ELEMENT MATERIALS TECHNOLOGY
(formerly PCTEST)
7185 Oakland Mills Road, Columbia, MD 21046 USA
Tel. +1.410.290.6652 / Fax +1.410.290.6654
http://www.element.com

# RF EXPOSURE EVALUATION REPORT

**Applicant Name:**
Garmin Internation Inc.
1200 E. 151 Street
Olathe, Kansas 66062
United States

**Date of Evaluation:**
07/07/2025
**Test Site/Locations:**
Element, Columbia, MD, USA

**Document Serial No.:**
1M2505300056-04.IPH

| | |
|---|---|
| **FCC ID:** | **IPH-05071** |
| **IC ID:** | **1792A-05071** |
| **APPLICANT:** | **GARMIN** |

| | |
|---|---|
| **DUT Type:** | Portable Digital Transceiver |
| **Application Type:** | Certification |
| **Model(s):** | A05071 |

Declaration of Compliance and Responsibility

This wireless portable device has been evaluated for RF Exposure test exemption and has been shown to be compliant to exposure limits for general population/uncontrolled exposure environments, as specified in the referenced regulatory and guidance documents.

I hereby attest to the accuracy and integrity of the data presented in this report. All measurements and calculations were either performed by me or conducted under my direct supervision. To the best of my knowledge and belief, the information reported herein is complete and correct. I assume full responsibility for the validity of the results and the qualifications of all personnel involved in conducting the evaluation.

The test results contained in this report apply only to the specific item(s) tested.

RJ Ortanez
Executive Vice President

ACCREDITED
CERT #2041.01

.

# TABLE OF CONTENTS

# 1 TEST LABORATORY INFORMATION

## 1.1 Introduction

This test report for device subject to testing at an accredited testing laboratory has been generated by the testing laboratory that tested the device. Measurements were performed at various locations within Element Materials Technology. Detailed location and accredited information regarding the testing laboratories are provided below.

## 1.2 Test Laboratories Information

### 1.2.1 Testing Laboratory 1

| | |
|---|---|
| **Test Firm Name** | ELEMENT MATERIALS TECHNOLOGY WASHINGTON DC LLC |
| **Test Lab Location** | 7185 Oakland Mills Road, Columbia, MD 21046, United States<br>Tel. +1.410.290.6652 / Fax +1.410.290.6654 |
| **Accreditation Info.** | Designation Number (FCC): US1113 |
| | Lab Code. (ISED): 2451B |
| | CAB Identifier (NIST): US0110 |
| | ISO/IEC 17025 (A2LA): CERT #2041.01 |
| | ilac-MRA A2LA ACCREDITED CERT #2041.01 |
| **Measurement system No.** | N/A |

# 2 INTRODUCTION

## 2.1 Evaluation Introduction

This RF Exposure Evaluation Report supports the compliance assessment of the device with respect to applicable regulatory requirements for Specific Absorption Rate (SAR) exemption determination. The evaluation is conducted in accordance with the relevant national and international standards, rules, and procedural guidance.

### 2.1.1 Regulatory Rule and Guidance Applied

The following regulatory standards and guidance documents have been applied in the evaluation:

- 47 CFR §1.1307
- 47 CFR §1.1310
- 47 CFR §2.1093
- FCC KDB Publication 447498 D01
- FCC KDB Publication 447498 D04
- ISED RSS-102 Issue 6
- RPS S-1 (Rev.1)
- EN 50663: 2017
- EN 62479:2010
- EN 62311:2008

The purpose of this report is to determine whether the device is eligible for SAR testing exemption in each applicable regulatory domain, based on the maximum available conducted output power, antenna-to-user separation distance, and the defined RF exposure exemption criteria. SAR exemption thresholds were evaluated per technology and transmission mode, using jurisdiction-specific formulas and conditions prescribed by each regulatory body.

# 3 DEVICE UNDER TEST

## 3.1 Device Overview

### 3.1.1 Maximum Average Power Level

The maximum average output power levels used in this RF exposure evaluation are based on the device's declared operational description, including tune-up tolerances. Detailed information regarding the power configurations, operating modes, and channel allocations is documented in the device's RF tune-up procedure and Main Operational Description.

For all supported technologies and transmission modes, the maximum average power—including tune-up tolerance—was used in SAR exemption calculations to represent worst-case output levels.

# 4 RF EXPOSURE EVALUATION

## 4.1 RF Exposure Exemption Justification

This section presents the justification for exemption from Specific Absorption Rate (SAR) evaluation in accordance with the applicable regulatory frameworks. The device has been assessed against the exemption criteria defined by each regulatory body, based on parameters including maximum conducted output power, minimum separation distance, and operational frequency.

### 4.1.1 FCC KDB Publication 447498 D01 (FCC)

Under FCC KDB Publication 447498 D01, routine SAR evaluation—either by measurement or numerical simulation—is not required for general population exposure conditions when the following exclusion threshold is met:

$$\left[\frac{(max.power\ of\ channel,including\ tune-up\ tolerance,mW)}{(min.test\ separation\ distance,mm)}\right] \times \left[\sqrt{f}(GHz)\right] \leq 3.0\ (for\ 1g\ SAR), and\ 7.5\ (for\ 10g\ SAR)$$

Where:
*Pmax includes tune-up tolerance*
*dmin is the minimum test separation distance*
*f is the transmit frequency in GHz*

The test exclusions are applicable only when the minimum test separation distance is ≤ 50 mm, and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is < 5 mm, a distance of 5 mm according to 4.1 f) of KDB 447498 D01 is applied to determine SAR test exclusion.

### 4.1.2 FCC KDB Publication 447498 D04 (FCC)

In accordance with 47 CFR §1.1307(b)(3)(i)(B) and the procedures defined in FCC KDB Publication 447498 D04, a device may be exempt from routine RF exposure evaluation if the maximum available time-averaged conducted output power or effective radiated power (ERP), whichever is greater, including tune-up tolerance—does not exceed the applicable exemption threshold Pth (in mW), as determined by the following formula:

$$P_{th}\ (\text{mW}) = \begin{cases} ERP_{20\ cm}(d/20\ \text{cm})^x & d \leq 20\ \text{cm} \\ ERP_{20\ cm} & 20\ \text{cm} < d \leq 40\ \text{cm} \end{cases}$$

Where

$$x = -\log_{10}\left(\frac{60}{ERP_{20\ cm}\sqrt{f}}\right) \text{ and } f \text{ is in GHz;}$$

and

$$ERP_{20\ cm}\ (\text{mW}) = \begin{cases} 2040f & 0.3\ \text{GHz} \leq f < 1.5\ \text{GHz} \\ 3060 & 1.5\ \text{GHz} \leq f \leq 6\ \text{GHz} \end{cases}$$

$d$ = the separation distance (cm);

This method shall only be used at separation distances (cm) from 0.5 centimeters to 40 centimeters and at frequencies from 0.3 GHz to 6 GHz (inclusive).

### 4.1.3 RSS-102 Issue 6 (ISED)

Devices are exempt from SAR evaluation under ISED RSS-102 Issue 6 when their output power, adjusted for tune-up tolerance, does not exceed the limits specified in the exemption tables for the corresponding frequency and separation distance.

**Table 4-1,**
**Power limits for exemption from routine SAR evaluation based on the separation distance**

| Frequency (MHz) | ≤ 5 mm (mW) | 10 mm (mW) | 15 mm (mW) | 20 mm (mW) | 25 mm (mW) | 30 mm (mW) | 35 mm (mW) | 40 mm (mW) | 45 mm (mW) | > 50 mm (mW) |
|---|---|---|---|---|---|---|---|---|---|---|
| **≤ 300** | 45 | 116 | 139 | 163 | 189 | 216 | 246 | 280 | 319 | 362 |
| **450** | 32 | 71 | 87 | 104 | 124 | 147 | 175 | 208 | 248 | 296 |
| **835** | 21 | 32 | 41 | 54 | 72 | 96 | 129 | 172 | 228 | 298 |
| **1900** | 6 | 10 | 18 | 33 | 57 | 92 | 138 | 194 | 257 | 323 |
| **2450** | 3 | 7 | 16 | 32 | 56 | 89 | 128 | 170 | 209 | 245 |
| **3500** | 2 | 6 | 15 | 29 | 50 | 72 | 94 | 114 | 134 | 158 |
| **5800** | 1 | 5 | 13 | 23 | 32 | 41 | 54 | 74 | 102 | 128 |

When the operating frequency of the device is between two frequencies located in table 4-1, linear interpolation shall be applied for the applicable separation distance. If the separation distance of the device is between two distances located in table above, linear interpolation may be applied for the applicable frequency.

The exemption limits in table 4-1 are based on measurements and simulations of half-wave dipole antennas at separation distances of 5 mm to 50 mm from a flat phantom, which provides a SAR value of approximately 0.4 W/kg for 1 g of tissue.

For limb-worn devices where the 10 gram of tissue applies, the exemption limits for routine evaluation in table 11 are multiplied by a factor of 2.5.

### 4.1.4 EN 62479, EN 62311, and 50566 (EU Assessment)

In accordance with EN 62479:2010, when SAR is basic restriction, a conservative minimum value for Pmax can be derived, equal to the localized SAR limit (SARmax) multiplied by the averaging mass (m):

$$Pmax = SARmax \times m$$

Where:
*SARlimit is the regulatory SAR limit (2.0 W/kg)*
*m is the averaging mass (10g)*

**Table 4-2,**
**Low-power exclusion level Pmax based on ICNIRP**

| Guideline / Standard | SAR limit, $SAR_{max}$ W/kg | Averaging mass, $m$ g | $P_{max}$ mW | Exposure tier[a] | Region of body[a] |
|---|---|---|---|---|---|
| ICNIRP [1] | 2 | 10 | 20 | General public | Head and trunk |
| | 4 | 10 | 40 | General public | Limbs |
| | 10 | 10 | 100 | Occupational | Head and trunk |
| | 20 | 10 | 200 | Occupational | Limbs |

If the calculated Pmax exceeds the device's actual maximum power, exemption from detailed EMF assessment is justified.

### 4.1.5 ARPANSA RPS S-1 Rev.1 (Australia)

Based on RPS S-1 Advisory Note: Compliance of mobile or portable transmitting equipment (100 kHz to 300 GHz), if the power used by or radiated from the device is sufficiently low, the emitted RF fields will be incapable of producing exposures that exceed the limits of RPS S-1.

**Table 4-3,**
**Lower Power Exclusion Levels for nominal mean power averaged over 6 min**

| Exposure scenario | Low Power Exclusion Level at frequency, f | | |
|---|---|---|---|
| | 100 kHz ≤ f ≤ 6 GHz | 6 GHz< f ≤ 30 GHz | 30 GHz< f ≤ 300 GHz |
| Occupational | 100 mW | 40 mW | 20 mW |
| General Public | 20 mW | 8 mW | 4 mW |

The evaluation of mobile or portable transmitting equipment for compliance with RPS S-1 is not required when the nominal mean power output delivered to the antenna does not exceed the Low Power Exclusion (LPE) Level as listed in Table above for the appropriate exposure condition.

## 4.2 RF Exposure Exemption Evaluation Results

Each supported technology and operational mode were individually evaluated to determine whether SAR testing is required or if exemption criteria are met. Where applicable, conservative assumptions and tune-up tolerances were applied to ensure compliance under worst-case conditions.

### 4.2.1 SAR Exemption Assessment – FCC KDB Publication 447498 D01

| Technology | Frequency [MHz] | Minimum Distance [mm] | Maximum Average Power - Including tune-up tolerance [dBm] | Maximum Average Power - Including tune-up tolerance [mW] | SAR test exclusion threshold - FCC | 10g SAR test exclusion threshold limit |
|---|---|---|---|---|---|---|
| **BLE** | 2400 | 5.0 | 5.0 | 3.16 | 0.98 | 7.5 |
| **ANT/ANT+** | 2400 | 5.0 | 5.0 | 3.16 | 0.98 | 7.5 |

### 4.2.2 SAR Exemption Assessment – FCC KDB Publication 447498 D04

| Technology | Frequency [MHz] | Minimum Distance [mm] | Maximum Average Power - Including tune-up tolerance [dBm] | Maximum Average Power - Including tune-up tolerance [mW] | 10g SAR test exclusion threshold limit [mW] |
|---|---|---|---|---|---|
| **BLE** | 2400 | 5.0 | 5.0 | 3.16 | 7.0 |
| **ANT/ANT+** | 2400 | 5.0 | 5.0 | 3.16 | 7.0 |

### 4.2.3 SAR Exemption Assessment – ISED RSS-102 Issue 6

| Technology | Frequency [MHz] | Minimum Distance [mm] | Maximum Average Power - Including tune-up tolerance [dBm] | Maximum Average Power - Including tune-up tolerance [mW] | 10g SAR test exclusion threshold limit [mW] |
|---|---|---|---|---|---|
| **BLE** | 2400 | ≤ 5.0 | 5.0 | 3.16 | 7.5 |
| **ANT/ANT+** | 2400 | ≤ 5.0 | 5.0 | 3.16 | 7.5 |

### 4.2.4 SAR Exemption Assessment – EN 62479:2010 and RPS S-1 (Rev.1)

| Technology | Frequency [MHz] | Minimum Distance [mm] | Maximum Average Power - Including tune-up tolerance [dBm] | Maximum Average Power - Including tune-up tolerance [mW] | 10g SAR test exclusion threshold limit Pmax [mW] |
|---|---|---|---|---|---|
| **BLE** | 2400 | ≤ 5.0 | 5.0 | 3.16 | 20 |
| **ANT/ANT+** | 2400 | ≤ 5.0 | 5.0 | 3.16 | 20 |

### 4.2.5 Evaluation Summary

All technologies and operational modes have been evaluated using the most conservative input parameters, including maximum tune-up power and minimum separation distance. Where the calculated values fall within the applicable exemption thresholds, SAR testing is not required. For any cases not meeting exemption conditions, further evaluation or testing may be required under applicable regulatory procedures.

# 5 CONCLUSION

## 5.1 Evaluation Conclusion

This RF exposure compliance evaluation confirms that the device qualifies for Specific Absorption Rate (SAR) test exemption in accordance with applicable regulatory requirements.

The determination is based on conservative assessment of the device's maximum output power, antenna separation distances, and operational frequency characteristics. All supported technologies and operating modes were evaluated against defined exemption thresholds, with appropriate consideration of tune-up tolerances and minimum separation distances.

The device meets the applicable criteria for exemption from routine SAR evaluation. Where permitted, test reduction and exclusion provisions were applied. The exposure scenarios were assessed using conservative assumptions to ensure compliance under worst-case operating conditions.

No further SAR testing is required to demonstrate RF exposure compliance for this device.