

RF Exposure Evaluation for FCC ID: 2ABRC-APBESPORTS

Refer user manual this device is Bluetooth earphones, and this device was designed used in portable devices that the minimum distance between human's body is **5mm**. Based on the 47CFR 2.1093, this device belongs to portable device. The definition of the category as following:

Portable Derives:

CFR Title 47 § 2.1093(b)

(b) For purposes of this section, a portable device is defined as a transmitting device designed to be used so that the radiating structure(s) of the device is/are within 20 centimeters of the body of the user.

FCC KDB 447498 D01 General RF Exposure Guidance v06 Limit

Unless specifically required by the published RF exposure KDB procedures, standalone 1-g head or body and 10-g extremity SAR evaluation for general population exposure conditions, by measurement or numerical simulation, is not required when the corresponding SAR Test Exclusion Threshold condition, listed below, is satisfied. These test exclusion conditions are based on source-based time-averaged maximum conducted output power of the RF channel requiring evaluation, adjusted for tune-up tolerance, and the minimum test separation distance required for the exposure conditions. The minimum test separation distance is determined by the smallest distance from the antenna and radiating structures or outer surface of the device, according to the host form factor, exposure conditions and platform requirements, to any part of the body or extremity of a user or bystander.

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0$ for 1-g SAR and ≤ 7.5 for 10-g extremity SAR

Where

- f (GHz) is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison

The test exclusions are applicable only when the minimum test separation distance is ≤ 50 mm and

for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion.

Peak Output Power

BLUETOOTH			
Mode	BR/EDR		
	GFSK	$\pi/4$ -DQPSK	8-DPSK
Peak power (dBm)	8.00	7.17	7.35
Note: This report listed the maximal case Peak power value, please refer to RF test report for more details.			

Tune-up

Mode	Tune-up power range(dBm)
GFSK	6.90-8.10
Π/4-DQPSK	4.75-7.25
8-DPSK	5.15-7.45

FCC exclusion condition= $[6.46 \text{ mW}/5 \text{ mm}] \cdot [\sqrt{2.480 \text{ GHz}}] = 2.034 < 3.0$

RF Exposure Evaluation Result: **Pass**

Note: More power data, Please refer to the RF report.

Environmental Assessment

Refer user manual this device is Bluetooth earphones, and this device was designed used in environment that the minimum distance between human's is **5cm**.

According to FCC Part 1.1307, systems operating under the provisions of this section shall be operated in a manner the ensures that the public is not exposed to radio frequency energy level in excess of the commission's guidelines.

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 ²)
0.3-1.34	614	1.63	(100)*
1.34-30	824/f	2.19/f	(180/f ²)*
30-300	27.5	0.073	0.2
300-1500			f/1500
1500-100,000			1.0

MPE calculation formula

$$S = \frac{PG}{4\pi R^2}$$

Where:

S = power density

P = output power (mW)

G = power gain of the antenna in the direction of interest relative to an isotropic radiator

R = Separation distance between radiator and human body (cm)

Test result

Evolution mode	Maximum peak output power (dBm)	Antenna Gain (typical) (dBi):	Total Power (mw)	Distance (cm)	Limit of Power Density (mW/cm ²)	Power Density (mW/cm ²)	Verdict
Bluetooth	8.10	2.2	10.72	5	1	0.034	Pass

Environmental Assessment Result: **Pass**

Note: More power data, Please refer to the RF report.