

TROOP COMMANDERS
RADIO GUIDE

VHF RADIO PATH ASSESSMENT

This is a system of assessing the loss along a VHF radio path. It can enable a rapid and reasonable comparison of possible alternative paths to be made before rece. It is not a substitute for rece in marginal cases.

System Value (SV)

between identical stations at 30 MHz.
For 50 MHz subtract 4 dB.
For 70 MHz subtract 8 dB.

Equipment	SV in dB
PRC 350, 1.2m whip	119
PRC 351, SURF 4W, 1.2m whip	129
PRC 352, Ground Spike antenna	140
VRC 353, TUAAM, 2m whip	Min 116
	1W 127
	15W 141
	50W 146
VRC 353, Plessey elevated (8m)	Min 135
	1W 144
	15W 157
	50W 163

SV =

TABLE 2

Plane Earth Loss (PEL)

Distance (km)	Loss (dB)	Distance (km)	Loss (dB)	Distance (km)	Loss (dB)
1	77	12	120	50	150
2	89	14	122	55	152
3	97	16	125	60	155
4	101	18	127	65	157
5	105	20	129	70	159
6	108	25	132	75	161
7	110	30	136	80	163
8	113	35	141	90	166
9	115	40	144	100	167
10	117	45	147	160	186

PEL =

Is SV - PEL more than 38 dB?

No Yes - the path will work.

Is PEL - SV more than 50 dB?

No Yes - the path will not work.

Go to table 3.

TABLE 3

Diffraction Loss (DL)

Height of Intrusion Above Line of Sight (m)	Loss (dB)									
	Distance From Worst Intrusion to Nearest Antenna (km)									
	1/2	1	1 1/2	3	5	8	15	25	30	50
20	5	4	3	1	--	--	--	--	--	--
30	8	6	4	3	2	--	--	--	--	--
40	10	7	6	4	3	2	1	--	--	--
50	11	9	7	5	3	2	1	--	--	--
100	17	14	12	10	7	7	5	2	1	1
150	21	17	16	13	12	10	8	6	5	4
200	23	21	18	14	13	11	9	7	6	5
250	25	22	20	16	14	13	11	9	8	6
300	27	24	22	18	16	14	12	10	9	7
350	28	25	23	20	18	16	14	12	10	9

PEL + DL =

Is SV - (PEL + DL) more than 10 dB?

No Yes - the path will work

Is (PEL + DL) - SV more than 50 dB?

No Yes - the path will not work

Go to Table 4.

TABLE 4

Slope Correction (SC)

- a. These gains apply only when the antenna is sited on the forward edge of a concave slope.
- b. Both ends of the link are to be assessed separately and the gains added together.
- c. Measurements are to be made from the base of the mast.

Ground Falls Away Over First 500m From Antenna Base By At Least:

Distance	Gain (dB)
60m	20
45m	15
30m	10
20m	5

15m - but only if ground falls a further 35m in next 50m

SV + SC =

Is (SV + SC) - (PEL + DL) more than 10 dB?

No Yes - the path will work

Is (PEL + DL) - (SV + SC) more than 10 dB?

No Yes - the path will not work

The path is marginal. Test it, or try different sites.