

Hon660 - Android Upgrade User Guide

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Rev.	Date	Author	Description
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3	July 19, 2017	Yang Yang	Update for QFIL Image position
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6	Sep 1, 2017	Te Chhang	Appendix A –tools Installation
7	Sep 12,2017	Steven Tao	Add the resolve encrypting method
8	Sep 13,2017	Steven Tao	Add the CT60 Upgrade method
9	Sep 14,2017	Steven Tao	Change location & Add HUgrader
10	Sep 27,2017	Steven Tao	Improve & Add md5sum check
11	Nov 8,2017	Steven Tao	Honeywell Signed & erase ddr & factory reset

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1 Preparation

1.1 USB driver install

This section is required for QFIL to Upgrade.

If the USB driver is ready for you ,Please skip this section . Otherwise you need to install the USB driver first.

Please get the driver package from the below correct link .

Driver Packages

Qualcomm USB Drivers For Windows : USB driver\qud.win.1.1_installer_10044.7\Setup.exe
GoogleAndroidUSBDevice: USB driver\google\usb_driver\dpinst-amd64.exe

SZ:

<\\ch3uw1050\Engineer\Mobility\Projects\DubaiAndroid\Documents\qcom-SDM660\Tools>

US:

<\\de08st2702\hsm\ENG-MOB-SWImages\DubaiAndroid\Tools>

USI:

<sftp://Dubai@sftp.usi.com.tw:/Honeywell/Hon660Android/tools/>

- 1、 Simply run the Setup.exe after unzip the qud.win.1.1_installer_10040.5.zip.
- 2、 Simply run the dpinst-amd64.exe after unzip the google.zip.

See Appendix A for detail installation of USB drivers and QPST tools.

1.2 Identify device's SOM SDA vs SDM

When you Upgrade the OS version with QFIL ,This section is required. Please notice this device's SOM type.

If the number marked in red in below picture is 0, the SOM type is SDA. If the number is 1, the SOM type is SDM.

Examples for CN80:



Examples for CT60:



1.3 USB Cable

USB 2.0 complaint cable is required. USB 3.0 complaint cable may not work (for CN80)

2 OTA Upgrade for Hon660

This section introduces how to upgrade with OTA method. Including The OTA image position, USB connection way, Where is OTA package, Hupgrader.apk operation steps. How to Upgrade between Honeywell Key and Test key.

Notes :

OTA support One image for CN80 & CT60.

Please make sure the current version is newer version. If The OS version is older version, Please QFIL with 83.00.00(0288) version. Refer to Chapter 3 Program with QFIL

From 83/84.00.00(0310)

The **user** build image is signed by **Honeywell release key**

The **userdebug** build image is signed by **Google test key**

If want to **switch between user build** (Honeywell release key signed OS) and **user debug build** (Google test key signed OS). Please refer to the **Chapter 2.5** to Upgrade from between different key signed.

What kind of OTA zip is Honeywell release Key signed: **83/84.00.00(0310) user build or later**

What kind of OTA zip is Google Test Key signed: **All image except Honeywell release Key signed**

2.1 Download OTA Image

1、 One Image for all Products (Daily NB)

SZ:

<http://artifactory.android.honeywell.com:8080/artifactory/libs-snapshot-local/Honeywell/Hon660Android/nougat-master/>

USI:

sftp://Dubai@sftp.usi.com.tw:/Honeywell/Hon660Android/nougat-master/

US:

\\de08st2702\hsm\ENG-MOB-SWImages\DubaiAndroid\Nightly_Builds\Hon660Android\nougat-master

2、 Only for CN80 (Older NB)

SZ:

<http://artifactory.android.honeywell.com:8080/artifactory/libs-snapshot-local/Honeywell/CN80Android/nougat-master/>

USI:

sftp://Dubai@sftp.usi.com.tw:/Honeywell/CN80Android/nougat-master/

US:

\\de08st2702\hsm\ENG-MOB-SWImages\DubaiAndroid\Nightly_Builds\CN80Android\nougat-master

2、 Only for CT60 (Older NB)

SZ:

<http://artifactory.android.honeywell.com:8080/artifactory/libs-snapshot-local/Honeywell/CT60Android/nougat-master/>

USI:

sftp://Dubai@sftp.usi.com.tw:/Honeywell/CT60Android/nougat-master/

US:

\\de08st2702\hsm\ENG-MOB-SWImages\DubaiAndroid\Nightly_Builds\CT60Android\nougat-master

2.2 Connect the device to PC

Please notice the different connection method for CN80 & CT60.

For CN80:

Connect the device to PC follow the method below via a USB 2.0 cable..



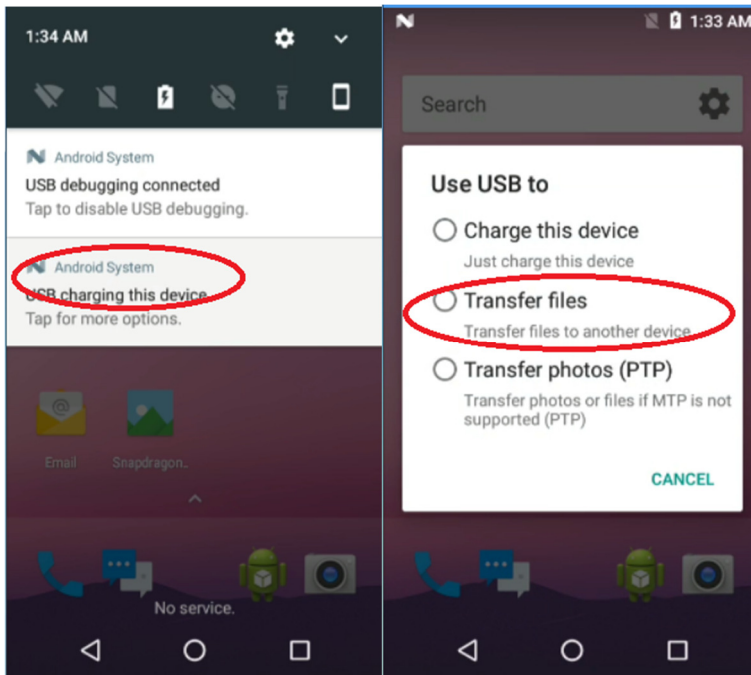
For CT60:

Connect the device to PC follow the below method. (CT60 support two Base see below picture)

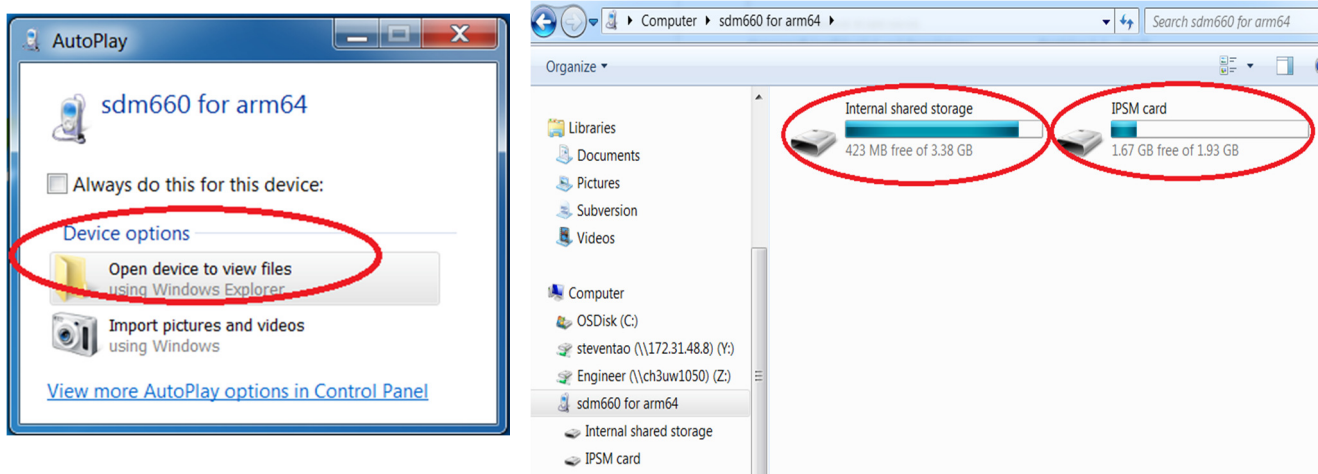


2.3 Copy OTA package to specified folder

1. Choose the USB as transfer files mode

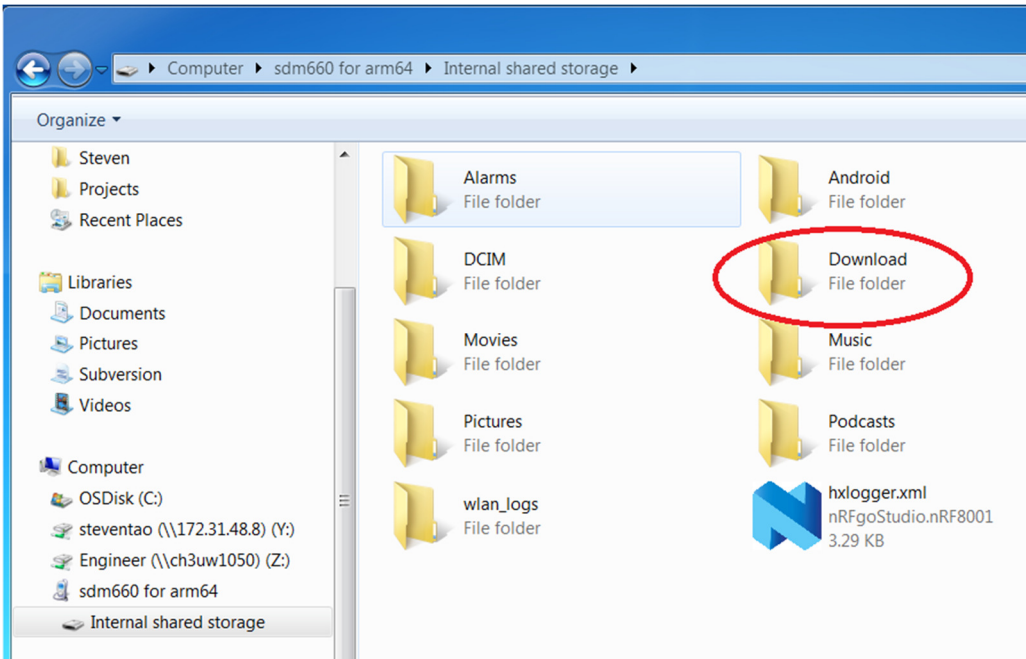


2. Open device to View files

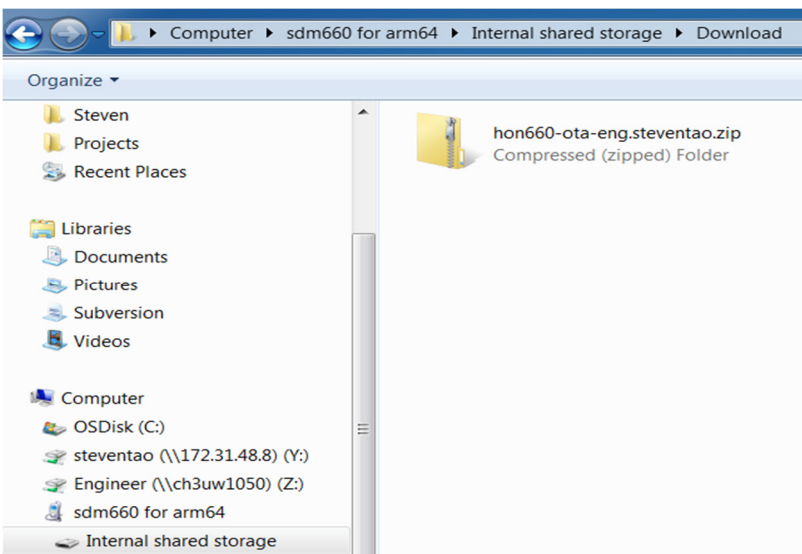


You can copy the OTA package into the **Internal Sdcard** Or **IPSM card**. It's optional for you. Take below operation copy OTA package to "Internal Scard/Download" as example.

3. Open the Download folder. The Hupgrader.apk will search ota zip from this folder default.



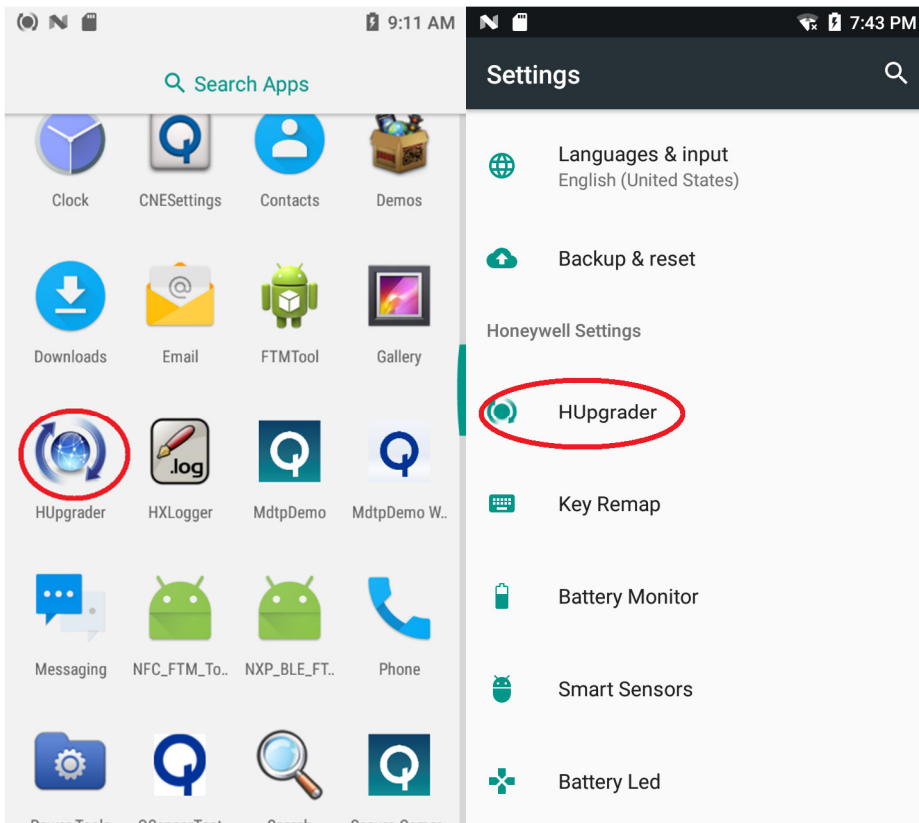
4. Copy the ota zip to the Download



2.4 OTA Upgrade By Hupgrader

Hugrader.apk Can select the OTA zip By Filebrower. (From Internal Sdcard or IPSM)

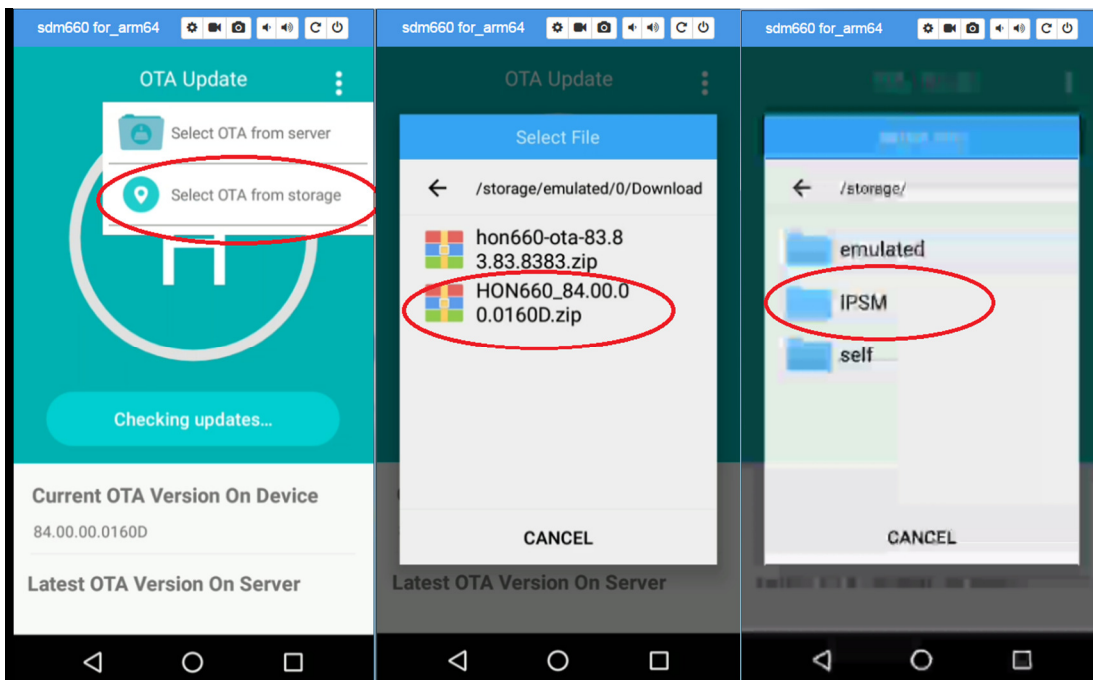
1、 Double click the HUPgrader.apk to show the HUPgrader main interface as second picture.



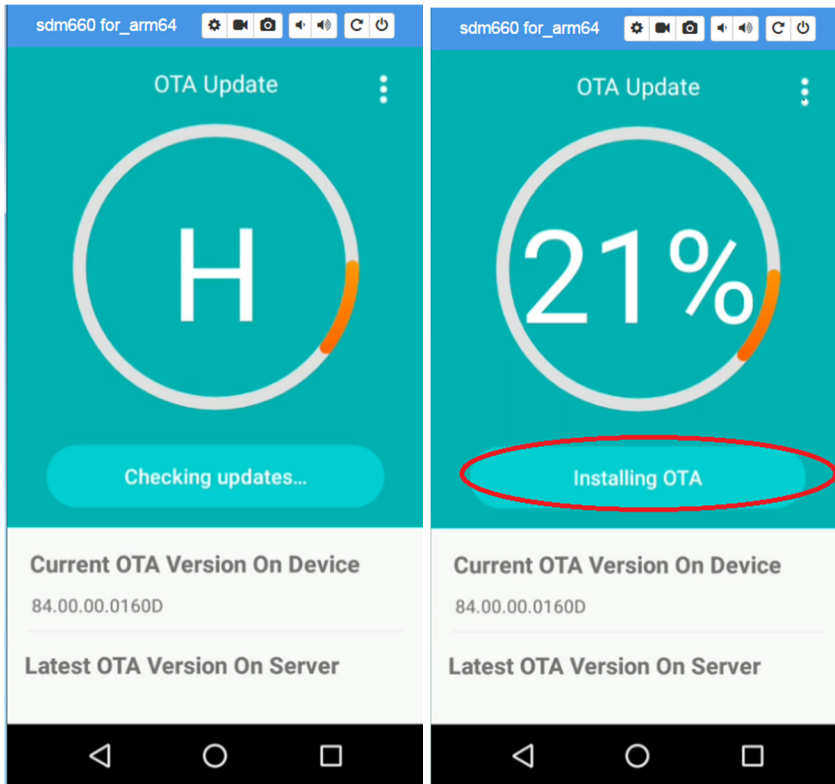
2、 Select the OTA zip which you want to Upgrade from storage.

Below Second Picture Select From sdcard/Download/ folder.

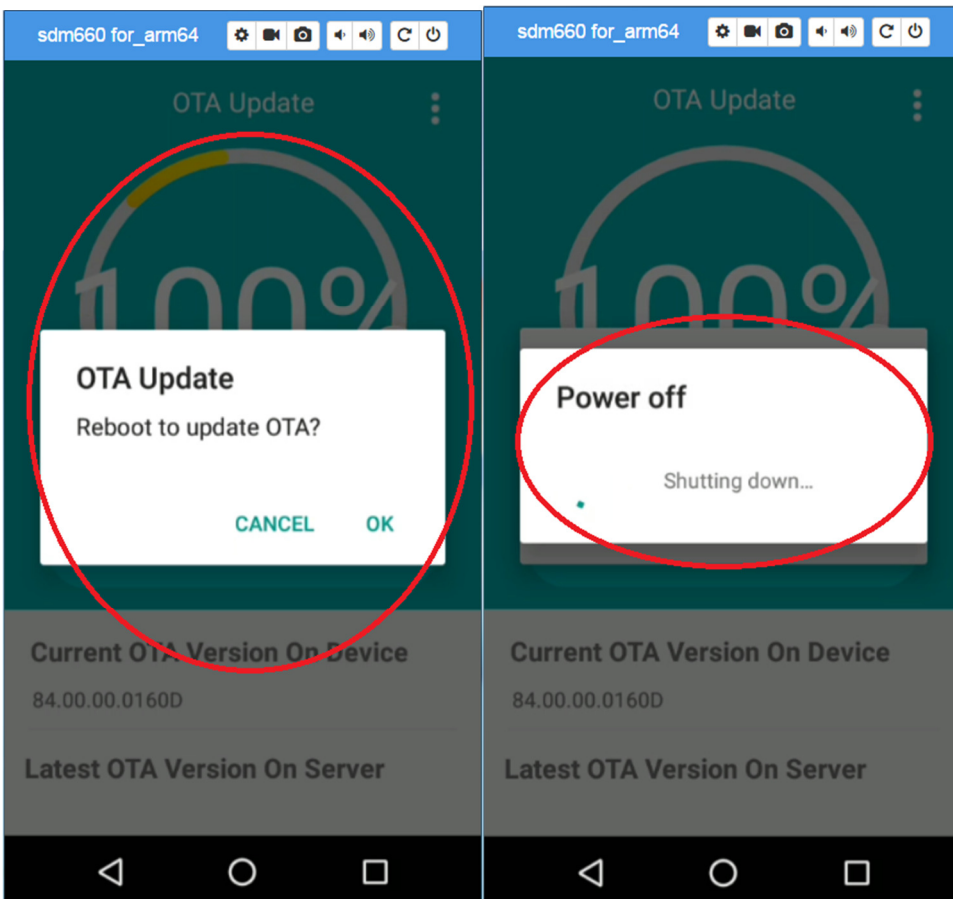
Below Third Picture also can select from IPSM(Marked red)



3、 need wait moment after the OTA package then start to Installing OTA see picture two marked.



4、 reach the hundred percent need to Reboot the devices and enter into new Upgraded OS version. Click the OK button. It will be take effect.



2.5 How to switch OS With OTA Between Honeywell Key and Test Key

What kind of OTA zip is Honeywell release Key signed: 83/84.00.00(0310) user build or later

What kind of OTA zip is Google Test Key signed: All image except Honeywell release Key signed

The G2H.zip & H2G.zip Position:

SZ:

[http://artifactory.android.honeywell.com:8080/artifactory/libs-snapshot-local/Honeywell/Hon660Android/nougat-master/PILOT/00.00.00\(0056\)/HON660-N-00.00.00D\(0056\)-H2G.zip](http://artifactory.android.honeywell.com:8080/artifactory/libs-snapshot-local/Honeywell/Hon660Android/nougat-master/PILOT/00.00.00(0056)/HON660-N-00.00.00D(0056)-H2G.zip)

[http://artifactory.android.honeywell.com:8080/artifactory/libs-snapshot-local/Honeywell/Hon660Android/nougat-master/PILOT/00.00.00\(0056\)/HON660-N-00.00.00D\(0056\)-G2H.zip](http://artifactory.android.honeywell.com:8080/artifactory/libs-snapshot-local/Honeywell/Hon660Android/nougat-master/PILOT/00.00.00(0056)/HON660-N-00.00.00D(0056)-G2H.zip)

USI:

sftp://Dubai:1688@sftp.usi.com.tw/Honeywell/Hon660Android/nougat-master/PILOT/00.00.00(0056)/HON660-N-00.00.00D(0056)-H2G.zip

sftp://Dubai:1688@sftp.usi.com.tw/Honeywell/Hon660Android/nougat-master/PILOT/00.00.00(0056)/HON660-N-00.00.00D(0056)-G2H.zip

US:

[\\de08st2702\hsm\ENG-MOB-SWImages\DubaiAndroid\Nightly_Builds\Hon660Android\nougat-master\PILOT\00.00.00\(0056\)\HON660-N-00.00.00D\(0056\)-H2G.zip](\\de08st2702\hsm\ENG-MOB-SWImages\DubaiAndroid\Nightly_Builds\Hon660Android\nougat-master\PILOT\00.00.00(0056)\HON660-N-00.00.00D(0056)-H2G.zip)

[\\de08st2702\hsm\ENG-MOB-SWImages\DubaiAndroid\Nightly_Builds\Hon660Android\nougat-master\PILOT\00.00.00\(0056\)\HON660-N-00.00.00D\(0056\)-G2H.zip](\\de08st2702\hsm\ENG-MOB-SWImages\DubaiAndroid\Nightly_Builds\Hon660Android\nougat-master\PILOT\00.00.00(0056)\HON660-N-00.00.00D(0056)-G2H.zip)

If your device is test key signed, Install the G2H.zip firstly ,then install Honeywell signed image

If your device is Honeywell key signed, Install the H2G.zip firstly ,then install Google Test signed image

Upgrade steps:

- 1、 Copy the OTA Zip(**switch zip**) to the Download folder (refer to the chapter 2.3 steps)
- 2、 Upgrade the switch OTA Zip (refer to the chapter 2.4 steps)
- 3、 Do Factory Reset (refer to the chapter 6 steps)
- 4、 Copy the OTA Zip(**target zip**) to the Download folder (refer to the chapter 2.3 steps)
- 5、 Upgrade the target OTA Zip (refer to the chapter 2.4 steps)
- 6、 Do Factory Reset (refer to the chapter 6 steps)

3 Program with QFIL (Qualcomm Flash Image Load)

This section introduces how to upgrade with QFIL method. Including QPST install & use, QFIL image position, How to enter QLOADER mode , QPST flash method.

The USB 2.0 Cable connection is required , Please Use the USB 2.0 to program with QFIL for CN80



3.1 Install QPST

3.1.1 QPST Installer Location

The installation package name is qpst.win.2.7_installer_00458.1.zip.

SZ:

<\\ch3uw1050\Engineer\Mobility\Projects\DubaiAndroid\Documents\qcom-SDM660\Tools>

US:

<\\de08st2702\hsm\ENG-MOB-SWImages\DubaiAndroid\Tools>

USI:

<sftp://Dubai@sftp.usi.com.tw:/Honeywell/Hon660Android/tools/>

3.1.2 QPST Installtion

QFIL is integrated in Qualcomm Product Support Tool(QPST). Please follow Qualcomm Flash Image Loader (QFIL) User Guide to install the tool. Simply steps are as follows:

1. In Windows Explorer, locate the **setup.exe** file in the CD's root directory. Double-click the file to launch the setup program.
2. Follow the instructions provided by the installer. This could include additional reboots depending on your operating system version and that of certain system files that QPST may need to update.

3. After rebooting the computer, relaunch the setup program by double-clicking the **setup.exe** file. When the Setup Complete dialog appears, the application has been installed successfully.
4. Click **Finish** to complete the installation.

3.2 Device SOM Type

At moment, there are two SOM types for Hon660 device, that is SDM and SDA. Unplug the battery, you will see the PN on the white sticky. Just like picture below

Examples for CN80:



Examples for CT60:



If the number marked in red in above picture is 0, the SOM type is SDA. If the number is 1, the SOM type is SDM.

3.3 Program steps

3.3.1 Download QFIL Image

1、 One Image for all Products

SZ:

<http://artifactory.android.honeywell.com:8080/artifactory/libs-snapshot-local/Honeywell/Hon660Android/nougat-master/QFIL/>

US:

\\de08st2702\hsm\ENG-MOB-SWImages\DubaiAndroid\Nightly_Builds\Hon660Android\nougat-master\QFIL

USI:

<sftp://Dubai@sftp.usi.com.tw:/Honeywell/Hon660Android/nougat-master/QFIL/>

2、 Only for CN80

SZ:

<http://artifactory.android.honeywell.com:8080/artifactory/libs-snapshot-local/Honeywell/CN80Android/nougat-master/QFIL/>

US:

\\de08st2702\hsm\ENG-MOB-SWImages\DubaiAndroid\Nightly_Builds\CN80Android\nougat-master\QFIL

USI:

<sftp://Dubai@sftp.usi.com.tw:/Honeywell/CN80Android/nougat-master/QFIL/>

3、 Only for CT60

SZ:

<http://artifactory.android.honeywell.com:8080/artifactory/libs-snapshot-local/Honeywell/CT60Android/nougat-master/QFIL/>

US:

\\de08st2702\hsm\ENG-MOB-SWImages\DubaiAndroid\Nightly_Builds\CT60Android\nougat-master\QFIL

USI:

<sftp://Dubai@sftp.usi.com.tw:/Honeywell/CT60Android/nougat-master/QFIL/>

3.3.2 How to Enter QLOADER mode

We have two ways to enter QLOADER mode that Command Enter & Short Enter.

Please choose the convenience method to enter the QLOADER mode.

3.3.2.1 adb Command to Enter QLOADE Mode

If the device can enter Android system, use adb command to make device enter QLOADER mode. The adb user manual is in Chapter 4. Input adb command:

adb reboot edl (For all Hon660 devices)

After enter QLOADER mode, go to Chapter 3.3.3 to download emergency package into device.

3.3.2.2 Short FORCE_USB_BOOT pins to Enter QLOADER Mode

This Document is applicable to different Hon660 devices. But the short method is different.

So User need to pay attention to different short methods(**CN80 &CT60**)

If the device cannot enter Android system or the device seems dead, please use the pin header to short the FORCE_USB_BOOT pins as below in device power off state. After that, Connect the device to the PC By USB and let it enter QLOADER mode. (disconnect the usb from PC before short to ensure enter QLOADER success). The following is the detail steps:

For CN80:

1. Connect IO Port to the device.



2. Unplug the battery, you will see the black rubber cushion



3. Unplug the black rubber cushion. Short the right two pins (marked in red in above right picture) , connect the USB from IO port to host computer to make device enter QLOADER mode.

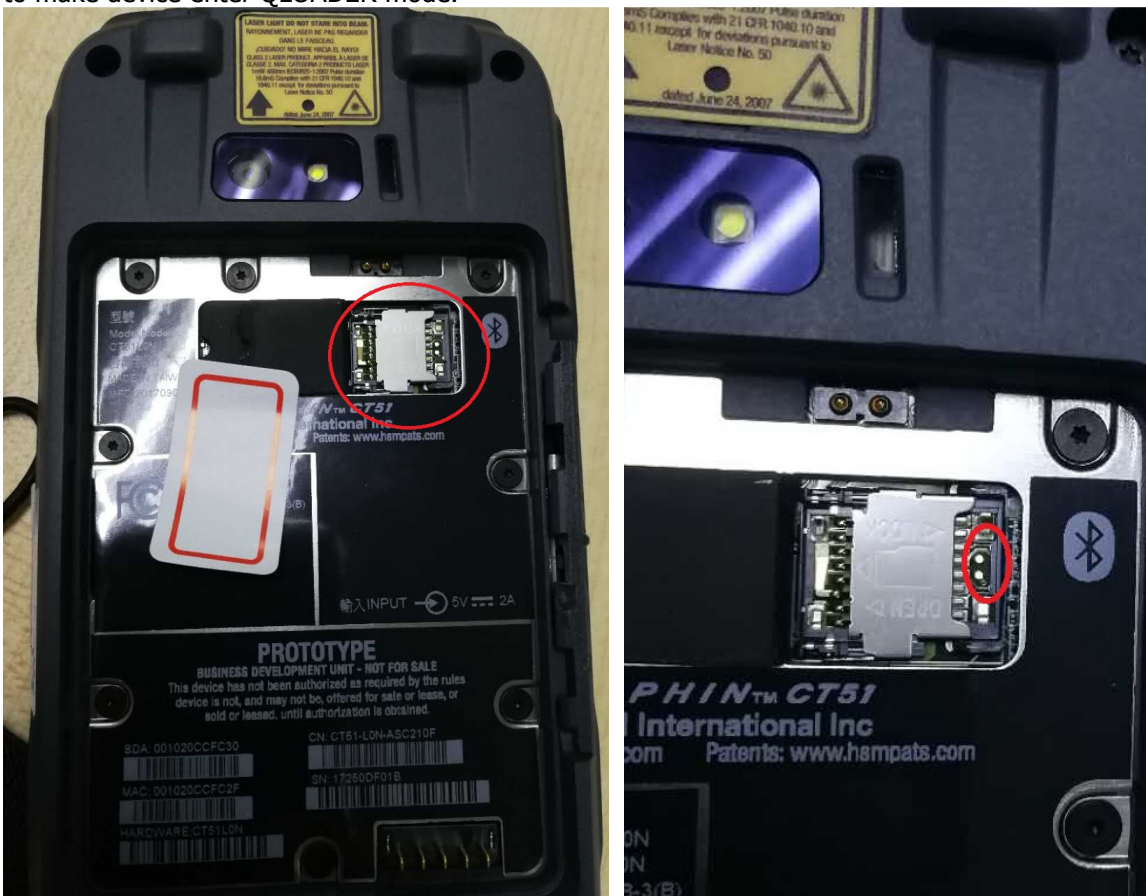
For CT60:

1、Unplug the battery && Connect the Base to the devices

Two Base for CT60 see below picture.

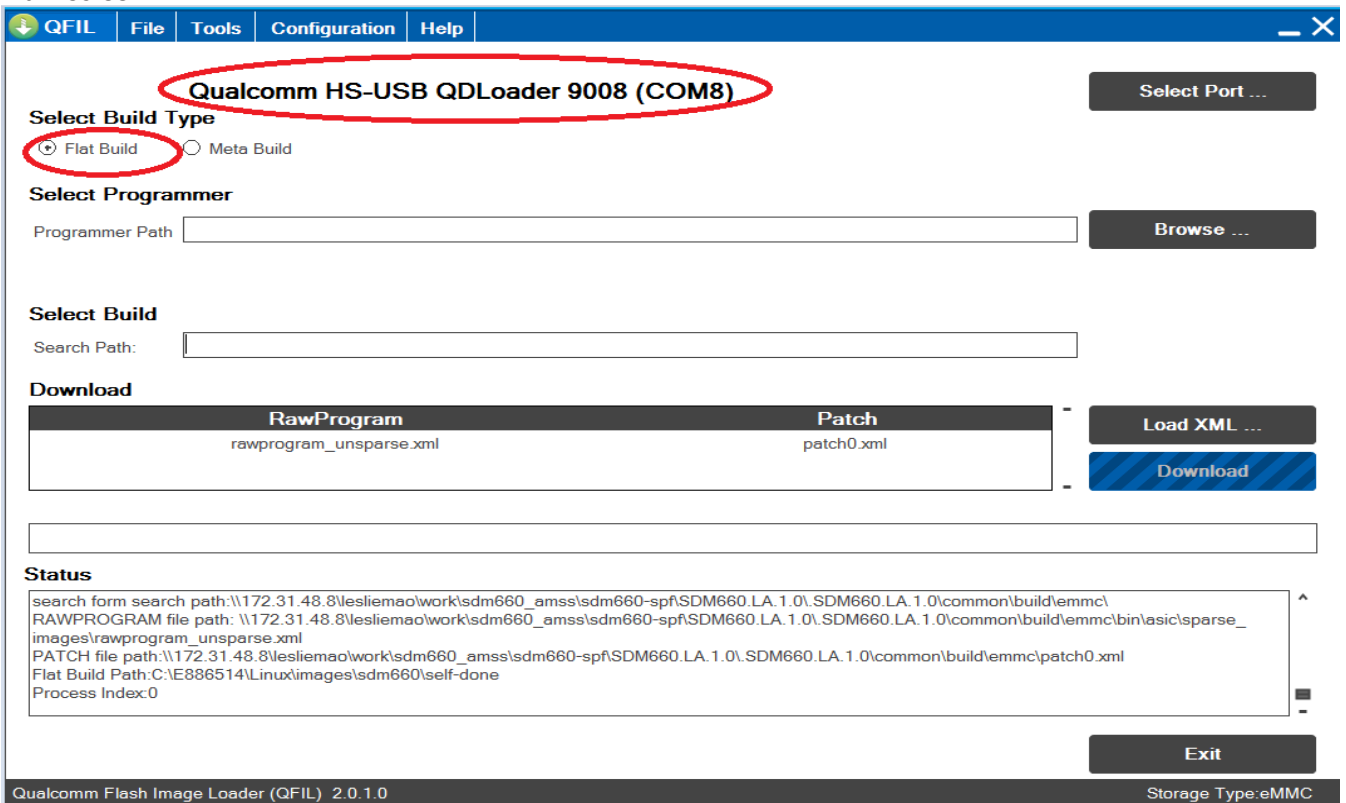


2、Short the right two pins (marked in red in below right picture) , connect the USB from base to host computer to make device enter QLOADER mode.



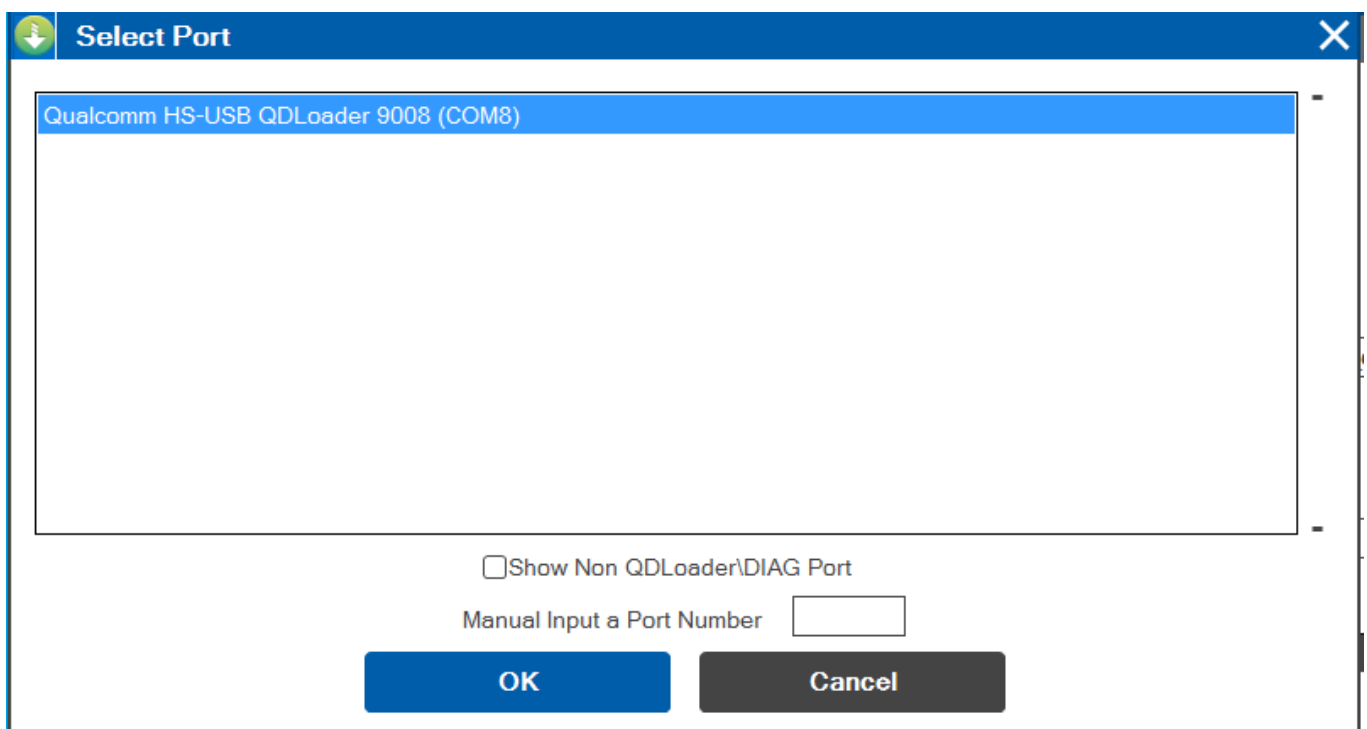
3.3.3 Use QFIL to download Flat Build image

1. Plug in a target device in QLOADER mode to an available USB port. The device is displayed at the top of the main screen.

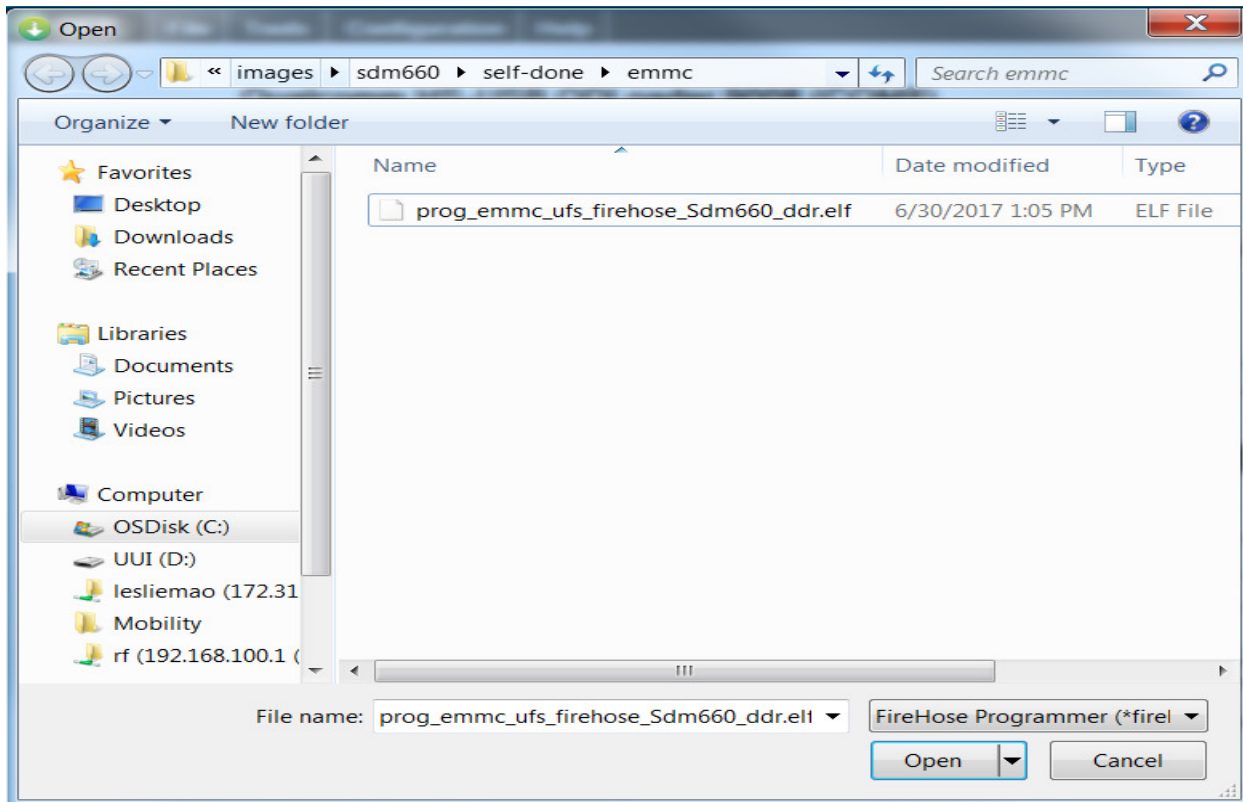


If the port is *not* automatically detected, click **Select Port**.

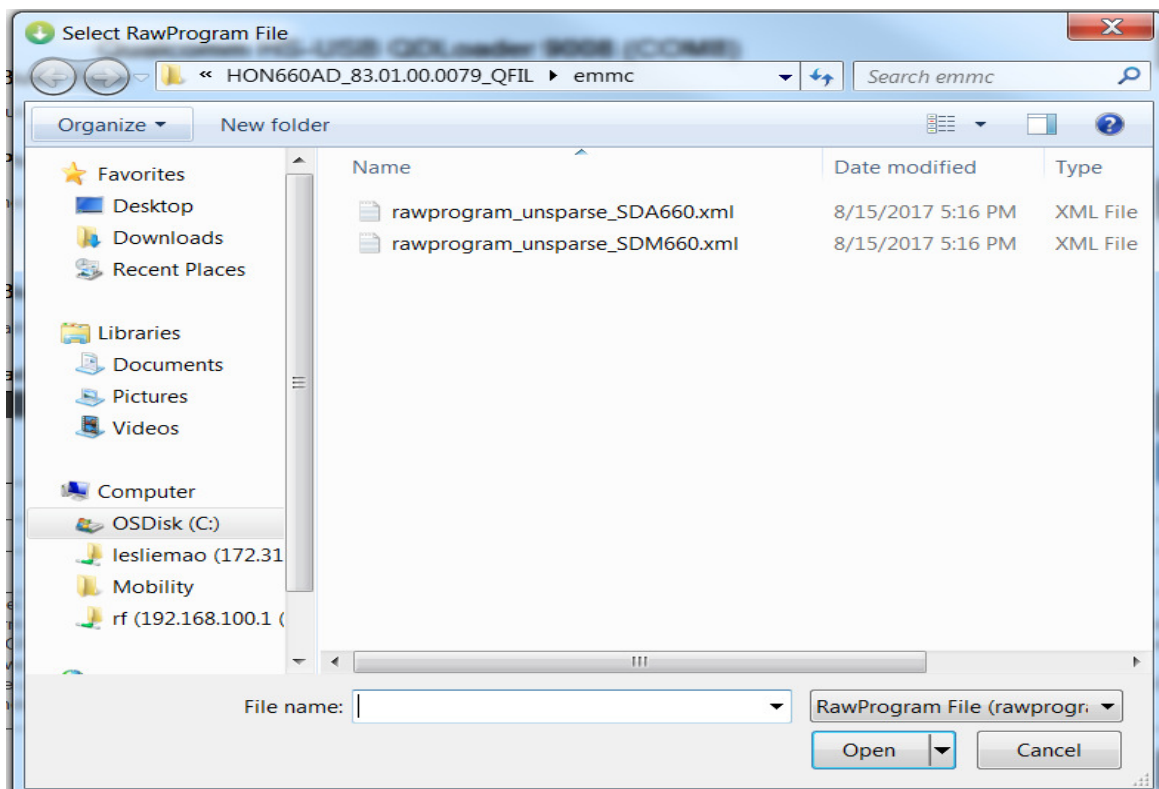
Select the applicable device and click **OK**. If no ports are displayed in the Select Port dialog, check if device is in QLOADER mode. **Check device Develop Options =>Select USB Configuration if Qualcomm com port still not showing up in QFIL selection.**



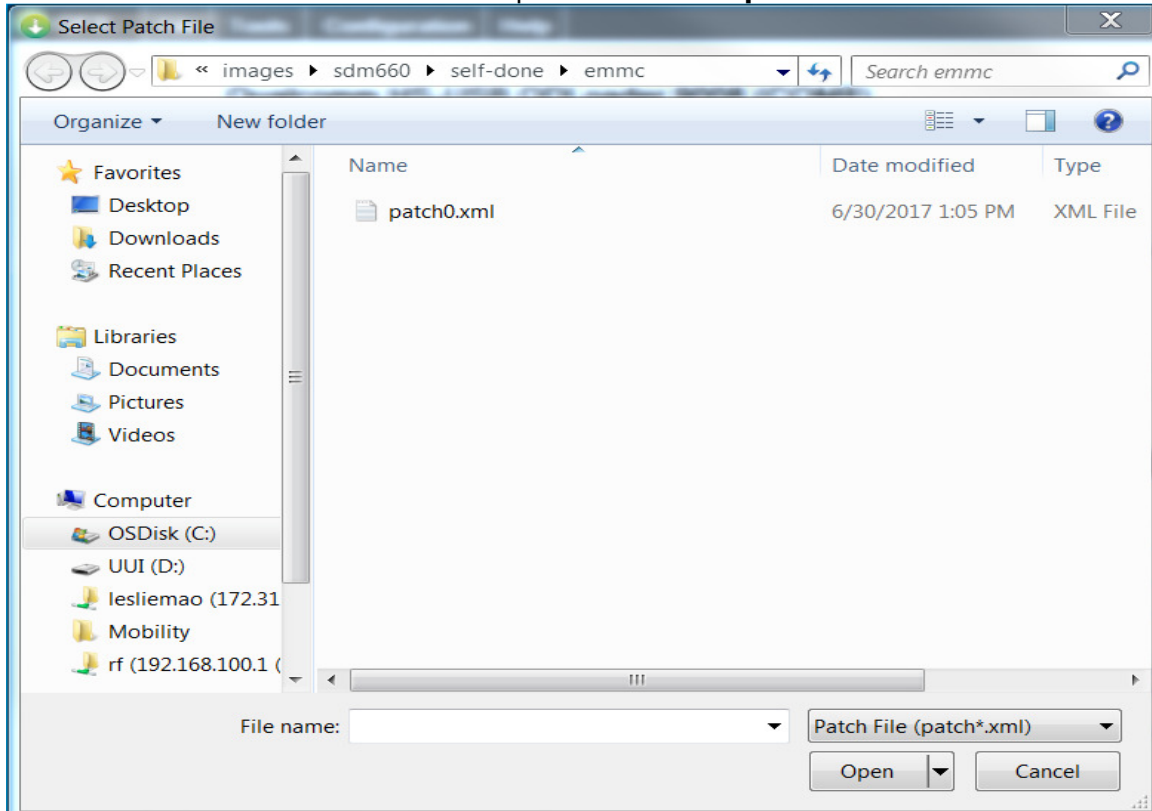
2. Click **BROWSE** to load the prog_emmc_ufs_firehose_Sdm660_ddr.elf file. Browse to the flat build location and select prog_emmc_ufs_firehose_Sdm660_ddr.elf. Click **Open**.



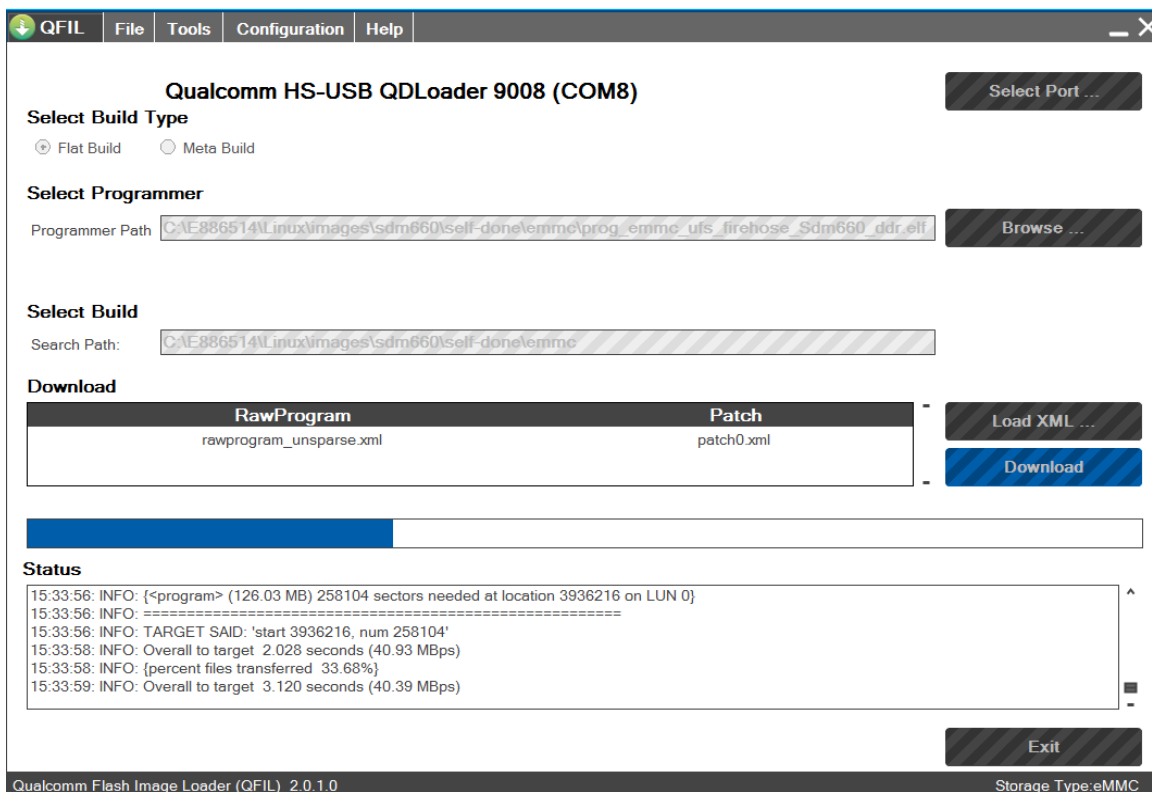
3 Click **Load XML** to load rawprogram_unsparse.xml and patch0.xml. Browse to the flat build location and select rawprogram_unsparse.xml according to your device SOM type. **If your SOM type is SDA, please choose rawprogram_unsparse_SDA660.xml. If SDM, choose rawprogram_unsparse_SDM660.xml.** Refer to Section 3.1 for SOM type. Click **Open**.



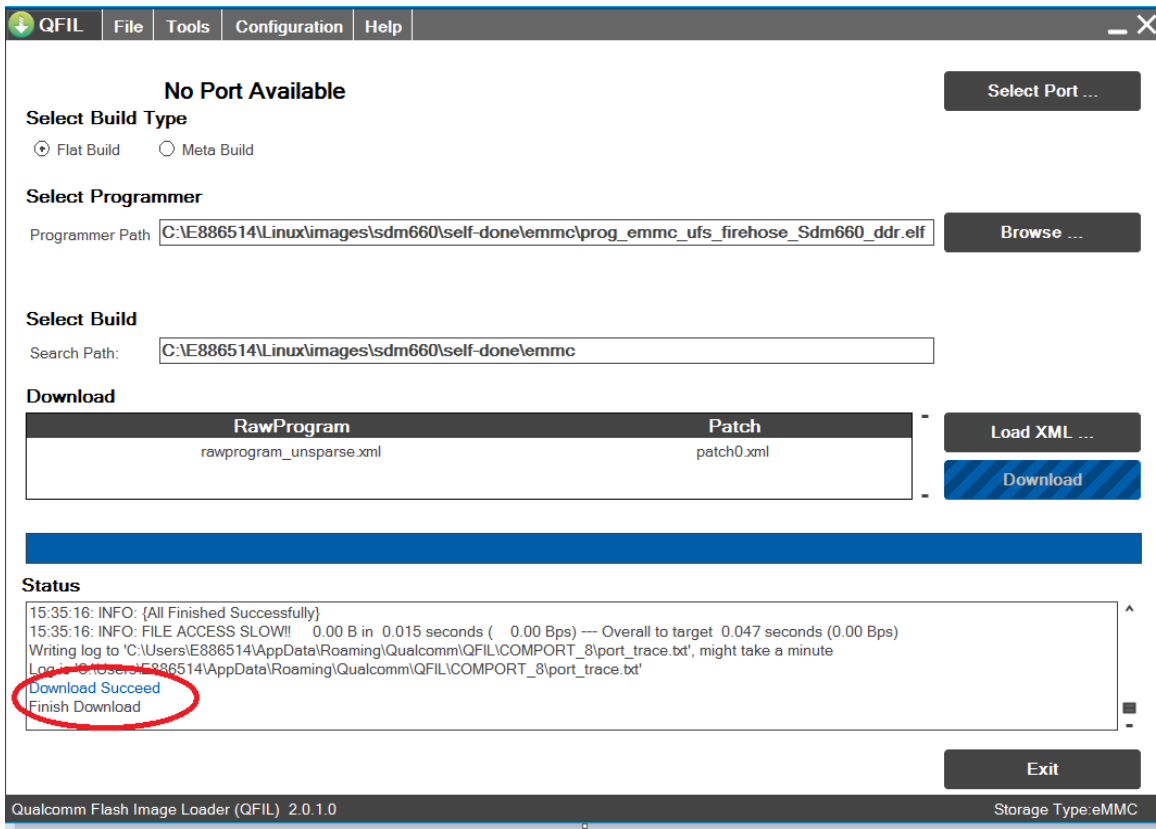
Browse to the flat build location and select patch0.xml. Click **Open**.



4. Click **Download** to start the download. During download, all of the function buttons are dimmed and will be re-enabled after downloading is complete. The download progress is indicated by the horizontal progress bar. The **Status** field displays the updated files and the images currently being programmed into the target device.



4. When the download has completed successfully, **Download Succeed** and **Finish Download** messages display in the **Status** field.



4 How to Check the md5sum

This section introduces why do we need to check md5sum and how to check.

4.1 Why do check

Sometimes User will meet OTA Upgrade failed or even if the upgrade process is successful but The device can't boot into the New OS version and back to the original OS version after 7 times reboot.

If that happens, Please check the md5sum first. Check the OTA package copy to the device is correct.

If the md5sum calculated from device is different from the md5sum from artifactory server. **It means the OTA package is broken. You must remove the broken OTA package and copy it again.**

4.2 How to check

Step 1: Obtain target OTA package's md5sum by command "md5sum package_name"

```
CN80-L1N-2EC:/storage/emulated/0/Download # md5sum HON660_83.00.00.0193D.zip
480336a28123ee55fd89ebbbfece04e8 HON660_83.00.00.0193D.zip
```

The md5sum marked red calculated from device see above picture.

Step 2: Obtain the original md5sum from artifactory server where you can get the OTA package.

Index of libs-snapshot-local/Honeywell/Hon660Android/nougat-master/83.00.00.0193

Name	Last modified	Size
..		
ivy/	26-Sep-2017 22:11	-
android_changes.html	26-Sep-2017 22:11	173.59 KB
android_changes.html.md5	26-Sep-2017 22:11	32 bytes
android_changes.html.sha1	26-Sep-2017 22:11	40 bytes
HON660_83.00.00.0193.zip	26-Sep-2017 22:11	686.18 MB
HON660_83.00.00.0193.zip.md5	26-Sep-2017 22:11	32 bytes
HON660_83.00.00.0193.zip.sha1	26-Sep-2017 22:11	40 bytes
HON660_83.00.00.0193_EMMC.zip	26-Sep-2017 22:10	1.01 GB
HON660_83.00.00.0193_EMMC.zip.md5	26-Sep-2017 22:10	32 bytes
HON660_83.00.00.0193_EMMC.zip.sha1	26-Sep-2017 22:10	40 bytes
HON660_83.00.00.0193D.zip	26-Sep-2017 22:10	713.05 MB
HON660_83.00.00.0193D.zip.md5	26-Sep-2017 22:10	32 bytes
HON660_83.00.00.0193D.zip.sha1	26-Sep-2017 22:10	40 bytes

The marked red file in artifactory which store the original md5sum see below picture.

```
HON660_83.00.00.0193D.zip.md5
480336a28123ee55fd89ebbbfece04e8
```

Step 3: Compare the md5sum between device and artifactory.

If the md5sum is same . It means the OTA package in device is no problem.

If the md5sum is different . It means the OTA package is broken.

5 How to Resolve Encrypting problem

Phenomenon : Recovery Device hang at encryption screen



Case 1: Current version is user

Please use the QFIL method Update the OS version

QFIL method Refer to the steps : Chapter 3 Program with QFIL

Case 2: Current version is userdebug

Please enter the recovery mode. Execute the "factory reset" & "Wipe IPSM partition"

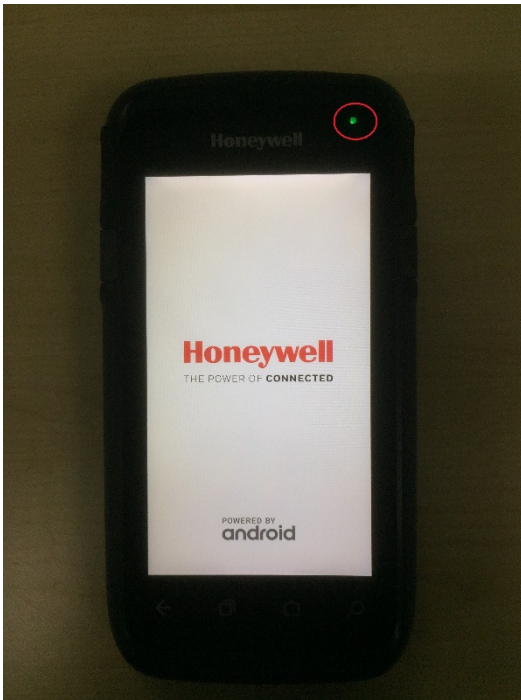
Press Power Key	HOLD VOL-DOWN KEY After press reboot button Then switch boot loader menu to Recovery by VOL +/-	Do Wipe data AND Wipe IPSM Then Reboot

6 How to do Factory Reset

Step1: Long press "power" button to reboot device

Step2: When the right up corner green light is on press "power" + "volume down"

Step3: The device will enter boot menu



Step4: Select "Factory Reset" and press "power" key then device do the factory reset then reboot into the OS.



7 How to erase ddr partition to fix ddr issues

Method 1:

QFIL with 83.00.00(0288) version . refer to the chapter 3 steps

Method 2:

Step1: Upgrade to the newest userdebug version refer to the chapter 2

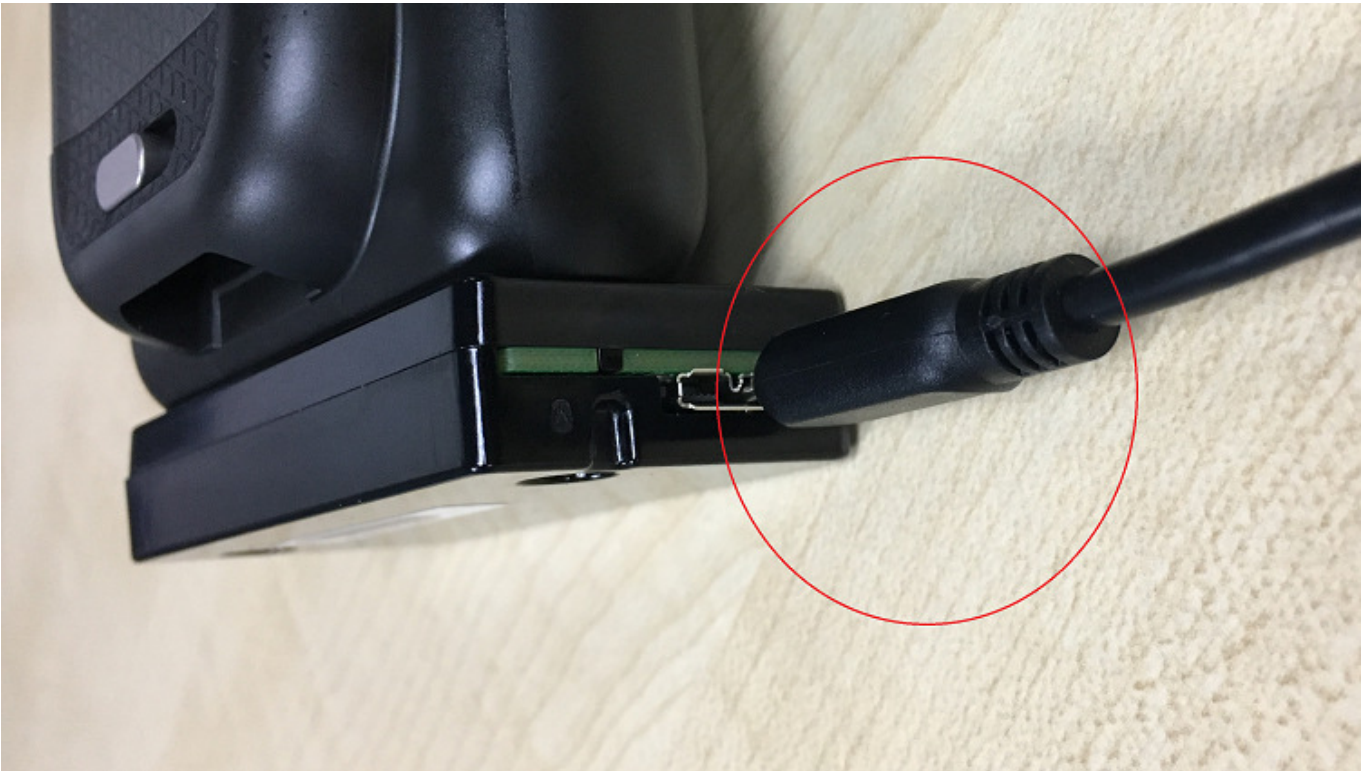
Step2: adb reboot bootloader && fastboot erase ddr

Step3: fastboot reboot

8 ADB Use(Common)

adb is a versatile command-line tool that lets you communicate with a device (an emulator or a connected Android device). The adb command facilitates a variety of device actions, such as installing and debugging apps, and it provides access to a Unix shell that you can use to run a variety of commands on a device. The USB is below:

For examples as CN80:



Use a usb cable to connect board to host computer and open Command Prompt on windows and use adb command to communicate with device.

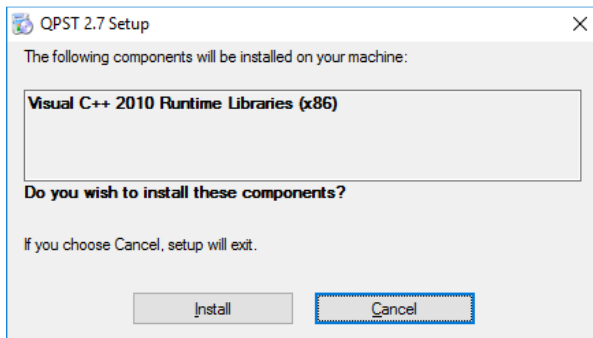
```
[ 96.565959] init: Service 'ppd' (pid 2174) killed with status 254
[ 96.565959] init: Service 'ppd' (pid 2174) killing any children in process group
cn80:/ #
cn80:/ # exit
cn80:/ $ exit

C:\Users\H151136>
C:\Users\H151136>
C:\Users\H151136>
C:\Users\H151136>
C:\Users\H151136>
C:\Users\H151136>adb shell
cn80:/ $ su
cn80:/ #
cn80:/ # pwd
/
cn80:/ # cat /proc/version
Linux version 4.4.21+ (jayzhang@ch3uu0002) (gcc version 4.9 20150123 (prerelease) (GCC) ) #35 SMP PREEMPT Tue Jul 18 15:38:40 CST 2017
cn80:/ #
```

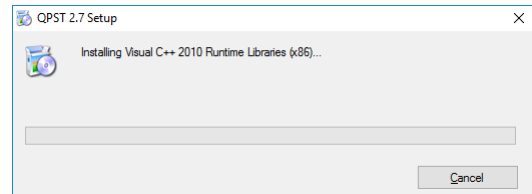

9 Appendix A – Tools Installation

9.1 Visual C++ Run-Tim Libraries Installation

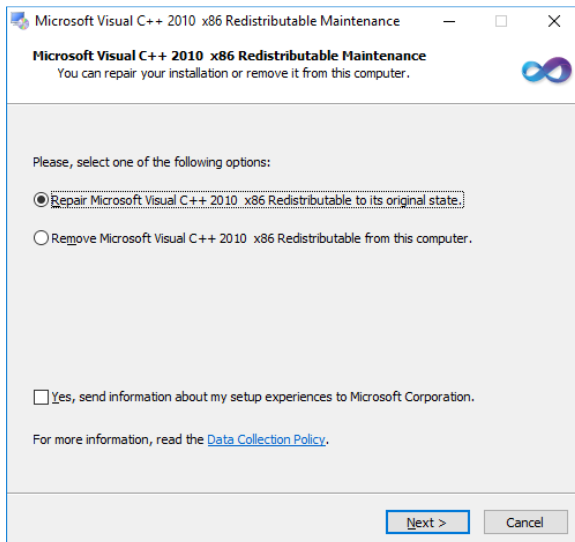
Run Setup.exe from the extracted qpst.win.2.7_installer_004581.zip.



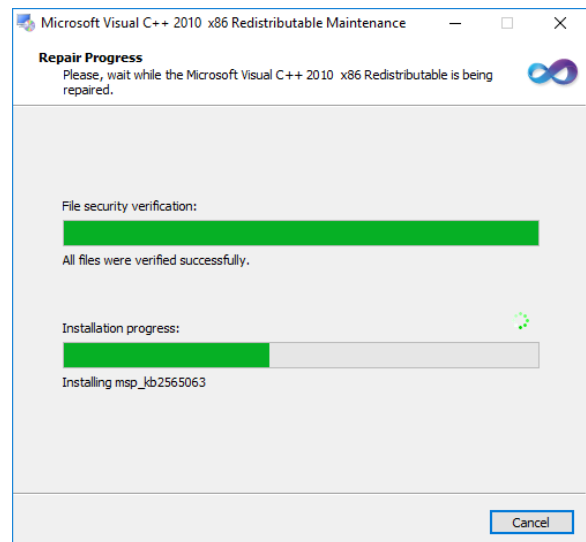
Click "Install" to start installation



Installation in progress...



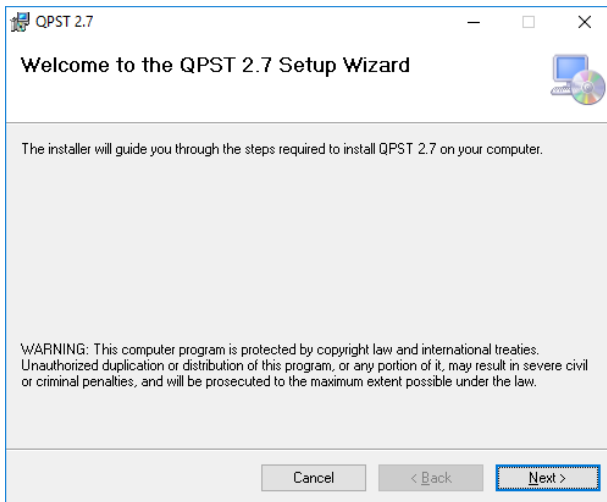
Select "Repair Microsoft Visual..." then click "Next"



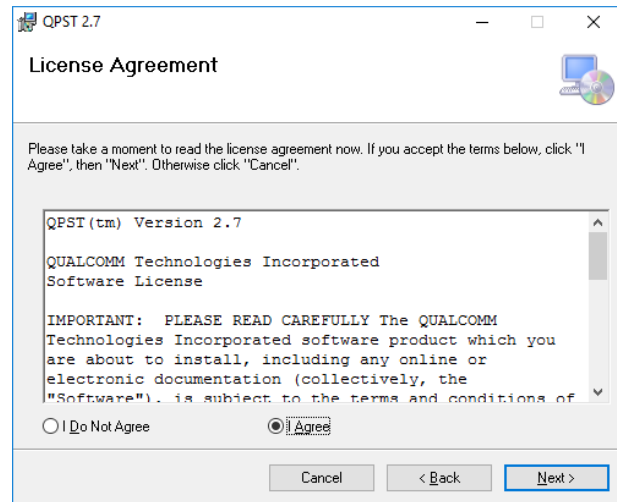
Installation in progress...

9.2 QPST 2.7x Installation

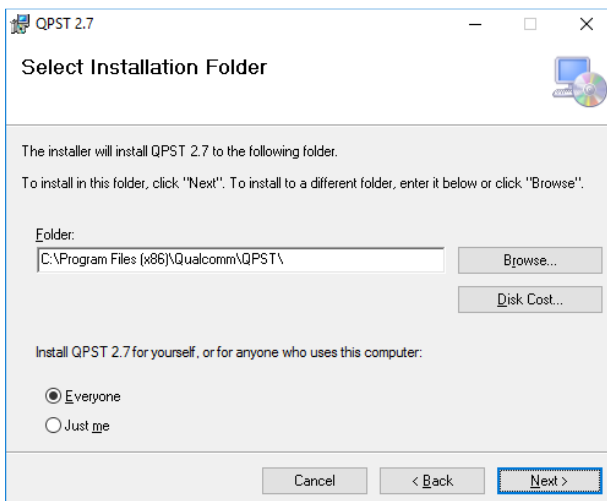
Run QPST.2.7.458.msi from the extracted qpst.win.2.7_installer_004581.zip.



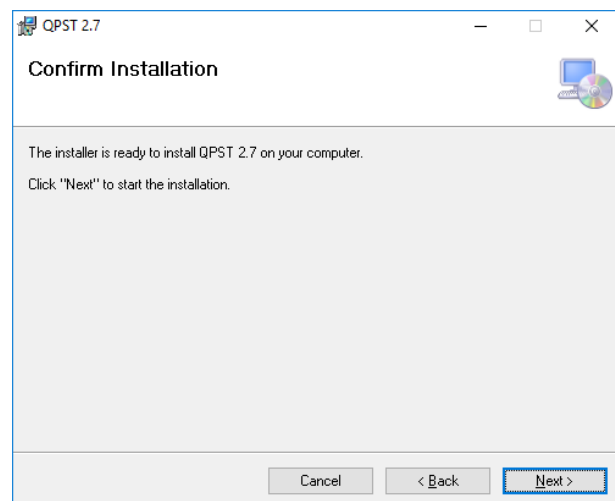
Click "Next" to begin installation of QPST 2.7



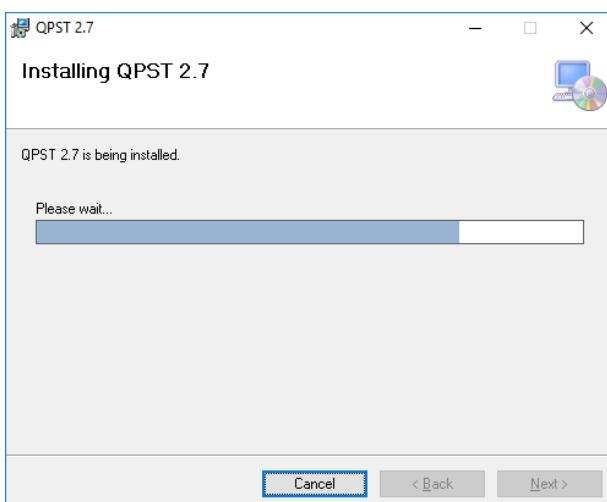
Select "Agree" then click on "Next"



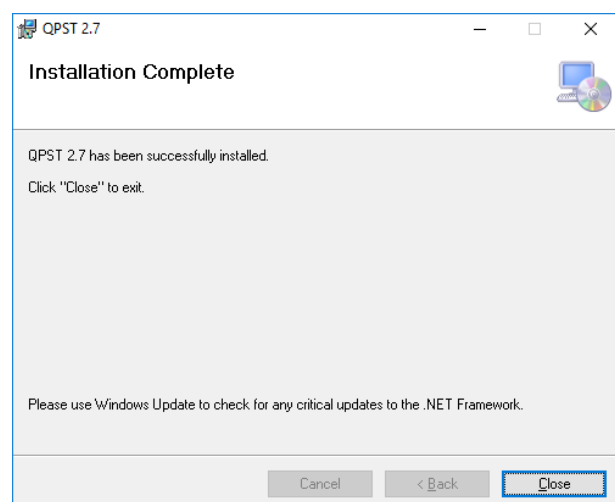
Select "Everyone" then click "Next"



Click "Next" to confirm installation



Installation in progress...



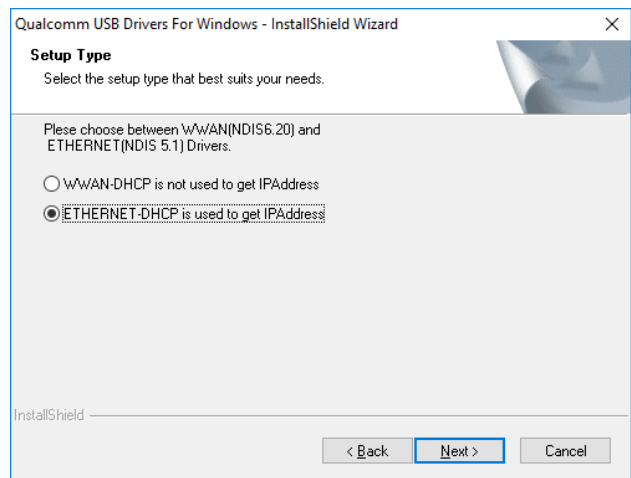
Click "Close" to complete installation of QPST 2.7

9.3 USB Drivers

1、 Run Setup.exe from extracted qud.win.1.1_installer_10040.5.zip



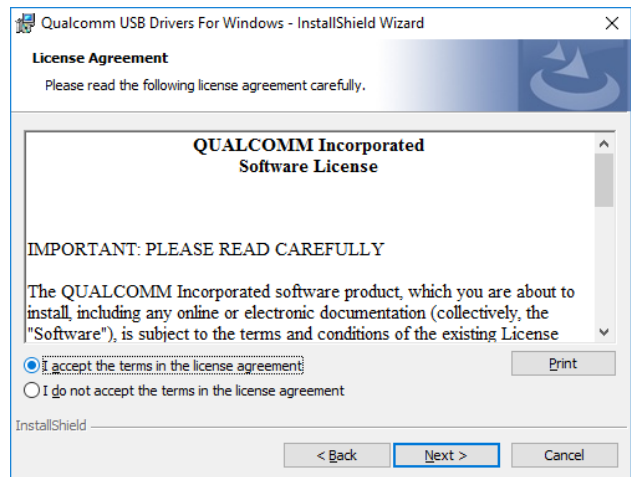
Double click on "Setup.exe" to start the installation



Select "ETHERNET-DHCP is used to get IPAddress"
 [Note: selecting the WWAN option would not work]

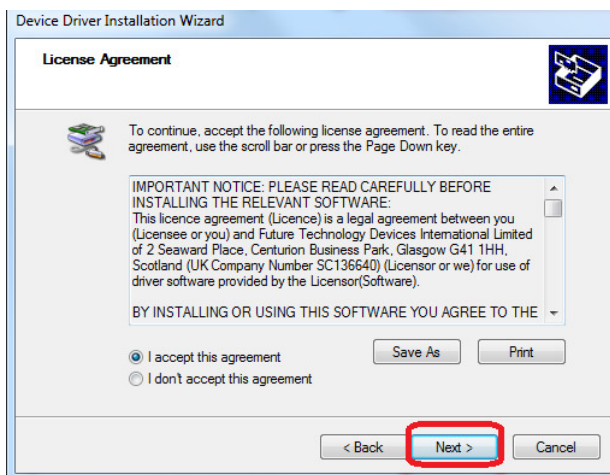


Click "Next"

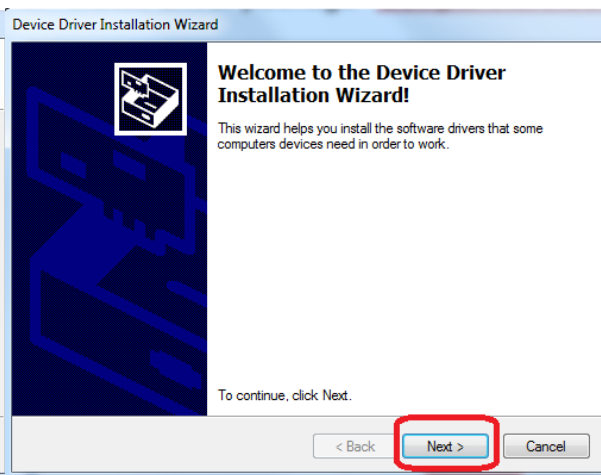


Accept terms and click "Next"

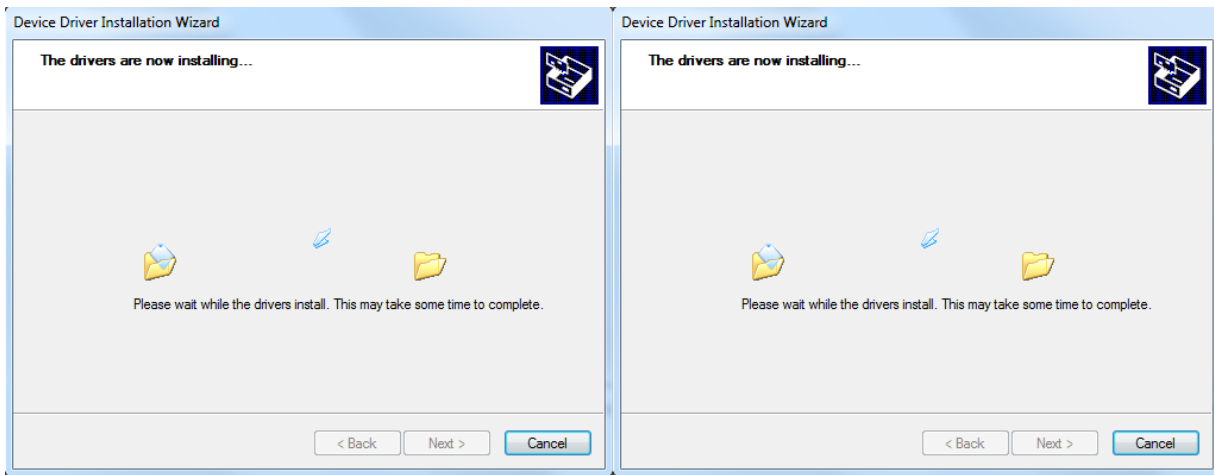
2、 Run dpinst-amd64.exe in USB driver\google\usb_driver



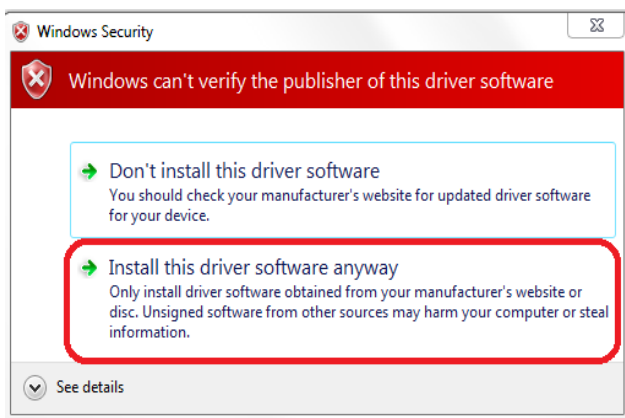
Click "Next"



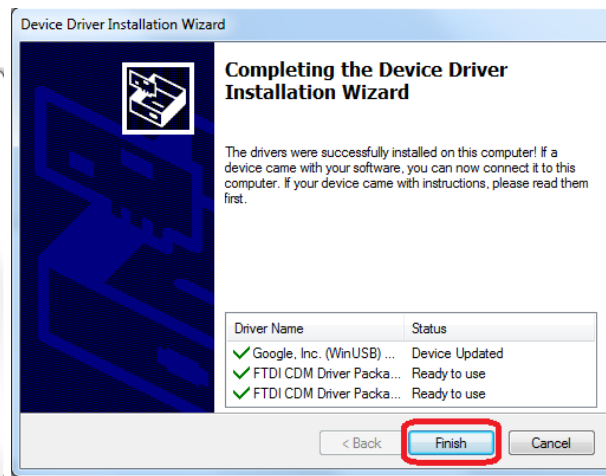
Click "Next"



Waiting for Installing..



Click "Install driver software anyway"



Completed it.

9.4 OTA Version Format Define

9.4.1 Version Format

<platform>.<major>.<minor>.<build>

9.4.2 <PLATFORM>

The <platform> will be a number assigned to a specific platform version. This will typically be a combination of the hardware architecture and OEM OS software. This number should change whenever there are changes to the underlying architectures. Please refer to **Error! Reference source not found.** for definitions of the platform identifiers. It will have a maximum of 2 numerical digits.

9.4.3 <MAJOR>

The <major> will indicate when a major branch has occurred in the code. The <major> version on the mainline will increase +1 with each branch for a release. It will have a maximum of 2 numerical digits.

9.4.4 <MINOR>

The <minor> will indicate when a release has occurred off of a branch. The <minor> version on the branch will increase +1 with each release. The mainline will always have a <minor> version number of 0. It will have a maximum of 2 numerical digits. Each release to manufacturing and the field will have a unique <plat>.<major>.<minor> number.

9.4.5 <BUILD>

The <build> will be a unique number that increments +1 with every build. The <build> number will be reset to 0 when a new branch occurs or when the <platform> version changes. It will have a maximum of 4 numerical digits.

PLATFORM		MAJOR		MINOR		BUILD	
83	No GMS	00	One Image	01	Release 1	Build number	
84	GMS	01	CN80	02	Release 2		
		02	CT60				

For Examples:

84.00.00.0160

84 : GMS
 00 : One Image for All products
 00 : not release
 160: Build number 160

HON660_84.00.00.0160.zip means GMS User version for All Products
 HON660_84.00.00.0160D.zip means GMS UserDebug Version for All Products