



**SGS-CSTC Standards Technical Services Co., Ltd.  
Shenzhen Branch**

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Report No.: SZEM161201083902  
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## RF Exposure Evaluation Report

**Application No:** SZEM1612010839CR  
**Applicant:** Develco Products A/S  
**Manufacturer:** Develco Products A/S  
**Factory:** EDA Electronics Co. Ltd.  
**EUT Name:** ZigBee Humidity Sensor  
**Model No.:** HMSZB-110  
**Trade mark:** Develco Products  
**FCC ID:** 2AHNM-HMSZB110  
**Standards:** 47 CFR Part 1.1307 (2015)  
47 CFR Part 1.1310 (2015)  
**Date of Receipt:** 2016-12-20  
**Date of Test:** 2016-12-20 to 2016-12-27  
**Date of Issue:** 2016-12-28

|                      |              |
|----------------------|--------------|
| <b>Test Result :</b> | <b>PASS*</b> |
|----------------------|--------------|

\* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:



Jack Zhang  
EMC Laboratory Manager

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government. All test results in this report can be traceable to National or International Standards.

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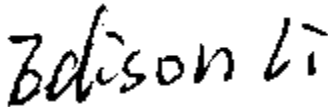


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**2 Version**

| Revision Record |         |            |          |          |
|-----------------|---------|------------|----------|----------|
| Version         | Chapter | Date       | Modifier | Remark   |
| 00              |         | 2016-12-28 |          | Original |
|                 |         |            |          |          |
|                 |         |            |          |          |

|                   |  |                                                                                     |  |             |
|-------------------|--|-------------------------------------------------------------------------------------|--|-------------|
|                   |  |                                                                                     |  |             |
|                   |  |  |  |             |
|                   |  |                                                                                     |  | 2016-12-27  |
| <b>Tested By</b>  |  | (Edison Li) /Project Engineer                                                       |  | <b>Date</b> |
|                   |  |  |  |             |
|                   |  |                                                                                     |  | 2016-12-28  |
| <b>Checked By</b> |  | (Eric Fu) /Reviewer                                                                 |  | <b>Date</b> |



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## **4 General Information**

### **4.1 Client Information**

|                          |                                                                  |
|--------------------------|------------------------------------------------------------------|
| Applicant:               | Develco Products A/S                                             |
| Address of Applicant:    | Olof Palmes Alle 40, 8200 Aarhus N, Denmark.                     |
| Manufacturer:            | Develco Products A/S                                             |
| Address of Manufacturer: | Oluf Palmes alle 40, 8200 Aarhus N, Denmark                      |
| Factory:                 | EDA Electronics Co. Ltd.                                         |
| Address of Factory:      | Shui Wei Industrial Zone, TangJiao, Chashan Town, DongGuan City, |

### **4.2 General Description of EUT**

|                     |                                          |
|---------------------|------------------------------------------|
| Product Name:       | ZigBee Humidity Sensor                   |
| Model No.:          | HMSZB-110                                |
| Trade Mark:         | Develco Products                         |
| Frequency Range:    | 2405-2480MHz                             |
| Modulation Type:    | QPSK                                     |
| Channel Numbers:    | 16 Channels                              |
| Channel Separation: | 5MHz                                     |
| Antenna Type:       | Integral                                 |
| Antenna Gain:       | 1dBi                                     |
| Battery:            | 3.0V DC ( 1.5V x 2 "AA" Size Batteries ) |



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### 4.3 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch

No. 1 Workshop, M-10, Middle section, Science & Technology Park, Shenzhen, Guangdong, China  
518057

Telephone: +86 (0) 755 2601 2053 Fax: +86 (0) 755 2671 0594

No tests were sub-contracted.

### 4.4 Test Facility

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

- **CNAS (No. CNAS L2929)**

CNAS has accredited SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC

Lab to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

- **A2LA (Certificate No. 3816.01)**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 3816.01.

- **VCCI**

The 10m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-823, R-4188, T-1153 and C-2383 respectively.

- **FCC – Registration No.: 556682**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen 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 No.: 556682.

- **Industry Canada (IC)**

Two 3m Semi-anechoic chambers and the 10m Semi-anechoic chamber of SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab have been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 4620C-1, 4620C-2, 4620C-3.



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**4.5 Deviation from Standards**

None.

**4.6 Abnormalities from Standard Conditions**

None.

**4.7 Other Information Requested by the Customer**

None.



## 5 RF Exposure Evaluation

### 5.1 RF Exposure Compliance Requirement

#### 5.1.1 Limits

According to FCC Part1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in part1.1307(b)

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

| Frequency range<br>(MHz)                                       | Electric field<br>strength<br>(V/m) | Magnetic field<br>strength<br>(A/m) | Power density<br>(mW/cm <sup>2</sup> ) | Averaging time<br>(minutes) |
|----------------------------------------------------------------|-------------------------------------|-------------------------------------|----------------------------------------|-----------------------------|
| <b>(A) Limits for Occupational/Controlled Exposures</b>        |                                     |                                     |                                        |                             |
| 0.3–3.0 .....                                                  | 614                                 | 1.63                                | *(100)                                 | 6                           |
| 3.0–30 .....                                                   | 1842/f                              | 4.89/f                              | *(900/f <sup>2</sup> )                 | 6                           |
| 30–300 .....                                                   | 61.4                                | 0.163                               | 1.0                                    | 6                           |
| 300–1500 .....                                                 | .....                               | .....                               | f/300                                  | 6                           |
| 1500–100,000 .....                                             | .....                               | .....                               | 5                                      | 6                           |
| <b>(B) Limits for General Population/Uncontrolled Exposure</b> |                                     |                                     |                                        |                             |
| 0.3–1.34 .....                                                 | 614                                 | 1.63                                | *(100)                                 | 30                          |
| 1.34–30 .....                                                  | 824/f                               | 2.19/f                              | *(180/f <sup>2</sup> )                 | 30                          |
| 30–300 .....                                                   | 27.5                                | 0.073                               | 0.2                                    | 30                          |
| 300–1500 .....                                                 | .....                               | .....                               | f/1500                                 | 30                          |
| 1500–100,000 .....                                             | .....                               | .....                               | 1.0                                    | 30                          |

F= Frequency in MHz

Friis Formula

Friis transmission formula:  $P_d = (P_{out} * G) / (4 * \pi * R^2)$

Where

$P_d$  = power density in mW/cm<sup>2</sup>

$P_{out}$  = output power to antenna in mW

G = gain of antenna in linear scale

$\pi$  = 3.1416

R = distance between observation point and center of the radiator in cm

$P_d$  is the limit of MPE, 1 mW/cm<sup>2</sup>. If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance r where the MPE limit is reached.

#### 5.1.2 Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.



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#### **4.1.3 EUT RF Exposure Evaluation**

Antenna Gain: 1dBi

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 1.26 in linear scale.

Output Power Into Antenna & RF Exposure Evaluation Distance:

| Channel | Frequency<br>(MHz) | Max Conducted<br>Peak Output<br>Power (dBm) | Output Power<br>to Antenna<br>(mW) | Power Density<br>at R = 20 cm<br>(mW/cm <sup>2</sup> ) | Limit | Result |
|---------|--------------------|---------------------------------------------|------------------------------------|--------------------------------------------------------|-------|--------|
| Highest | 2480               | 1.31                                        | 1.35                               | 0.0003                                                 | 1.0   | PASS   |

Note: Refer to report No. SZEM161201083901 for EUT test Max Conducted Peak Output Power value.

The distance r (4th column) calculated from the Fries transmission formula is far greater than 20 cm separation requirement.