

# RADIO TEST REPORT

Report ID

**REP089539**

Project ID

**PRJ0076072**

Type of assessment:

**MPE Calculation report**

Manufacturer:

**Geotab Inc.**

Product Marketing Name (PMN):

**Telematics Device**

Model number:

**GDSAA2**

FCC identifier:

**2AV57GDSAA2**

Specification:

- ◆ FCC 47 CFR Part 1 Subpart I, §1.1307, §1.1310
- ◆ FCC 47 CFR Part 2 Subpart J, §2.1091
- ◆ FCC KDB 447498 D01 General RF Exposure Guidance v06
- ◆ EN IEC 62311: 2020

Date of issue: April 25, 2025

Alvin Liu, EMC/RF Specialist

Prepared by



Signature

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ANAB File Number: AT-3195 (Ottawa); AT-3193 (Pointe-Claire); AT-3194 (Cambridge)



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Lab and test locations

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Test site identifier	<ul style="list-style-type: none"><li>– CA2040 (Ottawa)</li><li>– CA2041 (Montreal)</li><li>– CA0101 (Cambridge)</li></ul>		
Website	<a href="http://www.nemko.com">www.nemko.com</a>		

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Limits of responsibility

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Note that the results contained in this report relate only to the items tested and were obtained in the period between the date of initial receipt of samples and the date of issue of the report.

This test report has been completed in accordance with the requirements of ISO/IEC 17025. All results contained in this report are within Nemko Canada's ISO/IEC 17025 accreditation.

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## Section 1 Evaluation summary

### 1.1 MPE calculation for standalone transmission

#### 1.1.1 References, definitions and limits

##### FCC §2.1091(d)

- (2) For operations within the frequency range of 300 kHz and 6 GHz (inclusive), the limits for maximum permissible exposure (MPE), derived from whole-body SAR limits and listed in Table 1 in paragraph (e)(1) of this section, may be used instead of whole-body SAR limits as set forth in paragraphs (a) through (c) of this section to evaluate the environmental impact of human exposure to RF radiation as specified in §1.1307(b) of this part, except for portable devices as defined in §2.1093 of this chapter as these evaluations shall be performed according to the SAR provisions in §2.1093.

**Table 1.1-1:** Table 1 to §1.1310(e)(1) — Limits for Maximum Permissible Exposure (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm <sup>2</sup> )	Averaging time (minutes)
<b>(i) Limits for Occupational/Controlled Exposure</b>				
0.3–3.0	614	1.63	*(100)	≤6
3.0–30	1842 / f	4.89 / f	*(900 / f <sup>2</sup> )	<6
30–300	61.4	0.163	1.0	<6
300–1500			f / 300	<6
1500–100000			5	<6
<b>(ii) Limits for General Population/Uncontrolled Exposure</b>				
0.3–1.34	614	1.63	*(100)	<30
1.34–30	824 / f	2.19 / f	*(180 / f <sup>2</sup> )	<30
30–300	27.5	0.073	0.2	<30
300–1500			f / 1500	<30
1500–100000			1.0	<30

Notes: f = frequency in MHz. \* = Plane-wave equivalent power density.

##### EN 62311

- Limits used are from Table 7 of ICNIRP Guidelines for limiting exposure to time-varying electric, magnetic and electromagnetic fields (up to 300 GHz) (Published in: HEALTH PHYSICS 74 (4):494-522; 1998)

**Table 1.1-2:** Table 7. Reference levels for general public exposure to time-varying electric and magnetic fields (unperturbed rms values).

Frequency range (f)	E-field strength (V/m)	H-field strength (A/m)	B-field (μT)	Equivalent plane wave power density S <sub>eq</sub> (W/m <sup>2</sup> )
Up to 1 Hz	—	3.2 × 10 <sup>4</sup>	4 × 10 <sup>4</sup>	—
1–8 Hz	10,000	3.2 × 10 <sup>4</sup> /f <sup>2</sup>	4 × 10 <sup>4</sup> /f <sup>2</sup>	—
8–25 Hz	10,000	4,000/f	5,000/f	—
0.025–0.8 kHz	250/f	4/f	5/f	—
0.8–3 kHz	250/f	5	6.25	—
3–150 kHz	87	5	6.25	—
0.15–1 MHz	87	0.73/f	0.92/f	—
1–10 MHz	87/f <sup>1/2</sup>	0.73/f	0.92/f	—
10–400 MHz	28	0.073	0.092	2
400–2,000 MHz	1.375f <sup>1/2</sup>	0.0037f <sup>1/2</sup>	0.0046f <sup>1/2</sup>	f/200
2–300 GHz	61	0.16	0.20	10

Notes: None

## References, definitions and limits, continued

Equation from page 18 of OET Bulletin 65, Edition 97-01

$$S = \frac{PG}{4\pi R^2}$$

where: S = power density (mW/cm<sup>2</sup> or W/m<sup>2</sup>)

P = power input to the antenna (mW or W)

G = power gain of the antenna in the direction of interest relative to an isotropic radiator

R = distance to the center of radiation of the antenna (cm or m)

## 1.1.2 EUT technical information

Transmitter details	2G (Band 5)	3G (Band 2)	LTE (Band 7)
Prediction frequency	836.6 MHz	2535.3 MHz	1880.5 MHz
Antenna type	WWAN PIFA antenna	WWAN PIFA antenna	WWAN PIFA antenna
Antenna gain	-2.94 dBi	-1.54 dBi	-1.76 dBi
Maximum transmitter radiated power	26.82 dBm	29.46 dBm	25.14 dBm
Maximum transmitter conducted power	29.76 dBm	31.00 dBm	26.90 dBm
Prediction distance (declared)	20 cm	20 cm	20 cm

## 1.1.3 MPE calculation – FCC

Fundamental transmit (prediction) frequency:	836.6 MHz	2535.3 MHz	1880.5 MHz
Maximum measured conducted peak output power:	29.76 dBm	31.0 dBm	26.9 dBm
Cable and/or jumper loss:	0 dB	0 dB	0 dB
Maximum peak power at antenna input terminal:	29.76 dBm	31.0 dBm	26.9 dBm
Tx On time:	1.000 ms	1.000 ms	1.000 ms
Tx period time:	1.000 ms	1.000 ms	1.000 ms
Average factor:	100 %	100 %	100 %
Maximum calculated average power at antenna input terminal:	946.237 mW	1258.925 mW	489.779 mW
Single Antenna gain (typical):	-2.94 dBi	-1.54 dBi	-1.76 dBi
Number of antennae:	1	1	1
Total system gain:	-2.94 dBi	-1.54 dBi	-1.76 dBi
<b>MPE limit for uncontrolled exposure at prediction frequency:</b>	<b>0.558 mW/cm<sup>2</sup></b>	<b>1.000 mW/cm<sup>2</sup></b>	<b>1.000 mW/cm<sup>2</sup></b>
	5.577 W/m <sup>2</sup>	10.000 W/m <sup>2</sup>	10.000 W/m <sup>2</sup>
Minimum calculated prediction distance for compliance:	20 cm	20 cm	20 cm
Typical (declared) distance:	20 cm	20 cm	20 cm
<b>Average power density at prediction frequency:</b>	<b>0.096 mW/cm<sup>2</sup></b>	<b>0.176 mW/cm<sup>2</sup></b>	<b>0.065 mW/cm<sup>2</sup></b>
	0.957 W/m <sup>2</sup>	1.757 W/m <sup>2</sup>	0.650 W/m <sup>2</sup>
<b>Margin of Compliance:</b>	<b>7.66 dB</b>	<b>7.55 dB</b>	<b>11.87 dB</b>
Maximum allowable antenna gain:	4.72 dBi	6.01 dBi	10.11 dBi

## 1.1.4 MPE calculation – EN 62311

Fundamental transmit (prediction) frequency:	836.6 MHz	2535.3 MHz	1880.5 MHz
Maximum measured conducted peak output power:	29.76 dBm	31 dBm	26.9 dBm
Cable and/or jumper loss:	0 dB	0 dB	0 dB
Maximum peak power at antenna input terminal:	29.76 dBm	31 dBm	26.9 dBm
Tx On time:	1.000 ms	1.000 ms	1.000 ms
Tx period time:	1.000 ms	1.000 ms	1.000 ms
Average factor:	100 %	100 %	100 %
Maximum calculated average power at antenna input terminal:	946.237 mW	1258.925 mW	489.779 mW
Single Antenna gain (typical):	-2.94 dBi	-1.54 dBi	-1.76 dBi
Number of antennae:	1	1	1
Total system gain:	-2.94 dBi	-1.54 dBi	-1.76 dBi
MPE limit for uncontrolled exposure at prediction frequency:	0.418 mW/cm <sup>2</sup>	1.000 mW/cm <sup>2</sup>	0.940 mW/cm <sup>2</sup>
Minimum calculated prediction distance for compliance:	4.183 W/m <sup>2</sup>	10.000 W/m <sup>2</sup>	9.403 W/m <sup>2</sup>
	20 cm	20 cm	20 cm
Typical (declared) distance:	20 cm	20 cm	20 cm
Average power density at prediction frequency:	0.096 mW/cm <sup>2</sup>	0.176 mW/cm <sup>2</sup>	0.065 mW/cm <sup>2</sup>
	0.957 W/m <sup>2</sup>	1.757 W/m <sup>2</sup>	0.650 W/m <sup>2</sup>
Margin of Compliance:	6.41 dB	7.55 dB	11.61 dB
Maximum allowable antenna gain:	3.47 dBi	6.01 dBi	9.85 dBi

## 1.1.5 Verdict

The calculation is below the limit; therefore, the product is passing the RF Exposure requirements for the declared distance.

End of the test report