FCC PART 15.235
EMI MEASUREMENT AND TEST REPORT

For

AHA TOYS INC

709 MAIN STREET LAKE GENEVA WI 53147

FCC ID: SLP49MHZ00190

June 15, 2005

This Report Concerns:	**Equipment Type:**
☒ Original Report	Transmitter, Toy Remote Control

Test Engineer:	Louise Lu
Report No.:	RSZ05060604
Test Date:	June 7-8, 2005
Reviewed By:	Chris Zeng
Prepared By:	Bay Area Compliance Lab Corp. (ShenZhen) 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone, ShenZhen, Guangdong 518038, P.R.China Tel: 86-755-33320018 Fax: 86-755-33320008

TABLE OF CONTENTS

GENERAL INFORMATION

Product Description for Equipment Under Test (EUT)

The AHA TOYS INC ’s product, model number: #00190 or the "EUT" as referred to in this report is a Toy Remote Control and product name is RC Money.The EUT is measured approximately 12.0cm L x 10.9cm W x 5. 2cm H and rated input voltage: DC 9 V.

** The test data gathered are from production sample, serial number: 0506007, provided by the manufacturer.*

Objective

This Type approval report is prepared on behalf of *AHA TOYS INC* 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 C63.4-2003, 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 radiated and conducted emissions measurement was performed at Bay Area Compliance Lab 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 Lab Corp. (ShenZhen) to collect radiated and conducted emission measurement data is located in the 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone, ShenZhen, Guangdong 518038, P.R.China.

Test site at Bay Area Compliance Lab 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 November 04, 2004. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2003.

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 Lab Corp. (ShenZhen) is a National Institute of Standards and Technology (NIST) accredited laboratory, under the National Voluntary Laboratory Accredited Program (Lab Code 200707-0). The current scope of accreditations can be found at http://ts.nist.gov/ts/htdocs/210/214/scopes/2007070.htm

SYSTEM TEST CONFIGURATION

Justification

The system was configured for testing in a typical fashion (as normally used by a typical user).

EUT Exercise Software

N/A.

Special Accessories

N/A.

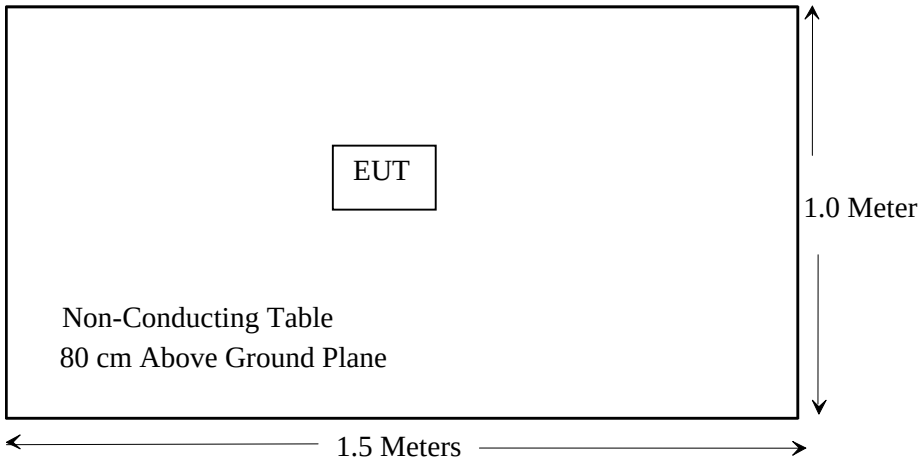
Equipment Modifications

BACL has not done any modification on the EUT.

Configuration of Test Setup

RC Money

Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

FCC RULES	DESCRIPTION OF TEST	RESULT
§15.203	Antenna requirement	Compliant
§15.209(a) §15.235(a)	Radiated Emission	Compliant
§15.235(b)	Band Edge Testing	Compliant

§15.203 - ANTENNA REQUIREMENT

Standard Applicable

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.

Test Result: Pass

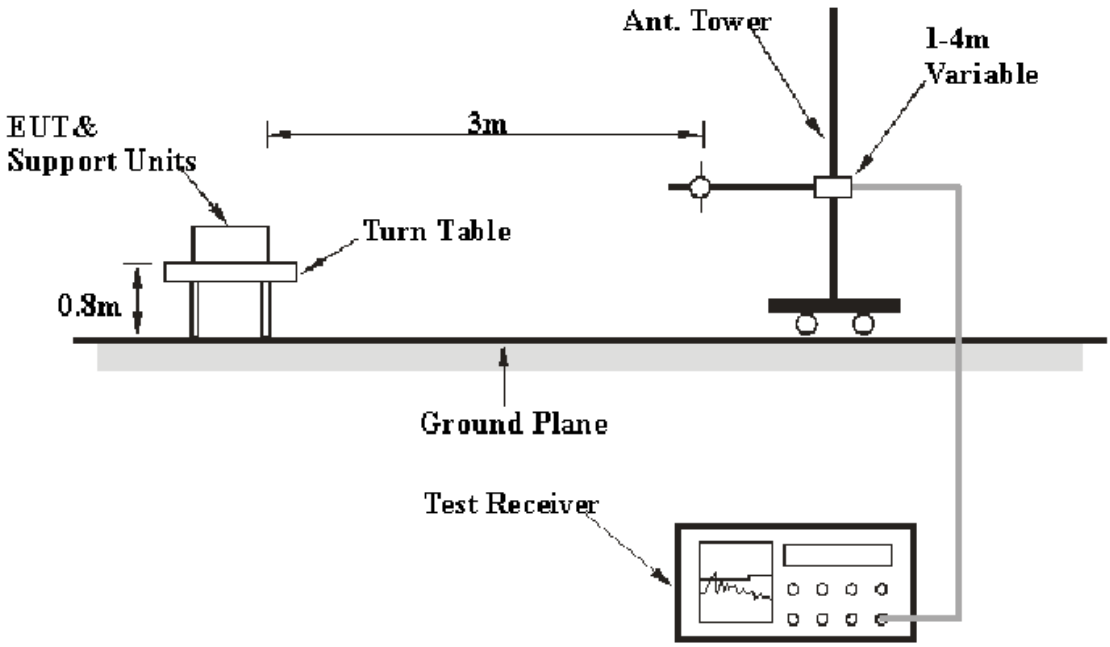
§15.209(a) §15.235(a) - RADIATED EMISSION

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 BACL is ±4.0 dB.

EUT Setup



The radiated emission tests were performed in the chamber A test site, using the setup accordance with the ANSI C63.4-2003. The specification used was the FCC 15.209 and 15.235 limits.

Test Receiver Setup

The system was investigated from 30 MHz to 1000 MHz.

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

Frequency Range	***R B/W***	***Video B/W***	***IF B/W***
30 – 1000 MHz	100 kHz	100 kHz	120 kHz

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
HP	Amplifier	8447E	1937A01046	2004-9-1	2005-8-31
Rohde & Schwarz	Test Receiver	ESCI	100035	2004-9-15	2005-9-14
Sunol Sciences	Bilog Antenna	JB1	A040904-1	2005-4-19	2006-4-18

*** Statement of Traceability: Bay Area Compliance Lab 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 data was recorded in the Quasi-peak detection mode.

Corrected Amplitude & Margin Calculation

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

Corr. Ampl. = Meter Reading + Antenna Loss + Cable Loss - Amplifier Gain

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

Margin = Corr. Ampl. – Standard Limit

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:

-14.9 dB at **149.38 MHz** in the **Horizontal** polarization.

Test Data

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	56 %
ATM Pressure:	1010mbar

The testing was performed by Louise Lu on 2005-6-7.

Test Mode: Transmitting

INDICATED			TABLE	ANTENNA		CORRECTION FACTOR			CORRECTED AMPLITUDE	FCC PART 15.209 & 15.235	
Frequency MHz	Meter Reading dBμV/m	Detector PK /AV	Angle Degree	Height Meter	Polar H/ V	Antenna Loss dB/m	Cable Loss dB	Amp. Gain dB	Corr. Ampl. dBμV/m	Limit dBμV/m	Margin dB
149.58	42.6	PK	60	1.0	H	13.4	1.1	28.5	28.6	43.5	-14.9
127.76	40.7	PK	180	1.2	H	14.4	1.1	28.5	27.7	43.5	-15.8
139.98	38.8	PK	90	1.0	H	14.2	1.1	28.5	25.6	43.5	-17.9
116.48	37.0	PK	90	1.2	H	13.3	1.1	28.5	22.9	43.5	-20.7
127.76	35.3	PK	60	1.0	V	14.4	1.1	28.5	22.3	43.5	-21.2
249.30	38.5	PK	60	1.0	H	12.3	1.3	27.7	24.4	46.0	-21.6
149.58	35.1	PK	45	1.2	V	13.4	1.1	28.5	21.1	43.5	-22.4
139.98	33.5	PK	45	1.2	V	14.2	1.1	28.5	20.3	43.5	-23.2
99.72	39.5	PK	45	1.2	H	8.2	0.9	28.6	20.0	43.5	-23.5
199.44	34.0	PK	60	1.2	H	12.0	1.3	28.0	19.3	43.5	-24.2
162.54	33.5	PK	45	1.0	V	12.7	1.1	28.3	19.0	43.5	-24.5
116.48	32.1	PK	60	1.2	V	13.3	1.1	28.5	18.0	43.5	-25.5
199.44	29.8	PK	45	1.0	V	12.0	1.3	28.0	15.1	43.5	-28.4
99.72	32.4	PK	60	1.0	V	8.2	0.9	28.6	13.0	43.5	-30.5
49.86	84.1	PK	180	1.2	V	10.8	0.6	28.8	66.7	100.0	-33.3
49.86	63.3	AV	90	1.0	V	10.8	0.6	28.8	45.9	80.0	-34.1
49.86	59.7	AV	270	1.0	H	10.8	0.6	28.8	42.3	80.0	-37.7
49.86	78.5	PK	60	1.2	H	10.8	0.6	28.8	61.1	100.0	-38.9

§15.235(b) - BAND EDGES TESTING

Standard Applicable

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 §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
Sunol Sciences	Antenna	JBI	A040904-1	2005-4-19	2006-4-18
HP	Amplifier	8447D	2994A09795	2004-9-1	2005-8-31
THERMAX	Coaxial Cable	RGS-142	EC002	2004-11-20	2005-11-19
Rohde& Schwarz	EMI Test Receiver	ESCS30	830245/006	2004-11-20	2005-11-19

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

Test Data

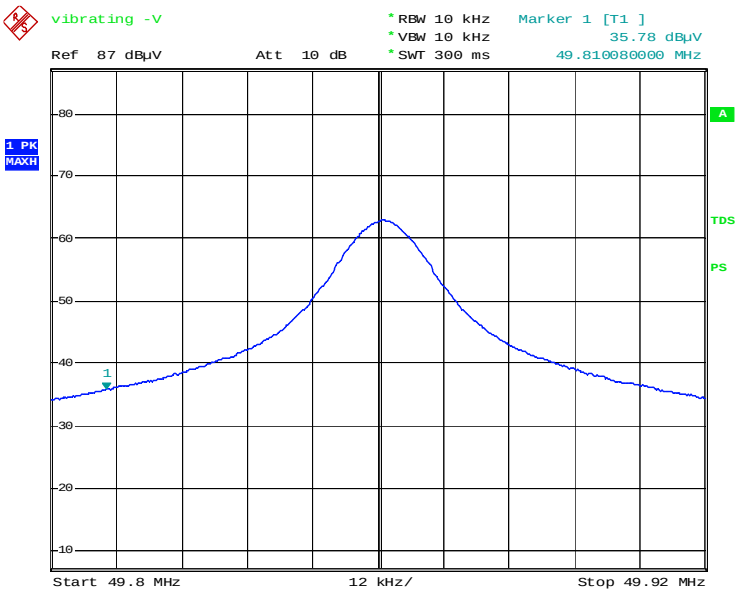
Environmental Conditions

Temperature:	20 °C
Relative Humidity:	55%
ATM Pressure:	1016mbar

The result has been complied with the 15.235(b), see the following plot:

Frequency MHz	Emission dBμV/m	Limit dBμV/m	Margin dB
49.81	35.78	40.0	-4.22
49.91	36.01	40.0	-3.99

49.81 MHz:



49.91 MHz: