NVLAP LAB CODE 200707-0

FCC PART 15.249
EMI MEASUREMENT AND TEST REPORT

For

Cooper Wiring Devices Inc.

203 Cooper Circle, Peachtree City, GA 30269, USA

FCC ID: UH2-RFWDC

This Report Concerns: ☒ Original Report	**Equipment Type:** RF Wall Mount Scene Controller
Test Engineer:	Merry Zhao Cinderallar Chen
Report No.:	RSH07032351
Test Date:	2007-03-30 to 2007-04-06
Report Date:	2007-04-11
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

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *Cooper Wiring Devices Inc.*'s product, model number: *RFWDC* or the "EUT" as referred to in this report is a *RF Wall Mount Scene Controller,* which measures approximately 10.7cmL x 4.8cmW x 4.5cmH, rated input voltage: AC 120V/60Hz.

** The test data gathered are from production sample, serial number: 0703123 provided by the manufacturer, we receive the EUT on 2007-03-23.*

Objective

This Type approval report is prepared on behalf of *Cooper Wiring Devices Inc.* 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 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. 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.

SYSTEM TEST CONFIGURATION

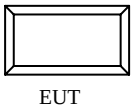
Justification

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

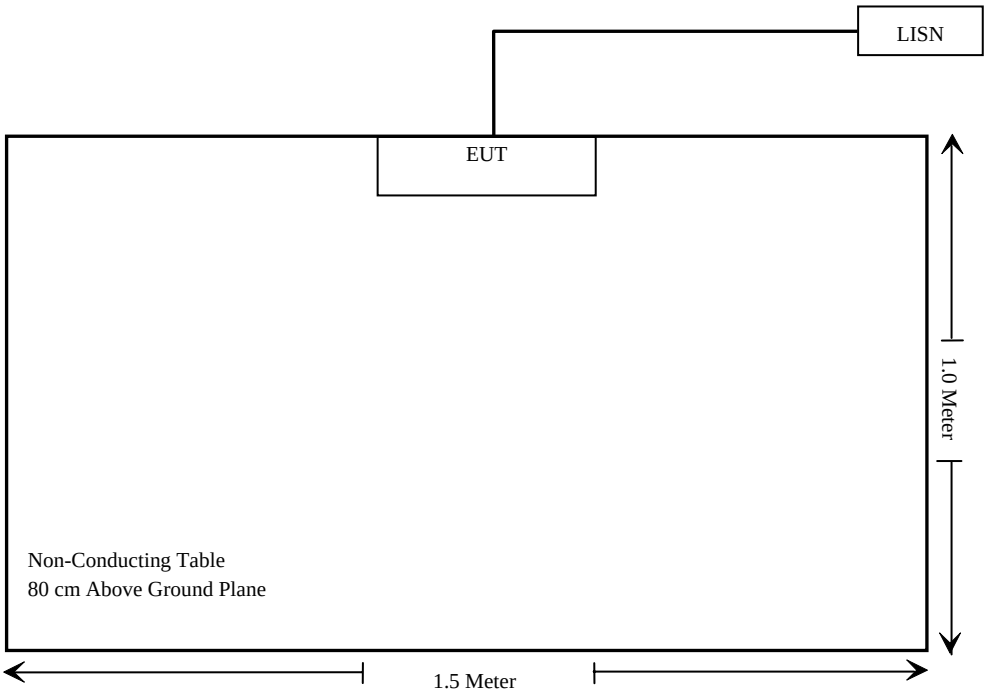
Equipment Modifications

Bay Area Compliance Laboratory Corp. (Shenzhen) has not done any modification on the EUT.

Configuration of Test Setup



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), §15.249(c)	Radiated Emissions	Compliant
§15.249(d)	Out of band emissions	Compliant

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

Result: Compliant

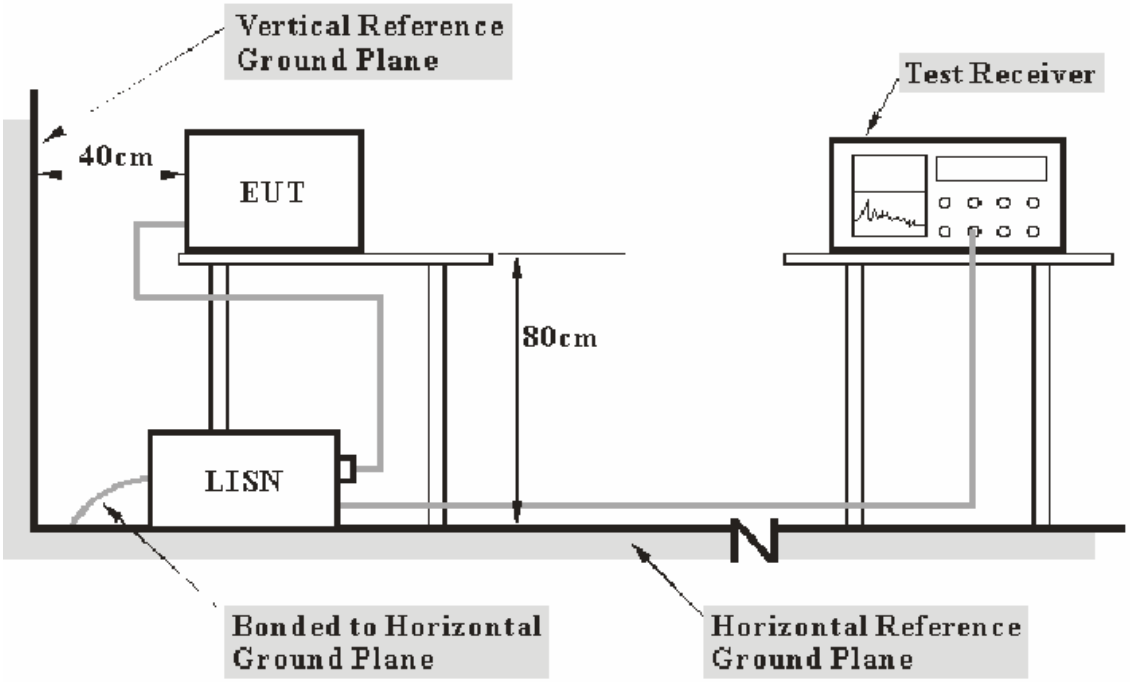
§15.207 - CONDUCTED EMISSIONS

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 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 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	2007-03-20	2008-03-19
Rohde & Schwarz	L.I.S.N.	ESH2-Z5	892107/021	2007-03-01	2008-03-01

***** 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:

11.90 dB at **0.1500 MHz** in the **Neutral** conductor mode.

Test Data

Environmental Conditions

Temperature:	22 ° C
Relative Humidity:	55%
ATM Pressure:	1000mbar

The testing was performed by Cinderallar Chen on 2007-03-30.

Test Mode: Transmitting

LINE CONDUCTED EMISSIONS				FCC PART 15 .207	
Frequency (MHz)	**Amplitude (dBµV)**	**Detector (QP/AV)**	**Phase (Live/Neutral)**	**Limit (dBµV)**	**Margin (dB)**
0.1500	54.10	QP	Neutral	66.00	11.90
0.1500	53.90	QP	Live	66.00	12.10
27.9000	46.70	QP	Neutral	60.00	13.30
28.7350	46.40	QP	Live	60.00	13.60
0.3350	43.60	QP	Neutral	59.33	15.73
0.4200	38.30	QP	Live	57.45	19.15
0.6550	31.20	QP	Live	56.00	24.80
0.6550	31.10	QP	Neutral	56.00	24.90
0.6550	18.00	AV	Live	46.00	28.00
0.6550	17.10	AV	Neutral	46.00	28.90
0.4200	17.30	AV	Live	47.45	30.15
2.9850	14.20	AV	Neutral	46.00	31.80
2.9850	13.50	AV	Live	46.00	32.50
5.1400	27.40	QP	Neutral	60.00	32.60
0.3350	16.40	AV	Neutral	49.33	32.93
5.5700	26.90	QP	Live	60.00	33.10
2.9850	20.00	QP	Neutral	56.00	36.00
28.7350	13.40	AV	Live	50.00	36.60
0.1500	18.90	AV	Neutral	56.00	37.10
0.1500	18.90	AV	Live	56.00	37.10
2.9850	18.30	QP	Live	56.00	37.70
27.9000	10.90	AV	Neutral	50.00	39.10
5.1400	6.10	AV	Neutral	50.00	43.90
5.5700	5.60	AV	Live	50.00	44.40

Plot(s) of Test Data

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

Conducted Emission Test

30. Mar 07 13:48

FCC PART 15

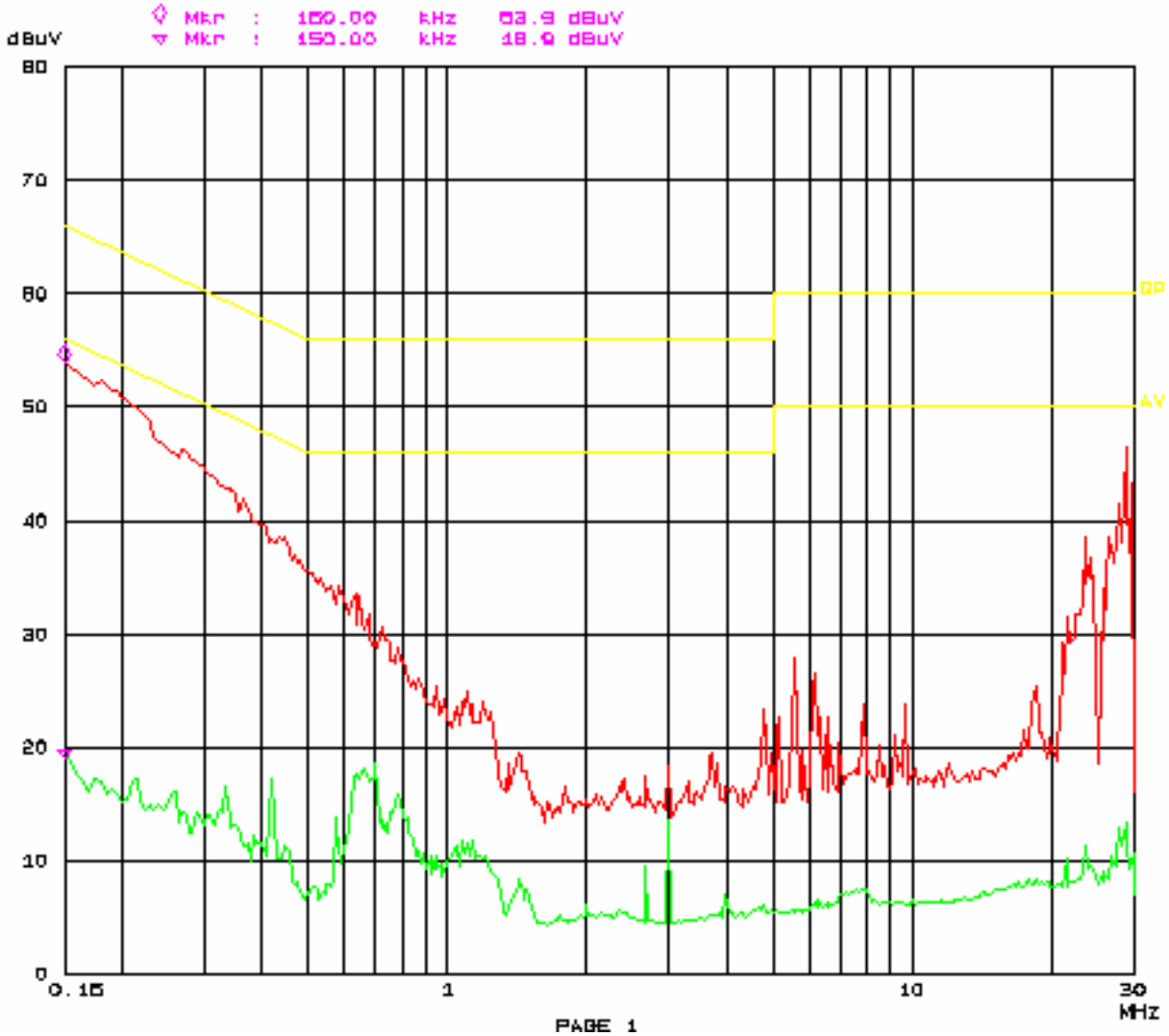
EUT: RF Wall Mount Scene Controller M/N RFWDC
Manuf: COOPER
Op Cond: Transmitting
Operator: Cinderellar
Test Spec: AC 120V/60Hz L
Comment: Temp: 25'C Humi: 56%

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

Final Measurement: x QP / + AV
Meas Time: 1 s
Subranges: 8
Acc Margin: 6dB

Transducer No.	Start	Stop	Name
3	0k	30M	ESH3Z2



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Conducted Emission Test

30. Mar 07 14:08

FCC PART 15

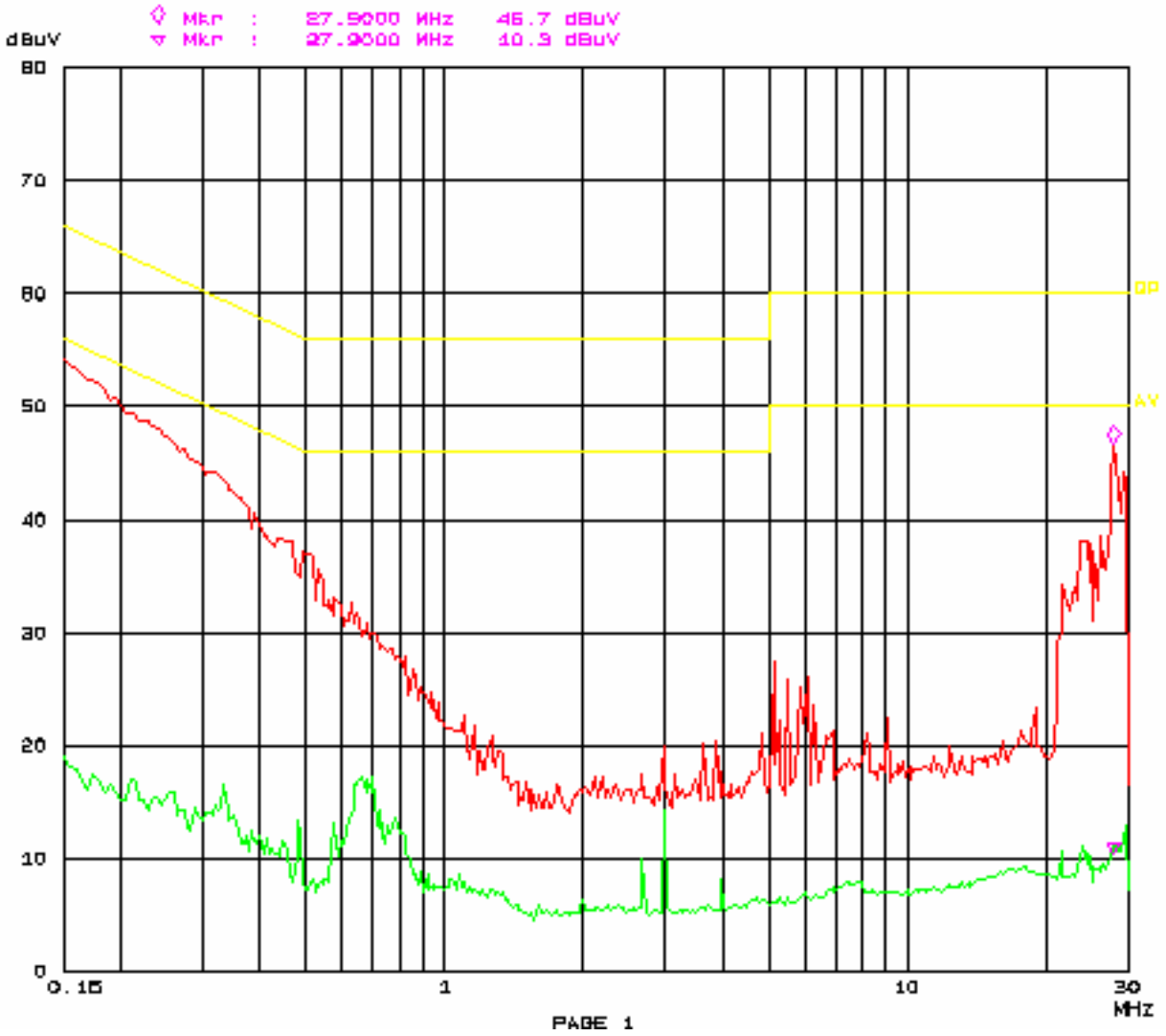
EUT: RF Wall Mount Scene Controller M/N RFWDC
Manuf: COOPER
Op Cond: Transmitting
Operator: Cinderellar
Test Spec: AC 120V/60Hz N
Comment: Temp: 25'C Humi: 58%

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

Final Measurement: x QP / + AV
Meas Time: 1 s
Subranges: 8
Acc Margin: 6dB

Transducer No.	Start	Stop	Name
3	5k	30M	ESH3Z2



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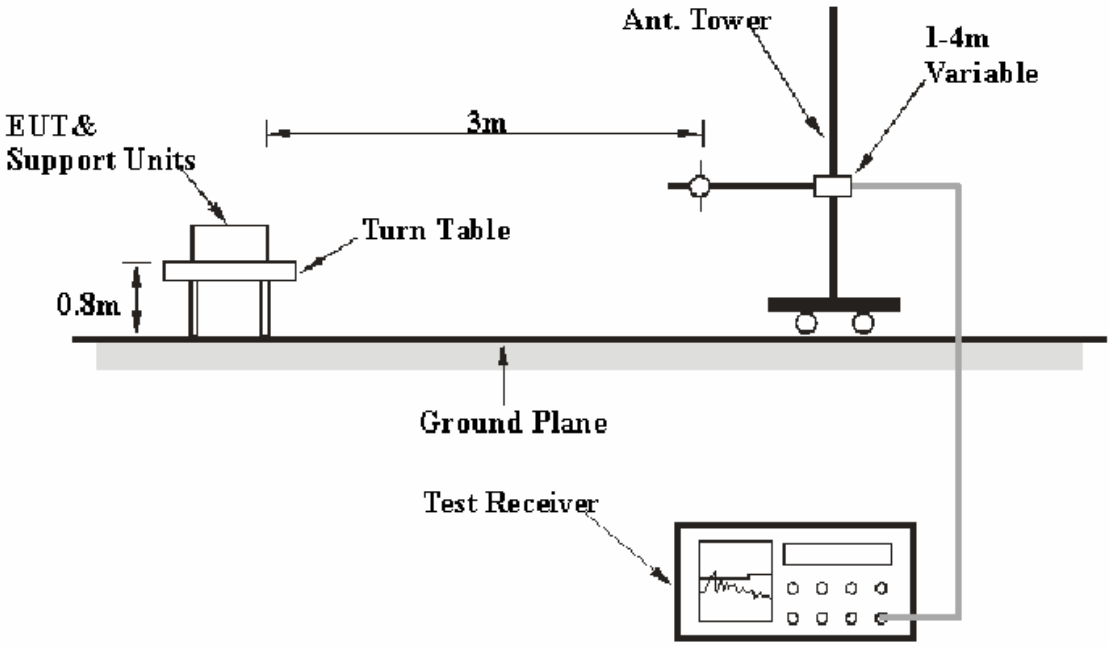
§15.205 §15.209(a) §15.249(a) §15.249(c) - RADIATED EMISSIONS

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 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 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	100224	2006-09-29	2007-09-29
HP	Amplifier	8447E	1937A01046	2006-11-15	2007-11-15
Sunol Sciences	Bilog Antenna	JB1	A040904-2	2006-08-14	2007-08-14
HP	Amplifier	8449B	3008A00277	2006-09-29	2007-09-29
Sunol Sciences	Horn Antenna	DRH-118	A052604	2006-07-20	2007-07-20
Agilent	Spectrum Analyzer	8564E	3943A01781	2006-11-22	2007-11-22

*** 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 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 maximum limit. The equation for margin calculation is as follows:

Margin = Limit - Corr. Ampl.

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:

30 -1000MHz: **5.65 dB** at **908.4 MHz** in the **Horizontal** polarization.
Above 1GHz: **14.75 dB** at **1816.8 MHz** in the **Vertical** polarization.

Test Data

Environmental Conditions

Temperature:	25 ° C
Relative Humidity:	53%
ATM Pressure:	1009mbar

The testing was performed by Merry Zhao on 2007-04-06.

Test Mode: Transmitting

Frequency (MHz)	Meter Reading (dBμV)	Detector PK/QP/AV	Direction Degree	Height (m)	Polar H / V	Antenna Factor (dB/m)	Cable loss (dB)	Pre-Amp. Gain (dB)	Corr. Ampl. dBuV/m	FCC Part 15.209 & 15.249		
										Limit (dBμV/m)	Margin (dB)	Comment
30 -1000MHz												
908.40	85.35	AV	75	1.1	H	22.9	6.6	26.5	88.35	94	5.65	Fundamental
30.30	29.3	PK	180	1.2	H	24.1	1.2	26.8	27.80	40	12.20	Spurious
908.40	78.6	AV	95	1.3	V	22.9	6.6	26.5	81.60	94	12.40	Fundamental
81.21	42.2	PK	60	1.0	V	8.4	1.9	26.8	25.70	40	14.30	Spurious
32.40	27.2	PK	45	1.0	H	24.1	1.2	26.8	25.70	40	14.30	Spurious
70.58	40.4	PK	289	1.0	V	8.6	1.8	26.8	24.00	40	16.00	Spurious
744.86	29.3	PK	45	1.2	V	21.4	5.8	26.9	29.60	46	16.40	Spurious
810.26	27.8	PK	60	1.2	H	21.9	6.2	26.7	29.20	46	16.80	Spurious
694.40	30.0	PK	45	1.0	H	20.6	5.5	27.1	29.00	46	17.00	Spurious
78.41	36.9	PK	289	1.0	V	8.6	1.8	26.8	20.50	40	19.50	Spurious
908.40	89.0	PK	105	1.2	H	22.9	6.6	26.5	92.00	114	22.00	Fundamental
908.40	82.8	PK	35	1.5	V	22.9	6.6	26.5	85.80	114	28.20	Fundamental

Frequency (MHz)	Meter Reading (dBμV)	Detector PK/QP/AV	Direction Degree	Height (m)	Polar H / V	Antenna Factor (dB/m)	Cable loss (dB)	Pre-Amp. Gain (dB)	Corr. Ampl. dBuV/m	FCC Part 15.209 & 15.249		
										Limit (dBμV/m)	Margin (dB)	Comment
Above 1000MHz												
1816.8	44.33	AV	0	1.0	V	27.1	2.82	35.0	39.25	54	14.75	Harmonic
3633.6	34.50	AV	90	1.5	V	30.3	4.04	32.5	36.34	54	17.66	Harmonic
4542	33.91	AV	60	1.0	V	30.9	4.42	33.4	35.83	54	18.17	Harmonic
2725.2	36.17	AV	180	1.2	H	28.5	4.40	33.4	35.67	54	18.33	Harmonic
2725.2	36.12	AV	180	1.2	V	28.5	4.40	33.4	35.62	54	18.38	Harmonic
3633.6	33.67	AV	270	1.5	H	30.3	4.04	32.5	35.51	54	18.49	Harmonic
1816.8	40.10	AV	120	1.0	H	27.1	2.82	35.0	35.02	54	18.98	Harmonic
4542	32.83	AV	360	1.0	H	30.9	4.42	33.4	34.75	54	19.25	Harmonic
5450.4	31.55	AV	0	1.2	H	32.2	4.19	33.4	34.54	54	19.46	Harmonic
5450.4	31.11	AV	100	1.2	V	32.2	4.19	33.4	34.1	54	19.90	Harmonic
2725.2	49.17	PK	180	1.2	V	28.5	4.40	33.4	48.67	74	25.33	Harmonic
1816.8	53.50	PK	0	1.0	V	27.1	2.82	35.0	48.42	74	25.58	Harmonic
2725.2	47.5	PK	180	1.2	H	28.5	4.40	33.4	47	74	27.00	Harmonic
3633.6	45.13	PK	270	1.5	H	30.3	4.04	32.5	46.97	74	27.03	Harmonic
3633.6	44.67	PK	90	1.5	V	30.3	4.04	32.5	46.51	74	27.49	Harmonic
1816.8	51.50	PK	120	1.0	H	27.1	2.82	35.0	46.42	74	27.58	Harmonic
4542	43.17	PK	60	1.5	V	30.9	4.42	33.4	45.09	74	28.91	Harmonic
4542	42.33	PK	360	1.5	H	30.9	4.42	33.4	44.25	74	29.75	Harmonic
5450.4	41.22	PK	0	1.0	H	32.2	4.19	33.4	44.21	74	29.79	Harmonic
5450.4	40.19	PK	100	1.0	V	32.2	4.19	33.4	43.18	74	30.82	Harmonic

§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 the RBW to 10 kHz and VBW of spectrum analyzer to 30 kHz with a convenient frequency span including the specified frequencies of band edges.
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	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCI	100224	2006-09-29	2007-09-29
HP	Amplifier	8449B	3008A00277	2006-09-29	2007-09-29
Sunol Sciences	Horn Antenna	DRH-118	A052604	2006-07-20	2007-07-20

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

Test Data

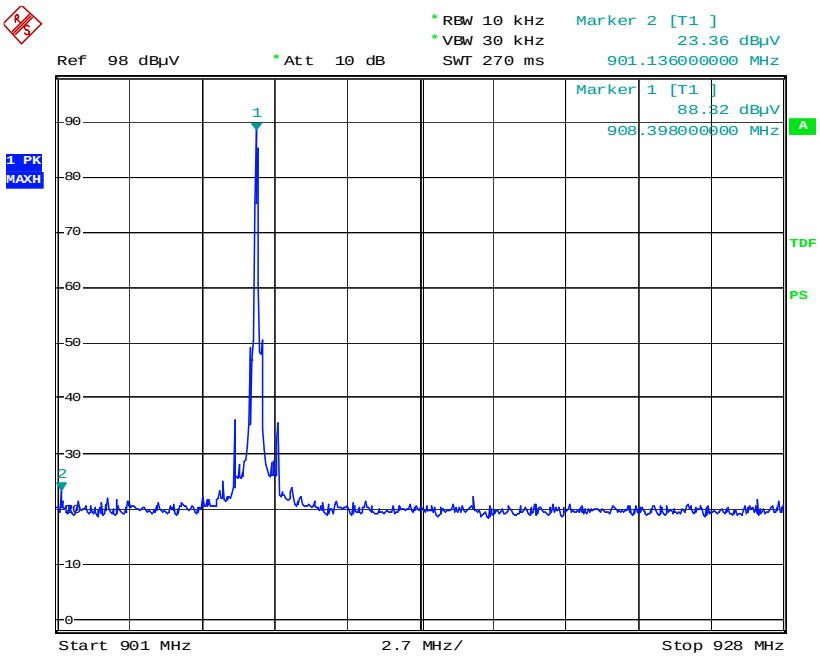
Environmental Conditions

Temperature:	25 ° C
Relative Humidity:	53%
ATM Pressure:	1009mbar

The testing was performed by Merry Zhao on 2007-04-06.

Test Mode: Transmitting

Test Result: Pass



Out of bandedge - left

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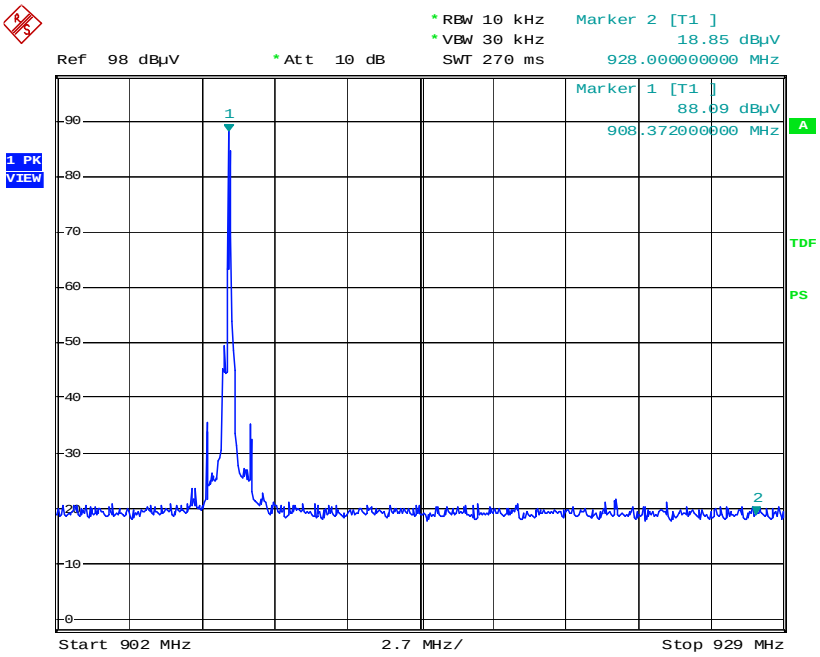

Out of bandedge - right

Date: 6.APR.2007 19:34:14