

## FCC 47 CFR MPE REPORT

Linkplay Technology Inc.

Wireless Smart Audio Module

Model Number: A128

FCC ID: 2ANOG-A128

Applicant:	Linkplay Technology Inc.
Address:	8F-8036, Qianren Building, No.7, Yingcui Road, Jiangning District, Nanjing, China
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<b>Applicant:</b>	Linkplay Technology Inc.		
<b>Address:</b>	8F-8036, Qianren Building, No.7, Yingcui Road, Jiangning District, Nanjing, China		
<b>Manufacturer:</b>	Linkplay Technology Inc.		
<b>Address:</b>	8F-8036, Qianren Building, No.7, Yingcui Road, Jiangning District, Nanjing, China		
<b>Factory:</b>	Shenzhen Compare Electronics Co., Ltd		
<b>Address:</b>	6F B Building, Jinhong Industrial Park, No.6 Third Industrial Zone, Jjuwei Community Hangcheng Street, Bao'an District, Shenzhen		
<b>E.U.T:</b>	Wireless Smart Audio Module		
<b>Model Number:</b>	A128	<b>Serial No.:</b>	38e018f9
<b>Power Supply:</b>	DC 5V From Adapter Input AC 100-240V, 50/60Hz		

## Maximum Permissible Exposure

### 1. Applicable Standards

Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess limit for maximum permissible exposure. In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as a mobile device whereby a distance of 0.2m normally can be maintained between the user and the device.

#### 1.1. Limits for Maximum Permissible Exposure (MPE)

##### (a) Limits for Occupational/Controlled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm <sup>2</sup> )	Averaging Times   E   <sup>2</sup> ,   H   <sup>2</sup> or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	(900/f)*	6
30-300	61.4	0.163	1.0	6
300-1500			F/300	6
1500-10000			5	6

##### (b) Limits for General Population / Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm <sup>2</sup> )	Averaging Times   E   <sup>2</sup> ,   H   <sup>2</sup> or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f)*	30
30-300	27.5	0.073	0.2	30
300-1500			F/1500	30
1500-10000			1.0	30

Note: f=frequency in MHz; \*Plane-wave equivalent power density

## 1.2. MPE Calculation Method

$$E \text{ (V/m)} = \frac{\sqrt{30 \times P \times G}}{d} \qquad \text{Power Density: Pd (W/m}^2\text{)} = \frac{E^2}{377}$$

E = Electric Field (V/m)

P = Peak RF output Power (W)

G = EUT Antenna numeric gain (numeric)

d = Separation distance between radiator and human body (m)

The formula can be changed to

$$Pd = \frac{30 \times P \times G}{377 \times d^2}$$

From the peak EUT RF output power, the minimum mobile separation distance, d=0.2m, as well as the gain of the used antenna, the RF power density can be obtained

## 2. Conducted Power Result

Antenna	Mode (MHz)	Frequency (MHz)	Peak output power (dBm)	Peak output power (mW)	Target power (dBm)
0	GFSK 2M-BLE	2480	3.110	2.046	3±1
0	GFSK-Bluetooth	2480	3.020	2.004	3±1
0	IEEE 802.11b	2412	16.66	46.345	16±1
0	IEEE 802.11g	2412	20.70	117.490	20±1
0	IEEE 802.11n HT20(2.4G)	2412	20.04	100.925	20±1
0	IEEE 802.11a	5200	13.60	22.909	13±1
0	IEEE 802.11n HT20(5G)	5745	13.22	20.989	13±1
0	IEEE 802.11ac VHT20(5G)	5745	13.36	21.677	13±1
1	IEEE 802.11b	2412	17.50	56.234	17±1
1	IEEE 802.11g	2472	22.20	165.959	22±1
1	IEEE 802.11n HT20(2.4G)	2412	21.42	138.676	21±1
1	IEEE 802.11a	5300	14.69	29.444	14±1
1	IEEE 802.11n HT20(5G)	5300	13.36	21.677	13±1
1	IEEE 802.11ac VHT20(5G)	5825	13.05	20.184	13±1
2	IEEE 802.11a	5180	14.88	30.761	14±1
2	IEEE 802.11n HT20(5G)	5180	14.86	30.620	14±1
2	IEEE 802.11ac VHT20(5G)	5745	14.93	31.117	14±1

### 3. Calculated Result and Limit

#### Antenna 0

Mode	Target power (dBm)	Antenna gain		Power Density (S) (mW/cm <sup>2</sup> )	Limited of Power Density (S) (mW/cm <sup>2</sup> )	Test Result
		(dBi)	(Linear)			
<b>2.4G Band</b>						
GFSK 2M-BLE	4	3.51	2.244	0.0011	1	Complies
GFSK-Bluetooth	4	3.51	2.244	0.0011	1	Complies
IEEE 802.11b	17	3.51	2.244	0.0224	1	Complies
IEEE 802.11g	21	3.51	2.244	0.0562	1	Complies
IEEE 802.11n HT20	21	3.51	2.244	0.0562	1	Complies
<b>5G Band</b>						
IEEE 802.11a	14	4.7	2.951	0.1475	1	Complies
IEEE 802.11n HT20	14	4.7	2.951	0.1475	1	Complies
IEEE 802.11ac VHT20	14	4.7	2.951	0.1475	1	Complies

**Antenna 1**

Mode	Target power (dBm)	Antenna gain		Power Density (S) (mW/cm <sup>2</sup> )	Limited of Power Density (S) (mW/cm <sup>2</sup> )	Test Result
		(dBi)	(Linear)			
<b>2.4G Band</b>						
IEEE 802.11b	18	3.76	2.377	0.0298	1	Complies
IEEE 802.11g	23	3.76	2.377	0.0943	1	Complies
IEEE 802.11n HT20	22	3.76	2.377	0.0749	1	Complies
<b>5G Band</b>						
IEEE 802.11a	15	4.6	2.884	0.1693	1	Complies
IEEE 802.11n HT20	14	4.6	2.884	0.1441	1	Complies
IEEE 802.11ac VHT20	14	4.6	2.884	0.1441	1	Complies

**Antenna 2**

Mode	Target power (dBm)	Antenna gain		Power Density (S) (mW/cm <sup>2</sup> )	Limited of Power Density (S) (mW/cm <sup>2</sup> )	Test Result
		(dBi)	(Linear)			
<b>5G Band</b>						
IEEE 802.11a	15	5.45	3.508	0.2207	1	Complies
IEEE 802.11n HT20	15	5.45	3.508	0.2207	1	Complies
IEEE 802.11ac VHT20	15	5.45	3.508	0.2207	1	Complies

**Antenna 0+1**

Mode	Power Density (S) (mW/cm <sup>2</sup> ) Antenna 0	Power Density (S) (mW/cm <sup>2</sup> ) Antenna 1	Power Density (S) (mW/cm <sup>2</sup> ) Total	Limited of Power Density (S) (mW/cm <sup>2</sup> )	Test Result
<b>2.4G Band</b>					
IEEE 802.11n HT20	0.0562	0.0749	0.1311	1	Complies
<b>5G Band</b>					
IEEE 802.11n HT20	0.1475	0.1441	0.2916	1	Complies
IEEE 802.11ac VHT20	0.1475	0.1441	0.2916	1	Complies

**Bluetooth+2.4G Wi-Fi+5G Wi-Fi ( ANT0+ANT1)+5G WiFi(ANT2)**

MAX Power Density (S) (mW/cm <sup>2</sup> ) Bluetooth	MAX Power Density (S) (mW/cm <sup>2</sup> ) 2.4G WiFi	MAX Power Density (S) (mW/cm <sup>2</sup> ) 5G WiFi ANT0+ANT1	MAX Power Density (S) (mW/cm <sup>2</sup> ) 5G WiFi ANT2	Power Density (S) (mW/cm <sup>2</sup> ) Total	Limited of Power Density (S) (mW/cm <sup>2</sup> )	Test Result
0.0011	0.1311	0.2916	0.2207	0.6455	1	Complies

**End of Test Report**