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RF Exposure Evaluation Report

Report No. :	CQASZ20191201314E-02
Applicant:	SHENZHEN HUBSAN TECHNOLOGY CO., LTD.
Address of Applicant:	13th Floor, Bldg 1C, Shenzhen Software Industry Base, Xuefu Road, Nanshan District, Shenzhen, China 518054
Equipment Under Test (EUT):	
Product:	HUBSAN HT018A Transmitter
Model No.:	HT018A
Brand Name:	HUBSAN
FCC ID:	2AN75-HT018ATX
Standards:	47 CFR Part 1.1307 47 CFR Part 1.1310 KDB447498D01 General RF Exposure Guidance v06
Date of Receipt:	2019-12-16
Date of Test:	2019-12-16 to 2019-12-26
Date of Issue:	2019-12-26
Test Result :	**PASS***

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

Tested By: Tom Chen.

(Tom chen)

Reviewed By: Aaron Ma

(Aaron Ma)

Approved By:

(Jack Ai)

1 Version

Revision History Of Report

Report No.	Version	Description	Issue Date
CQASZ20191201314E-02	Rev.01	Initial report	2019-12-26

2 Contents

3 General Information

3.1 Client Information

Applicant:	SHENZHEN HUBSAN TECHNOLOGY CO., LTD.
Address of Applicant:	13th Floor, Bldg 1C, Shenzhen Software Industry Base, Xuefu Road, Nanshan District, Shenzhen, China 518054
Manufacturer:	SHENZHEN HUBSAN TECHNOLOGY CO., LTD.
Address of Manufacturer:	13th Floor, Bldg 1C, Shenzhen Software Industry Base, Xuefu Road, Nanshan District, Shenzhen, China 518054

3.2 General Description of EUT

Product Name:	HUBSAN HT018A Transmitter
Model No.:	HT018A
Trade Mark:	HUBSAN
Hardware version:	EA04058034-04
Software version:	V0.1.1
Operation Frequency:	IEEE 802.11a: 5150MHz ~5250 MHz IEEE 802.11a: 5725MHz ~5850 MHz
Channel Numbers:	IEEE 802.11a: 5150MHz ~5250MHz/ 4 channel IEEE 802.11a: 5725MHz ~5850MHz/ 5 channel
Type of Modulation:	IEEE 802.11a: OFDM(64QAM, 16QAM, QPSK, BPSK)
Channel Spacing:	IEEE 802.11a: 20 MHz
Transmitter Operating channel width(OCW)	≤20MHz (provider declaration)
Sample Type:	☐ Mobile ☒ Portable ☐ Fix Location
Test Software of EUT:	Atheros Radio test 2 (manufacturer declare)
Antenna Type:	Integral antenna
Antenna Gain:	ANT1: 3.0dBi
	ANT2: 3.0dBi
Power Supply:	Battery: 3.6V 3350 mAh Li-Po

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

4.2 EUT RF Exposure Evaluation

1) For 5G WIFI

Antenna Gain: ANT1: 3.0dBi, ANT2: 3.0dBi

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 2.0 in linear scale.

Output Power Into Antenna & RF Exposure Evaluation Distance:

Measurement Data

ANT1:

802.11a mode				
Test channel	Average Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
5180	7.27	6.5±1.0	7.5	5.623
5200	7.38	6.5±1.0	7.5	5.623
5240	6.92	6.0±1.0	7.0	5.012
5745	6.61	6.0±1.0	7.0	5.012
5785	6.96	6.0±1.0	7.0	5.012
5825	6.73	6.0±1.0	7.0	5.012

The worst case:

Worst case: 802.11a mode						
Channel	Average Conducted Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power		Calculated value	Exclusion threshold
			(dBm)	(mW)		
Lowest (5180MHz)	7.27	6.5±1.0	7.5	5.623	2.560	3.0
Middle (5200MHz)	7.38	6.5±1.0	7.5	5.623	2.565	
Highest (5240MHz)	6.92	6.0±1.0	7.0	5.012	2.295	
Lowest (5745MHz)	6.61	6.0±1.0	7.0	5.012	2.403	
Middle (5785MHz)	6.96	6.0±1.0	7.0	5.012	2.411	
Highest (5825MHz)	6.73	6.0±1.0	7.0	5.012	2.419	
Conclusion: the calculated value ≤3.0, SAR is exempted.						

ANT2:

802.11a mode				
Test channel	Average Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
5180	7.38	6.5±1.0	7.5	5.623
5200	7.16	6.5±1.0	7.5	5.623
5240	6.81	6.0±1.0	7.0	5.012
5745	6.78	6.0±1.0	7.0	5.012
5785	6.64	6.0±1.0	7.0	5.012
5825	6.72	6.0±1.0	7.0	5.012

The worst case:

Worst case: 802.11a mode						
Channel	Average Conducted Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power		Calculated value	Exclusion threshold
			(dBm)	(mW)		
Lowest (5180MHz)	7.38	6.5±1.0	7.5	5.623	2.560	3.0
Middle (5200MHz)	7.16	6.5±1.0	7.5	5.623	2.565	
Highest (5240MHz)	6.81	6.0±1.0	7.0	5.012	2.295	
Lowest (5745MHz)	6.78	6.0±1.0	7.0	5.012	2.403	
Middle (5785MHz)	6.64	6.0±1.0	7.0	5.012	2.411	
Highest (5825MHz)	6.72	6.0±1.0	7.0	5.012	2.419	
Conclusion: the calculated value ≤3.0, SAR is exempted.						

Remark: The Max Conducted Peak Output Power data refer to report Report No.: CQASZ20191201314E-01

These tow antennas does not transmit simultaneously.