BG95&BG77&BG600L Series
QCFG AT Commands Manual

LPWA Module Series

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About the Document

Revision History

Version	Date	Author	Description
1.0	2020-08-15	Lane HAO	Initial
2.0	2021-07-27	Monas KONG/ Matt YE/ Egbert XU	1. Deleted applicable module BG95-N1 2. Added the following AT commands: AT+QCFG="lapiconf" AT+QCFG="emmcause" AT+QCFG="sibinfo" AT+QCFG="emmtimer" AT+QCFG="msclass" AT+QCFG="ims" AT+QCFG="snrscan" AT+QCFG="fgiconfig" AT+QCFG="sim/onchip" AT+QCFG="bandrestore" AT+QCFG="bip/auth" AT+QCFG="timer" AT+QCFG="timeupdate" AT+QCFG="uartcfg" AT+QCFG="dbgctl" AT+QCFG="cmux/flowctrl" AT+QCFG="fast/poweroff" 3. Deleted AT+QCFG="apn/display" 4. Updated AT+QCFG="ledmode" (Chapter 3.1.2.6) 5. Updated supported <pin> values in AT+QCFG="gpio" (Chapter 3.1.2.7)

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1 Introduction

This document describes the **AT+QCFG** commands 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
BG77	BG77	Cat M1/Cat NB2
BG600L	BG600L-M3	Cat M1/Cat NB2/EGPRS

2 AT Command Introduction

2.1. 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 not given in a command, the new value equals to its previous value or the default settings, unless otherwise specified.
- **Underline** Default setting of a parameter.

2.2. 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>**. In tables presenting commands and responses throughout this document, only the commands and responses are presented, and **<CR>** and **<LF>** are deliberately omitted.

AT+QCFG commands implemented by BG95 series, BG77 and BG600L-M3 modules are categorized as "Extended" syntax, as illustrated below.

- **Extended Command**

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

Table 2: Types of AT Commands

Command Type	Syntax	Description
Test Command	**AT+<cmd>=?**	Test the existence of corresponding Write Command and return information about the type, value, or range of its parameter.

Read Command	**AT+<cmd>?**	Check the current parameter value of a corresponding Write Command.
Write Command	**AT+<cmd>=<p1>[,<p2>[,<p3>[...]]]**	Set user-definable parameter value.
Execution Command	**AT+<cmd>**	Return a specific information parameter or perform a specific action.

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

Spaces should be ignored when you enter AT commands, except in the following cases:

Within quoted strings, where spaces 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 entered, **ERROR** will be returned.

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

2.3. 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 information 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>

Or

<CR><LF><parameters><CR><LF>
<CR><LF>OK<CR><LF>

2.4. Declaration of AT Command Examples

The AT command examples in this document are provided to help you learn about how to use the AT commands introduced herein. The examples, however, should not be taken as Quectel's recommendation or suggestions about how you should design a program flow or what status you should set the module into. Sometimes multiple examples may be provided for one AT command. However, this does not mean that there exists a correlation among these examples and that they should be executed in a given sequence.

3 Description of AT+QCFG Commands

3.1. AT+QCFG Extended Configuration Settings

The following Test Command shows the supported extended configuration settings of the module.

AT+QCFG Extended Configuration Settings	
Test Command **AT+QCFG=?**	Response **+QCFG: "nwscanmode",(**list of supported **<scan_mode>**s**),(**list of supported **<effect>**s**)** **+QCFG: "servicedomain",(**list of supported **<service>**s**),(**list of supported **<effect>**s**)** **+QCFG: "nwscanseq",(**range of supported **<scanseq>**s**),(**list of supported **<effect>**s**)** **+QCFG: "band",(**range of supported **<GSM_bandval>**s**),(**range of supported **<eMTC_bandval>**s**),(**range of supported **<NB-IoT_bandval>**s**),(**list of supported **<effect>**s**)** **+QCFG: "iotopmode",(**range of supported **<mode>**s**),(**list of supported **<effect>**s**)** **+QCFG: "celevel",(**range of supported **<level>**s**)** **+QCFG: "urc/ri/ring",(**list of supported **<typeRI>**s**),(**range of supported **<pulse_duration>**s**),(**range of supported **<active_duration>**s**),(**range of supported **<inactive_duration>**s**),(**list of supported **<ring_no_disturbing>**s**),(**range of supported **<pulse_count>**s**)** **+QCFG: "urc/ri/smsincoming",(**list of supported **<typeRI>**s**),(**range of supported **<pulse_duration>**s**),(**range of supported **<pulse_count>**s**)** **+QCFG: "urc/ri/other",(**list of supported **<typeRI>**s**),(**range of supported **<pulse_duration>**s**),(**range of supported **<pulse_count>**s**)** **+QCFG: "risignaltype",(**list of supported **<RI_signal_type>**s**)** **+QCFG: "urc/delay",(**list of supported **<enable>**s**)** **+QCFG: "ledmode",(**list of supported **<mode>**s**)** **+QCFG: "gpio",<mode>,<pin>[,[<dir>,<pull>,<drv>]/[<val>][,<save>]]** **+QCFG: "airplanecontrol",(**list of supported **<airplane_contro**

	l>s**)** **+QCFG: "cmux/urcport",(**range of supported **<URC_port>**s**)** **+QCFG: "apready",(**list of supported **<n>**s**),(**list of supported **<level>**s**),(**range of supported **<interval>**s**)** **+QCFG: "nccconf",(**range of supported **<cap_val>**s**)** **+QCFG: "psm/enter",(**list of supported **<mode>**s**)** **+QCFG: "psm/urc",(**list of supported **<enable>**s**)** **+QCFG: "simeffect",(**list of supported **<mode>**s**)** **+QCFG: "lapiconf",(**range of supported **<mode>**s**),(**list of supported **<enable>**s**)** **+QCFG: "nasconfig",(**range of supported **<conf_val>**s**)** **+QCFG: "irat/timer",(**range of supported **<timer_value>**s**),(**range of supported **<alignment_value>**s**)** **+QCFG: "nb1/bandprior",<band_priority_seq>** **+QCFG: "emmcause"[,(**list of supported **<display_format>**s**)]** **+QCFG: "sibinfo"** **+QCFG: "emmtimer"** **+QCFG: "msclass"[,(**list of supported **<GPRS_multislot_class>**s**),(**range of supported **<EGPRS_multislot_class>**s**)]** **+QCFG: "ims",(**list of supported **<VoLTE_state>**s**)** **+QCFG: "snrscan"[,(**range of supported **<level>**s**)]** **+QCFG: "fgiconfig"[,(**range of supported **<value>**s**)]** **+QCFG: "sim/onchip"[,(**list of supported **<mode>**s**)[,(**list of supported **<effect>**s**)]]** **+QCFG: "bip/auth",(**range of supported **<mode>**s**)** **+QCFG: "timer",<timer_ID>** **+QCFG: "timeupdate",(**list of supported **<mode>**s**)** **+QCFG: "uartcfg",(**list of supported **<UART_cfg_mode>**s**)** **+QCFG: "dbgctl",(**range of supported **<log_level>**s**)** **+QCFG: "cmux/flowctrl",(**list of supported **<flow_ctrl>**s**)** **+QCFG: "fast/poweroff", <pin>,(**list of supported **<enable>**s**)** **+QCFG: "bandrestore"** **OK**
Maximum Response Time	300 ms
Characteristics	/

3.1.1. Network Related AT Commands

3.1.1.1. AT+QCFG="nwscanmode" Configure RAT(s) to be Searched for

This Write Command configures the RAT(s) to be searched for or queries the current setting.

AT+QCFG="nwscanmode"	Configure RAT(s) to be Searched for
Write Command **AT+QCFG="nwscanmode"[,<scan_mode>[,<effect>]]**	Response If the optional parameters are omitted, query the current setting: **+QCFG: "nwscanmode",<scan_mode>** **OK** If any of the optional parameters is specified, configure the RAT(s) to be searched for: **OK** If there is an error related to ME functionality: **+CME ERROR: <err>** If there is any other error: **ERROR**
Maximum Response Time	300 ms
Characteristics	**<effect>** determines when the command will take effect. The configurations will be saved automatically.

Parameter

<scan_mode>	Integer type. RAT(s) to be searched for. 0 Automatic (GSM and LTE) 1 GSM only 3 LTE only
<effect>	Integer type. When to take effect. 0 Take effect after rebooting 1 Take effect immediately
<err>	Error code. See ***Chapter 4*** for details .

NOTE

This command is valid only on BG95-M3, BG95-M5 and BG600L-M3 modules.

3.1.1.2. AT+QCFG="servicedomain" Configure Service Domain

This Write Command configures the service domain to be registered or queries the current setting.

AT+QCFG="servicedomain"	Configure Service Domain
Write Command **AT+QCFG="servicedomain"[,<service>[,<effect>]]**	Response If the optional parameters are omitted, query the current setting: **+QCFG: "servicedomain",<service>** **OK** If any of the optional parameters is specified, configure the service domain to be registered: **OK** If there is an error related to ME functionality: **+CME ERROR: <err>** If there is any other error: **ERROR**
Maximum Response Time	300 ms
Characteristics	**<effect>** determines when the command will take effect. The configurations will be saved automatically.

Parameter

<service>	Integer type. Service domain to be registered. 1 PS only 2 CS & PS
<effect>	Integer type. When to take effect. 0 Take effect after rebooting 1 Take effect immediately
<err>	Error code. See ***Chapter 4*** for details.

3.1.1.3. AT+QCFG="nwscanseq" Configure RATs Searching Sequence

This Write Command configures the searching sequence of RATs or queries the current setting.

AT+QCFG="nwscanseq"	Configure RATs Searching Sequence
Write Command **AT+QCFG="nwscanseq"[,<scanseq>[**	Response If the optional parameters are omitted, query the current

,<effect>]]	setting: **+QCFG: "nwscanseq",<scanseq>** **OK** If any of the optional parameters is specified, configure the RAT searching sequence: **OK** If there is an error related to ME functionality: **+CME ERROR: <err>** If there is any other error: **ERROR**
Maximum Response Time	300 ms
Characteristics	**<effect>** determines when the command will take effect. The configurations will be saved automatically.

Parameter

<scanseq>	Integer type. RATs searching sequence, e.g.: 020301 stands for eMTC → NB-IoT → GSM. 00 Automatic (eMTC → NB-IoT → GSM) 01 GSM 02 eMTC 03 NB-IoT
<effect>	Integer type. When to take effect. 0 Take effect after rebooting 1 Take effect immediately
<err>	Error code. See ***Chapter 4*** for details.

NOTE

1. The command is invalid on BG95-M1 module.
2. GSM RAT is valid only on BG95-M3, BG95-M5 and BG600L-M3 modules.

3.1.1.4. AT+QCFG="band" Configure Frequency Band

This Write Command configures the frequency bands to be searched for or queries the current setting.

AT+QCFG="band" Configure Frequency Band	
Write Command **AT+QCFG="band"[,<GSM_bandval>,<eMTC_bandval>,<NB-IoT_bandval>[,<effect>]]**	Response If the optional parameters are omitted, query the current setting: **+QCFG: "band",<GSM_bandval>,<eMTC_bandval>,<NB-IoT_bandval>** **OK** If any of the optional parameters is specified, configure the frequency bands to be searched for: **OK** If there is an error related to ME functionality: **+CME ERROR: <err>** If there is any other error: **ERROR**
Maximum Response Time	300 ms
Characteristics	**<effect>** determines when the command will take effect. The configurations will be saved automatically.

Parameter

<GSM_bandval>	A hexadecimal value that specifies the GSM frequency band (e.g.: 0xa = 0x2(DCS1800) + 0x8(PCS1900)). If it is set to 0, it means not to change GSM frequency band.	
	0	No change
	0x1	EGSM900
	0x2	DCS1800
	0x4	GSM850
	0x8	PCS1900
	0xF	All of the supported bands above
<eMTC_bandval>	A hexadecimal value that specifies the eMTC frequency band (e.g.: 0x15 = 0x1(LTE B1) + 0x4(LTE B3) + 0x10(LTE B5)). If it is set to 0, it means not to change the eMTC frequency band.	
	0	No change
	0x1 (BAND_PREF_LTE_BAND1)	LTE B1

	0x2 (BAND_PREF_LTE_BAND2)	LTE B2
	0x4 (BAND_PREF_LTE_BAND3)	LTE B3
	0x8 (BAND_PREF_LTE_BAND4)	LTE B4
	0x10 (BAND_PREF_LTE_BAND5)	LTE B5
	0x80 (BAND_PREF_LTE_BAND8)	LTE B8
	0x800 (BAND_PREF_LTE_BAND12)	LTE B12
	0x1000 (BAND_PREF_LTE_BAND13)	LTE B13
	0x20000 (BAND_PREF_LTE_BAND18)	LTE B18
	0x40000 (BAND_PREF_LTE_BAND19)	LTE B19
	0x80000 (BAND_PREF_LTE_BAND20)	LTE B20
	0x1000000 (BAND_PREF_LTE_BAND25)	LTE B25
	0x2000000 (BAND_PREF_LTE_BAND26)	LTE B26
	0x4000000 (BAND_PREF_LTE_BAND27)	LTE B27
	0x8000000 (BAND_PREF_LTE_BAND28)	LTE B28
	0x40000000 (BAND_PREF_LTE_BAND31)	LTE B31
	0x20000000000000000 (BAND_PREF_LTE_BAND66)	LTE B66
	0x800000000000000000 (BAND_PREF_LTE_BAND72	LTE B72
	0x1000000000000000000 (BAND_PREF_LTE_BAND73)	LTE B73
	0x100000000000000000000 (BAND_PREF_LTE_BAND85)	LTE B85
<NB-IoT_bandval>	A hexadecimal value that specifies the NB-IoT frequency band (e.g.: 0x15 = 0x1(LTE B1) + 0x4(LTE B3) + 0x10(LTE B5)). If it is set to 0, it means not to change the NB-IoT frequency band.	
	0	No change
	0x1 (BAND_PREF_LTE_BAND1)	LTE B1
	0x2 (BAND_PREF_LTE_BAND2)	LTE B2
	0x4 (BAND_PREF_LTE_BAND3)	LTE B3
	0x8 (BAND_PREF_LTE_BAND4)	LTE B4
	0x10 (BAND_PREF_LTE_BAND5)	LTE B5
	0x80 (BAND_PREF_LTE_BAND8)	LTE B8
	0x800 (BAND_PREF_LTE_BAND12)	LTE B12
	0x1000 (BAND_PREF_LTE_BAND13)	LTE B13
	0x20000 (BAND_PREF_LTE_BAND18)	LTE B18
	0x40000 (BAND_PREF_LTE_BAND19)	LTE B19
	0x80000 (BAND_PREF_LTE_BAND20)	LTE B20
	0x1000000 (BAND_PREF_LTE_BAND25)	LTE B25
	0x8000000 (BAND_PREF_LTE_BAND28)	LTE B28
	0x40000000 (BAND_PREF_LTE_BAND31)	LTE B31
	0x20000000000000000 (BAND_PREF_LTE_BAND66)	LTE B66
	0x400000000000000000 (BAND_PREF_LTE_BAND71)	LTE B71
	0x800000000000000000 (BAND_PREF_LTE_BAND72)	LTE B72
	0x1000000000000000000 (BAND_PREF_LTE_BAND73)	LTE B73
	0x100000000000000000000 (BAND_PREF_LTE_BAND85)	LTE B85
<effect>	Integer type. When to take effect.	
	0 Take effect after rebooting	

	1 Take effect immediately
<err>	Error code. See ***Chapter 4*** for details.

NOTE

1. For the specific bands supported by each model, see corresponding specifications of the modules.
   - **<GSM_bandval>** is valid only on BG95-M3, BG95-M5 and BG600L-M3 modules.
   - **<NB-IoT_bandval>** is invalid on BG95-M1 module.
   - LTE B31/B72/B73 is valid on BG95-M4 module only.
2. The value setting of **<eMTC_bandval>** when all eMTC bands are intended to be searched for:
   - 0x100182000000004F0E189F for BG95-M4
   - 0x100002000000000F0E189F for BG77, BG600L-M3 and other BG95 series modules
3. The value setting of **<NB-IoT_bandval>** when all NB-IoT bands are intended to be searched for:
   - 0x10018200000000490E189F for BG95-M4
   - 0x10004200000000090E189F for BG77, BG600L-M3 and other BG95 series modules

3.1.1.5. AT+QCFG="iotopmode" Configure Network Category to be Searched for under LTE RAT

This Write Command configures the network category to be searched for under LTE RAT or queries the current setting.

AT+QCFG="iotopmode" Configure Network Category to be Searched for under LTE RAT	
Write Command **AT+QCFG="iotopmode"[,<mode>[,<effect>]]**	Response If the optional parameters are omitted, query the current setting: **+QCFG: "iotopmode",<mode>** **OK** If any of the optional parameters is specified, configure the network category to be searched for under LTE RAT: **OK** If there is an error related to ME functionality: **+CME ERROR: <err>** If there is any other error: **ERROR**
Maximum Response Time	300 ms
Characteristics	**<effect>** determines when the command will take effect. The configurations will be saved automatically.

Parameter

<mode>	Integer type. Network category to be searched for under LTE RAT. 0 eMTC 1 NB-IoT 2 eMTC and NB-IoT
<effect>	Integer type. When to take effect. 0 Take effect after rebooting 1 Take effect immediately
<err>	Error code. See ***Chapter 4*** for details.

NOTE

This command is invalid on BG95-M1 module.

3.1.1.6. AT+QCFG="celevel" Get NB-IoT Coverage Enhancement Level

This Write Command queries NB-IoT coverage enhancement level.

AT+QCFG="celevel" Get NB-IoT Coverage Enhancement Level	
Write Command **AT+QCFG="celevel"**	Response **+QCFG: "celevel",<level>** **OK** If there is an error related to ME functionality: **+CME ERROR: <err>** If there is any other error: **ERROR**
Maximum Response Time	300 ms
Characteristics	/

Parameter

<level>	Integer type. NB-IoT coverage enhancement level. 0 CE level 0 1 CE level 1 2 CE level 2
<err>	Error code. See ***Chapter 4*** for details.

3.1.1.7. AT+QCFG="nccconf" Configure NB-IoT Features

This Write Command configures NB-IoT features or queries the current setting.

AT+QCFG="nccconf" Configure NB-IoT Features	
Write Command **AT+QCFG="nccconf"[,<cap_val>]**	Response If the optional parameter is omitted, query the current setting: **+QCFG: "nccconf",<cap_val>** **OK** If the optional parameter is specified, configure NB-IoT features: **OK** If there is an error related to ME functionality: **+CME ERROR: <err>** If there is any other error: **ERROR**
Maximum Response Time	300 ms
Characteristics	The command takes effect after rebooting. The configuration will be saved automatically.

Parameter

<cap_val>	Hexadecimal value. If any bit is set to 1, it means the corresponding feature is enabled, otherwise it is disabled. The NB-IoT features are as follows: Bit 0 Enable or disable the use of EMM_CP_CIOT Bit 1 Enable or disable the use of EMM_UP_CIOT Bit 2 Enable or disable the use of EMM_S1_U Bit 3 Enable or disable the use of EMM_ER_WITHOUT_PDN Bit 4 Enable or disable the use of EMM_HC_CP_CIOT Bit 5 Enable or disable the use of EMM_SMS_ONLY Bit 6 Enable or disable the use of EMM_PNB_CP_CIOT Bit 7 Enable or disable the use of EMM_PNB_UP_CIOT Bit 8 Enable or disable the use of EMM_EPCO_CIOT
<err>	Error code. See ***Chapter 4*** for details.

3.1.1.8. AT+QCFG="psm/enter" Trigger the Module into PSM Immediately

This Write Command configures whether to trigger the module to enter PSM immediately after the RRC connection release is received or queries the current setting.

When **<mode>**=1, the module skips active timer (T3324) and enters PSM immediately after the RRC connection release is received.

AT+QCFG="psm/enter" Trigger the Module into PSM Immediately	
Write Command **AT+QCFG="psm/enter"[,<mode>]**	Response If the optional parameter is omitted, query the current setting: **+QCFG: "psm/enter",<mode>** **OK** If the optional parameter is specified, configure whether to trigger the module into PSM immediately after the RRC connection release is received: **OK** If there is an error related to ME functionality: **+CME ERROR: <err>** If there is any other error: **ERROR**
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configuration will not be saved.

Parameter

<mode>	Integer type. Whether to trigger the module into PSM immediately. 0 Enter PSM after T3324 expires 1 Enter PSM immediately after RRC connection release is received.
<err>	Error code. See ***Chapter 4*** for details.

3.1.1.9. AT+QCFG="psm/urc" Enable/Disable PSM Entering Indication

This Write Command configures whether to enable PSM entering indication URC **+QPSMTIMER: <TAU_timer>,<T3324_timer>** which is used to indicate the TAU timer and the duration the module stays active before entering PSM, or queries the current setting.

When PSM function is enabled and RRC connection release is received, the active timer (T3324) will be started, and the indication URC will be reported.

AT+QCFG="psm/urc" Enable/Disable PSM Entering Indication	
Write Command **AT+QCFG="psm/urc"[,<enable>]**	Response If the optional parameter is omitted, query the current setting: **+QCFG: "psm/urc",<enable>** **OK** If the optional parameter is specified, configure whether to enable the PSM entering indication: **OK** If there is an error related to ME functionality: **+CME ERROR: <err>** If there is any other error: **ERROR**
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configuration will be saved automatically.

Parameter

<enable>	Integer type. Enable/disable the output of PSM entering indication URC **+QPSMTIMER: <TAU_timer>,<T3324_timer>**. If enabled, the URC will be reported when RRC connection release is received. 0 Disable 1 Enable
<TAU_timer>	Integer type. The interval for periodic tracking area updating.
<T3324_timer>	Integer type. The duration the module stays active before entering PSM.
<err>	Error code. See ***Chapter 4*** for details.

NOTE

When **AT+QCFG="psm/urc",1** and **AT+QCFG="psm/enter",1** are executed at the same time, there will be a possibility that the URC **+QPSMTIMER: <TAU_timer>,<T3324_timer>** cannot be outputted because the module enters PSM immediately.

3.1.1.10. AT+QCFG="simeffect" Control RAT Search Order Stored in (U)SIM Card

This Write Command enables/disables the RAT search order stored in (U)SIM card or queries the current setting.

AT+QCFG="simeffect" Control RAT Search Order Stored in (U)SIM Cards	
Write Command **AT+QCFG="simeffect"[,<mode>]**	Response If the optional parameter is omitted, query the current setting: **+QCFG: "simeffect",<mode>** **OK** If the optional parameter is specified, enable/disable RAT search order stored in (U)SIM cards: **OK** If there is an error related to ME functionality: **+CME ERROR: <err>** If there is any other error: **ERROR**
Maximum Response Time	300 ms
Characteristics	The command takes effect after rebooting. The configuration will be saved automatically.

Parameter

<mode>	Integer type. Enable/disable the RAT search order stored in (U)SIM card. 0 Disable 1 Enable
<err>	Error code. See ***Chapter 4*** for details.

3.1.1.11. AT+QCFG="lapiconf" Configure Low Access Priority Indication Feature

This Write Command configures the low access priority indication (LAPI) feature or queries the current setting.

AT+QCFG="lapiconf" Configure Low Access Priority Indication Feature	
Write Command **AT+QCFG="lapiconf"[,<mode>[,<enable>]]**	Response If the optional parameters are omitted, query the current setting: **+QCFG: "lapiconf",<mode>[,<enable>]** **OK** If any of the optional parameters is specified, configure the low access priority indication feature: **OK** If there is an error related to ME functionality: **+CME ERROR: <err>** If there is any other error: **ERROR**
Maximum Response Time	300 ms
Characteristics	The command takes effect after rebooting. The configurations will be saved automatically.

Parameter

<mode>	Integer type. Whether to enable low access priority indication feature. 0 Disable. Forced to disable 1 Enable. Forced to enable 2 Auto. Determined by (U)SIM/EFS
<enable>	Integer type. Whether **<mode>** takes effect. This parameter is valid only when **<mode>**=1 or 2. 0 Do not take effect 1 Take effect
<err>	Error code. See ***Chapter 4*** for details.

3.1.1.12. AT+QCFG="nasconfig" Configure NAS Related Parameters

This Write Command configures NAS related parameters or queries the current setting.

AT+QCFG="nasconfig" Configure NAS Related Parameters	
Write Command **AT+QCFG="nasconfig"[,<conf_val>]**	Response If the optional parameter is omitted, query the current setting: **+QCFG: "nasconfig",<conf_val>** **OK** If the optional parameter is specified, configure NAS related parameters: **OK** If there is an error related to ME functionality: **+CME ERROR: <err>** If there is any other error: **ERROR**
Maximum Response Time	300 ms
Characteristics	The command takes effect after rebooting. The configuration will be saved automatically.

Parameter

<conf_val>	Hexadecimal value. If any bit is set to 1, it means the corresponding feature is enabled, otherwise it is disabled. The NAS related parameters are as follows: Bit 0 Enable or disable the use of NAS_SIGNALLING_PRIORITY Bit 1 Enable or disable the use of NMO_I_BEHAVIOUR Bit 2 Enable or disable the use of ATTACH_WITH_IMSI Bit 3 Enable or disable the use of MINIMUM_PERIODIC_SEARCH_TIMER Bit 4 Enable or disable the use of EXTENDED_ACCESS_BARRING Bit 5 Enable or disable the use of TIMER_T3245_BEHAVIOUR Bit 6 Enable or disable the use of OVERRIDE_NAS_SIGNALLING_LOW_PRIORITY Bit 7 Enable or disable the use of OVERRIDE_EXTENDED_ACCESS_BARRING Bit 8 Enable or disable the use of FAST_FIRST_HIGHER_PRIORITY_PLMN_SEARCH Bit 9 Enable or disable the use of EUTRA_DISABLING_ALLOWED_FOR_EMM_CAUSE_15 Bit 10 Enable or disable the use of SM_RETRY_WAIT_TIME Bit 11 Enable or disable the use of SM_RETRY_AT_RAT_CHANGE Bit 12 Enable or disable the use of DEFAULT_DCN_ID Bit 13 Enable or disable the use of EXCEPTION_DATA_REPORTING_ALLOWED Bit 14 Enable or disable the use of LIGHT_CONNECTION

<err>	Error code. See ***Chapter 4*** for details.

3.1.1.13. AT+QCFG="irat/timer" Configure High-Priority RAT Search Timer

This Write Command configures the high-priority RAT search timer or queries the current setting. If the module is in a low-priority RAT, it periodically attempts to obtain RAT services of higher priority, and the interval is **<timer_value>**.

AT+QCFG="irat/timer" Configure High-Priority RAT Search Timer	
Write Command **AT+QCFG="irat/timer"[,<timer_value>[,<alignment_value>]]**	Response If the optional parameters are omitted, query the current setting: **+QCFG: "irat/timer",<timer_value>,<alignment_value>** **OK** If any of the optional parameters is specified, configure the high-priority RAT search timer: **OK** If there is an error related to ME functionality: **+CME ERROR: <err>** If there is any other error: **ERROR**
Maximum Response Time	300 ms
Characteristics	The command takes effect after rebooting. The configurations will be saved automatically.

Parameter

<timer_value>	Integer type. Timeout value for high-priority RAT search timer. Range: 5–300. Default: 60. Unit: minute.
<alignment_value>	Integer type. This parameter specifies the interval before eDRX paging when a scan should begin. Range: 5–20. Default: 20. Unit: minute.
<err>	Error code. See ***Chapter 4*** for details.

3.1.1.14. AT+QCFG="nb1/bandprior" Configure Band Scan Priority under NB-IoT

This Write Command configures the band scan priority under NB-IoT or queries the current setting.

AT+QCFG="nb1/bandprior"	Configure Band Scan Priority under NB-IoT
Write Command **AT+QCFG="nb1/bandprior"[,<band_priority_seq>]**	Response If the optional parameter is omitted, query the current setting: **+QCFG: "nb1/bandprior",<band_priority_seq>** **OK** If the optional parameter is specified, configure the band scan priority under NB-IoT: **OK** If there is an error related to ME functionality: **+CME ERROR: <err>** If there is any other error: **ERROR**
Maximum Response Time	300 ms
Characteristics	The command takes effect after rebooting. The configuration will be saved automatically.

Parameter

<band_priority_seq>	Hex string. NB-IoT band(s) of scan priority.	
	01	Band 1
	02	Band 2
	03	Band 3
	04	Band 4
	05	Band 5
	08	Band 8
	0C	Band 12
	0D	Band 13
	12	Band 18
	13	Band 19
	14	Band 20
	19	Band 25
	1C	Band 28
	1F	Band 31
	42	Band 66

	47	Band 71
	48	Band 72
	49	Band 73
	55	Band 85
<err>	Error code. See ***Chapter 4*** for details.	

NOTE

1. This command is invalid on BG95-M1 module.
2. Bands 31, 72 and 73 are valid on BG95-M4 module only.

3.1.1.15. AT+QCFG="emmcause" Get the EMM Cause Value

This Write Command queries the EMM cause value for the rejected attach request.

AT+QCFG="emmcause" Get the EMM Cause Value	
Write Command **AT+QCFG="emmcause"[,<display_format>]**	Response **+QCFG: "emmcause",<cause_value>** **OK** If there is an error related to ME functionality: **+CME ERROR: <err>** If there is any other error: **ERROR**
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configurations will not be saved.

Parameter

<display_format>	Integer type. The display format of EMM cause value.	
	0	Numeric value
	1	Verbose value
<cause_value>	EMM reject cause value. See *3GPP 24.301* for details.	
<err>	Error code. See ***Chapter 4*** for details.	

3.1.1.16. AT+QCFG="sibinfo" Query SIB Information

This Write Command queries the SIB information.

AT+QCFG="sibinfo" Query SIB Information	
Write Command **AT+QCFG="sibinfo"**	Response **+QCFG: "sibinfo",<EARFCN>,<PCI>,<q_RX_lev_min>,<q_qual_min>,<s_intra_search>,<cell_resel_priority>,<thresh_serving_low>,<s_non_intra_search>,<idle_DRX_cycle_len>** **OK** If there is an error related to ME functionality: **+CME ERROR: <err>** If there is any other error: **ERROR**
Maximum Response Time	300 ms
Characteristics	/

Parameter

<EARFCN>	Integer type. EARFCN of the serving cell. Range: 0–65535.
<PCI>	Integer type. Physical cell ID. Range: 0–503.
<q_RX_lev_min>	Integer type. The minimum required RX level in the cell. Range: 0–140. Unit: dBm.
<q_qual_min>	Integer type. The minimum required quality level in the cell. Range: 0–140. Unit: dB.
<s_intra_search>	Integer type. Cell selection parameter that specifies the Srxlev threshold (in dB) for intra-frequency measurements.
<cell_resel_priority>	Integer type. Cell reselection priority. Range: 0–7. Value 0 means lowest priority.
<thresh_serving_low>	Integer type. Specifies the suitable reception level threshold used by the UE on the serving cell when reselecting towards a lower-priority RAT/frequency. Unit: dB.
<s_non_intra_search>	Integer type. Threshold to control non-intra-frequency searches.
<idle_DRX_cycle_len>	Integer type. Idle DRX cycle length. Unit: ms.
<err>	Error code. See ***Chapter 4*** for details.

3.1.1.17. AT+QCFG="emmtimer" Query EMM Timer

This Write Command queries EPS mobility management timer.

AT+QCFG="emmtimer" Query EMM Timer	
Write Command **AT+QCFG="emmtimer"**	Response **+QCFG: "emmtimer",<T3402_value>,<T3412_value>** **OK** If there is an error related to ME functionality: **+CME ERROR: <err>** If there is any other error: **ERROR**
Maximum Response Time	300 ms
Characteristics	/

Parameter

<T3402_value>	Integer type. T3402 timer value. Default: 720. Unit: s. See *3GPP 24.301*.
<T3412_value>	Integer type. T3412 timer value. Unit: s. See *3GPP 24.301*.
<err>	Error code. See ***Chapter 4*** for details.

3.1.1.18. AT+QCFG="msclass" Configure Multislot Class

This Write Command queries or configures the multislot class.

AT+QCFG="msclass" Configure Multislot Class	
Write Command **AT+QCFG="msclass"[,<GPRS_multislot_class>,<EGPRS_multislot_class>]**	Response If the optional parameters are omitted, query the current setting: **+QCFG: "msclass",<GPRS_multislot_class>,<EGPRS_multislot_class>** **OK** If the optional parameters are specified, configure GPRS and EGPRS multislot class: **OK**

	If there is an error related to ME functionality: **+CME ERROR: <err>** If there is any other error: **ERROR**
Maximum Response Time	300 ms
Characteristics	The command takes effect after rebooting. The configurations will be saved automatically.

Parameter

<GPRS_multislot_class>	Integer type. GPRS multislot class. Range: 0–18, 30–34. Default: 12.
<EGPRS_multislot_class>	Integer type. EGPRS multislot class. Range: 0–34. Default: 12.
<err>	Error code. See ***Chapter 4*** for details.

3.1.1.19. AT+QCFG="ims" Query IMS Registration State

This Write Command queries module's IMS registration state.

AT+QCFG="ims" Query IMS Registration State	
Write Command **AT+QCFG="ims"**	Response **+QCFG: "ims",<VoLTE_state>** **OK** If there is an error related to ME functionality: **+CME ERROR: <err>** If there is any other error: **ERROR**
Maximum Response Time	300 ms
Characteristics	/

Parameter

<VoLTE_state>	Integer type. VoLTE state. 0 VoLTE is not ready 1 VoLTE is ready
<err>	Error code. See ***Chapter 4*** for details.

NOTE

This command is valid only on the firmware version supporting VoLTE.

3.1.1.20. AT+QCFG="snrscan" Configure Band Scan Level under NB-IoT

This command configures SNR level of band scan process under NB-IoT or queries the current setting.

AT+QCFG="snrscan" Configure Band Scan Level under NB-IoT	
Write Command **AT+QCFG="snrsnan"[,<level>]**	Response If the optional parameter is omitted, query the current setting: **+QCFG: "snrscan",<level>** **OK** If the optional parameter is specified, configure SNR level of band scan process under NB-IoT: **OK** If there is an error related to ME functionality: **+CME ERROR: <err>** If there is any other error: **ERROR**
Maximum Response Time	300 ms
Characteristics	The command takes effect after rebooting. The configuration will be saved automatically.

Parameter

<level>	Integer type. Signal noise ratio level. 0 SNR level 0 1 SNR level 0 & 1 2 SNR level 0 & 1 & 2
<err>	Error code. See ***Chapter 4*** for details.

3.1.1.21. AT+QCFG="fgiconfig" Configure Feature Group Indicators

This Write Command queries or configures feature group indicators (FGI).

AT+QCFG="fgiconfig" Configure Feature Group Indicators	
Write Command **AT+QCFG="fgiconfig"[,<value>]**	Response If the optional parameter is omitted, query the current setting: **+QCFG: "fgiconfig",<value>** **OK** If the optional parameter is specified, configure FGI features: **OK** If there is an error related to ME functionality: **+CME ERROR: <err>** If there is any other error: **ERROR**
Maximum Response Time	300 ms
Characteristics	The command takes effect after rebooting The configuration will be saved automatically.

Parameter

<value>	Hexadecimal value. Feature group indicators (FGI). Range: 0–0xFFFFFFFF. See *3GPP 36.331*.
<err>	Error code. See ***Chapter 4*** for details.

3.1.1.22. AT+QCFG="sim/onchip" Enable/Disable On-Chip SIM

This Write Command queries or configures whether to enable on-chip SIM.

AT+QCFG="sim/onchip" Enable/Disable On-Chip SIM	
Write Command **AT+QCFG="sim/onchip"[,<mode>[,<effect>]]**	Response If the optional parameters are omitted, query the current setting: **+QCFG: "sim/onchip",<mode>**

	OK If any of the optional parameters is specified, enable/disable on-chip SIM: **OK** If there is an error related to ME functionality: **+CME ERROR: <err>** If there is any other error: **ERROR**
Maximum Response Time	300 ms
Characteristics	**<effect>** determines when the command will take effect. The configurations will be saved automatically.

Parameter

<mode>	Integer type. Enable/disable on-chip SIM. 0 Disable 1 Enable
<effect>	Integer type. When to take effect. 0 Take effect after rebooting 1 Take effect immediately
<err>	Error code. See ***Chapter 4*** for details.

3.1.1.23. AT+QCFG="bandrestore" Restore Default Band Configuration

This Write Command restores the default band configuration.

AT+QCFG="bandrestore" Restore Default Band Configuration	
Write Command **AT+QCFG="bandrestore"**	Response **OK** If there is an error related to ME functionality: **+CME ERROR: <err>** If there is any other error: **ERROR**
Maximum Response Time	300 ms
Characteristics	/

Parameter

<err>	Error code. See ***Chapter 4*** for details.

3.1.1.24. AT+QCFG="bip/auth" Configure the Auth Type in BIP Process

This Write Command queries or configures the auth type in BIP process.

AT+QCFG="bip/auth" Configure the Auth Type in BIP Process	
Write Command **AT+QCFG="bip/auth"[,<mode>]**	Response If the optional parameter is omitted, query the current setting: **+QCFG: "bip/auth",<mode>** **OK** If the optional parameter is specified, configure the auth type in BIP process: **OK** If there is an error related to ME functionality: **+CME ERROR: <err>** If there is any other error: **ERROR**
Maximum Response Time	300 ms
Characteristics	The command takes effect after rebooting. The configuration will be saved automatically.

Parameter

<mode>	Integer type. Auth type. 0 None 1 PAP 2 CHAP 3 PAP or CHAP
<err>	Error code. See ***Chapter 4*** for details.

3.1.1.25. AT+QCFG="timer" Query the T3402 Timer

This Write Command queries the T3402 timer.

AT+QCFG="timer" Query the T3402 Timer	
Write Command **AT+QCFG="timer",<timer_ID>**	Response **+QCFG: <value>** **OK** If there is an error related to ME functionality: **+CME ERROR: <err>** If there is any other error: **ERROR**
Maximum Response Time	300 ms
Characteristics	/

Parameter

<timer_ID>	Integer type. 3402 T3402 timer. See *3GPP 24.301* for details.
<value>	Integer type. T3402 timer value. Default: 720. Unit: s.
<err>	Error code. See ***Chapter 4*** for details.

Example

```
AT+QCFG="timer",3402
+QCFG: 720

OK
```

3.1.1.26. AT+QCFG="timeupdate" Control Automatic Time Update via NITZ

This Write Command queries or configures whether to enable automatic time update via NITZ. After receiving the NITZ message from network, UE will decode the timestamp and update it to local RTC by default.

AT+QCFG="timeupdate" Control Automatic Time Update via NITZ	
Write Command **AT+QCFG="timeupdate"[,<mode>]**	Response If the optional parameter is omitted, query the current setting: **+QCFG: "timeupdate",<mode>** **OK** If the optional parameter is specified, enable/disable automatic time update via NITZ: **OK** If there is an error related to ME functionality: **+CME ERROR: <err>** If there is any other error: **ERROR**
Maximum Response Time	300 ms
Characteristics	The command takes effect after rebooting. The configuration will be saved automatically.

Parameter

<mode>	Integer type. Enable/disable automatic time update via NITZ. 0 Disable 1 Enable
<err>	Error code. See ***Chapter 4*** for details.

3.1.2. Platform Related AT Commands

Among the following AT commands, **AT+QCFG="urc/ri/ring"**, **AT+QCFG="urc/ri/smsincoming"** and **AT+QCFG="urc/ri/other"** control the behavior of MAIN_RI pin when a URC is reported. MAIN_RI is active low.

3.1.2.1. AT+QCFG="urc/ri/ring" Configure MAIN_RI Behavior in Case of RING URC

This Write Command queries or configures the behavior of MAIN_RI pin implemented when the URC **RING** is presented to indicate an incoming call.

The sum of **<active_duration>** and **<inactive_duration>** determines the interval time of **RING** indications when a call is coming.

AT+QCFG="urc/ri/ring" Configure MAIN_RI Behavior in Case of RING URC	
Write Command **AT+QCFG="urc/ri/ring"[,<typeRI>[,<pulse_duration>[,<active_duration>[,<inactive_duration>[,<ring_no_disturbing>[,<pulse_count>]]]]]]**	Response If the optional parameters are omitted, query the current setting: **+QCFG: "urc/ri/ring",<typeRI>,<pulse_duration>,<active_duration>,<inactive_duration>,<ring_no_disturbing>,<pulse_count>** **OK** If any of the optional parameters is specified, configure the behavior of MAIN_RI pin implemented when the URC **RING** is presented: **OK** If there is an error related to ME functionality: **+CME ERROR: <err>** If there is any other error: **ERROR**
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configurations will be saved automatically.

Parameter

<typeRI>	String type. The behavior of MAIN_RI pin when URC **RING** is presented.	
	"off"	No change. MAIN_RI keeps inactive (high level).
	"pulse"	Pulse. Pulse width is determined by **<pulse_duration>**.
	"always"	Change to active. MAIN_RI behavior can be restored to inactive by **AT+QRIR** (see ***document [1]*** for details).
	"auto"	When **RING** is presented to indicate an incoming call, MAIN_RI changes to active and keeps active. When the ring of the incoming call ends, either answering or hanging up the incoming

		call changes MAIN_RI to inactive.
	"wave"	When **RING** is presented to indicate an incoming call, MAIN_RI outputs a square wave. Both **<active_duration>** and **<inactive_duration>** are used to set the square wave. When the ring of incoming call ends, either answering or hanging up the incoming call changes MAIN_RI to inactive.
<pulse_duration>	Integer type. The width of pulse. Range: 1–2000. Default: 120. Unit: ms. This parameter is valid only when **<typeRI>**="pulse".	
<active_duration>	Integer type. The active duration of square wave. Range: 1–10000. Default: 1000. Unit: ms. This parameter is valid only when **<typeRI>**="wave".	
<inactive_duration>	Integer type. The inactive duration of square wave. Range: 1–10000. Default: 5000. Unit: ms. This parameter is valid only when **<typeRI>**="wave".	
<ring_no_disturbing>	String type. Set whether the MAIN_RI behavior could be disturbed. This parameter is valid only when **<typeRI>**="auto" or "wave". For example, when **<typeRI>**="wave", if you want the square wave not to be disturbed by other URCs (including SMS related URCs), then **<ring_no_disturbing>** should be set to "on".	
	"off"	MAIN_RI behavior can be disturbed by other URCs when the behavior is caused by an incoming call ringing.
	"on"	MAIN_RI behavior cannot be disturbed by other URCs when the behavior is caused by an incoming call ringing.
<pulse_count>	Integer type. The count of pulse. This parameter is valid only when **<typeRI>**="pulse". Range: 1–5. Default: 1. The interval time between two pulses is equal to **<pulse_duration>**.	
<err>	Error code. See ***Chapter 4*** for details.	

3.1.2.2. AT+QCFG="urc/ri/smsincoming" Configure MAIN_RI Behavior in Case of Incoming SMS URCs

This Write Command queries or configures the behavior of MAIN_RI pin implemented when related incoming message URCs are presented. Incoming message URCs include **+CMTI**, **+CMT**, **+CDS**, and **+CBM**. For more details, please refer to ***document [1]***.

AT+QCFG="urc/ri/smsincoming"	**Configure MAIN_RI Behavior in Case of Incoming SMS URCs**
Write Command **AT+QCFG="urc/ri/smsincoming"[,<typeRI>[,<pulse_duration>[,<pulse_count>]]]**	Response If the optional parameters are omitted, query the current setting: **+QCFG: "urc/ri/smsincoming",<typeRI>,<pulse_duration>,<pulse_count>** **OK**

	If any of the optional parameters is specified, configure the MAIN_RI behavior implemented when incoming SMS URCs are presented: **OK** If there is an error related to ME functionality: **+CME ERROR: <err>** If there is any other error: **ERROR**
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configurations will be saved automatically.

Parameter

<typeRI>	String type. MAIN_RI behavior implemented when SMS URCs are presented. "off" No change. MAIN_RI keeps inactive (high level). "pulse" Pulse. Pulse width is determined by **<pulse_duration>**. "always" Change to active. MAIN_RI behavior can be restored to inactive by **AT+QRIR** (see ***document [1]*** for details).
<pulse_duration>	Integer type. The width of pulse. Range: 1–2000. Default: 120. Unit: ms. This parameter is valid only when **<typeRI>**="pulse".
<pulse_count>	Integer type. The count of pulse. It is valid only when **<typeRI>**="pulse". Range: 1–5. Default: 1. The interval time between two pulses is equal to **<pulse_duration>**.
<err>	Error code. See ***Chapter 4*** for details.

3.1.2.3. AT+QCFG="urc/ri/other" Configure MAIN_RI Behavior in Case of Other URCs

This Write Command queries or configures the behavior of MAIN_RI pin when other URCs are presented.

AT+QCFG="urc/ri/other" Configure MAIN_RI Behavior in Case of Other URCs	
Write Command **AT+QCFG="urc/ri/other"[,<typeRI>[,<pulse_duration>[,<pulse_count>]]]**	Response If the optional parameters are omitted, query the current setting: **+QCFG: "urc/ri/other",<typeRI>,<pulse_duration>,<pulse_count>** **OK** If any of the optional parameters is specified, configure the

	MAIN_RI behavior when other URCs are presented: **OK** If there is an error related to ME functionality: **+CME ERROR: <err>** If there is any other error: **ERROR**
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configurations will be saved automatically.

Parameter

<typeRI>	String type. MAIN_RI behavior when other URCs are presented. "off" No change. MAIN_RI keeps inactive (high level). "pulse" Pulse. Pulse width is determined by **<pulse_duration>**.
<pulse_duration>	Integer type. The width of pulse. Range: 1–2000. Default: 120. Unit: ms. This parameter is valid only when **<typeRI>**="pulse".
<pulse_count>	Integer type. The count of pulse. This parameter is valid only when **<typeRI>**="pulse". Range: 1–5. Default: 1. The interval time between two pulses is equal to **<pulse_duration>**.
<err>	Error code. See ***Chapter 4*** for details.

3.1.2.4. AT+QCFG="risignaltype" Configure MAIN_RI Signal Output Carrier

This Write Command queries or configures the MAIN_RI signal output carrier.

AT+QCFG="risignaltype" Configure MAIN_RI Signal Output Carrier	
Write Command **AT+QCFG="risignaltype"[,<RI_signal_type>]**	Response If the optional parameter is omitted, query the current setting: **+QCFG: "risignaltype",<RI_signal_type>** **OK** If the optional parameter is specified, configure the MAIN_RI signal output carrier: **OK** If there is an error related to ME functionality: **+CME ERROR: <err>**

	If there is any other error: **ERROR**
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configuration will be saved automatically.

Parameter

<RI_signal_type>	String type. MAIN_RI signal output carrier. "respective" MAIN_RI behavior on the port where URC is presented. For example, if URC is presented on UART port, it is a physical ring indication signal. If URC is presented on USB modem port, it is a virtual ring indication signal. **AT+QURCCFG="urcport"** can get the port on which URC is presented, and see ***document [1]*** for details of the AT command. "physical" No matter on which port the URC is presented, it only causes the behavior of physical ring indication signal.
<err>	Error code. See ***Chapter 4*** for details.

3.1.2.5. AT+QCFG="urc/delay" Configure When to Output URC

This Write Command queries or configures when to output the URC.

AT+QCFG="urc/delay" Configure When to Output URC	
Write Command **AT+QCFG="urc/delay"[,<enable>]**	Response If the optional parameter is omitted, query the current setting: **+QCFG: "urc/delay",<enable>** **OK** If the optional parameter is specified, configure when to output the URC: **OK** If there is an error related to ME functionality: **+CME ERROR: <err>** If there is any other error: **ERROR**
Maximum Response Time	300 ms

Characteristics	The command takes effect immediately. The configuration will be saved automatically.

Parameter

<enable>	Integer type. When to output the URC. 0 Output URC when ring indication pulse starts. 1 Output URC when ring indication pulse ends (effective only when **<typeRI>**="pulse". Refer to **AT+QCFG="urc/ri/ring"**, **AT+QCFG="urc/ri/smsincoming"** and **AT+QCFG="urc/ri/other"** for more details).
<err>	Error code. See ***Chapter 4*** for details.

3.1.2.6. AT+QCFG="ledmode" Configure NET_STATUS Output Mode

This Write Command queries or configures the output mode of NET_STATUS pin.

AT+QCFG="ledmode" Configure NET_STATUS Output Mode	
Write Command **AT+QCFG="ledmode"[,<mode>[,<timer_on>,<timer_off>]]**	Response If the optional parameters are omitted, query the current setting: **+QCFG: "ledmode",<mode>[,<timer_on>,<timer_off>]** **OK** If any of the optional parameters is specified, configure the output mode of NET_STATUS pin: **OK** If there is an error related to ME functionality: **+CME ERROR: <err>** If there is any other error: **ERROR**
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configurations will be saved automatically.

Parameter

<mode>	Integer type. Output mode of NET_STATUS pin. 0 Flicker mode.

		Network searching: LED is on for 200 ms (high level); LED is off for 1800 ms (low level) Idle: LED is on for 1800 ms (high level); LED is off for 200 ms (low level) Data transfer is ongoing: LED is on for 125 ms (high level); LED is off for 125 ms (low level) Voice calling: always high
	1	Output high level when attaching to the network and low level in other conditions.
	3	Set NET_STATUS pin as customization mode
<timer_on>	Integer type. The high-level duration of NET_STATUS pin in customization mode. Range: 0–60000. Default: 500. Unit: ms.	
<timer_off>	Integer type. The low-level duration of NET_STATUS pin in customization mode. Range: 0–60000. Default: 500. Unit: ms.	
<err>	Error code. See ***Chapter 4*** for details.	

Example

```
AT+QCFG="ledmode",1          //Set the NET_STATUS mode
OK
AT+QCFG="ledmode"            //Query the current configuration
+QCFG: "ledmode",1

OK
```

3.1.2.7. AT+QCFG="gpio" Configure GPIO Status

This Write Command queries or configures the GPIO status.

AT+QCFG="gpio" Configure GPIO Status	
Write Command Query the formats of the command **AT+QCFG="gpio"**	Response **+QCFG: "gpio",<mode>,<pin>[,[<dir>,<pull>,<drv>]/[<val>][,<save>]]** **OK**
Write Command **AT+QCFG="gpio",<mode>,<pin>[,[<dir>,<pull>,<drv>]/[<val>][,<save>]]**	Response If **<mode>**=2, then all optional parameters should be omitted: **+QCFG: "gpio",<val>** **OK** If **<mode>**=1, then **<val>** should be omitted: **OK** If **<mode>**=3, then **<dir>**, **<pull>** and **<drv>** should be

	omitted: **OK** If there is an error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. **<save>** determines whether the configurations will be saved.

Parameter

<mode>	Integer type. Command mode. 1 Initialize GPIO status 2 Query GPIO status 3 Configure GPIO status
<pin>	Integer type. The corresponding pin number of the module's GPIO. BG95 series module supports the following pin numbers: 4 5 6 7 18 19 22 23 25 26 27 28 30 36 37 38 39 40 41 64 65 66 85 86 87 88

BG77 supports the following pin numbers:
1
2
3
4
5
8
9
33
34
35
36
37
38
39
40
41
57
60
61
62
63
76
77
90
BG600L-M3 supports the following pin numbers:
9
10
11
12
22
23
29
30
35
36
37
38
39
53
54
57
58
59

	60 61 62
<dir>	Integer type. GPIO pin direction. 0 Input 1 Output
<pull>	Integer type. GPIO pin pull type. 0 No pull 1 Pull the GPIO down 2 Keep the GPIO as it is 3 Pull the GPIO up
<drv>	Integer type. GPIO pin drive strength. 0 2 mA 1 4 mA 2 6 mA 3 8 mA 4 10 mA 5 12 mA 6 14 mA 7 16 mA
<val>	Integer type. The value read from or write to a GPIO. 0 Low level 1 High level
<save>	Integer type. Whether to save the configurations. 0 Not save 1 Save
<err>	Error code. See ***Chapter 4*** for details.

NOTE

1. **<save>** means whether the module will save the current configuration and whether this configuration will be used to set related GPIO at next power-up.
2. **<save>** is valid only when **<mode>** is 1 or 3.
3. For the value of **<pin>**, see corresponding hardware design for details.
4. Pin numbers 30, 36, 37, 38, 39 supported by BG95 series module and 38, 39, 62, 76, 90 supported by BG77 module and 35, 36, 37, 38, 39, supported by BG600L-M3 module are used for main UART by default; if they are used for GPIO function, please disable DCD/RI/DTR/RTS/CTS function first through **AT+QCFG="uartcfg"**.

3.1.2.8. AT+QCFG="airplanecontrol" Enable/Disable Airplane Mode Control via W_DISABLE#

This Write Command enables/disables airplane mode control via the W_DISABLE# pin or queries the current setting. If the function is enabled, the module enters the airplane mode when the pin is pulled down and enters normal mode when the pin is pulled up. Also, related URC will be outputted before the module enters or exits the airplane mode.

When the W_DISABLE# pin level becomes valid, the pulse signal generated on the MAIN_RI pin will still be outputted according to the configured mode, and the pulse signal will not be buffered.

AT+QCFG="airplanecontrol" Enable/Disable Airplane Mode Control via W_DISABLE#	
Write Command **AT+QCFG="airplanecontrol"[,<airplane_control>]**	Response If the optional parameter is omitted, query whether airplane mode control via W_DISABLE# is enabled and the current status of the module: **+QCFG: "airplanecontrol",<airplane_control>,<airplane_status>** **OK** If the optional parameter is specified, configure whether to enable the airplane mode control via W_DISABLE# pin: **OK** Or **ERROR**
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configuration will be saved automatically.

Parameter

<airplane_control>	Integer type. Enable/disable airplane mode control via W_DISABLE# pin. 0 Disable 1 Enable The following URC will be reported when pulling up or down W_DISABLE# pin if airplane mode control via W_DISABLE# pin is enabled: **+QIND: "airplanestatus",<airplane_status>**
<airplane_status>	Integer type. The current status of the module. 0 In normal mode 1 In airplane mode

NOTE

1. The status of the W_DISABLE# pin may affect the validity of **AT+CFUN** (see ***document [1]***). When airplane mode control via W_DISABLE# is enabled and the pin is pulled down, the module enters airplane mode no matter which status the module is set to via **AT+CFUN**, and also the module's functionality level cannot be switched with **AT+CFUN**.
2. The function is only applicable for BG95 series module and BG77 module. For more details about W_DISABLE# pin, see the corresponding hardware design.

Example

```
AT+QCFG="airplanecontrol",1      //Enable airplane mode control via W_DISABLE#
OK
//Pull down W_DISABLE# pin
+QIND: "airplanestatus",1        //URC indicating that the module enters airplane mode

AT+QCFG="airplanecontrol"        //Query whether airplane mode control via W_DISABLE# is enabled and the current status of the module
+QCFG: "airplanestatus",1,1      //Airplane mode control via W_DISABLE# is enabled and the module is in airplane mode currently

OK
//Pull up W_DISABLE# pin
+QIND: "airplanestatus",0        //The module exits from airplane mode

AT+QCFG="airplanecontrol"        //Query whether airplane mode control via W_DISABLE# is enabled and the current status of the module
+QCFG: "airplanestatus",1,0      //Airplane mode control via W_DISABLE# is enabled and the module is in normal mode currently

OK
```

3.1.2.9. AT+QCFG="cmux/urcport" Configure Output Port of CMUX URCs

This Write Command queries or configures the output port of CMUX URCs.

AT+QCFG="cmux/urcport"	Configure Output Port of CMUX URCs
Write Command **AT+QCFG="cmux/urcport"[,<URC_port>]**	Response If the optional parameter is omitted, query the current setting: **+QCFG: "cmux/urcport",<URC_port>**

	OK If the optional parameter is specified, configure the output port of CMUX URCs: **OK** If there is an error related to ME functionality: **+CME ERROR: <err>** If there is any other error: **ERROR**
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configuration will be saved automatically.

Parameter

<URC_port>	Integer type. Output port of CMUX URCs. 0 All ports 1 Virtual port 1 2 Virtual port 2 3 Virtual port 3 4 Virtual port 4
<err>	Error code. See ***Chapter 4*** for details.

3.1.2.10. AT+QCFG="apready" Configure AP_READY Behavior

This Write Command queries or configures the behavior of AP_READY pin. An external MCU can change the AP_READY pin level as needed.

When there is a URC to be reported, if the AP_READY pin level is invalid, the URC is buffered first, and the AP_READY pin level will be detected periodically according to the configured detection period. The URC will be outputted when the AP_READY pin level becomes valid. The pulse signal generated on the MAIN_RI pin can still be outputted according to the configured mode, and the pulse signal will not be buffered.

AT+QCFG="apready" Configure AP_READY Behavior	
Write Command **AT+QCFG="apready"[,<n>[,<level>[,<interval>]]]**	Response If the optional parameters are omitted, query the current setting: **+QCFG: "apready",<n>,<level>,<interval>**

	OK If any of the optional parameters is specified, configure the AP_READY behavior: **OK** If there is an error related to ME functionality: **+CME ERROR: <err>** If there is any other error: **ERROR**
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configurations will be saved automatically.

Parameter

<n>	Integer type. Enable/disable the AP_READY pin for AP sleep state detection. 0 Disable 1 Enable
<level>	Integer type. Valid level of AP_READY. The parameter is valid only when the AP_READY detection function is enabled. 0 Low level 1 High level
<interval>	Integer type. Detection interval. Range: 100–3000. Default: 500. Unit: ms. This parameter is valid only when the AP_READY detection function is enabled.
<err>	Error code. See ***Chapter 4*** for details.

NOTE

1. Maximally 15 URCs can be buffered. When the number of URC exceeds 15, the oldest one in the buffer will be cleared to store the new URC.
2. The **RING** URC is buffered only once for each call process.
3. The function is only applicable for BG95 series module and BG77 module. For details about AP_READY pin, see the corresponding hardware design.

3.1.2.11. AT+QCFG="uartcfg" Control DCD/RI/DTR/RTS/CTS Function

This Write Command enables/disables DCD/RI/DTR/RTS/CTS function.

AT+QCFG="uartcfg" Control DCD/RI/DTR/RTS/CTS Function	
Write Command **AT+QCFG="uartcfg"[,<UART_cfg_mode>]**	Response If the optional parameter is omitted, query the current setting: **+QCFG: "uartcfg",<UART_cfg_mode>** **OK** If the optional parameter is specified, enable/disable DCD/RI/DTR/RTS/CTS function: **OK** If there is any other error: **ERROR**
Maximum Response Time	300 ms
Characteristics	The command takes effect after rebooting. The configuration will be saved automatically.

Parameter

<UART_cfg_mode>	Hexadecimal value. Enable/Disable DCD/RI/DTR/RTS/CTS function. 0x00 Enable DCD/RI/DTR/RTS/CTS function 0x01 Disable DCD function 0x02 Disable RI function 0x04 Disable DTR function 0x08 Disable RTS function 0x10 Disable CTS function

NOTE

For more details about DCD/RI/DTR/RTS/CTS pin, see the corresponding hardware design.

3.1.2.12. AT+QCFG="dbgctl" Configure Log Output Level

This Write Command queries or configures the debug log output level.

AT+QCFG="dbgctl" Configure Log Output level	
Write Command **AT+QCFG="dbgctl"[,<log_level>]**	Response If the optional parameter is omitted, query the current setting: **+QCFG: "dbgctl",<log_level>** **OK** If the optional parameter is specified, configure log output level: **OK** Or **ERROR**
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configuration will be saved automatically.

Parameter

<log_level>	Integer type. Log output level. 0 Enable the log output 1 Partially prohibit the log output 2 Disable the protocol stack log output

3.1.2.13. AT+QCFG="cmux/flowctrl" Configure Hardware Flow Control for CMUX Mode

This Write Command queries or configures hardware flow control for CMUX Mode.

AT+QCFG="cmux/flowctrl" Configure Hardware Flow Control for CMUX Mode	
Write Command **AT+QCFG="cmux/flowctrl"[,<flow_ctrl>]**	Response If the optional parameter is omitted, query the current setting: **+QCFG: "cmux/flowctrl",<flow_ctrl>** **OK** If the optional parameter is specified, enable/disable the

	hardware flow control for CMUX mode: **OK** If there is an error related to ME functionality: **+CME ERROR: <err>** If there is any other error: **ERROR**
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configuration will not be saved.

Parameter

<flow_ctrl>	Integer type. Enable/disable hardware flow control for CMUX mode. 0 Disable 1 Enable

3.1.2.14. AT+QCFG="fast/poweroff" Control Fast Shutdown Function

This Write Command enables/disables fast shutdown function triggered by the specified pin.

AT+QCFG="fast/poweroff" Control Fast Shutdown Function	
Write Command **AT+QCFG="fast/poweroff"[,<pin>,<enable>]**	Response If the optional parameters are omitted, query the current setting: **+QCFG: "fast/poweroff",<pin>,<enable>** **OK** If the optional parameters are specified, enables/disables fast shutdown function triggered by the specified pin: **OK** Or **ERROR**
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configurations will be saved automatically.

Parameter

<pin>	Integer type. The corresponding pin number of the GPIO which has an input and pull-up mode and can be triggered by a falling edge for fast shutdown. The corresponding pin number for BG95 series: 25 The corresponding pin number for BG77 module: 63 The corresponding pin number for BG600L-M3 module: 11
<enable>	Integer type. Enable/Disable fast shutdown function. 0 Disable 1 Enable

NOTE

For more details about the pin number, see the corresponding hardware design.

4 Summary of CME ERROR Codes

Final result code **+CME ERROR: <err>** indicates an error related to mobile equipment or network. The operation is similar to **ERROR** result code.

<err> values are mostly used by common message commands. The following table lists most of general and GPRS related **ERROR** codes. For some GSM protocol failure causes described in GSM specifications, the corresponding **ERROR** codes are not included.

Table 3: Summary of CME ERROR Codes

<err>	Meaning
0	Phone failure
1	No connection to phone
2	Phone-adaptor link reserved
3	Operation not allowed
4	Operation not supported
5	PH-SIM PIN required
6	PH-FSIM PIN required
7	PH-FSIM PUK required
10	(U)SIM not inserted
11	(U)SIM PIN required
12	(U)SIM PUK required
13	(U)SIM failure
14	(U)SIM busy
15	(U)SIM wrong

16	Incorrect password
17	(U)SIM PIN2 required
18	(U)SIM PUK2 required
20	Memory full
21	Invalid index
22	Not found
23	Memory failure
24	Text string too long
25	Invalid characters in text string
26	Dial string too long
27	Invalid characters in dial string
30	No network service
31	Network timeout
32	Network not allowed - emergency calls only
40	Network personalization PIN required
41	Network personalization PUK required
42	Network subset personalization PIN required
43	Network subset personalization PUK required
44	Service provider personalization PIN required
45	Service provider personalization PUK required
46	Corporate personalization PIN required
47	Corporate personalization PUK required

5 Appendix References

Table 4: Related Documents

Document Name
[1] Quectel_BG95&BG77&BG600L_Series_AT_Commands_Manual

Table 5: Terms and Abbreviations

Abbreviation	Description
AP	Application Processor
BIP	Bearer Independent Protocol
CE	Coverage Enhancement
CHAP	Challenge Handshake Authentication Protocol
CDS	Common Data Service
CME	Command Error
CMUX	Connection Multiplexing (Multiplexing Protocol)
CS	Circuit Switched
CTS	Clear To Send
DCD	Data Carrier Detection
DCS	Data Coding Scheme
DRX	Discontinuous Reception
DTR	Data Terminal Ready
EARFCN	E-UTRA Absolute Radio Frequency Channel Number
eDRX	extended Discontinuous Reception

EFS	Encrypting File System
EGPRS	Enhanced General Packet Radio Service
EGSM	Enhanced Global System for Mobile Communications
EMM	EPS Mobility Management
eMTC	enhanced Machine-Type Communication
EPS	Evolved Packet System
FGI	Feature Group Indicators
GPIO	General-purpose Input/Output
GPRS	General Packet Radio Service
GSM	Global System for Mobile Communication
IMS	IP Multimedia Subsystem
LAPI	Low Access Priority Indication
LED	Light Emitting Diode
LTE	Long Term Evolution
MCU	Microcontroller Unit
ME	Mobile Equipment
NAS	Non-Access Stratum
NB-IoT	Narrowband Internet of Things
NITZ	Network Identity and Time Zone
PAP	Password Authentication Protocol
PCI	Physical Cell Identity
PCS	Personal Communications Service
PIN	Personal Identification Number
PS	Packet Switched
PSM	Power Saving Mode

PUK	PIN Unlock Key
RAT	Radio Access Technology
RI	Ring Indicator
RRC	Radio Resource Control
RTC	Real-Time Clock
RTS	Request to Send
RX	Receive
SIB	System Information Block
SIM	Subscriber Identity Module
SMS	Short Message Service
SNR	Signal-to-Noise Ratio
TA	Terminal Adapter
TAU	Tracking Area Update
UART	Universal Asynchronous Receiver/Transmitter
UE	User Equipment
URC	Unsolicited Result Code
(U)SIM	Universal Subscriber Identity Module
VoLTE	Voice (voice calls) over LTE