# FCC CFR 47 PART 15 TEST REPORT
On Behalf of

## DIANZHE (HONG KONG) INDUSTRIAL CO., LTD.

Radio Controlled Toys

Model No.: EC10214, EC10215, EC10240, EC10241, EC10242, EC10243, EC10244, EC10245, EC10246, EC10247, EC10248, EC10249, EC10250

| | | |
|---|---|---|
| Prepared for | : | DIANZHE (HONG KONG) INDUSTRIAL CO., LTD. |
| Address | : | Rm 507, Qinghai Mansion, #7043, Beihuan Road, Futian District, Shenzhen, Guangdong, China |

| | | |
|---|---|---|
| Prepared by | : | SHENZHEN LCS CERTIFICATION SERVICES INC. |
| Address | : | Xingyuan Industrial Park, Tongda Road, Bao'an Blvd., Bao'an District, Shenzhen, Guangdong, China |

| | | |
|---|---|---|
| Date of receipt of test sample | : | July 10, 2011 |
| Number of tested samples | : | 1 |
| Serial number | : | Prototype |
| Date of Test | : | July 11, 2011 - July 22, 2011 |
| Date of Report | : | July 22, 2011 |

| **TEST REPORT**<br>**FCC CFR 47 PART 15** | |
|---|---|
| **Report Reference No. ..... :** | **LCS1107111417F** |
| Date of issue ..... : | July 22, 2011 |
| **Testing Laboratory Name ..... :** | **Shenzhen LCS Compliance Testing Laboratory Ltd.** |
| Address ..... : | Xingyuan Industrial Park, Tongda Road, Bao'an Blvd., Bao'an District, Shenzhen, Guangdong, China |
| Testing location/ procedure ..... : | Full application of Harmonised standards ■<br>Partial application of Harmonised standards □<br>Other standard testing method □ |
| **Applicant's name ..... :** | **DIANZHE (HONG KONG) INDUSTRIAL CO., LTD.** |
| Address ..... : | Rm 507, Qinghai Mansion, #7043, Beihuan Road, Futian District, Shenzhen, Guangdong, China |
| **Test specification** | |
| Standard ..... : | FCC CFR 47 PART 15 Subpart C(Section 15.227): 2011, ANSI C63.4-2009 |
| **Test Report Form No. ..... :** | LCSEMC-1.0 |
| TRF Originator ..... : | SHENZHEN LCS CERTIFICATION SERVICES INC. |
| Master TRF ..... : | Dated 2011-03 |
|  | |
| **Test item description. ..... :** | **Radio Controlled Toys** |
| Trade Mark ..... : | N/A |
| Manufacturer ..... : | DIANZHE (HONG KONG) INDUSTRIAL CO., LTD. |
| Model/Type reference ..... : | EC10214, EC10215, EC10240, EC10241, EC10242, EC10243, EC10244, EC10245, EC10246, EC10247, EC10248, EC10249, EC10250 |
| Ratings ..... : | Remote Controller: DC 9V<br>Radio Controlled Toys With 27MHz as a Carrier |
| Result ..... : | **Positive** |

| **Compiled by:** | **Supervised by:** | **Approved by:** |
|---|---|---|
| Bobo Li | Vito Cao | Gavin Liang |
| Bobo Li/ File administrators | Vito Cao/ Technique principal | Gavin Liang/ Manager |

# EMC -- TEST REPORT

| | |
|---|---|
| **Test Report No. : LCS1107111417F** | July 22, 2011<br>Date of issue |

| | |
|---|---|
| Type / Model..... | : EC10214, EC10215, EC10240, EC10241, EC10242, EC10243, EC10244, EC10245, EC10246, EC10247, EC10248, EC10249, EC10250 |
| EUT..... | : Radio Controlled Toys |
| **Applicant.....** | **: DIANZHE (HONG KONG) INDUSTRIAL CO., LTD.** |
| Address..... | : Rm 507, Qinghai Mansion, #7043, Beihuan Road, Futian District, Shenzhen, Guangdong, China |
| Telephone..... | : / |
| Fax..... | : / |
| Contact..... | : / |
| **Manufacturer.....** | **: DIANZHE (HONG KONG) INDUSTRIAL CO., LTD.** |
| Address..... | : Rm 507, Qinghai Mansion, #7043, Beihuan Road, Futian District, Shenzhen, Guangdong, China |
| Telephone..... | : / |
| Fax..... | : / |
| Contact..... | : / |
| **Factory.....** | **: /** |
| Address..... | : / |
| Telephone..... | : / |
| Fax..... | : / |
| Contact..... | : / |
| **Customer.....** | **: TOYS TEKK CO. (US)** |
| Address..... | : 1005 E. Las Tunas Drive #777 San Gabriel, CA 91776, USA |
| Telephone..... | : / |
| Fax..... | : / |
| Contact..... | : / |

**Test Result** according to the standards on page 5: **Positive**

The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

TABLE OF CONTENTS

Test Report Description Page

# 1. SUMMARY OF STANDARDS AND RESULTS

## 1.1.Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below.

| EMISSION | | | |
|---|---|---|---|
| **Description of Test Item** | **Standard** | **Standard Paragraph** | **Results** |
| Radiated Emission | FCC CFR 47 PART 15: 2011 | Section 15.227 | PASS① |
| Occupied Bandwidth | FCC CFR 47 PART 15: 2011 | Section 15.215 | PASS |
| N/A is an abbreviation for Not Applicable. | | | |

Remark: § Item No.: EC10214, EC10215, EC10240, EC10241, EC10242, EC10243, EC10244, EC10245, EC10246, EC10247, EC10248, EC10249, EC10250

Only the Item EC10214 was tested, since the electrical circuit design, PCB layout, components used and internal wiring were identical for the above items, only the outer decoration. color and item numbers were different according to the conformation from the applicant (manufacturer).

① The EUT passed the Radiated Emission after modifications by client.

# 2. GENERAL INFORMATION

## 2.1.Description of Device (EUT)

| | | |
|---|---|---|
| EUT | : | Radio Controlled Toys |
| Model Number | : | EC10214, EC10215, EC10240, EC10241, EC10242, EC10243, EC10244, EC10245, EC10246, EC10247, EC10248, EC10249, EC10250 |
| Power Supply | : | Remote Controller: DC 9V |

## 2.2.Description of Test Facility

Site Description

| | | |
|---|---|---|
| EMC Lab. | : | Accredited by CNAS, June 04, 2010<br>The Certificate Registration Number. is L4595.<br>Accredited by FCC, July 14, 2011<br>The Certificate Registration Number. is 899208.<br>Accredited by Industry Canada, May. 02, 2011<br>The Certificate Registration Number. is 9642A-1 |
| Name of Firm | : | Shenzhen LCS Compliance Testing Laboratory Ltd. |
| Site Location | : | Xingyuan Industrial Park, Tongda Road, Bao'an Blvd, Bao'an District, Shenzhen, Guangdong, China |

## 2.3.Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. To CISPR 16 – 4 "Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements" and is documented in the LCS quality system acc. To DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

## 2.4.Measurement Uncertainty

| Test Item | | Frequency Range | Uncertainty | Note |
|---|---|---|---|---|
| Radiation Uncertainty | : | 30MHz~200MHz | ±2.96dB | (1) |
| | | 200MHz~1000MHz | ±3.10dB | (1) |
| Conduction Uncertainty | : | 150kHz~30MHz | ±1.63dB | (1) |
| Power disturbance | : | 30MHz~300MHz | ±1.60dB | (1) |

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

# 3. MEASURING DEVICE AND TEST EQUIPMENT

## 3.1.Radiatd Electromagnetic Disturbance

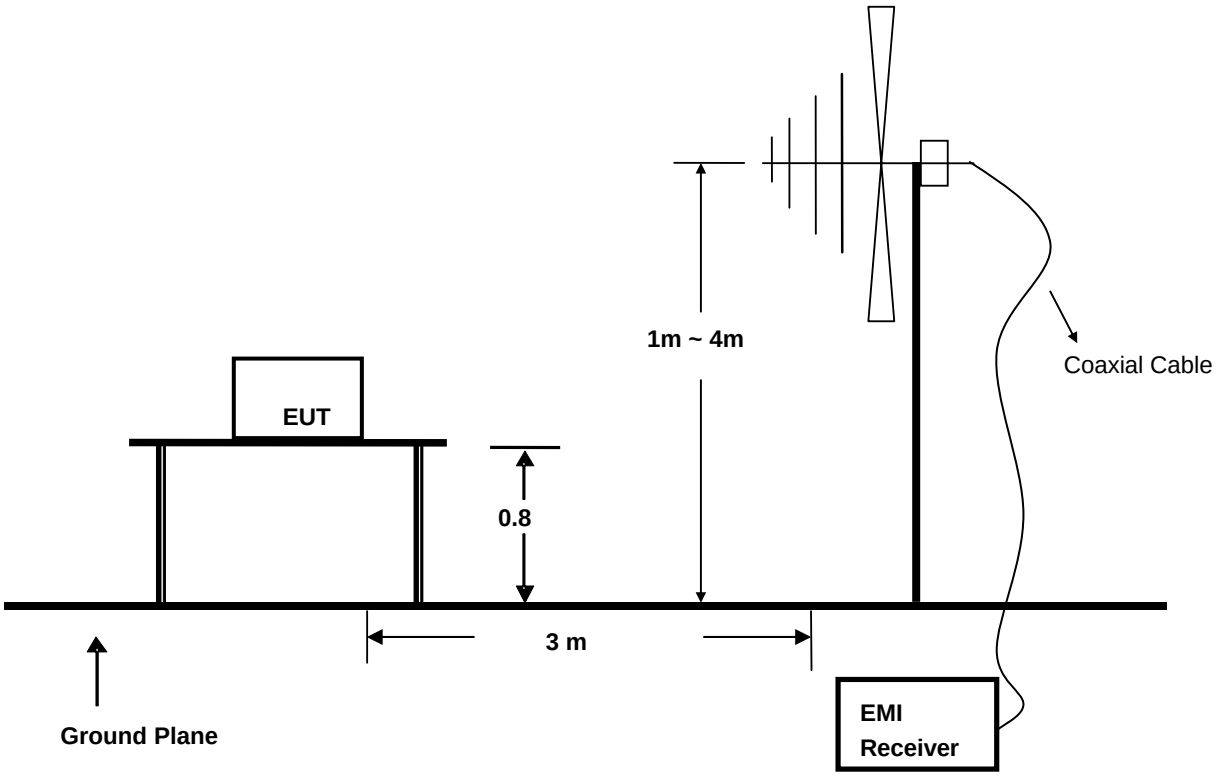
| Item | Test Equipment | Manufacturer | Model No. | Serial No. | Last Cal. |
|---|---|---|---|---|---|
| 1 | EMI Test Receiver | ROHDE & SCHWARZ | ESCI | 1166.5950.03 | 2011/06 |
| 2 | EMI Test Receiver | ROHDE & SCHWARZ | ESPI | 1164.6407.03 | 2011/06 |
| 3 | Log per Antenna | ROHDE & SCHWARZ | VULB9163 | 9163-470 | 2011/06 |
| 4 | Amplifier | SCHWARZBECK | PAP-0001 | 21002 | 2011/06 |
| 5 | EMI Test Software | AUDIX | E3 | N/A | 2011/06 |
| 6 | Horn Antenna | ROHDE & SCHWARZ | HF906 | 100095 | 2011/06 |
| 7 | Spectrum Analyzer | ROHDE & SCHWARZ | FSP30 | 100324 | 2011/06 |
| 8 | 0.1-1300 MHz Pre-Amplifier | HP | 8447D OPT 010 | 2944A06252 | 2011/06 |
| 9 | 1-26.5 GHz Pre-Amplifier | AGILENT | 8449B | 3008A01649 | 2011/06 |
| 10 | 310N Amplifier | SONAMA | 310N | 272683 | 2011/06 |
| 11 | Active Loop Antenna | EMCO | 6502 | 0042963 | 2011/06 |

# 4. RADIATED EMISSION MEASUREMENT

## 4.1.Test Equipment

Refer to section 3 for details

## 4.2.Block Diagram of Test Setup




## 4.3.Radiated Emission Limit (Class B)

FCC Part15 C Section 15.227(§ 15.209) Limits:

| FREQUENCY MHz | DISTANCE Meters | FIELD STRENGTHS LIMIT | |
|---|---|---|---|
| | | μV/m | dB(μV)/m |
| 30 ~ 88 | 3 | 100 | 40.0 |
| 88 ~ 216 | 3 | 150 | 43.5 |
| 216 ~ 960 | 3 | 200 | 46.0 |
| 960 ~ 1000 | 3 | 500 | 54.0 |

Remark：(1) Emission level (dB)μV = 20 log Emission level μV/m

(2) The smaller limit shall apply at the cross point between two frequency bands.

(3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.

## 4.4.EUT Configuration on Measurement

The following equipment are installed on Radiated Emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

## 4.5.Operating Condition of EUT

5.5.1.Setup the EUT as shown in Section 4.2.
5.5.2. Let the EUT work in test mode (on) and measure it.

## 4.6.Test Procedure

1) 9K to 30MHz emissions:
For testing performed with the loop antenna, testing was performed in accordance to ANSIC63.4:2003 section 8.2.1. The center of the loop was positioned 1 m above the ground and positioned with its plane vertical at the specied distance from the EUT. During testing the loop was rotated about its vertical axis for maximum response at each azimuth and also investigated with the loop positioned in the horizontal plane.

2) 30MHz to 1GHz emissions:
EUT and its simulators are placed on a turntable, which is 0.8 meter high above ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on a antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated by-log antenna) is used as receiving antenna. Both horizontal and vertical polarization of the antenna is set on measurement. In order to find the maximum emission levels, all of the interface cables must be manipulated according to ANSI C63.4-2009 on radiated emission measurement.
The bandwidth of the EMI test receiver is set at 120kHz.
The frequency range from 30MHz to 1000MHz is checked.

## 4.7.Radiated Emission Noise Measurement Result

**PASS.**

The scanning waveforms please refer to the next page.

## 1) Below 30MHz Emissions:

**Vertical**:

| Test Frequency | Peak (dBμV/m) | | | Limits | Margin (dB) | | |
|---|---|---|---|---|---|---|---|
| (MHz) | X | Y | Z | (dBμV/m) | X | Y | Z |
| 27.145 | 73 | 71 | 71 | 100.0 | 27 | 29 | 29 |
| **Test Frequency** | **Average (dBμV/m)** | | | **Limits** | **Margin (dB)** | | |
| **(MHz)** | X | Y | Z | **(dBμV/m)** | X | Y | Z |
| 27.145 | 67 | 65 | 64 | 80.0 | 13 | 15 | 16 |

Remark:

Y: EUT as Radiated Emission test setup photograph in section 8 of this report.

X: rotate EUT by 90° clockwise.

Z: rotate EUT by 90° vertically.

According to ANSI Standard C63.4-2003, the protable equipment shall be tested with X, Y, Z axis of the EUT to find the maximum emissions. Other equipment shall be put in normal use status to find the maximum emissions.

## 2) other emissions

Remark: When an emission was found, the table was rotated to produce the maximum signal strength. Was performed in the 3m chamber using the spectrum analyser in peak detection mode.The EUT was measured for both the Horizontal and Vertical polarities and performed a pre-test three orthogonal planes. The worst case emissions were reported.

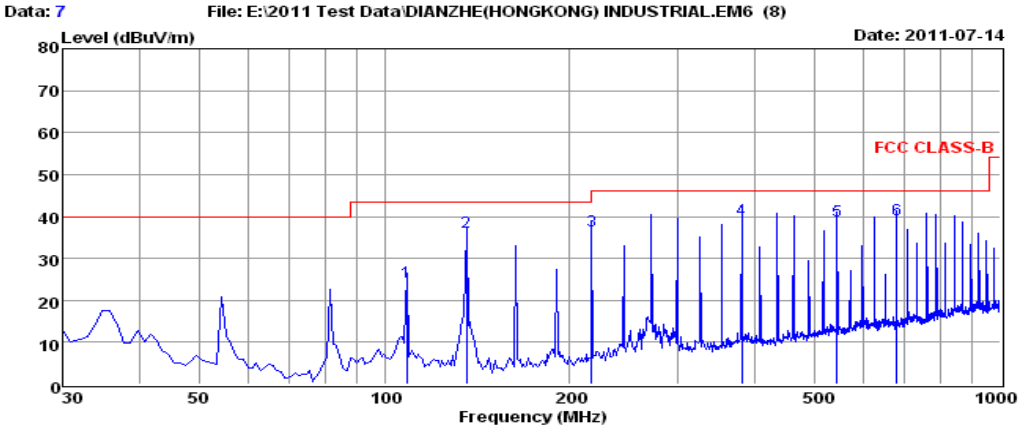
According to 15.35 (b) When average radiated emission measurements are specified in the regulations, including emission measurements below 1000 MHz, there is also a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit for the frequency being investigated unless a different peak emission limit is otherwise specified in the rules, e.g., see Section 15.255.

The field strength is calculated by adding the Antenna Factor, Cable Factor & Peramplifier. The basic equation with a sample calculation is as follows:

Final Test Level =Receiver Reading + Antenna Factor + Cable Loss –Peramplifier Factor.

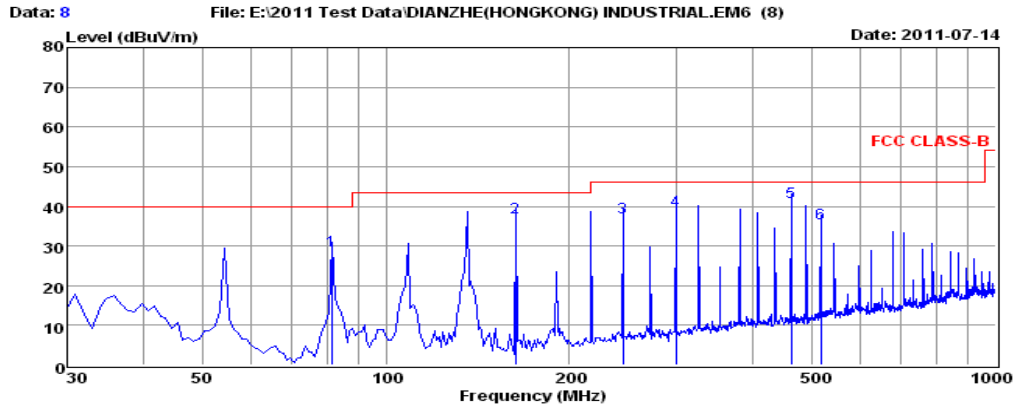
The following test results were performed on the EUT.

## 30MHz to 1GHz Emissions




Site : 3m chamber
Condition : FCC CLASS-B 3m VULB-9163 HORIZONTAL
: RBW:120.000KHz VBW:300.000KHz SWT:0.100sec
Env. /Ins. : 24℃/56%
EUT : Radio Controlled Toys
M/N : EC10214
Power Rating: DC 9V
Test Mode : ON
Operator : Liu
Memo :

| | Freq | Read Level | Cable Loss | Antenna Factor | Preamp Factor | Limit Line | Over Limit | Remark |
|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV | dB | dB/m | dB | dBuV/m | dB | |
| 1 | 108.57 | 50.66 | 0.68 | 12.38 | 39.20 | 43.50 | -18.98 | QP |
| 2 | 135.73 | 66.20 | 0.70 | 8.51 | 39.20 | 43.50 | -7.29 | QP |
| 3 | 217.21 | 63.86 | 0.88 | 11.11 | 39.19 | 46.00 | -9.34 | QP |
| 4 | 380.17 | 62.63 | 1.18 | 14.59 | 39.11 | 46.00 | -6.71 | QP |
| 5 | 543.13 | 59.16 | 1.44 | 17.39 | 39.03 | 46.00 | -7.04 | QP |
| 6 | 678.93 | 57.83 | 1.73 | 18.73 | 39.04 | 46.00 | -6.75 | QP |




Site : 3m chamber
Condition : FCC CLASS-B 3m VULB-9163 VERTICAL
: RBW:120.000KHz VBW:300.000KHz SWT:0.100sec
Env. /Ins. : 24℃/56%
EUT : Radio Controlled Toys
M/N : EC10214
Power Rating: DC 9V
Test Mode : ON
Operator : Liu
Memo :

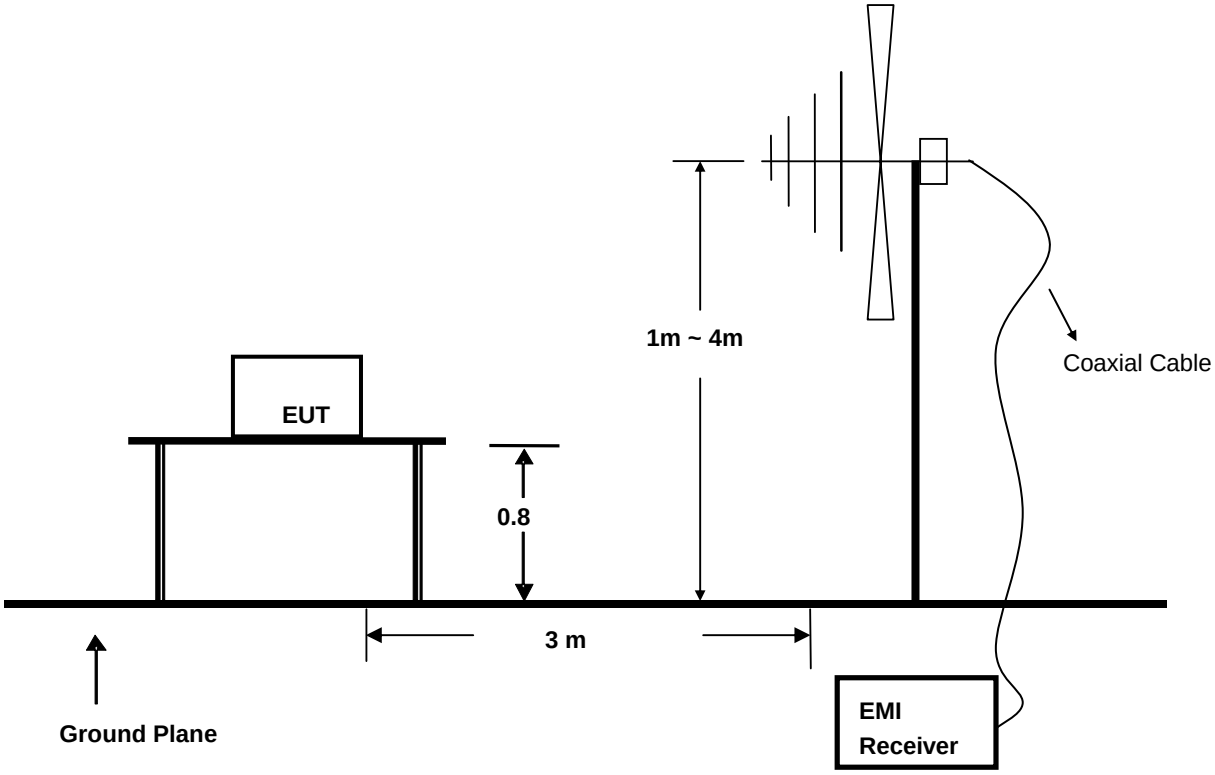
| | Freq | Read Level | Cable Loss | Antenna Factor | Preamp Factor | Limit Line | Over Limit | Remark |
|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV | dB | dB/m | dB | dBuV/m | dB | |
| 1 | 81.41 | 58.31 | 0.65 | 9.04 | 39.18 | 40.00 | -11.18 | QP |
| 2 | 162.89 | 66.64 | 0.86 | 8.76 | 39.20 | 43.50 | -6.44 | QP |
| 3 | 244.37 | 63.46 | 0.90 | 12.08 | 39.18 | 46.00 | -8.74 | QP |
| 4 | 298.69 | 63.83 | 1.12 | 13.03 | 39.15 | 46.00 | -7.17 | QP |
| 5 | 461.65 | 63.22 | 1.36 | 15.63 | 39.07 | 46.00 | -4.86 | QP |
| 6 | 515.97 | 56.36 | 1.42 | 16.88 | 39.04 | 46.00 | -10.38 | QP |

# 5. OCCUPIED BANDWIDTH MEASUREMENT

## 5.1.Test Equipment

Refer to section 3 for details

## 5.2.Block Diagram of Test Setup




## 5.3.Test Requirement

FCC Part 15 C Section 15.215 (C) and Section 15.227.

15.215(c), Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§ 15.217 through 15.257 and in subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission is contained within the frequency band designated in the rule section under which the equipment is operated. The requirement to contain the 20 dB bandwidth of the emission within the specified frequency band includes the effects from frequency sweeping, frequency hopping and other modulation techniques that may be employed as well as the frequency stability of the transmitter over expected variations in temperature and supply voltage. If a frequency stability is not specified in the regulations, it is recommended that the fundamental emission be kept within at least the central 80% of the permitted band in order to minimize the possibility of out-of-band operation.

## 5.4. Limit

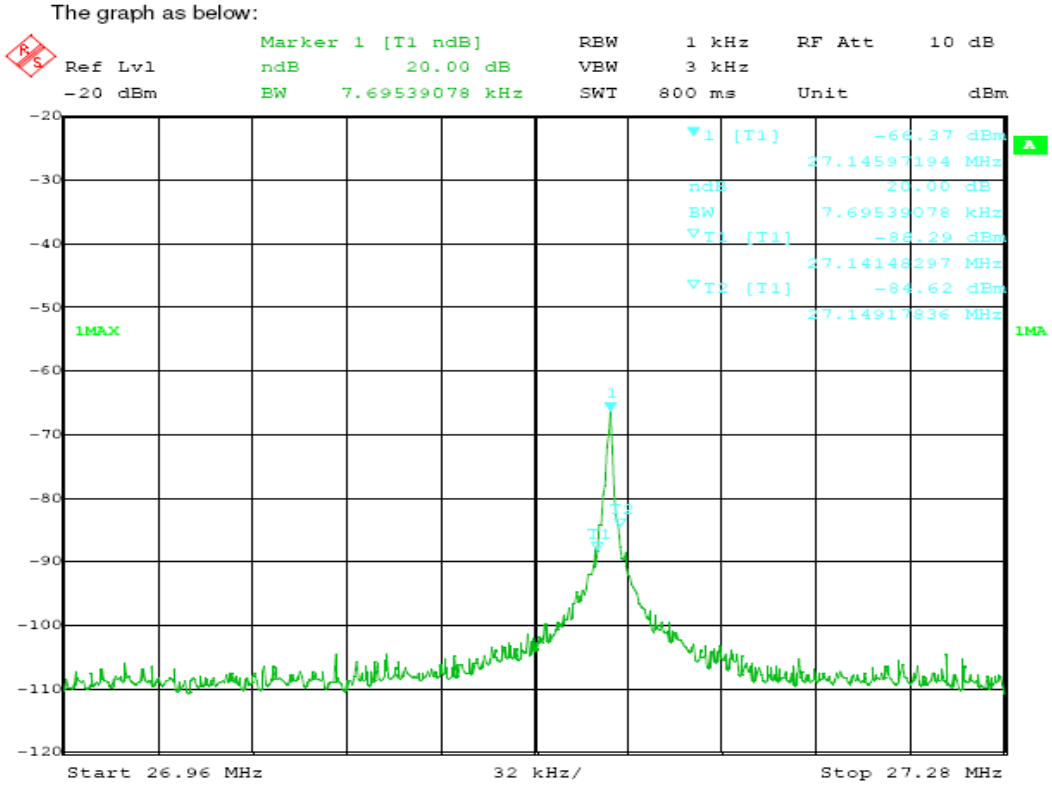
Operation within the band 26.960 – 27.280 MHz

## 5.5. Test Procedure

The useful radiated emission from the EUT was detected by the spectrum analyser with peak detector. The vertical Scale is set to 10dB per division. Record the 20 dB bandwidth of the carrier.
The useful radiated emission from the EUT was detected by the spectrum analyser with peak detector. The vertical Scale is set to 10dB per division. The horizontal scale is set to 20KHz per division. Read the down 26dB bandwidth of the carrier.
Set the spectrum analyzer: start at 26.96MHz and stop at 27.28MHz
Set the spectrum analyzer: RBW = 1kHz, VBW = 3KHz
Sweep = auto; Detector Function = Peak. Trace = Max Hold.
Mark the peak frequency and -20dB points bandwidth.

## 5.6. Measurement Result

The graph as below:




20dB bandwidth lower frequency : 27.14148297MHz
20dB bandwidth upper frequency : 27.14917836MHz
**The results: The unit does meet the FCC requirements**

# 6. MANUFACTURER/ APPROVAL HOLDER DECLARATION

The following identical model(s):

| | | | | | |
|---|---|---|---|---|---|
| EC10240 | EC10241 | EC10242 | EC10243 | EC10244 | EC10245 |
| EC10246 | EC10247 | EC10248 | EC10249 | EC10250 | EC10215 |

Belong to the tested device:

Product description : Radio Controlled Toys
Model name : EC10214

----------THE END OF REPORT----------