

# FCC PART 15.235

## EMI MEASUREMENT AND TEST REPORT

For

**Meisida Electronic Toys Co., Ltd.**

Anping , Industry Park (Anhai) , Fujian, China

**FCC ID: PV5MSD03431990**

<b>Report Type:</b> Original Report	<b>Product Type:</b> SUPER QUAD PLUS 2
<b>Test Engineer:</b> <u>Vicent Kang</u>	<i>Vicent Kang</i>
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<b>Reviewed By:</b> <u>Lisa Zhu</u>	<i>Lisa Zhu</i>
<b>Prepared By:</b>	Bay Area Compliance Laboratories Corp. (Shenzhen) 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China Tel: +86-755-33320018 Fax: +86-755-33320008

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\* This report may contain data that are not covered by the NVLAP accreditation and are marked with an asterisk “\*” (Rev.2)

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## GENERAL INFORMATION

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

The MEISIDA ELECTRONIC TOYS CO., LTD.'s product, model number: MSD0343 (49MHZ) or the "EUT" as referred to in this report is a SUPER QUAD PLUS 2 which measures approximately 34.0cm L x 14.0cm W x 4.0cm H, rated input voltage: DC 9.0V Battery.

*\* The test data gathered are from production sample, serial number: 0807038 provided by the manufacturer, we receive the EUT on 2008-07-14.*

### Objective

This Type approval report is prepared on behalf of *MEISIDA ELECTRONIC TOYS CO., LTD.* 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, 15.207, 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 Laboratory 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 Laboratory 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 Laboratory 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 and Industrial Canada registration test site No.: 5500A. 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 a National Institute of Standards and Technology (NIST) accredited laboratory, under the National Voluntary Laboratory Accredited Program (Lab Code 200707-0).



NVLAP LAB CODE 200707-0

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

## SYSTEM TEST CONFIGURATION

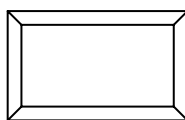
### Justification

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

### Equipment Modifications

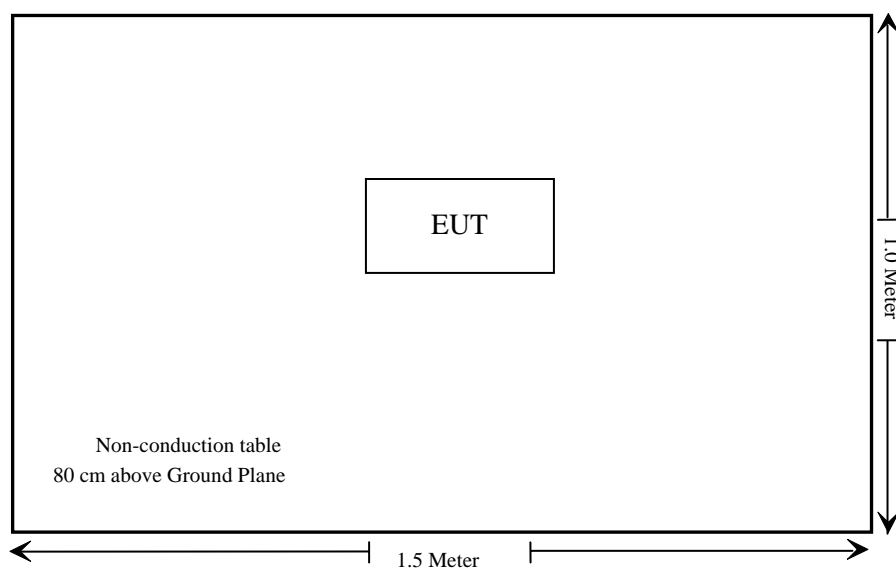
No modifications were made to the unit tested.

### Configuration of Test Setup



EUT

### Block Diagram of Test Setup



## SUMMARY OF TEST RESULTS

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

Note: \* Battery operation.

## **§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.

This product has a permanent antenna, fulfill the requirement of this section.

**Result:** Compliant.

Please refer to the EUT photos.

## §15.209(a) §15.235(a) §15.205- RADIATED EMISSIONS

### Standard Applicable

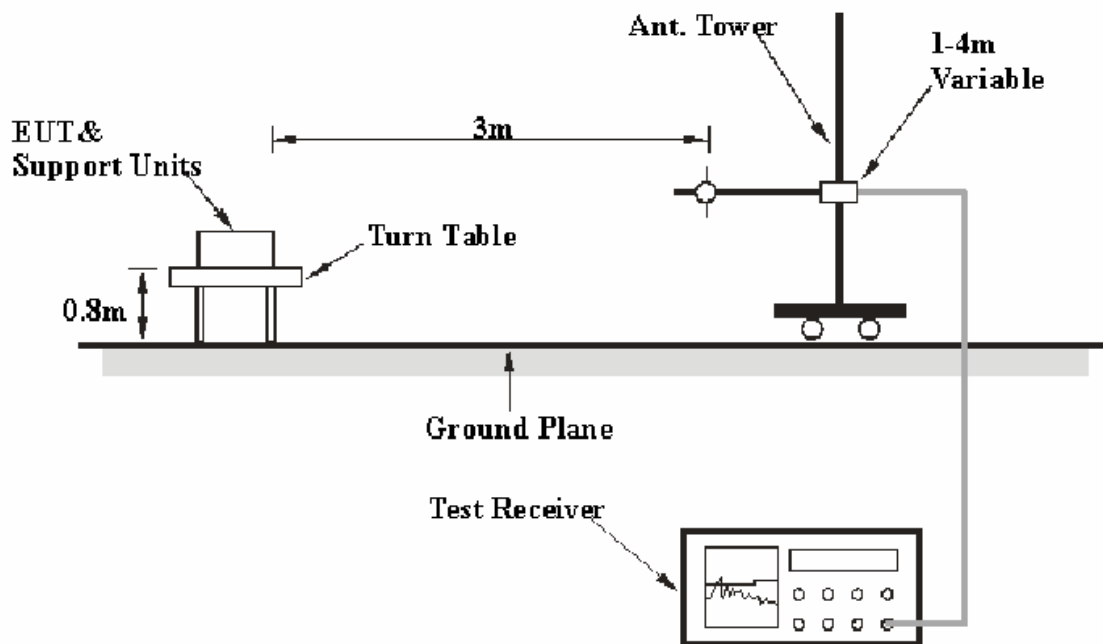
CFR47 Part15.205, 15.209 and 15.235

### 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  $\pm 4.0$  dB.

### EUT Setup



The radiated emission tests were performed in the chamber B test site, using the setup accordance with the ANSI C63.4-2003. The specification used was the FCC part15.205, 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
HP	Amplifier	8447E	1937A01046	2008-08-02	2009-08-02
Rohde & Schwarz	EMI Test Receiver	ESCI	100224	2007-10-16	2008-10-16
Sunol Sciences	Bilog Antenna	JB1	A040904-2	2008-04-12	2009-04-12

\* **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 harmonic 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 7dB means the emission is 7dB 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:

**6.8 dB at 99.72 MHz in the Horizontal polarization.**

**Test Data****Environmental Conditions**

<b>Temperature:</b>	25 °C
<b>Relative Humidity:</b>	56 %
<b>ATM Pressure:</b>	101.0 kPa

The testing was performed by Vicent Kang on 2008-09-18.

Test Mode: Transmitting

Freq. (MH)	Reading (dBμV)	Table Angle Deg	Antenna		Detector (PK/QP/ AV)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre- Amp, Gain (dB)	Cord. Amp. (dBμV/m)	FCC Part15.235/15.209		
			Height (m)	Polar (H/V)						Limit (dBμV/m)	Margin (dB)	Remarks
99.72	64.08	95	3.3	H	QP	8.40	0.52	36.30	36.7	43.5	6.8	Harmonic
797.76	43.86	2	1.0	H	QP	19.50	3.73	33.19	33.9	46	12.1	Harmonic
747.9	42.29	68	3.7	V	QP	19.00	3.69	34.28	30.7	46	15.3	Harmonic
398.88	52.7	235	1.3	V	QP	13.80	1.67	37.87	30.3	46	15.7	Harmonic
897.48	38.34	92	3.8	H	QP	20.40	3.87	32.41	30.2	46	15.8	Harmonic
698.04	43.81	192	1.2	H	QP	18.30	3.59	35.60	30.1	46	15.9	Harmonic
349.02	50.64	84	4.0	H	QP	12.80	1.58	37.72	27.3	46	18.7	Harmonic
49.86	83.74	78	4.0	H	AV	7.10	0.37	36.11	55.1	80	24.9	Fund.
49.86	91.84	180	2.5	V	AV	7.10	0.37	36.11	63.2	80	16.8	Fund.
49.86	83.84	78	4.0	H	PK	7.10	0.37	36.11	55.2	100	44.8	Fund.
49.86	91.94	180	2.5	V	PK	7.10	0.37	36.11	63.3	100	36.7	Fund.

\*Note 1: The Duty cycle is 100%

\*Note 2: The worst-case is located in stand orientation for fundamental.

\*Note 3: The worst-case is located in lie orientation for spurious emissions.

## §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
Rohde & Schwarz	EMI Test Receiver	ESCI	100224	2007-10-16	2008-10-16

\* **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:	101.0kPa

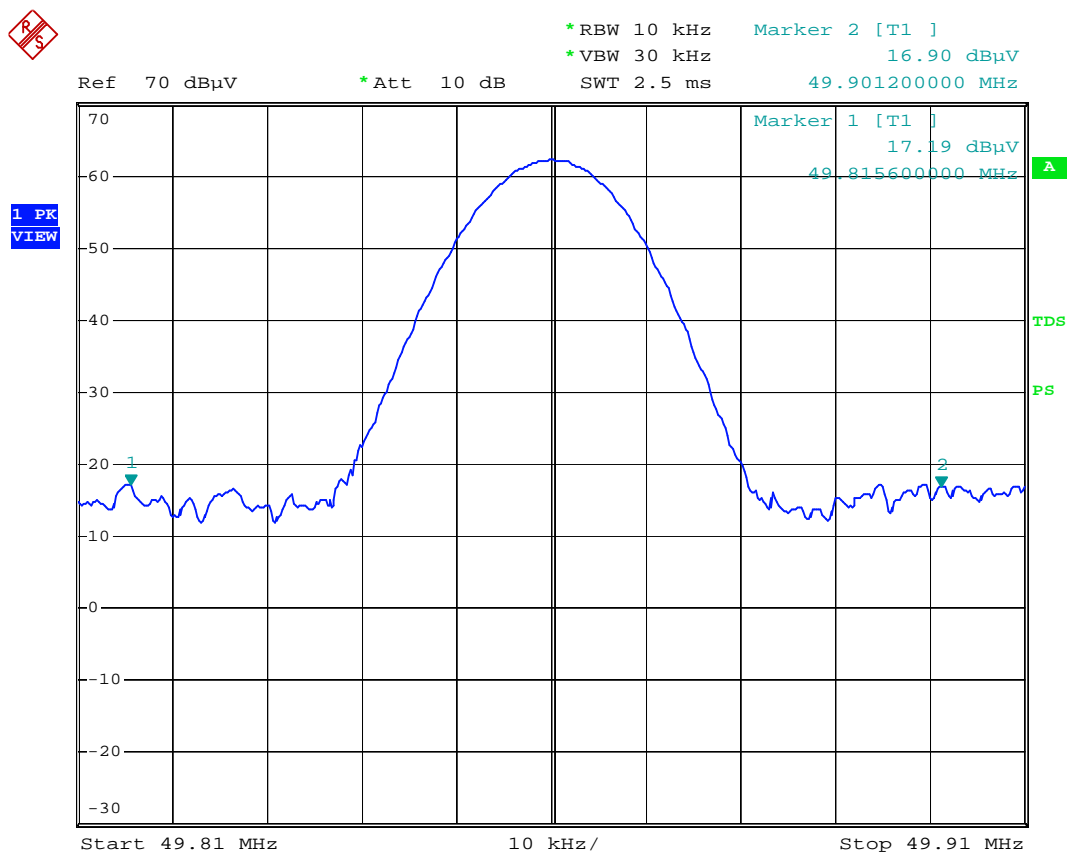
*The testing was performed by Vicent Kang on 2008-09-18.*

**Result:** Compliant.

Please refer to the plot attached.

*Test Mode: Transmitting*

Indicated		Table Angle Degree	Antenna Height (m)	Detector PK/AV/QP	Correction Factor			Cord. Amp. (dB $\mu$ V/m)	FCC Part 15.235/15.209	
Freq. (MHz)	Reading (dB $\mu$ V)				Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)		Limit (dB $\mu$ V/m)	Margin (dB)
49.8156	45.83	150	2.5	PK	7.10	0.37	36.11	17.19	40	22.81
49.9012	45.54	273	2.5	PK	7.10	0.37	36.11	16.90	40	23.10

**Plot of Band Edge**

Date: 18.SEP.2008 16:09:26

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