

Working DX with Wire Antennas and 100 Watts

By K0NA

What is DX ?

- Depends on the band
- Typically it is working stations outside of the US

Topics

- Equipment
 - antennas
 - radios & miscellaneous equipment
- Modes of operation
 - SSB, CW, PSK31
- Operating
 - listening
 - timing
 - spotting networks
 - contest

Antennas

- Your most important piece of equipment!
- Work with in your restrictions and what you have
 - experiment, try it
- Depending on conditions some will work better than others
 - Your receiver is a good initial check

Height of Dipole on 20 M

• Height	Power for equivalent signals	
• Feet	USA	DX
• 10	851	1621
• 20	426	645
• 30	169	288
• 40	100	100
• 60	79	55
• 100	186	33

Wire Size of the Dipole

- Wire size Gain Dbi USA
 - #12 5.94
 - #20 5.94
 - 2 inch dia 5.96
-
- Wire size does not affect gain
 - Band width and length are affected but not shown

Inverted V at 40 Feet

- Height Power for equivalent signals
- Feet USA DX
- 40 ft high 100 100 Reference Dipole
- V at 40 132 141

Vertical Dipole Top at 40 Feet

- Power for equivalent signal from a dipole at 40 ft
 - Vertical dipole USA DX
 - Mtn soil 398 245
 - Fresh water 170 58
 - Sea water 91 15
-
- Soil conditions greatly affect gain with vertically polarized antennas

Coax on 20 M with 100 Watts

- | | Xtra swr Db | Total | Power |
|-----------------|-------------|-------|--------------|
| Coax | Loss | Loss | Lost @100 ft |
| • RG58a 8219 | .10 (2.27W) | 1.71 | 33 |
| • RG8 8237 | .03 (.69W) | .73 | 15 |
| • LMR400 | .02 (.46W) | .48 | 10 |
| • RG6 8215 | .04 (.92W) | 1.27 | 25 |
| • 450 open wire | .22 (4.94W) | .32 | 7* |
- * does not include the tuner loss!!!!
 - Numbers are Belden

Questions One Might Ask

- How much does height matter?
 - A lot. The higher antennas are better within reason
- How does an inverted V compare?
 - It is almost as good as a dipole at the same apex
- Does wire size make a difference?
 - No

Questions One Might Ask

- Do ground conditions matter?
 - Not for a horizontal antenna
 - Vertical antennas YES
- Would it help if there was a ground screen?
 - Not worth the effort for a horizontal antenna
- What if a dipole was hung vertically?
 - It is better to be horizontal
- Types of feed lines and your signal
 - On 20 M it is not real important

Other Equipment

- Radios
 - The receiver is not a critical element with 100 watts
- Speech processor
- Pan adapters

Modes

- Single Side Band
 - Most common mode
 - Most competitive with big antennas and amplifiers
- CW
 - Gives you a about 10X signal to noise ratio over SSB
 - Less competitive
- PSK31
 - Gives you about 100X signal to noise ratio compared to SSB
 - Most people are running low power

Operating

- Listening, learning, and timing is critical
 - Many times you will need to out smart the big guns
- Split operation
 - Very important on rare stations
 - Know your radio
 - Pay attention to what you are doing

Operating

- Contest
 - Great way to increase the number of countries worked
 - Typically there are many rare areas activated
 - The big stations are on with great receivers
 - Avoid the first part of the contest
 - Good contest: CQWW and ARRL DX

Operating

- DX spotting networks
 - dxscape.com
 - dxsummit.fi
- Upgrade
 - A lot of the DX stations are in the extra portion of the band
- Patience and be proud of what you work