

The Louisiana Council of Amateur Radio Clubs

ERP CALCULATION

This worksheet may be used to calculate your repeater transmit effective radiated power (ERP).

Information Needed: _____ Sponser: _____

Transmitting Frequency Band: _____ MHz

Transmitter Output Power: _____ Watts

Antenna Make and Model: _____

Antenna Gain (in dB over a half-wave dipole): _____ dBd

Type of Antenna Feed Line: _____

Length of Antenna Feed Line: _____ Feet

Duplexer Make and Model: _____

SYSTEM GAINS

Transmitter Output Power: _____ dBW
 Add the Antenna Gain: + _____ dBd
 Equals System Gain: = _____ db

SYSTEM LOSSES

Length of Antenna Feed Line: _____ Feet
 Divide by 100: ÷ 100
 Equals: = _____
 Multiply this figure by the
 Cable Loss Factor from Table III
 or other source: x _____ dB per
 100 Ft.
 Equals Cable Loss in dB: = _____ dB
 Add Duplexer Insertion Loss
 (if used): + _____ dB
 Equals total System Loss: = _____ dB

Now calculate your transmit ERP - Subtract the System Loss from the System Gain:

System Gain: _____ dB
 Minus System Loss: - _____ dB
 Equals ERP in dBW: = _____ dBW*

*Using this figure, refer to Table 1 to convert from dBW back to watts (always round up to the next higher value): = ERP in Watts: _____ Watts.

Table II

TABLE 1

Watts	dBW	Watts	dBW	Watts	dBW	Watts	dBW
1	= 0.0	15	= 11.8	100	= 20.0	800	= 29.0
2	= 3.0	20	= 13.0	150	= 21.8	900	= 29.5
3	= 4.8	25	= 14.0	200	= 23.0	1000	= 30.0
4	= 6.0	30	= 14.8	250	= 24.0	1500	= 31.8
5	= 7.0	40	= 16.0	300	= 24.8	2000	= 33.0
6	= 7.8	50	= 17.0	350	= 25.4	2500	= 34.0
7	= 8.5	60	= 17.8	400	= 26.0	3000	= 34.8
8	= 9.0	70	= 18.5	500	= 27.0	4000	= 36.0
9	= 9.5	80	= 19.0	600	= 27.8	5000	= 37.0
10	= 10.0	90	= 19.5	700	= 28.5	6000	= 37.8

50Ω Coaxial Cable Feed Line Loss Factors
(dB per 100 Feet)

Freq. Band (MHz)	Cable Type				
	RG-58,	RG-8,	RG-9,	1/2" Foam	7/8" Foam
29	2.8	1.0	1.0	0.4	0.26
52	3.8	1.3	1.4	0.55	0.36
144	7.0	2.6	2.6	1.0	0.66
220	9.0	3.4	3.4	1.3	0.85
440	13.0	5.3	5.1	1.9	1.3
1240	19.0	10.3	10.3	4.2	3.2