

The Radio Hotel - What Makes the Best Antenna?

By Rick Hiller -- W5RH

What makes the best antenna? The answer depends on the individual Ham. Hams tend to want low SWR, maximum gain, low (or high) angle of the main radiation lobe, low noise, high front to back ratio, high front to side ratio, etc. Some Hams want just one of these characteristics, some want 2 or more and even some Hams want all of them.

In the May, 1925 QST, W. H. Murphy, states: "The average transmitting amateur has simply got to fit his antenna into his space. Just what makes the best antenna does not concern him very much. He is only interested in 'what makes the best antenna within my space' "

The TTFD For example, the TTFD is an aperiodic antenna. It is not a standing wave/resonant antenna, but it is a Traveling Wave Antenna that has a resistor at the end of the antenna current path, hence the name TTFD -- **Tilted, Terminated Folded Dipole**. Yes, you lose power in this resistor, but the benefit is that the antenna has a low SWR across a few octaves of HF radio frequencies. So you can work multiple bands without fear of a high SWR. To get this benefit you have to accept slightly lower gain and lower efficiency, but it does work. For some, this would be the best antenna.

The Yagi Another example is a typical 6 meter Yagi-Uda with 4 or more elements. It will have high gain but has a fairly narrow working beamwidth and bandwidth (although the recent GOKSC antenna designs have taken care of this matched bandwidth dilemma with Loop Feeding, OWA, etc.). For the 6 Meter Ham, this is what they want and they don't care about working other bands, so it is the best antenna for them.

In the end The best antenna is the one that allows you to work the bands you want, and communicate with the Hams you want, either locally or on the other continents. At the sunspot cycle peak, a dipole strung between 2 clothes line poles in the back yard will work the world, whereas a 4 element SteppIR at 75 feet will hear crickets on the higher bands for the next few years. From a snapshot view, in the first instance, the dipole is a great antenna and, in the second, the SteppIR is not such a good antenna, but we all know that not to be true.

Learning -- A different path. What the above descriptions illuminate is that it might be a good thing to learn about antennas – what makes them tick, how they work in conjunction with the surrounding environment, how they are best deployed and how to connect them (correctly) into our radio stations. A side journey into HF propagation might also be worth it.

For those Hams just starting out into the field of antenna understanding, might I suggest a slightly different path. Do not buy the ARRL Antenna Handbook. It is a great book (which you can purchase later), but it has way too much information for the beginner. Rather, purchase (new or used) one of the "cook book" type antenna books being sold by ARRL or others...even older books. For example: The RSGB's Practical Wire Antennas by G3BDQ or ARRL's Simple and Fun Antennas, or Joe Carr's Practical Antenna Handbook. These books put the emphasis on building antennas of all different types and less emphasis on how or why they work. That theoretical knowledge can, and will, come later. Getting a skyhook in the air and using it is the most important thing for you right now.

So, what makes the best antenna? The best antenna (for now) is probably the one you have in your back yard - - "your space". Appreciate what it does for you and strive to improve it thru more practical building and complementary education into the theoretical aspects of these skyhooks. Antennas, as Ham Radio, are not a destination, but a never ending journey. Note -- there are plenty of key words to Google in this article, so have fun and enjoy your hobby.

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