



**BUREAU  
VERITAS**

**TEST REPORT N°: BVCK09AP119MTHS**

# TEST REPORT

|            |   |          |   |
|------------|---|----------|---|
| To:        | <b>CABEN ASIA PACIFIC LTD</b>                                 | To:      | - |
| Attn:      | --  | Attn:    | - |
| Address:   | 9/F, Tal building, 49 Austin Road, TST,<br>Kowloon, Hong Kong | Address: | - |
| Fax:       | 86-755-8831-2343  | Fax:     | - |
| E-mail:    | --  | E-mail:  | - |
| Offer No.: | <b>BVCK09AP08-03MTHS-A0</b>                                   |          |   |

|               |  |
|---------------|--|
| Factory name: | --   |
| Location:     | --   |
| Product:      | <b>00061759000270 BILLY FUN WHEELS - RED<br/>MODEL: --</b> |

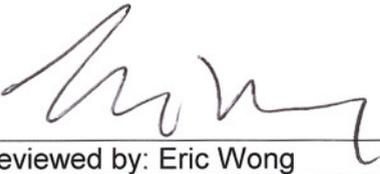


|                 |                    |
|-----------------|--------------------|
| Sample No:      | (5209) 093-0573    |
| Test date:      | April 16, 2009     |
| Test Requested: | FCC Part 15 - 2008 |
| Test Method:    | ANSI C63.4 - 2003  |
| FCC ID:         | MVH04979661759RTX  |

**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: Eric Wong  | Approved by: Steven Tsang  |
| Date: May 4, 2009   | Date: May 4, 2009  |

**BUREAU VERITAS HONG KONG LIMITED –**  
**Kowloon Bay Office**  
**1/F Pacific Trade Centre,**  
**2 Kai Hing Road, Kowloon Bay,**  
**Kowloon, HONG KONG**  
 Tel: +852 2331 0888  
 Fax: +852 2331 0889  
 www.cps.bureauveritas.com

This report is intended for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. Our report is limited to the test samples identified herein. The results set forth in this report are not necessarily indicative or representative of the statistical quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof. You shall have thirty days from receipt of this report to request additional testing of the samples or to notify us of any errors or omissions relating to our report, provided, however, such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents.



## TEST REPORT N<sup>o</sup>: BVCK09AP119MTHS

### Location of the test site

Radiated and Conducted emissions measurements are investigated and taken pursuant to the procedures of ANSI C63.4 – 2003. 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-AUG-2009     |
| HF LOOP ANTENNA          | SCHAFFNER    | HLA 6120  | 21728        | 14-NOV-2009     |
| BILOG ANTENNA            | SCHAFFNER    | CBL6112D  | 25229        | 31-JAN-2010     |
| OPEN AREA TEST SITE      | BVCPS        | N/A       | N/A          | 05-JULY-2009    |
| ANECHOIC CHAMBER         | ALBATROSS    | M-CDC     | 80374004499B | 09-JULY-2009    |
| HORN ANTENNA             | SCHWARZBECK  | BBHA9120D | 9120D-692    | 29-JULY-2009    |
| PREAMPLIFIER             | SCHWARZBECK  | BBV9718   | 9718-152     | 22-JULY-2009    |
| COAXIAL CABLE<br>1-18GHz | SUHNER       | N/A       | N/A          | 23-JULY-2009    |
| SPECTRUM ANALYZER        | ADVANTEST    | R3127     | 111000909    | 02-DEC-2009     |

#### Conducted Emission

| EQUIPMENT         | MANUFACTURER | MODEL NO. | SERIAL NO. | CALIBRATION DUE |
|-------------------|--------------|-----------|------------|-----------------|
| EMI TEST RECEIVER | R&S          | ESCS30    | 830986/030 | 18-SEP-2009     |
| LISN              | R&S          | ENV216    | 100024     | 25-MAR-2010     |

#### Remarks:-

N/A : Not Applicable or Not Available

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

## TEST REPORT N<sup>o</sup>: BVCK09AP119MTHS

### Equipment Under Test [EUT]

#### Description of Sample:

Model Name: 00061759000270 BILLY FUN WHEELS  
Model Number: --  
Rating: 4.5Vd.c (“AAA” size battery x 3)

#### Description of EUT Operation:

The Equipment Under Test (EUT) is a CABEN ASIA PACIFIC LTD of Radio Control toy. The transmitter is 3 buttons 1 switch and 1 marble transmitter and operating at 49.8596MHz. The EUT continues to transmit buttons is being pressed, Modulation by IC, and type is pulse modulation.

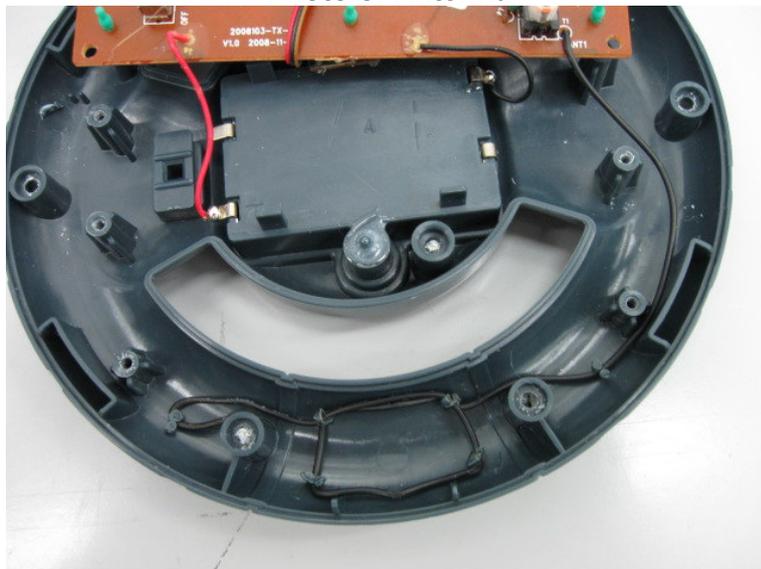
The transmitter has different control:

1. Left button – Backward control
2. Right button – Forward control
3. Middle button – Horn control
4. Switch “ON/OFF” – Choose ON/OFF of the transmitter
5. Marble – Left or Right control

#### Antenna Requirement (Section 15.203)

The EUT is use of a permanently antenna. The antenna consists of 27.5cm long signal wire. It is soldered on the PCB. The antenna is not replaceable or user serviceable. The requirement of S15.203 are met. There are no deviations or exceptions to the specifications.

Photo of Antenna



## TEST REPORT N°: BVCK09AP119MTHS

### Radiated Emissions (Fundamental)

Test Requirement: FCC Part 15 Section 15.235

Test Method: ANSI C63.4

Test Date(s): 2009-04-16

Mode of Operation: Transmission mode

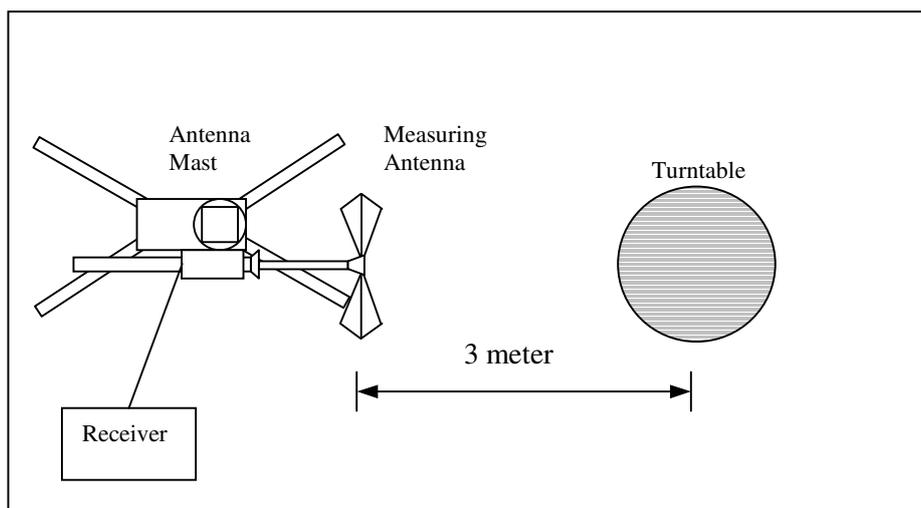
### Test Procedure:

Radiated emissions measurements are investigated and taken pursuant to the procedures of ANSI C63.4 – 2003.

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.

### Test Setup: Open Area Test Site





## TEST REPORT N<sup>o</sup>: BVCK09AP119MTHS

### Limits for Field Strength of Fundamental Emissions [FCC 47CFR 15.235]:

| Frequency Range of Fundamental<br>[MHz] | Field Strength of Fundamental Emission<br>[Peak]<br>[ $\mu\text{V}/\text{m}$ ] | Field Strength of Fundamental Emission<br>[Average]<br>[ $\mu\text{V}/\text{m}$ ] |
|---|--|---|
| 49.82 – 49.90                           | 100,000 (100 dB $\mu\text{V}/\text{m}$ )                                       | 10,000 (80 dB $\mu\text{V}/\text{m}$ )  |

### 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 (dB $\mu\text{V}/\text{m}$ ) | Limit at 3m (dB $\mu\text{V}/\text{m}$ ) | Margin (dB) |
|-----------------|---------------------------|--------------------------------------|---|--|-------------|
| 49.86           | V                         | 10.5                                 | 70.0  | 100                                      | -30.0       |

#### Detection mode: # Average

| Frequency (MHz) | Polarity (H/V) and degree | Antenna Factor and Cable Loss (dB/m) | Field Strength at 3m (dB $\mu\text{V}/\text{m}$ ) | Limit at 3m (dB $\mu\text{V}/\text{m}$ ) | Margin (dB) |
|-----------------|---------------------------|--------------------------------------|---|--|-------------|
| 49.86           | V                         | 10.5                                 | **65.3  | 80                                       | -14.7       |

# For pulse modulated devices and using measuring equipment employing a peak detection mode, properly adjusted for such factor as pulse desensitisation.

\*\*Duty Cycle Correction =  $20\text{Log}(0.58) = -4.7\text{dB}$

Note: Field Strength includes Antenna Factor and Cable Loss.

Receiver setting: RBW = 100KHz  
VBW = 300KHz



## TEST REPORT N°: BVCK09AP119MTHS

### Radiated Emissions (9kHz – 1GHz)

Test Requirement: FCC Part 15 Section 15.209

Test Method: ANSI C63.4

Test Date(s): 2009-04-16

Mode of Operation: **Transmission mode**

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

| Frequency Range [MHz] | Quasi-Peak Limits [ $\mu\text{V/m}$ ] |
|-----------------------|---------------------------------------|
| 1.705-30              | 300                                   |
| 30-88                 | 100                                   |
| 88-216                | 150                                   |
| 216-960               | 200                                   |
| Above960              | 500                                   |

### 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 (dB $\mu\text{V/m}$ ) | Limit at 3m (dB $\mu\text{V/m}$ ) | Margin (dB) |
|-----------------|----------------|--------------------------------------|--|-----------------------------------|-------------|
| 99.72           | H              | 14.8                                 | 25.4                                       | 43.5                              | -18.1       |
| 149.58          | H              | 14.8                                 | 27.3                                       | 43.5                              | -16.2       |
| 199.44          | V              | 15.2                                 | 24.1                                       | 43.5                              | -19.4       |
| 249.30          | H              | 17.9                                 | 30.2                                       | 46.0                              | -15.8       |
| 299.16          | V              | 21.0                                 | 30.9                                       | 46.0                              | -15.1       |
| 349.02          | H              | 23.3                                 | 34.2                                       | 46.0                              | -11.8       |
| 398.88          | H              | 25.1                                 | 40.6                                       | 46.0                              | -5.4        |
| 448.74          | H              | 26.4                                 | 37.5                                       | 46.0                              | -8.5        |
| 498.60          | H              | 27.4                                 | 34.5                                       | 46.0                              | -11.5       |
| 548.46          | H              | 28.8                                 | 37.2                                       | 46.0                              | -8.8        |

Note: Field Strength includes Antenna Factor and Cable Loss.

Receiver setting: RBW = 120KHz  
VBW = 120KHz



## TEST REPORT N°: BVCK09AP119MTHS

### 26dB Bandwidth of Fundamental Emission

Test Requirement: FCC 47 CFR 15.235  
Test Method: ANSI C63.4:2003 (Section 13.1.7)  
Test Date: 2009-04-16  
Mode of Operation: Transmission mode

#### 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.

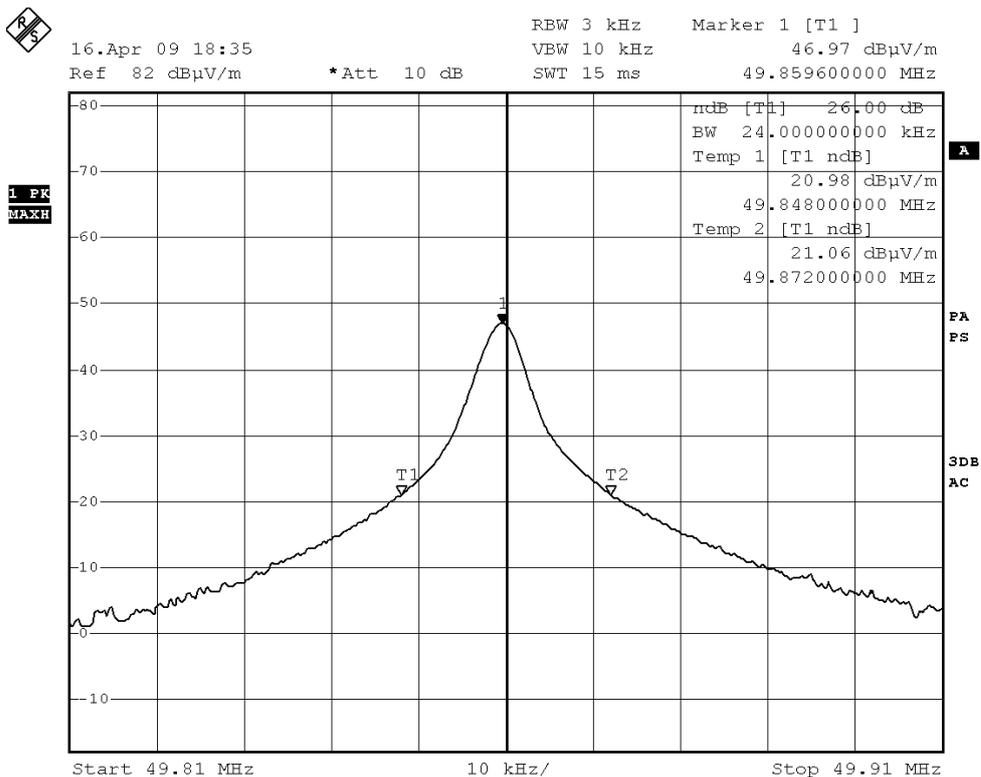
#### Limits for 26dB Bandwidth of Fundamental Emission:

| Frequency<br>[MHz] | 26dB Bandwidth<br>[KHz] | Limits<br>[MHz]    |
|--------------------|-------------------------|--------------------|
| 49.8596            | 24.00                   | within 49.82-49.90 |

# TEST REPORT N°: BVCK09AP119MTHS

## Measurement Data :

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



Date: 16.APR.2009 18:35:45



## TEST REPORT N<sup>o</sup>: BVCK09AP119MTHS

### Duty Cycle Correction During 100msec:

Each function key sends a different series of characters, but each packet period (16.3msec) never exceeds a series of 6 long (1msec) and 7 short (0.5msec) pulses. Assuming any combination of short or long pulses may be obtained due to encoding the worst case transmit duty cycle would be considered  $(6 \times 1\text{msec}) + (7 \times 0.5\text{msec})$  per 16.3msec = 58% duty cycle. Figure A through C show the characteristics of the pulse train for one of these functions.

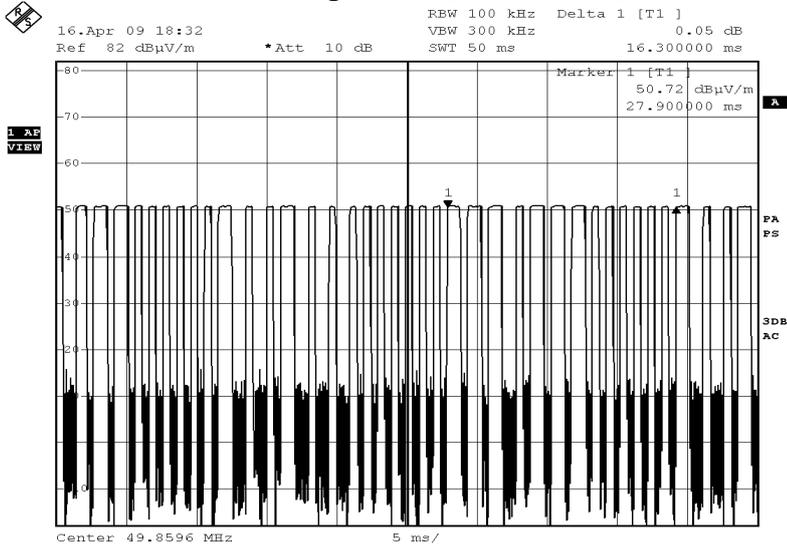
Remarks:

Duty Cycle Correction =  $20\text{Log}(0.58) = -4.7\text{dB}$

The following figures [Figure A to Figure C] show the characteristics of the pulse train for one of these functions.

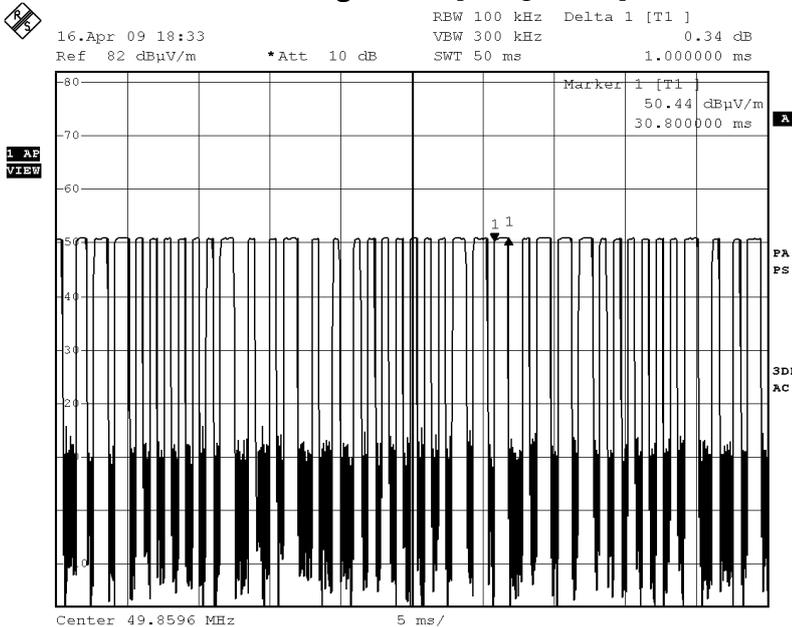
**TEST REPORT N°: BVCK09AP119MTHS**

**Figure A [Pulse Train]**



Date: 16.APR.2009 18:32:07

**Figure B [Long Train]**



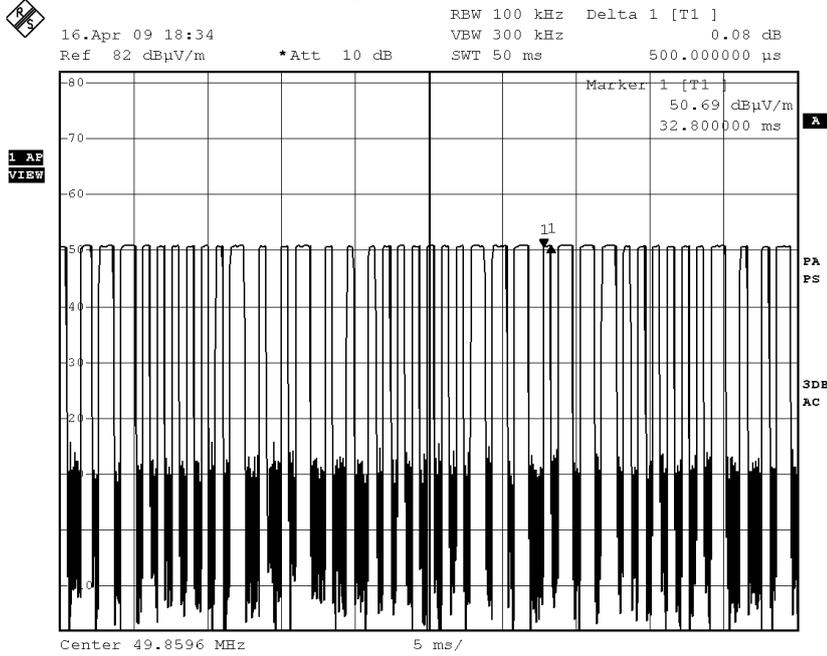
Date: 16.APR.2009 18:33:19



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TEST REPORT N°: BVCK09AP119MTHS

Figure C [Short Pulse]



Date: 16.APR.2009 18:34:04

**TEST REPORT N°: BVCK09AP119MTHS**

**Photographs of EUT**

**Front View of the product**



**Rear View of the product**



**Inner Circuit Top View**



**Inner Circuit Bottom View**



**TEST REPORT N°: BVCK09AP119MTHS**

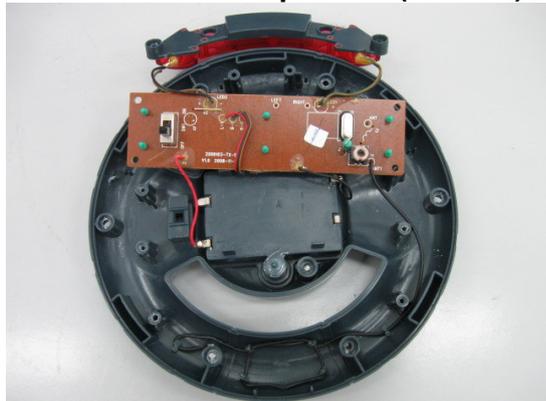
**Battery compartment**



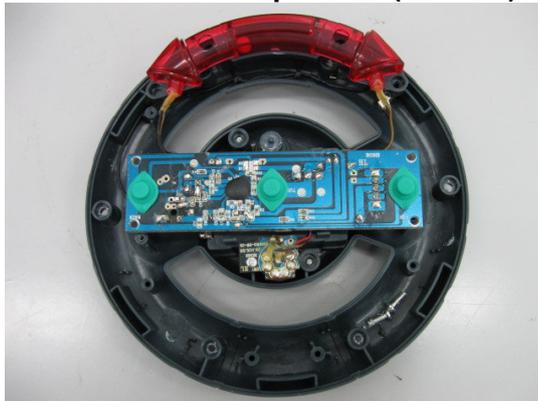
**Battery Cover**



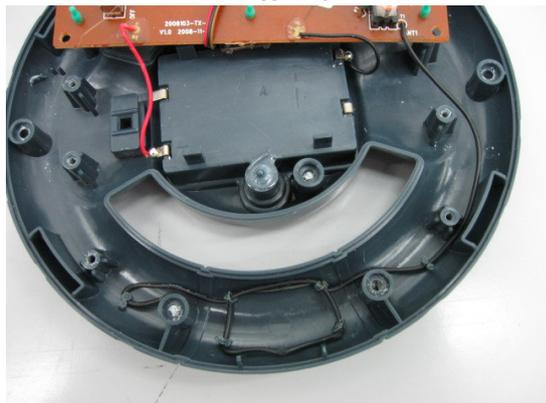
**Front View of the product (Internal)**



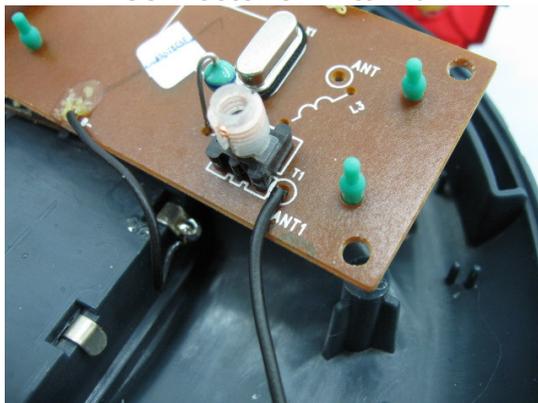
**Rear View of the product (Internal)**



**Antenna**



**Connector of Antenna**



**TEST REPORT N°: BVCK09AP119MTHS**

**Measurement of Radiated Emission Test Set Up**



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