BOG antennas, BOG antenna, Beverage on ground antenna

Single Wire BOG's

- The most improvement in signal strength comes from the first inch above ground. This can occur naturally from leaf cover, and low vegetation. Covered (insulated) wires are necessary.
- Impedance of the termination will vary with ground conductivity, wire size, and height above ground. Recent reported termination impedances have been between 225 and 300 ohms.
- A BOG antenna will self terminate beyond a length for a given frequency. This length is determined by the close proximity of your type of soil.
- Termination testing:
  Use changes of 50 ohms to get close, then 25 ohms. Less than 25 ohm differences are difficult to detect.
- Longer BOG antennas may loose signal strength. One that works well on 160 meters, may be less directive on 80 meters and possibly reverse direction on 40 meters.(This has to do with self termination that will vary with soil conditions)
- The 200 foot BOG is not as efficient as the 440 foot up in the air Beverage, but works well on 160 & 80 meters, more directional than expected, and mostly out of sight.
- Single wire BOG type KB-1 transformer sales include a free 235 ohm termination starting March 2014, until further notice.
- An easy way to find your best, single wire, length for 160 meters is to lay out about 200 feet of insulated wire in the desired direction. Connect the near end of the wire to a 250-300 ohm matching transformer that also has a connection to a long ground rod. For this test, leave the far wire end un-terminated. Connect your VSWR analyzer to the matching transformer and sweep through frequencies 1.8 MHZ and above. Above

a given frequency the VSWR will go to a low value and stay there as you continue. This low value is self termination that may cause reverse direction and an unpredictable pattern.

Shorten the wire far end until the band or bands of interest are not self terminating. Then drive a long ground rod, and terminate with a 235 +/- ohm resistor.

- Beverage antennas with 1/4 wave radial grounds become optimum for one band per "Low Band DXng". A BOG antenna is no exception.
- Shorter radials may pick up noise or signals that have incomplete cancellation in the termination resistor.
- Because the BOG is "trying" to develop signal voltage between the wire and the earth it sits upon, A good ground connection is best. In areas where the earth freezes 3 to 4 feet or in very dry soil, long ground rods make the difference
- For best wide band results use long, multiple, minimum impedance, ground rods.

- **Long BOG research notes:**

December 2013 Finished BOG antenna research. From experimenting and reports received, wire lengths from 160 to 200 feet were most successful. **200 feet is optimum for 160 meters in most locations,** but maybe too long for 40 meters without pattern distortion. Recommend trying 200 feet, and shorten if necessary.

- **Common mode pick up:**

Remove the coax from the BOG transformer and listen on the receiver to check possible coax cable pickup problems.
A 50 to 50 ohm isolation transformer in the BOG antenna coax cable at the shack end solved TV and house noise.
The coax cable could have been buried 5-6 inches deep to avoid pick up.
KB-1 and KB-2 BOG Transformers are wound with very low inter-winding coupling capacity to prevent common mode at that end of the coax.
A ferrite wound coil, or common mode choke could been placed at the receiver end of the coax.
Now a popular choke is constructed by winding 6-8 turns of small diameter coax in a 6 inch diameter coil and held together with plastic ties. One mix 31 ferrite 'clamp on' core Amidon 2x31-1081P2, or equivalent is installed over the windings.

Questions? email k1fz@MyFairPoint.net

BOG antenna transformers are available in KB-1, KB-2 and KB-3 versions.

Photos:

One wire BOG starting point

smaller box available.

Through the field.

Used a dual binding post for easy termination experimentation.

Two wire, two direction BOG antenna using field telephone wire, speaker wire, or zip cord.

KB-3 Reflection termination transformer

Two wire two direction BOG antenna KB-2 transformer

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[Beverage antenna]

[Delta, Pennant, Flag receiving antenna notes]

[Flag antenna transformer]

73
Bruce-K1FZ