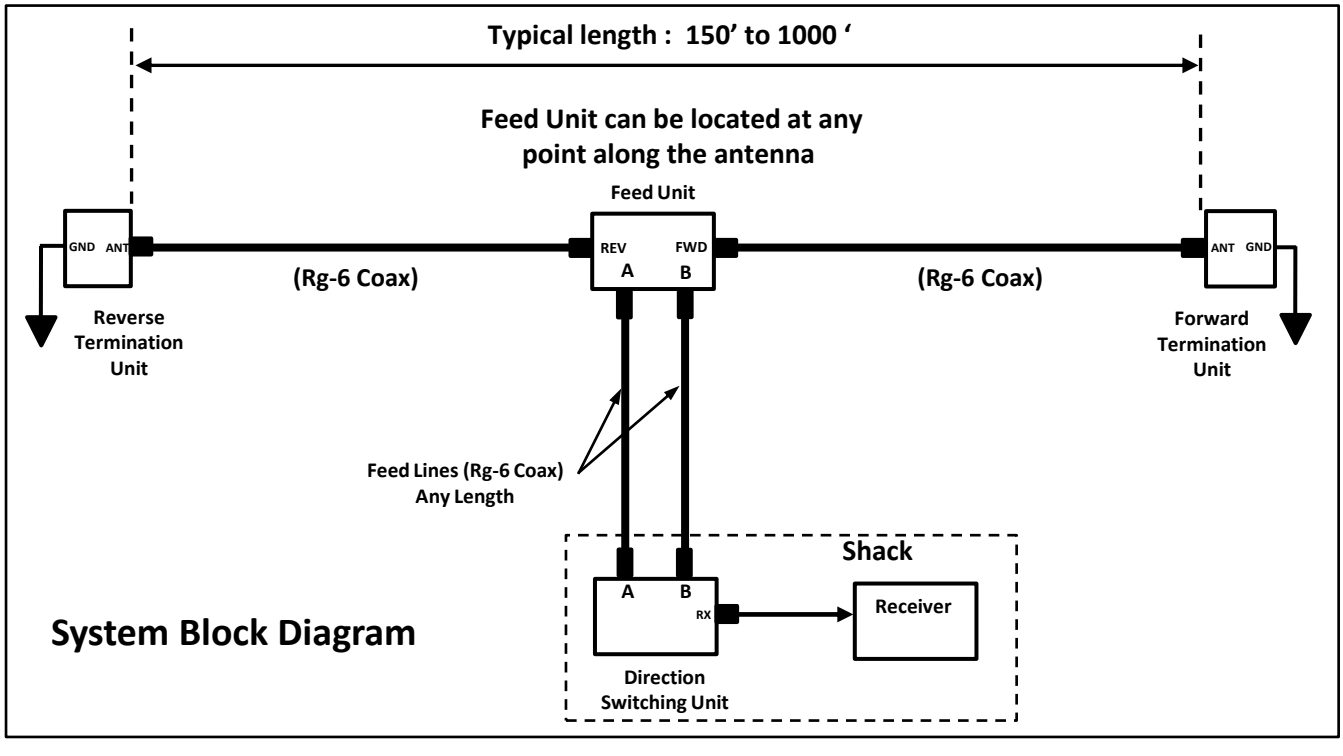
BevPro-1: The Ultimate Reversible Beverage Antenna System

- NEW unique design
- Lowest overall system cost available
- Uses low cost RG-6 cable
- Flexible feed can be located at any point along antenna
- Easy to deploy
- All passive high-reliability design
- Termination resistors can be adjusted from shack to optimize directivity and S/N

Only $299.99



New Ground-Breaking BevPro-1
The Ultimate Bi-Directional Beverage Antenna System

Introduction

The Pixel BevPro-1 is an easy to deploy, low cost, bi-directional Beverage receiving antenna system that will allow you to hear weak DX stations that are buried in the noise of typical transmit/receive antenna systems. **It is the culmination of more than four years of development and improvements to the Classic Beverage receiving antenna by active DX'ers.**

Convenient Installation Features

The classic Beverage antenna is unidirectional, consisting of a single wire elevated several feet above ground level and terminated at the far end with a resistor in series with a ground rod. The impedance matching transformer and feed line to the receiver must be placed at the un-terminated end of the antenna making it impossible to connect the feed line to any other point along the antenna. This limitation often makes it difficult to place the Beverage antenna wire at the optimum location on the available site. ***The BevPro-1 solves this problem, by allowing the feed lines to the receiver to be placed anywhere along the entire length of the antenna!***

Reversibility

In the past, reversible, or bi-directional Beverage antennas have been constructed using expensive, and hard to support, open-wire or ladder-line as a transmission line to bring the received signal back from the far end of the antenna to the feed-line end of the antenna. ***The BevPro-1 solves this problem by using readily available, low cost, RG-6, CATV, coaxial cable to simultaneously operate as both an antenna and a shielded transmission line to bring the received signals from both ends of the antenna back to the receiver feed-lines which can be placed anywhere along the entire length of the antenna!***

Termination Optimization in the Shack

Adjustment or replacement of the terminating resistor(s) in the classic Beverage antenna is difficult, requiring access to terminations at the ends of the antenna. ***The Bev-Pro-1 solves this problem by moving the terminating resistors to the operator's position where they can be conveniently adjusted for optimum directivity and S/N.***

Lowest Overall System Cost Available

Table 1 below shows a total system cost comparison for a 500 ft antenna between a popular standard reversible Beverage kit that requires ladder line that is sold by a competitor and our BevPro-1. ***As you can see the total cost difference is significant, plus our system offers many other features not available from others. For longer antennas the cost difference is even more dramatic.***

About the Developers: Geoff Mendenhall – W8GNM Ned Mountain-WC4X

Geoff Mendenhall has been an active amateur radio operator and DX'er for 52 years. He received his WAS and DXCC awards from several different QTH's , most recently, from a location where he has only wire antennas, including a bi-directional Beverage receiving antenna. He has a BSEE degree from Georgia Tech and holds eight U.S. patents for broadcast equipment. He received the National Association of Broadcasters Radio Engineering Achievement Award for his contributions to FM broadcast transmitter technology and in 2008 he was named a Harris Fellow. Geoff is a registered Professional Engineer and a member of the Association of Federal Communications Consulting Engineers (AFCCE), a member of the FCC Technological Advisory Council (FCC-TAC), a contributor to the National Radio Systems Committee, and a Senior Member of the IEEE.

Ned Mountain has been an active amateur as DX and DX'er for over 54 years. He holds a BSEE degree from the University of Pittsburgh and has had a career in engineering, sales, and marketing primarily in the broadcast and cable industries. Ned holds a US patent in the field of digital television signal processing. Ned has been responsible for extensive testing and evaluation of the BevPro-1 concept since 2009.

Specifications	
Antenna element:	75 Ohm RG-6 coax
Feed line:	75 Ohm RG-6 coax
Antenna feed point:	Any point along length of antenna
Lightning protection:	Gas discharge tubes at each end
Overload protection:	Diode protection for close Tx antenna
Impedance match:	75 to 50 Ohm impedance match
Direction switching:	Front/rear switch
Design:	All passive components
Connectors	F-Female
Directionality null:	All passive components
Frequency range (antenna length dependent):	150 kHz- 30 MHz

Table 1. Cost Comparison

	Competition	Pixel BevPro-1
Basic Bi-Directional kit	$ 210	$ 299
Voltage coupler (for direction reversal)	$ 90	Not Required
Ladder line (500 ft)	$ 245	Not Required
Ladder line supports (25)	$ 10	Not Required
RG-6 feed line to shack (Assume 100 ft @ $.19/ft)	$ 19	$ 38
RG-6 antenna element	N/A	$ 95
Directional switching control box	N/A or Homebrew	Included
TOTAL COST COMPARISON	**$ 574**	**$ 432**

BevPro-1 System Description and Performance Guidelines

Beverage receiving antennas have been around since the 1920's, and are proven performers for receiving weak DX signals in the presence of atmospheric and man-made noise. The Beverage antenna is not suitable for transmitting, since its overall relative gain is typically more than 10dB lower than a dipole antenna. You may ask why a receiving antenna with such low overall gain is useful as a receiving antenna. The answer lies in the fact that the noise levels on the long wave, medium wave, and lower HF bands are far above the sensitivity of modern receivers. While the overall gain of the Beverage receiving antenna is much lower than most transmit/receive antennas, the signal to noise ratio of signals received in the favored direction of the Beverage antenna will be typically much higher than on the main, transmit/receive antenna. The physics behind the antenna design itself are well documented and well understood. You will find many reference articles that fully describe a wide range of creative implementations of Beverage antenna designs ranging from simple to complex. The purpose of this article is to discuss the differences between other Beverage antenna designs and the new BevPro-1, bi-directional, Beverage receiving antenna system.

The performance of the Bev-Pro-1 Beverage antenna system will be as good as or better than conventional Beverage system installations of the same height and length. The design is inherently easier to install and more stable than reversible systems employing "open wire" or "window line", dual antenna elements, providing increased performance and ease of adjustment in real world installations.

The basic Beverage antenna consists of a wire antenna element, a terminating resistance at the far end, and a feed system to bring the signal back to the receiver. Reversible Beverage systems provide the additional feature of switching the termination and feed ends of the antenna system to provide bi-directional performance.

The BevPro-1, uses a common mode, receiving antenna, wire element, consisting of the outer shield of the RG-6 coaxial cable that extends to each end point of the antenna. The outer shield of the coaxial cable is continuously connected regardless of where the unique feed system is placed along the entire length of the antenna. The terminating resistances to correctly match the impedance (Zo) of the antenna at each end point, are replaced with precision reflection components to couple the signals from each end as differential signals to the center conductor of the coaxial cable. The center conductor of the coaxial cable can be separated at any point along the entire antenna element length where these signals from each end are then brought to the receiver location via two individual, coaxial feed cables. At the receive location, a switching and impedance matching system is employed to reflect the correct terminating resistance value back to each end of the antenna via the inner conductor of the coaxial cable. By making the terminating resistance adjustable at the operator position, it is possible to optimize antenna performance in either direction right at the receiver location.

While all this sounds simple, it has taken years of prototyping and testing with precision test equipment to get the various components designed and developed to the point where a product can be manufactured in quantity with predictable results.

The exact performance of any given beverage antenna system is dependent on many variables, such as ground conductivity and mounting height above ground, but the most common variable under the control of the operator is the overall antenna length. The following chart can be used as a general guideline to aid in typical installation decisions. The bulk of field experience with the BevPro-1 design has been with systems ranging from 270 ft. to 800 Ft. in length, but testing with antennas as short as 150 Ft. in length has yielded encouraging results, especially from the 40 meter to 15 meter bands. Figure 1 shows a typical antenna pattern for a 500 ft antenna at 4 MHz.

BevPro-1 Performance Guidelines

Antenna Length	Overall Performance Vs. Band						Relative Directivity					
	160m	80m	40m	30m	20m	15m	160m	80m	40m	30m	20m	15m
100 Ft.	P	F	G	G	E	E	Nil	P	G	E	E	E
150 Ft.	F	F	G	E	E	E	Nil	F	G	E	E	G
250 Ft.	G	G	E	E	E	E	F	G	E	E	E	G
350 Ft.	G	E	E	E	G	G	G	E	E	E	G	F
450 Ft.	E	E	E	E	F	F	G	E	E	E	F	P
550 Ft.	E	E	E	E	P	P	E	E	E	E	P	P
750 Ft.	E	E	E	G	P	P	E	E	G	G	P	P
950 Ft.	E	E	G	G	P	P	E	G	G	P	P	P

E=Excellent, G=Good, F=Fair, P=Poor, NIL=Insignificant

The following block diagram illustrates the various components of the unique BevPro-1 system

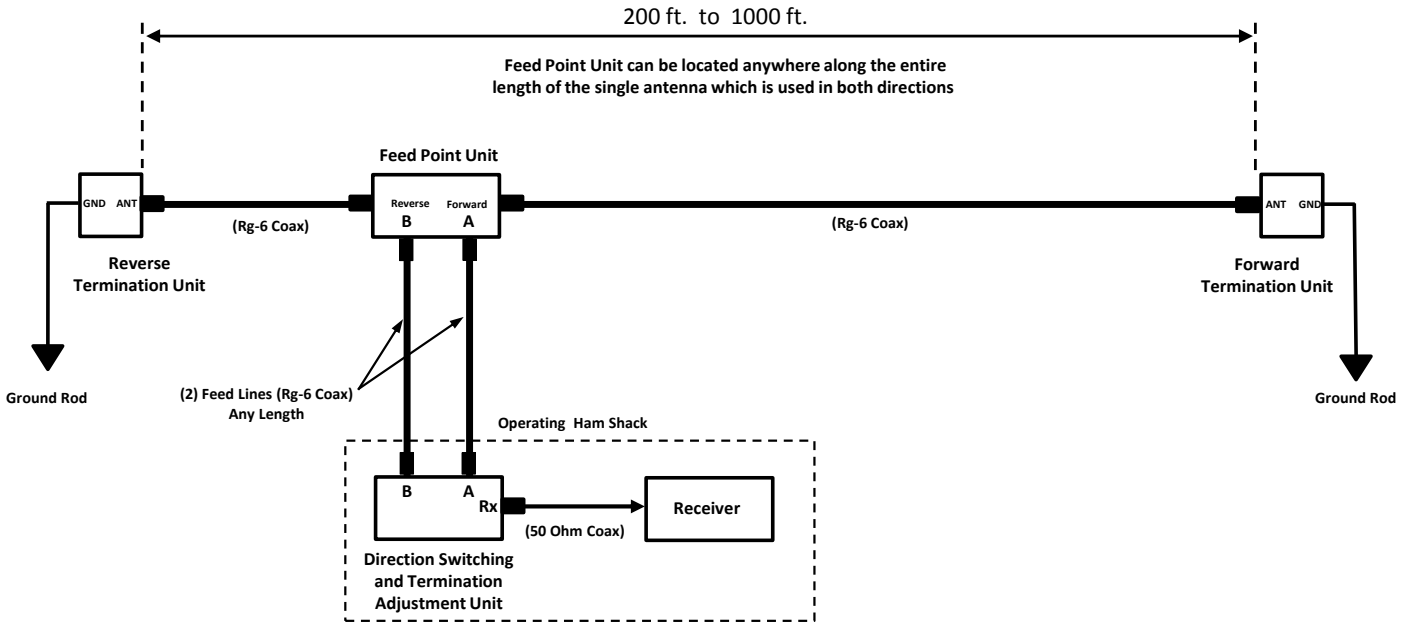
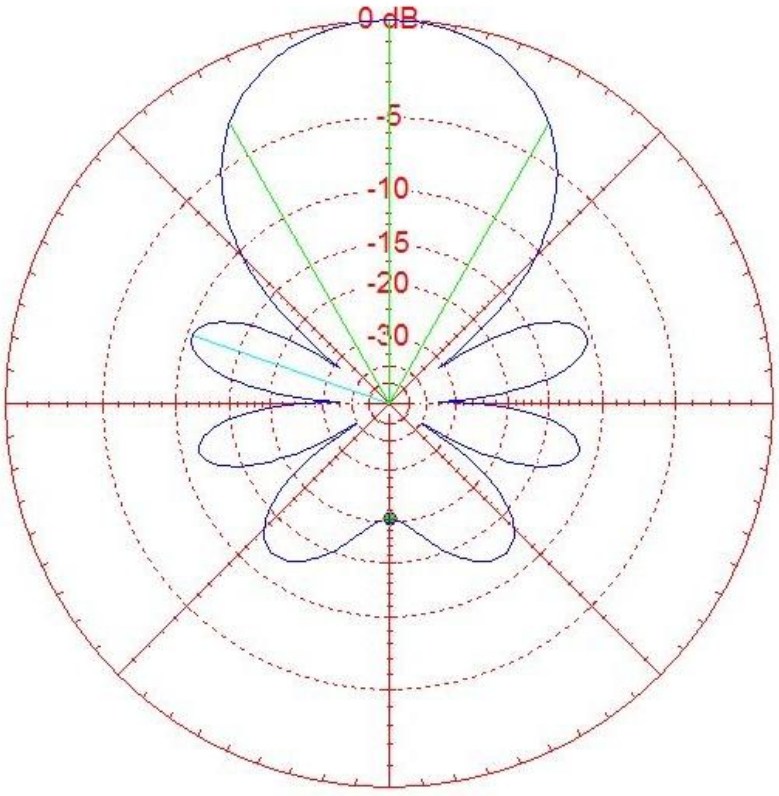


Figure 1. Typical Antenna Pattern for a 500 Ft BevPro-1 Antenna (at 4 MHz)



Azimuth Plot	
Elevation Angle	29.0 deg.
Outer Ring	-4.42 dBref
3D Max Gain	-4.42 dBref
Slice Max Gain	-4.42 dBref @ Az Angle = 90.0 deg.
Front/Back	20.59 dB
Beamwidth	59.6 deg.; -3dB @ 60.2, 119.8 deg.
Sidelobe Gain	-14.91 dBref @ Az Angle = 161.0 deg.
Front/Sidelobe	10.49 dB