# BG96 Release Notes

**LPWA Module Series**

Rev. BG96_Firmware_Release_Notes_V0208.01.013.01.013

Date: 2019-10-24

# 1. Preamble

This document provides the Release Notes for BG96 firmware version: **BG96MAR02A08M1G_01.013.01.013**. It describes major changes compared to BG96 firmware version **BG96MAR02A08M1G_01.012.01.012**. For a detailed listing of all changes, please refer to the BG96 AT Command Set.

Before：
**ATI**
**Quectel**
**BG96**
**Revision: BG96MAR02A08M1G**

After：
**ATI**
**Quectel**
**BG96**
**Revision: BG96MAR02A08M1G**

**AT+QGMR**
**BG96MAR02A08M1G_01.013.01.013**

**AT+QAPPVER**
**+QAPPVER: 01.013.01.013**

# 2. New Features

## 2.1 New Features of Modem Protocol

No update.

## 2.2 New Features of Modem APP

| Item /Category | Brief description | Since |
| --- | --- | --- |
| **GENERAL** | Added AT Command **AT+QGMR** to query the full version information, including the protocol version number and application version number of the modem. | R02A08_01.008.01.008 |
| **GENERAL** | Added AT Command **AT+QCFG="airplanecontrol"** to enable/disable airplane mode. | R02A08_01.008.01.008 |

| GENERAL | Added AT Command **AT+QCFG="gpio"** to configure some of the GPIOs. | R02A08_01.008.01.008 |
|---|---|---|
| LwM2M | Added AT Command **AT+QLWM2M="psk"** to enable automatic generation of PSK data. | R02A08_01.008.01.008 |
| GENERAL | Added USB suspend function. | R02A08_01.008.01.008 |
| GENERAL | Added AT Command **AT+QICFG="recvind"** to control whether to append the received data length in the URC. | R02A08_01.008.01.008 |
| GENERAL | Added AT Command **AT+QCFG="simeffect"**. | R02A08_01.008.01.008 |
| GENERAL | Added AT Command **AT+CSIM**. | R02A08_01.008.01.008 |
| GENERAL | Added AT Command **AT+QAPPVER**. | R02A08_01.008.01.008 |
| GENERAL | Added AT Command **AT+QCFG="sibinfo"**. | R02A08_01.008.01.008 |
| LwM2M | Added support for China Telecom cloud platform access function. | R02A08_01.008.01.008 |
| FILE | Added AT Commands **AT+QFCRC/AT+QFCPY**. | R02A08_01.008.01.008 |
| GENERAL | Added AT Command **AT+QCFG="emmtimer"** to query the T3402 and T3412 configuration. | R02A08_01.008.01.008 |
| GENERAL | Added AT Command **AT+QCFG="msclass"** to configure GPRS/EDGE multi slot. | R02A08_01.008.01.008 |
| GENERAL | Added AT Command **AT+QVBATT**. | R02A08_01.008.01.008 |
| GENERAL | Added AT Command **AT+QRIR**. | R02A08_01.008.01.008 |
| GENERAL | Added AT Command **AT+QCFG="gpio"**. | R02A08_01.008.01.008 |
| GENERAL | Added AT Command **AT+QCFGEXT="apn"** to set APN for FOTA thread. | R02A08_01.008.01.008 |
| GENERAL | Added AT Command **AT+QCPWR**. | R02A08_01.008.01.008 |
| QuecLocator™ | Added support QuecLocator under GSM and Cat.M1 network. | R02A08_01.008.01.008 |
| GENERAL | Added AT Command **AT+QCFGEXT="disusb"** to enable/disable USB port function. | R02A08_01.008.01.008 |
| GENERAL | Added URC **"APP RDY"** to prompt ATFWD command is ready. | R02A08_01.008.01.008 |
| SSL | Added AT Command **AT+QSSLCFG="sni"** to support SNI feature. | R02A08_01.009.01.009 |
| NETWORK | Added IPV6 features. | R02A08_01.009.01.009 |
| FILE | Added AT command to support access AP file system. | R02A08_01.009.01.009 |
| SSL | Added AT Command **AT+QSSLCFG="ignorecertchain"** to support ignore verify cert chain. | R02A08_01.009.01.009 |
| NETWORK | Added AT Command **AT+QCFG="rrcabort"** to terminate RRC connection from UE side. | R02A08_01.009.01.009 |
| Quecopen® | Added QAPI to support getting random number which generated by hardware. | R02A08_01.009.01.009 |

| | | |
|---|---|---|
| **LwM2M** | Added AT Command **AT+QLWM2M="carrier_cfg"** to access carrier_cfg configure file. & AT+QLWM2M="lwm2m_cfg" | R02A08_01.009.01.009 |
| **LwM2M** | Added AT Command **AT+QLWM2M="lwm2m_cfg"** to access lwm2m_cfg configure file. | R02A08_01.009.01.009 |
| **MQTT** | Added AT Command **AT+QMTCFG="recv/mode"** to enable or disable the payload length shown in the **+QMTRECV**. | R02A08_01.009.01.009 |
| **FILE** | Added Security file function. | R02A08_01.013.01.013 |
| **TCP/IP** | Added AT command **AT+QICFG="tcp/keepalive"** | R02A08_01.013.01.013 |
| **GENERAL** | Added **AT+QCFG="mmcause"** to get the reject reason when module try to attach on GSM. | R02A08_01.013.01.013 |
| **GENERAL** | Added AT command **AT+QCTEMP**. | R02A08_01.013.01.013 |
| **SSL** | Added **AT+QSSLCFG="checkhost"** to configure the host name validation. | R02A08_01.013.01.013 |
| **NETWORK** | Added **AT+QICFG="ipv6prior"** to select IPv4 or IPv6 as default PDN type. | R02A08_01.013.01.013 |
| **GENERAL** | Added AT+QDIAGPORT to enable the secondary AT port for supporting the basic AT command. | R02A08_01.013.01.013 |

# 3. Improved Features

## 3.1 Improved Features of Modem Protocol

No update.

## 3.2 Improved Features of Modem APP

| Item/Category | Brief description | Since |
|---|---|---|
| **MQTT** | Optimized **AT+QMTPUB** to enable the specifying of load length. | R02A08_01.008.01.008 |
| **GENERAL** | Fixed the bug that DTR pin is not internal pulled up when module powers on. | R02A08_01.008.01.008 |
| **GENERAL** | Fixed the bug that DCD pin cannot be controlled by **AT&C** command. | R02A08_01.008.01.008 |
| **MQTT** | Fixed the bug that data transmission sometime fails when sending data with a long-time interval. | R02A08_01.008.01.008 |
| **GENERAL** | Optimized the file system performance. | R02A08_01.008.01.008 |
| **GENERAL** | Optimized **AT+QCFGEXT="nipdr"** to support the display of returned data in hexadecimal format. | R02A08_01.008.01.008 |

| GENERAL | Optimized **AT+QLWM2M** commands. | R02A08_01.008.01.008 |
|---|---|---|
| GENERAL | Fixed the bug of incorrect format when executing **AT+QPSMCFG=?**/**AT+QPSMEXTCFG=?**. | R02A08_01.008.01.008 |
| TCP/IP | Fixed the bug that TCP handshake fails when setting TCP window scale option to 14. | R02A08_01.008.01.008 |
| TCP/IP | Fixed the bug of potential memory leak under TCP connection stress test. | R02A08_01.008.01.008 |
| DFOTA | Optimized FOTA download mechanism. | R02A08_01.008.01.008 |
| GENERAL | Optimized AT Command **AT+QCFG="ledmode"** to support the adjustment of PWM setting of the NETLIGHT pin. | R02A08_01.008.01.008 |
| LwM2M | Fixed the bug that reporting of firmware version number includes compiling timestamp when client connects to server. | R02A08_01.008.01.008 |
| LwM2M | Fixed the bug that Error#506 is reported when the module starts FOTA progress. | R02A08_01.008.01.008 |
| LwM2M | Added URCs to prompt starting and completion of DFOTA package downloading of In-Band mode. | R02A08_01.008.01.008 |
| LwM2M | Fixed the bug that LwM2M client cannot perform the firmware package downloading when executing motive case#11.01 repeatedly in the case that the server has an invalid/mismatch DFOTA package. | R02A08_01.008.01.008 |
| GENERAL | Fixed the bug that Power-On URC is reported when the module enables the UART hardware FC. | R02A08_01.008.01.008 |
| GNSS | Fixed the bug that the module crashes occasionally when switching on/off GNSS for over 5000 times. | R02A08_01.008.01.008 |
| GENERAL | Optimized AT Command **AT+QCSCON**. | R02A08_01.008.01.008 |
| FILE | Fixed the bug that cannot use "**+++**" to exit from data mode when downloading file of over 1MB from the module. | R02A08_01.008.01.008 |
| TCP/IP | Optimized the IPV6 feature. | R02A08_01.008.01.008 |
| PSM | Adjusted the minimum threshold value when entering into PSM. | R02A08_01.008.01.008 |
| SMS | Fixed the bug that the URC "**+CMTI: -1**" is reported when the module receives WAP message. | R02A08_01.008.01.008 |
| GENERAL | Fixed the bug that **AT+CFUN=1,1** cannot be executed after setting the module to enter into FTM mode. | R02A08_01.008.01.008 |
| CMUX | Fixed the bug that CMUX work abnormally when setting the CMUX frame size to over 127. | R02A08_01.008.01.008 |
| GENERAL | Optimization for the **AT+QFOTADL** to support the URL longer than 100 characters, up to 1000 characters. | R02A08_01.009.01.009 |
| GNSS | Optimized for **AT+QGPSCFG** to support configure the | R02A08_01.009.01.009 |

| | baud rate of the UART NMEA port. | |
|---|---|---|
| **SMS** | Fixed the bug that unexpected URC "+CMTI: -1" reported when module received WAP push type message. | R02A08_01.009.01.009 |
| **SMS** | Fixed the bug that module cannot receive new message after got a WAP format message. | R02A08_01.009.01.009 |
| **FTP** | Optimized hostname processing mechanism. | R02A08_01.009.01.009 |
| **Quecopen®** | Fixed the bug that IIC working abnormal in Quecopen solution. | R02A08_01.009.01.009 |
| **FILE** | Fixed the bug that file system abnormal if delete the file which still in downloading. | R02A08_01.009.01.009 |
| **FTM** | Fixed the bug that **AT+QRXFTM** returns an abnormal query value. | R02A08_01.009.01.009 |
| **LwM2M** | Fixed the bug that **AT+QLWM2M="device_object"** cannot configure correctly occasionally. | R02A08_01.009.01.009 |
| **NETWORK** | Fixed the bug when change module to another RAT, "No service" returned by **AT+QNWINFO** occasionally. | R02A08_01.009.01.009 |
| **SMS** | Fixed the bug that "+CMS ERROR code 500" reported when execute **AT+CMGS**. | R02A08_01.009.01.009 |
| **MQTT** | Fixed the bug that result of **+QMTRECV** will be abnormal when includes '\0' data. | R02A08_01.009.01.009 |
| **LwM2M** | Fixed the bug that invalid manufacture name reported occasionally when LwM2M client boot up. | R02A08_01.009.01.009 |
| **SIM** | Fixed the bug that error result reported occasionally when query IMSI number immediately after module power on. | R02A08_01.009.01.009 |
| **NETWORK** | Fixed the bug when SIM EPLMN is 310170 and the module registered to the network (PLMN is 310410), show that the module is in roaming state. | R02A08_01.009.01.009 |
| **MQTT** | Fixed the bug that module received a large amount of data in GSM mode and could not output to the serial port occasionally. | R02A08_01.012.01.012 |
| **MQTT** | Optimized **QMTPUB** which supports up to 4K bytes data input. | R02A08_01.012.01.012 |
| **GNSS** | Fixed the bug that module cannot output NMEA data to USB NMEA port occasionally. | R02A08_01.012.01.012 |
| **GNSS** | Fixed the bug that incorrect location status after GNSS lost its location. | R02A08_01.012.01.012 |
| **FTM** | Fixed the bug that incorrect result returned of **QRXFTM** when module is tested under Band 13. | R02A08_01.012.01.012 |
| **TCP/IP** | Optimized for IPV6 support. | R02A08_01.012.01.012 |
| **NETWORK** | Fixed the bug that there is a redundant parameter returned when configure **AT+CEREG=4**. | R02A08_01.012.01.012 |

| Quecopen® | Fixed the bug that failed to uploading file in Quecopen application. | R02A08_01.013.01.013 |
|---|---|---|
| NETWORK | Fixed the bug that module cannot register to network after manually deactivating MBN. | R02A08_01.013.01.013 |
| FOTA | Fixed the bug that configuring the parameters "user" and "password" is invalid when using the command **AT+QCFGEXT="fota_apn".** | R02A08_01.013.01.013 |
| LWM2M | Changed the number of LWM2M COAP packet retransmission times from 4 to 2. | R02A08_01.013.01.013 |
| GNSS | Improved command **AT+QGPSLOC** to let module report location actively. | R02A08_01.013.01.013 |
| GNSS | Improved command **AT+QGPSCFG** to output NEMA sentences through UART2(debug) port. | R02A08_01.013.01.013 |
| NETWORK | Fixed the bug that **CSQ** value display 99 when RSSI is 0. | R02A08_01.013.01.013 |
| GENERAL | Fixed the bug that data is easily lost when being output via UART port quickly. | R02A08_01.013.01.013 |
| GENERAL | Optimized module stability at high temperature with 85 degree Celsius. | R02A08_01.013.01.013 |
| SMS | Fixed the bug that executing **AT+CMGW** command without <oa/da> will report error. | R02A08_01.013.01.013 |
| GENERAL | Fixed the bug that flow control enabled by default under CMUX. | R02A08_01.013.01.013 |
| FTP | Fixed the bug that using command **AT+QFTPGET** to get data connection status failed after successfully building FTP connection in IPV6 environment. | R02A08_01.013.01.013 |
| GENERAL | Added the mechanism of output data will be discarded actively when USB buffer is full in the condition of USB disconnect. | R02A08_01.013.01.013 |
| TCP/IP | Fixed the bug that executing **AT+QIOPEN** can't be succeed when the value of DNS handle exceeds 32768 if building TCP connection with domain name. | R02A08_01.013.01.013 |
| GNSS | Changed the NMEA sentence parameter of the DEBUG port output. | R02A08_01.013.01.013 |
| MQTT | Fixed the bug that module cannot output all data if there is a '\0' character in the data payload. | R02A08_01.013.01.013 |
| HTTP | Fixed the bug that executing HTTPREAD command don't exit data mode when get HTTP server's body is 0. | R02A08_01.013.01.013 |
| GENERAL | Fixed the bug that there is always return error when querying IMSI number immediately after RDY is reported. | R02A08_01.013.01.013 |
| FILE | Fixed the bug that there is error returned occasionally when using **AT+QFDEL** to delete file. | R02A08_01.013.01.013 |
| MBN | Supported always activate the SKT MBN automatically after inserting the SKT sim card. | R02A08_01.013.01.013 |

| | | |
|---|---|---|
| **SSL** | Fixed the bug that module can't establish a connection with Apache server using IP address after SNI feature was enabled. | R02A08_01.013.01.013 |
| **SMS** | Fixed the bug that module's SMS storage location setting can't be saved after the module was power down. | R02A08_01.013.01.013 |
| **HTTP** | Fixed the bug that configuring HTTP URL in IPV6 environment but the querying result of the URL is for HTTPS. | R02A08_01.013.01.013 |
| **NETWORK** | Fixed the bug that the configuration of the command **AT+QCFG="servicedomain"** can't be saved after the module was power down. | R02A08_01.013.01.013 |
| **Quecopen®** | Supported configure the NMEA port as an serial port for output Quecopen application debug log. | R02A08_01.013.01.013 |
| **TCP/IP** | Changed the NV#1341 default setting to 1 to support FIN & ACK data package could be transmitted to server after the RRC connection already released. | R02A08_01.013.01.013 |

# 4. Functions

| Basic Function | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| SMS | Voice Call | Data Call | Fax | USSD | PHB | STK | CMUX | Dual UART |
| Y | N | N | N | N | N | N | Y | N |
| FILE [1] | Triple UART | | | | | | | |
| Y | N | | | | | | | |

| Protocol Function | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| TCP/ UDP | PPP | FTP | HTTP | NITZ | PING | HTTPS | TCP SSL | FTPS [2] |
| Y | Y | Y | Y | Y | Y | Y | Y | Y |

| MQTT | LwM2M |
|------|-------|
| Y | Y |

| Special Function | | | | |
|------|------|------|------|------|
| GNSS | PSM | DFOTA | Quec Locator™ | Quecopen® |
| Y | Y | Y | Y | Y |

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**NOTES**

1. Y means the firmware supports this function.
2. N means the firmware does not support this function.
3. [1] Supports UFS FILE only.
4. [2] Supports FTPS-Implicit SSL only.