

10-Watt Version

Model: GMN-02002		Test Number: 190715	
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 maximum Output power operating at 100% (Watts)	13.3352		
Percent Duty Cycle operation (%)	0.5		
Output Power for 100% duty Cycle operation (Watts)	6.6676		
Tx Frequency (MHz)	127	Calculation power (Watts)	6.6676
			dBd + 2.17 = dBi
			dBi to dBd
			Antenna Gain (dBd)
			Antenna Gain (dB)
Cable Loss (dB)	0.0	Adjusted Power (dBm)	38.24
			Antenna minus cable (dBi)
	Calculated ERP (mw)	6,713.82	6.71
	Calculated EIRP (mw)	11,065.47	11.07
			EIRP = Po(dBm) + Gain (dB)
			Radiated (EIRP) dBm
			ERP = EIRP - 2.17 dB
			Radiated (ERP) dBm
			38.270
<div style="border: 1px solid black; padding: 5px; width: fit-content;"> $\text{Power density (S) mW/cm}^2 = \frac{\text{EIRP}}{4 \pi r^2}$ <p>r (cm) EIRP (mW)</p> </div>			
Occupational Limit		FCC radio frequency radiation exposure limits per 1.1310	
1	mW/cm ²	Frequency (MHz)	Occupational Limit (mW/cm ²)
10	W/m ²	30-300	1
	General Public Limit	300-1,500	1/300
0.2	mW/cm ²	1,500-10,000	5
2	W/m ²		1
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)
9.1	W/m ²	100-6,000	0.6455 f ^{0.5}
	General Public Limit	6,000-15,000	50
1.291	W/m ²	48-300	
1.291	W/m ²	300-6,000	0.02619 f ^{-0.6834}
		6,000-15,000	50
			10
f = Transmit Frequency (MHz)			f (MHz) = 127
P _T = Power Input to Antenna (mW)			P _T (mW) = 13,335.2143
Duty cycle (percentage of operation)			% = 0.5
P _A = Adjusted Power due to Duty cycle or Cable Loss (mW)			P _A (mW) = 6,667.61
G _N = Numeric Gain of the Antenna			G _N (numeric) = 1.66
S ₂₀ = Power Density of device at 20cm (W/m ²)		S ₂₀ =(P _A G _N)/(4πR ₂₀) ²	S ₂₀ (W/m ²) = 22.01
S _L = Power Density Limit (W/m ²)			S _L (W/m ²) = 1.291
R _C = Minimum distance to the Radiating Element for Compliance (cm)		R _C =√(P _A G _N /4πS _L)	R _C (cm) = 82.6
S _C = Power Density of the device at the Compliance Distance R _C (W/m ²)		S _C =(P _A G _N)/(4πR _C) ²	S _C (W/m ²) = 1.29
R ₂₀ = 20cm			R ₂₀ = 20
	For Compliance with Canada General Population Limits, User Manual must indicate a minimum separation distance of		82.59 cm
	Or in Meters for Compliance with Canada General Population Limits, a minimum separation distance of		0.83 Meters

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 4405 West 259th Terrace
 Louisburg, KS 66053
 Phone/Fax: (913) 837-3214
 Revision 1

Garmin International, Inc.
 Model: GMN-02002
 Test: 190715
 Test to: FCC Parts 2, 15, 87
 File: GMN02002 TNB RF Exposure

SN : 5FR000206
 FCC ID: IPH-03309
 Date: November 27, 2019
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16-Watt Version

Model: GMN-02002		Test Number: 190715	
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 maximum Output power operating at 100% (Watts)	18.4077		
Percent Duty Cycle operation (%)	0.5		
Output Power for 100% duty Cycle operation (Watts)	9.2039		
Tx Frequency (MHz)	127	Calculation power (Watts)	9.2039
			dBd + 2.17 = dBi
			Antenna Gain (dBd)
			Antenna Gain (Numeric)
			Antenna Gain (dBd)
Cable Loss (dB)	0.0	Adjusted Power (dBm)	39.64
			Antenna minus cable (dBi)
	Calculated ERP (mw)	9,267.66	9.27
	Calculated EIRP (mw)	15,274.61	15.27
			EIRP = Po(dBm) + Gain (dB)
			Radiated (EIRP) dBm
			ERP = EIRP - 2.17 dB
			Radiated (ERP) dBm
			39.670
	<div style="border: 1px solid black; padding: 5px; width: fit-content;"> $\text{Power density (S) } \frac{\text{mW}}{\text{cm}^2} = \frac{\text{EIRP}}{4 \pi r^2}$ <p>r (cm) EIRP (mW)</p> </div>		
	Occupational Limit	FCC radio frequency radiation exposure limits per 1.1310	
1	mW/cm ²	Frequency (MHz)	Occupational Limit (mW/cm ²)
10	W/m ²	30-300	1
	General Public Limit	300-1,500	1/300
0.2	mW/cm ²	1,500-10,000	5
2	W/m ²		1
	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)
9.1	W/m ²	100-6,000	0.6455 f ^{0.5}
	General Public Limit	6,000-15,000	50
1.291	W/m ²	48-300	1.291
1.291	W/m ²	300-6,000	0.02619 f ^{0.6834}
		6,000-15,000	10
f = Transmit Frequency (MHz)			f (MHz) = 127
P _T = Power Input to Antenna (mW)			P _T (mW) = 18,407.7200
Duty cycle (percentage of operation)			% = 0.5
P _A = Adjusted Power due to Duty cycle or Cable Loss (mW)			P _A (mW) = 9,203.86
G _N = Numeric Gain of the Antenna			GN (numeric) = 1.66
S ₂₀ = Power Density of device at 20cm (W/m ²)		S ₂₀ =(P _A G _N)/(4πR ₂₀) ²	S ₂₀ (W/m ²) = 30.39
S _L = Power Density Limit (W/m ²)			S _L (W/m ²)= 1.291
R _C = Minimum distance to the Radiating Element for Compliance (cm)		R _C =√((P _A G _N)/4πS _L)	R _C (cm) = 97.0
S _C = Power Density of the device at the Compliance Distance R _C (W/m ²)		S _C =(P _A G _N)/(4πR _C) ²	S _C (W/m ²) = 1.29
R ₂₀ = 20cm			R20= 20
	For Compliance with Canada General Population Limits, User Manual must indicate a minimum separation distance of		97.03 cm
	Or in Meters for Compliance with Canada General Population Limits, a minimum separation distance of		0.97 Meters

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