



BUREAU
VERITAS

TEST REPORT N°: (5209)140-0463

TEST REPORT

To:	NEW-RAY TOYS CO. LTD.	To:	-
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E-mail:	yoyo@new-ray.com	E-mail:	-
Folder No.:	BVCK09JU138MTHS-B		

Factory name:	--
Location:	--
Product:	1:14 B/O R/C VEHICLES SERIES MODEL: 88253



Sample No:	(5209)140-0463
Test date:	June 10, 2009 to June 15, 2009
Test Requested:	FCC Part 15 - 2008
Test Method:	ANSI C63.4 - 2003
FCC ID:	Q4S88253

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: June 23, 2009

Date: June 23, 2009

BUREAU VERITAS HONG KONG LIMITED –
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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.



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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 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

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Equipment Under Test [EUT]

Description of Sample:

Model Name: 1:14 B/O R/C VEHICLES SERIES

Model Number: 88253

Rating: 4.5Vd.c ("AA" size battery x 3)

Description of EUT Operation:

The Equipment Under Test (EUT) is a NEW-RAY TOYS CO. LTD. of Radio Control toy. The transmitter is 1 button, 1 switch, 1 trigger and 1 wheel transmitter and operating at 27.14496MHz. The EUT continues to transmit stick is being pressed, Modulation by IC, and type is pulse modulation.

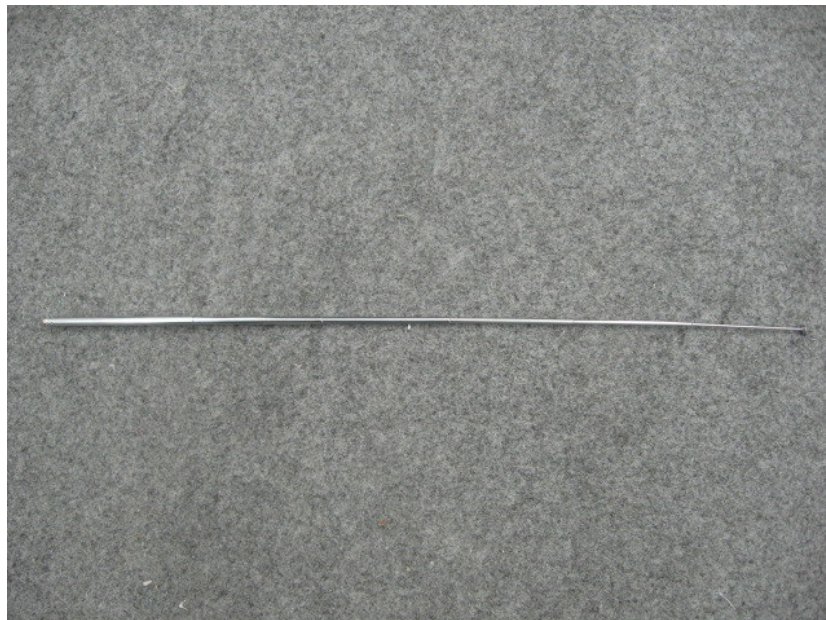
The transmitter has different control:

1. Wheel – Left or right control
2. Trigger– Forward or backward control
3. Switch "ON/OFF" – ON/OFF control
4. Brake Button – Stop control

Antenna Requirement (Section 15.203)

The EUT is use of a permanently antenna. The antenna consists of 48cm long Metal antenna. The antenna is not replaceable or user serviceable and the antenna connector is custom-made and not be able to found in the market. It also cannot be replaced with other antenna other then the one bundled inside the package. The requirement of S15.203 are met. There are no deviations or exceptions to the specifications.

Photo of Antenna



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Radiated Emissions (Fundamental)

Test Requirement: FCC Part 15 Section 15.227

Test Method: ANSI C63.4

Test Date(s): 2009-06-15

Mode of Operation: Transmission mode

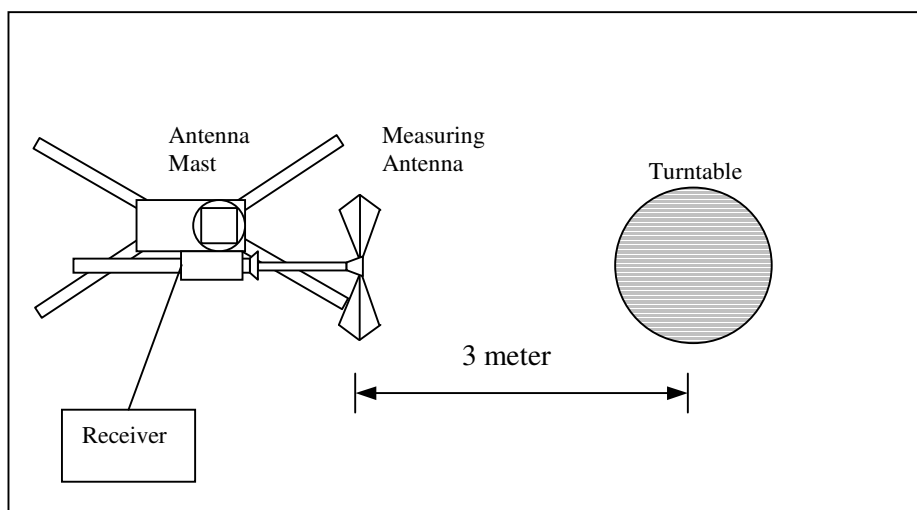
Test Procedure:

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





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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] [$\mu\text{V}/\text{m}$]	Field Strength of Fundamental Emission [Average] [$\mu\text{V}/\text{m}$]
26.96 – 27.28	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)
27.145	V/90°	21.8	43.9	100	-56.1

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)
27.145	V/90°	21.8	39.3	80	-40.7

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

**Duty Cycle Correction = $20\text{Log}(0.589) = -4.6\text{dB}$

Note: Field Strength includes Antenna Factor and Cable Loss.

Receiver setting: RBW = 100KHz
VBW = 300KHz



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Radiated Emissions (9kHz – 1GHz)

Test Requirement: FCC Part 15 Section 15.209

Test Method: ANSI C63.4

Test Date(s): 2009-06-15

Mode of Operation: **Transmission mode**

Limits for Radiated Emissions [FCC 47 CFR 15.209]:

Frequency Range [MHz]	Quasi-Peak Limits [μ 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 μ V/m)	Limit at 3m (dB μ V/m)	Margin (dB)
54.290	V	10.3	23.5	40.0	-16.5
81.435	H	9.6	16.2	40.0	-23.8
108.580	V	11.5	18.6	43.5	-24.9
135.725	V	13.0	20.2	43.5	-23.3
162.870	V	13.9	21.9	43.5	-21.6
190.015	V	15.4	25.2	43.5	-18.3
217.160	V	12.8	22.6	46.0	-23.4
244.305	V	13.6	20.4	46.0	-25.6
271.450	V	14.5	20.9	46.0	-25.1
298.595	H	15.2	22.1	46.0	-23.9

Note: Field Strength includes Antenna Factor and Cable Loss.

Receiver setting: RBW = 120KHz
VBW = 120KHz



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26dB Bandwidth of Fundamental Emission

Test Requirement: FCC 47 CFR 15.227
Test Method: ANSI C63.4:2003 (Section 13.1.7)
Test Date: 2009-06-10
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.

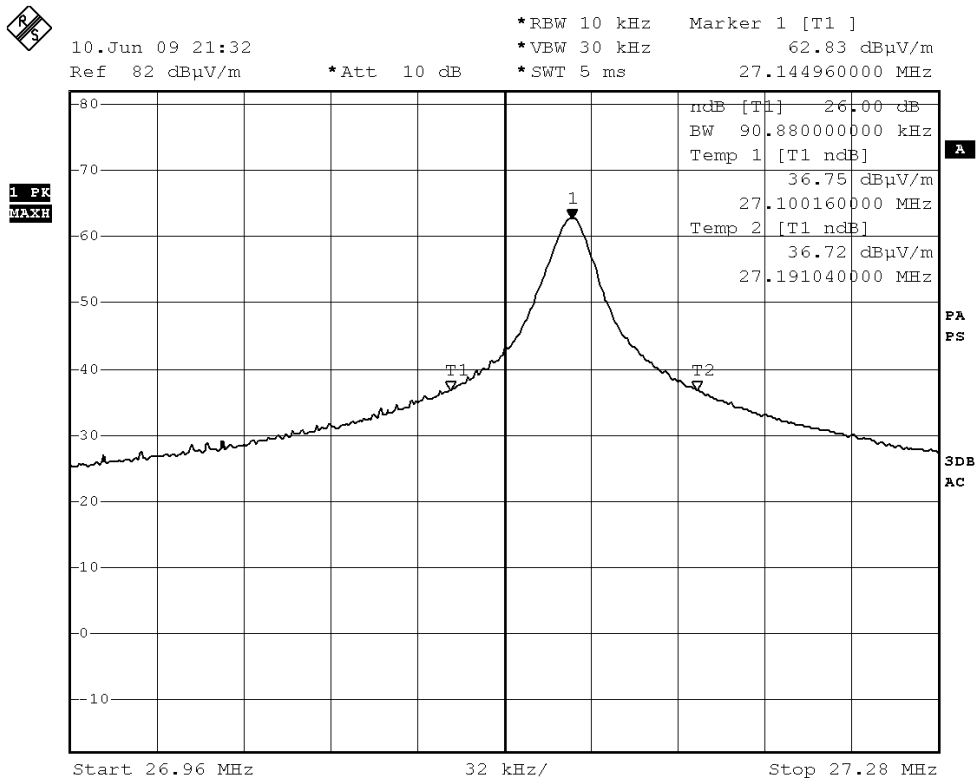
Limits for 26dB Bandwidth of Fundamental Emission:

Frequency [MHz]	26dB Bandwidth [KHz]	Limits [MHz]
27.14496	90.88	within 26.96 – 27.28

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Measurement Data :

Test Result of 26dB Bandwidth of Fundamental Emission: PASS



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Duty Cycle Correction During 100msec:

Each function key sends a different series of characters, but each packet period (50.6msec) never exceeds a series of 4 long (1.6msec) and 39 short (0.6msec) pulses. Assuming any combination of short or long pulses may be obtained due to encoding the worst case transmit duty cycle would be considered $(4 \times 1.6\text{msec}) + (39 \times 0.6\text{msec})$ per 50.6msec = 58.9% duty cycle. Figure A through C show the characteristics of the pulse train for one of these functions.

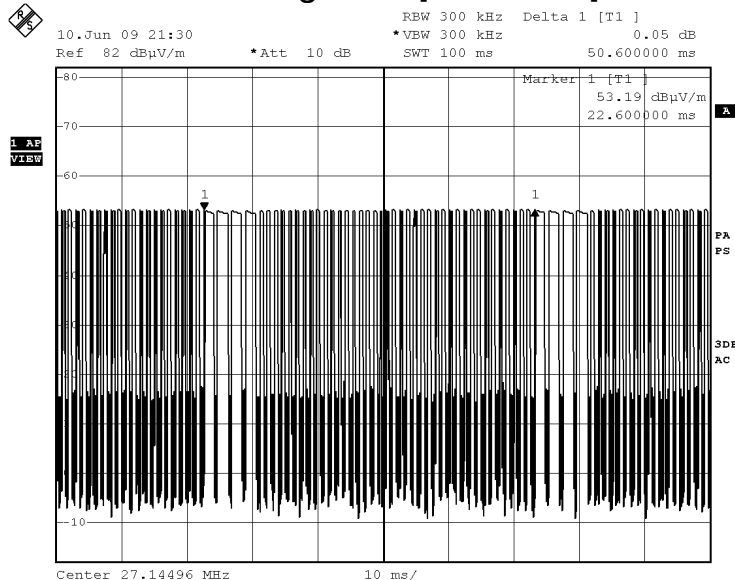
Remarks:

Duty Cycle Correction = $20\text{Log}(0.589) = -4.6\text{dB}$

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

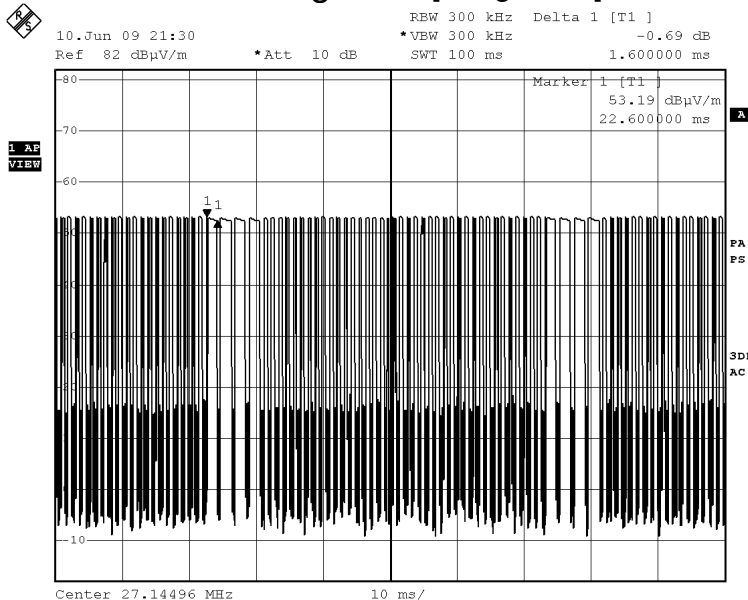
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Figure A [Pulse Train]



Date: 10.JUN.2009 21:30:31

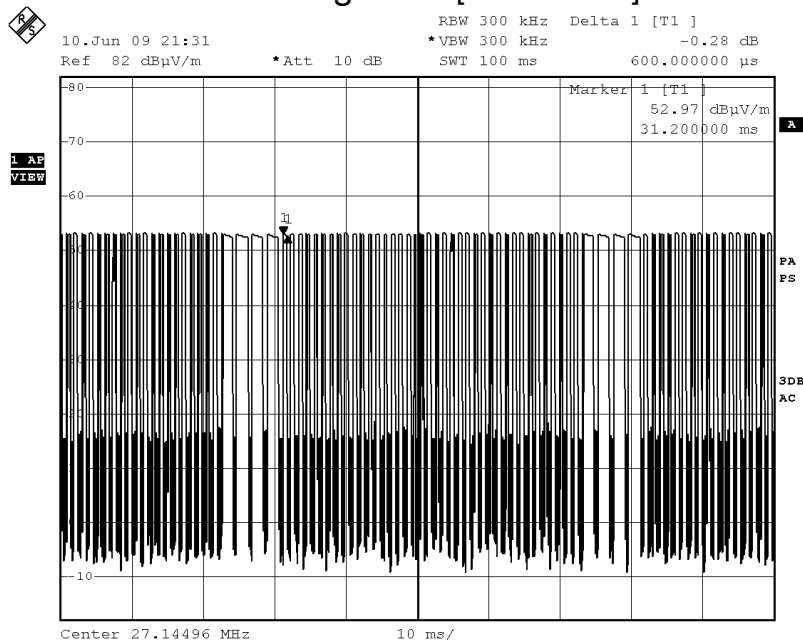
Figure B [Long Train]



Date: 10.JUN.2009 21:30:58

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Figure C [Short Pulse]



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Photographs of EUT

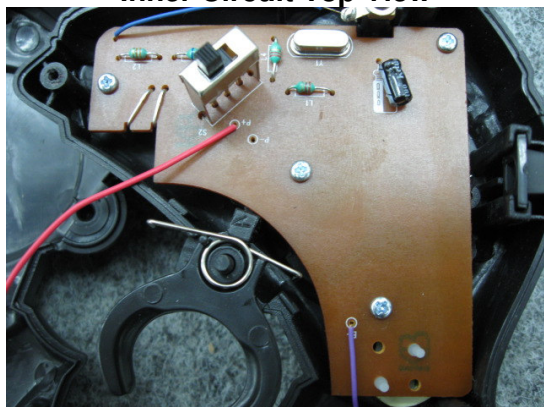
Front View of the product



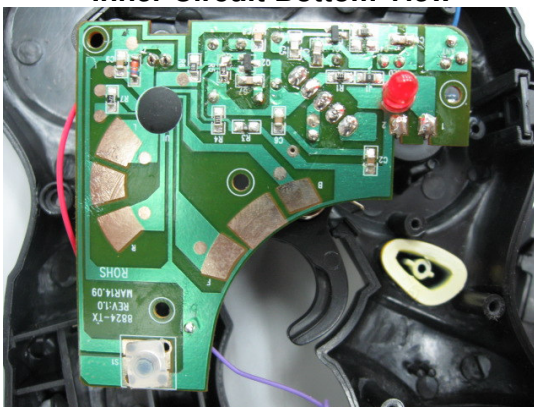
Rear View of the product



Inner Circuit Top View



Inner Circuit Bottom View



Battery compartment

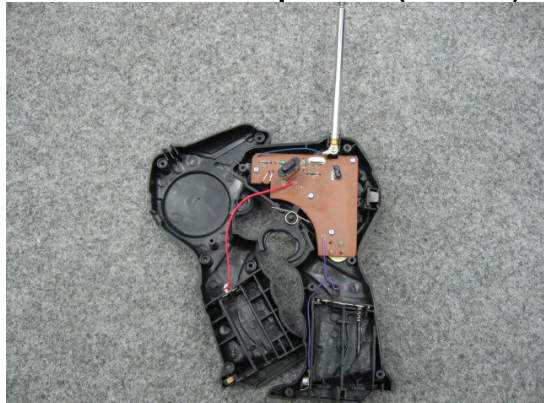


Battery Cover

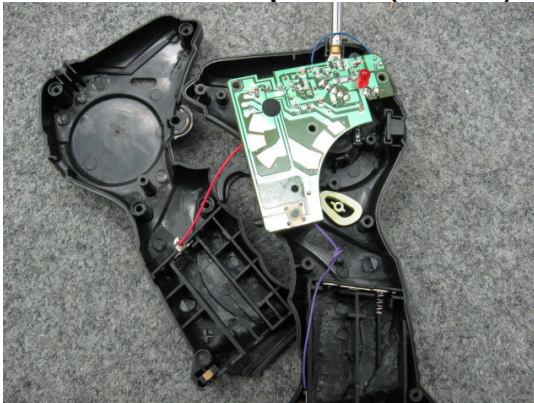


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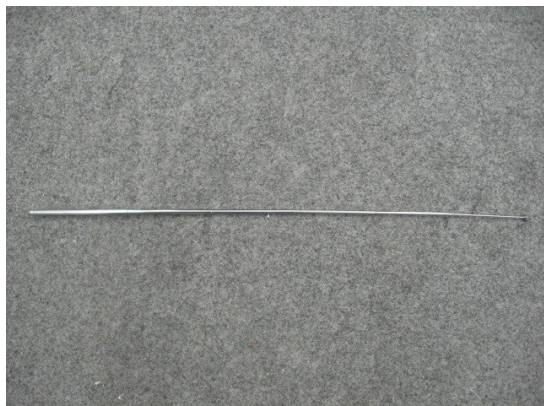
Front View of the product (Internal)



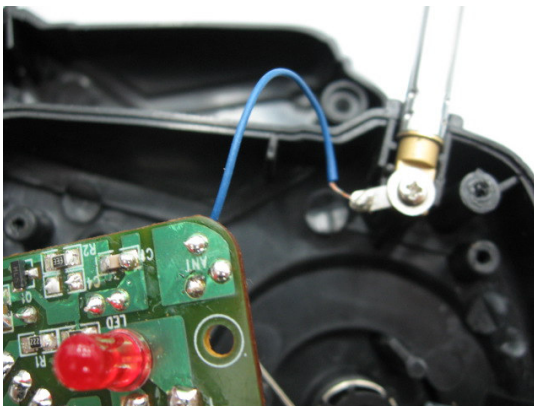
Rear View of the product (Internal)



Antenna



Connection of Antenna



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Measurement of Radiated Emission Test Set Up



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