



Choose Scandinavian trust

Assessment Report

463869-11ARFWL

Type of assessment:

MPE Calculation report

Manufacturer:

Foresight Sports

Model:

PAN9028 (8927)

Product Marketing Name (PMN):

Radio Module

FCC ID:

2A6QA-JODYW263FSS

IC certification number:

28505-JODYW263FSS

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: **August 10, 2022**

James Cunningham, EMC/MIL/WL Supervisor

Prepared by

Signature



Lab locations=

Company name	Nemko USA Inc.
Address	2210 Faraday Ave, Suite 150
City	Carlsbad
State	California
Postal code	92008
Country	USA
Telephone	+1 760 444 3500
Website	www.nemko.com
FCC Site Number	Test Firm Registration Number: 392943 Designation Number: US5058
ISED Test Site	2040B-3

Prepared by	James Cunningham, EMC/MIL/WL Supervisor
Date	August 10, 2022
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.

This test report has been completed in accordance with the requirements of ISO/IEC 17025. All results contain in this report are within Nemko USA'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) 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.

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

	Bluetooth	Bluetooth Low Energy	Wi-Fi (2.4 GHz)	Wi-Fi (5 GHz)
Prediction frequency	2.4 GHz	2.4 GHz	2.4 GHz	5.18 GHz
Antenna type	Embedded	Embedded	Embedded	Embedded
Antenna gain	2.2 dBi	2.2 dBi	2.2 dBi	5.1 dBi
Maximum transmitter conducted power	10.8 dBm (12.0 mW)	3.9 dBm (2.5 mW)	15.3 dBm (33.9 mW)	14.9 dBm (30.9 mW)
Prediction distance	20 cm	20 cm	20 cm	20 cm

The EUT implements the following radio transmitter types:

- Bluetooth in 2400 – 2483.5 GHz band
- Bluetooth Low Energy in 2400 – 2483.5 GHz band
- Wi-Fi (IEEE 802.11) in 2400 – 2483.5 GHz band
- Wi-Fi (IEEE 802.11) in 5 GHz bands

The exact simultaneity of the transmitters is unknown except that Bluetooth and Bluetooth Low Energy do not operate simultaneously. As a worst case assessment, it is assumed that the Bluetooth, 2.4 GHz Wi-Fi, and 5 GHz Wi-Fi transmitters can operate simultaneously. Note that from the measured data, Bluetooth Low Energy has a lower transmitter power than Bluetooth.

1.1.3 MPE calculation

	Bluetooth		Wi-Fi 2.4 GHz		Wi-Fi 5 GHz	
Fundamental transmit (prediction) frequency:	2400	MHz	2400	MHz	5180	MHz
Maximum measured conducted peak output power:	10.8	dBm	15.3	dBm	14.9	dBm
Cable and/or jumper loss:	0	dB	0	dB	0	dB
Maximum peak power at antenna input terminal:	10.8	dBm	15.3	dBm	14.9	dBm
Tx On time:	1.000	ms	1.000	ms	1.000	ms
Tx period time:	1.000	ms	1.000	ms	1.000	ms
Average factor:	100	%	100	%	100	%
μm calculated average power at antenna input terminal:	12.0226	mW	33.8844	mW	30.903	mW
Single Antenna gain (typical):	2.2	dBi	2.2	dBi	5.1	dBi
Number of antennae:	1		1		2	
Total system gain:	2.20	dBi	2.20	dBi	8.11	dBi
ISSED limit	0.534776	mW/cm ²	0.534776	mW/cm ²	0.904708	mW/cm ²
FCC limit	1.000000	mW/cm ²	1.000000	mW/cm ²	1.000000	mW/cm ²
Minimum calculated prediction distance for compliance:	20	cm	20	cm	20	cm
Typical (declared) distance:	20	cm	20	cm	20	cm
Average power density at prediction frequency:	0.003969	mW/cm ²	0.011187	mW/cm ²	0.039789	mW/cm ²
Combined MPE compliance:	0.039694	W/m ²	0.111874	W/m ²	0.397887	W/m ²
Margin of Compliance:	21.29	dB	16.79	dB	13.57	dB
Maximum allowable antenna gain:	23.49	dBi	24.01	dBi	21.68	dBi
Average power density to MPE limit ratio:	0.007		0.021		0.044	
Total sum of ratios for FCC:	0.055					
Total sum of ratios for ISSED:	0.072					
Maximum allowed sum of ratios:	1					

Note: Blue indicates entered values. Purple indicates calculated values.

1.1.4 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