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Shenzhen Branch**

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Report No.: SZEM181100965601  
Page: 1 of 15

## **TEST REPORT**

**Application No.:** SZEM1811009656CR  
**Applicant:** Soprod SA  
**Address of Applicant:** Soprod SA Rue de la Blancherie 63 1950 Sion Switzerland  
**Manufacturer:** Soprod SA  
**Address of Manufacturer:** Soprod SA Rue de la Blancherie 63 1950 Sion Switzerland  
**Factory:** Customer Service & Information Ltd.  
**Address of Factory:** Suite A & B, 16/F, Kam Wing Commercial Building, 28 Minden Avenue,  
Tsim Sha Tsui, Kowloon, Hong Kong

**Equipment Under Test (EUT):**

**EUT Name:** Wireless Charger  
**Model No.:** 601302  
**Trade mark:** FESTINA  
**FCC ID:** 2AMGUFST601302  
**Standard(s) :** 47 CFR Part 18  
**Date of Receipt:** 2018-11-12  
**Date of Test:** 2018-11-13 to 2018-11-22  
**Date of Issue:** 2018-11-26

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

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



Keny Xu  
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.

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| Revision Record |         |            |          |          |
|-----------------|---------|------------|----------|----------|
| Version         | Chapter | Date       | Modifier | Remark   |
| 01              |         | 2018-11-26 |          | Original |
|                 |         |            |          |          |
|                 |         |            |          |          |

|                          |  |                                                                                     |  |  |
|--------------------------|--|-------------------------------------------------------------------------------------|--|--|
| Authorized for issue by: |  |                                                                                     |  |  |
|                          |  |    |  |  |
|                          |  | <hr/>                                                                               |  |  |
|                          |  | Powell Bao /Project Engineer                                                        |  |  |
|                          |  |  |  |  |
|                          |  | <hr/>                                                                               |  |  |
|                          |  | Eric Fu /Reviewer                                                                   |  |  |



## 2 Test Summary

| Radio Spectrum Matter Part |                |          |             |        |
|----------------------------|----------------|----------|-------------|--------|
| Item                       | Standard       | Method   | Requirement | Result |
| Conducted disturbance      | 47 CFR Part 18 | FCC MP-5 | Part 18.307 | Pass   |
| Radiated emission          | 47 CFR Part 18 | FCC MP-5 | Part 18.305 | Pass   |



### 3 Contents

|                                                   | Page |
|---------------------------------------------------|------|
| 1 COVER PAGE .....                                | 1    |
| 2 TEST SUMMARY .....                              | 3    |
| 3 CONTENTS .....                                  | 4    |
| 4 GENERAL INFORMATION .....                       | 5    |
| 4.1 DETAILS OF E.U.T. ....                        | 5    |
| 4.2 DESCRIPTION OF SUPPORT UNITS .....            | 5    |
| 4.3 MEASUREMENT UNCERTAINTY .....                 | 5    |
| 4.4 TEST LOCATION .....                           | 6    |
| 4.5 TEST FACILITY .....                           | 6    |
| 4.6 DEVIATION FROM STANDARDS .....                | 6    |
| 4.7 ABNORMALITIES FROM STANDARD CONDITIONS .....  | 6    |
| 5 EQUIPMENT LIST .....                            | 7    |
| 6 RADIO SPECTRUM MATTER TEST RESULTS .....        | 8    |
| 6.1 CONDUCTED DISTURBANCE .....                   | 8    |
| 6.1.1 E.U.T. Operation .....                      | 8    |
| 6.1.2 Test Setup Diagram .....                    | 8    |
| 6.1.3 Measurement Procedure and Data .....        | 8    |
| 6.2 RADIATED EMISSION .....                       | 11   |
| 6.2.1 E.U.T. Operation .....                      | 12   |
| 6.2.2 Test Setup Diagram .....                    | 12   |
| 6.2.3 Measurement Procedure and Data .....        | 12   |
| 7 PHOTOGRAPHS .....                               | 15   |
| 7.1 TEST SETUP .....                              | 15   |
| 7.2 EUT CONSTRUCTIONAL DETAILS (EUT PHOTOS) ..... | 15   |

## 4 General Information

### 4.1 Details of E.U.T.

|                      |                                                                                                                                                          |
|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Power supply:        | Input: DC5V 2A<br>Output: DC5V 1A                                                                                                                        |
| Cable:               | Micro USB cable(Unshielded, 124cm)                                                                                                                       |
| Operation frequency: | 121.15-179.65 kHz                                                                                                                                        |
| Modulation type:     | Load Modulation                                                                                                                                          |
| Antenna type:        | Inductive Loop Coil Antenna                                                                                                                              |
| Remark:              | This device has been tested the worst status of full load and the device has been tested with load at zero charge, intermediate charge, and full charge. |

### 4.2 Description of Support Units

| Description | Manufacturer                   | Model No.      | Serial No.      |
|-------------|--------------------------------|----------------|-----------------|
| Adapter     | Apple                          | A1357 W010A051 | REF. No.SEA0500 |
| smart wrist | Motorola<br>provided by client | Moto 360       | N/A             |

### 4.3 Measurement Uncertainty

| No. | Item                            | Measurement Uncertainty         |
|-----|---------------------------------|---------------------------------|
| 1   | Radio Frequency                 | $\pm 7.25 \times 10^{-8}$       |
| 2   | Duty cycle                      | $\pm 0.37\%$                    |
| 3   | Occupied Bandwidth              | $\pm 3\%$                       |
| 4   | RF conducted power              | $\pm 0.75\text{dB}$             |
| 5   | RF power density                | $\pm 2.84\text{dB}$             |
| 6   | Conducted Spurious emissions    | $\pm 0.75\text{dB}$             |
| 7   | RF Radiated power               | $\pm 4.5\text{dB}$ (below 1GHz) |
|     |                                 | $\pm 4.8\text{dB}$ (above 1GHz) |
| 8   | Radiated Spurious emission test | $\pm 4.5\text{dB}$ (Below 1GHz) |
|     |                                 | $\pm 4.8\text{dB}$ (Above 1GHz) |
| 9   | Temperature test                | $\pm 1^\circ\text{C}$           |
| 10  | Humidity test                   | $\pm 3\%$                       |
| 11  | Supply voltages                 | $\pm 1.5\%$                     |
| 12  | Time                            | $\pm 3\%$                       |



#### **4.4 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.

Tel: +86 755 2601 2053 Fax: +86 755 2671 0594

No tests were sub-contracted.

#### **4.5 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 3m Fully-anechoic chamber for above 1GHz, 10m Semi-anechoic chamber for below 1GHz, Shielded Room for Mains Port Conducted Interference Measurement and Telecommunication Port Conducted Interference Measurement of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-20026, R-14188, C-12383 and T-11153 respectively.

- **FCC –Designation Number: CN1178**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized as an accredited testing laboratory.

Designation Number: CN1178. Test Firm Registration Number: 406779.

- **Innovation, Science and Economic Development Canada**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized by ISED as an accredited testing laboratory.

CAB identifier: CN0006.

IC#: 4620C.

#### **4.6 Deviation from Standards**

None

#### **4.7 Abnormalities from Standard Conditions**

None



## 5 Equipment List

| Conducted disturbance |                   |               |              |            |              |
|-----------------------|-------------------|---------------|--------------|------------|--------------|
| Equipment             | Manufacturer      | Model No      | Inventory No | Cal Date   | Cal Due Date |
| Shielding Room        | ChangZhou ZhongYu | GB-88         | SEM001-06    | 2017-05-10 | 2020-05-09   |
| Measurement Software  | AUDIX             | e3 V5.4.1221d | N/A          | N/A        | N/A          |
| Coaxial Cable         | SGS               | N/A           | SEM024-01    | 2018-07-12 | 2019-07-11   |
| LISN                  | Rohde & Schwarz   | ENV216        | SEM007-01    | 2018-09-25 | 2019-09-24   |
| LISN                  | ETS-LINDGREN      | 3816/2        | SEM007-02    | 2018-04-02 | 2019-04-01   |
| EMI Test Receiver     | Rohde & Schwarz   | ESCI          | SEM004-02    | 2018-04-02 | 2019-04-01   |

| Radiated emission                     |                      |                 |              |            |              |
|---------------------------------------|----------------------|-----------------|--------------|------------|--------------|
| Equipment                             | Manufacturer         | Model No        | Inventory No | Cal Date   | Cal Due Date |
| 10m Semi-Anechoic Chamber             | SAEMC                | FSAC1018        | SEM001-03    | 2018-03-31 | 2021-03-30   |
| Measurement Software                  | AUDIX                | e3 V8.2014-6-27 | N/A          | N/A        | N/A          |
| Coaxial Cable                         | SGS                  | N/A             | SEM029-01    | 2018-07-12 | 2019-07-11   |
| EMI Test Receiver (9kHz-7GHz)         | Rohde & Schwarz      | ESR             | SEM004-03    | 2018-04-02 | 2019-04-01   |
| Trilog-Broadband Antenna (25MHz-2GHz) | Schwarzbeck          | VULB9168        | SEM003-18    | 2016-01-26 | 2019-01-25   |
| Pre-amplifier                         | Sonoma Instrument Co | 310N            | SEM005-04    | 2018-04-13 | 2019-04-12   |
| Active Loop Antenna                   | ETS-Lindgren         | 6502            | SEM003-08    | 2017-08-22 | 2020-08-21   |

| General used equipment          |                                           |          |              |            |              |
|---------------------------------|-------------------------------------------|----------|--------------|------------|--------------|
| Equipment                       | Manufacturer                              | Model No | Inventory No | Cal Date   | Cal Due Date |
| Humidity/ Temperature Indicator | Shanghai Meteorological Industry Factory  | ZJ1-2B   | SEM002-03    | 2018-09-27 | 2019-09-26   |
| Humidity/ Temperature Indicator | Shanghai Meteorological Industry Factory  | ZJ1-2B   | SEM002-04    | 2018-09-27 | 2019-09-26   |
| Humidity/ Temperature Indicator | Mingle                                    | N/A      | SEM002-08    | 2018-09-27 | 2019-09-26   |
| Barometer                       | Changchun Meteorological Industry Factory | DYM3     | SEM002-01    | 2018-04-08 | 2019-04-07   |

## 6 Radio Spectrum Matter Test Results

### 6.1 Conducted disturbance

Test Requirement Part 18.307  
 Test Method: FCC MP-5  
 Limit:

| Frequency of emission (MHz) | Conducted limit (dBμV) |           |
|-----------------------------|------------------------|-----------|
|                             | Quasi-peak             | Average   |
| 0.15-0.5                    | 66 to 56*              | 56 to 46* |
| 0.5-5                       | 56                     | 46        |
| 5-30                        | 60                     | 50        |

\*Decreases with the logarithm of the frequency.

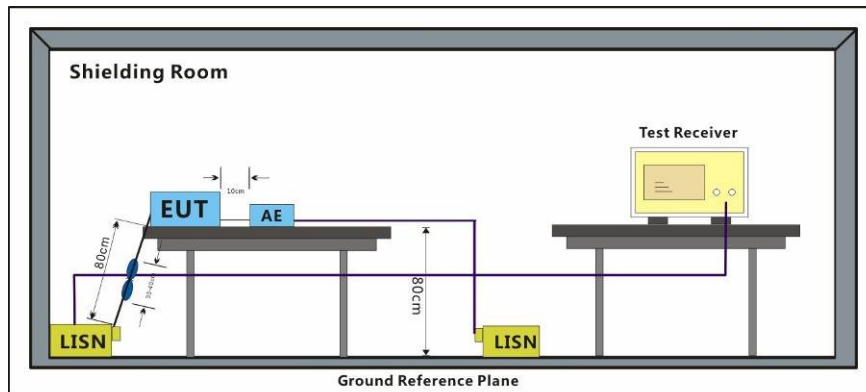
#### 6.1.1 E.U.T. Operation

Operating Environment:

Temperature: 21.5 °C Humidity: 55 % RH Atmospheric Pressure: 1015 mbar

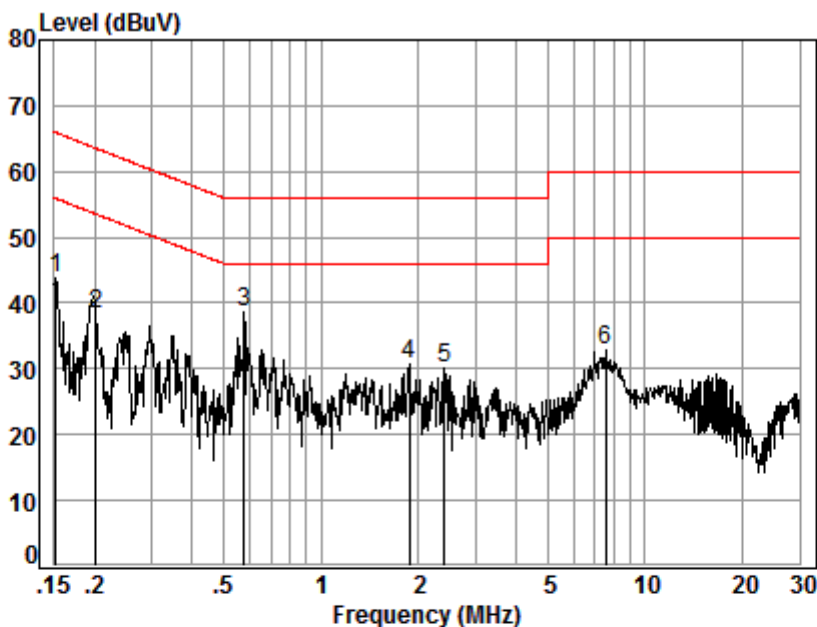
Test mode a:Charge mode\_Keep the EUT charging

#### 6.1.2 Test Setup Diagram



#### 6.1.3 Measurement Procedure and Data

Mode:a; Line:Live Line



Site : Shielding Room

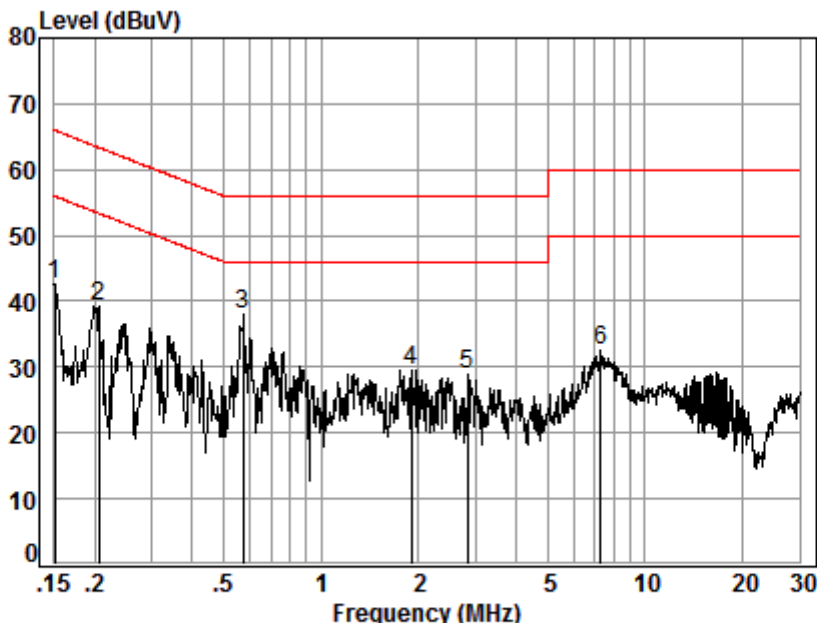
Condition: Line

Job No. : 09656CR

Test mode: a

|   | Freq | Cable Loss | LISN Factor | Read Level | Level | Limit Line | Over Limit | Remark |
|---|------|------------|-------------|------------|-------|------------|------------|--------|
|   | MHz  | dB         | dB          | dBuV       | dBuV  | dBuV       | dB         |        |
| 1 | 0.15 | 0.01       | 9.66        | 34.20      | 43.87 | 55.91      | -12.04     | Peak   |
| 2 | 0.20 | 0.02       | 9.66        | 28.75      | 38.43 | 53.54      | -15.11     | Peak   |
| 3 | 0.58 | 0.07       | 9.67        | 28.96      | 38.70 | 46.00      | -7.30      | Peak   |
| 4 | 1.87 | 0.15       | 9.72        | 20.79      | 30.66 | 46.00      | -15.34     | Peak   |
| 5 | 2.41 | 0.16       | 9.71        | 20.28      | 30.15 | 46.00      | -15.85     | Peak   |
| 6 | 7.57 | 0.17       | 9.80        | 22.81      | 32.78 | 50.00      | -17.22     | Peak   |

Mode:a; Line:Neutral Line



Site : Shielding Room

Condition: Neutral

Job No. : 09656CR

Test mode: a

|   | Freq | Cable Loss | LISN Factor | Read Level | Level | Limit Line | Over Limit | Remark |
|---|------|------------|-------------|------------|-------|------------|------------|--------|
|   | MHz  | dB         | dB          | dBuV       | dBuV  | dBuV       | dB         |        |
| 1 | 0.15 | 0.01       | 9.63        | 32.94      | 42.58 | 55.96      | -13.38     | Peak   |
| 2 | 0.21 | 0.02       | 9.64        | 29.55      | 39.21 | 53.36      | -14.15     | Peak   |
| 3 | 0.58 | 0.07       | 9.64        | 28.34      | 38.05 | 46.00      | -7.95      | Peak   |
| 4 | 1.90 | 0.15       | 9.69        | 19.77      | 29.61 | 46.00      | -16.39     | Peak   |
| 5 | 2.84 | 0.16       | 9.68        | 18.91      | 28.75 | 46.00      | -17.25     | Peak   |
| 6 | 7.29 | 0.17       | 9.77        | 22.48      | 32.42 | 50.00      | -17.58     | Peak   |

## 6.2 Radiated emission

Test Requirement Part 18.305

Test Method: FCC MP-5

Measurement Distance: 3m

Limit:

(b) The field strength levels of emissions which lie outside the bands specified in §18.301, unless otherwise indicated, shall not exceed the following:

| Equipment                                           | Operating frequency                      | RF Power generated by equipment (watts) | Field strength limit (uV/m)                                                         | Distance (meters)         |
|-----------------------------------------------------|------------------------------------------|-----------------------------------------|-------------------------------------------------------------------------------------|---------------------------|
| Any type unless otherwise specified (miscellaneous) | Any ISM frequency                        | Below 500<br>500 or more                | 25<br>$25 \times \text{SQRT}(\text{power}/500)$                                     | 300<br><sup>1</sup> 300   |
|                                                     | Any non-ISM frequency                    | Below 500<br>500 or more                | 15<br>$15 \times \text{SQRT}(\text{power}/500)$                                     | 300<br><sup>1</sup> 300   |
| Industrial heaters and RF stabilized arc welders    | On or below 5,725 MHz<br>Above 5,725 MHz | Any<br>Any                              | 10<br>( <sup>2</sup> )                                                              | 1,600<br>( <sup>2</sup> ) |
| Medical diathermy                                   | Any ISM frequency                        | Any                                     | 25                                                                                  | 300                       |
|                                                     | Any non-ISM frequency                    | Any                                     | 15                                                                                  | 300                       |
| Ultrasonic                                          | Below 490 kHz                            | Below 500<br>500 or more                | $2,400/F(\text{kHz})$<br>$2,400/F(\text{kHz}) \times \text{SQRT}(\text{power}/500)$ | 300<br><sup>3</sup> 300   |
|                                                     | 490 to 1,600 kHz                         | Any                                     | $24,000/F(\text{kHz})$                                                              | 30                        |
|                                                     | Above 1,600 kHz                          | Any                                     | 15                                                                                  | 30                        |
| Induction cooking ranges                            | Below 90 kHz                             | Any                                     | 1,500                                                                               | <sup>4</sup> 30           |
|                                                     | On or above 90 kHz                       | Any                                     | 300                                                                                 | <sup>4</sup> 30           |

<sup>1</sup>Field strength may not exceed 10 µV/m at 1600 meters. Consumer equipment operating below 1000 MHz is not permitted the increase in field strength otherwise permitted here for power over 500 watts.

<sup>2</sup>Reduced to the greatest extent possible.

<sup>3</sup>Field strength may not exceed 10 µV/m at 1600 meters. Consumer equipment is not permitted the increase in field strength otherwise permitted here for over 500 watts.

<sup>4</sup>Induction cooking ranges manufactured prior to February 1, 1980, shall be subject to the field strength limits for miscellaneous ISM equipment.

Remark:

1 This product belongs to non-ISM equipment, the field strength limit is 15uV/m at 300 meter distance.

2 Limit:  $20\log(15\text{uV/m}) + 20\log(300/3) = 23.52 + 40 = 63.52\text{dBuV/m}$  at 3 meters distance

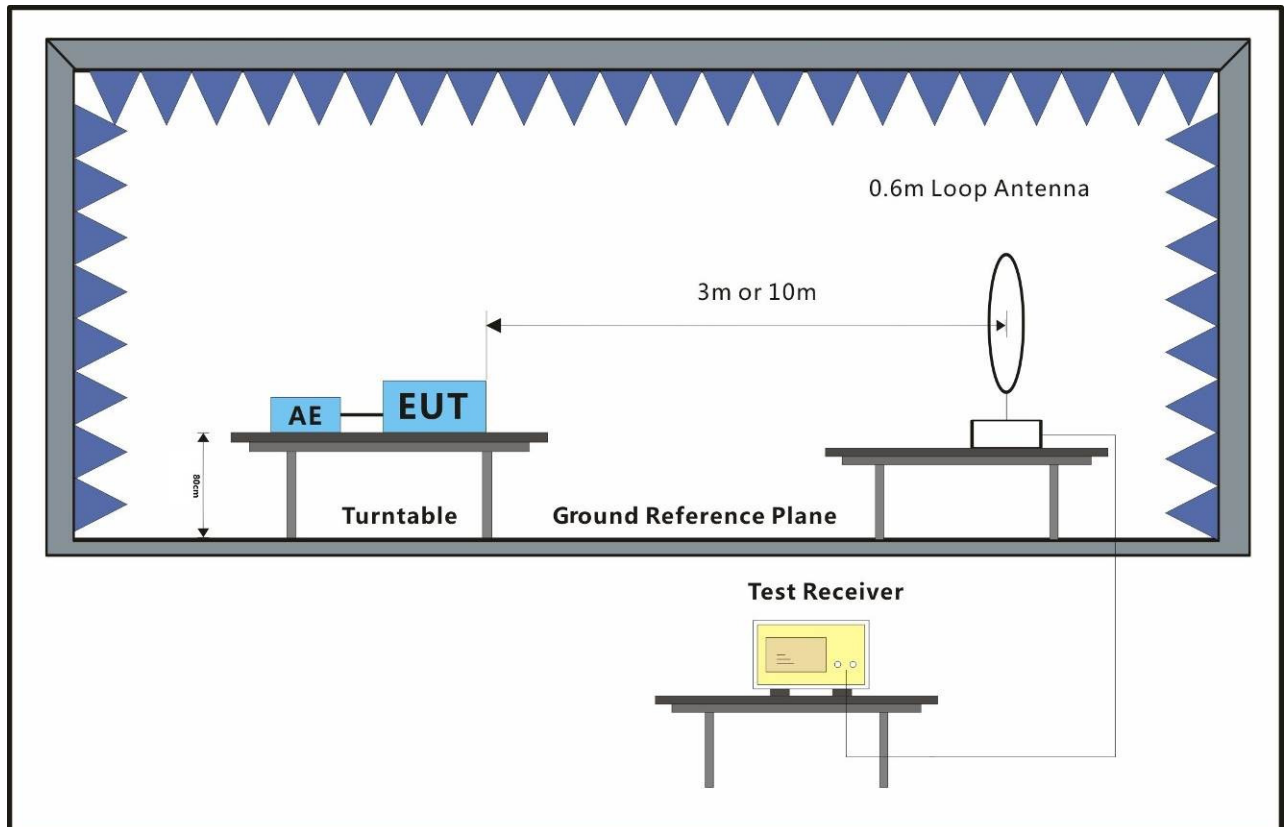
### 6.2.1 E.U.T. Operation

Operating Environment:

Temperature: 25 °C Humidity: 51 % RH Atmospheric Pressure: 1015 mbar

Test mode a: Charge mode\_Keep the EUT charging

### 6.2.2 Test Setup Diagram

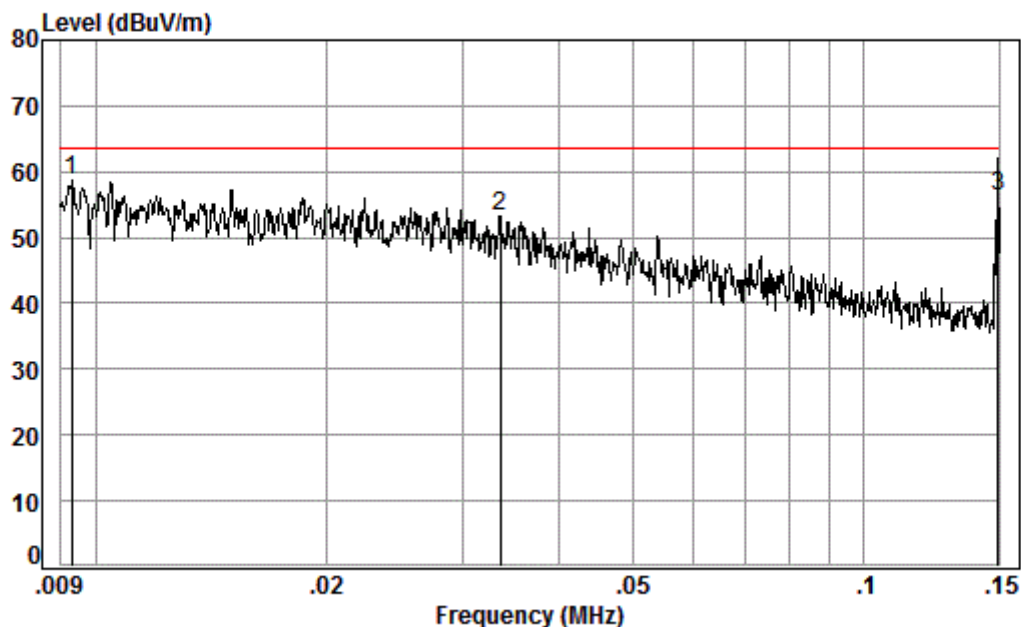


### 6.2.3 Measurement Procedure and Data



Mode a:

9kHz-150kHz



Condition: 3m

Job No. : 09656CR

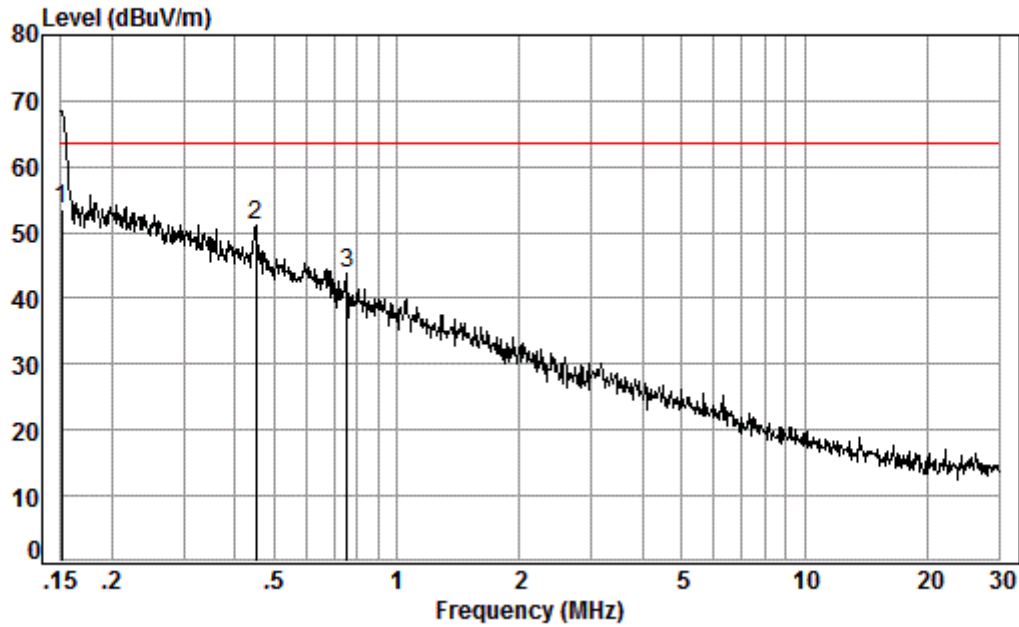
Test Mode: a

|      | Freq | Cable | Ant    | Preamp | Read  | Limit  | Over   |               |
|------|------|-------|--------|--------|-------|--------|--------|---------------|
|      | MHz  | Loss  | Factor | Factor | Level | Line   | Limit  | Remark        |
|      | MHz  | dB    | dB/m   | dB     | dBuV  | dBuV/m | dBuV/m | dB            |
| 1 pp | 0.01 | 0.30  | 19.78  | 31.17  | 69.65 | 58.56  | 63.52  | -4.96 Peak    |
| 2    | 0.03 | 0.16  | 13.53  | 32.07  | 71.72 | 53.34  | 63.52  | -10.18 Peak   |
| 3    | 0.15 | 0.07  | 11.70  | 32.67  | 77.09 | 56.19  | 63.52  | -7.33 Average |



Mode a:

150kHz-30MHz



Condition: 3m

Job No. : 09656CR

Test Mode: a

|      | Freq | Cable Loss | Ant Factor | Preamp Factor | Read Level | Level  | Limit  | Over Limit | Remark |
|------|------|------------|------------|---------------|------------|--------|--------|------------|--------|
|      | MHz  | dB         | dB/m       | dB            | dBuV       | dBuV/m | dBuV/m | dB         |        |
| 1 pp | 0.15 | 0.07       | 11.70      | 32.67         | 74.53      | 53.63  | 63.52  | -9.89      | Peak   |
| 2    | 0.45 | 0.11       | 11.74      | 32.66         | 71.97      | 51.16  | 63.52  | -12.36     | Peak   |
| 3    | 0.75 | 0.18       | 12.00      | 32.65         | 64.41      | 43.94  | 63.52  | -19.58     | Peak   |



## **7 Photographs**

### **7.1 Test Setup**

Please refer to setup photos.

### **7.2 EUT Constructional Details (EUT Photos)**

Please refer to external and internal photos for details.

- End of the Report -