

DXing on 160 Meters?

Part II

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Antennas for 160M

Well, what does it take to get on 160 and work DX? The 3 most important things are location, location, and location. A low angle of radiation is also mandatory, as with most DX work. We here on the Gulf Coast have one advantage in that the ground conductivity here is as high as any place in the country.

A peculiar antenna situation occurs on the low bands starting at 40 meters and heading toward 160 meters. Most hams treat the transmitting antenna and the receiving antenna as separate entities. Yes, some use the same antenna for both but most use totally separate antennas for transmit and receive.

Transmit Antennas

Most amateurs on 160 will have a vertical transmitting antenna and maybe use it for receiving as well. When the ground conductivity is high, verticals will work quite well even with a poor or none-existent radial system. The overriding driver for using a vertical transmitting antenna is the simple fact that the majority of us can not get a horizontal dipole antenna up high enough for good low angle radiation which is required for DXing. A half wave on 160M is ~265 feet long and if decent low angle radiation is desired, it must be up about ½ wavelength above ground – 265 feet! Thus, a 160M dipole is out of the question for most of us. A full size vertical at 135 feet tall is slightly more feasible, but is still out of the question for many. Shorten verticals, however, become very practical and with careful design can be reasonably efficient.

Receive Antennas

Bear in mind, the often overlooked fact, that an antenna's "signal capture area" is based on wavelength. Equation is -- Capture Area = (Receive gain) x (wavelength²) / 4 π (meters²)] – longer wavelength antennas have (all other things being equal) a larger capture area and, therefore, a greater received signal amplitude. A 160M antenna will have 4 times the capture area of an 80M antenna. And this is true regardless of the physical length of the antenna. Even a short 160M antenna will have superior signal capture properties compared to a full sized 80M antenna. For receiving, the vertical's well known proclivity as a noisy antenna often has amateurs seeking other antenna forms which are quieter. Beverages and EWE's (traveling wave antennas) are popular but take up lots of real estate. Small loops perform well in this capacity. There is a great deal of opportunity for experimentation in the area of antennas. Improving the signal-to-noise on 160M is a constant on-going effort through better receiving antennas and receiver filtering schemes.

Make a 160 Meter plan

Make a 160 Meter plan and put it into action now. The weather here is starting to cool off making it more pleasant to get outside and do some antenna work. There are 160 meter contacts to be made the year round, but winter time is the quieter period and also the period of longer nighttime hours. December thru March is the operational 'prime time' and is also when the 160 meter contests occur.

160 meters is a unique band for the ham op. The wavelengths are long, components are large and equipment can be easily homebrewed. 2 times a day propagation peaks, for an hour each time, so you can easily plan your operating day.

So get busy. Put up a shortened vertical, an inverted L or even a low dipole...but make the effort to get on the air on 160 this winter season. Once you get a taste of the low bands you will be back again next year and most probably with an improved antenna farm for both transmit and receive.

We hope you enjoyed the article on 160 meters. If you should have any further questions you can contact us directly --

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References for 160 Operation, Radios and Antenna Systems

http://www.w8ji.com/160_history.htm --

W1BB article <http://www.w8ji.com/160%20History/hist160dx.pdf>

Receiving Wire Antennas -- <http://www.arrrl.org/tis/info/recwire.html>

"Is This EWE for you?" The EWE antenna was first described by Floyd Koontz, WA2WVL in QST from 2 February 1995

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Receiving Antenna information

EWE --- <http://www.nrcdxas.org/articles/ewe.html>

<http://www.w8ji.com/>

<http://www.w8ji.com/antennas.htm>

<http://www.cebik.com/wire/160new.html> Your First 160 Meter Antenna

<http://www.chem.hawaii.edu/uham/160strat.html> working top band in Hawaii

WWVH 2.5 MHZ

<http://www.spacew.com/www/160pred.html> Propagation prediction table

EI7BA's Amateur Radio Pages

http://www.iol.ie/~bravo/low_band_antennae.htm

References from W5RH – rhiller@sdcigm.com

The following references are not available on line, but if you want a copy just send me an e-mail and I'll send a PDF out to you.

World Radio

A Sloper for 160 Meters – W4JTL – November 2001

Why low gain antennas work so well at lower HF frequencies – W4HET – Sept 1999

QST

Feeding an 80 Meter Delta Loop at 160 Meters – K6XK – Page 37 April 1990

Loading Coils for 160 Meter Antennas – W7XC – April 1990

160 Meters: A Tribute – N4LBJ – Aug. 1989

The 160 Meter Antenna Dilemma – W1FB – Nov 1990

One Ham's Introduction to Top Band – AA6OZ – Nov. 1991