

# TEST REPORT

**Product Name** : Microwave Motion Sensor  
HD07VR-M, HD07VR-M-1, HD07VR-M-2,  
HD07VR-MH, HD07VR-MH-1, HD07VR-MH-2,  
**Model Number** : HD07VR-MHB, HD07VR-MHB-1,  
HD07VR-MHB-2, HD09VR-M, HD09VR-M-1,  
HD09VR-MH, HD09VR-MH-1, HD09VR-MHB,  
HD09VR-MHB-1  
**FCC ID** : 2BBZW-HDM013

**Prepared for** : Dongguan Haiyue Intelligent Technology Co., LTD  
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**Report Number** : ENS2305160098E00102R  
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## 1. TEST RESULT CERTIFICATION

Applicant : Dongguan Haiyue Intelligent Technology Co., LTD

Address : Room1305, Building1, Songhu Zhigu Industrial Building, No. 9 Liaobu South Yanhe Road, Liaobu Town, Dongguan City, Guangdong Province, China

Manufacturer : Dongguan Haiyue Intelligent Technology Co., LTD

Address : Room1305, Building1, Songhu Zhigu Industrial Building, No. 9 Liaobu South Yanhe Road, Liaobu Town, Dongguan City, Guangdong Province, China

EUT : Microwave Motion Sensor

Model Name : HD07VR-M, HD07VR-M-1, HD07VR-M-2, HD07VR-MH, HD07VR-MH-1, HD07VR-MH-2, HD07VR-MHB, HD07VR-MHB-1, HD07VR-MHB-2, HD09VR-M, HD09VR-M-1, HD09VR-MH, HD09VR-MH-1, HD09VR-MHB, HD09VR-MHB-1

Trademark : HAISEN

Measurement Procedure Used:

| APPLICABLE STANDARDS  |             |
|-----------------------|-------------|
| STANDARD              | TEST RESULT |
| § 15.247(i), § 2.1093 | PASS        |

The above equipment was tested by EMTEK(SHENZHEN) CO., LTD. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10 (2013) and the energy emitted by the sample EUT tested as described in this report is in compliance with the requirements of FCC Rules FCC § 15.247(i), § 2.1093.

The test results of this report relate only to the tested sample identified in this report

Date of Test : May 16, 2023 to July 04, 2023

*Una Yu*

Prepared by :

Una Yu /Editor

Reviewer :

*Joe Xia*  
Joe Xia/Supervisor

Approve & Authorized Signer :

*Lisa Wang*  
Lisa Wang/Manager



## Modified History

| Version | Report No.           | Revision Date | Summary         |
|---------|----------------------|---------------|-----------------|
|         | ENS2305160098E00102R | /             | Original Report |
|         |                      |               |                 |
|         |                      |               |                 |



## 2. EUT Specification

| Characteristics                       | Description                                                                                                                                                                                                                                                                                                                                                                    |
|---------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Product:</b>                       | Microwave Motion Sensor                                                                                                                                                                                                                                                                                                                                                        |
| <b>Model Number:</b>                  | HD07VR-M, HD07VR-M-1, HD07VR-M-2, HD07VR-MH, HD07VR-MH-1, HD07VR-MH-2, HD07VR-MHB, HD07VR-MHB-1, HD07VR-MHB-2, HD09VR-M, HD09VR-M-1, HD09VR-MH, HD09VR-MH-1, HD09VR-MHB, HD09VR-MHB-1<br>All models have the same RF module and antenna, PCB layout, schematics and components. Only the model and exterior color are different.<br>Here we selected HD07VR-M for all the test |
| <b>Sample:</b>                        | 1#                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Modulation:</b>                    | FMCW                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Operating Frequency Range(s) :</b> | 5725MHz-5875MHz                                                                                                                                                                                                                                                                                                                                                                |
| <b>Number of Channels:</b>            | 1 Channel                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Transmit Power Max:</b>            | 79.99 dBuV@3m                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Antenna Type:</b>                  | Patch antenna                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Antenna Gain:</b>                  | -0.37 dBi                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Power supply:</b>                  | DC 10.5-15V                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Evaluation applied:</b>            | <input type="checkbox"/> MPE Evaluation<br><input checked="" type="checkbox"/> SAR Evaluation                                                                                                                                                                                                                                                                                  |

### 3. Test Requirement

#### RF EXPOSURE EVALUATION

According to §15.247(i) and §1.1307(b)(1), 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 level in excess of the Commission's guidelines.

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at *test separation distances*  $\leq 50$  mm are determined by:

$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f_{\text{(GHz)}}}] \leq 3.0$  for 1-g SAR and  $\leq 7.5$  for 10-g extremity SAR,<sup>24</sup> where

- $f_{\text{(GHz)}}$  is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation<sup>25</sup>
- The result is rounded to one decimal place for comparison
- 3.0 and 7.5 are referred to as the numeric thresholds in the step 2 below

The test exclusions are applicable only when the minimum *test separation distance* is  $\leq 50$  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 according to 5) in section 4.1 is applied to determine SAR test exclusion.

Routine SAR evaluation refers to that specifically required by § 2.1093, using measurements or computer simulation. When routine SAR evaluation is not required, portable transmitters with output power greater than the applicable low threshold require SAR evaluation to qualify for TCB approval. One antenna is available for the EUT. The minimum separation distance is 5mm.

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):

$$\text{EIRP} = E + 20\log(d) - 104.7 \quad (22)$$

where

EIRP is the equivalent isotropically radiated power, in dBm

E is the field strength of the emission at the measurement distance, in dB $\mu$ V/m

d is the measurement distance, in m

## 4. Measurement Result

Antenna gain:-0.37 dBi

When a single module works, the measurement results are as follows:

5.8G

| Channel Freq.<br>(MHz) | Max Field<br>Strength<br>(dBuV/m) | peak output<br>power (dBm) | Tune<br>upPower<br>(dBm) | Max tune up<br>power(dBm) | Calculation Result | 1-g<br>SAR |
|------------------------|-----------------------------------|----------------------------|--------------------------|---------------------------|--------------------|------------|
| 5800                   | 79.99                             | -15.5376                   | -16±1                    | -15                       | 0.01523155         | 3          |

According to KDB 447498 D01, no stand-alone required for antenna, and no simultaneous SAR measurement is required.

\*\*\* End of Report \*\*\*