

FCC PART 15.249 EMI MEASUREMENT AND TEST REPORT

For

JOYO Electronics Company Limited

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FCC ID: R4GJY278T01

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This Report Concerns: <input checked="" type="checkbox"/> Original Report	Equipment Type: Wireless Baby Monitor
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Report No.: RSZ05122002	
Test Date: December 23-28, 2005	
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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

Product Description for Equipment Under Test (EUT)

The JOYO Electronics Company Limited 's product, model number: JY-278T or the "EUT" as referred to in this report is a Wireless Baby Monitor. The EUT is measured approximately 13.0 cm L x 10.0 cm W x 10.0 cm H, rated input voltage: DC 9 V battery.

Adaptor:

manufacturer: KINGS ELECTRIC CO., LTD. model: 41G-9-500;
input:230V~50Hz, output: DC 9V 500mA

** The test data gathered are from production sample, serial number: JY0512027 provided by the manufacturer, we received EUT on 2005-12-20.*

Objective

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

The tests were performed in order to determine compliance with FCC Part 15, Subpart C, and section 15.203,15.205,15.207,15.209 and 15.249 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>

Local Support Equipment List and Details

Manufacturer	Description	Model	Serial Number	FCC ID
PHILIPS	Color TV PG	PM5418	LO670816	DoC
N/A	Audio Generator	NY2201	N/A	DoC

External I/O Cable

Cable Description	Length (M)	From/Port	To
Unshielded AV Cable	0.65	EUT	AV Player
Unshielded Power Cable	1.90	EUT	Adaptor

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

The special accessories were provided by Bay Area Compliance Lab Corp. (ShenZhen).

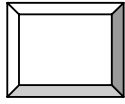
Block Diagram/Schematics

Please refer to the tech.

Equipment Modifications

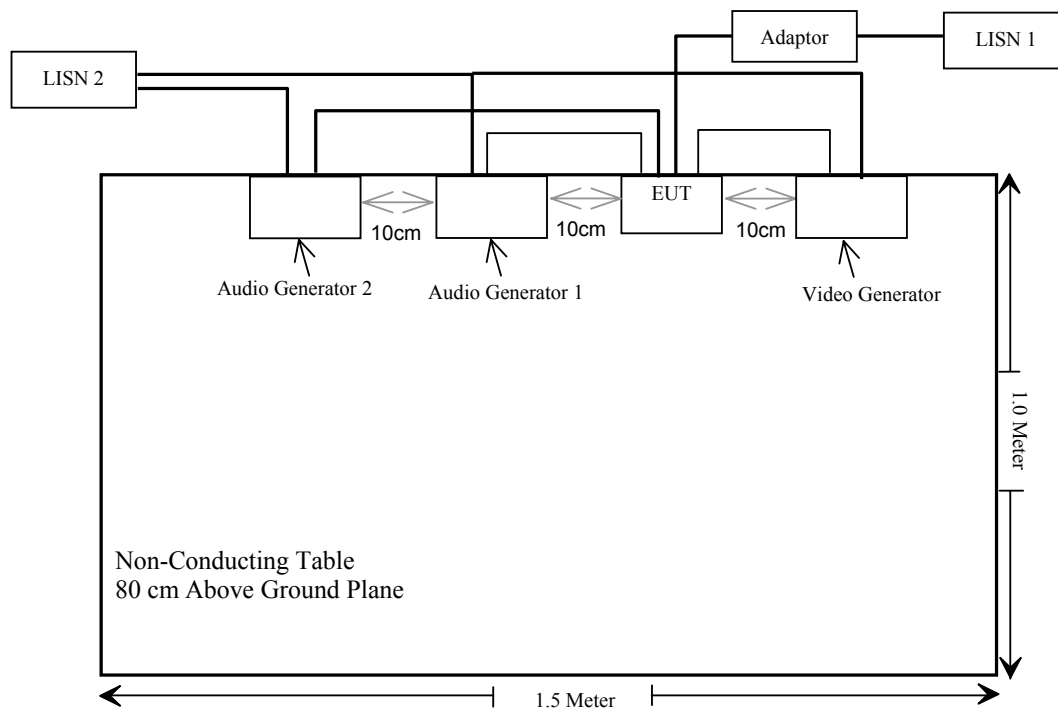
Bay Area Compliance Lab Corp. (ShenZhen) has not done any modification on the EUT.

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 Bands of Operation	Compliant
§15.207(a)	Conduction Emission	Compliant
§15.209(a), §15.249(a), §15.249(c)	Radiated Emission	Compliant*
§15.249(d)	Out of band emission	Compliant

* Within measurement uncertainty

§15.203 - ANTENNA APPLICATION

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

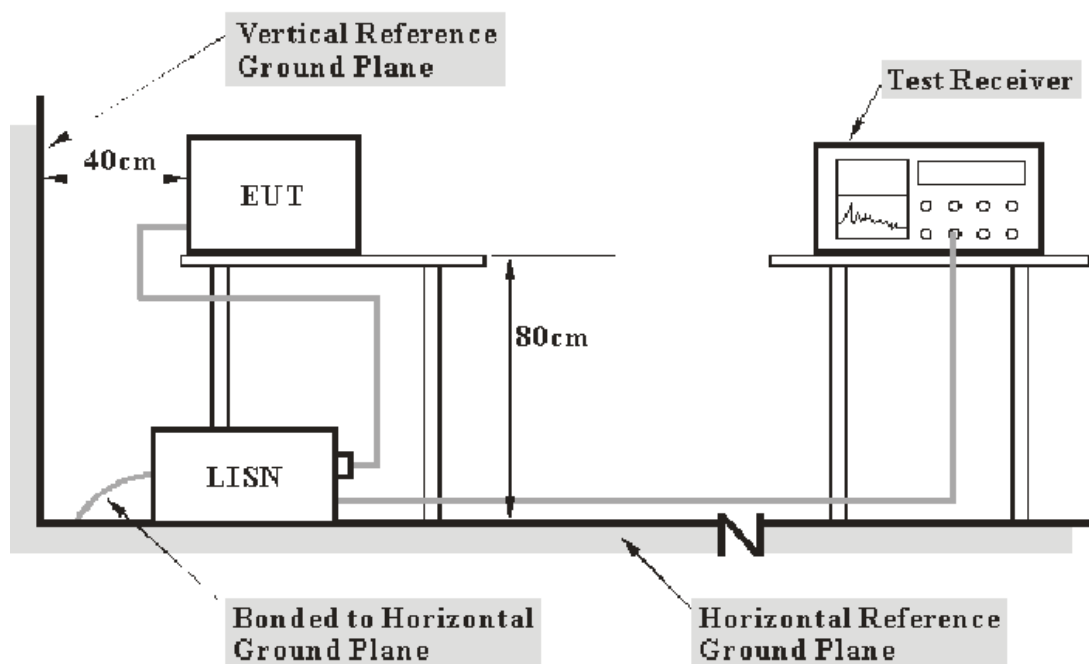
§15.207 - CONDUCTED EMISSION

Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, and LISN.

Based on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement at Bay Area Compliance Lab Corp. (ShenZhen) is ± 2.4 dB.

EUT Setup



- Note:** 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The setup of EUT is according with per ANSI C63.4-2003 measurement procedure. The specification used was with the FCC Part 15 .207 limits.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.

The adaptor was connected to a 120 VAC/60 Hz power source.

EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

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

<i>Frequency Range</i>	<i>IFBW</i>
150 kHz – 30 MHz	9 kHz

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Com-Power	L.I.S.N.	LI-200	12005	N/A	N/A
Com-Power	L.I.S.N.	LI-200	12008	N/A	N/A
Rohde & Schwarz	EMI Test Receiver	ESCS30	830245/006	2005-1-26	2006-1-26
Rohde & Schwarz	L.I.S.N.	ESH2-Z5	892107/021	2005-2-28	2006-2-28

* Com-Power's LISN were used as the supporting equipment.

* **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 six (6) highest emissions of the EUT.

All data was recorded in the Quasi-peak and average detection mode.

From the audio signal generator connect to the speaker, the distance between the EUT and the speaker was 10 cm.

Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Part 15.207, with the worst margin reading of:

-26.80 dB at 0.985 MHz in the Neutral conductor mode.

Test Data**Environmental Conditions**

Temperature:	25 ° C
Relative Humidity:	65%
ATM Pressure:	1000mbar

The testing was performed by Simon Mo on 2005-12-23.

Test mode: Adaptor Running

LINE CONDUCTED EMISSIONS				FCC PART 15 .207	
Frequency MHz	Amplitude dBμV	Detector QP/AV	Phase Line/Neutral	Limit dBμV	Margin dB
0.985	29.20	QP	Neutral	56.00	-26.80
0.585	18.90	AV	Neutral	46.00	-27.10
0.585	28.70	QP	Neutral	56.00	-27.30
0.985	16.80	AV	Neutral	46.00	-29.20
0.980	25.90	QP	Line	56.00	-30.10
0.160	18.90	AV	Neutral	50.00	-31.10
0.600	23.00	QP	Line	56.00	-33.00
0.980	12.60	AV	Line	46.00	-33.40
1.595	22.20	QP	Neutral	56.00	-33.80
0.600	12.00	AV	Line	46.00	-34.00
1.560	21.90	QP	Line	56.00	-34.10
9.675	20.10	QP	Line	56.00	-35.90
0.160	28.90	QP	Neutral	65.46	-36.56
1.560	9.40	AV	Line	46.00	-36.60
1.595	8.30	AV	Neutral	46.00	-37.70
0.265	23.20	QP	Neutral	61.27	-38.07
0.290	12.40	AV	Line	50.52	-38.12
0.265	13.00	AV	Neutral	51.27	-38.27
0.175	16.30	AV	Line	54.72	-38.42
0.175	25.70	QP	Line	64.72	-39.02
0.290	21.30	QP	Line	60.52	-39.22
9.525	20.40	QP	Neutral	60.00	-39.60
9.525	8.40	AV	Neutral	50.00	-41.60
9.675	7.80	AV	Line	50.00	-42.20

Plot(s) of Test Data

Plot(s) of Test Data is presented hereinafter as reference.

Conducted Emission Test fcc15

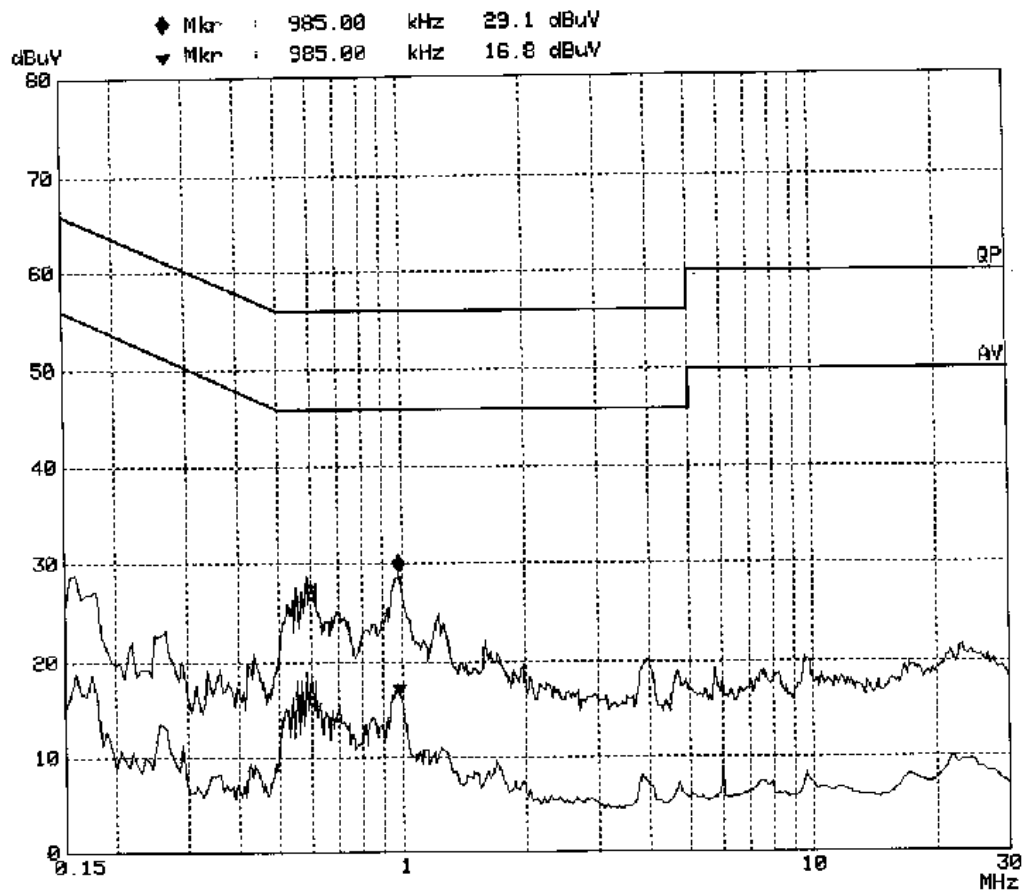
EUT: Wireless Baby monitor m/n:jy-278T
Manuf: JOYO
Op Cond: ADAPTER RUNNING
Operator: SIMON
Test Spec: AC 120V/60Hz N
Comment: Temp:25
Humi:65%
Date: 13. Dec 15 22:43

Scan Settings (1 Range)

Frequencies			Receiver Settings				
Start	Stop	Step	IF BW	Detector	M-Time	Atten Preamp	
150k	30M	5k	9k	PK+AV	20ms AUTO	LN OFF	

Transducer No.	Start	Stop	Name
1	9k	2150M	FACTOR

Final Measurement: x QP / + AV
Meas Time: 1 s
Subranges: 25
Acc Margin: 6dB



Conducted Emission Test fcc15

EUT: Wireless Baby monitor m/n:jy-278T
Manuf: JOYO
Op Cond: ADAPTER RUNNING
Operator: SIMON
Test Spec: AC 120V/60Hz L
Comment: Temp:25
Humi:65%
Date: 13. Dec 15 22:11

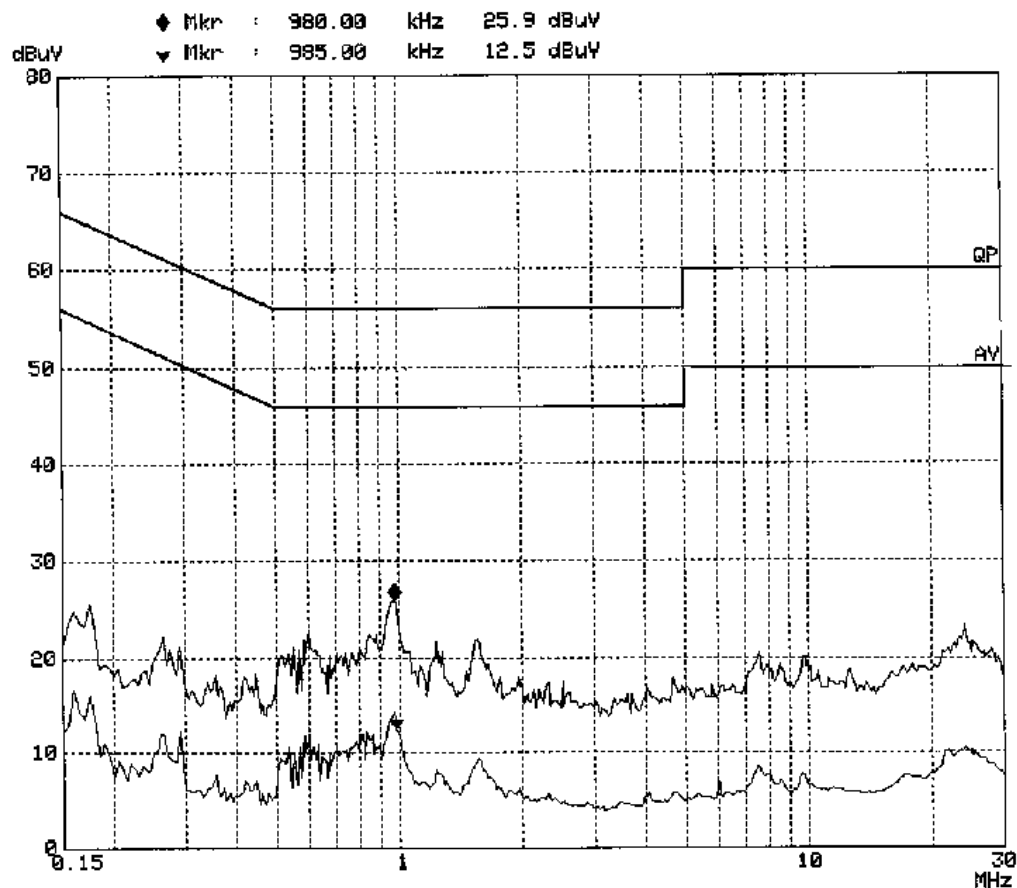
Scan Settings (1 Range)

Frequencies			Receiver Settings			
Start	Stop	Step	IF BW	Detector	M-Time	Atten Preamp
150k	30M	5k	9k	PK+AV	20ms	AUTO LN OFF

Transducer No.	Start	Stop	Name
1	9k	2150M	FACTOR

Final Measurement: x QP / + AV

Meas Time: 1 s
Subranges: 25
Acc Margin: 6dB



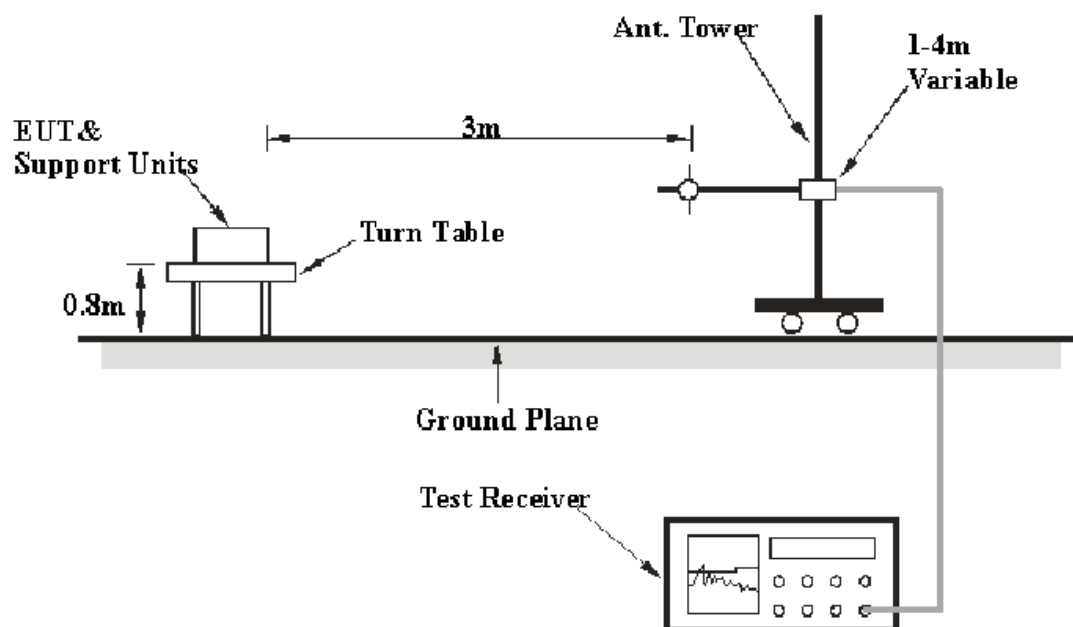
§15.205 §15.209(a) §15.249(a) - RADIATED EMISSION

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 Bay Area Compliance Lab Corp. (ShenZhen) is ± 4.0 dB.

EUT Setup



The radiated emission tests were performed in the 3-meter Chamber B, using the setup accordance with the ANSI C63.4-2003. The specification used was the FCC 15.209 and FCC 15.249 limits.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.

The adaptor was connected to a 120 VAC/60 Hz power source.

EMI Test Receiver Setup

The system was investigated from 30 MHz to 25000 MHz.

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

<i>Frequency Range</i>	<i>RBW</i>	<i>Video B/W</i>
30 – 1000 MHz	100 kHz	300 kHz
1000 MHz – 25000 MHz	1MHz	3 MHz

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCI	100028	2005-8-17	2006-8-17
HP	Amplifier	HP8447E	1937A01046	2005-8-17	2006-8-17
Sunol Sciences	Broadband Antenna	JB1	A040904-2	2005-4-28	2006-4-28
HP	Spectrum analyzer	8593A	2919A00242	2005-2-28	2006-2-28
HP	Preamplifier	8449B	3008A00277	2005-8-17	2006-8-17
SUNOL SCIENCES	Horn Antenna	DRH-118	A052604	2005-7-20	2006-7-20

* **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

For the radiated emissions test, the adaptor power cords were connected to the AC floor outlet.

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.

From the audio generator connect to the speaker, the distance between the EUT and the speaker was 10 cm.

Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Loss and Cable Loss, and subtracting the Amplifier Gain from the Meter 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 limit. The equation for margin calculation is as follows:

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

Test Results Summary

According to the data in the following table, the EUT complied with the FCC Part 15.249, with the worst margin reading of:

30 -1000MHz: **-5.7 dB** at **31.28 MHz** in the **Vertical** polarization.
 1-25 GHz (Low channel): **-4.9 dB** at **2411 MHz** in the **Vertical** polarization.
 1-25 GHz (Middle channel): **-3.8 dB** at **2433 MHz** in the **Vertical** polarization.
 1-25 GHz (High channel): **-6.6 dB** at **2473 MHz** in the **Vertical** polarization.

Test Data

Environmental Conditions

Temperature:	25 ° C
Relative Humidity:	53%
ATM Pressure:	1000mbar

The testing was performed by Simon Mo on 2005-12-23.

Test mode: Transmitting

Frequency	Meter Reading	Detector	Direction	Height	Polar	Antenna Loss	Cable loss	Amplifier Gain	Corr. Ampl.	FCC Part 15.249	
MHz	dBuV/m	PK/QP/AV	Degree	Meter	H / V	dB	dB	dB	dBuV/m	Limit dBuV/m	Margin dB
31.28	38.5	PK	45	1.0	V	24.1	0.6	28.8	34.4	40.0	-5.7
39.16	40.0	PK	180	1.0	V	17.7	0.6	28.8	29.5	40.0	-10.5
30.85	29.4	PK	45	1.0	H	24.1	0.6	28.8	25.3	40.0	-14.7
112.91	39.5	PK	60	1.0	V	12.2	1.0	28.5	24.2	43.5	-19.4
714.17	31.1	PK	360	1.2	H	20.3	3.1	28.6	25.9	46.0	-20.1
127.21	36.1	PK	120	1.5	V	14.4	1.1	28.5	23.1	43.5	-20.5
127.21	35.7	PK	270	1.2	H	14.4	1.1	28.5	22.7	43.5	-20.8
112.90	36.5	PK	180	1.5	H	12.2	1.0	28.5	21.2	43.5	-22.3
169.59	35.2	PK	270	1.0	H	12.5	1.2	28.3	20.6	43.5	-22.9
169.59	33.0	PK	60	1.0	V	12.5	1.2	28.3	18.4	43.5	-25.1
234.16	34.8	PK	45	1.2	H	11.7	1.3	27.7	20.1	46.0	-25.9
489.02	24.9	PK	90	1.0	V	17.9	2.3	28.5	16.6	46.0	-29.4

Frequency	Meter	Detector	Direction	Height	Polar	Antenna	Cable	Amplifier	Corr.	FCC Part 15.249		
	Reading									Limit	Margin	Comment
MHz	dBuV/m	PK/QP/AV	Degree	Meter	H / V	dB	dB	dB	dBuV/m	dBuV/m	dB	
1GHz-25GHz (Low Channel)												
2411	92.35	AV	180	1.2	V	28.1	3.7	35.0	89.2	94	-4.9	fundamental
9644	33.48	AV	60	1.0	H	37.6	7.3	34.1	44.3	54	-9.7	harmonic
9644	33.48	AV	60	1.0	V	37.6	7.3	34.1	44.3	54	-9.7	harmonic
7233	33.48	AV	180	1.2	V	35.8	6.1	33.7	41.7	54	-12.3	harmonic
2411	84.73	AV	180	1.2	H	28.1	3.7	35.0	81.5	94	-12.5	fundamental
2411	102.8	PK	45	1.0	V	28.1	3.7	35.0	99.6	114	-14.4	fundamental
9644	48.67	PK	45	1.2	H	37.6	7.3	34.1	59.5	74	-14.5	harmonic
7233	30.98	AV	180	1.2	H	35.8	6.1	33.7	39.2	54	-14.8	harmonic
4822	33.48	AV	60	1.0	H	33.8	5.2	33.4	39.1	54	-14.9	harmonic
4822	33.48	AV	60	1.0	V	33.8	5.2	33.4	39.1	54	-14.9	harmonic
9644	48.24	PK	45	1.2	V	37.6	7.3	34.1	59.0	74	-15.0	harmonic
4822	50.98	PK	45	1.0	V	33.8	5.2	33.4	56.6	74	-17.4	harmonic
7233	47.01	PK	45	1.2	H	35.8	6.1	33.7	55.2	74	-18.8	harmonic
4822	49.04	PK	45	1.0	H	33.8	5.2	33.4	54.6	74	-19.4	harmonic
7233	46.04	PK	45	1.2	V	35.8	6.1	33.7	54.2	74	-19.8	harmonic
2411	94.03	PK	45	1.0	H	28.1	3.7	35.0	90.8	114	-23.2	fundamental

Frequency	Meter	Detector	Direction	Height	Polar	Antenna	Cable	Amplifier	Corr.	FCC Part 15.249		
	Reading									Limit	Margin	Comment
MHz	dBuV/m	PK/QP/AV	Degree	Meter	H / V	dB	dB	dB	dBuV/m	dBuV/m	dB	
1GHz-25GHz (Middle Channel)												
2433	93.40	AV	180	1.2	V	28.1	3.7	35.0	90.2	94	-3.8*	fundamental
9732	33.48	AV	60	1.0	H	38.0	7.0	34.1	44.4	54	-9.6	harmonic
9732	33.48	AV	60	1.0	V	38.0	7.0	34.1	44.4	54	-9.6	harmonic
4866	35.41	AV	60	1.0	V	33.8	5.2	33.4	41.0	54	-13.0	harmonic
2433	83.28	AV	180	1.2	H	28.1	3.7	35.0	80.1	94	-13.9	fundamental
9732	48.88	PK	45	1.2	V	38.0	7.0	34.1	59.8	74	-14.2	harmonic
9732	48.28	PK	45	1.2	H	38.0	7.0	34.1	59.2	74	-14.8	harmonic
2433	102.4	PK	45	1.0	V	28.1	3.7	35.0	99.2	114	-14.8	fundamental
7299	30.98	AV	180	1.2	V	35.8	6.1	33.7	39.2	54	-14.8	harmonic
4866	33.40	AV	60	1.0	H	33.8	5.2	33.4	39.0	54	-15.0	harmonic
7299	30.25	AV	180	1.2	H	35.8	6.1	33.7	38.5	54	-15.6	harmonic
7299	47.88	PK	45	1.2	H	35.8	6.1	33.7	56.1	74	-17.9	harmonic
7299	47.01	PK	45	1.2	V	35.8	6.1	33.7	55.2	74	-18.8	harmonic
4866	48.28	PK	45	1.0	H	33.8	5.2	33.4	53.9	74	-20.1	harmonic
4866	48.28	PK	45	1.0	V	33.8	5.2	33.4	53.9	74	-20.1	harmonic
2433	93.42	PK	45	1.0	H	28.1	3.7	35.0	90.2	114	-23.8	fundamental

* Within measurement uncertainty

Frequency MHz	Meter Reading dBuV/m	Detector PK/QP/AV	Direction Degree	Height Meter	Polar H / V	Antenna Loss dB	Cable loss dB	Amplifier Gain dB	Corr. Ampl. dBuV/m	FCC Part 15.249		
										Limit dBuV/m	Margin dB	Comment
1GHz-25GHz (High Channel)												
2473	90.58	AV	180	1.2	V	28.1	3.7	35.0	87.4	94	-6.6	(fundamental)
9892	33.48	AV	60	1.0	H	37.6	7.3	34.1	44.3	54	-9.7	(harmonic)
9892	33.48	AV	60	1.0	V	37.6	7.3	34.1	44.3	54	-9.7	(harmonic)
9892	48.67	PK	45	1.2	V	37.6	7.3	34.1	59.5	74	-14.5	(harmonic)
2473	82.41	AV	180	1.2	H	28.1	3.7	35.0	79.2	94	-14.8	(fundamental)
7419	30.98	AV	180	1.2	H	35.8	6.1	33.7	39.2	54	-14.8	(harmonic)
7419	30.98	AV	180	1.2	V	35.8	6.1	33.7	39.2	54	-14.8	(harmonic)
4946	33.48	AV	60	1.0	H	33.8	5.2	33.4	39.1	54	-14.9	(harmonic)
9892	48.28	PK	45	1.2	H	37.6	7.3	34.1	59.1	74	-14.9	(harmonic)
4946	33.48	AV	60	1.0	V	33.8	5.2	33.4	39.1	54	-14.9	(harmonic)
2473	100.46	PK	45	1.0	V	28.1	3.7	35.0	97.3	114	-16.7	(fundamental)
7419	46.54	PK	45	1.2	H	35.8	6.1	33.7	54.7	74	-19.3	(harmonic)
7419	46.54	PK	45	1.2	V	35.8	6.1	33.7	54.7	74	-19.3	(harmonic)
4946	48.67	PK	45	1.0	H	33.8	5.2	33.4	54.3	74	-19.7	(harmonic)
4946	48.28	PK	45	1.0	V	33.8	5.2	33.4	53.9	74	-20.1	(harmonic)
2473	91.78	PK	45	1.0	H	28.1	3.7	35.0	88.6	114	-25.4	(fundamental)

§15.249(d) – OUT OF BAND EMISSION

Standard Applicable

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.

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
HP	Amplifier	8447E	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	2005-4-28	2006-4-28
HP	Amplifier	8447D	2994A09795	2005-8-17	2006-8-17
Rohde & Schwarz	EMI Test Receiver	ESCI	100028	2005-8-17	2006-8-17
Sunol Sciences	Broadband Antenna	JB1	A040904-1	2005-4-28	2006-4-28

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

Test Data

Environmental Conditions

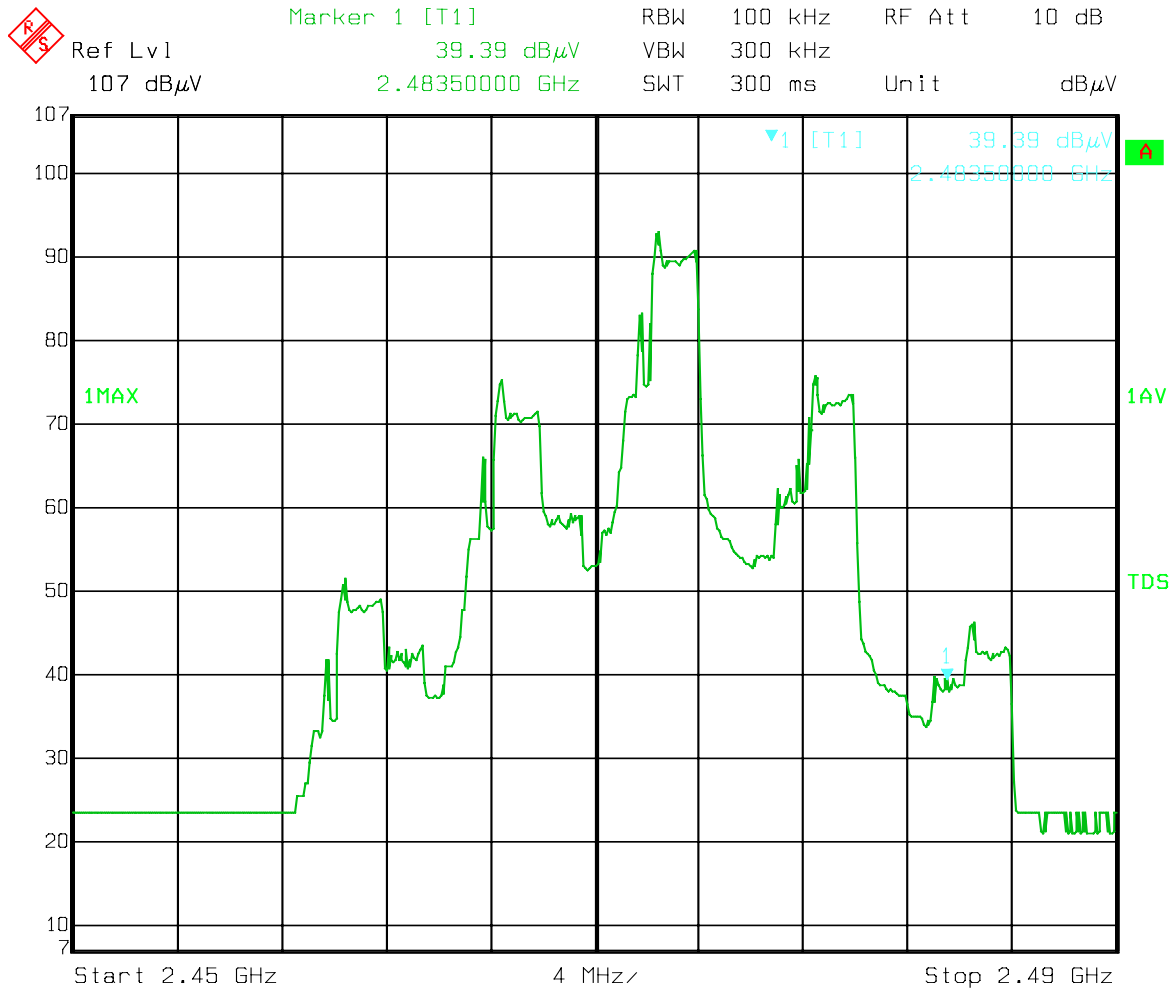
Temperature:	25 °C
Relative Humidity:	55%
ATM Pressure:	1016mbar

The testing was performed by Simon Mo on 2005-12-28.

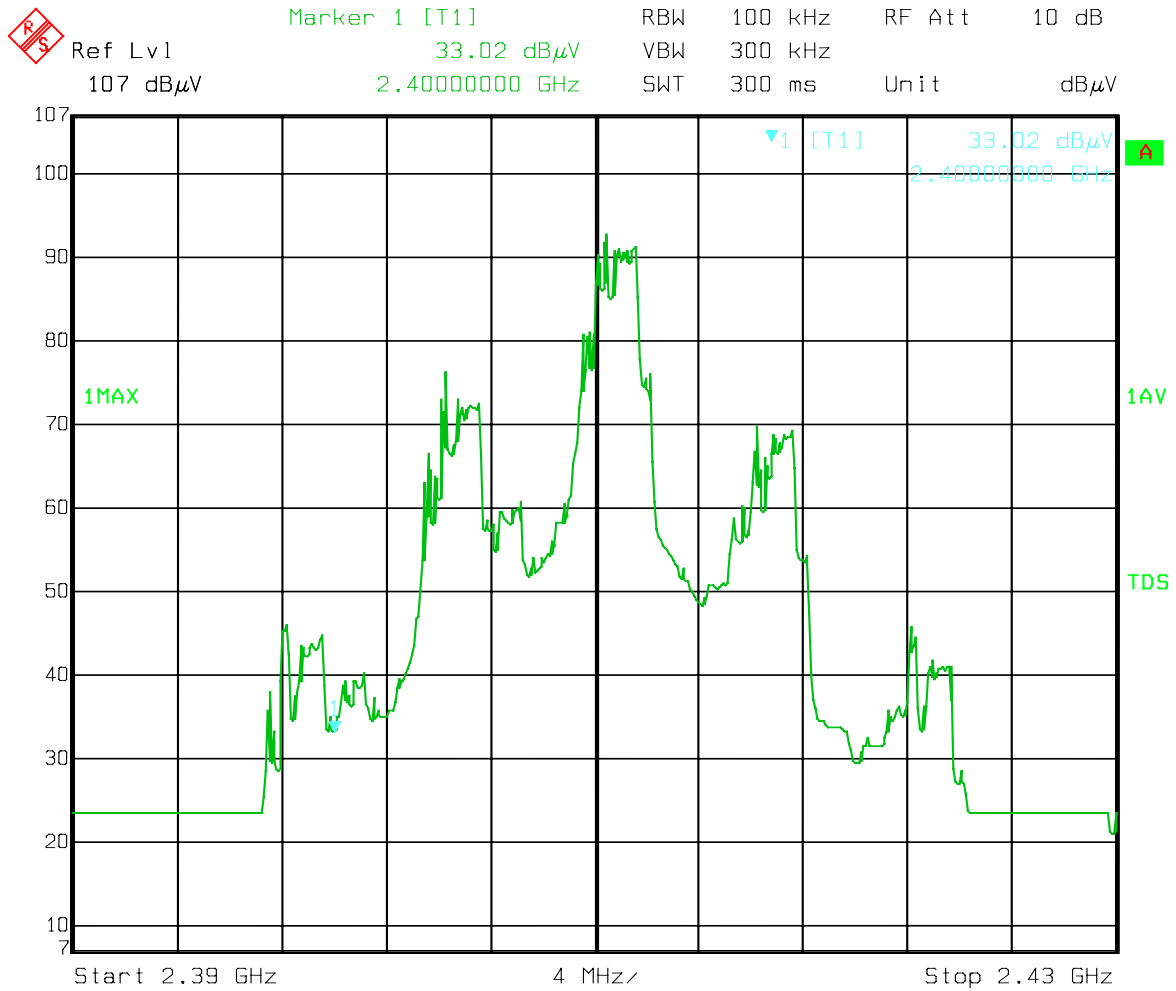
The result has been complied with the 15.249(d), see the following plot:

Frequency MHz	Emission dBμV	Limit dBμV/m
2483.5	39.39	54
2400.0	33.02	54

Test Result: Pass



Date: 17.JAN.2006 15:52:09



Date: 17.JAN.2006 16:01:47