

FIP-2410 User Manual



Contents

1. Package List	2nd
2. Precautions	2nd
3. Interface	4th
4. Installation	4th
4.1. Make TX and RX and accessories ready.....	5th
4.2. Connection	5th
4.3. Power on	5th
5. Software Configuration	6th
5.1. Start The Software	7th
5.2. RF Configuration	8th
5.3. RS1 Configuration	11th
5.4. RS2 Configuration	11th
5.5. IP New Network Configuration	12th
5.6. RF New NET Configuration	12th
5.6.4. Connect last IP	13th

1. Package List



2. Precautions

- 1) Be sure to use the parts provided by IWAVE.
- 2) Before powering on please make sure the antenna are in good connection and not install or remove the antennas with power on.
- 3) Given that the carbon fiber body and metal load may have shielding effects on antenna signals, they should not be installed between the antenna and ground terminal. Keep the antenna on board free from winding or blocking by obstacles. The antenna end should be vertically downward without bending to prevent shortening communication distance and failure communication.
- 4) Antennas on board should be kept away from other radio antennas to avoid electromagnetic noise and interference.
- 5) Do not disassemble or modify IWAVE FIP-2410. Any problem occur during installation, contact IWAVE or IWAVE local branch office.
- 6) Keep appropriate distances between different electronic devices during installation to minimize the electromagnetic interference.

- 7) Before using, please make sure all cables are in good connection and all components can work properly.
- 8) Check the surrounding environment to ensure there is no other 2.4GHz devices to cause interference.
- 9) After starting the product, the self-test indicators of FIP-2410 will continuously blink for 30s and then keep bright. Only after the video from the camera shown on the display, then you can confirm that the device work properly now.
- 10) If you use the Futaba remote controller, the controller should be adjusted into the French mode.

11) Adjust the Futaba controller into French mode as following steps:

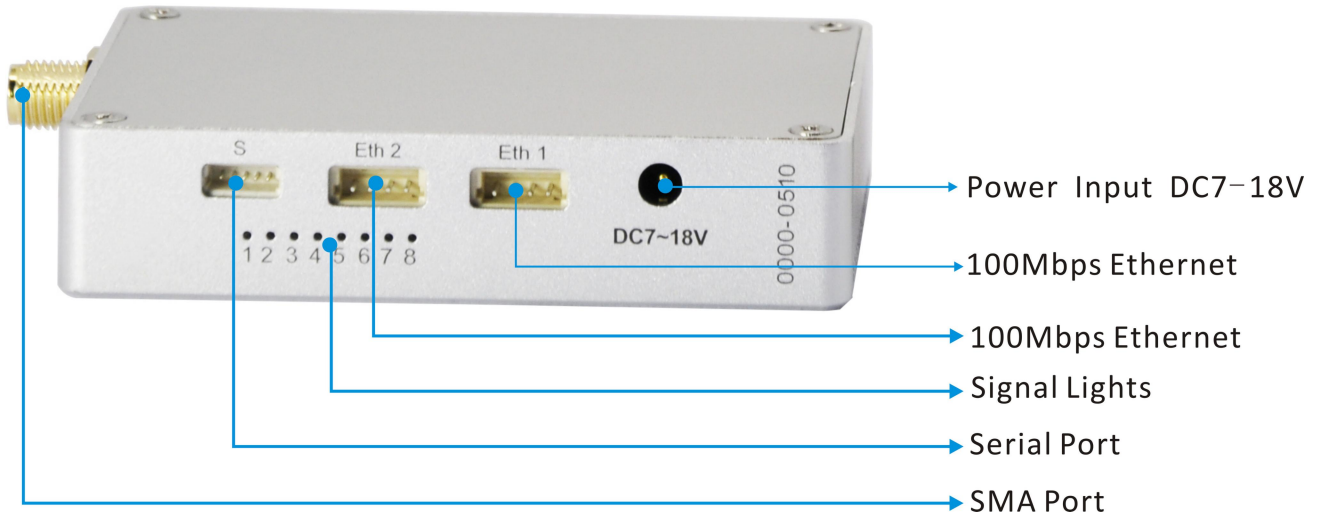
[LINKAGE MENU]→FRQUENCY→ RTN b→ [AREA]→[FRANCE]



- 12) Before using, please check the power of RX and TX. If the receiver power off, transmitter on board will lose connection.
- 13) Adjusting RX antenna inclination can improve the signal strength and image quality.
- 14) The camera should be fully charged to ensure normal video output.
- 15) FIP-2410 support video and duplex data communication. If the video stuck or stopped for more than 10s, which means the radio signal is weakened or the radio channel is narrowed. In this case, the aircraft need to fly back to short the distance between TX and RX. Otherwise the TX will lose connection.
- 16) Please use good electromagnetic shielding accessories(such as HD displays, Network cables, etc.)

Notes: Improper operation of FIP-2410 may cause personal injury or damage to properties. Please pay high attention to operation safety.

3. Interface



Note: signal light meaning is as follows

- 1) After powering on, light 1,2,3 turn green, light 6 turns blue and light 8 turns red.
- 2) After 1 second, light 1, 2, 3 and 6 start to blink. Light 5 and 8 will keep constant light.
- 3) After a few seconds, the starting completed. Light 1(Green), 2(Green), 3(Green), 4(Red), 6(blue) and 8(Red) will keep constant bright. By the way, when you use the the ETH1, 7 (Green) will quickly blink.

1, 2, and 3 are signal strength indicators.

- ① Light 1 on: Signal Weak
- ② Light 1,2 on: Signal Normal
- ③ Light 1,2,3 on: Signal Strong

(2) lights of 1, 2, and 3 are flashing repeatedly in sequence which means the device pairing is unsuccessful, and Rx and Tx do not communicate.

4. Installation

4.1. Make TX and RX and accessories ready.

Besides the whole equipment we supply, you also need to make sure the IP Camera, display and power source ready before installation.



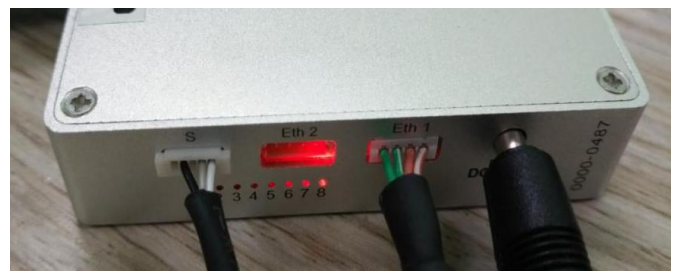
4.2. Connection

Make the power cable, Ethernet cable, serial port cable and antenna in good connection.
(the serial port cable is for data)



4.3. Power on

After checking all the connections are in good condition, turn on the the video source, LCD display, transmitter and receiver. The indicators will bright and the whole system starts work.



Note:

Tx default IP: 192.168.55.1

Rx default IP: 192.168.55.2

Remark: In UAV application, please make the connection successfully and after the video show on ground station smoothly then fly the UAV. About how to install the antenna on UAV please refer to the following figure.



5. Software Configuration

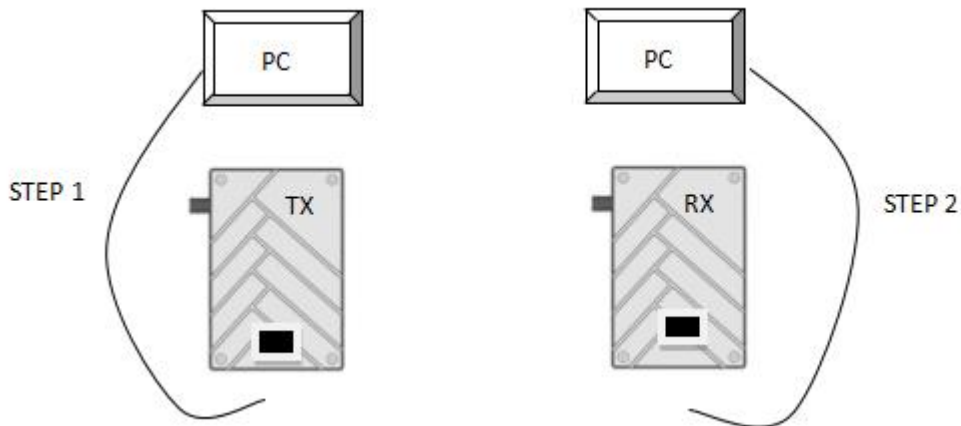
User's Manual of TDD_COFDM V1.5

Note: As our devices are working pairs, so their parameters need be consistent, which mean when

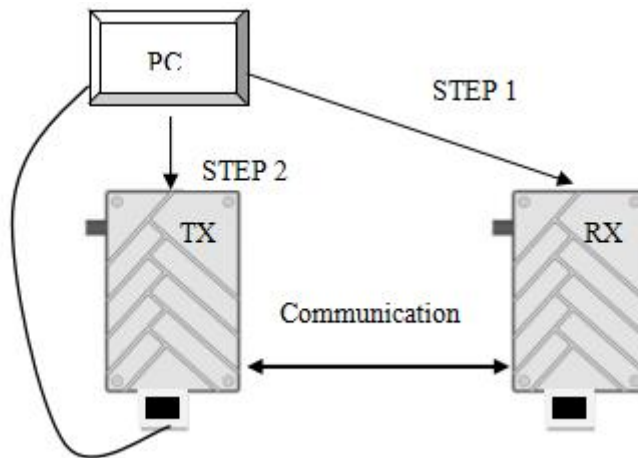
one unit parameters are changed, the other unit parameters need to be change too. Or they will lose connection.

The following show you two ways to do the parameters settings:

(1) Connect Tx or Rx with PC separately then change their parameters one by one.



(2) When the communication between Tx and Rx are working normally, you can change the remote unit parameters through the local unit and then change the local unit parameters.



Note: If you find the devices cannot connect with PC, firstly wait for a moment for device finishing its running process, then try again.

Secondly, check whether the distance between transmitter and receiver is too close, increase their distance and try again.

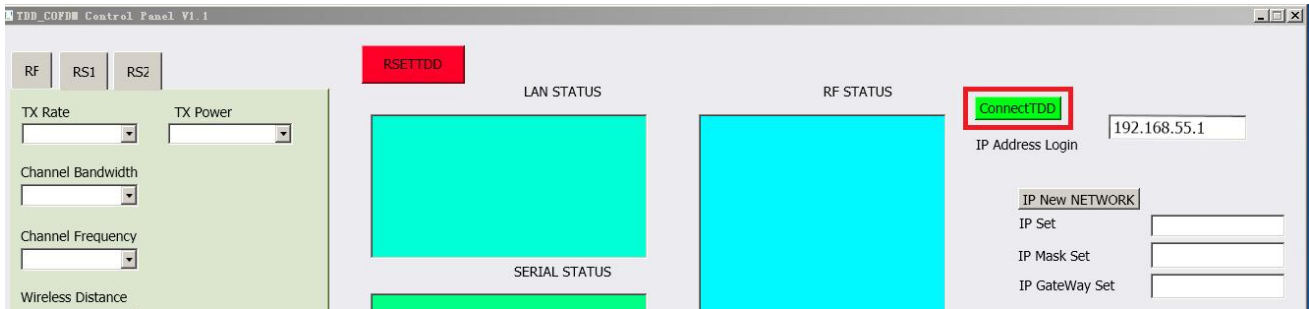
If still failure, change another Ethernet cable.

5.1. Start The Software

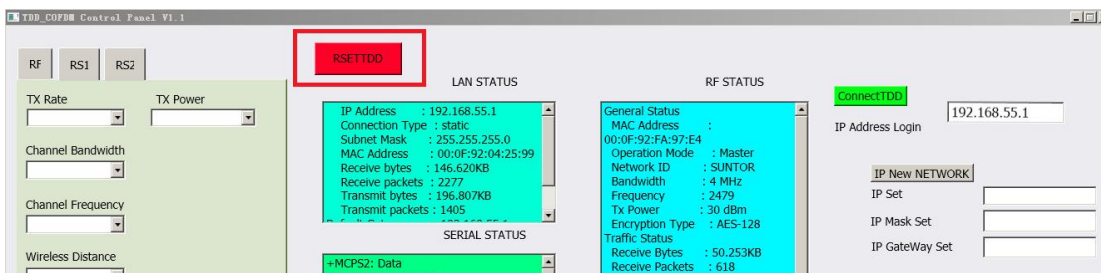
- 1) Right-click the icon to choose "Run as administrator"



2) Enter the IP address (Tx IP: 192.168.11.1 ; Rx IP: 192.168.11.2), Next click **Connect TDD** button

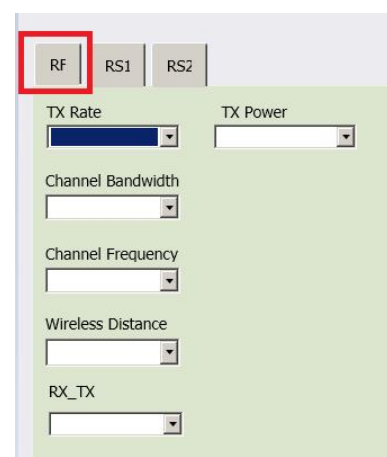


If you want to Restart OFDM software, click **Restart-TDD** button.



Notice: You must restart the software after finishing modifying TX or RX parameters. Then type in another one's IP address, connect and modify its parameters. Please not change IP address directly in IP ADDRESS LOGIN.

5.2. RF Configuration



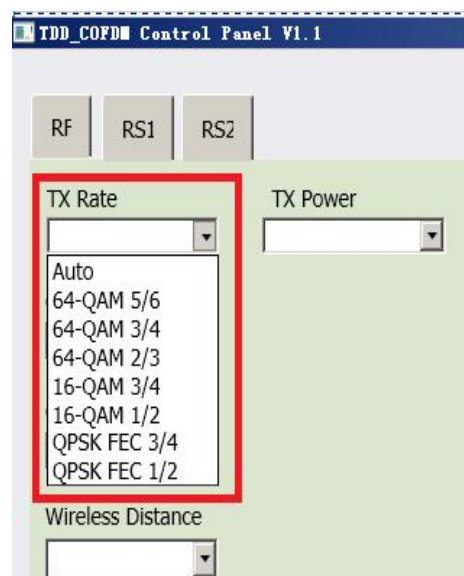
In this section, you can modify six parameters.

5.2.1. TX Rate(Default: QPSK FEC 1/2)

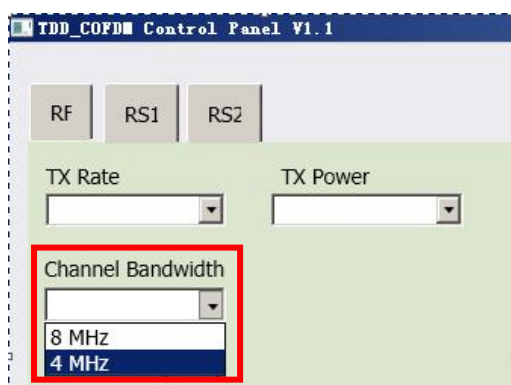
This setting determines the modulation type and the rate at which the data is wirelessly transferred. For example:

Auto: The data will be transmitted at the highest possible rate in consideration of the receive signal strength (RSSI)

If setting a fixed TX Rate, it is recommended to retain a fade margin of at least 10dbm for optimum performance. For example, for a link (8MHz channel) with a signal strength of at least -75dBm, a TX rate of 16-QAM 3/4 FEC is recommended. Note: Setting the highest rate with a poor link will degrade the performance.



5.2.2. Channel Bandwidth(Default: 4Mhz)



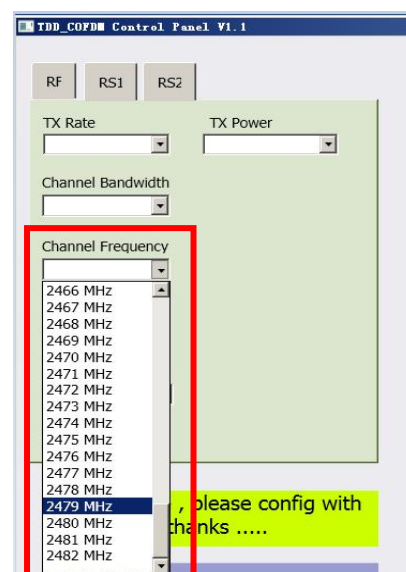
The bandwidth channel can be selected from the list.

Note: Before choosing the bandwidth please refer to the specifications to see the relationship and performance between channel bandwidth , throughput and sensitivity.

Generally a larger channel has greater throughput at the cost of sensitivity, while a smaller channel tends to be more robust, but at the cost of throughput.

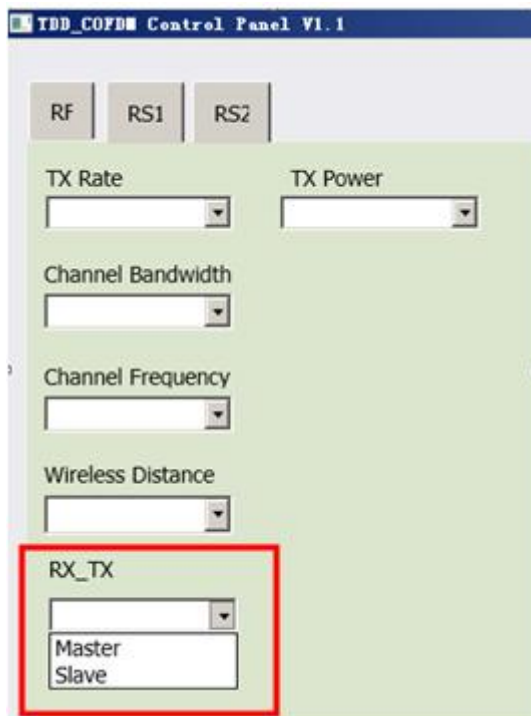
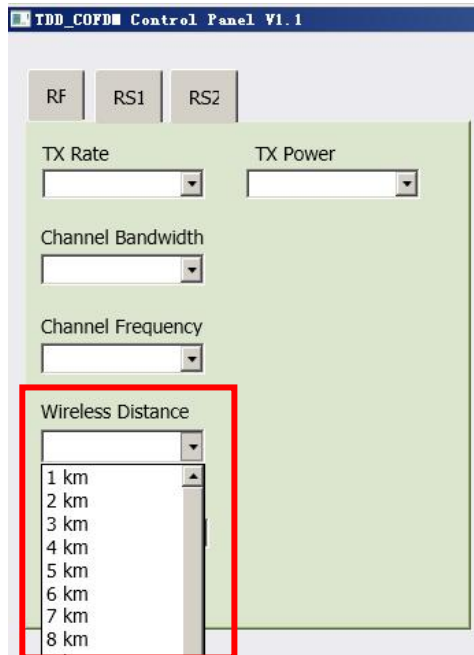
5.2.3. Channel-Frequency (Default:2479Mhz)

You can choose the frequency from 2402 to 2482Mhz



5.2.4. Wireless Distance(Default: 10km)

The Wireless Distance parameter allows a user to set the expected distance that the wireless signal needs to travel. The TDD-COFDM sets various internal timeouts to account for this travel time. Longer distances will require a higher setting, and shorter distances may perform better if the setting is reduced.



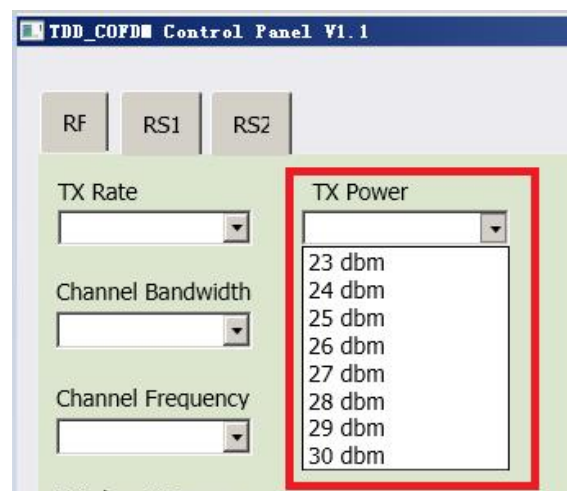
5.2.5. RX TX Mode

TX Master - A Master provide a wireless data connection to slave.

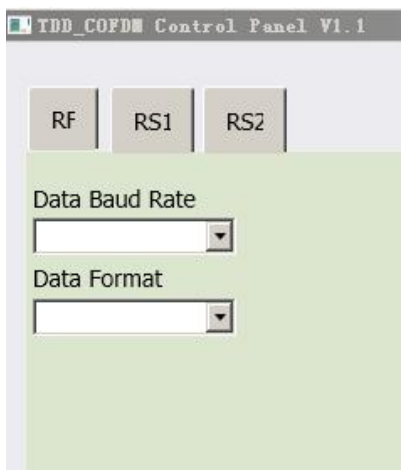
RX Slave- A Slave sustain one wireless connection to Master.

5.2.6. TX Power(Default: 29dbm)

This setting establishes the transmit power level which will be presented to the antenna connector of the TDD_COFDM. Unless required, the Tx Power should not be set with maximum value, but rather for the minimum value required to maintain an adequate system fade margin.



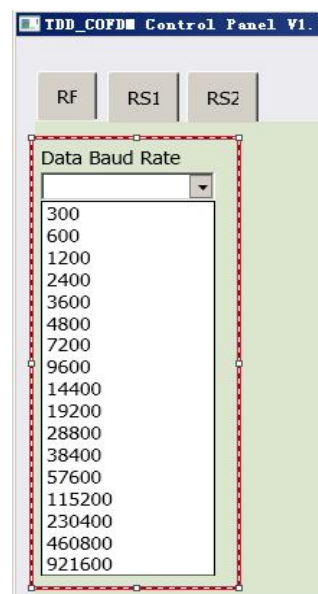
5.3. RS1 Configuration



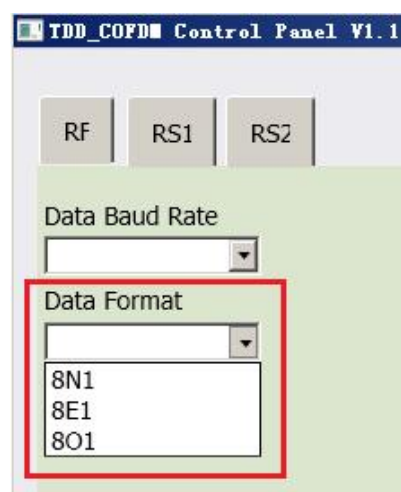
In this section, you can modify two parameters listed in the following picture.

5.3.1. Data Baud Rate(Default: 115200)

The serial baud rate is the rate at which the modem is to communicate with the attached local asynchronous device.



5.3.2. Data Format(Default: 8N1)



This setting determines the format of the data on the serial port. The default is 8 data bits, No parity, and 1 Stop bit.

5.4. RS2 Configuration

This setting determines which protocol the serial server will use to transmit serial port data over the TDD-COFDM network.

- Remote IP Address

IP address of distant device to which UDP packets are sent when data received at serial port.

Default: 192.168.55.2(master)

192.168.55.1(slave)

- Remote Port

UDP port of distant device mentioned above.

Default: 20002

- Listening Port

UDP port which the IP Series listens to (monitors).

UDP packets received on this port are forwarded to the unit's serial port.

Default: 20002

- UDP Timeout(s)

UDP Timeout in second.

Default: 10

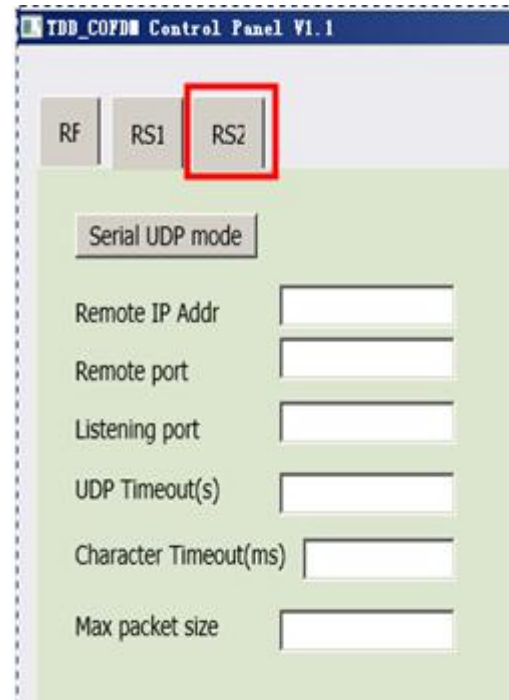
- Character Timeout(ms)

Character Timeout in millisecond.

Default: 1

- Max Packet size

Default: 1024



5.5. IP New Network Configuration

This setting helps you to change the IP address of devices.

The master default IP 192.168.55.1

the slave default IP 192.168.55.2

For example, you want to change the master's IP address to "192.168.55.5". Then do as the following steps.

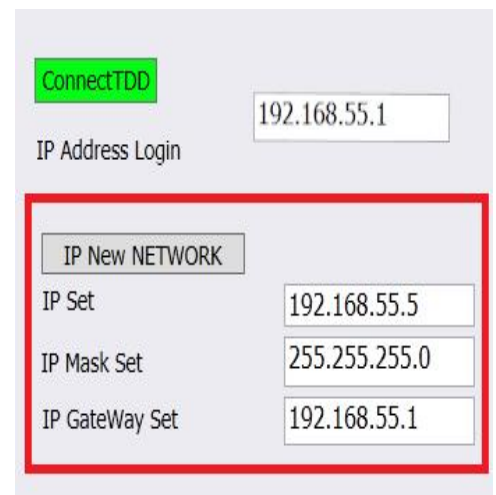
IP Set : 192.168.55.5

IP Mask Set: 255.255.255.0

IP Gateway Set: 192.168.55.1

Then click **IP NEW NETWORK** button.

Attention! When you have changed the IP address, you should correct another device's "Remote IP Addr" into the same "IP SET", or the serial port will lose connection.



For example, you have changed the master's IP address to "192.168.55.5", then you should also correct the slave's "Remote IP Addr" to "192.168.55.5".

5.6. RF New NET Configuration

5.6.1. RF Net ID

Each network of TDD-COFDM modules must have a unique Network ID. This Network ID must be set same in each unit on the network. **You can change it according to your needs , but TX and RX must have the same RF NET ID .**

Chose the box in front of RF NEW ID , and type in the RF NET ID you choose , then click RF new NET button.

Select the RF NEW ID, and type in the RF NET ID you choose, then click **RF new NET** button.

5.6.2. RF Encrypt KEY

This is the password or preshared key that is required by any device trying to connect with the wireless interface of the TDD-COFDM. We strongly recommend you to have a password defined, and change it from the factory default

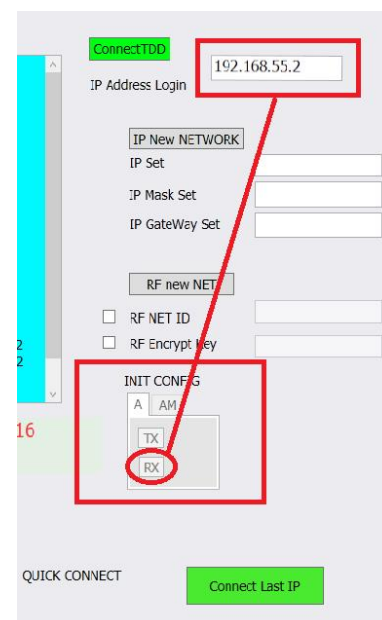
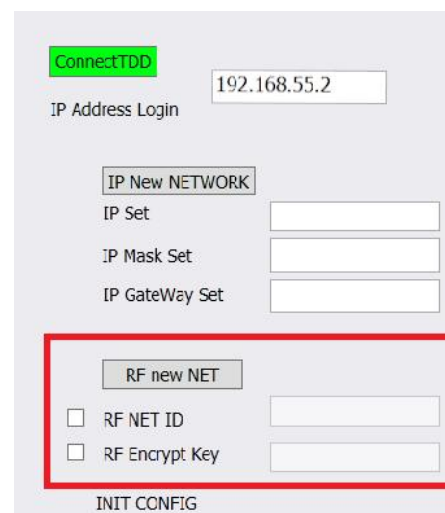
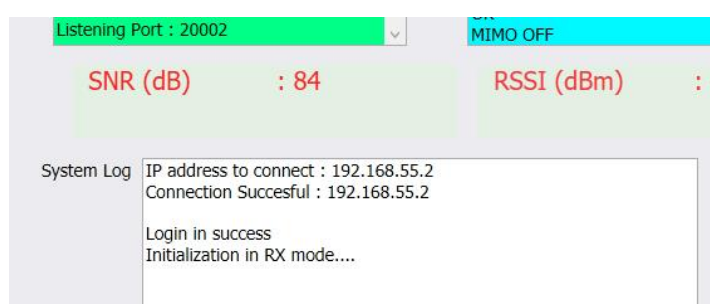
Notice! TX and RX must have the same RF Encrypt Key.

Select the RF Encrypt Key then type in the password you set, and then click **RF new NET** button. The default encryption is AES128.

5.6.3. INIT CONFIG

TX means transmitter initialization and RX means receiver initialization.

We suggest that when you initialize one device, please initialize another one at the same time.



5.6.4. Connect last IP

For quickly connect to last IP

