

## ERP CALCULATION WORKSHEET

Use to calculate your repeater effective radiated power (ERP). This worksheet is for your use only. Please do not submit this form with your application.

### Information Needed:

Sponsor: \_\_\_\_\_  
 Transmit Frequency: \_\_\_\_\_ MHz  
 Transmitter Output Power: \_\_\_\_\_ Watts (97.103(e)(6))  
 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 / 100 = \_\_\_\_\_  
 Multiply by the cable loss factor from Table II X \_\_\_\_\_ db per 100 ft.  
 Equals cable loss in dB = \_\_\_\_\_ dB  
 Add duplexer insertion loss  
 (If used): + \_\_\_\_\_ dB  
 Equals total system loss = \_\_\_\_\_

### Calculate Transmit ERP

System Gain: \_\_\_\_\_ dB  
 Minus System Loss: \_\_\_\_\_ dB  
 Equals ERP in dBW \_\_\_\_\_ dBW  
 Equals ERP in watts: \_\_\_\_\_ Watts

**TABLE 1 - dbW/Watt Table**

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

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**Table II - 50 ohm Coaxial Cable Feed Line Loss Factors (dB pre 100 feet)**

Freq (MHz)	CABLE TYPE				
	RG-58, -223	RG-8, -213	RG-9, -214	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