

Model: A04475		Test Number: 230301	
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 <sup>2</sup>		
	Transmitter Output power (dBm)	9.28	
	Transmitter Output power (mW)	8.47	
Output Power for % duty Cycle operation (Watts)	100	0.0085	Antenna Gain (dBi) 5
Output Power for 100% duty Cycle operation (Watts)			Antenna Gain (Numeric) 3.16
Tx Frequency (MHz)	2437	Calculation power (Watts) 0.01	dBd + 2.17 = dBi dBi to dBd 2.2
			Antenna Gain (dBd) 2.83
Cable Loss (dB)	0.0	Adjusted Power (dBm) 9.28	Antenna minus cable (dBd) 5.00
	Calculated ERP (mw) 16.255		EIRP = Po(dBm) + Gain (dB)
	Calculated EIRP (mw) 26.792		Radiated (EIRP) dBm 14.280
			ERP = EIRP - 2.17 dB
			Radiated (ERP) dBm 12.110
	<div style="border: 1px solid black; padding: 5px; width: fit-content;">           Power density (S) mW/cm<sup>2</sup> = <math>\frac{\text{EIRP}}{4 \pi r^2}</math>            r (cm) EIRP (mW)         </div>		
	<b>Occupational Limit</b>	FCC radio frequency radiation exposure limits per 1.1310	
5	mW/cm <sup>2</sup>	Frequency (MHz)	Occupational Limit (mW/cm <sup>2</sup> )
50	W/m <sup>2</sup>	30-300	1
	<b>General Public Limit</b>	300-1,500	1/300
1	mW/cm <sup>2</sup>	1,500-10,000	5
10	W/m <sup>2</sup>		1
	<b>Occupational Limit</b>	IC radio frequency radiation exposure limits per RSS-102	
0.6455f <sup>0.5</sup>	W/m <sup>2</sup>	Frequency (MHz)	Occupational Limit (W/m <sup>2</sup> )
39.7	W/m <sup>2</sup>	100-6,000	0.6455f <sup>0.5</sup>
	<b>General Public Limit</b>	6,000-15,000	50
0.02619f <sup>0.6834</sup>	W/m <sup>2</sup>	48-300	1.291
5.4	W/m <sup>2</sup>	300-6,000	0.02619f <sup>0.6834</sup>
		6,000-15,000	10
f = Transmit Frequency (MHz)		f (MHz) =	2437 MHz
P <sub>T</sub> = Power Input to Antenna (mW)		P <sub>T</sub> (mW) =	8.4723 mW
Duty cycle (percentage of operation)		% =	100 %
P <sub>A</sub> = Adjusted Power due to Duty cycle or Cable Loss (mW)		P <sub>A</sub> (mW) =	8.47 mW
G <sub>N</sub> = Numeric Gain of the Antenna		G <sub>N</sub> (numeric) =	2.17 numeric
S <sub>20</sub> = Power Density of device at 20cm (mW/m <sup>2</sup> )		S <sub>20</sub> (mW/m <sup>2</sup> ) =	0.00 mW/m <sup>2</sup>
S <sub>20</sub> = Power Density of device at 20cm (W/m <sup>2</sup> )		S <sub>20</sub> (W/m <sup>2</sup> ) =	0.04 W/m <sup>2</sup>
S <sub>L</sub> = Power Density Limit (W/m <sup>2</sup> )		S <sub>L</sub> (W/m <sup>2</sup> ) =	5.404 W/m <sup>2</sup>
R <sub>C</sub> = Minimum distance to the Radiating Element for Compliance (cm)		R <sub>C</sub> (cm) =	1.6 cm
S <sub>C</sub> = Power Density of the device at the Compliance Distance R <sub>C</sub> (W/m <sup>2</sup> )		S <sub>C</sub> (W/m <sup>2</sup> ) =	5.40 W/m <sup>2</sup>
R <sub>20</sub> = 20cm		R <sub>20</sub> =	20 cm
	For Compliance with Canada General Population Limits, User Manual must indicate a minimum separation distance of		1.6 cm
	Or in Meters for Compliance with Canada General Population Limits, a minimum separation distance of		0.02 Meters
<b>Summary: Standalone MPE Calculations and Summary</b>			
Band (MHZ)	Tx Duty Cycle (%)	Tx Frequency (MHz)	Power Total (mW)
2402-2480	100	2437	8
			Antenna Gain (dBi) 5
			S <sub>L</sub> (W/m <sup>2</sup> ) 5.404
			S <sub>20</sub> (W/m <sup>2</sup> ) 0.04
			R <sub>C</sub> (cm) 1.6
			S <sub>C</sub> (W/m <sup>2</sup> ) 5.40

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 Revision 2

Garmin International, Inc. SN's: 3432028971 / 3442517201  
 PMN: A04475 – 10”, A04475 – 7”  
 Test: 230301  
 Test to: CFR47 15C, RSS-210, RSS-247  
 File: A04475 RFExpr2

FCC ID: IPH-04475  
 IC: 1792A-04475  
 Date: June 28, 2023  
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