

# Ohio Area Repeater Council, Inc.

## ERP CALCULATION WORKSHEET

This worksheet is be used to calculate your repeater system transmit effective radiated power (ERP) to report when filing for repeater coordination.

Repeater Call Sign: \_\_\_\_\_/R Repeater Output Frequency: \_\_\_\_\_ MHz

Antenna Make and Model \_\_\_\_\_ Transmitter output power: \_\_\_\_\_ Watts

Type of feedline \_\_\_\_\_ Antenna Gain (in dB over  
A half-wave dipole) \_\_\_\_\_ dBd

### SYSTEM GAIN

Transmitter output power: \_\_\_\_\_ dBW \*  
ADD the antenna gain: \_\_\_\_\_ dBd  
  
Total System Gain: \_\_\_\_\_ dB (A)

### SYSTEM LOSS

Length of feedline: \_\_\_\_\_ ft  
Divide by 100: / 100  
Equals: \_\_\_\_\_ dB  
Multiply by cable loss factor  
from Table II x \_\_\_\_\_ dB  
  
EQUALS cable loss: \_\_\_\_\_ dB  
ADD duplexer loss \_\_\_\_\_ dB  
  
EQUALS total system loss: \_\_\_\_\_ db (B)

### SYSTEM ERP

System Gain (From (A) above): \_\_\_\_\_ dB  
MINUS system loss (B): \_\_\_\_\_ dB  
EQUALS system gain \_\_\_\_\_ dB  
  
SYSTEM ERP: \* \_\_\_\_\_ Watts

\* Use Table I to convert from Watts to dBw or dBw to Watts

**TABLE I**

Watts=dB	Watts=db	Watts=dB	Watts=dB
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

**TABLE II** (50 Ohm coaxial feedline loss dB/100 ft)

Freq (MHz)	RG58 -223	RG8 -213	RG9 -214	1/2" Foam	7/8" Foam
29	2.8	1.0	1.0	.40	.26
52	3.8	1.3	1.4	.55	.36
144	7.0	2.6	2.6	1.00	.66
220	9.0	3.4	3.4	1.30	.85
440	13.0	5.3	5.1	1.90	1.30
1240	19.0	10.3	10.3	4.20	3.20