

RADIO TEST REPORT – 462657APF2

Type of assessment:

MPE Calculation report

Manufacturer:

Ericsson Canada Inc.

Product:

Radio 4460

Product Marketing Name (PMN):

Radio 4460 44B2/25 44B66 C

Hardware Version Identification Number (HVIN):

AS1619123

FCC ID:

TA8AKRC161912-3

IC certification number:

287AB-AS1619123

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: May 11, 2022

Andrey Adelberg, Senior EMC/RF Specialist

Prepared by



Signature

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SCC File Number: 15064 (Ottawa/Almonte); 151100 (Montreal); 151097 (Cambridge)



Lab locations

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	Test site identifier	Organization	Ottawa/Almonte	Montreal
	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 2.5.2

RF exposure evaluation is required if the separation distance between the user and/or bystander and the device’s radiating element is greater than 20 cm, except when the device operates as follows:

- below 20 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 1 W (adjusted for tune-up tolerance);
- at or above 20 MHz and below 48 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than $4.49/f^{0.5}$ W (adjusted for tune-up tolerance), where f is in MHz;
- at or above 48 MHz and below 300 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 0.6 W (adjusted for tune-up tolerance);
- at or above 300 MHz and below 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than $0.0131 f^{0.6834}$ W (adjusted for tune-up tolerance), where f is in MHz;
- at or above 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 5 W (adjusted for tune-up tolerance).

In these cases, the information contained in the RF exposure technical brief may be limited to information that demonstrates how the e.i.r.p. was derived.

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

	Band 66	Band 2/25
Prediction frequency	2155 MHz	1960 MHz
Maximum transmitter conducted power	80 W*	80 W*
Prediction distance	22 m	22 m
Antenna gain	18 dBi	17.5 dBi

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

1.1.3 MPE calculation

	Band 66		Band 2/25	
Fundamental transmit (prediction) frequency:	2155 MHz		1960 MHz	
Maximum measured conducted peak output power:	49.03 dBm		49.03 dBm	
Cable and/or jumper loss:	1 dB		1 dB	
Maximum peak power at antenna input terminal:	48.0309 dBm		48.0309 dBm	
Tx On time:	1.000 ms		1.000 ms	
Tx period time:	1.000 ms		1.000 ms	
Average factor:	100 %		100 %	
Maximum calculated average power at antenna input terminal:	63546.3 mW		63546.3 mW	
Single Antenna gain (typical):	18 dBi		17.5 dBi	
Number of antennae:	4		4	
Total system gain:	24.02 dBi		23.52 dBi	
MPE limit for uncontrolled exposure at prediction frequency:	0.496836 mW/cm²	1.000000 mW/cm²	0.465654 mW/cm²	1.000000 mW/cm²
Minimum calculated prediction distance for compliance:	1603 cm	1130 cm	1563 cm	1067 cm
Typical (declared) distance:	2200 cm	2200 cm	2200 cm	2200 cm
Average power density at prediction frequency:	0.263691 mW/cm²	0.263691 mW/cm²	0.235015 mW/cm²	0.235015 mW/cm²
Combined MPE compliance:	2.75 dB	5.79 dB	2.97 dB	6.29 dB
Margin of Compliance:	26.77 dB	5.79 dB	26.49 dB	6.29 dB
Average power density to MPE limit ratio:	0.531	0.264	0.505	0.235
Total sum of ratios for FCC:	0.499		0.505	
Total sum of ratios for ISED:	1.035			
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

IC Certification Number	287AB-AS1619123
Product marketing name (PMN)	Radio 4460 44B2/25 44B66 C
Hardware version identification number (HVIN)	AS1619123
Firmware version identification number (FVIN)	N/A
Host marketing name (HMN)	N/A
Applicant company number	287AB
Applicant name	Ericsson Canada Inc.
SAR/RF exposure test laboratory	2040A-4 (3 m semi anechoic chamber)
Type of evaluation	<input type="checkbox"/> SAR Evaluation: Device Used in the Vicinity of the Human Head <input type="checkbox"/> SAR Evaluation: Body-Worn Device and Body-Supported Device <input type="checkbox"/> SAR Evaluation: Limb-Worn Device <input checked="" type="checkbox"/> RF Exposure Evaluation <input type="checkbox"/> Nerve Stimulation Exposure Evaluation (SPR-002)
SAR evaluation	Multiple transmitters: <input type="checkbox"/> Yes <input type="checkbox"/> No
	Evaluated against exposure limits: <input type="checkbox"/> General Public Use <input type="checkbox"/> 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 <input type="checkbox"/> Measured <input type="checkbox"/> Computed <input type="checkbox"/> Calculated
Nerve Stimulation Evaluation (SPR-002)	Evaluated against exposure limits: <input type="checkbox"/> General Public Use <input type="checkbox"/> Controlled Use
	Measurement distance: N/A m
	Field Strength: N/A <input type="checkbox"/> V/m (electric) <input type="checkbox"/> A/m (magnetic) <input type="checkbox"/> Measured <input type="checkbox"/> Computed <input type="checkbox"/> Calculated
	Exposure condition: <input type="checkbox"/> Whole body/Torso/Head <input type="checkbox"/> Leg <input type="checkbox"/> Arm <input type="checkbox"/> Hand/Foot
RF exposure evaluation	Evaluated against exposure limits: <input type="checkbox"/> General Public Use <input type="checkbox"/> Controlled Use
	Duty cycle used in evaluation: 100 %
	Operational frequency: 2155 MHz
	Standard used for evaluation: Safety Code 6
	Measurement distance: 22 m
	RF value: 2.63 <input checked="" type="checkbox"/> W/m ² <input type="checkbox"/> V/m <input type="checkbox"/> A/m <input type="checkbox"/> Measured <input type="checkbox"/> Computed <input checked="" type="checkbox"/> Calculated

End of the test report