

RF Exposure Lab

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CERTIFICATE OF COMPLIANCE SAR EVALUATION

Garmin International, Inc.
1200 E. 151st Street
Olathe, KS 66062

Dates of Test:
Test Report Number:

September 22, 2023
SAR.20230911
Revision B

Lab Designation Number: US1195(FCC) & US0194(ISED)

FCC ID:	IPH-04714
IC Certificate:	1792A-04714
Model(s):	A04714
Test Sample:	Engineering Unit Same as Production
Serial No.:	453413899
Equipment Type:	Digital Transmission System Transceiver
Classification:	Portable Transmitter Next to Extremity
TX Frequency Range:	2402 – 2480 MHz; 2412 – 2462 MHz
Frequency Tolerance:	± 2.5 ppm
Maximum RF Output:	2450 MHz (BLE) – 4.0 dBm, 2450 MHz (ANT) – 4.0 dBm, 13.56 MHz – <0 dBm Conducted
Signal Modulation:	GFSK, DSSS, OFDM
Antenna Type:	Internal Antenna
Application Type:	Certification
Standard(s):	47CFR1.1310, 47CFR2.1093, KDB447498 D01 v07, KDB248227 D01 v02r02, RSS-102, Safety Code 6
Separation Distance:	0 mm

This wireless portable device has been shown to be excluded for RF exposure testing for uncontrolled environment/general exposure limits specified in above listed standards for standalone SAR. The device has also been shown to meet the simultaneous requirements of each standard as well (See test report).

I attest to the accuracy of the data. I assume full responsibility for the completeness of these calculations and vouch for the qualifications of all persons making them.



Jay M. Moulton
Vice President



Certificate # 2387.01

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Comment/Revision	Date
Original Release	September 27, 2023
Revision A – Correct model number and IDs on page 1	September 28, 2023
Revision B – Change the description of the device page 5	November 10, 2023

Note: The latest version supersedes all previous versions listed in the above table. The latest version shall be used.

1. Introduction

This report shows exclusion calculations of the Garmin International, Inc. Model A04714 Digital Transmission System Transceiver with 47CFR1.1310, 47CFR2.1093, KDB447498 D01 v07, RSS-102, Safety Code 6.

2. Radiation Sources

Radio	Description	
BLE	Frequency Range (MHz)	2402 – 2480 MHz
	Maximum Power (dBm)	4.0 dBm
	Maximum Duty Cycle (%)	100%
ANT	Frequency Range (MHz)	2402 – 2480 MHz
	Maximum Power (dBm)	4.0 dBm
	Maximum Duty Cycle (%)	100%
13.56 MHz	Frequency Range (MHz)	13.56 MHz
	Maximum Power (dBm)	<0.0 dBm
	Maximum Duty Cycle (%)	100%

3. A04714

The device is worn in close proximity of the user. The minimum distance for all antennas is 5 mm for extremity evaluation. See a photo of the device in Appendix A.

4. RF Exposure Classifications

Device Types	
Fixed	A fixed device is defined as a device physically secured at one fixed location and cannot be easily re-located.
Mobile	A mobile device is defined as a transmitting device designed to be used in other than fixed locations and to generally be used in such a way that a separation distance of at least 20 centimeters is normally maintained between the transmitter's radiating structure(s) and the body of the user or nearby persons. (47 CFR 2.1091)
Portable	A portable device is defined as a transmitting device designed to be used so that the radiating structure(s) of the device is/are within 20 centimeters of the body of the user. (47 CFR 2.1093)

Exposure Categories	
Occupational / Controlled	Limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.
General population / uncontrolled	Exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

5. RF Exposure Limits Standalone

FCC Requirements

The FCC SAR test exclusion for standalone SAR is determined for each operating configuration and exposure condition the device can operate.

The exclusion is evaluated based on the calculation in KDB447498 D01 v06 section 4.3.1 a). The formula is shown below.

$$[(\text{max. power, mW}) / (\text{min. distance, mm})] * [\sqrt{f_{(\text{GHz})}}] \leq 7.5 \text{ for extremity SAR}$$

ISED Requirements

SAR evaluation is required if the separation distance between the user and/or bystander and the antenna and/or radiating element of the device is less than or equal to 20 cm, except when the device operates at or below the applicable output power level (adjusted for tune-up tolerance) for the specified separation distance defined in Table 1.

Table 1: SAR evaluation – Exemption limits for routine evaluation based on frequency and separation distance^{4,5}

Frequency (MHz)	Exemption Limits (mW)				
	At separation distance of ≤5 mm	At separation distance of 10 mm	At separation distance of 15 mm	At separation distance of 20 mm	At separation distance of 25 mm
≤300	71 mW	101 mW	132 mW	162 mW	193 mW
450	52 mW	70 mW	88 mW	106 mW	123 mW
835	17 mW	30 mW	42 mW	55 mW	67 mW
1900	7 mW	10 mW	18 mW	34 mW	60 mW
2450	4 mW	7 mW	15 mW	30 mW	52 mW
3500	2 mW	6 mW	16 mW	32 mW	55 mW
5800	1 mW	6 mW	15 mW	27 mW	41 mW

Frequency (MHz)	Exemption Limits (mW)				
	At separation distance of 30 mm	At separation distance of 35 mm	At separation distance of 40 mm	At separation distance of 45 mm	At separation distance of ≥50 mm
≤300	223 mW	254 mW	284 mW	315 mW	345 mW
450	141 mW	159 mW	177 mW	195 mW	213 mW
835	80 mW	92 mW	105 mW	117 mW	130 mW
1900	99 mW	153 mW	225 mW	316 mW	431 mW
2450	83 mW	123 mW	173 mW	235 mW	309 mW
3500	86 mW	124 mW	170 mW	225 mW	290 mW
5800	56 mW	71 mW	85 mW	97 mW	106 mW

6. BLE/ANT Specifications

The maximum power including the antenna gain for the BLE/ANT is 4.0 dBm maximum TX power.

7. Standalone SAR Exclusion Assessment

FCC Requirements

The maximum power levels for each transmitter is listed below. The maximum power allowed to be excluded are shown below as well.

BLE Power = 2.5 mW
ANT Power = 2.5 mW
13.56 MHz Power = <1 mW

For the FCC, the calculation in section 5 above gives an exclusion power of 23.8 mW for the extremities.

Therefore, the all transmitters are excluded from standalone SAR evaluations.

ISED Requirements

The maximum power levels for each transmitter is listed below. The maximum power allowed to be excluded are shown below as well.

BLE Power = 2.5 mW
ANT Power = 2.5 mW
13.56 MHz Power = <1 mW

Based on the table in RSS-102, the transmitters must be less than 10 mW to be excluded from extremity SAR. The transmitter is less than the required power level to be excluded. Therefore, the all transmitters are excluded from SAR testing.

Note: For ISED extremity limits, the limit for body is multiplied by 2.5.

Appendix A

Photo Removed

Front of Device

Photo Removed

Back of Device