Lab Code: 200707-0

FCC PART 15.249

MEASUREMENT AND TEST REPORT

For

Moor Technology Co., Ltd.

RM 602, Block 2, Jianxinglou, Chaguang Industrial Zoon,
Nanshan District, Shenzhen, Guangdong, China

FCC ID: ZECSZMOORCN888

Report Type:	**Product Type:**
Original Report	Wireless Inspection Camera

Test Engineer:	Felix Li
Report Number:	RDG11031705
Report Date:	2011-04-28
Reviewed By:	Merry Zhao EMC Engineer
Prepared By:	Bay Area Compliance Laboratories 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 *Moor Technology Co., Ltd* 's product, model *MG-6808(FCC ID: ZECSZMOORCN888)*, or the "EUT" as referred to in this report is a *Wireless inspection camera*, which measures approximately: 17.0 cm (L) x 16.0 cm (W) x 5.0 cm (H), rated input voltage: DC 1.5V AA*4 battery

Note: the product Wireless inspection camera, model MG-6808 can be divided into three kinds due to the length of tube, which was explained in the attached declaration letter.

** All measurement and test data in this report was gathered from production sample serial number: 1103017 (Assigned by BACL, Shenzhen). The EUT was received on 2011-03-17.*

Objective

This Type approval report is prepared on behalf of *Moor Technology Co., Ltd* 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)

N/A.

Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2009, 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 Laboratories 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 Laboratories 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 December 06, 2010. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2009.

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 Laboratories 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/Standards/scopes/2007070.htm

SYSTEM TEST CONFIGURATION

Justification

The EUT has three difference length tube, 1 m tube with camera, 2 m tube with camera and 5 m tube with camera, due to the difference between them, radiated spurious emission have been pre-scanned and the worst case mode (with 5 m tube) will be fully tested.

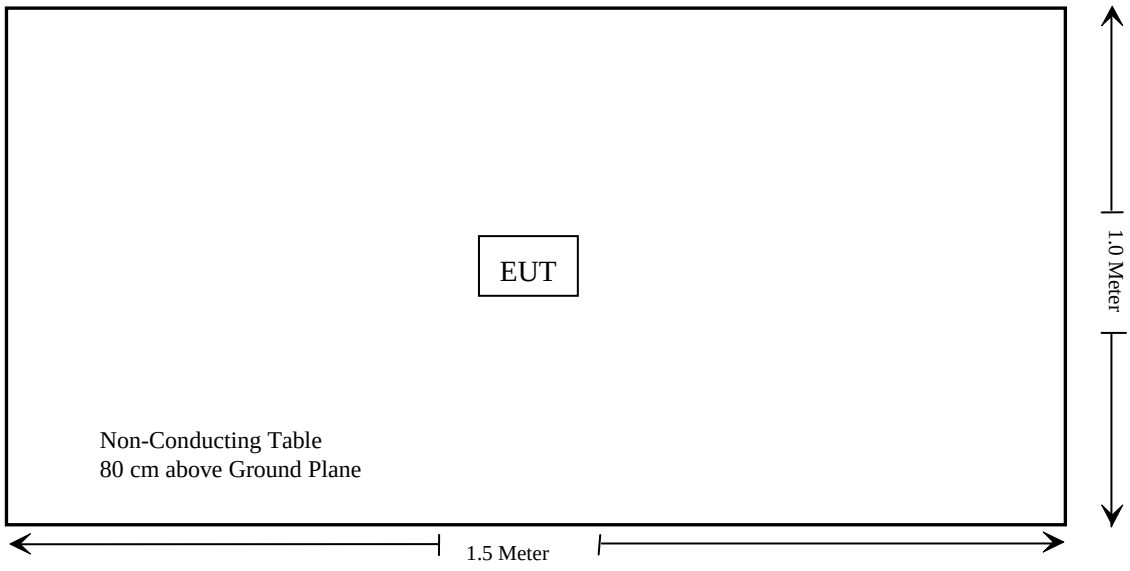
Description of Test Configuration

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.

Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§15.203	Antenna Requirement	Compliance
§15.207(a)	AC Line Conduction Emissions	N/A*
§15.209(a), §15.249	Radiated Emissions	Compliance
§15.215(c)	20 dB Emission Bandwidth	Compliance
§15.205(a), §15.249(d)	Out of band emissions	Compliance

Note: N/A* EUT is battery operation.

FCC §15.203 - ANTENNA REQUIREMENT

Applicable Standard

For intentional device, according to FCC §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 has an integral antenna soldered on the PCB board and it is considered sufficiently to comply with the provisions of this section.

Result: Compliant.

Please refer to the EUT photos.

FCC §15.209 & §15.249 - RADIATED EMISSIONS

Applicable Standard

As per FCC §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 FCC§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:

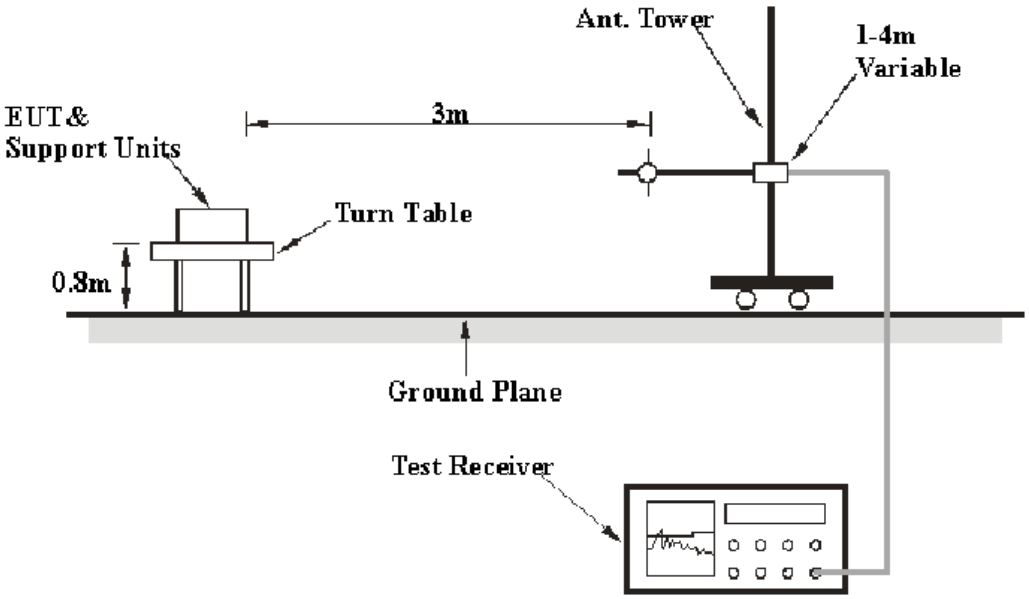
RBW = 100 kHz / VBW = 300 kHz / Sweep = Auto

Above 1000 MHz:

Peak: RBW = 1MHz / VBW = 1MHz / Sweep = Auto

Average: RBW = 1MHz / VBW = 10Hz / 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 C63.4-2009. The specification used was the FCC 15.209 and FCC 15.249 limits.

Test Procedure

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:

Corrected Amplitude = Meter Reading + Antenna Factor + 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 7 dB means the emission is 7 dB below the limit. The equation for margin calculation is as follows:

Margin = Limit – Corrected Amplitude

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
HP	Amplifier	8447E	1937A01046	2010-08-02	2011-08-01
Rohde & Schwarz	EMI Test Receiver	ESCI	100224	2010-11-11	2011-11-10
Sunol Sciences	Broadband Antenna	JB1	A040904-1	2010-07-05	2011-07-04
Mini-Circuits	Amplifier	ZVA-213+	T-E27H	2011-03-08	2012-03-07
Sunol Sciences	Horn Antenna	DRH-118	A052604	2010-05-05	2011-05-04
Rohde & Schwarz	Spectrum Analyzer	FSEM30	849720/019	2010-07-08	2011-07-07

*** 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 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:

Below 1 GHz

1.5 dB at **95.987500 MHz** in the **Horizontal** polarization for low channel

Above 1 GHz

1.22 dB at **7296 MHz** in the **Vertical** polarization for Middle channel

Test Data

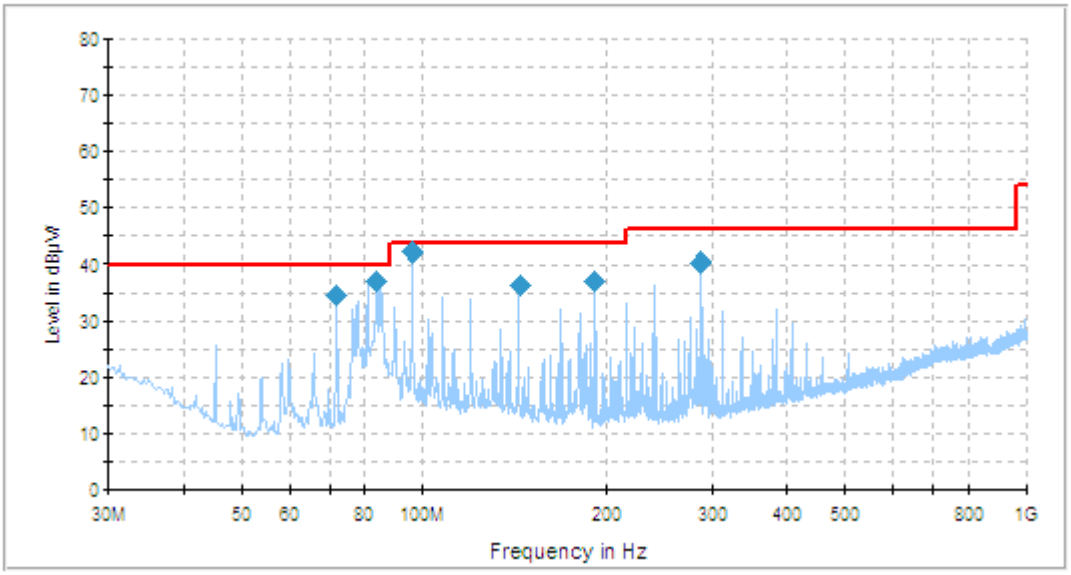
Environmental Conditions

Temperature:	25 °C
Relative Humidity:	56 %
ATM Pressure:	100.2 kPa

The testing was performed by Felix Li on 2011-04-28

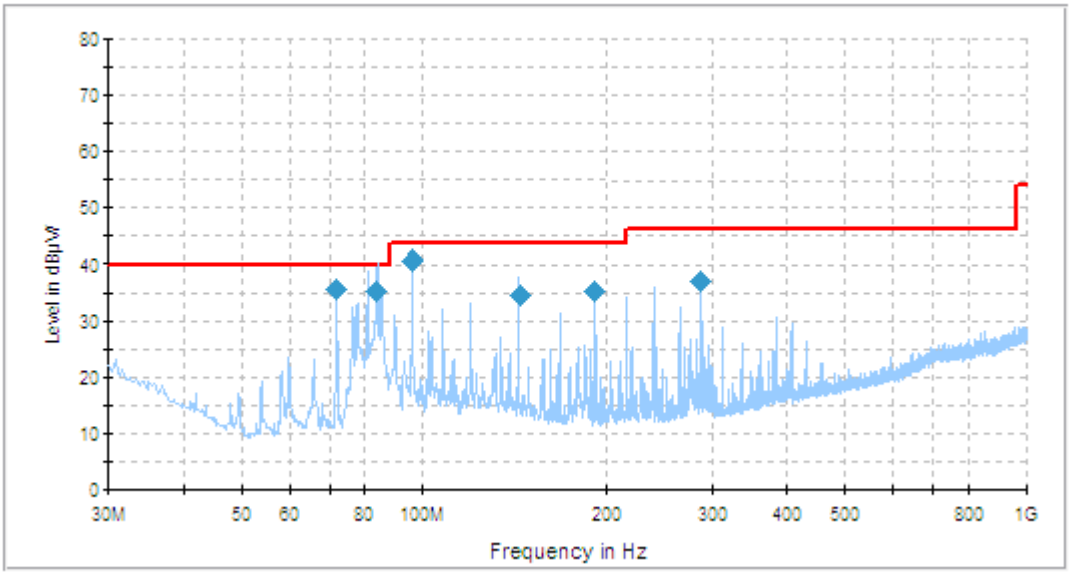
1) 30-1000 MHz:

Worst case, Low Channel-2414 MHz



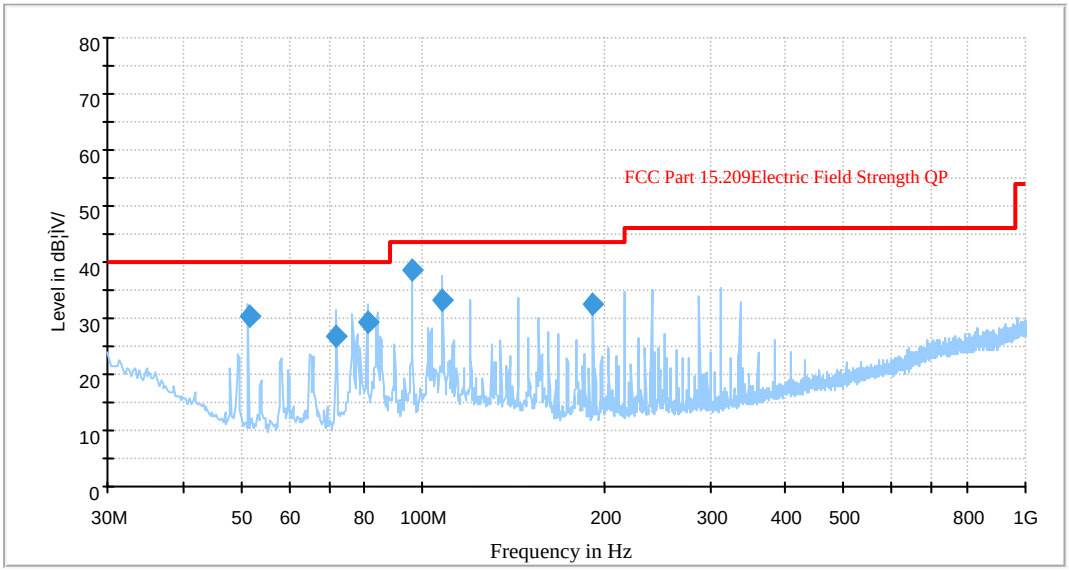
Frequency (MHz)	Corrected Amplitude (dBµV/m)	Test Antenna		Turntable Position (degree)	Correction Factor (dB)	Limit (dBµV/m)	Margin (dB)
		Height (cm)	Polarity (H/V)				
95.987500	42.0	210.0	H	185.0	-15.8	43.5	1.5*
84.002750	37.3	209.0	H	169.0	-17.9	40.0	2.7*
72.001250	34.6	400.0	H	25.0	-18.2	40.0	5.4
288.021750	40.3	102.0	H	64.0	-12.6	46.0	5.7
192.007250	37.0	108.0	H	169.0	-14.7	43.5	6.5
144.011000	36.6	211.0	H	185.0	-13.5	43.5	6.9

Worst case, Middle Channel-2432 MHz



Frequency (MHz)	Corrected Amplitude (dBµV/m)	Test Antenna		Turntable Position (degree)	Correction Factor (dB)	Limit (dBµV/m)	Margin (dB)
		Height (cm)	Polarity (H/V)				
96.004500	40.7	400.0	H	0.0	-15.7	43.5	2.8*
72.000500	35.8	400.0	H	8.0	-18.2	40.0	4.2
83.966000	35.3	400.0	H	207.0	-17.9	40.0	4.7
192.004500	35.4	108.0	H	219.0	-14.7	43.5	8.1
144.043000	34.8	309.0	H	28.0	-13.5	43.5	8.7
288.021500	37.2	109.0	H	237.0	-12.6	46.0	8.8

Worst case, High Channel-2468 MHz



Frequency (MHz)	Corrected Amplitude (dBµV/m)	Test Antenna		Turntable Position (degree)	Correction Factor (dB)	Limit (dBµV/m)	Margin (dB)
		Height (cm)	Polarity (H/V)				
96.001250	38.6	205.0	H	177.0	-15.7	43.5	4.9
51.591000	30.2	227.0	H	84.0	-17.5	40.0	9.8
108.037500	33.3	279.0	H	334.0	-13.6	43.5	10.2
80.989500	29.3	400.0	H	164.0	-18.1	40.0	10.7
71.994250	26.8	303.0	H	134.0	-18.2	40.0	13.2
191.021000	32.6	340.0	H	83.0	-11.2	46.0	13.4

2) Spurious Emissions above 1 GHz

Test Mode: Transmitting (worst case)

Freq. (MHz)	S.A. Reading (dBμV)	Detector QP/PK/Ave	Turntable Direction Degree	Test Antenna			Cable Loss (dB)	Pre-Amp. Gain (dB)	Cord. Amp. (dBμV/m)	FCC 15.209/15.249		
				Height (m)	Polar (H/V)	Factor (dB/m)				Limit (dBμV/m)	Margin (dB)	Comment
Low Channel (2414 MHz)												
7242	33.84	Ave	35	1.2	V	37	5.05	26.64	49.25	54	4.75	harmonic
7242	32.77	Ave	334	1.8	H	36.5	5.05	26.64	47.68	54	6.32	harmonic
4828	34.23	Ave	338	1.6	H	33.8	4.34	26.75	45.62	54	8.38	harmonic
4828	32.49	Ave	65	1.2	V	33.5	4.34	26.75	43.58	54	10.42	harmonic
7242	44.26	PK	35	1.2	V	37	5.05	26.64	59.67	74	14.33	harmonic
7242	40.67	PK	334	1.8	H	36.5	5.05	26.64	55.58	74	18.42	harmonic
4828	41.6	PK	338	1.6	H	33.8	4.34	26.75	52.99	74	21.01	harmonic
4828	40.33	PK	65	1.2	V	33.5	4.34	26.75	51.42	74	22.58	harmonic
Middle Channel (2432 MHz)												
7296	37.37	Ave	117	2.1	V	37	5.05	26.64	52.78	54	1.22*	harmonic
7296	35.73	Ave	292	1.8	H	36.5	5.05	26.64	50.64	54	3.36*	harmonic
4864	37.75	Ave	209	1.4	V	33.5	4.34	26.75	48.84	54	5.16	harmonic
4864	35.68	Ave	125	1.1	H	33.8	4.34	26.75	47.07	54	6.93	harmonic
7296	48.87	PK	179	2.1	V	37	5.05	26.64	64.28	74	9.72	harmonic
7296	46.97	PK	292	1.8	H	36.5	5.05	26.64	61.88	74	12.12	harmonic
4864	45.7	PK	209	1.4	V	33.5	4.34	26.75	56.79	74	17.21	harmonic
4864	44.32	PK	125	1.1	H	33.8	4.34	26.75	55.71	74	18.29	harmonic
High Channel (2468 MHz)												
7404	36.58	Ave	117	2.1	V	37	5.2	26.59	51.8	54	1.81*	harmonic
4936	34.10	Ave	209	1.4	V	34.6	4.4	26.75	50.4	54	7.65	harmonic
4936	35.24	Ave	125	1.1	H	34.5	4.4	26.75	47.56	54	6.61	harmonic
7404	33.26	Ave	177	1.2	H	37	5.2	26.59	47.5	54	5.13	harmonic
7404	48.00	PK	117	2.1	V	37	5.2	26.59	61.85	74	10.39	harmonic
4936	45.08	PK	284	1.7	V	34.6	4.4	26.75	59.76	74	16.67	harmonic
7404	43.36	PK	0	1.4	H	37	5.2	26.59	58.04	74	15.03	harmonic
4936	44.06	PK	290	1.7	H	34.5	4.4	26.75	56.47	74	17.79	harmonic

3) Field strength of fundamental

Freq. (MHz)	S.A. Reading (dBμV)	Detector QP/PK/Ave	Turntable Direction Degree	Test Antenna			Cable Loss (dB)	Pre-Amp. Gain (dB)	Cord. Amp. (dBμV/m)	FCC 15.249		
				Height (m)	Polar (H/V)	Factor (dB/m)				Limit (dBμV/m)	Margin (dB)	Comment
Low Channel (2414 MHz)												
2414	83.97	Ave	228	2.3	H	28.9	3.07	26.85	89.09	94	4.91	Fund.
2414	80.26	Ave	5	1.0	V	29.1	3.07	26.85	85.58	94	8.42	Fund.
2414	87.96	PK	228	2.3	H	28.9	3.07	26.85	93.08	114	20.92	Fund.
2414	85.07	PK	5	1.0	V	29.1	3.07	26.85	90.39	114	23.61	Fund.
Middle Channel (2432 MHz)												
2432	84.4	Ave	208	2.1	H	28.9	3.07	26.85	89.52	94	4.48	Fund.
2432	81.68	Ave	76	1.8	V	29.1	3.07	26.85	87	94	7.00	Fund.
2432	89	PK	208	2.1	H	28.9	3.07	26.85	94.12	114	19.88	Fund.
2432	85.37	PK	76	1.8	V	29.1	3.07	26.85	90.69	114	23.31	Fund.
High Channel (2468 MHz)												
2468	85.25	Ave	32	1.0	H	28.8	3.11	26.86	90.3	94	3.7*	Fund.
2468	80.05	Ave	234	1.7	V	29	3.11	26.86	85.3	94	8.7	Fund.
2468	89.66	PK	32	1.0	H	28.8	3.11	26.86	94.71	114	19.29	Fund.
2468	83.77	PK	234	1.7	V	29	3.11	26.86	89.02	114	24.98	Fund.

*Within measurement uncertainty.

FCC §15.215(c) – 20 dB EMISSION BANDWIDTH

Applicable Standard

Intentional radiators operating under the alternative provisions to the general emission limits, as contained in § 15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.

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 it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.

3. Measure the frequency difference of two frequencies that indicated 20 dB bandwidth.

4. Repeat above procedures until all frequencies measured were complete.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCI	100224	2010-11-11	2011-11-10
Mini-Circuits	Amplifier	ZVA-213+	T-E27H	2011-03-08	2012-03-07
Sunol Sciences	Horn Antenna	DRH-118	A052604	2010-05-05	2011-05-04

*** 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 Data

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	56 %
ATM Pressure:	100.2 kPa

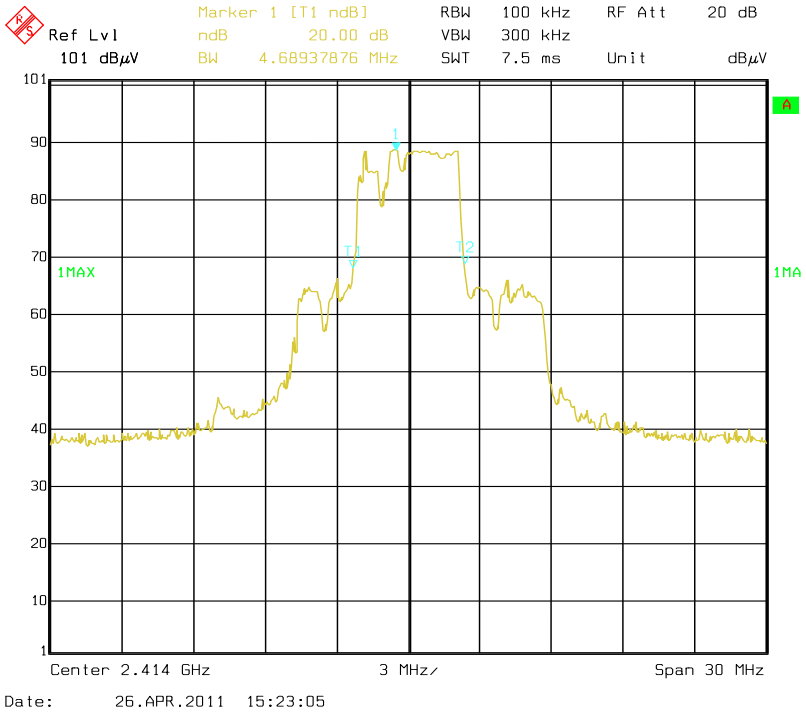
**The testing was performed by Felix Li on 2011-04-25*

Test Mode: Transmitting

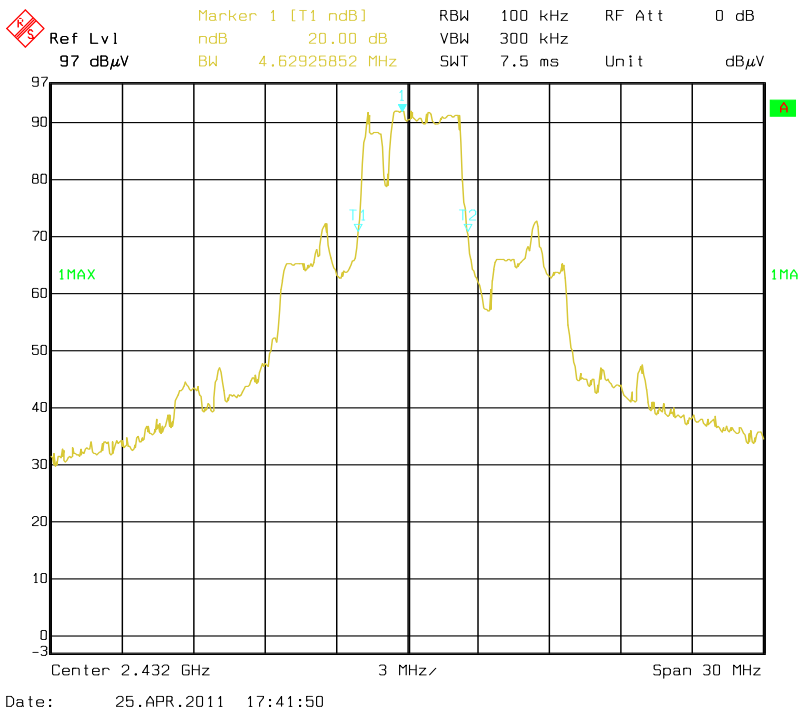
Pleas refer to the plot and tabular data sheet attached.

Channel	Frequency (MHz)	20 dB Emission Bandwidth (MHz)
Low	2414	4.6894
Middle	2432	4.6293
High	2468	4.8697

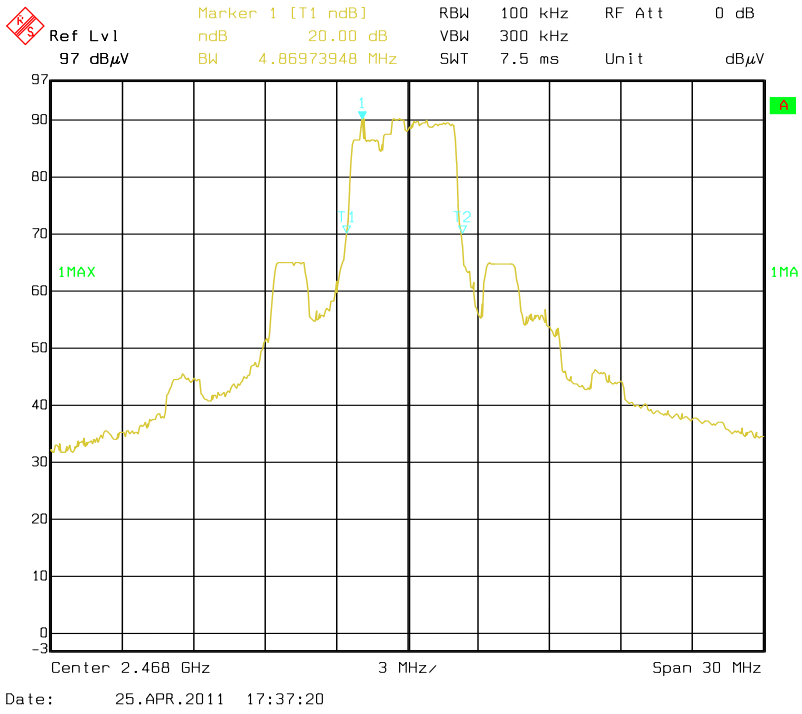
Low Channel



Middle Channel



High Channel



FCC §15.209 & §15.249(d) – OUT OF BAND EMISSIONS

Applicable Standard

As per FCC §15.249, 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 $\pm$4.0 dB.

Test Procedure

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 at the band edge. The receiving antenna should be changed the polarization both of horizontal and vertical.

Corrected Amplitude = Meter Reading + Antenna Factor + Cable Loss - Amplifier Gain

Test Equipment Setup

The spectrum analyzer or receiver is set as:

Above 1000 MHz:

Peak: RBW = 1MHz / VBW = 3MHz / Sweep = Auto
Average: RBW = 1MHz / VBW = 10Hz / Sweep = Auto

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCI	100224	2010-11-11	2011-11-10
Mini-circuits	Amplifier	ZVA-213+	T-E27H	2011-03-08	2012-03-07
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*** 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:	56 %
ATM Pressure:	100.2 kPa

**The testing was performed by Felix Li on 2011-04-26.*

Freq. (MHz)	S.A. Reading (dBµV)	Detector QP/PK/Ave	Turntable Direction Degree	Test Antenna			Cable Loss (dB)	Pre-Amp. Gain (dB)	Cord. Amp. (dBµV/m)	FCC 15.209/15.249		
				Height (m)	Polar (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	Comment
Low Channel (2414 MHz)												
2484.3	42.24	PK	360	1.3	H	29	3.03	26.83	47.44	74	26.56	spurious
2484.3	22.06	Ave	360	1.4	V	29	3.03	26.83	27.26	54	26.74	spurious
2484.3	42.01	PK	360	1.4	V	29	3.03	26.83	47.21	74	26.79	spurious
2484.3.	21.27	Ave	135	1.3	H	29	3.03	26.83	26.47	54	27.53	spurious
2381.9	21.26	Ave	223	1.5	V	28.8	2.98	26.83	26.21	54	27.79	spurious
2381.9	21.05	Ave	12	1.5	H	28.8	2.98	26.83	26	54	28.00	spurious
2381.9	36.35	PK	12	1.5	H	28.8	2.98	26.83	41.3	74	32.70	spurious
2381.9	35.59	PK	223	1.5	V	28.8	2.98	26.83	40.54	74	33.46	spurious
Middle Channel (2432 MHz)												
2485.72	42.71	PK	360	1.4	V	29	3.03	26.83	47.91	74	26.09	spurious
2485.72	42.62	PK	360	1.3	H	29	3.03	26.83	47.82	74	26.18	spurious
2485.72	22.6	Ave	360	1.4	V	29	3.03	26.83	27.8	54	26.2	spurious
2485.72	22.27	Ave	135	1.3	H	29	3.03	26.83	27.47	54	26.53	spurious
2380.5	21.82	Ave	223	1.5	V	28.8	2.98	26.83	26.77	54	27.23	spurious
2380.5	20.15	Ave	12	1.5	H	28.8	2.98	26.83	25.1	54	28.9	spurious
2380.5	35.28	PK	12	1.5	H	28.8	2.98	26.83	40.23	74	33.77	spurious
2380.5	35.09	PK	223	1.5	V	28.8	2.98	26.83	40.04	74	33.96	spurious
High Channel (2468 MHz)												
2483.73	46.77	PK	360	1.3	H	29	3.03	26.83	51.97	74	22.03	spurious
2483.73	44.72	PK	360	1.4	V	29	3.03	26.83	49.92	74	24.08	spurious
2483.73	22.37	Ave	135	1.3	H	29	3.03	26.83	27.57	54	26.43	spurious
2483.73	22.35	Ave	360	1.4	V	29	3.03	26.83	27.55	54	26.45	spurious
2381.5	20.82	Ave	223	1.5	V	28.8	2.98	26.83	25.77	54	28.23	spurious
2381.5	20.15	Ave	12	1.5	H	28.8	2.98	26.83	25.1	54	28.9	spurious
2381.5	35.59	PK	223	1.5	V	28.8	2.98	26.83	40.54	74	33.46	spurious
2381.5	35.3	PK	12	1.5	H	28.8	2.98	26.83	40.25	74	33.75	spurious

DECLARATION LETTER

Moor Technology Co., Ltd

RM602,Block 2, Jianxinglou, Chaguang Industrial Zoon, Nanshan District, Shenzhen City, China
Tel: 0755-86131512
Fax: 0755-86131526

Product Similarity Declaration

To Whom It May Concern,

We, Moor Technology Co., Ltd, hereby declare that our Wireless inspection camera, Model Number: MG-6808 that was certified by BACL can be divided into three products due to The length of the tube internal. The Description of these three tubes were: 1 meter tube with camera; 2 meters tube with camera; 5 meters tube with camera. difference between them is only the length , others are the same.

Please contact me if you have any question.

Jean chan

Jean chan/ Manager

2011-04-25

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