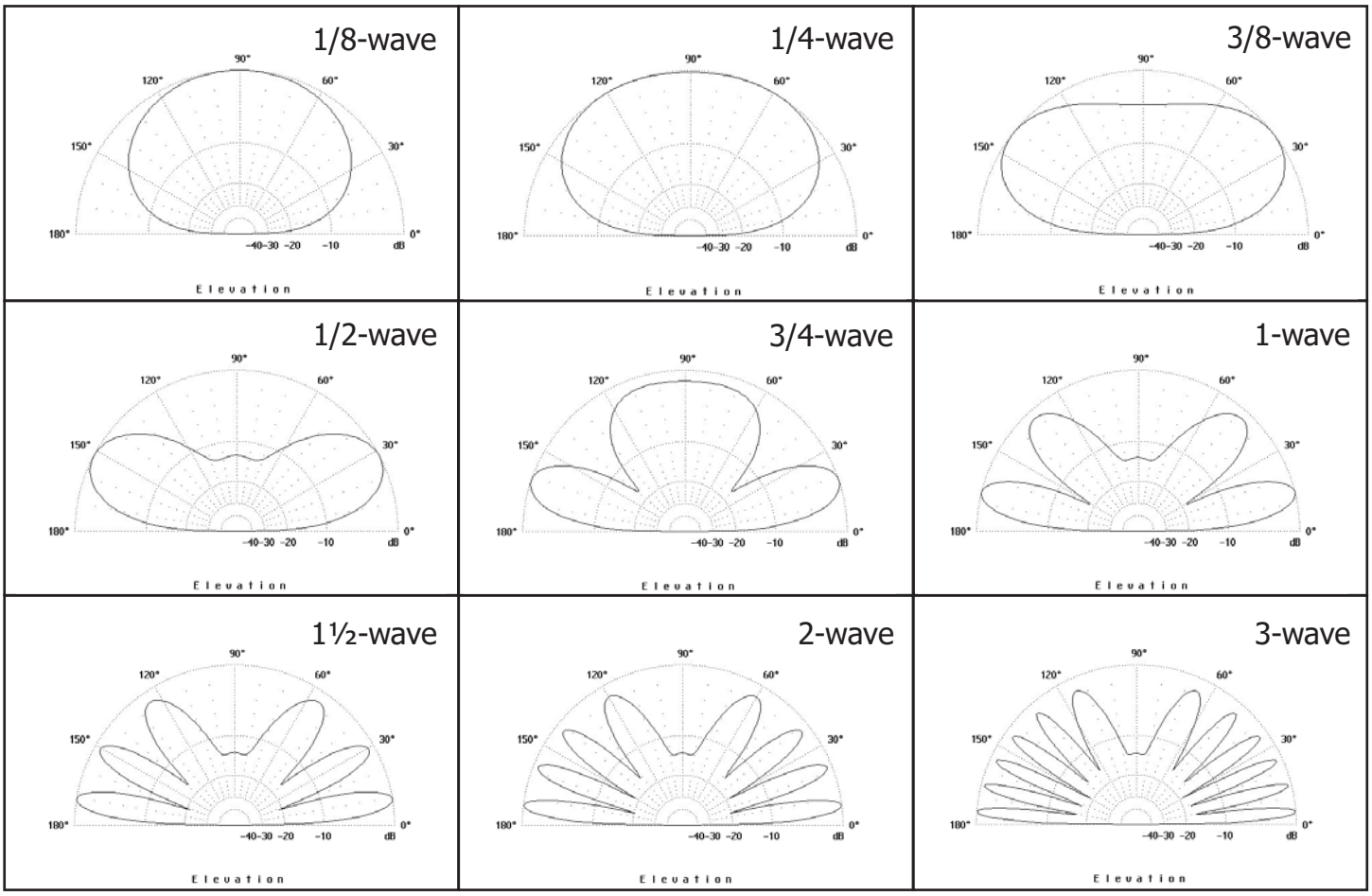
Dipole Vertical Radiation Patterns (over average ground)



Electrical Height (Wavelengths)	Frequency Band (centre of band)										
	160m	80m	60m	40m	30m	20m	17m	15m	12m	10m	6m
1/8	65'	32.4'	23'	17.2'	12.2'	8.7'	6.8'	5.8'	4.9'	4.3'	2.4'
1/4	130'	64.7'	46'	34.4'	24.3'	17.3'	13.6'	11.5'	9.9'	8.6'	4.7'
3/8	194'	97'	69'	51.6'	36.5'	26'	20.4'	17.3'	14.8'	12.9'	7.1'
1/2	259'	130'	92'	68.8'	48.6'	34.6'	27.2'	23.1'	19.7'	17.2'	9.5'
3/4	388'	194'	138'	103'	72.9'	52'	40.8'	34.6'	29.6'	25.8'	14.2'
1	518'	259'	184'	137'	97'	69'	54.4'	46.2'	39.5'	34.4'	18.9'
1½	777'	388'	276'	206'	146'	104'	81.5'	69.2'	59.2'	51.6'	28.4'
2	1036'	518'	368'	275'	194'	139'	109'	92'	79'	68.6'	37.8'
3	1554'	777'	552'	413'	292'	208'	163'	138'	118'	103'	56.8'

Note: - In general, the higher the antenna the better
- Most DX comes in at an angle of <12°
- Nulls in the vertical pattern will cause signal reductions at those angles
- Inverted V dipoles will fill in some of these nulls with a vertically polarized signal
- Horizontal dipoles on 160m are generally not good for DX
- Even a top-loaded short vertical (on 160m) will work better than a dipole at 130 feet
- Dipole heights are generally less than 70 feet for an average installation
- The chart above shows heights >70 feet in grey