

AT Commands Interface Guide

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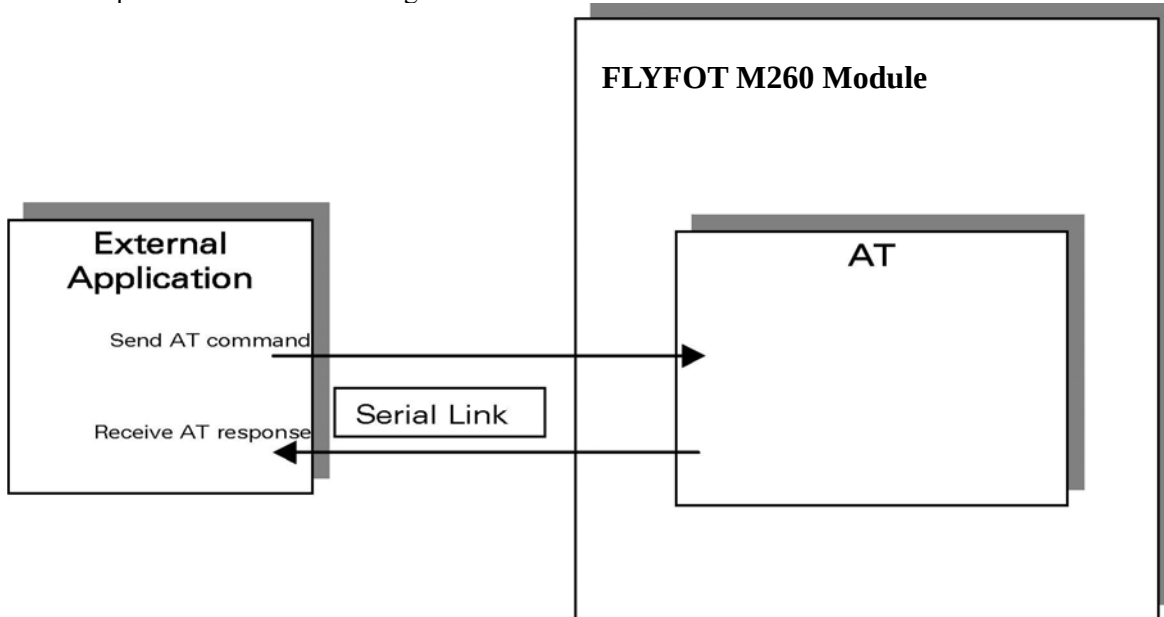
Overview

The aim of this document is to provide FLYFOT customers with a full description of the AT commands.

1 Introduction

1.1 Scope of this document

This document describes the AT-command based messages exchanged between an application and the FLYFOT products in order to manage GSM related events or services.



1.1 Related documents

This interface specification is based on the following recommendations:

- [1] ETSI GSM 07.05: Digital cellular telecommunications system (Phase 2); Use of DTE-DCE interface for Short Message Service (SMS) and Cell Broadcast Service (CBS)
- [2] ETSI GSM 07.07: Digital cellular telecommunications system (Phase 2); AT command set for GSM Mobile Equipment (ME)
- [3] ITU-T Recommendation V.25 ter: Serial asynchronous automatic dialling and control
- [4] ETSI GSM 03.40: Digital cellular telecommunications system (Phase 2); Technical implementation of the Short Message Service (SMS) Point-to-Point (PP)
- [5] ETSI GSM 03.38: Digital cellular telecommunications system (Phase 2); Alphabets and language-specific information
- [6] ETSI GSM 04.80: Digital cellular telecommunications system (Phase 2); Mobile radio interface layer 3, Supplementary service specification, Formats and coding

1.2 ETSI secretariat

The following addresses may be of use in obtaining the latest GSM recommendations:

Postal address: F-06921 Sophia Antipolis CEDEX – France

Office address: 650 Route des Lucioles – Sophia Antipolis – Valbonne – France

1.3 Definitions

The words, “Mobile Station” (MS) or “Mobile Equipment” (ME) are used for mobile terminals supporting GSM services.

A call from a GSM mobile station to the PSTN is called a “mobile originated call” (MOC) or “outgoing call”, and a call from a fixed network to a GSM mobile station is called a “mobile terminated call” (MTC) or “incoming call”.

In this document, the word “product” refers to any FLYFOT product supporting the AT commands interface.

1.4 Presentation rules

In the following, the AT commands are presented with as much precision as possible, through three paragraphs. A “Description” paragraph provides general information on the AT command (or response) behaviour. A “Syntax” paragraph describes the way to use it, the possible answers, through a readable format. A “Defined values” paragraph provides parameters values, as well for the AT command as for the corresponding responses.

Schemas are provided where necessary.

2 AT commands features

2.1 FLYFOT line settings

A serial link handler is set with the following default values (factory settings):
baud rate is 460800 bit/s, 8 bits data, 1 stop bit, no parity, no flow control.

2.2 Command line

Commands always start with AT (which means Attention) and finish with a <CR> character.

2.3 Information responses and result codes

Responses start and end with <CR><LF>

If command syntax is incorrect, the “ERROR” string is returned,.

- If command syntax is correct but transmitted with wrong parameters, the +CME ERROR: <Err> or +CMS ERROR: <SmsErr> strings is returned with adequate error codes if CMEE was previously set to 1. By default, CMEE is set to 0, and the error message is only “ERROR”.
- If the command line has been executed successfully, an “OK” string is returned.

In some cases, such as “AT+CPIN?” or (unsolicited) incoming events, the product does not return the “OK” string as a response.

3 General behaviors

3.1 SIM Insertion, SIM Removal

SIM card Insertion and Removal procedures are supported. There are software functions relying on positive reading of the hardware SIM detect pin. This pin state (open/closed) is permanently monitored.

When the SIM detect pin indicates that a card is present in the SIM connector, the product tries to set up a logical SIM session. The logical SIM session will be set up or not depending on whether the detected card is a SIM Card or not.

The AT+CPIN? command delivers the following responses:

- If the SIM detect pin indicates “absent”, the response to AT+CPIN? is “+CME ERROR 10” (SIM not inserted).
- If the SIM detect pin indicates “present”, and the inserted card is a SIM card, the response to AT+CPIN? is “+CPIN: xxx” depending on SIM PIN state.
- If the SIM detect pin indicates “present”, and the inserted card is not a SIM card, the response to AT+CPIN? is “+CME ERROR 10”.
- These last two states are not provided immediately due to background initialization. Between the hardware SIM detect pin indicating “present” and the final results, the AT+CPIN? sends “+CME ERROR: 515” (Please wait, init in progress).

When the SIM detect pin indicates card absence, and if a SIM Card was previously inserted, an IMSI detach procedure is performed, all user data is removed from the product (Phonebooks, SMS etc.). The product then switches to emergency mode.

3.2 Background initialization

After entering the PIN (Personal Identification Number), some SIM user data files are loaded into the product (phonebooks, SMS status, etc.). Please be aware that it might take some time to read a large phonebook.

The AT+CPIN? command response occurs after the PIN checking. After this response user data is loaded in background. This means that some data may not be available just when PIN entry is confirmed by 'OK'. The reading of phonebooks will then be refused by “+CME ERROR: 515” or “+CMS ERROR: 515” meaning, “Please wait, service is not available yet, init in progress”.

This type of answer may be sent by the product at several points:

- when trying to execute another AT command before the previous one is completed (before response),
- when asking for +CPIN? status immediately after SIM insertion and before the product has determined if the inserted card is a valid SIM card.

4 General commands

4.1 Module initial reason +TINIT

4.1.1 Description :

Request module initial reason.

4.1.2 Syntax:

Command syntax : AT+TINIT

Command	Possible responses
AT+TINIT=?	OK
AT+TINIT?	+TINIT: 0,n Note: onkey init +TINIT: 1,n "YY/MM/DD, hh:mm:00" Note: wakeup init "YY/MM/DD, hh:mm:00" is the time of alarm clock +TINIT: 2,n Note: watchdog init +TINIT: 3,n Note: plugin init +TINIT: 4,n Note: restart init +TINIT: 5,n Note: error init OK
AT+TINIT AT+TINIT=1	+CME ERROR 3 Note: not support

4.1.3 Defined values :

<n>

0: airplane mode is off

1: airplane mode is on

4.2 Battery state +CBC

4.2.1 Description :

Request module battery state.

4.2.2 Syntax :

Command syntax : AT+CBC

Command	Possible responses
AT+CBC?	+CBC: n,m OK
AT+CBC=?	+CBC: (0-3), (0-100) OK
AT+CBC	+CBC: n,m OK
AT+CBC=1	+CME ERROR 3 Note: not support

While the battery level changed the indicator will be send to TE.

4.2.3 Defined values :

<n>

- 0: battery not in charge
- 1: battery in charge
- 2: battery full
- 3: battery low

<m>

- 0: battery level 0
- 25: battery level 1
- 50: battery level 2
- 75: battery level 3
- 100: battery level 4

4.3 Manufacturer identification +CGMI

4.3.1 Description :

This command gives the manufacturer identification.

4.3.2 Syntax :

Command syntax : AT+CGMI

Command	Possible responses
AT+CGMI	FLYFOT MODEM OK
Note: Get manufacture identification	Note: Command valid, FLYFOT modem
AT+CGMI=?	OK
AT+CGMI? AT+CGMI=1	+CME ERROR 3 Note: not support

4.4 Request model identification +CGMM

4.4.1 Description :

This command is used to get the supported frequency bands. With multi-band products the response may be a combination of different bands.

4.4.2 Syntax :

Command syntax : AT+CGMM

Command	Possible responses
AT+CGMM Note: Get all available frequency band	MULTIBAND 900 1800 1900 OK Note: 900(EGSM), 1800(DCS) MHz primary band.
AT+CGMM? Note: Get current used frequency band	+CGMM: EGSM900 OK
AT+CGMM=?	OK
AT+CGMM=1	+CME ERROR 3 Note: not support

4.5 Request revision identification +CGMR

4.5.1 Description :

This command is used to get the revised software version.

4.5.2 Syntax :

Command syntax : AT+CGMR

Command	Possible responses
AT+CGMR Note: Get software version	FLYFOT-M260-MODULE-VER-01.00 Aug 12 2006 14:06:42 OK Note: Software release, revision 01.23 generated on the 17 st of Dec 2003
AT+ CGMR =?	OK
AT+ CGMR? AT+ CGMR =1	+CME ERROR 3 Note: not support

4.6 Product Serial Number +CGSN

4.6.1 Description :

This command allows the user application to get the IMEI (International Mobile Equipment Identity, 15 digits number) of the product.

4.6.2 Syntax :

Command syntax : AT+CGSN

Command	Possible responses
AT+CGSN Note: Get the IMEI	012345678901234 OK Note: IMEI read from EEPROM
AT+CGSN Note: Get the IMEI	+CME ERROR: 22 Note: IMEI not found in EEPROM
AT+ CGSN =?	OK
AT+ CGSN? AT+ CGSN =1	+CME ERROR 3 Note: not support

4.7 Request IMSI +CIMI

4.7.1 Description :

This command is used to read and identify the IMSI (International Mobile Subscriber Identity) of the SIM card. The PIN may need to be entered before reading the IMSI.

4.7.2 Syntax

Command syntax : AT+CIMI

Command	Possible responses
AT+CIMI Note : Read the IMSI	208200120320598 OK Note : IMSI value (15 digits), starting with MCC (3 digits) / MNC (2 digits, 3 for PCS 1900)
AT+ CIMI =?	OK
AT+ CIMI? AT+ CIMI =1	+CME ERROR 3 Note: not support

See appendix 16.12 for MCC / MNC description.

4.8 Card Identification +CCID

4.8.1 Description :

This command orders the product to read the EF-CCID file on the SIM card.

4.8.2 Syntax :

Command syntax : AT+CCID

Command	Possible responses
AT+CCID Note : Get card ID	+CCID: "123456789AB111213141" Note : EF-CCID is present, hexadecimal format

AT+CCID? Note : Get current value	+ CCID: "123456789AB111213141" Note : Same result as +CCID
AT+CCID = ? Note : Get possible value	OK Note : No parameter but this command is valid
AT+ CCID =1	+CME ERROR 3 Note: not support

If there is no EF-CCID file present on the SIM, the +CCID answer will not be sent, but the OK message will be returned.

4.9 Capabilities list +GCAP

4.9.1 Description :

This command gets the complete list of capabilities.

4.9.2 Syntax :

Command syntax : AT+GCAP

Command	Possible responses
AT+GCAP Note :Get capabilities list	+GCAP;+CGSM OK Note: Support GSM command

4.9.3 Defined values :

No parameter

4.10 Repeat last command A/

4.10.1 Description :

This command repeats the previous command. Only the A/ command itself cannot be repeated.

4.10.2 Syntax :

Command syntax : A/

Command	Possible responses
A/ Note Repeat last command	

4.11 Power off +CPOF

4.11.1 Description :

This specific command power off FLYFOT M260 module

4.11.2 Syntax :

Command syntax : AT+CPOF

Command	Possible responses
AT+CPOF Note : power off	OK Note: Command valid
AT+CPOF? AT+CPOF=? AT+CPOF =1	+CME ERROR 3 Note: not support

4.12 Set phone functionality +CFUN

4.12.1 Description :

This command selects the mobile station's level of functionality. If the application wants to force the product to execute an IMSI DETACH procedure, then it must send: AT+CFUN=0 This command closed RF and SIM card can be accessed, so, sending SM function can Not be used again. The AT+CFUN=1 command restarts the entire GSM stack and GSM functionality.

If the mobile switch on with the charger plugged in, it must send: either AT+CFUN=1 at normal mode or AT+CFUN=3 at airplane mode so that the SIM CARD can be identified correctly.

4.12.2 Syntax :

Command syntax : AT+CFUN=<functionality level>

Command	Possible responses
AT+CFUN? Note : Ask for current functionality level	+CFUN: 1 OK Note : Full functionality
AT+CFUN=0 Note : Set minimum functionality, IMSI detach procedure	OK Note : Command valid SIM is valid
AT+CFUN=1 Note : Set the full functionality mode with a Complete software reset	OK Note : Command valid
AT+CFUN=3 Note : Set the airplane mode	OK Note : Command valid
AT+CFUN	+CME ERROR 3 Note: not support
AT+CFUN=?	+CFUN: (0,1,3) OK

NOTE: Command Operator Selection +COPS is used to force registration/deregistration.

4.12.3 Defined values :

<functionality level>

0 : Set minimum functionality, IMSI detach procedure

1 : Set the full functionality mode with a complete software reset

3 : Set the airplane mode, disable the network registration when switching on.

<cfun state>

0: radio off

1: radio on

2: the system is initializing

3: radio off and the product at airplane mode

4.13 Phone activity status +CPAS

4.13.1 Description :

This command returns the activity status of the mobile equipment.

4.13.2 Syntax :

Command syntax : AT+CPAS

Command	Possible responses
AT+CPAS Note : Current activity status	+CPAS: <pas> OK
AT+ CPAS? AT+ CPAS=? AT+ CPAS=1	+CME ERROR 3 Note: not support

4.13.3 Defined values :

<pas>

0: ready (allow commands from TA/TE)

1: unavailable (does not allow commands)

2: unknown

3: ringing (ringer is active)

4: call in progress

5: asleep (low functionality)

4.14 Report Mobile Equipment errors +CMEE

4.14.1 Description :

This command disables or enables the use of the “+CME ERROR : <xxx>” or “+CMS ERROR :<xxx>” result code instead of simply “ERROR”. See appendix 16.1 for +CME ERROR result codes description and appendix 16.2 for +CMS ERROR result codes.

4.14.2 Syntax :

Command syntax : AT+CMEE=<error reporting flag>

Command	Possible responses
AT+CMEE=0 Note : Disable ME error reports, use only “ERROR”	OK

AT+CMEE=1 Note : Enable “+CME ERROR:<xxx>” or “+CMS ERROR:<xxx>”	OK
AT+CMEE?	+CMEE : 1 Note : Enable “+CME ERROR: <xxx>”
AT+CMEE=? AT+CMEE	+CME ERROR 3 Note: not support

4.14.3 Defined values :

<error reporting flag>

0 : Disable ME error reports, use only “ERROR”

1 : Enable “+CME ERROR: <xxx>”

4.15 Keypad control +CKPD

4.15.1 Description :

This command emulates the ME keypad by sending each keystroke as a character in a <keys> string. The supported GSM sequences are listed in the appendix. If emulation fails, a +CME ERROR: <err> is returned. If emulation succeeds, the result depends on the GSM sequence activated:

Note: In the case where the FDN phonebook is activated, the sequences concerning “call forwarding” are allowed only if the entire sequence is written in the FDN.

4.15.2 Syntax :

Command syntax : AT+CKPD=<keys>

Command	Possible responses
AT+CKPD="*#21#" Note : Check every call forwarding status	+CCFC: 0,7
AT+CKPD="1234" Note : Sequence not allowed	+CME ERROR 3

4.15.3 Defined values :

<keys>

Keyboard sequence : string of the following characters (0-9,*,#).

4.16 Clock Management +CCLK

4.16.1 Description :

This command is used to set or get the current date and time of the ME real-time clock.

4.16.2 Syntax :

Command syntax : AT+CCLK=<date and time string>

Command	Possible responses
---------	--------------------

AT+CCLK="00/06/09,17:33:00+32" Note : set date to June 9 th , 2000, and time to 5:33pm, GMT +8	OK Note : Date/Time stored
AT+CCLK="00/13/13,12:00:00-16" Note : Incorrect month entered	+CME ERROR 3
AT+CCLK? Note : Get current date and time	+CCLK: "00/06/09,17:34:00+16" OK Note : current date is June 9 th , 2000 current time is 5:34:00 pm, GMT +4
AT+ CCLK =? AT+ CCLK	+CME ERROR 3 Note: not support

4.16.3 Defined values :

<date and time string>

String format for date/time is: "yy/MM/dd,hh:mm:ss±zz".

Valid years are 00 (for 2000) to 98 (for 2098).

Default date/time is "00/01/01,00:00:00+00" (January 1st, 2000 / midnight).

4.17 Alarm Management +CALA

4.17.1 Description :

This command is used to set alarms date/time in the ME. The maximum number of alarms is 1.

4.17.2 Syntax :

Command syntax : AT+CALA=<date and time string> (set alarm)
AT+CALA="" (delete alarm)

Command	Possible responses
AT+CALA="00/06/09,07:30" Note : set an alarm for June 9 th , 2000 at 7:30 am	OK Note : Alarm stored
AT+CALA="99/03/05,13:00:00" Note : set an alarm for March 5 th , 1999 at 1:00 pm	+CME ERROR 3 Note : Invalid alarm (date/time expired)
AT+CALA? Note : list all alarms	+CALA: "00/06/08,15:25:00"
CALA interruption	+CALA: "00/06/08,15:25:00" Note : an alarm occurs
AT+CALA="" Note : delete this alarm.	OK Note : Alarm is deleted
AT+CALA? Note : list all alarms	+CALA: "00/06/09,07:30:00" Note : Only one alarm
AT+CALA = ?	OK
AT+CALA	+CME ERROR 3 Note: not support

4.17.3 Defined values :

<date and time string>

String format for alarms : “yy/MM/dd, hh:mm:ss” (see +CCLK).

Note : Seconds are not taken into account.

4.18 Select type of address +CSTA

4.18.1 Description :

This command is used to select type of address.

4.18.2 Syntax :

Command syntax : AT+CSTA=<type>

Command	Possible responses
AT+CSTA?	+CSTA: 129 OK Note : read current value
AT+CSTA=?	+CSTA: (129,145) OK Note : get all value
AT+CSTA=129	OK Note : set value
AT+CSTA	+CME ERROR: 3 Note : not support

4.18.3

4.19 Open Micorphone power +TCFG

4.19.1 Description :

Firstly this command is used to open or close main microphone power by parameter “RED”.

Secondly this command is used to control display mode by parameter “IND”.

4.19.2 Syntax :

Command syntax : AT+TCFG=<type>,<value>

Command	Possible responses
AT+TCFG="IND",1 Note : enable the value of CSQ, CREG, CBC, CGREG indication unsolicited	OK
AT+TCFG=? Note : Get all value	+TCFG: ("RED","NTC","IND"),(0,1) OK
AT+TCFG? AT+TCFG	+CME ERROR: 3 Note : not support

4.19.3 Defined values :

<Type>

“RED”: record mode.

<Value>

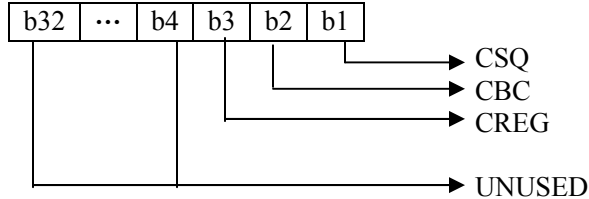
0:close power.

1:open power.

<Type>

“IND”: indication control mode

<Value>



m : this value has 4 octets. If the bit is set, the value of indication unsolicited once changing. Otherwise the value is not given until requested.

4.20 32kHz Power down Mode +W32K

4.20.1 Description :

This specific command allows the 32kHz power down mode to be enabled or disabled.

Note :

- When power down mode is entered, the product uses a 32kHz internal clock during inactivity stages (despite of its nominal internal clock).
- When enabled, power down mode is active after 1 to 15 minutes. The mode is not stored in EEPROM : the command has to be repeated after a reset.

4.20.2 Syntax :

Command syntax : AT+W32K=<mode>

Command	Possible responses
AT+W32K=1	OK
Note : Enable 32kHz power down mode	Note : 32kHz power down mode is enabled
AT+W32K=0	OK
Note : Disable 32kHz power down mode	Note : 32kHz power down mode is disabled

4.20.3 Defined values

<mode> :

0 : Disable 32kHz power down mode

1 : Enable 32kHz power down mode

4.21 Set alert tone Command +TMEL

4.21.1 Description:

This command with two parameters is used to set call active alert tone or other alert tone.

4.21.2 Syntax :

Command syntax : AT+TMEL=<type>,< volume>

Command	Possible responses
AT+TMEL=2,3 Note: Set the alert type and volume	OK
AT+TMEL=? Note: Get possible value	+TMEL: (0-15),(1-3) OK
AT+TMEL=10,4 Note: Set invalid value	+CME ERROR: 3 Note: The product can not support this command
AT+ TMEL? AT+ TMEL	+CME ERROR: 3 Note: The product can not support this command

4.21.3 Defined values :

<type> The value range is 0-15

0: none alert tone

(1-15): different alert tone

<volume> The value range is 1-3

1: The volume is lowest

2: The volume is middle

3: The volume is topmost

4.22 Control Flash LED Command +TFLED

4.22.1 Description

This command with six parameters is used to control the flash led sparking.

4.22.2 Syntax

AT+TFLED=[Operation],<light time in idle>,<dark time in idle>,<light in calling>,<dark in calling>,<mode>

Command	Possible responses
AT+ TFLED=? Note: Set the alert type and volume	+TFLED: (0-1),(0-65535),(0-65535),(0-65535),(0-65535),(0-1) OK
AT+ TFLED=1,10,10,10,10 ,1 Note: Get possible value	OK
AT+ TFLED=10,4 Note: Set invalid value	+CME ERROR: 3 Note: The product can not support this command
AT+ TFLED?	+TFLED: 1,10,10,10,10,1
AT+ TFLED	+CME ERROR: 3 Note: The product can not support this command

4.22.3 Defined values :

Operation:

- 0:turn off the led
- 1:flash the led according to the other parameters

light time in idle:

- 0~65535 the light time in idle state;

dark time in idle:

- 0~65535 the dark time in idle state;

light in calling:

- 0~65535 the light time in calling state;

dark in calling:

- 0~65535 the dark time in calling state;

mode:

- 0:Normal mode
- 1:Super mode(the flash of the led is not relative to the calling of registration state)

4.23 Restricted SIM access +CRSM

4.23.1 Description

By using this command instead of Generic SIM Access +CSIM TE application has easier but more limited access to the SIM database. This command transmits to the MT the SIM <command> and its required parameters.

As response to the command, MT sends the actual SIM information parameters and response data. MT error result code +CME ERROR may be returned when the command cannot be passed to the SIM, but failure in the execution of the command in the SIM is reported in <sw1> and <sw2> parameters.

As for the CSIM command , there is no locking between two successive commands. The user should be aware of the precedence of the GSM application commands to the TE commands.

4.23.2 Syntax

Command	Possible responses
+CRSM=<command>[,<fileid>[,<P1>,<P2>,<P3>[,<data>]]]	+CRSM: <sw1>,<sw2>[,<response>] +CME ERROR: <err>
AT+CRSM?	OK
AT+CRSM=?	OK

4.23.3 Defined values

<command> : integer type

Command passed on by the MT to the SIM; refer GSM 11.11 (or 3GPP TS 51.011) :

176 READ BINARY

178 READ RECORD

192 GET RESPONSE

242 STATUS

all other values are reserved and the command will return +CME ERROR=3

NOTE 1: The MT internally executes all commands necessary for selecting the desired file, before performing the actual command.

<fileid> : integer type

This is the identifier of a elementary datafile on SIM. Mandatory for every command except STATUS.

NOTE 2: The range of valid file identifiers depends on the actual SIM and is defined in GSM 11.11 (or 3GPP TS 51.011). Optional files may not be present at all. This value must be in the range [0 . 65535] else a CME_ERROR=3 is returned.

<P1>, <P2>, <P3> : integer type

Parameters passed on by the MT to the SIM. These parameters are mandatory for every command, except GET RESPONSE and STATUS. The values are described in GSM 11.11 (or 3GPP TS 51.011).

<data> : hexadecimal type

information which shall be written to the SIM (hexadecimal character format; refer +CSCS).

<sw1>, <sw2> : integer type

Information from the SIM about the execution of the actual command.

These parameters are delivered to the TE in both cases, on successful or failed execution of the command.

<response> : hexadecimal type

response of a successful completion of the command previously issued (hexadecimal character format; refer +CSCS). STATUS and GET RESPONSE return data, which gives information about the current elementary datafield. This information includes the type of file and its size (refer GSM 11.11 (or 3GPP TS 51.011)). After READ BINARY or READ RECORD command the requested data will be returned.

<error>: integer type

3 Wrong format or parameters of the command

13 SIM no response

5 Call Control commands

5.1 Dial command D

5.1.1 Description :

The ATD command is used to **set a voice, data call**, As per GSM 02.30, the dial command also controls supplementary services.

For a **data call**, the application sends the following ASCII string to the product:

ATD<nb> where <nb> is the destination phone number.

For a **voice call**, the application sends the following ASCII string to the product:

(the bearer may be selected previously, if not a default bearer is used).

ATD<nb> where <nb> is the destination phone number.

Please note that for an **international number**, the local international prefix does not need to be set (usually 00) but does need to be replaced by the '+' character.

Example: to set up a voice call to FLYFOT offices from another country, the AT command is: **"ATD+8601062965555;"**

Note that some countries may have specific numbering rules for their GSM handset numbering.

The response to the ATD command is one of the following:

Verbose result	Numeric code	Description
OK	0	if the call succeeds, for voice call only
CONNECT <speed>	10,11,12,13,14,15	if the call succeeds, for data calls only, <speed> takes the value negotiated by the product.
BUSY	7	If the called party is already in communication
NO ANSWER	8	If no hang up is detected after a fixed network time-out
NO CARRIER	3	Call setup failed or remote user release. Use the AT+CEER command to know the failure cause

Direct dialing from a phonebook (stored in the SIM card) can be performed with the following command:

ATD> <index>; to call <index> from the selected phonebook (by the +CPBS command)

ATD> "BILL"; to call "BILL" from the selected phonebook

5.1.2 Syntax:

Command syntax: ATD<nb>[:]

ATD><index>[:]

Command	Possible responses
AT+CPBS? Note: Which phonebook is selected?	+CPBS:"SM", 8, 10 Note: ADN phonebook is selected, 8 locations are used and 10 locations are available
ATD>8; Note: Call index 8 from AND phonebook	OK Note: Call succeeds

Note: The “,” for speech calls

5.1.3 Defined values :

<nb>

destination phone number

<index>

call number at indicated offset from the phonebook selected by the +CPBS command

<name>

call number corresponding to given name from the phonebook selected by the +CPBS command

5.2 Hang-Up command H

5.2.1 Description:

The ATH command is used by the application to disconnect the remote user. In the case of multiple calls, all calls are released (active, on-hold and waiting calls).

The specific FLYFOT ATH1 command has been appended to disconnect the current outgoing call, only in dialing or alerting state (i.e. ATH1 can be used only after the ATD command, and before its terminal response (OK, NO CARRIER...)). It can be useful in the case of multiple calls.

5.2.2 Syntax :

Command syntax : ATH<n>

Command	Possible responses
ATH Note: Ask for disconnection	OK Note: Every call, if any, are released
ATH1 Note: Ask for outgoing call disconnection	OK Note: Outgoing call, if any, is released

5.2.3 Defined values:

<n>

0: Ask for disconnection (default value)

1: Ask for outgoing call disconnection

5.3 Answer a call A

5.3.1 Description :

When the product receives a call, it sets the **Ring Indication** signal and sends the ASCII “**RING**” string to the application. Then it waits for the application to accept the call with the ATA command.

5.3.2 Syntax :

Command syntax : ATA

Command	Possible responses
	RING Note: Incoming call

ATA Note: Answer to this incoming call	OK Note: Call accepted
ATH Note: Disconnect call	OK Note: Call disconnected

5.3.3 Defined values :

No parameter

5.4 Remote disconnection

This message is used by the product to inform the application that an active call has been released by the remote user.

The product sends “**NO CARRIER**” to the application. (Release cause reference to appendixes 17.4 failure cause from GSM 04.08 recommendation with +CEER command).

5.5 Extended error report +CEER

5.5.1 Description :

This command gives the cause of call release when the last call set up (originating or answering) failed. Release cause reference to Appendixes 17.4 failure cause from GSM 04.08 recommendation

5.5.2 Syntax :

Command syntax : AT+CEER

Command	Possible responses
ATD123456789; Note: Outgoing voice call	NO CARRIER Note: Call setup failure
AT+CEER Note: Ask for reason of release	+CEER: Error <xxx> OK Note: <xxx>is the release cause reference to Appendixes 17.4 failure cause from GSM 04.08 recommendation

For the cause information element from GSM 04.08 see chapter 18.4 or 18.5. “NO CARRIER” indicates that the AT+CEER information is available for failure diagnosis.

5.5.3 Defined values :

No parameter

5.6 DTMF signals +VTD, +VTS

5.6.1 +VTD Description:

The product enables the user application to send DTMF tones over the GSM network. This command is used to define tone duration (the default value is 300ms).

5.6.2 +VTD Syntax:

Command syntax: AT+VTD=<n>

Command	Possible responses
AT+VTD=6 Note: To define 600 ms tone duration	OK Note: Command valid
AT+VTD=0 Note: To set the default value	OK
AT+VTD? Note: interrogate current tone duration	+VTD: <n> OK
AT+VTD=?	+VTD: (0-255) OK

5.6.3 Defined values :

<n> : tone duration

<n>*100 is the duration in ms.

If n < 4, tone duration is 300 ms; if n > 255, the value is used modulo 256.

Default value is 300 ms, that is <n> = 3.

5.6.4 +VTS Description:

The product enables the user application to send DTMF tones over the GSM network. This command enables tones to be transmitted, only when there is an active call.

5.6.5 +VTS Syntax:

Command syntax: AT+VTS=<Tone>

Command	Possible responses
AT+VTS=A	OK Note: Command valid
AT+VTS=11	+CME ERROR: 4 Note: If the <Tone> is wrong
AT+VTS=4	+CME ERROR: 3 Note: If there is no communication

5.6.6 Defined values:

<Tone>:

The value is in {0-9, *, #, A, B, C, D}

Example:

To send tone sequence 13#, the application sends:

AT+VTS=1; +VTS=3; +VTS=#

OK

5.7 Redial last telephone number ATDL

5.7.1 Description:

This command is used by the application to redial the last number used in the ATD command. The last number dialed is displayed followed by “;” for voice calls only

5.7.2 Syntax:

Command syntax: ATDL

Command	Possible responses
ATDL Note: Redial last number	01062965555 Note: Last call was a voice call. Command valid

5.7.3 Defined values :

No parameter

5.8 Automatic answer ATS0

5.8.1 Description:

This S0 parameter determines and controls the product automatic answering mode.

5.8.2 Syntax :

Command syntax : ATS0=<value>

Command	Possible responses
ATS0=2 Note: Automatic answer after 2 rings	OK
ATS0? Note: Current value	002 OK Note: always 3 characters padded with zeros
ATS0=0 Note: No automatic answer	OK Note: Command valid

All others S-parameters (S6,S7,S8 ...) are not implemented.

5.8.3 Defined values:

<value>

number of rings before automatic answer (3 characters padded with zeros).

Range of values is 0 to 255.

5.9 Gain control +VGR, +VGT

5.9.1 Description:

This command is used by the application to tune the receive gain of the speaker and the transmit gain of the microphone.

5.9.2 Syntax:

Command syntax: AT+VGR=<Rgain>

AT+VGT=<Tgain>

Command	Possible responses
AT+VGR=5	OK Note: Command valid
AT+VGT=45	OK Note: Command valid
AT+VGR? Note: Interrogate value	+VGR: 5 OK Note: Default receive gain
AT+VGR=? Note: Test command	+VGR: (1-10) OK Note: Possible values
AT+VGT? Note: Interrogate value	+VGT: 20 (When AT+SPEAKER=0) +VGT: 96 (When AT+SPEAKER=1) +VGT: 32 (When AT+SPEAKER=2) OK Note: Default transmit gain
AT+VGT=? Note: Test command	+VGT: (0-255) OK Note: Possible values

5.9.3 Defined values :

<Rgain>: receiver gain

<Tgain>: transmission gain

Note: VGT command is not supported.

5.10 Microphone Mute Control +CMUT

5.10.1 Description :

This command is used to mute the microphone input on the product (for the active microphone set with the +SPEAKER command). This command is only allowed during a call. Syntax:

Command syntax : AT+CMUT=<mode>

Command	Possible responses
AT+CMUT=? Note: Test command	+CMUT: (0,1) OK Note: Enable / disable mute
AT+CMUT? Note: Ask for current value	+CMUT: 0 OK Note: Current value is OFF
AT+CMUT=1 Note: Mute ON (call active)	OK Note: Command valid
AT+CMUT? Note: Ask for current value	+CMUT: 1 OK Note: Mute is active (call active)
AT+CMUT=0 Note: Mute OFF (call not active)	+CME ERROR:3 Note: Command not valid

5.10.2 Defined values :

<mode>

0 : microphone mute off (default value).

1 : microphone mute on.

5.11 Speaker & Microphone selection +SPEAKER

5.11.1 Description:

This specific command is used to select the speaker and the microphone set.

5.11.2 5.14.2 Syntax :

Command syntax : AT+SPEAKER=<ActiveSpkMic>

Command	Possible responses
AT+SPEAKER=0 Note : Speaker ONE and Micro ONE	OK Note : Command valid
AT+SPEAKER?	+SPEAKER: 0 OK Note : Speaker ONE and Micro ONE are active
AT+SPEAKER=?	+SPEAKER: (0-2) OK

5.11.3 5.14.3 Defined values :

5.14.3 Defined values :

<ActiveSpkMic>

0 : SPEAKER ONE, MICRO ONE

1 : SPEAKER TWO, MICRO TWO

2: BUZZER, MICRO TWO

5.12 Echo Cancellation +ECHO

5.12.1 Description :

This specific command is used to enable, disable or configure the Echo Cancellation functions for voice calls (in rooms, in cars, etc.). It is necessary to tune the Microphone gain (AT+VGT) and the Speaker gain (AT+VGR) before activating the Echo Cancellation.

5.12.2 Syntax :

Command syntax :

AT+ECHO=<GammaSp>,<GammaNSp>,<AlfaRev>

Command	Possible responses
AT+CMEE=1 Note: Enables the use of result code	OK
AT+SPEAKER?	+ SPEAKER: 0 OK Note : Speaker ONE and Micro ONE are active
AT+SIDET=0 Note: Deactivate the Sidetone	OK

AT+SIDET?	+SIDET: 0,0
AT+ECHO? Note : Read current settings	+ECHO: 0,2,0 OK
AT+ECHO=96,2,95 Note : Active Echo cancellation for Mic/Spk one.	OK
AT+ECHO? Note : Read current settings	+ECHO: 96,2,95 OK

5.12.3 Defined values:

<GammaSp>

Remote echo cancellation

The allowed range is [1; 96].

16 by default

<GammaNSp>

Near echo cancellation

The allowed range is [1; 96].

96 by default

<AlfaRev>

Echo cancellation related to room

The allowed range is [1; 64].

64 by default

5.13 SideTone modification +SIDET

5.13.1 Description :

This specific command is used to set the level of audio feedback in the speaker (microphone feedback in the speaker).

5.13.2 Syntax :

Command syntax : AT+SIDET=<val1>[,<val2>]

Command Possible responses

AT+SIDET=1,0

OK

Note : Command valid

AT+SIDET?

Note : Current value

+SIDET: 1,0

OK

Note : Command valid

AT+SIDET=? +SIDET: (0-1),(0-3)

OK

5.13.3 Defined values :

<val1>

0: SideTone is disabled

1: SideTone is enabled

<val2> (default value 0 will be used if this parameter is not given)

0: 0 db

1: - 6 db

2: - 12 db

3: - 18 db

5.14 Initialize Voice Parameters +VIP

5.14.1 Description :

This command allows factory settings for voice parameters to be restored from EEPROM.

These voice parameters include:

- Gain control (+VGR & +VGT commands),
- Microphone mute control (+CMUT command),
- Speaker & Microphone selection (+SPEAKER command),
- Echo cancellation (+ECHO command),
- Side tone modification (+SIDET command).

5.14.2 Syntax :

Command syntax : AT+VIP=<n>

Command	Possible responses
AT+VIP?	+VIP: 1 OK
AT+VIP=2 Note : Syntax error	+CME ERROR: 3
AT+VIP=1 Note : Restore the factory settings from EEPROM	OK Note : The command has been executed
AT+VIP=1 Note : Restore the factory settings from EEPROM with the current Echo cancellation algo (different of the default algo).	CME ERROR: 519 Note : Reset the product to accept the new algo.
AT+VIP=? Note : List of supported <n>s	+VIP: (1) OK

5.14.3 Defined values :

<n>

1 : Restore all voice parameters

Other values are not supported.

5.15 Ring Melody Playback +CRMP

5.15.1 Description

This command allows a melody to be played. All melodies are manufacturer defined.

For incoming voice, data or fax calls, 10 manufacturer-defined melodies can be played back (in a loop).

Note:

loop melodies (for voice/data/fax call) must be stopped by a +CRMP command with the <index> field set to 0 (example: +CRMP=0,,0).

When the <volume> parameter is given, this overwrites the <sound level> value of the +CRSL command. If the <volume> parameter is not given, the <sound level> value of +CRSL is used as default value.

5.15.2 Syntax :

Command syntax : AT+CRMP=<call type>[,<volume>,<type>,<index>]

Command	Possible responses
AT+CRMP=0,7,0,2 Note : Play voice call melody index 2 with volume level 7.	OK Note : Melody Playback.
AT+CRMP=0,,,0 Note : Stop the melody.	OK Note : The melody is stopped.
AT+CRMP=? Note : supported parameters	+CRMP: (0-2),(0-15),0,(0-10) OK

5.15.3 Defined values :

<call type>

0 Incoming voice call

1 Incoming data call

2 Incoming fax call

<volume>

0 Min volume

...

6 Default volume

15 Max volume

<type>

0 Manufacturer Defined (default)

<index>

0 Stop Melody Playback

1-10 Melody ID for voice/data/fax call type (default : 1)

5.16 Ringer Sound Level +CRSL

5.16.1 Description :

This command is used to set/get the sound level of the ringer on incoming calls. The set command changes the default <volume> value of the +CRMP command.

5.16.2 Syntax :

Command syntax : AT+CRSL=<sound level>

Command	Possible responses
AT+CRSL=0 Note : Set volume to Min.	OK Note : Current ring playing with Min. volume.

AT+CRSL=15 Note : Set volume to Max.	OK Note : Current ring playing with Max. volume.
AT+CRSL=? Note : supported parameters	+CRSL: (0-15) OK

5.16.3 Defined values :

<sound level>

0 Min volume

6 Default volume (default)

15 Max volume

5.17 Audio loop test +TLOOP

5.17.1 Description:

This specific command is used to open MAINMIC/AUXMIC and RECEIVER/EARPHONE for audio loop test

5.17.2 Syntax:

Command syntax: AT+TLOOP=m,<device>

Command	Possible responses
AT+ TLOOP =1,0 Note: test main micro and receiver	OK Note: Command valid
AT+ TLOOP =1,1 Note : test aux micro and earphone	OK Note: Command valid
AT+TLOOP = 0 Note: close audio loop test	OK Note: Command valid
AT+ TLOOP?	+CME ERROR: 3 Note: not support this command
AT+ TLOOP =?	+ TLOOP: (0~1), (0~2) OK

5.17.3 Defined values:

m: 0 close audio test

1 open audio test.

device:

0 main micro and receiver.

1 aux micro and earphone.

5.17.4 Note:

If exist call now, this command is not supported. In this case, return error 4(Not support).

5.18 Telephone firewall +TSFW

5.18.1 Description:

This specific command is used to set the telephone firewall.

5.18.2 Syntax:

Command syntax: AT+TSFW=m,<flag>,<telephone number>

Command	Possible responses
AT+TSFW=3,0,331234,234534,12343 Note: Set rejected phone number	+TSFW: 3 OK Note: 3 phone numbers have been added into the phone firewall list
AT+TSFW =2,1,334234,34523 Note : Set acceptable phone number	+TSFW: 2 OK Note: The flag is changed and old list should be empty. Then 2 phone numbers have been added into the new list
AT+ TSFW =2,1,234325,213423 Note: Set acceptable phone number	+TSFW: 4 OK Note: The flag is the same as the last. 2 phone numbers added into the list. The current list has 4 recorders.
AT+TSFW =0 Note: Delete all recorders	+TSFW: 0 OK Note: Delete successfully
AT+TSFW =? Note: Get current the reorders' number of the list	+TSFW: 4 OK Note: Current reorders' number

AT+TSFW =0 AT+TSFW =1,0,01062965555 Note: Set one rejected phone number	+TSFW: 0 OK +TSFW:1 OK +TSFW: 01062965555 Note: When the rejected phone number incoming, the product will reject this call and send the phone number indication
AT+TSFW? AT+TSFW	+CME ERROR 3 Note: not support

Note:

The telephone firewall list contains 40 entries at most.

5.18.3 Defined values:

m : the number of reorders that need be added into the firewall list

<flag>

1 : the phone number of the list can be received.

0 : the phone number of the list should be rejected.

<telephone number>

the comma is used between two phone numbers.

5.19 Telephone minute alarm +TMAS

5.19.1 Description:

This specific command is used to set the telephone minute alarm.

5.19.2 Syntax:

Command syntax: AT+TMAS=m

Command	Possible responses
AT+ TMAS=1 Note: Enable minute alarm	OK Note: Minute alarm is set.
AT+ TMAS=0 Note: Disable minute alarm	OK Note: Minute alarm is canceled.

AT+ TMAS?	+TMAS: 1 OK Note: Get current value
AT+ TMAS =?	+TMAS: (0,1) OK Note: Current reorders' number
AT+ TMAS	+CME ERROR 3 Note: not support

5.19.3 Defined values:

<m>

1: Enable minute alarm

0: Disable minute alarm

5.20 FLYFOT Speaker & Microphone selection +TFSPEAKER

5.20.1 Description:

This specific command is used to select the speaker and the microphone set.

5.20.2 Syntax:

Command syntax: AT+TFSPEAKER=<ActiveSpkMic>

Command	Possible responses
AT+TFSPEAKER=0 Note: receiver	OK Note: Command valid
AT+TFSPEAKER=1 Note: headset	OK Note: Command valid
AT+TFSPEAKER=2 Note: hand free	OK Note: Command valid
AT+TFSPEAKER?	+SPEAKER: 0 OK Note: receiver are active
AT+TFSPEAKER=?	+SPEAKER: (0-2) OK

5.20.3 Defined values:

<ActiveSpkMic>

0: earphone and aux MIC

1: receiver and main MIC

2: hand free and main MIC

6 Network service commands

6.1 Signal Quality +CSQ

6.1.1 Description :

This command is used to ascertain the received signal strength indication (<rss>) and the channel bit error rate (<ber>) with or without a SIM card inserted.

6.1.2 Syntax :

Command syntax : AT+CSQ

Command	Possible responses
AT+CSQ	+CSQ: <rss>,<ber> OK Note : <rss>,<ber> as defined below
AT+CSQ=?	+CSQ:(0~31),(0~7) OK Note : get parameter range
AT+CSQ?	+CME ERROR: 3 Note : not support

6.1.3 Defined values :

<rss> :

0: -113 dBm or less

1: -111 dBm

2 to 30: -109 to -53 dBm

31: -51dBm or greater

99: not known or not detectable

<ber> : 0~7: as RXQUAL values in the table GSM 05.08

99: not known or not detectable

Notes: <ber> is not valid and only response "99"

6.2 Operator selection +COPS

6.2.1 Description :

There are three possible ways of selecting an operator (PLMN):

- 1) The product is in **manual** mode. It then tries to find the operator specified by the application and if found, tries to register.

- 2) The product is in **automatic** mode. It then tries to find the home operator and if found, tries to register. If not found, the product automatically searches for another network.
- 3) The product enters into **manual/automatic** mode, and then tries to find an operator as specified by the application (as in manual mode). If this attempt fails it enters **automatic** mode. If this is successful, the operator specified by the application is selected. The mobile equipment then enters into **automatic** mode.

Note:

*The read command returns the current mode and the currently selected operator. In manual mode, this PLMN may not be the one set by the application (as it is in the search phase).
These commands are not allowed during one communication.*

6.2.2 Syntax :

To force an attempt to select and register on a network, the application must send the following command:

Command syntax: AT+COPS=<mode>, [<format> [, <oper>]]

Possible responses for AT+COPS=<mode>:

- OK** (Network is selected with full service)
- +CME ERROR: 30** (No network service),
- +CME ERROR: 32** (Network not allowed – emergency calls only)
- +CME ERROR: 3** (not allowed during one Communication)
- +CME ERROR: 4** (Incorrect parameters)

Response syntax for AT+COPS?:

+COPS: <mode> [, <format>, <oper>]

Response syntax for AT+COPS=?:

+COPS: [list of supported (<stat>, long alphanumeric <oper>, short alphanumeric <oper>s, numeric <oper>) s]

If an incoming call occurs during a PLMN list request, the operation is aborted

(**+CME ERROR: 520**) and the unsolicited RING appears

Command	Possible responses
AT+COPS?	+COPS: 0,2,46000 OK
Note : Ask for current PLMN	Note : Home PLMN is China Telecom
AT+COPS=?	+COPS:(2,"CHINA MOBILE","CMCC","46000"), (3,"CHN-CUGSM","CU-GSM","46001") OK
Note : Ask for PLMN list	Note : detect current available PLMN
AT+COPS=1,2,46000	OK
Note : Ask for registration on China Telecom network	Note : register successfully

AT+COPS=0 Note : Ask for registration on home network	OK Note : Succeeded
AT+COPS=3,0 Note : Set <format> to long alphanumeric	OK Note: Succeeded
AT+COPS=2 Note : Ask for deregistration from network	OK Note : Succeeded
AT+COPS	+CME ERROR: 3 Note : not support

6.2.3 Defined values :

The parameters values are the following ones:

<mode>

0: automatic (default value)

1: manual

2: deregistration ; ME will be unregistered until <mode>=0 or 1 is selected.

3: set only <format> (for read command AT+COPS?)

4: manual / automatic (<oper> shall be present), if manual selection fails, automatic mode is entered.

<format>: format of <oper> field

0: long alphanumeric format <oper>

1: short alphanumeric format <oper>

2: numeric <oper> (default value)

<stat>: status of <oper>

0: unknown

1: available

2: current

3: forbidden

<oper>: operator identifier (MCC/MNC in numeric format only for operator selection)

The long alphanumeric format can be up to 16 characters long (see appendix 19.12 for operator names description, field is "Name")

The short alphanumeric format can be up to 8 characters long.

6.3 Network registration +CREG

6.3.1 Description

This command is used by the application to ascertain the registration status of the product.

6.3.2 Syntax :

Command syntax : AT+CREG= <mode>

Response syntax : +CREG : <mode>, <stat> [,<lac>,<ci>] for AT+CREG? Command only

Command	Possible responses
AT+CREG?	+CREG: <mode>,<stat> OK Note : As defined here-above
AT+CREG=1 Note : Enable network registration unsolicited result code	OK Note : Command valid
AT+CREG=?	+CREG: (0-2) Note : 0,1,2 <mode> values are supported
AT+CREG	+CME ERROR: 3 Note : not support

6.3.3 Defined values :

<mode>

- 0: Disable network registration unsolicited result code (default)
- 1: Enable network registration code result code +CREG : <stat>
- 2: Enable network registration and location information unsolicited result code +CREG: <stat>,<lac>,<ci> if there is a change of network cell.

<stat>

- 0: not registered, ME is not currently searching for a new operator.
- 1: registered, home network.
- 2: not registered, ME currently searching for a new operator to register to.
- 3: registration denied.
- 4: unknown.
- 5: registered, roaming.

<lac>: string type; two byte location area code in hexadecimal format (e.g. "00C3" equals 195 in decimal).

<ci>: string type; two byte cell ID in hexadecimal format.

6.4 Preferred operator list +CPOL

6.4.1 Description :

This command is used to edit (or update) the SIM preferred list of networks. This list is read in the SIM file selected by the command AT+CPLS.

6.4.2 Syntax :

Command syntax : AT+CPOL=

[<index>] [,<format>[,<oper>[,<GSM_Act>,<GSMcomp_Act>,<Utran_Act>]]]

The different possibilities are:

- AT+CPOL = <index> to delete an entry.
- AT+CPOL = , <format> to set the format used by the read command (AT+CPOL?).
- AT+CPOL = <index> , <format> , <oper> to write <oper> in the <format> at the <index>.

The supported format are those of the +COPS command.

Command	Possible responses
AT+CPOL? Note : Ask for preferred list of networks With only EF_PLMNsel present	+CPOL: 1,2,46000 OK Note : Preferred list of networks in numeric format (read in EF_PLMNsel)
AT+CPOL=,0 Note : Select long alphanumeric format	OK
AT+CPOL? Note : Ask for preferred list of networks With only EF_PLMNsel present	+CPOL: 1,0,"CHINA TELECOM" OK Note : Preferred list of networks in long alphanumeric format
AT +CPOL=7 , 2 , 46001 Note : Add a network to the list	OK Note: succeed
AT+CPOL = 7 Note : Delete 7 th location	OK Note: succeed
AT+CPOL = ? Note: get the max index	+CPOL:(0~8),(0~2) OK Note: succeed

6.4.3 Defined values :

<index> : position of the operator record in the sim preferred operator list. Do

AT+CPOL=? To get the maximum index of the selected EF.

<format> :

0 long alphanumeric format for <oper>

1 short alphanumeric format for <oper>

2 numeric format for <oper>

<oper> : character string or integer (see <format>) indicating operator identifier.

6.5 Read operator name +COPN

6.5.1 Description :

This command returns the list of all operator names (in numeric and alphanumeric format) stored in the module.

6.5.2 Syntax :

Command syntax : AT+COPN

Command response : +COPN: <NumOper>,<AlphaOper>

Command	Possible responses
AT+COPN Note : Ask for preferred list of networks	+COPN: 23201,"A1" +COPN: 23203,"A max." +COPN: 23207,"A tele.ring" +COPN: 23205,"one" ... OK
AT+COPN=?	OK Note: succeed
AT+COPN? AT+COPN=1	+CME ERROR: 3 Note: not support

6.5.3 Defined values :

<NumOper> is the operator in numeric format.

<AlphaOper> is the operator in long alphanumeric format (see appendix 19.12 for operator names description)

6.6 Get handover counter +THOC

6.6.1 Description :

This command returns the counter of the product spanning over BSIC.

6.6.2 Syntax :

Command syntax : AT+THOC

Command response : + THOC: <Handover Counter>

Command	Possible responses
---------	--------------------

6.7 Cell environment description +CCED

This command can be used by the application to retrieve the parameters of the main cell and of up to six neighbouring cells.

Automatic mode is not supported during communication or registration.

Command syntax: AT+CCED=<mode>[, <requested dump>]

6.7.3 Defined values :

0: One shot requested

1: Automatic shots requested

2: Stop automatic shots

<requested dump>

1: Main Cell : if the Cell Identity is available MCC, MNC, LAC, CI, BSIC, BCCH, Freq (absolute), RxLev, RxLev Full, RxLev Sub, RxQual, RxQual Full, RxQual,Sub, Idle TS. if the Cell Identity is not available MCC, MNC, LAC, BSIC, BCCH, Freq (absolute), RxLev, RxLev Full, RxLev Sub, RxQual, RxQual Full, RxQual Sub,Idle TS

2: Neighbour1 to Neighbour6 : if the Cell Identity is available MCC, MNC, LAC, CI, BSIC, BCCH

Freq(absolute), RxLev if the Cell Identity is not available MCC,MNC, LAC,, BSIC, BCCH Freq (absolute),

RxLev

4: Timing Advance

Combination (addition of the values) of the requested dump is supported. Note that in idle mode, only RxLev measurements (on the main cell and on the neighbouring cells) are made. The value of these RxLev is set in the RxLev Full field for the main cell.

The response will be:

+CCED :<value>, . , <value>

OK

Where <value> is the ASCII string of the values (in decimal form except the LAC and CI values which are in hexadecimal form) of the parameters. If a field cannot be measured . or has no sense . the parameter is not filled in (two consecutive commas are then found).

If the <requested dump> parameter is absent, that of the last +CCED command (or 15 by default) will be used.

Values of MCC/MNC are set to 0 in the case of .No service..

7 Security commands

7.1 Enter PIN +CPIN

7.1.1 Description :

This command is used to enter the ME passwords (CHV1 / PUK1), that are required before any ME functionality can be used.

CHV1 is between **4** and **8** digits long, **PUK1** is **only 8 digits** long.

The application is responsible for checking the PIN after each reset or power on

- if the PIN was enabled.

7.1.2 Syntax :

Command syntax: AT+CPIN=<pin>

Command	Possible responses
AT+CPIN=1234 Note : Enter PIN	OK Note : PIN code is correct
AT+CPIN=5678 Note : Enter PIN	+CME ERROR : 3 Note : Operation not allowed, PIN previously entered

After 3 unsuccessful attempts to enter the PIN (Personal Identification Number), the PUK (Personal Unblocking Key) will be required. PUK validation forces the user to enter a new PIN code as a second parameter and this will be the new PIN code if PUK validation succeeds. CHV1 is then **enabled** if PUK1 is correct. The application therefore uses this command: AT+CPIN=<Puk>,<NewPin>

Command	Possible responses
AT+CPIN=00000000,1234 Note : Enter PUK and new PIN	+CME ERROR: 16 Note : Incorrect PUK
AT+CPIN=12345678,1234 Note : Enter PUK and new PIN, 2 nd attempt	OK Note : PUK correct, new PIN stored

To ascertain which code must be entered (or not), the following query command can be used:

AT+CPIN?

The possible responses are :

+CPIN: READY	ME is not pending for any password
+CPIN: SIM PIN	CHV1 is required
+CPIN: SIM PUK	PUK1 is required
+CPIN: SIM PIN2	CHV2 is required
+CPIN: SIM PUK2	PUK2 is required
+CPIN: PH-SIM PIN	SIM lock (phone-to-SIM) is required
+CPIN: PH-NET PIN	Network personnalisation is required
+CME ERROR: <err>	SIM failure (13) absent (10) etc...

Please note that in this case the mobile equipment does not end its response with the OK string.

The response +CME ERROR : 13 (SIM failure) is returned after 10 unsuccessful PUK attempts. The SIM card is then out of order and must be replaced by a new one.

Example: 3 failed PIN validations + 1 successful PUK validation

AT+CPIN?	Read the PIN status
+CPIN: SIM PIN	The product requires SIM PIN
AT+CPIN=1235	First attempt to enter a SIM PIN
+CME ERROR: 16	Wrong PIN
AT+CPIN=1236	Second attempt
+CME ERROR: 16	Wrong PIN
AT+CPIN=1237	Third attempt
+CME ERROR: 16	Wrong PIN
AT+CPIN?	Read PIN state
+CPIN: SIM PUK	The product requires PUK
AT+CPIN=99999999,5678	The PUK is entered, the new PIN shall be 5678
OK	PUK validation is OK. New Pin is 5678
AT+CPIN?	Read PIN state
+CPIN: READY	The product is ready

7.1.3 Defined values :

<pin> Personal Identification Number.

<puk> Personal Unblocking Key needed to change the PIN.

See above conditions of use.

7.2 PIN remaining attempt number +CPINC

7.2.1 Description :

This **specific** command is used to get the number of valid attempts for PIN1 (CHV1), PIN2 (CHV2), PUK1 (UNBLOCK CHV1) and PUK2 (UNBLOCK CHV2) identifiers.

7.2.2 Syntax :

Command syntax : AT+CPINC

Response syntax : +CPINC : <n1>,<n2>,<k1>,<k2>

Command	Possible responses
AT+CPINC Note : Get the number of attempts left	+CPINC : 2,3,10,10 OK Note : First CHV1 attempt was a failure
AT+CPINC? Note : Get current values	+CPINC : 2,3,10,10 OK Note : First attempt was a failure
AT+CPINC=? Note : Get possible values	OK

7.2.3 Defined values

<n1>, <n2> are the attempts left for PIN1, PIN2 (0 = blocked, 3 max)

<k1>, <k2> are the attempts left for PUK1, PUK2 (0 = blocked, 10 max)

For this to work, the card should be present at the time of initialization, otherwise an error will be sent (+CME ERROR : 10).

Note: if PIN2 not aviable , the n2 and k2 maybe 255

7.3 Facility lock +CLCK

7.3.1 Description:

This command is used by the application to lock, unlock or interrogate an ME or network facility <fac>.

Note: Test SIM cards (with MCC=001 & MNC=01) doesn't check "PS", "PN", "PU", "PP" and "PC" locks.

7.3.2 Syntax :

Command syntax: AT+CLCK= <fac>,<mode>[,<passwd>[,<class>]]

Response syntax: +CLCK: <status> [,<class1>]<CR><LF>+CLCK: <status>,<class2> [...]]

Command	Possible responses
---------	--------------------

AT+CLCK="SC",1,1234 Note: Enable PIN	OK Note: PIN was correct
AT+CLCK? Note: Read PIN status	+CLCK:("PS",0),("SC",0),("FD",0),("PN",0),("PU",0),("PP",0),("PC",0) OK Note: PIN is enabled, no SIM lock, no network lock, no information on Call barring
AT+CLCK="SC",0,5555 Note : Disable PIN	+CME ERROR: 16 Note: PIN was wrong
AT+CPIN=1234 Note : Enter PIN	OK Note : PIN was good
AT+CLCK=? Note : Request supported facilities	+CLCK: ("PS","SC","AO","OI","OX","AI","IR","AB","AC","FD","PN","PU","PP","PN") OK Note : Supported facilities
AT+CLCK="PN",1,12345678 Note : Activate network lock	OK Network lock activated
AR+CLCK="AO",1,1234,2 Note : Activate all outgoing calls barring for data calls	OK Note : Call barring is activate
AT+CLCK="AO",2 Note : Query BAOC status	+CLCK : 1,2 OK Note : BAOC activate for data calls only
AT+CLCK="SC",0,0000 Note : Disable PIN	+CME ERROR: 521 Note : PIN deactivation is forbidden with this SIM card

7.3.3 Defined values :

<fac> : supported facilities

- "PS": SIM lock facility with a 8 digits password.
- "SC": PIN enabled (<mode> = 1) / disabled (<mode> = 0)
- "AO": BAOC (Barr All Outgoing Calls)
- "OI": BOIC (Barr Outgoing International Calls)
- "OX": BOIC-exHC (Barr Outgoing. International Calls except to Home Country)
- "AI": BAIC (Barr All Incoming Calls)
- "IR": BIC-Roam (Barr Inc. When Roaming outside Home Country)
- "AB": All Barring services
- "AG": All outGoing barring services
- "AC": All inComing barring services
- "PN": Network lock with a 8 digits password (NCK).
- "PU": Network Subset lock with a 8 digits password (NSCK).
- "PP": Service Provider lock with a 8 digits password (SPCK).
- "PC": Corporate lock with a 8 digits password (CCK).

- “FD”: SIM Fixed Dialing Numbers (FDN) memory feature (PIN2 is required as <password>)

<mode>

0 : unlock the facility
1 : lock the facility
2 : query status

<class> : A facility status can be changed for only one class, or for all classes (7 or omitted).

<class>

1 : Voice (telephony)
2 : Data (apply to all bearer services)

8 : Short Message service
7 : Equal to all classes (Default value)

Any attempt to combine different classes will result in activation / deactivation / interrogation of all classes.

Password maximum length is given with the AT+CPWD=? Command.

Note: It will not possible to lock the FDN phonebook if this one is not loaded.

7.4 Change password +CPWD

7.4.1 Description :

This command is used by the application to change a password (PIN, call barring, NCK, etc.). The facility values (<fac>) are the same as for the +CLCK command with a “P2” facility to manage SIM PIN2.

For the network lock (“PN”), unlocking is forbidden after 10 failed attempts to disable (unlock) the network lock with an incorrect password.

7.4.2 Syntax :

Command syntax : AT+CPWD= <fac>, <oldpwd>, <newpwd>

Command	Possible responses
AT+CPWD=? Note : Possible values	+CPWD: (“PS”,8), (“SC”,8), (“AO”,4), (“OI”,4), (“OX”,4), (“AI”,4), (“IR”,4), (“AB”,4), (“AG”,4), (“AC”, 4), (“P2”,8), (“FD”,8), (“PN”,8), (“PU”,8), (“PP”,8), (“PC”,8) OK Note : CHV1/CHV2 must be on 8 digits maximum (4mini) For call barring, on 4 digits maximum

AT+CPWD="SC",1234,5555 Note : Change PIN	OK Note : PIN was correct
AT+CPWD="SC",1234,5555 Note : Change PIN	+CME ERROR: 16 Note: PIN was wrong
AT+CPIN=5555 Note : Enter PIN	OK Note : PIN was correct
AT+CPWD="PN",12345678,00000000 Note : Change NCK	OK Note : NCK changed for net lock

7.4.3 Defined values :

<fac> : facility

- "PS"
- "SC"
- "AO"
- "OI"
- "OX"
- "AI"
- "IR"
- "AB"
- "AG"
- "AC"
- "P2"
- "FD"
- "PN"
- "PU"
- "PP"
- "PC"

<oldpwd>, <newpwd>

On 4 or up to 8 or 16 digits accprding to the facility.

7.5 Enter PIN2/PUK2 +CPIN2

7.5.1 Description :

This specific command is used to validate the PIN2 code (CHV2), or to validate the PUK2 code (UNBLOCK CHV2) and to define a new PIN2 code.

PIN2 length is between 4 and 8 digits, PUK2 length is 8 digits only.

7.5.2 Syntax :

Command syntax : AT+CPIN2 = <pin2>

Command	Possible responses
AT+CPIN2=1234 Note : Enter PIN2	OK Note : PIN2 is correct
AT+CPIN2=5678 Note : Enter PIN2	+CME ERROR:3 Note : Operation not allowed,PIN2 previously entered is wrong.

After 3 unsuccessful attempts, PUK2 will then be required. PUK2 validation forces the user to enter a new PIN2 code as a second parameter and this will be the new PIN2 code if PUK2 validation succeeds. The application therefore uses this command:

AT+CPIN2=<puk2>,<NewPin2>

Command	Possible responses
AT+CPIN2=00000000,1234 Note : Enter PUK2 and new PIN2	+CME ERROR:16 Note : Incorrect Password(PUK2).
AT+CPIN2=12345678,1234 Note : Enter PIN2 and new PIN2	OK Note : PUK2 is correct, new PIN2 stored

To ascertain which code must be entered (or not), the following query command can be used:

AT+CPIN2?

The possible responses are

+CPIN2: READY +CPIN2: SIM PIN2 +CPIN2: SIM PUK2 +CME ERROR: <err>	No PIN2 is needed PIN2 is required PUK2 is required SIM failure (13) absent (10) etc...
--	--

Example

Command	Possible responses
AT+CPBS="FD" Note : Choose FDN	OK
AT+CPBW=5,"01290917",129,"Jacky" Note : Write in FDN at location 5	+CME ERROR:17 Note :SIM PIN2 is required
AT+CPIN2?	+CPIN2: SIM PIN2

AT+CPIN2=5678	OK
AT+CPBW=5,"01290917",129,"Jacky"	OK

8 Phonebook commands

8.1 Select phonebook memory storage +CPBS

8.1.1 Description :

This command selects phonebook memory storage("SM","ME","ON").

8.1.2 Syntax :

Command syntax : AT+CPBS=<pb>

Command	Possible responses
AT+CPBS=? Note : Possible values	+CPBS: ("SM","ME","ON") Note : only .EN. phonebook is not supported with this SIM card.
AT+CPBS? Note : Status	+CPBS: "SM",20,100 OK Note: ADN phonebook selected, 20 locations used, 100 locations available
AT+CPBS="SM"	OK Note: ADN phonebook is selected
AT+CPBS="ME"	OK Note: ME phonebook is selected
AT+CPBS	+CME ERROR: 3 Note: The product can not support this command
AT+CPBS? Note : Status	+CPBS: "ME",10,100 OK Note: ADN phonebook selected, 10 locations used, 100 locations available

8.1.3 Defined values :

<pb> : phonebook

"SM": ADN (SIM phonebook)

"ON": MSISDN (SIM own numbers)

"ME": ME(Mobile Equipment)

8.2 Read phonebook entries +CPBR

8.2.1 Description :

This command returns phonebook entries for a range of locations from the current phonebook memory storage selected with +CPBS.

Note :

for all phonebook read commands (+CPBR, +CPBF, +CPBN, +CPBP, +CNUM), the TON/NPI MSB of each number is set to 1 (ex : a TON/NPI stored as 17 is displayed as 145).

8.2.2 Syntax :

Command syntax : AT+CPBR=<first_entry>[,<last_entry>]

Command	Possible responses
AT+CPBR=? Note: Test command	+CPBR: (1-100),40,12 OK Note:+CPBS="SM",100locations (from 1 to100), max length for phone number is 40digits, 12 characters max for the text
AT+CPBR=? Note: Test command	+CPBR: (1-100),19,30 OK Note: +CPBS="ME",100locations (from 1 to100), max length for phone number is 19digits, 30 characters max for the text
AT+CPBR? AT+CPBR	+CME ERROR: 3 Note: The product can not support this command
AT+CPBR=10 Note: Read entry 10	+CPBR: 10,"12345678",129,"NON" OK Note: Display location 10
AT+CPBR=1,10 Note: Read entries from 1 to 10	+CPBR: 1,"13911133127",129,"" +CPBR: 2,"13511015868",129,"YING" +CPBR: 3,"13520941547",129,"nm" +CPBR: 4,"01064345558",129,"11" +CPBR: 5,"13691580530",129,"22" +CPBR: 6,"13911828812",129,"33" +CPBR: 7,"13520941547",129,"44" +CPBR: 8,"13521835820",129,"" +CPBR: 9,"13911133127",129,"LINYX" +CPBR: 10,"12345678",129,"NON" OK Note: Display locations 1~10 with location, number, type (TON/NPI), Text
AT+CPBR=11	+CPBR:

Note: Read entry 11 (UCS2 format)	11,"01012312312",129,"805F204E09FFFF" OK Note: Display location 11
AT+CPBR=52 Note : Read entry 52 (empty)	OK Note: location 52 is empty
AT+CPBR=356 Note : Read entry 356 (wrong)	+CME ERROR: 21 Note : Invalid index because the maximize is 355

8.2.3 Defined values :

<first_entry>, <last_entry>

location (or range of locations) where to read phonebook entry.

The first entry and last entry must both be more than 0. The first entry must be less than last entry.

8.3 Find phonebook entries +CPBF

8.3.1 Description:

This command returns phonebook entries with alphanumeric fields starting with a given string. The AT+CPBF= "" command can be used to display all phonebook entries sorted in alphabetical order.

This command is not allowed for "LD", "RC", "MC", "SN", phonebooks and for the "EN" phonebook, which does not contain alphanumeric fields.

It is possible to use this command with UCS2 strings. If a wrong UCS2 format is entered, the string is considered as an ASCII string.

8.3.2 Syntax :

Command syntax : AT+CPBF=<string>

Command	Possible responses
AT+CPBF=? Note: Test command	+CPBF: 20,12 OK Note : +CPBS="SM" ,Max length for phone number is 20 digits, 12 characters for the text
AT+CPBF=? Note: Test command	+CPBF: 19,30 OK Note : +CPBS="ME" ,Max length for phone number is 19digits, 30 characters for the text
AT+CPBF? AT+CPBF	+CME ERROR: 3 Note: The product can not support this command
AT+CPBF="L" Note : Read entries with . L.	+CPBF: 13,"01085966659",129,"Lin" +CPBF: 9,"13911133127",129,"LINYX" OK Note : Display locations with text field starting with L

AT+CPBF="h" Note: Read entries with . h.	+CME ERROR: 22 Note: Entry not found
AT+CPBF="" Note: Get all entries	+CPBF: 1,"13911133127",129,"" +CPBF: 8,"13521835820",129,"" +CPBF: 14,"01086982235",129,"" +CPBF: 20,"0301234567",129,"8052A8FFFF" +CPBF: 18,"02822334455",129,"805F20FFFF" +CPBF: 11,"01012312312",129,"805F204E09FFFF" +CPBF: 17,"02712345678",129,"8079FB52A8FFFF" +CPBF: 4,"01064345558",129,"11" +CPBF: 5,"13691580530",129,"22" +CPBF: 6,"13911828812",129,"33" +CPBF: 7,"13520941547",129,"44" +CPBF: 16,"02512345678",129,"805F20FFFF" +CPBF: 19,"02912345678",129,"8079FB" +CPBF: 12,"02411112222",129,"80XYZ" +CPBF: 13,"01085966659",129,"lin" +CPBF: 9,"13911133127",129,"LINYX" +CPBF: 15,"12345678010",129,"miler" +CPBF: 3,"13520941547",129,"nm" +CPBF: 10,"12345678",129,"NON" +CPBF: 2,"13511015868",129,"YING" OK Note: display all phonebook entries sorted in alphabetical order

8.3.3 Defined values :

<string>

Searched starting string (depends on the format of data stored in the phonebooks)

8.4 Write phonebook entry +CPBW

8.4.1 Description:

This command writes a phonebook entry in location number <index> in the current phonebook memory storage.

“RC” and “MC” phonebooks could be only erased by +CPBW. Adding field and/or modifying field is not allowed for these phonebooks.

8.4.2 Syntax :

Command	Possible responses
AT+CPBW=? Note: Test command	+CPBW: (1-100),20,(129,145),12 OK Note : +CPBS="SM" 100 locations, phone number = 20 digits max, TON/NPI of 129 or 145, text length = 12
AT+CPBW=? Note: Test command	+CPBW: (1-100),19,(129,145),30 OK Note : +CPBS="SM" 100 locations, phone number = 19 digits max, TON/NPI of 129 or 145, text length = 30
AT+CPBW? AT+CPBW	+CME ERROR: 3 Note: The product can not support this command
AT+CPBW=1 Note: Erase location 1	OK Note: Location 1 erased
AT+CPBW=1,"01089898989",129,"TOM" Note: Write at location 1	OK Note: Location 1 written
AT+CPBW=1,"0101234567",129,"JACK" Note : Overwrite location 1	OK Note: Location 1 overwritten
AT+CPBW=",04012345678",129,"CHINA" Note: Write at the first location available	OK Note: First location available is written
AT+CPBW=22,"123456789123456789123456789123456789123456789123456789123456789123456789123456789123456789123456789",129,"HELLO" Note: Write at location 22 a phone number exceeding the limit (20 digits)	+CME ERROR: 26 Note: Phone number too long
AT+CPBW=22,"2021234567",129,"LONG LONG AGOTHERELIVEAKING" Note : Write at location 22 along text (11 characters)	+CME ERROR: 24 Note: Text too long
AT+CPBW=22,"02012345678",129,"80ABC" Note: write location	OK Note: Location 22 is written. The string has a wrong UCS2 format, it is therefore considered

	as an ASCII string
AT+CPBW=23,"02112345678",129,"804E095F20"	OK
Note : write location 23 (UCS2 format for the <text> field)	Note: Location 23 is written

When the fixed dialing phonebook (FDN) is locked, this command is not allowed. Moreover, when the FDN is unlocked, PIN2 is required to write in the FDN phonebook.

But if PIN2 authentication has been performed during the current session, the +CPBW command with FDN is allowed.

8.4.3 Defined values :

<index> integer type value depending on the capacity of the phonebook memory.

<number> phone number in ASCII format.

<type> TON/NPI (Type of address byte in integer format).

Note:

for the <type> parameter, all values are allowed from 0 to 255, but the MSB will be set to 1 in all cases (ex : a <type> value of 17 will be written as 145).

<text> string type.

Note 1:

For the <text> parameter all strings starting with "80", "81" or "81" are considered in UCS2 format. See the APPENDIX E (Coding of Alpha fields in the SIM for UCS2).

Note 2:

The +CSCS (Select Character set) command does not affect the format for phonebook entries.

8.5 Phonebook phone search +CPBP

8.5.1 Description :

This specific command orders the product to search the phonebook for an item with the same phone number as that defined in the parameter.

8.5.2 Syntax :

Command syntax: AT+CPBP=<PhoneNumber>

Command	Possible responses
AT+CPBP="331290101"	+CPBP : 15,"331290101",145,"Eric"
Note : Search entries corresponding to this phone number	OK
	Note : Display the entry corresponding to the specified phone number
AT+CPBP="331290101"	+CPBP : 15,"01290101",129,"Eric"
Note : Search entries corresponding to this phone number	OK
	Note : Display the entry corresponding to the

	specified phone number
AT+CPBP="01290202" Note : Search entries corresponding to this phone number	+CPBP : 15,"+331290202",145,"David" OK Note : Display the entry corresponding to the specified phone number
AT+CPBP="+331290101" Note : Search entries corresponding to this phone number	+CPBP : 15,"+331290101",145,"8045682344FFFF" " (UCS2 format) OK Note : Display the entry corresponding to the specified phone number
AT+CPBP="0129" Note : Search entries corresponding to this phone number	+CME ERROR: 22 Note : Entry not found
AT+CPBP=? Note : Get possible value	OK Note : No parameter but this command is valid
AT+CPBP	+CME ERROR: 3 Note: The product can not support this command
AT+CPBP?	ERROR Note: The product can not support this command

8.5.3 Defined values :

<PhoneNumber>

coded according to GSM 07.07 or GSM 07.05.

8.6 Move action in phonebook +CPBN

8.6.1 Description

This specific command instructs the product to make a forward or backward move in the phonebook (in alphabetical order).

This command is not allowed for the "EN" phonebook - which does not contain alphanumeric fields.

8.6.2 Syntax :

Command syntax : AT+CPBN=<mode>

Command	Possible responses
AT+CPBN=? Note : Test command	+CPBN: (0-5) OK Note : Possible modes
AT+CPBN?	+CME ERROR: 3

AT+CPBN	Note: The product can not support this command
AT+CPBN=0 Note : Read the first location	+CPBN: 8,"13521835820",129,"" OK Note : Display the first location
AT+CPBN=1 Note : Read the last location	+CPBN: 2,"13511015868",129,"YING" OK Note : Display the last location
AT+CPBN=2 Note : Read the next location	+CPBN: 8,"13521835820",129,"" OK Note : Display Next valid item in alphabetical order
AT+CPBN=3 Note : Read the previous location	+CPBN: 2,"13511015868",129,"YING" OK Note : Display Next valid item Previous valid item in alphabetical order
AT+CPBN=4 Note : Get the last location read	+CPBN: 2,"13511015868",129,"YING" OK Note : Display the last location read
AT+CPBN=5 Note : Get the last location write	+CPBN: 23,"02112345678",129,"804E095F20FFFF" OK Note : Display the last location write
AT+CPBN=6	+CME ERROR: 3 Note: The value exceed the limit (0~5)
AT+CPBN AT+CPBN?	+CME ERROR: 3 Note: The product can not support this command

Using mode 4 and 5 with +CPBF command and CPBW :

Command	Possible responses
AT+CPBF="Er" Note : Find "Er" in phonebook	+CPBF : 15,"+331290101",145,"Eric" OK Note : Display the location
AT+CPBN=2 Note : Read the next location	+CPBN : 5,"+33147658987",145,"Frank" OK Note : Display the following location
AT+CPBF="Er" Note : Find "Er" in phonebook	+CPBF : 15,"+331290101",145,"Eric" OK Note : Display the location
AT+CPBN=4 Note : Get the last location read	+CPBF : 15,"+331290101",145,"Eric" OK Note : Display the last location read
AT+CPBW=",0146290800",129,"WM" Note : Write an item at the first location available	OK Note : No information about this location
AT+CPBN=5 Note : Get the last location write	AT+CPBN=38,"0146290800,129,"WM" Note : Display the last item written with its location
AT+CPBN=4 Note : Get the last item read	AT+CPBN=38,"0146290800,129,"WM" Note : Now the last item read is the last written item too
AT+CPBF="800041FFFF" Note : Find "800041" in phonebook	+CPBF : 15,"+3312345",145,"8000414339FFFF" OK Note : Display this location
AT+CPBN=4 Note : Get the last location read	+CPBF : 15,"+3312345",145,"8000414339FFFF" OK Note : Display the last location read

Please note that the AT+CPBN=5 command is useful after an AT+CPBW command used without a location.

8.6.3 Defined values :

<mode>

- 0: First item
- 1: Last item
- 2: Next valid item in alphabetical order
- 3: Previous valid item in alphabetical order

- 4: Last item read (usable only if a read operation has been performed on the current phonebook since the end of initialization)
- 5: Last item written (usable only if a write operation has been performed on the current phonebook since the end of initialization)

8.7 Subscriber number +CNUM

8.7.1 Description:

This command returns the subscriber MSISDN(s).

If the subscriber has different MSISDNs for different services, each MSISDN is returned in a separate line.

8.7.2 Syntax:

Command syntax: AT+CNUM

Response syntax: +CNUM : <alpha1>, <number1>, <type1>

<CR><LF> +CNUM : <alpha2>, <number2>, <type2> ...

Command	Possible responses
AT+CNUM=? Note : Test command	OK Note : No parameter but this command is valid
AT+CNUM? AT+CNUM=1	+CME ERROR: 3 Note: The product can not support this command
AT+CNUM Note : Get MSISDNs	+CNUM : "Phone", "0612345678", 129 Note : MSISDNs

8.7.3 Defined values :

- <alphax> optional alphanumeric string associated with <numberx>
- <numberx> string type phone number with format as specified by <typex>
- <typex> type of address byte in integer format

8.8 FLYFOT Phonebook Character Set +WPCS

8.8.1 Description :

This specific command informs the ME which character set is used by the TE for the phonebooks. The ME can convert each character of entered or displayed strings. This is used to read or write phonebook entries. See also +CSCS for the short messages character sets.

8.8.2 Syntax :

Command syntax : AT+WPCS=<Character Set>

Command	Possible responses
AT+WPCS="TRANSPARENT" Note : Transparent mode	OK Note : Command valid
AT+WPCS=? Note : Get possible values	+WPCS: ("TRANSPARENT","HEX") OK Note : Possible values
AT+WPCS? Note : Get current value	+WPCS: "TRANSPARENT" Note : read current value
AT+WPCS	+CME ERROR: 3 Note: The product can not support this command

8.8.3 Defined values :

<Character Set>

“TRANSPARENT”: Transparent mode. The strings are displayed and entered as they are stored in SIM.

“HEX”: Hexadecimal mode. No character set used; the user can read or write hexadecimal values.

9 Short Messages commands

Note: At present, M260 only support “SM” storage.

9.1 Parameters definition

- <da> Destination Address, coded like GSM 03.40 TP-DA
- <dcs> Data Coding Scheme, coded like in document [5].
- <dt> Discharge Time in string format :
“yy/MM/dd,hh:mm:ss±zz”(Year [00-99], Month [01-12],
Day [01-31], Hour, Minute, Second and Time Zone [quarters of an hour])
- <fo> First Byte, coded like SMS-SUBMIT first byte in document [4],
Default value is 17 for SMS-SUBMIT
- <index> Place of storage in memory.
- <length> PDU mode (+CMGF=0): length of the TP data unit in bytes
- <mem1> **Memory used to list, read and delete messages (+CMGL, +CMGR and +CMGD).**
- <mem2> Memory used to write and send messages (+CMGW, +CMSS).
- <mid> CBM Message Identifier.
- <mr> Message Reference.
- <oa> Originator Address.
- <pid> Protocol Identifier.
- <pdu> **For SMS : GSM 04.11 SC address followed by GSM 03.40 TPDU in hexadecimal** format,
coded as specified in doc [4] For CBS : GSM 03.41 TPDU in hexadecimal format
- <ra> Recipient Address.
- <sca> Service Center Address
- <scts> Service Center Time Stamp in string format :
“yy/MM/dd,hh:mm:ss±zz”
(Year/Month/Day,Hour:Min:Seconds±TimeZone)
- <sn> CBM Serial Number
- <st> Status of a SMS-STATUS-REPORT
- <stat> Status of message in memory.
- <tooa> Type-of-Address of <oa>.
- <tora> Type-of-Address of <ra>.
- <tosca> Type-of-Address of <sca>.
- <total1> Number of message locations in <mem1>.
- <total2> Number of messages locations in <mem2>.
- <used1> Total number of messages locations in <mem1>.
- <used2> Total number of messages locations in <mem2>.
- <vp> Validity Period of the short message, default value is 167

9.2 Select message service +CSMS

9.2.1 Description:

The supported services are originated (SMS-MO) and terminated short message (SMS-MT) + Cell Broadcast Message (SMS-CB) services.

9.2.2 Syntax:

Command syntax : AT+CSMS=<service>

Command	Possible responses
AT+CSMS=0 Note : SMS AT command Phase 2 version 4.7.0	+CSMS: 1,1,1 OK Note : SMS-MO, SMS-MT
AT+CSMS=1 Note : SMS AT command Phase 2 +	+CMS ERROR: 303 Note : SMS-MO, SMS-M
AT+CSMS? Note : Current values ?	+CSMS: 0,1,1,1 OK Note : GSM 03.40 and 03.41 (SMS AT command Phase 2 version 4.7.0)
AT+CSMS=? Note : Possible services	+CSMS: (0,1) OK
AT+CSMS	+CMS ERROR: 3 Note: action command is not supported.

9.2.3 Defined values:

<service>

0: SMS AT commands are compatible with GSM 07.05 Phase 2 version 4.7.0.

1: SMS AT commands are compatible with GSM 07.05 Phase 2 + version.

9.3 Preferred Message Storage +CPMS

9.3.1 Description:

This command allows the message storage area to be selected (for reading, writing, etc).

At present M260 only support “SM” storage.

9.3.2 Syntax:

Command syntax: AT+CPMS=<mem1>,[<mem2>]

Command	Possible responses
AT+CPMS=? Notes: List possible parameters.	+CPMS: ("SM") Note: Read, list, delete: SMS, CBM or SMS Status Report Write, send: SMS
AT+CPMS="BM" Notes: Select CBM message storage	+CME ERROR 3 Note: At present M260 MODULE, only support "SM" storage.
AT+CPMS="SR" Notes: set status report storage	+CME ERROR 3 Note: At present M260 MODULE, only support "SM" storage.
AT+CPMS? Note : Read	+CPMS: "SM",3,10,"SM",3,10 OK Note : Read, write SMS from/to SIM 3 SMS are stored in SIM. 10 is the total memory available in SIM
AT+CPMS	+CMS ERROR: 3 Note: action command is not supported.

9.3.3 Defined values :

<mem1>: Memory used to list, read and delete messages. It can be:

- "SM"**: SMS message storage in SIM (default)
- "BM"**: CBM message storage (in volatile memory).
- "SR"** : Status Report message storage (in SIM if the EF-SMR file exists, otherwise in the ME non volatile memory)

Note :

"SR" ME non volatile memory is cleared when another SIM card is inserted. It is kept, even after a reset, while the same SIM card is used.

<mem2>: Memory used to write and send messages

- "SM"** : SMS message storage in SIM (default).

If the command is correct, the following message indication is sent:

+CPMS: <used1>,<total1>,<used2>,<total2>

When <mem1> is selected, all following +CMGL, +CMGR and +CMGD commands are related to the type of SMS stored in this memory.

9.4 Save Settings +CSAS

9.4.1 Description:

All settings specified by the +CSCA and +CSMP commands are stored in EEPROM if the SIM card is a Phase 1 card or in the SIM card if it is a Phase 2 SIM card.

9.4.2 Syntax:

Command	Possible responses
AT+CSAS Note: Store +CSAS parameter	OK Note: Parameter Stored
AT+CSAS? AT+CSAS=?	+CMS ERROR: 3 Note: not supported.

9.4.3 Defined values:

No parameter

9.5 Restore settings +CRES

9.5.1 Description:

All settings specified in the +CSCA command is restored from EEPROM if the SIM card is Phase 1 or from the SIM card if it is a Phase 2 one.

9.5.2 Syntax:

Command	Possible responses
AT+CRES Note: Restore +CSAS parameter	OK Note: Parameter restored
AT+CRES? AT+CRES=?	+CMS ERROR: 3 Note: not supported.

9.5.3 Defined values:

No parameter

9.6 New message indication +CNMI

9.6.1 Description:

This command selects the procedure for message reception from the network.

9.6.2 Syntax :

Command syntax : AT+CNMI=<mode>,<mt>,<bm>,<ds>,<bfr>

Command	Possible responses
AT+CNMI=2,1,0,0,0 Note : <mt>=1	OK Note: message received and saved in sim, then route the SMS-DELIVERS with unsolicited result codes: +CMTI: SM, <index>
AT+CNMI=2,2,0,0,0 Note : <mt>=2	OK Note: message received, then route the SMS-DELIVERS with unsolicited result codes: +CMT: [<alpha>,<length> <CR> <LF> <pdu>
AT+CNMI=2,0,0,1,0 Note : <ds>=1	OK Note: SMS-STATUS-REPORTS are routed using unsolicited code: +CDS : <length> <CR> <LF> <pdu>
AT+CNMI=2,0,0,0,0 Note : <ds>=0	OK Note: No SMS-STATUS-REPORTs are routed.
at+cnmi? Note : Read	+CNMI: 2,2,0,1,0
at+cnmi=?	+CNMI: (0-3),(0-3),(0-3),(0-1),(0,1)

9.6.3 Defined values :

<mode> : controls the processing of unsolicited result codes

0: Buffer unsolicited result codes in the TA. If TA result code buffer is full, indications can be buffered in some other place or the oldest indications may be discarded and replaced with the new received indications

1: Discard indication and reject new received message unsolicited result codes when TA-TE link is reserved. Otherwise forward them directly to the TE

2: Buffer unsolicited result codes in the TA when TA-TE link is reserved and flush them to the TE after reservation. Otherwise forward them directly to the TE

3: Forward unsolicited result codes directly to the TE. TA-TE link specific in hand used to embed result codes and data when TA is in on-line data mode

Important note: only <mode>=2 is supported.

Any other value for <mode> (0,1 or 3) is accepted (return code will be OK), but the processing of unsolicited result codes will be the same as with<mode>=2.

<mt> : sets the result code indication routing for SMS-DELIVER indications.

Default is 1.

0:	No SMS-DELIVER indications are routed.
1:	SMS-DELIVERs are routed using unsolicited code : +CMTI: "SM",<index>

2:	SMS-DELIVERs (except class 2 messages) are routed using unsolicited +CMT : [<alpha>,<length> <CR> <LF> <pdu>
3:	Class 3 SMS-DELIVERs are routed directly using code in <mt>=2 ; Other classes messages result in indication <mt>=1

<bm> : defines the rules for storing the received CBMs (Cell Broadcast Message) types. They depend also on the coding scheme (text or PDU) and the setting of Select CBM Types (see +CSCB command). Default is 0.

0: No CBM indications are routed to the TE. The CBMs are stored.

1: The CBM is stored and an indication of the memory location is routed to the customer application using unsolicited result code: +CBMI: "BM", <index>

2: New CBMs are routed directly to the TE using unsolicited result code.

+CBM: <length><CR><LF><pdu> (PDU mode enabled)

or

+CBM: <sn>,<mid>,<dcs>,<page>,<pages><CR><LF><data> (text mode enabled)

3: Class 3 CBMs : as <bm>=2. Other

classes CBMs : as <bm>=1.

<ds> for SMS-STATUS-REPORTs. Default is 0.

0: No SMS-STATUS-REPORTs are routed.

1: SMS-STATUS-REPORTs are routed using unsolicited code :

+CDS : <length> <CR> <LF> <pdu> (PDU mode) or

<bfr> Default is 0.

0: TA buffer of unsolicited result codes defined within this command is flushed to the TE when <mode> = 1 to 3 is entered (OK response shall be given before flushing the codes)

1: TA buffer of unsolicited result codes defined within this command is cleared when <mode>

1...3 is entered.

9.7 Read message +CMGR

9.7.1 Description :

This command allows the application to read stored messages. The messages are read from the memory selected by +CPMS command.

9.7.2 Syntax :

Command syntax : AT+CMGR=<index>

Response syntax for PDU mode :

+CMGR: <stat>,<alpha>,<length> <CR><LF> <pdu>

Note :

The <length> parameter for SMS Status Reports is always 0.

Example :

Command	Possible responses
	+CMTI: .SM.,1 Note : New message received
AT+CMGR=1 Note : Read the message	+CMGR: 1,,24 0891683108100005F0040D91683185716393 F900005001429042802304B0182C06 OK
AT+CMGR=51 Note : Read at a wrong index	+CMS ERROR: 500 Note : Error : invalid index
AT+CMGR AT+CMGR? AT+CMGR=?	+CMS ERROR: 3 Note: not supported.

9.7.3 Defined values :

<stat> possible values (status of messages in memory) :

Text mode possible values	PDU mode possible values	Status of messages in memory
“REC UNREAD”	0	received unread messages
“REC READ”	1	received read messages
“STO UNSENT”	2	stored unsent messages
“STO SENT”	3	stored sent messages
“ALL”	4	all messages

<length> length of the TP data unit in octets.

9.8 List message +CMGL

9.8.1 Description :

This command allows the application to read stored messages, by indicating the type of the message to read. The messages are read from the memory selected by the +CPMS command.

9.8.2 Syntax :

Command syntax : AT+CMGL=<stat>

Response syntax for PDU mode :

+CMGL : <index>,<stat>, [<alpha>], <length> <CR><LF> <pdu> (for SMSDELIVER, SMS-SUBMIT and SMS-STATUS-REPORT, may be followed by other <CR><LF>+CMGL:<index>...)

Command	Possible responses
AT+CMGL=4 Note : List all messages in pdu mode	+CMGL: 3,1,,23 0891683108100005F0040D91683185716393 F90000500142907350230331D90C +CMGL: 1,1,,24 0891683108100005F0040D91683185716393 F900005001429042802304B0182C06 +CMGL: 2,1,,34 0891683108100005F0240D91683185716393 F900005011525151012310F3F61C442FCFE9 20F7DB0502C570 OK
AT+CMGL=1 Note : List read messages in PDU mode	+CMGL: 6,1,,34 0891683108100005F0240D91683185716393 F900005011525131902310F3F61C442FCFE9 20F7DB05028162 +CMGL: 5,1,,21 0891683108100005F0240D91683185716393 F90000501152514054230161 OK
AT+CMGL=?	+CMGL: (0-4) OK
AT+CMGL AT+CMGL?	+CMS ERROR: 3 Note: not supported.

9.8.3 Defined values

Note :

For SMS Status Reports, only “ALL” / 4 and “READ” / 1 values of the <stat> parameter will list messages ; other values will only return OK.

9.9 Send message +CMGS

9.9.1 Description :

The <address> field is the address of the terminal to which the message is sent. To send the message, simply type, <ctrl-Z> character (ASCII 26). The text can contain all existing characters except <ctrl-Z> and <ESC> (ASCII 27). This command can be aborted using the <ESC> character when entering text. In PDU mode, only hexadecimal characters are used ('0'...'9','A'...'F').

9.9.2 Syntax :

Command syntax in PDU mode :

AT+CMGS= <length> <CR>

PDU is entered <ctrl-Z / ESC >

Command	Possible responses
AT+CMGS=.28.<CR> 0031000BA13105119226F40000AD0AA8C3F6 30885E9ED301 <ctrl-Z> Note : Send a message in PDU mode	+CMGS: <mr> OK Note : Successful transmission
AT+CMGS=?	+CMGS: OK
AT+CMGS AT+CMGS?	+CMS ERROR: 3 Note: not supported.

The message reference, <mr>, which is returned to the application is allocated by the product. This number begins with 0 and is incremented by one for each outgoing message (successful and failure cases); it is cyclic on one byte (0 follows 255).

Note:

this number is not a storage number – outgoing messages are not stored.

9.9.3 Defined values :

See above paragraphs.

9.10 Write Message to Memory +CMGW

9.10.1 Description :

This command stores a message in memory (either SMS-SUBMIT or SMSDELIVERS). The memory location <index> is returned (no choice possible as with phonebooks +CPBW).

Text or PDU is entered as described for the Send Message +CMGS command.

9.10.2 Syntax :

Command syntax in PDU mode :

AT+CMGW= <length> [,<stat>] <CR>

give PDU<ctrl-Z / ESC>

Response syntax:

+CMGW: <index> or +CMS ERROR: <err> if writing fails

Command	Possible responses
AT+CMGW=.28.<CR> 0031000BA13105119226F40000AD0AA8C3F6 30885E9ED301 <ctrl-Z> Note : Write a message in PDU mode	+CMGW: 4 OK Note : Message stored in index 4
AT+CMGW=?	OK
AT+CMGW AT+CMGW?	+CMS ERROR: 3 Note: not supported.

9.10.3 Defined values :

None.

9.11 Send Message From Storage +CMSS

9.11.1 Description :

This command sends a message stored at location value <index>.

9.11.2 Syntax :

Command syntax: AT+CMSS=<index>[,<da> [,<toda>]]

Response syntax:

+CMSS : <mr> or +CMS ERROR: <err> if sending fails

If a new recipient address <da> is given, it will be used instead of the one stored with the message.

Command	Possible responses
AT+CMGW=25<CR>	+CMSS: <mr> OK Note: Message stored with index 25 is send successfully
AT+CMSS=5, 13901011234 Note : Send the message 5 to a different destination number	AT+CMSS:<mr> OK Note : Successful transmission

AT+CMSS=5, 13901011234, 129 Note : Send the message 5 to a different destination number and different < toda>	+CMSS :<mr> OK Note : Successful transmission
AT+CMSS AT+CMSS? AT+CMSS=?	+CMS ERROR: 3 Note: not supported.

9.11.3 Defined values

<index>

<da>

<toda>

<mr>

See above descriptions.

9.12 Delete message +CMGD

9.12.1 Description :

This command is used to delete one or several messages from preferred message storage (“BM” SMS CB ‘RAM storage’, “SM” SMSPP storage ‘SIM storage’ or “SR” SMS Status-Report storage).

9.12.2 Syntax :

Command syntax : AT+CMGD=<Index> [,<DelFlag>]

Command	Possible responses
	+CMTI:..SM.,3 Note : New message received
AT+CMGD=3 Note : Delete it	OK Note : Message deleted
AT+CMGD=52 Note : Delete it	+CMS ERROR: 321 Note : the index is wrong.
AT+CMGD=1,0	OK Note : The message from the preferred message storage at the location 1 is deleted
AT+CMGD=1,1	OK Note : All READ messages from the preferred message storage are deleted
AT+CMGD=1,2	OK Note : All READ messages and SENT

	mobile originated messages are deleted
AT+CMGD=1,3	OK Note : All READ, SENT and UNSENT messages are deleted
AT+CMGD=1,4	OK Note : All messages are deleted
AT+CMGD AT+CMGD? AT+CMGD=?	+CMS ERROR: 3 Note: not supported.

9.12.3 Defined values

<index>

(1-20) When the preferred message storage is “BM” Integer type values in the range of location numbers of SIM Message memory when the preferred message storage is “SM” or “SR”.

<DelFlag>

- 0 Delete message at location <index>.
- 1 Delete All READ messages
- 2 Delete All READ and SENT messages
- 3 Delete All READ, SENT and UNSENT messages
- 4 Delete All messages.

Note :

when the preferred message storage is “SR”, as SMS status reports are assumed to have a “READ” status, if <DelFlag> is greater than 0, all SMS status reports will be deleted.

9.13 Service center address +CSCA

9.13.1 Description

This command is used to indicate to which service center the message must be sent.

The product has no default value for this address. If the application tries to send a message without having indicated the service center address, an error will be generated.

Therefore, the application must indicate the SC address when initializing the SMS. This address is then permanently valid. The application may change it if necessary.

9.13.2 Syntax:

Command syntax: AT+CSCA=<sca>

Command	Possible responses
AT+CSCA=13800100500. Note : Service center initialization	OK
AT+CSCA? Note : Read	+CSCA: "+8613800100500",145

	OK
AT+CSAS AT+CSAS=?	+CMS ERROR: 3 Note: not supported.

9.13.3 Defined values :

<sca>

See above descriptions

9.14 Message status modification +WMSC

9.14.1 Description

This commands allow the manipulation of a message status. The accepted status changes are from READ to NOT READ and vice versa, and from SENT to NOT SENT and vice versa.

NOTE:

At present, the product only support the status change from NOT READ to READ.

Syntax:

Command syntax : AT+WMSC= <loc>, <status>

Command	Possible responses
AT+WMSC=25,1	OK Note: the status change from NOT READ to READ.
AT+WMSC=51,1	+CMS ERROR: 321 Note: If <loc> is invalid or free
AT+WMSC=10,1	+CMS ERROR: 302 Note: If the new <status> and the previous one are incompatible.
AT+WMSC AT+WMSC? AT+WMSC=?	+CMS ERROR: 3 Note: not supported.

Note:

If all the parameters are correct, the product overwrites the whole SMS in SIM. Only the first byte (Status byte) is changed.

9.14.2 Defined values:

<loc> location number of the stored message (integer)

<status> new status to be stored, as for +CMGR command :

9.15 Message overwriting +WMGO

9.15.1 Description:

The WMGO command is used to specify a location in the SIM, for the next SMS storing with +CMGW command. The defined location is used only once: +WMGO has to be used again to perform another overwrite.

Important notes:

- If the external application specifies a free location, and an incoming message is received before the AT+CMGW command occurs, the product may store the incoming message at the specified available location. If the user then issues an AT+CMGW command without changing the location with another AT+WMGO, the received message will be overwritten.
- The location number is not kept over software reset.

9.15.2 Syntax:

Command syntax: AT+WMGO= <loc>

Command	Possible responses
AT+WMGO=26	+CMS ERROR: 321 Note: <loc> is out of the SIM capacity range.
AT+WMGO=4	OK
AT+WMGO?	+WMGO: 4 OK
AT+CMGW=28<CR> 0031000BA13105119226F40000AD0AA8C3F630885E9ED301 <ctrl-Z>	+CMGW: 4 OK Note : New Message stored in index 4
AT+WMGO=?	+WMGO: [<range of location>] OK
AT+WMGO	+CMS ERROR: 3 Note: not supported.

9.15.3 Defined values :

<loc> location number of the SIM record to write or overwrite. Number depending of the SIM capacity.

9.16 Unchange SMS Status +WUSS

9.16.1 Description:

The +WUSS command allows keeping the SMS Status to UNREAD after +CMGR or +CMGL, the default value of <mode> is 1.

9.16.2 Syntax :

Command syntax : AT+WUSS = <mode>

Command	Possible responses
AT+WUSS=1	OK
	+CMTI: "SM",10 Note : SMS has been received in index 10
AT+CMGR=10	+CMGR: 0,,20 0891683108100005F0240D91683185716393 F900005021605174142300 OK
AT+CMGR=10	+CMGR: 0,,20 0891683108100005F0240D91683185716393 F900005021605174142300 OK Note : The state hasn't be updated
AT+WUSS=0	OK
	+CMTI: "SM",11 Note : SMS has been received in index 11
AT+CMGR=11	+CMGR: 0,,20 0891683108100005F0240D91683185716393 F900005021605174142300 OK
AT+CMGR=11	+CMGR: 1,,20 0891683108100005F0240D91683185716393 F900005021605174142300 OK Note : The state has been updated

9.16.3 Defined values :

<mode>	
<mode> : 1	The SMS Status will not change.
<mode> : 0	The SMS Status will change.

9.17 Preferred Message Format +CMGF

9.17.1 Description

The message formats supported are text mode and PDU mode.

In PDU mode, a complete SMS Message including all header information is given as a binary string (in hexadecimal format). Therefore, only the following set of characters is allowed:

{‘0’, ‘1’, ‘2’, ‘3’, ‘4’, ‘5’, ‘6’, ‘7’, ‘8’, ‘9’, ‘A’, ‘B’, ‘C’, ‘D’, ‘E’, ‘F’}. Each pair of character is converted to a byte (e.g.: ‘41’ is converted to the ASCII character ‘A’, whose ASCII code is 0x41 or 65).

In Text mode, all commands and responses are in ASCII characters.

9.17.2 Syntax

Command syntax : AT+CMGF=<mode>

Command	Possible responses
AT+CMGF?	+CMGF:1 OK
Note : Current message format	Note : Text mode
AT+CMGF=?	+CMGF: (0,1) OK
Note : Possible message format	Note : Text or PDU modes are available

Example, sending an SMS Message in PDU mode

Command	Possible responses
AT+CMGF=0	OK
Note : Set PDU mode	Note : PDU mode valid
AT+CMGS=14<CR> 0001030691214365000004C9E9340B	+CMGS: 4 OK
Note : Send complete MSG in PDU mode, no SC address	Note : MSG correctly sent, <mr> is returned

9.17.3 Defined values

<mode> PDU or text mode

0 PDU mode

1 Text mode

The <pdu> message is composed of the SC address (00 means no SC address given, use default SC address read with +CSCA command) and the TPDU message.

In this example, the length in bytes of the TPDU buffer is 14, coded as GSM03.40

In this case the TPDU is : 0x01 0x03 0x06 0x91 0x21 0x43 0x65 0x00 0x00 0x04 0xC9 0xE9 0x34 0x0B, which means regarding GSM 03.40 :

<fo> 0x01 (SMS-SUBMIT, no validity period)

<mr> (TP-MR) 0x03 (Message Reference)

<da> (TP-DA) 0x06 0x91 0x21 0x43 0x65 (destination address +123456)

<pid> (TP-PID) 0x00 (Protocol Identifier)

<dc> (TP-DCS) 0x00 (Data Coding Scheme : 7 bits alphabet)

<length> (TP-UDL) 0x04 (User Data Length, 4 characters of text)

TP-UD 0xC9 0xE9 0x34 0x0B (User Data : ISSY)

TPDU in hexadecimal format must be converted into two ASCII characters. For

example, the byte 0x2A is presented to the ME as two characters '2' (ASCII 50) and 'A' (ASCII 65).

9.18 Set Text Mode Parameters +CSMP

9.18.1 Description

This command is used to select a value for <vp>, <pid>, and <dc>.

9.18.2 Syntax ;

Command syntax : AT+CSMP=<fo>, <vp>, <pid>, <dc>

Command	Possible responses
AT+CSMP? Note : current values	+CSMP: 0,0,0,0 OK Note : No validity period <dc>= PCCP437 alphabet (8 bits " 7bits)
AT+CSMP=17,23,0,0 Note : <vp> = 23 (2 hours, relative format) Remind to enter <fo> value in decimal notation.	OK Note : Command correct

9.18.3 Defined values

The <fo> byte comprises 6 different fields :

B7	B6	B5	B4	B3	B2	B1	B0
RP	UDH I	SRR	VPF		RD	MTI	

Note: <fo> must be entered in DECIMAL format. Hexadecimal format would lead to irrelevant result.

RP : Reply Path, not used in text mode.

UDHI : User Data Header Information, b6=1 if the beginning of the User Data field contains a Header in addition to the short message. This option is not supported in +CSMP command, but can be used in PDU mode (+CMGS).

SRR : Status Report Request, b5=1 if a status report is requested. This

mode is supported.

VPF : Validity Period Format

b4=0 & b3=0 -> <vp> field is not present

b4=1 & b3=0 -> <vp> field is present in relative format

Others formats (absolute & enhanced) are not supported.

RD : Reject Duplicates, b2=1 to instruct the SC to reject an SMS-SUBMIT

for an SM still held in the SC which has the same <mr> and the

same <da> as the previously submitted SM from the same <oa>.

MTI : Message Type Indicator

b1=0 & b0=0 -> SMS-DELIVER (in the direction SC to MS)

b1=0 & b0=1 -> SMS-SUBMIT (in the direction MS to SC)

In text mode <vp> is only coded in “relative” format. The default value is 167

(24 hours). This means that one byte can describe different values :

VP value	Validity period value
0 to 143	(VP + 1) x 5 minutes (up to 12 hours)
144 to 167	12 hours + ((VP -143) x 30 minutes)
168 to 196	(VP - 166) x 1 day
197 to 255	(VP-192) x 1 week

<pid> is used to indicate the higher layer protocol being used or indicates interworking with a certain type of telematic device. For example, 0x22 is for group 3 telefax, 0x24 is for voice telephone, 0x25 is for ERMES (European Radio Messaging System).

<dc> is used to determine the way the information is encoded. Compressed text is not supported. Only GSM default alphabet, 8 bit data and UCS2 alphabet are supported.

9.19 Select TE character set +CSCS

9.19.1 Description

This command informs the ME which character set is used by the TE. The ME can convert each character of entered or displayed strings. This is used to send, read or write short messages. See also +WPCS for the phonebooks character sets.

9.19.2 Syntax

Command syntax : AT+CSCS=<Character Set>

Command	Possible responses
AT+CSCS="GSM"	OK
Note : GSM default alphabet	Note : Command valid

AT+CSCS=? Note : Get possible values	+CSCS: ("GSM","UCS2","HEX") OK Note : Possible values
---	---

9.19.3 Defined values

<Character Set>

"GSM" GSM default alphabet.

"HEX" Hexadecimal mode. No character set used ; the user can read or write hexadecimal values.

9.20 Select Cell Broadcast Message Types +CSCB

9.20.1 Description

This command selects which types of CBMs are to be received by the ME. It is allowed in both PDU and text modes.

9.20.2 Syntax

Command syntax : AT+CSCB= <mode>, [<mids>, [<dcss>]]

Important note : Test read command (AT+CSCB ?) is not supported.

Command	Possible responses
AT+CSCB=0,.15-17,50,86,... Note : Accept SMS-CB types, 15,16,17,50 and 86 in any language	OK Note : CBMs can be received
	+CBM : 10<CR><LF> 00112233445566778899 Note : CBM length of a received Cell Broadcast message (SMS-CB), CBM bytes in PDU mode)
AT+CSCB=1 Note : Deactivate the reception of CBMs	OK Note : CBM reception is completely stopped

9.20.3 Defined values

The <bm> parameter of +CNMI command controls the message indication. The activation of CBM reception (<mode>=0) can select only specific Message Identifiers (list in <mids>) for specific Languages (list in <dcss>), but the deactivation stops any reception of CBMs (only AT+CSCB=1 is allowed) Message Identifiers (<mids> parameter) indicates to which type of message identifiers the ME should listen.

<dcss> : Supported languages

0 German

1 English

2 Italian

3 French

4 Spanish

- 5 Dutch
- 6 Swedish
- 7 Danish
- 8 Portuguese
- 9 Finnish
- 10 Norwegian
- 11 Greek
- 12 Turkish
- 13 Hungarian
- 14 Polish
- 32 Czech.

9.21 Cell Broadcast Message Identifiers +WCBM

9.21.1 Defined values :

This specific command is used to read the EF-CBMI SIM file.

Remark: The EF-CBMI file is not used with the +CSCB command. The application should read this file (using AT+WCBM ?) and combine the Message Identifiers with those required by the application.

9.21.2 Syntax

Command syntax : AT+WCBM= <mids>

Command	Possible responses
AT+WCBM=.10,100,1000,10000. Note : Write 4 messages identifiers in EFCBMI	OK Note : CBMIs are stored in EF-CBMI
AT+WCBM? Note : Read the CBMIs in EF-CBMI	+WCBM=.10,100,1000,100000. OK Note : 4 CBMIs are stored in EF-CBMI
AT+WCBM=?	OK

9.21.3 Defined values :

<mids>: See above descriptions

9.22 Capacity of SIM card been adjusted +TSMC

At present M260 do not support this command.

Indicator	Receiving message
“+TSMC:<num>” Note: inform PDA that the capacity of SIM card been adjusted.	APPI_SMS_STATUS_MSG_LIST_IND

9.22.1 Defined values :

<num>: the new capacity of SIM card.

10 Supplementary Services commands

10.1 Call forwarding +CCFC

10.1.1 Description:

This commands allows control of the "call forwarding" supplementary service.

10.1.2 Syntax:

Command syntax:

AT+CCFC= <reason>, <mode> [, <number> [, <type> [, <class> [, <subaddr> [, <satype> [, <time>]]]]]]

Response syntax:

```
+CCFC: <status>, <class1> [, <number>, <type> [, <subaddr>,
<satype> [, <time> ] ] [ <CR><LF>+CCFC: <status>, <class2> [, <number>,
<type> [, <subaddr>, <satype> [, <time> ] ] ] [ ... ] ]
```

Command	Possible responses
AT+CCFC = 0,3,"13051204317" Note: Register to unconditional call forwarding	OK Note: Command valid
AT+CCFC=0,2 Note: Interrogate unconditional call forwarding	+CCFC: 1,1,"+861062965555",129 OK
AT+CCFC=0,4 Note: Erase unconditional call forwarding	OK
AT+CCFC=2,3,"+861064345558", , , , 5 Note: Register no reply call forwarding after 5s	OK

+CCFC responses are not sorted by <class> parameter, but only by the order of network response.

10.1.3 Defined values

<reason>

- | | |
|---|---------------------------------|
| 0 | Unconditional |
| 1 | Mobile busy |
| 2 | No reply |
| 3 | Not reachable |
| 4 | All call forwarding |
| 5 | All conditional call forwarding |

<mode>

- | | |
|---|-------------|
| 0 | Disable |
| 1 | Enable |
| 2 | Interrogate |

3 Registration

4 Erasure

<type> : TON/NPI (Type of address byte in integer format) (default 145 when dialing string includes international access code character "+", otherwise 129)

<class>

1 Voice

2 Data

4 Fax

8 Short Messages

7 All classes

Note: The combination of different classes is not supported, it will only result in the activation / deactivation / status request of all classes.

If the FDN phonebook is activated, the registration is restricted to the phone numbers written in it.

if <Class> parameter is not given in the command, 7 is used as default value.

<subaddr> not managed

<satype> not managed

<time> For <reason> = 2 (No reply), 4 (all calls forwarding) and 5 (all conditional call forwarding), time to wait (1 to 30) in seconds before call is forwarded. Default value is 20.

< status >

0 : not active

1 : active

2 : quiescent

10.2 Call barring +CLCK

10.2.1 Description:

This command allows control of the call barring supplementary service.

Locking, unlocking or querying the status of call barring is possible for all classes or for a specific class, but not a combination of some.

10.2.2 Syntax:

Command Syntax : AT+CLCK= <fac>, <mode> [, <password> [, <class>]]

Response Syntax: (for <mode>=2 and command successful)

+CLCK: <status> [, <class1> [<CR><LF>+CLCK: <status>, <class2> [...]]

Command	Possible responses
AT+CLCK =SC, 1, 1234 Note: set SIM lock	OK Note: Command succeed
AT+CLCK =SC, 0, 1234 Note: set SIM unlock	OK Note: Command succeed
AT+CLCK ="AO",2 Note: query the status	+CLCK: 0,7 Note: not active
AT+CLCK ?	+CLCK: ("PS",0),("SC",0),("FD",0),("PN",0),("PU",0), ("PP",0), ("PC",0) Note: all unlocks the facility
AT+CLCK =?	+CLCK: ("PS", "SC", "FD", "PN", "PU", "PP", "PC", "AO", "OI", "OX", "AI", "IR", "AB", "AG", "AC") Note: all calls barring

10.2.3 Defined values :

<fac>

"AO", "OI", "OX"	Barring for outgoing calls
"AI", "IR"	Barring for incoming calls
"AG", "AC", "AB"	For all calls barring (<mode>=0 only)

<mode>

0: Unlocks the facility

1: Locks the facility

2: Query status

<class> : see description for +CLCK command (Facility lock) or +CCFC (Call forwarding).

Note: A combination of different classes is not supported. It will only result in the activation / deactivation / status request for all classes . The password code is over 4 digits maximum.

< status >

0 : not active

1 : active

10.3 Modify SS password +CPWD

10.3.1 Description :

This command is used by the application to change the supplementary service password.

10.3.2 Syntax :

Command Syntax: AT+CPWD=<fac>,<OldPassword>, <NewPassword>

Command	Possible responses
AT+CPWD = SC,"1234","4321" Note: to perform this the pin lock must be active.	+CME ERROR: 3 Note: operation not allowed
AT+CLCK="SC", 1, "1234" AT+CPWD = "SC","1234","4321"	OK
AT+CPWD = "P2","12345678","87654321"	+CME ERROR: 3

10.3.3 Defined values :

<fac>

see +CLCK command with only "P2" facility added (SIM PIN2).

Note : Whatever the facility specified, the change of password applies to all calls barring.

<OldPassword>, <NewPassword>

The password code is over up to 8 digits for P2 facility (4 to 8 digits).

The password code is over up to 4 digits for the other facilities (1 to 4 digits).

10.4 Call waiting +CCWA

10.4.1 Description:

This command allows control of the call waiting supplementary service. Activation, deactivation and status query are supported. Parameter <n> is used to disable/enable the presentation of an unsolicited result code +CCWA: <number>, <type>, <class>[, <alpha>] to the TE when call waiting service is enabled. Command should be aborted when network is interrogated.

10.4.2 Syntax:

Command Syntax : AT+CCWA=<n>, [<mode> [, <class>]]

Response Syntax: (for <mode>=2 and command successful)

+CCWA: <status> [, <class1> [<CR><LF>+CCWA: <status>, <class2> [...]]

Unsolicited result: +CCWA: <number>, <type>, <class> [, <alpha>] (when waiting service is enabled)

Command	Possible responses
AT+CCWA =1,2 Note: Query enable status	+CCWA: 1,1 OK Note: voice call waiting is active
AT+CCWA =1 Note: enable the presentation of an unsolicited	OK

result code	
AT+CCWA =0 Note: disable the presentation of an unsolicited result code	OK
AT+CCWA =1,1,1 Note: Enable voice call waiting	OK
AT+CCWA =1,0,1 Note: Disable voice call waiting	OK

10.4.3 Defined values :

<n> : result code presentation status in the follows

0: Disable

1: Enable

<mode>

0: Disable

1: Enable

2: Query status

<class>

1: Voice

2: Data

3: Fax

7: All classes (voice, data and fax)

A combination of different classes is **not supported**. It will only result in the activation / deactivation / status request for all classes.

<status>

0: not active

1: active

<alpha> : optional string type alphanumeric representation of <number> corresponding to the entry found in the ADN or FDN phonebook.

10.5 Calling line identification restriction +CLIR

10.5.1 Description:

This command allows control of the calling line identification restriction supplementary service.

10.5.2 Syntax:

Command syntax : AT+CLIR=<n>

Response syntax : +CLIR :<n>,<m> (for AT+CLIR ?)

Command	Possible responses
AT+CLIR=1	OK
AT+CLIR?	+CLIR: 1,0 OK
AT+CLIR =2	OK
AT+CLIR =0	OK

10.5.3 Defined values:

<n>: sets the line ID restriction for outgoing calls

0: Presentation indicator is used according to the subscription of the CLIR service

1: CLIR invocation

2: CLIR suppression

<m>: shows the subscriber CLIR status in the network

0: CLIR not provisioned

1: CLIR provisioned in permanent mode

2: Unknown (no network...)

3: CLIR temporary mode presentation restricted

4: CLIR temporary mode presentation allowed

10.6 Calling line identification presentation +CLIP

10.6.1 Description:

This command allows control of the Calling Line Identifier presentation supplementary service. When presentation of the CLI (Calling Line Identifier) is enabled (and calling subscriber allows), +CLIP response is returned after every RING result code.

10.6.2 Syntax :

Command syntax: AT+CLIP=<n>

Response syntax:

+CLIP: <n>,<m> (as response to AT+CLIP?)

+CLIP: <number>, <type>[,<subaddr>, <satype>, <alpha>] (for an incoming call, after each RING indication)

Command	Possible responses
AT+CLIP=0 Note: deactivate CLIP	OK

AT+CLIP? Note: ask for current value CLIP	+CLIP: 0,1 OK
AT+CLIP=1 Note: activate CLIP	OK
	RING +CLIP: "01062965555", 129 Note: if the CLIP function is active, for an incoming call, after each RING indication the CLIP indication will be come.

10.6.3 Defined values:

<n>: parameter sets/shows the result code presentation in the follows

0: Disable

1: Enable

<m>: parameter shows the subscriber CLIP service status in the network

0: CLIP not provisioned

1: CLIP provisioned

2: Unknown (no network...)

10.7 Connected line identification presentation +COLP

10.7.1 Description:

This command allows control of the connected line identification presentation supplementary service - useful for call forwarding of the connected line.

10.7.2 Syntax :

Command syntax: AT+COLP=<n>

Response syntax:

+COLP: <n>, <m> (as response to AT+COLP?)

+COLP: <number>,<type> [,<subaddr>, <satype>, <alpha>]

after ATD command, before OK or CONNECT <speed>

Command	Possible responses
AT+COLP=0 Note: deactivate COLP	OK
AT+ COLP? Note: ask for current value COLP	+COLP: 0,2 OK
AT+ COLP =1 Note: activate COLP	OK
ATD1860;	+COLP: "1860", 129

	OK Note: if the COLP function is active, for an outgoing call, the COLP indication will be come before OK come back.
--	--

10.7.3 Defined values

<n>: parameter sets/shows the result code presentation status in the follows

0: Disable

1: Enable

<m>: parameter shows the subscriber COLP service status in the network

0: COLP not provisioned

1: COLP provisioned

2: Unknown (no network)

10.8 Call related supplementary services +CHLD

10.8.1 Description:

This command is used to manage call hold and multiparty conversation (conference call). Calls can be put on hold, recovered, released or added to a conversation.

10.8.2 Syntax:

Command	Possible responses
AT+CHLD=?	+CHLD: (0-4,11-17,21-27) OK
AT+CHLD=1 Note: When a call is active, an other call is coming	Note: Release active call (if exist) and accepts the other (held or waiting) call
ATD1860; AT+CHLD=2 Note: hold current active call	OK OK
ATD1861; AT+CHLD=2 Note: switch active and hold call	OK OK

10.8.3 Defined values

<n>

0: Release all held calls or set User Determined User Busy (UDUB) for a waiting call.

1: Release all active calls (if any exist) and accepts the other (held or waiting) call.

1X: Release a specific call X (active, held or waiting)

- 2: Place all active calls (if any exist) on hold and accepts the other (held or waiting) call.
- 2X: Place all active calls on hold except call X with which communication is supported.
- 3: Adds a held call to the conversation.
- 4: Connects the two calls and disconnects the subscriber from both calls (Explicit Call Transfer).

10.9 List current calls +CLCC

10.9.1 Description:

This command is used to return a list of current calls.

10.9.2 Syntax:

Command syntax: AT+CLCC

Response syntax: OK (if no calls are available)

+CLCC : <id1>, <dir>, <stat>, <mode>, <mpty> [,<number>, <type>
[<alpha>]] [<CR><LF>
+CLCC: <id2>, <dir>, <stat>, <mode>, <mpty> [,<number>, <type>
[<alpha>]][...]] [<CR><LF>

Command	Possible responses
When a call incoming run: AT+CLCC?	"+CLCC: 1,1,4,0,0,"01062965555",129"
ATD1860; AT+CHLD=2 ATD 1861; AT+CLCC?	OK OK OK +CLCC: 1,0,1,0,0,"1860",129 +CLCC: 2,0,0,0,0,"1861",129 Note: list current calls. One is active, one is held. They both are MO call.

10.9.3 Defined values :

<idx> integer type, call identification as described in GSM 02.30

<dir> (direction of the call)

0: mobile originated (MO) call

1: mobile terminated (MT) call

<stat> (state of the call):

0: active

1: held

2: dialling (MO call)

3: alerting (MO call)

4: incoming (MT call)

5: waiting (MT call)

<mode> (teleservice) :

0 : voice

1: data

9: unknown

<mpty> (multiparty)

0: call is not one of multiparty (conference) call parties

1: call is one of multiparty (conference) call parties

<number> string type phone number in format specified by **<type>**

<type> type of address byte in integer format

<alpha> optional string type alphanumeric representation of **<number>**, corresponding to the entry found in phonebook. (for UCS2 format see commands examples +CLIP, +CCWA or +COLP)

10.10 Supplementary service notifications +CSSN

10.10.1 Description:

This command refers to supplementary service related network initiated notifications.

10.10.2 Syntax:

Command syntax: AT+CSSN= <n>, <m>

When <n>=1 and a supplementary service notification is received after a mobile originated call setup, intermediate result code **+CSSI:<code1>[,<index>]** is sent before any other MO call setup result codes.

When <m>=1 and a supplementary service notification is received during a call, unsolicited result code **+CSSU:<code2>[,<index>[,<number>,<type>]]** is sent.

Command	Possible responses
AT+CSSN?	+CSSN: 0,0 OK

10.10.3 Defined values

<n> (parameter sets/shows the +CSSI result code presentation status) :

0: disable

1: enable

<m> (parameter sets/shows the +CSSU result code presentation status) :

0: disable

1: enable

<code1>

- 0: unconditional call forwarding is active
- 1: some of the conditional call forwarding are active
- 2: call has been forwarded
- 3: call is waiting
- 4: this is a CUG call (also <index> present)
- 5: outgoing calls are barred
- 6: incoming calls are barred
- 7: CLIR suppression rejected

<code2>

- 1: closed User Group call, with CUG <index>
- 2: call has been put on hold (during a voice call, <number> & <type> fields may be present)
- 3: all has been retrieved (during a voice call, <number> & <type> fields may be present)
- 4: multiparty call entered (during a voice call, <number> & <type> fields may be present)
- 5: call on hold has been released (during a voice call)
- 7: call is being connected (alerting) with the remote party in alerting state in Explicit Call Transfer operation (during a voice call)
- 8: call has been connected with the other remote party in Explicit Call Transfer operation (during a voice call, <number> & <type> fields may be present)

<index>	Closed User Group index
<number>	String type phone number
<type>	Type of address

10.11 Unstructured supplementary service data +CUSD

10.11.1 Description:

The USSD supplementary service is described in GSM 02.90.

It is based on sequences of digits, which may be entered by a mobile user with a handset. A sequence entered is sent to the network which replies with an alphanumerical string, for display only, or for display plus request for the next sequence.

This command is used to:

- Enable or disable the CUSD indication sent to the application by the product when an incoming USSD is received
- Send and receive USSD strings

10.11.2 Syntax:

Command syntax: AT+CUSD = <n> [, <str> [<dcs>]]

Note: in case of enabled presentation, a +CUSD (as direct answer to a send USSD) is then indicated with:
+CUSD: <m> [, <str>, <dcs>]

10.11.3 Defined values:

<n>

- 0: Disable the result code presentation
- 1: Enable the result code presentation
- 2: Cancel session (not applicable to read command response)

<m>

- 0: no further user action required (network initiated USSD-Notify, or no further information needed after mobile initiated operation)
- 1: further user action required (network initiated USSD-Request, or further information needed after mobile initiated operation)
- 2: USSD terminated by network
- 4: Operation not supported

<str>: network string (name), converted in the selected character set

<dc> : the data coding scheme received (GSM TS 03.38).

10.11.4 Syntax To send and receive USSD:

Command syntax: AT+CUSD= <n> [,<str> [,<dc>]]

Note : Please, be aware that the send USSD command needs the user to re-enter the <n> parameter !

10.11.5 Defined values To send and receive USSD :

<str> is the USSD string to be sent.

<dc> the default alphabet and the UCS2 alphabet are supported.

When the product sends a USSD, an OK response is first returned, and the intermediate +CUSD indication comes subsequently.

In case of error, a "+CUSD:4" indication is returned.

11 Specific AT commands

11.1 Abort command +WAC

11.1.1 15.13.1 Description

This specific command allows SMS, SS and PLMN selection related commands to be aborted.

11.1.2 Syntax

Command syntax: AT+WAC

Command Syntax	Return
AT+WAC	
AT+WAC=?	OK
AT+WAC?	OK

Example:

Command	Possible responses
AT+COPS=? Note : Available PLMN	
Note : Available PLMN	
AT+WAC Note : Abort the request of PLMN list	OK Note : PLMN list request aborted

11.1.3 Defined values:

No parameter

11.2 Priority of AT commands

List of High priority at command

AT+WAC,

ATH,

ATH1,

ATA,

ATD,

AT+CLCC,

AT+CMGS,

Priority of at commands in above list is higher than the other at commands not in the list and the at commands in the list have following priority sequence: +WAC > ATH > ATH1 > ATA > ATD > +CLCC > CMGS.

12 SIM TOOLKIT

12.1 Overview of SIM Application ToolKit

12.1.1 Summary

SIM ToolKit, also known as “SIM Application ToolKit” introduces functionalities, which open the way to a broad range of value added services. The principle is to allow service providers to develop new applications (e.g.. for banking, travel, ticket booking, etc.) for subscribers and to download them into the SIM.

This solution allows new services to be accessible to the user by adding new SIM-based applications without modifying the handset.

12.1.2 Functionality

SIM Toolkit refers to the functionalities described in the GSM Technical specification 11.14.

It introduces twenty-five commands for the SIM. Three classes of increasing ToolKit functionalities have been defined, with class 1 offering a subset of commands and class 3 offering the full range of commands (See table 1 in APPENDIX B).

The SIM Application Toolkit supports:

- Profile download,
- Proactive SIM,
- Data download into SIM.
- Menu selection,
- Call control by SIM.

12.1.3 Profile download

The Profile Download instruction is sent by the customer application to the SIM as part of the initialization.

It is used to indicate which SIM Application Toolkit features are supported by the customer application.

The AT commands used for this operation is +STSF (SIM ToolKit Set Facilities).

12.1.4 Proactive SIM

A proactive SIM provides a mechanism whereby the SIM can ask the customer application to perform certain actions.

These actions include:

- Display menu,
- Display given text,
- Get user input,
- Send a short message,
- Play the requested tone,
- Set up a call,
- Provide location information.

This mechanism allows SIM applications to generate powerful menu-driven sequences on the customer application and to use services available in the network.

The commands used for this operation are:

- +STIN (SIM Toolkit Indication),
- +STGI (SIM Toolkit Get Information),
- +STGR (SIM Toolkit Give Response).

12.1.5 Data Download to SIM

Data downloading to the SIM (SMS, phonebook...) allows data or programs (Java applets) received by SMS or by Cell Broadcast to be transferred directly to the SIM Application.

This feature does not need any AT command. It is transparent to the customer application.

12.1.6 Menu Selection

A set of menu items is supplied by the SIM Application ToolKit. The menu selection command can then be used to signal to the SIM Application which menu item is selected.

The commands used for this operation are +STIN, +STGI and +STGR.

12.1.7 Call control by SIM

The call control mechanism allows the SIM to check all dialed numbers, supplementary service control strings and USSD strings before connecting to the network. This gives the SIM the ability to allow, bar or modify the string before the operation starts.

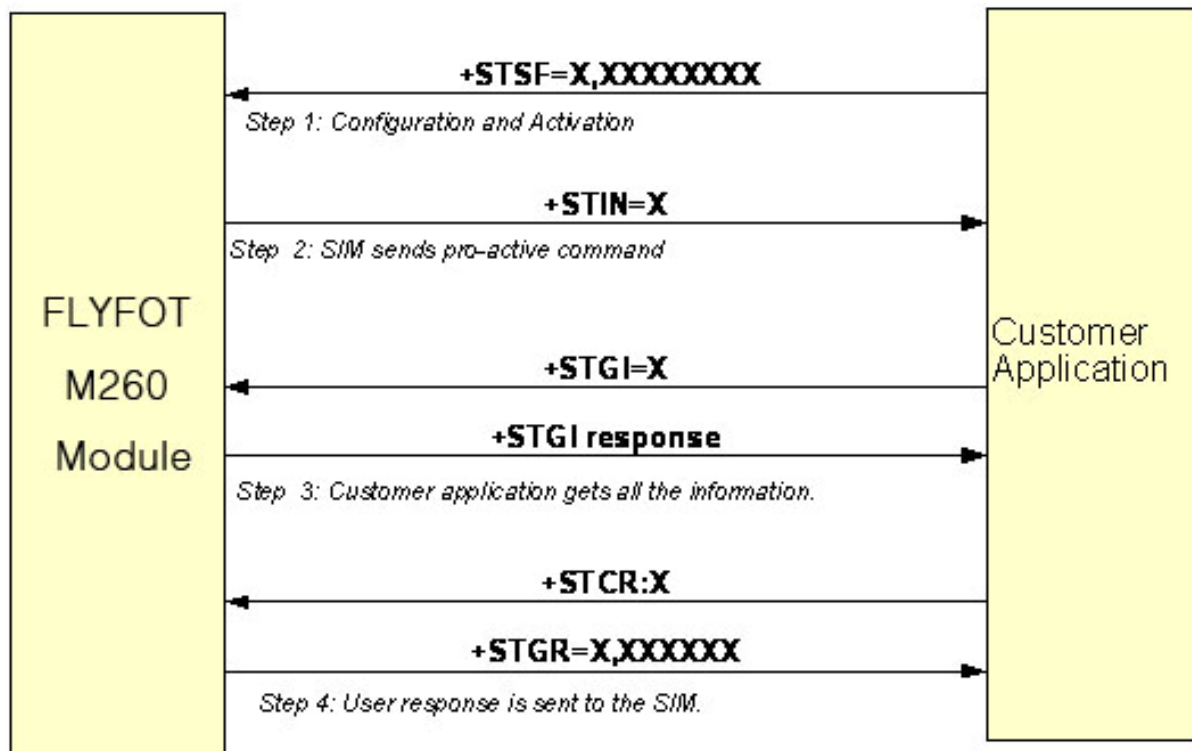
The commands used for this operation are :

- +STCR (SIM Toolkit Control Response),
- +STGR (SIM Toolkit Give Response).

12.2 SIM TOOLKIT COMMANDS

12.2.1 Messages exchanged during a SIM ToolKit operation.

The following scheme shows the SIM Toolkit commands and unsolicited results that are exchanged.



On the first step, the customer application informs the FLYFOT product which facilities are supported. This operation is performed with the +STSF (*SIM ToolKit Set Facilities*) command, which also allows activating or deactivating the SIM Toolkit functionality.

On the second step, an unsolicited result +STIN (*SIM ToolKit indication*) is sent by the product, indicating to the customer application which command type the SIM Application Toolkit is running on the SIM card. The last SIM Toolkit indication can be requested by the +STIN? command.

On the third step, the customer application uses the +STGI (*SIM ToolKit Get Information*) command to get all the information about the SIM Toolkit command, returned by a +STIN message.

On the fourth step, the customer application uses the +STGR (*SIM Toolkit Give Response*) to send its response (if any) to the SIM Toolkit Application.

The +STCR (*SIM Toolkit Control response*) indication is an unsolicited result sent by the SIM when Call control functionality is activated and before the customer application has performed any outgoing call, SMS, SS, or USSD.

12.3 SIM ToolKit Set Facilities (+STSF)

12.3.1 Description

This command allows SIM Toolkit facilities to be activated or deactivated.

12.3.1.1 Syntax

Command syntax :

+STSF=<mode>

Command	Possible responses
+STSF=<Mode>	OK +CME ERROR: <err>
+STSF?	+STSF: <Mode>,5FFFFFFF7F,255
+STSF=?	+STSF: (0-2),(160060C01F-5FFFFFFF7F),(1-255),(0-1) OK

12.3.1.2 Defined values

<mode>

0: Deactivates the SIM Toolkit functionalities.

1: Activates the SIM Toolkit functionalities.

12.3.2 Error codes

+CME ERROR: 3 Operation not allowed. This error is returned when a wrong parameter is entered.

12.4 SIM ToolKit Indication (+STIN)

12.4.1.1 Unsolicited result

In order to allow the customer application to identify the pro-active command sent via SIM ToolKit, a mechanism of unsolicited SIM ToolKit indications (+STIN) is implemented.

Syntax : +STIN: <CmdType>

<CmdType>

0: a 'Setup Menu' pro-active command has been sent from the SIM.

1: a 'Display Text' pro-active command has been sent from the SIM.

2: a 'Get Inkey' pro-active command has been sent from the SIM.

3: a 'Get Input' pro-active command has been sent from the SIM.

4: a 'Setup Call' pro-active command has been sent from the SIM.

5: a 'Play Tone' pro-active command has been sent from the SIM. (*)

6: a 'Sel Item' pro-active command has been sent from the SIM.

7: a 'Refresh' pro-active command has been sent from the SIM. (*)

8: a 'Send SS' pro-active command has been sent from the SIM. (*)

- 9: a 'Send SMS' pro-active command has been sent from the SIM. (*)
 10: a 'Send USSD' pro-active command has been sent from the SIM. (*)
 11: a 'SETUP EVENT LIST' pro-active command has been sent from the SIM.
 98: timeout when no response from user.
 99: a "End Session" has been sent from the SIM.

(*) if the automatic response parameter is activated, this indication is followed by the corresponding +STGI response.

12.4.1.2 Last SIM toolkit indication

The last SIM toolkit indication sent by the SIM can be requested by the AT+STIN? command. This command is only usable between the sending of the STIN indication by the SIM (step 2: see section 16.2) and the response of the user with the +STGI command (step 3).

Command syntax: +STIN?

Command	Possible responses
+STIN? Note : Ask for the last SIM toolkit indication sent by the SIM	+STIN: 0 OK Note : the last SIM toolkit indication was a Setup Menu
+STGI=0	Note : Display the SIM toolkit application menu
+STIN? Note : Ask for the last SIM toolkit indication sent by the SIM	+CME ERROR: 4 Note : operation not supported, the +STGI command has been already used

12.5 SIM ToolKit Get Information (+STGI)

12.5.1 Description

This command allows to get the information (text to display, Menu information, priorities...) of a pro-active command sent from the SIM.

The information is returned only after receiving a SIM Toolkit indication (+STIN).

12.5.2 Syntax

12.5.2.1 Command syntax : +STGI=<CmdType>

Command	Possible responses
+STGI=<CmdType> <i>See Table 1</i>	+CME ERROR: <err> +STIN: index
+STGI=?	+STGI: (0-11) OK

Table 1

Cmd Type	Description	Possible responses
0	Get information about ‘ Setup Menu ’ pro-active command.	+STGI: <Alpha Identifier menu> +STGI: <Id1>,<NbItems>,<Alpha Id1 Label>,<Help Info>[,<NextActionId>]<CR><LF> +STGI: <Id2>,<NbItems>,<Alpha Id2 Label>,<Help Info>[,<NextActionId>]<CR><LF> [...] No action expected from SIM.
1	Get information about ‘ Display text ’ pro-active command.	+STGI: <Prior>,<Text>,<ClearMode> No action expected from SIM.
2	Get information about ‘ Get Inkey ’ pro-active command.	+STGI: <Format>,<HelpInfo>[,<TextInfo>] SIM expects key pressed (+STGR).
3	Get information about ‘ Get Input ’ pro-active command.	+STGI: <Format>,<EchoMode>,<SizeMin>,<SizeMax>,<HelpInfo>[,<TextInfo>] SIM expects key input (+STGR).
4	Get information about ‘ Setupt call ’ pro-active command.	+STGI: <Type>,< Textinfo >,<SubAddress>,<Class> SIM expects user authorization (+STGR).
5	Get information about ‘ Play Tone ’ pro-active command.	+STGI: <ToneType>[,<TimeUnit>,<TimeInterval>,<TextInfo>] No action.

Cmd Type	Description	Possible responses
6	Get information about 'Sel Item' pro-active command.	+STGI: <DefaultItem>, <Alpha Identifier menu><CR><LF> +STGI: <Id1>,<NbItems>,<Alpha Id1 Label>,<Help Info>,<NextActionId>]<CR><LF> +STGI: <Id2>,<NbItems>,<Alpha Id2 Label>,<Help Info>,<NextActionId>]<CR><LF> [...]
7	Get information about 'Refresh' pro-active command.	+STGI: <RefreshType> No action (Refresh done automatically by product).
8	Get information about 'Send SS' pro-active command.	+STGI:<TextInfo> No action (Send SS done automatically by product).
9	Get information about 'Send SMS' pro-active command.	+STGI: <TextInfo> No action (Send SMS done automatically by product).
10	Get information about 'Send USSD' pro-active command.	+STGI: <TextInfo> No action (Send USSD done automatically by product).
11	Get information about 'SETUP EVENT LIST' proactive command.	+STGI: <Evt>

12.5.3 Defined values

Values when CmdType=0 (Setup menu)

<Alpha Identifier menu>	Alpha identifier of the main menu.
<Idx> (1-255)	Menu item Identifier.
<NbItems> (1-255)	Number of items in the main menu.
<Alpha Idx Label>	Alpha identifier label of items in ASCII format.
<HelpInfo>	
0:	No help information available.

1:	Help information available.
<NextActionId>	Contains a pro-active command

Identifier.(see the table in APPENDIX D)

Compared to other commands the customer application can always get information about setup menu after having received the +STIN:0 indication.

Values when CmdType=1 (Display text)

<Prior>

0: Normal priority of display.

1: High priority of display.

<Text>

Text to display in ASCII format.

<ClearMode>

0: Clear message after a delay (3 seconds)

1: Wait for user to clear message.

Values when CmdType=2 (Get Inkey)

<Format>

0: Digit (0-9, *, #, and +)

1: SMS alphabet defaults.

2: UCS2

<HelpInfo>

0: No help information available.

1: Help information available.

<TextInfo>

Text information in ASCII format.

Values when CmdType=3 (Get Input)

<Format>

0: Digit (0-9, *, #, and +)

1: SMS alphabet defaults.

2: UCS2

3: Unpacked format.

4: Packed format.

<EchoMode>

0: Echo off.

1: Echo on.

<SizeMin> (1-255)

Minimum length of input.

<SizeMax>(1-255)

Maximum length of input.

<HelpInfo>

0: No help information available.

1: Help information available.

<TextInfo>

Text information in ASCII format.

Values when CmdType=4 (Setup Call)

<Type>

0: Set up call but only if not currently busy on another call.

1: Set up call, putting all other calls (if any) on hold.

2: Set up call, disconnecting all other calls (if any).

<CalledNb>

Information about this message.

<SubAddress>

Called party sub-address in ASCII format.

<Class>

0: Voice call.

1: Data call.

2: Fax call

Values when CmdType=5 (Play tone)

<ToneType>

0: Tone Dial.

1: Tone Busy.

2: Tone Congestion.

3: Tone Radio ack

4: Tone Dropped.

5: Tone Error.

6: Tone Call waiting.

7: Tone Ringing.

8: Tone General beep.

9: Tone Positive beep.

10: Tone Negative beep.

<TimeUnit>

- 0: Time unit used is minutes.
- 1: Time unit used is seconds.
- 2: Time unit used is tenths of seconds.

<TimeInterval> (1-255)

Time required expressed in units.

<TextInfo>

Text information in ASCII format. Values when CmdType=6 (Sel Item)

<DefaultItem> (1-255)	Default Item Identifier.
<Alpha Identifier menu>	Alpha identifier of the main menu.
<Idx> (1-255)	Identifier items.
<NbItems> (1-255)	Number of items in the menu.
<Alpha Idx Label>	Alpha identifier label of items in ASCII format.
<HelpInfo>	
0:	No help information available.
1:	Help information available.
<NextActionId>	Contains a pro-active command identifier.

(see the table in APPENDIX D)

Values when CmdType=7 (Refresh)

<RefreshType>

- 0: SIM initialization and full file change notification.
- 1: File change notification.
- 2: SIM initialization and file change notification.
- 3: SIM initialization.
- 4: SIM reset.

Values when CmdType=8 (Send SS)

<TextInfo>

Text information in ASCII format.

Values when CmdType=9 (Send SMS)

<TextInfo>

Text information in ASCII format.

Values when CmdType=10 (Send USSD)

<TextInfo>

Text information in ASCII format.

Values when CmdType=11 (Setup Event List)

<Evt>

- 1: Reporting asked for an 'Idle Screen' event.
- 2: Reporting asked for an 'User Activity' event.
- 3: Reporting asked for 'Idle Screen' and 'User Activity' events.
- 4: Cancellation of reporting event.

Rem: For the UCS2 format texts are displayed in Hex ASCII format. Example: When the SIM sends a TextString containing 0x00 0x41 the text displayed is "0041".

12.5.4 Error codes

- | | |
|-----------------|---|
| + CME ERROR: 3 | Operation not allowed. This error is returned when a wrong parameter is detected. |
| +CME ERROR: 4 | Operation not supported. This error is returned when the user wants to get information about a SIM ToolKit proactive command (with SIM ToolKit functionality not activated.) |
| +CME ERROR: 518 | SIM ToolKit indication not received. This error is returned when the SIM Toolkit indication (+STIN) has not been received. |

12.5.5 Example

Initially, all facilities are activated, the PIN is not required and SIM toolkit functionality is activated.

```

AT+CMEE=1           Enable the reporting of mobile equipment errors
OK
AT+WIND=15          Set FLYFOT indications
OK
AT+STSF?
+STSF: 1,"5FFFFFFF7F",3  SIM ToolKit functionality activated with all facilities.
OK
+STIN: 0             The main menu has been sent from the SIM.
AT+STIN?
+STIN: 0
OK
AT+STGI=0            Get information about the main menu
+STGI: "SIM TOOLKIT MAIN MENU" Main menu contains 3 items.
    
```

+STGI: 1,3,"BANK",0
 +STGI: 2,3,"QUIZ",0
 +STGI: 3,3,"WEATHER",0
 OK
 AT+STIN?
 +CME ERROR: 4

12.6 Unsolicited Result : SIM ToolKit Control Response (+STCR)

When the customer application makes an outgoing call or an outgoing SMS and if the call control facility is activated, CALL CONTROL and SMS CONTROL responses can be identified. This is also applicable to SS calls.

Syntax : +STCR: <Result>[,<Number>,<MODestAddr>,<TextInfo>]

Option :

<Result>

- 0: Control response not allowed.
- 1: Control response with modification.

<Number> Called number, Service Center Address or SS String in ASCII format.

<MODestAddr> MO destination address in ASCII format.

<TextInfo> Text information in ASCII format.

12.7 SIM ToolKit Give Response (+STGR)

12.7.1 Description

This command allows the application/user to select an item in the main menu, or to answer the following proactive commands:

- GET INKEY Key pressed by the user.
- GET INPUT Message entered by the user.
- SELECT ITEM Selected item.
- SETUP CALL User confirmation.
- DISPLAY TEXT User confirmation to clear the message.
- SETUP EVENT LIST Reporting events.

It is also possible to terminate the current proactive command session by sending a Terminal Response to the SIM, with the following parameters:

- BACKWARD MOVE Process a backward move
- BEYOND CAPABILITIES Command beyond ME capabilities
- UNABLE TO PROCESS ME is currently unable to process command
- NO RESPONSE No response from the user
- END SESSION User abort.

12.7.2 Syntax

Command syntax : +STGR=<CmdType>[,<Result>,<Data>]

Command	Possible responses
+STGR=<CmdType>[,<Result>,<Data>]	OK +CME ERROR: <err>
For GetInput with <Result>=1: +STGR=3,1<CR> <Data><Ctrl Z>	OK +CME ERROR: <err>
For GetInkey with <Result>=1 +STGR=2,1,<Data>.	OK +CME ERROR: <err>
+STGR=?	OK

12.7.2.1 Defined values

<CmdType>

0:	Item selection in the main menu.
1:	User confirmation to clear a 'Disp Text'.
2:	Response for a 'Get Inkey'.
3:	Response for a 'Get Input'.
4:	Response for a 'Setup call'.
6:	Response for a 'Sel Item'.
11	Response for a 'Setup event list'.
95	Backward move
96	Command beyond ME capabilities
97	ME currently unable to process command
98	No response from the user.
99	User abort.

Values when CmdType=0 (Select an item from the main menu)

<Result>

- 1: Item selected by the user.
- 2: Help information required by user.

<Data> Contains the item identifier of the item selected by the user.

Values when CmdType=1 (Confirm the display text clearing)

No values.

Values when CmdType=2 (Get Inkey)

<Result>

- 0: Session ended by user.
 - 1: Response given by the user.
 - 2: Help information required by user.
- <Data>** Contains the key pressed by the user.

Values when CmdType=3 (Get Input)

- <Result>**
- 0: Session ended by user.
 - 1: Response given by the user.
 - 2: Help information required by user.
- <Data>** Contains the string of characters entered by the user.

Note:

For Inputs in UCS2 format, the data are entered in ASCII format. Example : For “8000410042FFFF”entered, the SIM receives 0x000x41 0x00 0x42 with UCS2 DCS. (See the Appendix E about the differentUCS2 syntaxes).

Values when CmdType=4 (Setup call)

- <Result>**
- 0: User refuses the call.
 - 1: User accepts call.

Values when CmdType=6 (Select Item)

- <Result>**
- 0: Session terminated by the user
 - 1: Item selected by the user
 - 2: Help information required by the user
 - 3: Return to the back item
- <Data>** Contains the item identifier selected by the user

Values when CmdType=11 (Setup Event List)

- <Result>**
- 1: Idle screen available.
 - 2: User activity event.

Sending a Terminal Response to the SIM :

- Values when CmdType=95 (Backward Move)
- Values when CmdType=96 (Command beyond ME capabilities)
- Values when CmdType=97 (ME currently unable to process command)
- Values when CmdType=98 (No response from the user)
- Values when CmdType=99 (SIM Toolkit Session aborting by the user)

No values.

It is possible to send a Terminal Response after the +STIN indication (step 2, cf § 16.2), or after the +STGI command (step 3).

Note :

For the SETUP MENU Proactive Command, it is only possible to send a Terminal Response after the +STIN: 0 indication, not after a +STGI=0 request.

All of the Terminal Responses are not possible with all of the Proactive Commands. Compatibility between available Terminal Responses and Proactive Commands is given in Appendix B, Table 2. If a Terminal Response is attempted during a incompatible Proactive Command session, a +CME ERROR: 3 will be returned.

12.7.3 Possible error codes

- | | |
|----------------|---|
| + CME ERROR: 3 | Operation not allowed. This error is returned when a wrong parameter is detected. |
| +CME ERROR: 4 | Operation not supported. This error is returned when the user gives a response with SIM ToolKit functionality not activated. Or if the SIM Toolkit indication (+STIN) has not been received. |

12.7.4 Example

Initially, all facilities are activated, the PIN is not required and the SIM toolkit functionality is activated.

- | | |
|--|--|
| +STIN: 0 | The main menu has been sent from the SIM. |
| AT+STGI=0 | Get information about the main menu |
| +STGI: 1,3,"BANK",0 | The main menu contains 3 items. |
| +STGI: 2,3,"QUIZ",0 | |
| +STGI: 3,3,"WEATHER",0 | |
| OK | |
| AT+STGR=0,1,1 | The item 2 of the main menu has been selected. |
| OK | |
| +STIN: 6 | The Sel item menu has been sent from the SIM. |
| AT+STGI=6 | Get information about the BANK menu |
| +STGI: 1,"BANK" | The BANK menu contains two items. |
| +STGI: 1,2,"PERSONAL ACCOUNT ENQUIRY",1 | |
| +STGI: 2,2,"NEWS",0 | |
| OK | |
| AT+STGR=6,1,1 | Select Item 1. |
| OK | |
| +STIN: 3 | User request to enter Password sent. |
| AT+STGI=3 | Get information about this request. |
| +STGI: 0,0,4,4,0,"Enter Account Password:" | |
| OK | |

AT+STGR=3,1<CR>	The user enters the Password.
>0000<Ctrl Z>	
OK	
+STIN:1	A text info has been sent from the SIM.
AT+STGI=1	Get information about this text.
+STGI: 0,"Password correct, please wait for response",0	
OK	
+STIN: 9	SIM requests a bank account update from bank server via the network (SEND SMS)
AT+STGI=9	Get all information about the SEND SMS
+STGI: "Send account balance of user, authorization ok"	
OK	
***** After a short period of time. *****	
+STIN: 5	Transaction is complete: BEEP
+STGI=5	Get information about the Tone
+STGI: 9,1,1	
+STIN: 1	Display text indication
AT+STGI=1	
+STGI: 0,"Your account balance is 1000 \$",0	
OK	

13 GPRS commands

GPRS commands are not available under GSM-only software.

13.1 Define PDP Context +CGDCONT

13.1.1 Description

This command specifies PDP context parameter values for a PDP context identified by the local context identification parameter, <cid>.

Three PDP contexts can be defined through FLYFOT software.

A special form of the set command, +CGDCONT= <cid> causes the values for context number <cid> to become undefined.

The test command returns values supported as a compound value. If the MT supports several PDP types, <PDP_type>, the parameter value ranges for each <PDP_type> are returned on a separate line.

The read command returns the current settings for each defined context.

13.1.2 Syntax

Command	Possible response(s)
AT+CGDCONT=[<cid> [,<PDP_type> [,<APN> [,<PDP_addr> [,<d_comp> [,<h_comp>]]]]]] Note: set PDP	OK Note: set successfully +CME ERROR: 3 Note: set failed
AT+CGDCONT? Note: get all PDPs information	+CGDCONT: <cid>, <PDP_type>, <APN>, <PDP_addr>, <data_comp>, <head_comp> [<CR><LF>+CGDCONT: <cid>, <PDP_type>, <APN>, <PDP_addr>, <data_comp>, <head_comp> [...]] OK Note: succeed
AT+CGDCONT=?	+CGDCONT: (range of supported <cid>s), <PDP_type>,,(list of supported <d_comp>s), (list of supported <h_comp>s) [<CR><LF>+CGDCONT: (range of supported <cid>s), <PDP_type>,,(list of supported <d_comp>s),(list of supported <h_comp>s) [...]] OK Note: get parameter range

AT+CGDCONT	+CME ERROR: 3 Note: Note support
------------	-------------------------------------

13.1.3 Defined values

<cid>: (PDP Context Identifier) a numeric parameter which specifies a particular PDP context definition. The parameter is local to the TE-MT interface and is used in other PDP context-related commands. Range of values is 1 to 3.

<PDP_type>: (Packet Data Protocol type) a string parameter which specifies the type of packet data protocol

- IP: Internet Protocol
- PPP : Point to Point Protocol

<APN>: (Access Point Name) a string parameter, which is a logical name that is used to select the GGSN or the external packet data network. If the value is null or omitted, then the subscription value will be requested.

<PDP_address>: a string parameter that identifies the MT in the address space applicable to the PDP. If the value is null or omitted, then a value may be provided by the TE during the PDP startup procedure or, a dynamic address will be requested. The read form of the command will return the null string even if an address has been allocated during the PDP startup procedure. The allocated address may be read using the **+CGPADDR** command.

<d_comp>: a numeric parameter that controls PDP data compression

- 0 : OFF (default if value is omitted)
- 1 : ON
- Other values are reserved.

<h_comp>: a numeric parameter that controls PDP header compression

- 0 : OFF (default if value is omitted)
- 1 : ON
- Other values are reserved.

Notes :

- The data compression algorithm provided in SNDTCP is V.42bis.
- 4 cids are available to specify 4 PDP contexts but only 11 NSAPI are available for PDP activation. Due to FLYFOT Choice, 4 PDP contexts can be specified with only one activated at the same time.

13.2 GPRS attach or detach +CGATT

13.2.1 Description

The execution command is used to attach the MT to, or detach the MT from the GPRS service. After the command has completed, the MT remains in V.25ter command state. If the MT is already in the requested state, the command is ignored and the OK response is returned. If the requested state cannot be achieved because the GPRS is not supported by the an ERROR or +CME ERROR response is returned. Extended error responses are enabled by the +CMEE command.

Any active PDP contexts will be automatically deactivated when the attachment state changes to detached.

The read command returns the current GPRS service state.

The test command is used for requesting information on the supported GPRS service states.

13.2.2 Syntax

Command	Possible Response(s)
AT+CGATT= [<state>] Note: attach gprs	OK Note: succeed +CME ERROR: 3 Note: failed
AT+CGATT? Note: get gprs attach state	+CGATT: <state> OK Note: succeed
AT+CGATT=? 	+CGATT: (list of supported <state>s) OK Note: get parameter range
AT+CGATT	+CME ERROR: 3 Note: Note support

13.2.3 Defined Values

<state>: indicates the state of GPRS attachment

- 0 : detached
- 1 : attached
- Other values are reserved and will result in an ERROR response to the execution command.

13.3 PDP context activate or deactivate +CGACT

13.3.1 Description

The execution command is used to activate or deactivate the specified PDP context (s). After the command has completed, the MT remains in V.25ter command state. If any PDP context is already in the requested state, the state for that context remains unchanged.

If the requested state for any specified context cannot be achieved, an ERROR or +CME ERROR response is returned. Extended error responses are enabled by the +CMEE command.

If the MT is not GPRS attached when the activation form of the command is executed, the MT first performs a GPRS attach and then attempts to activate the specified contexts. If the attach fails then the MT responds with ERROR or, if extended error responses are enabled, with the appropriate failure-to-attach error message.

If no <cid>s are specified the activation form of the command activates the first activable defined contexts. If no <cid>s are specified the deactivation form of the command deactivates all active contexts.

One PDP contexts can be activated through FLYFOT software at the same time.

The read command returns the current activation states for all the defined PDP contexts.

The test command is used for requesting information on the supported PDP context activation states.

13.3.2 Syntax

Command	Possible Response(s)
AT+CGACT=[<state> [,<cid>[,<cid>[,…]]]] Note: active the specified PDP	OK Note: succeed +CME ERROR: 3 Note: failed
AT+CGACT? Note: get PDP active state	+CGACT: <cid>, <state> [<CR><LF> +CGACT: <cid>, <state> [...] OK Note: succeed
AT+CGACT=?	+CGACT: (0,1) OK Note: get parameter range
AT +CGACT	+CME ERROR: 3 Note: not support

13.3.3 Defined Values

<state>: indicates the state of PDP context activation

- 0 : deactivated
- 1 : activated

- Other values are reserved and will result in an ERROR response to the execution command.

<cid>: a numeric parameter which specifies a particular PDP context.

Before the activation of the context, the MT has to attached himself to the GPRS network if necessary.

13.4 GPRS network registration status +CGREG

13.4.1 Description

The set command controls the presentation of an unsolicited result code +CGREG: <stat> when <n>=1 and there is a change in the MT's GPRS network registration status, or code +CGREG: <stat>[,<lac>,<ci>] when <n>=2 and there is a change of the network cell.

The read command returns the status of result code presentation and an integer <stat> which shows whether the network has currently indicated the registration of the MT. Location information elements <lac> and <ci> are returned only when <n>=2 and MT is registered in the network.

13.4.2 Syntax

Command	Possible response(s)
AT+CGREG=<n> Note: set gprs mode	OK Note: succeed
AT+CGREG? Note: get gprs state	+CGREG: <n>,<stat>[,<lac>,<ci>] OK Note: succeed
AT+CGREG=? Note: get parameter range	+CGREG: (0,1,2) OK Note: get parameter range
AT+CGREG	+CME ERROR: 3 Note: not support

13.4.3 Defined values

<n>:

- 0 : disable network registration unsolicited result code
- 1 : enable network registration unsolicited result code +CGREG: <stat>
- 2 : enable network registration and location information unsolicited result code +CGREG: <stat>[,<lac>,<ci>]

<stat>:

- 0 : not registered, ME is not currently searching a new operator to register to
- 1 : registered, home network

- 2 : not registered, but ME is currently searching a new operator to register to
- 3 : registration denied
- 4 : unknown
- 5 : registered, roaming

<lac>:

string type; two byte location area code in hexadecimal format.

<ci>:

string type; two byte cell ID in hexadecimal format

13.5 Quality of Service Profile (Requested) +CGQREQ

13.5.1 Description

This command allows the TE to specify a Quality of Service Profile that is used when the MT sends an Activate PDP Context Request message to the network.

The set command specifies a profile for the context identified by the local context identification parameter, <cid>. Since this is the same parameter that is used in the +CGDCONT command, the +CGQREQ command is effectively an extension to the +CGDCONT command. The QoS profile consists of a number of parameters, each of which may be set to a separate value.

A special form of the set command, +CGQREQ= <cid> causes the requested profile for context number <cid> to become undefined.

The read command returns the current settings for each defined context. The test command returns values supported as a compound value. If the MT supports several PDP types, the parameter value ranges for each PDP type are returned on a separate line.

13.5.2 Syntax

Command	Possible Response(s)
AT+CGQREQ=[<cid> [,<precedence>]	OK
[,<delay> [,<reliability> [,<peak>]	ERROR
[,<mean>]]]]]	
AT+CGQREQ?	+CGQREQ: <cid>, <precedence> , <delay>, <reliability>, <peak>, <mean>
	[<CR><LF>+CGQREQ: <cid>, <precedence> , <delay>, <reliability>, <peak>, <mean> [...]]
	OK
AT+CGQREQ=?	+CGQREQ: <PDP_type>, (list of supported

	<precedence>s), (list of supported <delay>s), (list of supported <reliability>s) , (list of supported <peak>s), (list of supported
	<mean>s) [<CR><LF>+CGQREQ: <PDP_type>, (list of supported <precedence>s), (list of supported
	<delay>s), (list of supported <reliability>s) , (list of supported <peak>s), (list of supported <mean>s)
	[...]] OK
AT +CGQREQ=1,1,4,5,2,14	OK
AT+CGQREQ=?	+CGQREQ:"IP",(1-3),(1-4),(1-5),(1-9),(1-31)
	+CGQREQ:"PPP",(1-3),(1-4),(1-5),(1-9),(1-31)
	OK
AT+CGQREQ?	+CGQREQ: 1,1,4,5,2,14 +CGQREQ: 3,3,7,7,15,255
	OK

13.5.3 Defined values

<cid>: numeric parameter which specifies a particular PDP context definition. Range of values is 1 to 3

<precedence>: numeric parameter which specifies the precedence class

- 0 : Subscribed precedence (Subscribed by the Network by default if value is omitted)
- 1 : High priority (Service commitments shall be maintained ahead of precedence classes 2 and 3)
- 2 : Normal priority (Service commitments shall be maintained ahead of precedence class 3.)
- 3 : Low priority (Service commitments shall be maintained after precedence classes 1 and 2)

<delay>: numeric parameter which specifies the delay class

- 0 : Subscribed
- 1 : Delay class 1
- 2 : Delay class 2
- 3 : Delay class 3
- 4 : Delay class 4

Delay Class	Delay (maximum values)			
	SDU size: 128 bytes		SDU size: 1024 bytes	
	Mean Transfer Delay (sec)	95 percentile Delay (sec)	Mean Transfer Delay (sec)	95 percentile Delay (sec)

1. (Predictive)	Subscribed	Subscribed by the Nwk / default if value is omitted		
	< 0.5		< 2	< 7
2. (Predictive)	< 5	< 25	< 15	< 75
3. (Predictive)	< 50	< 250	< 75	< 375
4. (Best Effort)	Unspecified			

<reliability>: numeric parameter which specifies the reliability class

0 : Subscribed

1 : Up to 1 000 (8 kbit/s).

2 : Up to 2 000 (16 kbit/s).

3 : Up to 4 000 (32 kbit/s).

4 : Up to 8 000 (64 kbit/s).

5 : Up to 16 000 (128 kbit/s).

6 : Up to 32 000 (256 kbit/s).

7 : Up to 64 000 (512 kbit/s).

8 : Up to 128 000 (1 024 kbit/s).

9 : Up to 256 000 (2 048 kbit/s).

Reliability Class	GTP Mode	LLC Frame Mode	LLC Data Protection	RLC Block Mode	Traffic Type
0	Subscribed	Subscribed by the Nwk / default if value is omitted			
1	Acknowledged	Acknowledged	Protected	Acknowledged	Non real-time traffic, error-sensitive application that cannot cope with data loss.
2	Unacknowledged	Acknowledged	Protected	Acknowledged	Non real-time traffic, error-sensitive application that can cope with infrequent data loss.
3	Unacknowledged	Unacknowledged	Protected	Acknowledged	Non real-time traffic, error-sensitive application that can cope with data loss, GMM/SM, and SMS.
4	Unacknowledged	Unacknowledged	Protected	Unacknowledged	Real-time traffic, error-sensitive application that can cope with data loss.

5	Unacknowledged	Unacknowledged	Unprotected	Unacknowledged	Real-time traffic, error non-sensitive application that can cope with data loss.
NOTE: For real-time traffic, the QoS profile also requires appropriate settings for delay and throughput.					

<peak>: numeric parameter which specifies the peak throughput class

0 : Subscribed

1 : Up to 1 000 (8 kbit/s).

2 : Up to 2 000 (16 kbit/s).

3 : Up to 4 000 (32 kbit/s).

4 : Up to 8 000 (64 kbit/s).

5 : Up to 16 000 (128 kbit/s).

6 : Up to 32 000 (256 kbit/s).

7 : Up to 64 000 (512 kbit/s).

8 : Up to 128 000 (1 024 kbit/s).

9 : Up to 256 000 (2 048 kbit/s).

<mean>: numeric parameter which specifies the mean throughput class

0 : Subscribed by the Nwk / default if value is omitted

1 : 100 (~0.22 bit/s).

2 : 200 (~0.44 bit/s).

3 : 500 (~1.11 bit/s).

4 : 1 000 (~2.2 bit/s).

5 : 2 000 (~4.4 bit/s).

6 : 5 000 (~11.1 bit/s).

7 : 10 000 (~22 bit/s).

8 : 20 000 (~44 bit/s).

9 : 50 000 (~111 bit/s).

10 : 100 000 (~0.22 kbit/s).

11 : 200 000 (~0.44 kbit/s).

12 : 500 000 (~1.11 kbit/s).

13 : 1 000 000 (~2.2 kbit/s).

14 : 2 000 000 (~4.4 kbit/s).

15 : 5 000 000 (~11.1 kbit/s).

16 : 10 000 000 (~22 kbit/s).

17 : 20 000 000 (~44 kbit/s).

18 : 50 000 000 (~111 kbit/s).

31 : Best effort.

If a value is omitted for a particular class, then it is considered to be unspecified.

13.6 Quality of Service Profile (Minimum acceptable) +CGQMIN

13.6.1 Description

This command allows the TE to specify a minimum acceptable profile which is checked by the MT against the negotiated profile returned in the Activate PDP Context Accept message.

The set command specifies a profile for the context identified by the local context identification parameter, <cid>. Since this is the same parameter that is used in the +CGDCONT command, the +CGQMIN command is an extension to the +CGDCONT command. The QoS profile consists of a number of parameters, each of which may be set to a separate value.

A special form of the set command, +CGQMIN= <cid> causes the minimum acceptable profile for context number <cid> to become undefined. In this case no check is made against the negotiated profile.

The read command returns the current settings for each defined context.

The test command returns values supported as a compound value. If the MT supports several PDP types, the parameter value ranges for each PDP type are returned on a separate line.

13.6.2 Syntax

Command	Possible Response(s)
AT+CGQMIN=[<cid>	OK
[,<precedence> [<delay>	ERROR
[,<reliability> [<peak>	
[,<mean>]]]]]	
AT+CGQMIN?	+CGQMIN: <cid>, <precedence>, <delay>, <reliability>, <peak>, <mean> [<cr><lf>+cgqmin: </cr><lf>+cgqmin: <cid>, <precedence>, <delay>, <reliability>, <peak>, <mean>
	[...] OK
AT+CGQMIN=?	+CGQMIN: <PDP_type>, (list of supported <precedence>s), (list of supported <delay>s), (list of supported <reliability>s) , (list of supported <peak>s), (list of supported <mean>s) [<cr><lf>+cgqmin: <pdp_type>,="" (list="" of<br=""></cr><lf>+cgqmin:> supported <precedence>s), (list of supported <delay>s), (list of supported <reliability>s) , (list of supported <peak>s), (list of supported <mean>s)
	[...] OK
AT +CGQMIN=1,1,4,5,2,31	OK

AT+CGQMIN=?	+CGQMIN:“IP”,(1-3),(1-4),(1-5),(1-9),(1-31) +CGQMIN:“PPP”,(1-3),(1-4),(1-5),(1-9),(1-31) OK
AT+CGQMIN?	+CGQMIN: 1,1,4,5,2,14
	OK

13.6.3 Defined values

<cid>: a numeric parameter which specifies a particular PDP context .

<precedence>: a numeric parameter which specifies the precedence class.

<delay>: a numeric parameter which specifies the delay class.

<reliability>: a numeric parameter which specifies the reliability class.

<peak>: a numeric parameter which specifies the peak throughput class.

<mean>: a numeric parameter which specifies the mean throughput class. If a value is omitted for a particular class then this class is not checked.

13.7 Enter data state +CGDATA

13.7.1 Description

This command causes the MT to perform the necessary actions to set up communication between the TE and the network. This may include performing a GPRS attach and one PDP context activation.

If the <cid> value is not defined to the MT, it will return an ERROR or +CME ERROR response. Otherwise, the MT issues the intermediate result code CONNECT and enters V.25ter online data state.

GPRS attachment and PDP context activation procedures may take place prior to or during the PDP startup if they have not already been performed using the +CGATT and +CGACT commands.

If no <cid> is given, the MT attempts to activate the context with available information. The other context parameters are set to their default values (No APN, default QOS parameters, dynamic IP address requested).

If the activation is successful, data transfer may proceed.

After data transfer and layer 2 protocol termination procedure completion, the V.25ter command state is re-entered and the MT returns the final result code OK.

In case of abnormal termination or start up, the V.25ter command state is reentered and the MT returns the final result code NO CARRIER or, if enabled, +CME ERROR. Attach, activate and other errors may be reported.

This command may be used in both normal and modem compatibility modes.

Remark : This command has the same effects than ATD*99***.

13.7.2 Syntax

Command	Possible Response(s)
AT+CGDATA=[<cid>]	CONNECT
	ERROR
AT+CGDATA=?	+CGDATA:
	OK
AT+CGDATA=?	+CGDATA:
	OK
AT +CGDATA=1	CONNECT

13.7.3 Defined Values

<cid>: a numeric parameter which specifies a particular PDP context definition.

13.8 GPRS mobile station class +CGCLASS

13.8.1 Description

The set command is used to set the MT to operate according to the specified GPRS mobile class. If the requested class is not supported, an ERROR or +CME ERROR response is returned.

The read command returns the current GPRS mobile class.

The test command is used for requesting information on the supported GPRS mobile classes.

13.8.2 Syntax

Command	Possible Response(s)
AT+CGCLASS= [<class>]	OK
	ERROR
AT+CGCLASS?	+CGCLASS: <class>
	OK
AT+CGCLASS=?	+CGCLASS: (list of supported <class>s)
	OK
AT +CGCLASS="CG"	OK
Note : EnterGPRS class Cmode	
AT +CGCLASS="CC"	OK

Note : EnterGSMmode	
AT +CGCLASS="A"	+CME ERROR: 150
Note : Chosen class not supported.	
AT+CGCLASS=?	+CGCLASS: ("CC","B")
	OK
AT+CGCLASS?	+CGCLASS: "CC"
	OK

13.8.3 Defined Values

<class>: a string parameter which indicates the GPRS mobile class (in descending order of functionality)

- A class A (highest)
- B class B
- CG class C in GPRS only mode
- CC class C in circuit switched only mode (lowest)

Other values are reserved and will result in an ERROR response to the set command.

If the MT is GPRS attached when the set command is issued with a <class> = CC specified, a GPRS detach request is sent to the network.

If the MT is GSM attached when the set command is issued with a <class> = CG specified, a GSM detach request is sent to the network.

Class A is not supported by TF GPRS software.

Remark : During switch-On in CG class, the MS always performs an automatic GPRS attach (the ATTACH-STATUS parameter of +WGPRS is ignored).

But if the MS is not already GPRS attached when switching from B/CC class to CG class then no automatic GPRS attach is performed.

Example about automatic attachment (see remark above) :

```

AT+CGCLASS?
+CGCLASS: "B"
OK
AT+CGATT?
+CGATT: 0
OK
AT+CGCLASS="CG"
OK
AT+CGATT?
+CGATT: 0
OK

```

```
AT+CGATT=1
OK
AT+CPOF
OK
AT+CFUN=1
OK
AT+CGCLASS?
+CGCLASS: "CG"
OK
AT+CGATT?
+CGATT: 1
OK
```

13.9 Select service for MO SMS messages +CGSMS

13.9.1 Description

The set command is used to specify the service or service preference that the MT will use to send MO SMS messages.

The read command returns the currently selected service or service preference.

The test command is used for requesting information on the currently available services and service preferences.

13.9.2 Syntax

Command	Possible Response(s)
+CGSMS= [<service>]	OK
	ERROR
+CGSMS?	+CGSMS: <service>
	OK
+CGSMS=?	+CGSMS: (list of currently available
	<service>s)
	OK
AT +CGSMS=0	OK
AT+CGSMS=?	+CGSMS: (0-3) OK

13.9.3 Defined Values

<service>: a numeric parameter which indicates the service or service preference to be used

- 0 : GPRS
- 1 : Circuit switched

- 2 : GPRS preferred (use circuit switched if GPRS is not available)
- 3 : Circuit switched preferred (use GPRS if circuit switched not available)
- Other values are reserved and will result in an ERROR response to the set command.

13.10 Show PDP address +CGPADDR

13.10.1 Descriptio

The execution command returns a list of PDP addresses for the specified context identifiers.
The test command returns a list of defined <cid>s

13.10.2 Syntax

Command	Possible response(s)
+CGPADDR=[<cid> [,<cid>	+CGPADDR: <cid>,<PDP_addr>
[,···]]]	[<CR><LF>+CGPADDR: <cid>,<PDP_addr>
	[...]]
	OK
+CGPADDR=?	+CGPADDR: (list of defined <cid>s)
	OK

13.10.3 Defined values

<cid>: a numeric parameter which specifies a particular PDP context definition. If no <cid> is specified, the addresses for all defined contexts are returned.

<PDP_address>: a string that identifies the MT in the address space applicable to the PDP. The address may be static or dynamic. For a static address, it will be the one set by the +CGDCONT command when the context was defined. For a dynamic address it will be the one assigned during the last PDP context activation that used the context definition referred to by <cid>. <PDP_address> is omitted if none is available.

Example

In this example 3 Cids are defined.

```
AT+CGPADDR=1
+CGPADDR=1,"107.210.5.4"
OK
```

```
AT+CGPADDR=?
+CGAPDDR: (1,2,4)
OK
```

```
AT+CGPADDR
```

+CGPADDR: 1,
+CGPADDR: 2,"10.3.73.151"
+CGPADDR: 4,

13.11 Request GPRS IP service 'D'

13.11.1 Description

This command causes the MT to perform whatever actions are necessary to establish communication between the TE and the external PDN.

The V.25ter 'D' (Dial) command causes the MT to enter the V.25ter online data state and, with the TE, to start the specified layer 2 protocol. The MT return CONNECT to confirm acceptance of the command prior to entering the V.25ter online data state. No further commands may follow on the AT command line.

The detailed behaviour after the online data state has been entered is described briefly in clause 9, for IP, of GSM 07.60. GPRS attachment and PDP context activation procedures may take place prior to or during the PDP startup if they have not already been performed using the +CGATT and +CGACT commands.

If <cid> is supported, its usage is the same as in the +CGDATA command. The +CGDCONT, +CGQREQ, etc. commands may then be used in the modem initialisation AT command string to set values for for PDP type, APN, QoS etc...

If <cid> is not supported or is supported but omitted, the MT attempt to activate the context using the 'Empty PDP type' (GSM 04.08). (No PDP address or APN is sent in this case and only one PDP context subscription record is present in the HLR for this subscriber.)

13.11.2 Syntax

Command	Possible responses
D*<GPRS_SC_IP>[***<cid>]# Note: Dialing	CONNECT Note: success OR ERROR Note: fail

13.11.3 Defined Values

<GPRS_SC_IP>: (GPRS Service Code for IP) a digit string (value 99), which identifies a request to use the GPRS with IP (PDP types IP and PPP)

<cid>: a digit string which specifies a particular PDP context definition.

Example

```
ATD*99***1#  
CONNECT  
ATD*99***2#  
ERROR
```

13.12 Full AT GPRS commands examples

13.12.1 Activation of an IP PDP context

Example 1 :

```
AT +CGDCONT=1, "IP", "cmnet";  
OK  
ATD*99***1#  
CONNECT
```


14 GSM string

14.1 Call forwarding

description	Command	Reponses
Register and activate unconditional call forwarding	**21*PhoneNumber#	OK
Interrogate unconditional call forwarding	*#21#	+CCFC:0,1,"+861391107****",145 OK
Active unconditional call forwarding.	*21#	OK
Deactivate unconditional call forwarding.	#21#	OK
Unregistered and deactivate unconditional call forwarding.	##21#	OK
Register and activate unconditional call forwarding on no answer	**61*PhoneNumber**time#	OK
Interrogate call forwarding on no answer.	*#61#	+CCFC: 0,1,"+861391107****",145 OK +CCFC: 1,1,"+8601062965555",145 OK
Active call forwarding on no answer	*61#	OK
Deactivate call forwarding on no answer.	#61#	OK

Unregistered and deactivate call forwarding on no answer.	##61#	OK
Register and activate call forwarding on not reachable.	**62*PhoneNumber#	OK
Interrogate call forwarding on not reachable.	*#62#	+CCFC: 0,1,"+861391107****",145 OK +CCFC: 1,1,"+861391107****",145 OK
Active call forwarding on not reachable.	*62#	OK
Deactivate call forwarding on not reachable.	#62#	OK
Unregistered and deactivate call forwarding on not reachable.	##62#	OK
Interrogate call forwarding on busy	*#67#	+CCFC: 0,1,"+861391107****",145 OK +CCFC: 1,1,"+861391107****",145 OK
Register and activate call forwarding on busy.	**67*PhoneNumber#	OK
Active call forwarding on busy	*67#	OK
Deactivate call forwarding on busy	#67#	OK
Unregistered and deactivate call forwarding on busy	##67#	OK

Unregistered and deactivate all call forwarding	##002#	OK
Unregistered and deactivate all conditional call forwarding	##004#	OK

Note: If add time for unconditional call forwarding, forwarding on not reachable and forwarding on busy, time is not available, but there're no error notification.

14.2 Change/unlock password (PIN and PIN2)

description	Command	M260 MODULE responses
Change PIN code	**04*OLDPIN*NEWPIN*NEWPIN#	OK
Unlock PIN code	**05*PUK*NEWPIN*NEWPIN#	No test condition

14.3 Call waiting

description	Command	M260 MODULE responses
Active call waiting	*43#	OK
Deactivate call waiting	#43#	OK
Interrogate call waiting status	*#43#	+CCWA: 1,1 OK +CCWA: 0,7 OK

14.4 Call barring

Description	Command	M260 MODULE response
Active call barring of outgoing call	*33*Password#	OK
Interrogate call barring of outgoing call.	*#33#	+CLCK: 1, 7 +CLCK: 1, 1 OK +CLCK: 1, 7 +CLCK: 1, 2 OK +CLCK: 1, 7 OK

Deactivate call barring of outgoing call .	#33*Password#	OK
Active call barring of outgoing international call	*331*Password#	OK
Interrogate call barring of outgoing international call.	*#331#	+CLCK: 1,7 +CLCK: 1,7 +CLCK: 1,1 +CLCK: 1,2
Deactivate call barring of outgoing international call .	#331*Password#	OK
Active call barring of outgoing international calls except to HPLMN	*332*Password#	OK
Interrogate call barring of outgoing international calls except to HPLMN	*#332#	+CLCK: 1,7 +CLCK: 1,7 +CLCK: 1,1 +CLCK: 1,2
Deactivate call barring of outgoing international calls except to HPLMN	#332*Password#	OK
Active call barring of incoming calls	*35*Password#	OK
Interrogate call barring of incoming calls .	*#35#	+CLCK: 1,1 +CLCK: 1,7 +CLCK: 1,2 +CLCK: 1,7
Deactivate call barring of incoming calls .	#35*Password#	OK
Active call barring of incoming calls if roaming.	*351*Password#	OK
Interrogate call barring of incoming calls if roaming..	*#351#	+CLCK: 1,1 +CLCK: 1,7 +CLCK: 1,2 +CLCK: 1,7
Deactivate call barring of incoming calls if roaming	#351*Password#	OK
Deactivate all call	#330*Password#	OK

barring service		
Deactivate all outgoing call barring service	#333*Password#	OK
Deactivate all call barring service	#330*Password#	OK
Change password for call barring	**03*330*OLDPWD*NEWPWD*NEW PWD#	OK
	03OLDPWD*NEWPWD*NEWPWD #	OK
	*03*330*OLDPWD*NEWPWD*NEW PWD#	OK
	*03**OLDPWD*NEWPWD*NEWPWD#	OK

14.5 Number presentation

description	Command	M260 MODULE responses
Interrogate incoming call status	*#30#	+CLIP: 0,1 OK +CLIP: 1,1 OK 其他返回值参照 CLIP 命令
Interrogate send my mobile phone number status	*#31#	+CLIR: 0, 1 OK +CLIR: 1, 1 OK 其他返回值参照 CLIR 命令
Get IMEI number.	*#06#	000000 00 000000 0

15 V24-V25 commands

15.1 Fixed DTE rate +IPR

15.1.1 Description:

This command specifies the data rate at which the DCE will accept commands.

Notes :

- Autobauding is supported (operating from 1200 to 38400 baud).
- Any AT command issued by the DTE must start with both capital 'A' and 'T' (or '/') or both lower case 'a' and 't' (or '/'), otherwise the DCE may return some garbage characters and become desynchronized. Should this happen, the DTE simply issues 'AT\r' (at 2400 or 4800 bauds) once or twice or just 'AT' (at 9600 bauds) to resynchronize the modem.
- The DTE waits for 1ms after receiving the last character of the AT response (which is always '\n' or 0x0A) to send a new AT command at either the same rate or a new rate. Should this delay be ignored, the DCE can become desynchronised. Once again, sending 'AT\r' once or twice or just 'AT' causes the DCE to recover.

Caution:

when starting up, if autobauding is enabled and no AT command has yet been received, the product sends all unsolicited responses (like RING) at 9600 bauds.

15.1.2 Syntax:

Command syntax : AT+IPR=<n> or AT+IPR=<m>

Command	Possible responses
AT+IPR? Note :	+IPR: 9600 OK Note : Current rate is 9600 bps
AT+IPR=? Note :	+IPR: (300,600,1200,2400,4800,9600,14400,19200, 3 8400,57600),(115200) OK Note : Possible value (*)
AT+IPR=38400 Note :	OK Note : Disable autobauding and set rate to 38400 bps
AT+IPR=0 Note :	OK Note : Enable autobauding

15.1.3 Defined values:

<n> : range of auto-detectable speeds (bauds)

- 0
- 2400
- 4800
- 9600
- 19200

<m>: possible speeds that can be used by the DCE (bauds)

- 300
- 600
- 1200
- 38400
- 57600
- 115200

15.2 DTE-DCE character framing +ICF

15.2.1 Description :

This command is used to determine the local serial port start-stop (asynchronous) character framing used by the DCE.

15.2.2 Syntax :

Command syntax: AT+ICF= <format>[, <parity>]

Command	Possible responses
AT+ICF? Note :	+ICF: 3,4 OK Note : Current values
AT+ICF=? Note :	+ICF: 3,4 OK Note : Possible values
AT+ICF=3,4 Note :	OK Note : New values
AT+ICF=3	OK Note : New values

15.2.3 Defined values:

<format>

0 : Autodetect (not supported)

1 : 8 Data 2 Stop (not supported)

<parity>parameter is ignored.

2 : 8 Data 1 Parity 1 Stop (not supported)

if no<parity> provided, 3 is used by default as <parity>value.

3 : 8 Data 1 Stop (supported)

<parity>parameter is ignored.

4 : 7 Data 2 Stop (not supported)

<parity>parameter is ignored.

5 : 7 Data 1 Parity 1 Stop (not supported)

if no<parity> provided, 3 is used by default as <parity>value.

6 : 7 Data 1 Stop (not supported)

<parity>parameter is ignored.

<parity>

0 : Odd (not supported)

1 : Even (not supported)

2 : Mark (not supported)

3 : Space (not supported)

4 : None (supported)

Notes :

- Setting a character framing different from 8N1 will disable autobauding if it was activated. Setting it back to 8N1 **will not** re-enable autobaud.
- Setting the framing to 8N1 will let the autobauding enabled, if it was already enabled (implying framing was already 8N1).

15.3 DTE-DCE local flow control +IFC

15.3.1 Description :

This command is used to control the operation of local flow control between the DTE and DCE.

15.3.2 Syntax :

Command syntax : AT+IFC=<DCE_by_DTE>,<DTE_by_DCE>

Command	Possible responses
AT+IFC?	+IFC: 2,2
Note :	OK
	Note : Current values
AT+IFC=?	+IFC: (0,2),(0,2)
Note :	OK

	Note : Possible values
AT+IFC=0,0	OK
Note :	Note : New values

15.3.3 Defined values :

< DCE_by_DTE >

0 : none (supported)

1 : Xon/Xoff local circuit 103 (not supported)

2 : RTS (supported)

3 : Xon/Xoff global on circuit 103 (not supported)

Important note:

when this parameter is set to 2 (DTE invokes flow control through RTS) DCE behaviour is as follows:

If the DCE has never detected RTS in the high (or ON) condition since startup, then it ignores RTS (assuming this signal is not connected). As soon as the DCE detects RTS high the signal acts on it. Therefore subsequent RTS transition to OFF will prevent the DCE from sending any further data in both online and offline modes. This behaviour allows the user to use the default settings (hardware flow control) and leave RTS disconnected. In the case where RTS is connected and is high at least once, it acts on the DCE.

< DTE_by_DCE >

0 : none (supported)

1 : Xon/Xoff circuit 104 (not supported)

2 : CTS (supported)

When this parameter is set to 0 (none) then CTS is kept high all the time.

15.4 Set DCD signal &C

15.4.1 Description :

This commands controls the Data Carrier Detect (DCD) signal.

15.4.2 Syntax :

Command syntax : AT&C<n>

Command	Possible responses
AT&C0 Note : DCD always on	OK Note : Command valid
AT&C1 Note : DCD matches state of the remote modem's data carrier	OK Note : Command valid

15.4.3 Defined values:

<n>

0 : DCD always on

1 : DCD matches state of the remote modem's data carrier

15.5 Set DTR signal &D

15.5.1 Description :

This commands controls the Data Terminal Ready (DTR) signal.

15.5.2 Syntax :

Command syntax : AT&D<n>

Command	Possible responses
AT&D0 Note : The DTR signal is ignored	OK Note : Command valid
AT&D1 Note : Modem switches from data to command mode when DTR switches from ON to OFF	OK Note : Command valid
AT&D2 Note : Upon DTR switch from ON to OFF, the call is released	OK Note : Command valid

15.5.3 Defined values:

<n>

0 : The DTR signal is ignored

1 : Modem switches from data to command mode when DTR switches from ON to OFF

2 : Upon DTR switch from ON to OFF, the call is released

15.6 Set DSR signal &S

15.6.1 Description :

This commands controls the Data Set Ready (DSR) signal.

15.6.2 Syntax :

Command syntax : AT&S<n>

Command	Possible responses
AT&S0 Note : DSR always on	OK Note : Command valid
AT&S1 Note : DSR off in command mode, DSR on in data mode	OK Note : Command valid

15.6.3 Defined values:

<n>

0 : DSR always on

1 : DSR off in command mode, DSR on in data mode

15.7 Back to online mode O

15.7.1 Description

If a connection has been established and the ME is in command mode, this command allows you to return to online data mode.

15.7.2 Syntax

Command syntax : ATO

Command	Possible responses
ATO <i>Return from offline mode to online mode</i>	OK

15.7.3 Defined values :

No parameter

15.8 Result code suppression Q

15.8.1 Description :

This command determines whether the mobile equipment sends result codes or not

15.8.2 Syntax :

Command syntax : ATQ<n>

Command	Possible responses
ATQ0 Note : DCE transmits result codes	OK Note : Command valid
ATQ1 Note : Result codes are suppressed and not transmitted	Note : No response

15.8.3 Defined values :

<n>

0 : DCE transmits result codes

1 : Result codes are suppressed and not transmitted

15.9 DCE response format V

15.9.1 Description :

This command determines whether the DCE response format uses or not the header characters <CR><LF>, and the result codes are provided as numeric or verbose.

15.9.2 Syntax :

Command syntax : ATV<n>

Command	Possible responses
ATV0 Note : DCE transmits limited headers and trailers and numeric result codes	0 Note : Command is valid (0 means OK)
ATV1 Note : DCE transmits full headers and trailers and verbose response text	OK Note : Command valid

15.9.3 Defined values :

	<n>=0	<n>=1
Information responses	<text><CR><LF>	<CR><LF> <text><CR><LF>
Result codes	<numeric code><CR>	<CR><LF> <verbose code><CR><LF>

15.10 Default configuration Z

15.10.1 Description :

This command restores the configuration profile. Any call is released.

15.10.2 Syntax :

Command syntax : ATZ

Command	Possible responses
ATZ <i>Note :</i>	Ok <i>Note : Command valid</i>

15.10.3 Defined values :

No parameter

15.11 Save configuration &W

15.11.1 Description :

This commands writes the active configuration to a non-volatile memory (EEPROM).

15.11.2 Syntax :

Command syntax : AT&W

Command	Possible responses
AT&W <i>Note : Writes current configuration to EEPROM</i>	OK <i>Note : Command valid</i>

15.11.3 Defined values :

No parameter

15.12 Auto-tests &T

15.12.1 Description :

This command allows to trigger various auto-tests.

15.12.2 Syntax :

Command syntax : AT&T<n>

Command	Possible responses
AT&T0 Note : Perform software auto-tests	OK Note : No software problem detected, all checksums are correct
AT&T1 Note : Do the audio loop test (close)	OK Note : Command valid
AT&T2 Note : Stop the audio loop test (open)	OK Note : Command valid

15.12.3 Defined values :

<n>

0 : Perform software auto-tests

The response will be OK if no software problem is detected (EEPROM, RAM and ROM checksums), otherwise a simple ERROR response is sent.

1 : Do the audio loop test (close)

This is used to validate the audio loop(microphone to speaker).

2 : Stop the audio loop test (open)

This is used to validate the audio loop(microphone to speaker).

15.13 Echo E

15.13.1 Description :

This command is used to determine whether the modem echoes characters received by an external application (DTE) or not.

15.13.2 Syntax :

Command syntax : ATE<n>

Command	Possible responses
ATE0 Note : Characters are not echoed	OK Note : Done
ATE1 Note : Characters are echoed	OK Note : Done

15.13.3 Defined values :

<n>

0 : Characters are not echoed

1 : Characters are echoed

15.14 Restore factory settings &F

15.14.1 Description :

This command is used to restore the factory settings from EEPROM.

15.14.2 Syntax :

Command syntax : AT&F[<n>]

Command	Possible responses
AT&F Note : Ask for restoring the factory settings	OK Note : Done
AT&F0 Note : idem	OK Note : Done

15.14.3 Defined values :

<n>

0 : restore factory setting

No other value supported

15.15 Display configuration &V

15.15.1 Description

This command is used to display the modem configuration.

15.15.2 Syntax :

Command syntax : AT&V<n>

The parameters displayed are the following :

Q:val1, V:val2, S0:val3, S2:val4, S3:val5, S4:val6, S5:val7,
+CR:val8, +CRC:val9, +CMEE:val10, +CBST:val11,
+SPEAKER:val12, +ECHO:val13, &C:val14, &D:val15, %C:val16
+IPR:val17, +ICF:val18, +IFC:val19

Command	Possible responses
AT&V <i>Note : Display active parameters in RAM</i>	Q:0 V:1 S0:000 S2:043 S3:013 S4:010 S5:008 +CR:0 +CRC:0 +CMEE:0 +CBST:0,0,1 +SPEAKER:0 +ECHO:0,0 &C:1 &D:2 %C:0 +IPR:9600 +ICF:3,4 +IFC:2,2 OK <i>Note : Done</i> <i>For Echo the first value corresponds to Echo cancellation 1.</i>

15.15.3 Defined values :

<n>

0 : Display the modem configuration in RAM. (default value if no parameter provided)

1 : Display the modem configuration in EEPROM.

2 : Display the modem factory configuration.

15.16 Data / Commands Multiplexing +WMUX

15.16.1 Description

This specific command allows to manage the data / AT commands multiplexing mode. See appendix 18.7 for the Data / Commands multiplexing protocol description.

15.16.2 Syntax

Command syntax AT+WMUX=<mode>

Command	Possible responses
AT+WMUX=?	+WMUX: (0-1) OK
AT+WMUX?	+WMUX: 0 OK Note : Data / Commands multiplexing disabled.
AT+WMUX=1 Note : Enable Data / Commands multiplexing.	OK

15.16.3 Defined values

<mode>

0: Multiplexing disabled. When the product is online (data communication in progress), no AT command can be used (default).

1: Multiplexing enabled. Data flows and AT commands are multiplexed while in online mode (data communication in progress).

15.17 Request identification information I

15.17.1 Description :

This command causes the product to transmit one or more lines of specific information text.

15.17.2 Syntax :

Command syntax : ATI<n>

Command	Possible responses
ATI0 Note : Manufacturer and model identifications	FLYFOT MODEM MULTIBAND 900 1800 OK Note : GSM 900 MHz primary band
ATI3 Note : Revision identification	FLYFOT M260-VER-01.00 Aug 12 2006

	14:06:42 OK Note : Software release 4.40, generated on the 05 th of February 2003
--	---

15.17.3 Defined values :

<n>

0 : Display manufacturer followed by model identification.

(equivalent to +CGMI and +CGMM).

3 : Display revision identification

(equivalent to +CGMR).

4 : Display modem configuration in RAM

(equivalent to &V0).

5 : Display modem configuration in EEPROM

(equivalent to &V1).

Other values : "OK" string is sent back.

16 Data commands

16.1 Using AT Commands during a data connection

To use AT Commands during a data connection (e.g. while the product is in online mode), it is necessary either to switch to offline mode, or to use the **specific +WMUX** command to enable Commands / Data multiplexing.

16.1.1 Switch from online to offline mode

To switch from online mode to offline mode, the “+++” sequence must be sent. Following this, the product gets back to offline mode with an “OK” response, and a AT command can be sent.

Note : the “+++” sequence will only work with the +ICF command using one of the following settings:

- 8 data bits, with no parity
- 7 data bits, with even parity

16.1.2 Switch from offline to online mode

See the ATO command description.

16.2 Bearer type selection +CBST

16.2.1 Description :

This command applies to both **outgoing** and **incoming data calls**, but in a different way. For an outgoing call, the two parameters (e.g. <speed> and <ce>) are meaningful, whereas for an incoming call, only the <ce> parameter is used.

Note 1) For incoming calls, if <ce> is set to ‘T’ only and the network offers only ‘NT’ or vice versa, then the call is released.

Note 2) Values 2 and 3 for <ce> parameter are equivalent to former values 100 and 101. Those values are managed for compatibility purpose, but they shouldn’t be used in new code (2 as former 100, and 3 as former 101).

16.2.2 Syntax :

Command syntax: AT+CBST= <speed>, <name>, <ce>

Command	Possible responses
AT+CBST=? Note : Test command	+CBST: (7,71),(0),(1) OK Note : Data 14,4 kbps not supported
AT+CBST=? Note : Test command	+CBST: (7,71),(0),(1) OK Note : Data 14,4 kbps supported
AT+CBST=7,0,1	OK

Note : Ask for a bearer	Note : Bearer supported
AT+CBST?	+CBST:7,0,1 OK
Note : Current values	Note : Command valid
AT+CBST=81,0,0	+CME ERROR : 4
Note : Ask for a bearer	Note : Bearer not supported

16.2.3 Defined values :

<speed>

0 (default): Autobauding (modem type : none)

- 1: 300 bps (modem type: V.21)
- 2: 1200 bps (modem type: V.22)
- 3: 1200/75 bps (modem type: V.23)
- 4: 2400 bps (modem type: V.22bis)
- 5: 2400 bps (modem type: V.26ter)
- 6: 4800 bps (modem type: V.32)
- 7: 9600 bps (modem type: V.32)
- 8: Specific
- 12: 9600 bps (modem type: V.34)
- 14(*): 1400 bps (modem type : V.34)
- 65: 300 bps (modem type: V.110)
- 66: 1200 bps (modem type: V.110)
- 68: 2400 bps (modem type: V.110)
- 70: 4800 bps (modem type: V.110)
- 71: 9600 bps (modem type: V.110)
- 75(*): 14400 bps (modem type: V.110)

(*)This speed configures data and fax 14.4 kbps bearers.

<name>

No data compression is provided and only asynchronous modem is supported :

<name> = 0.

<ce> : Connection element

- 0: Transparent only
- 1(default) : Non transparent only
- 2: Transparent preferred
- 3: Non transparent preferred

16.3 Service reporting control +CR

16.3.1 Description :

This command enables a detailed type of service reporting in the case of **incoming or outgoing data calls**. Before sending the CONNECT response to the application, the product will specify the type of data connection that has been set up.

These report types are :

+CR: ASYNC	For asynchronous transparent
+CR: REL ASYNC	For asynchronous non-transparent

16.3.2 Syntax :

Command syntax : AT+CR=<mode>

Command	Possible responses
AT+CR=0 Note : Extended reports disabled	OK Note : Command valid
AT+CR=1 Note : Extended reports enabled	OK Note : Command valid
AT+CR?	+CR: 1 OK
AT+CR=?	+CR: (0,1) OK

16.3.3 Defined values:

<mode>:

0: disable extended reports

1: enable extended reports

16.4 Cellular result codes +CRC

16.4.1 Description :

This command allows more detailed ring information for an **incoming call** (voice or data). Instead of the string “RING”, an extended string is used to indicate which type of call is ringing (e.g. +CRING: VOICE).

These extended indications are:

+CRING: ASYNC	for asynchronous transparent
+CRING: REL ASYNC	for asynchronous non-transparent
+CRING: VOICE	for normal speech.
+CRING : FAX	for fax calls

16.4.2 Syntax :

Command syntax : AT+CRC=<mode>

Command	Possible responses
AT+CRC=0 Note : Extended reports disabled	OK Note : Command valid
AT+CRC=1 Note : Extended reports enabled	OK Note : Command valid
AT+CRC?	+CRC: 1 OK
AT+CRC=?	+CRC: (0,1) OK

16.4.3 Defined values:

<mode>:

0: disable extended reports

1: enable extended reports

16.5 DTE-DCE local rate reporting +ILRR

16.5.1 Description :

This parameter controls whether the extended-format “+ILRR:<rate>” information text is transmitted from the DCE to the DTE or not. The <rate> value reported represents the current (negotiated or renegotiated) DTE-DCE speed rate.

If enabled, the intermediate result code is transmitted in an **incoming or outgoing data call**, after any data compression report, and before any final result code (CONNECT).

16.5.2 Syntax :

Command syntax : AT+ILRR = <value>

Command	Possible responses
AT+ILRR=0 Note : Local port rate report disabled	OK Note : Command valid
AT+ILRR=1 Note : Local port rate report enabled	OK Note : Command valid
AT+ILRR?	+ILRR: 1 OK
AT+ILRR=?	+ILRR: (0,1) OK

16.5.3 Defined values:

<value>:

0: disable local port rate report

1: enable local port rate report

<rate> can take the following values: 300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200 (kbps).

17 TCP/IP

17.1 AT+ CIPSTART

AT+CIPSTART Start up a connection	
AT+ CIPSTART ="TCP"/"UDP",IP_AD DRESS/"DOMAIN_N AME",PORT	Response This Command will start the process of establishing a connection. there are two kinds of connection: TCP And UDP. For establishing a connection, it is necessary to know IP address or Domain name and port of remote server. 1) If format is right OK Otherwise ERROR 2) If Connection is established Successfully CONNECT OK Otherwise CONNECT FAIL
	Parameter "TCP" / "UDP" : "TCP" Establish a TCP connection "UDP" Establish a UDP connection IP_ADDRESS: remote server IP address " DOMAIN_NAME": remote server Domain Name PORT: remote server port
Reference	Note

17.2 AT+CIPSEND

AT+CIPSEND Send data	
AT+CIPSEND<C R >	Response This Command is used to send data on the TCP or UDP connection that has been established already. Ctrl-Z is used as a termination symbol.
Back of ">", Text is	There are at most 1024 bytes that can be sent each time.

entered <Ctrl-Z>	1) OK 2) If sending successfully SEND SUCCESS 3) If error is occurred SEND FAIL
AT+ CIPSEND =< data length >	Response This command is used to send fixed length of data. in this way termination symbol is not used any more. 1) OK 2) If sending successfully SEND SUCCESS 3) If error is occurred SEND FAIL
	Parameter < data length > the length of data that would be sent
Reference	Note : length less than 1024

17.3 AT+CIPCLOSE

AT+CIPCLOSE Close connection	
Action command AT+ CIPCLOSE	Response This command is used to close TCP or UDP connection. After this command, data can not be sent or received any more. However, the PDP context is still active when connecting GPRS network and CSD is still connected when connecting GSM network.
	Parameter none
Reference	Note

17.4 AT+CIPSHUT

AT+CIPSHUT Detach from GPRS network	
Action command AT+ CIPSHUT	Response This command is used to shut down connection After this command executed, it will generally get a different IP address when starting up a

	new connection. OK
	Parameter none
Reference	note

17.5 AT+CLPORT

AT+CLPORT Set local TCP or UDP port	
AT+ CLPORT = "TCP"/"UDP","PORT"	Response This command is used to set local port for connection. In default, Local port 2020 is used for TCP connection and 3030 is used for UDP connection.
	Parameter "TCP" : Set local TCP port "UDP" : Set local UDP port "PORT": port number range from 0 to 65535
Reference	Note

17.6 AT+CSTT

AT+CSTT Set APN, user name, password for GPRS attachment	
AT+ CSTT = <APN>, <USER ID>, <PASSWORD>	Response This command is used to set APN, user name and password for GPRS attachment OK
	Parameter APN= "CMNET" , access point name USER ID= " " , PASSWORD= " "
Reference	Note

17.7 AT+CIICR

AT+CIICR Attach to GPRS network	
Test command AT+ CIICR	Response This command is used to activate a PDP context or establish a CSD connection for wireless connection OK,

	Parameter none
Reference	Note

17.8 AT+CIFSR

AT+CIFSR Get local IP address	
Test command AT+ CIFSR	Response This command is used to get local IP address assigned by GPRS or GSM network If wireless connection has been established successfully: <IP Address> Otherwise OK
	Parameter none
Reference	Note

17.9 AT+CIPSTATUS

AT+CIPSTATUS Query Status	
Action command AT+ CIPSTATUS	Response This command is used to query current status of connection progress. State 0 IP INITIAL Initializing state 1 IP START starting state 2 IP CONFIG 3 IP IND activating PDP context/establishing CSD connection 4 IP GPRSACT PDP context activated/CSD connection established 5 IP STATUS local IP address got 6 TCP/UDP CONNECTING connecting 7 IP CLOSE connection closed 8 CONNECT OK TCP/UDP connection established
Reference	Note

17.10 AT+CIPHEAD

AT+CIPHEAD Set whether add a header to data received	
Test command AT+ CIPHEAD=?	Response +CIPHEAD:(0-NO HEADER,1-ADD HEADER) OK
AT+CIPHEAD?	Response <mode> OK
	Parameter See set command
AT+ CIPHEAD =<mode >	Response This command is used to add a header to data received from TCP/UDP connection,distinguishing data received by other way such as SMS OK, ERROR
	Parameter <mode> 0 no header 1 set header,
Reference	Note The header format is "+IPD(data length):"

17.11 AT+CIPATS

AT+ CIPATS Set auto send timer	
Test command AT+ CIPATS=?	Response +CIPATS:(0-NOT AUTO SEND,1-AUTO SEND) OK
AT+ CIPATS = <mode>,<time>	Parameter <mode> 0 not set timer of sending data

	1 set timer of sending data <time> time of sending data timer. unit of second
Reference	Note

17.12 AT+CIPSPRT

AT+CIPSEND Set prompt of '>' when sending data	
Test command AT+ CIPSPRT=?	Response +CIPSPRT: (0-NOT PROMPT,1-PROMPT) OK
	Parameter See set command
AT+CIPSPRT?	Response <send_prompt> OK
	Parameter See set command
AT+ CIPSPRT = <send_prompt>	Response OK, ERROR
	Parameter < send_prompt > 0 no prompt after issuing AT+CIPSEND command 1 with ">" prompt after issuing AT+CIPSEND command
Reference	Note

17.13 AT+CIPCSGP

AT+CIPCSGP Set CSD or GPRS for wireless connection mode	
Test command AT+ CIPCSGP=?	Response +CIPCSGP: 0-CSD,DIAL NUMBER,USER NAME,PASSWORD,RATE(0,3) +CIPCSGP: 1-GPRS,APN,USER NAME,PASSWORD OK
	Parameter See set command
Query command AT+CIPCSGP?	Response <mode> OK

	Parameter See set command
AT+ CIPCSGP = <mode>,[<apn>,< user_ID>,<pwd>,</ <dial_num>,<user _ID>,<pwd>,<rate >]	Response OK
	Parameter <mode> 0 CSD connection mode 1 GPRS connection mode CSD connection parameters: <dial num> dial number, default is 17201 <user ID> user name ,default is 172 <pwd> password, default is 172 <rate>connection rate, 0 2400bps 1 4800bps 2 9600bps 3 14400bps default connection rate is 9600bps GPRS connection parameters: <apn> access point name, default is CMNET <user ID> user name, default is null <pwd> password, default is null
Reference	Note

17.14 AT+CDNSCFG

AT+CDNSCFG Configure DNS	
Execute command AT+ CDNSCFG= <pri_dns>,[<sec_dn s>]	Response OK
Query command AT+CDNSCFG?	Response <pri_dns>,[<sec_dns>] OK
	Parameter <pri_dns> : Primary DNS IP Address <sec_dns> :Secondary DNS IP Address

Reference	Note
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17.15 AT+CDNSORIP

AT+CDNSORIP Set Link the SERVER is IP address or domain name	
Set command	Response
AT+ CDNSORIP= <mode>	OK
AT+ CDNSORIP=1	OK Note: Set Link the SERVER is domain name
Query command	Response
AT+CDNSORIP?	1 OK
	Parameter <mode>: 0:Set Link the SERVER is IP address. 1:Set Link the SERVER is domain name.
Reference	Note

17.16 TCP/IP Examples

17.16.1 以 GPRS 方式连接到 SERVER 端 IP 地址并开始传送数据

1. AT+CIPCSGP=1,"CMNET"
2. AT+CIPSTART="TCP", 218.246.2.150,2020
3. AT+CIPSEND
4. AT+CIPCLOSE
5. AT+CIPSHUT

17.16.2 以 CSD 方式连接到 SERVER 端 IP 地址并开始传送数据

1. AT+CIPCSGP=0,17201,172,172,2
2. AT+CIPSTART="TCP", 218.246.2.150,2020
3. AT+CIPSEND
4. AT+CIPCLOSE
5. AT+CIPSHUT

17.16.3 连接到 SERVER 端 UDP 地址并开始传送数据

1. AT+CIPSTART="UDP", 218.246.2.150,3030
2. AT+CIPSEND
3. AT+CIPCLOSE
4. AT+CIPSHUT

18 Specific AT commands

18.1 General Indications +WIND

18.1.1 Description :

FLYFOT has introduced a general mechanism to send unsolicited non-standardized indications to the application. These indications are:

- indication of a physical change on the SIM detect pin from the connector (meaning SIM inserted, SIM removed)
- indication during mobile originated call setup that the calling party is ringing.
- Indication of the availability of the product to receive AT commands after boot.

For each indication, a “bit flow” has to be indicated.

18.1.2 Syntax:

Command syntax: AT+WIND= <IndLevel >

Command	Possible responses
AT+WIND?	+WIND: 0OK
AT+WIND=255	OK
Note: The SIM has been removed	+WIND: 0 Note: The SIM presence pin has been detected as “SIM removed”
Note: The SIM has been inserted	+WIND: 1 Note: The SIM presence pin has been detected as “SIM inserted”
Note: The network service is available for an emergency call	+WIND: 7
Note: The initialization has been completed	+WIND: 4

The AT+WIND? command is supported and indicates the <allowed bit flows>.

AT+WIND settings are automatically stored in non volatile memory (EEPROM).

This means the &W command does not need to be used and the selected flows are always activated after boot.

Default value is 0: no flow activated, no indication.

AT+WIND=? gives the possible value range (0-4095)

The unsolicited response will then be:

+WIND : <event> [,<idx>]

<idx>: Call identifier, defined in +CLCC command.

Or for event 10:

+WIND: <event>,<phonebook>,<status>,...,<phonebook>,<status>

Or for event 11:

+WIND: <event>,[“<checksum of SM>”],[“<checksum of FD>”],[“<checksum of ON>”],[“<checksum of SN>”],[“<checksum of EN>”],[“<checksum of LD>”]

18.1.3 Defined values :

<IndLevel>

0 : no unsolicited “+WIND: <IndNb>” will occur (default value)

1 (bit 0) :	Hardware SIM Insert / Remove indications (Rack open/close) or SIM presence after software reset
2 (bit 1) :	Calling party alert indication
4 (bit 2) :	Product is ready to process AT commands (except phonebooks, AOC, SMS), but still in emergency mode.
8 (bit 3) :	the product is ready to process all AT commands, at the end of init or after swapping to ADN in case of FDN configuration
16 (bit 4) :	a new call identifier has been created (after an ATD command, +CCWA indication)
32 (bit 5) :	an active, held or waiting call has been released by network or other party
64 (bit 6) :	Network service available indication
128 (bit 7) :	Network lost indication
256 (bit 8) :	Audio ON indication
512 (bit 9) :	SIM Phonebooks reload status
1024 (bit 10) :	Sim phonebooks checksum indication
2048 (bit 11) :	Interruption indication (only if FTR_INT is activated)

Combination (addition of the values) is used to allow more than one indication

flow : $0 \leq \text{IndLevel} \leq 4095$

The response is OK if the values are in the previous range.

The supported events are: <event>

0 :	The SIM presence pin has been detected as “SIM removed”
1 :	The SIM presence pin has been detected as “SIM inserted”
2 :	Calling party is alerting
3 :	Product is ready to process AT commands (except phonebooks, AOC, SMS), at init or after AT+CFUN=1
4 :	Product is ready to process all AT commands, end of phonebook init or swap (FDN to ADN)
5 :	Call <idx> has been created (after ATD or +CCWA...)
6 :	Call <idx> has been released, after a NO CARRIER, a +CSSU: 5 indication, or after the release of a call waiting
7 :	The network service is available for an emergency call.
8 :	The network is lost.
9 :	Audio ON.
10 :	Show reload status of each SIM phonebook after init phase (after Power-ON or SIM insertion).
11 :	Show the checksum of SIM phonebooks after loading
12 :	An interruption has occurred

Or for event 10:

<phonebook> : SIM phonebook

“SM”

“FD”

“ON”

“SN”

“EN”

<status> :

0 : Not Reloaded from SIM (no change since last init or SIM removal)

1 : Reloaded from SIM to internal memory (at least one entry has changed)

Or for event 11:

<checksum> : 128-bit “fingerprint” of the phonebook.

Note : If the service of the phonebook is not loaded or not present, the checksum is not displayed and two comas without checksum are displayed (,,).

18.2 Analog digital converters measurements +ADC

18.2.1 Description:

This command gets the (DC level * 1024) of ADC A, ADC B, and possibly ADC C. These voltages are coded on 12 bits..

18.2.2 Syntax :

Command syntax : AT+ADC=<n>

Response syntax : +ADC: <ADCValA>,<ADCValB>[,<ADCValC>]

Command	Possible responses
AT+ADC=? Note : Ask for the list of possible values	+ADC: (0-1) Note : possible values 0 or 1
AT+ADC=0 Note : Select 2 converters (mode 0)	OK Note : 2 converters mode selected
AT+ADC? Note : Ask for the current values of converters in mode 0	+ADC: 500,23 OK Note : Adc A, Adc B on 12 bits
AT+ADC=1 Note : Select 3 converters (mode 1)	OK Note : 3 converters mode selected
AT+ADC? Note : Ask for the current values of converters in mode 1	+ADC: 712,23,23 OK Note: Adc A, Adc B, Adc C on 12 bits

18.2.3 Defined values:

<n>

0 : Select 2 converters

1 : Select 3 converters

<ADCValA>

ADC A value, coded on 12 bits. The value returned includes the resistor bridge.

These values are updated every 10 seconds. Displayed on modes 0 and 1.

<ADCValB>

ADC B value, coded on 12 bits. Displayed on modes 0 and 1.

<ADCValC>

ADC C value, coded on 12 bits. Displayed only on mode 1.

18.3 Mobile Equipment event reporting +CMER

18.3.1 Description :

This command enables or disables sending of unsolicited result codes in the case of a key press.

18.3.2 Syntax :

Command Syntax: AT+CMER=<mode>,<keyp>,<disp>,<ind>,<bfr>

Response syntax (key press event report) : +CKEV : <key>, <press>

Response syntax (indicator event report) : +CIEV: <indresp>,<value>.

Command	Possible responses
AT+CMER=,1 Note : Ask key press event report	OK
	+CKEV:12,1 +CKEV:12,0 Note : Key 12 has been pressed and released.
AT+CMER?	+CMER: 3,1,0,0,0 OK

18.3.3 Defined values :

Important note : The parameters <mode>, <disp> and <bfr> are not handled.

<keyp> (keypad) :

0 : No keypad event reporting.

1 : Keypad event reporting are routed using unsolicited code. Only the key pressings not caused by +CKPD are indicated.

2 : Keypad event reporting are routed using unsolicited code. All key pressings are indicated.

Note: As AT software does not manage the emulation of key press, the values 1 and 2 lead to the same results.

<ind>

0 : no indicator event reporting

1 : indicator event reporting using unsolicited result code. Only the indicator events not caused by +CIND shall be indicated by the TA to the TE

2: indicator event reporting using unsolicited result code. All indicator events shall be directed from TA to TE

<key> : Keyboard map is (5,5)

0	1	2	3	4
5	6	7	8	9
10	11	12	13	14
15	16	17	18	19
20	21	22	23	24

<press>

1: key press

0: key release

<indresp> : indicator order number (as specified for +CIND)

<value> : new value of the indicator

18.4 Indicator control +CIND

18.4.1 Description :

This command is used to set the values of ME indicators. If ME does not allow setting of indicators or ME is not currently reachable, an error code is returned.

18.4.2 Syntax :

Command Syntax: AT+CIND=[<ind>[,<ind>[,...]]]

Response syntax : +CIND: <descr>[,<descr>[,...]]

Command	Possible responses
AT+CIND=[<ind>[,<ind>[,...]]]	+CME ERROR: <err> Note : ME not reachable
AT+CIND=[<ind>[,<ind>[,...]]]	OK
AT+CIND? Note: read ME indicators current values	+CIND: <descr>[,<descr>[,...]] OK
AT+CIND=? Note: read possible value for ME indicators	+CIND: ("battchg",(0-5)),("signal",(0-5)),("service",(0-1)),("message",(0-1)),("call",(0-1)),("roam",(0-1)),("smsfull",(0-1)) OK

18.4.3 Defined values :

<ind>:

0: indicator is OFF or in state which can be identified as “OFF” state

1: indicator is ON or in a state that is more substantial than “OFF” state

2: this value is more substantial than 1, and so on.

Note: If the indicator is a simple ON/OFF style element, it has values 0 and 1.

<descr>:

"battchg" : battery charge level (0 - 5)

"signal" : signal quality (0 - 5)

"service" : service availability (0 - 1)

"message" : message received (0 - 1)

"call" : call in progress (0 - 1)

"roam" : roaming indicator (0 - 1)

"smsfull" : SMS memory storage status in the MT (0 - 1)

0 : memory locations are available

1 : memory full

18.5 Mobile equipment control mode +CMEC

18.5.1 Description :

This command selects the equipment which operates ME keypad, writes to ME display and sets ME indicators. If operation mode is not allowed by the ME, +CME ERROR: <err> is returned

18.5.2 Syntax :

Command Syntax: AT+CMEC=[<keyp>[,<disp>[,<ind>]]]

Response syntax : +CMEC: <keyp>,<disp>,<ind>

Command	Possible responses
AT+CMEC=[<keyp>[,<disp>[,<ind>]]]	+CME ERROR: <err>
AT+CMEC=[<keyp>[,<disp>[,<ind>]]]	OK
AT+CMEC?	+CMEC: 2,0,0 OK
AT+CMEC=?	+CMEC: (2),(0),(0) OK Note: no change allowed

18.5.3 Defined values:

<keyp>:

- 0 : ME can be operated only through its keypad (execute command of +CKPD cannot be used)
- 1 : ME can be operated only from TE (with command +CKPD)
- 2 : ME can be operated from both ME keypad and TE

<disp>:

- 0 : only ME can write to its display (command +CDIS can only be used to read the display)
- 1 : only TE can write to ME display (with command +CDIS)
- 2 : ME display can be written by both ME and TE

<ind>:

- 0 : only ME can set the status of its indicators (command +CIND can only be used to read the indicators)
- 1 : only TE can set the status of ME indicators (with command +CIND)
- 2 : ME indicators can be set by both ME and TE

18.6 Read Language Preference +WLPR

18.6.1 Description :

Read a Language Preference value of EF-LP. The first indices should have the highest priority.

18.6.2 Syntax :

Command syntax: AT+WLPR=<index>

Response syntax: +WLPR: <value>

Command	Possible responses
AT+WLPR? Note : Read command	+WLPR: 4 OK Note : Four language preferences are available in EF-LP
AT+WLPR=1 Note : Read first EF-LP index value	+WLPR: 5 OK Note : Language preference is 5

18.6.3 Defined values:

<index>

offset in the available languages range (SIM dependant).

<value>

Exemple of values for language : (see 23038)

<value>	Language
0	German
1	English
2	Italian
3	French
4	Spanish
5	Dutch
6	Swedish
7	Danish
8	Portuguese
9	Finnish
10	Norwegian
11	Greek
12	Turkish
13	Hungarian
14	Polish
32	Czech
33	Hebrew
34	Arabic
35	Russian

18.7 Write Language Preference +WLPW

18.7.1 Description :

Write a Language Preference value in EF-LP

18.7.2 Syntax :

Command syntax: AT+WLPW=<index >,<value>

Response syntax: OK or +CME ERROR: <err>

Command	Possible responses
AT+WLPW=1,5 <i>Note : Write Lang Pref equal to 5 in EF-LP with index 1</i>	OK <i>Note : EF-LP correctly updated</i>

18.7.3 Defined values :

<index>:

offset in the available languages range (SIM dependant).

<value>

See <value> examples above.

18.8 Read GPIO value +WIOR

18.8.1 Description

Read the requested GPI or GPIO pin value.

- Note : by default (e.g. after a reset), the I/O ports configuration is set by the +**WIOM** command.
- This command is allowed only on a Gpio not allocated by an Open-AT embedded application or for bus operations.

18.8.2 Syntax

Command syntax: AT+WIOR=<index>

Response syntax: +WIOR: <value>

Command	Possible responses
AT+WIOR=0 <i>Read I/O (number 0) value</i>	+WIOR: 0 OK <i>GPIO number 0 is reset</i>

18.8.3 Defined values

<index>

Eight I/O ports are available. The <index> value is between 0 and 7.

<value>

0: I/O port number <index> is reset.

1: I/O port number <index> is set.

18.9 Write GPIO value +WIOV

18.9.1 Description

Set the requested GPO or GPIO pin value.

Note :

- by default (after a reset), the I/O ports configuration is set by the +WIOM command.
- This command is allowed only on a GPIO not allocated by the Open-AT embedded application or for bus operations.

18.9.2 Syntax

Command syntax: AT+WIOV=<index>,<value>

Command	Possible responses
AT+WIOV=2,0 <i>Reset I/O (number 2)</i>	OK <i>GPIO value is written</i>

18.9.3 Defined values

<index>

Eight I/O ports are available. The <index> value is between 0 and 7.

<value>

0: I/O port number <index> is reset.

1: I/O port number <index> is set.

18.10 Input/Output Management +WIOM

18.10.1 Description

This **specific** command allows to set the default GPIOs configuration (input or output) after reset, and each GPIO default value (if set as an output) after reset.

Note :

- This command is allowed only on a GPIO not allocated by the Open-AT embedded application or for bus operations.

18.10.2 Syntax

Command Syntax AT+WIOM=[<GpioDir>],[<GpioVal>]

Command	Possible responses
AT+WIOM?	+WIOM: 255,0

	OK On reset, all GPIOs are set to 0, as an output.
AT+WIOM=?	+WIOM: (0-255),(0-255) OK Range allowed for the parameters.
AT+WIOM=254 Set GPIO 0 as an input, and all others as outputs.	OK
AT+WIOM=,128 Set GPIO8 or GPO 3 default output value to 1.	OK
AT+WIOM?	+WIOM: 254,128 OK

18.10.3 Defined values

<GpioDir> : Bit table parameter indicating each GPIO direction.

0 : input

1 : output (default value).

Default value : 255 (all GPIOs set as outputs).

<GpioVal> : Bit table parameter indicating each **output-configured GPIO value** (each bit gives the corresponding GPIO default value).

0 : reset (default value)

1 : set

Remark : the GPIOs set as inputs by the <GpioDir> parameter are not affected by the value set by the <GpioVal> parameter.

Notes :

- <GpioDir> bit values for GPI and GPO are ignored.
- <GpioVal> bit values for GPI are ignored.

18.11 Play tone +WTONE

18.11.1 Description :

This specific command allows a tone to be played on the current speaker or on the buzzer. Frequency, gain and duration can be specified.

18.11.2 Syntax :

Command syntax: AT+WTONE=<mode>[,<dest>,<freq>,<gain>,<duration>]

Response syntax: OK or +CME ERROR: <err>

Command	Possible responses
AT+WTONE=1,1,300,9,50	OK
Note : Play a tone	Note : Done
AT+WTONE=0	OK
Note : Stop playing	Note : Done
AT+WTONE=?	OK
Note : Test command	Note : Done
AT+WTONE?	ERROR
Note : Current value	Note :

18.11.3 Defined values :

<mode>

0: Stop playing.

1: Play a tone

<dest>: This parameter sets the destination (mandatory if <mode>=1)

1: Speaker

2: Buzzer

<freq> : This parameter sets tone frequency (in Hz) (mandatory if <mode>=1).

If <dest> = 1 (speaker), range is 1 Hz to 3999 Hz.

If <dest> = 2 (buzzer), range is 1 Hz to 3999 Hz.

<gain> : This parameter sets the tone gain. The default value is 9.

Range of values is 0 to 15.

<gain>	Speaker (db)	Buzzer (db)
0	0	-0.25
1	-0.5	-0.5
2	-1	-1
3	-1.5	-1.5
4	-2	-2
5	-3	-3
6	-6	-6
7	-9	-9
8	-12	-12
9	-15	-15
10	-18	-18
11	-24	-24

12	-30	-30
13	-36	-40
14	-42	-infinite
15	-infinite	-infinite

<duration>: This parameter sets tone duration (in unit of 100 ms).

Range of values is 0 to 50 (0 is default value, 1 -> 0,1 s., 50 -> 5 s.)

Remark : when **<duration>** = 0, the duration is infinite, and the tone should be stopped by AT+WTONE=0.

18.12 Play DTMF tone +WDTMF

18.12.1 Description :

This **specific** command allows a DTMF tone to be played on the current speaker. DTMF, gain and duration can be specified.

Remark : This command is only used to play a DTMF tone. To send a DTMF over the GSM network, use the +VTS command.

18.12.2 Syntax :

Command syntax: AT+WDTMF=<mode>[,<dtmf>,<gain>,<duration>]

Response syntax: OK or +CME ERROR: <err>

Command	Possible responses
AT+WDTMF=1,"*",9,50	OK
Note : Play a DTMF tone	Note : Done
AT+WDTMF=0	OK
Note : Stop playing	Note : Done
AT+WDTMF=?	+WDTMF: (0-1),(0-9,*,#,A-D),(0-
Note : Test command	15),(0-50)
	OK
	Note : Done
AT+WDTMF?	ERROR
Note : Current value	Note :

18.12.3 Defined values :

<mode>

0: Stop playing.

1: Play a DTMF tone

<dtmf> : This parameter sets the DTMF to play (mandatory if <mode>=1).

Value must be in {0-9,*,#,A-D}

<gain>: This parameter sets tone gain. The values are identical to those of the +WTONE (speaker) command. The default value is 9.

Range of values is 0 to 15 (see array on § 18.11.3)

<duration>: This parameter sets the tone duration (in unit of 100 ms).

Range of values is 0 to 50 (0 is default value, 1 -> 0,1 s., 50 -> 5 s.)

Remark : when **<duration>** = 0, the duration is infinite, and the DTMF tone can be stopped by AT+WDTMF=0.

18.13 FLYFOT Downloading +WDWL

18.13.1 Description :

This specific command switches the product to download mode. Downloading is performed using the 1K-XMODEM protocol.

18.13.2 Syntax :

Command syntax: AT+WDWL

Command	Possible responses
AT+WDWL Note : Switch on downloading mode	+WDWL: 0 Note : Start the downloading
	...
	Note : Downloading in progress
	AT+CFUN=1
	Note : Reset the product at the end
	OK
	Note : reset completed, new software
	running

18.13.3 Defined values :

No parameter

18.14 FLYFOT Voice Rate +WVR

18.14.1 Description :

This specific command allows the voice rate for bearer voice to be configured (available for outgoing calls only).

18.14.2 Syntax :

Command syntax : AT+WVR=<n>

Command Syntax	Return
AT+WVR=?	+WVR: (0,2,3)

	Note : Half Rate available.
AT+WVR=?	+WVR: (0,1)
	Note : If EFR available.
AT+WVR=?	+WVR: (0)
	Note : If HR and EFR not available
AT+WVR=?	+WVR: (0-5)
	Note : If HR and EFR available
AT+WVR?	+WVR: <n>

Command	Possible responses
AT+WVR=1	OK
Note : Configure voice type FR and EFR	Note : Bearer is configured
AT+WVR=6	+CME ERROR: 3
	Note : Syntax error
Syntax error	
AT+WVR?	+WVR: 1
Note : Ask for the current value	OK

18.14.3 Defined values :

<n> : Voice coding type.

0: FR

1: FR and EFR

2: FR, HR with HR preferred

3: HR, FR with FR preferred

4: EFR,HR with HR preferred

5: HR,EFR with EFR preferred.

18.15 Data Rate +WDR

18.15.1 Description :

This specific command allows the data rate for bearer data to be configured (available for outgoing calls only).

18.15.2 Syntax :

Command syntax : AT+WDR=<n>

Command Syntax	Return
AT+WDR=<n>	OK
AT+WDR=?	+WDR: (0-2)
	Note : If Half Rate available.
AT+WDR=?	+WDR: (0)

	Note : If Half Rate not available.
AT+WDR?	+WDR: <n>

Command	Possible responses
AT+WDR=1	OK
Note : Configure voice type FR,HR with HR preferred.	Note : Bearer is configured
AT+WDR=3	+CME ERROR: 3
Syntax error	Note :
AT+WDR?	+WDR: 1
Note : Ask the current value	OK
	Note :

18.15.3 Defined values :

<n>: Data coding type.

0: FR

1: FR, HR with HR preferred

2: HR, FR with FR preferred

18.16 Hardware Version +WHWV

18.16.1 Description :

This specific command gets the hardware version.

18.16.2 Syntax :

Command syntax : AT+WHWV

Command	Possible responses
AT+WHWV	Hardware Version 4.14
	OK
Note : Request Hardware Version	Note : Hardware version is 4.14
AT+WHWV	Hardware Version --
	OK
Note : Request Hardware Version	Note : No hardware version available

18.16.3 Defined values :

No parameter

18.17 Date of Production +WDOP

18.17.1 Description :

This specific command gets the date of production. Format of the date is Week/Year (ww/yyyy).

18.17.2 Syntax :

Command syntax : AT+WDOP

Command	Possible responses
AT+WDOP	Production date (W/Y): 01/2000
	OK
	Note : Date of production is WEEK: 01 /
Note : Request Date of Production	YEAR: 2000(1 st week of year 2000)
AT+WDOP	Production date (W/Y): --/----
	OK
Note : Request Date of Production	Note : No date of production available

18.17.3 Defined values :

No parameter

18.18 FLYFOT Select Voice Gain +WSVG

18.18.1 Description :

The product has 2 voice gain controllers, this specific command selects the microphone gain controller.

18.18.2 Syntax :

Command syntax : AT+WSVG = <n>

Command	Possible responses
AT+WSVG=<n>	
AT+WSVG=0	OK
Note : Select Controller 1 (Default)	Note : Controller 1 selected
AT+WSVG=1	OK
Note : Select Controller 2 (Default)	Note : Controller 2 selected
AT+WSVG=?	+WSVG: (0-1)
Note : Get the list of possible values	Note : possible values 0 or 1
AT+WSVG?	+WSVG: 1
Note : Get the current value	Note : Controller 1 is selected

18.18.3 Defined values

<n> Controller

0 : Controller 1 (Default)

1 : Controller 2

18.19 FLYFOT Status Request +WSTR

18.19.1 Description :

This **specific** command returns some operation status. It can be used for example to check the state of the initialisation sequence; the different values returned are Not started, Ongoing, Finished.

18.19.2 Syntax :

Command syntax: AT+WSTR=<status>

Response syntax: +WSTR: <status>,<value>

Command	Possible responses
AT+WSTR=<status>	+WSTR :<status>,<value>
AT+WSTR=1	+WSTR: 1,2
Note : Select the status 1 (INIT SEQUENCE)	OK
	Note : Init finished
AT+WSTR=2	+WSTR: 2,1
Note : Select the status 2 (NETWORK STATUS)	OK
	Note : The network is available
AT+WSTR=?	+WSTR: (1-2)
Note : Ask for the list of possible values	
	Note : possible values : 1 and 2

18.19.3 Defined values

<status>

1 : Initialisation sequence

<value>

0 : Not started

1 : On going

2 : Finished

2 : Network status

<value>

0 : No network

1 : Network available

18.20 FLYFOT Scan +WSCAN

18.20.1 Description :

This specific command displays the received signal strength indication (<rss>) for a specified frequency (in absolute format).

This command is not allowed during communication.

18.20.2 Syntax :

Command syntax: AT+WSCAN=<absolute frequency>

Response syntax: +WSCAN: <rss>

Command	Possible responses
AT+WSCAN=50	+WSCAN: 23 OK
Note : Request <rss> of absolute frequency 50	Note : <rss> is 23.
AT+WSCAN=1025	CME ERROR: 3
Note : Request power of absolute frequency 1025	Note : 1025 is not a valid absolute frequency

18.20.3 Defined values

<absolute frequency> : frequency in absolute format<rss>

0 : -113 dBm or less

1 : -111 dBm

2-30 : -109 to -53 dBm

31 : -51dBm or more

99 : not known or not detectable

18.21 FLYFOT Ring Indicator Mode +WRIM

18.21.1 Description :

This specific command sets the state of the Ring Indicator Mode.

- In pulse RI mode : an electrical pulse is sent on the Ring Indicator signal just before sending any unsolicited AT response, in order to lose no AT responses when client tasks are in sleep state. Still in RI mode, when receiving incoming calls, electrical pulses are sent on the RI signal.
- In up-down RI mode : no pulses are sent before unsolicited AT response. Up-down signals are sent when receiving an incoming call.

18.21.2 Syntax :

Command syntax: AT+WRIM=<n>

Command	Possible responses
AT+WRIM=<n>	OK
AT+WRIM=0	OK
Note : Select up-down RI mode	Note : up-down RI mode selected

AT+WRIM=1	OK
Note : Select pulse RI mode	Note : pulse RI mode selected
AT+WRIM=?	+WRIM: (0-1)
Note : Ask for the list of possible values	OK
	Note : possible values 0 or 1
AT+WRIM?	+WRIM: 1
Note : Ask for the current value	OK
	Note : current RI mode is pulse RI.

18.21.3 Defined values

<n>

0 : up-down RI mode

1 : pulse RI mode

18.22 FLYFOT Change Default Melody +WCDM

18.22.1 Description :

This specific command allows the selection of a manufacturer specific melody.. This default melody will be played for any new incoming voice call, either on the buzzer or on the speaker.

18.22.2 Syntax :

Command syntax : AT+WCDM=<melody>,<player>

Command	Possible responses
AT+WCDM=0	OK
Note : Select no melody	
AT+WCDM=5	OK
Note : Select melody n° 5	
AT+WCDM?	+WCDM: 5,0
Note : Indicate the current melody	OK
	Note : Melody n° 5 is currently selected,
	and the buzzer is selected to play it.
	RING
	Note : An incoming call occurs, and the
	melody n° 5 is played on the buzzer.
AT+WCDM=5,1	OK
Note : Select the speaker to play the	
melody on.	
AT+WCDM?	+WCDM: 5,1
	OK
	Note : Now the speaker is selected to play the
	melody if an incoming call occurs.

18.22.3 Defined values

<melody>

0 : No melody (default)

1 - 10 : Melody 1 to 10

<player>

0 : Melody n° <melody> will be played on the buzzer for any new incoming voice call. (default)

1 : Melody n° <melody> will be played on the speaker for any new incoming voice call.

18.23 FLYFOT Software version +WSSW

18.23.1 Description :

This specific command displays some internal software reference.

18.23.2 Syntax :

Command syntax : AT+WSSW

Command	Possible responses
AT+WSSW <i>Note : Get Software version</i>	A00_00gm.2c 000000008F5DC6EA OK <i>Note : internal software information</i>

18.23.3 Defined values :

No parameter

18.24 FLYFOT Custom Character Set +WCCS

18.24.1 Description :

This specific command allows to edit and display the custom character set tables. These tables are used by the “CUSTOM” mode of +CSCS and the +WPCS commands. In this CUSTOM mode, when the user enters a string, it is converted into GSM alphabet using the Custom To GSM table. In a similar way, when the user requests a string display, the string is converted from GSM alphabet using the GSM To Custom table.

In edition mode, the session is terminated by <ctrl-Z>, or aborted by <ESC>. Only hexadecimal characters ('0'...'9', 'A'...'F') can be used. The number of characters entered must be equal to the edition range requested, otherwise the command will return “+CME ERROR: 3”.

18.24.2 Syntax :

Command syntax : AT+WCCS=<mode>,<table>,<char 1>[,<char 2>]

Command	Possible responses
AT+WCCS=0,0,120,130	+WCCS: 11,
Note : Display from character 120 to	78797A2020202020097E05
character 130 of the Custom To GSM	OK
conversion table	Note : 11 characters displayed
AT+WCCS=1,0,115<CR>	OK
20<ctrl-Z>	Note : Edition successful
Note : Edit character 115 of the Custom To	
GSM conversion table	
AT+WCCS=1,1,0,4<CR>	OK
40A324A5E8<ctrl-Z>	Note : Edition successful
Note : Edit the 5 first characters of the	
GSM To Custom conversion table	
AT+WCCS=1,1,200	+CME ERROR: 3
Note : Edit character 200 of GSM To	Note : Index out of range
Custom conversion table	

18.24.3 Defined values

<mode>

0 : Display the table

1 : Edit the table

<table>

0 : Custom To GSM conversion table

1 : GSM To Custom conversion table

<char 1>, <char 2> : Character range to display/edit.

0-127 : for GSM To Custom conversion table

0-255 : for Custom To GSM conversion table

Note : If only <char 1> is provided, only this char is displayed/edited.

See section 19.2 for informative examples on phonebooks.

18.25 FLYFOT LoCK +WLCK

18.25.1 Description :

This specific command allows the ME to be locked on a specific network operator.

Note: Test SIM cards (with MCC=001 & MNC=01) doesn't check these locks.

18.25.2 Syntax :

Command syntax: AT+WLCK=<fac>,<passwd>,<NetId>[,<GID1>[,GID2]]
[,<CnlType>[,<CnlData>]]

Response syntax: +WLCK: <status>

Command	Possible responses
AT+WLCK="PN",12345678,20810	OK
Note : Activate network lock on SFR (208,10)	Note : Network lockactivated
AT+WLCK="PS",12345678,208105923568	OK
974	Note : SIM lock activated
Note : Activate SIM lock	
AT+WLCK="PU",12345678,2081035	OK
Note : Activate Network Subset lock on SFR (208, 10, 35).	Note : Network Subset lock activated
AT+WLCK="PU",12345678,20810	+CME ERROR: 3
	Note: Need 7 digits of IMSI to perform a service provider lock
AT+WLCK="PP",12345678,20810,"E5"	OK
Note : Activate Service Provider lock on SFR (208, 10) and GID1 (0xE5).	Note : Service Provider lock activated.
AT+WLCK="PC",12345678,20810,"E5","10"	OK
Note : Activate Corporate lock on SFR(208, 10), GID1 (0xE5)and GID2 (0x10).	Note : Corporate lock activated.
AT+WLCK="PN",12345678,20810,0	OK
Note : Activate Network lock on SFR (208, 10) using co-operative network list from SIM file EFCNL (must be present in SIM)	Note : Network lockactivated on SFR and co-operative network list present inSIM
AT+WLCK="PN",12345678,20801,1,"02F802FFFFFF02F801FFFFFF" Note : Activate Network lock on F ORANGE (208, 01) withmanual co-operative network list including SFR (208, 10) and Bouygues Telecom (208, 20)	OK Note : Network lockactivated on F ORANGE (primary network), SFR and Bouygues Telecom (co-operative networks)

18.25.3 Defined values :

<fac> :

"PS" : SIM lock facility with a 8 digits password (PCK).

"PN" : Network lock with a 8 digits password (NCK).

“PU” : Network subset lock with a 8 digits password (NSCK).

“PP” : Service provider lock with a 8 digits password (SPCK).

“PC” : Corporate lock with a 8 digits password (CCK).

<CnlType> : Type of lock for cooperative network list (CNL)

0 : Automatic (co-operative network list retrieved from EFCNL SIM file)

Note : EFCNL file must be present in SIM to use automatic mode.

1 : Manual (cooperative network list is given in the <CnlData> parameter)

<CnlData> : Co-operative network list (hexa string type) using same format as in EFCNL SIM file (ETSI GSM 11.11 or 3GPP 04.08).

Note : Only if <CnlType>= 1

18.26 CPHS command: +CPHS

18.26.1 Description

This **specific** command is used to activate, deactivate or interrogate a CPHS feature (e.g. Voice Mail Indicator, Mail Box Number...)

Note : This command may answer +CME ERROR: 3 if the CPHS feature is disabled (cf. +WFM command), or if the SIM card does not support this CPHS feature.

18.26.2 Syntax

Command syntax : AT+CPHS=<Mode>,<FctId>[,<precision>]

Command	Possible responses
AT+CPHS=<Mode>,<FctId>[,<precision>]	OK
AT+CPHS=<Mode>,<FctId>[,<precision>]	+CME ERROR: 3
	+CPHS: <FctId1>,<Status><CR<LF> +CPHS: <FctId2>,<Status><CR<LF>
AT+CPHS?	... +CPHS: <FctIdn>,<Status><CR<LF>
	OK
AT+CPHS=?	OK

18.26.3 Defined values:

<Mode>

0 : Deactivate a CPHS feature

1 : Activate a CPHS feature

2 : Interrogate a CPHS status

Note : The deactivate or activate command has not effect for Alternate line service, Network Operator Name, CPHS information and Customer Profile Service features.

<FctId>

- 1 : Voice Mail Indicator
- 2 : Mail Box Number
- 3 : Alternate Line Service
- 4 : Diverted Call Indicator
- 5 : Network Operator Name
- 6 : CPHS Information
- 7 : Customer Service Profile

Note : The Customer Service Profile and Alternate Line Service features are activated if the field is set in CPHS information and CSP files. The Network Operator Name is activated if at least one of the two format names exist (Long or Short format). This is done at initialization.

<precision> :

- only used if <Mode>=2 and <FctId>= 5 to 7
- if <FctId>=5, this field is <type format> (See +WNON)
- if <FctId>=6, this field is <data field> (See +WCPI)
- if <FctId>=7, this field is <service> (See +WCSP)

<Status>

- 0 : CPHS feature disabled
- 1 : CPHS feature enabled

18.26.4 Examples

AT+CPHS? Interrogate the status of CPHS functionality

+CPHS: 1,0	The voice mail indicator functionality is deactivated
+CPHS: 2,0	The mail box number functionality is deactivated
+CPHS: 3,1	The Alternate Line Service functionality is activated
+CPHS: 4,0	The Divert Call Indicator functionality is deactivated
+CPHS: 5,1	The Network Operator Name functionality is activated
+CPHS: 6,1	The CPHS Information functionality is activated
+CPHS: 7,1	The Customer Service Profile functionality is activated

OK

AT+CPHS=3,1 Syntax error

+CME ERROR: 3

AT+CPHS=1,1 Activate the voice mail indicator functionality

OK

AT+ CPHS? Interrogate the status of CPHS functionality

+CPHS: 1, 1	The voice mail indicator functionality is activated
+CPHS: 2, 0	The mail box number functionality is deactivated
+CPHS: 3, 1	The Alternate Line Service functionality is activated
+CPHS: 4, 0	The Divert Call Indicator functionality is deactivated
+CPHS: 5, 1	The Network Operator Name functionality is activated
+CPHS: 6, 1	The CPHS Information functionality is activated
+CPHS: 7, 1	The Customer Service Profile functionality is activated

OK

**** the message box contains 1 message ****

+WVMI: 1, 1 A message is waiting on Line 1

**** The message box contains a second message ***

+WVMI: 2, 1 A message is waiting on Line 2

AT+ CPHS=1, 4 Activate the divert call indicator functionality

OK

**** the call forwarding is active on Line 1 ****

	+WD C I: 1,1	Call forwarding is activated on Line 1
AT+ CPHS=2, 1	+WVMI: 1, 1 +WVMI: 2, 1 +WVMI: 3, 0 +WVMI: 4, 0 OK	Interrogate the status of voice mail indicator functionality a message is waiting on LINE 1 a message is waiting on LINE 2 no Data waiting no Fax waiting
AT+ CPHS=1, 2	OK	Activate the mail box number functionality
AT+ WAL S=1	+WA L S: 2 OK	Interrogate the status of activated Line The current line is number 2
AT+ CPHS=0, 4	OK	Deactivate the divert call indicator functionality
AT+ C PHS?	+CPHS: 1, 1 +CPHS: 2, 1 +CPHS: 3, 1 +CPHS: 4, 0 +CPHS: 5, 1 +CPHS: 6, 1 +CPHS: 7, 1 OK	Interrogate the status of CPHS functionality The voice mail indicator functionality is activated The mail box number functionality is activated The Alternate Line Service functionality is activated The Divert Call Indicator functionality is deactivated The Network Operator Name functionality is activated The CPHS Information functionality is activated The Customer Service Profile functionality is activated
AT+ CPHS=2, 2		Query current mail box numbers in SIM
	+WMBN: 1," 19254 871 23 4",129,, 1	Mail box number for Line 1
	+WMBN:2,,, 1 +WMBN:3,,, 1 +WMBN:4,,, 1 OK	Mail box number for Line 2 Mail box number for Data Line Mail box number for Fax Line Only Line1 can be updated

18.27 Unsolicited result : FLYFOT Voice Mail Indicator : +WVMI

18.27.1 Description

This unsolicited indication gives the status of the LINE 1, LINE 2, DATA or FAX mailboxes. The +CPHS command can be used to know the status of voice mail indicator for each line.

18.27.2 Syntax

Response syntax : +WVMI: <LineId>,<Status>

Response syntax (to AT+CPHS=2,1)

+WVMI = <LineId>,<Status>

Command	Possible responses
AT+CPHS=1,1	OK
Note : Activate the Voice Mail indicator feature.	
AT+CPHS=2,1	+WVMI: 1,1 a message is waiting on LINE 1
Note :Get the current status of Voice mail indicator.	+WVMI: 2,1 a message is waiting on LINE 2
	+WVMI: 3,0 no Data waiting
	+WVMI: 4,0 no Fax waiting
AT+CPHS=2,1	+CME ERROR: 3
	Note :CPHS Feature is not allowed
AT+CPHS=1,1	OK
Note :Activation of Voice mail indicator feature.	Note :The Voice mail indicator feature is activated
	+WVMI: 1,1 Note :A message is waiting on Line 1

18.27.3 Defined values

<LineId>

1 : Line 1

2 : Line 2

3 : Data

4 : Fax

<Status>

0 : No message waiting.

1 : At least one message is waiting

18.28 Unsolicited result : FLYFOT diverted call indicator: +WDCI

18.28.1 Description

This indication provides the call forwarding flags. The +CPHS command can be used to know the status of Divert call indicator for each line.

18.28.2 Syntax

Response syntax: +WDCI:<LineId>,<flag>

Response syntax (to AT+CPHS=2,4)

+WDCI = <LineId>,<Status>

Command	Possible responses
AT+CPHS=1,4	OK
Note :Activate the Divert Call indicator feature.	
AT+CPHS=2,4 Note :Get the current status of Divert call indicator.	+WDCI: 1,1 divert call indicator is active on LINE 1 +WDCI: 2,1 divert call indicator is active on LINE 2
	+WDCI: 3,0 divert call indicator is deactivate on Data
	+WDCI: 4,1 divert call indicator is active on Fax
AT+CPHS=2,4	+CME ERROR: 3
	Note :CPHS Feature is not allowed
AT+CPHS=1,4	OK
Note :Activationof Divert call indicator feature.	Note :The Divert call indicator feature is activated
	+WDCI: 1,1
	Note :Call forwarding is activate on Line 1

18.28.3 Defined values

<LineId>

1 : Line 1

2 : Line 2

3 : Data

4 : Fax

<flag>, <status>

0 : Call forwarding is deactivated

1 : Call forwarding is activated

Note : The call forwarding SS is set by the AT+CCFC command.

18.29 FLYFOT network operator name: +WNON

18.29.1 Description

This indication provides the name of the network operator (as a character string). This command is the response to the AT+CPHS 2,5[,<type format>] command.

18.29.2 Syntax

Command : AT+CPHS=2,5[,<type format>]

Response syntax : +WNON:<type format>,<operator name>

Command	Possible responses
AT+CPHS=2,5	+WNON: 0,"Orange F"
Note :Get the operator name	OK
AT+CPHS=2,5,1	+WNON: 1,"Orange"
Note :Get the short format operator name.	OK
AT+CPHS=2,5,0	+CME ERROR: 3
	Note :When CPHS Feature is not allowed or format name no accessible
AT+CPHS=2,5,1	+CME ERROR: 3
	Note :When NON Feature is not allowed or format name no accessible
AT+CPHS=0,5	OK
Note :Deactivation of Network Operator Name feature.	Note :No effect.

18.29.3 Defined values

<type format>

0 : Long format operator name

1 : Short format operator name (default value)

<operator name>

The name of the operator, in long or short format

18.30 FLYFOT CPHS information: +WCPI

18.30.1 Description

This indication provide CPHS information; ie. which data field are present in the SIM. This command is the response to the AT+CPHS 2,6[,<data field>] command.

18.30.2 Syntax

Command : AT+CPHS=2,6[,<data field >]

Response syntax : +WCPI: <data field>,<status>

Command	Possible responses
AT+CPHS=2,6	+WCPI: 0,"0033000F"
Note :Get the current status for all CPHS info field	OK
AT+CPHS=2,6,13	+WCPI: 13,1
Note :Get the current status for Call	OK

Forward Activated indicator for Line 1.	Note :Call Forward is active for Line 1.
AT+CPHS=2,6,22	+WCPI: 22,0
Note :Get the current status for Line 2	OK
Mailbox number.	Note :Mailbox number for Line2 is not available.
AT+CPHS=2,6,17	+CME ERROR: 3
	Wrong data field
AT+CPHS=2,6,22	+CME ERROR: 3
Note :Get the current status for Line 2	Note :CPHS Feature is not allowed
Mailbox number.	
AT+CPHS=0,6	OK
Note :Deactivation of CPHS Info feature.	Note :No effect.

18.30.3 Defined values

<data field> : value indicating the field of CPHS information (see appendix 19.14)

If <precision> field omitted in the AT+CPHS command, all field of CPHS Info will be displayed.

<status>

0 : data field is set

1 : data field is unset

When all CPHS information are requested, the status correspond to a bit field (see appendix 19.14)

Note : The field CSP service (<data field> = 1) is used to set or not the CSP feature at the initialisation.

18.31 FLYFOT customer service profile: +WCSP

18.31.1 Description

This indication indicates if a service is accessible to the customer. This is the response to the AT+CPHS 2,7,<service > command.

18.31.2 Syntax

Command : AT+CPHS=2,7,<service>

Response syntax: +WCSP: <service>,<status>

Command	Possible responses
AT+WCSP=?	ERROR
AT+WCSP?	ERROR
AT+CPHS=2,7	+CME ERROR: 3
	Note :Syntax error
AT+CPHS=2,7,9	+WCSP: 9,1
Note :Get the current status for	OK

Barring of All Outgoing Calls.	Note : Barring of All Outgoing Calls is
	customer accessible.
AT+CPHS=2,7,11	+WCSP: 11,1
Note :Get the current status Barring	OK
of Outgoing International Calls	Note :Barring of Outgoing International
	Calls is customer accessible.
AT+CPHS=2,7,2	+CME ERROR: 3
Note :Get the current status Call	Note :CPHS Feature is not allowed
forwarding on user Busy.	
AT+CPHS=0,7	OK
Note :Deactivation of CPHS Info.	Note :No effect.

18.31.3 Defined values

<service> value indicating the field of CSP field to display (see appendix 19.15, column External Value)

<status>

0 : service is not customer-accessible

1 : service is customer-accessible

Note : The field Alternate Line Service (CPHS Teleservices Group) is used to set or not the ALS feature at the initialisation.

18.32 FLYFOT Battery Charge Management +WBCM

18.32.1 Description

This specific command allows the management of the battery charging operations (start and stop the charge, enable or disable unsolicited +WBCI Battery Charge Indications). It also sets the battery charge parameters.

18.32.2 Syntax

Command syntax : AT+WBCM=<Mode>[,<ChargeInd>][,<BattLevelMax>],
[<BattLevelMin>],[<TPulseInCharge>],
[<TPulseOutCharge>],[<BattIntRes>]]]

Command	Possible responses
AT+WBCM=0	OK
Note :Stop the battery charging.	
AT+WBCM=1,1	OK
Start the battery charging withcharge	
indications.	

	+WBCI: 2,4060
	Note : Unsolicited charge indication: the
	current battery voltage is 4.06 V. (See
	+WBCIdescription)
AT+WBCM=1,0	OK
Note :Start the battery charging	
without charge indications.	
AT+WBCM=2	+WBCI: 2,4110
Note :Get the battery voltage during the charging.	OK
	Note : See the description of+WBCI unsolicited response. The current battery voltage is 4.11 V.

Command	Possible responses
	+WBCI: 1
	Note :The battery voltage has reached
	the max level. The battery is considered
	as charged and the charging is stopped.
AT+WBCM?	+WBCM: 0,0,4200,3300,100,5000,0
	OK
	Note :Current values.
AT+WBCM=0,1	OK
Note :Enable the battery charge	
unsolicited indications out of charge.	
	+WBCI: 3,4195
	Note :The current battery voltage is 4.195 V.
AT+WBCM=3,0,4800,3000,500,3000	OK
,0	
Note :Configure the battery charging	
parameters.	
AT+WBCM=?	+WBCM: (0-3),(0-1),(4000-5000),(2800-
Note :Get the parameters range.	3800), (100-10000),(100-10000),(0-255)
	OK
	+WBCI: 0
	Note : The battery voltage has reached the min level. The battery is considered as discharged, and the product is turned off, with the +CPOFcommand behavior.

18.32.3 Defined values

<Mode>

- 0 : Stop the battery charging (default).
- 1 : Start the battery charging.
- 2 : Get the current battery voltage.
- 3 : Set the battery charge parameters.

Note :

When <Mode> = 0 or 1, only the <ChargeInd> parameter can be set.

When <Mode> = 2, no additional parameter can be set.

When <Mode> = 3, all others parameters can be set.

<ChargeInd>

- 0 : Disable the battery charge unsolicited indications (default value).
- 1 : Enable the battery charge unsolicited indications (see +WBCI description).

<**BattLevelMax**> : Maximum level for the battery voltage. When reached, the battery is considered as charged. The allowed range is [4000 ; 5000] (in mV, default value is 4200)

<**BattLevelMin**> : Minimum level for the battery voltage. When reached, the battery is considered as discharged, and the product is turned off (with the +CPOF command behavior). The allowed range is [2800 ; 3800] (in mV, default value is 3100)

Note :

The <BattLevelMax> and <BattLevelMin> parameters cannot be changed during the battery charging (when <Mode> = 1).

<**TPulseInCharge**> Time between pulses for the pulsed charge.

The pulse duration lasts one second. When the battery charging is started with unsolicited charging indications (<ChargeInd>= 1), +WCBI responses are returned by the ME with a period equals to (<Pulse Time> (= 1s.) +<TPulseInCharge>).

The allowed range is [100 ; 10000]. (unit is ms, default value is 100).

<**TPulseOutCharge**> Time between +WBCI unsolicited responses, when the battery charge is stopped with charging indications requested (<ChargeInd> = 1).

The allowed range is [100 ; 10000] (in ms, default value is 5000).

<**BattIntRes**> : Battery Internal Resistor.

This parameter must be set to have correct values with +WBCI unsolicited results.

The allowed range is [0 ; 255] (in mΩ, default value is 0)

Note :

When the <BattIntRes> parameter is changed, the product must be reset to take the modification into account.

18.33 Unsolicited result : FLYFOT Battery Charge Indication +WBCI

18.33.1 Description

This unsolicited indication returns information about the battery charge (maximum level reached, current battery voltage).

18.33.2 Syntax

Unsolicited response syntax : +WBCI: <Status>[,<BattLevel>]

18.33.3 Defined values

<Status>

0 : Minimum battery level reached. The battery is considered as discharged.

The product is turned off (as with the +CPOF command).

1 : Maximum battery level reached. The battery is considered as charged.

The battery charging is stopped.

2 : Battery currently in charge.

3 : Battery currently out of charge.

<**BattLevel**> : Current battery voltage during or out of the charging.

The possible range is [2800 ; 5000]. (in mV)

Note :

<Status> = 2 and 3 are solicited, by the AT+WBCM=2 command, or unsolicited when the <ChargeInd> parameter of the +WBCM command is set to 1. With these <Status> values, the <BattLevel> parameter is also present.

18.34 Features Management +WFM

18.34.1 Description

This specific command allows some features to be enabled or disabled.

Note :

After a modification, the changes will be taken into account only after a **reset of the product**.

18.34.2 Syntax

Command syntax AT+WFM=<mode>[,<FtrID>]

Response syntax +WFM: <FtrID>,<status>,<resetFlag>

Command	Possible responses
AT+WFM=2,"BI9001800"	+WFM: "BI9001800",1,0
	OK
	Note : Dual-band mode 900/1800 is enabled
AT+WFM=1,11	+CME ERROR: 3
Note : Enable the Mono-band 900 mode	Note : Band selection are not allowed with AT+WFM command
AT+WFM=0,61	+CME ERROR: 3
	Note : <mode>=0 is not allowed on
	<FtrID> values with 2 digits
AT+WFM=0,"EFR"	OK
Note : Disable the Enhanced Full Rate feature	

18.34.3 Defined values

<mode>

0 : disable feature <FtrID>

1 : enable feature <FtrID>

2 : interrogate the status of the <FtrID> feature.

If the <FtrID> parameter is not used, the status of all the features are listed (with several +WFM responses).

<FtrID>

Numeric value	String value	Meaning
11	"MONO900"	Mono-band mode 900 MHz (def. 0)
12	"MONO1800"	Mono-band mode 1800 MHz (def. 0)
13	"MONO1900"	Mono-band mode 1900 MHz (def. 0)
14	"BI9001800"	Dual-band mode 900/1800 MHz (def. 1)
15	"BI9001900"	Dual-band mode 900/1900 MHz (def. 0)
16	"MONO850"	Mono-band mode 850 MHz (def. 0)
17	"BI8501900"	Dual-band mode 850/1900 MHz (def. 0)
18	"QUADBAND"	Quad-band mode 850/900/1800/1900 MHz
2	"EFR":	Enhanced Full Rate feature (def. 1)
31	"NOHR_NOECHO"	HR and ECHO features are disabled
32	"HR"	Half Rate feature (def. 1)
33	"ECHO"	Echo Cancel (def. 0)
4	"DTXDATA"	Data with DTX feature (def. 1)
5	"DATA144"	Data 14.4 kbit/s feature (def. 1)
61	"SIM3VONLY"	3V SIM voltage mode (def. 0)

62	"SIM5VONLY"	5V SIM voltage mode
63	"SIM3AND5V"	Both 3 and 5V SIM voltage mode (def. 1)
7	"SIMREMOVE"	SIM removal feature (def. 1)
81	"NOINTERRUPT"	No management of interruption (def. 0)
82	"QUICKOFF"	Quick Off mode (def. 0)
83	"OFFWHENUNPLUG"	Off when unplug mode (def. 0)
84	"INTERRUPT"	interruption for customer (def. 1)
9	"SWITCHATT"	Switch Attenuation feature (def. 1)
A	"CPHS"	CPHS feature (def. 1)
B	"SIMSPEEDENH"	SIM speed enhancement feature (def.0)
C	"LOCA"	Location feature (def. 0)

Notes :

- The +WFM response only use alphabetical values for the <FtrID> parameter.
- For<FtrID>values with two digits (like 1x, 6x or 8x), the<mode>0 value is not allowed. When a « xa » feature is enabled, enabling an other « xb » feature will automatically disable the « xa » feature. For example, if the "MONO900" feature is enabled, if the "BI9001800" feature is activated, the "MONO900"feature gets automatically disabled. Likewise, the "HR" feature and the "ECHO" feature are exclusive. If “NOHR_NOECHO” is activated, both features “HR” and “ECHO” are disabled.
- “MONO900”, “MONO850”, “MONO1800”, “MONO1900”, “BI9001900”, “BI9001800”, “BI8501900” and “QUADBAND” features are read-only. In order to change the Band selection use AT+WMBS command, see § 15.54.

<status>

0 : the <FtrID> feature is disabled

1 : the <FtrID> feature is enabled

<resetFlag>

0 : the feature has not been modified since the last boot of the product.

1 : the feature has been modified since the last boot of the product; a reset must be performed to take the modifications into account.

Note: If a feature is reset to its initial value after a modification, the <resetFlag> parameter will be reset to 0.

18.35 Commercial Features Management +WCFM

18.35.1 Description

This command enables ou disables FLYFOT specific features. Disabling a feature can be done with no restriction, but a password is required to enable features.

Note : Once a feature successfully enabled or disabled, the product needs to be reset to take the modification into account.

18.35.2 Syntax

Command syntax AT+WCFM=<mode>[,<FtrMask>[,<Password>]]

Command	Possible responses
AT+WCFM=0,"0A00"	OK
Note : Disable some features	
AT+WCFM=2	0000
Note : Display of the feature status	OK
AT+WCFM=1,"0003","1234567890A	OK
BCDEF1234567890ABCDEF12345678	Note : The features are enabled (the
90ABCDEF1234567890ABCDEF"	password is correct)
Note : Enable features	
AT+WCFM=1,"0050","1234567890A	+CME ERROR: 3
BCDEF1234567890ABCDEF12345678	Note : Incorrect password
90ABCDEF1234567890FFFFFF"	
Note : Enable features	

18.35.3 Defined values

<mode>

0 : disable some features of <FtrMask>

1 : enable some features of <FtrMask>

2 : display the features state

<FtrMask> : features mask

16 bits hexadecimal string (4 characters from 0 (zero) to 'F')

<PassWord> : Password

256 bits hexadecimal string (64 characters from 0 (zero) to 'F')

18.36 FLYFOT Customer storage mirror +WMIR

18.36.1 Description

This specific command allows to make a mirror copy of the current configuration parameters in the EEPROM. In case of memory problem for the storage, if a customer mirror already exists, this one will be restored. Otherwise, the FLYFOT default mirrored parameters are restored.

18.36.2 Syntax

Command syntax AT+WMIR

Command	Possible responses
AT+WMIR=?	OK
AT+WMIR	OK
Note : Build the Customer Mirror	

18.36.3 Defined values :

No parameter

18.37 FLYFOT Change Default Player +WCDP

18.37.1 Description

This specific command allows the default melody player to be selected.

18.37.2 Syntax

Command syntax AT+WCDP = <player>

Command	Possible responses
AT+WCDP=?	+WCDP : (0-1)
	OK
AT+WCDP=0	OK
Note : Select the speaker.	
AT+WCDP?	+WCDP: 0
	OK

18.37.3 Defined values :

<player>

0 : Buzzer

1 : Speaker

18.38 FLYFOT CPHS Mail Box Number: +WMBN

18.38.1 Description

This specific command sets the different mailbox numbers in SIM. The +CPHS command can be used to know which mailbox numbers can be updated.

18.38.2 Syntax

Command syntax AT+WMBN = <LineId>,<number>,<type>,<name>

Response syntax (to AT+CPHS=2,2)

+WMBN = <LineId>,<number>,<type>,<name>,<status>

Command	Possible responses
AT+WMBN=?	OK
AT+WMBN?	OK
AT+CPHS=2,2	+WMBN: 1,"0123456789",129,"Maison",1
Note : Get the current Mail Box	+WMBN: 2,"9876543210",129,"Travail",1
Numbers in SIM	+WMBN: 3,,1
	+WMBN: 4,,1
	OK
AT+WMBN=1,"+33122334455",145	OK
Note : Set mailbox number for line1.	Note : Mailbox number for Line1 is set.
AT+WMBN=2	OK
Note : Erase mailbox number & name	
for line2	
AT+CPHS=2,2	+WMBN: 1,"+33122334455",145,,1
Note : Get the current Mail Box	+WMBN: 2,,1
Numbers again	+WMBN: 3,,1
	+WMBN: 4,,1
	OK

18.38.3 Defined values

<LineId>

1 : Line 1

2 : Line 2

3 : Data

4 : Fax

<number> : Phone number in ASCII format.

<type> : TON/NPI

(Type of address byte in integer format).

<name> : name of mailbox.

Notes :

- For the<name> parameter all strings starting with “80”, “81” or “82” are considered in UCS2 format. See the APPENDIX E: Coding of Alpha fields in the SIM for UCS2. If a wrong UCS2 format is entered, the string is considered as an ASCII string.

- The AT command +WPCS affect the format of the Mailbox <name> entry.

<status>

When checked with “AT+CPHS=2,2”, it indicates if the number can be updated or not:

0 : Update is not possible

1 : Update is possible

18.39 FLYFOT Alternate Line Service: +WALS

18.39.1 Description

This specific command allows to set and to get the active line. The +CPHS command can be used to know which line is activated.

18.39.2 Syntax

Command syntax AT+WALS = <CmdType>[,<LineId>]

Response syntax (to AT+CPHS=2,3)

+WALS = <LineId>

Command	Possible responses
AT+WALS?	+WALS: 1
	OK
	Note : Display the current active line
AT+WALS=?	+WALS: (0-1),(1-2)
	OK
AT+WALS = 0,1	+WALS: 1
Note : Activate Line 1	OK
AT+WALS = 0,2	+CME ERROR: 3
Note : Activate Line 2	Note : When the ALS feature is not
	allowed
AT+WALS = 1	+WALS: 1
Note : Get the current activate Line	Note : Display the current active line
AT+WALS = 1,2	+CME ERROR: 3
	Note : Syntax error
AT+CPHS=0,3	OK
Note : Deactivation of ALS feature.	Note : No effect.
AT+CPHS=2,3 Note : Interrogate of ALS Feature	+WALS: 1 Note : Display the current active line
	+CME ERROR: 3
	Note : in the case where the ALS feature
	is not allowed

18.39.3 Defined values

<CmdType>

0 : Set active line

1 : Get active line

<LineId>:

Only used for <CmdType>= 0

1 : Line 1

2 : Line 2

18.40 FLYFOT Open AT control command +WOPEN

18.40.1 Description

This specific command allows to start, stop, delete and get information about the current Open AT embedded application.

Note : This command is only available if the Open AT feature is enabled (cf +WCFM command).

18.40.2 Syntax

Command syntax AT+WOPEN=<Mode>

Response syntax +WOPEN: <Mode>[,<IntVersion>[<ExtVersion>]]

Command	Possible responses
AT+WOPEN=?	+WOPEN: (0-4)
	OK
AT+WOPEN?	+WOPEN: 0
	OK
AT+WOPEN=2	+WOPEN: 2, “AT v2.00”, “AT v2.00”
Note : Get the Open-AT library versions.	OK
	Note : Open-AT v2.00 library version. An embedded application has been
	downloaded on this product.
AT+WOPEN=3	OK
	Note : The objects flash are erased
AT+WOPEN=1	OK
Note : Start the embedded application.	+WIND: 3
	Note : Product reset in order to start the
	embedded application.
AT+WOPEN = 3	+CME ERROR: 532

	Note : the embedded application is activated so the objects flash are not erased.
AT+WOPEN = 4	+CME ERROR: 532
	Note : the embedded application is
	activated so it cannot be erased

Command	Possible responses
AT+WOPEN=0	OK
Note : Stop the embedded application.	+WIND: 3
	Note : Product reset in order to stop the
	embedded application.
AT+WOPEN=3	OK
	Note : The objects flash are erased
AT+WOPEN=4	OK
	Note : the embedded application is
	erased
AT+WOPEN?	+CME ERROR: 3
	Note : The Open AT feature is disabled.

18.40.3 Defined values :

<Mode>

0 : Stop the Open-AT embedded application.

If the product was running, it resets.

1 : Start the Open-AT embedded application.

If the product was stopped, it resets.

2 : Get the Open AT library versions.

3 : Erase the objects flash of the Open-AT embedded application.

4 : Erase the Open-AT embedded application.

Note : Mode = 3 and 4 are only available if Open-AT embedded application is stopped (AT+WOPEN=0).

<IntVersion>

Ascii string giving the internal Open AT library version.

<ExtVersion>

Ascii string giving the external Open AT library version.

Note :

If no embedded application is loaded, the<ExtVersion>parameter does not appear.

18.41 FLYFOT Reset +WRST

18.41.1 Description

This specific command resets the module after the time specified by the <delay> parameter.

18.41.2 Syntax

Command syntax : AT+WRST =<Mode>,<Delay>

Response syntax : +WRST: <Mode>,<Delay>,<RemainTime>

Command	Possible responses
AT+WRST=?	OK
AT+WRST=0	OK
Note : Disable timer	
AT+WRST=1,"001:03"	OK
Note : Enable timer and set delay at 1	
hour 3 minutes	
AT+WRST?	+WRST: 1,"001:03","001:01" OK
	Note: Timer activated to reset after 1
	hour and 3 minutes. At this point, 1 hour and 1 minute remain before next reset.

18.41.3 Defined values :

<val1> :

0 : timer reset is disabled

1 : timer reset is enabled

<Delay>: sets the time before reset

Range "000:01"- "168:59" (format hhh:mm)

<RemainTime> : time before next reset

Range "000:01"- "168:59" (format hhh:mm)

18.42 Set Standard Tone +WSST

18.42.1 Description :

This specific command allows to set/get the sound level of the Standard Tones.

18.42.2 Syntax :

Command syntax : AT+WSST=[<sound level>][,<ring tone level>]

Command	Possible responses
AT+WSST=0	OK
Note : Set volume to Max.	
AT+WSST=15	OK
Note : Set volume to Min.	
AT+WSST=,5	OK
Note : Set ring tone level to 5	
AT+WSST?	+WSST: 15,5
Note : getcurrent standard tones sound level	OK
	Note : current standard tones level is
	15 (mini.), and ring tone level is 5.
AT+WSST=?	+WSST: (0-15),(0-15)
Note : supported parameters	OK

18.42.3 Defined values :

<sound level>

Range [0 ; 15]

0 : Maximum volume (default)

15 : Minimum volume

<ring tone level>

Range [0 ; 15]

0 : Maximum volume (default)

15 : Minimum volume

18.43 FLYFOT Location +WLOC

18.43.1 Description :

This specific command can be used by the application to retrieve the following local informations : MCC-MNC, LAC, CI, Network measurement, BCCH channel list, Timing Advance, Date and Time.

Two ways exist for the external application to get these information : on request of the application, or automatically by the module every x seconds (x has to be a multiple of 5 different from 0).

The location feature has to be activated to get information.

if the feature is not activated, "ERROR" is sent.

If the data are not valid at the requested time, the network measurement, BCCH list and Timing Advance cannot be displayed ("," is displayed instead).

18.43.2 Syntax :

Command syntax : AT+WLOC =< mode > [, < time period/dump >]

Command	Possible responses
AT+WLOC=0	OK
Note : stops the display of local information	
AT+WLOC=3,255 Note : set the wished information to display (255 -> complete information)	OK

Command	Possible responses
AT+WLOC=1	+WLOC:
Note : displays once the local information	02f802,0006,7772,f13101b04cf5127 8
	91138e95a846d160,8b49d08d0797c
	419e272e10889a0000093021703990
	20403c1020a03c5020a03,00,010121
	111349ff
	OK
AT+WLOC=2,6	+CME ERROR:3
Note : 6 is not a multiple of 5	
AT+WLOC=2,10	OK
Note : displays OK then the current local information immediately for the first time and then every 10 seconds.	+WLOC: 02f802,0006,7772,ed3001af4cf492780
	b040889c74acc23,8b49d08d0797c419e2
	72e1
	0889a000009302160399020503c1020a0
	3c5020
	a03,00,010121111354ff
	+WLOC:
	02f802,0006,7772,f02d01ae4cf41278
	4b03c889c846dba5,8b49d08d0797c
	419e272e10889a0000093021703990
	20403c1020a03c5020903,00,010121
	111404ff
	...

AT+WLOC=?	+CME ERROR:3
Note : The feature “loca” is not activated	
AT+WLOC?	+CME ERROR:3
Note : The feature “loca” is not activated	
AT+WLOC=?	
Note : The feature “loca” is activated	OK
AT+WLOC?	
Note : The location is not in mode	+WLOC: 0,5,255
automatic, the period value is set to 5	
seconds, the configuration value is set to	OK
255	
AT+WLOC?	+WLOC: 1,10,20
Note : The location is in mode automatic,	
the period value is set to 10 seconds, the	OK
configuration value is set to 20	

18.43.3 Defined values :

<mode>

0 : Stop automatic shots

1 : One shot requested

2 : Automatic shots requested (every x seconds)

3 : Configuration of the wished information

for <mode> = 2 :

<time period> optional parameter –

Range : [5 - 255] – in seconds

it has to be a multiple of 5.

default value of time period : 5 seconds

The automatic mode for location is saved in EEPROM, so will be taken into account after an Init (+WLOC:… will be displayed).

Fields of the response to AT+WLOC=1 or AT+WLOC=2 :

The format of these fields are as specified in 04.08 :

Parameter	Type
MCC-MNC	3 bytes
LAC	2 bytes
CI	2 bytes
Network measurement	16 bytes
BCCH channel list	Maximum 48 bytes (version V0)

	Or 129 bytes (version V1)
Timing Advance	1 byte
Date and Time	7 bytes : Date, time and timezone at
	STLK Format

for mode = 3 :

<dump> optional parameter

Range : [1-255] (at least 1 bit set to 1).

- if bit 0 set to 1 (value 1) : DaT will be returned in the response
- if bit 1 set to 1 (value 2) : TA will be returned in the response
- if bit 2 set to 1 (value 4) : BCCH will be returned in the response
- if bit 3 set to 1 (value 8) : NetMeas will be returned in the response
- if bit 4 set to 1 (value 16) : CI will be returned in the response
- if bit 5 set to 1 (value 32) : LAC will be returned in the response
- if bit 6 set to 1 (value 64) : MNC-MCC will be returned in the response

Notes :

- After having downloaded the EEPROM configuration: default value of <dump> is 0xFF (all information returned).
- The <dump> value set with the command “at+wloc=3,xx” is saved in EEPROM, so it will be taken into account after an Init.

Fields of the response to AT+WLOC? :

The response is built as follows

+WLOC: <mode>,<timeperiod>,<dump>

<mode> :

0 : no automatic mode

1 : automatic mode

<timeperiod> , <dump> :see above.

18.44 FLYFOT Bus Read +WBR

18.44.1 Description

This specific command allows to read a buffer from a specific bus (SPI, I2C Soft or Parallel).

Note : Bus configuration is set by the +WBM command.

18.44.2 Syntax

Command syntax : AT+WBR=<BusId>,<Size>[,<Address>[,<Opcode>]]

Response syntax : +WBR: <Data><CR><LF>

OK

Command	Possible responses
AT+WBR=0,9,"ABFF","C9" Note : Read 9 bytes from the SPI bus, after having sent the 0xC9 Opcode byte and ABFF Address.	+WBR: 0A5F98231012345678 OK
AT+WBR=1,5,"2A"	+WBR: 0102030405
Note : Read 5 bytes from the I2C Soft bus, at the 0x2A slave address.	OK
AT+WBR=2,2,0	+WBR: A000
Read 2 bytes from the Parallel bus with the A2 pin set to 0.	OK

18.44.3 Defined values

< BusId >

0 : SPI bus.

1 : I2C Soft bus.

2 : Parallel bus.

<Size>

Size of data to read, in bytes (**max 256 bytes**).

18.45 FLYFOT Bus Write +WBW

18.45.1 Description

This specific command allows to write a buffer on a specific bus (SPI, I2C soft or parallel).

Note : Bus configuration is set by the +WBM command.

18.45.2 Syntax

Command syntax: AT+WBW=<BusId>,<Size>[,<Address>]<CR>

<Data Buffer> <ctrl-Z >

Command	Possible responses
AT+WBW=0,10<CR>	OK
0123456789ABCDEF0123<ctrl-Z>	Note : Data buffer is written on SPI bus.
Note : Write 10 bytes on the SPI bus.	
AT+WBW=1,5<CR>	OK
0246801234<ctrl-Z>	Note : Data buffer is written on I2C Soft
Note : Write 5 bytes on the I2C Soft bus.	bus.

AT+WBW=2,2,0<CR>	OK
434F<ctrl-Z>	Note : Data buffer is written on PARALLEL
Note : Write 2 bytes on the Parallel bus	bus.
with the A2 pin set to 0.	

18.45.3 Defined values

<BusId>

0 : SPI bus.

1 : I2C Soft bus.

2 : Parallel bus.

<Size>

Size of data buffer, in bytes. (max. 256 bytes)

<Address>

- For SPI bus :
Not Used
- For Parallel bus :
0 : set the A2 pin to 0 (default)
1 : set the A2 pin to 1
- For I2C Soft bus :
Slave address byte, in hexadecimal format (default "00").
This is a 7-bits address, shifted to left from 1 bit, padded with the LSB set to 0 (to write), and sent first on the I2C bus before performing the writing operation.

<Data Buffer> : Data buffer to write on the specific bus.

This parameter must only contain hexadecimal characters (0-9, A-F) **Its length must be twice the <Size> parameter.**

18.46 FLYFOT Bus Management +WBM

18.46.1 Description

This specific command allows to manage specific buses (SPI, I2C Soft, Parallel) with a given configuration.

18.46.2 Syntax

- Command Syntax for SPI bus

AT+WBM=<BusId>,<Mode>,[<Clock_Speed>],[<Clock_Mode>],
[<ChipSelect>],[<ChipSelectPolarity>],[<LsbFirst>],
[<Gpio ChipSelect>],[<Gpio Handling>]

- Command Syntax for I2C bus

AT+WBM=<BusId>,<Mode>,[<Scl_Gpio>],[<Sda_Gpio>]

- Command Syntax for parallel

The parameters depend on ChipSelect configuration :

if CS is Gpio 5 :

AT+WBM=<BusId>,<Mode>,[<Chip_Select>],[<Order>],[<Gpio_NbWaitS tate>]

if CS is LCD_EN

AT+WBM=<BusId>,<Mode>,[<Chip_Select>],[<Order>],
[<LCDEN_AddressSetupTime>],
[<LCDEN_SignalPulseDuration>],
[<LCDEN_PolarityControl>]

Command	Possible responses
AT+WBM=0,1,1,3,1,0,1	OK
Open SPI bus with configuration :	
Clock Speed : 812 kHz	
Clock Mode : 3	
ChipSelect : LCDEN	
ChipSelectPolarity : LOW	
LsbFirst : MSB	
AT+WBM=1,1,0,4	OK
Open I2C Soft bus with configuration :	
Scl Gpio : 0	
Sda Gpio : 4	
AT+WBM=2,1,0,1,10, 31,0	OK
Open PARALLEL bus with configuration : (on P32X3 product)	
ChipSelect : LCDEN	
Order: Direct	
LcdenAddressSetUpTime: 10	
LcdenSignalPulseDuration : 31	
PolarityControl : low	
AT+WBM=0,2	+WBM: 0,1,1,3,1,0,1,0,0
	OK
AT+WBM=1,0	OK

Close I2C bus.	
AT+WBM=1,2	+WBM: 0,0,0,4
	OK
AT+WBM=1,1	OK
Open I2C Soft bus with the last configuration :	
Scl Gpio : 0	
Sda Gpio : 4	
AT+WBM = 1,2	+WBM: 1,1,0,4
	OK

18.46.3 Defined values

<BusId>

- 0 : SPI bus.
- 1 : I2C bus.
- 2 : Parallel bus.

<Mode>

- 0 : close bus.
- 1 : open bus.
- 2 : get bus status.

<Clock Mode>

- 0 : rest state is 0, the data is valid on rising edge (default value).
- 1 : rest state is 0, the data is valid on falling edge.
- 2 : rest state is 1, the data is valid on rising edge.
- 3 : rest state is 1, the data is valid on falling edge.

<ChipSelect> (default 0)

<ChipSelectPolarity>

- 0 : LOW (Chip select signal is valid on low state). (Default value).
- 1 : HIGH (Chip select signal is valid on high state)

<LsbFirst>

0 : LSB (Data are sent with LSB first)

1 : MSB (Data are sent with MSB first) (default value)

<Gpio ChipSelect > if ChipSelect = GPIO (default GPIO 0, see § 15.12.3)

The GPIO value is between 0 and 7.

It must be a GPIO or a GPO (not a GPI), and not allocated by any Open-AT embedded application.

Please refer to +WIOM command

<Gpio Handling > if ChipSelect = GPIO

0 : SPI BYTE (GPIO signal pulse on each written or read byte)

1 : SPI FRAME (GPIO signal works as a standard Chip Select signal) (default value)

18.46.3.1 15.50.3.2 for I2C bus :

<Scl Gpio> (default value is 0)

The Scl GPIO value is between 0 and 7.

It must be a GPIO (not a GPI or GPO) and not allocated by an Open-AT embedded application.

<Sda Gpio> (default value is 4)

The Sda GPIO value is between 0 and 7.

It must be a GPIO (not a GPI or GPO) and not allocated by an Open-AT embedded application.

18.46.3.2 15.50.3.3 for Parallel bus (only on Pac products) :

<ChipSelect> (default value is 1)

0 : GPIO 5 (it must not be allocated by any Open-AT application)

1 : LCDEN (same pin as SPI_EN, and Gpio 8 on P32X6 products (it must not be allocated by any Open-AT application))

<Order> (default value is 0)

0 : DIRECT

1 : REVERSE

<LCDEN AddressSetUpTime> if ChipSelect = LCDEN (default value is 0)

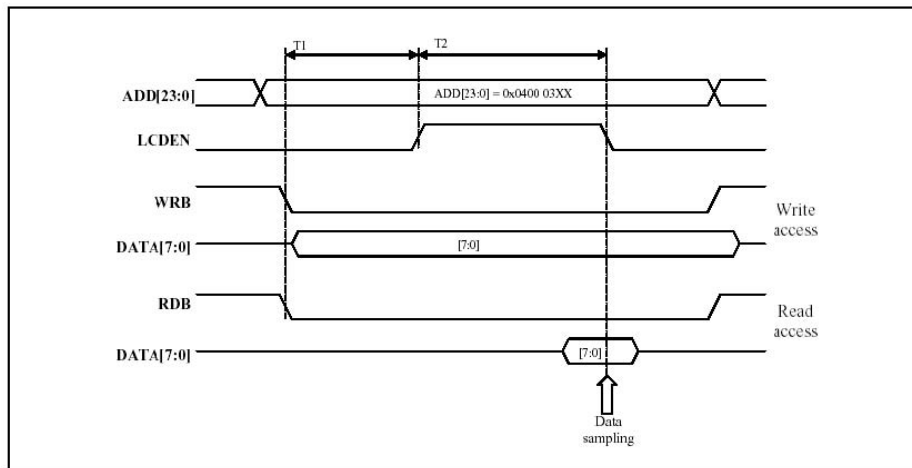
The <Lcd AddressSetUpTime> value is between 0 and 31.

The resulting time is :

For P32X3 product: (X * 38.5) ns ;

For P32X6 product : (1 + 2 X) * 19 ns.

This is the time between the setting of an address on the bus, and the activation of the LCD_EN pin (T1 on the figure bellow).



<LCDEN SignalPulseDuration> if ChipSelect = LCDEN (default value is 0)

The **<Lcd LcdenSignalPulseDuration>** value is between 0 and 31.

The resulting time is :

For P32X3 product: $(X + 1.5) * 38.5 \text{ ns}$;

For P32X6 product : $(1 + 2 * (X + 1)) * 19 \text{ ns}$

(Warning, for this product, the 0 value in considered as 32).

This is the time during which the LCD_EN signal is valid (T2 on the figure above).

<LCDEN PolarityControl> if ChipSelect = LCDEN (default value is 0)

0 : LOW (LCD_EN signal is valid on low state)

1 : HIGH (LCD_EN signal is valid on high state)

<GPIO NbWaitState> if ChipSelect = GPIO (default value is 0)

This is the time during which the data is valid on the bus.

0 : 62 ns

1 : 100 ns

2 : 138 ns

3 : 176 ns

Notes :

- If one or two IOs are needed by a bus, they are not available any more for the +WIOR , +WIOW, +WIOM commands. When the corresponding bus is closed, these commands resume the control of the IOs.
- A bus may not be available for an open operation if an Open-AT embedded application has opened it before with the same parameters. In this case, the +WBM command will return +CME ERROR: 3.

18.47 FLYFOT Hang-up +WATH

18.47.1 Description

This specific command is used by the application to disconnect the remote user, specifying a release cause and the location. In the case of multiple calls, all calls are released (active, on-hold and waiting calls).

18.47.2 Syntax

Command Syntax AT+WATH=<RelCause>,<location>

AT+WATH=31	OK
Note : Ask for disconnection with release cause=normal and location=USER	Note : Every call, if any, are released
AT+WATH=?	+WATH: (1-127),(0-5,7,10)
AT+WATH=17,2	OK
Note : Ask for disconnection with release cause=user busy and location=public network serving the local user	Note : Every call, if any, are released

18.47.3 Defined values

<RelCause> :

decimal value from 1 to 127 (see the table in appendix 18.4 “Failure Cause from GSM 04.08 recommendation)

<location> :

optional parameter (default value =0)

values as defined in 04.08

0 : user

1 : private network serving the local user

2 : public network serving the local user

3 : transit network

4 : public network serving the remote user

5 : private network serving the remote user

7 : international network

10 : network beyond interworking point

Notes :

“AT+WATH=0” has the same behaviour as “ATH”

18.48 Write IMEI +WIMEI

18.48.1 Description

The download of the IMEI is available through this specific command. This operation is possible

only if the module contains the default IMEI.

The IMEI can only be downloaded once.

No password is needed. If the download is not correct, only FLYFOT can reset the IMEI.

18.48.2 Syntax

Command syntax AT+WIMEI=<IMEI>

Command	Possible responses
AT+WIMEI? <i>Request IMEI</i>	+WIMEI: 123456789012345 OK <i>Note: Default IMEI present in EEPROM</i>
AT+WIMEI=123456789099995 <i>First Download</i>	OK
AT+WIMEI=12345 <i>First Download with wrong length of the string</i>	+CME ERROR: 24
AT+WIMEI=123456789999996 <i>Try to overwrite an IMEI already downloaded</i>	+CME ERROR: 3
AT+WIMEI? <i>Request IMEI</i>	+WIMEI: 123456789099995 OK <i>Note: IMEI present in EEPROM</i>
AT+WIMEI=?	OK <i>Note: Command valid</i>

18.48.3 Defined values

<IMEI>

14 or 15 digits as defined by GSM 03.03.

18.49 Write IMEI SVN: +WSVN

18.49.1 Description

The update of the IMEI SVN is available through this **specific** command.

18.49.2 Syntax

Command syntax : AT+WSVN=<IMEISVN>

Command	Possible responses
AT+WSVN?	+WSVN: 10
	OK
Note: Request IMEI SVN	Note: IMEI SVN present in
	EEPROM

AT+WSVN=11	OK
Note: Update the IMEI SVN	
AT+WSVN=256	+CME ERROR: 24
	Note: wrong length of the string.
	1 <= IMEI SVN <= 255
AT+WSVN=?	+WSVN: (1-255)
	OK
	Note: Command valid

18.49.3 Defined values

<IMEI SVN> IMEI SVN value between 1 and 255

18.50 FLYFOT multi-band selection command: +WMBS

18.50.1 Description

This command permits to select the GSM bands on which the module have to work. This command is allowed only if the selected bands are supported. The module have to be reset to take this change into account.

18.50.2 Syntax

Command syntax : AT+WMBS=<Band>

Command	Possible responses
AT+WMBS=<Band>	OK
	Note: Band mode selected
AT+WMBS=<Band>	+CME ERROR: 3
	Note: Band not allowed
AT+WMBS?	+WMBS:<Band>,<ResetFlag> OK
	Note: current selected band
	mode is returned
AT+WMBS=?	+WMBS: (0,3,4) OK
	Note: Only 850 mono-band or 850-1900 bi-band are available
AT+WMBS=?	+WMBS: (0,1,2,3,4,5,6)
	OK
	Note: all bands are available

18.50.3 Defined values

<Band> : frequency band configuration to be supported

0 : mono-band mode 850 MHz

- 1 : mono-band mode 900 MHz
- 2 : mono-band mode 1800 MHz
- 3 : mono-band mode 1900 MHz
- 4 : dual-band mode 850/1900 MHz
- 5 : dual-band mode 900/1800 MHz
- 6 : dual-band mode 900/1900 MHz

<ResetFlag>

0 : the feature was not modified since the last boot of the product.

1 : the feature has been modified since the last boot of the product : it has to be reset in order to take the modification into account.

18.51 Ring Melody Playback +CRMP

18.51.1 Description

This command allows a melody to be played. All melodies are manufacturer defined.

For incoming voice, data or fax calls, 10 manufacturer-defined melodies can be played back (in a loop).

Note:

loop melodies (for voice/data/fax call) must be stopped by a +CRMP command with the <index> field set to 0 (example: +CRMP=0,,,0).

When the <volume> parameter is given, this overwrites the <sound level> value of the +CRSL command. If the <volume> parameter is not given, the <sound level> value of +CRSL is used as default value.

18.51.2 Syntax :

Command syntax : AT+CRMP=<call type>[,<volume>,<type>,<index>]

Command	Possible responses
AT+CRMP=0,7,0,2 Note : Play voice call melody index 2 with volume level 7.	OK Note : Melody Playback.
AT+CRMP=0,,,0 Note : Stop the melody.	OK Note : The melody is stopped.
AT+CRMP=? Note : supported parameters	+CRMP: (0-2),(0-15),0,(0-10) OK

18.51.3 5.18.3 Defined values :

<call type>

0 Incoming voice call

1 Incoming data call

2 Incoming fax call

<volume>

0 Min volume

...

6 Default volume

15 Max volume

<type>

0 Manufacturer Defined (default)

<index>

0 Stop Melody Playback

1-10 Melody ID for voice/data/fax call type (default : 1)

18.52 Ringer Sound Level +CRSL

18.52.1 Description :

This command is used to set/get the sound level of the ringer on incoming calls. The set command changes the default <volume> value of the +CRMP command.

18.52.2 Syntax :

Command syntax : AT+CRSL=<sound level>

Command	Possible responses
AT+CRSL=0 Note : Set volume to Min.	OK Note : Current ring playing with Min. volume.
AT+CRSL=15 Note : Set volume to Max.	OK Note : Current ring playing with Max. volume.
AT+CRSL=? Note : supported parameters	+CRSL: (0-15) OK

18.52.3 Defined values :

<sound level>

0 Min volume

6 Default volume (default)

15 Max volume

18.53 FLYFOT Matrix +TMTX

18.53.1 Description:

This command return **GB2312** character matrix in 12*12 mode.

18.53.2 Syntax :

Command syntax : AT+TMTX=<Mode>, <Unicode_data>

Response syntax : + TMTX: < character matrix in HEX mode>

Command	Possible responses
AT+TMTX=? Note : Ask for the list of possible values	+TMTX: (1),<unicode_data> Note : Mode must be 1
AT+TMTX=1, 4f60597d Note : Get 6123 and 6124 character matrix	+TMTX: 11, 00, 11, 00, 11, 00, 23, FC, 22, 04, 64 , 08, A8, 40, 20, 40, 21, 50, 21, 48, 22, 4 4, 24, 44, 20, 40, 20, 40, 21, 40, 20, 80 10, 00, 11, FC, 10, 04, 10, 08, FE, 10, 22 , 20, 22, 20, 23, FE, 42, 20, 24, 20, 14, 2 0, 08, 20, 14, 20, 22, 20, 40, A0, 80, 40 OK

18.53.3 Defined values:

< Mode >

1 : Get Unicode data matrix

<Unicode_data>

Unicode data which included in **GB2312** CHARSET, the max characters count is 5.

19 Appendixes

19.1 ME error result code : +CME ERROR: <error>

<error>	Meaning	Resulting from the following commands
3	Operation not allowed	All GSM 07.07 commands (+CME ERROR: 3)
4	Operation not supported	All GSM 07.07 commands (+CME ERROR: 4)
5	PH-SIM PIN required (SIM lock)	All GSM 07.07 commands (+CME ERROR: 5)
10	SIM not inserted	All GSM 07.07 commands (+CME ERROR: 10)
11	SIM PIN required	All GSM 07.07 commands (+CME ERROR: 11)
12	SIM PUK required	All GSM 07.07 commands (+CME ERROR: 12)
13	SIM failure	All GSM 07.07 commands (+CME ERROR: 13)
16	Incorrect password	+CACM, +CMM, +CPUC, +CLCK, +CPWD, +CPIN, +CPIN2 (+CME ERROR: 16)
17	SIM PIN2 required	+CPBW (FDN), +CLCK (FDN),
18	SIM PUK2 required	+CACM, +CMM, +CPUC, +CPBW (FDN), +CPIN, +CPIN2, +CLCK (FDN), +CPWD
20	Memory full	+CPBW
21	Invalid index	+CPBR, +CPBW, ATD>[mem]index, +WMGO
22	Not found	+CPBF, +CPBP, +CPBN, +CGSN, +WOPN, ATD>[mem]"name"
24	Text string too long	+CPBW, +CPIN, +CPIN2, +CLCK, +CPWD
25	Invalid characters in password	+CPINC
26	Dial string too long	+CPBW, ATD, +CCFC
27	Invalid characters in dial string	+CPBW
30	No network service	+VTS, +COPS=?, +CLCK, +CCFC, +CCWA, +CUSD
32	Network not allowed – emergency calls only	+COPS
40	Network personalization PIN required (Network lock)	All GSM 07.07 commands (+CME ERROR: 40)

<error>	Meaning	Resulting from the following commands
132	service option not supported (#32)	+CGACT +CGDATA ATD*99
133	requested service option not subscribed (#33)	+CGACT +CGDATA ATD*99
134	service option temporarily out of order (#34)	+CGACT +CGDATA ATD*99
148	unspecified GPRS error	All GPRS commands
149	PDP authentication failure	+CGACT +CGDATA ATD*99
150	invalid mobile class	+CGCLASS +CGATT

19.2 Message service failure result code: +CMS ERROR : <er>

<er> is defined as below :

<er>	Meaning	Resulting from the following commands
1 to 127	Error cause values from the GSM recommendation 04.11 Annex E2	+CMGS, +CMSS
301	SMS service of ME reserved	+CSMS (with +CMS: ERROR 301)
302	Operation not allowed	All SMS commands (+CMSS, +CMGL, +CPMS, +CSMP...
303	Operation not supported	All SMS commands
304	Invalid PDU mode parameter	+CMGS, +CMGW
305	Invalid text mode parameter	+CMGS, +CMGW, +CMSS
310	SIM not inserted	All SMS commands
311	SIM PIN required	All SMS commands
312	PH-SIM PIN required	All SMS commands
313	SIM failure	All SMS commands
316	SIM PUK required	All SMS commands
317	SIM PIN2 required	All SMS commands
318	SIM PUK2 required	All SMS commands
321	Invalid memory index	+CMGR, +CMSS, +CMGD
322	SIM memory full	+CMGW
330	SC address unknown	+CSCA?, +CMSS, +CMGS
340	no +CNMA acknowledgement expected	+CNMA

19.3 Specific error result codes

<error>	Meaning	Resulting from the following commands
500	unknown error.	All commands
512	MM establishment failure (for SMS).	+CMGS, +CMSS (+CMS ERROR: 512)
513	Lower layer failure (for SMS)	+CMGS, +CMSS (+CMS ERROR: 513)
514	CP error (for SMS).	+CMGS, +CMSS (+CMS ERROR: 514)
515	Please wait, init or command processing in progress.	All commands ("+CME ERROR: 515" ERROR: 515") or "+CMS
517	SIM Toolkit facility not supported.	+STGI
518	SIM Toolkit indication not received.	+STGI
519	Reset the product to activate or change a new echo cancellation algo.	+ECHO, +VIP
520	Automatic abort about get plmn list for an incoming call.	+COPS=?
526	PIN deactivation forbidden with this SIM card.	+CLCK
527	Please wait, RR or MM is busy. Retry your selection later.	+COPS
528	Location update failure. Emergency calls only.	+COPS
529	PLMN selection failure. Emergency calls only.	+COPS
531	SMS not sent : the <da> is not in FDN phonebook, and FDN lock is enabled. (for SMS)	+CMGS, +CMSS (+CMS ERROR: 531)
532	the embedded application is activated so the objects flash are not erased	+WOPEN
533	Missing or Unknown APN	ATD*99 +GACT +CGDATA

19.4 Failure Cause from GSM 04.08 recommendation (+CEER)

Cause value	Diagnostic
1	Unassigned (unallocated) number
3	No route to destination
6	Channel unacceptable
8	Operator determined barring
16	Normal call clearing
17	User busy
18	No user responding
19	User alerting, no answer
21	Call rejected
22	Number changed

26	Non selected user clearing
27	Destination out of order
28	Invalid number format (incomplete number)
29	Facility rejected
30	Response to STATUS ENQUIRY
31	Normal, unspecified
34	No circuit/channel available
38	Network out of order
41	Temporary failure
42	Switching equipment congestion
43	Access information discarded
44	Requested circuit/channel not available
47	Resources unavailable, unspecified
49	Quality of service unavailable
50	Requested facility not subscribed
55	Incoming calls barred with in the CUG
57	Bearer capability not authorized
58	Bearer capability not presently available
63	Service or option not available, unspecified
65	Bearer service not implemented
68	ACM equal to or greater than ACMmax
69	Requested facility not implemented
70	Only restricted digital information bearer capability is available
79	Service or option not implemented, unspecified
81	Invalid transaction identifier value
87	User not member of CUG
88	Incompatible destination
91	Invalid transit network selection
95	Semantically incorrect message
96	Invalid mandatory information
97	Message type non-existent or not implemented
98	Message type not compatible with protocol state
99	Information element non-existent or not implemented
100	Conditional IE error
101	Message not compatible with protocol state
102	Recovery on timer expiry
111	Protocol error, unspecified
127	Interworking, unspecified

Cause value	Diagnostic
224	MS requested detach
225	PDP unsuccessful activation cause MMI ignore
226	NWK requested Detach
227	Unsuccessful attach cause NO SERVICE
228	Unsuccessful attach cause NO ACCESS
229	Unsuccessful attach cause GPRS SERVICE REFUSED
230	PDP deactivation requested by Nwk
231	PDP deactivation cause LLC link activation failed
232	PDP deactivation cause NWK reactivation with same TI
233	PDP deactivation cause GMM abort
234	PDP deactivation cause LLC or SNDCP failure
235	PDP unsuccessful activation cause GMM error
236	PDP unsuccessful activation cause NWK reject
237	PDP unsuccessful activation cause NO NSAPI available
238	PDP unsuccessful activation cause SM refuse

All other values in the range 0 to 31 shall be treated as cause 31.

All other values in the range 32 to 47 shall be treated as cause 47.

All other values in the range 48 to 63 shall be treated as cause 63.

All other values in the range 64 to 79 shall be treated as cause 79.

All other values in the range 80 to 95 shall be treated as cause 95.

All other values in the range 96 to 111 shall be treated as cause 111.

All other values in the range 112 to 127 shall be treated as cause 127.

19.5 Specific Failure Cause for +CEER

Cause value	Diagnostic
240	FDN is active and number is not in FDN
241	Call operation not allowed
252	Call barring on outgoing calls
253	Call barring on incoming calls
254	Call impossible
255	Lower layer failure

19.6 GSM 04.11 Annex E-2: Mobile originating SM-transfer

These error causes could appear for SMS commands (+CMGS, +CMSS, +CMGD...)

Cause no 1: "Unassigned (unallocated) number"

This cause indicates that the destination requested by the Mobile Station cannot be reached because, although the number is in a valid format, it is not currently assigned (allocated).

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Cause no 8: "Operator determined barring"

This cause indicates that the MS has tried to send a mobile originating short message when the MS's network operator or service provider has forbidden such transactions.

Cause no 10: "Call barred"

This cause indicates that the outgoing call barred service applies to the short message service for the called destination.

Cause no 21: "Short message transfer rejected"

This cause indicates that the equipment sending this cause does not wish to accept this short message, although it could have accepted the short message since the equipment sending this cause is neither busy nor incompatible.

Cause no 27: "Destination out of service"

This cause indicates that the destination indicated by the Mobile Station cannot be reached because the interface to the destination is not functioning correctly. The term "not functioning correctly" indicates that a signaling message was unable to be delivered to the remote user; e.g., a physical layer or data link layer failure at the remote user, user equipment off-line, etc.

Cause no 28: "Unidentified subscriber"

This cause indicates that the subscriber is not registered in the PLMN (e.g.. IMSI not known)

Cause no 29: "Facility rejected"

This cause indicates that the facility requested by the Mobile Station is not supported by the PLMN.

Cause no 30: "Unknown subscriber"

This cause indicates that the subscriber is not registered in the HLR (e.g.. IMSI or directory number is not allocated to a subscriber).

Cause no 38: "Network out of order"

This cause indicates that the network is not functioning correctly and that the condition is likely to last a relatively long period of time; e.g., immediately reattempting the short message transfer is not likely to be successful.

Cause no 41: "Temporary failure"

This cause indicates that the network is not functioning correctly and that the condition is not likely to last a long period of time; e.g., the Mobile Station may wish to try another short message transfer attempt almost immediately.

Cause no 42: "Congestion"

This cause indicates that the short message service cannot be serviced because of high traffic.

Cause no 47: "Resources unavailable, unspecified"

This cause is used to report a resource unavailable event only when no other cause applies.

Cause no 69: "Requested facility not implemented"

This cause indicates that the network is unable to provide the requested short message service.

Cause no 81: "Invalid short message transfer reference value"

This cause indicates that the equipment sending this cause has received a message with a short message reference which is not currently in use on the MS-network interface.

Cause no 95: "Invalid message, unspecified"

This cause is used to report an invalid message event only when no other cause in the invalid

message class applies.

Cause no 96: "Invalid mandatory information"

This cause indicates that the equipment sending this cause has received a message where a mandatory information element is missing and/or has a content error (the two cases are undistinguishable).

Cause no 97: "Message type non-existent or not implemented"

This cause indicates that the equipment sending this cause has received a message with a message type it does not recognize either because this is a message not defined or defined but not implemented by the equipment sending this cause.

Cause no 98: "Message not compatible with short message protocol state"

This cause indicates that the equipment sending this cause has received a message such that the procedures do not indicate that this is a permissible message to receive while in the short message transfer state.

Cause no 99: "Information element non-existent or not implemented"

This cause indicates that the equipment sending this cause has received a message which includes unrecognized information elements because the information element identifier is not defined or it is defined but not implemented by the equipment sending the cause. However, the information element is not required to be present in the message so that the equipment sends the cause to process the message.

Cause no 111: "Protocol error, unspecified"

This cause is used to report a protocol error event only when no other cause applies.

Cause no 127: "Interworking, unspecified"

This cause indicates that there has been interworking with a network which does not provide causes for actions it takes; thus, the precise cause for a message which is being sent cannot be ascertained. All values other than specified should be treated as error Cause No 41

19.7 Data / Commands multiplexing protocol

19.7.1 Introduction

The M260 multiplexing protocol operates between a DCE (Data Communication Equipment: the product) and a DTE (Data Terminal Equipment). It allows a double session over a serial link interface: one for AT commands and one for DATA communications. In Multiplexing Mode, AT commands and DATA are encapsulated into packets. The header of these packets allows to recognize whether it is a DATA packet or an AT command packet.

AT+WMUX=1 activates the Multiplexing Mode. With this mode, AT commands and DATA are encapsulated into packets. The header of these packets allows to recognize whether it is a DATA packet or an AT command packet. AT+WMUX=0 deactivates the Multiplexing Mode and gets the product back to the default mode.

19.7.2 AT command packets

An AT command is encapsulated into a packet with a header which allows to separate it from DATA packets. This packet is formed by a header (3 bytes), the AT command itself and a checksum (1 byte) :

B7	B6	B5	B4	B3	B2	B1	B0
Start pattern → 0xAA							
AT command length LSB							
AT command pattern → 0x1D					AT command length MSB		
AT command							
Checksum							

The 3 bytes of the header are:

- ➔ the first byte (0xAA) is used to identify the packet,
- ➔ the second byte represents the 8 LSB (Low Significant Bits) bits of the length of the AT command,
- ➔ the third byte is made of 2 parts :
 - the 3 LSB bits are the 3 MSB (Most Significant Bits) bits of the length of the AT command,
 - the 5 MSB bits (0x1D which equals to 0xE8 with the 3 bits offset) are used to identify an AT command.

The maximum length of an AT command could be 2047 bytes which is greater than all the existing AT commands.

The checksum is the addition (modulo 256) of all the transmitted bytes (header bytes and AT command bytes).

19.7.3 Data packets

Like for AT commands, DATA are encapsulated into packets. These packets are composed of a header (3 bytes), the data bytes and the checksum (1 byte) :

B7	B6	B5	B4	B3	B2	B1	B0
Start pattern → 0xDD							
Data packet length LSB							
Data packet type					Data packet length MSB		
Data bytes							
Checksum							

The 3 bytes of the header are:

- ➔ the first byte (0xDD) used to identify the packet,
- ➔ the second byte represents the 8 LSB bits of the length of the data field,
- ➔ the last byte is made of 2 parts :
 - the 3 LSB bits represent the 3 MSB bits of the length of the data field,
 - the 5 MSB bits represent the packet type.

Data packets can have different values according to the type of packet:

- ➔ 0 . DATA packet : the packet contains the data to transmit on the radio link or received from the radio link,
- ➔ 1 . STATUS packet: the packet contains the status of SA, SB, X bits⁽¹⁾ and the break condition coding as follow :

SA	SB	X	BRK	RI	Spare	Spare	Spare
----	----	---	-----	----	-------	-------	-------

- the length of data for the status packet is always equal to 1,
- whenever a status changes (except break), all the status bits are included,
- these bits are off by default (and therefore the bits DTR and RTS), so it is necessary to send a status packet to the target at the beginning of the multiplexing to start the transmission,

¹ These status bits contain the V24 control information :

- SA contains DTR (signal CT108 . from terminal to IWF) and DSR (signal CT107 . from terminal to IWF),
- SB contains RTS (signal CT105 . from terminal to IWF) and DCD (signal CT109 . from IWF to terminal),
- X contains CTS (signal CT106).

For more information, refer to GSM 07.02

➔ 2 . READY packet : the packet indicates that the target is ready to receive data :

- no data are transmitted in this packet (so the length is null),

➔ 3 . BUSY packet : the packet indicates that the target is busy and can not receive data :

- like the ready packet, no data are transmitted,

➔ other values : currently, these values are not used (reserved for future enhancement).

The checksum is calculated like the AT command packet checksum (addition of all the transmitted bytes including the header bytes).

19.7.4 Examples

19.7.4.1 AT command and its answer

When there is no encapsulation the AT command transmitted on the serial link is like this (in ASCII and hexadecimal):

AT\r\n ⇔ 0x41 0x54 0x0D 0x0A

and the answer is like this :

\r\nOK\r\n ⇔ 0x0D 0x0A 0x4F 0x4B 0x0D 0x0A

With the encapsulation in the serial link, the packet transmitted is (in hexadecimal) :

0xAA 0x04 0xE8 0x41 0x54 0x0D 0x0A 0x42

and the answer is like this :

0xAA 0x06 0xE8 0x0D 0x0A 0x4F 0x4B 0x0D 0x0A 0x60

19.7.4.2 Initialisation and Data packet

When the Multiplexing Mode is activated (+WMUX=1), the product sends 2 Data packets after the establishment of a DATA call (after the CONNECT xxxx message) : 1 READY Packet and 1 STATUS Packet. To set the different signals to the right value, it is necessary to send a STATUS packet to the product.

Here are some examples of STATUS packets :

0xDD 0x01 0x08 0x40 0x26 ⇔ bit RTS is on

to start a data call, all the bits should be on :

0xDD 0x01 0x08 0xC0 0xA6 (bits DTR and RTS are on)

19.7.5 Error manage

When received data checksum is error ,we should discard the firs three byte, Start pattern , Data length and Data packet type, then find “0xAA” or “0xDD” to start the next data frame. If you do this action, you will skip the error data frame and get next correct frame start byte that maybe “0xAA” or “0xDD”. The high layer protocol will guarantee the error data to be resend.

19.7.6 Restriction

The autobauding mode is not available when the Multiplexing Mode is activated : the serial link speed must be set to a fixed rate.