	HVIN: AB2759		Test Number: 220615				
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)	19.999				
		Transmitter Output power (W)	0.020				
Output Power for % duty Cycle operation (Watts)	100		0.020		Antenna Gain (dBi)	4.2	
	Output Power for 100% duty Cycle operation (Watts)		0.020		Antenna Gain (Numeric)	2.63	
Tx Frequency (MHz)	2437	Calculation power (Watts)	0.020	dBd + 2.17 = dBi	dBi to dBd	2.17	
					Antenna Gain (dBd)	2.03	
Cable Loss (dB)	0.0	Adjusted Power (dBm)	13.01		Antenna minus cable (dBi)	4.20	
					Antenna Gain (Numeric)	2.63	
	Calculated ERP (mw)	31.915			EIRP = Po(dBm) + Gain (dB)		
	Calculated EIRP (mw)	52.602			Radiated (EIRP) dBm	17.210	
					ERP = EIRP - 2.17 dB		
					Radiated (ERP) dBm	15.040	

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

r (cm) EIRP (mW)

	Occupational Limit	FCC radio frequency radiation exposure limits per 1.1310		
8.123333333	mW/cm^2	Frequency (MHz)	Occupational Limit (mW/cm^2)	Public Limit (mW/cm^2)
81.2	W/m^2	30-300	1	0.2
	General Public Limit	300-1,500	f/300	f/1500
1.624666667	mW/cm^2	1,500-10,000	5	1
16.2	W/m^2			

	Occupational Limit			
$0.6455f^{0.5}$	W/m^2	IC radio frequency radiation exposure limits per RSS-102		
31.9	W/m^2	Frequency (MHz)	Occupational Limit (W/m^2)	Public Limit (W/m^2)
	General Public Limit	100-6,000	$0.6455f^{0.5}$	
$0.02619f^{0.6834}$	W/m^2	6,000-15,000	50	
5.40	W/m^2	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) =	2437	2437	MHz
P_T = Power Input to Antenna (mW)				P_T (mW) =	19.9986	19.9986	mW
Duty cycle (percentage of operation)				% =	100	100	%
P_A = Adjusted Power due to Duty cycle or Cable Loss (mW)				P_A (mW) =	20.00	20.00	mW
G_N = Numeric Gain of the Antenna				GN (numeric) =	2.63	2.63	numeric
S_{20} = Power Density of device at 20cm (mW/m^2)			$S_{20}=(P_AG_N)/(4\pi R_{20})^2$	S_{20} (mW/m^2) =	0.01	0.01	mW/m^2
S_{20} = Power Density of device at 20cm (W/m^2)			$S_{20}=(P_AG_N)/(4\pi R_{20})^2$	S_{20} (W/m^2) =	0.10	0.10	W/m^2
S_L = Power Density Limit (W/m^2) FCC				S_L (W/m^2)=	16.247	81.233	W/m^2
S_L = Power Density Limit (W/m^2) Canada				S_L (W/m^2)=	5.404	31.866	W/m^2
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) =	1.6	0.7	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) =	2.8	1.1	cm
S_C = Power Density of the device at the Compliance Distance R_C (W/m^2) FCC			$S_C=(P_AG_N)/(4\pi R_C)^2$	S_C (W/m^2) =	16.25	81.23	W/m^2
S_C = Power Density of the device at the Compliance Distance R_C (W/m^2) Canada			$S_C=(P_AG_N)/(4\pi R_C)^2$	S_C (W/m^2) =	5.40	31.87	W/m^2
R_{20} = 20cm				R20=	20	20	cm

For Compliance with Canada General Population Limits, User Manual must indicate a minimum separation distance of 2.8 cm

Or in Meters for Compliance with Canada General Population Limits, a minimum separation distance of 0.03 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/m^2)	S_{20} (W/m^2)	R_C (cm)	S_C (W/m^2)
FCC	100	2437	20	2.63	16.247	0.10	1.6	16.25
Canada	100	2437	20	2.63	5.404	0.10	2.8	5.40

		Limit	Overall Minimum (cm)	Overall Minimum (inches)
	Public	Occupational		
FCC (cm)	1.6	0.7		
FCC (inches)	1.0	1.0		
Canada (cm)	2.8	1.1		
Canada (inches)	2.0	1.0		

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