



REPORT No. : SZ18010222S01

# RF EXPOSURE EVALUATION REPORT

**APPLICANT** : Cleer Limited

**PRODUCT NAME** : Portable Bluetooth Speaker with Alexa Voice Service

**MODEL NAME** : STAGE

**BRAND NAME** : Cleer

**FCC ID** : 2AETW-1251

**STANDARD(S)** : 47CFR 2.1093  
KDB 447498 D01 General RF Exposure Guidance v06

**ISSUE DATE** : 2018-01-31

Tested by: Peng Fuwei  
Peng Fuwei (Test engineer)

Approved by: Peng Huarui  
Peng Huarui (Supervisor)

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Change History		
Issue	Date	Reason for change
1.0	2018-01-31	First edition



# 1. Technical Information

**Note:** Provide by manufacturer.

## 1.1. Applicant and Manufacturer Information

<b>Applicant:</b>	Cleer Limited
<b>Applicant Address:</b>	Unit518, Lakeside 1, Science Park West Ave. HK Science Park,Hong Kong
<b>Manufacturer:</b>	Cleer Limited
<b>Manufacturer Address:</b>	Unit518, Lakeside 1, Science Park West Ave. HK Science Park,Hong Kong

## 1.2. Equipment Under Test (EUT) Description

<b>EUT Type:</b>	Portable Bluetooth Speaker with Alexa Voice Service
<b>Hardware Version:</b>	V2
<b>Software Version:</b>	2.04.1
<b>Frequency Bands:</b>	Bluetooth 4.2:2402-2480MHz;
<b>Modulation Mode:</b>	Bluetooth 2.1+EDR: GFSK; $\pi/4$ -DQPSK; 8-DPSK Bluetooth 4.0LE: GFSK;
<b>Antenna Type:</b>	PIFA Antenna
<b>Antenna Gain:</b>	2.0dBi

### 1.3. Photographs of the EUT

#### 1. EUT front view



#### 2. EUT rear view





### 1.3.1. Identification of all used EUT

The EUT identity consists of numerical and letter characters, the letter character indicates the test sample, and the following two numerical characters indicate the software version of the test sample.

EUT Identity	Hardware Version	Software Version
1#	V2	2.04.1

### 1.4. Applied Reference Documents

Leading reference documents for testing:

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



## 2. Device Category and RF Exposure Limit

Per user manual, this device is a Portable Bluetooth Speaker. 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 Peak Output Power

#### 1. Bluetooth Peak output power

Band	Channel	Output Power(dBm)		
		GFSK	$\pi/4$ -DQPSK	8-DPSK
BT 2.1+EDR	0	0.69	1.27	1.71
	39	1.79	2.01	2.45
	78	0.68	1.05	1.44

Band	Channel	Frequency (MHz)	Output Power(dBm)
			GFSK
BLE	0	2402	-0.80
	19	2440	1.02
	39	2480	1.17

### 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  $\leq 50$  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 **2.0mW @ 2.441GHz**

When Bluetooth Speaker is used close to the body, so use **5mm** as the most conservative minimum test separation distance,

$[(\text{max. power of channel, including tune-up tolerance, mW})/(\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] = 0.62 \leq 3.0$

So SAR evaluation is not required for this device.

Note: Declaration of the Max tune-up limit is 3.0dBm.



## Annex A General Information

### 1. Identification of the Responsible Testing Laboratory

Company Name:	Shenzhen Morlab Communications Technology Co., Ltd.
Department:	Morlab Laboratory
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### 2. Identification of the Responsible Testing Location

Name:	Shenzhen Morlab Communications Technology Co., Ltd. Morlab Laboratory
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