Connect Between two C099-F9P

* it is based on “C099-F9P User Guide (with ODIN-W2 Connectivity SW)” I summarize and comment on the guide

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0. Basic understanding and installation.

0.1 Port

- There are three port to communication each module: ZED-F9P, ODIN-W2, and communication port
- If you want to change or control ODIN-W2 (in s-center), you need to use ODIN-W2 instead of others
- If you want to change or control ZED-F9P (in u-center), you need to use ZED-F9P port

*note: but for me ZED-F9P is not working. if you are same with me just use Communication port instead of ZED-F9P)

0.1: u-blox(u-center) and s-center application

u-blox:

- GUI program for ZED-F9P module which is kind of GPS module.
- So, set configuration for ZED-F9P like baud rate, signal rate, communication protocol, etc
- In this software, you can also see GPS connection status (gps,gps-rtk,etc), lat and long info, accuracy, etc

s-center:

- It is the program for ODIN-W2 multi-radi module
- So, set configuration for ODIn-W2 like wifi point, wifi AP, bluetooth, etc
- when you use s-center, you are going to connect ODIN-W2, it mean you have to connect ODIN-W2 port

0.2: Connect Jumper Cable OE3

- 3OE jumper set as required to connect the ODIN-W2 and ZED-F9P serial ports.

1. Wi-Fi connection between two C099-F9P boards

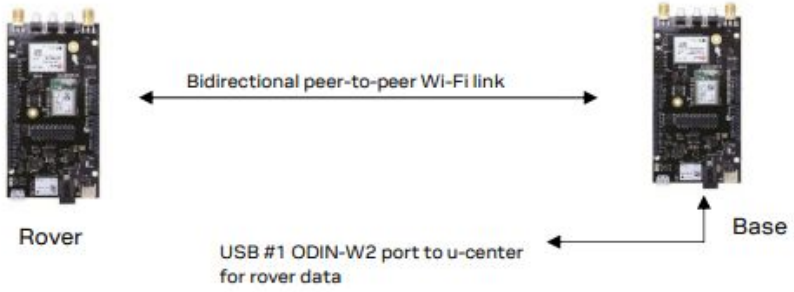


Figure 26: Reference and rover C099-F9P set up

1.1 Configuration a C099-F9P rover for WI-FI operation (Odin Board Setting).

1.1.1 Connect board with s-center

- please take off all of jumper cable from boards before you work!

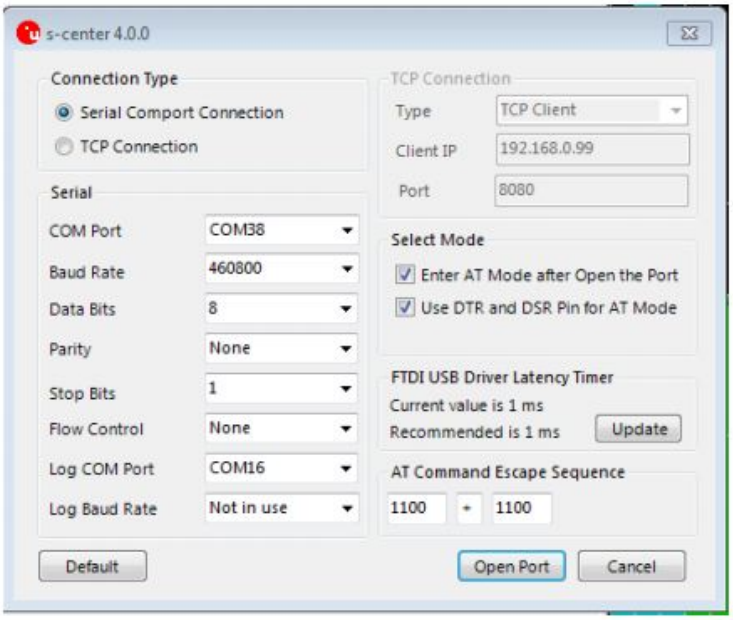


Figure 27: s-center connection setting window

- Select the COM port installed for the ODIN-W2.
- Set the baud rate to 460800 baud.
- Ensure hardware flow control is not enabled.
- Click on the "FTDI USB Latency Timer" **Update** button.
- Click **Open Port**.
- If the C099-F9P is powered, the ODIN-W2 responds with AT commands.

*note: If you cannot see "FTDI USB Driver Latency Timer", Run s-center as administrator

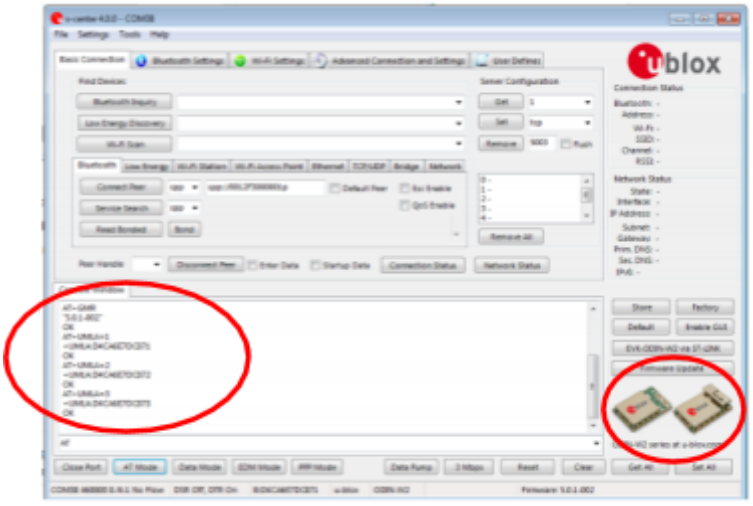
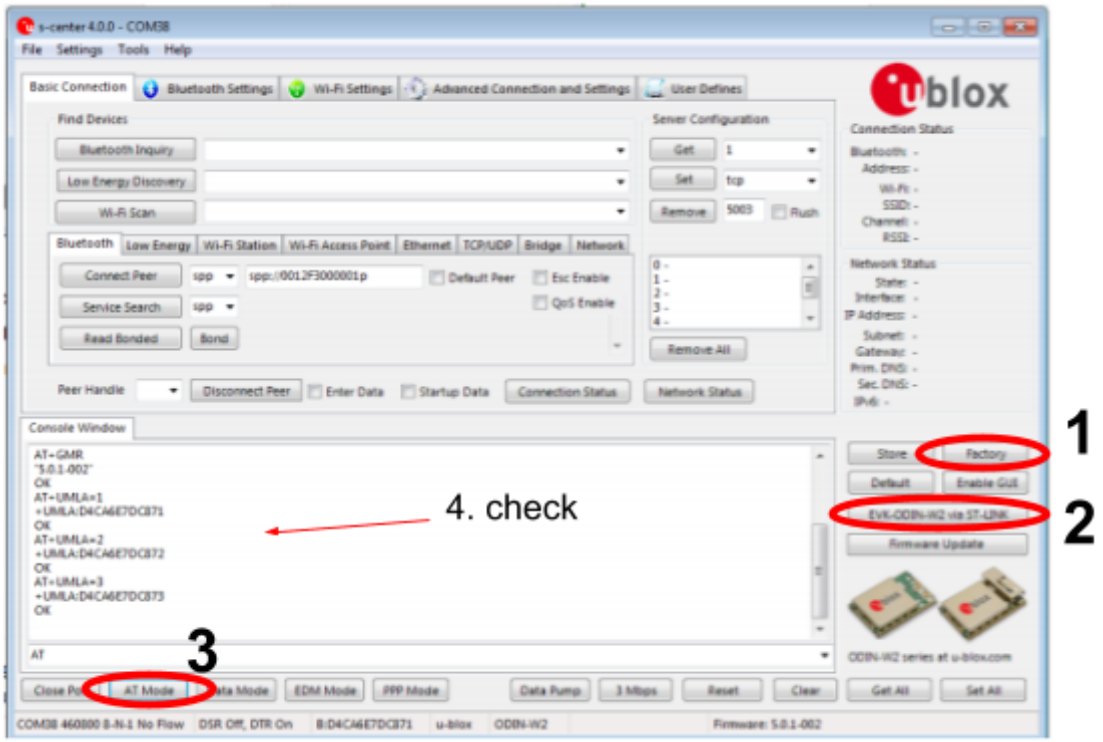


Figure 28: s-center connected to ODIN-W2

If your s-center looks like above image, it is correctly connected

1.1.2 Factory reset

- Click Factory button, after this the baud rate will change 115200 (you don't need to consider about it, if you are not going to turn off the board until end of the Odin setting)
- Click EVK-ODIN-W2 via ST-LINK button
- Then click AT mode (if you see something like below picture, so far so good!



- **Figure 28: s-center connected to ODIN-W2**

1.1.3 Set Odin Rover Configuration

*note: you can download on:
https://github.com/u-blox/ublox-C099_F9P-uCS/tree/master/odin-w2
, but if it is not work trying to use mine (I edited little configurations, since it didn't works for me)

- Then select File > Download Configuration
- select the file you downloaded which name is "Rover ODIN-W2 Access Point UDP Server. txt"

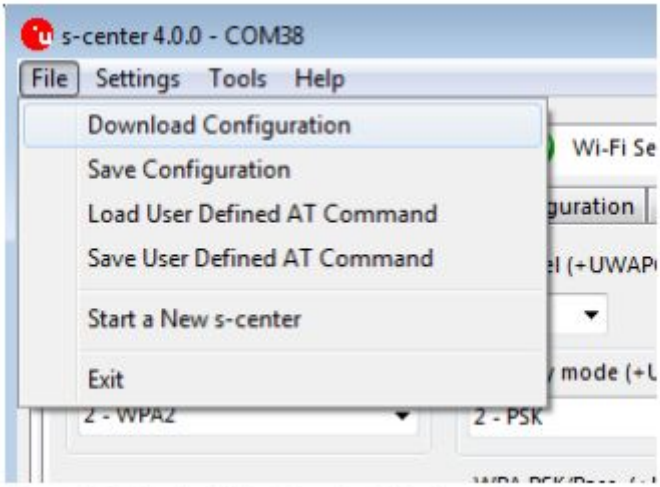
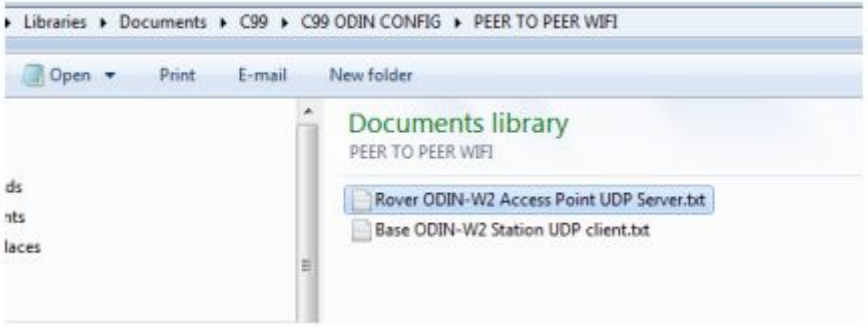


Figure 32: Selecting File > Download Configuration

- Select the "Rover ODIN-W2 Access Point UDP Server.txt" file and click **Open**.



- Then, you are just done to set configuration of odin for rover
- (TO CHECK) Turn off the board, and turn one and connect with s-center with: Odin-port, 460800 baud-rate, and no flow control as 1.1.1, and check there is Odin board image and can see AT message as figure in 1.1.1
- (TO CHECK) ODIN LED on your board will blink green (it change between green and blue) -> when it connect with base it will change blue and blink when it starts to communicate

1.2 Configuration a C099-F9P base for WI-FI operation. (Odin Board Setting)

- please take off all of jumper cable from boards before you work!

- Connect another C099-F9P to be base
- Every steps are just like 1.1 Configuration a C099-F9P rover for WI-FI operation, except the use configuration file "Base ODIN-W2 Station UDP client.txt" instead

1.3 Configuration a C099-F9P rover for WI-FI operation. (ZED-F9P)

*note: you can download configuration files from:
https://github.com/u-blox/ublox-C099_F9P-uCS
or you can use what I uploaded

- Open U-center instead of S-center and connect port with Communication port with baud rate 9600 (See 0.1 Port part).
- Select View > Generation 9 Configuration View

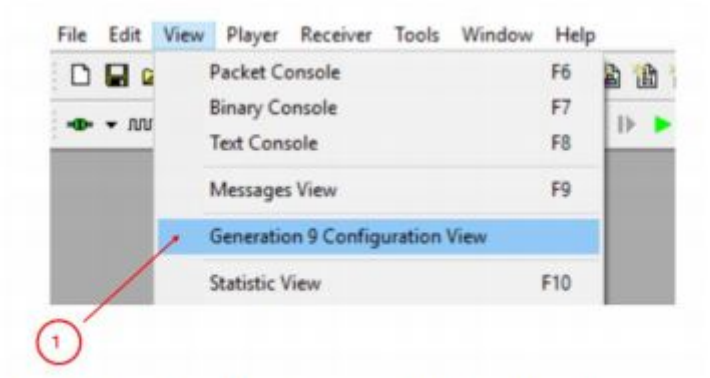


Figure 34: u-center View > Generation 9 Configuration View

- Select Advanced Configuration

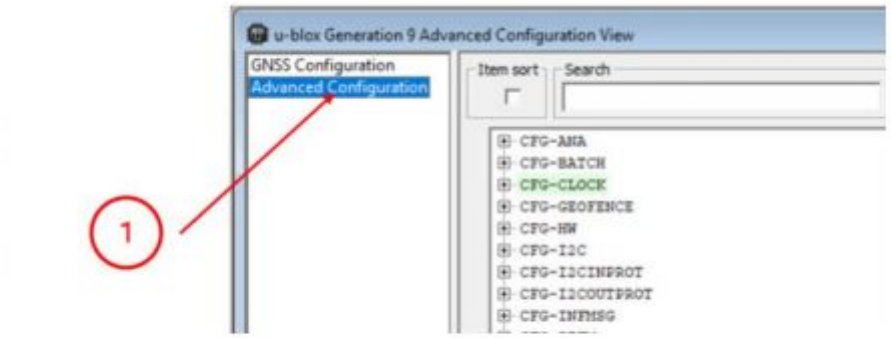
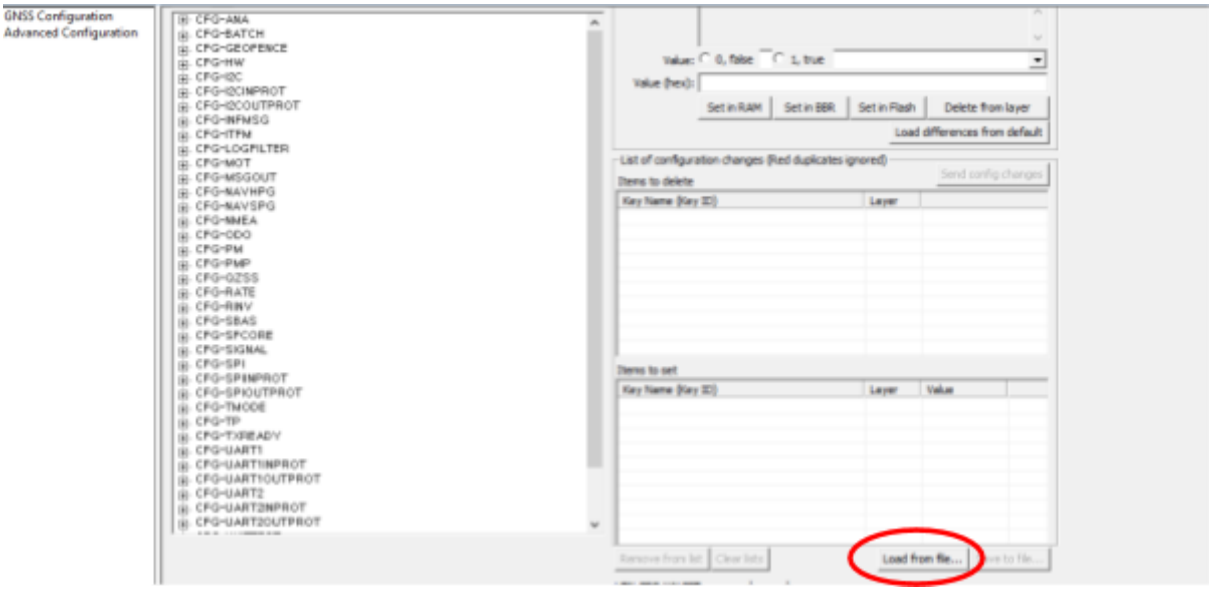


Figure 35: u-center View > Generation 9 Configuration View > Advanced Configuration

- Click 1 return receiver defaults and set autobaud (not required to click autobaud)

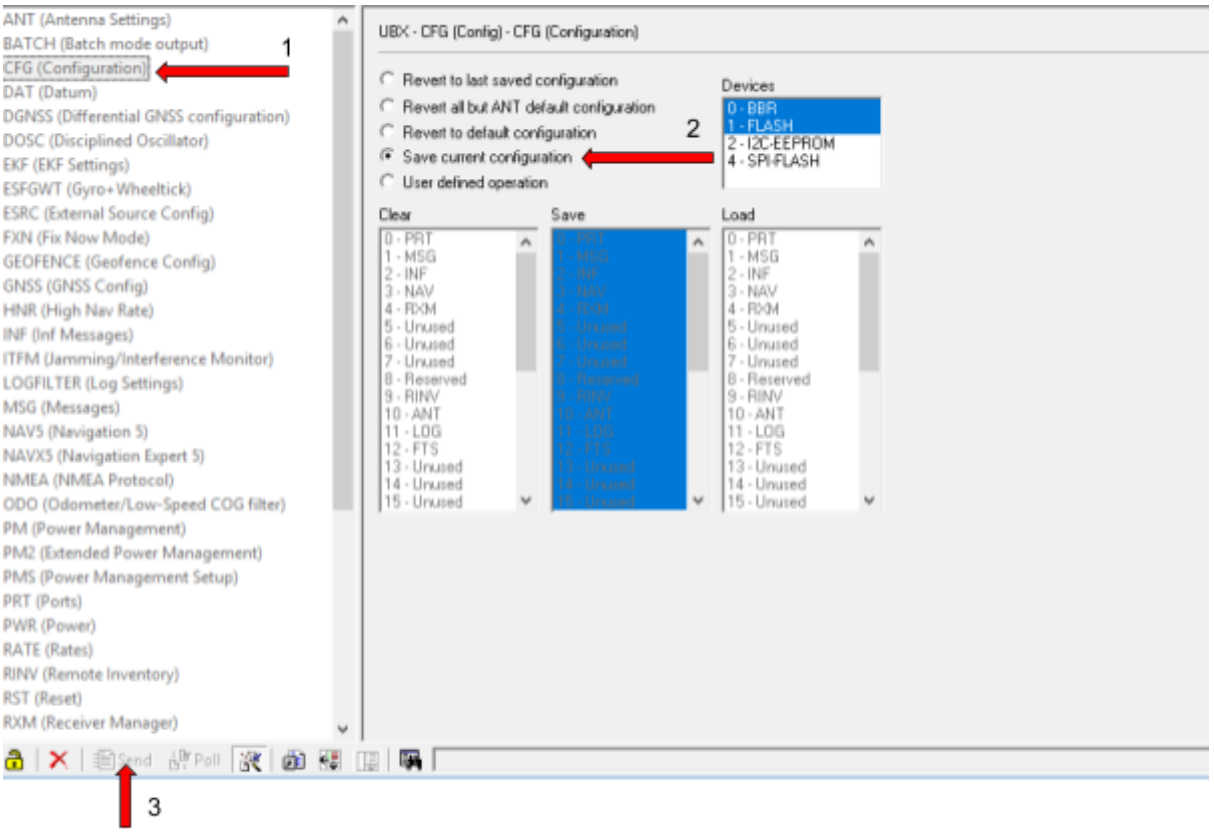
- Then, click “Load from file…” Then, selecte “F9P rover config C99.txt”



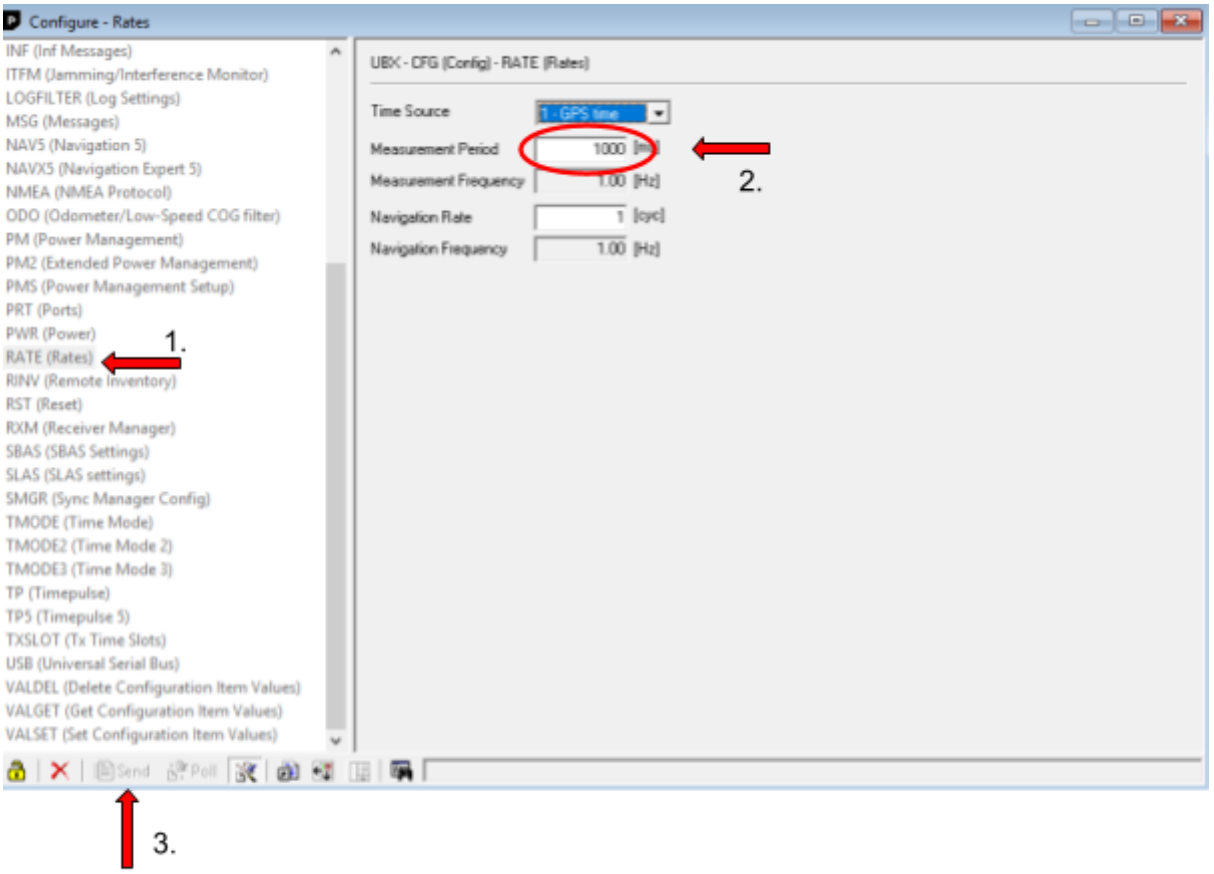
- Click, “Send config change”
- (TO CHECK) make sure all of configuration checked like below image

- Click, View > Configuration View

- Click “CFG” -> check “Save Current configuration” -> click “Send”



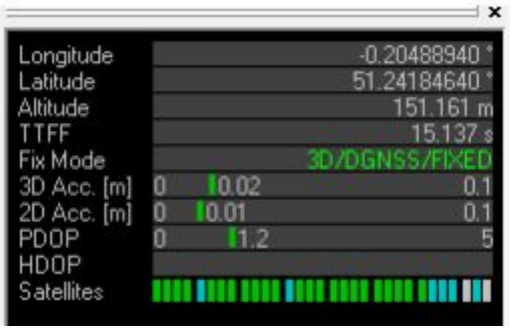
- (It is only for rover) If you want to change measurement rate,
- Click “Rate” -> change measurement Period (greater than 50ms) -> send
- Repeat for all of Time Source
- Do previous step again (Click “CFG” -> check “Save Current configuration” -> click “Send”)



1.4 Configuration a C099-F9P base for WI-FI operation. (ZED-F9P)

- Connect another C099-F9P which is base
- Every steps are just like 1.3 Configuration a except the select configuration file “F9P base config C99.txt” instead

If you can see “3D/DGNSS/FIXED” and there is solid yellow light on rover board, You just done!



you can get gps-rtk data from rover with below simple code

2. Checklist (if it’s not work)

- Both boards Odin LED is blue and blink
    - (if not, two board is not connected via wifi)
- 3OE position Jumped (0.3)
    - (If not, Odin and ZED-F9P cannot communicate, it means gps data cannot send or receive from Odin (wifi))
- Both boards TP led is blue and blink (GPS data cannot received)
    - need to check antenna is connected and it is attached on magnetic base
    - need power is supplied enough
    - need to wait at least 1 min (max 15 min) after turning on
- Yellow light on RTK LED is solid
    - If no light on RTK, there is no connection well between base and rover
    - If yellow light is blink on RTK, light connection (if so, there will <1m error)
- If everything is ok, then consider
    - you need to go open-space
    - Base station will be higher then rover if it is possible
- If you still not get it, try to firmware-update both Odin and Zed for both base and rover. (If you firmware-update, you need to set up again)

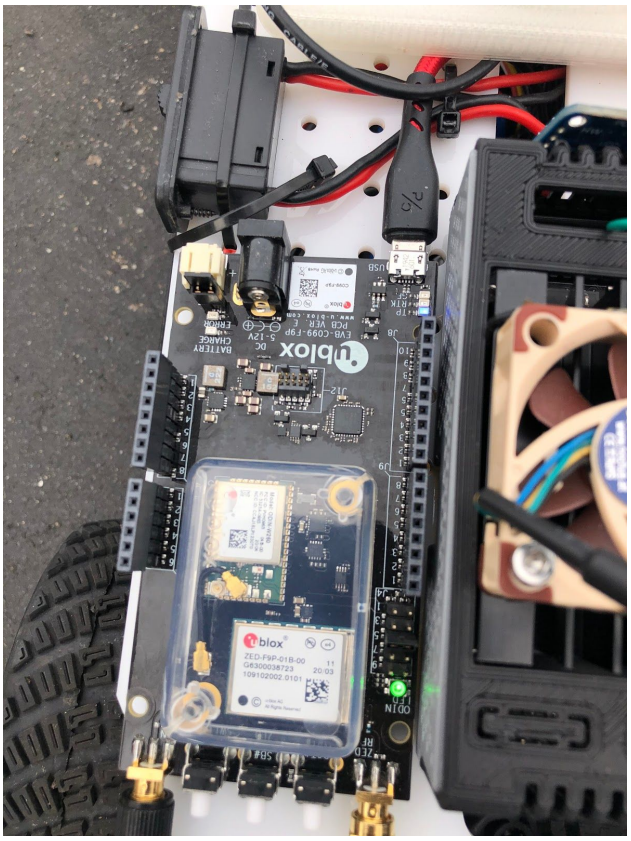


Figure: (Rover) Ready status

Figure: (base) Ready status

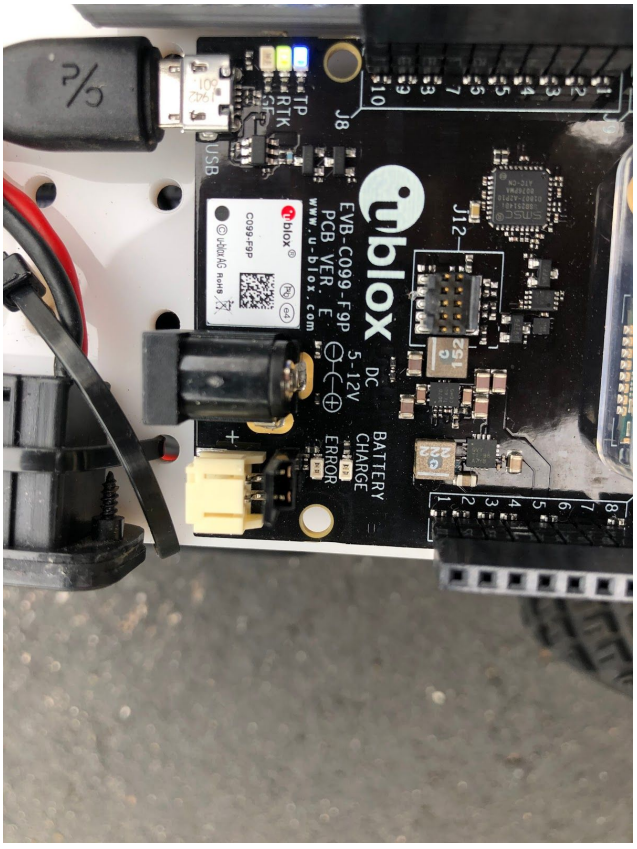


Figure: blink blue light, solid RTK light (Ready to use gps-rtk)

3. Getting GPS data

```
gpsSer = serial.Serial(port=port,baudrate = baudRate,timeout = timeOut)
gpsMsg = self.gpsSer.readline().decode('utf-8')
 if "$GNRMC" not in gpsMsg:
            return
  gpsCoord = pynmea2.parse(gpsMsg)
  current_longitude = gpsCoord.longitude
  current_latitude = gpsCoord.latitude
```

4. Reference:

U-blox: C099-F9P User Guide (with ODIN-W2 Connectivity SW)

ZED-F9P Base and Rover Configuration (by Robo Roby)
ZED-F9P Base and Rover Configuration