PMN: Integra-5G8 — Test Number: 230711

MPE Calculator — RF Exposure 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

	Transmitter Output power (mW)	1000.0	
	Transmitter Output power (W)	1.00	
Output Power for % duty Cycle operation (Watts)	100	1.00	Antenna Gain (dBi) 41.2
Output Power for 100% duty Cycle operation (Watts)		1.00	Antenna Gain (Numeric) 13182.57
Tx Frequency (MHz) 5727.5	Calculation power (Watts)	1.00	dBd + 2.17 = dBi; dBi to dBd 2.17
			Antenna Gain (dBd) 39.03
Cable Loss (dB) 0.0	Adjusted Power (dBm)	30.00	Antenna minus cable (dBi) 41.20
			Antenna Gain (Numeric) 13182.57
Calculated ERP (mw)	7998342.550		EIRP = Po(dBm) + Gain (dB)
Calculated EIRP (mw)	13182567.386		Radiated (EIRP) dBm 71.200
			ERP = EIRP - 2.17 dB
			Radiated (ERP) dBm 69.030

Power density (S) mW/cm² = EIRP / (4 p r^2)

r (cm) EIRP (mW)

Occupational Limit		FCC radio frequency radiation exposure limits per 1.1310		
5	mW/cm²	Frequency (MHz)	Occupational Limit (mW/cm²)	Public Limit (mW/cm²)
50.0	W/m²	30-300	1	0.2
General Public Limit		300-1,500	f/300	f/1500
1	mW/cm²	1,500-10,000	5	1
10.0	W/m²			

Occupational Limit		IC radio frequency radiation exposure limits per RSS-102		
$0.6455f^{0.5}$	W/m²			
48.9	W/m²	Frequency (MHz)	Occupational Limit (W/m²)	Public Limit (W/m²)
General Public Limit		100-6,000	$0.6455f^{0.5}$	
$0.02619f^{0.6834}$	W/m²	6,000-15,000	50	
9.69	W/m²	48-300		1.291
		300-6,000		$0.02619f^{0.6834}$
		6,000-15,000	50	10

			General Public	Occupational	
f = Transmit Frequency (MHz)		f (MHz) =	5727.5	5727.5	MHz
P_T = Power Input to Antenna (mW)		P_T (mW) =	1,000.0000	1,000.0000	mW
Duty cycle (percentage of operation)		% =	100	100	%
P_A = Adjusted Power due to Duty cycle or Cable Loss (mW)		P_A (mW) =	1,000.00	1,000.00	mW
G_N = Numeric Gain of the Antenna		GN (numeric) =	13182.57	13182.57	numeric
S_{20} = Power Density of device at 20cm (mW/m²)	$S_{20}=(P_AG_N)/(4\pi R_{20})^2$	S_{20} (mW/m²) =	2622.59	2622.59	mW/m²
S_{20} = Power Density of device at 20cm (W/m²)	$S_{20}=(P_AG_N)/(4\pi R_{20})^2$	S_{20} (W/m²) =	26225.88	26225.88	W/m²
S_L = Power Density Limit (W/m²) FCC		S_L (W/m²)=	10.000	50.000	W/m²
S_L = Power Density Limit (W/m²) Canada		S_L (W/m²)=	9.690	48.852	W/m²
R_C = Minimum distance to the Radiating Element for Compliance (cm) FCC	$R_C=\sqrt{(P_AG_N/4\pi S_L)}$	R_C (cm) =	1024.2	458.0	cm
R_C = Minimum distance to the Radiating Element for Compliance (cm) Canada	$R_C=\sqrt{(P_AG_N/4\pi S_L)}$	R_C (cm) =	1040.5	463.4	cm
S_C = Power Density of the device at the Compliance Distance R_C (W/m²) FCC	$S_C=(P_AG_N)/(4\pi R_C)^2$	S_C (W/m²) =	10.00	50.00	W/m²
S_C = Power Density of the device at the Compliance Distance R_C (W/m²) Canada	$S_C=(P_AG_N)/(4\pi R_C)^2$	S_C (W/m²) =	9.69	48.85	W/m²
R_{20} = 20cm		R20=	20	20	cm

For Compliance with Canada General Population Limits, User Manual must indicate a minimum separation distance of 1040.5 cm

Or in Meters for Compliance with Canada General Population Limits, a minimum separation distance of 10.40 Meters

Summary: Standalone MPE Calculations and Summary					Public Limit		Public	
	Tx Duty Cycle (%)	Tx Frequency (MHz)	Power Total (mW)	Antenna Gain (numeric)	S_L (W/m²)	S_{20} (W/m²)	R_C (cm)	S_C (W/m²)
FCC	100	5727.5	1,000	13182.57	10.000	26225.88	1024.2	10.00
Canada	100	5727.5	1,000	13182.57	9.690	26225.88	1040.5	9.69

		Limit	Overall Minimum (cm)	Overall Minimum (inches)
	Public	Occupational		
FCC (cm)	1024.2	458.0		
FCC (inches)	404.0	181.0		
Canada (cm)	1040.5	463.4		
Canada (inches)	410.0	183.0		

Overall Minimum Limit Public	Overall Minumu Limit Occuppational
1041 cm	464 cm
410 inches	183 inches