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RF Exposure Evaluation Report

Report No. : CQASZ20181000097E-02

Applicant: ZAGG Inc.

Address of Applicant: 910 West Legacy Center Way, Suite 500 Midvale, Utah 84047, USA

Manufacturer: ZAGG Inc.

Address of Manufacturer: 910 West Legacy Center Way, Suite 500 Midvale, Utah 84047, USA

Factory: DONGGUAN LINPA ACOUSTIC TECHNOLOGY CO.,LTD

Address of Factory: 2A NO.60, Lizhong Road, Dali, Qingxi Town, Dongguan City, Guangdong Province, China

Equipment Under Test (EUT):

Product: IFROGZ TWS

Model No.: IFIETWS15

Trade mark: IFROGZ

FCC ID: QTG-IFALTWS

Standards: 47 CFR Part 1.1307
47 CFR Part 2.1093
KDB447498D01 General RF Exposure Guidance v06

Date of Test: 2018-10-31 to 2018-11-08

Date of Issue: 2018-11-08

Test Result : PASS*

Tested By: Tiny You
(Tiny You)

Reviewed By: Aaron Ma
(Aaron Ma)

Approved By: Jack Ai
(Jack Ai)



* In the configuration tested, the EUT complied with the standards specified above.

The test report is effective only with both signature and specialized stamp, The result(s) shown in this report refer only to the sample(s) tested. Without written approval of CQA, this report can't be reproduced except in full.

1 Version

Revision History Of Report

Report No.	Version	Description	Issue Date
CQASZ20181000097E-02	Rev.01	Initial report	2018-11-08

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3 General Information

3.1 Client Information

Applicant:	ZAGG Inc.
Address of Applicant:	910 West Legacy Center Way, Suite 500 Midvale, Utah 84047, USA
Manufacturer:	ZAGG Inc.
Address of Manufacturer:	910 West Legacy Center Way, Suite 500 Midvale, Utah 84047, USA
Factory:	DONGGUAN LINPA ACOUSTIC TECHNOLOGY CO.,LTD
Address of Factory:	2A NO.60, Lizhong Road, Dali, Qingxi Town, Dongguan City, Guangdong Province, China

3.2 General Description of EUT

Product Name:	IFROGZ TWS
Model No.:	IFIETWS15
Trade Mark:	IFROGZ
Hardware Version:	V1.0
Software Version:	V1.0
Operation Frequency:	2402MHz~2480MHz
Bluetooth Version:	V5.0
Modulation Technique:	Frequency Hopping Spread Spectrum(FHSS)
Modulation Type:	GFSK, $\pi/4$ DQPSK, 8DPSK
Number of Channel:	79
Hopping Channel Type:	Adaptive Frequency Hopping systems
Sample Type:	portable production
Test Software of EUT:	Blue test (manufacturer declare)
Antenna Type:	Integral antenna
Antenna Gain:	0dBi
Power Supply:	lithium battery: DC3.7V, 60mAh, Charge by DC5.0V

4 SAR Evaluation

4.1 RF Exposure Compliance Requirement

4.1.1 Standard Requirement

According to KDB447498D01 General RF Exposure Guidance v06

4.3.1. Standalone SAR test exclusion considerations

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 Exclusion Threshold condition, listed below, is satisfied.

4.1.2 Limits

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:

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

☐ $f(\text{GHz})$ is the RF channel transmit frequency in GHz

☐ Power and distance are rounded to the nearest mW and mm before calculation¹⁷

☐ 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

4.1.3 EUT RF Exposure

For BT:

Measurement Data

GFSK mode	
Test channel	Peak Output Power (dBm)
Lowest	-2.090
Middle	-2.050
Highest	-2.010
$\pi/4$ DQPSK mode	
Test channel	Peak Output Power (dBm)
Lowest	-2.370
Middle	-2.220
Highest	-2.090
8DPSK mode	
Test channel	Peak Output Power (dBm)
Lowest	-2.430
Middle	-2.200
Highest	-2.140

The Max Conducted Peak Output Power is -2.01dBm in highest channel(2.480GHz);

The best case gain of the antenna is 0dBi.

EIRP= -2.01dBm + 0dBi = -2.01dBm

-2.01dBm logarithmic terms convert to numeric result is nearly 0.63mW

According to the formula. calculate the EIRP test result:

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

General RF Exposure = $(0.63\text{mW} / 5 \text{ mm}) \times \sqrt{2.480\text{GHz}} = 0.2$ ①

SAR requirement:

S= 3.0

② ;

① < ②.

So the SAR report is not required.

Remark: The Max Conducted Peak Output Power data refer to report Report No.:CQASZ20181000097E-01