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RADIO TEST REPORT – PRJ0048690APF1

Type of assessment:

MPE Calculation report

Manufacturer:

Ericsson Canada Inc.

Product Marketing Name (PMN):

Radio Unit

Product Marketing Name (PMN):

Radio 4890HP 48B2/B25 48B66 M01

Hardware Version Identification Number (HVIN):

AS1619833

FCC ID:

TA8AKRC161983-3

ISED certification number:

IC: 287AB-AS1619833

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: February 6, 2024

Andrey Adelberg, Senior EMC/RF Specialist

Prepared by

Adelberg

Signature

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

Lab locations

Company name	Nemko Canada Inc.			
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Test site identifier	**Organization**	**Ottawa/Almonte**	**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/cm^2 or W/m^2)
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 (Band 4/66)	Transmitter 2 (Band 2/25)
Prediction frequency	2152 MHz	1962.5 MHz
Antenna gain	17 dBi	17 dBi
Maximum transmitter conducted power	47.78 dBm (60 W) *	47.78 dBm (60 W) *
Prediction distance (declared)	2200 cm	2200 cm

*60 W per antenna port during simultaneous transmission (Band 4/66 and Band 2/25)

1.1.3 MPE calculation

	Transmitter 1		Transmitter 2	
Fundamental transmit (prediction) frequency:	2152 MHz		1962.5 MHz	
Maximum measured conducted peak output power:	47.78 dBm		47.78 dBm	
Cable and/or jumper loss:	2.5 dB		2.5 dB	
Maximum peak power at antenna input terminal:	45.28 dBm		45.28 dBm	
Duty cycle:	100 %		100 %	
Maximum calculated average power at antenna input terminal:	33728.7309 mW		33728.7309 mW	
Single Antenna gain (typical):	17 dBi		17 dBi	
Number of antennae:	4		4	
Total system gain:	23.02 dBi		23.02 dBi	

	ISED limit	FCC limit	ISED limit	FCC limit
MPE limit for uncontrolled exposure at prediction frequency:	**0.49636 mW/cm^2**	**1.00000 mW/cm^2**	**0.46606 mW/cm^2**	**1.00000 mW/cm^2**
	4.963636 W/m^2	10.00000 W/m^2	4.660598 W/m^2	10.00000 W/m^2
MPE limit for controlled exposure at prediction frequency:	**2.99445 mW/cm^2**	**5.00000 mW/cm^2**	**2.85957 mW/cm^2**	**5.00000 mW/cm^2**
	29.94452 W/m^2	50.00000 W/m^2	28.59572 W/m^2	50.00000 W/m^2
Minimum calculated prediction distance for compliance:	1041 cm	734 cm	1074 cm	734 cm
Typical (declared) distance:	2200 cm	2200 cm	2200 cm	2200 cm
Average power density at prediction frequency:	**0.111174 mW/cm^2**	**0.111174 mW/cm^2**	**0.111174 mW/cm^2**	**0.111174 mW/cm^2**
	1.111744 W/m^2	1.111744 W/m^2	1.111744 W/m^2	1.111744 W/m^2
MPE compliance for simultaneous operation:				
Margin of Compliance for controlled environment:	**14.30 dB**	**16.53 dB**	**14.10 dB**	**16.53 dB**
with Maximum permitted antenna gain:	37.32 dBi	39.55 dBi	37.12 dBi	39.55 dBi
Margin of Compliance for uncontrolled environment:	**6.50 dB**	**9.54 dB**	**6.22 dB**	**9.54 dB**
with Maximum permitted antenna gain:	29.52 dBi	9.54 dBi	29.24 dBi	9.54 dBi
Average power density to MPE limit ratio (uncontrolled):	0.224	0.111	0.239	0.111
Average power density to MPE limit ratio (controlled):	0.037	0.022	0.039	0.022

Total sum of ratios for FCC (uncontrolled):	0.222 <1	Total sum of ratios for FCC (controlled):	0.044 <1
Total sum of ratios for ISED (uncontrolled):	0.463 <1	Total sum of ratios for ISED (controlled):	0.076 <1
Maximum allowed sum of ratios:	**1**		

1.1.4 Verdict

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

1.1.5 RSS-102, Annex A - RF technical brief cover sheet

ISED certification number	IC: 287AB-AS1619833
Product marketing name (PMN)	Radio 4890HP 48B2/B25 48B66 M01
Hardware version identification number (HVIN)	AS1619833
Firmware version identification number (FVIN)	CXP2021113/1_R42F12
Host marketing name (HMN)	N/A
Applicant name	Ericsson Canada Inc.
SAR/RF exposure test laboratory	2040A-4 (3 m semi anechoic chamber - Ottawa)
Type of evaluation	☐ SAR Evaluation: Device Used in the Vicinity of the Human Head ☐ SAR Evaluation: Body-Worn Device and Body-Supported Device ☐ SAR Evaluation: Limb-Worn Device ☒ RF Exposure Evaluation ☐ Nerve Stimulation Exposure Evaluation (SPR-002)
SAR evaluation	Multiple transmitters: ☐ Yes ☐ No
	Evaluated against exposure limits: ☐ General Public Use ☐ Controlled Use
	Duty cycle used in evaluation: N/A %
	Separation distance: N/A mm
	Standard used for evaluation: N/A
	SAR value: N/A W/kg
	☐ Measured ☐ Computed ☐ Calculated
Nerve Stimulation Evaluation (SPR-002)	Evaluated against exposure limits: ☐ General Public Use ☐ Controlled Use
	Measurement distance: N/A m
	Field Strength: N/A ☐ V/m (electric) ☐ A/m (magnetic) ☐ Measured ☐ Computed ☐ Calculated
	Exposure condition: ☐ Whole body/Torso/Head ☐ Leg ☐ Arm ☐ Hand/Foot
RF exposure evaluation	Evaluated against exposure limits: ☒ General Public Use ☐ Controlled Use
	Duty cycle used in evaluation: **100** %
	Operational frequency: **1962.5** MHz
	Standard used for evaluation: **Safety Code 6**
	Measurement distance: **22** m
	RF value: **1.11** ☒ W/m² ☐ V/m ☐ A/m ☐ Measured ☐ Computed ☒ Calculated

End of the test report