



REPORT No. : SZ18110355S01

RF EXPOSURE EVALUATION REPORT

APPLICANT : Cleer Limited
PRODUCT NAME : True Wireless Headphone
MODEL NAME : ALLY
BRAND NAME : Cleer
FCC ID : 2AETW-1293
STANDARD(S) : FCC 47CFR 2.1093
RECEIPT DATE : 2018-11-30
TEST DATE : 2018-12-17
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MORLAB

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Change History		
Version	Date	Reason for change
1.0	2018-12-19	First edition



1. Technical Information

Note: Provide by manufacturer.

1.1 Applicant and Manufacturer Information

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

1.2 Equipment Under Test (EUT) Description

EUT Type:	True Wireless Headphone
Hardware Version:	V0.3
Software Version:	V1.01
Frequency Bands:	Bluetooth: 2402 MHz ~ 2480 MHz
Modulation Mode:	Bluetooth: GFSK, $\pi/4$ -DQPSK, 8-DPSK BLE: GFSK
Antenna Type:	PIFA Antenna
Antenna Gain:	-4.0dBi

1.3 Photographs of the EUT

1.EUT Front View



2.EUT Back View





1.4 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#	V0.3	V1.01

1.5 Applied Reference Documents

Leading reference documents for testing:

No.	Identity	Document Title
1	47 CFR§2.1093	Radio Frequency 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 True Wireless Headphone. 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 RF Output Power

<Bluetooth output power>

Mode	Channel	Frequency (MHz)	Peak Power (dBm)		
			DH5	2DH5	3DH5
BR / EDR	CH 00	2402	5.862	7.546	7.923
	CH 39	2441	5.815	7.949	8.606
	CH 78	2480	5.894	8.295	8.872
Tune-up Limit (dBm)			6.500	8.500	9.500

Mode	Channel	Frequency (MHz)	Peak Power (dBm)
LE	CH 00	2402	7.324
	CH 19	2440	7.736
	CH 39	2480	8.063
Tune-up Limit			8.500

Note: According to KDB 447498 Section 4.3, SAR 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

**<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)	Exposure Position	Left	Right	Summed 1g SAR (W/kg)
Bluetooth	9.5	Estimated SAR (W/kg)	0.373	0.373	0.746

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



4. RF Exposure Evaluation

The device only incorporates a True Wireless Headphone, 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 **8.91mW @ 2.480GHz**

When Ring Scanner is used on the hand/head, so use **5mm** as the most conservative minimum test separation distance,

$$[(\text{max. power of channel, including tune-up tolerance, mW})/(\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] = \mathbf{2.80 < 3.0}$$

So SAR evaluation is not required for this device.

Note: Declaration of the tune-up limit is **9.50dBm**.



Annex A General Information

1. Identification of the Responsible Testing Laboratory

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