

KB1GW's collection of Beverage Antenna Information

[A \\$50 Beverage](#) by Randall Thompson, K5ZD
(Originally printed in the YCCC *Scuttlebutt*, Issue 119)

[Beverage Notes](#) *First article of my two-part series.*
(Originally printed in the YCCC *Scuttlebutt*, Issue 128)

[More Beverage Notes](#) *The second article of my two-part series.*
(Originally printed in the YCCC *Scuttlebutt*, Issue 131)

[Two-Wire Beverage](#) by Jeff Parker, KA1GJ
(Originally printed in the YCCC *Scuttlebutt*, Issue 140)

Here's a [link](#) to a webpage by Barry, W2UP, where he compares a Beverage to a receive 80/160 M delta loop he built:

[W2UP Rotatable Low Band Receiving Delta Loop](#)

Don't care to roll your own Beverage-matching transformers?

You can purchase ready-made ones here: [Industrial Communication Engineers, LTD.](#), or here: [K1FZ \(two-wire\) Beverage Antenna Transformers.](#)

From Barry, NE1U: I prefer the performance of the W8JI/W7IUV matching-transformer design. See the bottom of this [link](#) to his webpage titled: [Beverage Transformer Notes.](#)

Introduction

The Beverage (or "wave") antenna was invented in the early 1920s by Dr. Harold H. Beverage. It was first discussed in a paper titled "The Wave Antenna - A New Type of Highly Directive Antenna" written by Beverage, Chester W. Rice and and Edward W. Kellogg for the journal of the American Institute of Electrical Engineers (Volume 42, 1923). The paper discusses testing longwave antennas (7,000 to 25,000 meters; 12-43 kHz) that were 7 miles (11 km) long. This work was done at Riverhead, Long Island, NY, and mentions "shortwave" tests around 450 meters (665 kHz) as a practical upper limit in subsequent experiments. While others have since written about the antenna, if you can find a reprint of this original work in a research library, you'll find the paper is fascinating reading.

In 1938, the Radio Institute of America presented Dr. Beverage with its Armstrong Medal for his work in the development of antenna systems. The Beverage antenna, the citation said, was "the precursor of wave antennas of all types." Dr. Harold Henry Beverage, Stony Brook, NY, USA, passed away on January 27, 1993 (at age 99).

A classic Beverage receiving antenna requires a lot of space. It is a long wire, one or more wavelengths long, mounted near to the ground and oriented in the direction of the desired reception. A nominal 9:1 balun is required at the juncture of the wire and 50- or 75-Ohm coaxial feedline. The far end is terminated with a nominal 600-ohm resistance. (When available land will not permit the installation of a "full length" Beverage, some people install "short" Beverages, ranging in length from about 300 feet up to 600 feet or so.)

The Beverage antenna is highly directional, responsive to low-angle signals, has little noise pick-up, and produces excellent signal to noise ratios. Some say the frequency range suitable for Beverage antennas ranges (from an Amateur Radio viewpoint) from 1.8 MHz on up to about 7 MHz or so... However, consider the following from Frank, W3LPL:

Subject: Beverage antennas effective on entire HF range
From: Frank Donovan (donovanf@jekyll.sgate.com)
Date: October 22, 1995
Organization: (Usenet's) rec.radio.shortwave

Properly designed Beverage receiving antennas are very effective across the entire HF frequency range. At the W3LPL DX contest station we use Beverages from 1.8 to 14 MHz, and during the sunspot maximum we used them up to 28 MHz!

Beverage arrays (multiple Beverages designed to operate as a phased array) are even more effective on HF. I've seen Beverage arrays with as many as 128 individual Beverage elements, each 220 feet long and 4 feet high.

ARRL Books:

"Low Band DXing:"

Low band antennas (TX and RX, including Beverages), operating techniques; by ON4UN

"DXing on the Edge--The Thrill of 160 Meters:"

160-meter operating, TX and RX antennas, and more; by K1ZM (includes an audio CD, too).

Beverage antenna articles--from *QST*:

"Beverage Antennas for Amateur Communications," *QST* Magazine, January 1983, pp. 22-27. (Belrose, Litva, Moss, and Stevens)

"The Classic Beverage Antenna, Revisited," *QST* Magazine, January 1982, pp. 11-17 (H. H. Beverage and Doug DeMaw).

"The Wave Antenna for 200-Meter Reception," *QST* Magazine, November 1922, pp. 7-15 (H.H. Beverage).

K9AY receiving-loop antenna article--from *QST*:

"The K9AY Terminated Loop--A Compact, Directional Receiving Antenna" *QST* Magazine, September 1997, pp. 43-46 (Gary Breed).

"EWE" receiving antenna articles--from *QST*:

"Is This EWE For You?," *QST* Magazine, February 1995, p 31 (Koontz).

"Feedback," (Re: Is This EWE For You?), *QST* Magazine, April 1995, p 75 (Koontz).

"More EWE's For You" *QST* Magazine, January 1996, p 32 (Koontz).

Further reading:

"The Beverage Antenna Handbook"
Victor Misek, W1WCR
142 Wason Road
Hudson, NH 03051

"Beverage and Longwire Theory"
National Radio Club
P.O. Box 164
Mannsville, NY 13661

"The Beverage Antenna"
Popular Electronics magazine
January 1998 issue; pages 40 to 46
An article by Joseph J. Carr, K4IPV

Where you can purchase hardware for your receive antenna:

K1FZ offers his model KB-1 and the KB-2 *two-wire Beverage* matching transformers that include:

- High efficiency wound ferrite toroid transformers with isolated 50 ohm windings for minimum noise transfer.
- Transformers are housed in attractive, rugged plastic project type boxes.
- Each unit is individually calibrated to eliminate variations found in mass production.
- The use of large core size prevents saturation from adjacent local stations.

Website: [K1FZ Beverage Antenna Transformers](#)

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Industrial Communication Engineers, LTD.

PO Box 18495
Indianapolis, IN 46218-0495
Tel. 800-ICE-COMM (800-423-2666)
Main Office 317-545-5412
Cust Serv (parts) 317-547-1398
Fax 317-545-9645
Telex I.C.E. 27-440

Website: [Industrial Communication Engineers, LTD.](#)

About 1/2 the way down the above ICE webpage, you'll see that ICE offers their Model 180A matching box for \$39 (plus shipping). The 180A has taps to select 50 or 75-Ohm coax feedlines; and taps to match 300/450/600 or 800-Ohm Beverage antenna loads. The 180A has dc blocking capacitors and a gas-discharge lightning protection system. ICE also sells a Model 181A for \$39 (plus shipping), which allows you to apply a dc voltage into your Beverage for remote switching. Like the 180A, the '181A has a gas-discharge protection system.

Finally, they offer a Model 185A "resistive load" to terminate your Beverage with (\$34 plus shipping). It

has same high-impedance taps as the Model 180A. These units are rated for 10 W of continuous RF and 100 W on peaks. (I was told that these ratings are not specified for transmitting into the boxes. Rather, they are what the boxes can withstand when your Beverage picks up energy from nearby transmitting antennas.) All of these boxes are made of 1/8-inch extruded aluminum (milled and tapped). And, if you're looking to buy American, they're all made in the USA.

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