

ERP CALCULATIONS

Upper Peninsula Amateur Radio Repeater Association

UPARRA Frequency Coordinator

Email: UPARRA@Hotmail.com

Website: <https://uparra.org>

Repeater Information			
Callsign: <input type="text"/>	City: <input type="text"/>	, MI	Date: <input type="text"/>
Transmitter Power Output: <input type="text"/>	Watts	Transmitter Frequency Band: <input type="text"/>	
Antenna Information			
Make and Model: <input type="text"/>		Gain: <input type="text"/>	dBd
Feedline Information			
Type of feedline: <input type="text"/>		Feedline Length: <input type="text"/>	ft
Duplexer Information			
Make and Model: <input type="text"/>		Insertion Loss: <input type="text"/>	dB

Calculate System GAINS	
Transmitter power output= <input type="text"/>	dBW
(from table 1)	
Transmit Antenna gain= <input type="text"/>	dBd
Add above lines together= <input type="text"/>	dB

Calculate System LOSSES	
Feedline length divided by 100= <input type="text"/>	
Multiply above number by	
Line Loss Factor (table 2)= <input type="text"/>	dB
Duplexer insertion loss= <input type="text"/>	dB
Add above lines together= <input type="text"/>	dB

Calculate the ERP (Effective Radiated Power) in Watts			
Enter total system gains = <input type="text"/>	dB	From GAINS calculations, above.	
Enter total system losses = <input type="text"/>	dB	From LOSSES calculations, above.	
Subtract losses from gains = <input type="text"/>	dBW	The is your ERP in dBW	
Convert dBW to Watts (use table 1) = <input type="text"/>		This is your ERP in Watts	

(TABLE 1) Watts to dBW Conversion			
Watts = dBW	Watts = dBW	Watts = dBW	Watts = dBW
1 = 0.0	8 = 9.0	40 = 16.0	150 = 21.8
2 = 3.0	9 = 9.5	50 = 17.0	200 = 23.0
3 = 4.8	10 = 10.0	60 = 17.8	250 = 24.0
4 = 6.0	15 = 11.8	70 = 18.5	300 = 24.8
5 = 7.0	20 = 13.0	80 = 19.0	350 = 25.4
6 = 7.8	25 = 14.0	90 = 19.5	400 = 26.0
7 = 8.5	30 = 14.8	100 = 20.0	500 = 27.0

(TABLE 2) 50 Ohm Coax Cable loss in dB per 100 feet									
Band Frequency (MHz)	Coaxial Cable Type								
	RG-58 RG-223	LMR200	RG-8 RG-213	RG-9 RG-214	LMR400	Belden 9913.	1/2" Foam	LMR600	7/8" Foam
29	2.8	1.3	1	1	0.7	0.5	0.4	0.4	0.3
52	3.8	1.7	1.3	1.4	0.9	0.9	0.6	0.5	0.4
146	7	3	2.6	2.6	1.5	1.6	1	0.9	0.7
220	9	3.7	3.4	3.4	1.8	1.9	1.3	1.2	0.9
440	13	5.2	5.3	5.1	2.7	2.8	1.9	1.7	1.3