**TEST REPORT No.: (5211)335-0357**

# TEST REPORT

| | | | |
|---|---|---|---|
| To: | **MAY CHEONG TOY PRODUCTS FTY. LTD** | To: | - |
| Attn: | Huanghaiyu | Attn: | - |
| Address: | 7/F., East Wing, Tsim Sha tsui Centre, 66 Mody Road, Tsimshatsui East, Kowloon, Hong Kong | Address: | - |
| Fax: | 0769-87753123 | Fax: | - |
| E-mail: | huanghaiyu.mt@maycheonggroup.com.cn | E-mail: | - |
| Folder No.: | -- | | |
| | | | |
| Factory name: | -- | | |
| Location: | -- | | |
| Product: | Radio Control Vehicle ARM-ered Attack R/C.<br>Model No.: 11014 / 11013 (Assortment: 81192) | | |

| | |
|---|---|
| Sample No: | (5211)335-0357 |
| Test date: | December 8, 2011 |
| Test Requested: | FCC Part 15 - 2010 |
| Test Method: | ANSI C63.4 - 2009 |
| FCC ID: | PKG11014RC27 |

**The results given in this report are related to the tested specimen of the described electrical apparatus.**

**CONCLUSION: The submitted sample was found to COMPLY with requirement of FCC Part 15 Subpart C.**

Authorized Signature:

| | |
|---|---|
| Reviewed by: Keith Yeung | Approved by: Steven Tsang |
| Date: December 16, 2011 | Date: December 16, 2011 |

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**1/F Pacific Trade Centre,**
**2 Kai Hing Road, Kowloon Bay,**
**Kowloon,HONG KONG**
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## TEST REPORT No.: (5211)335-0357

## Location of the test laboratory

Radiated and Conducted emissions measurements are investigated and taken pursuant to the procedures of ANSI C63.4 – 2009. An Open Area Test Site and Full Anechoic Chamber (FCC Listed Site, Registration No. 642151) are set up for investigation and located at :

**BUREAU VERITAS HONG KONG LIMITED, EMC CENTRE**

No. 2106-2107, 21/F., Westin Centre,
26 Hung To Road,
Kwun Tong, Kowloon,
Hong Kong

## List of measuring equipment

**Radiated Emission**

| EQUIPMENT | MANUFACTURER | MODEL NO. | SERIAL NO. | CALIBRATION DUE |
|---|---|---|---|---|
| EMI TEST RECEIVER | R&S | ESCI | 100379 | 18-OCT-2012 |
| LOOP ANTENNA | ETS-LINDGREN | 6502 | 00102266 | 07-AUG-2012 |
| BILOG ANTENNA | SCHAFFNER | CBL6112D | 25229 | 16-SEP-2012 |
| OPEN AREA TEST SITE | BVCPS | N/A | N/A | 07-JUL-2012 |
| ANECHOIC CHAMBER | ALBATROSS | M-CDC | 80374004499B | 26-OCT-2012 |
| COAXIAL CABLE | SUHNER | N/A | N/A | 06-OCT-2012 |

**Remarks:-**
N/A : Not Applicable or Not Available

The measurement instrumentation uncertainty would be taking into consideration on each of the test result

**BUREAU VERITAS HONG KONG LIMITED –
Kowloon Bay Office
1/F Pacific Trade Centre,
2 Kai Hing Road, Kowloon Bay,
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## TEST REPORT No.: (5211)335-0357

**Equipment Under Test [EUT]**
**Description of Sample:**
Model Name: Radio Control Vehicle ARM-ered Attack R/C.
Model Number: 11014 / 11013 (Assortment: 81192)
Rating: 9Vd.c. (“6F22” size battery x 1)

**Description of EUT Operation:**
The Equipment Under Test (EUT) is a MAY CHEONG TOY PRODUCTS FTY. LTD. of Radio Control toy. The transmitter is 1 wheel, 1 trigger, 1 button and 1 switch and operating at 27.145MHz. The EUT continues to transmit when trigger is being pressed, Modulation by IC, and type is pulse modulation.
The transmitter has different control:

1. Wheel – control left and right
2. Trigger – control forward and backward
3. Launcher button – control launcher
4. On/Off switch – control ON / OFF

**Antenna Requirement**
The EUT is use of a permanently antenna. The antenna consists of 16.5cm long metal spring covered with rubber. The antenna is not replaceable or user serviceable. There are no deviations or exceptions to the specifications.

**Photo of Antenna**

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**1/F Pacific Trade Centre,**
**2 Kai Hing Road, Kowloon Bay,**
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## TEST REPORT No.: (5211)335-0357

## Radiated Emissions (Fundamental)

| | |
|---|---|
| Test Requirement: | FCC Part 15 Section 15.227 |
| Test Method: | ANSI C63.4 |
| Test Date(s): | 2011-12-08 |
| Temperature: | 24.0 °C |
| Humidity: | 53.0 % |
| Atmospheric Pressure: | 101.2 kPa |
| Mode of Operation: | Transmission mode |
| Tested voltage: | 9Vd.c. (“6F22” size battery x 1) |

## Test Procedure:

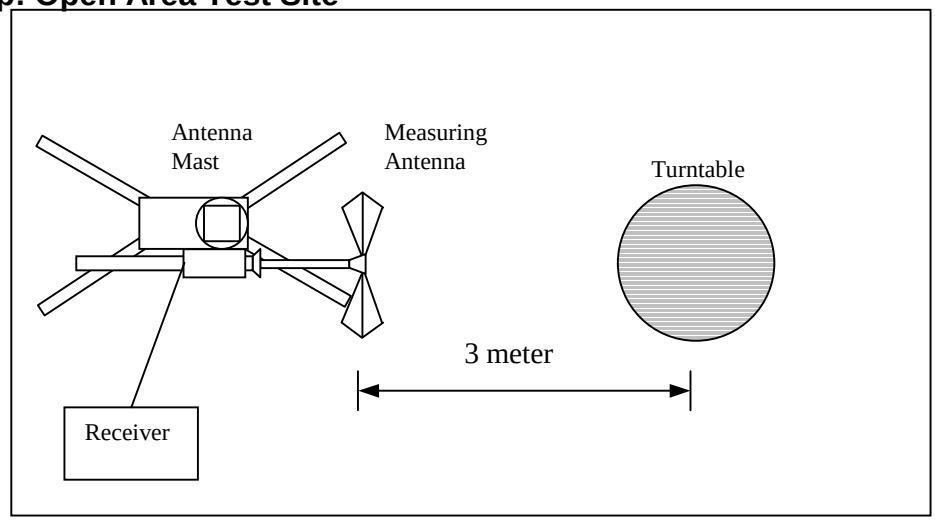
Radiated emissions measurements are investigated and taken pursuant to the procedures of ANSI C63.4 – 2009.

The equipment under test (EUT) was placed on a non-conductive turntable with dimensions of 1.5m x 1m and 0.8m high above the ground. 3m from the EUT, a broadband antenna mounting on the mast received the signal strength. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, For battery operated equipment, the equipment tests shall be perform using new battery. The turntable was rotated to maximize the emission level. The antenna was then moving along the mast from 1m up to 4m until no more higher value was found. Both horizontal and vertical polarization of the antenna were placed and investigated.

For below 30MHz, a loop antenna with its vertical plane is place 3m from the EUT and rotated about its vertical axis for maximum response at each azimuth about the EUT. And the centre of the loop shall be 1m above the ground.

Location: The Roof, Westin Centre, 26 Hung To Road, Kwun Tong, Kowloon, Hong Kong

## Test Setup: Open Area Test Site

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**1/F Pacific Trade Centre,**
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**Kowloon,HONG KONG**
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**Limits for Field Strength of Fundamental Emissions [FCC 47CFR 15.227]:**

| Frequency Range of Fundamental [MHz] | Field Strength of Fundamental Emission [Peak] [μV/m] | Field Strength of Fundamental Emission [Average] [μV/m] |
|---|---|---|
| 26.96 – 27.28 | 100,000 (100 dBμV/m) | 10,000 (80 dBμV/m) |

## Measurement Data

## Test Result of (Transmission mode): PASS

## Detection mode: Peak

| Frequency (MHz) | Polarity (H/V) and degree | Antenna Factor and Cable Loss (dB/m) | Field Strength at 3m (dBμV/m) | Limit at 3m (dBμV/m) | Margin (dB) |
|---|---|---|---|---|---|
| 27.145 | V/0° | 9.9 | 63.7 | 100 | -36.3 |

## Detection mode: # Average

| Frequency (MHz) | Polarity (H/V) and degree | Antenna Factor and Cable Loss (dB/m) | Field Strength at 3m (dBμV/m) | Limit at 3m (dBμV/m) | Margin (dB) |
|---|---|---|---|---|---|
| 27.145 | V/0° | 9.9 | **46.1 | 80 | -33.9 |

# For pulse modulated devices and using measuring equipment employing a peak detection mode, properly adjusted for such factor as pulse desensitisation.
**Duty Cycle Correction = 20Log(0.132) =-17.6dB

Note: Field Strength includes Antenna Factor and Cable Loss.

Receiver setting: RBW = 100KHz
VBW = 300KHz

**BUREAU VERITAS HONG KONG LIMITED – Kowloon Bay Office**
**1/F Pacific Trade Centre,**
**2 Kai Hing Road, Kowloon Bay,**
**Kowloon,HONG KONG**
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## TEST REPORT No.: (5211)335-0357

## Radiated Emissions (9kHz – 1GHz)

Test Requirement: FCC Part 15 Section 15.209

Test Method: ANSI C63.4

Test Date(s): 2011-12-08
Temperature: 24.0 °C
Humidity: 53.0 %
Atmospheric Pressure: 101.2 kPa
Mode of Operation: Transmission mode
Tested voltage: 9Vd.c. (“6F22” size battery x 1)

**Limits for Radiated Emissions [FCC 47 CFR 15.209]:**

| Frequency Range [MHz] | Quasi-Peak Limits [µV/m] |
|---|---|
| 1.705-30 | 300 |
| 30-88 | 100 |
| 88-216 | 150 |
| 216-960 | 200 |
| Above960 | 500 |

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**1/F Pacific Trade Centre,**
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## TEST REPORT No.: (5211)335-0357

## Measurement Data

## Test Result of (Transmission mode): PASS

## Detection mode: Quasi-Peak

| Frequency (MHz) | Polarity (H/V) | Antenna Factor and Cable Loss (dB/m) | Field Strength at 3m (dBµV/m) | Limit at 3m (dBµV/m) | Margin (dB) |
|---|---|---|---|---|---|
| 54.290 | H | 5.4 | 24.8 | 40.0 | -15.2 |
| 81.435 | H | 6.5 | 16.7 | 40.0 | -23.3 |
| 108.580 | H | 12.4 | 20.5 | 43.5 | -23.0 |
| 135.725 | H | 11.8 | 22.3 | 43.5 | -21.2 |
| 162.870 | H | 9.0 | 20.8 | 43.5 | -22.7 |
| 190.015 | H | 8.1 | 20.3 | 43.5 | -23.2 |
| 217.160 | H | 8.7 | 21.8 | 46.0 | -24.2 |
| 244.305 | H | 12.1 | 23.0 | 46.0 | -23.0 |
| 271.450 | H | 13.6 | 22.8 | 46.0 | -23.2 |
| 298.595 | H | 14.3 | 24.7 | 46.0 | -21.3 |

| Frequency (MHz) | Polarity (H/V) | Antenna Factor and Cable Loss (dB/m) | Field Strength at 3m (dBµV/m) | Limit at 3m (dBµV/m) | Margin (dB) |
|---|---|---|---|---|---|
| 54.290 | V | 5.4 | 23.9 | 40.0 | -16.1 |
| 81.435 | V | 6.5 | 16.9 | 40.0 | -23.1 |
| 108.580 | V | 12.4 | 20.7 | 43.5 | -22.8 |
| 135.725 | V | 11.8 | 22.1 | 43.5 | -21.4 |
| 162.870 | V | 9.0 | 21.5 | 43.5 | -22.0 |
| 190.015 | V | 8.1 | 20.5 | 43.5 | -23.0 |
| 217.160 | V | 8.7 | 22.0 | 46.0 | -24.0 |
| 244.305 | V | 12.1 | 22.7 | 46.0 | -23.3 |
| 271.450 | V | 13.6 | 23.0 | 46.0 | -23.0 |
| 298.595 | V | 14.3 | 24.5 | 46.0 | -21.5 |

Note: Field Strength includes Antenna Factor and Cable Loss.

Receiver setting: RBW = 120KHz
VBW = 120KHz

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**2 Kai Hing Road, Kowloon Bay,**
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## TEST REPORT No.: (5211)335-0357

26dB Bandwidth of Fundamental Emission

| | |
|---|---|
| Test Requirement: | FCC 47 CFR 15.227 |
| Test Method: | ANSI C63.4:2009 |
| Test Date(s): | 2011-12-08 |
| Temperature: | 24.0 °C |
| Humidity: | 53.0 % |
| Atmospheric Pressure: | 101.2 kPa |
| Mode of Operation: | Transmission mode |
| Tested voltage: | 9Vd.c. (“6F22” size battery x 1) |

Test Method:

The bandwidth is measured at an amplitude level reduced from the reference level by a specified ratio. The reference level is the level of the highest amplitude signal observed from the transmitter at the fundamental frequency. Once the reference level is established, the equipment is conditioned with typical modulating signal to produce the worst-case (i.e. the widest) bandwidth.

**Limits for 26dB Bandwidth of Fundamental Emission:**

| Frequency [MHz] | 26dB Bandwidth [KHz] | Limits [MHz] |
|---|---|---|
| 27.14496 | 60.8 | within 26.96 – 27.28 |

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**1/F Pacific Trade Centre,**
**2 Kai Hing Road, Kowloon Bay,**
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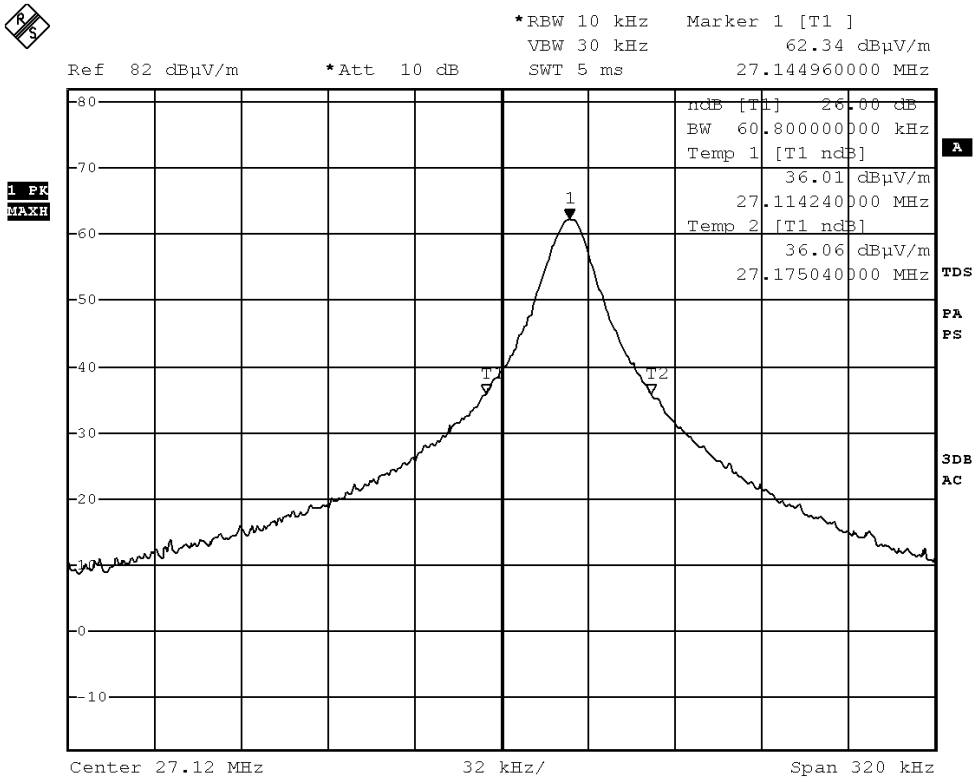
## Measurement Data :

### Test Result of 26dB Bandwidth of Fundamental Emission: PASS




Date: 8.DEC.2011 09:24:05

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**1/F Pacific Trade Centre,**
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## Duty Cycle Correction During 100msec:

Each function key sends a different series of characters, but each packet period (74.0msec) never exceeds a series of (9.8msec) pulses. Assuming any combination of short and long pulses maybe obtained due to encoding the worst case transmit duty cycle would be considered (9.8msec) per 74.0msec = 13.2% duty cycle. Figure A through B shows the characteristics of the pulse train for one of these functions.

Remarks:

Duty Cycle Correction = 20Log(0.132) = -17.6dB

The following figures (Figure A to Figure B) show the characteristics of the pulse train for one of these functions.

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**1/F Pacific Trade Centre,**
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Figure A [Pulse Train]

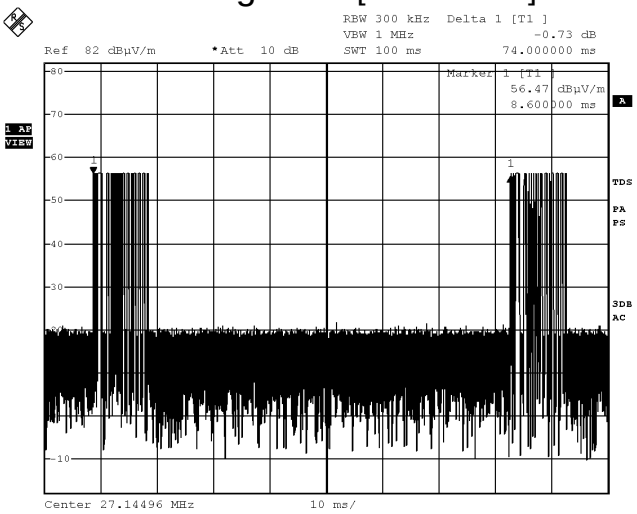


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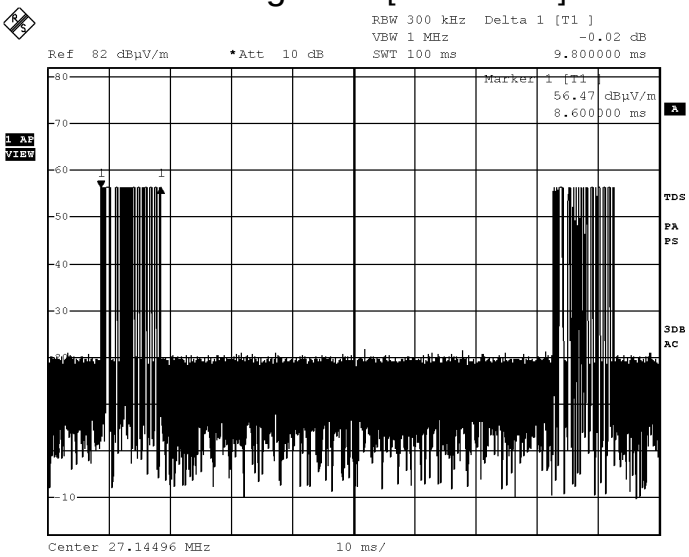
Figure B [Pulse Train]

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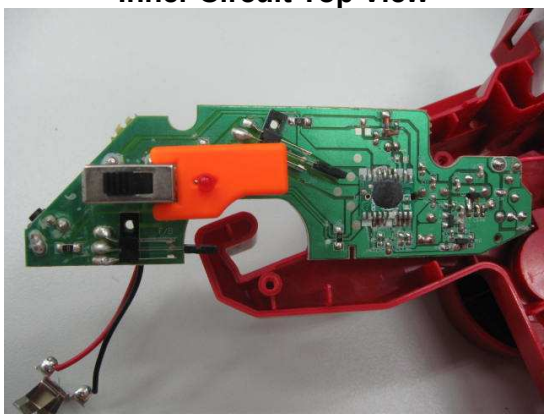
### Photographs of EUT

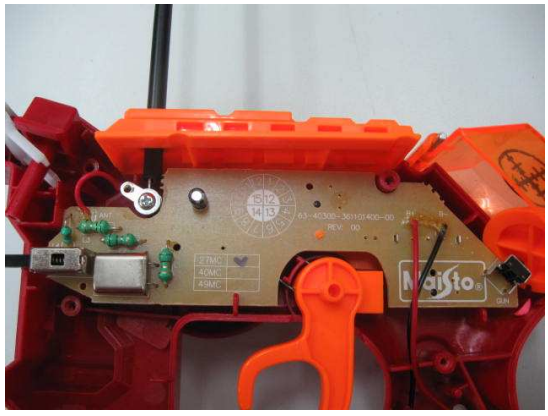
**Front View of the product**

**Rear View of the product**

**Inner Circuit Top View**



**Inner Circuit Bottom View**



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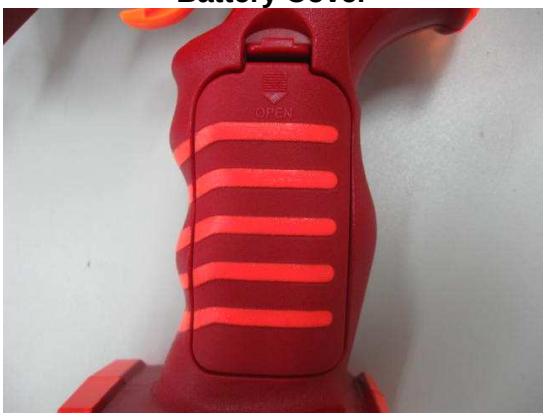
**Battery compartment**

**Battery Cover**




**Front View of the product (Internal)**

**Rear View of the product (Internal)**

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**1/F Pacific Trade Centre,**
**2 Kai Hing Road, Kowloon Bay,**
**Kowloon,HONG KONG**
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Fax: +852 2331 0889
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## Measurement of Radiated Emission Test Set Up

******* End of Report *******

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**1/F Pacific Trade Centre,**
**2 Kai Hing Road, Kowloon Bay,**
**Kowloon,HONG KONG**
Tel: +852 2331 0888
Fax: +852 2331 0889
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