TEST REPORT

Reference No......................	:	WTD23D10233341W002
FCC ID	:	2AZUC-MS033C
Applicant...........................	:	Shenzhen Mosentek Technology Co., Ltd.
Address.............................	:	5F, Building H, Block C, Dayangtian Industry Park, Shiwei Community, Matian Street, Guangming District, Shenzhen, P.R.China
Manufacturer	:	Shenzhen Mosentek Technology Co., Ltd.
Address.............................	:	5F, Building H, Block C, Dayangtian Industry Park, Shiwei Community, Matian Street, Guangming District, Shenzhen, P.R.China
Product..............................	:	Highbay 5.8GHz Microwave Motion Sensor
Model(s).	:	MS012HR-A, MS012HR-C, MS012HR-D, MSH012HR-A, MSH012HR-C, MSH012HR-D, MS033C, MS033D, MS033C-A, MS033C-D, MS026, MS027
Standards...........................	:	FCC 47CFR Part 2 Subpart J Section 2.1091
Date of Receipt sample	:	2023-11-23
Date of Test........................	:	2023-11-23 to 2023-11-30
Date of Issue......................	:	2023-12-01
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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Compiled by:

Approved by:

Will Tan / Project Engineer

Deval Qin / Designated Reviewer

2. Contents

3. Revision History

Test Report No.	Date of Receipt Sample	Date of Test	Date of Issue	Purpose	Comment	Approved
WTD23D10233341W002	2023-11-23	2023-11-23 to 2023-11-30	2023-12-01	Original	-	Valid

4. General Information

4.1. General Description of E.U.T.

Product:	Highbay 5.8GHz Microwave Motion Sensor
Model(s):	MS012HR-A, MS012HR-C, MS012HR-D, MSH012HR-A, MSH012HR-C, MSH012HR-D, MS033C, MS033D, MS033C-A, MS033C-D, MS026, MS027
Model difference:	Only the model and appearance are different are different for different market requirement. the test sample model name is MS033C.
Operation Frequency:	5.83GHz-5.87GHz
Hardware Version:	V1.0
Software Version:	V3.5

4.2. Details of E.U.T.

Operation Frequency:	5.83GHz-5.87GHz
Max. RF output power:	79.53dBuv/m
Modulation Technology:	Linear polarization
Antenna installation:	Internal permanent antenna
Antenna Gain:	1.7dBi

Note:

#: The antenna gain is provided by the applicant, and the applicant should be responsible for its authenticity, WALTEK lab has not verified the authenticity of its information.

Ratings:	11-15VDC, 22mA

4.3. 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.

4.4. Subcontracted

Whether parts of tests for the product have been subcontracted to other labs:

☐ Yes   ☒ No

If Yes, list the related test items and lab information:

Test Lab: N/A

Lab address: N/A

Test items: N/A

4.5. Abnormalities from Standard Conditions

None.

5. Test Summary

Test Items	Test Requirement	Result
Maximum Permissible Exposure (Exposure of Humans to RF Fields)	FCC Part 2.1091	PASS

6. RF Exposure

Test Requirement: FCC 47CFR Part 2 Subpart J Section 2.1091

Evaluation Method: FCC 47CFR Part 1 Subpart I Section 1.1310,

KDB 447498 D01 General RF Exposure Guidance v06

6.1.   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.

6.2. The procedures / limit

Table 1 to § 1.1310(e)(1) - Limits for Maximum Permissible Exposure (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm^2)	Averaging time (minutes)
(i) Limits for Occupational/Controlled Exposure				
0.3-3.0	614	1.63	*(100)	≤6
3.0-30	1842/f	4.89/f	*(900/f^2)	<6
30-300	61.4	0.163	1	<6
300-1,500			f/300	<6
1,500-100,000			5	<6
(ii) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*(100)	<30
1.34-30	824/f	2.19/f	*(180/f^2)	<30
30-300	27.5	0.073	0.2	<30
300-1,500			f/1500	<30
1,500-100,000			1	<30

f = frequency in MHz. * = Plane-wave equivalent power density.

6.3. MPE Calculation Method

$$S = \frac{P \times G}{4 \times \pi \times R^2}$$

S = power density (in appropriate units, e.g. mW/cm^2)
P = output power to the antenna (in appropriate units, e.g., mW).
G = power gain of the antenna in the direction of interest relative to an isotropic radiator,
       the power gain factor, is normally numeric gain.
R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

From the peak EUT RF output power, the minimum mobile separation distance, R=20cm,

as well as the gain of the used antenna, the RF power density can be obtained

6.4.   Radio Frequency Radiation Exposure Evaluation

According to ANSI C63.10:2013 clause 9.5

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

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

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.

Frequency(MHz)	E-Field Strength (dBuV/m)	Measurement Distance (m)	EIRP (dBm)
5858	79.53	3	-15.63

Frequency (MHz)	Antenna Gain (dBi)	Antenna Gain (numeric)	Max Power (dBm)	Max Power (mW)	Power Density (mW/cm^2)	Limit (mW/cm^2)
5858	1.7	1.48	-17.33	0.02	0.000005	1.0

Note:
1. EIRP (dBm)= Max Power (dBm) + G (dBi).
2. Chose the maximum power to do MPE analysis.

Conclusion:
RF Exposure is FCC compliant.

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

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