



BUREAU VERITAS

Test Report No.: FC130515N003



Test Lab
Cert 2951.01

TEST REPORT



Applicant	XQ Arts toys co., Ltd
Address	North of Xing Ye Road, Lai Mei Industrial District, Shan Tou, China

Manufacturer or Supplier	XQ Arts toys co., Ltd
Address	North of Xing Ye Road, Lai Mei Industrial District, Shan Tou, China
Product	1:10 R/C Toys series
Brand Name	XQ
Model	XQRC10-2
Additional Model & Model Difference	N/A
Date of tests	May 15, 2013 ~ May 16, 2013

the tests have been carried out according to the requirements of the following standard:

FCC Part 15, Subpart B

CONCLUSION: The submitted sample was found to COMPLY with the test requirement

Tested by Glyn He Project Engineer / EMC Department	Approved by Sam Tung Manager / EMC Department
	 Date: May 13, 2013

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Bureau Veritas Shenzhen Co., Ltd.
Dongguan Branch

No. 34, Chenwulu Section, Guantai Rd., Houjie
Town, Dongguan City,
Guangdong 523942, China

Tel.: +86 769 8593 5656
Fax: +86 769 8593 1080
Email: customerservice.dg@cn.bureauveritas.com



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**BUREAU
VERITAS**

Test Report No.: FC130515N003

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
FV130515N003	Original release	May 16, 2013



1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 15, Subpart B			
Standard Section	Test Item	Result	Remark
FCC Part 15, Subpart B, Class B	Conducted Emission Test	PASS	Meets Class B Limit Minimum passing margin is -3.01 dB at 0.60313MHz
	Radiated Emission Test (30MHz ~ 1GHz)	PASS	Meets Class B Limit Minimum passing margin is -5.3 dB at 49.30MHz
	Radiated Emission Test (1GHz ~ 6GHz)	N/A	N/A

1.1 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

MEASUREMENT	FREQUENCY	UNCERTAINTY
Radiated emissions	30MHz ~ 1GHz	3.40 dB
	1GHz ~ 6GHz	2.26dB



2 GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

PRODUCT	1:10 R/C Toys series
MODEL NO.	XQRC10-2
FCC ID	W2M-XQ013RXAA49
POWER SUPPLY	DC 7.2V by battery
CABLE SUPPLIED	N/A
THE HIGHEST OPERATING FREQUENCY	49.86MHz

NOTE:

1. The EUT was Charging by the following adapter:

ADAPTER	
BRAND:	OXIN
MODEL:	ZX-072050US
INPUT:	AC 120V, 60Hz
OUTPUT:	DC 7.2V, 0.5A
DC LINE:	Unshielded, Undetachable, 1.8m

2. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.
3. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.



2.2 DESCRIPTION OF TEST MODES

The EUT was tested under the following modes. And the final worst mode was marked in boldface and recorded in this report.

◆ Conducted Test

Test Mode
Charging

◆ Radiated Test

Test Mode
Normal
Charging

2.3 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	N/A	N/A	N/A	N/A	N/A

NO.	DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	N/A



3 EMISSION TEST

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

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

NOTE: 1.The lower limit shall apply at the transition frequencies.

2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

3.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
EMI Test Receiver Rohde&Schwarz	ESU 26	100005	May 14,13	May 13,14
Artificial Mains Network Rohde&Schwarz	ENV216	101173	May 14,13	May 13,14
Artificial Mains Network Rohde&Schwarz	ESH2-Z5	100317	May 14,13	May 13,14
Test software	ADT_Cond_V7.3.7	N/A	N/A	N/A

NOTE: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to CEPREI/CHINA and NIM/CHINA

2. The test was performed in Dongguan Shielded Room 553.



3.1.3 TEST PROCEDURES

- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

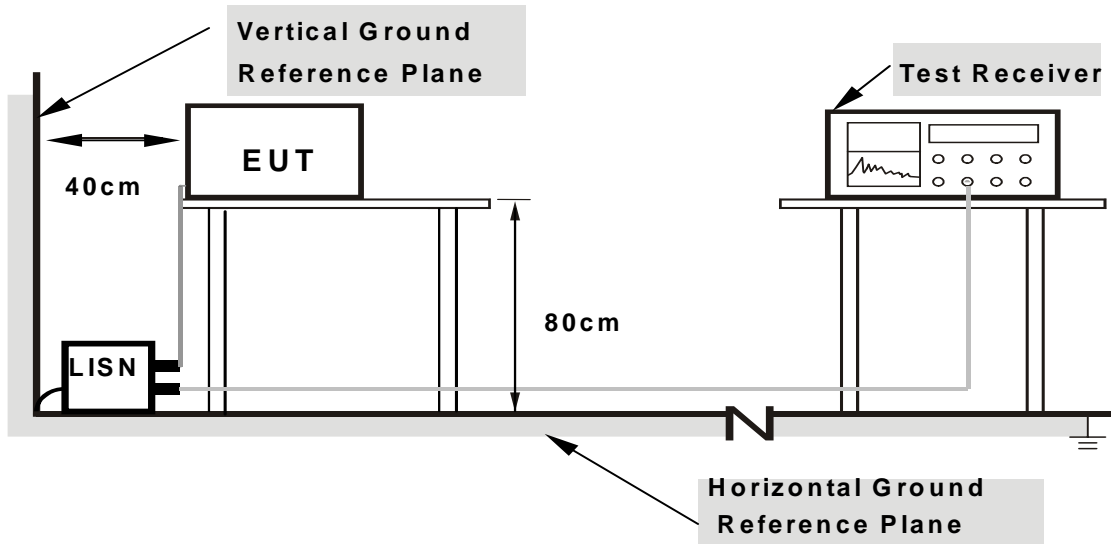
NOTE: All modes of operation were investigated and the worst-case emissions are reported.

3.1.4 DEVIATION FROM TEST STANDARD

No deviation.



3.1.5 TEST SETUP



- Note:**
- 1.Support units were connected to second LISN.
 - 2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

For the actual test configuration, please refer to the attached file (Test Setup Photo).

3.1.6 EUT OPERATING CONDITIONS

The EUT(Battery) was recharged from adapter via one DC cable continuously



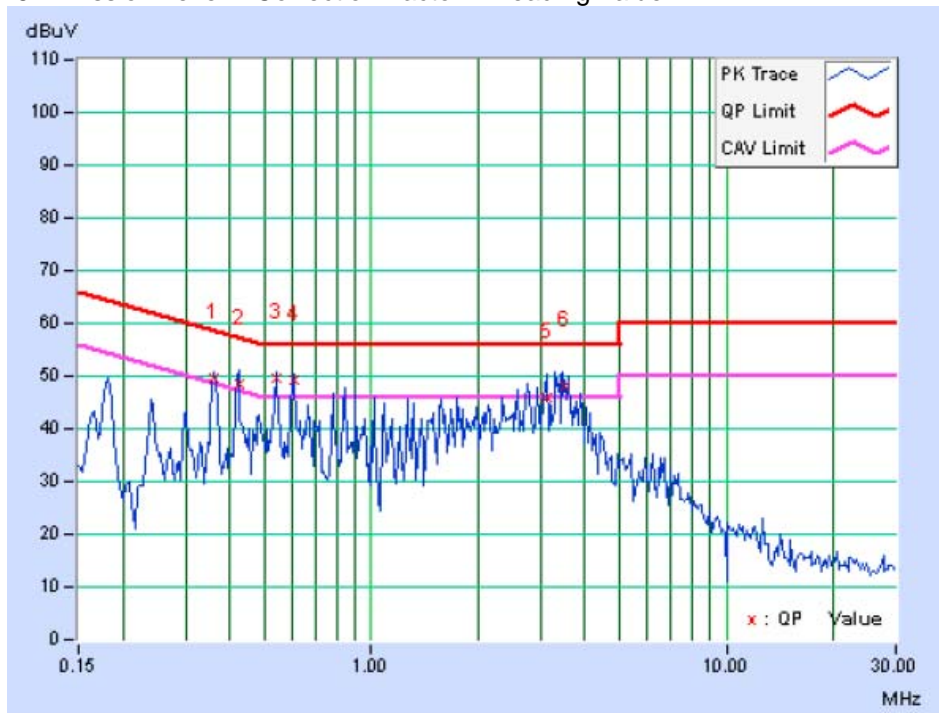
3.1.7 TEST RESULTS

CONDUCTED WORST-CASE DATA

PHASE	Line 1	6dB BANDWIDTH	9kHz
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.36094	0.15	49.41	44.25	49.56	44.40	58.71	48.71	-9.15	-4.31
2	0.42344	0.16	48.37	43.50	48.53	43.66	57.38	47.38	-8.85	-3.72
3	0.54312	0.16	49.46	42.20	49.62	42.36	56	46	-6.38	-3.64
4	0.60313	0.17	49.15	42.82	49.32	42.99	56	46	-6.68	-3.01
5	3.11687	0.28	45.82	36.33	46.10	36.61	56	46	-9.90	-9.39
6	3.50166	0.30	47.90	39.33	48.20	39.63	56	46	-7.80	-6.37

- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value = Emission level - Limit value
 5. Correction factor = Insertion loss + Cable loss
 6. Emission Level = Correction Factor + Reading Value.

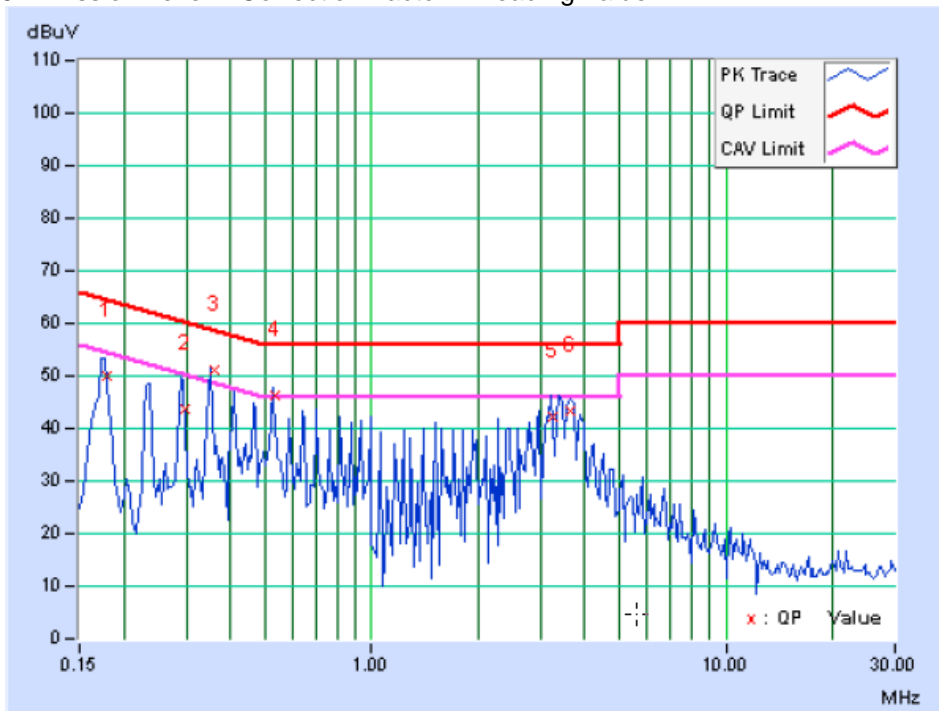




PHASE	Neutral	6dB BANDWIDTH	9kHz
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.17834	0.15	49.86	41.71	50.01	41.86	64.56	54.56	-14.55	-12.70
2	0.29962	0.17	43.54	35.13	43.71	35.30	60.25	50.25	-16.54	-14.95
3	0.35863	0.18	51.05	43.98	51.23	44.16	58.76	48.76	-7.53	-4.60
4	0.53750	0.20	46.24	40.30	46.44	40.50	56	46	-9.56	-5.50
5	3.22984	0.32	41.95	34.78	42.27	35.10	56	46	-13.73	-10.90
6	3.62400	0.33	43.06	37.28	43.39	37.61	56	46	-12.61	-8.39

- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value = Emission level - Limit value
 5. Correction factor = Insertion loss + Cable loss
 6. Emission Level = Correction Factor + Reading Value.





3.2 RADIATED EMISSION MEASUREMENT

3.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

TEST STANDARD: FCC Part 15, Subpart B (Section: 15.109)

FREQUENCY (MHz)	Class A (at 10m)		Class B (at 3m)	
	uV/m	dBuV/m	uV/m	dBuV/m
30 – 88	90	39.1	100	40.0
88 – 216	150	43.5	150	43.5
216 – 960	210	46.4	200	46.0
960 – 1000	300	49.5	500	54.0

FREQUENCY RANGE OF RADIATED MEASUREMENT

(For unintentional radiators)

Highest frequency generated or Upper frequency of measurement used in the device or on which the device operates or tunes (MHz)	Range (MHz)
Below 1.705	30
1.705 – 108	1000
108 – 500	2000
500 – 1000	5000
Above 1000	5th harmonic of the highest frequency or 40 GHz, whichever is lower

LIMIT OF RADIATED EMISSION OF FCC PART 15, SUBPART B FOR FREQUENCY ABOVE 1000 MHz

FREQUENCY (MHz)	Class A (dBuV/m) (at 3m)		Class B (dBuV/m) (at 3m)	
	PEAK	AVERAGE	PEAK	AVERAGE
Above 1000	80.0	60.0	74.0	54.0

- Note: (1) The lower limit shall apply at the transition frequencies.
 (2) Emission level (dBuV/m) = 20 log Emission level (uV/m).
 (3) All emanation from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.



3.2.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Spectrum Analyzer	Agilent	E4446A	MY46180622	April 24,13	April 23,14
EMI Test Receiver	Rohde&Schwarz	ESVD	847398/003	May 14,13	May 13,14
Bilog Antenna (25MHz-2GHz)	Teseq	CBL 6111D	27089	Jul. 16,12	Jul. 15,13
Bilog Antenna	Teseq	CBL 6111D	25757	Nov. 22,12	Nov. 21,13
Horn Antenna (1GHz -18GHz)	EMCO	3117	00062558	Oct.18,12	Oct.17,13
Pre-Amplifier (20MHz-3GHz)	EMCI	EMC 330	980095	Nov. 02,12	Nov.01,13
Pre-Amplifier (100MHz-26.5GHz)	Agilent	8449B	3008A00409	May 14,13	May 13,14
10m Semi-anechoic Chamber	CHANGLING	21.4m*12.1m*8 .8m	NSEMC006	Mar. 24,13	Mar. 23,14
Digital Multimeter	FLUKE	15B	A1220010D G	Oct. 31,12	Oct. 30,13
Test Software	ADT	ADT_Radiated _V7.6.15	N/A	N/A	N/A

- NOTE:** 1. The calibration interval of the above test instruments is 12 months. And the calibrations are traceable to CEPREI/CHINA and NIM/CHINA.
2. The test was performed in 10m Chamber.



3.2.3 TEST PROCEDURE

The basic test procedure was in accordance with ANSI C63.4 (section 12).

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 10 meters Semi-anechoic chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
- f. The test-receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz

NOTE:

1. The resolution bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth is 1MHz and video bandwidth of test receiver/spectrum analyzer is 3MHz for Peak detection at frequency above 1GHz. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz for Average detection (AV) at frequency above 1GHz.
3. For measurement of frequency above 1000 MHz, the EUT was set 3 meters away from the receiver antenna.
4. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
5. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
6. Margin value = Emission level – Limit value.

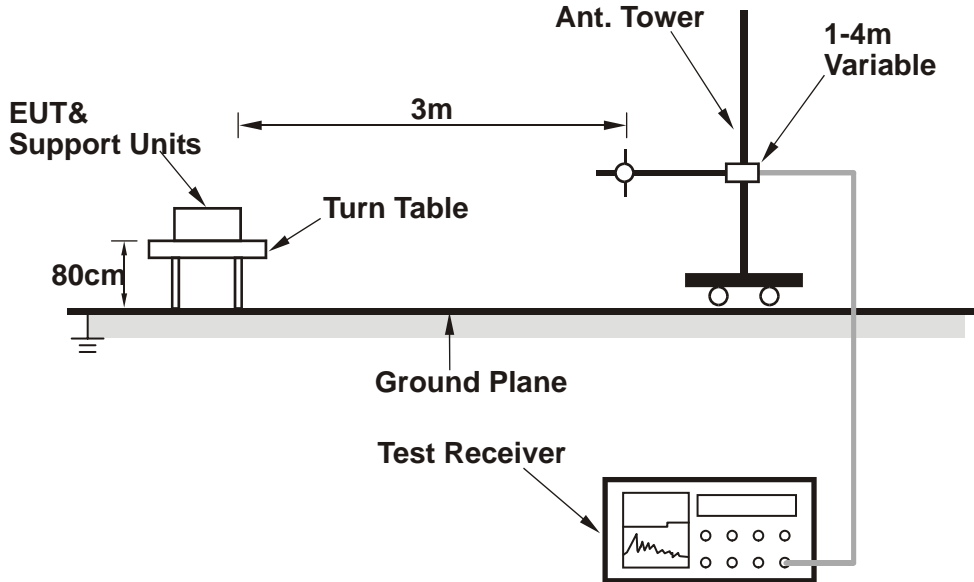
3.2.4 DEVIATION FROM TEST STANDARD

No deviation

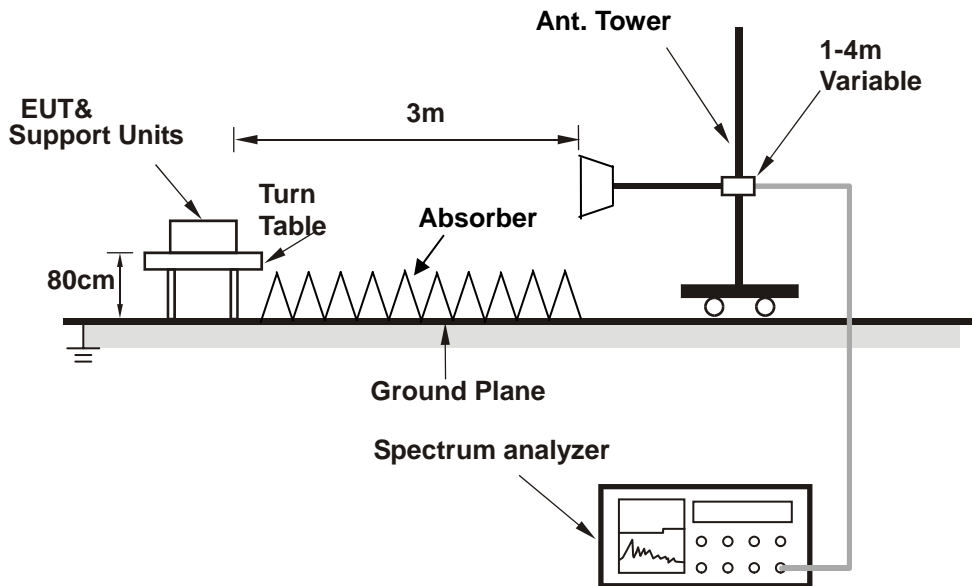


3.2.5 TEST SETUP

<Frequency Range below 1GHz>



<Frequency Range above 1GHz>



3.2.6 EUT OPERATING CONDITIONS

- a. Turned on the power of all equipment.
- b. EUT was operated according to the manufacturer's specifications or the User's Manual.



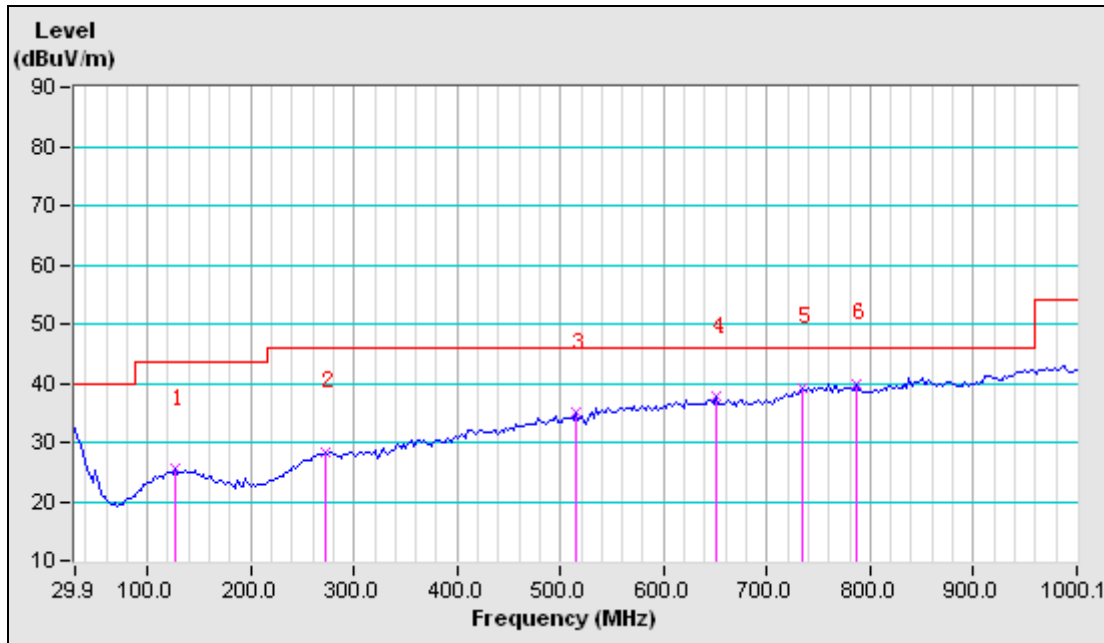
3.2.7 TEST RESULTS

TEST MODE	Normal	FREQUENCY RANGE	30-1000MHz
TEST VOLTAGE	DC 7.2V by battery	DETECTOR FUNCTION & RESOLUTION BANDWIDTH	Quasi-Peak, 120kHz
ENVIRONMENTAL CONDITIONS	21 deg. C, 55% RH	TESTED BY: Glyn	

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	126.92	25.4 QP	43.5	-18.1	2.09 H	184	12.60	12.84
2	272.45	28.4 QP	46.0	-17.6	1.79 H	218	13.37	15.00
3	515.00	35.0 QP	46.0	-11.0	1.94 H	201	14.46	20.53
4	650.83	37.6 QP	46.0	-8.4	1.52 H	249	14.36	23.27
5	733.29	39.2 QP	46.0	-6.8	1.64 H	234	14.34	24.85
6	786.66	39.8 QP	46.0	-6.3	1.35 H	268	14.35	25.40

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.



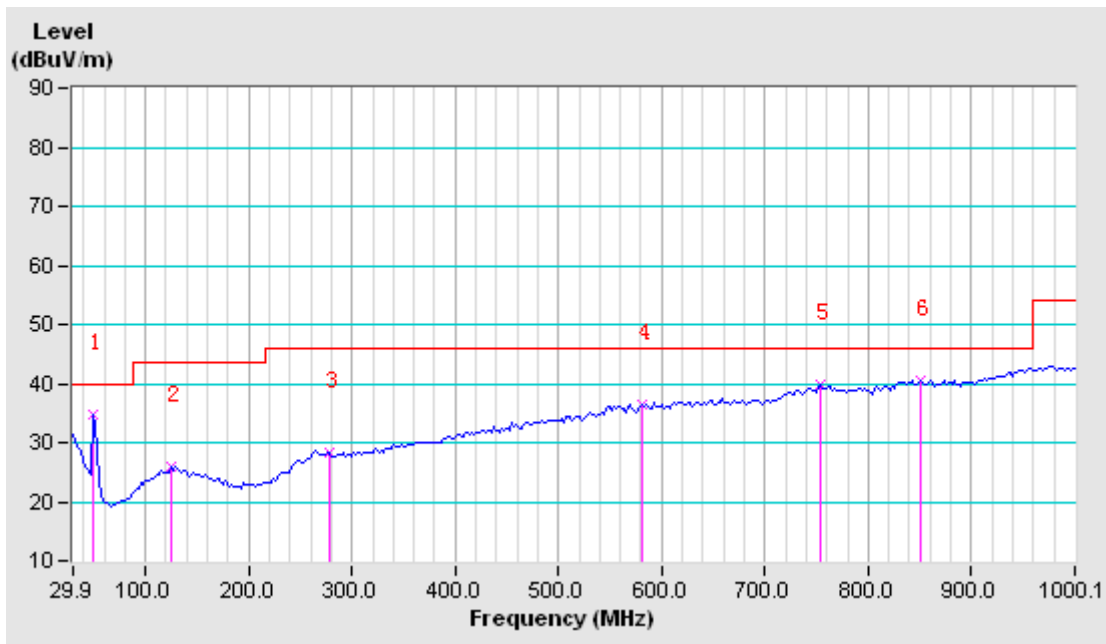


TEST MODE	Receiving	FREQUENCY RANGE	30-1000MHz
TEST VOLTAGE	DC 7.2V by battery	DETECTOR FUNCTION & RESOLUTION BANDWIDTH	Quasi-Peak, 120kHz
ENVIRONMENTAL CONDITIONS	21 deg. C, 55% RH	TESTED BY: Glyn	

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	49.30	34.7 QP	40.0	-5.3	1.00 V	170	24.26	10.47
2	124.49	26.0 QP	43.5	-17.6	1.00 V	148	13.11	12.84
3	277.30	28.4 QP	46.0	-17.6	1.00 V	130	13.48	14.92
4	580.49	36.4 QP	46.0	-9.6	1.00 V	92	14.08	22.36
5	752.70	39.8 QP	46.0	-6.3	1.00 V	113	14.48	25.27
6	849.72	40.5 QP	46.0	-5.6	1.00 V	72	14.21	26.24

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.





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Test Report No.: FC130515N003

4 APPENDIX A – MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No any modifications were made to the EUT by the lab during the test.

---END---