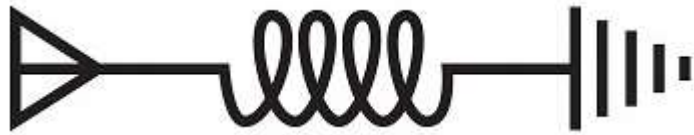


*July 2019*





Back in the winter my fellow EMF Engineer Scott NØBST mentioned a friend of his who built a sniffer that could detect RF leakage from a transmitter that could cause interference to LTE phone providers.

**Simply ingenious!** Made out of a coffee can, N connector, and a resistor.



The resistor (sensor) inside the can

According to Scott, this worked very well and showed the RF leakage connected to a field spectrum analyzer and solving the issue then followed pretty easily. Great Job Scott! This should be a useful tool in our engineering arsenal as cell phone signals are so prevalent these days! Scott also provided the resistor value information from Mouser Electronics.

Line No.	Mouser Part Number Customer/MFG Part No. Description	Quantity Ordered	Quantity Shipped	Quantity Pending	Unit Price (USD)	Extended Price (USD)
1	71-CPF1-B-50 MFG Part No: CPF150R000BHB14 Vishay / Dale 1watt 50ohms 0.1% / US HTS:8533210090 ECCN:EAR99 COO:US	25	25	0	0.620	15.50
	Metal Film Resistors - Through Hole					

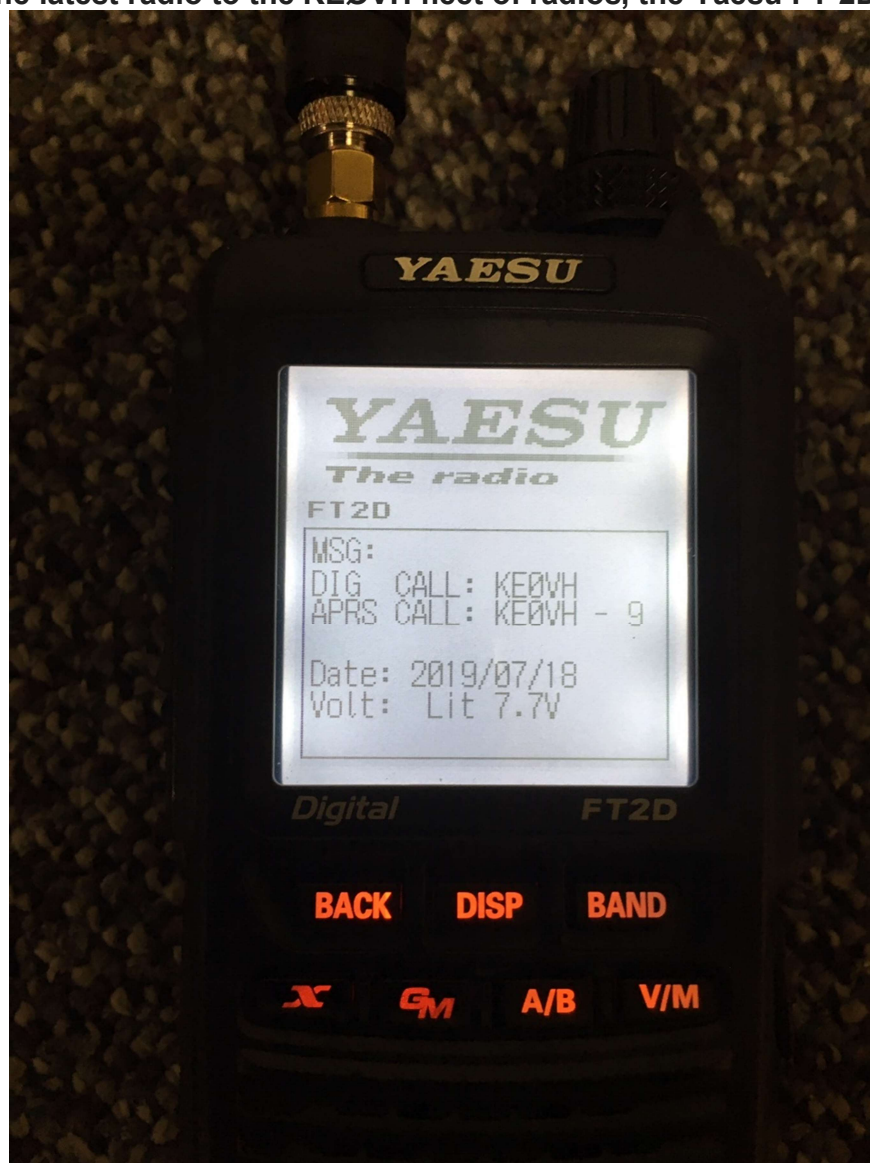
We now have the old higher gain antenna up at the 449.625 Fusion/analog repeater up at the Lookout Mountain site above Golden Colorado site. Some tuning of the line and filtering for the repeater is needed for optimization. Scott WØKU and I will be working on this soon in the future. As it is the repeater coverage is pretty good east, northeast, and north of Denver



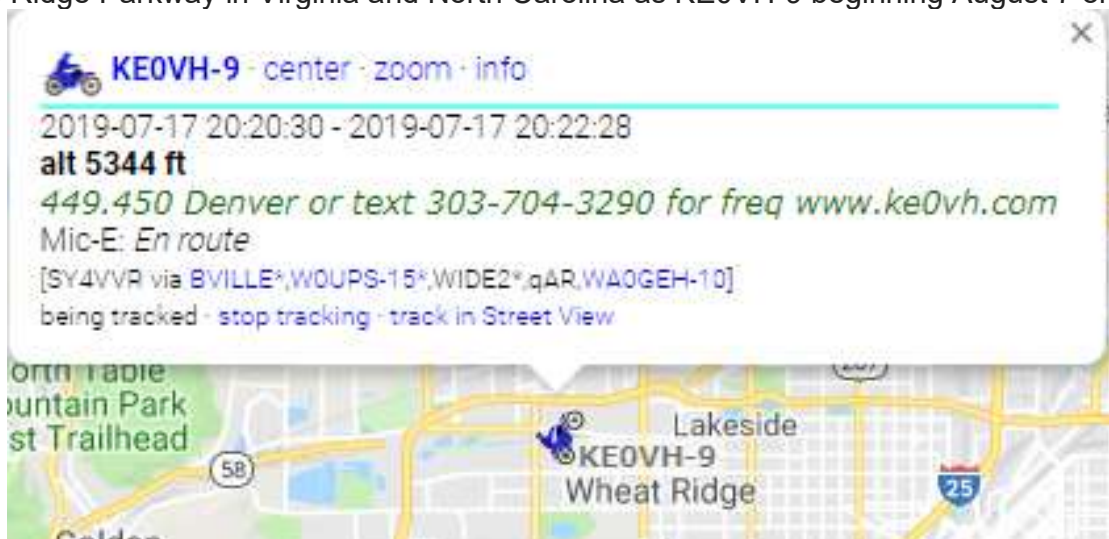
. And I have my WiresX node setup at home to send the WiresX link to the repeater. I am using a small UHF Yagi (provided by Dunnigan K1DUN), thanks Dunnigan! As shown in an earlier newsletter article <http://www.ke0vh.com/hamshack/archives/TheKE0VHHamshack201903Mar.pdf> a Yaesu FTM-100 is serving as the link radio to this antenna. Here is the 3 element yagi link radio antenna



The latest radio to the KEØVH fleet of radios, the Yaesu FT-2DR!



This radio is the equivalent of the mobile FTM-400 in handheld 5 watt HT form. Does all the same things, touch screen, true DUAL band, APRS capable radio with GPS. No color screen though, that will show up in the now for sale FT-3DR. Will be using the FT-2DR to beacon my position on my motorcycle trip to ride the Blue Ridge Parkway in Virginia and North Carolina as KEØVH-9 beginning August 7 on APRS.fi



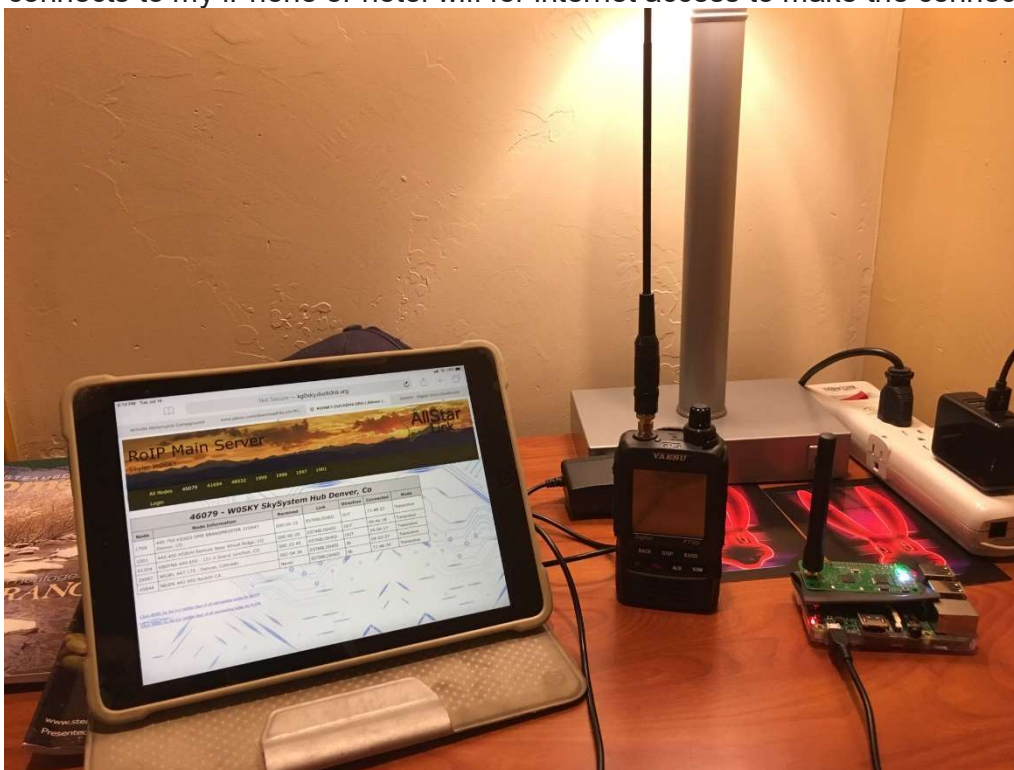


Monitoring 449.450 K1DUN in Denver and APRS on the B channel



The FT2D on the Motorcycle, ready for the test drive beaconing APRS as KEØVH-9

I am really having fun keeping touch with friends back in Denver on the SkyHub system using my hotspot and now the FT-2DR when traveling. I will be using the same system on my motorcycle trip upcoming plus using the AllStar phone portal to connect back. The system is easy to setup and use. This raspberry Pi3 connects to my iPhone or hotel wifi for internet access to make the connection.



Motel comms in Steamboat Springs back to the DenverSkyhub System talking to Shane KØSDT, Rich W9BNO, and Matt KEØLNU

SO TUNING the PI-Star for minimum BER (Bit Error Rate) (any mode) is quite the topic on the DMR Talkgroups and Wires-X rooms. You can get into the SSH the sites below describe by clicking on the following under "Configuration" 1<sup>st</sup> is "Expert"

## Pi-Star Digital Voice - Configuration

Dashboard | Admin | **Expert** | Power | Update | Backup/Restore | Factory Reset

### Gateway Hardware Information

Kernel	Platform	CPU Load	CPU Temp
4.9.35-v7+	Pi 3 Model B (1GB) - Sony, UK	0.17 / 0.14 / 0.06	34.3°C / 93.7°F

Then MMDVM Host

## Pi-Star Digital Voice - Expert Editors

Dashboard | Admin | Update | Upgrade | Backup/Restore | Configuration

**Quick Edit:** DStarRepeater | ircDDBGateway | TimeServer | **MMDVMHost** | DMR GW | YSF GW | P25 GW | NXDN GW | DAPNET GW  
**Full Edit:** DMR GW | PiStar-Remote | WiFi | BM API | DAPNET API | System Cron | RSSI Dat **Tools:** CSS Tool | SSH Access

Then "SSH Access"

Pi-Star: 3.4.13 / Dashboard: 20190709

## Pi-Star Digital Voice - Expert Editors

Dashboard | Admin | Update | Upgrade | Backup/Restore | Configuration

**Quick Edit:** DStarRepeater | ircDDBGateway | TimeServer | MMDVMHost | DMR GW | YSF GW | P25 GW | NXDN GW | DAPNET GW  
**Full Edit:** DMR GW | PiStar-Remote | WiFi | BM API | DAPNET API | System Cron | RSSI Dat **Tools:** CSS Tool **SSH Access**

Log in using "pi-star" and whatever password you may have chosen and you will see this:

Pi-Star: 3.4.13 / Dashboard: 20190709

## Pi-Star Digital Voice - Expert Editors

Dashboard | Admin | Update | Upgrade | Backup/Restore | Configuration

**Quick Edit:** DStarRepeater | ircDDBGateway | TimeServer | MMDVMHost | DMR GW | YSF GW | P25 GW | NXDN GW | DAPNET GW  
**Full Edit:** DMR GW | PiStar-Remote | WiFi | BM API | DAPNET API | System Cron | RSSI Dat **Tools:** CSS Tool | SSH Access

SSH - Pi-Star

Password:

```
Linux pi-star 4.9.35-v7+ #1014 SMP Fri Jun 30 14:47:43 BST 2017 armv7l
```



v3.4.13

From your Windows Computer:  
Pi-Star Dashboard: <http://pi-star/>

From your Apple iPhone, iPad, Macbook, iMac etc.  
Pi-Star Dashboard: <http://pi-star.local/>

Pi-Star's disk is read-only by default, enable read-write with "rpi-rw".  
Pi-Star built by Andy Taylor (MW0MWZ), pi-star tools all start "pistar".

```
pi-star@pi-star(ro):~$
```

[Click here for fullscreen SSH client](#)

Pi-Star web config, © Andy Taylor (MW0MWZ) 2014-2019.  
Need help? [Click here for the Support Group](#)  
Get your copy of Pi-Star from [here](#).

Then follow the directions on the websites listed below:

<https://riku.titanix.net/wordpress/dmr/mmdvm-ber-error-rate-tuning/>

<https://n5amd.com/digital-radio-how-tos/tune-mmdvm-repeater-sdr-low-ber/>

I will write up a full tutorial on this next month, I couldn't believe how easy it was!

It was great fun to help my buddy Harold W6IWI raise his new multiband beam up at his QTH this month. Harold now has quite the signal on the air from Arvada CO, just NW of Denver, north of Wheat Ridge. Nice job Harold!



**RoIP Main Server**  
Skyler WØSKY

All Nodes 46079 41694 48532 1999 1998 1997 1001  
Logout

Node Number: 41304 DMR Talkgroup Number: Permanent ☐

Connect Disconnect Monitor Local Monitor Control Panel Steer DMR Talkgoup

**46079 - WØSKY SkySystem Hub Denver, Co**

Node	Node Information	Received	Link	Direction	Connected	Mode
3672396	Echolink	000:00:02	ESTABLISHED	IN	00:12:16	Transceive
1001	449.450 KEØVH Remote Base Wheat Ridge, CO	000:01:21	ESTABLISHED	OUT	03:04:31	Transceive
1708	449.750 KIOGO DMR BRANDMEISTER 310847 Denver, CO	002:15:42	ESTABLISHED	OUT	109:32:14	Transceive
29997	WØJRL 447.175 - Denver, Colorado	017:06:05	ESTABLISHED	IN	39:47:29	Transceive
41304	KBØYNA 449.650 - 151.4 Grand Junction, CO	Never	ESTABLISHED	OUT	00:19:47	Transceive
45844	N6JER 442.950 Rocklin CA	Never	ESTABLISHED	IN	109:32:30	Transceive

[Click HERE for the live bubble chart of all surrounding nodes for 46079](#)  
[Click HERE for the live bubble chart of all surrounding nodes for 41694](#)

So one day monitoring 449.450 and the SkySystem Hub as seen above I heard PW8PM from Brazil come in over the system. Evidently Jose had been trying different Echolink connections and showed up one morning thru the WØSKY-L link. Working "DX" on the UHF repeater.... Very cool, you never know what or who may turn up! Check out "America Link" on WiresX and you also can work the world!

### The Hamshack Archive Links

<http://www.ke0vh.com/hamshack/archives/TheKE0VHHamshack201701Jan.pdf>

<http://www.ke0vh.com/hamshack/archives/TheKE0VHHamshack201702Feb.pdf>

<http://www.ke0vh.com/hamshack/archives/TheKE0VHHamshack201703Mar.pdf>

<http://www.ke0vh.com/hamshack/archives/TheKE0VHHamshack201704April.pdf>

<http://www.ke0vh.com/hamshack/archives/TheKE0VHHamshack201705May.pdf>

<http://www.ke0vh.com/hamshack/archives/TheKE0VHHamshack201706June.pdf>

<http://www.ke0vh.com/hamshack/archives/TheKE0VHHamshack201707July.pdf>

<http://www.ke0vh.com/hamshack/archives/TheKE0VHHamshack201708Aug.pdf>

<http://www.ke0vh.com/hamshack/archives/TheKE0VHHamshack201709Sep.pdf>

<http://www.ke0vh.com/hamshack/archives/TheKE0VHHamshack201710Oct.pdf>

<http://www.ke0vh.com/hamshack/archives/TheKE0VHHamshack201711Nov.pdf>

<http://www.ke0vh.com/hamshack/archives/TheKE0VHHamshack201712Dec.pdf>  
<http://www.ke0vh.com/hamshack/archives/TheKE0VHHamshack201801Jan.pdf>  
<http://www.ke0vh.com/hamshack/archives/TheKE0VHHamshack201802Feb.pdf>  
<http://www.ke0vh.com/hamshack/archives/TheKE0VHHamshack201803Mar.pdf>  
<http://www.ke0vh.com/hamshack/archives/TheKE0VHHamshack201804April.pdf>  
<http://www.ke0vh.com/hamshack/archives/TheKE0VHHamshack201805May.pdf>  
<http://www.ke0vh.com/hamshack/archives/TheKE0VHHamshack201806June.pdf>  
<http://www.ke0vh.com/hamshack/archives/TheKE0VHHamshack201807July.pdf>  
<http://www.ke0vh.com/hamshack/archives/TheKE0VHHamshack20180809AugSept.pdf>  
<http://www.ke0vh.com/hamshack/archives/TheKE0VHHamshack201810Oct.pdf>  
<http://www.ke0vh.com/hamshack/archives/TheKE0VHHamshack201811Nov.pdf>  
<http://www.ke0vh.com/hamshack/archives/TheKE0VHHamshack201812Dec.pdf>  
<http://www.ke0vh.com/hamshack/archives/TheKE0VHHamshack201901Jan.pdf>  
<http://www.ke0vh.com/hamshack/archives/TheKE0VHHamshack201902Feb.pdf>  
<http://www.ke0vh.com/hamshack/archives/TheKE0VHHamshack201903Mar.pdf>  
<http://www.ke0vh.com/hamshack/archives/TheKE0VHHamshack201904April.pdf>  
<http://www.ke0vh.com/hamshack/archives/TheKE0VHHamshack201905May.pdf>  
<http://www.ke0vh.com/hamshack/archives/TheKE0VHHamshack201906June.pdf>

4 Years AGO: <http://www.smpte-sbe48.org/wp/2015/07/>

5 Years AGO: <http://www.smpte-sbe48.org/wp/2014/07/>

6 Years AGO: <http://www.smpte-sbe48.org/wp/2013/07/>

Be SURE TO CHECK OUT the latest BDR.net articles at: <https://www.thebdr.net/articles/thisweek.html>



## The **Broadcasters' Desktop Resource**

*... edited by Barry Mishkind - the Eclectic Engineer*

Society of Broadcast Engineers



The Association for Broadcast and  
Multimedia Technology Professionals

## **SBE VHF/UHF Chapter 73' of the Air HAMnet**

**The SBE Chapter 73 of the air UHF/VHF Hamnet is every Monday at 9 p.m. ET (6 p.m. PT) worldwide via Echolink KG0SKY-L, node 985839 (available via computer and radio), Allstar node 46079, DMR Talkgroup 310847, AND try it with your hotspot on YSFtoDMR then TalkGroup 310847. The SBE UHF/VHF Hamnet is based in Denver on 449.450, pl 103.5, and the 449.625 Fusion repeater, linked to WiresX room "DenverSkyhubLink" node 46361**

**And Soon on the network: KD0SSP-RPT 448.350, Fusion/Analog pl 225.7**

**You can listen on the LIVE STREAM thru Broadcastify at:**

**<https://www.broadcastify.com/listen/feed/25448/web>**

**or <https://hose.brandmeister.network/group/310847/>**

**We hope you'll join us.**

**See the latest edition of "The KE0VH Hamshack" for more information  
at [www.ke0vh.com](http://www.ke0vh.com).**

[The Society of Broadcast Engineers](http://www.sbe.org)

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**73' from the "Shack"**