

FCC PART 15.227

EMI MEASUREMENT AND TEST REPORT

For

AHA Toys Inc

709 Main Street Lake Geneva WI 53147

FCC ID: SLP27MHZ00160

October 27, 2004

This Report Concerns: <input checked="" type="checkbox"/> Original Report	Equipment Type: Street Beatz RC
Test Engineer: Louise Lu	
Report No.: RSZ04100901	
Test Date: October 19-22, 2004	
Reviewed By: Chris Zeng	
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Note: This test report is specially limited to the above client company and the product model only. It may not be duplicated without prior written consent of Bay Area Compliance Laboratory Corporation. This report **must not** be used by the client to claim product endorsement by NVLAP or any agency of the U.S. Government.

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GENERAL INFORMATION

Product Description for Equipment Under Test (EUT)

The *AHA Toys Inc*'s product, model number: 00160 or the "EUT" as referred to in this report is a Street Beatz RC. The EUT is measured approximately 10.6cmL x 8.0cmW x 3.5cmH.

** The test data gathered are from production sample, serial number: 0410001, 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 to determine compliance with FCC rules, sec 15.203, 15.205, 15.209 and sec 15.227.

Related Submittal(s)/Grant(s)

No Related Submittals

Test Methodology

All measurements contained in this report were conducted with ANSI C63.4 - 2001, 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 Laboratory, Corp. The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Test Facility

Test site at Bay Area Compliance Laboratory Corporation has been fully described in reports submitted to the Federal Communication Commission (FCC) and Voluntary Control Council for Interference (VCCI). The details of these reports has been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on February 11 and December 10, 1997 and Article 8 of the VCCI regulations on December 25, 1997. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2001.

The Federal Communications Commission and Voluntary Control Council for Interference has the reports on file and is listed under FCC file 31040/SIT 1300F2 and VCCI Registration No.: C-1298 and R-1234. The test site has been approved by the FCC and VCCI for public use and is listed in the FCC Public Access Link (PAL) database.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

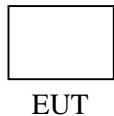
The EUT was configured for testing according to ANSI C63.4-2001.

The final qualification test was performed with the EUT operating at normal mode

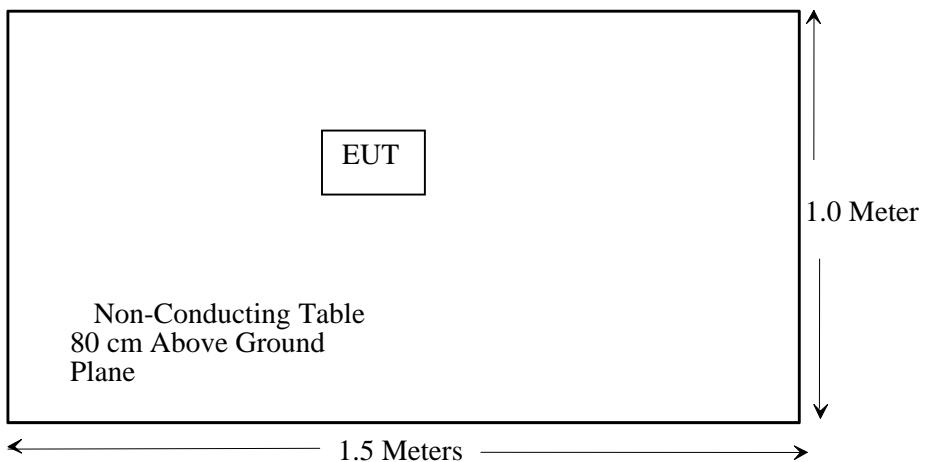
Equipment Modifications

No modifications were made to the EUT.

Configuration of Test System



Test Setup Block Diagram



SUMMARY OF TEST RESULTS

Results reported relate only to the product tested, serial number: 0410001.

FCC RULES	DESCRIPTION OF TEST	RESULT
§15.203	Antenna requirement	Passed
§15.205	Restricted Band	Passed
§15.209	Radiated Emission Limit	Passed
§15.227	Band Edge Testing	Passed

§15.203 – ANTENNA REQUIREMENT

Standard Applicable

According to §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 antenna for this device is an integral antenna that the end user cannot access.

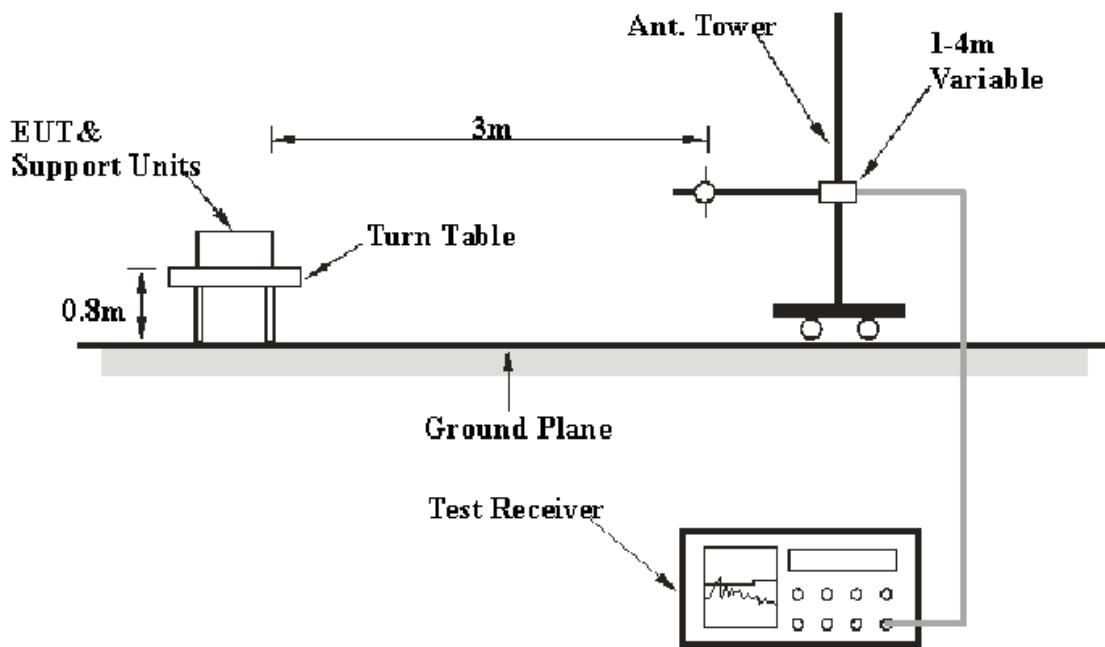
§15.205, §15.209, §15.227- RADIATED EMISSION

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 3-meter Chamber, using the setup accordance with the ANSI C63.4-2001. The specification used was the FCC 15.209 and 15.227 limits.

Spectrum Analyzer Setup

The system was investigated from 30MHz to 1000MHz.

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

Frequency Range	RBW	Video B/W
30 – 1000MHz	100KHz	100KHz
1000MHz – 25GHz	1MHz	1MHz

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Sunol Sciences	Antenna	JBI	A040904-1	2004-4-19	2005-4-18
HP	Amplifier	HP844TK	2944A09295	2004-4-5	2005-4-4
Rohde & Schwarz	Spectrum Analyzer	FSEM	849720/09	2003-10-30	2004-10-29
THERMAX	Coaxial Cable	RGS-142	EC002	2003-11-20	2004-11-19
Fluke	True RMS Multimeter	187	78540402	2004-3-23	2005-3-22
A.H.Syster	DRG Horn Antenna	SAS-200/571	135	2003-10-30	2004-10-29
HP	Preamplifier	8449B	3008A00277	2003-10-30	2004-10-29
Utiflex	Coaxial	N/A	EC004	2003-10-30	2004-10-29

* **Statement of Traceability:** BACL Corp. attests that all calibrations had 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 peak and average detection mode.

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 -7dB means the emission is 7dB below the maximum limit for Class B. The equation for margin calculation is as follows:

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

Test Data @ 3M

Date of Test : October 19-22, 2004 Temperature : 25°C
 EUT : Street Beatz RC Humidity : 45%
 M/N : 00160 Operating Mode : Transmitting
 S/N : 0410001 Test Engineer: Louise Lu

Frequency	Reading	Direction	Height	Polar	Antenna Loss	Cable loss	Amplifier	Correction Factor	FCC15.227	FCC15.227
MHz	dBuV	Degree	Meter	H / V	dB	dB	dB	dBuV/m	Limit dBuV/m	Margin dBuV/m
27.156(Peak)	62.83	45	1.0	h	15.3	0.6	26.29	52.4	100.0	-47.6
27.156(AV)	52.46	45	1.0	h	15.3	0.6	26.29	42.0	80.0	-38.0
27.150(Peak)	73.26	60	1.0	v	15.3	0.6	26.29	62.8	100.0	-37.2
27.150(AV)	66.67	45	1.2	v	15.3	0.6	26.29	56.2	80.0	-23.8
80.44	41.63	45	1.0	v	9.6	0.9	26.03	26.1	40.0	-13.9
216.24	37.91	45	1.0	v	10.1	1.3	25.06	24.3	46.0	-21.8
243.40	41.17	60	1.0	v	11.3	1.3	24.94	28.8	46.0	-17.2
270.56	39.17	45	1.2	v	11.7	1.4	24.70	27.6	46.0	-18.4
297.72	37.27	180	1.2	v	12.6	1.6	24.64	26.8	46.0	-19.2
357.86	35.46	45	1.0	v	14.9	1.8	25.09	27.1	46.0	-18.9
144.46	45.40	60	1.2	h	13.2	1.1	25.58	34.1	43.5	-9.4
189.08	39.72	270	1.0	h	13.8	1.3	25.24	29.6	43.5	-13.9
216.24	43.09	45	1.2	h	10.1	1.3	25.06	29.4	46.0	-16.6
243.40	45.57	90	1.2	h	11.3	1.3	24.94	33.2	46.0	-12.8
270.56	42.68	180	1.2	h	11.7	1.4	24.70	31.1	46.0	-14.9
297.72	39.45	0	1.0	h	12.6	1.6	24.64	29.0	46.0	-17.0

Test Result: Pass

§15.227 – OUT OF BAND EMISSION

Requirement

The field strength of any emissions which appear outside of this band shall not exceed the general radiated emission limits in §15.209.

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 spectrum analyzer 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	2004-4-19	2005-4-18
Rohde& Schwarz	Spectrum Analyzer	FSEM	849720/09	2003-10-30	2004-10-29
THERMAX	Coaxial Cable	RGS-142	EC002	2003-11-20	2004-11-19
Rohde& Schwarz	EMI Test Receiver	ESCS30	830245/006	2003-11-20	2004-11-19
Fluke	True RMS Multimeter	187	78540402	2004-3-23	2005-3-22
HP	Preamplifier	8449B	3008A00277	2003-10-30	2004-10-29
Utiflex	Coaxial	N/A	EC004	2003-10-30	2004-10-29

* **Statement of Traceability:** BACL Corp. attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Data:

Refer to the attached plots.

Test Result: Pass

