GB-1916

GNSS/Bluetooth Module

AT Commands Manual

Document history

Version	Date	Updates
1.0	July 19, 2017	First formal version

Contents

1. Introduction

The GGB-1916 Cellular Modules AT Commands Manual provides the necessary information to configure the applicable GGB-1916 cellular modules

1.1 AT commands types

In general AT commands comprises of three parts, which start with AT, followed by a command and ended with the line termination character <cr>. The response from each command varies and is documented within the following text. In general a successful command will respond with OK, whilst an unrecognized command will fail with an error.

1.1.1 Set command

Syntax	Description
AT+<x>=<…>	A set command configures the user-preferred values for the specified command.

1.1.2 Read command

Syntax	Description
AT+<x>?	A read command provides the current configuration of the command parameters.

1.1.3 Test command

Syntax	Description
AT+<x>=?	A test command returns the list of parameters allowed by the current command.

1.1.4 Action command

Syntax	Description
AT+<x>	An action command forces to execute a specific action for the command.

2. General Commands

2.1 AT+CGMI – Request Manufacturer Identification

Syntax

Type	Command	Response
Test	+CGMI=?	OK
Read	+CGMI	+CGMI: <manufacturer> OK

Description

Identifying the manufacturer identification

Field

Parameter	Type	Description
<manufacturer>	String	Manufacturer name

2.2 AT+CGMM – Request Model Identification

Syntax

Type	Command	Response
Test	+CGMM=?	OK
Read	+CGMM	+CGMM: <model> OK

Description

Identifying the model identification

Field

Parameter	Type	Description
<model>	String	Model name

2.3 AT+CGMR – Request Firmware Revision Identification

Syntax

Type	Command	Response
Test	+CGMR=?	OK
Read	+CGMR	+CGMR: <revision> OK

Description

Identifying the firmware revision identification

Field

Parameter	Type	Description
<revision>	String	Revision name

2.4 AT+CSCS – Select TE Character Set

Syntax

Type	Command	Response
Test	+CSCS=?	+CSCS: (list of supported <chset>s) OK
Read	+CSCS?	+CSCS: <chset> OK
Set	+CSCS=<chset>	OK note : If the function is retrieving an error, then return ERROR

Description

Set command informs TA which character set <chset> is used by the TE. TA is then able to convert character strings correctly between TE and MT character sets.

Field

Parameter	Type	Description
<chset>	String	● "GSM" GSM 7 bit default alphabet (3GPP TS 23.038); this setting causes easily software flow control (XON/XOFF) problems ● "HEX" character strings consist only of hexadecimal numbers

		from 00 to FF; e.g. "032FE6" equals three 8-bit characters with decimal values 3, 47 and 230; no conversions to the original MT character set shall be done. ● "IRA" International reference alphabet (ITU-T T.50) ● "PCCP437" PC character set Code Page 437 ● "UCS2" 16-bit universal multiple-octet coded character set (ISO/IEC10646); UCS2 character strings are converted to hexadecimal numbers from 0000 to FFFF; e.g. "004100620063" equals three 16-bit characters with decimal values 65, 98 and 99 ● "8859-1" ISO 8859 Latin character set ● "UCS2_08X1"

2.5 AT+GCAP – Request Complete Capabilities List

Syntax

Type	Command	Response
Test	+GCAP=?	OK
Read	+GCAP	+GCAP: <capability 1>[,<capability 2>[...]] OK

Description

Request complete capabilities list.

Field

Parameter	Type	Description
<capability>	String	The equipment supported command set list. Where: +CGSM: GSM ETSI command set +FCLASS: Fax command set

2.6 AT+GMI – Request Manufacturer Identification

Description

Same as AT+CGMI

2.7 AT+GMM – Request Model Identification

Description

Same as AT+CGMM

2.8 AT+GMR – Request Revision Identification

Description

Same as AT+CGMR

2.9 AT+CFUN – Set Phone Functionality

Syntax

Type	Command	Response
Test	+CFUN=?	+CFUN: (list of supported <fun>s), (list of supported <rst>s) OK
Read	+CFUN?	+CFUN: <fun> OK
Set	+CFUN=<fun>,<rst>	OK Note: If the function is retrieving an error, then return ERROR.

Description

AT+CFUN=0 turn off radio and SIM power. (Supported only for feature phone with feature option)

AT+CFUN=1,1 or AT+CFUN=4,1 can reset the target. (Supported only for feature phone)

AT+CFUN=1 can enter normal mode. (Supported only for module solution)

AT+CFUN=4 can enter flight mode. (Supported only for module solution)

Field

Parameter	Type	Description
<fun>	Number	● 1 : Full functionality ● 4: Disable phone both transmit and receive RF circuits (supported only for module solution) ● 0: Minimal functionality, turn off radio and SIM power.
<rst>	Number	● 0 : Do not reset the MT before setting it to <fun> power level ● 1 : Reset the MT before setting it to <fun> power level

2.10 AT&F – Set to Factory-Defined Configuration

Syntax

Type	Command	Response
Action	AT&F<value>	OK Note: If the function is retrieving an error, then return ERROR.

Description

Set to factory-defined configuration

Field

Parameter	Type	Description
<value>	Number	0 : Set parameters to factory defaults

2.11 AT&V – Display Current Configuration

Syntax

Type	Command	Response
Action	AT&V	DEFAULT PROFILE <user default configuration> USER PROFILE <user configuration> ACTIVE PROFILE <current configuration> OK

Description

Display Current Configuration

2.12 AT&W – Save Stored Profile

Syntax

Type	Command	Response
Action	AT&W	OK Note: If the function is retrieving an error, then return ERROR.

Description

Save Stored Profile

2.13 ATQ – Set Result Code Suppression Mode.

Syntax

Type	Command	Response
Action	ATQ<value>	For supported values If <value> is 0 then return OK. If <value> is 1 then return (none). For unsupported values If previous <value> was 0 then return ERROR. If previous <value> was 1 then return (none).

Description

Set result code suppression mode.

Field

Parameter	Type	Description
<value>	Number	● 0: DCE transmits result codes. ● 1: Result codes are suppressed and not transmitted.

2.14 ATV – Set DCE Response Format

Syntax

Type	Command	Response
Action	ATV<value>	If <value> is 0 then return 0. If <value> is 1 then return OK. Note: If the function is retrieving an error, then return ERROR.

Description

Set DCE response format.

Field

Parameter	Type	Description
<value>	Number	● 0: DCE transmits limited headers and trailers and numeric text. ● 1 : DCE transmits full headers and trailers and verbose response text

2.15 ATX – Set CONNECT Result Code Format

Syntax

Type	Command	Response
Action	ATX<value>	OK Note: If the function is retrieving an error, then return ERROR.

Description

The setting of this parameter determines whether or not the DCE transmits particular result codes to the DTE. It also controls whether or not the DCE verifies the presence of dial tone when it first goes off-hook to begin dialing, and whether or not engaged tone (busy signal) detection is enabled. However, this setting has no effect on the operation of the W dial modifier, which always checks for dial tone regardless of this setting, or on the busy signal detection capability of the W and @ dial modifiers.

Field

Parameter	Type	Description
<value>	Number	● 0: CONNECT result code is given upon entering online data state. Dial tone and busy detection are disabled. ● 1: CONNECT <text> result code is given upon entering online data state. Dial tone and busy detection are disabled. ● 2: CONNECT <text> result code is given upon entering online data state. Dial tone detection is enabled, and busy detection is disabled. ● 3: CONNECT <text> result code is given upon entering online data state. Dial tone detection is disabled, and busy detection is enabled. ● 4: CONNECT <text> result code is given upon entering online data state. Dial tone and busy detection are both enabled.

2.16 ATZ – Reset To Default Configuration

Syntax

Type	Command	Response
Action	ATZ<value>	OK Note: If the function is retrieving an error, then return ERROR.

Description

Reset to default configuration

Field

Parameter	Type	Description
<value>	Number	0 : Set parameters to factory defaults

2.17 ATI – Identification Information

Syntax

Type	Command	Response
Read	ATI	<model> <revision> OK

Description

Request Identification Information

Field

Parameter	Type	Description
<model>	String	model name
<revision>	String	Revision name

3. Status Control Commands

3.1 AT+CEER – Extended Error Report

Syntax

Type	Command	Response
Test	+CEER=?	OK
Read	+CEER	+CEER: <cause>, <report> OK

Description

Execution command causes the TA to return one or more lines of information text <report>, which offer the user of the TA an extended report of the reason for

- The failure in the last unsuccessful call setup (originating or answering) or in-call modification;
- The last call release;

Field

Parameter	Type	Description
<cause>	Number	Code number of the received error
<report>	String	Code description of the received error

<cause>	<report>
0	NONE
1	CM_UNASSIGNED_NUM
3	CM_NO_ROUTE_TO_DESTINATION
6	CM_CHANNEL_UN_ACCP
8	CM_OPR_DTR_BARRING
10	CM_CALL_BARRED*
11	CM_RESERVED*
16	CM_NORMAL_CALL_CLR
17	CM_USER_BUSY
18	CM_NO_USER_RESPONDING
19	CM_NO_ANSWER_ON_ALERT
21	CM_CALL_REJECTED
22	CM_NUMBER_CHANGED
25	CM_PRE_EMPTION

			26	CM_NON_SEL_USER_CLEAR	
			27	CM_DEST_OUT_OF_ORDER	
			28	CM_INVALID_NUMBER_FORMAT	
			29	CM_FACILITY_REJECT	
			30	CM_RES_STATUS_ENQ	
			31	CM_NORMAL_UNSPECIFIED	
			34	CM_NO_CIRCUIT_CHANNEL_AVAIL	
			38	CM_NETWORK_OUT_OF_ORDER	
			41	CM_TEMPORARY_FAILURE	
			42	CM_SWITCH_EQUIPMENT_CONGESTION	
			43	CM_ACCESS_INFO_DISCARDED	
			44	CM_REQUESTED_CKT_CHANEL_NOT_AVIL	
			47	CM_RESOURCE_UNAVAIL_UNSPECIFIED	
			49	CM_QOS_UNAVAIL	
			50	CM_REQ_FAC_NOT_SUBS	
			55	CM_IC_BAR_CUG	
			57	CM_BEARER_CAP_NOT_AUTHORISED	
			58	CM_BEARER_CAP_NOT_AVAIL	
			63	CM_SER_UNAVAILABLE	
			65	CM_BEARER_SER_UNIMPL	
			68	CM_ACM_EXCEEDED	
			69	CM_REQ_FACILITY_UNAVAIL	
			70	CM_RESTR_DIGITAL_INFO	
			79	CM_SER_OPT_UNIMPL	
			81	CM_INVALID_TI_VALUE	
			87	CM_USER_NOT_IN_CUG	
			88	CM_INCOMPATIBLE_DEST	
			91	CM_INVALID_TRANSIT_NW_SEL	
			95	CM_SEMANTIC_ERR	
			96	CM_INVALID_MANDATORY_INF	
			97	CM_MSG_TYPE_UNIMPL	
			98	CM_MSG_TYPE_NOT_COMPATIBLE	
			99	CM_IE_NON_EX	
			100	CM_COND_IE_ERR	
			101	CM_INCOMP_MESG_WITH_STATE	
			102	CM_RECOVERY_ON_TIMER_EXPIRY	
			111	CM_PROTOCOL_ERR_UNSPECIFIED	

			127	CM_INTER_WRK_UNSPECIFIED	
			128	ERROR_CAUSE_UNKNOWN*	

3.2 AT+CTZR – Time Zone Reporting

Syntax

Type	Command	Response
Test	+CTZR=?	+CTZR: (list of supported <onoff>s) OK
Read	+CTZR?	+CTZR: <onoff> OK
Set	+CTZR=<onoff>	OK Note: If the function is retrieving an error, then return ERROR.

Description

Enables and disables the time zone change event reporting.

Field

Parameter	Type	Description
<onoff>	Number	● 0: Disable automatic time zone update via NITZ (default). ● 1: Enable automatic time zone update via NITZ.

4. Serial Interface Control Commands

4.1 AT&C – Set UART Data Carrier Detect (DCD) Function Mode

Syntax

Type	Command	Response
Action	AT&C<mode>	OK Note: If the function is retrieving an error, then return ERROR.

Description

Set UART Data Carrier Detect (DCD) Function Mode

Field

Parameter	Type	Description
<mode>	Number	● 0 : DCD line is always active ● 1 : DCD line is active in the presence of data carrier only

4.2 AT&D – Set UART Data Terminal Ready (DTR-PC view) Function Mode

Syntax

Type	Command	Response
Action	AT&D<mode>	OK Note: If the function is retrieving an error, then return ERROR.

Description

Set UART Data Terminal Ready (DTR-PC view) Function Mode

Field

Parameter	Type	Description
<mode>	Number	● 0 : Ignores status on DTR ● 1 : DTR drop from active to inactive: Change to command mode while retaining the connected data call ● 2: DTR drop from active to inactive: Disconnect data call, change to command mode. During state DTR inactive auto answer is off

4.3 AT+IFC – DTE-DCE Local Flow Control

Syntax

Type	Command	Response
Test	+IFC=?	+IFC: (list of supported <DCE_by_DTE>s), (list of supported <DTE_by_DCE>s) OK
Read	+IFC?	+IFC: <DCE_by_DTE>, <DTE_by_DCE> OK
Set	+IFC=<DCE_by_DTE>,<DTE_by_DCE>	OK Note: If the function is retrieving an error, then return ERROR.

Description

DTE-DCE local flow control

Field

Parameter	Type	Description
<DCE_by_DTE>	Number	Specifies the method to be used by the DTE to control the flow of received data from the DCE ● 0 : None ● 1 : Enable software flow control ● 2 : Enable hardware flow control
<DTE_by_DCE>	Number	Specifies the method to be used by the DCE to control the flow of transmitted data from the DTE ● 0 : None ● 1 : Enable software flow control ● 2 : Enable hardware flow control

4.4 AT+IPR – Local Serial Port Data Rate

Syntax

Type	Command	Response
Test	+IPR=?	+IPR: (list of supported <rate>s) OK

Read	+IPR?	+IPR: <rate> OK
Set	+IPR=<rate>	OK Note: If the function is retrieving an error, then return ERROR.

Description

Specifies the data rate, at which the DCE will accept commands. May be used to select operation at rates at which the DCE is not capable of automatically detecting the data rate being used by the DTE.

Field

Parameter	Type	Description
<rate>	Number	The rate, in bits per second, at which the DTE-DCE interface should operate. Currently, the following rates are supported: 0, 300, 600, 1200, 2400, 4800, 9600, 14400, 19200, 38400, 57600, 115200, 230400, 460800, 921600.If unspecified, or set to zero, automatic detection is selected, and the character format is forced to auto-detect (AT+ICF=0). Supported auto-detectable <rate> values and fixed only <rate> values are both the same.

5. GPS related Commands

5.1 AT+EGPSC – Power On/Off GPS

Syntax

Type	Command	Response
Test	+EGPSC=?	+EGPSC:(list of supported<state>s) OK
Read	+EGPSC?	+EGPSP:<state> OK
Set	+EGPSC=<state>	OK Note: If the function is retrieving an error, then return ERROR.

Description

Power on/off GPS.

Field

Parameter	Type	Description
<state>	Number	● 0 : power off GPS ● 1 : power on GPS

5.2 AT+EGPSS – Send PMTK Command

Syntax

Type	Command	Response
Test	+EGPSS=?	OK
Set	+EGPSS="<pmtk>"	OK Note: If the function is retrieving an error, then return ERROR.

Description

Send MTK private GPS command – PMTK command to GPS chip.

Field

Parameter	Type	Description
<pmtk>	String	PMTK command string. No ?$‘ before the PMTK string

5.3 AT+EGPSEPO – Set EPO Parameter

Syntax

Type	Command	Response
Test	+EGPSEPO=?	+EGPSEPO:(list of supported<status>s)(list of supported<data account>s) OK
Read	+EGPSEPO?	+EGPSEPO:<status><data account> OK
Set	+EGPSEPO=<status>,<data account>	OK Note: If the function is retrieving an error, then return ERROR.

Description

Enable/Disable EPO downloading and aiding features. Set the data account used by EPO downloading.

Field

Parameter	Type	Description
<status>	Number	● 0 : Disable EPO ● 1 : Enable EPO
<data account>	Number	Network data account is used to access internet and set by command "AT+EGDCONT".

5.4 AT+EGPSTS – Set GPS Time Sync Parameter

Syntax

Type	Command	Response
Test	+EGPSTS=?	+EGPSTS:(list of supported<status>s)(list of supported<data account>s) OK
Read	+EGPSTS?	+EGPSTS:<status><data account>

		OK
Set	+EGPSTS=<status>,<data account>	OK Note: If the function is retrieving an error, then return ERROR.

Description

Enable/Disable GPS time sync and aiding. Set time sync network data account.

Field

Parameter	Type	Description
<status>	Number	● 0 : Disable GPS time sync ● 1 : Enable GPS time sync
<data account>	Number	Network data account is used to access internet and set by command "AT+EGDCONT".

6. Hardware Related Commands

6.1 AT+CCLK – Clock

Syntax

Type	Command	Response
Test	+CCLK=?	OK
Read	+CCLK?	+CCLK: <time> OK
Set	+CCLK=<time>	OK Note: If the function is retrieving an error, then return ERROR.

Description

Set command sets the real-time clock of the MT. Read command returns the current setting of the clock.

Field

Parameter	Type	Description
<time>	String	Format is "YY/MM/DD, HH:MM:SS", where characters indicate year (two last digits), month, day, hour, minutes, seconds.

6.2 AT+CALA – Alarm

Syntax

Type	Command	Response
Test	+CALA=?	+CALA: (0) OK
Read	+CALA?	+CALA: <time>,<n1>,,,<recurr>[<CR><LF>+CALA: <time>,<n2>,,,<recurr>[...]] OK
Set	+CALA=<time>[,<n>[,<type>[,<text>[,<recur>]]]]	OK Note: If the function is retrieving an error, then return ERROR.

Description

Sets an alarm time in the ME

Field

Parameter	Type	Description
<n>	Number	indicating the index of the alarm
<type>	Number	We don‘t care about type value.
<text>	String	text content
<recurr>	String	indicating day of weeks for the alarm in one of the following format: "<1..7>[,<1..7>[…]]" – Sets a recurrent alarm for one or more days in the week. The digits 1 to 7 corresponds to the days in the week, Monday (1), …, Sunday (7). Example: The string "1, 2, 3, 4, 5" may be used to set an alarm for all weekdays “0" – Sets a recurrent alarm for all days in the week.
<time>	String	Format is "YY/MM/DD, HH:MM:SS", where characters indicate year (two last digits), month, day, hour, minutes, seconds.

6.3 AT+CALD – Delete Alarm

Syntax

Type	Command	Response
Test	+CALD=?	+CALD: (list of supported <n>s) OK
Set	+CALD=<n>	OK Note: If the function is retrieving an error, then return ERROR.

Description

Action command deletes an alarm in the MT.

Field

Parameter	Type	Description
<n>	Number	indicating the index of the alarm; default is manufacturer specific

6.4 AT+CBC – Battery Charge

Syntax

Type	Command	Response

Test	+CBC=?	+CBC: (list of supported <bcs>s),(list of supported <bcl>s) OK
Read	+CBC	+CBC: <bcs>,<bcl> OK

Description

Execution and read command returns battery connection status <bcs> and battery level <bcl> of the ME.

Field

Parameter	Type	Description
<bcs>	Number	● 0 : MT is powered by the battery ● 2 : MT does not have a battery connected
<bcl>	Number	● 0 : Battery is exhausted, or MT does not have a battery connected ● 1...100 : Battery has 1 100 percent of capacity remaining

6.5 AT+LSSLEEP – Enable Sleep Mode

Syntax

Type	Command	Response
Set	+LSSLEEP=<value>	OK Note: If the function is retrieving an error, then return ERROR.

Description

Enable sleep mode.

Field

Parameter	Type	Description
<value>	Number	● 1 : enable sleep mode

6.6 AT+LSGPIOC – GPIO select configuration

Syntax

Type	Command	Response
Test	+LSGPIOC=?	+LSGPIOC: (list of supported <gpio_id>),(list of supported

		<gpio_mode>),(list of supported <gpio_out_val>\<gpio_in_pull_val >),(list of supported <gpio_in_pull_en>) OK
Read	LSGPIOC?	+LSGPIOC: <gpio_id>,<gpio_mode>[<gpio_id>,<gpio_mode>[....]] OK
Set	+LSGPIOC=<gpio_id>,<gpio_mode>[,<gpio_out_val>\<gpio_in_pull_val>],<gpio_in_pull_en>	OK Note: If the function is retrieving an error, then return ERROR.

Description

Configures the GPIOs pins as input or output. When the GPIOs pins are configured as output pin, it is possible to set the value.

Field

Parameter	Type	Description
<gpio_id>	Number	GPIO pin identifier ● 4: pin number 4 ● 5: pin number 5 ● 6: pin number 6 ● 7: pin number 7 ● 9: pin number 9
<gpio_mode>	Number	Mode identifier: configured function ● 0: output ● 1: input
<gpio_out_val>	Number	GPIO output value (for output function <gpio_mode>=0 only): ● 0: low ● 1: high
<gpio_in_pull_val >	Number	GPIO input value (for input function <gpio_mode>=1 only): ● 0: pull down ● 1: pull up
<gpio_in_pull_en>	Number	GPIO input value (for input function <gpio_mode>=1 only): ● 0: Disable pull up/pull down ● 1: Enable pull up/pull down

6.7 AT+LSGPIOR – GPIO read

Syntax

Type	Command	Response
Test	+LSGPIOR=?	+LSGPIOR: (list of supported <gpio_id>s) OK
Set	+LSGPIOR=<gpio_id>	+LSGPIOR: <gpio_id>,<gpio_val> OK Note: If the function is retrieving an error, then return ERROR.

Description

Read the current value of the specified GPIO pin, no matter whether it is configured as input or output.

Field

Parameter	Type	Description
<gpio_id>	Number	GPIO pin identifier: pin number
<gpio_val>	Number	GPIO value. Allowed values are 0 and 1

6.8 AT+LSGPIOW – GPIO set

Syntax

Type	Command	Response
Test	+LSGPIOW=?	+UGPIOW: (list of supported <gpio_id>s),(list of supported <gpio_out_val>s) OK
Set	+LSGPIOW=<gpio_id>,<gpio_out_val>	OK Note: If the function is retrieving an error, then return ERROR.

Description

Set the output of the specified GPIO pin, but only if it is configured in output function.

Field

Parameter	Type	Description

<gpio_id>	Number	GPIO pin identifier: pin number
<gpio_out_val>	Number	GPIO value. Allowed values are 0 and 1

6.9 AT+LSADC – ADC read

Syntax

Type	Command	Response
Test	+LSADC=?	+LSADC: OK
Read	+LSADC?	+LSADC: <adc_val> OK Note: If the function is retrieving an error, then return ERROR.

Description

Read the current value of the specified ADC, given in mV. The syntax and the parameters range are shown in the response to the test command if ADC is supported; if no ADC is supported by the modem, an error is returned. Before you want to read the current value of ADC, please use the command AT+EADC=1 to enable ADC function.

Field

Parameter	Type	Description
<adc_val>	Number	Current ADC value measured on the specified ADC pin, typical range [0-2800 mV]

6.10 AT+EADC – ADC Channel Indication

Syntax

Type	Command	Response
Test	+EADC=?	+EADC: (list of supported <op>s) OK
Set	+EADC=<op>	OK Note: If the function is retrieving an error, then return ERROR.

Description

When +EADC is enabled, the ADC channel indication is sent as unsolicited result code to DTE.

Field

Parameter	Type	Description
<op>	Number	● 0: Disable ● 1: Enable

6.11 Unsolicited result code: +EADC

Format

Unsolicited result code
+EADC: <ADC0>,<ADC1>,<ADC2>,<ADC3>,<ADC4>

Description

This is indication report the battery status to AP.

Field

Parameter	Type	Description
<ADC0>	Number	Battery voltage (micro voltage)
<ADC1>	Number	Battery temperature (1/100 C)
<ADC2>	Number	AUX voltage (micro voltage)
<ADC3>	Number	Charge current (micro A)
<ADC4>	Number	Charger voltage (micro voltage)

7. Other Commands

7.1 ATE – Command Echo Mode

Syntax

Type	Command	Response
Action	ATE<value>	OK Note: If the function is retrieving an error, then return ERROR.

Description

The setting of this parameter determines whether or not the DCE echoes characters received from the DTE during command state and online command state.

Field

Parameter	Type	Description
<value>	Number	● 0 DCE does not echo characters during command state and online command state. ● 1 DCE echoes characters during command state and online command state.

7.2 ATS3 – Command Line Termination Character

Syntax

Type	Command	Response
Read	ATS3?	<value> OK
Action	ATS3<value>	OK Note: If the function is retrieving an error, then return ERROR.

Description

This S-parameter represents the decimal IA5 value of the character recognized by the DCE from the DTE to terminate an incoming command line. It is also generated by the DCE as part of the header, trailer, and terminator for result codes and information text, along with the S4 parameter (see the description of the V parameter for usage).

Field

Parameter	Type	Description
<value>	Number	● 13: Carriage return character (CR, IA5 0/13). ● 0 to 127: Set command line termination character to this value.

7.3 ATS4 – Response Formatting Character

Syntax

Type	Command	Response
Read	ATS4?	<value> OK
Action	ATS4<value>	OK Note: If the function is retrieving an error, then return ERROR.

Description

This S-parameter represents the decimal IA5 value of the character generated by the DCE as part of the header, trailer, and terminator for result codes and information text, along with the S3 parameter (see the description of the V parameter for usage).

Field

Parameter	Type	Description
<value>	Number	● 10: Line feed character (LF, IA5 0/10).. ● 0 to 127: Set response formatting character to this value.

7.4 ATS5 – Command Line Editing Character

Syntax

Type	Command	Response
Read	ATS5?	<value> OK
Action	ATS5<value>	OK Note: If the function is retrieving an error, then return ERROR.

Description

This S-parameter represents the decimal IA5 value of the character recognized by the DCE as a request to delete

from the command line the immediately preceding character.

Field

Parameter	Type	Description
<value>	Number	● 8 Backspace character (BS, IA5 0/8). ● 0 to 127 Set command line editing character to this value.

Description

Receive data from socket.

Note: The max receives data length is 512 bytes raw data.

Field

Parameter	Type	Description
<socket id >	Number	When create a socket, if success will return this value

8. BT Connection Manager Commands

8.1 AT+EBTPWR – Power on/off BT

Syntax

Type	Command	Response
Test	+EBTPWR=?	+EBTPWR: (list of supported <op>s) OK
Set	+EBTPWR=<op>	OK Note: If the function is retrieving an error, then return ERROR.

Description

The command is used to power on or off BT. The power on command could only be sent when BT is power off. And the power off command could only be sent when BT is power on.

Field

Parameter	Type	Description
<op>	Number	● 0: Power on ● 1: Power off

8.2 AT+EBTNAME – Read/Write BT device local name

Syntax

Type	Command	Response
Test	+EBTNAME=?	OK
Read	+EBTNAME?	+EBTNAME: <device name> OK
Set	+EBTNAME=<device name>	OK Note: If the function is retrieving an error, then return ERROR.

Description

The command is used to read or write BT device local name.

Field

Parameter	Type	Description
<device name>	String	BT name do not need use "" double quotes. The max invalid length of the device name is 54.

8.3 AT+EBTADDR – Read BT device local address

Syntax

Type	Command	Response
Test	+EBTADDR=?	OK
Read	+EBTADDR?	+EBTADDR: <address> OK

Description

The command is used to read BT device local address. This CMD should only sent to Target when BT is power off.

Field

Parameter	Type	Description
<address>	String	BT address do not need use "" double quotes. Length should be 12 characters. Example: xxxxxxyyzzzz It means ：LAP is "xxxxxx", UAP is "yy", NAP is "zzzz"

8.4 AT+EBTINQ – Inquiry BT devices

Syntax

Type	Command	Response
Test	+EBTINQ=?	+EBTINQ: (0-255),(0-255),(0-255),(0-4294967295) OK
Read	+EBTINQ?	+EBTINQ: <interval>,<poll time>,<device number>,<Cod> OK
Set	+EBTINQ=<interval>,<poll time>,<device number>,<Cod>	OK Note: If the function is retrieving an error, then return ERROR.
Action	+EBTINQ	OK

Description

The command is used to inquiry BT devices.

Field

Parameter	Type	Description
<interval>	Number	The value should greater than poll time. (Note: Current the parameter does not work, because of BT stack already have itself timer)
<poll time>	Number	The max seconds number for inquring
<device number>	Number	
<Cod>	Number	ref: https://www.bluetooth.org/en-us/specification/assignednumbers/baseband

8.5 AT+EBTINQC – Cancel inquiry BT devices

Syntax

Type	Command	Response
Test	+EBTINQC=?	OK
Action	+EBTINQC	OK

Description

The command is used to cancel inquiry BT devices. Should be sent only when it's inquiring.

8.6 AT+EBTVISB – Set BT visible

Syntax

Type	Command	Response
Test	+EBTVISB=?	+EBTVISB: (0-1),(0-255) OK
Set	+EBTVISB=<n>,<time>	OK Note: If the function is retrieving an error, then return ERROR.

Description

The command is used to set BT visible

Field

Parameter	Type	Description

<n>	Number	● 0: Non-visible ● 1: Visible
<time>	Number	Visible time ,seconds (0~255) ● 0: Visible forever ● 1~255: Visible time seconds

8.7 AT+EBTRNAME – Read remote BT device name

Syntax

Type	Command	Response
Test	+EBTRNAME=?	OK
Set	+EBTRNAME=<address>	+EBTRNAME:<device name> OK Note: If the function is retrieving an error, then return ERROR.

Description

The command is used to read remote BT device name

Field

Parameter	Type	Description
<address>	String	BT address do not need use "" double quotes. Length should be 12 characters
<device name>	String	BT name do not need use "" double quotes.

8.8 AT+EBTPAIR – Pair BT device

Syntax

Type	Command	Response
Test	+EBTPAIR=?	+EBTPAIR: ,(0-255) OK
Set	+EBTPAIR=<address>,<timeout>	+EBTPAIR:<address>,<name>,<enable 16 digits pin>[,<password>] OK Note: If the function is retrieving an error, then return ERROR.

Description

The command is used to pair BT device

Field

Parameter	Type	Description
<address>	String	BT address do not need use "" double quotes. Length should be 12 characters
<timeout>	Number	Time in seconds for pairing timeout. The value should between 1 and 20. 0 means 20s. Value larger than 20 will be treat as 20.
<name>	String	BT name do not need use "" double quotes.
<enable 16 digits pin>	Number	● 0: Not enable the 16 digits pin ● 1: Enable the 16 digits pin
<password>	String	

8.9 AT+EBTPAIRCNF – Allow or disallow BT pair

Syntax

Type	Command	Response
Test	+EBTPAIRCNF=?	+EBTPAIRCNF: (0-1), OK
Set	+EBTPAIRCNF=<n>,<password>	OK Note: If the function is retrieving an error, then return ERROR.

Description

The command is used to allow or disallow BT pair.

Field

Parameter	Type	Description
<n>	Number	● 0: Disallow BT pair ● 1: Allow BT pair
<password>	String	Password need use "" double quotes.

8.10 AT+EBTRP – Read remote BT device support profiles

Syntax

Type	Command	Response
Test	+EBTRP=?	OK

Set	+EBTRP=<address>	+EBTRP:<profile_bitmap> OK

Description

The command is used to read remote BT device support profiles which we support also.

Field

Parameter	Type	Description
<address>	String	BT address do not need use "" double quotes. Length should be 12 characters
<profile_bitmap>	Number	uint64, one bit is a profile support or not. ● 0: not support ● 1: supported Example : profile_bitmap value is 1 , 0x0000000000000001 means profile 1 supported, others not supported. Bit1: SPP Profile, UUID = 0x1101. Bit2-Bit64: All reserved.

8.11 AT+EBTSENM – Read/Write security mode, encryption mode

Syntax

Type	Command	Response
Test	+EBTSENM=?	+EBTSENM: (0-4),(0-2) OK
Read	+EBTSENM?	+EBTSENM:<sec-mod>,<enc-mod> OK
Set	+EBTSENM=<sec-mod>,<enc mod>	OK Note: If the function is retrieving an error, then return ERROR.

Description

The command is used to read or write BT security and encryption mode. Currently we only support security mode setting. Note that the value of queried value of security mode is decide by BT Stack, may not be the same with setting value.)

Field

Parameter	Type	Description
<sec-mod>	Number	● 0: Off ● 1: Non-secure ● 2: Service ● 3: Link ● 4: Unknown
<enc-mod>	Number	● 0: Off ● 1: pt_to_pt ● 2: pt_to_pt_and_bcast

8.12 AT+EBTOPAD – Get device list

Syntax

Type	Command	Response
Test	+EBTOPAD=?	+EBTOPAD: (0-4), OK
Set	+EBTOPAD=<n>,<address>	+EBTOPAD:<index>,<address> OK

Description

The command is used to operate device list.

Field

Parameter	Type	Description
<address>	String	BT address do not need use "" double quotes. Length should be 12 characters
<n>	Number	● 0: Delete ● 1: Locate ● 2: Delete all ● 3: Most recently used ● 4: Return total list
<index>	Number	

8.13 AT+EBTSTATE – Query connect manger and profile status

Syntax

Type	Command	Response
Test	+EBTSTATE=?	+EBTSTATE: ,(0-4294967295) OK
Read	+EBTSTATE	+EBTSTATE: <CM state> OK
Set	+EBTSTATE=<address>,<profile id>	+EBTSTATE: <profile state> OK

Description

The command is used to query BT connect manger and profile status.

Field

Parameter	Type	Description
<address>	String	BT address do not need use "" double quotes. Length should be 12 characters
<CM state>	Number	● 1: START, BT is powering on. ● 2: READY, BT powered on, stand by for working ● 3: PAIRING ● 4: INQUIRING ● 5: CONNECTING ● 6: CONNECTED ● 7: NUKNOWN
<profile state>	Number	● 1: START, Reserved. ● 2: IDLE, APP for this profile not activated. ● 3: ACTIVATE, APP for this profile activated. ● 4: AUTHORIZING, authorizing for connection. ● 5: DISCONNECTING, disconnecting for connection. ● 6: DEACTIVATING, deactivating for profile APP.
<profile id>	Number	See BT Profile SPEC for profile UUID.

8.14 AT+EBTENSNIFF – Set or get SNIFF mode level

Syntax

Type	Command	Response
Test	+EBTENSNIFF=?	+EBTENSNIFF: (0-1),(0-4)

		OK
Read	+EBTENSNIFF=<op>,<level>	+EBTENSNIFF:<level> OK

Description

The command is used to read or set BT sniff level

Field

Parameter	Type	Description
<op>	Number	● 0: Write. ● 1: Read.
<level>	Number	● 0: Reserved. ● 1: Reserved. ● 2: Reserved. ● 3: Reserved.

8.15 AT+EBTCONN – Connect BT profile

Syntax

Type	Command	Response
Test	+EBTCONN=?	+EBTCONN: (0-1),,(0-4294967295),(0-1) OK
Set	+EBTCONN=<n>,<address>,<profile id>,<role>	OK

Description

The command is used to connect BT profile.

Field

Parameter	Type	Description
<address>	String	BT address do not need use "" double quotes. Length should be 12 characters
<n>	Number	● 0: Disconnect ● 1: Connect
<profile id>	Number	Please see BT Profile SPEC for profile UUID.

<role>	Number	● 0: Client ● 1: Server

8.16 AT+LSBTSPP – Send Data through BT SPP interface

Syntax

Type	Command	Response
Test	+LSBTSPP=?	OK
Set	+LSBTSPP=<data>	OK

Description

The command is used to send data through BT SPP interface.

Field

Parameter	Type	Description
<data>	String	User defined content. The max invalid length of the data content is 63.

8.17 AT+LSTALKWALK – Open or close Talkie-Walkie Bluetooth audio stream

Syntax

Type	Command	Response
Test	+LSTALKWALK=?	+LSTALKWALK OK
Set	+LSTALKWALK=<n>	OK Note: If the function is retrieving an error, then return ERROR.

Description

Open/Close talkie walkie Bluetooth audio stream.

Field

Parameter	Type	Description
<n>	Number	● 0 : Close ● 1 : Open

8.18 AT+LSTALKWALKSPK – Talkie-Walkie's Loudspeaker Volume Level

Syntax

Type	Command	Response
Test	+LSTALKWALKSPK=?	+LSTALKWALKSPK: (list of supported <level>s)
Read	+LSTALKWALKSPK?	+LSTALKWALKSPK: <level> OK
Set	+LSTALKWALKSPK=<level>	OK Note: If the function is retrieving an error, then return ERROR.

Description

Sets the volume of the Talkie-Walkie's loudspeaker.

Field

Parameter	Type	Description
<level>	Number	Value with manufacturer specific range.

8.19 AT+LSTALKWALKMIC – Talkie-Walkie's Microphone Sensitivity Level

Syntax

Type	Command	Response
Test	+LSTALKWALKMIC=?	+LSTALKWALKMIC: (list of supported <level>s)
Read	+LSTALKWALKMIC?	+LSTALKWALKMIC: <level> OK
Set	+LSTALKWALKMIC=<level>	OK Note: If the function is retrieving an error, then return ERROR.

Description

Sets the sensitivity of the Talkie-Walkie's microphone.

Field

Parameter	Type	Description
<level>	Number	Value with manufacturer specific range.

8.20 Unsolicited result code: Pair indication +EBTPAIR

Format

Unsolicited result code
+EBTPAIR:<address>,<device name>,<enable 16 digits pin>[,<password>]

Description

The command is used to notify other device want to pair local BT, and may be need input password or pin code.

Field

Parameter	Type	Description
<address>	String	BT address do not need use "" double quotes. Length should be 12 characters
<device name>	String	BT name do not need use "" double quotes.
< enable 16 digits pin >	Number	● 0: Not enable the 16 digits pin ● 1: Enable the 16 digits pin
<password>	String	Password do not need use "" double quotes.

8.21 Unsolicited result code: Inquiry indication +EBTINQ

Format

Unsolicited result code
+EBTINQ:<address>,<device name>

Description

The command is used to notify other BT devices are found. It should be output after command AT+EBTINQ.

Field

Parameter	Type	Description
<address>	String	BT address do not need use "" double quotes. Length should be 12 characters
<device name>	String	BT name do not need use "" double quotes.

8.22 Unsolicited result code: Inquiry completed indication +EBTIND

Format

Unsolicited result code
+EBTIND:<result>,<is cancelled>

Description

The command is used to notify that the inquiring is completed.

Field

Parameter	Type	Description
<result >	Number	● 0: Failed ● 1: Successful
<is cancelled>	Number	● 0: Not be canceled ● 1: Be canceled

8.23 Unsolicited result code: Passive pair response +EBTPAIRRES

Format

Unsolicited result code
+EBTPAIRRES:<result>,<is first>,[address]

Description

The command is used to notify the response of passive pairing.

Field

Parameter	Type	Description
<result >	Number	● 0: Failed ● 1: Successful
<is first>	Number	● 0: Not be first ● 1: Be first
<address>	String	BT address do not need use "" double quotes. Length should be 12 characters

8.24 Unsolicited result code: Notify profile connected +EBTCONN

Format

Unsolicited result code
+EBTCONN:<result>,<address>,<profile id>

Description

The command is used to notify BT profile connected.

Field

Parameter	Type	Description
<result >	Number	● 0: Failed

		● 1: Successful
<address>	String	BT address do not need use "" double quotes. Length should be 12 characters
<profile id>	Number	Please see BT Profile SPEC for profile UUID.

8.25 Unsolicited result code: Notify all supported profiles are (de)active +EBTPRFAC

Format

Unsolicited result code
+EBTPRFAC:<state>

Description

The command is used to notify all supported profiles are deactivate or active.

Field

Parameter	Type	Description
<state>	Number	● 0: All deactivate ● 1: All active

8.26 Unsolicited result code: Notify profile disconnected +EBTDISC

Format

Unsolicited result code
+EBTDISC:<n>,<address>[,<profile id>,<passive>]

Description

The command is used to notify BT connections are disconnected.

Field

Parameter	Type	Description
<n>	Number	● 1: One connection is disconnected ● 2: All connections are disconnected
<address>	String	BT address do not need use "" double quotes. Length should be 12 characters
<profile id>	Number	Please see BT Profile SPEC for profile UUID.
<passive>	Number	● 0: Not passive disconnect ● 1: Passive disconnected

8.27 Unsolicited result code: Notify visibility is changed +EBTVISB

Format

Unsolicited result code
+EBTVISB:3,<is because AT>

Description

The command is used to notify BT visibility is changed.

Field

Parameter	Type	Description
<is because AT>	Number	● 0: Not because receive AT+EBTVISB ● 1: Because receive AT+EBTVISB

8.28 Unsolicited result code: Notify BT is Reset +EBTRST

Format

Unsolicited result code
+EBTRST:1

Description

The command is used to notify BT is reset.

8.29 Unsolicited result code: Notify bond profile fail + EBTPRFBND

Format

Unsolicited result code
+EBTPRFBND:<profile id>,0

Description

The command is used to notify BT bond profile fail.

Field

Parameter	Type	Description
<profile id>	Number	Please see BT Profile SPEC for profile UUID.

8.30 Unsolicited result code: Notify BT devices need connect our profile +EBTPRFAU

Format

Unsolicited result code
+EBTPRFAU:<Profile id>,<address>,<device name>

Description

The command is used to notify other BT devices need connect our profile.

Field

Parameter	Type	Description
<profile id>	Number	Please see BT Profile SPEC for profile UUID.
<address>	String	BT address do not need use "" double quotes. Length should be 12 characters
<device name>	String	BT name do not need use "" double quotes.

8.31 Unsolicited result code: Notify profile connected +EBTPRFCN

Format

Unsolicited result code
+EBTPRFCN:<profile id>,<result>

Description

The command is used to notify BT profile connected.

Field

Parameter	Type	Description
<profile id>	Number	Please see BT Profile SPEC for profile UUID.
<result>	Number	● 0: Failed ● 1: Successful

8.32 Unsolicited result code: Notify profile disconnected +EBTPRFDSCN

Format

Unsolicited result code
+EBTPRFCN:<profile id>,<address>

Description

The command is used to notify BT profile disconnected.

Field

Parameter	Type	Description
<profile id>	Number	Please see BT Profile SPEC for profile UUID.
<address>	String	BT address do not need use "" double quotes. Length should be 12 characters

8.33 Unsolicited result code: SPP message indication +BTSPP

Format

Unsolicited result code
+BTSPP: <data>

Description

The command is used to notify other BT device sends data to our BT SPP interface.

Field

Parameter	Type	Description
<data>	String	User defined content.

9. Generic Attribute Profile (GATT) Commands

9.1 AT+GATSREG – (De) Register GATT Server

Syntax

Type	Command	Response
Test	+GATSREG =?	+GATSREG OK
Set	+GATSREG=<op>,<user_id>	+GATSREG:<op>,<user_id>,<result> OK Note: If the function is retrieving an error, then return ERROR.

Description

(De)Register GATT Server with user_id.

Note: Each GATT Server AT can only send after the prior AT return OK/ERROR.

Field

Parameter	Type	Description
<op>	Number	● 0: Deregister ● 1: Register
<user_id>	String	User id of GATT server, or the name of the GATT server. A Hex value string, each char of it should in set { '0'~'9','a'~'f','A'~'F'}. Max length of it is 32.
<result>	Number	● 0: Success ● Others: Un-success

9.2 AT+GATSS - Add/Remove a service

Syntax

Type	Command	Response
Test	+GATSS=?	+GATSS OK
Set (Add)	+GATSS=<op>,<user_id>,<uuid>,<num_handles>,<is_primary>,<inst>	+GATSS:<op>,<user_id>,<uuid>,<is_primary>,<result>,<inst>,<service_handle> OK Note: If the function is retrieving an error, then return ERROR.
Set	+GATSS=<op>,<user_id>,<serv	+GATSS:<op>,<user_id>,<result>,<service_handle>

(Remove)	ice_handle>	OK Note: If the function is retrieving an error, then return ERROR.

Description

Add or remove a service to or from a GATT Server.

Note: Each GATT Server AT can only send after the prior AT return OK/ERROR.

Field

Parameter	Type	Description
<op>	Number	● 0: Remove ● 1: Add
<user_id>	String	User id of GATT server, or the name of the GATT server. A Hex value string, each char of it should in set { '0'~'9','a'~'f','A'~'F'}. Max length of it is 32.
<uuid>	String	The UUID of the service, a string with hex value, max length is 32, min length is 4.
<num_handles>	Number	Number of handles of this service. Dec format.
<is_primary>	Number	● 0: Not primary service ● 1: Primary service
<inst>	Number	Instance id of this UUID. Dec format.
<result>	Number	● 0: Success ● Others: Un-success
<service_handle>	Number	The handle of this service. Dec format.

9.3 AT+GATSC - Add a characteristic to an existed service

Syntax

Type	Command	Response
Test	+GATSC=?	+GATSC OK
Set	+GATSC=<op>,<user_id>,<service_handle>,<uuid>,<inst>,<prop>,<permission>	+GATSC:<op>,<user_id>,<service_handle>,<uuid>,<inst>,<result>,<char_handle> OK Note: If the function is retrieving an error, then return ERROR.

Description

Add a characteristic to an existed service.

Note: Each GATT Server AT can only send after the prior AT return OK/ERROR.

Field

<table>
<tr><th>Parameter</th><th>Type</th><th>Description</th></tr>
<tr><td><op></td><td>Number</td><td>● 1: Add</td></tr>
<tr><td><user_id></td><td>String</td><td>User id of GATT server, or the name of the GATT server. A Hex value string, each char of it should in set { ‘0’~’9’,’a’~’f’,’A’~’F’}. Max length of it is 32.</td></tr>
<tr><td><service_handle></td><td>Number</td><td>The handle of this service. Dec format.</td></tr>
<tr><td><uuid></td><td>String</td><td>The UUID of the service, a string with hex value, max length is 32, min length is 4.</td></tr>
<tr><td><inst></td><td>Number</td><td>Instance id of this UUID. Dec format.</td></tr>
<tr><td><prop></td><td>Number</td><td>Properties of this characteristic. Dec format. (0 - 4294967295)
<table>
<tr><th>Properties</th><th>Dec format map</th></tr>
<tr><td>Default</td><td>0</td></tr>
<tr><td>Broadcast</td><td>1</td></tr>
<tr><td>Read</td><td>2</td></tr>
<tr><td>Write without response</td><td>4</td></tr>
<tr><td>Write</td><td>8</td></tr>
<tr><td>Notify</td><td>16</td></tr>
<tr><td>Indicate</td><td>32</td></tr>
<tr><td>Signed write</td><td>64</td></tr>
<tr><td>Extended properties</td><td>128</td></tr>
</table></td></tr>
<tr><td><permission></td><td>Number</td><td>Permission of this characteristic. Dec format. (0 - 4294967295)
<table>
<tr><th>Properties</th><th>Dec format map</th></tr>
<tr><td>Read</td><td>1</td></tr>
<tr><td>Read with encrypted protection</td><td>2</td></tr>
<tr><td>Read with MITM protection</td><td>4</td></tr>
<tr><td>Write</td><td>16</td></tr>
<tr><td>Write with encrypted protection</td><td>32</td></tr>
<tr><td>Write with MITM protection</td><td>64</td></tr>
<tr><td>Signed write</td><td>128</td></tr>
<tr><td>Signed write with MITM protection</td><td>256</td></tr>
</table></td></tr>
<tr><td><result></td><td>Number</td><td>● 0: Success
● Others: Un-success</td></tr>
<tr><td><char_handle></td><td>Number</td><td>The handle of this Characteristic. Dec format.</td></tr>
</table>

9.4 AT+GATSD - Add a descriptor to an existed service

Syntax

Type	Command	Response
Test	+GATSD=?	+GATSD OK
Set	+GATSD=<op>,<user_id>,<service_handle>,<uuid>,<inst>,<permission>	+GATSD:<op>,<user_id>,<service_handle>,<uuid>,<inst>,<result>,<handle> OK Note: If the function is retrieving an error, then return ERROR.

Description

Add a descriptor to an existed service.

Note: Each GATT Server AT can only send after the prior AT return OK/ERROR.

Field

Parameter	Type	Description
<op>	Number	● 1: Add
<user_id>	String	User id of GATT server, or the name of the GATT server. A Hex value string, each char of it should in set { '0'~'9','a'~'f','A'~'F'}. Max length of it is 32.
<service_handle>	Number	The handle of this service. Dec format.
<uuid>	String	The UUID of the descriptor, a string with hex value, max length is 32, min length is 4.
<inst>	Number	Instance id of this UUID. Dec format.
<permission>	Number	Permission of this descriptor. Dec format. (0 - 4294967295)
<result>	Number	● 0: Success ● Others: Un-success
<handle>	Number	The handle of this descriptor. Dec format.

9.5 AT+GATSST - Start/Stop a service

Syntax

Type	Command	Response
Test	+GATSST=?	+GATSST OK
Set	+GATSST=<op>,<user_id>,<service_handle>,<transport>	+GATSST:<op>,<user_id>,< result >,<service_handle> OK Note: If the function is retrieving an error, then return ERROR.

Description

Start or stop a service.

Note: Each GATT Server AT can only send after the prior AT return OK/ERROR.

Field

Parameter	Type	Description
<op>	Number	● 0: Stop ● 1: Start
<user_id>	String	User id of GATT server, or the name of the GATT server. A Hex value string, each char of it should in set { '0'~'9','a'~'f','A'~'F'}. Max length of it is 32.
<service_handle>	Number	The handle of this service. Dec format.
<transport>	Number	Transport way to start service. ● 0: LE ● 1: BR/EDR ● 2: Dual mode
<result>	Number	● 0: Success ● Others: Un-success

9.6 AT+GATSL - Start/Stop advertising

Syntax

Type	Command	Response
Test	+GATSL=?	+GATSL OK
Set	+GATSL=<user_id>,<op>	+GATSL: <user_id>,<result> OK Note: If the function is retrieving an error, then return ERROR.

Description

Start or stop advertising.

Note: Each GATT Server AT can only send after the prior AT return OK/ERROR.

Field

Parameter	Type	Description
<op>	Number	● 0: Stop ● 1: Start
<user_id>	String	User id of GATT server, or the name of the GATT server. A Hex value string,

		each char of it should in set { ‘0’~’9’,’a’~’f’,’A’~’F’}. Max length of it is 32.

9.7 AT+GATADV - Set Advertising parameters

Syntax

Type	Command	Response
Test	+GATADV=?	+GATADV OK
Set	+GATADV=<min_interval>,<max_interval>	OK Note: If the function is retrieving an error, then return ERROR.

Description

Set advertising parameters.

Note: Each GATT Server AT can only send after the prior AT return OK/ERROR.

Field

Parameter	Type	Description
<min_interval>	Number	Minimum advertising interval for undirected and low duty cycle directed advertising. Dec format. Range: 32 to 16384.
<max_interval>	Number	Maximum advertising interval for undirected and low duty cycle directed advertising. Dec format. Range: 32 to 16384.

9.8 AT+GATCPU - Connection parameters update

Syntax

Type	Command	Response
Test	+GATCPU=?	+GATCPU OK
Set	+GATCPU=<addr>,<min_interval>,<max_interval>,<timeout>,<latency>	OK Note: If the function is retrieving an error, then return ERROR.

Description

Connection parameters update.

Note: Each GATT Server AT can only send after the prior AT return OK/ERROR.

Field

Parameter	Type	Description
<addr>	Number	Address of the peer device. HEX value.
<min_interval>	Number	Minimum value of the connection interval. Dec format. Range: 6 to 3200.
<max_interval>	Number	Maximum value of the connection interval. Dec format. Range: 6 to 3200.
<timeout>	Number	Supervision timeout for the connection. Dec format. Range: 10 to 3200.
<latency>	Number	Maximum allowed slave latency for the connection specified as the number of connection events. Dec format. Range: 0 to 499.

9.9 AT+GATSIND: send an indication to a client

Syntax

Type	Command	Response
Test	+GATSIND=?	+GATSIND OK
Set	+GATSIND=<user_id>,<conn_id>,<attr_handle>,<need_confirm>,<value>	+GATSIND:<result>,<user_id>,<conn_id>,<attr_handle> OK Note: If the function is retrieving an error, then return ERROR.

Description

Send an indication or notification to a client.

Note: Each GATT Server AT can only send after the prior AT return OK/ERROR.

Field

Parameter	Type	Description
<user_id>	String	User id of GATT server, or the name of the GATT server. A Hex value string, each char of it should in set { '0'~'9','a'~'f','A'~'F'}. Max length of it is 32.
<conn_id>	Number	The connection id of current connection.
<attr_handle>	Number	The handle of the characteristic value. Dec format.
<need_confirm>	Number	Need client confirm when send indication, not when send notification. ● 0: No ● 1: Yes
<value>	String	The value need to be notified. Hex format.
<result>	Number	● 0: Success ● Others: Un-success

9.10 AT+GATSRSP - send a response to a client's read or write operation

Syntax

Type	Command	Response
Test	+GATSRSP=?	+GATSRSP OK
Set	+GATSRSP=<user_id>,<client_result>,<conn_id>,<trans_id>,<attr_handle>,<value>	+GATSRSP:<result>,<user_id>,<conn_id>,<attr_handle> OK Note: If the function is retrieving an error, then return ERROR.

Description

Send response to a client.

Note: Each GATT Server AT can only send after the prior AT return OK/ERROR.

Field

Parameter	Type	Description
<user_id>	String	User id of GATT server, or the name of the GATT server. A Hex value string, each char of it should in set { '0'~'9','a'~'f','A'~'F'}. Max length of it is 32.
<client_result>	Number	Result of response for client request. 0-255
<conn_id>	Number	The connection id of current connection.
<trans_id>	Number	The ID of the current transaction. 0-255.
<attr_handle>	Number	The handle of the attribute. Dec format.
<value>	String	The value need to be response. Hex format.
<result>	Number	● 0: Success ● Others: Un-success
<handle>	Number	The handle of this descriptor. Dec format.

9.11 AT+LSGATTNMEA: send GPS NMEA indications to a client

Syntax

Type	Command	Response
Test	+LSGATTNMEA=?	+LSGATTNMEA: OK
Set	+LSGATTNMEA=<onoff>	+LSGATTNMEA:<result> OK Note: If the function is retrieving an error, then return ERROR.

Description

Send GPS NMEA indications to a client periodically. (1 second)

Note: Each GATT Server AT can only send after the prior AT return OK/ERROR.

Field

Parameter	Type	Description
<onoff>	Number	● 0: Disable periodical GPS NMEA indications ● 1: Enable periodical GPS NMEA indications
<result>	Number	● 0: Success ● 1: Un-success (BLE is disabled) ● 2: Un-success (GPS is disabled) ● 3: Un-success (GPS and BLE are disabled)

9.12 Unsolicited result code : Notify when a connection or disconnection comes +GATSCON

Format

Unsolicited result code
+GATSCON:<op>,<user_id>,<result>,<addr>,<conn_id>

Description

Notify when connection's status change.

Field

Parameter	Type	Description
<op>	Number	● 0: Disconnect ● 1: Connect
<user_id>	String	User id of GATT server, or the name of the GATT server. A Hex value string, each char of it should in set { '0'~'9','a'~'f','A'~'F'}. Max length of it is 32.
<result>	Number	● 0: Success ● Others: Un-success
<addr>	Number	Address of the peer device. HEX value.
<conn_id>	Number	The connection id of current connection.

9.13 Unsolicited result code: Notify when client's read request comes +GATRREQ

Format

Unsolicited result code
+GATRREQ:<user_id>,<conn_id>,<trans_id>,<addr>,<attr_handle>,<is_long>,<offset>

Description

Notify when a client's read request comes.

Field

Parameter	Type	Description
<user_id>	String	User id of GATT server, or the name of the GATT server. A Hex value string, each char of it should in set { '0'~'9','a'~'f','A'~'F'}. Max length of it is 32.
<conn_id>	Number	The connection id of current connection.
<trans_id>	Number	The id of the current transaction. 0-255.
<addr>	Number	Address of the peer device. HEX value.
<attr_handle>	Number	Handle of attribute. Dec format.
<is_long>	Number	Tell server that the request is one or several requests.
<offset>	Number	Offset of the request. 0 –65535

9.14 Unsolicited result code: Notify when client's write request comes +GATWREQ

Format

Unsolicited result code
+GATWREQ:<user_id>,<conn_id>,<trans_id>,<addr>,<attr_handle>,<value>,<need_rsp>,<is_prepare>,<offset>

Description

Notify when a client's write request comes.

Field

Parameter	Type	Description
<user_id>	String	User id of GATT server, or the name of the GATT server. A Hex value string, each char of it should in set { '0'~'9','a'~'f','A'~'F'}. Max length of it is 32.
<conn_id>	Number	The connection id of current connection.
<trans_id>	Number	The id of the current transaction. 0-255.
<addr>	Number	Address of the peer device. HEX value.
<attr_handle>	Number	Handle of attribute. Dec format.

<value>	String	The value need to be write. Hex format.
<need_rsp>	Number	Whether client need server's response. ● 0: No ● 1: Yes
<is_prepare>	Number	Whether or not server execute request immediately. ● 1: No ● 2: Yes
<offset>	Number	Offset of the request. 0 –65535