BG95&BG77-QuecOpen NAND Flash Loading Application Notes

LPWA Module Series

Rev. BG95&BG77-QuecOpen_NAND_Flash_Loading_Application_Notes_V1.0

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GENERAL NOTES

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About the Document

History

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

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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.

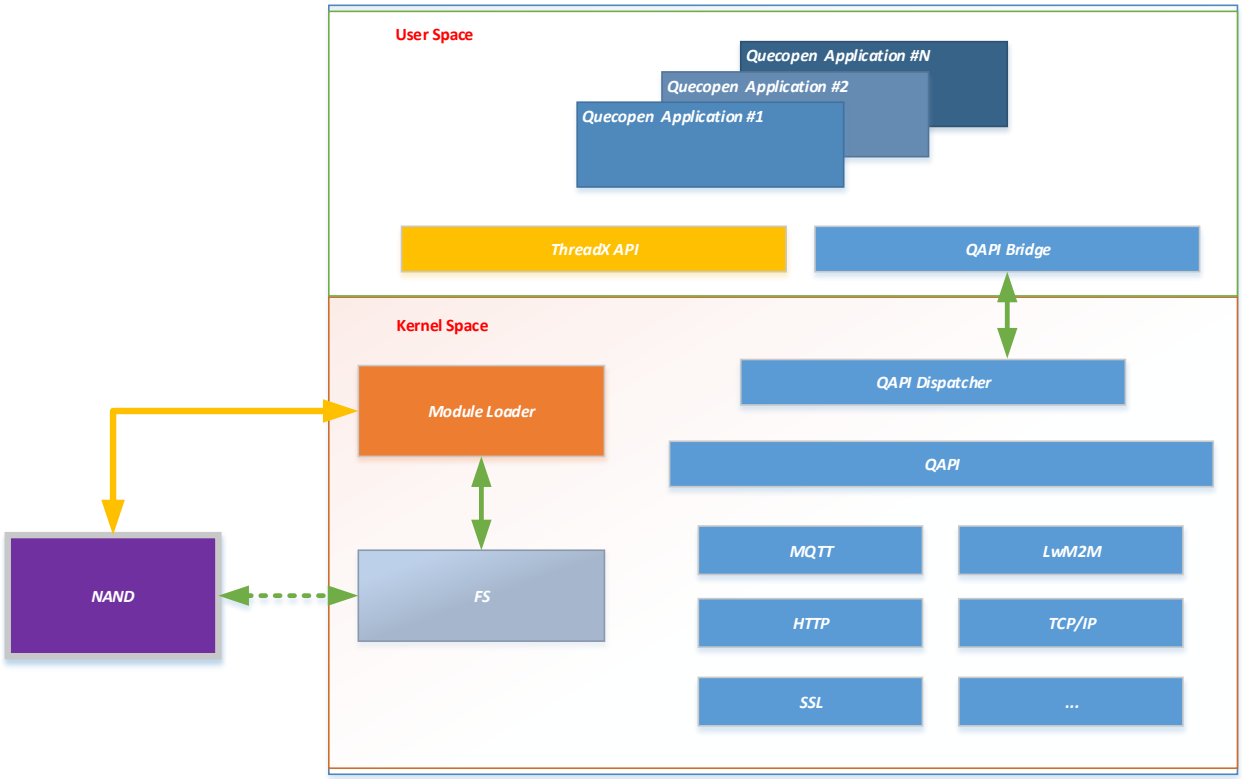

Figure 1: Load QuecOpen APP from NAND Partition

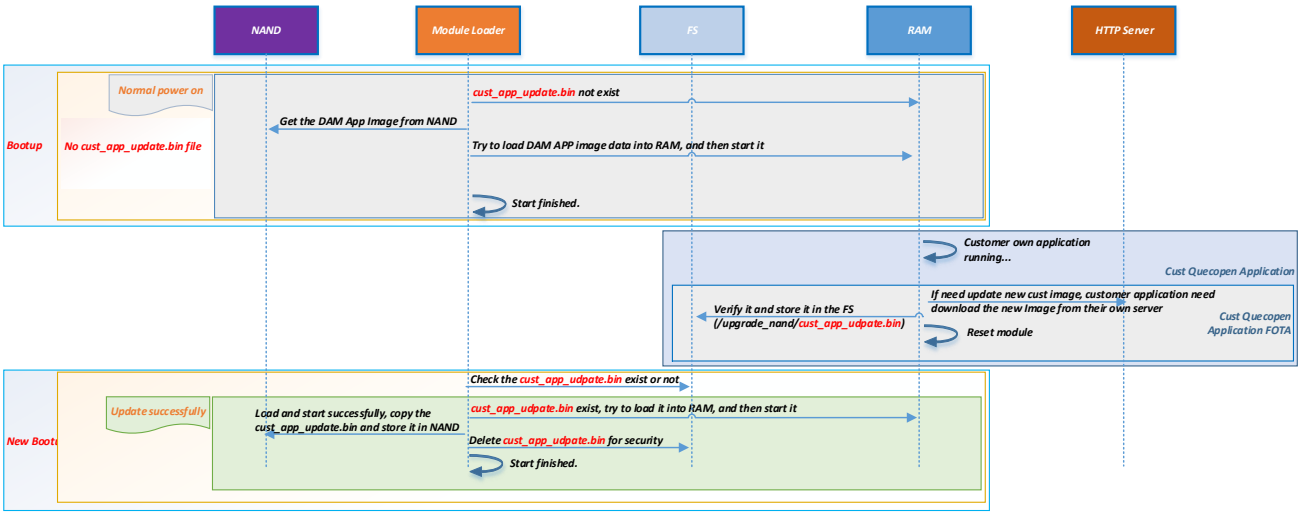

Figure 2: QuecOpen APP Bootup Diagram

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.

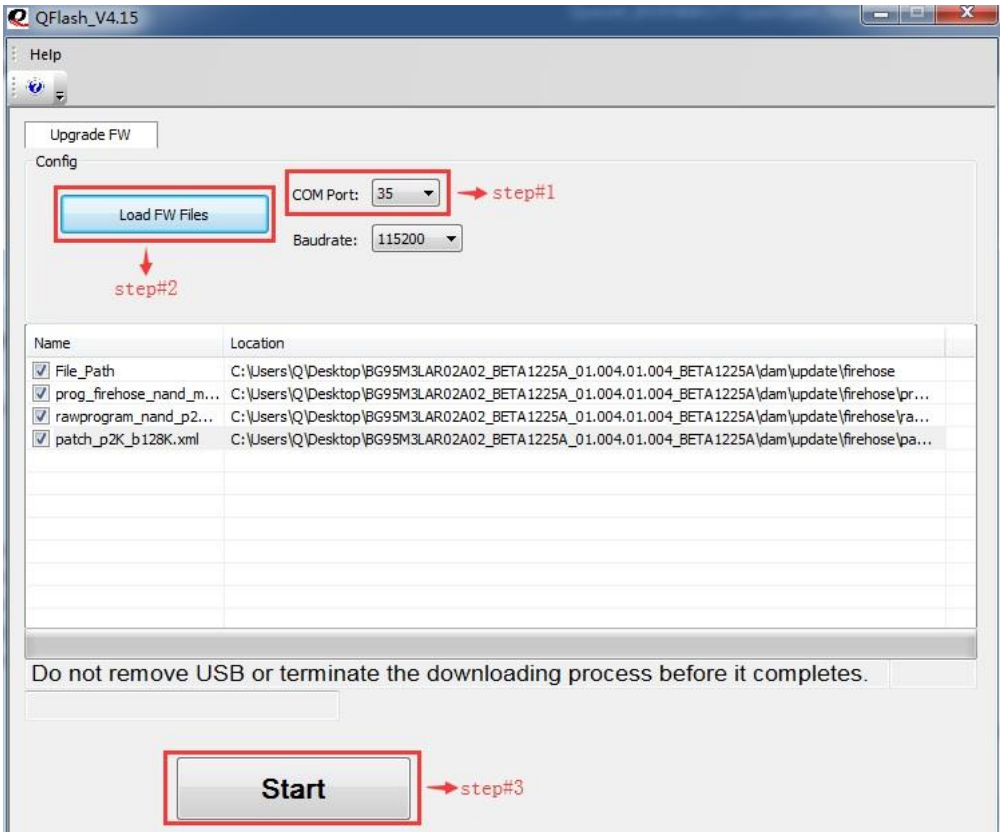

Figure 3: Steps of Downloading Application into NAND Flash

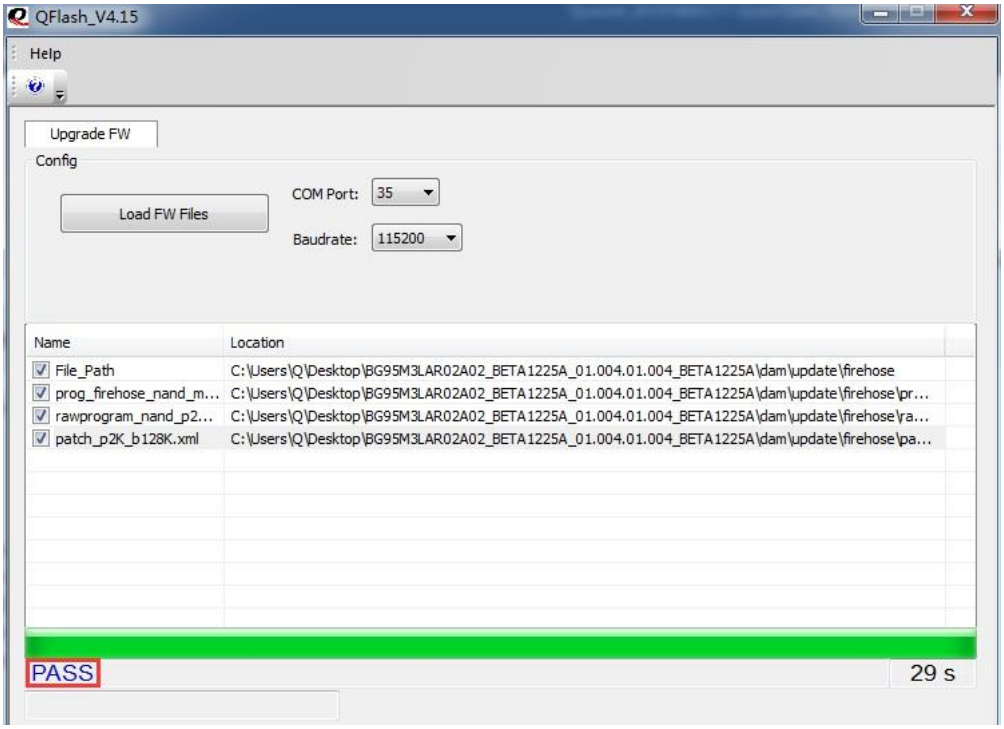

Figure 4: Downloading Application Successfully

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