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RF Exposure Evaluation Report

Report No. :	CQASZ20200500342E-03
Applicant:	Zhongshan Yangguo Electronic Technology Co., Ltd.
Address of Applicant:	Second and Fourth Of Three Floor, NO.9 Huayuan Road, Xiaolan town, Zhongshan City, Guangdong Province, China
Equipment Under Test (EUT):	
EUT Name:	Smartphone stabilizer
Model No.:	SMART XR
Brand Name:	AOCHUAN
FCC ID:	2AWDI-SMARTXR
Standards:	47 CFR Part 1.1307 47 CFR Part 2.1093 KDB447498D01 General RF Exposure Guidance v06
Date of Receipt:	2020-05-11
Date of Test:	2020-05-11 to 2020-05-25
Date of Issue:	2020-05-25
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)

1 Version

Revision History Of Report

Report No.	Version	Description	Issue Date
CQASZ20200500342E-03	Rev.01	Initial report	2020-05-25

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3 General Information

3.1 Client Information

Applicant:	Zhongshan Yangguo Electronic Technology Co., Ltd.
Address of Applicant:	Second and Fourth Of Three Floor, NO.9 Huayuan Road, Xiaolan town, Zhongshan City, Guangdong Province, China
Manufacturer:	Zhongshan Yangguo Electronic Technology Co., Ltd.
Address of Manufacturer:	Second and Fourth Of Three Floor, NO.9 Huayuan Road, Xiaolan town, Zhongshan City, Guangdong Province, China
Factory:	Zhongshan Yangguo Electronic Technology Co., Ltd.
Address of Factory:	Second and Fourth Of Three Floor, NO.9 Huayuan Road, Xiaolan town, Zhongshan City, Guangdong Province, China

3.2 General Description of EUT

Product Name:	Smartphone stabilizer
Model No.:	SMART XR
Trade Mark:	AOCHUAN
Hardware Version:	V2.0
Software Version:	V2.0
EUT Supports Radios application	Bluetooth Dual mode: 2402MHz to 2480MHz
Power Supply:	lithium battery:DC3.7V 3200mAh, Charge by DC5.0V

3.3 General Description of BT

Operation Frequency:	2402MHz~2480MHz
Bluetooth Version:	V4.2
Modulation Technique:	Frequency Hopping Spread Spectrum(FHSS)
Modulation Type:	GFSK, π/4DQPSK, 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:	FCC Test Tool V1.3 (manufacturer declare)
Antenna Type:	PCB antenna
Antenna Gain:	2dBi

3.4 General Description of BLE

Operation Frequency:	2402MHz~2480MHz
Bluetooth Version:	V4.2
Modulation Type:	GFSK
Transfer Rate:	1Mbps
Number of Channel:	40

Product Type:	☐ Mobile ☒ Portable ☐ Fix Location
Test Software of EUT:	FCC Test Tool V1.3 (manufacturer declare)
Antenna Type:	PCB antenna
Antenna Gain:	2dBi

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

Measurement Data

For BT:

GFSK mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2402MHz)	-6.460	-6.5±1	-5.5	0.282
Middle(2441MHz)	-6.690	-6.5±1	-5.5	0.282
Highest(2480MHz)	-6.970	-6.5±1	-5.5	0.282
π/4DQPSK mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2402MHz)	-6.400	-6.5±1	-5.5	0.282
Middle(2441MHz)	-6.620	-6.5±1	-5.5	0.282
Highest(2480MHz)	-6.920	-6.5±1	-5.5	0.282
8DPSK mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2402MHz)	-6.400	-6.5±1	-5.5	0.282
Middle(2441MHz)	-6.610	-6.5±1	-5.5	0.282
Highest(2480MHz)	-6.910	-6.5±1	-5.5	0.282

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)	-6.400	-6.5±1	-5.5	0.282	0.087	3.0
Middle (2441MHz)	-6.610	-6.5±1	-5.5	0.282	0.088	
Highest (2480MHz)	-6.910	-6.5±1	-5.5	0.282	0.089	
Conclusion: the calculated value ≤3.0, SAR is exempted.						

Remark: The Max Conducted Peak Output Power data refer to report Report No.: CQASZ20200500342E-02

For BLE:

GFSK mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2402MHz)	-9.8	-10±1	-9	0.126
Middle(2441MHz)	-9.85	-10±1	-9	0.126
Highest(2480MHz)	-10.25	-10±1	-9	0.126

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)	-9.8	-10±1	-9	0.126	0.039	3.0
Middle (2441MHz)	-9.85	-10±1	-9	0.126	0.039	
Highest (2480MHz)	-10.25	-10±1	-9	0.126	0.040	
Conclusion: the calculated value ≤3.0, SAR is exempted.						

Remark: The Max Conducted Peak Output Power data refer to report Report No.: CQASZ20200500342E-01.

BR, EDR and BLE can not simultaneous transmitting at same time.