

TEST REPORT FOR CERTIFICATION
On Behalf of

Lorex Technology Inc

2.4G wireless camera product

Model Number: LWU3620-C

FCC ID : UCZ-LWU3620C

Prepared for : Lorex Technology Inc
250 Royal Crest Court Markham, ON L3R 3S1 Canada

Prepared By :EST Technology Co., Ltd.
Santun(guantai Road), Houjie Town, DongGuan City,
GuangDong, China.

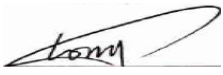
Tel: 86-769-83081888-808
Fax:86-769-83081878

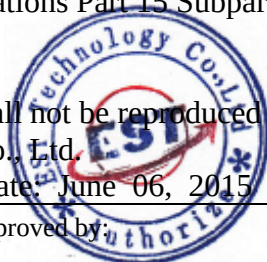
Report Number: ESTE-R1506014
Date of Test : April 28,2015~ June 05, 2015
Date of Report : June 06, 2015

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Test Report Verification

Applicant:	Lorex Technology Inc		
Address:	250 Royal Crest Court Markham, ON L3R 3S1 Canada		
Manufacturer Address:	OPCOM O.E.(DONG GUAN)INC. Gu Cun Industry Estate Dajing Countryside Committee Houjie Town, Dongguan City Guangdong, China 523958		
E.U.T:	2.4G wireless camera product		
Model Number:	LWU3620-C Note: ("LWU3620-C", only TX.)		
Power Supply:	DC 12V From Adapter Input AC 100-240V; 50V/60Hz		
Test Voltage:	DC 12V From Adapter Input AC 120V/60Hz		
Trade Name:	-----	Serial No.:	-----
Date of Receipt:	April 28, 2015	Date of Test:	April 28,2015~ June 05, 2015
Test Specification:	FCC Rules and Regulations Part 15 Subpart C:2014 ANSI C63.10:2013		
Test Result:	The device described above is tested by EST Technology Co., Ltd.. The measurement results were contained in this test report and EST Technology Co., Ltd. was assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT to be technically compliance with the FCC Rules and Regulations Part 15 Subpart C requirements. This report applies to above tested sample only and shall not be reproduced in part without written approval of EST Technology Co., Ltd. Date: June 06, 2015		
Prepared by:	Tested by:	Approved by:	
 	 	 	
Ada / Assistant	Tony.Tang/ Engineer	IcemanHu / Manager	
Other Aspects:	None.		
Abbreviations: OK/P=passed fail/F=failed n.a/N=not applicable E.U.T=equipment under tested			
This test report is based on a single evaluation of one sample of above mentioned products ,It is not permitted to be duplicated in extracts without written approval of EST Technology Co., Ltd.			



1. GENERAL INFORMATION

1.1. Description of Device (EUT)

Product Name	: 2.4G wireless camera product
Model Number	: LWU3620-C
FCC ID	: UCZ-LWU3620C
Operation frequency	: 2408-2468 MHz
Number of channel	: 16
Antenna	: Whip antenna, 3 dBi gain
Modulation	: GFSK
Power Supply	: DC 12V From Adapter Input AC 120V/60Hz
Sample Type	: Prototype production

2. SUMMARY OF TEST

2.1. Summary of test result

Description of Test Item	Standard	Results
Power Line Conducted Emissions	FCC Part 15C: 15.207 ANSI C63.10-2013	PASS
Radiated Emission Test	FCC Part 15C: 15.209 FCC Part 15C: 15.249 ANSI C63.10-2013	PASS
20 dB Bandwidth Test	FCC Part 15: 15.249 ANSI C63.10-2013	PASS
Band Edge Compliance Test	FCC Part 15: 15.215 ANSI C63.10-2013	PASS
Antenna requirement	FCC Part 15: 15.203	PASS
N/A is an abbreviation for Not Applicable.		

2.2. Test Facilities

EMC Lab : Certificated by CNAL, CHINA
 Registration No.: L5288
 Date of registration: Nov 23, 2014

 Certificated by FCC, USA
 Registration No.: 989591
 Date of registration: November 20, 2013

 Certificated by Industry Canada
 Registration No.: 9405A-1
 Date of registration: January 03, 2013

 Certificated by VCCI, Japan
 Registration No.: R-3663 & C-4103
 Date of registration: July 25, 2011

 Certificated by TUV Rheinland, Germany
 Registration No.: UA 50195514 0001
 Date of registration: January 07, 2011

 Certificated by TUV/PS, Shenzhen
 Registration No.: SCN1017
 Date of registration: January 27, 2011

 Certificated by Intertek ETL SEMKO
 Registration No.: 2011-RTL-L1-18
 Date of registration: April 28, 2011

 Certificated by Siemic, Inc.
 Registration No.: SLCN021
 Date of registration: November 8, 2011

 Certificated by Nemko, Hong Kong
 Registration No.: 175193
 Date of registration: May 4, 2011

Name of Firm : EST Technology Co., Ltd.

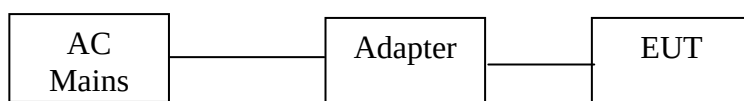
Site Location : San Tun Management Zone, Houjie District, Dongguan,
Guangdong, China

2.3. Assistant equipment used for test

2.3.1. Adapter

Model:	TEKA012-120100UK
Input:	100-240V;50/60Hz 0.35A MAX
Output:	12V/1A

2.4. Block Diagram



(EUT: 2.4G wireless camera product)

2.5. Test mode

The test software was used to control EUT work in Continuous TX mode, and select test channel, wireless mode

Mode	Channel	Frequency
TX	Low	2408MHz
	Middle	2440MHz
	High	2468MHz

2.6. Channel List for GFSK

Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)
1	2408	2	2412
3	2416	4	2420
5	2424	6	2428
7	2432	8	2436
9	2440	10	2444
11	2448	12	2452
13	2456	14	2460
15	2464	16	2468

2.7. Test Equipment

2.7.1. For conducted emission test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde & Schwarz	ESHS30	832354	June,28,14	1 Year
Artificial Mains Networ	Rohde & Schwarz	ENV216	101260	June,28,14	1 Year
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	101100	June,28,14	1 Year

2.7.2. For radiated emission test(30-1000MHz)

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde & Schwarz	ESVS10	100004	June,28,14	1 Year
Spectrum Analyzer	Agilent	E4411B	MY50140697	June,28,14	1 Year
Bilog Antenna	Teseq	CBL 6111D	27090	June,28,14	1 Year
Signal Amplifier	Agilent	310N	187037	June,28,14	1 Year

2.7.3. For radiated emission test(above 1GHz)

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Horn Antenna	SCHWARZB ECK	BBHA 9120 D	BBHA9120D1 002	June,28,14	1 Year
Signal Amplifier	SCHWARZB ECK	BBV9718	9718-212	June,28,14	1 Year
Spectrum Analyzer	Agilent	E4408B	MY44211139	June,28,14	1 Year
RF Cable	Hubersuhner	RG 214/U	513423	June,28,14	1 Year

3. RADIATED EMISSIONS

3.1. Limit

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMIT	
		$\mu\text{V/m}$	$\text{dB}(\mu\text{V})/\text{m}$
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
960 ~ 1000	3	500	54.0
Above 1000	3	74.0 $\text{dB}(\mu\text{V})/\text{m}$ (Peak) 54.0 $\text{dB}(\mu\text{V})/\text{m}$ (Average)	

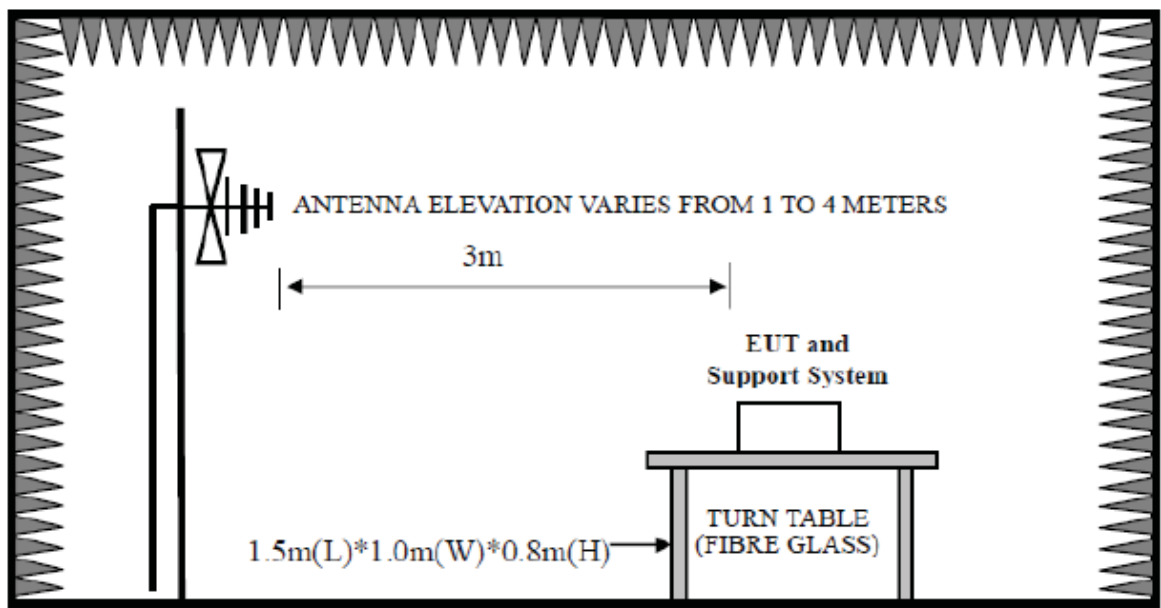
Remark : (1) Emission level $\text{dB}\mu\text{V} = 20 \log$ Emission level $\mu\text{V/m}$

(2) The smaller limit shall apply at the cross point between two frequency bands.

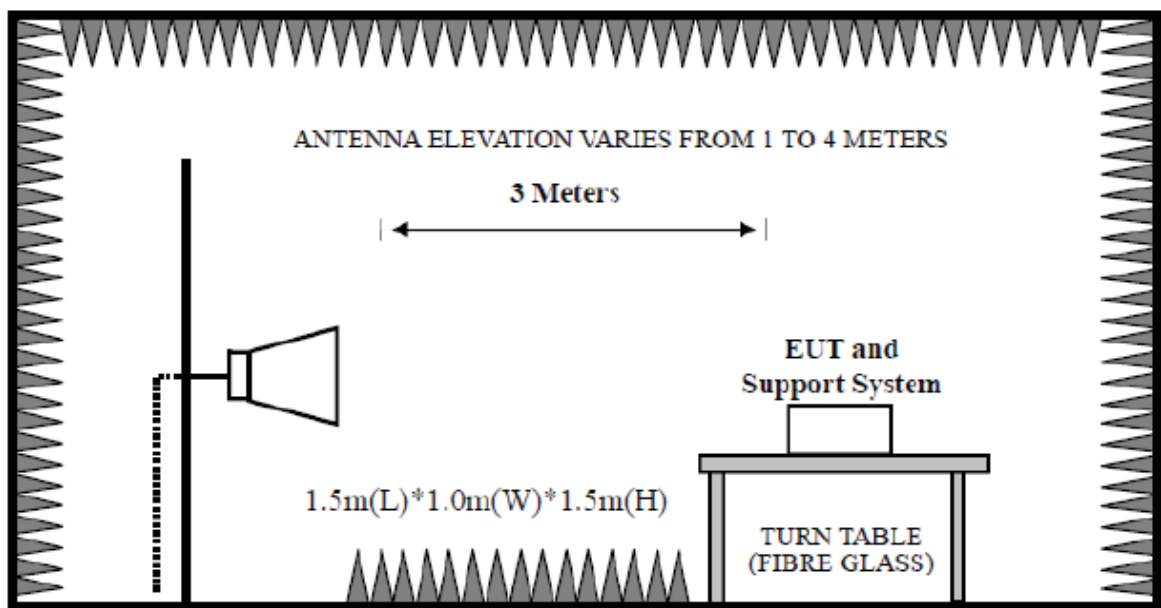
(3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system

3.2. Block Diagram of Test setup

30~1000MHz



Above 1GHz



3.3. Test Procedure

EUT was placed on a turn table, which is 0.8 meter high above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. Power on the EUT and let it working in test mode, then test it. EUT is set 3 meters away from the receiving antenna, which is mounted on a antenna tower. The antenna can be moved up and down between 1 meter and 4 meters to find out the maximum emission level. Both horizontal and vertical polarization of the antenna are set on test.

The bandwidth of the EMI test receiver (R&S FSU) is set at 120kHz for frequency range from 30MHz to 1000 MHz.

The bandwidth of the Spectrum's VBW is set at 1MHz and RBW is set at 1MHz for peak emissions measurement above 1GHz and 1MHz RBW, 10Hz VBW for average emissions measure above 1GHz

PEAK detector, 1MHz/1MHz for PAEK measurement,

PEAK detector, 1MHz/10Hz for Average measurement

The frequency range from 30MHz to 10th harmonic (25GHz) are checked.

3.4. Test Result

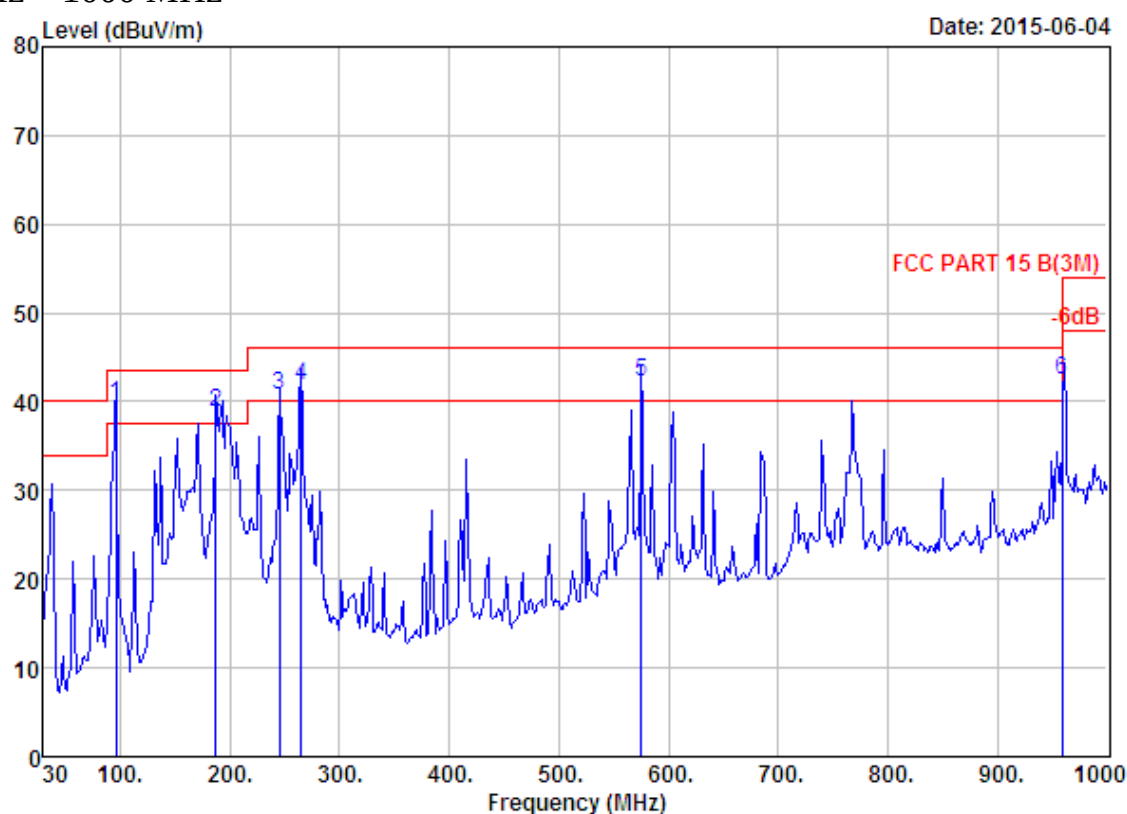
30MHz—25GHz Radiated emission Test result	
EUT: 2.4G wireless camera product	M/N: LWU3620-C
Power: DC 12V From Adapter Input AC 120V/60Hz	
Test date: 2015-04-30~2015-06-05 Test site: 3m Chamber Tested by: Tony Tang	
Test mode: Tx	
Pass	

Note: 1、 For emissions above 1GHz, if peak level comply with average limit, then the average level is deemed to comply with average limit.

- 2、 The frequency 2408MHz 、 2440MHz and 2468MHz is fundamental frequency which no limit, the limit on plots is automatically generated by the software, it's not fundamental limit, we can't remove it.

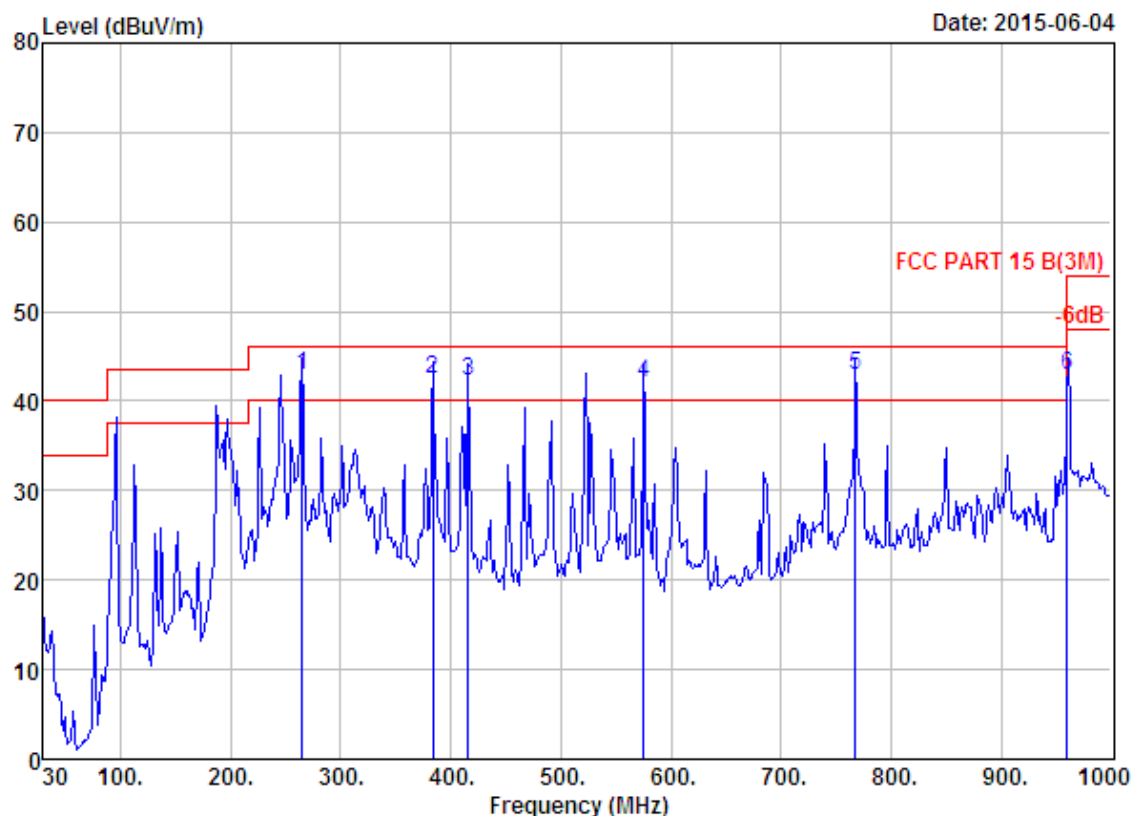
3.5. Test Data

30 MHz – 1000 MHz



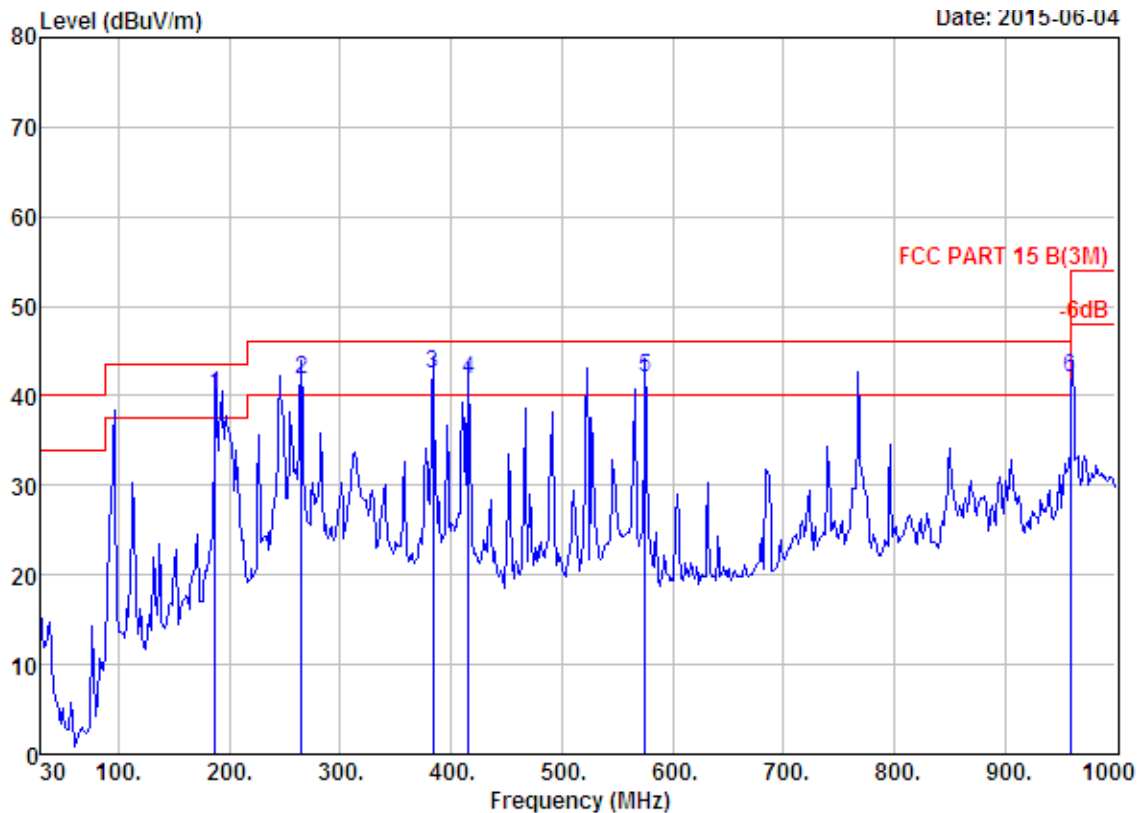
Site no. : 966 1# chamber Data no. : 175
 Dis. / Ant. : 3m 27137 Ant. pol. : VERTICAL
 Limit : FCC PART 15 B(3M)
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa
 Engineer : Dick
 EUT : 2.4G wireless camera product
 Power : DC 5V From Adapter Input AC 120V/60Hz
 M/N : LWU3620-C
 Test Mode : TX 2408MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	95.96	8.92	1.31	29.35	39.58	43.50	3.92	QP
2	187.14	8.26	1.84	28.71	38.81	43.50	4.69	QP
3	245.34	11.06	2.10	27.50	40.66	46.00	5.34	QP
4	264.74	12.94	2.28	26.54	41.76	46.00	4.24	QP
5	575.14	19.55	3.40	19.28	42.23	46.00	3.77	QP
6	959.34	24.48	4.67	13.32	42.47	46.00	3.53	QP



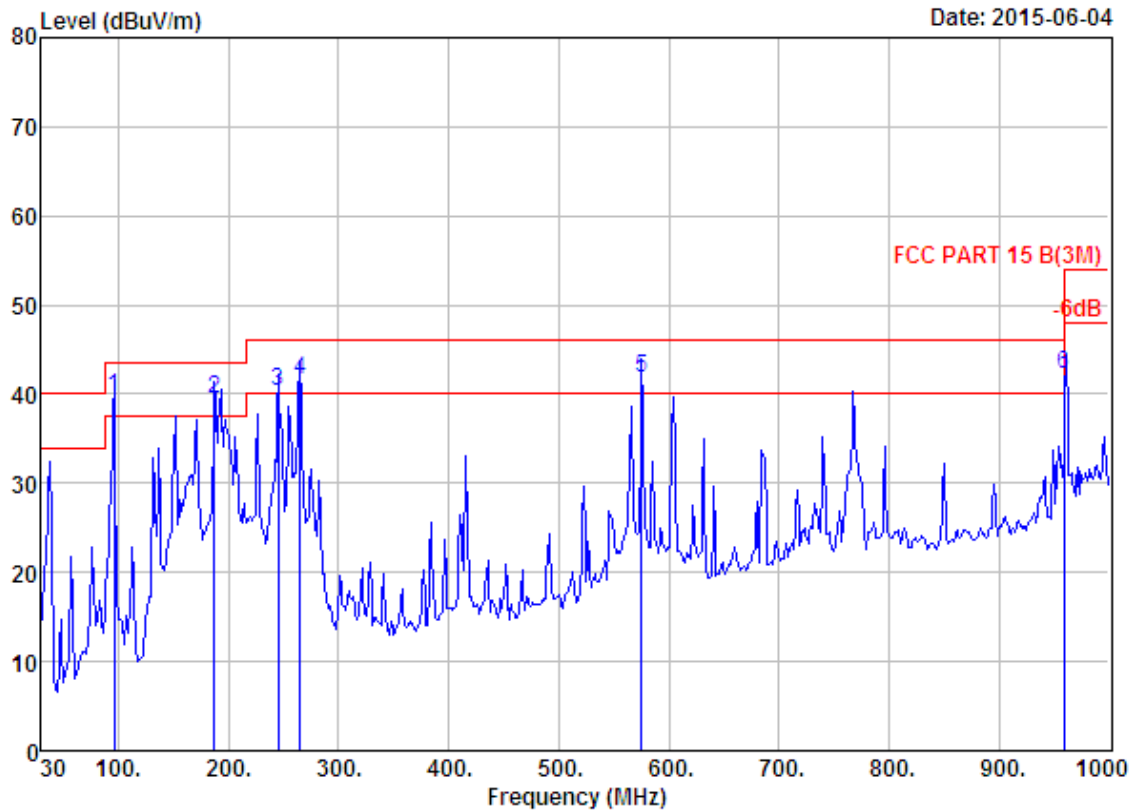
Site no. : 966 1# chamber Data no. : 176
 Dis. / Ant. : 3m 27137 Ant. pol. : HORIZONTAL
 Limit : FCC PART 15 B(3M)
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa
 Engineer : Dick
 EUT : 2.4G wireless camera product
 Power : DC 5V From Adapter Input AC 120V/60Hz
 M/N : LWU3620-C
 Test Mode : TX 2408MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	264.74	12.94	2.28	27.66	42.88	46.00	3.12	QP
2	384.05	15.24	2.64	24.48	42.36	46.00	3.64	QP
3	416.06	16.30	2.75	23.09	42.14	46.00	3.86	QP
4	575.14	19.55	3.40	19.15	42.10	46.00	3.90	QP
5	767.20	22.04	3.87	16.88	42.79	46.00	3.21	QP
6	959.67	24.48	4.67	13.70	42.85	46.00	3.15	QP



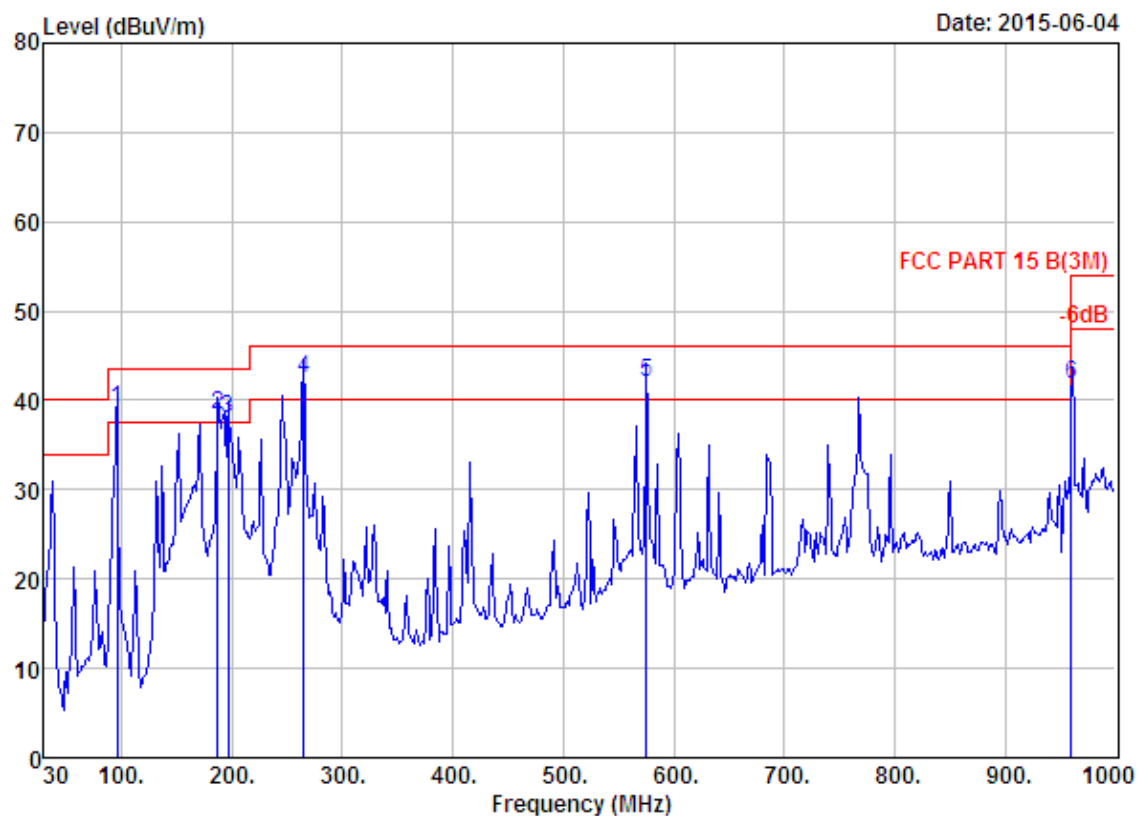
Site no. : 966 1# chamber Data no. : 177
 Dis. / Ant. : 3m 27137 Ant. pol. : HORIZONTAL
 Limit : FCC PART 15 B(3M)
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa
 Engineer : Dick
 EUT : 2.4G wireless camera product
 Power : DC 5V From Adapter Input AC 120V/60Hz
 M/N : LWU3620-C
 Test Mode : TX 2440MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	187.14	8.26	1.84	30.09	40.19	43.50	3.31	QP
2	264.74	12.94	2.28	26.64	41.86	46.00	4.14	QP
3	384.05	15.24	2.64	24.48	42.36	46.00	3.64	QP
4	416.06	16.30	2.75	22.70	41.75	46.00	4.25	QP
5	575.14	19.55	3.40	19.18	42.13	46.00	3.87	QP
6	959.34	24.48	4.67	12.83	41.98	46.00	4.02	QP



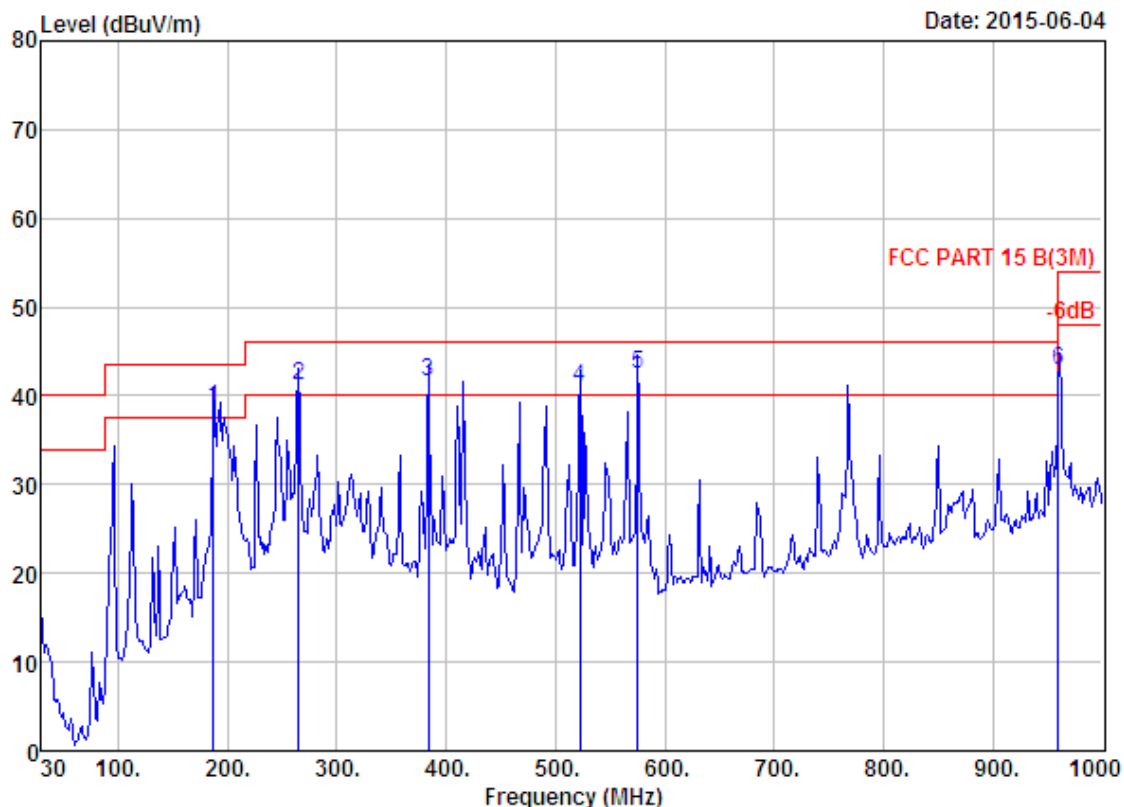
Site no. : 966 1# chamber Data no. : 178
 Dis. / Ant. : 3m 27137 Ant. pol. : VERTICAL
 Limit : FCC PART 15 B(3M)
 Env. / Ins. : Temp:23.6°;Humi:56%;Press:101.52kPa
 Engineer : Dick
 EUT : 2.4G wireless camera product
 Power : DC 5V From Adapter Input AC 120V/60Hz
 M/N : LWU3620-C
 Test Mode : TX 2440MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	95.96	8.92	1.31	29.42	39.65	43.50	3.85	QP
2	187.14	8.26	1.84	29.33	39.43	43.50	4.07	QP
3	245.34	11.06	2.10	27.19	40.35	46.00	5.65	QP
4	264.74	12.94	2.28	26.42	41.64	46.00	4.36	QP
5	575.14	19.55	3.40	18.90	41.85	46.00	4.15	QP
6	959.34	24.48	4.67	13.18	42.33	46.00	3.67	QP



Site no. : 966 1# chamber Data no. : 179
 Dis. / Ant. : 3m 27137 Ant. pol. : VERTICAL
 Limit : FCC PART 15 B(3M)
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa
 Engineer : Dick
 EUT : 2.4G wireless camera product
 Power : DC 5V From Adapter Input AC 120V/60Hz
 M/N : LWU3620-C
 Test Mode : TX 2468MHz

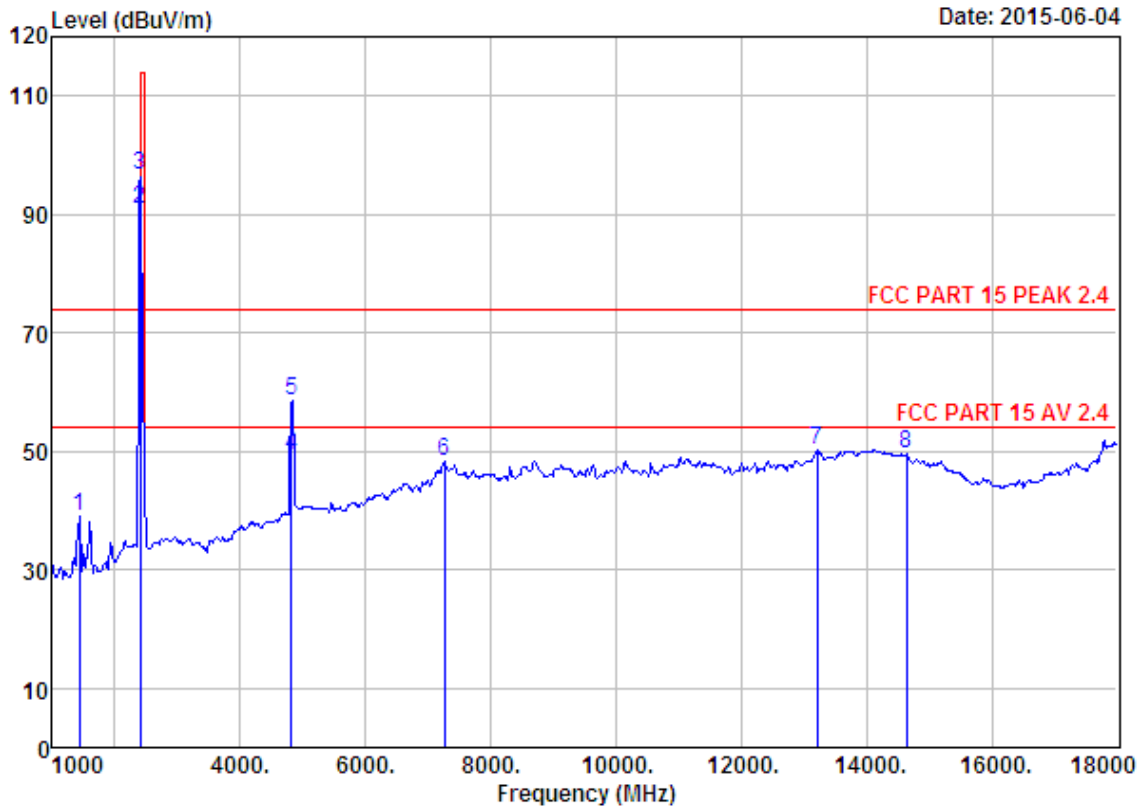
	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	95.96	8.92	1.31	28.80	39.03	43.50	4.47	QP
2	187.14	8.26	1.84	28.27	38.37	43.50	5.13	QP
3	196.84	7.72	1.81	28.41	37.94	43.50	5.56	QP
4	264.74	12.94	2.28	27.30	42.52	46.00	3.48	QP
5	575.14	19.55	3.40	19.16	42.11	46.00	3.89	QP
6	959.55	24.48	4.67	12.60	41.75	46.00	4.25	QP



Site no. : 966 1# chamber Data no. : 180
 Dis. / Ant. : 3m 27137 Ant. pol. : HORIZONTAL
 Limit : FCC PART 15 B(3M)
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa
 Engineer : Dick
 EUT : 2.4G wireless camera product
 Power : DC 5V From Adapter Input AC 120V/60Hz
 M/N : LWU3620-C
 Test Mode : TX 2468MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	187.14	8.26	1.84	28.57	38.67	43.50	4.83	QP
2	264.74	12.94	2.28	25.96	41.18	46.00	4.82	QP
3	384.05	15.24	2.64	23.72	41.60	46.00	4.40	QP
4	522.76	18.04	3.21	19.65	40.90	46.00	5.10	QP
5	575.14	19.55	3.40	19.58	42.53	46.00	3.47	QP
6	959.67	24.48	4.67	13.68	42.83	46.00	3.17	QP

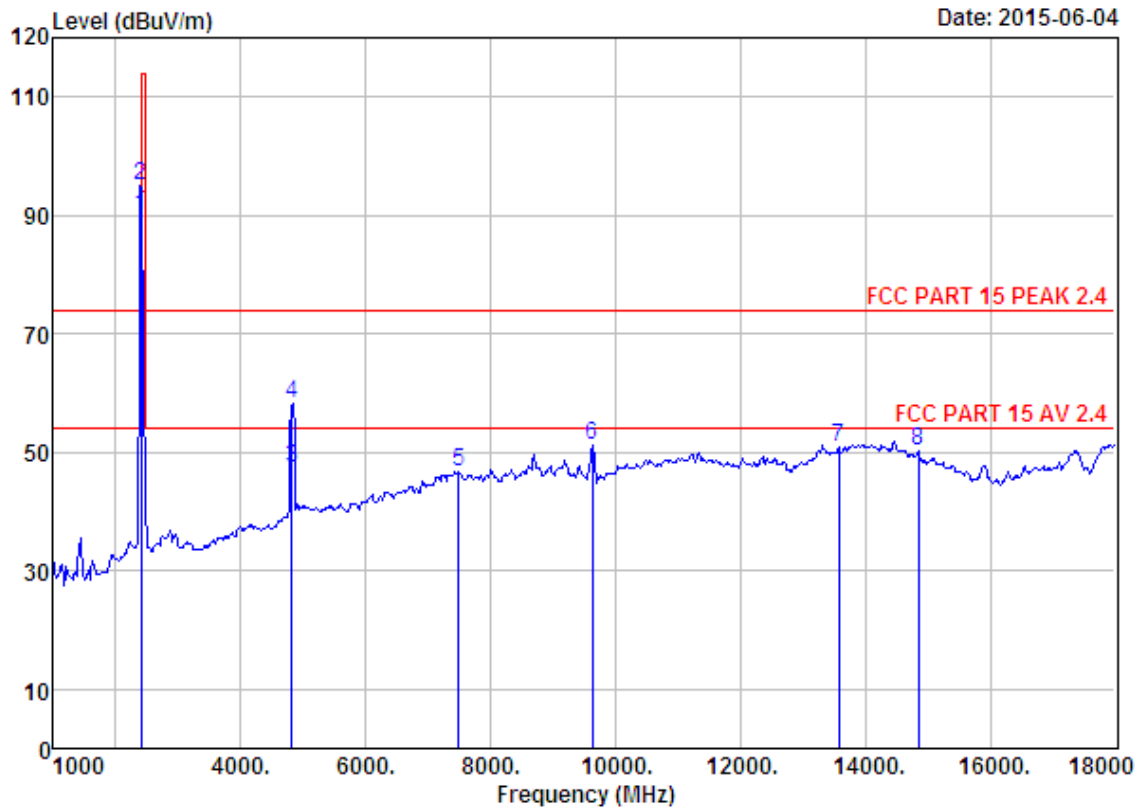
1000-18000MHz



Site no. : 1# 966 chamber Data no. : 191
 Dis. / Ant. : 3m ANT 1-18G Ant. pol. : HORIZONTAL
 Limit : FCC PART 15 PEAK 2.4
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa
 Engineer : Dick
 EUT : 2.4G wireless camera product
 Power : DC 12V From Adapter Input AC 120V/60Hz
 M/N : LWU3620-C
 Test Mode : TX 2408MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	1425.00	25.09	4.20	35.06	44.92	39.15	74.00	34.85	Peak
2	2408.00	27.61	6.64	34.64	91.30	90.91	94.00	3.09	Average
3	2408.00	27.61	6.64	34.64	96.94	96.55	114.00	17.45	Peak
4	4816.00	31.25	11.77	35.66	42.03	49.39	54.00	4.61	Average
5	4816.00	31.25	11.77	35.66	51.28	58.64	74.00	15.36	Peak
6	7256.00	36.53	11.55	34.02	34.20	48.26	74.00	25.74	Peak
7	13206.00	39.38	11.46	32.79	32.12	50.17	74.00	23.83	Peak
8	14634.00	41.48	10.91	33.86	30.97	49.50	74.00	24.50	Peak

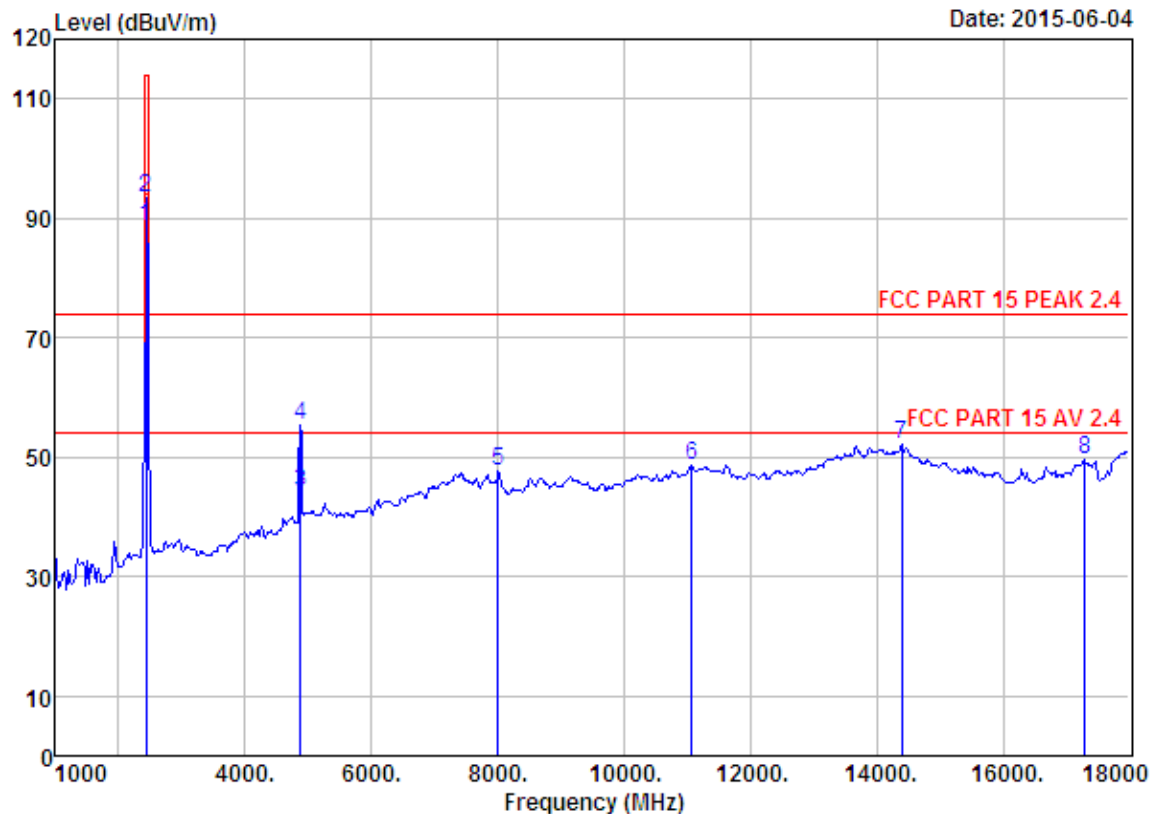
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 1# 966 chamber Data no. : 192
 Dis. / Ant. : 3m ANT 1-18G Ant. pol. : VERTICAL
 Limit : FCC PART 15 PEAK 2.4
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa
 Engineer : Dick
 EUT : 2.4G wireless camera product
 Power : DC 12V From Adapter Input AC 120V/60Hz
 M/N : LWU3620-C
 Test Mode : TX 2408MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2408.00	27.61	6.64	34.64	90.35	89.96	94.00	4.04	Average
2	2408.00	27.61	6.64	34.64	95.56	95.17	114.00	18.83	Peak
3	4816.00	31.25	11.77	35.66	40.01	47.37	54.00	6.63	Average
4	4816.00	31.25	11.77	35.66	50.81	58.17	74.00	15.83	Peak
5	7494.00	36.48	11.62	34.18	32.74	46.66	74.00	27.34	Peak
6	9636.00	37.96	11.68	35.09	36.76	51.31	74.00	22.69	Peak
7	13580.00	40.31	11.40	32.64	31.86	50.93	74.00	23.07	Peak
8	14855.00	40.71	10.88	33.68	32.42	50.33	74.00	23.67	Peak

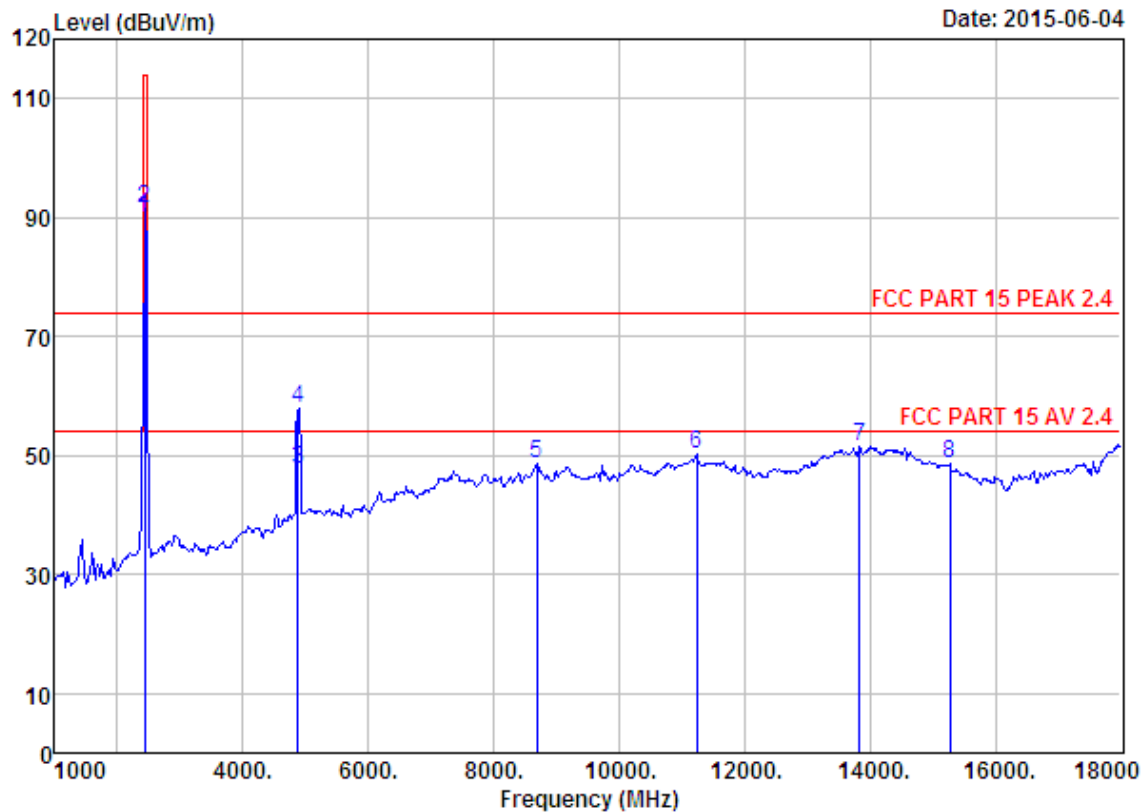
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 1# 966 chamber Data no. : 195
 Dis. / Ant. : 3m ANT 1-18G Ant. pol. : HORIZONTAL
 Limit : FCC PART 15 PEAK 2.4
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa
 Engineer : Dick
 EUT : 2.4G wireless camera product
 Power : DC 12V From Adapter Input AC 120V/60Hz
 M/N : LWU3620-C
 Test Mode : TX 2440MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2440.00	27.60	6.67	34.85	89.21	88.63	94.00	5.37	Average
2	2440.00	27.60	6.67	34.85	94.10	93.52	114.00	20.48	Peak
3	4880.00	31.37	12.07	35.76	36.55	44.23	54.00	9.77	Average
4	4880.00	31.37	12.07	35.76	47.75	55.43	74.00	18.57	Peak
5	8004.00	37.01	11.40	34.96	34.15	47.60	74.00	26.40	Peak
6	11064.00	39.48	11.24	33.83	31.60	48.49	74.00	25.51	Peak
7	14396.00	41.79	10.92	33.39	32.74	52.06	74.00	21.94	Peak
8	17303.00	40.84	10.88	31.31	29.18	49.59	74.00	24.41	Peak

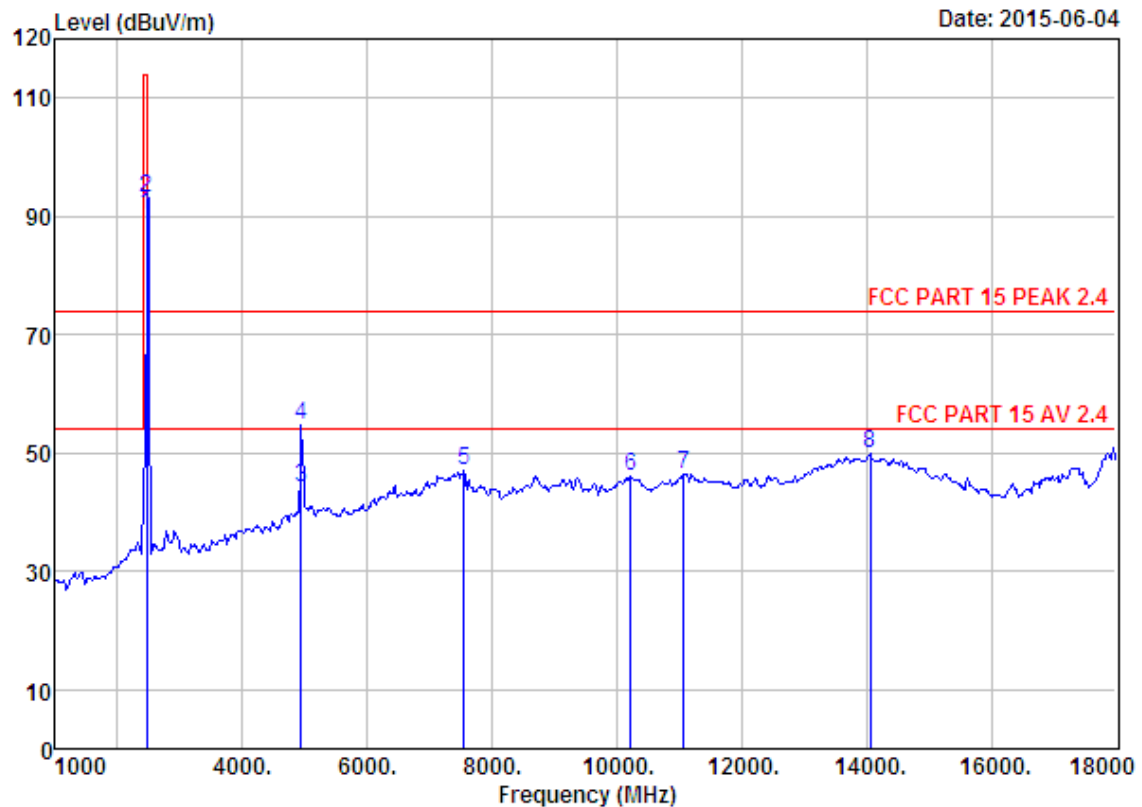
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 1# 966 chamber Data no. : 196
 Dis. / Ant. : 3m ANT 1-18G Ant. pol. : VERTICAL
 Limit : FCC PART 15 PEAK 2.4
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa
 Engineer : Dick
 EUT : 2.4G wireless camera product
 Power : DC 12V From Adapter Inpuy AC 120V/60Hz
 M/N : LWU3620-C
 Test Mode : TX 2440MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2440.00	27.60	6.67	34.85	90.41	89.83	94.00	4.17	Average
2	2440.00	27.60	6.67	34.85	92.00	91.42	114.00	22.58	Peak
3	4880.00	31.37	12.07	35.76	40.01	47.69	54.00	6.31	Average
4	4880.00	31.37	12.07	35.76	50.29	57.97	74.00	16.03	Peak
5	8684.00	37.32	11.45	33.66	33.48	48.59	74.00	25.41	Peak
6	11234.00	39.37	11.12	33.25	32.90	50.14	74.00	23.86	Peak
7	13835.00	41.02	11.10	33.06	32.46	51.52	74.00	22.48	Peak
8	15280.00	38.90	10.99	33.54	32.31	48.66	74.00	25.34	Peak

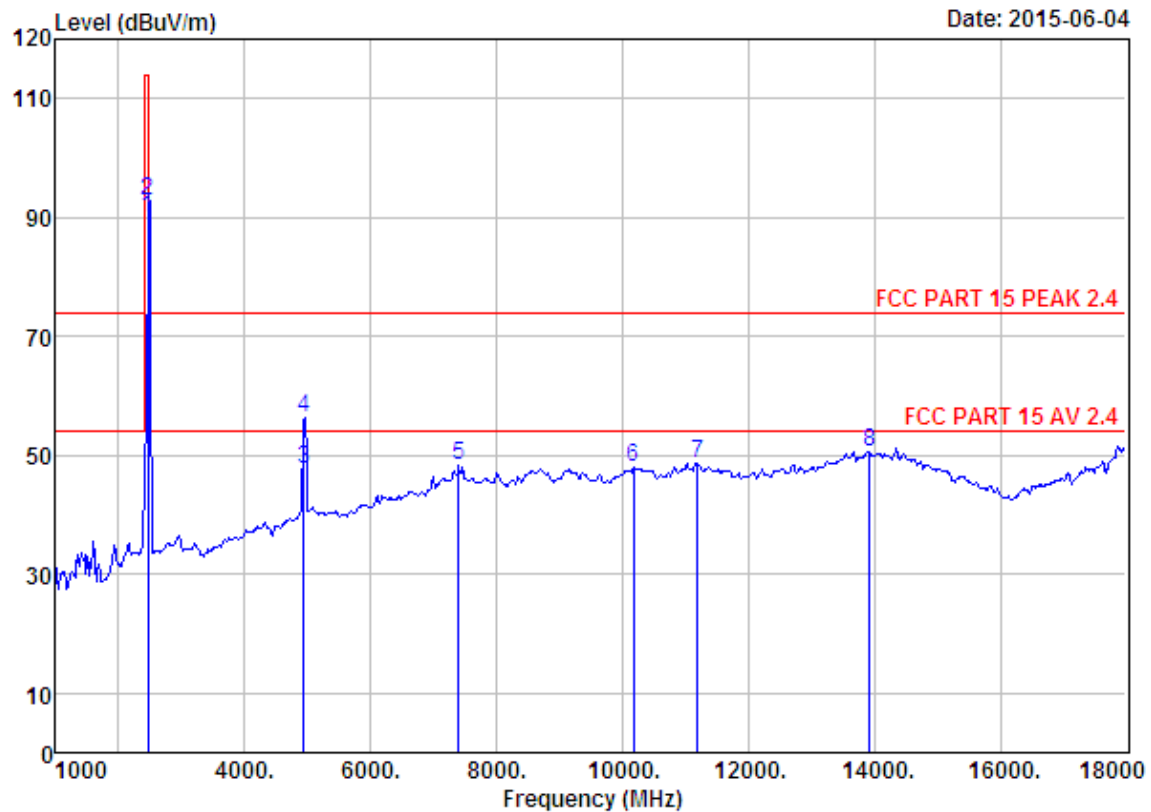
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 1# 966 chamber Data no. : 197
 Dis. / Ant. : 3m ANT 1-18G Ant. pol. : VERTICAL
 Limit : FCC PART 15 PEAK 2.4
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa
 Engineer : Dick
 EUT : 2.4G wireless camera product
 Power : DC 12V From Adapter Input AC 120V/60Hz
 M/N : LWU3620-C
 Test Mode : TX 2468MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2468.00	27.58	6.69	34.98	91.02	90.31	94.00	3.69	Average
2	2468.00	27.58	6.69	34.98	93.86	93.15	114.00	20.85	Peak
3	4936.00	31.45	12.37	35.91	36.11	44.02	54.00	9.98	Average
4	4936.00	31.45	12.37	35.91	46.72	54.63	74.00	19.37	Peak
5	7545.00	36.43	11.60	34.15	33.19	47.07	74.00	26.93	Peak
6	10214.00	38.48	11.47	34.50	30.61	46.06	74.00	27.94	Peak
7	11064.00	39.48	11.24	33.83	29.59	46.48	74.00	27.52	Peak
8	14056.00	41.51	10.90	33.06	30.60	49.95	74.00	24.05	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

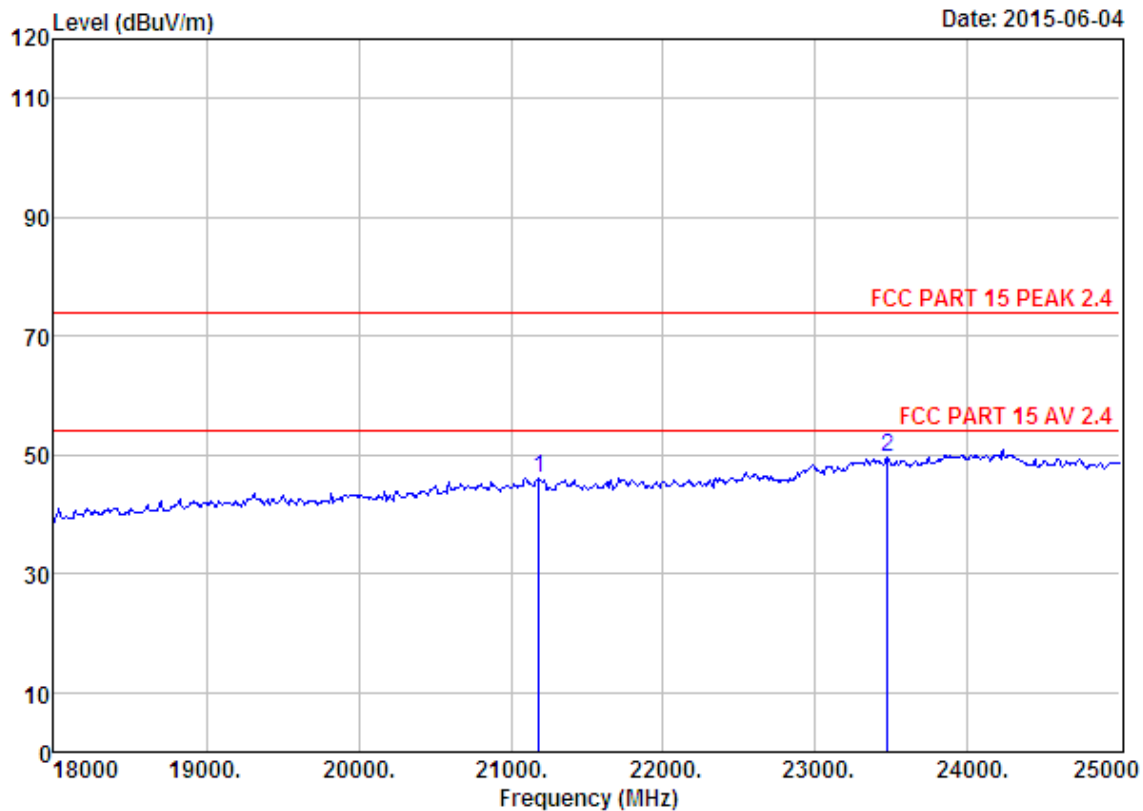


Site no. : 1# 966 chamber Data no. : 198
 Dis. / Ant. : 3m ANT 1-18G Ant. pol. : HORIZONTAL
 Limit : FCC PART 15 PEAK 2.4
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa
 Engineer : Dick
 EUT : 2.4G wireless camera product
 Power : DC 12V From Adapter Input AC 120V/60Hz
 M/N : LWU3620-C
 Test Mode : TX 2468MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBUV)	Emission Level (dBUV/m)	Limits (dBUV/m)	Margin (dB)	Remark
1	2468.00	27.58	6.69	34.98	90.67	89.96	94.00	4.04	Average
2	2468.00	27.58	6.69	34.98	93.56	92.85	114.00	21.15	Peak
3	4936.00	31.45	12.37	35.91	39.87	47.78	54.00	6.22	Average
4	4936.00	31.45	12.37	35.91	48.34	56.25	74.00	17.75	Peak
5	7392.00	36.57	11.59	34.23	34.33	48.26	74.00	25.74	Peak
6	10180.00	38.42	11.49	34.53	32.68	48.06	74.00	25.94	Peak
7	11200.00	39.39	11.14	33.24	31.38	48.67	74.00	25.33	Peak
8	13920.00	41.26	11.00	33.00	31.30	50.56	74.00	23.44	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

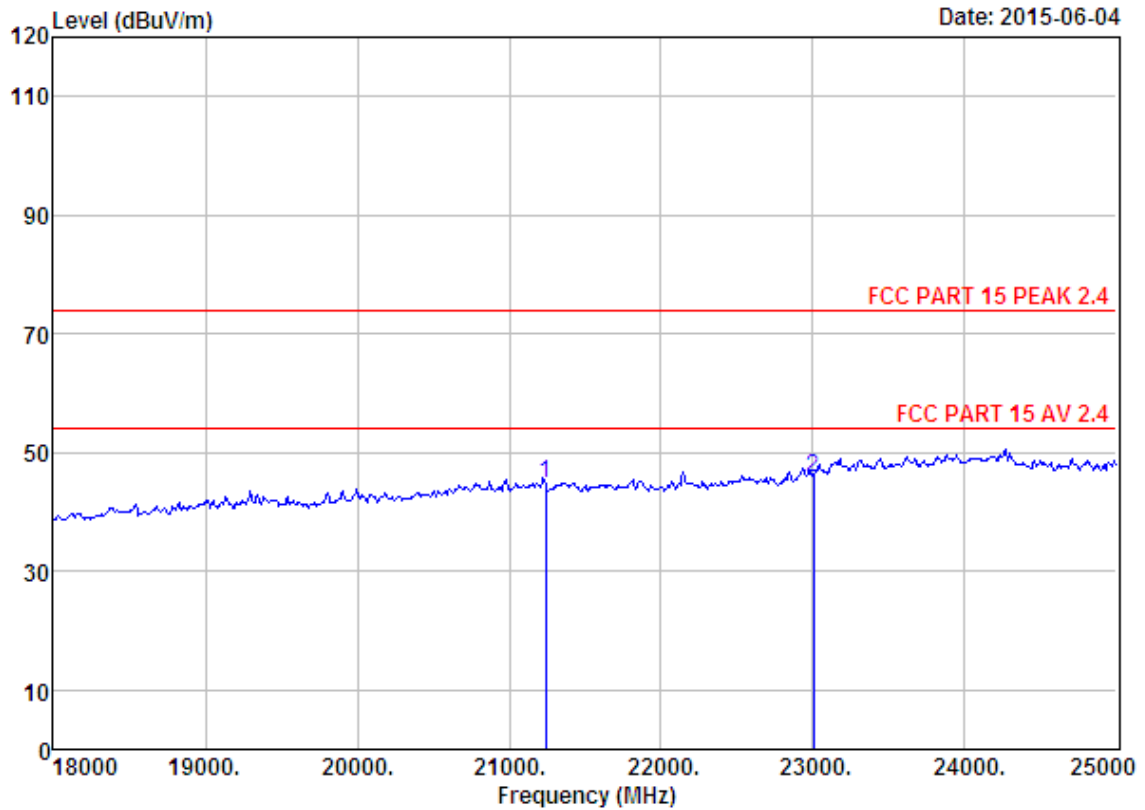
18000MHz-25000MHz



Site no. : 1# 966 chamber Data no. : 201
 Dis. / Ant. : 3m ANT ABOVE 18G Ant. pol. : VERTICAL
 Limit : FCC PART 15 PEAK 2.4
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa
 Engineer : Dick
 EUT : 2.4G wireless camera product
 Power : DC 12V From Adapter Inpuy AC 120V/60Hz
 M/N : LWU3620-C
 Test Mode : TX 2408MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	21185.00	46.18	20.21	35.64	15.25	46.00	74.00	28.00	Peak
2	23474.00	45.70	21.57	33.35	15.66	49.58	74.00	24.42	Peak

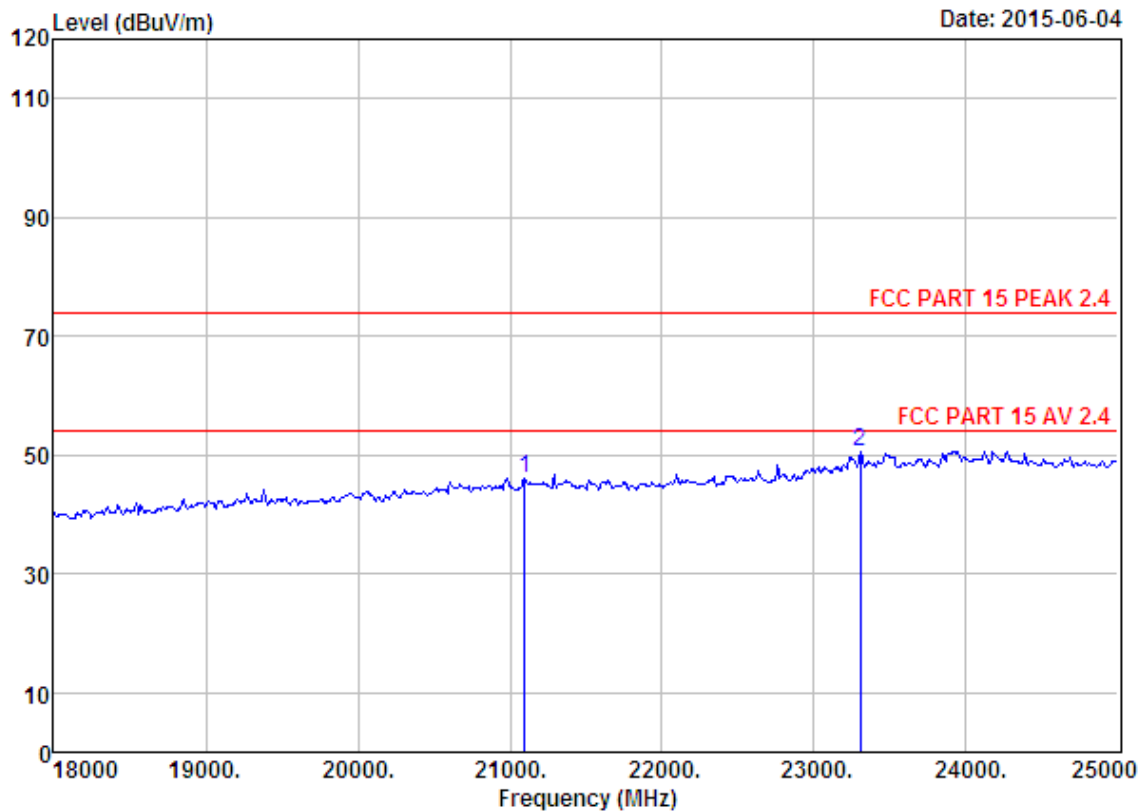
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 1# 966 chamber Data no. : 202
 Dis. / Ant. : 3m ANT ABVOE 18G Ant. pol. : HORIZONTAL
 Limit : FCC PART 15 PEAK 2.4
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa
 Engineer : Dick
 EUT : 2.4G wireless camera product
 Power : DC 12V From Adapter Input AC 120V/60Hz
 M/N : LWU3620-C
 Test Mode : TX 2408MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	21241.00	46.16	20.23	35.58	13.90	44.71	74.00	29.29	Peak
2	23005.00	45.60	21.15	33.85	12.98	45.88	74.00	28.12	Peak

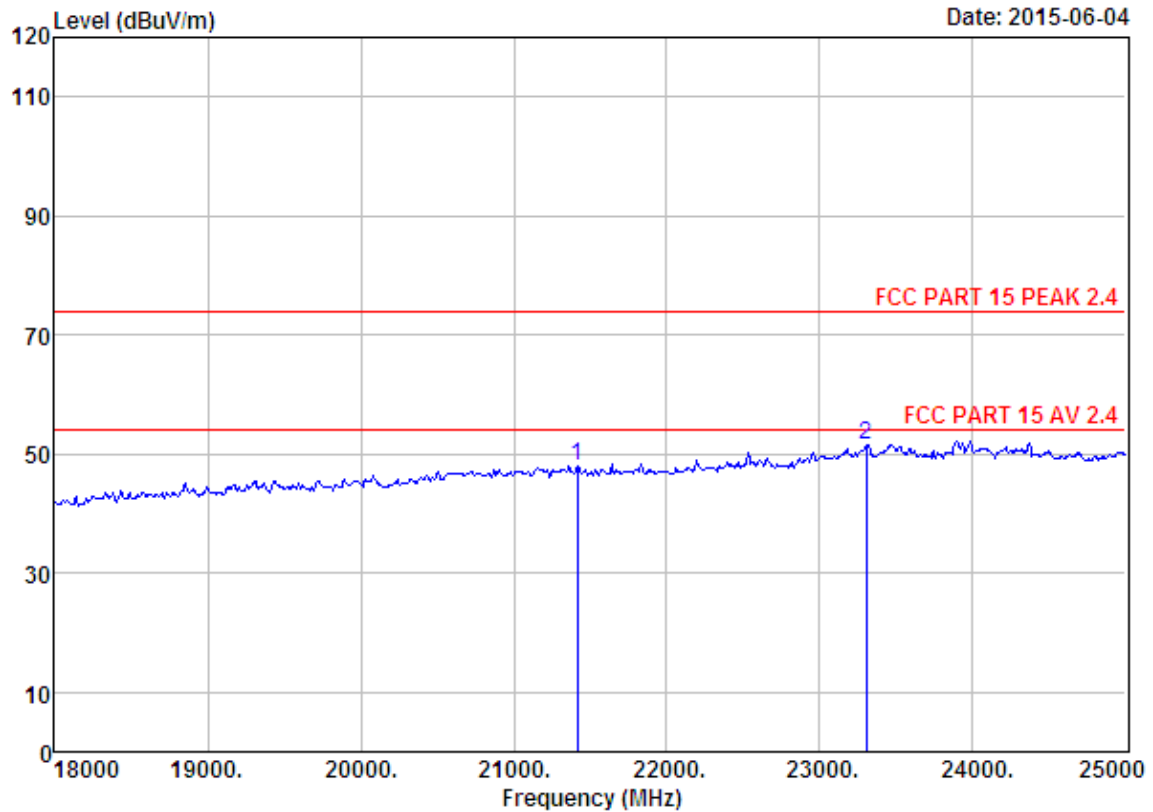
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 1# 966 chamber Data no. : 203
 Dis. / Ant. : 3m ANT ABVOE 18G Ant. pol. : HORIZONTAL
 Limit : FCC PART 15 PEAK 2.4
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa
 Engineer : Dick
 EUT : 2.4G wireless camera product
 Power : DC 12V From Adapter Inpuy AC 120V/60Hz
 M/N : LWU3620-C
 Test Mode : TX 2440MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	21094.00	46.23	20.17	35.71	15.55	46.24	74.00	27.76	Peak
2	23306.00	45.66	21.43	33.53	16.96	50.52	74.00	23.48	Peak

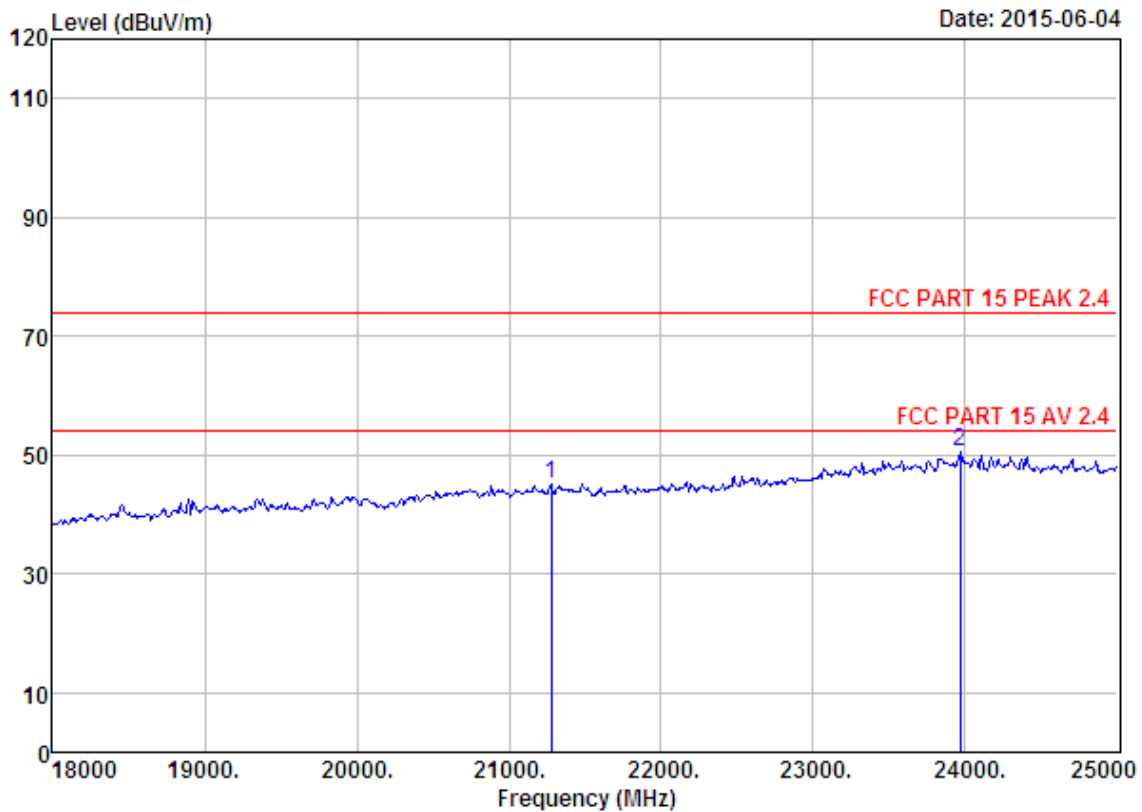
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
 2. The emission levels that are 20dB below the official
 limit are not reported.



Site no. : 1# 966 chamber Data no. : 204
 Dis. / Ant. : 3m ANT ABOVE 18G Ant. pol. : VERTICAL
 Limit : FCC PART 15 PEAK 2.4
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa
 Engineer : Dick
 EUT : 2.4G wireless camera product
 Power : DC 12V From Adapter Input AC 120V/60Hz
 M/N : LWU3620-C
 Test Mode : TX 2440MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	21416.00	46.05	20.31	35.42	17.15	48.09	74.00	25.91	Peak
2	23306.00	45.66	21.43	33.53	17.97	51.53	74.00	22.47	Peak

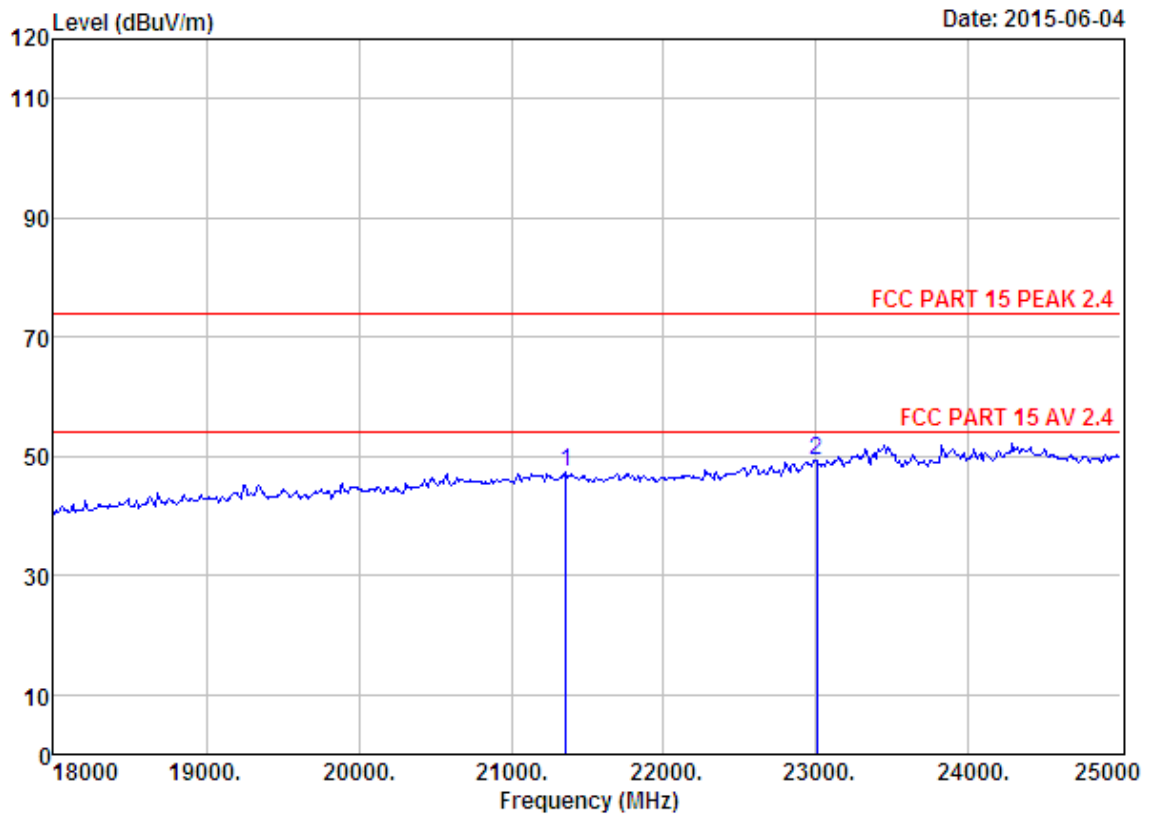
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 1# 966 chamber Data no. : 205
 Dis. / Ant. : 3m ANT ABOVE 18G Ant. pol. : VERTICAL
 Limit : FCC PART 15 PEAK 2.4
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa
 Engineer : Dick
 EUT : 2.4G wireless camera product
 Power : DC 12V From Adapter Input AC 120V/60Hz
 M/N : LWU3620-C
 Test Mode : TX 2468MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	21276.00	46.13	20.25	35.55	14.36	45.19	74.00	28.81	Peak
2	23964.00	45.61	22.02	32.83	15.84	50.64	74.00	23.36	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 1# 966 chamber Data no. : 206
 Dis. / Ant. : 3m ANT ABOVE 18G Ant. pol. : HORIZONTAL
 Limit : FCC PART 15 PEAK 2.4
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa
 Engineer : Dick
 EUT : 2.4G wireless camera product
 Power : DC 12V From Adapter Input AC 120V/60Hz
 M/N : LWU3620-C
 Test Mode : TX 2468MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	21360.00	46.08	20.28	35.49	16.35	47.22	74.00	26.78	Peak
2	23005.00	45.60	21.15	33.85	16.50	49.40	74.00	24.60	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

4. 20 DB BANDWIDTH

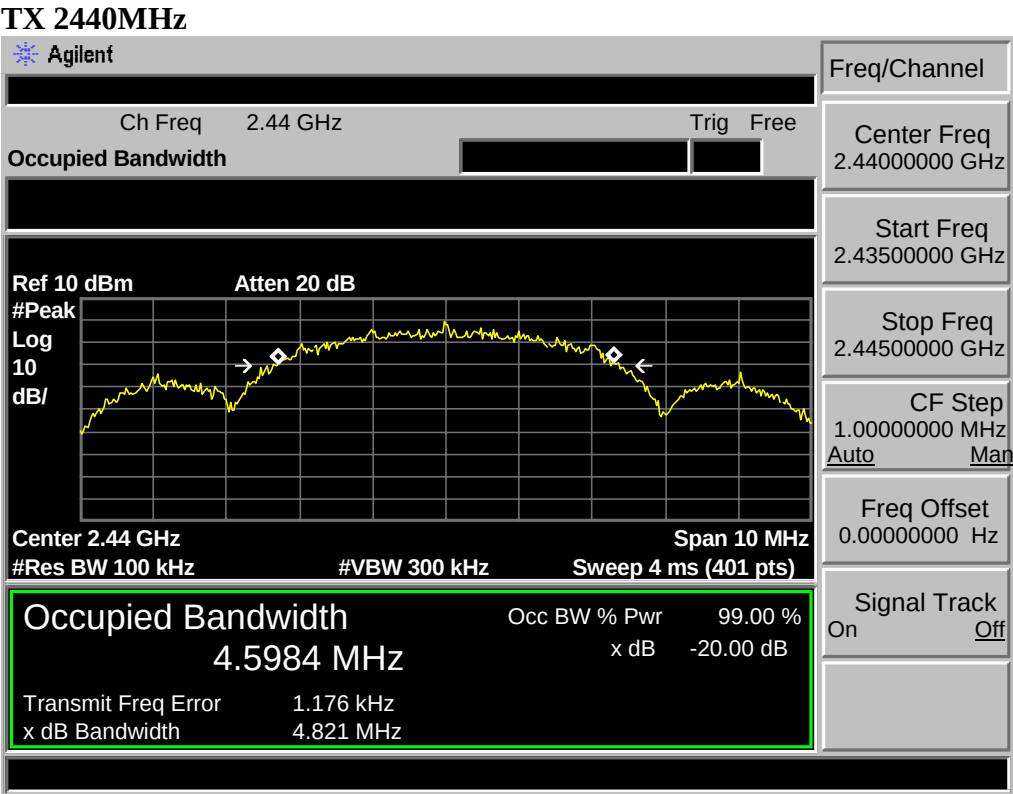
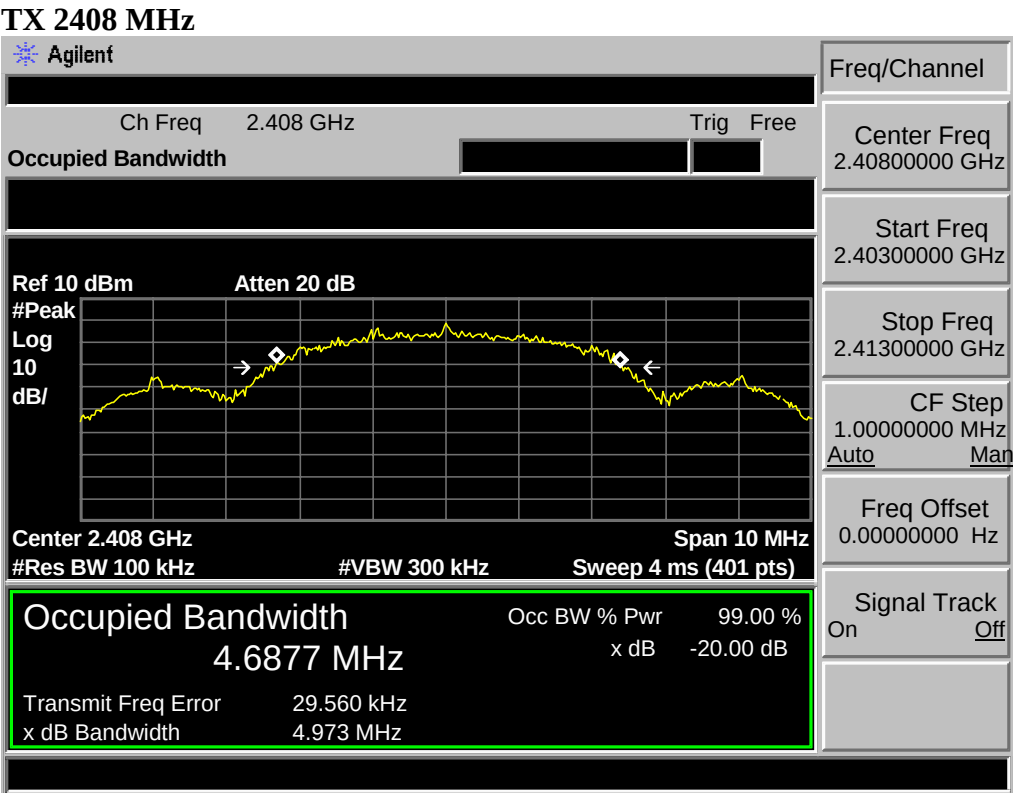
4.1. Test Procedure

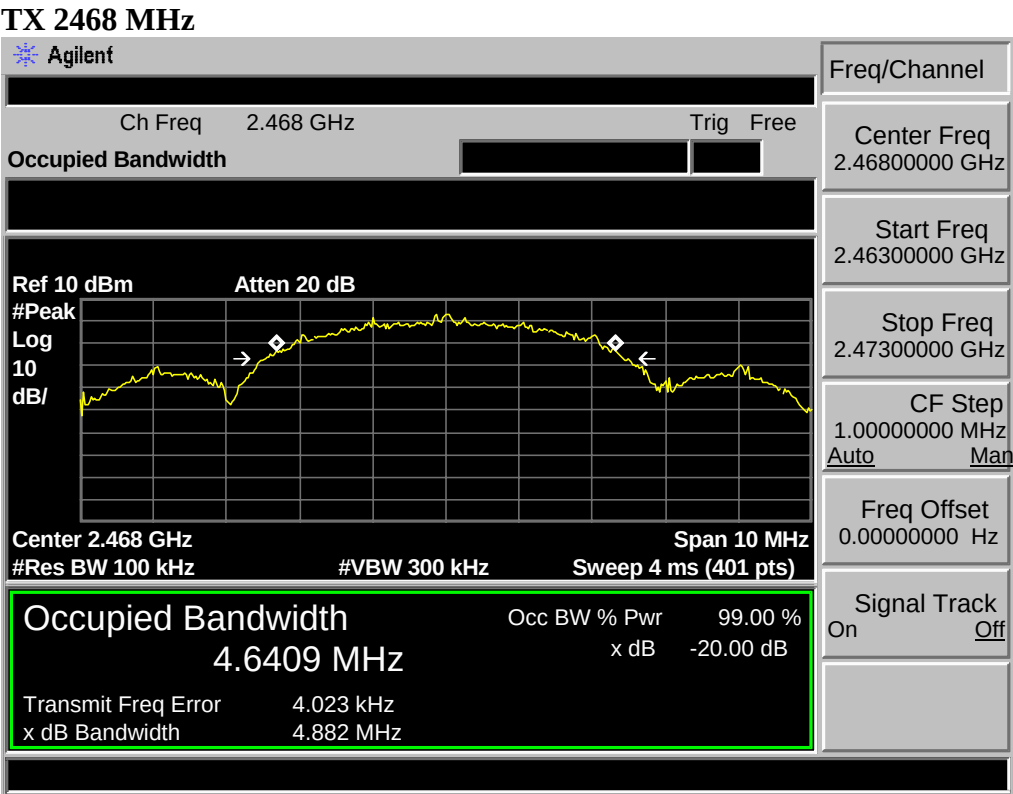
The transmitter output was coupled to a spectrum analyzer via a antenna. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 100kHz RBW and 300kHz VBW. The 20dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20dB.

4.2. Test Result

EUT: 2.4G wireless camera product				
M/N: LWU3620-C				
Test date: 2015-05-28		Test site: RF site		Tested by: Tony Tang
Mode	Freq (MHz)	20dB Bandwidth (MHz)	Limit (kHz)	Conclusion
TX	2408	4.973	/	PASS
	2440	4.821	/	PASS
	2468	4.882	/	PASS

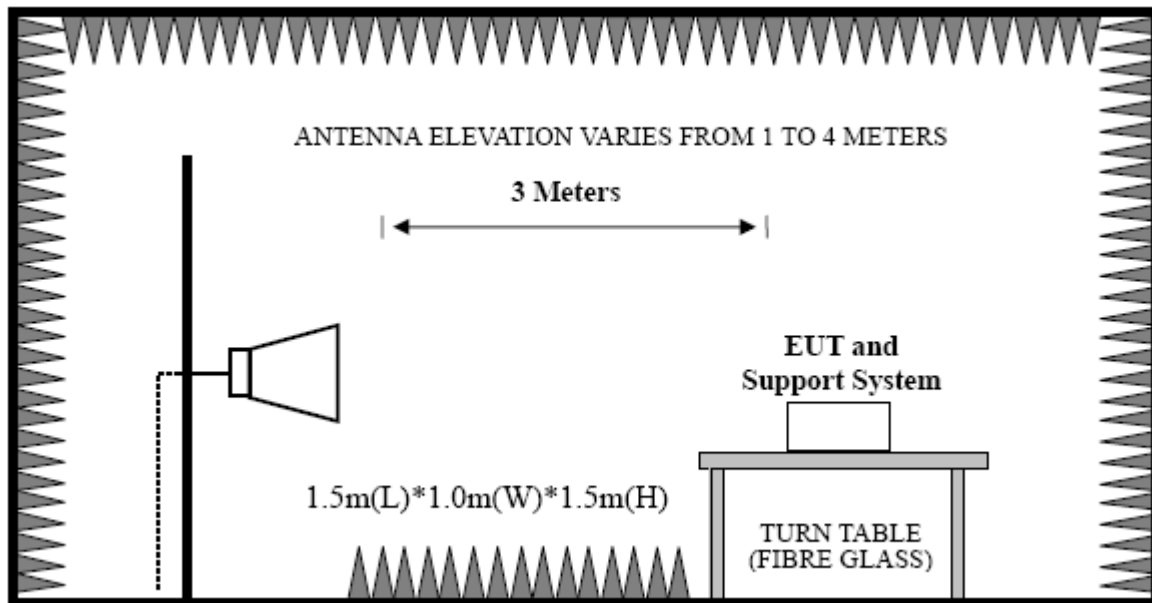
4.3. Test Data





5. BAND EDGE COMPLIANCE

5.1. Block Diagram of Test setup



5.2. Test Procedure

EUT was placed on a turn table, which is 1.5 meter high above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. Power on the EUT and let it working in test mode, then test it. EUT is set 3 meters away from the receiving antenna, which is mounted on a antenna tower. The antenna can be moved up and down between 1 meter and 4 meters to find out the maximum emission level. Both horizontal and vertical polarization of the antenna are set on test.

Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of emissions

Peak : RBW = 1MHz, VBW = 1MHz, Detector=PEAK detector, Sweep time = auto.

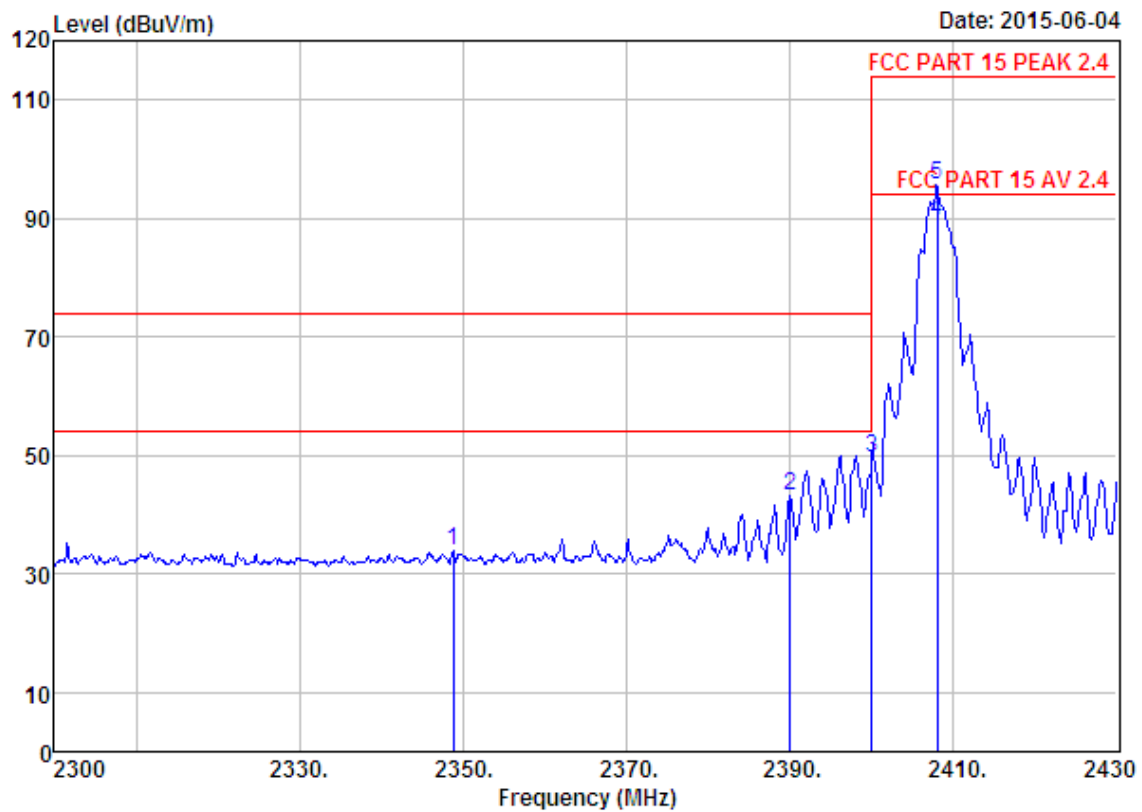
AV : RBW = 1MHz, VBW = 10Hz, Detector=PEAK detector, Sweep time = auto .

5.3. Test Result

EUT: 2.4G wireless camera product	M/N: LWU3620-C
Power: DC 12V From Adapter Input AC 120V/60Hz	
Test date: 2015-06-04 Test site: 3m Chamber Tested by: Tony Tang	
Test mode: Tx Mode	
Pass	

Note: If the PK measured levels comply with average limit, then the average level were deemed to comply with average limit.

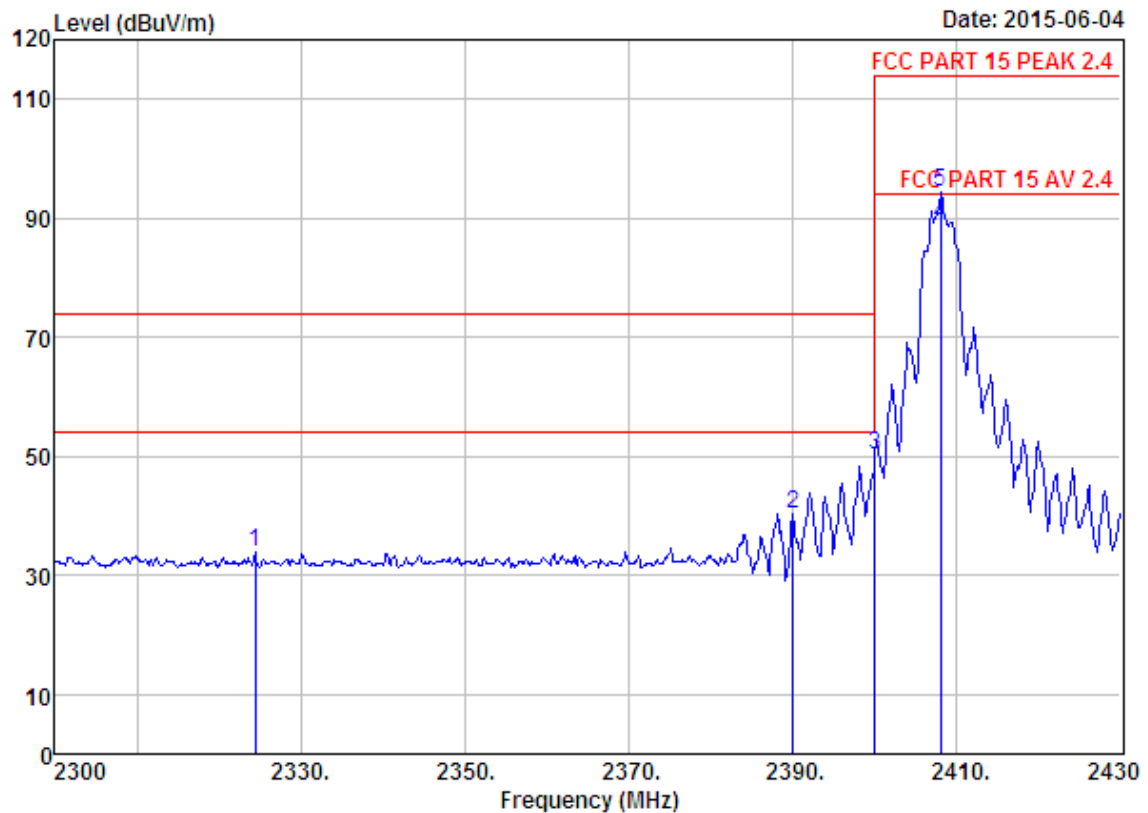
5.4. Test Data



Site no. : 1# 966 chamber Data no. : 193
 Dis. / Ant. : 3m ANT 1-18G Ant. pol. : VERTICAL
 Limit : FCC PART 15 PEAK 2.4
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa
 Engineer : Dick
 EUT : 2.4G wireless camera product
 Power : DC 12V From Adapter Input AC 120V/60Hz
 M/N : LWU3620-C
 Test Mode : TX 2408MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2348.75	27.70	6.56	34.57	34.36	34.05	74.00	39.95	Peak
2	2390.00	27.64	6.62	34.62	43.53	43.17	74.00	30.83	Peak
3	2400.00	27.61	6.62	34.64	49.87	49.46	74.00	24.54	Peak
4	2408.00	27.61	6.64	34.64	90.01	89.62	94.00	4.38	Average
5	2408.00	27.61	6.64	34.64	96.08	95.69	114.00	18.31	Peak

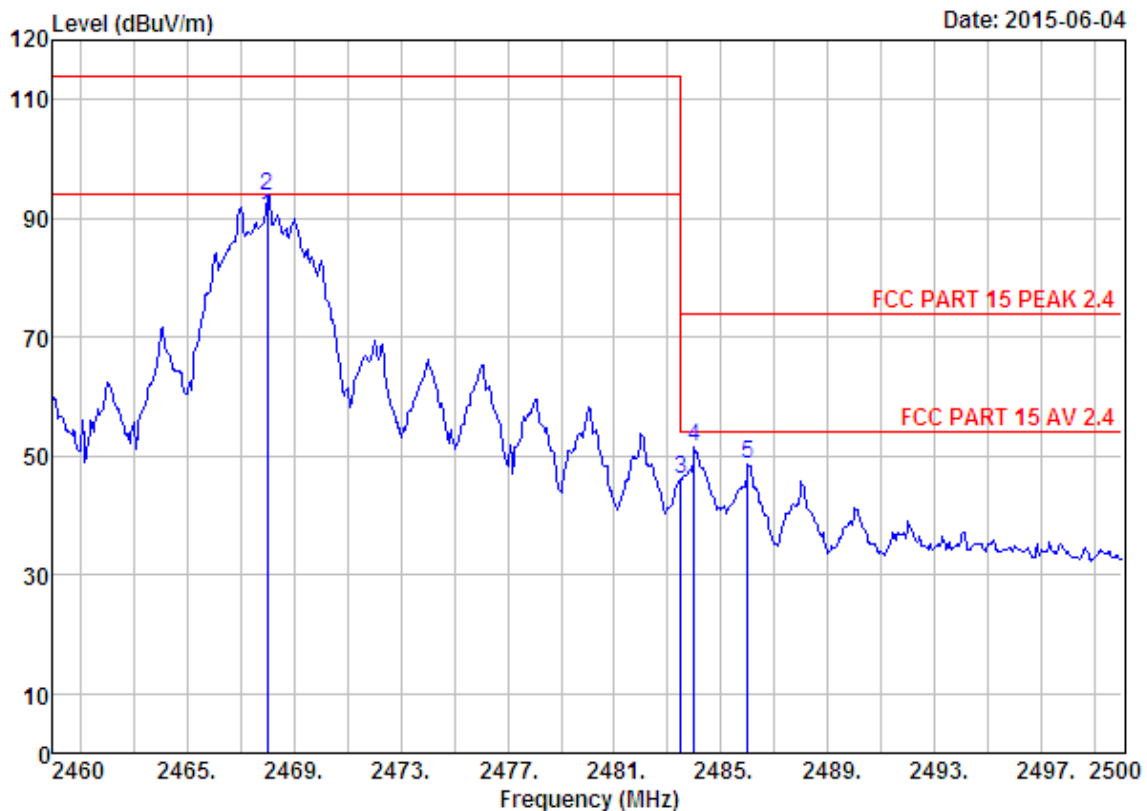
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 1# 966 chamber Data no. : 194
 Dis. / Ant. : 3m ANT 1-18G Ant. pol. : HORIZONTAL
 Limit : FCC PART 15 PEAK 2.4
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa
 Engineer : Dick
 EUT : 2.4G wireless camera product
 Power : DC 12V From Adapter Inpuy AC 120V/60Hz
 M/N : LWU3620-C
 Test Mode : TX 2408MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2324.44	27.73	6.54	34.60	34.14	33.81	74.00	40.19	Peak
2	2390.00	27.64	6.62	34.62	40.82	40.46	74.00	33.54	Peak
3	2400.00	27.61	6.62	34.64	50.75	50.34	74.00	23.66	Peak
4	2408.00	27.61	6.64	34.64	89.33	88.94	94.00	5.06	Average
5	2408.00	27.61	6.64	34.64	94.74	94.35	114.00	19.65	Peak

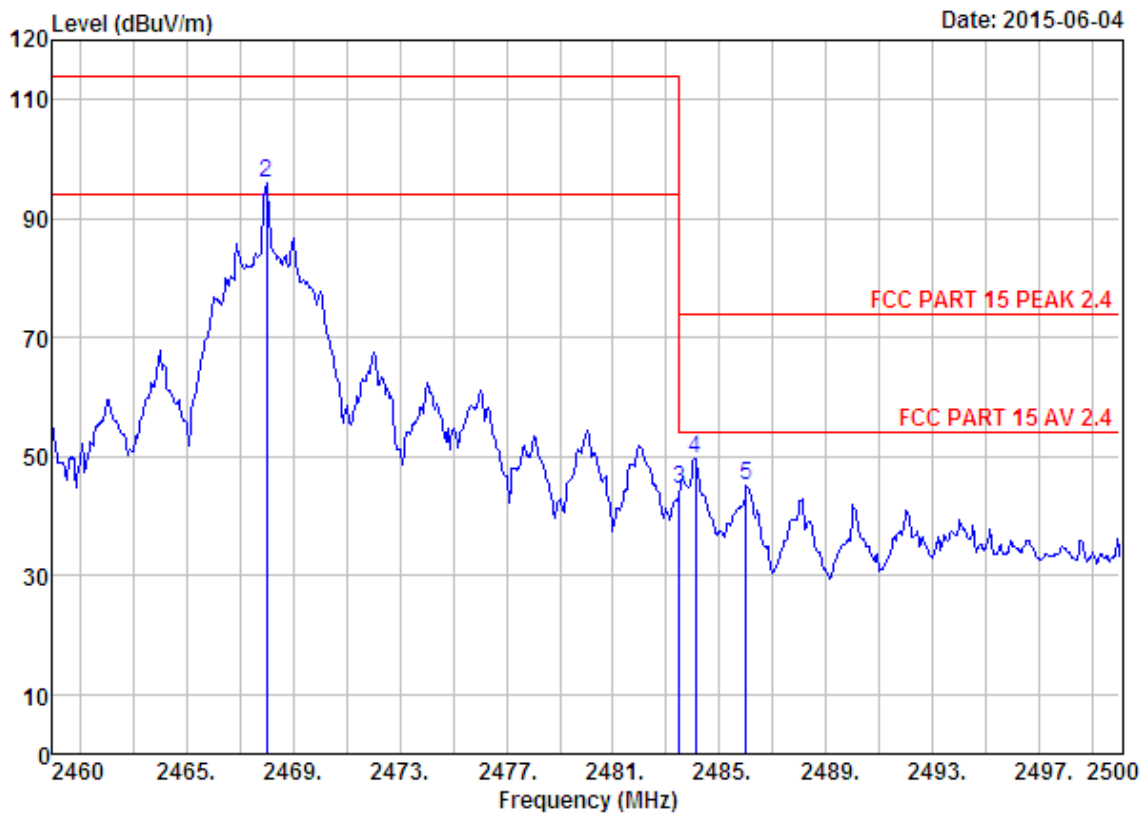
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 1# 966 chamber Data no. : 199
 Dis. / Ant. : 3m ANT 1-18G Ant. pol. : HORIZONTAL
 Limit : FCC PART 15 PEAK 2.4
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa
 Engineer : Dick
 EUT : 2.4G wireless camera product
 Power : DC 12V From Adapter Input AC 120V/60Hz
 M/N : LWU3620-C
 Test Mode : TX 2468MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2468.00	27.58	6.69	34.98	91.01	90.30	94.00	3.70	Average
2	2468.00	27.58	6.69	34.98	94.40	93.69	114.00	20.31	Peak
3	2483.50	27.58	6.71	35.11	47.01	46.19	74.00	27.81	Peak
4	2484.00	27.58	6.71	35.11	52.24	51.42	74.00	22.58	Peak
5	2486.00	27.58	6.71	35.11	49.38	48.56	74.00	25.44	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 1# 966 chamber Data no. : 200
 Dis. / Ant. : 3m ANT 1-18G Ant. pol. : VERTICAL
 Limit : FCC PART 15 PEAK 2.4
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa
 Engineer : Dick
 EUT : 2.4G wireless camera product
 Power : DC 12V From Adapter Input AC 120V/60Hz
 M/N : LWU3620-C
 Test Mode : TX 2468MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBUV)	Emission Level (dBUV/m)	Limits (dBUV/m)	Margin (dB)	Remark
1	2468.00	27.58	6.69	34.98	91.47	90.76	94.00	3.24	Average
2	2468.00	27.58	6.69	34.98	96.67	95.96	114.00	18.04	Peak
3	2483.50	27.58	6.71	35.11	45.28	44.46	74.00	29.54	Peak
4	2484.08	27.58	6.71	35.11	50.36	49.54	74.00	24.46	Peak
5	2486.00	27.58	6.71	35.11	45.95	45.13	74.00	28.87	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

6. POWER LINE CONDUCTED EMISSIONS

6.1. Limit

Frequency	Maximum RF Line Voltage	
	Quasi-Peak Level dB(μ V)	Average Level dB(μ V)
150kHz ~ 500kHz	66 ~ 56*	56 ~ 46*
500kHz ~ 5MHz	56	46
5MHz ~ 30MHz	60	50

Notes: 1. * Decreasing linearly with logarithm of frequency.

2. The lower limit shall apply at the transition frequencies.

6.2. Test Procedure

The EUT was placed on a non-metallic table, 10cm above the ground plane. The EUT was charged from PC's USB port which connected to the power mains through a line impedance stabilization network (L.I.S.N. 1#).. Both sides of AC line are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to ANSI C63.4: 2009 on Conducted Emission Test.

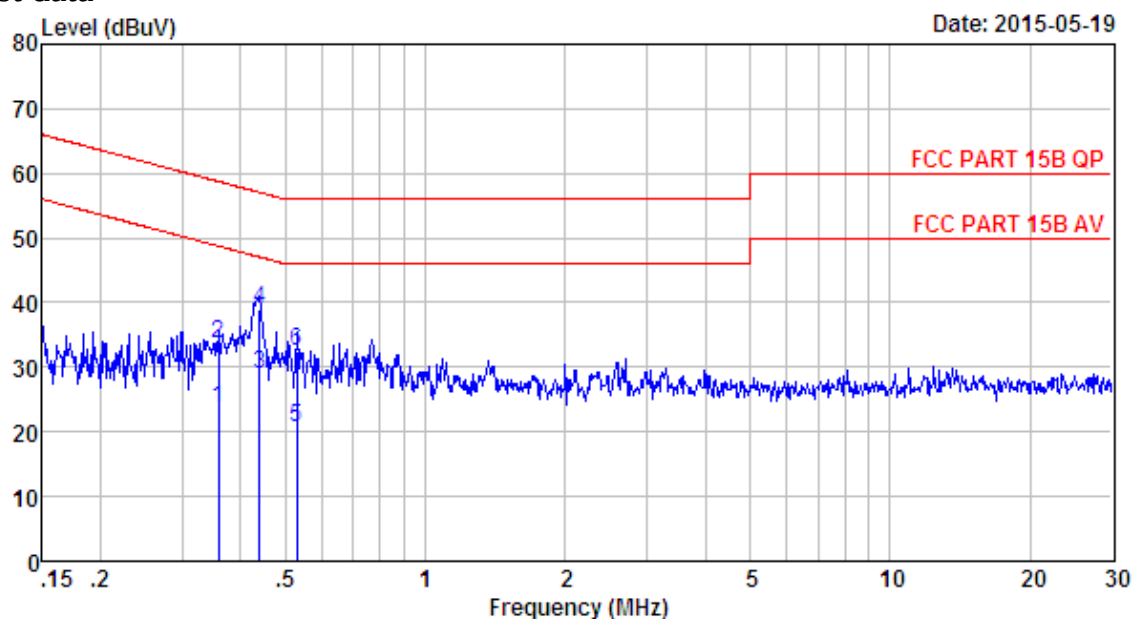
The bandwidth of test receiver (R & S ESHS30) is set at 10kHz.

The frequency range from 150kHz to 30MHz is checked.

6.3. Test Result

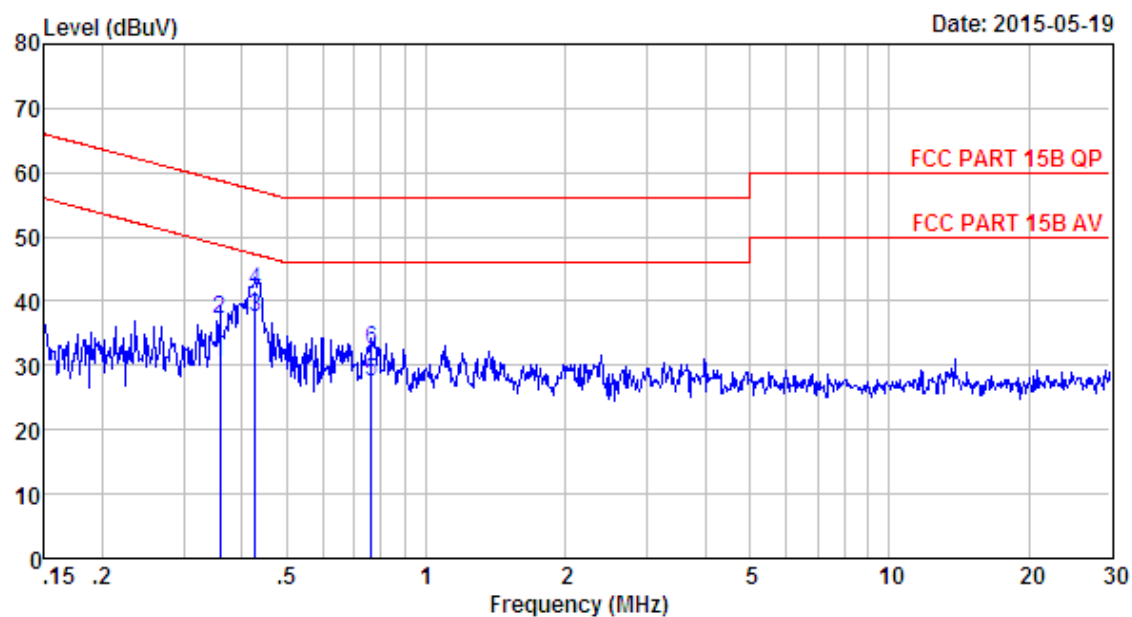
0.15MHz—30MHz Conducted emissison Test result	
EUT: 2.4G wireless camera product	M/N:LWU3620-C
Power: DC 12V From Adapter Input AC 120V/60Hz	
Test date: 2015-05-19 Test site: 3m Chamber Tested by: Tony.Tang	
Test mode: Tx Mode	
Pass	

6.4. Test data



Site no : 844 Shield Room
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa LINE
 Limit : FCC PART 15B QP
 Engineer : Dick
 EUT : 2.4G wireless camera product
 M/N : DC 12V From Adapter Input AC 120V/60Hz
 Power : LWU3620-C
 Test Mode : TX Mode

	Freq. (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.36	9.61	9.82	4.20	23.63	48.74	25.11	Average
2	0.36	9.61	9.82	14.20	33.63	58.74	25.11	QP
3	0.44	9.61	9.81	9.52	28.94	47.07	18.13	Average
4	0.44	9.61	9.81	19.52	38.94	57.07	18.13	QP
5	0.53	9.61	9.81	1.10	20.52	46.00	25.48	Average
6	0.53	9.61	9.81	13.10	32.52	56.00	23.48	QP



Site no : 844 Shield Room
 Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa NEUTRAL
 Limit : FCC PART 15B QP
 Engineer : Dick
 EUT : 2.4G wireless camera product
 M/N : DC 12V From Adapter Input AC 120V/60Hz
 Power : LWU3620-C
 Test Mode : TX Mode

	Freq. (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.36	9.59	9.82	10.89	30.30	48.74	18.44	Average
2	0.36	9.59	9.82	17.89	37.30	58.74	21.44	QP
3	0.43	9.59	9.81	18.18	37.58	47.29	9.71	Average
4	0.43	9.59	9.81	22.18	41.58	57.29	15.71	QP
5	0.76	9.63	9.81	7.91	27.35	46.00	18.65	Average
6	0.76	9.63	9.81	12.91	32.35	56.00	23.65	QP

7. ANTENNA REQUIREMENTS

7.1. Limit

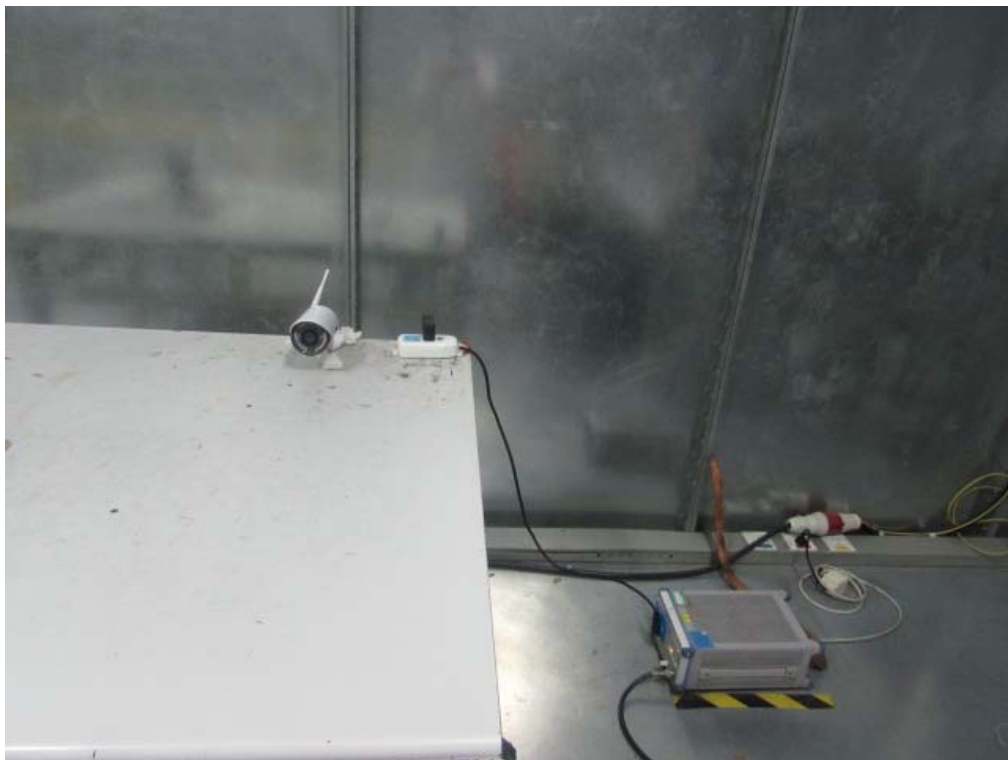
For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. And according to FCC 47 CFR Section 15.249 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

7.2. Result

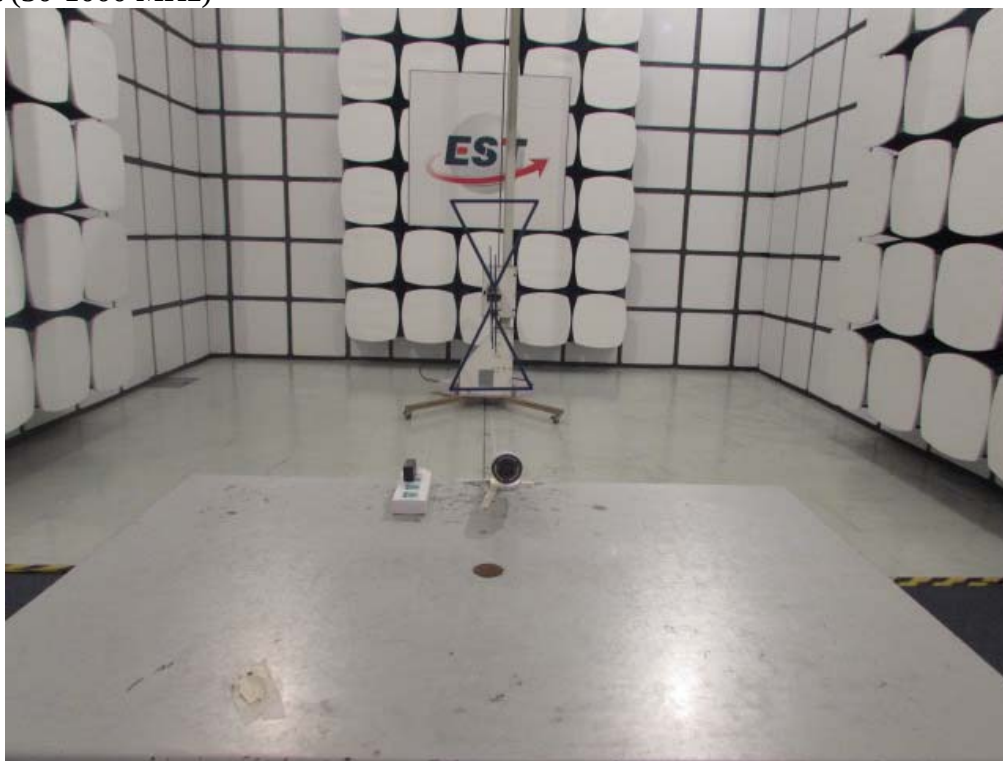
The antennas used for this product are integral Patch Antenna and that no antenna other than that furnished by the responsible party shall be used with the device, the maximum peak gain of the transmit antenna is only 3dBi.

8. TESTSETUP PHOTO

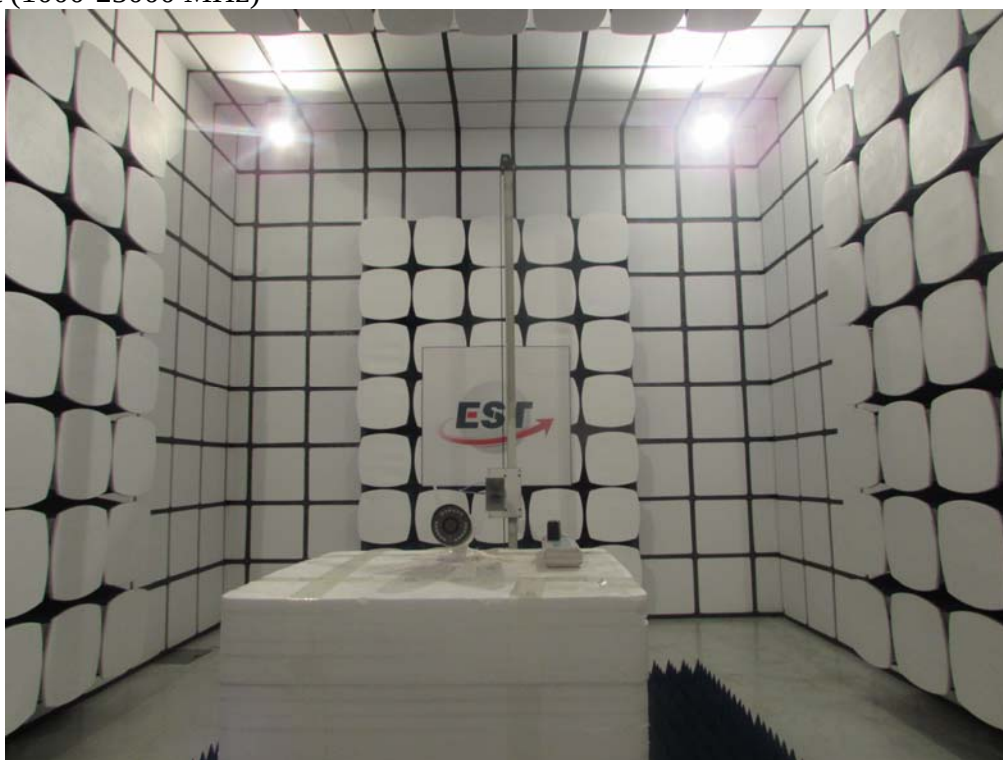
Conducted Test



Radiated Test (30-1000 MHz)



Radiated Test (1000-25000 MHz)



Photos of EUT

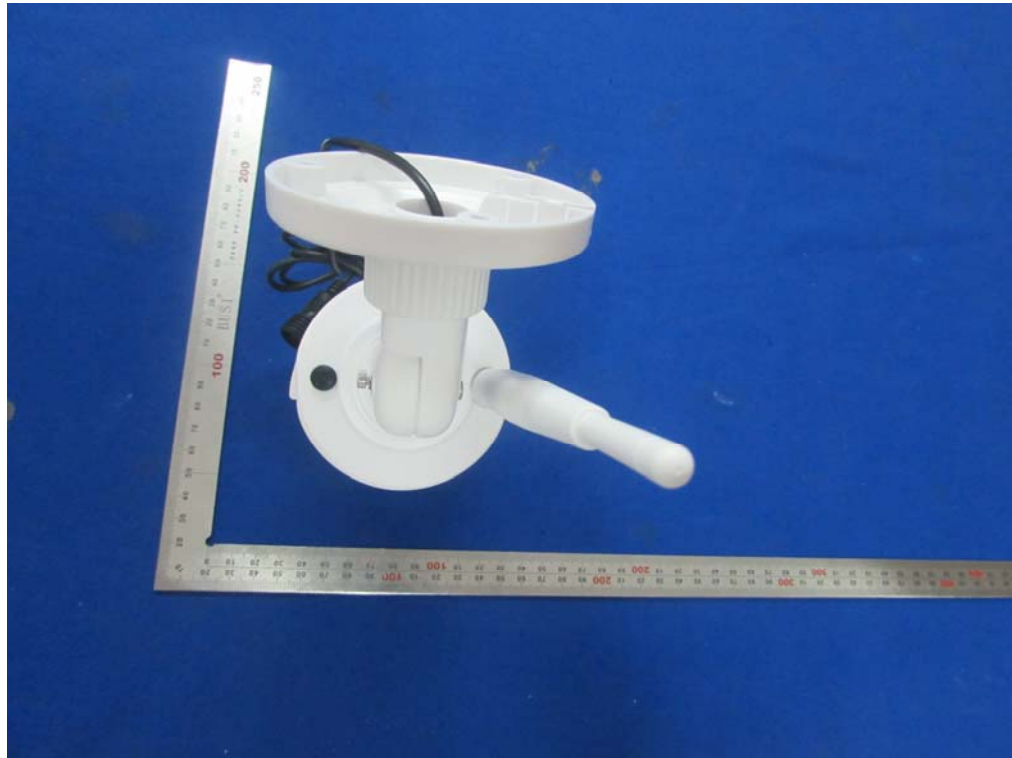
External Photos
M/N: LWU3620-C



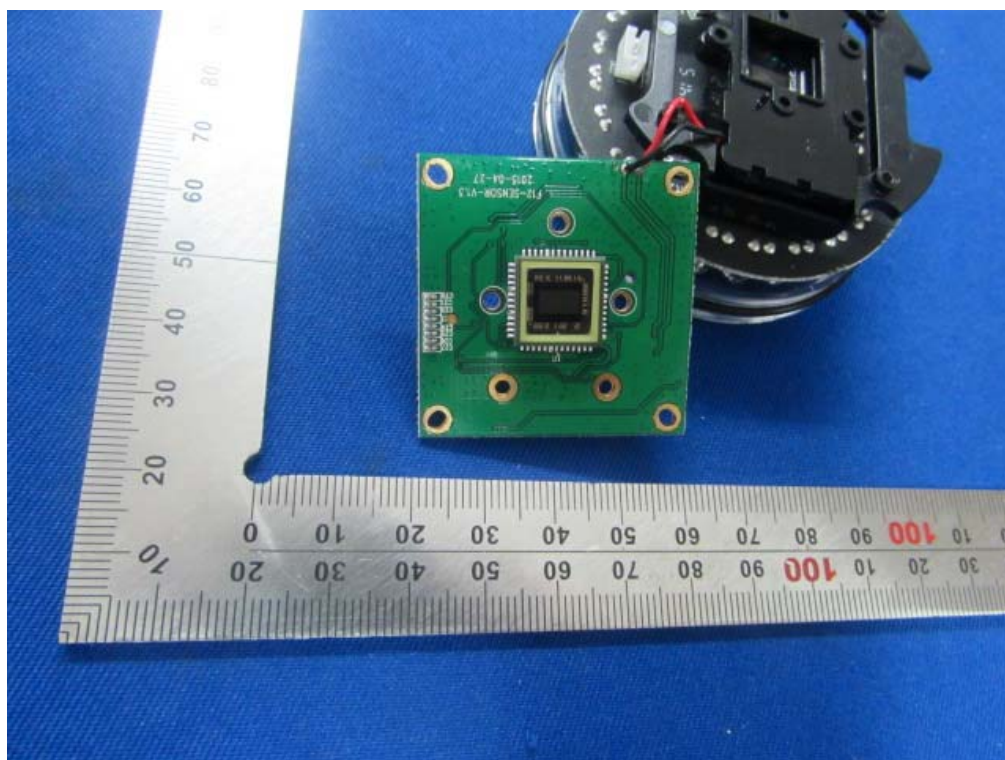
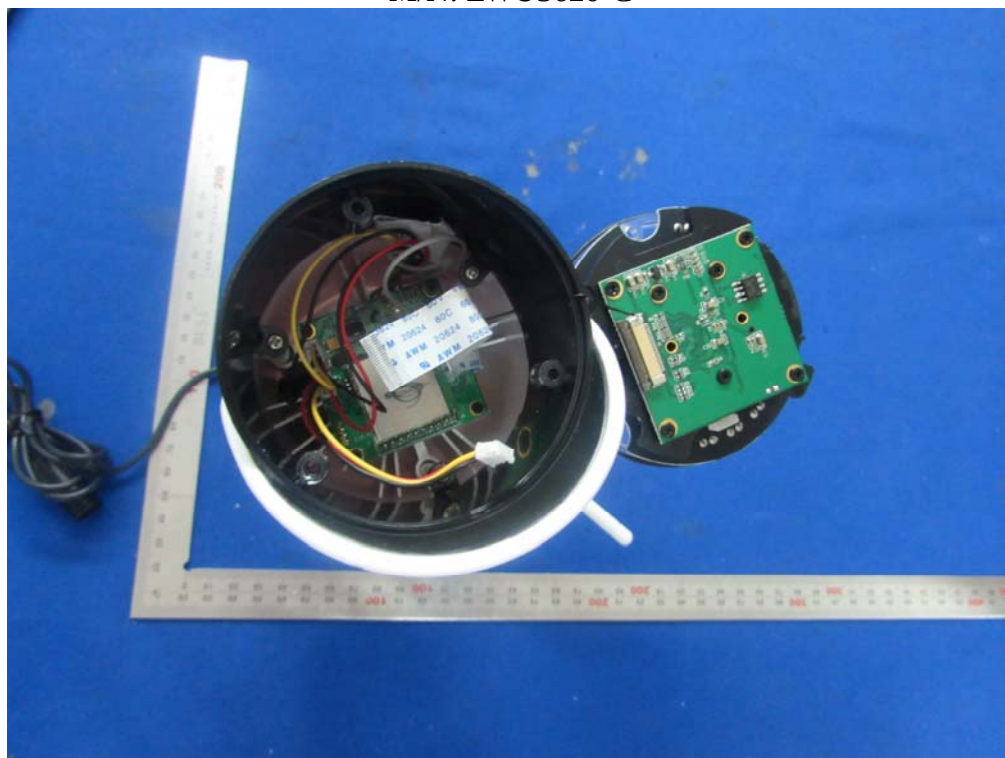
External Photos
M/N: LWU3620-C



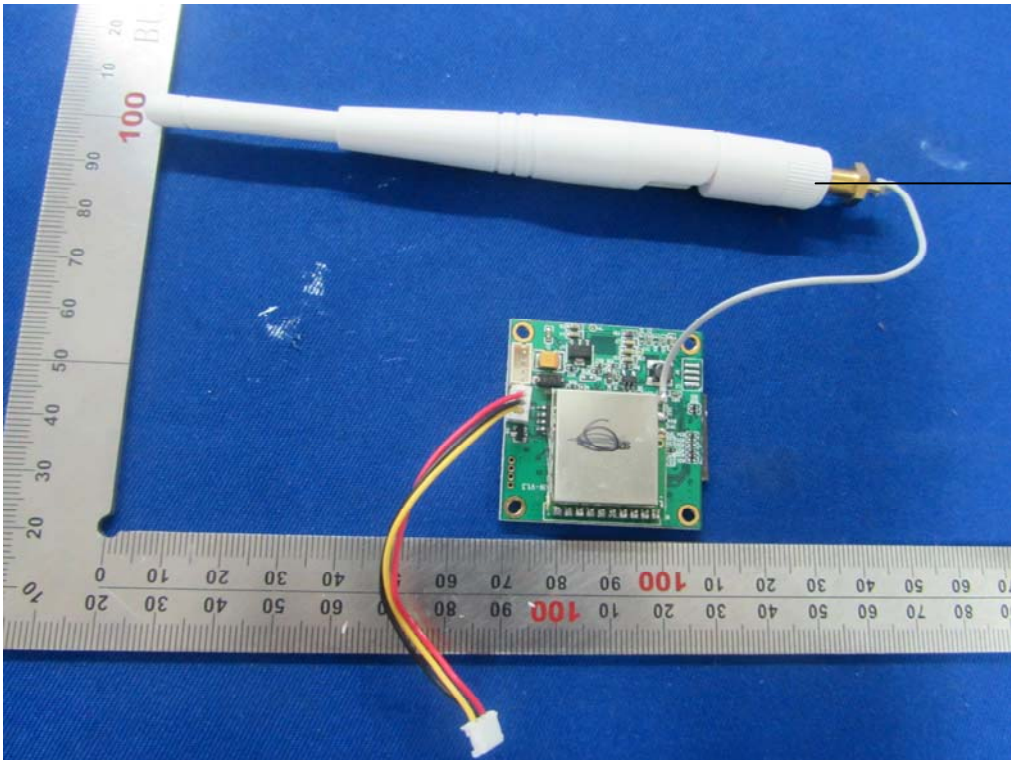
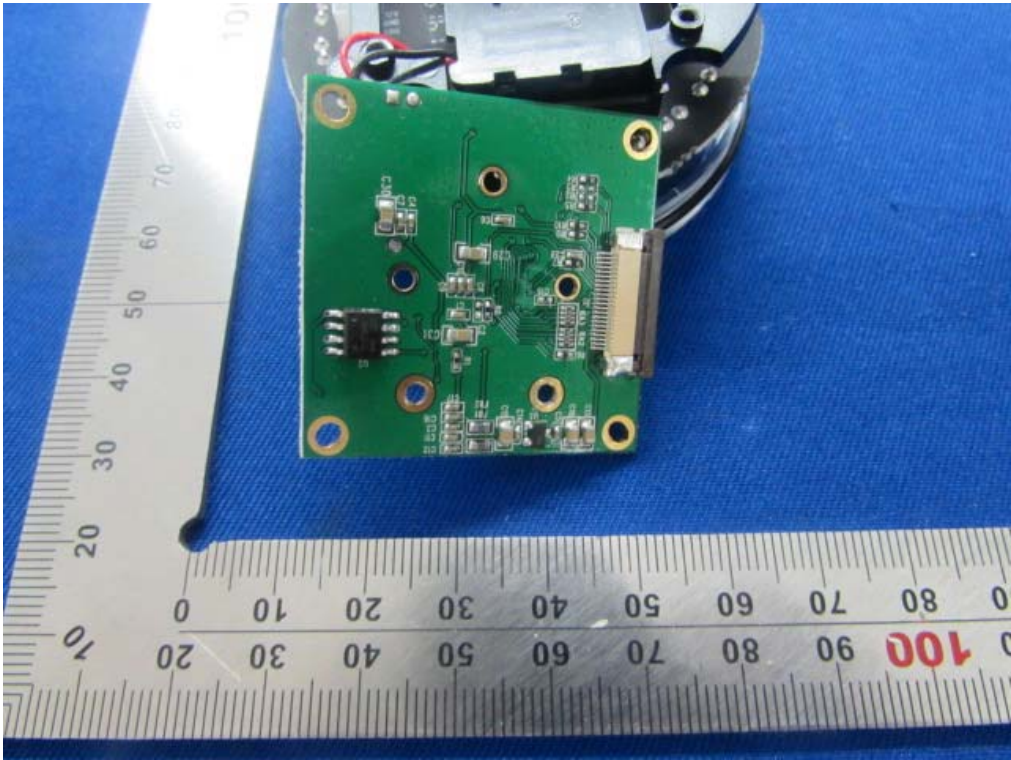
External Photos
M/N: LWU3620-C



Internal Photos
M/N: LWU3620-C

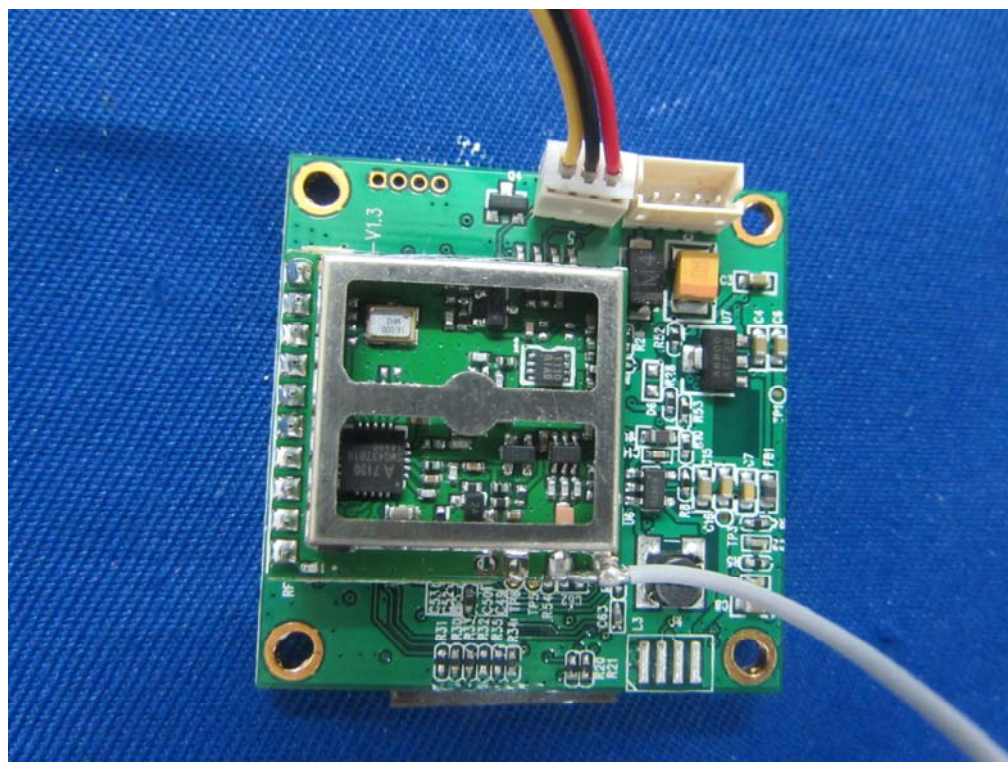
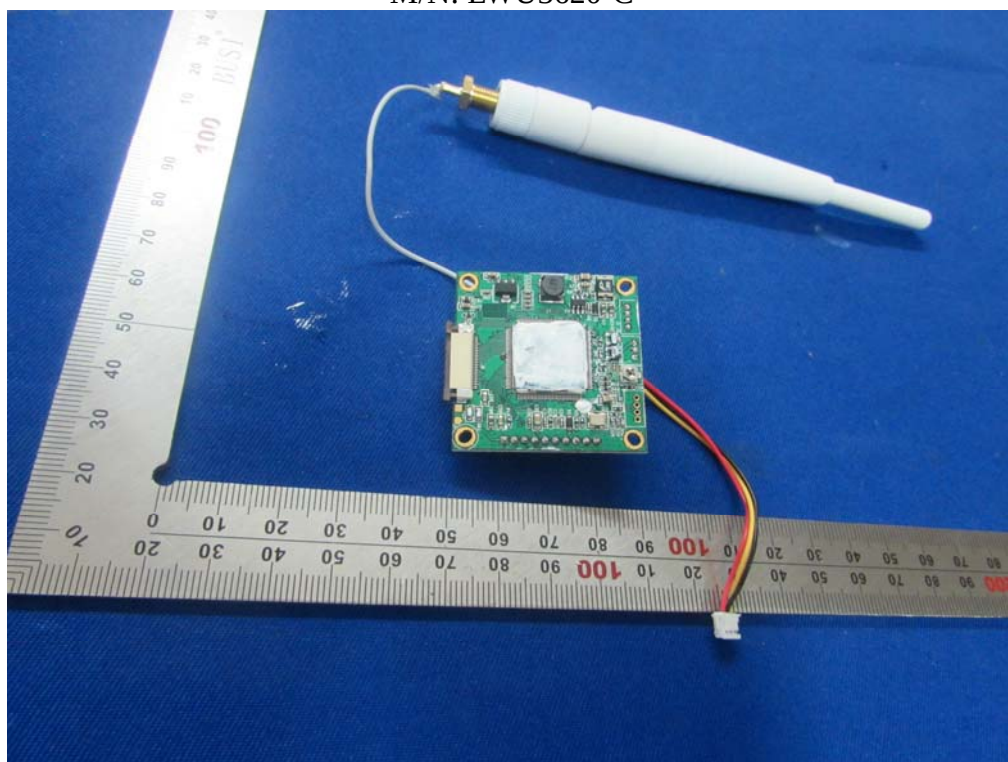


Internal Photos
M/N: LWU3620-C



TX
Antenna

Internal Photos
M/N: LWU3620-C



Adapter

