

Model: A04101		Test Number: 200615		
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 (mW)	5.0		
	Transmitter Output power (W)	0.005		
	Output Power for % duty Cycle (Watts)	100	0.005	
	Output Power for 100% duty Cycle operation (Watts)	0.005	Antenna Gain (dBi)	
			3	
			Antenna Gain (Numeric)	
			2.00	
Tx Frequency (MHz)	2437	Calculation power (Watts)	0.01	
			dBd + 2.17 = dBi	
			dBi to dBd	
			2.2	
			Antenna Gain (dBd)	
			0.83	
Cable Loss (dB)	0.0	Adjusted Power (dBm)	6.99	
			Antenna minus cable (dBi)	
			3.00	
			Antenna Gain (Numeric)	
			2.00	
	Calculated ERP (mw)	6.053	EIRP = Po(dBm) + Gain (dB)	
	Calculated EIRP (mw)	9.976		
			Radiated (EIRP) dBm	
			9.990	
			ERP = EIRP - 2.17 dB	
			Radiated (ERP) dBm	
			7.820	
	<div style="border: 1px solid black; padding: 5px; width: fit-content;"> <math display="block">\text{Power density (S) mW/cm}^2 = \frac{\text{EIRP}}{4 \pi r^2}</math> <math display="block">r \text{ (cm)} = \sqrt{\frac{\text{EIRP (mW)}}{4 \pi S}}</math> </div>			
	<b>Occupational Limit</b>			
	FCC radio frequency radiation exposure limits per 1.1310			
	mW/cm <sup>2</sup>	Frequency (MHz)	Occupational Limit (mW/cm <sup>2</sup> )	Public Limit (mW/cm <sup>2</sup> )
5	W/m <sup>2</sup>	30-300	1	0.2
50				
	<b>General Public Limit</b>			
		300-1,500	ƒ/300	ƒ/1500
1	mW/cm <sup>2</sup>	1,500-10,000	5	1
10	W/m <sup>2</sup>			
	<b>Occupational Limit</b>			
	IC radio frequency radiation exposure limits per RSS-102			
	W/m <sup>2</sup>	Frequency (MHz)	Occupational Limit (W/m <sup>2</sup> )	Public Limit (W/m <sup>2</sup> )
0.6455f <sup>0.5</sup>	W/m <sup>2</sup>	100-6,000	0.6455f <sup>0.5</sup>	
31.9				
	<b>General Public Limit</b>			
	W/m <sup>2</sup>	6,000-15,000	50	
0.02619f <sup>0.6834</sup>	W/m <sup>2</sup>	48-300		1.291
5.4				
		300-6,000		0.02619f <sup>0.6834</sup>
		6,000-15,000	50	10
f = Transmit Frequency (MHz)			f (MHz) =	2437 MHz
P <sub>T</sub> = Power Input to Antenna (mW)			P <sub>T</sub> (mW) =	5.0000 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) =	5.00 mW
G <sub>N</sub> = Numeric Gain of the Antenna			G <sub>N</sub> (numeric) =	2.00 numeric
S <sub>20</sub> = Power Density of device at 20cm (mW/m <sup>2</sup> )		S <sub>20</sub> =(P <sub>A</sub> G <sub>N</sub> )/(4πR <sub>20</sub> ) <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> =(P <sub>A</sub> G <sub>N</sub> )/(4πR <sub>20</sub> ) <sup>2</sup>	S <sub>20</sub> (W/m <sup>2</sup> ) =	0.02 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> =√(P <sub>A</sub> G <sub>N</sub> /4πS <sub>L</sub> )	R <sub>C</sub> (cm) =	1.2 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> =(P <sub>A</sub> G <sub>N</sub> )/(4πR <sub>C</sub> ) <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			1.2 cm
	Or in Meters for Compliance with Canada General Population Limits, a minimum separation distance of			0.01 Meters

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Revision 1

Garmin International, Inc.  
Model: A04101  
Test: 200615  
Test to: CFR47 15C, RSS-210, RSS-247  
File: A04101 RFExp

SN's: ENG1, ENG2  
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