

Station Techniques to Enhance DX'ing

Joel Harrison, W5ZN



The Radio



The Radio

What is the best radio to use?



The Radio

What do all those specifications
mean anyway?



The Radio

What do all those specifications mean anyway?

RECEIVER (Main and Sub)*	
Sensitivity (MDS)	-136 to -138 dBm (typ.), preamp on, 500 Hz bandwidth, 6 m MDS with PR6 option: -143 to -144 dBm (typ.). Reduced sensitivity near 8.2 MHz (first I.F.) and from 44-49.5 MHz. Sensitivity decreases gradually below 1.8 MHz due to intentional high-pass response at the T-R switch. (Use RX ANT input or sub receiver's AUX input to avoid the high-pass filter loss.) Note: KBPF3 option required for full general coverage (including 0.49 to 1.7 MHz).
Dynamic Range	IMD3 > 100 dB, Blocking 140 dB, typical (at 5, 10, and 20 kHz spacing)
Image and I.F. Rejection	> 70 dB
Audio Output	2.5 W per channel into 4 ohms; typ. 10% THD @ 1 kHz, 2 W
S-Meter	Nom. S9 = 50 μ V, preamp on; user-adjustable
Noise Blanker	Adjustable, multi-threshold/multi-width hardware blanker plus DSP blanker
Receive AF graphic EQ	+/- 16 dB/octave, 8 bands
Filter Controls	IF Shift/Width & Lo/High Cut with automatic crystal filter selection
<p>* Receive specifications are guaranteed only within ham bands. Dynamic range measurements based on 400-Hz, 8-pole filter. Other available filters have very similar performance; see www.elecraft.com for full list.</p>	
TRANSMITTER *	



The Radio

Sensitivity – Noise Floor

– Somewhere around -135 dBm

Dynamic Range

- Receiver Blocking
 - The 1 dB compression point. This is where the receiver departs from being linear

- Intermodulation Distortion (IMD)
 - A mixing action that takes place between two or more signals to create new signals.

<http://www.sherweng.com/table.html>



Antennas



Antennas

**One that improves your
current system!**



Antennas

If you have:

1. Dipole

- **Go to a Yagi or a Sloper**

2. Vertical

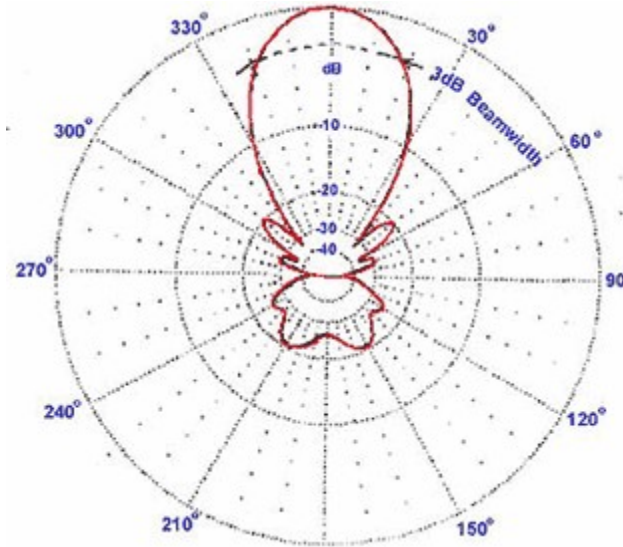
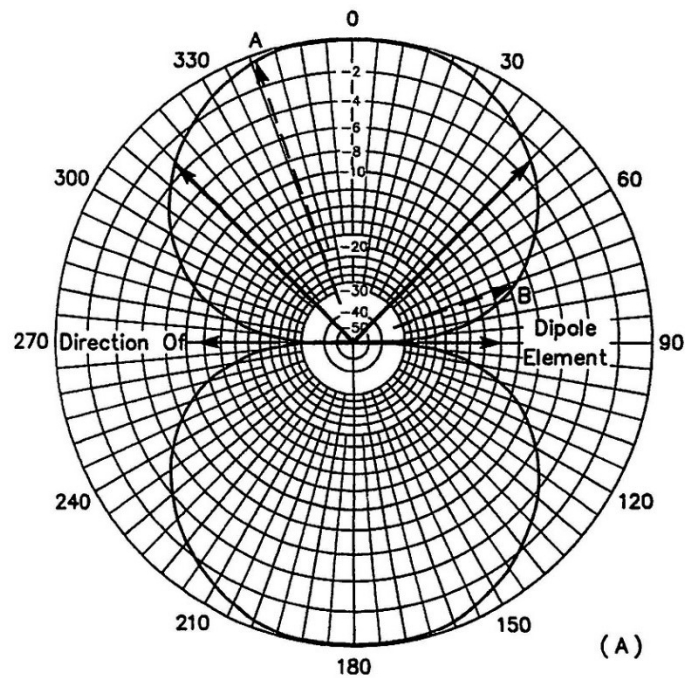
- **Dipole, Sloper, Phased Verticals**

3. For 160/80/40

- **Inverted Vee, Inverted L**
- **Dedicated Receive Antennas**



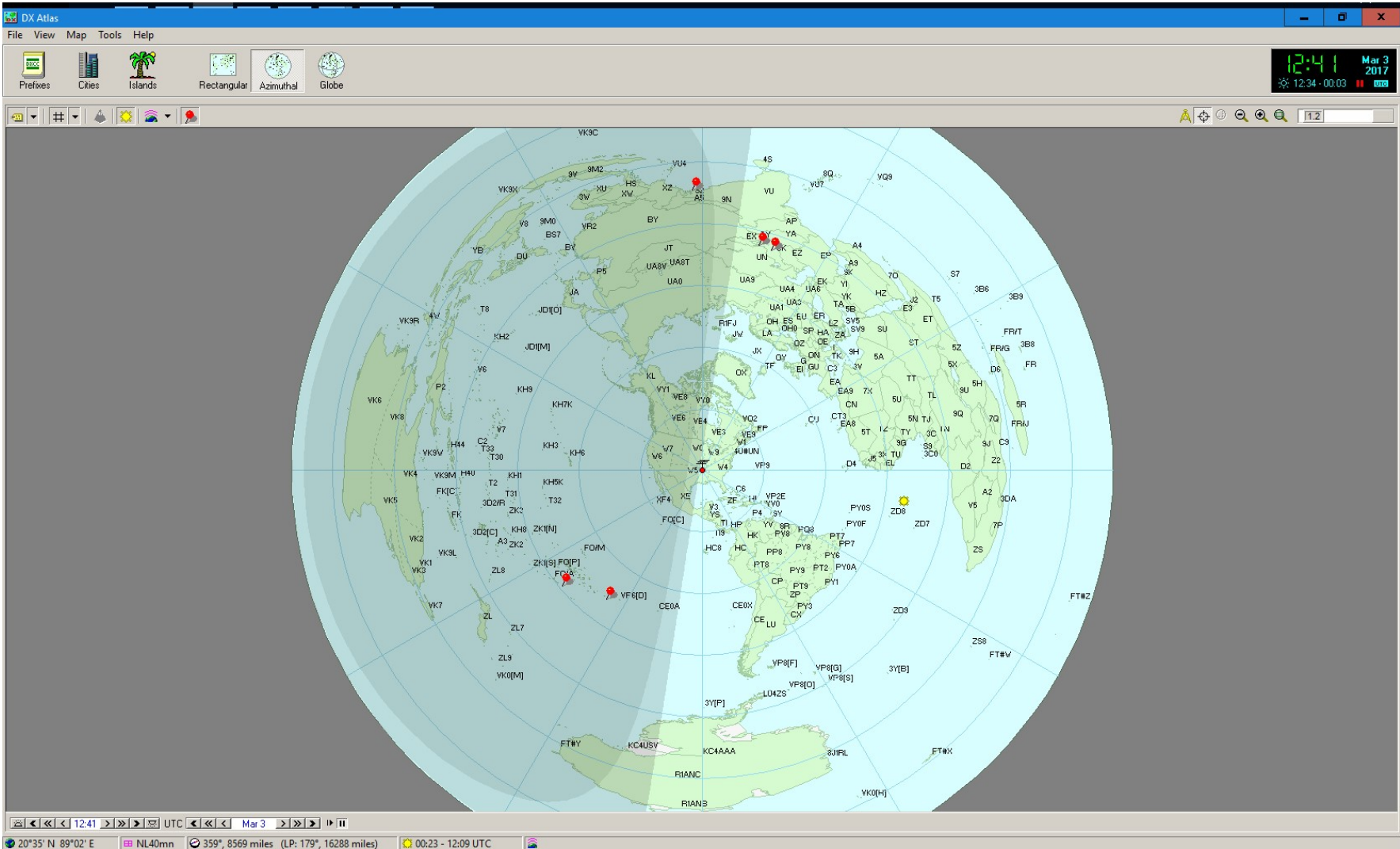
Antennas



Software Tools



Software Tools



Software Tools

Logging:

- Ham Radio Deluxe
- DX4Win

Antenna Modeling

- EZNEC
- 4NEC

Tons of others



Reception Improvement



Receiver Suicide

NOISE

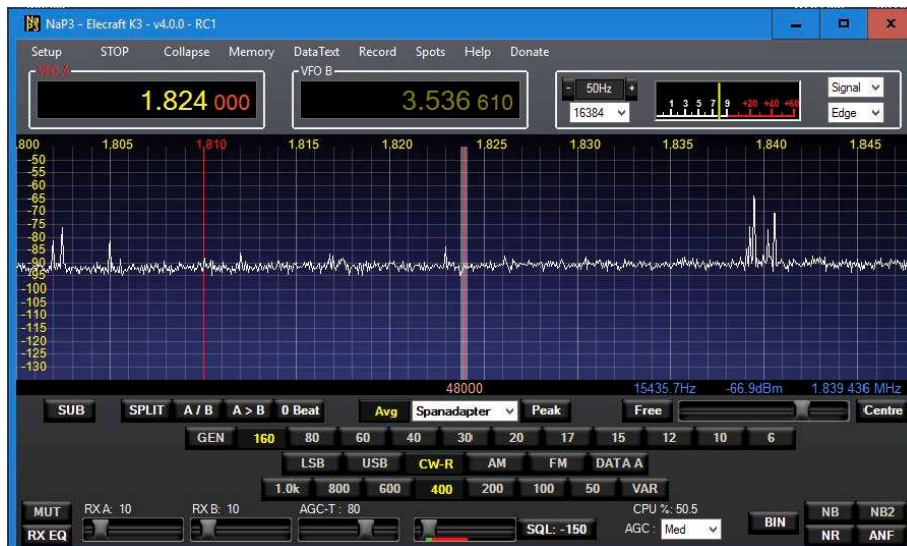
What's underneath all that racket?



Receiver Suicide

NOISE

What's underneath all that racket?



Receiver Suicide

1. Conduct a station assessment
 - Throw the breaker and run your radio on a battery
 - Identify any noise, track it down and eliminate it
2. Once your house is “clean” address other areas
 - Line noise
 - Man-made sources



Noise Abatement



Noise Abatement

Toroids:

Mouser # 623-2631803802

Fair-Rite Part No:2631803802

Fair-Rite Ferrite Cable Cores



Noise Abatement

Where do you place the Toroids?

At the source –

- At the power supply
- At the Receive Antenna input
- At your computer
 - W5ZN is now 100% Network Wireless

<http://audiosystemsgroup.com/RFI-Ham.pdf>



Stubs & Filters

A coaxial stub is a length of transmission line that is either shorted or open at one end and connected to a radio or antenna at the other end.

Stubs are generally $\frac{1}{4}$ wavelength or $\frac{1}{2}$ wavelength shorted or open.

For example:

A Type 1 Stub, which is a $\frac{1}{4}$ wavelength shorted stub, when cut for 7.0 MHz will pass 7.0 MHz and provide a 30 dB attenuation null at 14 MHz.

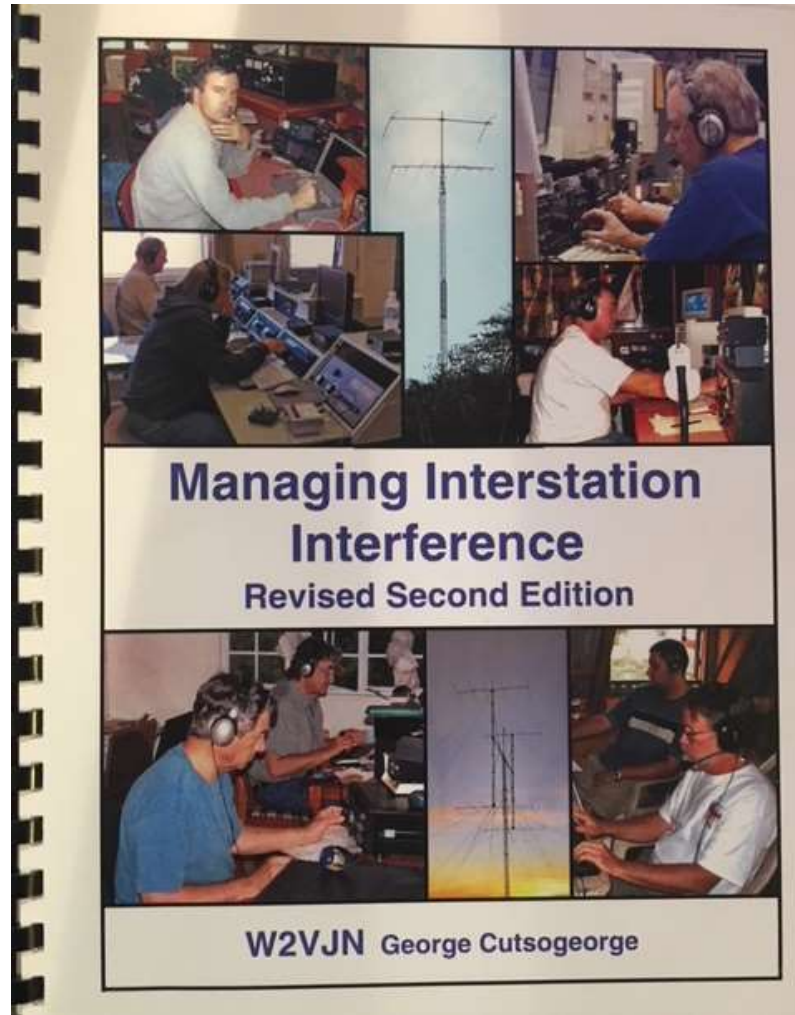
A Type 2 Stub, which is a $\frac{1}{2}$ wavelength open stub, when cut for 7.0 MHz will provide a 30 dB null at 3.5 MHz.



Stubs & Filters



Stubs & Filters



Available from DX Engineering & INRAD



Station Improvements Grounding



Station Improvements



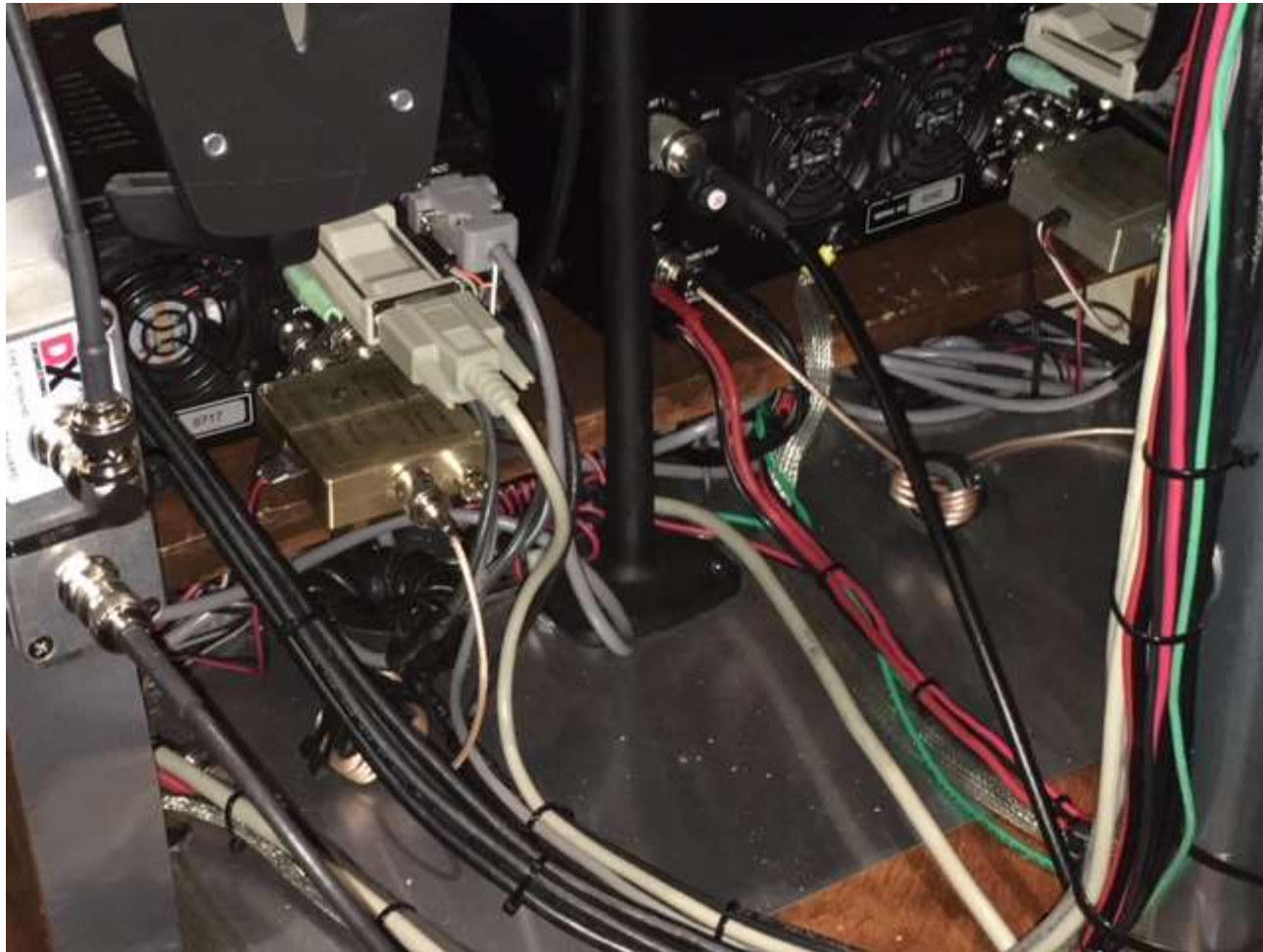
Station Improvements



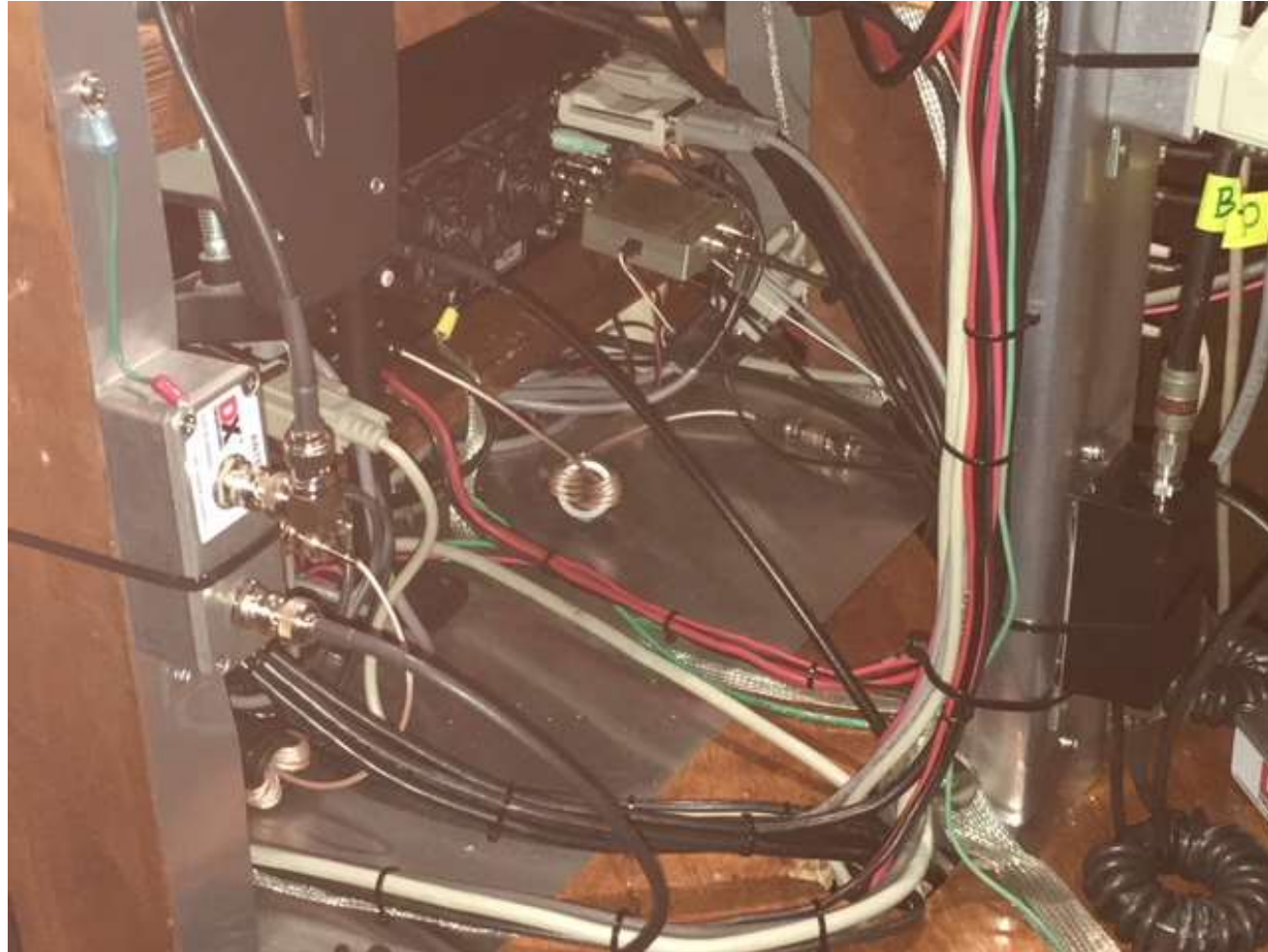
Station Improvements



Station Improvements



Station Improvements



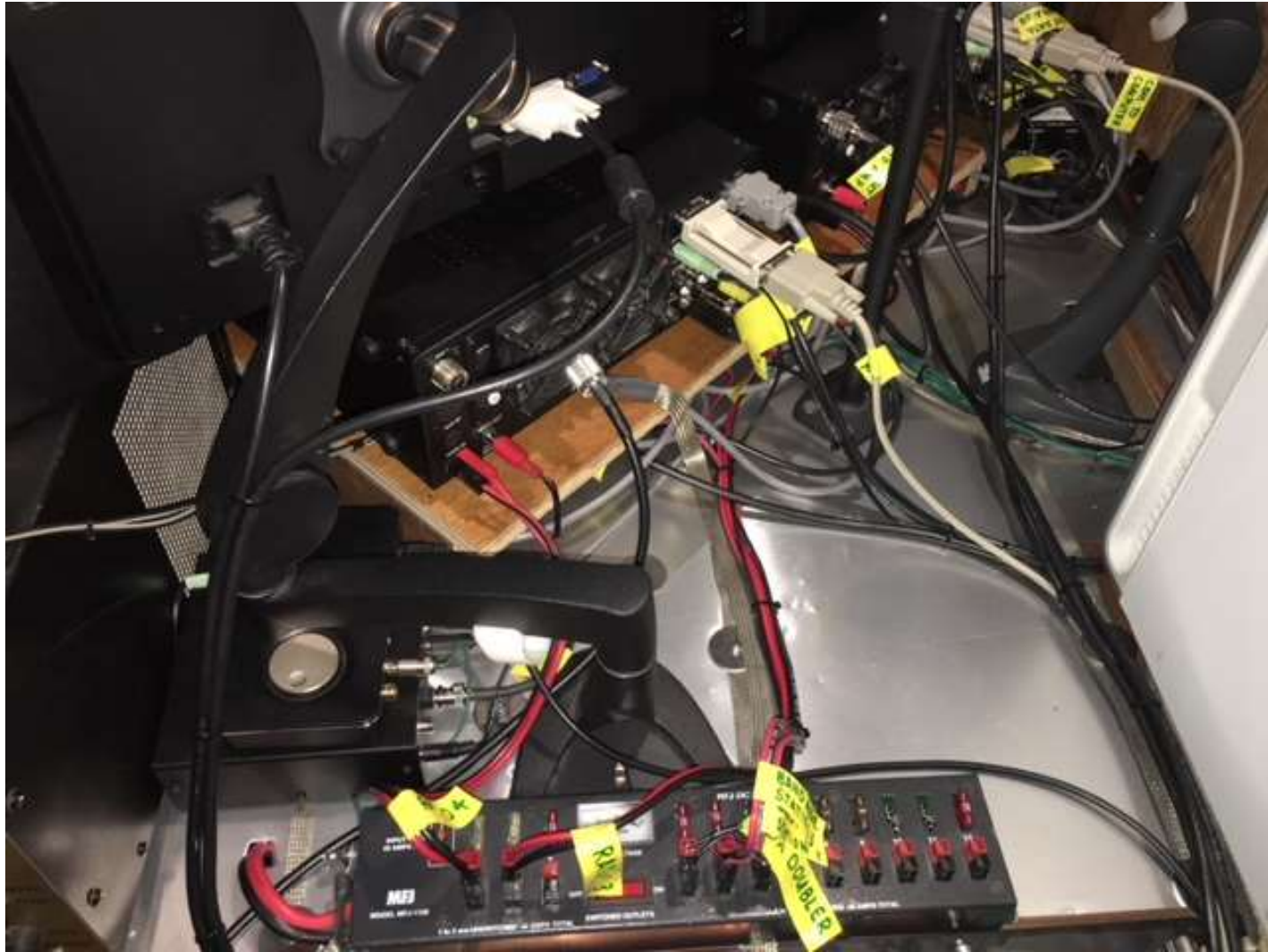
Station Improvements



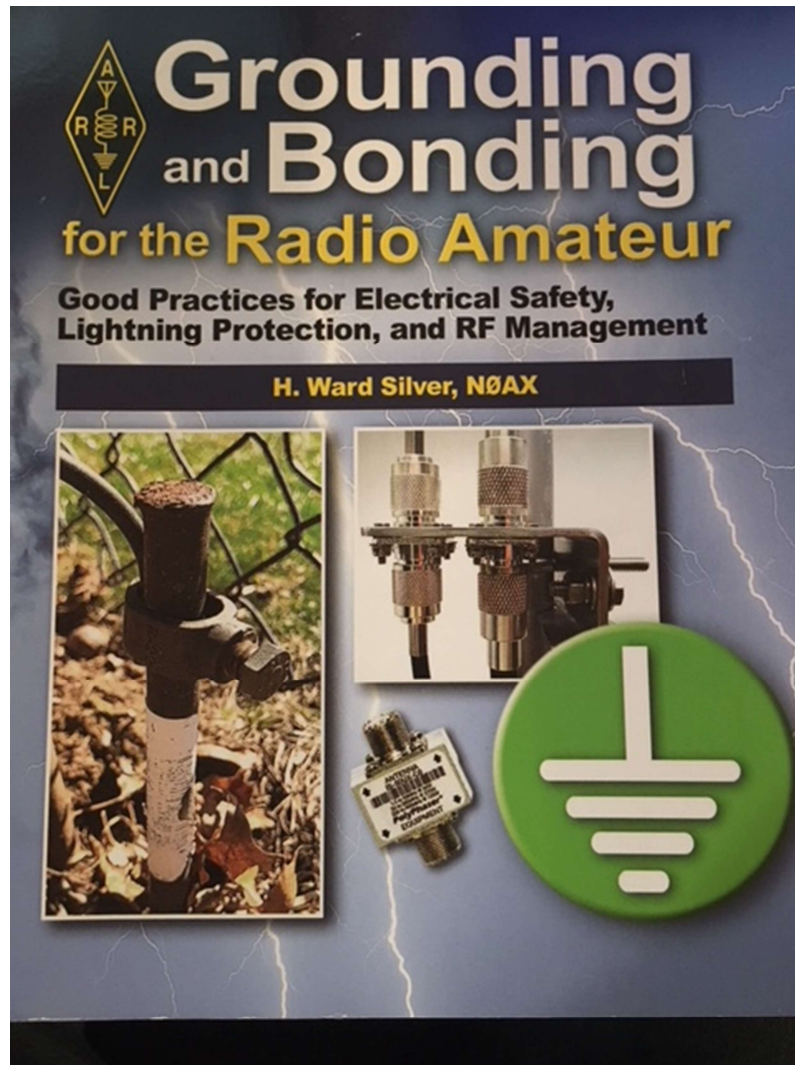
Station Improvements



Station Improvements



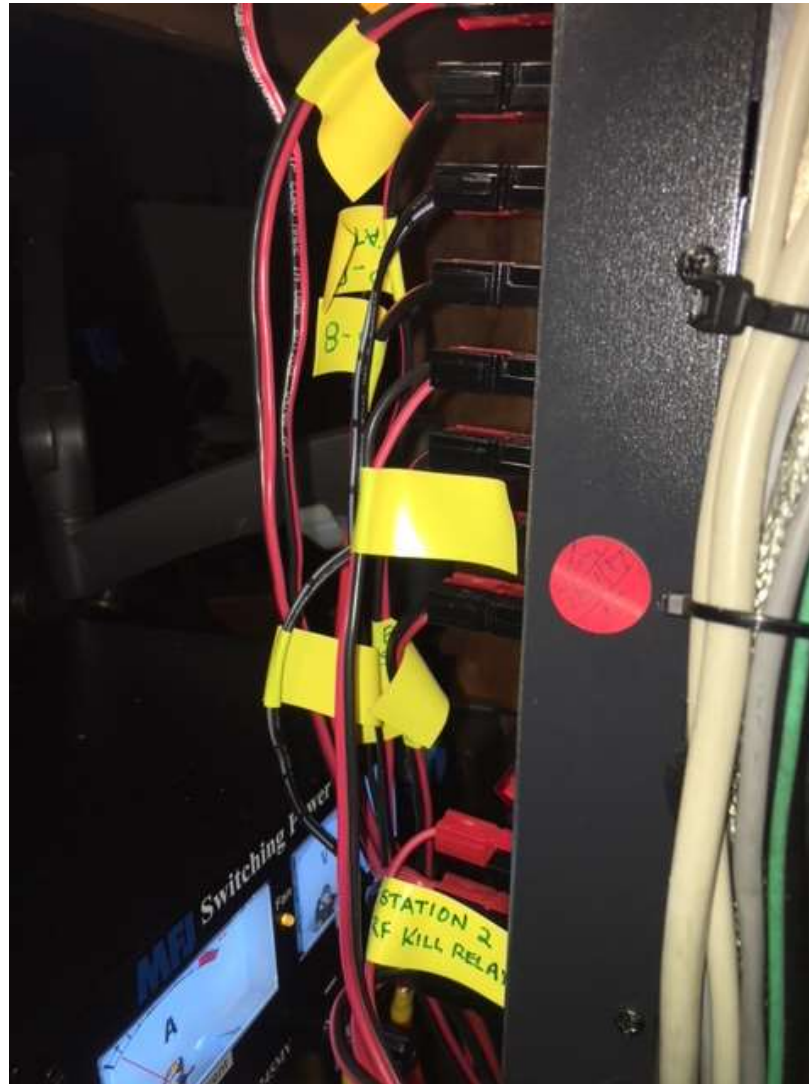
Station Improvements



Station Improvements Labeling



Station Improvements



Station Improvements



Station Improvements



Station Improvements



Station Layout



Station Layout



Advertisement



Contest University

Contest University

Thu, May 17, 2018
Crowne Plaza Hotel
Dayton, Ohio USA

Home Registration Files Videos 2018 Course Outline Contact Us

Contest University 2018

[Register Now](#)

Contest University will be held on Thursday May 17, 2018, from 7:00am to 5:00pm, at the Crowne Plaza Hotel in Dayton, Ohio. This is the day before the Dayton Hamvention officially opens. Don't miss this rare opportunity to gain knowledge that may take you years of practice, trial and error or lost time to learn otherwise. Get the edge to improve your scores and put your station in the winners circle today!

Registration Fee includes:

- ✓ Full day of training and knowledge enhancement, for both beginners and advanced contesters, and taught by veteran Contesters (Check files and videos for past CTU Presentations).
- ✓ Breakfast Buffet and Boxed Lunch on Thursday.
- ✓ Coffee and Cookies during break.
- ✓ Printed Textbook and Class Notes. Access to color slide decks.
- ✓ Handouts, Catalogs and a CTU carry bag.
- ✓ Personalized "Certificate of Completion" (suitable for framing!)
- ✓ You are also invited to the Wednesday Night Pizza Party.

2018 Professors:

Frank Donovan, W3LPL
Ed Muns, W0YK
Rob Sherwood, NC0B
Joel Harrison, W5ZN
Tim Duffy, K3LR
Bob Wilson, N6TV
Tim Jellison, W3YQ
H. Ward Silver, N0AX
Doug Grant, K1DG
Dan Zeitlin, K2YWE

Contester Activities

[CLICK HERE for a Free Webinar: "2017 Contest University and Dayton Contester Activities"](#)
by Tim K3LR

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Forthcoming Papers & Presentations

The Religion of Radials

- A practical discussion on the basics of radials

The Five Element, Four Direction Parasitic Transmit Array for 160 Meters

- W5ZN Details his construction of his new high gain transmit array for 160 meters.

