

	HVIN: A04326		Test Number: 211130				Email from Bi
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)	29.3					Thanks for inc
	Transmitter Output power (W)	0.03					The answer is
	Output Power for % duty Cycle operation (Watts)	100		0.03	Antenna Gain (dBi)	3	For example t
	Output Power for 100% duty Cycle operation (Watts)	0.03		0.03	Antenna Gain (Numeric)	2.00	
Tx Frequency (MHz)	2437	Calculation power (Watts)	0.03	dBi + 2.17 = dBi	dBi to dBd	2.17	
					Antenna Gain (dBd)	0.83	
Cable Loss (dB)	0.0	Adjusted Power (dBm)	14.67		Antenna minus cable (dBi)	3.00	
					Antenna Gain (Numeric)	2.00	
	Calculated ERP (mw)	35.471			EIRP = Po(dBm) + Gain (dB)		
	Calculated EIRP (mw)	58.461			Radiated (EIRP) dBm	17.669	
					ERP = EIRP - 2.17 dB		
					Radiated (ERP) dBm	15.499	
	Power density (S) mW/cm ² = $\frac{EIRP}{4 \pi r^2}$						
	r (cm) EIRP (mW)						
	Occupational Limit						
	FCC radio frequency radiation exposure limits per 1.1310						
	5 mW/cm ²	30-300	1			0.2	
	50.0 W/m ²	300-1,500	ƒ/300			ƒ/1500	
	General Public Limit						
	1 mW/cm ²	1,500-10,000	5			1	
	10.0 W/m ²						
	Occupational Limit						
	IC radio frequency radiation exposure limits per RSS-102						
	0.6455 f ^{-0.5} W/m ²	100-6,000	0.6455 f ^{-0.5}				
	31.9 W/m ²	6,000-15,000	50				
	General Public Limit						
	0.02619 f ^{-0.8834} W/m ²	48-300				1.291	
	5.40 W/m ²	300-6,000				0.02619 f ^{-0.8834}	
		6,000-15,000	50			10	
f = Transmit Frequency (MHz)			f (MHz) =	2437	2437	2437	MHz
P _T = Power Input to Antenna (mW)			P _T (mW) =	29.3000	29.3000	29.3000	mW
Duty cycle (percentage of operation)			% =	100	100	100	%
P _A = Adjusted Power due to Duty cycle or Cable Loss (mW)			P _A (mW) =	29.30	29.30	29.30	mW
G _N = Numeric Gain of the Antenna			G _N (numeric) =	2.00	2.00	2.00	numeric
S ₂₀ = Power Density of device at 20cm (mW/m ²)			S ₂₀ (mW/m ²) =	0.01	0.01	0.01	mW/m ²
S ₂₀ = Power Density of device at 20cm (W/m ²)			S ₂₀ (W/m ²) =	0.12	0.12	0.12	W/m ²
S _L = Power Density Limit (W/m ²) FCC			S _L (W/m ²) =	10.000	50.000	50.000	W/m ²
S _L = Power Density Limit (W/m ²) Canada			S _L (W/m ²) =	5.404	31.866	31.866	W/m ²
R _C = Minimum distance to the Radiating Element for Compliance (cm) FCC			R _C (cm) =	2.2	1.0	1.0	cm
R _C = Minimum distance to the Radiating Element for Compliance (cm) Canada			R _C (cm) =	2.9	1.2	1.2	cm
S _C = Power Density of the device at the Compliance Distance R _C (W/m ²) FCC			S _C (W/m ²) =	10.00	50.00	50.00	W/m ²
S _C = Power Density of the device at the Compliance Distance R _C (W/m ²) Canada			S _C (W/m ²) =	5.40	31.87	31.87	W/m ²
R ₂₀ = 20cm			R ₂₀ =	20	20	20	cm
	For Compliance with Canada General Population Limits, User Manual must indicate a minimum separation distance of					2.9 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							
	Tx Duty Cycle (%)	Tx Frequency (MHz)	Power Total (mW)	Antenna Gain (numeric)	Public Limit	Occupational	Public
	FCC 100	2437	29	2.00	S _L (W/m ²) 10.000	S ₂₀ (W/m ²) 0.12	R _C (cm) 2.2
	Canada 100	2437	29	2.00	5.404	0.12	2.9
		Limit	Overall Minimum (cm)	Overall Minimum (inches)			
	FCC (cm)	Public 2.2	Occupational 1.0				
	FCC (inches)	1.0	1.0				
	Canada (cm)	2.9	1.2				
	Canada (inches)	2.0	1.0				
	Overall Minimum Limit Public	3 cm	2 cm				
	2 inches		1 inches				

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Revision 1

Garmin International, Inc.
HVIN: A04326
Test: 211130
Test to: CFR47 15C, RSS-210
File: A04326 RFExp

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