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Report No.: SZEM160400216002
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TEST REPORT

Application No.: SZEM1704003558BA
Applicant: Flashbay Electronics
Address of Applicant: Bldg b & C Xi Feng Cheng IND Zone, No. 2 FuYuan Road He Ping, Village, FuYong Town, ShenZhen
Manufacturer: Flashbay Electronics
Address of Manufacturer: Bldg b & C Xi Feng Cheng IND Zone, No. 2 FuYuan Road He Ping, Village, FuYong Town, ShenZhen
Factory: Flashbay Electronics
Address of Factory: Bldg b & C Xi Feng Cheng IND Zone, No. 2 FuYuan Road He Ping, Village, FuYong Town, ShenZhen
Equipment Under Test (EUT):
EUT Name: power bank
Model No.: Tour(TR)
Standards: AS/NZS CISPR 32:2015
 (only for Conducted Disturbance at Mains Terminals and Radiated Disturbance)
Date of Receipt: 2017-04-27
Date of Test: 2017-05-03 to 2017-05-08
Date of Issue: 2017-05-12

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		2017-05-12		Original

Authorized for issue by:				
Tested By				
		Foray Chen /Project Engineer		2017-05-08
Checked By				
		Eric Fu /Reviewer		2017-05-12

2 Test Summary

Emission Part				
Item	Standard	Method	Requirement	Result
Conducted Disturbance at Mains Terminals (150kHz-30MHz)	AS/NZS CISPR 32:2015	AS/NZS CISPR 32:2015	Class B	Pass
Radiated Disturbance (30MHz-1GHz)	AS/NZS CISPR 32:2015	AS/NZS CISPR 32:2015	Class B	Pass

InternalSource	UpperFrequency
Below 108MHz	1GHz
108MHz to 500MHz	2GHz
500MHz to 1GHz	5GHz
Above 1GHz	5 times the highest frequency or 6 GHz, whichever is less

Remark:

Model No.: Tour(TR)

This test report (Ref. No.: SZEM160400216002) is only valid with the original test report (Ref. No.: SZEM160400216001).

Compared with the original report, this report changed the Model No., Since the electrical circuit design, layout, components used and internal wiring for the model in the report SZEM160400216002 were exactly the same as the model in original report SZEM160400216001, only different on model No..

Review this report and the original report, this report updated the below standards.

Original report standard

The newest report standard

AS/NZS CISPR 22:2009+A1:2010

AS/NZS CISPR 32:2015

Considering to the difference, pre-scan were performed on the sample in this report to find the items which can be influential to the result in the original test report for fully retest.

Therefore in this report Conducted Disturbance at Mains Terminals(150kHz-30MHz)and Radiated Disturbance(30MHz-1GHz) were fully retested on Model Tour(TR) and shown the data in this report, other tests please refer to original report SZEM160400216001.



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4 General Information

4.1 Details of E.U.T.

Power supply: Input Voltage: DC5V 1A
Output Voltage: DC5V 1A
Rechargeable Battery Capacity: 2500mAh
Cable: USB Cable 3cm Unshielded

4.2 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
Adapter	Apple	A1357 W010A051	REF. No.SEA0500
Load Resistor	SGS	N/A	REF. No.SEA0600
USB Cable	PHILIPS	SWR2101	REF. No.SEA0700

4.3 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Conduction emission	3.0dB (150kHz to 30MHz)
2	Radiated emission	4.5dB (30MHz-1GHz)
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 – 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)**

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 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	2018-05-10
LISN	Rohde & Schwarz	ENV216	SEM007-01	2016-10-09	2017-10-09
LISN	ETS-LINDGREN	3816/2	SEM007-02	2017-04-14	2018-04-14
EMI Test Receiver	Rohde & Schwarz	ESCI	SEM004-02	2017-04-14	2018-04-14

Radiated Disturbance(30MHz-1GHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
10m Semi-Anechoic Chamber	SAEMC	FSAC1018	SEM001-03	2017-05-10	2018-05-10
EMI Test Receiver (9k-3GHz)	Rohde & Schwarz	ESR	SEM004-03	2017-04-14	2018-04-14
Trilog-Broadband Antenna (30M-1GHz)	Schwarzbeck	VULB9168	SEM003-18	2016-06-29	2019-06-29
Pre-amplifier	Sonoma Instrument Co	310N	SEM005-03	2016-07-06	2017-07-06

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	2016-10-12	2017-10-12
Humidity/ Temperature Indicator	Shanghai Meteorological Industry Factory	ZJ1-2B	SEM002-04	2016-10-12	2017-10-12
Humidity/ Temperature Indicator	Mingle	N/A	SEM002-08	2016-10-12	2017-10-12
Barometer	Changchun Meteorological Industry Factory	DYM3	SEM002-01	2016-05-18	2017-05-18

6 Emission Test Results

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

Test Requirement:	AS/NZS CISPR 32:2015
Test Method:	AS/NZS CISPR 32:2015
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: 25.0 °C Humidity: 55 % RH Atmospheric Pressure: 1015 mbar

a: Charge mode, keep EUT being charged with adapter.

Pretest these mode to find the worst case:

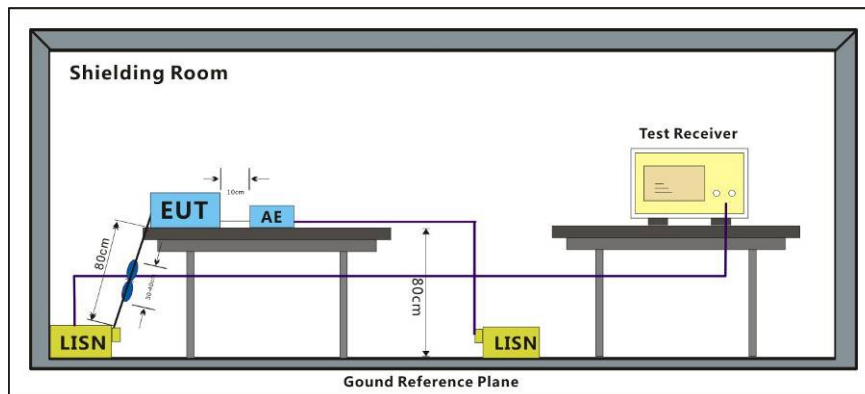
c: Charge and full output mode, keep EUT being charged with adapter and working with full load.

d: Idle mode.

The worst case for final test:

c: Charge and full output mode, keep EUT being charged with adapter and working with full load.

6.1.2 Test Setup Diagram

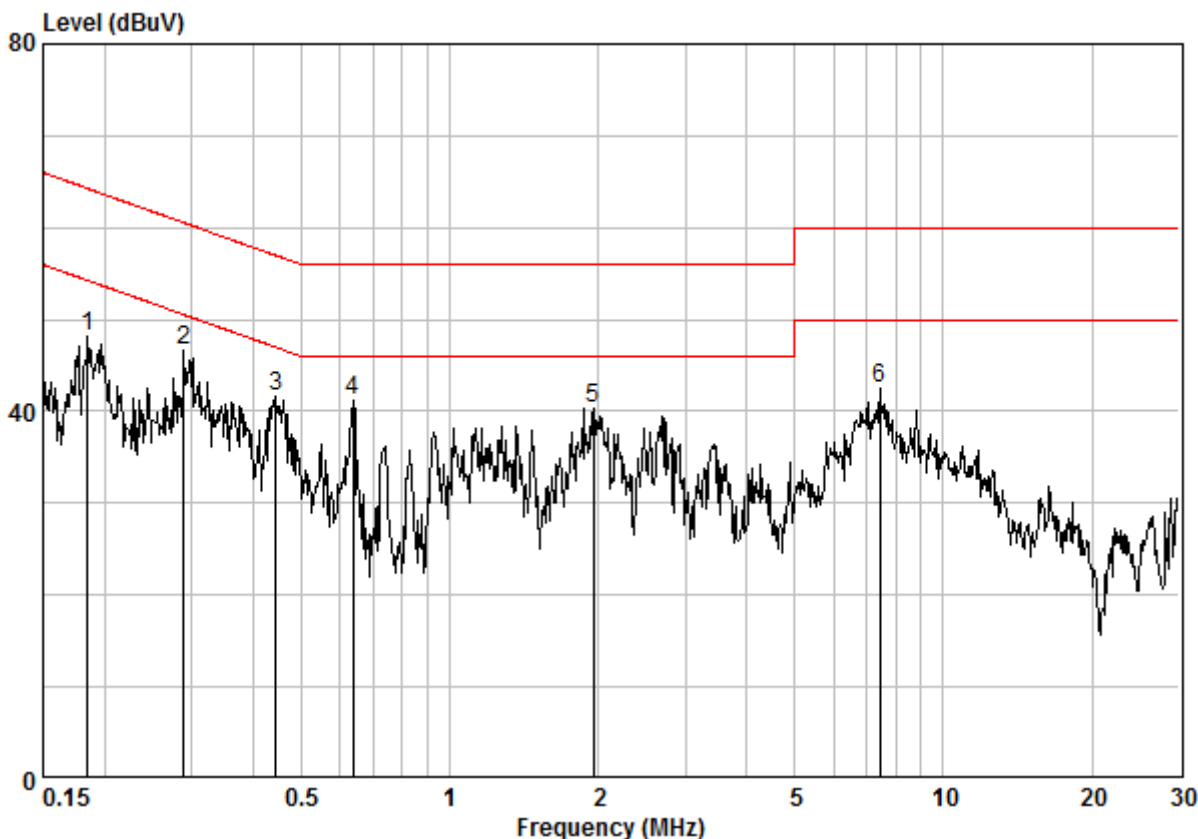


6.1.3 Measurement Data

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:c; Line:Live Line

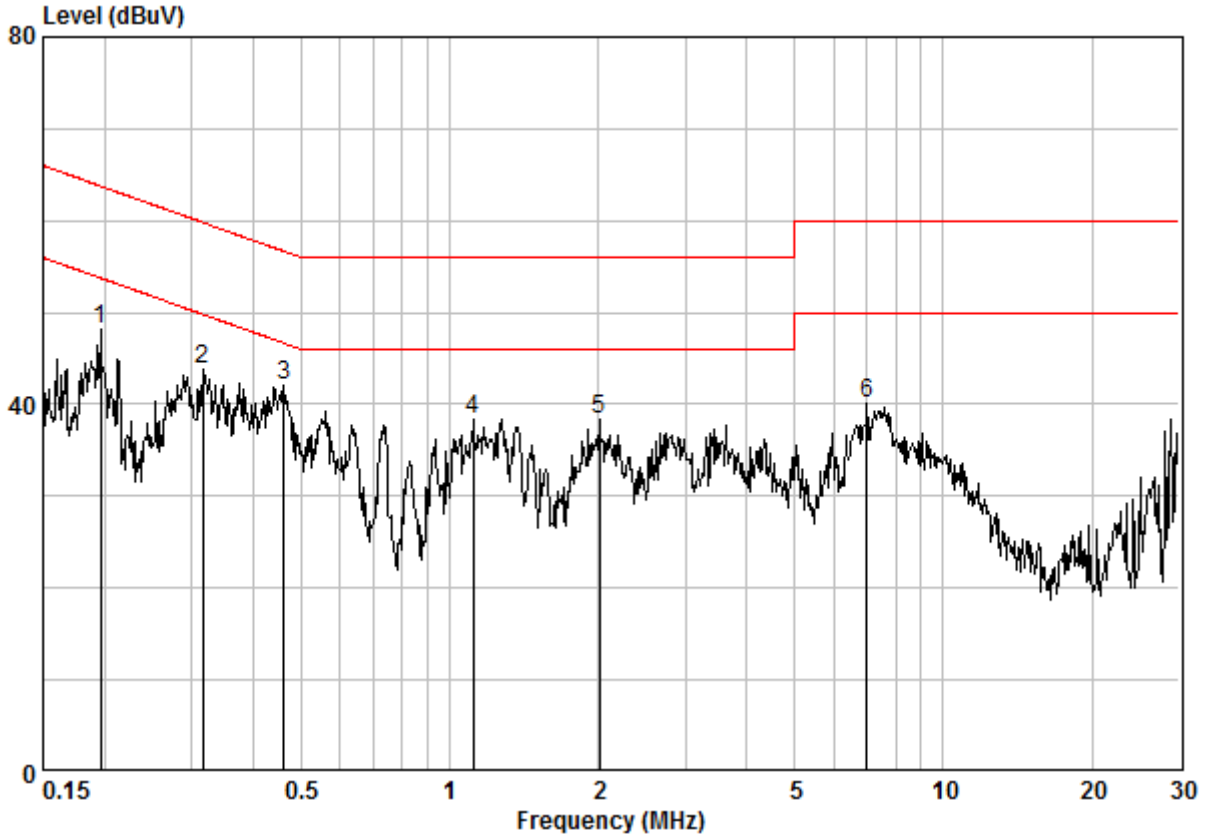


Site : Shielding Room
Condition : CE LINE
Job No. : 03558BA
Mode : c

	Freq	Cable Loss	LISN Factor	Read Level	Limit Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.18443	0.02	9.64	38.60	48.26	54.28	-6.02	Peak
2 @	0.28935	0.02	9.64	36.97	46.63	50.54	-3.92	Peak
3	0.44443	0.02	9.64	31.97	41.63	46.98	-5.35	Peak
4	0.63720	0.02	9.65	31.43	41.10	46.00	-4.90	Peak
5	1.959	0.03	9.67	30.66	40.35	46.00	-5.65	Peak
6	7.446	0.09	9.80	32.70	42.59	50.00	-7.41	Peak



Mode:c; Line:Neutral Line



Site : Shielding Room
Condition : CE NEUTRAL
Job No. : 03558BA
Mode : c

	Freq	Cable Loss	LISN Factor	Read Level	Limit Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.19654	0.02	9.63	38.46	48.11	53.76	-5.65	Peak
2	0.31662	0.02	9.63	34.08	43.73	49.80	-6.06	Peak
3	0.46122	0.02	9.63	32.50	42.15	46.67	-4.52	Peak
4	1.117	0.03	9.64	28.74	38.41	46.00	-7.59	Peak
5	2.012	0.03	9.66	28.57	38.26	46.00	-7.74	Peak
6	6.988	0.08	9.77	30.37	40.21	50.00	-9.79	Peak



6.2 Radiated Disturbance(30MHz-1GHz)

Test Requirement:	AS/NZS CISPR 32:2015
Test Method:	AS/NZS CISPR 32:2015
Frequency Range:	30MHz to 1GHz
Measurement Distance:	10m
Limit:	
30MHz-230MHz	30 dB(μ V/m) quasi-peak
230MHz-1GHz	37 dB(μ V/m) quasi-peak
Detector:	Peak for pre-scan (120kHz resolution bandwidth) 30M to 1000MHz

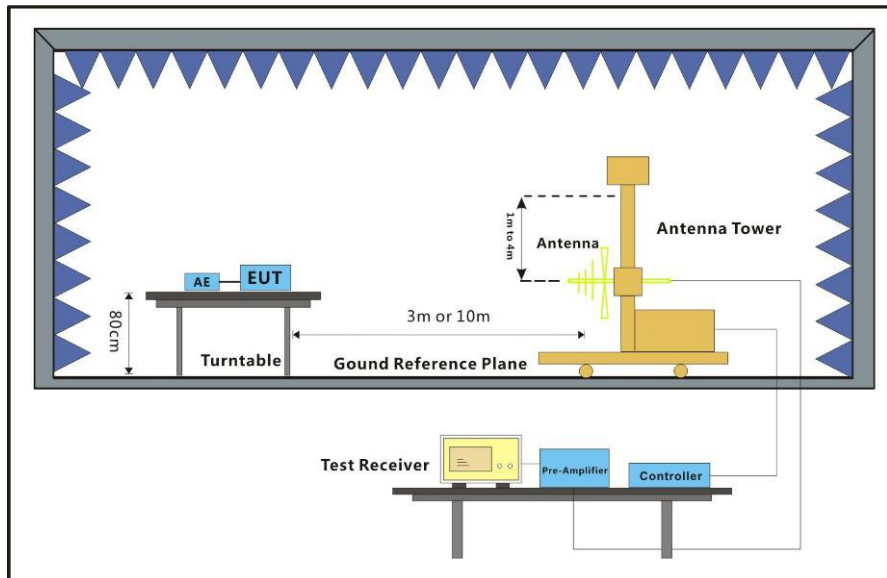
6.2.1 E.U.T. Operation

Operating Environment:

Temperature: 22.0 °C Humidity: 54 % RH Atmospheric Pressure: 1015 mbar

- a: Charge mode, keep EUT being charged with adapter.
 - b: Full output mode, keep EUT working with full load.
 - c: Charge and full output mode, keep EUT being charged with adapter and working with full load.
 - d: Idle mode.
- The worst case for final test: c: Charge and full output mode, keep EUT being charged with adapter and working with full load.

6.2.2 Test Setup Diagram

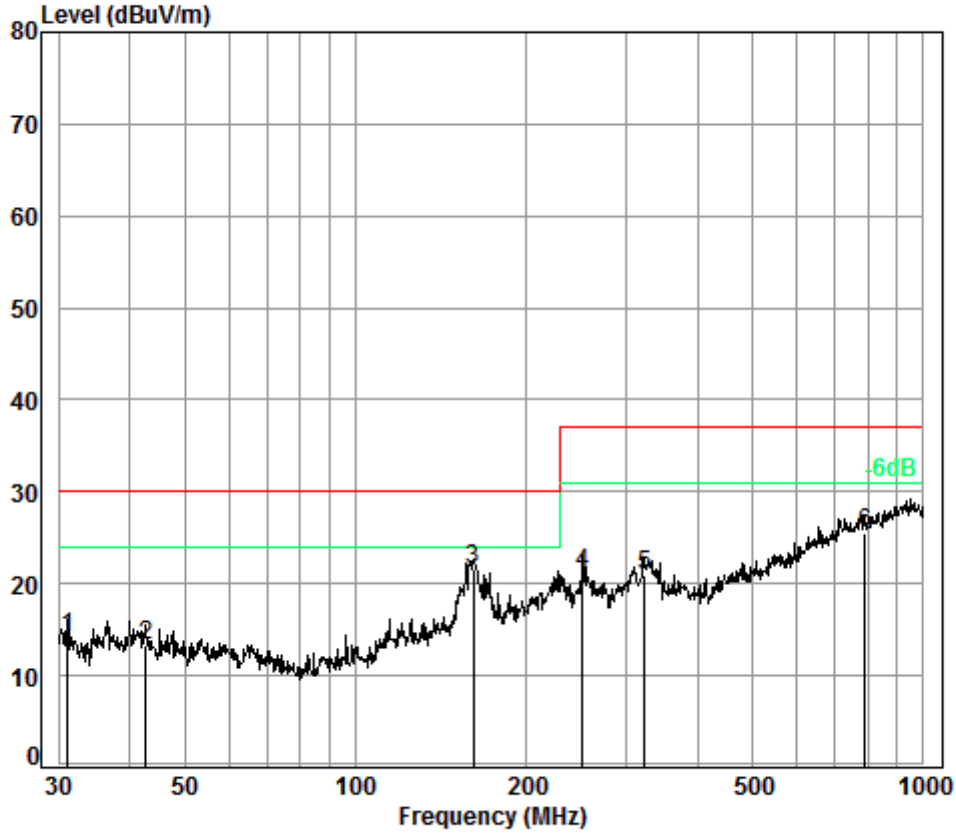


6.2.3 Measurement Data

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:c; Polarization:Horizontal



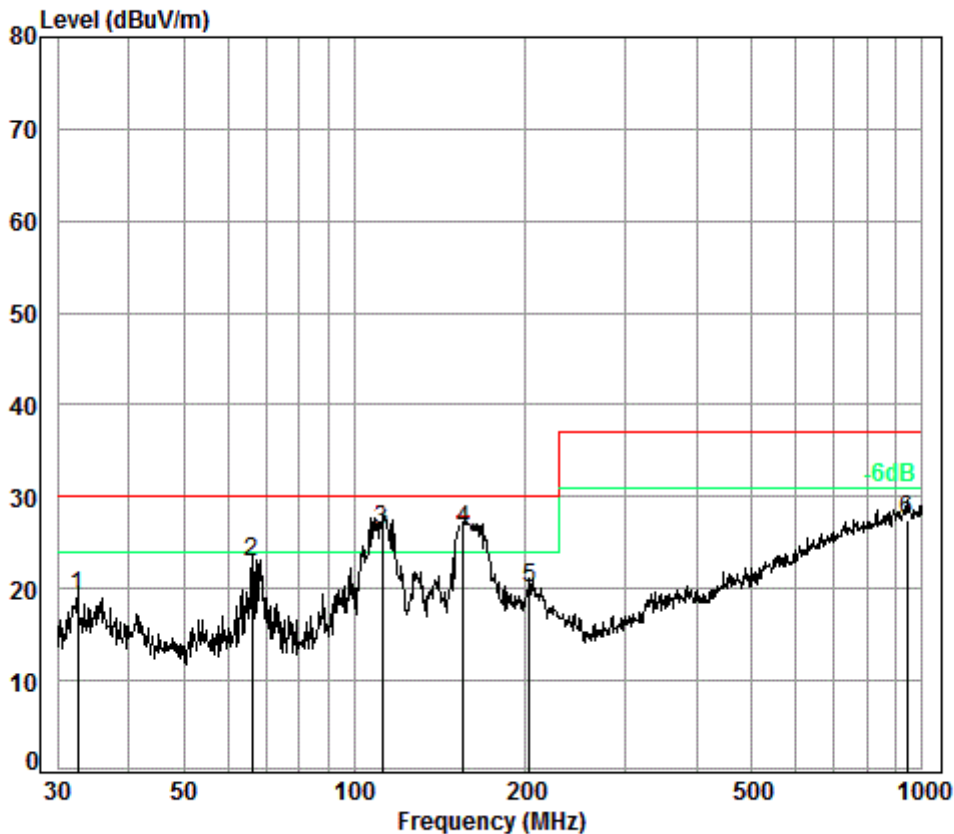
Condition: 10m HORIZONTAL

Job No. : 03558BA

Test Mode: c

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Limit Level	Limit Line	Over Limit
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	31.18	6.99	12.51	32.97	27.59	14.12	30.00	-15.88
2	42.75	6.80	13.08	32.99	26.49	13.38	30.00	-16.62
3 pp	161.47	7.45	13.24	32.73	33.68	21.64	30.00	-8.36
4	251.18	7.74	11.27	32.64	34.82	21.19	37.00	-15.81
5	323.32	8.18	13.32	32.60	32.09	20.99	37.00	-16.01
6	787.85	9.75	21.15	32.60	27.25	25.55	37.00	-11.45

Mode:c; Polarization:Vertical



Condition: 10m VERTICAL

Job No. : 03558BA

Test Mode: c

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Limit Level	Limit Line	Over Limit
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	32.63	6.98	12.56	32.97	32.69	19.26	30.00	-10.74
2	66.03	6.90	10.80	32.92	38.08	22.86	30.00	-7.14
3	111.80	7.48	10.58	32.78	41.19	26.47	30.00	-3.53
4 pp	155.70	7.46	13.40	32.74	38.50	26.62	30.00	-3.38
5	203.52	7.37	9.38	32.70	36.11	20.16	30.00	-9.84
6	938.83	10.14	22.65	32.50	27.26	27.55	37.00	-9.45

7 Photographs

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



7.2 Radiated Disturbance(30MHz-1GHz) Test Setup



7.3 EUT Constructional Details



