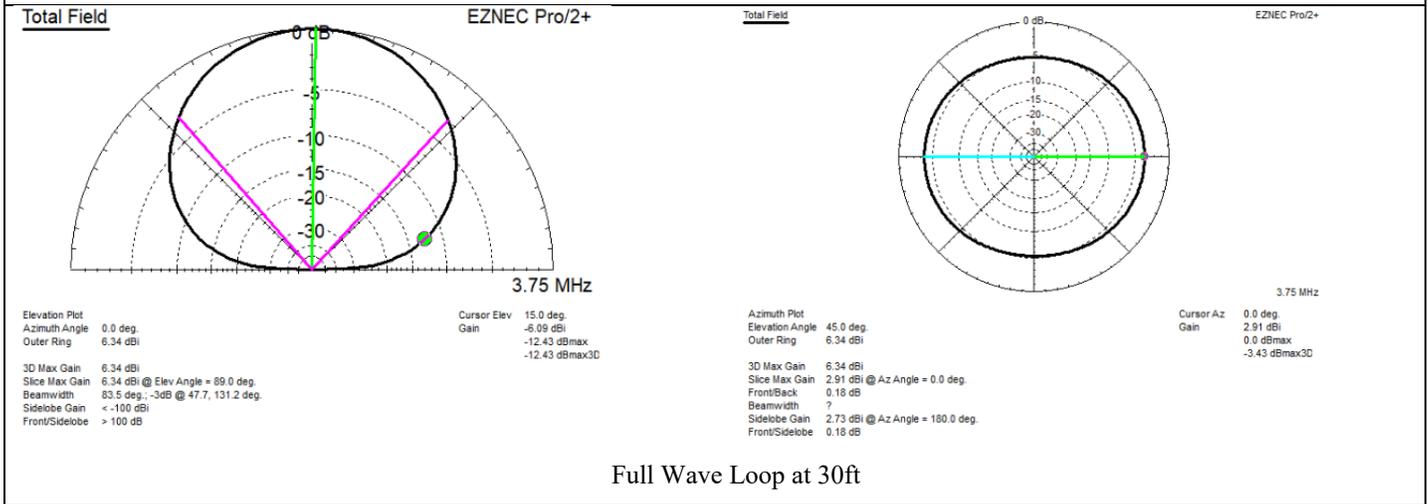
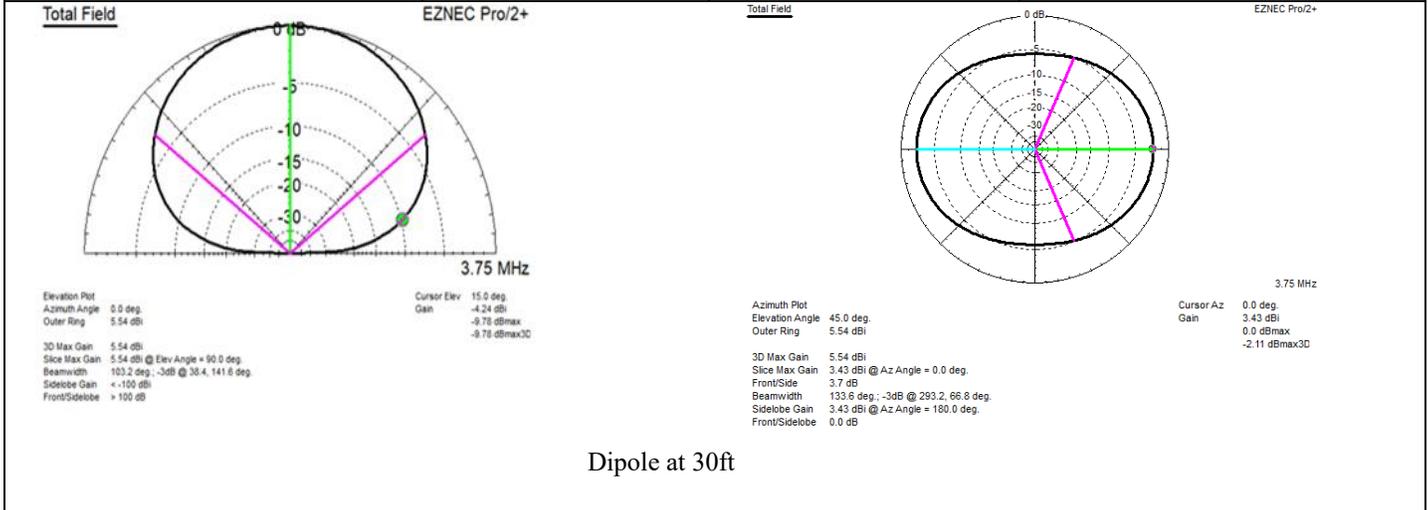


# Full Wave Loop vs. Half Wave Dipole

Tech Talk 3/14/2026 W8JI

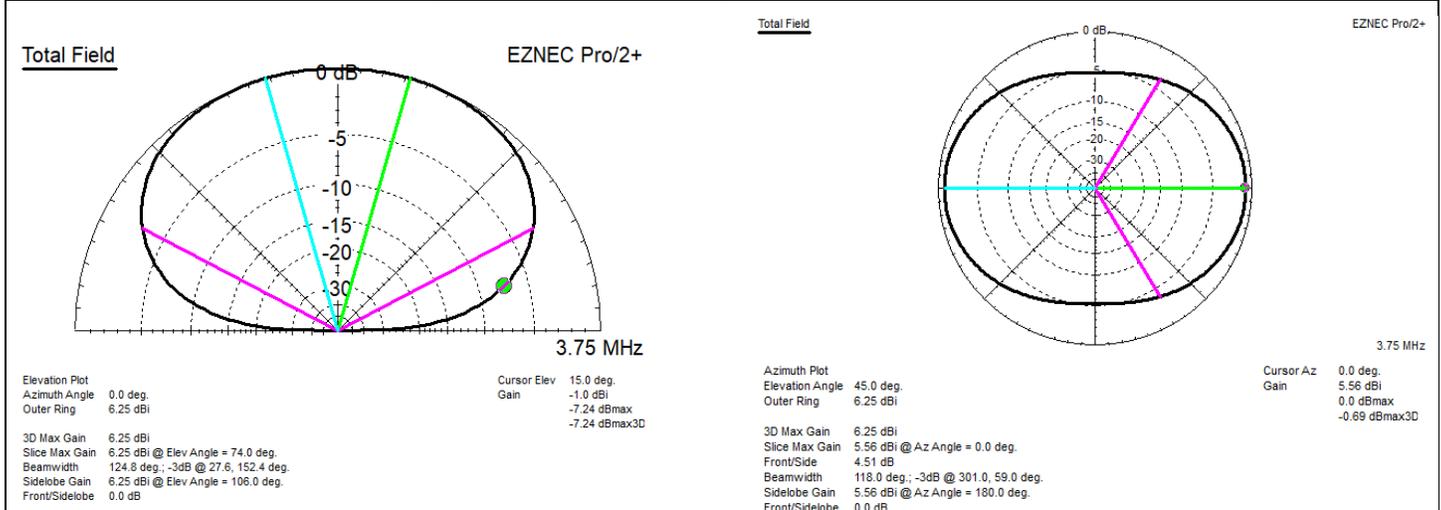
On March 9, 2026's Tech Talk N4UAX brought up a large loop vs dipole. This is a comparison of a full wave horizontal loop and half-wave dipole antenna at three typical heights of 30, 50, and 70 feet. The antennas are placed over flat medium soil without. Feedline loss is not included. Wire is bare #14 AWG solid copper. It is assumed common mode is fully mitigated. These two base models are on the barnesvillega.net repeater website **shared files** page top.

Antenna	Dipole 30ft	Loop 30ft	Differences
Average gain	-2.68dB (53.9% eff)	-2.37dB (57.9%)	Loop + 0.31db from efficiency
Peak gain	5.54dBi	6.34dBi	+ 0.8dB favor of loop
15° gain	-4.24dBi	-6.09dBi	Dipole better + 1.85dB
45° gain (moderate distance)	3.43dBi	2.91dBi	Dipole better + 0.52dB
Peak gain angle	90°	90°	same
2:1 SWR BW	149 kHz	152 kHz	Essentially same BW

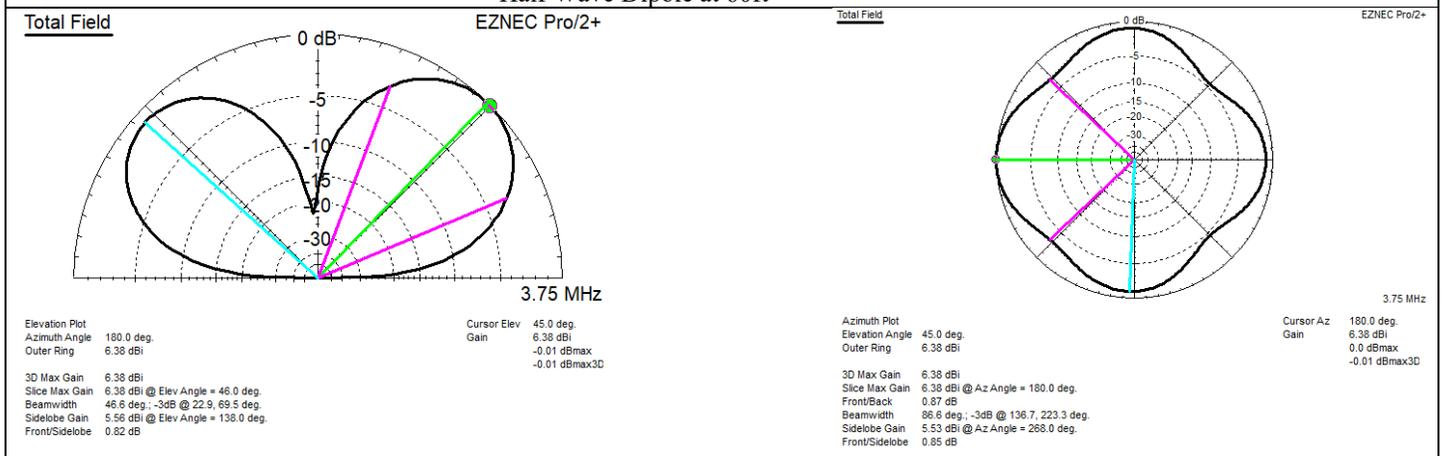


## Larger 2WL Comparison to Half Wave Dipole both at 60-feet

Antenna	Dipole 60ft	Loop 60ft	Differences
Average gain	-1.05dB (78.4% eff)	-1.34dB (73.5%)	Dipole + 0.29db from efficiency
Peak gain	6.23dBi	6.38dBi	+ 0.15dB favor of loop
15° gain	-1.00dBi	-6.09dBi	Dipole better + 5.09dB
45° gain (moderate distance)	5.56dBi	6.38dBi	Loop better + 0.82dB
Peak gain angle	90°	46°	same
2:1 SWR BW	240 kHz	193 kHz	Dipole broader by 47kHz



### Half Wave Dipole at 60ft



### Two Wavelength Loop at 60ft