

GSM 908/GSM 909 DUAL/GSM 909 DUAL S

AT Command Reference

References

- [1] GSM 07.05 “Use of Data Terminal Equipment - Data Circuit terminating Equipment (DTE-DCE) interface for Short Message Service (SMS) and Cell Broadcast Service (CBS)
 [2] GSM 07.07 “AT command set for GSM Mobile Equipment (ME)
 [3] ITU-T V25ter “Serial asynchronous automatic dialling and control”

Contents

1	Introduction	2
2	Abbreviations and Definitions	2
2.1	Abbreviations	2
2.2	Definitions	2
3	AT Commands	3
3.1	E Command Echo	3
3.2	Q Result code suppression	3
3.3	V response format	3
3.4	&C Circuit 109 behaviour	3
3.5	&D Circuit 108 behaviour	4
3.6	&K Local flow control	4
3.7	+IPR Fixed DTE data rate	4
3.8	+CGMI/GMI/FMI Manufacturer Id	5
3.9	+CGMM/GMM/FMM	5
3.10	+CGMR/GMR/FMR Revision Id	5
3.11	+CGSN/GSN Serial Number	5
3.12	Z Reset	5
3.13	&F Restore factory settings	6
3.14	I Manufacturer Information	6
3.15	+GCAP Request capabilities	6
3.16	+WS46 Select wireless network	6
3.17	D Dial	7
3.18	+CBST Select Bearer Service	7
3.19	+CRLP Radio Link Protocol	8
3.20	T Select tone dialling	8
3.21	P Select pulse dialling	8
3.22	A Answer a call	9
3.23	H Hang-up call	9
3.24	O Go on-line	9
3.25	W Negotiation process message selection	9
3.26	S0 Automatic answer	9
3.27	S7 Connection completion timeout	10
3.28	S8 Comma dial modifier time	10
3.29	L Monitor speaker mode	10
3.30	M Speaker control setting	11
3.31	+CPAS Phone activity status	11
3.32	+CPBS Select phonebook memory storage	11
3.33	+CPBR Read phonebook entries	11
3.34	+CPBW Write phonebook entry	12
3.35	+CMEE Mobile Equipment Errors	12
3.36	+CSMS Select Message Service	12
3.37	+CPMS Select preferred message storage	12
3.38	+CMGF Message Format	13

3.39	+CSCA Service Centre Address.....	13
3.40	+CNMI New Message Indications.....	13
3.41	+CMGL List Messages.....	14
3.42	+CMGR Read Message.....	14
3.43	+CMGD Delete Message.....	15
3.44	+CMGS Send Message.....	15
3.45	+FTS Stop transmission and wait.....	15
3.46	+FRS Receive silence.....	15
3.47	+FTM Transmit data.....	16
3.48	+FRM Receive data.....	16
3.49	+FTH Transmit data with HDLC framing.....	16
3.50	+FRH Receive data with HDLC framing.....	17
3.51	+FCLASS Select mode.....	17
3.52	+CME ERROR: <err>.....	17
3.53	+CMS ERROR: <err>.....	18
3.54	+CMTI.....	18
4	List of AT Commands and Result codes.....	19
4.1	AT Commands.....	19
4.2	Result codes.....	20

1 Introduction

This reference describes the AT commands supported by the GSM 908/GSM 909 DUAL and GSM 909 DUAL S. Each supported AT command is described in detail with supported parameters.

2 Abbreviations and Definitions

2.1 Abbreviations

DCE	Data Circuit terminating Equipment
DTE	Data Terminating Equipment
SIM	Subscriber Identity Module
ITU-T	International Telecommunications Union – Telecommunications Standardization Sector
TIA	Telecommunications Industry Association
ETSI	European Telecommunications Standards Institute
ME	Mobile Equipment
RLP	Radio Link Protocol
SM	Short Message
AT	Attention; this two-character abbreviation is always used to start a command line to be sent from the DTE to DCE

2.2 Definitions

<CR>	Carriage return character
<LF>	Line feed character
<...>	Name enclosed in angle brackets is a syntactical element. Brackets themselves do not appear in the command line
[...]	Optional subparameter of a command or an optional part of DCE information. Brackets themselves do not appear in the command line

3 AT Commands

3.1 E Command Echo

Syntax:

E[<value>]

Supported values:

<value>

0 Commands are not echoed

1 Commands are echoed (default)

3.2 Q Result code suppression

Syntax:

Q[<value>]

Supported values:

<value>

0 Result codes are transmitted (default)

1 Result codes are suppressed and not transmitted

3.3 V response format

Determines whether the resultcodes should be returned in numerical or verbose form.

Syntax:

V[<value>]

Supported values:

<value>

0 Returns the code in numerical form

1 Returns the code in verbose form (default)

3.4 &C Circuit 109 behaviour

Determines how ITU-T V.24 circuit 109 (Received line signal detector, CD) relates to the detection of received line signal from remote end.

Syntax:

&C[<value>]

Supported values:

<value>

- 0 Circuit 109 always ON
- 1 Circuit 109 operation relates to detection of received signal. (default)

3.5 &D Circuit 108 behaviour

Determines how DCE responds when ITU-T V.24 circuit 108 (Data Terminal Ready, DTR) changes from the ON to OFF condition during online data state.

Syntax:

&D[<value>]

Supported values:

<value>

- 0 DTR is ignored
- 1 Go to command mode
- 2 Hang up and go to command mode (default)

3.6 &K Local flow control

Selects the local flow control method.

Syntax:

&K[<value>]

Supported values:

<value>

- 0 Flow control disabled
- 3 RTS/CTS (hardware) flow control is enabled (default)

3.7 +IPR Fixed DTE data rate

Specifies the transmission speed at which the DCE will accept commands.

Syntax:

+IPR=<rate>

Supported values:

<rate>

- 0 Automatic rate detection (default)
- 600 600 bit/s
- 1200 1200 bit/s
- 2400 2400 bit/s
- 4800 4800 bit/s
- 9600 9600 bit/s
- 19200 19200 bit/s

3.8 +CGMI/GMI/FMI Manufacturer Id

Returns manufacturer identification.

Syntax:

+CGMI
or
+GMI
or
+FMI

3.9 +CGMM/GMM/FMM

Returns model identification.

Syntax:

+CGMM
or
+GMM
or
+FMM

3.10 +CGMR/GMR/FMR Revision Id

Returns revision identification in format X.Y.Z, e.g. 1.0.2.

Syntax:

+CGMR
or
+GMR
or
+FMR

3.11 +CGSN/GSN Serial Number

Returns serial number, e.g.: 0045036700152000.

Syntax:

+CGSN
or
+GSN

3.12 Z Reset

Resets the DCE and returns to default (factory) settings.

Syntax:

Z

3.13 &F Restore factory settings

Restores DCE factory settings.

Syntax:

&F

3.14 I Manufacturer Information

The I<n> command returns information about the modem. The implementation of this command is manufacturer specific.

Syntax:

I<n>

Supported values:

<n>

9 Returns Plug and Play Id character string

3.15 +GCAP Request capabilities

Returns a complete list of capabilities, in this case +FCLASS, +CGSM.

Syntax:

+GCAP

3.16 +WS46 Select wireless network

Selects wireless network to operate with the DCE.

Syntax:

+WS46=[<n>]

Supported values:

<n>

12 GSM digital cellular (default)

3.17 D Dial

Dials the number specified in the dialling string.

Syntax:

D<n>

Supported values:

<n>

1, 2, 3, 4, 5, 6, All digits specified may be used in the dialling string.

7, 8, 9, 0, *, #, Note: When dialling string starts with international access code character “+” or “00” type of +, A, B, C address is set to 145 otherwise 129 (unknown).

Ignored values:

<n>

D

, Pause during dialling

T Tone dialling

P Pulse dialling

! Register recall

W Wait for dial tone

@ Wait for quiet answer

; Initiates a voice call

I, i Override the CLIR suppression

G, g Control the CUG service information

3.18 +CBST Select Bearer Service

Selects the bearer service <name> with the data rate <speed>, and the connection element <ce> to be used when data calls are originated.

Syntax:

AT+CBST=[<speed>[,<name>[,<ce>]]]

Supported values:

<speed>

0 Autobauding (default)

4 2400 bit/s (V.22 bis)

5 2400 bit/s (V.26ter)

6 4800 bit/s (V.32)

7 9600 bit/s (V.32)

12 9600 bit/s (V.34)

68 2400 bit/s (V.110)

70 4800 bit/s (V.110)

71 9600 bit/s (V.110)

<name>

0 Asynchronous modem (default)

<ce>

- 0 Transparent
- 1 Non Transparent (default)
- 2 Both, Transparent preferred
- 3 Both, Non Transparent preferred

3.19 +CRLP Radio Link Protocol

Sets Radio Link Parameters.

Syntax:

AT+CRLP=[<iws>[,<mws>[,<T1>[,<N2>]]]]

Supported values:

<iws>

0-61 IWF to MS window size (default 61)

<nws>

0-61 MS to IWF window size (default 61)

<T1>

>380 Acknowledgement timer in ms (default 480)

<N2>

>0 Retransmission attempts (default 6)

3.20 T Select tone dialling

Selects tone dialling. The command is ignored but added for compatibility.

Syntax:

T

3.21 P Select pulse dialling

Selects pulse dialling. The command is ignored but added for compatibility.

Syntax:

P

3.22 A Answer a call

Answers an incoming call.

Syntax:

A

3.23 H Hang-up call

Hangs up the current call.

Syntax:

H[<value>]

<value>

0 Hang-up call, go “on-hook” (default).

3.24 O Go on-line

Return from online command state to online data state.

Syntax:

O[<value>]

<value>

0 Return from online command state to online data state (default)

3.25 W Negotiation process message selection

Determines which result codes that is used to describe the type of connection and protocol, etc., that resulted from handshaking and negotiation.

Syntax:

W[<value>]

<value>

0 CONNECT result code reports DTE speed
1 Hayes 4 line format CARRIER, PROTOCOL, COMPRESSION, DTE speed
2 CONNECT result code reports DCE speed (carrier rate) (default)
3 Hayes 4 line format CARRIER, PROTOCOL, COMPRESSION, DCE speed

3.26 S0 Automatic answer

This S parameter controls the automatic answering function in the DCE.

Syntax:

S0=[<value>]

<value>

0 Automatic answering is disabled (default)

- 1-255 Answer the call after the number of RINGs specified by <value>.
Note: Disabled when no cable is connected.

3.27 S7 Connection completion timeout

This S parameter specifies the amount of time, in seconds, that the DCE will wait for a carrier before disconnecting.

Syntax:

S7=[<value>]

<value>

- 1-255 Number of seconds in which a connection must be established or call will be disconnected.
The command is supported but has no effect.

3.28 S8 Comma dial modifier time

This S parameter specifies the amount of time, in seconds, the DCE must pause when the “,” dial modifier is used. Command is accepted for compatibility reasons, but has no effect.

Syntax:

S8=[<value>]

<value>

- 0-255 All values accepted, but no effect.

3.29 L Monitor speaker mode

Speaker volume setting. The command is accepted for compatibility reasons, but has no effect.

Syntax:

L[<value>]

<value>

- 0-3 All values accepted, but no effect.

3.30 M Speaker control setting

Speaker control setting. The command is accepted for compatibility reasons, but has no effect.

Syntax:

M[<value>]

<value>

0-3 All values accepted, but no effect.

3.31 +CPAS Phone activity status

Returns activity status <pas> of the mobile.

Syntax:

+CPAS

Supported values:

<pas>

0 Ready to accept commands

3.32 +CPBS Select phonebook memory storage

Selects phonebook memory storage that is used by phonebook commands.

Syntax:

+CPBS=<storage>

Supported values:

<storage>

“SM” SIM phonebook (default)

3.33 +CPBR Read phonebook entries

Reads phonebook entries in the number range specified in the command.

Syntax:

+CPBR=<index1>[,<index2>]

The <index1>, <index2> are integer type values in the range of location numbers in phonebook memory.

3.34 +CPBW Write phonebook entry

Writes phonebook entry in location number <index> in the current phonebook memory.

Syntax:

+CPBW=[<index>][,<number>[,<type>[,<text>]]]

Supported values:

<index> integer type values in the range of location numbers of phonebook memory

<number> string type phone number of format <type>
<type> type of address octet in integer format. Default 145 when dialling starts with "+", otherwise 129
<text> string type field

3.35 +CMEE Mobile Equipment Errors

This command enables or disables report of Mobile Equipment errors.

Syntax:

+CMEE=[<n>]

Supported values:

<n>
0 Disable, no ME errors are shown
1 Enable, ME errors are shown in numeric form (default)
2 Verbose mode

3.36 +CSMS Select Message Service

Selects messaging service <service>. It returns types of messages supported by the ME.

Syntax:

+CSMS=<service>

Supported values:

<service>
0 GSM 03.40 and 03.41

3.37 +CPMS Select preferred message storage

This command selects the preferred message storage for reading and deletion of SMS messages.

Syntax:

+CPMS=<mem1>[,<mem2>[,<mem3>]]

Supported values:

<mem1>
"SM" SIM message storage

<mem2>
"SM" SIM message storage

<mem3>
"SM" SIM message storage

3.38 +CMGF Message Format

Set command selects the message format.

Syntax:

+CMGF=<mode>

Supported values:

<mode>

0 PDU mode

3.39 +CSCA Service Centre Address

Set command updates the service centre address, through which mobile originated SMS are sent.

Syntax:

+CSCA=<sca>,[<tosca>]

Supported values:

Please refer to GSM 07.05 [1] for detailed description of parameters.

3.40 +CNMI New Message Indications

Set command selects the procedure, how receiving of new messages from the network is indicated to the DTE when DTE is active.

Syntax:

+CNMI=[<mode>[,<mt>[,<bm>[,<ds>[,<bfr>]]]]]

Supported values:

<mode>

1 Discard indication and reject new received message unsolicited result codes when DTE-DCE link is reserved (e.g. on-line data mode); otherwise forward them directly to the DTE (default)

<mt>

0 No SMS-DELIVER indications are routed to the DTE (default)

1 Indication of SMS-DELIVER is routed to the DTE using unsolicited result code +CMTI: <mem>,<index>

<bm>

0 No CBM indications are routed to the DTE (default)

<ds>

0 No SMS-STATUS-REPORTs are routed to the DTE (default)

<bfr>

0 DCE buffer of unsolicited result codes defined within this command is flushed to the DTE when <mode> 1...3 is entered (default)

- 1 DCE buffer of unsolicited result codes defined within this command is cleared when <mode> 1...3 is entered.

3.41 +CMGL List Messages

Command returns messages with status value <stat> from preferred message storage <mem1> to the DTE.

Syntax:

+CMGL[=<stat>]

Supported values:

<stat>

- | | |
|---|-----------------------------------|
| 0 | received unread message (default) |
| 1 | received read message |
| 2 | stored unsent message |
| 3 | stored sent message |
| 4 | all messages |

3.42 +CMGR Read Message

Command returns messages with location value <index> from preferred message storage <mem1> to the DTE.

Syntax:

+CMGR=<index>

Supported values:

<index> integer type; value in the range of location numbers supported by the associated memory

3.43 +CMGD Delete Message

Command deletes message with location value <index> from preferred message storage <mem1>.

Syntax:

+CMGD=<index>

Supported values:

<index> integer type; value in the range of location numbers supported by the associated memory

3.44 +CMGS Send Message

Command sends message from the DTE to the network.

Syntax:

+CMGS=<length><CR>*PDU is given*<ctrl-Z/ESC>

Supported values:

Please refer to GSM 07.05 [1] for detailed description of parameters.

3.45 +FTS Stop transmission and wait

Causes the DCE to stop any transmission. The DCE then waits for the specified amount of time, and then sends the OK result code to the DTE.

Syntax:

+FTS=<n>

Supported values:

<n>

0-255 Wait for <n> * 10 ms before responding with OK

3.46 +FRS Receive silence

Causes the DCE to listen, and to report back to the DTE with an OK result code when silence has been present on the line after the specified amount of time.

Syntax:

+FRS=<n>

Supported values:

<n>

0-255 Silence for <n> * 10 ms before responding with OK

3.47 +FTM Transmit data

Causes the DCE to transmit data using the modulation selected in <mod>.

Syntax:

+FTM=<mod>

Supported values:

<mod>

24	V.27ter 2400 bit/s
48	V.27ter 4800 bit/s
72	V.29 7200 bit/s
96	V.29 9600 bit/s

3.48 +FRM Receive data

Causes the DCE to enter receive mode using the modulation selected in <mod>.

Syntax:

+FRM=<mod>

Supported values:

<mod>

24 V.27ter 2400 bit/s

48 V.27ter 4800 bit/s

72 V.29 7200 bit/s

96 V.29 9600 bit/s

3.49 +FTH Transmit data with HDLC framing

Causes the DCE to transmit data using the modulation selected in <mod>.

Syntax:

+FTH=<mod>

Supported values:

<mod>

3 V.21 300 bit/s

3.50 +FRH Receive data with HDLC framing

Causes the DCE to enter receive mode using the modulation selected in <mod>.

Syntax:

+FRH=<mod>

Supported values:

<mod>

3 V.21 300 bit/s

3.51 +FCLASS Select mode

Command puts the DCE into a particular mode of operation (data, fax etc.).

Syntax:

+FCLASS=<n>

Supported values:

<n>

- 0 Data
- 1 Fax class 1 (TIA-578-A)

3.52 +CME ERROR: <err>

This message indicates an error related to the mobile equipment or network.

Supported values:

<err> (numeric)	<err> (verbose)
0	Phone failure
1	No connection to phone
2	Phone-adaptor link reserved
3	Operation not allowed
4	Operation not supported
5	PH-SIM PIN required
10	SIM not inserted
11	SIM PIN required
12	SIM PUK required
13	SIM failure
14	SIM busy
15	SIM wrong
16	Incorrect password
17	SIM PIN2 required
18	SIM PUK2 required
20	Memory full
21	Invalid index
22	Not found
23	Memory failure
24	Text string too long
25	Invalid characters in text string
26	Dial string too long
27	Invalid characters in dial string
30	No network service
31	Network timeout
100	Unknown

3.53 +CMS ERROR: <err>

This message indicates an error related to the mobile equipment or network in connection with SMS commands.

Supported values:

<err> (numeric)	<err> (verbose)
0-127	GSM 04.11 Annex E-2 values
128-255	GSM 03.40 section 9.2.3.22 values
300	ME failure
301	SMS service of ME reserved
302	Operation not allowed
303	Operation not supported
304	Invalid PDU mode parameter
305	Invalid text mode parameter
310	SIM not inserted
311	SIM PIN necessary
312	PH-SIM PIN necessary

313	SIM failure
314	SIM busy
315	SIM wrong
320	Memory failure
321	Invalid memory index
322	Memory full
330	SMSC address unknown
331	No network service
332	Network timeout
500	Unknown error

3.54 +CMTI

SMS deliver indicated by <mem> and <index> .

+CMTI: <mem>,<index>

4 List of AT Commands and Result codes

4.1 AT Commands

E	Command echo
Q	Result code suppression
V	DCE response format
&C	Circuit 109 behaviour
&D	Circuit 108 behaviour
&K	Selects the local flow control method
+IPR	Fixed DTE data rate.
+CGMI	Request Manufacturer Identification
+CGMM	Request Model Identification
+CGMR	Request Revision Identification
+CGSN	Request Serial Number Identification
Z	Reset to default configuration
&F	Restore factory settings
I	Request manufacturer specific information
+GMI	Request Manufacturer Identification
+GMM	Request DCE Model Identification
+GMR	Request DCE Revision Identification
+GSN	Request DCE Serial Number Identification
+GCAP	Request overall capabilities of DCE
+WS46	Select wireless network
D<n>	Originate call
+CBST	Select bearer service type
+CRLP	Sets radio link protocol parameters
T,P	tone/pulse dialling
A	Answer call
H	Hang-up call
O	Returns to online data mode
W	Negotiation progress message selection.
S0	Automatic answer
S7	Connection completion timeout
S8	Comma dial modifier time
L, M	Monitor speaker mode
+CPAS	Phone activity status
+CPBS	Selects phonebook memory storage
+CPBR	Read phonebook entries
+CPBW	Write phonebook entry
+CMEE	Report mobile equipment error
+CSMS	Select Message Service
+CPMS	Preferred Message Storage
+CMGF	Message Format
+CSCA	Service Centre Address
+CNMI	New Message Indications to DTE
+CMGL	List Messages
+CMGR	Read Message
+CMGS	Send Message
+CMGD	Delete Message
+FMI	Request Manufacturer Identification
+FMM	Request Model Identification
+FMR	Request Revision Identification
+FTS	Stop transmission and wait
+FRS	Receive silence
+FTM	Transmit Data

+FRM	Receive Data
+FTH	Transmit Data with HDLC framing
+FRH	Receive Data with HDLC framing
+FCLASS	Select mode
(+++)	Escape from data mode

4.2 Result codes

Numeric	Verbose
0	OK
1	CONNECT
2	RING
3	NO CARRIER
4	ERROR
5	CONNECT 1200
7	BUSY
9	CONNECT 600
10	CONNECT 2400
11	CONNECT 4800
12	CONNECT 9600
16	CONNECT 19200
47	CARRIER 2400
48	CARRIER 4800
50	CARRIER 9600
70	PROTOCOL: NONE
78	PROTOCOL: RLP
95	CONNECT 300
+F4	+FCERROR
See 3.52	+CME ERROR: <err>
See 3.53	+CMS ERROR: <err>
See 3.54	+CMTI