

AT commands for PDA

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1 Aim of the document

This document will give the minimal set of AT commands to use in order to communicate with a PDA application.

This document is based on V420 AT commands firmware.

This documents will give hints and recommendations to use AT commands.

Please note that this document is a complement to AT commands specification (sii015.d89). It does not replace it. It just gives hints for major AT commands used with PDA products.

2 Initialization

When module is ready to receive AT commands, CTS signal will be set to high value.

+WIND: 3

This means that AT commands can be received by the module.
(this indication will appear only if AT+WIND=4 has been set before)

AT+WIND=511

OK

All general indications are set. Please refer to AT commands specification to set only several indications.

AT+CFUN?

+CFUN: 1

OK

Check for current functionality level.

+WIND: 1

This means that the SIM has been detected by the module. When SIM is detected, the customer application can check the PIN state.

AT+CPIN?

+CPIN: READY

PIN is disabled.

or

+CPIN : SIM PIN

PIN is enabled and has to be entered. Only three tries are possible.



Before receiving +WIND : 4, AT commands, which generates unsolicited AT commands, can be sent. AT commands to set unsolicited results are described in next chapter.

+WIND: 4

This means that mobile initialization is over. During initialization the module reads the SIM card files. This indication means that the user can now have a full access to phonebook, short messages and so on...

3 Enable unsolicited AT commands

3.1 USSD

AT+CUSD=1
OK

Allow USSD network notifications.

For example,

ATD#444#
OK

+CUSD: 2

3.2 Incoming calls

AT+CLIP=1
OK

Allows more informations about incoming calls. Number indication depends on network.

For example,

RING

+CLIP: "28240785",129

3.3 Signal strength

AT+CCED=1,8
OK

Used to get Automatic RxLev indication.

+CSQ: 22,99

The signal strength of the serving cell shall be read every 5 seconds in idle, and every 500 ms in dedicated mode (in communication). The response will be a +CSQ answer and not a +CCED answer.

During 5 seconds when entering dedicated mode, Wavecom's software will answer 99.

One **example** for antenna icons management is :



/ * -82 dBm */	15 (4 bars)
/ * -88 dBm */	12 (3 bars)
/ * -94 dBm */	9 (2 bars)
/ * -100 dBm */	6 (1 bars)
Less than 6 (0 bars)	

3.4 Network registration

AT+CREG=1
OK

Set automatic network registration indication.

+CREG: 2
Module not registered

+CREG : 1
Home network found

+CREG : 5
registered in roaming

3.5 Call waiting

AT+CCWA=1
OK

Allows more informations about call waiting numbers. Number indication depends on network.

For example,

RING

ata
OK

+CCWA: "0926351278",129,1

3.6 Incoming calls

AT+CRC=1
OK

This command enables a more detailed ring indication.

For example,

+CRING: VOICE



+CRING : FAX

This command is useful to indicate the user to plug a data cable and so on...

3.7 Outgoing data calls

AT+CR=1

OK

Service reporting control

AT+DR=1

OK

V42 bis data compression report

For example,

ATD28240255

+CR: REL ASYNC

+DR: NONE

CONNECT 9600

(Data communication stopped by +++)

ATH

OK

4 Communication state

4.1 Outgoing calls

ATD28240254 ;

OK

Please note the « ; » for speech calls

ATD28240255

CONNECT 9600

This command is for a data call

AT+FCLASS=1

OK

ATD28240255

CONNECT 9600

This command is for a fax call class 1.



4.2 Call features

AT+VGR=64
OK

Change the speaker volume

This command can be used during the outgoing call procedure. So in case of network announcements, volume can be increased.

AT+SPEAKER=1
OK

Selection of micro 2 and speaker 2

In case of headset, the customer's software will have to manage the hardware detection. In case of plug, send **AT+SPEAKER=1**. In case of unplug, send **AT+SPEAKER=0**.

This command can be used during the outgoing call procedure.

AT+VTD=3
OK

AT+VTS=1
OK

First command is to set the DTMF duration. The second one is to send the DTMF. This command can be used during the outgoing call procedure. Some network services require to send DTMF when audio path is opened but call connection not realized.

AT+VGT=0
OK

Command to set the micro gain.

AT+ECHO=0
OK

AT+SIDET=1,1
OK

First command allows to modify echo cancellation parameters and the second one sidetone parameters. Those two AT commands can be useful but hardware checkings have to be done about speaker and micro choice.

4.3 Call failure

In case of call failure, **AT+CEER** shall be used to know the error cause type.

Atd3434385455;
NO CARRIER

at+ceer
+CEER: Error 1
OK



4.4 How to prompt a user that is in call waiting status.

AT+CCWA=1,1
OK

Enable call waiting for speech

RING

incoming call

ata
OK

answer to call

+CCWA: "0926351278",129,1

Another incoming call -> Call waiting

ath
OK

This fonctionnality depends on network features.

4.5 How to set BUSY tone, (the user want to reject the incoming call)

at+ccfc=1,2
+CCFC: 1,1,"+886931010026",145
OK

Check the call forwarding on busy is active

atd222;
OK

+CCWA: "0926351278",129,1

Waiting call

at+chld=0
OK

Waiting call is transfered to the previous number this fonctionnality is called UDUB (User Determined User Busy)

4.6 How to prompt a user when he has been held.

AT+CSSN=1,1
OK



ATD0926351278;
OK

+CSSU: 2,,"0926351278",129

Call has been put on hold

+CSSU: 3,,"0926351278",129

Call has been retrieved

NO CARRIER

This fonctionnality depends on network notifications.

atdl
0926351278;
OK

at+chld=2
OK

Call is put on hold

+CSSU: 5

Call on hold has been released

NO CARRIER

4.7 How to get the list of current calls.

atd0926351278;
OK

at+chld=2
OK

First call is put on hold.

atd222;
OK

at+clcc
+CLCC: 1,0,1,0,0,"0926351278",129
+CLCC: 2,0,0,0,0,"222",129
OK

Two calls are present. One is active, one is on hold.

ath
OK



4.8 How to make a multiparty call

AT+CCWA=1,1
OK

Enable call waiting. This command can only be sent when network is found.

ATD97542004;
OK

Call setup was successful

...Conversation...

+CCWA: "27488333",129,1

Waiting call

ATA
OK

Put first call on hold and answer the second one.

...Conversation...

AT+CHLD=3
OK

Adds the held call to the conversation.

AT+CHLD=11
OK

Release the first call (i.e. 97542004) and recover the second call (i.e. 27488333)

...Conversation...

ATH

Release the second call.

4.9 Call melodies

For **incoming** calls, in a case of waiting call, the PDA application has to play the call waiting tone melody. To make a melody or tone, **AT+CRMP** (melody) or **AT+WTONE** (tone) are available.

For **outgoing** calls, if the module receives the information from the network that the calling party is alerting but no audio connection has been established then the module plays a local ring tone.

4.10 Call type



AT+WVR allows to modify the speech bearer type.
AT+WDR allows to modify the data bearer type.

These two commands have to be used carefully, especially when requesting half rate bearers. Networks might refuse the call.

4.11 Restrict phone number

AT+CLIR command allows control of the calling line identification restriction supplementary service.

```
at+clir?  
+CLIR: 2,1  
OK
```

Check CLIR network subscription. CLIR is here provisioned in permanent mode.

```
at+clir=2  
OK
```

CLIR suppression

```
atd93076624;  
+WIND: 5,1  
ath  
OK
```

So the number appears on remote unit.

```
at+clir=1  
OK
```

CLIR invocation

```
atd93076624;  
+WIND: 5,1  
+WIND: 9  
+WIND: 2  
BUSY  
+WIND: 6,1
```

So NO number appears on remote unit.

```
at+clir=0  
OK
```

According to CLIR subscription.

```
atd93076624;  
+WIND: 5,1  
+WIND: 9  
+WIND: 2  
ath  
OK
```

So the number appears on remote unit.



The following cases are for one shot calls :

```
atd93076624i;  
+WIND: 5,1  
+WIND: 9  
+WIND: 2  
BUSY  
+WIND: 6,1
```

One shot CLIR invocation.
So NO number appears on remote unit.

```
atd93076624i;  
+WIND: 5,1  
+WIND: 9  
+WIND: 2  
OK
```

One shot CLIR suppression.
So the number appears on remote unit.

4.12 Incoming call examples

First example:
AT+WIND=32
OK

+CRING: VOICE

+CLIP: "97542004",129

Remote user hangs up.

+WIND: 6,1

Please note that "NO CARRIER" is not sent by the module.

Second example:
+CRING: VOICE

+CLIP: "98051087",129

ata
+WIND: 9
OK

+CCWA: "97542004",129,1

Call waiting call.

+WIND: 5,2

Call 2 created

+WIND: 6,2

Call 2 released

Please note that "AT+CLCC" can be use to get more informations about current calls.

Third example:

at+cssn=1,1

OK

+CRING: VOICE

+CLIP: "97542004",129

ata

+WIND: 9

OK

Answer to incoming call.

+CCWA: "98051087",129,1

+WIND: 5,2

Call waiting. Call 2 created.

ata

+WIND: 9

OK

Answer to call waiting. Current active call is set on hold.

+CSSU: 5

Remote hold call has hanged up.

+WIND: 6,1

Call 1 is released.

NO CARRIER

User has hang up.

5 UCS2 format

The coding of the names in the SIM phonebooks can take one of three forms.

- 1) If the first octet in the alpha string is '80', then the remaining octets are 16 bit UCS2 characters, with the more significant octet (MSO) of the UCS2 character coded in the lower numbered octet of the alpha field, and the less significant octet (LSO) of the UCS2 character is coded in the higher numbered alpha field octet, i.e. octet 2 of the alpha field contains the more significant octet (MSO) of the first UCS2 character, and octet 3 of the alpha field contains the less significant octet (LSO) of the first UCS2 character (as shown below). Unused octets shall be set to 'FF', and if the alpha field is an even number of octets in length, then the last (unusable) octet shall be set to 'FF'.

Example 1

Octet 1	Octet 2	Octet 3	Octet 4	Octet 5	Octet 6	Octet 7	Octet 8	Octet 9
'80'	Ch1 _{MSO}	Ch1 _{LSO}	Ch2 _{MSO}	Ch2 _{LSO}	Ch3 _{MSO}	Ch3 _{LSO}	'FF'	'FF'

- 2) If the first octet of the alpha string is set to '81', then the second octet contains a value indicating the number of characters in the string, and the third octet contains an 8 bit number which defines bits 15 to 8 of a 16 bit base pointer, where bit 16 is set to zero, and bits 7 to 1 are also set to zero. These sixteen bits constitute a base pointer to a "half-page" in the UCS2 code space, to be used with some or all of the remaining octets in the string. The fourth and subsequent octets in the string contain codings as follows; if bit 8 of the octet is set to zero, the remaining 7 bits of the octet contain a GSM Default Alphabet character, whereas if bit 8 of the octet is set to one, then the remaining seven bits are an offset value added to the 16 bit base pointer defined earlier, and the resultant 16 bit value is a UCS2 code point, and completely defines a UCS2 character.

Example 2

Octet 1	Octet 2	Octet 3	Octet 4	Octet 5	Octet 6	Octet 7	Octet 8	Octet 9
'81'	'05'	'13'	'53'	'95'	'A6'	'XX'	'FF'	'FF'

In the above example;

- Octet 2 indicates there are 5 characters in the string
- Octet 3 indicates bits 15 to 8 of the base pointer, and indicates a bit pattern of 0hhh hhhh h000 0000 as the 16 bit base pointer number. Bengali characters for example start at code position 0980 (0000 1001 1000 0000), which is indicated by the coding '13' in octet 3 (shown by the italicised digits).
- Octet 4 indicates GSM Default Alphabet character '53', i.e. "S".
- Octet 5 indicates a UCS2 character offset to the base pointer of '15', expressed in binary as follows 001 0101, which, when added to the base pointer value results in a sixteen bit value of 0000 1001 1001 0101, i.e. '0995', which is the Bengali letter KA.

Octet 8 contains the value 'FF', but as the string length is 5, this a valid character in the string, where the bit pattern 111 1111 is added to the base pointer, yielding a sixteen bit value of 0000 1001 1111 1111 for the UCS2 character (i.e. '09FF').

- 3) If the first octet of the alpha string is set to '82', then the second octet contains a value indicating the number of characters in the string, and the third and fourth octets contain a 16 bit number which defines the complete 16 bit base pointer to a "half-page" in the UCS2 code space, for use with some or all of the remaining octets in the string. The fifth and subsequent octets in the string contain codings as follows; if bit 8 of the octet is set to zero, the remaining 7 bits of the octet contain a GSM Default Alphabet character, whereas if bit 8 of the octet is set to one, the remaining seven bits are an offset value added to the base pointer defined in octets three and four, and the resultant 16 bit value is a UCS2 code point, and defines a UCS2 character.

Example 3

Octet 1	Octet 2	Octet 3	Octet 4	Octet 5	Octet 6	Octet 7	Octet 8	Octet 9
'82'	'05'	'05'	'30'	'2D'	'82'	'D3'	'2D'	'31'

In the above example

- Octet 2 indicates there are 5 characters in the string
- Octets 3 and 4 contain a sixteen bit base pointer number of '0530', pointing to the first character of the Armenian character set.
- Octet 5 contains a GSM Default Alphabet character of '2D', which is a dash "-".
- Octet 6 contains a value '82', which indicates it is an offset of '02' added to the base pointer, resulting in a UCS2 character code of '0532', which represents Armenian character Capital BEN.
- Octet 7 contains a value 'D3', an offset of '53', which when added to the base pointer results in a UCS2 code point of '0583', representing Armenian Character small PIWR.

4) Examples

```
AT+CPBW=14,"123456",129,"804E004E004E00FFFF"  
OK
```

The following command is also correct.

```
AT+CPBW=15,"123456",129,"804E035F327621"  
OK
```

```
AT+CPBR=14  
+CPBR: 14,"789",129,"804E004E004E00FFFF"  
OK
```

```
AT+CPBR=15  
+CPBR: 15,"789",129,"804E035F327621"  
OK
```

```
AT+CPBW=?  
+CPBW=(1-100),20,(129,145),14  
OK
```

This means that 14 ascii characters can be used to store a name but of course only 7 UCS2 characters.

6 How to send an SMS ?

6.1 Text Mode

```
at+cmgf=1  
OK
```

The command selects the text mode.

```
at+csdh=1  
OK
```

This command gives more informations in text mode result codes



```
at+cscs?  
+CSCA: "+85294985795",145  
OK
```

Check that your service center address is correct.

```
at+csmp?  
+CSMP: 1,173,0,0  
OK
```

This command shall be used to select value for the <vp>, <pid>, the <dc>. These are the default value.

<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. <dc> values are defined in ETSI GSM 03.38 : Digital cellular telecommunications system (phase 2) ; Alphabets and language-specific information.

```
at&cscs  
OK
```

Parameters are saved.

```
at+cmgs=97542004  
>Flowers  
+CMGS: 44  
OK
```

A Short Message is sent at destination address 97542004 with the text « Flowers ». For test purposes, 97542004 is in fact the number of the SIM card inserted in the module.

```
+CMTI: "SM",5
```

Message is received

```
at+cmgr=5  
+CMGR: "REC UNREAD","+85297542004",,"00/09/01,15:03:07-28",145,4,0,0,  
"+85294980000",145,8  
Flowers  
OK
```

In this example the <dc> value is 0 (default alphabet) and the text length is 8.



In default alphabet up to 160 characters can be sent.

6.2 PDU mode

PDU mode is useful when the customer application wants to have a total control on SMS. In PDU mode, the data sent to Wavecom module (except the message reference) are sent to the network without modifications.



PDU mode is mandatory in order to use Short Message compression. Short Message compression is not handled by Wavecom's module.

PDU data are explained in **GSM recommendation 03.40**.

```
at+cmgf=0
OK
```

Set PDU mode.

```
at+cmgr=1
+CMGR: 2,,126
07915892020430F111000B915892026415F10000A7808080604028180E888462
C168381E90886442A9582E988C66C3E9783EA09068442A994EA8946AC56AB9
5EB0986C46ABD96EB89C6EC7EBF97EC0A070482C1A8FC8A472C96C3A9FD0A
8744AAD5AAFD8AC76CBED7ABFE0B0784C2E9BCFE8B47ACD6EBBDFF0B87C4
EAFDBEFF8BC7ECFEFFBFF
OK
```

Read a SMS in PDU mode.

```
07915892020430F1
Service center address
11
MTI
SMS submit, Validity period present coded relative format
Message reference
0B915892026415F1
Destination address
00
Protocol Identifier
00
Data coding scheme
A7
Validity period
80
User Data Length
8080604028180E888462C168381E90886442A9582E988C66C3E9783EA09068442A9
94EA8946AC56AB95EB0986C46ABD96EB89C6EC7EBF97EC0A070482C1A8FC8A472
C96C3A9FD0A8744AAD5AAFD8AC76CBED7ABFE0B0784C2E9BCFE8B47ACD6EBBD
FF0B87C4EAFDBEFF8BC7ECFEFFBFF
User Data
```

This is an example of an SMS in PDU mode. PDU data are explained in **GSM recommendation 03.40**.

6.3 Default Alphabet GSM 03.38 for SMS

During FTA, a special SMS is sent to the module in order to display all characters in Default alphabet (7 bits per character) in **GSM recommendation 03.38**.

Character table:

b7	0	0	0	0	1	1	1	1
b6	0	0	1	1	0	0	1	1

					b5	0	1	0	1	0	1	0	1
b4	b3	b2	b1			0	1	2	3	4	5	6	7
0	0	0	0	0		@	Δ	SP	0	i	P	ı	p
0	0	0	1	1		£	—	!	1	A	Q	a	q
0	0	1	0	2		\$	Φ	"	2	B	R	b	r
0	0	1	1	3		¥	Γ	#	3	C	S	c	s
0	1	0	0	4		è	Λ	α	4	D	T	d	t
0	1	0	1	5		é	Ω	%	5	E	U	e	u
0	1	1	0	6		ù	Π	&	6	F	V	f	v
0	1	1	1	7		î	Ψ	'	7	G	W	g	w
1	0	0	0	8		ò	Σ	(	8	H	X	h	x
1	0	0	1	9		ç	Θ	)	9	I	Y	i	y
1	0	1	0	10		LF	Ξ	*	:	J	Z	j	z
1	0	1	1	11		Ø	1)	+	;	K	Ä	k	ä
1	1	0	0	12		ø	Æ	,	<	L	Ö	l	ö
1	1	0	1	13		CR	æ	-	=	M	Ñ	m	ñ
1	1	1	0	14		Å	ß	.	>	N	Ü	n	ü
1	1	1	1	15		å	É	/	?	O	Š	o	à

- 1) This code is an escape to an extension of the 7 bit default alphabet table. A receiving entity which does not understand the meaning of this escape mechanism shall display it as a space character.

GSM 7bit default alphabet extension table

				b7	0	0	0	0	1	1	1	1
				b6	0	0	1	1	0	0	1	1
				b5	0	1	0	1	0	1	0	1
b4	b3	b2	b1		0	1	2	3	4	5	6	7
0	0	0	0	0					|			
0	0	0	1	1								
0	0	1	0	2								
0	0	1	1	3								
0	1	0	0	4		^						
0	1	0	1	5						2)		
0	1	1	0	6								
0	1	1	1	7								
1	0	0	0	8			{					
1	0	0	1	9			}					
1	0	1	0	10	3)							
1	0	1	1	11		1)						
1	1	0	0	12				[
1	1	0	1	13				~				
1	1	1	0	14]				
1	1	1	1	15			\					

- 1) This code value is reserved for the extension to another extension table. On receipt of this code, a receiving entity shall display a space until another extension table is defined.
- 2) This code represents the EURO currency symbol. The code value is that used for the character 'e'. Therefore a receiving entity which is incapable of displaying the EURO currency symbol will display the character 'e' instead.
- 3) This code is defined as a Page Break character and may be used for example in compressed CBS messages. Any mobile which does not understand the 7 bit default alphabet table extension mechanism will treat this character as Line Feed

at+cmgf=0
OK

Set PDU mode

at+cmgw=126

```
>0011000B915892026415F10000A7808080604028180E888462C168381E9088
6442A9582E988C66C3E9783EA09068442A994EA8946AC56AB95EB0986C46AB
D96EB89C6EC7EBF97EC0A070482C1A8FC8A472C96C3A9FD0A8744AAD5AAF
D8AC76CBED7ABFE0B0784C2E9BCFE8B47ACD6EBBDF0B87C4EAFDBEFF8BC
7ECFEFFBFF
+CMGW: 2
OK
```

This SMS is tested in FTA. So the application should check that all 128 characters are correctly displayed.

```
at+cmgf=1
OK
```

```
at+cscs="PCCP437"
OK
```

PC character set code page 437

```
at+cmgr=2
+CMGR: "STO UNSENT", "+85292046511",
@œ$•Š,—••€•† _èâ éâ äé 'á• !"#
%&'()*+,-./0123456789:;<=>?-ABCDEFGHIJKLMNOPQRSTUVWXYZ™¥š ¨`abcdefg
hijklmnopqrstuvwxyz,"'•...
OK
```

Due to the use of Windows Word fonts, the display is not correct. Below is a picture taken from Windows HyperTerminal.

```
at+cmgr=1
+CMGR: "STO UNSENT", "+85292046511",
@E$YëëüiöÇ
Åå _ŒΓ ΩΠ ΣΘ ÆæßÉ !"#$ %&'()*+,-./0123456789:;<=>?¡ABCDEFGHIJKLMNÖPQRSTU
ÜŠžabcdefghijklmnopqrstuvwxyzäöñüà
OK
```

```
at+cscs="HEX"
OK
```

Hexadecimal mode set

```
at+cmgr=2
+CMGR: "STO UNSENT", "+85292046511",
000102030405060708090A0B0C0D0E0F101112131415161718191A1B1C1D1E1
F20122232425262728292A2B2C2D2E2F303132333435363738393A3B3C3D3E
3F404142434445464748494A4B4C4D4E4F505152535455565758595A5B5C5D5
E5F606162636465666768696A6B6C6D6E6F707172737475767778797A7B7C7D
7E7F
OK
```

➡ Some networks modify the characters sent in default alphabet GSM 03.38. Due to the problem of displaying default alphabet GSM 03.38, it is wise to use PDU mode or Text Mode (Hex format) especially for the extension table.

Here is an example with the GSM 7bit default alphabet extension table :

```
at+cmgw=16
>0011000B915892026415F10000A7029B72
+CMGW: 2
OK
```

This SMS displays the Euro character.

```
at+cscs="HEX"
OK
```

Hexadecimal mode set

```
at+cmgr=2
+CMGR: "STO UNSENT","+85292046511",
1B65
OK
```

7 How to send an SMS in UCS2 ?

```
at+csmg=1,173,0,8
OK
```

This command shall be used to select value for the <vp>, <pid>, the <dc>.

```
at+cmgs=97542004
>4e004e0d
+CMGS: 45
OK
```

A Short Message is sent at destination address 97542004 with the text « 4e004e0d ». This text is 2 Chinese characters.

```
+CMTI: "SM",6
```

Message is received

```
at+cmgr=6
+CMGR: "REC UNREAD","+85297542004",,"00/09/01,15:03:5328",145,4,0,
8,"+85294980000",145,2
4E004E0D
OK
```

In this example the <dc> value is 8 (UCS2 alphabet) and the text length is 2.



In UCS2 alphabet up to 70 characters can be sent.

8 How to manage the SMS status report

The aim of the status report is to convey a report from the Service Center to the mobile.



AT+CNMI=0,1,1,1,0
OK

This to allow +CDS indications.

AT+CSMP=33,167,0,0
OK

This to set SRR to 1 (check AT commands specifications for more details)

Also the SMS status report depends on networks. Some networks don't support this feature.

Full example :

at+cnmi?
+CNMI: 0,1,1,1,0
OK

at+csmp?
+CSMP: 33,169,0,0
OK

at+cmgs=92046511
> bonjour_
+CMGS: 4
OK

+CDS: 6,4,"85292046511",129,"00/09/20,16:56:00-28","00/09/20,16:56:00-28",0

9 How to manage Cell Broadcast

Here is a sequence of AT commands to receive and read Cell Broadcast messages.

Cell Broadcast feature is depending on network capabilities.

1)

at+cnmi=0,1,1,0,0
OK

This command sets the rules for storing received CBMs (Cell Broadcast Message).
The syntax for this command is AT+CNMI=<mode>,<mt>,<bm>,<ds>,<bfr>.
Default for <bm> is 0.

<bm>	
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) or +CBM :<sn>,<mid>,<dcs>,<page>,<pages>(Text mode)

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<CR><LF> <data>

Check Wavecom document about AT commands to learn more about the other parameters of AT+CNMI.

2)

```
at+cscb=0
OK
```

Activation of CBM reception for all Message Identifiers.

3)

```
+CBMI: "BM",1
```

A cell broadcast has been received and store in position 1.

```
+CBMI: "BM",2
```

An another one in position 2.

4)

```
at+cpms="BM"
+CPMS: 2,20,6,20
OK
```

This command allows defining the message storage area to be used for reading, writing...

This command has selected CBM message storage. 2 cell broadcast messages are stored. 20 are the maximum number of cell broadcast that can be stored. 6,20 are for short messages.

```
at+cpms?
+CPMS: "BM",2,20,"SM",6,20
OK
```

5)

```
at+cmgr=1
+CMGR: "REC UNREAD",12240,882,1,1,1
HSI 17710 +0
14:44
PLS CALL "19010" FOR DETAILS
OK
```

```
at+cmgr=2
+CMGR: "REC UNREAD",9221,883,72,1,1
62C6606F53485E025FAE5347FF0C9694591CFF15002EFF18FF17FF15FF05FF0C
4E09500B6708FF16
002EFF12FF15FF05FF0C7F8E96FB63015E73002E002E8A7360C58ACB96FB002
30031003000300023
000D
OK
```

First cell broadcast is in english. Second one is in Chinese UCS2.



Check for the dcs (data coding scheme) to know the alphabet used with the cell broadcast text.

In text mode (+CMGF=1) and for cell broadcast storage, format for +CMGR is :
+CMGR: <stat>,<sn>,<mid>,<dcs>,<page>,<pages><CR><LF><data>

<stat> : same as for short messages

<stat> 0 : "REC UNREAD" (received unread message)

1 : "REC READ" (received read message)

2 : "STO UNSENT" (stored unsent message)

3 : "STO SENT" (stored sent message)

4 : "ALL" (all messages)

<sn> : Cell Broadcast serial number

<mid> : Cell Broadcast message identifier

<dcs> : Cell Broadcast data coding scheme in integer format

<page> : current page

<pages> : total number of pages.

6)

+CBMI: "BM",3

New cell broadcast received.

at+cmgl="ALL"

+CMGL: 1,"REC READ",12240,882,1,1,1

HSI 17710 +0

14:44

PLS CALL "19010" FOR DETAILS

+CMGL: 2,"REC READ",9221,883,72,1,1

62C6606F53485E025FAE5347FF0C9694591CFF15002EFF18FF17FF15FF05FF0C
4E09500B6708FF16

002EFF12FF15FF05FF0C7F8E96FB63015E73002E002E8A7360C58ACB96FB002
30031003000300023

000D

+CMGL: 3,"REC UNREAD",9223,883,72,1,1

8B4976E367034FC38ACB62958CC78005FF0C5728907864C78B4952384FDD8B
4991D1878D8CC74EBA

66425FC598085C0F5FC35BE9614E002E002E8A7360C58ACB96FB00230031003
000300023000D000D

000D

OK

Command AT+CMGL can be used to read all cell broadcast messages.

7)

at+cnmi=0,1,2,0,0

OK

Cell broadcast won't be saved but will be routed directly.

+CBM: 9225,883,64,1,1

<NEWS>TYPHOON ALERT ONE TOMORROW IN HONG KONG

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8)

The command **AT+CSCB** allows choosing the cell broadcast types that the module has to listen. Also the command **AT+WCBM** allows writing Cell Broadcast Message Identifiers in the SIM if a specific file called EF-CBMI is present in the SIM.

Check Wavecom document about AT commands to learn more about the syntax.

9)

Cell broadcast can also be received in PDU mode.
Cell broadcast format is described in GSM 04.80.

at+cmgf=0
OK

+CBM: 88
24010373481162C6606F534A65E565367A69FF0C9694591CFF15002EFF17FF15
FF05FF0C4E09500B6708FF16FF05FF0C7F8E96FB63015E73002E002E8A7360C5
8ACB96FB00230031003000300023000D000D000D000D000D

+CBM: 88
2EE003720111C8691214A3D96A37D02A876B2862311D8DD650409953D030C8
648244B11C2C0613818C4F298858A40693CC6943D168341A8D46A3D168341A
8D46A3D168341A8D46A3D168341A8D46A3D168341A8D46A3D100

10 USSD

atd*147#
OK

OK doesn't mean it has been accepted by the network. It means that the syntax of the USSD sequence is correct.

To get answers from the network, the user shall set **AT+CUSD=1**

at+cusd=1
OK

10.1 Operation not supported

Test with a Chinese card :

atd*147#
OK

+CUSD: 4
(Operation not supported. Chinese network doesn't support USSD)

10.2 Terminated by network

Tests with C&W HKT card

atd*147#
OK

+CUSD: 2
(USSD terminated by network. This sequence is not supported by the network)

10.3 No answer from user

atd#100#
OK

+CUSD: 1,"i.Menu
0:What's New
1:Customer Svc
2:MoneyLine
3:WinningLine/ Info
4:Ringtone/ Graphic
5:e-Shopping
6:Dictionary
7:Fortune
8:Bank/Credit Card
9:Setup",0

+CUSD: 4

No answer from the user. USSD terminated

10.4 Full transaction

atd#100#
OK

+CUSD: 1,"i.Menu
0:What's New
1:Customer Svc
2:MoneyLine
3:WinningLine/ Info
4:Ringtone/ Graphic
5:e-Shopping
6:Dictionary
7:Fortune
8:Bank/Credit Card
9:Setup",0

at+cusd=1,"4"
OK

User selects item 4.

+CUSD: 1,"1:Graphics
2:Mobile e-Card
3:Ringing Tone



*:Previous Menu (Apply to Nokia Handsets)",0

at+cusd=1,"3"
OK

User selects item 3

+CUSD: 1,"1:What's Hot
2:Folk-song
3:Classics
4:Festival
5:Others
6:Send Ringing Tone to other handset
*:Previous Menu
**:Main Menu (Apply to Nokia Handsets except 5110",0

at+cusd=1,"**"
OK

User selects item **.

+CUSD: 1,"i.Menu
0:What's New
1:Customer Svc
2:MoneyLine
3:WinningLine/ Info
4:Ringtone/ Graphic
5:e-Shopping
6:Dictionary
7:Fortune
8:Bank/Credit Card
9:Setup",0

at+cusd=1,"4"
OK

+CUSD: 1,"1:Graphics
2:Mobile e-Card
3:Ringing Tone
*:Previous Menu (Apply to Nokia Handsets)",0

at+cusd=1,"3"
OK

+CUSD: 1,"1:What's Hot
2:Folk-song
3:Classics
4:Festival
5:Others
6:Send Ringing Tone to other handset
*:Previous Menu
**:Main Menu (Apply to Nokia Handsets except 5110",0

at+cusd=1,"2"
OK

User selects item 2.



+CUSD: 1,"1:Ah Li San Ji Koh
2:Cho Yuen Ching Koh
3:Mei Lai Dik Koo Leung
4:Pau Ma Lau Lau Dik San Shang
5:Lim Koo Heung
6:Home, Sweet Home
*:Previous Menu
**:Main Menu",0

at+cUSD=1,"2"
OK

User selects item 2.

+CUSD: 1,"U will receive the Ringing Tone soon.
Press
*:Previous Menu
**:Main Menu",0

+CMTI: "SM",1
Ringing tone received by Short Message.

at+cUSD=2
OK

The session is cancelled by user

11 Sim Tool Kit

11.1 Terminal profile

AT+STSF allows to activate, deactivate or configure the SIM ToolKit facilities.

at+stsf?
+STSF: 0,"160060C0",3
OK

at+stsf=2,"5ffffff7"
OK

at+stsf=1
OK

at+cfun=1
OK

11.2 Full session in english

Example 1
+STIN: 0

at+stgi=0
+STGI: "C&W HKT"



+STGI: 1,4,"HSBC",0
+STGI: 2,4,"Hang Seng",0
+STGI: 3,4,"C&W HKT Info",0
+STGI: 4,4,"Language",0
OK

+STIN: 99

at+stgr=0,1,3
OK

Selection of third item in main menu.

+STIN: 6

at+stgi=6
+STGI: 0," "
+STGI: 1,2,"Stock Price",0
+STGI: 2,2,"Stock Index",0
OK

Read new sub menu.

at+stgr=6,1,1
OK

Get item number 1.

+STIN: 6

at+stgi=6
+STGI: 0," "
+STGI: 1,3,"Local Stock",0
+STGI: 2,3,"Top 10 Stock",0
+STGI: 3,3,"LDN HK Stock",0
OK

Read new sub menu.

at+stgr=6,1,2
OK

+STIN: 6

at+stgi=6
+STGI: 0," "
+STGI: 1,4,"By Volume",0
+STGI: 2,4,"By Turnover",0
+STGI: 3,4,"By % Rise",0
+STGI: 4,4,"By % Drop",0
OK

Read new sub menu.

at+stgr=6,1,3
OK

Get item number 3.

+STIN: 9

at+stgi=9

+STGI: "Sending message"

OK

Send SMS.

+STIN: 99

Session ended

+CMTI: "SM",8

+CMTI: "SM",9

11.3 Full session in Chinese

at+stgi=0

+STGI: "C&W HKT"

+STGI: 1,4,"HSBC",0

+STGI: 2,4,"Hang Seng",0

+STGI: 3,4,"C&W HKT Info",0

+STGI: 4,4,"Language",0

OK

Read main menu.

at+stgr=0,1,4

OK

Select item 4.

+STIN: 6

at+stgi=6

+STGI: 0," "

+STGI: 1,2,"English",0

+STGI: 2,2,"Chinese",0

OK

Read new sub menu

at+stgr=6,1,2

OK

Select item 2

+STIN: 0

at+stgi=0

+STGI: "8099996E2F96FB8A0AFFFF"

+STGI: 1,4,"80532F8C50FFFF",0

+STGI: 2,4,"806052751F9280884CFFFF",0

+STGI: 3,4,"8099996E2F96FB8A0A8CC78A0AFFFF",0



+STGI: 4,4,"80907864C78A9E8A00FFFF",0
OK

Read main menu

+STIN: 1

at+stgi=1
+STGI: 1,"805DF28F4970BA4E2D6587FFFF",0
OK

Display Text

+STIN: 99

11.4 Other examples

11.4.1 Example 1

at+stgi=0
+STGI: "SMARTMENU"
+STGI: 1,2,"SmartGuide",0
+STGI: 2,2,"Menu Setup",0
OK

Read main menu.

at+stgr=0,1,1
OK

Select item 1.

+STIN: 6

at+stgi=6
+STGI: 0,"SmartGuide"
+STGI: 1,7,"Dining",0
+STGI: 2,7,"Leisure",0
+STGI: 3,7,"Automobile",0
+STGI: 4,7,"Bank",0
+STGI: 5,7,"Shopping",0
+STGI: 9,7,"Useful tips",0
+STGI: 10,7,"Messages",0
OK

Read new sub menu

at+stgr=6,1,1
OK

Select item 1.

+STIN: 6

at+stgi=6
+STGI: 0,"Dining"



+STGI: 1,5,"Chinese",0
+STGI: 2,5,"Japanese",0
+STGI: 3,5,"Western",0
+STGI: 4,5,"Others",0
+STGI: 5,5,"Fast Food",0
OK

Read new sub menu

at+stgr=6,1,1
OK

Select item 1.

+STIN: 6

at+stgi=6
+STGI: 0,"Select Location"
+STGI: 1,4,"Current Loc.",0
+STGI: 2,4,"HK Island",0
+STGI: 3,4,"Kowloon",0
+STGI: 4,4,"N.T.",0
OK

Read new sub menu

at+stgr=6,1,1
OK

Select item 1.

+STIN: 1

at+stgi=1
+STGI: 1,"Info. for ref. only",0
OK

Display text

+STIN: 9

at+stgi=9
+STGI: ""
OK

Send Short message

+STIN: 99

End of session

+STIN: 5

at+stgi=5
+STGI: ,,,, ""
OK

 Tone has to be played locally by the PDA.

+STIN: 1

at+stgi=1
+STGI: 1,"SmartGuide Message Received",1
OK

Display text

at+stgr=1
OK

Confirm text has been read.

+STIN: 1

at+stgi=1
+STGI: 1,"Super Star,4/F., The Gateway 2, 21 Canton Road"23660878" Jade
Garden
Chinese Rest,Star House,TST"27306888" ",1
OK

Read text.

at+stgr=1
OK

Confirm text has been read.

+STIN: 6

at+stgi=6
+STGI: 0,"Option"
+STGI: 1,4,"More",0
+STGI: 2,4,"Make Call",0
+STGI: 3,4,"Save",0
+STGI: 4,4,"Del. & Exit",0
OK

Read new sub menu

at+stgr=6,1,4
OK

Read item 4.

+STIN: 99

End of session

11.4.2 Example 2

at+stgi=0
+STGI: "SMARTMENU"
+STGI: 1,2,"SmartGuide",0
+STGI: 2,2,"Menu Setup",0
OK



Read main menu

at+stgr=0,1,1
OK

Select item 1

+STIN: 6

at+stgi=6
+STGI: 0,"SmartGuide"
+STGI: 1,7,"Dining",0
+STGI: 2,7,"Leisure",0
+STGI: 3,7,"Automobile",0
+STGI: 4,7,"Bank",0
+STGI: 5,7,"Shopping",0
+STGI: 9,7,"Useful tips",0
+STGI: 10,7,"Messages",0
OK

Read sub menu

at+stgr=6,3
OK

Back to previous menu.

+STIN: 99

Sim Tool Kit session is ended.



There is no way to go back from the SELECT ITEM to the MAIN MENU. The SIM card doesn't send back the MAIN MENU (except special cases : i.e. language modification).

The customer MMI software doesn't need to store it because the module provides it with AT+STGI=0

at+stgi=0
+STGI: "SMARTMENU"
+STGI: 1,2,"SmartGuide",0
+STGI: 2,2,"Menu Setup",0
OK

Read main menu

at+stgr=0,1,1
OK

Select item 1

+STIN: 6

at+stgi=6
+STGI: 0,"SmartGuide"
+STGI: 1,7,"Dining",0
+STGI: 2,7,"Leisure",0
+STGI: 3,7,"Automobile",0
+STGI: 4,7,"Bank",0

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+STGI: 5,7,"Shopping",0
+STGI: 9,7,"Useful tips",0
+STGI: 10,7,"Messages",0
OK

Read sub menu

at+stgr=6,1,5
OK

Select item 5

+STIN: 6

at+stgi=6
+STGI: 0,"Shopping"
+STGI: 1,4,"Store",0
+STGI: 2,4,"Fashion",0
+STGI: 3,4,"Jewellery",0
+STGI: 4,4,"Household",0
OK

Read sub menu

at+stgr=6,3
OK

Go backward

+STIN: 6

at+stgi=6
+STGI: 0,"SmartGuide"
+STGI: 1,7,"Dining",0
+STGI: 2,7,"Leisure",0
+STGI: 3,7,"Automobile",0
+STGI: 4,7,"Bank",0
+STGI: 5,7,"Shopping",0
+STGI: 9,7,"Useful tips",0
+STGI: 10,7,"Messages",0
OK

Read main menu

at+stgr=6,3
OK

Go backward

+STIN: 99

Session ended.

11.4.3 Example 3

at+stgi=0
+STGI: "MoviStar"
+STGI: 1,8,"Noticias",0



+STGI: 2,8,"Economia",0
+STGI: 3,8,"Deportes",0
+STGI: 6,8,"Sorteos",0
+STGI: 4,8,"Trafico",0
+STGI: 5,8,"Tiempo",0
+STGI: 7,8,"Despertador",0
+STGI: 8,8,"E-Mail",0
OK

Read main menu

at+stgr=0,1,4
OK

Select item 4

+STIN: 6

at+stgi=6
+STGI: 0,"Trafico"
+STGI: 1,3,"Por Carreteras",0
+STGI: 2,3,"Por Provincias",0
+STGI: 3,3,"DGT",0
OK

Read sub menu

at+stgr=6,1,2
OK

Select item 2

+STIN: 3

at+stgi=3
+STGI: 1,1,1,2,0,"Provincia?"
OK

at+stgr=99
OK

User abort

+STIN: 99

End of session

11.4.4 Example 4

at+stgi=0
+STGI: "80906050B3670D52D95340FFFF"
+STGI: 2,2,"805F978A0A901FFFFF",1
+STGI: 3,2,"805A1B6A029AD8624BFFFF",1
OK

Read main menu



at+stgr=0,1,2
OK

Select item 2

+STIN: 6

at+stgi=6
+STGI: 0,"805F978A0A901FFFF"
+STGI: 1,5,"8053F0706380A15E02FFFF",0
+STGI: 2,5,"80570B969B80A15E02FFFF",0
+STGI: 3,5,"8059165E63532F7387FFFF",0
+STGI: 4,5,"80671F8CA863076578FFFF",0
+STGI: 5,5,"804ECA65E565B0805EFFFF",0
OK

Read sub-menu

at+stgr=6,1,1
OK

Select item 1

+STIN: 6

at+stgi=6
+STGI: 0,"8053F0706380A15E02FFFF"
+STGI: 1,3,"8052A06B0A63076578FFFF",0
+STGI: 2,3,"804E0A6AC363076578FFFF",0
+STGI: 3,3,"80500B80A1884C60C5FFFF",0
OK

Read sub-menu

at+stgr=6,1,1
OK

Select item 1

+STIN: 10

Send USSD done automatically by the module.

at+stgi=10
+STGI: "80865574064E2DFF0C8ACB7A0D5F8CFFFF"
OK

Get text info related to USSD.

+STIN: 99

End of session

11.4.5 Example 5

at+stgi=0
+STGI: "TCC Menu"



+STGI: 1,3,"805BCC90A6884C52D59280884CFFFF",0
+STGI: 2,3,"808CC78A0A670D52D9FFFF",0
+STGI: 3,3,"8096FB5B5090F54EF6FFFF",0
OK

Read main menu

at+stgr=0,1,1
OK

Select item 1

+STIN: 6

at+stgi=6
+STGI: 0,"805BCC90A6884C52D59280884CFFFF"
+STGI: 1,6,"805B586B3E9918984D67E58A62FFFF",0
+STGI: 2,6,"808F495E33670D52D9FFFF",0
+STGI: 3,6,"804FE1752853616D888CBB984DFFFF",0
+STGI: 4,6,"8096FB8A715BC678BC8B8A66F4FFFF",0
+STGI: 5,6,"808B8053D69280884C8A0A606FFFF",0
+STGI: 6,6,"808F4963A5670D52D94EBA54E1FFFF",0
OK

Read sub menu

at+stgr=6,1,1
OK

Select item 1

+STIN: 3

at+stgi=3
+STGI: 0,1,12,12,0,"808F3851655E33865FFFFF"
OK

Read input text

at+stgr=3,1
> 033220072628
OK

Input data. Data shall end with CTRL-Z.

+STIN: 3

at+stgi=3
+STGI: 0,0,4,4,0,"808F3851655BC678BCFFFF"
OK

Read input text

at+stgr=3,1
> 0000
OK

Input data. Data shall end with CTRL-Z.



+STIN: 1

at+stgi=1

+STGI:

1,"805E33865F003000330033003200320030003000370032003600320038FFFF",1
OK

Read text. Option "Wait for user to clear message" is set.

at+stgr=1

OK

Confirm text.

+STIN: 9

Send SMS done automatically by the module.

at+stgi=9

+STGI: "808CC78A0A865574064E2DFFFF"
OK

Get text info related to SMS.

+STIN: 1

at+stgi=1

+STGI: 1,"8000530065006E00740020005300750063006300650073007300660075006 C006C0079FFFF",0
OK

Read text.

+STIN: 99

End of session

After a while, the module receives a SMS download. This is done automatically by the module.

+STIN: 1

at+stgi=1

+STGI: 1,"800050006C006500610073006500200057006100690074FFFF",0
OK

Read text.

+STIN: 1

at+stgi=1

+STGI: 1,"8000500072006F00630065007300730069006E00670020004D006500730073006100670065FFFF",0
OK

Read text



+STIN: 1

at+stgi=1
+STGI: 1,"8065B077ED8A0AFFFF",1
OK

Read text. Option "Wait for user to clear message" is set.

at+stgr=1
OK

Confirm text.

+STIN: 99

End of session

11.4.6 Example 6

at+stgi=0
+STGI: "DeLaRue"
+STGI: 1,2,"Beta Tests",0
+STGI: 2,2,"Javdebug",0
OK

Read main menu

at+stgr=0,1,1
OK

Select item 1

+STIN: 6

at+stgi=6
+STGI: 0,"Beta Tests"
+STGI: 1,11,"Profile",0
+STGI: 2,11,"Display",0
+STGI: 3,11,"Get Inkey",0
+STGI: 4,11,"Get Input",0
+STGI: 5,11,"Play Tone",0
+STGI: 6,11,"Refresh",0
+STGI: 7,11,"Message",0
+STGI: 8,11,"Sup Services",0
+STGI: 9,11,"SetUpCall",0
+STGI: 10,11,"LocalInfo",0
+STGI: 11,11,"Unicode UCS2",0
OK

Read sub-menu

at+stgr=6,1,3
OK

Select item 3



+STIN: 2

at+stgi=2
+STGI: 0,0,"DIGIT ?"
OK

Get information about GET INKEY command

at+stgr=2,1,"6"
OK

Key "6" is pressed

+STIN: 1

at+stgi=1
+STGI: 1,"6",1
OK

Read text.

11.4.7 Example 7

at+stgi=0
+STGI: "DeLaRue"
+STGI: 1,2,"Beta Tests",0
+STGI: 2,2,"Javdebug",0
OK

Read main menu

at+stgr=0,1,1
OK

Select item 1

+STIN: 6

at+stgi=6
+STGI: 0,"Beta Tests"
+STGI: 1,11,"Profile",0
+STGI: 2,11,"Display",0
+STGI: 3,11,"Get Inkey",0
+STGI: 4,11,"Get Input",0
+STGI: 5,11,"Play Tone",0
+STGI: 6,11,"Refresh",0
+STGI: 7,11,"Message",0
+STGI: 8,11,"Sup Services",0
+STGI: 9,11,"SetUpCall",0
+STGI: 10,11,"LocalInfo",0
+STGI: 11,11,"Unicode UCS2",0
OK

Read sub-menu

at+stgr=6,1,6
OK

Select item 6

+STIN: 6

at+stgi=6

+STGI: 0,"Refresh" ,0
+STGI: 1,5,"Init Ref AI" ,0
+STGI: 2,5,"Ref Files" ,0
+STGI: 3,5,"Init Ref Files" ,0
+STGI: 4,5,"Init SIM" ,0
+STGI: 5,5,"Reset SIM" ,0
OK

Read sub-menu

at+stgr=6,1,1

OK

Select item 1

+STIN: 1

at+stgi=1

+STGI: 0,"Refresh..." ,0
OK

Read text

+STIN: 7

Refresh done automatically by module.

+STIN: 1

at+stgi=1

+STGI: 1,"Vodafone Toolkit TestSIM",0
OK

Read text.

+STIN: 99

End of session

11.4.8 Example 8

at+stgi=0

+STGI: "Vodafone TestSIM"
+STGI: 1,11,"Test DisplayText",0
+STGI: 2,11,"Test SENDSMS",0
+STGI: 3,11,"Test SENDSS",0
+STGI: 4,11,"Test SETUPCALL",0
+STGI: 5,11,"Test PLAYTONE",0
+STGI: 6,11,"Test Polling",0
+STGI: 7,11,"Test PROVLocInfo",0
+STGI: 8,11,"Test USSD",0



+STGI: 9,11,"Test ProfDownload",0
+STGI: 10,11,"Test GetInput",0
+STGI: 11,11,"Test GetInputForm",0
OK

Read main menu

at+stgr=0,1,3
OK

Select item 3

+STIN: 6

at+stgi=6
+STGI: 0,"Test SENDSS"
+STGI: 1,2,"No alpha",0
+STGI: 2,2,"With alpha",0
OK

Read sub-menu

at+stgr=6,1,2
OK

Select item 2

+STIN: 8

Send SS done automatically by module.

at+stgi=8
+STGI: "Sending SS..."
OK

Get text info related to SS.

+STIN: 99

End of session

12Phonebooks

12.1 FDN

Fixed dialing numbers. This is a SIM phonebook.

+WIND: 4

Initialization phase finished.

at+clck?
+CLCK: ("PS",0), ("SC",1), ("FD",0), ("PN",0)
OK



EF_FDN is desactivated.

at+cpbs?
+CPBS: "SM",1,50
OK

at+cpbr=?
+CPBR: (1-50),20,14
OK

at+cpbr=1,50
+CPBR: 1,"28240254",129,"WAPAC"
OK

One item in EF_ADN.

at+cpbs="FD"
OK

Select EF_FDN. When EF_FDN is desactivated, both EF_ADN and EF_FDN can be read.
Only EF_ADN can be modified.

at+cpbr=?
+CPBR: (1-20),20,14
OK

at+cpbr=1,20
+CPBR: 1,"3699",129,"H"
+CPBR: 2,"28245224",129,"BUREAU"
+CPBR: 3,"+7777",145,"SC"
OK

3 items in EF_FDN.

at+cpin2?
+CPIN2: SIM PIN2

Check PIN2

at+cpin2=0000
OK

Enter PIN2

at+cpbw=4,"123456",145,"rty"
OK

Write an item at location 4

at+cpbr=1,10
+CPBR: 1,"3699",129,"H"
+CPBR: 2,"28245224",129,"BUREAU"
+CPBR: 3,"+85225495005",145,"HOME"
+CPBR: 4,"+123456",145,"rty"
OK

Read EF_FDN



at+clck?
+CLCK: ("PS",0), ("SC",1), ("FD",0), ("PN",0)
OK

EF_FDN is still deactivated.

At+clck="FD",1,0000
OK

EF_FDN is activated.

At+cfun=1
OK

Reset of module

at+clck?
+CLCK: ("PS",0), ("SC",1), ("FD",1), ("PN",0)
OK

EF_FDN is deactivated.

at+cpbr=1,10
+CPBR: 1,"3699",129,"H"
+CPBR: 2,"28245224",129,"BUREAU"
+CPBR: 3,"+85225495005",145,"HOME"
+CPBR: 4,"+7777",145,"SC"
OK

Read EF_FDN.

at+cpbw=5,"123456",129,"TOTO"
+CME ERROR: 17

PIN2 required

at+cpin?
+CPIN: SIM PIN2

at+cpin2=0000
OK

PIN2 entered.

at+cpbw=5,"123456",129,"TOTO"
OK

at+cpbw=6,"98765",129,"TITI"
OK

Write items at local 5 and 6.

at+cpbr=1,10
+CPBR: 1,"3699",129,"H"
+CPBR: 2,"28245224",129,"BUREAU"
+CPBR: 3,"+85225495005",145,"HOME"
+CPBR: 4,"+7777",145,"SC"
+CPBR: 5,"123456",129,"TOTO"



+CPBR: 6,"98765",129,"TITI"
OK

Read EF_FDN.

at+cpbw=5
OK

at+cpbw=6
OK

Delete item 5 and 6.

at+cpbr=1,10
+CPBR: 1,"3699",129,"H"
+CPBR: 2,"28245224",129,"BUREAU"
+CPBR: 3,"+85225495005",145,"HOME"
+CPBR: 4,"+7777",145,"SC"
OK

Read EF_FDN.

at+cpbs="SM"
+CME ERROR: 3

No access to EF_ADN.

at+clck="FD",0,0000
OK

Desactivate EF_FDN.

+WIND: 4

Swap between EF_ADN and EF+FDN finished.

at+clck?
+CLCK: ("PS",0), ("SC",1), ("FD",0), ("PN",0)
OK

EF_FDN desactivated.

at+cpbs?
+CPBS: "SM",0,50
OK

EF_AND activated.

at+cpbr=1,50
+CPBR: 1,"28240254",129,"WAPAC"
OK

Read EF_ADN.

12.2 LND

Last dialed numbers.



No write command (AT+CPBW) for this phonebook. This is a SIM/ME phonebook.

```
at+cpbs="LD"  
OK
```

```
at+cpbr=?  
+CPBR: (1-10),20,14  
OK
```

```
at+cpbr=1,10  
+CPBR: 1,"##55**",129,""  
+CPBR: 2,"96***5*7#",129,""  
+CPBR: 3,"5*4#",129,""  
+CPBR: 4,"+85225295225",145,"HOME"  
+CPBR: 5,"28245224",129,"BUREAU"  
+CPBR: 6,"+7777",145,"SC"  
+CPBR: 7,"+85225295225",145,"HOME"  
+CPBR: 8,"28245224",129,"BUREAU"  
+CPBR: 9,"28245224",129,"BUREAU"  
+CPBR: 10,"25295225",129,"HOME"  
OK
```

12.3 MC

Missed calls.

No write command (AT+CPBW) for this phonebook. This is a ME phonebook.

```
at+cpbs="MC"  
OK
```

```
at+cpbr=?  
+CPBR: (1-10),20,30  
OK
```

```
at+cpbr=1,10  
+CPBR: 1,"25295225",129,"HOME"  
+CPBR: 2,"28240785",129,""  
OK
```

12.4 RC

Received calls.

No write command (AT+CPBW) for this phonebook. This is a ME phonebook.

```
at+cpbs="RC"  
OK
```

```
at+cpbr=?  
+CPBR: (1-10),20,30  
OK
```

```
at+cpbr=1,10  
+CPBR: 1,"93111419",129,"CHRIS GSM"  
+CPBR: 2,"98051087",129,""  
OK
```


13 Important remarks

13.1 Battery management

There is no charging battery software in AT commands software.
AT+CBC is not supported.

AT+ADC=0
+ADC: ADC_A, ADC_B
OK

2 results.

AT+ADC=1
+ADC: ADC_A, ADC_B, ADC_C
OK

3 results.

AT+ADC command allows to get the (DC level * 1024) of ADC A and ADC B (those voltages are coded on 10 bits) or the (DC level * 1024) of ADC A, ADC B and ADC C (voltages coded on 10 bits) depending on the ADC mode. For ADC A, the value returned includes the resistor bridge. Those values are updated every 10 seconds.

Where:

ADC_A = Vbatt (in Volt) x 1024

ADC_B = VBat_Temp (in Volt) x 1024 with 0 VBat_Temp 2,5V (1)

ADC_C = VAux_V0 (in Volt) x 1024 with 0 VAux_V0 2,5V (1)

Note:

1- The 2,5V limit will be changed to 2,8V on Wismo2C-2 module

13.2 Error results

AT+CMEE=1
OK

Allow extented error report.

For example,

AT+CMEE=0
OK

AT+CMGR=1
ERROR

Record 1 for SMS is empty.

AT+CMEE=1
OK

AT+CMGR=1
+CMS ERROR: 321

So this command allows to get more informations about errors.

13.3 Power Saving mode

AT+WRIM=1;%D0&D1;+W32K=1
OK

Both **power saving mode** and **RI management** are activated with this command.

When you switch on the module, the chip One C doesn't allow to make the 32 Khz calibration during several minutes.

During this period, module can not enter power saving mode.

Once this period is finished, it will work normally.

If the module is reset with AT+CFUN=1, it will work immediately. The delay only appears after a switch on.

So this delay is not a bug or problem but it is due to the One C chip's characteristics.

Module can enter power saving mode only when already in idle mode.

To be sure that power saving mode is working, a supplementary file shall be downloaded. This file depends on the hardware version.

at+whwv
Hardware Version 4.15
OK

Hardware version	File to download
V4.00	v400.dwl
V4.01	v400.dwl
V4.10	v400.dwl
V4.15	v400.dwl
V4.27	v417.dwl
V5.00	v500.dwl

13.4 Store in E2P

AT&W
OK

AT+CSAS
OK

Those two commands are used to save parameters in E2P. Second is used especially for SMS AT commands.

13.5 Turn off module

AT+CFUN=0 will be accepted during initialization phase. It can be useful to stop the module in such places like a plane where GSM phones are prohibited. Then the user can still use the PDA part.

13.6 Automatic power off

V420 software contains a new feature called "Automatic CPOF on interrupt". This feature is allowing to perform an automatic CPOF on hardware interrupt.

```
at+cfun=1
OK
```

Module reset

```
+WIND: 3
+WIND: 1
+WIND: 7
+CREG: 2
+CREG: 1
+WIND: 4
```

```
at+cfun?
+CFUN: 1
OK
```

Full fonctionnality is set.

OK

Pin interrupt is activated on the module. So an automatic AT+CPOF is launched internally.

This OK is the answer to the AT+CPOF

```
at+cfun?
+CFUN: 0
OK
```

Mimimal fonctionnality is set.

14 GPRS

A preliminary AT commands document called « **gprsATcmdv10.pdf** » is already available.

A more complete document is also available : "**gprs_at_cmd_v11.pdf**".

15 History

Document history	
10^h November, 2000	Version 1.0
15th December, 2000	Version 2.0 Restrict phone number, cell broadcast PDU, history added, GPRS updated New examples added for Sim Tool Kit
20th December, 2000	Version 3.0 Phonebook chapter added
09th February, 2001	Version 4.0 Incoming call examples, automatic power off, power saving mode updated
12th March, 2001	Version 5.0 SMS PDU mode, Default alphabet GSM 03.38 SMS
23th March, 2001	Version 6.0 New STK examples, PCB versions updated