

RF Exposure Evaluation Report

Date of Report	11/06/2024	Client's Contact person:	Matthew Anderson
Number of pages:	7	Responsible Test engineer:	Jesper Varis
Testing laboratory:	Verkotan Oy Elektroniikkatie 17 90590 Oulu Finland	Client:	Sound Devices LLC E7556 State Road 23 and 33 Reedsburg 53959 Wisconsin USA
Tested devices	Multi-Channel Wireless Microphone Receiver		
Related reports:	-		
Testing has been carried out in accordance with:	47CFR §2.1091 Radiofrequency Radiation Exposure Evaluation: Mobile Devices FCC published RF exposure KDB procedures		
Documentation:	The test report must always be reproduced in full; reproduction of an excerpt only is subject to written approval of the testing laboratory		
Test Results:	The DUT complies with the requirements in respect of all parameters subject to the test. The test results relate only to devices specified in this document		

Date and 11.06.2024

signatures:

For the contents:

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1. SUMMARY OF SAR TEST REPORT

1.1 Test Details

Device under Test (DUT):

Product:	Multi-Channel Wireless Microphone Receiver
Manufacturer:	Sound Devices LLC
Model:	A20-SuperNexus
Hardware Version:	28303
FCC ID:	2AKLX-28303
Mobile/Portable device	Mobile
Document ID:	FCC MPE-Based RF exposure evaluation report_A20-SuperNexus_ID6699_04062024.docx
Document History/changes	Initial
FCC Test Firm Designation Number:	FI0005

1.2 Evaluation Results

The device conforms to the requirements of the standards when the maximum ERP is less than or equal to the Test Exclusion Threshold Limit.

System	Maximum ERP [mW]	MPE-Based Exemption threshold at 20cm separation [mW]	Result
Bluetooth LE	4.8	768	PASS
2.4GHz	7.7	768	PASS

2. DESCRIPTION OF THE DEVICE UNDER TEST (DUT)

The DUT is a 32-channel digital wireless audio receiver positioned on a desktop or rack mount. The DUT supports long-range proprietary 2.4GHz wireless back-link and Bluetooth LE technologies.

The DUT has 4 antennas, front RF ports A and B & rear RF ports A and B that are shared between BLE and proprietary transmitters. Only one RF port can be used at a time and for only one technology at a time. Antenna used in all 4 RF ports is model W1010, manufactured by Pulse Electronics. As the model of the antenna are the same for all antennas, the power exemption calculations in this report applies to every RF ports.

According to antenna datasheet "Antenna datasheet_w1010_1622314480.pdf" antenna gain is 2 dBi.



Figure 1 Front and rear A and B antenna's

Exposure Environment	General population, uncontrolled
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2.1 Supported Frequency Bands and Operational Modes

TX Frequency bands	Modes of Operation	Transmitter Frequency Range (MHz)
	Bluetooth LE	2402 – 2480
	2.4 GHz Proprietary FHSS	2400 – 2482

3. TEST EXCLUSIONS

FCC MPE-based Exemption thresholds in 447498 D04 Interim General RF Exposure Guidance v01 are shown in a table below.

TABLE B.1—THRESHOLDS FOR SINGLE RF SOURCES
SUBJECT TO ROUTINE ENVIRONMENTAL EVALUATION

RF Source Frequency			Minimum Distance			Threshold ERP
f_L MHz		f_H MHz	$\lambda_L / 2\pi$		$\lambda_H / 2\pi$	W
0.3	–	1.34	159 m	–	35.6 m	1,920 R ²
1.34	–	30	35.6 m	–	1.6 m	3,450 R ² /f ²
30	–	300	1.6 m	–	159 mm	3.83 R ²
300	–	1,500	159 mm	–	31.8 mm	0.0128 R ² f
1,500	–	100,000	31.8 mm	–	0.5 mm	19.2R ²
Subscripts L and H are low and high; λ is wavelength. From § 1.1307(b)(3)(i)(C), modified by adding Minimum Distance columns.						

According to Table B.1 in 447498 D04 Interim General RF Exposure Guidance v01, FCC MPE-based Exemption threshold can be calculated according to formulas:

1500-100 000 MHz: $19.2R^2$

where:

R = Separation distance (m)

f = Frequency (MHz)

Transmission mode	Frequency [f]	Separation distance [d]	P _{th} [W]	P _{th} [mW]
Bluetooth LE	2402	0.2	0.768	768
2.4GHz Proprietary FHSS	2400	0.2	0.768	768

4. RESULTS

4.1 Standalone Exposure

Transmission mode	Maximum Conducted Power [dBm]	Time-Averaged Output power [dBm]	Time-Averaged Output power [mW]	Power Gain of Antenna, G [dBi]	Time-Averaged EIRP [dBm]	Time-Averaged ERP [dBm]	Time-Averaged ERP [mW]	P _{th} [mW]
Bluetooth LE	7	7	5.0	2	9	6.85	4.8	768
2.4GHz Proprietary FHSS	9	9	7.9	2	11	8.85	7.7	768

The ERP of the DUT is below the test exclusion threshold.