

A comparison of different loop antennas for the Basic-2

When loop antennas other than 19 inch diameter are built for the basic-2 radios, the same total length and 24 gauge enameled (magnet) wire should be used. This is ~1.9 lbs (0.9 kg) of wire per loop. This will keep the DC resistance the same, which is nearly the same as the AC load seen by the 3 op-amps at resonance. Different loop diameters will result in different loop inductances which will result in different operating frequencies. Only radios with identical antennas will be truly compatible. The largest diameter loops will give much longer range than the smallest ones. I would go smaller than 19 inches only if absolutely necessary. The table below gives the calculated inductance when the wire is wound in a multi-layer bundle.

Loop Dia. inches	Loop Dia cm	Turns of #24 wire	Inductance, mH	Operating frequency, Hz
15.5"	39.4 cm	379	138 mH	1643 Hz
19"	48.3	309	121.6	1750
20.5"	52	286	119	1769
24"	61	245	104	1892
30"	76.2	196	91.8	2014