

RADIO TEST REPORT – APFWL

Report ID

REP111014

Project ID

PRJ0080736

Type of assessment:

MPE Calculation report

Manufacturer:

Strato Automation Inc.

Description of product:

OpenStat OS537 Series HVAC Controller

Product Marketing Name (PMN):

OS214W, OS537HW, OS537MHW, OS537MHCW

Hardware Version Identification Numbers (HVINs):

OS214W, OS537HW, OS537MHW,
OS537MHCW

FCC identifier:

FCC ID: 2BPMM-OSXXXMHCW

ISED certification number:

IC: 34000-OSXXXMHCW

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 radiocommunication apparatus meets the exemption from the routine evaluation limits in Section 6 of this standard; that the Technical Brief was prepared and the information contained therein is correct, that the device evaluation was performed or supervised by the undersigned, that applicable measurement methods and evaluation methodologies have been followed and that the device meets the SAR, NS, APD and/or FRL exposure limits of RSS-102.

Date of issue: August 19, 2025

Atefeh Beiginezhad, 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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	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 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

Transmitter type	Radar
Prediction frequency	61.39 GHz
Antenna type	integrated patch antenna
Antenna gain	6 dBi
Number of antennas	1
Maximum transmitter field strength	103.01 dBμV/m (at 3 m)
Maximum transmitter conducted power	1.78 dBm (103.01 dBμV/m – 95.23 dB – 6 dBi)
Prediction distance (declared)	20 cm
Transmitter type	Wi-Fi
Prediction frequency	2462 GHz
Antenna gain	2 dBi
Number of antennas	1
Maximum transmitter power	26.95 dBm (495.5 mW)
Prediction distance (declared)	20 cm

1.1.3 MPE calculation for stand-alone Radar transmission

Fundamental transmit (prediction) frequency: 61390 MHz
Maximum measured field strength at 3 m: 103.01 dBμV/m
Transmit duty cycle: 100 %
Maximum calculated average field strength: 103.01 dBμV/m
Single Antenna gain (typical): 6.00 dBi
Number of antennae: 1
Total system gain: 6.00 dBi

FCC calculations

ISED calculations

Uncontrolled environment

Declared distance:	<u>20</u> cm	<u>20</u> cm
Average power density at declared distance:	<u>0.001193</u> mW/cm ² <u>0.011932</u> W/m ²	<u>0.001193</u> mW/cm ² <u>0.011932</u> W/m ²
MPE limit at prediction frequency:	<u>1.000000</u> mW/cm ² <u>10.000000</u> W/m ²	<u>1.000000</u> mW/cm ² <u>10.000000</u> W/m ²
Minimum calculated prediction distance for compliance:	<u>20</u> cm	<u>20</u> cm
Margin of Compliance:	<u>29.23</u> dB	<u>29.23</u> dB

Controlled environment

Declared distance:	<u>20</u> cm	<u>20</u> cm
Average power density at declared distance:	<u>0.001193</u> mW/cm ² <u>0.011932</u> W/m ²	<u>0.001193</u> mW/cm ² <u>0.011932</u> W/m ²
MPE limit at prediction frequency:	<u>5.000000</u> mW/cm ² <u>50.000000</u> W/m ²	<u>5.000000</u> mW/cm ² <u>50.000000</u> W/m ²
Minimum calculated prediction distance for compliance:	<u>20</u> cm	<u>20</u> cm
Margin of Compliance:	<u>36.22</u> dB	<u>36.22</u> dB

1.1.4 MPE calculation for simultaneous transmission

	Radar Transmitter		Wi-Fi Transmitter	
Fundamental transmit (prediction) frequency:	61390	MHz	2462	MHz
Maximum measured conducted peak output power:	1.78	dBm	26.95	dBm
Cable and/or jumper loss:	0	dB	0	dB
Maximum peak power at antenna input terminal:	1.78	dBm	26.95	dBm
Duty cycle:	100	%	100	%
Maximum calculated average power at antenna input terminal:	1.51	mW	495.45	mW
Single Antenna gain (typical):	6	dBi	2	dBi
Number of antennae:	1		1	
Total system gain:	6.00	dBi	2.00	dBi

	FCC calculations		ISED calculations		FCC calculations		ISED calculations	
Uncontrolled environment								
Declared distance:	20	cm	20	cm	20	cm	20	cm
Average power density at declared distance:	0.001193	mW/cm ²	0.001193	mW/cm ²	0.156218	mW/cm ²	0.156218	mW/cm ²
	0.011932	W/m ²	0.011932	W/m ²	1.562177	W/m ²	1.562177	W/m ²
MPE limit at prediction frequency:	1.000000	mW/cm ²	1.000000	mW/cm ²	1.000000	mW/cm ²	0.544179	mW/cm ²
	10.000000	W/m ²	10.000000	W/m ²	10.000000	W/m ²	5.441790	W/m ²
Minimum calculated prediction distance for compliance:	20	cm	20	cm	20	cm	20	cm
Margin of Compliance:	29.23	dB	29.23	dB	8.06	dB	5.42	dB
with Maximum premitted antenna gain:	35.23	dBi	35.23	dBi	10.06	dBi	7.42	dBi
Individual transmitter exposure ratio (average density to MPE limit):	0.001193		0.001193		0.156218		0.287070	
Total exposure ratio for FCC:	0.157411	<1						
Total exposure ratio for ISED:	0.288264	<1						
Total RF value for ISED listing:	1.574109	W/m ²						

Controlled environment								
Declared distance:	20	cm	20	cm	20	cm	20	cm
Average power density at declared distance:	0.001193	mW/cm ²	0.001193	mW/cm ²	0.156218	mW/cm ²	0.156218	mW/cm ²
	0.011932	W/m ²	0.011932	W/m ²	1.562177	W/m ²	1.562177	W/m ²
MPE limit at prediction frequency:	5.000000	mW/cm ²	5.000000	mW/cm ²	5.000000	mW/cm ²	3.202877	mW/cm ²
	50.000000	W/m ²	50.000000	W/m ²	50.000000	W/m ²	32.028771	W/m ²
Minimum calculated prediction distance for compliance:	20	cm	20	cm	20	cm	20	cm
Margin of Compliance:	36.22	dB	36.22	dB	15.05	dB	13.12	dB
with Maximum permitted antenna gain:	42.22	dBi	42.22	dBi	17.05	dBi	15.12	dBi
Individual transmitter exposure ratio (average density to MPE limit):	0.000239		0.000239		0.031244		0.048774	
Total exposure ratio for FCC:	0.031482	<1						
Total exposure ratio for ISED:	0.049013	<1						
Total RF value for ISED listing:	1.574109	W/m ²						

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