

TEST REPORT

Reference No...... : WTD21D11132168W002 V2
FCC ID : 2AN7F-HDM03
Applicant..... : Shenzhen Haisen Technology Co., Ltd
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Province, China
Product..... : Motion Sensor
Model(s) : HD401S
Standards..... : FCC 1.1307
Date of Receipt sample : 2021-12-02
Date of Test : 2021-12-02 to 2021-12-06
Date of Issue..... : 2021-12-22
Test Result..... : **Pass**

Remarks:

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

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2 Contents

	Page
1 COVER PAGE.....	1
2 CONTENTS	2
3 REVISION HISTORY	3
4 GENERAL INFORMATION.....	4
4.1 GENERAL DESCRIPTION OF E.U.T.	4
4.2 DETAILS OF E.U.T.	4
5 TEST SUMMARY	5
6 RF EXPOSURE.....	6
6.1 REQUIREMENTS.....	7
6.2 THE PROCEDURES / LIMIT.....	7
6.3 MPE CALCULATION METHOD	8

3 Revision History

Test report No.	Date of Receipt sample	Date of Test	Date of Issue	Purpose	Comment	Approved
WTD21D11132168W 002	2021-12-02	2021-12-02 to 2021-12-06	2021-12-06	Original	-	Replaced
WTD21D11132168W 002 V1	2021-12-02	2021-12-02 to 2021-12-06	2021-12-21	Version 1	Updated-	Replaced
WTD21D11132168W 002 V2	2021-12-02	2021-12-02 to 2021-12-06	2021-12-22	Version 2	Updated-	Valid

4 General Information

4.1 General Description of E.U.T.

Product:	Motion Sensor
Model(s):	HD401S
Model Differences:	N/A
Type of Modulation:	FM-CW
Frequency Range:	5725MHz-5875MHz
Hardware Version:	V1.0
Software Version:	V1.0
Antenna Gain:	5.42dBi
Antenna installation:	Internal Antenna

4.2 Details of E.U.T.

Ratings:	AC 120-277V, 50/60Hz
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5 Test Summary

Test Items	Test Requirement	Result
Maximum Permissible Exposure (Exposure of Humans to RF Fields)	1.1307(b)(1)	PASS

6 Test Facility

The test facility has a test site registered with the following organizations:

ISED CAB identifier: CN0013. Test Firm Registration No.: 7760A.

Waltek Testing Group Co., Ltd. Has been registered and fully described in a report filed with the Industry Canada. The acceptance letter from the Industry Canada is maintained in our files. Registration number 7760A, October 15, 2016.

FCC Designation No.: CN1201. Test Firm Registration No.: 523476.

Waltek Testing Group Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration number 523476, September 10, 2019.

7 RF Exposure

Test Requirement: FCC Part 1.1307

Test Mode: The EUT work in test mode(Tx).

7.1 Requirements

Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess limit for maximum permissible exposure. In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as a mobile device whereby a distance of 0.2 m normally can be maintained between the user and the device.

7.2 The procedures / limit

FCC Part 1.1307:

(A) Limits for Occupational / Controlled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842 / f	4.89 / f	(900 / f)*	6
30-300	61.4	0.163	1.0	6
300-1500			F/300	6
1500-100,000			5	6

(B) Limits for General Population / Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f)*	30
30-300	27.5	0.073	0.2	30
300-1500			F/1500	30
1500-100,000			1.0	30

Note: f = frequency in MHz ; *Plane-wave equivalent power density

7.3 MPE Calculation Method

$$E \text{ (V/m)} = \frac{\sqrt{30 \times P \times G}}{d} \quad \text{Power Density: } Pd \text{ (W/m}^2\text{)} = \frac{E^2}{377}$$

E = Electric field (V/m)

P = Peak RF output power (W)

G = EUT Antenna numeric gain (numeric)

d = Separation distance between radiator and human body (m)

The formula can be changed to

$$Pd = \frac{30 \times P \times G}{377 \times d^2}$$

From the peak EUT RF output power, the minimum mobile separation distance, $d=0.2\text{m}$, as well as the gain of the used antenna, the RF power density can be obtained

According to ANSI C63.10-2013 (9.5 Equations to calculate EIRP),

Calculate the EIRP from the radiated field strength in the far field using Equation (22):

$$\text{EIRP} = E_{\text{Meas}} + 20 \log(d_{\text{Meas}}) - 104.7 \quad (22)$$

where

EIRP is the equivalent isotropically radiated power, in dBm

E_{Meas} is the field strength of the emission at the measurement distance, in dBμV/m

d_{Meas} is the measurement distance, in m

NOTE—Because this equation yields the identical result whether the field strength is extrapolated using the default 20 dB/decade of distance extrapolation factor, or the field strength is not extrapolated for distance, this equation can generally be applied directly (with no further correction) to determine EIRP. In some cases, a different distance correction factor may be required; see 9.1.

$$\text{EIRP} = E_{\text{Meas}} + 20 \log(d_{\text{Meas}}) - 104.7$$

E_{Meas} is the field strength of the emission at the measurement distance, in dBμV/m.

d_{Meas} is the measurement distance, in m.

$$E_{\text{Meas}} = 84.12 \text{ dBμV/m}$$

$$d_{\text{Meas}} = 3 \text{ m}$$

$$\text{EIRP} = -11.04 \text{ dBm}$$

$$\text{Max peak output power} = \text{EIRP} - \text{Antenna Gain} = -11.04 \text{ dBm}$$

Antenna Gain (dBi)	Antenna Gain (numeric)	Max. Peak Output Power (dBm)	Peak Output Power (mW)	Power Density (mW/cm ²)	Limit of Power Density (mW/cm ²)
5.42	3.483	-11.04	0.08	0.000055	1

=====End of Report=====