Robinson Barnes HF Broadband Antenna

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The HF radio spectrum is generally considered to be 2-30 MHz. In this frequency range antennas need to be physically large to enable good coupling to "space" and hence efficient radiation. As an example, at 5 MHz a half wave dipole is around 30m in length and 2 MHz it is 75m long. Half wave dipoles are very efficient radiators but they are narrow band (only work over a very small frequency range) before serious impedance mismatch occurs. This mismatch can be accommodated using an antenna tuner but these add to costs and modern HF communication often uses frequency hopping techniques. Even automatic antenna tuners will not work with frequency hopping signals.

Broadband HF base antennas traditionally fall into two main categories, resistively loaded antennas which can be inexpensive and reasonably compact but inefficient, or large elaborate and very expensive, non-loaded designs. (These can cost upward of $80,000 to purchase and install). The challenge for many years has been to devise an antenna which is an efficient radiator, compact, and also inexpensive. Previous solutions include the Barker Williamson folded dipole, the Australian traveling wave dipole and other designs by Guertler etc. Many "broadband" designs have also been offered by the Amateur Radio community but these are generally not true broadband antennas as they only work well (without an antenna tuner) in the harmonically related Amateur bands. A true HF broadband antenna will work continuously across most of, if not all of the HF spectrum with good radiation efficiency and minimal compromise of the radiation pattern.

The **Robinson Barnes HF Broadband Antenna** was conceptualised and developed in the early 1990s by Graham Robinson and John Barnes and has become a widely used design for commercial and military HF base stations, where ground space is limited, yet a full 4 octave bandwidth (2-30 MHz)is required.

It is a centre fed wire antenna with two arms each consisting of 3 radiating elements and is generally tower mounted, either horizontally or as an "inverted V"

The design has almost double the radiation efficiency of the HF folded dipole of the same length and is nearly half the size of other traditional HF wire antennas such as the "Australian traveling wave dipole" The standard size Robinson Barnes antenna is only 28m in length. The "Australian traveling wave dipole" in comparison is 52m long.

References

- Antennas. J.D. Kraus McGraw-Hill
- Electronic Radio and Engineering. F.R. Terman. MacGraw-Hill
- Terrestrial Radio Waves. Dr.H. Bremer. Elsevier Publishing Co.
- Ultra & Extreme Short Wave Reception. M. Strutt. Van Nostrand

Categories: Antennas (radio)

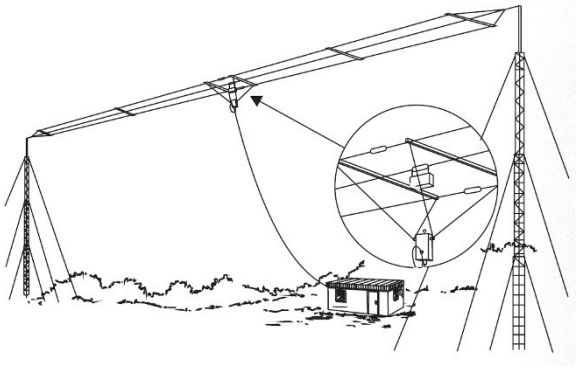
Bushcomm
HF Antennas

Product Overview

BBA Family Overview

HF BROADBAND MULTIWIRE ANTENNA

Our flagship model and all-round best performer to date is the BBA series of antennas.



These antennas are highly efficient, and engineered to meet the exacting standards of professional users. Frequency range is specified according to useful gain (not only VSWR), and all components are validated for rated power.

The Bushcomm BBA has the flexibility to suit a wide range of installation situations - between two purpose built towers at a professional site, in an inverted "V" configuration, or even between a tree and the back shed.

Light yet sturdy construction ensures low total mass wind loading. The highest quality materials are used in construction, such as stainless steel wire and fittings, and UV resistant fibreglass rods, to produce an antenna that will survive the rigours of the outdoors for many years.

SPECIAL FEATURES

- **No tuner required**
- **S/S wire and fittings**
- **UV resistant components**
- **Easy installation (instruction provided)**
- **Variation of length and power available**
- **Configurable in horizontal, inverted V or sloped configuration**

Model	Length	Power (Average)	Max VSWR	Freq Range
BBA 100CS	20m	100W	2:1	4.9 to 30MHz
BBA 100C	27m	100W	2:1	3.6 to 30MHz
BBA 100CE	54m	100W	2.5:1	1.8 to 30MHz
BBA 100CF	74m	100W	2.5:1	1.6 to 30MHz
BBA 600V	27m	600W Voice, 250W Avg	2:1	3.6 to 30MHz
BBA 600VE	54m	600W Voice, 250W Avg	2.5:1	1.8 to 30MHz
BBA 1kC	27m	1kW	2.5:1	3.6 to 30MHz
BBA 1kCE	54m	1kW	2.5:1	1.8 to 30MHz
BBA 1kCF	74m	1kW	2.5:1	1.6 to 30MHz
BBA 1kD	27m	1kW	2:1	3.6 to 30MHz
BBA 1kDE	54m	1kW	2:1	1.8 to 30MHz