



# **BG95&BG77&BG600L Series**

# **QNWCFG AT Commands Manual**

**LPWA Module Series**

Version: 1.0

Date: 2021-12-08

Status: Released



At Quectel, our aim is to provide timely and comprehensive services to our customers. If you require any assistance, please contact our headquarters:

**Quectel Wireless Solutions Co., Ltd.**

Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road, Minhang District, Shanghai 200233, China

Tel: +86 21 5108 6236

Email: [info@quectel.com](mailto:info@quectel.com)

**Or our local offices. For more information, please visit:**

<http://www.quectel.com/support/sales.htm>.

**For technical support, or to report documentation errors, please visit:**

<http://www.quectel.com/support/technical.htm>.

Or email us at: [support@quectel.com](mailto:support@quectel.com).

## Legal Notices

We offer information as a service to you. The provided information is based on your requirements and we make every effort to ensure its quality. You agree that you are responsible for using independent analysis and evaluation in designing intended products, and we provide reference designs for illustrative purposes only. Before using any hardware, software or service guided by this document, please read this notice carefully. Even though we employ commercially reasonable efforts to provide the best possible experience, you hereby acknowledge and agree that this document and related services hereunder are provided to you on an “as available” basis. We may revise or restate this document from time to time at our sole discretion without any prior notice to you.

## Use and Disclosure Restrictions

### License Agreements

Documents and information provided by us shall be kept confidential, unless specific permission is granted. They shall not be accessed or used for any purpose except as expressly provided herein.

### Copyright

Our and third-party products hereunder may contain copyrighted material. Such copyrighted material shall not be copied, reproduced, distributed, merged, published, translated, or modified without prior written consent. We and the third party have exclusive rights over copyrighted material. No license shall be granted or conveyed under any patents, copyrights, trademarks, or service mark rights. To avoid ambiguities, purchasing in any form cannot be deemed as granting a license other than the normal non-exclusive, royalty-free license to use the material. We reserve the right to take legal action for noncompliance with abovementioned requirements, unauthorized use, or other illegal or malicious use of the material.

## Trademarks

Except as otherwise set forth herein, nothing in this document shall be construed as conferring any rights to use any trademark, trade name or name, abbreviation, or counterfeit product thereof owned by Quectel or any third party in advertising, publicity, or other aspects.

## Third-Party Rights

This document may refer to hardware, software and/or documentation owned by one or more third parties (“third-party materials”). Use of such third-party materials shall be governed by all restrictions and obligations applicable thereto.

We make no warranty or representation, either express or implied, regarding the third-party materials, including but not limited to any implied or statutory, warranties of merchantability or fitness for a particular purpose, quiet enjoyment, system integration, information accuracy, and non-infringement of any third-party intellectual property rights with regard to the licensed technology or use thereof. Nothing herein constitutes a representation or warranty by us to either develop, enhance, modify, distribute, market, sell, offer for sale, or otherwise maintain production of any our products or any other hardware, software, device, tool, information, or product. We moreover disclaim any and all warranties arising from the course of dealing or usage of trade.

## Privacy Policy

To implement module functionality, certain device data are uploaded to Quectel’s or third-party’s servers, including carriers, chipset suppliers or customer-designated servers. Quectel, strictly abiding by the relevant laws and regulations, shall retain, use, disclose or otherwise process relevant data for the purpose of performing the service only or as permitted by applicable laws. Before data interaction with third parties, please be informed of their privacy and data security policy.

## Disclaimer

- a) We acknowledge no liability for any injury or damage arising from the reliance upon the information.
- b) We shall bear no liability resulting from any inaccuracies or omissions, or from the use of the information contained herein.
- c) While we have made every effort to ensure that the functions and features under development are free from errors, it is possible that they could contain errors, inaccuracies, and omissions. Unless otherwise provided by valid agreement, we make no warranties of any kind, either implied or express, and exclude all liability for any loss or damage suffered in connection with the use of features and functions under development, to the maximum extent permitted by law, regardless of whether such loss or damage may have been foreseeable.
- d) We are not responsible for the accessibility, safety, accuracy, availability, legality, or completeness of information, advertising, commercial offers, products, services, and materials on third-party websites and third-party resources.

**Copyright © Quectel Wireless Solutions Co., Ltd. 2021. All rights reserved.**

# About the Document

## Revision History

Version	Date	Author	Description
-	2021-10-28	Forest WANG	Creation of the document
1.0	2021-12-08	Forest WANG	First official release

---

**Contents**

**About the Document** ..... 3

**Contents** ..... 4

**Table Index**..... 5

**1 Introduction** ..... 6

**2 AT Command Introduction** ..... 7

2.1. Definitions ..... 7

2.2. AT Command Syntax..... 7

2.3. AT Command Responses..... 8

2.4. Declaration of AT Command Examples ..... 9

**3 Description of AT+QNWCFG Commands** ..... 10

3.1. AT+QNWCFG Extended Configuration Settings ..... 10

3.1.1. AT+QNWCFG="acqdb" Get All Historic Frequency Information Under NB-IoT or eMTC ..... 11

3.1.2. AT+QNWCFG="backoff" Query Back-off Timer Value of FPLMN Searching ..... 11

3.1.3. AT+QNWCFG="clearbackoff" Delete Back-off Timer Value of FPLMN Searching... 12

3.1.4. AT+QNWCFG="activetimer" Enable the Module to Enter PSM Conditionally ..... 12

3.1.5. AT+QNWCFG="hplmnsearch\_ctrl" Disable HPLMN Searching in Roaming State... 14

3.1.6. AT+QNWCFG="ta" Query Timing Advance Value Under Current RAT ..... 15

3.1.7. AT+QNWCFG="cqi" Query Channel Quality Indication Under eMTC..... 15

3.1.8. AT+QNWCFG="cfun\_init\_mode" Configure Booting Mode..... 16

3.1.9. AT+QNWCFG="3gpp\_rel\_control" Configure 3GPP Release Version Under NB-IoT or eMTC ..... 17

3.1.10. AT+QNWCFG="nb\_feature\_ctrl" Configure Capability Features Under NB-IoT..... 18

3.1.11. AT+QNWCFG="catm\_feature\_ctrl" Configure Capability Features Under eMTC..... 20

3.1.12. AT+QNWCFG="pci\_lock" Lock Physical Cell ID and Frequency Under NB-IoT or eMTC ..... 21

3.1.13. AT+QNWCFG="edrx\_urc" Enable URC Report When Reselecting a Cell That Does Not Support eDRX..... 22

3.1.14. AT+QNWCFG="esmcause" Get ESM Cause Value..... 23

3.1.15. AT+QNWCFG="smsoverip" Configure SMS Type ..... 24

**4 Summary of CME Error Codes** ..... 26

**5 Appendix References** ..... 28

## Table Index

Table 1: Applicable Modules .....	6
Table 2: Types of AT Commands .....	7
Table 3: Different Coding Schemes of +CME ERROR: <err>.....	26
Table 4: Related Documents.....	28
Table 5: Terms and Abbreviations .....	28

# 1 Introduction

This document describes the subcommands of **AT+QNWCFG** and is applicable to the following modules.

**Table 1: Applicable Modules**

Module Series	Model	Description
<b>BG95</b>	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
<b>BG77</b>	BG77	Cat M1/Cat NB2
<b>BG600L</b>	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+QNWCFG** 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	<b>AT+&lt;cmd&gt;=?</b>	Test the existence of corresponding Write Command and return information about the type, value, or range of its parameter.
Read Command	<b>AT+&lt;cmd&gt;?</b>	Check the current parameter value of a corresponding Write Command.



Write Command	<b>AT+&lt;cmd&gt;=&lt;p1&gt;[,&lt;p2&gt;[,&lt;p3&gt;[...]]]</b> <b>]</b>	Set user-definable parameter value.
Execution Command	<b>AT+&lt;cmd&gt;</b>	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+QNWCFG Commands

## 3.1. AT+QNWCFG Extended Configuration Settings

This command queries and configures various settings of UE.

AT+QNWCFG Extended Configuration Settings	
Test Command AT+QNWCFG=?	Response +QNWCFG: "acqdb" +QNWCFG: "backoff" +QNWCFG: "clearbackoff" +QNWCFG: "activetimer",(range of supported <enable>s),(range of supported <timeout>s) +QNWCFG: "hplmnsearch_ctrl",(list of supported <enable>s) +QNWCFG: "ta" +QNWCFG: "cqi",(range of supported <CQI_val>s) +QNWCFG: "cfun_init_mode",(list of supported <cfun_init_value>s) +QNWCFG: "3gpp_rel_control",(list of supported <RAT>s),(list of supported <operation>s),(list of supported <3gpp_rel_control_value>s) +QNWCFG: "nb_feature_ctrl",(list of supported <operation>s),(range of supported <nb_feature>s) +QNWCFG: "catm_feature_ctrl",(list of supported <operation>s),(range of supported <eMTC_feature>s) +QNWCFG: "pci_lock",(list of supported <RAT>s),(list of supported <operation>s),(range of supported <channel>s),(range of supported <cellID>s) +QNWCFG: "edrx_urc",(list of supported <mode>s) +QNWCFG: "esmcause",(list of supported <display_format>s) +QNWCFG: "smsoverip",(list of supported <enable>s)  OK
Maximum Response Time	300 ms
Characteristics	/

### 3.1.1. AT+QNWCFG="acqdb" Get All Historic Frequency Information Under NB-IoT or eMTC

This command gets all historic frequency information under NB-IoT or eMTC.

<b>AT+QNWCFG="acqdb" Get All Historic Frequency Information Under NB-IoT or eMTC</b>	
Write Command <b>AT+QNWCFG="acqdb"</b>	Response <b>+QNWCFG: "acqdb",&lt;RAT&gt;,&lt;PLMN&gt;,&lt;band&gt;,&lt;channel&gt;,&lt;cellID&gt;</b> [...]  <b>OK</b>  If there is an error related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b>  If there is any other error: <b>ERROR</b>
Maximum Response Time	300 ms
Characteristics	/

#### Parameter

<b>&lt;RAT&gt;</b>	String type. Radio access technology. "eMTC" eMTC "NB-IoT" NB-IoT
<b>&lt;PLMN&gt;</b>	Integer type. PLMN.
<b>&lt;band&gt;</b>	Integer type. Band.
<b>&lt;channel&gt;</b>	Integer type. The frequency that has been locked. Range: 0–4294967295.
<b>&lt;cellID&gt;</b>	Integer type. The physical cell ID that has been locked. Range: 0–503.
<b>&lt;err&gt;</b>	Error code. Please refer to <b>Chapter 4</b> .

### 3.1.2. AT+QNWCFG="backoff" Query Back-off Timer Value of FPLMN Searching

This command queries the back-off timer value of FPLMN searching.

<b>AT+QNWCFG="backoff" Query Back-off Timer Value of FPLMN Searching</b>	
Write Command <b>AT+QNWCFG="backoff"</b>	Response <b>+QNWCFG: "backoff",&lt;timer_value&gt;</b>  <b>OK</b>

	If there is an error related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b>  If there is any other error: <b>ERROR</b>
Maximum Response Time	300 ms
Characteristics	/

**Parameter**

<timer_value>	Integer type. Back-off timer value of FPLMN searching. Unit: second.
<err>	Error code. Please refer to <b>Chapter 4</b> .

**3.1.3. AT+QNWCFG="clearbackoff" Delete Back-off Timer Value of FPLMN Searching**

This command deletes the back-off timer value of FPLMN searching.

AT+QNWCFG="clearbackoff" Delete Back-off Timer Value of FPLMN Searching	
Write Command <b>AT+QNWCFG="clearbackoff"</b>	Response <b>OK</b>  If there is an error related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b>  If there is any other error: <b>ERROR</b>
Maximum Response Time	300 ms
Characteristics	/

**Parameter**

<err>	Error code. Please refer to <b>Chapter 4</b> .
-------	------------------------------------------------

**3.1.4. AT+QNWCFG="activetimer" Enable the Module to Enter PSM Conditionally**

This command enables or disables the module to enter PSM conditionally if no data interaction occurs within <timeout>. This command is valid under the premise of enabling PSM. If AT command interaction

occurs during **<timeout>**, the module does not enter PSM even if the T3324 timer expires and recounts **<timeout>** after the AT command is executed.

**AT+QNWCFG="activetimer" Enable the Module to Enter PSM Conditionally**

Write Command <b>AT+QNWCFG="activetimer"[,&lt;enable&gt;,&lt;timeout&gt;]</b>	Response If the optional parameters are omitted, query the current setting: <b>+QNWCFG: "activetimer",&lt;enable&gt;,&lt;timeout&gt;</b>  <b>OK</b>  If the optional parameters are specified, enable or disable the module to enter PSM conditionally: <b>OK</b>  If there is an error related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b>  If there is any other error: <b>ERROR</b>
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configurations are saved automatically.

**Parameter**

<b>&lt;enable&gt;</b>	Integer type. Enable or disable the module to enter PSM when no AT command interaction occurs within the time specified by <b>&lt;timeout&gt;</b> . 0 Disable. 1 Enable. The module enters PSM after <b>&lt;timeout&gt;</b> is reached and T3324 timer expires. 2 Enable. The module enters PSM after <b>&lt;timeout&gt;</b> is reached without considering whether T3324 time expires.
<b>&lt;timeout&gt;</b>	Integer type. The timeout value for the module to enter PSM. The timeout timer starts once there is no AT command interaction and restarts once an AT command is entered. Range: 1–4294967295. Unit: millisecond.
<b>&lt;err&gt;</b>	Error code. Please refer to <b>Chapter 4</b> .

**Example**

```
AT+QNWCFG="activetimer",1,6000 //Enable the module to enter PSM after 6000 ms and T3324 timer expires.
```

```
OK
AT+QNWCFG="activetimer"
+QNWCFG: "activetimer",1,6000
OK
```

**NOTE**

1. It is suggested to configure **<timeout>** to a value over 5000, otherwise the module cannot respond in time.
2. Please make sure to enable PSM through **AT+CPSMS=1**. See **document [1]** for details.

### 3.1.5. AT+QNWCFG="hplmnsearch\_ctrl" Disable HPLMN Searching in Roaming State

This command disables HPLMN searching when the (U)SIM card is in roaming state.

#### AT+QNWCFG="hplmnsearch\_ctrl" Disable HPLMN Searching in Roaming State

Write Command <b>AT+QNWCFG="hplmnsearch_ctrl" [,&lt;enable&gt;]</b>	Response If the optional parameter is omitted, query the current setting: <b>+QNWCFG: "hplmnsearch_ctrl",&lt;enable&gt;</b>  <b>OK</b>  If the optional parameter is specified, enable or disable HPLMN searching in roaming state: <b>OK</b>  If there is an error related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b>  If there is any other error: <b>ERROR</b>
Maximum Response Time	300 ms
Characteristics	The command takes effect after the module reboots. The configurations are saved automatically.

#### Parameter

<b>&lt;enable&gt;</b>	Integer type. Enable or disable HPLMN searching when the (U)SIM card is in roaming state.
-----------------------	-------------------------------------------------------------------------------------------

	0	Disable
	1	Enable
<err>	Error code. Please refer to <b>Chapter 4</b> .	

### 3.1.6. AT+QNWCFG="ta" Query Timing Advance Value Under Current RAT

This command queries the timing advance value under current RAT.

AT+QNWCFG="ta" Query Timing Advance Value Under Current RAT	
Write Command <b>AT+QNWCFG="ta"</b>	Response <b>+QNWCFG: "ta",&lt;current_RAT&gt;,&lt;ta_value&gt;</b>  <b>OK</b>  If there is an error related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b>  If there is any other error: <b>ERROR</b>
Maximum Response Time	300 ms
Characteristics	/

#### Parameter

<current_RAT>	String type. Current radio access technology.
	"GSM" GSM
	"eMTC" eMTC
	"NB-IoT" NB-IoT
<ta_value>	Integer type. Timing advance.
<err>	Error code. Please refer to <b>Chapter 4</b> .

**NOTE**

Only BG95-M3, BG95-M5 and BG600L-M3 modules support GSM.

### 3.1.7. AT+QNWCFG="cqi" Query Channel Quality Indication Under eMTC

This command queries the channel quality indication under eMTC.



**AT+QNWCFG="cqi" Query Channel Quality Indication Under eMTC**

Write Command <b>AT+QNWCFG="cqi"</b>	Response <b>+QNWCFG: "cqi",&lt;CQI_value&gt;</b>  <b>OK</b>  If there is an error related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b>  If there is any other error: <b>ERROR</b>
Maximum Response Time	300 ms
Characteristics	/

**Parameter**

<b>&lt;CQI_value&gt;</b>	Integer type. Channel quality indication value. Range: 0–15.
<b>&lt;err&gt;</b>	Error code. Please refer to <b>Chapter 4</b> .

**NOTE**

1. Please make sure to enable the log output first through **AT+QCFG="dbgctl",0**. See **document [2]** for details.
2. This command is valid only when module registers to eMTC RAT.

**3.1.8. AT+QNWCFG="cfun\_init\_mode" Configure Booting Mode**

This command configures the booting mode of the module.

**AT+QNWCFG="cfun\_init\_mode" Configure Booting Mode**

Write Command <b>AT+QNWCFG="cfun_init_mode" [,&lt;cfun_init_value&gt;]</b>	Response If the optional parameter is omitted, query the current setting: <b>+QNWCFG: "cfun_init_mode",&lt;cfun_init_value&gt;</b>  <b>OK</b>  If the optional parameter is specified, configure the booting mode: <b>OK</b>  If there is an error related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b>
-------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

	If there is any other error: <b>ERROR</b>
Maximum Response Time	300 ms
Characteristics	The command takes effect after the module reboots. The configurations are saved automatically.

**Parameter**

<b>&lt;cfun_nint_value&gt;</b>	Integer type. The booting mode for the module. 0 Minimum functionality <u>1</u> Full functionality
<b>&lt;err&gt;</b>	Error code. Please refer to <b>Chapter 4</b> .

**Example**

```
AT+QNWCFG="cfun_init_mode",0 //Set the module booting mode to minimum functionality.
OK
AT+QNWCFG="cfun_init_mode" //Query the current setting.
+QNWCFG: "cfun_init_mode",0
OK
```

**3.1.9. AT+QNWCFG="3gpp\_rel\_control" Configure 3GPP Release Version Under NB-IoT or eMTC**

This command configures 3GPP release version under NB-IoT or eMTC.

AT+QNWCFG="3gpp_rel_control" Configure 3GPP Release Version Under NB-IoT or eMTC	
Write Command <b>AT+QNWCFG="3gpp_rel_control" [,&lt;RAT&gt;[,&lt;operation&gt;[,&lt;3gpp_rel_control_value&gt;]]]</b>	Response If <b>&lt;operation&gt;</b> and <b>&lt;3gpp_rel_control_value&gt;</b> are omitted, query the current setting: <b>+QNWCFG: "3gpp_rel_control",&lt;RAT&gt;,&lt;operation&gt;[,&lt;3gpp_rel_control_value&gt;]</b> [...]  <b>OK</b>  If any of <b>&lt;operation&gt;</b> and <b>&lt;3gpp_rel_control_value&gt;</b> is specified, delete or configure 3GPP release version under NB-IoT or eMTC:

	<p><b>OK</b></p> <p>If there is an error related to ME functionality:  <b>+CME ERROR: &lt;err&gt;</b></p> <p>If there is any other error:  <b>ERROR</b></p>
Maximum Response Time	300 ms
Characteristics	The command takes effect after the module reboots. The configurations are saved automatically.

**Parameter**

<b>&lt;RAT&gt;</b>	String type. RAT to be controlled. "eMTC" eMTC "NB-IoT" NB-IoT
<b>&lt;operation&gt;</b>	Integer type. 0 Delete the configuration 1 Configure release version
<b>&lt;3gpp_rel_control_value&gt;</b>	A hexadecimal value that specifies 3GPP release version. This parameter is omitted when <b>&lt;operation&gt;</b> is 0. In the Write Command, "0x" is allowed to be omitted. 0xA0 Rel-13 version 0xB0 Rel-14 version
<b>&lt;err&gt;</b>	Error code. Please refer to <b>Chapter 4.</b>

**Example**

```

AT+QNWCFG="3gpp_rel_control","eMTC",1,B0 //Set 3GPP release version under eMTC
OK
AT+QNWCFG="3gpp_rel_control" //Query the current configuration
+QNWCFG: "3gpp_rel_control","eMTC",1,0xb0
+QNWCFG: "3gpp_rel_control","NB-IoT",0

OK
AT+QNWCFG="3gpp_rel_control","eMTC",0 //Delete the configuration under eMTC
OK
    
```

**3.1.10. AT+QNWCFG="nb\_feature\_ctrl" Configure Capability Features Under NB-IoT**

This command configures the capability features under NB-IoT.

**AT+QNWCFG="nb\_feature\_ctrl" Configure Capability Features Under NB-IoT**

<p>Write Command  <b>AT+QNWCFG="nb_feature_ctrl"[,&lt;operation&gt;[,&lt;nb_feature&gt;]]</b></p>	<p>Response</p> <p>If the optional parameters are omitted, query the current setting:  <b>+QNWCFG: "nb_feature_ctrl",&lt;operation&gt;[,&lt;nb_feature&gt;]</b></p> <p><b>OK</b></p> <p>If any of the optional parameters is specified, delete or configure the capability features under NB-IoT:  <b>OK</b></p> <p>If there is an error related to ME functionality:  <b>+CME ERROR: &lt;err&gt;</b></p> <p>If there is any other error:  <b>ERROR</b></p>
<p>Maximum Response Time</p>	<p>300 ms</p>
<p>Characteristics</p>	<p>The command takes effect after the module reboots.  The configurations are saved automatically.</p>

**Parameter**

<b>&lt;operation&gt;</b>	<p>Integer type.</p> <p>0 Delete the capability features</p> <p>1 Enable the capability features</p>
<b>&lt;nb_feature&gt;</b>	<p>A hexadecimal value that specifies the NB-IoT capability features. This parameter is omitted when <b>&lt;operation&gt;</b> is 0. Range: 0–0xFFE. In the Write Command, "0x" is allowed to be omitted.</p> <p>0x2 NB1_RRC_CAP_FEATURE_MULTI_TONE_BM</p> <p>0x4 NB1_RRC_CAP_FEATURE_MULTI_CARRIER_BM</p> <p>0x8 NB1_RRC_CAP_FEATURE_MULTI_NS_PMAX_BM</p> <p>0x10 NB1_RRC_CAP_FEATURE_MULTI_TONE_MSG3_BM</p> <p>0x20 NB1_RRC_CAP_FEATURE_TWO_HARQ_BM</p> <p>0x40 NB1_RRC_CAP_FEATURE_INTERFERENCE_RANDOM_BM</p> <p>0x80 NB1_RRC_CAP_FEATURE_R14_RAI_BM</p> <p>0x100 NB1_RRC_CAP_FEATURE_R14_DATA_INAC_TIMER_BM</p> <p>0x200 NB1_RRC_CAP_FEATURE_MULTI_CARRIER_PRACH_BM</p> <p>0x400 NB1_RRC_CAP_FEATURE_CFRA_CONFIG_ENABLED_BM</p> <p>0x800 NB1_RRC_CAP_FEATURE_MULTI_CARRIER_PAGING_BM</p>
<b>&lt;err&gt;</b>	<p>Error code. Please refer to <b>Chapter 4</b>.</p>

**NOTE**

This command is not valid on BG95-M1 module.

### 3.1.11. AT+QNWCFG="catm\_feature\_ctrl" Configure Capability Features Under eMTC

The command configures the capability features under eMTC.

#### AT+QNWCFG="catm\_feature\_ctrl" Configure Capability Features Under eMTC

Write Command <b>AT+QNWCFG="catm_feature_ctrl"[, &lt;operation&gt;[,&lt;eMTC_feature&gt;]]</b>	<p>Response</p> <p>If the optional parameters are omitted, query the current setting: <b>+QNWCFG: "catm_feature_ctrl",&lt;operation&gt;[,&lt;eMTC_feature&gt;]</b></p> <p><b>OK</b></p> <p>If any of the optional parameters is specified, delete or configure the capability features under eMTC: <b>OK</b></p> <p>If there is an error related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b></p> <p>If there is any other error: <b>ERROR</b></p>
Maximum Response Time	300 ms
Characteristics	The command takes effect after the module reboots. The configurations are saved automatically.

#### Parameter

<b>&lt;operation&gt;</b>	Integer type. 0 Delete the capability features 1 Enable the capability features
<b>&lt;eMTC_feature&gt;</b>	A hexadecimal value that specifies the eMTC capability features. This parameter is omitted when <b>&lt;operation&gt;</b> is 0. Range: 0–0x1FFE. In the Write Command, "0x" is allowed to be omitted. 0x2 LTE_RRC_CAP_INTRE_FREQ_GAPLESS_MEAS_SUPPORT_FDD

0x4	LTE_RRC_CAP_DISABLE_CE_PUSCH_NB_MAX_TBS_R14
0x8	LTE_RRC_CAP_DISABLE_INTRA_FREQ_CE_MODE_A_HO
0x10	LTE_RRC_CAP_DISABLE_INTRA_FREQ_CE_MODE_A_MEAS
0x20	LTE_RRC_CAP_DISABLE_EXTENDED_POLL_BYTE_R14
0x40	LTE_RRC_CAP_DISABLE_R14_RAI
0x80	LTE_RRC_CAP_DISABLE_POWER_CLASS_PER_BAND
0x100	LTE_RRC_CAP_DISABLE_R14_DATA_INAC_TMR
0x200	LTE_RRC_CAP_DISABLE_CE_PDSCH_PUSCH_ENH_R14
0x400	LTE_RRC_CAP_DISABLE_IE_CE_MEAS_R14
0x800	LTE_RRC_CAP_DISABLE_CE_PDSCH_TEN_PROCESSES_R14
0x1000	LTE_RRC_CAP_DISABLE_CE_RETUNING_SYMBOLS_R14

<err> Error code. Please refer to **Chapter 4**.

### Example

```

AT+QNWCFG="catm_feature_ctrl",1,40 //Set to LTE_RRC_CAP_DISABLE_R14_RAI.
OK
AT+QNWCFG="catm_feature_ctrl" //Query the current configuration.
+QNWCFG: "catm_feature_ctrl",1,0x40

OK
AT+QNWCFG="catm_feature_ctrl",0 //Delete the configuration.
OK
    
```

### 3.1.12. AT+QNWCFG="pci\_lock" Lock Physical Cell ID and Frequency Under NB-IoT or eMTC

This command locks physical cell ID and frequency under NB-IoT or eMTC.

#### AT+QNWCFG="pci\_lock" Lock Physical Cell ID and Frequency Under NB-IoT or eMTC

<p>Write Command</p> <p><b>AT+QNWCFG="pci_lock"[,&lt;RAT&gt;[,&lt;operation&gt;[,&lt;channel&gt;[,&lt;cellID&gt;]]]]</b></p>	<p>Response</p> <p>If &lt;operation&gt;, &lt;channel&gt;, and &lt;cellID&gt; are omitted, query the current setting:</p> <p><b>+QNWCFG: "pci_lock",&lt;RAT&gt;,&lt;operation&gt;[,&lt;channel&gt;,&lt;cellID&gt;][...]</b></p> <p><b>OK</b></p> <p>If any of &lt;operation&gt;, &lt;channel&gt;, and &lt;cellID&gt; is specified, delete the NV file or lock the physical cell ID and frequency under NB-IoT or eMTC:</p> <p><b>OK</b></p>
------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

	<p>If there is an error related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b></p> <p>If there is any other error: <b>ERROR</b></p>
Maximum Response Time	300 ms
Characteristics	<p>The command takes effect after the module reboots.</p> <p>The configurations are saved automatically.</p>

**Parameter**

<b>&lt;RAT&gt;</b>	String type. The type of radio access technology. "eMTC" eMTC "NB-IoT" NB-IoT
<b>&lt;operation&gt;</b>	Integer type. 0 Delete the NV file. <b>&lt;channel&gt;</b> and <b>&lt;cellID&gt;</b> are omitted. 1 <b>&lt;channel&gt;</b> and <b>&lt;cellID&gt;</b> must be configured.
<b>&lt;channel&gt;</b>	Integer type. The frequency to be locked. This parameter is omitted when <b>&lt;operation&gt;</b> is 0. Range: 0–4294967295.
<b>&lt;cellID&gt;</b>	Integer type. Physical cell ID to be locked. This parameter is omitted when <b>&lt;operation&gt;</b> is 0. Range: 0–503.
<b>&lt;err&gt;</b>	Error code. Please refer to <b>Chapter 4</b> .

**Example**

```

AT+QNWCFG="pci_lock","eMTC",1,6300,102 //Lock specific frequency and physical cell ID.
OK
AT+QNWCFG="pci_lock" //Query the current configuration.
+QNWCFG: "pci_lock","eMTC",1,6300,102
+QNWCFG: "pci_lock","NB-IoT",0
OK
    
```

**3.1.13. AT+QNWCFG="edrx\_urc" Enable URC Report When Reselecting a Cell That Does Not Support eDRX**

When the eDRX function and eDRX URC are both enabled through **AT+CEDRXS** (see **document [1]** for details), this command controls whether the module reports URC **+CEDRXP: 0** when reselecting from a cell that supports eDRX to another cell that does not support eDRX.

<b>AT+QNWCFG="edrx_urc" Enable URC Report When Reselecting a Cell That Does Not Support eDRX</b>	
Write Command <b>AT+QNWCFG="edrx_urc"[,&lt;mode&gt;]</b>	Response If the optional parameter is omitted, query the current setting: <b>+QNWCFG: "edrx_urc",&lt;mode&gt;</b>  <b>OK</b>  If the optional parameter is specified, enable or disable the eDRX URC report: <b>OK</b>  If there is an error related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b>  If there is any other error: <b>ERROR</b>
Maximum Response Time	300 ms
Characteristics	The command takes effect after the module reboots. The configurations are saved automatically.

**Parameter**

<b>&lt;mode&gt;</b>	Integer type. Enable or disable URC report when the modem reselects a cell that does not support eDRX. 0 Disable 1 Enable
<b>&lt;err&gt;</b>	Error code. Please refer to <b>Chapter 4</b> .

**3.1.14. AT+QNWCFG="esmcause" Get ESM Cause Value**

This command queries the ESM cause value in session management.

<b>AT+QNWCFG="esmcause" Get ESM Cause Value</b>	
Write Command <b>AT+QNWCFG="esmcause"[,&lt;display_format&gt;]</b>	Response <b>+QNWCFG: "esmcause",&lt;cause_value&gt;</b>  <b>OK</b>  If there is an error related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b>



	If there is any other error: <b>ERROR</b>
Maximum Response Time	300 ms
Characteristics	/

**Parameter**

<b>&lt;display_format&gt;</b>	Integer type. The format of ESM reject cause. 0 Numeric value 1 Verbose value
<b>&lt;cause_value&gt;</b>	ESM reject cause.
<b>&lt;err&gt;</b>	Error code. Please refer to <i>Chapter 4</i> .

**NOTE**

Please make sure to enable the log output first through **AT+QCFG="dbgctl",0**. See *document [2]* for details.

**3.1.15. AT+QNWCFG="smsoverip" Configure SMS Type**

This command configures SMS type when module registers to IMS.

<b>AT+QNWCFG="smsoverip" Configure SMS Type</b>	
Write Command <b>AT+QNWCFG="smsoverip"[,&lt;enable&gt;]</b>	Response If the optional parameter is omitted, query the current setting: <b>+QNWCFG: "smsoverip",&lt;enable&gt;</b>  <b>OK</b>  If the optional parameter is specified, enable or disable IMS SMS: <b>OK</b> Or <b>ERROR</b>
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configurations are saved automatically.

**Parameter**

<b>&lt;enable&gt;</b>	Integer type. Disable/enable IMS SMS.
0	Disable IMS SMS. SMS type is NAS SMS
1	Enable IMS SMS. SMS type is IMS SMS

**Example**

```

AT+QNWCFG="smsoverip",1           //Enable IMS SMS
OK
AT+QNWCFG="smsoverip"             //Query the current configuration
+QNWCFG: "smsoverip",1
OK
    
```

**NOTE**

1. This command is valid only when module registers to eMTC RAT.
2. This command is valid only on the firmware version supporting VoLTE.

# 4 Summary of CME Error Codes

Final result code **+CME ERROR: <err>** indicates an error related to mobile equipment or network. The operation of **+CME ERROR: <err>** final result code is similar to the regular **ERROR** result code: if **+CME ERROR: <err>** is the result code for any of the commands in a command line, none of the following commands in the same command line is executed (neither **ERROR** nor **OK** result code shall be returned as a result of a completed command line execution). The format of **<err>** can be either numeric or verbose. This is set with **AT+CMEE**. For more details, see *document [1]*.

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

**Table 3: Different Coding Schemes of +CME ERROR: <err>**

Numeric <err> Value	Verbose <err> Value
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	SIM not inserted
11	SIM PIN required
12	SIM PUK required
13	SIM failure

---

14	SIM busy
15	SIM wrong
16	incorrect password
17	SIM PIN2 required
18	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
[2] Quectel_BG95&BG77&BG600L_Series_QCFG_AT_Commands_Manual

**Table 5: Terms and Abbreviations**

Abbreviation	Description
3GPP	3rd Generation Partnership Project
eDRX	extended Discontinuous Reception
EGPRS	Enhanced General Packet Radio Service
eMTC	enhanced Machine-Type Communication
EPS	Evolved Packet System
ESM	EPS Session Management
FPLMN	Forbidden Public Land Mobile Network
GSM	Global System for Mobile Communications
HPLMN	Home Public Land Mobile Network
IMS	IP Multimedia Subsystem
ID	Identifier
ME	Mobile Equipment
NAS	Non-Access Stratum
NB-IoT	Narrowband Internet of Things

---

PIN	Personal Identification Number
PLMN	Public Land Mobile Network
PUK	PIN Unlock Key
PSM	Power Saving Mode
RAT	Radio Access Technology
SMS	Short Message Service
TA	Terminal Adapter
(U)SIM	(Universal) Subscriber Identity Module
UE	User Equipment
URC	Unsolicited Result Code
Wi-Fi	Wireless Fidelity

---