

# ANTENNA DOWNTILT CALCULATOR

Antenna Height: 75ft			Antenna Beamwidth: 7°	
Downtilt (°)	Inner Radius (miles/km)		Outer Radius (miles/km)	
0	0.23 mi	0.37 km	Over Horizon	Over Horizon
1	0.18	0.29	Over Horizon	Over Horizon
2	0.15	0.24	Over Horizon	Over Horizon
3	0.12	0.20	Over Horizon	Over Horizon
4	0.11	0.17	1.63 mi	2.62 km
5	0.10	0.15	0.54	0.87
6	0.08	0.14	0.33	0.52
7	0.08	0.12	0.23	0.37

Antenna Height: 100ft			Antenna Beamwidth: 7°	
Downtilt (°)	Inner Radius (miles/km)		Outer Radius (miles/km)	
0	0.31 mi	0.50 km	Over Horizon	Over Horizon
1	0.24	0.39	Over Horizon	Over Horizon
2	0.20	0.32	Over Horizon	Over Horizon
3	0.17	0.27	Over Horizon	Over Horizon
4	0.14	0.23	2.17 mi	3.49 km
5	0.13	0.20	0.72	1.16
6	0.11	0.18	0.43	0.70
7	0.10	0.16	0.31	0.50

Antenna Height: 125ft			Antenna Beamwidth: 7°	
Downtilt (°)	Inner Radius (miles/km)		Outer Radius (miles/km)	
0	0.39 mi	0.62 km	Over Horizon	Over Horizon
1	0.30	0.48	Over Horizon	Over Horizon
2	0.25	0.40	Over Horizon	Over Horizon
3	0.21	0.33	Over Horizon	Over Horizon
4	0.18	0.29	2.71 mi	4.37 km
5	0.16	0.25	0.90	1.45
6	0.14	0.23	0.54	0.87
7	0.13	0.21	0.39	0.62

Antenna Height: 150ft			Antenna Beamwidth: 7°	
Downtilt (°)	Inner Radius (miles/km)		Outer Radius (miles/km)	
0	0.46 mi	0.75 km	Over Horizon	Over Horizon
1	0.36	0.58	Over Horizon	Over Horizon
2	0.30	0.47	Over Horizon	Over Horizon
3	0.25	0.40	Over Horizon	Over Horizon
4	0.22	0.35	3.26 mi	5.24 km
5	0.19	0.31	1.08	1.75
6	0.17	0.27	0.65	1.05
7	0.15	0.25	0.46	0.75

Antenna Height: 175ft			Antenna Beamwidth: 7°	
Downtilt (°)	Inner Radius (miles/km)		Outer Radius (miles/km)	
0	0.54 mi	0.87 km	Over Horizon	Over Horizon
1	0.42	0.68	Over Horizon	Over Horizon
2	0.34	0.55	Over Horizon	Over Horizon
3	0.29	0.47	Over Horizon	Over Horizon
4	0.25	0.41	3.80 mi	6.11 km
5	0.22	0.36	1.27	2.04
6	0.20	0.32	0.76	1.22
7	0.18	0.29	0.54	0.87

Antenna Height: 200ft			Antenna Beamwidth: 7°	
Downtilt (°)	Inner Radius (miles/km)		Outer Radius (miles/km)	
0	0.62 mi	1.00 km	Over Horizon	Over Horizon
1	0.48	0.77	Over Horizon	Over Horizon
2	0.39	0.63	Over Horizon	Over Horizon
3	0.33	0.54	Over Horizon	Over Horizon
4	0.29	0.46	4.34 mi	6.99 km
5	0.25	0.41	1.45	2.33
6	0.23	0.36	0.87	1.40
7	0.20	0.33	0.62	1.00

**Note:** These values represent a first-order approximation and assumes a smooth terrain with no obstacles. It should only be used as a guide.

**Formula:** Radius=Height/[tan(Downtilt Angle ± Beamwidth/2) \* 5280]