



RF EXPOSURE EVALUATION REPORT

APPLICANT : Xiamen Padmate Technology Co.,LTD
PRODUCT NAME : Bluetooth Headset
MODEL NAME : X12
BRAND NAME : Padmate
FCC ID : 2AJEO-X12
STANDARD(S) : 47 CFR§2.1093 ; KDB 447498 D01v06
TEST DATE : 2018-12-29
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DIRECTORY

- 1. Technical Information..... 3
- 1.1. Applicant and manufacturer information 3
- 1.2. Equipment under test (EUT) description 3
- 1.3. Applied reference documents..... 3
- 2. Device category and RF exposure limit..... 4
- 3. Measurement of conducted output power 4
- 4. RF exposure evaluation 5
- Annex A General Information 6

Change History		
Issue	Date	Reason for change
1.0	2018-12-29	First edition



1. Technical Information

Note: Provide by manufacturer.

1.1. Applicant and manufacturer information

Applicant:	Xiamen Padmate Technology Co., LTD
Applicant Address:	RM 201, Huli Park No.37, Industrial Zone, Tong'an District, Xiamen, China
Manufacturer:	Xiamen Padmate Technology Co., LTD
Manufacturer Address:	RM 201, Huli Park No.37, Industrial Zone, Tong'an District, Xiamen, China

1.2. Equipment under test (EUT) description

EUT Type:	Bluetooth Headset
Hardware Version:	V5.0
Software Version:	V28
Frequency Bands:	Bluetooth:2402-2480MHz;
Modulation Mode:	Bluetooth BR+EDR: GFSK; $\pi/4$ -DQPSK; 8-DPSK BLE: GFSK
Antenna type:	LDS Antenna

1.3. Applied reference documents

Leading reference documents for testing:

No.	Identity	Document Title
1	47 CFR§2.1093	Radiofrequency Radiation Exposure Evaluation: portable devices
2	KDB 447498 D01v06	General RF Exposure Guidance

2. Device category and RF exposure limit

Per user manual, this device is a Bluetooth Headset. Based on 47CFR 2.1093, this device belongs to portable device category with General Population/Uncontrolled exposure.

Portable Devices:

47CFR 2.1093(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.

GENERAL POPULATION / UNCONTROLLED EXPOSURE

47CFR 2.1093(d) (2)

Limits for General Population/Uncontrolled exposure: 0.08 W/kg as averaged over the whole-body and spatial peak SAR not exceeding 1.6 W/kg as averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube). Exceptions are the hands, wrists, feet and ankles where the spatial peak SAR shall not exceed 4 W/kg, as averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube). General Population/Uncontrolled limits apply when the general public may be exposed, or when persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or do not exercise control over their exposure. Warning labels placed on consumer devices such as cellular telephones will not be sufficient reason to allow these devices to be evaluated subject to limits for occupational/controlled exposure in paragraph (d)(1) of this section.

3. Measurement of conducted output power

Bluetooth peak output power

Band	Channel	Output Power(dBm)		
		GFSK	$\pi/4$ -DQPSK	8-DPSK
BT BR+EDR	0	4.21	4.14	4.30
	39	4.22	4.13	4.28
	78	4.18	4.07	4.21

Band	Channel	Frequency (MHz)	Output Power(dBm)
			GFSK
BLE	0	2402	4.678
	19	2440	4.627
	39	2480	4.639



4. RF exposure evaluation

The device only incorporates a Bluetooth transmitter, so standalone SAR evaluation is required for Bluetooth and simultaneous SAR is not required.

Standalone transmission SAR evaluation

According to KDB 447498 section 4.3.1, the 1-g SAR test exclusion thresholds at test separation Distances ≤ 50 mm are determined by:

$$[(\text{max. power of channel, including tune-up tolerance, mW})/(\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0$$

The maximum tune-up limit power is **4.7dBm (2.95mW) @ 2.402GHz**

When Bluetooth Headset is used on the head, so use **5mm** as the most conservative minimum test separation distance,

$$[(\text{max. power of channel, including tune-up tolerance, mW})/(\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] = \mathbf{0.91} \leq 3.0$$

So SAR measurement is not required for this device.

Simultaneous Transmission Procedures

This device contains transmitters that may operate simultaneously. Therefore simultaneous transmission analysis is required. Per FCC KDB 447498 D01v06, simultaneous transmission SAR test exclusion may be applied when the sum of the 1-g SAR for all the simultaneous transmitting antennas in a specific a physical test configuration is ≤ 1.6 W/kg. When standalone SAR is not required to be measured, per FCC KDB 447498 D01v06 4.3.2), the following equation must be used to estimate the standalone 1g SAR for simultaneous transmission assessment involving that transmitter.

$$\text{Estimated SAR} = \frac{\sqrt{f(\text{GHz})}}{7.5} \cdot \frac{\text{Max. power of channel, mW}}{\text{Min. Separation Distance, mm}}$$

Mode	Max. tune-up Power (dBm)	Estimate 1-g SAR(W/kg)		Summed 1-g SAR(W/kg)
		Left	Right	
BT 2.1+EDR	4.7	0.123	0.123	0.246

Note: When the minimum test separation distance is < 5mm, a distance 5mm according is applied to determine estimated SAR.



Annex A General Information

1. Identification of the Responsible Testing Laboratory

Company Name:	Kehu-Morlab Test Laboratory
Address:	Unit 101, No.1732 Gangzhong Road, Xiamen Area, Pilot Free Trade Zone (Fujian), P. R. China
Responsible Test Lab Manager:	Mr. Di Dehai
Telephone:	+86-592-5612050
Facsimile:	+86-592-5612095

2. Identification of the Responsible Testing Location

Name:	Kehu-Morlab Test Laboratory
Address:	Unit 101, No.1732 Gangzhong Road, Xiamen Area, Pilot Free Trade Zone (Fujian), P. R. China

3. Accreditation Certificate

Accredited Testing Laboratory:	The FCC designation number is CN1249. (Kehu-Morlab Test Laboratory)
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