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RF Exposure Evaluation Report

Report No. :	CQASZ20191001055E-03
Applicant:	Dongguan OSM Technologies Co., Ltd
Address of Applicant:	1 to 6 / F, Building A, Longdi Industrial Park, No. 6 Tiansha Road, Keyuan City, Tangxia Town, Dong guan City
Equipment Under Test (EUT):	
EUT Name:	Phantom handle multi-function bracket
Model No.:	Oth-AB204, Oth-AB204YT, Oth-AB204DY, Oth-AB203, Oth-AB203YT, Oth-AB203DY, SS101, SNAP-X10, M801, JH402, ATSS025
Test Model No.:	Oth-AB204YT
Brand Name:	SEAJIC
FCC ID:	2ARZU-AB204YT
Standards:	47 CFR Part 1.1307 47 CFR Part 1.1310 KDB447498D01 General RF Exposure Guidance v06
Date of Receipt:	2019-10-25
Date of Test:	2019-10-25 to 2019-10-31
Date of Issue:	2019-10-31
Test Result :	**PASS***

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

Tested By: Tom Chen.

(Tom chen)

Reviewed By: Sheek . Luo

(Sheek Luo)

Approved By:

(Jack Ai)

SHENZHEN HUAXIA TESTING TECHNOLOGY CO., LTD. CQA 华夏准测 APPROVED

1 Version

Revision History Of Report

Report No.	Version	Description	Issue Date
CQASZ20191001055E-03	Rev.01	Initial report	2019-10-31

2 Contents

3 General Information

3.1 Client Information

Applicant:	Dongguan OSM Technologies Co., Ltd
Address of Applicant:	1 to 6 / F, Building A, Longdi Industrial Park, No. 6 Tiansha Road, Keyuan City, Tangxia Town, Dong guan City
Manufacturer:	Dongguan OSM Technologies Co., Ltd
Address of Manufacturer:	1 to 6 / F, Building A, Longdi Industrial Park, No. 6 Tiansha Road, Keyuan City, Tangxia Town, Dong guan City

3.2 General Description of EUT

Product Name:	Phantom handle multi-function bracket
Model No.:	Oth-AB204, Oth-AB204YT, Oth-AB204DY, Oth-AB203, Oth-AB203YT, Oth-AB203DY, SS101, SNAP-X10, M801, JH402, ATSS025
Test Model No.:	Oth-AB204YT
Trade Mark:	SEAJIC
Hardware Version:	V2.0
Software Version:	V2.0
Product Type:	☐ Mobile ☒ Portable ☐ Fix Location
Power Supply:	lithium battery:DC3.7V, Charge by DC5.0V

3.3 General Description of BLE

Operation Frequency:	2402MHz~2480MHz
Bluetooth Version:	V4.2
Modulation Type:	GFSK
Transfer Rate:	1Mbps
Number of Channel:	40
Test Software of EUT:	BK32xx RF Test – V1.8.2_en (manufacturer declare)
Antenna Type:	PCB antenna
Antenna Gain:	0dBi

3.4 General Description of 2.4G

Operation Frequency:	2416 MHz ~ 2467MHz
Modulation Type:	GFSK
Number of Channels:	52 (declared by the client)
Test Software of EUT:	RF test (manufacturer declare)
Antenna Type:	Integral antenna
Antenna Gain:	0dBi

Model No.: Oth-AB204, Oth-AB204YT, Oth-AB204DY, Oth-AB203, Oth-AB203YT, Oth-AB203DY, SS101, SNAP-X10, M801, JH402, ATSS025

Only the model Oth-AB204YT was tested, There are identical on circuitry design, PCB layout, electrical components used, internal wiring and functions with the model/item No. Oth-AB204YT , only different on the shape and technology of plastic shell, There are same from the electronic part, function; and schematic diagram.

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:

[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] · [√f(GHz)] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where

f(GHz) is the RF channel transmit frequency in GHz
Power and distance are rounded to the nearest mW and mm before calculation[17]
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

1) For BLE

Measurement Data

GFSK mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2402MHz)	1.58	1.0±1	2.0	1.585
Middle(2440MHz)	0.91	0±1	1.0	1.259
Highest(2480MHz)	1.31	0.5±1	1.5	1.413

Worst case: GFSK						
Channel	Maximum Peak Conducted Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power		Calculated value	Exclusion threshold
			(dBm)	(mW)		
Lowest (2402MHz)	1.58	1.0±1	2.0	1.585	0.491	3.0
Middle (2440MHz)	0.91	0±1	1.0	1.259	0.393	
Highest (2480MHz)	1.31	0.5±1	1.5	1.413	0.445	
Conclusion: the calculated value ≤3.0, SAR is exempted.						

Remark: The Max Conducted Peak Output Power data refer to report Report No.: CQASZ20191001055E-01

2) For 2.4G

eirp = pt x gt = $(E \times d)^2/30$

where:

pt = transmitter output power in watts,

gt = numeric gain of the transmitting antenna (unitless),

E = electric field strength in V/m, ---$10^{((dB\mu V/m)/20)}/10^6$,

d = measurement distance in meters (m)---3m,

So pt = $(E \times d)^2/30$ / gt

The worst case (refer to report CQASZ20191001055E-02) is below:

Antenna polarization: Horizontal		
Frequency (MHz)	Level (dBuV/m)	Polarization
2467	100.21	Peak
2467	96.92	Average

Antenna polarization: Vertical		
Frequency (MHz)	Level (dBuV/m)	Polarization
2467	99.65	Peak
2467	95.97	Average

For 2467MHz wireless:

Field strength = 100.21dBμV/m @3m

Ant. gain 0dBi; so Ant numeric gain=1.0

So pt={[$10^{(100.21/20)}/10^6$x3]^2/30 /1.0}x1000mW =3.149mW

So (3.149mW/5mm)x √2.467GHz = 0.989,

0.989<3.0 for 1-g SAR

So the SAR report is not required.