

RF Exposure Evaluation Report

Product : True Wireless Stereo Earphone
Trade mark : N/A
Model/Type reference : BTW-V2, SiFi, BTW-V1, BTW-105Q, BTW-106Q, BTW-107Q
Serial Number : N/A
Report Number : EED32L00168902
FCC ID : 2ADQABTW-V2
Date of Issue : Aug. 08, 2019
Test Standards : 47 CFR Part 1.1307(2015)
47 CFR Part 1.1310(2015)
KDB447498D01v06
Test result : PASS

Prepared for:

ShenZhen iFree Electronic Technology Co., Ltd.
7F, A9 Building, Tianrui Industrial Zone,
No.35 Fuyuan 1st, Fuyong, Baoan, Shenzhen, China

Prepared by:

Centre Testing International Group Co., Ltd.
Hongwei Industrial Zone, Bao'an 70 District,
Shenzhen, Guangdong, China
TEL: +86-755-3368 3668
FAX: +86-755-3368 3385

Tested By:

Jay Zheng

Jay Zheng

Compiled by:

Alex Wu

Alex Wu

Reviewed by:

Ware Xin

Ware Xin

Approved by:

Kevin Yang

Kevin Yang

Date:

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2 Version

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4 General Information

4.1 Client Information

Applicant:	ShenZhen iFree Electronic Technology Co., Ltd.
Address of Applicant:	7F, A9 Building, Tianrui Industiral Zone, No.35 Fuyuan 1st, Fuyong, Baoan, Shenzhen, China
Manufacturer:	ShenZhen iFree Electronic Technology Co., Ltd.
Address of Manufacturer:	7F, A9 Building, Tianrui Industiral Zone, No.35 Fuyuan 1st, Fuyong, Baoan, Shenzhen, China
Factory:	ShenZhen iFree Electronic Technology Co., Ltd.
Address of Factory:	7F, A9 Building, Tianrui Industiral Zone, No.35 Fuyuan 1st, Fuyong, Baoan, Shenzhen, China

4.2 General Description of EUT

Product Name:	True Wireless Stereo Earphone
Model No:	BTW-V2, SiFi, BTW-V1, BTW-105Q, BTW-106Q, BTW-107Q
Test Model No:	BTW-V2
Trade Mark:	N/A
EUT Supports Radios application:	BT 5.0 Single mode, 2402-2480MHz;

4.3 Product Specification subjective to this standard

Frequency Range:	2402-2480MHz
Modulation Type:	GFSK, $\pi/4$ DQPSK, 8DPSK
Number of Channels:	79
Test Power Grade:	N/A(manufacturer declare)
Test Software of EUT:	N/A(manufacturer declare)
Antenna Type:	internal antenna
Antenna Gain:	4.97dBi
Power Supply:	Battery 3.7V
Max Conducted Peak Output Power:	4.753dBm The Max Conducted Peak Output Power: data refer to the report EED32L00168901
Sample Received Date:	Jun, 27, 2019
Sample tested Date:	Jun, 27, 2019 to Jul. 29, 2019
The tested sample(s) and the sample information are provided by the client. Model No: BTW-V2, SiFi, BTW-V1, BTW-105Q, BTW-106Q, BTW-107Q Only the model BTW-V2 was tested, The add model and original model , electrical circuit design, layout, components used and internal wiring are identical, only model name is different. For the left earphone and right earphone ,electrical circuit design ,PCB Layout is same ,only the cars is different.	

4.4 Test Location

All tests were performed at:

Centre Testing International Group Co., Ltd

Building C, Hongwei Industrial Park Block 70, Bao'an District, Shenzhen, China

Telephone: +86 (0) 755 33683668 Fax: +86 (0) 755 33683385

No tests were sub-contracted.

FCC Designation No.: CN1164

4.5 Deviation from Standards

None.

4.6 Abnormalities from Standard Conditions

None.

4.7 Other Information Requested by the Customer

None.

5 RF Exposure Evaluation

5.1 RF Exposure Compliance Requirement

5.1.1 Limits

According to FCC Part1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in part1.1307(b)

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3–3.0	614	1.63	*(100)	6
3.0–30	1842/f	4.89/f	*(900/f ²)	6
30–300	61.4	0.163	1.0	6
300–1500			f/300	6
1500–100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3–1.34	614	1.63	*(100)	30
1.34–30	824/f	2.19/f	*(180/f ²)	30
30–300	27.5	0.073	0.2	30
300–1500			f/1500	30
1500–100,000			1.0	30

A rough estimation of the expected exposure in power flux density on a given point can be made with the following equation:

$$S = \frac{P \times G}{4 \times \pi \times R^2}$$

Where:

S = power density

P = power input to the antenna

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

R= distance to the centre of radiation of the antenna

EIRP = P*G

The antenna of the product, under normal use condition is at least 20 cm away from the body of the user.

Warning statement to the user for keeping at least 20cm separation distance and the prohibition of operating to a person has been printed on the user's manual. Therefore, the S of the device is calculated with R=20cm, and if it is below the limit S, then we can conclude the device complies with the rules.

5.1.2 Test Procedure

Software provided by client enabled the EUT to transmit data at lowest, middle and highest channel individually.

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5.1.3 EUT RF Exposure Evaluation

Antenna Gain: 4.97dBi

Output Power Into Antenna & RF Exposure Evaluation Distance:

Channel	Frequency (MHz)	Max Conducted Peak Output Power(dBm)	Gain (dBi)	EIRP* (dBm)	EIRP (mW)	R (cm)	S (mW/cm ²)	Limit (mW/cm ²)	Result
Highest	2480	4.753	4.97	9.723	9.38	20	0.0093	1.0	Pass

Note: Refer to report No. EED32L00168901 for EUT test Max Conducted Peak Output Power value.

PHOTOGRAPHS OF EUT Constructional Details

Refer to Report No. EED32I00168901 for EUT external and internal photos.

*** End of Report ***

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