

FCC TEST REPORT

FCC ID : QE845070TX49
Applicant : Interactive Toy Concepts Limited
Address : 7th Floor, Eu Yan San Tower, 11-15 Chatham Road South, TST, Kowloon,
Hong Kong

Equipment Under Test (EUT) :

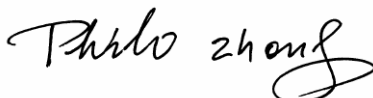
Product description : RC Helicopter

Model No. : RC Helicopter

Standards : FCC Part15 Subpart C 15.235

Date of Test : July 23, 2009

Test Engineer : Zero.Zhou

Reviewed By : 

PERPARED BY:

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3 **Test Summary**

Test	Test Requirement	Test Method	Class / Severity	Result
Radiated Emission (30MHz to 1GHz)	FCC PART 15: 2007	ANSI C63.4: 2003	Class B	PASS
Conducted Emission (150KHz to 30MHz)	FCC PART 15: 2007	ANSI C63.4: 2003	Class B	N/A

4 General Information

4.1 Client Information

Applicant: Interactive Toy Concepts Limited
Address of Applicant: 7th Floor, Eu Yan San Tower, 11-15 Chatham Road South, TST,
Kowloon, Hong Kong

Manufacturer: Interactive Toy Concepts Limited
Address: 7th Floor, Eu Yan San Tower, 11-15 Chatham Road South, TST,
Kowloon, Hong Kong

4.2 General Description of E.U.T.

Product description: RC Helicopter
Model No.: RC Helicopter

4.3 Details of E.U.T.

Power Supply: TX: 9 VDC Battery

4.4 Description of Support Units

The EUT has been tested as a transmitter unit.

4.5 Standards Applicable for Testing

The customer requested FCC tests for a RC Helicopter. The standards used were FCC 15 Paragraph 15.235, Paragraph 15.203, Paragraph 15.205, Paragraph 15.209, Paragraph 15.31, Paragraph 15.33, Paragraph 15.35.

4.6 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **IC – Registration No.: 7760A**

Waltek Services(Shenzhen) Co., Ltd. has been registered and fully described in a report filed with the Industry Canada. The acceptance letter from the Industry Canada is maintained in our files. Registration No.:7760A.

- **FCC – Registration No.: 880581**

Waltek Services(Shenzhen) Co., Ltd. has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration No.:880581, June 24, 2008. compliance

4.7 Test Location

All Emission tests were performed at:-

Waltek Services(Shenzhen) Co., Ltd. at 1/F, Fukangtai Building, West Baima Rd., Songgang Street, Baoan District, Shenzhen 518105, China.

5 Equipment Used during Test

Equipment Name	Manufacturer Model	Equipment No	Internal No	Specification	Cal. Date	Due Date	Cert. No	Uncertainty
EMC Analyzer	Agilent/ E7405A	MY45114 943	W2008001	9k-26.5GHz	Aug-08	Aug-09	Wws200 81596	±1dB
Trilog Broadband Antenne 30-3000 MHz	SCHWARZ BECK MESS-ELEKTROM / VULB9163	336	W2008002	30-3000 MHz	Aug-08	Aug-09		±1dB
Broad-band Horn Antenna 1-18 GHz	SCHWARZ BECK MESS-ELEKTROM / VULB9163	667	W2008003	1-18GHz	Aug-08	Aug-09		f<10 GHz: ±1dB 10GHz<f<18 GHz: ±1.5dB
Broadband Preamplifier 0.5-18 GHz	SCHWARZ BECK MESS-ELEKTROM / BBV 9718	9718-148	W2008004	0.5-18GHz	Aug-08	Aug-09		±1.2dB
10m Coaxial Cable with N-male Connectors usable up to 18GHz,	SCHWARZ BECK MESS-ELEKTROM / AK 9515 H	-	-	-	Aug-08	Aug-09		-
10m 50 Ohm Coaxial Cable with N-plug, individual length, usable up to 3(5)GHz, Connector	SCHWARZ BECK MESS-ELEKTROM / AK 9513				Aug-08	Aug-09		
Positioning Controller	C&C LAB/ CC-C-IF				N/A	N/A		
Color Monitor	SUNSP0/ SP-14C				N/A	N/A		
Test Receiver	ROHDE&SC HWARZ/ ESPI	101155	W2005001	9k-3GHz	Aug-08	Aug-09	Wws200 80942	±1dB
EMI Receiver	Beijingkehua n	KH3931		9k-1GHz	Aug-08	Aug-09		
Two-Line V-Network	ROHDE&SC HWARZ/ ENV216	100115	W2005002	50Ω/50μH	Aug-08	Aug-09	Wws200 80941	±10%
V—LISN	SCHWARZ BECK MESS—	NSLK 8128	8128-259	9k-30MHz	Aug-08	Aug-09		

Equipment Name	Manufacturer Model	Equipment No	Internal No	Specification	Cal. Date	Due Date	Cert. No	Uncertainty
	ELEKTRON IK							
Absorbing Clamp	ROHDE&SC HWAARZ/ MDS-21	100205	W2005003	impedance 50 Ω loss: 17 dB	Aug-08	Aug-09	Wws200 80943	± 1 dB
10m 50 Ohm Coaxial Cable with N-plug, individual length, usable up to 3(5)GHz, Connectors	SCHWARZ BECK MESS- ELEKTROM / AK 9514				Aug-08	Aug-09		
Digital Power Analyzer	Em Test AG/Switzerland/ DPA 500	V07451 03095	W2008012	Power: 2000VA Vol-range: 0-300V Freq_range: 10-80Hz	Aug-08	Aug-09	Wwd200 81185	Voltage distinguish:0.025% Power_freq distinguish:0.02Hz
Power Source	Em Test AG/Switzerland/ ACS 500	V07451 03096	W2008013	Vol-range: 0-300V Power_freq: 10-80Hz				
Electrostatic Discharge Simulator	Em Test AG/Switzerland/DITO	V07451 03094	W2008005	Contact discharge: 500V-10KV Air discharge: 500V-16.5KV	Aug-08	Aug-09	Wwc200 82400	7.5A current will be changed in $V_m=1.5V$
RF Generator	TESEQ GmbH/ NSG4070	25781	W2008008	Freq-range: 9K-1GHz RF voltage: -60 dBm-+10dBm	Aug-08	Aug-09	Wws200 81890	Power_freq distinguish:0.1Hz RF electric distinguish:0.1 B
CDN M-Type	TESEQ GmbH/ CDN M016	25112	W2008009	Voltage correct factor 9.5 dB	Aug-08	Aug-09	Wwc200 82396	150K-80MHz: ± 1 dB 80-230MHz:-2-+3dB
EM-Clamp	TESEQ GmbH/ KEMZ 801	25453	W2008010	Freq_range: 0.15-1000 MHz	Aug-08	Aug-09	Wwc200 82397	0.3-400 MHz: ± 4 dB Other freq: ± 5 dB
Attenuator 6dB	TESEQ GmbH/ ATN6050	25365			Aug-08	Aug-09	Wws200 81597	
All Modules Generator	SCHAFFNER/6150	34579	W2008006	voltage:200V-4.4KV	Aug-08	Aug-09	Wwc200 82401	voltage: $\pm 10\%$

Equipment Name	Manufacturer Model	Equipment No	Internal No	Specification	Cal. Date	Due Date	Cert. No	Uncertainty
				Pulse current: 100A-2.2KA				Pulse current: $\pm 10\%$
Capacitive Coupling Clamp	SCHAFFNER/ CDN 8014	25311			Aug-08	Aug-09	Wwc200 82398	-
Signal and Data Line Coupling Network	SCHAFFNER/ CDN 117	25627	W2008011	1.2/50 μ S	Aug-08	Aug-09	Wwc200 82399	-
AC Power Supply	TONGYUN/ DTDGC-4				Aug-08	Aug-09	Wws200 80944	-
Exposure Level Tester ELT-400	Narda Safety TEST Solutions/23 04/03	M-0155	w2008022	Test freq range: 1 — 400kHz	Aug-08	Aug-09	Wwd200 81191	Test uncertainty : 1 — 120kHz: $\pm 1.83\%$, 120 kHz-400 kHz: $\pm 4.06\%$
Magnetic Field Probe 100cm ²	Narda Safety TEST Solutions/23 00/90.10	M-1070	w2008021	Test freq range: 1 — 400kHz				Test uncertainty : 1Hz-10Hz: $\pm 16.2\%$, 10Hz - 120kHz: $\pm 2.2\%$, 120 kHz-400 kHz: $\pm 4.7\%$
Active Loop Antenna 10kHz-30MHz	Beijing Dazhi	ZN30900A	-	10kHz-30MHz	Aug-08	Aug-09		$\pm 1\text{dB}$

6 Conducted Emission Test

Test Requirement:	FCC Part15 Paragraph 15.207
Test Method:	Based on ANSI C63.4:2003
Test Date:	N/A
Frequency Range:	150kHz to 30MHz
Class:	Class B
Detector:	Peak for pre-scan (9kHz Resolution Bandwidth) Quasi-Peak & Average if maximised peak within 6dB of Average Limit

6.1 Conducted Emission Test Result

Owing to the battery operation of EUT, this test is not performed.

7 Radiation Emission Test

Product Name:	Snowmobile
Test Requirement:	FCC Part15 Paragraph 15.209, Paragraph 15.235
Test Method:	Based on ANSI C63.4:2003
Frequency Range:	30MHz to 1GHz
Measurement Distance:	3m
Detector:	Peak for pre-scan (120kHz resolution bandwidth) Quasi-Peak if maximised peak within 6dB of limit

7.1 Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in the field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

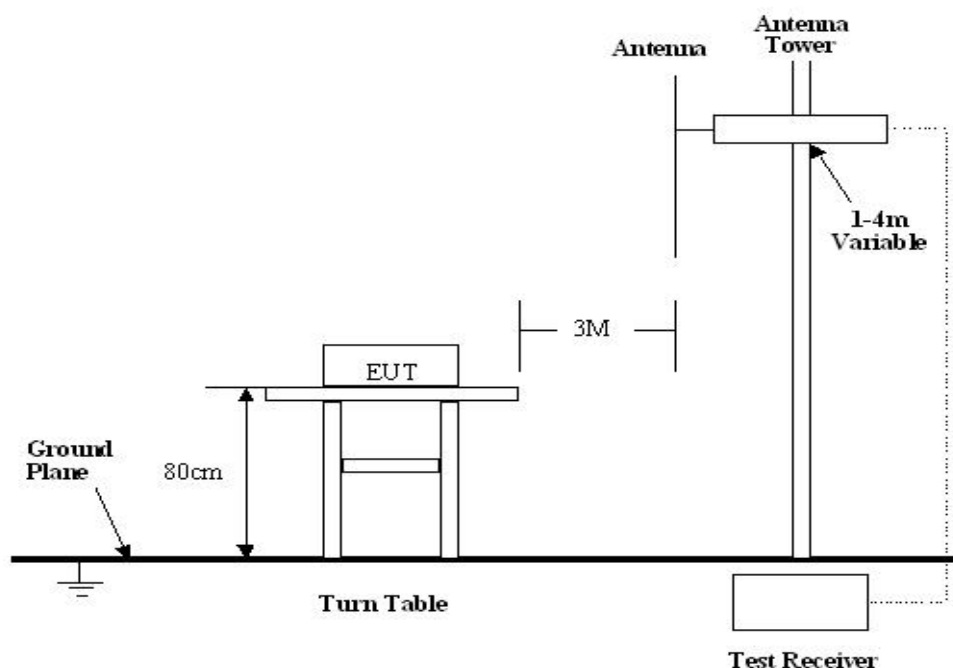
Based on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement at Waltek EMC Lab is ± 5.03 dB.

7.2 Test Procedure

1. New battery were installed in the equipment under test for radiated emissions test.
2. This is a handheld device, The radiation emission should be tested under 3-axes position (lying, side and stand), After pre-test, It was found that the worse radiation emission was get at the lying position.
3. Maximizing procedure was performed on the six (6) highest emissions to ensure EUT is compliant with all installation combinations.
4. All data was recorded in the average detection mode.
5. The EUT was under normal mode during the final qualification test and the configuration was used to represent the worst case results.
6. The device was rotated through three orthogonal axes to determine which attitude and configuration produce the highest emission during measurement.

7.3 Radiated Test Setup

The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site, using the setup accordance with the ANSI C63.4:2003, The specification used in this report were the FCC Part15 Paragraph 15.209, Paragraph 15.235 limits.



7.4 Spectrum Analyzer Setup

According to FCC Part15 Paragraph 15.235 Rules, the system was tested to 1000 MHz.

Start Frequency	30MHz
Stop Frequency	1000 MHz
Sweep Speed	Auto
IF Bandwidth	100 kHz
Video Bandwidth	100KHz
Quasi-Peak Adapter Bandwidth	120 kHz
Quasi-Peak Adapter Mode.....	Normal
Resolution Bandwidth	100KHz

7.5 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

$$\text{Corr. Ampl.} = \text{Indicated Reading} + \text{Antenna Factor} + \text{Cable Factor} - \text{Amplifier Gain}$$

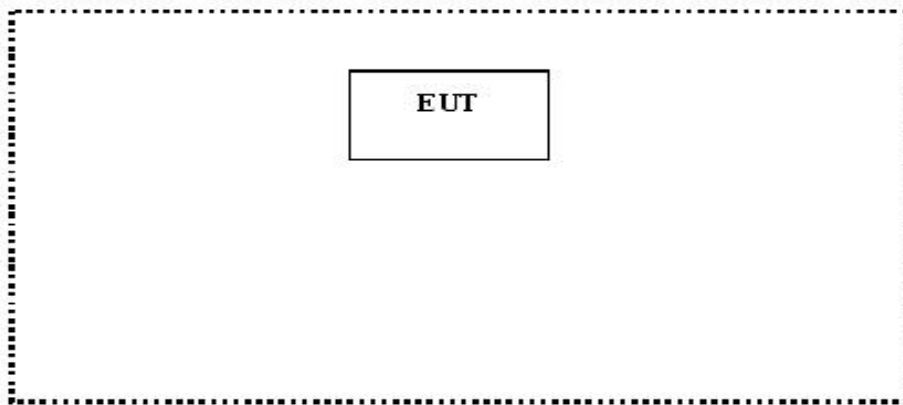
The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7dBμV means the emission is 7dBμV below the maximum limit for Class B. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{Class B Limit}$$

7.6 EUT Operating Condition

Operating condition is according to ANSI C63.4:2003.

- A. Setup the EUT and simulators as shown on follow.
- B. Enable RF signal and confirm EUT active.
- C. Modulate output capacity of EUT up to specification.



7.7 Radiated Emissions Limit

A. FCC Part 15 subpart C Paragraph 15.235 Rules Limit

Fundamental Frequency(MHZ)	Field Strength of Fundamental
	dBuV/m
49.86	80

Note:(1) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

B. Frequencies in restricted band are complied to limit on FCC Part Paragraph 15.209

30-88	100	40.0
88-216	150	43.5
216-960	200	46.0
Above 960	500	54.0

Note: (1) RF Voltage(dBuV)=20 log RF Voltage(uV)

(2) In the Above Table,the tighter limit applies at the band edges.

(3) Distance refers to the distance in meters between the measuring instrument antenna.

7.8 Radiated Emissions Test Result

Formula of conversion factors:the field strength at 3m was established by adding
The meter reading of the spectrum analyzer (which is set to read in units of dBuV)
To the antenna correction factor supplied by the antenna manufacturer. The antenna
Correction factors are stated in terms of dB.The gain of the pressletor was accounted
For in the spectrum analyser meter reading.

Example:

Freq(MHz) Meter Reading +ACF=FS

33 20dBuV+10.36dB=30.36dBuV/m @3m

7.9 Radiated Emission Test Data

Test Mode: TX On
Temperature: 24 °C
Humidity: 52%RH
Test Result: PASS

Frequency (MHz)	Detector	Antenna Polarization	Emission Level (dBuV/m)	FCC 15 Subpart C Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Turntable Angle (°)
49.86	AV	Vertical	59.00	80.0	-21.00	1.8	0
49.86	AV	Horizontal	60.11	80.0	-19.89	1.5	120
99.72	AV	Horizontal	31.00	40.0	-9.00	1.8	130
149.58	AV	Horizontal	30.02	40.0	-9.98	1.5	127
199.44	AV	Horizontal	30.36	43.5	-13.14	1.5	130
249.30	AV	Horizontal	33.98	43.5	-9.52	1.5	120
299.16	AV	Horizontal	41.84	43.5	-1.66	1.2	110
349.02	AV	Horizontal	31.35	43.5	-12.15	1.5	100
398.88	AV	Horizontal	29.59	46.0	-16.41	1.5	110
488.74	AV	Horizontal	27.49	46.0	-18.51	1.8	120
498.60	AV	Horizontal	27.62	46.0	-18.38	1.5	125
99.72	AV	Vertical	29.89	43.5	-13.61	1.5	120
149.58	AV	Vertical	29.47	43.5	-14.03	1.5	130
199.44	AV	Vertical	29.92	43.5	-13.58	1.2	130
249.30	AV	Vertical	29.50	43.5	-14.00	1.2	120
299.16	AV	Vertical	28.96	46.0	-17.04	1.8	130
349.02	AV	Vertical	28.01	46.0	-17.99	1.5	120

398.88	AV	Vertical	28.35	46.0	-17.65	1.5	120
488.74	AV	Vertical	28.11	46.0	-17.89	1.5	0
498.60	AV	Vertical	27.85	46.0	-18.15	1.2	120

8 Antenna Requirement.

According to the FCC 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. The use of a permanently attached antenna to the intentional radiator shall be considered sufficient to comply with the provisions of this section. This product has a permanent antenna, fulfill the requirement of this section

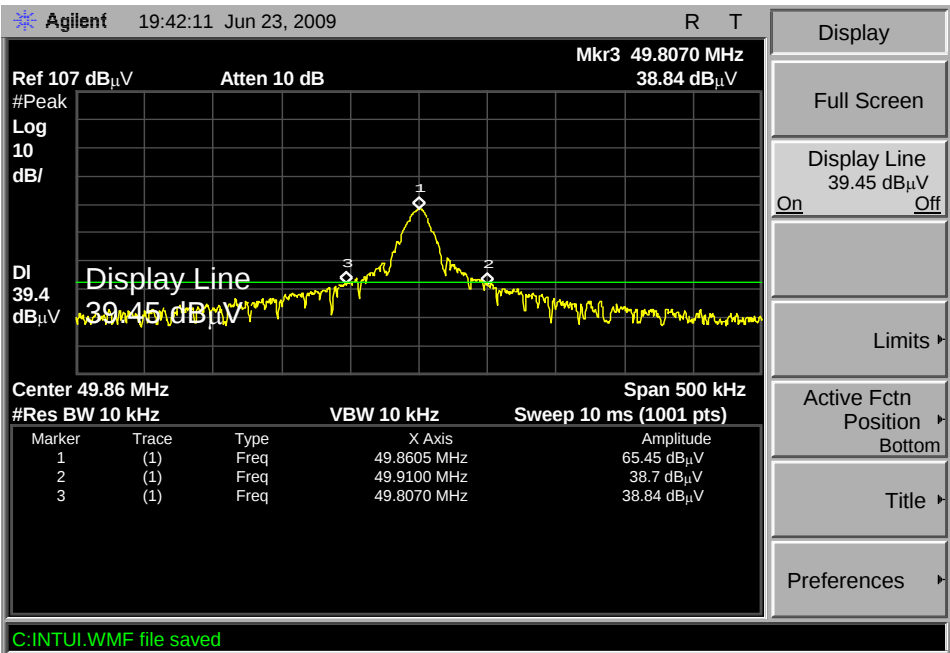
9 Occupied Bandwidth

Rules of test :	FCC 15.235
Test mode:	TX On
Temperature:	24 °C
Humidity:	52%RH

9.1 Test Procedure

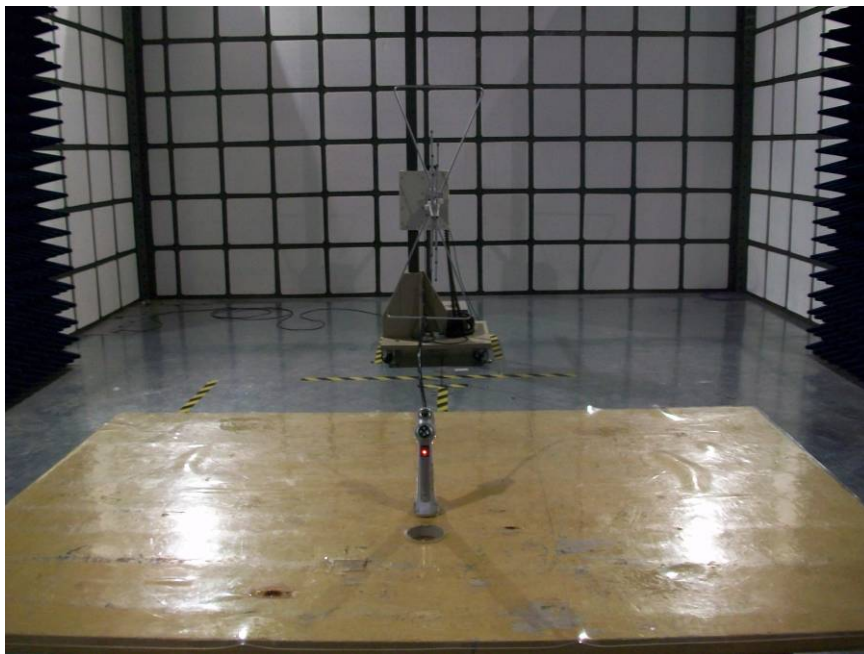
1. The field strength of any emissions which appear outside of the band shall not exceed the general radiated emission limits of FCC 15.235
2. The useful radiated emission form the EUT was detected by the spectrum analyser with peak detector.
- 3 The result has been complied with the FCC 15.235, The field strength of any emissions appearing between the band edges and up to10kHz above and below the band edges shall be attenuated at least 26dB belowthe level of the unmldulated carrier or to the general limits of FCC 15.235, which ever permits the higher emissions levels. see the following plot:

The graph as below.



10 Photographs of Testing

10.1 Radiation Emission Test View



11 Photographs - Constructional Details

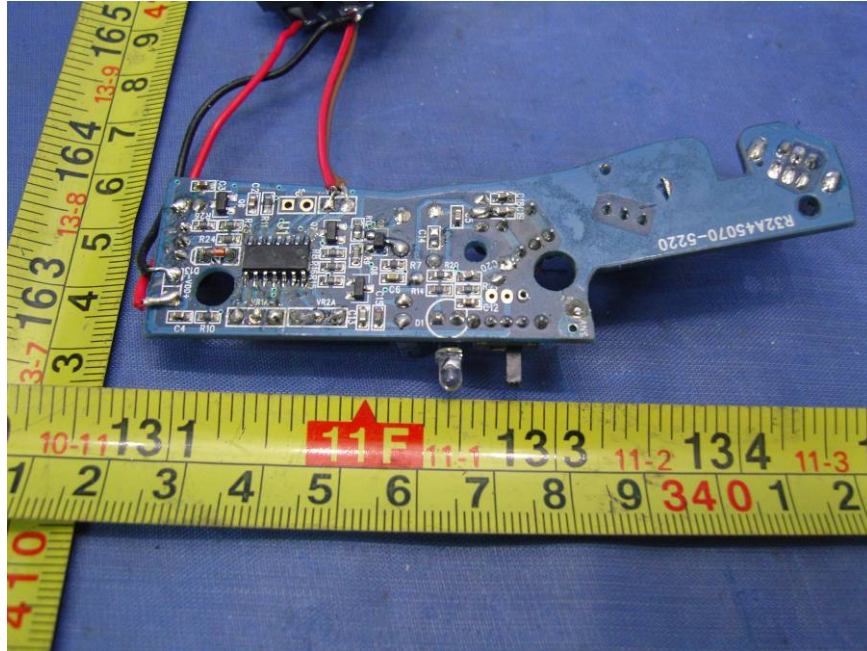
11.1 EUT - Side View



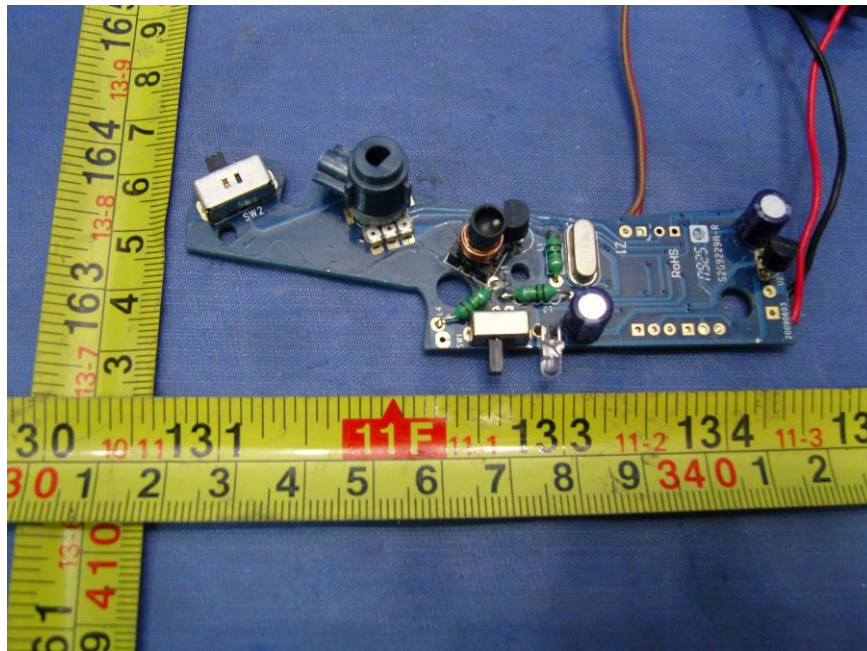
11.2 EUT - Front View



11.3 PCB- Front View



11.4 PCB- Back View



12 IC Label

This device complies with IC Rules. Operation is subject to the following two conditions:(1)this device may not cause harmful interference,and (2) this device must accept any interference received, including interference that may cause undesired operation.

The Label must not be a stick-on paper. The Label on these products must be permanently affixed to the product and readily visible at the time of purchase and must last the expected lifetime of the equipment not be readily detachable.

Proposed Label Location on EUT
EUT Top View/ proposed IC Mark Location

