NVLAP LAB CODE 200707-0

FCC PART 15.249
EMI MEASUREMENT AND TEST REPORT

For

ESP Systems, LLC

401 N.Tryon St-10th Floor, Charlotte, NC

FCC ID: UGDWATCHG2

This Report Concerns:	Equipment Type:
☒ Original Report	ESP Watch

Test Engineer:	Deny Xiong Deny Xiong Louise Lu Louise Lu
Report No.:	RSZ06071001
Test Date:	2006-07-11 to 2007-02-07
Report Date:	2007-02-28
Reviewed By:	EMC Manager:Boni Baniqued
Prepared By:	Bay Area Compliance Laboratory 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

TABLE OF CONTENTS

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *ESP Systems, LLC*'s product, model number: *ESP Watch Generation 2* or the "EUT" as referred to in this report is an *ESP Watch.* The EUT is measured approximately 22.0 cm L x 4.0 cm W x 2.0 cm H, the charger of EUT rated input voltage: AC 120VC/60Hz.

** The test data gathered are from production sample, serial number: 0607009 provided by the manufacturer, we received EUT on 2006-7-10.*

Objective

This Type approval report is prepared on behalf of *ESP Systems, LLC* 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 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 radiated and conducted emissions measurement 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. 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 Laboratory 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

External I/O Cable

Cable Description	Length (M)	From/Port	To
AC Adapter Cable Detachable	0.9	Charger	AC Power Source

SYSTEM TEST CONFIGURATION

Justification

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

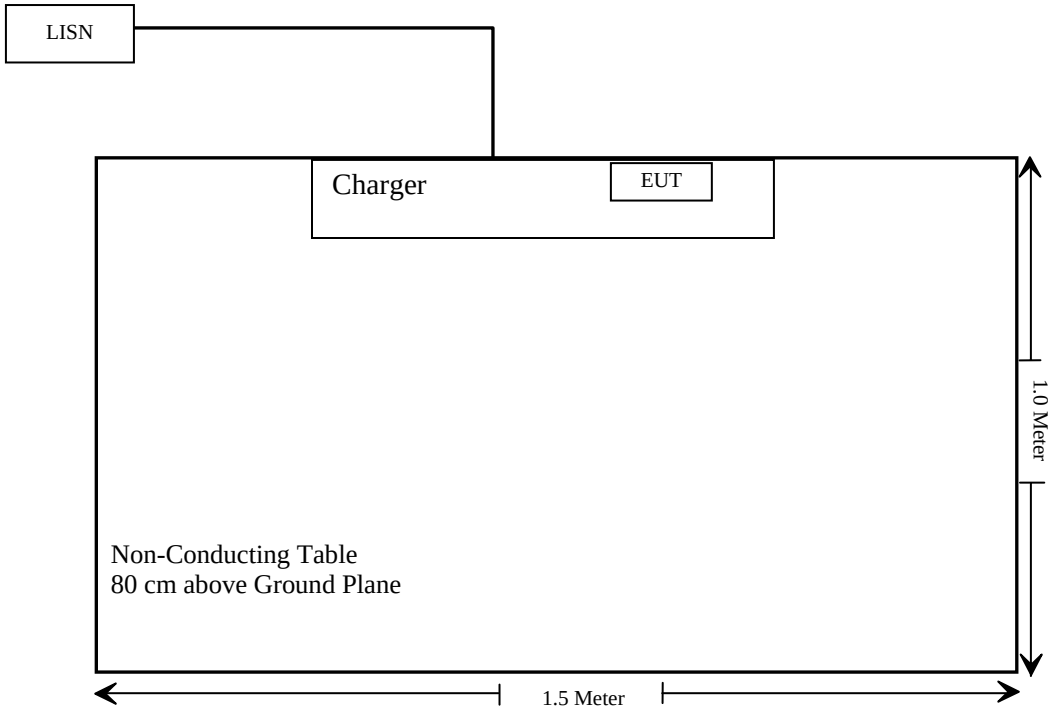
Equipment Modifications

Bay Area Compliance Laboratory 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
§15.207(a)	Conduction Emissions	Compliant
§15.205(a), §15.209(a), §15.249(a)	Radiated Emissions	Compliant*
§15.249(d)	Out of band emissions	Compliant

* Within measurement uncertainty.

§15.203 - ANTENNA REQUIREMENT

Standard Applicable

For intentional device, 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.

Antenna Connector Construction

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

Result: Compliant.

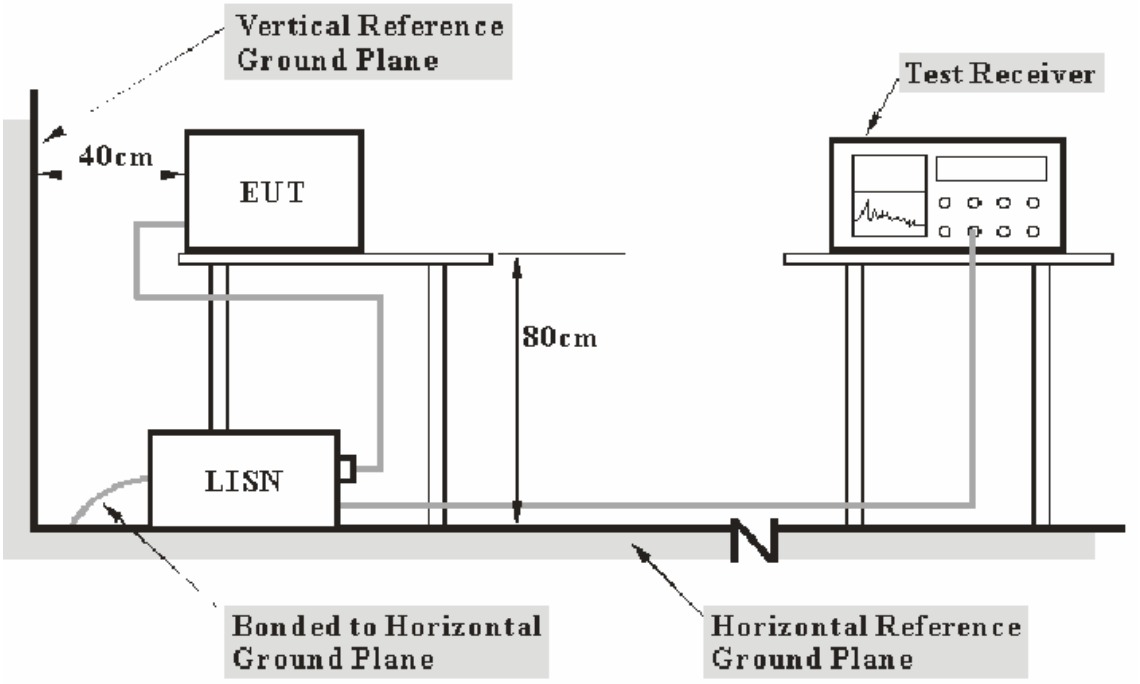
§15.207 - CONDUCTED EMISSIONS

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 Laboratory 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 charger of EUT was connected to a 120 VAC/60 Hz power source.

EMI Test Receiver Setup

The 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
Rohde & Schwarz	EMI Test Receiver	ESCS30	DE25330 or 830245/006	2006-1-26	2007-1-26
Rohde & Schwarz	L.I.S.N.	ESH2-Z5	892107/021	2006-3-1	2007-3-1

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

During the conducted emission test, the EUT was connected to the outlet of the LISN.

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.

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:

-11.10 dB at **1.890 MHz** in the **Live** conductor mode.

Test Data

Environmental Conditions

Temperature:	25 ° C
Relative Humidity:	55%
ATM Pressure:	1002mbar

The testing was performed by Louise Lu on 2006-7-11.

Test mode: Charging

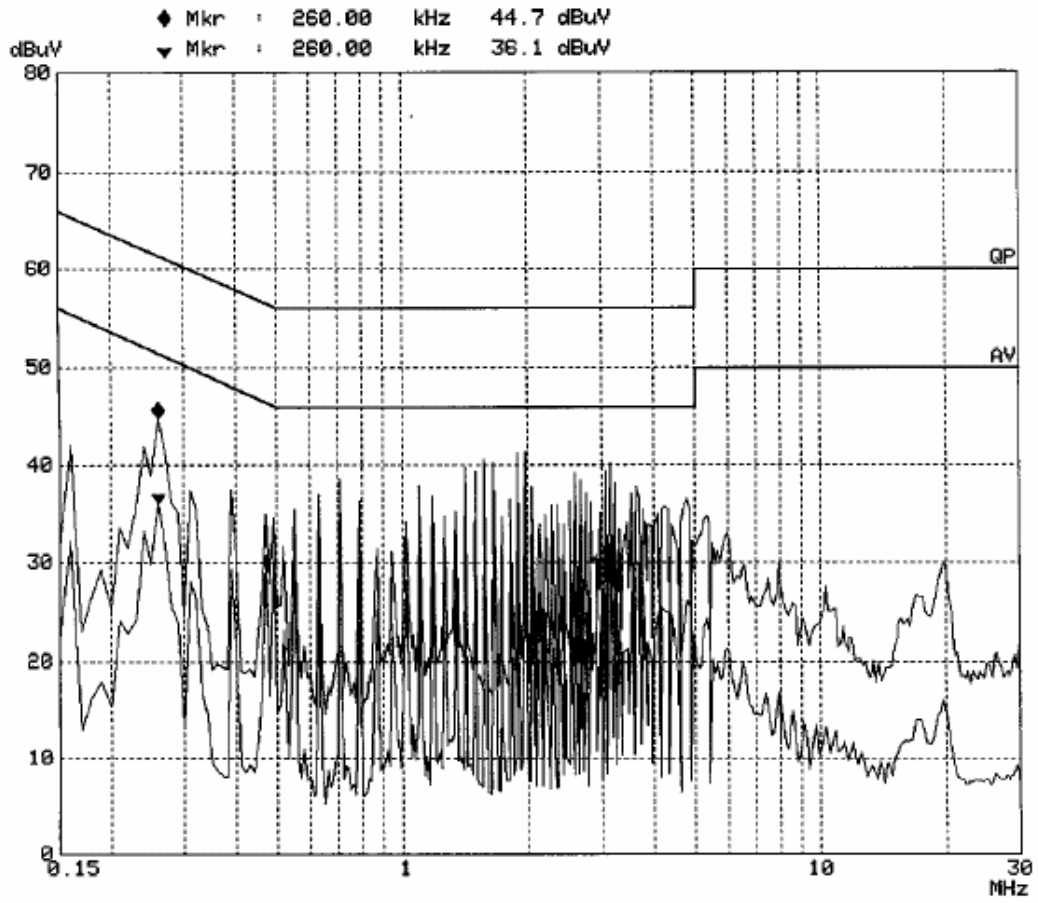
Line Conducted Emissions				FCC PART 15 .207	
Frequency (MHz)	**Amplitude (dBμV)**	**Detector (QP/AV)**	**Phase (Live/Neutral)**	**Limit (dBμV)**	**Margin (dB)**
1.890	34.90	AV	Live	46.00	-11.10
1.650	34.20	AV	Neutral	46.00	-11.80
0.710	33.10	AV	Live	46.00	-12.90
1.100	32.50	AV	Live	46.00	-13.50
3.150	32.00	AV	Live	46.00	-14.00
1.890	41.20	QP	Live	56.00	-14.80
0.260	36.10	AV	Live	51.43	-15.33
0.260	35.70	AV	Neutral	51.43	-15.73
3.150	40.20	QP	Live	56.00	-15.80
1.650	39.50	QP	Neutral	56.00	-16.50
2.120	39.30	QP	Neutral	56.00	-16.70
0.260	44.70	QP	Live	61.43	-16.73
0.710	38.60	QP	Live	56.00	-17.40
0.260	43.60	QP	Neutral	61.43	-17.83
2.120	28.10	AV	Neutral	46.00	-17.90
1.100	37.90	QP	Live	56.00	-18.10
3.300	37.50	QP	Neutral	56.00	-18.50
3.300	25.10	AV	Neutral	46.00	-20.90
0.160	32.30	AV	Live	55.46	-23.16
0.160	42.20	QP	Live	65.46	-23.26
0.160	32.20	AV	Neutral	55.46	-23.26
0.160	40.10	QP	Neutral	65.46	-25.36
19.660	30.30	QP	Neutral	60.00	-29.70
19.660	16.40	AV	Neutral	50.00	-33.60

Plot(s) of Test Data

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

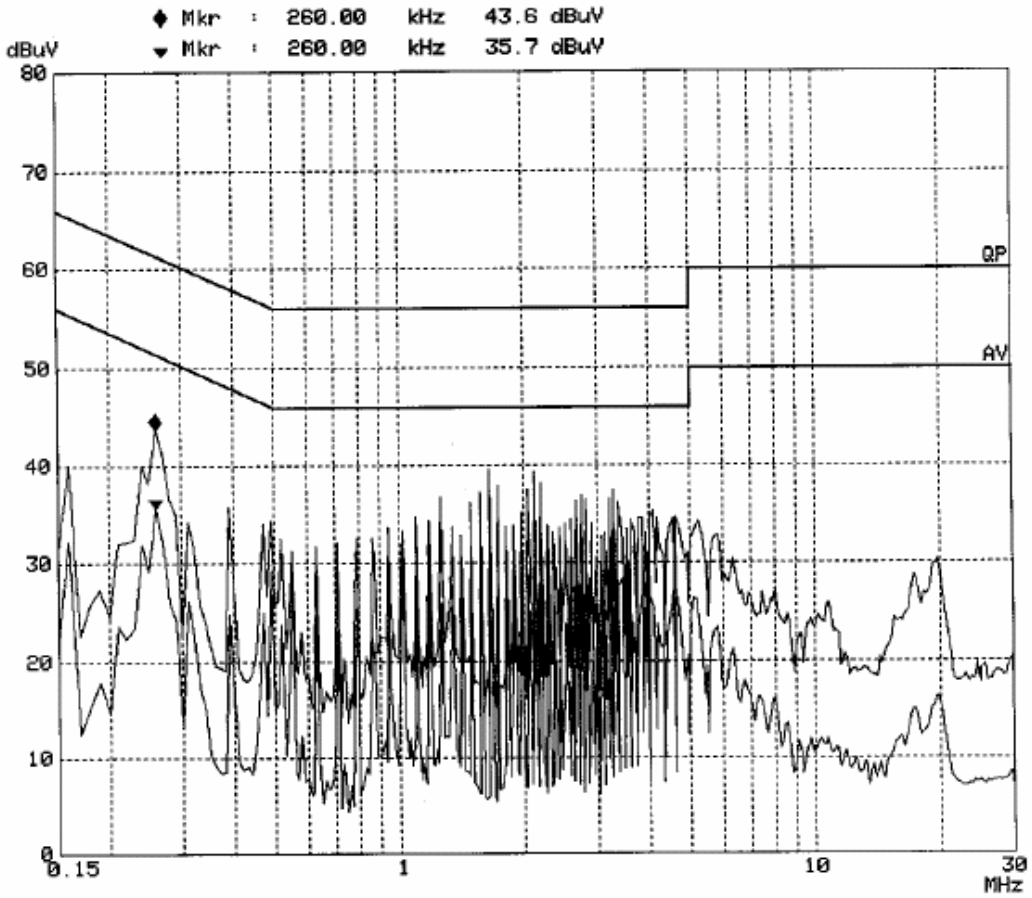
Conducted Emission
FCC Part15

EUT:	ESP Watch M/N: ESP Watch Generation 2
Manuf:	ESP
Op Cond:	Charging
Operator:	Louise
Test Spec:	120V AC/60Hz L
Comment:	Temp.:25 Humi.:53%
Date:	11. Jul 06 15:01



Conducted Emission
FCC Part15

EUT:	ESP Watch M/N: ESP Watch Generation 2
Manuf:	ESP
Op Cond:	Charging
Operator:	Louise
Test Spec:	120V AC/60Hz N
Comment:	Temp.:25 Humi.:53%
Date:	11. Jul 06 15:20



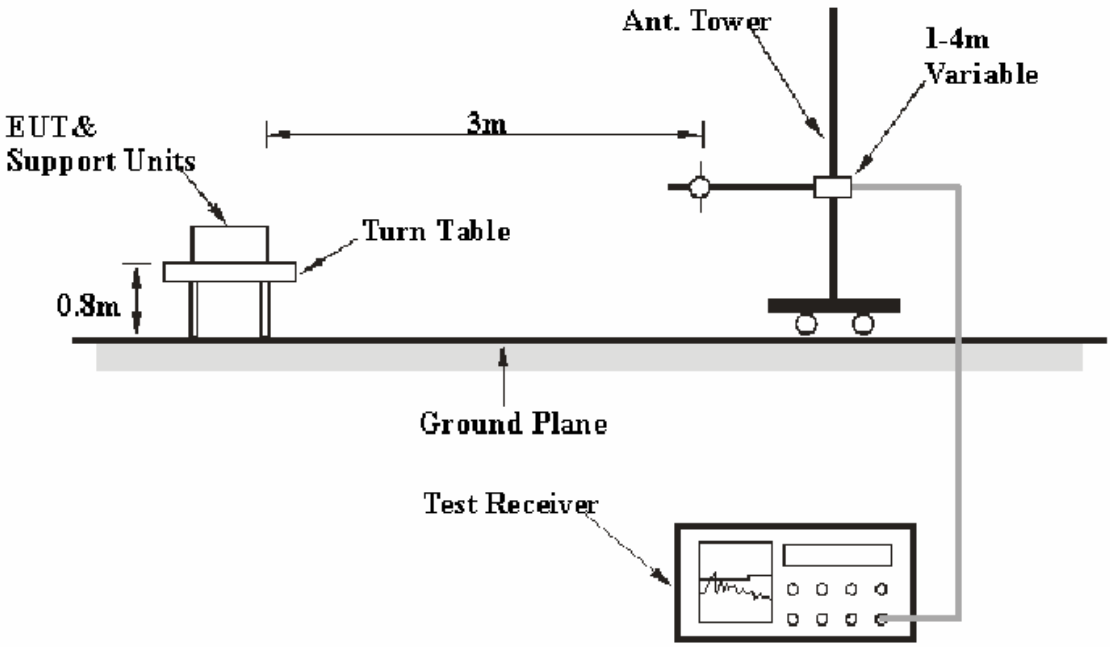
§15.205 §15.209(a) §15.249(a) - RADIATED EMISSIONS

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 ±4.0 dB.

EUT Setup



The radiated emission and out of band emission tests were performed in the 3 meters chamber A&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 charger of EUT 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 and out of band emission test, the test receiver was set with the following configurations:

Frequency Range	***RBW***	***Video B/W***
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	2006-4-28	2007-4-28
Agilent	Spectrum Analyzer	8564E	3943A01781	2005-12-8	2006-12-8
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 Laboratory 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 EUT was 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 peak and average 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 Meter 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 limit. The equation for margin calculation is as follows:

Margin = Corr. Ampl. – Limit

Test Results Summary

According to the data in the following table, the EUT complied with the FCC Part 15.209 & 15.249, with the worst margin reading of:

Charging &Transmitting Mode (Low channel): **-5.66 dB** at **3609.20 MHz** in the **Horizontal** polarization.
Charging &Transmitting Mode (Middle channel): **-8.49 dB** at **3665.936 MH**z in the **Vertical** polarization.
Charging & Transmitting Mode (High channel): **-5.93 d**B at **3710.160 MHz** in the **Horizontal** polarization.

Transmitting Mode (Low channel): **-6.51 dB** at **902.30 MHz** in the **Horizontal** polarization.
Transmitting Mode (Middle channel): **-6.83 dB** at **3665.936MHz** in the **Horizontal** polarization.
Transmitting Mode (High channel: **-3.26 dB** at **3710.16 MHz** in the **Horizontal** polarization.

Test Data

Environmental Conditions

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

The testing was performed by Deny Xiong on 2006-7-11.

Test mode: Charging & Transmitting (Low channel)

Frequency (MHz)	Meter Reading (dBuV)	Detector PK/ AV	Direction Degree	Height (m)	Polar H / V	Antenna Factor (dB/m)	Cable loss (dB)	Amplifier Gain (dB)	Corr. Ampl. dBuV/m	FCC Part 15.209 & 15.249		
										Limit (dBuV/m)	Margin (dB)	Comment
Low Channel: Channel 1												
3609.20	46.50	AV	250	1.8	H	30.3	4.04	32.5	48.34	54	-5.66	Harmonic
3609.20	43.33	AV	247	1.8	V	30.3	4.04	32.5	45.17	54	-8.83	Harmonic
902.30	83.64	PK	45	1.0	V	22.9	3.45	26.5	83.49	94	-10.51	Fundamental
2706.90	41.50	AV	90	1.2	V	28.3	4.02	33.4	40.42	54	-13.58	Harmonic
1804.57	45.33	AV	180	1.6	V	27.1	2.82	35.0	40.25	54	-13.75	Harmonic
1804.57	44.83	AV	270	1.6	H	27.1	2.82	35.0	39.75	54	-14.25	Harmonic
902.30	79.54	PK	263	1.4	H	22.9	3.45	26.5	79.39	94	-14.61	Fundamental
2706.90	39.83	AV	261	1.0	H	28.3	4.02	33.4	38.75	54	-15.25	Harmonic
4511.50	32.67	AV	105	1.6	H	30.9	4.42	32.5	35.49	54	-18.51	Harmonic
4511.50	31.83	AV	263	1.8	V	30.9	4.42	32.5	34.65	54	-19.35	Harmonic
3609.20	51.67	PK	250	1.8	H	30.3	4.04	32.5	53.51	74	-20.49	Harmonic
3609.20	49.33	PK	247	1.8	V	30.3	4.04	32.5	51.17	74	-22.83	Harmonic
4511.50	45.83	PK	263	1.8	V	30.9	4.42	32.5	48.65	74	-25.35	Harmonic
2706.90	49.33	PK	180	1.0	V	28.3	4.02	33.4	48.25	74	-25.75	Harmonic
4511.50	45.33	PK	105	1.6	H	30.9	4.42	32.5	48.15	74	-25.85	Harmonic
2706.90	48.83	PK	180	1.3	H	28.3	4.02	33.4	47.75	74	-26.25	Harmonic
1804.57	51.50	PK	250	1.0	V	27.1	2.82	35.0	46.42	74	-27.58	Harmonic
1804.57	51.35	PK	49	1.2	H	27.1	2.82	35.0	46.27	74	-27.73	Harmonic

Test mode: Charging & Transmitting (Middle channel)

Frequency (MHz)	Meter Reading (dBuV)	Detector PK/ AV	Direction Degree	Height (m)	Polar H / V	Antenna Factor (dB/m)	Cable loss (dB)	Amplifier Gain (dB)	Corr. Ampl. dBuV/m	FCC Part 15.209 & 15.249		
										Limit (dBuV/m)	Margin (dB)	Comment
Middle Channel: Channel 2												
3665.936	43.67	AV	144	1.6	V	30.3	4.04	32.5	45.51	54	-8.49	Harmonic
3665.936	43.00	AV	187	1.5	H	30.3	4.04	32.5	44.84	54	-9.16	Harmonic
916.484	83.32	PK	197	1.6	H	22.7	3.87	26.5	83.39	94	-10.61	Fundamental
916.484	83.22	PK	182	1.2	V	22.7	3.87	26.5	83.29	94	-10.71	Fundamental
1832.568	46.83	AV	180	1.6	V	27.1	2.82	35.0	41.75	54	-12.25	Harmonic
1832.568	46.50	AV	109	1.2	H	27.1	2.82	35.0	41.42	54	-12.58	Harmonic
2749.400	40.00	AV	45	1.0	H	28.5	4.40	33.4	39.5	54	-14.50	Harmonic
2749.400	37.83	AV	90	1.2	V	28.5	4.40	33.4	37.33	54	-16.67	Harmonic
4582.420	32.00	AV	147	1.6	H	30.9	4.42	32.5	34.82	54	-19.18	Harmonic
4582.420	31.50	AV	255	1.6	V	30.9	4.42	32.5	34.32	54	-19.68	Harmonic
3665.936	49.67	PK	144	1.6	V	30.3	4.04	32.5	51.51	74	-22.49	Harmonic
3665.936	48.83	PK	187	1.5	H	30.3	4.04	32.5	50.67	74	-23.33	Harmonic
2749.400	49.17	PK	90	1.2	V	28.5	4.40	33.4	48.67	74	-25.33	Harmonic
2749.400	48.00	PK	180	1.0	H	28.5	4.40	33.4	47.5	74	-26.50	Harmonic
4582.420	44.50	PK	147	1.6	H	30.9	4.42	32.5	47.32	74	-26.68	Harmonic
4582.420	44.33	PK	255	1.6	V	30.9	4.42	32.5	47.15	74	-26.85	Harmonic
1832.568	51.83	PK	45	1.0	V	27.1	2.82	35.0	46.75	74	-27.25	Harmonic
1832.568	51.67	PK	109	1.2	H	27.1	2.82	35.0	46.59	74	-27.41	Harmonic

Test mode: Charging & Transmitting (High channel)

Frequency (MHz)	Meter Reading (dBuV)	Detector PK/ AV	Direction Degree	Height (m)	Polar H / V	Antenna Factor (dB/m)	Cable loss (dB)	Amplifier Gain (dB)	Corr. Ampl. dBuV/m	FCC Part 15.209 & 15.249		
										Limit (dBuV/m)	Margin (dB)	Comment
High Channel: Channel 3												
3710.160	45.33	AV	158	1.6	H	31.2	4.04	32.5	48.07	54	-5.93	Harmonic
3710.160	44.67	AV	146	1.8	V	31.2	4.04	32.5	47.41	54	-6.59	Harmonic
927.543	81.16	PK	182	1.2	V	23.1	4.03	26.5	81.79	94	-12.21	Fundamental
1855.080	46.17	AV	109	1.2	H	27.1	2.82	35.0	41.09	54	-12.91	Harmonic
1855.080	46.00	AV	180	1.3	V	27.1	2.82	35.0	40.92	54	-13.08	Harmonic
2782.620	39.83	AV	108	1.8	H	28.5	4.40	33.4	39.33	54	-14.67	Harmonic
2782.620	37.00	AV	240	1.2	V	28.5	4.40	33.4	37.00	54	-17.00	Harmonic
927.543	75.97	PK	125	1.6	H	23.1	4.03	26.5	76.60	94	-17.40	Fundamental
4637.700	32.17	AV	237	1.8	H	30.9	4.42	33.4	34.09	54	-19.91	Harmonic
4637.700	32.00	AV	246	1.6	V	30.9	4.42	33.4	33.92	54	-20.08	Harmonic
3710.160	50.83	PK	158	1.6	H	31.2	4.04	32.5	53.57	74	-20.43	Harmonic
3710.160	50.00	PK	146	1.8	V	31.2	4.04	32.5	52.74	74	-21.26	Harmonic
2782.620	49.00	PK	108	1.8	H	28.5	4.40	33.4	48.50	74	-25.50	Harmonic
2782.620	48.33	PK	240	1.2	V	28.5	4.40	33.4	47.83	74	-26.17	Harmonic
4637.700	45.20	PK	237	1.8	H	30.9	4.42	33.4	47.12	74	-26.88	Harmonic
1855.080	52.00	PK	109	1.2	H	27.1	2.82	35.0	46.92	74	-27.08	Harmonic
1855.080	51.67	PK	45	1.3	V	27.1	2.82	35.0	46.59	74	-27.41	Harmonic
4637.700	44.50	PK	246	1.6	V	30.9	4.42	33.4	46.42	74	-27.58	Harmonic

Test mode: Transmitting (Low channel)

Frequency (MHz)	Meter Reading (dBuV)	Detector PK/ AV	Direction Degree	Height (m)	Polar H / V	Antenna Factor (dB/m)	Cable loss (dB)	Amplifier Gain (dB)	Corr. Ampl. dBuV/m	FCC Part 15.209 & 15.249		
										Limit (dBuV/m)	Margin (dB)	Comment
Low Channel: Channel 1												
902.30	87.64	PK	263	1.4	H	22.9	3.45	26.5	87.49	94	-6.51	Fundamental
3609.20	44.83	AV	247	1.8	V	30.3	4.04	32.5	46.67	54	-7.33	Harmonic
3609.20	44.17	AV	180	1.0	H	30.3	4.04	32.5	46.01	54	-7.99	Harmonic
1804.57	46.83	AV	263	1.4	H	27.1	2.82	35.0	41.75	54	-12.25	Harmonic
902.30	81.54	PK	45	1.0	V	22.9	3.45	26.5	81.39	94	-12.61	Fundamental
1804.57	44.00	AV	180	1.6	V	27.1	2.82	35.0	38.92	54	-15.08	Harmonic
2706.90	36.33	AV	90	1.2	V	28.3	4.02	33.4	35.25	54	-18.75	Harmonic
4511.50	31.80	AV	263	1.8	V	30.9	4.42	32.5	34.62	54	-19.38	Harmonic
4511.50	31.50	AV	247	1.8	H	30.9	4.42	32.5	34.32	54	-19.68	Harmonic
2706.90	34.83	AV	250	1.0	H	28.3	4.02	33.4	33.75	54	-20.25	Harmonic
3609.20	50.00	PK	247	1.8	V	30.3	4.04	32.5	51.84	74	-22.16	Harmonic
3609.20	49.67	PK	180	1.6	H	30.3	4.04	32.5	51.51	74	-22.49	Harmonic
4511.50	44.86	PK	263	1.8	V	30.9	4.42	32.5	47.68	74	-26.32	Harmonic
4511.50	44.33	PK	90	1.2	H	30.9	4.42	32.5	47.15	74	-26.85	Harmonic
2706.90	47.33	PK	180	1.0	V	28.3	4.02	33.4	46.25	74	-27.75	Harmonic
1804.57	51.00	PK	250	1.0	V	27.1	2.82	35.0	45.92	74	-28.08	Harmonic
2706.90	46.67	PK	49	1.2	H	28.3	4.02	33.4	45.59	74	-28.41	Harmonic
1804.57	50.17	PK	20	1.2	H	27.1	2.82	35.0	45.09	74	-28.91	Harmonic

Test mode: Transmitting (Middle channel)

Frequency (MHz)	Meter Reading (dBuV)	Detector PK/ AV	Direction Degree	Height (m)	Polar H / V	Antenna Factor (dB/m)	Cable loss (dB)	Amplifier Gain (dB)	Corr. Ampl. dBuV/m	FCC Part 15.209 & 15.249		
										Limit (dBuV/m)	Margin (dB)	Comment
Middle Channel: Channel 2												
3665.936	45.33	AV	187	1.5	H	30.3	4.04	32.5	47.17	54	-6.83	Harmonic
916.484	83.53	PK	197	1.6	H	22.7	3.87	26.5	83.60	94	-10.40	Fundamental
3665.936	41.67	AV	144	1.6	V	30.3	4.04	32.5	43.51	54	-10.49	Harmonic
916.484	81.62	PK	182	1.2	V	22.7	3.87	26.5	81.69	94	-12.31	Fundamental
2749.400	41.33	AV	90	1.2	V	28.5	4.40	33.4	40.83	54	-13.17	Harmonic
1832.568	43.17	AV	109	1.2	H	27.1	2.82	35.0	38.09	54	-15.91	Harmonic
2749.400	37.83	AV	45	1.0	H	28.5	4.40	33.4	37.33	54	-16.67	Harmonic
4582.420	33.17	AV	147	1.6	H	30.9	4.42	32.5	35.99	54	-18.01	Harmonic
1832.568	40.67	AV	180	1.6	V	27.1	2.82	35.0	35.59	54	-18.41	Harmonic
4582.420	31.50	AV	255	1.6	V	30.9	4.42	32.5	34.32	54	-19.68	Harmonic
3665.936	51.17	PK	187	1.5	H	30.3	4.04	32.5	53.01	74	-20.99	Harmonic
3665.936	48.83	PK	144	1.6	V	30.3	4.04	32.5	50.67	74	-23.33	Harmonic
2749.400	49.67	PK	90	1.2	V	28.5	4.40	33.4	49.17	74	-24.83	Harmonic
4582.420	43.83	PK	147	1.6	H	30.9	4.42	32.5	46.65	74	-27.35	Harmonic
2749.400	46.67	PK	180	1.0	H	28.5	4.40	33.4	46.17	74	-27.83	Harmonic
4582.420	43.33	PK	255	1.6	V	30.9	4.42	32.5	46.15	74	-27.85	Harmonic
1832.568	50.50	PK	109	1.2	H	27.1	2.82	35.0	45.42	74	-28.58	Harmonic
1832.568	49.50	PK	45	1.0	V	27.1	2.82	35.0	44.42	74	-29.58	Harmonic

Test mode: Transmitting (High channel)

Frequency (MHz)	Meter Reading (dBuV)	Detector PK/ AV	Direction Degree	Height (m)	Polar H / V	Antenna Factor (dB/m)	Cable loss (dB)	Amplifier Gain (dB)	Corr. Ampl. dBuV/m	FCC Part 15.209 & 15.249		
										Limit (dBuV/m)	Margin (dB)	Comment
High Channel: Channel 3												
3710.160	48.00	AV	158	1.6	H	31.2	4.04	32.5	50.74	54	-3.26*	Harmonic
3710.160	44.17	AV	146	1.8	V	31.2	4.04	32.5	46.91	54	-7.09	Harmonic
927.543	79.66	PK	125	1.6	H	23.1	4.03	26.5	80.29	94	-13.71	Fundamental
1855.080	45.17	AV	109	1.2	H	27.1	2.82	35.0	40.09	54	-13.91	Harmonic
2782.620	38.50	AV	240	1.2	V	28.5	4.40	33.4	38.00	54	-16.00	Harmonic
1855.080	42.17	AV	180	1.3	V	27.1	2.82	35.0	37.09	54	-16.91	Harmonic
927.543	76.06	PK	182	1.2	V	23.1	4.03	26.5	76.69	94	-17.31	Fundamental
2782.620	36.17	AV	108	1.8	H	28.5	4.40	33.4	35.67	54	-18.33	Harmonic
3710.160	52.50	PK	158	1.6	H	31.2	4.04	32.5	55.24	74	-18.76	Harmonic
4637.700	32.33	AV	237	1.8	H	30.9	4.42	33.4	34.25	54	-19.75	Harmonic
4637.700	32.17	AV	246	1.6	V	30.9	4.42	33.4	34.09	54	-19.91	Harmonic
3710.160	50.67	PK	146	1.8	V	31.2	4.04	32.5	53.41	74	-20.59	Harmonic
2782.620	48.33	PK	240	1.2	V	28.5	4.40	33.4	47.83	74	-26.17	Harmonic
4637.700	45.27	PK	237	1.8	H	30.9	4.42	33.4	47.19	74	-26.81	Harmonic
2782.620	47.00	PK	108	1.8	H	28.5	4.40	33.4	46.50	74	-27.50	Harmonic
1855.080	51.00	PK	109	1.2	H	27.1	2.82	35.0	45.92	74	-28.08	Harmonic
4637.700	43.33	PK	246	1.6	V	30.9	4.42	33.4	45.25	74	-28.75	Harmonic
1855.080	49.67	PK	45	1.3	V	27.1	2.82	35.0	44.59	74	-29.41	Harmonic

* Within measurement uncertainty.

§15.249(d) – OUT OF BAND EMISSIONS

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

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
3. Set both RBW and VBW of spectrum analyzer to 100 kHz with a convenient frequency span including 100kHz bandwidth from band edge.
4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
5. Repeat above procedures until all measured frequencies were complete.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date
Sonoma	Amplifier, Pre	317	260407	2006-03-20
Sunol Science	30MHz ~ 2 GHz Antenna	JB1	A03105-3	2006-03-15
A.R.A	Antenna, Horn, DRG	DRG-118/A	1132	2005-08-17*
Agilent	Analyzer, Spectrum	E4446A	US44300386	2006-03-06
HP	Pre, Amplifier (1 ~ 26.5 GHz)	8449B	3147A00400	2006-08-21

***** *two year calibration cycle*

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

Test Data

Environmental Conditions

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

The testing was performed by Dan Coronia on 2007-02-07.

Test Mode: Transmitting

Channel	Frequency (MHz)	Emission (dBµV/m)	Limit (dBµV/m)	Result
Low Channel	901.99	43.23	46	Pass
High Channel	928.10	34.90	46	Pass

Test Mode: Transmitting with Charger

Channel	Frequency (MHz)	Emission (dBµV/m)	Limit (dBµV/m)	Result
Low Channel	901.99	29.57	46	Pass
High Channel	928.10	21.23	46	Pass