

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
Page: 1 of 20

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

Test Result :	Pass*
----------------------	-------

* 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.

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.

3 Contents

	Page
1 COVER PAGE	1
2 TEST SUMMARY	2
3 CONTENTS	3
4 GENERAL INFORMATION	4
4.1 DETAILS OF E.U.T	4
4.2 DESCRIPTION OF SUPPORT UNITS	4
4.3 STANDARDS APPLICABLE FOR TESTING	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 EMISSION TEST RESULTS	9
6.1 CONDUCTED DISTURBANCE AT MAINS TERMINALS(150KHz-30MHz)	9
6.1.1 E.U.T. Operation	9
6.1.2 Test Setup	9
6.1.3 Measurement Data	9
6.2 RADIATED DISTURBANCE (MAGNETIC FIELD STRENGTH)(9KHz-30MHz)	12
6.2.1 E.U.T. Operation	12
6.2.2 Measurement Data	12
7 PHOTOGRAPHS	15
7.1 CONDUCTED DISTURBANCE AT MAINS TERMINALS(150KHz-30MHz) TEST SETUP	15
7.2 RADIATED DISTURBANCE (MAGNETIC FIELD STRENGTH)(9KHz-30MHz) TEST SETUP	15
7.3 EUT CONSTRUCTIONAL DETAILS	16-20

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 (9kHz-30MHz)	✗
FCC OST/MP-5:1986	Conducted Disturbance at Mains Terminals (150kHz-30MHz)	✓
FCC OST/MP-5:1986	Radiated Disturbance(30MHz-1GHz)	✗
FCC OST/MP-5:1986	Radiated Disturbance (Magnetic field Strength) (9kHz-30MHz)	✓
FCC OST/MP-5:1986	Radiated Disturbance (Magnetic field Strength) (150kHz-30MHz)	✗
FCC OST/MP-5:1986	Conducted Disturbance at Mains Terminals (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, Scientech 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 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 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 MESS-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 MESS-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	Sonama	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 MESS-ELEKTRONIK	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

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

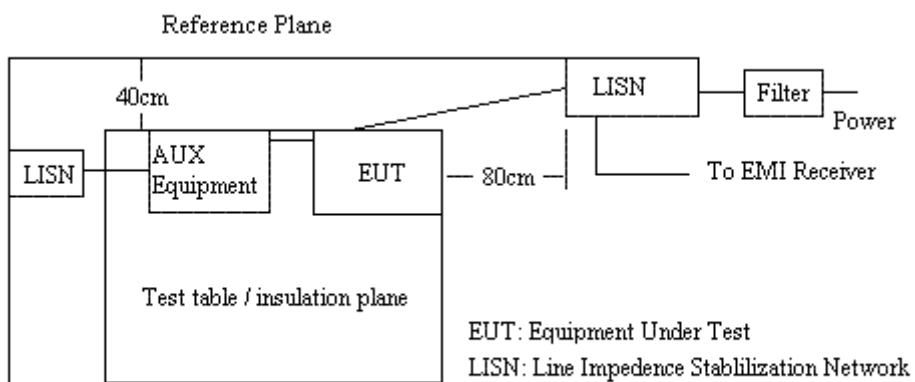
6.1.1 E.U.T. Operation

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.

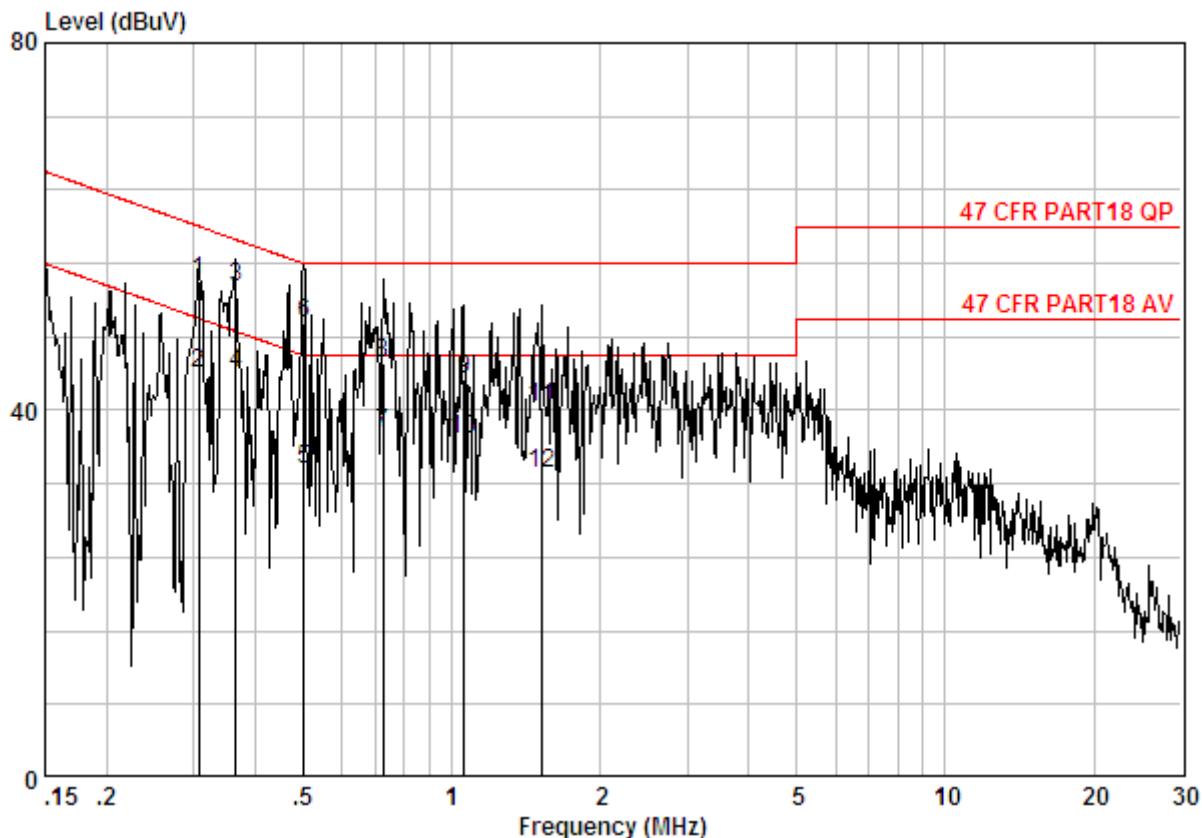
6.1.2 Test Setup



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

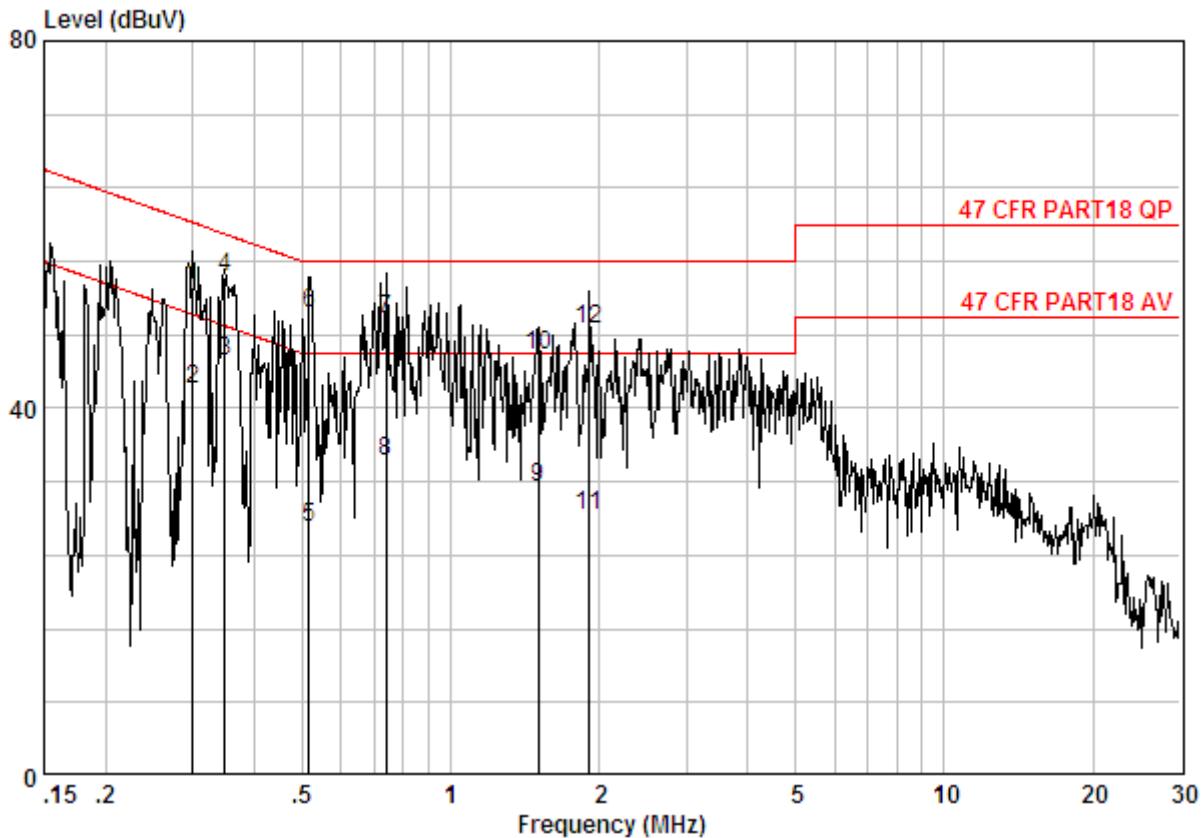


Site : Shielding Room
 Condition : 47 CFR PART18 QP CE LINE
 Job No. : 4841CR
 Test mode : a

	Freq	Cable	LISN	Read	Limit		Over	Remark
		Loss	Factor	Level	Level	Line	dB	
	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	LISN	Read	Limit		Over	Remark
		Loss	Factor	Level	Level	Line	Limit	
	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(μ V/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

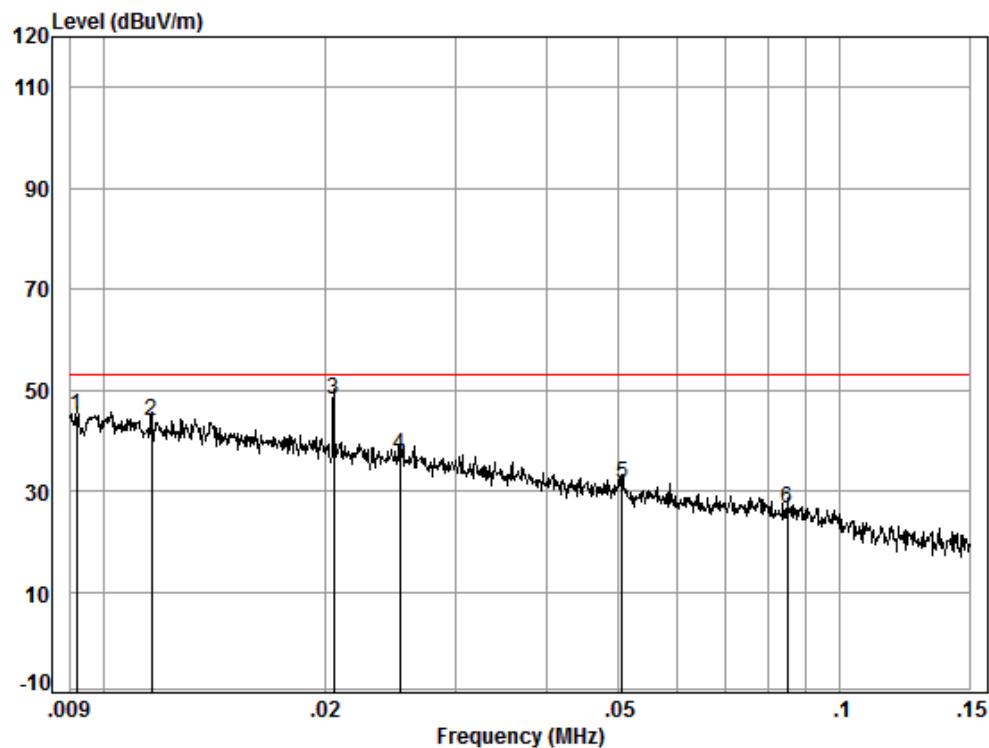
Operating Environment:

Temperature: 22.0 °C Humidity: 52 % RH Atmospheric Pressure: 1010 mbar
a: Wireless charge mode, keep the EUT at normal operation mode with client device,
Test mode: 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



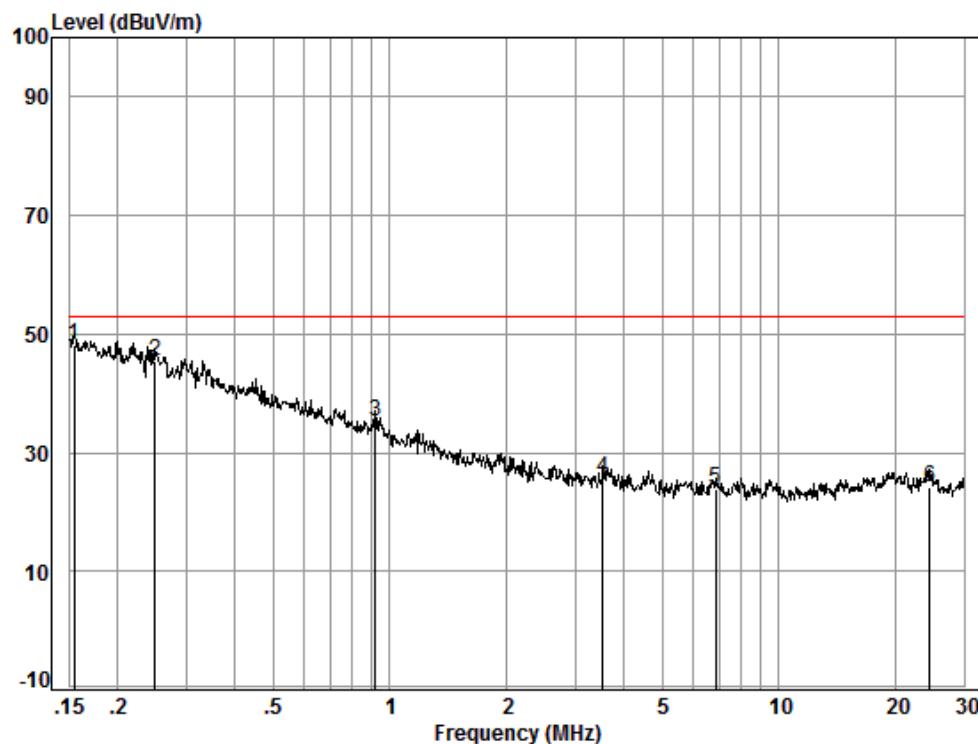
Condition: 10m

Job No. : 4841CR

Test Mode: a

	Cable Freq	Ant Loss	Preamp Factor	Read Level	Limit Level	Limit Line	Over Limit	
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	0.01	0.30	21.80	0.00	22.63	44.73	53.06	-8.33
2	0.01	0.27	20.73	0.00	22.70	43.70	53.06	-9.36
3 pp	0.02	0.21	16.78	0.00	31.20	48.19	53.06	-4.87
4	0.03	0.19	15.83	0.00	21.10	37.12	53.06	-15.94
5	0.05	0.12	12.71	0.00	18.50	31.33	53.06	-21.73
6	0.08	0.07	12.94	0.00	13.59	26.60	53.06	-26.46

150kHz-30MHz



Condition: 10m

Job No. : 4841CR

Test Mode: a

Freq	Cable	Ant	Preamp	Read	Limit	Over	Limit	
	Loss	Factor	Factor	Level				
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1 pp	0.15	0.07	12.80	0.00	35.42	48.29	53.06	-4.77
2	0.25	0.08	12.80	0.00	32.66	45.54	53.06	-7.52
3	0.92	0.22	12.74	0.00	22.18	35.14	53.06	-17.92
4	3.53	0.39	12.09	0.00	13.15	25.63	53.06	-27.43
5	6.88	0.46	10.82	0.00	12.51	23.79	53.06	-29.27
6	24.40	0.73	10.09	0.00	13.32	24.14	53.06	-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.

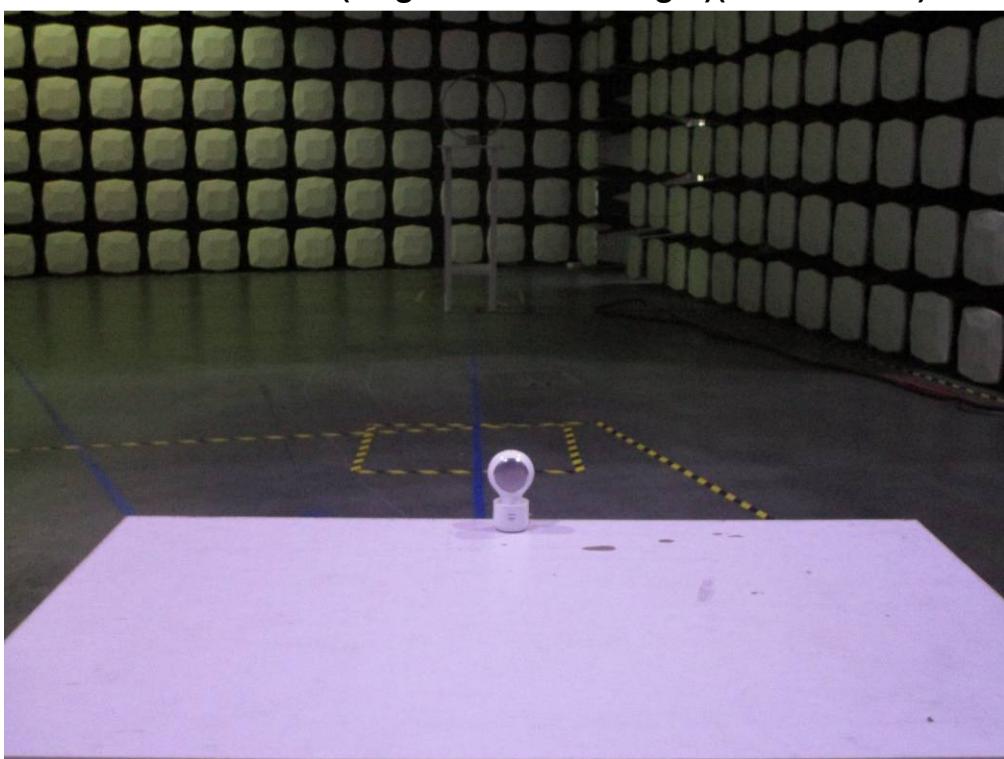
2:According to the clause 2.3 of MP-5:1986, the hightest frequency is 50kHz, So the Range of frequency measurements is 9kHz to 30MHz.

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



Report No.: SZEM150800484101

Page: 17 of 20





