FCC TEST REPORT

For

Shenzhen EasyN Technology Co., Ltd.

IP Camera

Model No.: FS-613A-M105

Prepared for	:	Shenzhen EasyN Technology Co., Ltd.
Address	:	Block 1, Xingfa Industrial Zone, Tiegang, Xixiang, Bao'an, Shenzhen, China
Prepared by	:	SHENZHEN LCS CERTIFICATION SERVICES INC.
Address	:	Xingyuan Industrial Park, Tongda Road, Bao'an Blvd, Bao'an District, Shenzhen, Guangdong, China

Report Number	:	LCS1106030914F
Date of Test	:	June 1, 2011 – June 10, 2011
Date of Report	:	June 10, 2011

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1. TEST RESULT CERTIFICATION

Applicant	:	Shenzhen EasyN Technology Co., Ltd.
Manufacturer	:	Shenzhen EasyN Technology Co., Ltd.
EUT	:	IP Camera
Model No.	:	FS-613A-M105
Serial Number	:	N/A
Test Rule Part(s)	:	47 CRR FCC Part Subpart C §15.247
Date of Test	:	June 1, 2011 – June 10, 2011

APPLICABLE STANDARDS	
STANDARD	**TESTRESULT**
FCC PART 15.247 (2010)	No non-compliance noted

SHENZHEN LCS CERTIFICATION SERVICES INC. as requested by the applicant to evaluate the EMC performance of the product Sample received on April 06, 2010 would like to declare that the tested sample has been evaluated And found to be in compliance with the tested rule parts. The data recorded as well as the test Configuration specified is true and accurate for showing the sample's EMC nature.

Compiled by:	**Supervised by:**	**Approved by:**
Bobo Li	Vito Cao	Gavin Liang
Bobo Li/ File administrators	Vito/ Technique principal	Gavin Liang/ Manager

2. GENERAL INFORMATION

2.1. Product Description for Equipment Under Test (EUT)

EUT	:	IP Camera
Model No.	:	FS-613A-M105
Power Supply	:	DC 12V From Adapter Input AC 120V/60Hz
Modulation Type	:	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
Radio Technology	:	DSSS, OFDM
Transfer Rate	:	802.11b:11/5.5/2/1Mbps 802.11g: 54/48/36/24/18/12/9/6Mbps
Frequency Range	:	2412MHz ~ 2462MHz
Number Of Channel	:	11
File Number	:	LCS1106030914F
Date of Test	:	June 1, 2011 – June 10, 2011

2.2. Description Of Test Modes

Operated in 2400 ~ 2483.5MHz band:
For 802.11b/g normal mode: Eleven channels are provided to this EUT.

Channel	Frequency	Channel	Frequency
1	2412 MHz	7	2442 MHz
2	2417 MHz	8	2447 MHz
3	2422 MHz	9	2452 MHz
4	2427 MHz	10	2457 MHz
5	2432 MHz	11	2462 MHz
6	2437 MHz		

2.3. Objective

This Type approval report is prepared on behalf of Shenzhen EasyN Technology Co., Ltd. in accordance with Part 2, Subpart J, 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, 15.209 and 15.247 rules.

2.4. Related Submittal(s)/Grant(s)

No Related Submittals.

2.5. 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.
The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

2.6. Facilities

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.

2.7. External I/O Cable

N/A

2.8. Laboratory Accreditations And Listings

Site Description

EMC Lab. : **CNAS-Lab Code: L3503**

Anbotek Compliance Laboratory Limited, has been assessed and proved to be in compliance with CNAS-CL01: 2006 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC 17025: 2005 General Requirements) for the Competence of Testing and Calibration Laboratories.

FCC-Registration No.: 752021

Anbotek Compliance Laboratory Limited, EMC Laboratory has been registeredand fully described in a report filed with the FCC (Federal Communications Commission). Theacceptance letter from the FCC is maintained in our files. Registration No. August 20, 2010.

Name of Firm : Anbotek Compliance Laboratory Limited
Site Location : 1/F, 1 /Build, SEC Industrial Park, No. 4 Qianhai Road, Nanshan District, Shenzhen, Guangdong, China

3. SYSTEM TEST CONFIGURATION

3.1. Justification

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

3.2. EUT Exercise Software

N/A

3.3. Special Accessories

N/A

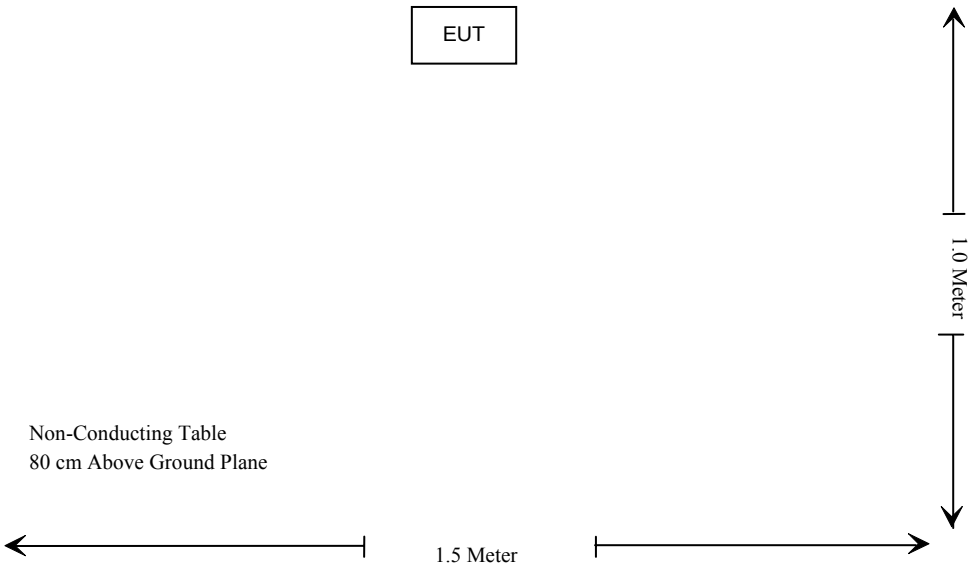
3.4. Block Diagram/Schematics

Please refer to the report.

3.5. Equipment Modifications

SHENZHEN LCS CERTIFICATION SERVICES INC has not done any modification on the EUT.

3.6. Block Diagram of Test Setup



4. SUMMARY OF TEST RESULTS

Applied Standard: 47 CFR FCC Part 15 Subpart C		
FCC Rules	**Description of Test**	**Result**
§15.247(b)(3)	Maximum Conducted Output Power	Compliant
§15.247(e)	Power Spectral Density	Compliant
15.247(a)(2)	6dB Spectrum Bandwidth	Compliant
§15.247(d)	Radiated Emissions	Compliant
§15.247(d)	Band Edge Emissions	Compliant
§15.207	Conducted Emissions	Compliant
§15.203	Antenna Requirements	Compliant
§15.247(i)§2.1093§1.1307	RF Exposure	Compliant

Test Items	Uncertainty	Remark
Maximum Conducted Output Power	±0.8dB	Confidence levels of 95%
Power Spectral Density	±0.5dB	Confidence levels of 95%
6dB Spectrum Bandwidth	$\pm 8.5\times 10^{-8}$	Confidence levels of 95%
Radiated Emissions (9kHz~30MHz)	±0.8dB	Confidence levels of 95%
Radiated Emissions (30MHz~1000MHz)	±1.9dB	Confidence levels of 95%
Radiated / Band Edge Emissions (1GHz~18GHz)	±1.9dB	Confidence levels of 95%
Radiated Emissions (18GHz~40GHz)	±1.9dB	Confidence levels of 95%
Temperature	±0.7℃	Confidence levels of 95%
Humidity	±3.2%	Confidence levels of 95%
DC / AC Power Source	±1.4%	Confidence levels of 95%

5. TEST RESULT

5.1. Maximum Conducted Output Power Measurement

5.1.1. Limit

For systems using digital modulation in the 2400-2483.5MHz, the limit for peak output power is 30dBm. The limited has to be reduced by the amount in dB that the gain of the antenna exceed 6dBi. In case of point-to-point operation, the limit has to be reduced by 1dB for every 3dB that the directional gain of the antenna exceeds 6dBi.

5.1.2. Measuring Instruments and Setting

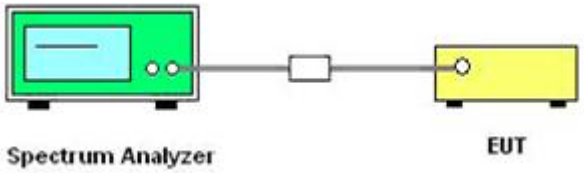
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	Encompass the entire emissions bandwidth (EBW) of the signal
RB	1000 kHz
VB	1000 kHz
Detector	RMS
Trace	RMS
Sweep Time	Auto

5.1.3. Test Procedures

1. The transmitter output (antenna port) was connected to the spectrum analyzer.
2. Test was performed in accordance with Measurement of Digital Transmission Systems Operating under Section 15.247.

5.1.4. Test Setup Layout



5.1.5. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

5.1.6. Test Result of Maximum Conducted Output Power

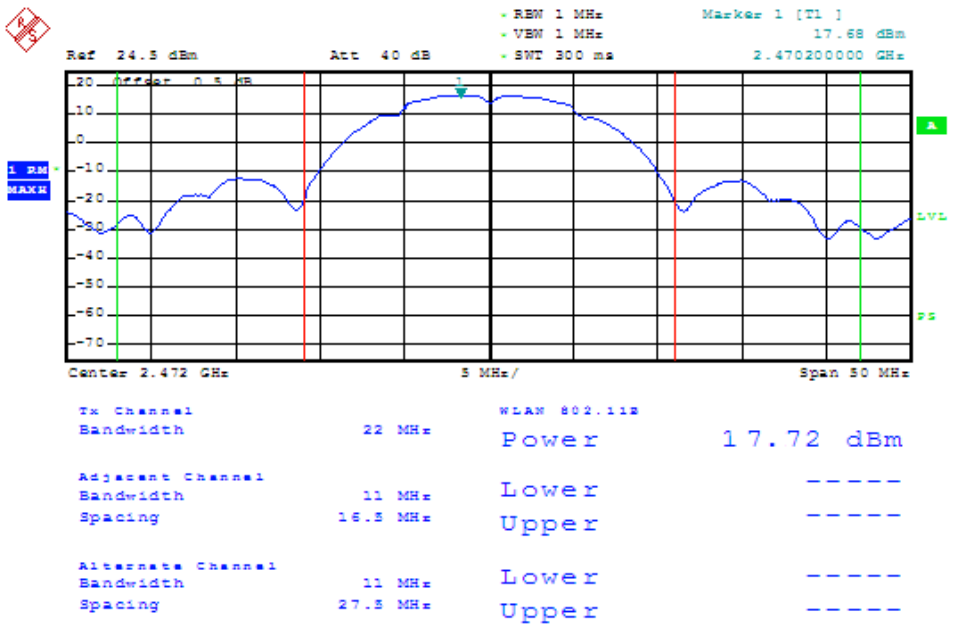
Temperature	25℃	Humidity	60%
Test Engineer	Vito Cao	Configurations	802.11b,g

802.11b（DSSS modulation）

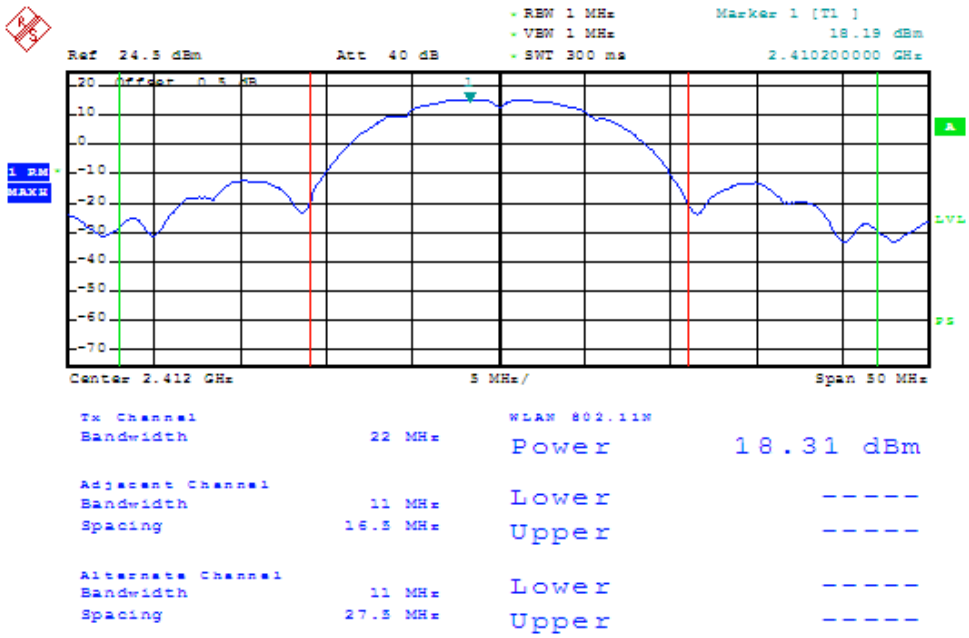
Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
1	2412	17.72	30	Complies
6	2437	18.31	30	Complies
11	2462	17.55	30	Complies

802.11g（OFDM modulation）

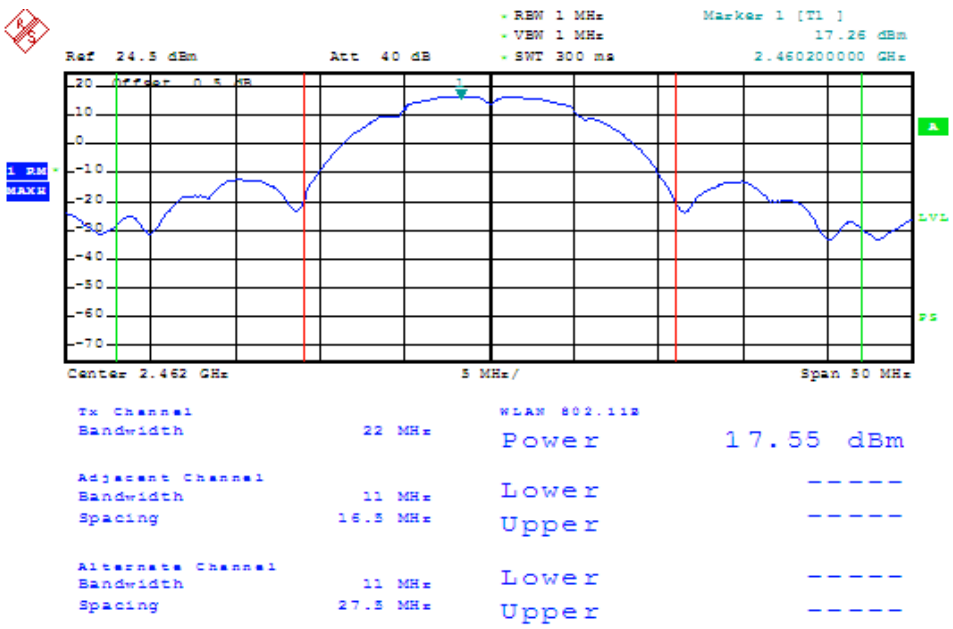
Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
1	2412	16.81	30	Complies
6	2437	16.76	30	Complies
11	2462	16.46	30	Complies



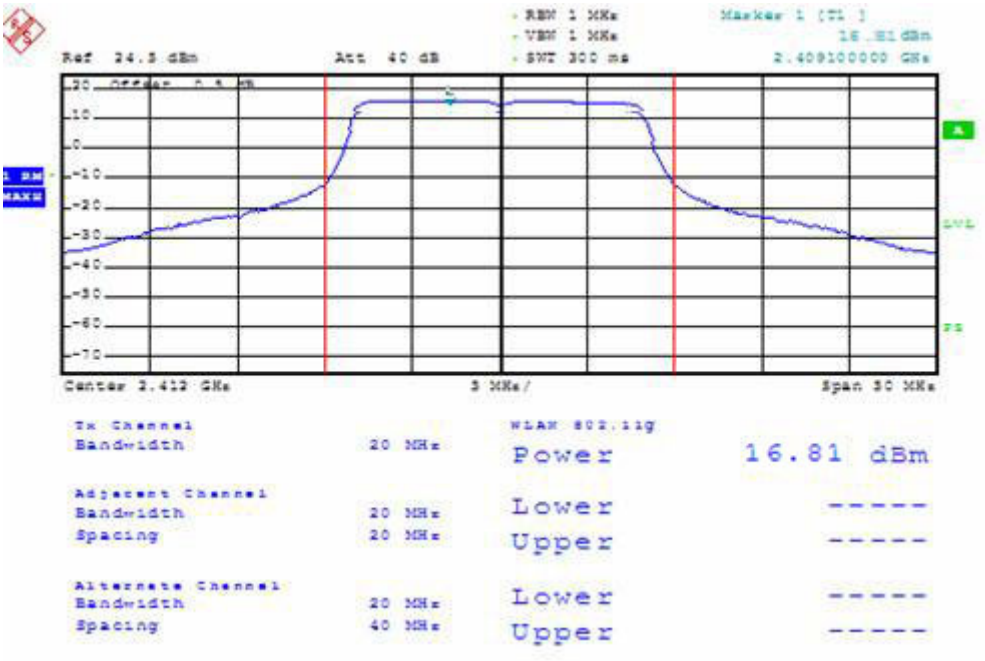
802.11b, low channel, output power
Date: June 8, 2011



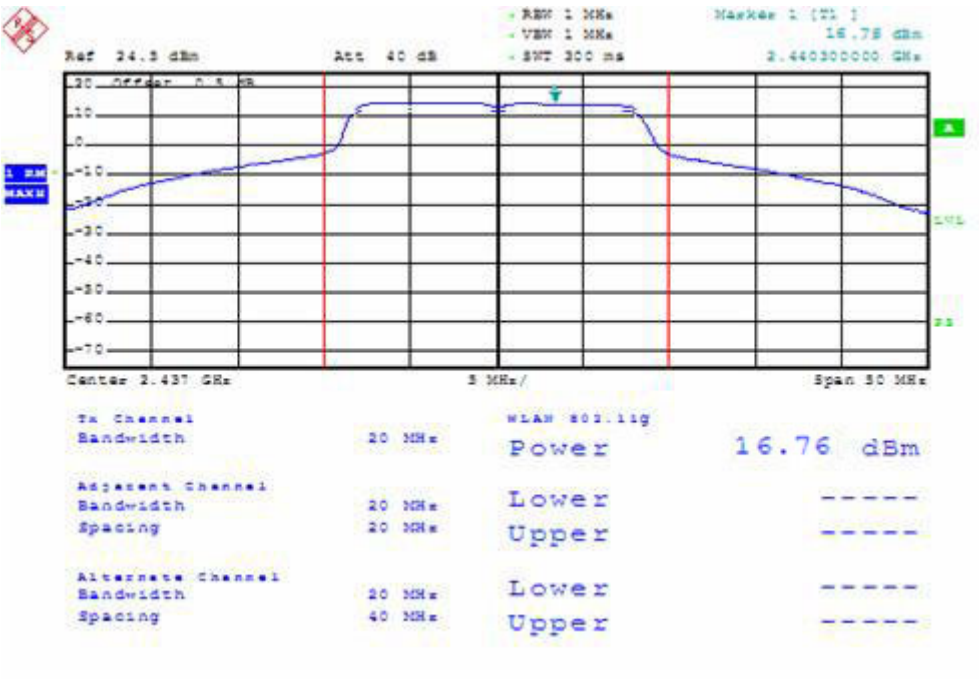
802.11b, middle channel, output power
Date: June 8, 2011



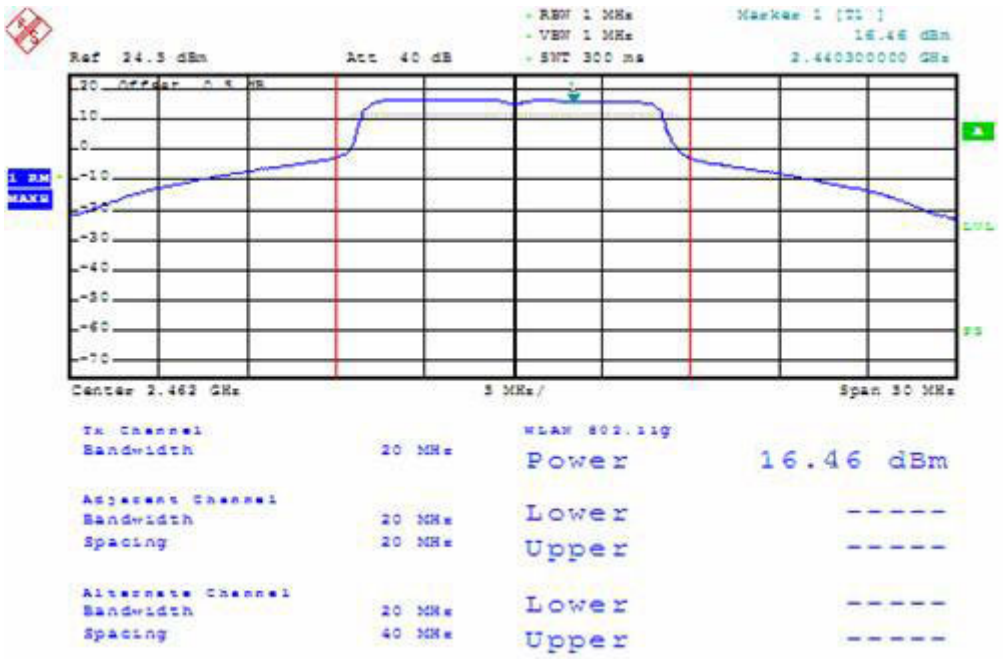
802.11b, high channel, output power
Date: June 8, 2011



802.11g, low channel, output power
Date: June 8, 2011



802.11g, middle channel, output power
Date: June 8, 2011



802.11g, high channel, output power
Date: June 8, 2011

5.2. Power Spectral Density Measurement

5.2.1. Limit

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

5.2.2. Measuring Instruments and Setting

Please refer to section 5 of equipments list in this report. The following table is the setting of Spectrum Analyzer.

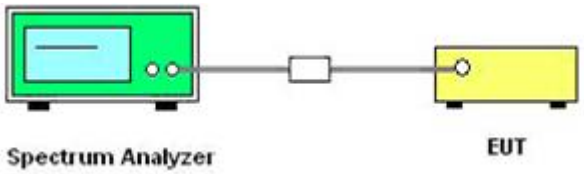
Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	30MHz
RB	3 kHz
VB	10 kHz
Detector	Peak
Trace	Max Hold
Sweep Time	10s

5

5.2.3. Test Procedures

1. The transmitter output (antenna port) was connected to the spectrum analyser.
2. Set RBW of spectrum analyzer to 3kHz and VBW to 10kHz. Set Detector to Peak, Trace to Max Hold.
3. Mark the frequency with maximum peak power as the center of the display of the spectrum.
4. Set the span to 1.5MHz and the sweep time to 500s and record the maximum peak value.

5.2.4. Test Setup Layout



5.2.5. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

5.2.6. Test Result of Power Spectral Density

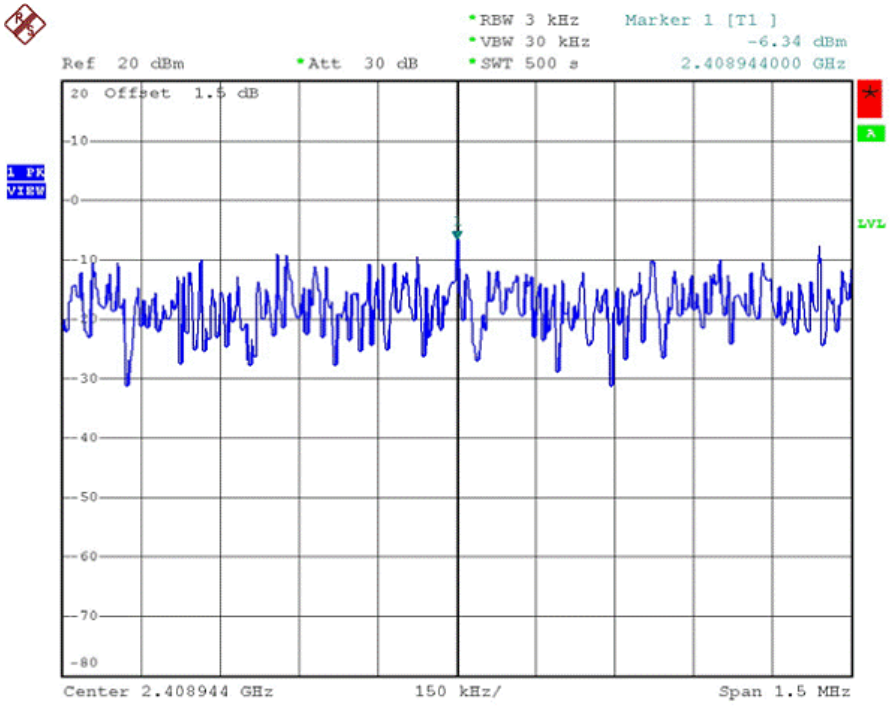
Temperature	25℃	Humidity	60%
Test Engineer	Vito Cao	Configurations	802.11b,g

802.11b（DSSS modulation）

Channel	Frequency	Power Density (dBm)	Max. Limit (dBm)	Result
1	2412	-6.34	8	Complies
6	2437	-6.68	8	Complies
11	2462	-7.34	8	Complies

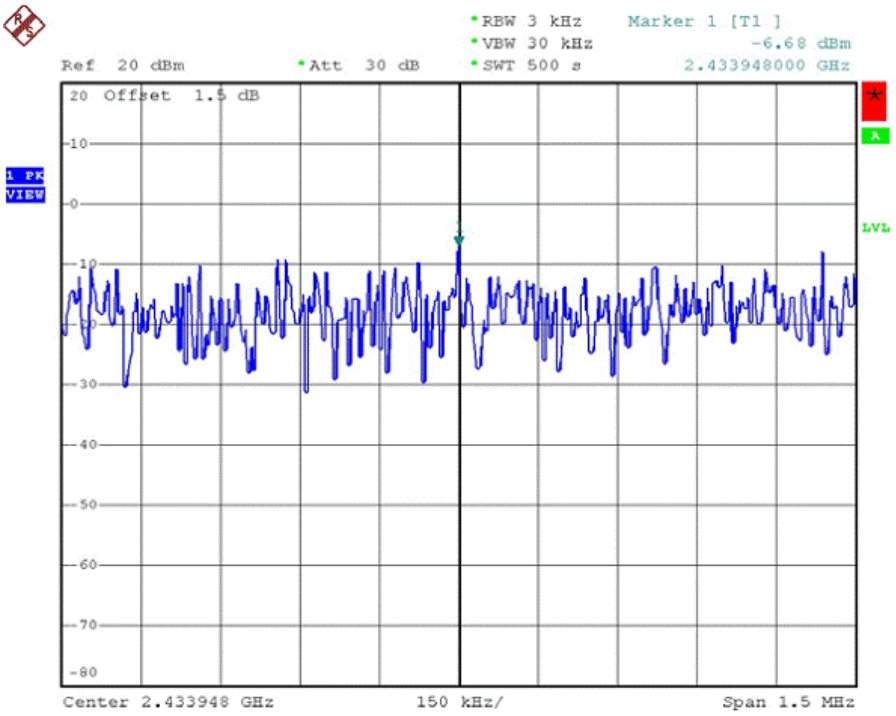
802.11g（OFDM modulation）

Channel	Frequency	Power Density (dBm)	Max. Limit (dBm)	Result
1	2412	-10.74	8	Complies
6	2437	-10.45	8	Complies
11	2462	-10.56	8	Complies



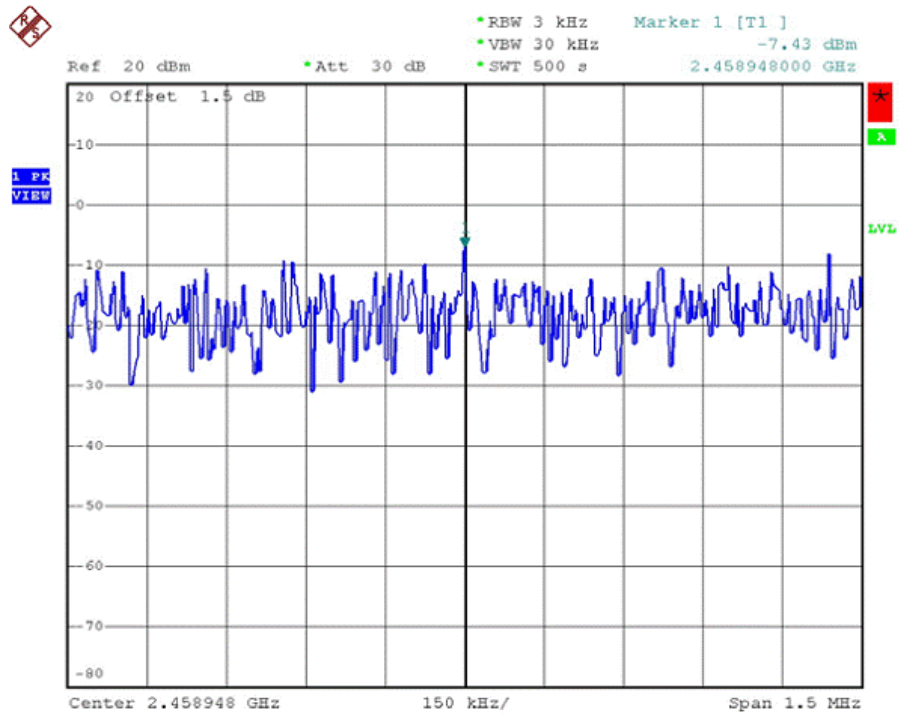
802.11b, low channel power density

Date: June 8, 2011



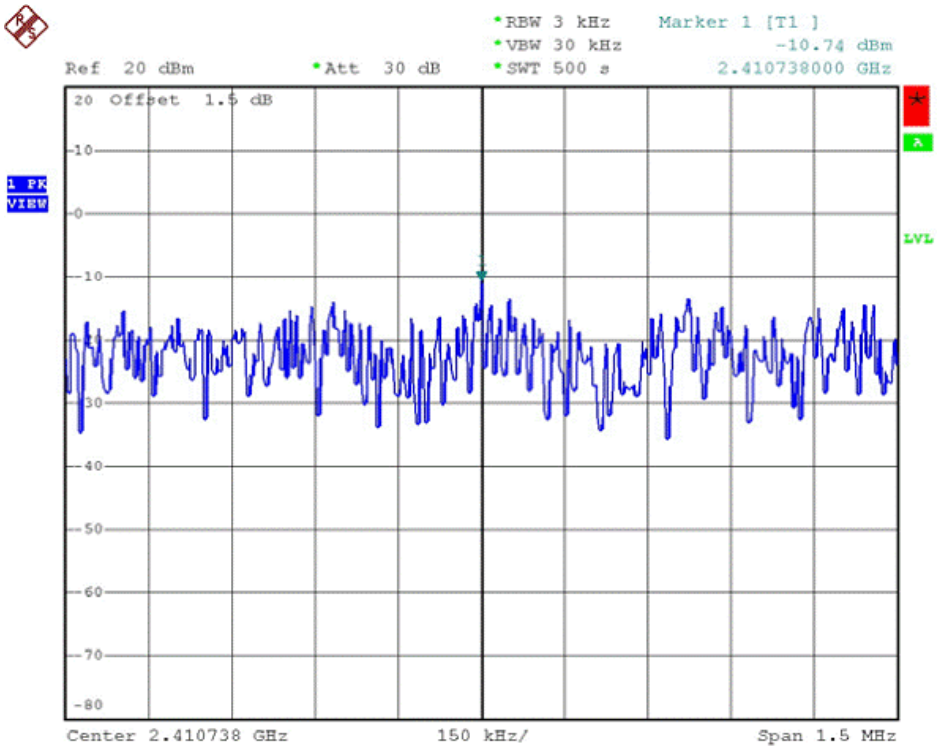
802.11g, middle channel power density

Date: June 8, 2011



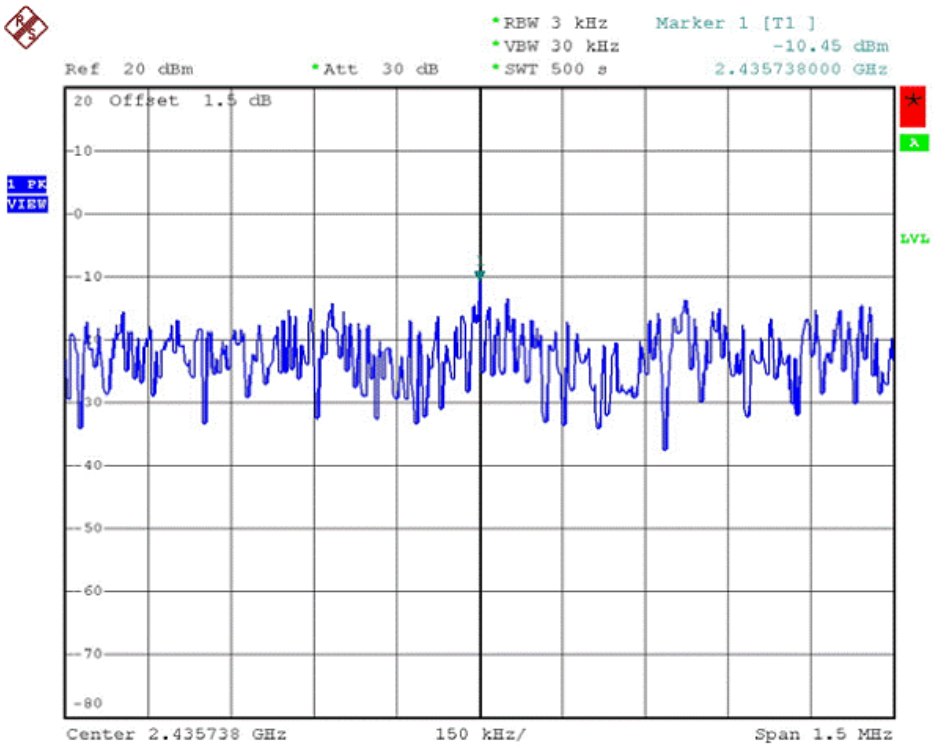
802.11b, high channel power density

Date: June 8, 2011



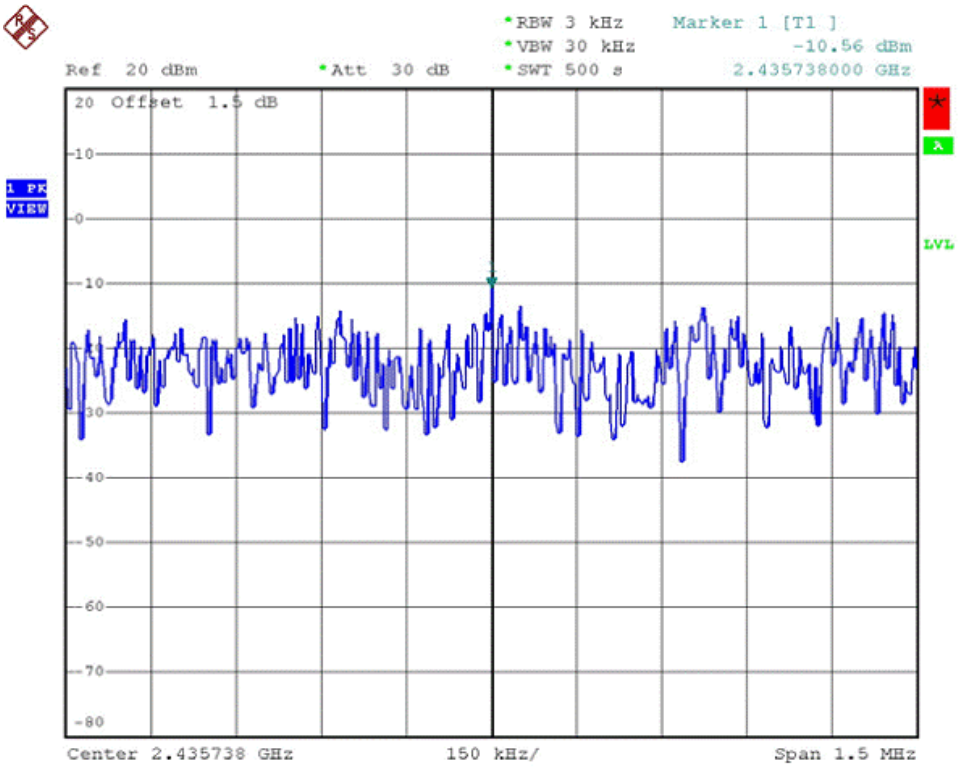
802.11g, low channel power density

Date: June 8, 2011



802.11g, middle channel power density

Date: June 8, 2011



802.11g, high channel power density

Date: June 8, 2011

5.3. 6 dB Spectrum Bandwidth Measurement

5.3.1. Limit

For digital modulation systems, the minimum 6 dB bandwidth shall be at least 500 kHz.

5.3.2. Measuring Instruments and Setting

Please refer to section 5 of equipments list in this report. The following table is the setting of the Spectrum Analyzer.

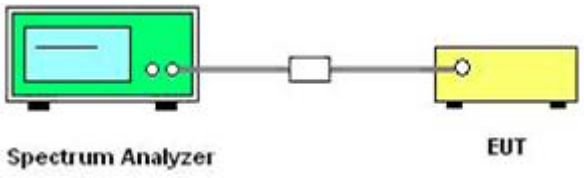
Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	> 6dB Bandwidth
RB	100kHz
VB	300kHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

5

5.3.3. Test Procedures

1. The transmitter output (antenna port) was connected to the spectrum analyser in peak hold mode.
2. The resolution bandwidth of 100 kHz and the video bandwidth of 300 kHz were used.
3. Measured the spectrum width with power higher than 6dB below carrier.

5.3.4. Test Setup Layout



5.3.5. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

5.3.6. Test Result of 6dB Spectrum Bandwidth

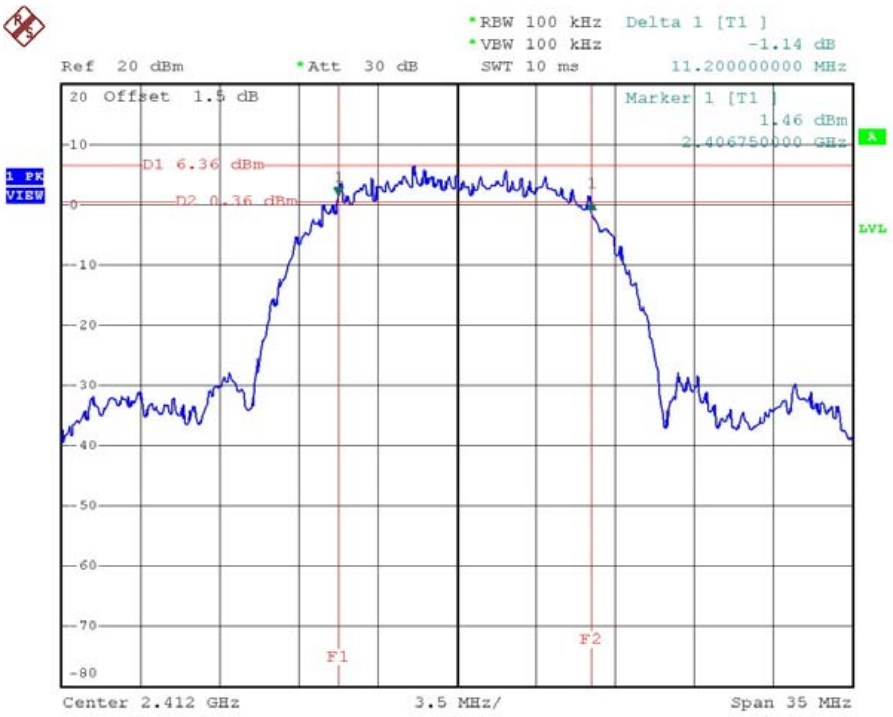
Temperature	25℃	Humidity	60%
Test Engineer	Vito Cao	Configurations	802.11b,g

802.11b（DSSS modulation）

Channel	Frequency	6dB Bandwidth (MHz)	Min. Limit (kHz)	Result
1	2412	11.2	500	Complies
6	2437	11.9	500	Complies
11	2462	11.83	500	Complies

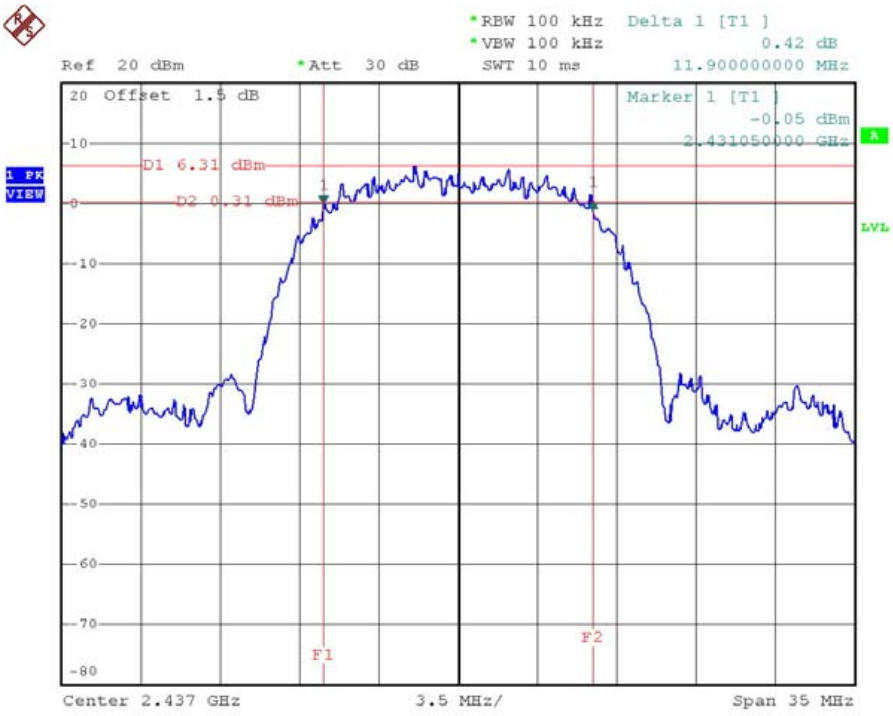
802.11g（OFDM modulation）

Channel	Frequency	6dB Bandwidth (MHz)	Min. Limit (kHz)	Result
1	2412	16.38	500	Complies
6	2437	16.31	500	Complies
11	2462	16.38	500	Complies



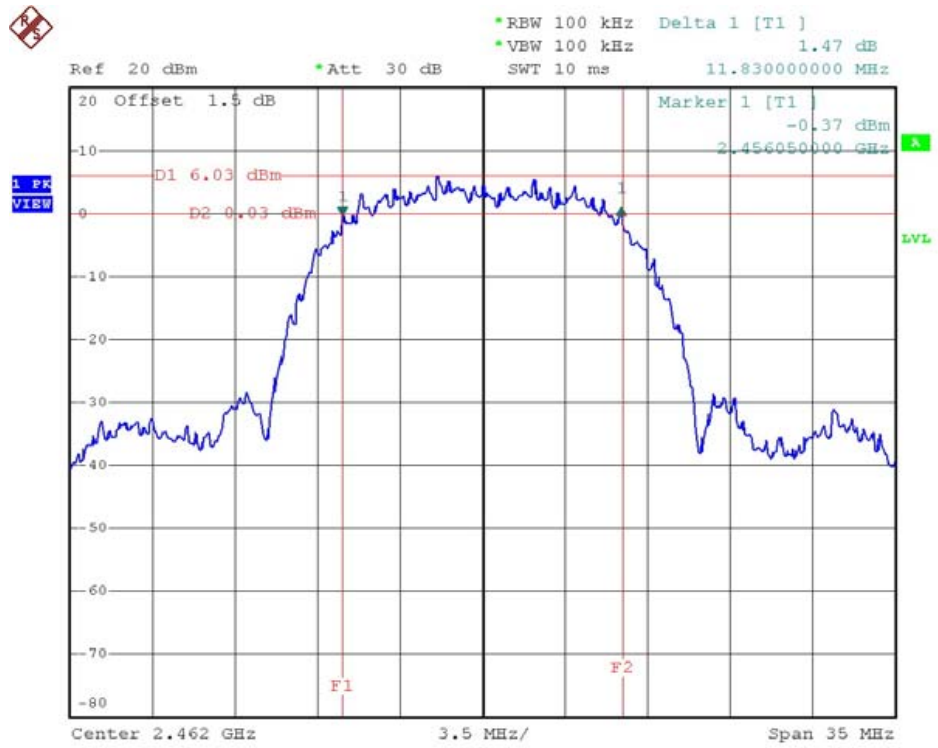
802.11b, low channel, 6dB bandwidth

Date: June 8, 2011



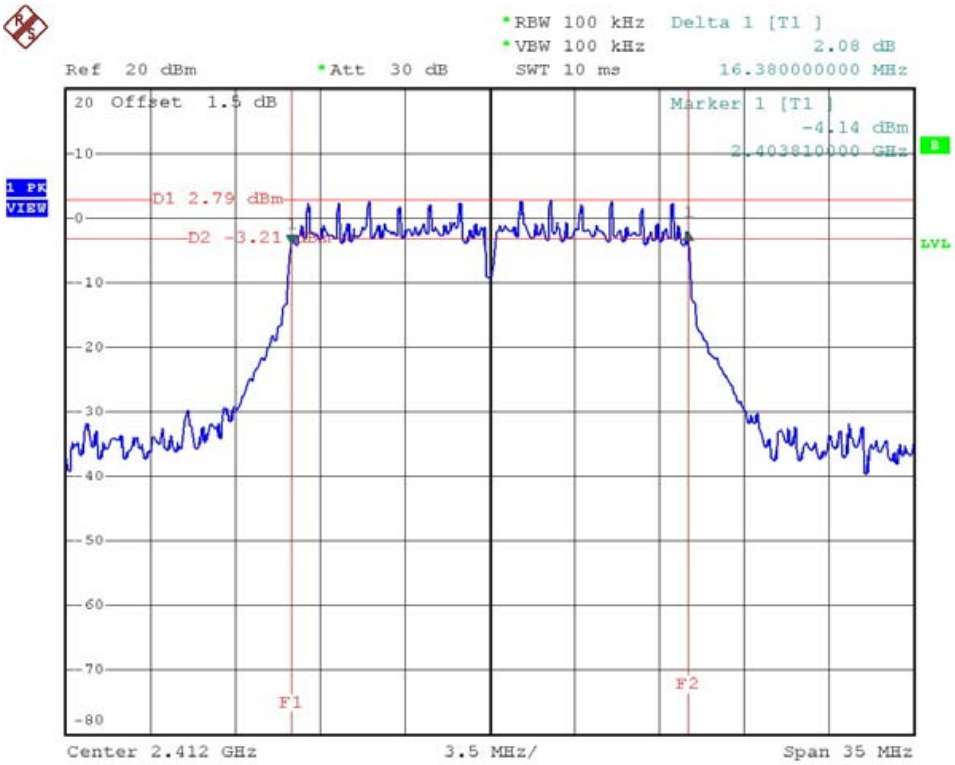
802.11b, middle channel, 6dB bandwidth

Date: June 8, 2011



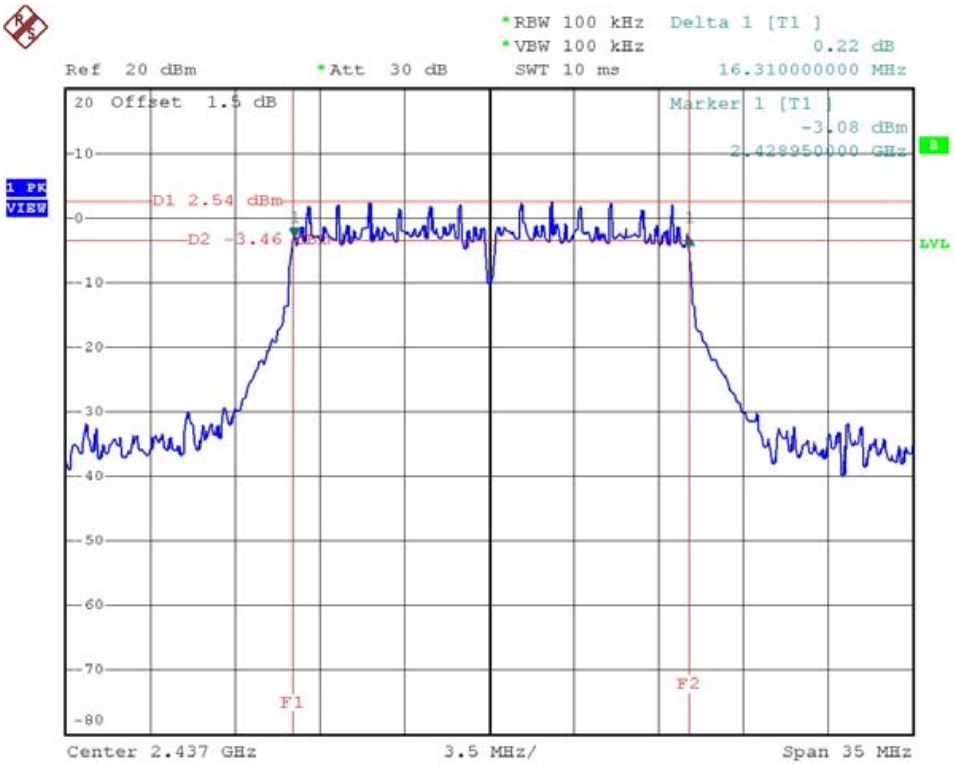
802.11b, high channel, 6dB bandwidth

Date: June 8, 2011



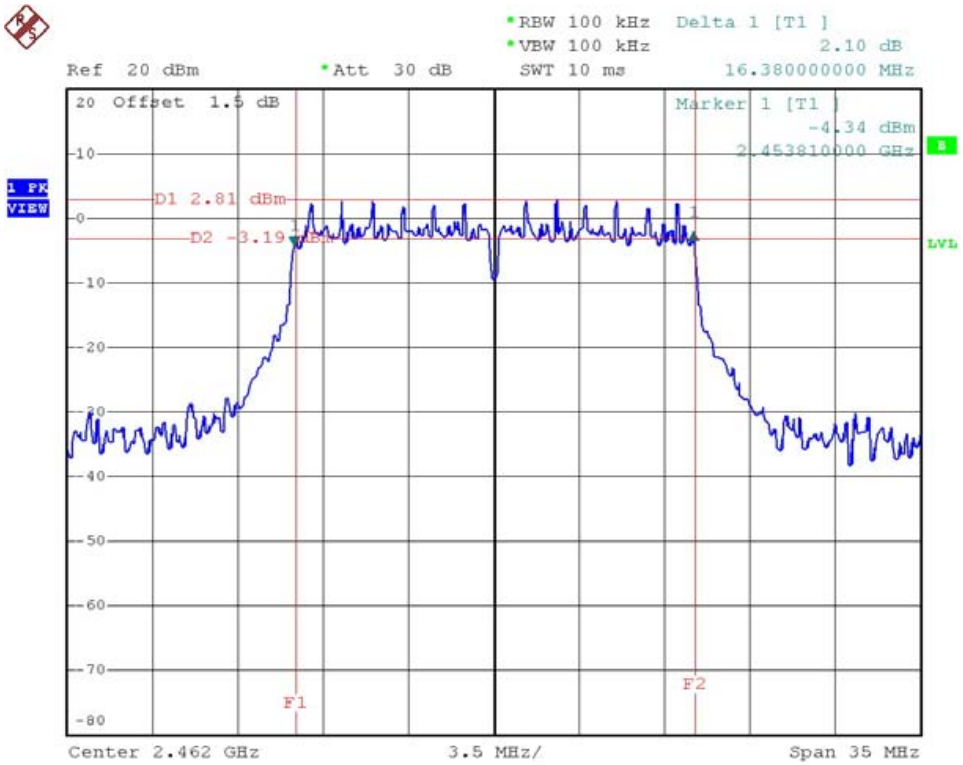
802.11g, low channel, 6dB bandwidth

Date: June 8, 2011



802.11g, middle channel, 6dB bandwidth

Date: June 8, 2011



802.11g, high channel, 6dB bandwidth

Date: June 8, 2011

5.4. Radiated Emissions Measurement

5.4.1. Limit

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequencies(MHz)	Field Strength(micorvolts/meter)	Measurement Distance(meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

5.4.2. Measuring Instruments and Setting

Please refer to section 5 of equipments list in this report. The following table is the setting of spectrum analyzer and receiver.

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB / VB (Emission in restricted band)	1MHz / 1MHz for Peak, 1 MHz / 10Hz for Average
RB / VB (Emission in non-restricted band)	1000KHz / 1000KHz for peak

Spectrum Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

5.4.3. Test Procedures

1. Configure the EUT according to ANSI C63.4. The EUT was placed on the top of the turntable 0.8 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.

2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.

3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.

4. For each suspected emissions, the antenna tower was scan (from 1 m to 4 m) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading
.
5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.

6. For emissions above 1GHz, use 1MHz VBW and RBW for peak reading. Then 1MHz RBW and 10Hz VBW for average reading in spectrum analyzer.

7. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value.

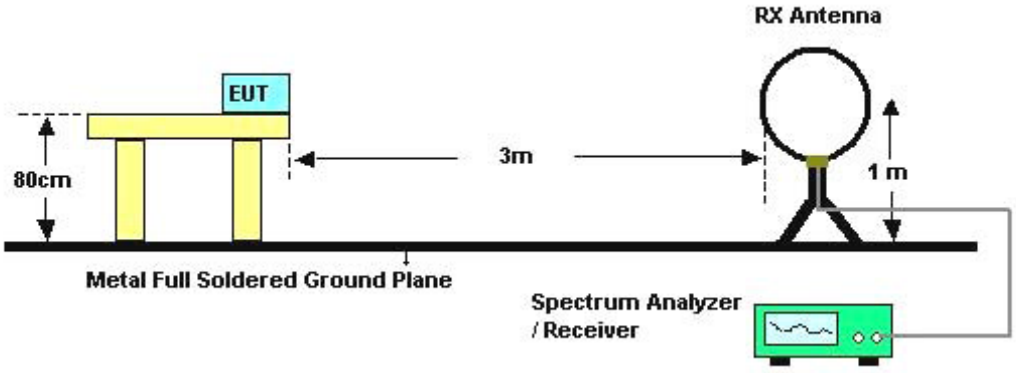
8. If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.

9. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

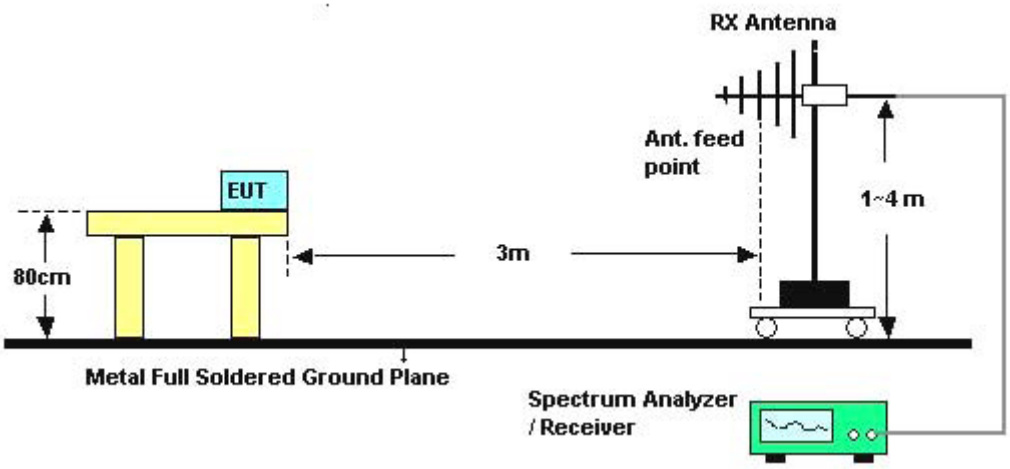
10. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High – Low scan is not required in this case.

5.4.4. Test Setup Layout

For radiated emissions below 30MHz



For radiated emissions above 30MHz



Above 10 GHz shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade form 3m to 1.5m.
Distance extrapolation factor = 20 log (specific distanc [3m] / test distance [1.5m]) (dB);
Limit line = specific limits (dBuV) + distance extrapolation factor [6 dB].

5.4.5. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

5.4.6. Results of Radiated Emissions (9kHz~30MHz)

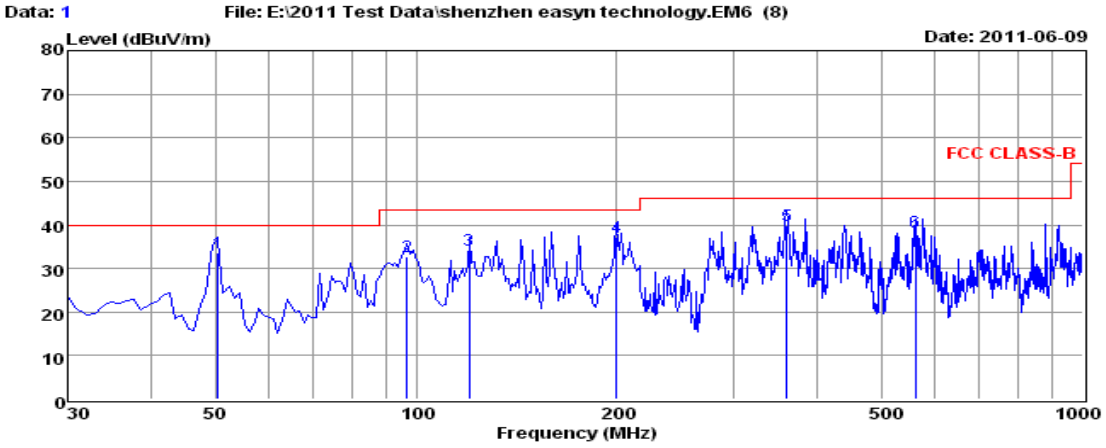
Temperature	25℃	Humidity	60%
Test Engineer	Vito Cao	Configurations	802.11b,g

Freq. (MHz)	Level (dBuV)	Over Limit (dB)	Over Limit (dBuV)	Remark
-	-	-	-	See Note

Note:
The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.
Distance extrapolation factor = 40 log (specific distance / test distance) (dB);
Limit line = specific limits (dBuV) + distance extrapolation factor.

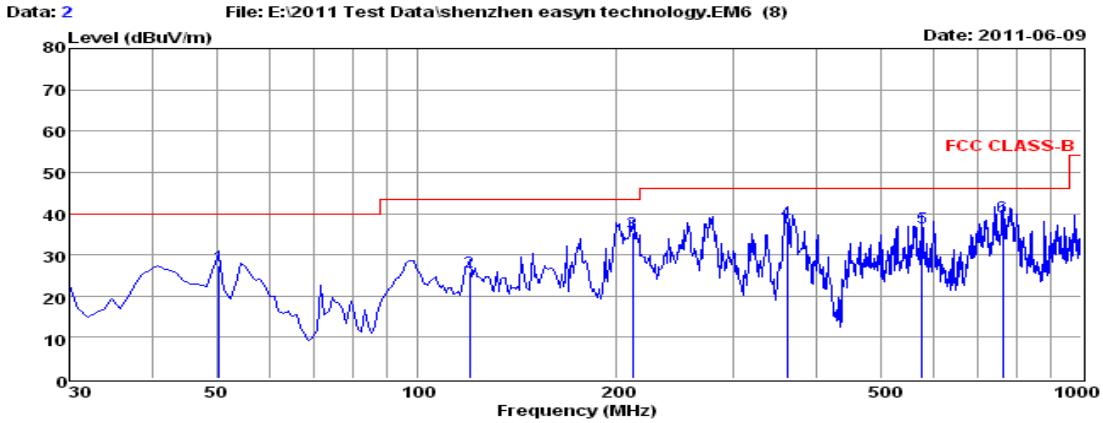
5.4.7. Results of Radiated Emissions (30MHz~1GHz)

Temperature	25℃	Humidity	60%
Test Engineer	Vito Cao	Configurations	802.11b,g



Site : 3m chamber
Condition : FCC CLASS-B 3m VULB-9163 VERTICAL
: RBW:120.000KHz VBW:300.000KHz SWT:0.100sec
Env. /Ins. : 24℃/56%
EUT : Ip Camera
M/N : FS-613A-M105
Power Rating: DC 12V From Adpter Input AC 120V/60Hz
Test Mode : ON
Operator : Long
Memo :

	Freq	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB/m	dB	dBuV/m	dB	
1	50.37	57.86	1.26	13.23	38.74	40.00	-6.39	QP
2	96.93	56.76	1.79	12.96	38.80	43.50	-10.79	QP
3	120.21	60.43	1.99	10.45	38.80	43.50	-9.43	QP
4	199.75	62.77	2.52	10.57	38.80	43.50	-6.44	QP
5	359.80	60.48	3.55	14.43	38.48	46.00	-6.02	QP
6	561.56	54.21	4.56	17.73	38.08	46.00	-7.58	QP



Site : 3m chamber
Condition : FCC CLASS-B 3m VULB-9163 HORIZONTAL
: RBW:120.000KHz VBW:300.000KHz SWT:0.100sec
Env. /Ins. : 24℃/56%
EUT : Ip Camera
M/N : FS-613A-M105
Power Rating: DC 12V From Adpter Input AC 120V/60Hz
Test Mode : ON
Operator : Long
Memo :

	Freq	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB/m	dB	dBuV/m	dB	
1	50.37	51.54	1.26	13.23	38.74	40.00	-12.71	QP
2	120.21	52.19	1.99	10.45	38.80	43.50	-17.67	QP
3	211.39	60.58	2.60	10.93	38.78	43.50	-8.17	QP
4	360.77	58.59	3.56	14.44	38.48	46.00	-7.89	QP
5	576.11	52.00	4.64	18.00	38.05	46.00	-9.41	QP
6	762.35	52.13	5.47	19.59	38.08	46.00	-6.89	QP

Note:
The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.
Emission level (dBuV/m) = 20 log Emission level (uV/m).
Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

5.4.8. Results for Radiated Emissions (1GHz~10th Harmonic)

802.11b（DSSS modulation）

Channel 1

Freq MHz	Level dBuV/m	Read Level dBuV	Ant. Fac dB/m	Pre. Fac dB	Cab.Los dB	Over limit dB	Remark	Pol/Phase
4824.34	54.3	52.34	33.06	35.04	3.94	-19.7	Peak	Horizontal
4824.34	42.81	40.85	33.06	35.04	3.94	-11.19	Average	Horizontal
4824.34	53.69	51.73	33.06	35.04	3.94	-20.31	Peak	Vertical
4824.34	41.25	39.29	33.06	35.04	3.94	-12.75	Average	Vertical

Channel 6

Freq MHz	Level dBuV/m	Read Level dBuV	Ant. Fac dB/m	Pre. Fac dB	Cab.Los dB	Over limit dB	Remark	Pol/Phase
4874.47	51.53	49.56	33.16	35.15	3.96	-22.47	Peak	Horizontal
4874.47	41.61	39.64	33.16	35.15	3.96	-12.39	Average	Horizontal
4874.47	50.64	48.67	33.16	35.15	3.96	-23.36	Peak	Vertical
4874.47	40.13	38.16	33.16	35.15	3.96	-13.87	Average	Vertical

Channel 11

Freq MHz	Level dBuV/m	Read Level dBuV	Ant. Fac dB/m	Pre. Fac dB	Cab.Los dB	Over limit dB	Remark	Pol/Phase
4924.22	47.99	45.89	33.26	35.14	3.98	-26.01	Peak	Horizontal
4924.22	35.65	33.55	33.26	35.14	3.98	-18.35	Average	Horizontal
4924.22	46.82	44.72	33.26	35.14	3.98	-27.18	Peak	Vertical
4924.22	34.79	32.69	33.26	35.14	3.98	-19.21	Average	Vertical

802.11g（OFDM modulation）

Channel 1

Freq MHz	Level dBuV/m	Read Level dBuV	Ant. Fac dB/m	Pre. Fac dB	Cab.Los dB	Over limit dB	Remark	Pol/Phase
4824.73	55.45	53.49	33.06	35.04	3.94	-18.55	Peak	Horizontal
4824.73	43.23	41.27	33.06	35.04	3.94	-10.77	Average	Horizontal
4824.73	54.88	52.92	33.06	35.04	3.94	-19.12	Peak	Vertical
4824.73	42.14	40.18	33.06	35.04	3.94	-11.86	Average	Vertical

Channel 6

Freq MHz	Level dBuV/m	Read Level dBuV	Ant. Fac dB/m	Pre. Fac dB	Cab.Los dB	Over limit dB	Remark	Pol/Phase
4874.26	49.16	47.19	33.16	35.15	3.96	-24.84	Peak	Horizontal
4874.26	41.44	39.47	33.16	35.15	3.96	-12.56	Average	Horizontal
4874.26	48.19	46.22	33.16	35.15	3.96	-25.81	Peak	Vertical
4874.26	38.84	36.87	33.16	35.15	3.96	-15.16	Average	Vertical

Channel 11

Freq MHz	Level dBuV/m	Read Level dBuV	Ant. Fac dB/m	Pre. Fac dB	Cab.Los dB	Over limit dB	Remark	Pol/Phase
4924.18	49.31	47.21	33.26	35.14	3.98	-24.69	Peak	Horizontal
4924.18	40.72	38.62	33.26	35.14	3.98	-13.28	Average	Horizontal
4924.18	48.94	46.84	33.26	35.14	3.98	-25.06	Peak	Vertical
4924.18	43.51	41.41	33.26	35.14	3.98	-10.49	Average	Vertical

5.5. Band Edge Emissions Measurement

5.5.1. Limit

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequencies(MHz)	Field Strength(micorvolts/meter)	Measurement Distance(meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

5.5.2. Measuring Instruments and Setting

Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	100 MHz
RB / VB (Emission in restricted band)	1MHz / 1MHz for Peak, 1 MHz / 10Hz for Average
RB / VB (Emission in non-restricted band)	100 KHz /100 KHz for Peak

5.5.3. Test Procedures

1. The test procedure is the same as section 5.4.3, only the freqeuncy range investigated is limited to 100MHz around bandedges.
2. In case the emission is fail due to the used RB/VB is too wide, marker-delta method of FCC Public Notice DA00-705 will be followed.

5.5.4. Test Setup Layout

This test setup layout is the same as that shown in section 5.4.4.

5.5.5. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

5.5.6. Test Result of Band Edge and Fundamental Emissions

Temperature	25℃	Humidity	60%
Test Engineer	Vito Cao	Configurations	802.11b

Channel 1

	Freq	Level	Over Limit	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Ant Pos	Table Pos	Remark	Pol/Phase
	MHz	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1 @	2390.000	63.13	-10.87	32.25	28.17	0.00	2.71	128	153	PEAK	HORIZONTAL
2 @	2390.000	48.58	-5.42	17.70	28.17	0.00	2.71	128	153	AVERAGE	HORIZONTAL
3 @	2408.800	95.43	41.43	64.50	28.21	0.00	2.73	128	153	AVERAGE	HORIZONTAL
4 @	2413.800	104.41	30.41	73.47	28.21	0.00	2.73	128	153	PEAK	HORIZONTAL

Item 3, 4 are the fundamental frequency at 2412 MHz.

Channel 6

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	
1	2381.600	55.44	-18.56	74.00	24.59	28.13	2.71	0.00	PEAK	100	VERTICAL
2	2381.600	44.32	-9.68	54.00	13.47	28.13	2.71	0.00	AVERAGE	100	VERTICAL
3 over	2438.600	103.12	29.12	74.00	72.09	28.29	2.74	0.00	PEAK	100	VERTICAL
4 @	2439.800	98.56	44.56	54.00	67.53	28.29	2.74	0.00	AVERAGE	100	VERTICAL
5	2492.700	47.23	-6.77	54.00	16.05	28.41	2.77	0.00	AVERAGE	100	VERTICAL
6	2493.100	58.66	-15.34	74.00	27.47	28.41	2.77	0.00	PEAK	100	VERTICAL

Item 3, 4 are the fundamental frequency at 2437MHz.

Channel 11

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	
1 over	2468.800	99.49	25.49	74.00	68.36	28.37	2.76	0.00	PEAK	101	VERTICAL
2 over	2469.400	92.56	38.56	54.00	61.43	28.37	2.76	0.00	AVERAGE	101	VERTICAL
3	2483.500	47.89	-6.11	54.00	16.74	28.37	2.77	0.00	AVERAGE	101	VERTICAL
4	2483.700	65.91	-8.09	74.00	34.77	28.37	2.77	0.00	PEAK	101	VERTICAL

Item 1, 2 are the fundamental frequency at 2462 MHz.

Temperature	25℃	Humidity	60%
Test Engineer	Vito Cao	Configurations	802.11g

Channel 1

	Freq	Level	Over Limit	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Ant Pos	Table Pos	Remark	Pol/Phase
	MHz	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1 @	2385.800	48.63	-5.37	17.74	28.17	0.00	2.71	128	153	AVERAGE	HORIZONTAL
2 @	2386.000	59.32	-14.68	28.44	28.17	0.00	2.71	128	153	PEAK	HORIZONTAL
3 @	2409.400	101.64	47.64	70.70	28.21	0.00	2.73	128	153	AVERAGE	HORIZONTAL
4 @	2413.600	106.22	32.22	75.28	28.21	0.00	2.73	128	153	PEAK	HORIZONTAL

Item 3, 4 are the fundamental frequency at 2412 MHz

Channel 6

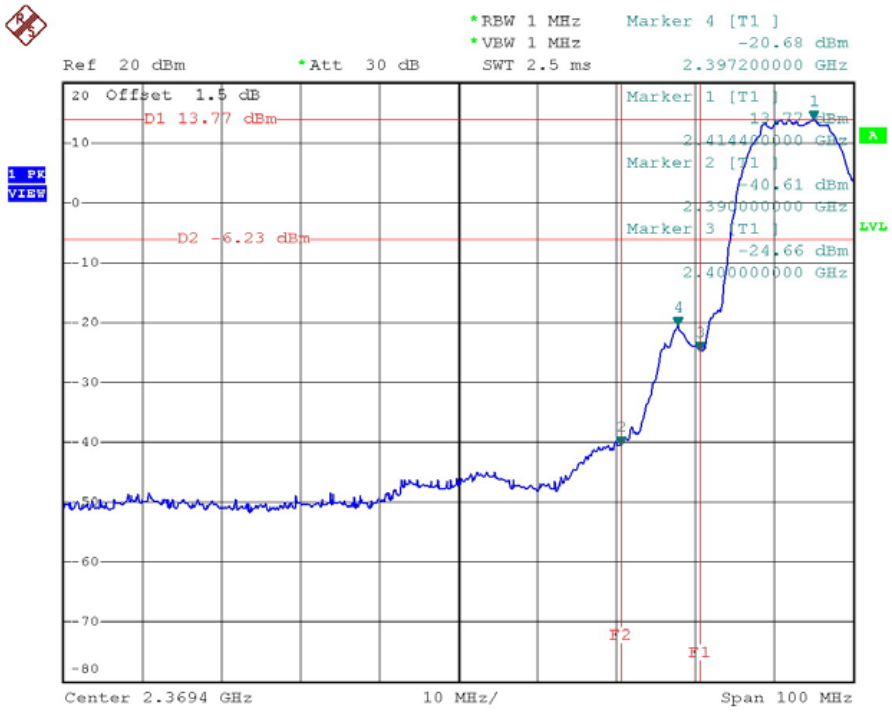
	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	
1	2384.200	55.14	-18.86	74.00	24.25	28.17	2.71	0.00	PEAK	101	VERTICAL
2	2384.200	44.60	-9.40	54.00	13.72	28.17	2.71	0.00	AVERAGE	101	VERTICAL
3 over	2435.800	91.12	37.12	54.00	60.09	28.29	2.74	0.00	AVERAGE	101	VERTICAL
4 over	2441.000	101.10	27.10	74.00	70.07	28.29	2.74	0.00	PEAK	101	VERTICAL
5	2489.800	59.22	-14.78	74.00	28.04	28.41	2.77	0.00	PEAK	101	VERTICAL
6	2489.900	47.99	-6.01	54.00	16.81	28.41	2.77	0.00	AVERAGE	101	VERTICAL

Item 3, 4 are the fundamental frequency at 2437MHz.

Channel 11

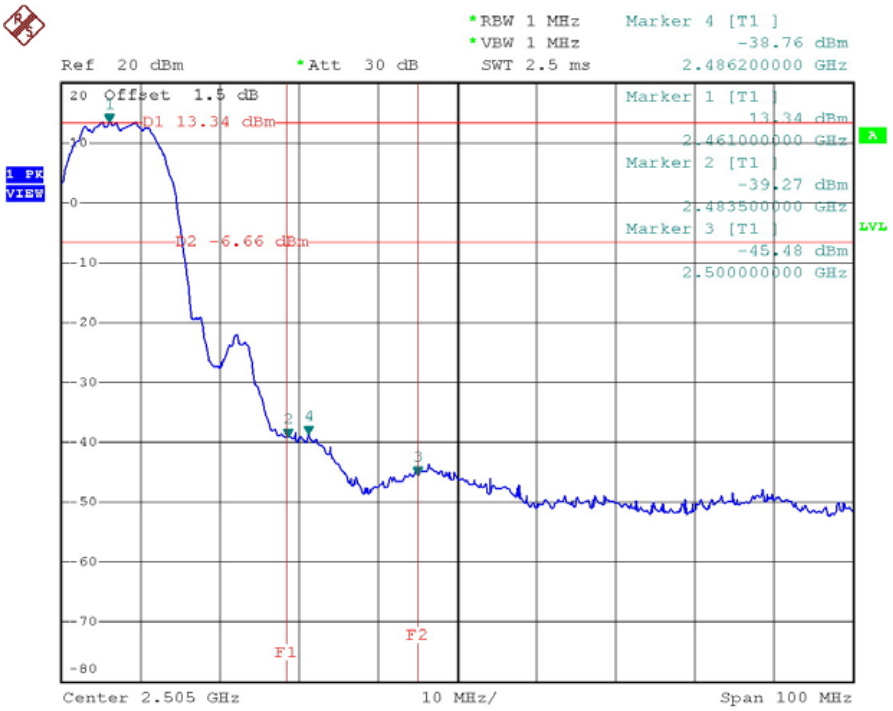
	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	
1 over	2463.800	101.33	27.33	74.00	70.24	28.33	2.76	0.00	PEAK	103	VERTICAL
2 @	2464.800	97.01	43.01	54.00	65.93	28.33	2.76	0.00	AVERAGE	103	VERTICAL
3	2487.900	60.82	-13.18	74.00	29.63	28.41	2.77	0.00	PEAK	103	VERTICAL
4 *	2488.300	52.62	-1.38	54.00	21.44	28.41	2.77	0.00	AVERAGE	103	VERTICAL

Item 1, 2 are the fundamental frequency at 2462 MHz.



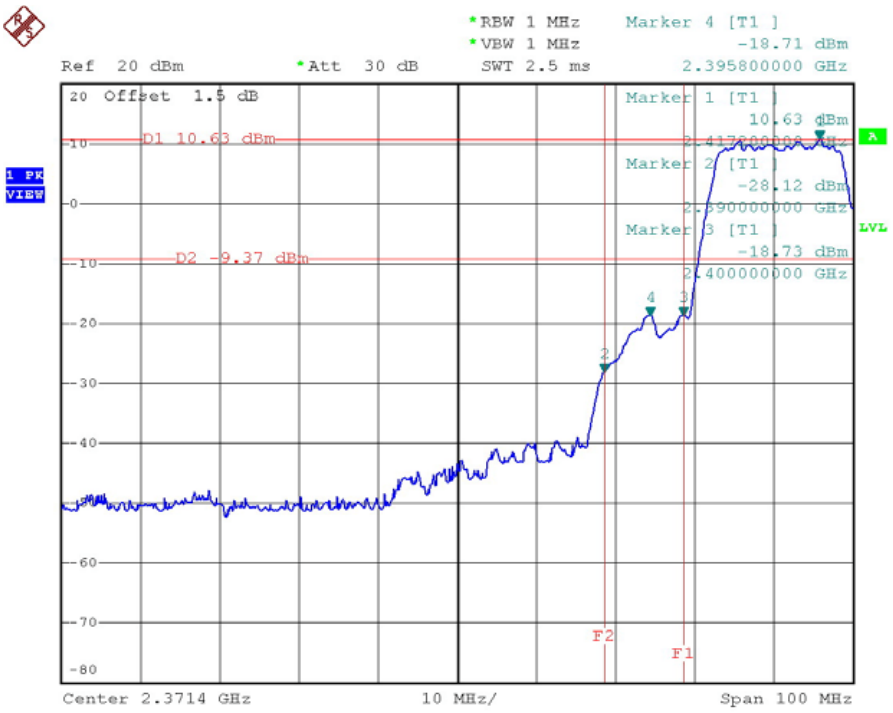
802.11b out of bandedge, left

Date: June 8, 2011



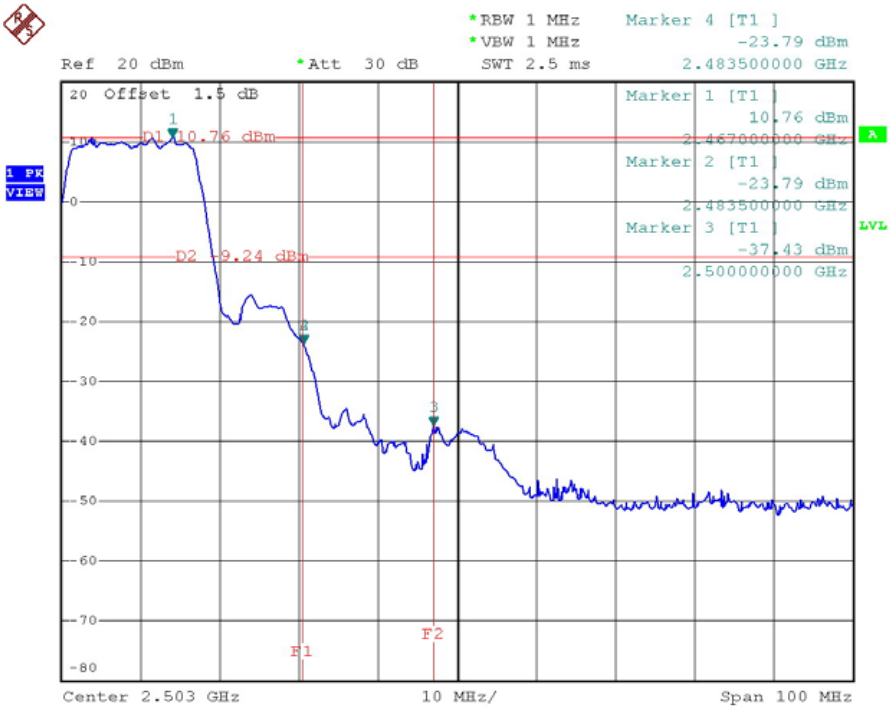
802.11b out of bandedge, right

Date: June 8, 2011



802.11g, out of bandedge, left

Date: June 8, 2011



802.11g, out of bandedge, right

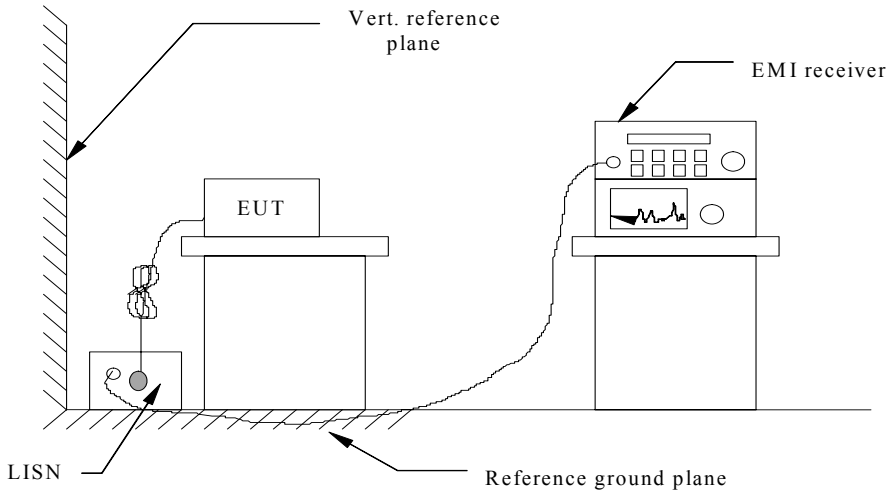
Date: June 8, 2011

Band edge:

Frequency (MHz)	Data Rate (Mbps)	Delta Value (dBc)	Limit (dBc)	Ref Plot	Result
802.11b					
2397.12	11	34.4	20	PLOT1	PASS
2488.10	11	52.11	20	PLOT2	PASS
802.11g					
2399.68	54	29.34	20	PLOT3	PASS
2484.00	54	48.19	20	PLOT4	PASS

5.6. Power line conducted emissions

5.6.1 Block Diagram of Test Setup



5.6.2 Conducted Emission Limit

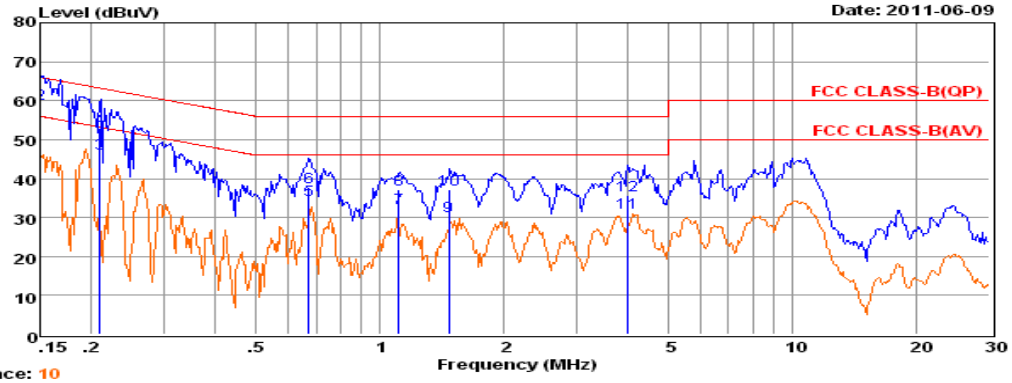
For an intentional radiator which is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed 250 microvolts (The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz). The limits at specific frequency range is listed as follows:

Frequency Range (MHz)	Limits (dBμV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50

5.6.3 Test Results

PASS.

The test data please refer to following page.

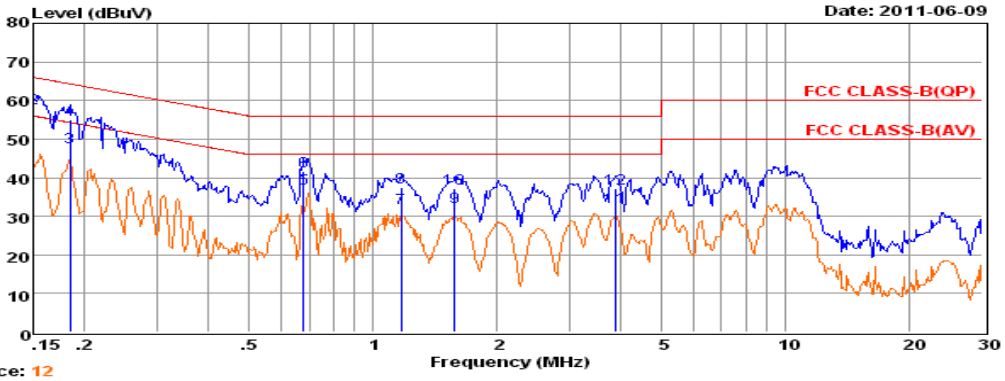


Trace: 10

Env. Ins:	24*/56%
EUT:	Ip Camera
M/N:	FS-613A-M105
Power Rating:	DC 12V From Adpter Input AC 120V/60Hz
Test Mode:	On
Operator:	Long
Memo:	
Pol:	LINE

	Freq	Reading	LisnFac	CabLos	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB	dBuV/m	dBuV/m	dBuV/m	
1	0.15	39.53	9.57	0.02	49.12	56.00	-6.88	Average
2	0.15	49.61	9.57	0.02	59.20	66.00	-6.80	QP
3	0.21	36.75	9.63	0.03	46.41	53.21	-6.80	Average
4	0.21	43.21	9.63	0.03	52.87	63.21	-10.34	QP
5	0.67	24.83	9.64	0.04	34.51	46.00	-11.49	Average
6	0.67	28.02	9.64	0.04	37.70	56.00	-18.30	QP
7	1.11	22.78	9.63	0.05	32.46	46.00	-13.54	Average
8	1.11	27.35	9.63	0.05	37.03	56.00	-18.97	QP
9	1.47	20.63	9.64	0.05	30.32	46.00	-15.68	Average
10	1.47	27.51	9.64	0.05	37.20	56.00	-18.80	QP
11	3.98	21.45	9.65	0.06	31.16	46.00	-14.84	Average
12	3.98	26.03	9.65	0.06	35.74	56.00	-20.26	QP

Remarks: C.F (Correction Factor) = Insertion loss + Cable loss



Trace: 12

Env. Ins:	24*/56%
EUT:	Ip Camera
M/N:	FS-613A-M105
Power Rating:	DC 12V From Adpter Input AC 120V/60Hz
Test Mode:	On
Operator:	Long
Memo:	
Pol:	NEUTRAL

	Freq	Reading	LisnFac	CabLos	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB	dBuV/m	dBuV/m	dBuV/m	
1	0.15	38.95	9.70	0.02	48.67	56.00	-7.33	Average
2	0.15	48.32	9.70	0.02	58.04	66.00	-7.96	QP
3	0.18	38.22	9.62	0.02	47.86	54.30	-6.44	Average
4	0.18	45.43	9.62	0.02	55.07	64.30	-9.23	QP
5	0.68	27.65	9.63	0.04	37.32	46.00	-8.68	Average
6	0.68	31.92	9.63	0.04	41.59	56.00	-14.41	QP
7	1.17	22.54	9.63	0.05	32.22	46.00	-13.78	Average
8	1.17	27.71	9.63	0.05	37.39	56.00	-18.61	QP
9	1.58	22.67	9.63	0.05	32.35	46.00	-13.65	Average
10	1.58	27.64	9.63	0.05	37.32	56.00	-18.68	QP
11	3.88	22.81	9.65	0.06	32.52	46.00	-13.48	Average
12	3.88	27.34	9.65	0.06	37.05	56.00	-18.95	QP

Remarks: C.F (Correction Factor) = Insertion loss + Cable loss

5.7. Antenna Requirements

5.7.1. Standard Applicable

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 with the device.

5.7.2. Antenna Connector Construction

The EUT has a component antenna, which, in accordance to the above sections, is considered sufficient to comply with the provisions of these sections. Please see EUT photo for details.

5.7.3. Result: Compliance.

6. LIST OF MEASURING EQUIPMENTS

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
EMC Receiver	R&S	ESCS 30	100174	9kHz – 2.75GHz	May 23,2011	Conduction (CO04-HY)
LISN	MESS Tec	NNB-2/16Z	99079	9KHz-30MHz	May 23,2011	Conduction (CO04-HY)
LISN (Support Unit)	EMCO	3819/2NM	9703-1839	9KHz-30MHz	May 23,2011	Conduction (CO04-HY)
RF Cable-CON	UTIFLEX	3102-26886-4	CB049	9KHz-30MHz	May 23,2011	Conduction (CO04-HY)
ISN	SCHAFFNER	ISN ST08	21653	9KHz-30MHz	May 23,2011	Conduction (CO04-HY)
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	30M-1GHz 3m	May 23,2011	Radiation (03CH03-HY)
Amplifier	SCHAFFNER	COA9231A	18667	9kHz-2GHzz	May 23,2011	Radiation (03CH03-HY)
Amplifier	Agilent	8449B	3008A02120	1GHz-26.5GHz	May 23,2011	Radiation (03CH03-HY)
Amplifier	MITEQ	AMF-6F-260400	9121372	26.5GHz-40GHz	May 23,2011	Radiation (03CH03-HY)
Spectrum Analyzer	R&S	FSP30	100023	9k-30GHz	May 23,2011	Radiation (03CH03-HY)
Loop Antenna	R&S	HFH2-Z2	860004/001	9k-30MHz	May 23,2011	Radiation (03CH03-HY)
By-log Antenna	SCHAFFNER	CBL 6112D	22237	30MHz-1GHz	May 23,2011	Radiation (03CH03-HY)
Horn Antenna	EMCO	3115	6741	1GHz-18GHz	May 23,2011	Radiation (03CH03-HY)
Horn Antenna	SCHWARZBECK	BBHA9170	BBHA9170154	15GHz-40GHz	May 23,2011	Radiation (03CH03-HY)
RF Cable-R03m	Jye Bao	RG142	CB021	30MHz-1GHz	May 23,2011	Radiation (03CH03-HY)
RF Cable-HIGH	SUHNER	SUCOFLEX 106	03CH03-HY	1GHz-40GHz	May 23,2011	Radiation (03CH03-HY)
Spectrum Meter	R&S	FSP 30	100023	9kHz-30GHz	May 23,2011	Conducted (TH01-HY)
Power Meter	R&S	NRVS	100444	DC-40GHz	May 23,2011	Conducted (TH01-HY)
Power Sensor	R&S	NRV-Z51	100458	DC-30GHz	May 23,2011	Conducted (TH01-HY)
Power Sensor	R&S	NRV-Z32	10057	30MHz-6GHz	May 23,2011	Conducted (TH01-HY)
AC Power Source	HPC	HPA-500E	HPA-9100024	AC 0~300V	May 23,2011	Conducted (TH01-HY)
DC power Soure	GW	GPC-6030D	C671845	DC 1V-60V	May 23,2011	Conducted (TH01-HY)
Temp. and Humidigy Chamber	Giant Force	GTH-225-20-S	MAB0103-00	N/A	May 23,2011	Conducted (TH01-HY)
RF CABLE-1m	JYE Bao	RG142	CB034-1m	20MHz-7GHz	May 23,2011	Conducted (TH01-HY)
RF CABLE-2m	JYE Bao	RG142	CB)35-2m	20MHz-1GHz	May 23,2011	Conducted (TH01-HY)
Vector signal Generator	R&S	SMU200A	102098	100kHz~6GHz	May 23,2011	Conducted (TH01-HY)
Signal Generator	R&S	SMR40	10016	10MHz~4oGHa	May 23,2011	Conducted (TH01-HY)
Oscilloscope	Tektonix	TDS380	B016197	400MHz/2GRS	May 23,2011	Conducted (TH01-HY)

7. MANUFACTURER/ APPROVAL HOLDER DECLARATION

The following identical model(s):

FS-613A-M105I, FS-603A-M106, HS-691A-BAH5, HS-691A-A105, HS-691A-A405, HS-691A-V031, HS-691A-A031, HS-691A-M031, MS-633A-A405, MS-633A-A105

Belong to the tested device:

Product description: IP Camera

Model name: FS-613A-M105

No additional models were tested.

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