



HF Antennas vs QTH

Dennis - WR4i
AARC Presentation 4/11/22



Antenna Types Based on QTH

Large Lot



Antennas for Limited Spaces and CC&R Communities



Apartments/Condos/Hotels



Large Lot =Towers/Beams/80m 160m Wire Ant

Beams=Gain

- 100wts = 600w ++
- Pull out weak signals

Directional

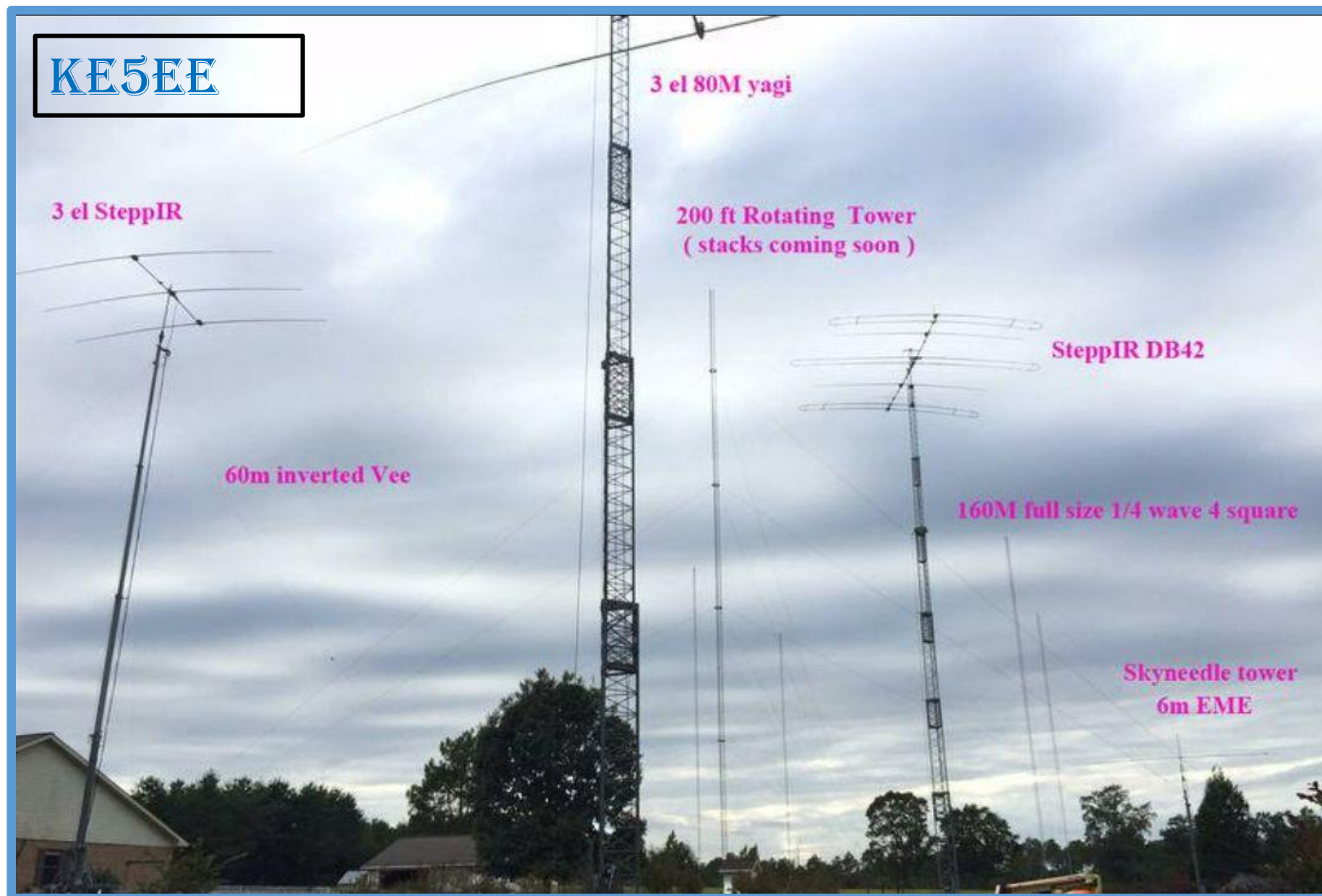
- Focus on where the signals are
- Eliminate QRM (F/B ratio)

Best For

- Chasing DX
- Working Contests
- Reliable skeds

Constraints

- 6m~40m
- Installation \$\$
- Maintenance \$\$



Types of Beams

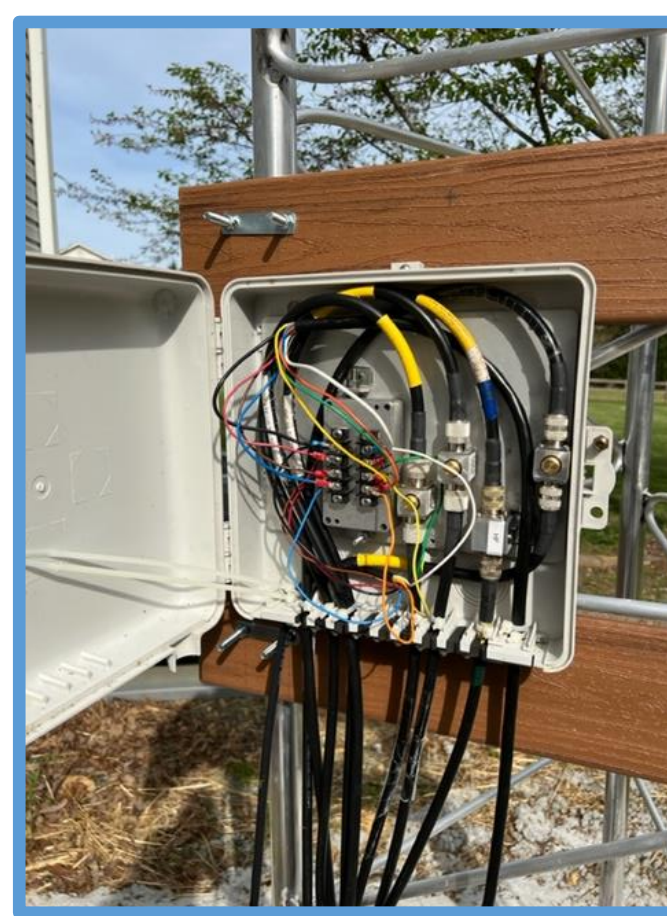
Log Periodic at W4UVA



HEX Beam



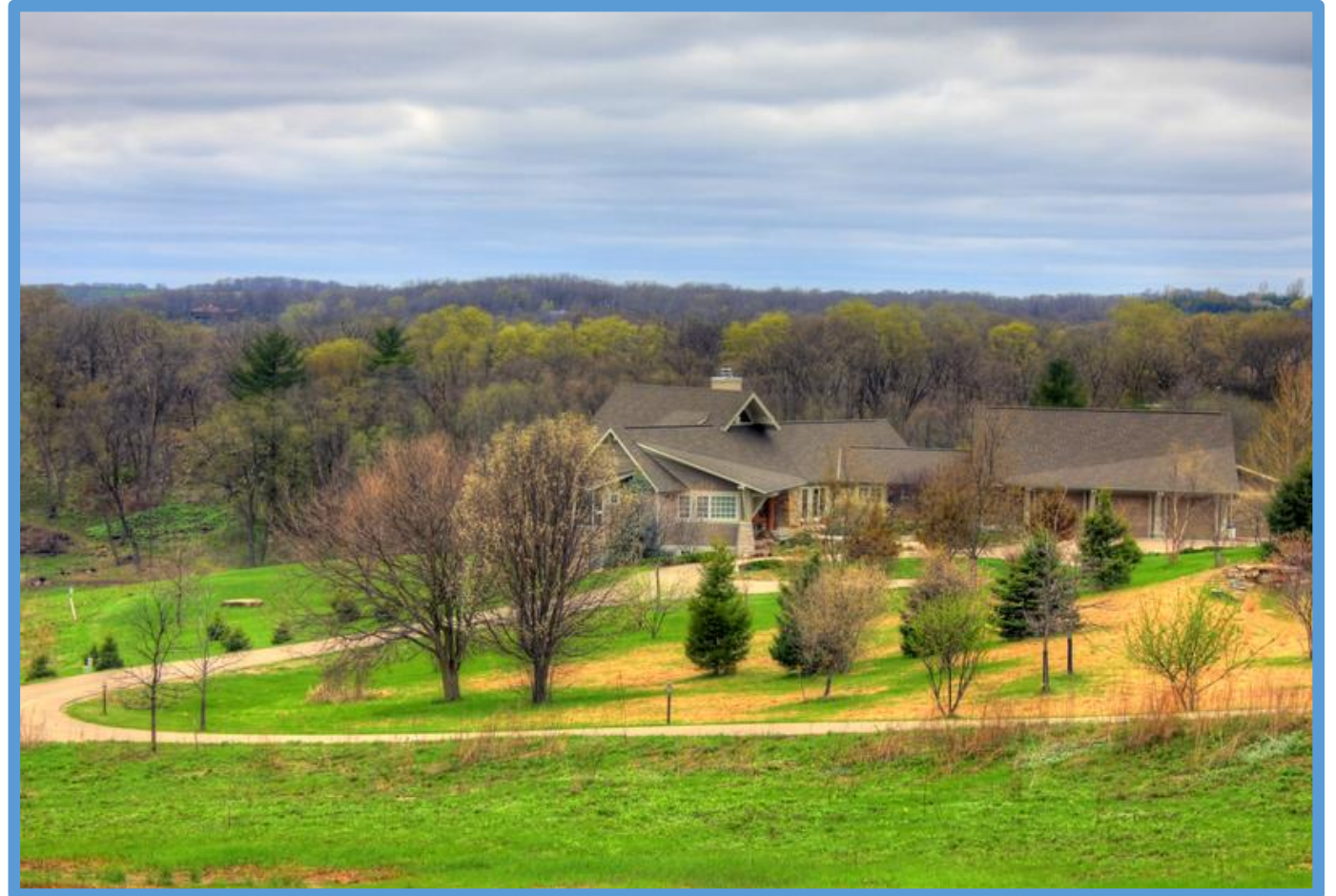
K4DU - YAGI



Large Lot = 80m / 160m Wire Antennas

Wire Antennas

- Need supports
- \$ to purchase
- Easy to build
- Easy to feed w/coax
- Good radiation patterns
- Tuner needed in most cases



Basic Dipole

Length = $468/\text{freq}$

10m = 16'

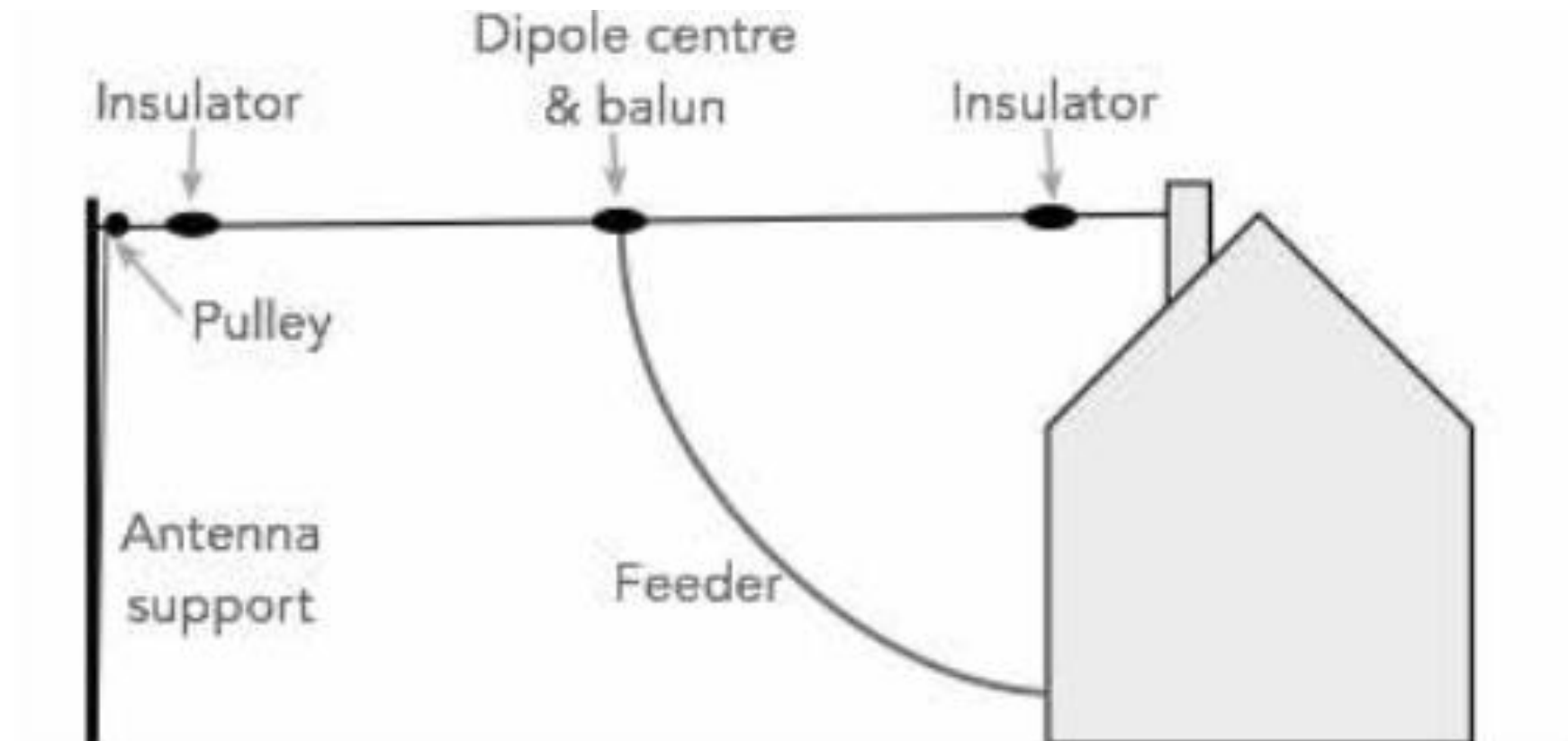
15m = 22'

20m = 33'

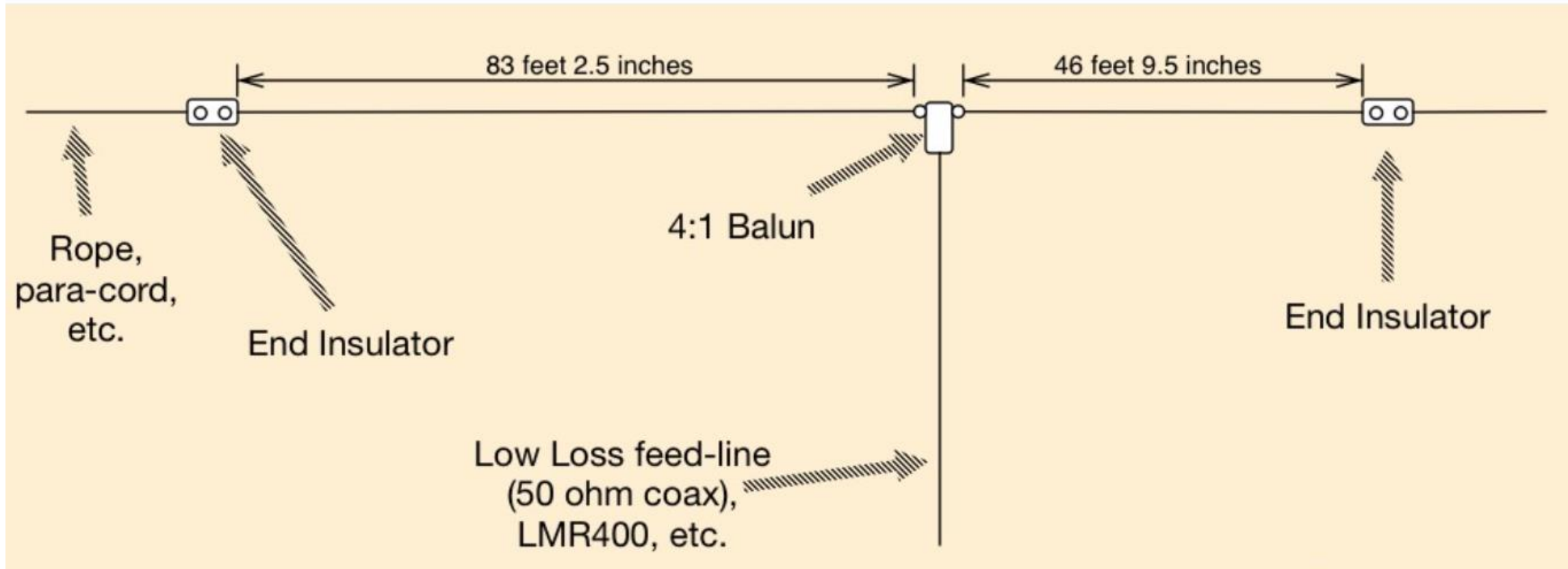
40m = 66'

80m = 133'

160m = 260'



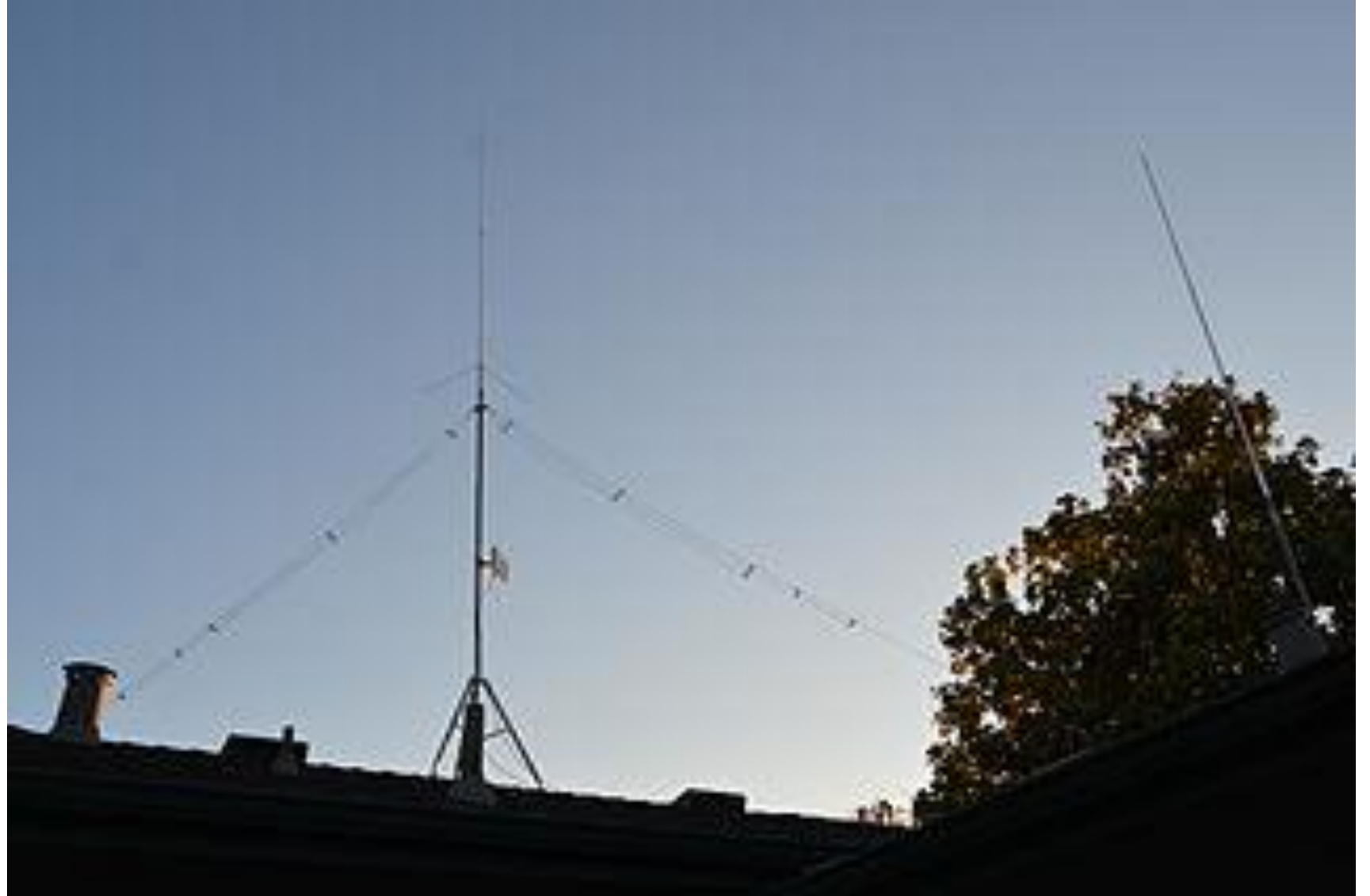
Wire Antennas - OCF



- OCF dipole bands 10~80m =130'
- Trees or other supports
- Tuner needed
- Pre-made= \$100

Inverted V

- Use less space
- Needs only one tree or support



Wire Variations +400!!

YO3DAC VA3IUL, <http://www.qsl.net/va3iul>

[01 - Tee Antenna](#)
[02 - Half-Lambda Tee Antenna](#)
[03 - Twin-Led Marconi Antenna](#)
[04 - Swallow-Tail Antenna](#)
[05 - Random Length Radiator Wire Antenna](#)
[06 - Windom Antenna](#)
[07 - Windom Antenna - Feed with coax cable](#)
[08 - Quarter Wavelength Vertical Antenna](#)
[09 - Folded Marconi Tee Antenna](#)
[10 - Zeppelin Antenna](#)
[11 - EWE Antenna](#)
[12 - Dipole Antenna - Balun](#)
[13 - Multiband Dipole Antenna](#)
[14 - Inverted-Vee Antenna](#)
[15 - Sloping Dipole Antenna](#)
[16 - Vertical Dipole](#)
[17 - Delta Fed Dipole Antenna](#)
[18 - Bow-Tie Dipole Antenna](#)
[19 - Bow-Tie Folded Dipole Antenna for RX](#)
[20 - Multiband Tuned Doublet Antenna](#)
[21 - G5RV Antenna](#)
[22 - Wideband Dipole Antenna](#)
[23 - Wideband Dipole for Receiving](#)
[24 - Tilted Folded Dipole Antenna](#)
[25 - Right Angle Marconi Antenna](#)
[26 - Linearly Loaded Tee Antenna](#)
[27 - Reduced Size Dipole Antenna](#)
[28 - Doublet Dipole Antenna](#)
[29 - Delta Loop Antenna](#)

[221 - Three-Elements 90-degrees Wire Beam for 20m](#)
[222 - Two-Elements Wire Beam for 20m](#)
[223 - Suitcase-Fit Dipole Antenna for 80m, 40m, 20m](#)
[224 - Multiband Coaxial Dipole for 80m, 40m](#)
[225 - Vertical Log Periodic Antenna for 80m, 40m](#)
[226 - Inverted Vertical Log Periodic Antenna for 40m](#)
[227 - Double Extended Zepp Antenna Gain=7dB for 15m](#)
[228 - Double Lazy-H Antenna G=10dB for 70cm](#)
[229 - Wire Log Periodic Antenna G=12dB for 15m, 20m](#)
[230 - Five-Elements Vertical Log Periodic for 80m, 40m, 20m](#)
[231 - Sloping Delta Loop Antenna for 40m](#)
[232 - Doublet Antenna for 160m](#)
[233 - Log Periodic Wire Beam for 40m](#)
[234 - G3LDO Wire Beam Antenna for 20m, 15m, 10m](#)
[235 - Phased Delta Loop Array for 20m](#)
[236 - Dual Band V-dipole for 80m, 40m](#)
[237 - Collinear Array 5dB-Gain for 15m](#)
[238 - Two-Band Quad Loop Antenna 80m, 40m](#)
[239 - K7CW Quad Antenna](#)
[240 - Broadband Short Dipole for 80m](#)
[241 - Off-Center Fed Dipole for 40m, 20m, 10m](#)
[242 - Broadband Sloper Antenna for 80m](#)
[243 - Two-Frequency Dipole Antenna for 80m](#)
[244 - Top Loaded Vertical Antenna for 160m](#)
[245 - Two Loop Beam Antenna for 20m, 15m](#)
[246 - Corner-Fed Delta Loop Antenna for 80m, 40m, 20m](#)
[247 - Loaded Delta Loop Antenna for 40m, 20m](#)
[248 - Compact Size Dipole for 80m](#)
[249 - JAWS 3dB Gain Antenna for 40m](#)

Small lots & No Trees!

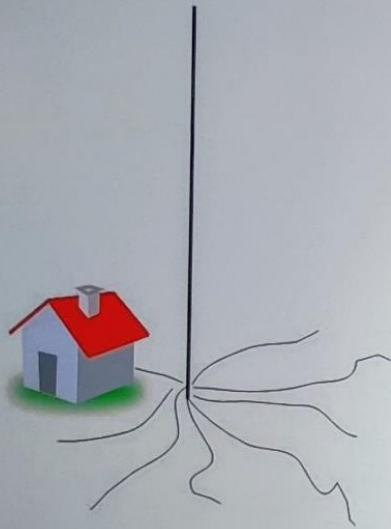
- ✓ Verticals
- ✓ End Fed
- ✓ Crawl Space Ant



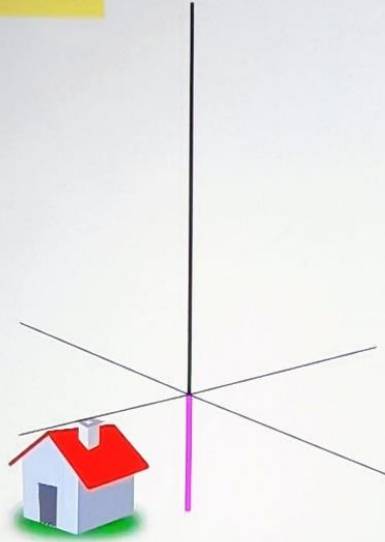
Small lots – No Trees

Vertical

Vertical Antenna Variations



Ground-mounted
single-band or
trapped multi-band
vertical with radials

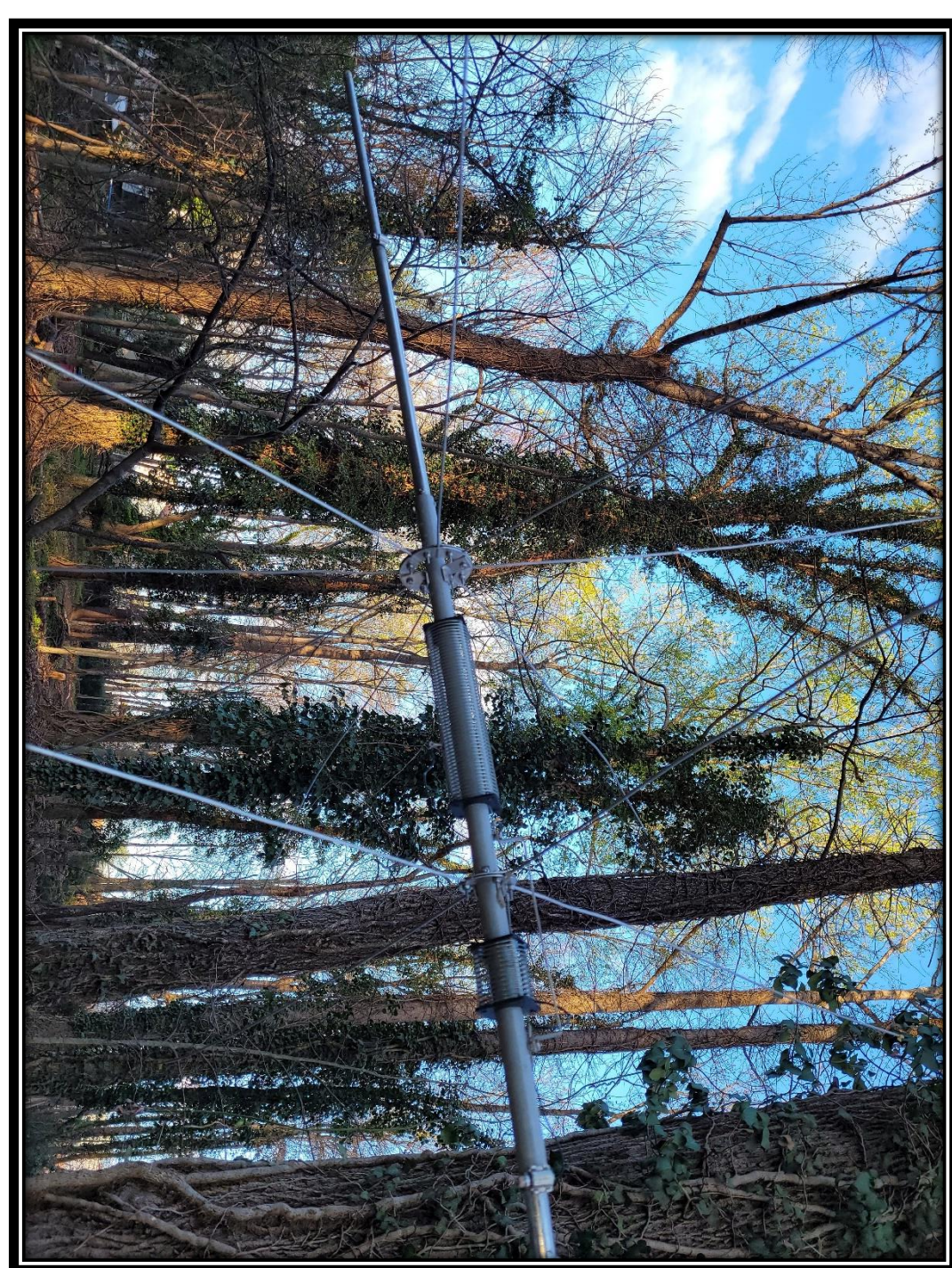


Mast-mounted
single-band or
trapped multi-band
vertical with resonant
radials



Mast-mounted
Multi-band vertical
with built-in counterpois
(no radials needed)

KN4TKR
Cushcraft
R9



Flag Pole Antennas



The Benefits of Greyline DX:

- **HOA Approved** + XYL and neighborhood approved too!
- **No Radials!** needed for high-performance
- **Coax Adapter included** The feed system uses ladder line at the antenna for the lowest possible loss. Connect your coax and turn on the radio.
- **Strong, Smart, Elegant design.** "Pretty" premium aluminum, No messy stubs, coils, etc.
- **Premium-only, Made in the USA.** Double-dipped, double-walled tubing & stainless steel parts.
- **All frequencies** 160-6M including WARC, MARS, FEMA, etc.
- **160M bonus:** Try the 20'-24'-28' many report success!
- **Smart** Clean Design, Rugged Materials & Engineering: 80-100 MPH wind rating
- **Best in Class** 'as good or better' than any legacy brands
- **ARRL Antenna Competition Award Winner**
- **Featured on Ham Talk Live** Ep. 188 "Stealth Antennas & HOA's"
- **>90%** and *better* efficiency across all bands
- **Very Low Losses** owing to the feed system
- **Lower Angles** than ground-mounted verticals requiring 100+ radials
- **Lower Noise** too reported widely
- **Easy Install:** Dig a 3-4' post hole, build antenna (1-hour), dirt or Quik Crete, drop (15-20-lbs), plug-in, play radio!
- **Free Shipping** in the USA + Deep discounts Worldwide
- Shipping time: See our Order-Status Page for transparent updates
- **Industry-leading 4-year warranty**

• **New!** 5-15 minute build times on the new versions (same Strong, Smart Elegant)

Order Includes:

- 20' DX Flagpole Vertical Dipole Antenna
- Premium Flagpole Kit (Flag, truck, cleat, clips, lanyard) - (\$75 value)
- Feedline Kit + RF Choke (\$95 value)
- Ground Mount Kit
- Pro tip: Add Mini or Maxi RF Choke for even lower noise
- Free Shipping!
- Everything you need to get on all bands. Just connect your coax!



Greyline Performance Antennas

20' DX Flagpole Antenna, Stealth HOA Vertical Antenna No

Radials 160-6M

Visit

End Fed Antenna

EF-ALLBAND-KW 80-10m 1 kW ICAS antenna

- Use less space
- Needs only one tree or support
- Coax Fed on end



Frequency coverage: 80, 40, 30, 20, 17, 15, 12, 10 meter Amateur Radio bands
VSWR bandwidth 80 meters: 100 kHz 2:1
VSWR bandwidth 40 meters: 300 kHz 2:1
VSWR bandwidth 30 meters: >50 kHz 2:1
VSWR bandwidth 20 meters: 350 kHz 2:1
VSWR bandwidth 17 meters: >100 kHz 2:1
VSWR bandwidth 15 meters: 450 kHz 2:1
VSWR bandwidth 12 meters: >100 kHz 2:1
VSWR bandwidth 10 meters: 900 kHz 2:1
Power handling: 1 kW ICAS
Weight: 2 lb 4 oz (1.02 kg)
Length: 132' 8" (40.43m)
Matchbox construction: 49:1 transformer, 2x FT-240-43 toroids, #14 enameled wire windings, silver plated SO-239, Amphenol side air vent + vent and drain holes at bottom.
Antenna hardware: all stainless steel thimble and dual wire clips.
Radiator wire: #18 POLYSTEALTH polyethylene coated copper-clad.
\$169.95 + shipping.

Condos & Apartments/Hotels

Compromise antennas

- Balcony Antenna
- Mag Loop
- Stealth Antenna
(gutter access?)
- Crawl Space Ant
- Remote OP Websites
- Mobile Op
- SOTA/POTA
- Air Ducts



Condos & Apartments

- Mag Loop



Condos & Apartments

- Attic



Condos & Apartments

- Mobile



Condos & Apartments

- Remote

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W7/TACOMA

Airtime: \$0.09/min RX | \$0.39/min @ 100w | \$0.69/min @ 1500w

Location: Washington

Hardware: Flex Radio & KPA1500 1500w

The closest to Asia you can get from the continental United States! This station is on an island in Puget sound with multiple towers and beautiful views in all directions.

The Station:

6m – Cushcraft 5EL @ 78'

10m/ 12m/ 15m/ 17m/ 20m – GXP 3EL @ 72'

30m/ 40m – 3 Element SteppIR DB36 @ 75'

30m/ 40m – GXP 2EL @ 72'

80m – Full size 4 Square

160m – 4 Square Array, coil loaded elements



Condos & Apartments

- POTA/SOTA





Testing Antennas



- *RBN (Reverse Beacon Network)*
- WSPR

REVERSE BEACON NETWORK












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showing spots for DX call: WR4I

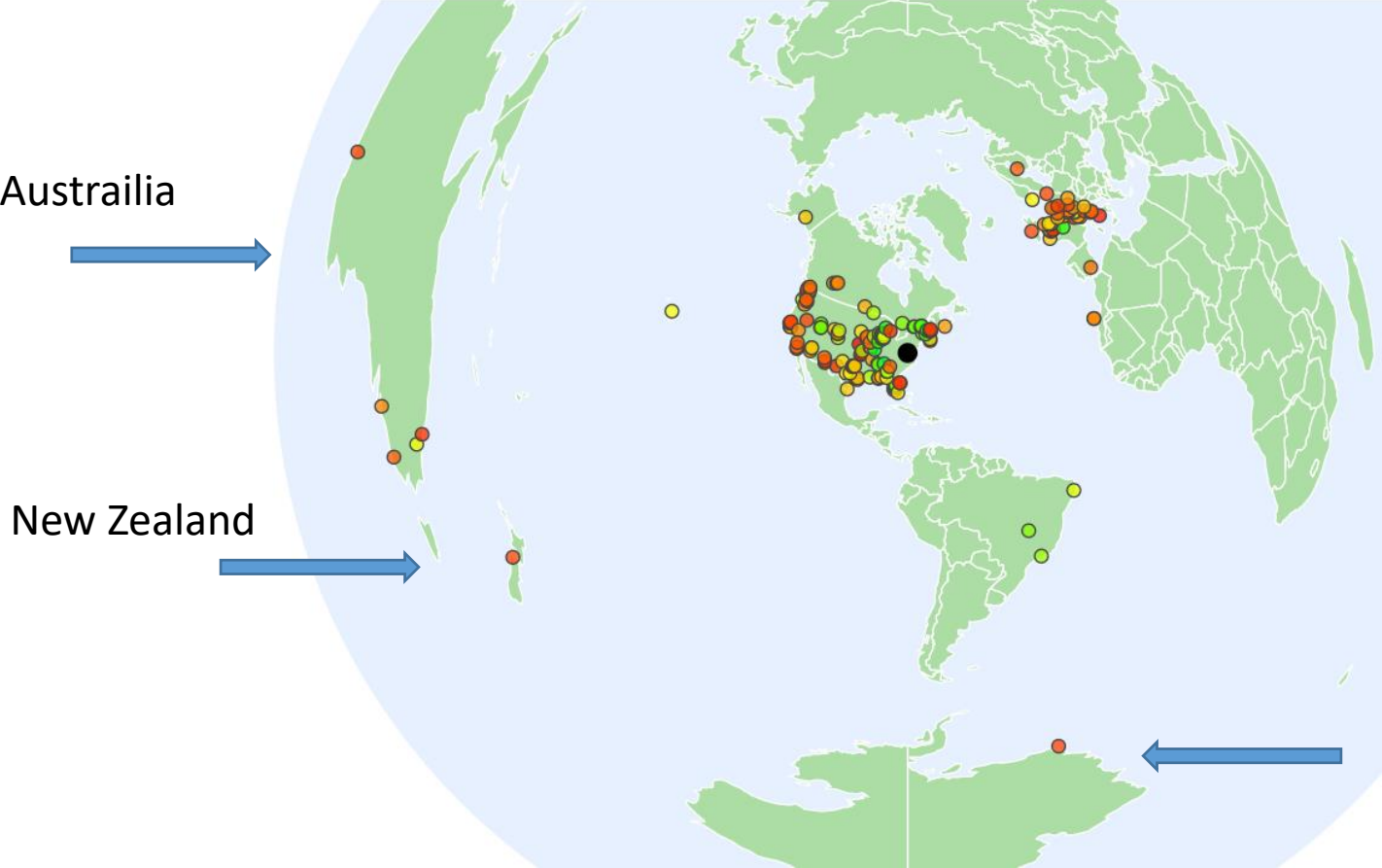
rows to show: 100 ▼

[search spot by callsign](#)

de	dx	freq	cq/dx	snr	speed	time
K1TTT	 WR4I	18080.0	CW CQ	12 dB	18 wpm	1502z 10 Apr
AC0C-1	 WR4I	14062.0	CW CQ	17 dB	18 wpm	1458z 10 Apr
AC0C-1	 WR4I	14062.0	CW CQ	17 dB	18 wpm	1458z 10 Apr
K1TTT	 WR4I	14062.0	CW CQ	32 dB	18 wpm	1457z 10 Apr
AC0C-1	 WR4I	14061.0	CW CQ	10 dB	18 wpm	1457z 10 Apr
AC0C-1	 WR4I	14061.0	CW CQ	10 dB	18 wpm	1457z 10 Apr
K1TTT	 WR4I	14061.0	CW CQ	13 dB	18 wpm	1457z 10 Apr
KM3T-2	 WR4I	14059.9	CW CQ	9 dB	18 wpm	1455z 10 Apr
AC0C-1	 WR4I	14059.9	CW CQ	9 dB	18 wpm	1455z 10 Apr
AC0C-1	 WR4I	14059.9	CW CQ	9 dB	18 wpm	1455z 10 Apr
KM3T	 WR4I	14059.9	CW CQ	10 dB	18 wpm	1455z 10 Apr

WSPR – Weak Signal Propagation Report

Spots: WR4I - 14 MHz - 100mW

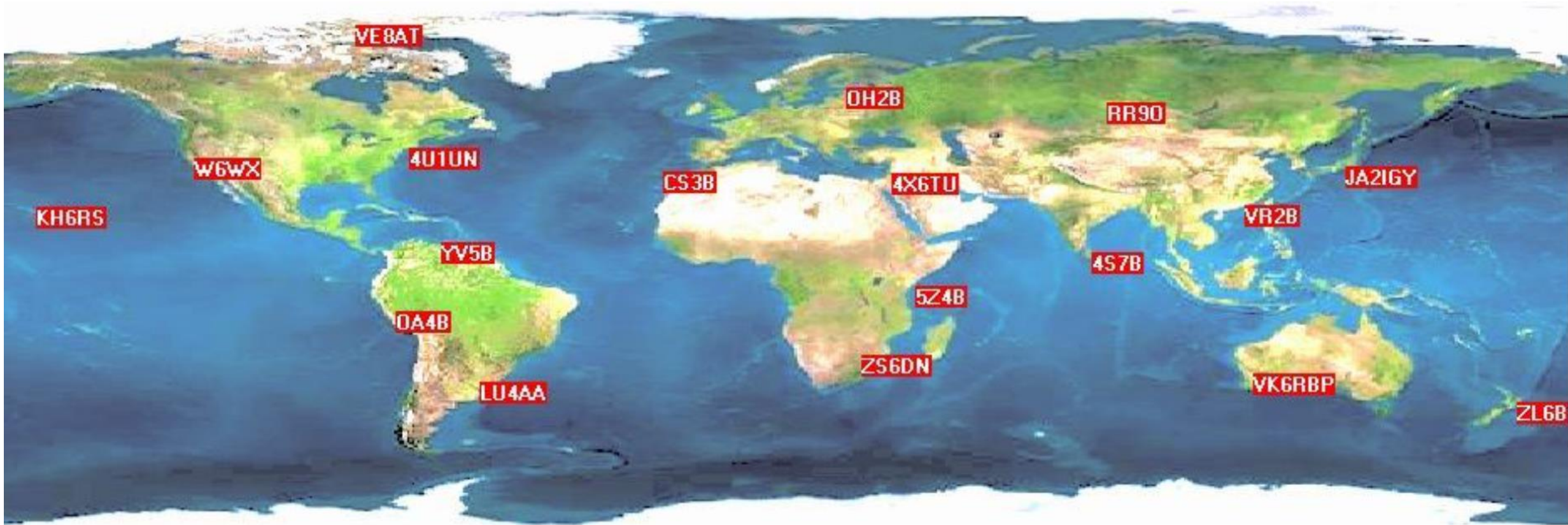


DX10: WR4I - 14 MHz - 100mW

Distance (km)	Call	Spots count
18494	VK6QS	15
17563	EI7HZB	1
16701	VK5MR	1
16559	VK5DG	7
15776	VK1SV	74
15554	VK2AAA	4
14040	ZL2005SWL	74
13298	DP0GVN/3	4
13298	DP0GVN/1	5
7680	PY1EME	18

Propagation Tools - Beacons

Each beacon transmits once on each band once every three minutes, 24 hours a day.



NCDXF/IARU International Beacon Project

Sunspot Reports

HF Band Info



Daytime Conditions



Nighttime Conditions

Band

80m-40m

3.5 - 7.3 MHz

30m-20m

10.1 - 14.35 MHz

17m-15m

18.068 - 21.45 MHz

12m-10m

24.89 - 29.7 MHz

Poor

Good

Fair

Poor

Fair

Good

Fair

Poor

Solar Conditions

Sunspot Number

Derived from num of sunspots + groups. From 0 to 250, higher better

37

Solar Flux

Overall Solar Activity on 10.7cm. From 62.5 to 300, higher better

101

Geomagnetic Storm

Overall activity of Earth's magnetic field. Based on K-Index.

Normal

Solar Wind

Speed of Solar Wind in KM/s. Typically 0-1000, lower better; Contributes noise

480.1

Noise Floor

Noise Contributed by Solar Activity.

S2-S3



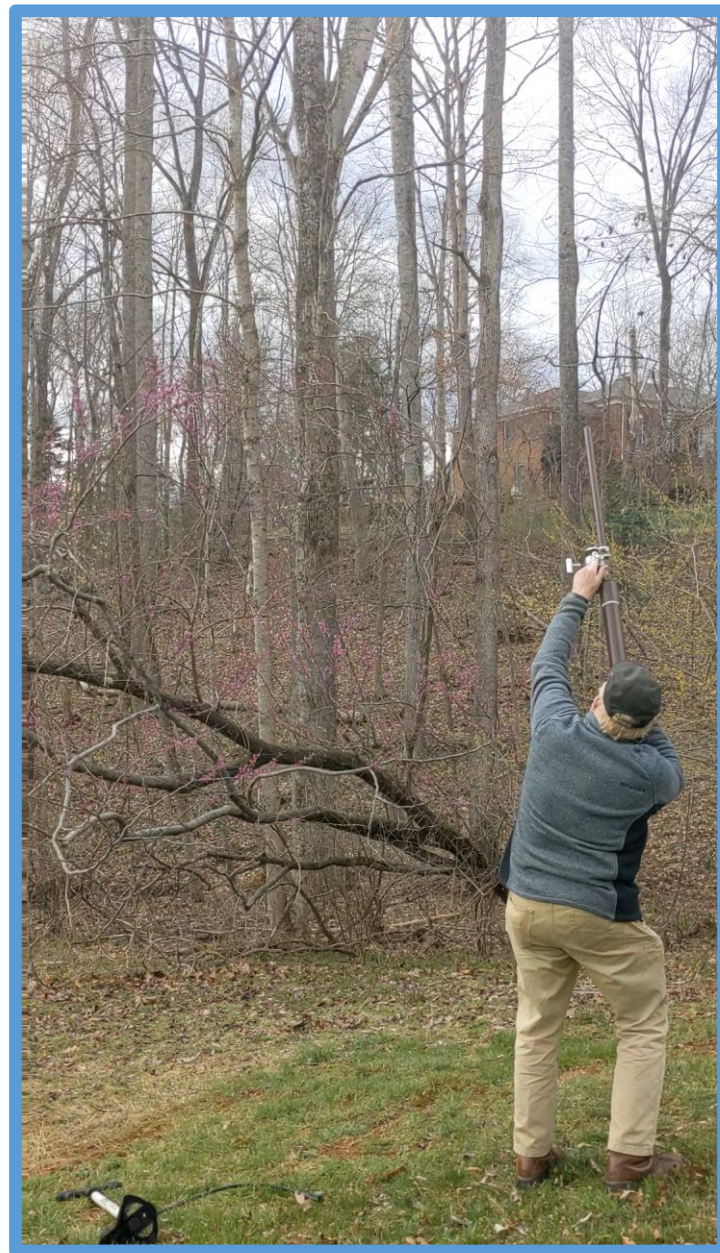
HF Antennas

Dennis - WR4i 4/11/22



Antenna Construction Information

- ARRL Antenna Books
- YouTube Videos
- *AARC Antenna Team!*
- *73's and Good DX to All! ----*



P. O'DONN²
Bizarro.
5.11.12
w/ANDY
COWAN

And I can't believe
you still have
rabbit ears.

From Bob to Everyone: 07:37 PM

WARC

World Administrative Radio Conference

https://en.wikipedia.org/wiki/World_Administrative_Radio_Conference

https://www.qsl.net/va3iul/Antenna/Wire%20Antennas%20for%20Ham%20Radio/Wire_antennas_for_ham_radio.htm

From Bob to Everyone: 07:55 PM

International Beacon Project - <https://www.ncdxf.org/beacon/>

Zed Zed's Workbench on YouTube (Dave Tadlock)

<https://www.youtube.com/channel/UCgUosv1Sx79IGEUBcm9Lw-g>