

BG96 MBN

Application Note

LPWA Module Series

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Our aim is to provide customers with timely and comprehensive service. For any assistance, please contact our company headquarters:

Quectel Wireless Solutions Co., Ltd.

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

Tel: +86 21 5108 6236

Email: info@quectel.com

Or our local office. For more information, please visit:

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

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About the Document

History

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1 Introduction

Modem Configuration Binaries (MBNs) are a set of critical NV/EFS settings to configure the User Equipment (UE) and make it comply with operator requirements.

This document mainly introduces MBN application notes and also describes how to configure MBN of Quectel BG96 module with related AT commands.

2 MBN Application Notes

2.1. MBN Application Scenario

BG96 is loaded with multiple MBN files by default in the factory version, and an example is provided in the figure below. When end devices incorporating Quectel BG96 module need to get operator certificates, the corresponding MBN file must be activated in advance.

```
AT+QMBNCFG="LIST"

+QMBNCFG: "List",0,0,0,"Att_Non_Volte_Lab",0x05010310,201712191
+QMBNCFG: "List",1,0,0,"China_Common",0x05802800,201806231
+QMBNCFG: "List",2,0,0,"Telstra-Commercial",0x05801801,201806301
+QMBNCFG: "List",3,0,0,"ROW_Commercial",0x05800801,201806301
+QMBNCFG: "List",4,0,0,"Verizon_Commercial",0x05803801,201806301

OK
```

	MBN File Name	MBN Version	MBN Release Date
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Figure 1: MBN Files in BG96

2.2. MBN Application Notes

- 1) All MBN configuration parameters can be implemented with AT commands.
- 2) When end devices need to get operator (AT&T, Telstra, Verizon, etc.) certificates, please activate the corresponding MBN file first.
- 3) MBN versions are forward compatible. Please ask Quectel Technical Support Team for the latest MBN files.
- 4) After activating one MBN file, the operation of MBN deactivation will delete the relevant NV/EFS configuration.
- 5) Please use **AT+QMBNCFG** command or QFlash tool to upgrade MBN files. DFOTA mechanism or QPST upgrade tool cannot upgrade MBN files.

3 Description of MBN AT Commands

3.1. AT+QMBNCFG MBN Configuration

AT+QMBNCFG MBN Configuration	
Test Command AT+QMBNCFG=?	Response +QMBNCFG: "List" +QMBNCFG: "Select"[,<MBN name>] +QMBNCFG: "Deactivate" +QMBNCFG: "AutoSel"[,(0,1)] +QMBNCFG: "Delete", "<MBN name>" +QMBNCFG: "Add", "<filename>" OK
Maximum Response Time	300ms
Reference	

3.2. AT+QMBNCFG="List" List All MBN Files

The command is used to query all the MBN files which have been uploaded in the module.

AT+QMBNCFG="List" List All MBN Files	
Write Command AT+QMBNCFG="List"	Response +QMBNCFG: "List",<index>,<selected>,<activated>,<MBN name>,<version>,<release_date> [+QMBNCFG: "List",<index>,<selected>,<activated>,<MBN name>,<version>,<release_date> [...]] OK
Reference	

Parameter

<index>	MBN serial number.
<selected>	Indicate whether the MBN file is selected. Selected but not activated MBN file will be activated until the next reboot. 0 The current MBN file is not selected 1 The current MBN file is selected
<activated>	Indicate whether the MBN file is activated. 0 The current MBN file is not activated 1 The current MBN file is activated
<MBN name>	The name of the MBN file.
<version>	The MBN version.
<release_date>	The release date of MBN.

3.3. AT+QMBNCFG="Select" Select MBN File

The command is used to select a specified MBN file to be loaded in the module.

AT+QMBNCFG="Select" Select MBN File

Write Command AT+QMBNCFG="Select",<MBN name>	Response OK If there is any other error: ERROR
Reference	

Parameter

<MBN name>	The name of the MBN file.
------------	---------------------------

NOTE

The selected MBN file will be activated automatically after module reboot.

3.4. AT+QMBNCFG="Deactivate" Deactivate MBN File

The command is used to deactivate the MBN file which is running in the module.

AT+QMBNCFG="Deactivate" Deactivate MBN File

Write command

AT+QMBNCFG="Deactivate"

Response

OK

If there is any other error:

ERROR

Reference

Example

AT+QMBNCFG="List"

+QMBNCFG: "List",0,1,1,"ROW_Commercial",0x05010800,201801051

OK

AT+QMBNCFG="Deactivate"

OK

AT+QMBNCFG="List"

+QMBNCFG: "List",0,0,0,"ROW_Commercial",0x05010800,201801051

OK

3.5. AT+QMBNCFG="AutoSel" Configure MBN Automatic Selection Function

The command is used to enable/disable automatic selection of MBN file.

AT+QMBNCFG="AutoSel" Configure MBN Automatic Selection Function

Write Command

AT+QMBNCFG="AutoSel"[,<enable>]

Response

If <enable> is omitted, it will return the current configuration:

+QMBNCFG: "AutoSel",<enable>

OK

If <enable> is present, configure whether to enable automatic selection of MBN file

OK

	If there is any other error, response: ERROR
Reference	

Parameter

<enable>	Enable or disable automatic selection of MBN file. 0 Disable 1 Enable
-----------------------	---

NOTES

1. The command takes effect after reboot.
2. When the function is enabled, the MBN file will be automatically selected based on the IMSI of (U)SIM card by default.
3. When the function is enabled but no appropriate MBN file is activated, the module will reboot automatically to select and activate a suitable MBN file.

3.6. AT+QMBNCFG="Delete" Delete a MBN File

The command is used to delete a specified MBN file from CEFS.

AT+QMBNCFG="Delete" Delete a MBN File	
Write Command AT+QMBNCFG="Delete",<MBN name>	Response OK If there is any other error, response: ERROR
Reference	

Parameter

<MBN name>	MBN file name.
-------------------------	----------------

3.7. AT+QMBNCFG="Add" Add a New MBN File

The command is used to add a new MBN file which needs to be uploaded to the UFS in advance.

AT+ QMBNCFG="Add" Add a New MBN File

Write Command

AT+QMBNCFG="Add",<file_name>

Response

OK

If there is any other error:

ERROR

Reference

Parameter

<file_name> File name.

NOTE

The MBN file to be added has to be uploaded to the UFS in advance.

Example

AT+QFUPL="test.mbn",9436

CONNECT

<send the MBN file data in size of 9436 bytes>

+QFUPL: 9436,657c

OK

AT+QMBNCFG="Add","test.mbn"

OK

4 Examples

4.1. General Operation

AT+QMBNCFG=?

+QMBNCFG: "List"

+QMBNCFG: "Select"[,<MBN name>]

+QMBNCFG: "Deactivate"

+QMBNCFG: "AutoSel"[,(0,1)]

+QMBNCFG: "Delete", "<MBN name>"

+QMBNCFG: "Add", "<file_name>"

OK

AT+QMBNCFG="List"

+QMBNCFG: "List",0,0,0,"ROW_Commercial",0x05010800,201801051

OK

AT+QMBNCFG="Delete","ROW_Commercial"

OK

AT+QMBNCFG="List"

OK

AT+QFLST=""

OK

AT+QFUPL="test.mbn",9436

CONNECT

<send the MBN file data in size of 9436 bytes>

+QFUPL: 9436,657c

OK

AT+QFLST=""

+QFLST: "test.mbn",9436

OK

AT+QMBNCFG="Add","test.mbn"

OK

AT+QMBNCFG="List"

+QMBNCFG: "List",0,0,0,"ROW_Commercial",0x05010800,201801051

OK

AT+QMBNCFG="Select","ROW_Commercial"

OK

AT+QMBNCFG="List"

+QMBNCFG: "List",0,1,0,"ROW_Commercial",0x05010800,201801051

OK

//Reboot the module to activate the selected MBN file.

AT+QMBNCFG="List"

+QMBNCFG: "List",0,1,1,"ROW_Commercial",0x05010800,201801051

OK

4.2. Enable MBN Automatic Selection

AT+QMBNCFG="List"

+QMBNCFG: "List",0,0,0,"ROW_Commercial",0x05010800,201801051

OK

AT+QMBNCFG="Autosel"

+QMBNCFG: "AutoSel",0

OK

AT+QMBNCFG="Autosel",1

OK

//Reboot the module to make the above setting take effect.

RDY

POWERED DOWN //The module will automatically reboot to activate a suitable MBN file.

RDY

+CPIN: READY

+QUSIM: 1

+QIND: SMS DONE

AT+QMBNCFG="List"

+QMBNCFG: "List",0,1,1,"ROW_Commercial",0x05010800,201801051

OK

//Reboot the module manually.

RDY

+CPIN: READY

+QUSIM: 1

//The module will not reboot because a suitable MBN file has been activated.

+QIND: SMS DONE

AT+QMBNCFG="List"

+QMBNCFG: "List",0,1,1,"ROW_Commercial",0x05010800,201801051

OK

5 Appendix A References

Table 1: Terms and Abbreviations

Abbreviation	Description
CEFS	Canonical Embedded File System
DFOTA	Delta Firmware upgrade Over-The-Air
EFS	Embedded File System
MBN	Modem Configuration Binary
NV	Non-Volatile
QPST	Qualcomm Product Support Tool
UFS	User File System