

# Skywire<sup>®</sup> LTE CAT4 Firmware Update

NimbeLink Corp

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# 1. Introduction

## 1.1 Options for Updating Firmware

There are 3 methods to update firmware on modules:

- 1) Direct connection using a Windows utility. This procedure is covered in this document.
- 2) Direct connection using a Linux utility. For more information on this method, please request access by emailing: [product.support@nimbelink.com](mailto:product.support@nimbelink.com)
- 3) Firmware Over The Air (FOTA) update using Sierra Wireless' AirVantage service. This procedure is outlined in this application note 1001696: FOTA Update Procedure for NL-SW-LTE-S7588-x:

[https://nimbelink.com/Documentation/Skywire/4G\\_LTE\\_Cat\\_4/1001696\\_NL-SW-LTE-S7588-x\\_FOTA-Guide.pdf](https://nimbelink.com/Documentation/Skywire/4G_LTE_Cat_4/1001696_NL-SW-LTE-S7588-x_FOTA-Guide.pdf)

## 1.2 Overview

This document outlines the steps for updating the firmware on the Skywire® LTE CAT4 modem using a direct connection to a Windows PC.

The NL-SW-LTE-S7588-V, NL-SW-LTE-S7588-V-B, NL-SW-UAV-S7588, NL-SW-LTE-S7588-T and NL-SW-LTE-S7588-T-C all use common hardware that has different firmware flashed to it during manufacturing. Users are able to load AT&T/T-Mobile or Verizon firmware onto any of the aforementioned devices for use with their preferred carrier. This document will refer to all of the previously listed devices as 'the modem' for the sake of brevity.

## 1.3 Orderable Parts

Orderable Device	Firmware Revision	Description	Manufacturer	Carrier
NL-SW-LTE-S7588-V	V.3.6	4G LTE CAT4 Verizon	NimbeLink	Verizon
NL-SW-LTE-S7588-V-B	V.3.15	4G LTE CAT4 Verizon	NimbeLink	Verizon
NL-SW-UAV-S7588	V.3.14	4G LTE CAT4 Verizon	NimbeLink	Verizon
NL-SW-LTE-S7588-T	A.2.10	4G LTE CAT4 AT&T/T-Mobile	NimbeLink	AT&T/T-Mobile
NL-SW-LTE-S7588-T-C	A.2.13	4G LTE CAT4 AT&T/T-Mobile	NimbeLink	AT&T/T-Mobile

## 1.4 Hardware and Software

This procedure has been tested on Windows 7 and Windows 10, which is the Windows version we recommended. It may be possible to use the procedure on Windows 8.1, but it has not been tested and is not supported or recommended.

In order to provide access to the most current and up to date files, firmware and USB drivers are available for download from Sierra Wireless. Users will need to register on their website in order to access them. Firmware versions references in this document may be different than the firmware versions downloaded from Sierra Wireless.

## 1.5 Switching Firmwares

Since the NL-SW-LTE-S7588-V and NL-SW-LTE-S7588-T Skywires share the same hardware, it is possible to load the S7588-T's firmware on a S7588-V, and vice versa.

**Please note that this can only be done reliably once. Loading a different firmware on the part more than once may corrupt the flash memory and permanently damage the Skywire, voiding the warranty.**

## 2. Firmware Update

### 2.1 Download the Update ZIP File and USB Drivers

Before connecting the modem to your workstation, download the USB drivers and firmware update packages and extract them to a known location.

- USB Driver:  
<https://source.sierrawireless.com/resources/airprime/software/hl7588-usb-drivers/>
- AT&T Firmware (A2.13) and Verizon Firmware (V3.15)  
**Note: Verizon firmware version V3.13 is not supported, please use V3.15)**  
<https://source.sierrawireless.com/resources/airprime/software/hl7588-firmware/>
- Verizon Airborne LTE Operations(ALO) Firmware (V3.14) can be requested from  
[Product.Support@NimbeLink.com](mailto:Product.Support@NimbeLink.com)

### 2.2 Install the USB Driver

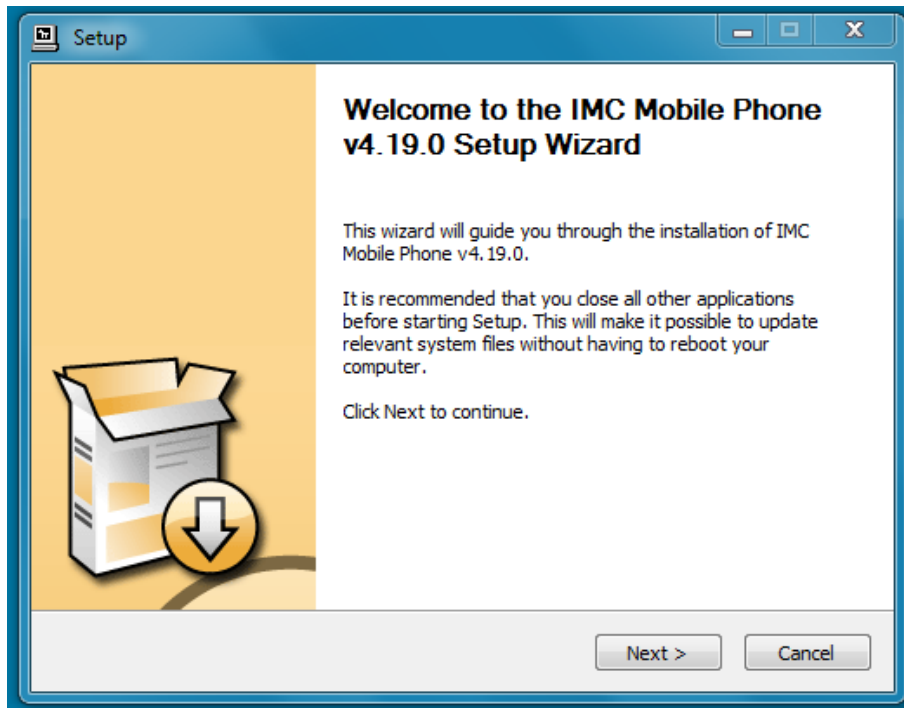
Unzip the downloaded file to a known location. Navigate to that location, open the *WMC\_comneon8\_v4.xx.0* folder, and, as Administrator, run the *setup.exe*.

Follow the on-screen instructions to install the driver.

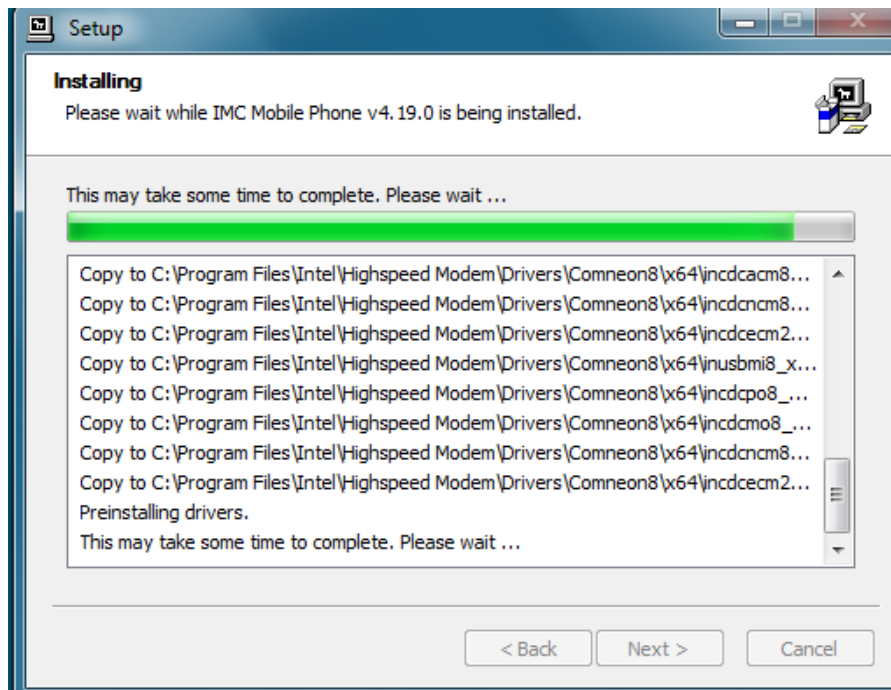
**Note: you may have a newer driver version than indicated in the below pictures.**

**Note: This may take several minutes to complete.**

Below are screenshots of various stages of the process:



Initial Screen

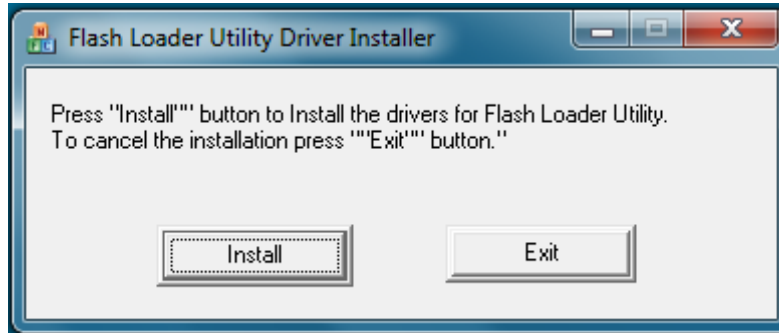


Progress Bar

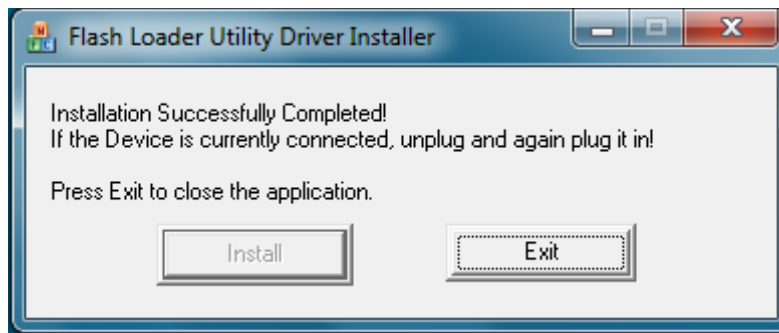
**Note: You may get a window that pops up asking if you would like to reset your device now or later. Select "Later".**

## 2.3 Install the Firmware Upgrade Utility (If Applicable)

If included in your update files, extract the file `flashusb_driver_1_0_1_1.zip` to a known location. This file may be contained inside of both of the firmware update packages (AT&T or Verizon) for the modem. Open the directory `flashusb_driver_1_0_1_1` and open the folder corresponding to your architecture (x86 or X64). Run, as Administrator, `setup.exe` and follow the instructions to install the software.



Initial Screen



Finished Screen

Once the software is finished installing, click "Exit"

Reboot your workstation.

## 2.4 Update the Firmware

### 2.4.1 Introduction

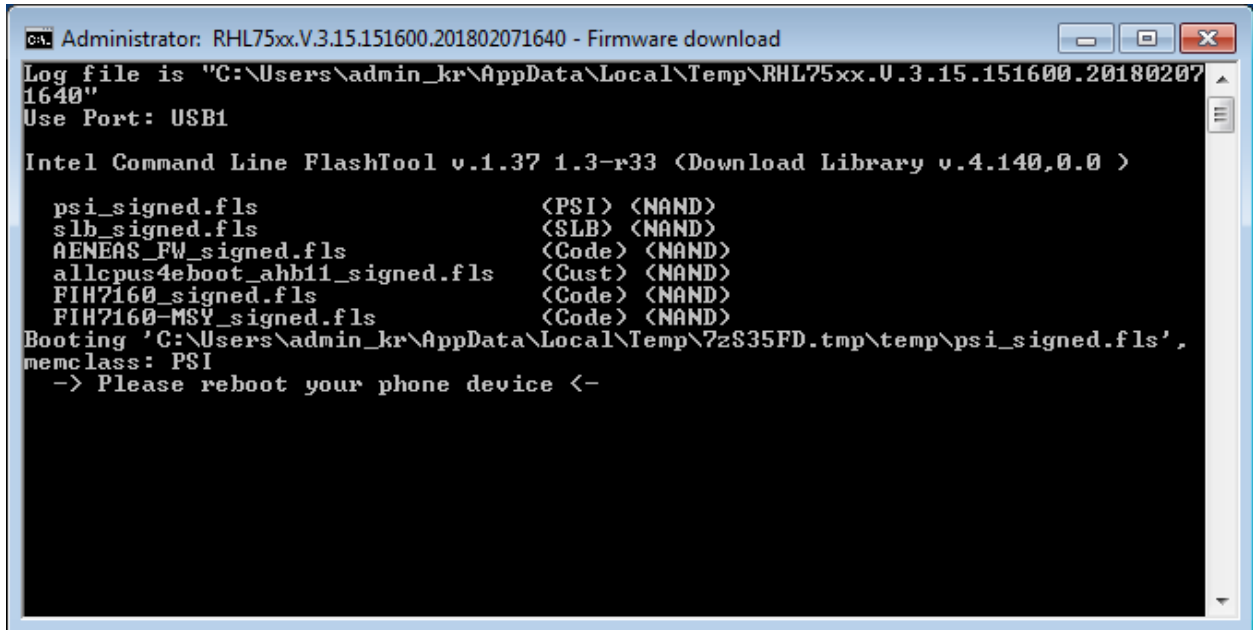
The firmware update process is the same for all NL-SW-LTE-S7588-x Skywires. This section uses the V.3.15 firmware as an example in the Verizon section, and A.2.10 in the AT&T/T-Mobile section. Substitute the .exe file mentioned for your specific firmware.

## 2.4.2 Verizon Firmware

Once your system has rebooted, navigate to the extracted Verizon firmware file that you have downloaded. Then, as Administrator, run

```
RHL75xx.V.3.15.151600.201802071640.x7160_1_signed_EXE.exe
```

You will see the following screen:



```
Administrator: RHL75xx.V.3.15.151600.201802071640 - Firmware download
Log file is "C:\Users\admin_kr\AppData\Local\Temp\RHL75xx.V.3.15.151600.201802071640"
Use Port: USB1

Intel Command Line FlashTool v.1.37 1.3-r33 (Download Library v.4.140,0.0 >

psi_signed.fl                    (PSI) (NAND)
slb_signed.fl                    (SLB) (NAND)
AENEAS_FW_signed.fl              (Code) (NAND)
allcpus4eboot_ahb11_signed.fl   (Cust) (NAND)
FIH7160_signed.fl                (Code) (NAND)
FIH7160-MSY_signed.fl            (Code) (NAND)
Booting 'C:\Users\admin_kr\AppData\Local\Temp\7zS35FD.tmp\temp\psi_signed.fl',
memclass: PSI
-> Please reboot your phone device <-
```

Initial Screen

Plug your modem into the Skywire Development Kit, plug the USB cable into Port J5, plug in the power cable, and plug the USB cable into your workstation. Press the ON\_BTN, and the upgrade process should start. If it does not, remove power, reapply power, and press the ON\_BTN again.

The firmware upgrade process should take less than 10 seconds over USB 2.0. During the process, you will see a screen similar to:



```
Administrator: RHL75xx.V.3.15.151600.201802071640 - Firmware download
Downloading Code...
> Start downloading item 'CODE:AENEAS_FW.flc' from file 'C:\Users\admin_kr\AppData
ata\Local\Temp\7zS778F.tmp\temp\AENEAS_FW_signed.flc'.
Details> Sending sec-pack.
Details> Load region 0
Details> - Erasing. (Pre-erase, Used-length)
Progress: 100%
Details> - Sending data. (USB RAW mode)
Progress: 100%(50 Mb/s)
Details> Sending end-pack.
> Checksum OK (0x60C6)
Details> Verify OK
> Process time was 125 msec.

Downloading Code...
> Start downloading item 'CODE:FIH7160.flc' from file 'C:\Users\admin_kr\AppData
a\Local\Temp\7zS778F.tmp\temp\FIH7160_signed.flc'.
Details> Sending sec-pack.
Details> Load region 0
Details> - Erasing. (Pre-erase, Used-length)
Progress: 100%
Details> - Sending data. (USB RAW mode)
Progress: 21% (54 Mb/s)
```

### Firmware Upgrade Progress

Once your firmware upgrade is complete, you will see a screen similar to the following:

```
Administrator: RHL75xx.V.3.15.151600.201802071640 - Firmware download
Downloading Cust...
> Start downloading item 'CUST:allcpus4eboot_ahb1.flc' from file 'C:\Users\adm
in_kr\AppData\Local\Temp\7zS778F.tmp\temp\allcpus4eboot_ahb1_signed.flc'.
Details> Sending sec-pack.
Details> Load region 0
Details> - Erasing. (Pre-erase, Used-length)
Progress: 100%
Details> - Sending data. (USB RAW mode)
Progress: 100%(47 Mb/s)
Details> Sending end-pack.
> Checksum OK (0xE064)
Details> Verify OK
> Process time was 546 msec.

Success!
Force Target Reset!
> Total time was 6.3 sec.

*** Download COMPLETED ***

This prompt will be closed in 5 seconds
```

### Firmware Upgrade Complete

If the firmware upgrade process was successful, this screen will automatically close. If it did not, errors will be reported here.

### 2.4.3 AT&T Firmware

Once your system has rebooted, navigate to the extracted AT&T firmware file. Then, as Administrator, run:

RHL75xx.A.2.10.151600.201604151852.x7160\_1\_signed.exe

You will see something similar to the following screen:

```
Log file is "C:\Users\Admin\AppData\Local\Temp\RHL75xx.A.2.10.151600.201604151852"
Use Port: USB1

Intel Command Line FlashTool v.1.37 1.3-r33 (Download Library v.4.140.0.0 )

psi_signed.fl                    (PSI) (NAND)
slb_signed.fl                    (SLB) (NAND)
AENEAS_FW_signed.fl             (Code) (NAND)
allcpus4eboot_ahb11_signed.fl   (Cust) (NAND)
FIH7160_signed.fl               (Code) (NAND)
FIH7160-MSV_signed.fl           (Code) (NAND)
Booting 'C:\Users\Admin\AppData\Local\Temp\7zS476C.tmp\temp\psi_signed.fl', mem
class: PSI
-> Please reboot your phone device <-
```

### Initial Screen

Plug your modem into the Skywire Development Kit, plug the USB cable into Port J5, plug in the power cable, and plug the USB cable into your workstation. Press the ON\_BTN, and the upgrade process should start. If it does not, remove power, reapply power, and press the ON\_BTN again.

The firmware upgrade process should take less than 10 seconds over USB 2.0. During the process, you will see a screen similar to:

```
Downloading Code...
> Start downloading item 'CODE:AENEAS_FW.fl'' from file 'C:\Users\Admin\AppData\
Local\Temp\7zS7742.tmp\temp\AENEAS_FW_signed.fl''.
Details> Sending sec-pack.
Details> Load region 0
Details> - Erasing. (Pre-erase, Used-length)
Progress: 100%
Details> - Sending data. (USB RAW mode)
Progress: 100% (49 Mb/s)
Details> Sending end-pack.
> Checksum OK (0x541B)
Details> Verify OK
> Process time was 125 msec.

Downloading Code...
> Start downloading item 'CODE:FIH7160.fl'' from file 'C:\Users\Admin\AppData\L
ocal\Temp\7zS7742.tmp\temp\FIH7160_signed.fl''.
Details> Sending sec-pack.
Details> Load region 0
Details> - Erasing. (Pre-erase, Used-length)
Progress: 100%
Details> - Sending data. (USB RAW mode)
Progress: 30% (53 Mb/s)
```

### Firmware Upgrade Progress

Once your firmware upgrade is complete, you will see a screen similar to the following:

```
RHL75xx.A.2.10.151600.201604151852 - Firmware download

Downloading Cust...

> Start downloading item 'CUST:allcpus4eboot_ahb11.flc' from file 'C:\Users\Adm
in\AppData\Local\Temp\7zS86FA.tmp\temp\allcpus4eboot_ahb11_signed.flc'.
Details> Sending sec-pack.
Details> Load region 0
Details> - Erasing. (Pre-erase, Used-length)
Progress: 100%
Details> - Sending data. (USB RAW mode)
Progress: 100%(48 Mb/s)
Details> Sending end-pack.
> Checksum OK (0x9CF6)
Details> Verify OK
> Process time was 531 msec.

Success!
Force Target Reset!
> Total time was 5.4 sec.

*** Download COMPLETED ***
This prompt will be closed in 5 seconds
```

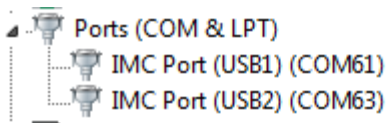
### Firmware Upgrade Complete

If the firmware upgrade process was successful, this screen will automatically close. If it did not, errors will be reported here.

## 2.5 Verify Firmware Update

Remove power and USB from your modem. Wait ten seconds, and reapply power and USB, and press the ON\_BTN.

Using the terminal program of your choice (PuTTY, TeraTerm, etc.), connect to the modem. In your Device Manager, look for IMC Port (USB2), and look for your COM number. In the case of this example, it is COM63:



Once connected, issue:

**AT+CGMR**

To the modem to confirm the Firmware Version. At the time of the writing of this document the latest firmware versions are:

**Verizon Firmware:** RHL75xx.V.3.15.151600.201802071640.x7160\_1

**AT&T Firmware:** RHL75xx.A.2.13.151600.201802201800.x7160\_1