

# openCom LTE - User Manual

LTE connectivity for your Framework Laptop.





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# 1 Introduction

Thank you for purchasing the openCom LTE from Liberated Embedded Systems.

Within your package you will find the following:

- **1x openCom LTE**
- LTE antenna(s) (if ordered)
- SMA dust covers (if ordered)
- 3x assorted stickers
- This manual

## 2 Overview

Within this section, we provide an overview of notable aspects of the openCom LTE.

### 2.1 Top

The openCom LTE supports 3 antenna connections, with these being:

- An SMA main antenna for LTE connectivity (J1)
- An SMA diversity antenna to enhance connection reliability (J2)
- A u.FL GPS antenna for determining location (J3)

The LEDs D2 and D3 are status indicators, and are covered in the next section.

Please note that a GPS antenna is **not included** with the device, and one can only be connected with the top cover disassembled.



### 2.1.1 LEDs

**D3, or the left LED**, is red, and activates when the device is powered on.

**D2, or the right LED**, is red, and flashes differently depending on network status:

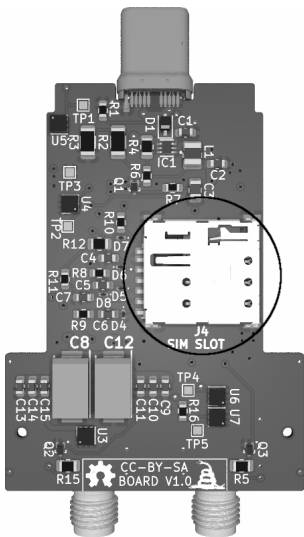
- Short flashing - searching for cell tower
- Long flashing - idle
- Quick flicker - data transfer

## 2.2 Bottom

On the rear side of the device, the SIM slot is present, which accepts a **nano sized** SIM card.

The SIM can be inserted into the slot by pushing it until it clicks. It can also be removed by pushing it until it clicks, and it will spring out after. You may want to consider using the spudger end of your Framework screwdriver to help insert and remove it.

There are many test points present on rear of the device, which are documented in the next section.



## 2.3 Test points

There are several test points available on the device, which allow you to test critical functionality of the device if you so choose.

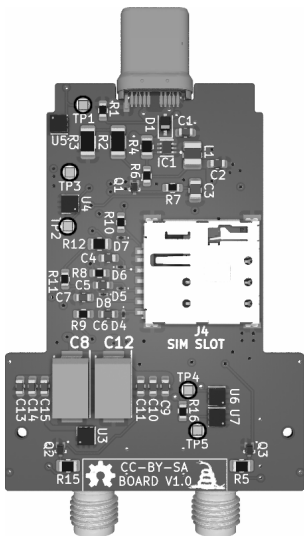
These are detailed below:

- TP1 - USB D+ trace
- TP2 - USB D- trace
- TP3 - GND
- TP4 - USB\_BOOT
- TP5 - VDD\_EXT

Note that to access TP1 and TP2, the resistor pads R13 and R14 must be bridged with wire or solder, as  $0\Omega$  resistors are not provided here.

### 2.3.1 Emergency download mode

If necessary, the module can be booted into emergency download mode by shorting TP4 and TP5 before powering it up. This will allow you to upgrade the firmware of the module over USB. The firmware upgrade can only be done with the QFlash utility from Quectel, which only works on Windows. A download link is provided in Section 4.3.

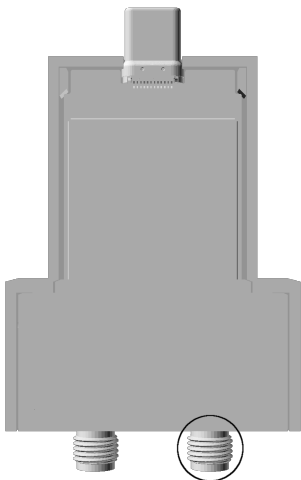


### 3 Installation

In order to use your openCom LTE, you must first connect the external antenna(s) to facilitate communication.

Connect an antenna to the **J1 port** on the device, which is the right external SMA connector. It is screwed on clockwise.

Although the diversity antenna on the **J2 port** is optional, **consider also connecting it** to the device in order to ensure an optimal internet connection.



Your openCom LTE is now assembled and ready to go, and can be inserted into your Framework Laptop by slotting it into an empty Expansion Card bay.

**Remember to insert your SIM card!**



## 4 Usage

### 4.1 Antennas

If you chose to bring your own LTE antennas at checkout, please ensure you purchase LTE antennas with a VSWR  $< 2$  for optimal performance.

Additionally, if you choose to purchase a GPS antenna for your use, ensure it is a passive antenna (active antennas are not supported), with a VSWR  $\leq 2$ .

### 4.2 Linux

On Linux you may use NetworkManager with ModemManager to create a connection for your openCom LTE. With the device plugged in, create a new connection, choosing "mobile broadband", then progress through the Wizard. If you use **Arch Linux**, there are great wiki articles on the subject.

### 4.3 Windows

Download the drivers to interface with your openCom LTE from the following link:

<https://link.liberatedsystems.co.uk/EG95>

Within the archive, you will find the executable file to install your drivers.

## 5 Enclosure

### 5.1 Disassembly

There are two M2 screws on the exterior section of the device which hold on the lid. Unscrewing them, you can take the lid off, and the LED columns with it (**don't lose them!**).

There are just two M1 screws holding the circuit board onto the bottom of the enclosure, which when removed allow for the removal of the board. However, we do not recommend these screws are removed frequently, as their effectiveness will decrease over time if they are.

### 5.2 Assembly

Insert the circuit board into the bottom of the enclosure, and fasten it in with the two M1 screws.

Insert the LED columns into their respective holes on the lid (upside down). Then, place the bottom part of the enclosure on top of the lid. Finally, insert the M2 screws, and screw them into their respective holes on the exterior section.

## **6 AT commands**

For information concerning the available AT commands, please download the archive from the following link:

<https://link.liberatedsystems.co.uk/EG95>

Within, you will find a copy of the AT command manual for your openCom LTE, which utilises Quectel's EG95 module.

## **7 Durability**

Please be careful of the conditions in which you use this device, do not expose it to rain or submerge it in bodies of water.

## **8 Warranty**

Please follow the below URL in order to access information about your warranty.

<https://store.liberatedsystems.co.uk/opencom-lte-warranty>

## 9 Contact

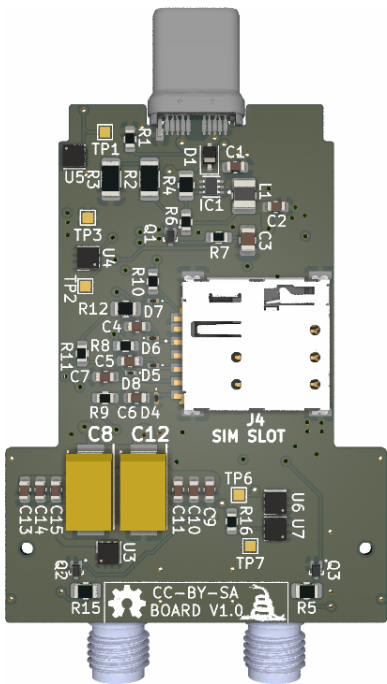
If you have any issues with your openCom LTE, please reach out to us. You can contact us via email or XMPP at `contact@liberatedsystems.co.uk`.

## 10 Legal

Liberated Embedded Systems Ltd. is registered in England and Wales (company no. 14722578). Our registered business address is Portland House, Bute Street, Cardiff, CF10 5EQ.

We are not to be held responsible if the customer chooses to download classified F35 schematics using our product, to build their own in their garage.





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