

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

Nemko Canada Inc., a testing laboratory, is accredited by ANSI National Accreditation Board (ANAB).

The tests included in this report are within the scope of this accreditation.

The ANAB symbol is an official symbol of the ANSI National Accreditation Board, used under licence.

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> 303 River Road Ottawa, Ontario Canada K1V 1H2	<i>Montréal site:</i> 292 Labrosse Avenue Pointe-Claire, Québec Canada H9R 5L8	<i>Cambridge site:</i> 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 FCC: ISED:	Ottawa CA2040 2040A-4	Montreal CA2041 2040G-5	Cambridge CA0101 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.

Copyright notification

Nemko Canada Inc. authorizes the applicant to reproduce this report provided it is reproduced in its entirety and for use by the company's employees only. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties.

Nemko Canada Inc. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

© Nemko Canada Inc.

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 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 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 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

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

Controlled environment

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