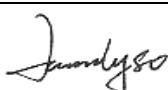




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## Test Report

<b>Applicant</b>	Scientific Toys Ltd.
<b>Address</b>	Rm. 1108, 11/F., Block B, New Mandarin Plaza, 14 Science Museum Road, TST East, Kowloon, Hong Kong
<b>FCC ID Number</b>	FCC ID: BY32007-27TP
<b>Brand Name(s)</b>	None
<b>Model Number(s)</b>	92160
<b>Product Description</b>	26.96-27.28 MHz Wireless Remote Control Toy - TX
<b>Operating Frequency</b>	27.145 MHz
<b>Rules/Standards</b>	Part 15.227 of the FCC Rules, RSS-310 Issue 3 and RSS-Gen Issue 3 of the Industry Canada
<b>Received Date</b>	1st June, 2012
<b>Tested Date</b>	4th June, 2012
<b>Approved by</b>	Dick Chan (Director of Gakkiku)
<b>Tested by</b>	Lahm Peng (Engineer of SEM.Test)
<b>Signed by</b>	 Jandy So (Manager of SEM.Test)
<b>Report Number</b>	GKK201206010A
<b>Test Results</b>	<input checked="" type="checkbox"/> PASSED <input type="checkbox"/> 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 SEM.Test Compliance Service Co., Ltd., 3/F, Jinbao Commerce Building, Xin'an Fanshen Road, Bao'an District, Shenzhen, 518101, Guangdong, China. The FCC Recognized 2.948 Listed Test Firm Registration Number is 994117. The Industry Canada IC OATS Filing Number/Assigned Code is 7673A.

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## 1. GENERAL INFORMATION

### 1.1 Product Description for Equipment Under Test (EUT)

#### Client Information

Applicant: Scientific Toys Ltd.  
 Address of applicant: Rm. 1108, 11/F., Block B, New Mandarin Plaza,  
 14 Science Museum Road, TST East, Kowloon, Hong Kong

Manufacturer: Scientific Toys Ltd.  
 Address of manufacturer: Rm. 1108, 11/F., Block B, New Mandarin Plaza,  
 14 Science Museum Road, TST East, Kowloon, Hong Kong

#### General Description of E.U.T

Items	Description
EUT Description:	26.96-27.28 MHz Wireless Remote Control Toy - TX
Trade Name:	None
Model No.:	92160
Rated Voltage:	2 X DC 1.5V AAA-Size Batteries
Frequency Range:	27.145 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 Scientific Toys Ltd. in accordance with Part 15, Subpart C, and Part 15.203, 15.205, 15.209 & 15.227 of the Federal Communication Commissions Rules and RSS-310 Issue 3: 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, and Part 15.203, 15.205, 15.209 & 15.227 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 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 15.227(a), RSS-310 Issue 3 §3.8 & RSS-Gen Issue 3 §7.2.5 Table 5	Field Strength	Compliant
Part 15.227(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**

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#### **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 15.205, 15.209, 15.227 & 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  $\pm 5.10$  dB.

### **4.2 Standard Applicable**

According to Part 15.227(a), 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 for limiting peak emissions apply.

According to RSS-310 Issue 3 §3.8, the field strength shall not exceed 10 millivolts/m measured at 3 metres (equivalent with an averaging or a CISPR quasi-peak detector (equivalent to 30  $\mu$ W e.i.r.p.).

According to Part 15.227(b), the field strength of any emissions which appear outside of this band shall not exceed the general radiated emission limits in Part 15.209.

According to RSS-310 Issue 3 §3.8, 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**

<b>Description</b>	<b>Manufacturer</b>	<b>Model</b>	<b>Serial Number</b>	<b>Cal. Date</b>	<b>Due. Date</b>
Spectrum Analyzer	R&S	FSP	836079/035	2012-03-28	2013-03-27
EMI Test Receiver	R&S	ESVB	825471/005	2012-03-28	2013-03-27
Positioning Controller	C&C	CC-C-1F	N/A	2012-03-28	2013-03-27
RF Switch	EM	EMSW18	SW060023	2012-03-28	2013-03-27
Pre-amplifier	Agilent	8447F	3113A06717	2012-03-28	2013-03-27
Pre-amplifier	Compliance Direction	PAP-0118	24002	2012-03-28	2013-03-27
Trilog Broadband Antenna	SCHWARZBECK	VULB9163	9163-333	2012-02-25	2013-02-24
Horn Antenna	ETS	3117	00086197	2012-02-25	2013-02-24
Loop Antenna	SCHWARZECK	HFRA 5165	9365	2012-02-25	2013-02-24

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

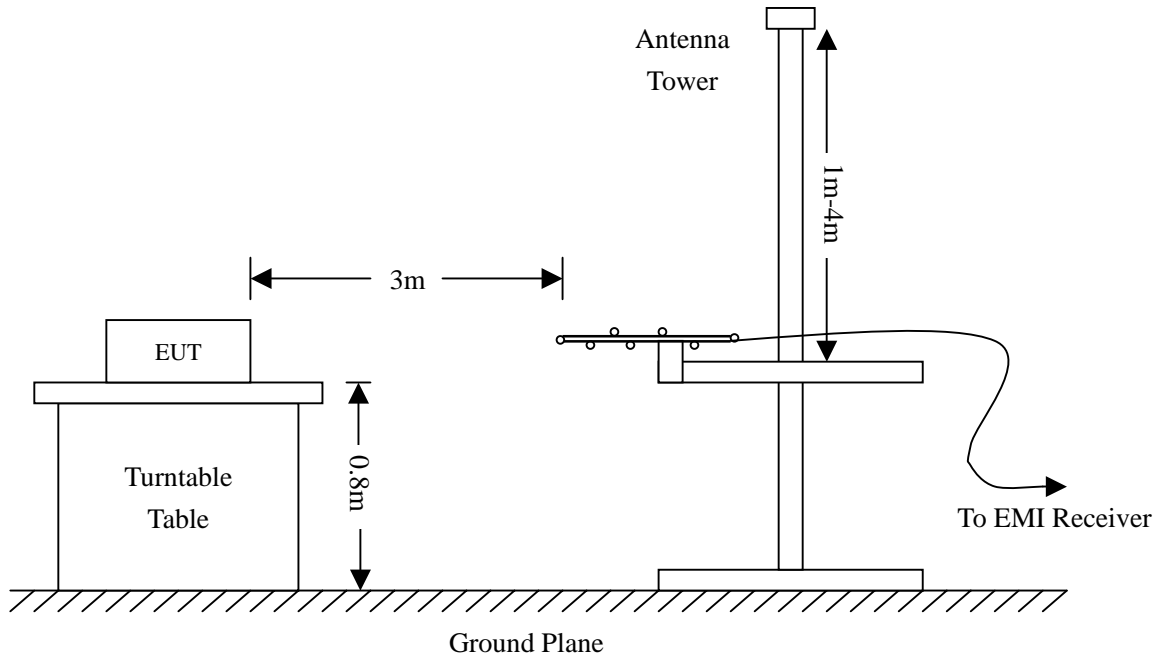


### 4.4 Test Procedure

The setup of EUT is according with per ANSI C63.4-2009 measurement procedure. The specification used was with the limits of Part 15.205, 15.227(a) & 15.209 and RSS-310 Issue 3 §3.8.

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:

$$\text{Corr. Ampl.} = \text{Indicated Reading} - \text{Corr. Factor}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -6dB $\mu$ V means the emission is 6dB $\mu$ V below the maximum limit for Class B. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{Limit of Part 15 (RSS-310 Issue 3)}$$

### 4.6 Environmental Conditions

Temperature:	25° C
Relative Humidity:	52%
ATM Pressure:	1012 mbar

### 4.7 Summary of Test Results/Plots

According to the data below, the standards of Part 15.205, 15.209 & 15.227 and RSS-310 Issue 3, and had the worst margin of:

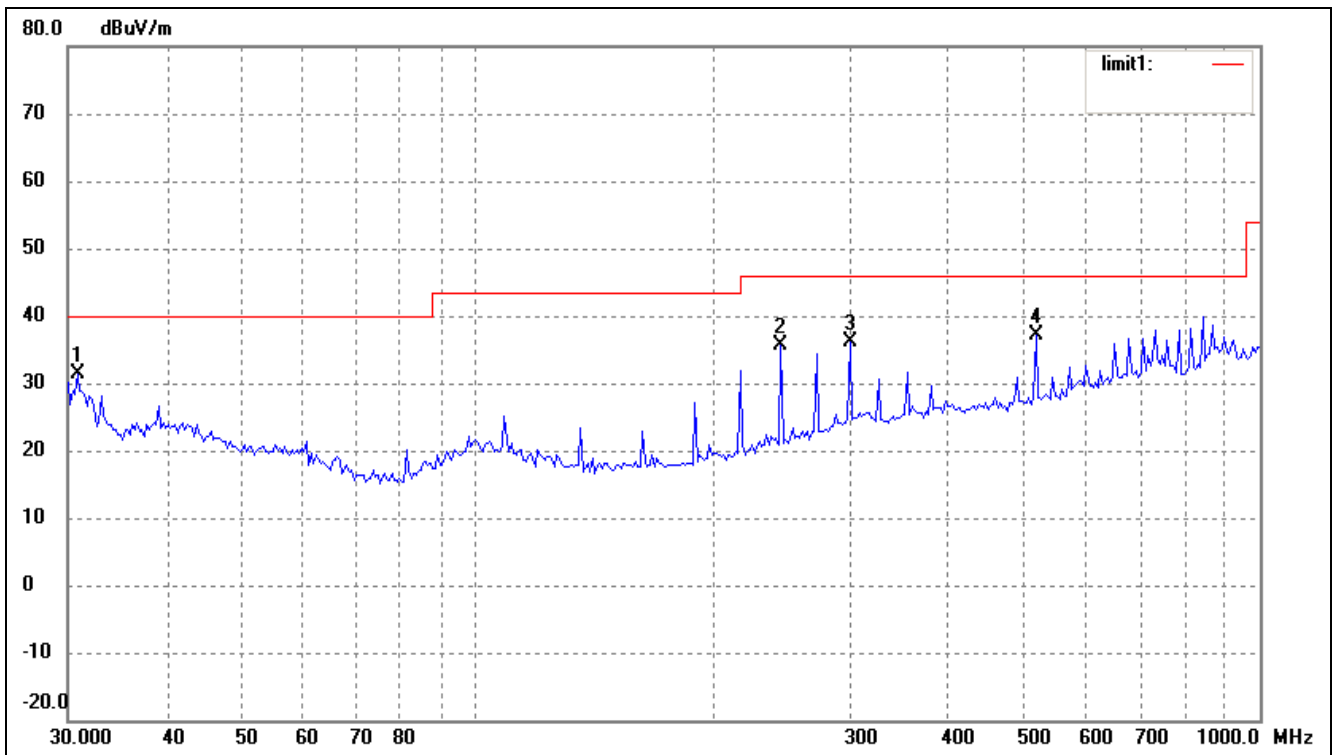
**-2.62 dB $\mu$ V at 30.0000 MHz in the Vertical polarization, 9 kHz to 1 GHz, 3 Meters**

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

Test Mode: Transmitting

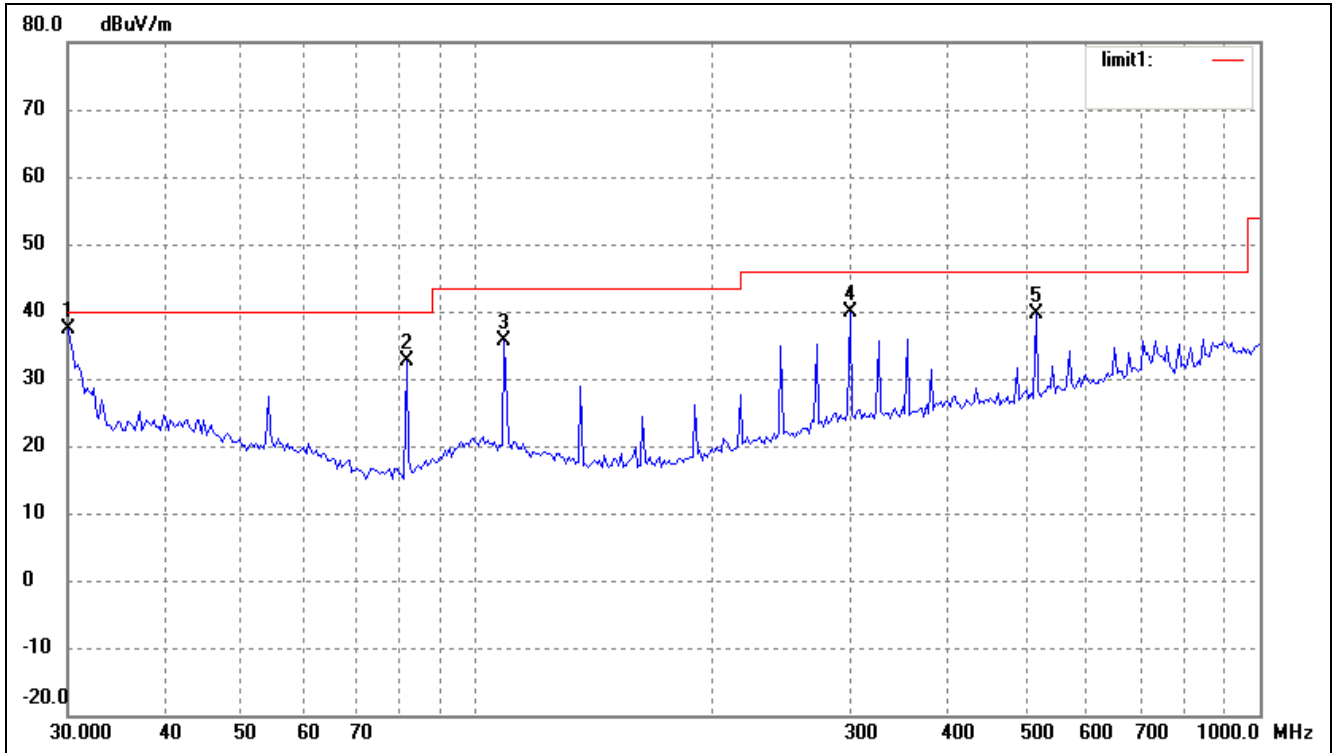
### Plot of Radiated Emission Test

Horizontal:



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
Fundamental	27.145	54.77	6.85	61.62	100	-38.38	125	200	Peak
Fundamental	27.145	48.17	6.85	55.02	80	-24.98	125	200	Average
1	30.8535	23.28	8.19	31.47	40.00	-8.53	33	100	Peak
2	244.2321	28.45	7.12	35.57	46.00	-10.43	48	200	Peak
3	299.3158	26.01	10.15	36.16	46.00	-9.84	57	200	Peak
4	517.2480	24.42	12.82	37.24	46.00	-8.76	244	100	Peak

Vertical:



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
Fundamental	27.145	64.67	6.85	71.52	100	-28.48	124	200	Peak
Fundamental	27.145	57.64	6.85	64.49	80	-15.51	124	200	Average
1	30.0000	29.34	8.04	37.38	40.00	-2.62	144	100	Peak
2	81.2117	30.65	2.02	32.67	40.00	-7.33	25	100	Peak
3	108.2667	29.58	6.02	35.60	43.50	-7.90	34	100	Peak
4	299.3158	29.65	10.15	39.80	46.00	-6.20	77	100	Peak
5	517.2480	26.73	12.82	39.55	46.00	-6.45	45	200	Peak

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

**5. Part 15.227(b) & RSS-310 Issue 3 §2.4 - OUT OF BAND EMISSIONS**

**5.1 Standard Applicable**

According to Part 15.227(b) and RSS-310 Issue 3 §2.4, the field strength of any emissions which appear outside of 26.96MHz to 27.28MHz shall not exceed the general radiated emission limits under Part 15.209 and RSS-310 Issue 3 §3.8.

**5.2 Test Equipment List and Details**

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Spectrum Analyzer	R&S	FSP	836079/035	2012-03-28	2013-03-27
EMI Test Receiver	R&S	ESVB	825471/005	2012-03-28	2013-03-27
Positioning Controller	C&C	CC-C-1F	N/A	2012-03-28	2013-03-27
RF Switch	EM	EMSW18	SW060023	2012-03-28	2013-03-27
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Horn Antenna	ETS	3117	00086197	2012-02-25	2013-02-24
Loop Antenna	SCHWARZECK	HFRA 5165	9365	2012-02-25	2013-02-24

**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=10kHz VBW=30kHz, observed the outside band of 26.96MHz to 27.28MHz, 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

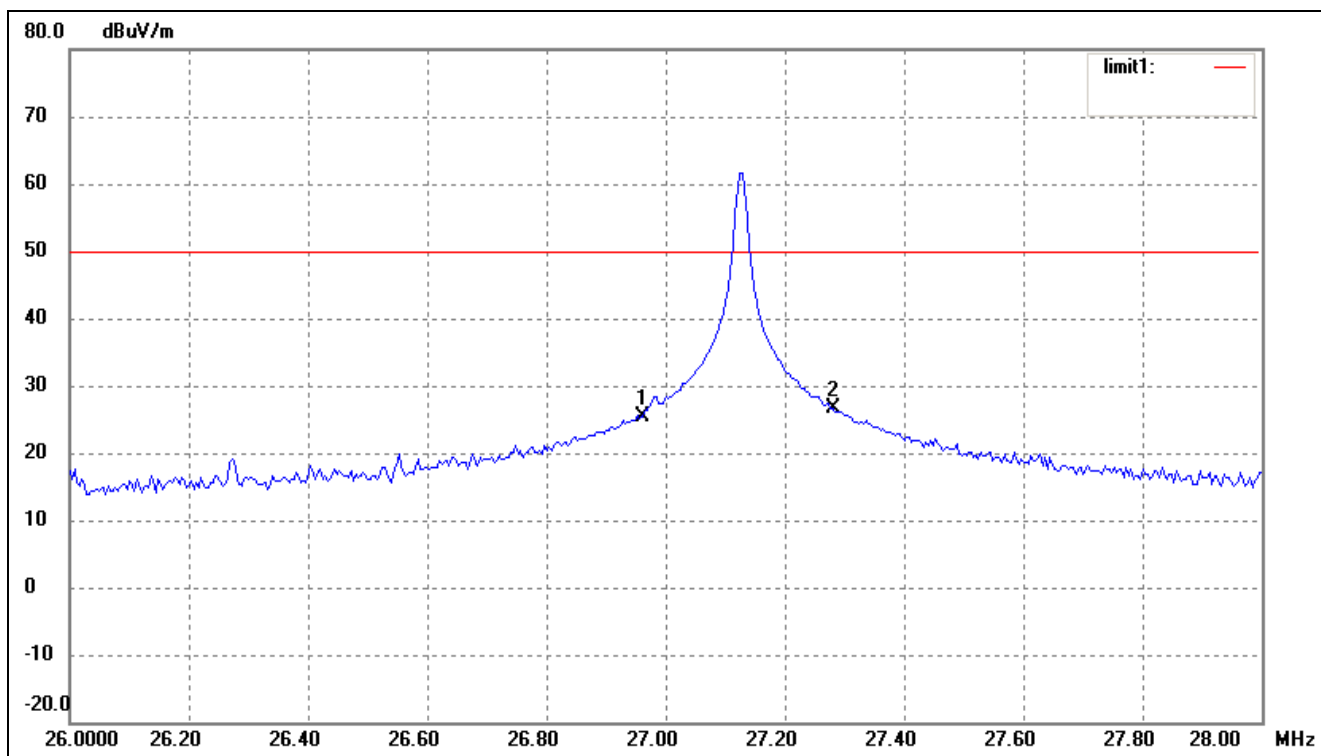
### 5.5 Summary of Test Results/Plots

Frequency MHz	Emission dB $\mu$ V/m	Limit dB $\mu$ V/m
26.9600	35.00	50
27.2800	36.02	50

**Test Result: Passed**

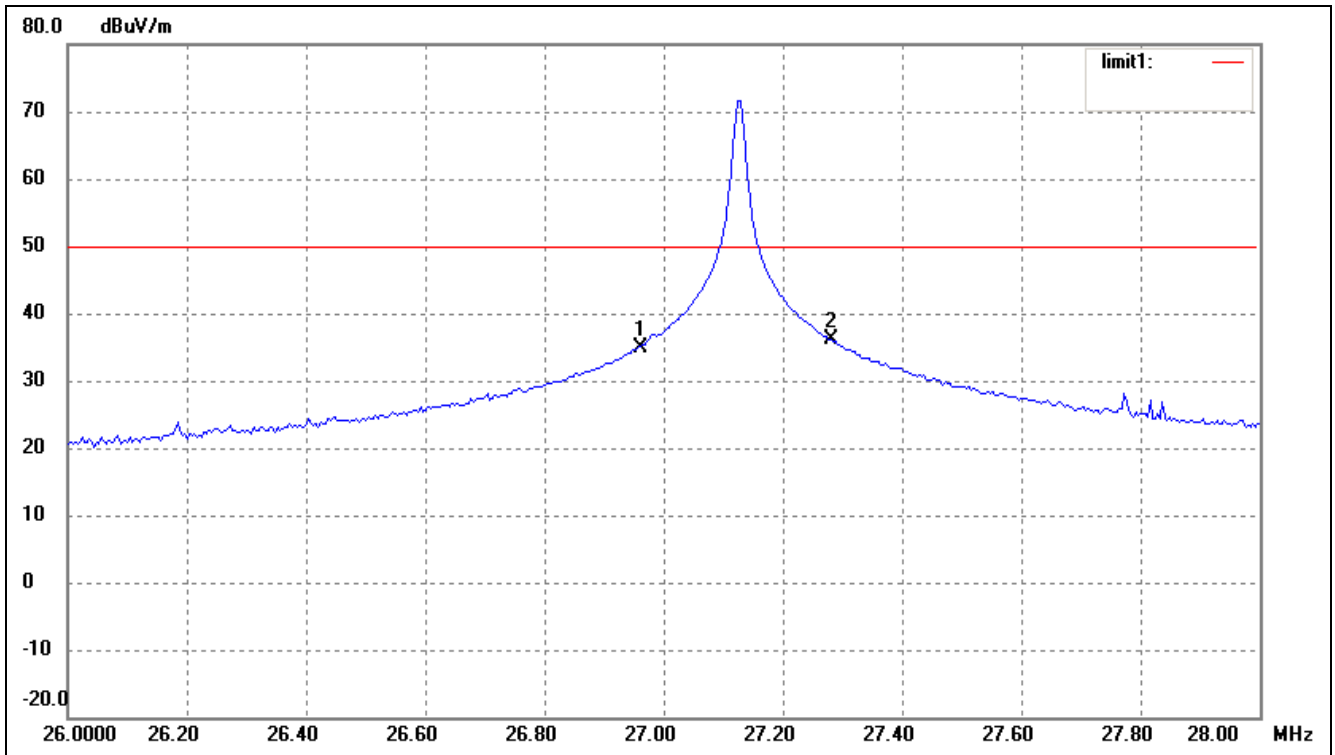
Refer to the attached plots.

*Horizontal:*



No.	Frequency (MHz)	Reading (dB $\mu$ V/m)	Correct dB/m	Result (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Degree ( $^{\circ}$ )	Height (cm)	Remark
1	26.9600	16.98	8.34	25.32	50.00	-24.68	300	100	Peak
2	27.2800	18.38	8.28	26.66	50.00	-23.34	44	100	Peak

Vertical:



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	26.9600	26.66	8.34	35.00	50.00	-15.00	25	100	Peak
2	27.2800	27.74	8.28	36.02	50.00	-13.98	34	100	Peak

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