

APPLICATION CERTIFICATION FCC Part 15C  
On Behalf of  
Interactive Toy Concepts Limited

R/C Vehicle  
Model No.: 22029

FCC ID: RSD-22029TX

Prepared for : Interactive Toy Concepts Limited  
Address : Unit 709, 7/F., Tower 2, Cheung Sha Wan Plaza No.  
833 Cheung Sha Wan Rd. Kowloon, Hong Kong  
Prepared by : ACCURATE TECHNOLOGY CO., LTD  
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Report Number : ATE20141460  
Date of Test : July 28-Aug 06, 2014  
Date of Report : Aug 07, 2014

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## Test Report Certification

Applicant& address : Interactive Toy Concepts Limited  
Unit 709, 7/F., Tower 2, Cheung Sha Wan Plaza No. 833  
Cheung Sha Wan Rd.Kowloon,Hong Kong  
Manufacturer& address : Interactive Toy Concepts Limited  
Unit 709, 7/F., Tower 2, Cheung Sha Wan Plaza No. 833  
Cheung Sha Wan Rd.Kowloon,Hong Kong  
Product : R/C Vehicle  
Model No. : 22029

Measurement Procedure Used:

**FCC Rules and Regulations Part 15 Subpart C Section 15.249**  
**ANSI C63.4: 2009**

The EUT was tested according to FCC 47CFR 15.249 for compliance to FCC 47CFR 15.249 requirements

The device described above is tested by ACCURATE TECHNOLOGY CO. LTD to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart C Section 15.249 limits. The measurement results are contained in this test report and ACCURATE TECHNOLOGY CO. LTD is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the Equipment Under Test (EUT) is to be technically compliant with the FCC requirements.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of ACCURATE TECHNOLOGY CO. LTD.

Date of Test : July 28-Aug 06,2014

Date of Report: Aug 07,2014

Prepared by :



(Eric, Engineer)

Approved & Authorized Signer :



( Sean Liu, Manager)

## 1. GENERAL INFORMATION

### 1.1. Description of Device (EUT)

|                         |   |                                                                                              |
|-------------------------|---|----------------------------------------------------------------------------------------------|
| EUT                     | : | R/C Vehicle                                                                                  |
| Model Number            | : | 22029                                                                                        |
| Power Supply            | : | 3V DC ( “AAA” batteries 2× )                                                                 |
| Operate Frequency       | : | 2405-2468MHz                                                                                 |
| Applicant               | : | Interactive Toy Concepts Limited                                                             |
| Address                 | : | Unit 709, 7/F., Tower 2, Cheung Sha Wan Plaza No. 833<br>Cheung Sha Wan Rd.Kowloon,Hong Kong |
| Manufacturer            | : | Interactive Toy Concepts Limited                                                             |
| Address                 | : | Unit 709, 7/F., Tower 2, Cheung Sha Wan Plaza No. 833<br>Cheung Sha Wan Rd.Kowloon,Hong Kong |
| Date of sample received | : | July 28, 2014                                                                                |
| Date of Test            | : | July 28-Aug 06,2014                                                                          |

### 1.2. Special Accessory and Auxiliary Equipment

N/A

### 1.3. Description of Test Facility

EMC Lab : Accredited by TUV Rheinland Shenzhen

Listed by FCC  
The Registration Number is 752051

Listed by Industry Canada  
The Registration Number is 5077A-2

Accredited by China National Accreditation Committee  
for Laboratories  
The Certificate Registration Number is L3193

Name of Firm : ACCURATE TECHNOLOGY CO. LTD

Site Location : F1, Bldg. A, Changyuan New Material Port, Keyuan Rd.  
Science & Industry Park, Nanshan, Shenzhen, Guangdong  
P.R. China

### 1.4. Measurement Uncertainty

Conducted Emission Expanded Uncertainty = 2.23dB, k=2

Radiated emission expanded uncertainty = 3.08dB, k=2  
(9kHz-30MHz)

Radiated emission expanded uncertainty = 4.42dB, k=2  
(30MHz-1000MHz)

Radiated emission expanded uncertainty = 4.06dB, k=2  
(Above 1GHz)

## 2. MEASURING DEVICE AND TEST EQUIPMENT

**Table 1: List of Test and Measurement Equipment**

| Kind of equipment  | Manufacturer              | Type                                    | S/N        | Calibrated dates | Calibrated until |
|--------------------|---------------------------|-----------------------------------------|------------|------------------|------------------|
| EMI Test Receiver  | Rohde&Schwarz             | ESCS30                                  | 100307     | Jan. 11, 2014    | Jan. 10, 2015    |
| EMI Test Receiver  | Rohde&Schwarz             | ESPI3                                   | 101526/003 | Jan. 11, 2014    | Jan. 10, 2015    |
| Spectrum Analyzer  | Agilent                   | E7405A                                  | MY45115511 | Jan. 11, 2014    | Jan. 10, 2015    |
| Pre-Amplifier      | Rohde&Schwarz             | CBLU118354<br>0-01                      | 3791       | Jan. 11, 2014    | Jan. 10, 2015    |
| Loop Antenna       | Schwarzbeck               | FMZB1516                                | 1516131    | Jan. 15, 2014    | Jan. 14, 2015    |
| Bilog Antenna      | Schwarzbeck               | VULB9163                                | 9163-323   | Jan. 15, 2014    | Jan. 14, 2015    |
| Horn Antenna       | Schwarzbeck               | BBHA9120D                               | 9120D-655  | Jan. 15, 2014    | Jan. 14, 2015    |
| Horn Antenna       | Schwarzbeck               | BBHA9120D                               | 9120D-1067 | Jan. 15, 2014    | Jan. 14, 2015    |
| LISN               | Rohde&Schwarz             | ESH3-Z5                                 | 100305     | Jan. 11, 2014    | Jan. 10, 2015    |
| LISN               | Schwarzbeck               | NSLK8126                                | 8126431    | Jan. 11, 2014    | Jan. 10, 2015    |
| Highpass Filter    | Wainwright<br>Instruments | WHKX3.6/18<br>G-10SS                    | N/A        | Jan. 11, 2014    | Jan. 10, 2015    |
| Band Reject Filter | Wainwright<br>Instruments | WRCG2400/2<br>485-2375/2510<br>-60/11SS | N/A        | Jan. 11, 2014    | Jan. 10, 2015    |

### 3. OPERATION OF EUT DURING TESTING

#### 3.1.Operating Mode

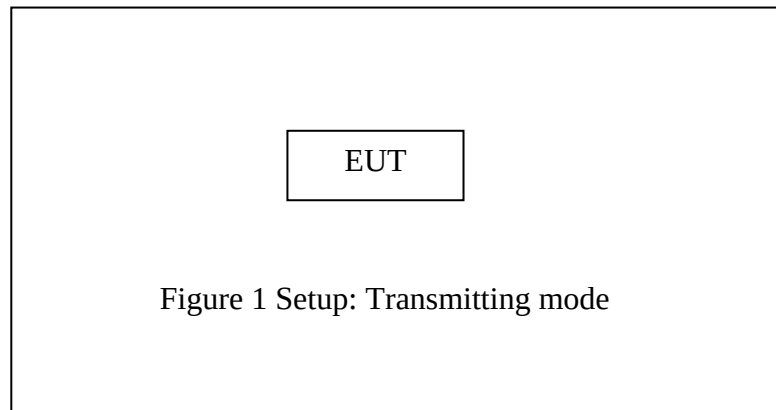
The mode is used: **Transmitting mode**

Low Channel: 2405MHz

Middle Channel: 2442MHz

High Channel: 2468MHz

#### 3.2.Configuration and peripherals



#### 4. TEST PROCEDURES AND RESULTS

| FCC Rules                                                                    | Description of Test                   | Result    |
|------------------------------------------------------------------------------|---------------------------------------|-----------|
| Section 15.215(c)                                                            | 20dB Bandwidth                        | Compliant |
| Section 15.249(d)                                                            | Band Edge Compliance Test             | Compliant |
| Section 15.205(a),<br>Section 15.209(a),<br>Section 15.249,<br>Section 15.35 | Radiated Spurious Emission Test       | Compliant |
| Section 15.207                                                               | AC Power Line Conducted Emission Test | N/A       |
| Section 15.203                                                               | Antenna Requirement                   | Compliant |

## 5. 20DB BANDWIDTH MEASUREMENT

### 5.1. Block Diagram of Test Setup



### 5.2. The Requirement For Section 15.215(c)

The bandwidth of a frequency hopping channel is the 20 dB emission bandwidth, measured with the hopping stopped. The system RF bandwidth is equal to the channel bandwidth multiplied by the number of channels in the hopset. The hopset shall be such that the near-term distribution of frequencies appears random, with sequential hops randomly distributed in both direction and magnitude of change in the hopset while the long-term distribution appears evenly distributed.

### 5.3. Operating Condition of EUT

5.3.1. Setup the EUT and simulator as shown as Section 5.1.

5.3.2. Turn on the power of all equipment.

5.3.3. Let the EUT work in TX modes measure it. The transmit frequency are 2405-2468 MHz. We select 2405MHz, 2442MHz, and 2468MHz TX frequency to transmit.

### 5.4. Test Procedure

5.4.1. Place the EUT on the table and set it in transmitting mode.

5.4.2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.

5.4.3. Set RBW of spectrum analyzer to 100 kHz and VBW to 300 kHz, Detector function=peak, Trace=max hold, Sweep=auto.

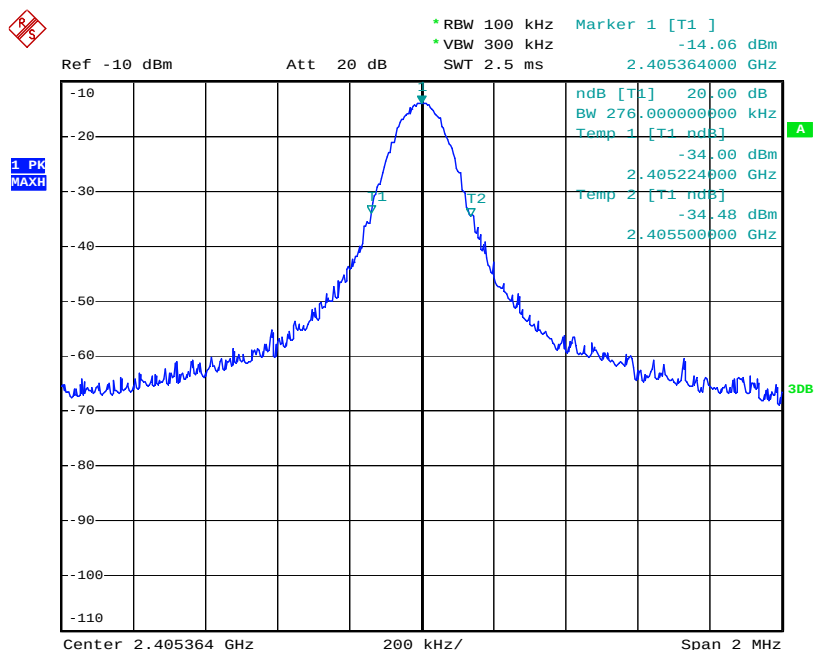
5.4.4. Set the measured low, middle and high frequency and test 20dB bandwidth with spectrum analyzer.

## 5.5. Test Result

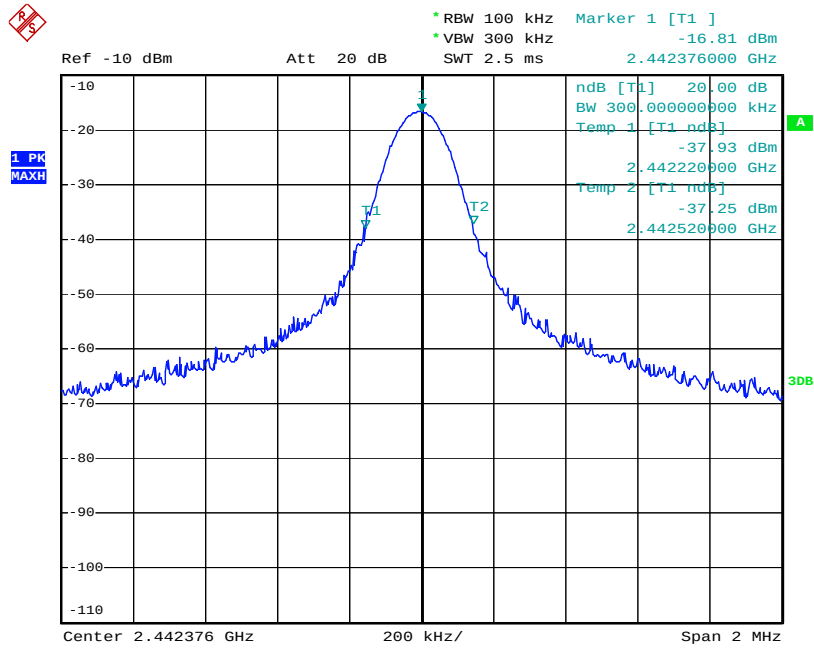
| Channel | Frequency (MHz) | 20 dB Bandwidth (MHz) |
|---------|-----------------|-----------------------|
| Low     | 2405            | 0.276                 |
| Middle  | 2442            | 0.300                 |
| High    | 2468            | 0.296                 |

The spectrum analyzer plots are attached as below.

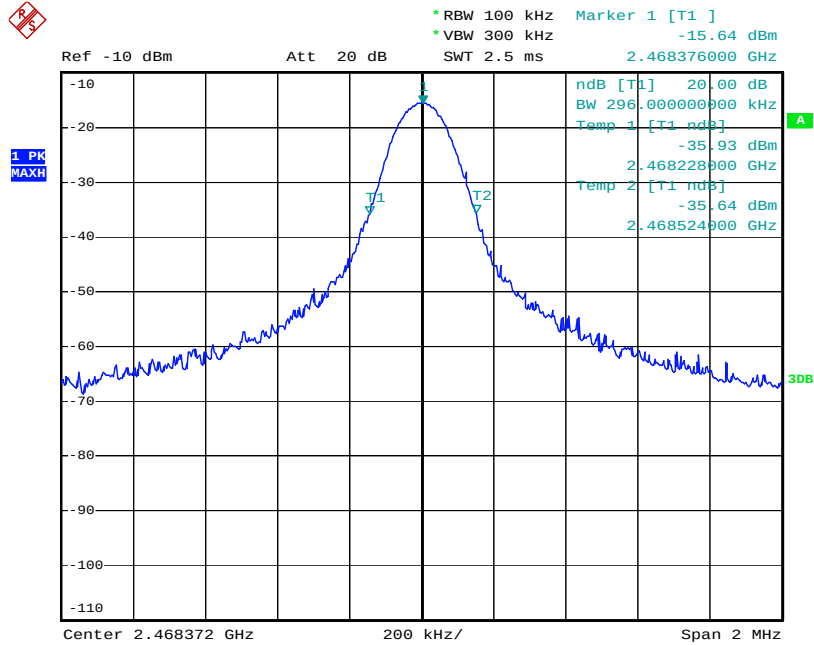
### Low channel



### Middle channel

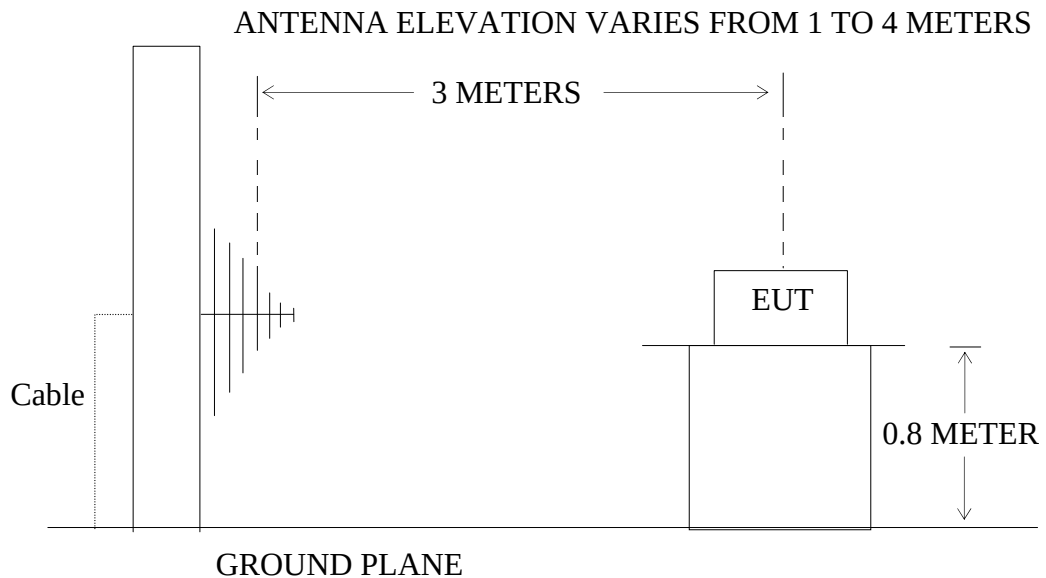


### High channel



## 6. BAND EDGE COMPLIANCE TEST

### 6.1. Block Diagram of Test Setup



### 6.2. The Requirement For Section 15.249

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph A8.4(4), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

### 6.3. EUT Configuration on Measurement

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

## 6.4. Operating Condition of EUT

6.4.1. Setup the EUT and simulator as shown as Section 6.1.

6.4.2. Turn on the power of all equipment.

6.4.3. Let the EUT work in TX modes measure it. The transmit frequency are 2405-2468 MHz. We select 2405MHz, 2468MHz TX frequency to transmit.

## 6.5. Test Procedure

Radiate Band Edge:

6.5.1. The EUT is placed on a turntable, which is 0.8m above the ground plane and worked at highest radiated power.

6.5.2. The turntable was rotated for 360 degrees to determine the position of maximum emission level.

6.5.3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission.

6.5.4. Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of the emission:

RBW=1MHz, VBW=1MHz

6.5.5. The band edges was measured and recorded.

## 6.6. Test Result

### Radiated Band Edge Result

|               |                   |                |       |
|---------------|-------------------|----------------|-------|
| Date of Test: | Aug 06, 2014      | Temperature:   | 25°C  |
| EUT:          | R/C Vehicle       | Humidity:      | 50%   |
| Model No.:    | 22029             | Power Supply:  | DC 3V |
| Test Mode:    | TX (2405MHz) GFSK | Test Engineer: | Ricky |

| Frequency<br>(MHz) | Reading(dBμV/m) |       | Factor(dB)<br>Corr. | Result(dBμV/m) |       | Limit(dBμV/m) |       | Margin(dB) |        | Polarization |
|--------------------|-----------------|-------|---------------------|----------------|-------|---------------|-------|------------|--------|--------------|
|                    | AV              | PEAK  |                     | AV             | PEAK  | AV            | PEAK  | AV         | PEAK   |              |
| 2381.415           | 40.68           | 45.78 | -7.58               | 33.10          | 38.20 | 54.00         | 74.00 | -20.90     | -35.80 | Vertical     |
| 2390.000           | 36.87           | 41.96 | -7.53               | 29.34          | 34.43 | 54.00         | 74.00 | -24.66     | -39.57 | Vertical     |
| 2381.285           | 41.01           | 46.16 | -7.58               | 33.43          | 38.58 | 54.00         | 74.00 | -20.57     | -35.42 | Horizontal   |
| 2390.000           | 36.64           | 41.86 | -7.53               | 29.11          | 34.33 | 54.00         | 74.00 | -24.89     | -39.67 | Horizontal   |

|               |                   |                |       |
|---------------|-------------------|----------------|-------|
| Date of Test: | Aug 06, 2014      | Temperature:   | 25°C  |
| EUT:          | R/C Vehicle       | Humidity:      | 50%   |
| Model No.:    | 22029             | Power Supply:  | DC 3V |
| Test Mode:    | TX (2468MHz) GFSK | Test Engineer: | Ricky |

| Frequency<br>(MHz) | Reading(dBμV/m) |       | Factor(dB)<br>Corr. | Result(dBμV/m) |       | Limit(dBμV/m) |       | Margin(dB) |        | Polarization |
|--------------------|-----------------|-------|---------------------|----------------|-------|---------------|-------|------------|--------|--------------|
|                    | AV              | PEAK  |                     | AV             | PEAK  | AV            | PEAK  | AV         | PEAK   |              |
| 2483.500           | 36.37           | 41.63 | -7.37               | 29.00          | 34.26 | 54.00         | 74.00 | -25.00     | -39.74 | Vertical     |
| 2487.184           | 41.13           | 46.21 | -7.38               | 33.75          | 38.83 | 54.00         | 74.00 | -20.25     | -35.17 | Vertical     |
| 2483.500           | 36.49           | 41.40 | -7.37               | 29.12          | 34.03 | 54.00         | 74.00 | -24.88     | -39.97 | Horizontal   |
| 2487.345           | 40.98           | 46.07 | -7.38               | 33.60          | 38.69 | 54.00         | 74.00 | -20.40     | -35.31 | Horizontal   |

#### Note:

1. Emissions attenuated more than 20 dB below the permissible value are not reported.
2. The field strength is calculated by adding the antenna factor, high pass filter loss(if used) and cable loss, and subtracting the amplifier gain(if any)from the measured reading. The basic equation calculation is as follows:  
Result = Reading + Corrected Factor
3. Display the measurement of peak values.
4. The average measurement was not performed when peak measured data under the limit of average detection.

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Science & Industry Park,Nanshan Shenzhen,P.R.China

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Fax:+86-0755-26503396

Job No.: RICKY #626

Standard: FCC PK

Test item: Radiation Test

Temp.( C)/Hum.(%) 23 C / 48 %

EUT: R/C Vehicle

Mode: TX 2405MHz

Model: 22029

Manufacturer: Interactive Toy Concepts (HK) Ltd.

Polarization: Vertical

Power Source: DC 3V

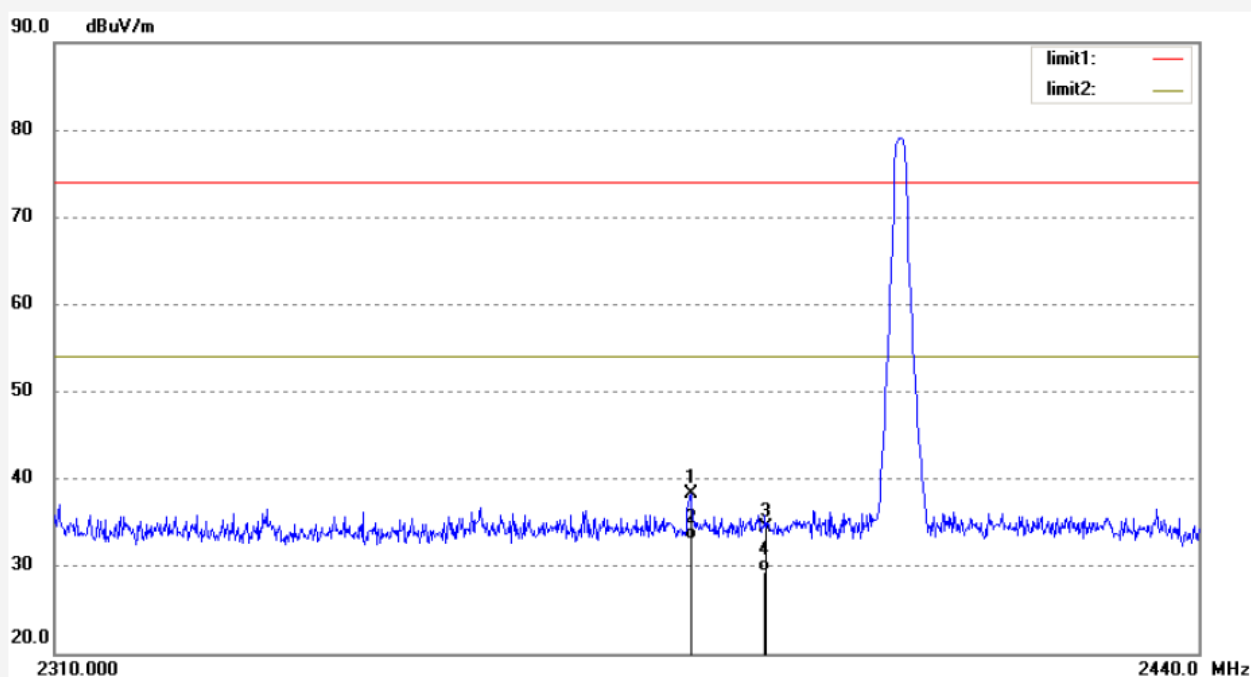
Date: 14/08/06/

Time: 10/09/13

Engineer Signature:

Distance: 3m

Note: Report No.:ATE20141460



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1   | 2381.415    | 45.78            | -7.58       | 38.20           | 74.00          | -35.80      | peak     |             |               |        |
| 2   | 2381.415    | 40.68            | -7.58       | 33.10           | 54.00          | -20.90      | AVG      |             |               |        |
| 3   | 2390.000    | 41.96            | -7.53       | 34.43           | 74.00          | -39.57      | peak     |             |               |        |
| 4   | 2390.000    | 36.87            | -7.53       | 29.34           | 54.00          | -24.66      | AVG      |             |               |        |

Job No.: RICKY #627

Standard: FCC PK

Test item: Radiation Test

Temp.( C)/Hum.(%) 23 C / 48 %

EUT: R/C Vehicle

Mode: TX 2405MHz

Model: 22029

Manufacturer: Interactive Toy Concepts (HK) Ltd

Polarization: Horizontal

Power Source: DC 3V

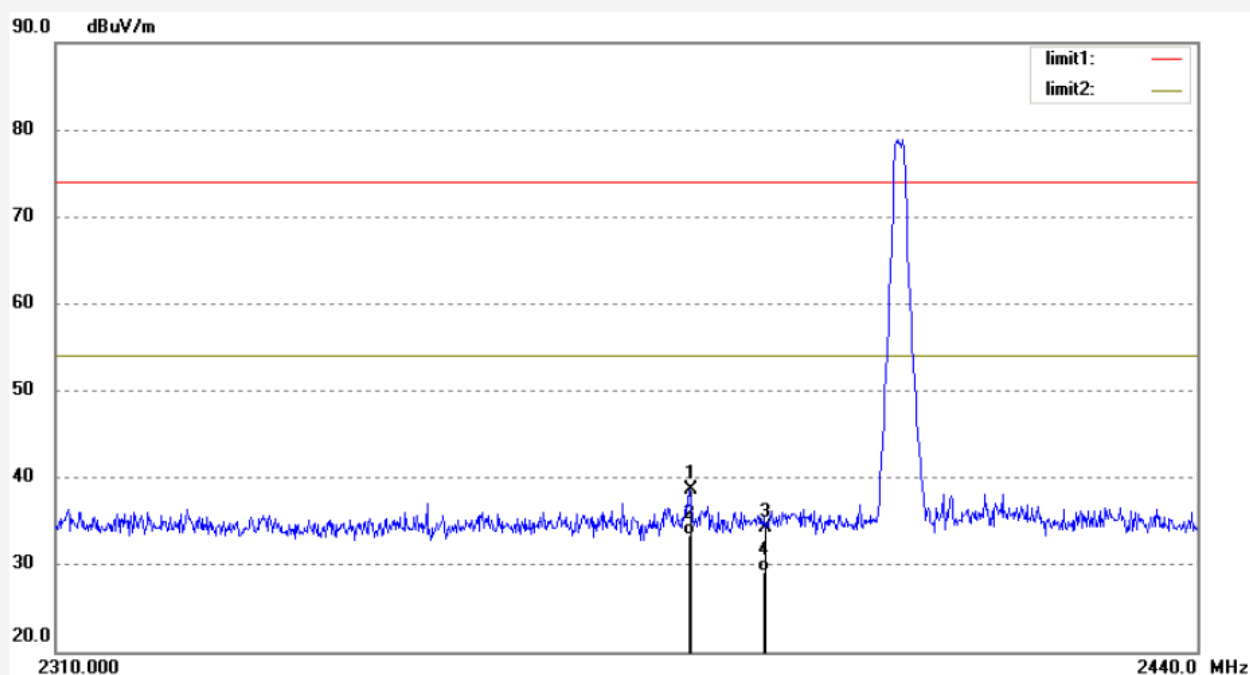
Date: 14/08/06/

Time: 10/11/25

Engineer Signature:

Distance: 3m

Note: Report No.:ATE20141460



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1   | 2381.285    | 46.16            | -7.58       | 38.58           | 74.00          | -35.42      | peak     |             |               |        |
| 2   | 2381.285    | 41.01            | -7.58       | 33.43           | 54.00          | -20.57      | AVG      |             |               |        |
| 3   | 2390.000    | 41.86            | -7.53       | 34.33           | 74.00          | -39.67      | peak     |             |               |        |
| 4   | 2390.000    | 36.64            | -7.53       | 29.11           | 54.00          | -24.89      | AVG      |             |               |        |

**ACCURATE TECHNOLOGY CO., LTD.**F1,Bldg,A,Changyuan New Material Port Keyuan Rd,  
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Site: 2# Chamber

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Job No.: RICKY #628

Standard: FCC PK

Test item: Radiation Test

Temp.( C)/Hum.(%) 23 C / 48 %

EUT: R/C Vehicle

Mode: TX 2468MHz

Model: 22029

Manufacturer: Interactive Toy Concepts (HK) Ltd.

Polarization: Vertical

Power Source: DC 3V

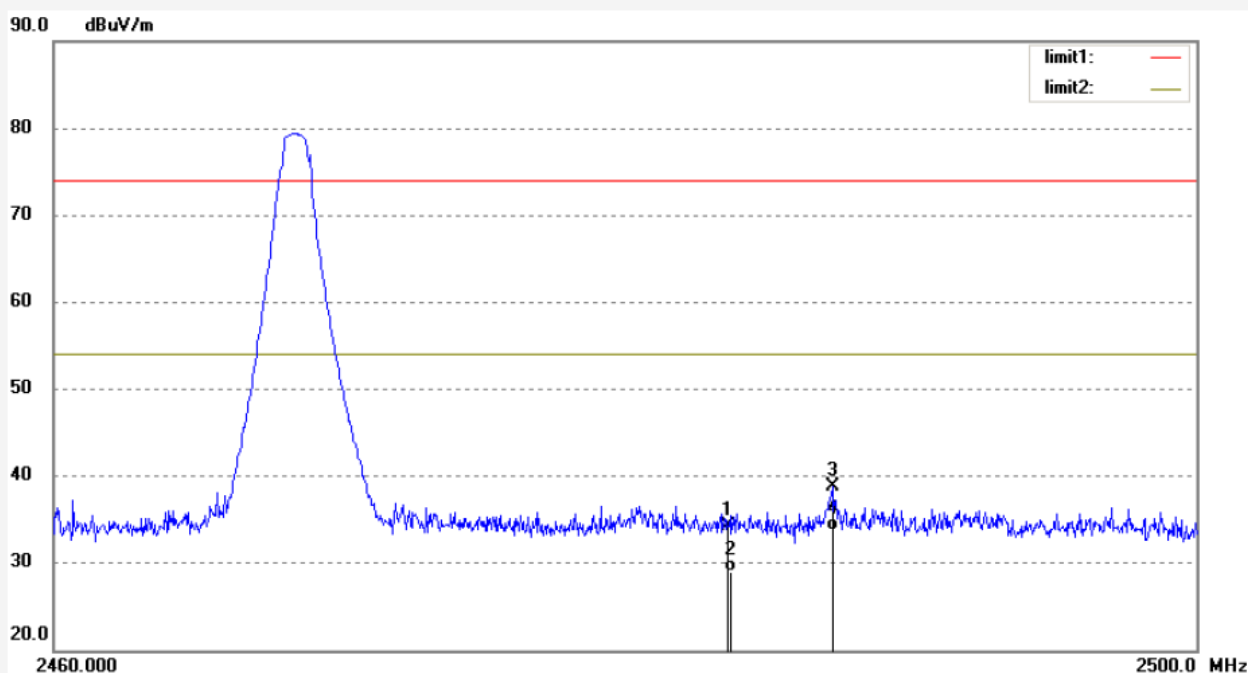
Date: 14/08/06/

Time: 10/15/16

Engineer Signature:

Distance: 3m

Note: Report No.:ATE20141460



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1   | 2483.500    | 41.63            | -7.37       | 34.26           | 74.00          | -39.74      | peak     |             |               |        |
| 2   | 2483.500    | 36.37            | -7.37       | 29.00           | 54.00          | -25.00      | AVG      |             |               |        |
| 3   | 2487.184    | 46.21            | -7.38       | 38.83           | 74.00          | -35.17      | peak     |             |               |        |
| 4   | 2487.184    | 41.13            | -7.38       | 33.75           | 54.00          | -20.25      | AVG      |             |               |        |

Job No.: RICKY #629

Standard: FCC PK

Test item: Radiation Test

Temp.( C)/Hum.(%) 23 C / 48 %

EUT: R/C Vehicle

Mode: TX 2468MHz

Model: 22029

Manufacturer: Interactive Toy Concepts (HK) Ltd.

Polarization: Horizontal

Power Source: DC 3V

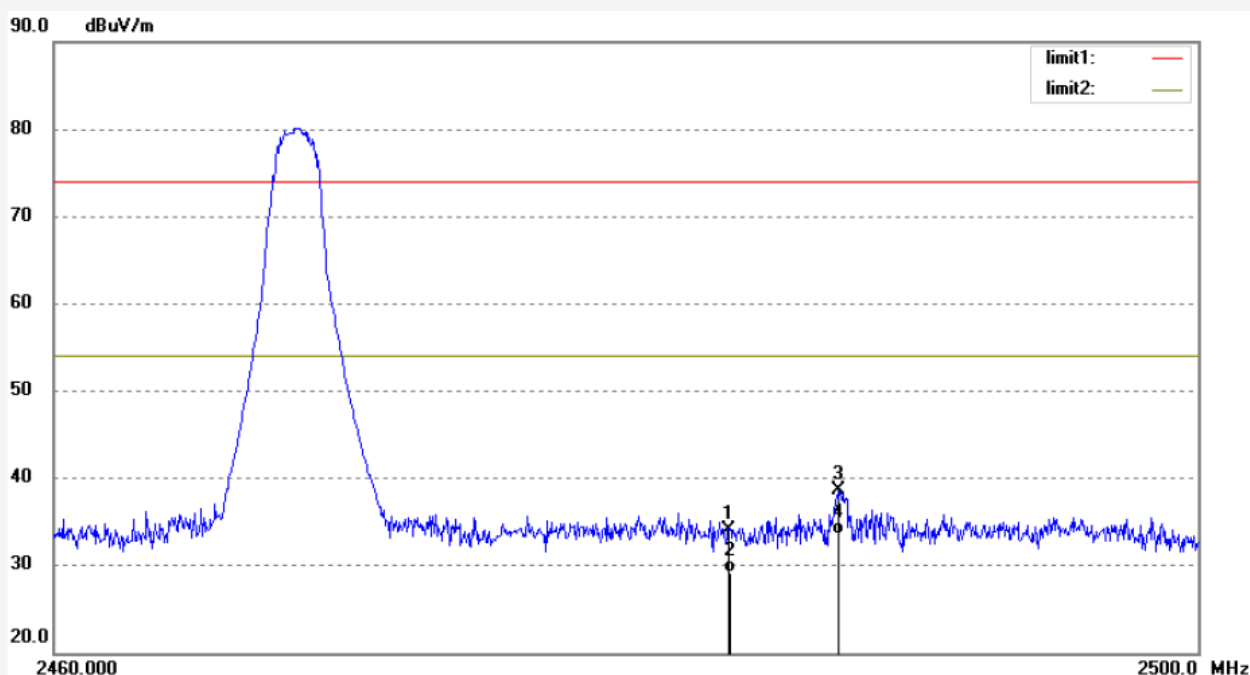
Date: 14/08/06/

Time: 10/17/57

Engineer Signature:

Distance: 3m

Note: Report No.:ATE20141460



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1   | 2483.500    | 41.40            | -7.37       | 34.03           | 74.00          | -39.97      | peak     |             |               |        |
| 2   | 2483.500    | 36.49            | -7.37       | 29.12           | 54.00          | -24.88      | AVG      |             |               |        |
| 3   | 2487.345    | 46.07            | -7.38       | 38.69           | 74.00          | -35.31      | peak     |             |               |        |
| 4   | 2487.345    | 40.98            | -7.38       | 33.60           | 54.00          | -20.40      | AVG      |             |               |        |

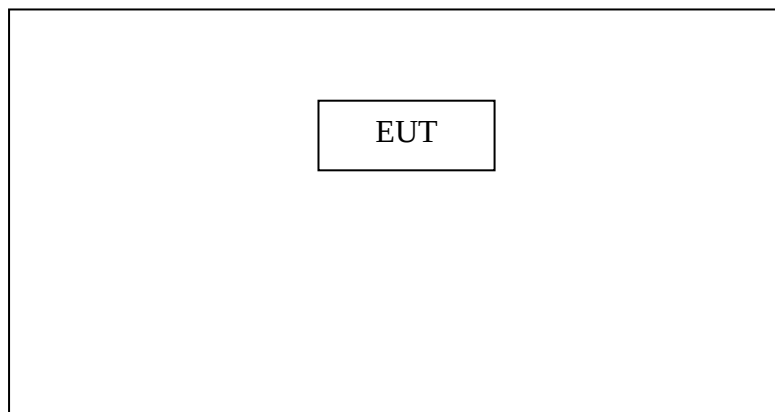
Note:

1. Emissions attenuated more than 20 dB below the permissible value are not reported.
2. The field strength is calculated by adding the antenna factor, high pass filter loss(if used) and cable loss, and subtracting the amplifier gain(if any)from the measured reading. The basic equation calculation is as follows:  
Result = Reading + Corrected Factor
3. Display the measurement of peak values.
4. The average measurement was not performed when peak measured data under the limit of average detection.

## 7. RADIATED SPURIOUS EMISSION TEST

### 7.1. Block Diagram of Test Setup

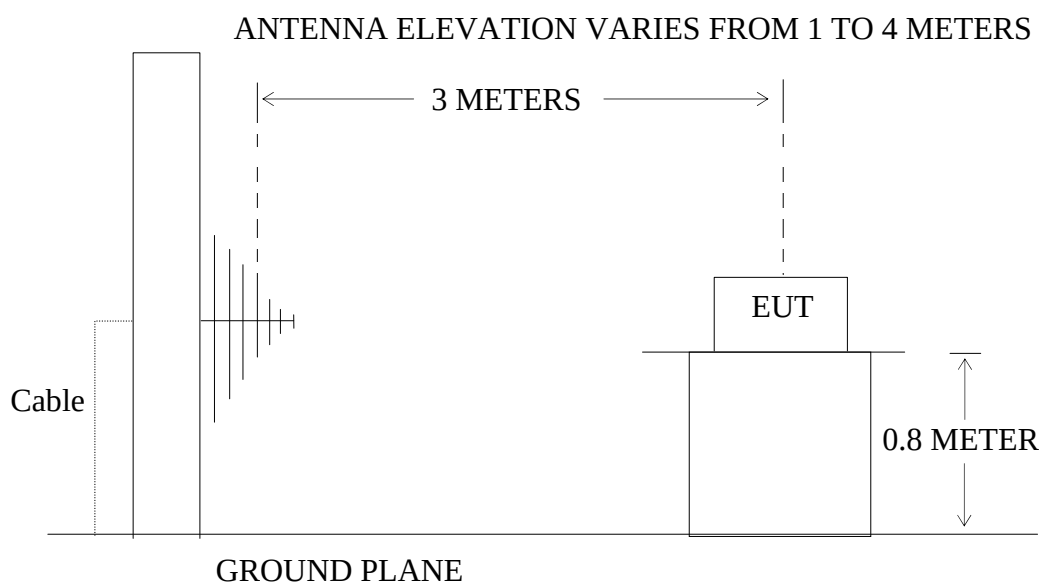
#### 7.1.1. Block diagram of connection between the EUT and peripherals



Setup: Transmitting mode

(EUT: 22029)

#### 7.1.2. Semi-Anechoic Chamber Test Setup Diagram



## 7.2.The Limit For Section 15.249

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph A8.4(4), the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

## 7.3.Restricted bands of operation

### 7.3.1.FCC Part 15.205 Restricted bands of operation

(a) Except as shown in paragraph (d) of this section, Only spurious emissions are permitted in any of the frequency bands listed below:

| MHz                      | MHz                 | MHz           | GHz              |
|--------------------------|---------------------|---------------|------------------|
| 0.090-0.110              | 16.42-16.423        | 399.9-410     | 4.5-5.15         |
| <sup>1</sup> 0.495-0.505 | 16.69475-16.69525   | 608-614       | 5.35-5.46        |
| 2.1735-2.1905            | 16.80425-16.80475   | 960-1240      | 7.25-7.75        |
| 4.125-4.128              | 25.5-25.67          | 1300-1427     | 8.025-8.5        |
| 4.17725-4.17775          | 37.5-38.25          | 1435-1626.5   | 9.0-9.2          |
| 4.20725-4.20775          | 73-74.6             | 1645.5-1646.5 | 9.3-9.5          |
| 6.215-6.218              | 74.8-75.2           | 1660-1710     | 10.6-12.7        |
| 6.26775-6.26825          | 108-121.94          | 1718.8-1722.2 | 13.25-13.4       |
| 6.31175-6.31225          | 123-138             | 2200-2300     | 14.47-14.5       |
| 8.291-8.294              | 149.9-150.05        | 2310-2390     | 15.35-16.2       |
| 8.362-8.366              | 156.52475-156.52525 | 2483.5-2500   | 17.7-21.4        |
| 8.37625-8.38675          | 156.7-156.9         | 2690-2900     | 22.01-23.12      |
| 8.41425-8.41475          | 162.0125-167.17     | 3260-3267     | 23.6-24.0        |
| 12.29-12.293             | 167.72-173.2        | 3332-3339     | 31.2-31.8        |
| 12.51975-12.52025        | 240-285             | 3345.8-3358   | 36.43-36.5       |
| 12.57675-12.57725        | 322-335.4           | 3600-4400     | ( <sup>2</sup> ) |
| 13.36-13.41              |                     |               |                  |

<sup>1</sup>Until February 1, 1999, this restricted band shall be 0.490-0.510

<sup>2</sup>Above 38.6

(b) Except as provided in paragraphs (d) and (e), the field strength of emission appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000MHz, Compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

## 7.4. Configuration of EUT on Measurement

The 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.

## 7.5. Operating Condition of EUT

7.5.1. Setup the EUT and simulator as shown as Section 7.1.

7.5.2. Turn on the power of all equipment.

7.5.3. Let the EUT work in TX modes measure it. The transmit frequency are 2405-2468 MHz. We select 2405MHz, 2442MHz, and 2468MHz TX frequency to transmit.

## 7.6. Test Procedure

The 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 an 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 bilog antenna) is used as receiving antenna. Both horizontal and vertical polarizations of the antenna are 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 EUT was tested in 3 orthogonal planes.

The final measurement in band 9-90 kHz, 110-490 kHz and above 1000MHz is performed with Average detector. Except those frequency bands mention above, the final measurement for frequencies below 1000MHz is performed with Quasi Peak detector. When average radiated emissions measurements are specified there is also a limit on the peak emissions level which is 20 dB above the applicable maximum permitted average emission limit

RBW (120 kHz), VBW (300 kHz) for QP detector below 1GHz  
RBW (1 MHz), VBW (3MHz) for Peak detector above 1GHz  
RBW (1 MHz), VBW (10Hz) for AV detector above 1GHz

The field strength is calculated by adding the antenna factor, and cable loss, and subtracting the amplifier gain from the measured reading. The basic equation calculation is as follows:

Result = Reading + Corrected Factor

Where Corrected Factor = Antenna Factor + Cable Loss – Amplifier Gain

## 7.7.The Field Strength of Radiation Emission Measurement Results

### PASS.

#### Fundamental Radiated Emissions

| Frequency<br>(MHz) | Reading(dBμV/m) |       | Factor(dB)<br>Corr. | Result(dBμV/m) |       | Limit(dBμV/m) |        | Margin(dB) |        | Polarization |
|--------------------|-----------------|-------|---------------------|----------------|-------|---------------|--------|------------|--------|--------------|
|                    | AV              | PEAK  |                     | AV             | PEAK  | AV            | PEAK   | AV         | PEAK   |              |
| 2405.00            | 84.34           | 89.40 | -6.75               | 76.89          | 81.95 | 94.00         | 114.00 | -17.11     | -32.05 | Vertical     |
| 2405.00            | 84.23           | 89.50 | -6.76               | 76.78          | 82.05 | 94.00         | 114.00 | -17.22     | -31.95 | Horizontal   |
| 2442.00            | 84.13           | 89.37 | -7.35               | 76.78          | 82.02 | 94.00         | 114.00 | -17.22     | -31.98 | Vertical     |
| 2442.00            | 83.29           | 88.44 | -7.35               | 75.94          | 81.09 | 94.00         | 114.00 | -18.06     | -32.91 | Horizontal   |
| 2468.00            | 85.21           | 89.73 | -7.35               | 77.86          | 82.38 | 94.00         | 114.00 | -16.14     | -31.62 | Vertical     |
| 2468.00            | 84.11           | 89.31 | -7.35               | 76.77          | 81.97 | 94.00         | 114.00 | -17.23     | -32.03 | Horizontal   |

Note: 1. Emissions attenuated more than 20 dB below the permissible value are not reported.

2. \*: Denotes restricted band of operation.

3. The EUT is tested radiation emission at Low, Middle, High channel in three axes. The worst emissions are reported in all channels.

4. The radiation emissions from 18-25GHz are not reported, because the test values lower than the limits of 20dB.

5. The average measurement was not performed when peak measured data under the limit of average detection.

Below 1G



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Job No.: Ricky #2110

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 %

EUT: R/C Vehicle

Mode: TX 2405MHz

Model: 22029

Manufacturer: Interactive Toy Concepts (HK) Ltd.

Polarization: Horizontal

Power Source: DC 3V

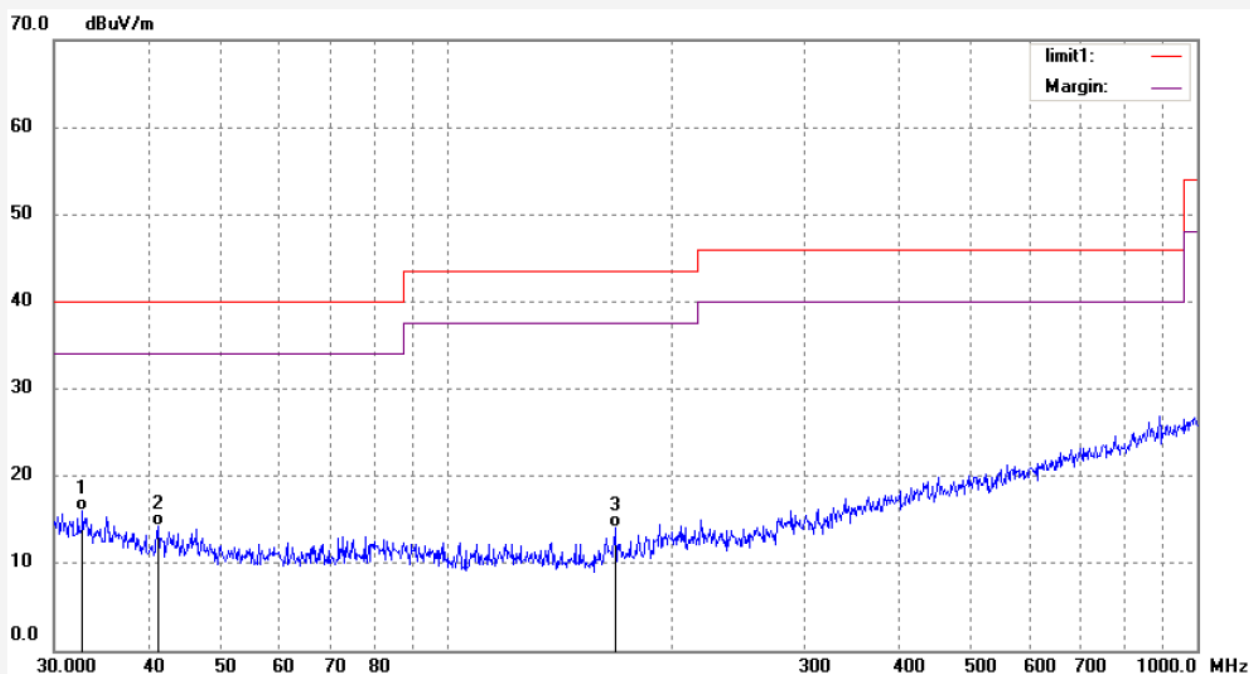
Date: 2014/08/01

Time: 15:42:20

Engineer Signature:

Distance: 3m

Note: Report No.:ATE20141460



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1   | 32.7486     | 27.03            | -11.01      | 16.02           | 40.00          | -23.98      | QP       |             |               |        |
| 2   | 41.2764     | 27.14            | -12.87      | 14.27           | 40.00          | -25.73      | QP       |             |               |        |
| 3   | 167.8242    | 29.16            | -15.13      | 14.03           | 43.50          | -29.47      | QP       |             |               |        |

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Job No.: Ricky #2111

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 %

EUT: R/C Vehicle

Mode: TX 2405MHz

Model: 22029

Manufacturer: Interactive Toy Concepts (HK) Ltd.

Polarization: Vertical

Power Source: DC 3V

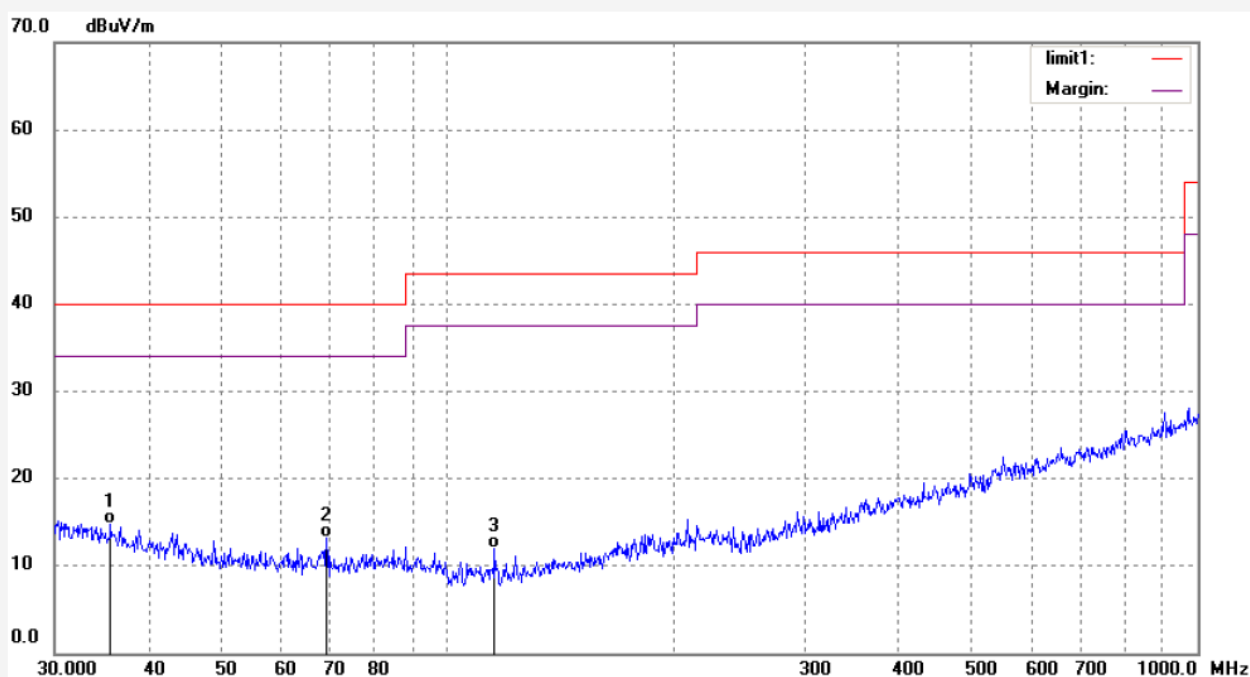
Date: 2014/08/01

Time: 15:44:29

Engineer Signature:

Distance: 3m

Note: Report No.:ATE20141460



| No. | Freq.<br>(MHz) | Reading<br>(dBuV/m) | Factor<br>(dB) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Detector | Height<br>(cm) | Degree<br>(deg.) | Remark |
|-----|----------------|---------------------|----------------|--------------------|-------------------|----------------|----------|----------------|------------------|--------|
| 1   | 35.6240        | 26.37               | -11.50         | 14.87              | 40.00             | -25.13         | QP       |                |                  |        |
| 2   | 69.1140        | 27.97               | -14.82         | 13.15              | 40.00             | -26.85         | QP       |                |                  |        |
| 3   | 115.7256       | 27.55               | -15.63         | 11.92              | 43.50             | -31.58         | QP       |                |                  |        |

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Job No.: Ricky #2112

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 %

EUT: R/C Vehicle

Mode: TX 2442MHz

Model: 22029

Manufacturer: Interactive Toy Concepts (HK) Ltd.

Polarization: Vertical

Power Source: DC 3V

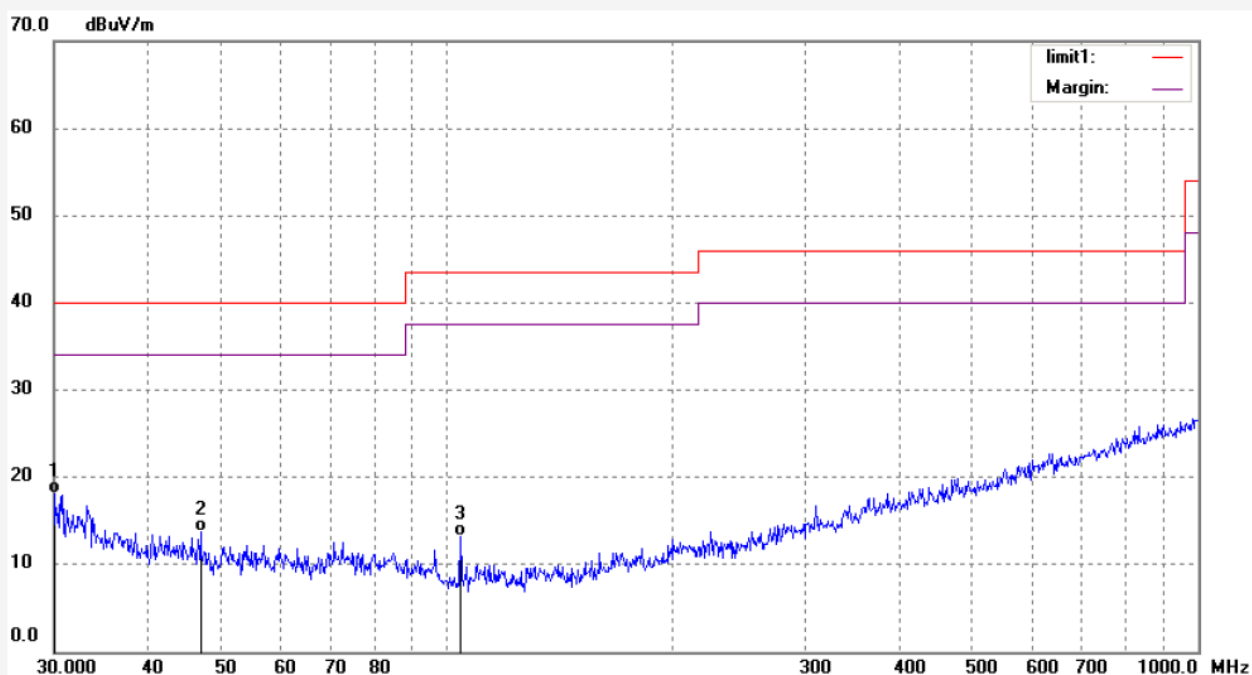
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Time: 15:46:30

Engineer Signature:

Distance: 3m

Note: Report No.:ATE20141460



| No. | Freq.<br>(MHz) | Reading<br>(dBuV/m) | Factor<br>(dB) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Detector | Height<br>(cm) | Degree<br>(deg.) | Remark |
|-----|----------------|---------------------|----------------|--------------------|-------------------|----------------|----------|----------------|------------------|--------|
| 1   | 30.0000        | 28.68               | -10.63         | 18.05              | 40.00             | -21.95         | QP       |                |                  |        |
| 2   | 46.9947        | 27.35               | -13.55         | 13.80              | 40.00             | -26.20         | QP       |                |                  |        |
| 3   | 104.1701       | 29.40               | -16.19         | 13.21              | 43.50             | -30.29         | QP       |                |                  |        |

Job No.: Ricky #2113

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 %

EUT: R/C Vehicle

Mode: TX 2442MHz

Model: 22029

Manufacturer: Interactive Toy Concepts (HK) Ltd.

Polarization: Horizontal

Power Source: DC 3V

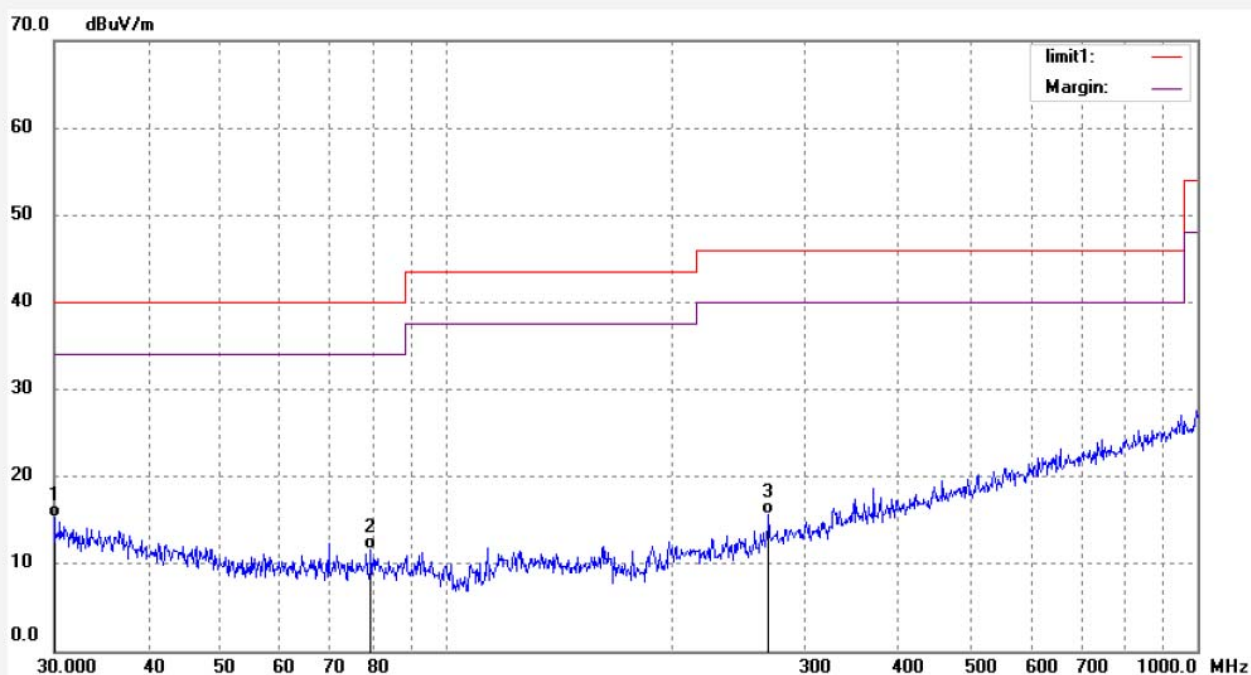
Date: 2014/08/01

Time: 15:48:19

Engineer Signature:

Distance: 3m

Note: Report No.:ATE20141460



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1   | 30.0000     | 25.92            | -10.63      | 15.29           | 40.00          | -24.71      | QP       |             |               |        |
| 2   | 79.2426     | 26.59            | -14.89      | 11.70           | 40.00          | -28.30      | QP       |             |               |        |
| 3   | 268.4853    | 27.04            | -11.45      | 15.59           | 46.00          | -30.41      | QP       |             |               |        |

Job No.: Ricky #2114

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 %

EUT: R/C Vehicle

Mode: TX 2468MHz

Model: 22029

Manufacturer: Interactive Toy Concepts (HK) Ltd.

Polarization: Horizontal

Power Source: DC 3V

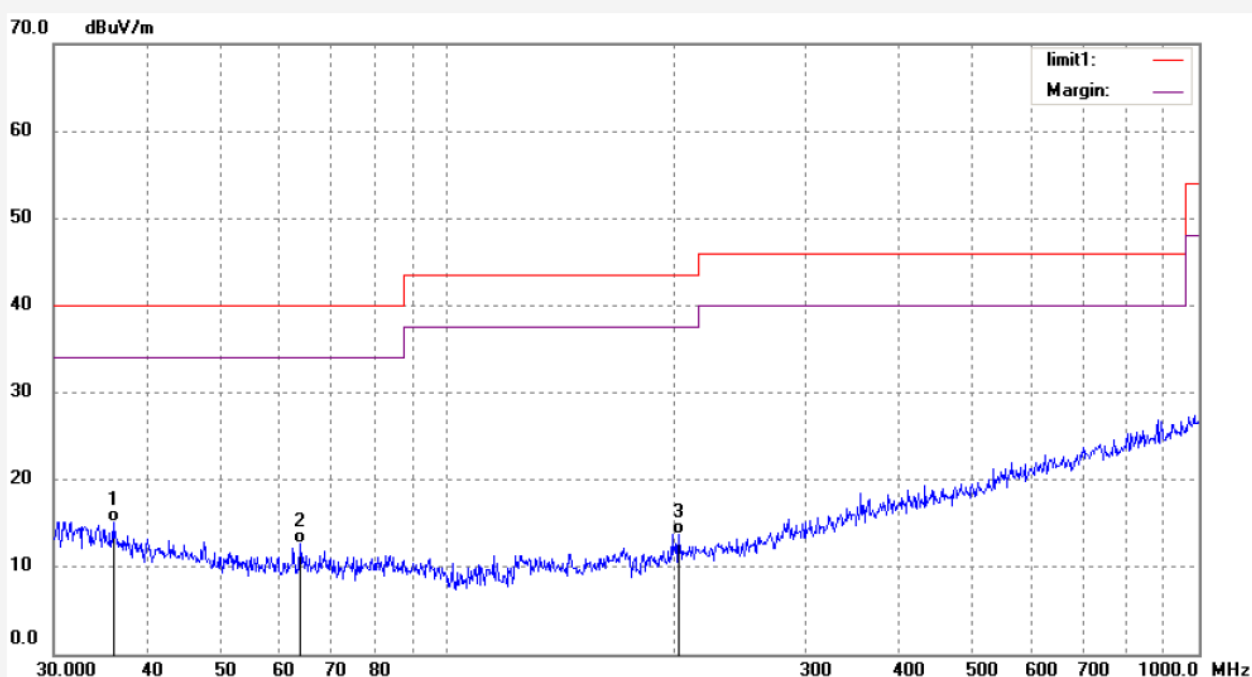
Date: 2014/08/01

Time: 15:49:09

Engineer Signature:

Distance: 3m

Note: Report No.:ATE20141460



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1   | 36.0007     | 26.78            | -11.62      | 15.16           | 40.00          | -24.84      | QP       |             |               |        |
| 2   | 63.7588     | 27.37            | -14.68      | 12.69           | 40.00          | -27.31      | QP       |             |               |        |
| 3   | 203.5228    | 26.83            | -13.07      | 13.76           | 43.50          | -29.74      | QP       |             |               |        |

Job No.: Ricky #2115

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 %

EUT: R/C Vehicle

Mode: TX 2468MHz

Model: 22029

Manufacturer: Interactive Toy Concepts (HK) Ltd.

Polarization: Vertical

Power Source: DC 3V

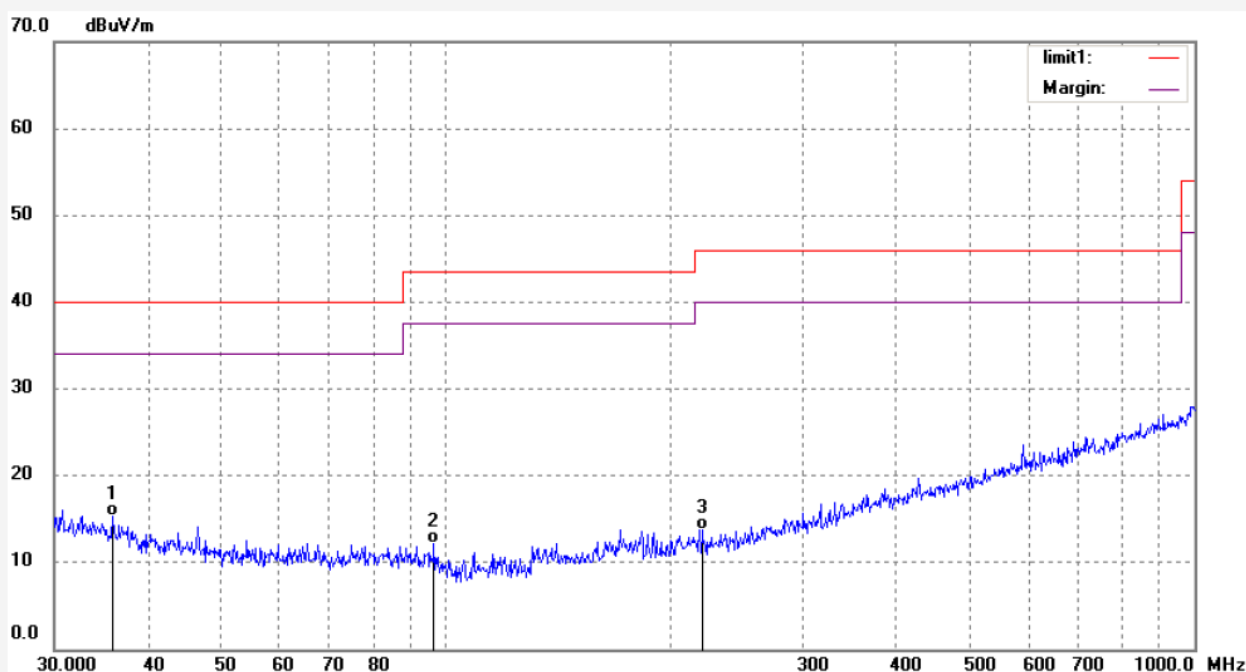
Date: 2014/08/01

Time: 15:50:12

Engineer Signature:

Distance: 3m

Note: Report No.:ATE20141460



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1   | 35.8746     | 26.85            | -11.58      | 15.27           | 40.00          | -24.73      | QP       |             |               |        |
| 2   | 96.4362     | 27.61            | -15.48      | 12.13           | 43.50          | -31.37      | QP       |             |               |        |
| 3   | 219.8449    | 26.65            | -12.83      | 13.82           | 46.00          | -32.18      | QP       |             |               |        |

Above 1G



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Job No.: Ricky #608

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 23 C / 48 %

EUT: R/C Vehicle

Mode: TX 2405MHz

Model: 22029

Manufacturer: Interactive Toy Concepts (HK) Ltd.

Polarization: Horizontal

Power Source: DC 3V

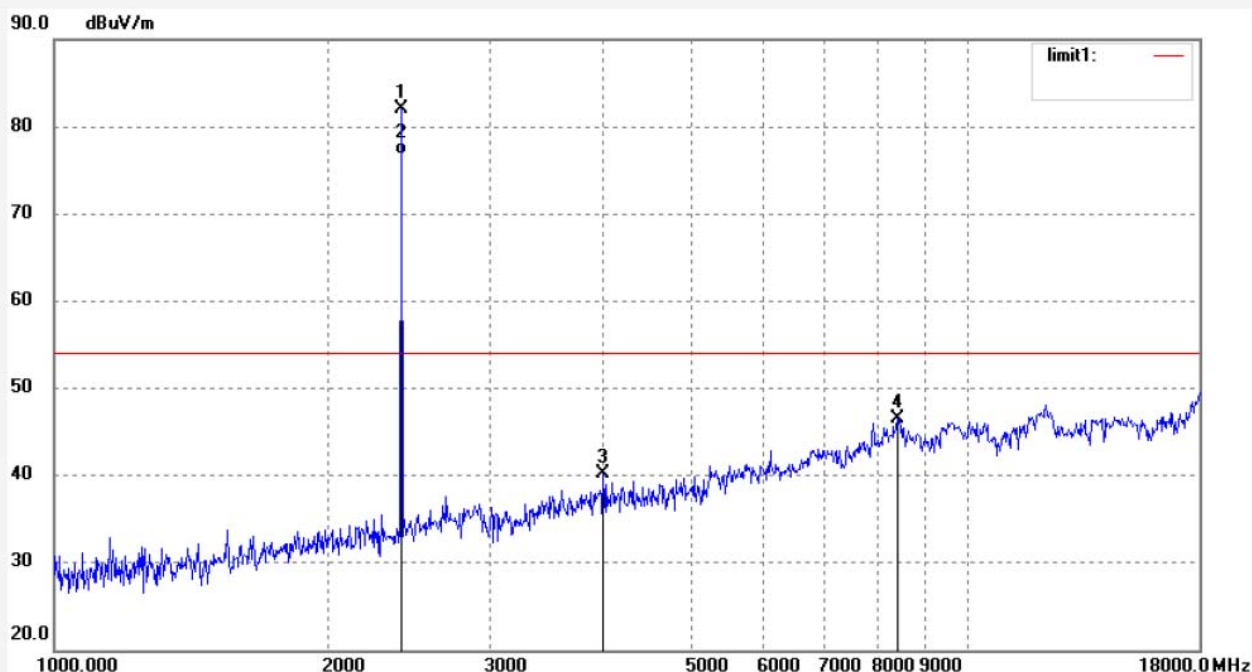
Date: 14/08/04/

Time: 8/51/18

Engineer Signature:

Distance: 3m

Note: Report No.:ATE20141460



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1   | 2405.000    | 89.50            | -7.45       | 82.05           | 54.00          | 28.05       | peak     |             |               |        |
| 2   | 2405.000    | 84.23            | -7.45       | 76.78           | 54.00          | 22.78       | AVG      |             |               |        |
| 3   | 3996.886    | 41.91            | -1.62       | 40.29           | 54.00          | -13.71      | peak     |             |               |        |
| 4   | 8420.480    | 38.49            | 8.06        | 46.55           | 54.00          | -7.45       | peak     |             |               |        |



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Job No.: Ricky #609

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 23 C / 48 %

EUT: R/C Vehicle

Mode: TX 2405MHz

Model: 22029

Manufacturer: Interactive Toy Concepts (HK) Ltd.

Polarization: Vertical

Power Source: DC 3V

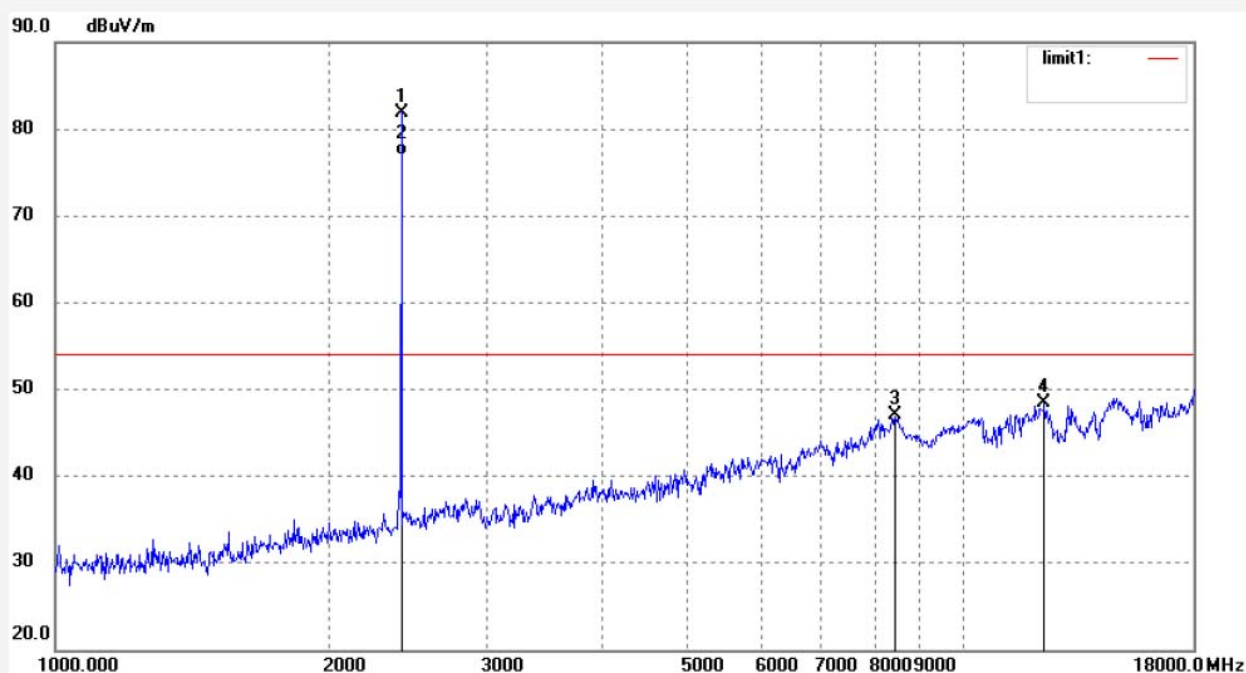
Date: 14/08/04/

Time: 8/53/41

Engineer Signature:

Distance: 3m

Note: Report No.:ATE20141460



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1   | 2405.000    | 89.40            | -7.45       | 81.95           | 54.00          | 27.95       | peak     |             |               |        |
| 2   | 2405.000    | 84.34            | -7.45       | 76.89           | 54.00          | 22.89       | AVG      |             |               |        |
| 3   | 8445.025    | 38.95            | 8.00        | 46.95           | 54.00          | -7.05       | peak     |             |               |        |
| 4   | 12329.252   | 10.14            | 38.23       | 48.37           | 54.00          | -5.63       | peak     |             |               |        |

Job No.: Ricky #610

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 23 C / 48 %

EUT: R/C Vehicle

Mode: TX 2442MHz

Model: 22029

Manufacturer: Interactive Toy Concepts (HK) Ltd.

Polarization: Vertical

Power Source: DC 3V

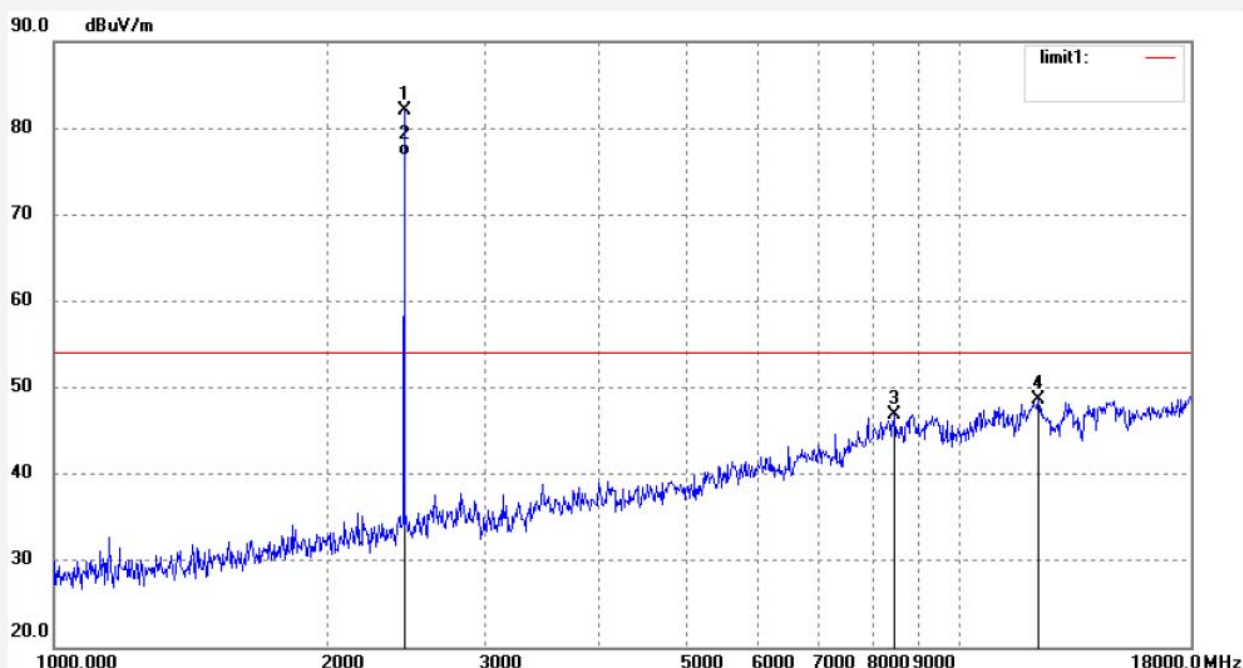
Date: 14/08/04/

Time: 8/55/03

Engineer Signature:

Distance: 3m

Note: Report No.:ATE20141460



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1   | 2442.000    | 89.37            | -7.35       | 82.02           | 54.00          | 28.02       | peak     |             |               |        |
| 2   | 2442.000    | 84.13            | -7.35       | 76.78           | 54.00          | 22.78       | AVG      |             |               |        |
| 3   | 8469.642    | 38.90            | 7.96        | 46.86           | 54.00          | -7.14       | peak     |             |               |        |
| 4   | 12222.059   | 10.53            | 38.12       | 48.65           | 54.00          | -5.35       | peak     |             |               |        |

Job No.: Ricky #611

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 23 C / 48 %

EUT: R/C Vehicle

Mode: TX 2442MHz

Model: 22029

Manufacturer: Interactive Toy Concepts (HK) Ltd.

Polarization: Horizontal

Power Source: DC 3V

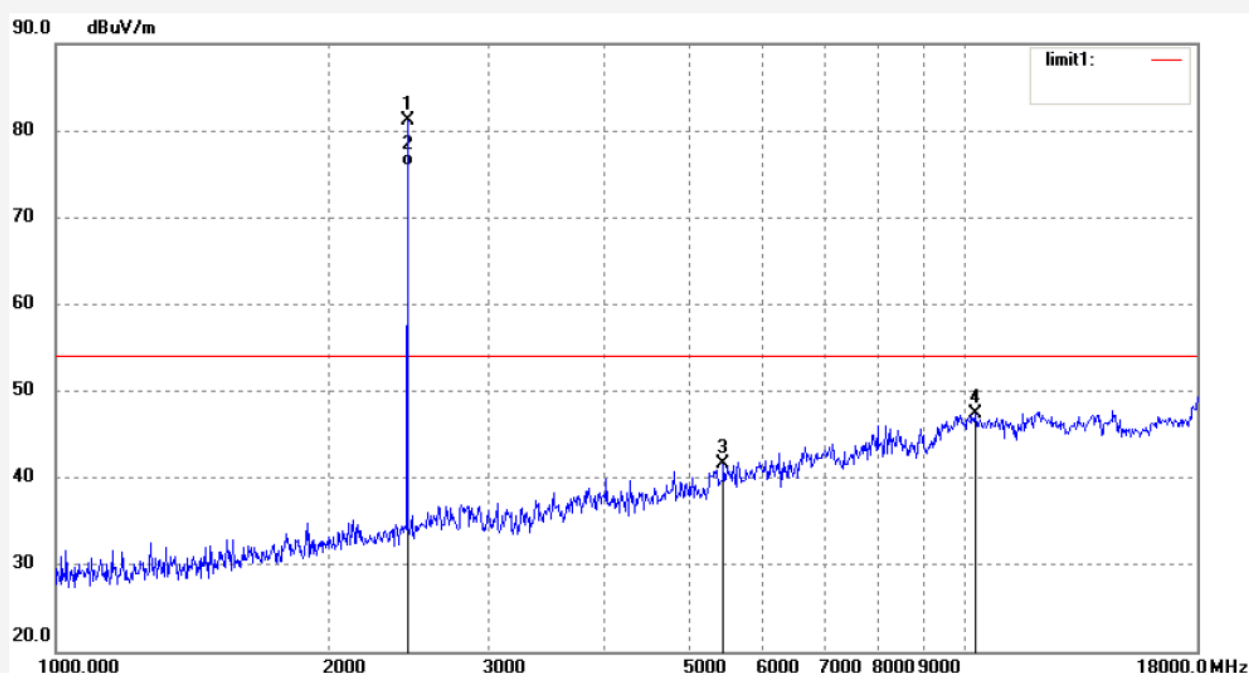
Date: 14/08/04/

Time: 8/57/13

Engineer Signature:

Distance: 3m

Note: Report No.:ATE20141460



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1   | 2442.000    | 88.44            | -7.35       | 81.09           | 54.00          | 27.09       | peak     |             |               |        |
| 2   | 2442.000    | 83.29            | -7.35       | 75.94           | 54.00          | 21.94       | AVG      |             |               |        |
| 3   | 5425.684    | 40.81            | 0.81        | 41.62           | 54.00          | -12.38      | peak     |             |               |        |
| 4   | 10293.456   | 38.31            | 9.13        | 47.44           | 54.00          | -6.56       | peak     |             |               |        |

Job No.: Ricky #612

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 23 C / 48 %

EUT: R/C Vehicle

Mode: TX 2468MHz

Model: 22029

Manufacturer: Interactive Toy Concepts (HK) Ltd.

Polarization: Horizontal

Power Source: DC 3V

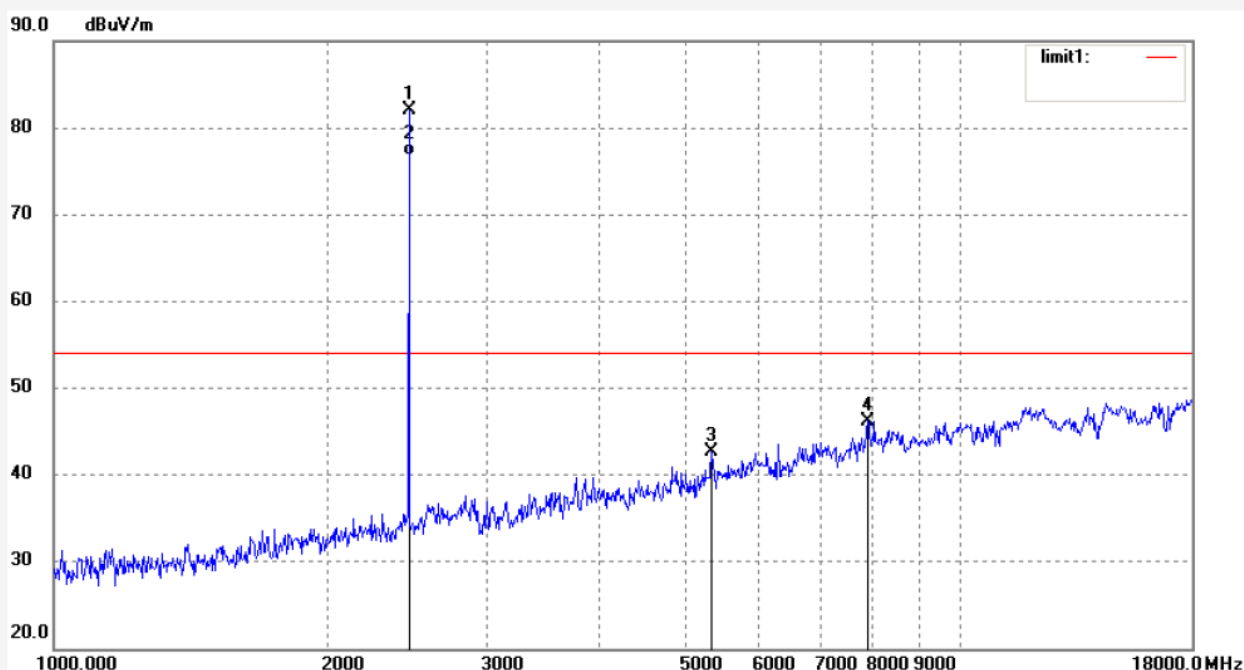
Date: 14/08/04/

Time: 8/59/22

Engineer Signature:

Distance: 3m

Note: Report No.:ATE20141460



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1   | 2460.000    | 89.31            | -7.34       | 81.97           | 54.00          | 27.97       | peak     |             |               |        |
| 2   | 2460.000    | 84.11            | -7.34       | 76.77           | 54.00          | 22.77       | AVG      |             |               |        |
| 3   | 5316.253    | 41.76            | 0.96        | 42.72           | 54.00          | -11.28      | peak     |             |               |        |
| 4   | 7898.164    | 39.96            | 6.29        | 46.25           | 54.00          | -7.75       | peak     |             |               |        |

Job No.: Ricky #613

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 23 C / 48 %

EUT: R/C Vehicle

Mode: TX 2468MHz

Model: 22029

Manufacturer: Interactive Toy Concepts (HK) Ltd.

Polarization: Vertical

Power Source: DC 3V

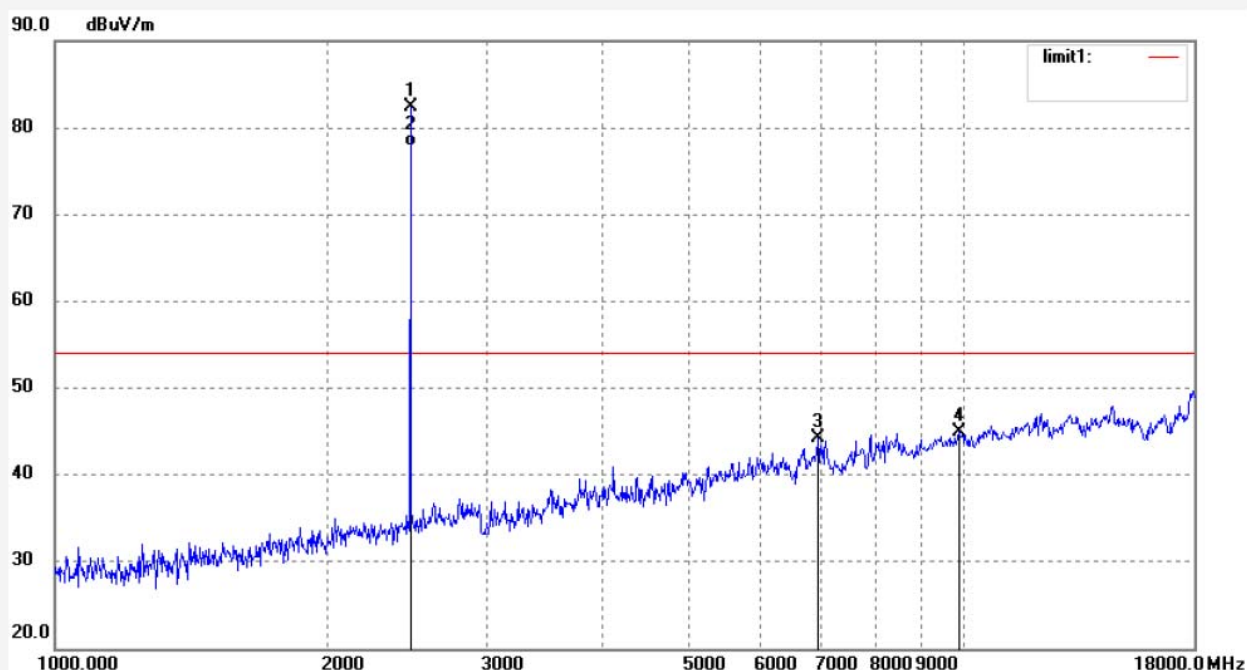
Date: 14/08/04/

Time: 9/01/03

Engineer Signature:

Distance: 3m

Note: Report No.:ATE20141460



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1   | 2468.000    | 89.73            | -7.35       | 82.38           | 54.00          | 28.38       | peak     |             |               |        |
| 2   | 2468.000    | 85.21            | -7.35       | 77.86           | 54.00          | 23.86       | AVG      |             |               |        |
| 3   | 6928.524    | 40.43            | 3.78        | 44.21           | 54.00          | -9.79       | peak     |             |               |        |
| 4   | 9911.232    | 35.33            | 9.63        | 44.96           | 54.00          | -9.04       | peak     |             |               |        |

## 8. ANTENNA REQUIREMENT

### 8.1.The Requirement

According to Section 15.203, 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.

### 8.2.Antenna Construction

Device is equipped with unique antenna, which isn't displaced by other antenna. Therefore, the equipment complies with the antenna requirement of Section 15.203.

Antenna

