



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

Report No.: SZEM171001106301
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TEST REPORT

Application No.: SZEM1710011063CR
Applicant: ACOUSTMAX INTERNATIONAL CO., LTD.
Address of Applicant: Unit D16/F Cheuk Nang Plaza 250 Henessy Road Wanchai HongKong,China
Manufacturer: ACOUSTMAX INTERNATIONAL CO., LTD.
Address of Manufacturer: Unit D16/F Cheuk Nang Plaza 250 Henessy Road Wanchai HongKong,China
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: ROCKIN' ROLLER 4 SPEAKER
Model No.: ROCKIN ROLLER 4 (RR4), RR4-1, RR4 PRO, RR4 mini, RR4, RR5, RR6,
RR7, RR8 ♣

♣

Please refer to section 2 of this report which indicates which model was actually tested and which were electrically identical.

FCC ID: 2AAINYS1350
Trade mark: Monster
Standard(s) : 47 CFR Part 15,Subpart B
Date of Receipt: 2017-10-30
Date of Test: 2017-11-13 to 2017-11-24
Date of Issue: 2017-11-29

Test Result:	Pass*
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* 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.

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Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2017-11-29		Original

Authorized for issue by:				
				
		Harry Wu /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 15, Subpart B	ANSI C63.4	Class B	Pass
Radiated Emissions (30MHz-1GHz)	47 CFR Part 15, Subpart B	ANSI C63.4	Class B	Pass
Radiated Emissions (above 1GHz)	47 CFR Part 15, Subpart B	ANSI C63.4	Class B	Pass

Internal Source	Upper Frequency
Below 1.705MHz	30MHz
1.705MHz to 108MHz	1GHz
108MHz to 500MHz	2GHz
500MHz to 1GHz	5GHz
Above 1GHz	5th harmonic of the highest frequency or 40GHz, whichever is lower

Remark:

Model No.: ROCKIN ROLLER 4 (RR4), RR4-1, RR4 PRO, RR4 mini, RR4, RR5, RR6, RR7, RR8

Only the model ROCKIN ROLLER 4 (RR4) was tested, since the electrical circuit design, layout, components used, internal wiring and functions were identical for all the above models, with only difference on model No. and enclosure colour.



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4 General Information

4.1 Details of E.U.T.

Power supply:	AC120V, 60Hz Or Rechargeable battery (DC12V,9AH)
Cable:	AC Cable: 200cm, Unshielded Microphone cable: 220cm unshielded
Receiving Frequency Range:	162.400MHz - 162.550MHz

4.2 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
iPhone 4	Apple	A1349	C37HL4GXDP0N
Load Resistor	SGS	N/A	REF. No.SEA0600
Micro USB Cable	PHILIPS	SWR2101	REF. No.SEA0700
Aux In Cable	SAMZHE	YPH-8310	REF. No.SEA0800

4.3 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Conduction emission	3.0dB (150kHz to 30MHz)
2	Radiated emission	4.5dB (30MHz-1GHz)
		4.8dB (1GHz-6GHz)
3	Temperature test	1 °C
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 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 –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 (30MHz-1GHz)					
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
BiConiLog Antenna (26-3000MHz)	ETS-LINDGREN	3142C	SEM003-01	2017-06-27	2020-06-26
Pre-amplifier (0.1-1300MHz)	Agilent Technologies	8447D	SEM005-01	2017-04-14	2018-04-13

Radiated Emissions (above 1GHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
3m Semi-Anechoic Chamber	AUDIX	N/A	SEM001-02	2017-05-02	2020-05-01
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM026-01	2017-07-13	2018-07-12
EXA Spectrum Analyzer	Agilent Technologies Inc	N9010A	SEM004-09	2017-06-05	2018-06-04
Horn Antenna (1-18GHz)	Rohde & Schwarz	HF907	SEM003-06	2015-06-14	2018-06-13
Low Noise Amplifier (100MHz-18GHz)	Black Diamond Series	BDLNA-0118-352810	SEM005-05	2017-09-27	2018-09-26



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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 15, Subpart B
Test Method:	ANSI C63.4
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: 25 °C Humidity: 45 % RH Atmospheric Pressure: 1015 mbar

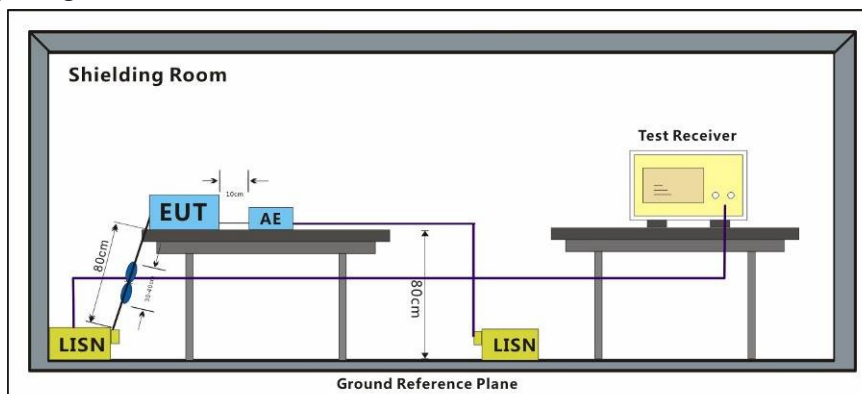
Pretest these mode to find the worst case:
 j: NOAA+ charge+ discharge, Keep EUT working at low channel while discharging with full load and being charged.

k: NOAA+ charge+ discharge, Keep EUT working at middle channel while discharging with full load and being charged.

l: NOAA+ charge+ discharge, Keep EUT working at high channel while discharging with full load and being charged.

The worst case for final test: k: NOAA+ charge+ discharge, Keep EUT working at middle channel while discharging with full load and being charged.

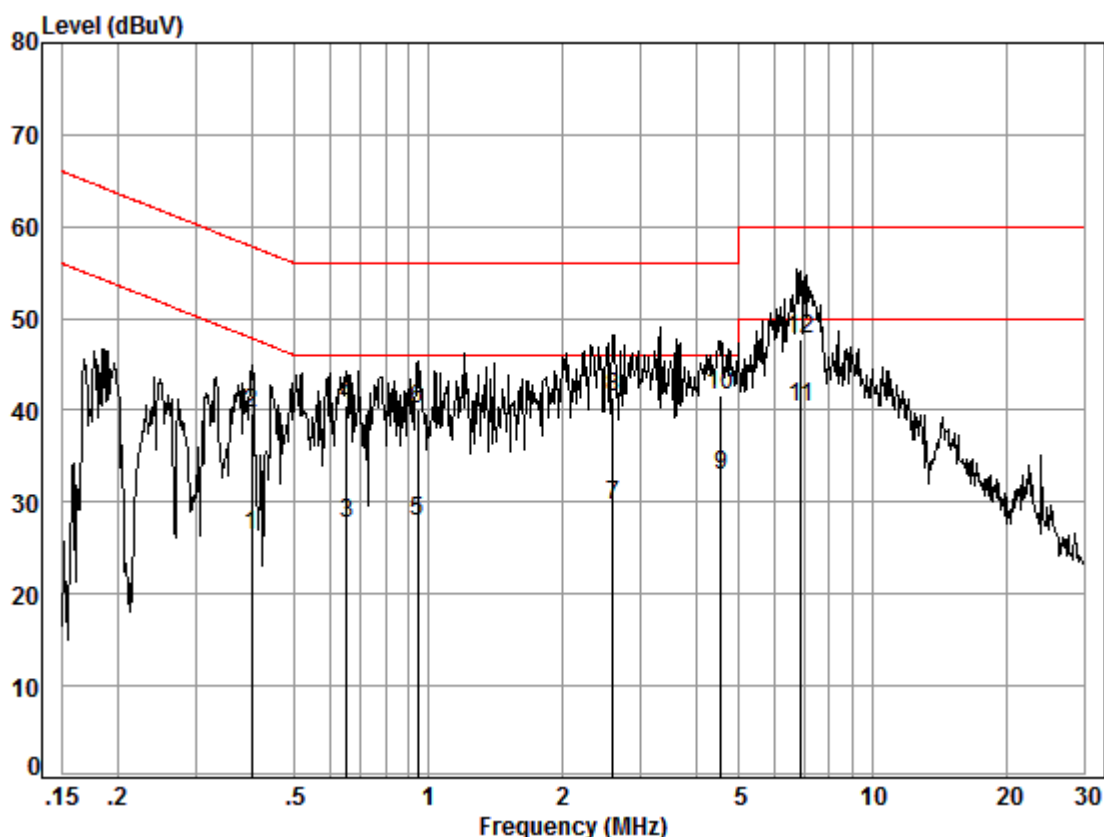
6.1.2 Test Setup Diagram



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:k; Line:Live Line



Site : Shielding Room

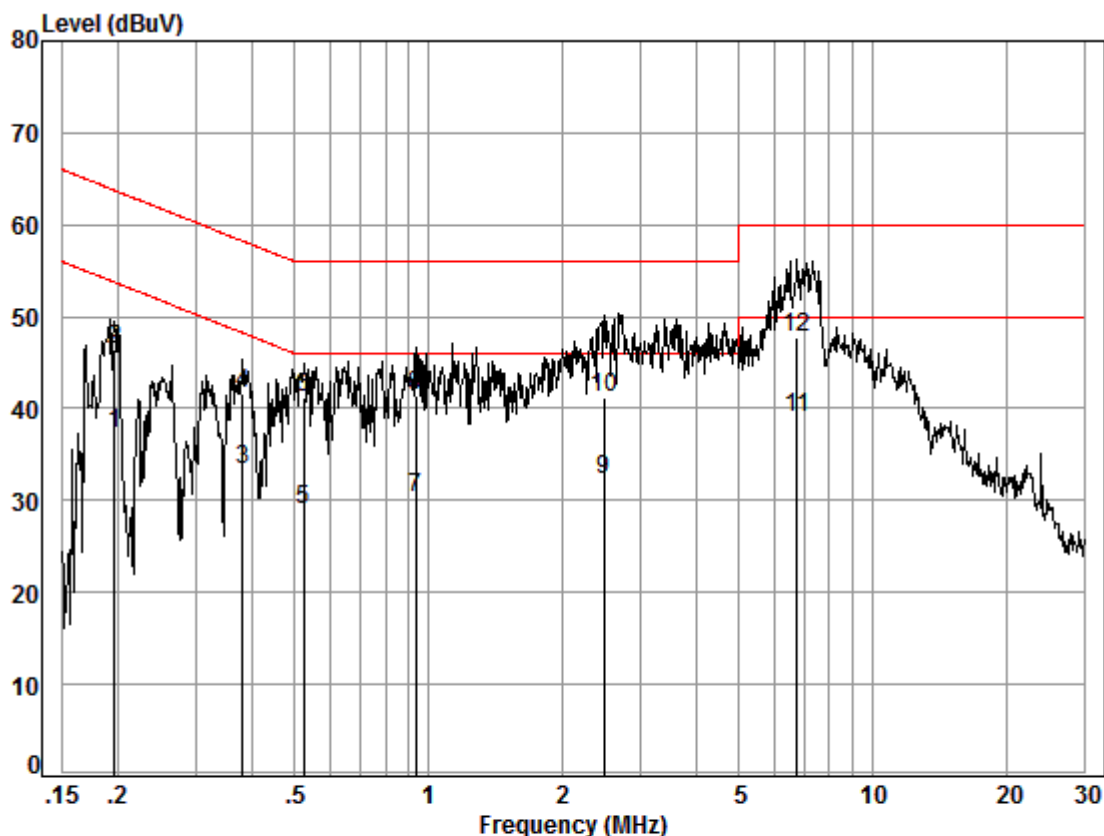
Condition: Line

Job No. : 11063CR

Test mode: k

	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.40	0.01	9.49	16.97	26.47	47.86	-21.39	Average
2	0.40	0.01	9.49	30.06	39.56	57.86	-18.30	QP
3	0.65	0.02	9.51	18.21	27.74	46.00	-18.26	Average
4	0.65	0.02	9.51	30.93	40.46	56.00	-15.54	QP
5	0.95	0.02	9.49	18.41	27.92	46.00	-18.08	Average
6	0.95	0.02	9.49	30.58	40.09	56.00	-15.91	QP
7	2.61	0.02	9.53	20.08	29.63	46.00	-16.37	Average
8	2.61	0.02	9.53	31.90	41.45	56.00	-14.55	QP
9	4.55	0.01	9.55	23.41	32.97	46.00	-13.03	Average
10	4.55	0.01	9.55	32.13	41.69	56.00	-14.31	QP
11	6.91	0.01	9.59	30.62	40.22	50.00	-9.78	Average
12	6.91	0.01	9.59	38.14	47.74	60.00	-12.26	QP

Mode:k; Line:Neutral Line



Site : Shielding Room

Condition: Neutral

Job No. : 11063CR

Test mode: k

	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	27.59	37.18	53.76	-16.58	Average
2	0.20	0.02	9.57	36.89	46.48	63.76	-17.28	QP
3	0.38	0.01	9.59	23.86	33.46	48.25	-14.79	Average
4	0.38	0.01	9.59	32.08	41.68	58.25	-16.57	QP
5	0.52	0.01	9.61	19.32	28.94	46.00	-17.06	Average
6	0.52	0.01	9.61	31.57	41.19	56.00	-14.81	QP
7	0.94	0.02	9.62	20.75	30.39	46.00	-15.61	Average
8	0.94	0.02	9.62	31.67	41.31	56.00	-14.69	QP
9	2.49	0.02	9.64	22.55	32.21	46.00	-13.79	Average
10	2.49	0.02	9.64	31.55	41.21	56.00	-14.79	QP
11	6.77	0.01	9.72	29.20	38.93	50.00	-11.07	Average
12	6.77	0.01	9.72	38.02	47.75	60.00	-12.25	QP

6.2 Radiated Emissions (30MHz-1GHz)

Test Requirement: 47 CFR Part 15, Subpart B

Test Method: ANSI C63.4

Frequency Range: 30MHz to 1GHz

Measurement Distance: 3m

Limit:

30MHz -88MHz 40.0(dBμV/m) quasi-peak

88MHz-216MHz 43.5(dBμV/m) quasi-peak

216MHz-960MHz 46.0(dBμV/m) quasi-peak

960MHz-1000MHz 54.0(dBμV/m) quasi-peak

Detector: Peak for pre-scan (120kHz resolution bandwidth) 30M to1000MHz

6.2.1 E.U.T. Operation

Operating Environment:

Temperature: 24 °C Humidity: 54 % RH Atmospheric Pressure: 1015 mbar

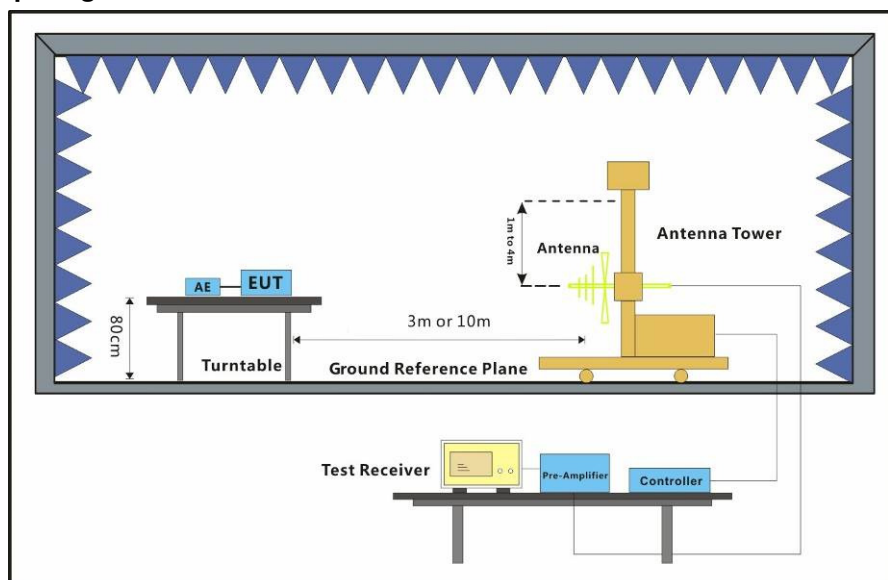
Pretest these j: NOAA+ charge+ discharge, Keep EUT working at low channel while discharging mode to find the worst case: with full load and being charged.

k: NOAA+ charge+ discharge, Keep EUT working at middle channel while discharging with full load and being charged.

l: NOAA+ charge+ discharge, Keep EUT working at high channel while discharging with full load and being charged.

The worst case for final test: k: NOAA+ charge+ discharge, Keep EUT working at middle channel while discharging with full load and being charged.

6.2.2 Test Setup Diagram

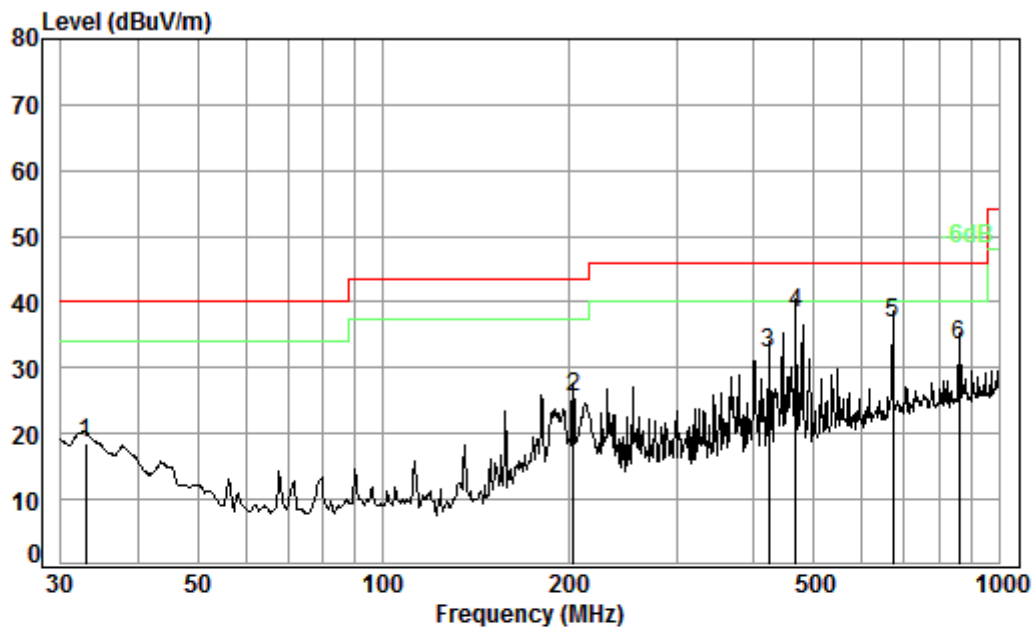


6.2.3 Measurement Data

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:k; Polarization:Horizontal



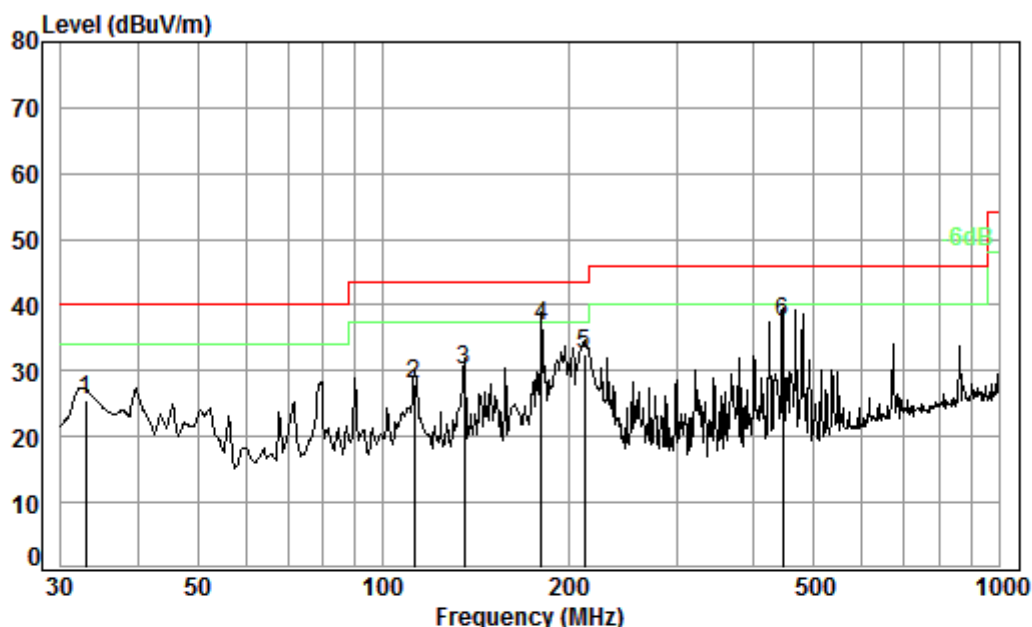
Condition: 3m HORIZONTAL

Job No. : 11063CR

Test mode: k

	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	32.86	0.60	17.10	27.35	28.09	18.44	40.00
2	203.52	1.42	10.38	26.69	40.43	25.54	43.50
3	423.54	2.30	16.39	27.27	40.72	32.14	46.00
4 pp	468.88	2.49	17.58	27.54	45.90	38.43	46.00
5	672.84	2.85	21.33	27.45	40.05	36.78	46.00
6	863.06	3.46	22.71	26.96	34.19	33.40	46.00

Mode:k; Polarization:Vertical



Condition: 3m VERTICAL

Job No. : 11063CR

Test mode: k

	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	32.86	0.60	17.10	27.35	35.07	25.42	40.00
2	112.52	1.23	8.42	27.11	45.46	28.00	43.50
3	135.51	1.29	7.92	26.98	47.79	30.02	43.50
4 pp	180.65	1.37	9.91	26.77	52.29	36.80	43.50
5	212.27	1.47	10.84	26.65	46.97	32.63	43.50
6	446.41	2.40	16.83	27.42	45.66	37.47	46.00

6.3 Radiated Emissions (above 1GHz)

Test Requirement:	47 CFR Part 15, Subpart B
Test Method:	ANSI C63.4
Frequency Range:	Above 1GHz
Measurement Distance:	3m
Limit:	
Above 1GHz	74(dBμV/m) peak, 54(dBμV/m) average
Detector:	Peak for pre-scan (1000kHz resolution bandwidth) 1000M to 18000MHz

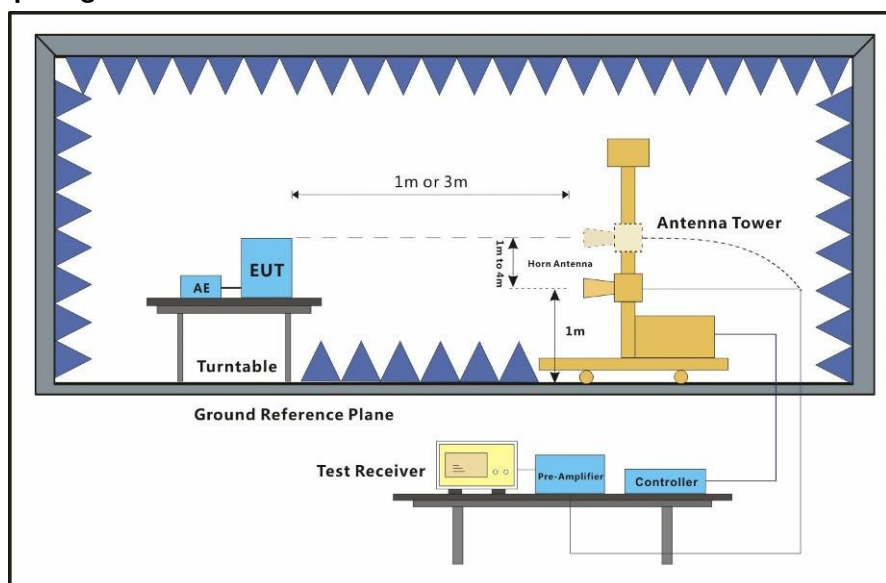
6.3.1 E.U.T. Operation

Operating Environment:

Temperature:	23 °C	Humidity:	54 % RH	Atmospheric Pressure:	1015 mbar
Pretest these mode to find the worst case:	<p>j: NOAA+ charge+ discharge, Keep EUT working at low channel while discharging with full load and being charged.</p> <p>k: NOAA+ charge+ discharge, Keep EUT working at middle channel while discharging with full load and being charged.</p> <p>l: NOAA+ charge+ discharge, Keep EUT working at high channel while discharging with full load and being charged.</p>				

The worst case for final test: k: NOAA+ charge+ discharge, Keep EUT working at middle channel while discharging with full load and being charged.

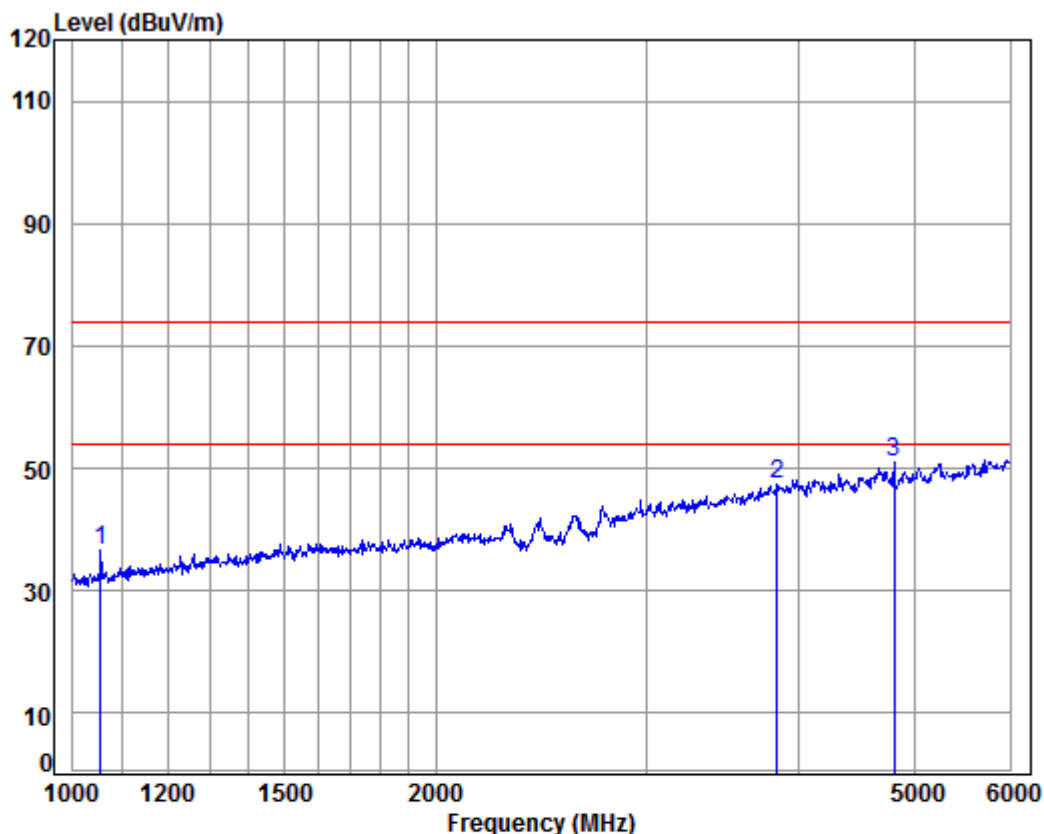
6.3.2 Test Setup Diagram



6.3.3 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:k; Polarization:Horizontal



Condition: 3m Horizontal

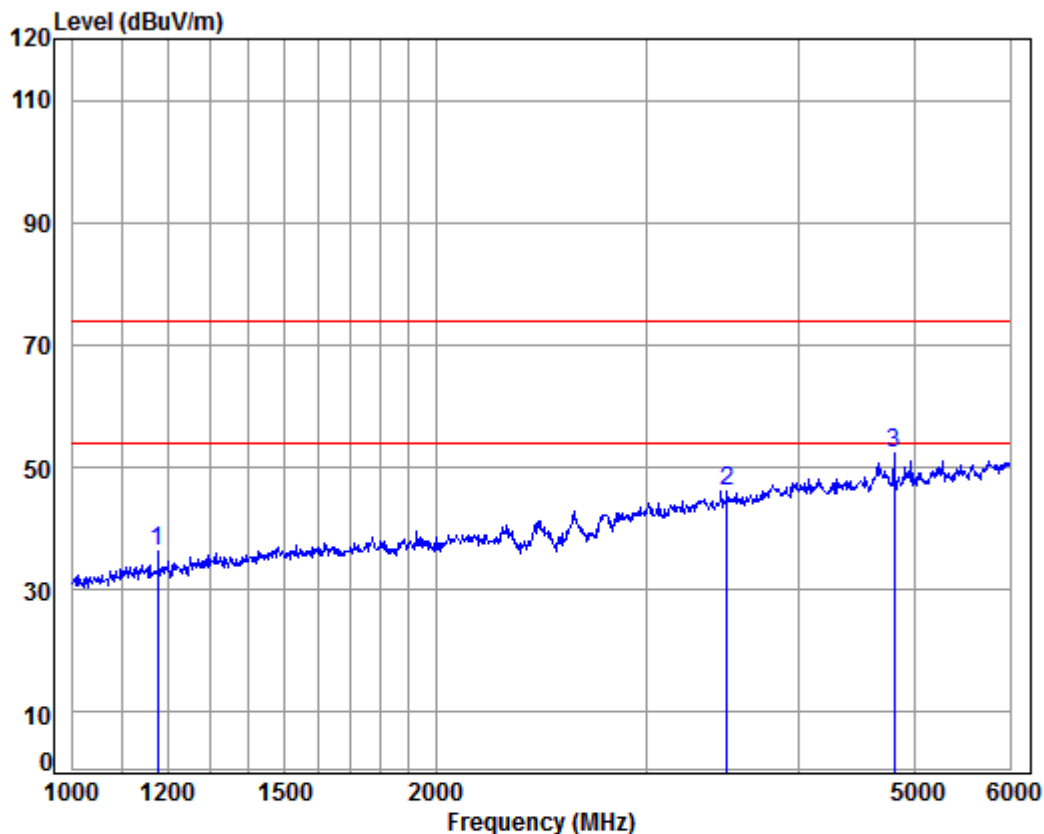
Job No : 11063CR

Mode : k

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1055.224	3.81	23.72	37.79	46.88	36.62	74.00	-37.38	Peak
2	3840.534	6.82	33.17	37.17	44.67	47.49	74.00	-26.51	Peak
3 pp	4804.636	7.89	34.16	37.26	46.35	51.14	74.00	-22.86	Peak



Mode:k; Polarization:Vertical



Condition: 3m VERTICAL

Job No : 11063CR

Mode : k

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1177.096	4.33	24.37	37.78	45.23	36.15	74.00	-37.85	Peak
2	3492.606	6.45	32.19	37.34	44.88	46.18	74.00	-27.82	Peak
3 pp	4804.636	7.89	34.16	37.26	47.53	52.32	74.00	-21.68	Peak



7 Photographs

7.1 Test Setup

Refer to setup photos.

7.2 EUT Constructional Details

Refer to External photos and Internal photos.

- End of the Report -