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
Email: ee.shenzhen@sgs.com

TEST REPORT

Application No.:	SZEM1806005250CR
Applicant:	Tylt, Inc.
Address of Applicant:	685 Cochran St. Suite 200 Simi Valley CA United States 93065
Manufacturer:	Lucent Trans Electronics Co., Ltd.
Address of Manufacturer:	9F-1, No.16 Chien Pah Road Chung Ho District New Taipei City Taiwan 23511
Factory:	LUCENT TRANS INTERNATION (guangzhou) CO., LTD.
Address of Factory:	Hanfeng Floor, Datong Village, Dongchong Town, Nan Sha, Guangzhou, Guangdong, China 511475
Equipment Under Test (EUT):	
EUT Name:	Wireless Charging Pad
Model No.:	QITWSTBK-TMO
Trade mark:	TYLT
FCC ID:	2AOAF-410
Standard(s) :	47 CFR Part 18
Date of Receipt:	2018-06-15
Date of Test:	2018-06-19 to 2018-06-21
Date of Issue:	2018-06-22
Test Result:	**Pass***

* 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.

Revision Record				
Version	**Chapter**	**Date**	**Modifier**	**Remark**
01		2018-06-22		Original

Authorized for issue by:				
				
		Vincent Chen /Project Engineer		
				
		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

4 General Information

4.1 Details of E.U.T.

Power supply:	Input: AC 100-240V, 0.3A, 50/60Hz Output: DC 5V, 2A For Adapter model: TCA52-10W EUT output 5W
Cable:	USB cable 106cm unshielded
Modulation type:	Load modulation
Antenna type:	Inductive Loop Coil Antenna
Operation frequency:	111.3-175.4kHz

4.2 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
iPhone 8	Apple	A1863	F4GVQ656JC6D

4.3 Measurement Uncertainty

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

• 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.

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	2017-07-13	2018-07-12
LISN	Rohde & Schwarz	ENV216	SEM007-01	2017-09-27	2018-09-26
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	2017-07-13	2018-07-12
EMI Test Receiver (9kHz-3GHz)	Rohde & Schwarz	ESCI	SEM004-01	2018-04-02	2019-04-01
Trilog-Broadband Antenna(30MHz-1GHz)	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	2017-09-29	2018-09-28
Humidity/ Temperature Indicator	Shanghai Meteorological Industry Factory	ZJ1-2B	SEM002-04	2017-09-29	2018-09-28
Humidity/ Temperature Indicator	Mingle	N/A	SEM002-08	2017-09-29	2018-09-28
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.

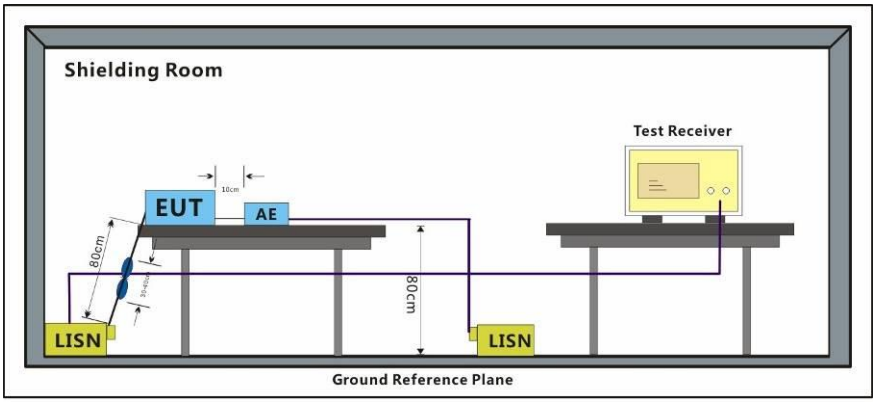
6.1.1 E.U.T. Operation

Operating Environment:

Temperature: 25.3 °C Humidity: 63.6 % RH Atmospheric Pressure: 1010 mbar

Test mode a:Charge mode_Keep the EUT charging

6.1.2 Test Setup Diagram



6.1.3 Measurement Procedure and Data

Test Mode:	C 5.0V a. 10% capacity of battery b. 50% capacity of battery c. 90% capacity of battery

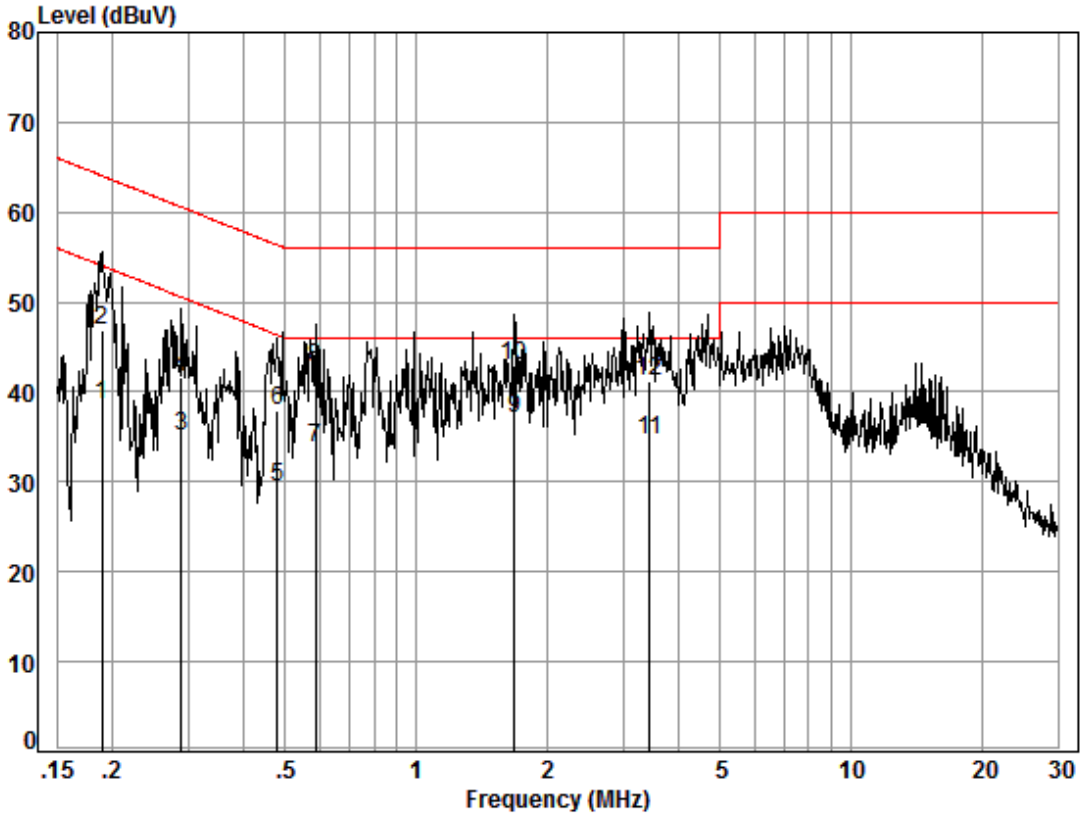
Measurement Data

An initial pre-scan was performed on the live and neutral lines with peak detector.

Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.

We have tested the speaker which with (10%, 50%, 90%) capacity of battery and found that the speaker with 10% capacity of battery is the worst case, the worst one data was show on the report.

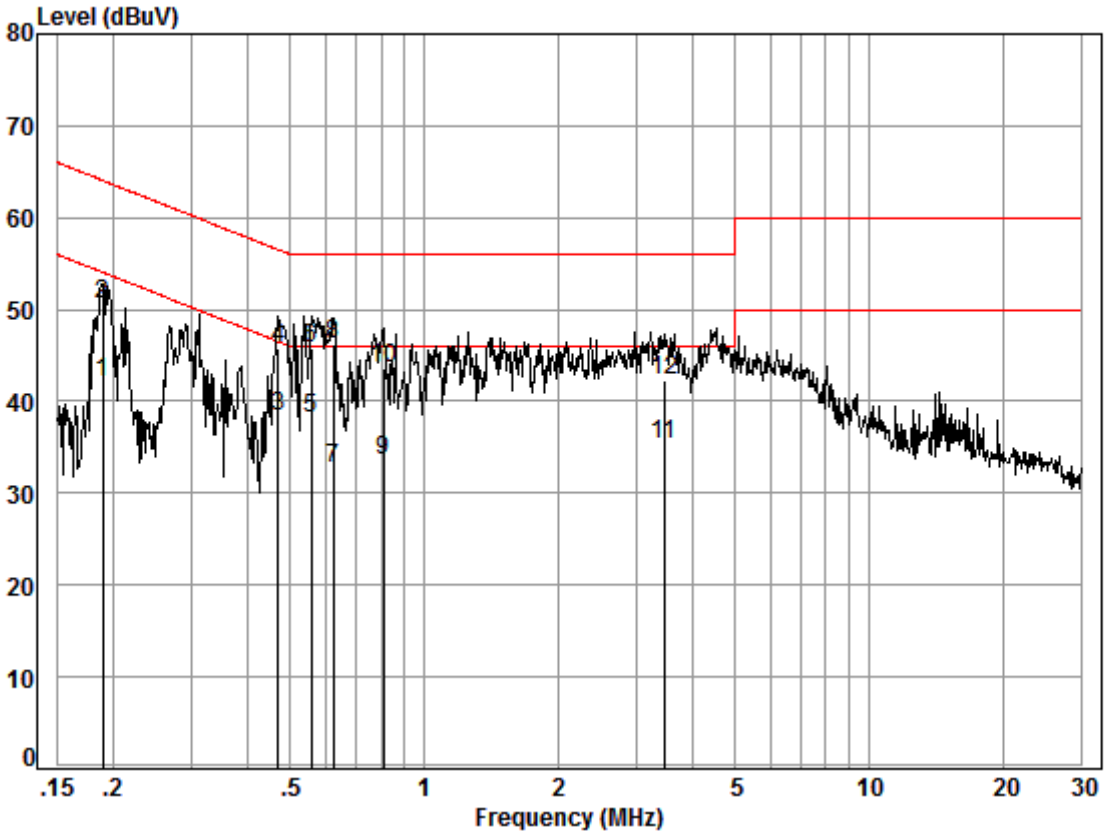
Mode:a; Line:Live Line



Site : Shielding Room
Condition: Line
Job No. : 05250CR
Test mode: a

	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.19	0.03	9.51	28.95	38.49	54.06	-15.57	Average
2	0.19	0.03	9.51	37.40	46.94	64.06	-17.12	QP
3	0.29	0.03	9.51	25.48	35.02	50.59	-15.57	Average
4	0.29	0.03	9.51	32.02	41.56	60.59	-19.03	QP
5	0.48	0.04	9.49	19.88	29.41	46.36	-16.95	Average
6	0.48	0.04	9.49	28.47	38.00	56.36	-18.36	QP
7	0.59	0.05	9.53	24.27	33.85	46.00	-12.15	Average
8	0.59	0.05	9.53	33.06	42.64	56.00	-13.36	QP
9	1.68	0.14	9.51	27.47	37.12	46.00	-8.88	Average
10	1.68	0.14	9.51	33.26	42.91	56.00	-13.09	QP
11	3.45	0.19	9.55	24.95	34.69	46.00	-11.31	Average
12	3.45	0.19	9.55	31.45	41.19	56.00	-14.81	QP

Mode:a; Line:Neutral Line



Site : Shielding Room
Condition: Neutral
Job No. : 05250CR
Test mode: a

	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.19	0.03	9.58	32.38	41.99	54.06	-12.07	Average
2	0.19	0.03	9.58	40.91	50.52	64.06	-13.54	QP
3	0.47	0.04	9.60	28.76	38.40	46.49	-8.09	Average
4	0.47	0.04	9.60	36.13	45.77	56.49	-10.72	QP
5	0.56	0.05	9.61	28.40	38.06	46.00	-7.94	Average
6	0.56	0.05	9.61	36.16	45.82	56.00	-10.18	QP
7	0.62	0.06	9.62	22.98	32.66	46.00	-13.34	Average
8	0.62	0.06	9.62	36.55	46.23	56.00	-9.77	QP
9	0.81	0.08	9.61	23.87	33.56	46.00	-12.44	Average
10	0.81	0.08	9.61	33.86	43.55	56.00	-12.45	QP
11	3.47	0.19	9.66	25.56	35.41	46.00	-10.59	Average
12	3.47	0.19	9.66	32.36	42.21	56.00	-13.79	QP

6.2 Radiated emission

Test Requirement Part 18.305
Test Method: FCC MP-5
Measurement Distance: 10m
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 500 500 or more	25 25 × SQRT(power/500)	300 [1]300
	Any non-ISM frequency	Below 500 500 or more	15 15 × SQRT(power/500)	300 [1]300
Industrial heaters and RF stabilized arc welders	On or below 5,725 MHz Above 5,725 MHz	Any Any	10 ([2])	1,600 ([2])
Medical diathermy	Any ISM frequency Any non-ISM frequency	Any Any	25 15	300 300
Ultrasonic	Below 490 kHz	Below 500 500 or more	2,400/F(kHz) 2,400/F(kHz) × SQRT (power/500)	300 [3]300
	490 to 1,600 kHz Above 1,600 kHz	Any Any	24,000/F(kHz) 15	30 30
Induction cooking ranges	Below 90 kHz On or above 90 kHz	Any Any	1,500 300	[4]30 [4]30

[1]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.

[2]Reduced to the greatest extent possible.

[3]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.

[4]Induction cooking ranges manufactured prior to February 1, 1980, shall be subject to the field strength limits for miscellaneous ISM equipment.

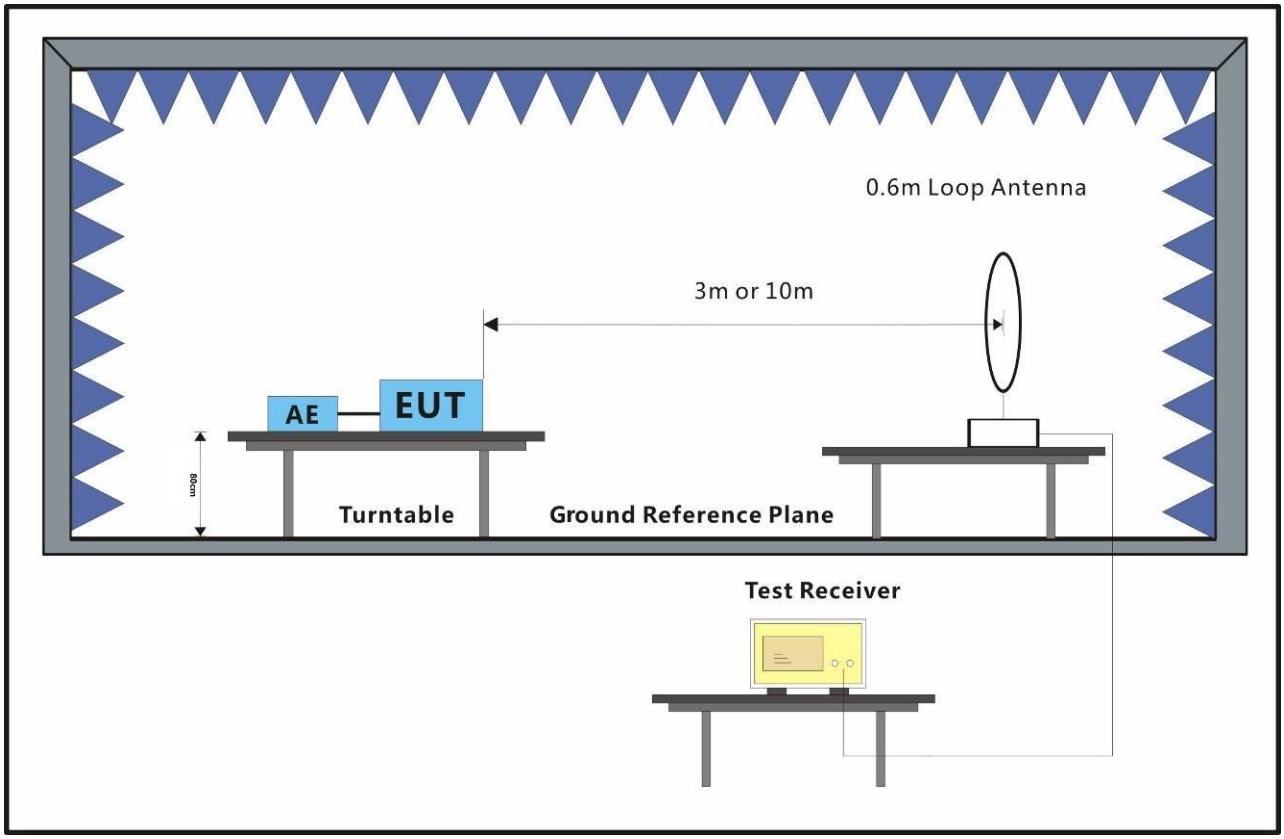
6.2.1 E.U.T. Operation

Operating Environment:

Temperature: 25 °C Humidity: 51 % RH Atmospheric Pressure: 1010 mbar

Test mode a:Charge mode_Keep the EUT charging

6.2.2 Test Setup Diagram



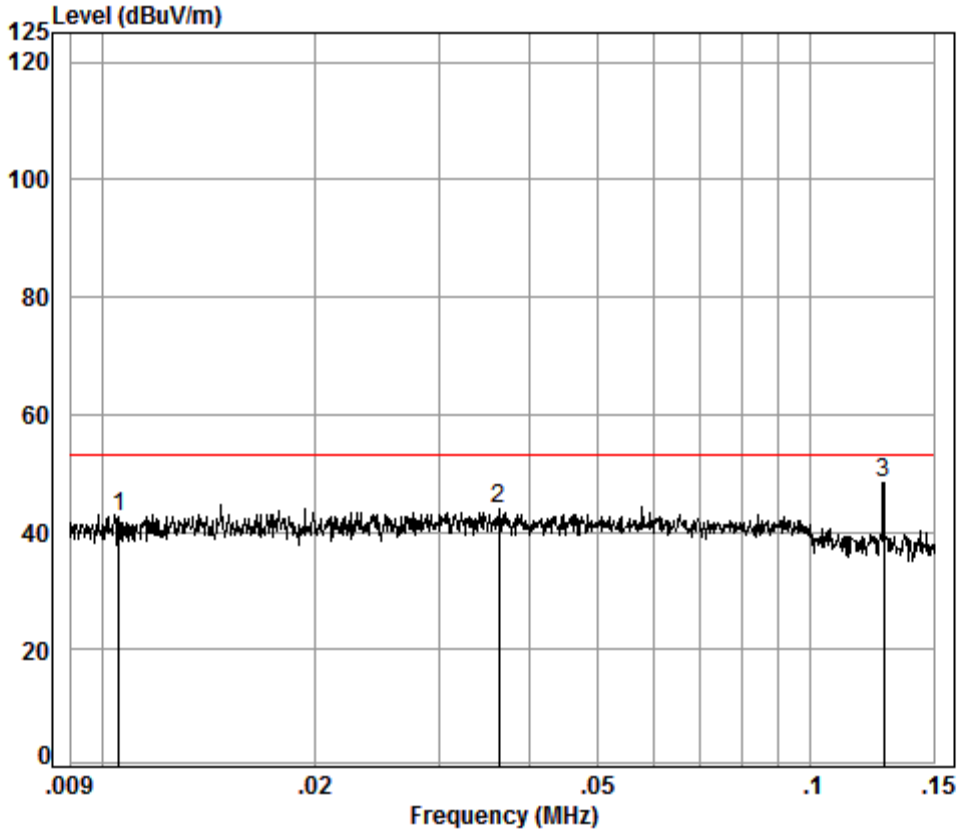
6.2.3 Measurement Procedure and Data

Test Mode:	DC 5.0V 1) 10% capacity of battery 2) 50% capacity of battery 3) 90% capacity of battery

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.

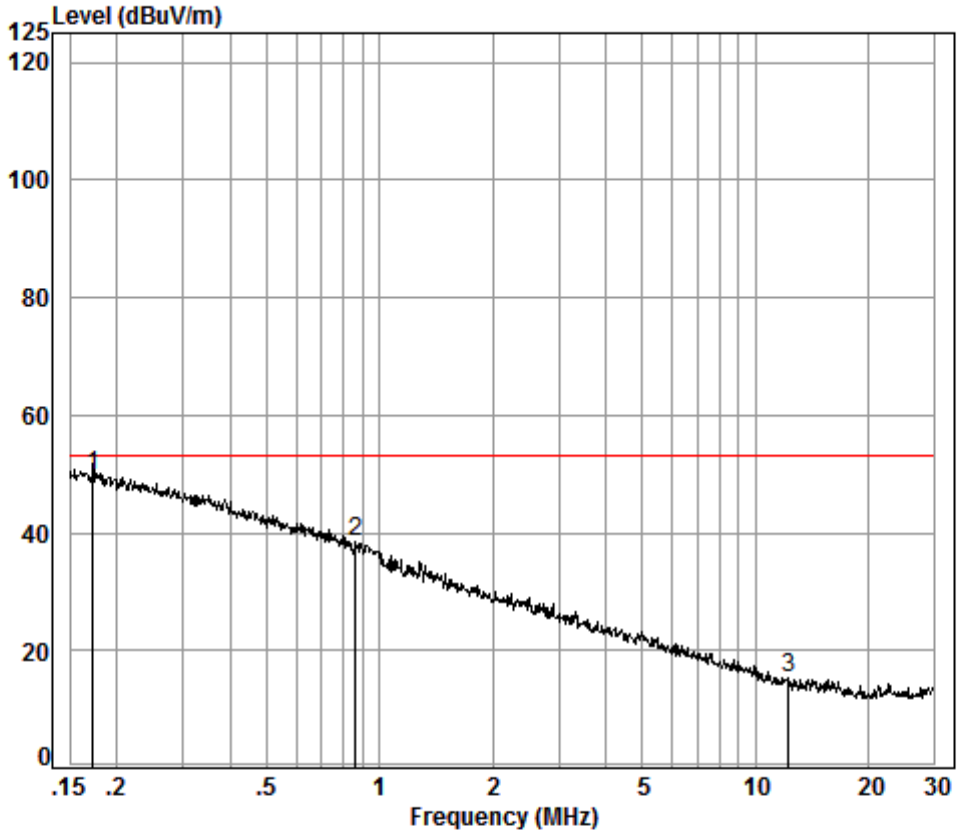
9kHz~150kHz



Condition: 10m
Job No. : 05250CR
Test Mode: a

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	0.01	0.28	18.96	0.00	23.18	42.42	53.06	-10.64
2	0.04	0.16	13.31	0.00	30.44	43.91	53.06	-9.15
3 pp	0.13	0.06	11.82	0.00	36.43	48.31	53.06	-4.75

150kHz~30MHz



Condition: 10m
Job No. : 05250CR
Test Mode: a

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1 pp	0.17	0.07	11.78	0.00	37.98	49.83	53.06	-3.23
2	0.86	0.20	12.00	0.00	26.22	38.42	53.06	-14.64
3	12.25	0.54	10.55	0.00	4.22	15.31	53.06	-37.75

The test was performed at a 10m test site. According to below formulate and the test data at 10m test distance,

$L_{300} / L_{10} = D_{10} / D_{300}$

Note:

L_{300}: Level @ 300m distance. Unit: uV/m;

L_{10}: Level @ 10m distance. Unit: uV/m;

D_{300}: 300m distance. Unit: m

D_{10}: 10m distance. Unit: m

The level at 300m test distance is below:

Frequency (MHz)	Level @ 10m (dBuV/m)	Level @ 10m (uV/m)	Level @ 300m (uV/m)	Level @ 300m (dBuV/m)	Limit @ 300m (dBuV/m)	Margin (dB)
0.01	42.42	132.13	4.40	12.88	23.52	-10.64
0.04	43.91	156.86	5.23	14.37	23.52	-9.15
0.13	48.31	260.32	8.68	18.77	23.52	-4.75
0.17	49.83	310.10	10.34	20.29	23.52	-3.23
0.86	38.42	83.37	2.78	8.88	23.52	-14.64
12.25	4.22	1.63	0.05	-25.32	23.52	-48.84

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: We have tested the speaker which with (10%, 50%, 90%) capacity of battery and found that the speaker with 10% capacity of battery is the worst case, the worst one data was show on the report.

7 Photographs

7.1 Test Setup photo

Refer to EUT setup photos.

7.2 EUT Constructional Details (EUT Photos)

Refer to EUT external and internal photos.

- End of the Report -