IndustrialPro™ and MobilityPro™ Gateway Wireless Modems

AT Commands Reference Document
Version 3.8.16 / 3.9.3

June 2013

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CHANGE HISTORY

Version	Date	Description
3.8.16	June 14, 2013	+BIGNNET allows the ppp connection to be disconnected on ign down event +BSECUR allows access security to be configured for telnet service ports Updates: +BMTIME no longer supports STORED option +GPSFIL SOG LOG behavior and odometer saving updated
3.9.2	October 17, 2012	Updates: +BIFCON to accept “br0” and “wlan0” interfaces
3.8.15	October 10, 2012	+BIGNEN to enable/disable ignition sensing on BT-5K units +BDOSET allow ,0 parameter to make settings volatile
3.8.14	August 23, 2012	+BGPSFIL: New options available for Kalman 1D SOG filter +BGPSKAL: New defaults recommended for Kalman 1D performance
3.8.13	June 30, 2012	+BGPSFIL to configure optimized GPS filter for Copernicus II +BGPSKAL to configure Kalman filter to filter SOG value from Copernicus II +BOVCMT to configure overcommit of system memory +BSIPNEG to configure Telnet negotiation and setup for SIP connection
3.8.12	April 4, 2012	AT&C3 : DCD status is decided by SIP TCP connection status
3.9.1	February 9, 2012	+BWIFIMD to configure Wi-Fi mode +BWIFIAPM to configure Wi-Fi AP mode general parameters +BWIFIAPC to advanced configure all Wi-Fi AP mode parameters +BWIFIST to query recent Wi-Fi running status Removal: +BSMSEV
3.8.11	July 7, 2011	No change
3.8.10	June 20, 2011	+BGPSELV to configure GPS elevation angle mask +BIORATE to configure I/O sampling rate Updates: +BPINGH to accept data bytes in packets
3.8.9	February 15, 2011	+BUSBHOST for BT-5000v2 series to query USB host info
3.8.8	December 14, 2010	Updates: +BIPFWD accept now up to 40 ports +BIPFWDI allows specifying the incoming interface of IP packets to forward. +BSIPDMO (Serial IP Mobile Originated)
3.8.7	September 28, 2010	No change
3.8.6	September 17, 2010	No change
3.8.5	September 9, 2010	Updates: +BEVENT accepts now 63 events (1..63) +BMDIAG: HSPA RF state I1: RF field include RF module type, PRI and PRLREGION added +BGPSLOG a new command to log GPS fixes
3.8.4	June 7, 2010	Updates: +BGPSRP (GPS Reporting Parameters)

		+BSFMST (Store and Forward Memory Status) +BRPSWD (AT command password) Add serial port +BGETLG (Get modem Log) add modem configuration +BFRBE (Factory Reset Button Enable) +BSFMRM (Store and Forward Memory Removal) +BEVLOG (Log BEP event per destination) +BGPSSV (GPS data server) +BMTIME (Select modem time source) +BNTP (Define NTP servers) +BNTPST (NTP status)
3.8.3	February 18, 2010	No change
3.8.2	February 12, 2010	+COPS update for HSPA +BSIPLS examples

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TABLES

1 Introduction

1.1 Scope

This document describes the AT-command based messages used to configure, control and monitor Sixnet Industrial Wireless Modems[1]:

- Legacy Industrial Wireless Modems (BT-4000 / BT-5000 Series):
  - BT-4200, BT-5200: CDMA 1xRTT
  - BT-4400, BT-5400: GSM/GPRS
  - BT-4600, BT-5600: CDMA EVDO
  - BT-4600A, BT-5600A: CDMA EVDO A
- **Sixnet IndustrialPro™ Gateway** Wireless Modems (BT-6000 Series):
  - BT-6401, BT-6401EB, BT-6421: GSM/EDGE
  - BT-6600, BT-6601, BT-6601EB, BT-6621: CDMA EVDO A
  - BT-6800, BT-6801, BT-6801EB, BT-6821: GSM/HSPA
- **Sixnet MobilityPro™ Gateway** Wireless Modems with GPS (BT-5000v2 Series):
  - BT-5600v2: CDMA EVDO A with GPS
  - BT-5800v2: GSM/HSPA with GPS

1.2 Supported modems

Unless when stated otherwise, all the AT commands described in this document are supported by all the BT-4000, BT-5000, BT-5000v2 and BT-6000 series of Sixnet Industrial Wireless modems.
The model specific commands use the following availability notation to state on which modems they are applicable:

Table 1. Supported modems

Availability			Wireless technology	Supported modems
CDMA	1xRTT		CDMA 1xRTT	*BT-4200, BT-5200*
	EVDO	EVDO 0	EVDO Rel. 0	*BT-4600, BT-5600*
		EVDO A	EVDO Rev. A	*BT-4600A, BT-5600A* BT-6600, BT-6601, BT-6601EB, BT-6621, BT-5600v2
GSM		GPRS	GSM GPRS	*BT-4400, BT-5400*
		EDGE	GSM EGPRS	BT-6401, BT-6401EB, BT-6421
		HSPA	GSM HSPA	BT-6800, BT-6801, BT-6801EB, BT-6821, BT-5800v2

[1] Formerly BlueTree Wireless Data

2 AT commands general information

2.1 Connecting to the modem

2.1.1 Over serial port

The Blue Tree modems serial port factory default settings are:

- Baud rate: 115,200
- Data bits: 8
- Parity: None
- Stop bits: 1
- Flow control: Hardware (CTS/RTS)

2.1.2 Over TCP/IP

The Blue Tree modems default TCP/IP settings are:

- IP address **192.168.0.1** when connected over Ethernet (LAN)
- IP address **192.168.111.1** when connected over USB (LAN)
- IP address **variable** when connected over the air (WAN)
- TCP port **6070**

2.2 AT Command syntax

Commands always start with the AT (short for attention) characters and ends with a <CR> (<Enter> key) character.
Commands may be entered in upper or lower cases.
Command names may use letters, digits and punctuation characters (+, &, \, …).
Sixnet specific AT commands start with +B. All other listed commands are either third party commands or industry de-facto standard commands supported by Sixnet modems. Non-listed commands are not supported and return the ERROR string.
The specific syntax of each supported AT command is given in the description of the command in the subsequent sections of this document.
In general the syntax of the AT commands follows the following rules:

- Command with no parameter:

  AT<command_name>
- Command with parameters:

  AT<command_name>=<parameter1>[,<parameter2>[…]]
- Query the actual setting parameters of a command:

  AT<command_name>?
- Query the syntax of a command:

  AT<command_name>=?

Notes:

- Parameters that include spaces or comma must be enclosed in quotes (")
- ? is optional for query-only AT commands
- Parameters shown between square brackets ([]) are optional. When not specified, the default value for those parameters is used.
- Several AT commands may be specified after the "AT" string, they must be separated by a semicolon ';'. When a command must appear last on the command line, this is specifically stated in the command description.

2.3 AT Command response codes

Responses start and end with the <CR><LF> characters.
When the modem cannot interpret a command, it returns the <CR><LF>ERROR<CR><LF> string. This is also the case when a command intended for the RF module is issued while in a call.
When the command is successful, the modem appends a <CR><LF>OK<CR><LF> sequence to the end of the response.
Command responses usually start with the command name followed by a column.

2.4 Password protected modems

Sixnet modems may be protected by a password for restricted network access.
The password protection does not apply to the serial port connection.
The modem may be password protected for access over the LAN interface, the WAN interface, the serial port interface or a combination of the three.
When a connection is established to a password protected modem, the modem prompts for the password to be entered (the first line is only prompted on TCP/IP connections):

Welcome to BlueTree Wireless BT modem 192.168.111.20
Serial No: BTW-000000000000
password:

If the correct password is entered, the modem responds with:

PASS

In case, the entered password is not correct, the modem responds with:

WRONG
Serial No: BTW-000000000000
password:

The modem will repeat this process up to three times, after which it will closes the connection.
If the password is not entered within one minute, the modem will display:

TIMEOUT

and then will close the connection.
Notes:

- The IP address displayed after the "Welcome to BlueTree Wireless BT modem" is the IP address of the host attempting a connection to the modem.
- The serial number of the modem (see the I command page 67) is displayed after the "Serial No: " message.
- The password and the interface to which it is applied are configured with the +BRPSWD AT command (page 61).

2.5 Modem configuration profiles

Modems have three sets of configuration profiles:

- The **Active profile** stored in memory. Most of the AT commands only change the active profile. When the modem starts up, it copies it Stored profile into its Active profile.
- The **Stored profile** stored in non-volatile memory.
- The **Factory profile**: the default modem configuration. This configuration cannot be changed but with a firmware upgrade.

Specific AT commands are used to manage the modem profiles as shown in the following diagram:

- AT&W Copy the Active profile to the Stored profile
- ATZ1 Copy the Stored profile to the Active profile
- AT&F Copy the Factory profile to the Active profile

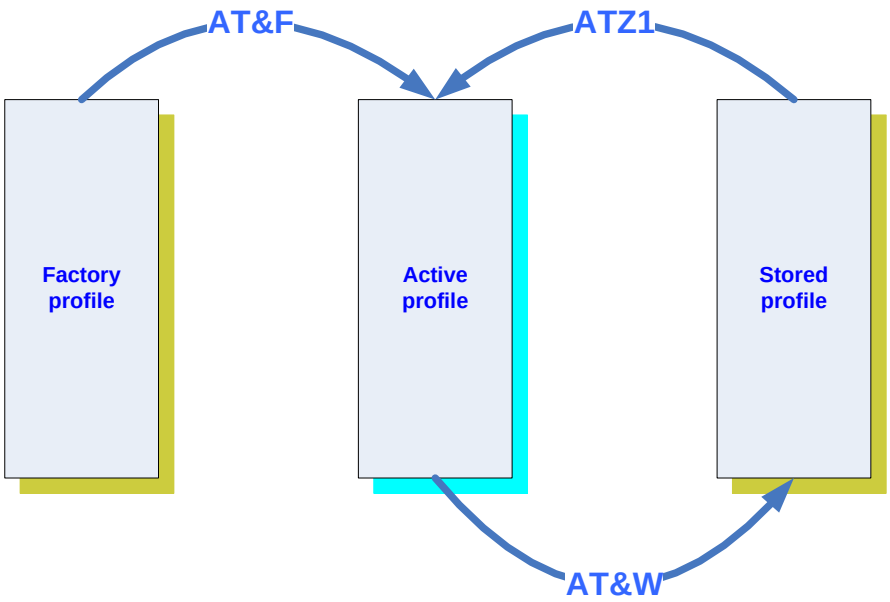

Figure 1: Modem configuration profiles

Notes:

- Changes made to the Active profile need to be copied to the Stored profile with the AT&W command in order to persist a modem restart.
- Pressing the modem RESET button for between 3 and 10 seconds will reset the modem to its factory profile (AT&F&W).

3 Basic connection commands

The basic connection commands are used to make a call, disconnect and define the connection behavior:

3.1 D, DP and DT: Dial Command

Description

The ATD command is used to originate a data call.
The ATD command could be used to setup the modem in Serial IP mode.
The ATDT command is equivalent to the ATD.
The ATDP command is used to dial with pulses instead of tones.

Availability

Since FW version 1.1.1

Command Syntax

ATD<Phone number>
ATD<IP>,<Port>[,<Transport>]
ATDP<Phone number>

Response Syntax

CONNECT	Call succeeds, for data calls only
BUSY	If the called party is already in communication
NO ANSWER	If no hang up is detected after a fixed network time-out
NO CARRIER	Call setup failed or remote user release.
ERROR	Can not establish TCP connection or meet other issues

Defined Values

<Phone number>

0-9#*...	Called phone number, sequence of digits and special characters (#, *, …)

<IP>

nnn.nnn.nnn.nnn	IP address (dotted decimal) of remote destination

<Port>

1-65535	IP port number

<Transport>

0	UDP (**Default**)
1	TCP

Example:

Commands	**Responses**
ATD5551212	BUSY
ATD5551212	CONNECT
ATD200.100.100.5,2000,1	CONNECT

Connection Setup process:

- Establishing a connection to a phone number
  - When the phone number is identical to the one stored in the connection profile (see 12 Wireless Network Connection Profile), the modem is setup as a router

- When the phone number is different from the one stored in the connection profile, the modem is setup in simple modem mode.

- Establishing a Serial IP connection
  - When an IP address is specified, the modem is setup is Serial IP mode. It will attempt a PPP connection as defined in its connection profile and if successful, it will establish a connection to the specified IP address.

Note:

- When the modem is set in Always-on mode, the ATD command has no effect.

3.2 A: Answer Incoming Call

Description

When the modem receives a call, it sets the **RingInd** signal and sends the ASCII "**RING**" string to the application, then waits for the application to accept the call with the ATA command.

Availability

Since FW version 1.1.1

Command Syntax

ATA

Response Syntax

CONNECT
NO CARRIER
ERROR

Defined Values

None

Example:

Commands	Responses
	RING
ATA	CONNECT
ATA	NO CARRIER
ATA	ERROR

3.3 +++: Escape Sequence

Description
The "+++" escape sequence is sent by the application to switch the modem to the command state without dropping the on-going call (stay online). The escape sequence shall not be preceded by the AT characters. Use the ATO command to go back to the online mode.

The following time thresholds must be respected for the +++ command to work:

1. The idle time between the last key typed and the first "+" character cannot exceed 1 second.
2. The idle time between "+" characters being typed cannot exceed 500 milliseconds.
3. The idle time following the last "+" character must be at least 1½ seconds before another key can be typed.

Failure to meet all three of these time constraints will result in the failure of the +++ command to execute.

Availability
Since FW version 1.1.1

Command Syntax
+++

Response Syntax
OK
none (when not already online)

Defined Values
None

Example:

Commands	Responses
+++	*<none if not online>*
+++	OK

3.4 H: Hang-up

Description

The ATH command is used by the application to release any ongoing connection.

Availability

Since FW version 1.1.1

Command Syntax

ATH[<value>]

Response Syntax

OK
NO CARRIER

Defined Values

<value>

0-1	Ignored.

Example:

Commands	Responses
ATH	OK
ATH	NO CARRIER

3.5 O: Switch to Online Mode

Description
Returns to online mode after a "+++" escape sequence has been issued and the modem was switched to the offline mode.

Availability
Since FW version 1.1.1

Command Syntax
ATO

Response Syntax
OK
ERROR

Defined Values
None

Example:

Commands	Responses
ATO	OK
ATO	ERROR (if not in a call)

3.6 S0: Automatic Answer

Description
This S0 (S zero) register parameter controls the modem automatic answering mode.

Availability
Since FW version 1.1.1

Command Syntax
ATS0=<Value>

Response Syntax
OK
ERROR

Defined Values
<Value> :

0	Disable automatic answer **(default)**
1 - 12	Modem answers in circuit-switched after the specified number of rings

Example:

Commands	Responses
ATS0=1	OK
ATS0?	S0: 001 OK

4 Basic AT response commands

The basic AT response commands define the behavior or AT commands:

4.1 E: Echo Sent Commands

Description

Determines whether or not the modem echoes characters received from an external application (DTE) on the serial port.

Availability

Since FW version 1.1.1

Command Syntax

ATE[<Action>]

Response Syntax

OK

Defined Values

<Action>

0	Disable echo (**default**)
1	Enable echo

Example:

Commands	Responses
ATE0 AT	OK OK
ATE1 AT	OK AT OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.
- Use AT&V to retrieve the Active profile settings for this command.

4.2 Q: Enable/Disable Result Codes

Description

This command determines whether the mobile equipment sends result codes or not. When disabled, the modem does not return any response. Unsolicited messages such as RING are not affected by this command.

Availability

Since FW version 1.1.1

Command Syntax

ATQ[<Action>]

Response Syntax

OK

Defined Values

<Action>

0	Enable result code (**default**)
1	Disable result code

Example:

Commands	Responses
ATQ0	OK
ATQ1	*<none>*

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.
- Use AT&V to retrieve the Active profile settings for this command.

4.3 V: Result Codes Format

Description

This command specifies the modem result code format: Text (verbose) or numeric (non-verbose).
Result codes, both text and numeric, can be suppressed by the ATQ command.
Unsolicited messages, such as RING, are not affected by the ATV command and will always be displayed as text.

Availability

Since FW version 1.1.1

Command Syntax

ATV<Action>

Response Syntax

OK	(if ATV1)
0	(if ATV0)

Defined Values

<Action>

0	report result codes as numbers see Table 2.
1	report result codes as text **(default)**

Table 2. Text to numeric result codes mapping

Text Result Codes (V1)	Numeric Result Codes (V0)
BUSY	7
ERROR	4
NO ANSWER	8
NO CARRIER	3
OK	0
RING	2
CONNECT	1

Example:

Commands	Responses
ATV1 AT***	OK ERROR
ATV0 AT***	0 4

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.
- Use AT&V to retrieve the Active profile settings for this command.

5 Basic profile management commands

The following commands are used to save and restore the modem configuration:

5.1 &V: Display active profile

Description

Displays the modem basic profile: Echo mode (E), result code format (V and Q), Automatic answer (S0), DCD signal handling (&C), DTR signal handling (&D), DCE serial port speed (IPR), serial port character framing (IFC), the serial IP destination setting (+BSIPDS) and the serial IP flush parameters (+BSIPFB, +BSIPFC and +BSIPFT).

Availability

Since FW version 1.1.1

Command Syntax

AT&V[<value>]

Response Syntax

E: … V: … Q: … S0: … &C: … &D: …
IPR: … ICF: … IFC: …
+BSIPDS: …
+BSIPFB: … +BSIPFC: … +BSIPFT: …
OK

Defined Values

<value>

0-1	Ignored

Example:

Commands	Responses
AT&V	E: 0 V: 1 Q: 0 S0: 0 &C: 1 &D: 2 IPR: 115200 ICF: 3, 3 IFC: 2, 2 +BSIPDS: 1, 0.0.0.0, 1, 8888 +BSIPDS: 2, 0.0.0.0, 1, 8888 +BSIPFB: 1024 +BSIPFC: 13 +BSIPFT: 1 OK

5.2 &W: Save Active Profile to NV Memory

Description

Stores the active profile and settings to the Stored profile in non-volatile (NV) memory.
This command also stores a timestamp and its origin (serial port, IP address) into a location that can be queried with AT+BCFGW?.

Availability

Since FW version 1.1.1

Command Syntax

AT&W[<value>]

Response Syntax

OK

Defined Values

<value>

0	Ignored

Example:

Commands	Responses
AT&W	OK

Notes:

- This command affects the Stored profile.

5.3 Z1: Reset to Stored Profile

Description
This command restores the modem stored profile into its active profile.

Availability
Since FW version 1.1.1

Command Syntax
ATZ1

Response Syntax
OK

Defined Values
None

Example:

Commands	Responses
ATZ1	OK

Notes:

- This command affects the Active profile.

5.4 &F: Reset to Factory Default

Description

This command restores the factory settings of the modem from non-volatile (NV) memory.

Availability

Since FW version 1.1.1

Command Syntax

AT&F[<value>]

Response Syntax

OK

Defined Values

<value>

0	Ignored

Example:

Commands	Responses
AT&F	OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.
- GSM GPRS/EDGE/HSPA modems have their APN and other connection settings reset by AT&F according to the installed SIM card.

5.5 +BCFGW: Configuration last Write

Description

This AT command allows retrieves when was the last time the active configuration was written to non-volatile memory (see AT&W) as well as from which port the command was issued.

Availability

Since FW version 3.6.1

Command Syntax

AT+BCFGW?

Response Syntax

+BCFGW: +BCFGW: September 9, 2010,<time>,<protocol>,<ip address>,<port>
OK

Defined Values

September 9, 2010 MM/DD/YYYY when the last AT&W was performed
<time> HH:MM:SS when the last AT&W was performed
<protocol> Protocol on which the AT&W was last issued (tcp or serial)
<ip address> IP address from which the AT&W was last issued (tcp only)
<port> Port from which the AT&W was last issued (tcp only: 5070 or 6070)

Example:

Commands	Responses
AT+BCFGW?	+BCFGW: 11/27/2008,13:14:37,tcp,"192.168.111.20",5070 OK
AT+BCFGW?	+BCFGW: 11/27/2008,15:08:10,serial OK

5.6 +BCFGV: Configuration Version

Description

This AT command allows to store a configuration version string of up to 32 characters. The information is directly written into non-volatile memory.

Availability

Since FW version 3.6.1

Command Syntax

AT+BCFGV="<configuration version>"
AT+BCFGV?

Response Syntax

OK

+BCFGV: <configuration version>
OK

Defined Values

<configuration version>

1 to 32 characters

Example:

Commands	Responses
AT+BCFGV="Config AVL #12"	OK
AT+BCFGV?	+BCFGV: Config AVL #12 OK

6 Serial port commands

The following commands are used to configure the modem serial port:

6.1 &C: Set DCD Signal

Description
This command is used to control the Data Carrier Detect (DCD) signal on the serial port.

Availability
Since FW version 1.1.1

Command Syntax
AT&C[<Action>]

Response Syntax
OK

Defined Values
<Action>

0	force DCD signal to be Always-On
1	DCD follows connection state as per the specified service **(default)**
2	force DCD signal to be Always-On and wink it (off 2 sec) on channel disconnect
3	DCD follows SIP TCP connection status

Example:

Commands	Responses
AT&C2	OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.
- Use AT&V to retrieve the Active profile settings for this command.

6.2 &D: Set DTR Signal

Description
Controls how the modem interprets the Data Terminal Ready (DTR) signal on the serial port.

Availability
Since FW version 1.1.1

Command Syntax
AT&D[<Action>]

Response Syntax
OK

Defined Values
<Action>

0	modem ignores the DTR signal
2	when DTR signal is dropped, call is dropped and modem transitions to command mode **(default)**

Example:

Commands	Responses
AT&D0	OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.
- Use AT&V to retrieve the Active profile settings for this command.

6.3 +IPR: DCE Serial Port Speed

Description
Specifies the data rate, in bits-per-second at which the modem (DCE) will accept commands.

Availability
Since FW version 1.1.1

Command Syntax
AT+IPR=<value>

Response Syntax
OK

Defined Values
<value>

300	set the modem's serial port speed to 300bps
600	set the modem's serial port speed to 600bps
1200	set the modem's serial port speed to 1 200bps
2400	set the modem's serial port speed to 2 400bps
4800	set the modem's serial port speed to 4 800bps
9600	set the modem's serial port speed to 9 600bps
19200	set the modem's serial port speed to 19 200bps
38400	set the modem's serial port speed to 38 400bps
57600	set the modem's serial port speed to 57 600bps
115200	set the modem's serial port speed to 115 200bps

Example:

Commands	Responses
AT+IPR=115200	OK
AT+IPR?	+IPR:115200 OK
AT+IPR=?	+IPR: (300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200) OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.
- Use AT&V to retrieve the Active profile settings for this command.

6.4 +ICF: Serial Port Character Framing

Description

Determines the local serial port data format, start-stop (asynchronous) character framing and the parity.

Availability

Since FW version 1.1.1

Command Syntax

AT+ICF=<format>,<parity>

Response Syntax

+ICF:<format>,<parity>
OK

Defined Values

<format>

1	8-bit Data 2 Stop bits
2	reserved
3	8-bit Data 1 Stop bit **(default)**
4	7-bit Data 2 Stop bits
5	reserved
6	7-bit Data 1 Stop bit

<parity>

0	Odd
1	Even
2	Mark
3	None **(default)**

Example:

Commands	Responses
AT+ICF=3,3	OK
AT+ICF?	+ICF:3,3 OK
AT+ICF=?	+ICF: <1-6>,<0-3>

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.
- Use AT&V to retrieve the Active profile settings for this command.

6.5 +IFC: Serial Port Flow Control

Description
This command is used to control the operation of local serial connection flow control between the modem (DCE) and the attached host (DTE).

Availability
Since FW version 1.1.1

Command Syntax
AT+IFC=<Tx>,<Rx>

Response Syntax
OK

Defined Values
<Tx>

0 : None – Transmit data flow control is disabled
2 : Hardware – Use RTS signal **(default)**

<Rx>

0 : None – Receive data flow control is disabled
2 : Hardware – Use CTS signal **(default)**

Note:

- <Rx> and <Tx> values shall be identical.

Example:

Commands	Responses
AT+IFC=2,2	OK
AT+IFC?	+IFC:2,2 OK
AT+IFC=?	+IFC: <0,2>,<0,2> OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.
- Use AT&V to retrieve the Active profile settings for this command.

6.6 +BSERMD: Serial Port Operational Mode

Description

This command sets the current mode of operation of the modem's serial port.

Availability

Since FW version 1.1.1

Command Syntax

AT+BSERMD=<mode>

Response Syntax

+BSERMD: <mode>

Defined Values

<mode>

0	Command **(default)**
1	Serial-IP

Example

Commands	Responses
AT+BSERMD?	+BSERMD: 0 OK
AT+BSERMD=1	OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.

6.7 +BSERAO: Serial Port Always-On

Description

This command is used to configure whether the serial port device shall go into sleep mode when no activity is detected on the serial port (no signal on DTR, Tx and RTS) or remain always on.

Availability

Since FW version 3.3.0

Command Syntax

AT+BSERAO=<action>

Response Syntax

+BSERAO: <action>

Defined Values

<action>

0	Disable; the serial port may go into sleep mode.
1	Enable **(default)**; the serial port is always-on.

Example

Commands	Responses
AT+BSERAO?	+BSERAO: 1 OK
AT+BSERAO=0	OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.

7 Basic wireless service commands

The following commands are used to monitor the available wireless services:

Advanced wireless information is available with the AT commands described in section **14 - Wireless Network Status Information** on page 108.

7.1 +CSQ: Check Signal Quality

Description
This command returns the Received Signal Strength Indication (RSSI) and the channel Frame Error Rate (FER).

Availability
Since FW version 1.1.1

Command Syntax
AT+CSQ[?]

Note: The query version works with or without the '?'.

Response Syntax
+CSQ :<RSSI>,<FER>
OK

Defined Values
<RSSI> Receive Signal Strength Indicator

0-31 1xRTT and GPRS modems: 0 represents -110dBm, and each increment is 1.09375dBm. See Table 3.
EVDO and HSPA modems: 0 is lowest quality signal, 31 is the highest
EDGE modems: 0 represents -113 dbm, and each increment is 2 dBm. See Table 4. +CSQ RSSI values (EDGE).

99 No signal

<FER> Frame Error Rate

99 No signal or measurement not available. Currently all modems report 99.

Table 3. +CSQ RSSI values (CDMA 1xRTT and GPRS)

Value	RSSI	Value	RSSI	Value	RSSI	Value	RSSI
0	-110.00 dBm	10	-99.06 dBm	20	-88.13 dBm	30	-77.19 dBm
1	-108.91 dBm	11	-97.97 dBm	21	-87.03 dBm	31	-76.09 dBm
2	-107.81 dBm	12	-96.88 dBm	22	-85.94 dBm		
3	-106.72 dBm	13	-95.78 dBm	23	-84.84 dBm		
4	-105.63 dBm	14	-94.69 dBm	24	-83.75 dBm		
5	-104.53 dBm	15	-93.59 dBm	25	-82.66 dBm		
6	-103.44 dBm	16	-92.50 dBm	26	-81.56 dBm		
7	-102.34 dBm	17	-91.41 dBm	27	-80.47 dBm		
8	-101.25 dBm	18	-90.31 dBm	28	-79.38 dBm		
9	-100.16 dBm	19	-89.22 dBm	29	-78.28 dBm		

Table 4. +CSQ RSSI values (EDGE)

Value	RSSI	Value	RSSI	Value	RSSI	Value	RSSI
0	- 113.00 dBm or less	10	-93.00 dBm	20	-73.00 dBm	30	-53.00 dBm
1	-111.00 dBm	11	-91.00 dBm	21	-71.00 dBm	31	-51.00 dBm or greater
2	-109.00 dBm	12	-89.00 dBm	22	-69.00 dBm		
3	-107.00 dBm	13	-87.00 dBm	23	-67.00 dBm		
4	-105.00 dBm	14	-85.00 dBm	24	-65.00 dBm		
5	-103.00 dBm	15	-83.00 dBm	25	-63.00 dBm		
6	-101.00 dBm	16	-81.00 dBm	26	-61.00 dBm		
7	-99.00 dBm	17	-79.00 dBm	27	-59.00 dBm		
8	-97.00 dBm	18	-77.00 dBm	28	-57.00 dBm		
9	-95.00 dBm	19	-75.00 dBm	29	-55.00 dBm		

Example:

Commands	Responses
AT+CSQ?	+CSQ: 12,99 OK

Notes:

- This command is only available when the modem is OFFLINE.
- This command is dependent on the OEM RF module and returns the value provided by it.
- Use +BNSTAT to query the modem registration independently of its connection state.

7.2 +CCED: Check Cell Environment Description

Description
This command retrieves information about the main cell and up to six neighboring cells.

Availability
Since FW version 1.1.1
1xRTT and GPRS only.

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

Response Syntax
+CCED : <requested dump>
OK

Defined Values
<mode>

0	Requests a single snapshot of cell data
1	Start automatic snapshot mode
2	Stop automatic snapshot mode

Note: Automatic snapshot mode will not return a terminating "OK". The unsolicited responses +CCED and/or +CSQ will be used to return the requested information.

<requested dump>

0-15		Bitwise sum of the possible following values (see note below):
	1	Main Cell: <mode>, <band class>, <Channel #>, SID, NID, <Base Station P Rev>, [<Pilot PN offset>], <Base Station ID>, [<Slot cycle index>], [<Ec/Io>], <Rx power>, <Tx power>, <Tx Adj>
	2	Neighbor1 to Neighbor20 (max): The first value is the <number of neighbor entries> in the response. Each neighbor entry consists of the following values: <band class>, [<Pilot PN>], <Frequency Assignment>
	4	Timing Advance: Always zero for CDMA
	8	Main cell RSSI indication (RxLev) from 0 to 31.

Note:

- If the <requested dump> parameter is not specified, the <requested dump> value from the previous +CCED command will be used. If no previous +CCED <requested dump> value is available, a default value of 13 (8, 4, and 1) will be used.
- For <requested dump> 4, 2, and 1, the requested information is output using the unsolicited +CCED response. Place holders are used in the +CCED output for fields that cannot be measured or are not meaningful in the current mode of operation. In this case, consecutive commas will be present in the output. There are also several optional parameters ([]) that are not displayed in analog mode and will result in place holders in the +CCED command output. Automatic snapshots of these dumps is not supported during communication or registration.
- For <requested dump> 1, the first value output in the unsolicited +CCED response is the +CCED command specified <mode> (0, 1, or 2). The value displayed for Ec/Io is the index of the Active set in 0.5dB steps from 0 (0dB) to 63 (-31.5dB). For example: 0 = 0dB, 1 = 0.5dB, 2 = 1dB, … 62 = 31dB, 63 = 31.5dB. The value displayed for <Rx power>, <Tx power>, and <Tx Adj> is in terms of dBm.

- For <requested dump> 8, the information is output using the unsolicited +CSQ response. The 07.07 format of the +CSQ response is respected. However, the <fer> portion of the +CSQ response is not evaluated by this dump request so the <fer> value will always be 99. Automatic snapshots are supported in idle mode and during communication.
- The combination of multiple <requested dump> values (addition of the values) in a single +CCED command is supported with the exception of <requested dump> 2. The <requested dump> 2 value must be used by itself and not in combination with other dump request values.
- Either or both the +CCED and +CSQ responses are used for output depending upon the <requested dump> value. Activation or deactivation of a +CCED response flow will not affect an existing +CSQ response flow. Likewise, activation or deactivation of a +CSQ response flow will not affect an existing +CCED response flow.

Example:

Commands	**Responses**
AT+CCED=?	AT+CCED= (0-2),(1-15) OK
AT+CCED?	+CCED: 0,13 OK
AT+CCED=0 *Note: one time, dump default (8, 4, and 1)*	+CSQ: 15, 99 +CCED: 0,0,1,125,4,65535,6,,0,,,-107,-32,-63 OK
AT+CCED=0,1 *Note: one time, dump main cell*	+CCED: 1,725,4,65535,6,,0,,,-104,-35,-63 OK
AT+CCED=1,8 *Note: Start automatic snapshots and dump <rssi>.*	+CSQ: 18, 99 *Note: No OK response. New +CSQ response output every 5 seconds.*
AT+CCED=2,8	OK *Note: Stop automatic snapshots of <rssi>.*
AT+CCED=0,2 *Note: one time, dump neighbor cells. Neighbor cells must be dumped separately.*	+CCED:18,0,268,384,0,272,384,0,296,384,0,8,384,0,48,384,0,248,384,0,164,384,0,16,384,0,12,384,0,224,384,0,108,384,0,476,384,0,472,3840,76,384,0,292,384,0,300,384,0,312,384,0,308,384 OK *Note: 18 neighbor cells are present. The first neighbor cell band class is 0, its PilotPN is 268, and its frequency assignment is 384.*

Notes:

- This command may change the RF module settings.
- This command is only available when the modem is OFFLINE.

7.3 +CGDCONT: Define GSM PDP Context

Description

This command specifies the Packet Data Protocol (PDP) context parameter values for GSM connections directly into the RF module.
Up to four PDP contexts can be defined, but only one can be active at a given time.

Availability

Since FW version 1.2.2
GPRS, EDGE and HSPA only.

Command Syntax

AT+CGDCONT=<cid>,<PDP_type>,<APN>,<PDP_addr>,<data_comp>,<head_comp>

Response Syntax

OK
ERROR

Defined Values

<cid> PDP context identifier

1-4	Numeric identifier of the PDP context definition.

<PDP_type> Packet Data Protocol type (string):

IP	Internet Protocol
PPP	Point to Point Protocol

<APN > Access Point Name

"…"	Logical name 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_addr> Context address

"…"	Identifies the PDP address applicable to the PDP context.

<data_comp> Data Compression

0	OFF (default if value is omitted)
1	ON

<head_comp> Header Compression

0	OFF (default if value is omitted)
1	ON

Example:

Commands	Responses
AT+CGDCONT?	+CGDCONT:1,"IP","internet.com",,0,0 +CGDCONT:2,"IP","apn.com",,0,0 OK

AT+CGDCONT=?	+CGDCONT:(1-4),"IP",,,(0-1),(0-1) +CGDCONT:(1-4),"PPP",,,0,0 OK
AT+CGDCONT=1,"IP","internet.com",,1,1	OK

Notes:

- The setting form of this command changes the RF module settings.
- This command is only available when the modem is OFFLINE.
- The settings are not stored into the modem configuration profiles. Use the AT+BCPAPN and/or AT+BCPINS commands to query or change the modem PDP context parameters.
- Edge modems do not support data and header compression; both values shall be set to 0.

7.4 +CREG and +CCREG: Check Registration and Roaming

Description

This command returns the registration and roaming current state. +CCREG is equivalent to +CREG.

Availability

Since FW version 1.1.1
1xRTT, GPRS, EDGE and HSPA only, not supported by EVDO modems.

Command Syntax

AT+CREG
AT+CCREG

Response Syntax

+CREG: <reg mode>, <reg status>
OK

Defined Values

<reg 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..

<reg status>

0	not registered, MS is not currently searching for a new operator.
1	registered, home network.
2	not registered, MS currently searching for a base station.
4	unknown.
5	registered, roaming

Example:

Commands	Responses
AT+CREG	+CREG: 0,1 OK

Notes:

- This command is only available when the modem is OFFLINE.
- Use +BNSTAT to query the modem registration independently of its connection state.

7.5 +CSS: Serving System

Description

This command returns information on the serving base stations.
Note: This command returns a response only in offline mode. When the modem is connected, the command returns ERROR.

Availability

Since FW version 1.1.1
CDMA only

Command Syntax

AT+CSS

Response Syntax (1xRTT modem)

+CSS: <Class>,<Band>,<SID>,<BS_P_REV>,<CHANNEL>
OK

Response Syntax (EVDO modem)

<Class>,<Band>,<SID>
OK

Defined Values

<Class>

0	No service
1	800Mhz
2	1900Mhz PCS

<Band> EVDO modems

A – F	Cellular band
Z	The mobile station is not registered

<Band> Non-EVDO modems

A – C	Cellular 800
PA – PF	PCS 1900, the second letter is the block ('A' to 'F')
Z	The mobile station is not registered

<SID>

0 – 32767	The mobile station is registered with the indicated system ID.
99999	The mobile station is not registered.

<BS_P_REV> Base Station Protocol Revision In Use for the cellular band (<Band>="A" .. "C")

1	IS-95
2	IS-95A
3	TSB74
4	N/A
5	IS-95B
6	IS-2000
7	IS-2000A

<BS_P_REV> Base Station Protocol Revision In Use for the PCS band (<Band>="PA" .. "PF")

1	J-STD-008C
2	N/A
3	N/A
4	N/A
5	IS-95B
6	IS-2000
7	IS-2000A

<CHANNEL>

0 – Max RF Channel Number

Example:

Commands	Responses
AT+CSS?	+CSS: 2, A, 4145, 6, 334 OK
AT+CSS	0, Z , 0 OK

Notes:

- This command is only available when the modem is OFFLINE.
- Use +BNSTAT to query the modem base station information independently of its connection state.

7.6 +CAD: Query Analog or Digital service

Description

This command queries the availability of the Analog or Digital service.

Availability

Since FW version 3.4.6
CDMA only

Command Syntax

AT+CAD?

Response Syntax

+CAD: <Service>
OK

Defined Values

<Service>

0	No service is available
1	CDMA digital service is available
2	TDMA digital service is available
3	Analog service is available
4-255	Reserved

Example:

Commands	Responses
AT+CAD?	+CAD: 1 OK
AT+CAD	ERROR

Notes:

- This command is only available when the modem is OFFLINE.
- Use +BNSTAT or +BMDIAG to query the modem service availability independently of its connection state.

7.7 +CGATT: GPRS Attach or Detach

Description

This command attaches the modem to the GPRS service, or detaches the modem from the GPRS service.
After the command completes, the modem remains in command mode. If the modem is already in the requested state, the command is ignored and the OK response is returned. If the requested state cannot be achieved an ERROR is returned.
Any active PDP context will be automatically deactivated when the attachment state changes to Detached.

Availability

Since FW version 1.1.1
GPRS, EDGE and HSPA only.

Command Syntax

AT+CGATT=<state>

Response Syntax

+CGATT: <state>
OK

Defined Values

<state>

0	Detached
1	Attached
2	Combined Detach (GPRS and GSM Detach performed in the same network request)

Example:

Commands	Responses
AT+CGATT?	+CGATT: 1 OK
AT+CGATT=?	+CGATT: (0-2) OK
AT+CGATT=1	OK

Notes:

- The setting form of this command changes the RF module settings.
- This command is only available when the modem is OFFLINE.
- Use +BNSTAT or +BMDIAG to query the modem service availability independently of its connection state.

7.8 +CGACT: GPRS PDP Context Activate/Deactivate

Description

This command activates or deactivates the specified PDP context(s).

Availability

Since FW version 1.1.1
GPRS and HSPA only.

Command Syntax

AT+CGACT=[<state>[,<cid>[,<cid>[,…]]]]

Response Syntax

OK
ERROR
Query response: +CGACT: <cid>, <state>[<CR><LF>+CGACT: <cid>, <state>[…]]

Defined Values

<state>

0	Deactivated
1	Activated

<cid> PDP context Numeric identifier

Example:

Commands	Responses
`AT+CGACT=1,1`	`OK`
`AT+CGACT?`	`+CGACT: 1, 1` `OK`

Notes:

- The setting form of this command changes the RF module settings.
- This command is only available when the modem is OFFLINE.

7.9 +COPN: Read Operator Name

Description

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

Availability

Since FW version 1.1.1
GPRS only.

Command Syntax

AT+COPN

Response Syntax

+COPN: <OpNum>,<OpName>

Defined Values

N/A

Example:

Commands	Responses
AT+COPN=?	OK
AT+COPN	+COPN: 23201,"A1" +COPN: 23203,"A max." +COPN: 23207,"A tele.ring" +COPN: 23205,"one" … OK

Notes:

- This command is only available when the modem is OFFLINE.
- Use +BNSTAT or +BMDIAG to query the modem current operator name independently of its connection state.

7.10 +COPS: Operator Selection

Description

This command selects the GSM network operator. The selection can be automatic or forced to a specific operator. The query form of the command returns the current mode and the currently selected operator (also when in automatic mode).

Availability

Since FW version 1.1.1
GPRS and HSPA only.

Command syntax	Responses syntax
+COPS=<mode>[,<format>[,<oper>][,<AcT>]]	OK Network is selected with full service
+COPS?	+COPS: <mode>[, <format>, <oper>]
+COPS=?	+COPS: [list of supported (<stat>,alphanumeric <oper>, short alphanumeric <oper>, numeric <oper>)]

Defined Values

<err>: Error code

30	No network service
32	Network not allowed – emergency calls only
3	Not allowed during communication
4	Incorrect parameters
527	Please wait
528	Location update failure – emergency calls only
529	Selection failure – emergency calls only

<mode>:

0	Automatic network selection (remaining parameters ignored)
1	Manual network selection (<format> and <oper> are required)
2	Deregister from network (remaining parameters ignored)
3	Set format to use when querying the network operator value. (<format> is required, <oper> is ignored)
4	Manual network selection or Automatic if manual selection fails (<format> and <oper> are required).

<format>: Format of <oper> field

0	long alphanumeric format <oper>
1	short alphanumeric format <oper>
2	numeric <oper> **(default)**

<AcT>: access technology selected (HSPA modems only):

0	GSM
1	GSM Compact
2	UTRAN
3	GSM w/EGPRS
4	UTRAN w/HSDPA
5	UTRAN w/HSUPA
6	UTRAN w/HSDPA and HSUPA
7	E-UTRAN

<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. The short alphanumeric format can be up to 10 characters long.

Example:

Commands	**Responses**
AT+COPS?	+COPS: 0,2,20801 OK *Note: Home PLMN is France Telecom Orange*
AT+COPS=?	+COPS:(2,"F SFR","SFR","20810"),(3,"F-BOUYGUES TELECOM","BYTEL","20820"),(3,"Orange F","Orange,"20801") OK *Note: Home PLMN is SFR, BYTEL and Orange networks have been detected*
AT+COPS=1,2,20810 *Note: Ask for registration of SFR network*	+CME ERROR: 32 *Note: Network not allowed – emergency calls only*
AT+COPS=0 *Note: Ask for registration on home network*	OK *Note: Succeeded*

Notes:

- The setting form of this command changes the RF module settings.
- This command is only available when the modem is OFFLINE.
- AT+COPS returns long list of data. You may need to issue it several time to get the complete operator list.

7.11 +CFUN: Set Phone Functionality

Description
This command restarts or puts offline the modem RF module.

Availability
Since FW version 1.1.1

Command Syntax
AT+CFUN=<value>

Response Syntax
+CFUN: <value>

Defined Values
<value>:

0	For CDMA, set the RF module to Offline mode For GSM, perform IMSI detach and disable access to SIM card
1	Restarts the RF module. A complete RF module software reset is performed.

Note: After a +CFUN=0, a +CFUN=1 must be issued to be able to use the RF and register on the network again. A full power-off and power-on will also reset the module and returns it to normal mode.

Example:

Commands	Responses
AT+CFUN?	+CFUN: 1 OK
AT+CFUN=1	OK

Notes:

- Resetting the modem RF module may trigger a modem restart.
- This command is only available when the modem is OFFLINE.

7.12 +CCLK: Clock Management

Description

This command sets or gets the current date and time of the RF module.

Availability

Since FW version 1.1.1
1xRTT, GPRS and HSPA only, not supported by EVDO modems.

Command Syntax

AT+CCLK?
AT+CCLK="YY/MM/DD,hh:mm:ss"

Response Syntax

+CFUN: <value>

Defined Values

<date_and_time>: using the following format YY/MM/DD,hh:mm:ss with:

YY	Two last digits of the year
MM	Month (01-12)
DD	Day (01-31)
hh	Hours (00-24)
mm	Minutes (00-59)
ss	Seconds (00-59)

Example:

Commands	Responses
AT+CCLK?	+CCLK: "06/12/21,15:25:56" OK
AT+CCLK="06/12/21,15:22:00"	OK

Notes:

- The setting form of this command changes the RF module settings.
- This command is only available when the modem is OFFLINE.
- Use +BMDIAG to query the modem RF module time independently of its connection state.

8 Security

The following commands are used to configure the modem security features:

Modem access can also be restricted via ACL, see section **19 - Access Control Lists (ACL)** on page 183.

8.1 +BRPSWD: Modem Remote access Password

Description

This command enables or disables the password protection feature of the modem and set the restricted access password. When enabled, this feature allows to protect the AT command access to the modem over the LAN, the WAN or both with a password (see Password protected modems page 14).

Availability

Since FW version 3.4.0
Since FW version 3.8.4 for the serial interface.

Command Syntax

AT+BRPSWD=<action>,<interface>,<password>

Response Syntax

+BRPSWD: <action>,<interface>,<password>

Defined Values

<action>

0	**Disable password protection (default)**
1	Enable password protection

<interface>

0	**WAN only (default)**
1	WAN and LAN
2	LAN only
3	SERIAL only
4	SERIAL and WAN
5	SERIAL and LAN
6	SERIAL, WAN and LAN

<password>

6..30 characters	Case sensitive password

Example:

Commands	Responses
`AT+BRPSWD=1,1,"myPassw0rd"`	`OK`
`AT+BRPSWD?`	`+BRPSWD=1,1,"myPassw0rd"` `OK`

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.

8.2 +BRFPON: Turn RF Power ON/off

Description

This command turns the RF transceiver ON or OFF. When turned OFF, the radio circuitry is immediately shut off, disabling data transmission and reception over the wireless network. This functionality is a safety measure for areas where RF transmissions are restricted. The power state of the RF module is maintained in non-volatile memory independently of the modem configuration.

Availability

Since FW version 3.4.7
EVDO-A, EDGE (BT-6400 series) and HSPA modems only.

Command Syntax

AT+BRFPON=<state>

Response Syntax

+BRFPON: <state>

Defined Values

<state>

0	Turn RF transceiver OFF
1	**Turn RF transceiver ON (default)**

Example:

Commands	Responses
AT+BRFPON=1	OK
AT+BRFPON?	+BRFPON: 1 OK

Notes:

- This command affects the Active profile and the Stored profile.

8.3 +BFRBE: Factory Reset Button Enable

Description

This command enables or disables the reset to factory settings feature activated when pressing the Reset button for between 3 and 10 seconds (until RS232 LEDs starts flashing).

Availability

Since FW version 3.8.4
IndustrialPro and MobilityPro (BT-6000 and BT-5000v2 Series) only.

Command Syntax

AT+BFRBE=<Action>

Response Syntax

+BFRBE: <Action>

Defined Values

<Action>

0	Disabled. Pressing the RESET button will not restore factory default settings.
1	Enabled (**default**). Pressing the RESET button for between 3 and 10 seconds will reset the modem configuration to factory settings.)

Example:

Commands **Responses**

Commands	Responses
AT+BFRBE=1	OK
AT+BFRBE?	+BFRBE: 1 OK

Notes:

- The setting is automatically saved into non-volatile memory (no need for AT&W).

8.4 +BSECUR: Enable Port Security

Description
This option will offer the ability to disable certain login ports over TCP/IP Interfaces, such as Ethernet and PPP.

Availability
Since FW version 3.8.16
IndustrialPro and MobilityPro (BT-6K and BT-5K Series) only.

Command Syntax
AT+BSECUR=<Value>

Response Syntax
+BSECUR: <Value>

Defined Values
<Value>

0	No Ports Disabled
1	Block the telnet port for root/prompt log in on all interfaces
2	Level 1 plus Block the telnet port for AT commands on eth0

Example:

Commands	Responses
AT+BSECUR=1	OK
AT+BSECUR?	+BSECUR: 1 OK

9 Modem Identification

The following commands are used to configure the modem name and retrieve the modem specific hardware configuration:

9.1 +BMNAME: Modem Name

Description

This command sets or retrieves the user-defined modem name. The modem name is stored directly in non-volatile memory.

Availability

Since FW version 1.1.1

Command Syntax

AT+BMNAME="<modem_name>"

Response Syntax

+BMNAME: <modem_name>

Defined Values

<modem_name> up to 31 alphanumeric characters string

Example:

Commands	Responses
AT+BMNAME?	+BMNAME: modem123.com OK
AT+BMNAME="test"	OK

Notes:

- This command does not affect the modem configuration profiles.
- The modem name should not include a comma (for compatibility with IP registration messages).

9.2 I: Request Identification information

Description
This command returns the modem identification information, such as model number, hardware version and software version.
When given the optional value 1, the commands returns formatted information. When no parameter is given, the version is returned on a single line.

Availability
Since FW version 1.1.1
Since FW version 3.6.1 (ATI1)

Command Syntax
ATI
ATI1

Response Syntax
I: <Manufacturer ID>,<Model>,HW:<HW version>,FW:<FW version>,S/N:<Serial No>,GPS:<GPS F/W Version>,RF:<RF FW Version>
OK

I1:" <Manufacturer ID>
Model:<Model>
HW:<HW version>
FW:<Bluex FW version and date>
OS:<OS version and date>
BOOT:<Boot loader version >
FS:<File system version>
S/N:<Serial number>
RF: <RF module main version>
PRI: <RF module Product Release Information>
PRLREGION: <RF Module PRL Region settings>
PRL:<RF module PRL version>
ESN: <ESN>
Phone:<Phone number>
Name:<Modem name>
"
OK
Note: For ATI1, the fields name may vary according to the modem model (e.g. ESN/IMEI, GPS version, …).

Defined Values
None

Example:

Commands	Responses
ATI	I: BlueTree Wireless Data,BT-6600 Bell Mobility,HW:3.0,FW:3.6.1t6(Nov 27

	2008) OS:2.6.21 #btw03 (Nov 10 2008) U-Boot 1.2.0-btw02-g19c5ad76 FS 3.0.0,S/N:BTW-071166330013,GPS:N/A,RF: p2006000,31394 [Apr 10 2007 10:29:36] APPL: SWI6800_FP.00.60 2007/04/12 14:35:03 BOOT: SWI6800_FP.00.60 2007/04/12 14:35:03 QCOM: SWI6800_FP.00.60 2007/04/12 14:35:03 SWID: SWI6800_FP.00.60 2007/04/12 14:35:03 [GENERIC_00] USBD: SWI6800_FP.00.60 2007/04/12 14:35:03 [GENERIC_00] USB VID: 0x1199 PID: 0x0020 OK
ATI1	I1:"BlueTree Wireless Data Model: BT-6600 Bell Mobility HW: 3.0 FW: 3.6.1t6 (Nov 27 2008) OS: 2.6.21 #btw03 (Nov 10 2008) BOOT: U-Boot 1.2.0-btw02-g19c5ad76 FS: 3.0.0 S/N: BTW-071166330013 RF: MC5725 p2006000 PRL: 31394 ESN: 605856D7 Phone: 5142360419 Name: Bluetree Modem " OK

Notes:

- The ATI1 fields may vary according to the modem model (e.g. ESN/IMEI, GPS version, …).
- The ATI1 RF field include the RF module type name since FW 3.8.5
- The ATI1 PRI and PRLREGION fields were added in FW 3.8.5. The PRI shows the RF module (HSPA and recent EVDO.A modules only) provisioning information. The PRLREGION (HSPA only) shows the frequency region settings of the RF module.

9.3 +GMI: Get Manufacturer Identification

Description
This command returns the modem's manufacturer's name, i.e. BlueTree Wireless Data (now Sixnet).

Availability
Since FW version 1.1.1

Command Syntax
AT+GMI

Response Syntax
+GMI: BlueTree Wireless Data
OK

Defined Values
None

Example:

Commands	Responses
AT+GMI	+GMI: Bluetree Wireless Data OK

9.4 +GMM: Modem Model

Description
This command returns the modem's model.

Availability
Since FW version 1.1.1

Command Syntax
AT+GMM

Response Syntax
+GMM: <Model>
OK

Defined Values
None

Example:

Commands	Responses
AT+GMM	+GMM: BT-4400 OK

Notes:

- On CDMA modems, the command returns the carrier name after the model

9.5 +GMR and +CGMR: Modem Record Information

Description

This command returns the firmware versions of the modem, the GPS module (when available) and the RF module.

Availability

Since FW version 1.1.1

Command Syntax

AT+GMR
AT+CGMR

Response Syntax

+GMR: HW:<HW Version>,FW:<FW version>,S/N:<serial number>,GPS:<GPS Version>,RF:<RF Version>
+CGMR: HW:<HW Version>,FW:<FW version>,S/N:<serial number>,GPS:<GPS Version>,RF:<RF Version>

Defined Values

None

Example:

Commands	Responses
AT+GMR	+GMR: HW:1.0,FW:3.2.0t6(Dec 29 2006) 2.6.15.1bt5 U-Boot 1.1.3bt9 FS 3.0.0,S/N:BTW-SP0001,GPS:1.4,RF:p1708100,20212 [Jul 25 2005 12:30:59],Boot: EM5625_FP_17.00.81 2005/07/26 16:04:14, VID: 4505 PID: OK

9.6 +GSN and +CGSN: Modem Identification

Description

This command returns the modem's ESN (Electronic Serial Number - CDMA modem) or IMEI (International Mobile Equipment Identification - GSM modem).

Availability

Since FW version 1.1.1

Command Syntax

AT+GSN
AT+CGSN

Response Syntax

+GSN : <Modem ID>
or
<modem ID>

Defined Values

<Modem ID>

6 hexadecimal digits ESN (CDMA modems)
15 decimal digits IMEI (GSM modems)

Example:

Commands	Responses
AT+GSN	+GSN: F60A1234 OK
AT+GSN	+GSN: 352974020327961 OK

9.7 +CNUM: Check Modem's Phone Number

Description
This command returns the modem's phone number(s) (when available).

Availability
Since FW version 1.1.1

Command Syntax
AT+CNUM

Response Syntax
+CNUM: <alpha>,<number>,<type>[,<CR><LF>+CNUM: <alpha>,<number>,<type>…]

Defined Values

<alpha>	optional alphanumeric string associated with <number>
<number>	string type number with format as specified by <type>
<type>	type of address byte in integer format

Example:

Commands	Responses
AT+CNUM	+CNUM: "Phone","5145551212",0 OK

Notes:

- Depending on the carrier requirements and on the SIM card (GPRS/Edge/HSPA only), the information may not be available.

9.8 +CIMI: Check Modem's IMSI

Description
This command gets the IMSI (International Mobile Subscriber Identity) of the modem.

Availability
Since FW version 1.1.1
1xRTT, GPRS and HSPA only, not supported by EVDO modems.

Command Syntax
AT+CIMI

Response Syntax
+CIMI: <value>

Defined Values
<value> 15 digit IMSI. From left to right:
3-digit Mobile Country Code (MCC)
2-digit Mobile Network Code (MNC)
10-digit Mobile Identification Number (MIN)

Example:

Commands	Responses
AT+CIMI	+CIMI: 302005145551212 OK

Notes:

- Depending on the carrier requirements and on the SIM card (GPRS/Edge/HSPA only), the information may not be available.
- This command is only available when the modem is OFFLINE

9.9 +CCID: Check Modem's SIM Card Number

Description
This command returns the modem's SIM card number.

Availability
Since FW version 1.1.1
GSM only.

Command Syntax
AT+CCID

Response Syntax
+CCID: <SIM card number>

Defined Values
<SIM card number>
String SIM card number

Example:

Commands	Responses
AT+CCID	+CCID: 89035145551212 OK

Notes:

- This command is only available when the modem is OFFLINE
- This command is equivalent to +BSIMNUM.
- The modem needs to be restarted when the SIM card is changed.

9.10 +BSIMNUM: Query the Modem's SIM Card Number

Description

This command returns the modem's SIM card number.

Availability

Since FW version 3.6.1
GPRS, EDGE and HSPA only.

Command Syntax

AT+BSIMNUM?

Response Syntax

+BSIMNUM: <SIM card number>

Defined Values

<SIM card number>

String SIM card number

Example:

Commands	Responses
AT+BSIMNUM?	+BSIMNUM: 89035145551212 OK

Notes:

- This command is equivalent to +CCID, except that it is available when the modem is ONLINE or OFFLINE.
- The modem needs to be restarted when the SIM card is changed.

10 Modem Initialization

The following commands are used to configure the modem initialization:

10.1 +BRESET: Reset Modem

Description
This command resets the modem.

Availability
Since FW version 1.1.1

Command Syntax
AT+BRESET=<value>

Response Syntax
OK

Defined Values
<value>

0	reset modem

Example:

Commands	Responses
AT+BRESET=0	+BRESET: Resetting the modem OK

Notes:

- This command takes effect immediately. Use the AT&W command to make changes to the Active profile permanent prior to the reset.

10.2 +BRSTRT: Reset Modem – Timer Based

Description

This command resets the modem after a specified delay in minutes.

Availability

Since FW version 2.0.3

Command Syntax

AT+BRSTRT=<Action>,<Delay_min>

Response Syntax

Defined Values

<Action>

0	Disable (Default)
1	Enable
2	Reserved

<Delay_min>

0	Disabled (factory default)
5-525600	Delay before reset in minutes (Note: 525 600 minutes is 365 days).

Example:

Commands	Responses
AT+BRSTRT=0, 5	AT+BRSTRT=0,5 OK
AT+BRSTRT=1, 5	AT+BRSTRT=1,5 OK
AT+BRSTRT?	+BRSTRT=1,5 OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.
- The reset may be delayed by up to 5 minutes after the active configuration profile is loaded from the factory profile (AT&F) or from non-volatile memory (ATZ1).

10.3 +BIGNIT: Ignition Sense Shutdown Delay

Description

This command sets the modem's ignition-related power-off delay (delay after which the modem will be shutdown once IGN input signal is set to OFF).

Availability

Since FW version 1.1.1
BT-4000, BT-5000 and BT-5000v2 only.

Command Syntax

AT+BIGNIT=<power-off delay>

Response Syntax

+BIGNIT: <power-off delay>

Defined Values

<power-off delay>

0	Immediately power off the modem when the IGN signal is turned off. **(default).**
1-65535	delay in minutes before powering off the modem after the ignition sense is triggered.

Example:

Commands	Responses
AT+BIGNIT?	+BIGNIT: 0 OK
AT+BIGNIT=?	+BIGNIT: <0-65535> delay in minutes OK
AT+BIGNIT=300	ERROR
AT+BIGNIT=5	OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.
- The power-off may be delayed by up to 5 minutes after the active configuration profile is loaded from the factory profile (AT&F) or from non-volatile memory (ATZ1).
- The command has no effect on modems without an IGN input (BT-6000 series).

10.4 +BINITS: Modem Initialization String

Description

This command sets the modem power-up initialization string. The programmed string is executed by the modem each time it is reset.

Availability

Since FW version 1.1.1

Command Syntax

AT+BINITS="<init string>"

Response Syntax

+BINITS: "<init string>"

Defined Values

<init string>

Maximum 127 characters (default = ""). An empty string ("") clears the modem initialization string.

Example:

Commands	Responses
AT+BINITS?	+BINITS: "S0=1" OK
AT+BINITS="X4S0=1"	OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.
- The init string must be between quotes and does not need to be prefixed by "AT".
- This command cannot be combined with any other commands, and must be terminated with a Carriage Return.

10.5 +BWDTEN: Watchdog Timer Enable

Description

Enables or disables the watchdog timer used to reset the modem whenever a critical fault is encountered in the system.

Availability

Since FW version 3.2.0

Command Syntax

AT+BWDTEN=<Action>

Response Syntax

+BWDTEN: <Action>

Defined Values

<Action>

0	Disable
1	Enable (**Default**)

Example:

Commands	Responses
AT+BWDTEN?	+BWDTEN: 1 OK
AT+BWDTEN=0	OK

-

Notes:

- The settings of this command are not saved in the stored profile and cannot be made permanent.
- By default, the watchdog is always enabled.
- Setting the watchdog timer to disabled only lasts until the next modem restart.
- When disabled, the modem is not restarted even when configured to do so with +BPNGKA, +BIGNIT or +BRSTRT commands.
- Disabling the watchdog timer is meant as a failsafe mode.

10.6 +BMTIME: Select Modem Time source

Description
Select or report the time source of the modem system time.

Availability
Since FW version 3.8.4

Command Syntax
AT+BMTIME=<Source>

Response Syntax
+BMTIME: "
Configured Source: <Source>
Source in use: <Source>
"

Defined Values
<Source>

BEST	Select the best possible source (NTP if server is available, GPS if a GPS fix is available, cellular network if the modem is registered or stored time).
NTP	Set the modem time from NTP servers configured in AT+BNTP or, if none are configured from pool.ntp.org.
GPS	Set the modem time from GPS as soon as a fix is available.
CELL	Set the modem time from the cellular network **(default)**
STORED	Set the modem time from the last stored value (may be off, if modem has not been powered on for some time) **This value is no longer supported beyond 3.8.15/3.9.2.*

Example:

Commands	Responses
AT+BMTIME?	+BMTIME:" Configured Source:CELL Source in use: CELL " OK
AT+BMTIME=CELL	OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.
- For the modem date/time to be set from GPS, the AT+BGPSDT command must be set to 1.

10.7 +BNTP: Define NTP servers

Description
This command defines which NTP servers shall be used when setting the modem time from a NTP server (Cf. AT+BMTIME).

Availability
Since FW version 3.8.4

Command Syntax
AT+BNTP=<index>,<NTP server>

Response Syntax
+BNTP: 1,<NTP server>
+BNTP: 2,<NTP server>
…

Defined Values

<index>

1..10	Index of the NTP servers.

<NTP server>

"nnn.nnn.nnn.nnn"	IP address of an NTP server
"name1.name2"	Fully qualified domain name of an NTP server
""	No configured (**default**).

Example:

Commands	Responses
AT+BNTP?	+BNTP:1,"" +BNTP:2,"" +BNTP:3,"" +BNTP:4,"" +BNTP:5,"" +BNTP:6,"" +BNTP:7,"" +BNTP:8,"" +BNTP:9,"" +BNTP:10,"" " OK
AT+BNTP=1,"pool.ntp.org"	OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.

10.8 +BNTPST: NTP status

Description
This command return the status log of the NTP client process.

Availability
Since FW version 3.8.4

Command Syntax
AT+BNTPST?

Response Syntax
+BNTPST: "
NTP log status
"

Example:

Commands	Responses
AT+BNTPST?	+BNTPST:" [Jan 1 00:00:04] ntpd launched! [Jan 1 18:59:48] set local clock to Tue Jun 1 22:04:10 UTC 2010 (offset 1275429776.778309s) " OK

11 Modem Firmware Upgrade

The following commands are used to perform firmware updates on the modem:

11.1 +BFWUPS: Firmware Upgrade Session

Description

This command is used to upgrade firmware components of the modem. Supported upgrade packages are:

- Modem firmware
- Modem firmware patch
- Modem OS (kernel)
- GPS module firmware
- Modem configuration (AT command in TTL format)
- RF module PRL
- Partner applications

Availability

Since FW version 1.1.1

Command Syntax

AT+BFWUPS=<Action>

Defined Values

<Action>

1	Begin an upgrade session
0	End an upgrade session
2	Reserved for future use
3	Start an upgrade session which will close automatically

Example:

Commands	Responses
AT+BFWUPS?	+BFWUPS: 0 OK
AT+BFWUPS=1	+BFWUPS: FW was updated to 3.6.1 11/28/08,rebooting.. OK
AT+BFWUPS=0	OK
AT+BFWUPS=3	+BFWUPS: FW was updated to 3.6.1 11/28/08,rebooting.. OK

Notes:

- The upgrade package (.upd file) must be downloaded to the modem via FTP in binary mode and named "btfw.bin". It can also be downloaded from the modem via wget (see +BWGET)
- If the modem reboots before the upgrade session is closed (manually or automatically), the firmware is reverted to its previous version.
- The automatic upgrade session closure (AT+BFWUPS=3) is available since FW 3.6.1. The session is automatically closed:
  - 2 minutes after the modem restarted (3.6.1 <= FW <= 3.7.1)
  - 15 seconds after the modem restarted (FW >= 3.7.2)
- The modem FTP server must be enabled prior to downloading an upgrade package (cf. +BFTPE for FW >= 3.7.0).

11.2 +BFTPE: FTP server Enable

Description
This command is used to start or stop the modem FTP server enabling the transfer of upgrade packages.

Availability
Since FW version 3.7.0

Command Syntax
AT+BFTPE=<Action>

Defined Values
<Action>

1	Start the modem FTP server. The server will automatically shutdown after 15 minutes.
0	Stop the modem FTP server.

Example:

Commands	Responses
AT+BFTPE?	+BFTPE: 0 OK
AT+BFTPE=1	OK
AT+BFTPE?	+BFTPE: 1 OK

11.3 +BWGET: Upgrade package download

Description
This command is used to initiate the download of an upgrade package from a web server or an FTP server.

Availability
Since FW version 3.7.0

Command Syntax
AT+BWGET="<url>"[,"<wget_options>"]

Defined Values
<url> URL of the upgrade package to download such as:
http://host[:port]/directory/file
http://user:password@host/path
ftp://host[:port]/directory/file
ftp://user:password@host/path
<wget_options> Command line options of the wget command (advanced users only).

Example:

Commands	Responses
AT+BWGET="http://www.mysite.com/abt_3.8.0_bt6k.upd"	OK

12 Wireless Network Connection Profile

The following commands are used to monitor the available wireless services:

12.1 +BCPNAC: Network Access Credentials

Description

This command sets the network connection dial string along with the authentication credentials to be used when establishing a PPP session to the wireless network.

Availability

Since FW version 1.1.1

Command Syntax

AT+BCPNAC=<connection profile num>,<dial string>,"<username>","<password>"

Response Syntax

+BCPNAC: <connection profile num>,<dial string>,"<username>","<password>"

Defined Values

<connection profile num>

1	Connection profile number (for future enhancement)

<dial string>

[0-9#*]*	Maximum 32 characters (default = "")

<username>

	Maximum 128 characters (default = "")

<password>

	Maximum 128 characters (default = "")

Example:

Commands	Responses
`AT+BCPNAC?`	`+BCPNAC: 1,#777,"admin","admin"` `OK`
`AT+BCPNAC=1,*99#,"user","password"`	`OK`

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.
- The credentials will be used at the next connection attempt.

12.2 +BCPINS: Connection Profile Initialization String

Description

This command sets a connection profile initialization string. This is different from the power-up initialization string (set with +BINITS). The connection init string is used to setup a proper context before establishing a connection.

Availability

Since FW version 1.1.1

Command Syntax

AT+BCPINS=<connection profile num >,"<init string>"

Response Syntax

+BCPINS: <connection profile num >,"<init string>"

Defined Values

<connection profile num >

1 Connection profile number (for future enhancement)

<init string>

Maximum 128 characters (default = ""). An empty string ("") clears the initialization string.

Example:

Commands	Responses
AT+BCPINS?	+BCPINS: 1,"E0" OK
AT+BCPINS=1,"+CGDCONT=1,"IP","proxy",0,0"	OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.
- The initialization string will be used at the next connection attempt.
- The AT+BCPAPN command may be used to set the APN of a HSPA/EDGE/GPRS modem.
- The init string must be between quotes.
- This command cannot be combined with any other commands, and must be terminated with a Carriage Return.

12.3 +BCPDNS: Domain Name Server

Description
This command sets the network domain name server addresses.

Availability
Since FW version 1.1.1

Command Syntax
AT+BCPDNS=<connection profile num>,<preferred DNS>,[<alternate DNS>]

Response Syntax
AT+BCPDNS: <connection profile num>,<preferred DNS>,<alternate DNS>

Defined Values
<connection profile num >
1 Connection profile number (for future enhancement)
<preferred DNS>
"*nnn.nnn.nnn.nnn*" Preferred DNS IP address (default is "0.0.0.0" to obtain DNS addresses automatically)
<alternate DNS>
"*nnn.nnn.nnn.nnn*" Alternate DNS IP address (optional)

Example:

Commands	Responses
AT+BCPDNS?	+BCPDNS: 1,"0.0.0.0" OK
AT+BCPDNS=1,"204.101.84.1","204.101.84.2"	OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.
- The DNS settings will be used at the next connection attempt.

12.4 +BCPADV: Advanced Connection Profile Settings

Description

This command sets the advanced connection profile parameters.

Availability

Since FW version 1.1.1

Command Syntax

AT+BCPADV=<connection profile num>,<use default gateway>,<use header compression>

Response Syntax

+BCPADV: <connection profile num>,<use default gateway>,<use header compression>

Defined Values

<connection profile num>

1	Connection profile number (for future enhancement)

<use default gateway>

0	do not use default gateway
1	use default gateway on remote server **(default)**

<use header compression>

0	disable IP header compression
1	enable IP header compression **(default)**

Example:

Commands	Responses
AT+BCPADV?	+BCPADV: 1,0,0 OK
AT+BCPADV=1,1,1	OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.
- The advanced settings will be used at the next connection attempt.

12.5 $QCMIP: Query Mobile IP Profile number

Description

This command queries the Mobile IP Profile number.

Availability

Since FW version 3.6.1

Command Syntax

AT$QCMIP?

Response Syntax

$QCMIP: <MIP profile number>

Defined Values

< MIP profile number >

Integer MIP Profile number

Example:

Commands	Responses
AT$QCMIP?	$QCMIP: 1 OK

Notes:

- The value returned is the value read during modem initialization.

12.6 $QCMIPGETP: Query Mobile IP Profile settings

Description
This command queries the Mobile IP Profile settings.

Availability
Since FW version 3.6.1

Command Syntax
AT$QCMIPGETP?

Response Syntax
$QCMIPGETP

<MIP profile parameters>

OK

Defined Values
< MIP profile parameters > Mobile IP profile parameters, see example below.

Example:

Commands	Responses
AT$QCMIPGETP?	AT$QCMIPGETP Profile:1 Enabled NAI:5144229110@mip.1x.bell.ca Home Addr:0.0.0.0 Primary HA:255.255.255.255 Secondary HA:0.0.0.0 MN-AAA SPI:2 MN-HA SPI:1235 Rev Tun:1 MN-AAA SS:Set MN-HA SS:Set OK

Notes:

- The value returned is the value read during modem initialization.

12.7 +BCPAPN: Connection Profile Access Point Name

Description
This command sets the APN (Access Point Name) of the HSPA/EDGE/GPRS modem.

Availability
Since FW version 3.7.0
HSPA, EDGE and GPRS modems.

Command Syntax
AT+BCPAPN="<APN>"

Response Syntax
+BCPAPN: "<APN>"

Defined Values
<APN> Access Point Name

Example:

Commands	Responses
AT+BCPAPN?	+BCPAPN: "proxy" OK
AT+BCPAPN="internet.com"	OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.
- The APN will be used at the next connection attempt.
- The +BCPAPN command also sets the APN in the +BCPINS settings as a parameter to AT+CGDCONT.
- When the APN is set with the AT+BCPINS command, the changes are also set in the +BCPAPN settings.

13 Wireless Network Connection Control

The following commands are used to configure how the modem connects to the wireless services:

13.1 +BCMODE: Connection Mode

Description

This command sets the network connection mode (on-demand or always-on).

WARNING:

Setting the connection mode to **On-demand** may make the modem unreachable on the network since it will not attempt to automatically reconnect.

Except in very specific circumstances, the connection mode should be set to **Always-on**.

Availability

Since FW version 1.1.1

Command Syntax

AT+BCMODE=<Mode>,[<Delay_s>]

Response Syntax

+BCMODE: <Mode>,<Delay_s>

Defined Values

<Mode>

0	On-Demand
1	**Always-On (default)**
2	Reserved

<Delay_s>

0-1044	Delay in seconds between each connection start. This parameter is no longer used and is only kept for backward compatibility (use +BWANRT instead)

Example:

Commands	Responses
AT+BCMODE?	+BCMODE: 1,600 OK
AT+BCMODE=1	OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.

13.2 +BPPPAP: PPP Authentication Protocol Setting

Description
This command set the authorization protocol for PPP client connection.

Availability
Since FW version 1.1.1

Command Syntax
AT+BPPPAP=<Protocol>

Response Syntax
+BPPPAP: <Protocol>

Defined Values
<Protocol>

0	no authentication protocol
1	PAP
2	CHAP
3	PAP & CHAP **(default)**
4-65535	Reserved

Example:

Commands	Responses
AT+BPPPAP?	+BPPPAP: 3 OK
AT+BPPPAP=3	OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.

13.3 +BPPPTR: WAN Auto-Reconnect Timer

Description
This command sets a delay in seconds before trying to reconnect in Always-On mode.

Availability
Since FW version 1.2.0

Deprecated
As of version 2.0.5, replaced by AT+BWANRT. This command is still currently supported for backwards compatibility with legacy code.

Command Syntax
AT+BPPPTR=<Delay_s>

Response Syntax
+BPPPTR: <Delay_s>

Defined Values
<Delay_s>

0–600	Delay in seconds before trying to reconnect in Always-On mode

Example:

Commands	Responses
AT+BPPPTR=3	OK
AT+BPPPTR?	+BPPPTR: 3 OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.
- This command has been replaced by +BWANRT

13.4 +BWANRT: WAN Auto-Reconnect Timer

Description

This command sets a delay in seconds before trying to reconnect in Always-On mode.

Availability

Since FW version 2.0.5

Note: AT+BWANRT replaces AT+BPPPTR.

Command Syntax

AT+BWANRT=<Delay_s>

Response Syntax

+BWANRT: <Delay_s>

Defined Values

<Delay_s>

0–600 Delay in seconds before trying to reconnect in Always-On mode

Example:

Commands	Responses
AT+BWANRT=3 AT+BWANRT?	OK +BWANRT: 3 OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.

13.5 +BWANDT: Termination Timer of WAN PPP connection

Description

This command sets the termination timer of a WAN PPP connection.
The modem drops the WAN PPP connection when the timer elapses except if it is set to 0 (disabled).
If the modem is set to Always-On the connection will automatically be reestablished.

Availability

Since FW version 2.0.5

Command Syntax

AT+BWANDT=<Delay_s>

Response Syntax

+BWANDT: <Delay_s>

Defined Values

<Delay_s>

0	Disable timer
1–432000	Maximum duration in seconds of the WAN PPP connection.

Example:

Commands	Responses
AT+BWANDT=3600	OK
AT+BWANDT?	+BWANDT: 3600 OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.

13.6 +BWANIT: Disconnect on Inactivity Timeout

Description

This command sets the inactivity timeout after which a network connection is terminated.

Availability

Since FW version 1.1.1

Command Syntax

AT+BWANIT=<Delay_min>

Response Syntax

+BWANIT: <Delay_min>

Defined Values

<Delay_min>

0	Session is never terminated, inactivity timeout is disabled **(default)**
1–255	terminate session when the specified delay in **minutes** elapses after the last packet has been received or transmitted.

Example:

Commands	Responses
AT+BWANIT?	+BWANIT: 60 OK
AT+BWANIT=120	OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.
- This command is equivalent to +BDCITO.

13.7 +BDCITO: Disconnect on Inactivity Timeout

Description

This command sets the inactivity timeout after which a network connection is terminated.

Availability

Since FW version 1.1.1

Command Syntax

AT+BDCITO=<Delay_min>

Response Syntax

+BDCITO: <Delay_min>

Defined Values

<Delay_min>

0	Session is never terminated, inactivity timeout is disabled **(default)**
1–255	terminate session when the specified delay in **minutes** elapses after the last packet has been received or transmitted.

Example:

Commands	Responses
AT+BDCITO?	+BDCITO: 60 OK
AT+BDCITO=120	OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.
- This command is equivalent to +BWANIT.

13.8 +BWANON and +BNCON: Manual WAN Connection

Description

Makes or drops a WAN connection manually in On-Demand mode according to the configuration of +BCPNAC. +BWANON and +BNCON are equivalent.

Availability

Since FW version 2.0.5

Command Syntax

AT+BWANON=<Action>
AT+BNCON=<Action>

Response Syntax

Defined Values

<Action>

0	Hang up
1	Make a connection

Example:

Commands	Responses
AT+BWANON=1	OK

Notes:

- This command returns ERROR when the connection schedule is set to Always-on (see +BCMODE)

13.9 +BPPPKA: PPP Keep-alive option

Description

This command configures the keep-alive feature of a modem WAN PPP connection.
When enabled, the modem sends an LCP echo request each time no packet is received for the specified inactivity timer. If the specified maximum number of consecutive echo attempts fails to receive a response, the PPP connection will be reset. The reception of an IP packet on the PPP connection or an echo response reset the inactivity timer and the failure counter.

Availability

Since FW version 3.1.1

Command Syntax

AT+BPPPKA=<Delay_s>,<Count Before Reset>

Response Syntax

+BPPPKA: <Delay_s>,<Count Before Reset>

Defined Values

<Delay_s>

0	Disable the PPP keep-alive feature **(default).**
900–86400	Delay in seconds before sending an LCP echo request when no packet has been received.

<Count before reset>

0	Do not reset the connection **(default).**
1-1023	Count of failures to terminate the existing PPP connection.

Example:

Commands	Responses
AT+BPPPKA?	+BPPPKA:2000,5 OK
AT+BPPPKA=2000,5	OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.
- The changes in the configuration of the PPP keep-alive feature are only taken into effect at the next connection.

13.10 +BPNGKA: PING based Keep-alive

Description

This command configures the ping-based keep-alive feature of a modem WAN PPP connection.
When enabled, the modem sends a PING request each time no packet is received for the specified inactivity timer.
The modem may also be configured to either reset the PPP connection or the whole modem after a maximum number of consecutive PING attempts fails to receive a response.
The reception of an IP packet on the PPP connection resets the inactivity timer and the failure counter.
The modem will send and receive four 28-Byte ICMP packets per Ping Keep Alive attempt. Note that if this setting is set to run frequently and the connection is up at all times, it could consume a significant amount of bandwidth. Based on a setting of 1 ping every 15 minutes, the total consumption can use approximately 650 KB per month excluding framing.

Availability

Since FW version 3.1.1
Since FW 3.2.0 (Action parameter)

Command Syntax

AT+BPNGKA=<Delay_min>,<Count Before Reset>,<Server IP>,<Action>

Response Syntax

+BPNGKA: <Delay_min>,<Count Before Reset>,<Server IP>,<Action>

Defined Values

<Delay_min>

0	Disable the ping-based keep-alive feature **(default).**
1–1440	Send a ping when the specified delay in **minutes** elapses after the last packet has been received.

<Count before reset>

0	Do not perform any action when ping fails **(default).**
1-1023	Number of consecutive ping failures before performing the specified action (terminating the existing PPP connection or resetting the modem). A ping is considered as a failure if no response is received after the four ICMP packets have been sent.

<Server IP>

"nnn.nnn.nnn.nnn"	IP address (dotted decimal) of remote destination

<Action> Action to perform after the specified maximum number of consecutive ping failures (non-null <Count before reset>):

0	Reset the PPP connection (default)
1	Reset the modem

Example:

Commands	Responses
`AT+BPNGKA?`	`+BPNGKA:20,5,"205.205.17.71",0` `OK`
`AT+BPNGKA=20,5,"205.205.17.71",0`	`OK`

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.

14 Wireless Network Status Information

The following commands are used to monitor the wireless network status:

14.1 +BMDIAG: Modem diagnostics

Description
This command returns the most relevant formatted diagnostic information.

Availability
Since FW version 3.6.1

Command Syntax
AT+BMDIAG

Response Syntax

```
+BMDIAG: "
<Field>: <Value>[, <Value> …]
"
OK
```

Defined Values
The defined fields and associated values depend on the modem model.

Field	Value(s)	Modems
RSSI	Receive Signal Strength Indicator (RSSI) in dBm	all
Registration	No service | Home | Roaming | Searching	all
RF state	No Service | Idle | Dormant | In-use | Incoming | Calling N/A Active Packet Session | Inactive Packet Session	CDMA GPRS/EDGE HSPA
Service	Currently used service	all
Channel	Network channel in use	CDMA, EDGE and HSPA
BSIC	Base Station Identification Code	GPRS
System ID	System ID (integer)	CDMA
Network	Network ID (string)	HSPA
Ec/Io	Signal to interference ratio in steps of -0.5dB	CDMA and HSPA
Error rate	Frame Error Rate	all
Date	Network date and time (yy/mm/dd, hh:mm:ss)	all
Network Attach	Attached | Not Attached	GPRS/EDGE/HSPA
WAN IP	Assigned WAN IP address (empty when not connected), Time in days, hours, minutes and seconds since connected, number of bytes received, Number of bytes transmitted	all
GPS fix	Last GPS fix	GPS only
Uptime	Time in days, hours, minutes and seconds since the last modem restart	all
APN	Access point name (carrier specific)	GPRS/EDGE/HSPA

Example:

Commands	Responses
AT+BMDIAG?	+BMDIAG: " RSSI: -91 dBm Registration: Home RF State: Dormant Service: EVDO Rev. A Channel: 350 System ID: 16420 Ec/Io: 11 Error Rate: 0.000 Date: 08/11/27,16:30:39 WAN IP:70.25.160.157, 52 s, RX:892 (892.0 B), TX:935 (935.0 B) Uptime: 1 h 10 min 32 s " OK

14.2 +BCDIAG: Connection diagnostics

Description
This command returns the connection diagnostics including:

- What is the current schedule type (On-demand or Always-on)
- What is the current connection state
- When will be attempted the next connection
- Status of the last connection attempt with a timestamp, state, reason for failure, …).
- Status of the last disconnection (timestamp, reason, …)

Availability
Since FW version 3.7.2

Command Syntax
AT+BCDIAG?

Response Syntax

```
+BCDIAG: "
                <Field>: <Value>
                …
"
OK
```

Defined Values
The defined fields and associated values are detailed in the following table:

Field	Value(s)
Schedule	Always-on or On-demand (according to +BCMODE)
State	ONLINE, CONNECTING, OFFLINE, DISCONNECTING. When ONLINE, EVDO modems show whether they are connected with Simple IP or Mobile IP.
Next connection attempt	This field returns when the next connection will get attempted. It is omitted when ONLINE.
Last connection attempt error	This section details the reason why the connection attempt failed. It is omitted if the connection succeeded at the first attempt.
Timestamp	Timestamp of the last connection attempt (N/A if the modem had not been able to get date/time from the network). The timestamp is in the format YYYY-MM-DD HH:MM:SS
Reason	Reason for the failure to connect: No service RF Power off Chat Iinit Error Chat dialing Error Chat no carrier PPP launch Error PPP quit

Field	Value(s)
PPP log	Last few lines of the PPP process
MIP error code	MIP error code and description (EVDO modems only)
Call error code	Call error code and description (EVDO modems only)
Last disconnection	This section details the reason why the connection has been disconnected (user or network initiated). It is omitted if the connection has not been terminated.
Timestamp	Timestamp of the disconnection. The timestamp is in the format YYYY-MM-DD HH:MM:SS
Reason	Reason for the disconnection: User initiated Network initiated RF power off
PPP log	Last few lines of the PPP process when the disconnection is network initiated.
MIP error code	MIP error code and description (EVDO modems only)
Call error code	Call error code and description (EVDO modems only)

Example:

Commands	Responses
AT+BCDIAG?	+BCDIAG:" Schedule: Always-on State: ONLINE (Simple IP) Last connection attempt error: Timestamp: 2009-06-29 09:58:25 Reason: No service Last disconnection: Timestamp: 2009-06-29 09:55:33 Reason: User initiated " OK

14.3 +BNSTAT: Network Status (CDMA version)

Description
This command returns the current wireless network status information for the CDMA version.

Availability
Since FW version 1.1.1
CDMA only.

Command Syntax
AT+BNSTAT

Response Syntax
+BNSTAT: <Rx power>,<reg status>,<RF state>,<Base Station P_REV/Svc *Availability*>,<service type in-use>,<band>,<channel>,<sid>,<nid>,<pilot PN offset>,<Base Station ID>,<slot cycle index>,<Ec/Io>,<Tx power>,<Tx Adj>,<fer>,September 9, 2010,<Network Time>

Defined Values
<Rx power>:

Signed integer	Receive Signal Strength Indicator (RSSI) in dBm

<reg status>

0	not registered
1	registered, home network
2	registered, roaming

<RF state>

0	No Service
1	Idle
2	Dormant
3	In-use
4	Incoming
5	Calling

<Base Station P_REV/Svc Availability>

1	PCS
2	IS-95
3	IS-95A
4	IS-95B
5	IS-95B
6	CDMA Rev. 0 (1xRTT)
7	CDMA Rev. 1

Note: BT-x600 returns "N/A" (FW version > 3.2.x)

<Service type in-use>

1	PCS
2	IS-95
3	IS-95A
4	IS-95B
5	IS-95B

6	CDMA Rev. 0 (1xRTT)
7	CDMA Rev. 1
81-87	EVDO Rev-0
91-97	EVDO Rev-A

<band> Frequency band

0	Cellular (800 MHz)
1	PCS (1900 MHz)

<channel>

Integer	ID of the network channel in use

<sid>

Integer	System ID

<nid>

Integer	Network ID

<pilot PN offset>

Integer	Pseudo noise offset specific to the base station in use.

<Base Station ID>

Integer	This is the Base Station ID.

Note: The Base Station ID always returns "N/A". This is due to the fact that getting this value requires approximately 5 minutes of waiting time.

<slot cycle index>

Integer	Slot cycle index

<Ec/Io>

0-63	Signal to interference ratio in steps of -0.5dB: i.e. 0 corresponds to 0 × -0.5 dB=0 dB, 63 corresponds to 63 × -0.5 dB = -31.5 dB

<Tx power>

Integer	Transmit power in dBm

<Tx Adj>

Integer	Transmit power adjusted in dBm

<fer>

n.nnn	Frame Error Rate

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yy/mm/dd	Network Date

<Network Time>

hh:mm:ss	Network Time (local or UTC, see +BLODAT page 121)

Example:

Commands	Responses
AT+BNSTAT?	+BNSTAT: -91,1,1,6,6,1,350,16420,54,184,N/A,2,16,0,0,0.000,05/10/14,15:23:43 OK

Notes:

- The command +BMDIAG returns some of the +BNSTAT information

14.4 +BNSTAT: Network Status (GPRS version)

Description

This command returns the current wireless network status information for the GPRS version.

Availability

Since FW version 1.1.1
GPRS only.

Command Syntax

AT+BNSTAT

Response Syntax

+BNSTAT: <Rx power>,<Ber>,<MCC>,<MNC>,<LAC>,<CI>,<BSIC>,<BCCH Freq>,<RxLev>,<RxLev Full>,<RxLev Sub>,<RxQual>,<RxQual Full>, <RxQual Sub>,<Idle TS>,<Creg mode>,<Creg stat>,<Cops mode>,<Cops format>,<Cops Id>,<Cgatt state>

Defined Values

<Rx power>
Integer — Receive Signal Strength Indicator (RSSI) .
See Table 3. +CSQ RSSI values (CDMA 1xRTT and GPRS) page 43

<Ber>
Integer — Bit Error Rate, 99 when not available.

<MCC>
Integer — Mobile Country Code

<MNC>
Integer — Mobile Network Code

<LAC>
Hex Integer — Location Area Code

<CI>
Hex Integer — Cell Identifier

<BSIC>
Integer — Base Station Identification Code

<BCCH Freq>
Integer — Broadcast Control Channel Absolute

<RxLev>
Integer — Received Signal Level. Indicates the average signal level received.

<RxLev Full>
Integer — Received Signal Level. Indicates the average signal level received DTX disabled

<RxLev Sub>
Integer — Received Signal Level. Indicates the average signal level received DTX enabled

<RxQual>
Integer — Received Signal Quality. Indicates the average signal quality received.

<RxQual Full>
Integer — Received Signal Quality. Indicates the average signal quality received DTX disabled

<RxQual Sub>
Integer — Received Signal Quality. Indicates the average signal quality received DTX enabled

<Idle TS>

Integer	Idle timeslots, used to scan neighboring cells to form a list of potential candidates for a signal handoff, based on RxLev.

<Creg 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..

<Creg stat>

0	not registered, MS is not currently searching for a new operator.
1	registered, home network.
2	not registered, MS currently searching for a base station.
4	unknown.
5	registered, roaming

<Cops mode>

0	automatic
1	use long format alphanumeric <oper>
2	use short format alphanumeric <oper>
3	use numeric <oper>

<Cops format> Format of <oper> field

0	long alphanumeric format <oper>
1	short alphanumeric format <oper>
2	numeric <oper> **(default)**

<Cops Id>

Integer	Operator ID

<Cgatt state>

0	Detached
1	Attached
2	Combined Detach (GPRS and GSM Detach performed in the same network request)

Example:

Commands	Responses
AT+BNSTAT?	+BNSTAT:16,0,302,720,32c8,2902,37,532,29,,,0,,,0,0,1,0,2,302720,0 OK

Notes:

- The command +BMDIAG returns some of the +BNSTAT information

14.5 +BNSTAT: Network Status (HSPA/Edge version)

Description

This command returns the current wireless network status information for HSPA modems.

Availability

Since FW version 3.6.0
HSPA and Edge only.

Command Syntax

AT+BNSTAT

Response Syntax

+BNSTAT: <Rx power>,<Reg status>,<RF state>,<Base Station P_REV/Svc *Availability*>,<service type in-use>,<band>,<channel>,<Network String>, <MNC>,<pilot PN offset>,<Cell ID>,<slot cycle index>,<Ec/Io>,<Tx power>,<Tx Adj>,<Ber>,September 9, 2010,<Network Time>

Defined Values

<Rx power>:

Signed integer	Receive Signal Strength Indicator (RSSI) in dBm for GPRS and EDGE Received Signal Code Power (RSCP) in dBm for UMTS, HSDPA, HSUPA and HSPA,

<Registration status>

0	not registered
1	registered, home network
2	registered, roaming

<RF state>

N/A	Unavailable

<Base Station P_REV/Svc Availability>

N/A	Unavailable

<Service type in-use>

100	None
101	GPRS
102	EDGE
103	UMTS
104	HSDPA
105	HSUPA
106	HSPA (HSDPA + HSUPA)

<band> Frequency band

000	No Service
001	GSM 850
002	GSM 900
003	GSM 1800

004	GSM 1900
257	WCDMA 2100
258	WCDMA 1900
259	WCDMA 850
260	WCDMA 800
261	WCDMA 1800
262	WCDMA 1700 (US)
263	WCDMA 2600
264	WCDMA 900
265	WCDMA 1700 (Japan)
266-65534	Reserved
65535	Invalid band

<channel>

Integer	Channel number ((U)ARFCN) Valid values are dependent on current band

<Network String>

String	Network string

<MNC>

Integer	MNC (Mobile Network Code)

<pilot PN offset>

N/A	Unavailable

<Cell ID>

Integer	Cell ID. Valid values: Any 16-bit number

<slot cycle index>

N/A	Unavailable

<Ec/Io>

Ec/Io measurement in –dB

Value represents half-decibel increments. For example:

1: Ec/Io = -0.5 dB

21: Ec/Io = -10.5 dB

N/A	Unavailable for GPRS and EDGE

<Tx power>

N/A	Unavailable

<Tx Adj>

N/A	Unavailable

<BER>

n.nnn	Bit Error Rate for GPRS and EDGE
N/A	Unavailable for HSDPA and HSUPA

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yy/mm/dd UTC Date

<Network Time>
hh:mm:ss UTC Time

Example:

Commands	Responses
AT+BNSTAT?	+BNSTAT: -90,1,N/A,N/A,103,259,1037,Rogers,302,N/A,12095,N/A, 16,N/A,N/A,N/A,08/08/06,15:23:46 OK

Notes:

- The command +BMDIAG returns some of the +BNSTAT information

14.6 +BGSMST: GSM Status information

Description

This command returns the available services for the HSPA version.

Availability

Since FW version 3.6.0
HSPA only

Command Syntax

AT+BGSMST?

Response Syntax

+BGSMST: <Service Icon>, <Service Type Available>,<GPRS Attached Status>,<Packet Session Active Status>

Defined Values

<Service Icon>

00	No
01	Yes

<Service Type Available>

00	None
01	GPRS
02	EDGE
03	UMTS
04	HSDPA
05	HSUPA
06	HSPA (HSDPA + HSUPA)

<GPRS Attached Status>

00	No
01	Yes

<Packet Session Active Status>

00	No
01	Yes

Example:

Commands	Responses
AT+BGSMST?	+BGSMST: 1,6,1,0 OK

Notes:

- HSPA modems always reports the Packet Session Active Status as 00 (No).

14.7 +BLODAT: Local Date and Time

Description
This command returns the current local date and time.

Availability
Since FW version 1.1.1

Command Syntax
AT+BLODAT

Response Syntax
+BLODAT: <Local date>,<Local time>

Defined Values
<Local date>

yy/mm/dd	Local date (year last two digits, month, day)

<Local time>

hh:mm:ss	Time (hours:minutes:seconds) - Local: CDMA, EVDO, EVDO-A (with MC5725) - UTC: GPRS, EDGE, HSPA and EVDO-A (with MC5727)

Example:

Commands	Responses
AT+BLODAT	+BLODAT: 06/11/22,12:55:23 OK

Notes:

- The date and time information is local for CDMA, EVDO-0 and some EVDO-A modems.
- The date and time information is GMT for GPRS/EDGE/HSPA and some EVDO-A modems.

15 Modem Provisioning

The following commands are used to provision the modem for the wireless network provider:

15.1 +BPVMLC: Provision Master Lock Code

Description

This command stores the modem MLC (Master Lock Code, aka. MSL or Master Subsidy Lock) into non-volatile memory. The stored MLC is used by other provisioning commands (e.g. +BPVNAM) and by the PRL upgrade package feature (cf. +BFWUPS).
The MLC is not verified when the +BPVMLC command is issued, it cannot be queried.
The MLC is automatically stored into non-volatile memory.

Availability

Since FW version 3.6.1
EVDO only.

Command Syntax

AT+BPVMLC=<MLC>

Response Syntax

OK

Defined Values

<MLC>: Master Lock Code (carrier dependent)
6 digit number default is **000000**

Example:

Commands	Responses
AT+BPVMLC=123456	OK
AT+BPVMLC?	ERROR

15.2 +BPVNAM: Provision NAM

Description

This command provisions the modem NAM information (MDN and MIN and optionally system ID). The values are provided by carriers upon subscription.
Except for the carrier having no MLC requirements, the modem MLC must have been provisioned with the +BPVMLC command prior to using +BPVNAM to set the modem NAM information.
The NAM information is automatically stored into non-volatile memory.
This command automatically resets the modem.

Availability

Since FW version 3.6.1
EVDO only.

Command Syntax

AT+BPVNAM=<MDN>,<MIN>[,<SID>]
AT+BPVNAM?

Response Syntax

OK
+BPVNAM: <MDN>,<MIN>,<SID>

Defined Values

<MDN>: Mobile Directory Number
10-digit phone number
<MIN>: Mobile Identification Number
10-digit phone number
<SID>: System ID
Number identifying your "Home" network

Example:

Commands	Responses
AT+BPVMLC=123456 AT+BPVNAM=5144229110,5144229110	*OK* *OK*
AT+BPVNAM?	+BPVNAM: 5144229110,5144229110,0 OK

15.3 +BPVCMD: Provision RF module Commands

Description

This command stores up to 16 AT commands which will get executed into the RF module when AT+BPVCME is issued. When queried, the +BPVCMD? command returns the list of commands together with an execution flag showing the status of each command.
Setting a new RF AT command automatically sets the execution flag to 1.
Please refer to AT+BPVCME for details on the execution process.
The RF AT commands are automatically saved into non-volatile memory.

Availability

Since FW version 3.6.1
EVDO only.

Command Syntax

AT+BPVCMD=<index>,"<command>"
AT+BPVCMD?

Response Syntax

OK
+BPVCMD=0,<command>,<flag>
+BPVCMD=1,<command>,<flag>
…
OK

Defined Values

<index>: Command index
0..15
<command>: RF module AT command
String starting with "AT"
<flag>: Execution flag (query only)

0	Command executed successfully
1	Command scheduled for execution at next AT+BPVCME=1
2	Command executed and failed
3	Command executed and timed out

Example:

Commands	Responses
AT+BPVCMD=2,"AT~NAMVAL=5551234"	OK
AT+BPVCMD?	+BPVCMD:0,"AT$QCMIP=1",1 +BPVCMD:1,"AT~NAMLCK=000000",1 +BPVCMD:2,"AT~NAMVAL=5551234",1 +BPVCMD:3,"",0 +BPVCMD:4,"",0 +BPVCMD:5,"",0 +BPVCMD:6,"",0 +BPVCMD:7,"",0 +BPVCMD:8,"",0

```
                                        +BPVCMD:9,"",0
                                        +BPVCMD:10,"",0
                                        +BPVCMD:13,"",0
                                        +BPVCMD:12,"",0
                                        +BPVCMD:13,"",0
                                        +BPVCMD:14,"",0
                                        +BPVCMD:15,"",0
                                        OK
```


15.4 +BPVCME: Execute RF provisioning commands

Description

This command triggers a modem restarts and the execution of the RF provisioning commands programmed into the AT+BPVMCD commands.

The commands programmed into AT+BPVCMD which have their execution flag set to 1 are executed sequentially, starting with the smallest index. The command execution stops when a command execution fails or times out (timeout is 5 s).

Availability

Since FW version 3.6.1

Command Syntax

AT+BPVCME=<action>

Response Syntax

OK

Defined Values

<action>:

1	Restart the modem and start the execution of RF provisioning commands

Example:

Commands	Responses
AT+BPVCME=1	OK

15.5 +BOTASP: Start OTASP process

Description

The AT+BOTASP command starts the OTASP (Over The Air Service Provisioning).
The result of the OTASP process may be monitored with the AT+BOTASP? or AT+BOSTAST? command (either locally during the process, or remotely after the process has completed).

Availability

Since FW version 3.6.1
EVDO only.

Command Syntax

AT+BOTASP="<dial string>"
AT+BOTASP?

Response Syntax

OK
+BOTASP:
<OTASP status>
OK

Defined Values

<dial string>: OTASP dial string (carrier dependent)

Example:

Commands	Responses
AT+BOTASP="*22886"	OK
AT+BOTASP?	+BOTASP: [Nov 21 2008] [15:51:50]: OTASP state:[AT+CDV*22886] [Nov 21 2008] [15:51:50]: OTASP state:[SPL unlock],[succeeded] [Nov 21 2008] [15:51:50]: OTASP state:[New MDM download],[succeeded] [Nov 21 2008] [15:51:50]: OTASP state:[New NAM download],[succeeded] [Nov 21 2008] [15:51:50]: OTASP state:[OTASP finished, commit parameters to NVRAM],[succeeded] OK

15.6 +BOTAST: Over the air activation status

Description

The AT+BOTAST command returns the accumulated results of the Over The Air Service Provisioning (OTASP) since its last invocation. The AT+BOTAST command may be invoked periodically during the OTASP process. The accumulated results are cleared after each invocation.

Availability

Since FW version 3.2
EVDO only.

Command Syntax

AT+BOTAST[?]

Note: This query command works with or without the '?'.

Response Syntax

+ BOTAST: <Stage>,<Status>,<Description>
+ BOTAST: <Stage>,<Status>,<Description>

Defined Values

<Stage>: Activation stages

0	Not available
1	SPL unlock
2	Authentication key exchange
3	Shared Secret Data (SSD) update
4	New NAM download
5	New MDM download
6	IMSI download
7	PRL download
8	OTASP finished, commit parameters to NVRAM

< Status>: Activation stage status

0	Failed
1	Succeeded

<Description>: Textual description of the activation stages and statuses

Example:

Commands	Responses
AT+BOTAST?	+BOTAST: 1,1, SPL unlock succeeded +BOTAST: 5,1, New MDM download succeeded +BOTAST: 4,1, New NAM download succeeded OK *Note: OTASP is in progress*
AT+BOTAST?	+BOTAST: 0,0, No available state OK *Note: No result is available; all results have already been retrieved or OTASP has not been started.*

AT+BOTAST?	+BOTAST: 7,1, PRL download succeeded +BOTAST: 8,1, OTASP finished, commit parameters to NVRAM succeeded OK *Note: OTASP just completed*

15.7 +BPTOIP: Pass-Through Over IP

Description
This command set the modem in a pass-through mode to directly connect the RF module over IP.

Availability
Since FW version 3.3

Command Syntax
AT+BPTOIP=<Dst>,<Action>,<TCP Port Number>,<Server Inactivity Timer>,<Connection Inactivity Timer>

Response Syntax
+ BPTOIP: <Dst>,<Action>,<TCP Port Number >,<Server Inactivity Timer>,<Connection Inactivity Timer>

Defined Values
<Dst>

1	RF main port
2	RF secondary port (Not Used)

<Action> Set Command:

0	Stop the pass-through over IP server for the specified RF port.
1	Start the pass-through over IP server for the specified RF port.
2	Restart (Stop and then Start) the pass-through over IP server for the specified RF port.

<Action> Query Command:

0	Stopped (Pass-through over IP server for the specified port is stopped).
1	Listening (Pass-through over IP server for the specified port has been started and is awaiting an incoming connection).
2	Connected (Pass-through over IP server for the specified port has been started and a connection has been established).

<TCP port Number>

1-65535	TCP port number (shall not be a reserved port and must not be currently in-use by the modem)

<Server Inactivity Timer>

1-3600	Server inactivity timer in seconds. The server will be stopped after the specified delay without an established connection. This timer cannot be disabled.

<Connection Inactivity Timer>

0	Disable connection inactivity timer (connection is maintained even if no data exchange occurs).
1-3600	Connection inactivity timer in seconds. The connection will be terminated when no exchange of data takes place on the established connection after the timer expires.

Example:

Commands	Responses
AT+BPTOIP=1,1,6701,600,120	OK
AT+BPTOIP?	+BPTOIP:1,1,6701,600,120 +BPTOIP:2,1,6702,600,0 OK

Notes:

- This command does not affect the modem configuration profiles, its settings are temporary.
- This command can be used to manually provision an RF module and is only available when the modem is offline.

16 Modem IP Settings

The following commands are used to configure the basic IP configuration of the modem:

16.1 +BIPINF: IP Configuration

Description
This command queries the modem's Internet Protocol settings.

Availability
Since FW version 1.1.1

Command Syntax
AT+BIPINF

Response Syntax
+BIPINF: <LAN MAC>,<LAN IP>,<WAN IP>,<Service TCP Port>

Defined Values
<LAN MAC>
Hex Local Area Network MAC address
<LAN IP>
"*nnn.nnn.nnn.nnn*" Local Area Network IP address in dotted decimal
<WAN IP>
"*nnn.nnn.nnn.nnn*" Wide Area Network IP address in dotted decimal
<Service TCP Port>
6070 Modem's service TCP port number

Example:

Commands	Responses
AT+BIPINF	+BIPINF: 00134700C8E2,"192.168.222.20","204.12.54.33",6070 OK

16.2 +BIPPTE: IP Pass-Through via Ethernet

Description

This command configures the IP Pass-Through via Ethernet mode. This mode allows to assign to the connected host, the WAN IP address assigned by the network to the modem.

When enabled, the normal DHCP settings are used to assign an IP address to the LAN interface until the modem acquires an IP address from the network. At this point, the modem sets the maximum number of DHCP clients to one and set the host IP address to the WAN IP address. In case of network disconnection, the modem will re-assign the default host IP address if it did not get a new IP address within 60 seconds, otherwise, the modem will either assign the newly acquired IP address or leave the IP address as-is if it has not changed.

The IP pass-through via Ethernet can only be activated on one interface at a time. When the interface is changed with the AT+BIPPTE command, the previous settings are disabled automatically. When activated on Ethernet, DHCP must be enabled (see AT+BDHCPE).

DMZ and Port Forwarding settings are ignored when the IP pass-through over Ethernet is enabled.

Availability

Since FW version 3.4.4

Command Syntax

AT+BIPPTE=<option>,<interface>

Response Syntax

+BIPPTE=<option>,<interface>
OK

Defined Values

<option>

0	Disable IP pass-through over Ethernet mode (default)
1	Enable IP pass-through over Ethernet mode

<interface>

1	Ethernet interface (default)
2	USB Interface
3	Local PPP interface

Example:

Commands	Responses
AT+BIPPTE=1,1	OK
AT+BIPPTE?	+BIPPTE: 1,1 OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.
- The following ports are not forwarded to the connected host: tcp:6070, tcp:6073, tcp:5070, tcp:20, tcp:21, tcp:9999, udp:21000, serial IP listening server port (when enabled and configured with a saved configuration).

16.3 +BETHIP: Modem's LAN IP Address

Description

This command sets the IP address and subnet mask of the modem LAN Ethernet interface. The modem can be used as the Gateway address for the LAN devices.

Availability

Since FW version 1.1.1

Command Syntax

AT+BETHIP=<Modem IP>,<Subnet mask>

Response Syntax

+BETHIP: <Modem IP>,<Subnet mask>

Defined Values

<Modem IP>:

"*nnn.nnn.nnn.nnn*" Modem's Local Area Network IP address in dotted decimal

<Subnet mask>:

"*nnn.nnn.nnn.nnn*" Local Area Network subnet mask in dotted decimal

Example:

Commands	Responses
AT+BETHIP?	+BETHIP: "192.168.0.1","255.255.255.0" OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.

16.4 +BETHCLI: Modem's LAN IP Address – DHCP Client

Description

This command sets the LAN Ethernet interface to obtain its IP address from a DHCP server.
The modem can be used as the Gateway address for the LAN devices.
Once an IP is obtained from the DHCP server it will not be presented in BlueVue Device Manager.
You will need to issue AT+BIFCON-eth0 to see the IP that was issued.

Availability

Since FW version 3.8.16

Command Syntax

AT+BETHCLI=<enable>

0 (default) disable DHCP Client from running
1 enable DHCP Client on Eth0 / Ethernet port

Response Syntax

+BETHCLI: <enable>

Example:

Commands	Responses
AT+BETHCLI?	+BETHCLI: OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.

16.5 +BDHCPE: Modem's DHCP Server Enable

Description

This command enables or disables the modem's DHCP server running on the Ethernet interface(s).

Availability

Since FW version 1.1.1

Command Syntax

AT+BDHCPE=<Action>

Response Syntax

+BDHCPE: <Action>

Defined Values

<Action>:

0	Disable DHCP Server
1	Enable DHCP Server (**Default**)

Example:

Commands	Responses
AT+BDHCPE?	+BDHCPE: 1 OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.

16.6 +BDHCPR: Modem's DHCP Server IP Addresses Range

Description

This command sets the range of IP addresses to be assigned by the modem's DHCP server to connected LAN devices.

Availability

Since FW version 1.1.1

Command Syntax

AT+BDHCPR=<Start IP>,<Range>

Response Syntax

+BDHCPR: <Start IP>,<Range>

Defined Values

<Start IP>:

"nnn.nnn.nnn.nnn"	Starting IP address in dotted decimal. This address will be assigned to the first connected device. This address must fit in the subnet defined by +BETHIP settings.

<Range>:

0-254	Number of IP addresses to use including the starting IP address. The addresses are usually selected by incrementing fields such that the addresses are above the starting IP address. All addresses are part of the subnet mask specified in +BETHIP.

Example:

Commands	Responses
AT+BDHCPR?	+BDHCPR: "192.168.0.4",36 OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.
- The IP addresses are leased for the amount of time specified in +BDHCPL.
- The modem DHCP server must be enabled with +BDHCPE.

16.7 +BDHCPL: Modem's DHCP servers Lease time

Description

This command sets how long IP addresses are leased to DHCP clients. The command only affects future leases on the USB and Ethernet interfaces.

Availability

Since FW version 3.6.0

Command Syntax

AT+BDHCPL=<Lease time>

Response Syntax

+BDHCPL: <Lease time>

Defined Values

<Lease time>:

60-864000 Lease time in seconds (from one minute to 10 days, default is one hour – 3600s).

Example:

Commands	Responses
AT+BDHCPL?	+BDHCPL: 3600 OK
AT+BDHCPL=120	OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.
- Some networking equipments do not detect physical Ethernet reset, in that case, Sixnet recommends using a short leases time (a few minutes).
- When the modem is configured for IP Pass-through (AT+BIPPTE), the DHCP lease time is set to 30 seconds until the WAN IP address is acquired. It is then set to the value configured by AT+BDHCPL.

16.8 +BPPPIP: Modem's IP Settings Over PPP Connection

Description

This command sets the modem and the serially connected host PPP IP addresses.

Availability

Since FW version 1.1.1

Command Syntax

AT+BPPPIP=<Modem IP>,<Host IP>

Response Syntax

+BPPPIP=<Modem IP>,<Host IP>

Defined Values

<Modem IP>

"*nnn.nnn.nnn.nnn*" Modem's IP address over the local PPP connection (using a serial cable) in dotted decimal.

<Host IP>

"*nnn.nnn.nnn.nnn*" Attached device's IP address over the local PPP connection (using a serial cable) in dotted decimal.

Example:

Commands	Responses
AT+BPPPIP?	+BPPPIP: "192.168.0.2","192.168.0.3" OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.

16.9 +BIPREG: IP Registration Setting

Description

This command controls the IP registration mechanism and notification method allowing a central server to be kept aware of modem IP address changes.

Availability

Since FW version 1.1.1

Command Syntax

AT+BIPREG=<option>,[<server IP or Domain Name >,<server port>,<server port type>,<Delay_min>]

Note: When omitting parameters, the previous defined values of the omitted parameters are used.

Response Syntax

+BIPREG: <option>,"<server IP>",<server port>,<server port type>,<Delay_min>

Defined Values

<option>

0	No registration **(default)**
1	Enable registration

<server IP>

"nnn.nnn.nnn.nnn"	IP registration server IP address or Domain Name (**default is "0.0.0.0"**)

<server port>

1-65535	IP registration server port number(**default is 7777**)

<server port type>

0	UDP
1	TCP **(default)**

<Delay_min>

0	Register once every time a connection is established **(default)**
1-65535	Register every time a connection is established and every time the specified delay in minutes elapses.

Example:

Commands	Responses
AT+BIPREG?	+BIPREG: 0 OK
AT+BIPREG=1,"204.101.1.2",6666,1,180	OK

The messages sent to the IP registration server have the following format:

<ESN>,<Modem name>,<Current WAN IP>

Defined Values

<ESN>

String	Electronic Serial Number – unique identifier of the modem

<Modem name>

String	The modem name set by the user (refer to BlueVue DM or AT+BNAME)

<Current WAN IP>

nnn.nnn.nnn.nnn The current IP address or Domain Name assigned to the modem by the wireless network.

-

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.
- Modified settings are taken into effect when the IP registration is disabled and then enabled back.

16.10 +BUSBIP: Modem's IP Settings Over USB NDIS Connection

Description

This command sets the modem's IP address as seen over the USB NDIS interface by the attached host as well as the IP address that gets assigned by the modem to the attached host. It also configures the local network subnet mask formed by the USB NDIS connection.

Availability

Since FW version 3.0.0

Command Syntax

AT+BUSBIP=<index>,<Modem IP>,<Host IP>,<Subnet Mask>

Response Syntax

+BUSBIP: <index>,< Modem IP >,<Host IP >,<Subnet Mask>

Defined Values

<Index>

1	This is for future use. Must be set to '1' for now

<Modem IP>

"*nnn.nnn.nnn.nnn*"	IP address of the modem as seen by the attached host

<Host IP>

"*nnn.nnn.nnn.nnn*"	IP address assigned by the modem to the attached host The IP address is leased for the amount of time specified in +BDHCPL.

<Subnet Mask>

"*nnn.nnn.nnn.nnn*"	IP address subnet mask

Example:

Commands	Responses
AT+BUSBIP?	+BUSBIP:1,"192.168.1.1","192.168.1.2","255.255.255.0" OK
AT+BUSBIP=1,"192.168.1.1","192.168.1.2","255.255.255.0"	OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.

16.11 +BIPMTU: IP Interfaces MTU

Description

This command configures the MTU (Maximum Transmit Unit) and MRU (Maximum Receive Unit) of the modem IP interfaces.

Availability

Since FW version 3.7.3

Command Syntax

AT+BIPMTU=<interface>[,<mtu>,[<mru>]]

Response Syntax

+BIPMTU: <interface>,<mtu>,<mru>
OK

Defined Values

<interface>

0	All interfaces
1	Ethernet interface (eth0)
2	USB Interface (usb0)
3	Local PPP interface (ppp0)

<mtu>

68-1500	Maximum Transmit Unit size in bytes. Default is 1500,

<mru>

68-1500	Maximum Receive Unit size in bytes. Default is 1500, When not specified, it is set to the same value as the MTU. Not used for Ethernet and USB interface.

Example:

Commands	Responses
AT+BIPMTU=1,1460	OK
AT+BIPMTU?	+BIPMTU: 1,1460,1460 +BIPMTU: 2,1500,1500 +BIPMTU: 3,1500,1500 OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.
- This command will only take effect at the next successful WAN connection.
- This command should only be used when encountering transmission errors with large packets. The wireless carrier may advise on the most sensible settings. Sixnet recommends using the same MTU/MRU settings on all the IP interfaces.

17 IP traffic Management

The following commands are used to configure IP traffic:

17.1 +BIPFWD: Port Forwarding Setting

Description

This command allows to forward data packets received on a specific protocol/port to a specified local IP address and port destination. Up to 20 protocol/port pairs and their destination may be specified.

Availability

Since FW version 1.2.0 (up to 20 ports)
Since FW version 3.8.8 (up to 40 ports)

Command Syntax

AT+BIPFWD=<index>,<transport>,<srcPort>,<dstIP>,<dstPort>

Response Syntax

+BIPFWD: <index>,<transport>,<srcPort>,<dstIP>,<dstPort>
…
OK

Note: The AT+BIPFWD? command, lists all (20) entries one after the other. Values of all zeros "0" indicate an empty entry.

Defined Values

<Index> Index

1-40	Port forwarding index (limited to 20 with FW < 3.8.8)

<transport> transport protocol

0	UDP
1	TCP

<srcPort>

0-65535	Source Port, receiving port on the modem from which packets will be forwarded to LAN address

<dstIP>

"*nnn.nnn.nnn.nnn*"	Destination LAN IP address to which packets will be forwarded

<dstPort>

1-65535	Destination Port, to which packets will be forwarded

Note: To clear an entry the following command shall be issued:
AT+BIPFWD=<Index>,<transport>,0

Example:

Commands	Responses
AT+BIPFWD=2,1,3389,192.168.0.6,3389	OK
AT+BIPFWD?	+BIPFWD:1,0,69,"192.168.0.4",69 +BIPFWD: 2,1,3389,"192.168.0.6",3389 +BIPFWD: 3,1,22,"192.168.0.7",21 +BIPFWD: 4,0,0,"0.0.0.0",0 +BIPFWD: 5,0,0,"0.0.0.0",0 +BIPFWD: 6,0,0,"0.0.0.0",0 +BIPFWD: 7,0,0,"0.0.0.0",0 +BIPFWD: 8,0,0,"0.0.0.0",0 … +BIPFWD: 40,0,0,"0.0.0.0",0

	OK
AT+BIPFWD=3,0,0	OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.
- The IP port forwarding feature is disabled when IP pass-through is enabled (see +BIPPTE).

17.2 +BIPFWDI: Port Forwarding Interface Setting

Description

This command allows setting or querying on which interface IP forwarding settings apply. For each port (see AT+BIPFWD), the interface may be WAN (default), USB or Ethernet.

Availability

Since FW version 3.8.8

Command Syntax

AT+BIPFWDI=<index>,<interface>

Response Syntax

+BIPFWDI: <index>,<interface>
…
OK

Defined Values

<Index> Index

1-40	Port forwarding index

<interface>

3	WAN (default)
2	USB
1	Ethernet

Example:

Commands	Responses
AT+BIPFWDI=2,1	OK
AT+BIPFWDI?	+BIPFWDI:1,3 +BIPFWD: 2,1 +BIPFWD: 3,3 +BIPFWD: 4,3 +BIPFWD: 5,3 +BIPFWD: 6,3 +BIPFWD: 7,3 +BIPFWD: 8,3 … +BIPFWD: 40,3 OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.
- The IP port forwarding feature is disabled when IP pass-through is enabled (see +BIPPTE).

17.3 +BGREIP: GRE Pass-through to IP Address

Description

This command sets the GRE (Generic Routing Encapsulation) pass through to forward all GRE traffic to the specified IP address.

Availability

Since FW version 1.1.1

Command Syntax

AT+BGREIP=<Action>,<IP address>

Response Syntax

+BGREIP: <Action>,<IP address>

Defined Values

<Action>

0	Disable GRE (**Default**)
1	Enable GRE

<IP address>

"*nnn.nnn.nnn.nnn*"	Private IP on LAN side

Example:

Commands	Responses
AT+BGREIP?	+BGREIP: 1,"192.168.0.30" OK
AT+BGREIP=?	+BGREIP: <0-1>,<GRE IP> OK
AT+BGREIP=1,"192.168.0.30"	OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.
- When enabled this command creates the gre0 virtual interface.

17.4 +BDMZIP: DMZ to IP Address

Description
This command sets DMZ to a dedicated IP. When enabled, all traffic is forwarded to the specified IP address (except traffic intended for the modem itself and optionally traffic forwarded to specific ports via AT+BIPFWD).

Availability
Since FW version 3.2.0

Command Syntax
AT+BDMZIP=<Action>,<IP address>,<Port forwarding mode>

Response Syntax

Defined Values
<Action>:

0	for disabled (**default**)
1	for enabled

<IP address>

"*nnn.nnn.nnn.nnn*"	DMZ IP address

<Port forwarding mode>

0	All ports are forwarded to DMZ except BlueX reserved ports
1	All ports are forwarded to DMZ except BlueX reserved ports, and Port Forward list (see +BIPFWD)

Example:

Commands	Responses
AT+BDMZIP?	+BDMZIP: 1,"192.168.0.30",1 OK
AT+BDMZIP=?	+BDMZIP: <0-1>,<DMZ IP>,<0-1> OK
AT+BDMZIP=1,"192.168.0.30",1	OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.

17.5 +BIPNAT: IP Network Address Translation

Description

This command enables or disables Network Address Translation between LAN and WAN.

Availability

Since FW version 3.6.2

Command Syntax

AT+BIPNAT=<Action>

Response Syntax

+BIPNAT: <Action>

Defined Values

<Action>:

0	Disable NAT or NAT is disabled
1	Enable NAT or NAT is enabled (**default**)

Example:

Commands	Responses
AT+BIPNAT?	+BIPNAT: 1 OK
AT+BIPNAT=1	OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.
- This command is taken into affect at the next successful WAN connection.

17.6 +BGRETUN: GRE Tunnel

Description

This command creates or disables a GRE (Generic Routing Encapsulation) tunnel between the modem and a remote network entity.

Availability

Since FW version 3.8.0

Command Syntax

AT+BGRETUN=<index>,<action>,[<WAN IP>],<local IP/mask>,<remote IP>,<remote Net IP/mask>

Response Syntax

+BGRETUN:<index>,<action>,<WAN IP>,<local IP/mask>,<remote IP>,<remote Net IP/mask>

Defined Values

<index>:

1-10	GRE Tunnel index (interfaces gre1 to gre10)

<action>:

0	Disable the GRE tunnel (default)
1	Enable the GRE tunnel

<WAN IP>:

0.0.0.0	Use the WAN interface (default)
n.n.n.n.n	Reserved for future use

<Local IP/mask>:

n.n.n.n.n/m	Local IP address of the GRE tunnel. The mask (m) parameter can be specified to allow subnet routing. The default mask value is 24.

<Remote IP>:

n.n.n.n.n	IP address of the remote peer.

<Remote Net IP/mask>:

n.n.n.n.n/m	Remote Net IP address of the GRE tunnel. The mask (m) parameter can be specified to allow subnet routing. The default mask value is 24.

Examples:

Commands	Responses
AT+BGRETUN=1,1,,10.0.0.2/24,207.206.10.14,10.0.0.1/24	OK
AT+BGRETUN?	+BGRETUN: 1,1,0.0.0.0, 10.0.0.2/24,207.206.10.14,10.0.0.1/24 +BGRETUN: 2,0,0.0.0.0,0.0.0.0/24,0.0.0.0,0.0.0.0/24 … OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.
- Omitted parameters keep their previous value.
- Options, keys and multicast static routes can be specified with the +BGREOPT, +BGREKEY and +BGREMR commands.
- The following commands restart a GRE tunnel:

  AT+BGRETUN=<index>,0
  AT+BGRETUN=<index>,1

17.7 +BGREOPT: GRE Tunnel Options

Description

This command sets GRE tunnel options.

Availability

Since FW version 3.8.0

Command Syntax

AT+BGREOPT=<index>,<ttl>,[<multicast>,[<arp>]]

Response Syntax

+BGREOPT: <index>,<ttl>,<multicast>,<arp>

Defined Values

<index>:

1-10	GRE Tunnel index (interfaces gre1 to gre10)

<ttl>:

1..255	Define TTL threshold. IP packets with a TTL less than the defined value are dropped. Default is 64.

<multicast>:

0	Disable multicast
1	Enable multicast (**default**)

<arp>:

0	Disable ARP (**default**)
1	Enable ARP

Examples:

Commands	Responses
AT+BGREOPT=1,16,1,0	OK
AT+BGREOPT?	+BGREOPT: 1,16,1,0 +BGREOPT: 2,64,1,0 … OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.
- Omitted parameters keep their previous value.
- The tunnel has to be restarted for the changes to take effect (see +BGRETUN)

17.8 +BGREKEY: GRE Tunnel Keys

Description

This command allows to specify GRE tunnel input and output keys.

Availability

Since FW version 3.8.0

Command Syntax

AT+BGREKEY=<index>,<input key>,[<output key>]

Response Syntax

+BGREKEY: <index>,<input key>,<output key>

Defined Values

<index>:

1-10	GRE Tunnel index (interfaces gre1 to gre10)

<input key>:

n	32-bit decimal number.
n.n.n.n	32-bit number coded in an IP address-like dotted quad.

<output key>:

n	32-bit decimal number.
n.n.n.n	32-bit number coded in an IP address-like dotted quad.

Examples:

Commands	Responses
AT+BGREKEY=1,16895	OK
AT+BGREKEY=2,70151,70152	OK
AT+ BGREKEY?	+BGREKEY: 1,16895,16895 +BGREKEY: 2,70151,70152 … OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.
- When the <Output key> is not specified, the value of the input key is used for both the input and the output keys.
- The tunnel has to be restarted for the changes to take effect (see +BGRETUN)

17.9 +BGREMR: GRE Tunnel Multicast Route

Description

This command allows specifying GRE tunnel static multicast routes when the modem is using a static multicast router (see +BMCASTR).

Availability

Since FW version 3.8.0

Command Syntax

AT+BGREMR=<index>,<route index>,<source IP>,<multicast IP>

Response Syntax

+BGREMR: <index>,<route index>,<source IP>,<multicast IP>

Defined Values

<index>:

1-10	GRE Tunnel index (interfaces gre1 to gre10)

<route index>:

1-10	Static multicast route index (up to 10 routes per GRE tunnel)

<source IP>:

n.n.n.n	IP address of the multicast source.

<multicast IP>:

n.n.n.n	Multicast IP address.

Examples:

Commands	Responses
AT+BGREMR=1,1,10.0.0.2,224.1.1.1	OK
AT+BGREMR?	+BGREOPT: 1,1,10.0.0.2,224.1.1.1 OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.
- The query form of the command (AT+BGREMR?) only reports non-null routes.
- The tunnel has to be restarted for the changes to take effect (see +BGRETUN)

17.10 +BGREDI: GRE Tunnel Diagnostics

Description

This command is used to report the configuration of one or all the GRE tunnels.

Availability

Since FW version 3.8.0

Command Syntax

AT+BGREDI=<index>
AT+BGREDI?

Response Syntax

+BGREDI: "
    <GRE configuration report>
"

Defined Values

<index>:

1-10	GRE Tunnel index (interfaces gre1 to gre10)

<GRE configuration report>:

text	Configuration of the specified GRE tunnel or configuration of all the GRE tunnels.

Examples:

Commands	Responses
AT+BGREDI?	+BGREDI:" Multicast router: none gre1: disabled local IP: 0.0.0.0 local net: 0.0.0.0/24 remote IP: 0.0.0.0 remote net: 0.0.0.0/24 TTL: 64 multicast: enabled arp: disabled input key: output key: ping: disabled gre2: disabled … " OK
AT+BGREDI=1	+BGREDI:" Multicast router: none gre1: disabled local IP: 0.0.0.0 local net: 0.0.0.0/24 remote IP: 0.0.0.0 remote net: 0.0.0.0/24 TTL: 64 multicast: enabled arp: disabled

```
                                        input key:
                                        output key:
                                        ping: disabled
                                    "
                                    OK
```


17.11 +BMCASTR: Multicast Router selection

Description

This command allows to specify a multicast router.

Availability

Since FW version 3.8.0

Command Syntax

AT+BMCASTR=<multicast router>

Response Syntax

+BMCASTR=<multicast router>

Defined Values

<multicast router>:

none	Modem is not forwarding multicast IP packet
static	Modem is forwarding multicast IP packets on static multicast routes between a GRE Tunnel and the Ethernet port (see +BGREMR).

Examples:

Commands	Responses
AT+BMCASTR=static	OK
AT+BMCASTR?	+BMCASTR: static OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.
- It is advised to restart the modem when the multicast router is changed.

17.12 +BSROUTE: Static Route

Description

This command allows to specify a number of IP static routes.

Availability

Since FW version 3.8.0

Command Syntax

AT+BSROUTE=<index>,<action>,<destination IP/mask>,<gateway IP>,<interface>

Response Syntax

+BSROUTE: <index>,<action>,<destination IP/mask>,<gateway IP>,<interface>

Defined Values

<index>:

1-10	Static route index

<action>:

0	Disable the static route (default)
1	Enable the the static route

<destination IP/mask>:

n.n.n.n/m	Destination IP address. The mask (m) parameter can be specified to allow subnet routing. The default mask value is 24.

<gateway IP>:

n.n.n.n	IP address of the next hop gateway.

<interface>:

eth0	Ethernet
ppp0	WAN (cellular network)
usb0	USB Ethernet/RNDIS
gre0..gre10	GRE Tunnel

Examples:

Commands	Responses
AT+BSROUTE=1,1,10.10.0.0/24,10.0.0.1,gre1	OK
AT+BSROUTE?	+BSROUTE: 1,1,10.10.0.0/24,10.0.0.1,"gre1" OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.

18 IP Security

IP security is based on IPSEC and is available on BT-5000v2 and BT-6000 series of Sixnet modems with kernel version 2.6.21 #btw04 or above (see ATI1 page 67).
Please note that IP Security requires IP path-through (+BIPPTE page 135) to be disabled.
The following IP security commands allow the configuration of up to 10 IPSEC tunnels into which exchanged data is encrypted:

18.1 +BIPSEN: Enable/Disable an IPSEC tunnel

Description

This command enables or disables IPSEC tunnels.

Availability

Since FW version 3.6.2
BT-5000v2 and BT-6000 series only

Command Syntax

Set: **AT+BIPSEN=<index>,<mode>**
Query: **AT+BIPSEN?**

Response Syntax

Set: OK
Query: +BIPSEN: <index>,<mode>
…
OK

Defined Values

<index>:

1..10	IPSEC tunnel index number.

<mode>:

0	Disabled (default)
1	Enabled

Example:

Commands	Responses
AT+BIPSEN?	+BIPSEN:1,0 +BIPSEN:2,0 … +BIPSEN:10,0 OK
AT+BIPSEN=1,1	OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.
- Make sure the tunnel is correctly configured (using +BIPSDI? page 145) before enabling it.
- Enabling an IPSEC tunnel may take a few seconds to complete.

18.2 +BIPSGA: IPSEC tunnel remote Gateway IP Address

Description

This command defines the IPSEC tunnels remote gateway IP address (aka. IPSEC router).

Availability

Since FW version 3.6.2
BT-5000v2 and BT-6000 series only

Command Syntax

Set: **AT+BIPSGA=<index>,<IP address>**
Query: **AT+BIPSGA?**

Response Syntax

Set: OK
Query: +BIPSGA: <index>,<IP address>
…
OK

Defined Values

<index>:

1..10	IPSEC tunnel index number.

<IP address>: IP address in quad-dotted decimal

"0.0.0.0"	Not configured (default).
"nnn.nnn.nnn.nnn"	IP address. Each *nnn* number ranges from 0 to 255. Numbers having a leading 0 are interpreted in octal rather than decimal.

Example:

Commands	Responses
AT+BIPSGA?	+BIPSGA:1,"0.0.0.0" +BIPSGA:2,"0.0.0.0" … +BIPSGA:10,"0.0.0.0" OK
AT+BIPSGA=1,"10.10.10.1"	OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.

18.3 +BIPSSN: IPSEC tunnel remote Sub-Network IP address and mask

Description

This command defines the IPSEC tunnels remote network IP address and mask (aka right subnet).

Availability

Since FW version 3.6.2
BT-5000v2 and BT-6000 series only

Command Syntax

Set: **AT+BIPSSN=<index>,<subnet IP>,<subnet mask>**
Query: **AT+BIPSSN?**

Response Syntax

Set: OK
Query: +BIPSSN: <index>,<subnet IP>,<subnet mask>
OK

Defined Values

<index>:

1..10	IPSEC tunnel index number.

<subnet IP>: Subnet IP address in quad-dotted decimal

"0.0.0.0"	Not configured (default).
"nnn.nnn.nnn.nnn"	Subnet IP address. Each *nnn* number ranges from 0 to 255. Numbers having a leading 0 are interpreted in octal rather than decimal.

<subnet mask>: Subnet mask in quad-dotted decimal

"255.255.255.255"	Not configured (default).
"nnn.nnn.nnn.nnn"	Subnet mask. Each *nnn* number ranges from 0 to 255. Numbers having a leading 0 are interpreted in octal rather than decimal. Only the sequence of leading bits set to 1 is significant.

Example:

Commands	Responses

`AT+BIPSSN?`	`+BIPSSN:1,"0.0.0.0","255.255.255.255"`
	`+BIPSSN:2,"0.0.0.0","255.255.255.255"`
	…
	`+BIPSSN:10,"0.0.0.0","255.255.255.255"`
	
	`OK`

`AT+BIPSSN=1,"10.10.10.0","255.255.255.0"`	`OK`

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.

18.4 +BIPSLN: IPSEC tunnel Local Network IP address and mask

Description

This command defines the IPSEC tunnels local network IP address and mask (aka left subnet).

Note: The local subnet must correspond to a valid subnet defined by either the Ethernet (+BETHIP page 135) or USB (+BUSPIP page 144) interface settings.

Availability

Since FW version 3.6.2

BT-5000v2 and BT-6000 series only

Command Syntax

Set: **AT+BIPSLN=<index>,<subnet IP>,<subnet mask>**

Query: **AT+BIPSLN?**

Response Syntax

Set: OK

Query: +BIPSLN: <index>,<subnet IP>,<subnet mask>
OK

Defined Values

<index>:

1..10	IPSEC tunnel index number.

<subnet IP>: Subnet IP address in quad-dotted decimal

"0.0.0.0"	No subnet attached. Only the modem generated traffic is routed through the tunnel (default)
"nnn.nnn.nnn.nnn"	Subnet IP address. Each *nnn* number ranges from 0 to 255. Numbers having a leading 0 are interpreted in octal rather than decimal.

<subnet mask>: Subnet mask in quad-dotted decimal

"0.0.0.0"	No subnet attached. Only the modem generated traffic is routed through the tunnel (default)
"nnn.nnn.nnn.nnn"	Subnet mask. Each *nnn* number ranges from 0 to 255. Numbers having a leading 0 are interpreted in octal rather than decimal. Only the sequence of leading bits set to 1 is significant.

Example:

Commands	Responses

`AT+BIPSLN?`	`+BIPSLN:1,"0.0.0.0","0.0.0.0"`
	`+BIPSLN:2,"0.0.0.0","0.0.0.0"`
	…
	`+BIPSLN:10,"0.0.0.0","0.0.0.0"`
	
	`OK`

`AT+BIPSLN=1,"192.168.0.0","255.255.255.0"`	`OK`

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.

18.5 +BIPSKN: IPSEC tunnel phase 1 Key Negotiation mode

Description

This command defines the IPSEC tunnels phase 1 key negotiation mode.

Availability

Since FW version 3.6.2
BT-5000v2 and BT-6000 series only

Command Syntax

Set: **AT+BIPSKN=<index>,<mode>**
Query: **AT+BIPSKN?**

Response Syntax

Set: OK
Query: +BIPSKN: <index>,<mode>
…
OK

Defined Values

<index>:

1..10	IPSEC tunnel index number.

<mode>:

0	Main mode (default)
1	Aggressive mode

Example:

Commands	Responses
AT+BIPSKN?	+BIPSKN:1,0 +BIPSKN:2,0 … +BIPSKN:10,0 OK
AT+BIPSKN=1,0	OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.

18.6 +BIPSIL: IPSEC tunnel IKE key Lifetime

Description

This command defines the IPSEC tunnels phase 1 IKE key lifetime.

Availability

Since FW version 3.6.2
BT-5000v2 and BT-6000 series only

Command Syntax

Set: **AT+BIPSIL=<index>,<lifetime>**
Query: **AT+BIPSIL?**

Response Syntax

Set: OK
Query: +BIPSIL: <index>,<lifetime>
…
OK

Defined Values

<index>:

1..10 IPSEC tunnel index number.

<lifetime>:

1..86400 Key lifetime in seconds (default 3600 sec.; i.e. 1 hour)

Example:

Commands	Responses
AT+BIPSIL?	+BIPSIL:1,3600 +BIPSIL:2,3600 … +BIPSIL:10,3600 OK
AT+BIPSIL=1,1800	OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.

18.7 +BIPSIA: IPSEC tunnel IKE Algorithms

Description

This command defines which Phase 1 IKE algorithms shall be used to establish the IPSEC tunnels.

Availability

Since FW version 3.6.2
BT-5000v2 and BT-6000 series only

Command Syntax

Set: **AT+BIPSIA=<index>,<algorithm>**
Query: **AT+BIPSIA?**

Response Syntax

Set: OK
Query: +BIPSIA: <index>,**<algorithm>**
…
OK

Defined Values

<index>:

1..10 IPSEC tunnel index number.

<algorithm>: String (31) with the following formats:

"" When set to blank (default), the algorithm is negotiated between the modem and the remote gateway.

"<enc>[-<auth>[-<group>]]" Define which algorithm shall be used, with:
<enc> Encryption method: see

Table 8.
<auth> Authentication method: see

Table 9.
<group> Group: see Table 7.
The -<auth> and -<group> are optional; they are negotiated between the modem and the remote gateway when not specified.

Table 5. Supported IKE encryption methods

Algorithm	Key size	<enc>
3DES	192	3des
AES	128-256	aes, aes128, aes192, aes256

Table 6. Supported IKE authentication methods

Algorithm	Key size	<auth>
MD5	128	md5
SHA1	160	sha1

Table 7. Supported IKE groups

Type	Algorithm	<group>
Diffie-Hellman	Group2	modp1024
Diffie-Hellman	Group5	modp1536
Diffie-Hellman	Group14	modp2048
Diffie-Hellman	Group15	modp3072
Diffie-Hellman	Group16	modp4096
Diffie-Hellman	Group17	modp6144
Diffie-Hellman	Group18	modp8192

Example:

Commands	Responses
AT+BIPSIA?	+BIPSIA:1,"3des-md5-modp1024" +BIPSIA:2,"" +BIPSIA:3,"" +BIPSIA:4,"" +BIPSIA:5,"" +BIPSIA:6,"" +BIPSIA:7,"" +BIPSIA:8,"" +BIPSIA:9,"" +BIPSIA:10,"" OK
AT+BIPSIA=1,"3des"	OK
AT+BIPSIA=2,"3des-md5-modp1024"	OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.

18.8 +BIPSPM: IPSEC tunnel Phase 2 authentication Mode

Description

This command defines the IPSEC tunnels phase 2 authentication mode.

Availability

Since FW version 3.6.2
BT-5000v2 and BT-6000 series only

Command Syntax

Set: **AT+BIPSPM=<index>,<mode>**
Query: **AT+BIPSPM?**

Response Syntax

Set: OK
Query: +BIPSPM: <index>,<mode>
…
OK

Defined Values

<index>:

1..10	IPSEC tunnel index number.

<mode>:

0	Encryption (ESP) (default)
1	Authentication Header (AH)

Example:

Commands	Responses
AT+BIPSPM?	+BIPSPM:1,0 +BIPSPM:2,0 … +BIPSPM:10,0 OK
AT+BIPSPM=1,0	OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.

18.9 +BIPSPL:IPSEC tunnel Phase 2 key Lifetime

Description

This command defines the IPSEC tunnels phase 2 key lifetime.

Availability

Since FW version 3.6.2
BT-5000v2 and BT-6000 series only

Command Syntax

Set: **AT+BIPSPL=<index>,<lifetime>**
Query: **AT+BIPSPL?**

Response Syntax

Set: OK
Query: +BIPSPL: <index>,<lifetime>
…
OK

Defined Values

<index>:

1..10 IPSEC tunnel index number.

<lifetime>:

1..86400 Key lifetime in seconds (default 28800 sec.; i.e. 8 hours)

Example:

Commands	Responses
AT+BIPSPL?	+BIPSPL:1,3600 +BIPSPL:2,28800 … +BIPSPL:10,28800 OK
AT+BIPSPL=1,3600	OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.

18.10 +BIPSPA: IPSEC tunnel Phase 2 encryption Algorithms

Description

This command defines which Phase 2 encryption algorithms shall be used to establish the IPSEC tunnels.

Availability

Since FW version 3.6.2
BT-5000v2 and BT-6000 series only

Command Syntax

Set: **AT+BIPSPA=<index>,<algorithm>**
Query: **AT+BIPSPA?**

Response Syntax

Set: OK
Query: +BIPSPA: <index>,**<algorithm>**
…
OK

Defined Values

<index>:

1..10 IPSEC tunnel index number.

<algorithm>: String (31) with the following formats:

"" When set to blank (default), the algorithm is negotiated between the modem and the remote gateway.

"<enc>[-<auth>]" Define which algorithm shall be used, with:
<enc> Encryption method: see

Table 8.
<auth> Authentication method: see

Table 9.
The -<auth> is optional; when it is not specified, it is negotiated between the modem and the remote gateway.

Table 8. Supported encryption methods

Algorithm	Key size	<enc>
3DES	192	3des
AES	128-256	aes, aes128, aes192, aes256
Serpent	128-256	serpent
Blowfish	40-448	blowfish

Table 9. Supported authentication methods

Algorithm	Key size	<auth>
MD5	128	md5
SHA1	160	sha1
SHA2	256	sha2_256

Example:

Commands	Responses
AT+BIPSSA?	+BIPSPA:1,"" +BIPSPA:2,"" … +BIPSPA:10,"" OK
AT+BIPSSA=1,"3des"	OK
AT+BIPSSA=2,"aes128-sha1"	OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.

18.11 +BIPSCO: IPSEC tunnel Compression

Description

This command defines whether an IPSEC tunnel shall attempt to use compression.

Availability

Since FW version 3.6.2
BT-5000v2 and BT-6000 series only

Command Syntax

Set: **AT+BIPSCO=<index>,<mode>**
Query: **AT+BIPSCO?**

Response Syntax

Set: OK
Query: +BIPSCO: <index>,<mode>
…
OK

Defined Values

<index>:

1..10	IPSEC tunnel index number.

<mode>:

0	No
1	Yes, the tunnel will attempt to use compression (default)

Example:

Commands	Responses
AT+BIPSCO?	+BIPSCO:1,1 +BIPSCO:2,1 … +BIPSCO:10,1 OK
AT+BIPSCO=1,1	OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.

18.12 +BIPSPS: IPSEC tunnel Perfect Forward Secrecy

Description

This command defines whether an IPSEC tunnel requires Perfect Forward Secrecy.

Availability

Since FW version 3.6.2
BT-5000v2 and BT-6000 series only

Command Syntax

Set: **AT+BIPSPS=<index>,<mode>**
Query: **AT+BIPSPS?**

Response Syntax

Set: OK
Query: +BIPSPS: <index>,<mode>
…
OK

Defined Values

<index>:

1..10	IPSEC tunnel index number.

<mode>:

0	No
1	Yes, the tunnel will use Perfect Forward Secrecy (default)

Example:

Commands	Responses
AT+BIPSPS?	+BIPSPS:1,1 +BIPSPS:2,1 … +BIPSPS:10,1 OK
AT+BIPSPS=1,1	OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.

18.13 +BIPSPSK: IPSEC tunnel Private Shared Key

Description

This command defines the private shared key to use for establishing an IPSEC tunnel.
Note: For security reasons, the configured key is returned as "******" when queried.

Availability

Since FW version 3.6.2
BT-5000v2 and BT-6000 series only

Command Syntax

Set: **AT+BIPSPSK=<index>,"<PSK>"**
Query: **AT+BIPSPSK?**

Response Syntax

Set: OK
Query: +BIPSPSK: <index>,"******"
…
OK

Defined Values

<index>:

1..10	IPSEC tunnel index number.
<PSK>: String (63)	Private Share Key to use to establish the IPSEC tunnel. It may contain any characters but commas and semi-columns.

Example:

Commands	Responses
AT+BIPSPSK?	+BIPSPSK: 1,"******" +BIPSPSK: 2,"******" … +BIPSPSK: 10,"******" OK
AT+BIPSPSK=1,"myIPSECkey 123 #%"	OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.

18.14 +BIPSDPD: IPSEC Dead Peer Detection

Description

This command defines the parameters of the Dead Peer Detection (RFC 3706) allowing to detect when an IPSEC tunnel connected peer is not longer reachable.

Availability

Since FW version 3.7.1
BT-5000v2 and BT-6000 series only

Command Syntax

Set: **AT+BIPSDPD=<index>,<delay>,<timeout>,<action>**
Query: **AT+BIPSDPD?**

Response Syntax

Set: OK
Query: +BIPSDPD: **<index>,<delay>,<timeout>,<action>**
OK

Defined Values

<index>:

1..10	IPSEC tunnel index number.

<delay>: Delay in seconds between each attempt to detect dead peer (when tunnel is idle)

0	DPD is disabled
1..86400	Delay in seconds (default is 30 sec)

<timeout>: Timeout in seconds before assuming a peer is not longer connected.

0	DPD is disabled
1..86400	Delay in seconds (default is 120 sec)

<action>: Action to undertake when a dead peer is detected:

hold	Re-establish tunnel whenever the modem has traffic to send (default)
restart	Restart the tunnel
clear	Destroy the tunnel

Example:

Commands	Responses

`AT+BIPSDPD?`	`+BIPSDPD:1,30,120,hold`
	`+BIPSDPD:2,30,120,hold`
	…
	`+BIPSDPD:10,30,120,hold`
	`OK`

`AT+BIPSDPD=1,60,120,restart`	`OK`

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.

18.15 +BIPSDI: IPSEC tunnels configuration

Description

This command shows the configuration of one or all the IPSEC tunnels. The complete configuration (except the private shared key) is returned.

Availability

Since FW version 3.6.2
BT-5000v2 and BT-6000 series only

Command Syntax

Query: **AT+BIPSDI?**
AT+BIPSDI=<index>

Response Syntax

Query:
+BIPSDI: <index>,"
IPSec: <Tunnel Enabled/Disabled>
Gateway: <Gateway IP>
Remote subnet: <Remote subnet>
Local subnet: <Local subnet>
IKE Mode: <IKE Mode>
IKE Key Lifetime: <IKE key lifetime>
IKE Algorithm: <IKE algorithms>
Phase 2 Auth Mode: <Phase 2 auth.>
Phase 2 Key Lifetime: <Phase 2 key lifetime>
Phase 2 Algorithm: <Phase 2 algorithms>
IPSec compression: <IPSEC comp.>
Perfect Forward Secrecy: <Forward Secrecy >
DPD delay: <DPD delay>
DPD timeout: <DPD timeout>
DPD action: <DPD action>"
OK

Defined Values

<index>:

1..10	IPSEC tunnel index number.

<Tunnel Enabled/Disabled>:

Enabled	The tunnel is enabled (see +BIPSEN)
Disabled	The tunnel is not enabled (see +BIPSEN)

<Gateway IP>:	IP address of the remote IPSEC gateway as configured with AT+BIPSGA
<Remote subnet>:	Remote subnet IP address and CIDR mask as configured with AT+BIPSSN
<Local subnet>:	Local subnet IP address and CIDR mask as configured with AT+BIPSLN. This line may not appear if a specific subnet has not been configured for this tunnel. In that case the LAN Ethernet IP address and mask is used (see AT+BETHIP).
<IKE mode>:	Phase 1 negotiation mode as configured with AT+BIPSKN
<IKE key lifetime>:	Phase 1 IKE key lifetime as configured with AT+BIPSIL
<IKE algorithms>:	Phase 1 IKE algorithms as configured with AT+BIPSIA
<Phase 2 auth.>:	Phase 2 authentication mode as configured with AT+BIPSPM

<Phase 2 key lifetime>: Phase 2 key lifetime as configured with AT+BIPSPL
<Phase 2 algorithms>: Phase 2 algorithms as configured with AT+BIPSPA
<IPSEC comp.>: IPSEC compression mode as configured with AT+BIPSCO
<Forward secrecy>: IPSEC perfect forward secrecy mode as configured with AT+BIPSPS
<DPD delay>: Delay in seconds between each attempt to detect dead peer (when tunnel is idle), configured with AT+BIPSDPD
<DPD timeout>: Timeout in seconds before assuming a peer is not longer connected, configured with AT+BIPSDPD
<DPD action>: Action to undertake when a dead peer is detected, configured with AT+BIPSDPD

Example:

Commands	Responses
AT+BIPSDI?	+BIPSDI:1,” IPSec: Enabled Gateway: 66.201.210.204 Remote subnet: 172.14.14.0/24 Local subnet: 10.0.0.0/24 IKE Mode: Main IKE Key Lifetime: 3600s IKE Algorithm: aes128-sha1;modp1024 Phase 2 Auth Mode: ESP Phase 2 Key Lifetime: 28800s Phase 2 Algorithm: aes128-sha1 IPSec compression: Enabled Perfect Forward Secrecy: Yes DPD delay: 30s DPD timeout: 120s DPD action: hold ” … +BIPSDI:10," IPSec: Disabled Gateway: 0.0.0.0 Remote subnet: 0.0.0.0/32 IKE Mode: Main IKE Key Lifetime: 3600s IKE Algorithm: Phase 2 Auth Mode: ESP Phase 2 Key Lifetime: 28800s Phase 2 Algorithm: IPsec compression: Enabled Perfect Forward Secrecy: Yes DPD delay: 30s DPD timeout: 120s DPD action: hold " OK
AT+BIPSDI=1	+BIPSDI:1,” IPSec: Enabled Gateway: 66.201.210.204

```
Remote subnet: 172.14.14.0/24
Local subnet: 10.0.0.0/24
IKE Mode: Main
IKE Key Lifetime: 3600s
IKE Algorithm: aes128-sha1;modp1024
Phase 2 Auth Mode: ESP
Phase 2 Key Lifetime: 28800s
Phase 2 Algorithm: aes128-sha1
IPSec compression: Enabled
Perfect Forward Secrecy: Yes
DPD delay: 30s
DPD timeout: 120s
DPD action: hold
"

OK
```


18.16 +BIPSSA IPSEC tunnels status

Description

This command shows the status of all the IPSEC tunnels.
Each tunnel is named "btw" followed by its index number: "btw1", "btw2", …

Availability

Since FW version 3.6.2
BT-5000v2 and BT-6000 series only

Command Syntax

Query: **AT+BIPSSA?**

Response Syntax

Query: +BIPSSA: " …
"
OK

Defined Values

N/A

Example:

Commands	Responses
AT+BIPSSA?	+BIPSSA:" ipsec auto: warning: obsolete command syntax used … [SNIP] 000 #2: "btw1":500 STATE_QUICK_I2 (sent QI2, IPsec SA established); EVENT_SA_REPLACE in 27526s; newest IPSEC; eroute owner 000 #2: "btw1" esp.58adf46c@205.205.17.69 esp.a6717e97@207.164.130.155 tun.0@205.205.17.69 tun.0@207.164.130.155 000 #1: "btw1":500 STATE_MAIN_I4 (ISAKMP SA established); EVENT_SA_REPLACE in 2482s; newest ISAKMP; lastdpd=-1s(seq in:0 out:0) 000 " OK
AT+BIPSSA?	+BIPSSA:" ipsec auto: warning: obsolete command syntax used whack: Pluto is not running (no "/var/run/pluto/pluto.ctl") " OK

19 Access Control Lists (ACL)

Access Control Lists (ACL) allow the restriction of unauthorized users from accessing the modem.
The following ACL commands can be used to prevent incoming unauthorized IP traffic (received from the WAN interface) from utilizing the services in the Sixnet modem and from communicating with devices attached to the modem's interfaces:

19.1 +BIPACE: Enable/Disable ACL

Description

This command enables or disables ACL.

Notes: Make sure the authorized accesses are correctly configured (using +BIPACL? page 184) before enabling it.
Enabling ACL without having correctly configured authorized accesses may prevent further WAN access to the modem.

Availability

Since FW version 3.6.2
BT-5000v2 and BT-6000 series only

Command Syntax

Set: **AT+BIPACE=<mode>**
Query: **AT+BIPACE?**

Response Syntax

Set: OK
Query: +BIPACE: <mode>
…
OK

Defined Values

<mode>:

0	Disabled (default)
1	Enabled

Example:

Commands	Responses
AT+BIPACE?	+BIPACE: 0 OK
AT+BIPACE=1	OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.
- This command will only take effect at the next successful WAN connection.

19.2 +BIPACL: WAN ACL

Description

This command defines the WAN Access Control Lists (ACL). The WAN ACL restrict access to the modem and its interfaces from the WAN interface. When ACL is enabled (see +BIPACE page 184), access from the WAN interface is restricted to the rules defined by the +BIPACL command.

Availability

Since FW version 3.6.2
BT-5000v2 and BT-6000 series only

Command Syntax

Set: **AT+BIPACL=<index>,<subnet IP>,<subnet mask>,<ports>,<protocol>**
Query: **AT+BIPACL?**
Note: The query only report configured rules.

Response Syntax

Set: OK
Query: +BIPACL: <index>,**<subnet IP>,<subnet mask>,<ports>,<protocol>**
…
OK

Defined Values

<index>:

1..10	ACL rule index number.

<subnet IP>: Authorized subnet IP address in quad-dotted decimal

"0.0.0.0"	Not configured (default).
"*nnn.nnn.nnn.nnn*"	IP address. Each *nnn* number ranges from 0 to 255. Numbers having a leading 0 are interpreted in octal rather than decimal.

<subnet mask>: Subnet mask in quad-dotted decimal

"0.0.0.0"	No subnet attached. Only the modem generated traffic is routed through the tunnel (default)
"*nnn.nnn.nnn.nnn*"	Subnet mask. Each *nnn* number ranges from 0 to 255. Numbers having a leading 0 are interpreted in octal rather than decimal. Only the sequence of leading bits set to 1 is significant.

The <subnet IP> and <subnet mask> define a range of authorized hosts IP addresses.

<ports>: List of authorized ports separated by |. Ranges can be specified with the a -. Each port is an integer number from 1 to 65365. Up to 15 ports can be specified, a range counting for two ports.

""	When empty (default), all ports are authorized for the given subnet.
"n-m"	Range of authorized port numbers from *n* to *m*.
"n|m"	Port *n* and port *m* are authorized.

<protocol>: Authorized protocols:

0	UDP
1	TCP
2	UDP and TCP

Example:

Commands	Responses
AT+BIPACL?	+BIPACL: 10,"205.205.17.64","255.255.255.240","",2 OK
AT+BIPACL=1,"64.65.10.0","255.255.255.0","21-23|5070-5071|6070",1	OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.
- This command will only take effect at the next successful WAN connection.
- By default rule 10 is configured with Sixnet's network IP range, providing Sixnet support access to your modem in case you forget to provide access to yourself (i.e. lock yourself out). This rule can be removed, but Sixnet support will be unable to remotely aid in troubleshooting.

20 Serial-IP Configuration

The following commands are used to monitor the wireless network status:

20.1 +BSIPDS: Serial-IP remote Destination Settings

Description

This command sets Serial-IP destinations IP addresses, ports and protocols. The modem supports up to two different destinations.

Availability

Since FW version 1.1.1

Command Syntax

AT+BSIPDS=<destination number>,<server IP or Domain Name >,<server port number>,<server port type>

Response Syntax

+BSIPDS: <destination number>,<server IP>,<server port number>,<server port type>

Defined Values

<destination number>

1-2	destination number

<server IP>

"*nnn.nnn.nnn.nn"n*	Server IP address or Domain Name (**default "0.0.0.0"**)

<server port number>

0	Not configured
1–65535	Server port number (**default 8888**)

<server port type>

0	UDP
1	TCP **(default)**

Example:

Commands	Responses
AT+BSIPDS?	+BSIPDS: 1,"0.0.0.0",0,0 +BSIPDS: 2,"0.0.0.0",0,0 OK
AT+BSIPDS=1,"204.101.80.1",6666,1	OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.
- When an active session is established with a Serial IP Listening server (see AT +BSIPSV and +BSIPSE or +BSIPLS) or with the on-demand SIP client (see AT D), the SIP destinations are disabled (FW version 3.4.7 and after).

20.2 +BSIPDMO: Serial-IP remote Destination Mobile Originated

Description

This command sets the Serial-IP destinations Mobile Originated parameters for each of the two destinations. The parameters currently consist of a timer. When the timer is set, the modem will enable TCP keep-alive or send periodic empty UDP packet to keep the connection with the Serial-IP server open.

Availability

Since FW version 1.1.1

Command Syntax

AT+BSIPDMO=<destination number>,<timer>

Response Syntax

+BSIPDMO: <destination number>,<timer>

Defined Values

<destination number>

1-2	Serial IP destination number (Cf. AT+BSIPDS)

<timer>

0	No keep-alive **(default)**
1–432000	Time in seconds at which keep-alive empty UDP packets (when destination is configured for UDP) are sent or TCP keep-alive timer (when configured for TCP).

Example:

Commands	Responses
AT+BSIPDMO?	+BSIPDMO: 1,0 +BSIPDMO: 2,0 OK
AT+BSIPDMO=1,30	OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.

20.3 +BSIPLS: Serial-IP Listening Servers

Description

This command configures the modem Serial IP listening servers.

Availability

Since FW version 3.7.0

Command Syntax

AT+BSIPLS=<index>,<port>,<protocol>,<Inactivity timer>

Response Syntax

+BSIPLS: 1,<port>,<protocol>,<inactivity timer>
+BSIPLS: 2,<port>,<protocol>,<inactivity timer>

Defined Values

<index>

1-2	Listening server index

<port>

1-65535	Listening port number (reserved ports – tcp:20, tcp:21, tcp:23, tcp:5070, tcp:6070, tcp:9999 - cannot be used)

<protocol>

0	UDP
1	TCP (**default**)

<inactivity timer>

0	Use the value defined in +BSIPIT
1-432000	seconds (default is **15** seconds) after which an idle connection is terminated.

Example:

Commands	Responses
AT+BSIPLS?	+BSIPLS: 1,0,1 +BSIPLS: 2,0,1 OK
AT+BSIPLS=1,6666,1	OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.
- In order for the firewall to be configured with the listening servers settings, the configuration needs to be saved and the connection re-established (modem reset or disconnect/connect cycle).

20.4 +BSIPSV: Serial-IP Server Settings

Description
This command sets the listening port and protocol of the Serial-IP listening server.

Availability
Since FW version 1.2.0 – DEPRECATED.

Command Syntax
AT+BSIPSV=<modem listening port number>,<modem listening port type>

Response Syntax
+BSIPSV: <modem listening port number>,<modem listening port type>

Defined Values
<modem listening port number>

1-65535	Listening port number (reserved ports – tcp:20, tcp:21, tcp:23, tcp:5070, tcp:6070, tcp:9999 - cannot be used)

<modem listening port type>

0	UDP
1	TCP (**default**)

Example:

Commands	Responses
AT+BSIPSV?	+BSIPSV: 0,0 OK
AT+BSIPSV=6666,1	OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.
- This command is being deprecated and has been replaced by +BSIPLS. It configures the SIP listening server #1 configured with AT+BSIPLS=1,…

20.5 +BSIPSE: Listening Server Enable

Description

This command is used to enable the SIP listening server in AT command mode.
Note: This command is being deprecated and has been replaced by +BSIPLS. It enables the SIP listening server #1 configured with AT+BSIPLS=1.

Availability

Since FW version 2.0.5 – DEPRECATED.

Command Syntax

AT+BSIPSE=<value>

Response Syntax

+BSIPSE: <value>

Defined Values

<value >

0	Disable (default)
1	Enable

Example:

Commands	Responses
AT+BSIPSE?	+BSIPSE: 0 OK
AT+BSIPSE=1	OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.
- This command is being deprecated and has been replaced by +BSIPLS. When the listening server #1 has a valid port number (as configured with AT+BSIPLS=1), the listening server is enabled.

20.6 +BSIPFB: Serial-IP Flush on Byte Count

Description

Sets the maximum number of received data bytes to wait for before the modem assembles and forwards a serial data packet.

Availability

Since FW version 1.1.1

Command Syntax

AT+BSIPFB=<maximum byte count>

Response Syntax

+BSIPFB: <maximum byte count>

Defined Values

<maximum byte count>

0	Send each data packet independently of the number of received bytes.
1-4096	Send after the specified number of bytes are received from the serial device (default = **1024**).

Example:

Commands	Responses
AT+BSIPFB?	+BSIPFB: 0 OK
AT+BSIPFB=128	OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.

20.7 +BSIPFS: Serial IP Flush on Byte Sequence

Description

This command sets the sequence of bytes upon which the modem assembles and forwards an IP packet with the Serial Data. When the specified sequence of up to 12 bytes is received on the serial port, the assembled IP packet, including the specified sequence of bytes, is sent.

Availability

Since FW version 2.0.5

Command Syntax

AT+BSIPFS=<Hexadecimal string>

Response Syntax

+BSIPFS: <Hexadecimal string>

Defined Values

<Hexadecimal string>

String 0-24 hexadecimal (0-9A-F) characters (each byte being coded with two characters, the string must have an even number of characters)

Note: An empty string ("") disables the feature.

Example:

Commands	Responses
AT+BSIPFS?	+BSIPFS: 30ffee OK
AT+BSIPFS=30FFEE	OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.
- A packet is always sent when it reaches the standard MTU (Maximum Transmit Unit) size.
- This command replaces the +BSIPFC command.

20.8 +BSIPFC: Serial-IP Flush on Special Character

Description

This command sets the framing character to wait for before the modem assembles and forwards a serial data packet. When the specified byte is received on the serial port, the assembled IP packet, including the specified byte, is sent.

Availability

Since FW version 1.1.1 – DEPRECATED.

Deprecated

As of version 2.0.6, replaced by AT+BSIPFS. This command is still currently supported for backwards compatibility with legacy code.

Command Syntax

AT+BSIPFC=<framing char>

Response Syntax

+BSIPFC: <framing char>

Defined Values

<framing char>

0–255	Flush upon reception of this framing character (byte value in decimal)
256	Disable the Serial-IP Flush on Special Character feature **(default)**

Example:

Commands	Responses
AT+BSIPFC?	+BSIPFC: 256 OK
AT+BSIPFC=13	OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.
- A packet is always sent when it reaches the standard MTU (Maximum Transmit Unit) size.
- This command has been deprecated; the +BSIPFS command shall be used instead.

20.9 +BSIPFT: Serial-IP Flush on Timeout

Description

This command sets the inter-character timeout to wait for before the modem assembles and forwards a serial data packet.

Availability

Since FW version 1.1.1

Note: Prior to FW 2.0.6, the defined values were in multiples of 100 ms.

Note: Prior to FW 3.6.1, the default value was 1ms.

Command Syntax

AT+BSIPFT=<timeout_ms>

Response Syntax

+BSIPFT: <timeout_ms>

Defined Values

<timeout_ms>

0	Disable the Serial-IP Flush on Timeout feature
1–65535	Send the IP packet when the specified delay in milliseconds elapses after the last character was received from the serial device (**default=15ms**).

Example:

Commands	Responses
AT+BSIPFT?	+BSIPFT: 10 OK
AT+BSIPFT=1	OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.
- A packet is always sent when it reaches the standard MTU (Maximum Transmit Unit) size.

20.10 +BSIPIT: Serial-IP Inactivity Timer

Description

This command sets the Serial-IP server's inactivity timer. This inactivity timer is only used when the modem is in Serial-IP mode. If the timer expires while there is no traffic on the serial port, the connection to the Serial-IP server or destination gets released.

Availability

Since FW version 2.0.6

Command Syntax

AT+BSIPIT=<Delay_s>

Response Syntax

+BSIPIT: <Delay_s>

Defined Values

<Delay_s>

0	disable
1-432000	seconds (**default** is **15** seconds)

Example:

Commands	Responses
AT+BSIPIT?	+BSIPIT: 30 OK
AT+BSIPIT=30	OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.
- Since FW 3.7.2, the serial-IP inactivity timer is also used to close inactive SIP destinations.

20.11 +BSIPDI: Serial-IP Connection Diagnostics

Description

This command returns diagnostic information on the Serial IP connections.

Availability

Since FW version 3.7.2

Command Syntax

AT+BSIPDI?

Response Syntax

+BSIPDI: "<connection>","<state>","<timestamp>","<duration>","<IP_to_serial>,<serial_to_IP>
…
OK

Defined Values

<connection>

SERVER 1	Serial IP Listening Server #1 (AT+BSIPLS)
SERVER 2	Serial IP Listening Server #2 (AT+BSIPLS)
CLIENT 1	Serial IP Destination #1 (AT+BSIPDS)
CLIENT 2	Serial IP Destination #2 (AT+BSIPDS)
ON_DEMAND	Serial IP on-demand (ATDT)

<state>

Connected	The connection is established
Accepted	The connection is being established
Listening	Waiting for an incoming connection
Not connected	The connection is not established

<timestamp>

YYYY-MM-DD HH:MM:SS	Time at which the connection was established

<duration>

String	Duration of the connection in days, hours, minutes and seconds

<IP to Serial>

Integer	Number of bytes transferred from IP packets to the serial port since the connection was established.

<Serial to IP>

Integer	Number of bytes transferred from the serial port to IP packets since the connection was established.

Example:

Commands	Responses
AT+BSIPDI?	+BSIPDI: "SERVER 1","Not Connected","","0 s",0,0 +BSIPDI: "SERVER 2","Not Connected","","0 s",0,0 +BSIPDI: "CLIENT 1","Not Connected","","0 s",0,0 +BSIPDI: "CLIENT 2","Not Connected","","0 s",0,0 +BSIPDI: "ON_DEMAND","Not Connected","","0 s",0,0 OK

Notes:

- This command is equivalent to AT+BSIPSA but with a different format.

20.12 +BSIPSA: Serial-IP Connection Status

Description

This command returns status information on the Serial IP connections.

Availability

Since FW version 3.7.2

Command Syntax

AT+BSIPSA?

Response Syntax

+BSIPSA:
<connection>:
State: <state>
Time: <timestamp>
Duration: <duration>
IP -> Serial:<IP_to_serial>
Serial->IP:<serial_to_IP>
…
OK

Defined Values

<connection>

SERVER 1	Serial IP Listening Server #1 (AT+BSIPLS)
SERVER 2	Serial IP Listening Server #2 (AT+BSIPLS)
CLIENT 1	Serial IP Destination #1 (AT+BSIPDS)
CLIENT 2	Serial IP Destination #2 (AT+BSIPDS)
ON_DEMAND	Serial IP on-demand (ATDT)

<state>

Connected	The connection is established
Accepted	The connection is being established
Listening	Waiting for an incoming connection
Not connected	The connection is not established

<timestamp>

YYYY-MM-DD HH:MM:SS	Time at which the connection was established

<duration>

String	Duration of the connection in days, hours, minutes and seconds

<IP to Serial>

Integer	Number of bytes transferred from IP packets to the serial port since the connection was established.

<Serial to IP>

Integer	Number of bytes transferred from the serial port to IP packets since the connection was established.

Example:

Commands	Responses
AT+BSIPSA?	+BSIPSA: SERVER 1: State: Not Connected Time:

```
                        Duration: 0 s
                        IP->Serial:0
                        Serial->IP:0
                SERVER 2:
                        State: Not Connected
                        Time:
                        Duration: 0 s
                        IP->Serial:0
                        Serial->IP:0
                CLIENT 1:
                        State: Not Connected
                        Time:
                        Duration: 0 s
                        IP->Serial:0
                        Serial->IP:0
                CLIENT 2:
                        State: Not Connected
                        Time:
                        Duration: 0 s
                        IP->Serial:0
                        Serial->IP:0
                ON_DEMAND:
                        State: Not Connected
                        Time:
                        Duration: 0 s
                        IP->Serial:0
                        Serial->IP:0

                OK
```

Notes:

- This command is equivalent to AT+BSIPDI but with a different format.

20.13 +BSIPNEG: Set up Telnet negotiation and configure for Serial-IP connection

Description

This command sets how some options negotiations will be performed with a TELNET client, and connection to a Cisco console port.

Availability

Since FW version 3.8.13

Command Syntax

AT+BSIPNEG=<TelnetNego>, <CiscoAPH>

Response Syntax

+BSIPNEG: 3, 1

Defined Values

<TelnetNego>

0	Disabled: No TELNET options negotiation are performed. **(default)**
1	Basic: Common TELNET options negotiation are performed.
2	Basic + drop LF: Linefeed characters (x'0A) are dropped.
3	Basic + drop LF & NUL (Cisco Preferred): LF and NUL (x'00) characters are dropped.
4	Basic + drop LF & NUL/HIGH: LF, NUL and any characters > x'7F are dropped.
5	Basic + drop CR: Carriage return characters (x'0D) are dropped.
6	Basic + drop CR & NUL: CR and NUL (x'00) characters are dropped.
7	Basic + drop CR & NUL/HIGH: CR, NUL (x'00) and any characters > x'7F are dropped.

<CiscoAPH>

0	Disabled: **(default)**
1	Enable the CISCO APH: Upon network disconnect, send "exit" commands to the serial port. NOTE: Recommended setting is 1 when connecting to a Cisco console port.

Example:

Commands	Responses
AT+BSIPNEG?	+BSIPNEG: 3,1 OK
AT+BSIPNEG=3,1	OK

21 GPS Configuration

The following commands are used to monitor the wireless network status:

21.1 +BGPSID: GPS TAIP Vehicle ID

Description

This command sets the vehicle ID into the GPS receiver for TAIP reported messages.

Availability

Since FW version 1.1.1

Command Syntax

AT+BGPSID=<vehicle id>

Response Syntax

+BGPSID: <vehicle id>

Defined Values

<vehicle id>

String of 4 alphanumeric characters or empty string.

Example:

Commands	Responses
AT+BGPSID?	+BGPSID: V123 OK
AT+BGPSID=Z9X3	OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.

21.2 +BGPSDS: GPS Destination Server

Description

This command sets the GPS destination IP addresses, ports and protocols. The modem supports up to two different destinations, the second being optional.

Availability

Since FW version 1.1.1

Command Syntax

AT+BGPSDS=<destination number>,<server IP or Domain Name >,<server port number>,<server port type>

Response Syntax

+BGPSDS: <destination number>,<server IP or Domain Name >,<server port number>,<server port type>

Defined Values

<destination number>

1-2	Destination number

<server IP>

"*nnn.nnn.nnn.nnn*"	Server IP address or Domain Name (default "0.0.0.0")

<server port number>

0	Not configured (**default**)
1–65535	Server port number

<server port type>

0	UDP
1	TCP **(default)**

Example:

Commands	Responses
AT+BGPSDS?	+BGPSDS: 1,"204.38.44.123",0,1212 +BGPSDS: 2,"0.0.0.0",0,0 OK
AT+BGPSDS=1,"204.101.80.1",6666,1	OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.

21.3 +BGPSPR: GPS Protocol Selection

Description

This command sets the GPS protocol to be used along with the associated acquisition and reporting timers. The acquisition timer controls the frequency at which GPS fixes are stored. The reporting timer controls the frequency of reporting the stored GPS fixes.

When the reporting timer is the same as the acquisition one, GPS fixes are reported as they are acquired and do not get stored. When the reporting timer is larger than the acquisition timer, then acquired fixes are temporarily stored into memory until it is time to report them.

Availability

Since FW version 1.1.1

Command Syntax

AT+BGPSPR=<protocol type>,<Acquisition timer>,<Reporting timer>

Response Syntax

+BGPSPR: <protocol type>,<Acquisition timer>,<Reporting timer>

Defined Values

<Protocol type>

1	NMEA (**default**)
2	TAIP

<Acquisition timer>

1-255	NMEA acquisition frequency in seconds (Default 1s)
1-3600	TAIP unused value. The acquisition frequency is set in the +BGPSTP command.

<Reporting timer>

1-65535	Reporting frequency in seconds for sending the acquired fixes. The reporting timer needs to be greater or equal than the Acquisition timer. The default NMEA reporting frequency is 3s.

Example:

Commands	Responses
AT+BGPSPR?	+BGPSPR: 1,10,60 OK Note: Acquire NMEA every 10s, report every 60s
AT+BGPSPR=2,2,1800	OK
AT+BGPSPR=1,1,3600	OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.
- Since FW version 3.8.4, the AT+BGPSRP command allows to select a specific reporting time per GPS destination.

21.4 +BGPSTP: GPS TAIP Raw Command

Description

This command configures the TAIP mode behavior of the GPS module. The given TAIP command is passed unchanged to the GPS module, please refer to documentation from Trimble to correctly program the GPS module. This command has no effect unless the GPS protocol is set to TAIP (see AT+BGPSPR).

Availability

Since FW version 1.1.1

Command Syntax

AT+BGPSTP=<TAIP command>

Response Syntax

+BGPSTP: <TAIP command>

Defined Values

<TAIP command>

String TAIP command string enclosed in quotes and including the TAIP > and < characters.

Example:

Commands	Responses
AT+BGPSTP?	+BGPSTP: ">DPV0060000505000600<" OK
AT+BGPSTP=">DPV0060000505000600<"	OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.

21.5 +BGPSNM: GPS NMEA Packet Selection Command

Description

This command selects which NMEA sentences have to be sent to the GPS destinations (BEP, IP1, IP2 and Serial). It allows any combination of the supported packets:

1- RMC
2- GGA
3- GLL
4- GSA
5- GSV
6- VTG
7- ZDA

A blank value is not allowed, at least one packet must be specified.

Availability

Since FW version 1.1.1
Deprecated in favor of AT+BGPSRP since FW 3.8.4

Command Syntax

AT+BGPSNM="<Comma-separated packets list>"

Response Syntax

+BGPSNM: "<Comma-separated packets list >"

Defined Values

<Comma-separated packets list>

String	List of NMEA packets to report amongst RMC, GGA, GLL, GSA, GSV, VTG and ZDA. The modem default is "RMC"
"ALL"	A value of ALL automatically selects all of the possible packets to be reported.

Example:

Commands	Responses
AT+BGPSNM?	+BGPSNM: "GGA,VTG,ZDA" OK
AT+BGPSNM="ALL"	OK
AT+BGPSNM?	+BGPSNM: "RMC,GGA,GLL,GSA,GSV,VTG,ZDA" OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.
- Since FW version 3.8.4, the AT+BGPSRP command allows to select specific NMEA sentences per GPS destination.
- Most GPS applications use the "CGA, VTG" or "RMC" NMEA packets.

21.6 +BGPSRP: GPS Reporting Parameters

Description

This command configures each GPS destination (Serial, IP 1 and IP2) with a specific reporting timer and specific NMEA sentences.

Availability

Since FW version 3.8.4

Command Syntax

AT+BGPSRP=<GPS destination>,<Reporting Timer>[,"<NMEA sentences list>"]

Response Syntax

+BGPSRP: 0,<Reporting Timer>,"< NMEA sentences list >"
+BGPSRP: 1,<Reporting Timer>,"< NMEA sentences list >"
+BGPSRP: 2,<Reporting Timer>,"< NMEA sentences list >"
+BGPSRP: 3,<Reporting Timer>,"< NMEA sentences list >"

Defined Values

<GPS destination>:

0	BEP GPn payload (AT+BEVRPR)
1	IP 1 destination (defined in AT+BGPSDS)
2	IP 2 destination (defined in AT+BGPSDS)
3	Serial port

<Reporting Timer>:

1-65535	Reporting frequency in seconds for sending GPS data to the GPS destination.

<NMEA sentences list>

String	List of NMEA sentences to report amongst RMC, GGA, GLL, GSA, GSV, VTG and ZDA. The modem default is "RMC"
"ALL"	A value of ALL automatically selects all of the possible packets to be reported.

Example:

Commands	Responses
AT+BGPSRP?	+BGPSRP: 0,3,"RMC" +BGPSRP: 1,30,"RMC-GGA-GLL" +BGPSRP: 2,300,"RMC" +BGPSRP: 3,10,"RMC" OK
AT+BGPRP=2,120,"ALL"	OK
AT+BGPSRP?	+BGPSRP: 0,3,"RMC" +BGPSRP: 1,30,"RMC-GGA-GLL" +BGPSRP: 2,120,"RMC-GGA-GLL-GSA-GSV-VTG-ZDA" +BGPSRP: 3,10,"RMC " OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.
- The AT+BGPSPR sets the reporting timer of all GPS destinations (for backward compatibility). Please use AT+BGPSRP after AT+BGPSPR to set specific values per destination.
- The AT+BGPSNM sets the NMEA sentence mask of all GPS destinations (for backward compatibility). Please use AT+BGPSRP instead to set specific values per destination.
- Most GPS applications use the "CGA, VTG" or "RMC" NMEA packets.

21.7 +BGPSRD: GPS Enable Reporting

Description
This command select which GPS destinations (IP1, IP2 or serial) shall be activated.

Availability
Since FW version 1.1.1

Command Syntax
AT+BGPSRD=<value>

Response Syntax
+BGPSRD: 0
OK

Defined Values

<value>	IP 1	IP 2	Serial
0	✗	✗	✗
1	✓	✗	✗
2	✗	✓	✗
3	✗	✗	✓
4	✓	✓	✗
5	✓	✗	✓
6	✗	✓	✓
7	✓	✓	✓
8	Reserved	Reserved	Reserved

✗ Do not report

✓ Report

Example:

Commands	Responses
AT+BGPSRD?	+BGPSRD: 0 OK
AT+BGPSRD=?	+BGPSRD: <0-8> OK
AT+BGPSRD=2	OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.

21.8 +BGPSSM: GPS Safe Mode Serial Port Control

Description

This command enables or disables the GPS data reporting to the serial port without affecting the modem's configuration profiles. It has effect only if modem is in Safe Mode (i.e. connected to BVDM via the serial port), otherwise it returns ERROR.

Availability

Since FW version 1.1.1

Command Syntax

AT+BGPSSM=<value>

Response Syntax

+BGPSSM: 0
OK

Defined Values

<value>

0	Disable reporting on serial port **(default)**
1	Enable reporting on serial port

Example:

Commands	Responses
AT+BGPSSM?	+BGPSSM: 0 OK
AT+BGPSSM=?	+BGPSSM: (0 - 1) OK
AT+BGPSSM=1	OK

21.9 +BGPSSV: GPS Server Enable

Description

Enable or disable a modem GPS server allowing a client application to get GPS data from the modem.

Availability

Since FW version 3.8.4

Command Syntax

AT+BGPSSV=<value>

Response Syntax

+BGPSSV: 0
OK

Defined Values

<value>

0	Disable reporting **(default)**
1	Enable reporting

Example:

Commands	Responses
AT+BGPSSV?	+BGPSSV: 0 OK
AT+BGPSSV=?	+BGPSSV: (0 - 1) OK
AT+BGPSSV=1	OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.
- The GPS server, when enabled is using TCP/IP on port 9999.
- The modem needs to be restarted for the change to take effect.

21.10 +BGPSOE: Enable GPS Odometer Feature

Description

This command enables or disables the GPS odometer (distance traveled) feature.

Note: The GPS odometer is updated from information acquired from the GPS module. It requires the GPS module to be programmed either with the NMEA protocol or the TAIP protocol (see AT+BGPSPR). For the TAIP protocol, the TAIP RV message must be programmed (see +BGPSTP).

Availability

Since FW version 2.0.6

Command Syntax

AT+BGPSOE=<value>

Response Syntax

+BGPSOE: 0
OK

Defined Values

<Value>

0	Disable (**default**)
1	Enable

Example:

Commands	Responses
AT+BGPSOE?	+BGPSOE: 0 OK
AT+BGPSOE=?	+BGPSOE: <0-1> OK
AT+BGPSOE=1	OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.

21.11 +BGPSOD: GPS Odometer

Description

This command sets or resets the distance traveled and to query the current value.

Note: The GPS odometer is updated from information acquired from the GPS module. It requires the GPS module to be programmed either with the NMEA protocol or the TAIP protocol (see AT+BGPSPR). For the TAIP protocol, the TAIP RV message must be programmed (see +BGPSTP).

Availability

Since FW version 2.0.6

Command Syntax

AT+BGPSOD=<value>

Response Syntax

+BGPSOD: 888
OK

Defined Values

<Value>

0-999999999 Distance in meters (**default 0 m**)

Example:

Commands	Responses
AT+BGPSOD?	+BGPSOD: 888 OK
AT+BGPSOD=?	+BGPSOD: <0-999999999> OK
AT+BGPSOD=0	OK

Notes:

- The setting form of this command directly stores the new value into non-volatile memory.
- The odometer value is stored into non-volatile memory when the IGN signal is OFF.

21.12 +BGPSGT: Query the GPS reporting data

Description

This command returns the latest GPS data report from the GPS module.

Command Syntax

AT+BGPSGT?

Response Syntax

+BGPSGT: "<GPS_Message>
<GPS_Message>
...
"

OK

Defined Values

<GPS_Message>

Please refer to NMEA or TAIP specification for details

Example:

Commands	Responses
AT+BGPSGT?	+BGPSGT: "$GPGGA,,,,,,0,00,,,,,,,*66 $GPVTG,,,,,,,,,N*30 " OK

21.13 +BGPSDT: Synchronize modem Date/Time with GPS time

Description

Enable or disable the ability to synchronize the modem date and time from the GPS time (UTC).

Availability

Since FW version 3.8.0

Command Syntax

AT+BGPSDT?
AT+BGPSDT=<action>

Response Syntax

+BGPSDT: <action>
OK

Defined Values

<action>

0	Disable setting the modem time from GPS fix **(default)**
1	Enable setting the modem time from GPS fix

Example:

Commands	Responses
AT+BGPSDT?	+BGPSDT: 0 OK
AT+BGPSDT=1	OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.
- The modem time is set from GPS date/time only if AT+BMTIME is set to BEST (and no NTP server is available) or if it is set to GPS.

21.14 +BGPSLOG: Log received GPS positions (diagnostics)

Description

This command enables or disables the logging of received GPS positions for diagnostic purposes.

Availability

Since FW version 3.8.5

Command Syntax

AT+BGPSLOG?
AT+BGPSLOG=<action>

Response Syntax

+BGPSLOG: <action>
OK

Defined Values

<action>

0	Disable GPS position logging **(default)**
1	Enable GPS position logging

Example:

Commands	Responses
AT+BGPSLOG?	+BGPSLOG: 0 OK
AT+BGPSLOG=1	OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.
- GPS positions are logged in up to two files limited to 100KB each in volatile memory.
- The logged GPS data can be retrieved with the AT+BGETLG command in var/log/gps.log and var/log/gps_prev.log.

21.15 +BGPSELV: GPS Elevation Angle Mask Configuration

Description

This command configures GPS Elevation Angle Mask.

Availability

Since FW version 3.8.10

Command Syntax

AT+BGPSELV?
AT+BGPSELV=<elevation_angle>

Response Syntax

+BGPSELV: <elevation_angle>
OK

Defined Values

<elevation angle> 0.00 - 89.99

Example:

Commands	Responses
AT+BGPSELV?	+BGPSELV: 5.0 OK
AT+BGPSELV=15.00	OK

21.16 +BGPSFIL: Optimized GPS Filter Configuration

Description

This command configures the Optimal GPS filtering mode for the Copernicus II GPS chipset data. When GPS data integrity falls below configured Signal-to-Noise ratios for the number of satellites used in a GPS fix, it is marked with an "F" as it's RMC Status. This is also used to increase noise when being evaluated by the Kalman filter function (see +BGPSKAL). When on-board Kalman logging is enabled compressed filter logs are stored at /nvlog/gps/. These can be retrieved with BlueVue Device Manager (Tools->Download Modem Log). It is not recommended to run onboard logging for extended periods of time, as this will shorten the lifespan of NVRAM.

The log files are comma delimited with the following fields:

3.8.15

$SOG-LOG,<Time>,<RMC Status>,<SOG (Raw)>,<SOG (Filtered)>,<Lat>,<Long>,<Odometer>,<Quality>,<# of Sats>,<MinSNR (Used)>,<Noise>

3.8.16

FIL,<Date>,<Time>,<RMC Status>,<SOG (Raw)>,<SOG (Filtered)>,<Lat>,<Long>,<HDOP>,<Odometer>,<Quality>,<# of Sats>,<Min SNR (Used)>,<Noise>

Availability

Since FW version 3.8.13

Command Syntax

AT+BGPSFIL?

AT+BGPSFIL=<mode>,<SNR-2>,<SNR-3>,<SNR-4>,<SNR-5>,<SNR-6>,<SNR-7>

Response Syntax

+BGPSFIL:5,100,32,25,23,23,21 **(Default values)**

OK

Defined Values

<mode> 0: disabled
1: Enable Optimal packet marking only
2: Enable Optimal packet marking with noise smoothing (12 point toggle) * Not recommended.
3: Kalman 2D filter enabled
4: Kalman 2D filter enabled with on-board logging
5: Kalman 1D filter enabled **(Default)**
6: Kalman 1D filter enabled with on-board logging

<SNR-x> Minimum threshold SNR value for x satellites currently being used for GPS data by Copernicus II

Example:

Commands	Responses
AT+BGPSFIL?	+BGPSFIL: 5,100,32,25,23,23,21 OK
AT+BGPSFIL=1,100,32,25,23,23,21	OK
AT+BGPSFIL=6	OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.
- You may issue this command with just the <MODE> argument if you are not familiar with tuning SNR values to retain the default SNR values.
- If switching from 1D (5/6) to 2D (3/4) or vice versa, a BGPSKAL should also be executed with the appropriate parameters.
    - When switching to the 2D Kalman filter, also issue AT+BGPSKAL=1,5,500,1.40,1000000,2.00 to set the recommended 2D Kalman parameters.
    - If switching back to the 1D Kalman filters, issue an AT+BGPSKAL=1,3,10,1.40,200,3.00 to set the recommended 1D Kalman parameters
- If upgrading from 3.8.13 the previous default of mode 3 (Kalman 2D) will be retained. You must issue new AT commands to switch to the Kalman 1D filter.

21.17 +BGPSKAL: GPS Kalman Filter Configuration

Description

This command configures the GPS Kalman filters for Copernicus II chipset. It is NOT RECOMMENDED to alter these settings from provided defaults.

Availability

Since FW version 3.8.13

Command Syntax

AT+BGPSKAL?

AT+BGPSKAL=<Look Ahead>,< Noise Initial>,<Noise Jump>,<Noise Ramp Rate>,<Noise Max>,<Noise Decay Rate>

Response Syntax

+BGPSKAL: 1,3,10,1.40,200,3.00 **(default values for 1D)**

OK

+BGPSKAL: 1,5,500,1.40,1000000,2.00 **(default values for 2D)**

OK

Defined Values

<Look Ahead>	Integer	- Reserved for future use. (Default: 1)
<Noise Initial>	Integer	- Initial and minimum noise value (Default: 5)
<Noise Jump>	Integer	- Noise after first 'F' point from optimal filter (Default: 500)
<Noise Ramp Rate>	Floating Point	- Multiplier for increasing noise on 'F' points from optimal filter (Default: 1.4)
<Noise Max>	Integer	- Maximum noise value (Default: 1000000)
<Noise Decay Rate>	Floating Point	- Divisor for decreasing noise on 'A' points from optimal filter (Default: 2.0)

Example:

Commands	Responses
AT+BGPSKAL?	+BGPSKAL: 1,1000,50000,1.80,1000000,1.40 OK
AT+BGPSKAL=1,1000,50000,1.80,1000000,1.40	OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.
- You may issue this command with just the <MODE> argument if you are not familiar with tuning SNR values to retain the default SNR values.
- If switching from 1D (5/6) to 2D (3/4) or vice versa, a BGPSKAL should also be executed with the appropriate parameters.
  - When switching to the 2D Kalman filter, also issue AT+BGPSKAL=1,5,500,1.40,1000000,2.00 to set the recommended 2D Kalman parameters.
  - If switching back to the 1D Kalman filters, issue an AT+BGPSKAL=1,3,10,1.40,200,3.00 to set the recommended 1D Kalman parameters
- If upgrading from 3.8.13 the previous default of mode 3 (Kalman 2D) will be retained. You must issue new AT commands to switch to the Kalman 1D filter.

22 Input/Output (I/O) Query and Control

The following commands are used to query and control the I/O pins of the modems:

22.1 +BDIGET: Get Digital Input

Description
This command queries the states of all digital input pins.

Availability
Since FW version 2.0.3

Command Syntax
AT+BDIGET

Response Syntax
+BDIGET: <label>, <state>
+BDIGET: <label>, <state>D
…

Defined Values
<label> Label of the digital input pin

DI1	digital input pin #1 (**DI1** on BT-4000/BT-5000/BT-5000v2 series, **IN** on BT-6000 series)
DI2	digital input pin #2 (**DI2** on BT-4000/BT-5000/BT-5000v2 series)
DI3	digital input pin #3 (**DI3** on BT-4000/BT-5000/BT-5000v2 series)
DI4	digital input pin #4 (**DI4** on BT-4000/BT-5000/BT-5000v2 series)
IGN	ignition sense input (**IGN** on BT-4000/BT-5000/BT-5000v2 series)

<state> Digital input logical state

0	LOW logical state (described in terms of electrical measures)
1	HIGH logical state

Example:

Commands	Responses
AT+BDIGET?	+BDIGET: DI1,0 +BDIGET: DI2,0 +BDIGET: DI3,0 +BDIGET: DI4,0 +BDIGET: IGN,1 OK
AT+BDIGET=DI1	+BDIGET: DI1,0 OK

Notes:

- The command response depends on the modem model.

22.2 +BDOSET: Set Digital Output

Description
This command is used to set a digital output pin to a specific value.

Availability
Since FW version 2.0.3

Command Syntax
AT+BDOSET=<label>,<state>,<store>

Response Syntax
+BDOSET: DO1,0
+BDOSET: DO2,0
+BDOSET: DO3,0
OK

Defined Values
<label> Label of the digital output pin
DO1 digital output pin #1 (**O1** on BT-4000/BT-5000/BT-5000v2 series, **OUT** on BT-6000 series)
DO2 digital output pin #2 (**O2** on BT-4000/BT-5000/BT-5000v2 series)
DO3 digital output pin #3 (**O3** on BT-4000/BT-5000/BT-5000v2 series)
<state> Digital output logical state
0 OFF
1 ON
<store> 0 This setting will not be written to NV ram and will not be stored for future use upon a device reboot
1 (default) This setting will be written to NV ram with &W and will be stored until another state is written

*Leaving this parameter off will operate in default behavior and allow the setting to be stored
*If a BDOSET is issued to be stored then followed by a new state change that is not stored the original stored value is still present in NV Ram and the DO **will be restored to the last stored state** upon a device reboot.

Example:

Commands	Responses
AT+BDOSET? **query does not return the <store> parameter*	+BDOSET: DO1,0 +BDOSET: DO2,0 +BDOSET: DO3,0 OK
AT+BDOSET=DO2,1,0 DO2 is set to ON but not stored and will not persist a reboot	OK
AT+BDOSET=DO2,1,1 DO2 is set to ON and will be stored as well as persist a reboot	OK

22.3 +BAIGET: Get Analog Input

Description

This command queries the voltage values measured on all analog input pins.

Availability

Since FW version 2.0.3

Command Syntax

AT+BAIGET=<label>

Response Syntax

+BAIGET: <label>, <value>
+BAIGET: <label>, <value>
…

Defined Values

<label> Label of the analog input pin

AI1	analog input pin #1 (**AI1** on BT-4000/BT-5000/BT-5000v2 series, **IN** on BT-6000 series)
AI2	analog input pin #2 (**AI2** on BT-4000/BT-5000/BT-5000v2 series)
AI3	analog input pin #3 (available on 4600/5600 models only) (**AI3** on BT-4600/BT-5600/BT-5000v2 series)
PWR	voltage level on the positive (**POS** on BT-4000/BT-5000/BT-5000v2 series, **PWR** on BT-6000 series)

<value>

n.nnn	Analog input voltage value in volts with 3 decimal precision

Example:

Commands	Responses
AT+BAIGET?	+BAIGET: PWR,13.553 +BAIGET: AI1,3.056 +BAIGET: AI2,1.987 +BAIGET: AI3,0.000 OK
AT+BAIGET=PWR	+BAIGET: PWR,13.553 OK

Notes:

- The command response depends on the modem model.

22.4 +BIORATE: Get and Set I/O Sampling Interval

Description

This command is used to query and set I/O sampling interval.

Availability

Since FW version 3.8.10

Command Syntax

AT+BIORATE=<100-290>

Response Syntax

+BIORATE: <value>
OK

Defined Values

<value> Time interval in ms of I/O sampling

Example:

Commands	Responses
AT+BIORATE?	+BIORATE: 290 OK
AT+BIORATE=?	+BIORATE: <100-290> Set up IO sampling interval OK
AT+BIORATE=200	OK

Notes:

- The command response depends on the modem model.

22.5 +BIGNEN: Ignition Sensing Enable / Disable

Description

By default, the IGN pin is enabled for BT5K units, and no such IGN pin exists for the BT6K platform. This will allow a user to disable IGN pin shutdown on BT5K units, and alternately to allow the Digital Input pin to function as a pseudo-IGN pin on the BT6K. By disabling this feature the unit will not respond to a loss of power at the IGN pin. Shutdown logs will still be written but the unit will stay on and operational regardless of IGN position.

Availability

Since FW version 3.8.15

Command Syntax

AT+BIGNEN=1,0

Response Syntax

+BIGNEN: <enable-BT5K>,<enable-BT6K>
OK

Defined Values

<enable-bt5k>: 0 IGN sensing DISABLED for BT-5xxx units
1 IGN sensing ENABLED for BT-5xxx units **(default)**
<enable-bt6k>: 0 IGN sensing DISABLED for BT-6xxx units
1 IGN sensing ENABLED for BT-6xxx units (DIN pin is used for IGN moitoring)

Example:

Commands	Responses
AT+BIGNEN?	+BIGNEN: 1, 0 OK
AT+BIGNEN=?	+BIGNEN: <0-1>, <0-1> Set up to enable/disable IGNITION for BT5K and BT6K OK
AT+BIGNEN=1,0	OK (IGN sense enabled on BT5K, disabled on BT6K)
AT+BIGNEN=0,1	OK (IGN sense enabled on BT6K, disabled on BT5K)

22.6 +BIGNNET: Cellular Call teardown when Ignition pin goes to OFF

Description

BIGNNET allows control of forcing a graceful cellular (ppp0) disconnection after the IGN timer is reached. The goal is that this disconnect would occur before power-down of the unit. Some carriers have requested the ability to perform a clean disconnect from the tower when doing a graceful shutdown. This command satisfies that request.

Availability

Since FW version 3.8.16

Command Syntax

AT+BIGNNET=[0 or 1]

Response Syntax

+BIGNNET: <enable>
OK

Defined Values

<enable>: 0 The PPP connection will not be affected during ignition power down.
1 The PPP connection will hang up gracefully after ignition drop timer is expired, and there is no configure change. When the modem boots up again, the PPP connection will be established.

Example:

Commands	Responses
AT+BIGNNET?	+BIGNNET: 0 OK
AT+BIGNNET=?	+BIGNEN: <0-1> OK
AT+BIGNNET=1	OK

23 Event Handling

The following commands are used to configure the modem event protocol:

23.1 +BEVENT: Define Event

Description
This command is used to define an event.

Availability
Since FW version 2.0.3
Since FW version 3.4.7 (RFS1 to RFS31 and Command ID)
Since FW version 3.8.0 (DST and STOP signal trigger)
Since FW version 3.8.4 (WAN signal trigger)
Since FW version 3.8.5 (Allow up to 63 events)

Command Syntax
AT+BEVENT=<id>,<Trigger Expression>,<Trigger Options>,<Register Options>,<Command ID>,<Report ID>

Response Syntax

Defined Values
<id>

0	Reserved
1-63	Event identifier (was 1-31 for FW < 3.8.5)
126	Reserved

<Trigger Expression> Boolean expression based on event signals

The expression is evaluated from left to right. It cannot be more than 128 characters long and cannot use more than 10 operators. The expression syntax is:

signal	Signal to be used to evaluate the expression to TRUE or FALSE (see below)
expression**!**	The negation of the preceding expression
(expression**)**	Use the value of the expression within the parenthesis (used for expressions grouping).
expression **|** expression	Logical OR between two expressions
expression **&** expression	Logical AND between two expressions

signal

DIS1 to DIS31:	Digital Input Signal; configured with AT+BEVDIS
AIS1 to AIS31:	Analog Input Signal; configured with AT+BEVAIS
GSS1 to GSS31:	GPS Speed Signal; configured with AT+BEVGSS
GHS1 to GHS31:	GPS Heading Signal; configured with AT+BEVGHS
GOS1 to GOS31:	GPS Odometer Signal; configured with AT+BEVGOS
EVS1 to EVS31:	Event Signal; driven by another Event using its Event Register, the event is configured by another AT+BEVENT. Please note that events are evaluated in the order of increasing index number.
RFS1 to RFS31:	RF status Signal; configured with AT+BEVRFS
TMS:	Timer Signal; is always TRUE and Trigger Option must be 'T'; cannot be combined with other signals
GPS:	GPS receiver Signal; TRUE when GPS receiver reports a fix; cannot be combined with other signals

GVS:	GPS Valid fix Signal: always available without configuration. This signal is used to determine whether valid GPS fixes are currently available from the GPS receiver. It applies a heuristic rule to determine the validity of the fix based on different fields' values in the reported GPS message. It reflects the validity since the last reported fix.
DST:	Distance travelled; TRUE when the distance travelled since startup or since the last DST event becomes greater than the Trigger Option value which must be 'D'.
STOP:	Vehicle is stopped; TRUE when the GPS calculated speed is less than 4 km/h for more than 3 minutes and FALSE when the GPS calculated speed is bigger or equal to 4 km/h for more than 15 seconds. The event is not triggered when neither condition can be evaluated (e.g. no GPS fix).
WAN:	TRUE whenever the modem has obtained a WAN IP address.

<Trigger Options>

B	any change in the state of the Trigger Expression
R	transition of the Trigger Expression state from FALSE to TRUE
T0-T65535	the Trigger Expression state is TRUE for at least a specified time in second (between 0 and 65535 seconds). The time must be specified after T.
D0-D65535	the Trigger Expression state is TRUE when the distance travelled becomes greater than the specified distance (between 0 and 65535 meters). The distance must be specified after D.

<Register Options> Used to concatenate events

S	the event register synchronize with the state of the Trigger Expression
E0-E65535	expiry timer in seconds indicates how long the Event register will indicate TRUE once the Event is triggered. The time must be specified after E.

<Command ID>

0	No associated command.
1-31	Command identifier of a command defined with +BEVCMD. The specified command will get executed when the event is triggered. The command is executed before the report message defined by <Report ID> is sent.

<Report ID>

0-23	Identifier of the report message as defined by +BEVRPR

Example:

Commands	Responses

`AT+BEVENT?`	`+BEVENT:0,"","","",0,0 +BEVENT:1,"GPS","T120","S",0,1`
	`+BEVENT:2,"GPS","T2","S",0,2`
	…
	`+BEVENT:31,"","","",0,0`
	`OK`

`AT+BEVENT=?`	`+BEVENT: <id>,<Trigger Expression>,<Trigger Options>,<Register Options>,<Command ID>,<Report ID>`
	
	`OK`

`AT+BEVENT=1,"GPS","T120","S",0,1`	`OK`

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.

23.2 +BEVRPR: Define Report Message

Description

This command is used to define the message to report by specifying its data content, its destination, and whether it requires an acknowledgement of receipt from the destination.

Availability

Since FW version 2.0.3
MI2, MI3, RF2, IP1, AC1, AU1 since FW version 3.8.0.

Command Syntax

AT+BEVRPR=<idx>,"<Content List>","<Destination List>",<Reporting Timer>,<ACK Flag>,<ACK Timer>

Response Syntax

OK

Defined Values

<idx>		
	0-23	Report message identifier
<Content List>		List of the information payloads to include in the report separated by -, for example "MI1-IO1-GP1". The messages formats are described in "Sixnet BlueTree Event Protocol (BEP) reference document".
	0	GPS RAW message (TAIP or NMEA, depending on the protocol programmed in the GPS module, see +BGPSPR), BEP message formatting disabled. This content type cannot be mixed with the other types.
	MI1, MI2 or MI3	Modem Info format 1, 2 or 3 (only one format can be specified)
	RF1 or RF2	RF Info format 1 or 2 (only one format can be specified)
	IO1	I/O Info format 1
	GP1	GPS Info format 1
	GO1	GPS Odometer format 1
	IP1	WAN IP address format 1 (set to 0.0.0.0 when WAN is not connected)
	AC1	Action format 1
	AU1	Authentication format 1
<Destination List>		List of the destinations identifiers (as defined with AT+BRPRDS) separated by "-" to send the report to; in the form "1-2-4"
<Reporting Timer>		
	0	Report once as soon as the event is triggered
	1-65535	Reporting frequency in seconds
<ACK Flag>		
	0	Disable (Default)
	1	Enable
<ACK Timer>		Message will be retransmitted every <ACK Timer> seconds until the ACK is received
	0-65535	Time in seconds before retransmitting an unacknowledged message.

Example:

Commands	Responses

AT+BEVRPR?	+BEVRPR:1,"MI1-IO1","1",120,0,0 +BEVRPR:2,"0","2",5,0,0 … +BEVRPR:23,"","",0,0,0 OK
AT+BEVRPR =?	+BEVRPR:<ID>,<Content List>,<Destination List>,<Reporting Timer>,<ACK Flag>,<ACK Timer> OK
AT+BEVRPR =1,"0","1",120,0,0	OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.

23.3 +BRPRDS: Define Reporting Destination

Description
This command is used to add a reporting destination to the list of destinations.

Availability
Since FW version 2.0.3

Command Syntax
AT+BRPRDS=<ID>,<DST Type>,<IP Address or Domain Name>,<Port Number>,<Port Type>

Response Syntax
OK

Defined Values
<ID>

1-10	Destination ID

<DST Type> Destination Type

0	Disable destination
1	IP address
2	*Serial port raw data (not supported)*
3	Management Server for Modem Originated Management (MOM)
4	Initial Configuration Server for Modem Originated Management (IMOM)

<IP Address>

"*nnn.nnn.nnn.nnn*"	Destination IP Address or Domain Name. Used only if the DST Type 1, 3 and 4

<Port Number>

1-65535	Destination port number. Used only if the DST Type 1, 3 and 4

<Port Type> Used only if DST Type = 1

0	UDP
1	TCP

Example:

Commands	Responses
AT+BRPRDS?	+BRPRDS:1,1,"24.122.77.226",10020,0 +BRPRDS:2,1,"205.205.17.71",8888,0 +BRPRDS:3,0,"",0,0 +BRPRDS:4,0,"",0,0 +BRPRDS:5,0,"",0,0 +BRPRDS:6,0,"",0,0 +BRPRDS:7,0,"",0,0 +BRPRDS:8,0,"",0,0 +BRPRDS:9,0,"",0,0 +BRPRDS:10,0,"",0,0 OK
AT+ BRPRDS=?	+ BRPRDS:<ID>,<DST Type>,<Destination Address>,<Port Number>,<Port Type> OK
AT+ BRPRDS=1,1,"24.122.77.226",10020,0	OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.

23.4 +BEVDIS: Define Digital Input Signal

Description

This command is used to define a digital input signal that can be used to trigger an event.

Availability

Since FW version 2.0.3

Command Syntax

AT+BEVDIS=<idx>,"<Comparison Exp>"

Response Syntax

Defined Values

<idx>

1-31	Index number

<Comparison Exp> Comparison expression that compares a data source to a value:

The expression syntax is: **source operator value**

source

DI1
DI2
DI3
DI4
IGN

operator

=	equal to

value

0	input is OFF
1	input is ON

Example:

Commands	Responses
AT+BEVDIS?	+BEVDIS: 1,"" +BEVDIS: 2,"" … +BEVDIS: 31,"" OK
AT+ BEVDIS=?	+BEVDIS: <idx>,"<Comp Exp>" OK
AT+ BEVDIS=4,"DI1=1"	OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.

23.5 +BEVAIS: Define Analog Input Signal

Description
This command is used to define an analog input signal that can be used to trigger an event.

Availability
Since FW version 2.0.3
Command Syntax
AT+BEVAIS=<idx>,"<Comparison Exp>"
Response Syntax

Defined Values
<idx>

1-31	Index number

<Comparison Exp> Comparison expression that compares a data source to one or two values.

The expression syntax is either:

source operator value	Compare a source to one value
or	
$value_1$ $operator_1$ source $operator_2$ $value_2$	Compare a source to two values. This expression is equivalent to ($value_1$ $operator_1$ source) AND (source $operator_2$ $value_2$)

source

- AI1
- AI2
- AI3
- PWR

operator

=	equal to
>	greater than
<	smaller than
>=	greater or equal to
<=	smaller or equal to

value

0.000-34.000	Value in volts for PWR
0.000-5.000	Value in volts for AI1, AI2 and AI3

Example:

Commands	Responses
AT+BEVAIS?	+BEVAIS: 1,"" … +BEVAIS: 31,"" OK
AT+ BEVAIS=?	AT+BEVAIS=<idx>,"<Comparison Exp>"
AT+ BEVAIS=1,"2.000<AI2<3.000"	OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.

23.6 +BEVGSS: Define GPS Speed Signal

Description

This command is used to define a speed signal that can be used to trigger an event.

Note: The speed signal is updated from information acquired from the GPS module. It requires the GPS module to be programmed either with the NMEA protocol or the TAIP protocol (see AT+BGPSPR). For the TAIP protocol, the TAIP RV message must be programmed (see +BGPSTP).

Availability

Since FW version 2.0.3

Command Syntax

AT+BEVGSS=<idx>,"<Comparison Exp>"

Response Syntax

OK

Defined Values

<idx>

1-31	Index number

<Comparison Exp> Comparison expression that compares a data source to one or two values.

The expression syntax is either:

source operator value	Compare a source to one value
or	
$value_1$ $operator_1$ source $operator_2$ $value_2$	Compare a source to two values. This expression is equivalent to ($value_1$ $operator_1$ source) AND (source $operator_2$ $value_2$)

source

GS	Ground Speed

operator

=	equal to
>	greater than
<	smaller than
>=	greater or equal to
<=	smaller or equal to

value

n.nnn	Speed value. The unit is dependent on the chosen GPS protocol (see +BGPSPR); unit is nautical miles per hour (knots) for NMEA, and miles per hour for TAIP (note: firmware up to 3.4.6 was using meters per second for TAIP).

Example:

Commands	Responses
AT+BEVGSS?	+BEVGSS: 1,"GS>60.5" +BEVGSS: 2," " … +BEVGSS: 31," " OK
AT+BEVGSS=?	+BEVGSS: <idx>,"<Comparison Exp>"

	OK
AT+BEVGSS=1,"GS>60.5"	OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.

23.7 +BEVGHS: Define GPS Heading Signal

Description

This command is used to define a GPS heading signal that can be used to trigger an event.

Note: The GPS heading signal is updated from information acquired from the GPS module. It requires the GPS module to be programmed either with the NMEA protocol or the TAIP protocol (see AT+BGPSPR). For the TAIP protocol, the TAIP RV message must be programmed (see +BGPSTP).

Availability

Since FW version 2.0.3

Command Syntax

AT+BEVGHS=<idx>,"<Comparison Exp>"

Response Syntax

Defined Values

<idx>

1-31 Index number

<Comparison Exp> Comparison expression that compares a data source to one or two values.

The expression syntax is either:

source operator value Compare a source to one value

or

$value_1$ $operator_1$ source $operator_2$ $value_2$ Compare a source to two values. This expression is equivalent to ($value_1$ $operator_1$ source) AND (source $operator_2$ $value_2$)

source

GH

operator

=	equal to
>	greater than
<	smaller than
>=	greater or equal to
<=	smaller or equal to

value

nn.n Heading value in decimal degrees

Example:

Commands	Responses
AT+BEVGHS?	+BEVGHS: 1,"GH>30.1" +BEVGHS: 2,"28.3<GH<45.2" … +BEVGHS: 31,"" OK
AT+BEVGHS=?	AT+BEVGHS=<idx>,"<Comparison Exp>"
AT+BEVGHS=1,"25.1<GH<39.3"	OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.

23.8 +BEVGOS: Define GPS Odometer Signal

Description

This command is used to define an odometer signal that can be used as an event trigger.

Note: The odometer signal is updated from information acquired from the GPS module. It requires the GPS module to be programmed either with the NMEA protocol or the TAIP protocol (see AT+BGPSPR). For the TAIP protocol, the TAIP RV message must be programmed (see +BGPSTP).

Availability

Since FW version 2.0.6

Command Syntax

AT+BEVGOS=<idx>,"<Comparison Exp>"

Response Syntax

Defined Values

<idx>

1-31 Index number

<Comparison Exp> Comparison expression that compares a data source to one or two values.

The expression syntax is either:

source operator value Compare a source to one value

or

$value_1$ $operator_1$ source $operator_2$ $value_2$ Compare a source to two values. This expression is equivalent to ($value_1$ $operator_1$ source) AND (source $operator_2$ $value_2$)

source

GO

operator

=	equal to
>	greater than
<	smaller than
>=	greater or equal to
<=	smaller or equal to

value

0-999999999 Distance in meters.

Example:

Commands	Responses
AT+BEVGOS?	+BEVGOS: 1,"GO>19999" +BEVGOS: 2," " … +BEVGOS: 31," " OK
AT+BEVGOS=?	+BEVGOS: <idx>,"<Comparison Exp>" OK
AT+BEVGOS=1,"GO>60"	OK

```
AT+BEVGOS=1,"6000<GO<=12000"     OK
```

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.

23.9 +BEVRFS: Define RF status Signal

Description

This command is used to define an RF status signal that can be used as an event trigger.

Availability

Since FW version 3.4.7.
EVDO, EDGE (BT-6400 series) and HSPA modems only.

Command Syntax

AT+BEVRFS=<idx>,"<Comparison Exp>"

Response Syntax

Defined Values

<idx>

1-31 Index number

<Comparison Exp> Comparison expression that compares the source to a value.

The expression syntax is either:

source operator value — Compare a source to one value

or

$value_1$ $operator_1$ source $operator_2$ $value_2$ — Compare a source to two values. This expression is equivalent to ($value_1$ $operator_1$ source) AND (source $operator_2$ $value_2$)

The following table specifies the possible sources and their associated values:

source	value	Description
RFP		**RF Power state** (see +BRFPON)
	0	Off
	1	On
STU		**Service Type in Use** (see +BNSTAT)
	0	No service
	1	PCS
	2	IS-95
	3	IS-95A
	4	IS-95B
	5	IS-95B
	6	CDMA Rev. 0 (1xRTT)
	7	CDMA Rev. 1
	81-87	EVDO Rev-0
	91-97	EVDO Rev-A
	101	GSM GPRS/EDGE/HSPA
	102	GSM EDGE/HSPA
	103	GSM EDGE/HSPA
	104	GSM HSPA
	105	GSM HSPA

	106	GSM HSPA
RFS		**RF Status** (see +BNSTAT)
	0	No service
	1	Idle
	2	Dormant
	3	In-use
	4	Incoming
	5	Calling

operator

=	equal to
>	greater than
<	smaller than
>=	greater or equal to
<=	smaller or equal to

Example:

Commands	Responses
AT+BEVRFS?	+BEVRFS: 1,"REG=2" +BEVRFS: 2," " … +BEVRFS: 31," " OK
AT+BEVRFS=?	+BEVRFS: <idx>,"<Comparison Exp>" OK
AT+BEVRFS=1,"REG=2"	OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.

23.10 +BEVCMD: Event command

Description

This command is used to define a command to be executed when an event is triggered.

Availability

Since FW version 3.4.7

Command Syntax

AT+BEVCMD=<idx>,"<Command>"

Response Syntax

Defined Values

<idx>

1-31	Index number

<Command>

String	Command to execute when event occurs. The command is restricted to the following: +BDOSET=<label>,<state> +BRFPON=<state> Multiple commands can be specified and need to be separated by a semi-column character ';'. The command must start with the "AT" string. The command maximum size is 128 characters.

Example:

Commands	Responses
AT+BEVCMD=1,"AT+BDOSET=DO2,0"	OK
AT+BEVCMD?	+BEVCMD: 1,"AT+BDOSET=DO2,0" +BEVCMD: 2," " … +BEVCMD: 31," " OK
AT+BEVCMD=?	+BEVCMD: <idx>,"<Command>" OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.

23.11 +BSMSEV: SMS Event

Description
Enable or disable of a special preset SMS reporting event.

Availability
CDMA 1xRTT modems only.

Command Syntax
AT+BSMSEV=<action>,<timer>,<SMS destination>

Response Syntax
OK

Defined Values

<action>:

0	Disable (**default**)
1	Enable the event

<timer>:

1-86400	Timer value in seconds during which the modem should be out of packet data coverage to trigger the event

<SMS destination>:

String	60 characters email address or cellular phone number

Example:

Commands	Responses
AT+BSMSEV?	+BSMSEV: 1,900,"1234567890@carrier.com " OK
AT+ BSMSEV=?	AT+BSMSEV=<0-1>,<1-86400>”<Destination>”
AT+ BSMSEV=1,900,"1234567890@carrier.com "	OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.
- The sent SMS event payload is composed of the last GPS data, followed by "MN=" and then by the modem name.

23.12 +BSYNCF: BEP packet Sync Flag

Description

Enable and disable the BEP (Bluex Event Protocol) packet framing feature and define the start and end 2-byte sequence values.

Availability

Since FW version 2.0.6

Command Syntax

AT+BSYNCF=<Action>,<Start_flag>,<End_flag>

Response Syntax

+BSYNCF: 1,"0xffaa","0xccdd"

Defined Values

<Action>

0	Disable (default)
1	Enable BEP packet framing (each packet starts with the start flag and ends with the end flag).

<Start_flag>

0xHHHH	4 hexadecimal digits (0-9A-F) preceded by "0x" representing the start flag sequence.

<End_flag>

0xHHHH	4 hexadecimal digits (0-9A-F) preceded by "0x" representing the end flag sequence.

Example:

Commands	Responses
AT+BSYNCF= 1,"0xffaa","0xccdd"	OK
AT+BSYNCF?	+BSYNCF: 1,"0xffaa","0xccdd" OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.
- The sequences are sent in reverse order, the second byte is sent first, the first byte is sent last.
- The start and end byte sequences are not escaped in the message content. Programs used to receive BEP messages must get the actual message size from the message content.
- The sequences are not used for MOM and IMOM destinations (see +BRPRDS).

23.13 +BSFMBS: Set Store and Forward Memory Block Size

Description

This command sets the store and forward memory block size. The setting only takes effect after the modem reboots.

Availability

Since FW version 3.4.0

Command Syntax

AT+BSFMBS=<value>

Response Syntax

+BSFMBS: <value>

Defined Values

<value>

32-1024	Range of acceptable integer values for the desired memory block size (**default is 128**). If this value is not a multiple of 8, the modem will round it down to the nearest multiple of 8.

Example:

Commands	Responses
AT+BSFMBS?	+BSFMBS: 128 OK
AT+BSFMBS=64	OK
AT+BSFMBS=77	OK
AT+BSFMBS?	+BSFMBS: 72 OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.
- The modem needs to reboot for the change to take effect.
- A single event may be stored in a maximum of 4 memory blocks. The event block size should be chosen according to the selection of event payload. Refer to the BEP Reference documentation for more details.

23.14 +BSFMST: Store and Forward Memory Status

Description

This command reports the Store and Forward Memory (SFM) usage:

- Used blocks
- Free blocks
- Number of stored events per event and per destination

Availability

Since FW version 3.8.4

Command Syntax

AT+BSFMST?

Response Syntax

+BSFMST:
Used blocks: <Percent used> (<Used blocks>/<Total blocks>)
Free blocks: <Percent free> (<Free blocks>/<Total blocks>)
Event # 1: <Number of stored events #1> (D 1: <Number of stored events #1 for destination #1>, …)
…

Defined Values

<Percent used>
0..100% Ratio of used blocks / total number of blocks
<Used blocks>
0..n Number of used SFM blocks
<Total blocks>
n Total number of SFM blocks (depends on AT+BSFMBS setting)
<Percent free>
0..100% Ratio of free blocks / total number of blocks
<Free blocks>
0..n Number of free SFM blocks
< Number of stored events #1 >
0..m Number of events with index 1 stored in SFM
< Number of stored events #1 for destination #1 >
0..d Number of events with index 1 stored in SFM for destination 1

Example:

Commands	Responses
AT+BSFMST?	+BSFMST: Used blocks: 8.2% (286/3480) Free blocks: 91.8% (3194/3480) Event # 1: 143 (D 1: 143) OK

23.15 +BSFMRM: Store and Forward Memory Removal

Description

This command removes all the events stored in the Store and Forward Memory (SFM).

Availability

Since FW version 3.8.4

Command Syntax

AT+BSFMRM=<action>
AT+BSFMRM?

Response Syntax

+BSFMRM: <action>

Defined Values

<action>

1	Remove the content of the SFM at next reboot.
0	Do not remove the content of the SFM (**default**)

Example:

Commands	Responses
AT+BSFMRM?	+BSFMRM: 0 OK
AT+BSFMRM=1	OK

Notes:

- This command settings is directly stored into non-volatile memory (no need for AT&W).
- The modem needs to reboot for the change to take effect.

23.16 +BEVLOG: Log BEP events

Description

This command allows to log the BEP messages sent by the modem as well as the BEP ACK messages received.

Availability

Since FW version 3.8.4

Command Syntax

AT+BEVLOG=<BEP Destination>,<action>
AT+BEVLOG?

Response Syntax

+BEVLOG: 1,<action>
+BEVLOG: 2,<action>
…
+BEVLOG:10,<action>

Defined Values

<BEP Destination>

1..10	BEP destination index (as defined in AT+BRPRDS)

<action>

0	Do not log BEP event messages (**default**)
1	Log BEP event messages.

Example:

Commands	Responses
AT+BEVLOG?	+BEVLOG: 1,0 +BEVLOG: 2,0 +BEVLOG: 3,0 +BEVLOG: 4,0 +BEVLOG: 5,0 +BEVLOG: 6,0 +BEVLOG: 7,0 +BEVLOG: 8,0 +BEVLOG: 9,0 +BEVLOG: 10,0 OK
AT+BEVLOG=1,1	OK

Notes:

- This command settings is directly stored into non-volatile memory (no need for AT&W).
- The BEP event messages are logged into /var/log/bep<BEP Destination>.log and /var/log/bep<BEP Destination>_prev.log. The files are limited to 100 kB and can be captured with the AT+BGETLG command.

24 Partner Applications

This feature allows to run a partner application directly on the modem. The partner applications are installed with an upgrade package (similar to firmware upgrade). The following commands allow to control and monitor the partner applications.

24.1 +BAPPEN: Partner Application Enable

Description

This command enables or disables an installed partner application.

Availability

Since FW version 3.7.0

Partner application enabled modems.

Command Syntax (set)

AT+BAPPEN="<App name>",<enable>

Response Syntax (set)

OK

Command Syntax (query)

AT+BAPPEN?

Response Syntax (query)

+BAPPEN:"<App name>",<enable>

OK

Defined Values

<App name> Name of the partner application

<enable>

0 Disable the partner application, or application is disabled.

1 Enable the partner application, or application is enabled.

Example:

Commands	Responses
AT+BAPPEN="partnerApp",1	OK
AT+BAPPEN?	+BAPPEN:"partnerApp",1 OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.
- When no partner application has been installed, the AT+BAPPEN? query command only returns OK.

24.2 +BAPPSA: Partner Application Status

Description

This command displays the log of an enabled partner application.
When the size of the log exceeds the capacity of the AT command response, the head of the log is truncated and replaced by "...".

Availability

Since FW version 3.7.0
Partner application enabled modems.

Command Syntax

AT+BAPPSA="<App name>"

Response Syntax

OK

Defined Values

<App name> Name of the partner application

Example:

Commands	Responses
AT+BAPPSA="partnerApp"	+BPAPPSA: "partnerApp"," … last line of application log " OK

24.3 +BAPPDI: Partner Application Diagnostics

Description

This command displays diagnostic information about an installed partner application.
The query form (AT+BAPPDI?) of the commands queries diagnostic information for all the installed partner applications.

Availability

Since FW version 3.7.0
Partner application enabled modems.

Command Syntax

AT+BAPPDI="<App name>"
AT+BAPPDI?

Response Syntax

+BAPPDI:"<App name>","
Shortname: <Short name>
Full name: <Full name>
Version:Version: <Version>
Status: <Status>

"
OK

Defined Values

<App name>	Name of the partner application for which to query diagnostic information.
<Short name>	Name of the partner application as defined in its manifest.
<Full name>	Full name of the partner application as defined in its manifest.
<Version>	Version of the partner application.
<Status>	Running status of the partner application:

Running	The application is currently enabled and running
Not running	The application is not currently running

Example:

Commands	Responses
AT+BAPPDI="btappdemo"	+BPAPPSA: "btappdemo"," Shortname: btappdemo Full name: BlueTree Partner Application Demo Version:Version: 1.2 Status: Not running "OK

24.4 +BAPPRM: Partner Application Removal

Description

This command uninstalls a partner application. The application needs to be disabled first with AT+BAPPEN and the configuration must be saved to stored profile (AT&W).
The query form (AT+BAPPRM?) of the commands shows all the installed partner applications.

Availability

Since FW version 3.8.0
Partner application enabled modems (BT-6000, BT-5000v2).

Command Syntax

AT+BAPPRM="<App name>"
AT+BAPPRM?

Response Syntax

+BAPPRM:"<App name>"
OK

Defined Values

<App name> Partner application name.

Example:

Commands	Responses
AT+BAPPEN="partnerApp",0	OK
AT&W	OK
AT+BAPPRM="partnerApp"	OK

25 Wi-Fi Access and Connectivity

This feature allows to BT-XX30 model to work as a Wi-Fi Access Point. Using the AT commands to enable/disable and switch between different modes, to configure parameters for each mode, and to query running status for each mode.

25.1 +BWIFIMD: Configuration of Wi-Fi modes

Description
This command configures Wi-Fi mode.

Availability
Since FW version 3.9.0
BT-5X30 models.

Command Syntax (set)
AT+BWIFIMD=<Mode number>
Response Syntax (set)
OK

Command Syntax (query)
AT+ BWIFIMD?

Response Syntax (query)
+BWIFIMD:< Mode number>
OK

Defined Values

< Mode number>	Number of the mode
0	None Wi-Fi mode.
2	Enable AP mode.

Example:

Commands	Responses
AT+BWIFIMD=2	OK
AT+BWIFIMD?	+BWIFIMD:2 OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.

25.2 +BWIFIAPM: General Configuration for Wi-Fi AP mode

Description

This command configures general parameters for Wi-Fi AP mode. (7 often used parameters in hostapd.conf)

Availability

Since FW version 3.9.0
BT-5X30 models.

Command Syntax (set)

AT+BWIFIAPM="<ssid>",<encrypt>,"<key>",<broadcast>,"<mode>",<channel>,<max_clients>

Response Syntax (set)

OK

Command Syntax (query)

AT+ BWIFIAPM?

Response Syntax (query)

+BWIFIAPM:"<ssid>",<encrypt>,"<key>",<broadcast>,"<mode>",<channel>,<max_clients>
OK

Defined Values

<ssid>	Wi-Fi network ID
<encrypt>	
0	No encryption/authentication required to connect
1	WPA
2	WPA2
3	WPA and WPA2
<key>	WPA pass phrase
<broadcast>	Send empty SSID in beacons and ignore probe request frames
0	disabled
1	send empty SSID in beacon and ignore probe request for broadcast SSID
2	clear SSID but keep the original length and ignore probe request for broadcast SSID
<mode>	Operation mode
a	IEEE 802.11a
b	IEEE 802.11b
g	IEEE 802.11g
<channel>	Channel number
<max_clients>	Maximum number of clients (1~2007)

Example:

Commands	Responses
AT+BWIFIAPM="BT-AR9271-	OK

TEST",3,"testwifi",0,"g",8,5	
AT+BWIFIAPM?	+BWIFIAPM::"BT-AR9271-TEST",3,"testwifi",0,"g",8,5 OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.
- All the parameter syntax refers to hostapd.conf format

25.3 +BWIFIAPC: Advanced Configuration for Wi-Fi AP mode

Description

This command configures all(advanced) parameters for Wi-Fi AP mode. (refer to hostapd.conf syntax)

Availability

Since FW version 3.9.0
BT-5X30 models.

Command Syntax (set)

AT+BWIFIAPC="<name>",<value>

Response Syntax (set)

OK

Command Syntax (query)

AT+ BWIFIAPC?

Response Syntax (query)

+BWIFIAPC:<name>,<value>
OK

Defined Values

<name>	name of the parameter
<value>	value of the parameter

Example:

Commands	Responses
AT+BWIFIAPC="beacon_int",100	OK
AT+BWIFIAPC?	+BWIFIAPC:" interface,wlan0 bridge,br0 driver,nl80211 logger_syslog,-1 logger_syslog_level,2 logger_stdout,-1 logger_stdout_level,2 dump_file,/tmp/hostapd.dump ctrl_interface,/var/run/hostapd ctrl_interface_group,0 ssid,BT-AR9271-TEST hw_mode,g channel,8 beacon_int,100 … … …

```
OK
```

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.
- All the parameter syntax refers to hostapd.conf format

25.4 +BWIFIST: Query Wi-Fi recent running status

Description
This command queries recent Wi-Fi running status

Availability
Since FW version 3.9.0
BT-5X30 models.

Command Syntax (set)
AT+BWIFIST?
Response Syntax (set)
OK
Command Syntax (query)
AT+ BWIFIST?

Response Syntax (query)
+BWIFIST:
…(Wi-Fi status string)
…
OK

Defined Values

<name>	name of the parameter
<value>	value of the parameter

Example:

Commands	Responses
AT+BWIFIST?	+BWIFIST:" Sep 27 20:31:50 btmodem user.notice bxnetconn[715]: wifi: Wi-Fi AP mode started! Sep 27 20:32:14 btmodem user.notice bxnetconn[715]: wifi: Wi-Fi turned off! " OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.
- All the parameter syntax refers to hostapd.conf format

26 Interoperability Commands

The commands below have a limited behavior and are supported to allow interoperability with applications that require them.

AT Commands	Description
B	Command has no action and will always reply OK
C	Command has no action and will always reply OK
G	Command has no action and will always reply OK
L	Command has no action and will always reply OK
M	Command has no action and will always reply OK
N	Command has no action and will always reply OK
P	Command has no action and will always reply OK
T	Command has no action and will always reply OK
W	Command has no action and will always reply OK
X	Command has no action and will always reply OK
Y	Command has no action and will always reply OK
\K	Command has no action and will always reply OK
&E	Command has no action and will always reply OK
&G	Command has no action and will always reply OK
&K	Command has no action and will always reply OK
&P	Command has no action and will always reply OK
&Q	Command has no action and will always reply OK
&R	Command has no action and will always reply OK
&Y	Command has no action and will always reply OK
&S	Command has no action and will always reply OK
S1	Command has no action and will always reply OK
S2	Command has no action and will always reply OK
S3	Command has no action and will always reply OK
S4	Command has no action and will always reply OK

AT Commands	Description
S5	Command has no action and will always reply OK
S6	Command has no action and will always reply OK
S7	Command has no action and will always reply OK
S8	Command has no action and will always reply OK
S9	Command has no action and will always reply OK
S10	Command has no action and will always reply OK
S11	Command has no action and will always reply OK
Z	For firmware starting at 3.4.6, the ATZ command has no action and will always return OK. For firmware before 3.4.6, this command is equivalent to the ATZ1 command, see page 27).
\APPP	The AT\APPP command behaves exactly as if ATD is submitted with a dial string (i.e. ATD#777) matching the modem's connection profile's dial string (i.e. #777). It is introduced to allow legacy CDPD products requiring this command to establish a data connection to the network. The modem attempts to establish two PPP connections (WAN and LAN). It returns either "CONNECT" if the data call succeeds or "NO CARRIER" if the call setup fails or if the remote side releases the connection.

27 Diagnostics Commands

The following commands are used to troubleshoot the modem:

27.1 +BGETLG: Get modem Log

Description
Collects all the modem log files and archive them in the FTP home directory.

Availability
Since FW version 1.1.1

Command Syntax
AT+BGETLG

Response Syntax
+BGETLG: Log is copied

Defined Values
None

Example:

Commands	Responses
AT+BGETLG	+BGETLG: Log is copied OK

Notes:

- The log.tgz file is removed from the modem when the modem resets.
- The log.tgz file may be retrieved from FTP or with BVDM, it contains a compressed archive of the modem status and configuration.
- Since FW 3.7.0, the command AT+BFTPE=1 must be used to start the FTP server.

27.2 +BLOGDS: Set SYSLOG reporting Destination

Description

This command is used to set a network destination for the events logged into the modem syslog (system log facility).

Availability

Since FW version 3.4.0

Command Syntax

AT+BLOGDS=<IP destination>,<port>,<protocol>

Response Syntax

OK

Defined Values

<IP destination>

"*nnn.nnn.nnn.nnn*"	IP address of the server setup to receive syslog entries from the modem.

<port>

1-65535	Destination port number. The default port is 514.

<protocol>

0	**UDP (default)**
1	TCP (not supported on BT-6000 series and BT-5000v2 series)

Example:

Commands	Responses
AT+BLOGDS?	+BLOGDS:"205.205.17.71",514,0 OK
AT+BLOGDS="205.205.17.71",514,0	OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.

27.3 +BLOGMD: Set SYSLOG reporting Mode

Description

This command is used to set the syslog (system log facility) reporting mode.

Availability

Since FW version 3.4.0

Command Syntax

AT+BLOGMD=<Mode>

Response Syntax

OK

Defined Values

<mode>:

0	local only (default), syslog events are recorded in a file
1	network only, syslog events are reported over the network
2	local and network, syslog events are reported in a file and over the network.

Example:

Commands	Responses
AT+BLOGMD?	+BLOGMD:0 OK
AT+BLOGMD=2	OK

Notes:

- This command affects the Active profile; use AT&W to make the changes permanent.

27.4 +BSERST: Query the state of the serial port

Description
This command is used to query the state of the serial port.

Availability
Since FW version 3.4.0

Command Syntax
AT+BSERST?

Response Syntax
+BSERST: "
…
"
OK

Defined Values
None

Example:

Commands	Responses
AT+BSERST?	+BSERST: " serinfo:1.0 driver revision: 0: uart:AT91_SERIAL mmio:0xFEFFF200 irq:1 tx:11201 rx:11 RTS|CTS|DTR|DSR|CD|RI 1: uart:AT91_SERIAL mmio:0xFEFC0000 irq:6 tx:0 rx:0 DSR|CD|RI 2: uart:AT91_SERIAL mmio:0xFEFC4000 irq:7 tx:0 rx:0 DSR|CD|RI 3: uart:AT91_SERIAL mmio:0xFEFC8000 irq:8 tx:94 rx:37336 RTS|DTR|DSR|CD|RI 4: uart:AT91_SERIAL mmio:0xFEFCC000 irq:9 tx:29 rx:23 RTS|CTS|DTR|DSR|CD|RI " OK

The following table shows the allocation of serial port number per modem model:

Port # / Model	0	1	2	3	4	5
BT-4200	Internal	RF Diag	RF Data		User port	
BT-5200	Internal	RF Diag	RF Data	GPS	User port	
BT-4400	Internal	RF Diag	RF Data		User port	
BT-5400	Internal	RF Diag	RF Data	GPS	User port	
BT-4600	Internal				User port	
BT-5600	Internal			GPS	User port	
BT-5600v2	Internal	User port			GPS A	GPS B
BT-5800v2	Internal	User port			GPS A	GPS B
BT-6400	Internal	User port		RF Diag		
BT-6600	Internal	User port				
BT-6800	Internal	User port				

27.5 +BPINGH: Ping a Host IP address

Description

This command is used to diagnose IP connectivity problems. It reports the results of a 4-packet ping (ICMP echo requests) on a given IP address.

Note: Support of ICMP packets is subject to carrier policies. Some carriers disable support of this protocol on their networks.

Availability

Since FW version 3.4.0

Parameter “data bytes in packets” available since 3.8.10

Command Syntax

AT+BPINGH=<IP address>,<data bytes in packets>

Response Syntax

+BPINGH: "PING …

…

"

OK

Defined Values

<IP address>

"*nnn.nnn.nnn.nnn*" IP address of the host to ping.

<data bytes in packets>

nnnn Data bytes in each packet.

Example:

Commands	Responses
AT+BPINGH=?	+BPINGH: <IP Address>,data bytes in packets> OK
AT+BPINGH="205.205.17.71" or AT+BPINGH="205.205.17.71",1024	+BPINGH:"PING 205.205.17.71 (205.205.17.71): 0 data bytes 28 bytes from 205.205.17.71: icmp_seq=0 ttl=107 time=1384.7 ms 28 bytes from 205.205.17.71: icmp_seq=1 ttl=107 time=436.4 ms 28 bytes from 205.205.17.71: icmp_seq=2 ttl=107 time=201.9 ms 28 bytes from 205.205.17.71: icmp_seq=3 ttl=107 time=201.7 ms --- 205.205.17.71 ping statistics --- 4 packets transmitted, 4 packets received, 0% packet loss round-trip min/avg/max = 201.7/556.1/1384.7 ms " OK

27.6 +BPINGP: Ping a TCP/IP Port

Description

This command is used to diagnose IP connectivity problems. It reports the results of a connection attempt on a TCP IP address and port.

The timeout for establishing the connection is set to 30 seconds.

In case of success, the connection is closed immediately after being established.

Availability

Since FW version 3.6.1

Command Syntax

AT+BPINGP=<IP address>,<port>

Response Syntax

+BPINGP: <connection status>

OK or ERROR

Defined Values

<IP address>

"*nnn.nnn.nnn.nnn*" IP address of the host.

<port>

1..65535 TCP/IP port.

Example:

Commands	Responses
AT+BPINGP="66.201.210.204",80	+BPINGP: connection established after 0.472 sec OK
AT+BPINGP="66.201.210.204",8080	+BPINGP: Connection Timeout after 30.000 sec ERROR

27.7 +BCONTK: Query IP connection track table

Description

This diagnosis command is used to query the IP connection track table.

Availability

Since FW version 3.4.0

Command Syntax (specific connection)

AT+BCONTK=<connection Id>,<port>

Command Syntax (all connections)

AT+BCONTK?

Response Syntax

+BCONTK: "
…
"

OK

Defined Values

<connection Id>:

1..15 characters identifying the connection (example, "udp", "tcp", …)

<port>:

0	All the ports of the given <connection Id> are reported.
1..65535	Port number

Example:

Commands	Responses
AT+BCONTK="tcp", 6070	+BCONTK:" tcp 6 431736 ESTABLISHED src=192.168.111.20 dst=192.168.111.1 sport=60077 dport=6070 packets=13 bytes=543 src=192.168.111.1 dst=192.168.111.20 sport=6070 dport=60077 packets=11 bytes=821 [ASSURED] mark=0 use=1 " OK

27.8 +BNETST: Query the network state

Description
This diagnosis command is used to query the network state.

Availability
Since FW version 3.4.0

Command Syntax
AT+BNETST?

Response Syntax
+BNETST: "
…
"
OK

Defined Values
None

Example:

Commands	Responses
AT+BNETST?	+BNETST:" Active Internet connections (servers and established) Proto Recv-Q Send-Q Local Address Foreign Address State tcp 0 0 *:time *:* LISTEN tcp 0 0 *:discard *:* LISTEN tcp 0 0 *:daytime *:* LISTEN tcp 0 0 *:5070 *:* LISTEN tcp 0 0 *:9999 *:* LISTEN tcp 0 0 *:ftp *:* LISTEN tcp 0 0 *:6070 *:* LISTEN tcp 0 0 *:telnet *:* LISTEN tcp 0 0 192.168.111.1:6070 192.168.111.20:60077 ESTABLISHED udp 0 0 *:21000 *:* *truncated*" OK

27.9 +BSUPTM: Query the system up time

Description
This diagnosis command is used to query the system up time (how long since the last restart).

Availability
Since FW version 3.4.0 (version 3.4.9 added report on memory and process usage)

Command Syntax
AT+BSUPTM?

Response Syntax

+BSUPTM: "
…
"
OK

The response string includes:

- The modem system date: YYYY-MM-DD
- The modem system time: HH:MM:SS
- Memory Used / Total available in kilo bytes and percentage of free memory
- Number of processes
- CPU load average for the last 1, 5 and 15 minutes
- Modem up time (how long since last restart) in days, hours, minutes and seconds

Defined Values

None

Example:

Commands	Responses
AT+BSUPTM?	+BSUPTM:" 2010-05-03 12:55:01 Memory: 17768/29856 KB - 59% free - 53 processes - loads: 0.00, 0.05, 0.04 - up 7 min 35 s" OK

27.10 +BIFCON: Query network interface configuration

Description

This diagnosis command is used to query the configuration and statistics of a network interface. The available network interfaces depend on the modem configuration and state.

Availability

Since FW version 3.4.0

Command Syntax

AT+BIFCON=<interface name>

Response Syntax

+BIFCON: "
…
"

OK

Defined Values

<interface name>:

1..15 characters — Interface name:

"eth0"	Ethernet (RJ45) interface
"usb0"	Ethernet over USB interface
“wlan0”	Wi-Fi interface
"ppp0"	Point-to-point
"lo"	Loop-back Ethernet interface
"gre0"	GRE encapsulation interface

Example:

Commands	Responses
AT+BIFCON="usb0"	+BIFCON:" usb0 Link encap:Ethernet HWaddr 00:13:47:00:01:B7 inet addr:192.168.111.1 Bcast:192.168.111.255 Mask:255.255.255.0 UP BROADCAST RUNNING MTU:1500 Metric:1 RX packets:704 errors:0 dropped:0 overruns:0 frame:0 TX packets:285 errors:0 dropped:0 overruns:0 carrier:0 collisions:0 txqueuelen:1000 RX bytes:59387 (57.9 KiB) TX bytes:46277 (45.1 KiB) " OK

27.11 +BRFMST: Query RF Module serial ports state

Description

This diagnosis command is used to query the state of the RF module serial port.

Availability

Since FW version 3.4.0
BT-4600, BT-4600A, BT-5600, BT-5600A EVDO modems only.

Command Syntax

AT+BRFMST?

Response Syntax

+BRFMST: "
…
"
OK

Defined Values

None

Example:

Commands	Responses
AT+BRFMST?	+BRFMST: " 0 port 0 tx:64 rx:239 cd:2 CTS|DSR 0 port 1 tx:150270 rx:623170 RTS|DTR 0 port 2 tx:0 rx:0 " OK

27.12 +BRSTDI: Query modem reset reasons

Description
This diagnosis command is used to query up to the last 12 reasons why the modem reset.

Availability
Since FW version 3.7.2

Command Syntax
AT+BRSTDI?

Response Syntax

+BRSTDI: "
<date >,<time>,<action>,<reason>
"
OK

Defined Values

<date>: Reset date in YYYY-MM-DD format
<time>: Reset time in HH:MM:SS format (24 hours)
<action>: Action performed:

RESTART MODEM	The whole modem is reset.
RESTART BLUEX	The firmware is restarted.

<reason>: Reason for the reset.

Example:

Commands	Responses
AT+BRSTDI?	+BRSTDI: " 2009-03-11,16:14:26,RESTART MODEM,+BRESET=0 2009-03-11,16:42:21,RESTART MODEM,+BRESET=0 2009-04-24,16:17:05,RESTART MODEM,+BRESET=0 2009-04-24,16:22:27,RESTART MODEM,CnS OTASP reset 2009-06-22,14:57:54,RESTART MODEM,+BRESET=0 2009-06-22,16:31:33,RESTART MODEM,CnS OTASP reset 2009-06-29,11:53:00,RESTART MODEM,Failed to connect (DCTM max reached) " OK

27.13 +BSERVICE: Query modem IP services

Description

This diagnosis command is used to query settings of the modem IP services.

Availability

Since FW version 3.6.0

Command Syntax

AT+BSERVICE?

Response Syntax

+BSERVICE: tftp,<TFTP server IP>,<modem TFTP client IP>,69
OK

Defined Values

tftp	TFTP service (Advanced firmware upgrade)
<TFTP server IP >	IP address of the TFTP server used to retrieve code for Advanced Firmware upgrade.
<modem TFTP client IP >	IP address used by the modem during Advanced Firmware upgrade.
69	TFTP port number

Example:

Commands	Responses
AT+BSERVICE?	+BSERVICE: tftp,192.168.222.180,192.168.222.164,69 OK
AT+BSERVICE?	+BSERVICE: tftp,192.168.88.180,192.168.88.101,69 OK
AT+BSERVICE?	+BSERVICE: tftp,192.168.222.178,192.168.222.164,69 OK

27.14 +BUSBHOST: Query USB host information

Description
This command is used to query USB host information

Availability
Since FW version 3.8.9

Command Syntax
AT+BUSBHOST?

Response Syntax

+BUSBHOST: 1,1,”
…
“

OK

Example:

Commands	Responses
AT+BUSBHOST?	+BUSBHOST: 1,1," ftdi_sio ttyUSB3: FTDI USB Serial Device converter now disconnected from ttyUSB3 ftdi_sio ttyUSB4: FTDI USB Serial Device converter now disconnected from ttyUSB4 usb 1-2: FTDI USB Serial Device converter now attached to ttyUSB3 usb 1-2: FTDI USB Serial Device converter now attached to ttyUSB4 " OK

27.15 +BOVCMT: Control overcommit of system memory

Description
This command is used to query and setup overcommit of system memory

Availability
Since FW version 3.8.13

Command Syntax
AT+BOVCMT=<overcommit_memory>, <overcommit_ratio>

Response Syntax
+BOVCMT: 2,100

Defined Values
<overcommit_memory>

0	Default: as before
1	Never refuse any malloc()
2	Be precise about the overcommit - never commit a virtual address space larger than swap space plus a percentage (overcommit_ratio) of the physical memory
<overcommit_ratio>	0 – 100 (expressed as a percentage of physical memory)

Example:

Commands	Responses
AT+BOVCMT?	+BOVCMT: 2,100 OK
AT+BOVCMT= 2,50	OK

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