



## RF Exposure Evaluation Declaration

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**FCC ID:** SVC-BLSN33A  
**Applicant:** Lenbrook Industries Limited  
**Product:** Wireless Music Streaming Amplifier  
**Model No.:** POWERNODE  
**Brand Name:** Bluesound  
**FCC Classification:** FCC Part 15 Spread Spectrum Transmitter (DSS)  
Digital Transmission System (DTS)  
Unlicensed National Information Infrastructure (NII)  
**FCC Rule Part(s)** FCC Part 2.1091  
**Test Procedure(s):** KDB 447498 D01v06

**Reviewed By:**

\_\_\_\_\_  
Kevin Guo

**Approved By:**

\_\_\_\_\_  
Robin Wu



The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standards through the calibration of the equipment and evaluated measurement uncertainty herein.

The test report shall not be reproduced except in full without the written approval of MRT Technology (Suzhou) Co., Ltd.

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### Revision History

Report No.	Version	Description	Issue Date	Note
2107RSU029-U6	Rev. 01	Initial Report	04-15-2022	Valid

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## 1. General Information

### 1.1. Applicant

Lenbrook Industries Limited  
633 Granite Court, Pickering, Ontario L1W 3K1, Canada

### 1.2. Manufacturer

Lenbrook Industries Limited  
633 Granite Court, Pickering, Ontario L1W 3K1, Canada

### 1.3. Testing Facility

<input checked="" type="checkbox"/>	<p><b>Test Site – MRT Suzhou Laboratory</b></p> <p><b>Laboratory Location (Suzhou - Wuzhong)</b> D8 Building, No.2 Tian'edang Rd., Wuzhong Economic Development Zone, Suzhou, China</p> <p><b>Laboratory Location (Suzhou - SIP)</b> 4b Building, Liando U Valley, No.200 Xingpu Rd., Shengpu Town, Suzhou Industrial Park, China</p> <p><b>Laboratory Accreditations</b></p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">A2LA: 3628.01</td> <td style="width: 50%;">CNAS: L10551</td> </tr> <tr> <td>FCC: CN1166</td> <td>ISED: CN0001</td> </tr> <tr> <td>VCCI: <input type="checkbox"/>R-20025</td> <td><input type="checkbox"/>G-20034</td> </tr> <tr> <td><input type="checkbox"/>R-20141</td> <td><input type="checkbox"/>G-20134</td> </tr> <tr> <td></td> <td><input type="checkbox"/>C-20020</td> </tr> <tr> <td></td> <td><input type="checkbox"/>C-20103</td> </tr> <tr> <td></td> <td><input type="checkbox"/>T-20020</td> </tr> <tr> <td></td> <td><input type="checkbox"/>T-20104</td> </tr> </table>	A2LA: 3628.01	CNAS: L10551	FCC: CN1166	ISED: CN0001	VCCI: <input type="checkbox"/> R-20025	<input type="checkbox"/> G-20034	<input type="checkbox"/> R-20141	<input type="checkbox"/> G-20134		<input type="checkbox"/> C-20020		<input type="checkbox"/> C-20103		<input type="checkbox"/> T-20020		<input type="checkbox"/> T-20104
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	<input type="checkbox"/> T-20104																
<input type="checkbox"/>	<p><b>Test Site – MRT Shenzhen Laboratory</b></p> <p><b>Laboratory Location (Shenzhen)</b> 1G, Building A, Junxiangda Building, Zhongshanyuan Road West, Nanshan District, Shenzhen, China</p> <p><b>Laboratory Accreditations</b></p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">A2LA: 3628.02</td> <td style="width: 50%;">CNAS: L10551</td> </tr> <tr> <td>FCC: CN1284</td> <td>ISED: CN0105</td> </tr> </table>	A2LA: 3628.02	CNAS: L10551	FCC: CN1284	ISED: CN0105												
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<input type="checkbox"/>	<p><b>Test Site – MRT Taiwan Laboratory</b></p> <p><b>Laboratory Location (Taiwan)</b> No. 38, Fuxing 2nd Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)</p> <p><b>Laboratory Accreditations</b></p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">TAF: L3261-190725</td> <td style="width: 50%;"></td> </tr> <tr> <td>FCC: 291082, TW3261</td> <td>ISED: TW3261</td> </tr> </table>	TAF: L3261-190725		FCC: 291082, TW3261	ISED: TW3261												
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#### 1.4. Product Information

Product Name	Wireless Music Streaming Amplifier
Model No.	POWERNODE
Serial No.	H213N330B01032
Wi-Fi Specification	802.11a/b/g/n/ac
Bluetooth Specification	V4.2 single mode for BR/EDR
Antenna Information	Refer to section 1.5
Working Voltage	100-120/220-240V ~ 50/60Hz, 150W
Remark: The information of EUT was provided by the manufacturer, and the accuracy of the information shall be the responsibility of the manufacturer.	

#### 1.5. Antenna Details

Antenna Type	Frequency Band (MHz)	T <sub>x</sub> Paths	Antenna Gain (dBi)
Bluetooth			
PCB Antenna	2402 ~ 2480	1	2.0
Wi-Fi			
PCB Antenna	2412 ~ 2462	1	-0.02
	5180 ~ 5240	1	2.53
	5260 ~ 5320	1	1.99
	5500 ~ 5720	1	1.49
	5745 ~ 5825	1	1.51

## 2. RF Exposure Evaluation

### 2.1. Test Limits

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in 1.1307(b)

#### LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm <sup>2</sup> )	Average Time (Minutes)
(A) Limits for Occupational/ Control Exposures				
300-1500	--	--	f/300	6
1500-100,000	--	--	5	6
(B) Limits for General Population/ Uncontrolled Exposures				
300-1500	--	--	f/1500	6
1500-100,000	--	--	1	30

f= Frequency in MHz

Calculation Formula:  $P_d = (P_{out} * G) / (4 * \pi * r^2)$

Where

$P_d$  = power density in mW/cm<sup>2</sup>

$P_{out}$  = output power to antenna in mW

G = gain of antenna in linear scale

$\pi$  = 3.1416

r = distance between observation point and center of the radiator in cm

$P_d$  is the limit of MPE, 1mW/cm<sup>2</sup>. If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance r where the MPE limit is reached.

## 2.2. Test Result

Product	Wireless Music Streaming Amplifier
Test Item	RF Exposure Evaluation

Test Mode	Frequency Band (MHz)	Conducted Power (dBm)	Tune-up Power (dBm)	Antenna Gain (dBi)	Maximum EIRP (dBm)
Bluetooth	2402 ~ 2480	8.05	8.50	2.00	10.50
802.11b/g/n	2412 ~ 2462	19.91	20.0	-0.02	19.98
802.11a/n/ac	5180 ~ 5240	18.76	19.0	2.53	21.53
	5260 ~ 5320	18.87	19.0	1.99	20.99
	5500 ~ 5720	18.96	19.0	1.49	20.49
	5745 ~ 5825	18.64	19.0	1.51	20.51

Test Mode	Frequency Band (MHz)	Maximum EIRP (dBm)	Compliance Distance (cm)	Power Density (mW/cm <sup>2</sup> )	Limit of Power Density (mW/cm <sup>2</sup> )
Bluetooth	2402 ~ 2480	10.50	20.00	0.0022	1
802.11b/g/n	2412 ~ 2462	19.98	20.00	0.0198	1
802.11a/n/ac	5180 ~ 5240	21.53	20.00	0.0283	1
	5260 ~ 5320	20.99	20.00	0.0250	1
	5500 ~ 5720	20.49	20.00	0.0223	1
	5745 ~ 5825	20.51	20.00	0.0224	1

### CONCLUSION:

The max Power Density at R (20.0 cm) =  $0.0022\text{mW/cm}^2 + 0.0198\text{mW/cm}^2 + 0.0283\text{mW/cm}^2 = 0.0503\text{mW/cm}^2 < 1\text{mW/cm}^2$ .

So the compliance distance is 20.0cm for device installed without any other radio equipment.

\_\_\_\_\_ The End \_\_\_\_\_

## Appendix A - EUT Photograph

Refer to "2107RSU029-UE" file.