



# *Rogers Labs, Inc.*

4405 West 259<sup>th</sup> Terrace  
Louisburg, KS 66053  
913 837-3214

## **RF Exposure Compliance Calculation**

### **Report**

FOR

## **Garmin International, Inc.**

1200 East 151<sup>st</sup> Street  
Olathe, KS 66062

Model: 0163700

Certification Date: October 16, 2015

Authorized Signatory:

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Rogers Labs, Inc.  
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Revision 1

Garmin International, Inc.  
Models: GMN-00831, GMN-00871  
Test #: 151105  
Test to: 47CFR15B  
File: 0163700 RFExp

FCC ID: IPH-0163700  
SN: 1YQ200000  
Date: November 16, 2015  
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Garmin		Model: 0163700	Project Number:	151016		
MPE Calculator	MPE 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>					
					Antenna Gain (dBi)	2.5
		Output Power		dBd + 2.17 = dBi	dBi to dBd	2.2
Tx Frequency (MHz)	2437	Maximum (Watts)	0.00		Antenna Gain (dBd)	0.33
Cable Loss (dB)	0.0	(dBm)		0.4	Antenna minus cable (dBi)	2.50
	Calculated ERP (mw)	1.187			EIRP = Po(dBm) + Gain (dB)	
	Calculated EIRP (mw)	1.956			Radiated (EIRP) dBm	2.914
					ERP = EIRP - 2.17 dB	
	<b>Occupational Limit</b>				Radiated (ERP) dBm	0.744
	$0.6455f^{0.5}$ W/m <sup>2</sup>	<div style="border: 1px solid black; padding: 5px;">           Power density (S)            EIRP            ----- = mW/cm<sup>2</sup>  <math>4 \pi r^2</math>            r (cm) EIRP (mW)         </div>				
	0.95332 W/m <sup>2</sup>					
	<b>General Public Limit</b>					
	$0.02619f^{0.6834}$ W/m <sup>2</sup>					
	5.40397 W/m <sup>2</sup>					
FCC radio frequency radiation exposure limits per 1.1310						
	Frequency (MHz)	Occupational Limit	Public Limit			
	300-1,500	f/300	f/1500			
	1,500-10,000	5	1			
IC radio frequency radiation exposure limits per RSS-102						
	Frequency (MHz)	Occupational Limit (W/m <sup>2</sup> )	Public Limit (W/m <sup>2</sup> )			
	100-6,000	$0.6455f^{0.5}$				
	6,000-15,000	50				
	48-300		1.291			
	300-6,000		$0.02619f^{0.6834}$			
	6,000-15,000	50	10			
EIRP	S	S	Distance	Distance	Distance	Distance
milliwatts	mW/cm <sup>2</sup>	W/m <sup>2</sup>	cm	meter	inches	Feet
1.956	0.00002	0.00019	90.00	0.90	35.43	2.95
1.956	0.00002	0.00024	80.00	0.80	31.50	2.62
1.956	0.00003	0.00032	70.00	0.70	27.56	2.30
1.956	0.00004	0.00043	60.00	0.60	23.62	1.97
1.956	0.00006	0.00062	50.00	0.50	19.69	1.64
1.956	0.00010	0.00097	40.00	0.40	15.75	1.31
1.956	0.00156	0.01557	10.00	0.10	3.94	0.33
1.956	0.00192	0.01922	9.00	0.09	3.54	0.30
1.956	0.00243	0.02432	8.00	0.08	3.15	0.26
1.956	0.00318	0.03177	7.00	0.07	2.76	0.23
1.956	0.00432	0.04324	6.00	0.060	2.36	0.20
1.956	0.00623	0.06226	5.00	0.050	1.97	0.16
1.956	0.00973	0.09729	4.00	0.040	1.57	0.13
1.956	0.01730	0.17296	3.00	0.030	1.18	0.10
1.956	0.03892	0.38916	2.00	0.020	0.79	0.07
1.956	0.15566	1.55662	1.00	0.010	0.39	0.03
1.956	0.62265	6.22648	0.50	0.005	0.20	0.02
		Frequency (MHz)	Occupational Limit minimum Distance (meters)	Occupational Limit minimum Distance (cm / inches)	Public Limit minimum distance (meters)	Public Limit minimum distance (cm / inches)
		300-1,500	N/A	N/A	N/A	N/A
		1,500-10,000	N/A	N/A	N/A	N/A

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