

FCC PART 15.235

EMI MEASUREMENT AND TEST REPORT

For

Cyberking Future Toys Limited

Unit 601, 6/F, Prosperity Place, No.6 Shing Yip Street,
Kwun Tong, Hong Kong

FCC ID: ZV3CYBERKING606

Report Type: Original Report	Product Type: RC Helicopter (Controller)
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Report Number: RSZ110801801-00-15.235	
Report Date: 2011-08-29	
Reviewed By: EMC Engineer Merry Zhao <i>merry.zhao</i>	
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Note: This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp. This report must not be used by the customer to claim product certification, approval, or endorsement by NVLAP*, or any agency of the Federal Government.

* This report contains data that are not covered by the NVLAP accreditation and are marked with an asterisk "★" (Rev.2)

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GENERAL INFORMATION

Product Description for Equipment Under Test (EUT)

The *Cyberking Future Toys Limited*'s product, model number: CKS00606A (FCC ID: ZV3CYBERKING606) or the "EUT" as referred to in this report is a controller of the RC Helicopter, which measures approximately: 16.0 cm (L) x 16.0 cm (W) x 7.0 cm (H), rated input voltage: DC 9V Battery.

*Note: The serial product model CKS00606A, CKS00607, CKS00608, CKS00609, CKS00610, CKS00611, CKS00612, KM-606A, KM-612A, KM-630A, KM-2080A, KM-2108A, KJ-713A, S107G, all the models are electrically identical, only their difference is model names, and we select model CKS00606A for the testing in this report, which was explained in the attached declaration letter.

** All measurement and test data in this report was gathered from production sample serial number: 1108001 (Assigned by BACL, Shenzhen). The EUT was received on 2011-08-01.*

Objective

This Type approval report is prepared on behalf of *Cyberking Future Toys Limited* in accordance with Part 2, Subpart J, and Part 15, Subparts A, B and C of the Federal Communication Commissions rules.

The objective is to determine compliance with FCC rules, section 15.203, 15.205, 15.209 and 15.235 rules.

Related Submittal(s)/Grant(s)

No Related Submittals.

Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2009. American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

All emissions measurement was performed and Bay Area Compliance Laboratories Corp. (Shenzhen). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Shenzhen) to collect test data is located in the 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China.

Test site at Bay Area Compliance Laboratories Corp. (Shenzhen) has been fully described in reports submitted to the Federal Communication Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on December 06, 2010. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2009.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 382179. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

Additionally, Bay Area Compliance Laboratories Corp. (Shenzhen) is an ISO/IEC 17025 accredited laboratory, and is accredited by National Voluntary Laboratory Accredited Program (Lab Code 200707-0).



The current scope of accreditations can be found at <http://ts.nist.gov/Standards/scopes/2007070.htm>

SYSTEM TEST CONFIGURATION

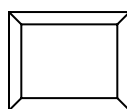
Justification

The system was configured for test mode.

Equipment Modifications

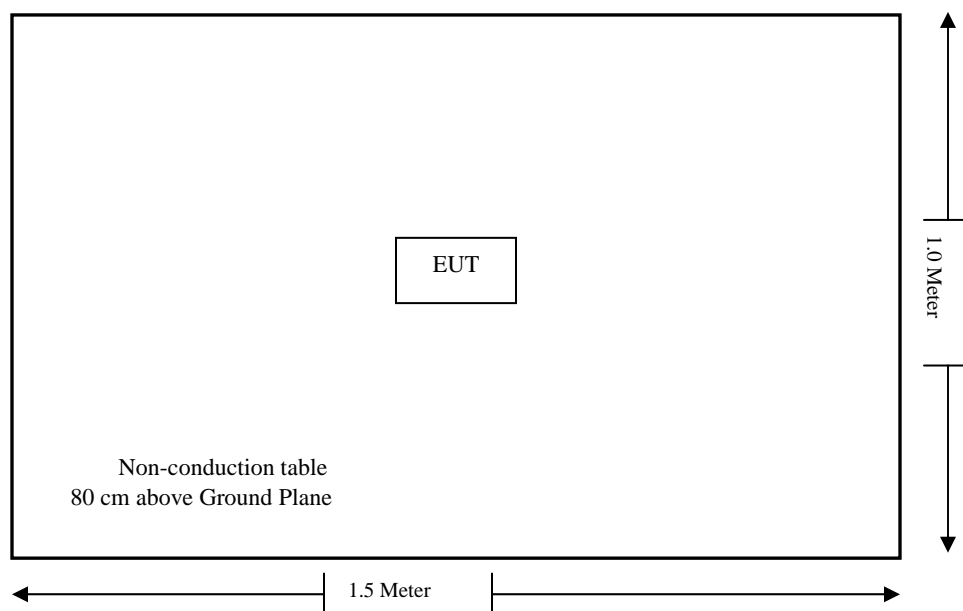
No modifications were made to the unit tested.

Configuration of Test Setup



EUT

Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§15.203	Antenna requirement	Compliance
§15.207(a)	AC Line Conducted Emissions	N/A*
§15.205; §15.209 §15.235	Radiated Emissions	Compliance
§15.235(b)	Band Edge Testing	Compliance

Note: N/A* EUT is battery operation.

FCC §15.203 - ANTENNA REQUIREMENT

Applicable Standard

As per 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 or of an antenna that uses a unique coupling 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.

Result: Compliance.

Please refer to the EUT photos.

FCC §15.205, §15.209 & §15.235 - RADIATED EMISSIONS

Applicable Standard

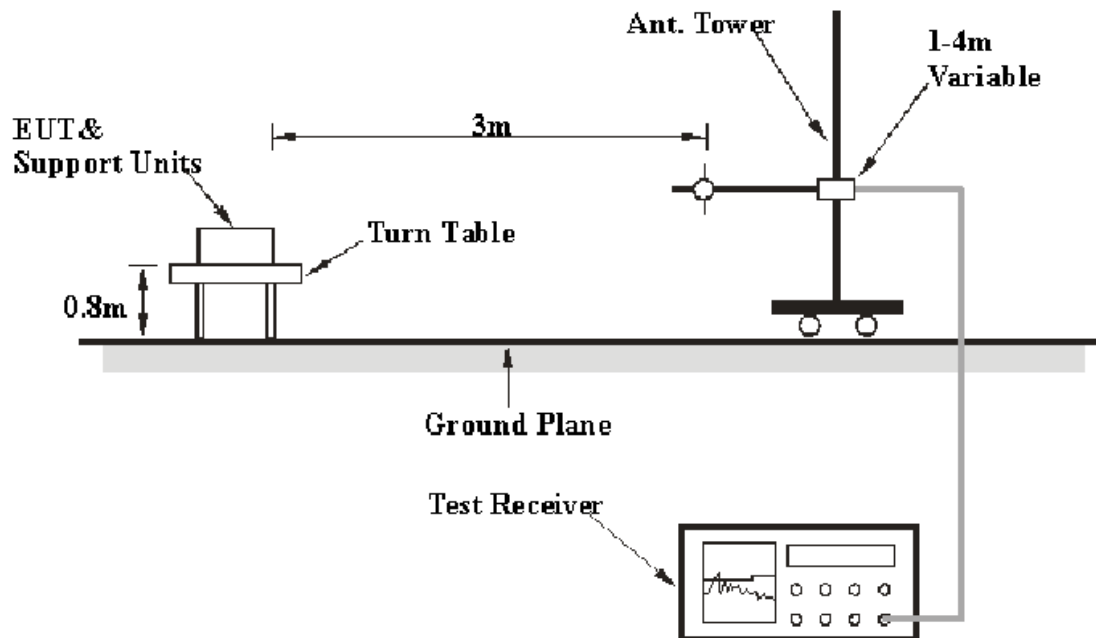
FCC Part 15.205, 15.209 and 15.235

Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in 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 Bay Area Compliance Laboratory Corp. (Shenzhen) is ± 4.0 dB.

EUT Setup



The radiated emission tests were performed in the chamber B test site, using the setup accordance with the ANSI C63.4-2009. The specification used was the FCC part 15.205, 15.209 and 15.235 limits.

EMI Test Receiver Setup

The system was investigated from 30 MHz to 1000 MHz.

During the radiated emission test, the EMI test receiver was set with the following configurations:

<i>Frequency Range</i>	<i>R B/W</i>	<i>Video B/W</i>	<i>IF B/W</i>
30 – 1000 MHz	100 kHz	100 kHz	120 kHz

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCI	100035	2010-11-11	2011-11-10
HP	Pre-amplifier	HP8447E	1937A01046	2011-08-02	2012-08-01
Sunol Sciences	Broadband Antenna	JB1	A040904-2	2011-07-05	2012-07-04

* **Statement of Traceability:** Bay Area Compliance Laboratory Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Procedure

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

All fundamental data was recorded in the Average and Peak detection mode.

All Spurious data was recorded in the Quasi-Peak detection mode.

Corrected Amplitude & Margin Calculation

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

$$\text{Corrected Amplitude} = \text{Meter Reading} + \text{Antenna Factor} + \text{Cable Loss} - \text{Amplifier Gain}$$

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

$$\text{Margin} = \text{Limit} - \text{Corrected Amplitude}$$

Test Results Summary

According to the data in the following table, the EUT complied with the FCC Part 15.209 & 15.235, with the worst margin reading of:

6.3 dB at 149.584000 MHz in the Vertical polarization

Test Data**Environmental Conditions**

Temperature:	25 ° C
Relative Humidity:	56 %
ATM Pressure:	101 kPa

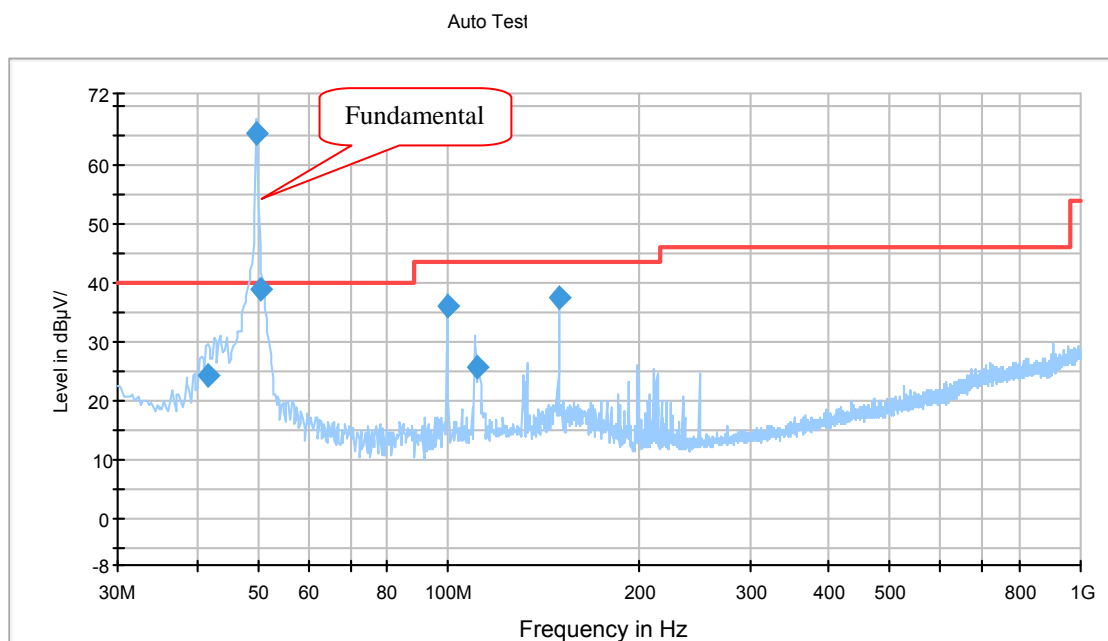
The testing was performed by Allan An on 2011-08-24.

Test Mode: Transmitting

1) Fundamental:

Frequency (MHz)	S.A. Reading (dBμV/m)	Table Angle Deg	Test Antenna		Detector (PK/QP/ Ave.)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre- Amp. Gain (dB)	Cord. Amp. (dBμV/m)	FCC Part 15.235		
			Height (cm)	Polar (H/V)						Limit (dBμV/m)	Margin (dB)	Note
49.86	79.33	180	1.2	V	Ave	7.1	0.36	25.92	60.87	80	19.13	Fund.
49.86	85.23	180	1.2	V	PK	7.1	0.36	25.92	66.77	100	33.23	Fund.
49.86	57.18	224	2.0	H	Ave	7.1	0.36	25.92	38.72	80	41.28	Fund.
49.86	63.35	224	2.0	H	PK	7.1	0.36	25.92	44.89	100	55.11	Fund.

2) Spurious Emissions



Frequency (MHz)	Corrected Amplitude (dBμV/m)	Test Antenna		Turntable position (degree)	Correction Factor (dB)	Limit (dBμV/m)	Margin (dB)
		Height (cm)	Polarity (H/V)				
50.360500	38.9	100.0	V	323.0	-17.3	40	1.1*
149.584000	37.2	100.0	V	219.0	-14.0	43.5	6.3
99.695500	36.1	100.0	V	0.0	-14.7	43.5	7.4
41.806250	24.1	100.0	V	114.0	-13.2	40.0	15.9
111.188250	25.6	120.0	V	50.0	-14.6	43.5	17.9

*Within measurement uncertainty.

FCC §15.235(b) - BAND EDGES TESTING

Applicable Standard

The field strength of any emissions appearing between the band edges and up to 10 kHz above and below the band edges shall be attenuated at least 26 dB below the level of the unmodulated carrier or to the general limits in FCC §15.209, whichever permits the higher emission levels. The field strength of any emissions removed by more than 10 kHz from the band edges shall not exceed the general radiated emission limits in §15.209. All signals exceeding 20 microvolts/meter at 3 meters shall be reported in the application for certification.

Test Procedure

With the EUT's antenna attached, the EUT's radiated emission power was received by the test antenna which was connected to the test receiver setup with the START and STOP frequencies set to the EUT's operation band.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCI	100224	2010-11-11	2011-11-10
HP	Pre-amplifier	HP8447E	1937A01046	2011-08-02	2012-08-01
Sunol Sciences	Broadband Antenna	JB1	A040904-2	2011-07-05	2012-07-04

* **Statement of Traceability:** Bay Area Compliance Laboratory Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Data

Environmental Conditions

Temperature:	25 ° C
Relative Humidity:	56 %
ATM Pressure:	101 kPa

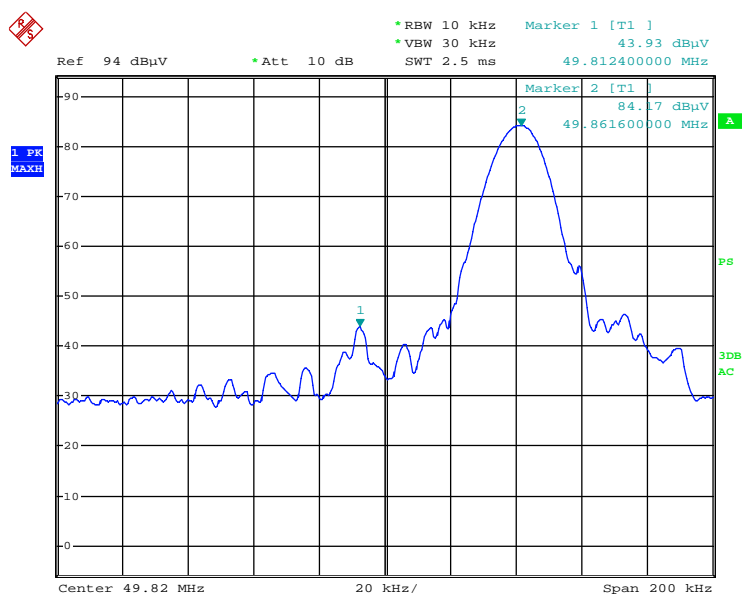
The testing was performed by Allan An on 2011-08-24.

Test Mode: Transmitting

Indicated		Table Angle Degree	Ant. Height (m)	Detector (PK/Ave)	Correction Factor			Cord. Amp. (dBμV/m)	Part 15.235/15.209	
Freq. (MHz)	Receiver Reading (dBμV)				Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. (dB)		Limit (dBμV/m)	Margin (dB)
49.812	43.93	180	1.2	PK	7.1	0.36	25.92	25.72	40	14.28
49.908	38.90	180	1.2	PK	7.1	0.36	25.92	20.44	40	19.56

Frequency (MHz)	Emission Level (dBμV/m)	Fundamental Peak Emission (dBμV/m)	Attenuation (dB)	Limit (dB)	Result
49.812	25.72	66.77	41.05	26	Compliance
49.908	20.44	66.77	46.33	26	Compliance

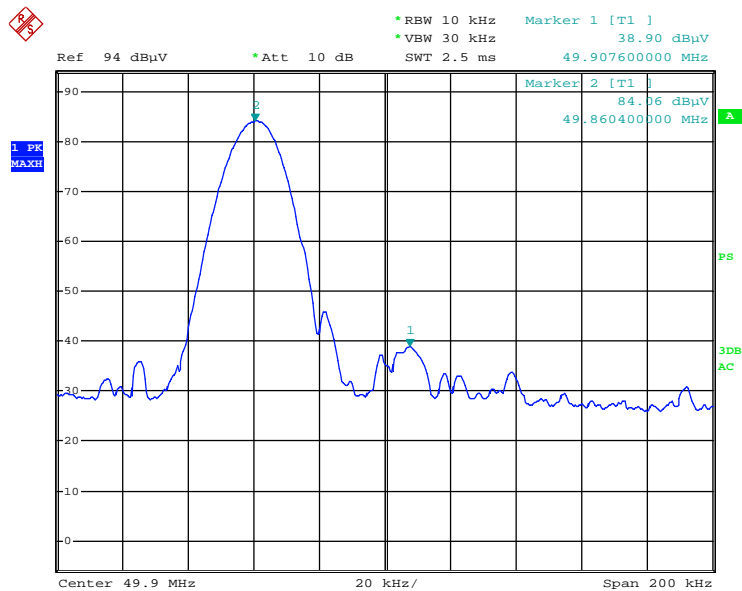
Result: Compliance, please refer to the plot attached.

Plot of Band Edge- Left Side

EUT

Date: 24.AUG.2011 14:43:40

Plot of Band Edge- Right Side



EUT

Date: 24.AUG.2011 14:45:43

PRODUCT SIMILARITY DECLARATION LETTER



Cyberking Future Toys Limited

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Fax: +852 3568 3759

Product Similarity Declaration

To Whom It May Concern,

We, Cyberking Future Toys Limited, hereby declare that our RC Helicopter, Model Number:CKS00607,CKS00608,CKS00609,CKS00610,CKS00611,CKS00612,KM-606A,KM-612A,KM-630A,KM-2080A,KM-2108A,KJ-713A,S107G are identically same with CKS00606A which was certified by BACL.

CKS00606A ,CKS00608,CKS00609,CKS00610,CKS00611,CKS00612,KM-606A,KM-612A,KM-630A,KM-2080A,KM-2108A,KJ-713A,S107G, CKS00607 are only in different model name for market purpose.

Please contact me if you have any question.

Signature:
Cindy Chan
Manager
2011-8-26



***** END OF REPORT *****