

FCC PART 15.249 MEASUREMENT AND TEST REPORT

For

Swann Communications Pty Ltd (Swann Global Limited - HK office)

Room 1601, Tung Ning Building, 249-255 Des Voeux Rd, Central, Hong Kong

FCC ID: VMIWCH001

This Report Concerns: <input checked="" type="checkbox"/> Original Report	Equipment Type: Wireless Outdoor Camera
Test Engineer: Kidd Yang <i>Kidd Yang</i>	
Report No.: RSZ07082254 Rev.1	
Test Date: 2007-10-19 to 2008-01-28	
Report Date: 2008-01-30	
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Note: This test report is for the customer shown above and their specific product only. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratory Corp. (Shenzhen) This report **must not** be used by the customer to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *Swann Communications Pty Ltd (Swann Global Limited - HK office)*'s product, model number: *WCH* the "EUT" as referred to in this report is a *Wireless Outdoor Camera*, which measures approximately 11.0cmL x 8.0cmW x 4.3cmH, rated input voltage: DC 12V adapter.

AC/DC Adapter:

Model: KSAFC120050W1US;

Input: 100-240V 50/60Hz 0.18A;

Output: 12V 500mA.

All measurement and test data in this report was gathered from production sample serial number: 0708026 (Assigned by BAFL, Shenzhen). The EUT was received on 2007-10-18.

Objective

This Type approval report is prepared on behalf of *Swann Communications Pty Ltd (Swann Global Limited - HK office)* 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 Laboratories 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 518038, P.R. of 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 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).



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).

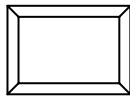
Equipment Modifications

No modifications were made to the unit tested.

External I/O Cable

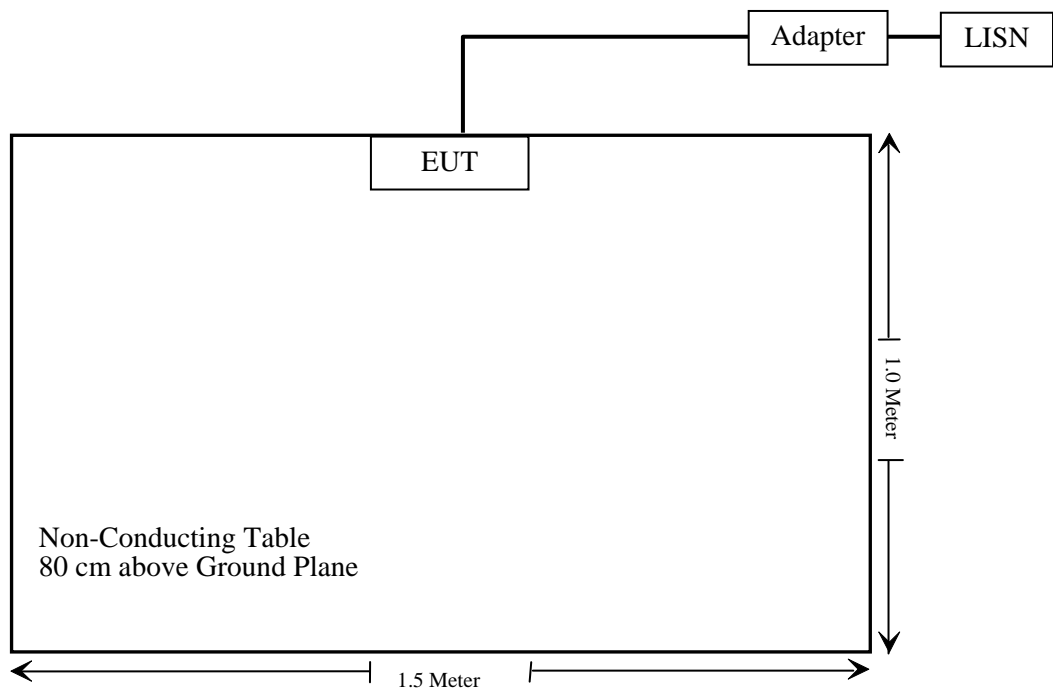
Cable Description	Length (M)	From/Port	To
Unshielded Detachable DC Power Cable	1.80	EUT	Adapter

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), §15.249(c)	Radiated Emissions	Compliant*
§15.249(d)	Out of Band Emissions	Compliant

* *Within measurement uncertainty.*

§15.203 - ANTENNA REQUIREMENT

Applicable Standard

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 wire omni-directional antenna, which in accordance to section 15.203, is considered sufficient to comply with the provisions of this section.

Result: Compliant.

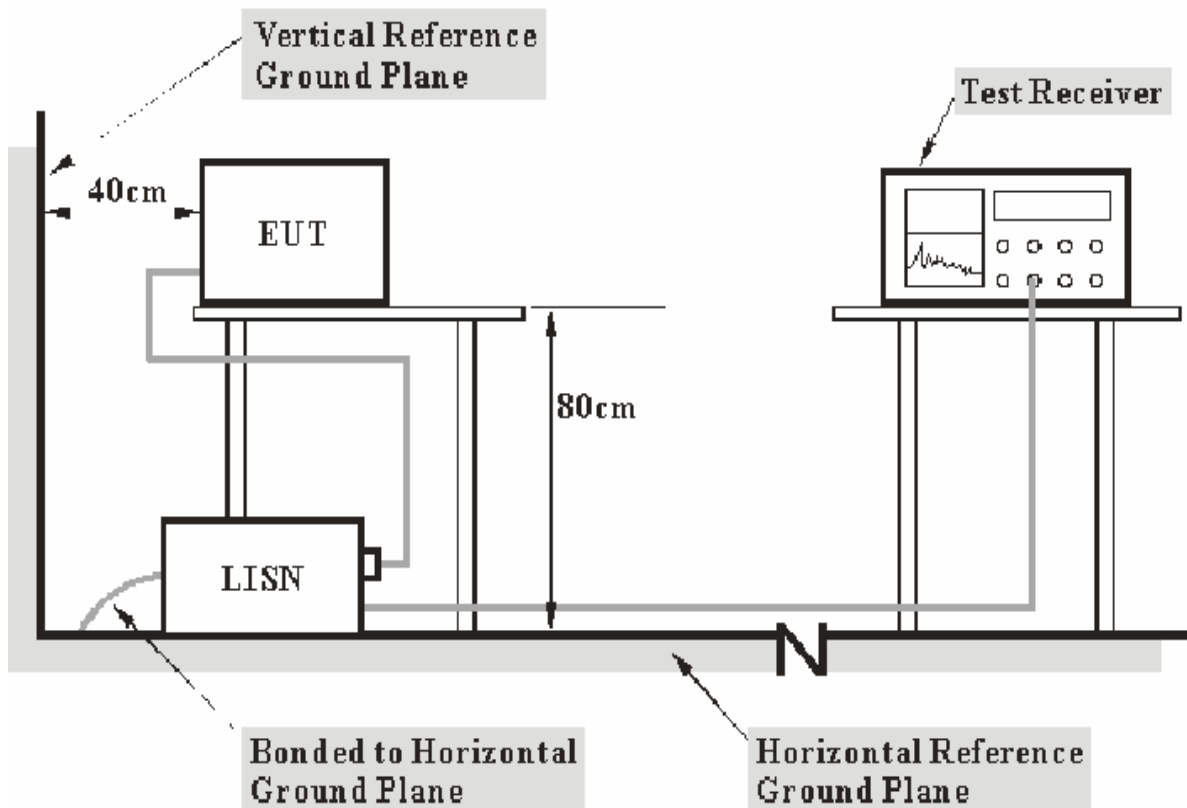
§15.207 - CONDUCTED EMISSIONS

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 Laboratories 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 adapter 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:

<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	12208	N/A	N/A
Rohde & Schwarz	EMI Test Receiver	ESCS30	DE25330	2007-03-26	2008-03-26
Rohde & Schwarz	L.I.S.N.	ESH2-Z5	892107/021	2007-03-26	2008-03-26

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

* **Statement of Traceability:** Bay Area Compliance Laboratories 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 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:

20.20 dB at **1.100 MHz** in the **Neutral** conductor mode. (Low Channel)
21.30 dB at **1.065 MHz** in the **Neutral** conductor mode. (Middle Channel)
21.30 dB at **1.060 MHz** in the **Neutral** conductor mode. (High Channel)

Test Data**Environmental Conditions**

Temperature:	25 ° C
Relative Humidity:	56 %
ATM Pressure:	100.0 kPa

The testing was performed by Kidd Yang on 2007-10-19/2008-01-28.

Test Mode: Transmitting

Low Channel:

Line Conducted Emissions				FCC Part 15 .207	
Frequency (MHz)	Amplitude (dB μ V)	Detector (QP/AV)	Conductor (Hot/Neutral)	Limit (dB μ V)	Margin (dB)
1.100	35.80	QP	Neutral	56.00	20.20
1.100	24.10	AV	Neutral	46.00	21.90
13.270	34.90	QP	Hot	60.00	25.10
10.640	34.30	QP	Hot	60.00	25.70
2.055	29.60	QP	Neutral	56.00	26.40
5.460	33.60	QP	Hot	60.00	26.40
27.160	31.20	QP	Hot	60.00	28.80
5.595	30.60	QP	Neutral	60.00	29.40
2.030	16.60	AV	Neutral	46.00	29.40
0.260	21.80	AV	Neutral	51.40	29.60
0.260	31.20	QP	Neutral	61.40	30.20
4.550	24.50	QP	Neutral	56.00	31.50
13.795	24.30	QP	Neutral	60.00	35.70
0.175	17.50	AV	Hot	54.70	37.20
0.260	12.50	AV	Hot	51.40	38.90
0.260	22.40	QP	Hot	61.40	39.00
0.175	25.30	QP	Hot	64.70	39.40
4.550	5.20	AV	Neutral	46.00	40.80
27.385	7.60	AV	Hot	50.00	42.40
13.270	7.50	AV	Hot	50.00	42.50
10.640	6.70	AV	Hot	50.00	43.30
13.865	6.30	AV	Neutral	50.00	43.70
5.595	5.60	AV	Neutral	50.00	44.40
5.435	5.30	AV	Hot	50.00	44.70

Middle Channel:

Line Conducted Emissions				FCC Part 15 .207	
Frequency (MHz)	Amplitude (dB μ V)	Detector (QP/AV)	Conductor (Hot/Neutral)	Limit (dB μ V)	Margin (dB)
1.065	24.70	AV	Neutral	46.00	21.30
0.250	39.20	QP	Neutral	61.80	22.60
1.065	32.40	QP	Neutral	56.00	23.60
0.380	34.40	QP	Neutral	58.30	23.90
0.315	34.00	QP	Hot	59.80	25.80
1.060	20.10	AV	Hot	46.00	25.90
1.060	28.10	QP	Hot	56.00	27.90
0.215	33.80	QP	Hot	63.00	29.20
0.190	34.70	QP	Hot	64.00	29.30
0.215	23.10	AV	Hot	53.00	29.90
2.200	21.80	QP	Neutral	56.00	34.20
7.055	25.60	QP	Neutral	60.00	34.40
16.175	25.40	QP	Neutral	60.00	34.60
0.190	18.30	AV	Hot	54.00	35.70
2.185	5.60	AV	Neutral	46.00	40.40
0.250	11.30	AV	Neutral	51.80	40.50
0.380	6.60	AV	Neutral	48.30	41.70
2.180	13.90	QP	Hot	56.00	42.10
0.315	7.10	AV	Hot	49.80	42.70
16.265	6.40	AV	Neutral	50.00	43.60
7.035	5.70	AV	Neutral	50.00	44.30
2.205	1.40	AV	Hot	46.00	44.60
19.385	13.80	QP	Hot	60.00	46.20
19.380	0.20	AV	Hot	50.00	49.80

High Channel:

Line Conducted Emissions				FCC Part 15 .207	
Frequency (MHz)	Amplitude (dB μ V)	Detector (QP/AV)	Conductor (Hot/Neutral)	Limit (dB μ V)	Margin (dB)
1.060	24.70	AV	Neutral	46.00	21.30
0.255	39.10	QP	Neutral	61.60	22.50
0.335	36.40	QP	Neutral	59.30	22.90
1.060	32.80	QP	Neutral	56.00	23.20
0.350	33.40	QP	Hot	59.00	25.60
0.285	34.80	QP	Hot	60.70	25.90
1.055	18.40	AV	Hot	46.00	27.60
0.180	34.70	QP	Hot	64.50	29.80
0.660	25.60	QP	Hot	56.00	30.40
1.055	25.50	QP	Hot	56.00	30.50
3.230	21.40	QP	Neutral	56.00	34.60
0.180	19.50	AV	Hot	54.50	35.00
16.530	22.40	QP	Neutral	60.00	37.60
0.335	10.60	AV	Neutral	49.30	38.70
19.980	21.20	QP	Neutral	60.00	38.80
0.255	11.60	AV	Neutral	51.60	40.00
3.205	4.90	AV	Neutral	46.00	41.10
0.350	7.60	AV	Hot	49.00	41.40
0.285	8.00	AV	Hot	50.70	42.70
0.660	3.20	AV	Hot	46.00	42.80
19.265	17.00	QP	Hot	60.00	43.00
20.015	6.20	AV	Neutral	50.00	43.80
16.730	5.00	AV	Neutral	50.00	45.00
19.305	2.30	AV	Hot	50.00	47.70

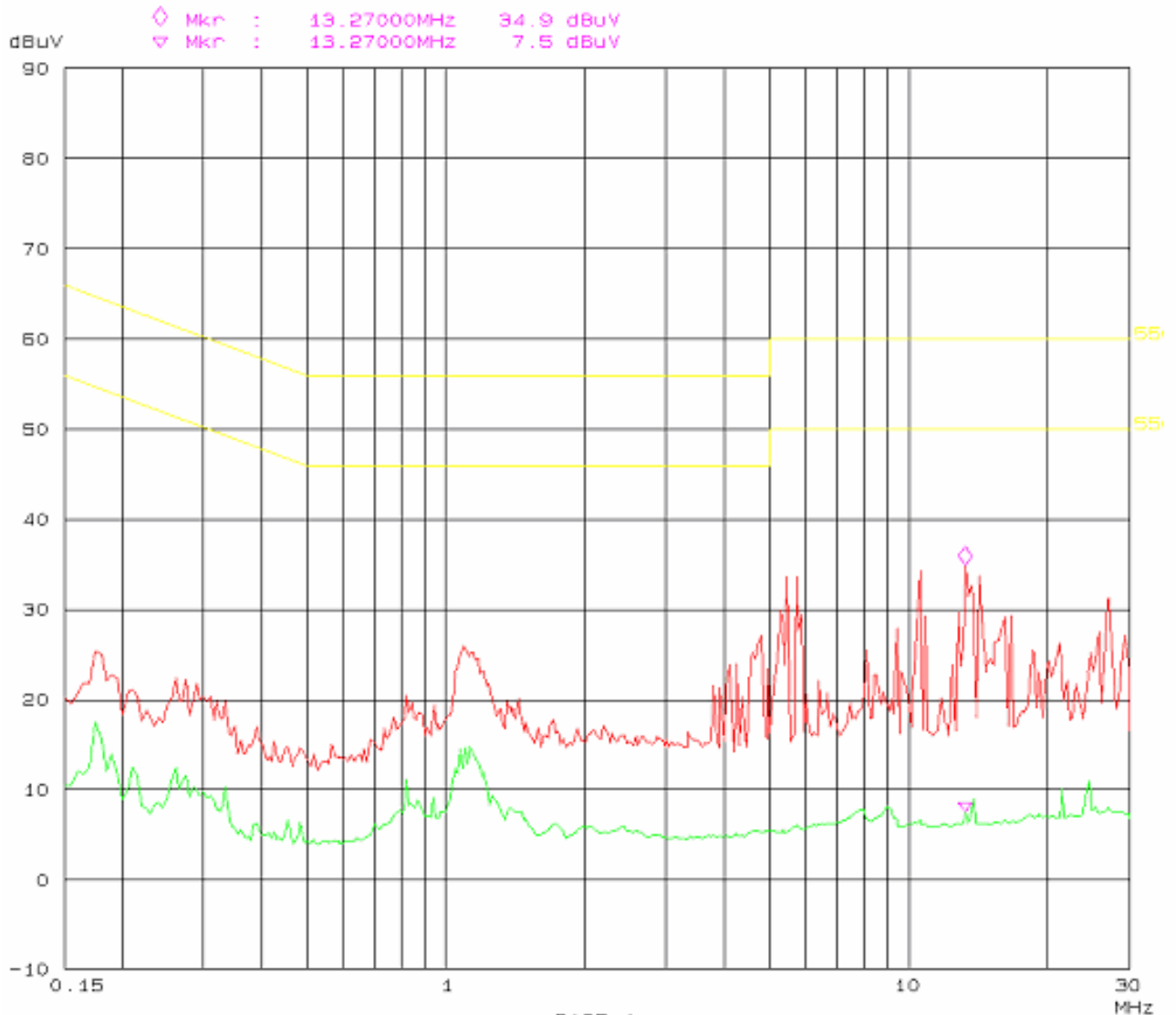
Plot(s) of Test Data

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

Conducted Emission Test FCC Part15

19. Oct 07 18:38

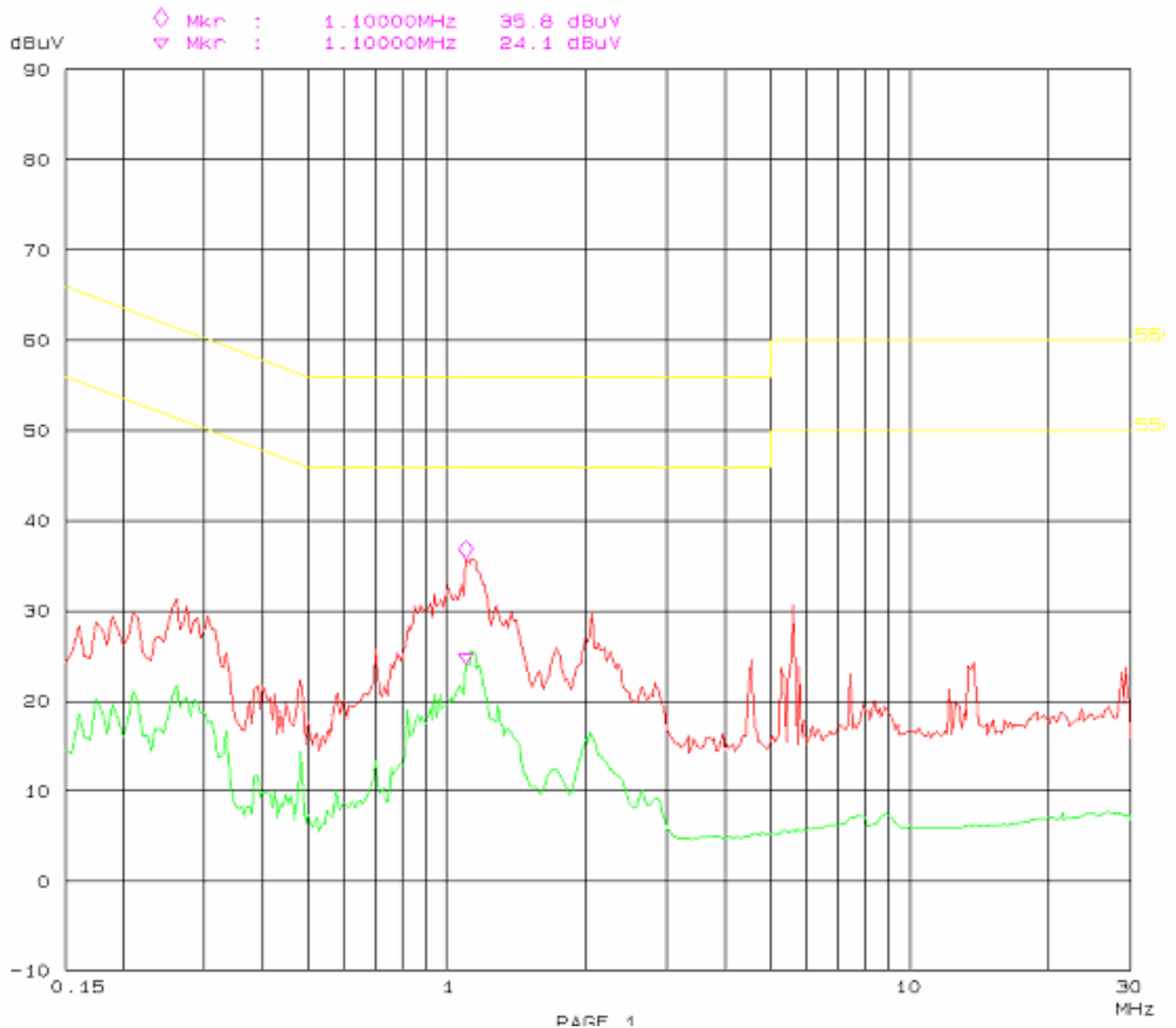
EUT: Wireless outdoor camera
Manuf: Swann
Op Cond: Transmitting(Low Channel)
Operator: Kidd
Test Spec: AC 120V/60Hz Hot
Comment: temp: 25 Humi 58%



Conducted Emission Test FCC Part15

19. Oct 07 19:31

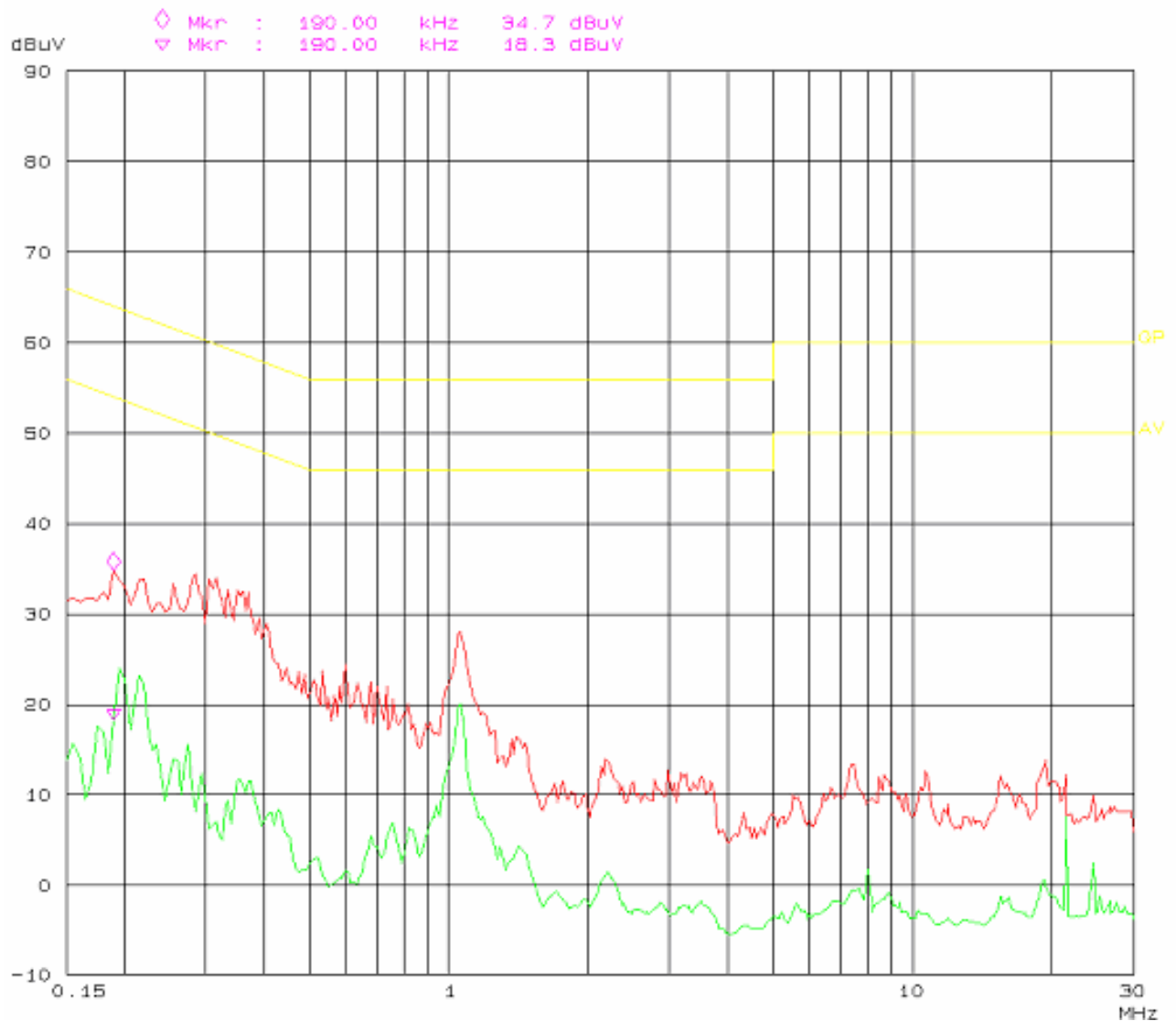
EUT: Wireless outdoor camera
Manuf: Swann
Op Cond: Transmitting(Low Channel)
Operator: Kidd
Test Spec: AC 120V/60Hz N
Comment: temp: 25 Hum: 56%



CONDUCTED EMISSION TEST FCC Part15

28. Jan 08 22: 22

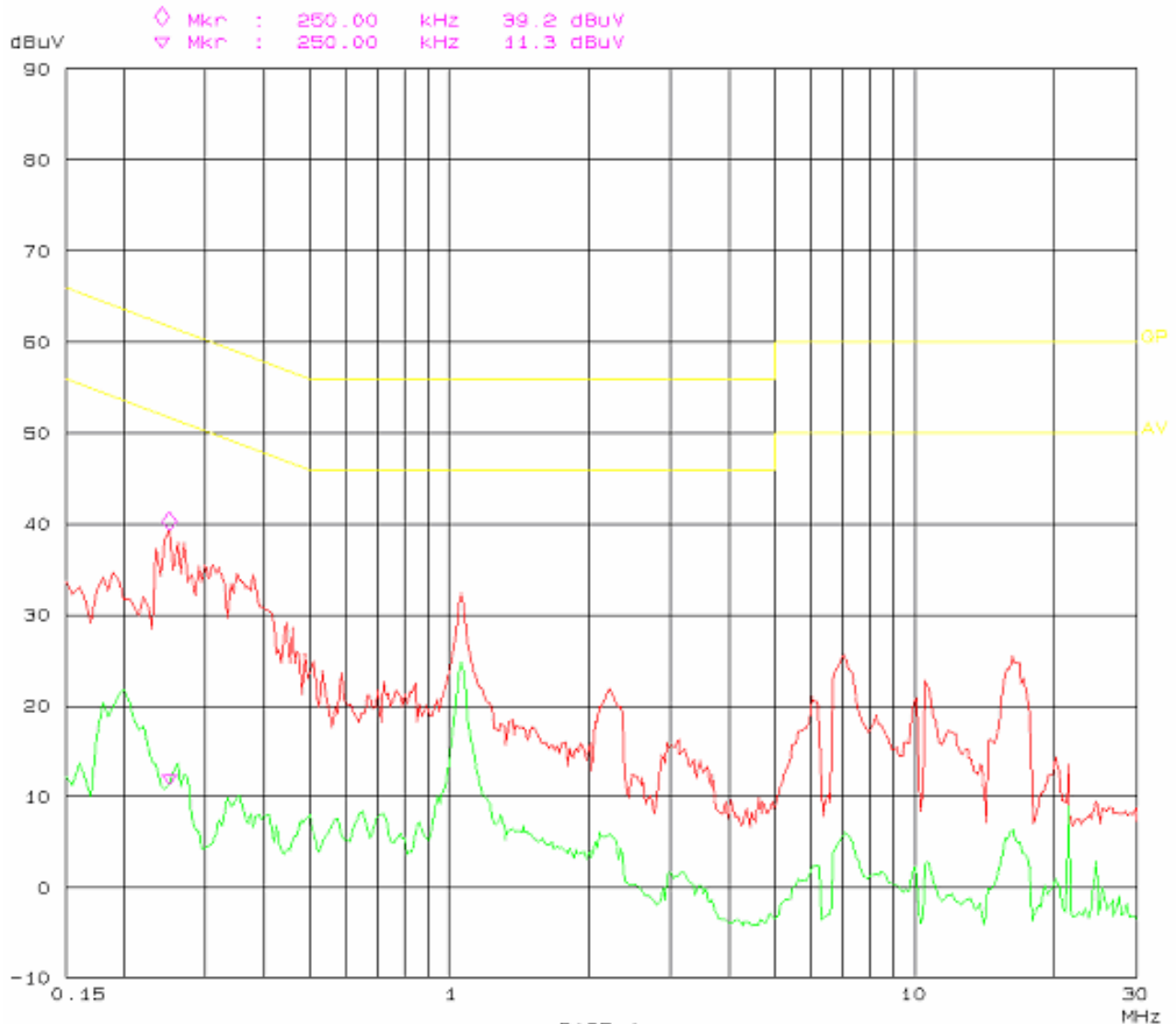
EUT: Wireless Outdoor Camera M/N: WCH
Manuf: Swann
Op Cond: Transmitting (Middle Channel)
Operator: Kidd
Test Spec: AC 120V/60Hz Hot



CONDUCTED EMISSION TEST FCC Part15

28. Jan 08 22:39

EUT: Wireless Outdoor Camera M/N: WCH
Manuf: Swann
Op Cond: Transmitting (Middle Channel)
Operator: Kidd
Test Spec: AC 120V/60Hz N

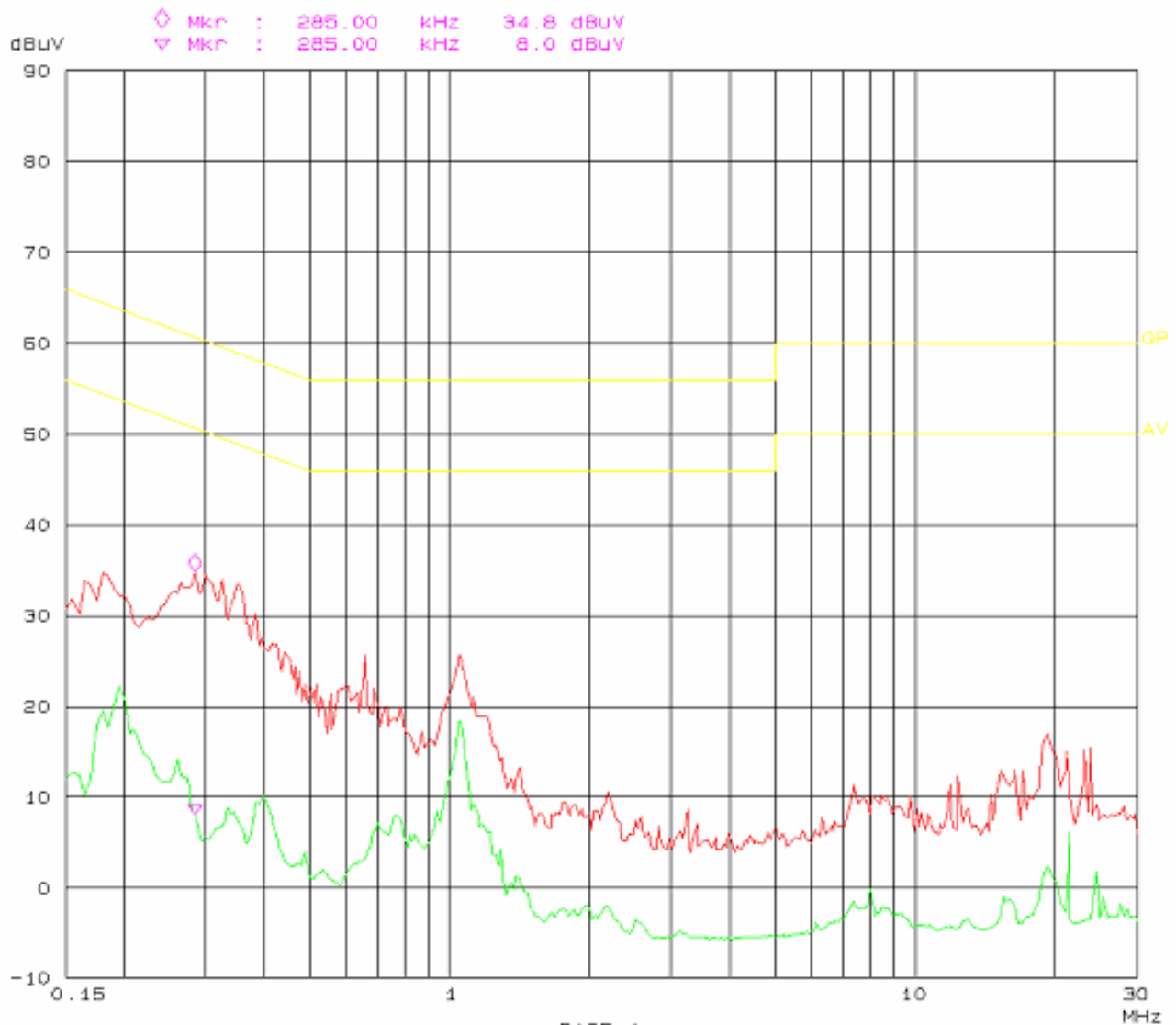


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CONDUCTED EMISSION TEST FCC Part15

28. Jan 08 23:25

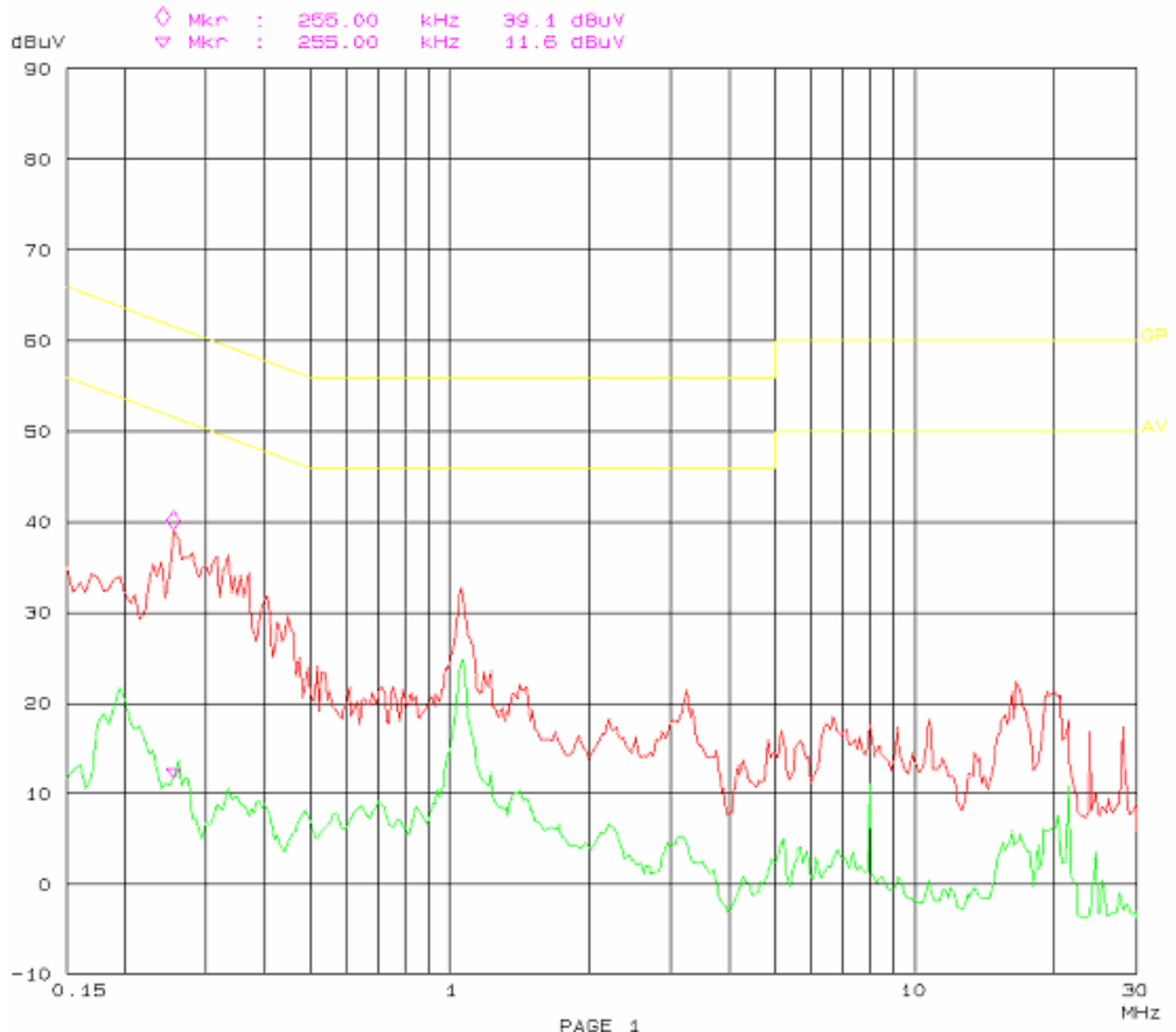
EUT: Wireless Outdoor Camera M/N: WCH
Manuf: Swann
Op Cond: Transmitting (High Channel)
Operator: Kidd
Test Spec: AC 120V/60Hz Hot



CONDUCTED EMISSION TEST FCC Part15

28. Jan 08 22:54

EUT: Wireless Outdoor Camera M/N: WCH
Manuf: Swann
Op Cond: Transmitting (High Channel)
Operator: Kidd
Test Spec: AC 120V/60Hz N



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

Applicable Standard

As per §15.249 (a), except as provided in paragraph (b) of this section, the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Fundamental frequency	Field strength of fundamental (millivolts/meter)	Field strength of harmonics (microvolts/meter)
902–928 MHz	50	500
2400–2483.5 MHz	50	500
5725–5875 MHz	50	500
24.0–24.25 GHz	250	2500

As per §15.249 (c), Field strength limits are specified at a distance of 3 meters.

(d) 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.

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 Laboratories Corp. (Shenzhen) is ± 4.0 dB.

Test Equipment Setup

The spectrum analyzer or receiver is set as:

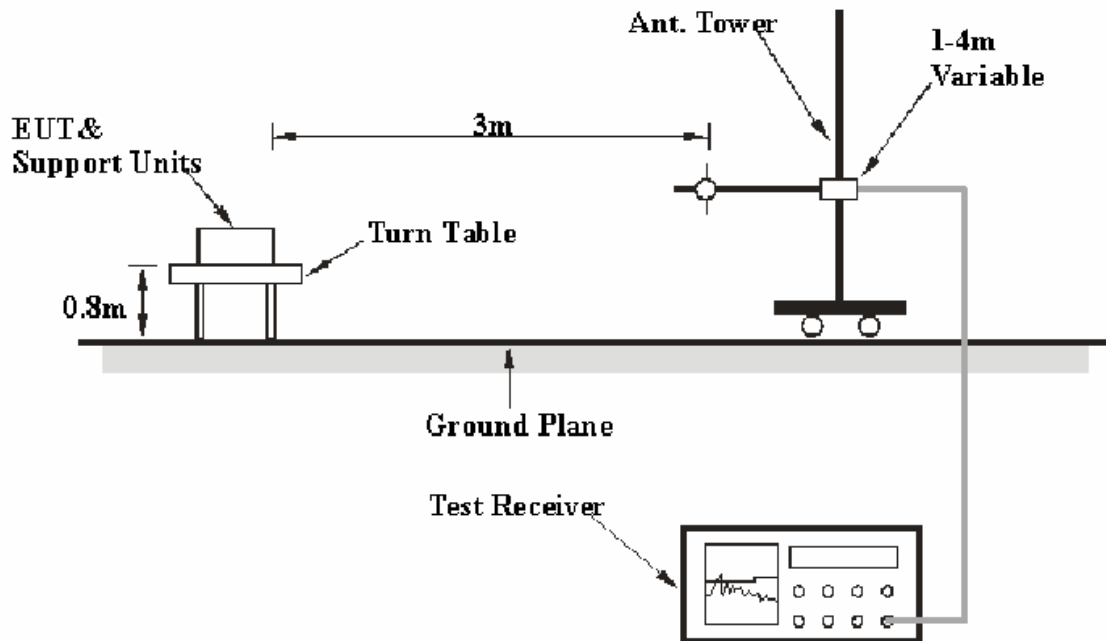
Below 1000 MHz:

$$\text{RBW} = 100 \text{ kHz} / \text{VBW} = 300 \text{ kHz} / \text{Sweep} = \text{Auto}$$

Above 1000 MHz:

- (1) Peak: RBW = 1 MHz / VBW = 1 MHz / Sweep = Auto
- (2) Average: RBW = 1 MHz / VBW = 10 Hz / Sweep = Auto

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.

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
HP	Amplifier	8447E	1937A01046	2006-11-15	2007-11-15
Sunol Sciences	Bilog Antenna	JB1	A040904-2	2007-08-14	2008-08-14
HP	Amplifier	8449B	3008A00277	2007-09-29	2008-09-29
Sunol Sciences	Horn Antenna	DRH-118	A052604	2007-09-25	2008-09-25
Agilent	Spectrum Analyzer	8564E	3943A01781	2006-11-22	2007-11-22

* **Statement of Traceability:** Bay Area Compliance Laboratories 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, and all support equipment power cords 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.

The EUT is set 3 meter away from the testing antenna, which is varied from 1-4 mete, and the EUT is placed on a turntable, which is 0.8 meter above ground plane, the table shall be rotated for 360 degrees to find out the highest emission. The receiving antenna should be changed the polarization both of horizontal and vertical.

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 & 15.249, with the worst margin reading of:

30-1000 MHz:

9.5 dB at **934.919250 MHz** in the **Horizontal** polarization. (Low Channel)
10.0 dB at **153.133375 MHz** in the **Horizontal** polarization. (Middle Channel)
6.4 dB at **31.461250 MHz** in the **Vertical** polarization. (High Channel)

Above 1 GHz:

3.49 dB at **7243 MHz** in the **Vertical** polarization. (Low Channel)
2.49 dB at **7350 MHz** in the **Vertical** polarization. (Middle Channel)
2.42 dB at **7404 MHz** in the **Vertical** polarization. (High Channel)

Test Data

Environmental Conditions

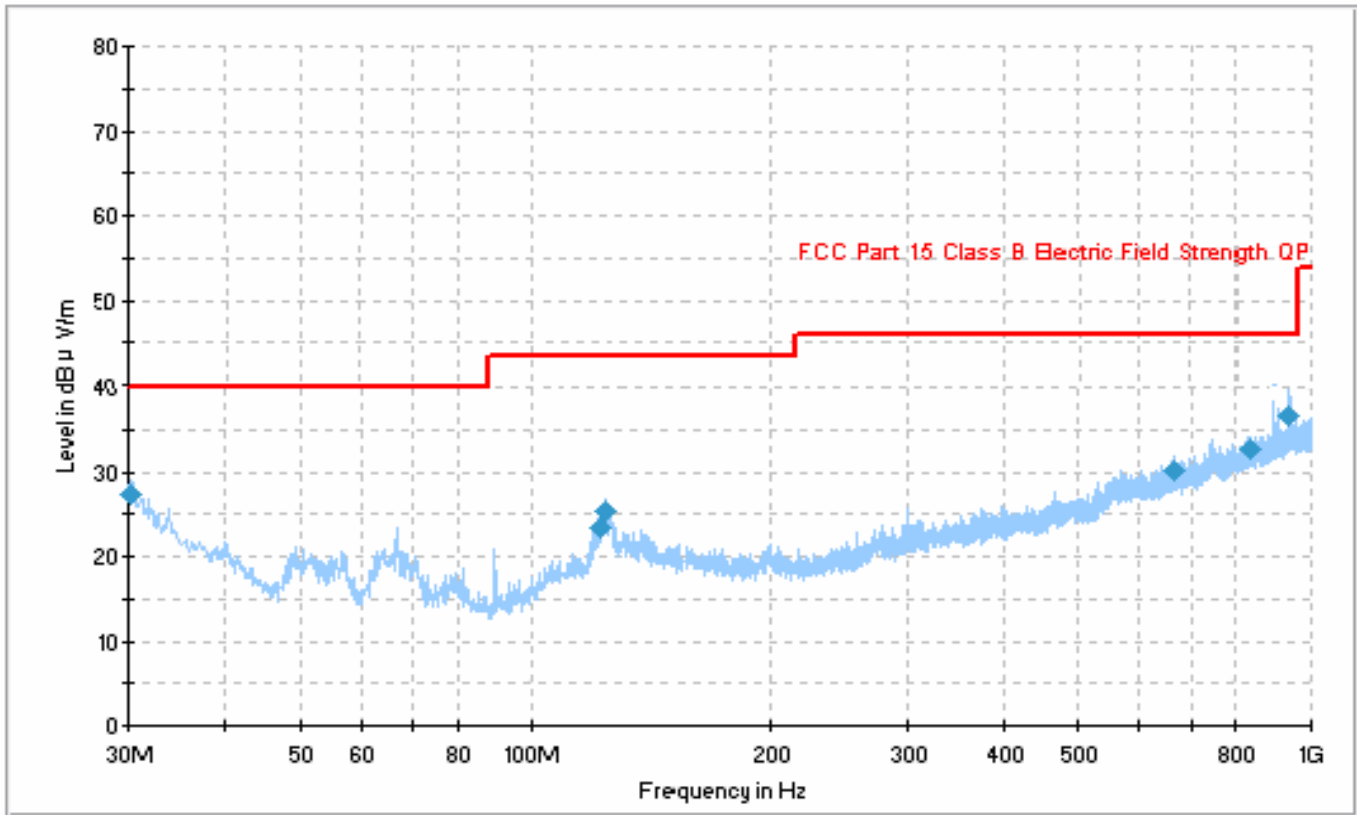
Temperature:	25 ° C
Relative Humidity:	56 %
ATM Pressure:	100.9kPa

The testing was performed by Kidd Yang on 2007-10-19/2008-01-28.

Test Mode: Transmitting

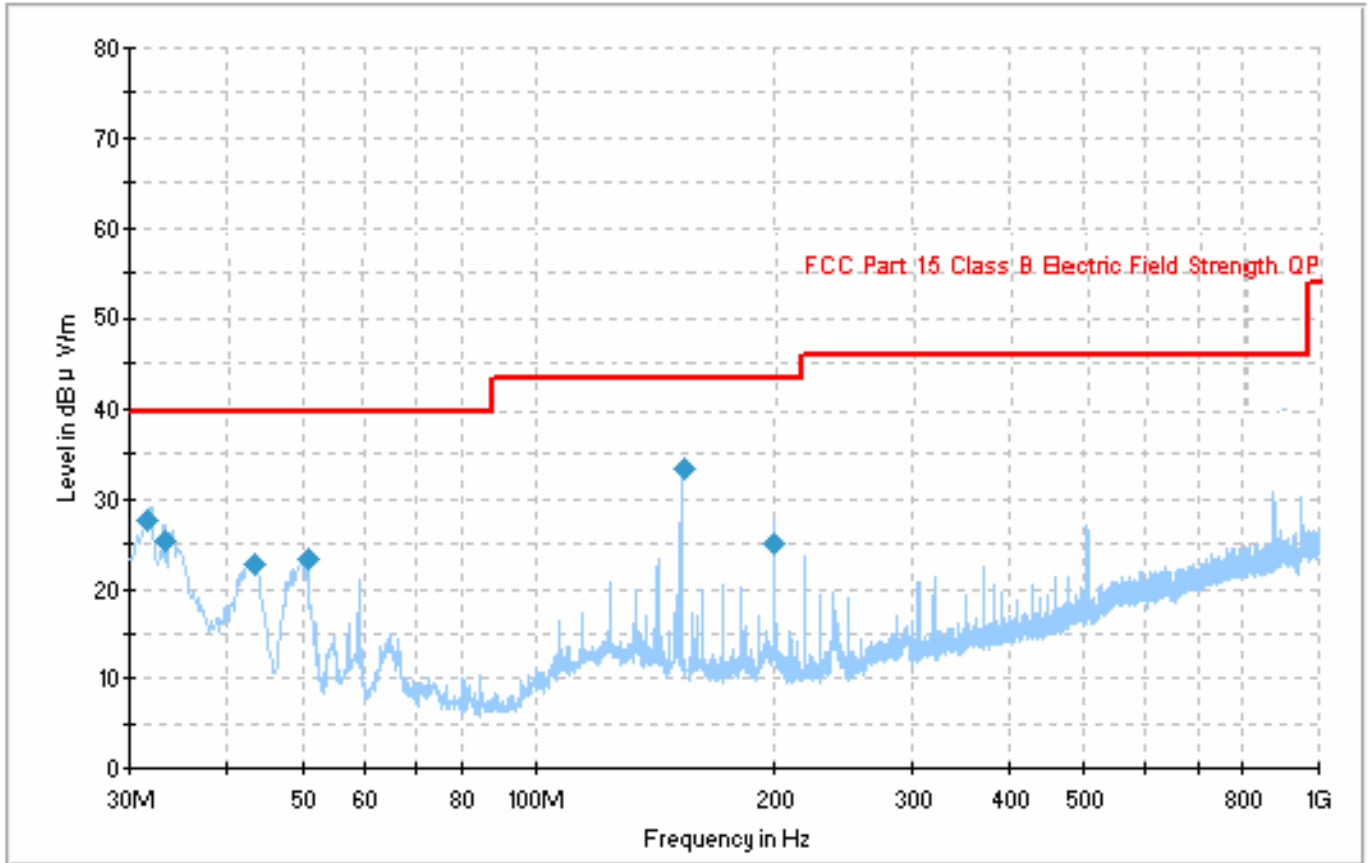
Below 1GHz:

Low Channel:



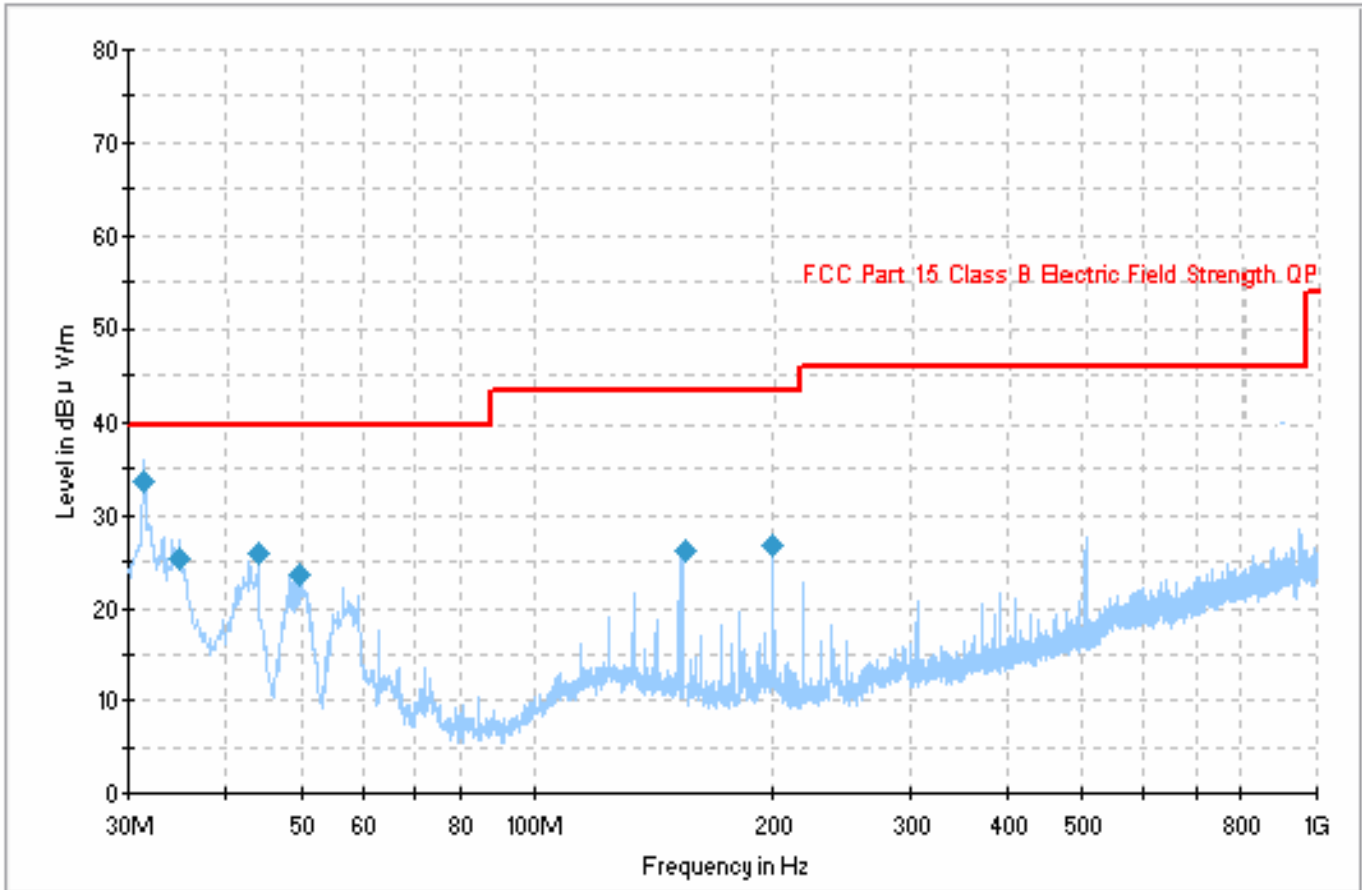
Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Polarity (H/V)	Turntable Position (deg)	Correction Factor (dB)	Limit (dBµV/m)	Margin (dB)
934.919250	36.5	105.0	H	275.0	1.8	46.0	9.5
30.246430	27.4	110.0	V	300.0	-3.6	40.0	12.6
831.707375	32.8	108.0	V	230.0	0.2	46.0	13.2
666.373125	30.2	217.0	V	300.0	-2.3	46.0	15.8
123.941125	25.4	168.0	V	135.0	-10.8	43.5	18.1
122.703375	23.5	109.0	V	132.0	-10.9	43.5	20.0

Middle Channel:



Frequency (MHz)	Corrected Amplitude (dB μ V/m)	Antenna Height (cm)	Polarity (H/V)	Turntable Position (deg)	Correction Factor (dB)	Limit (dB μ V/m)	Margin (dB)
153.133375	33.5	99.0	H	55.0	-25.3	43.5	10.0
31.694250	27.7	300.0	V	133.0	-16.7	40.0	12.3
33.271241	25.3	120.0	V	90.0	-15.2	40.0	14.7
50.731021	23.3	100.0	V	15.0	-14.3	40.0	16.7
43.453654	22.8	110.0	H	50.0	-15.1	40.0	17.2
200.458625	24.9	99.0	H	4.0	-24.5	43.5	18.6

High Channel:



Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Polarity (H/V)	Turntable Position (deg)	Correction Factor (dB)	Limit (dBµV/m)	Margin (dB)
31.461250	33.6	387.0	V	5.0	-16.9	40.0	6.4
43.941500	25.8	110.0	V	1.0	-25.3	40.0	14.2
34.851240	25.3	120.0	V	250.0	-16.3	40.0	14.7
49.642142	23.7	110.0	H	95.0	-14.2	40.0	16.3
200.452875	26.8	99.0	H	306.0	-24.5	43.5	16.7
154.249875	26.1	100.0	H	5.0	-25.3	43.5	17.4

Above 1GHz:

Low Channel:

Freq. (MHz)	Meter Reading (dBuV)	Detector (PK/ AV)	Direction (Degree)	Ant. Height (m)	Ant. Polar (H / V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Cord. Amp. (dBuV/m)	FCC Part 15.209 & 15.249		
										Limit (dBuV/m)	Margin (dB)	Comment
7243	44.30	AV	90	1.2	V	35.4	4.51	33.7	50.51	54	3.49*	Harmonic
9658	38.50	AV	158	1.3	V	37.6	5.35	34.1	50.35	54	6.65	Harmonic
4823	44.40	AV	180	1.6	V	31.3	4.64	33.4	46.94	54	7.06	Harmonic
4823	63.01	PK	250	1.0	V	31.3	4.64	33.4	65.55	74	8.45	Harmonic
4823	42.60	AV	270	1.6	H	31.3	4.64	33.4	45.14	54	8.86	Harmonic
9658	35.60	AV	238	1.5	H	37.6	5.35	34.1	44.45	54	9.55	Harmonic
2414	87.67	AV	45	1.0	V	27.4	3.61	35.0	83.68	94	10.32	Fund.
7243	56.10	PK	180	1.0	V	35.4	4.51	33.7	62.31	74	11.69	Harmonic
9658	52.00	PK	158	1.3	V	37.6	5.35	34.1	60.85	74	13.15	Harmonic
7243	33.60	AV	261	1.0	H	35.4	4.51	33.7	39.81	54	14.19	Harmonic
2414	82.17	AV	263	1.4	H	27.4	3.61	35.0	78.18	94	15.82	Fund.
9658	48.33	PK	158	1.6	H	37.6	5.35	34.1	57.18	74	16.82	Harmonic
4823	53.26	PK	49	1.2	H	31.3	4.64	33.4	55.80	74	18.20	Harmonic
7243	46.96	PK	180	1.3	H	35.4	4.51	33.7	53.17	74	20.83	Harmonic
2414	95.65	PK	18	1.6	V	27.4	3.61	35.0	91.66	114	22.34	Fund.
2414	90.62	PK	20	1.2	H	27.4	3.61	35.0	86.63	114	27.37	Fund.

Middle Channel:

Freq. (MHz)	Meter Reading (dBuV)	Detector (PK/ AV)	Direction (Degree)	Ant. Height (m)	Ant. Polar (H / V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Cord. Amp. (dBuV/m)	FCC Part 15.209 & 15.249		
										Limit (dBuV/m)	Margin (dB)	Comment
7350	45.3	AV	90	1.2	V	35.4	4.51	33.7	51.51	54	2.49*	Harmonic
9800	39.52	AV	158	1.3	V	37.6	5.35	34.1	48.37	54	5.63	Harmonic
4900	44.6	AV	270	1.6	H	31.3	4.64	33.4	47.14	54	6.86	Harmonic
4900	44.2	AV	180	1.6	V	31.3	4.64	33.4	46.74	54	7.26	Harmonic
9800	36.3	AV	238	1.5	H	37.6	5.35	34.1	45.15	54	8.85	Harmonic
7350	57.1	PK	180	1.0	V	35.4	4.51	33.7	63.31	74	10.69	Harmonic
9800	54.1	PK	158	1.3	V	37.6	5.35	34.1	62.95	74	11.05	Harmonic
7350	35.61	AV	261	1.0	H	35.4	4.51	33.7	41.82	54	12.18	Harmonic
4900	57.21	PK	250	1.0	V	31.3	4.64	33.4	59.75	74	14.25	Harmonic
9800	49.33	PK	158	1.6	H	37.6	5.35	34.1	58.18	74	15.82	Harmonic
4900	54.28	PK	49	1.2	H	31.3	4.64	33.4	56.82	74	17.18	Harmonic
7350	48.26	PK	180	1.3	H	35.4	4.51	33.7	54.47	74	19.53	Harmonic
2450	96.62	PK	18	1.6	V	27.4	3.61	35.0	92.63	114	21.37	Fund.
2450	76.25	AV	45	1.0	V	27.4	3.61	35.0	72.26	94	21.74	Fund.
2450	74.32	AV	263	1.4	H	27.4	3.61	35.0	70.33	94	23.67	Fund.
2450	92.32	PK	20	1.2	H	27.4	3.61	35.0	88.33	114	25.67	Fund.

High Channel:

Freq. (MHz)	Meter Reading (dBuV)	Detector (PK/ AV)	Direction (Degree)	Ant. Height (m)	Ant. Polar (H / V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Cord. Amp. (dBuV/m)	FCC Part 15.209 & 15.249		
										Limit (dBuV/m)	Margin (dB)	Comment
7404	45.37	AV	90	1.2	V	35.4	4.51	33.7	51.58	54	2.42*	Harmonic
4936	46.4	AV	180	1.6	V	31.3	4.64	33.4	48.94	54	5.06	Harmonic
9872	39.57	AV	158	1.3	V	37.6	5.35	34.1	48.42	54	5.58	Harmonic
9872	37.66	AV	238	1.5	H	37.6	5.35	34.1	46.51	54	7.49	Harmonic
4936	43.62	AV	270	1.6	H	31.3	4.64	33.4	46.16	54	7.84	Harmonic
7404	57.11	PK	180	1.0	V	35.4	4.51	33.7	63.32	74	10.68	Harmonic
9872	53.05	PK	158	1.3	V	37.6	5.35	34.1	61.9	74	12.1	Harmonic
7404	35.60	AV	261	1.0	H	35.4	4.51	33.7	41.81	54	12.19	Harmonic
4936	59.04	PK	250	1.0	V	31.3	4.64	33.4	61.58	74	12.42	Harmonic
9872	50.33	PK	158	1.6	H	37.6	5.35	34.1	59.18	74	14.82	Harmonic
2468	82.17	AV	263	1.4	H	27.4	3.61	35.0	78.18	94	15.82	Fund.
4936	55.26	PK	49	1.2	H	31.3	4.64	33.4	57.8	74	16.2	Harmonic
7404	48.97	PK	180	1.3	H	35.4	4.51	33.7	55.18	74	18.82	Harmonic
2468	78.67	AV	45	1.0	V	27.4	3.61	35.0	74.68	94	19.32	Fund.
2468	97.67	PK	18	1.6	V	27.4	3.61	35.0	93.68	114	20.32	Fund.
2468	93.42	PK	20	1.2	H	27.4	3.61	35.0	89.43	114	24.57	Fund.

* Within measurement uncertainty.

§15.249(d) – OUT OF BAND EMISSIONS

Applicable Standard

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 100 kHz and VBW of spectrum analyzer to 300 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	2007-10-16	2008-10-16
HP	Amplifier	8449B	3008A00277	2007-09-29	2008-09-29
Sunol Sciences	Horn Antenna	DRH-118	A052604	2007-09-25	2008-09-25

*** Statement of Traceability:** Bay Area Compliance Laboratories 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:	100.9 kPa

The testing was performed by Kidd Yang on 2007-10-19/2008-01-28.

Test Mode: Transmitting

Test Result: Compliant.

Please refer to the following tabular data.

Frequency (MHz)	Receiver Reading (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Pre- Amp. (dB)	Cord. Amp. (dBuV/m)	Limit (dBuV/m)	Margin (dB)
2399.9	42.30	27.4	3.61	35.0	38.31	54	15.69
2483.6	42.41	27.4	3.61	35.0	38.42	54	15.58

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