BACKGROUND INFORMATION

With the corporate changes that are affecting MFJ, obtaining their Hamstick antennas has become more difficult. Several secondary sources have surfaces. One new version is Intellitron. Their Hamstick antenna seem to be in good supply, and at a fairly low price. It made good sense to do an objective test on their 10 meter MA-2010T antenna. Possibly other bands will be tested in the future.

Since many of the Hamstick antennas are being used for POTA, I tested the MA-2010T antennas in a manner typically used by POTA Activators. These test were run from a free standing support, with antenna elevations of 10’, 15’ and 20’. Two dipole adapter brackets were used. The MFJ-347 and my own custom fabricated mounts were tested. Both versions have two isolated antennas, and only the mount frames were tied to the support mast. Both mounts had similar results.

Before taking the tabulated data, I experimented with several configurations of feed lines. Different length of RG-8U cable with and without coiled coax chokes were tested. The antenna elevation, coax susceptibility to positioning, antenna impedance, and antenna bandwidth were all considered. The ideal feedline seems to be 50’ to 60’ of coax. A three to six turn coax choke coil, wound with twelve inch diameter turns, seemed best. The coil was located on the ground, at the base of the support mast. All charted tests were done using this coax configuration. Feed lines less than 30’ resulted in very poor results.

GRAPHS SHOWN FOR EACH ANTENNA CONFIGURATION

The graph labeled S11 represents the reflection coefficient or return loss charted over frequency. It is a measure of how much power is reflected back to the transmitter, from the antenna. Normally this value is given as a negative dB number, but I set this chart up to show the amount of power reflected back to the transmitter as a percentage. The 0 value indicates that 0% of the power is being reflected back, and a 1 indicates that 100% of the power is being reflected back from the antenna. Stated in another way, the 0 value indicates that there is no reflected power, so all of the power is being transmitted out of the antenna. (Note: The value of S11 is a complex calculation with numerous parameters. The over simplified version of S11 is commonly called reflection coefficient or return loss. Under most conditions, the resultant is more accurate than needed for amateur radio use.)

The VSWR graph represents the voltage standing wave ratio, or more commonly called the SWR by Hams. It is always a ratio of some variable number compared to 1, or 1.5:1. An over simplified explanation, is that it is the ratio of the antenna voltage for the antenna being measured, compared to the voltage of a perfectly match antenna.

The graph labeled as S11|Z| is a measure of the AC impedance of the antenna charted over frequency. It is the vector sum of the capacitive reactance, inductive reactance, and resistance. These values combine to show the true impedance of an antenna. Very seldom does an antenna actually have an impedance that it is listed for, and never does the impedance remain constant over frequency.

Graphs were run for two different sections of the 10 meter band. The full band width including data, and phone (28.00 to 29.70) are listed as Band. The antenna was tuned to 28.85 MHZ. The phone only section (28.30 to 29.70) is called Phone, and the antenna was tuned for 29.00 MHZ.

The graphic file names all share a standard format. It is HIS\_10m\_Phone\_20’\_S11.jpg. The HIS stands for Intellitron Ham Stick, 10m stands for 10 Meters, 20’ stands for antenna elevation, and S11 stands for what is on the graph.