

Antennas and Feedlines

If I set up a 6 meter horizontally polarized dipole antenna measuring 112 inches outside my shack and connected it to my transceiver with commonly used 50 ohm co-ax cable (co-ax is so easy to use and requires few special installation considerations) using a PL259 connector, usually used for HF, it would need weather proofing to prevent an increase in feedline loss. I will try to get the lowest SWR possible to reduce signal loss and make sure that all connections are tight to prevent erratic changes in SWR. I might have to use RG58, but if I can get some RG8 it has lower loss at a given frequency.

If the antenna tunes to a lower frequency than I want I'll need to shorten each element equally to increase resonant frequency. Short wavelengths (higher frequencies) + shorter antennas. If on the other hand, I made the elements too short but don't have room to lengthen them I can increase the electrical length by "Loading" the antenna with an inductor in each leg.

Since the greatest signal strength is broadside to the dipole antenna I would align the wires north and south to better reach the East and West coasts. If I can only support the center of the antenna, I can lower the ends in the shape of an inverted V and the radiation pattern will become more omnidirectional and the impedance will change. I may need to use an antenna tuner to match the antenna system impedance to the transceiver output impedance (50 ohms).

Since my HT with its rubber duck antenna does not transmit or receive very effectively in my car due to the shielding effect of the body I will need an outside antenna. A 19 inch $\frac{1}{4}$ wavelength would greatly improve performance at 146 Mhz, but a $\frac{5}{8}$ wavelength would lower the radiation angle and yield increased gain.

My tape measure Yagi antenna is a directional Beam antenna like a Quad or Dish. These all have gain when compared to a reference antenna.

Air-insulated hard line has the lowest loss at VHF/UHF. Since I don't have the skills or budget for hard line I need to use co-ax for my VHF/UHF antenna. I will select the co-ax with the lowest loss in dB per 100ft that I can afford, Since the signal loss increases as frequency increases I will keep the cable runs as short as possible and use Type-N connectors especially for frequencies of 400 Mhz and above. Type-N connectors are also more weatherproof than "uhf" connectors.