

QFlash User Guide

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About the Document

Revision History

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1 Introduction

1.1. OS and Version

This document mainly introduces methods of upgrading the firmware with “QFlash” upgrade tool provided by Quectel. The tool can run on a PC without installation if the OS is among the ones listed below:

- Windows 7
- Windows 8
- Windows 10

Any newer version of the tool and notification thereof will be provided in advance.

NOTE

1. In Windows 10, please start *QFlash.exe* by right-clicking the icon and select “**Run as administrator**”.
2. The storage path of the tool and the firmware package should NOT contain any space, and English characters are preferred.
3. The storage/loading path of the firmware package has to be a local path instead of a USB or network path.

1.2. Applicable Modules

QFlash is applicable to the following Quectel modules.

Table 1: Applicable Modules

Module Series	Modules
LPWA Module Series	BCxx: BC95-G/ BC68/ BC66/ BC660K-GL
	BGxx: BG96/ BG95/ BG77/ BG770A-GL/ BG951A-GL

LTE Standard Module Series	EC2x: EC20-CE/ EC25/ EC21
	EG9x: EG91/ EG95
	EG2x-G: EG21-G/ EG25-G
	EM05
	EC200U/ EC200T/ EC200S/ EG912Y
LTE-A Module Series	Ex06: EP06/ EG06/ EM06
	Ex12: EG12/ EM12-G
	EG18
Automotive Module Series	AGxx: AG35/ AG15/ AG52xR/ AG55xQ/ AG215S-CN AG509M-EU
Smart Module Series	SCxx: SC20/ SC66/ SC200E SGxx: SG865W-WF
WCDMA Module Series	UCxx: UC15/ UC20/ UC200T
	UGxx: UG95/ UG96
GSM/GPRS/GNSS Module Series	Mxx: M10/ M66/ M72/ M80/ M85/ M95/ M65/ MC60
	GCxx: GC10
5G Module Series	RG500Q/ RG520N/ RG500L
	RM5xx: RM500Q
WiFi&Bluetooth Module Series	FC41D

NOTE

Quectel modules listed above may include multiple models. See the corresponding module specifications for more specific information.

1.3. About QFlash Tool

Click “**About This Tool**” under “**Help**” in the toolbar, and you can obtain the version information of the QFlash tool developed by Quectel as is shown below:

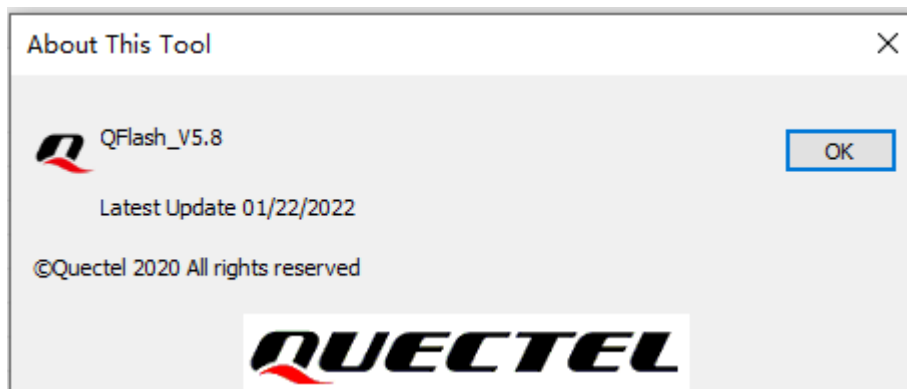


Figure 1: About the QFlash Tool

2 Firmware Upgrade Procedures

The firmware is upgraded through the following three steps with QFlash.

Step 1: Set the serial port and baud rate;

Step 2: Load firmware files;

Step 3: Upgrade the firmware.

The following chapters describe the details about how to use the tool to upgrade firmware.

2.1. Configure Serial Port and Baud Rate

After the QFlash tool is started, the main interface is shown as below.

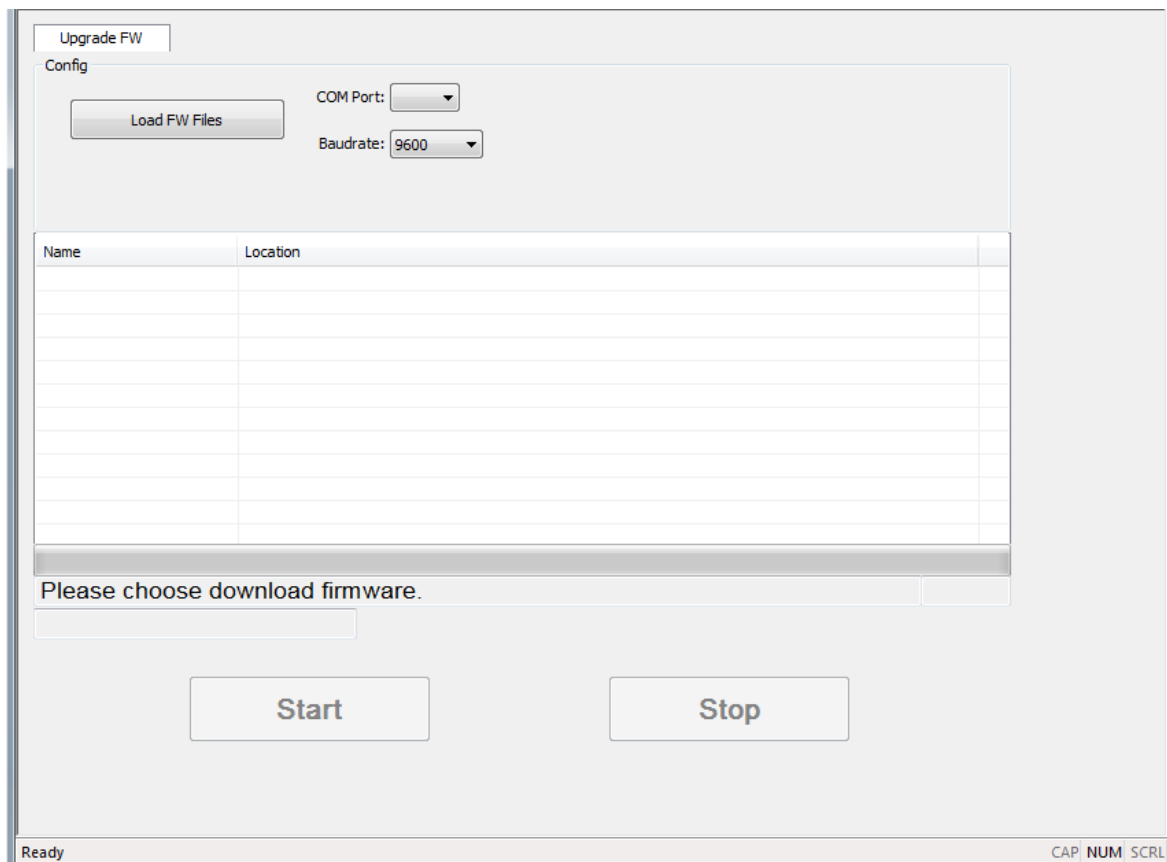


Figure 2: Main Interface of QFlash

2.1.1. Set COM Port

2.1.1.1. COM Port Selection for Mxx/GCxx/BCxx

Click “**COM Port**” drop-down list to select the COM port through which the firmware will be upgraded, as shown in the following figure.

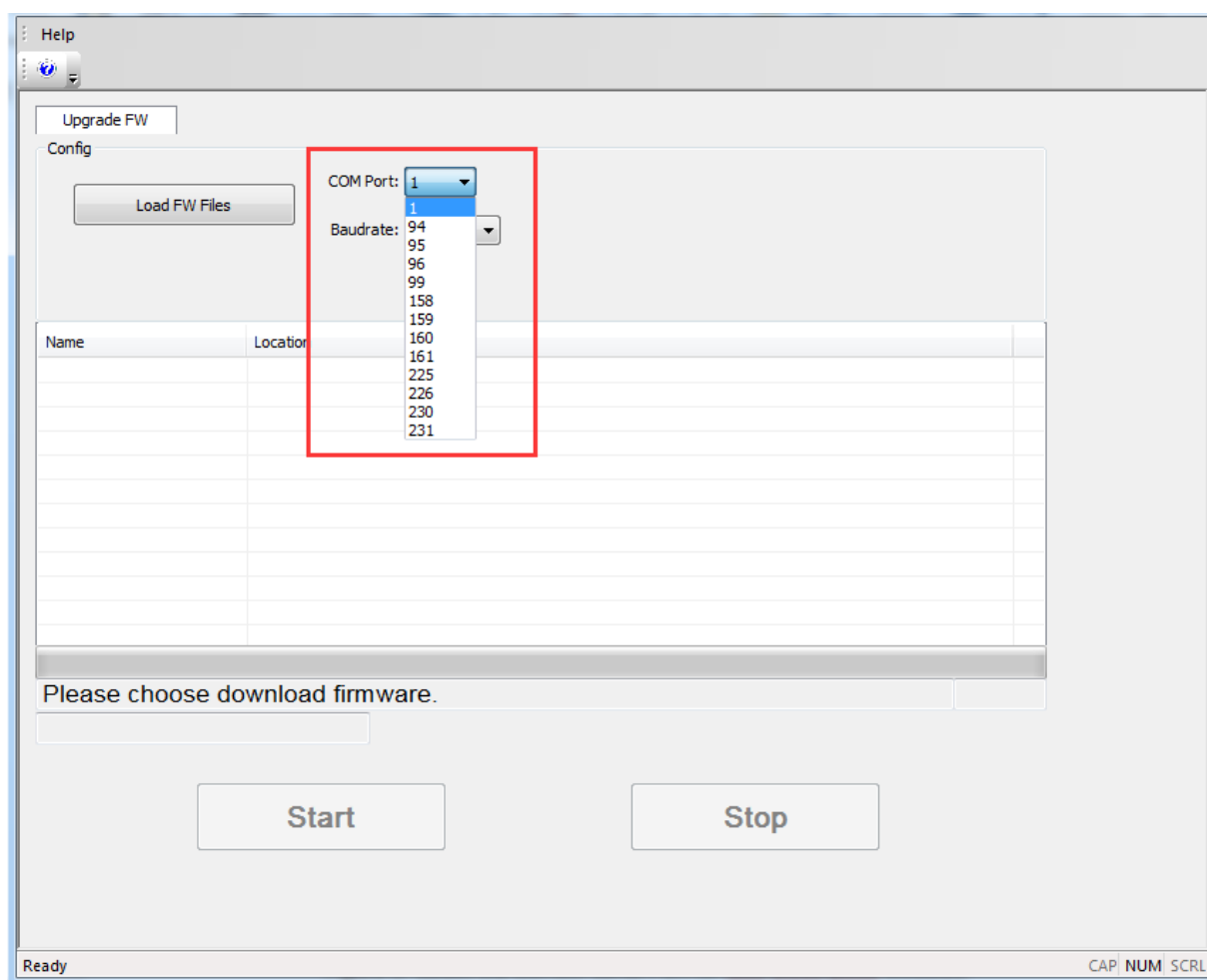


Figure 3: Select the Correct Serial Port for Mxx/GCxx/BCxx Modules

NOTE

1. For M10, M66, M72, M80, M85, M95 or MC60, the main UART is used to upgrade firmware. After the port is selected, switch the D/L to “**ON**” on EVB within 30 seconds after clicking “**Start**” button, and then manually restart the module.
2. For M65 and GCxx modules, the USB port is used to upgrade firmware. After the port is selected, please click the “**Start**” button and then the module will be automatically restarted.
3. For BC66 module, the USB UART Ch A is used to upgrade firmware. After the port is selected,

please click the “**Start**” button and wait for the prompt “[INFO]Start connect with target,Please reset DUT...”, and then manually restart the module.

4. For BC95-G and BC68 modules, the USB UART Ch A is used to upgrade firmware. After the port is selected, please click the “**Start**” button and wait for the prompt “**Reset**”, and then manually restart the module.
5. For BC660K-GL module, the first USB Serial Port is used to upgrade firmware. After the port is selected, press and hold the BOOT pin during module reset until the module enters the download mode, and then click the “**Start**” button to upgrade.
6. For FC41D module, the main UART is used to upgrade firmware. After the port is selected, please click the “**Start**” button and wait for the prompt “**Erasing Flash...**”, and then manually restart the module.

2.1.1.2. COM Port Selection for UGxx

For UGxx, the USB port is used to upgrade firmware, and it is selected automatically. When firmware files are uploaded, “**USB**” will be displayed in gray in “**COM Port**” drop-down list. The module needs to be turned off before “**Start**” is clicked. After clicking “**Start**”, please turn on the module within 10 seconds. The interface is shown in the following figure.

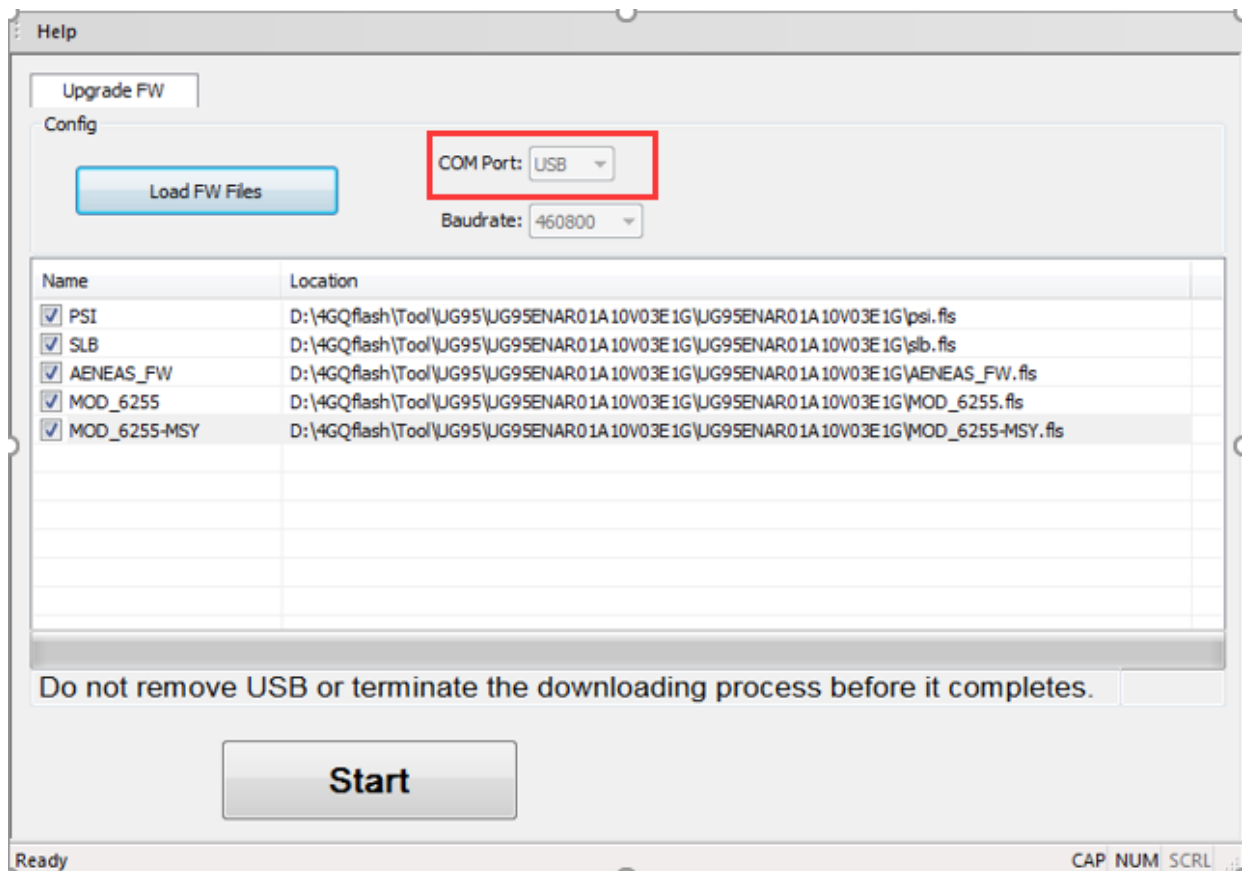


Figure 4: USB Port Selected Automatically for UGxx

2.1.1.3. COM Port Selection for UCxx/EC2x/EG9x/EG2x-G/Ex06/EM05/AGxx/SGxx/BGxx/Ex12/

EG18/RG500Q/RG520N/RM5xx

For UCxx, EC2x, EG9x, EG2x-G, Ex06, EM05, AGxx, SGxx, BGxx, Ex12, EG18, RG500Q, RG520N or RM5xx, the USB DM port can be used for firmware upgrade. Click “**COM Port**” drop-down list and select the USB DM port for upgrade, as shown in the following figure.

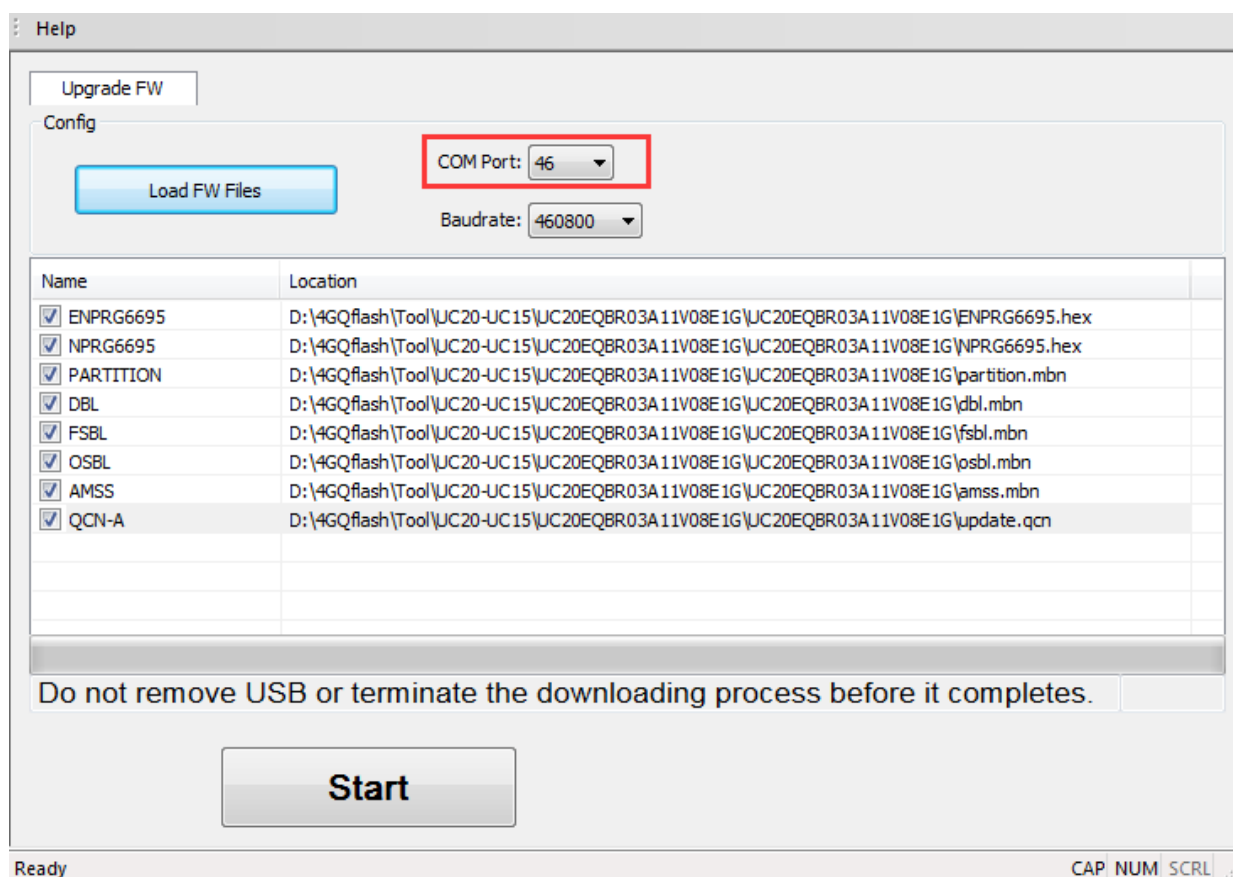


Figure 5: Select the USB DM Port for UCxx/EC2x/EG9x/EG2x-G/Ex06/EM05/AGxx/SGxx/BGxx/Ex12/EG18/RG500Q/RG520N/RM5xx

2.1.1.4. COM Port Selection for EC200U

For EC200U, the USB AT port can be used for firmware upgrade. Click “**COM Port**” drop-down list and select Quectel USB AT port for upgrade, as shown in the following figure.

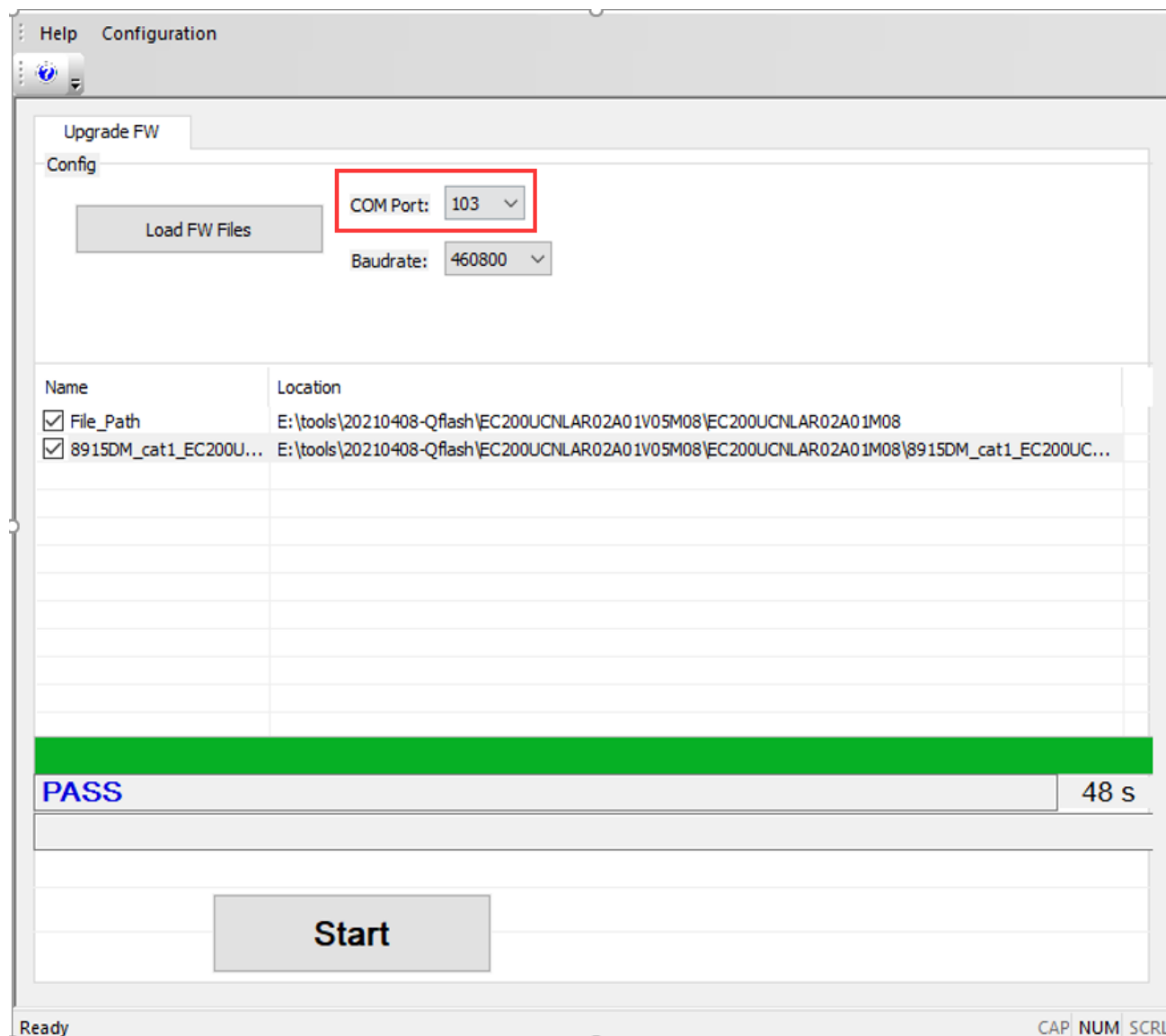


Figure 6: Select the USB AT Port for EC200U

NOTE

1. After the “**Start**” button is clicked, the tool will automatically switch to the SPRD U2S Diag port to start the upgrade. After successful upgrade, the loaded port is still the SPRD U2S Diag port and you need to reset the module to reload the ports.
2. You can also upgrade EC200U by short-circuiting BOOT to PL_1V8 to get the SPRD U2S Diag port loaded for upgrade.

2.1.1.5. COM Port Selection for EC200T/EC200S/EG912Y

For EC200T, EC200S and EG912Y, you can directly select the .zip package to load firmware.

For EC200S and EG912Y, after clicking “**Load FW Files**” to select the .zip package, you can use either the USB AT port or Quectel Download Port for firmware upgrade. If you use USB AT port for upgrade, wait for the prompt “**getting serial devices list...\n**” before clicking “**Start**” to upgrade. If you use Quectel Download Port for upgrade, wait for the prompt “**<COM68> device <COM68> is ready to be enabled manually\n**” before clicking the “**Start**” button to upgrade.

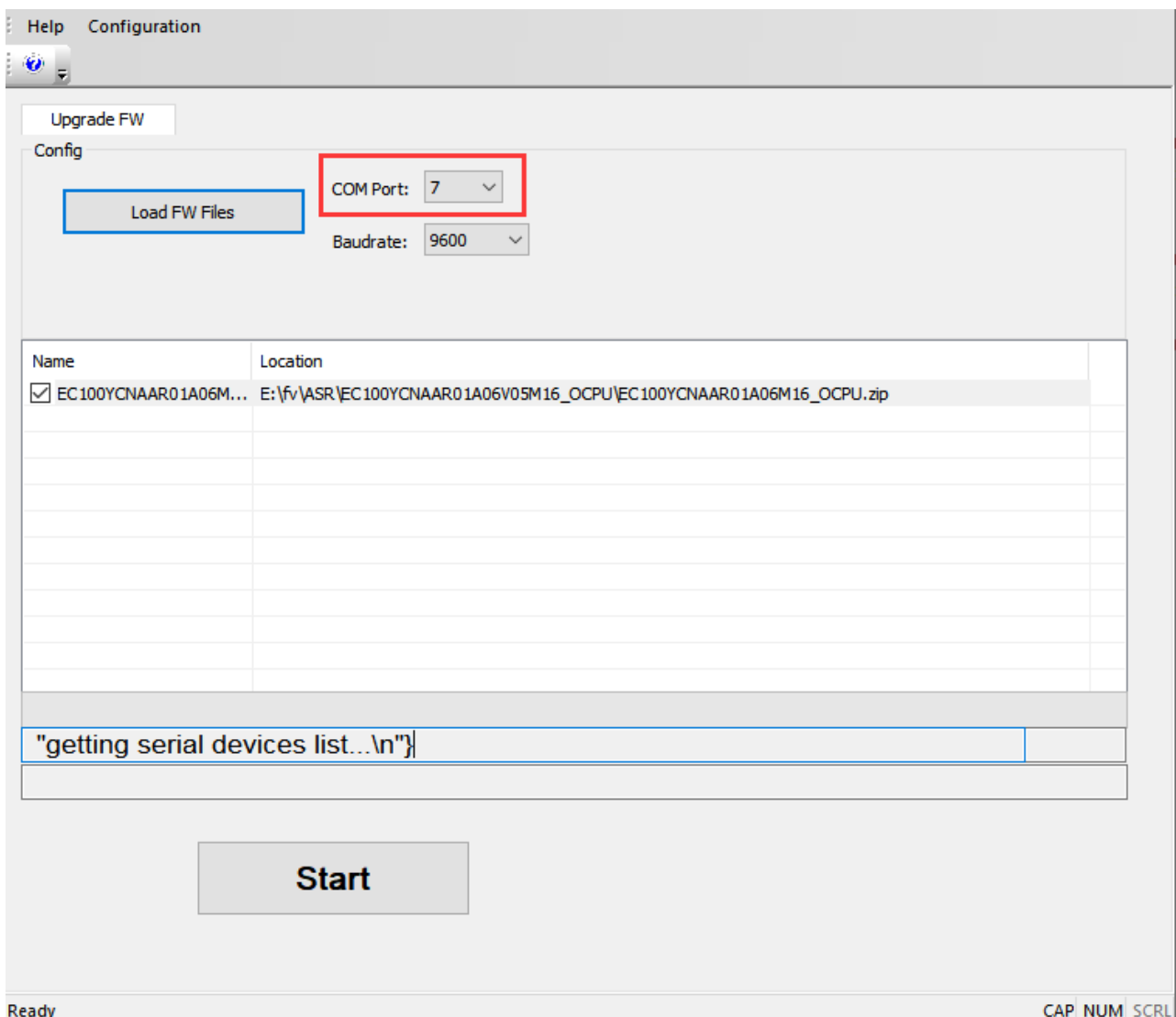


Figure 7: Select the USB AT Port for EC200S/EG912Y

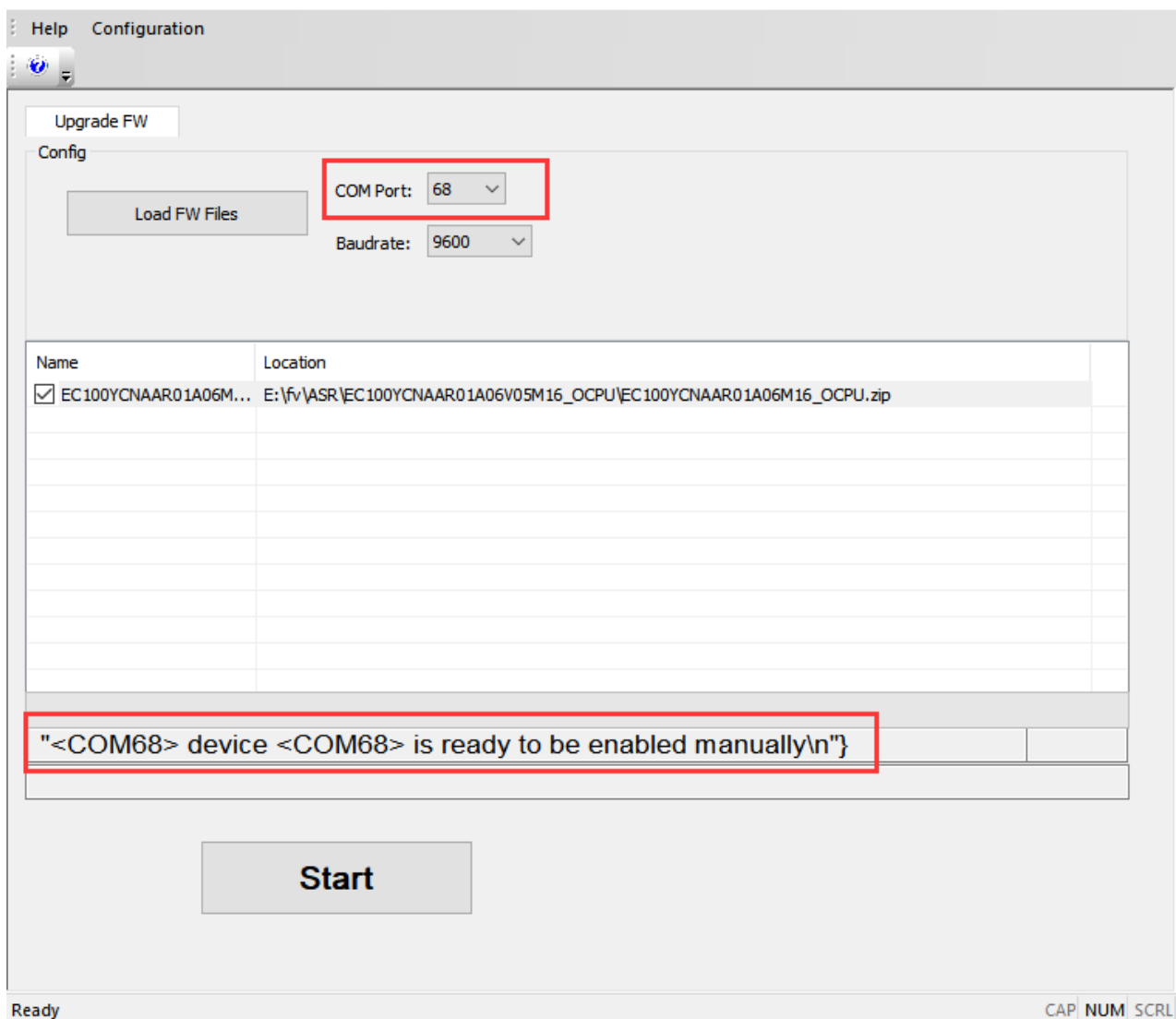


Figure 8: Select Quectel Download Port for EC200S/EG912Y

NOTE

For EC200S and EG912Y, you can get Quectel Download Port loaded for upgrade by short-circuiting BOOT to PL_1V8. Also, you can first select the .zip firmware package, and then manually power on the module to directly get Quectel Download Port loaded.

For EC200T, select the .zip firmware package, and then click the **“Start”** button. After this, manually power on the module to automatically select Quectel USB Download Port for upgrade.

Help Configuration

Upgrade FW

Config

Load FW Files

COM Port: USB ▼

Baudrate: 9600 ▼

Name	Location
<input checked="" type="checkbox"/> EC200TCNAAR02A04V...	E:\fv\ASR\EC200TCNAAR02A04V03M1G.zip

Do not remove USB or terminate the downloading process before it completes.

Start

Figure 9: Quectel USB Download Port Selected Automatically for EC200T

2.1.1.6. COM Port Selection for SCxx

For SCxx, the HS-USB Diagnostics 9091 port can be used for firmware upgrade. Click “**COM Port**” drop-down list and select the HS-USB Diagnostics 9091 port for upgrade, as shown in the following figure.

The screenshot shows the 'Upgrade FW' window with the 'Config' tab selected. A red box highlights the 'COM Port' dropdown menu, which is set to '7'. Below it, the 'Baudrate' is set to '460800'. A 'Load FW Files' button is visible. Below the configuration section is a table with two columns: 'Name' and 'Location'. The table contains several rows of files with checkboxes in the 'Name' column. At the bottom, there is a warning message: 'Do not remove USB or terminate the downloading process before it completes.' and a large 'Start' button.

Name	Location
<input checked="" type="checkbox"/> File_Path	E:\MSM8909\SC20\SC20CEPCR01A01V01H8G_SX_factory\SC20CEPCR01A01V01H8G_SX_factory
<input checked="" type="checkbox"/> prog_emmc_firehose_...	E:\MSM8909\SC20\SC20CEPCR01A01V01H8G_SX_factory\SC20CEPCR01A01V01H8G_SX_factory\prog_em...
<input checked="" type="checkbox"/> rawprogram_unsparse...	E:\MSM8909\SC20\SC20CEPCR01A01V01H8G_SX_factory\SC20CEPCR01A01V01H8G_SX_factory\rawprog...
<input checked="" type="checkbox"/> patch0.xml	E:\MSM8909\SC20\SC20CEPCR01A01V01H8G_SX_factory\SC20CEPCR01A01V01H8G_SX_factory\patch0.xml
<input checked="" type="checkbox"/> fs_image.tar.gz.mbn.img	E:\MSM8909\SC20\SC20CEPCR01A01V01H8G_SX_factory\SC20CEPCR01A01V01H8G_SX_factory\fs_image...
<input checked="" type="checkbox"/> zero.bin	E:\MSM8909\SC20\SC20CEPCR01A01V01H8G_SX_factory\SC20CEPCR01A01V01H8G_SX_factory\zero.bin

Figure 10: Select the HS-USB Diagnostics 9091 Port for SCxx

2.1.1.7. COM Port Selection for BG770A-GL

For BG770A-GL, the debug UART is used for firmware upgrade, and the name of the loaded port on PC is Silicon Labs CP210x USB to UART Bridge.

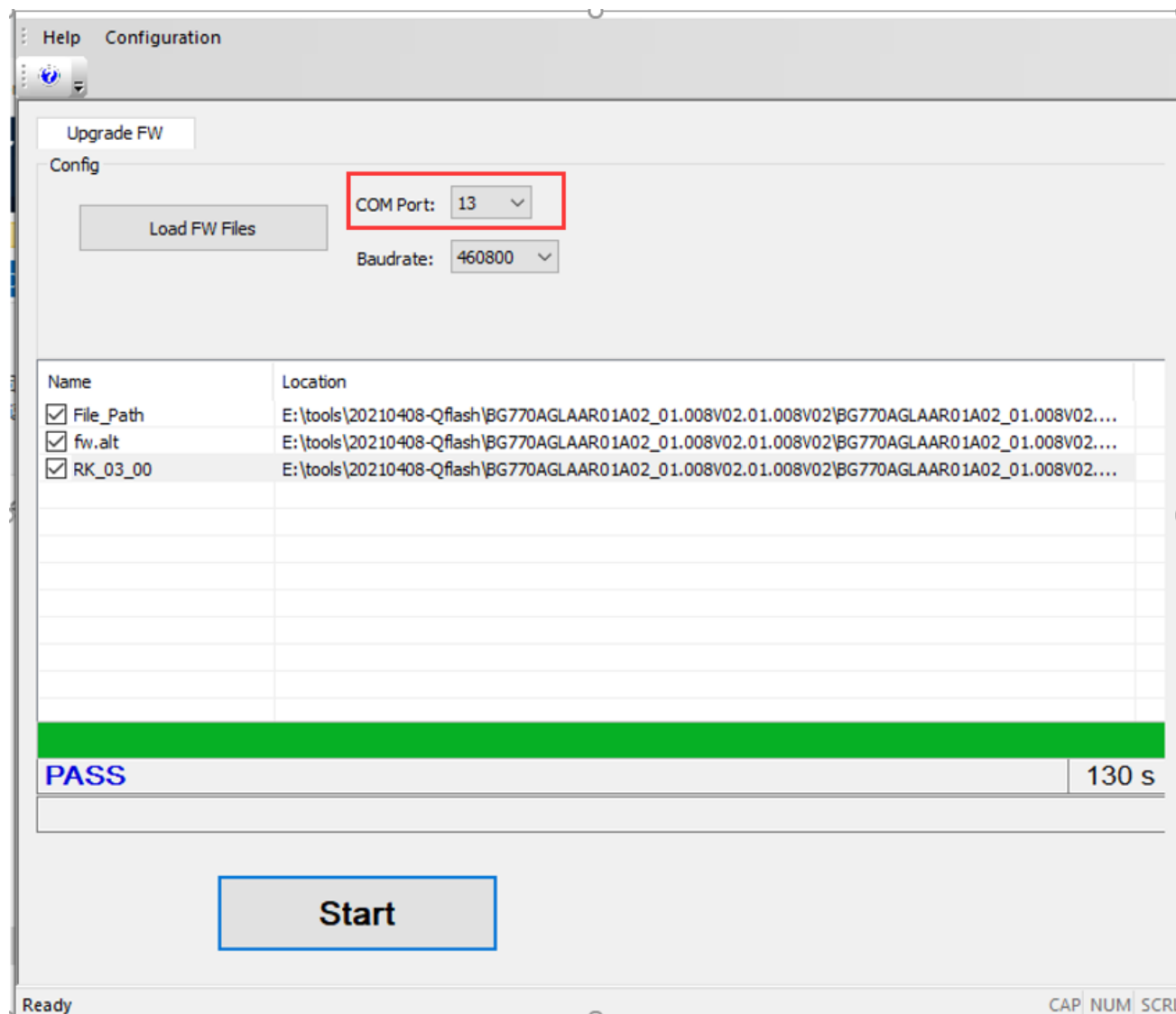


Figure 11: Select the Silicon Labs CP210x USB to UART Bridge Port for BG770A-GL

2.1.1.8. COM Port Selection for AG509M-EU

For AG509M-EU module, turn on the USB_BOOT switch, and then only the Android ADB interface will be loaded. Therefore, port selection is unnecessary for firmware upgrade of AG509M-EU with QFlash.

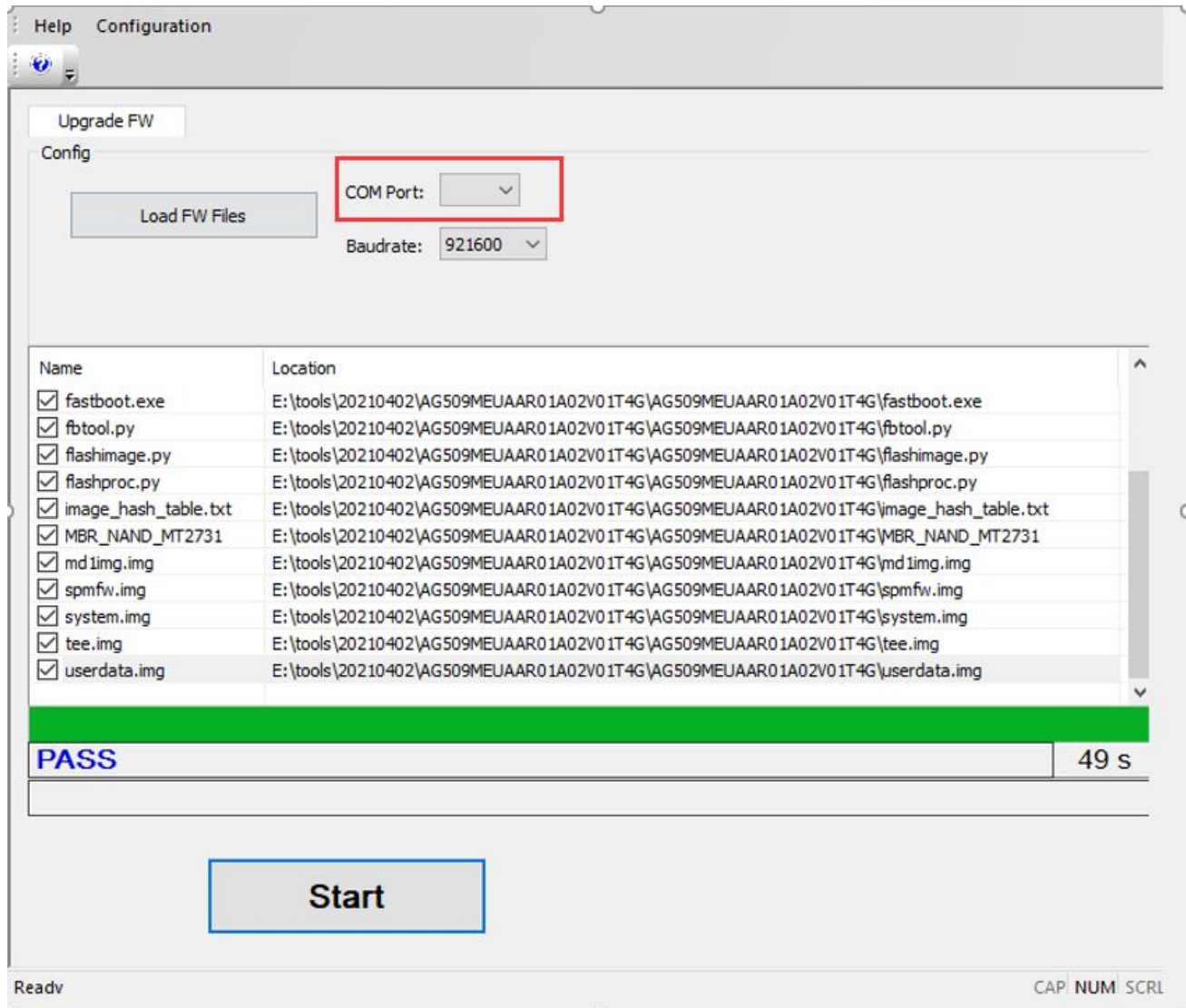


Figure 12: Port Selection is Unnecessary for AG509M-EU

NOTE

It is only supported by 64-bit systems to download the firmware package into this module.

2.1.1.9. COM Port Selection for RG500L

The RG500L module is upgraded using “Quectel USB ETS Port”.

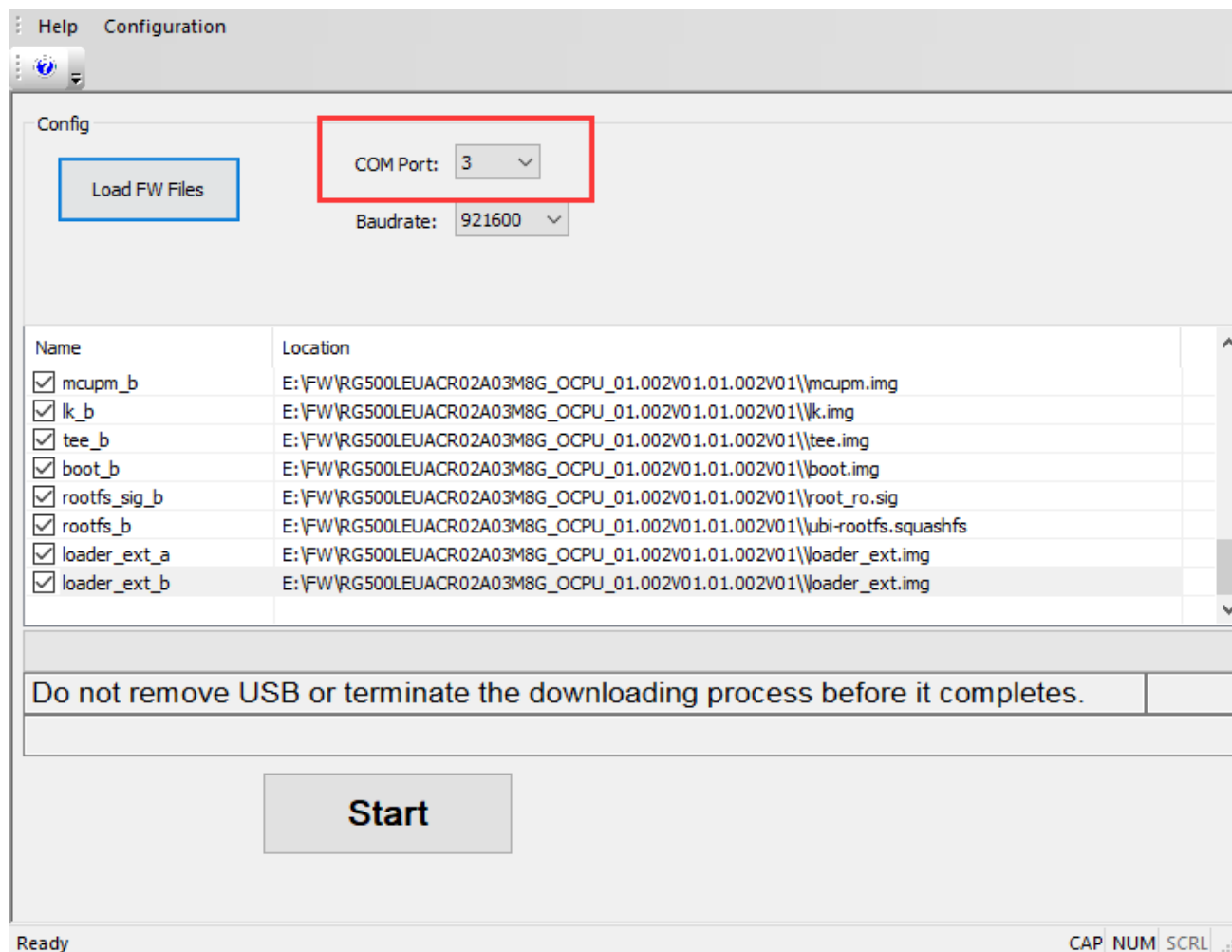


Figure 13: Select Quectel USB ETS Port for RG500L

2.1.1.10.COM Port Selection for BG951A-GL

The BG951A-GL module is upgraded using UART_CLI and UART_GNSS ports, whose names are both displayed as "Silicon Labs CP210x USB to UART Bridge" after the module is connected to the PC.

Click “**COM Port**” drop-down list and select the UART_CLI port number; then click “**GPS Port**” drop-down list and select the UART_GNSS port number.

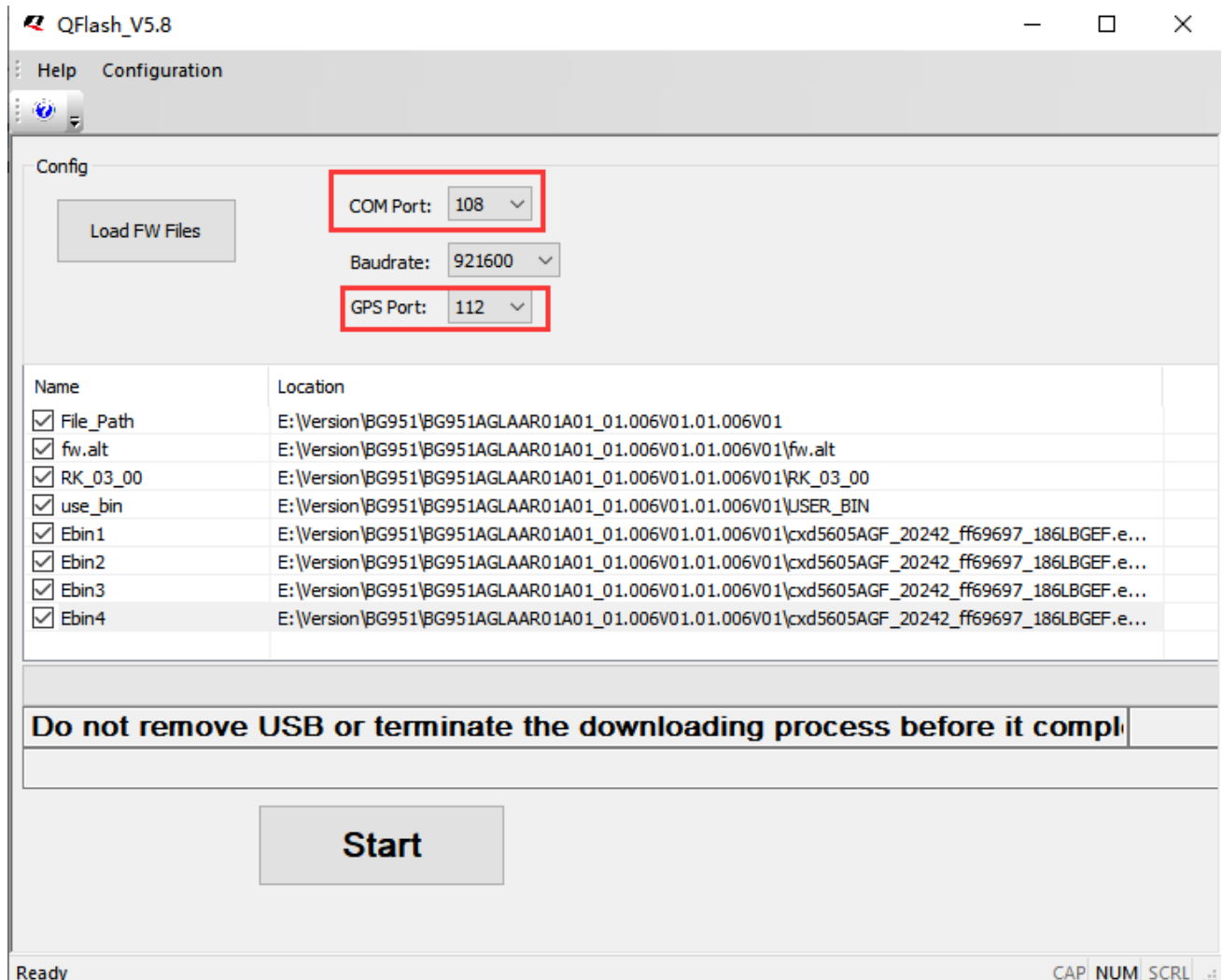


Figure 14: Select Silicon Labs CP210x USB to UART Bridge Port for BG951A-GL

2.1.2. Set Baud Rate

Click the “**Baudrate**” drop-down list and select an appropriate baud rate, as shown in the following figure.

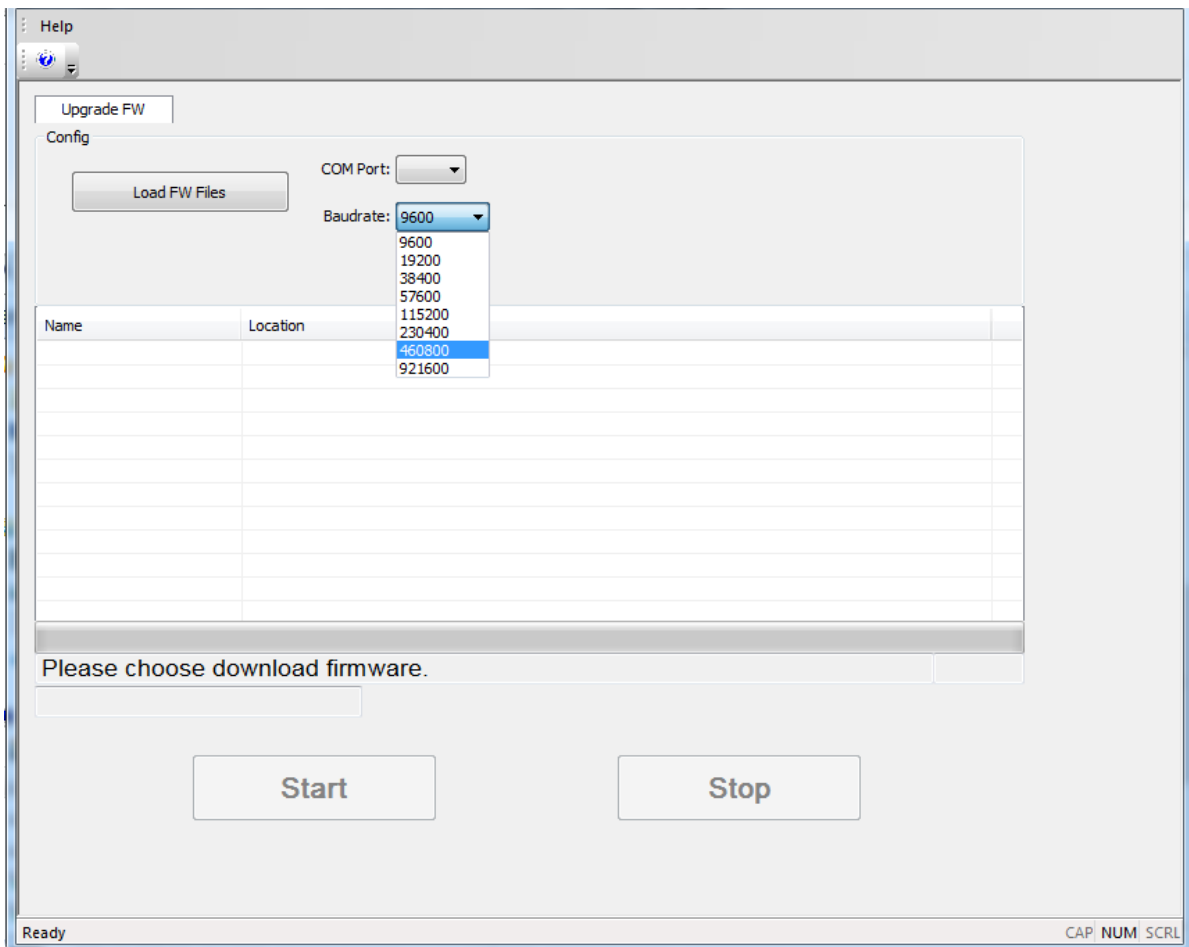


Figure 15: Select the Baud Rate

NOTE

1. Baud rate setting is unnecessary for virtual USB port.
2. There are different baud rate values to be selected and the hardware environment determines whether a specified baud rate can be supported. If the baud rate is not supported, an error message will be returned.
3. Please set baud rate to 921600 when upgrading firmware for GCxx, M65 or BC660K-GL modules, 9600 for other BCxx modules, and 460800 for other Quectel modules. Other baud rates may lead to an upgrading failure.

2.2. Load Firmware Files and APP Firmware

2.2.1. Load Firmware Files

The steps in this chapter are performed to load firmware files for standard and QuecOpen modules.

NOTE

The storage paths of the firmware files have to be local paths instead of USB or network paths. The paths should NOT contain any spaces, and English characters are preferred.

Step 1: Click the button “Load FW Files”.

Step 2: Select the Bootloader_xxx.bin, .txt, .cfg, .mbn, .lod, .fls, .fwpkg, .pac, .zip, .bin, .bat, .elf, fw.alt, .xml or .py file which needs to be downloaded to the module.

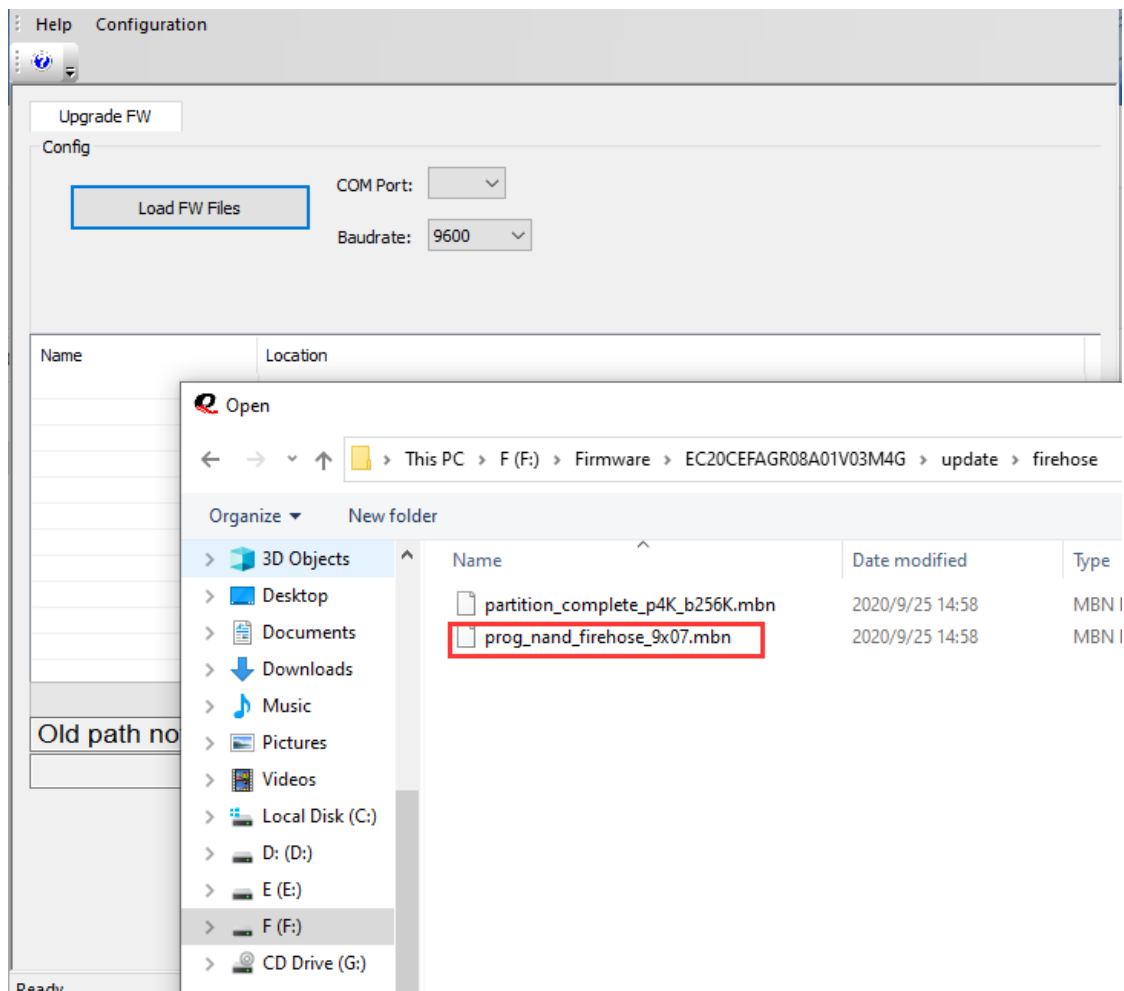


Figure 16: Select the File to Be Downloaded (Standard or QuecOpen® Modules)

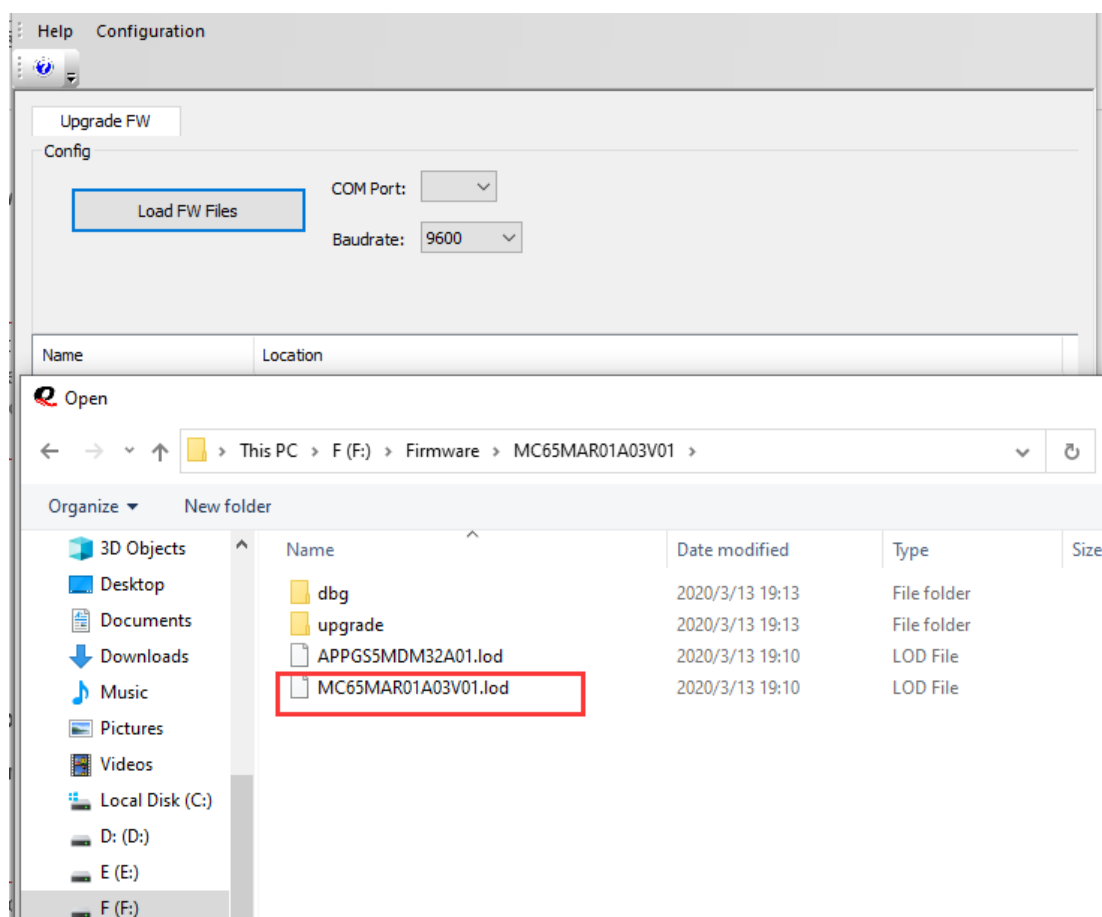


Figure 17: Select the File to Be Downloaded (QuecOpen® Modules)

NOTE

1. When *Firehose* folder exists in the firmware package, the firmware will be upgraded in Firehose mode by default. To upgrade in Sahara mode, please select “**Sahara only**” under “**Configuration**” in the menu bar. The upgrade will be processed in Sahara mode by default if there is no *Firehose* folder in the firmware package.
2. For EC200U and EC200D, select the .pac file.
3. For EC200T, EC200S and EG912Y, select the .zip file directly.
4. For BG770A-GL/BG951A-GL, select the fw.alt file.
5. For AG509M-EU, select the .py file.
6. For BC660K-GL/FC41D, select the .bin file.
7. For SCxx, AGxx, SGxx, RG500Q, RG520N, RM5xx, select the .elf file.
8. For RG500L, select the .xml file.

2.2.2. Load APP Firmware for QuecOpen® Modules

The steps in this chapter are performed to load APP firmware for QuecOpen modules.

NOTE

The storage paths of the APP firmware files have to be local paths instead of USB or network paths. The paths should NOT contain any spaces, and English characters are preferred.

2.2.2.1. Load APP Firmware for MC60/M66 QuecOpen®

Step 1: Click the button “Load FW Files”, and select the .cfg file which needs to be downloaded to the module.

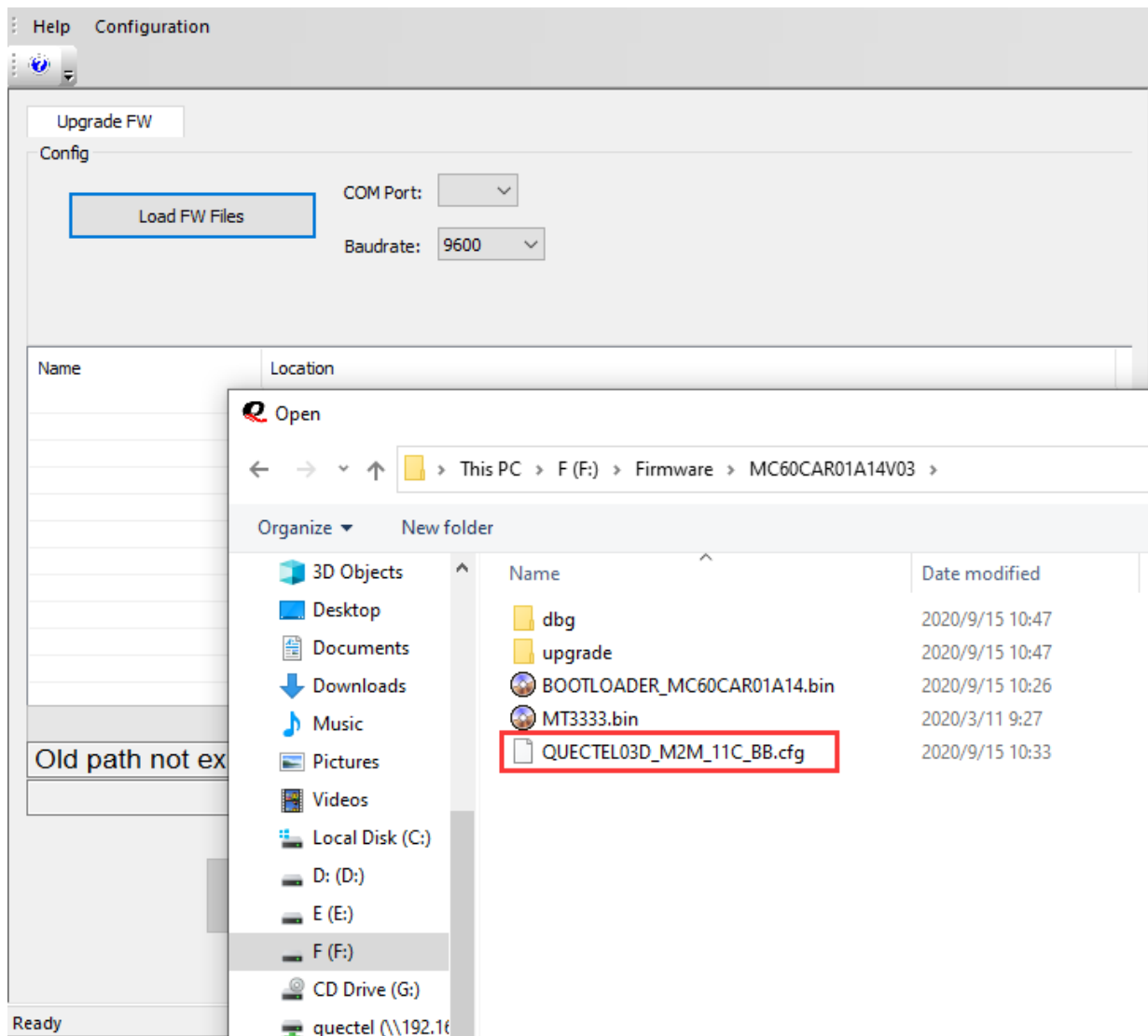


Figure 18: Select the .cfg File

Step 2: Click the “**Module Type**” drop-down list and select the corresponding module.

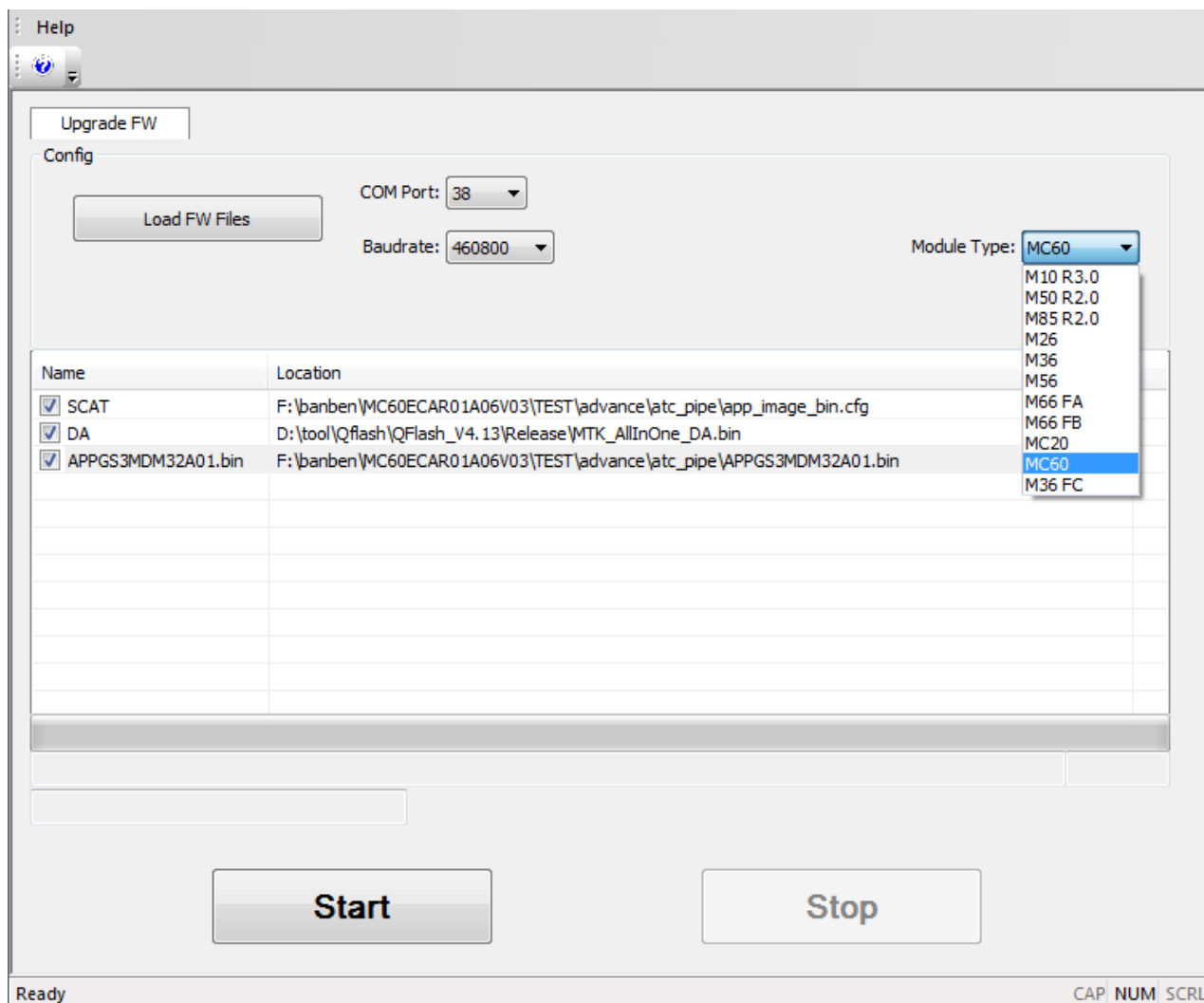


Figure 19: Select the Module Type

2.2.2.2. Load APP Firmware for M65 QuecOpen®

Click the button “**Load FW Files**”, and select the .lod file which needs to be downloaded to the module.

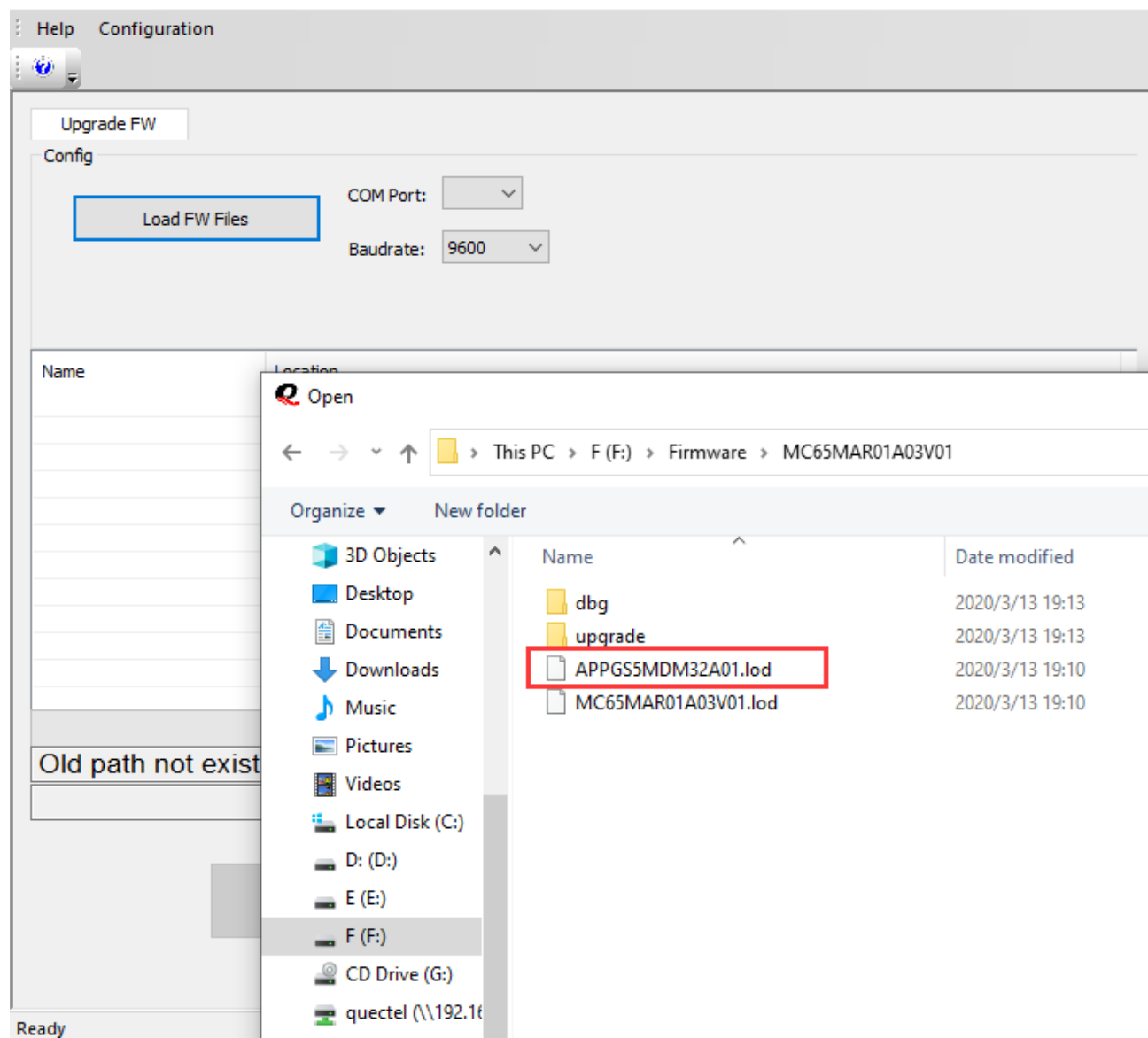


Figure 20: Select the .lod File

2.3. Upgrade Firmware

Step 1: Click the “Start” button.

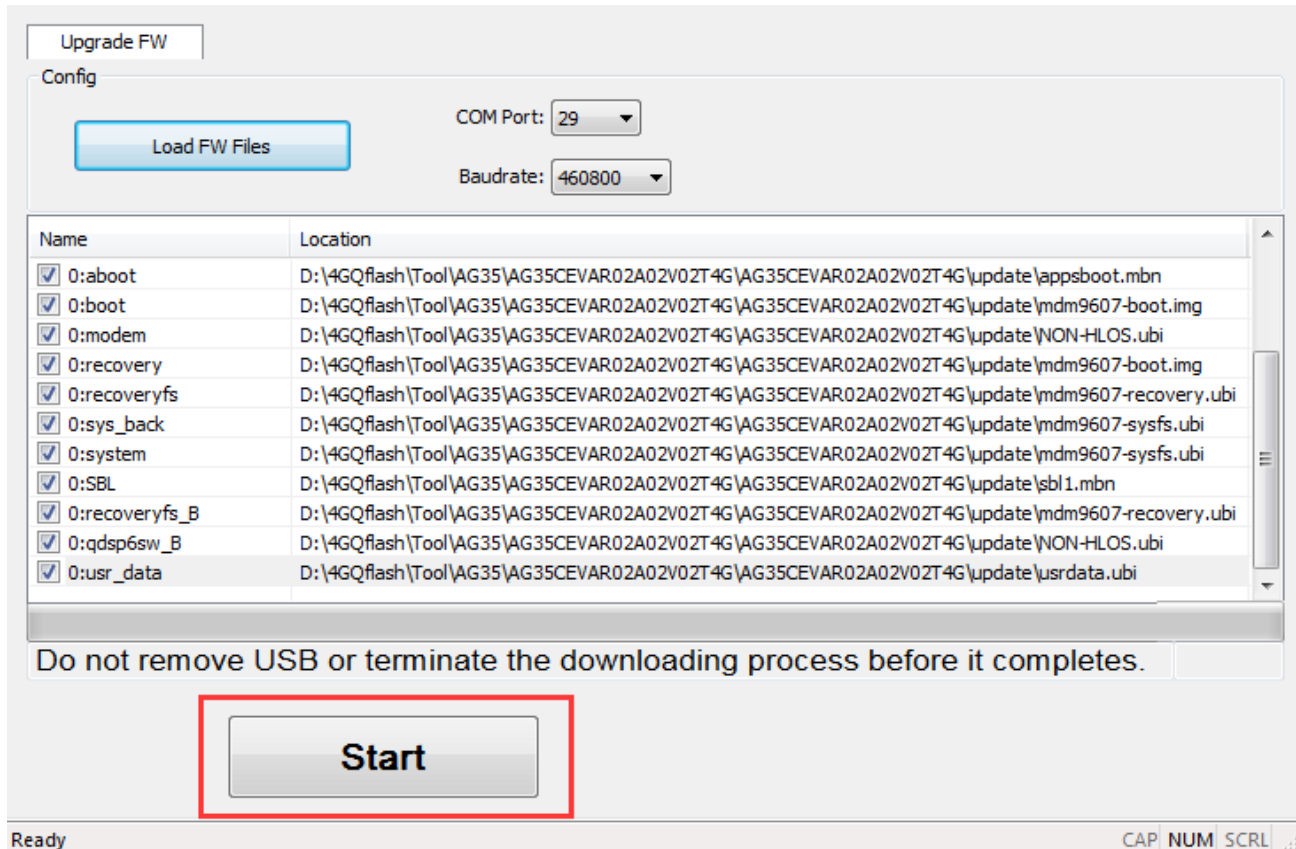


Figure 21: Click the “Start” Button

NOTE

1. Please note that there is no “**Stop**” button while upgrading firmware for GCxx, UCxx, UGxx, EC2x, EG9x, EG2x-G, Ex06, SCxx, BCxx, EM05, AGxx, BG96, Ex12, and EG18, as shown above. In this case, it is NOT permitted to stop the upgrading process, and please do NOT remove the USB or terminate the downloading process before the upgrading is completed.
2. When *Firehose* folder exists in the firmware package, the firmware will be upgraded in Firehose mode by default. To upgrade in Sahara mode, please select “**Sahara only**” under “**Configuration**” in the menu bar. The upgrade will be processed in Sahara mode by default if there is no *Firehose* folder in the firmware package.
3. If the upgrade in Firehose mode fails after many attempts, please try again after turning off or uninstalling your anti-virus software and firewall.

Step 2: Restart the module to enable firmware upgrade.

- (1) GCxx, UCxx, EC2x, EG9x, EG2x-G, Ex06, SCxx, EM05, AGxx, SGxx, BGxx, Ex12, EG18, M65, RG500Q, RG520N, RM5xx, EC200U, EC200S and EG912Y modules will be restarted automatically after clicking the “**Start**” button, so there is no need to restart the modules manually. See the following figure.

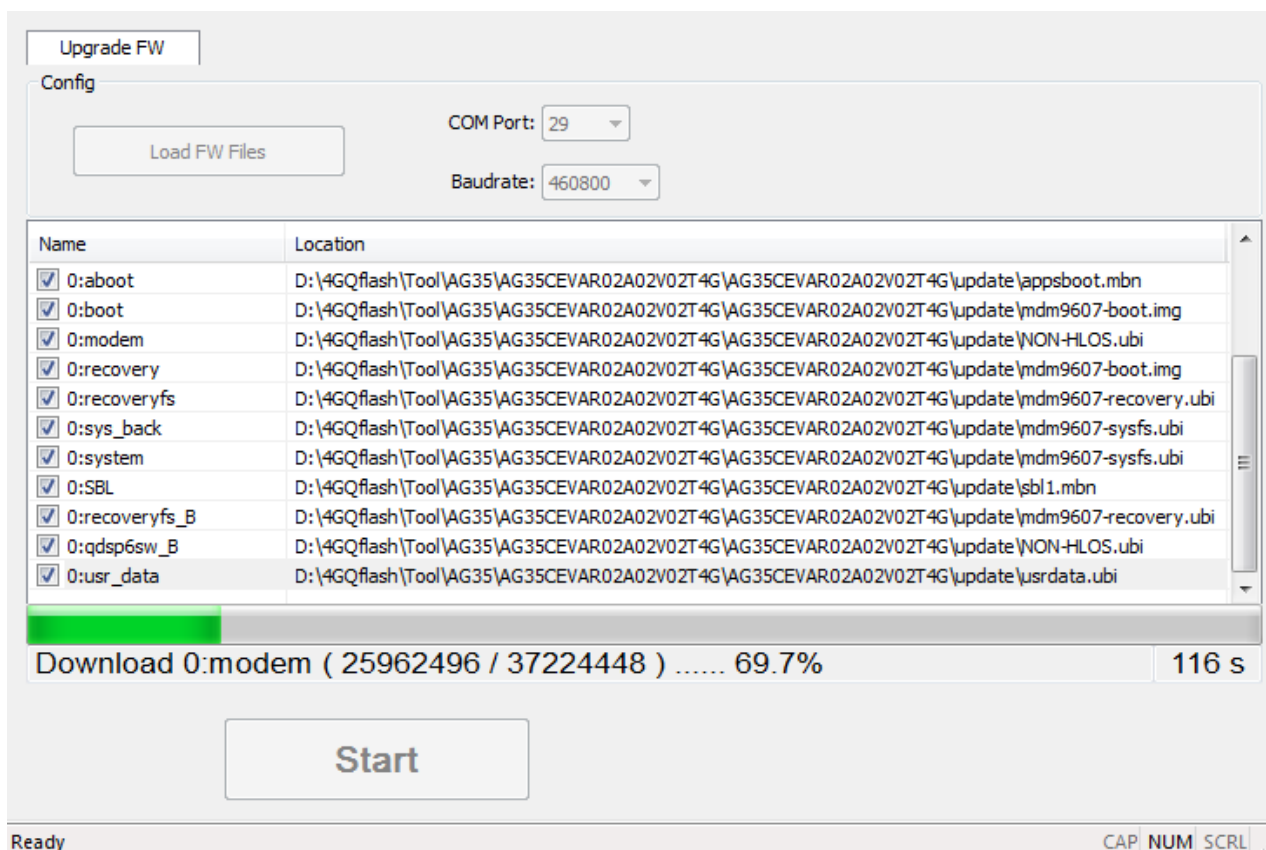


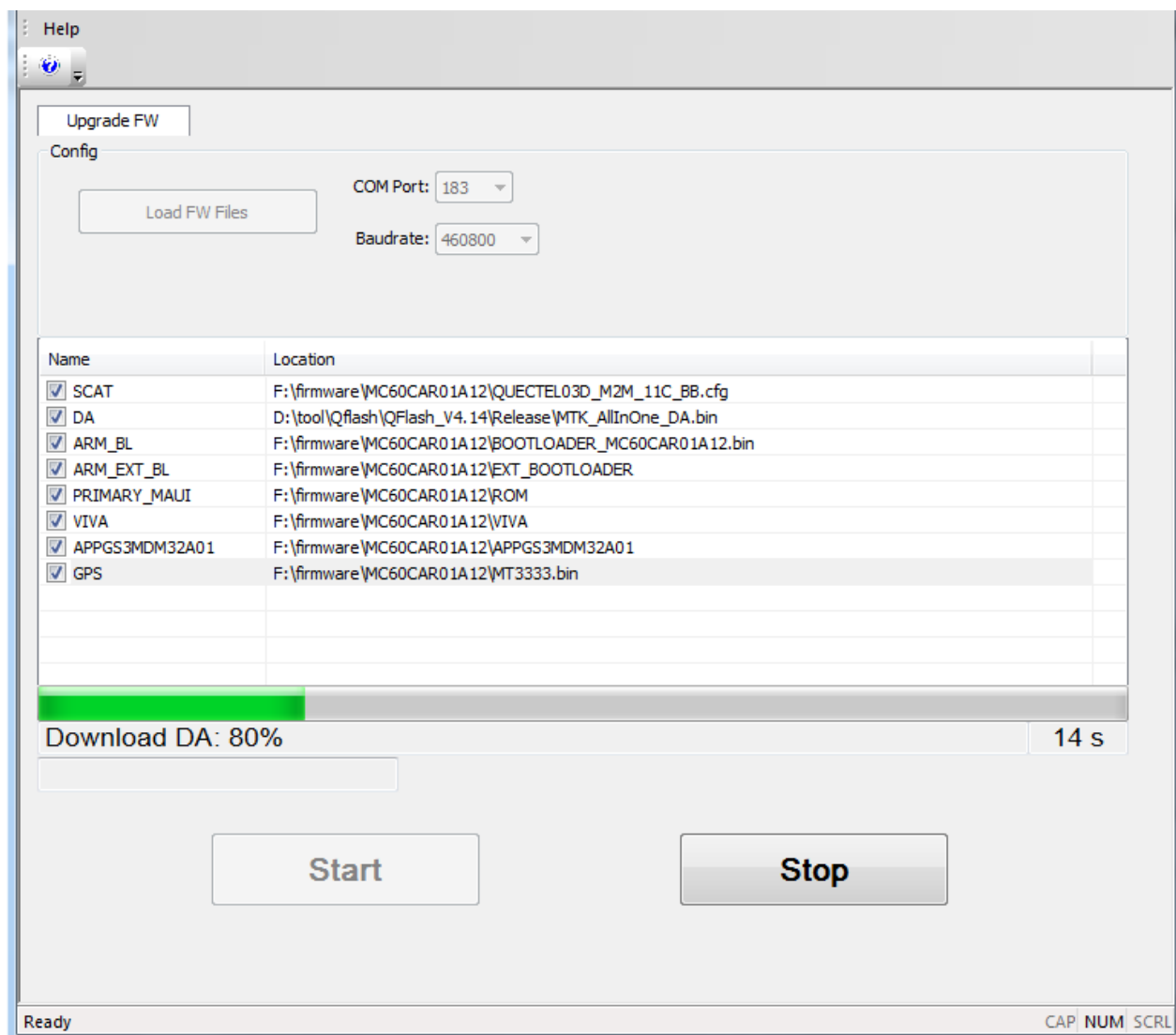
Figure 22: Start Firmware Upgrade Automatically After Clicking “Start” Button

NOTE

- For GCxx, UCxx, UGxx, EC2x, EG9x, EG2x-G, Ex06, SCxx, EM05, AGxx, SGxx, BG96, Ex12, EG18, M65, RG500Q, RG520N or RM5xx, if there is no EVB for module firmware upgrade, please drive the PWRKEY pin to a low level after clicking the “**Start**” button in 30 seconds.
- AG509M-EU only supports firmware upgrading on 64-bit operating system.
- For BG951A-GL, it is necessary to enable the GNSS function and make it enter the emergency download mode before the upgrading.

- (2) For EC200T, after clicking the “**Start**” button, manually power on the module to automatically select Quectel USB Download Port for upgrade.

- (3) For UGxx, BG770A-GL and AG509M-EU, the module needs to be turned off before **“Start”** is clicked. After clicking **“Start”**, please turn on the module within 10 seconds.
- (4) For FC41D module, please wait for the prompt **“Erasing Flash...”** after clicking the **“Start”** button, and then manually restart the module.
- (5) For M10, M66, M72, M80, M85, M95, MC60 or RG500L, switch the D/L to **“ON”** on EVB within 30 seconds after clicking **“Start”** button, and then manually restart the module. In this way, the firmware upgrade will be started, as shown in the following figure.



**Figure 23: Start Firmware Upgrade after Manually Restarting the Module
(M10/M66/M72/M80/M85/M95/MC60)**

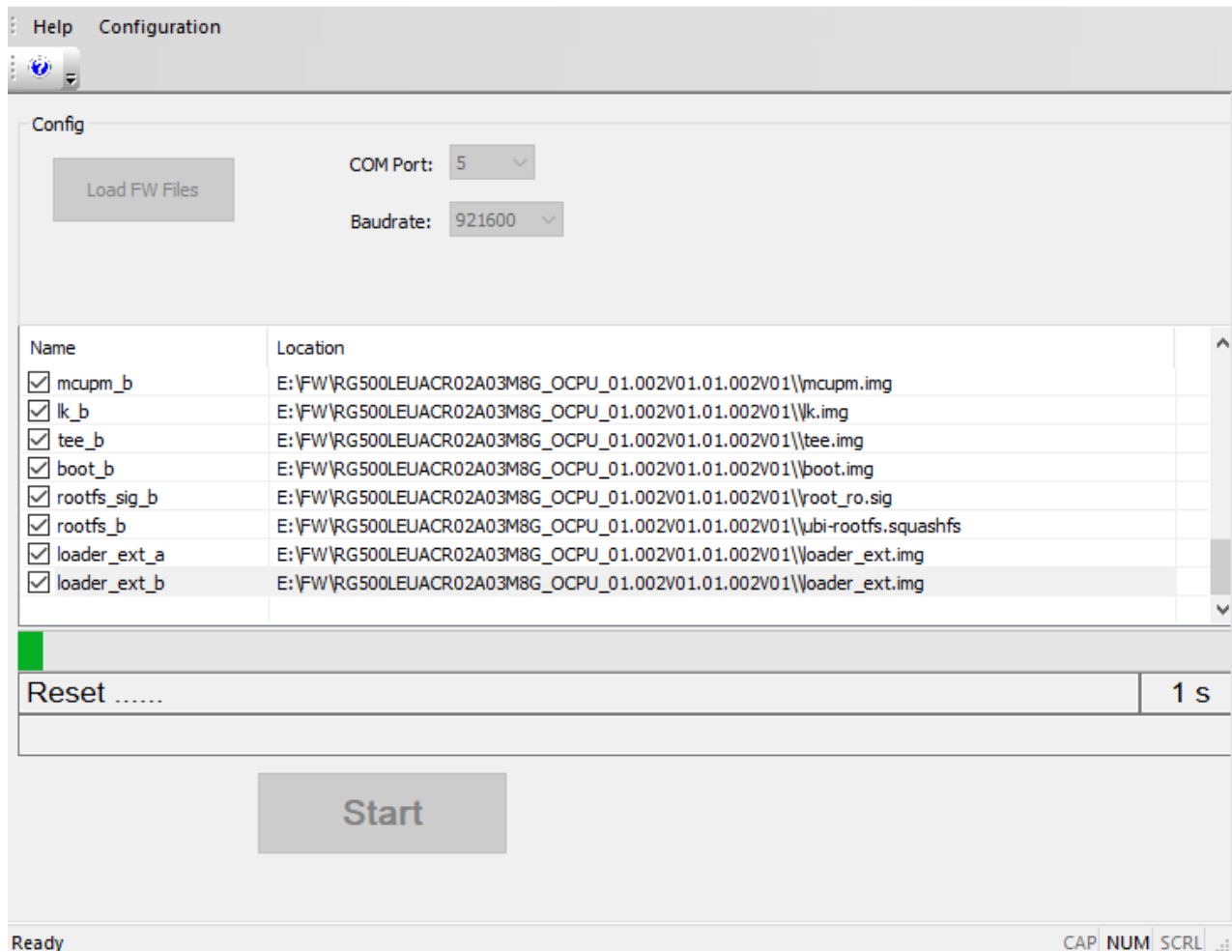


Figure 24: Start Firmware Upgrade after Manually Restarting the Module (RG500L)

NOTE

1. On M10, M66, M72, M80, M85, M95, MC60, please make sure the EVB is powered by a 5 V power supply when switching the D/L to “ON”, and then manually restart the module.
2. On the RG500L module, Start the module, click Start, wait for the “**Reset**” message, and restart the module

- (6) For the firmware upgrade of BC95-G, BC68 and BC66 modules through TE-B, please wait for the prompt “**Reset**” (for BC95-G and BC68) or “[**INFO**]Start connect with target,Please reset DUT...” (for BC66) or “**Reset**” after clicking the “**Start**” button, and then manually restart the modules.

The log will be printed in the path *QFlash_V5.5\Release\WB-IoT\1* when the firmware of the BC95-G module is upgraded.

- (7) For BC660K-GL module, before clicking the **"Start"** button to upgrade, press and hold the BOOT pin during module reset until the module enters the download mode. After clicking **"Start"**, the module will start upgrade automatically.
- (8) For BG951A-GL module, GNSS BOOT pin is set to "HIGH" and GPS PWR EN pin is set to "ON" before upgrading. Click the **"Start"** button and follow the tooltips.

Step 3: "PASS" will be shown on the interface after the firmware has been successfully upgraded, as shown in the following figure.

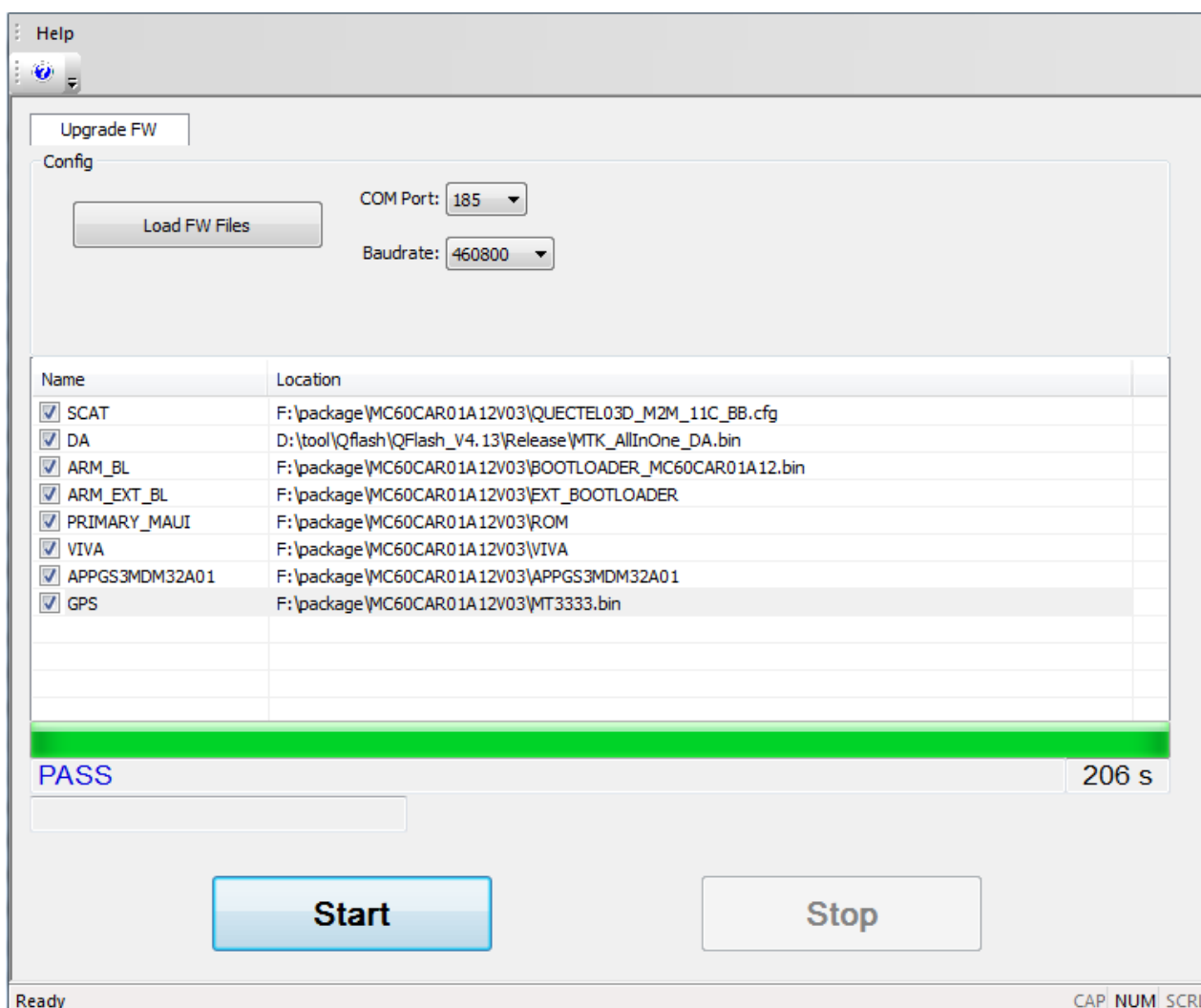


Figure 25: Firmware Upgraded Successfully

2.4. MBN Function

Currently QFlash only supports MBN upgrade function for BG96, the operation procedure being as follows:

Step 1: Click the “**COM Port**” drop-down list and select the COM port that will be used to upgrade the firmware, as shown in the following figure.

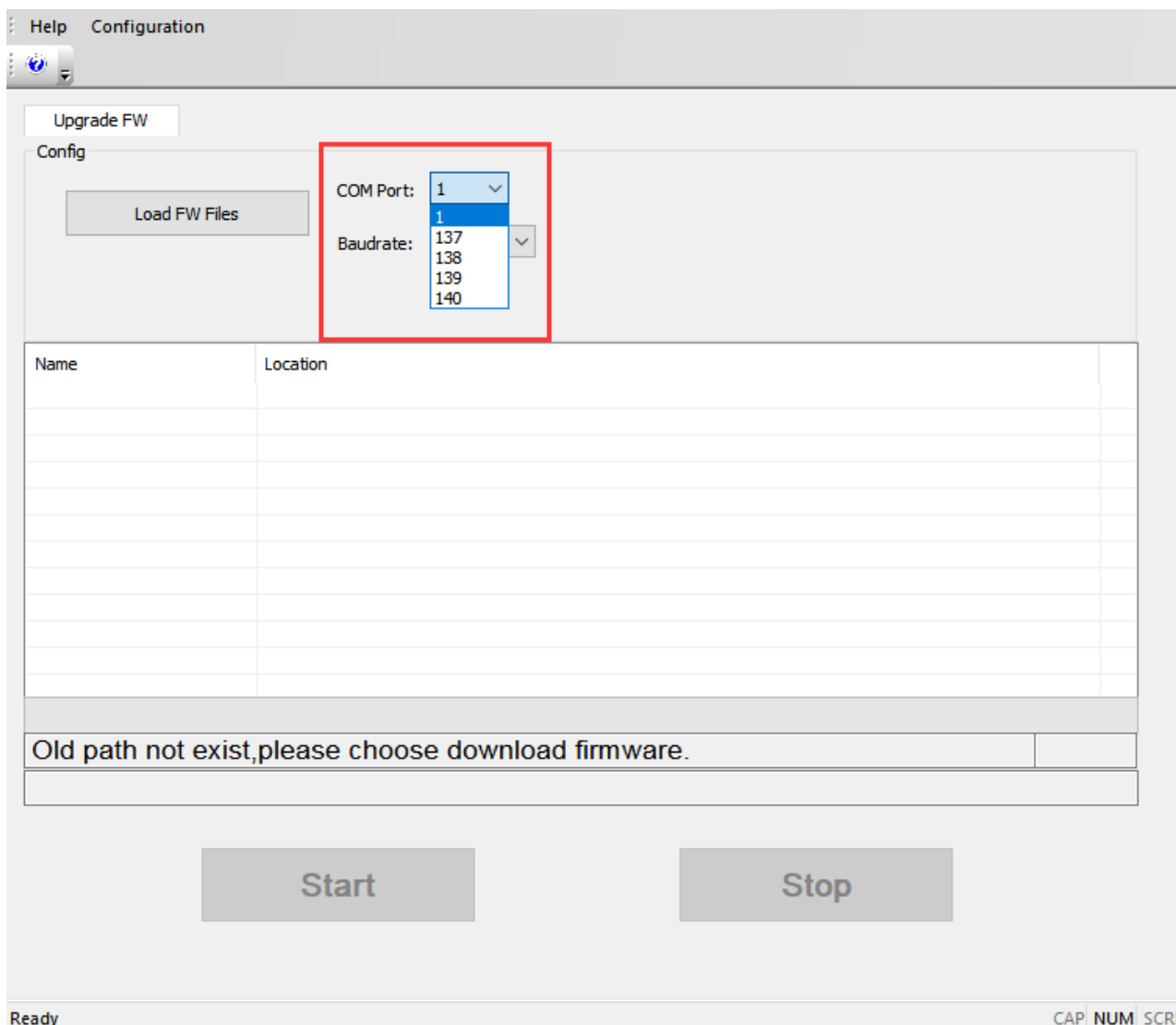


Figure 26: Select the Serial Port of BG96 Module

Step 2: Click the “Load FW Files” button and select the firmware file with the extension .mbn to download to the module.

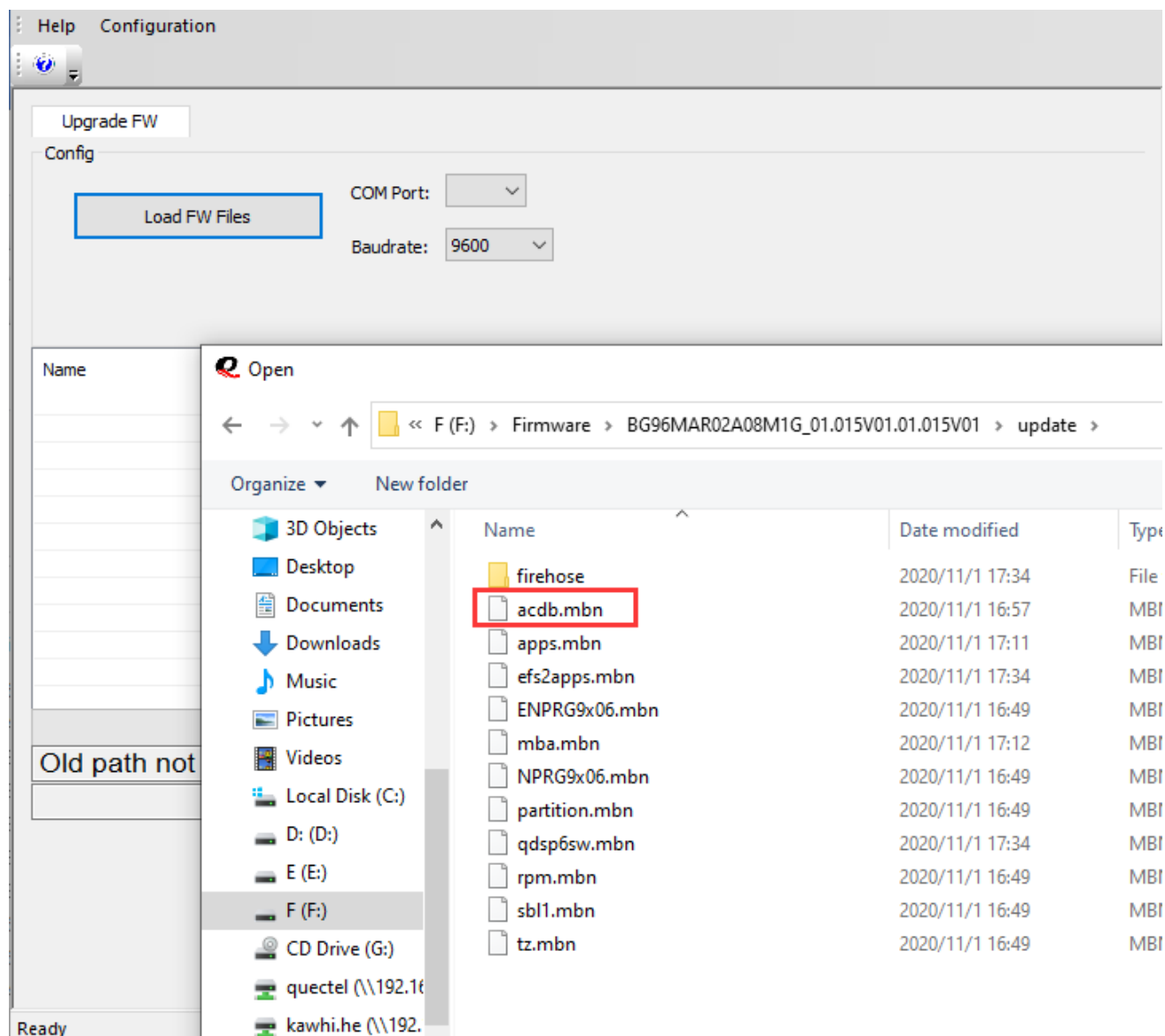


Figure 27: Select the File to Be Downloaded

Step 3: Click the “Start” button and the prompt “Do you need MBN autosel feature enabled by default” will pop out.

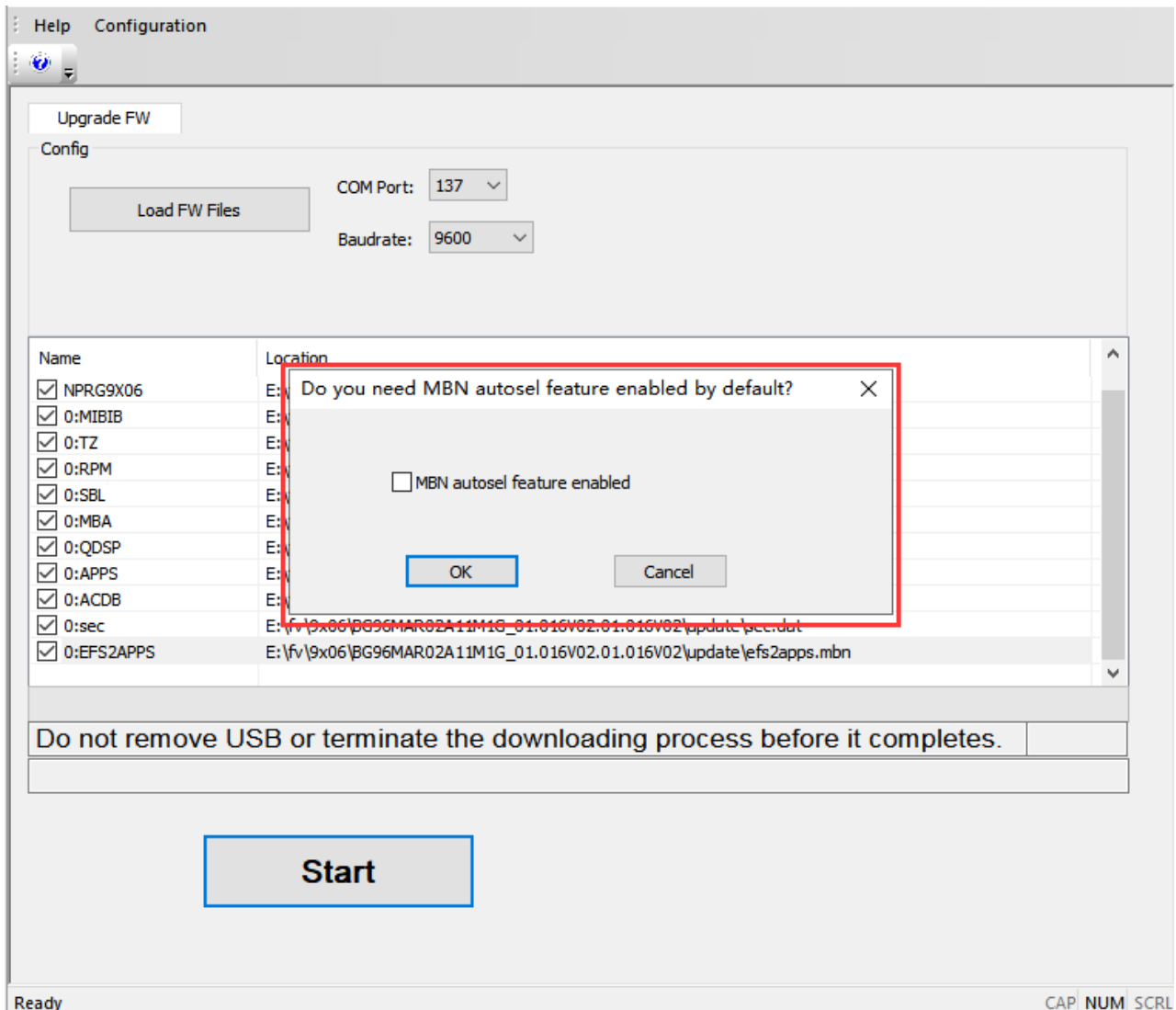


Figure 28: Select MBN Autosel Function

NOTE

1. Make sure there is an *mbn* folder in the selected firmware version package before upgrading.
2. If the “**MBN autosel feature enabled**” checkbox is checked, the MBN automatic selection function is enabled; otherwise, it is disabled. You can start upgrading MBN files either by clicking the “**OK**” button after checking “**MBN autosel feature enabled**”, or by just clicking “**Cancel**”.

Step 4: “PASS” will be shown on the interface after the firmware has been successfully upgraded, as shown in the following figure.

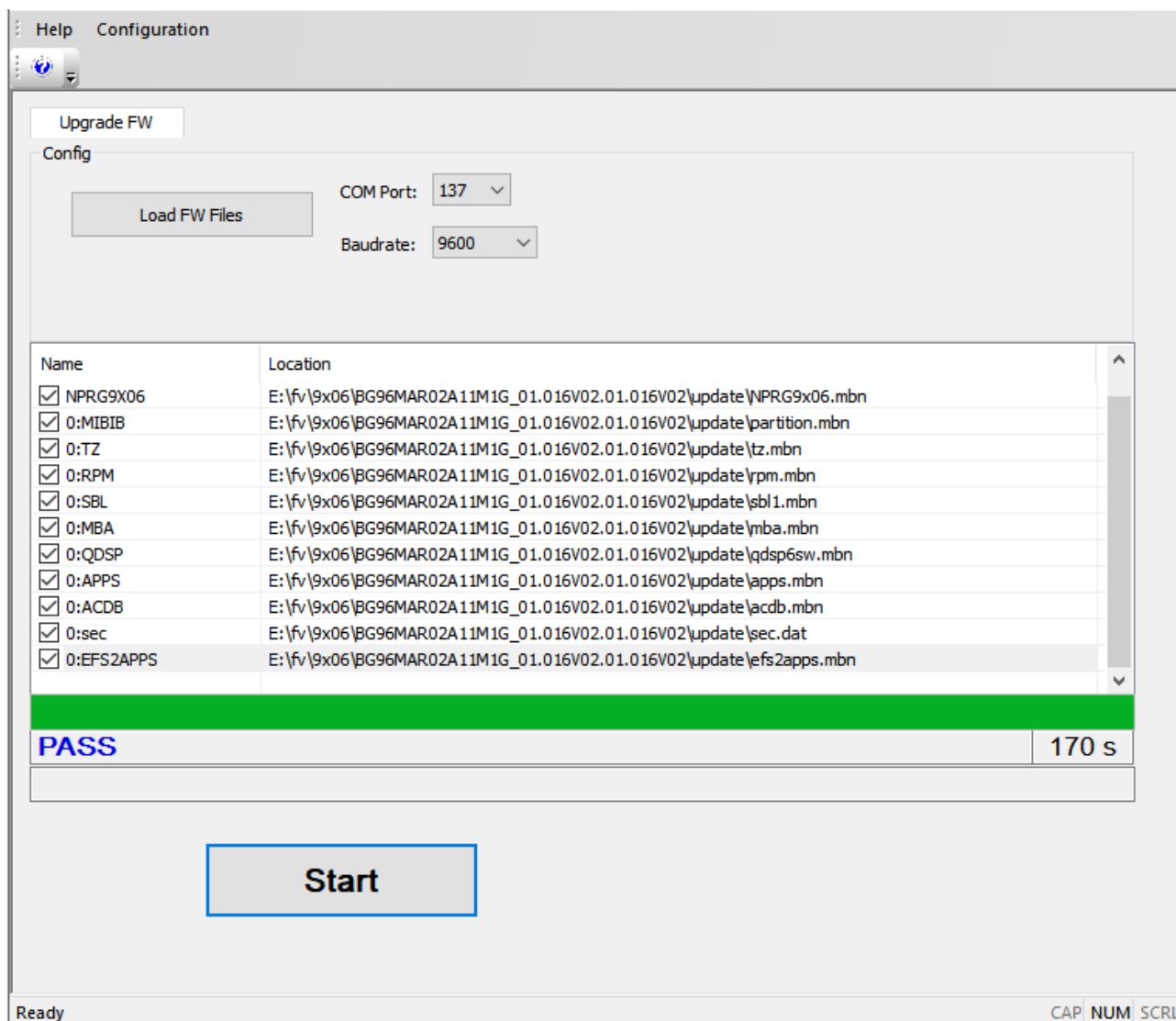


Figure 29: MBN Files Upgraded Successfully for BG96

2.5. Abnormalities

Abnormalities may be caused by the incorrect baud rate, damaged EVB/TE-B or invalid files, etc. The following illustrates some common abnormalities.

2.5.1. Selected a Wrong Serial Port

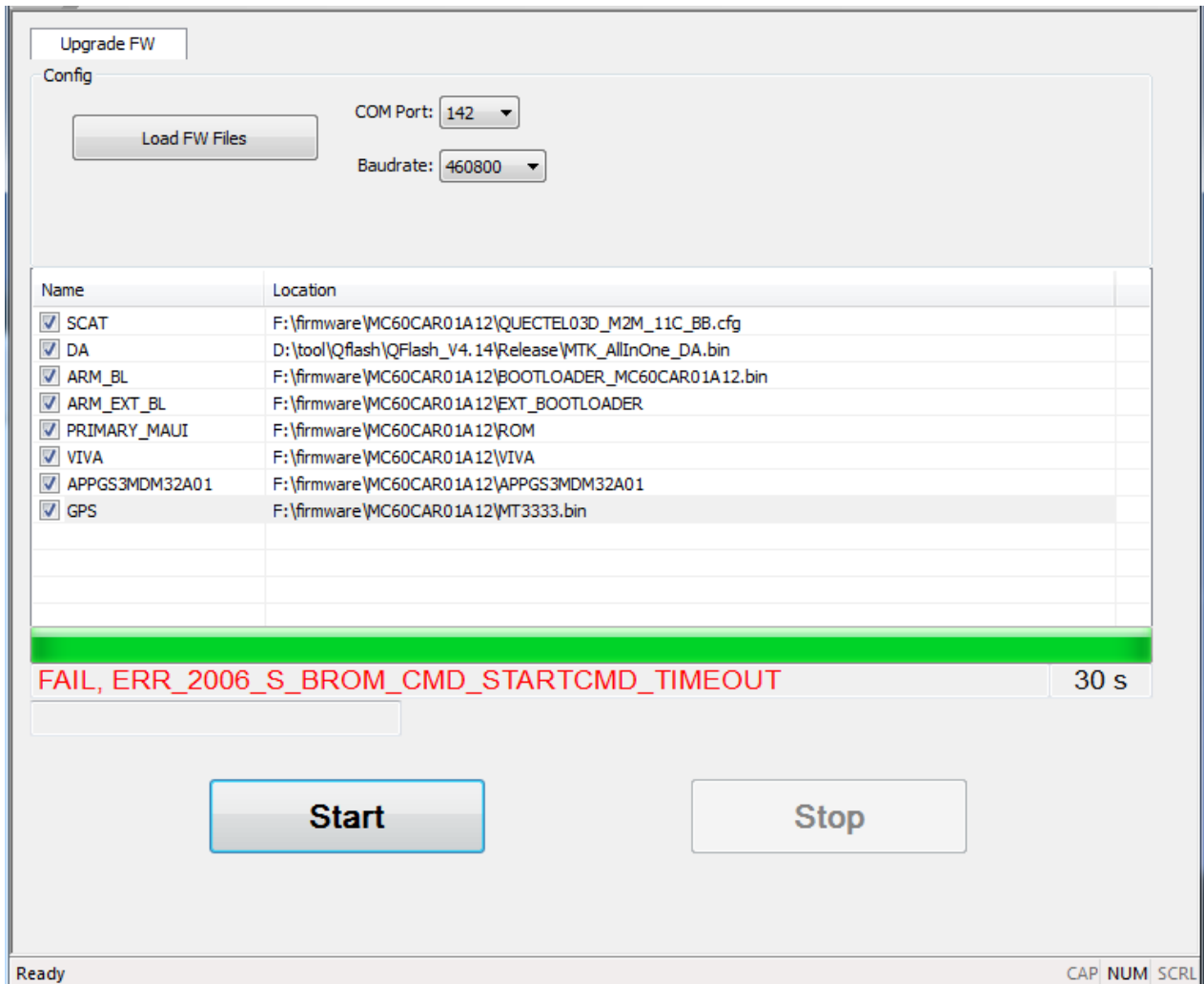


Figure 30: Connected to a Wrong Serial Port (M10/M66/M72/M80/M85/M95/MC60)

NOTE

After selecting a correct serial port, if M10, M66, M72, M80, M85, M95 and MC60 modules are not restarted, the error message will be the same as that caused by selecting a wrong serial port.

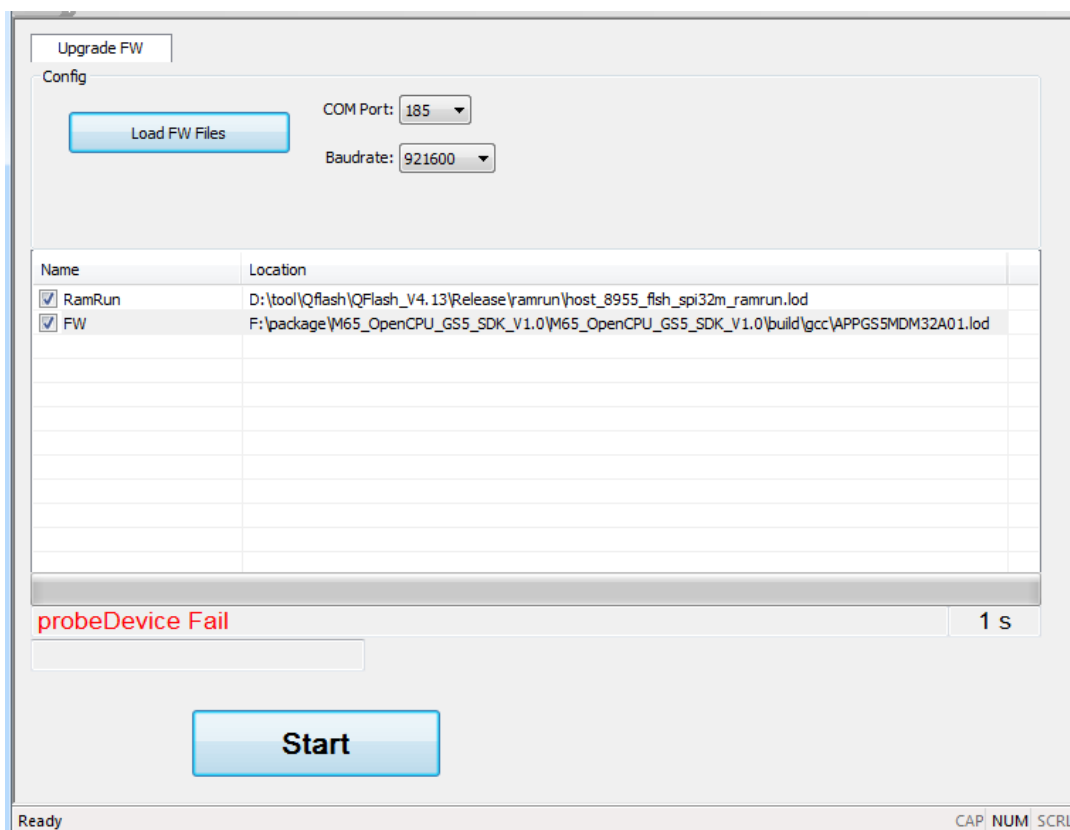


Figure 31: Connected to a Wrong Serial Port (M65)

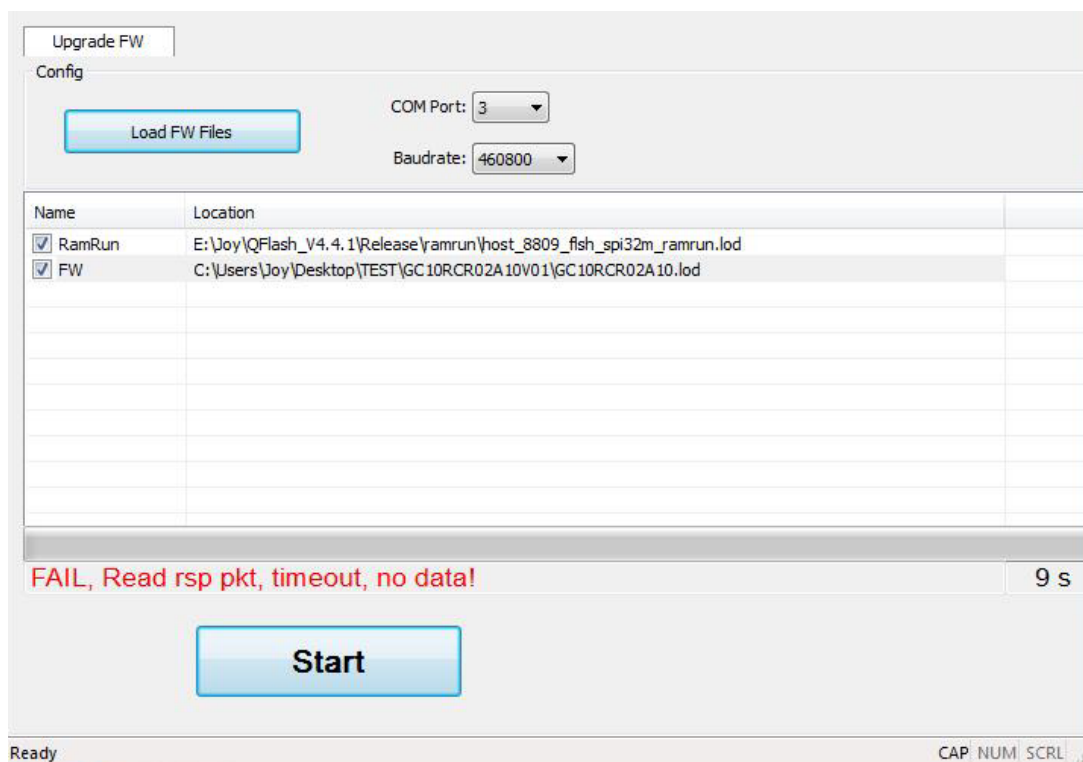


Figure 32: Connected to a Wrong Serial Port (GCxx)

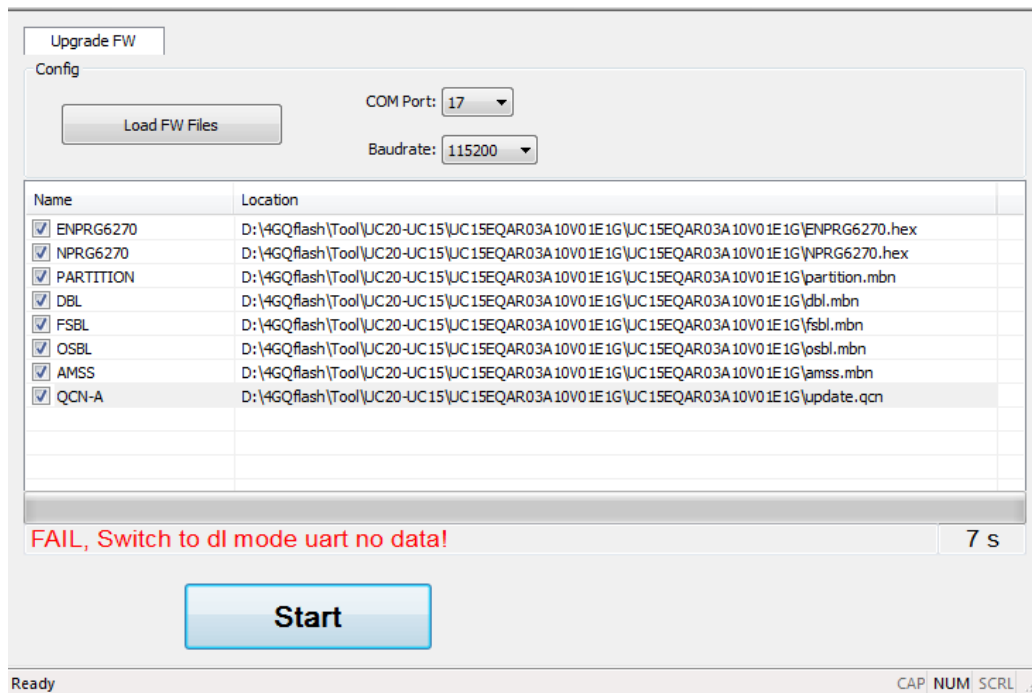


Figure 33: Connected to a Wrong Serial Port (UCxx)

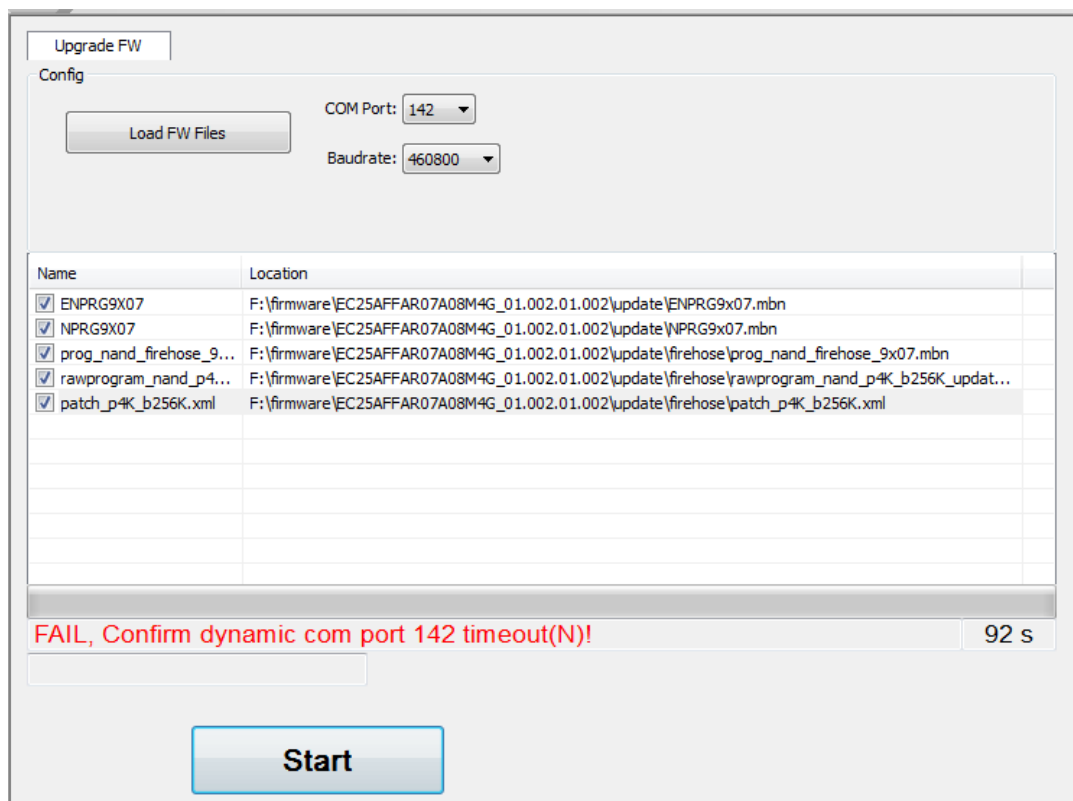


Figure 34: Connected to a Wrong Serial Port (EC2x/AGxx/EG9x/EG2x-G/Ex06/EM05/BGxx/Ex12/EG18/RG500Q/RM500Q)

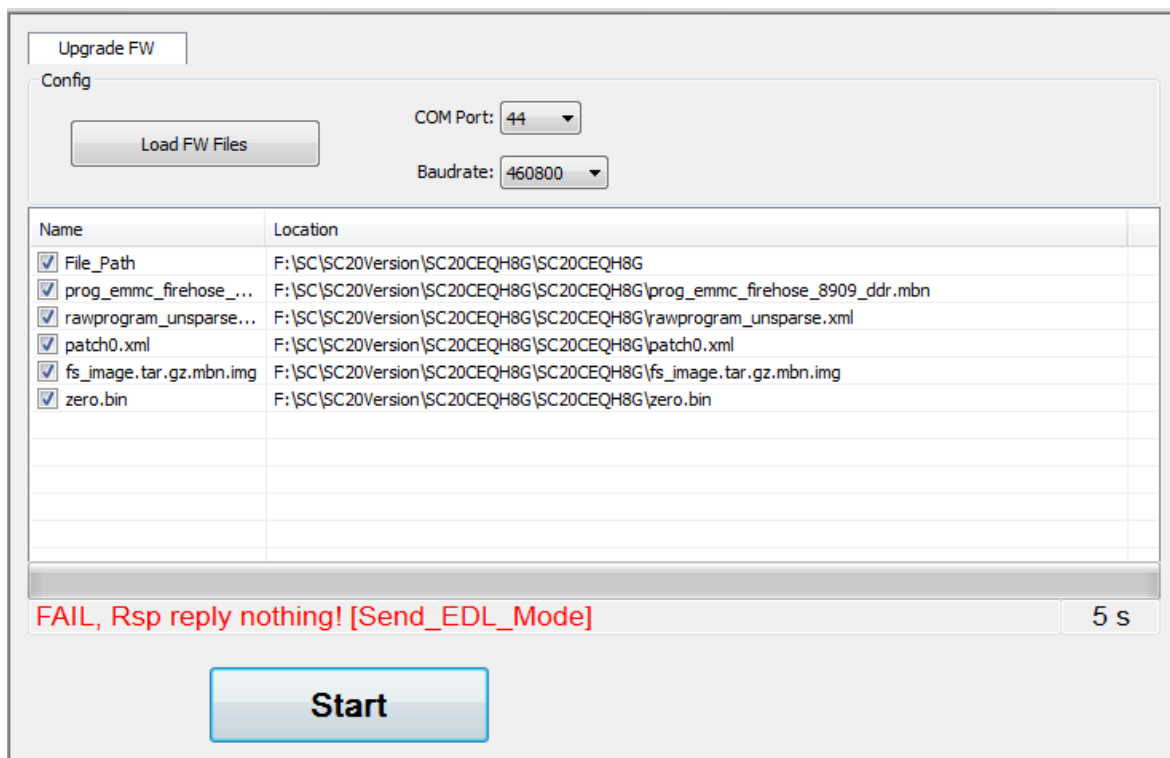


Figure 35: Connected to a Wrong Serial Port (SCxx)

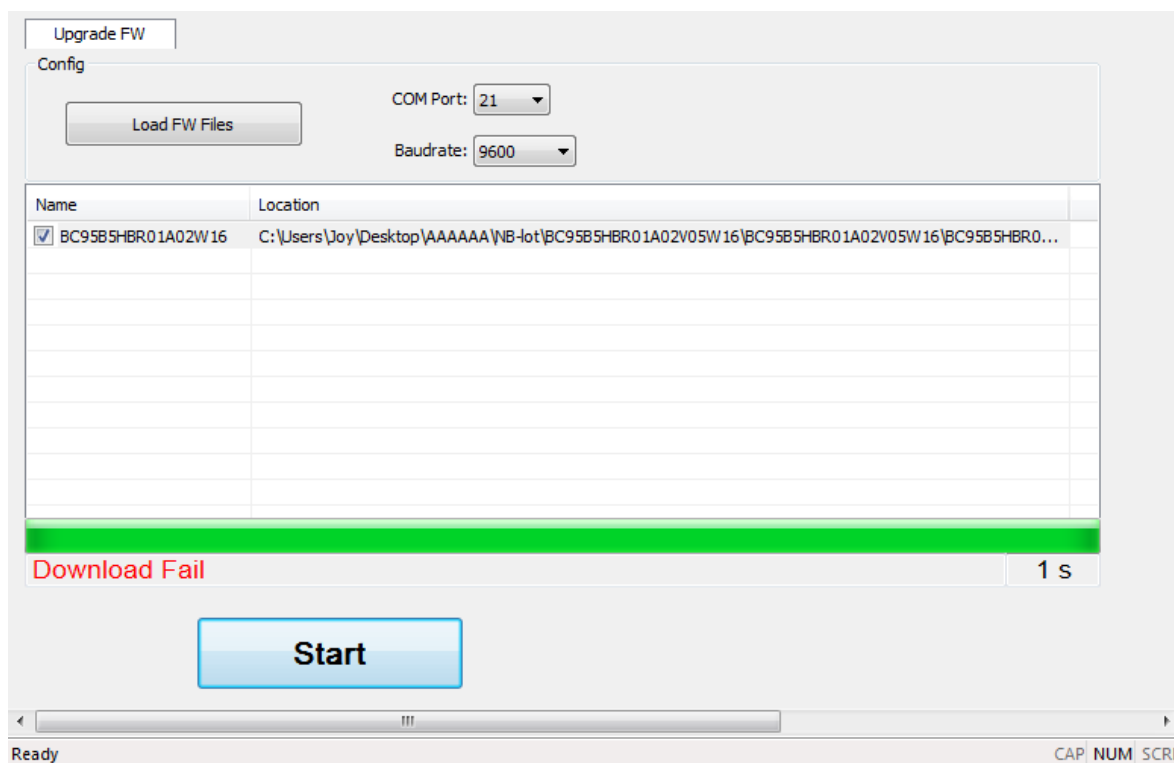


Figure 36: Connected to a Wrong Serial Port (BCxx)

2.5.2. Connected to an Occupied Serial Port

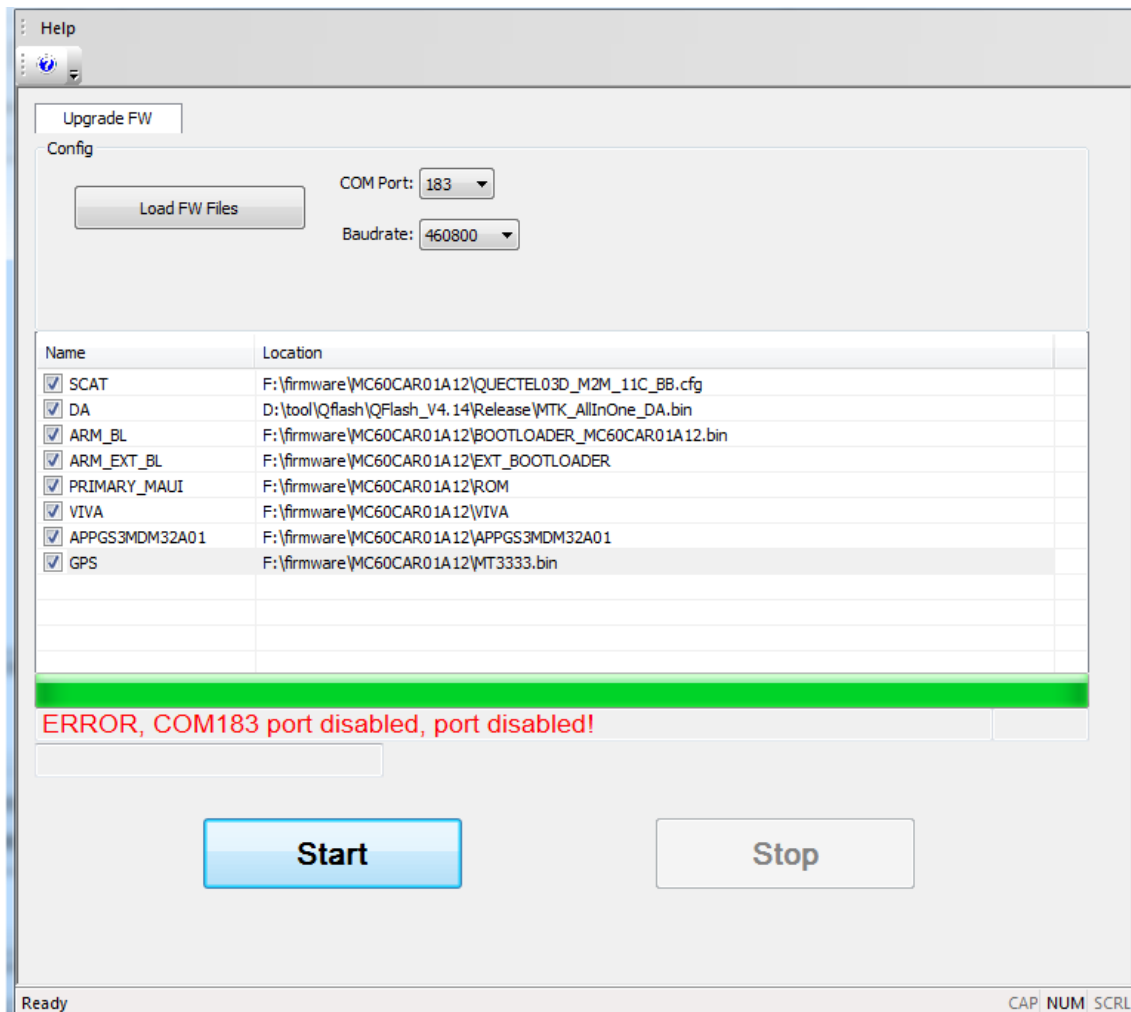


Figure 37: Connected to an Occupied Serial Port (M10/M66/M72/M80/M85/M95/MC60)

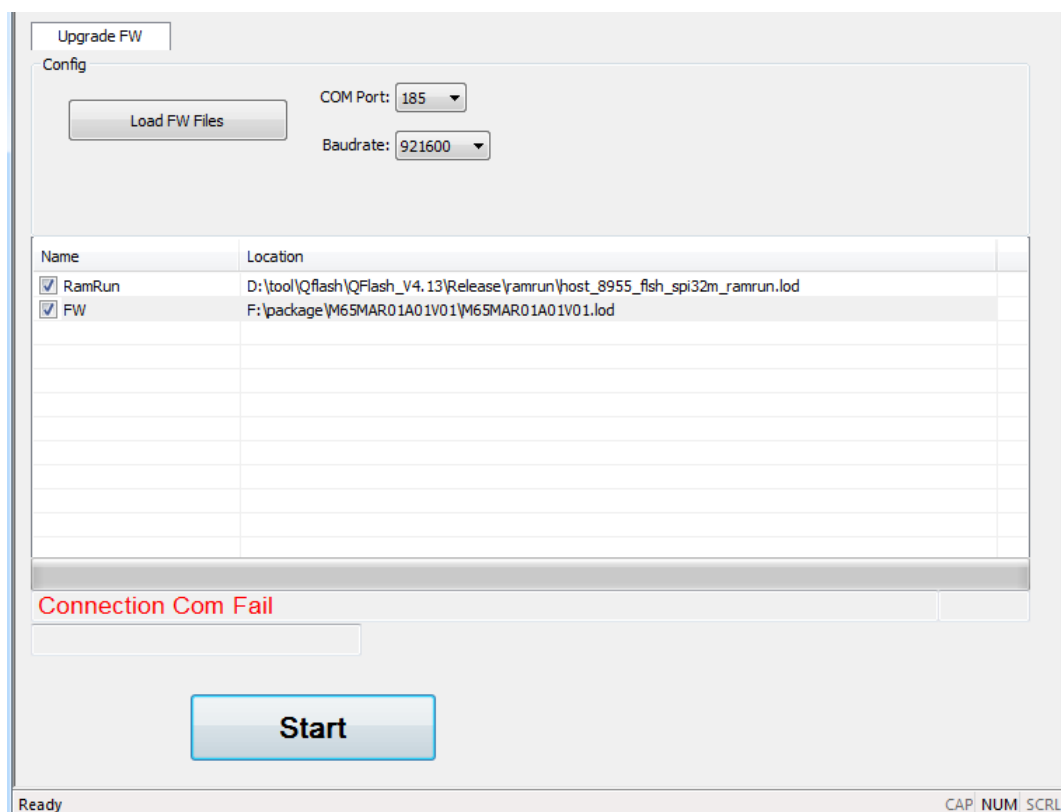


Figure 38: Connected to an Occupied Serial Port (M65)

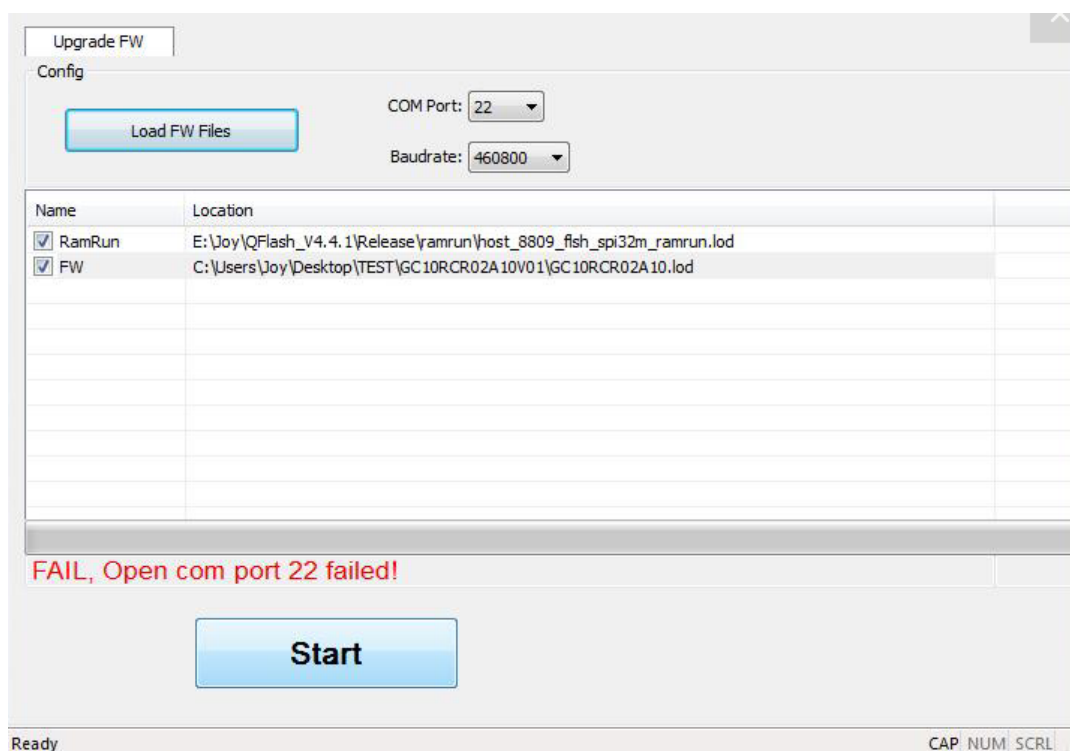


Figure 39: Connected to an Occupied Serial Port (GCxx)

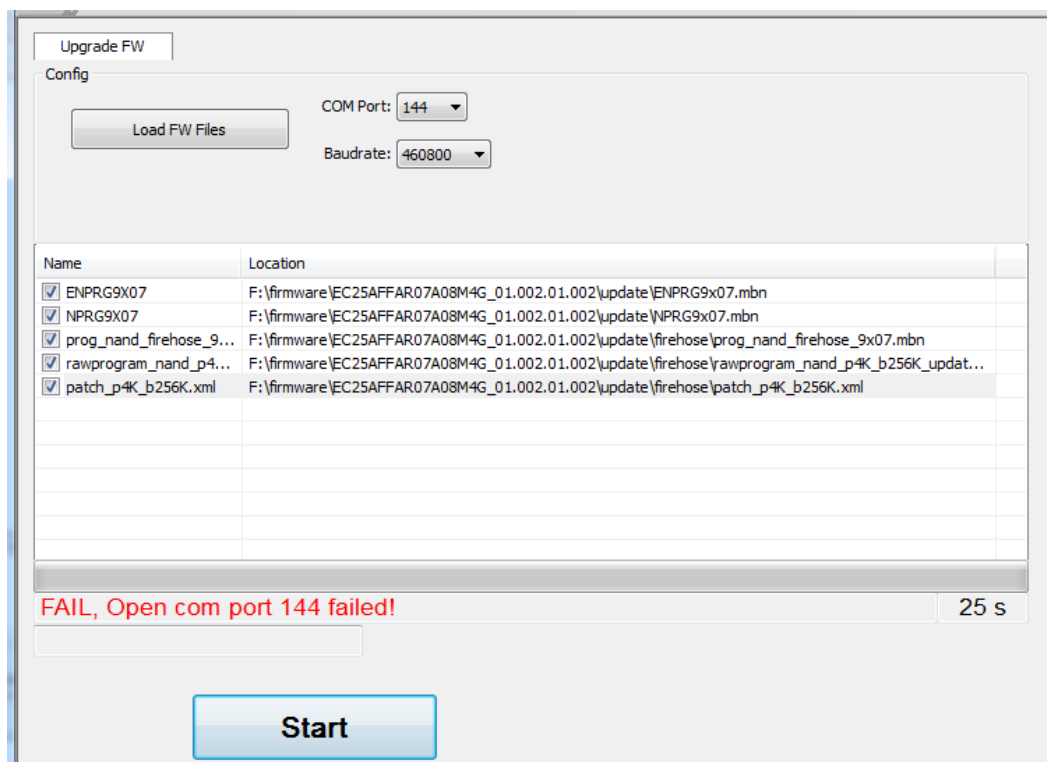


Figure 40: Connected to an Occupied Serial Port (UCxx/EC2x/EG9x/EG2x-G/Ex06/SCxx/EM05/AGxx/ BGxx/Ex12/EG18/RG500Q/RM500Q)

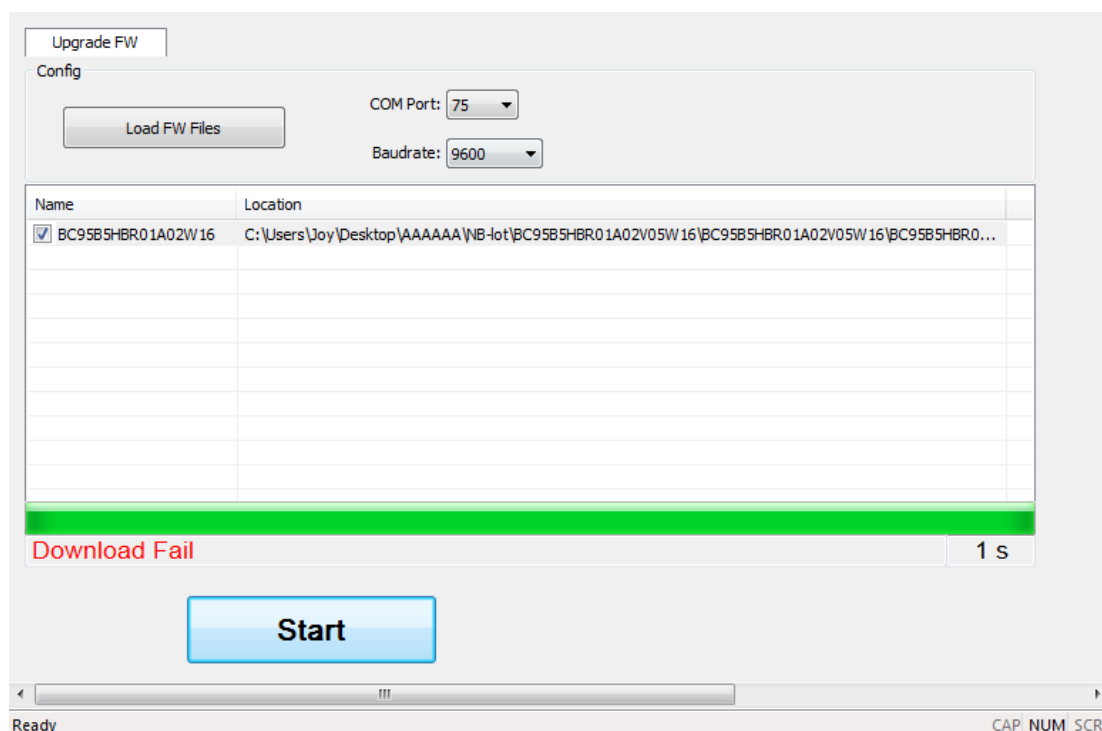


Figure 41: Connected to an Occupied Serial Port (BCxx)

2.5.3. Selected an Unsupported Baud Rate

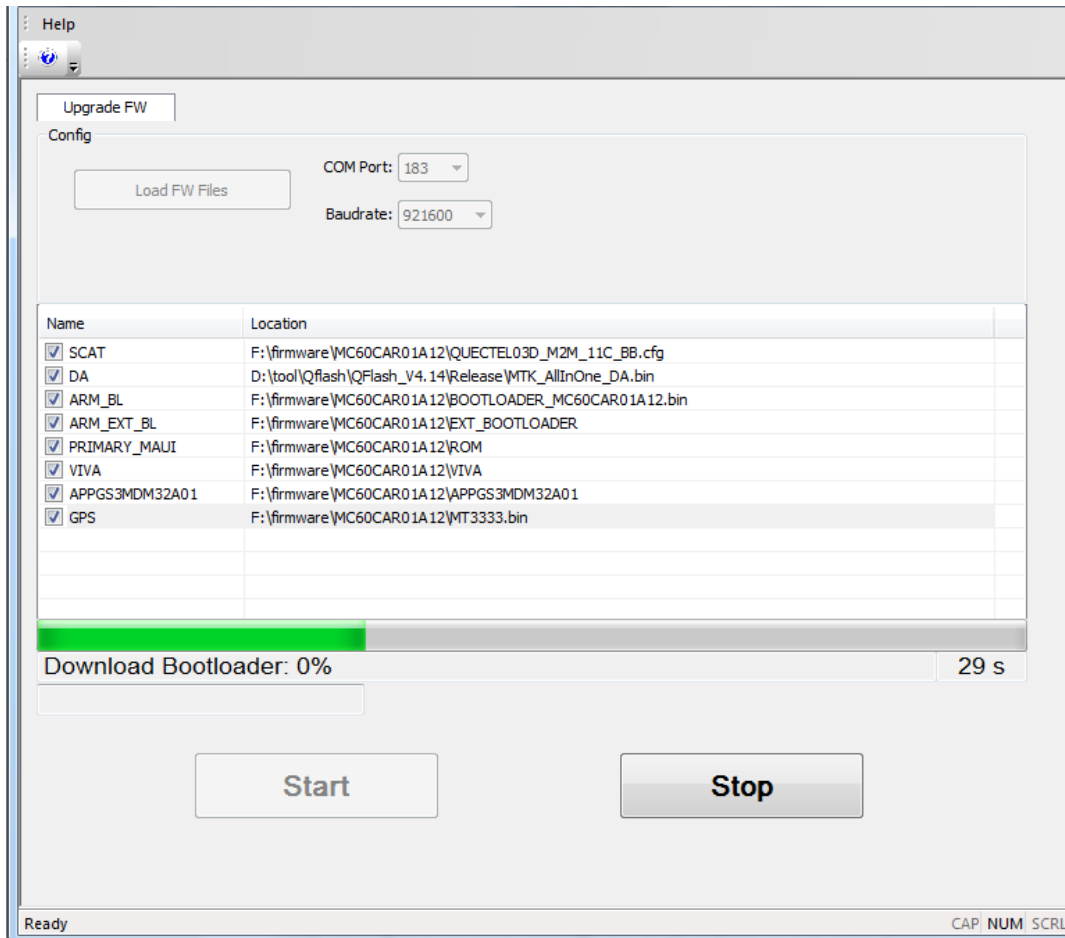


Figure 42: Selected an Unsupported Baud Rate (M10/M66/M72/M80/M85/M95/MC60)

NOTE

For M10, M66, M72, M80, M85, M95 or MC60, if an unsupported baud rate is selected, the tool will stop running and no error message will be prompted. In such a case, please click the **“Stop”** button to re-select a supported baud rate to restart with.

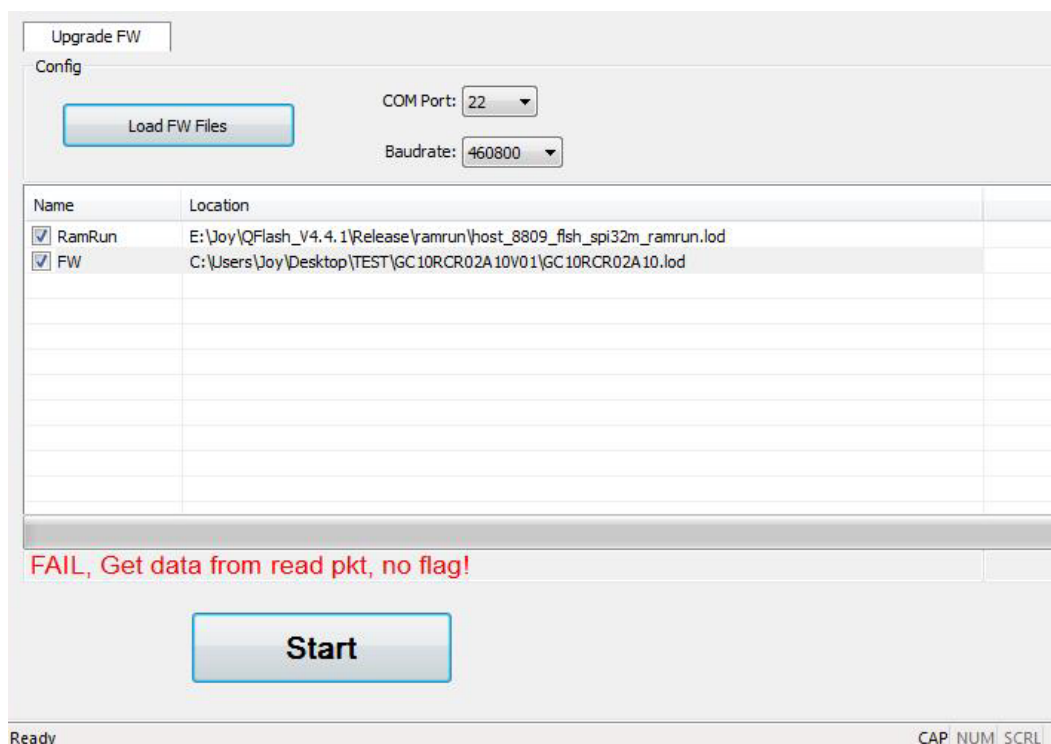


Figure 43: Selected an Unsupported Baud Rate (GCxx)

2.5.4. Selected an Invalid FW File

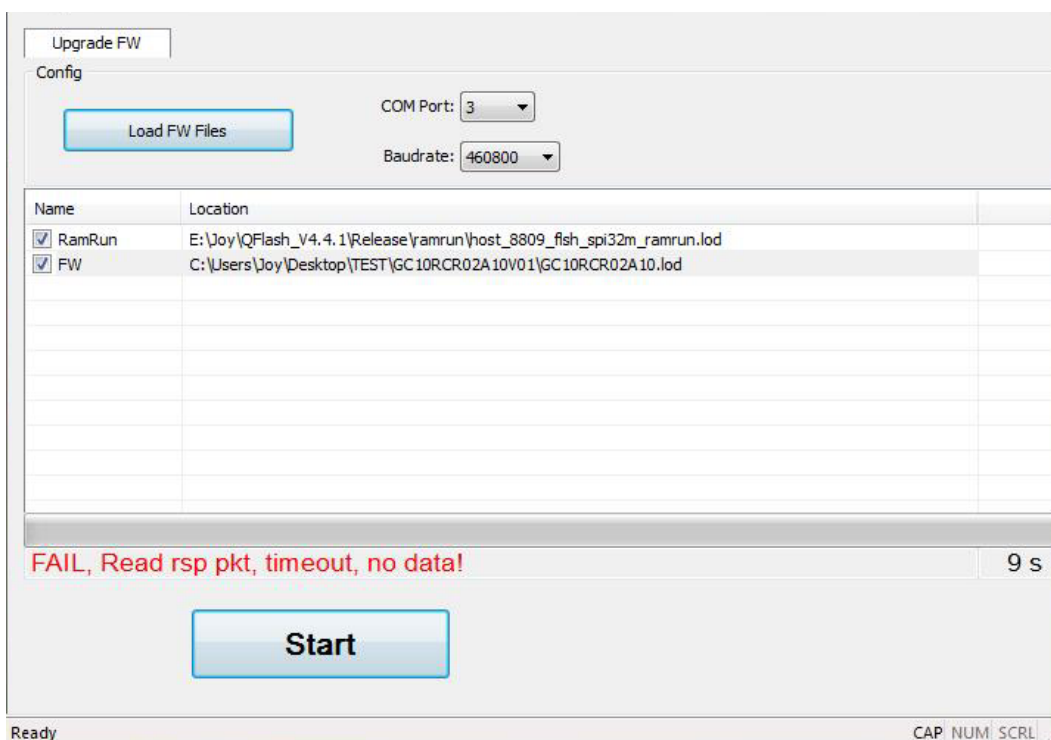


Figure 44: Selected an Invalid FW File (M10/M66/M72/M80/M85/M95/MC60)

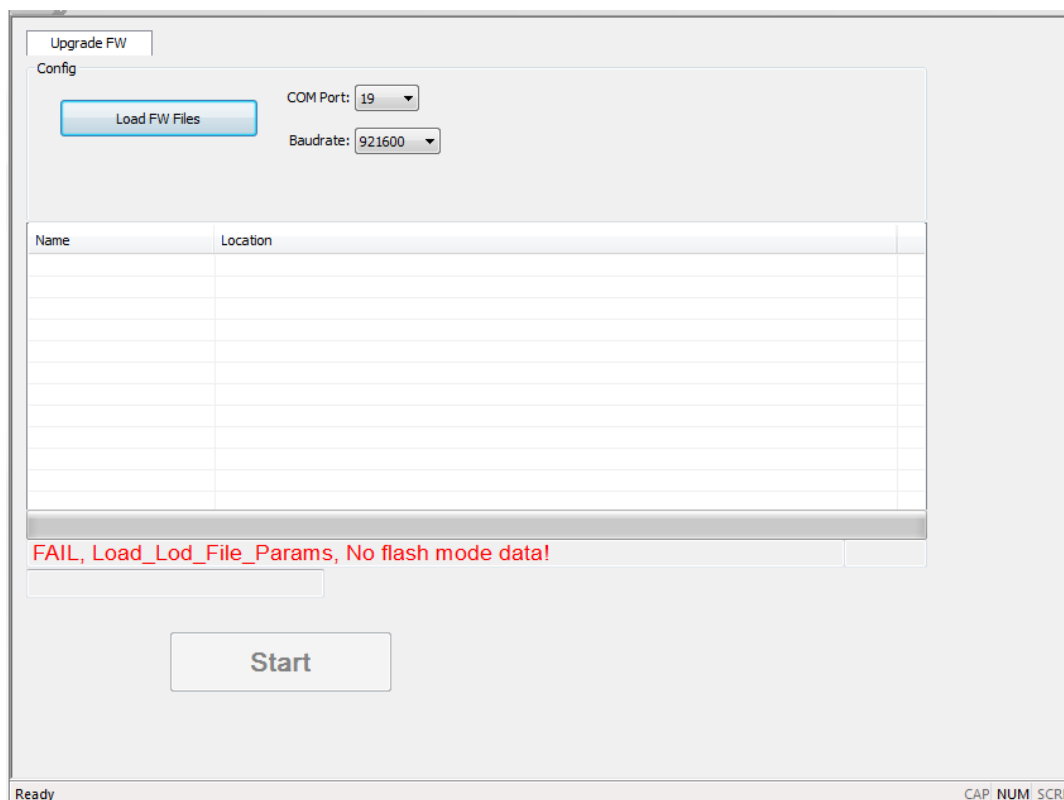


Figure 45: Selected an Invalid FW File (M65)

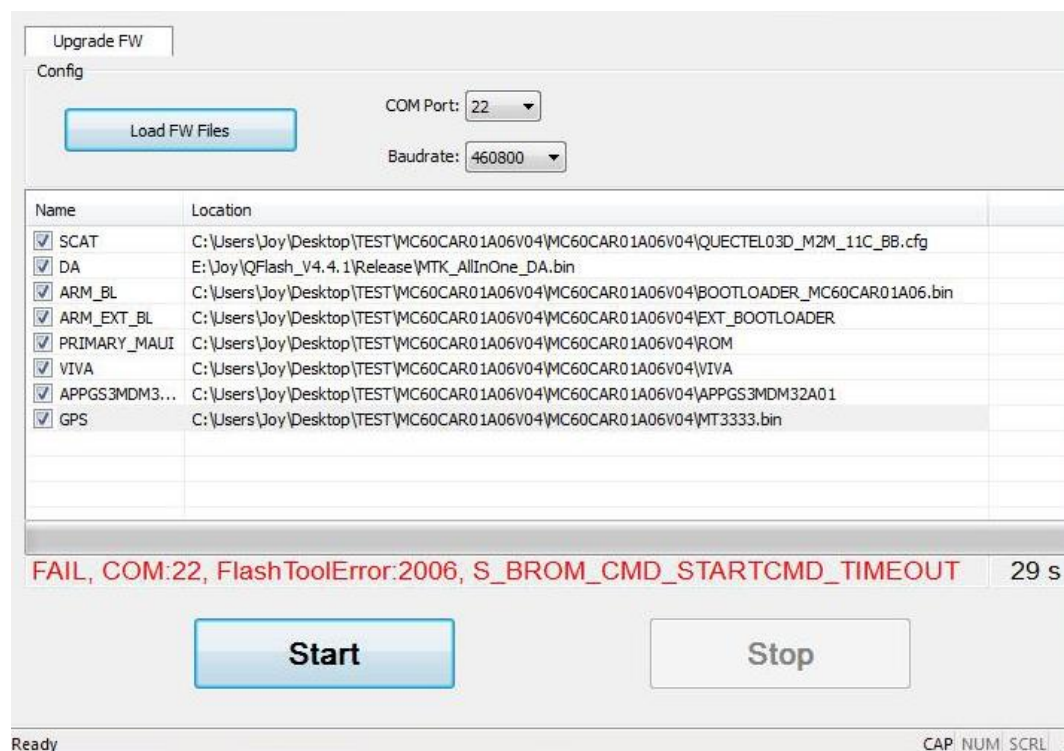


Figure 46: Selected an Invalid FW File (GCxx)

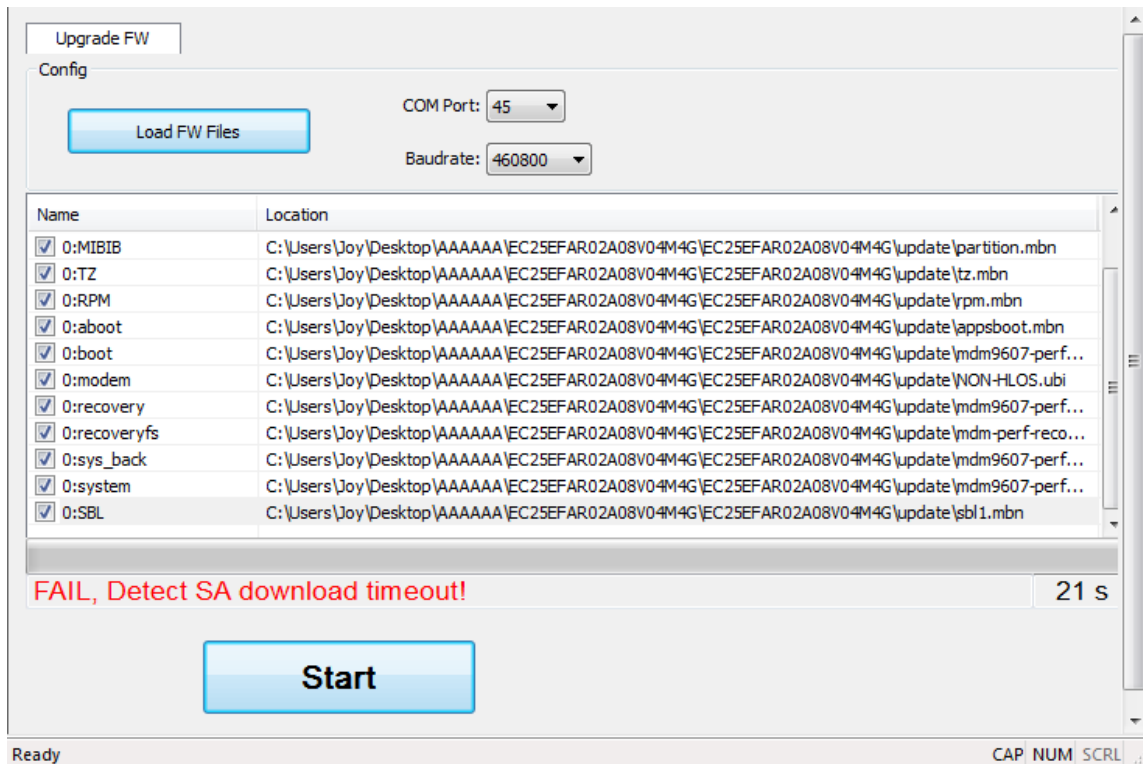


Figure 47: Selected an Invalid FW File (UCxx)

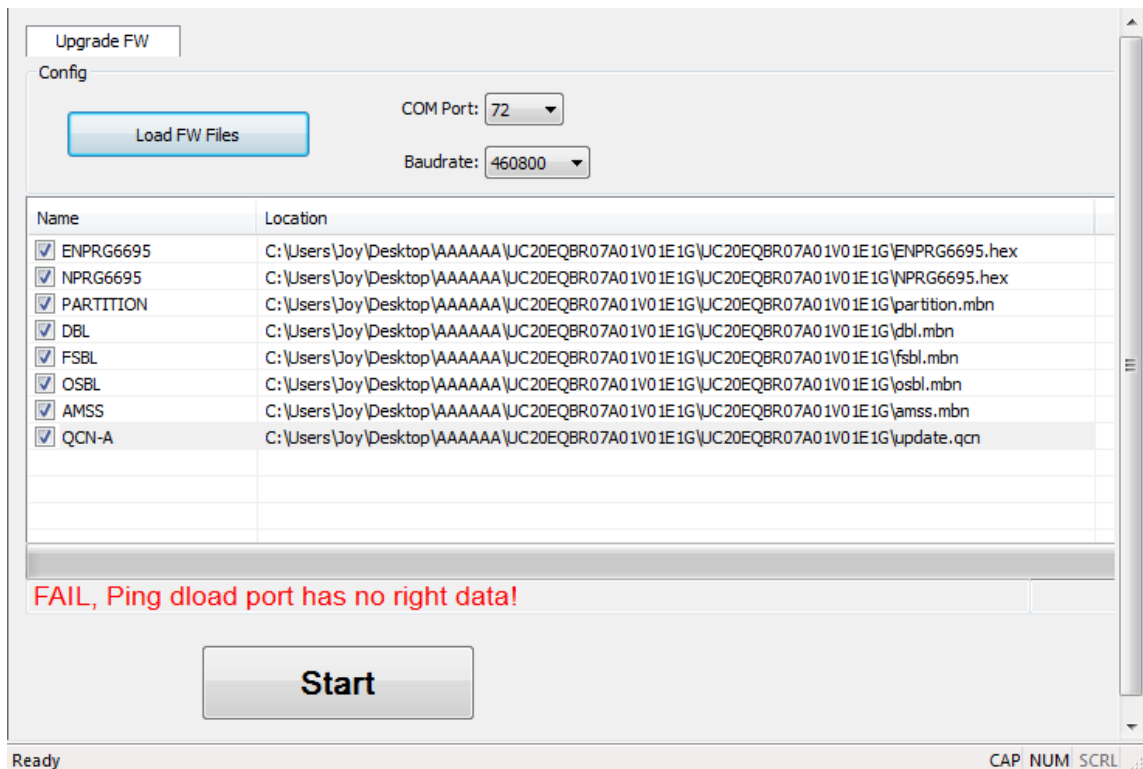


Figure 48: Selected an Invalid FW File (EC2x/EG9x/EM05)

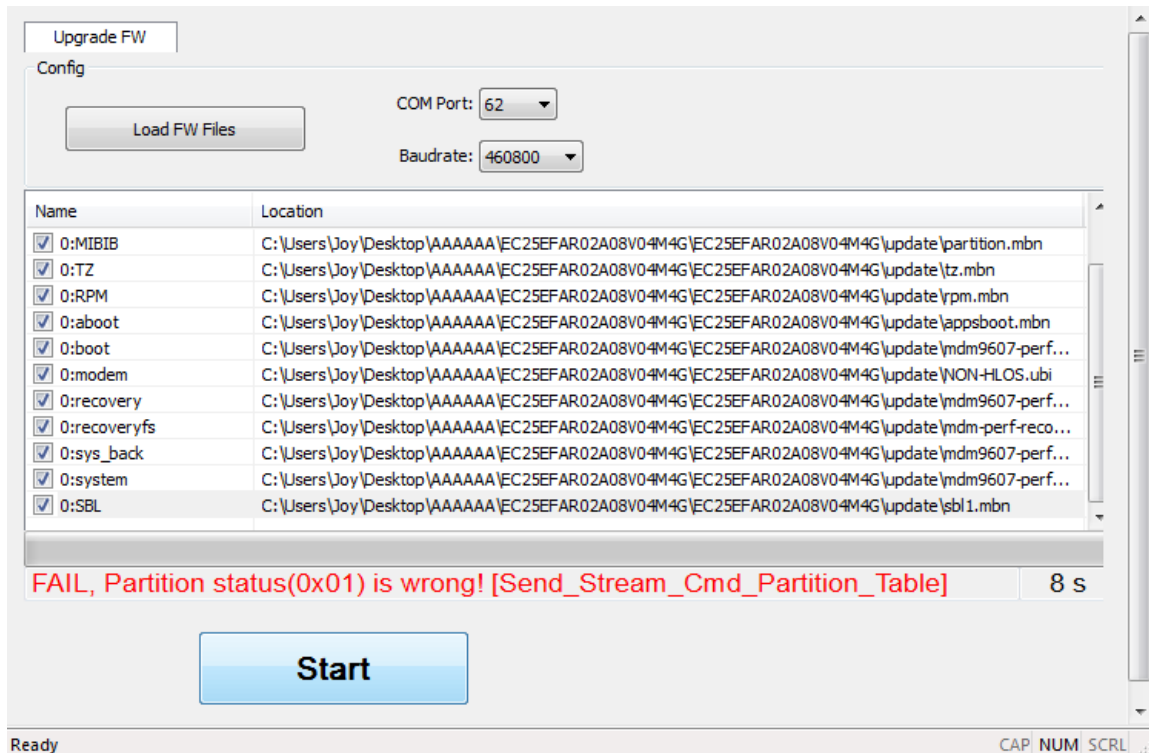


Figure 49: Selected an Invalid FW File (Ex06/AGxx/BG96/Ex12/EG18)

2.5.5. Power Supply is Abnormal

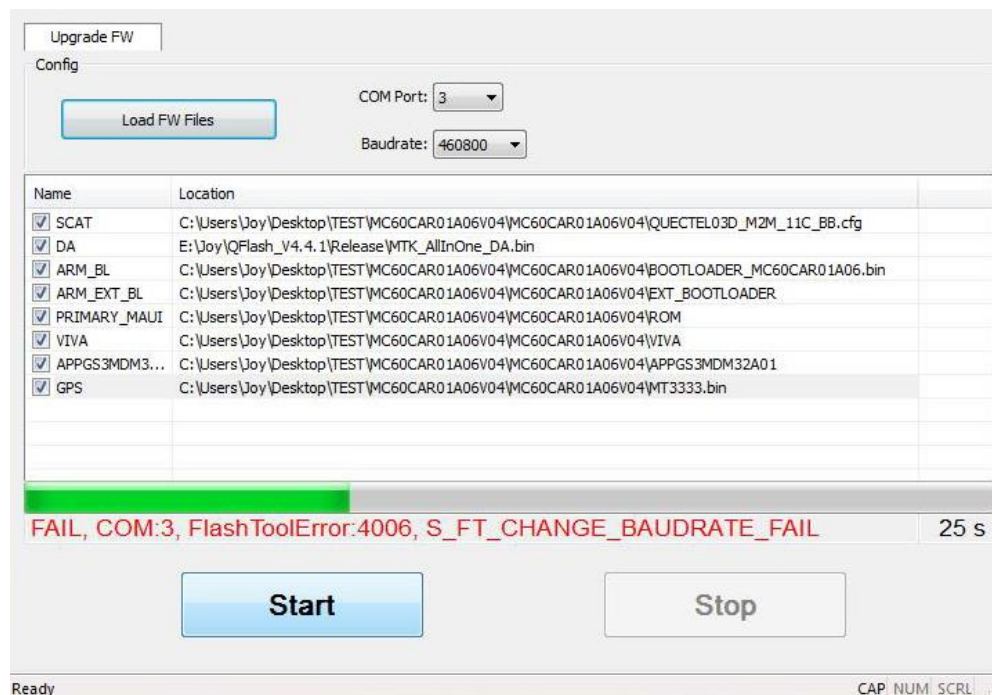


Figure 50: Abnormal Power Supply (M10/M66/M72/M80/M85/M95/MC60)

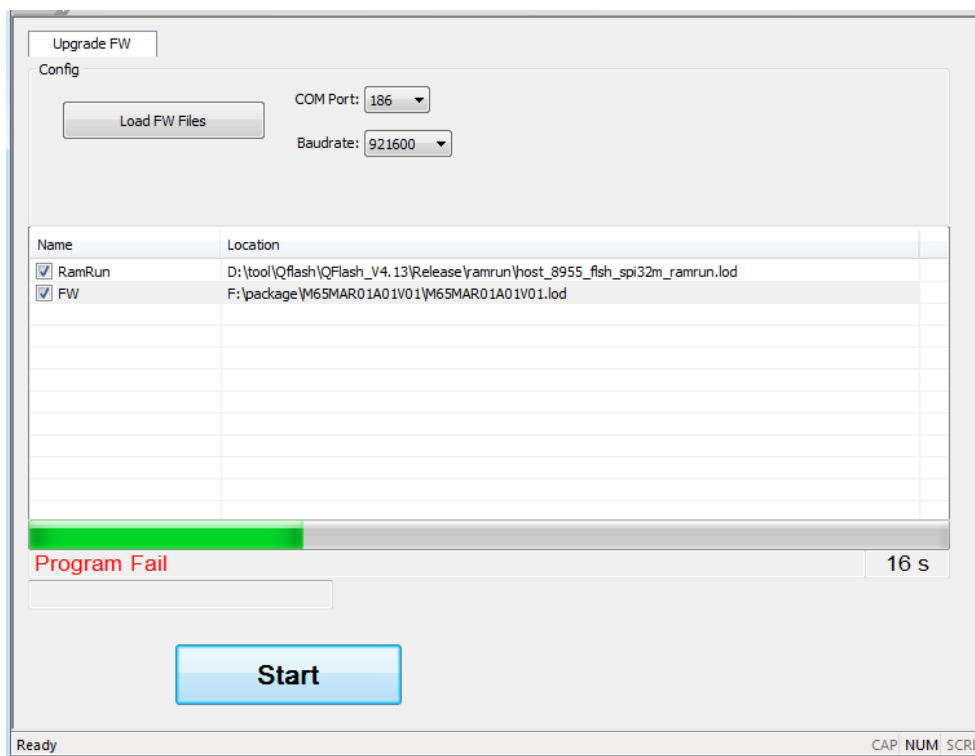


Figure 51: Abnormal Power Supply (M65)

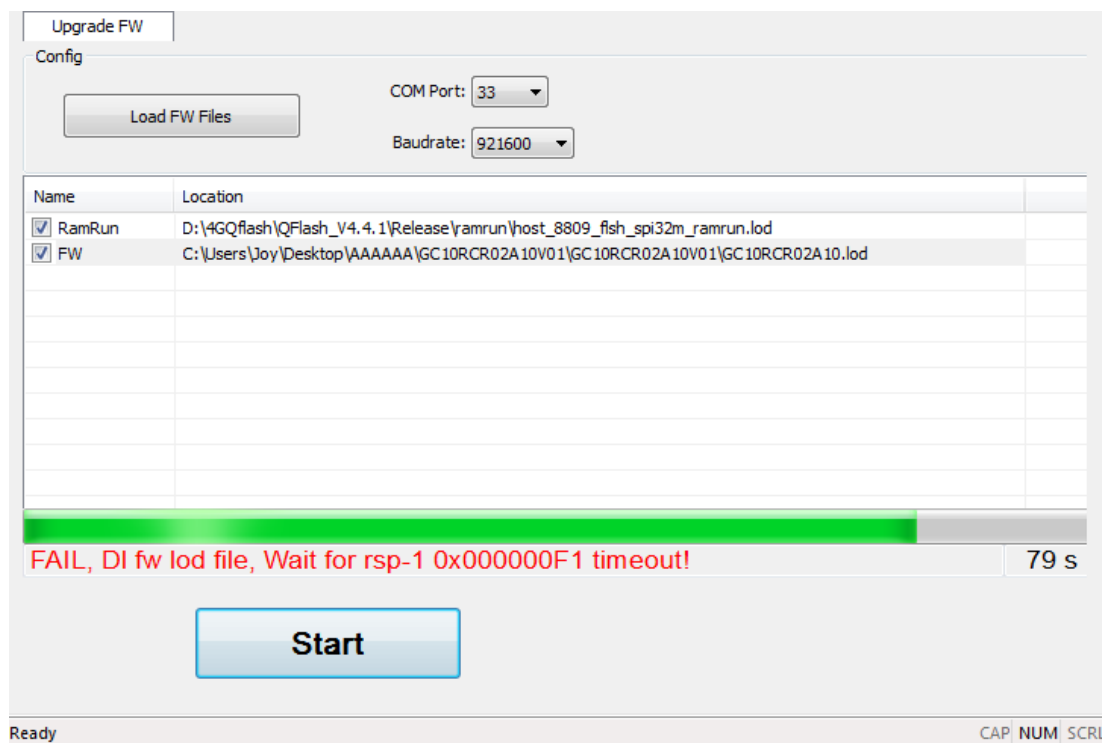


Figure 52: Abnormal Power Supply (GCxx)

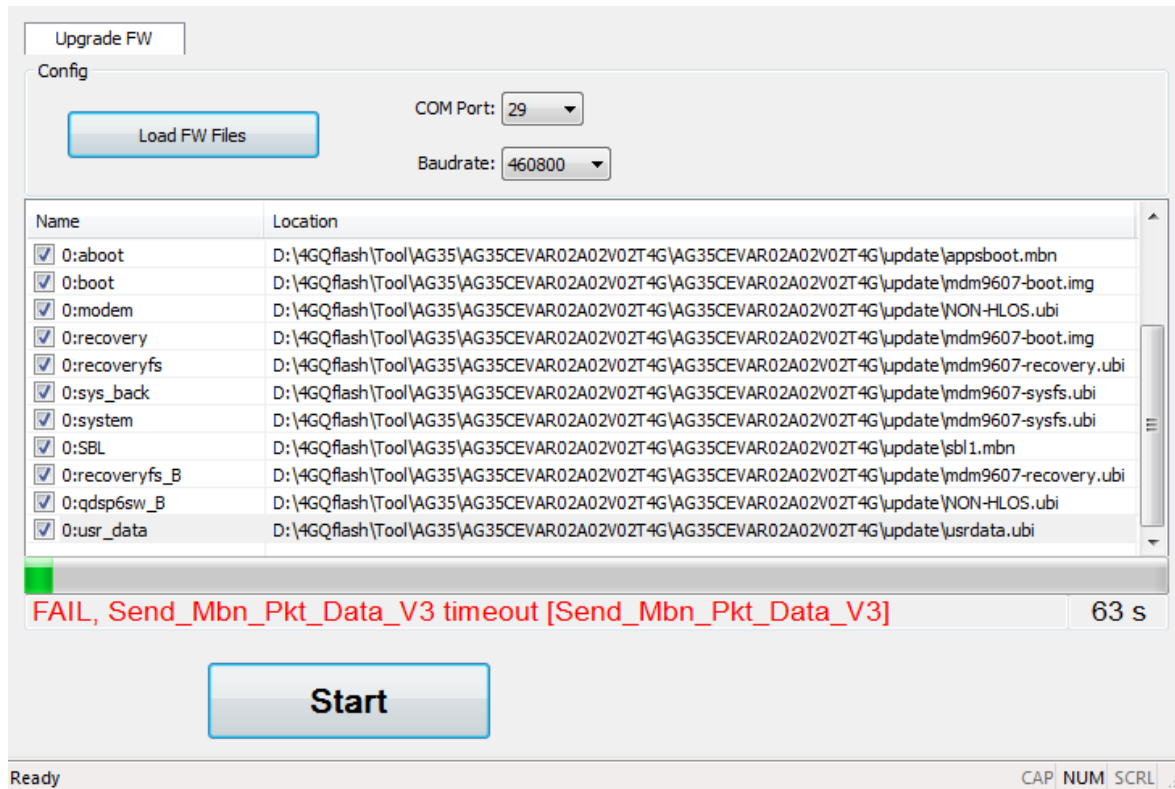


Figure 53: Abnormal Power Supply (UCxx/EC2x/EG9x/EG2x-G/Ex06/EM05/AGxx/BGxx/Ex12/EG18/RG500Q/RM500Q)

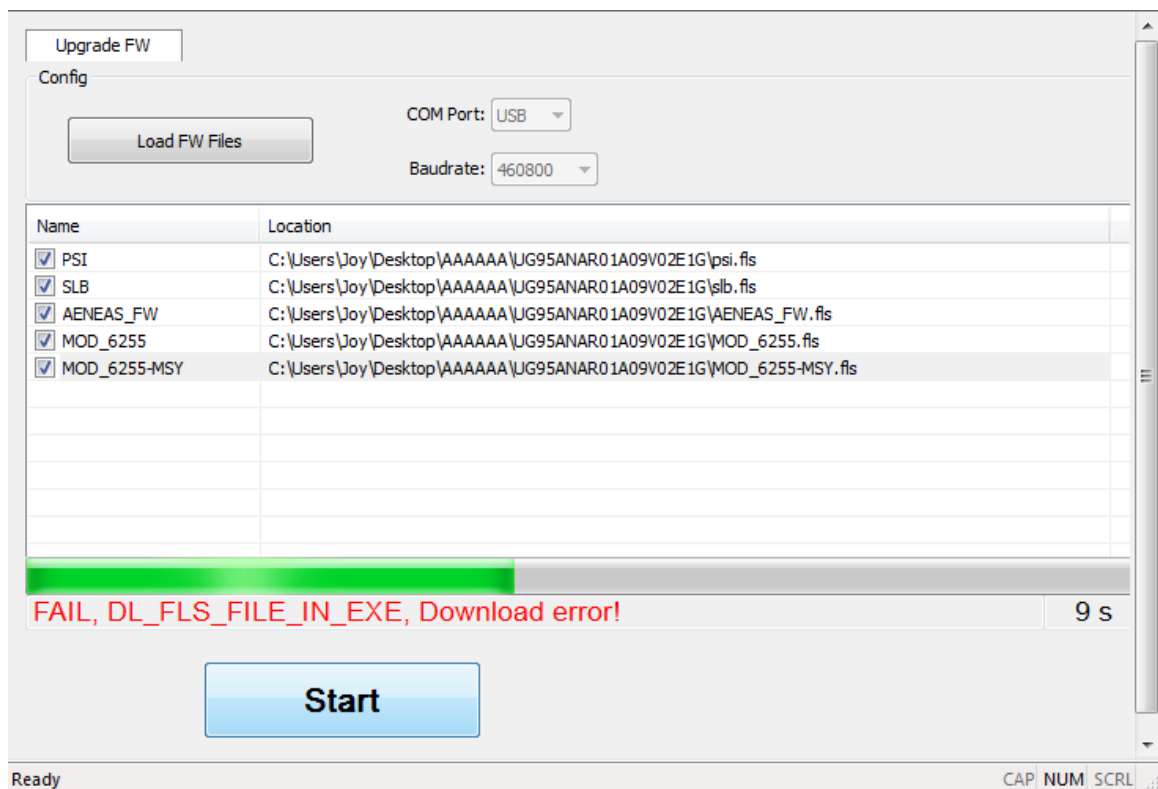


Figure 54: Abnormal Power Supply (UGxx)

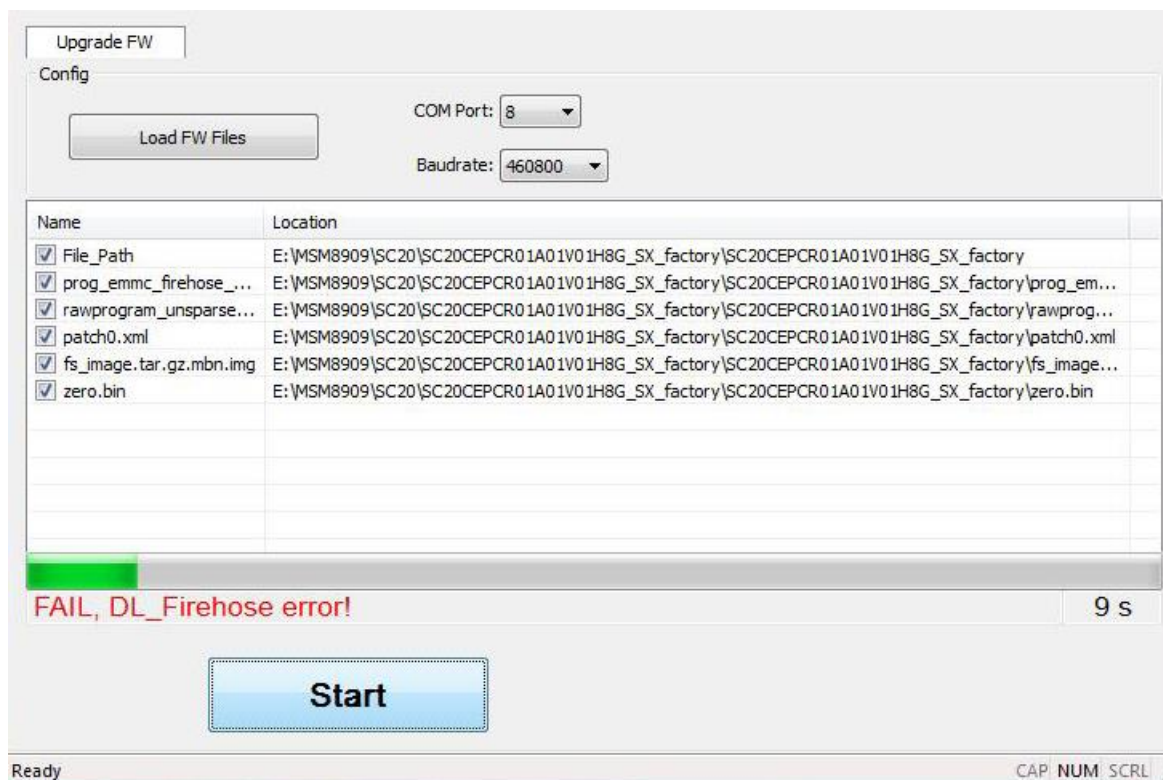


Figure 55: Abnormal Power Supply (SCxx)

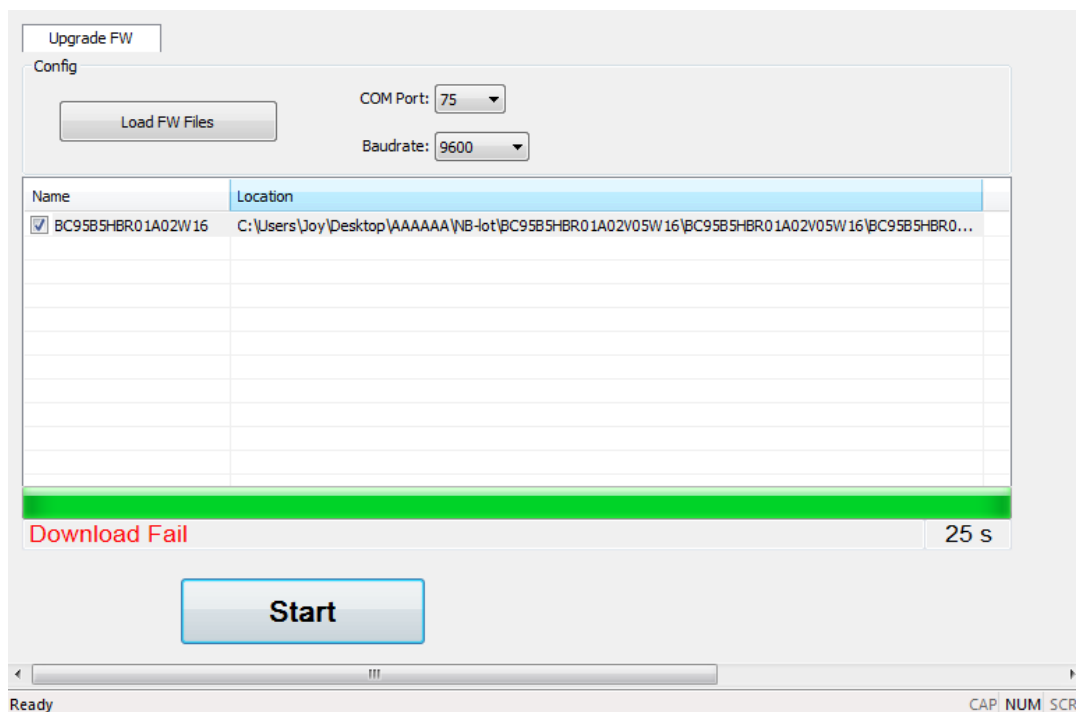


Figure 56: Abnormal Power Supply (BCxx)

2.5.6. USB to RS-232 Converter Cable is Abnormal

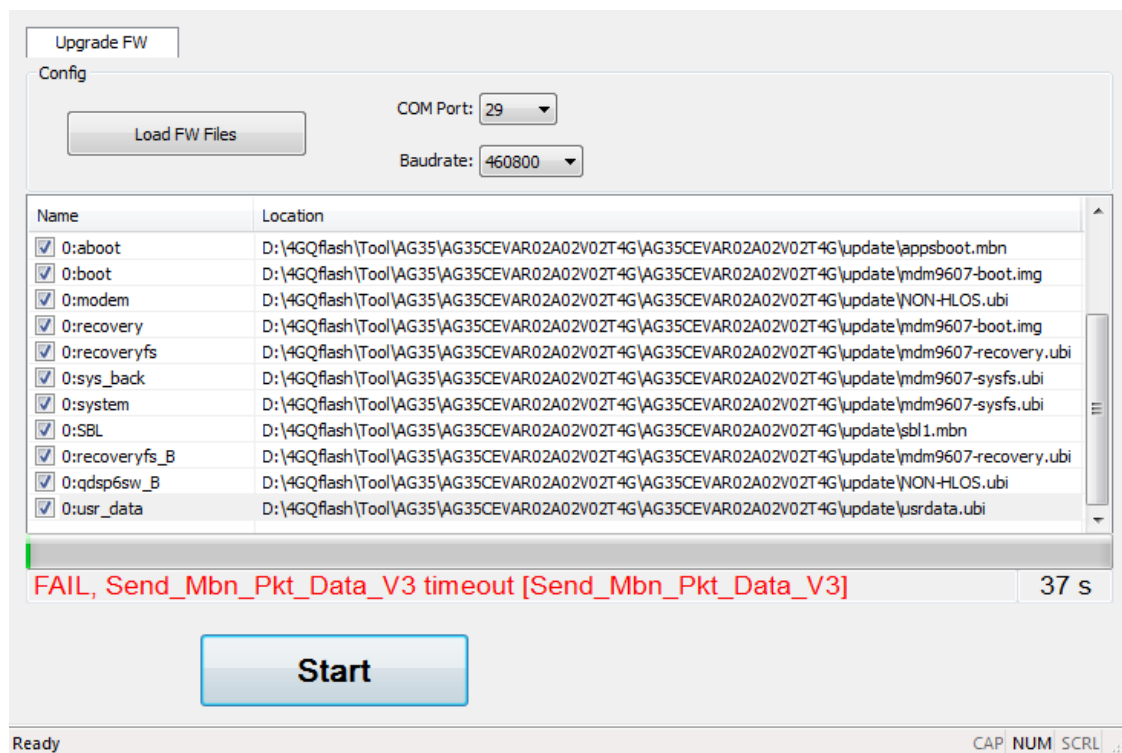


Figure 57: Abnormal USB to RS-232 Converter Cable