Step By Step How To Reband A Motorola CDM1550 To The 220 Mhz Band

Model Number Beginning with *****M

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Special Thanks Given to: Bryan W9CR For His Guidance in fine tuning this procedure

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Contents

Things you will need

Hardware

Motorola CDM 1550

Model Number Must Begin with *****M

Computer

Windows 2000, XP, Vista, 7, 8, or 10

Rib (Radio Interface Box)

Programing Cable

RLN4460/RKN4083 Test Box

Only used to put audio into the radio for testing/alignment

Audio Generator

Used to feed RLN Box

Service Monitor

We used a Motorola 2002C communications Monitor

2 x Motorola Wide band filters

Can be obtained from Bricked or Dead Waris Radios Filters will be Marked With a “D”

T-20 Bit and Driver

Flat head Screw driver

Software

All software required can be acquired at: http://wiki.w9cr.net/index.php/Waris

You will find all of the links at the bottom of the page.

Chirp

Waris.py Plug in for Chirp

Winabler

Motorola Professional Radio CPS-R06.12.05

Global Tuner

Getting Started

Install Software

Install all programs and plugins listed under software above.

Changing the filters in the CDM 1550

Changing the Filters is a requirement as if you do not change the audio will be distorted in the final product, the filters inside the CDM 1550 are Narrow Band Filters and you must change them to Wide band filters.

Step 1: Remove the cover

In order to remove the cover

Pop off the upper back section of the CDM1550, Place a flat head screw driver under the Bracket mount on the side and pop off the top, you will not bend the top and to hear a pop or “snap” sound is normal

Remove the 6 Visible Screws with a T-20 bit and driver

Remove the cover, if you remove the rubber seal ensure not to lose it.

Step 2: change the Filters

Flip out the board and de-solder/remove and change existing filters

Step 3: re assemble

Replace board back into CDM 1550

Ensure rubber seal is on the Cover

Replace the cover and follow the numbers as you replace the screws

Replace external cover

Begin Programing

Pre testing

Step 1: Set Up

Plug power, mic, service monitor and the RLN test box into radio,

Step 2: Power

Check that the radio has a power output

You want to see about 25 watts on the service monitor

Step 3: Receive

Check the receive and sensitivity and ensure they have reasonable audio out and sensitivity levels, on whatever frequency it is originally set to

Using Chirp and Waris.py

Step 1: Open

Open chirp > Load Module > Choose Waris.py Module > Click open.

If every thing is as planned your screen will turn red

Step 2: Read from Radio

Radio > Download from radio

Select appropriate port that your RIB is connected to

Vendor: Motorola

Model: Waris Tuning

Click ok and it will import the data from the radio

Step 3: Change to Wideband

On the left click on settings > Feature Data

Enter the following data:

Channel Steps: **0x1 – 12.5/20/25 KHz – Used on VHF Only**

This allows the radio to be programed in Wide band mode with CPS

Lower Frequency Limit: **222.000**

Upper Frequency Limit: **225.000**

Trunking Channel Limit: **16**

Conventional Channel Limit: **128**

Step 4: Tuning Piers

Still in the setting go to Tuning Piers

Enter the following data:

Tuning Pier RX1: **221.975**

Tuning Pier TX1: **221.975**

Tuning Pier RX2: **222.500**

Tuning Pier TX2: **222.500**

Tuning Pier RX3: **223.125**

Tuning Pier TX3: **223.125**

Tuning Pier RX4: **223.625**

Tuning Pier TX4: **223.625**

Tuning Pier RX5: **224.125**

Tuning Pier TX5: **224.125**

Tuning Pier RX6: **224.625**

Tuning Pier TX6: **224.625**

Tuning Pier RX7: **225.025**

Tuning Pier TX7: **225.025**

Step 5 (optional): Test Modes

Still in settings RF test Channels

Enter the following

Test Mode CH01/08 TX: **221.975**

Test Mode CH01/08 RX: **221.975**

Test Mode CH02/09 TX: **222.500**

Test Mode CH02/09 RX: **222.500**

Test Mode CH03/10 TX: **223.125**

Test Mode CH03/10 RX: **223.125**

Test Mode CH04/11 TX: **223.625**

Test Mode CH04/11 RX: **223.625**

Test Mode CH05/12 TX: **224.125**

Test Mode CH05/12 RX: **224.125**

Test Mode CH06/13 TX: **224.625**

Test Mode CH06/13 RX: **224.625**

Test Mode CH07/14 TX: **225.025**

Test Mode CH07/14 RX: **225.025**

Step 6: Finnish

Radio > Upload to radio > Ok

This writes the Programing to the radio

Close chirp

Using Global Tuner and Win abler

Step 1: Open

Open the program

Read radio

Step 2: Reference Oscillator

TX Align > Reference oscillator warp

Verify the radio is on **225.025**

Click program

Close section

Step 3: K and M Tuning

TX Align > K and M Tuning

Select each box and click PTT Toggle, enter the power reading from your service Monitor into the box

Once all have been done Click Program

Close section

Step 4: Mod Balance

TX Align > Mod Balance Adjust

This is where things get tricky.

For each one inject **200 Hz** then **2200 Hz**

Make sure the Deviation is the same or within reason of both

Program and Close

Step 5: Win Abler

Open Winabler > Click Capture Menu > Click on TX Align in Winabler > Hover over VCO Attn > Click VCO Attn 25 KHz

Set the Deviation to **4 KHz** with **1 KHz** Tone for each

Program and Close section

Step 6: Squelch Attn 25KHz

Within Winabler RX Align > Squelch Attn > Squelch Attn 25KHz

Set generator to: **.22µ** Volt

Auto Tune all Squelch Pots for Frequencies

Program and Close Section

Step 7: Squelch Attn 20KHz

Within Winabler RX Align > Squelch Attn > Squelch Attn 20KHz

Set generator to: **.22µ** Volt

Auto Tune all Squelch Pots for Frequencies

Program and Close Section

Step 8: Squelch Attn 12.5KHz

Within Winabler RX Align > Squelch Attn > Squelch Attn 12.5KHz

Set generator to: **.22µ** Volt

Auto Tune all Squelch Pots for Frequencies

Program and Close Section

Close Tuner and radio is ready to be programed

Using Motorola Professional Radio CPS-R06.12.05

Program Whatever you wish into the radio

And you are done!

Have fun Playing Radio!

Questions, Comments, Concerns

If you have any questions, comments, or concerns, do not hesitate to Contact Graham Warrington at ve3wgw@gmail.com