

RADIO TEST REPORT

Report ID

REP052225

Project ID

PRJ0061485

Type of assessment:

MPE Calculation report

Manufacturer:

ORBCOMM License Corp.

Product description:

Industrial Assets Tracking &
management System

Hardware Version Identification Number (HVIN):

CT5300

FCC IDs:

XMR202212EG21GL,
XGS-CT5300

ISED certification numbers:

10224A-2022EG21GL,
11881A-CT5300

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
- ◆ ISED Canada RSS-102 Issue 5 Amendment 1, (February 2021)

RSS-102 Annex B - Declaration of RF Exposure Compliance

ATTESTATION: I attest that the information provided in Annex A is correct; that the Technical Brief was prepared and the information contained therein is correct; that the device evaluation was performed or supervised by me; that applicable measurement methods and evaluation methodologies have been followed; and that the device meets the SAR and/or RF field strength limits of RSS-102.

Date of issue: March 10, 2026

Tarek Elkholy, EMC/RF Specialist

Prepared by



Signature

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



Lab locations

Company name	Nemko Canada Inc.			
Facilities	<i>Ottawa site:</i>	<i>Montréal site:</i>	<i>Cambridge site:</i>	
	303 River Road Ottawa, Ontario Canada K1V 1H2	292 Labrosse Avenue Pointe-Claire, Québec Canada H9R 5L8	1-130 Saltsman Drive Cambridge, Ontario Canada N3E 0B2	
	Tel: +1 613 737 9680 Fax: +1 613 737 9691	Tel: +1 514 694 2684 Fax: +1 514 694 3528	Tel: +1 519 650 4811	
Test site identifier	Organization	Ottawa	Montreal	Cambridge
	FCC:	CA2040	CA2041	CA0101
	ISED:	2040A-4	2040G-5	24676
Website	www.nemko.com			

Limits of responsibility

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 simultaneous transmission

1.1.1 References, definitions and limits

FCC §2.1091(d)

- (2) (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 ²)	Averaging time (minutes)
(i) Limits for Occupational/Controlled Exposure				
0.3–3.0	614	1.63	*(100)	≤6
3.0–30	1842 / f	4.89 / f	*(900 / f ²)	<6
30–300	61.4	0.163	1.0	<6
300–1500			f / 300	<6
1500–100000			5	<6
(ii) Limits for General Population/Uncontrolled Exposure				
0.3–1.34	614	1.63	*(100)	<30
1.34–30	824 / f	2.19 / f	*(180 / f ²)	<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.

RSS-102, Section 4

For the purpose of this standard, Industry Canada has adopted the SAR and RF field strength limits established in Health Canada's RF exposure guideline, Safety Code 6:

Table 1.1-2: Table 4 to RSS-102 — RF Field Strength Limits

Frequency range (MHz)	Electric field strength (V/m rms)	Magnetic field strength (A/m rms)	Power density (W/m ²)	Reference Period (minutes)
Limits for Controlled Environment				
10–20	61.4	0.163	10	6
20–48	129.8 / f ^{0.25}	0.3444 / f ^{0.25}	44.72 / f ^{0.5}	6
48–100	49.33	0.1309	6.455	6
100–6000	15.60 f ^{0.25}	0.04138 f ^{0.25}	0.6455 f ^{0.5}	6
6000–15000	137	0.364	50	6
Limits for Uncontrolled Environment				
10–20	27.46	0.0728	2	6
20–48	58.07 / f ^{0.25}	0.1540 / f ^{0.25}	8.944 / f ^{0.5}	6
48–300	22.06	0.05852	1.291	6
300–6000	3.142 f ^{0.3417}	0.008335 f ^{0.3417}	0.02619 f ^{0.6834}	6
6000–15000	61.4	0.163	10	6

Notes: f = frequency in MHz

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/cm² or W/m²)
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 1 (GSM-850)	Transmitter 2 (BLE)
Prediction frequency	848.8 MHz	2480 MHz
Antenna type	Dipole	Inverted L
Antenna gain	2.7 dBi	4.2 dBi
Maximum transmitter conducted power	33 dBm	9.1 dBm
Prediction distance (declared)	35 cm	35 cm

1.1.3 MPE calculation

	Transmitter 1	Transmitter 2
Fundamental transmit (prediction) frequency:	848.8 MHz	2480 MHz
Maximum measured conducted peak output power:	15 dBm	9.1 dBm
Cable and/or jumper loss:	0 dB	0 dB
Maximum peak power at antenna input terminal:	33 dBm	9.1 dBm
Duty cycle:	100 %	100 %
Maximum calculated average power at antenna input terminal:	1995.2623 mW	8.1283052 mW
Single Antenna gain (typical):	2.7 dBi	4.2 dBi
Number of antennae:	1	1
Total system gain:	2.70 dBi	4.20 dBi

	FCC limit	ISSED limit	FCC limit
MPE limit for <u>uncontrolled</u> exposure at prediction frequency:	0.26283 mW/cm ² 2.628337 W/m ²	0.56587 mW/cm ² 5.65867 W/m ²	0.54689 mW/cm ² 5.468948 W/m ²
MPE limit for <u>controlled</u> exposure at prediction frequency:	1.88061 mW/cm ² 18.80611 W/m ²	2.82933 mW/cm ² 28.29333 W/m ²	3.21456 mW/cm ² 32.14564 W/m ²
Minimum calculated prediction distance for compliance:	34 cm	23 cm	20 cm
Typical (declared) distance:	35 cm	35 cm	35 cm
Average power density at prediction frequency:	0.241354 mW/cm ² 2.413537 W/m ²	0.241354 mW/cm ² 2.413537 W/m ²	0.001389 mW/cm ² 0.013888 W/m ²
MPE compliance for simultaneous operation:			
Margin of Compliance for <u>controlled</u> environment:	8.92 dB	10.69 dB	33.64 dB
with Maximum permitted antenna gain:	11.62 dBi	13.39 dBi	37.84 dBi
Margin of Compliance for <u>uncontrolled</u> environment:	0.37 dB	3.70 dB	25.95 dB
with Maximum permitted antenna gain:	3.07 dBi	3.70 dBi	30.15 dBi
Average power density to MPE limit ratio (<u>uncontrolled</u>):	0.918	0.427	0.003
Average power density to MPE limit ratio (<u>controlled</u>):	0.128	0.085	0.000
Total sum of ratios for FCC (uncontrolled):	0.428 <1		0.086 <1
Total sum of ratios for ISSED (uncontrolled):	0.921 <1		0.129 <1
Maximum allowed sum of ratios:	1		
Total RF value for ISSED:			2.4274 W/m ²

1.1.4 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