ERP CALCULATIONS

Upper Peninsula Amateur Radio Repeater Association

UPARRA Frequency Coordinator
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Repeater Information

Callsign: _____ City: _____ **, MI** Date: _____

Transmitter Power Output: _____ **Watts** Transmitter Frequency Band: _____

Antenna Information

Make and Model: _____ Gain: _____ **dBd**

Feedline Information

Type of feedline: _____ Feedline Length: _____ **ft**

Duplexer Information

Make and Model: _____ Insertion Loss: _____ **dB**

Calculate System GAINS

Transmitter power output= _____ dBW
(from table 1)
Transmit Antenna gain= _____ dBd
Add above lines together= 0.0 dB

Calculate System LOSSES

Feedline length divided by 100= 0.00
Multiply above number by
Line Loss Factor (table 2)= _____ dB
Duplexer insertion loss= _____ dB
Add above lines together= 0.0 dB

Calculate the ERP (Effective Radiated Power) in Watts

Enter total system gains = 0.0 dB From GAINS calculations, above.
Enter total system losses = 0.0 dB From LOSSES calculations, above.
Subtract losses from gains = 0.0 dBW The is your ERP in dBW

Convert dBW to Watts (use table 1) = _____ 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.	½" 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