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Report Template Version: V03

Report Template Revision Date: Mar.1st, 2017

RF Exposure Evaluation Report

Report No. : CQASZ20190700590E-02
Applicant: ZAGG Inc.
Address of Applicant: 910 West Legacy Center Way, Suite 500 Midvale, Utah 84047, USA

Equipment Under Test (EUT):

Product: BRAVEN BRV-X/2 Speaker
Test Model No.: BBRVMB46
Brand Name: BRAVEN
FCC ID: QTG-BAANBX2
Standards: 47 CFR Part 1.1307
47 CFR Part 2.1093
KDB447498D01 General RF Exposure Guidance v06

Date of Receipt: 2019-07-12
Date of Test: 2019-07-12 to 2019-07-25
Date of Issue: 2019-07-25
Test Result : PASS*

Tested By:

Tom Chen

(Tom Chen)

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
CQASZ20190700590E-02	Rev.01	Initial report	2019-07-25

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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

3.2 General Description of EUT

Product Name:	BRAVEN BRV-X/2 Speaker
Model No.:	BBRVMBS46
Trade Mark:	BRAVEN
Hardware Version:	V2.0
Software Version:	V1.3
Operation Frequency:	2402MHz~2480MHz
Bluetooth Version:	V5.0
Modulation Technique:	Frequency Hopping Spread Spectrum(FHSS)
Modulation Type:	GFSK, $\pi/4$ DQPSK, 8DPSK
Transfer Rate:	1Mbps/2Mbps/3Mbps
Number of Channel:	79
Hopping Channel Type:	Adaptive Frequency Hopping systems
Product Type:	☐ Mobile ☒ Portable ☐ Fix Location
Test Software of EUT:	BT FCC Tool V2.00 (manufacturer declare)
Antenna Type:	PCB antenna
Antenna Gain:	-6.17dBi
Power Supply:	lithium battery:DC7.4V, Charge by DC5.0V

Note: Only one model number: BBRVMBS46, but it comes in four colors (black, blue, red, gray)

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

Measurement Data

GFSK mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2402MHz)	-6.240	-6±1	-5	0.316
Middle(2441MHz)	-6.920	-6±1	-5	0.316
Highest(2480MHz)	-5.900	-5.5±1	-5	0.316
π/4DQPSK mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2402MHz)	-3.600	-3.5±1	-2.5	0.562
Middle(2441MHz)	-4.140	-3.5±1	-2.5	0.562
Highest(2480MHz)	-3.000	-3±1	-2	0.631
8DPSK mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2402MHz)	-3.080	-3.5±1	-2.5	0.562
Middle(2441MHz)	-3.640	-3.5±1	-2.5	0.562
Highest(2480MHz)	-2.340	-3±1	-2	0.631

Worst case: 8DPSK						
Channel	Maximum Peak Conducted Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune- up Power		Calculated value	Exclusion threshold
			(dBm)	(mW)		
Lowest (2402MHz)	-3.080	-3.5±1	-2.5	0.562	0.17	3.0
Middle (2441MHz)	-3.640	-3.5±1	-2.5	0.562	0.18	
Highest (2480MHz)	-2.340	-3±1	-2	0.631	0.20	
Conclusion: the calculated value ≤3.0, SAR is exempted.						

Remark: The Max Conducted Peak Output Power data refer to report Report No.: CQASZ20190700590E-01