

Mikrotik	Model: RouterBOARD LHG-5nD	Test Number:	160414a											
MPE Calculator	MPE uses EIRP for calculation. EIRP is based on TX power added to the antenna gain in dBi. dBi = dB gain compared to an isotropic radiator. S = power density in mW/cm <sup>2</sup>													
		Output Power	dBd + 2.17 = dBi	Antenna Gain (dBi)	27									
Tx Frequency (MHz)	5785	Maximum (Watts)	0.001	dBi to dBd	2.2									
				Antenna Gain (dBd)	24.83									
Cable Loss (dB)	0.0	(dBm)	0.0	Antenna minus cable (dBi)	27.00									
	Calculated ERP (mw)	304.089	EIRP = Po(dBm) + Gain (dB)	Radiated (EIRP) dBm	27.000									
	Calculated EIRP (mw)	501.187	ERP = EIRP - 2.17 dB	Radiated (ERP) dBm	24.830									
		<table border="1"> <tr> <td colspan="2">Power density (S)</td> </tr> <tr> <td>EIRP</td> <td>= mW/cm<sup>2</sup></td> </tr> <tr> <td></td> <td><math>4 \pi r^2</math></td> </tr> <tr> <td>EIRP (mW), r (cm)</td> <td></td> </tr> </table>				Power density (S)		EIRP	= mW/cm <sup>2</sup>		$4 \pi r^2$	EIRP (mW), r (cm)		
Power density (S)														
EIRP	= mW/cm <sup>2</sup>													
	$4 \pi r^2$													
EIRP (mW), r (cm)														
<b>Occupational Limit</b>		FCC radio frequency radiation exposure limits per 1.1310												
5	mW/cm <sup>2</sup>	Frequency (MHz)	Occupational Limit (mW/cm <sup>2</sup> )	Public Limit (mW/cm <sup>2</sup> )										
50	W/m <sup>2</sup>	300-1,500	ƒ300	ƒ1500										
<b>General Public Limit</b>		1,500-10,000	5	1										
1	mW/cm <sup>2</sup>													
10	W/m <sup>2</sup>													
<b>Occupational Limit</b>		IC radio frequency radiation exposure limits per RSS-102												
0.6455 <sup>f-0.5</sup>	W/m <sup>2</sup>	Frequency (MHz)	Occupational Limit (W/m <sup>2</sup> )	Public Limit (W/m <sup>2</sup> )										
49.09621	W/m <sup>2</sup>	100-6,000	0.6455 <sup>f-0.5</sup>											
<b>General Public Limit</b>		6,000-15,000	50											
0.02619 <sup>f-0.6834</sup>	W/m <sup>2</sup>	48-300		1.291										
9.75649	W/m <sup>2</sup>	300-6,000		0.02619 <sup>f-0.6834</sup>										
		6,000-15,000	50	10										
EIRP	S	S	Distance	Distance	Distance									
milliwatts	mW/cm <sup>2</sup>	W/m <sup>2</sup>	cm	meter	inches									
501.187	0.00492	0.04924	90.00	0.90	35.43									
501.187	0.00623	0.06232	80.00	0.80	31.50									
501.187	0.00814	0.08139	70.00	0.70	27.56									
501.187	0.01108	0.11079	60.00	0.60	23.62									
501.187	0.01595	0.15953	50.00	0.50	19.69									
501.187	0.02493	0.24927	40.00	0.40	15.75									
501.187	0.04431	0.44315	30.00	0.30	11.81									
501.187	0.09971	0.99708	20.00	0.20	7.87									
501.187	0.23600	2.35995	13.00	0.13	5.12									
501.187	0.62318	6.23175	8.00	0.08	3.15									
501.187	1.00487	10.04868	6.30	0.063	2.48									
501.187	1.31845	13.18453	5.50	0.055	2.17									
501.187	1.59533	15.95329	5.00	0.050	1.97									
501.187	2.49270	24.92701	4.00	0.040	1.57									
501.187	4.43147	44.31468	3.00	0.030	1.18									
501.187	9.97080	99.70803	2.00	0.020	0.79									
501.187	39.88321	398.83213	1.00	0.010	0.39									
		<table border="1"> <tr> <td>Frequency (MHz)</td> <td>Occupational Limit minimum Distance (meters)</td> <td>Public Limit minimum distance (meters)</td> </tr> <tr> <td>47CFR 1.1310</td> <td>0.03</td> <td>0.06</td> </tr> <tr> <td>RSS-102</td> <td></td> <td></td> </tr> </table>				Frequency (MHz)	Occupational Limit minimum Distance (meters)	Public Limit minimum distance (meters)	47CFR 1.1310	0.03	0.06	RSS-102		
Frequency (MHz)	Occupational Limit minimum Distance (meters)	Public Limit minimum distance (meters)												
47CFR 1.1310	0.03	0.06												
RSS-102														
The calculation demonstrates compliance with RF exposure requirements when the a separation distance of 20cm or great is maintained.														
RSS-102 Exclusion calculation														
2.5.2 Exemption Limits for Routine Evaluation – RF Exposure Evaluation														
RF exposure evaluation is required if the separation distance between the user and/or bystander and the device's radiating element is greater than 20 cm, except when the device operates as follows:														
• below 20 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 1 W (adjusted for tune-up tolerance);														
• at or above 20 MHz and below 48 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 22.48/ƒ0.5W (adjusted for tune-up tolerance), where ƒ is in MHz;														
• at or above 48 MHz and below 300 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 0.6 W (adjusted for tune-up tolerance);														
• at or above 300 MHz and below 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 1.31 x 10 <sup>-2</sup> /ƒ0.6834 W (adjusted for tune-up tolerance), where ƒ is in MHz;														
• at or above 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 5 W (adjusted for tune-up tolerance).														
In these cases, the information contained in the RF exposure technical brief may be limited to information that demonstrates how the e.i.r.p. was derived.														
	(1.31 x 10 <sup>-2</sup> ) <sup>f-0.6834</sup> W	ƒ=	5785											
	Calculation Requirement for exclusion =		4.880107784 W											
	e.i.r.p Power of EUT =		0.501 W											
The e.i.r.p of the EUT was calculated summing the output power of the two transmitter chains and adding antenna gain to provide effective isotropic radiator power.														
The e.i.r.p was calculated with the transmitter output power and isotropic gain of the antenna.														
The calculation demonstrates compliance with RF exposure requirements when the a separation distance of 20cm or great is maintained.														