MMDVM Duplex Hotspot Support DMR User Manual

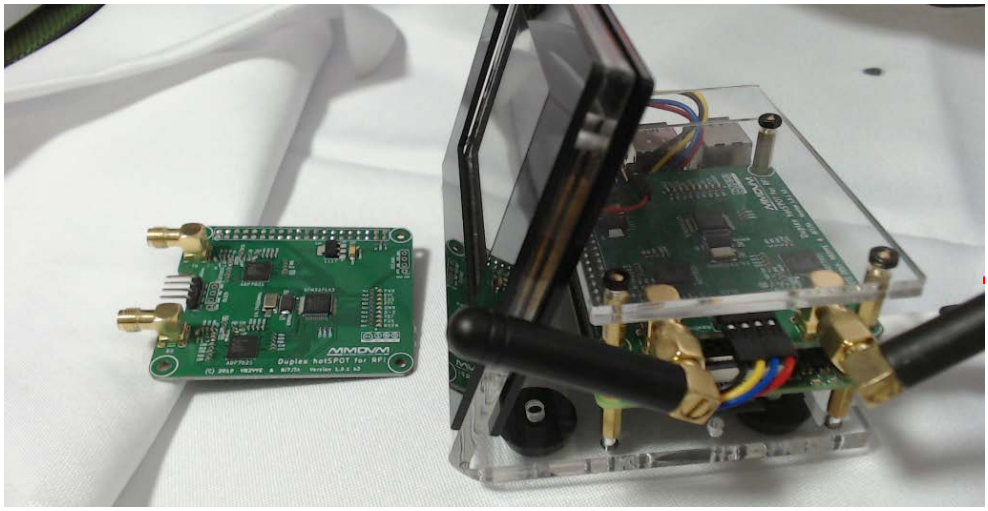
Contents

MMDVM MULTIMODE DIGITAL VOICE MODEM

MMDVM Duplex Hotspot Support DMR

This guide just for the Products made by BI7JTA, Synchronous update www.youtube.com/winters-huang , www.bi7jta.org

Overview



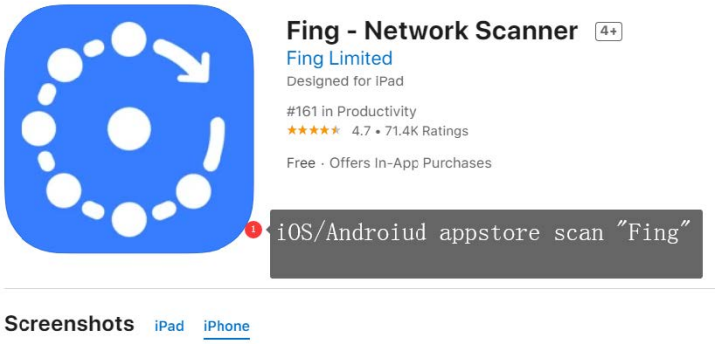
Prepare

NOTE:
I have configuration your hotspot with default settings, if your purchase is from BI7JTA provider, you do not need to flash SD card .

Hardware
MMDVM Duplex Hat with Antennas,
Raspberry Pi 3B, 4B, ZeroW,
SD Card/ TF card 8G/16G,
Nextion Display, OLED (Option)
Power supply 5V2A

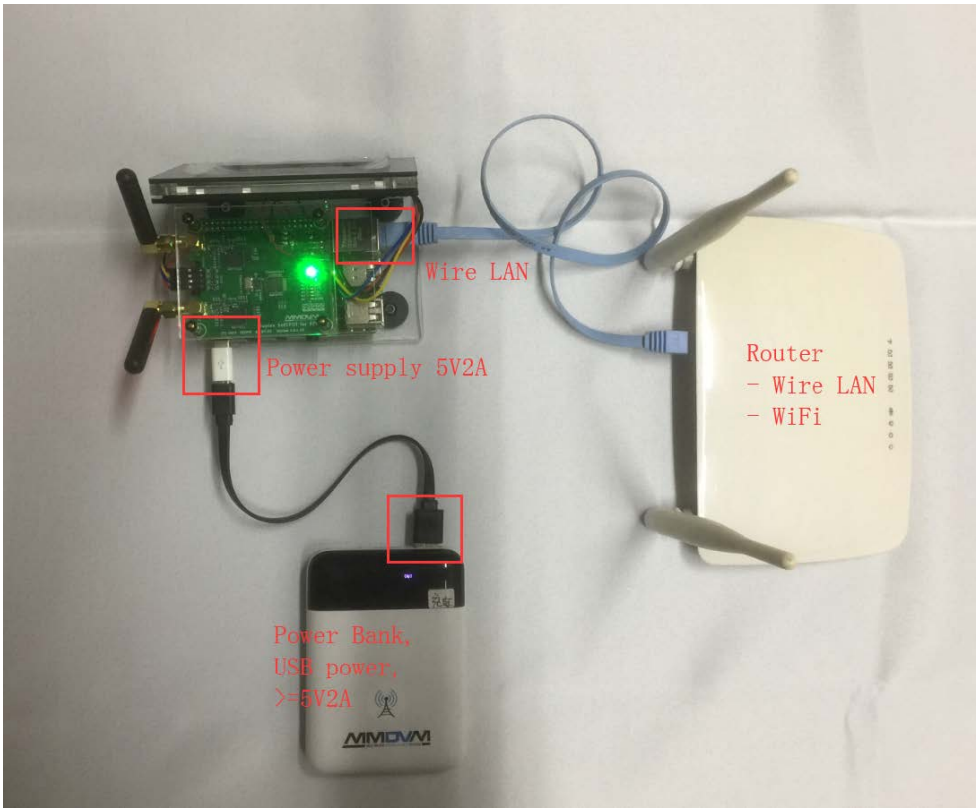
Software
Pi-Star OS (Raspbian integration MMDVMHost, Serial of DMR/YSF/P25/D-STAR/NXDN/POCSAG gateway serivces , Pi-Star Dashboard),
LAN IP devices address scan tools:

Fing , for iOS, Android, **www.fing.com**
IP Scan tools, for MAC OSX **https://apps.apple.com/cn/app/lanscan/id472226235?mt=12**
Advanced_IP_Scanner , for Microsoft Windows **http://www.advanced-ip-scanner.com/**
SDFormatter v4, for format your SD Card, just for install a new OS,
win32diskimager, just for install a new OS,
Web browser, Mobile default browser, Chrome, Firefox for Windows, Safari, Not support Microsoft IE



Step 1 Hardware connection

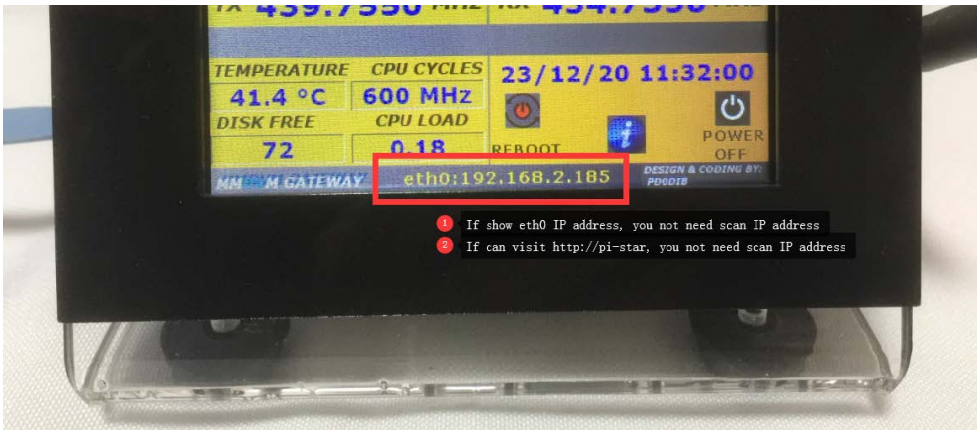
Use 5V2A Power supply, any MicroUSB Android power supply wire, but must stable , otherwise the power will affect your TX spectrum, cause high BER% .
Wire LAN recommend, the first time you use MMDVM hotspot.



Step 2 Network Configuration

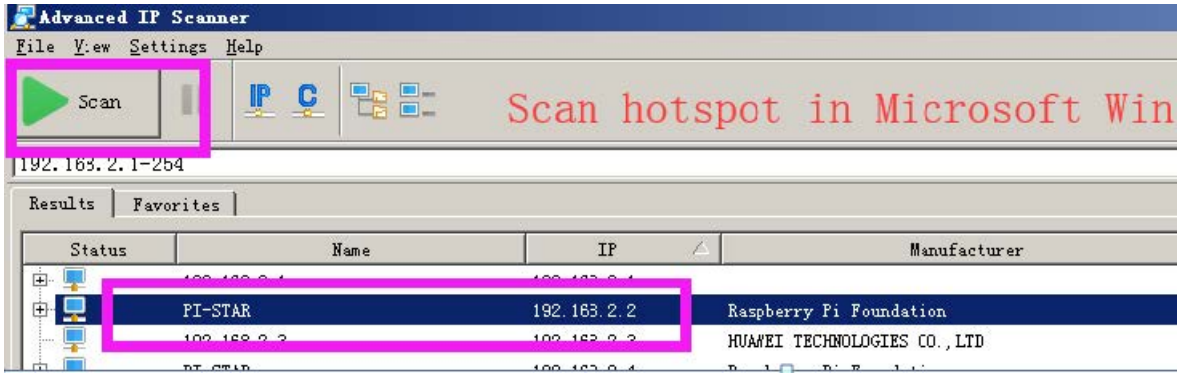
There are 3 methods to make MMDVM hotspot connect to internet

1, Wire LAN (Simple and Recommend)
NOTE:
1, This method cannot use in your Raspberry Pi ZW, not have LAN interface, Unless you buy a USB-LAN adapter.
2, If your hotspot with Raspberry Pi 3B/4B purchase from BI7JTA, one your plug-in Wire LAN ,the display will show the true IP address.



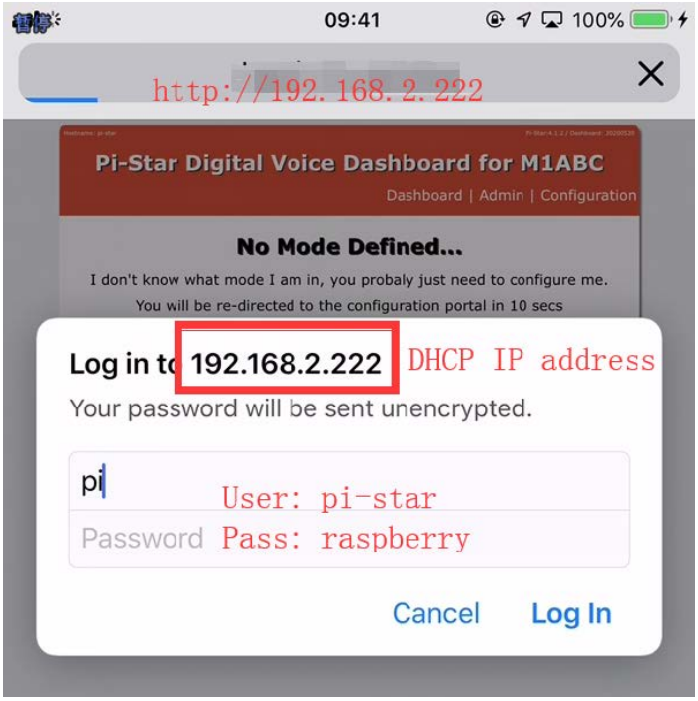
Steps one by one:
– Connect the Wire LAN between Raspberry Pi 3B/4B and Router,

– The router assign IP address through DHCP ,
– Scan your MMDVM hotspot IP address,
See Figure: Windows OS find HS IP Address

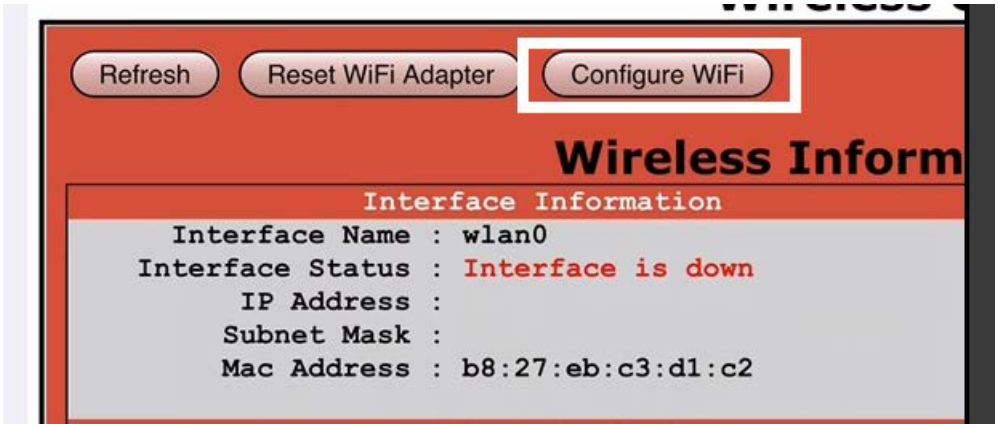


– Open your the default web browser , visit the URL ,as follow

http://pi-star (If your LAN have more than 1 hotspot , this possible not link to the hotspot you need)
http://192.168.x.x (the IP address you have scan from IP scan tools).
See Figure: Visit MMDVM Dashboard



– Add your home WiFi SSID/PSK, then reboot



– Finally you can use WiFi connection, instead of Wire LAN.

* The IP address here just a demo value , please use your true scan result value.

2, WiFi self AP (Complicated)

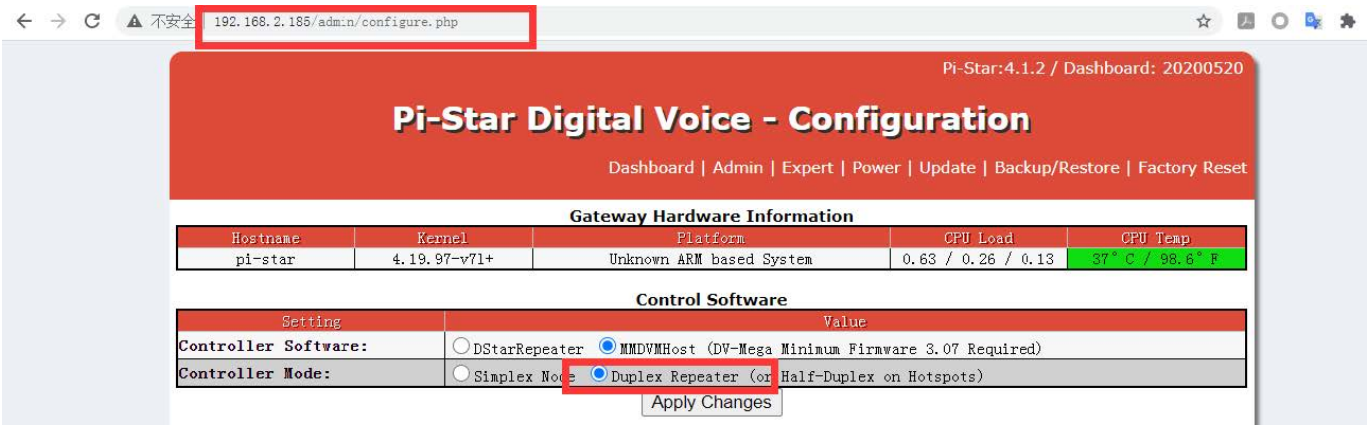
View Appendix –> Configuration WiFi –> WiFi Self AP

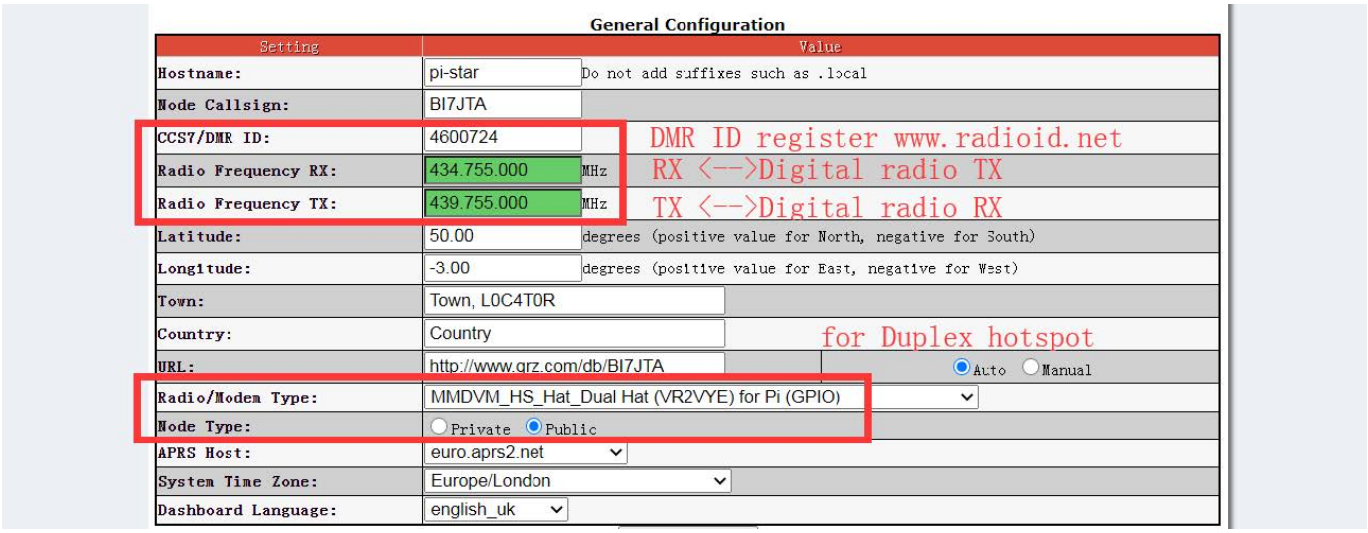
3, WiFi config file (Need SD Card adpater)

View Appendix –> Configuration WiFi –> WiFi Config file

Step 3 Pi-Star Configuration

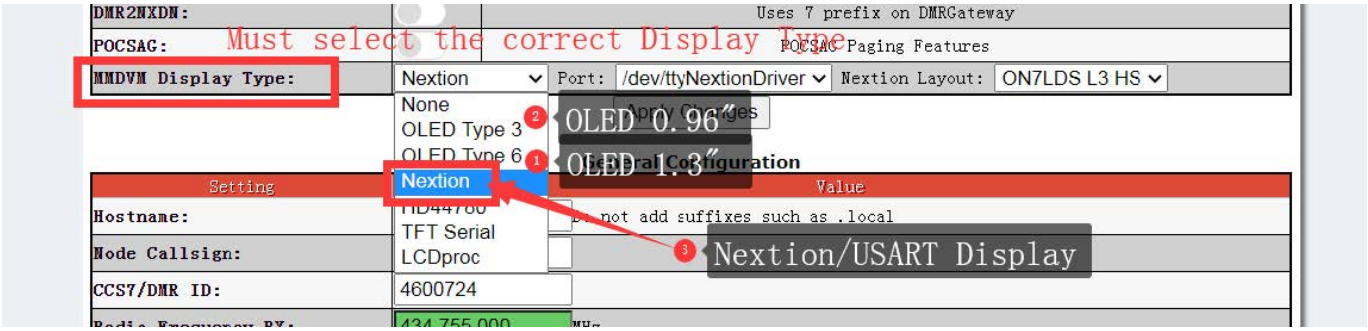
Base settings

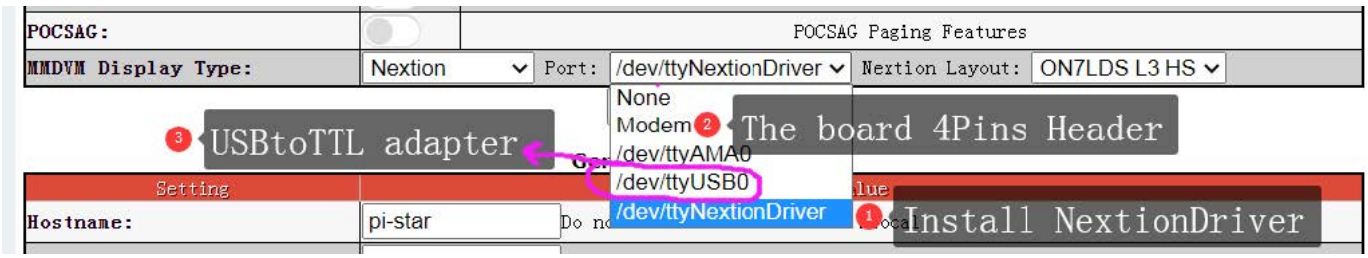


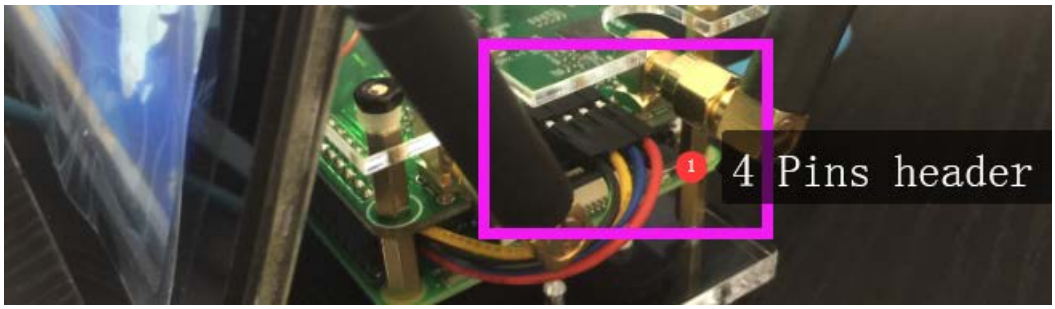


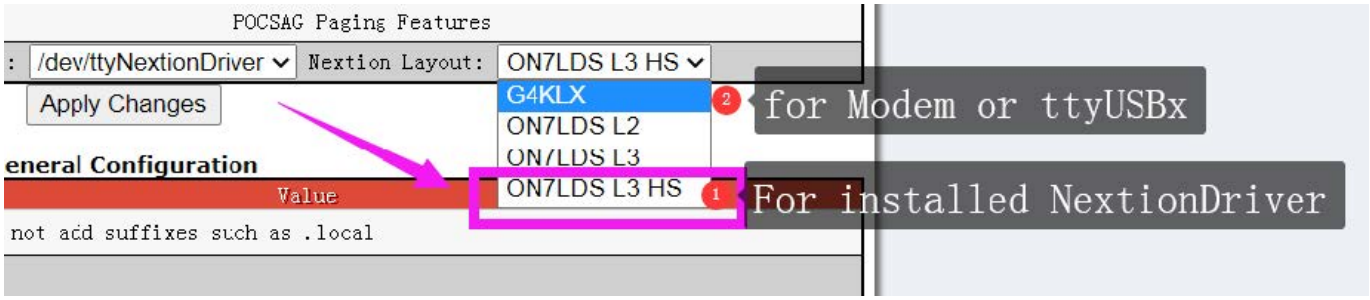
Frequency range: 144MHz-148MHz, 420MHz-475MHz,842MHz-950MHz
avoid the following ranges: 145.8-146.000 MHz and 435-438.000 MHz, otherwise firmware will not start. See also https://github.com/juribeparada/MMDVM_HS/releases/tag/v1.4.12

Display Type:

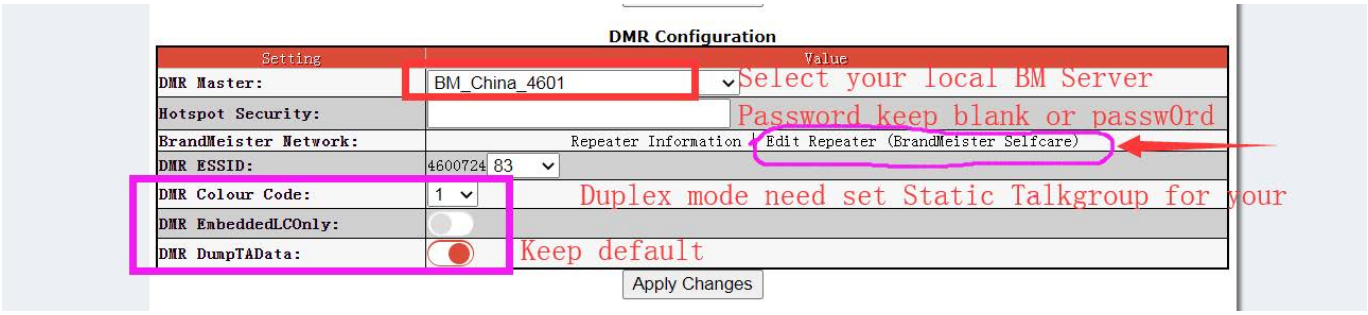




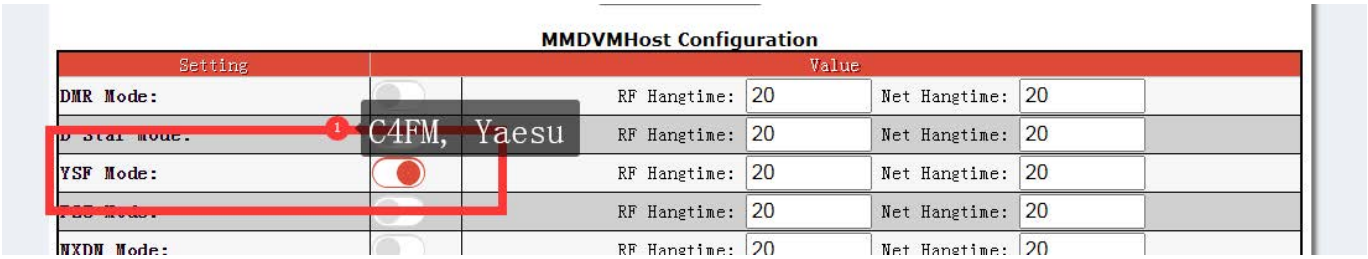


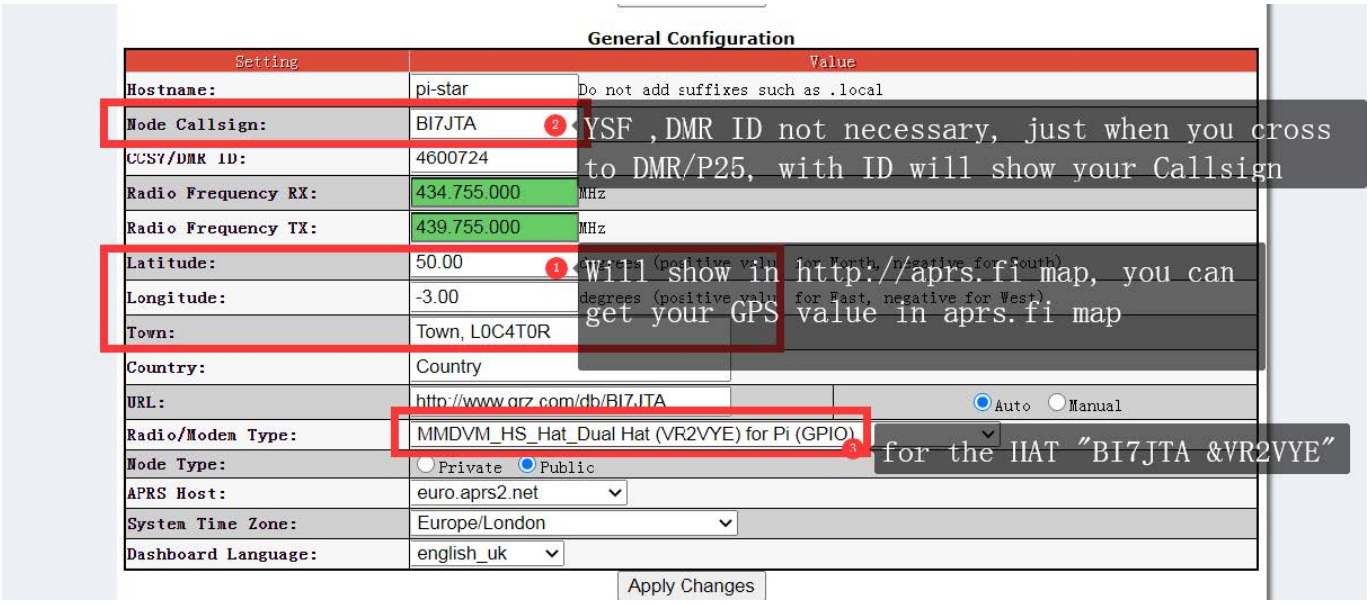


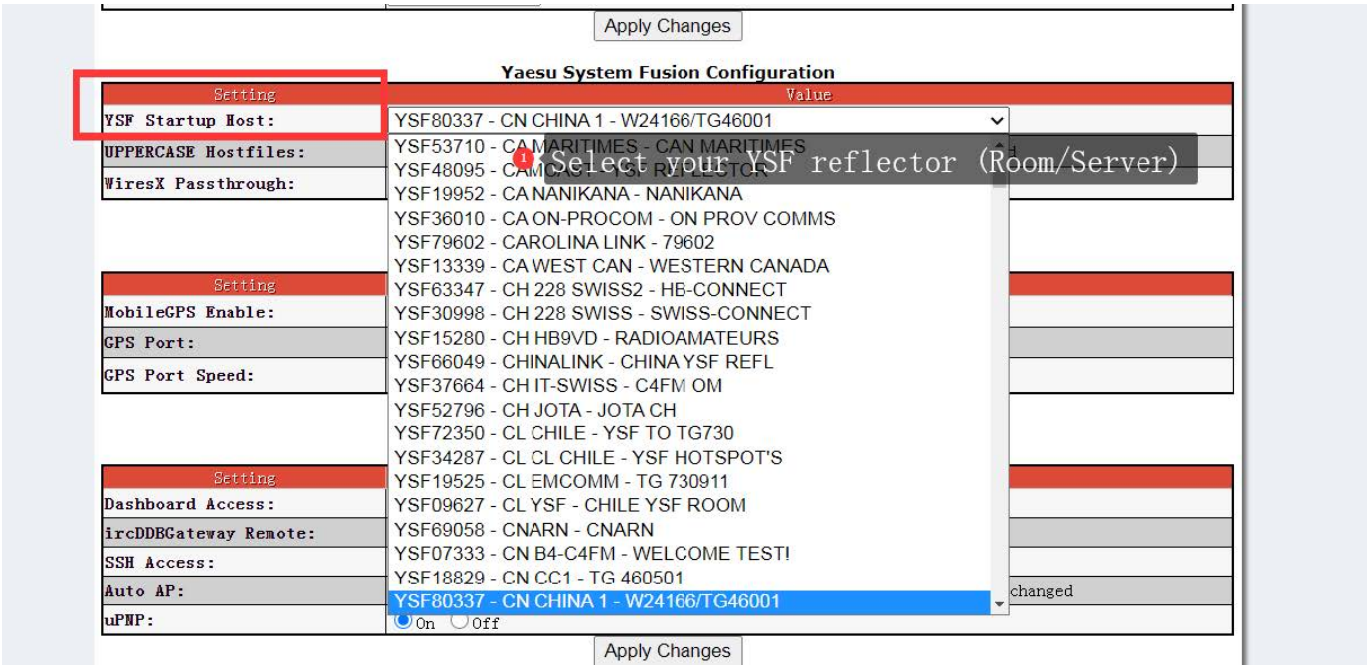
DMR Mode:



YSF Mode:



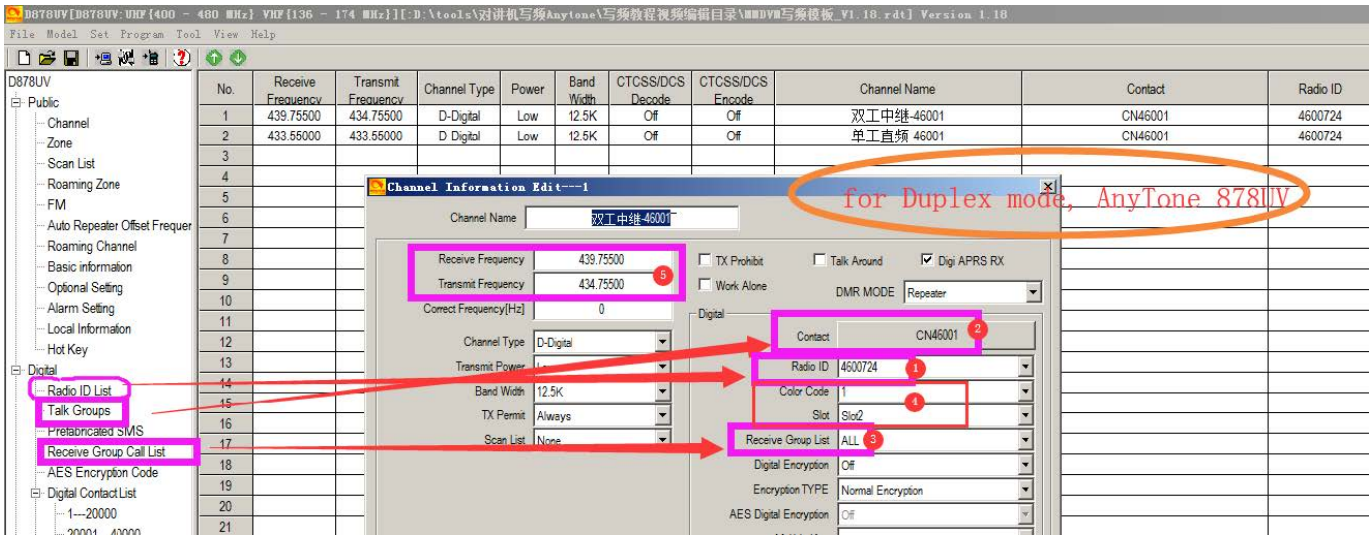




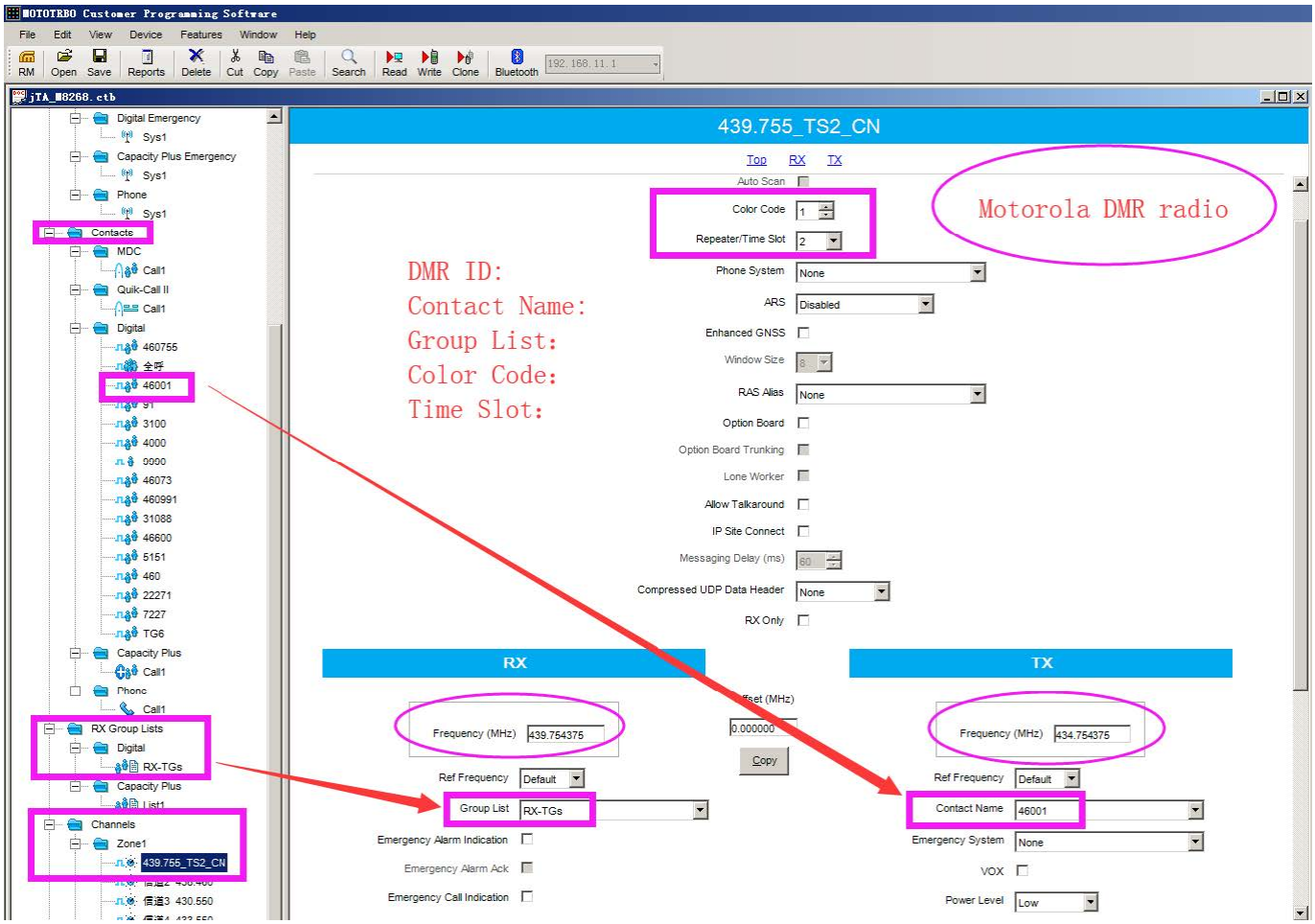
Step 4 Radio Programming

DMR Mode:

AnyTone 878UV,
Also apply to other model DMR radios, such TYT, Baofeng, Motorola, GD77 The key items:
1, DMRID,
2, Talkgroup,
3, Receive Group CallList,
4, Color Code, Slot,



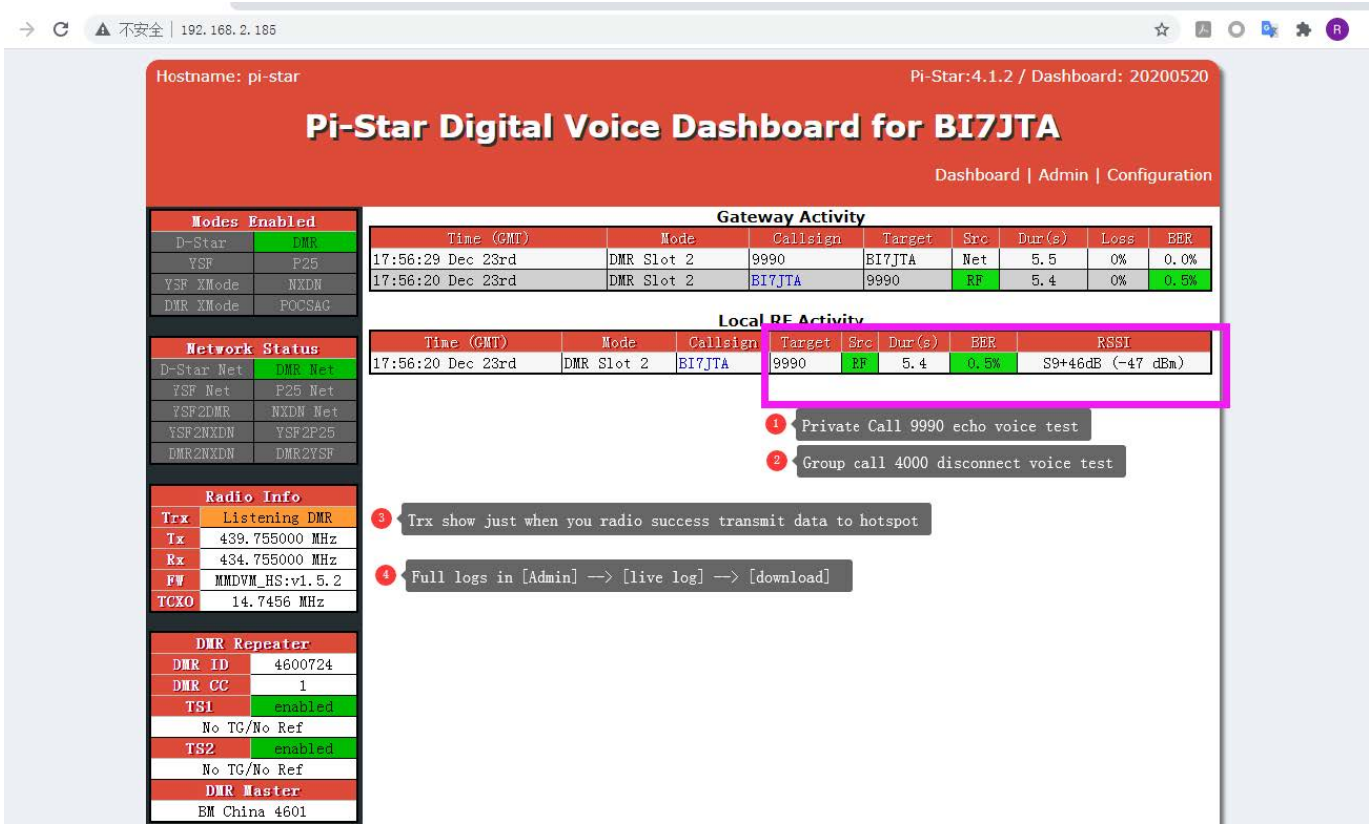
Motorola P8668i, XPR4550



YSF

YSF the BER around 1% is ok, you can also adjust by set RXOffset, TXOffset in Pi-Star expert mode.

Step 5 QSO & Testing

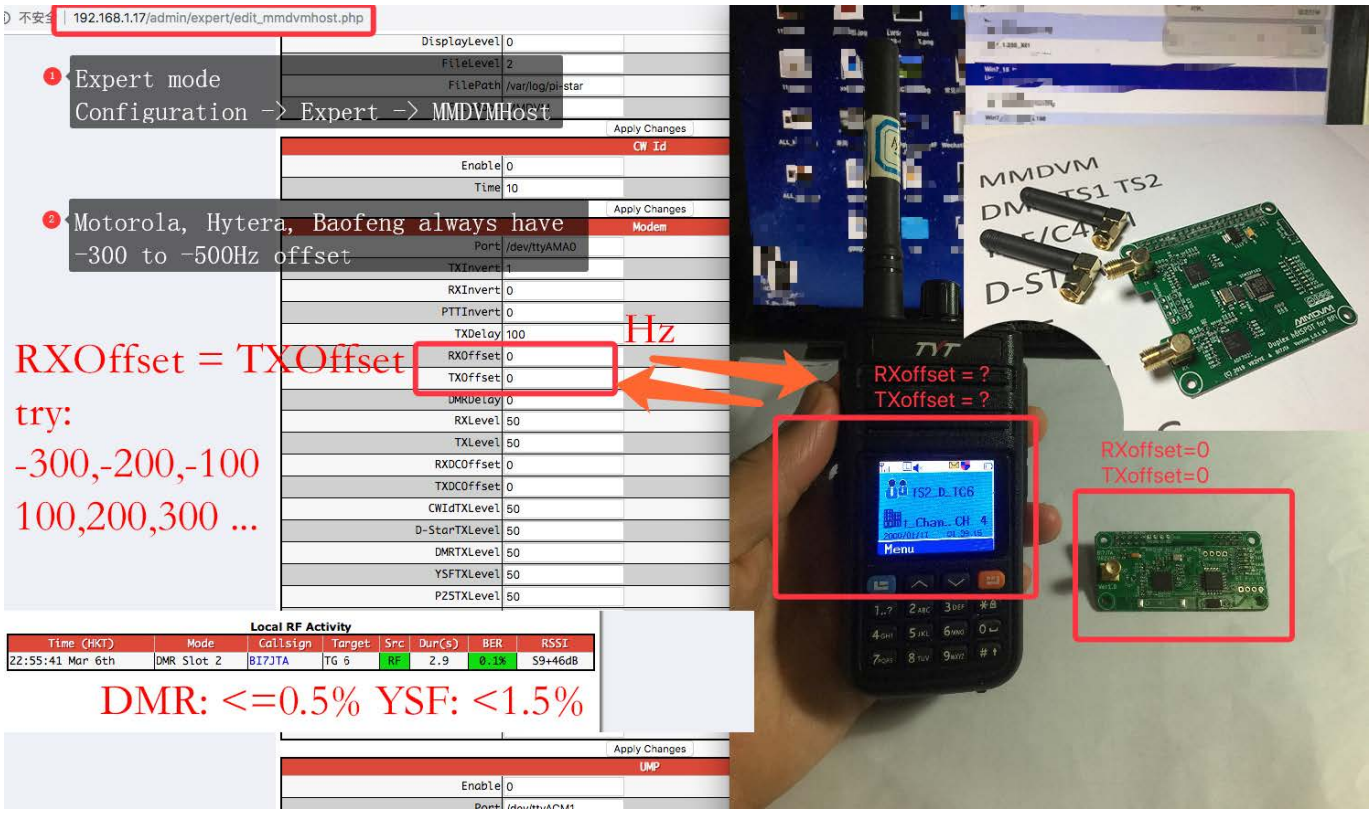


Troubleshooting

* Believe me , your board I have tested full, please do not doubt the board issue, need patience to make it work.

BER too high

Most Motorola radio, Hytera, Baofeng DMR radio ,will has big offset more than -300Hz



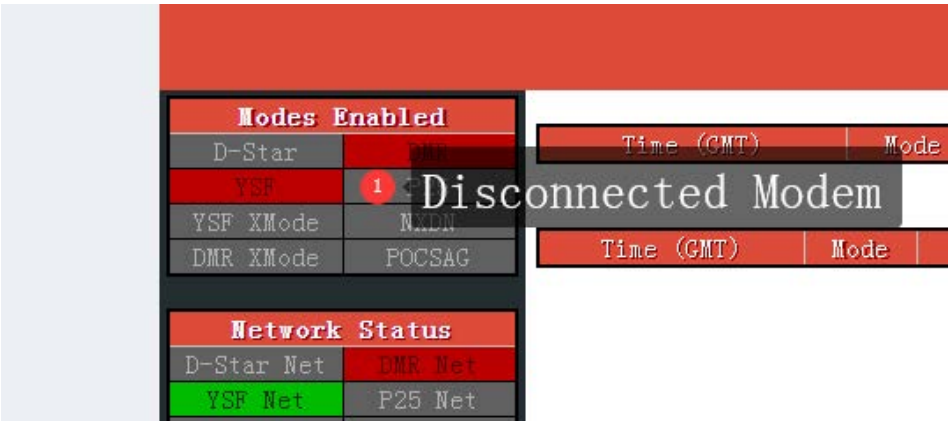
Cannot open repeater

Possible,
1) RX, TX not invert with Hat and radio;
2, BER too high,
3, Other, such as frequency be interferences, Power supply not stable,

Cannot continue listen network TG, in DMR mode
– Duplex mode(Simplex Hat not support duplex mode)
Register BM account and setup your static Talkgroup for TS1,TS2
https://www.bi7jta.org/wiki/index.php?title=Main-Page#Set-Static-Talkgroups
– Simplex mode
Simplex mode default use Dynamic talkgroup, will continue listen the last TG you have press PTT, on your DMR radio. YOu can also set more than one static Talkgroup for TS2

Cannot connect to Modem

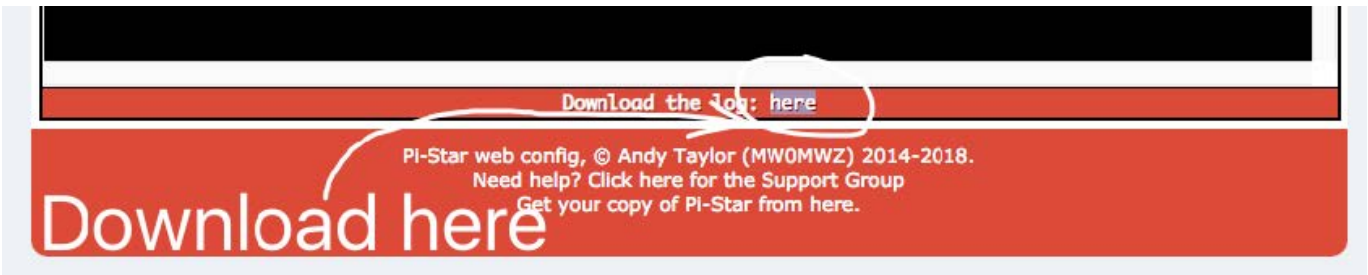
Possible reason:
1) satellite
Frequency restrictions to avoid satellite interference. Please avoid the following ranges: 145.8-146.0 MHz and 435-438 MHz, otherwise firmware will not start.
tail -100f /var/log/pi-star/MMDVM-2018-11-21.log
Error message Received a NAK to the SET_FREQ command from the modem



2) Factory Reset cause NextionDriver not normal

Ask me for help

Before ask me for help, please analysis Pi-Star running logs first,
http://pi-star/admin/download_modem_log.php



1) Download Pi-Star full logs
2) your radio channel settings detail screenshots
3) Send to email **bi7jta@gmail.com**

Too large size video please upload to Youtube.com, then send me a link. Remote Desktop: Microsoft Teams, Teamviewer

Demo video

https://www.youtube.com/winters_huang

Reference

BI7JTA Wiki https://www.bi7jta.org
Pi-Star http://pistar.uk
MMDVM Project https://github.com/g4klx/MMDVM

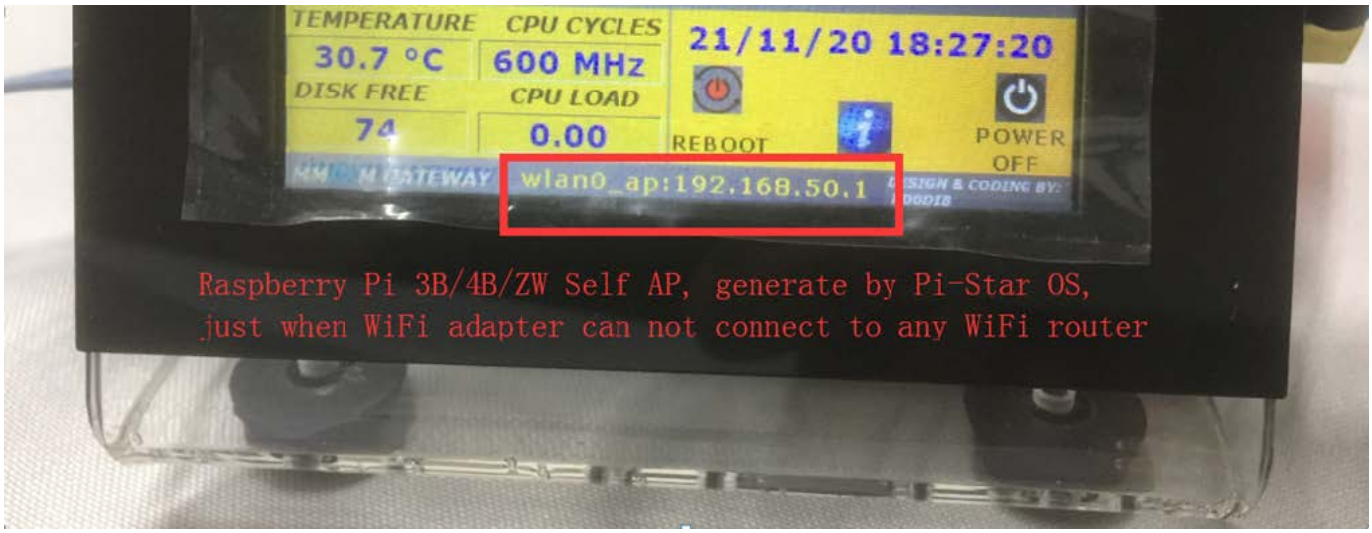
Appendix

Frequency range:
144MHz-148MHz, 420MHz-475MHz,842MHz-950MHz
avoid the following ranges: 145.8-146.000 MHz and 435-438.000 MHz, otherwise firmware will not start.
See also https://github.com/juribeparada/MMDVM_HS/releases/tag/v1.4.12

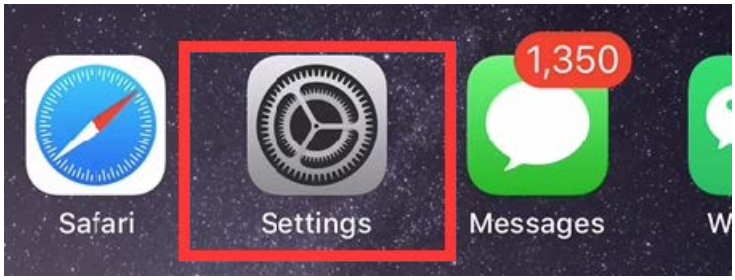
Other method for Configuration WiFi

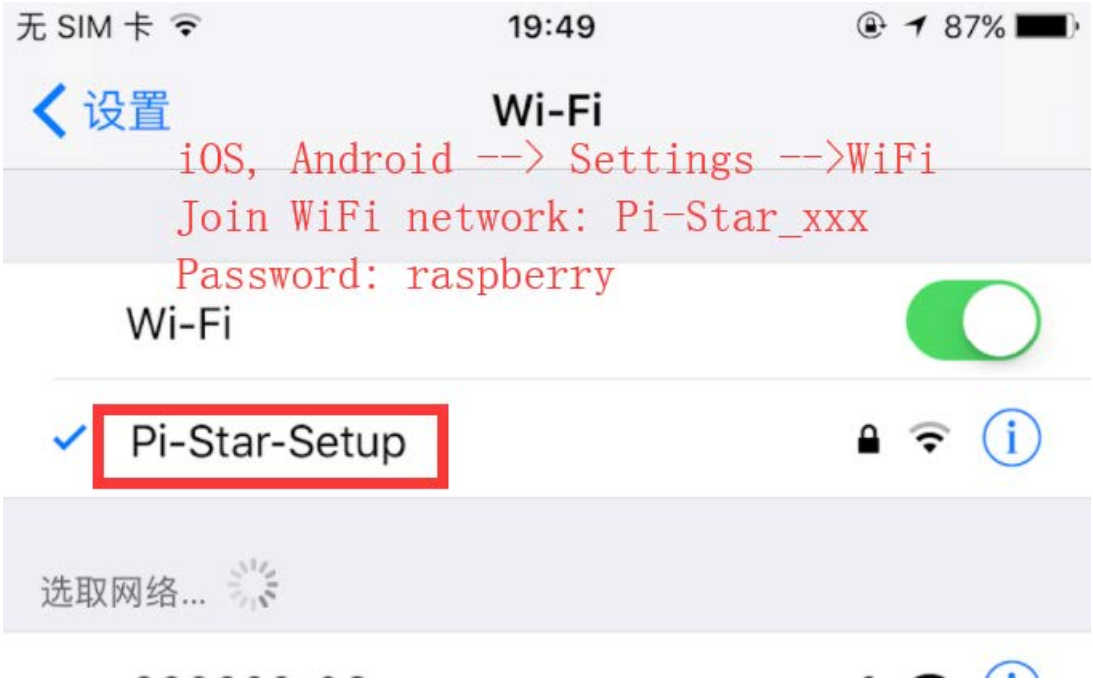
WiFi self AP,
NOTE: This method cannot use in your NanoPi NEO, Raspberry Pi 2B not have inner WiFi model.

Steps one by one:
– Power on your hotspot , after 2 or 3 minutes , if MMDVM hotspot cannot join any WiFi netwok, Pi-Star OS will generate a WiFi AP(access point/router),



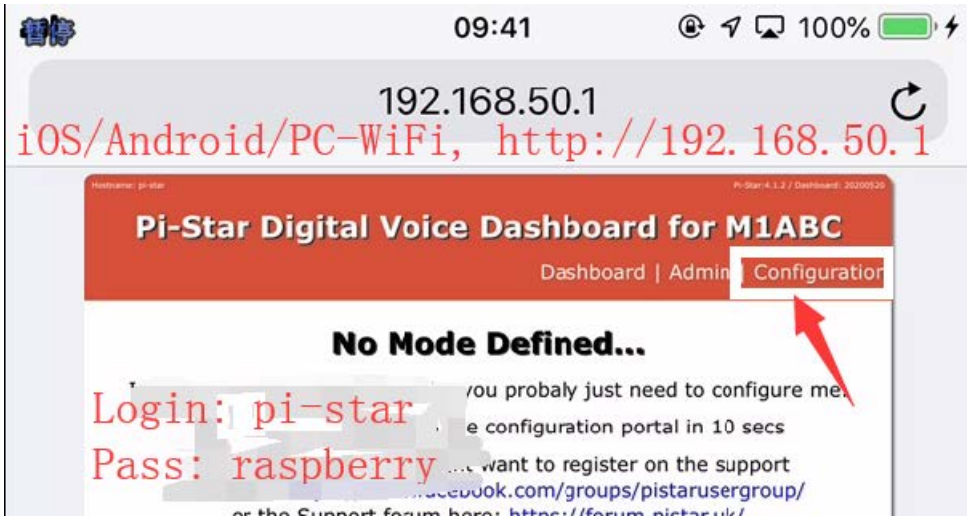
– Open your iOS or Android , PC with WiFi adapter, join the Pi-Star WiFI AP,



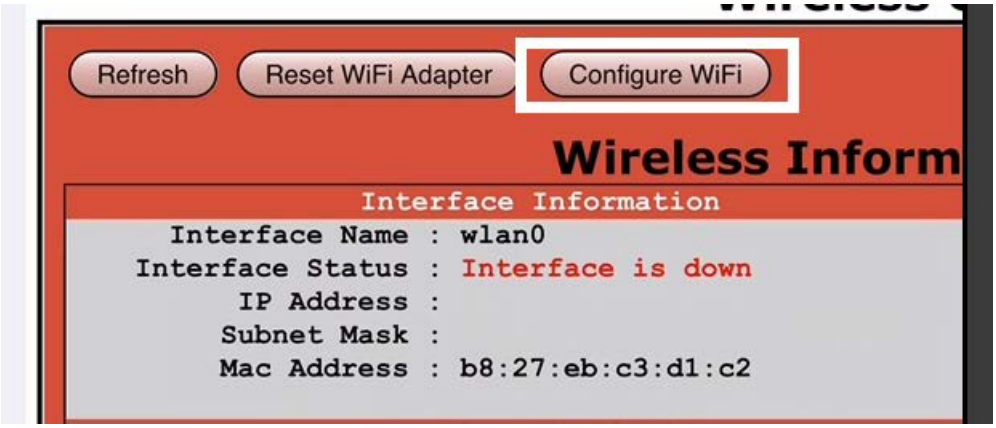


– Open your the default web browser , visit the URL ,as follow (Must join this WiFi AP)

http://pi-star or
http://192.168.50.1 (the IP address is fix, if your display show this 50.1 address, means hotspot WiFi have not connect to internet). Figure: Visit management page

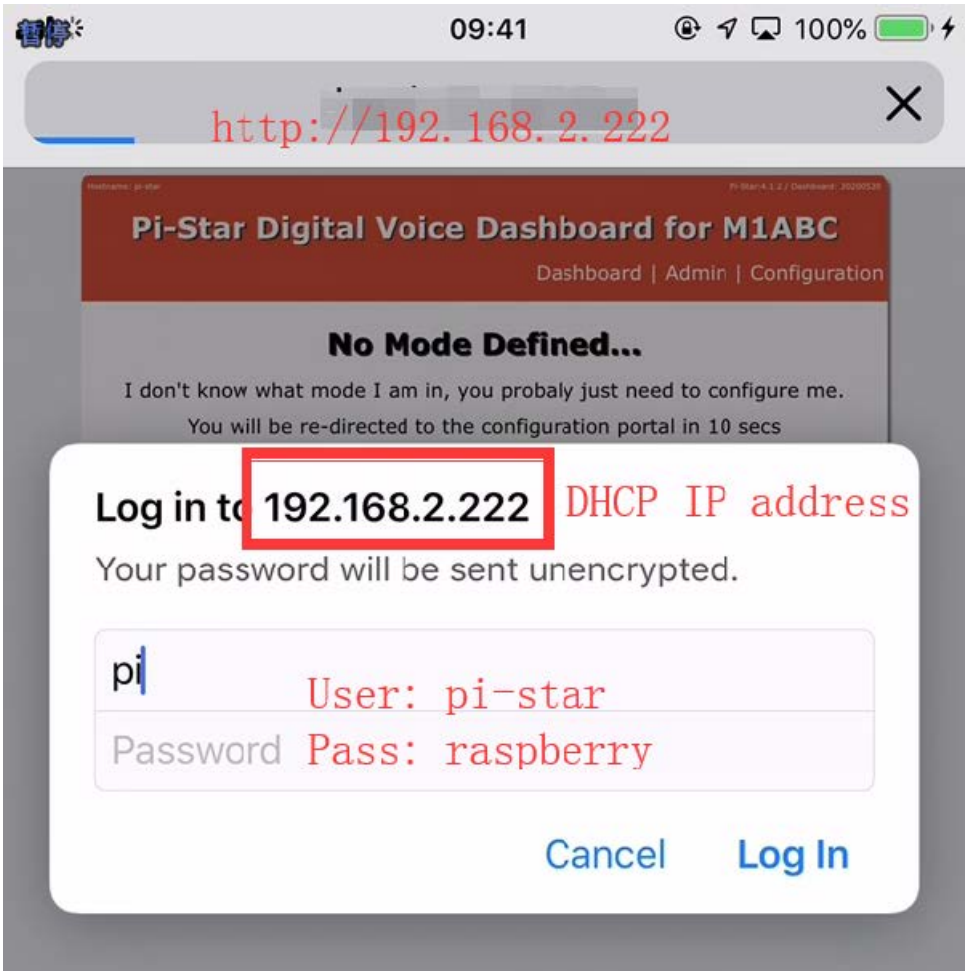


– Add your home WiFi SSID/PSK, then reboot



– Use Fing APP or IP scan tools in Windows/OSX, find the Pi-Star hostname and DHCP IP

– Finally you have made the MMDVM hotspot connect to your router, do the next step

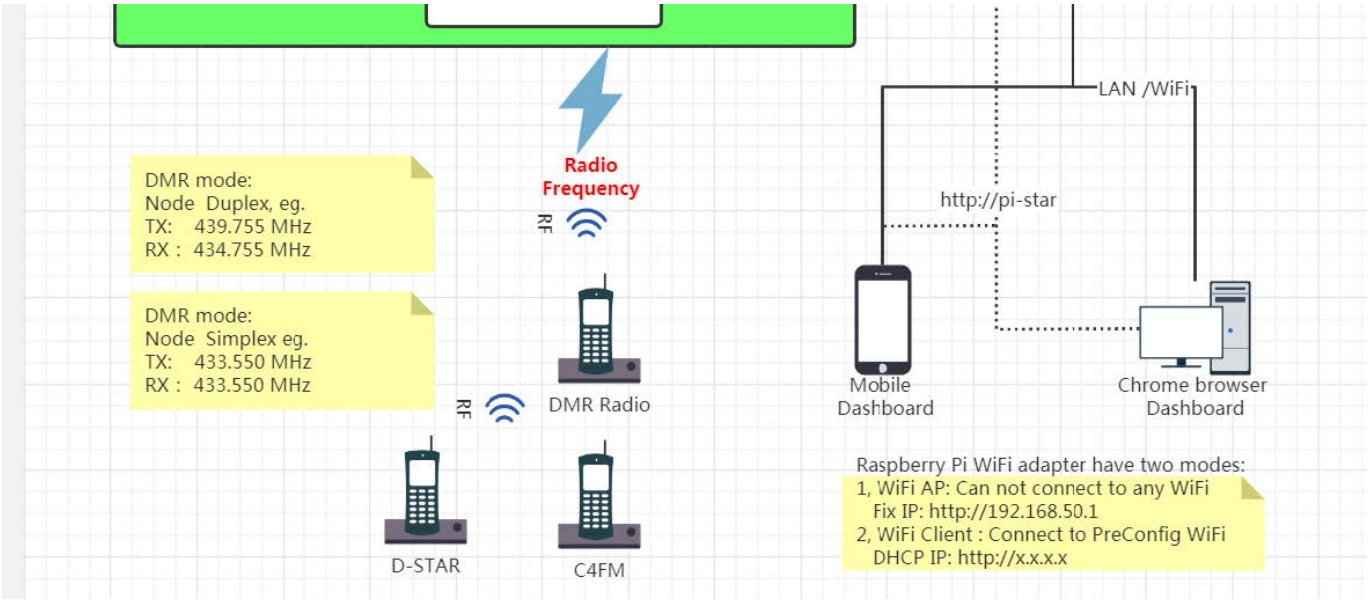


Known issue:
1, Some Android OS will reject join the WiFi network without internet connection.
2, One you have reset factory settings ,re-flash SD card , MMDVM Hat Modem connect failed, the Nextion Display or OLED will not show normal data (connecting always), but do not worry , the WiFi AP will be made, ignore the display data, Nextion/OLED display not a System Monitor.

WiFi config file
https://www.pistar.uk/wifi_builder.php

– Input your home WiFi SSID/PSK
– Submit to download, the file wpa_supplicant.conf
– Copy this file to the root of Pi-Star SD card
– Power on again ,if all correct , your MMDVM hotspot will connect to your WiFi router

(Continue and not the end) Write by bi7jta@gmail.com www.bi7jta.org 2020.12.24



Documents / Resources

	[MMDVM Duplex Hotspot Support DMR] [pdf] User Manual Duplex Hotspot, Duplex Hotspot Support DMR