RF Exposure Calculations

Mikrotik	Model: RB SXT HG5		Test Number:	170512		
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^2					
					Antenna Gain (dBi)	20
		Output Power		dBd + 2.17 = dBi	dBi to dBd	2.2
Tx Frequency (MHz)	5825	Maximum (Watts)	0.645494		Antenna Gain (dBd)	17.83
Cable Loss (dB)	0.0	(dBm)	28.1		Antenna minus cable (dBi)	20.00
	Calculated ERP (mw)	39164.439		EIRP = Po(dBM) + Gain (dB)		
	Calculated EIRP (mw)	64549.355			Radiated (EIRP) dBm	48.099
				ERP = EIRP - 2.17 dB		
					Radiated (ERP) dBm	45.929

Power density (S)

$$S = \frac{EIRP}{4 \pi r^2}$$

EIRP (mW), r (cm)

	Occupational Limit	FCC radio frequency radiation exposure limits per 1.1310		
5	mW/cm^2	Frequency (MHz)	Occupational Limit (mW/cm^2)	Public Limit (mW/cm^2)
50	W/m^2	300-1,500	f/300	f/1500
	General Public Limit	1,500-10,000	5	1
1	mW/cm^2			
10	W/m^2			

	Occupational Limit	IC radio frequency radiation exposure limits per RSS-102		
$0.6455f^{0.5}$	W/m^2	Frequency (MHz)	Occupational Limit (W/m^2)	Public Limit (W/m^2)
49.26565	W/m^2	100-6,000	$0.6455f^{0.5}$	
	General Public Limit	6,000-15,000	50	
$0.02619f^{0.6834}$	W/m^2	48-300		1.291
9.80254	W/m^2	300-6,000		$0.02619f^{0.6834}$
		6,000-15,000	50	10

EIRP	S	S	Distance	Distance	Distance	Distance
milliwatts	mW/cm^2	W/m^2	cm	meter	inches	Feet
64549.355	0.12842	1.284	200.00	2.00	78.74	6.56
64549.355	0.16773	1.677	175.00	1.75	68.90	5.74
64549.355	0.22830	2.283	150.00	1.50	59.06	4.92
64549.355	0.32875	3.287	125.00	1.25	49.21	4.10
64549.355	0.51367	5.137	100.00	1.00	39.37	3.28
64549.355	0.63416	6.342	90.00	0.90	35.43	2.95
64549.355	0.80261	8.026	80.00	0.80	31.50	2.62
64549.355	0.91319	9.132	75.00	0.75	29.53	2.46
64549.355	1.04830	10.483	70.00	0.70	27.56	2.30
64549.355	1.42685	14.269	60.00	0.60	23.62	1.97
64549.355	1.69807	16.981	55.00	0.550	21.65	1.80
64549.355	2.05467	20.547	50.00	0.500	19.69	1.64
64549.355	3.21042	32.104	40.00	0.400	15.75	1.31
64549.355	2.53663	25.366	45.00	0.450	17.72	1.48
64549.355	3.21042	32.104	40.00	0.400	15.75	1.31
64549.355	4.71687	47.169	33.00	0.330	12.99	1.08
64549.355	5.70742	57.074	30.00	0.300	11.81	0.98

Frequency (MHz)	Occupational Limit minimum Distance (meters)	Public Limit minimum distance (meters)
47CFR 1.1310	0.33	0.75
RSS-102	0.33	0.75