

RADIO MPE TEST REPORT

Type of assessment:

MPE Exemption report

Manufacturer:

ProMinent GmbH

Equipment description:

Radar level sensor

Hardware Version Identification Number (HVIN):

1120573

Product Marketing Name (PMN):

DulcoLevel

FCC identifier:

FCC ID: 2BBPH-1120573

ISED certification number:

IC: 30005-1120573

Contains FCC identifier:

FCC ID: QOQGM210P

Contains ISED certification number:

IC: 5123A-GM210P

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)

Declaration of RF exposure compliance for exemption from routine evaluation limits

RSS-102 Annex C - Attestation:

I attest that the radiocommunication apparatus meets the exemption from the routine evaluation limits in Section 2.5 of RSS-102 standard; 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 22, 2023

Andrey Adelberg, Senior EMC/RF Specialist

Prepared by



Signature

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

FCC and RSS-102 Annex C – MPE Exemption; Date: May 2021

Lab locations

Company name	Nemko Canada Inc.			
Facilities	<i>Ottawa site:</i> 303 River Road Ottawa, Ontario Canada K1V 1H2 Tel: +1 613 737 9680 Fax: +1 613 737 9691	<i>Montréal site:</i> 292 Labrosse Avenue Pointe-Claire, Québec Canada H9R 5L8 Tel: +1 514 694 2684 Fax: +1 514 694 3528	<i>Cambridge site:</i> 1-130 Saltsman Drive Cambridge, Ontario Canada N3E 0B2 Tel: +1 519 650 4811	<i>Almonte site:</i> 1500 Peter Robinson Road West Carleton, Ontario Canada KOA 1L0 Tel: +1 613 256-9117
Test site identifier	Organization FCC: ISED:	Ottawa/Almonte 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.

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FCC and RSS-102 Annex C – MPE Exemption; Date: May 2021



Section 1 Evaluation summary

1.1 MPE exemption for standalone transmission

1.1.1 References, definitions and limits

FCC §2.1091(c)

- (1) Mobile devices that operate in the Commercial Mobile Radio Services pursuant to part 20 of this chapter; the Cellular Radiotelephone Service pursuant to part 22 of this chapter; the Personal Communications Services pursuant to part 24 of this chapter; the Satellite Communications Services pursuant to part 25 of this chapter; the Miscellaneous Wireless Communications Services pursuant to part 27 of this chapter; the Upper Microwave Flexible Use Service pursuant to part 30 of this chapter; the Maritime Services (ship earth station devices only) pursuant to part 80 of this chapter; the Specialized Mobile Radio Service, and the 3650 MHz Wireless Broadband Service pursuant to part 90 of this chapter; the 76–81 GHz Band Radar Service pursuant to part 95 of this chapter; and the Citizens Broadband Radio Service pursuant to part 96 of this chapter are subject to routine environmental evaluation for RF exposure prior to equipment authorization or use if:
 - (i) They operate at frequencies of 1.5 GHz or below and their effective radiated power (ERP) is 1.5 watts or more, or
 - (ii) They operate at frequencies above 1.5 GHz and their ERP is 3 watts or more.
- (2) Unlicensed personal communications service devices, unlicensed millimeter-wave devices, and unlicensed NII devices authorized under §§15.255(f), 15.257(g), 15.319(i), and 15.407(f) of this chapter are also subject to routine environmental evaluation for RF exposure prior to equipment authorization or use if their ERP is 3 watts or more or if they meet the definition of a portable device as specified in §2.1093(b) requiring evaluation under the provisions of that section.
- (3) All other mobile and unlicensed transmitting devices are categorically excluded from routine environmental evaluation for RF exposure prior to equipment authorization or use, except as specified in §§1.1307(c) and 1.1307(d) of this chapter.

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.

1.1.2 EUT technical information

Operational frequency	77000 MHz
Antenna type	Internal
Maximum field strength	125.63 dB μ V/m

1.1.3 MPE exemption calculation

Fundamental transmit (prediction) frequency:	<u>77000</u> MHz	
Maximum measured field strength at 3 m:	<u>125.63</u> dB μ V/m	
Duty cycle:	<u>100</u> %	
Maximum calculated average field strength:	<u>125.63</u> dB μ V/m	
	ISED limit	FCC limit
MPE exemption limit:	<u>5.000000</u> W	<u>3.000000</u> W
Average EIRP/ERP at prediction frequency:	<u>1096.478</u> mW	<u>669.885</u> mW
	<u>1.096</u> W	<u>0.670</u> W
Margin of Compliance:	<u>6.59</u> dB	<u>6.51</u> dB

1.1.4 Verdict

The calculation of EIRP is below the exemption limit; therefore, the product is passing the RF Exposure exemption requirements.

1.2 MPE exemption for simultaneous transmission

1.2.1 References, definitions and limits

FCC §2.1091(c)

- (1) Mobile devices that operate in the Commercial Mobile Radio Services pursuant to part 20 of this chapter; the Cellular Radiotelephone Service pursuant to part 22 of this chapter; the Personal Communications Services pursuant to part 24 of this chapter; the Satellite Communications Services pursuant to part 25 of this chapter; the Miscellaneous Wireless Communications Services pursuant to part 27 of this chapter; the Upper Microwave Flexible Use Service pursuant to part 30 of this chapter; the Maritime Services (ship earth station devices only) pursuant to part 80 of this chapter; the Specialized Mobile Radio Service, and the 3650 MHz Wireless Broadband Service pursuant to part 90 of this chapter; the 76-81 GHz Band Radar Service pursuant to part 95 of this chapter; and the Citizens Broadband Radio Service pursuant to part 96 of this chapter are subject to routine environmental evaluation for RF exposure prior to equipment authorization or use if:
 - (i) They operate at frequencies of 1.5 GHz or below and their effective radiated power (ERP) is 1.5 watts or more, or
 - (ii) They operate at frequencies above 1.5 GHz and their ERP is 3 watts or more.
- (2) Unlicensed personal communications service devices, unlicensed millimeter-wave devices, and unlicensed NII devices authorized under §§15.255(f), 15.257(g), 15.319(i), and 15.407(f) of this chapter are also subject to routine environmental evaluation for RF exposure prior to equipment authorization or use if their ERP is 3 watts or more or if they meet the definition of a portable device as specified in §2.1093(b) requiring evaluation under the provisions of that section.
- (3) All other mobile and unlicensed transmitting devices are categorically excluded from routine environmental evaluation for RF exposure prior to equipment authorization or use, except as specified in §§1.1307(c) and 1.1307(d) of this chapter.

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.

1.2.2 EUT technical information

	Transmitter 1 (LPR)	Transmitter 2 (BT)
Operational frequency	77000–81000 MHz	2402–2480 MHz
Antenna gain	28.3 dBi	2.14 dBi
Maximum transmitter power	125.63 dBµV/m (radiated)	19.77 dBm (conducted)

1.2.3 MPE exemption calculation

	Transmitter 1		Transmitter 2	
Fundamental transmit (prediction) frequency:	77000 MHz		2480 MHz	
Maximum measured conducted peak output power:	30.4 dBm		19.77 dBm	
Cable and/or jumper loss:	0 dB		0 dB	
Maximum peak power at antenna input terminal:	30.4 dBm		19.77 dBm	
Duty cycle:	100 %		100 %	
Maximum calculated average power at antenna input terminal:	1096.478 mW		94.8418 mW	
Single Antenna gain (typical):	0 dBi		2.14 dBi	
Number of antennae:	1		1	
Total system gain:	0.00 dBi	-2.14 dBd	2.14 dBi	0.00 dBd
MPE exemption limit:	5.000000 W	3.000000 W	2.735518 W	3.000000 W
Average EIRP at prediction frequency:	1096.478 mW	669.885 mW	155.239 mW	94.842 mW
	1.096 W	0.670 W	0.155 W	0.095 W
Margin of Compliance:	6.59 dB	6.51 dB	12.46 dB	15.00 dB
EIRP to MPE exemption ratio:	0.219	0.223	0.057	0.032
Total ISED sum of ratios:	0.276			
Total FCC sum of ratios:	0.255			
Maximum allowed sum of ratios:	1			

1.2.4 Verdict

The calculation of EIRP is below the exemption limit; therefore, the product is passing the RF Exposure exemption requirements.

End of the test report