

Assessment report

412895-3ARFWL

Date of issue: May 13, 2021

Applicant:

GE Current, a Daintree Company

Product:

Radio receiver

Model

A-1028250

FCC ID:

2AS3F-A1028250

IC ID:

25008-A1028250

Type of assessment:

MPE Exemption Report

Specifications:

- ◆ **FCC 47 CFR Part 1 Subpart I, §§1.1307, 1.1310**
- ◆ **FCC 47 CFR Part 2 Subpart J, §2.1091**
- ◆ **KDB 447498 D01 General RF Exposure Guidance v06**
- ◆ **RSS-102 Issue 5 Amendment 1, (February 2021) – Annex C**

Lab and test locations

Company name	Nemko USA, Inc.
Address	1110 Faraday Ave, Suite 150
City	Carlsbad
State	California
Postal code	92008
Country	USA
Telephone	+1 760 444 3500
Website	www.nemko.com

Prepared by	James Cunningham, EMC/MIL/WL Supervisor
Reviewed by	Juan M Gonzalez, EMC & Wireless Divisions Manager
Review date	May 13, 2021
Reviewer signature	

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.

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Section 1 Declaration

Declaration of RF exposure compliance for exemption from routine evaluation limits:

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 and/or supervised by me; that the 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 12, 2021

James Cunningham, EMC/MIL/WL Supervisor

Prepared by



Signature

Section 2 Evaluation summary

2.1 MPE exemption for simultaneous transmission

2.1.1 References, definition, 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 $0.031f^{0.6834}$ 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.

2.1.2 EUT technical information

	Transmitter 1 (Bluetooth Low Energy)	Transmitter 2 (Zigbee)
Operational frequency	2402 – 2480 MHz	2405 – 2480 MHz
Antenna type	Embedded on PCB	Embedded on PCB
Antenna gain	2.5 dBi	2.5 dBi
Number of antennas	1	1
Maximum transmitter conducted power	2.39 dBm (1.70 mW)	7.11 dBm (5.14 mW)
Maximum EIRP	4.89 dBm (3.08 mW)	9.61 dBm (9.14 mW)

2.1.3 MPE exemption calculations

	Transmitter 1		Transmitter 2	
Fundamental transmit (prediction) frequency:	2480	MHz	2405	MHz
Maximum measured conducted peak output power:	2.39	dBm	7.11	dBm
Cable and/or jumper loss:	0	dB	0	dB
Maximum peak power at antenna input terminal:	2.39	dBm	7.11	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:	1.733804	mW	5.1404365	mW
Single Antenna gain (typical):	2.5	dBi	2.5	dBi
Number of antennae:	1		1	
Total system gain:	2.50	dBi	2.50	dBi
	ISED limit	FCC limit	ISED limit	FCC limit
MPE exemption limit:	2.735518 W	3.000000 W	2.678708 W	3.000000 W
Average EIRP at prediction frequency:	3.083 mW	3.083 mW	9.141 mW	9.141 mW
	0.003 W	0.003 W	0.009 W	0.009 W
Margin of Compliance:	29.48 dB	29.88 dB	24.67 dB	25.16 dB
EIRP to MPE exemption ratio:	0.001	0.001	0.003	0.003
Total ISED sum of ratios:	0.005			
Total FCC sum of ratios:	0.004			
Maximum allowed sum of ratios:	1			

2.1.4 Verdict

The calculation of EIRP is below the exemption limit; therefore, the product is compliant with the RF exposure exemption requirements.

End of test report