Model: GMN 02481				Test Number: 230727	

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)		16,557.0			
Transmitter Output power (W)		16.56			
Output Power for % duty Cycle operation (Watts)	50	8.28		Antenna Gain (dBi)	2.2
Output Power for 50% duty Cycle operation (Watts)		8.28		Antenna Gain (Numeric)	1.66
Tx Frequency (MHz)	118	Calculation power (Watts)	8.28	dBd + 2.17 = dBi dBi to dBd	2.17
				Antenna Gain (dBd)	0.03
Cable Loss (dB)	0.0	Adjusted Power (dBm)	39.18	Antenna minus cable (dBi)	2.20
				Antenna Gain (Numeric)	1.66
				EIRP = Po(dBm) + Gain (dB)	
Calculated ERP (mw)	8335.884			Radiated (EIRP) dBm	41.380
Calculated EIRP (mw)	13738.890			ERP = EIRP - 2.17 dB	
				Radiated (ERP) dBm	39.210

Power density (S) mW/cm² = $\dfrac{EIRP}{4\,p\,r^2}$

r (cm)   EIRP (mW)

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

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

					General Public	Occupational	
f = Transmit Frequency (MHz)				f (MHz) =	118	118	MHz
P$_T$ = Power Input to Antenna (mW)				P$_T$ (mW) =	8,278.5000	8,278.5000	mW
Duty cycle (percentage of operation)				% =	50	50	%
P$_A$ = Adjusted Power due to Duty cycle or Cable Loss (mW)				P$_A$ (mW) =	8,278.50	8,278.50	mW
G$_N$ = Numeric Gain of the Antenna				GN (numeric) =	1.66	1.66	numeric
S$_{20}$ = Power Density of device at 20cm (mW/m^2)		$S_{20}=(P_A G_N)/(4\pi R_{20})^2$		S$_{20}$ (mW/m^2) =	2.73	2.73	mW/m^2
S$_{20}$ = Power Density of device at 20cm (W/m^2)		$S_{20}=(P_A G_N)/(4\pi R_{20})^2$		S$_{20}$ (W/m^2) =	27.33	27.33	W/m^2
S$_L$ = Power Density Limit (W/m^2) FCC				S$_L$ (W/m^2) =	2.000	10.000	W/m^2
S$_L$ = Power Density Limit (W/m^2) Canada				S$_L$ (W/m^2) = 1.29		7.012	W/m^2
R$_C$ = Minimum distance to the Radiating Element for Compliance (cm) FCC		$R_C=\sqrt{(P_A G_N/4\pi S_L)}$		R$_C$ (cm) =	73.9	33.1	cm
R$_C$ = Minimum distance to the Radiating Element for Compliance (cm) Canada		$R_C=\sqrt{(P_A G_N/4\pi S_L)}$		R$_C$ (cm) =	92.1	39.5	cm
S$_C$ = Power Density of the device at the Compliance Distance R$_C$ (W/m^2) FCC		$S_C=(P_A G_N)/(4\pi R_C)^2$		S$_C$ (W/m^2) =	2.00	10.00	W/m^2
S$_C$ = Power Density of the device at the Compliance Distance R$_C$ (W/m^2) Canada		$S_C=(P_A G_N)/(4\pi R_C)^2$		S$_C$ (W/m^2) =	1.29	7.01	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	92.1	cm
Or in Meters for Compliance with Canada General Population Limits, a minimum separation distance of	0.92	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	50	118	8,279	1.66	2.000	27.33	73.9	2.00
Canada	50	118	8,279	1.66	1.29	27.33	92.1	1.29

	Limit		Overall Minimum (cm)	Overall Minimum (inches)
	Public	Occupational		
FCC (cm)	73.9	33.1		
FCC (inches)	30.0	14.0		
Canada (cm)	92.1	39.5		
Canada (inches)	37.0	16.0		

Overall Minimum Limit Public		Overall Minumu Limit Occuppational
93 cm		40 cm
37 inches		16 inches