	HVIN: A04336		Test Number: 220223					
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)	4.1					
		Transmitter Output power (W)	0.004					
Output Power for % duty Cycle operation (Watts)		100	0.004			Antenna Gain (dBi)	3.9	
	Output Power for 100% duty Cycle operation (Watts)		0.004			Antenna Gain (Numeric)	2.45	
Tx Frequency (MHz)	2441	Calculation power (Watts)	0.004		dBd + 2.17 = dBi	dBi to dBd	2.17	
						Antenna Gain (dBd)	1.73	
Cable Loss (dB)	0.0	Adjusted Power (dBm)	6.09			Antenna minus cable (dBi)	3.90	
						Antenna Gain (Numeric)	2.45	
	Calculated ERP (mw)	6.053				EIRP = Po(dBm) + Gain (dB)		
	Calculated EIRP (mw)	9.977				Radiated (EIRP) dBm	9.990	
						ERP = EIRP - 2.17 dB		
						Radiated (ERP) dBm	7.820	

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		
8.136666667	mW/cm²	Frequency (MHz)	Occupational Limit (mW/cm²)	Public Limit (mW/cm²)
81.4	W/m²	30-300	1	0.2
	General Public Limit	300-1,500	f/300	f/1500
1.627333333	mW/cm²	1,500-10,000	5	1
16.3	W/m²			

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

				General Public	Occupational	
f = Transmit Frequency (MHz)			f (MHz) =	2441	2441	MHz
P_T = Power Input to Antenna (mW)			P_T (mW) =	4.0644	4.0644	mW
Duty cycle (percentage of operation)			% =	100	100	%
P_A = Adjusted Power due to Duty cycle or Cable Loss (mW)			P_A (mW) =	4.06	4.06	mW
G_N = Numeric Gain of the Antenna			GN (numeric) =	2.45	2.45	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) =	0.00	0.00	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) =	0.02	0.02	W/m²
S_L = Power Density Limit (W/m²) FCC			S_L (W/m²)=	16.273	81.367	W/m²
S_L = Power Density Limit (W/m²) Canada			S_L (W/m²)=	5.410	31.892	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) =	0.7	0.3	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) =	1.2	0.5	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) =	16.27	81.37	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) =	5.41	31.89	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 1.2 cm

Or in Meters for Compliance with Canada General Population Limits, a minimum separation distance of 0.01 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	2441	4	2.45	16.273	0.02	0.7	16.27
Canada	100	2441	4	2.45	5.410	0.02	1.2	5.41

		Limit	Overall Minimum (cm)	Overall Minimum (inches)
	Public	Occupational		
FCC (cm)	0.7	0.3		
FCC (inches)	1.0	1.0		
Canada (cm)	1.2	0.5		
Canada (inches)	1.0	1.0		

Overall Minimum Limit Public	Overall Minumu Limit Occuppational
2 cm	1 cm
1 inches	1 inches