

The Radio Hotel – Advances in Antenna Tech

by Rick Hiller – W5RH

If you have been a ham for a long time then you have seen things change. Continual technological advances and how they have influenced our Ham Radio hobby. If you are new to the Ham Radio world, you would be remiss if you did not know from where the current offerings of technology, information and operational standards came from. I'll limit my scope to antenna use within Ham Radio world. As we move forward through the hobby both the technology changes as does the implementation or how that technology is utilized. I haven't really seen any new discoveries, but I have seen refinement of how that technology is used and implemented. So what has changed within the antenna world?

Yagis have taken on a different tack with Yagi element length and spacing adjustments to establish 50 ohm feeds. This eliminates the use of those finicky Gamma or even Hairpin matches. If you look at the gain and F/B curves for Yagi's you'll find that 50 ohm feed is readily obtainable, but at a slight loss of maximum gain and a reduction of F/B ratio. However, anecdotal evidence from designers and users point to the betterment of performance in contesting, etc. using direct feed. (Ref: Array of Light book – N6BT, Tom Schiller) (See: The Radio Hotel -- Nov. 2017 Beacon “Recent Trends in Yagi-Uda Design”)

Also in the Yagi world, low noise antennas have taken a stint in the spotlight. Low noise is defined as antennas designed to reduce the signals coming in off the sides, but more importantly, off the back of the array. Noise in these cases is defined as any signal that is undesirable, not just the traditional "noise" in the sense of QRM, but also EMI or atmospherics etc.. What helps here is the use of NEC modeling and iterative scripts built to change one control attribute at a time and play it against all other, but static, attributes, then increment and repeat. This is done over and over until all control attributes are varied and played against all other attributes. (Ref: The Radio Hotel – Aug. 2016 Beacon “50 Ohm direct Feed Yagi's”)

Receive Only antennas have also taken an expansion of strange utilizations. A few years back Flags and Pennants were in vogue, allowing rotatable/directive receive systems. Hams then took the “snake” on-ground antenna from years past and started to put Flags on the Ground (FOG) and Loops on the Ground (LOG). Putting some of these antennas, even reduced size was a shoe-horn effort into your back yard. Shared Loop arrays fit that bill along with also being directive through phasing. However, all of this new implementation did not put a damper on the legacy Beverage Wave Antenna. In fact, that design has taken a few steps forward with the use of parallel and phased Wave Antenna systems. If you have the room, the Beverage remains the Cadillac of the receive assortment. (Ref: The Radio Hotel – July 2020 Beacon “A Cursory Look at Receive Only Antennas”) And, note that, even the Beverage has been lowered to ground level as a Beverage On Ground -- BOG.

As Hams took a deeper dive into the theory of antennas and their working characteristics in order to improve their performance characteristics, they got deeper in the physics of the sky hook. (See: The Radio Hotel Aug 2018 Beacon “The Impedance of Space”.) Also, although currently in the commercial realm, there is some antenna development we might want to pay attention too. (See: The Radio Hotel – April 2017 Beacon “AA0ST and Antennas Thru the Looking Glass”.)

All this reminds me of the Virginia Slims ad from years back, “We’ve come a long way Baby”
Enjoy your hobby....73