

# RF Exposure Evaluation Report

**Client:** Garmin International  
1200 E 151st Street  
Olathe Kansas 66062 USA

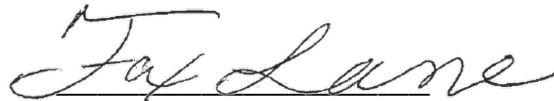
**Model:** A04540

**FCC ID:** IPH-04540  
**IC:** 1792A-04540

**Test Report No.:** RFE20221213-20-02A

**ISED CAB Identifier:** US0177

**Approved By:**



**Fox Lane,  
EMC Test Engineer**

**Date:** February 28, 2023

**Total Pages:** 5

## Revision Page

Rev. No.	Date	Description
Original	23 February 2023	Prepared by – FLane
A	28 February 2023	Added references - FL

**Regulatory Requirements:**

FCC Part 1.1310, 2.1091, 2.1093  
KDB 447498 D01  
RSS-102, Issue 5

**Summary:**

The EUT's EIRP were used to evaluate for exemption from routine SAR testing.

**EUT:**

FCC ID: IPH-04540  
IC: 1792A-04540

MPE Lab Nebraska Center for Excellence in Electronics  
MPE Labs FCC Cab Designation: US1060  
MPE Labs ISED Cab Designation: US0177

**24 GHz power density calculations:**

$P_T$  = power delivered to antenna = (EIRP / peak antenna gain)

EIRP = 59.314 mW Peak, measured at ISED registered EMC test laboratory

Peak antenna gain (G) = 10.55 dBi = 11.35 numeric (from antenna technical description)

Max duty cycle (DC) = 30% (from antenna technical description)

$$P_T = (EIRP / G * DC) = (59.314 / 11.35 * 0.30) = 1.568 \text{ mW}$$

$A_s$  = Antenna surface area = 7.74 cm<sup>2</sup> (see following page)

Power Density =  $P_T / A_s$

Power density = 1.568 mW / 7.74 cm<sup>2</sup> = 0.203 mW/cm<sup>2</sup>

Averaged over 4 cm<sup>2</sup> = 0.203 / 4 = 0.051 mW/cm<sup>2</sup>

Power density limit from eCFR 1.1310(e)(ii) and RSS-102, Issue 5, Table 4 = 10 W/m<sup>2</sup> = 1 mW/cm<sup>2</sup>

24GHz radio limit passing % = Radar% = 5.1%

2.4GHz radio Limit passing % = 2.4GHz% = 2.32%

Total Limit % = 2.4GHz% + Radar% = 2.32 + 5.1 < 100%, therefore exempt

Because the amount of power available over the entire surface of the antenna averaged over the 4 cm<sup>2</sup> area, we believe there is no way power density measurements could result in a non-compliant device.

From April 2021 TCB workshop training:

## Canada's new localized limits > 6 GHz

- February 2021, Health Canada introduced new localized (basic restrictions and reference levels) PD limits
  - < 30 GHz → harmonized w/ ICNIRP-2020 (averaged over 4-cm<sup>2</sup>)
  - > 30 GHz → spatial peak instead 1 cm<sup>2</sup> average
- New limits are now in effect

Power density limit from RSS-102, Issue 5, Table 4 = 10 W/m<sup>2</sup> = 1 mW/cm<sup>2</sup>

Table 4: RF Field Strength Limits for Devices Used by the General Public (Uncontrolled Environment)				
Frequency Range (MHz)	Electric Field (V/m rms)	Magnetic Field (A/m rms)	Power Density (W/m <sup>2</sup> )	Reference Period (minutes)
0.003-10 <sup>21</sup>	83	90	-	Instantaneous*
0.1-10	-	0.73/ f	-	6**
1.1-10	87/ f <sup>0.5</sup>	-	-	6**
10-20	27.46	0.0728	2	6
20-48	58.07/ f <sup>0.25</sup>	0.1540/ f <sup>0.25</sup>	8.944/ f <sup>0.5</sup>	6
48-300	22.06	0.05852	1.291	6
300-6000	3.142 f <sup>0.3417</sup>	0.008335 f <sup>0.3417</sup>	0.02619 f <sup>0.6834</sup>	6
6000-15000	61.4	0.163	10	6
15000-150000	61.4	0.163	10	616000/ f <sup>1.2</sup>
150000-300000	0.158 f <sup>0.5</sup>	4.21 x 10 <sup>-4</sup> f <sup>0.5</sup>	6.67 x 10 <sup>-5</sup> f	616000/f <sup>1.2</sup>

**Note:** f is frequency in MHz.  
 \* Based on nerve stimulation (NS).  
 \*\* Based on specific absorption rate (SAR).