



Perfect Wireless Experience
完美无线体验

FIBOCOM FG621 & FG650 & FM650 Series Firmware Download Guide_Windows

Version: V1.0.0

Date: 2020-04-17





Applicability type

No.	Product model	Description
1	FG621	NA
2	FG650	NA
3	FM650	NA

FIBOCOM
Confidential

Reproduction forbidden without Fibocom Wireless Inc. written authorization - All Rights Reserved.



Copyright

Copyright ©2020 Fibocom Wireless Inc. All rights reserved.

Without the prior written permission of the copyright holder, any company or individual is prohibited to excerpt, copy any part of or the entire document, or transmit the document in any form.

Notice

The document is subject to update from time to time owing to the product version upgrade or other reasons. Unless otherwise specified, the document only serves as the user guide. All the statements, information and suggestions contained in the document do not constitute any explicit or implicit guarantee.

Trademark



The trademark is registered and owned by Fibocom Wireless Inc.

Versions

Version	Author	Assessor	Approver	Update Date	Description
V1.0.0	Chen Cong	Yang Zhiping	Yang Shuai	2020-04-24	Initial Version for FG621 & FG650 & FM650

Reproduction forbidden without Fibocom Wireless Inc. written authorization - All Rights Reserved.



Contents

- 1 Preface..... 5
 - 1.1 Manual Scope..... 5
 - 1.2 Target Audience..... 5
- 2 ResearchDownload Introduction..... 5
 - 2.1 Introduction..... 5
 - 2.2 Environment 5
 - 2.2.1 Hardware environment..... 5
 - 2.2.2 Software environment 6
- 3 GUI Descriptions..... 6
 - 3.1 Executable file path 6
 - 3.2 Main GUI 7
 - 3.3 Toolbar 7
 - 3.4 Status Area 7
- 4 Quick Start 8
 - 4.1 Hardware connection 8
 - 4.2 Backup Set 9
 - 4.2.1 File backup 9
 - 4.2.2 NVItem backup..... 9
 - 4.2.3 Save file to local 10
 - 4.3 Download..... 11



1 Preface

1.1 Manual Scope

This manual introduces how to write firmware to hardware module using the ResearchDownload tool.

1.2 Target Audience

This manual is intended for the developers who need to communicate with the Fibocom family devices using the ResearchDownload.

2 ResearchDownload Introduction

2.1 Introduction

ResearchDownload is for developer to develop and debug and used to write the mobile software into the mobile device through the serial port or USB. It supports downloading to multiple mobile devices at the same time. Connect the mobile device correctly to the serial port and switch it to boot mode, ResearchDownload will automatically start downloading. After downloading into one mobile device is completed, manually replace the mobile device with another, and ResearchDownload will automatically detect the mobile device and start downloading again.

2.2 Environment

2.2.1 Hardware environment

Hardware	basic requirements
PC Memory	4G or above
PC hard disk	4G or above free space
PC USB Port	At least one USB port
Cable	Uart or usb cable

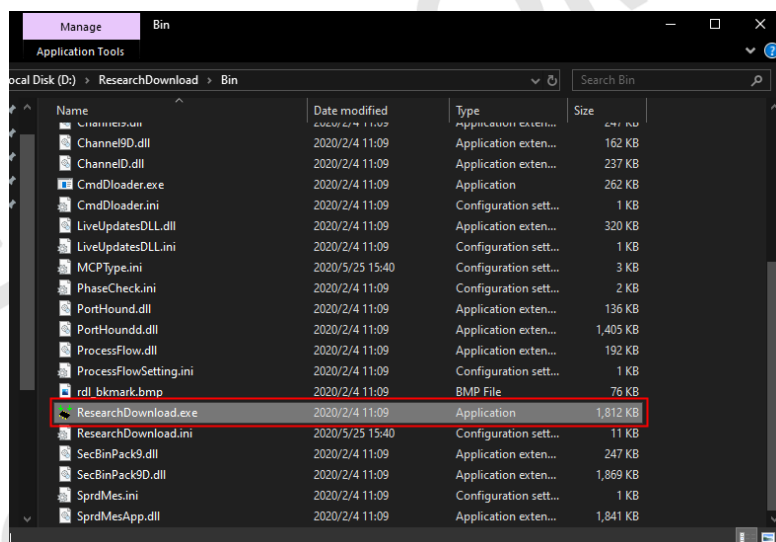
2.2.2 Software environment

Software	basic requirements
OS	Windows 7 or above
USB driver	2.0.0.131 or above

3 GUI Descriptions

3.1 Executable file path

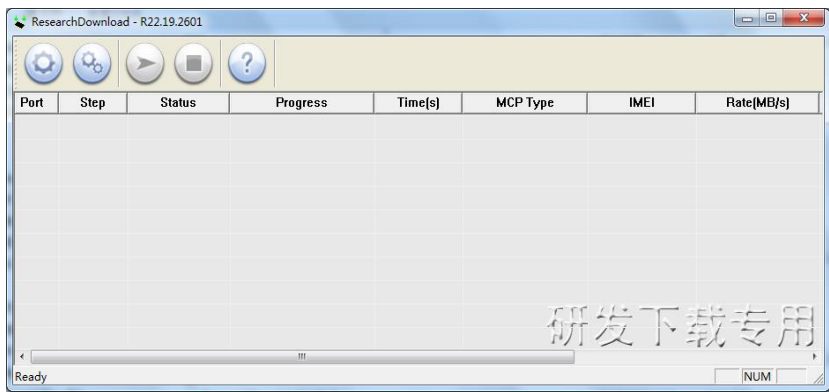
\\ResearchDownload\\Bin\\ ResearchDownload.exe










3.2 Main GUI

Launch ResearchDownload.exe , shows the main user interface(“ ResearchDownload – R22.19.2601” and “R22.19.2601” is tool version info, The version number will be continuously upgraded, which is based on the actual tool interface).



3.3 Toolbar

Icon	Description
	Select the downloading packet file
	Set the downloading parameters
	Start downloading
	Stop downloading
	Version information

3.4 Status Area



The area below the toolbar is the status window, which is used to display the status of the port,

Port	Step	Status	Progress	Time[s]	MCP Type	IMEI	Rate[MB/s]
3	System	Downloading...	<div><div></div></div>	22	—	867400020316612	Avg:4.82, Peak:11.50

the status of the download, the result, etc.

Column	Description
Port	Port number
Step	Current file name or operation
Status	Current operation status
Progress	Download progress: <ul style="list-style-type: none">• Waiting indicates no mobile device is detected.• Inprogress indicates downloading is ongoing.• This column turns green when downloading is complete and red when an error occurs.
Time(s)	Cost time (second), each download
MCP Type	Show MCP Type info
IMEI	Show device's IMEI info
Rate[MB/s]	Show download rate, Avg is the average rate, Peak is the highest rate

4 Quick Start

4.1 Hardware connection

- Firstly, disconnect the USB cable connected to computer and board;
- Disconnect board power supply (DC power supply or battery power supply);
- Press the POWER key and USB_BOOT key on Board and do not release;
- Insert USB cable;
- When the progress bar starts to move in ResearchDownload then let out the POWER key and USB_BOOT key



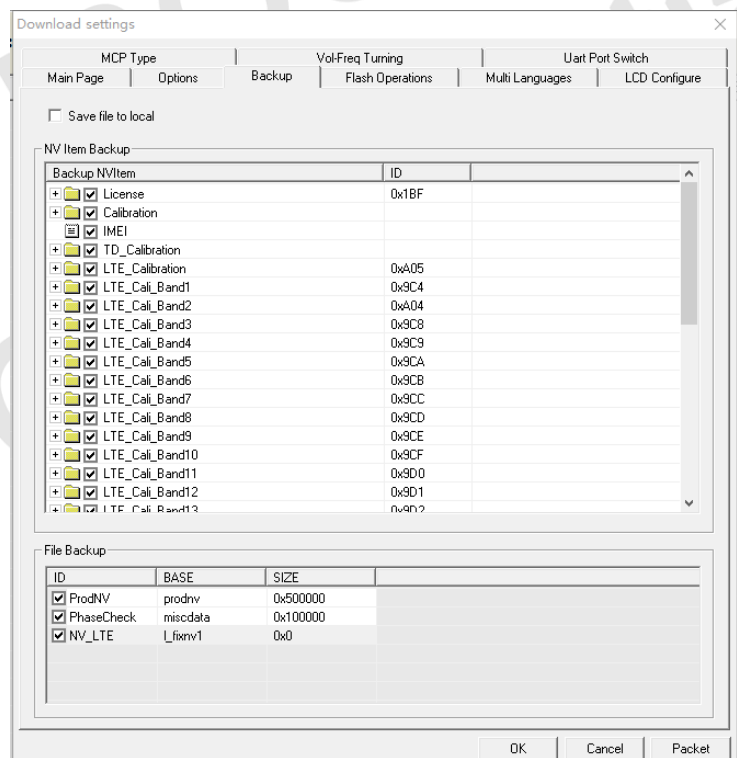
4.2 Backup Set

4.2.1 File backup

The list box for File Backup lists the partitions that need to be backed up by default, which will be backed up when the check option is downloaded. If you do not check the box, you will not backup the corresponding partition data, and directly download the original download file in the pac to the corresponding partition. If the appropriate download is not checked on the MainPage Settings page, the partitions are not manipulated at download time.

4.2.2 NVItem backup

NVItem Backup area list NV backup ID info, if select backup nv partition in File Backup, download tool will auto backup NV data. NV is raw binary data. It use NV Item ID to index the data. Some import data and configure data is stored in the NV, such as RF calibration, IMEI, and etc. So when upgrade the software of SPRD devices, the download tool need to backup some of NV Item ID's data. The backup process is as below:



Reproduction forbidden without Fibocom Wireless Inc. written authorization. All Rights Reserved.

- a. Read NV image data (d0) from the device
- b. Find NV Item ID that need backup in the d0
- c. Find NV Item ID that need backup in the NV image file (d1)
- d. Replace the data found in d1 with data found in d0.
- e. Download the merged d1 data to device.

4.2.3 Save file to local

The function of this setting item is used for FLASH's read and write function. It will not go to the configuration Page until the download item in the Main Page is processed. If you have "Erase All Flash" configured, first read back the backup partition, then Erase the entire Flash, then complete the download in MainPage, and finally execute the read and write configuration item in this setting. Select the "Flash Operations" TAB in the Settings window to enter the Flash Operations Settings interface.

Download settings

MCP Type

Vol-Freq Tuning

Uart Port Switch

Main Page

Options

Backup

Flash Operations

Multi Languages

LCD Configure

Read Flash

☐ Active Read Flash

☐ Select All

Clear

SN	Base	Size	File
<input type="checkbox"/>	spiloader	0xFFFFFFFF	D:\ResearchDownload\Bin\ReadFlash\u-boot-spl-16k-si...
<input type="checkbox"/>	recovery	0xE00000	D:\ResearchDownload\Bin\ReadFlash\recovery-signing
<input type="checkbox"/>	boot	0x900000	D:\ResearchDownload\Bin\ReadFlash\boot-signing
<input type="checkbox"/>	system	0x2000000	D:\ResearchDownload\Bin\ReadFlash\rootfs.ubifs
<input type="checkbox"/>	prodnv	0x500000	D:\ResearchDownload\Bin\ReadFlash\prodnv_b128k...
<input type="checkbox"/>	miscdata	0x100000	D:\ResearchDownload\Bin\ReadFlash\miscdata.bin
<input type="checkbox"/>	userdata	0xFFFFFFFF	D:\ResearchDownload\Bin\ReadFlash\userdata_b128k...

Erase Flash

☐ Active Erase Flash

Clear

SN	Base	Size	
----	------	------	--

Write Flash

☐ Active Write Flash

Clear

SN	Base		File
----	------	--	------

Erase Flash

☐ Erase All Flash

Notice: This operation will clear all data stored in the flash including calibration.

OK


Cancel

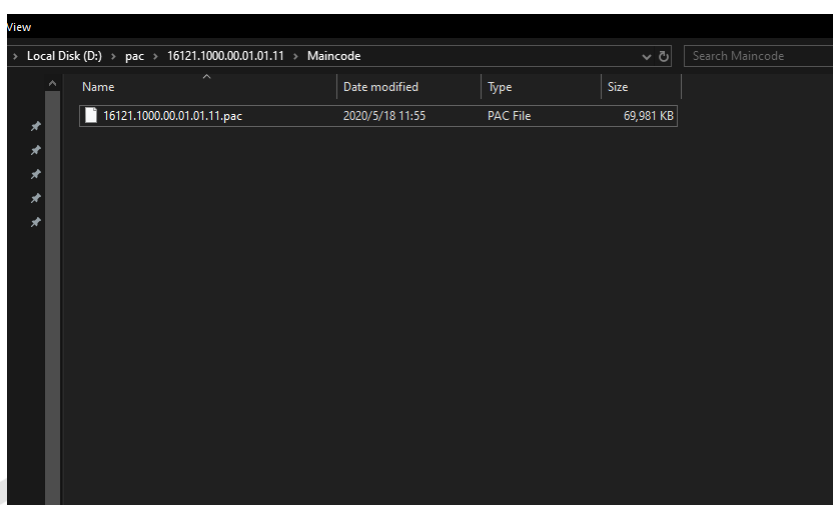
Packet



4.3 Download

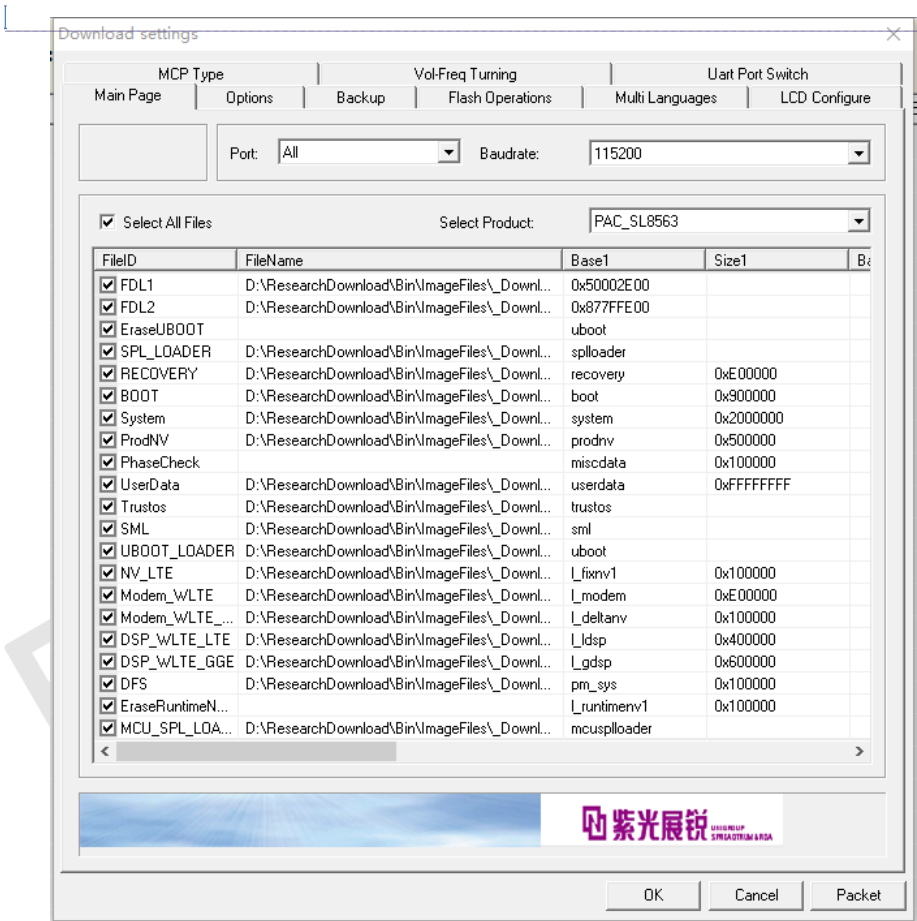
Step1: Open pac file

Click  button and select a pac file.



Step2: Set download parameter


Click  button will show the bellow settings windows, If there are no specific requirements, select the default Settings



批注 [王海亮1]: 这个软件是否可以切换为英文界面？看看紫光展锐的图标能否换成英文的。如果能优化最好，不是必需。

批注 [陈琛2R1]: 此 LOGO 为图片格式，不能切换为英文。

Step3: Start download

Click  button, then will automatically detects the available serial port and start to download.

Port	Step	Status	Progress	Time[s]	MCP...	IMEI	Rate[MB/s]
31	System	Downloading...	<div></div>	39	—	867400020316612	Avg:8.72, Peak:14.05

Downloading progress



Step4: Completing download

The downloading result is displayed in the status window, Green is"Passed", Red is"Failed"


Port	Step	Status	Progress	Time[s]	MCP...	IMEI	Rate[MB/s]
31	UBOOTLoader	Finish	Passed	59s	—	867400020316612	Avg:10.15, Peak:14.14

download pass

Port	Step	Status	Progress	Time[s]	MCP...	IMEI	Rate[MB/s]
31	FDL2	Unplugged	Failed: User cancel	3s	—	—	Avg:0.00, Peak:0.00

download failed

Step5: Stop download

Disconnect the mobile device from the serial port. In continuous downloading mode, if there are more mobile devices to be downloaded, connect it to the serial port and download tool automatically starts downloading again. Click  to stop download.