FCC PART 15.235
EMI MEASUREMENT AND TEST REPORT

For

SHANTOU CITY HUASHENGDA ELECTRONICS CO., LTD.

HUASHENGDA BUILDING, CHENDIAN INDUSTRIAL ZONE, CHAONAN DISTRICT, SHANTOU CITY, GUANGDONG, CHINA

FCC ID: TG52970

July 15, 2005

This Report Concerns:	**Equipment Type:**
☒ Original Report	Transmitter, WIRELESS HEADPHONE

Test Engineer:	Louise Lu
Report No.:	RSZ05062301
Test Date:	June 27-July 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

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 SHANTOU CITY HUASHENGDA ELECTRONICS CO., LTD. 's product, model number: HP-WH2970 or the "EUT" as referred to in this report is a WIRELESS HEADPHONE. The EUT is measured approximately 8.30cm L x 6.20cm W x 2.40cm H, rated input voltage: DC 12 V adapter or 9V battery.

AC/DC Adapter:
Model: YD-35-120020
Input: 120V AC 60Hz
Output: 12V DC 200mA.

** The test data gathered are from production sample, serial number: 29700001, provided by the manufacturer.*

Objective

This Type approval report is prepared on behalf of *SHANTOU CITY HUASHENGDA ELECTRONICS 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 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
NANYAN	Audio Generator	NY2201	019584	DoC
NANYAN	Audio Generator	NY2201	019796	DoC

External I/O Cable

Cable Description	Length (M)	From/Port	To
Unshielded detachable Audio Cable	0.62	EUT	Audio Generator
Unshielded Undetachable adapter Cable	1.65	EUT	Adapter

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 supplied by manufactures.

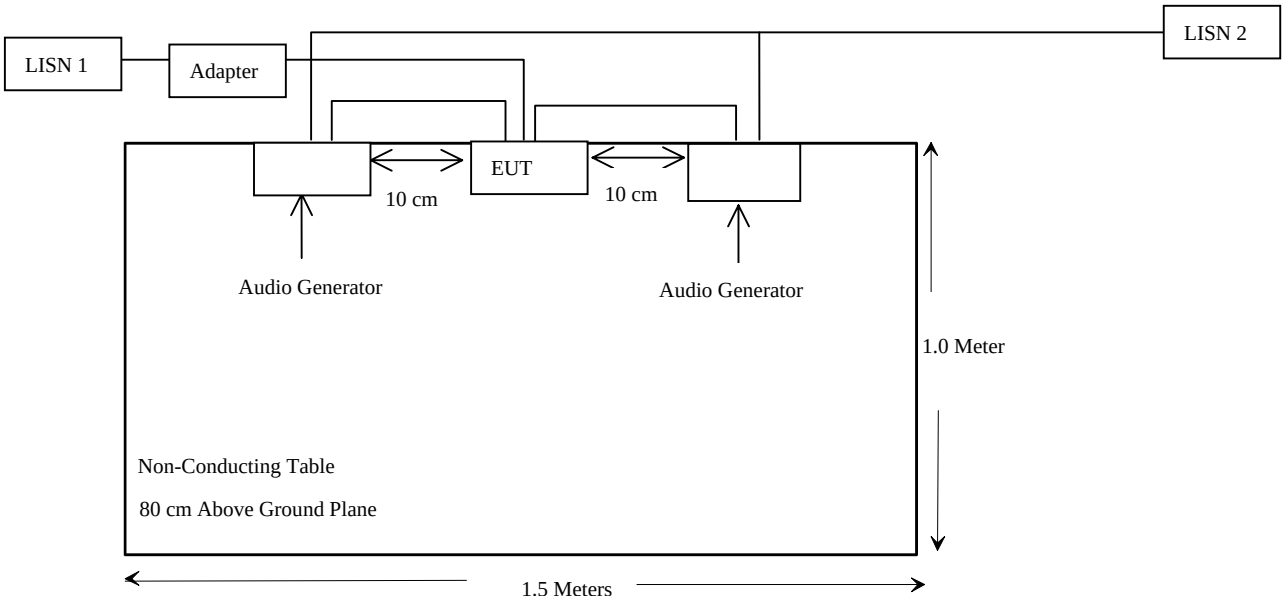
Equipment Modifications

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

Configuration of Test Setup

Audio Generator EUT Audio Generator

Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

FCC RULES	DESCRIPTION OF TEST	RESULT
§15.203	Antenna requirement	Compliant
§15.207(a)	Conducted Emission	Compliant
§15.209(a) §15.235(a) §15.205	Radiated Emission	Compliant
§15.235(b)	Band Edge Testing	Compliant

Note: The highest clocks of the EUT was 49.85 MHz.

§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

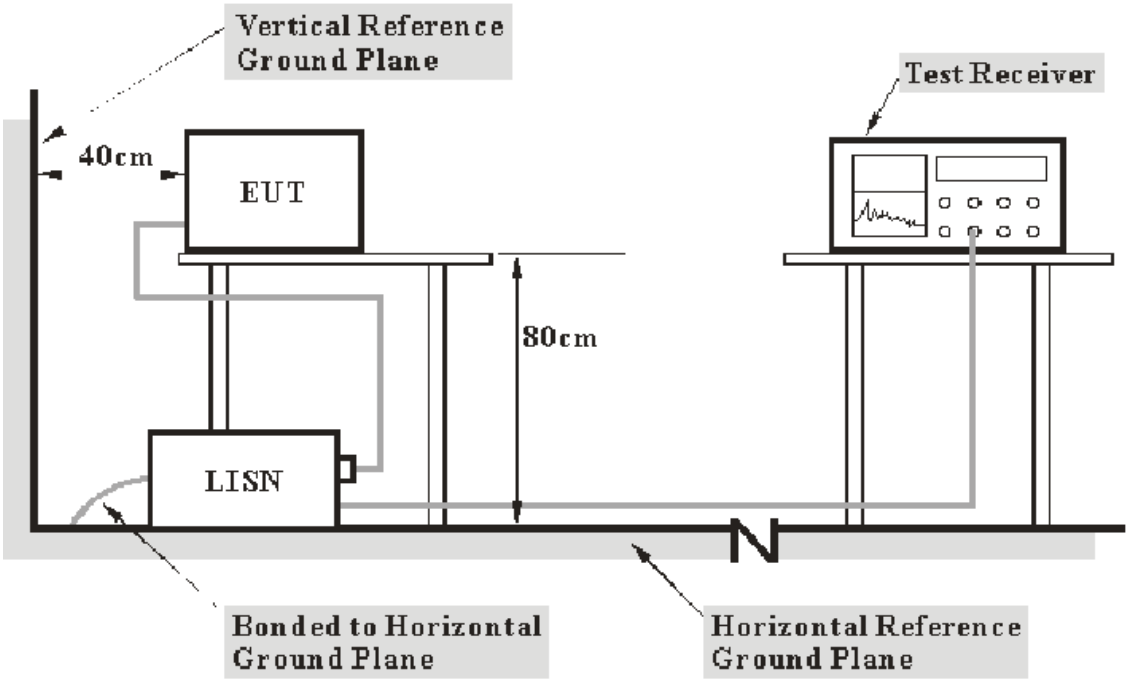
§15.207(a) - CONDUCTED EMISSION

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 adapter 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:

Frequency Range	***IFBW***
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

During the conducted emission test, the adapter was connected to the outlet of the first LISN, and all other support equipment power cords were connected to the outlet of the second LISN.

Maximizing procedure were performed on the six (6) highest emissions of the EUT.

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

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:

-20.52 dB at **0.245 MHz** in the **Neutral** conductor mode.

Test Data

Environmental Conditions

Temperature:	26 ° C
Relative Humidity:	56%
ATM Pressure:	1000mbar

The testing was performed by Louise Lu on 2005-6-27.

Test Mode: Transmitting

LINE CONDUCTED EMISSIONS				FCC PART 15.207	
Frequency MHz	Amplitude dBµV	Detector QP/AV	Phase Line/Neutral	Limit dBµV	Margin dB
0.245	41.40	QP	Neutral	61.92	-20.52
0.565	29.70	QP	Line	56.00	-26.30
0.425	30.20	QP	Line	57.35	-27.15
3.990	27.80	QP	Neutral	56.00	-28.20
0.150	37.20	QP	Line	66.00	-28.80
3.990	14.40	AV	Neutral	46.00	-31.60
1.210	23.20	QP	Line	56.00	-32.80
3.945	21.40	QP	Line	56.00	-34.60
0.565	11.20	AV	Line	46.00	-34.80
12.975	24.80	QP	Neutral	60.00	-35.20
1.210	10.70	AV	Line	46.00	-35.30
19.755	24.30	QP	Neutral	60.00	-35.70
1.915	9.50	AV	Line	46.00	-36.50
1.915	19.40	QP	Line	56.00	-36.60
3.945	9.00	AV	Line	46.00	-37.00
9.230	22.60	QP	Neutral	60.00	-37.40
19.755	12.20	AV	Neutral	50.00	-37.80
12.975	11.90	AV	Neutral	50.00	-38.10
7.275	21.70	QP	Neutral	60.00	-38.30
0.245	13.10	AV	Neutral	51.92	-38.82
0.425	7.70	AV	Line	47.35	-39.65
7.275	10.30	AV	Neutral	50.00	-39.70
9.230	9.00	AV	Neutral	50.00	-41.00
0.150	9.70	AV	Line	56.00	-46.30

Plot(s) of Test Data

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

Conduction Disturbance Test
FCC Part15

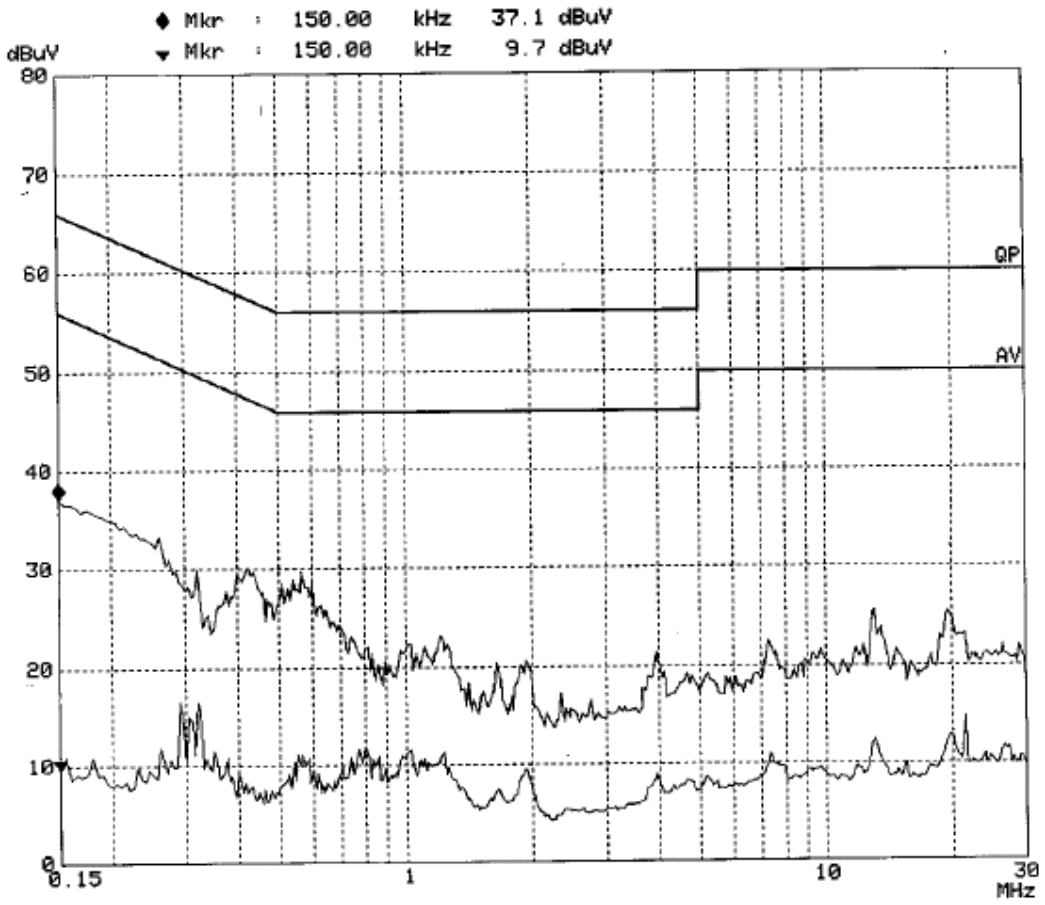
EUT: WIRELESS HEADPHONE M/N: HP_WH2970
Manuf: HUASHENGDA
Op Cond: Transmitting
Operator: Louise
Test Spec: AC 120V/60Hz L
Comment: Temp:28
Humi:61%
Date: 27. Jun 05 16:47

Scan Settings (1 Range)

Frequencies			Receiver Settings				
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp
150k	30M	5k	9k	PK+AV	10ms	AUTO	LN OFF

Transducer No.	Start	Stop	Name
1	9k	30M	ESH3

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



Conduction Disturbance Test
FCC Part15

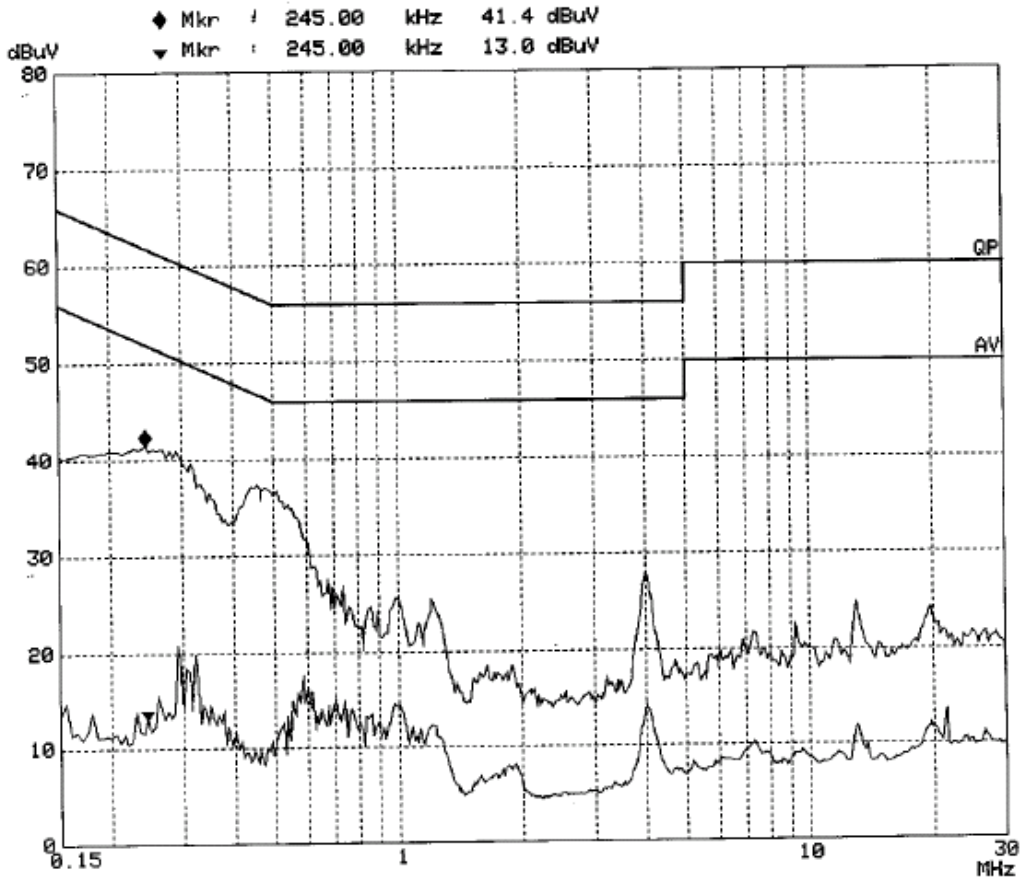
EUT: WIRELESS HEADPHONE M/N: HP_WH2970
Manuf: HUASHENGDA
Op Cond: Transmitting
Operator: Louise
Test Spec: AC 120V/60Hz N
Comment: Temp:28
Humi:61%
Date: 27. Jun 05 16:59

Scan Settings (1 Range)

Frequencies			Receiver Settings				
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp
150k	30M	5k	9k	PK+AV	10ms	AUTO	LN OFF

Transducer No.	Start	Stop	Name
1	9k	30M	ESH3

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



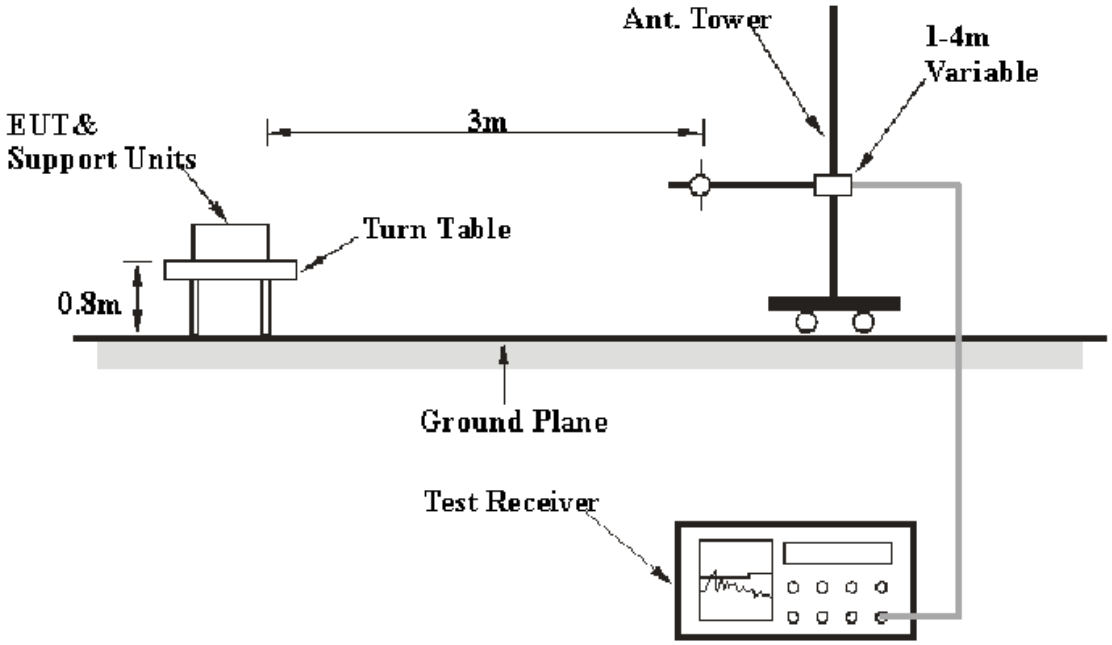
§15.209(a) §15.235(a) §15.205- RADIATED EMISSION

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 chamber B test site, using the setup accordance with the ANSI C63.4-2003. The specification used was the FCC 15.209 and 15.235 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 adapter was connected to a 120 VAC/60 Hz power source.

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:

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	8447D	2994A09795	2004-9-1	2005-8-31
Rohde & Schwarz	EMI Test Receiver	ESCI	100028	2004-9-15	2005-9-15
Sunol Sciences	Broadband Antenna	JB1	A040904-1	2005-4-28	2006-4-28

*** 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 adapter and all support equipment 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.

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:

-2.50 dB at **199.40 MHz** in the **horizontal** polarization.

Test Data

Environmental Conditions

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

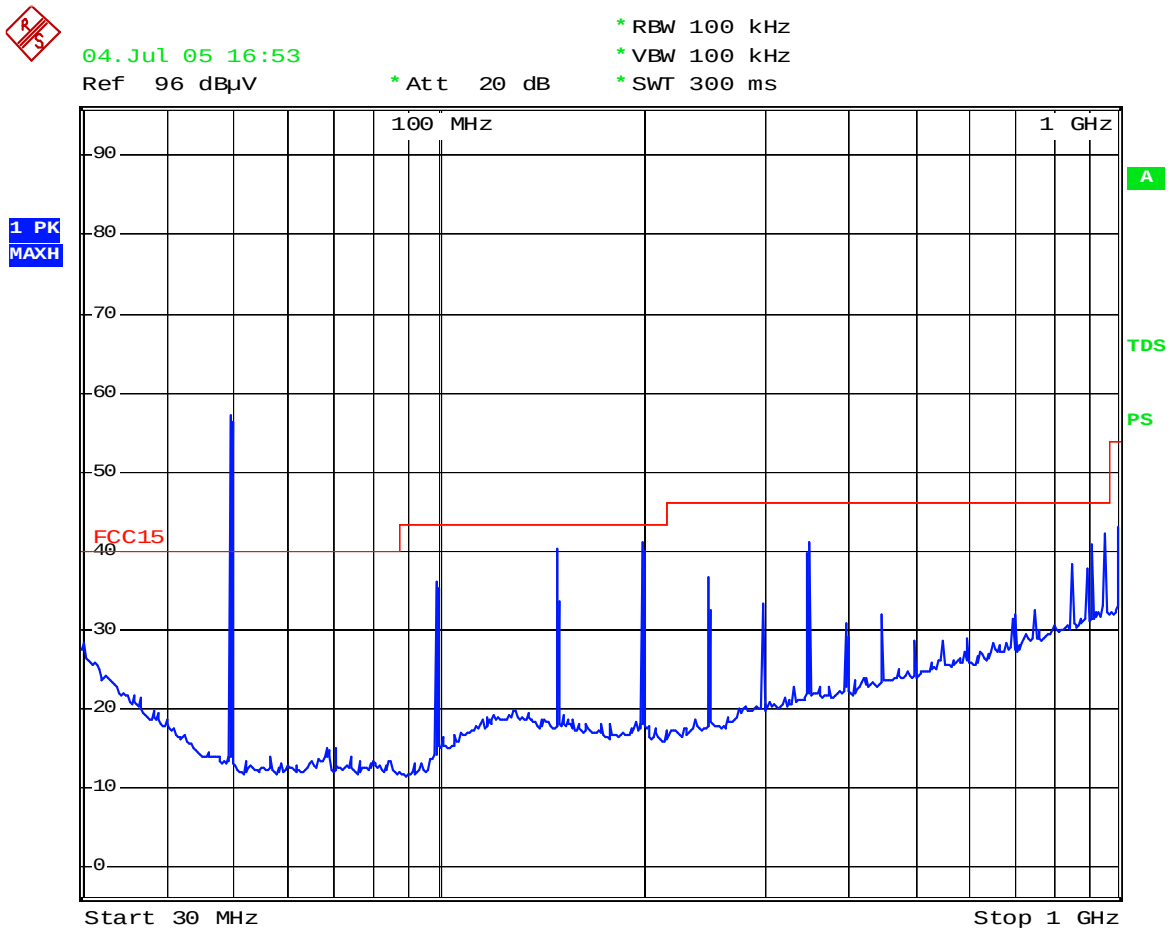
The testing was performed by Louise Lu on 2005-7-4.

Test Mode: Transmitting

INDICATED		TABLE	ANTENNA		CORRECTION FACTOR			CORRECTEI AMPLITUDI	FCC PART 15.209&15.235		
Frequency	Meter Reading	Angle	Height	Polar	Antenna Loss	Cable Loss	Amplifier Gain	Corr. Ampl.	Limit	Margin	PK/AV
MHz	dBμV/m	Degree	Meter	H/ V	dB	dB	dB	dBμV/m	dBμV/m	dB	
199.40	52.7	180	1.2	h	12.0	1.7	25.42	41.0	43.5	-2.5	PK (Harmonic)
149.55	51.5	90	1.2	h	13.4	1.5	26.01	40.3	43.5	-3.2	PK (Harmonic)
348.95	48.8	45	1.2	h	14.9	2.5	25.11	41.1	46.0	-4.9	PK (Harmonic)
149.55	49.0	45	1.2	v	13.4	1.5	26.01	37.8	43.5	-5.7	PK (Harmonic)
199.40	48.1	180	1.2	v	12.0	1.7	25.42	36.4	43.5	-7.1	PK (Harmonic)
99.70	52.2	45	1.2	h	8.2	1.8	26.05	36.1	43.5	-7.4	PK (Harmonic)
99.70	51.7	60	1.0	v	8.2	1.8	26.05	35.6	43.5	-7.9	PK (Harmonic)
249.25	48.0	0	1.0	h	12.3	1.6	25.28	36.6	46.0	-9.4	PK (Harmonic)
49.85	83.8	289	1.0	v	10.8	1.4	26.36	69.6	80.0	-10.4	AV (Fundamental)
299.10	43.4	35	3.8	h	13.8	2.6	25.25	34.5	46.0	-11.5	AV (Harmonic)
348.95	41.0	60	1.2	v	14.9	2.5	25.11	33.3	46.0	-12.7	PK (Harmonic)
299.10	39.7	45	1.0	v	13.8	2.6	25.25	30.8	46.0	-15.2	PK (Harmonic)
249.25	39.0	45	1.0	v	12.3	1.6	25.28	27.6	46.0	-18.4	PK (Harmonic)
49.85	69.8	35	3.8	h	10.8	1.4	26.36	55.6	80.0	-24.4	AV (Fundamental)
49.85	84.6	289	1.0	v	10.8	1.4	26.36	70.4	100.0	-29.6	PK (Fundamental)
49.85	71.1	35	3.8	h	10.8	1.4	26.36	56.9	100.0	-43.1	PK (Fundamental)

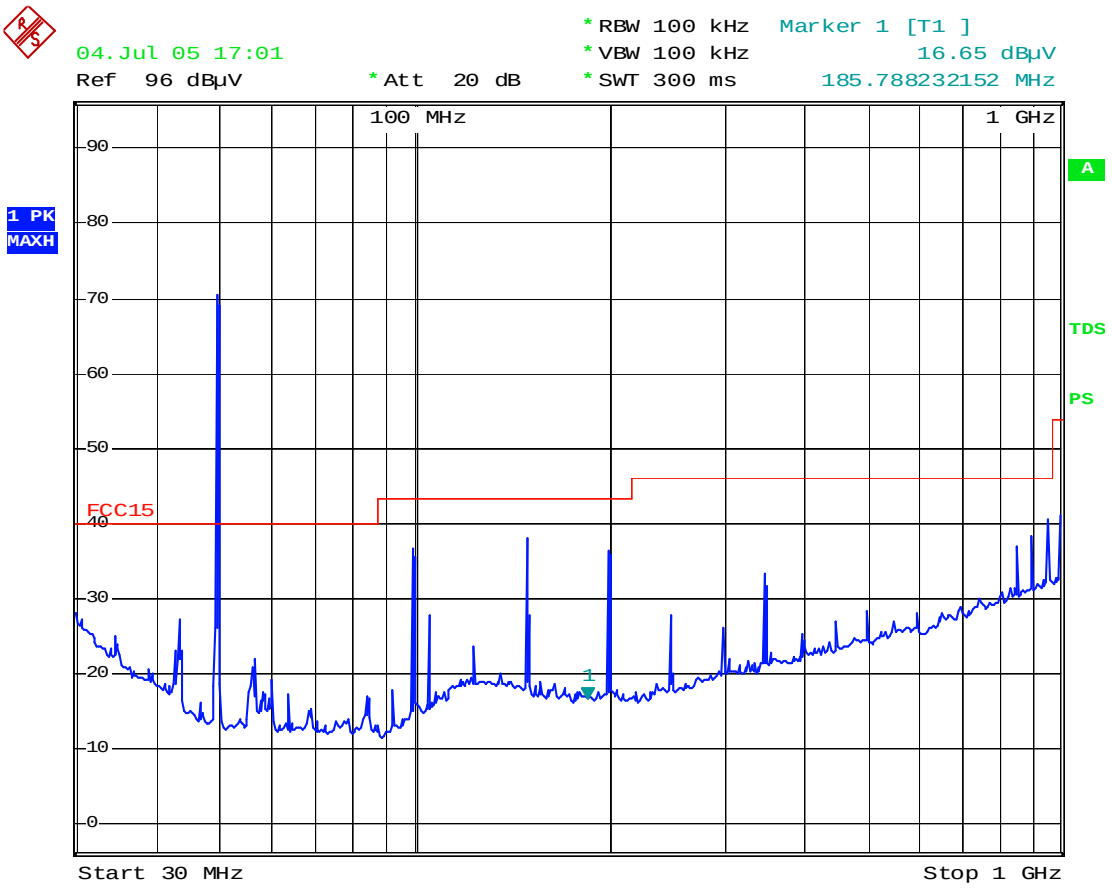
Plot(s) of Test Data

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



HUASHENGDA HP-WH2970 Running (Horizontal)

Date: 4.JUL.2005 16:53:59



HUASHENGDA HP-WH2970 Running (Vertical)

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§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	Broadband Antenna	JBI	A040904-1	2005-4-28	2006-4-28
HP	Amplifier	8447D	2994A09795	2004-9-1	2005-8-31
Rohde& Schwarz	EMI Test Receiver	ESCS30	830245/006	2005-1-26	2006-1-26

*** 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

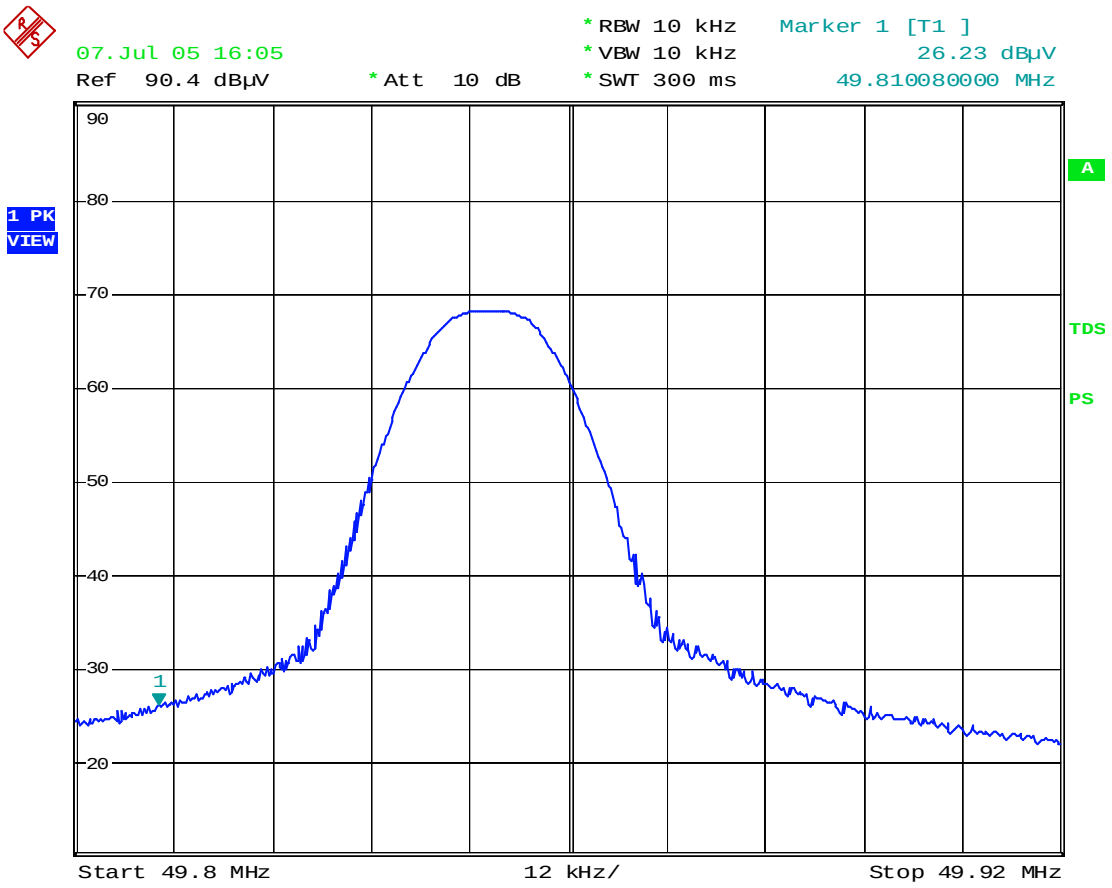
Temperature:	20 °C
Relative Humidity:	55%
ATM Pressure:	1016mbar

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

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	26.23	40.0	-13.77
49.91	23.66	40.0	-16.34

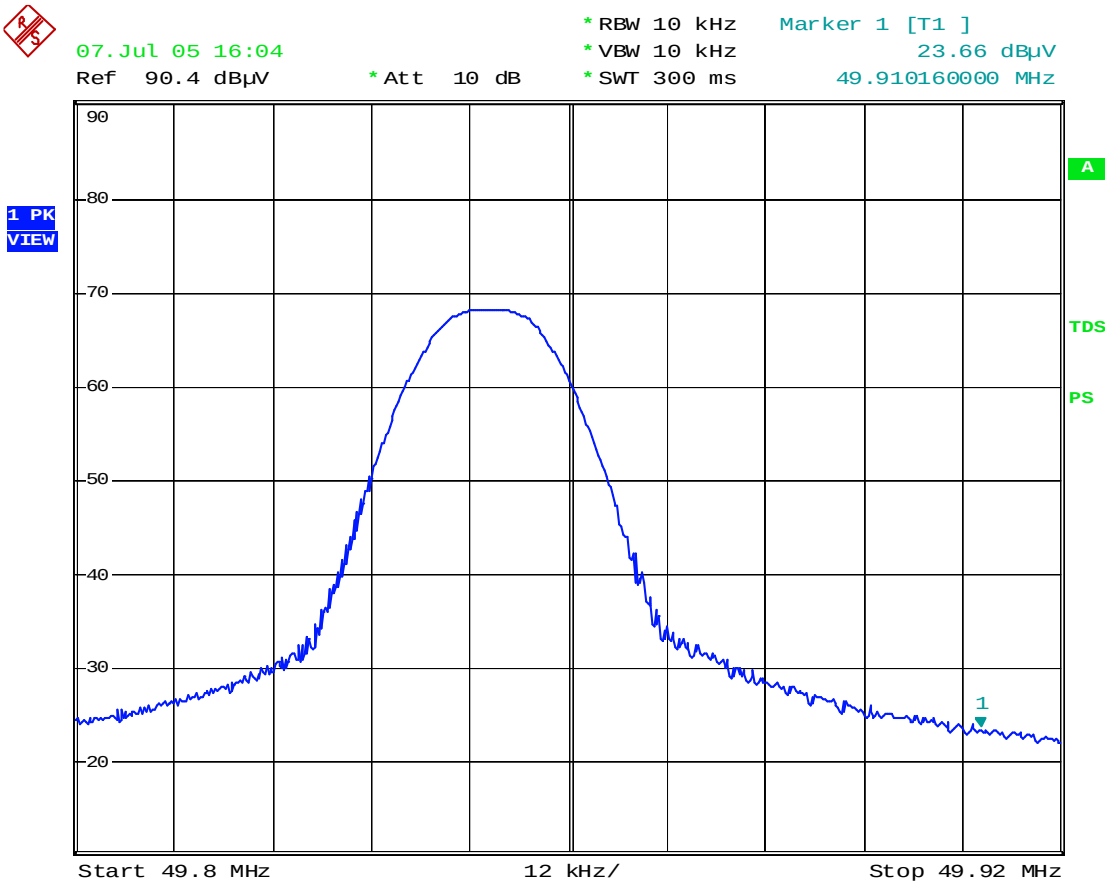
49.81 MHz:



HUASHENGDA 49.81MHz

Date: 7.JUL.2005 16:05:27

49.91 MHz:



HUASHENGDA 49.91MHz

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