

**FCC PART 15.227**  
**EMI MEASUREMENT AND TEST REPORT**

For

**AHA Toys Inc**

709 Main Street Lake Geneva WI 5317

**FCC ID: SLP27MHZ00525**

June 12, 2006

|                                                                                                                                                                                                                                                     |                                          |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|
| <b>This Report Concerns:</b><br><input checked="" type="checkbox"/> Original Report                                                                                                                                                                 | <b>Equipment Type:</b><br>Jeep Hurricane |
| <b>Test Engineer:</b> Henry Yang and Deny Xiong<br><i>Henry Yang Deny Xiong</i>                                                                                                                                                                     |                                          |
| <b>Report No.:</b> RSZ06051903                                                                                                                                                                                                                      |                                          |
| <b>Test Date:</b> May 26-June 2, 2006                                                                                                                                                                                                               |                                          |
| <b>Reviewed By:</b> Boni Baniqued <i>Boni Baniqued</i>                                                                                                                                                                                              |                                          |
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**Note:** The test report is specially limited to the above company and this particular sample only.  
It may not be duplicated without prior written consent of Bay Area Compliance Lab Corp.  
(ShenZhen). This report must not be used by the client to claim product certification,  
approval, or endorsement by NVLAP, NIST or any agency of the US Government.

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## GENERAL INFORMATION

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### Product Description for Equipment Under Test (EUT)

The AHA Toys Inc's product, model number: 525 or the "EUT" as referred to in this report is a *Jeep Hurricane*. The EUT is measured approximately 11.5 cm L x 5.0 cm W x 11.0 cm H. rated input voltage: DC 9V battery.

*\* The test data gathered are from production sample, serial number: 0605018, provided by the manufacturer, we received EUT on 2006-5-19.*

### 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, 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 C63.4-2003, 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>

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## **SYSTEM TEST CONFIGURATION**

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### **Justification**

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

### **Equipment Modifications**

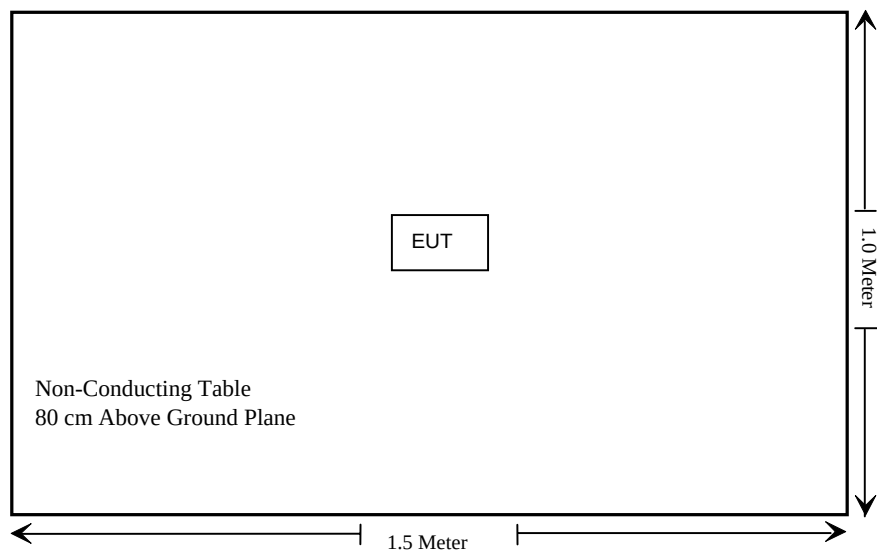
Bay Area Compliance Lab Corp. (ShenZhen) has not done any modification on the EUT.

## Configuration of Test Setup



EUT

## Block Diagram of Test Setup



**SUMMARY OF TEST RESULTS**

| FCC RULES  | DESCRIPTION OF TEST          | RESULT    |
|------------|------------------------------|-----------|
| §15.203    | Antenna requirement          | Compliant |
| §15.205    | Restricted Band of operation | Compliant |
| §15.209    | Radiated Emission Limit      | Compliant |
| §15.227(a) | Field Strength               | Compliant |
| §15.227(b) | Out of band emission         | Compliant |

**§15.203 - ANTENNA REQUIREMENT**

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**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.

**Antenna connected construction**

The EUT was a permanently attached antenna, which in accordance to section 15.203 is considered sufficient to comply with the provision of this section.

## §15.205, §15.209, §15.227(a) - RADIATED EMISSIONS TEST

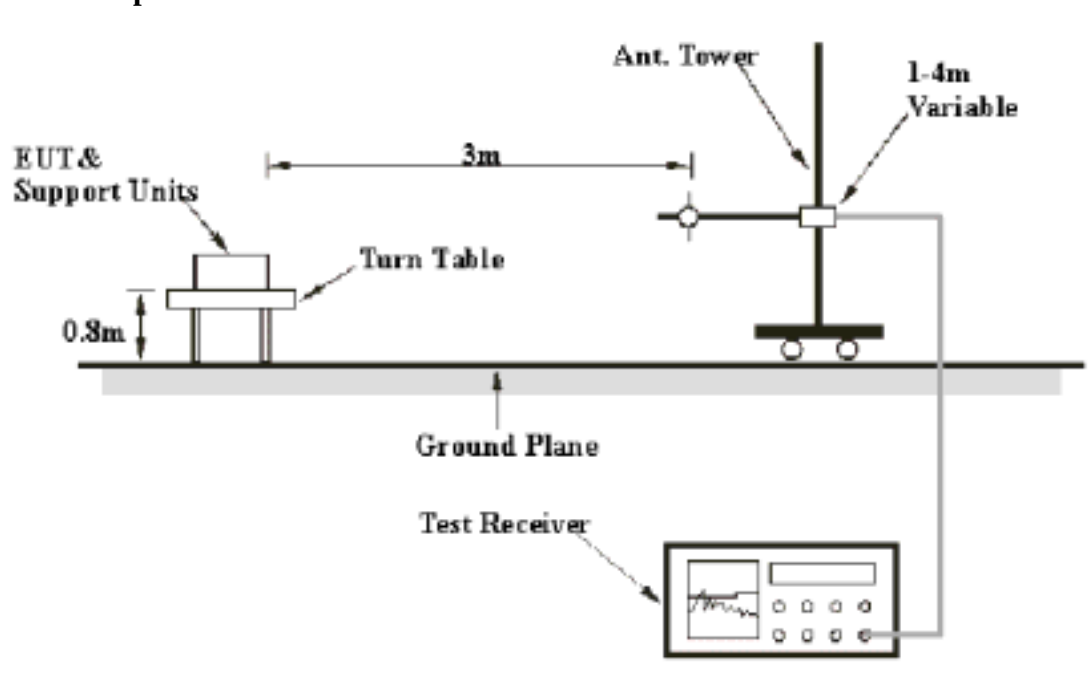
### Measurement Uncertainty

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 Lab Corp. (ShenZhen) is  $\pm 4.0$  dB.

The fundamental data was recorded in average detection mode: set the VBW AVE on, then record the data.

### EUT Setup



The radiated emission tests were performed in the 3-meter chamber A test site, using the setup accordance with the ANSI C63.4-2003. The specification used was the FCC Part 15.227 limits.

### EMI Test Receiver Setup

According to FCC Rules, 47 CFR 15.33, the EUT emissions were investigated from 30 to 1000 MHz.

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

| <i><b>Frequency Range</b></i> | <i><b>RBW</b></i> | <i><b>Video B/W</b></i> |
|-------------------------------|-------------------|-------------------------|
| Below 30 MHz                  | 10 kHz            | 30 kHz                  |
| 30 – 1000 MHz                 | 100 kHz           | 300 kHz                 |



### Test Equipment List and Details

| Manufacturer    | Description          | Model   | Serial Number | Calibration Date | Calibration Due Date |
|-----------------|----------------------|---------|---------------|------------------|----------------------|
| HP              | Amplifier            | HP8447E | 1937A01046    | 2005-8-17        | 2006-8-17            |
| Rohde & Schwarz | EMI Test Receiver    | ESCI    | 100035        | 2005-8-17        | 2006-8-17            |
| Sunol Sciences  | Broadband Antenna    | JB1     | A040904-2     | 2006-4-28        | 2007-4-28            |
| ETS             | Passive Loop Antenna | 6512    | 00029604      | 2006-4-26        | 2007-4-26            |

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

### 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:

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

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

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

### Test Results Summary

According to the data in the following table, the EUT complied with the FCC Part 15.227, with the worst margin reading of:

**-15.8 dB at 893.857225 MHz in the Horizontal polarization.**

### Test Data

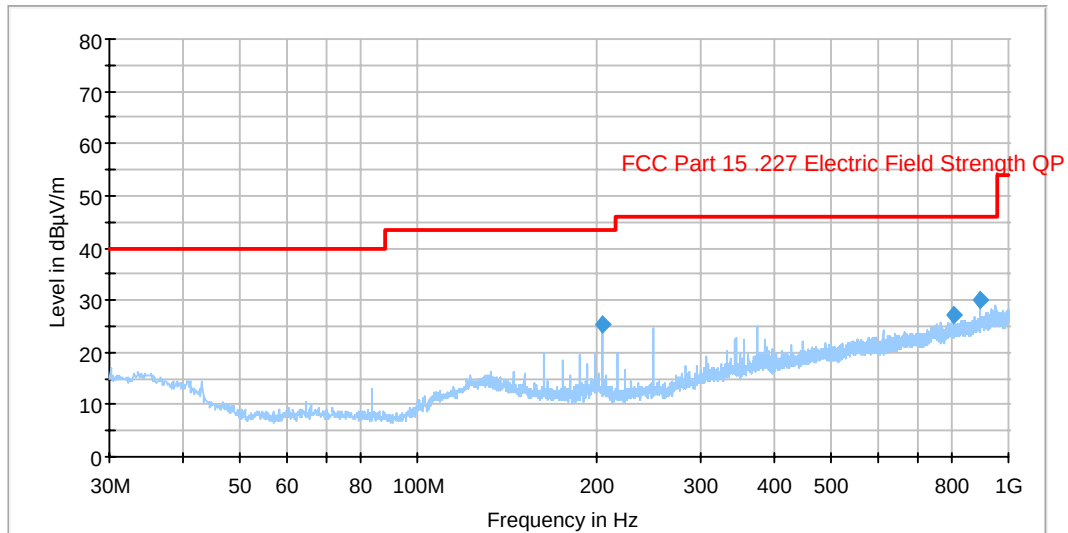
#### Environmental Conditions

|                    |           |
|--------------------|-----------|
| Temperature:       | 25 °C     |
| Relative Humidity: | 53 %      |
| ATM Pressure:      | 1010 mbar |

*The testing was performed by Henry Yang on 2006-5-26.*

Test mode: Transmitting

Auto Test(FCC 15.227)



Final Measurement Detector 1

| Frequency (MHz) | QuasiPeak (dB μ V/m) | Meas. Time (ms) | Bandwidth (kHz) | Antenna height (cm) | Polarity |
|-----------------|----------------------|-----------------|-----------------|---------------------|----------|
| 205.687275      | 25.2                 | 3000.000        | 120.000         | 204.0               | V        |
| 807.511975      | 27.1                 | 3000.000        | 120.000         | 253.0               | H        |
| 893.857225      | 30.2                 | 3000.000        | 120.000         | 150.0               | H        |

(continuation of the "Final Measurement Detector 1" table from column 6 ...)

| Frequency (MHz) | Turntable position (deg) | Corr. (dB) | Margin (dB) | Limit (dB μ V/m) | Comment |
|-----------------|--------------------------|------------|-------------|------------------|---------|
| 205.687275      | 8.0                      | -13.6      | 18.3        | 43.5             |         |
| 807.511975      | 194.0                    | -1.8       | 18.9        | 46.0             |         |
| 893.857225      | 226.0                    | -0.4       | 15.8        | 46.0             |         |

| Peak power level |         |          |           |        |              |            |           |                    |        |        |
|------------------|---------|----------|-----------|--------|--------------|------------|-----------|--------------------|--------|--------|
| Frequency        | Reading | Detector | Direction | Height | Antenna Loss | Cable loss | Amplifier | Calculated Reading | Limit  | Margin |
| MHz              | dBuV/M  | PK/QP/AV | Degree    | Meter  | dB           | dB         | dB        | dBuV/M             | dBuV/M |        |
| 27.145           | 44.4    | PK       | 119       | 1.0    | 31.8         | 0.84       | 26.8      | 50.24              | 100    | -49.76 |
| 27.145           | 41.2    | AV       | 119       | 1.0    | 31.8         | 0.84       | 26.8      | 47.04              | 80     | -32.96 |

## §15.227(b) - Out of Band Emission

### Standard Applicable

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

### EUT Setup

The radiated emission tests were performed in the 3-meter chamber B test site, using the setup accordance with the ANSI C63.4-2003. The specification used was the FCC Part 15.227 limits.

### Test Equipment List and Details

| Manufacturer    | Description          | Model | Serial Number | Calibration Date | Calibration Due Date |
|-----------------|----------------------|-------|---------------|------------------|----------------------|
| HP              | Amplifier            | 8447E | 1937A01046    | 2005-8-17        | 2006-8-17            |
| Rohde & Schwarz | EMI Test Receiver    | ESCI  | 100035        | 2005-8-17        | 2006-8-17            |
| ETS             | Passive Loop Antenna | 6512  | 00029604      | 2006-4-26        | 2007-4-26            |

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

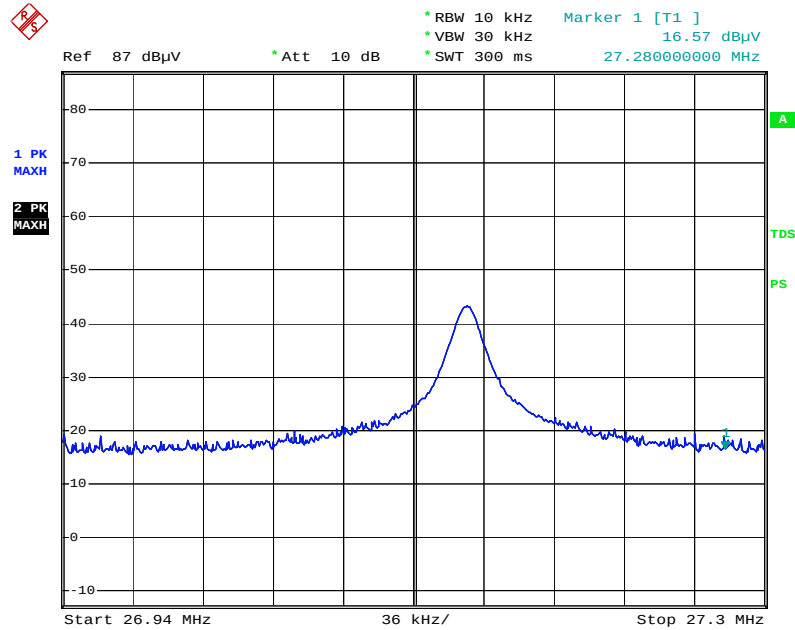
### Test Data

#### Environmental Conditions

|                    |           |
|--------------------|-----------|
| Temperature:       | 25 °C     |
| Relative Humidity: | 53 %      |
| ATM Pressure:      | 1010 mbar |

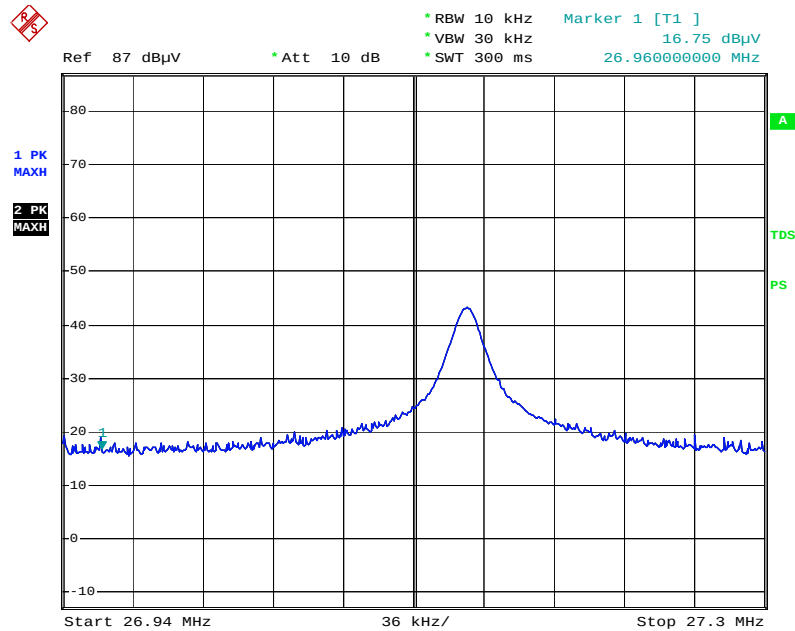
*The testing was performed by Deny Xiong on 2006-6-2.*

The result has been complied with the 15.227(b), see the following plot:



out of band1

Date: 2.JUN.2006 14:59:59



out of band2

Date: 2.JUN.2006 15:00:30