

BG95&BG77-QuecOpen

NAND Flash Loading

Application Notes

LPWA Module Series

Rev. BG95&BG77-QuecOpen_NAND_Flash_Loading_Application_Notes
_V1.0

Date: 2020-01-03

Status: Preliminary

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>

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

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

Or email to: support@quectel.com

GENERAL NOTES

QUECTEL OFFERS THE INFORMATION AS A SERVICE TO ITS CUSTOMERS. THE INFORMATION PROVIDED IS BASED UPON CUSTOMERS' REQUIREMENTS. QUECTEL MAKES EVERY EFFORT TO ENSURE THE QUALITY OF THE INFORMATION IT MAKES AVAILABLE. QUECTEL DOES NOT MAKE ANY WARRANTY AS TO THE INFORMATION CONTAINED HEREIN, AND DOES NOT ACCEPT ANY LIABILITY FOR ANY INJURY, LOSS OR DAMAGE OF ANY KIND INCURRED BY USE OF OR RELIANCE UPON THE INFORMATION. ALL INFORMATION SUPPLIED HEREIN IS SUBJECT TO CHANGE WITHOUT PRIOR NOTICE.

COPYRIGHT

THE INFORMATION CONTAINED HERE IS PROPRIETARY TECHNICAL INFORMATION OF QUECTEL WIRELESS SOLUTIONS CO., LTD. TRANSMITTING, REPRODUCTION, DISSEMINATION AND EDITING OF THIS DOCUMENT AS WELL AS UTILIZATION OF THE CONTENT ARE FORBIDDEN WITHOUT PERMISSION. OFFENDERS WILL BE HELD LIABLE FOR PAYMENT OF DAMAGES. ALL RIGHTS ARE RESERVED IN THE EVENT OF A PATENT GRANT OR REGISTRATION OF A UTILITY MODEL OR DESIGN.

Copyright © Quectel Wireless Solutions Co., Ltd. 2019. All rights reserved.

About the Document

History

Revision	Date	Author	Description
1.0	2020-01-03	Justice HAN Hyman DING	Initial

Contents

About the Document.....	2
Contents	3
Table Index.....	4
Figure Index	5
1 Introduction	6
2 Overview	7
3 Download Application into NAND Flash	9
3.1. Compilation	9
3.2. Download	9
3.3. Available Memory Mapping of ROM for QuecOpen Application.....	11
4 Load Application from NAND Flash.....	12
5 Appendix A References.....	13

Table Index

TABLE 1: AVAILABLE MEMORY MAPPING OF ROM FOR QUECOPEN APPLICATION	11
TABLE 2: TERMS AND ABBREVIATIONS.....	13

Figure Index

FIGURE 1: LOAD QUECOPEN APP FROM NAND PARTITION.....	7
FIGURE 2: QUECOPEN APP BOOTUP DIAGRAM.....	8
FIGURE 3: STEPS OF DOWNLOADING APPLICATION INTO NAND FLASH	10
FIGURE 4: DOWNLOADING APPLICATION SUCCESSFULLY	10

1 Introduction

This document mainly introduces how to load application from in BG95&BG77 series QuecOpen solution. BG95&BG77 QuecOpen solution supports to load application both from specified NAND flash partition and EFS, it is recommended to load application from NAND flash partition.

NOTE

In this document, BG95 refers to the corresponding module series models, including BG95M1, BG95M2 and BG95M3 models.

2 Overview

Comparing to BG96, which stores QuecOpen applications on EFS, BG95&BG77 modules support to store QuecOpen applications on the specified partition of NAND flash which has the following advantages.

- More secure. Avoid the risk of binary images being copied or tampered due to FS accessibility.
- Safer. Stored in a specified NAND flash partition, it prevents accidental deletion of binary images during file operation.
- Easier for users' production. QFlash allows users to update applications directly to modules.

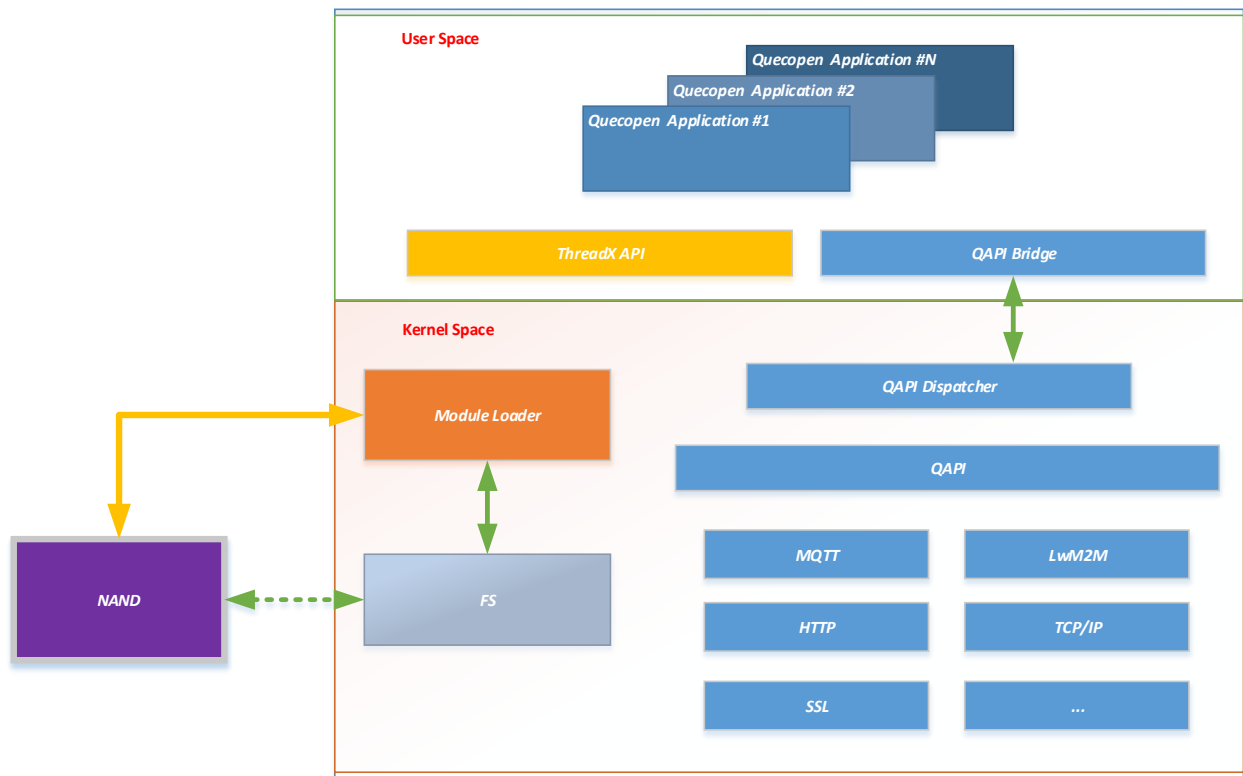


Figure 1: Load QuecOpen APP from NAND Partition

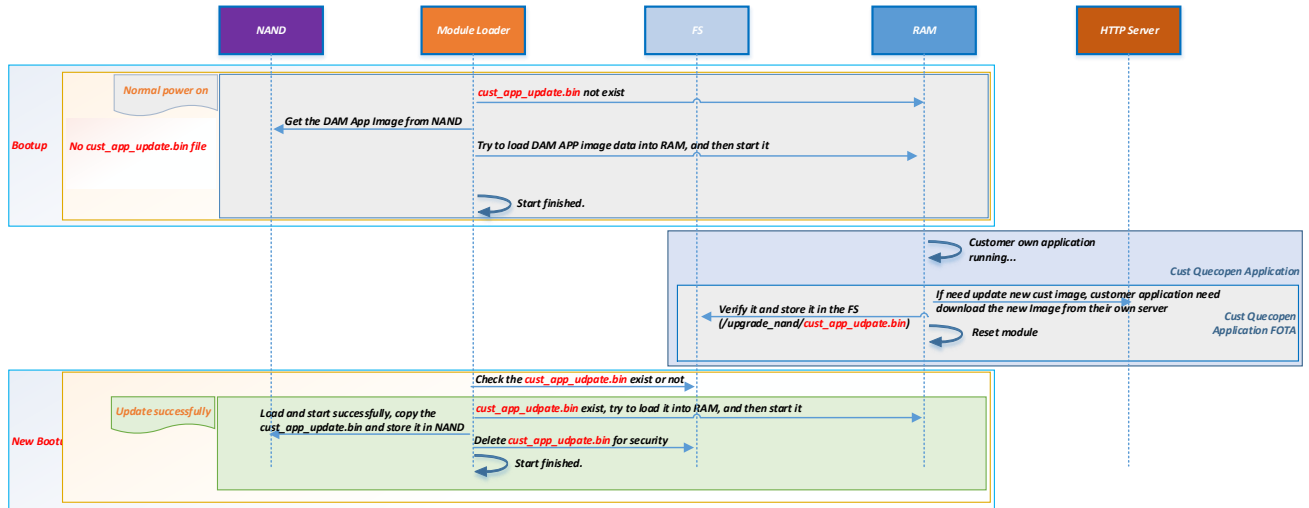


Figure 2: QuecOpen APP Bootup Diagram

NOTE

As shown in figure above, the update mechanism of application binary files stored in NAND flash is under development.

3 Download Application into NAND Flash

3.1. Compilation

- Compile the application and get binary image file in directory */bin* of QuecOpen SDK package, please refer to *Quectel_BG95&BG77_QuecOpen_Application_Note_V1.1_Preliminary_20191203, Chapter 4* for details.
- Rename the application binary image to *cust_app.bin*, and copy it into directory */dam/update/firehose* of firmware package.

3.2. Download

Download the application binary image named *cust_app.bin* into NAND flash by QFlash tool, please refer to the following steps for details.

- Connect the module to the PC via USB, boot the module and make sure that Quectel USB DM Port in Device Manager existed. Open QFlash tool, and configure the **COM port** as Quectel USB DM Port, please refer to *step#1* in figure below.
- Click **Load FW Files**, and browse to */dam/update/firehose/prog_firehose_nand_mdm9x05.elf* of the firmware package, then QFlash tool will load all the related files into the tool interface, please refer to *step#2* in figure below.
- Click **Start** to download the application binary image, refer to *step#3* in figure below. Do not remove USB or terminate the downloading process before downloading completed and a “PASS” will occur if downloading successfully, please refer to in figure below.

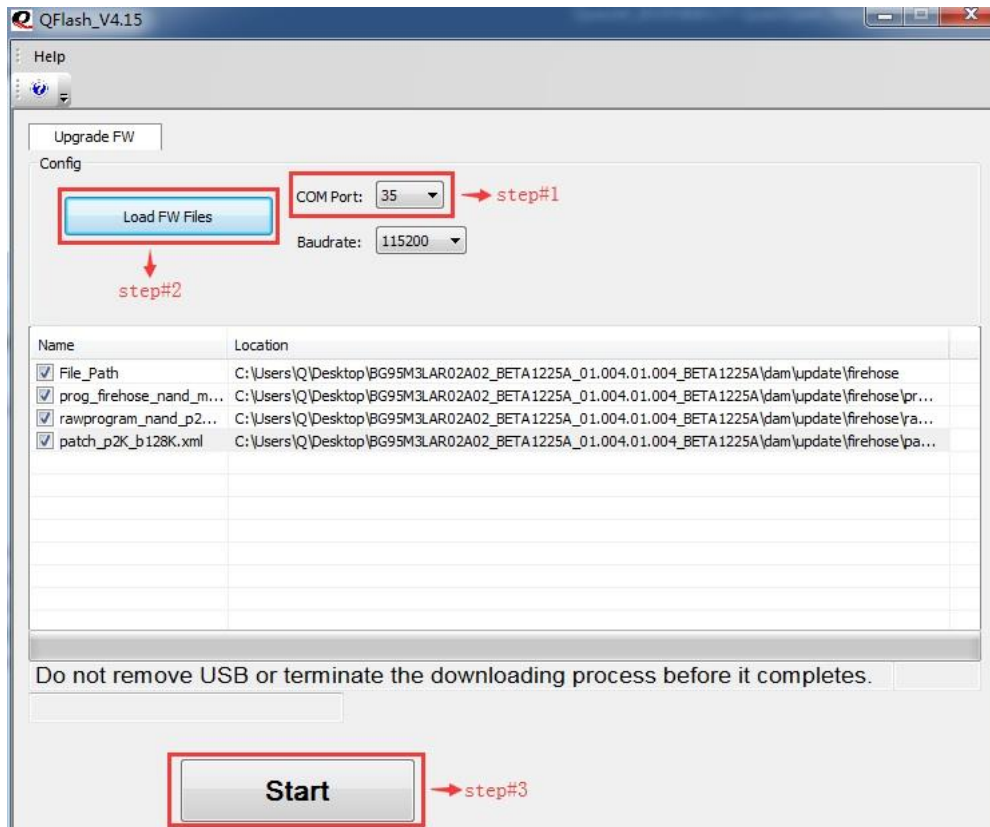


Figure 3: Steps of Downloading Application into NAND Flash

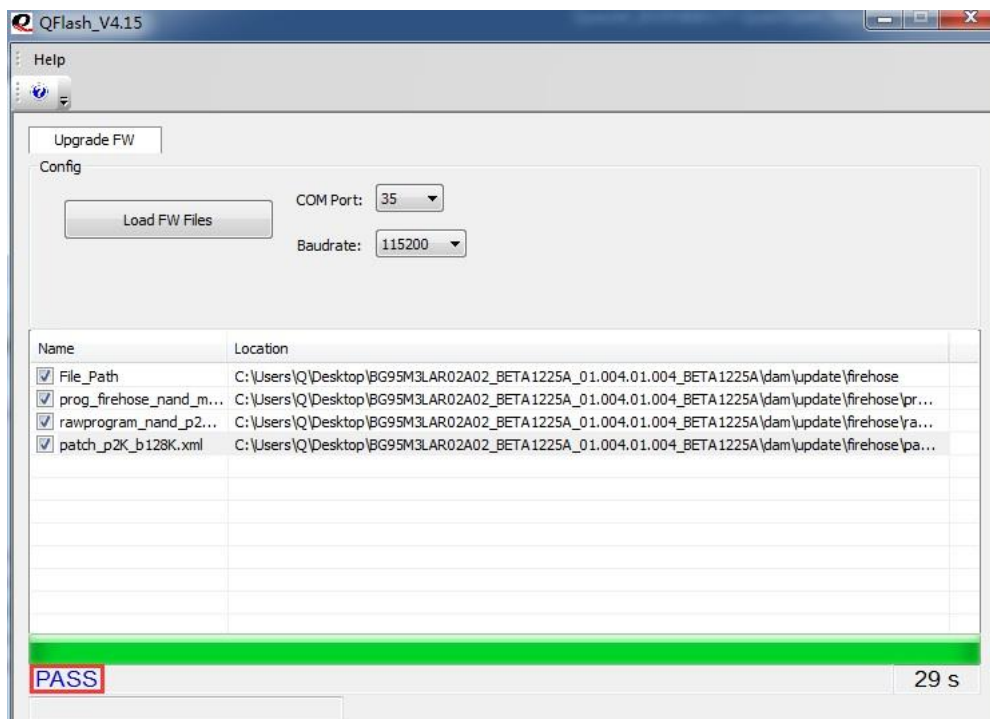


Figure 4: Downloading Application Successfully

3.3. Available Memory Mapping of ROM for QuecOpen Application

The following table shows the ROM(NAND flash) memory mapping for QuecOpen application.

Table 1: Available Memory Mapping of ROM for QuecOpen Application

SKT	ROM for QuecOpen Application (MB)	ROM for QuecOpen Configuration (KB)
BG95-M1	1.5	128
BG95-M2	1.5	128
BG77	1.5	128
BG95-M3	1.25	128

ROM for QuecOpen application: Used to store users QuecOpen application image.

ROM for configuration: Used to store the key configuration data for users QuecOpen application.

4 Load Application from NAND Flash

After the application is downloaded successfully, reboot the module and the application binary image stored in NAND flash will be automatically loaded into RAM and run.

NOTE

If the file *oem_app_path.ini* occurred in directory */datatx* of EFS, module loader will try to load application from EFS rather than NAND flash.

5 Appendix A References

Table 2: Terms and Abbreviations

Abbreviation	Description
APP	Application
API	Application Programming Interface
EFS	Encrypting File System
FS	File System
HTTP	Hyper Text Transfer Protocol
LwM2M	Lightweight Machine to Machine
MQTT	Message Queuing Telemetry Transport
PC	Personal Computer
RAM	Random Access Memory
ROM	Read Only Memory
TCP/IP	Transmission Control Protocol/Internet Protocol
USB	Universal Serial Bus
SDK	Software Development Kit
SSL	Secure Sockets Layer