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Test Report

Applicant	Bear River International LLC
Address	1011 West 400 North, Suite 110, Logan, Utah 84321, United States
FCC ID Number	FCC ID: ZEZB1041T49
Brand Name(s)	None
Model Number(s)/ Item Number(s)	B1041
Product Description	49.82-49.90 MHz Wireless Remote Control Toy - TX
Operating Frequency	49.860 MHz
Rules/Standards	Part 15.235 of the FCC Rules, RSS-310 Issue 3 and RSS-Gen Issue 3 of the Industry Canada
Received Date	28th April, 2014
Tested Date	28th April, 2014
Approved by	Dick Chan (Director of Gakkiku)
Tested by	Lahm Peng (Engineer of Shenzhen SEM.Test)
Signed by	Jandy So (Manager of Shenzhen SEM.Test)
Report Number	GKK201404280A
Test Results	☒ PASSED ☐ FAILED

GENERAL

The report is written by Gakkiku Technology Company. The tested device complies with the general approval requirements of the FCC Rules and the Industry Canada as identified in this test report.

TEST LOCATION

The tested device was tested at the test site of the Shenzhen SEM.Test Technology Co., Ltd., 1/F, Building A, Hongwei Industrial Park, Liuxian 2nd Road, Bao'an District, Shenzhen, 518101, Guangdong, China. The FCC Recognized 2.948 Listed Test Firm Registration Number is 934118. The Industry Canada IC OATS Filing Number/Assigned Code is 11464A.

TABLE OF CONTENTS

1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant:	Bear River International LLC
Address of applicant:	1011 West 400 North, Suite 110, Logan, Utah 84321, United States
Manufacturer:	Bear River International LLC
Address of manufacturer:	1011 West 400 North, Suite 110, Logan, Utah 84321, United States

General Description of EUT

Item	Description
Product Description:	49.82-49.90 MHz Wireless Remote Control Toy - TX
Brand Name(s):	None
Model Number(s)/Item Number(s):	B1041
Power Source:	DC 9V Battery
Frequency Range:	49.860 MHz
Antenna Type:	Fixed Antenna
For more information refer to the circuit diagram form and the user's manual.	

The test data is gathered from a production sample, provided by the manufacturer.

1.2 Test Standards

The following report is prepared on behalf of the Bear River International LLC in accordance with Part 15 Subpart C, Part 15.235, 15.209, 15.205 & 15.203 of the FCC Rules and RSS-310 Issue 3 & RSS-Gen Issue 3 of the Industry Canada: Spectrum Management Telecommunications Radio Standards Specification, Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands): Category II Equipment sets out standard requirements for Low-power Licence-exempt Radiocommunication Devices that are certification exempt.

The objective is to determine compliance with Part 15 Subpart C, Part 15.235, 15.209, 15.205 & 15.203 of the FCC Rules and RSS-310 Issue 3 & RSS-Gen Issue 3 of the Industry Canada.

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product, which results in lowering the emission/immunity, should be checked to ensure compliance has been maintained.

1.3 Related Submittal(s)/Grant(s)

No Related Submittal(s).

1.4 Test Methodology

All measurements contained in this report were conducted with ANSI Standard C63.4-2009, American National Standard Institute for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

The equipment under test (EUT) was configured to measure its highest possible emission level. The test modes were adapted accordingly in reference to the Operating Instructions.

1.5 EUT Exercise Software

The EUT exercise program used during the testing was designed to exercise the system components. The test software is started while the whole system is on.

1.6 Accessories Equipment List and Details

Description	Manufacturer	Model	Serial Number
/	/	/	/

1.7 EUT Cable List and Details

Cable Description	Length (M)	Shielded/ Unshielded	With Core/ Without Core
/	/	/	/

2. SUMMARY OF TEST RESULTS

FCC RULES INDUSTRY CANADA	DESCRIPTION OF TEST	RESULT
Part 15.203, RSS-Gen Issue 3 §7.1.2	Antenna Requirement	Compliant
Part 15.205, RSS-310 Issue 3 §2.4 & RSS-Gen Issue 3 §7.2.2 Table 3	Restricted Band of Operation	Compliant
Part 15.209, RSS-310 Issue 3 §3.8 & RSS-Gen Issue 3 §7.2.5 Table 5	Radiated Emission Limit	Compliant
Part 15.235(a) RSS-310 Issue 3 §3.8 & RSS-Gen Issue 3 §7.2.5 Table 5	Field Strength	Compliant
Part 15.235(b) RSS-310 Issue 3 §2.4 & RSS-Gen Issue 3 §7.2.2 Table 3	Out of Band Emission	Compliant

3. Part 15.203 & RSS-Gen Issue 3 §7.1.2 - ANTENNA REQUIREMENT

3.1 Standard Applicable

According to Part 15.203 and RSS-Gen Issue 3 §7.1.2, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.

3.2 Test Result

This product has a fixed antenna, fulfill the requirement of this section.

4. Part 15.235, 15.209, 15.205 & RSS-310 Issue 3 §3.8 - RADIATED EMISSION

4.1 Measurement Uncertainty

Based on NIS 81, the Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement is ±5.10 dB.

4.2 Standard Applicable

According to Part 15.235(a) of the FCC Rules, the field strength of any emission within this band shall not exceed 10,000 microvolts/meter at 3 meters. The emission limit in this paragraph is based on measurement instrumentation employing an average detector. The provisions in Part 15.35 of the FCC Rules for limiting peak emissions apply.
According to RSS-310 Issue 3 §3.8 of the Industry Canada, the field strength shall not exceed 10 millivolts/m measured at 3 meters (equivalent with an averaging or a CISPR quasi-peak detector (equivalent to 30 μW e.i.r.p.).

According to Part 15.235(b) of the FCC Rules, the field strength of any emissions appearing between the band edges and up to 10 kHz above and below the band edges shall be attenuated at least 26 dB below the level of the unmodulated carrier or to the general limits in Part 15.209 of the FCC Rules, whichever permits the higher emission levels. The field strength of any emissions removed by more than 10 kHz from the band edges shall not exceed the general radiated emission limits in Part 15.209 of the FCC Rules. All signals exceeding 20 microvolts/meter at 3 meters shall be reported in the application for certification.
According to RSS-310 Issue 3 §3.8 of the Industry Canada, the field strength of any emissions which appear outside of this band shall apply the limits of RSS-Gen Issue 3 §7.2.2 Table 3.

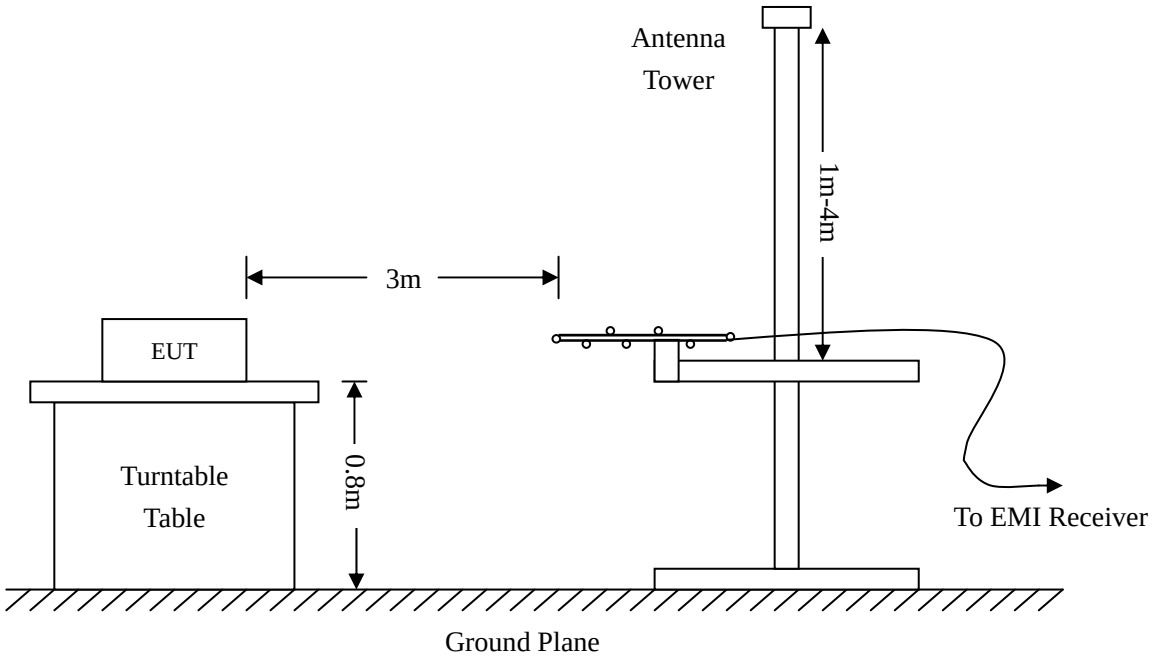
4.3 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Spectrum Analyzer	R&S	FSP	836079/035	2013-05-07	2014-05-06
EMI Test Receiver	R&S	ESVB	825471/005	2013-05-07	2014-05-06
Positioning Controller	C&C	CC-C-1F	N/A	2013-05-07	2014-05-06
RF Switch	EM	EMSW18	SW060023	2013-05-07	2014-05-06
Pre-amplifier	Agilent	8447F	3113A06717	2013-05-07	2014-05-06
Pre-amplifier	Compliance Direction	PAP-0118	24002	2013-05-07	2014-05-06
Trilog Broadband Antenna	SCHWARZBECK	VULB9163	9163-333	2014-04-20	2015-04-19
Horn Antenna	ETS	3117	00086197	2014-04-20	2015-04-19
Loop Antenna	SCHWARZECK	HFRA 5165	9365	2014-04-20	2015-04-19

Statement of Traceability: All calibrations have been performed per the NVLAP requirements traceable to the NIST.

4.4 Test Procedure

The setup of EUT is according with per ANSI Standard C63.4-2009 measurement procedure. The specification used was with the limits of Part 15.235(a), 15.209 & 15.205 of the FCC Rules and RSS-310 Issue 3 §3.8 of the Industry Canada.
The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.
The spacing between the peripherals was 10 cm.



4.5 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and the Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

Corr. Ampl. = Indicated Reading – Corr. Factor

The "**Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -6dBμV means the emission is 6dBμV below the maximum limit for Part 15. The equation for margin calculation is as follows:

Margin = Corr. Ampl. – Limit of Part 15 (RSS-310 Issue 3)

4.6 Environmental Conditions

Temperature:	26° C
Relative Humidity:	52%
ATM Pressure:	1012 mbar

4.7 Summary of Test Results/Plots

According to the data below, the standards of Part 15.235, 15.209 & 15.205 of the FCC Rules and RSS-310 Issue 3 of the Industry Canada, and had the worst margin of:

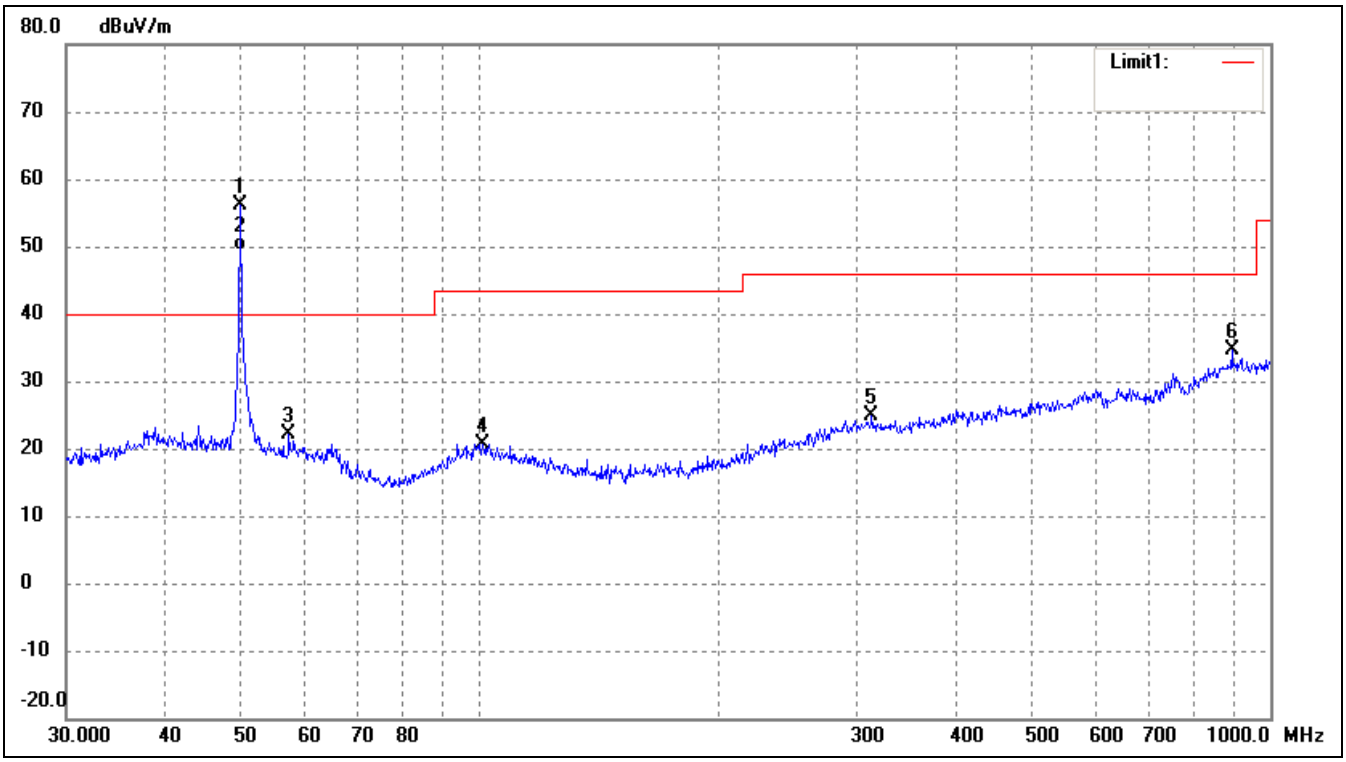
-8.51 dBµV at **893.8567 MHz** in the **Vertical** polarization, **9 kHz to 1 GHz, 3 Meters**

Note: *This EUT was tested in 3 orthogonal positions and the worst case position data was reported.*

Test Mode: Transmitting

Plot of Radiated Emissions Test

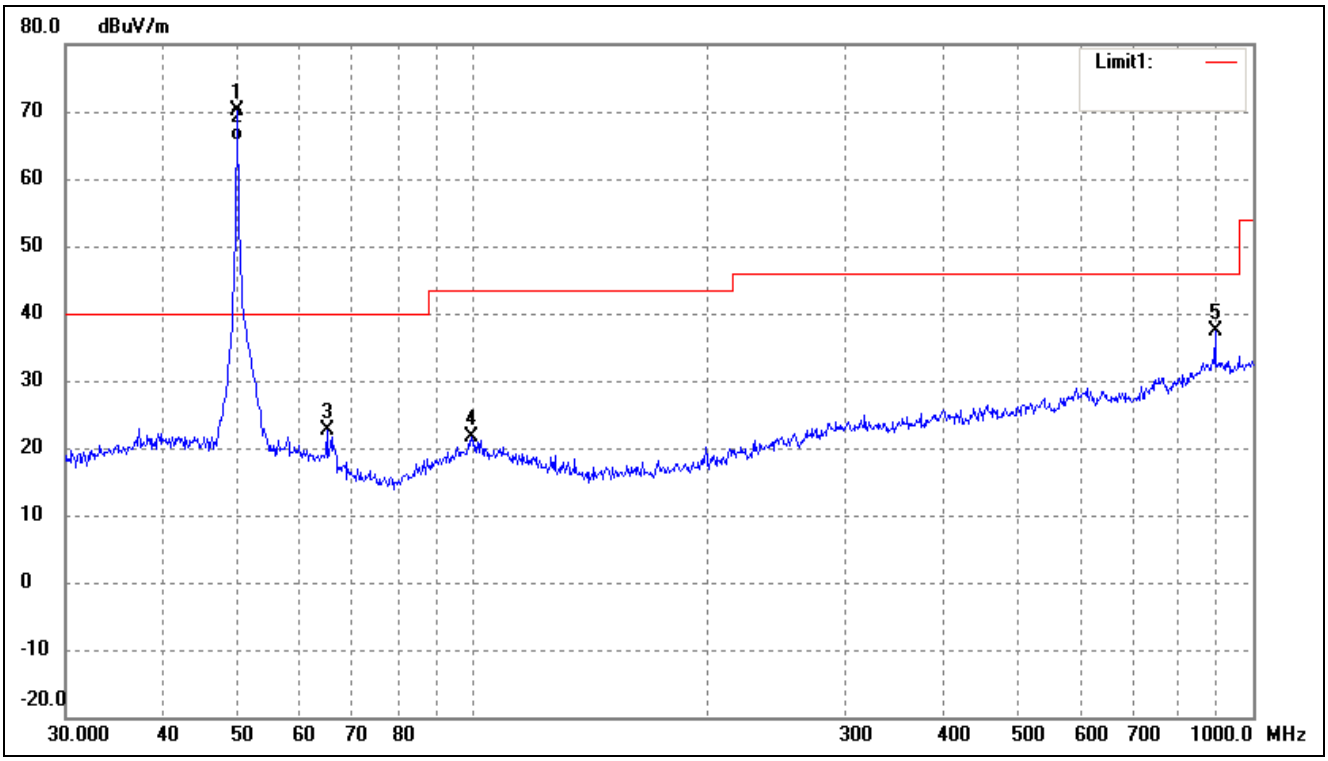
Horizontal:



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	49.8814	49.90	6.27	56.17	100.00	-43.83	255	100	Peak
2	49.8814	43.00	6.27	49.27	80.00	-30.73	47	100	Average
3	57.3923	16.43	5.60	22.03	40.00	-17.97	35	100	Peak
4	100.9340	14.67	6.03	20.70	43.50	-22.80	47	100	Peak
5	313.2760	15.68	9.25	24.93	46.00	-21.07	51	100	Peak
6	893.8567	17.71	16.85	34.56	46.00	-11.44	125	100	Peak

Note: Emissions attenuated more than 20 dB below the permissible value are not reported.

Vertical:



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	49.8814	63.71	6.30	70.01	100.00	-29.99	236	100	Peak
2	49.8814	59.30	6.30	65.60	80.00	-14.40	54	100	Average
3	64.8865	18.84	3.82	22.66	40.00	-17.34	71	100	Peak
4	99.5281	15.54	6.01	21.55	43.50	-21.95	27	100	Peak
5	893.8567	20.64	16.85	37.49	46.00	-8.51	129	100	Peak

Note: Emissions attenuated more than 20 dB below the permissible value are not reported.

5. Part 15.235(b) & RSS-310 Issue 3 §2.4 - OUT OF BAND EMISSIONS

5.1 Standard Applicable

According to Part 15.235(b) of the FCC Rules and RSS-310 Issue 3 §2.4 of the Industry Canada, the field strength of any emissions appearing between the band edges and up to 10 kHz above and below the band edges shall be attenuated at least 26 dB below the level of the unmodulated carrier or to the general limits in Part 15.209 of the FCC Rules, whichever permits the higher emission levels. The field strength of any emissions removed by more than 10 kHz from the band edges shall not exceed the general radiated emission limits in Part 15.209 of the FCC Rules. All signals exceeding 20 microvolts/meter at 3 meters shall be reported in the application for certification.

5.2 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Spectrum Analyzer	R&S	FSP	836079/035	2013-05-07	2014-05-06
EMI Test Receiver	R&S	ESVB	825471/005	2013-05-07	2014-05-06
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Loop Antenna	SCHWARZECK	HFRA 5165	9365	2014-04-20	2015-04-19

Statement of Traceability: All calibrations have been performed per the NVLAP requirements traceable to the NIST.

5.3 Test Procedure

As the radiation test, set the RBW=1kHz VBW=3kHz, observed the outside band of 49.82MHz to 49.90MHz, than mark the higher-level emission for comparing with the FCC Rules.

5.4 Environmental Conditions

Temperature:	26° C
Relative Humidity:	52%
ATM Pressure:	1022 mbar

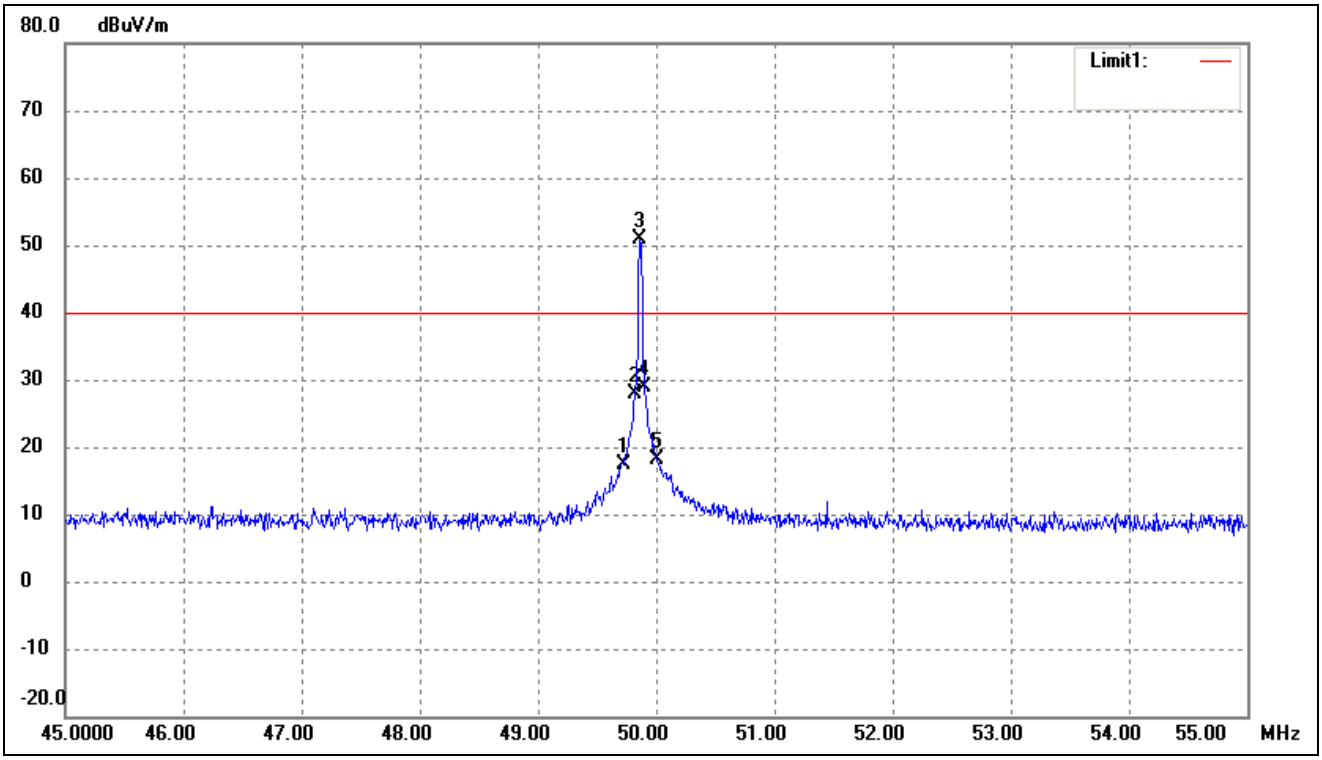
5.5 Summary of Test Results/Plots

Frequency MHz	Emission dBµV/m	Limit
49.7200	31.84	40 dBµV/m
49.8200	43.46	>26dB
49.8600	70.17	>26dB
49.9000	44.11	>26dB
50.0000	32.71	40 dBµV/m

Test Result: Passed

Refer to the attached plots.

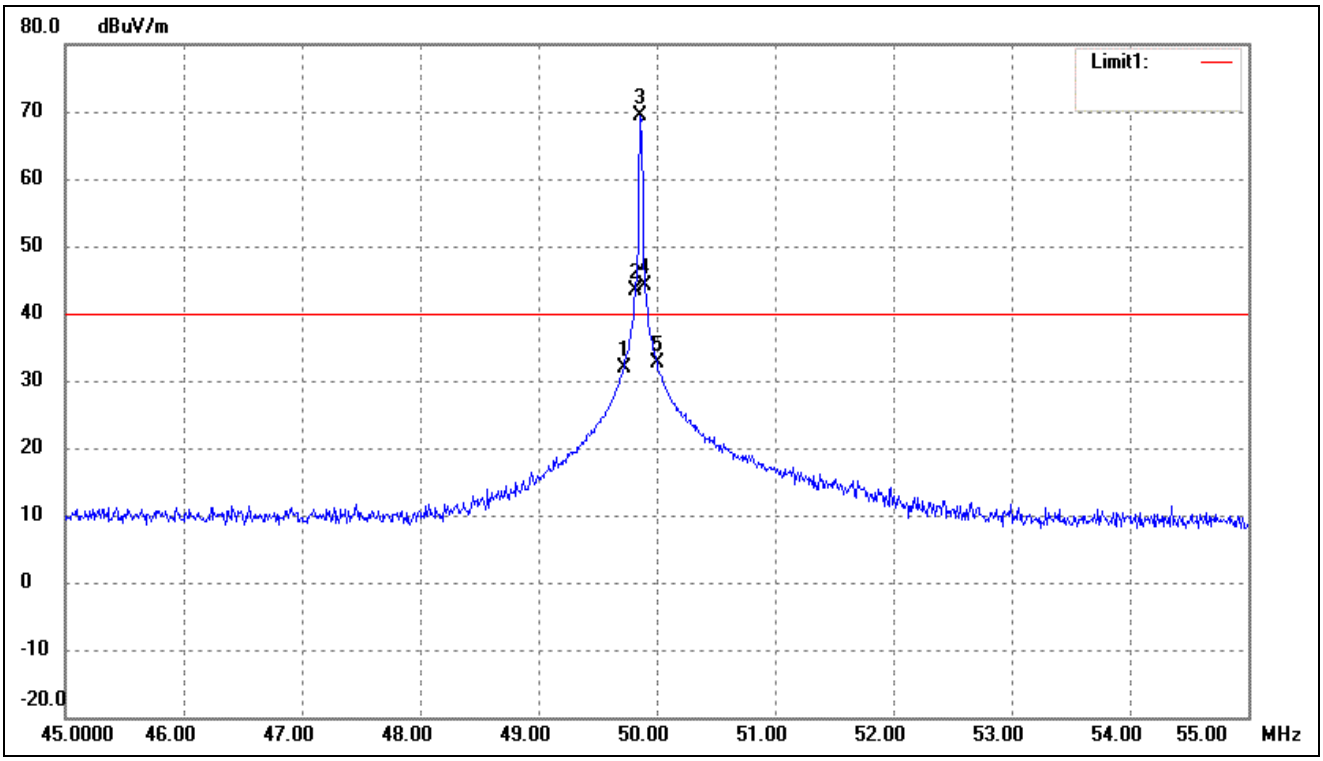
Horizontal:



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	49.7200	11.12	6.29	17.41	40.00	-22.59	248	100	Peak
2	49.8200	21.49	6.28	27.77	/	/	51	100	Peak
3	49.8600	44.58	6.27	50.85	/	/	163	100	Peak
4	49.9000	22.49	6.27	28.76	/	/	54	100	Peak
5	50.0000	11.83	6.26	18.09	40.00	-21.91	175	100	Peak

Note: Emissions attenuated more than 20 dB below the permissible value are not reported.

Vertical:



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	49.7200	25.50	6.34	31.84	40.00	-8.16	360	100	Peak
2	49.8200	37.15	6.31	43.46	/	/	251	100	Peak
3	49.8600	60.47	6.30	70.17	/	/	47	100	Peak
4	49.9000	37.82	6.29	44.11	/	/	69	100	Peak
5	50.0000	26.45	6.26	32.71	40.00	-7.29	125	100	Peak

Note: Emissions attenuated more than 20 dB below the permissible value are not reported.

******* END OF REPORT *******