Inexpensive Receive Antennas for TopBand

Tim Duffy K3LR
The TopBand Dinner
May 20, 2011

www.K3LR.com

Simple Ideas for Hearing better on 160 Meters

- **Other antennas from other bands**
- **Noise blankers and RX attenuation**
- **Good station grounding**
- **Chokes on your feedlines and other cables chokes (W1HIS)**
- **Find noise sources in your home**
- **Sign up to rfi@contesting.com**
- **Beverages – even short ones**
- **Does this work?**
- **Over 100 countries worked in CQWW CW**

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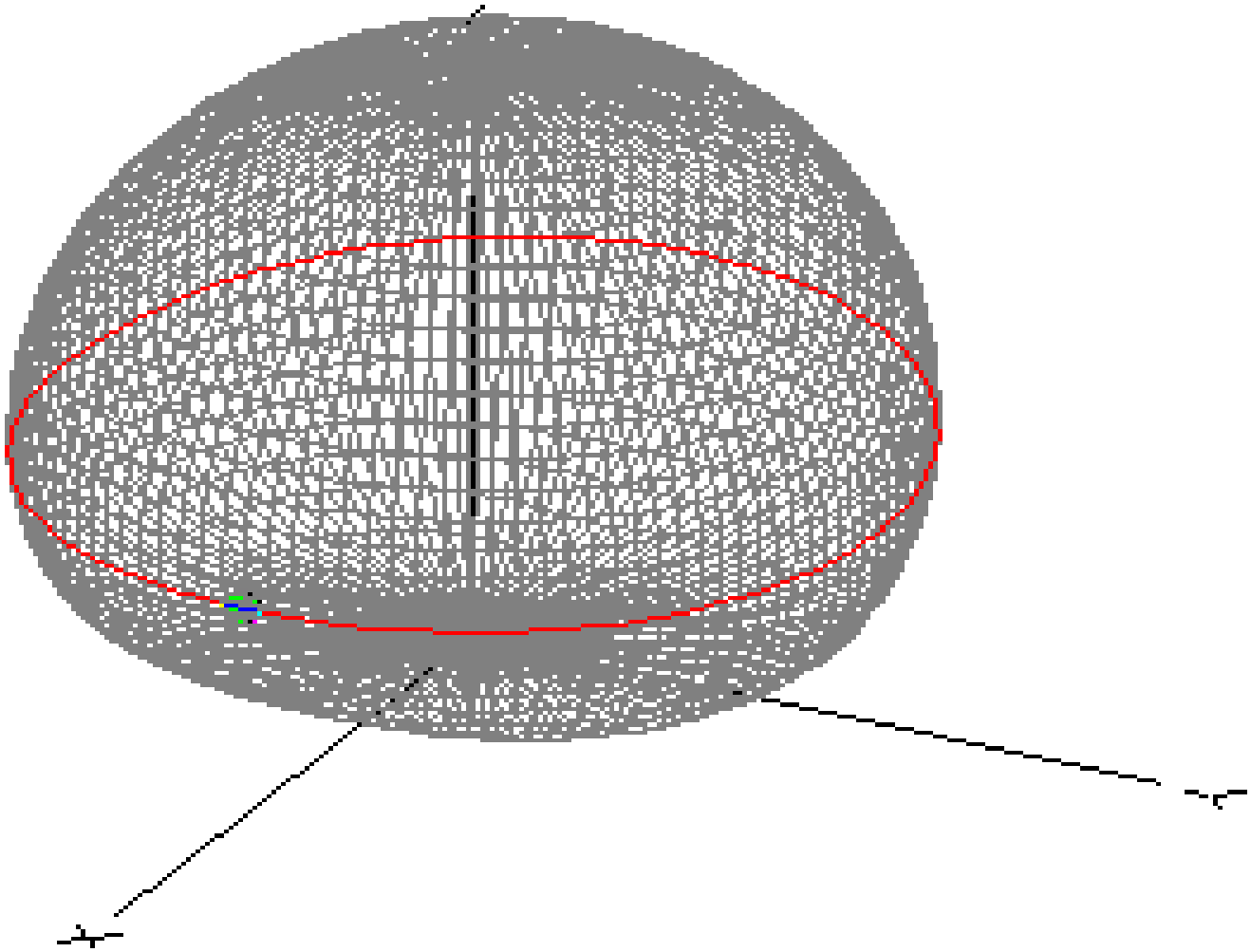
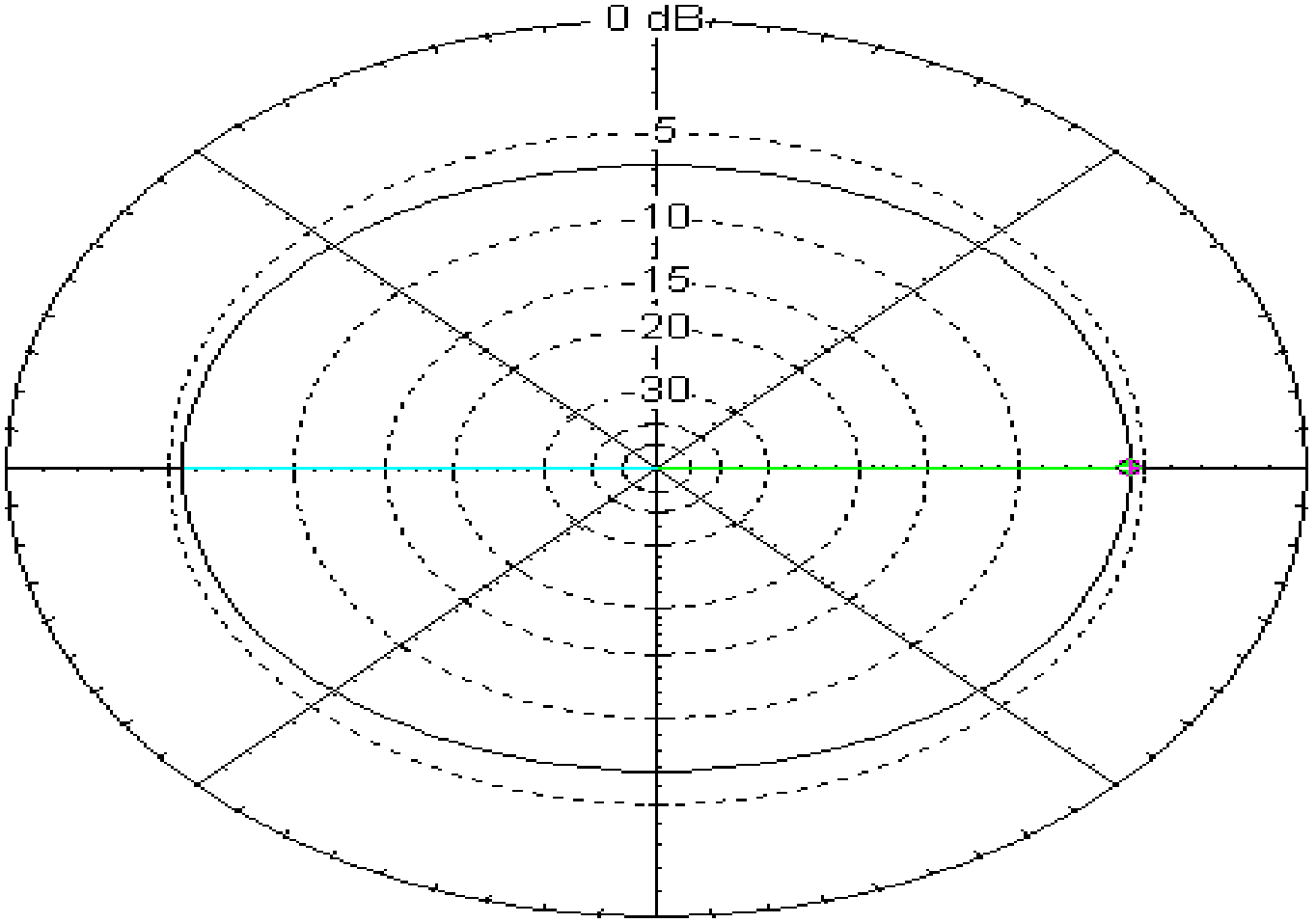
ANT +DC
08/19/2009

EZNEC+



Total Field

EZNEC+

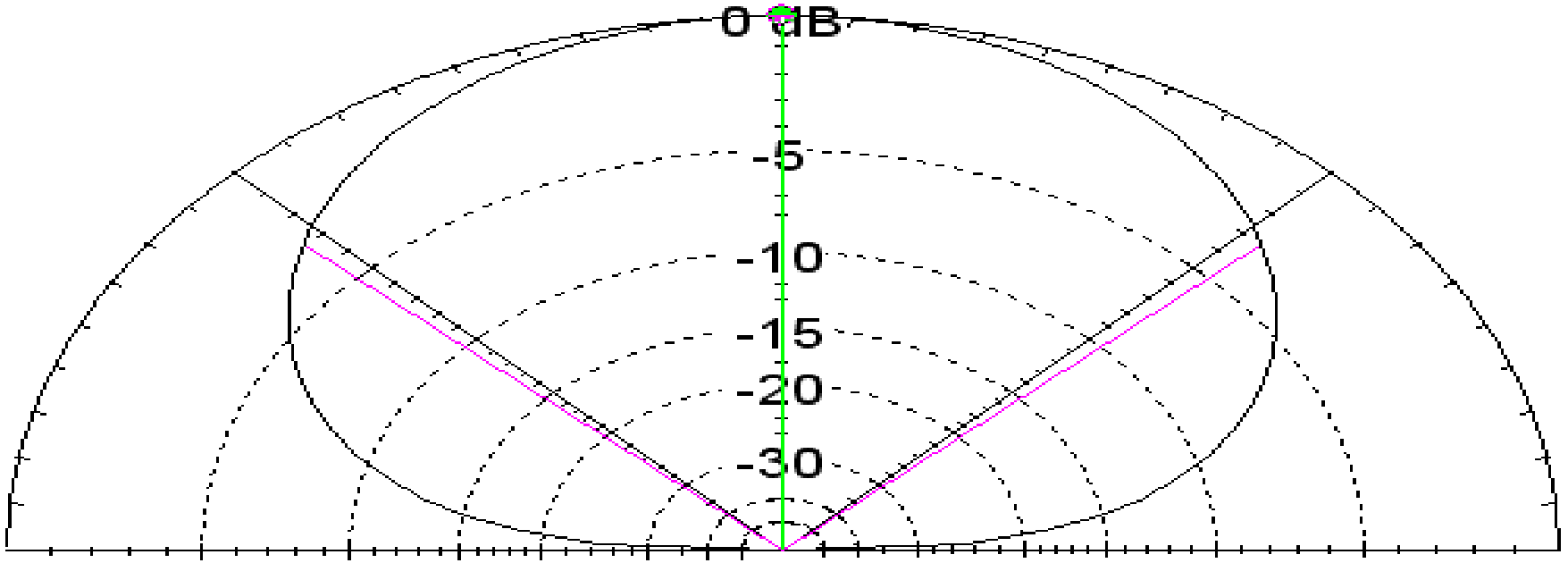


1.83 MHz

Azimuth Plot	
Elevation Angle	30.0 deg.
Outer Ring	-2.05 dBi
3D Max Gain	-2.05 dBi
Slice Max Gain	-7.52 dBi @ Az Angle = 0.0 deg.
Front/Side	1.28 dB
Beamwidth	?
Sidelobe Gain	-7.52 dBi @ Az Angle = 180.0 deg.
Front/Sidelobe	0.0 dB

Cursor Az	0.0 deg.
Gain	-7.52 dBi
	0.0 dBmax
	-5.47 dBmax3D

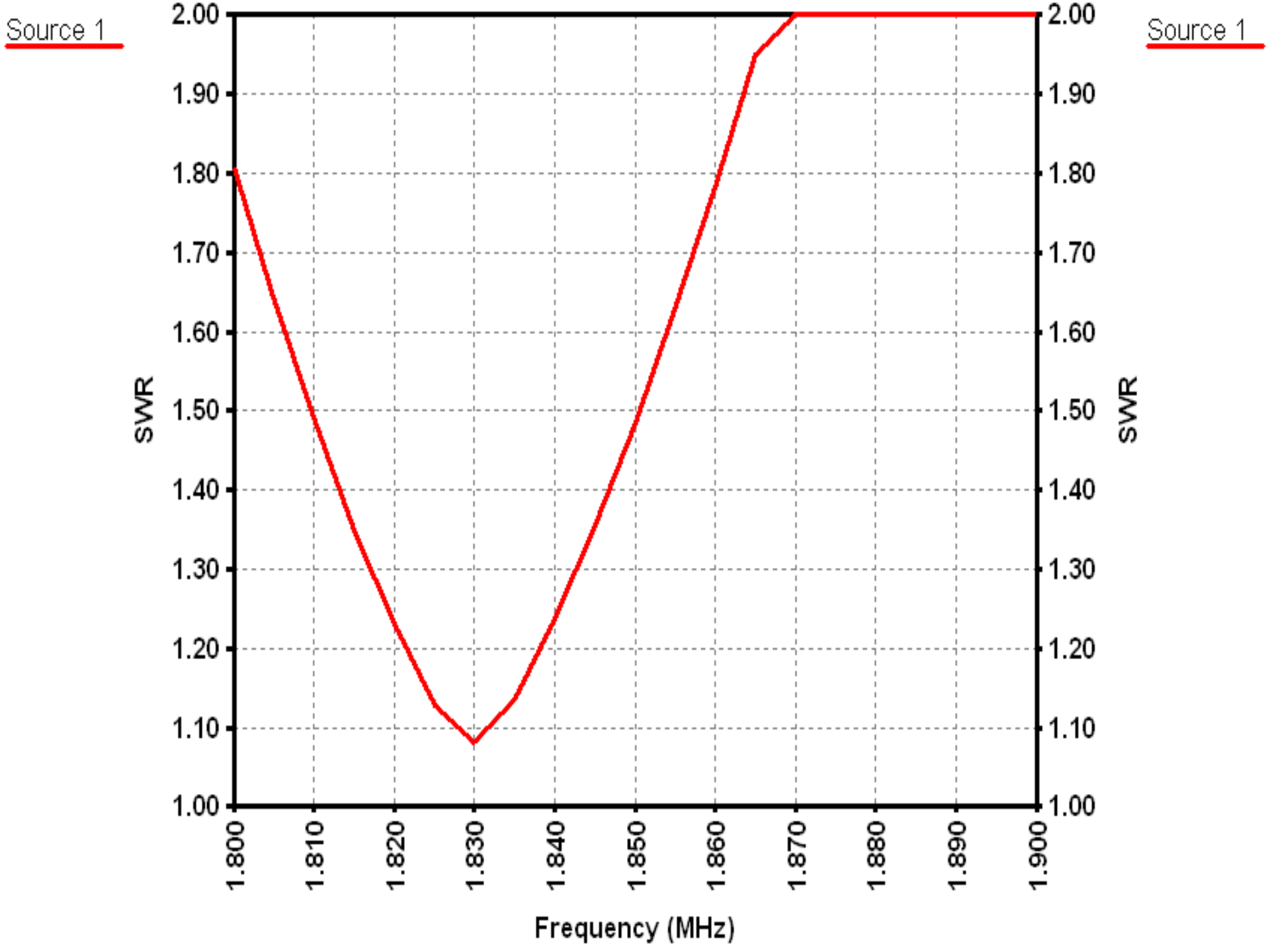
Total Field EZNEC+



1.83 MHz

Elevation Plot	
Azimuth Angle	0.0 deg.
Outer Ring	-2.05 dBi
3D Max Gain	-2.05 dBi
Slice Max Gain	-2.05 dBi @ Elev Angle = 90.0 deg.
Beamwidth	94.4 deg.; -3dB @ 42.8, 137.2 deg.
Sidelobe Gain	< -100 dBi
Front/Sidelobe	> 100 dB

Cursor Elev	90.0 deg.
Gain	-2.05 dBi
	0.0 dBmax
	0.0 dBmax3D

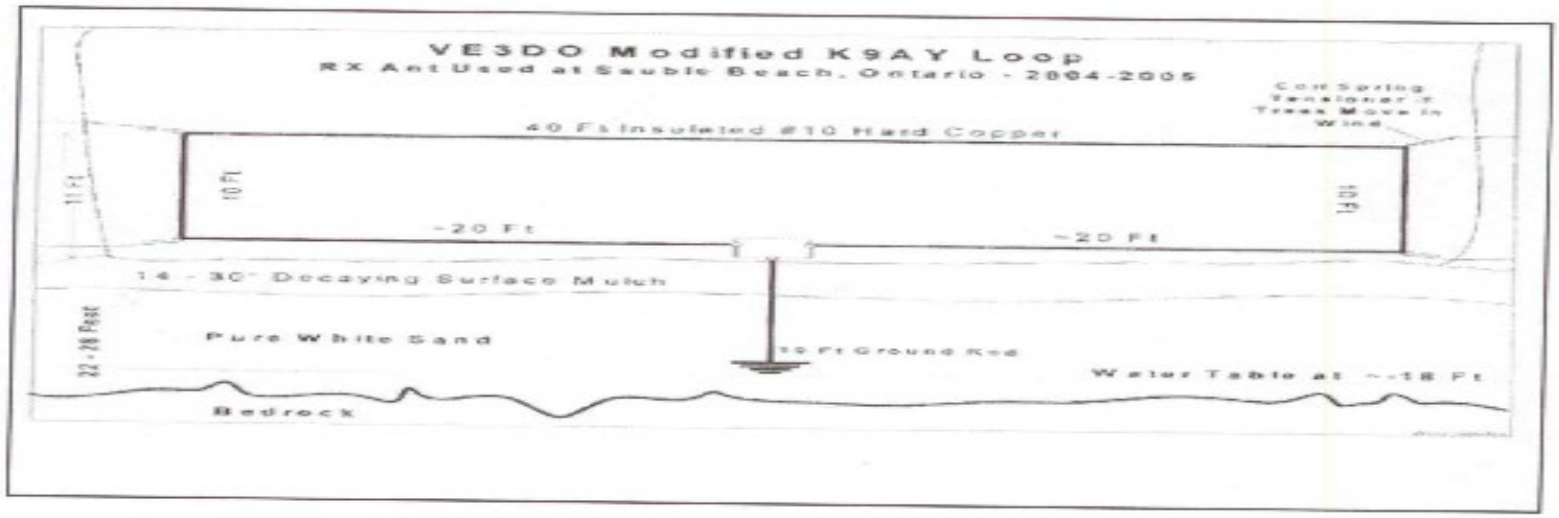

Source 1
Source 1
2.00
1.90
1.80
1.70
1.60
1.50
1.40
1.30
1.20
1.10
1.00
SWR
1.800
1.810
1.820
1.830
1.840
1.850
1.860
1.870
1.880
1.890
1.900
Frequency (MHz)

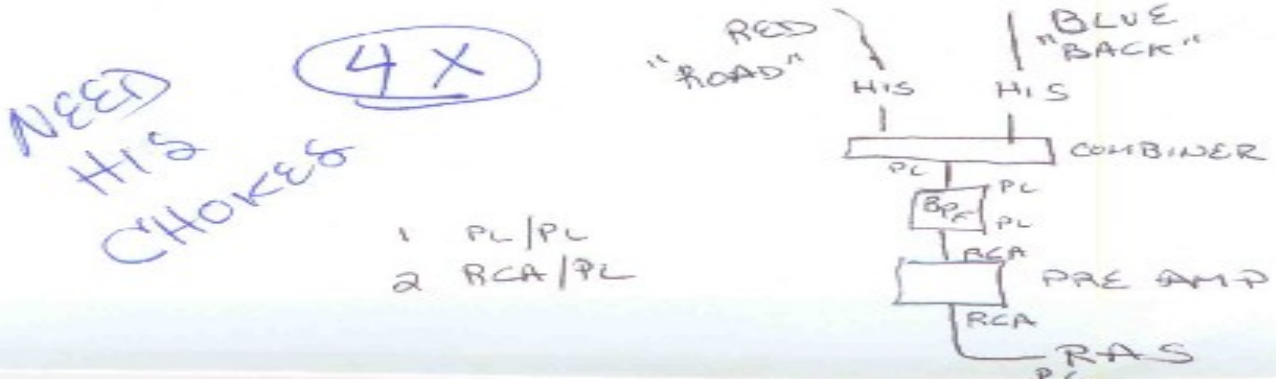
THE "DO LOOP"

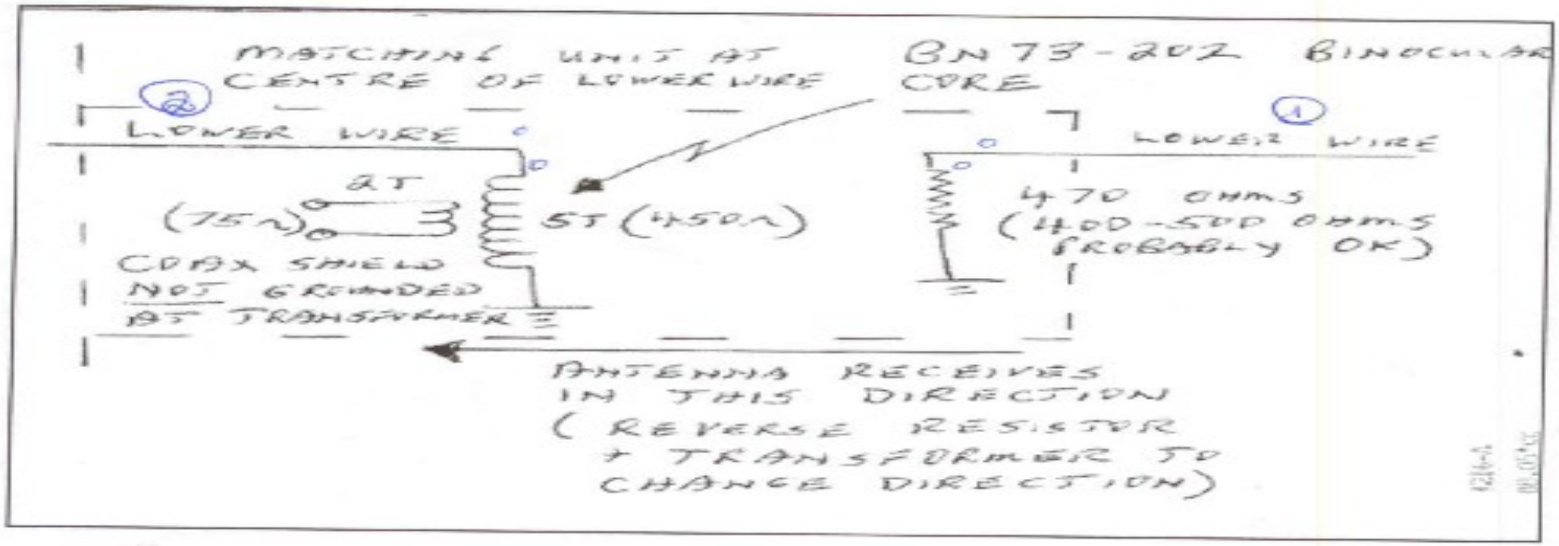
One day in 2006 while talking with Ivan, VE3DO on the telephone, he told me about a new RX antenna he had built and was currently testing. At first I was doubtful that such a design could bear better than 1000 ft Beverages or any of the other RX antennas which had received publicity over the years. However, I began to notice packet spots from Ivan for "rare" DX which he was obviously hearing and which I could not hear at all on my Beverages (he and I live about 90 miles apart) . I learned that he was one of a handful of NA stations to have worked the Lakshadweep expedition on topband and so I began to think that perhaps Ivan had a "secret weapon" for working DX and that I should give it a try.

He kindly sent me the details of this K9AY-derived design, and so I present it here for all to try. At this point (December, 2007), I have installed two of these loops and I am quite impressed with the performance. The first was installed at our summer home on Lake Huron just 55 miles south of Ivan. The comparison antenna at this QTH is a "boomerang Beverage" , 600 ft long sloping to the lake. This antenna is VERY quiet and hears extremely well, but in a series of A/B comparisons, the DO Loop heard as well on most occasions and better on several on the NW path to Japan.

The second loop was installed at the home QTH and oriented to JA. The comparison antennas are a 1000 ft Beverage firing 320 degrees and a pennant firing 310 degrees. The DO Loop is much quieter than the Beverage and hears JA better than both. When the path to JA is good, both the Beverage and the pennant hear the DX well but the DO Loop hears it with much less noise and often recovers a signal when QSB takes the signal into the noise on the other antennas.







NOTES

1- Varying the height of the lower wire above ground may affect the performance of the antenna. Ivan has indicated that he has tried
installing the bottom wire right on the ground up to 1 ft above ground with good results. I arbitrarily chose 18" for the height, partially
dictated by the circumstances of my installations.

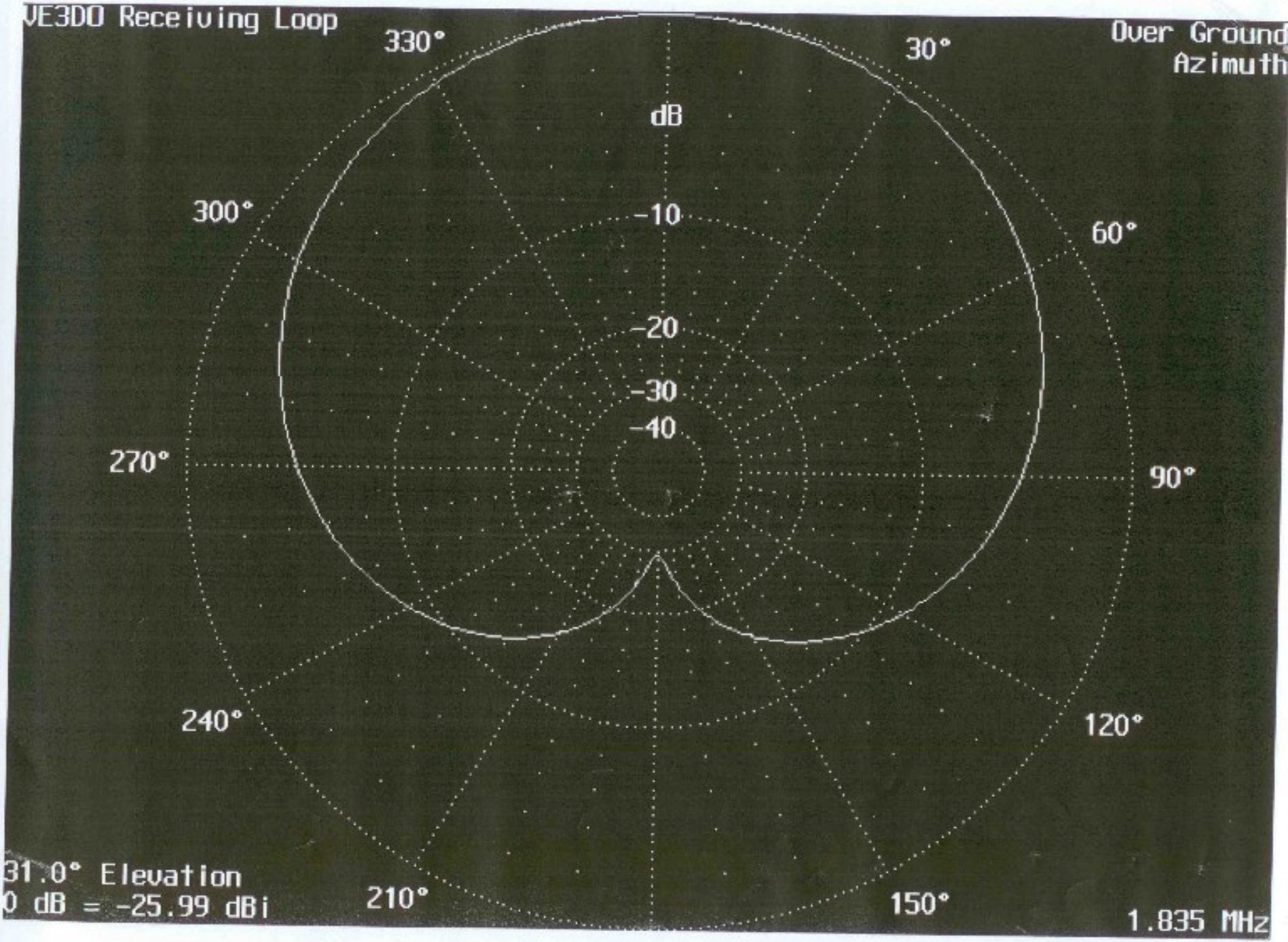
2-I have used a ground rod of 3-4 ft in each of my loops as the soil at both locations is clay loam and generally moist; Ivan employs a
10 ft ground rod as his soil is quite sandy and perhaps he feels that the longer rods are necessary to get the required grounding at his QTH.

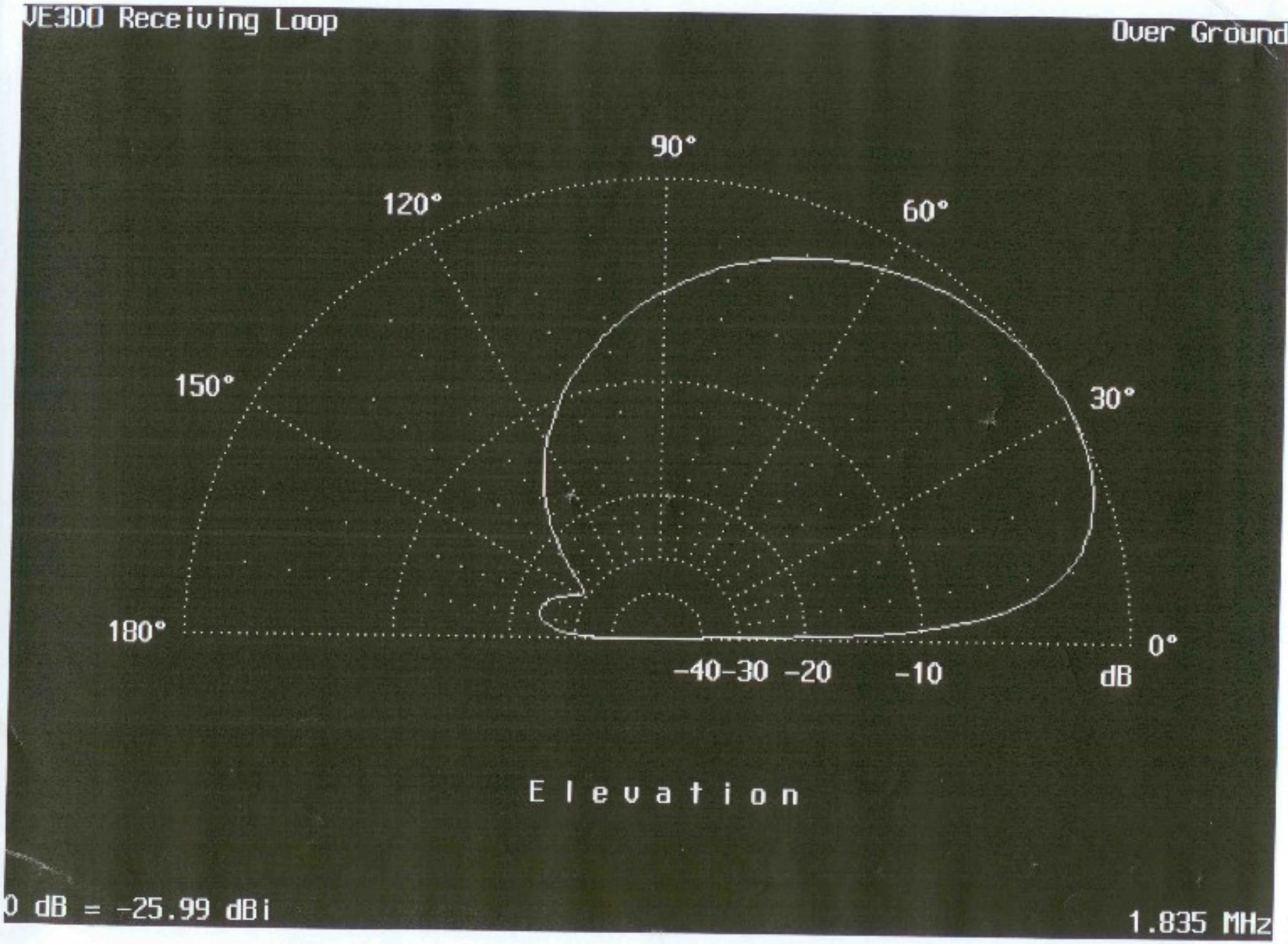
3-I arbitrarily chose to leave the coax ground floating as I have employed this in all of my RX antennas with good result; while I have not attempted to ground the shield at the antenna, doing so may affect the overall noise of the antenna.

4-My supports are wood: 14 ft lengths of 2"x4" lumber in one case and a pair of trees in the other. Use of metal supports will undoubtedly change the antenna's characteristics, most likely in a negative way.

5-The transformer using 5T secondary and 2T primary matches 75 ohm coax quite well about 1.2:1 SWR showing on an MFJ249 analyzer). A 450 ohm termination resistor is "standard" for this type of 9:1 application; however, in actual fact, any resistor from about 400-500 ohms should work. I am going to install a vactral on one of my loops and see what difference results from varying the termination resistor value between, say, 375 and 550 ohms.

Created December 27, 2007


VE3DO Receiving Loop
Over Ground
Azimuth
330°
30°
dB
300°
-10
60°
-20
-30
-40
270°
90°
240°
120°
210°
150°
31.0° Elevation
0 dB = -25.99 dBi
1.835 MHz


VE3DO Receiving Loop
Over Ground
90°
120°
60°
150°
30°
180°
0°
-40 -30 -20 -10
dB
Elevation
0 dB = -25.99 dBi
1.835 MHz

Top Band antennas do not have to be expensive.

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The TopBand Dinner
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