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

No. 1 Workshop, M-10, Middle section, Science & Technology Park,
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TEST REPORT

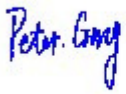
Application No.:	SZEM1801000454CR
Applicant:	Case-Mate, Inc.
Address of Applicant:	7000 Central Pkwy., Ste. 1050, Atlanta, Georgia 30328-4590, United States
Manufacturer:	Case-Mate, Inc.
Address of Manufacturer:	7000 Central Pkwy., Ste. 1050, Atlanta, Georgia 30328-4590, United States
Factory:	Case-Mate, Inc.
Address of Factory:	7000 Central Pkwy., Ste. 1050, Atlanta, Georgia 30328-4590, United States
Equipment Under Test (EUT):	
EUT Name:	Wireless Power Pad with Stand
Model No.:	CM037042, CM037040 ♣
♣	Please refer to section 2 of this report which indicates which model was actually tested and which were electrically identical.
Trade Mark:	, , ,
FCC ID:	2AAC4-CMPOWERPAD
Standard(s) :	47 CFR Part 18
Date of Receipt:	2018-01-16
Date of Test:	2018-01-23 to 2018-02-06
Date of Issue:	2018-02-08
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		2018-02-08		Original

Authorized for issue by:				
				
		Peter Geng /Project Engineer		
				
		Eric Fu /Reviewer		

2 Test Summary

Emission Part				
Item	**Standard**	**Method**	**Requirement**	**Result**
Conducted Emissions at Mains Terminals (150kHz-30MHz)	47 CFR Part 18	FCC OST/MP-5:1986	N/A	Pass
Radiated Emissions (Magnetic field Strength) (9kHz-30MHz)	47 CFR Part 18	FCC OST/MP-5:1986	N/A	Pass

N/A: Not applicable

Remark:

Model No.: CM037042, CM037040

Only the model CM037042 was tested, since the electrical circuit design, layout, components used, internal wiring and functions were identical for the above models, only different on housing colour.

3 Contents

4 General Information

4.1 Details of E.U.T.

Power supply:	INPUT: DC 5V/2A; DC 9V/2A OUTPUT: DC 5V/1A; DC 9V/1.1A
Operation frequency:	117.6-170.2 kHz
Antenna type:	Inductive Loop Coil Antenna
Modulation type:	Load modulation
Cable:	USB cable: 145cm, unshielded
Remark:	Tests were conducted in both loads and the worst case (DC 9V/1.1A) is reported only.

4.2 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
cement load	provided by client	DC 5V/1A	N/A
mobile phone	Samsung(provided by client)	Galaxy S7 edge	N/A
Power Supply	provided by client	DBS15Q	N/A

4.3 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Conduction emission	3.45dB (9kHz to 150kHz)
		3.0dB (150kHz to 30MHz)
2	Radiated emission	4.5dB (30MHz-1GHz)
		4.8dB (1GHz-6GHz)
3	Temperature test	1℃
4	Humidity test	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 Emissions at Mains Terminals (150kHz-30MHz)					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
Shielding Room	ChangZhou ZhongYu	GB-88	SEM001-06	2017-05-10	2018-05-09
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	2017-04-14	2018-04-13
EMI Test Receiver	Rohde & Schwarz	ESCI	SEM004-02	2017-04-14	2018-04-13

Radiated Emissions (Magnetic field Strength) (9kHz-30MHz)					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
3m Semi-Anechoic Chamber	ETS-LINDGREN	N/A	SEM001-01	2017-08-05	2020-08-04
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM025-01	2017-07-13	2018-07-12
EMI Test Receiver	Agilent Technologies	N9038A	SEM004-05	2017-09-27	2018-09-26
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	2017-04-18	2018-04-17

6 Emission Test Results

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

Test Requirement: 47 CFR Part 18

Test Method: FCC OST/MP-5:1986

Frequency Range: 150kHz to 30MHz

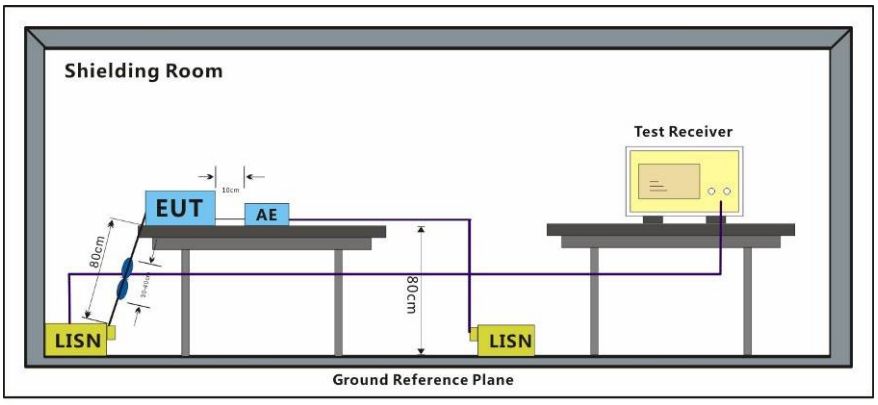
6.1.1 E.U.T. Operation

Operating Environment:

Temperature: 17.9 °C Humidity: 46.6 % RH Atmospheric Pressure: 1015 mbar

Test mode a:Normal Working_Blank

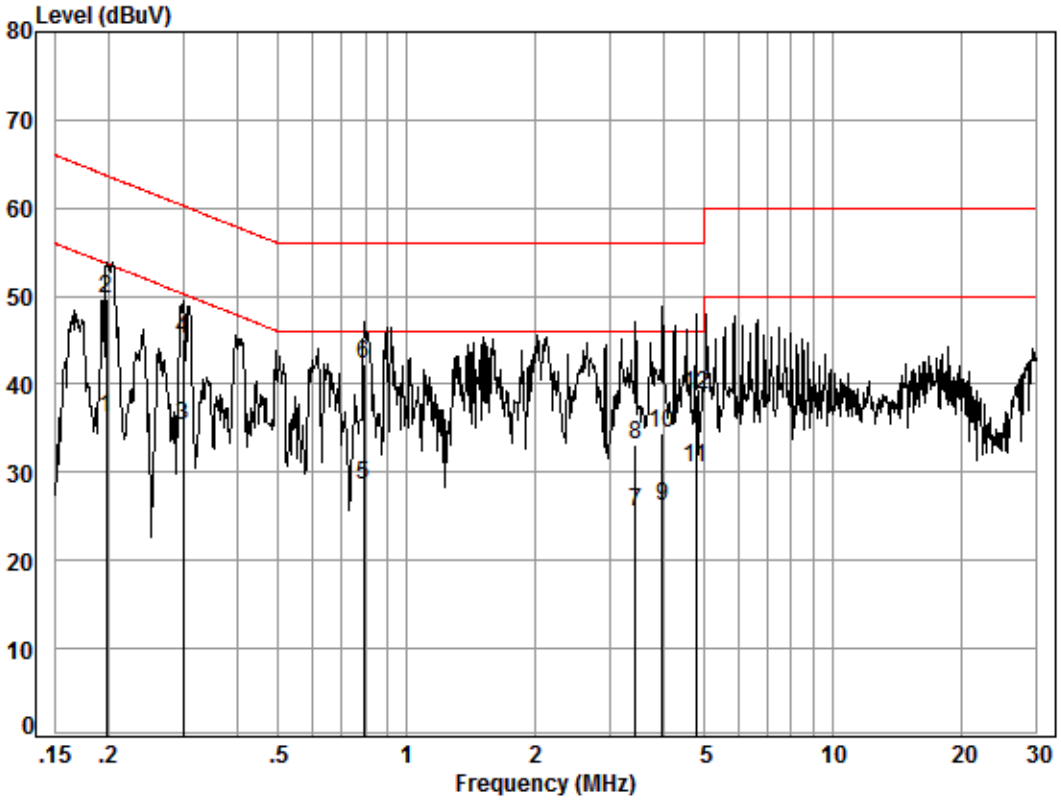
6.1.2 Test Setup Diagram



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.

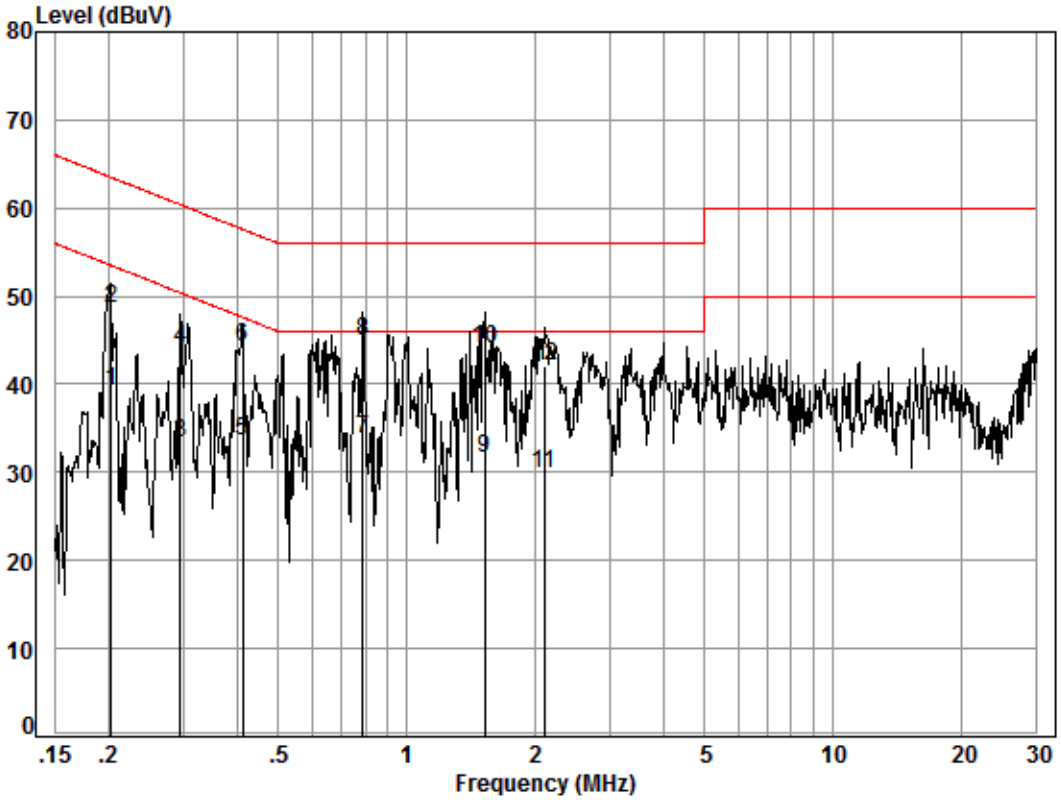
Mode:a; Line:Live Line



Site : Shielding Room
Condition: Line
Job No. : 00454CR
Test mode: a Phone

	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.20	0.02	9.50	26.62	36.14	53.71	-17.57	Average
2	0.20	0.02	9.50	40.08	49.60	63.71	-14.11	QP
3	0.30	0.01	9.51	25.86	35.38	50.28	-14.90	Average
4	0.30	0.01	9.51	35.50	45.02	60.28	-15.26	QP
5	0.79	0.02	9.50	18.93	28.45	46.00	-17.55	Average
6	0.79	0.02	9.50	32.66	42.18	56.00	-13.82	QP
7	3.45	0.02	9.55	16.00	25.57	46.00	-20.43	Average
8	3.45	0.02	9.55	23.61	33.18	56.00	-22.82	QP
9	3.99	0.01	9.54	16.62	26.17	46.00	-19.83	Average
10	3.99	0.01	9.54	24.82	34.37	56.00	-21.63	QP
11	4.77	0.01	9.55	21.00	30.56	46.00	-15.44	Average
12	4.77	0.01	9.55	29.34	38.90	56.00	-17.10	QP

Mode:a; Line:Neutral Line



Site : Shielding Room
Condition: Neutral
Job No. : 00454CR
Test mode: a Phone

	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.20	0.02	9.57	29.72	39.31	53.49	-14.18	Average
2	0.20	0.02	9.57	39.08	48.67	63.49	-14.82	QP
3	0.29	0.01	9.58	23.71	33.30	50.41	-17.11	Average
4	0.29	0.01	9.58	34.37	43.96	60.41	-16.45	QP
5	0.41	0.01	9.59	24.02	33.62	47.59	-13.97	Average
6	0.41	0.01	9.59	34.60	44.20	57.59	-13.39	QP
7	0.79	0.02	9.61	24.22	33.85	46.00	-12.15	Average
8	0.79	0.02	9.61	35.24	44.87	56.00	-11.13	QP
9	1.53	0.02	9.63	22.03	31.68	46.00	-14.32	Average
10	1.53	0.02	9.63	34.33	43.98	56.00	-12.02	QP
11	2.11	0.02	9.65	20.29	29.96	46.00	-16.04	Average
12	2.11	0.02	9.65	32.48	42.15	56.00	-13.85	QP

6.2 Radiated Emissions (Magnetic field Strength) (9kHz-30MHz)

Test Requirement: 47 CFR Part 18
Test Method: FCC OST/MP-5:1986
Frequency Range: 9kHz to 30MHz
Measurement Distance: 3m

6.2.1 E.U.T. Operation

Operating Environment:

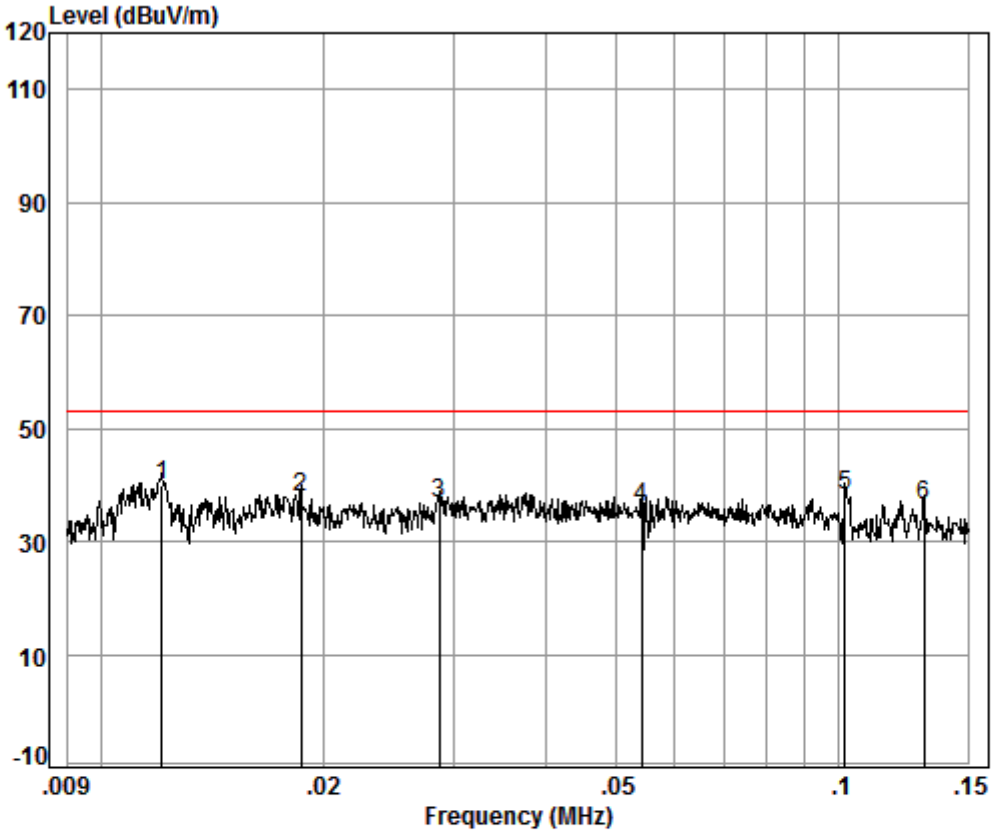
Temperature: 22.7 °C Humidity: 53.1 % RH Atmospheric Pressure: 1015 mbar

Test mode a:Normal Working_Blank

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.

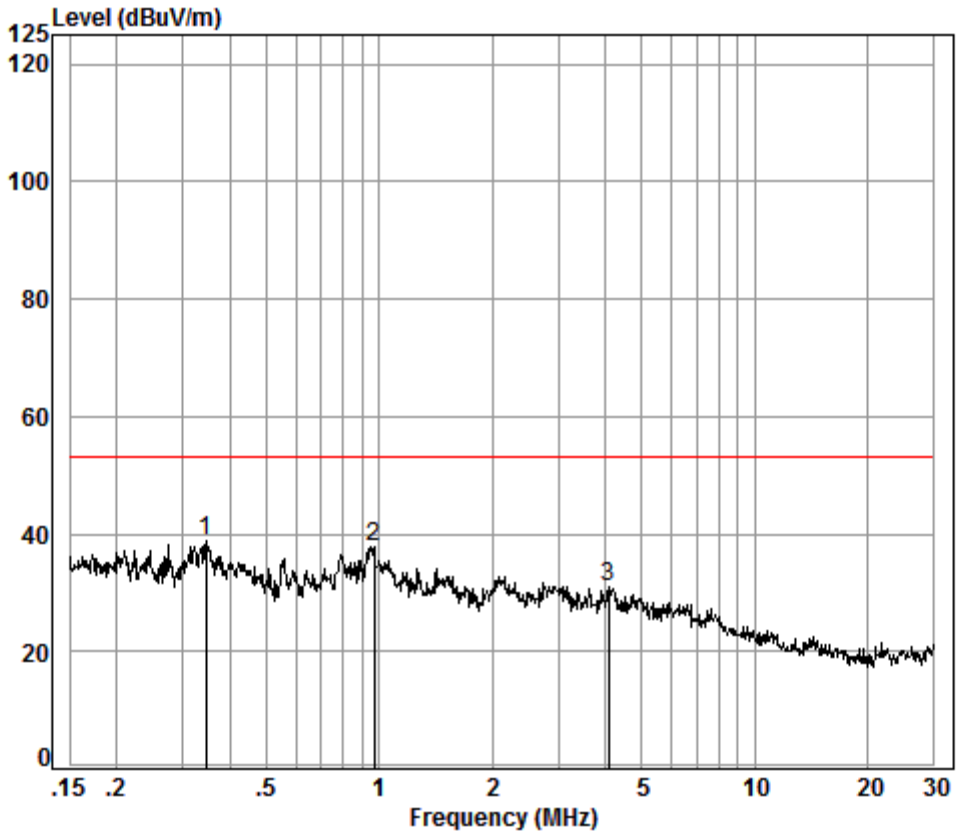
Mode:a;



Condition: 10m
Job No. : 00454CR
Test Mode: a Phone

	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	0.01	0.27	18.12	32.48	54.11	40.02	53.06	-13.04
2	0.02	0.22	15.43	32.49	54.77	37.93	53.06	-15.13
3	0.03	0.18	13.97	32.50	55.23	36.88	53.06	-16.18
4	0.05	0.11	12.34	32.51	56.04	35.98	53.06	-17.08
5	0.10	0.05	11.99	32.52	58.83	38.35	53.06	-14.71
6	0.13	0.06	11.80	32.51	56.90	36.25	53.06	-16.81

Mode:a;



Condition: 10m
Job No. : 00454CR
Test Mode: a
: phone

	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	0.35	0.10	11.86	0.00	26.97	38.93	53.06	-14.13
2	0.97	0.22	12.00	0.00	25.72	37.94	53.06	-15.12
3	4.07	0.41	12.08	0.00	18.38	30.87	53.06	-22.19

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

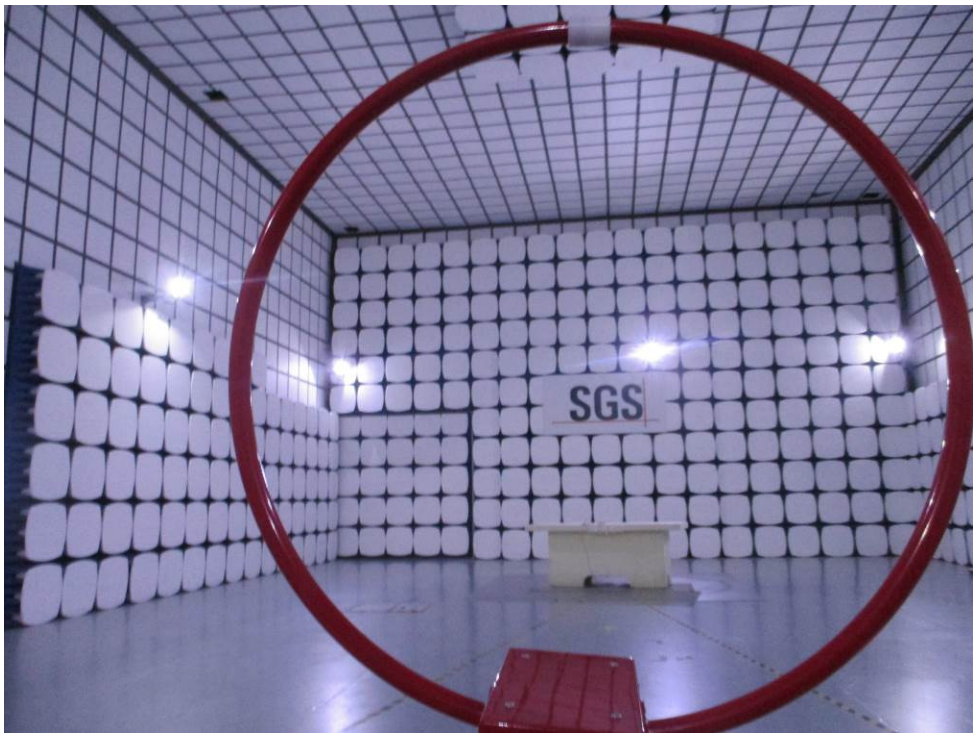
The level at 300m test distance is below:

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	40.02	100.23	3.34	10.48	23.52	-13.04
0.02	37.93	78.80	2.63	8.39	23.52	-15.13
0.03	36.88	69.82	2.33	7.34	23.52	-16.18
0.05	35.98	62.95	2.10	6.44	23.52	-17.08
0.10	38.35	82.70	2.76	8.81	23.52	-14.71
0.13	36.25	64.94	2.16	6.71	23.52	-16.81
0.35	38.93	88.41	2.95	9.39	23.52	-14.13
0.97	37.94	78.89	2.63	8.40	23.52	-15.12
4.07	30.87	34.95	1.17	1.33	23.52	-22.19

7 Photographs

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

7.2 Radiated Emissions (Magnetic field Strength) (9kHz-30MHz) Test Setup



- End of the Report -