



Shenzhen Huaxia Testing Technology Co., Ltd

1F., Block A of Tongsheng Technology Building, Huahui Road, Dalang Street, Longhua District, Shenzhen, China

Telephone: +86-755-26648640

Fax: +86-755-26648637

Website: www.cqa-cert.com

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RF Exposure Evaluation Report

Report No.: CQASZ20180700032E-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

Manufacturer: SHENZHEN HUBSAN TECHNOLOGY CO., LTD.

Address of Manufacturer: 13th Floor, Bldg 1C, Shenzhen Software Industry Base, Xuefu Road, Nanshan District, Shenzhen, China. 518054

Factory: Dongguan Tengsheng Industrial Co., Ltd.

Address of Factory: A22# Luyi Street, Tianxin Village, Tangxia Town, Dongguan, China.

Equipment Under Test (EUT):

Product: HT012 TRANSMITTER

Model No.: HT012

Brand Name: HUBSAN

FCC ID: 2AN75-T012TX

Standards: 47 CFR Part 1.1307
47 CFR Part 2.1093
KDB447498D01 General RF Exposure Guidance v06

Date of Test: 2018-07-15 to 2018-07-23

Date of Issue: 2018-07-23

Test Result : **PASS***

Tested By:

Aaron Ma

(Aaron Ma)

Reviewed By:

Jack Ai

(Jack Ai)

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.

2 Version

Revision History Of Report

Report No.	Version	Description	Issue Date
CQASZ20180700032E-02	Rev.01	Initial report	2018-07-23

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4 General Information

4.1 Client Information

Applicant:	SHENZHEN HUBSAN TECHNOLOGY CO., LTD.
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Manufacturer:	SHENZHEN HUBSAN TECHNOLOGY CO., LTD.
Address of Manufacturer:	13th Floor, Bldg 1C, Shenzhen Software Industry Base, Xuefu Road, Nanshan District, Shenzhen, China. 518054
Factory:	Dongguan Tengsheng Industrial Co., Ltd.
Address of Factory:	A22# Luyi Street, Tianxin Village, Tangxia Town, Dongguan, China.

4.2 General Description of EUT

Name:	HT012 TRANSMITTER
Model No.:	HT012
Trade Mark :	HUBSAN
Hardware Version:	V04
Software Version:	HT012D-TX-V1.1.4
Frequency Range:	2410 MHz ~ 2465MHz
Modulation Type:	GFSK
Number of Channels:	12 (declared by the client)
Sample Type:	Portable production
Test Software of EUT:	RF test (manufacturer declare)
Antenna Type:	Integral antenna
Antenna Gain:	1.5dBi
Power Supply:	4 x AA battery , DC6V

5 SAR Evaluation

5.1 RF Exposure Compliance Requirement

5.1.1 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.

5.1.2 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:

$$\left[\frac{\text{max. power of channel, including tune-up tolerance, mW}}{[\sqrt{f(\text{GHz})}]^2} \leq 3.0 \text{ for 1-g SAR and } \leq 7.5 \text{ for 10-g extremity SAR, where} \right.$$

$f(\text{GHz})$ 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

5.1.3 EUT RF Exposure

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

where:

p_t = transmitter output power in watts,

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

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

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

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

The worst case (refer to report CQASZ20180700032E-01) is below:

For 2.4G wireless:

Field strength = 90.52dB μ V/m @3m

Ant. gain 1.5dBi; so Ant numeric gain=1.41

$$\text{So } p_t = \left[\frac{10^{(90.52/20)/10^6} \times 3}{1.41} \right]^2 / 30 \times 1000 \text{mW} = 0.239 \text{mW}$$

$$\text{So } (0.239 \text{mW}/5 \text{mm}) \times \sqrt{2.410 \text{GHz}} = 0.074,$$

0.074 < 3.0 for 1-g SAR

So the SAR report is not required.