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Gakkiku Technology

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## Test Report

|                                            |                                                                                                                                 |
|--------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|
| <b>Applicant</b>                           | Junxing Toys Industrial Company Ltd.                                                                                            |
| <b>Address</b>                             | West of Fengxin 3 Avenue, North of Laimei Rd.,<br>Fengxiang Street, Chenghai District,<br>Shantou, Guangdong Province,<br>China |
| <b>FCC ID Number</b>                       | FCC ID: YB7D73T27                                                                                                               |
| <b>Brand Name(s)</b>                       | None                                                                                                                            |
| <b>Model Number(s)/<br/>Item Number(s)</b> | 5F62D73                                                                                                                         |
| <b>Product Description</b>                 | Wireless Remote Control Toy - TX                                                                                                |
| <b>Operating Frequency</b>                 | 27.145 MHz                                                                                                                      |
| <b>Rules/Standards</b>                     | Part 15.227 of the FCC Rules,<br>RSS-310 Issue 3 and RSS-Gen Issue 4 of<br>the Industry Canada                                  |
| <b>Received Date</b>                       | 5th June, 2015                                                                                                                  |
| <b>Tested Date</b>                         | 5th June, 2015                                                                                                                  |
| <b>Approved by</b>                         | Dick Chan (Director of Gakkiku)                                                                                                 |
| <b>Tested by</b>                           |  Lahm Peng (Engineer of Shenzhen SEM.Test)   |
| <b>Signed by</b>                           |  Jandy So (Manager of Shenzhen SEM.Test)     |
| <b>Report Number</b>                       | GKK201506050C                                                                                                                   |
| <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 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.

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## 1. GENERAL INFORMATION

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

#### Client Information

Applicant: Junxing Toys Industrial Company Ltd.  
Address of applicant: West of Fengxin 3 Avenue, North of Laimei Rd.,  
Fengxiang Street, Chenghai District,  
Shantou, Guangdong Province, China

Manufacturer: Junxing Toys Industrial Company Ltd.  
Address of manufacturer: West of Fengxin 3 Avenue, North of Laimei Rd.,  
Fengxiang Street, Chenghai District,  
Shantou, Guangdong Province, China

#### General Description of EUT

| Item                                                                          | Description                                                                                  |
|-------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|
| Product Description:                                                          | Wireless Remote Control Toy - TX                                                             |
| Brand Name(s):                                                                | None                                                                                         |
| Model Number(s)/<br>Item Number(s):                                           | 5F62D73<br>[All Brand Name(s) and Model Number(s)/Item Number(s) are electrically identical] |
| Power Source:                                                                 | 2 units of DC 1.5V AA-Size Battery                                                           |
| 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 Junxing Toys Industrial Company Ltd. in accordance with Part 15 Subpart C, Part 15.227, 15.209, 15.205 & 15.203 of the FCC Rules and RSS-310 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 15.227, 15.209, 15.205 & 15.203 of the FCC Rules and RSS-310 Issue 3 & RSS-Gen Issue 4 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 Number | Serial Number |
|-------------|--------------|--------------|---------------|
| /           | /            | /            | /             |

### 1.7 EUT Cable List and Details

| Cable Description | Length (M) | Shielded/<br>Unshielded | With Core/<br>Without Core |
|-------------------|------------|-------------------------|----------------------------|
| /                 | /          | /                       | /                          |

## 2. SUMMARY OF TEST RESULTS

| FCC RULES<br>INDUSTRY CANADA                                                   | DESCRIPTION OF TEST          | RESULT    |
|--------------------------------------------------------------------------------|------------------------------|-----------|
| Part 15.203,<br>RSS-Gen Issue 4 §7.1.2                                         | Antenna Requirement          | Compliant |
| Part 15.205,<br>RSS-310 Issue 3 §2.4 &<br>RSS-Gen Issue 4<br>§7.2.2 Table 3    | Restricted Band of Operation | Compliant |
| Part 15.209,<br>RSS-310 Issue 3 §3.8 &<br>RSS-Gen Issue 4<br>§7.2.5 Table 5    | Radiated Emission Limit      | Compliant |
| Part 15.227(a),<br>RSS-310 Issue 3 §3.8 &<br>RSS-Gen Issue 4<br>§7.2.5 Table 5 | Field Strength               | Compliant |
| Part 15.227(b),<br>RSS-310 Issue 3 §2.4 &<br>RSS-Gen Issue 4<br>§7.2.2 Table 3 | Out of Band Emission         | Compliant |

**3. Part 15.203 & RSS-Gen Issue 4 §7.1.2 - ANTENNA REQUIREMENT**

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**3.1 Standard Applicable**

According to Part 15.203 of the FCC Rules and RSS-Gen Issue 4 §7.1.2 of the Industry Canada, 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 15.227, 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  $\pm 5.10$  dB.

##### 4.2 Standard Applicable

According to Part 15.227(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  $\mu$ W e.i.r.p.).

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

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 4 §7.2.2 Table 3 of the Industry Canada.

##### 4.3 Test Equipment List and Details

| Description              | Manufacturer         | Model     | Serial Number | Cal. Date  | Due. Date  |
|--------------------------|----------------------|-----------|---------------|------------|------------|
| Spectrum Analyzer        | R&S                  | FSP       | 836079/035    | 2015-05-28 | 2016-05-27 |
| EMI Test Receiver        | R&S                  | ESVB      | 825471/005    | 2015-05-28 | 2016-05-27 |
| Positioning Controller   | C&C                  | CC-C-1F   | N/A           | 2015-05-28 | 2016-05-27 |
| RF Switch                | EM                   | EMSW18    | SW060023      | 2015-05-28 | 2016-05-27 |
| Pre-amplifier            | Agilent              | 8447F     | 3113A06717    | 2015-05-28 | 2016-05-27 |
| Pre-amplifier            | Compliance Direction | PAP-0118  | 24002         | 2015-05-28 | 2016-05-27 |
| Trilog Broadband Antenna | SCHWARZBECK          | VULB9163  | 9163-333      | 2015-05-24 | 2016-05-23 |
| Horn Antenna             | ETS                  | 3117      | 00086197      | 2015-05-24 | 2016-05-23 |
| Loop Antenna             | SCHWARZECK           | HFRA 5165 | 9365          | 2015-05-24 | 2016-05-23 |

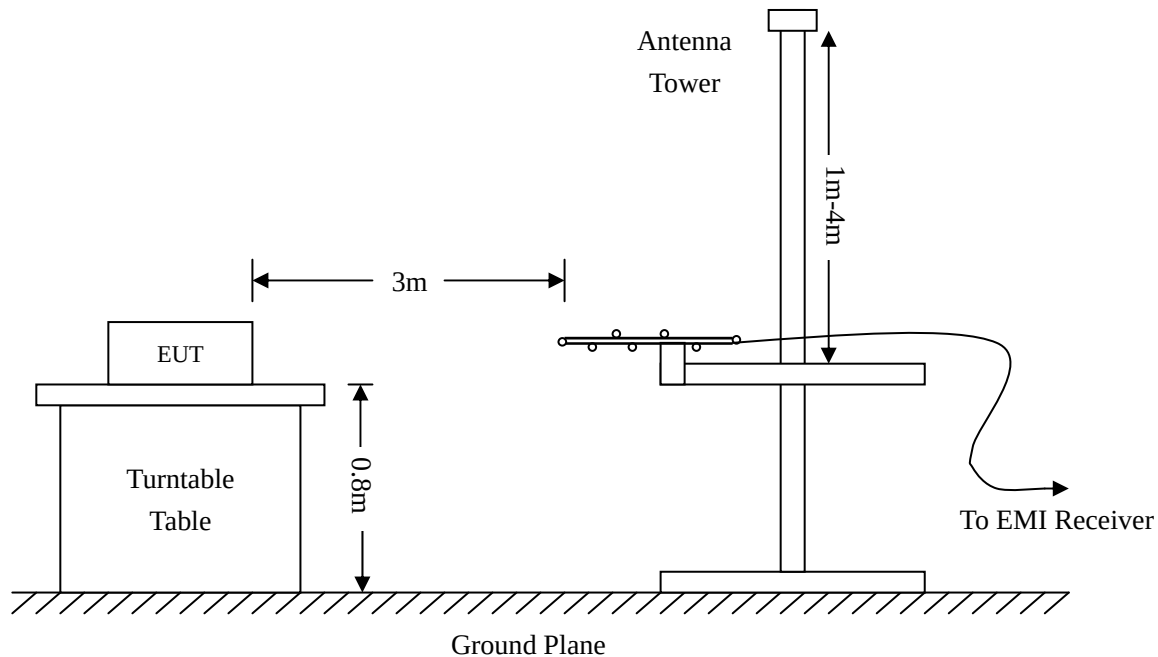
**Statement of Traceability:** All calibrations have been performed per the NVLAP requirements traceable to the NIST.

#### 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 15.227(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:

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

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 Part 15 of the FCC Rules. 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 15.227, 15.209 & 15.205 of the FCC Rules and RSS-310 Issue 3 of the Industry Canada, and had the worst margin of:

**-9.12 dB $\mu$ V at 54.2610 MHz in the Vertical polarization, Transmitting mode,  
9 kHz to 1 GHz, 3 Meters**

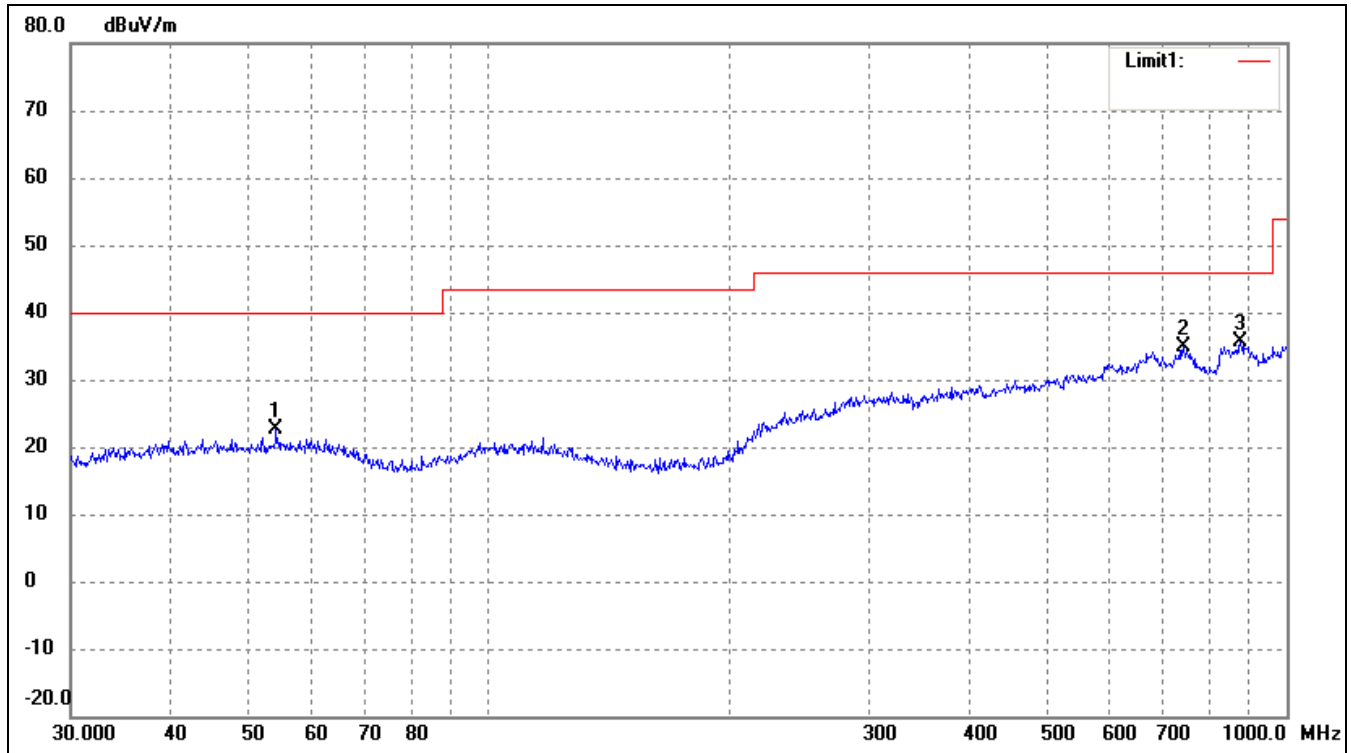
**Note:** This EUT was tested in 3 orthogonal positions and the worst case position data was reported.

*Test Mode: Transmitting below 30 MHz tested by using Loop Antenna*

| Frequency | Reading      | Correction Factor | Result       | Limit        | Margin | Polar | Detector |
|-----------|--------------|-------------------|--------------|--------------|--------|-------|----------|
| MHz       | dB $\mu$ V/m | dB/m              | dB $\mu$ V/m | dB $\mu$ V/m | dB     | H/V   |          |
| 27.145    | 29.57        | 7.91              | 37.48        | 100          | -62.52 | H     | Peak     |
| 27.145    | 20.34        | 7.91              | 28.25        | 80           | -51.75 | H     | Average  |
| 27.145    | 58.49        | 7.91              | 66.40        | 100          | -33.60 | V     | Peak     |
| 27.145    | 49.73        | 7.91              | 57.64        | 80           | -22.36 | V     | Average  |

Test Mode: Transmitting from 30 MHz to 1 GHz tested by using Trilog Broadband Antenna

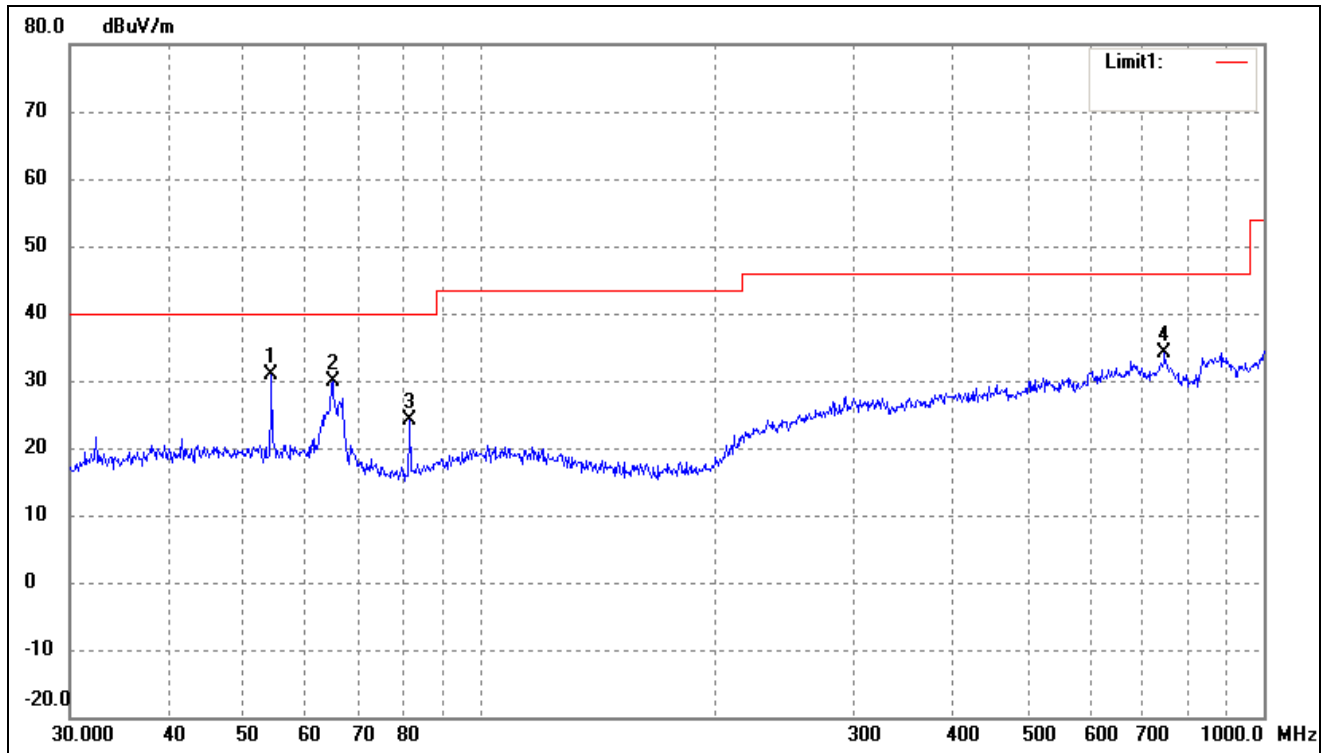
Horizontal:



| No. | Frequency | Reading | Correction Factor | Result | Limit  | Margin | Degree | Height | Remark |
|-----|-----------|---------|-------------------|--------|--------|--------|--------|--------|--------|
|     | MHz       | dBuV/m  | dB                | dBuV/m | dBuV/m | dB     | °      | cm     |        |
| 1   | 54.2610   | 17.33   | 5.31              | 22.64  | 40.00  | -17.36 | 147    | 100    | Peak   |
| 2   | 742.2586  | 15.45   | 19.45             | 34.90  | 46.00  | -11.10 | 25     | 100    | Peak   |
| 3   | 875.2469  | 17.99   | 17.70             | 35.69  | 46.00  | -10.31 | 96     | 100    | Peak   |

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

Vertical:



| No. | Frequency | Reading | Correction Factor | Result | Limit  | Margin | Degree | Height | Remark |
|-----|-----------|---------|-------------------|--------|--------|--------|--------|--------|--------|
|     | MHz       | dBuV/m  | dB                | dBuV/m | dBuV/m | dB     | °      | cm     |        |
| 1   | 54.2610   | 25.57   | 5.31              | 30.88  | 40.00  | -9.12  | 123    | 100    | Peak   |
| 2   | 64.8865   | 25.59   | 4.30              | 29.89  | 40.00  | -10.11 | 201    | 100    | Peak   |
| 3   | 81.4970   | 21.77   | 2.25              | 24.02  | 40.00  | -15.98 | 14     | 100    | Peak   |
| 4   | 747.4826  | 14.91   | 19.20             | 34.11  | 46.00  | -11.89 | 168    | 100    | 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) of the FCC Rules and RSS-310 Issue 3 §2.4 of the Industry Canada, 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 of the FCC Rules and RSS-310 Issue 3 §3.8 of the Industry Canada.

### 5.2 Test Equipment List and Details

| Description              | Manufacturer         | Model     | Serial Number | Cal. Date  | Due. Date  |
|--------------------------|----------------------|-----------|---------------|------------|------------|
| Spectrum Analyzer        | R&S                  | FSP       | 836079/035    | 2015-05-28 | 2016-05-27 |
| EMI Test Receiver        | R&S                  | ESVB      | 825471/005    | 2015-05-28 | 2016-05-27 |
| Positioning Controller   | C&C                  | CC-C-1F   | N/A           | 2015-05-28 | 2016-05-27 |
| RF Switch                | EM                   | EMSW18    | SW060023      | 2015-05-28 | 2016-05-27 |
| Pre-amplifier            | Agilent              | 8447F     | 3113A06717    | 2015-05-28 | 2016-05-27 |
| Pre-amplifier            | Compliance Direction | PAP-0118  | 24002         | 2015-05-28 | 2016-05-27 |
| Trilog Broadband Antenna | SCHWARZBECK          | VULB9163  | 9163-333      | 2015-05-24 | 2016-05-23 |
| Horn Antenna             | ETS                  | 3117      | 00086197      | 2015-05-24 | 2016-05-23 |
| Loop Antenna             | SCHWARZECK           | HFRA 5165 | 9365          | 2015-05-24 | 2016-05-23 |

**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

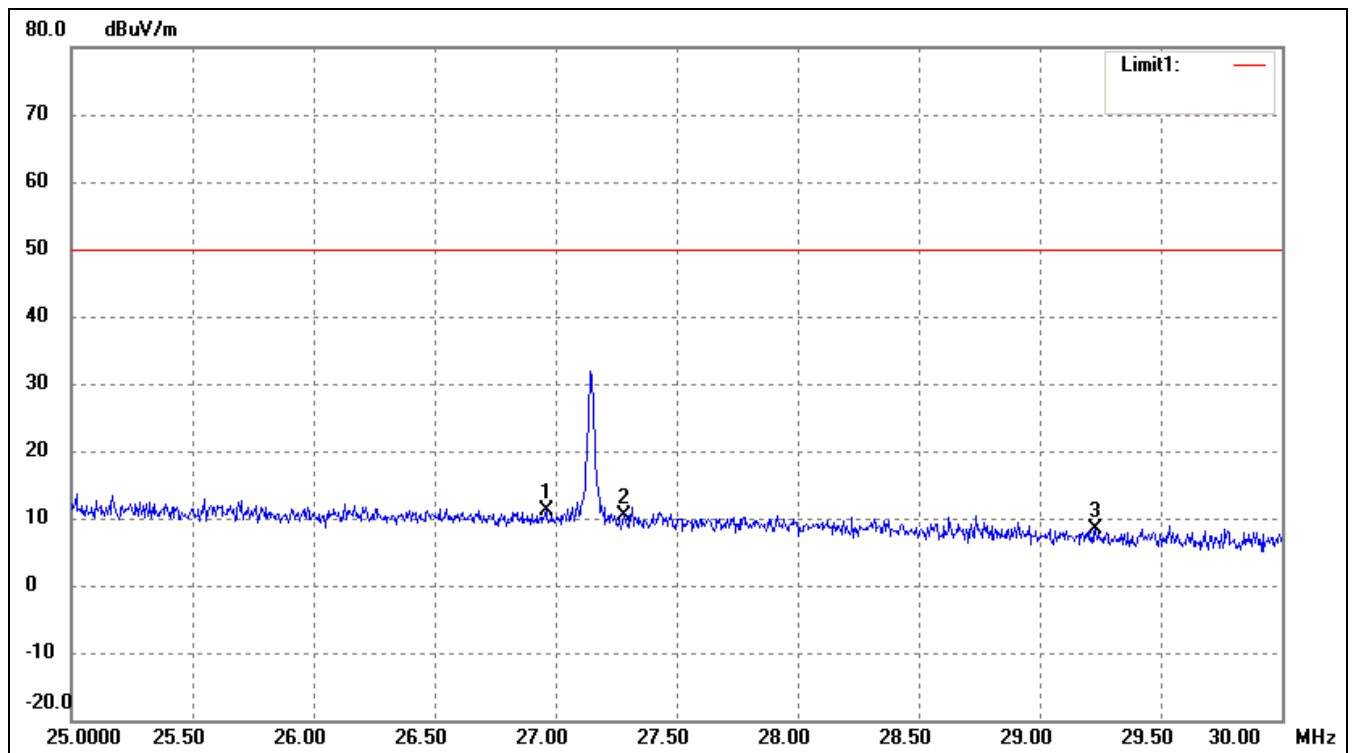
| Frequency<br>(MHz) | Emission<br>(dB $\mu$ V/m) | Limit<br>(dB $\mu$ V/m) |
|--------------------|----------------------------|-------------------------|
| 26.9600            | 27.48                      | 50                      |
| 27.2800            | 31.50                      | 50                      |
| 29.2300            | 8.13                       | 50                      |

### Test Result: Passed

Refer to the attached plots.

Test Mode: Transmitting

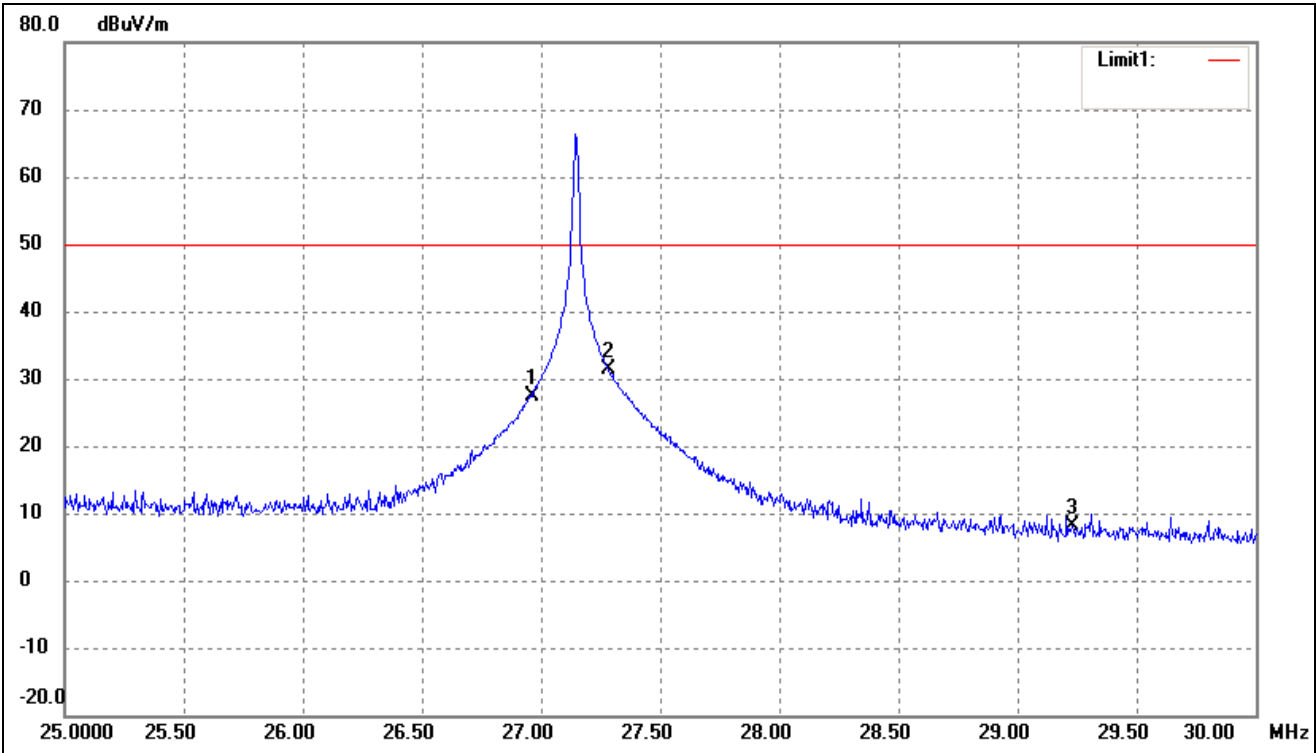
Horizontal:



| No. | Frequency | Reading      | Correction<br>Factor | Result       | Limit        | Margin | Degree | Height | Remark |
|-----|-----------|--------------|----------------------|--------------|--------------|--------|--------|--------|--------|
|     | MHz       | dB $\mu$ V/m | dB                   | dB $\mu$ V/m | dB $\mu$ V/m | dB     | °      | cm     |        |
| 1   | 26.9600   | 4.12         | 6.95                 | 11.07        | 50.00        | -38.93 | 314    | 100    | Peak   |
| 2   | 27.2800   | 3.78         | 6.61                 | 10.39        | 50.00        | -39.61 | 32     | 100    | Peak   |
| 3   | 29.2300   | 3.83         | 4.48                 | 8.31         | 50.00        | -41.69 | 21     | 100    | Peak   |

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

Vertical:



| No. | Frequency | Reading | Correction Factor | Result | Limit  | Margin | Degree | Height | Remark |
|-----|-----------|---------|-------------------|--------|--------|--------|--------|--------|--------|
|     | MHz       | dBuV/m  | dB                | dBuV/m | dBuV/m | dB     | °      | cm     |        |
| 1   | 26.9600   | 20.53   | 6.95              | 27.48  | 50.00  | -22.52 | 147    | 100    | Peak   |
| 2   | 27.2800   | 24.89   | 6.61              | 31.50  | 50.00  | -18.50 | 321    | 100    | Peak   |
| 3   | 29.2300   | 3.65    | 4.48              | 8.13   | 50.00  | -41.87 | 25     | 100    | Peak   |

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

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