



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.: SZEM170600661801
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TEST REPORT

Application No.: SZEM1706006618CR
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: wireless charger
Model No.: Cirque(CQ), Edge(ED) ♣
♣ Please refer to section 2 of this report which indicates which model was actually tested and which were electrically identical.

Standards: AS/NZS CISPR 11:2011
Date of Receipt: 2017-06-27
Date of Test: 2017-06-28
Date of Issue: 2017-07-01

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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<i>Revision Record</i>				
<i>Version</i>	<i>Chapter</i>	<i>Date</i>	<i>Modifier</i>	<i>Remark</i>
01		2017-07-01		Original

Authorized for issue by:				
				
		<hr/>		
		Foray Chen /Project Engineer		
				
		<hr/>		
		Eric Fu /Reviewer		

2 Test Summary

Emission Part				
Item	Standard	Method	Requirement	Result
Conducted Emissions at Mains Terminals (150kHz-30MHz)	AS/NZS CISPR 11:2011	AS/NZS CISPR 11:2011	Group 2 Class B	Pass
Radiated Emissions (30MHz-1GHz)	AS/NZS CISPR 11:2011	AS/NZS CISPR 11:2011	Group 2 Class B	Pass
Radiated Emissions (Magnetic field Strength) (150kHz-30MHz)	AS/NZS CISPR 11:2011	AS/NZS CISPR 11:2011	Group 2 Class B	Pass

Declaration of EUT Family Grouping:

Model No.: Cirque(CQ), Edge(ED)

Only the model Edge(ED) was tested, since the electrical circuit design, PCB layout, components used and internal wiring were identical for the above models, with only difference being of shape and model No..



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4 General Information

4.1 Details of E.U.T.

Power supply: Input: DC5.0V 2A
Output: DC5.0V 1.5A

4.2 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
iPhone 6	Apple	MG472ZP/A	C34NHTMFG5MN
Adapter	Apple	A1357 W010A051	REF. No.SEA0500
USB Cable	PHILIPS	SWR2101	REF. No.SEA0700
Wireless charger receiver board	Supply by client	N/A	N/A

4.3 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Conduction emission	3.0dB (150kHz to 30MHz)
2	Radiated emission	4.5dB (below 1GHz)
		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 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	2018-05-10
LISN	Rohde & Schwarz	ENV216	SEM007-01	2016-10-09	2017-10-09
LISN	ETS-LINDGREN	3816/2	SEM007-02	2017-04-14	2018-04-13
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
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	2018-04-13
Trilog-Broadband Antenna (30M-1GHz)	Schwarzbeck	VULB9168	SEM003-18	2016-06-29	2019-06-29
Pre-amplifier	Sonoma Instrument Co	310N	SEM005-03	2017-06-05	2018-06-04

Radiated Emissions (Magnetic field Strength)(150kHz-30MHz)					
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	2018-04-13
Trilog-Broadband Antenna (30M-1GHz)	Schwarzbeck	VULB9168	SEM003-18	2016-06-29	2019-06-29
Pre-amplifier	Sonoma Instrument Co	310N	SEM005-03	2017-06-05	2018-06-04
Active.Loop Antenna	ETS-LINDGREN	6502	SEM003-08	2015-08-14	2018-08-14



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	2017-04-18	2018-04-18

6 Emission Test Results

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

Test Requirement:	AS/NZS CISPR 11:2011
Test Method:	AS/NZS CISPR 11:2011
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

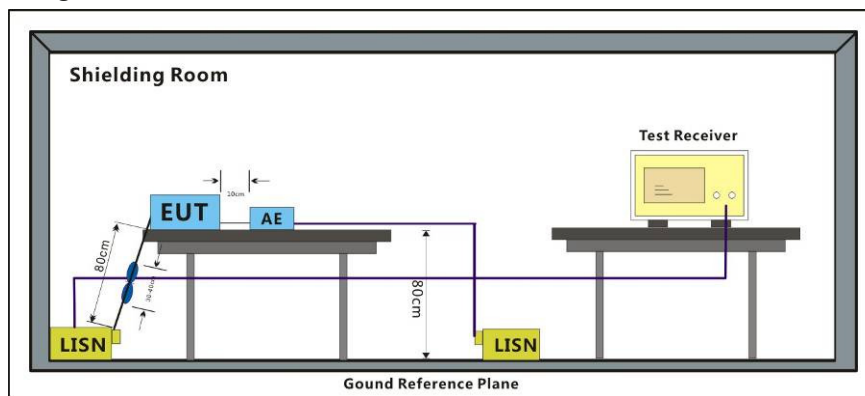
6.1.1 E.U.T. Operation

Operating Environment:

Temperature: 25 °C Humidity: 55 % RH Atmospheric Pressure: 1005 mbar

Test mode a: On mode, keep EUT charging to the wireless receiver device.

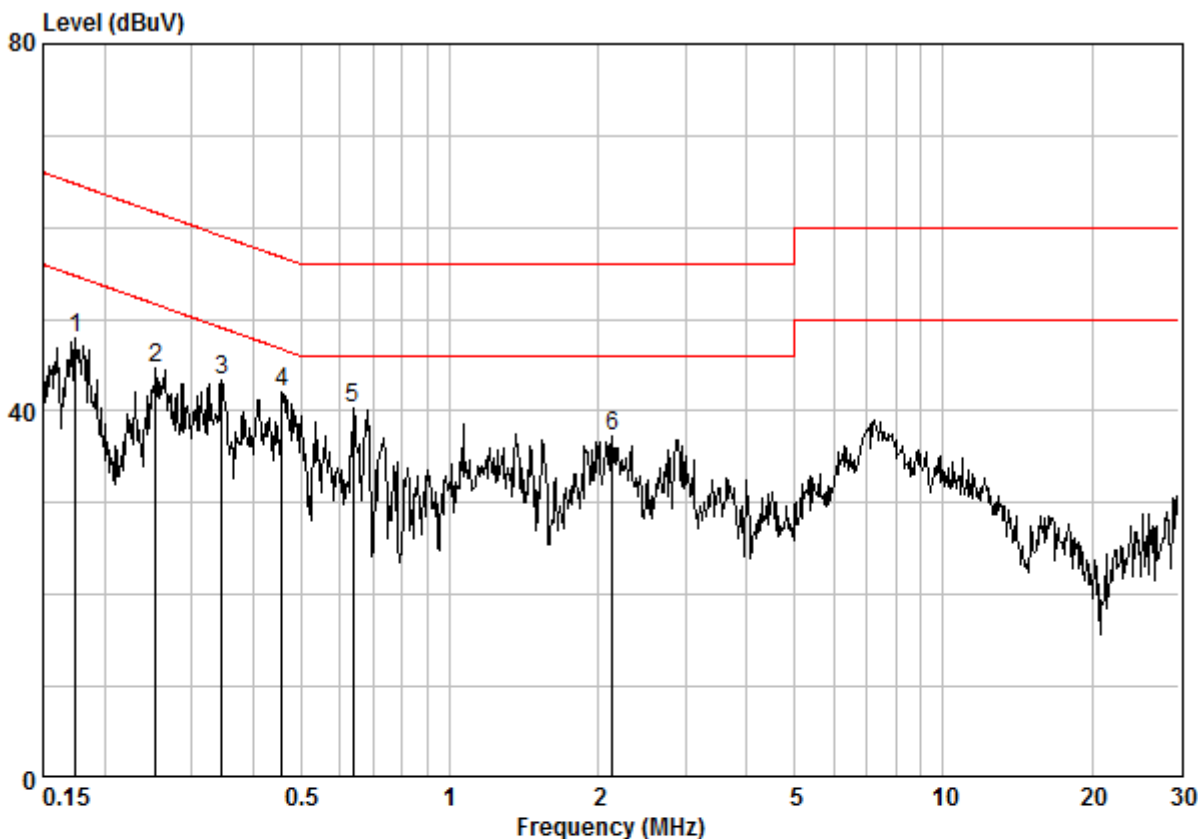
6.1.2 Test Setup Diagram



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.

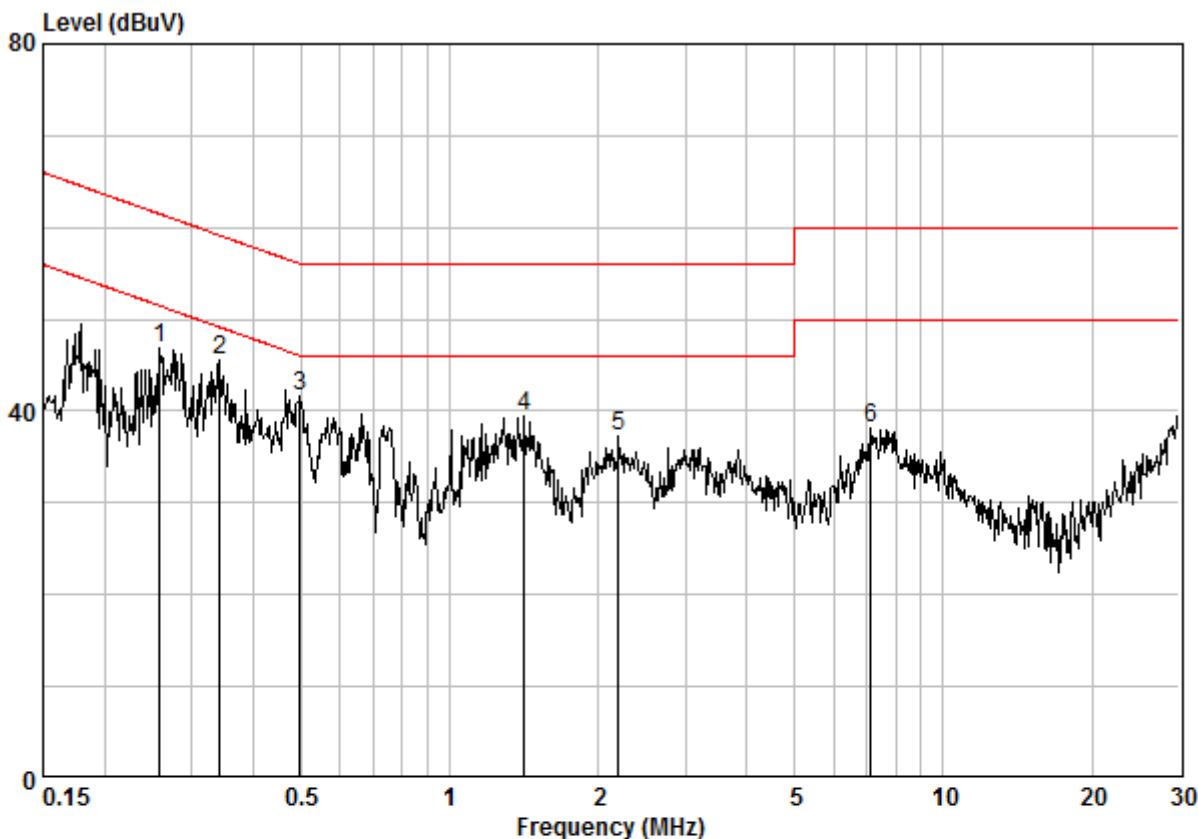
Mode:a; Line:Live Line



Site : Shielding Room
Condition : CE LINE
Job No. : 06618CR
Mode : a

	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.17491	0.02	9.64	38.37	48.03	54.72	-6.69	Peak
2	0.25345	0.02	9.64	35.03	44.69	51.64	-6.95	Peak
3	0.34463	0.02	9.64	33.74	43.40	49.09	-5.69	Peak
4 @	0.45636	0.02	9.64	32.44	42.10	46.76	-4.65	Peak
5	0.63720	0.02	9.65	30.74	40.42	46.00	-5.58	Peak
6	2.133	0.03	9.67	27.53	37.23	46.00	-8.77	Peak

Mode:a; Line:Neutral Line



Site : Shielding Room
 Condition : CE NEUTRAL
 Job No. : 06618CR
 Mode : a

	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.25888	0.02	9.63	37.13	46.78	51.47	-4.69	Peak
2 @	0.34281	0.02	9.63	35.89	45.54	49.13	-3.59	Peak
3 @	0.49673	0.02	9.63	31.90	41.55	46.05	-4.50	Peak
4	1.418	0.03	9.65	29.81	39.49	46.00	-6.51	Peak
5	2.201	0.03	9.66	27.63	37.31	46.00	-8.69	Peak
6	7.137	0.08	9.77	28.39	38.25	50.00	-11.75	Peak

6.2 Radiated Emissions (30MHz-1GHz)

Test Requirement:	AS/NZS CISPR 11:2011
Test Method:	AS/NZS CISPR 11:2011
Frequency Range:	30MHz to 1GHz
Measurement Distance:	10m
Limit:	
30MHz-80.872MHz	30dB(μV/m) quasi-peak
80.872MHz-81.848MHz	50dB(μV/m) quasi-peak
81.848MHz-134.786MHz	30dB(μV/m) quasi-peak
134.786MHz-136.414MHz	50dB(μV/m) quasi-peak
136.414MHz-230MHz	30dB(μV/m) quasi-peak
230MHz-1000MHz	37dB(μV/m) quasi-peak
Detector:	Peak for pre-scan (120kHz resolution bandwidth) 30M to 300MHz

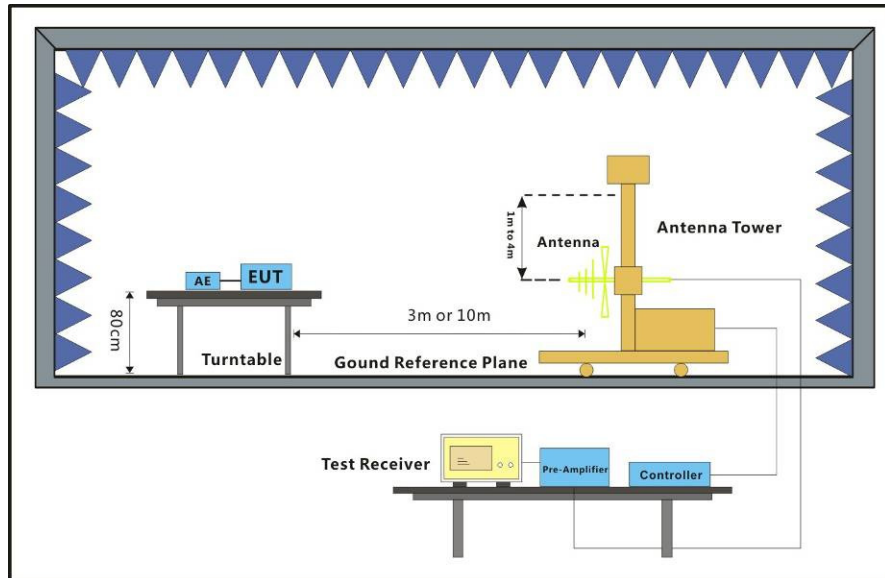
6.2.1 E.U.T. Operation

Operating Environment:

Temperature: 24 °C Humidity: 54 % RH Atmospheric Pressure: 1005 mbar

Test mode a: On mode, keep EUT charging to the wireless receiver device.

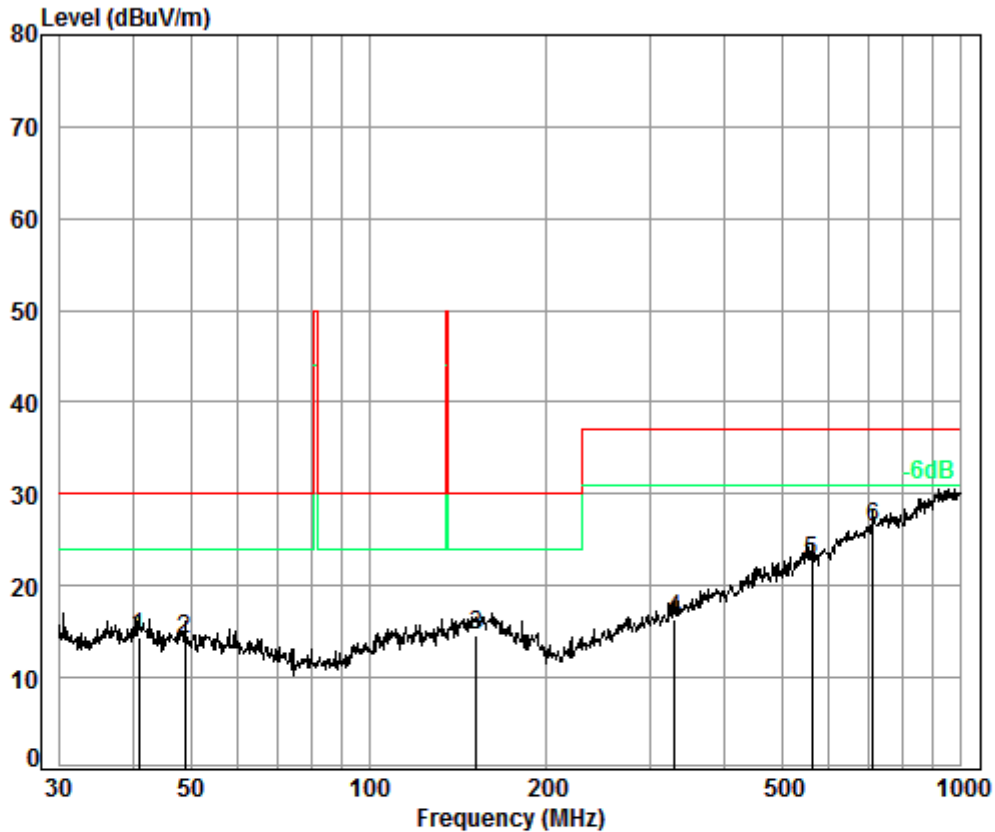
6.2.2 Test Setup Diagram



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:a; Polarization:Horizontal



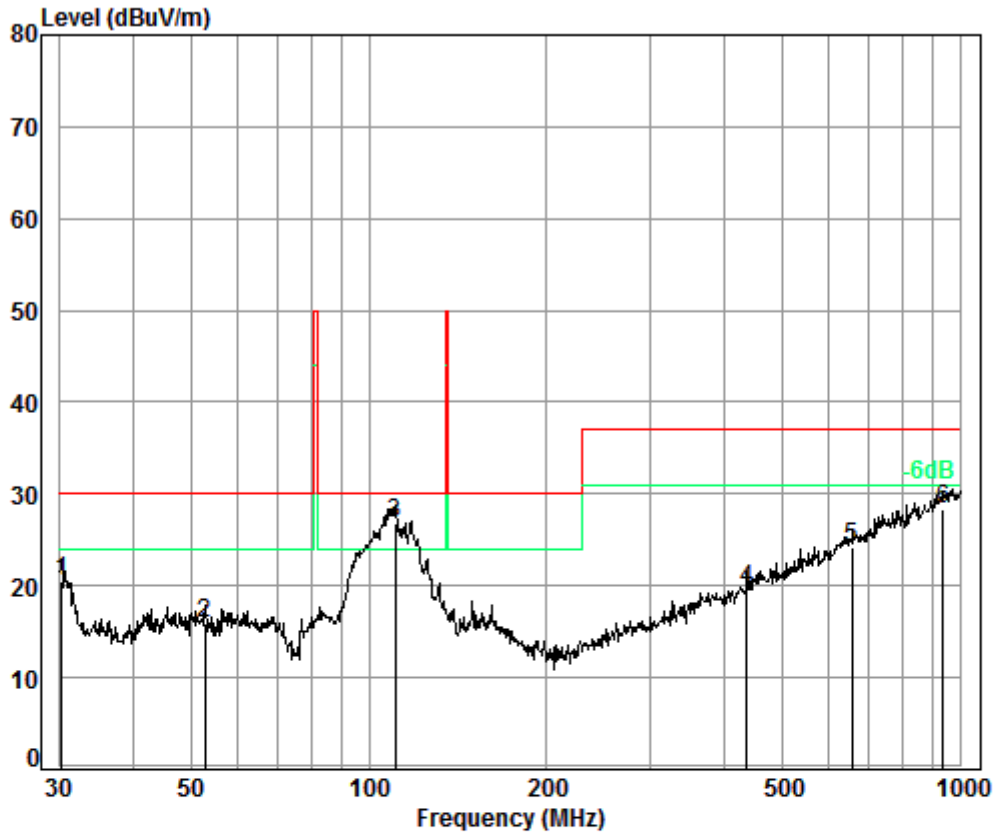
Condition: 10m HORIZONTAL

Job No. : 06618CR

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	40.84	6.99	13.25	32.46	26.70	14.48	30.00	-15.52
2	48.84	6.27	12.81	32.42	27.52	14.18	30.00	-15.82
3	152.13	7.46	13.41	32.43	26.10	14.54	30.00	-15.46
4	329.04	8.21	13.45	32.36	26.99	16.29	37.00	-20.71
5	560.69	8.97	17.92	32.28	27.99	22.60	37.00	-14.40
6 pp	711.67	9.62	20.27	32.27	28.76	26.38	37.00	-10.62

Mode:a; Polarization:Vertical



Condition: 10m VERTICAL

Job No. : 06618CR

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	30.32	6.99	12.48	32.52	33.61	20.56	30.00	-9.44
2	52.95	6.25	12.54	32.43	29.55	15.91	30.00	-14.09
3 pp	110.96	7.48	10.48	32.52	41.28	26.72	30.00	-3.28
4	435.59	8.55	15.82	32.31	27.57	19.63	37.00	-17.37
5	656.53	9.35	19.62	32.27	27.56	24.26	37.00	-12.74
6	932.27	10.11	22.61	31.14	26.75	28.33	37.00	-8.67



6.3 Radiated Emissions (Magnetic field Strength)(150kHz-30MHz)

Test Requirement: AS/NZS CISPR 11:2011
Test Method: AS/NZS CISPR 11:2011
Frequency Range: 150kHz to 30MHz
Measurement Distance: 3m
Limit:
0.15MHz-30MHz 39dB(μ A/m) - 3dB(μ A/m) quasi-peak
Detector: Peak for pre-scan (9kHz resolution bandwidth) 0.15M to 30MHz

6.3.1 E.U.T. Operation

Operating Environment:

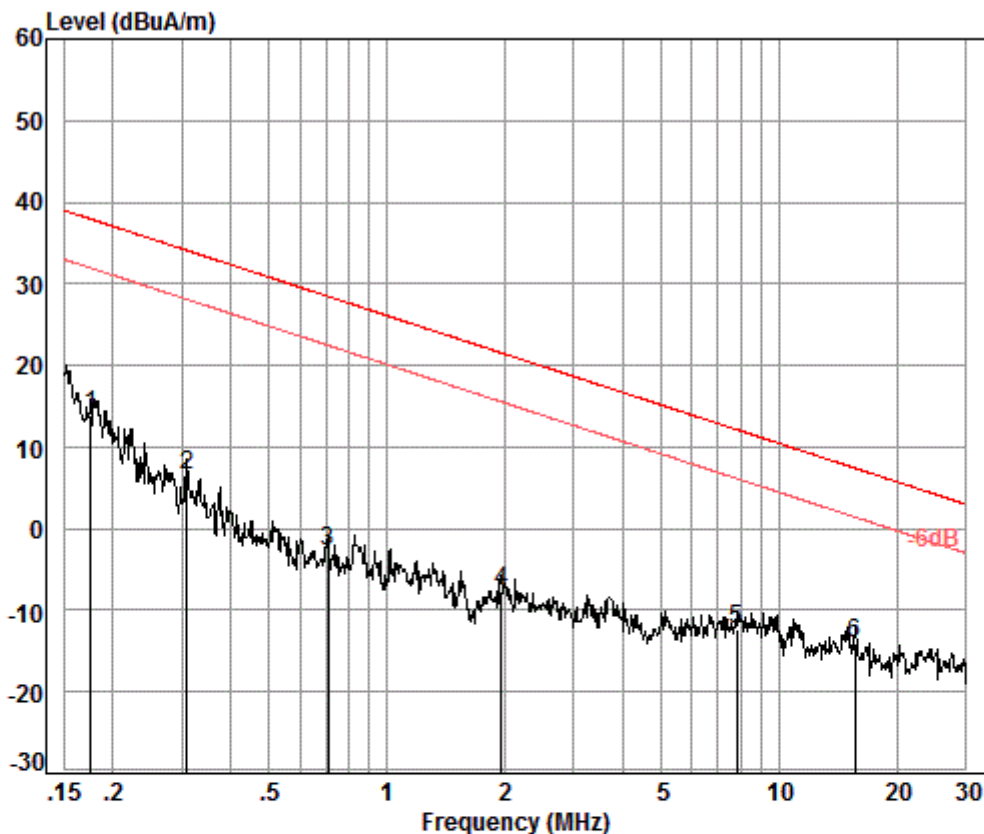
Temperature: 24 °C Humidity: 54 % RH Atmospheric Pressure: 1005 mbar

Test mode a: On mode, keep EUT charging to the wireless receiver device.

6.3.2 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.

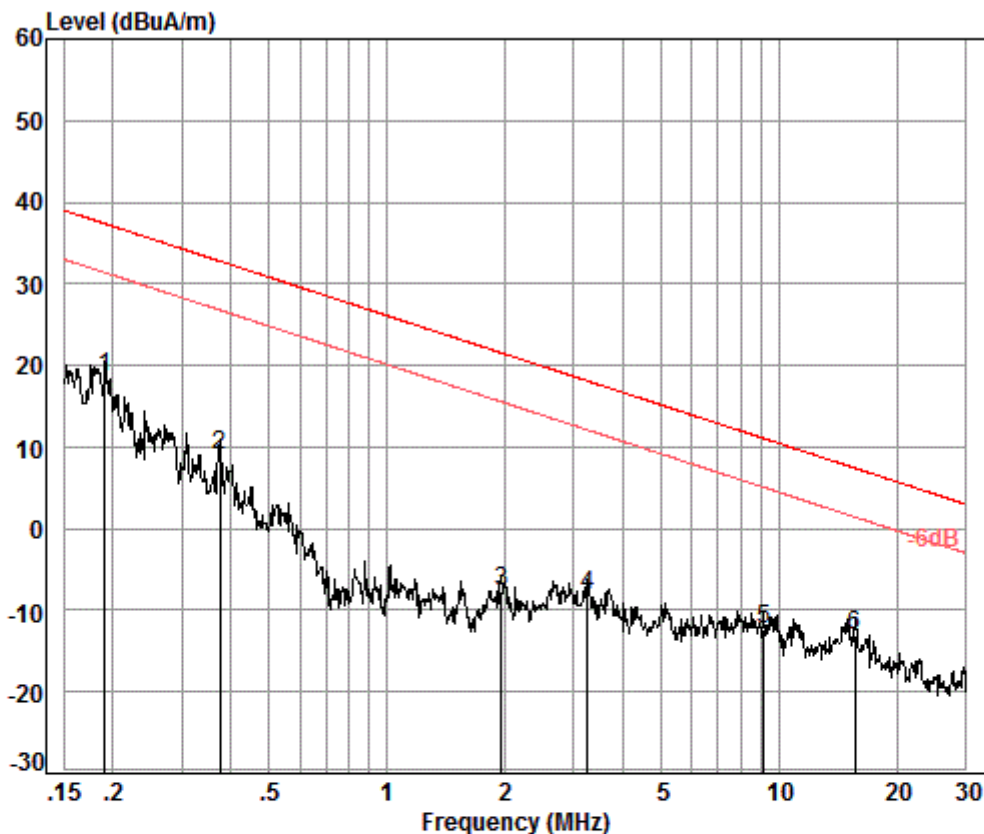
Mode:a;



Condition: 3m
Job No. : 06618CR
Test Mode: a
: X

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit
	MHz	dB	dB/m	dB	dBuA	dBuA/m	dBuA/m	dB
1	0.17	0.07	11.79	32.59	34.67	13.94	37.96	-24.02
2	0.31	0.09	11.91	32.59	27.20	6.61	34.10	-27.49
3	0.71	0.17	11.96	32.58	17.57	-2.88	28.45	-31.33
4	1.96	0.34	12.10	32.58	12.40	-7.74	21.54	-29.28
5	7.81	0.47	11.13	32.59	8.73	-12.26	12.14	-24.40
6 pp	15.63	0.61	10.27	32.57	7.52	-14.17	7.43	-21.60

Mode:a;



Condition: 3m
Job No. : 06618CR
Test Mode: a
: Y

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit
	MHz	dB	dB/m	dB	dBuA	dBuA/m	dBuA/m	dB
1 pp	0.19	0.07	11.84	32.59	39.15	18.47	37.38	-18.91
2	0.38	0.10	11.82	32.59	29.62	8.95	32.77	-23.82
3	1.96	0.34	12.10	32.58	12.40	-7.74	21.54	-29.28
4	3.26	0.39	12.17	32.59	11.74	-8.29	18.08	-26.37
5	9.16	0.48	10.85	32.59	8.91	-12.35	11.06	-23.41
6	15.63	0.61	10.27	32.57	8.52	-13.17	7.43	-20.60

7 Photographs

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



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



7.3 Radiated Emissions (Magnetic field Strength)(150kHz-30MHz) Test Setup



7.4 EUT Constructional Details

