



This is a picture of the tower presently used by Albert J Ward W5LUA in Allen, Texas on 160M. The tower was installed back in about 1980. The tower itself is 75 ft tall with 12 ft of mast plus top loading above this point. I use it as a shunt fed tower on 160M and propose matching it for 474 kHz. EZNEC shows the impedance of the 87 ft tower at 474 kHz to be $1.008 - j740.4$ which is equivalent to a circuit with $1\ \Omega$ in series with 454 pF, suggesting that the Zs of the antenna will be in the 1 ohm range.

Actual measurement of the tower fed with the same pair of gamma rods used for 160 meters without any additional matching shows the input impedance of the tower at 474 kHz to be $20\ \Omega$ in series with 15 uH. A series capacitor of 7500 pF should match out the inductive reactance. This is suggesting that the additional $19\ \Omega$ may be due to ground losses and other inefficiencies. Predicted efficiency at 474 kHz is less than 1%.

Albert J Ward III W5LUA February 14, 2014