

# RADIO TEST REPORT – APFWL

Report ID

REP095370

Project ID

PRJ0078733

Type of assessment:

MPE Calculation report

Manufacturer:

IRISS Inc.

Product Marketing Name (PMN):

IoT Sensors

HVIN/Models:

ESC3100, 3101, 3103, 3104, 3105

FCC identifier:

FCC ID: 2AE7J-ESC

ISED certification number:

IC: 20368-ESC

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 6, (December 2023)

## 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: August 13, 2025



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>	
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Test site identifier	<b>Organization</b>	<b>Ottawa</b>	<b>Montreal</b>	<b>Cambridge</b>
	FCC:	CA2040	CA2041	CA0101
	ISED:	2040A-4	2040G-5	24676
Website	<a href="http://www.nemko.com">www.nemko.com</a>			

## 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 standalone 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 <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.

##### RSS-102, Section 5

For the purpose of this standard, ISED 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 <sup>2</sup> )	Reference Period (minutes)
<b>Limits for Controlled Environment</b>				
10–20	61.4	0.163	10	6
20–48	129.8 / f <sup>0.25</sup>	0.3444 / f <sup>0.25</sup>	44.72 / f <sup>0.5</sup>	6
48–100	49.33	0.1309	6.455	6
100–6000	15.60 f <sup>0.25</sup>	0.04138 f <sup>0.25</sup>	0.6455 f <sup>0.5</sup>	6
6000–15000	137	0.364	50	6
<b>Limits for Uncontrolled Environment</b>				
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

Notes: f = frequency in MHz

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**References, definitions and limits, continued**

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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)

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**1.1.2 EUT technical information**

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Prediction frequency	2480 MHz
Antenna type	Dipole
Antenna gain	3.24 dBi
Number of antennas	1
Maximum transmitter power	9.18 dBm (conducted)
Prediction distance (declared)	20 cm

## 1.1.3 MPE calculation

Fundamental transmit (prediction) frequency:	2480 MHz
Maximum measured conducted peak output power:	9.18 dBm
Cable and/or jumper loss:	0 dB
Maximum peak power at antenna input terminal:	9.18 dBm
Duty cycle:	100 %
Maximum calculated average power at antenna input terminal:	8.28 mW
Single Antenna gain (typical):	3.24 dBi
Number of antennae:	1
Total system gain:	3.24 dBi

## FCC calculations

## ISED calculations

## Uncontrolled environment

Declared distance:	20 cm	20 cm
Average power density at declared distance:	0.003473 mW/cm <sup>2</sup> 0.034732 W/m <sup>2</sup>	0.003473 mW/cm <sup>2</sup> 0.034732 W/m <sup>2</sup>
MPE limit at prediction frequency:	1.000000 mW/cm <sup>2</sup> 10.000000 W/m <sup>2</sup>	0.546895 mW/cm <sup>2</sup> 5.468948 W/m <sup>2</sup>
Minimum calculated prediction distance for compliance:	20 cm	20 cm
Margin of Compliance:	24.59 dB	21.97 dB
with Maximum permitted antenna gain:	27.83 dBi	25.21 dBi

## Controlled environment

Declared distance:	20 cm	20 cm
Average power density at declared distance:	0.003473 mW/cm <sup>2</sup> 0.034732 W/m <sup>2</sup>	0.003473 mW/cm <sup>2</sup> 0.034732 W/m <sup>2</sup>
MPE limit at prediction frequency:	5.000000 mW/cm <sup>2</sup> 50.000000 W/m <sup>2</sup>	3.214564 mW/cm <sup>2</sup> 32.145641 W/m <sup>2</sup>
Minimum calculated prediction distance for compliance:	20 cm	20 cm
Margin of Compliance:	31.58 dB	29.66 dB
with Maximum permitted antenna gain:	34.82 dBi	32.90 dBi

## 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