GV55W @Track Air Interface Protocol

GSM/GPRS/WCDMA/GNSS Tracker

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0. Revision History

Version	Date	Author	Description of Change
1.00	2017-10-27	Felix Jiang	1. Initial.
1.01	2019-04-18	Abert Xu	1. Modified the value range of <*GEO ID*> in the **AT+GTGEO** command from 0 – 19 to 0 – 99. 2. Added Bit 18 to <*Event Mask*> in the **AT+GTCFG** command.

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1. Overview

1.1.Scope of This Document

The @Track Air Interface Protocol is a digital communication interface based on printable ASCII characters over SMS or UMTS, which is used for all communications between the backend server and the terminal. The backend server sends a command to the terminal and then the terminal confirms the receipt with an acknowledgement message. If configured, the terminal also sends report messages to the backend server.

The purpose of this document is to describe how to build the backend server based on the @Track Air Interface Protocol.

1.2.Terms and Abbreviations

Abbreviation	Description
APN	Access Point Network
ASCII	American National Standard Code for Information Interchange
UMTS	Universal Mobile Telecommunications System
WCDMA	Wideband Code Division Multiple Access
GNSS	Global Navigation Satellite System
HDOP	Horizontal Dilution of Precision
ICCID	Integrated Circuit Card Identity
IP	Internet Protocol
SMS	Short Message Service
TCP	Transmission Control Protocol
UDP	User Datagram Protocol
UTC	Coordinated Universal Time

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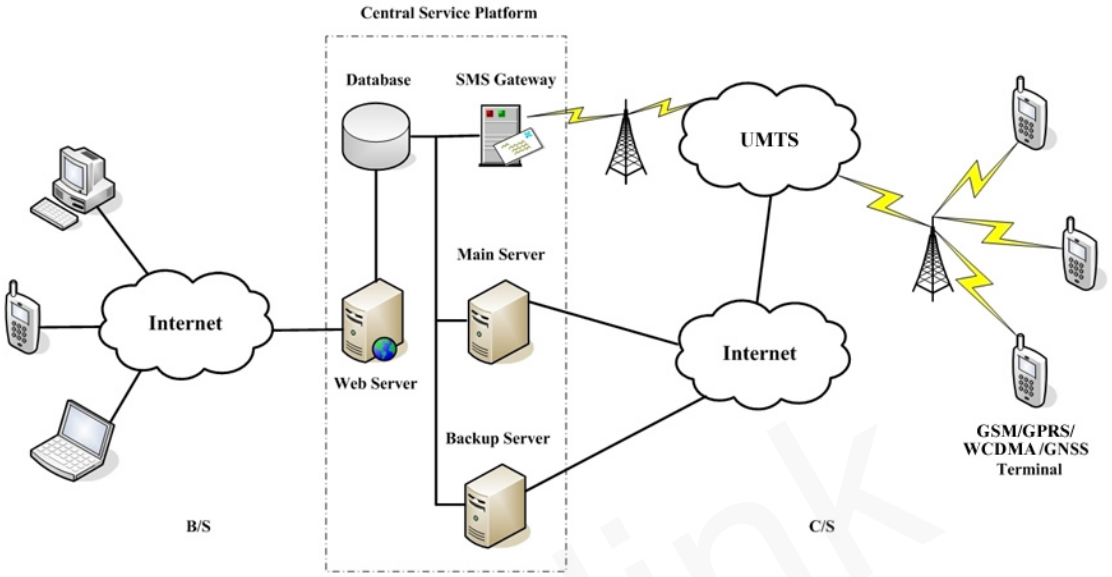
2. System Architecture



The backend server needs to be accessible by many terminals and should have the following abilities:

- ✧ The backend server should be able to access the internet and listen for the connection originating from the terminal.
- ✧ The backend server should be able to support TCP or UDP connection with the terminal. It should be able to receive data from the terminal and send data to the terminal.
- ✧ The backend server should be able to receive and send SMS.

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3. Message Description

3.1.Message Format

All of the @Track Air Interface Protocol messages are composed of printable ASCII characters. Message format which varies with message type is shown below:

Message Format	Message Type
AT+GTXXX=<parameter1>,<parameter2>,…$	Command
+ACK:GTXXX,<parameter1>,<parameter2>,…$	Acknowledgement
+RESP:GTXXX,<parameter1>,<parameter2>,…$	Report

The entire message string ends with the character '$'.

The characters 'XXX' allow the identification of the difference between messages.

The "<parameter1>,<parameter2>,…" carry the message's parameters. The number of parameters is different in different messages. The ASCII character ',' is used to separate the neighbouring parameter characters. The parameter string may contain the following ASCII characters: '0'–'9', 'a'–'z', and 'A'–'Z'.

Details of each message format are available in the corresponding message sections.

By sending Commands to the terminal, the backend server can either configure and query the parameters of the terminal or control the terminal when it performs specific actions. When the terminal receives Commands over the air, it will reply with a corresponding Acknowledgement message.

According to the configuration of the parameters, the terminal can send Report messages to the backend server. Please see the following figure:

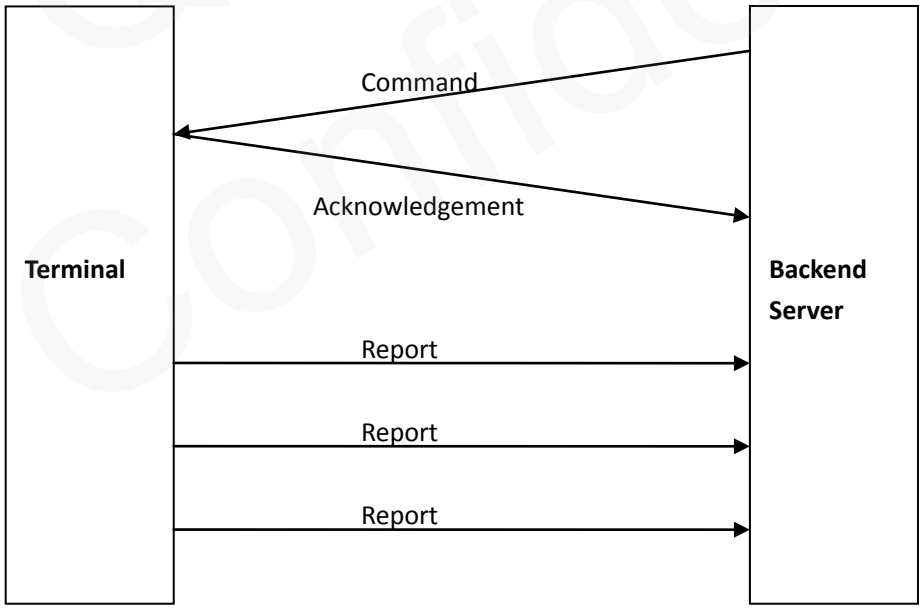

Figure 1: @Track Protocol Message Flow

3.2.Command and Acknowledgement

3.2.1.Server Connection

3.2.1.1.Bearer Setting Information

The command **AT+GTBSI** is used to configure the WCDMA parameters.

➢ **AT+GTBSI=**

Example: **AT+GTBSI=gv55w,cmnet,,,,,,,0000$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv55w
APN	<=40	(ASCII)	
APN User Name	<=30	(ASCII)	
APN Password	<=30	(ASCII)	
Reserved	0		
Reserved	0		
Reserved	0		
Network Mode	1	0-2	0
Serial Number	4	(HEX)	
Tail Character	1	$	$

✧ <*Password*>: The valid characters for the password include '0'–9', 'a' –'z', and 'A' –'Z'. The default value is "gv55w".

✧ <*APN*>: Access point name (APN).

✧ <*APN User Name*>: The WCDMA APN user name. If the parameter field is empty, the current value for this parameter will be cleared.

✧ <*APN Password*>: The WCDMA APN password. If the parameter field is empty, the current value for this parameter will be cleared.

✧ <*Reserved*>: Not used at present. Please keep the field empty.

✧ <Network Mode>: The mobile network mode the device works in.

- 0: Auto.
- 1: GSM only.
- 2**:** WCDMA only.

✧ <*Serial Number*>: The serial number of a command. It will be included in the ACK message of the command.

✧ <*Tail Character*>: A character to indicate the end of the command. It must be '$'.

The acknowledgment message of the **AT+GTBSI** command:

- **+ACK:GTBSI,**

Example: **+ACK:GTBSI,500100,135790246811220,,0000,20090214093254,11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', '_''0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', '_'	
Serial Number	4	(HEX)(HEX)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)(HEX)	
Tail Character	1	$	$

- <*Protocol Version*>: The protocol version that the terminal conforms to. The first two characters represent the device type. As shown in the example, "**50**" means GV55 new version. The middle two characters represent the major version number of the protocol and the last two characters represent the minor version number of the protocol. Both version numbers are hex digits. For example, "**020A**" means version 2.10.
- <*Unique ID*>: The (IMEI) of the terminal.
- <*Device Name*>: The specified name of the device.
- <*Serial Number*>: A serial number which is the same as the <*Serial Number*> in the corresponding command. It distinguishes which command the ACK message is for.
- <*Send Time*>: The local time to send the ACK message.
- <*Count Number*>: A self-increasing count number in each acknowledgment message and report message. It begins from 0000 and increases by 1 for each message. And it recycles back after "FFFF".
- <*Tail Character*>: A character to indicate the end of the command. It must be '$'.

Note: Only after both the command **AT+GTBSI** and **AT+GTSRI** are properly set can the ACK messages and other report messages be sent to the backend server.

3.2.1.2.Backend Server Registration Information

The command **AT+GTSRI** is used to configure where and how to report all the messages, including the server information and the method of communication between the backend server and the terminal. When the terminal is configured correctly, it should be able to report data to the backend server.

➢ **AT+GTSRI=**

Example: **AT+GTSRI=gv55w,3,,1,116.226.44.17,7011,116.226.45.229,7012,+8613812341234,15,1,,,,,0001$** **AT+GTSRI=gv55w,3,,1,some.host.name,7011,116.226.45.229,7012,+8613812341234,15,1,,,,30,0001$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv55w
Report Mode	1	0 – 7	0
Reserved	0		
Buffer Mode	1	0 - 2	1
Main Server IP / Domain Name	<=60	(ASCII)	
Main Server Port	<=5	0 – 65535	
Backup Server IP / Domain Name	<=60	(ASCII)	
Backup Server Port	<=5	0 – 65535	
SMS Gateway	<=20	(Call Number)	
Heartbeat Interval	<=3	0|2 - 360(min)	0
SACK Enable	1	0|1	0
Protocol Format	1	0|1	0
SMS ACK Enable	1	0|1	0
Reserved	0		
Connection life	<=3	0|10 - 600(sec)	30
Serial Number	4	(HEX)	
Tail Character	1	$	$

✧ <*Report Mode*>: This parameter defines the communication method between the backend server and the terminal. Supported report modes are as follows:

- 0: Stop mode.
- 1: TCP short-connection preferred mode. The connection is based on TCP protocol. The terminal connects to the backend server every time it needs to send data and will shut down the connection when the terminal finishes sending data. If the terminal fails to establish TCP connection to the backend server (both Main Server and Backup Server), it will try to send data via SMS to the SMS gateway.

- 2: TCP short-connection forced mode. The connection is based on TCP protocol. The terminal connects to the backend server every time it needs to send data and will shut down the connection when the terminal finishes sending data. If the terminal fails to establish TCP connection to the backend server (both Main Server and Backup Server), it will store the data in the memory buffer if buffer report function is enabled. Otherwise the data is dropped.
- 3: TCP long-connection mode. The connection is based on TCP protocol. The terminal connects to the backend server and maintains the connection using heartbeat data. The backend server should respond to the heartbeat data from the terminals.
- 4: UDP mode. The terminal will send data to the backend server by UDP protocol. Receiving protocol commands via UDP is supported if the WCDMA network allows it. It is recommended to enable heartbeat sending and **+RESP:GTPDP** report in the case of receiving commands via UDP.
- 5: Forced SMS mode. Only SMS is used for data transmission.
- 6: UDP with fixed local port. Like the UDP mode, the terminal will send data using UDP protocol. The difference is the terminal will use a fixed local port rather than a random port to communicate with the server in this mode. Thus the backend server could use the identical port to communicate with all terminals if the backend server and the terminals are all in the same VPN network. The port number the device uses is the same as the port number of the primary server.
- 7: Backup server supported TCP long-connection mode. The connection is based on TCP protocol. The terminal connects to the backend server and maintains the connection using the heartbeat data. The backend server should respond to the heartbeat data from the terminals. If the connection to the main server is lost, it will try to connect to the backup server. If the connection to the backup server is also lost, it will try to connect to the main server again.

✧ <*Buffer Mode*>: The working mode the buffer report function. If the buffer report function is enabled and the device goes into areas without WCDMA network coverage, it will store all reports locally. When the device goes to areas with WCDMA network coverage again, it will then send all the buffered reports through WCDMA.

- 0: Disable the buffer report function.
- 1: Low priority - Enable the buffer report function. In this mode, the device will send the buffered messages after real time messages.
- 2: High priority - Enable the buffer report function. In this mode, the device will send all the buffered messages before real time messages except the SOS message (**+RESP:GTSOS**).

✧ <*Main Server IP / Domain Name*>: The IP address or the domain name of the primary server.

✧ <*Main Server Port*>: The port of the primary server.

✧ <*Backup Server IP / Domain Name*>: The IP address or the domain name of the backup server.

✧ <*Backup Server Port*>: The port of the backup server.

✧ <*SMS Gateway*>: A maximum of 20 characters including the optional national code starting with "+" for sending SMS messages. Short code (for example, 10086) is also supported.

✧ <*Heartbeat Interval*>: The interval for sending the heartbeat message (**+ACK:GTHBD**) when

<*Report Mode*> is TCP long-connection mode or UDP mode. If it is set to 0, no heartbeat message will be sent.

✧ <*SACK Enable*>: This parameter defines whether the backend server should respond to the terminal with a SACK message when receiving a message from the terminal.

- 0: The backend server does not reply with a SACK message after receiving a message from the terminal.
- 1: The backend server replies with a SACK message when receiving a message from the terminal.

✧ <*Protocol Format*>: This parameter defines the format of the report message sent from the device to the backend server. 0 means "ASCII format" and 1 means "HEX format".

✧ <*SMS ACK Enable*>: A numeral to indicate whether to send an acknowledgement message to the original number when the command is sent via SMS.

- 0: The device will send the acknowledgement message to the backend server according to the mode configured by <*Report Mode*>.
- 1: The device will send the acknowledgement message to the original number via SMS if the command is received via SMS.

✧ <*Connection Life*>: A numeral to indicate the period of time over which TCP short connection is maintained for receiving commands from the server. If there is no data transmission within the time specified by <*Connection Life*>, the TCP connection will be closed. Unit: second.

The acknowledgment message of the **AT+GTSRI** command:

➢ **+ACK:GTSRI,**

Example: **+ACK:GTSRI,500100,135790246811220,,0001,20090214093254,11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', '_''0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', '_'	
Serial Number	4	(HEX)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

Note: Only after both the commands **AT+GTBSI** and **AT+GTSRI** are properly set can the ACK messages and other report messages be sent to the backend server.

3.2.1.3.Quick Start Setting

The command **AT+GTQSS** is used to configure the network parameters and backend server information if the length of all the settings is no greater than 160 bytes; otherwise the two commands **AT+GTBSI** and **AT+GTSRI** are used to configure those settings.

- **AT+GTQSS=**

Example: **AT+GTQSS=gv55w,cmnet,,,3,,1,116.226.44.17,7011,116.226.45.229,7012,+8613812341234,15,1,,,0002$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv55w
APN	<=40		
APN User Name	<=30		
APN Password	<=30		
Report Mode	1	0 – 7	0
Reserved	0		
Buffer Mode	1	0 - 2	1
Main Server IP / Domain Name	<=60	(ASCII)	
Main Server Port	<=5	0 – 65535	
Backup Server IP / Domain Name	<=60	(ASCII)	
Backup Server Port	<=5	0 – 65535	
SMS Gateway	<=20	(Call Number)	
Heartbeat Interval	<=3	0|2 - 360(min)	0
SACK Enable	1	0|1	0
Protocol Format	1	0|1	0
Reserved	0		
Serial Number	4	(HEX)	
Tail Character	1	$	$

The acknowledgment message of the **AT+GTQSS** command:

- **+ACK:GTQSS,**

Example:

+ACK:GTQSS,500100,135790246811220,,0002,20090214093254,11F0$			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', '_''0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', '_'	
Serial Number	4	(HEX)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

3.2.2.Device Configuration

3.2.2.1.Global Configuration

The **AT+GTCFG** command is used to configure the global parameters.

➢ **AT+GTCFG=**

Example: **AT+GTCFG=gv55w,123456,gv55w,,,,,,,,,,,,,,,,,0,0003$** **AT+GTCFG=gv55w,gv55w,gv55w,1,123.4,,,7F,0,3,3DEF,,1,1,300,1,,1,1,1F,0,FFFF$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv55w
New Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', '_'	GV55W
ODO Enable	1	0|1	0
ODO Initial Mileage	<=9	0.0 - 4294967.0(km)	0.0
Reserved	0		
Reserved	0		
Report Composition Mask	<=4	(HEX)	003F
Power Saving Mode	1	0 – 2	1
Event Info Mask	2	(HEX)	00

Event Mask	<=8	(HEX)	00003DEF
Reserved	0		
LED On	1	0|1	0
Info Report Enable	1	0|1	0
Info Report Interval	<=5	30 - 86400(sec)	300
Location Request Mask	2	00 - 03|10 - 13|20 - 23	00
Reserved	0		
Backup Battery Charge Mode	1	0|1	0
AGPS Mode	1	0|1	0
GSM Report	4	(HEX)	000F
GNSS Lost Time	2	0 – 30min	0
Serial Number	4	(HEX)	
Tail Character	1	$	$

- <*New Password*>: It is set to change the current password.
- <*Device Name*>: An ASCII string which represents the name of the device.
- <*ODO Enable*>: Enable/disable the odograph function to calculate the total mileage. The current mileage is included in every position report message.
- <*ODO Initial Mileage*>: The initial value for calculating the total mileage.
- <*Report Composition Mask*>: Bitwise mask to configure the composition of a report message, especially the composition of GNSS information.
  - Bit 0 for <*Speed*>
  - Bit 1 for <*Azimuth*>
  - Bit 2 for <*Altitude*>
  - Bit 3 for Cell tower data, including <*MCC*>, <*MNC*>, <*LAC*>, <*Cell ID*> and the <*Reserved*> parameter value “00”
  - Bit 4 for <*Mileage*>
  - Bit 5 for <*Send Time*>
  - Bit 6 for <*Device Name*>

  For each bit, set it to 1 to enable the corresponding component in the report, and 0 to disable the corresponding component in the report. This mask is valid for all report messages. Bit 3 is invalid for **+RESP:GTGSM** message.
- <*Power Saving Mode*>: It configures the power saving function of the device. If the parameter <*Power Saving Mode*> is set to 0, the GNSS will be always on. If the parameter <*Power Saving Mode*> is set to 1, the fixed report, geo-fence and speed alarm report functions are suspended when the device is at a standstill or the engine is turned off. If the parameter <*Power Saving Mode*> is set to 2, it is mostly like mode 1 and the difference is

that the fixed report will not be suspended and the fix and send interval of it will be set to <*IGF Report Interval*> in **AT+GTFRI** when the engine is off.

- 0: Disable the power saving function.
- 1: Mode 1 of the power saving function.
- 2: Mode 2 of the power saving function.

✧ <*Event Info Mask*>: Bitwise mask to configure which information will be included in the event report messages (except **+RESP:GTPNA**, **+RESP:GTPFA**, **+RESP:GTPNR**, **+RESP:GTPFR**, **+RESP:GTUPC** and **+RESP:GTPDP**). Each bit represents a field. If a bit is 1, the corresponding field will be present in the event report messages. Otherwise, the corresponding field will not be present in the event report messages.

- Bit 0 Reserved
- Bit 1 for device status

✧ <*Event Mask*>: Bitwise mask to configure which event report will be sent to the backend server.

- Bit 0 for **+RESP:GTPNA**
- Bit 1 for **+RESP:GTPFA**
- Bit 2 for **+RESP:GTMPN**
- Bit 3 for **+RESP:GTMPF**
- Bit 4 Reserved
- Bit 5 for **+RESP:GTBPL**
- Bit 6 for **+RESP:GTBTC**
- Bit 7 for **+RESP:GTSTC**
- Bit 8 for **+RESP:GTSTT**
- Bit 9 Reserved
- Bit 10 for **+RESP:GTPDP**
- Bit 11 for the power on **+RESP:GTRTL**
- Bit 12 for the ignition report **+RESP:GTIGN**, **+RESP:GTIGF**, **+REPS:GTVGN** and **+RESP:GTVGF**
- Bit 13 for the ignition on/off location report **+RESP:GTIGL** and **+RESP:GTVGL**
- Bit 14 Reserved
- Bit 15 for **+RESP:GTPNR**
- Bit 16 for **+RESP:GTPFR**
- Bit 17 Reserved
- Bit 18 for **+RESP:GTGIN** and **+RESP:GTGOT**

For each bit, set it to 1 to enable the corresponding event report, and 0 to disable the corresponding event report. If **+RESP:GTPNR** and **+RESP:GTPFR** events are enabled, **+RESP:GTPNA** and **+RESP:GTPFA** will not be reported even if they are enabled. Bit 18 is only used for the **AT+GTGEO** function. If Bit 18 is set to 1, **+RESP:GTGIN** and **+RESP:GTGOT** are reported instead of **+RESP:GTGEO**. If <*GEO ID*> in **AT+GTGEO** is set to a value greater than or equal to 20, Bit 18 will be automatically set to 1.

✧ <*LED On*>: It configures the working mode of power LED and GNSS LED.

- 0: Each time the device powers on, both LEDs will work for 30 minutes and then turn off.
- 1: Power LED and GNSS LED turn on as configured.

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- <*Info Report Enable*>: Enable/disable the device information report (**+RESP:GTINF**). The device information includes state of the device, ICCID, cell signal strength, voltage of external power supply, battery voltage, charging status, Power and GNSS LED working mode, the last known time of GNSS fix, status of all digit inputs and outputs, time zone information and daylight saving setting.
  - 0: Disable the device information report.
  - 1: Enable the device information report.
- <*Info Report Interval*>: The interval for reporting the device information.
- <*Location Request Mask*>: It specifies how to handle the requests. 4 high bits are for SMS request and 4 low bits for incoming call.

  4 high bits are for SMS request.
  - 0: Ignore the **SMS Position Request** message via SMS.
  - 1: Report the current position (**+RESP:GTLBC**) when the device receives an **SMS Position Request** message via SMS.
  - 2: Report the current position with a Google Map link through SMS to the original number when the device receives **SMS Position Request** message via SMS.

  4 low bits are for incoming call.
  - 0: Just hang up the call.
  - 1: Hang up the call and report the current position via **+RESP:GTLBC**.
  - 2: Hang up the call and report the current position with a Google Maps link through SMS to the phone number of the incoming call.
  - 3: Hang up the call. Report the current position via **+RESP:GTLBC** and report the current position with a Google Maps link through SMS to the phone number of the incoming call at the same time.
- <*Backup Battery Charge Mode*>: It controls the charge mode of the backup battery.
  - 0: When the main power supply is connected, the backup battery is charged as needed.
  - 1: When the main power supply is connected, the backup battery is only charged when ignition on is detected. The charging process will begin 3 minutes after the ignition is turned on and stop when the ignition is turned off.
- <*AGPS Mode*>: A numeral to indicate whether to enable AGPS. AGPS helps increase the chances of getting GNSS position successfully and reduce the time needed to get GNSS position.
  - 0: Disable the AGPS function.
  - 1: Enable the AGPS function.
- <*GSM Report*>: It controls how or when to report cell information.

  The 2 high bits, Bit 14 – 15, represent GSM report mode.
  - 0: Do not allow the cell information report.
  - 1: Report the cell information after failing to get GNSS position if cell information is available.
  - 2: Report the message **+RESP:GTGSM** after getting GNSS position successfully every time if cell information is available.
  - 3: Report the message **+RESP:GTGSM** regardless of whether getting GNSS position is successful or not if cell information is available.

Bitwise mask to configure which event report will be sent to the backend server.

- Bit 0 for **+RESP:GTRTL**
- Bit 1 for **+RESP:GTLBC**
- Bit 2 for **+RESP:GTFRI**
- Bit 3 for **+RESP:GTSOS**
- Bit 4 for **+RESP:GTTOW**
- Bit 5 – 13 Reserved

For each bit, set it to 1 to enable the corresponding event report, and 0 to disable the corresponding event report.

✧ <*GNSS Lost Time*>: A time parameter to monitor the GNSS signal. If there is no GNSS signal or no successful GNSS fix for consecutive <*GNSS Lost Time*>, the device will send the event report **+RESP:GTGSS** to indicate "GNSS signal lost". When the GNSS signal is recovered or a successful fix is obtained again, the device will send the event report **+RESP:GTGSS** to indicate the recovery. 0 means "Disable this feature".

Note: If the device is rebooted, it will not report **+RESP:GTGSS** to indicate GNSS signal recovery even if it has reported **+RESP:GTGSS** to indicate "GNSS signal lost" before reboot.

The acknowledgment message of the **AT+GTCFG** command:

➢ **+ACK:GTCFG,**

Example: **+ACK:GTCFG,500100,135790246811220,,0003,20090214093254,11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', ' '	
Serial Number	4	(HEX)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

3.2.2.2.Auto-unlock PIN

The command **AT+GTPIN** is used to configure the auto-unlock PIN function of the device. Some operators offer SIM card with PIN code protection by default. To make the device work with the PIN-protected SIM card, this command is used to configure the device to auto-unlock the SIM PIN with the pre-set PIN code.

➢ **AT+GTPIN=**

Example: **AT+GTPIN=gv55w,1,0000,,,,,,0014$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv55w
Enable Auto-unlock PIN	1	0|1	1
PIN	4 – 8	'0' – '9'	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Serial Number	4	(HEX)	
Tail Character	1	$	$

- ✧ <*Enable Auto-unlock PIN*>: Set it to 1 to enable the auto-unlock PIN function, and 0 to disable the auto-unlock PIN function.
- ✧ <*PIN*>: The PIN code used to unlock the SIM card.

The acknowledgment message of the **AT+GTPIN** command:

- ➢ **+ACK:GTPIN,**

Example: **+ACK:GTPIN,500100,135790246811220,,0014,20090214093254,11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', ' ' _	
Serial Number	4	(HEX)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

3.2.2.3.Time Adjustment

The command **AT+GTTMA** is used to adjust the local time on the device remotely. Upon receiving this command, the device will set the time zone and daylight saving accordingly. Then it will use the given UTC time to adjust the local time based on the time zone and daylight saving setting. This command will also be a trigger for the GNSS on the device. After a successful GNSS fix, the device will update the local time with the GNSS UTC time again.

➢ **AT+GTTMA=**

Example: **AT+GTTMA=gv55w,-,3,30,0,20090917203500,,,,,0011$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv55w
Sign	1	+|–	+
Hour Offset	<=2	0 – 23	0
Minute Offset	<=2	0 – 59	0
Daylight Saving	1	0|1	0
UTC Time	14	YYYYMMDDHHMMSS	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Serial Number	4	(HEX)	
Tail Character	1	$	$

✧ <*Sign*>: It indicates the positive or negative offset of the local time from UTC.
✧ <*Hour Offset*>: UTC offset in hours.
✧ <*Minute Offset*>: UTC offset in minutes.
✧ <*Daylight Saving*>: Enable/disable daylight saving time.
- 0: Disable daylight saving time.
- 1: Enable daylight saving time.

✧ <*UTC Time*>: UTC time used to adjust for the local time on the device.

The acknowledgment message of the **AT+GTTMA** command:

➢ **+ACK:GTTMA,**

Example: **+ACK:GTTMA,500100,135790246811220,,0011,20090214093254,11F0$**

Parameter	Length (byte)	Range/Format	Default
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', '_'	
Serial Number	4	(HEX)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

3.2.2.4.Outside Working Hours

To protect the privacy of the driver when he is off duty, the device can be configured to report empty location information outside working hours. The command **AT+GTOWH** is used to define the working hours and the working mode to protect the privacy. If this function is enabled and it is outside of working hours, in all ASCII format reports except **+RESP:GTSOS**, the fields Latitude, Longitude, MCC, MNC, LAC, Cell ID and the reserved field after Cell ID will be empty. Meanwhile, in HEX format reports where location should be hidden, the fields Latitude and Longitude will be filled with 0x054C5638, and the fields MCC, MNC, LAC Cell ID and the reserved field after Cell ID will be filled with 0.

➢ **AT+GTOWH=**

Example: **AT+GTOWH=gv55w,1,1F,0900,1200,1300,1730,,,1,1,1,0,0,,,,,0012$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv55w
Mode	1	0-3	0
Day of Work	<=2	0 – 7F	1F
Working Hours Start1	4	HHMM	0900
Working Hours End1	4	HHMM	1200
Working Hours Start2	4	HHMM	1300
Working Hours End2	4	HHMM	1800
Reserved	0		
Reserved	0		

Digital Input ID	1	0 – 1	0
Output ID	1	0 – 2	0
Output Status	1	0|1	0
Duration	<=3	0 - 255(*100ms)	0
Toggle Times	<=3	0 – 255	0
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Serial Number	4	(HEX)	
Tail Character	1	$	$

✧ <*Mode*>: The working mode of this function.

- 0: Disable this function.
- 1: Manual mode. By connecting an external unit to a specified digital input of the device, the driver manually enables time checking. If it is outside working hours, the device will hide the location information in the report messages. Otherwise, the location information will be reported normally.
- 2: Full manual mode. By connecting an external unit to a specified digital input of the device, the driver has full control over the privacy protection. The device will not check the time against the working hours range. It just hides the location information when the input is enabled manually and reports the location information normally when the input is disabled manually.
- 3: Automatic mode. In this mode, the device will ignore the status of the digital input. It will automatically check the current time against the working hours range. If it is outside working hours, the device will hide the location information. Otherwise, the location information will be reported normally.

✧ <*Day of Work*>: It specifies the working days in a week in a bitwise manner.

- Bit 0 for Monday
- Bit 1 for Tuesday
- Bit 2 for Wednesday
- Bit 3 for Thursday
- Bit 4 for Friday
- Bit 5 for Saturday
- Bit 6 for Sunday

For each bit, 0 means “off day”, and 1 means “working day”.

✧ <*Working Hours Start1*>, <*Working Hours End1*>: The first period of the working hours in a day.

✧ <*Working Hours Start2*>, <*Working Hours End2*>: The second period of the working hours in

a day.

- <*Digital Input ID*>: The input ID used to trigger this function when <*Mode*> is 1. The working parameters of the specified input must be set by **AT+GTDIS** first. If an interruptible digital input is used, please connect slide button instead of tact button to that input for this function.
- <*Output ID*>, <*Output Status*>, <*Duration*> and <*Toggle Times*>: If this function is enabled and it is currently off duty time, a specified wave will be output on the specified output.

The acknowledgment message of the **AT+GTOWH** command:

➢ **+ACK:GTOWH,**

Example: **+ACK:GTOWH,500100,135790246811220,,0012,20090214093254,11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', ' ' _	
Serial Number	4	(HEX)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

3.2.2.5.Protocol Watchdog

The **AT+GTDOG** command is used to reboot the device in a time based manner or upon ignition on. This helps the device avoid working in an abnormal status for a long time. Besides these two automatic reboot methods, the device also supports the use of the digital input to trigger the reboot manually.

➢ **AT+GTDOG=**

Example: **AT+GTDOG=gv55w,1,,1,0130,,1,1,,60,60,,0013$** **AT+GTDOG=gv55w,1,30,,,,1,1,,60,60,,0013$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv55w
Mode	1	0 - 2	0
Ignition Frequency	<=3	10 - 120(min)	60

Interval	<=2	1 – 30	30
Time	4	HHMM	0200
Reserved	0		
Report Before Reboot	1	0|1	1
Input ID	1	0|1	0
Reserved	0		
No Network Interval	4	0|5 - 1440(min)	60
No Activation Interval	4	0|5 - 1440(min)	60
Reserved	0		
Serial Number	4	(HEX)	
Tail Character	1	$	$

- <*Mode*>: The working mode of the watchdog function.
  - 0: Disable this function.
  - 1: Reboot periodically according to the <*Interval*> and <*Time*> settings.
  - 2: Reboot upon ignition on.
- <*Ignition Frequency*>: If the time interval between the current ignition-on and last ignition-on reboot is greater than the value specified by this parameter when the working mode is 2, the device will automatically reboot upon ignition on. The device will reboot automatically upon the second ignition on for the first time use whatever the time interval from the first ignition-on.
- <*Interval*>: The time interval for rebooting the device. It is measured in days.
- <*Time*>: The time to perform the reboot operation when the <*Interval*> condition is met.
- <*Report Before Reboot*>: Whether to report the **+RESP:GTDOG** message before reboot. 0 means "Do not report the message", and 1 means "Report the message". If this parameter is enabled, the device will initiate a real-time location fix before sending the message with the current location information.
- <*Input ID*>: The ID of the digital input port which is used to trigger manual reboot. 0 means "Disable manual reboot". Only digital input port 1 is supported.
- <*No Network Interval*>: The internal for rebooting the device in no network signal situation. 0 means "Do not reboot the device".
- <*No Activation Interval*>: The interval for rebooting the device when PDP context activation fails or the interaction of messages fails (e.g. no TCP ack, Server ack). 0 means "Do not reboot the device". Before using this parameter, at least one of the two fields <*APN*> and <*Backup APN*> in the command **AT+GTBSI** should not be empty.

The acknowledgment message of the **AT+GTDOG** command:

- **+ACK:GTDOG,**

Example:

+ACK:GTDOG,500100,135790246811220,,0013,20090214093254,11F0$			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', ' _ '	
Serial Number	4	(HEX)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

3.2.2.6.Settings for Preserving Device's Specified Logic States

The command **AT+GTPDS** is used to preserve specified logic states of the device. The specified logic states selected based on the value of <*Mask*> will be preserved or reset according to the <*Mode*> setting.

➢ **AT+GTPDS=**

Example: **AT+GTPDS=gv55w,1,1F,,,,,,FFFF$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv55w
Mode	1	0|1|2	0
Mask	4	0000-FFFF	0
Reserved			
Reserved			
Reserved			
Reserved			
Reserved			
Reserved			
Serial Number	4	(HEX)	
Tail Character	1	$	$

✧ <*Mode*>: The working mode of this function.

- 0: Disable this function.
- 1: Preserve specified logic state of the device according to the value of <*Mask*>.
- 2: Reset all the specified logic states listed in <*Mask*> after receiving the command, and then preserve specified logic states according to the value of <*Mask*>.

✧ <*Mask*>: Bitwise mask to configure which device state(s) will be preserved. Each bit represents a state.

- Bit 0: State of GEO
- Bit 1: Reserved
- Bit 2: Reserved
- Bit 3: Information of last known position
- Bit 4: State of ignition
- Bit 5: State of wave shape 1
- Bit 6: State of digital input
- Bit 7: State of SPD
- Bit 8: State of SSR
- Bit 9: State of main power

The acknowledgment message of the **AT+GTPDS** command:

➢ **+ACK:GTPDS,**

Example: **+ACK:GTPDS,500100,135790246811220,,000D,20090214093254,FFFF$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', ' '	
Serial Number	4	(HEX)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

3.2.2.7.Over-the-air Configuration Update

The **AT+GTUPC** command is used to download configuration file over the air for the update of the local configuration.

➢ **AT+GTUPC=**

Example: **AT+GTUPC=gv55w,0,10,0,0,168,http://www.queclink.com/configure.ini,0,,1,00000001,0001**

$			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Password	4 - 20	'0'-'9', 'a'-'z', 'A'-'Z'	gv55w
Max Download Retry	1	0 – 3	0
Download Timeout	<=2	5 - 30(min)	10
Download Protocol	1	0	0
Enable Report	1	0|1	0
Update Interval	<=4	0 - 8760(h)	0
Download URL	<=100	URL	
Mode	1	0|1	0
Reserved	0		
Reserved	0		
Reserved	0		
Serial Number	4	0000-FFFF	
Tail Character	1	$	$

- <*Password*>: The valid characters for the password include '0'- '9', 'a'-'z', and 'A'-'Z'. The default value is "gv55w".
- <*Max Download Retry*>: It specifies the maximum number of retries to download the configuration file upon download failure.
- <*Download Timeout*>: It specifies the expiration timeout of a single download. If the download expires, it is considered to be failure.
- <*Download Protocol*>: The protocol used to download the file. Only HTTP is supported now. It is set to 0.
- <*Enable Report*>: A numeral which indicates whether to report the message **+RESP:GTUPC** when the configuration is updated over the air.
  - 0: Do not report the message **+RESP:GTUPC**.
  - 1: Report the message **+RESP:GTUPC**.
- <*Update Interval*>: The time interval measured in hours for updating the configuration over the air.
- <*Download URL*>: It specifies the full URL ending with configuration file name to download the configuration file. If the <*Download URL*> ends with "/" which means the URL is just a path without file name, the unit will add <(IMEI)>.ini as the file name to complete the URL. If the URL is greater than or equal to 100 bytes in length, error will be returned.
- <*Mode*>: A numeral which indicates the working mode of downloading configuration over the air.
  - 0: Disable this function.
  - 1: Enable this function.

Note:

1. The maximum size of configuration file is 10240 bytes. If the file size exceeds the limit allowed, the device will fail to download the configuration file.

2. The length of one command in the configuration file should not exceed 320 bytes.
3. Make sure there's only one command per line in the configuration file.
4. Before each command there should be no space.
5. It is not recommended to include the commands **AT+GTUPC** and **AT+GTUPD** in the configuration file to be downloaded.
6. Please DO NOT execute the commands **AT+GTUPC** and **AT+GTUPD** at the same time.
7. Please DO NOT execute another command when the **AT+GTUPC** is being executed (i.e. during the period of time beginning upon sending the **AT+GTUPC** command until the reporting of **+RESP:GTUPC** with result 301 or 302).

The acknowledgement message of the **AT+GTUPC** command:

- **+ACK:GTUPC,**

Example: **+ACK:GTUPC,500100,135790246811220,,0005,20100310172830,11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	20	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', '_'	
Serial Number	4	(HEX)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

3.2.3.Position Related Report

3.2.3.1.Fixed Report Information

The command **AT+GTFRI** is used to configure the parameters of fixed report (**+RESP:GTFRI**).

- **AT+GTFRI=**

Example: **AT+GTFRI=gv55w,0,,,,,,,,,,,,,,,0009$** **AT+GTFRI=gv55w,1,1,,1,1000,2300,,30,,,,,600,,,,,0009$** **AT+GTFRI=gv55w,2,1,,1,1000,2300,,,500,,,,,,,,0009$** **AT+GTFRI=gv55w,3,1,,1,1000,2300,,,,1000,,,,,,,0009$** **AT+GTFRI=gv55w,4,1,,1,1000,2300,,60,,300,,,,,,,0009$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv55w
Mode	1	0 – 5	0
Discard No Fix	<=2	0|1	1
Reserved	0		

Period Enable	1	0|1	1
Start Time	4	HHMM	0000
End Time	4	HHMM	0000
Reserved	0		
Send Interval	<=5	5 - 86400(sec)	30
Distance	<=5	50 - 65535(m)	1000
Mileage	<=5	50 - 65535(m)	1000
Reserved	0		
Corner Report	<=3	0 – 180	0
IGF Report Interval	<=5	0|5 - 86400(sec)	600
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Serial Number	4	(HEX)	
Tail Character	1	$	$

✧ <*Mode*>: The working mode of the fixed report function.

- 0: Disable this function.
- 1: Fixed Time Report. The position report message is sent to the backend server periodically according to the parameter <*Send Interval*>.
- 2: Fixed Distance Report. The position report message is sent to the backend server when the straight line distance between the current GNSS position and the last sent GNSS position is greater than or equal to the distance specified by the parameter <*Distance*>. It is necessary to connect the ignition signal to the device or enable virtual ignition detection for this mode.
- 3: Fixed Mileage Report. The position report message is sent to the backend server when the path length between the current GNSS position and the last sent GNSS position is greater than or equal to the mileage specified by the parameter <*Mileage*>. It is necessary to connect the ignition signal to the device or enable virtual ignition detection for this mode.
- 4: Optimum Report. The device simultaneously checks both time interval and path length between two adjacent position reports. The device will report the current position if the calculated time interval between current time and time of the last report is greater than <*Send Interval*>, and the length of path between the current position and the last position is greater than <*Mileage*>. It is necessary to connect the ignition signal to the device or enable virtual ignition detection for this mode.

- 5: Fixed Time or Mileage Report. The device checks either time interval or path length between two adjacent position reports. The device will report the current location if the calculated time interval between current time and time of the last report is greater than <*Send Interval*>, or the length of path between the current position and the last position is greater than <*Mileage*>. It is necessary to connect the ignition signal to the device or enable virtual ignition detection for this mode.

✧ <*Discard No Fix*>: Enable/disable report when there is no GNSS fix.
- 0: Enable report.
- 1: Disable report.

✧ <*Period Enable*>: Enable/disable the time range specified by <*Start time*> and <*End time*>. If the time range is enabled, the position reporting will be limited within the time range.

✧ <*Start Time*>: The start time of scheduled report. The valid format is "HHMM". The value range of "HH" is "00"–"23". The value range of "MM" is "00"–"59".

✧ <*End Time*>: The end time of scheduled report. The valid format and range are the same as those of <*Start Time*>.

✧ <*Send Interval*>: The time interval for sending position information. The value range is 5 – 86400 and the unit is second. If <*Report Mode*> in **AT+GTSRI** is set to forced SMS mode, this parameter should not be less than 15 seconds, otherwise position information will be sent via TCP short connection.

✧ <*Distance*>: The specified distance for sending the position information when <*Mode*> is 2. Unit: meter.

✧ <*Mileage*>: The specified length for sending the position information when <*Mode*> is 3 and 4. Unit: meter.

✧ <*Corner Report*>: The threshold to determine whether the device is turning around a corner. 0 means "Disable the corner report". For other values, the device will compare the current azimuth with that of the last known corner; if the difference is greater than or equal to this value, the device will send the corner report with **+RESP:GTFRI**.

✧ <*IGF Report Interval*>: The time interval for fixing and sending position information when <*Power Saving Mode*> in **AT+GTCFG** is set to 0|2 and the engine is off. If <*IGF Report Interval*> is less than 60 seconds, the GNSS will be always on. Its value range is 0|5 – 86400 and the unit is second.

Note: If the current <*Mode*> is not 0 and the <*Power Saving Mode*> in **AT+GTCFG** is set to 0 or 2, the message **+RESP:GTFRI** will be sent to the backend server periodically according to the parameter <*IGF Report Interval*> when the engine is off.

The acknowledgment message of the **AT+GTFRI** command:

➢ **+ACK:GTFRI,**

Example: **+ACK:GTFRI,500100,135790246811220,,0009,20090214093254,11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	

Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', '_'	
Serial Number	4	(HEX)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

3.2.3.2.Frequency Change of Fixed Report Information

The command **AT+GTFFC** is used to change the parameters of fixed report when a corresponding event occurs, so that different report interval requirements can be met. When the event disappears, the device will resume its previous settings.

The device supports up to 5 sets of parameters for different events. Priority is assigned among these events. Only the parameters for the highest priority event are applied if more than one event occurs at the same time.

- **AT+GTFFC=**

Example: **AT+GTFFC=gv55w,0,1,0,,,,,,,30,500,500,300,,0,,,,,0000$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv55w
Priority	1	0-4	0
Mode	1	0-3	0
FRI Mode	1	0-5	0
Reserved			
Reserved			
Reserved			
Reserved			
Reserved			
Reserved			
FRI IGN Report Interval	<=5	5 - 86400(sec)	30
FRI Report Distance	<=5	50 - 65535(m)	500

FRI Report Mileage	<=5	50 - 65535(m)	500
FRI IGF Report Interval	<=5	0|5 - 86400(sec)	300
Reserved	0		
Corner Report	<=3	0 – 180	0
Reserved			
Reserved			
Reserved			
Reserved			
Serial Number	4	(HEX)	
Tail Character	1	$	$

- <*Priority*>: The priority of the event which triggers the parameter change for fixed report. 0 indicates the highest priority.
- <*Mode*>: It specifies the trigger event for the change of fixed report parameters.
  - 0: Disable the parameters of the specified priority.
  - 1: Change the fixed report parameter when the device enters into any of the defined Geo-Fence.
  - 2: Change the fixed report parameters when the device enters into known UMTS roaming state. (Please refer to the command **AT+GTRMD** for details)
  - 3: Change the fixed report parameters when the device enters into unknown UMTS roaming state.
- <*FRI Mode*>: When a corresponding event occurs, the working mode of the fixed report will be changed according to this parameter.
  - 0: Do not change the working mode.
  - 1: Change the working mode to “Fixed Time Report”.
  - 2: Change the working mode to “Fixed Distance Report”.
  - 3: Change the working mode to “Fixed Mileage Report”.
  - 4: Change the working mode to “Optimum Report”.
  - 5: Change the working mode to “Fixed Time or Mileage Report”.
- <*FRI IGN Report Interval*>: The time interval for sending the position information when the ignition is on. The value range is 5 – 86400 and the unit is second.
- <*FRI Report Distance*>: The specified distance for sending the position information when the working mode is fixed distance report. Unit: meter.
- <*FRI Report Mileage*>: The specified path length for sending the position information when the working mode is fixed mileage report or optimum report. Unit: meter.
- <*FRI IGF Report Interval*>: The time interval for fixing and sending the position information when the ignition is off if <*Power Saving Mode*> in **AT+GTCFG** is set to 0|2. The value range is 0|5 – 86400 and the unit is second.
- <*Corner Report*>: The threshold to determine whether the device is turning around a corner. 0 means “Disable the corner report”. For other values, the device will compare the current

azimuth with that of the last known corner; if the difference is greater than or equal to this value, the device will send the corner report with **+RESP:GTFRI**.

The acknowledgment message of the **AT+GTFFC** command:

- **+ACK:GTFFC,**

Example: **+ACK:GTFFC,500100,135790246811220,,0009,20090214093254,11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', '_'	
Serial Number	4	(HEX)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

3.2.4.Alarm Settings

3.2.4.1.Tow Alarm Configuration

The **AT+GTTOW** command is used to configure sensitivity setting of the motion sensor and the tow alarm parameters.

- **AT+GTTOW=**

Example: **AT+GTTOW=gv55w,1,5,0,120,1,0,5,10,4,10,4,,,,,,,,000B$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv55w
Tow Enable	1	0|1	0
Engine Off to Tow	<=2	5 - 15(min)	10
Fake Tow Delay	<=2	0 - 10(min)	1
Tow Interval	<=5	30 - 86400(sec)	300
Tow Output ID	1	0 – 2	0
Tow Output Status	1	0|1	0
Tow Output Duration	<=3	0 - 255(*100ms)	0

Tow Output Toggle Times	<=3	0 – 255	0
Rest Duration	<=3	1 - 255(*15sec)	2
Motion Duration	<=2	1 - 10(*100ms)	3
Motion Threshold	1	1 – 9	2
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Serial Number	4	(HEX)	
Tail Character	1	$	$

- <*Tow Enable*>: Enable/disable tow alarm (**+RESP:GTTOW**).
  - 0: Disable the tow alarm.
  - 1: Enable the tow alarm.
- <*Engine Off to Tow*>: A time parameter to determine whether the device is considered to be towed after the engine is turned off. If the motion sensor doesn't detect rest within the specified time after engine is turned off, the device is being towed.
- <*Fake Tow Delay*>: If the motion sensor detects movement after detecting engine off and rest, the device turns into a state called fake tow. If the device stays in fake tow for a period of time specified by the parameter <*Fake Tow Delay*>, it is considered to be towed.
- <*Tow Interval*>: The time interval for sending the tow alarm message.
- <*Tow Output ID*>: The ID of the output port to output the specified wave shape when tow event is detected.
- <*Tow Output Status*>: Please refer to the parameter <*Output1–2 Status*> in Chapter 3.2.5.
- <*Tow Output Duration*>: Please refer to the parameter <*Duration*> in Chapter 3.2.5.
- <*Tow Output Toggle Times*>: Please refer to the parameter <*Toggle Times*> in Chapter 3.2.5.
- <*Rest Duration*>: A time parameter to measure whether the device enters into rest status. The status of the device will be changed to rest if the motion sensor detects rest which is maintained for a period of time specified by the parameter <*Rest Duration*>.
- <*Motion Duration*>: A time parameter to measure whether the device enters into motion status. The status of the device will be changed to motion if the motion sensor detects motion which is maintained for a period of time specified by the parameter <*Motion Duration*>.
- <*Motion Threshold*>: The threshold for the motion sensor to measure whether the device is

moving.

The acknowledgment message of the **AT+GTTOW** command:

- **+ACK:GTTOW,**

Example: **+ACK:GTTOW,500100,135790246811220,,000B,20090214093254,11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', ' _ '	
Serial Number	4	(HEX)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

3.2.4.2.Geo-Fence Information

The command **AT+GTGEO** is used to configure the parameters of Geo-Fence. (Geo-Fence is a virtual perimeter around a geographic area using a location-based service. When the geofencing terminal enters or exits the area, a notification is generated. The notification contains information about the location of the terminal and can be sent to the backend server.)

- **AT+GTGEO=**

Example: **AT+GTGEO=gv55w,0,3,121.412248,31.187891,1000,600,1,1,0,0,,,,,000A$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv55w
GEO ID	<=2	0 – 99	
Mode	1	0 – 3	0
Longitude	<=11	-180 - 180	
Latitude	<=10	-90 - 90	
Radius	<=7	50 - 6000000(m)	50
Check Interval	<=5	0|5 - 86400(sec)	0
Output ID	1	0 – 2	0

Output Status	1	0|1	0
Duration	<=3	0 - 255(*100ms)	0
Toggle Times	<=3	0 – 255	0
Trigger Mode	<=2	0|21|22	0
Trigger Report	1	0|1	0
State Mode	1	0|1	0
Reserved	0		
Serial Number	4	(HEX)	
Tail Character	1	$	$

- <*GEO ID*>: The ID of the Geo-Fence. A total of 100 zones (0 – 99) are supported.
- <*Mode*>: The working mode of the Geo-Fence to report the message **+RESP:GTGEO** to the backend server.
  - 0: Disable the zone's Geo-Fence function.
  - 1: Entering the zone. The report will be generated only when the terminal enters the Geo-Fence.
  - 2: Exiting the zone. The report will be generated only when the terminal exits from the Geo-Fence.
  - 3: Report will be generated upon both entering and exiting the Geo-Fence zone.
- <*Longitude*>: The longitude of a point which is defined as the center of the circular Geo-Fence zone. The unit is degree, and accuracy is 6 decimal places. West longitude is defined as negative starting with the minus sign "–" and east longitude is defined as positive without "+".
- <*Latitude*>: The latitude of a point which is defined as the centre of the circular Geo-Fence zone. The unit is degree, and accuracy is 6 decimal places. South latitude is defined as negative starting with the minus sign "–" and north latitude is defined as positive without "+".
- <*Radius*>: The radius of the circular Geo-Fence zone. The value range is (50 – 6000000) and the unit is meter.
- <*Check Interval*>: The interval of GNSS checking for the Geo-Fence alarm.
- <*Trigger Mode*>: A numeral to indicate the working mode of the geofencing function.
  - 0: Disable auto trigger mode.
  - 21: Automatically set up a Geo-Fence after the ignition is turned off. In this mode, the device will automatically set up a Geo-Fence with the current location as the center point of the Geo-Fence when the ignition is off. It will only send the alarm report when exiting the Geo-Fence zone. The Geo-Fence will be cancelled after the device exits the zone.
  - 22: Manually enable Geo-Fence after the ignition is turned off. In this mode, the device will automatically set up a Geo-Fence with the current location as the center point of the Geo-Fence when the ignition is off. It will only send the alarm report

when exiting the Geo-Fence zone. When the device exits this Geo-Fence, it will cancel this Geo-Fence and disable the trigger mode at the same time. If the driver wants to use this trigger mode again, he has to manually set the trigger mode again.

✧ <*Trigger Report*>: Whether to report the **+RESP:GTGES** message when a specified trigger mode is triggered and when the Geo-Fence is cancelled.

- 0: Disable the **+RESP:GTGES** report.
- 1: Enable the **+RESP:GTGES** report.

✧ <*State Mode*>: A numeral to indicate the mode of reporting GEO state.

- 0: Report when getting the GEO state for the first time.
- 1: Do not report until the GEO state changes.

The acknowledgment message of the **AT+GTGEO** command:

➢ **+ACK:GTGEO,**

Example: **+ACK:GTGEO,500100,135790246811220,,0,000A,20090214093254,11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', '_'	
GEO ID	1	0 – 99	
Serial Number	4	(HEX)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

3.2.4.3.Polygon Geo-Fence

The command **AT+GTPEO** is used to configure the parameters of Polygon Geo-Fence. (Geo-Fence is a virtual perimeter around a geographic area using a location-based service. When the geo-fencing terminal enters or exits the area, a notification is generated. The notification which contains information about the location of the terminal will be sent to the backend server.)

Note: This command can configure less than ten sets of longitude and latitude coordinates each time.

➢ **AT+GTPEO=**

Example: **AT+GTPEO=gv55w,0,0,1,3,121.412240,31.187801,121.412248,31.187891,121.412258,31.187**

991,600,1,1,0,0,,,,,000B$			
Parameter	**Length(byte)**	**Range/Format**	**Default**
Password	4 – 20	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv55w
PEO ID	1	0 – 19	0
Mode	1	0 – 3	0
Start Point	2	1-10	1
End Point	2	3-10	3
Longitude	<=11	-180 - 180	
Latitude	<=10	-90 - 90	
Check Interval	<=5	0|5 - 86400(sec)	0
Output ID	1	0 – 2	0
Output Status	1	0|1	
Duration	<=3	0 - 255(*100ms)	0
Toggle Times	<=3	0 – 255	0
State Mode	1	0|1	0
Reserved	0		
Reserved	0		
Reserved	0		
Serial Number	4	(HEX)	
Tail Character	1	$	$

- <*GEO ID*>: The ID of the Geo-Fence. A total of 20 zones (0 to 19) are supported.
- <*Mode*>: The working mode for the polygon Geo-Fence to report the message to the backend server.
  - 0: Disable the zone's Geo-Fence function.
  - 1: Entering the zone. The report will be generated only when the terminal enters the Geo-Fence.
  - 2: Exiting the zone. The report will be generated only when the terminal exits from the Geo-Fence.
  - 3: Report both entering and exiting the zone.
- <*Start Point*>: The start point of the polygon GEO-Fence formed by a set of points.
- <*End Point*>: The end point of the polygon GEO-Fence formed by a set of points.
- <*Longitude*>: The longitude of a point which is defined as the endpoint of the polygon Geo-Fence region. The unit is degree, and accuracy is 6 decimal places. West longitude is defined as negative starting with the minus sign "–" and east longitude is defined as positive

without "+".

✧ <*Latitude*>: The latitude of a point which is defined as the endpoint of the polygon Geo-Fence region. The unit is degree, and accuracy is 6 decimal places. South latitude is defined as negative starting with the minus sign "–" and north latitude is defined as positive without "+".

Note: If more sets of <*Longitude*> and <*Latitude*> are needed, please adjust <*Start Point*> and <*End Point*> for appropriate setup. If some sets of <*Longitude*> and <*Latitude*> are empty, then the corresponding vertices will be deleted. For example, to delete the 4th, 5th and 6th vertices of a polygon Geo-Fence, please set <*Start Point*> to 4 and set <*End Point*> to 6 and keep the three sets of <*Longitude*> and <*Latitude*> empty.

✧ <*Check Interval*>: The interval of GNSS checking position information against the Geo-Fence alarm.

✧ <*State Mode*>: A numeral to indicate the mode of reporting PEO state.

- 0: Report when getting the PEO state for the first time.
- 1: Do not report until the PEO state changes.

The acknowledgment message of the **AT+GTPEO** command:

✧ **+ACK:GTPEO,**

Example: **+ACK:GTPEO,500100,135790246811220,,0,000B,20090214093254,11F0$**			
Parameter	**Length (Byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', '_'	
GEO ID	1	0 – 19	
Serial Number	4	(HEX)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

Note: Make sure the total size of the command is no more than 160 bytes if it is sent via SMS.

3.2.4.4.Roaming Detection Configuration

The command **AT+GTRMD** is used to configure the parameters for WCDMA roaming detection.

➢ **AT+GTRMD=**

Example:

AT+GTRMD=gv55w,0,,,,,1,2,46000F,46002F,,,1,1,,,,2,2,,,,1f,,,1f,,,,,0,0,0,0,,,0001$ AT+GTRMD=gv55w,1,,,,,1,3,46000,46002,46003,,,2,2,46007,,,1,1,46001,,,3fff,,,2ff,,,,,0,0,0,0,,,0002$			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv55w
Mode	1	0|1	0
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Home Operator Start	1	1-10	
Home Operator End	1	1-10	
Home Operator List	<=6*10	(ASCII)	
Reserved	0		
Reserved	0		
Roaming Operator Start	1	1-100	
Roaming Operator End	1	1-100	
Roaming Operator List	<=6*100	(ASCII)	
Reserved	0		
Reserved	0		
Blacklist Operator Start	1	1-20	
Blacklist Operator End	1	1-20	
Black List Operator	<=6*20	(ASCII)	
Reserved	0		
Reserved	0		
Known Roaming Event Mask	<=6	(HEX)	3DEF
Reserved	0		
Reserved	0		
Unknown Roaming Event Mask	<=6	(HEX)	3DEF
Reserved	0		
Reserved	0		

Queclink Confidential

Reserved	0		
Reserved	0		
Output ID	1	0 – 2	0
Output Status	1	0|1	
Duration	<=3	0 - 255(*100ms)	0
Toggle Times	<=3	0 – 255	0
Reserved	0		
Reserved	0		
Serial Number	4	(HEX)	
Tail Character	1	$	$

- <*Mode*>: The working mode of the roaming detection function.
  - 0: Disable this function.
  - 1: Enable this function.
- <*Operator Start*>: A numeral to indicate the first index of the whitelist operator numbers to be input. For example, if the value is 1, the device will update the white list of operators from the 1st one. If the parameter is empty, there should be no white list number following the empty value.
- <*Operator End*>: A numeral to indicate the last index of the whitelist operator numbers to be input. For example, if the value is 2, the device will update the white list of operators until the 2nd one. If it is empty, there should be no white list number following the empty value.
- <*Home Operator List*>: A white list of PLMN operator numbers. The numbers are composed of MCC and MNC, both of which consist of 3 digits. The last digit of MNC can be omitted (e.g. both '46001F' and '46001' are the PLMN of CHINA UNICOM). The operators in this list will be considered as in "Home" state. And two adjacent operator numbers are separated with ','. The number of the operators in the list is determined by the parameters <*Operator Start*> and <*Operator End*>. For example, if <*Operator Start*> is 1 and <*Operator End*> is 2, the operator list should include 2 operator numbers (empty value acceptable) and the two numbers are separated by with ','. 'MCCFF' type code is used to identify operators across a whole country. For example, '460FF' covers the mobile network operators all across China.
- <*Roaming Operator List*>: It is mostly like the <*Home Operator List*>, and the difference is that the operators in this list will be considered as in "Known Roaming" state.
- <*Black List Operator*>: It is mostly like the <*Home Operator List*>, and the difference is that the operators in this list will be considered as in "Blocking Report" state. In this state the device works normally but all reports will be buffered instead of being sent.

  Note: Operators that are not in <*Home Operator List*>, <*Roaming Operator List*> and <*Black List Operator*> will be considered as in "Unknown Roaming" state.
- <*Known Roaming Event Mask*>: Bitwise mask to configure which event report will be sent to the backend server when UMTS roaming state is detected. If the roaming state indicates "Known Roaming", the <*Known Roaming Event Mask*> will be valid; if the roaming state

indicates “Unknown Roaming”, the <*Unknown Roaming Event Mask*> will be valid.

- Bit 0 for **+RESP:GTPNA**
- Bit 1 for **+RESP:GTPFA**
- Bit 2 for **+RESP:GTMPN**
- Bit 3 for **+RESP:GTMPF**
- Bit 4 Reserved
- Bit 5 for **+RESP:GTBPL**
- Bit 6 for **+RESP:GTBTC**
- Bit 7 for **+RESP:GTSTC**
- Bit 8 for **+RESP:GTSTT**
- Bit 9 Reserved
- Bit 10 for **+RESP:GTPDP**
- Bit 11 for the power on **+RESP:GTRTL**
- Bit 12 for the ignition report **+RESP:GTIGN**, **+RESP:GTVGN**, **+RESP:GTIGF** and **+RESP:GTVGF**
- Bit 13 for the location report **+RESP:GTIGL** and **+RESP:GTVGL** when the ignition is on or off
- Bit 14 Reserved
- Bit 15 for **+RESP:GTPNR**
- Bit 16 for **+RESP:GTPFR**

For each bit, set it to 1 to enable corresponding event report, and 0 to disable corresponding event report. If **+RESP:GTPNR** and **+RESP:GTPFR** events are enabled, **+RESP:GTPNA** and **+RESP:GTPFA** will not be reported even if they are enabled.

✧ <*Unknown Roaming Event Mask*>: It is mostly like the <*Known Roaming Event Mask*>.

✧ <*Output ID*>, <*Output Status*>, <*Duration*> and <*Toggle Times*>: If this function is enabled and roaming is detected, a specified wave will be output at the specified output.

Note: If more operators are needed, please adjust <*Operator Start*> and <*Operator End*> for appropriate setup. If some operators in <*Operator List*> are empty, then the corresponding operators will be deleted. For example, to delete the 4th, 5th and 6th operators of the <*Operator List*>, please set <*Operator Start*> to 4 and set <*Operator End* > to 6 and keep those three operators of <*Operator List*> empty.

The acknowledgment message of the **AT+GTRMD** command:

➢ **+ACK:GTRMD,**

Example: **+ACK:GTRMD,500100,135790246811220,,0000,20090214093254,11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=10	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', '_'	

Serial Number	4	(HEX)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

Note: Only an AT command string of no more than 100 fields could be accepted by the device.

3.2.4.5.Speed Alarm

This command is used to set a speed range for the speed alarm function of the terminal. According to the working mode, the terminal will report the message **+RESP:GTSPD** to the backend server when its moving speed is outside or inside the range.

➢ **AT+GTSPD=**

Example: **AT+GTSPD=gv55w,1,80,120,60,300,1,1,0,0,,,,,,,,,,000C$** **AT+GTSPD=gv55w,2,80,120,60,300,1,1,0,0,,,,,,,,,,000C$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv55w
Mode	1	0 - 3	0
Min Speed	<=3	0 - 400(km/h)	0
Max Speed	<=3	0 - 400(km/h)	0
Validity	<=4	0 - 3600(sec)	60
Send Interval	<=4	30 - 3600(sec)	300
Output ID	1	0 – 2	0
Output Status	1	0|1	0
Duration	<=3	0 - 255(*100ms)	0
Toggle Times	<=3	0 – 255	0
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		

Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Serial Number	4	(HEX)	
Tail Character	1	$	$

- ✧ <*Mode*>: The working mode of the speed alarm function.
  - 0: Disable speed alarm.
  - 1: Report speed alarm if the current speed is within the speed range defined by <*Min Speed*> and <*Max Speed*>.
  - 2: Report speed alarm if the current speed is outside the speed range defined by <*Min Speed*> and <*Max Speed*>.
  - 3: Report speed alarm only one time if the current speed is within/outside the speed range defined by <*Min Speed*> and <*Max Speed*>. In this mode, <*Send Interval*> will be ignored.
- ✧ <*Min Speed*>: The lower speed limit.
- ✧ <*Max Speed*>: The upper speed limit.
- ✧ <*Validity*>: If the speed meets the alarm condition and is maintained for the period of time specified by <*Validity*>, the speed alarm will be triggered.
- ✧ <*Send Interval*>: The time interval for sending speed alarm message.

The acknowledgment message of the **AT+GTSPD** command:

- ➢ **+ACK:GTSPD,**

Example: **+ACK:GTSPD,500100,135790246811220,,000C,20090214093254,11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', ' ' '_'	
Serial Number	4	(HEX)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

3.2.4.6.Buzzer Alarm

This command is used to set the buzzer alarm. There are four kinds of alarms. Each alarm outputs a different sound with the buzzer, and all the alarms are settable in this command. Before using those alarms, configure the output ID which connects to the buzzer and enable it.

- **AT+GTBZA=**

Example: **AT+GTBZA=gv55w,2,,,,1,2,10,,,0,6,10,,,0,10,10,,,0,20,10,,,,,,,,0000$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv55w
Output ID	1	0|2	0
Reserved	0		
Reserved	0		
Reserved	0		
Alarm 1 Output Status	1	0|1	
Duration	<=3	0 - 255(*100ms)	0
Toggle Times	<=3	0 – 255	0
Reserved	0		
Reserved	0		
Alarm 2 Output Status	1	0|1	
Duration	<=3	0 - 255(*100ms)	0
Toggle Times	<=3	0 – 255	0
Reserved	0		
Reserved	0		
Alarm 3 Output Status	1	0|1	
Duration	<=3	0 - 255(*100ms)	0
Toggle Times	<=3	0 – 255	0
Reserved	0		
Reserved	0		
Alarm 4 Output Status	1	0|1	
Duration	<=3	0 - 255(*100ms)	0

Toggle Times	<=3	0 – 255	0
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Serial Number	4	(HEX)	
Tail Character	1	$	$

✧ <*Output ID*>: The ID of the output port which indicates the connection with the buzzer.

- 0: Disable buzzer.
- 2: Connect Output 2 to the external buzzer.

The acknowledgment message of the **AT+GTBZA** command:

➢ **+ACK:GTBZA,**

Example: **+ACK:GTBZA, 500100,135790246811220,,000D,20090214093254,FFFF$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', ' _ '	
Serial Number	4	(HEX)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

3.2.4.7.Overspeed Alarm with Buzzer Notification

This command is used to set the speed thresholds and bind one alarm type with each speed threshold for the buzzer alarm. If the current speed meets one of the thresholds, the buzzer will

make a sound corresponding to the alarm type.

➢ **AT+GTSPA=**

Example: **AT+GTSPA=gv55w,1,20,,2,1,,,40,,2,2,,,60,,2,3,,,80,,2,4,,,,,,,,000C$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv55w
Mode	1	0 - 2	0
Speed Threshold 1	<=3	0 - 400(km/h)	50
Reserved	0		
Validity	<=4	0 - 3600(sec)	60
Alarm Type	1	0 - 4	0
Reserved	0		
Reserved	0		
Speed Threshold 2	<=3	0 - 400(km/h)	70
Reserved	0		
Validity	<=4	0 - 3600(sec)	60
Alarm Type	1	0 - 4	0
Reserved	0		
Reserved	0		
Speed Threshold 3	<=3	0 - 400(km/h)	90
Reserved	0		
Validity	<=4	0 - 3600(sec)	60
Alarm Type	1	0 - 4	0
Reserved	0		
Reserved	0		
Speed Threshold 4	<=3	0 - 400(km/h)	110
Reserved	0		
Validity	<=4	0 - 3600(sec)	60
Alarm Type	1	0 - 4	0
Reserved	0		
Reserved	0		

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Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Serial Number	4	(HEX)	
Tail Character	1	$	$

- ✧ <*Mode*>: The working mode of the overspeed alarm function.
  - 0: Disable this function.
  - 1: Strict standard mode. In this mode, the device will check the speed and trigger the buzzer alarm during speedup or slowdown.
  - 2: Warning mode. In this mode, the device will only check the speed and trigger the buzzer alarm during speedup.
- ✧ <*Speed Threshold*>: It defines the speed threshold to trigger the buzzer alarm.
- ✧ <*Validity*>: If the speed meets the alarm condition and is maintained for the period of time specified by <*Validity*>, the buzzer alarm will be triggered.
- ✧ <*Alarm Type*>: The alarm type for each speed threshold. 0 means “No buzzer alarm”.

The acknowledgment message of the **AT+GTSPA** command:

- ➢ **+ACK:GTSPA,**

Example: **+ACK:GTSPA,500100,135790246811220,,000D,20090214093254,FFFF$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', ' _ '	
Serial Number	4	(HEX)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

3.2.4.8.SOS Function

This command is used to configure a specified input port for emergency. When an emergency occurs, the end user can use this input port to trigger the SOS function and report the position message **+RESP:GTSOS** to the backend server. A specified wave shape can be configured to be output on the specified output port.

➢ **AT+GTSOS=**

Example: **AT+GTSOS=gv55w,1,1,+8613812341234,1,1,0,0,,,,,000D$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv55w
Mode	1	0 – 2	0
Digital Input ID	1	0|1	0
SOS Number	<=20	(Call Number)	
Output ID	1	0 – 2	0
Output Status	1	0|1	0
Duration	<=3	0 - 255(*100ms)	0
Toggle Times	<=3	0 – 255	0
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Serial Number	4	(HEX)	
Tail Character	1	$	$

✧ <*Mode*>: The working mode of the SOS function.
- 0: Disable SOS function.
- 1: Send the current position to the backend server via data service only.
- 2: Send the current position to the SOS Number via SMS only.

✧ <*Digital Input ID*>: The ID of the digital input port which triggers the SOS function. 0 means "The SOS function is disabled". The digital input port should be configured by the command **AT+GTDIS** first for the SOS function. If a digital input port is configured to trigger the SOS function, there is no **+RESP:GTDIS** report message for the specified digital input port.

✧ <*SOS Number*>: The emergency phone number.

The acknowledgment message of the **AT+GTSOS** command:

➢ **+ACK:GTSOS,**

Example: **+ACK:GTSOS,500100,135790246811220,,000D,20090214093254,11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', '_'	
Serial Number	4	(HEX)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

3.2.4.9.Excessive Idling Detection

The command **AT+GTIDL** is used to detect the engine excessive idling (Vehicle stays stationary while the ignition is on). To use this command, it is necessary to connect the ignition signal to the device or enable virtual ignition detection. If the vehicle entering into the idle status is detected, the device will report the event message **+RESP:GTIDN** to the backend server. If the vehicle leaves the idle status, the device will report the event message **+RESP:GTIDF** to the backend server.

➢ **AT+GTIDL=**

Example: **AT+GTIDL=gv55w,1,2,1,0,,,,1,1,0,0,,,,,000F$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv55w
Mode	1	0|1	0
Time to Idling	<=2	1 - 30(min)	2
Time to Movement	1	1 - 5(min)	1
Debounce Distance	<=4	0|100 - 9999(m)	0
Reserved	0		
Reserved	0		
Reserved	0		
Output ID	1	0 – 2	0

Output Status	1	0|1	0
Duration	<=3	0 - 255(*100ms)	0
Toggle Times	<=3	0 – 255	0
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Serial Number	4	(HEX)	
Tail Character	1	$	$

- <*Mode*>: The working mode of the excessive idling detection function.
  - 0: Disable this function.
  - 1: Enable this function.
- <*Time to Idling*>: If it is detected that the vehicle is stationary with ignition on for the length of time specified by this parameter, it is considered to be in idling state.
- <*Time to Movement*>: If the vehicle moves again or ignition off is detected after it enters into idling status and the status lasts for the length of time specified by this parameter, the vehicle is considered to leave idling status.
- <*Debounce Distance*>: If the vehicle moves a longer distance than <*Debounce Distance*> after it enters into idling status, the vehicle will be considered to leave idling status.
- <*Output ID*>: It specifies the ID of the output port (1 - 2) to output specified wave shape when the vehicle enters into idling status. If it is set to 0, there will be no wave output.

The acknowledgment message of the **AT+GTIDL** command:

- **+ACK:GTIDL,**

Example: **+ACK:GTIDL,500100,135790246811220,,000F,20090214093254,11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', '_'	
Serial Number	4	(HEX)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

3.2.4.10.Start/Stop Report

The command **AT+GTSSR** is used to detect the status of vehicle (Start/Stop status). When the device detects the vehicle entering into Start status, it will report the event message **+RESP:GTSTR** to the backend server. When the vehicle leaves the Start status, and then enters into Stop status, the device will report the event message **+RESP:GTSTP** to the backend server.

➢ **AT+GTSSR=**

Example: **AT+GTSSR=gv55w,1,2,1,5,,,,,000F$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv55w
Mode	1	0|1	0
Time to Stop	<=4	(0 – 30 min)| (0 – 1800 Sec)	2
Time to Start	<=3	(0 – 5 min)|(0 – 300 Sec)	1
Start Speed	<=2	1 - 10(km/h)	5
Long Stop	<=5	0 - 43200(min)	0
Time Unit	1	0|1	0
Reserved	0		
Reserved	0		
Serial Number	4	(HEX)	
Tail Character	1	$	$

✧ <*Mode*>: The working mode of the Start/Stop report function.
- 0: Disable this function.
- 1: Enable this function.

✧ <*Time to Stop*>: If the vehicle becomes stationary again and stays in that status for the period of time specified by this parameter after it enters into Start status, the vehicle is considered to quit Start status.

✧ <*Time to Start*>: If it is detected that the vehicle is moving with ignition on for the period of time specified by this parameter, it is considered to be in Start status.

✧ <*Start Speed*>: The start speed threshold to determine whether the vehicle is started or not. When the built-in motion sensor detects that the vehicle is moving with ignition on, the device will start to check the speed from GNSS. If the device speed is maintained at a higher level than <*Start Speed*> for a period of time longer than <*Time to Start*>, the vehicle is

considered to be in Start status. The event message **+RESP:GTSTR** will be reported. Otherwise, if the device speed stays at a level lower than or equal with <*Start Speed*> for a period of time longer than <*Time to Stop*>, the vehicle is considered to quit Start status. The event message **+RESP:GTSTP** will be reported. If GNSS fix works in an abnormal state for more than 1 minute, the built-in motion sensor will be used to detect the Start/Stop status only without checking the speed.

✧ <*Long Stop*>: After the vehicle enters into Stop status and stays in the Stop status for the length of time specified by this parameter, the **+RESP:GTLSP** message will be sent. 0 means "Disable this parameter".

✧ <*Time Unit*>: It controls the time unit of <*Time to Stop*> and <*Time to Start*> parameters.

- 0: Unit: minute
- 1: Unit: second.

The acknowledgment message of the **AT+GTSSR** command:

➢ **+ACK:GTSSR,**

Example: **+ACK:GTSSR,500100,135790246811220,,000F,20090214093254,11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', '_'	
Serial Number	4	(HEX)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

3.2.4.11.Harsh Behavior Monitoring

The command **AT+GTHBM** is used to monitor the harsh driving behavior based on GNSS or motion sensor.

➢ **AT+GTHBM=**

Example: **AT+GTHBM=gv55w,1,,,100,21,6,,60,21,6,,,21,15,,1,1,8,3,,,,,0010$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv55w
Mode	1	0 - 4	0

Behavior Duration	1	3 - 5	3
Reserved	0		
High Speed	<=3	100 - 400(km/h)	100
ΔVhb	<=3	0 - 100(km/h)	0
ΔVha	<=3	0 - 100(km/h)	0
Reserved	0		
Medium Speed	<=3	60 - 100(km/h)	60
ΔVmb	<=3	0 - 100(km/h)	0
ΔVma	<=3	0 - 100(km/h)	0
Reserved	0		
Reserved	0		
ΔVlb	<=3	0 - 100(km/h)	0
ΔVla	<=3	0 - 100(km/h)	0
Reserved	0		
Output ID	1	0 – 2	0
Output Status	1	0|1	0
Duration	<=3	0 - 255(*100ms)	0
Toggle Times	<=3	0 – 255	0
Cornering and Braking Threshold	<=3	30-70	30
Cornering and Braking Duration	<=3	40-100(*8ms)	50
Acceleration Threshold	<=3	15-50	20
Acceleration Duration	<=3	50-250(*8ms)	65
Serial Number	4	(HEX)	
Tail Character	1	$	$

✧ <*Mode*>: The working mode of the harsh behavior monitoring function.

- 0: Disable this function.
- 1: Enable this function: Detection by GNSS only. In this mode, two harsh behaviors are monitored, i.e. harsh braking and harsh acceleration. According to the speed read from GNSS, 3 levels of speed are defined including high speed, medium speed and low speed. For each speed level, 2 thresholds of speed change are defined to

determine harsh braking and harsh acceleration. If the change of speed within 5 seconds is greater than the corresponding threshold, the device will report the **+RESP:GTHBM** message to the backend server to indicate the harsh behavior. The same harsh behavior within 30 seconds will only be reported once if only GNSS is used to measure harsh driving behavior.

- 2: Enable this function: Detection by motion sensor only. In this mode, three types of harsh behavior can be detected, i.e. harsh braking, harsh acceleration and harsh cornering. The device needs GNSS information to get the harsh behavior direction, so it is necessary to keep GNSS always on to collect all the information needed.
- 3: Enable this function: Detection by motion sensor or GNSS. This mode works as both mode 1 and 2 are enabled.
- 4: Enable this function: Detection by motion sensor and GNSS. In this mode, a harsh behavior can be triggered only if it is detected by both GNSS and motion sensor.

✧ <*Behavior Duration*>: The speed change within <Behavior Duration> is monitored.

✧ <*High Speed*>, <*Medium Speed*>: If the last known speed of the device read from GNSS is greater than or equal to <*High Speed*>, the vehicle that the device is attached to is considered to be at high speed. If the last known speed is less than <*High Speed*> and greater than or equal to <*Medium Speed*>, the vehicle is considered to be at medium speed. If the last known speed is less than <*Medium Speed*>, the vehicle is considered to be at low speed.

✧ <*ΔVhb*>: The threshold for harsh braking at high speed level. If the current speed is less than the last known speed and the change of the speed is greater than or equal to this value within 5 seconds, harsh braking is detected at high speed level. If it is set to 0, it means “Do not monitor harsh braking at high speed level”.

✧ <*ΔVha*>: The threshold for harsh acceleration at high speed level. If the current speed is greater than the last known speed and the change of the speed is greater than or equal to this value within 5 seconds, harsh acceleration is detected at high speed level. If it is set to 0, it means “Do not monitor harsh acceleration at high speed level”.

✧ <*ΔVmb*>: The threshold for harsh braking at medium speed level. If the current speed is less than the last known speed and the change of the speed is greater than or equal to this value within 5 seconds, harsh braking is detected at medium speed level. If it is set to 0, it means “Do not monitor harsh braking at medium speed level”.

✧ <*ΔVma*>: The threshold for harsh acceleration at medium speed level. If the current speed is greater than the last known speed and the change of the speed is greater than or equal to this value within 5 seconds, harsh acceleration is detected at medium speed level. If it is set to 0, it means “Do not monitor harsh acceleration at medium speed level”.

✧ <*ΔVlb*>: The threshold for harsh braking at low speed level. If the current speed is lower than the last known speed and the change of the speed is greater than or equal to this value within 5 seconds, harsh braking is detected at low speed level. If it is set to 0, it means “Do not monitor harsh braking at low speed level”.

✧ <*ΔVla*>: The threshold for harsh acceleration at low speed level. If the current speed is greater than the last known speed and the change of the speed is greater than or equal to this value within 5 seconds, harsh acceleration is detected at low speed level. If it is set to 0, it means “Do not monitor harsh acceleration at low speed level”.

- <*Output ID*>: It specifies the ID of the output port (1 - 2) to output specified wave shape when harsh behavior is detected. If it is set to 0, there will be no wave output.
- <*Cornering and Braking Threshold*>: The threshold for the motion sensor to determine whether the device is in harsh cornering or harsh braking status.
- <*Cornering and Braking Duration*>: The time parameter to measure whether the device enters harsh cornering or harsh braking status. If the driving behavior is maintained for a period of time longer than <*Cornering and Braking Duration*>, harsh cornering or harsh braking event will be triggered.
- <*Acceleration Threshold*>: The threshold for the motion sensor to determine whether the device is in harsh acceleration status.
- <*Acceleration Duration*>: The time parameter to measure whether the device enters harsh acceleration status. If the driving behavior is maintained for a period of time longer than <*Acceleration Duration*>, harsh acceleration event will be triggered.

The acknowledgment message of the **AT+GTHBM** command:

➢ **+ACK:GTHBM,**

Example: **+ACK:GTHBM,500100,135790246811220,,0010,20090214093254,11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', ' '	
Serial Number	4	(HEX)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

3.2.4.12.Crash Detection and Acceleration Report

The command **AT+GTCRA** is used to configure the parameters for crash detection and acceleration report. When the detection condition for crash event is matched, the device will report the **+RESP:GTCRA** event message and **+RESP:GTCRD** data packets to the backend server. If configured to report accelerations to the backend server, the device will report **+RESP:GTACC** with 75 sets of tri-axial acceleration data to the backend server.

➢ **AT+GTCRA=**

Example: **AT+GTCRA=gv55w,1,5,,,,,,0,1,10,6,,0019$**

Parameter	Length (byte)	Range/Format	Default
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv55w
Mode	1	0|1	0
Sensitivity	1	1 – 9	5
Report ACC	1	0|1	0
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Output ID	1	0 – 2	0
Output Status	1	0|1	
Duration	<=3	0 - 255(*100ms)	0
Toggle Times	<=3	0 – 255	0
Reserved	0		
Serial Number	4	(HEX)	
Tail Character	1	$	$

- <*Mode*>: The working mode of the crash detection / acceleration report function.
  - 0: Disable this function.
  - 1: Enable this function.
- <*Sensitivity*>: The crash detection sensitivity. The smaller the number is, the more sensitive this function will be.
- <*Report ACC*>: A numeral to indicate whether to report the acceleration data to the backend server.
  - 0: Disable the report.
  - 1: Enable the report. The device will report 75 sets of tri-axial acceleration data to the backend server via the message **+RESP:GTACC**.

The acknowledgment message of the **AT+GTCRA** command:

- **+ACK:GTCRA,**

Example: **+ACK:GTCRA,500100,135790246811220,,0019,20090214093254,11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	

Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', ' _ '	
Serial Number	4	(HEX)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

3.2.4.13.Jamming Detection

The command **AT+GTJDC** is used to configure the parameters for jamming detection. When the detection condition is matched, the device will report the **+RESP:GTJDR** or **+RESP:GTJDS** event message to the backend server according to the <*Mode*> setting.

➢ **AT+GTJDC=**

Example: **AT+GTJDC=gv55w,2,90,20,6,70,6,,1,1,0,0,,0019$**			
Parameter	**Length (Byte)**	**Range/Format**	**Default**
Password	4 – 20	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv55w
Mode	1	0 - 2	0
3G Threshold 1	<=2	0 - 99	90
3G Threshold 2	<=2	0-60	20
3G Increase Range	<=2	0-60	6
2G Threshold	<=2	0 - 99	70
2G Increase Range	<=2	0-31	6
Reserved			
Output ID	1	0 – 2	0
Output Status	1	0|1	0
Duration	<=3	0 - 255(*100ms)	0
Toggle Times	<=3	0 – 255	0
Reserved	0		
Serial Number	4	(HEX)	
Tail Character	1	$	$

✧ <*Mode*>: The working mode of the jamming detection function.

- 0: Disable jamming detection function.
- 1: Enable jamming detection function. If jamming is detected, the device will report the **+RESP:GTJDR** message upon entering jamming state.
- 2: Enable jamming detection function. If jamming is detected, the device will report the **+RESP:GTJDS** message upon entering jamming status or quitting jamming state.

✧ <*3G Threshold 1-2*>: If the signal is stronger than <*3G Threshold 1*> or <*3G Threshold 2*> for over 5s, the device will enter jamming state.

✧ <*3G Increase Range*>: If the signal increase range is more than <*3G Increase Range*> for over 5s, the device will enter jamming state.

✧ <*2G Threshold*>,<*2G Increase Range*>: If the signal is stronger than <*2G Threshold*> and the signal increase range is more than <*2G Increase Range*> for over 5s, the device will enter jamming state.

The acknowledgment message of the **AT+GTJDC** command:

➢ **+ACK:GTJDC,**

Example: **+ACK:GTJDC,500100,135790246811220,,0019,20090214093254,11F0$**			
Parameter	**Length (Byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', '_'	
Serial Number	4	(HEX)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

3.2.4.14.Jamming Behavior Setting

The command **AT+GTJBS** is used for the Jamming Behavior Setting function. There are two modes of Jamming Behavior Setting, i.e. Jamming Behavior Setting Configure Mode and Jamming Behavior Setting Reset Mode. The output1 is used for “cut off fuel” and the output2 is used for “siren”.

◆ **Jamming Behavior Setting Configure Mode**

➢ **AT+GTJBS=**

Example: **AT+GTJBS=gv55w,1,,60,30,1800,1,30,0,0,5,1,1,1,5,001A$**

Parameter	Length (Byte)	Range/Format	Default
Password	4 – 20	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv55w
Mode	1	0|1	0
Reserved	0		
Siren On Timer (T1)	5	1 - 65535(*100ms)	10
Siren Off Timer (T2)	5	1 - 65535(*100ms)	10
Ready Fuel Release Timer (T3)	5	1 – 65535 (sec)	1800
Check Speed	1	0|1	1
Speed Limit	3	0 - 999(km/h)	30
Output 1 Init State	1	0|1	0
Motion Sensor	1	0|1	0
GNSS Fix Failure Timeout Timer (T4)	3	1 – 100 (min)	5
Enable Siren	1	0|1	1
Release Fuel Cut-off Timer (T5)	4	0 – 1000 (min)	0
Check Jamming in T3	1	0|1	0
Waiting Release Fuel Timer (T6)	5	0 – 65535 (sec)	0
Serial Number	4	(HEX)	
Tail Character	1	$	$

- <*Mode*>: A numeral to indicate the working mode of Jamming Behavior Setting (JBS) function.
  - 0: Disable the JBS function.
  - 1: Jamming Behavior Setting Configure Mode.
- <*Siren On Timer (T1)*>: It specifies the length of time the siren is on.
- <*Siren Off Timer (T2)*>: It specifies the length of time the siren is off.
- <*Ready Fuel Release Timer (T3)*>: It indicates the length of time the fuel is cut off.
- <*Check Speed*>: Whether to check speed when the device enters into jamming state.
  - 0: Disable speed check.
  - 1: Enable speed check.
- <*Speed Limit*>: The speed limit to cut off fuel.
- <*Output 1 Init State*>: It is used to set the initial state of output 1.
- <*Motion Sensor*>: Whether the motion sensor needs to measure the motion status to cut off fuel when the GNSS fix failure timeout expires. If the <*Motion Sensor*> is set to 0, the state machine will always measure the GNSS fix state.

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- 0: Disable motion sensor.
- 1: Enable motion sensor.

✧ <*GNSS Fix Failure Timeout Timer (T4)*>: It indicates the GNSS timeout length of time.

✧ <*Enable Siren*>: It defines whether to control siren with the digital output 2 in the current JBS state.

✧ <*Release Fuel Cut-off Timer (T5)*>: If the device enters into JBS and then cuts off fuel, it will check the current jamming state when the <*Fuel Cut-off Timer (T3)*> condition is met. If the device does not quit the jamming state and the value of <*Release Fuel Cut-off Timer*> is greater than 0, the device will release fuel cut-off and the <*Release Fuel Cut-off Timer*> will start to work. When the <*Release Fuel Cut-off Timer*> condition is met, the device will check the current jamming state. If the device does not quit the jamming state, it will check the condition and decides whether to cut off fuel again. If the device doesn't quit the jamming state and the value of <*Release Fuel Cut-off Timer*> is 0, the device will maintain fuel cut-off status unless the device quits the jamming state.

✧ <*Check Jamming in T3*>: It determines whether the JBS state machine starts T3 timer to check jamming state every 2 seconds. If the device quits jamming state, T6 timer starts to work.

- 0: Do not check jamming state (compatible with old JBS state machines).
- 1: Check jamming state and start T6 timer.

✧ <*Waiting Release Fuel Timer (T6)*>: It indicates the length of time to be waited before releasing fuel and quitting JBS state machine.

The acknowledgment message of the **AT+GTJBS** command:

➢ **+ACK:GTJBS,**

Example: **+ACK:GTJBS,500100,135790246811220,,001A,20090214093254,11F0$**			
Parameter	**Length (Byte)**	**Range/Format**	**Default**
Protocol Version	6	XX8000 – XX80FF, X∈{'A' – 'Z','0' – '9'}	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', ' _ '	
Serial Number	4	(HEX)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

◆ **Jamming Behavior Setting Reset Mode**

➢ **AT+GTJBS=**

Example: AT+GTJBS=gv55w,2,,,,,001A$			
Parameter	**Length (Byte)**	**Range/Format**	**Default**
Password	4 – 20	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv55w
Mode	1	2	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Serial Number	4	(HEX)	
Tail Character	1	$	$

✧ <*Mode*>: A numeral to indicate the working mode of the Jamming Behavior Setting (JBS) function.

- 2: Jamming Behavior Setting Reset Mode.

The acknowledgment message of the **AT+GTJBS** command:

➢ **+ACK:GTJBS,**

Example: +ACK:GTJBS,500100,135790246811220,,001A,20090214093254,11F0$			
Parameter	**Length (Byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', '_'	
Serial Number	4	(HEX)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

3.2.5.IO Application

3.2.5.1.Digital Output

The **AT+GTOUT** command is used to configure digital output ports to output a specified wave shape. A total of four wave shapes are supported as shown below. If set to wave shape 1, the device will maintain this wave shape at the specified output port after power reset.

The digital output 1 is a latched output. The final status of the output will be latched during power off.

Wave Shape 1:

✓ <*Duration*> = 0ms, <*Toggle Times*> = 0

Figure 2: Wave Shape 1

Wave Shape 2:

✓ <*Duration*> = 500ms, <*Toggle Times*> = 1

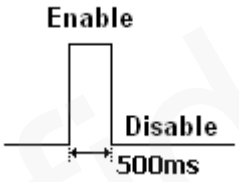

Figure 3: Wave Shape 2

Wave Shape 3:

✓ <*Duration*> = 800ms, <*Toggle Times*> = 3

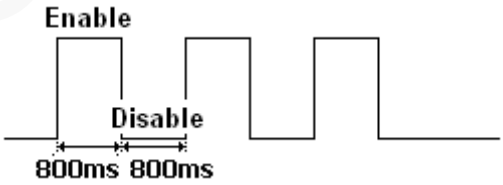

Figure 4: Wave Shape 3

Wave Shape 4:

✓ <*Duration*> = 800ms, <*Toggle Times*> = 0

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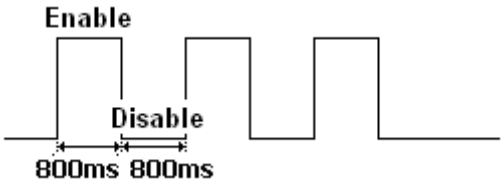

Figure 5: Wave Shape 4

➢ **AT+GTOUT=**

Example: **AT+GTOUT=gv55w,1,,,0,0,0,,,,1,,,,,,,0004$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv55w
Output1 Status	1	0|1	0
Duration	<=3	0 – 255(×100ms)	0
Toggle Times	<=3	0 – 255	0
Output2 Status	1	0|1	0
Duration	<=3	0 – 255(×100ms)	0
Toggle Times	<=3	0 – 255	0
Reserved	0		
Reserved	0		
Reserved	0		
DOS Report	1	0-3	0
Reserved	0		
Long Operation2	<=3	0 – 120min	0
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Serial Number	4	(HEX)	
Tail Character	1	$	$

✧ <*Output1–2 Status*>: Valid only for the wave shape 1 as shown in **Figure 2**, it is used to set the final status of the output port.

- 0: Disable status.
- 1: Enable status.

✧ <*Duration*>: Please refer to **Figure 2**, **Figure 3**, **Figure 4** and **Figure 5**. Unit: 100ms.

✧ <*Toggle Times*>: Please refer to **Figure 2**, **Figure 3**, **Figure 4** and **Figure 5**.

✧ <*DOS Report*>: A bitwise value to control whether or not to report **+RESP:GTDOS** when the status of wave shape 1 output changes.

- Bit 0: Output 1
- Bit 1: Output 2

✧ <*Long Operation2*>: The long operation time for output2. The output wave will be stopped on the specified output port after the length of time specified by this parameter. The parameter is valid only when the output wave shape is 1 or 4.

The acknowledgment message of the **AT+GTOUT** command:

➢ **+ACK:GTOUT,**

Example: **+ACK:GTOUT,500100,135790246811220,,0004,20090214093254,11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', ' _ '	
Serial Number	4	(HEX)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

3.2.5.2.Digital Input Port Setting

The command **AT+GTDIS** is used to configure the parameters of two digital input ports. The <*Ignition Detection*> input is dedicated to ignition signal detection. The other one is customizable. If the logic status of the customizable digital input changes, the device will report the message **+RESP:GTDIS** to the backend server.

➢ **AT+GTDIS=**

Example: **AT+GTDIS=gv55w,0,2,,0,1,1,4,1,,,,,,,,,,,0005$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv55w

Ignition Detection	1	0	0
Sample Period	<=2	0 - 12(*2sec)	1
MPF Debounce Time	<=2	0 - 12(*2sec)	0
Ignition Detection Mode	1	0-4	0
Input ID 1	1	1	1
Enable	1	0|1	0
Debounce Time	<=2	0 - 20(*10ms)	0
Validity Time	<=2	0 - 12(*2sec)	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Serial Number	4	(HEX)	
Tail Character	1	$	$

- <*Ignition Detection*>: The ID of the ignition detection port.
- <*Input ID 1*>: The digital input port ID.
- <*Sample Period*>: The sampling period of the non-interruptible input port.
- <*Enable*>: Enable/disable the interrupt input.
  - 0: Disable the interrupt input.
  - 1: Enable the interrupt input.
- <*MPF Debounce Time*>: The time for **+RESP:GTMPF** and **+RESP:GTMPN** report debouncing.
- <*Ignition Detection Mode*>: A numeral to define the ignition detection mode.
  - 0: Hard-wired ignition detection mode.
  - 1: Motion status to simulate ignition status. In this mode, movement state will trigger behaviors which should be triggered by ignition-on state, including (1) Enable

the odograph function to calculate the total mileage, (2) GNSS chip works in "always on" mode, (3) The fixed report, geo-fence (**AT+GTGEO** and **AT+GTPEO**) and speed alarm (**AT+GTSPD**) report functions are resumed, and non-movement state will trigger behaviors which should be triggered by ignition-off state, including (1) Disable the odograph function to calculate the total mileage, (2) GNSS chip works in "only on when needed" mode, (3) The fixed report, geo-fence (**AT+GTGEO** and **AT+GTPEO**) and speed alarm (**AT+GTSPD**) report functions are suspended when the <*Power Saving Mode*> is set to mode 1.

- 2: External power voltage mode (virtual ignition detection). Ignition state correlates with the voltage of external power. Please use the command **AT+GTVVS** to configure the parameters and enable the function of **AT+GTEPS**.
- 3: Reserved.
- 4: Accelerometer mode (virtual ignition detection). Ignition state correlates with the state of accelerometer. Please use the command **AT+GTAVS** to configure the parameters.

Note: The priority level of the hard-wired ignition detection mode is the highest. This means even if <*Ignition Detection Mode*> is not set to 0, but hard-wired line has connected to the terminal, then the terminal will only measure the ignition state by hard-wired igniton detection mode.

When both virtual ignition detection function and the corresponding report (**+RESP:GTVGN**, **+RESP:GTVGF** and **+RESP:GTVGL**) controlled by <*Event Mask*> in the command **AT+GTCFG** are enabled, **+RESP:GTVGN**, **+RESP:GTVGF** and **+RESP:GTVGL** can be reported to the backend server.

✧ <*Validity Time*>: The validity time of the input port. 0 means "Do not check the validity time". Only when a new input state is maintained for at least the period of time specified by the parameter <*Validity Time*> will the new state of the device be considered valid.

The acknowledgment message of the **AT+GTDIS** command:

➢ **+ACK:GTDIS,**

Example: **+ACK:GTDIS,500100,135790246811220,,0005,20090214093254,11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', ' _ '	
Serial Number	4	(HEX)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

3.2.5.3.Input/Output Port Binding

This command is used to configure the user defined output-port actions triggered by input ports. If I/O binding is configured and the corresponding condition is met, a specified wave shape will be output on a specified output port. Otherwise, the device will restore the initial status of the specified output port. The device will report the message **+RESP:GTIOB** to the backend server when the logic status of bound input ports changes.

➢ **AT+GTIOB=**

Example: **AT+GTIOB=gv55w,1,3,3,1,2,1,1,0,,,,,FFFF$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv55w
IOB ID	1	0 – 3	
Input Mask	1	0 – 3	0
Trigger Mask	1	0 – 3	0
Input Sample Period	<=2	0 - 12(*2sec)	0
Output ID	1	0 – 2	0
Output Status	1	0|1	0
Duration	<=3	0 - 255(*100ms)	0
Toggle Times	<=3	0 – 255	0
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Serial Number	4	(HEX)	
Tail Character	1	$	$

✧ <*IOB ID*>: The ID of the user defined IO binding.

✧ <*Input Mask*>: Bitwise mask for input ports composition. Each of the two bits (Bit 0 and Bit 1) represents one digital input port. Set a bit to 1 to enable the corresponding input port and 0 to disable the corresponding input port.

- Bit 0: Ignition detection
- Bit 1: Digital input 1

✧ <*Trigger Mask*>: Bitwise mask for trigger condition composition of the corresponding input

ports. Each of the two bits (Bit 0 and Bit 1) represents the logic status of the corresponding input port to trigger the IOB event. Set a bit to 1 to use "Enable status" as the trigger condition and 0 to use "Disable status" as the trigger condition. Only when the logic status of all the input ports in one IO binding meets the trigger condition will the IOB event be triggered.

- Bit 0: Ignition detection
- Bit 1: Digital input 1

✧ <*Input Sample Period*>: The sampling interval for checking the status of all the digital input ports in one IO binding. **AT+GTIOB** and **AT+GTDIS** use separate sample periods to check the input port status even for the same input port.

✧ <*Output ID*>: The ID of the output port to output specified wave when the trigger condition is met. 0 means "No wave will be output".

The acknowledgment message of the **AT+GTIOB** command:

➢ **+ACK:GTIOB,**

Example: **+ACK:GTIOB,500100,135790246811220,,1,0006,20090214093254,11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', '_'	
IOB ID	1	0 – 3	
Serial Number	4	(HEX)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

3.2.5.4.External Power Supply Monitoring

The command **AT+GTEPS** is used to configure the parameters of external power supply monitoring. The device will measure and monitor the voltage of the external power supply. If the voltage of the external power supply matches the predefined alarm condition, the device will report an alarm message **+RESP:GTEPS** to the backend server to notify the status of the external power supply.

To make sure this function works in all situations, please switch on the internal backup battery in case that the voltage of the external power may drop to a very low level.

➢ **AT+GTEPS=**

Example: **AT+GTEPS=gv55w,2,250,12000,3,2,1,1,0,0,1,,,,0007$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv55w
Mode	1	0 - 2	0
Min Threshold	<=5	250 - 32000(mV)	250
Max Threshold	<=5	250 - 32000(mV)	250
Sample Period	<=2	0 - 12(*2sec)	0
Debounce Time	1	0 - 5(sec)	0
Output ID	1	0 – 2	
Output Status	1	0|1	
Duration	<=3	0 - 255(*100ms)	0
Toggle Times	<=3	0 – 255	0
Sync with FRI	1	0|1	0
Voltage Margin Error	3	0 – 100(×10mv)	0
Debounce Voltage Threshold	3	0 – 100 (×100mv)	0
Reserved	0		
Serial Number	4	(HEX)	
Tail Character	1	$	$

✧ <*Mode*>: The working mode of the external power supply monitoring function.

- 0: Disable the external power supply monitoring function.
- 1: Enable the external power supply monitoring function: If the current voltage is within the range of (<*Min Threshold*>, <*Max Threshold*>), the **+RESP:GTEPS** alarm will be triggered.
- 2: Enable the external power supply monitoring function: If the current voltage is outside the range of (<*Min Threshold*>, <*Max Threshold*>), the **+RESP:GTEPS** alarm will be triggered.

✧ <*Min Threshold*>: The lower limit to the voltage of the external power supply to trigger the alarm.

✧ <*Max Threshold*>: The upper limit to the voltage of the external power supply to trigger the alarm.

✧ <*Sample Period*>: The period for sampling the external power supply.

✧ <*Debounce Time*>: The time for debouncing external power voltage to avoid excessive

voltage drop in the external power supply.

- <*Output ID*>: It specifies the ID of the output port (1 - 2) to output specified wave shape when the **+RESP:GTEPS** alarm is triggered. If it is set to 0, there will be no output wave.
- <*Sync with FRI*>: Besides the **+RESP:GTEPS** alarm report, the device can also send the voltage of external power supply periodically along with the fixed report message.
  - 0: Do not report external power supply voltage with fixed report message.
  - 1: Report external power supply voltage with fixed report message.
- <*Voltage Margin Error*>: This parameter is used together with <*Min Threshold*> and <*Max Threshold*> parameters. It indicates the voltage margin error of <*Min Threshold*> and <*Max Threshold*>. If the current voltage detected falls within the range of the <*Voltage Margin Error*> of the <*Min Threshold*> or the <*Voltage Margin Error*> of <*Max Threshold*>, it will not trigger **+RESP:GTEPS** alarm report. For example, if the <*Min Threshold*> is set to 6000mv, the <*Max Threshold*> is set to 12000mv, and the <*Voltage Margin Error*> is set to ±100mv, the current voltage will not trigger **+RESP:GTEPS** alarm report when the current voltage meets the condition (5900mv < current voltage <6100mv) or (11900mv < current voltage <12100mv). The parameter improves the performance of **+RESP:GTEPS** alarm report.
- <*Debounce Voltage Threshold*>: This parameter is used together with <*Debounce Time*>. If the voltage drops or bursts dramatically more than <*Debounce Voltage Threshold*>, the device will start to debounce voltage according to <*Debounce Time*>.

The acknowledgment message of the **AT+GTEPS** command:

- **+ACK:GTEPS,**

Example: **+ACK:GTEPS,500100,135790246811220,,0007,20090214093254,11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', ' ' _	
Serial Number	4	(HEX)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

3.2.6. Virtual Ignition Detection

3.2.6.1.Voltage Virtual Ignition Setting

The command **AT+GTVVS** is used to configure parameters for checking ignition state by voltage. It works when hard-wired ignition line is not connected and Voltage Virtual Ignition mode is

enabled by **AT+GTDIS**.

➢ **AT+GTVVS=**

Example: **AT+GTVVS=gv55w,13000,500,10,,,000B$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Password	4 - 20	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv55w
Ignition On Voltage	<=5	250 - 28000(mV)	13500
Voltage Offset	<=4	200 - 2000(mV)	600
Debounce	<=3	5 - 255(sec)	10
Reserved	0		
Reserved	0		
Serial Number	4	(HEX)	
Tail Character	1	$	$

✧ <*Ignition On Voltage*>: The external power voltage in ignition on state. Different vehicles have different voltage in ignition on state. This parameter should be set very close to the original external power so that the device can detect ignition event more accurately.

✧ <*Voltage Offset*>: The offset from <*Ignition On Voltage*> used to determine ignition on or ignition off state. If the voltage of the external power is higher than <*Ignition On Voltage*> - <*Voltage Offset*> and is maintained for <*Debounce*> seconds, the device will consider it as virtual ignition on state. If the voltage of the external power is lower than <*Ignition On Voltage*> - <*Voltage Offset*> and is maintained for <*Debounce*> seconds, the device will consider it as virtual ignition off state.

Note: <*Ignition On Voltage*> and <*Voltage Offset*> values will be adjusted automatically according to measured external power voltage data if necessary to make the ignition measurement more precise.

✧ <*Debounce*>: The debounce time before updating virtual ignition state according to the external power voltage. Unit: second.

The acknowledgment message of the **AT+GTVVS** command:

➢ **+ACK:GTVVS,**

Example: **+ACK:GTVVS,500100,135790246811220,,0000,20090214093254,11F0$**			
Parameter	**Length (Byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	

Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', ' _ '	
Serial Number	4	(HEX)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

3.2.6.2.Accelerometer (Motion Status) Virtual Ignition Setting

The command **AT+GTAVS** is used to configure parameters for checking ignition state based on motion status. It works when hard-wired ignition line is not connected and Accelerometer (Motion status) Virtual Ignition mode is enabled by **AT+GTDIS**.

- **AT+GTAVS=**

Example: **AT+GTAVS=gv55w,20,30,,,,000B$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Password	4 - 20	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv55w
Rest Validity	<=3	1 - 255(sec)	20
Movement Validity	<=3	1 - 255(sec)	60
Reserved	0		
Reserved	0		
Reserved	0		
Serial Number	4	(HEX)	
Tail Character	1	$	$

- <*Rest Validity*>: A time parameter to determine whether the device enters stationary state. The device will be considered in stationary state after the motion sensor detects stationary state and the stationary state is maintained for the period of time specified by the parameter <*Rest Validity*>.
- <*Movement Validity*>: A time parameter to determine whether the device enters moving state. The device will be considered in moving state after the motion sensor detects movement and the moving state is maintained for the period of time specified by the parameter <*Movement Validity*>.

The acknowledgment message of the **AT+GTAVS** command:

- **+ACK:GTAVS,**

Example: +ACK:GTAVS,500100,135790246811220,,0000,20090214093254,11F0$			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', '_'	
Serial Number	4	(HEX)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

3.2.7.Other Settings

3.2.7.1.Real Time Operation

The command **AT+GTRTO** is used to retrieve information from the terminal or control the terminal when it executes certain actions.

➢ **AT+GTRTO=**

Example: AT+GTRTO=gv55w,2,FRI,,,,,0015$ AT+GTRTO=gv55w,2, 0000000000000003,,,,,0015$ AT+GTRTO=gv55w,A,,,,,,0015$			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv55w
Sub Command	2	0 – 0xD	
AT Command / Configuration Mask	3|16	"SRI" | 0000000000000000 – FFFFFFFFFFFFFFFF	
Output Direction	1	0-3	
Reserved	0		
Reserved	0		
Reserved	0		
Serial Number	4	(HEX)	

Tail Character	1	$	$

✧ <*Sub Command*>: A hex value to indicate the sub command to be executed.

- 0: ***GNSS***. Get the GNSS related information via the message **+RESP:GTGPS**.
- 1: ***RTL***. Request the terminal to report its current position immediately via the message **+RESP:GTRTL**.
- 2: ***READ***. Get the current configuration of the terminal via the message **+RESP:GTALS**, **+RESP:GTALC** or **+RESP:GTALM**.
- 3: ***REBOOT***. Reboot the terminal.
- 4: ***RESET***. Reset all parameters to factory settings and clear all buffered messages. Parameters configured by **AT+GTBSI**, **AT+GTSRI**, **AT+GTCFG**, **AT+GTTMA** and **AT+GTPIN** will not be reset.
- 5: ***PWROFF***. Power off the device.
- 6: ***CID***. Get the ICCID of the SIM card being used by the terminal via the message **+RESP:GTCID**.
- 7: ***CSQ***. Get the current network signal level of the terminal via the message **+RESP:GTCSQ**.
- 8: ***VER***. Get the version information of the device via the message **+RESP:GTVER**.
- 9: ***BAT***. Get the battery level and adapter status of the terminal via the message **+RESP:GTBAT**.
- A: ***IOS***. Get the status of all the IO ports via the message **+RESP:GTIOS**.
- B: ***TMZ***. Get the time zone settings via the message **+RESP:GTTMZ**.
- C: ***GIR***. Get cell information via the message **+RESP:GTGSM**.
- D: ***DELBUF***. Delete all the buffered reports.

✧ <*AT Command / Configuration Mask*>:

- AT Command: To get single AT command configuration when <*Sub Command*> is set to 2, please follow the format in the following example. Example: To get the configuration of **AT+GTFRI**, set AT+GTRTO=gv55w,2,FRI,,,,,0015$, and get it via **+RESP:GTALS.**

  Note: To get local time information, please use "TMZ" instead of "TMA".
- Configuration Mask: If <*Sub Command*> is set to 2, configuration information which varies depending on the selected configuration mask can be obtained via the message **+RESP:GTALC** and the configuration mask must be 16 bytes. If it is less than 16 bytes, add '0' in the high bytes of the configuration mask.

Configuration Mask Table:

Mask Bit	Item
Bit 62	AVS
Bit 61	VVS
Bit 60	Reserved
Bit 59	GAM
Bit 58	Reserved

Bit 57	Reserved
Bit 56	Reserved
Bit 55	Reserved
Bit 54	Reserved
Bit 53	Reserved
Bit 52	Reserved
Bit 51	Reserved
Bit 50	UDF
Bit 49	CMD
Bit 48	Reserved
Bit 47	Reserved
Bit 46	Reserved
Bit 45	Reserved
Bit 44	Reserved
Bit 43	Reserved
Bit 42	Reserved
Bit 41	Reserved
Bit 40	PEO
Bit 39	Reserved
Bit 38	Reserved
Bit 37	UPC
Bit 36	Reserved
Bit 35	Reserved
Bit 34	Reserved
Bit 33	Reserved
Bit 32	Reserved
Bit 31	JBS
Bit 30	FFC
Bit 29	RMD
Bit 28	Reserved

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Bit 27	SSR
Bit 26	SPA
Bit 25	BZA
Bit 24	OUT
Bit 23	PDS
Bit 22	CRA
Bit 21	HRM
Bit 20	WLT
Bit 19	JDC
Bit 18	HBM
Bit 17	HMC
Bit 16	IDL
Bit 15	DOG
Bit 14	OWH
Bit 13	PIN
Bit 12	SOS
Bit 11	SPD
Bit 10	GEO
Bit 9	FRI
Bit 8	TMZ
Bit 7	IOB
Bit 6	DIS
Bit 5	EPS
Bit 4	TOW
Bit 3	CFG
Bit 2	Reserved
Bit 1	SRI
Bit 0	BSI

Set <*Sub Command*> to 4 to specify the configuration to be reset. To specify a configuration, use the last three letters of the protocol command. For example, to reset configuration of the **AT+GTFRI** command, send the command "**AT+GTRTO=gv55w,4,FRI,,,,,000F$**". Also, the buffered messages saved can be deleted with the command "**AT+GTRTO=gv55w,4,BUF,,,,,000F$**". Configuration of the commands

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AT+GTBSI, **AT+GTSRI**, **AT+GTQSS**, **AT+GTCFG**, and **AT+GTTMA** cannot be reset by this command.

✧ <*Output Direction*>: This parameter determines the destination that the response message of the RTO command will be reported to. This field is invalid for <*Sub Command*> 3(REBOOT), 4(RESET), and 5(PWROFF).

- 0: The message will be output to the backend server.
- 1: Reserved
- 2: Reserved
- 3: If the command is received via SMS, the message will be output to the original SMS number; otherwise the message will be output to the backend server.

Note: If this function is used for getting configurations and the length of a message is over 160 bytes, the terminal will report to the user a warning message which reads "The configuration information is too long to report by SMS".

The acknowledgment message of the **AT+GTRTO** command:

➢ **+ACK:GTRTO,**

Example: **+ACK:GTRTO,500100,135790246811220,,IOS,0015,20090214093254,11F1$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', ' _ '	
Sub Command	<=6	Sub Command String	
Serial Number	4	(HEX)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

✧ <*Sub Command*>: A string which indicates the sub command of **AT+GTRTO**.

3.2.7.2.Hour Meter Count

The command **AT+GTHMC** is used to measure the accumulated use time with each actuation of the ignition on. To use this command, it is necessary to connect the ignition signal to the device or enable virtual ignition detection. If the hour meter count function is enabled, <*Hour Meter Count*> will be included in **+RESP:GTFRI**, **+RESP:GTIGN, +RESP:GTVGN, +RESP:GTIGF** or **+RESP:GTVGF** report messages sent by the device.

➢ **AT+GTHMC=**

Example: **AT+GTHMC=gv55w,1,12345:12:34,,,,,,,,0018$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv55w
Hour Meter Enable	1	0|1|2	0
Initial Hour Meter Count	11	00000:00:00-99999:00:00	00000:00:00
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Serial Number	4	(HEX)	
Tail Character	1	$	$

✧ <*Hour Meter Enable*>: Enable/disable the hour meter count function. If the hour meter count function is enabled, the hour meter count will be increased when the device detects the vehicle ignition on.

- 0: Disable the hour meter count function.
- 1: Enable the hour meter count function. The current <*Hour Meter Count*> reported in **+RESP:GTFRI**, **+RESP:GTIGN** and **+RESP:GTIGF** is equal to (=) <*Hour Meter Count*> + current <*Initial Hour Meter Count*> - last <*Initial Hour Meter Count*>.
- 2: Enable hour meter count function. The current <*Hour Meter Count*> reported in **+RESP:GTFRI**, **+RESP:GTIGN** or **+RESP:GTIGF** is the same as the value of <*Initial Hour Meter Count*>.

✧ <*Initial Hour Meter Count*>: It is formatted with 5 hour digits, 2 minute digits and 2 second digits, and ranges from 00000:00:00 to 99999:00:00. When the ignition is turned on for the first time, the <*Hour Meter Count*> which is reported in **+RESP:GTFRI**, **+RESP:GTIGN** or **+RESP:GTIGF** will be increased based on this value.

The acknowledgment message of the **AT+GTHMC** command:

➢ **+ACK:GTHMC,**

Example: **+ACK:GTHMC,500100,135790246811220,,0018,20090214093254,11F0$**

Parameter	Length (byte)	Range/Format	Default
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', '_'	
Serial Number	4	(HEX)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

3.2.7.3.White List

The command **AT+GTWLT** is used to configure a list of authorized phone numbers which are allowed to perform the location by call function.

➢ **AT+GTWLT=**

Example: **AT+GTWLT=gv55w,1,1,2,13813888888,13913999999,,,,,0018$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv55w
Call Filter	1	0 – 7	0
Start Index	<=2	1 – 10	
End Index	<=2	1 – 10	
Phone Number List	<=20*10	(Call Number)	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Serial Number	4	(HEX)	
Tail Character	1	$	$

✧ <*Call Filter*>: Bitwise mask to configure the white list for a specific use.

- Bit 0: White list for location by call function.
- Bit 1: Reserved.

- Bit 2: White list for SMS.

For each bit, set it to 1 to enable the corresponding function, and 0 to disable the corresponding function. If a bit is set to 1, only the phone number(s) in white list will be valid for the function specified for that bit. If a bit is set to 0, the corresponding white list will be ignored.

✧ <*Start Index*>, <*End Index*>: The index range of the white list to which the phone numbers are to be updated. For example, if <*Start Index*> is set to 1 and <*End Index*> is set to 2, then the first two phone numbers in the white list will be updated by the numbers provided in the parameter <*Phone Number List*>. The two parameters <*Start Index*> and <*End Index*> determine the total number of phone numbers that will be updated. If either one is empty, there should be no <*Phone Number List*> following the empty value.

✧ <*Phone Number List*>: A list of comma-separated phone numbers to be updated to the white list. The number of the phone numbers is determined by <*Start Index*> and <*End Index*>.

Note: If more phone numbers are needed, please adjust <*Start Index*> and <*End Index*> for appropriate setup. If some phone numbers in <*Phone Number List*> are empty, then the corresponding phone numbers will be deleted. For example, to delete the 4th, 5th and 6th numbers of the <*Phone Number List*>, please set <*Start Index*> to 4 and set <*End Index*> to 6 and keep those three phone numbers of <*Phone Number List*> empty.

The acknowledgment message of the **AT+GTWLT** command:

➢ **+ACK:GTWLT,**

Example: **+ACK:GTWLT,500100,135790246811220,,0018,20090214093254,11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', ' ' _	
Serial Number	4	(HEX)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

Note: Make sure the total size of the command is not greater than 160 bytes if it is sent via SMS.

3.2.7.4.Command String Storage

The **AT+GTCMD** command is used to store the commands which will be configured by the

command **AT+GTUDF**.

➢ **AT+GTCMD=**

Example: **AT+GTCMD=gv55w,1,1,AT+GTRTO=gv55w,0,,,,,,000B$,,,,,0005$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Password	4 – 6	'0' – '9', 'a' – 'z', 'A' – 'Z'	gv55w
Mode	1	0-1	0
Stored cmd ID	3	0 – 31	
Command String	200	AT command	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Serial Number	4	(HEX)	
Tail Character	1	$	$

✧ <*Mode*>: A numeral to indicate the mode of storing a command string.
- 0: Delete the stored command.
- 1: Add the stored command.

✧ <*Stored cmd ID*>: A numeral to identify the stored command.

✧ <*Command String*>: The whole content of the stored command.

The acknowledgement message of the **AT+GTCMD** command:

➢ **+ACK:GTCMD**

Example: **+ACK:GTCMD,500100,135790246811220,,0005,20100310172830,11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	20	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', '_'	
Serial Number	4	(HEX)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

3.2.7.5.User Defined Function

The **AT+GTUDF** command is used to bind input events and the stored commands. The input events will trigger the corresponding stored commands.

➢ **AT+GTUDF=**

Example: **AT+GTUDF=gv55w,1,0,7,0,0,0,7,1,7,7,,,FFFF$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Password	4 – 6	'0' – '9', 'a' – 'z', 'A' – 'Z'	gv55w
Mode	1	0-2	0
Group ID	2	0 – 31	
Input ID Mask	16	(HEX)	
Debounce Time	5	0-86400(s)	0
Inzizo Mask	5	(HEX)	0
Outzizo Mask	5	(HEX)	0
Stocmd ID Mask	16	(HEX)	
Stocmd Ack	1	0|1	0
Inpeo Mask	<=5	(HEX)	0
Outpeo Mask	<=5	(HEX)	0
Reserved			
Reserved			
Serial Number	4	(HEX)	
Tail Character	1	$	$

- <*Mode*>: The working mode of the user defined function.
  - 0: Disable the group.
  - 1: Enable the group.
  - 2: Delete the group.
- <*Group ID*>: A numeral to identify the group of input events and the stored commands to be executed.
- <*Input ID Mask*>: Bitwise mask which indicates the input events included in the group.

  Bit 0 (00000001): Select ID 1

  Bit 1 (00000002): Select ID 2

  Bit 2 (00000004): Select ID 3

  Bit 3 (00000008): Select ID 4

  For example:

  Bit (00000003): Select ID 1, and ID 2

  Bit (00000017): Select ID 1, ID 2, ID 3, and ID 5

ID	Mask Bit	Item
1	**Bit 0**	Power on finished
2	**Bit 1**	Ignition on
3	**Bit 2**	Ignition off
4	**Bit 3**	The data service is activated.
5	**Bit 4**	The data service is not activated.
6	**Bit 5**	Registered on the network
7	**Bit 6**	Not registered on the network
8	**Bit 7**	Network roaming

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9	**Bit 8**	Network non-roaming
10	**Bit 9**	SIM card is locked
11	**Bit 10**	GNSS is on
12	**Bit 11**	GNSS is off
13	**Bit 12**	The device is stationary
14	**Bit 13**	The device is moving
15	**Bit 14**	External charge inserted
16	**Bit 15**	No external charge
17	**Bit 16**	The device is charging
18	**Bit 17**	The device is not charging
19	**Bit 18**	Reserved
20	**Bit 19**	Reserved
21	**Bit 20**	Digital input 1 is low
22	**Bit 21**	Digital input 1 is high
23	**Bit 22**	SIM card is inserted
24	**Bit 23**	SIM card is not inserted
25	**Bit 24**	Reserved
26	**Bit 25**	Reserved
27	**Bit 26**	Inside the speed range
28	**Bit 27**	Outside the speed range
29	**Bit 28**	Messages need to be sent
30	**Bit 29**	No messages need to be sent

- <*Debounce Time*>: The debounce time for input events before the specified stored commands are executed.
- <*Inzizo Mask*>: Bitwise mask used to indicate the input events which occur within the Geo-fence.

ID	Mask Bit	Item
1	**Bit 0**	Inside the Geo 0
2	**Bit 1**	Inside the Geo 1
3	**Bit 2**	Inside the Geo 2
4	**Bit 3**	Inside the Geo 3
5	**Bit 4**	Inside the Geo 4
6	**Bit 5**	Inside the Geo 5
7	**Bit 6**	Inside the Geo 6
8	**Bit 7**	Inside the Geo 7
9	**Bit 8**	Inside the Geo 8
10	**Bit 9**	Inside the Geo 9
11	**Bit 10**	Inside the Geo 10
12	**Bit 11**	Inside the Geo 11
13	**Bit 12**	Inside the Geo 12
14	**Bit 13**	Inside the Geo 13

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15	**Bit 14**	Inside the Geo 14
16	**Bit 15**	Inside the Geo 15
17	**Bit 16**	Inside the Geo 16
18	**Bit 17**	Inside the Geo 17
19	**Bit 18**	Inside the Geo 18
20	**Bit 19**	Inside the Geo 19

✧ <*Outzizo Mask*>: Bitwise mask to indicate the input events which occur outside the Geo-fence.

ID	Mask Bit	Item
1	**Bit 0**	Outside the Geo 0
2	**Bit 1**	Outside the Geo 1
3	**Bit 2**	Outside the Geo 2
4	**Bit 3**	Outside the Geo 3
5	**Bit 4**	Outside the Geo 4
6	**Bit 5**	Outside the Geo 5
7	**Bit 6**	Outside the Geo 6
8	**Bit 7**	Outside the Geo 7
9	**Bit 8**	Outside the Geo 8
10	**Bit 9**	Outside the Geo 9
11	**Bit 10**	Outside the Geo 10
12	**Bit 11**	Outside the Geo 11
13	**Bit 12**	Outside the Geo 12
14	**Bit 13**	Outside the Geo 13
15	**Bit 14**	Outside the Geo 14
16	**Bit 15**	Outside the Geo 15
17	**Bit 16**	Outside the Geo 16
18	**Bit 17**	Outside the Geo 17
19	**Bit 18**	Outside the Geo 18
20	**Bit 19**	Outside the Geo 19

✧ <*Stocmd ID Mask*>: The bitwise mask of the stored commands which will be executed after the status of the group becomes TRUE (i.e. All input events included in the group occur).

✧ <*Stocmd Ack*>: A numeral to indicate whether to return an acknowledgement message after a stored command is executed.

- 0: Do not send an acknowledgement message when a stored command is executed.
- 1: Send an acknowledgement message when a stored command is executed.

✧ <*Inpeo Mask*>: The bitwise mask to indicate the input events within the polygon Geo-Fence.

ID	Mask Bit	Item
1	**Bit 0**	Inside the Peo 0
2	**Bit 1**	Inside the Peo 1
3	**Bit 2**	Inside the Peo 2

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4	**Bit 3**	Inside the Peo 3
5	**Bit 4**	Inside the Peo 4
6	**Bit 5**	Inside the Peo 5
7	**Bit 6**	Inside the Peo 6
8	**Bit 7**	Inside the Peo 7
9	**Bit 8**	Inside the Peo 8
10	**Bit 9**	Inside the Peo 9
11	**Bit 10**	Inside the Peo 10
12	**Bit 11**	Inside the Peo 11
13	**Bit 12**	Inside the Peo 12
14	**Bit 13**	Inside the Peo 13
15	**Bit 14**	Inside the Peo 14
16	**Bit 15**	Inside the Peo 15
17	**Bit 16**	Inside the Peo 16
18	**Bit 17**	Inside the Peo 17
19	**Bit 18**	Inside the Peo 18
20	**Bit 19**	Inside the Peo 19

✧ <*Outpeo Mask*>: The bitwise mask to indicate the input events outside the polygon Geo-Fence.

ID	Mask Bit	Item
1	**Bit 0**	Outside the Peo 0
2	**Bit 1**	Outside the Peo 1
3	**Bit 2**	Outside the Peo 2
4	**Bit 3**	Outside the Peo 3
5	**Bit 4**	Outside the Peo 4
6	**Bit 5**	Outside the Peo 5
7	**Bit 6**	Outside the Peo 6
8	**Bit 7**	Outside the Peo 7
9	**Bit 8**	Outside the Peo 8
10	**Bit 9**	Outside the Peo 9
11	**Bit 10**	Outside the Peo 10
12	**Bit 11**	Outside the Peo 11
13	**Bit 12**	Outside the Peo 12
14	**Bit 13**	Outside the Peo 13
15	**Bit 14**	Outside the Peo 14
16	**Bit 15**	Outside the Peo 15
17	**Bit 16**	Outside the Peo 16
18	**Bit 17**	Outside the Peo 17
19	**Bit 18**	Outside the Peo 18
20	**Bit 19**	Outside the Peo 19

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Note: The maximum number of the stored commands to be executed in a group is five.

The acknowledgement message of the **AT+GTUDF** command:

- **+ACK:GTUDF**

Example: **+ACK:GTUDF,500100,135790246811220,,0005,20100310172830,11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	20	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', '_'	
Serial Number	4	(HEX)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

3.2.7.6.GNSS-Assisted Motion Measurement

The command **AT+GTGAM** is used for assisting in measuring motion with GNSS if the sensor detects stationary state while the vehicle is ignition on.

- **AT+GTGAM=**

Example: **AT+GTGAM=gv55w,1,1,10,10,10,5,,,,,0006$**			
Parameter	**Length (Byte)**	**Range/Format**	**Default**
Password	4 – 20	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv55w
Mode	1	0|1	1
Speed Mode	1	0|1	1
Motion Speed Threshold	<=2	5 - 50(km/h)	25
Motion Cumulative Time	<=3	10 - 100(sec)	10
Motionless Cumulative Time	<=3	10 - 250(sec)	60
GNSS Fix Failure Timeout	<=4	5 - 1800(sec)	60
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Serial Number	4	(HEX)	

Tail Character	1	$	$

- ✧ <*Mode*>: The working mode of the GNSS-assisted motion measurement function.
  - 0: Disable this function.
  - 1: Enable this function.
- ✧ <*Speed Mode*>: Enable/disable the use of GNSS speed to assist with motion measurement based on motion sensor state.
  - 0: Disable this feature.
  - 1: Enable this feature.
- ✧ <*Motion Speed Threshold*>: The speed threshold which is combined with GNSS speed to measure the status of movement.
- ✧ <*Motion Cumulative Time*>: If the average speed is higher than <*Motion Speed Threshold*> for <*Motion Cumulative Time*>, the device is considered to be in moving state.
- ✧ <*Motionless Cumulative Time*>: If the average speed is lower than <*Motion Speed Threshold*> for <*Motionless Cumulative Time*>, the device is considered to be in stationary state.
- ✧ <*GNSS Fix Failure Timeout*>: If GNSS takes longer than <*GNSS Fix Failure Timeout*> before it gets a fix, the device will update the motion status from the motion sensor.

The acknowledgment message of the **AT+GTGAM** command:

➢ **+ACK:GTGAM,**

Example: **+ACK:GTGAM,500100,135790246811220,,1,0006,20090214093254,11F0$**			
Parameter	**Length (Byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', '_'	
Serial Number	4	(HEX)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

3.2.7.7.SMS Position Request

This command can only be sent via SMS, and can configure the device to report SMS message with Google Maps hyperlink to the current position immediately. Please refer to Chapter 3.3.6 for the details of the position report.

Command format	get position
Example	get position

get position: It is a command string to request the current position.

3.3.Report

This section defines the formats of the report messages. Due to the size limit of an SMS message (160 bytes), it is recommended to carefully set the <*Report Composition Mask*> in **AT+GTCFG** to limit the length of the report message which contains GNSS position information in SMS transmission. Otherwise the report message will be truncated to fit the length of an SMS message.

3.3.1.Position Related Report

- **+RESP:GTTOW,**

If the tow alarm is enabled by the command **AT+GTTOW**, the device will send the message **+RESP:GTTOW** to the backend server when the motion sensor detects tow.

- **+RESP:GTDIS,**

If the status change of digital inputs is detected, the device will send the message **+RESP:GTDIS** to the backend server.

- **+RESP:GTIOB,**

If the IO binding is configured and the corresponding condition is met, the device will report the message **+RESP:GTIOB** to the backend server.

- **+RESP:GTSPD,**

If the speed alarm is enabled, the device will send the message **+RESP:GTSPD** to the backend server when the speed of the device which meets the alarm condition is detected.

- **+RESP:GTSOS,**

If the SOS function is enabled, the device will send the message **+RESP:GTSOS** to the backend server when a specified digital input port triggers SOS.

- **+RESP:GTRTL,**

After the device receives the command **AT+GTRTO**, it will start GNSS to get the current position and then send the message **+RESP:GTRTL** to the backend server.

- **+RESP:GTDOG,**

The protocol watchdog reboot message.

- **+RESP:GTIGL,**

The location message when the ignition is on/off.

- **+RESP:GTHBM,**

If harsh behavior is detected, this message will be sent to the backend server.

- **+RESP:GTVGL,**

The location message for virtual ignition on and ignition off.

All of the above report messages have the same format as shown below.

Example:

+RESP:GTTOW,500100,135790246811220,,,10,1,1,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,2000.0,20090214093254,11F0$

+RESP:GTDIS,500100,135790246811220,,,20,1,1,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,2000.0,20090214093254,11F0$

+RESP:GTIOB,500100,135790246811220,,,10,1,1,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,2000.0,20090214093254,11F0$

+RESP:GTSPD,500100,135790246811220,,,00,1,1,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,2000.0,20090214093254,11F0$

+RESP:GTSOS,500100,135790246811220,,,00,1,1,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,2000.0,20090214093254,11F0$

+RESP:GTRTL,500100,135790246811220,,,00,1,1,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,2000.0,20090214093254,11F0$

+RESP:GTDOG,500100,135790246811220,,,01,1,1,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,2000.0,20090214093254,11F0$

+RESP:GTIGL,500100,135790246811220,,,00,1,1,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,2000.0,20090214093254,11F0$

+RESP:GTHBM,500100,135790246811220,,,10,1,1,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,2000.0,20090214093254,11F0$

+RESP:GTHBM,500100,135790246811220,,,11,1,1,24.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,2000.0,20090214093254,11F0$

+RESP:GTVGL,500100,135790246811220,,,00,1,1,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,2000.0,20090214093254,11F0$

Parameter	Length (byte)	Range/Format	Default

Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', '_'	
Reserved			
Report ID / Report Type	2	XY(X∈{0 - 4}, Y∈{0 - 5})	
Number	1	0|1	
GNSS Accuracy	<=2	0 - 50	
Speed	<=5	0.0 - 999.9(km/h)	
Azimuth	<=3	0 – 359	
Altitude	<=8	(-)XXXXX.X(m)	
Longitude	<=11	-180 - 180	
Latitude	<=10	-90 - 90	
GNSS UTC Time	14	YYYYMMDDHHMMSS	
MCC	4	0XXX	
MNC	4	0XXX	
LAC	4	(HEX)	
Cell ID	<=8	(HEX)	
Reserved	2	00	00
Mileage	<=9	0.0 - 4294967.0(km)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

✧ <*Report ID / Report Type*>: It is a one-byte hexadecimal value represented by two ASCII bytes. The first byte (4 higher bits of the hexadecimal value) indicates Report ID and the second byte (4 lower bits of the hexadecimal value) indicates Report Type.

Report ID has different meanings in different messages as listed below.

- The ID of digital input port which triggers the report messages **+RESP:GTDIS** and **+RESP:GTSOS**. The value is 1.
- The ID of the bound IO which triggers the report message **+RESP:GTIOB**. The range is 0 – 3.
- The ID of the digital input port which triggers the reboot message **+RESP:GTDOG**. The valid value is 1.

- The speed level at which the harsh behavior is detected in the message **+RESP:GTHBM**. 3 indicates high speed, 2 indicates medium speed and 1 indicates low speed. If mode 2 in the **AT+GTHBM** command is selected, the value is always 0 which indicates unknown speed.
- The value of <*Ignition Detection Mode*> which indicates the trigger source of the message **+RESP:GTVGL**. The value range is 0 – 4. For other messages, it will always be 0.

Report type has different meanings in different messages as listed below.

- In the **+RESP:GTDIS** report message generated by a digital input

0: The current logic status of the input port is "Disable status".

1: The current logic status of the input is "Enable status".

- In the **+RESP:GTIOB** report message generated by bound IO

0: The current logic status of the bound IO does not meet the alarm condition.

1: The current logic status of the bound IO meets the alarm condition.

- In the speed alarm message **+RESP:GTSPD**

0: Outside the predefined speed range

1: Inside the predefined speed range

- In the protocol watchdog reboot message **+RESP:GTDOG**

1: Reboot message for time based working mode

2: Reboot message for ignition on working mode

3: Message for input triggered reboot

4: Reboot message for network watchdog reboot

5: Reboot message for data watchdog reboot

- In the harsh behavior monitoring message **+RESP:GTHBM**

0: Harsh braking behavior

1: Harsh acceleration behavior

2: Harsh cornering behavior

3: Harsh braking and cornering behavior

4: Harsh acceleration and cornering behavior

5: Unknown harsh behavior

- In the ignition messages **+RESP:GTIGL** and **+RESP:GTVGL**

0: Ignition off

1: Ignition on

For other messages, it will always be 0.

✧ <*Number*>: The number of the GNSS position(s) included in the report message. Generally, it is 1.

✧ <*GNSS Accuracy*>: A numeral to indicate the GNSS fix status and HDOP of the GNSS position. 0 means the current GNSS fix fails and the last known GNSS position is used. A non-zero value (1 - 50) indicates the current GNSS fix is successful and represents the HDOP of the current GNSS position.

✧ <*Speed*>: The current speed. Unit: km/h.

✧ <*Azimuth*>: The azimuth of the GNSS fix.

✧ <*Altitude*>: The height above the sea level.

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- <*Longitude*>: The longitude of the current position.
- <*Latitude*>: The latitude of the current position.
- <*GNSS UTC Time*>: The UTC time obtained from the GNSS chip.
- <*MCC*>: Mobile country code. It is 3 digits in length and ranges from 000 – 999.
- <*MNC*>: Mobile network code. It is 3 digits in length and ranges from 000 – 999.
- <*LAC*>: Location area code in hex format.
- <*Cell ID*>: Cell ID in hex format.
- <*Mileage*>: The current total mileage.

➢ **+RESP:GTFRI,**

If fixed report is enabled, the device will send the message **+RESP:GTFRI** to the backend server according to the working mode.

Example:

+RESP:GTFRI,500100,135790246811220,,,00,1,1,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,2000.0,12345:12:34,,,80,210100,,,,20090214093254,11F0$

+RESP:GTFRI,500100,135790246811220,,,00,2,1,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,0,4.3,92,70.0,121.354335,31.222073,20090101000000,0460,0000,18d8,6141,00,2000.0,12345:12:34,,,80,210100,,,,20090214093254,11F0$

+RESP:GTFRI,500100,135790246811220,,,00,1,1,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,2000.0,12345:12:34,,92,80,210100,,,,20090214093254,11F0$

Parameter	Length (byte)	Range/Format	Default
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', '_'	
External Power Voltage	<=5	0 – 99999 mV	
Report ID / Report Type	2	XY(X∈{1 - 5}, Y∈{0 - 6})	
Number	<=2	0|1	
GNSS Accuracy	<=2	0 - 50	
Speed	<=5	0.0 - 999.9(km/h)	
Azimuth	<=3	0 – 359	
Altitude	<=8	(-)XXXXX.X(m)	
Longitude	<=11	-180 - 180	
Latitude	<=10	-90 - 90	
GNSS UTC Time	14	YYYYMMDDHHMMSS	

MCC	4	0XXX	
MNC	4	0XXX	
LAC	4	(HEX)	
Cell ID	<=8	(HEX)	
Reserved	2	00	00
Mileage	<=9	0.0 - 4294967.0(km)	
Hour Meter Count	11	HHHHH:MM:SS	
Reserved	0		
Reserved	0		
Backup Battery Percentage	<=3	0 – 100	
Device Status	6	(HEX)	
Reserved	0		
Reserved	0		
Reserved	0		
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

- <*External Power Voltage*>: The voltage of the external power supply. If the command **AT+GTEPS** is used to configure the device to report the external power supply voltage periodically with fixed report, the device will send the current voltage along with the **+RESP:GTFRI** message to the backend server. If the device is not configured as such by the command **AT+GTEPS**, this field will be empty.
- <*Report ID / Report Type*>: It is a one-byte hexadecimal value represented by two ASCII bytes. The first byte (4 higher bits of the hexadecimal value) indicates Report ID and the second byte (4 lower bits of the hexadecimal value) indicates Report Type.

  Report ID has the following meanings.
  - 1: Fixed time report
  - 2: Fixed distance report
  - 3: Fixed mileage report
  - 4: Fixed time and mileage report
  - 5: Fixed time or mileage report

  Report type has the following meanings.
  - 0: Normal fixed report
  - 1: Corner report which indicates the device just turns around a corner
  - 2: FRI report frequency change which indicates the device enters into Geo-Fence or roaming status.

- 3: Corner report when FRI report frequency changes
- 4: Mileage report when <*Mode*> in **AT+GTFRI** is 5
- 5: Reserved
- 6: Mileage report when <*Mode*> in **AT+GTFRI** is 5 and **AT+GTFFC** works

✧ <*Number*>: The number of the GNSS position(s) included in the report message. In the message **+RESP:GTFRI**, there may be one or two positions. If there are multi-positions in one **+RESP:GTFRI** message, information of the items displayed in the green part will repeat.

✧ <*Hour Meter Count*>: If the hour meter count function is enabled by the command **AT+GTHMC**, the total hours the meter has counted when engine is on will be reported in this field. It is formatted with 5 hour digits, 2 minute digits and 2 second digits, and ranges from 00000:00:00 to 99999:00:00. If the function is disabled, this field will be empty.

✧ <*Backup Battery Percentage*>: The current volume of the backup battery in percentage.

✧ <*Device Status*>: The state of the device. From left to right, the first two characters indicate the current motion status of the device, the middle two characters indicate the status of input ports, and the last two characters indicate the status of output ports.

The current motion status of the device:

- 16 (Tow): The device attached vehicle is ignition off and it is towed.
- 1A (Fake Tow): The device attached vehicle is ignition off and it might be towed.
- 11 (Ignition Off Rest): The device attached vehicle is ignition off and it is motionless.
- 12 (Ignition Off Motion): The device attached vehicle is ignition off and it is moving before it is considered to be towed.
- 21 (Ignition On Rest): The device attached vehicle is ignition on and it is motionless.
- 22 (Ignition On Motion): The device attached vehicle is ignition on and it is moving.
- 41 (Sensor Rest): The device attached vehicle is motionless without ignition signal detected.
- 42 (Sensor Motion): The device attached vehicle is moving without ignition signal detected.

The status of input ports: A bitwise hex integer to represent the logic status of digital inputs. The low bit represents the ignition detection input and the high bit represents digital input 1. For each bit, 0 means “Disable status”, and 1 means “Enable status”.

The status of output ports: A bitwise hex integer to represent the logic status of digital outputs. The low bit represents digital output 1 and the high bit represents digital output 2. For each bit, 0 means “Disable status”, and 1 means “Enable status”.

➢ **+RESP:GTEPS,**

If external power supply monitoring is enabled by the command **AT+GTEPS**, the device will send the message **+RESP:GTEPS** to the backend server when the voltage of the external power supply enters the alarm range.

All of the above report messages have the same format as shown below.

Example:

+RESP:GTEPS,500100,135790246811220,,13500,00,1,1,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,2000.0,20090214093254,11F0$			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', '_'	
External Power Voltage	<=5	0 - 99999(mV)	
Report ID / Report Type	2	XY(X∈{0}, Y∈{0|1})	
Number	<=2	0|1	
GNSS Accuracy	<=2	0 - 50	
Speed	<=5	0.0 - 999.9(km/h)	
Azimuth	<=3	0 – 359	
Altitude	<=8	(-)XXXXX.X(m)	
Longitude	<=11	-180 - 180	
Latitude	<=10	-90 - 90	
GNSS UTC Time	14	YYYYMMDDHHMMSS	
MCC	4	0XXX	
MNC	4	0XXX	
LAC	4	(HEX)	
Cell ID	<=8	(HEX)	
Reserved	2	00	00
Mileage	<=9	0.0 - 4294967.0(km)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

- <*External Power Voltage*>: The value of the external power voltage. When the voltage of the external input meets the alarm condition as set by the command **AT+GTEPS**, the device will send the current external input voltage to the backend server via **+RESP:GTEPS**.
- <*Report ID / Report Type*>: It is a one-byte hexadecimal value represented by two ASCII bytes. The first byte (4 higher bits of the hexadecimal value) indicates Report ID and the second

byte (4 lower bits of the hexadecimal value) indicates Report Type.

The value of <*Report ID*> for the report message **+RESP:GTEPS** is 0.

Report type has two meanings:

- 0: Outside the predefined range.
- 1: Inside the predefined range.

✧ <*Number*>: The number of the GNSS position(s) included in the report message. Generally, it is 1.

➢ **+RESP:GTLBC,**

If the parameter <*Location by Call*> is enabled by the command **AT+GTCFG**, the device will get and send the current position to the backend server via the message **+RESP:GTLBC** when there is an incoming call.

Example: **+RESP:GTLBC,500100,135790246811220,,+8613800000000,1,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,20090214093254,11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', '_'	
Call Number	<=20	(Call Number)	
GNSS Accuracy	<=2	0 - 50	
Speed	<=5	0.0 - 999.9(km/h)	
Azimuth	<=3	0 – 359	
Altitude	<=8	(-)XXXXX.X(m)	
Longitude	<=11	-180 - 180	
Latitude	<=10	-90 - 90	
GNSS UTC Time	14	YYYYMMDDHHMMSS	
MCC	4	0XXX	
MNC	4	0XXX	
LAC	4	(HEX)	
Cell ID	<=8	(HEX)	
Reserved	0		
Mileage	<=9	0.0 - 4294967.0(km)	
Send Time	14	YYYYMMDDHHMMSS	

Count Number	4	(HEX)	
Tail Character	1	$	$

✧ <*Call Number*>: The phone number of the incoming call which triggers the report message.

➢ **+RESP:GTGEO,**

If Geo-Fence is configured and enabled, the device will send the message **+RESP:GTGEO** to the backend server according to settings when the device enters or exits the Geo-Fence.

Example:
+RESP:GTGEO,500100,135790246811220,,,00,1,1,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,2000.0,20090214093254,11F0$

Parameter	Length (byte)	Range/Format	Default
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', '_'	
Reserved			
Report ID / Report Type	<=3	XY(X∈{0 - 13}, Y∈{0|1})	
Number	1	0|1	
GNSS Accuracy	<=2	0 - 50	
Speed	<=5	0.0 - 999.9(km/h)	
Azimuth	<=3	0 – 359	
Altitude	<=8	(-)XXXXX.X(m)	
Longitude	<=11	-180 - 180	
Latitude	<=10	-90 - 90	
GNSS UTC Time	14	YYYYMMDDHHMMSS	
MCC	4	0XXX	
MNC	4	0XXX	
LAC	4	(HEX)	
Cell ID	<=8	(HEX)	
Reserved	2	00	00
Mileage	<=9	0.0 - 4294967.0(km)	

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Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

✧ <*Report ID / Report Type*>: It is a hexadecimal value represented by three ASCII bytes. The first two bytes indicates Report ID and the last byte indicates Report Type.

- Report ID: The ID of Geo Fence in HEX format. The range is 0X00 to 0X13.
- Report Type: 0 means "Exit from the Geo-Fence", and 1 means "Enter the Geo-Fence".

➢ **+RESP:GTGES,**

The device will report **+RESP:GTGES** according to the parameters <*Trigger Mode*> and <*Trigger Report*> in **AT+GTGEO** after the ignition is turned off.

Example:
+RESP:GTGES,500100,135790246811220,gv55w,,00,0,100,30,11,1,1,24.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141, ,20090214093254,11F0$

Parameter	Length (byte)	Range/Format	Default
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', '_'	
Reserved			
Report ID / Report Type	<=3	XY(X∈{0 - 63}, Y∈{0|1})	
Trigger Mode	<=3	0|21|22	
Radius	<=7	50 - 6000000(m)	
Check Interval	<=5	0|5 - 86400(sec)	
Number	<=2	0|1	
GNSS Accuracy	<=2	0 - 50	
Speed	<=5	0.0 - 999.9(km/h)	
Azimuth	<=3	0 – 359	
Altitude	<=8	(-)XXXXX.X(m)	
Longitude	<=11	-180 - 180	
Latitude	<=10	-90 - 90	
GNSS UTC Time	14	YYYYMMDDHHMMSS	

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MCC	4	0XXX	
MNC	4	0XXX	
LAC	4	(HEX)	
Cell ID	<=8	(HEX)	
Reserved	2	00	00
Mileage	<=9	0.0 - 4294967.0(km)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

✧ <*Report Type*>: The current Parking-Fence is active or inactive.

- 0: The current Parking-Fence is inactive.
- 1: The current Parking-Fence is active.

➢ **+RESP:GTGIN,**

If Geo-Fence is configured and enabled, the device will send the message **+RESP:GTGIN** to the backend server according to settings when the device enters the Polygon Geo-Fence.

➢ **+RESP:GTGOT,**

If Geo-Fence is configured and enabled, the device will send the message **+RESP:GTGOT** to the backend server according to settings when the device leaves the Polygon Geo-Fence.

Example:
+RESP:GTGIN,500100,100000000000091,gv55w,,,0,80000,,,,,1,1,40.9,266,30.0,117.145232,31.832502,20170103103610,0460,0000,550B,3C75,00,49.3,20170103183610,0053$
+RESP:GTGOT,500100,100000000000091,gv55w,,,0,80000,,,,,1,1,21.1,341,43.7,117.139643,31.832588,20170103103658,0460,0000,550B,3C76,00,49.8,20170103183658,0054$

Parameter	Length (Byte)	Range/Format	Default
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', '_'	
Reserved			
Reserved			
Area Type	1	0|1	
Area Mask 1	8	(HEX)	
Area Mask 2	8	(HEX)	

Area Mask 3	8	(HEX)	
Area Mask 4	8	(HEX)	
Reserved			
Number	1	0|1	
GNSS Accuracy	<=2	0 - 50	
Speed	<=5	0.0 - 999.9(km/h)	
Azimuth	<=3	0 – 359	
Altitude	<=8	(-)XXXXX.X(m)	
Longitude	<=11	-180 - 180	
Latitude	<=10	-90 - 90	
GNSS UTC Time	14	YYYYMMDDHHMMSS	
MCC	4	0XXX	
MNC	4	0XXX	
LAC	4	(HEX)	
Cell ID	<=8	(HEX)	
Reserved	2	00	00
Mileage	<=9	0.0 - 4294967.0(km)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

- <*Area Type*>: The report message is for polygon or circular area. 0 means “polygon”, and 1 means “circular area”.
- <*Area Mask 1–4*>: For polygon area, it indicates the report message is for a single polygon or multiple polygons overlapping.
  - Bit 0: for Polygon ID 0
  - Bit 1: for Polygon ID 1
  - ...
  - Bit 19: for Polygon ID 19

  For example, if the Area Mask is 03, it indicates the overlapping of Polygon ID 0 and Polygon ID 1.

  For circular area, it indicates the report message is for a single circle or multiple circles overlapping.
  - Bit 0: for Circular ID 0
  - Bit 1: for Circular ID 1

- ...
- Bit 99: for Circular ID 99

3.3.2.Device Information Report

If the device information report function is enabled by the command **AT+GTCFG**, the device will send the device information via the message **+RESP:GTINF** to the backend server periodically.

➢ **+RESP:GTINF,**

Example: **+RESP:GTINF,500100,135790246811220,,16,898600810906F8048812,16,0,1,12000,,4.2,0,0,,,20090214013254, , , ,00,00,+0800,0,20090214093254,11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', '_'	
Motion Status	2	11|12|16|1A|21|22|41|42	
ICCID	20	'0' - '9', 'a' - 'z'	
CSQ RSSI	<=2	0 – 31|99	
CSQ BER	<=2	0 – 7	
External Power Supply	1	0|1	
External Power Voltage	<=5	0 - 99999(mV)	
Reserved	0		
Backup Battery Voltage	<=4	0.00 - 4.20(V)	
Charging	1	0|1	
LED On	1	0|1	
Reserved	0		
Reserved	0		
Last Fix UTC Time	14	YYYYMMDDHHMMSS	
Reserved	0		
Reserved	0		
Reserved	0		
Digital Input	2	00 – 03	

Digital Output	2	00 – 03	
Time Zone Offset	5	+/- HHMM	
Daylight Saving	1	0|1	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

- <*Motion Status* >: The current motion status of the device.
  - 11 (Ignition Off Rest): The device attached vehicle is ignition off and it is motionless.
  - 12 (Ignition Off Motion): The device attached vehicle is ignition off and it is moving before it is considered to be towed.
  - 16 (Tow): The device attached vehicle is ignition off and it is towed.
  - 1A (Fake Tow): The device attached vehicle is ignition off and it might be towed.
  - 21 (Ignition On Rest): The device attached vehicle is ignition on and it is motionless.
  - 22 (Ignition On Motion): The device attached vehicle is ignition on and it is moving.
  - 41 (Sensor Rest): The device attached vehicle is motionless without ignition signal detected.
  - 42 (Sensor Motion): The device attached vehicle is moving without ignition signal detected.
- <*ICCID*>: The ICCID of the SIM card.
- <*CSQ RSSI*>: The level of signal strength.

CSQ RSSI	Signal Strength (dBm)
0	<-133
1	-111
2 – 30	-109 – -53
31	>-51
99	Unknown

- <*CSQ BER*>: The quality of the UMTS signal. The range is 0-7.
- <*External Power Supply*>: Whether the external power supply is connected.
  - 0: Not connected.
  - 1: Connected.
- <*External Power Voltage*>: The voltage of the external power supply.
- <*Backup Battery Voltage*>: The voltage of the backup battery. The value of this field is only valid when the external power is not connected.
- <*Charging*>: Whether the backup battery is charging when the main power supply is connected.
  - 0: Not charging.
  - 1: Charging.

- <*Last Fix UTC Time*>: The UTC time of the latest successful GNSS fix.
- <*Digital Input*>: A bitwise hex integer to represent the logic status of digital input. From the lowest bit to the highest bit, each bit represents the status of a digital input (e.g., ignition detection, digital input 1, etc.). For each bit, 0 means “Disable status”, and 1 means “Enable status”.
- <*Digital Output*>: A bitwise hex integer to represent the logic status of digital output. From the lowest bit to the highest bit, each bit represents the status of a digital output (e.g., digital output 1, digital input 2, etc.). For each bit, 0 means “Disable status”, and 1 means “Enable status”.
- <*Time Zone Offset*>: The offset of the local time zone from UTC time.
- <*Daylight Saving*>: The current setting of the daylight saving.
  - 0: Daylight saving is disabled.
  - 1: Daylight saving is enabled.

3.3.3.Report for Real Time Querying

3.3.3.1.+RESP:GTGPS

After the device receives the command **AT+GTRTO** to read the GNSS information, it will send the GNSS information to the backend server via the message **+RESP:GTGPS**.

- **+RESP:GTGPS,**

Example: **+RESP:GTGPS,500100,135790246811220,,,,,0000,,,20090214013254,20090214093254,11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', '_'	
Reserved	0		
Reserved	0		
Reserved	0		
Report Composition Mask	4	(HEX)	
Reserved	0		
Reserved	0		
Last Fix UTC Time	14	YYYYMMDDHHMMSS	
Send Time	14	YYYYMMDDHHMMSS	

Count Number	4	(HEX)	
Tail Character	1	$	$

✧ <*Report Composition Mask*>: Please refer to <*Report Composition Mask*> of the **AT+GTCFG** command.

3.3.3.2.+RESP:GTALM

After the device receives the command **AT+GTRTO** to read all the configurations, it will send all configurations to the backend server via the message **+RESP:GTALM**. This message is only sent via TCP/UDP; even if the report mode is forced SMS mode, it will be sent via TCP short-connection. The **+RESP:GTALM** message does not support the HEX report.

➢ **+RESP:GTALM,**

Example:

+RESP:GTALM,500100,868034001591312,,4,1,BSI,,,,,,,,SRI,0,,1,,0,0.0.0.0,0,,0,0,0,0,,,CFG,gv55w,gv55w,0,0.0,,,003F,1,,3FFF,,0,0,300,0,0,0,0,000F,0,TOW,0,10,1,300,0,0,0,0,2,3,2,,,,,,,,,EPS,0,0,0,0,0,0,0,0,0,0,0,,DIS,0,1,,0,1,0,0,0,,,,,,,,,,,,IOB,0,0,0,0,0,0,0,0,,,,,1,0,0,0,0,0,0,0,,,,,2,0,0,0,0,0,0,0,,,,,3,0,0,0,0,0,0,0,,,,,TMZ,+0000,0,,,,,FRI,0,1,,1,0000,0000,,30,1000,1000,,0,600,,,,,20110101000030,0027$

+RESP:GTALM,500100,868034001591312,,4,2,GEO,0,0,,,50,0,0,0,0,0,0,0,0,,,1,0,,,50,0,0,0,0,0,0,0,,,2,0,,,50,0,0,0,0,0,0,0,0,,,3,0,,,50,0,0,0,0,0,0,0,0,,,4,0,,,50,0,0,0,0,0,0,0,0,,,5,0,,,50,0,0,0,0,0,0,0,0,,,6,0,,,50,0,0,0,0,0,0,0,0,,,7,0,,,50,0,0,0,0,0,0,0,0,,,8,0,,,50,0,0,0,0,0,0,0,0,,,9,0,,,50,0,0,0,0,0,0,0,0,,,10,0,,,50,0,0,0,0,0,0,0,0,,,11,0,,,50,0,0,0,0,0,0,0,0,,,12,0,,,50,0,0,0,0,0,0,0,0,,,13,0,,,50,0,0,0,0,0,0,0,0,,,14,0,,,50,0,0,0,0,0,0,0,0,,,15,0,,,50,0,0,0,0,0,0,0,0,,,16,0,,,50,0,0,0,0,0,0,0,0,,,17,0,,,50,0,0,0,0,0,0,0,0,,,18,0,,,50,0,0,0,0,0,0,0,0,,,19,0,,,50,0,0,0,0,0,0,0,0,,,SPD,0,0,0,60,300,0,0,0,0,,,,,,,,,,SOS,0,0,,0,0,0,0,,,,,PIN,1,,,,,,OWH,0,1f,0900,1200,1300,1800,,,0,0,0,0,0,,,,,DOG,0,60,30,0200,,1,0,,60,60,,20110101000030,0028$

+RESP:GTALM,500100,868034001591312,,4,3,IDL,0,2,1,0,,,,0,0,0,0,,,,,HMC,0,00000:00:00,,,,,,,,HBM,0,,,100,0,0,,60,0,0,,,0,0,,0,0,0,0,0,30,50,20,65,WLT,0,,,,,,,,,,,,,,HRM,,,ef,fe1fbf,fe1fbf,fffd,ef,7d,,,,CRA,0,5,,,,,,0,0,0,0,,PDS,0,0,,,,,,,OUT,0,,,,,,,BZA,0,,,,0,0,0,,,0,0,0,,,0,0,0,,,0,0,0,,,0,0,0,,,,,,,,SPA,0,50,,60,0,,,70,,60,0,,,90,,60,0,,,110,,60,0,,,,,,,,SSR,0,2,1,5,0,,,,20110101000030,0029$

**+RESP:GTALM,500100,868034001591312,,4,4,RMD,0,,,,,,,,,,,,,,

		'_'	
Total Packets	1	1 - 25	
Current Packet	1	1 - 25	
Configurations	<1500		
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

- <*Total Packets*>: The total number of **+RESP:GTALM** message packets.
- <*Current Packet*>: The sequence number of the current packet.
- <*Configurations*>: The current configurations of the device. The first message contains configurations for the commands from **BSI** to **FRI**, the second message is for the commands from **GEO** to **DOG**, the third message is for the commands from **IDL** to **SSR**, and the last message is for the configurations of the commands from **RMD** to the end of the protocol commands.

Note: The length of every **+RESP:GTALM** message (including header and tail) must be less than or equal to (<=) 1500 characters.

3.3.3.3.+RESP:GTALC

After the device receives the command **AT+GTRTO** to read all the configurations, it will send all configurations to the backend server via the message **+RESP:GTALC**. This message is only sent via TCP/UDP; even if the report mode is forced SMS mode, it will be sent via TCP short-connection. The **+RESP:GTALC** message does not support the HEX report.

- **+RESP:GTALC,**

Example:

+RESP:GTALC,500100,135790246811220,,FFFFFFB,,,BSI,cmnet,,,,,,,SRI,3,,2,116.228.146.250,8144,116.228.146.250,8143,,5,0,0,0,,30,CFG,gv55w,gv55w,0,0.0,,,003F,1,,3FFF,,0,0,300,0,0,0,0,000F,0,TOW,0,10,1,300,0,0,0,0,2,3,2,,,,,,,,,EPS,0,0,0,0,0,0,0,0,0,0,0,0,,DIS,0,1,,0,1,0,0,0,,,,,,,,,,,,IOB,0,0,0,0,0,0,0,0,,,,,1,0,0,0,0,0,0,0,0,,,,,2,0,0,0,0,0,0,0,0,,,,,3,0,0,0,0,0,0,0,0,,,,,TMZ,+0000,0,,,,,FRI,0,1,,1,0000,0000,,30,1000,1000,,0,600,,,,,GEO,0,0,,,50,0,0,0,0,0,0,0,0,,,1,0,,,50,0,0,0,0,0,0,0,0,,,2,0,,,50,0,0,0,0,0,0,0,0,,,3,0,,,50,0,0,0,0,0,0,0,0,,,4,0,,,50,0,0,0,0,0,0,0,0,,,5,0,,,50,0,0,0,0,0,0,0,0,,,6,0,,,50,0,0,0,0,0,0,0,0,,,7,0,,,50,0,0,0,0,0,0,0,0,,,8,0,,,50,0,0,0,0,0,0,0,0,,,9,0,,,50,0,0,0,0,0,0,0,0,,,10,0,,,50,0,0,0,0,0,0,0,0,,,11,0,,,50,0,0,0,0,0,0,0,0,,,12,0,,,50,0,0,0,0,0,0,0,0,,,13,0,,,50,0,0,0,0,0,0,0,0,,,14,0,,,50,0,0,0,0,0,0,0,0,,,15,0,,,50,0,0,0,0,0,0,0,0,,,16,0,,,50,0,0,0,0,0,0,0,0,,,17,0,,,50,0,0,0,0,0,0,0,0,,,18,0,,,50,0,0,0,0,0,0,0,0,,,19,0,,,50,0,0,0,0,0,0,0,0,,,SPD,0,0,0,60,300,0,0,0,0,,,,,,,,,,SOS,0,0,,0,0,0,0,,,,,PIN,1,,,,,,,OWH,0,1f,0900,1200,1300,1800,,,0,0,0,0,0,,,,,DOG,0,60,30,0200,,1,0,,60,60,,IDL,0,2,1,0,,,,0,0,0,0,,,,,HMC,0,00000:00:00,,,,,,,,,HBM,0,,,100,0,0,,60,0,0,,,0,0,,0,0,0,0,0,30,50,20,65,WLT,0,,,,,,,,,,,,,HRM,,,ef,fe1fbf

,fe1fbf,fffd,ef,7d,,,,CRA,0,5,,,,,,0,0,0,0,,PDS,0,0,,,,,,OUT,0,,,,,,,BZA,0,,,,0,0,0,,,0,0,0,,,0,0,0,,,0,0,0,,,,,,,,SPA,0,50,,60,0,,,70,,60,0,,,90,,60,0,,,110,,60,0,,,,,,,,SSR,0,2,1,5,0,,,,RMD,0,,,,,1,2,46000F,46002F,,,1,1,,,,2,2,,,,1f,,,1f,,,,,0,0,0,0,,,FFC,0,1,0,,,,,,30,500,500,300,,0,,,,upc,gv55w,0,10,0,0,168,http://www.queclink.com/configure.ini,0,,,,peo,0,3,117.200955,31.834054,117.203152,31.833664,117.202325,31.832352,,,,,,,,,,,,,,,86400,2,1,255,255,,,,,,...19,3,117.149551,31.854971,117.137741,31.850317,117.140930,31.845852,,,,,,,,,,,,,,,5,2,1,10,10,,,,20140106075757,00A6$

Parameter	Length (byte)	Range/Format	Default
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', ' _ '	
Configuration Mask	<=16	(HEX)	
Next Packet	1	0|1	0
Current Packet	<=2	1-21	1
BSI	3	BSI	BSI
APN	<=40	(ASCII)	
APN User Name	<=30	(ASCII)	
APN Password	<=30	(ASCII)	
Reserved	0		
Reserved	0		
Reserved	0		
Network Mode	0	0 - 2	
SRI	3	SRI	SRI
Report Mode	1	0 – 7	
Reserved	0		
Buffer Mode	1	0 - 2	
Main Server IP / Domain Name	<=60	(ASCII)	
Main Server Port	<=5	0 – 65535	
Backup Server IP / Domain Name	<=60	(ASCII)	
Backup Server Port	<=5	0 – 65535	
SMS Gateway	<=20	(Call Number)	

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Heartbeat Interval	<=3	0|2 - 360(min)	
SACK Enable	1	0|1	
Protocol Format	1	0|1	0
SMS ACK Enable	1	0|1	0
Reserved	0		
Connection Life	<=3	0|10 - 600(sec)	30
CFG	3	CFG	CFG
Password	4 – 6	'0' - '9', 'a' - 'z', 'A' - 'Z'	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', '_'	
ODO Enable	1	0|1	
ODO Initial Mileage	<=9	0.0 - 4294967.0(km)	
Reserved	0		
Reserved	0		
Report Composition Mask	4	(HEX)	
Power Saving Mode	1	0 – 2	
Event Info Mask	2	(HEX)	00
Event Mask	4	(HEX)	
Reserved	0		
LED On	1	0|1	
Info Report Enable	1	0|1	
Info Report Interval	<=5	30 - 86400(sec)	
Location Request Mask	2	00 - 03|10 - 13|20 - 23	00
Reserved	0		
Backup Battery Charge Mode	1	0|1	
AGPS Mode	1	0|1	
GSM Report	4	(HEX)	
GNSS Lost Time	2	0 – 30min	0
TOW	3	TOW	TOW
Tow Enable	1	0|1	

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Engine Off to Tow	<=2	5 - 15(min)	
Fake Tow Delay	<=2	0 - 10(min)	
Tow Interval	<=5	30 - 86400(sec)	
Tow Output ID	1	0 – 2	
Tow Output Status	1	0|1	
Tow Output Duration	<=3	0 - 255(*100ms)	
Tow Output Toggle Times	<=3	0 – 255	
Rest Duration	<=3	1 - 255(*15sec)	
Motion Duration	<=2	1 - 10(*100ms)	
Motion Threshold	1	1 - 9	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
EPS	3	EPS	EPS
Mode	1	0 - 2	
Min Threshold	<=5	250 - 32000(mV)	
Max Threshold	<=5	250 - 32000(mV)	
Sample Period	<=2	0 - 12(*2sec)	
Debounce Time	1	0 - 5(sec)	
Output ID	1	0 – 2	
Output Status	1	0|1	
Duration	<=3	0 - 255(*100ms)	
Toggle Times	<=3	0 – 255	
Sync with FRI	1	0|1	
Voltage Margin Error	3	0 - 100(*10mv)	0

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Debounce Voltage Threshold	3	0 - 100(*10mv)	0
Reserved	0		
DIS	3	DIS	DIS
Ignition Detection	1	0	0
Sample Period	<=2	0 - 12(*2sec)	
MPF Debounce Time	<=2	0 - 12(*2sec)	0
Ignition Detection Mode	1	0-4	0
Input ID 1	1	1	1
Enable	1	0|1	
Debounce Time	<=2	0 - 20(*10ms)	
Validity Time	<=2	0 - 12(*2sec)	0
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
IOB	3	IOB	IOB
IOB ID0	1	0	0
Input Mask	1	(HEX)	
Trigger Mask	1	(HEX)	
Input Sample Period	<=2	0 - 12(*2sec)	
Output ID	1	0 – 2	
Output Status	1	0|1	

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Duration	<=3	0 - 255(*100ms)	
Toggle Times	<=3	0 – 255	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
IOB ID1	1	1	1
Input Mask	1	(HEX)	
Trigger Mask	1	(HEX)	
Input Sample Period	<=2	0 - 12(*2sec)	
Output ID	1	0 – 2	
Output Status	1	0|1	
Duration	<=3	0 - 255(*100ms)	
Toggle Times	<=3	0 – 255	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
IOB ID2	1	2	2
Input Mask	1	(HEX)	
Trigger Mask	1	(HEX)	
Input Sample Period	<=2	0 - 12(*2sec)	
Output ID	1	0 – 2	
Output Status	1	0|1	
Duration	<=3	0 - 255(*100ms)	
Toggle Times	<=3	0 – 255	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved			

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IOB ID3	1	3	3
Input Mask	1	(HEX)	
Trigger Mask	1	(HEX)	
Input Sample Period	<=2	0 - 12(*2sec)	
Output ID	1	0 – 2	
Output Status	1	0|1	
Duration	<=3	0 - 255(*100ms)	
Toggle Times	<=3	0 – 255	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
TMZ	3	TMZ	TMZ
Time Zone	5	+/- HHMM	
Daylight Saving	1	0|1	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
FRI	3	FRI	FRI
Mode	1	0 - 5	
Discard No Fix	<=2	0|1	
Reserved	0		
Period Enable	1	0|1	
Begin Time	4	HHMM	
End Time	4	HHMM	
Reserved	0		
Send Interval	<=5	5 - 86400(sec)	
Distance	<=5	50 - 65535(m)	
Mileage	<=5	50 - 65535(m)	

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Reserved	0		
Corner Report	<=3	0 – 180	
IGF Report Interval	<=5	0|5 - 86400(sec)	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
GEO	3	GEO	GEO
GEO ID0	1	0 – 99	0
Mode	1	0 – 3	
Longitude	<=11	-180 - 180	
Latitude	<=10	-90 - 90	
Radius	<=7	50 - 6000000(m)	
Check Interval	<=5	0|5 - 86400(sec)	
Output ID	1	0 – 2	
Output Status	1	0|1	
Duration	<=3	0 - 255(*100ms)	
Toggle Times	<=3	0 – 255	
Trigger Mode	<=2	0|21|22	0
Trigger Report	1	0|1	0
State Mode	1	0|1	0
Reserved	0		
SPD	3	SPD	SPD
Mode	1	0 - 3	
Min Speed	<=3	0 - 400(km/h)	
Max Speed	<=3	0 - 400(km/h)	
Validity	<=4	0 - 3600(sec)	
Send Interval	<=4	30 - 3600(sec)	
Output ID	1	0 – 2	
Output Status	1	0|1	

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Duration	<=3	0 - 255(*100ms)	
Toggle Times	<=3	0 – 255	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
SOS	3	SOS	SOS
Mode	1	0 – 2	
Digital Input ID	1	0|1	
SOS Number	<=20	(Call Number)	
Output ID	1	0 – 2	
Output Status	1	0|1	
Duration	<=3	0 - 255(*100ms)	
Toggle Times	<=3	0 – 255	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
PIN	3	PIN	PIN
Enable Auto-unlock PIN	1	0|1	
PIN	1	'0' – '9'	
Reserved	0		
Reserved	0		

Reserved	0		
Reserved	0		
Reserved	0		
OWH	3	OWH	OWH
Mode	1	0 - 3	
Day of Work	<=2	0 – 7F	
Working Hours Start1	4	HHMM	
Working Hours End1	4	HHMM	
Working Hours Start2	4	HHMM	
Working Hours End2	4	HHMM	
Reserved	0		
Reserved	0		
Digital Input ID	1	0 – 1	
Digital Output ID	1	0 – 2	
Output Status	1	0|1	
Duration	<=3	0 - 255(*100ms)	
Toggle Times	<=3	0 – 255	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
DOG	3	DOG	DOG
Mode	1	0 - 2	
Ignition Frequency	<=3	10 - 120(min)	
Interval	<=2	1 – 30	
Time	4	HHMM	
Reserved	0		
Report Before Reboot	1	0|1	
Input ID	1	0|1	
Reserved	0		

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No Network Interval	4	0|5 - 1440(min)	60
No Activation Interval	4	0|5 - 1440(min)	60
Reserved	0		
IDL	3	IDL	IDL
Mode	1	0|1	
Time to Idling	2	1 - 30(min)	
Time to Movement	1	1 - 5(min)	
Debounce Distance	<=4	0|100 - 9999(m)	0
Reserved	0		
Reserved	0		
Reserved	0		
Output ID	1	0 – 2	
Output Status	1	0|1	
Duration	<=3	0 - 255(*100ms)	
Toggle Times	<=3	0 – 255	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
HMC	3	HMC	HMC
Hour Meter Enable	1	0 - 2	
Initial Hour Meter Count	11	HHHHH:MM:SS	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		

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HBM	3	HBM	HBM
HBM Enable	1	0 - 4	
Behavior Duration	1	3 - 5	
Reserved	0		
High Speed	<=3	100 - 400(km/h)	
ΔVhb	<=3	0 - 100(km/h)	
ΔVha	<=3	0 - 100(km/h)	
Reserved	0		
Medium Speed	<=3	60 - 100(km/h)	
ΔVmb	<=3	0 - 100(km/h)	
ΔVma	<=3	0 - 100(km/h)	
Reserved	0		
Reserved	0		
ΔVlb	<=3	0 - 100(km/h)	
ΔVla	<=3	0 - 100(km/h)	
Reserved	0		
Output ID	1	0 – 2	
Output Status	1	0|1	
Duration	<=3	0 - 255(*100ms)	
Toggle Times	<=3	0 – 255	
Cornering and Braking Threshold	<=3	30-70	30
Cornering and Braking Duration	<=3	40-100(*8ms)	50
Acceleration Threshold	<=3	15-50	20
Acceleration Duration	<=3	50-250(*8ms)	65
WLT	3	WLT	WLT
Call Filter	1	0 – 7	0
Phone Number List	<=20*10	(Call Number)	
Reserved	0		
Reserved	0		

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Reserved	0		
Reserved	0		
HRM	3	HRM	HRM
Reserved	0		
Reserved	0		
ACK Mask	<=2	(HEX)	6F
Response Mask	<=8	(HEX)	FE1FBF
Event Mask	<=8	(HEX)	FE1FBF
Information Mask	<=8	(HEX)	FF7D
HBD Mask	<=2	(HEX)	EF
Crash Data Mask	<=4	(HEX)	7D
Reserved	0		
Reserved	0		
Reserved	0		
CRA	3	CRA	CRA
Mode	1	0|1	0
Sensitivity	1	1 – 9	5
Report ACC	0	0|1	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Output ID	1	0 – 2	0
Output Status	1	0|1	
Duration	<=3	0 - 255(*100ms)	0
Toggle Times	<=3	0 – 255	0
Reserved	0		
PDS	3	PDS	PDS
Mode	1	0 - 2	0
Mask	<=4	(HEX)	0

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Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
OUT	3	OUT	OUT
DOS Report	1	0-3	0
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
BZA	3	BZA	BZA
Output ID	1	0|2	0
Reserved	0		
Reserved	0		
Reserved	0		
Alarm 1 Output Status	1	0|1	
Duration	<=3	0 - 255(*100ms)	0
Toggle Times	<=3	0 – 255	0
Reserved	0		
Reserved	0		
Alarm 2 Output Status	1	0|1	
Duration	<=3	0 - 255(*100ms)	0
Toggle Times	<=3	0 – 255	0
Reserved	0		
Reserved	0		
Alarm 3 Output Status	1	0|1	

Duration	<=3	0 - 255(*100ms)	0
Toggle Times	<=3	0 – 255	0
Reserved	0		
Reserved	0		
Alarm 4 Output Status	1	0|1	
Duration	<=3	0 - 255(*100ms)	0
Toggle Times	<=3	0 – 255	0
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
SPA	3	SPA	SPA
Mode	1	0 - 2	0
Speed Threshold 1	<=3	0 - 400(km/h)	50
Reserved	0		
Validity	<=4	0 - 3600(sec)	60
Alarm Type	1	0 - 4	0
Reserved	0		
Reserved	0		
Speed Threshold 2	<=3	0 - 400(km/h)	70
Reserved	0		
Validity	<=4	0 - 3600(sec)	60
Alarm Type	1	0 - 4	0
Reserved	0		
Reserved	0		
Speed Threshold 3	<=3	0 - 400(km/h)	90

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Reserved	0		
Validity	<=4	0 - 3600(sec)	60
Alarm Type	1	0 - 4	0
Reserved	0		
Reserved	0		
Speed Threshold 4	<=3	0 - 400(km/h)	110
Reserved	0		
Validity	<=4	0 - 3600(sec)	60
Alarm Type	1	0 - 4	0
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
SSR	3	SSR	SSR
Mode	1	0|1	0
Time to Stop	2	0 - 30(min)	2
Time to Start	1	0 - 5(min)	1
Start Speed	2	1 - 10(km/h)	5
Long Stop	3	0 - 43200(min)	0
Time Unit	1	0|1	0
Reserved	0		
Reserved	0		
RMD	3	RMD	RMD
Mode	1	0|1	0
Reserved	0		
Reserved	0		

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Reserved	0		
Reserved	0		
Home Operator List	<=6*10	(ASCII)	
Reserved	0		
Reserved	0		
Roaming Operator List	<=6*100	(ASCII)	
Reserved	0		
Reserved	0		
Black List Operator	<=6*20	(ASCII)	
Reserved	0		
Reserved	0		
Known Roaming Event Mask	<=6	(HEX)	3FFF
Reserved	0		
Reserved	0		
Unknown Roaming Event Mask	<=6	(HEX)	3FFF
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Output ID	1	0 – 2	0
Output Status	1	0|1	
Duration	<=3	0 - 255(*100ms)	0
Toggle Times	<=3	0 – 255	0
Reserved	0		
Reserved	0		
FFC	3	FFC	FFC
Priority	1	0	0
Mode	1	0-3	0
FRI Mode	1	0-5	0
Reserved	0		

Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
FRI IGN Report Interval	<=5	5 - 86400(sec)	30
FRI Report Distance	<=5	50 - 65535(m)	500
FRI Report Mileage	<=5	50 - 65535(m)	500
FRI IGF Report Interval	<=5	0|5 - 86400(sec)	300
Reserved	0		
Corner Report	<=3	0 – 180	0
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Priority	1	1	1
Mode	1	0-3	0
FRI Mode	1	0-5	0
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
FRI IGN Report Interval	<=5	5 - 86400(sec)	30
FRI Report Distance	<=5	50 - 65535(m)	500
FRI Report Mileage	<=5	50 - 65535(m)	500
FRI IGF Report Interval	<=5	0|5 - 86400(sec)	300
Reserved	0		
Corner Report	<=3	0 – 180	0

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Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Priority	1	2	2
Mode	1	0-3	0
FRI Mode	1	0-5	0
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
FRI IGN Report Interval	<=5	5 - 86400(sec)	30
FRI Report Distance	<=5	50 - 65535(m)	500
FRI Report Mileage	<=5	50 - 65535(m)	500
FRI IGF Report Interval	<=5	0|5 - 86400(sec)	300
Reserved	0		
Corner Report	<=3	0 – 180	0
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Priority	1	3	3
Mode	1	0-3	0
FRI Mode	1	0-5	0
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		

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Reserved	0		
Reserved	0		
FRI IGN Report Interval	<=5	5 - 86400(sec)	30
FRI Report Distance	<=5	50 - 65535(m)	500
FRI Report Mileage	<=5	50 - 65535(m)	500
FRI IGF Report Interval	<=5	0|5 - 86400(sec)	300
Reserved	0		
Corner Report	<=3	0 – 180	0
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Priority	1	4	4
Mode	1	0-3	0
FRI Mode	1	0-5	0
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
FRI IGN Report Interval	<=5	5 - 86400(sec)	30
FRI Report Distance	<=5	50 - 65535(m)	500
FRI Report Mileage	<=5	50 - 65535(m)	500
FRI IGF Report Interval	<=5	0|5 - 86400(sec)	300
Reserved	0		
Corner Report	<=3	0 – 180	0
Reserved	0		
Reserved	0		
Reserved	0		

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Reserved	0		
UPC	3	UPC	UPC
Max Download Retry	1	0 – 3	0
Download Timeout	<=2	5 - 30(min)	10
Download Protocol	1	0	0
Enable Report	1	0|1	0
Update Interval	<=4	0 - 8760(h)	0
Download URL	<=100	URL	
Mode	1	0|1	0
Reserved	0		
Reserved	0		
Reserved	0		
PEO	3	PEO	PEO
GEO ID	1	0 – 19	0
Mode	1	0 – 3	0
Start Point	<=2	1 - 10	
End Point	<=2	3 - 10	
Longitude	<=11	-180 - 180	
Latitude	<=10	-90 - 90	
…			
Longitude	<=11	-180 - 180	
Latitude	<=10	-90 - 90	
Check Interval	<=5	0|5 - 86400(sec)	0
Output ID	1	0 – 2	0
Output Status	1	0|1	
Duration	<=3	0 - 255(*100ms)	0
Toggle Times	<=3	0 – 255	0
State Mode	1	0|1	0
Reserved	0		
Reserved	0		

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Reserved	0		
CMD	3	CMD	CMD
Mode	1	0-1	0
Stored Cmd ID	<=2	0 – 31	
Command String	<=200		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
UDF	3	UDF	UDF
Mode	1	0-2	0
Group ID	<=2	0 – 31	
Input ID Mask	<=16	(HEX)	
Debounce Time	<=5	0-86400(s)	0
Inzizo Mask	<=5	(HEX)	0
Outzizo Mask	<=5	(HEX)	0
Stocmd ID Mask	<=8	(HEX)	
Stocmd Ack	1	0|1	0
Inpeo Mask	<=5	(HEX)	0
Outpeo Mask	<=5	(HEX)	0
Reserved			
Reserved			
GAM	3	GAM	GAM
Mode	1	0|1	1
Speed Mode	1	0|1	1
Motion Speed Threshold	<=2	5 - 50(km/h)	25
Motion Cumulative Time	<=3	10 - 100(sec)	10
Motionless Cumulative Time	<=3	10 - 250(sec)	60
GNSS Fix Failure Timeout	<=4	5 - 1800(sec)	60
Reserved	0		

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Reserved	0		
Reserved	0		
Reserved	0		
VVS	3	VVS	VVS
Ignition On Voltage	<=5	250 - 28000(mV)	13500
Voltage Offset	<=4	200 - 2000(mV)	600
Debounce	<=3	5 - 255(sec)	10
Reserved	0		
Reserved	0		
AVS	3	AVS	AVS
Sensor Rest Duration	<=3	1 - 255(sec)	20
Sensor Motion Validity	<=3	1 - 255(sec)	30
Reserved	0		
Reserved	0		
Reserved	0		
JDC	3	JDC	JDC
Mode	1	0 - 2	0
3G Threshold 1	<=2	0 - 99	90
3G Threshold 2	<=2	0-60	20
3G Increase Range	<=2	0-60	6
2G Threshold	<=2	0 - 99	70
2G Increase Range	<=2	0-31	6
Reserved			
Output ID	1	0 – 2	0
Output Status	1	0|1	0
Duration	<=3	0 - 255(*100ms)	0
Toggle Times	<=3	0 – 255	0
Reserved	0		
JBS	3	JBS	JDC
Mode	1	0|1	0

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Reserved	0		
Siren On Timer (T1)	5	1 - 65535(*100ms)	10
Siren Off Timer (T2)	5	1 - 65535(*100ms)	10
Ready Fuel Release Timer (T3)	5	1 – 65535 (sec)	1800
Check Speed	1	0|1	1
Speed Limit	3	0 - 999(km/h)	30
Output 1 Init State	1	0|1	0
Motion Sensor	1	0|1	0
GNSS Fix Failure Timeout Timer (T4)	3	1 – 100 (min)	5
Enable Siren	1	0|1	1
Release Fuel Cut-off Timer (T5)	4	0 – 1000 (min)	0
Check Jamming in T3	1	0|1	0
Waiting Release Fuel Timer (T6)	5	0 – 65535 (sec)	0
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

✧ <*Next Packet*>: It indicates whether the following information packet is the last one or not.
- 0: The following packet is the last information packet.
- 1: The following packet is not the last information packet.

✧ <*Current Packet*>: It indicates the index of **+RESP:GTALC**.

3.3.3.4.+RESP:GTALS

After the device receives the command **AT+GTRTO** to get sub AT command configuration information, it will send the configuration information to the backend server via the message **+RESP:GTALS**. Configuration information varies with different AT Commands. For example, to get FRI configuration, set **AT+GTRTO=gv55w,2,FRI,,,,,0015$.**

➢ **+RESP:GTALS,**

Example:
+RESP:GTALS,500100,862170010822169,gv55w,FRI,1,0,,0,0000,0000,,30,1000,1000,,40,60,000

00000,,,,,20121205072258,00C3$			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', '_'	
Sub AT Command	3	'a' – 'z' 'A' – 'Z' '	
Mode	1	0 – 5	
Discard No Fix	<=2	0|1	
Reserved	0		
Period Enable	1	0|1	
Start Time	4	HHMM	
End Time	4	HHMM	
Reserved	0		
Send Interval	<=5	5 - 86400(sec)	
Distance	<=5	50 - 65535(m)	
Mileage	<=5	50 - 65535(m)	
Reserved	0		
Corner Report	<=3	0 – 180	
IGF Report Interval	<=5	0|5 - 86400(sec)	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

3.3.3.5.+RESP:GTCID

After the device receives the command **AT+GTRTO** to read the ICCID of the SIM card, it will send the ICCID to the backend server via the message **+RESP:GTCID**.

➢ **+RESP:GTCID,**

Example: **+RESP:GTCID,500100,135790246811220,,898600810906F8048812,20090214093254,11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', '_'	
ICCID	20	'0' - '9', 'a' - 'z'	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

3.3.3.6.+RESP:GTCSQ

After the device receives the command **AT+GTRTO** to read the UMTS signal level, it will send the signal level to the backend server via the message **+RESP:GTCSQ**.

➢ **+RESP:GTCSQ,**

Example: **+RESP:GTCSQ,500100,135790246811220,,16,0,20090214093254,11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', '_'	
CSQ RSSI	<=2	0 – 31|99	
CSQ BER	<=2	0 – 7	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

✧ <*CSQ RSSI*>: The level of signal strength.

CSQ RSSI	**Signal Strength (dBm)**

0	<-133
1	-111
2 – 30	-109 – -53
31	>-51
99	Unknown

✧ <*CSQ BER*>: The quality of the UMTS signal. The range is 0-7.

3.3.3.7.+RESP:GTVER

After the device receives the command **AT+GTRTO** to get the versions (including software version and hardware version), it will send the version information to the backend server via the message **+RESP:GTVER**.

➢ **+RESP:GTVER,**

Example: **+RESP:GTVER,500100,135790246811220,,GV55W,0100,0101,20090214093254,11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', '_'	
Device Type	10	'0' – '9' 'a' – 'z' 'A' – 'Z'	
Software Version	4	(HEX)	
Hardware Version	4	(HEX)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

✧ <*Device Type*>: The type of the device.

✧ <*Software Version*>: The software version of the device. The first two characters represent the major version and the last two characters represent the minor version. For example, **010A** means the version **1.10**.

✧ <*Hardware Version*>: The hardware version of the device. The first two characters represent the major version and the last two characters represent the minor version. For example, **010A** means the version **1.10**.

3.3.3.8.+RESP:GTBAT

After the device receives the command **AT+GTRTO** to read the power supply information, it will send the power supply information to the backend server via the message **+RESP:GTBAT**.

➢ **+RESP:GTBAT,**

Example: **+RESP:GTBAT,500100,135790246811220,,1,12000,,4.40,0,0,20090214093254,11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', '_'	
External Power Supply	1	0|1	
External Power Voltage	<=5	0 - 99999(mV)	
Reserved	0		
Backup Battery Voltage	<=4	0.00 - 4.20(V)	
Charging	1	0|1	
LED On	1	0|1	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

3.3.3.9.+RESP:GTIOS

After the device receives the command **AT+GTRTO** to get the status of all the IO ports, it will send the status information to the backend server via the message **+RESP:GTIOS**.

➢ **+RESP:GTIOS,**

Example: **+RESP:GTIOS,500100,135790246811220,,0,1200,1300,00,00,20090214093254,11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ',	

		'_'	
Reserved	0		
Reserved	0		
Reserved	0		
Digital Input Status	2	00 – 03	
Digital Output Status	2	00 – 03	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

3.3.3.10.+RESP:GTTMZ

After the device receives the command **AT+GTRTO** to get the time zone settings, it will send the time zone information to the backend server via the message **+RESP:GTTMZ**.

- **+RESP:GTTMZ,**

Example: **+RESP:GTTMZ,500100,135790246811220,,+0800,0,20090214093254,11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', '_'	
Time Zone Offset	5	+/-HHMM	
Daylight Saving	1	0|1	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

3.3.4.Event Report

The following event reports are triggered when certain events occur.

+RESP:GTPNA: Power on report

+RESP:GTPFA: Power off report

+RESP:GTMPN: The report for connecting main power supply
+RESP:GTMPF: The report for disconnecting main power supply
+RESP:GTBTC: Backup battery starts charging
+RESP:GTSTC: Backup battery stops charging
+RESP:GTBPL: Backup battery low
+RESP:GTSTT: Device motion status indication when the motion status changes
+RESP:GTPDP: Data Service (DS) connection establishment report
+RESP:GTIGN: Ignition on report
+RESP:GTIGF: Ignition off report
+RESP:GTIDN: Enter into idling status
+RESP:GTIDF: Leave idling status
+RESP:GTGSM: The report for the information of the serving cell and the neighbor cells
+RESP:GTGSS: GNSS signal status
+RESP:GTCRA: Crash incident report
+RESP:GTSTR: Vehicle enters into Start status
+RESP:GTSTP: Vehicle enters into Stop status
+RESP:GTLSP: Vehicle enters into long stop status
+RESP:GTDOS: Wave shape 1 output status change
+RESP:GTRMD: The report for entering or leaving UMTS roaming state
+RESP:GTUPC: The report for information about UPC
+RESP:GTVGN: Virtual ignition on report
+RESP:GTVGF: Virtual ignition off report
+RESP:GTPNR: Indication of the reason for power on
+RESP:GTPFR: Indication of the reason for power off
+RESP:GTJDR: If the <*Mode*> in **AT+GTJDC** is set to 1, the device will report the **+RESP:GTJDR** message when jamming is detected.
+RESP:GTJDS: If the <*Mode*> in **AT+GTJDC** is set to 2, the device will report the **+RESP:GTJDS** message when jamming is detected.

In **+RESP:GTMPN**, **+RESP:GTMPF**, **+RESP:GTBTC**, **+RESP:GTSTC**, **+RESP:GTBPL**, **+RESP:GTSTT**, **+RESP:GTIGN**, **+RESP:GTIGF**, **+RESP:GTIDN**, **+RESP:GTIDF**, **+RESP:GTSTR**, **+RESP:GTSTP**, **+RESP:GTLSP** and **+RESP:GTGSS** event reports, the last known GNSS information and the current cell information are included.

- **+RESP:GTPNA,**
- **+RESP:GTPFA,**
- **+RESP:GTPDP,**

Example:
+RESP:GTPNA,500100,135790246811220,,20090214093254,11F0$
+RESP:GTPFA,500100,135790246811220,,20090214093254,11F0$
+RESP:GTPDP,500100,135790246811220,,20090214093254,11F0$

Parameter	Length (byte)	Range/Format	Default
Protocol Version	6	(HEX)	

Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', '_'	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

- **+RESP:GTMPN,**
- **+RESP:GTMPF,**
- **+RESP:GTBTC,**
- **+RESP:GTCRA,**

Example:
+RESP:GTMPN,500100,135790246811220,,0,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,20090214093254,11F0$
+RESP:GTMPF,500100,135790246811220,,0,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,20090214093254,11F0$
+RESP:GTBTC,500100,135790246811220,,0,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,20090214093254,11F0$+RESP:GTCRA,500100,135790246811220,,0,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,20090214093254,11F0$

Parameter	Length(byte)	Range/Format	Default
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', '_'	
GNSS Accuracy	<=2	0	0, Last known
Speed	<=5	0.0 - 999.9(km/h)	
Azimuth	<=3	0 – 359	
Altitude	<=8	(-)XXXXX.X(m)	
Longitude	<=11	-180 - 180	
Latitude	<=10	-90 - 90	
GNSS UTC Time	14	YYYYMMDDHHMMSS	
MCC	4	0XXX	
MNC	4	0XXX	
LAC	4	(HEX)	

Cell ID	<=8	(HEX)	
Event Info Mask	2	(HEX)	00
Reserved (Optional)	2	00	
Device Status (Optional)	6	(HEX)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

- ✧ <*Reserved (Optional)*>: If Bit 0 of <*Event Info Mask*> is enabled, this field will be included in the event reports. Otherwise, this field will not be included.
- ✧ <*Device Status (Optional)*>: If Bit 1 of <*Event Info Mask*> is enabled, <*Device Status*> will be included in the event reports. Otherwise, this field will not be included. For detailed information of this field, please refer to the parameter <*Device Status*> in the report **+RESP:GTFRI**.

➢ **+RESP:GTSTC,**

Example: **+RESP:GTSTC,500100,135790246811220,,,0,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,20090214093254,11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', ' _ '	
Reserved	0		
GNSS Accuracy	<=2	0	0, Last known
Speed	<=5	0.0 - 999.9(km/h)	
Azimuth	<=3	0 – 359	
Altitude	<=8	(-)XXXXX.X(m)	
Longitude	<=11	-180 - 180	
Latitude	<=10	-90 - 90	
GNSS UTC Time	14	YYYYMMDDHHMMSS	
MCC	4	0XXX	
MNC	4	0XXX	

LAC	4	(HEX)	
Cell ID	<=8	(HEX)	
Event Info Mask	2	(HEX)	00
Reserved (Optional)	2	00	
Device Status (Optional)	6	(HEX)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

➢ **+RESP:GTBPL,**

Example: **+RESP:GTBPL,500100,135790246811220,,3.53,0,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,20090214093254,11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', '_'	
Backup Battery Voltage	<=4	0.00 - 4.20(V)	
GNSS Accuracy	<=2	0	0, Last known
Speed	<=5	0.0 - 999.9(km/h)	
Azimuth	<=3	0 – 359	
Altitude	<=8	(-)XXXXX.X(m)	
Longitude	<=11	-180 - 180	
Latitude	<=10	-90 - 90	
GNSS UTC Time	14	YYYYMMDDHHMMSS	
MCC	4	0XXX	
MNC	4	0XXX	
LAC	4	(HEX)	
Cell ID	<=8	(HEX)	
Event Info Mask	2	(HEX)	00
Reserved (Optional)	2	00	

Device Status (Optional)	6	(HEX)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

➢ **+RESP:GTSTT,**

Example: **+RESP:GTSTT,500100,135790246811220,,16,0,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,20090214093254,11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', '_'	
Motion Status	2	11|12|16|21|22|41|42	
GNSS Accuracy	<=2	0	0, Last known
Speed	<=5	0.0 - 999.9(km/h)	
Azimuth	<=3	0 – 359	
Altitude	<=8	(-)XXXXX.X(m)	
Longitude	<=11	-180 - 180	
Latitude	<=10	-90 - 90	
GNSS UTC Time	14	YYYYMMDDHHMMSS	
MCC	4	0XXX	
MNC	4	0XXX	
LAC	4	(HEX)	
Cell ID	<=8	(HEX)	
Event Info Mask	2	(HEX)	00
Reserved (Optional)	2	00	
Device Status (Optional)	6	(HEX)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

✧ <*Motion Status*>: The current motion status of the device.

- 11 (Ignition Off Rest): The device attached vehicle is ignition off and it is motionless.
- 12 (Ignition Off Motion): The device attached vehicle is ignition off and it is moving before it is considered to be towed.
- 16 (Tow): The device attached vehicle is ignition off and it is towed.
- 21 (Ignition On Rest): The device attached vehicle is ignition on and it is motionless.
- 22 (Ignition On Motion): The device attached vehicle is ignition on and it is moving.
- 41 (Sensor Rest): The device attached vehicle is motionless without ignition signal detected.
- 42 (Sensor Motion): The device attached vehicle is moving without ignition signal detected.

➢ **+RESP:GTIGN,**

Example: **+RESP:GTIGN,500100,135790246811220,,1200,0,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,2000.0,20090214093254,11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', '_'	
Duration of Ignition Off	<=6	0 - 999999(sec)	
GNSS Accuracy	<=2	0	0, Last known
Speed	<=5	0.0 - 999.9(km/h)	
Azimuth	<=3	0 – 359	
Altitude	<=8	(-)XXXXX.X(m)	
Longitude	<=11	-180 - 180	
Latitude	<=10	-90 - 90	
GNSS UTC Time	14	YYYYMMDDHHMMSS	
MCC	4	0XXX	
MNC	4	0XXX	
LAC	4	(HEX)	
Cell ID	<=8	(HEX)	

Event Info Mask	2	(HEX)	000
Reserved (Optional)	2	00	
Device Status (Optional)	6	(HEX)	
Hour Meter Count	11	HHHHH:MM:SS	
Mileage	<=9	0.0 - 4294967.0(km)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

- ✧ <*Duration of Ignition Off*>: Duration since last time the ignition is turned off. If the duration is greater than 999999 seconds, it will be reported as 999999 seconds.
- ✧ <*Hour Meter Count*>: If the hour meter count function is enabled by the command **AT+GTHMC**, the total hours the meter has counted when the engine is on will be reported in this field. If the function is disabled, this field will be empty. It is formatted with 5 hour digits, 2 minute digits and 2 second digits, and ranges from 00000:00:00 to 99999:00:00.

➢ **+RESP:GTVGN,**

Example: **+RESP:GTVGN,500100,135790246811220,,00,,1200,0,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00, 12345:12:34,2000.0,20090214093254,11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', '_'	
Reserved	2	00	
Report Type	1	0-4	
Duration of Ignition Off	<=6	0 - 999999(sec)	
GNSS Accuracy	<=2	0	0, Last known
Speed	<=5	0.0 - 999.9(km/h)	
Azimuth	<=3	0 – 359	
Altitude	<=8	(-)XXXXX.X(m)	
Longitude	<=11	-180 - 180	
Latitude	<=10	-90 - 90	

GNSS UTC Time	14	YYYYMMDDHHMMSS	
MCC	4	0XXX	
MNC	4	0XXX	
LAC	4	(HEX)	
Cell ID	<=8	(HEX)	
Event Info Mask	2	(HEX)	00
Reserved (Optional)	2	00	
Device Status (Optional)	6	(HEX)	
Hour Meter Count	11	HHHHH:MM:SS	
Mileage	<=9	0.0 - 4294967.0(km)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

- <*Report Type*>: This parameter indicates the trigger source of the ignition event.
  - 0: Reserved
  - 1: Sensor state mode
  - 2: External power voltage mode (virtual ignition detection)
  - 3: Reserved
  - 4: Accelerometer mode (virtual ignition detection)
- <*Duration of Ignition Off*>: Duration since last time the ignition is turned off. If it is greater than 999999 seconds, it will be reported as 999999 seconds.
- <*Hour Meter Count*>: If the hour meter count function is enabled by the command **AT+GTHMC**, total hours the meter has counted when the engine is on will be reported in this field. If the function is disabled, this field will be empty. It is formatted with 5 hour digits, 2 minute digits and 2 second digits and ranges from 00000:00:00 – 99999:00:00.

➢ **+RESP:GTIGF,**

Example: **+RESP:GTIGF,500100,135790246811220,,1200,0,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,2000.0,20090214093254,11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', '_'	

Duration of Ignition On	<=6	0 - 999999(sec)	
GNSS Accuracy	<=2	0	0, Last known
Speed	<=5	0.0 - 999.9(km/h)	
Azimuth	<=3	0 – 359	
Altitude	<=8	(-)XXXXX.X(m)	
Longitude	<=11	-180 - 180	
Latitude	<=10	-90 - 90	
GNSS UTC Time	14	YYYYMMDDHHMMSS	
MCC	4	0XXX	
MNC	4	0XXX	
LAC	4	(HEX)	
Cell ID	<=8	(HEX)	
Event Info Mask	2	(HEX)	00
Reserved (Optional)	2	00	
Device Status (Optional)	6	(HEX)	
Hour Meter Count	11	HHHHH:MM:SS	
Mileage	<=9	0.0 - 4294967.0(km)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

- ✧ <*Duration of Ignition On*>: Duration since last time the ignition is turned on. If the duration is greater than 999999 seconds, it will be reported as 999999 seconds.
- ✧ <*Hour Meter Count*>: If the hour meter count function is enabled by the command **AT+GTHMC**, the total hours the meter has counted when the engine is on will be reported in this field. If the function is disabled, this field will be empty. It is formatted with 5 hour digits, 2 minute digits and 2 second digits, and ranges from 00000:00:00 to 99999:00:00.

➢ **+RESP:GTVGF,**

Example: **+RESP:GTVGF,500100,135790246811220,,00,,1200,0,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00, 12345:12:34,2000.0,20090214093254,11F0$**			
Parameter	**Length (Byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	

Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', '_'	
Reserved	2	00	
Report Type	1	0-4	
Duration of Ignition On	<=6	0 - 999999(sec)	
GNSS Accuracy	<=2	0	0, Last known
Speed	<=5	0.0 - 999.9(km/h)	
Azimuth	<=3	0 – 359	
Altitude	<=8	(-)XXXXX.X(m)	
Longitude	<=11	-180 - 180	
Latitude	<=10	-90 - 90	
GNSS UTC Time	14	YYYYMMDDHHMMSS	
MCC	4	0XXX	
MNC	4	0XXX	
LAC	4	(HEX)	
Cell ID	<=8	(HEX)	
Event Info Mask	2	(HEX)	00
Reserved (Optional)	2	00	
Device Status (Optional)	6	(HEX)	
Hour Meter Count	11	HHHHH:MM:SS	
Mileage	<=9	0.0 - 4294967.0(km)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

- <*Duration of Ignition On*>: Duration since last time the ignition is turned on. If it is greater than 999999 seconds, it is reported as 999999 seconds.
- <*Hour Meter Count*>: If the hour meter count function is enabled by the command **AT+GTHMC**, total hours the meter has counted when the engine is on will be reported in this field. If the function is disabled, this field will be empty. It is formatted with 5 hour digits, 2 minute digits and 2 second digits and ranges from 00000:00:00 – 99999:00:00.

- **+RESP:GTIDN,**
- **+RESP:GTSTR,**
- **+RESP:GTSTP,**
- **+RESP:GTLSP,**

Example:
+RESP:GTIDN,500100,135790246811220,,,,0,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,2000.0,20090214093254,11F0$
+RESP:GTSTR,500100,135790246811220,,,,0,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,2000.0,20090214093254,11F0$
+RESP:GTSTP,500100,135790246811220,,,,0,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,2000.0,20090214093254,11F0$
+RESP:GTLSP,500100,135790246811220,,,,0,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,2000.0,20090214093254,11F0$

Parameter	Length (byte)	Range/Format	Default
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', '_'	
Reserved	0		
Reserved	0		
GNSS Accuracy	<=2	0	0, Last known
Speed	<=5	0.0 - 999.9(km/h)	
Azimuth	<=3	0 – 359	
Altitude	<=8	(-)XXXXX.X(m)	
Longitude	<=11	-180 - 180	
Latitude	<=10	-90 - 90	
GNSS UTC Time	14	YYYYMMDDHHMMSS	
MCC	4	0XXX	
MNC	4	0XXX	
LAC	4	(HEX)	
Cell ID	<=8	(HEX)	
Event Info Mask	2	(HEX)	00
Reserved (Optional)	2	00	
Device Status (Optional)	6	(HEX)	

Mileage	<=9	0.0 - 4294967.0(km)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

➢ **+RESP:GTIDF,**

Example: **+RESP:GTIDF,500100,135790246811220,,22,300,0,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,2000.0,20090214093254,11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', '_'	
Motion Status	2	11|12|16|1A|22	
Duration of Idling Status	<=6	0 - 999999(sec)	
GNSS Accuracy	<=2	0	0, Last known
Speed	<=5	0.0 - 999.9(km/h)	
Azimuth	<=3	0 – 359	
Altitude	<=8	(-)XXXXX.X(m)	
Longitude	<=11	-180 - 180	
Latitude	<=10	-90 - 90	
GNSS UTC Time	14	YYYYMMDDHHMMSS	
MCC	4	0XXX	
MNC	4	0XXX	
LAC	4	(HEX)	
Cell ID	<=8	(HEX)	
Event Info Mask	2	(HEX)	00
Reserved (Optional)	2	00	
Device Status (Optional)	6	(HEX)	
Mileage	<=9	0.0 - 4294967.0(km)	
Send Time	14	YYYYMMDDHHMMSS	

Count Number	4	(HEX)	
Tail Character	1	$	$

✧ <*Motion Status*>: The motion status when the vehicle leaves idling status.

✧ <*Duration of Idling Status*>: The period of time that the vehicle has been in idling status. If the duration is greater than 999999 seconds, it will be reported as 999999 seconds.

➢ **+RESP:GTGSM,**

Example: **+RESP:GTGSM,500100,135790246811220,FRI,0460,0000,1878,0871,20,,0460,0000,1878,0152,16,,,,,,,,,,,,,,,,,,,,,,0460,0000,1878,0873,57,00,20090214093254,11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Fix Type	3	RTL|LBC|FRI|SOS|TOW|GIR	
MCC1	4	0XXX	
MNC1	4	0XXX	
LAC1	4	(HEX)	
Cell ID1	4 - 8	(HEX)	
RX Level1	2	0-63	
Reserved	1		
MCC2	4	0XXX	
MNC2	4	0XXX	
LAC2	4	(HEX)	
Cell ID2	4 - 8	(HEX)	
RX Level2	2	0-63	
Reserved	1		
MCC3	4	0XXX	
MNC3	4	0XXX	
LAC3	4	(HEX)	
Cell ID3	4 - 8	(HEX)	
RX Level3	2	0-63	
Reserved	1		

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MCC4	4	0XXX	
MNC4	4	0XXX	
LAC4	4	(HEX)	
Cell ID4	4 - 8	(HEX)	
RX Level4	2	0-63	
Reserved	1		
MCC5	4	0XXX	
MNC5	4	0XXX	
LAC5	4	(HEX)	
Cell ID5	4 - 8	(HEX)	
RX Level5	2	0-63	
Reserved	1		
MCC6	4	0XXX	
MNC6	4	0XXX	
LAC6	4	(HEX)	
Cell ID6	4 - 8	(HEX)	
RX Level6	2	0-63	
Reserved	1		
MCC	4	0XXX	
MNC	4	0XXX	
LAC	4	(HEX)	
Cell ID	4 - 8	(HEX)	
RX Level	2	0-63	
Event Info Mask	2	00~FF	00
Reserved (Optional)	2	00	
Device Status (Optional)	6	(HEX)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

✧ <*Fix Type*>: A string to indicate what kind of GNSS fix this cell information is for.

"SOS": This cell information is for SOS request.
"RTL": This cell information is for RTL request.
"LBC": This cell information is for LBC request.
"FRI": This cell information is for FRI request.
"GIR": This cell information is for the sub command "**C**" in the **AT+GTRTO** command.

- <*MCC (i)*>: MCC of the neighbor cell *i* (*i* is the index of the neighbor cell).
- <*MNC (i)*>: MNC of the neighbor cell *i*.
- <*LAC (i)*>: LAC (in hex format) of the neighbor cell *i*.
- <*Cell ID (i)*>: Cell ID (in hex format) of the neighbor cell *i*.
- <*RX Level (i)*>: The signal strength of the neighbor cell *i*. This parameter is a 6-bit value coded in 1 dB steps:
  0: -110 dBm
  1 to 62: -109 to -48 dBm
  63: -47 dBm
- <*MCC*>: MCC of the serving cell.
- <*MNC*>: MNC of the serving cell.
- <*LAC*>: LAC (in hex format) of the serving cell.
- <*Cell ID*>: Cell ID (in hex format) of the serving cell.
- <*RX Level*>: The signal strength of the serving cell.

Note:

1. It may include information of several neighbor cells (or even no neighbor cell information). If no neighbor cell is found, all the fields of the neighbor cell will be empty.
2. "ffff" in the fields of <*LAC(i)*> and <*Cell ID(i)*> means the terminal does not know the value.
3. This message cannot be sent via SMS.
4. Information of GSM neighbouring cells is only available in 2G network mode.
5. If <*Fix Type*> is "SOS", information of GSM neighbouring cells will not be hidden.

➢ **+RESP:GTGSS,**

Example: **+RESP:GTGSS,500100,135790246811220,,1,9,11,,0,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,20090214093254,11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', '_'	
GNSS Signal Status	1	0 | 1	
Satellite Number	2	0 - 24	
Motion Status	2	11|12|16|1A|21|22|41|42	

Reserved	0		
GNSS Accuracy	<=2	0	0, Last known
Speed	<=5	0.0 - 999.9(km/h)	
Azimuth	<=3	0 – 359	
Altitude	<=8	(-)XXXXX.X(m)	
Longitude	<=11	-180 - 180	
Latitude	<=10	-90 - 90	
GNSS UTC Time	14	YYYYMMDDHHMMSS	
MCC	4	0XXX	
MNC	4	0XXX	
LAC	4	(HEX)	
Cell ID	<=8	(HEX)	
Event Info Mask	2	(HEX)	00
Reserved (Optional)	2	00	
Device Status (Optional)	6	(HEX)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

- <*GNSS Signal Status*>: 0 means “GNSS signal lost” or “no successful GNSS fix”, and 1 means “GNSS signal recovered and successful GNSS fix”.
- <*Satellite Number*>: The number of the satellites in view when fix is successful. If fix fails, the parameter field is empty.
- <*Motion Status*>: The current motion status of the device.
  - 11 (Ignition Off Rest): The device attached vehicle is ignition off and it is motionless.
  - 12 (Ignition Off Motion): The device attached vehicle is ignition off and it is moving before it is considered to be towed.
  - 16 (Tow): The device attached vehicle is ignition off and it is towed.
  - 21 (Ignition on Rest): The device attached vehicle is ignition on and it is motionless.
  - 22 (Ignition on Motion): The device attached vehicle is ignition on and it is moving.
  - 41 (Sensor Rest): The device attached vehicle is motionless without ignition signal detected.
  - 42 (Sensor Motion): The device attached vehicle is moving without ignition signal detected.

➢ **+RESP:GTDOS,**

Example: **+RESP:GTDOS,500100,862170010190559,,2,0.0,57.7,117.201371,31.833041,20121015085137,0460,0000,5663,5A02,,2,1,20121015085153,0149$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', '_'	
Wave1 Output ID	1	1-2	
Wave1 Ouptut Active	1	0|1	
GNSS Accuracy	<=2	0	0, Last known
Speed	<=5	0.0 - 999.9(km/h)	
Azimuth	<=3	0 – 359	
Altitude	<=8	(-)XXXXX.X(m)	
Longitude	<=11	-180 - 180	
Latitude	<=10	-90 - 90	
GNSS UTC Time	14	YYYYMMDDHHMMSS	
MCC	4	0XXX	
MNC	4	0XXX	
LAC	4	(HEX)	
Cell ID	<=8	(HEX)	
Event Info Mask	2	(HEX)	00
Reserved (Optional)	2	00	
Device Status (Optional)	6	(HEX)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

✧ <*Wave1 Output ID*>: The ID of the wave shape 1 output.

✧ <*Wave1 Output Active*>: The status of the wave shape 1 output.

If the UMTS roaming state of the device changes, the **+RESP:GTRMD** message will report the current roaming state. The message is defined as an event message.

➢ **+RESP:GTRMD,**

Example: **+RESP:GTRMD,500100,135790246811220,,0,0,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,20090214093254,11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=10	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', '_'	
Roaming State	1	0-3	
GNSS Accuracy	<=2	0	0, Last known
Speed	<=5	0.0 - 999.9(km/h)	
Azimuth	<=3	0 – 359	
Altitude	<=8	(-)XXXXX.X(m)	
Longitude	<=11	-180 - 180	
Latitude	<=10	-90 - 90	
GNSS UTC Time	14	YYYYMMDDHHMMSS	
MCC	4	0XXX	
MNC	4	0XXX	
LAC	4	(HEX)	
Cell ID	<=8	(HEX)	
Event Info Mask	2	(HEX)	00
Reserved (Optional)	2	00	
Device Status (Optional)	6	(HEX)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

✧ <*Roaming State*>: A numeral to indicate the roaming status.

- 0: Home
- 1: Known Roaming

- 2: Unknown Roaming
- 3: Blocking Report

➢ **+RESP:GTUPC,**

Example: **+RESP:GTUPC,500100,135790246811220,,1,http://www.queclink.com/configure.ini,20150201000000,11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=10	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', '_'	
Command ID	<=3		
Result	3	100|101|102|103|200|201|202|300|301|302	
Download URL	<=100	(URL)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000-FFFF	
Tail Character	1	$	$

✧ <*Command ID*>: The command ID in the update configuration file. It is always 0 before the device starts to update the configuration. It indicates the total number of the commands when the response code is 301. It indicates wrong format of command ID when the response code is 302.

✧ <*Result*>: A code to indicate whether the configuration is updated successfully.

- 100: The update command is starting.
- 101: The update command is confirmed by the device.
- 102: The update command is refused by the device.
- 103: The update process is refused because the battery is low.
- 200: The device starts to download the package.
- 201: The device finishes downloading the package successfully.
- 202: The device fails to download the package.
- 300: The device starts to update the device configuration.
- 301: The device finishes updating the device configuration successfully.
- 302: The device fails to update the device configuration.
- 303: Reserved

✧ <*Download URL*>: The complete URL to download the configuration. It includes the file name.

➢ **+RESP:GTPNR:** It indicates the reason for power on.

Example: **+RESP:GTPNR,500100,864802030038933,GV55W,2,,,,,20171215171633,0697$**			
Parameter	**Length(byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	

Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', '_'	
Power On Reason	1	0-3	
Reserved	0		
Reserved			
Reserved			
Reserved			
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

<*Power On Reason*>: The reason for power on.

- 0: Normal power on
- 1: FOTA reboot
- 2: RTO reboot
- 3: Watchdog reboot

➢ **+RESP:GTPFR:** It indicates the reason for power off.

Example: **+RESP:GTPFR,500100,864802030055671,GV55W,2,,,,,20171203020102,040F$**			
Parameter	**Length(byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', '_'	
Power Off Reason	1	0-3	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

✧ <*Power Off Reason*>: The reason for power off.

- 0: RTO power off
- 1: Low battery voltage
- 2: RTO reboot
- 3: Watchdog reboot

➢ **+RESP:GTJDR,**

Example: **+RESP:GTJDR,500100,135790246811220,,0,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,20090214093254,11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', '_'	
Jamming Net	1	1 - 3	
GNSS Accuracy	<=2	0	0, Last known
Speed	<=5	0.0 - 999.9(km/h)	
Azimuth	<=3	0 – 359	
Altitude	<=8	(-)XXXXX.X(m)	
Longitude	<=11	-180 - 180	
Latitude	<=10	-90 - 90	
GNSS UTC Time	14	YYYYMMDDHHMMSS	
MCC	4	0XXX	
MNC	4	0XXX	
LAC	4	(HEX)	
Cell ID	4	(HEX)	
Event Info Mask	2	(HEX)	00
Reserved (Optional)	2	00	
Device Status (Optional)	6	(HEX)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

✧ <*Jamming Net*>: A numeral to indicate which network is being jammed.

- 1: GSM
- 2: WCDMA
- 3: Both WCDMA and GSM

If the <*Mode*> is set to 2 in the **AT+GTJDC** command, the device will report the **+RESP:GTJDS** message when jamming is detected.

➢ **+RESP:GTJDS,**

Example: **+RESP:GTJDS,500100,135790246811220,,2,0,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,20090214093254,11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', '_'	
Jamming Status	1	1|2	
Jamming Net	1	1|2|3	
GNSS Accuracy	<=2	0	0, Last known
Speed	<=5	0.0 - 999.9(km/h)	
Azimuth	<=3	0 – 359	
Altitude	<=8	(-)XXXXX.X(m)	
Longitude	<=11	-180 - 180	
Latitude	<=10	-90 - 90	
GNSS UTC Time	14	YYYYMMDDHHMMSS	
MCC	4	0XXX	
MNC	4	0XXX	
LAC	4	(HEX)	
Cell ID	4	(HEX)	
Event Info Mask	2	(HEX)	00
Reserved (Optional)	2	00	
Device Status (Optional)	6	(HEX)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	

Tail Character	1	$	$

✧ <*Jamming Status*>: The current jamming status of the device.
- 1: Quit the jamming state.
- 2: Enter the jamming state.

3.3.5.Buffer Report

If the buffer report function is enabled by the command **AT+GTSRI**, the terminal will save the report messages in a local buffer when the following occurs.

✧ Failed to activate HSPA context for the TCP or UDP connection.
✧ Failed to establish the TCP connection with the backend server.

The buffered messages will be sent to the backend server when the connection to the server is recovered. The buffered reports are saved to the built-in non-volatile memory in case the device is reset. The terminal can buffer up to 10,000 messages.

Detailed information about buffer report is listed below.

✧ Only **+RESP** messages excluding **+RESP:GTPDP**, **+RESP:GTALS**, **+RESP:GTALC** and **+RESP:GTALM** are buffered.
✧ In the buffer report, the original header string "**+RESP**" is replaced by "**+BUFF**" while the other content including the original sending time and count number is kept unchanged.
✧ Buffered messages will be sent only via HSPA by TCP or UDP connection. They cannot be sent via SMS. If the current report is in forced SMS mode, the buffered messages will not be sent until the report mode is changed to TCP or UDP.
✧ The buffered messages will be sent after real time messages if <*Buffer Mode*> in **AT+GTSRI** is set to 1.
✧ The buffered messages will be sent before real time messages if <*Buffer Mode*> in **AT+GTSRI** is set to 2. The SOS message has the highest priority and is sent before buffered messages.

Example:

The following is an example of a buffered message:

+BUFF:GTFRI,500100,868034001000579,gv55w,0,10,1,1,0.4,60,56.6,117.201309,31.833082,20130107182151,0460,0000,5678,2079,00,21188.6,,,,100,210100,,,,20130107182154,01B8$

3.3.6.Report with Google Maps Hyperlink

If <*Location Request Mask*> in the command **AT+GTCFG** is set to 2, the device will send its current location to the phone number of the incoming call via SMS with a Google Maps hyperlink.

➢ **Google Maps Hyperlink**

Example:

gv55w: <http://maps.google.com/maps?q=31.222073,121.354335 F1 D2009/01/01T00:00:00 B100 I1 S99>			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', '_'	
Google Maps Hyperlink Header	30	http://maps.google.com/maps?q=	http://maps.google.com/maps?q=
Latitude	<=10	-90 - 90	
Longitude	<=11	-180 - 180	
GNSS Fix	<=3	F0|F1 – F50	
GNSS UTC Time	20	DYYYY/MM/DDTHH:MM:SS	
Battery Percent	<=4	B0-B100	
Ignition State	<=2	I0-I1	
Speed	<=6	V0.0-V999.9km/h	

- ✧ <*GNSS Fix*>: The accuracy of the location information. F0 means no GNSS fix.
- ✧ <*Ignition Status*>: The ignition status of the device.
  - 0: The device is ignition off.
  - 1: The device is ignition on.

3.3.7.Crash Data Packet

The message contains 10s XYZ-axis acceleration data before and after crash. When a crash accident is detected, tri-axial acceleration data before crash will be reported to backend server in several frames. And the device will continue to record tri-axial data after crash and report the data to backend server in several frames.

➢ **+RESP:GTCRD,**

Example:

+RESP:GTCRD,500100,359231038715676,,0,3,1,0001000100550001000200510000000000550000000100520001000100560001000100530000000000540000000100510001000000540000000100530001000100550001000000530001000100540000000030051000000010053000100010000053000100010054000000030051000000010053000100010000052000000000054000300010053000200010005200000000200510001000300530001000000530001ffff00540000000100520000000300550002000100530001000000520001000100550001000100540001ffff00530000000200530000000200560ffff00000530000000000520001000000520001000200520002000100540000000100540ffff00020052000000010051000100010ffff00530002ffff00540001fffe00520001ffff00530000000200520000000200520

020001005200010001005600010001005200 01ffff00530001000200560001ffff00510001000100550001000000510002000200530000000000550001000000520001000100550001000100 53ffffffff00520000ffff00520001000200530002000100540001000000550001000200530001000000530000000100530001000100520000ffff00510001000000520002000000520002ffff00520001000200530000000200540000000000540001fffe00530001ffff00520001000100520001000100530001000100100520000,20120330120443,005C$			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', '_'	
Data Type	1	0 | 1	
Total Frame	1	3	
Frame Number	1	1 -3	
Data	1000	(HEX)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

- <*Data Type*>: The data reported to backend server is recorded before or after crash.
  - 0: Before crash
  - 1: After crash
- <*Total Frame*>: The total number of the messages that are sent to the backend server for the crash event.
- <*Frame Number*>: A numeral to indicate the sequence of the current message.
- <*Data*>: There are at most 1000 ASCII characters in the message with 12 characters in a group. The first 4 characters of these 12 characters represent X axis acceleration data, the middle 4 characters represent Y axis acceleration data and the last 4 characters represent Z axis acceleration data. The ASCII "0001" means HEX value 0x0001, so the acceleration is 1. The ASCII "fffd" means HEX value 0xFFFD which is the compliment of -3, so the acceleration is -3.

Example:

+RESP:GTCRD,2F0204,359231038715676,,0,3,1,000100010055… ,20120330120443,005C$

The packet above is the original XYZ-axis acceleration data:

Conversion to hex format: X (axis acceleration data) = 0x0001; Y = 0x0001; Z = 0x0055;

Decimal format: X (axis acceleration data) = 1; Y = 1; Z = 85;

+RESP:GTCRD,060204,359231038715676,,1,3,3,...fffffff10052,20120330115736,005A$

The packet above is the original XYZ-axis acceleration data:

Conversion to hex format: X (axis acceleration data) = 0xFFFF; Y = 0xFFF1; Z = 0x0052;
Decimal format: X (axis acceleration data) = -1; Y = -15; Z = 82;

Note: The acceleration of gravity (+g) is 82 in decimal format and –g is -82. The linearized acceleration data 1312 represents +16g and -1312 represents -16g.

3.3.8.Acceleration Data Packet

The device will report the message every 3 seconds, and record 25 sets of XYZ-axis acceleration data per second.

- **+RESP:GTACC,**

Example:
+RESP:GTACC,500100,868034001591569,gv55w,0000fffb00590003fffb00580001fffd00560002ffc00560002fffb0054fffffffb005a0001fffa00580002fffb0056fffefffb0059fffffffb005afffefffb00590001fffd005bfffffffd00540000fffd00580003fffd0059fffffffc00560000fffa00580001fffb00580003fffc00590001fffb00580002000000059fffefffb00560000fffc00590003fffa00550000fffe0059fffffffd00590001fffd00560000fffe00570002fffa0059fffefffe0059fffefffc0058fffefffc00580001fffc00590002fffa0057fffffffd00580000fff900590001fffa0058fffefffb00570000fffa00580000fffc0058fffffffd00560000fffd00580000fffb00570000fffc00570002fffd005bfffffffff00590001fffb0057fffefffb00570001fffb00580002000200570002fff900580001fffc0057fffffffb00580002fffa00580004fffb00580004fffb00590001fffe00560001fffc0057fffffffe00580002fffc00580004fffb00580000fffa0058fffcfffb00580000fffb00590002fffb005afffefffb00580000fffb00570001fffc005c0002fffb00560002fffd0055fffffffb00590002fffe00580000fffb005a0001fffe00580001fffc005a,,,,20130830031904,04E7$

Parameter	Length (byte)	Range/Format	Default
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', '_'	
Data	12*75	‘0’-‘9’ ’a’-‘f’	
Reserved	0		
Reserved	0		
Reserved	0		
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

✧ <*Data*>: There are 12*75 ASCII characters in the message with 12 characters in a group. The first 4 characters of these 12 characters represent X axis acceleration data, the middle 4 characters represent Y axis acceleration data, and the last 4 characters represent Z axis acceleration data. ASCII "0001" means HEX value 0x0001, so the acceleration is 1. ASCII "fffd" means HEX value 0xFFFD which is the compliment of -3, so the acceleration is -3.

Example:

+RESP:GTACC, 2F0105, 868034001591569, 000100010055…, 20120330120443, 005C$

The packet above is the original XYZ-axis acceleration data:

Conversion to hex format: X (axis acceleration data) = 0x0001; Y = 0x0001; Z = 0x0055;

Equal to decimal format: X (axis acceleration data) = 1; Y = 1; Z = 85;

+RESP:GTACC, 2F0105, 868034001591569 , fffffff10052… ,,,20120330120443,005C$

The packet above is the orignal XYZ-axis acceleration data:

Conversion to hex format: X (axis acceleration data) = 0xFFFF; Y = 0xFFF1; Z = 0x0052;

Decimal format: X (axis acceleration data) = -1; Y = -15; Z = 82;

Note: Acceleration of gravity (+g) is 82 in decimal format and –g is -82. The linearized acceleration data 1312 represents +16g and -1312 represents -16g.

3.4.Heartbeat

Heartbeat is used to maintain the contact between the device and the backend server in case of TCP/UDP communication. The heartbeat package is sent to the backend server at the interval specified by <*Heartbeat Interval*> in the **AT+GTSRI** command.

➢ **+ACK:GTHBD,**

Example: **+ACK:GTHBD,500100,135790246811220,,20100214093254,11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', '_'	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

Whenever the backend server receives a heartbeat package, it should reply with an acknowledgement to the device.

➢ **+SACK:GTHBD,**

Example: **+SACK:GTHBD,500100,11F0$** **+SACK:GTHBD,,11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Count Number	4	(HEX)	
Tail Character	1	$	$

✧ <*Protocol Version*>: The device type and the protocol version that the backend server supports. This field is optional. The backend server can just send an empty field to decrease the length of the heartbeat data acknowledgement.

✧ <*Count Number*>: The backend server uses the <*Count Number*> extracted from the heartbeat package from the device as the <*Count Number*> in the server acknowledgement of the heartbeat package.

3.5.Server Acknowledgement

If server acknowledgement is enabled by the **AT+GTSRI** command, the backend server should reply to the device whenever it receives a message from the device.

➢ **+SACK:**

Example: **+SACK:11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Count Number	4	(HEX)	
Tail Character	1	$	$

✧ <*Count Number*>: The backend server uses the <*Count Number*> extracted from the received message as the <*Count Number*> in the server acknowledgement.

4. HEX Format Report Message

From this version, the @Track protocol starts to support report messages in HEX format. For all the commands, they are still using the ASCII format as described above. By default, the device uses ASCII format report messages. The backend server could use the **AT+GTQSS** or **AT+GTSRI** command to enable the HEX format report messages by setting the <*Protocol Format*> to 1.

All the report messages are sorted into 5 categories and messages in the same category use the same header string, including acknowledgement to command (**+ACK**), location report (**+RSP**), event report (**+EVT**), information report (**+INF**) and the heartbeat data (**+HBD**).

The composition of the HEX report message could be customized by the **AT+GTHRM** command. The actual length of each HEX report message varies depending on mask settings in **AT+GTHRM**.

The device uses CRC16 method to calculate the checksum of the report data and appends the checksum to the end of the data. The backend server could use this checksum to verify the integrity of the received data.

At the end of each HEX report message, the device uses 0x0D and 0x0A to mark the end.

The HEX report messages are transmitted in network byte order (big-endian).

4.1.Hex Report Mask

The **AT+GTHRM** command consists of <*+ACK Mask*>, <*+RSP Mask*>, <*+EVT Mask*>, <*+INF Mask*>, <*+HBD Mask*> and <*+CRD Mask*> which control the composition of a HEX report message. In each HEX report message, the corresponding mask for the report indicates which part is reported.

- **AT+GTHRM=**

Example: **AT+GTHRM=gv55w,,,EF,FFFFFFFF,FFFFFFFF,FFFF,FF,FE0F,,,,0018$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv55w
Reserved	0		
Reserved	0		
+ACK Mask	2	(HEX)	6F
+RSP Mask	8	(HEX)	FE1FBF
+EVT Mask	8	(HEX)	FE1FBF

+INF Mask	4	(HEX)	FF7D
+HBD Mask	2	(HEX)	EF
+CRD Mask	4	(HEX)	7D
Reserved	0		
Reserved	0		
Reserved	0		
Serial Number	4	(HEX)	
Tail Character	1	$	$

✧ <*+ACK Mask*>: Component mask of the acknowledgement received.

Mask Bit	Item
Bit 7	Reserved
Bit 6	<*Count Number*>
Bit 5	<*Send Time*>
Bit 4	<*Unique ID*>
Bit 3	<*Firmware Version*>
Bit 2	<*Protocol Version*>
Bit 1	<*Device Type*>
Bit 0	<*Length*>

✧ <*+RSP Mask*>: Component mask of the location report message.

Mask Bit	Item
Bit 31	Reserved
Bit 30	Reserved
Bit 29	Reserved
Bit 28	Reserved
Bit 27	Reserved
Bit 26	Reserved
Bit 25	Reserved
Bit 24	Reserved
Bit 23	<*Total Hour Meter Count*>

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Bit 22	*<Current Hour Meter Count>*
Bit 21	*<Total Mileage>*
Bit 20	*<Current Mileage>*
Bit 19	*<Satellite Information>*
Bit 18	*<Motion Status>*
Bit 17	*<Digital IO Status>*
Bit 16	Reserved
Bit 15	Reserved
Bit 14	Reserved
Bit 13	Reserved
Bit 12	*<External Power Voltage>*
Bit 11	*<Battery Level>*
Bit 10	*<Firmware Version>*
Bit 9	*<Protocol Version>*
Bit 8	*<Device Type>*
Bit 7	*<Length>*
Bit 6	*<Unique ID>*
Bit 5	*<Count Number>*
Bit 4	*<Send Time>*
Bit 3	*<MCC / MNC / LAC / Cell ID / Reserved>*
Bit 2	*<Altitude>*
Bit 1	*<Azimuth>*
Bit 0	*<Speed>*

✧ *<+EVT Mask>*: Component mask of the event report message.

Mask Bit	**Item**
Bit 31	Reserved
Bit 30	Reserved
Bit 29	Reserved
Bit 28	Reserved
Bit 27	Reserved

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Bit 26	Reserved
Bit 25	Reserved
Bit 24	Reserved
Bit 23	*<Total Hour Meter Count>*
Bit 22	*<Current Hour Meter Count>*
Bit 21	*<Total Mileage>*
Bit 20	*<Current Mileage>*
Bit 19	*<Satellite Information>*
Bit 18	*<Motion Status>*
Bit 17	*<Digital IO Status>*
Bit 16	Reserved
Bit 15	Reserved
Bit 14	Reserved
Bit 13	Reserved
Bit 12	*<External Power Voltage>*
Bit 11	*<Battery Level>*
Bit 10	*<Firmware Version>*
Bit 9	*<Protocol Version>*
Bit 8	*<Device Type>*
Bit 7	*<Length>*
Bit 6	*<Unique ID>*
Bit 5	*<Count Number>*
Bit 4	*<Send Time>*
Bit 3	*<MCC / MNC / LAC / Cell ID / Reserved>*
Bit 2	*<Altitude>*
Bit 1	*<Azimuth>*
Bit 0	*<Speed>*

✧ *<+INF Mask>*: Component mask of the information report message. Bit 8 - Bit 15 indicate which groups of information items are included when the device reports the message **+RESP:GTINF**.

Mask Bit	**Item**

Bit 15	**+RESP:GTGIR**
Bit 14	**+RESP:GTTMZ**
Bit 13	**+RESP:GTCSQ**
Bit 12	**+RESP:GTCID**
Bit 11	**+RESP:GTBAT**
Bit 10	**+RESP:GTGPS**
Bit 9	**+RESP:GTIOS**
Bit 8	**+RESP:GTVER**
Bit 7	Reserved
Bit 6	*<Count Number>*
Bit 5	*<Send Time>*
Bit 4	*<Firmware Version>*
Bit 3	*<Protocol Version>*
Bit 2	*<Device Type>*
Bit 1	*<Unique ID>*
Bit 0	*<Length>*

✧ *<+HBD Mask>*: Component mask of the heartbeat data.

Mask Bit	Item
Bit 7	*<UID>*
Bit 6	*<Count Number>*
Bit 5	*<Send Time>*
Bit 4	*<Unique ID>*
Bit 3	*<Firmware Version>*
Bit 2	*<Protocol Version>*
Bit 1	*<Device Type>*
Bit 0	*<Length>*

✧ *<+CRD Mask>*: Component mask of the crash data packet.

Mask Bit	Item
Bit 15	Reserved

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Bit 14	Reserved
Bit 13	Reserved
Bit 12	Reserved
Bit 11	Reserved
Bit 10	Reserved
Bit 9	Reserved
Bit 8	Reserved
Bit 7	Reserved
Bit 6	<*Count Number*>
Bit 5	<*Send Time*>
Bit 4	<*Firmware Version*>
Bit 3	<*Protocol Version*>
Bit 2	<*Device Type*>
Bit 1	<*Unique ID*>
Bit 0	<*Length*>

The acknowledgment message of the **AT+GTHRM** command:

- **+ACK:GTHRM,**

Example: **+ACK:GTHRM,500100,135790246811220,,0019,20090214093254,11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', ' - ', ' _ '	
Serial Number	4	(HEX)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

4.2.Acknowledgement +ACK

➢ **+ACK,**

Example: **2B 41 43 4B 01 EF 24 50 01 00 03 02 56 50 22 00 0A 00 27 07 00 07 F9 07 DD 01 1E 0A 15 0A 01 01 F9 19 0D 0A**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Message Header	4	+ACK	+ACK
Message Type	1		
Report Mask	1	(HEX)	
Length	1		
Device Type	1	50	50
Protocol Version	2	(HEX)	
Firmware Version	2	(HEX)	
Unique ID	8	(IMEI|Device Name)	
ID	1		
Serial Number	2	(HEX)	
Send Time	7	(YYYYMMDDHHMMSS)	
Count Number	2	(HEX)	
Checksum	2	(HEX)	
Tail Characters	2	(0x0D 0x0A)	0x0D 0x0A

✧ <*Message Type*>: It indicates the ID of the command that the device receives.

Command	**ID**
AT+GTBSI	0
AT+GTSRI	1
AT+GTQSS	2
Reserved	3
AT+GTCFG	4
AT+GTTOW	5
AT+GTEPS	6
AT+GTDIS	7

AT+GTOUT	8
AT+GTIOB	9
AT+GTTMA	10
AT+GTFRI	11
AT+GTGEO	12
AT+GTSPD	13
AT+GTSOS	14
Reserved	15
AT+GTRTO	16
Reserved	17
Reserved	18
Reserved	19
Reserved	20
AT+GTUPD	21
AT+GTPIN	22
Reserved	23
AT+GTOWH	24
AT+GTDOG	25
Reserved	26
AT+GTJDC	27
AT+GTIDL	28
AT+GTHBM	29
AT+GTHMC	30
Reserved	31
Reserved	32
Reserved	33
AT+GTWLT	34
AT+GTHRM	35
AT+GTCRA	36
AT+GTPDS	38

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AT+GTBZA	39
AT+GTSPA	40
AT+GTSSR	41
Reserved	42
Reserved	43
AT+GTRMD	44
AT+GTFFC	45
AT+GTCMD	46
AT+GTUDF	47
AT+GTJBS	48
Reserved	49
Reserved	50
AT+GTPEO	51
AT+GTUPC	52
Reserved	53
Reserved	54
Reserved	55
Reserved	56
Reserved	57
Reserved	58
Reserved	59
Reserved	60
Reserved	61
Reserved	62
Reserved	63
Reserved	64
AT+GTGAM	65
Reserved	66
Reserved	67
Reserved	68

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AT+GTVVS	69
AT+GTAVS	70

- <*Report Mask*>: Please refer to the <*+ACK Mask*> in **AT+GTHRM**.
- <*Length*>: The length of the whole acknowledgement message from header to the tail characters.
- <*Unique ID*>: If Bit 4 of <*+ACK Mask*> is 0, the (IMEI) of the device is used as the unique ID of the device. (IMEI) is a 15-digit string. In the HEX format message, each 2 digits are encoded into one byte as an integer.

(IMEI)	**86**	**80**	**34**	**00**	**10**	**00**	**39**	**7**
HEX	**56**	**50**	**22**	**00**	**0A**	**00**	**27**	**07**

If Bit 4 of <*+ACK Mask*> is 1, the device name is used as the unique ID of the device. For the device name, please refer to the <*Device Name*> in **AT+GTCFG**. Device name is an 8-byte string. If the length of the <*Device Name*> is more than 8 bytes, only the first 8 bytes will be acquired. In the Hex format message, each byte is encoded into one byte as an integer. If the device name is less than 8 bytes, the remaining bytes are set to 0.

Device Name	**g**	**v**	**5**	**5**	**w**			
HEX	**67**	**76**	**35**	**35**	**77**	**00**	**00**	**00**

- <*ID*>: The sub-command ID of **AT+GTRTO** or the ID of **AT+GTIOB** or **AT+GTGEO**. For others, set it to 0.
- <*Send Time*>: The local time to send the acknowledgement message. 7 bytes in total. The first 2 bytes are for year, and the other 5 bytes are for month, day, hour, minute and second respectively.

Send Time	**2011**		**01**	**31**	**06**	**29**	**11**
HEX	**07**	**DB**	**01**	**1F**	**06**	**1D**	**0B**

- <*Checksum*>: The CRC16 checksum for data from <*Message Type*> to <*Count Number*>.

4.3.Location Report +RSP

Location report messages including **+RESP:GTTOW**, **+RESP:GTEPS**, **+RESP:GTDIS**, **+RESP:GTIOB**, **+RESP:GTFRI**, **+RESP:GTSPD**, **+RESP:GTRTL**, **+RESP:GTDOG**, **+RESP:GTIGL**, **+RESP:GTVGL**, **+RESP:GTGES**, **+RESP:GTGIN**, **+RESP:GTGOT**, and **+RESP:GTHBM** use the format below.

- **+RSP,**

Example:
2B 52 53 50 07 00 FE 0F BF 00 5D 50 01 00 03 02 56 50 22 00 0A 00 27 07 5F 01 00 22 08 30 01 01 00 24 00 00 AE 00 28 06 FC 0F 06 01 E5 F6 04 07 DD 01 1E 00 14 04 04 60 00 00 55 0A 1A 11 00 00 07 00 00 00 00 07 00 0C 0C 23 00 00 00 0C 0C 23 07 DD 01 1E 08 14 05 00 C7 DE 11 0D 0A

Parameter	Length (byte)	Range/Format	Default

Message Header	4	+RSP	+RSP
Message Type	1		
Report Mask	4	(HEX)	
Length	2		
Device Type	1	50	50
Protocol Version	2	(HEX)	
Firmware Version	2	(HEX)	
Unique ID	8	(IMEI|Device Name)	
Battery Level	1	0 - 100	
External Power Voltage	2		
Digital Input Status	1	00 – 03	
Digital Output Status	1	00 – 03	
Motion Status	1	11|12|21|22|41|42|16|1A	
Satellites in View	1		
Report ID / Report Type	1	(HEX)	
Number	1	1	
GNSS Accuracy	1	0 – 50	
Speed	3	0.0 – 999.9(km/h)	
Azimuth	2	0 – 359	
Altitude	2		
Longitude	4	(-180 – 180)	
Latitude	4	(-90 – 90)	
GNSS UTC Time	7	(YYYYMMDDHHMMSS)	
MCC	2	(HEX)	
MNC	2	(HEX)	
LAC	2	(HEX)	
Cell ID	4	(HEX)	
Reserved	1		00
Current Mileage	3	0.0 – 65535.0(km)	
Total Mileage	5	0.0 – 4294967.0(km)	

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Current Hour Meter Count	3	(HHMMSS)	
Total Hour Meter Count	6	(HHHHHHHHMMSS)	
Send Time	7	(YYYYMMDDHHMMSS)	
Count Number	2	(HEX)	
Checksum	2	(HEX)	
Tail Characters	2	(0x0D 0x0A)	0x0D 0x0A

✧ <*Message Type*>: The ID of a specific location report message.

Message	ID
+RESP:GTRTL (PNL)	Reserved
+RESP:GTTOW	1
Reserved	2
+RESP:GTLBC	3
+RESP:GTEPS	4
+RESP:GTDIS	5
+RESP:GTIOB	6
+RESP:GTFRI	7
+RESP:GTGEO	8
+RESP:GTSPD	9
+RESP:GTSOS	10
+RESP:GTRTL	11
+RESP:GTDOG	12
Reserved	13
Reserved	14
+RESP:GTHBM	15
+RESP:GTIGL	16
Reserved	17
Reserved	18
Reserved	19
Reserved	20
Reserved	21

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Reserved	22
Reserved	23
Reserved	24
+RESP:GTGIN	25
+RESP:GTGOT	26
+RESP:GTVGL	27

- <*Report Mask*>: Please refer to the <*+RSP Mask*> in **AT+GTHRM**.
- <*Unique ID*>: If Bit 6 of <*+RSP Mask*> is 0, the (IMEI) of the device is used as the unique ID of the device. (IMEI) is a 15-digit string. In the HEX format message, each 2 digits are encoded into one byte as an integer.

(IMEI)	**86**	**80**	**34**	**00**	**10**	**00**	**39**	**7**
HEX	**56**	**50**	**22**	**00**	**0A**	**00**	**27**	**07**

If Bit 6 of <*+RSP Mask*> is 1, the device name is used as the unique ID of the device. For the device name, please refer to the <*Device Name*> in **AT+GTCFG**. Device name is an 8-byte string. If the length of the <*Device Name*> is more than 8 bytes, only the first 8 bytes will be acquired. In the Hex format message, each byte is encoded into one byte as an integer. If the device name is less than 8 bytes, the remaining bytes are set to 0.

Device Name	**g**	**v**	**5**	**5**	**w**			
HEX	**67**	**76**	**35**	**35**	**77**	**00**	**00**	**00**

- <*Digital Input Status*>: The status masks of ignition detection input and digital input 1 compose the byte.

Input Status Mask	**ID**
Ignition Detection	0x01
Digital Input 1	0x02
Reserved	
Reserved	

- <*Digital Output Status*>: The status masks of digital output 1 and digital output 2 compose the byte.

Output Status Mask	**ID**
Digital Output 1	0x01
Digital Output 2	0x02
Reserved	
Reserved	

- <*Motion Status*>: The current motion status of the device.

- <*Satellites in View*>: The number of visible satellites.
- <*Report ID / Report Type*>: The high nibble is for <*Report ID*> and the low nibble is for <*Report Type*>.
- <*Speed*>: 3 bytes in total. The first two bytes are for the integer part of the speed and the last byte is for the fractional part. The fraction part has 1 digit.
- <*Longitude*>: The longitude of the current position. 4 bytes in total. The longitude is converted to an integer with 6 implicit decimals and the integer is reported in HEX format. If the value of the longitude is a negative, it is represented in 2's complement format.

Longitude 121.390847	**121390847**			
HEX	**07**	**3C**	**46**	**FF**

- <*Latitude*>: The latitude of the current position. 4 bytes in total. The latitude is converted to an integer with 6 implicit decimals and the integer is reported in HEX format. If the value of the latitude is negative, it is represented in 2's complement format.

Latitude 31.164503	**31164503**			
HEX	**01**	**DB**	**88**	**57**

- <*Altitude*>: The altitude from GNSS. If the altitude is negative, it is represented in 2's complement format. Unit: meter.
- <*GNSS UTC Time*>: UTC time obtained from GNSS. 7 bytes in total. The first two bytes are for year, and the other 5 bytes are for month, day, hour, minute and second respectively.

GNSS UTC Time	**2011**		**07**	**14**	**08**	**24**	**13**
HEX	**07**	**DB**	**07**	**0E**	**08**	**18**	**0D**

- <*Current Mileage*>: 3 bytes in total. The first two bytes are for the integer part of the current mileage and the last byte is for the fractional part. The fractional part has 1 digit.

Current Mileage	**0**		**0**
HEX	**00**	**00**	**00**

- <*Total Mileage*>: 5 bytes in total. The first four bytes are for the integer part of the total mileage and the last byte is for the fractional part. The fractional part has 1 digit.

Total Mileage	**0**				**0**
HEX	**00**	**00**	**00**	**00**	**00**

- <*Total Hour Meter Count*>: 6 bytes in total. The first four bytes represent the hour part, the fifth byte represents the minute part, and the sixth byte represents the second part.

Total Hour Meter Count	**0**				**0**	**0**
HEX	**00**	**00**	**00**	**00**	**00**	**00**

The location report message **+RESP:GTLBC** uses the format below.

Example:
2B 52 53 50 03 00 FE 1F BF 00 66 50 01 00 03 02 56 50 22 00 0A 00 27 07 62 2E 46 01 00 21 08 00

70 02 15 44 50 29 3F 01 01 00 00 03 00 81 00 40 06 FC 59 86 01 E5 BC 2D 07 DD 01 1E 03 28 08 04 60 00 00 56 78 5D 7B 00 00 00 01 00 00 00 0B 05 00 04 32 00 00 00 0E 2A 29 07 DD 01 1E 0B 28 09 01 82 6A 27 0D 0A			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Message Header	4	+RSP	+RSP
Message Type	1		
Report Mask	4	(HEX)	
Length	2		
Device Type	1	50	50
Protocol Version	2	(HEX)	
Firmware Version	2	(HEX)	
Unique ID	8	(IMEI|Device Name)	
Battery Level	1	0 – 100	
External Power Voltage	2		
Digital Input Status	1	00 – 03	
Digital Output Status	1	00 – 03	
Motion Status	1	11|12|21|22|41|42|16|1A	
Satellites in View	1		
Report ID / Report Type	1	(HEX)	
Number Length / Number Type	1	(HEX)	
Phone Number	<=10		
Number	1	1	
GNSS Accuracy	1	0 – 50	
Speed	3	0.0 – 999.9(km/h)	
Azimuth	2	0 – 359	
Altitude	2		
Longitude	4	(-180 – 180)	
Latitude	4	(-90 – 90)	
GNSS UTC Time	7	(YYYYMMDDHHMMSS)	
MCC	2	(HEX)	

MNC	2	(HEX)	
LAC	2	(HEX)	
Cell ID	4	(HEX)	
Reserved	1		00
Current Mileage	3	0.0 –65535.0(km)	
Total Mileage	5	0.0 – 4294967.0(km)	
Current Hour Meter Count	3	(HHMMSS)	
Total Hour Meter Count	6	(HHHHHHHHMMSS)	
Send Time	7	(YYYYMMDDHHMMSS)	
Count Number	2	(HEX)	
Checksum	2	(HEX)	
Tail Characters	2	(0x0D 0x0A)	0x0D 0x0A

✧ <*Number Length / Number Type*>: The high nibble is for <*Number Length*> and the low nibble is for <*Number Type*>. <*Number Length*> is the total number of bytes which is equal to the length of the <*Phone Number*> in bytes plus the length of the parameter <*Number Length / Number Type*>. <*Number Type*> indicates if there is a '+' sign before the phone number. 1 means "with the sign", and 0 means "without the sign".

	Number Length	**Number Type**
HEX	**7**	**0**

✧ <*Phone Number*>: Not more than 10 bytes. In each byte, the high nibble and low nibble are used to represent one digit of the phone number respectively. If there is no digit for the last low nibble to represent, fill in 0xF.

Phone Number 02154450293	**02**	**15**	**44**	**50**	**29**	**3**
HEX	**02**	**15**	**44**	**50**	**29**	**3F**

The location report message **+RESP:GTSOS** uses the format below.

Example:
2B 52 53 50 0A 00 FE 1F BF 00 60 50 01 00 03 02 56 50 22 00 0A 00 27 07 62 2E 64 01 00 21 09 10 00 01 01 00 00 06 00 81 00 32 06 FC 59 89 01 E5 BC 06 07 DD 01 1E 03 28 26 04 60 00 00 56 78 5D 7B 00 00 00 01 00 00 00 0B 05 00 05 14 00 00 00 0E 2B 0B 07 DD 01 1E 0B 28 27 01 84 D1 47 0D 0A

Parameter	**Length (byte)**	**Range/Format**	**Default**
Message Header	4	+RSP	+RSP
Message Type	1		

Report Mask	4	(HEX)	
Length	2		
Device Type	1	50	50
Protocol Version	2	(HEX)	
Firmware Version	2	(HEX)	
Unique ID	8	(IMEI|Device Name)	
Battery Level	1	0 – 100	
External Power Voltage	2		
Digital Input Status	1	00 – 03	
Digital Output Status	1	00 – 03	
Motion Status	1	11|12|21|22|41|42|16|1A	
Satellites in View	1		
Report ID / Report Type	1	(HEX)	
Reserved	1		00
Number	1	1	
GNSS Accuracy	1	0 – 50	
Speed	3	0.0 – 999.9(km/h)	
Azimuth	2	0 – 359	
Altitude	2		
Longitude	4	(-180 - 180)	
Latitude	4	(-90 - 90)	
GNSS UTC Time	7	(YYYYMMDDHHMMSS)	
MCC	2	(HEX)	
MNC	2	(HEX)	
LAC	2	(HEX)	
Cell ID	4	(HEX)	
Reserved	1		00
Current Mileage	3	0.0 - 65535.0(km)	
Total Mileage	5	0.0 - 4294967.0(km)	
Current Hour Meter Count	3	(HHMMSS)	

Total Hour Meter Count	6	(HHHHHHHHHHMMSS)	
Send Time	7	(YYYYMMDDHHMMSS)	
Count Number	2	(HEX)	
Checksum	2	(HEX)	
Tail Characters	2	(0x0D 0x0A)	0x0D 0x0A

The location report message **+RESP:GTGEO** uses the format below.

- **+RSP,**

Example:
2B 52 53 50 08 00 FE 1F BF 00 5F 50 01 00 01 01 0A 00 00 00 00 00 09 01 00 00 00 01 02 21 07 22 01 01 00 00 00 00 00 FF C6 06 FC 59 6C 01 E5 BA 73 07 DF 0B 18 05 38 3B 04 60 00 00 56 78 2D 80 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 07 DF 0B 18 05 38 3A 00 73 92 79 0D 0A

Parameter	Length (byte)	Range/Format	Default
Message Header	4	+RSP	+RSP
Message Type	1		
Report Mask	4	(HEX)	
Length	2		
Device Type	1	50	50
Protocol Version	2	(HEX)	
Firmware Version	2	(HEX)	
Unique ID	8	(IMEI|Device Name)	
Battery Level	1	0 – 100	
External Power Voltage	2		
Digital Input Status	1	00 – 03	
Digital Output Status	1	00 – 03	
Motion Status	1	11|12|21|22|41|42|16|1A	
Satellites in View	1		
Report ID / Report Type	1	(HEX/HEX)	
Number	1	1	
GNSS Accuracy	1	0 – 50	
Speed	3	0.0 – 999.9(km/h)	

Azimuth	2	0 – 359	
Altitude	2		
Longitude	4	(-180 - 180)	
Latitude	4	(-90 - 90)	
GNSS UTC Time	7	(YYYYMMDDHHMMSS)	
MCC	2	(HEX)	
MNC	2	(HEX)	
LAC	2	(HEX)	
Cell ID	4	(HEX)	
Reserved	1		00
Current Mileage	3	0.0 – 65535.0(km)	
Total Mileage	5	0.0 – 4294967.0(km)	
Current Hour Meter Count	3	(HHMMSS)	
Total Hour Meter Count	6	(HHHHHHHHMMSS)	
Send Time	7	(YYYYMMDDHHMMSS)	
Count Number	2	(HEX)	
Checksum	2	(HEX)	
Tail Characters	2	(0x0D 0x0A)	0x0D 0x0A

✧ <*Report ID / Report Type*>: Bit 0 is used for Report Type. Bit 1 – 3 are used as 3 high bits of Report ID, and Bit 4 – 7 as 4 low bits of Report ID.

- Report ID: The ID of Geo Fence in HEX format. The range is 0 to 99.
- Report Type: 0 indicates "Exit from the Geo-Fence", and 1 indicates "Enter the Geo-Fence".

The location report messages **+RESP:GTGIN** and **+RESP:GTGOT** use the format below.

➢ **+RSP,**

Example:
2B 52 53 50 19 00 FE 1F BF 00 68 50 01 00 09 04 0A 00 00 00 00 00 09 01 61 00 00 01 00 21 0A 00 01 00 00 00 00 00 00 00 01 01 01 00 00 00 00 00 00 41 06 FC 5A 6B 01 E5 BC 29 07 E0 0C 1E 09 18 09 04 60 00 00 56 78 20 79 00 00 00 00 00 00 00 1D 04 00 00 00 00 00 00 00 00 00 07 E0 0C 1E 11 18 0A 20 24 0C 77 0D 0A

Parameter	Length (Byte)	Range/Format	Default
Message Header	4	+RSP	+RSP

Message Type	1		
Report Mask	4	(HEX)	
Length	2		
Device Type	1	50	50
Protocol Version	2	(HEX)	
Firmware Version	2	(HEX)	
Unique ID	8	(IMEI|Device Name)	
Battery Level	1	0 - 100	
External Power Supply Voltage	2		
Digital Input Status	1	00 – 03	
Digital Output Status	1	00 – 03	
Motion Status	1	11|12|21|22|41|42|16|1A	
Satellites in View	1		
Area Type	1	0 – 1	
Mask Group	1	01 – 1F	
Area Mask Group 1	8	0000000000000001 – FFFFFFFFFFFFFFFF	
Area Mask Group 2	8	0000000000000001 – FFFFFFFFFFFFFFFF	
Number	1	1	
GNSS Accuracy	1	0 – 50	
Speed	3	0.0 – 999.9(km/h)	
Azimuth	2	0 – 359	
Altitude	2		
Longitude	4	(-180 - 180)	
Latitude	4	(-90 - 90)	
GNSS UTC Time	7	(YYYYMMDDHHMMSS)	
MCC	2	(HEX)	
MNC	2	(HEX)	
LAC	2	(HEX)	

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Cell ID	4	(HEX)	
Reserved	1		00
Current Mileage	3	0.0 – 65535.0(km)	
Total Mileage	5	0.0 – 4294967.0(km)	
Current Hour Meter Count	3	(HHMMSS)	
Total Hour Meter Count	6	(HHHHHHHHMMSS)	
Send Time	7	(YYYYMMDDHHMMSS)	
Count Number	2	(HEX)	
Checksum	2	(HEX)	
Tail Characters	2	(0x0D 0x0A)	0x0D 0x0A

- <*Mask Group*>: The bitwise mask to determine whether to report <*Area Mask Group*>. Bit 0 is for Area Mask Group 1 and Bit 1 is for Area Mask Group 2. 1 means "Report the information", and 0 means "Do not report the information".
- <*Area Mask Group1–2*>: Bitwise mask for trigger condition composition of the corresponding PEO or GEO ID. Each bit, from Bit 0 to Bit 19 (or Bit 99), represents the logic status of the corresponding PEO or GEO ID to trigger the entering or exiting event. 1 means that the event of the PEO or GEO ID set is triggered and 0 means the event of the PEO or GEO ID set is not triggered. In a group, if no event of PEO or GEO ID is triggered, the bitwise mask will be null.

4.4.Information Report +INF

Information report messages include **+RESP:GTINF**, **+RESP:GTGPS**, **+RESP:GTCID**, **+RESP:GTCSQ**, **+RESP:GTVER**, **+RESP:GTBAT**, **+RESP:GTIOS**, **+RESP:GTTMZ** and **+RESP:GTGIR**. These messages use the same format as shown below. However, only **+RESP:GTINF** includes all the items while others only include information items related to themselves.

- **+INF,**

Example: **2B 49 4E 46 01 FF FD 00 AD 56 50 22 00 0A 00 27 07 50 01 00 03 02 01 01 01 0B 00 00 00 00 00 00 00 00 00 00 00 00 00 00 01 00 00 21 00 0C 01 07 DD 01 1D 0C 34 15 00 00 00 7F 00 3C 01 2C 00 00 00 00 00 D1 00 00 00 04 5F 89 86 00 95 12 42 16 06 30 63 1F 00 00 08 00 06 07 04 60 00 00 56 65 01 EC 00 2F 04 60 00 00 55 0A 2B B8 00 2F 04 60 00 00 55 0A 11 D3 00 2C 04 60 00 00 56 65 20 6D 00 2A 04 60 00 00 56 63 3A 40 00 29 04 60 00 00 55 0A 2B B9 00 28 04 60 00 00 55 0A 03 58 00 3E 07 DD 01 1D 14 34 16 00 52 A1 2C 0D 0A**			
Parameter	**Length (byte)**	**Range/Format**	**Default**

Message Header	4	+INF	+INF
Message Type	1		
Report Mask	2	(HEX)	
Length	2		
Unique ID	8	(IMEI|Device Name)	
Device Type	1	50	
Protocol Version	2	(HEX)	
Firmware Version	2	(HEX)	
Hardware Version	2	(HEX)	**+RESP:GTVER**
MCU Version	2	(HEX)	
Reserved	2		
Reserved	1		
Reserved	2		**+RESP:GTIOS**
Reserved	2		
Reserved	1		
Reserved	2		
Reserved	2		
Reserved	2		
Digital Input Status	1	00 – 03	
Digital Output Status	1	00 – 03	
Reserved	1		
Motion Status	1	11|12|21|22|41|42|16|1A	**+RESP:GTGPS**
Reserved	1		
Satellites in View	1		
Power Saving Enable / OWH Mode / Outside Working Hours / AGPS	1	(HEX)	
Last Fix UTC Time	7	(YYYYMMDDHHMMSS)	
Reserved	1		
FRI Discard No Fix	1	0|1	

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Response Report Item Mask	2	(HEX)	
IGN Interval	2		
IGF Interval	2		
Reserved	4		
Reserved	1		
External Power Supply / Backup Battery On / Charging / LED State / Backup Battery Charge Mode	1	(HEX)	**+RESP:GTBAT**
External Power Voltage	2		
Backup Battery Voltage	2	0 – 4200(mv)	
Backup Battery Level	1	0 - 100	
ICCID	10	(ICCID)	**+RESP:GTCID**
CSQ RSSI	1	0 – 31 | 99	**+RESP:GTCSQ**
CSQ BER	1	0 – 7	
Time Zone Offset Sign / Daylight Saving Enable	1	(HEX)	**+RESP:GTTMZ**
Time Zone Offset	2	(HHMM)	
GIR Trigger Type	1		**+RESP:GTGIR**
Cell Number	1		
MCC	2	(HEX)	
MNC	2	(HEX)	
LAC	2	(HEX)	
Cell ID	4	(HEX)	
TA	1	(HEX)	
RX Level	1		
Send Time	7	(YYYYMMDDHHMMSS)	
Count Number	2	(HEX)	
Checksum	2	(HEX)	
Tail Characters	2	(0x0D 0x0A)	0x0D 0x0A

✧ <*Message Type*>: The ID of a specific information report message.

Message	ID
+RESP:GTINF	1
+RESP:GTGPS	2
+RESP:GTCID	4
+RESP:GTCSQ	5
+RESP:GTVER	6
+RESP:GTBAT	7
+RESP:GTIOS	8
+RESP:GTTMZ	9
+RESP:GTGIR	10

- <*Report Mask*>: Please refer to the <*+INF Mask*> in **AT+GTHRM**.
- <*Unique ID*>: If Bit 1 of <*+INF Mask*> is 0, the (IMEI) of the device is used as the unique ID of the device. (IMEI) is a 15-digit string. In the HEX format message, each 2 digits are encoded into one byte as an integer.

(IMEI)	86	80	34	00	10	00	39	7
HEX	56	50	22	00	0A	00	27	07

If Bit 1 of <*+INF Mask*> is 1, the device name is used as the unique ID of the device. For the device name, please refer to the <*Device Name*> in **AT+GTCFG**. Device name is an 8-byte string. If the length of the <*Device Name*> is more than 8 bytes, only the first 8 bytes will be acquired. In the Hex format message, each byte is encoded into one byte as an integer. If the device name is less than 8 bytes, the remaining bytes are set to 0.

Device Name	g	v	5	5	w			
HEX	67	76	35	35	77	00	00	00

- <*Device Type*>: If <*Message Type*> is 6 (**+RESP:GTVER**) in the message, Bit 2 (<*Device Type*>) in <*+INF Mask*> will be forced to be 1, and thus the field will always be present in the hex report of **+RESP:GTVER**.
- <*Protocol Version*>: If <*Message Type*> is 6 (**+RESP:GTVER**) in the message, Bit 3 (<*Protocol Version*>) in <*+INF Mask*> will be forced to be 1, and thus the field will always be present in the hex report of **+RESP:GTVER**.
- <*Firmware Version*>: If <*Message Type*> is 6 (**+RESP:GTVER**) in the message, Bit 4 (<*Firmware Version*>) in <*+INF Mask*> will be forced to be 1, and thus the field will always be present in the hex report of **+RESP:GTVER**.
- <*Power Saving Enable / OWH Mode / Outside Working Hours / AGPS*>: The highest bit, or Bit 7, is reserved, Bit 5 and Bit 6 are for <*Power Saving Enable*>, Bit 4 and Bit 3 are for <*OWH Mode*>, and Bit 2 is for <*Outside Working Hours*>. Bit 0 is for <*AGPS*>. <*Outside Working Hours*> is used to indicate whether the device is currently working outside working hours. 1 means “outside working hours”.
- <*External Power Supply / Backup Battery On / Charging / LED State/ Backup Battery Charge*

Mode>: The highest bit, or Bit 7, is for <*External Power Supply*> which indicates whether the external power supply is connected to the device. Bit 6 is for <*Backup Battery On*> and indicates whether the backup battery is working. Bit 5 is for <*Charging*> which indicates whether the backup battery is currently charging. Bit 4 is for <*LED State*> and indicates whether the LED's are turned on. Bit 0 is for <*Backup Battery Charge Mode*>.

✧ <*ICCID*>: The ICCID is a 20-digit string. In the HEX format message, every 4 bits are used to represent one digit of the 20 digits of the ICCID.

ICCID	89	86	00	00	09	09	17	21	49	53
HEX	89	86	00	00	09	09	17	21	49	53

✧ <*Time Zone Offset Sign / Daylight Saving Enable*>: Bit 1 is for <*Daylight Saving Enable*> which indicates whether the daylight saving function is currently enabled. Bit 0 is for <*Time Zone Offset Sign*> which indicates the positive or negative offset of the local time from UTC time. 1 means "negative offset".

✧ <*GIR Trigger Type*>: A string to indicate what kind of GNSS fix this cell information is for.

"SOS": This cell information is for SOS request.

"RTL": This cell information is for RTL request.

"LBC": This cell information is for LBC request.

"TOW": This cell information is for TOW request.

"FRI": This cell information is for FRI request.

"GIR": This cell information is for the sub command "**C**" in the **AT+GTRTO** command.

Trigger Type	ID
SOS	1
RTL	2
LBC	3
TOW	4
FRI	5
GIR	6

✧ <*Cell Number*>: The number of cells. It also indicates the number of cell information groups. One cell information group consists of MCC, MNC, LAC, and Cell ID.

4.5.Event Report +EVT

Event report messages including **+RESP:GTPNA**, **+RESP:GTPFA**, **+RESP:GTMPN**, **+RESP:GTMPF**, **+RESP:GTBTC**, **+RESP:GTSTC**, **+RESP:GTSTT**, **+RESP:GTPDP**, **+RESP:GTIDN**, **+RESP:GTUPC**, **+RESP:GTSTR**, **+RESP:GTSTP** and **+RESP:GTLSP** use the format below.

➢ **+EVT,**

Example:
2B 45 56 54 09 00 FE 1F BF 00 5E 50 01 00 03 02 56 50 22 00 0A 00 27 07 5F 00 00 01 00 22 0C 01

00 00 00 02 00 28 00 35 06 FC 5E 38 01 E5 E0 E4 07 DD 01 1D 0C 34 30 04 60 00 00 55 0A 03 58 00 00 01 07 00 00 00 01 07 00 2D 0A 00 00 00 00 2D 0A 07 DD 01 1D 14 34 31 00 53 78 1D 0D 0A			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Message Header	4	+EVT	+EVT
Message Type	1		
Report Mask	4	(HEX)	
Length	2		
Device Type	1	50	50
Protocol Version	2	(HEX)	
Firmware Version	2	(HEX)	
Unique ID	8	(IMEI|Device Name)	
Battery Level	1	0 - 100	
External Power Voltage	2		
Digital Input Status	1	00 – 03	
Digital Output Status	1	00 – 03	
Motion Status	1	11|12|21|22|41|42|16|1A	
Satellites in View	1		
Number	1	1	
GNSS Accuracy	1	0	0
Speed	3	0.0 – 999.9(km/h)	
Azimuth	2	0 – 359	
Altitude	2		
Longitude	4	(-180 - 180)	
Latitude	4	(-90 - 90)	
GNSS UTC Time	7	(YYYYMMDDHHMMSS)	
MCC	2	(HEX)	
MNC	2	(HEX)	
LAC	2	(HEX)	
Cell ID	4	(HEX)	

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Reserved	1		00
Current Mileage	3	0.0 –65535.0(km)	
Total Mileage	5	0.0 – 4294967.0(km)	
Current Hour Meter Count	3	(HHMMSS)	
Total Hour Meter Count	6	(HHHHHHHHMMSS)	
Send Time	7	(YYYYMMDDHHMMSS)	
Count Number	2	(HEX)	
Checksum	2	(HEX)	
Tail Characters	2	(0x0D 0x0A)	0x0D 0x0A

✧ <*Message Type*>: The ID of a specific event report message.

Message	ID
+RESP:GTPNA	1
+RESP:GTPFA	2
+RESP:GTMPN	3
+RESP:GTMPF	4
Reserved	5
+RESP:GTBPL	6
+RESP:GTBTC	7
+RESP:GTSTC	8
+RESP:GTSTT	9
Reserved	10
Reserved	11
+RESP:GTPDP	12
+RESP:GTIGN	13
+RESP:GTIGF	14
+RESP:GTUPD	15
+RESP:GTIDN	16
+RESP:GTIDF	17
Reserved	18
Reserved	19

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+RESP:GTJDR	20
+RESP:GTGSS	21
Reserved	22
+RESP:GTCRA	23
+RESP:GTDOS	25
+RESP:GTGES	26
+RESP:GTSTR	28
+RESP:GTSTP	29
+RESP:GTLSP	30
Reserved	31
+RESP:GTRMD	32
+RESP:GTJDS	33
Reserved	34
Reserved	35
+RESP:GTUPC	36
Reserved	37
Reserved	38
+RESP:GTVGN	39
+RESP:GTVGF	40
+RESP:GTPNR	41
+RESP:GTPFR	42

- <*Report Mask*>: Please refer to the <*+EVT Mask*> in **AT+GTHRM**.
- <*Unique ID*>: If Bit 6 of <*+EVT Mask*> is 0, the (IMEI) of the device is used as the unique ID of the device. (IMEI) is a 15-digit string. In the HEX format message, each 2 digits are encoded into one byte as an integer.

(IMEI)	**86**	**80**	**34**	**00**	**10**	**00**	**39**	**7**
HEX	**56**	**50**	**22**	**00**	**0A**	**00**	**27**	**07**

If Bit 6 of <*+EVT Mask*> is 1, the device name is used as the unique ID of the device. For the device name, please refer to the <*Device Name*> in **AT+GTCFG**. Device name is an 8-byte string. If the length of the <*Device Name*> is more than 8 bytes, only the first 8 bytes will be acquired. In the Hex format message, each byte is encoded into one byte as an integer. If the device name is less than 8 bytes, the remaining bytes are set to 0.

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Device Name	g	v	5	5	w			
HEX	67	76	35	35	77	00	00	00

The event report message **+RESP:GTBPL** uses the format below.

- **+EVT,**

Example:
2B 45 56 54 06 00 7E 1F 3F 50 01 00 03 02 56 50 22 00 0B 31 5C 01 04 00 00 00 00 11 07 0D C1 01 00 00 01 02 01 0A 00 33 06 FC 59 81 01 E5 BC 2A 07 DD 01 1F 08 0B 15 04 60 00 01 55 04 69 D3 00 00 00 00 00 00 00 17 04 00 00 00 07 DD 01 1F 10 0B 18 00 B6 69 C2 0D 0A

Parameter	Length (byte)	Range/Format	Default
Message Header	4	+EVT	+EVT
Message Type	1		
Report Mask	4	(HEX)	
Length	2		
Device Type	1	50	50
Protocol Version	2	(HEX)	
Firmware Version	2	(HEX)	
Unique ID	8	(IMEI|Device Name)	
Battery Level	1	0 - 100	
External Power Voltage	2		
Digital Input Status	1	00 – 03	
Digital Output Status	1	00 – 03	
Motion Status	1	11|12|21|22|41|42|16|1A	
Satellites in View	1		
Backup Battery Voltage	2	0 – 4200(mv)	
Number	1	1	
GNSS Accuracy	1	0	0
Speed	3	0.0 – 999.9(km/h)	
Azimuth	2	0 – 359	
Altitude	2		
Longitude	4	(-180 - 180)	
Latitude	4	(-90 - 90)	
GNSS UTC Time	7	(YYYYMMDDHHMMSS)	

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MCC	2	(HEX)	
MNC	2	(HEX)	
LAC	2	(HEX)	
Cell ID	4	(HEX)	
Reserved	1		00
Current Mileage	3	0.0 –65535.0(km)	
Total Mileage	5	0.0 – 4294967.0(km)	
Current Hour Meter Count	3	(HHMMSS)	
Total Hour Meter Count	6	(HHHHHHHHMMSS)	
Send Time	7	(YYYYMMDDHHMMSS)	
Count Number	2	(HEX)	
Checksum	2	(HEX)	
Tail Characters	2	(0x0D 0x0A)	0x0D 0x0A

The event report messages **+RESP:GTIGN** and **+RESP:GTIGF** use the format below. For these two messages, the <*Current Mileage*> and <*Total Mileage*> fields will always be present regardless of the <*+EVT Mask*> setting.

- **+EVT,**

Example:
2B 45 56 54 0D 00 FE 1F BF 00 62 50 01 00 03 02 56 50 22 00 0A 00 27 07 57 00 00 01 00 22 08 00 00 00 00 01 00 00 00 04 00 6B 00 38 06 FC 59 7D 01 E5 BC 00 07 DD 01 1D 0C 07 24 04 60 00 00 56 78 5D 7B 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 07 DD 01 1D 14 07 27 00 3E 0F 13 0D 0A

Parameter	Length (byte)	Range/Format	Default
Message Header	4	+EVT	+EVT
Message Type	1		
Report Mask	4	(HEX)	
Length	2		
Device Type	1	50	50
Protocol Version	2	(HEX)	
Firmware Version	2	(HEX)	
Unique ID	8	(IMEI|Device Name)	

Battery Level	1	0 - 100	
External Power Voltage	2		
Digital Input Status	1	00 – 03	
Digital Output Status	1	00 – 03	
Motion Status	1	11|12|21|22|41|42|16|1A	
Satellites in View	1		
Duration of Ignition On or Ignition Off	4	0 – 999999(sec)	
Number	1	1	
GNSS Accuracy	1	0	0
Speed	3	0.0 – 999.9(km/h)	
Azimuth	2	0 – 359	
Altitude	2		
Longitude	4	(-180 - 180)	
Latitude	4	(-90 - 90)	
GNSS UTC Time	7	(YYYYMMDDHHMMSS)	
MCC	2	(HEX)	
MNC	2	(HEX)	
LAC	2	(HEX)	
Cell ID	4	(HEX)	
Reserved	1		00
Current Mileage	3	0.0 –65535.0(km)	
Total Mileage	5	0.0 – 4294967.0(km)	
Current Hour Meter Count	3	(HHMMSS)	
Total Hour Meter Count	6	(HHHHHHHHMMSS)	
Send Time	7	(YYYYMMDDHHMMSS)	
Count Number	2	(HEX)	
Checksum	2	(HEX)	
Tail Characters	2	(0x0D 0x0A)	0x0D 0x0A

The event report messages **+RESP:GTVGN** and **+RESP:GTVGF** use the format below. For these two messages, the <*Current Mileage*> and <*Total Mileage*> fields will always be present regardless of

the <*+EVT Mask*> setting.

- **+EVT,**

Example:
2B 45 56 54 28 00 FE 1F BF 00 66 50 01 00 01 04 56 30 02 03 00 37 43 01 64 2F 98 00 03 11 07 00 02 00 00 06 76 01 00 00 00 00 00 00 00 4D 06 FC 5A 9D 01 E5 BC 4C 07 E1 0C 0F 01 33 1B 04 60 00 00 56 78 00 00 2D 80 00 00 00 00 00 00 00 00 01 00 00 00 00 00 00 00 00 00 07 E1 0C 0F 01 33 1D 32 9A AA C3 0D 0A

Parameter	Length (byte)	Range/Format	Default
Message Header	4	+EVT	+EVT
Message Type	1		
Report Mask	4	(HEX)	
Length	2		
Device Type	1	50	50
Protocol Version	2	(HEX)	
Firmware Version	2	(HEX)	
Unique ID	8	(IMEI|Device Name)	
Battery Level	1	0 - 100	
External Power Supply Voltage	2		
Digital Input Status	1	00 – 03	
Digital Output Status	1	00 – 03	
Motion Status	1	11|12|21|22|41|42|16|1A	
Satellites in View	1		
Reserved	1		00
Report Type	1	0-4	
Duration of Ignition On or Ignition Off	4	0 – 999999(sec)	
Number	1	1	
GNSS Accuracy	1	0	0
Speed	3	0.0 – 999.9(km/h)	
Azimuth	2	0 – 359	
Altitude	2		
Longitude	4	(-180 - 180)	
Latitude	4	(-90 - 90)	

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GNSS UTC Time	7	(YYYYMMDDHHMMSS)	
MCC	2	(HEX)	
MNC	2	(HEX)	
LAC	2	(HEX)	
Cell ID	4	(HEX)	
Reserved	1		00
Current Mileage	3	0.0 –65535.0(km)	
Total Mileage	5	0.0 – 4294967.0(km)	
Current Hour Meter Count	3	(HHMMSS)	
Total Hour Meter Count	6	(HHHHHHHHMMSS)	
Reserved	4	(HEX)	
Send Time	7	(YYYYMMDDHHMMSS)	
Count Number	2	(HEX)	
Checksum	2	(HEX)	
Tail Characters	2	(0x0D 0x0A)	0x0D 0x0A

The event report message **+RESP:GTUPD** uses the format below. For this message, the <*Protocol Version*> and <*Firmware Version*> will always be present regardless of the <*+EVT Mask*> setting.

- **+EVT,**

Example:
2B 45 56 54 0F 00 FE 1F BF 00 61 50 01 00 03 02 56 50 22 00 0B 31 5C 01 62 2C C9 00 00 41 05 01 2C 00 01 00 00 00 01 00 00 00 43 06 FC 59 ED 01 E5 BC 09 07 DD 01 1F 0A 05 0E 04 60 00 01 55 04 58 2B 00 00 00 00 00 00 00 03 04 00 00 00 00 00 30 34 00 02 07 DD 01 1F 03 00 30 00 27 F7 0C 0D 0A

Parameter	Length (byte)	Range/Format	Default
Message Header	4	+EVT	+EVT
Message Type	1		
Report Mask	4	(HEX)	
Length	2		
Device Type	1	50	50
Protocol Version	2	(HEX)	
Firmware Version	2	(HEX)	
Unique ID	8	(IMEI|Device Name)	

Battery Level	1	0 - 100	
External Power Voltage	2		
Digital Input Status	1	00 – 03	
Digital Output Status	1	00 – 03	
Motion Status	1	11|12|21|22|41|42|16|1A	
Satellites in View	1		
Code	2	100 - 104|200 - 202|300 - 303|110 - 114|210 - 212|310 - 313	
Retry	1	0 - 3	
Number	1	1	
GNSS Accuracy	1	0	0
Speed	3	0.0 – 999.9(km/h)	
Azimuth	2	0 – 359	
Altitude	2		
Longitude	4	(-180 - 180)	
Latitude	4	(-90 - 90)	
GNSS UTC Time	7	(YYYYMMDDHHMMSS)	
MCC	2	(HEX)	
MNC	2	(HEX)	
LAC	2	(HEX)	
Cell ID	4	(HEX)	
Reserved	1		00
Current Mileage	3	0.0 –65535.0(km)	
Total Mileage	5	0.0 – 4294967.0(km)	
Current Hour Meter Count	3	(HHMMSS)	
Total Hour Meter Count	6	(HHHHHHHHMMSS)	
Send Time	7	(YYYYMMDDHHMMSS)	
Count Number	2	(HEX)	
Checksum	2	(HEX)	

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Tail Characters	2	(0x0D 0x0A)	0x0D 0x0A

The event report message **+RESP:GTIDF** uses the format below.

- **+EVT,**

Example:
2B 45 56 54 11 00 FE 1F BF 00 62 50 01 00 03 02 56 50 22 00 0A 00 27 07 5D 00 00 00 03 12 07 00 00 03 FF 01 00 00 01 01 00 99 00 21 06 FC 59 75 01 E5 BB BD 07 DD 01 1E 09 1C 07 04 60 00 00 56 78 5D 7B 00 00 00 02 00 00 00 0B 07 00 0B 28 00 00 00 00 00 00 07 DD 01 1E 11 1C 0A 03 C9 2A A1 0D 0A

Parameter	Length (byte)	Range/Format	Default
Message Header	4	+EVT	+EVT
Message Type	1		
Report Mask	4	(HEX)	
Length	2		
Device Type	1	50	50
Protocol Version	2	(HEX)	
Firmware Version	2	(HEX)	
Unique ID	8	(IMEI|Device Name)	
Battery Level	1	0 - 100	
External Power Voltage	2		
Digital Input Status	1	00 – 03	
Digital Output Status	1	00 – 03	
Motion Status	1	11|12|21|22|41|42|16|1A	
Satellites in View	1		
Duration of Idling	4		
Number	1	1	
GNSS Accuracy	1	0	0
Speed	3	0.0 – 999.9(km/h)	
Azimuth	2	0 – 359	
Altitude	2		
Longitude	4	(-180 - 180)	
Latitude	4	(-90 - 90)	

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GNSS UTC Time	7	(YYYYMMDDHHMMSS)	
MCC	2	(HEX)	
MNC	2	(HEX)	
LAC	2	(HEX)	
Cell ID	4	(HEX)	
Reserved	1		00
Current Mileage	3	0.0 –65535.0(km)	
Total Mileage	5	0.0 – 4294967.0(km)	
Current Hour Meter Count	3	(HHMMSS)	
Total Hour Meter Count	6	(HHHHHHHHMMSS)	
Send Time	7	(YYYYMMDDHHMMSS)	
Count Number	2	(HEX)	
Checksum	2	(HEX)	
Tail Characters	2	(0x0D 0x0A)	0x0D 0x0A

The event report message **+RESP:GTGSS** uses the format below.

- **+EVT,**

Example:
2B 45 56 54 15 00 FE 1F BF 00 63 50 01 00 03 02 56 50 22 00 0A 00 27 07 50 00 00 00 03 1A 05 00 00 00 00 00 01 00 00 02 04 00 2A 00 35 06 FC 59 9A 01 E5 BC 2C 07 DD 01 1E 09 25 24 04 60 00 00 56 78 5D 7B 00 00 00 02 00 00 00 0B 07 00 0B 28 00 00 00 00 00 00 07 DD 01 1E 12 04 19 03 D7 64 41 0D 0A

Parameter	Length (byte)	Range/Format	Default
Message Header	4	+EVT	+EVT
Message Type	1		
Report Mask	4	(HEX)	
Length	2		
Device Type	1	50	50
Protocol Version	2	(HEX)	
Firmware Version	2	(HEX)	
Unique ID	8	(IMEI|Device Name)	

Battery Level	1	0 - 100	
External Power Voltage	2		
Digital Input Status	1	00 – 03	
Digital Output Status	1	00 – 03	
Motion Status	1	11|12|21|22|41|42|16|1A	
Satellites in View	1		
GNSS Signal Status	1	0 | 1	
Reserved	4		00000000
Number	1	1	
GNSS Accuracy	1	0	0
Speed	3	0.0 – 999.9(km/h)	
Azimuth	2	0 – 359	
Altitude	2		
Longitude	4	(-180 - 180)	
Latitude	4	(-90 - 90)	
GNSS UTC Time	7	(YYYYMMDDHHMMSS)	
MCC	2	(HEX)	
MNC	2	(HEX)	
LAC	2	(HEX)	
Cell ID	4	(HEX)	
Reserved	1		00
Current Mileage	3	0.0 –65535.0(km)	
Total Mileage	5	0.0 – 4294967.0(km)	
Current Hour Meter Count	3	(HHMMSS)	
Total Hour Meter Count	6	(HHHHHHHHMMSS)	
Send Time	7	(YYYYMMDDHHMMSS)	
Count Number	2	(HEX)	
Checksum	2	(HEX)	
Tail Characters	2	(0x0D 0x0A)	0x0D 0x0A

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✧ <*GNSS Signal Status*>: 0 means "GNSS signal lost or no successful GNSS fix", and 1 means "GNSS signal recovered and successful GNSS fix".

The event report message **+RESP:GTDOS** uses the format below.

➢ **+EVT,**

Example: **2B 45 56 54 19 00 FE 1F BF 00 60 50 01 00 05 05 56 50 22 00 0F 5B 2E 00 5F 00 00 01 01 21 0A 01 01 01 00 00 00 00 00 85 00 38 06 FC 59 AA 01 E5 BB CE 07 DD 07 0B 08 07 29 04 60 00 00 56 78 20 79 00 00 00 02 00 00 00 00 02 00 00 00 00 00 00 00 00 00 07 DD 07 0B 10 07 2B 02 0D 42 59 0D 0A**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Message Header	4	+EVT	+EVT
Message Type	1		
Report Mask	4	(HEX)	
Length	2		
Device Type	1	50	50
Protocol Version	2	(HEX)	
Firmware Version	2	(HEX)	
Unique ID	8	(IMEI|Device Name)	
Battery Level	1	0 - 100	
External Power Supply Voltage	2		
Digital Input Status	1	00 – 03	
Digital Output Status	1	00 – 03	
Motion Status	1	11|12|21|22|41|42|16|1A	
Satellites in View	1		
Wave1 Output ID	1	1-2	
Wave1 Ouptut Active	1	0|1	
Number	1	1	
GNSS Accuracy	1	0	0
Speed	3	0.0 – 999.9(km/h)	
Azimuth	2	0 – 359	
Altitude	2		

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Longitude	4	(-180 - 180)	
Latitude	4	(-90 - 90)	
GNSS UTC Time	7	(YYYYMMDDHHMMSS)	
MCC	2	(HEX)	
MNC	2	(HEX)	
LAC	2	(HEX)	
Cell ID	4	(HEX)	
Reserved	1		00
Current Mileage	3	0.0 –65535.0(km)	
Total Mileage	5	0.0 – 4294967.0(km)	
Current Hour Meter Count	3	(HHMMSS)	
Total Hour Meter Count	6	(HHHHHHHHMMSS)	
Send Time	7	(YYYYMMDDHHMMSS)	
Count Number	2	(HEX)	
Checksum	2	(HEX)	
Tail Characters	2	(0x0D 0x0A)	0x0D 0x0A

The event report message **+RESP:GTGES** uses the format below.

- **+EVT,**

Example:
2B 45 56 54 1A 00 FE 1F BF 00 68 50 01 00 05 05 56 50 22 00 0F 5B 2E 00 5F 00 00 00 01 11 0B 01 15 00 00 00 32 00 00 00 1E 01 01 00 00 00 00 85 00 37 06 FC 59 9A 01 E5 BB D7 07 DD 07 0B 08 1C 11 04 60 00 00 56 78 20 79 00 00 00 02 00 00 00 00 02 00 00 00 00 00 00 00 00 00 07 DD 07 0B 10 1C 11 02 17 D2 D2 0D 0A

Parameter	Length (byte)	Range/Format	Default
Message Header	4	+EVT	+EVT
Message Type	1		
Report Mask	4	(HEX)	
Length	2		
Device Type	1	50	50
Protocol Version	2	(HEX)	
Firmware Version	2	(HEX)	

Unique ID	8	(IMEI|Device Name)	
Battery Level	1	0 – 100	
External Power Supply Voltage	2		
Digital Input Status	1	00 – 03	
Digital Output Status	1	00 – 03	
Motion Status	1	11|12|21|22|41|42|16|1A	
Satellites in View	1		
Trigger GEO ID	2	0 – 99	
Trigger GEO Enable	1	0|1	
Trigger Mode	1	0|21|22	
Radius	4	50 – 6000000(m)	
Check Interval	4	0|5 – 86400(sec)	
Number	1	1	
GNSS Accuracy	1	0|1	
Speed	3	0.0 – 999.9(km/h)	
Azimuth	2	0 – 359	
Altitude	2		
Longitude	4	(-180 - 180)	
Latitude	4	(-90 - 90)	
GNSS UTC Time	7	(YYYYMMDDHHMMSS)	
MCC	2	(HEX)	
MNC	2	(HEX)	
LAC	2	(HEX)	
Cell ID	4	(HEX)	
Reserved	1		00
Current Mileage	3	0.0 –65535.0(km)	
Total Mileage	5	0.0 – 4294967.0(km)	
Current Hour Meter Count	3	(HHMMSS)	
Total Hour Meter Count	6	(HHHHHHHHMMSS)	

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Send Time	7	(YYYYMMDDHHMMSS)	
Count Number	2	(HEX)	
Checksum	2	(HEX)	
Tail Characters	2	(0x0D 0x0A)	0x0D 0x0A

- ✧ <*Trigger GEO ID*>: The ID of Geo-Fence. The range is 0 – 99.
- ✧ <*Trigger GEO Enable*>: Current Parking-Fence is active or inactive.
  - 0: Current Parking-Fence is inactive.
  - 1: Current Parking-Fence is active.

The event report message **+RESP:GTRMD** uses the format below.

➢ **+EVT,**

Example:
2B 45 56 54 20 00 FE 1F BF 00 5F 50 01 00 06 06 56 50 22 00 0F 5B 2E 00 50 01 F0 00 01 11 00 01 01 00 00 00 00 00 00 00 30 05 4C 56 38 05 4C 56 38 07 DE 01 06 06 0A 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 2C 19 0A 00 00 00 45 12 21 07 DE 01 06 0E 0B 2C 1C 7B 39 AD 0D 0A

Parameter	Length (byte)	Range/Format	Default
Message Header	4	+EVT	+EVT
Message Type	1		
Report Mask	4	(HEX)	
Length	2		
Device Type	1	50	50
Protocol Version	2	(HEX)	
Firmware Version	2	(HEX)	
Unique ID	8	(IMEI|Device Name)	
Battery Level	1	0 - 100	
External Power Supply Voltage	2		
Digital Input Status	1	00 – 03	
Digital Output Status	1	00 – 03	
Motion Status	1	11|12|21|22|41|42|16|1A	
Satellites in View	1		
Roaming State	1	0-3	
Number	1	1	

GNSS Accuracy	1	0	0
Speed	3	0.0 – 999.9(km/h)	
Azimuth	2	0 – 359	
Altitude	2		
Longitude	4	(-180 - 180)	
Latitude	4	(-90 - 90)	
GNSS UTC Time	7	(YYYYMMDDHHMMSS)	
MCC	2	(HEX)	
MNC	2	(HEX)	
LAC	2	(HEX)	
Cell ID	4	(HEX)	
Reserved	1		00
Current Mileage	3	0.0 –65535.0(km)	
Total Mileage	5	0.0 – 4294967.0(km)	
Current Hour Meter Count	3	(HHMMSS)	
Total Hour Meter Count	6	(HHHHHHHHMMSS)	
Send Time	7	(YYYYMMDDHHMMSS)	
Count Number	2	(HEX)	
Checksum	2	(HEX)	
Tail Characters	2	(0x0D 0x0A)	0x0D 0x0A

The event report message **+RESP:GTUPC** uses the format below.

- **+EVT,**

Example:
2B 45 56 54 24 00 FE 1F BF 00 A0 50 01 00 09 04 0D 39 5A 18 44 0B 16 00 59 00 00 01 00 21 05 00 00 64 68 74 74 70 3A 2F 2F 32 32 30 2E 31 37 38 2E 36 37 2E 32 31 30 3A 31 30 30 32 38 2F 47 56 35 35 4E 2F 64 65 6C 74 61 62 69 6E 2F 47 56 35 35 4E 5F 30 32 30 33 5F 30 34 30 35 2E 62 69 6E 00 01 00 00 00 00 00 00 00 31 06 FC 5A 99 01 E5 BB C9 07 E1 01 12 02 0F 10 04 60 00 00 56 78 20 79 00 00 00 00 00 00 00 1D 04 00 00 00 00 00 00 00 00 00 07 E1 01 12 0A 0F 12 00 4A 10 15 0D 0A

Parameter	Length (byte)	Range/Format	Default
Message Header	4	+EVT	+EVT

Message Type	1		
Report Mask	4	(HEX)	
Length	2		
Device Type	1	50	50
Protocol Version	2	(HEX)	
Firmware Version	2	(HEX)	
Unique ID	8	(IMEI|Device Name)	
Battery Level	1	0 - 100	
External Power Supply Voltage	2		
Digital Input Status	1	00 – 03	
Digital Output Status	1	00 – 03	
Motion Status	1	11|12|21|22|41|42|16|1A	
Satellites in View	1		
Command ID	1		
Result	2	100 - 103|200 - 202|300 - 302	
Download URL	<=100	Complete URL	
Number	1	1	
GNSS Accuracy	1	0	0
Speed	3	0.0 – 999.9(km/h)	
Azimuth	2	0 – 359	
Altitude	2		
Longitude	4	(-180 - 180)	
Latitude	4	(-90 - 90)	
GNSS UTC Time	7	(YYYYMMDDHHMMSS)	
MCC	2	(HEX)	
MNC	2	(HEX)	
LAC	2	(HEX)	
Cell ID	4	(HEX)	

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Reserved	1		00
Current Mileage	3	0.0 –65535.0(km)	
Total Mileage	5	0.0 – 4294967.0(km)	
Current Hour Meter Count	3	(HHMMSS)	
Total Hour Meter Count	6	(HHHHHHHHMMSS)	
Send Time	7	(YYYYMMDDHHMMSS)	
Count Number	2	(HEX)	
Checksum	2	(HEX)	
Tail Characters	2	(0x0D 0x0A)	0x0D 0x0A

- <*Command ID*>: The command ID in the update configuration file. It is always 0 before the device starts to update the configuration. It indicates the total number of commands when the response code is 301. It indicates wrong format of command ID when the response code is 302.
- <*Result*>: A code to indicate whether the configuration is updated successfully.
  - 100: The update command is starting.
  - 101: The update command is confirmed by the device.
  - 102: The update command is refused by the device.
  - 103: The update process is refused because the battery is low.
  - 200: The device starts to download the package.
  - 201: The device finishes downloading the package successfully.
  - 202: The device fails to download the package.
  - 300: The device starts to update the device configuration.
  - 301: The device finishes updating the device configuration successfully.
  - 302: The device fails to update the device configuration.
- <*Download URL*>: The complete URL to download the configuration. It includes the file name and ends by 0x00.

The event report message **+RESP:GTPNR** uses the format below.

- **+EVT,**

Example:
**2B 45 56 54 29 00 FE 1F BF 00 61 50 01 00 01 05 56 47 3E 02 34 15 10 09 00 00 00 00 00 41 00 02 01 00 00 00 00 00

Report Mask	4	(HEX)	
Length	2		
Device Type	1	50	50
Protocol Version	2	(HEX)	
Firmware Version	2	(HEX)	
Unique ID	8	(IMEI|Device Name)	
Battery Level	1	0 - 100	
External Power Voltage	2		
Digital Input Status	1	00 – 03	
Digital Output Status	1	00 – 03	
Motion Status	1	11|12|21|22|41|42|16|1A	
Satellites in View	1		
Power On Reason	1	0 – 3	
Number	1	1	
GNSS Accuracy	1	0	0
Speed	3	0.0 – 999.9(km/h)	
Azimuth	2	0 – 359	
Altitude	2		
Longitude	4	(-180 - 180)	
Latitude	4	(-90 - 90)	
GNSS UTC Time	7	(YYYYMMDDHHMMSS)	
MCC	2	(HEX)	
MNC	2	(HEX)	
LAC	2	(HEX)	
Cell ID	4	(HEX)	
Reserved	1		00
Current Mileage	3	0.0 –65535.0(km)	
Total Mileage	5	0.0 – 4294967.0(km)	

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Current Hour Meter Count	3	(HHMMSS)	
Total Hour Meter Count	6	(HHHHHHHHMMSS)	
Send Time	7	(YYYYMMDDHHMMSS)	
Count Number	2	(HEX)	
Checksum	2	(HEX)	
Tail Characters	2	(0x0D 0x0A)	0x0D 0x0A

The event report message **+RESP:GTPFR** uses the format below.

- **+EVT,**

Example:
2B 45 56 54 2A 00 FE 1F BF 00 61 50 01 00 01 05 56 47 3E 02 34 15 10 09 64 00 00 00 00 11 07 02 01 00 00 00 00 00 00 00 37 06 FC 59 F9 01 E5 BB E6 07 E1 0C 16 03 25 2F 04 60 00 00 56 65 00 00 47 A1 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 07 E1 0C 16 03 26 17 0E 91 8C CA 0D 0A

Parameter	Length (byte)	Range/Format	Default
Message Header	4	+EVT	+EVT
Message Type	1		
Report Mask	4	(HEX)	
Length	2		
Device Type	1	50	50
Protocol Version	2	(HEX)	
Firmware Version	2	(HEX)	
Unique ID	8	(IMEI|Device Name)	
Battery Level	1	0 - 100	
External Power Voltage	2		
Digital Input Status	1	00 – 03	
Digital Output Status	1	00 – 03	
Motion Status	1	11|12|21|22|41|42|16|1A	
Satellites in View	1		
Power Off Reason	1	0 – 3	
Number	1	1	

GNSS Accuracy	1	0	0
Speed	3	0.0 – 999.9(km/h)	
Azimuth	2	0 – 359	
Altitude	2		
Longitude	4	(-180 - 180)	
Latitude	4	(-90 - 90)	
GNSS UTC Time	7	(YYYYMMDDHHMMSS)	
MCC	2	(HEX)	
MNC	2	(HEX)	
LAC	2	(HEX)	
Cell ID	4	(HEX)	
Reserved	1		00
Current Mileage	3	0.0 –65535.0(km)	
Total Mileage	5	0.0 – 4294967.0(km)	
Current Hour Meter Count	3	(HHMMSS)	
Total Hour Meter Count	6	(HHHHHHHHMMSS)	
Send Time	7	(YYYYMMDDHHMMSS)	
Count Number	2	(HEX)	
Checksum	2	(HEX)	
Tail Characters	2	(0x0D 0x0A)	0x0D 0x0A

The event report message **+RESP:GTJDR** uses the format below.

- **+EVT,**

Example:
2B 45 56 54 09 00 FE 1F BF 00 5E 50 01 00 03 02 56 50 22 00 0A 00 27 07 5F 00 00 01 00 22 0C 01 00 00 00 02 00 28 00 35 06 FC 5E 38 01 E5 E0 E4 07 DD 01 1D 0C 34 30 04 60 00 00 55 0A 03 58 00 00 01 07 00 00 00 01 07 00 2D 0A 00 00 00 00 2D 0A 07 DD 01 1D 14 34 31 00 53 78 1D 0D 0A

Parameter	Length (byte)	Range/Format	Default
Message Header	4	+EVT	+EVT
Message Type	1		
Report Mask	4	(HEX)	
Length	2		

Device Type	1	50	50
Protocol Version	2	(HEX)	
Firmware Version	2	(HEX)	
Unique ID	8	(IMEI|Device Name)	
Battery Level	1	0 - 100	
External Power Voltage	2		
Digital Input Status	1	00 – 03	
Digital Output Status	1	00 – 03	
Motion Status	1	11|12|21|22|41|42|16|1A	
Satellites in View	1		
Jamming Net	1	1-3	
Number	1	1	
GNSS Accuracy	1	0	0
Speed	3	0.0 – 999.9(km/h)	
Azimuth	2	0 – 359	
Altitude	2		
Longitude	4	(-180 - 180)	
Latitude	4	(-90 - 90)	
GNSS UTC Time	7	(YYYYMMDDHHMMSS)	
MCC	2	(HEX)	
MNC	2	(HEX)	
LAC	2	(HEX)	
Cell ID	4	(HEX)	
Reserved	1		00
Current Mileage	3	0.0 –65535.0(km)	
Total Mileage	5	0.0 – 4294967.0(km)	
Current Hour Meter Count	3	(HHMMSS)	
Total Hour Meter Count	6	(HHHHHHHHMMSS)	
Send Time	7	(YYYYMMDDHHMMSS)	

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Count Number	2	(HEX)	
Checksum	2	(HEX)	
Tail Characters	2	(0x0D 0x0A)	0x0D 0x0A

The event report message **+RESP:GTJDS** uses the format below.

- **+EVT,**

Example:
2B 45 56 54 09 00 FE 1F BF 00 5E 50 01 00 03 02 56 50 22 00 0A 00 27 07 5F 00 00 01 00 22 0C 01 00 00 00 02 00 28 00 35 06 FC 5E 38 01 E5 E0 E4 07 DD 01 1D 0C 34 30 04 60 00 00 55 0A 03 58 00 00 01 07 00 00 00 01 07 00 2D 0A 00 00 00 00 2D 0A 07 DD 01 1D 14 34 31 00 53 78 1D 0D 0A

Parameter	Length (byte)	Range/Format	Default
Message Header	4	+EVT	+EVT
Message Type	1		
Report Mask	4	(HEX)	
Length	2		
Device Type	1	50	50
Protocol Version	2	(HEX)	
Firmware Version	2	(HEX)	
Unique ID	8	(IMEI|Device Name)	
Battery Level	1	0 - 100	
External Power Voltage	2		
Digital Input Status	1	00 – 03	
Digital Output Status	1	00 – 03	
Motion Status	1	11|12|21|22|41|42|16|1A	
Satellites in View	1		
Jamming Status	1	1|2	
Jamming Net	1	1-3	
Number	1	1	
GNSS Accuracy	1	0	0
Speed	3	0.0 – 999.9(km/h)	
Azimuth	2	0 – 359	

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Altitude	2		
Longitude	4	(-180 - 180)	
Latitude	4	(-90 - 90)	
GNSS UTC Time	7	(YYYYMMDDHHMMSS)	
MCC	2	(HEX)	
MNC	2	(HEX)	
LAC	2	(HEX)	
Cell ID	4	(HEX)	
Reserved	1		00
Current Mileage	3	0.0 –65535.0(km)	
Total Mileage	5	0.0 – 4294967.0(km)	
Current Hour Meter Count	3	(HHMMSS)	
Total Hour Meter Count	6	(HHHHHHHHMMSS)	
Send Time	7	(YYYYMMDDHHMMSS)	
Count Number	2	(HEX)	
Checksum	2	(HEX)	
Tail Characters	2	(0x0D 0x0A)	0x0D 0x0A

4.6.Heartbeat Data +HBD

➢ **+HBD,**

Example: **2B 48 42 44 EF 20 50 01 00 03 02 56 50 22 00 0A 00 27 07 07 DD 01 1D 14 02 13 00 39 D2 5B 0D 0A**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Message Header	4	+HBD	+HBD
Report Mask	1	(HEX)	
Length	1		
Device Type	1	50	50
Protocol Version	2	(HEX)	
Firmware Version	2	(HEX)	

Unique ID	8	(IMEI|Device Name)	
Send Time	7	(YYYYMMDDHHMMSS)	
Count Number	2	(HEX)	
Checksum	2	(HEX)	
Tail Characters	2	(0x0D 0x0A)	0x0D 0x0A

- <*Report Mask*>: Please refer to the <*+HBD Mask*> in **AT+GTHRM**.
- <*Unique ID*>: If Bit 4 of <*+HBD Mask*> is 0, the (IMEI) of the device is used as the unique ID of the device. (IMEI) is a 15-digit string. In the HEX format message, each 2 digits are encoded into one byte as an integer.

(IMEI)	**86**	**80**	**34**	**00**	**10**	**00**	**39**	**7**
HEX	**56**	**50**	**22**	**00**	**0A**	**00**	**27**	**07**

If Bit 4 of <*+HBD Mask*> is 1, the device name is used as the unique ID of the device. Please refer to <*Device Name*> in **AT+GTCFG** for the device name. Device name is an 8-byte string. If the length of <*Device Name*> is more than 8 bytes, the device will only acquire the first 8 bytes. In the Hex format message, each byte is encoded into one byte as an integer. If the device name is less than 8 bytes, the remaining bytes are set to 0.

Device Name	**g**	**v**	**5**	**5**	**w**			
HEX	**67**	**76**	**35**	**35**	**77**	**00**	**00**	**00**

If the mask of <*UID*> in <*+HBD Mask*> of **AT+GTHRM** is set to 0, the heartbeat message will not report device name or (IMEI) information. If the mask of <*UID*> is set to 1, then the heartbeat message will report device name or (IMEI) information according to the mask of <*Device Name*>.

4.7.Crash Data Packet +CRD

- **+CRD,**

Example:

2B 43 52 44 00 7D 02 19 50 01 00 04 08 56 50 22 00 0F 5B 31 04 00 03 01 00 01 00 01 00 52 00 02 00 01 00 51 00 01 00 01 00 53 00 01 FF FF 00 52 00 01 FF FF 00 50 FF FF 00 00 00 54 00 01 00 00 00 52 00 01 00 00 00 52 00 02 00 00 00 54 00 01 00 00 00 53 00 02 00 00 00 53 00 01 00 00 00 52 00 02 00 01 00 52 00 01 00 00 00 52 00 00 00 01 00 50 00 00 00 01 00 55 00 01 00 01 00 51 00 01 00 01 00 51 00 02 00 00 00 53 00 01 FF FF 00 51 00 01 00 01 00 52 00 02 00 02 00 52 00 01 00 01 00 52 00 02 FF FF 00 52 00 03 FF FF 00 51 00 04 00 00 00 51 00 01 00 00 00 52 00 02 00 00 00 51 00 01 00 00 00 50 00 02 00 02 00 53 00 00 00 01 00 51 00 02 00 02 00 53 00 01 00 01 00 52 00 03 00 01 00 55 00 03 00 00 00 52 00 01 00 01 00 51 FF FF 00 00 00 52 00 02 00 02 00 53 00 02 FF FF 00 52 00 01 FF FF 00 52 00 00 00 01 00 54 00 01 00 00 00 52 00 01 00 01 00 51 00 02 00 00 00 54 00 03 00 00 00 53 00 01 00 01 00 52 00 02 00 02 00 53 00 01 00 00 00 53 00 01 00 00 00 52 00 02

00 01 00 52 00 02 00 01 00 54 00 00 00 00 00 54 00 02 00 00 00 52 00 01 00 00 00 52 00 01 00 01 00 51 00 02 FF FF 00 52 00 01 00 01 00 53 00 01 FF FF 00 51 00 01 00 01 00 52 00 01 00 01 00 53 00 01 00 00 00 52 00 04 00 02 00 53 00 02 00 01 00 51 00 01 00 01 00 54 00 03 00 02 00 52 00 03 FF FF 00 53 00 00 00 00 00 52 00 01 FF FF 00 53 00 01 00 01 00 52 00 03 00 01 00 51 00 02 00 02 00 53 00 00 00 01 00 52 00 01 FF FF 00 50 00 01 00 02 00 50 00 02 00 00 00 53 00 00 00 00 00 51 00 01 00 01 00 51 00 01 00 01 00 51 00 00 FF FF 00 52 00 01 00 02 00 51 00 02 00 00 00 52 00 02 00 00 00 53 00 03 00 00 00 52 00 00 07 DD 05 08 10 29 3A 00 18 10 CD 0D 0A

Parameter	Length (byte)	Range/Format	Default
Message Header	4	+CRD	+CRD
Report Mask	2	(HEX)	
Length	2		
Device Type	1	50	50
Protocol Version	2	(HEX)	
Firmware Version	2	(HEX)	
Unique ID	8	(IMEI|Device Name)	
Data Type	1	0|1	
Total Frame	1	3	
Frame Number	1	1 - 3	
Data	500		
Send Time	7	(YYYYMMDDHHMMSS)	
Count Number	2	(HEX)	
Checksum	2	(HEX)	
Tail Characters	2	(0x0D 0x0A)	0x0D 0x0A

- <*Report Mask*>: Please refer to <*+CRD Mask*> in **AT+GTHRM**.
- <*Unique ID*>: If Bit 1 of <*+CRD Mask*> is 0, the (IMEI) of the device is used as the unique ID of the device. (IMEI) is a 15-digit string. In the HEX format message, each 2 digits are encoded into one byte as an integer.

(IMEI)	86	80	34	00	10	00	39	7
HEX	56	50	22	00	0A	00	27	07

If Bit 1 of <*+CRD Mask*> is 1, the device name is used as the unique ID of the device. For the device name, please refer to the <*Device Name*> in **AT+GTCFG**. Device name is an 8-byte string. If the length of the <*Device Name*> is more than 8 bytes, only the first 8 bytes will be acquired. In the Hex format message, each byte is encoded into one byte as an integer. If the device name is less than 8 bytes, the remaining bytes are set to 0.

Device Name	g	v	5	5	w			
HEX	67	76	35	35	77	00	00	00

✧ <*Data Type*>: The data reported to the backend server is recorded before or after crash.

- 0: Before crash
- 1: After crash

✧ <*Total Frame*>: The total number of the messages that are sent to the backend server for the crash event.

✧ <*Frame Number*>: A numeral to indicate the sequence of the current message.

✧ <*Data*>: There are 500 bytes in one frame with 6 bytes in a group. The first 2 bytes of these 6 bytes represent X axis acceleration data, the middle 2 bytes represent Y axis acceleration data and the last 2 bytes represent Z axis acceleration data.

4.8.Acceleration Data Packet +ACC

➢ **+ACC,**

Example:

2B 41 43 43 50 01 00 56 50 22 00 0F 5B 38 09 FF FD FF FA 00 5D FF FE FF FC 00 5B 00 00 FF FD 00 5B 00 00 FF FB 00 59 FF FF FF FA 00 5B FF FD FF FB 00 5C FF FF FF FD 00 59 FF FE FF FC 00 59 FF FF FF FC 00 5A FF FF FF FD 00 59 00 00 FF FB 00 5B FF FF FF FC 00 5B FF FC FF FE 00 5B 00 00 FF FE 00 5B FF FA FF FB 00 5A FF FE FF FB 00 5A FF FF FF FD 00 5C FF FE FF FA 00 58 FF FE FF FD 00 5A FF FE FF FB 00 5D FF FE FF FE 00 5D FF FD FF FB 00 5A FF FE FF FB 00 5D FF FE FF FB 00 5C FF FF FF FB 00 5C FF FE FF FC 00 5B FF FF FF FC 00 5B FF FE FF FD 00 5D 00 01 FF FE 00 5B FF FF FF FE 00 5B 00 00 FF FE 00 5B 00 00 FF FB 00 5D 00 00 FF FC 00 5A FF FF FF FC 00 59 00 00 FF FC 00 57 FF FE FF FE 00 59 FF FF FF FB 00 5A FF FF FF FC 00 5B FF FE FF FB 00 59 FF FF FF FD 00 58 FF FB FF FE 00 5B FF FF FF FC 00 58 00 00 FF FE 00 60 FF FE FF FD 00 5C FF FF FF FE 00 5A FF FF FF FD 00 5D 00 01 FF FE 00 59 FF FE FF FC 00 5B FF FC FF FD 00 5A FF FE FF F9 00 5D FF FD FF FC 00 5A FF FE FF FC 00 5A 00 00 FF FA 00 5E 00 00 FF FB 00 5B 00 00 FF FA 00 5C FF FF FF FE 00 5A 00 00 FF FD 00 5B FF FE FF FD 00 5B 00 00 FF FC 00 5C FF FD FF FB 00 5B FF FD FF FB 00 5A FF FE FF FC 00 5B FF FE FF FB 00 5A FF FD FF FD 00 5C FF FB FF FB 00 59 FF FC FF FB 00 5A FF FE FF FC 00 5C 00 00 FF FA 00 5B 00 01 FF FD 00 5B FF FE FF FB 00 5A FF FD FF FD 00 59 FF FC FF FC 00 59 00 00 FF FA 00 5B FF FC FF FE 00 5C FF FF FF FD 00 5A 07 DB 01 01 00 00 0D 05 98 91 F8 0D 0A

Parameter	Length (byte)	Range/Format	Default
Message Header	4	+ACC	+ACC
Device Type	1	50	50
Protocol Version	2	(HEX)	
Unique ID	8	(IMEI|Device Name)	
Data	6*75		
Send Time	7	(YYYYMMDDHHMMSS)	
Count Number	2	(HEX)	

Checksum	2	(HEX)	
Tail Characters	2	(0x0D 0x0A)	0x0D 0x0A

✧ <*Unique ID*>: The (IMEI) of the device is used as the unique ID of the device. The (IMEI) is a 15-digit string. In the HEX format message, each 2 digits are encoded into one byte as an integer.

(IMEI)	**86**	**80**	**34**	**00**	**10**	**00**	**39**	**7**
HEX	**56**	**50**	**22**	**00**	**0A**	**00**	**27**	**07**

✧ <*Data*>: There are 6*75 bytes in one message with 6 bytes in a group. The first 2 bytes of these 6 bytes represent X axis acceleration data, the middle 2 bytes represent Y axis acceleration data and the last 2 bytes represent Z axis acceleration data.

4.9.Buffer Report in HEX Format

When a HEX format message goes into the local buffer, the device will replace the 2nd byte of the report message with 'B'. Thus, **+BSP** is buffered report for **+RSP**, **+BNF** is buffered report for **+INF**, **+BRD** is buffered report for **+CRD** and **+BVT** is buffered report for **+EVT**. The remaining part of the report messages is kept unchanged.

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Appendix: Message Index

✧ **Command and ACK**

AT+GTBSI
+ACK:GTBSI
AT+GTSRI
+ACK:GTSRI
AT+GTQSS
+ACK:GTQSS
AT+GTCFG
+ACK:GTCFG
AT+GTOUT
+ACK:GTOUT
AT+GTDIS
+ACK:GTDIS
AT+GTIOB
+ACK:GTIOB
AT+GTEPS
+ACK:GTEPS
AT+GTFRI
+ACK:GTFRI
AT+GTGEO
+ACK:GTGEO
AT+GTTOW
+ACK:GTTOW
AT+GTSPD
+ACK:GTSPD
AT+GTSOS
+ACK:GTSOS
AT+GTIDL
+ACK:GTIDL
AT+GTHBM
+ACK:GTHBM
AT+GTTMA
+ACK:GTTMA
AT+GTOWH
+ACK:GTOWH
AT+GTDOG
+ACK:GTDOG
AT+GTPIN
+ACK:GTPIN
AT+GTRTO
+ACK:GTRTO
AT+GTHMC

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+ACK:GTHMC
AT+GTWLT
+ACK:GTWLT
AT+GTCRA
+ACK:GTCRA
AT+GTPDS
+ACK:GTPDS
AT+GTSSR
+ACK:GTSSR
AT+GTBZA
+ACK:GTBZA
AT+GTSPA
+ACK:GTSPA
AT+GTRMD
+ACK:GTRMD
AT+GTFFC
+ACK:GTFFC
AT+GTCMD
+ACK:GTCMD
AT+GTUDF
+ACK:GTUDF
AT+GTUPC
+ACK:GTUPC
AT+GTPEO
+ACK:GTPEO
AT+GTGAM
+ACK:GTGAM
AT+GTVVS
+ACK:GTVVS
AT+GTAVS
+ACK:GVAVS
AT+GTJDC
+ACK:GTJDC
AT+GTJBS
+ACK:GTJBS

✧ **Position Related Report**

+RESP:GTTOW
+RESP:GTEPS
+RESP:GTDIS
+RESP:GTIOB
+RESP:GTFRI
+RESP:GTGEO
+RESP:GTSPD

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+RESP:GTSOS
+RESP:GTRTL
+RESP:GTLBC
+RESP:GTDOG
+RESP:GTIGL
+RESP:GTHBM
+RESP:GTDOS
+RESP:GTGES
+RESP:GTGIN
+RESP:GTGOT
+RESP:GTVGL
+RESP:GTPNR
+RESP:GTPFR

✧ **Device Information Report**

+RESP:GTINF

✧ **Report for Querying**

+RESP:GTGPS
+RESP:GTALC
+RESP:GTCID
+RESP:GTCSQ
+RESP:GTVER
+RESP:GTBAT
+RESP:GTIOS
+RESP:GTTMZ
+RESP:GTALS
+RESP:GTALM

✧ **Event Report**

+RESP:GTPNA
+RESP:GTPFA
+RESP:GTMPN
+RESP:GTMPF
+RESP:GTBTC
+RESP:GTSTC
+RESP:GTBPL
+RESP:GTSTT
+RESP:GTPDP
+RESP:GTIGN
+RESP:GTIGF
+RESP:GTIDN
+RESP:GTIDF
+RESP:GTGSM

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+RESP:GTGSS
+RESP:GTCRA
+RESP:GTSTR
+RESP:GTSTP
+RESP:GTLSP
+RESP:GTRMD
+RESP:GTUPC
+RESP:GTVGN
+RESP:GTVGF
+RESP:GTJDR
+RESP:GTJDS

✧ **Crash Data Packet**

+RESP:GTCRD

✧ **Acceleration Data Packet**

+RESP:GTACC

✧ **Heartbeat**

+ACK:GTHBD
+SACK:GTHBD

✧ **Server Acknowledgement**

+SACK

✧ **Hex Format Report Message**

+ACK
+RSP
+EVT
+INF
+HBD
+CRD

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