# BG95&BG77&BG600L Series QCFGEXT AT Commands Manual

**LPWA Module Series**

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# About the Document

## Revision History

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# 1 Introduction

This document describes the **AT+QCFGEXT** command supported on BG95 series, BG77 and BG600L-M3 modules.

## 1.1. Applicable Modules

**Table 1: Applicable Modules**

| Module Series | Model | Description |
|---|---|---|
| **BG95** | BG95-M1 | Cat M1 only |
| | BG95-M2 | Cat M1/Cat NB2 |
| | BG95-M3 | Cat M1/Cat NB2/EGPRS |
| | BG95-M4 | Cat M1/Cat NB2, 450 MHz Supported |
| | BG95-M5 | Cat M1/Cat NB2/EGPRS, Power Class 3 |
| | BG95-M6 | Cat M1/Cat NB2, Power Class 3 |
| | BG95-MF | Cat M1/Cat NB2, Wi-Fi Positioning |
| | BG95-N1 | Cat NB2 Only |
| **BG77** | BG77 | Cat M1/Cat NB2 |
| **BG600L** | BG600L-M3 | Cat M1/Cat NB2/EGPRS |

## 1.2. Definitions

- **<CR>** Carriage return character.
- **<LF>** Line feed character.
- **<...>** Parameter name. Angle brackets do not appear on the command line.
- **[...]** Optional parameter of a command or an optional part of TA information response. Square brackets do not appear on the command line. When an optional parameter is omitted, the new value equals to the previous value or the default settings, unless

otherwise specified.

- **Underline** Default setting of a parameter.

## 1.3. AT Command Syntax

All command lines must start with "**AT**" or "**at**" and end with "**<CR>**". Information responses and result codes always start and end with a carriage return character and a line feed character: **<CR><LF><response><CR><LF>**. Throughout this document, only the commands and responses are presented, while carriage return and line feed characters are deliberately omitted.

**AT+QCFG** implemented by BG95 series, BG77 and BG600L-M3 modules is in "Extended" syntax, as illustrated below.

- **Extended Syntax**

These commands can be operated in several modes, as following table:

**Table 2: Types of AT Commands and Responses**

| | | |
|---|---|---|
| **Test Command** | **AT+<cmd>=?** | This command returns the list of parameters and value ranges set by the corresponding Write Command or internal processes. |
| **Read Command** | **AT+<cmd>?** | This command returns the currently set value of the parameter or parameters. |
| **Write Command** | **AT+<cmd>=<p1>[,<p2>[,<p3>[...]]]** | This command sets the user-definable parameter values. |
| **Execution Command** | **AT+<cmd>** | This command reads non-variable parameters affected by internal processes in the module. |

Multiple commands can be placed on a single line using a semi-colon (**;**) between commands. Only the first command should have **AT** prefix. Commands can be in upper or lower case.

When entering AT commands, spaces are ignored except the following cases:

- Within quoted strings, where they are preserved;
- Within an unquoted string or numeric parameter;
- Within an IP address;
- Within the AT command name up to and including a **=**, **?** or **=?**.

On input, at least a carriage return is required. A newline character is ignored so it is permissible to use carriage return/line feed pairs on the input.

If no command is entered after the **AT** token, **OK** will be returned. If an invalid command is ente red, **ERROR** will be returned.

Optional parameters, unless explicitly stated, need to be provided up to the last parameter being entered.

## 1.4. AT Command Responses

When the AT command processor has finished processing a line, it will output **OK**, **ERROR** or **+CME ERROR: <err>** to indicate that it is ready to accept a new command. Solicited informational responses are sent before the final **OK**, **ERROR** or **+CME ERROR: <err>**.

Responses will be in the format of:

**<CR><LF>+CMD1: <parameters><CR><LF>**
**<CR><LF>OK<CR><LF>**

# 2 Description of AT+QCFGEXT Commands

## 2.1. AT+QCFGEXT Extended Configuration Settings

The Write Commands query and configure various extended settings of the module.

| AT+QCFGEXT Extended Configuration Settings | |
|---|---|
| Test Command<br>**AT+QCFGEXT=?** | Response<br>**+QCFGEXT: "addgeo",<geoid>,<mode>,<shape>,<lat1>,<lon1>,<lat2>,[<lon2>,[<lat3>,<lon3>[,<lat4>,<lon4>]]]**<br>**+QCFGEXT: "deletegeo",<geoid>**<br>**+QCFGEXT: "querygeo",<geoid>**<br>**+QCFGEXT: "nipdcfg"[,<type>[,<apn>[,<username>,<password>]]]**<br>**+QCFGEXT: "nipd"[,<mode>[,<timeout>]]**<br>**+QCFGEXT: "nipds"[,<mode>,<data>[,<data_length>]]**<br>**+QCFGEXT: "nipdr"[,<read_length>[,<read_mode>]]**<br>**+QCFGEXT: "dump"[,(**list of supported **<value>**s**)]**<br>**+QCFGEXT: "quecopen"[,(**list of supported **<value>**s**)]**<br>**+QCFGEXT: "disusb",(**list of supported **<value>**s**)**<br>**+QCFGEXT: "usb/event"**<br>**+QCFGEXT: "fota_apn",<iptype>,<apn>[,<username>,<password>]**<br>**+QCFGEXT: "dnsc_timeout"[,(**range of supported **<timeout>**s**)]**<br>**+QCFGEXT: "attm2mfeat"[,(**list of supported **<mode>**s**)]**<br><br>**OK** |

### 2.1.1. AT+QCFGEXT="addgeo" Add a Geo-fence

This command adds a geo-fence.

| AT+QCFGEXT="addgeo" Add a Geo-fence | |
|---|---|
| Write Command<br>**AT+QCFGEXT="addgeo",[<geoid>,[<mode>,<shape>,<lat1>,<lon1>,<lat2>,[<lon2>,[<lat3>,<lon3>[,<lat4>,<lon4>]]]]]** | Response<br>If all parameters after **"addgeo"** are omitted, the command queries the current setting of all geo-fences that have been added:<br>**[+QCFGEXT: "addgeo",<geoid>,<mode>,<shape>,<lat1>,<lon1>,<lat2>,[<lon2>,[<lat3>,<lon3>[,<lat4>,<lon4>]]]**<br>**…**<br>**+QCFGEXT: "addgeo",<geoid>,<mode>,<shape>,<lat1>,<lon1>,<lat2>,[<lon2>,[<lat3>,<lon3>[,<lat4>,<lon4>]]]]**<br><br>**OK**<br><br>If the parameters after **<geoID>** are omitted, the command queries the current setting of the specified geo-fence:<br>**+QCFGEXT: "addgeo",<geoid>,<mode>,<shape>,<lat1>,<lon1>,<lat2>,[<lon2>,[<lat3>,<lon3>[,<lat4>,<lon4>]]]**<br><br>**OK**<br><br>If **<shape>**=0, the command adds a circular geo-fence and the parameters after **<lat2>** must be omitted.<br>**OK**<br><br>If **<shape>**=1, the command adds a circular geo-fence and the parameters after **<lon2>** must be omitted.<br>**OK**<br><br>If **<shape>**=2, the command adds a triangular geo-fence and the parameters after **<lon3>** must be omitted.<br>**OK**<br><br>If **<shape>**=3, the command adds a quadrangle geo-fence. All parameters must be specified.<br>**OK**<br><br>If there is any error related to ME functionality:<br>**+CME ERROR: <errcode>** |
| Maximum Response Time | 300 ms |
| Characteristics | The command takes effect immediately.<br>The configurations are not saved. |

### Parameter

| | |
|---|---|
| **<geoid>** | Integer type. Geo-fence ID. Range: 0–9. |
| **<mode>** | Integer type. URC report mode.<br>0 Disable URC to be reported when entering or leaving the geo-fence<br>1 Enable URC to be reported when entering the geo-fence<br>2 Enable URC to be reported when leaving the geo-fence<br>3 Enable URC to be reported when entering or leaving the geo-fence<br>For details about the URC, see ***Chapter 2.2.1***. |
| **<shape>** | Integer type. Geo-fence shape.<br>0 Circularity with center and radius<br>1 Circularity with center and one point on the circle<br>2 Triangle<br>3 Quadrangle |
| **<lat1>** | The latitude of a point which is defined as the center of the geo-fence circular region or the first point. Unit: degree.<br>Format: ±dd.dddddd. Range: -90.000000 to 90.000000. |
| **<lon1>** | The longitude of a point which is defined as the center of the geo-fence circular region or the first point. Unit: degree.<br>Format: ±ddd.dddddd. Range: -180.000000 to 180.000000. |
| **<lat2>** | When **<shape>** is 0, this parameter is a radius. Range: 0–6000000. Unit: meter.<br>When **<shape>** is not 0, this parameter is a latitude. Unit: degree.<br>Format: ±dd.dddddd. Range: -90.000000 to 90.000000.<br>If **<shape>** is 0, the parameters after **<lat2>** must be omitted. |
| **<lon2>** | The longitude of the second point. Unit: degree.<br>Format: ±ddd.dddddd. Range: -180.000000 to 180.000000.<br>If **<shape>** is 1, the parameters after **<lon2>** must be omitted. |
| **<lat3>** | The latitude of the third point. Unit: degree.<br>Format: ±dd.dddddd. Range: -90.000000 to 90.000000. |
| **<lon3>** | The longitude of the third point. Unit: degree.<br>Format: ±ddd.dddddd. Range: -180.000000 to 180.000000.<br>If **<shape>** is 2, the parameters after **<lon3>** must be omitted. |
| **<lat4>** | The latitude of the fourth point. Unit: degree.<br>Format: ±dd.dddddd. Range: -90.000000 to 90.000000. |
| **<lon4>** | The longitude of the fourth point. Unit: degree.<br>Format: ±ddd.dddddd. Range: -180.000000 to 180.000000. |
| **<errcode>** | Integer type. Error code of operation. See ***Chapter 3*** for details. |

## 2.1.2. AT+QCFGEXT="deletegeo" Delete a geo-fence

This command deletes a geo-fence.

| AT+QCFGEXT="deletegeo" Delete a geo-fence | |
|---|---|
| Write Command<br>**AT+QCFGEXT="deletegeo",<geoid>** | Response<br>**OK**<br><br>If there is any error related to ME functionality:<br>**+CME ERROR: <errcode>** |
| Maximum Response Time | 300 ms |
| Characteristics | The command takes effect immediately.<br>The configuration is not saved. |

**Parameter**

| | |
|---|---|
| **<geoid>** | Integer type. Geo-fence ID. Range: 0–10. 10 means deleting all geo-fences. |
| **<errcode>** | Integer type. Error code of operation. See ***Chapter 3*** for details. |

### 2.1.3. AT+QCFGEXT="querygeo" Query the Position with Respect to Geo-fence

This command queries the position with respect to the geo-fence.

| AT+QCFGEXT="querygeo" Query the Position with Respect to Geo-fence | |
|---|---|
| Write Command<br>**AT+QCFGEXT="querygeo",<geoid>** | Response<br>**+QCFGEXT: "querygeo",<geoid>,<pos_wrt_geofence>**<br><br>**OK**<br><br>If there is any error related to ME functionality:<br>**+CME ERROR: <errcode>** |
| Maximum Response Time | 300 ms |
| Characteristics | / |

**Parameter**

| | |
|---|---|
| **<geoid>** | Integer type. Geo-fence ID. Range: 0–9. |
| **<pos_wrt_geofence>** | Integer type. Position with respect to the geo-fence.<br>0 Position unknown<br>1 Position is inside the geo-fence<br>2 Position is outside the geo-fence |
| **<errcode>** | Integer type. Error code of operation. See ***Chapter 3*** for details. |

### 2.1.4. AT+QCFGEXT="nipdcfg" Configure NIDD Connection

This command configures an NIDD connection.

| AT+QCFGEXT="nipdcfg" Configure NIDD Connection | |
|---|---|
| Write Command<br>**AT+QCFGEXT="nipdcfg"[,<type>[,<apn>[,<username>,<password>]]]** | Response<br>If the optional parameters are omitted, query the current setting:<br>**+QCFGEXT: "nipdcfg",<type>,<APN>**<br><br>**OK**<br><br>If any of the optional parameters is specified, configure the NIDD connection:<br>**OK**<br><br>If there is any error:<br>**ERROR** |
| Maximum Response Time | 300 ms |
| Characteristics | The command takes effect immediately.<br>The configurations are not saved. |

**Parameter**

| | |
|---|---|
| **<type>** | Integer type. Non-IP outgoing data type.<br>0 MO Non-IP data type<br>1 MO Exception Non-IP data type |
| **<apn>** | String type. Access point name. |
| **<username>** | String type. Username of the selected APN. |
| **<password>** | String type. Password of the selected APN. |

### 2.1.5. AT+QCFGEXT="nipd" Open or Close NIDD Connection

This command opens or closes an NIDD connection.

| AT+QCFGEXT="nipd" Open or Close NIDD Connection | |
|---|---|
| Write Command<br>**AT+QCFGEXT="nipd",<mode>[,<timeout>]** | Response<br>If **<mode>**=0, close the NIDD connection:<br>**OK**<br>If **<mode>**=1, open an NIDD connection:<br>**OK** |

| | |
|---|---|
| | **+QIND: "nipd","open",<errcode>**<br><br>If there is an error related to ME functionality:<br>**+CME ERROR: <errcode>**<br><br>If there is any other error:<br>**ERROR** |
| Maximum Response Time | 300 ms |
| Characteristics | The command takes effect immediately.<br>The configurations are not saved. |

### Parameter

| | |
|---|---|
| **<mode>** | Integer type. Close or open an NIDD connection.<br>0 Close an NIDD connection.<br>1 Open an NIDD connection. |
| **<timeout>** | Integer type. The timeout when opening the NIDD connection. This parameter is valid only when **<mode>**=1. Range: 30–90. Default value: 30. Unit: second. |
| **<errcode>** | Integer type. Error code of operation. See ***Chapter 3*** for details. |

**NOTE**

NIDD function is disabled by default. **AT+QCFG="nccconf",115** can be used to enable the function.

## 2.1.6. AT+QCFGEXT="nipds" Send MO Non-IP Data

This command sends MO Non-IP data to a server.

| **AT+QCFGEXT="nipds" Send MO Non-IP Data** | |
|---|---|
| Write Command<br>**AT+QCFGEXT="nipds",<mode>,<data>[,<data_length>]** | Response<br>**OK**<br><br>If there is an error related to ME functionality:<br>**+CME ERROR: <errcode>**<br><br>If there is any other error:<br>**ERROR** |
| Maximum Response Time | 300 ms |

| | |
|---|---|
| Characteristics | The command takes effect immediately.<br>The configurations are not saved. |

### Parameter

| | |
|---|---|
| **<mode>** | Integer type. Data format.<br>0 ASCII format string.<br>1 HEX format string. |
| **<data>** | String type. The data to be sent. |
| **<data_length>** | Integer type. The length of the data to be sent. If this parameter is omitted, **<data>** can be specified at any length within 1358 bytes of ASCII format. Range: 1–1358. **<data>** can be specified at any length within 679 bytes of HEX format. Range: 1–679. Unit: byte. |
| **<errcode>** | String type. Error code of operation. See ***Chapter 3*** for details. |

## 2.1.7. AT+QCFGEXT="nipdr" Retrieve MT Non-IP Data

This command retrieves the data reported by the URC **+QIND: "nipd","recv"**.

| **AT+QCFGEXT="nipdr" Retrieve MT Non-IP Data** | |
|---|---|
| Write Command<br>**AT+QCFGEXT="nipdr"[,<read_length>[,<read_mode>]]** | Response<br>**+QCFGEXT: "nipdr",<read_actual_length>,<data>**<br><br>**OK**<br><br>If there is no data that can be retrieved:<br>**+QCFGEXT: "nipdr",0**<br><br>**OK**<br><br>If there is an error related to ME functionality:<br>**+CME ERROR: <errcode>**<br><br>If there is any other error:<br>**ERROR** |
| Write Command<br>When **<read_length>** is 0, query the read status of the retrieved data:<br>**AT+QCFGEXT="nipdr",0** | Response<br>If the connection has existed:<br>**+QCFGEXT: "nipdr",<total_receive_length>,<have_read_length>,<unread_length>**<br><br>**OK**<br>If there is an error related to ME functionality: |

| | |
|---|---|
| | **+CME ERROR: <errcode>**<br><br>If there is any other error:<br>**ERROR** |
| Maximum Response Time | 300 ms |
| Characteristics | / |

### Parameter

| | |
|---|---|
| **<read_length>** | Integer type. The length of the data to be retrieved. Retrieve all available data if this parameter is omitted. Unit: byte. |
| **<read_mode>** | Integer type. Data format. This parameter is valid only when **<read_length>** is not 0.<br>0 String type<br>1 Hex type |
| **<read_actual_length>** | Integer type. The actual length of retrieved data. Unit: byte. |
| **<data>** | String type. Retrieved data. |
| **<total_receive_length>** | Integer type. The total length of received data. Unit: byte. |
| **<have_read_length>** | Integer type. The length of retrieved data. Unit: byte. |
| **<unread_length>** | Integer type. The length of unread data. Unit: byte. |
| **<errcode>** | Integer type. The error code of the operation. See ***Chapter 3*** for details. |

## 2.1.8. AT+QCFGEXT="dump" Enable/Disable Dump Mode

This command enables/disables dump mode.

| **AT+QCFGEXT="dump" Enable/Disable Dump Mode** | |
|---|---|
| Write Command<br>**AT+QCFGEXT="dump"[,<value>]** | Response<br>If the optional parameter is omitted, query the current setting:<br>**+QCFGEXT: "dump",<value>**<br><br>**OK**<br><br>If the optional parameter is specified, set whether to enable dump mode:<br>**OK**<br><br>If there is any error:<br>**ERROR** |
| Maximum Response Time | 300 ms |

| | |
|---|---|
| Characteristics | The command takes effect immediately.<br>The configuration is saved automatically. |

### Parameter

| | |
|---|---|
| **<value>** | Integer type. Enable/disable dump mode.<br>0 Disable<br>1 Enable |

## 2.1.9. AT+QCFGEXT="quecopen" Enable/Disable QuecOpen Function

This command enables/disables your App to load the QuecOpen function.

| AT+QCFGEXT="quecopen" Enable/Disable QuecOpen Function | |
|---|---|
| Write Command<br>**AT+QCFGEXT="quecopen"[,<value>]** | Response<br>If the optional parameter is omitted, query the current setting:<br>**+QCFGEXT: "quecopen",<value>**<br><br>**OK**<br><br>If the optional parameter is specified, set whether to enable QuecOpen function:<br>**OK**<br><br>If there is any error:<br>**ERROR** |
| Maximum Response Time | 300 ms |
| Characteristics | The command takes effect immediately.<br>The configuration is saved automatically. |

### Parameter

| | |
|---|---|
| **<value>** | Integer type. Enable/disable QuecOpen function.<br>0 Enable<br>1 Disable |

## 2.1.10. AT+QCFGEXT="disusb" Enable/Disable USB Function

This command enables/disables USB function.

| AT+QCFGEXT="disusb" Enable/Disable USB Function | |
|---|---|
| Write Command<br>**AT+QCFGEXT="disusb"[,<value>]** | Response<br>If the optional parameter is omitted, query the current setting:<br>**+QCFGEXT: "disusb",<value>**<br><br>**OK**<br><br>If the optional parameter is specified, set whether to enable USB function:<br>**OK**<br><br>If there is any error:<br>**ERROR** |
| Maximum Response Time | 300 ms |
| Characteristics | The command takes effect immediately.<br>The configuration is saved automatically. |

**Parameter**

| | |
|---|---|
| **<value>** | Integer type. Enable/Disable USB function.<br>0 Disable<br>1 Enable |

### 2.1.11. AT+QCFGEXT="usb/event" Get USB Events

This command gets USB events.

| AT+QCFGEXT="usb/event" Get USB Events | |
|---|---|
| Write Command<br>**AT+QCFGEXT="usb/event"** | Response<br>**+QCFGEXT: "usb/event",<event>**<br><br>**OK**<br><br>If there is any error:<br>**ERROR** |
| Maximum Response Time | 300 ms |
| Characteristics | / |

### Parameter

| | |
|---|---|
| **<event>** | Integer type. USB event.<br>0 USB CONNECT<br>1 USB DISCONNECT<br>2 USB SUSPEND<br>3 USB RESUME<br>4 USB RESUME COMPLETED<br>5 USB REMOTE WAKEUP<br>6 USB CONFIGURED<br>7 USB UNCONFIGURED<br>8 USB RESET<br>9 USB SPEED CHANGE |

## 2.1.12. AT+QCFGEXT="fota_apn" Configure IP Family and APN for DFOTA

This command configures the IP family and APN for DFOTA.

| **AT+QCFGEXT="fota_apn" Configure IP Family and APN for DFOTA** | |
|---|---|
| Write Command<br>**AT+QCFGEXT="fota_apn"[,<iptype>,<apn>[,<username>,<password>]]** | Response<br>If the optional parameters are omitted, query the current setting:<br>**+QCFGEXT: "fota_apn",<iptype>,<apn>[,<username>,<password>]**<br><br>**OK**<br><br>If any of the optional parameters is specified, set the IP family and APN for DFOTA:<br>**OK**<br><br>If there is any error:<br>**ERROR** |
| Maximum Response Time | 300 ms |
| Characteristics | The command takes effect immediately.<br>The configurations are saved automatically. |

### Parameter

| | |
|---|---|
| **<iptype>** | Integer type. IP family.<br>0 IPv4 address family<br>1 IPv6 address family |

| | |
|---|---|
| | 2 IPv4 and IPv6 address family |
| **<apn>** | String type. Access point name. |
| **<username>** | String type. Username of the selected APN. |
| **<password>** | String type. Password of the selected APN. |

### 2.1.13. AT+QCFGEXT="dnsc_timeout" Configure DNS Session Timeout

This command configures the timeout value for DNS session.

| AT+QCFGEXT="dnsc_timeout" Configure DNS Session Timeout | |
|---|---|
| Write Command<br>**AT+QCFGEXT="dnsc_timeout"[,<timeout>]** | Response<br>If the optional parameter is omitted, query the current setting:<br>**+QCFGEXT: "dnsc_timeout",<timeout>**<br><br>**OK**<br><br>If the optional parameter is specified, set the DNS session timeout value:<br>**OK**<br><br>If there is any error:<br>**ERROR** |
| Maximum Response Time | 300 ms |
| Characteristics | The command takes effect immediately.<br>The configuration is saved automatically. |

**Parameter**

| | |
|---|---|
| **<timeout>** | Integer type. Timeout value for DNS session. Range: 2–300. Default value: 60. Unit: second. |

### 2.1.14. AT+QCFGEXT="attm2mfeat" Enable/Disable AT&T LwM2M Feature

This command enables/disables LwM2M feature for AT&T (U)SIM card. If **<mode>**=0 and an AT&T (U)SIM card is used, the module attempts to register AT&T LwM2M server automatically when the module is powered on.

| AT+QCFGEXT="attm2mfeat" Enable/Disable AT&T LwM2M Feature | |
|---|---|
| Write Command<br>**AT+QCFGEXT="attm2mfeat"[,<mode>]** | Response<br>If the optional parameter is omitted, query the current setting:<br>**+QCFGEXT: "attm2mfeat",<mode>** |

| | |
|---|---|
| | **OK**<br><br>If the optional parameter is specified, set whether to enable AT&T LwM2M feature:<br>**OK**<br><br>If there is any error:<br>**ERROR** |
| Maximum Response Time | 300 ms |
| Characteristics | The command takes effect immediately.<br>The configuration is saved automatically. |

**Parameter**

| | |
|---|---|
| **<mode>** | Integer type. Mode of AT&T LwM2M feature.<br>0 The module attempts to register AT&T LwM2M server automatically.<br>1 The module does not attempt to register AT&T LwM2M server automatically. |

## 2.2. Description of URCs

### 2.2.1. +QIND: "GEOFENCE" Indicate Entering or Leaving Geo-fence

| **+QIND: "GEOFENCE" Indicate Entering or Leaving Geo-fence** | |
|---|---|
| **+QIND: "GEOFENCE",<ID>,<action>,<time>,<latitude>,<longitude>,<altitude>,<course>,<speed>,<PDOP>,<HDOP>,<VDOP>** | The URC indicates entering or leaving a geo-fence. |

**Parameter**

| | |
|---|---|
| **<ID>** | The ID of geo-fence which is to be entered or left. |
| **<action>** | The current action of the module.<br>1 Entering the geo-fence<br>2 Leaving the geo-fence |
| **<time>** | The UTC time when entering or leaving the geo-fence.<br>Format: YYYY/MM/DD hh:mm:ss |
| **<latitude>** | The latitude of the module when entering or leaving the geo-fence. Unit: degree<br>Format: ±dd.dddddd. Range: -90.000000 to 90.000000. |

| | |
|---|---|
| **<longitude>** | The longitude of the module when entering or leaving the geo-fence. Unit: degree<br>Format: ±ddd.dddddd. Range: -180.000000 to 180.000000. |
| **<altitude>** | Mean sea level altitude. Unit: meter. |
| **<course>** | Course over ground, relative to true north. Unit: degree. |
| **<speed>** | Speed over ground. Unit: m/s |
| **<PDOP>** | Position dilution of precision. |
| **<HDOP>** | Horizontal dilution of precision. |
| **<VDOP>** | Vertical dilution of precision. |

### 2.2.2. +QIND: "nipd","recv" Indicate the Incoming Data

After receiving the non-IP data from the MT, the module reports the URC **+QIND: "nipd","recv"** to notify the host that there is incoming data. Then host can retrieve data via **AT+QCFGEXT="nipdr"**. Be note that if the buffer is not empty, and the module receives data again, it will not report a new URC until all the received data has been retrieved via **AT+QCFGEXT="nipdr"** from the buffer. The size of the buffer is 2048 bytes. If the data received exceeds the buffer size, the subsequent data will be discarded.

| **+QIND: "nipd","recv" Indicate the Incoming Data** | |
|---|---|
| **+QIND: "nipd","recv"** | The URC notifies the host that there is incoming data from the network. Then the host can retrieve the data via **AT+QCFGEXT="nipdr"**. |

### 2.2.3. +QIND: "nipd","close" Indicate the Connection is Closed

| **+QIND: "nipd","close" Indicate the Connection is Closed** | |
|---|---|
| **+QIND: "nipd","close"** | The URC notifies that the connection is accidentally closed. If the connection is closed normally via the **AT+QCFGEXT="nipd",0**, this URC will not be reported. |

# 3 Summary of <errcode>

The error code **<errcode>** indicates an error related to mobile equipment or network. The table below describes the details about **<errcode>**.

**Table 3: Summary of <errcode>**

| <errcode> | Meaning |
|---|---|
| 501 | Invalid parameter |
| 517 | Geo-fence ID does not exist |
| 651 | Invalid parameter for Non-IP data |
| 652 | Non-IP data sending error |
| 654 | NIDD operation in process |
| 656 | NIDD connection not opened |
| 657 | NIDD connection opened already |

# 4 Appendix A References

**Table 4: Related Document**

| SN | Document Name | Remark |
|---|---|---|
| [1] | Quectel_BG95&BG77&BG600L_Series_AT_Commands_Manual | AT commands manual of BG95 series, BG77 and BG600L-M3 modules |

**Table 5: Terms and Abbreviations**

| Abbreviation | Description |
|---|---|
| APN | Access Point Name |
| ASCII | American Standard Code for Information Interchange |
| DFOTA | Delta Firmware Upgrade Over-The-Air |
| GPIO | General-Purpose Input/Output |
| HEX | Hexadecimal |
| IPv4 | Internet Protocol version 4 |
| IPv6 | Internet Protocol version 6 |
| LwM2M | Lightweight M2M |
| MO | Mobile Originated |
| NIDD | Non-IP Data Delivery |
| UART | Universal Asynchronous Receiver/Transmitter |
| URC | Unsolicited Result Code |
| USB | Universal Serial Bus |
| (U)SIM | (Universal) Subscriber Identity Module |
| UTC | Coordinated Universal Time |