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RF Exposure Evaluation Report

Report No.: CQASZ20210801434E-02
Applicant: SHENZHEN HUBSAN TECHNOLOGY CO., LTD
Address of Applicant: Unit 2801-2802A, Building F, Xinghe WORLD , Yabao Road, Bantian Street, Longgang District, Shenzhen,China.
Equipment Under Test (EUT):
EUT Name: HUBSAN ACE & HUBSAN ACE PRO&HUBSAN ACE SE&HUBSAN ACE PRO+
Test Model No.: HUBSAN ACE SE
Model No.: HUBSAN ACE, HUBSAN ACE PRO, HUBSAN ACE SE, HUBSAN ACE PRO+
Test Model No.: HUBSAN ACE SE
Brand Name: HUBSAN
FCC ID: 2AN75-HUBSANACERX
Standards: 47 CFR Part 1.1307
47 CFR Part 1.1310
KDB447498D01 General RF Exposure Guidance v06
Date of Receipt: 2021-08-25
Date of Test: 2021-08-25 to 2021-09-09
Date of Issue: 2021-11-23
Test Result: **PASS***

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

Tested By: Lewis Zhou
(Lewis Zhou)

Reviewed By: Rock Huang
(Rock Huang)

Approved By: Jack ai
(Jack ai)



1 Version

Revision History Of Report

| Report No. | Version | Description | Issue Date |
|----------------------|---------|----------------|------------|
| CQASZ20210801434E-02 | Rev.01 | Initial report | 2021-11-23 |

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3 General Information

3.1 Client Information

| | |
|--------------------------|--|
| Applicant: | SHENZHEN HUBSAN TECHNOLOGY CO., LTD |
| Address of Applicant: | Unit 2801-2802A, Building F, Xinghe WORLD , Yabao Road, Bantian Street, Longgang District, Shenzhen,China. |
| Manufacturer: | SHENZHEN HUBSAN TECHNOLOGY CO., LTD |
| Address of Manufacturer: | Unit 2801-2802A, Building F, Xinghe WORLD , Yabao Road, Bantian Street, Longgang District, Shenzhen,China. |
| Factory: | Dongguan Tengsheng Industrial Co., Ltd. |
| Address of Factory: | A22# Luyi Street, Tianxin Village, Tangxia Town, Dongguan, China. |

3.2 General Description of EUT

| | |
|-----------------------|--|
| EUT Name: | HUBSAN ACE & HUBSAN ACE PRO&HUBSAN ACE SE&HUBSAN ACE PRO+ |
| Test Model No.: | HUBSAN ACE SE |
| Model No.: | HUBSAN ACE, HUBSAN ACE PRO, HUBSAN ACE SE, HUBSAN ACE PRO+ |
| Trade Mark: | HUBSAN |
| Hardware Version: | V1.0 |
| Software Version: | V1.0 |
| Frequency Range: | 2406MHz ~ 2470MHz |
| Modulation Type: | OFDM |
| Number of Channels: | 9 (declared by the client) |
| Sample Type: | <input checked="" type="checkbox"/> Mobile <input type="checkbox"/> Portable <input type="checkbox"/> Fix Location |
| Test Software of EUT: | RF test |
| Antenna Type: | External antenna |
| Antenna Gain: | 3.38dbi |
| Power Supply: | lithium battery:DC11.4V 3800mAh 43.32Wh, Charge by DC 12.0V |

4 RF Exposure 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

4.2 EUT RF Exposure Evaluation

1) For 2.4G

$$e_{irp} = p_t \times g_t = (E \times d)^2 / 30$$

where:

p_t = transmitter output power in watts,

g_t = 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,

$$\text{So } p_t = (E \times d)^2 / 30 / g_t$$

The worst case (refer to report CQASZ20210801434E-01) is below:

| Antenna polarization: Horizontal | | |
|----------------------------------|----------------|--------------|
| Frequency (MHz) | Level (dBuV/m) | Polarization |
| 2406 | 89.76 | Peak |
| 2406 | 86.94 | Average |

For 2475MHz wireless:

Field strength = 89.76dBuV/m @3m

Ant. gain 3.38dBi; so Ant numeric gain=2.178

$$\text{So } p_t = \{ [10^{(89.76/20)/10^6} \times 3]^2 / 30 / 2.178 \} \times 1000 \text{mW} = 0.130 \text{mW}$$

$$\text{So } (0.130 \text{mW} / 5 \text{mm}) \times \sqrt{2.406 \text{GHz}} = 0.040,$$

0.040 < 3.0 for 1-g SAR

So the SAR report is not required.