



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

No. 1 Workshop, M-10, Middle Section, Science & Technology Park, Nanshan  
District Shenzhen, China 518057

Telephone: +86 (0) 755 2601 2053  
Fax: +86 (0) 755 2671 0594  
Email: ee.shenzhen@sgs.com

Report No.: SZEM150800484101  
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## **TEST REPORT**

**Application No.:** SZEM1508004841CR  
**Applicant/ Manufacturer:** Grohe AG  
**Address of Applicant/ Manufacturer:** Industriepark Edelburg 58675 Hemer Germany  
**Factory:** Arts Electronics Co., Ltd.  
**Address of Factory:** NO.1, SHANGXING LU, SHANGJIAO COMMUNITY, CHANGAN TOWN, DONGGUAN CITY, GUANGDONG PROVINCE, CHINA  
**Equipment Under Test (EUT):**  
**EUT Name:** Wireless shower speaker  
**Model No.:** 26326L00, GS32G/37 ♣  
♣ Please refer to section 2 of this report which indicates which model was actually tested and which were electrically identical.  
**Trade Mark:** Grohe  
**FCC ID:** WFK26326  
**Standards:** 47 CFR PART 18: 2014  
**Date of Receipt:** 2015-08-05  
**Date of Test:** 2015-08-12 to 2015-08-28  
**Date of Issue:** 2015-10-10

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

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



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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## 2 Test Summary

| Item                                                        | Standard             | Method            | Class / Severity | Result |
|-------------------------------------------------------------|----------------------|-------------------|------------------|--------|
| Conducted Disturbance at Mains Terminals (150kHz-30MHz)     | 47 CFR PART 18: 2014 | FCC OST/MP-5:1986 | 18.307(b)        | Pass   |
| Radiated Disturbance (Magnetic field Strength) (9kHz-30MHz) | 47 CFR PART 18: 2014 | FCC OST/MP-5:1986 | 18.305(b)        | Pass   |

### Remark :

Model No.: 26326L00, GS32G/37

Only the model 26326L00 was tested, since the electrical circuit design, layout, components used, internal wiring and functions were identical for the above models, with only different on model No.



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## **4 General Information**

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

Power Supply:                      Input voltage: AC 120V 60Hz 0.15A  
                                            Test voltage: AC 120V 60Hz  
Cable:                                AC cable: 200cm unshielded

### **4.2 Description of Support Units**

| Description                   | Manufacturer | Model No. |
|-------------------------------|--------------|-----------|
| Main unit (Bluetooth speaker) | Philips      | 26270LV0  |



### 4.3 Standards Applicable for Testing

**Table 1 : Tests Carried Out Under 47 CFR PART 18: 2014**

| Method            | Item                                                             | Status |
|-------------------|------------------------------------------------------------------|--------|
| FCC OST/MP-5:1986 | Conducted Disturbance at Mains Terminals<br>(9kHz-30MHz)         | ×      |
| FCC OST/MP-5:1986 | Conducted Disturbance at Mains Terminals<br>(150kHz-30MHz)       | √      |
| FCC OST/MP-5:1986 | Radiated Disturbance(30MHz-1GHz)                                 | ×      |
| FCC OST/MP-5:1986 | Radiated Disturbance (Magnetic field Strength)<br>(9kHz-30MHz)   | √      |
| FCC OST/MP-5:1986 | Radiated Disturbance (Magnetic field Strength)<br>(150kHz-30MHz) | ×      |
| FCC OST/MP-5:1986 | Conducted Disturbance at Mains Terminals<br>(450kHz-30MHz)       | ×      |

× Indicates that the test is not applicable  
√ Indicates that the test is applicable



#### **4.4 Test Location**

Conducted Disturbance at Mains Terminals was performed at:  
SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen Branch E&E Lab,  
No. 1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, Guangdong, China.  
518057.

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

Radiated Disturbance (Magnetic field Strength) was subcontracted to:  
SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou EMC Laboratory,  
198 Kezhu Road, Sciencetech Park, Guangzhou Economic & Technological Development District,  
Guangzhou, China 510663

Tel: +86 20 82155555 Fax: +86 20 82075059

#### **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 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)**

The 3m Semi-anechoic chambers and the 10m Semi-anechoic chambers 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-2, 4620C-3.

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

None

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

None



## 5 Equipment List

| Conducted Disturbance at Mains Terminals(150kHz-30MHz) |                   |                      |          |              |              |
|--------------------------------------------------------|-------------------|----------------------|----------|--------------|--------------|
| Item                                                   | Equipment         | Manufacturer         | Model No | Inventory No | Cal Due Date |
| 1                                                      | Shielding Room    | ChangZhou<br>ZhongYu | GB-88    | SEL0042      | 2016-05-13   |
| 2                                                      | LISN              | Rohde & Schwarz      | ENV216   | SEL0152      | 2015-10-24   |
| 3                                                      | LISN              | ETS-LINDGREN         | 3816/2   | SEL0021      | 2016-05-13   |
| 4                                                      | EMI Test Receiver | Rohde & Schwarz      | ESCI     | SEL0022      | 2016-05-13   |
| 5                                                      | Coaxial Cable     | SGS                  | N/A      | SEL0025      | 2016-05-13   |

| RE in Chamber |                                            |                                    |            |            |              |              |
|---------------|--------------------------------------------|------------------------------------|------------|------------|--------------|--------------|
| No.           | Test Equipment                             | Manufacturer                       | Model No.  | Serial No. | Cal. date    | Cal.Due date |
|               |                                            |                                    |            |            | (YYYY-MM-DD) | (YYYY-MM-DD) |
| EMC0525       | Compact Semi-Anechoic Chamber              | ChangZhou<br>ZhongYu               | N/A        | N/A        | 2014-12-05   | 2015-12-05   |
| EMC0522       | EMI Test Receiver                          | Rohde & Schwarz                    | ESIB26     | 100283     | 2015-03-02   | 2016-03-02   |
| EMC0056       | EMI Test Receiver                          | Rohde & Schwarz                    | ESCI       | 100236     | 2015-04-07   | 2016-04-07   |
| EMC0528       | RI High frequency Cable                    | SGS                                | 20 m       | N/A        | 2014-04-19   | 2016-04-19   |
| EMC2025       | Trilog Broadband Antenna 30-1000MHz        | SCHWARZBECK<br>MESS-<br>ELEKTRONIK | VULB 9160  | 9160-3372  | 2014-07-14   | 2017-07-14   |
| EMC0524       | Bi-log Type Antenna                        | Schaffner -Chase                   | CBL6112B   | 2966       | 2013-08-31   | 2016-08-31   |
| EMC0519       | Bilog Type Antenna                         | Schaffner -Chase                   | CBL6143    | 5070       | 2014-05-04   | 2017-05-04   |
| EMC2026       | Horn Antenna 1-18GHz                       | SCHWARZBECK<br>MESS-<br>ELEKTRONIK | BBHA 9120D | 9120D-841  | 2013-08-31   | 2016-08-31   |
| EMC0521       | 1-26.5 GHz Pre-Amplifier                   | Agilent                            | 8449B      | 3008A01649 | 2015-03-02   | 2016-03-02   |
| EMC2065       | Amplifier                                  | HP                                 | 8447F      | N/A        | 2015-07-18   | 2016-07-17   |
| EMC0075       | 310N Amplifier                             | Sonoma                             | 310N       | 272683     | 2015-03-02   | 2016-03-02   |
| EMC0523       | Active Loop Antenna                        | EMCO                               | 6502       | 42963      | 2014-03-03   | 2016-03-03   |
| EMC2041       | Broad-Band Horn Antenna (14)15-26.5(40)GHz | SCHWARZBECK<br>MESS-<br>ELEKTRONI  | BBHA 9170  | 9170-375   | 2014-05-26   | 2017-05-26   |
| EMC2079       | High Pass Filter(915MHz)                   | FSY MICROWAVE                      | HM1465-9SS | 009        | 2015-03-02   | 2016-03-02   |
| EMC2069       | 2.4GHz filter                              | Micro-Tronics                      | BRM 50702  | 149        | 2015-03-02   | 2016-03-02   |
| EMC0530       | 10m Semi-Anechoic Chamber                  | ETS                                | N/A        | N/A        | 2014-05-03   | 2016-05-03   |



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| General used equipment |                                |                                            |          |              |              |
|------------------------|--------------------------------|--------------------------------------------|----------|--------------|--------------|
| Item                   | Equipment                      | Manufacturer                               | Model No | Inventory No | Cal Due Date |
| 1                      | Humidity/Temperature Indicator | Shang Hai Meteorological Industry Factory  | ZJ1-2B   | SEL0101      | 2015-10-24   |
| 2                      | Humidity/Temperature Indicator | Shang Hai Meteorological Industry Factory  | ZJ1-2B   | SEL0102      | 2015-10-24   |
| 3                      | Humidity/Temperature Indicator | Shang Hai Meteorological Industry Factory  | ZJ1-2B   | SEL0103      | 2015-10-24   |
| 4                      | Barometer                      | Chang Chun Meteorological Industry Factory | DYM3     | SEL0088      | 2016-05-13   |

## 6 Emission Test Results

### 6.1 Conducted Disturbance at Mains Terminals(150kHz-30MHz)

|                   |                                                              |
|-------------------|--------------------------------------------------------------|
| Test Requirement: | 47 CFR PART 18: 2014                                         |
| Test Method:      | FCC OST/MP-5:1986                                            |
| Frequency Range:  | 150kHz to 30MHz                                              |
| Limit:            |                                                              |
| 0.15M-0.5MHz      | 66dB(μV)-56dB(μV) quasi-peak, 56dB(μV)-46dB(μV) average      |
| 0.5M-5MHz         | 56dB(μV) quasi-peak, 46dB(μV) average                        |
| 5M-30MHz          | 60dB(μV) quasi-peak, 50dB(μV) average                        |
| Detector:         | Peak for pre-scan (9kHz resolution bandwidth) 0.15M to 30MHz |

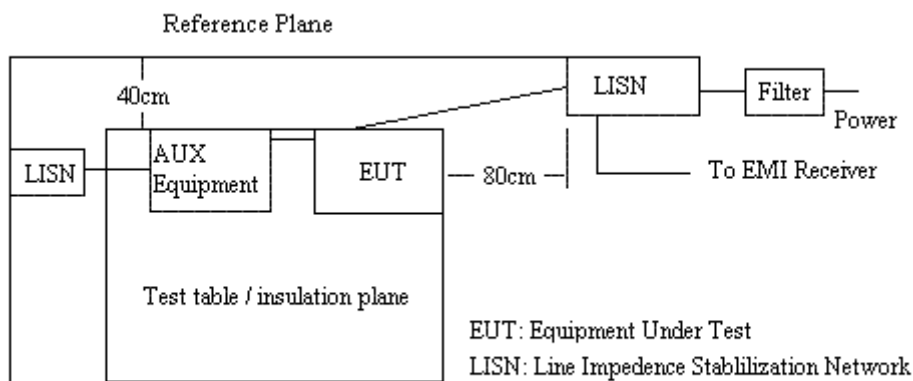
#### 6.1.1 E.U.T. Operation

Operating Environment:

Temperature: 23.0 °C      Humidity: 54 % RH      Atmospheric Pressure: 1010 mbar

Test mode: a: Wireless charge mode, keep the EUT at normal operation mode with client device, the client device was operated at standby mode, 0% power level which is the worse case found.

#### 6.1.2 Test Setup

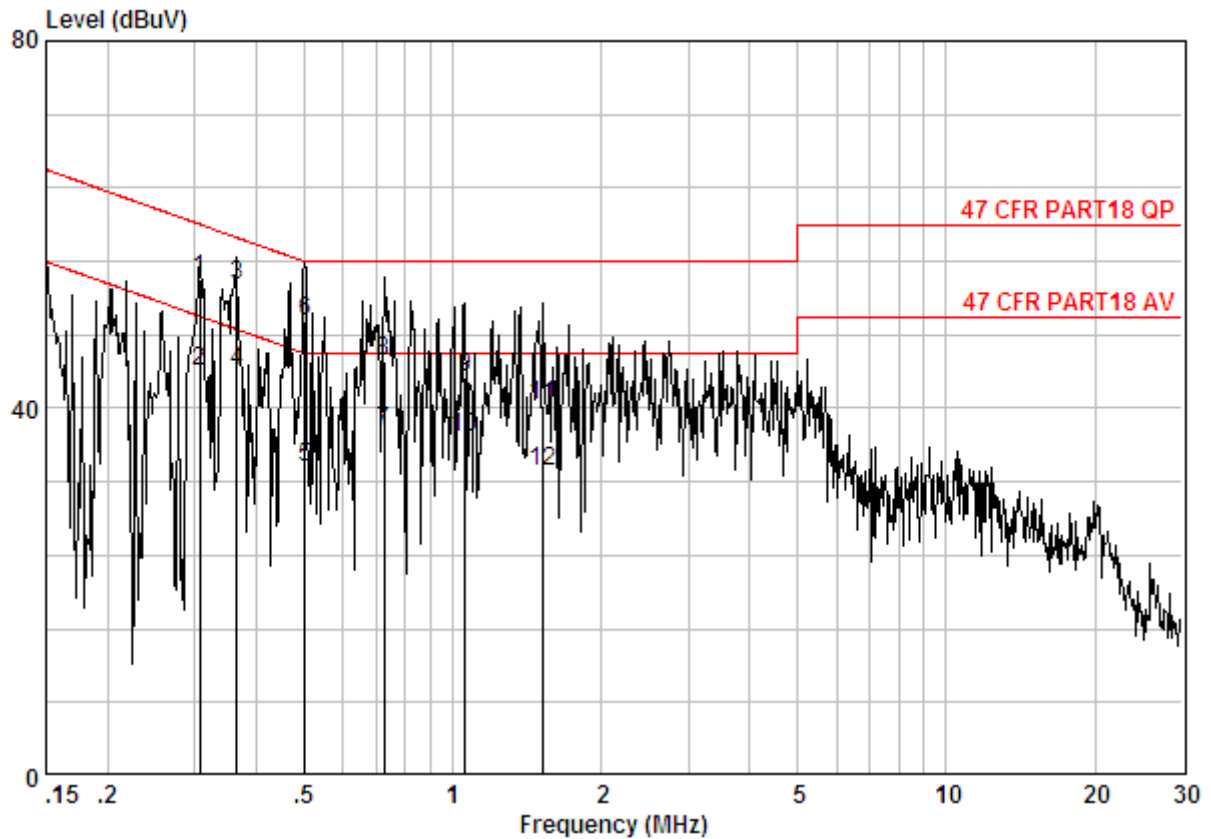


#### 6.1.3 Measurement Data

An initial pre-scan was performed with peak detector. Quasi-Peak or Average measurement were performed at the frequencies with maximized peak emission were detected.



Mode:a;Line:Live Line



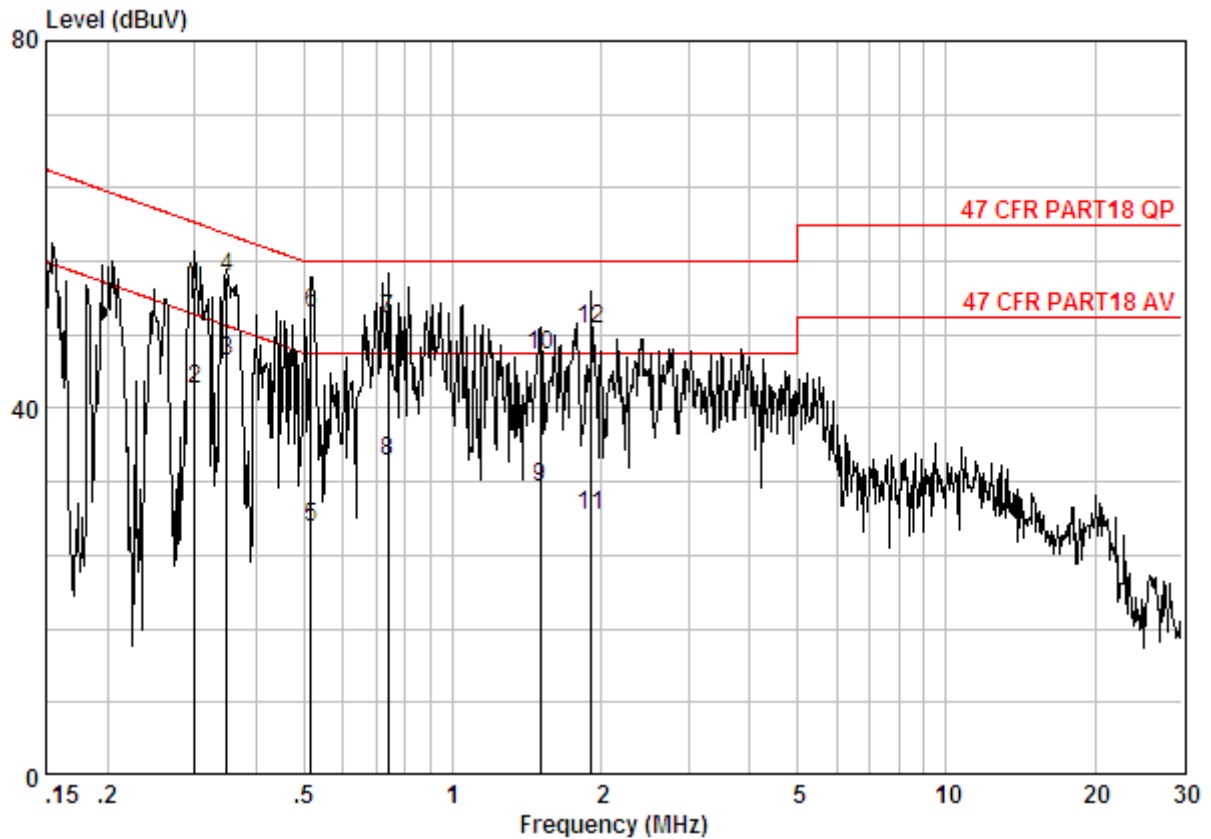
Site : Shielding Room  
Condition : 47 CFR PART18 QP CE LINE  
Job No. : 4841CR  
Test mode : a

|     | Freq    | Cable Loss | LISN Factor | Read Level | Level | Limit Line | Over Limit | Remark  |
|-----|---------|------------|-------------|------------|-------|------------|------------|---------|
|     | MHz     | dB         | dB          | dBuV       | dBuV  | dBuV       | dB         |         |
| 1   | 0.30671 | 0.01       | 9.84        | 44.24      | 54.09 | 60.06      | -5.97      | QP      |
| 2   | 0.30671 | 0.01       | 9.84        | 34.25      | 44.10 | 50.06      | -5.95      | AVERAGE |
| 3   | 0.36531 | 0.01       | 9.85        | 43.50      | 53.36 | 58.61      | -5.25      | QP      |
| 4 @ | 0.36531 | 0.01       | 9.85        | 34.20      | 44.06 | 48.61      | -4.55      | Average |
| 5   | 0.50203 | 0.01       | 9.86        | 23.70      | 33.57 | 46.00      | -12.43     | Average |
| 6   | 0.50203 | 0.01       | 9.86        | 39.70      | 49.57 | 56.00      | -6.43      | QP      |
| 7   | 0.72744 | 0.02       | 9.88        | 27.61      | 37.51 | 46.00      | -8.49      | Average |
| 8   | 0.72744 | 0.02       | 9.88        | 35.32      | 45.22 | 56.00      | -10.78     | QP      |
| 9   | 1.060   | 0.02       | 9.89        | 33.56      | 43.47 | 56.00      | -12.53     | QP      |
| 10  | 1.060   | 0.02       | 9.89        | 26.87      | 36.78 | 46.00      | -9.22      | Average |
| 11  | 1.527   | 0.02       | 9.93        | 30.40      | 40.34 | 56.00      | -15.66     | QP      |
| 12  | 1.527   | 0.02       | 9.93        | 23.16      | 33.11 | 46.00      | -12.89     | Average |





Mode:a;Line:Neutral Line



Site : Shielding Room  
Condition : 47 CFR PART18 QP CE NEUTRAL  
Job No. : 4841CR  
Test mode : a

|     | Freq    | Cable Loss | LISN Factor | Read Level | Level | Limit Line | Over Limit | Remark  |
|-----|---------|------------|-------------|------------|-------|------------|------------|---------|
|     | MHz     | dB         | dB          | dBuV       | dBuV  | dBuV       | dB         |         |
| 1   | 0.30028 | 0.01       | 9.86        | 43.21      | 53.08 | 60.24      | -7.15      | QP      |
| 2   | 0.30028 | 0.01       | 9.86        | 32.13      | 42.00 | 50.24      | -8.24      | AVERAGE |
| 3 @ | 0.34830 | 0.01       | 9.87        | 35.20      | 45.08 | 49.00      | -3.92      | AVERAGE |
| 4   | 0.34830 | 0.01       | 9.87        | 44.50      | 54.38 | 59.00      | -4.62      | QP      |
| 5   | 0.51550 | 0.01       | 9.89        | 17.20      | 27.10 | 46.00      | -18.90     | AVERAGE |
| 6   | 0.51550 | 0.01       | 9.89        | 40.48      | 50.38 | 56.00      | -5.62      | QP      |
| 7   | 0.73910 | 0.02       | 9.97        | 39.66      | 49.65 | 56.00      | -6.35      | QP      |
| 8   | 0.73910 | 0.02       | 9.97        | 24.29      | 34.28 | 46.00      | -11.72     | AVERAGE |
| 9   | 1.503   | 0.02       | 10.08       | 21.24      | 31.34 | 46.00      | -14.66     | AVERAGE |
| 10  | 1.503   | 0.02       | 10.08       | 35.73      | 45.83 | 56.00      | -10.17     | QP      |
| 11  | 1.908   | 0.02       | 10.11       | 18.13      | 28.26 | 46.00      | -17.74     | AVERAGE |
| 12  | 1.908   | 0.02       | 10.11       | 38.56      | 48.70 | 56.00      | -7.30      | QP      |



## **6.2 Radiated Disturbance (Magnetic field Strength)(9kHz-30MHz)**

Test Requirement: 47 CFR PART 18: 2014  
Test Method: FCC OST/MP-5:1986  
Frequency Range: 9kHz to 30MHz  
Measurement Distance: 10m  
Limit:  
9kHz - 30MHz 53.06 dB(μV/m) quasi-peak  
Detector: 9kHz~150kHz Peak for pre-scan (200Hz resolution bandwidth)  
150kHz~30MHz Peak for pre-scan (9kHz resolution bandwidth)

### **6.2.1 E.U.T. Operation**

Operating Environment:  
Temperature: 22.0 °C Humidity: 52 % RH Atmospheric Pressure: 1010 mbar  
Test mode: a: Wireless charge mode, keep the EUT at normal operation mode with client device,  
the client device was operated at standby mode, 0% power level which is the worse case found.

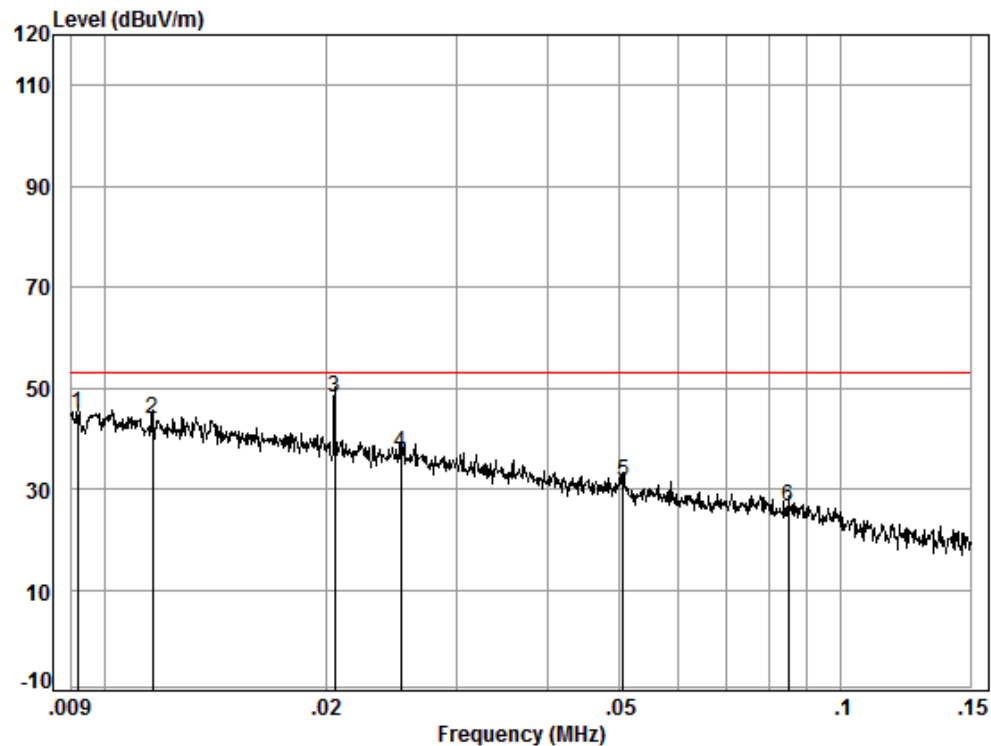
### **6.2.2 Measurement Data**

An initial pre-scan was performed in the chamber using the spectrum analyser in peak detection mode. Quasi-peak measurements were conducted based on the peak sweep graph. The EUT was measured by BiConiLog antenna with 2 orthogonal polarities.



Horizontal

9kHz-150kHz



Condition: 10m

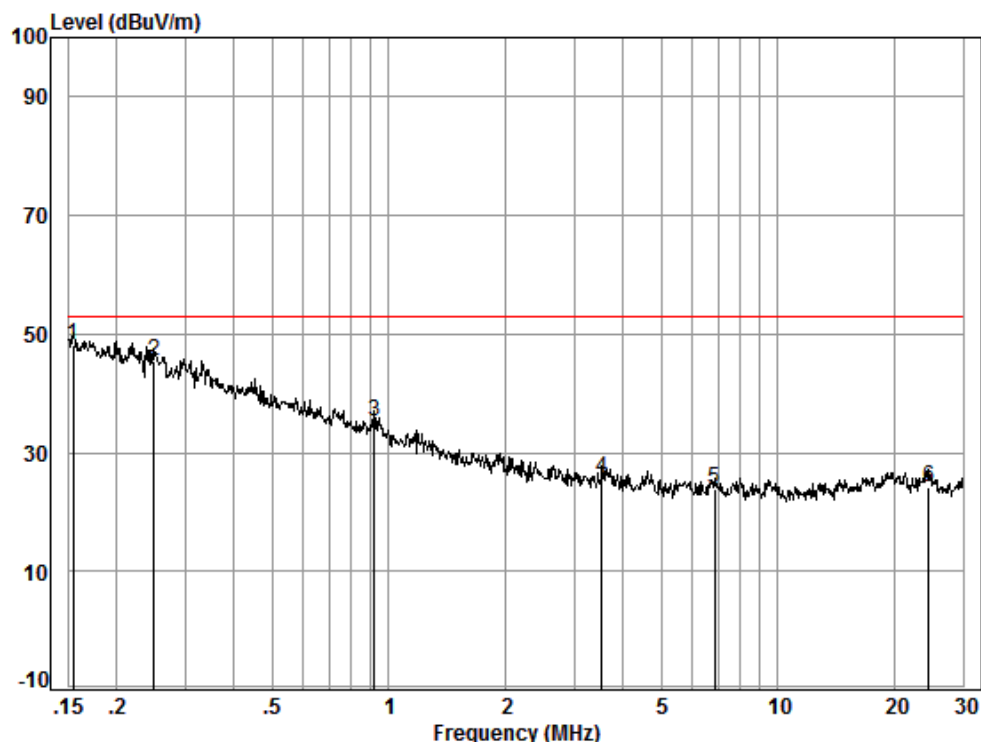
Job No. : 4841CR

Test Mode: a

|      | Freq | Cable | Ant    | Preamp | Read  | Limit  | Over   |
|------|------|-------|--------|--------|-------|--------|--------|
|      | MHz  | Loss  | Factor | Factor | Level | Line   | Limit  |
|      | MHz  | dB    | dB/m   | dB     | dBuV  | dBuV/m | dBuV/m |
| 1    | 0.01 | 0.30  | 21.80  | 0.00   | 22.63 | 44.73  | 53.06  |
| 2    | 0.01 | 0.27  | 20.73  | 0.00   | 22.70 | 43.70  | 53.06  |
| 3 pp | 0.02 | 0.21  | 16.78  | 0.00   | 31.20 | 48.19  | 53.06  |
| 4    | 0.03 | 0.19  | 15.83  | 0.00   | 21.10 | 37.12  | 53.06  |
| 5    | 0.05 | 0.12  | 12.71  | 0.00   | 18.50 | 31.33  | 53.06  |
| 6    | 0.08 | 0.07  | 12.94  | 0.00   | 13.59 | 26.60  | 53.06  |



150kHz-30MHz



Condition: 10m

Job No. : 4841CR

Test Mode: a

|      | Freq  | Cable | Ant    | Preamp | Read  | Limit  | Over   |
|------|-------|-------|--------|--------|-------|--------|--------|
|      | MHz   | Loss  | Factor | Factor | Level | Line   | Limit  |
|      | MHz   | dB    | dB/m   | dB     | dBuV  | dBuV/m | dB     |
| 1 pp | 0.15  | 0.07  | 12.80  | 0.00   | 35.42 | 48.29  | -4.77  |
| 2    | 0.25  | 0.08  | 12.80  | 0.00   | 32.66 | 45.54  | -7.52  |
| 3    | 0.92  | 0.22  | 12.74  | 0.00   | 22.18 | 35.14  | -17.92 |
| 4    | 3.53  | 0.39  | 12.09  | 0.00   | 13.15 | 25.63  | -27.43 |
| 5    | 6.88  | 0.46  | 10.82  | 0.00   | 12.51 | 23.79  | -29.27 |
| 6    | 24.40 | 0.73  | 10.09  | 0.00   | 13.32 | 24.14  | -28.92 |

Remark:

1:The loop antenna rotated about both Vertical and Horizontal to find the maximum emission, So only the worst position(Horizontal) was report.

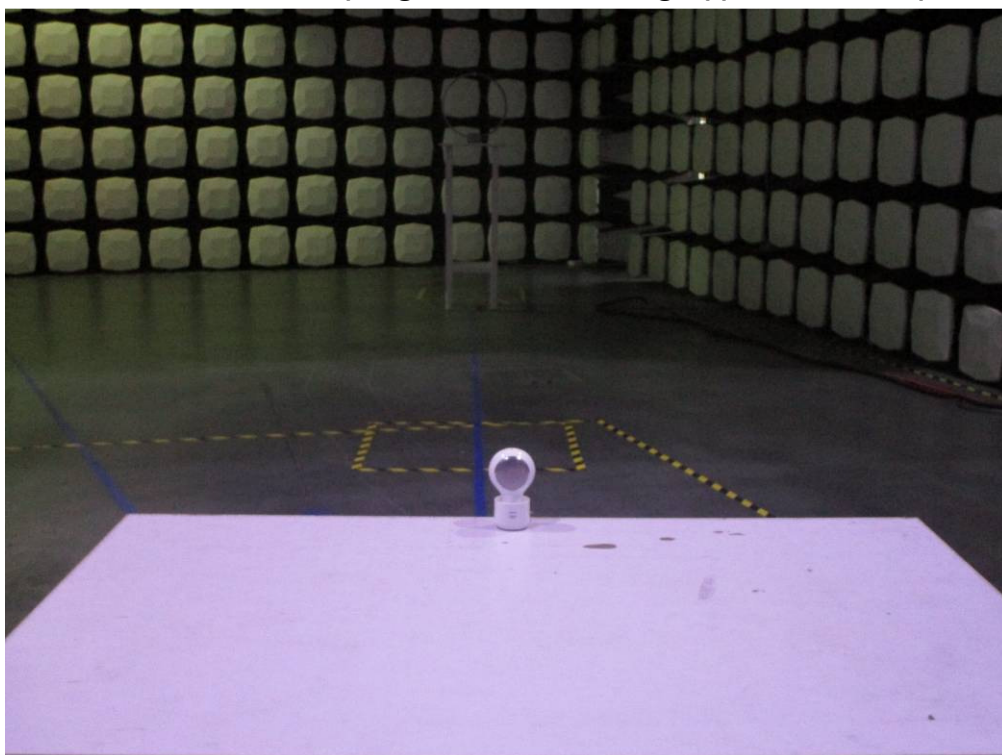
2:According to the clause 2.3 of MP-5:1986, the highest frequency is 50kHz, So the Range of frequency measurements is 9kHz to 30MHz.

## 7 Photographs

### 7.1 Conducted Disturbance at Mains Terminals(150kHz-30MHz) Test Setup



### 7.2 Radiated Disturbance (Magnetic field Strength)(9KHz-30MHz) Test Setup



### 7.3 EUT Constructional Details







