

8/10/63

Synopsis of Operation and Test

The effective length of an antenna is about proportional to frequency. Thus when antenna is immersed in a field of fixed strength, the induced voltage will be proportional to frequency. It is desired that the output voltage be proportional to field strength over working range. This will transpire as follows.

Place multiterm coil with axis vertical in center of single turn loop between base of down lead and tuner box. If dimensions of coil are small compared to loop, the exact position of coil will not be critical. Hold coil current constant. The coil field will be constant and proportional $F \propto NI = \text{constant}$. The voltage induced in loop E_a will be proportional to frequency. Correct antenna tuning will be when output voltage E_o is constant over operating range.

The detector for reading E_o must have an input impedance of 612 ohms resistive. Allowable capacity in reactance in shunt must exceed 6120 ohms = 9.3 pf at 2.8 mc. A diode detector will be satisfactory for high level work, a vacuum tube amplifier is indicated for low level work. The level cannot be very low or interference will be encountered from broadcast stations.

2/11/63

