

FCC TEST REPORT  
for  
Aeon Labs LLC.

Aeon Door/Window Sensor  
Model No.: DSB04100-ZWUS

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Date of Report : Apr. 15, 2009

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APPENDIX I (Photos of EUT) (3 Page)

## TEST REPORT

Applicant : Aeon Labs LLC.  
Manufacturer : Aeon Labs LLC.  
EUT : Aeon Door/Window Sensor  
Model No. : DSB04100-ZWUS  
Serial No. : N/A  
Rating : DC 3V  
Trade Mark : N/A

## Measurement Procedure Used:

FCC Part15 Subpart C, Paragraph 15.249

The device described above is tested by Anbotek Compliance Laboratory Limited to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The measurement results are contained in this test report and Anbotek Compliance Laboratory Limited is assumed full of responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT (Equipment Under Test) is technically compliant with the FCC Part 15 Subpart C requirements.

This report applies to above tested sample only and shall not be reproduced in part without written approval of Anbotek Compliance Laboratory Limited

Date of Test :

Apr. 04~14, 2009



Prepared by :

(Engineer)



Reviewer :

(Project Manager)



Approved &amp; Authorized Signer :

(Manager)

## 1. GENERAL INFORMATION

### 1.1. Description of Device (EUT)

EUT : Aeon Door/Window Sensor  
Model Number : DSB04100-ZWUS  
Test Power Supply : DC 3V  
Frequency : 908.42MHz  
Antenna assembly : 1 dBi  
Gain  
Applicant : Aeon Labs LLC.  
Address : 121 Buckingham drive, unit36 santa claras CA95051 USA  
Manufacturer : Aeon Labs LLC.  
Address : 121 Buckingham drive, unit36 santa claras CA95051 USA  
Date of receiver : Apr. 03, 2009  
Date of Test : Apr. 04~14, 2009

## 1.2. Description of Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

### **CNAS - LAB Code: L3503**

Anbotech Compliance Laboratory Limited., Laboratory has been assessed and in compliance with CNAS/CL01: 2006 accreditation criteria for testing laboratories (identical to ISO/IEC 17025:2005 General Requirements) for the Competence of Testing Laboratories.

### **FCC-Registration No.: 607248**

Anbotech Compliance Laboratory Limited, 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 607248, November 12, 2008.

### **IC-Registration No.: 8058A**

Anbotech Compliance Laboratory Limited., EMC Laboratory has been registered and fully described in a report filed with the (IC) Industry Canada. The acceptance letter from the IC is maintained in our files. Registration 8058A, November 12, 2008.

### **Test Location**

All Emissions tests were performed at

Anbotech Compliance Laboratory Limited. at 2/F, Langfeng Building, Kefa Road North, Hi-tech Industrial Park, Nanshan District, Shenzhen 518057, China

## 1.3. Measurement Uncertainty

Radiation Uncertainty :  $Ur = \pm 4.26\text{dB}$

Conduction Uncertainty :  $Uc = \pm 2.66\text{dB}$

## 2. MEASURING DEVICE AND TEST EQUIPMENT

| Equipment                            | Manufacturer             | Model #   | Serial #   | Data of Cal. | Due Data     |
|--------------------------------------|--------------------------|-----------|------------|--------------|--------------|
| EMI Test Receiver                    | Rohde & Schwarz          | ESCI      | 100119     | Mar.03, 2009 | Mar.02, 2010 |
| EMI Test Receiver                    | Rohde & Schwarz          | ESPI      | 1101604    | Jun.21, 2008 | Jun.20, 2009 |
| EMI Test Receiver                    | Rohde & Schwarz          | ESIB26    | 100249     | Sep.22, 2008 | Sep.21, 2009 |
| Spectrum Analyzer                    | Agilent                  | E7405A    | MY45114970 | Jun.21, 2008 | Jun.20, 2009 |
| Signal Generator                     | Rohde & Schwarz          | SMR27     | 100124     | Jul.06, 2008 | Jul.25, 2010 |
| Signal Generator                     | Rohde & Schwarz          | SML03     | 102319     | Aug.01, 2008 | Aug.01, 2010 |
| AC Power Source                      | All Power Electronic Co. | APW-1100N | 890869     | N/A          | N/A          |
| Absorbing Clamp                      | Rohde & Schwarz          | MDS21     | 100218     | Apr.30, 2007 | Apr.29, 2009 |
| Power Meter                          | Rohde & Schwarz          | NRVD      | 101287     | Jul.19, 2007 | Jul.18, 2009 |
| Coaxial Cable                        | N/A                      | N/A       | N/A        | May.31, 2008 | May.30, 2009 |
| Coaxial Cable                        | N/A                      | N/A       | N/A        | May.31, 2008 | May.30, 2009 |
| Coaxial Cable                        | N/A                      | N/A       | N/A        | May.31, 2008 | May.30, 2009 |
| Universal radio Communication tester | Rohde & Schwarz          | CMU200    | 101724     | Sep.08, 2007 | Sep.07, 2009 |
| Pulse Limiter                        | Rohde & Schwarz          | ESH3-Z2   | N/A        | N/A          | N/A          |
| BiConilog Antenna                    | ETS-LINDGREN             | 3142C     | 00042670   | Mar.03, 2009 | Mar.02, 2010 |
| BiConilog Antenna                    | ETS-LINDGREN             | 3142C     | 00042673   | Mar.03, 2009 | Mar.02, 2010 |
| Double-ridged Waveguide horn         | ETS-LINDGREN             | 3117      | 00035926   | Dec.30, 2007 | Dec.29, 2009 |
| Double-ridged Waveguide horn         | ETS-LINDGREN             | 3117      | 00041545   | Dec.30, 2007 | Dec.29, 2009 |
| Pre-amplifier                        | CD                       | PAM0203   | 804203     | Jun.21, 2008 | Jun.20, 2009 |
| RF Switch                            | CD                       | RSU-M3    | 706543     | Jun.21, 2008 | Jun.20, 2009 |
| Thermo-/Hygrometer                   | N/A                      | TH01      | N/A        | May.03, 2008 | Mar.03, 2010 |
| Shielding Room                       | Zhong Yu Electron        | GB-88     | N/A        | N/A          | N/A          |
| 3m Semi-Anechoic Chamber             | ETS-LINDGREN             | N/A       | N/A        | Apr.28, 2007 | Apr.27, 2009 |

### 3. Test Procedure

**GENERAL:** This report shall NOT be reproduced except in full without the written approval of Anbotek Compliance Laboratory Limited. The EUT was transmitting a test signal during the testing.

**RADIATION INTERFERENCE:** The test procedure used was ANSI STANDARD C63.4-2003 using a spectrum analyzer with a pre-selector. The analyzer was calibrated in dB above a microvolt at the output of the antenna. The resolution bandwidth was 100KHz and the video bandwidth was 300KHz up to 1.0GHz and 1.0MHz with a video BW of 3.0MHz above 1.0GHz. The ambient temperature of the EUT was 74.3oF with a humidity of 69%.

**FORMULA OF CONVERSION FACTORS:** The Field Strength at 3m was established by adding the meter reading of the spectrum analyzer (which is set to read in units of dBuV) to the antenna correction factor supplied by the antenna manufacturer. The antenna correction factors are stated in terms of dB. The gain of the Preselector was accounted for in the Spectrum Analyzer Meter Reading.

**Example:**

Freq (MHz) METER READING + ACF = FS  
33 20 dBuV + 10.36 dB = 30.36 dBuV/m @ 3m

**ANSI STANDARD C63.4-2003 10.1.7 MEASUREMENT PROCEDURES:** The EUT was placed on a table 80 cm high and with dimensions of 1m by 1.5m. The EUT was placed in the center of the table (1.5m side). The table used for radiated measurements is capable of continuous rotation.

When an emission was found, the table was rotated to produce the maximum signal strength. At this point, the antenna was raised and lowered from 1m to 4m. The antenna was placed in both the horizontal and vertical planes.

## 4. Radiation Interference

### 4.1. Requirements (15.249, 15.209):

| FIELD STRENGTH<br>of Fundamental:<br>902-928 MHZ<br>2.4-2.4835 GHz<br>94 dB $\mu$ V/m @3m | FIELD STRENGTH<br>of Harmonics<br>54 dB $\mu$ V/m @3m | S15.209<br>30 - 88 MHz<br>88 - 216 MHz<br>216 - 960 MHz<br>ABOVE 960 MHz | 40 dB $\mu$ V/m @3M<br>43.5<br>46<br>54dB $\mu$ V/m |
|---|---|--|---|
|---|---|--|---|

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in 15.209, whichever is the lesser attenuation.

### 4.2 Test Results

PASS.

Please refer the following pages.

**Data:**

## Horizontal

| Frequency<br>MHz | Cable<br>Loss<br>dB | Ant<br>Factor<br>dB/m | Preamp<br>Factor<br>dB | Read<br>Level<br>dB $\mu$ V | Level<br>dB $\mu$ V/m | Limit<br>dB $\mu$ V/m | Over<br>Limit<br>dB |
|------------------|---------------------|-----------------------|------------------------|-----------------------------|-----------------------|-----------------------|---------------------|
| 908.410          | 3.00                | 21.11                 | 38.52                  | 76.21                       | 61.80                 | 94.0                  | -32.20              |
| 1,816.800        | 3.11                | 27.52                 | 39.21                  | 49.89                       | 41.31                 | 54.0                  | -12.69              |
| 2,725.210        | 3.11                | 32.16                 | 35.17                  | 28.64                       | 28.74                 | 54.0                  | -25.26              |
| 3,633.600        | 3.12                | 35.31                 | 35.01                  | 32.58                       | 36.00                 | 54.0                  | -18.00              |
| 4,542.020        | 3.13                | 36.40                 | 34.79                  | 26.99                       | 31.73                 | 54.0                  | -22.27              |
| 5,450.410        | 3.14                | 37.84                 | 34.52                  | 21.69                       | 28.15                 | 54.0                  | -25.85              |
| 6,358.880        | 3.14                | 38.65                 | 34.37                  | 19.71                       | 27.13                 | 54.0                  | -26.87              |
| 7,267.310        | 3.15                | 38.98                 | 34.04                  | 13.86                       | 21.95                 | 54.0                  | -32.05              |
| 8,175.720        | 3.15                | 39.32                 | 33.81                  | 13.45                       | 22.11                 | 54.0                  | -31.89              |
| 9,084.130        | 3.16                | 40.02                 | 33.58                  | 14.09                       | 23.69                 | 54.0                  | -30.31              |

## Vertical

| Frequency<br>MHz | Cable<br>Loss<br>dB | Ant<br>Factor<br>dB/m | Preamp<br>Factor<br>dB | Read<br>Level<br>dB $\mu$ V | Level<br>dB $\mu$ V/m | Limit<br>dB $\mu$ V/m | Over<br>Limit<br>dB |
|------------------|---------------------|-----------------------|------------------------|-----------------------------|-----------------------|-----------------------|---------------------|
| 908.410          | 3.00                | 21.11                 | 38.52                  | 77.58                       | 63.17                 | 94.0                  | -30.83              |
| 1,816.800        | 3.11                | 27.52                 | 39.21                  | 45.63                       | 37.05                 | 54.0                  | -16.95              |
| 2,725.210        | 3.11                | 32.16                 | 35.17                  | 35.21                       | 35.31                 | 54.0                  | -18.66              |
| 3,633.600        | 3.12                | 35.31                 | 35.01                  | 26.72                       | 30.14                 | 54.0                  | -23.86              |
| 4,542.020        | 3.13                | 36.40                 | 34.79                  | 25.18                       | 29.92                 | 54.0                  | -24.08              |
| 5,450.410        | 3.14                | 37.84                 | 34.52                  | 20.35                       | 26.81                 | 54.0                  | -27.19              |
| 6,358.880        | 3.14                | 38.65                 | 34.37                  | 18.91                       | 26.33                 | 54.0                  | -27.67              |
| 7,267.310        | 3.15                | 38.98                 | 34.04                  | 13.55                       | 21.64                 | 54.0                  | -32.36              |
| 8,175.720        | 3.15                | 39.32                 | 33.81                  | 13.01                       | 21.67                 | 54.0                  | -32.33              |
| 9,084.130        | 3.16                | 40.02                 | 33.58                  | 12.54                       | 22.14                 | 54.0                  | -31.86              |

**Emissions attenuated more than 20 dB below the permissible value are not reported.**

## 5. Occupied Bandwidth

### 5.1. Requirements (15.249):

The field strength of any emissions appearing outside the band edges and up to 10 kHz above and below the band edges shall be attenuated at least 50 dB below the level of the carrier or to the general limits of 15.249.

### 5.2 Test Results

Pass.

Please refer the following plot.

FCC ID: XBA20090416

