



Product Service

FCC - TEST REPORT

Report Number : **68/850.9.087.01** Date of Issue: 12 November 2009

Model : **WIFI-9002**

Product Type : WIFI Module

Applicant : Wanlida Group Co., Ltd.

Address : No.618, Jiahe Road, Wanlida Industry Zone,
Xiamen, Fujian, China. 361006

Production Facility : Wanlida Group Co., Ltd.

Address : Wanlida Industry Zone, Nanjing, Fujian, China 363601

Test Result : ☒ **Positive** ☐ **Negative**

Total pages including
Appendices : 67

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2 Details about the Test Laboratory

Details about the Test Laboratory

Company name: Jiangsu TÜV Product Service Ltd. – Shenzhen Branch
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Fax: 86 755 8828 5299

Company name: China Shenzhen Academy of Metrology and Quality Inspection,
Metrology and Quality Inspection building,
Central Section of LongZhu Road,
Nan Shan,
Shenzhen,

Telephone: 86 755 2694 1599
Fax: 86 755 2694 1545

Company name: Audix Technology (shenzhen) Co.,Ltd
Block Shenzhen, Science & Industry Park,
Nantou, Shenzhen,
Guangdong,
China

Telephone: 86 755 2663 9496
Fax: 86 755 2663 2877

3 Description of the Equipment Under Test

Description of the Equipment Under Test

Product: WIFI Module

Model no.: WIFI-9002

Serial number: NIL

Options and accessories: NIL

Rating: DC 5V 230mA, 1.15W

RF Transmission
Frequency: 2412-2462MHz

Antenna information:

1. The antenna connections to the module will be internal to the product utilizing the module and will therefore be non-user accessible.
2. Only one of the antennas is used as the transmitting antenna.
3. Due to Antenna C168-JL-916(Antenna Gain=1dBi) is the highest gain value among PIFA antennas, so only Antenna C168-JL-916 was tested and recorded in this report.
Please refer to Appendix A for all antennas

Description of the EUT: NIL

Auxiliary Equipment Used during Test:

DESCRIPTION	MANUFACTURER	MODEL NO.(SHIELD)	S/N(LENGTH)
PC	Lenovo	X61	L3-L3729

4 Summary of Test Standards

Test Standards	
FCC Part 15 Subpart C	PART 15 - RADIO FREQUENCY DEVICES Subpart C - Intentional Radiators

5 Summary of Test Results

Technical Requirements				
FCC Part 15 Subpart C				
Test Condition	Pages	Test Result		
		Pass	Fail	N/A
15.207 Conducted Emission AC Power Port	8	☒	☐	☐
15.247 (b) (1) Conducted peak output power	12	☒	☐	☐
15.247(d) Band edge compliance of RF emissions	14	☒	☐	☐
15.247(d) Spurious RF conducted emissions	32	☒	☐	☐
15.247(d) 15.209 Spurious radiated emissions	40	☒	☐	☐
15.247(a)(2) 6dB bandwidth	46	☒	☐	☐
15.247(e) Power spectral density	56	☒	☐	☐

6 General Remarks

Remarks

This submittal(s) (test report) is intended for FCC ID: SMFWIFI9002 comply with Section 15.207, 15.209, 15.247 of the FCC Part 15, Subpart C Rules.

SUMMARY:

All tests according to the regulations cited on page 5 were

■ - Performed

□ - **Not** Performed

The Equipment Under Test

■ - **Fulfills** the general approval requirements.

□ - **Does not** fulfill the general approval requirements.

Sample Received Date: Oct 28 2009

Testing Start Date: Oct 29 2009

Testing End Date: Nov 12 2009

- Jiangsu TÜV Product Service Ltd. – Shenzhen Branch -

Reviewed by:

Prepared by:



Paul Yu
EMC Project Manager



Ken Li
EMC Project Engineer

7 Technical Requirement

7.1 Conducted Emission

Test Method

- 1 The EUT was placed on a table, which is 0.8m above ground plane
- 2 The power line of the EUT is connected to the AC mains through a Artificial Mains Network (A.M.N.).
- 3 Maximum procedure was performed to ensure EUT compliance
- 4 A EMI test receiver (R&S Test Receiver ESCS30) is used to test the emissions from both sides of AC line

Limit

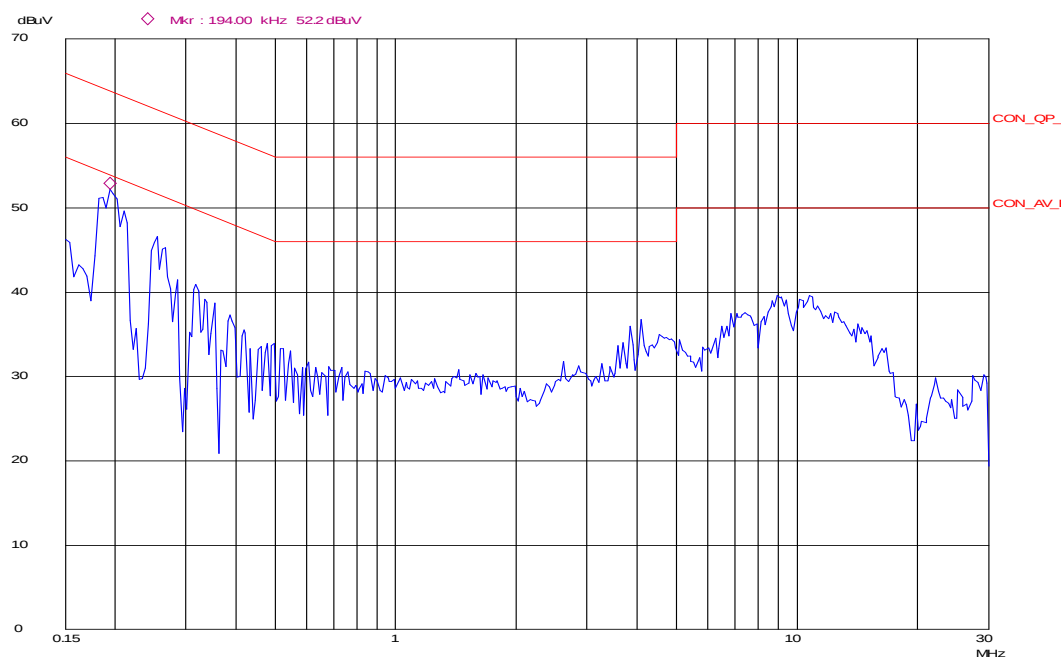
Frequency MHz	QP Limit dB μ V	AV Limit dB μ V
0.150-0.500	66-56*	56-46*
0.500-5	56	46
5-30	60	50

Decreasing linearly with logarithm of the frequency

Conducted Emission

Conducted Disturbance

EUT: WIF-9002
Op Cond: WIFTX
Test Spec: L
Comment: AC 120V/60Hz



Frequency MHz	Cable Loss dB	Reading dBμV	QP Test result dBμV	QP Limit dBμV	Margin dB
0.194	9.8	39.7	49.5	63.9	14.4
0.254	9.8	33.6	43.4	61.6	18.2
8.940	9.9	23.8	33.7	60	26.3

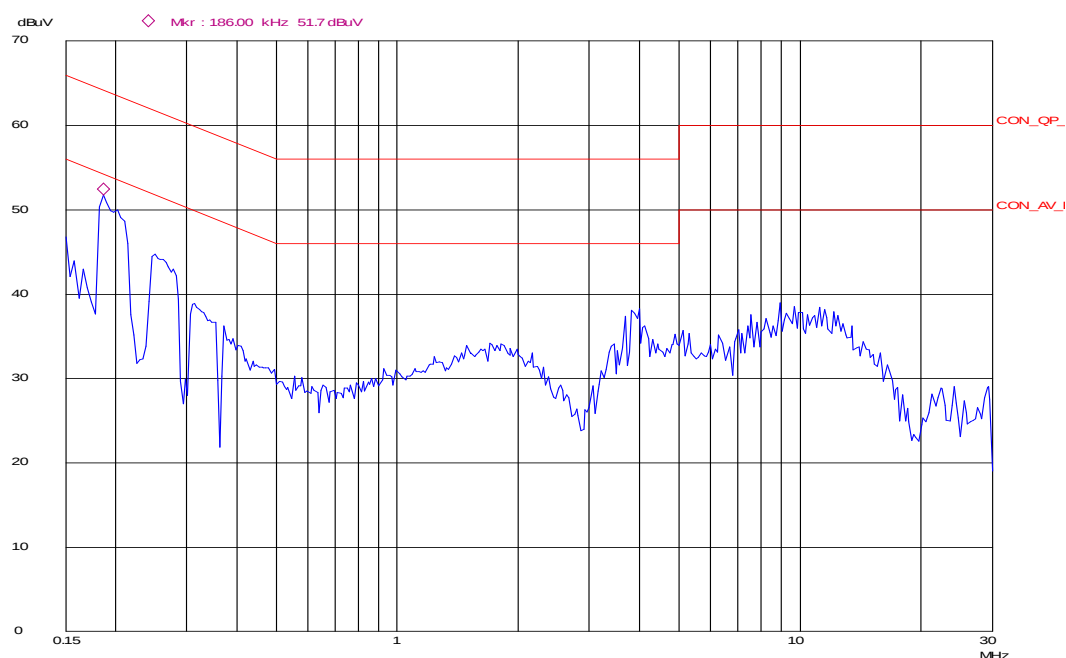
Frequency MHz	Cable Loss dB	Reading dBμV	AV Test result dBμV	AV Limit dBμV	Margin dB
0.194	9.8	23.1	32.9	53.9	21
0.254	9.8	16.0	25.8	51.6	25.8
8.940	9.9	13.9	23.8	50	26.2

Remark: Test Result= Reading + Cable Loss

Conducted Emission

Conducted Disturbance

EUT: WIF-9002
 Op Cond: WIF TX
 Test Spec: N
 Comment: AC 120V/60Hz



Frequency MHz	Cable Loss dB	Reading dBμV	QP Test result dBμV	QP Limit dBμV	Margin dB
0.186	9.8	40.4	50.2	64.2	14
0.250	9.8	33.1	42.9	61.8	18.9
4.005	10.0	19.7	29.7	56	26.3

Frequency MHz	Cable Loss dB	Reading dBμV	AV Test result dBμV	AV Limit dBμV	Margin dB
0.186	9.8	21.3	31.1	54.2	23.1
0.250	9.8	15.2	25.0	51.8	26.8
4.005	10.0	9.3	19.3	46	26.7

Remark: Test Result= Reading + Cable Loss

Test Equipment List

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL DUE DATE
EMI Test Receiver	Rohde & Schwarz	ESCS30	100003	Sep 23 2010
AMN	Rohde & Schwarz	ESH3-Z5	100229	Sep 23 2010
AMN	Rohde & Schwarz	ENV216	100042	Sep 23 2010

7.2 Conducted peak output power

Test Method

The transmitter output is connected to the Spectrum analyzer. The Spectrum analyzer is set to the peak power detection.

Limits for conducted peak output power measurements

Frequency Range MHz	Limit W	Limit dBm
2400-2483	≤1	≤30

Conducted peak output power

IEEE 802.11g modulation (6Mbps) Test Result

Frequency MHz	Conducted Peak Output Power dBm	Result
CH1 2412MHz	22.26	Pass
CH6 2437MHz	21.50	Pass
CH11 2462MHz	21.60	Pass

IEEE 802.11b modulation (1Mbps) Test Result

Frequency MHz	Conducted Peak Output Power dBm	Result
CH1 2412MHz	21.40	Pass
CH6 2437MHz	21.50	Pass
CH11 2462MHz	21.84	Pass

IEEE 802.11n HT20 modulation (6.5Mbps) Test Result

Frequency MHz	Conducted Peak Output Power dBm	Result
CH1 2412MHz	21.62	Pass
CH6 2437MHz	22.50	Pass
CH11 2462MHz	22.58	Pass

IEEE 802.11n HT40 modulation (13.5Mbps) Test Result

Frequency MHz	Conducted Peak Output Power dBm	Result
CH3 2422MHz	21.08	Pass
CH6 2437MHz	21.09	Pass
CH9 2452MHz	21.14	Pass



Product Service

Test Equipment

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL DUE DATE
Spectrum Analyzer	Agilent	E4407B	MY41440292	May 10 2010

7.3 Band edge compliance of RF emissions

Test Method

The band edge compliance of RF radiated emission should be measured by following the guidance in ANSI C63.4 with respect to maximizing the emission by rotating the EUT, measuring the emission while the EUT is situated in three orthogonal planes (if appropriate), adjusting the measurement antenna height and polarization etc. Set RBW and VBW to 1MHz to measure the peak field strength and set RBW to 1MHz and VBW to 10Hz to measure the average radiated field strength.

The conducted RF band edge was measured by using a spectrum analyzer. Set span wide enough to capture the highest in-band emission and the emission at the band edge. Set RBW and VBW to 100kHz, to measure the conducted peak band edge.

Limits

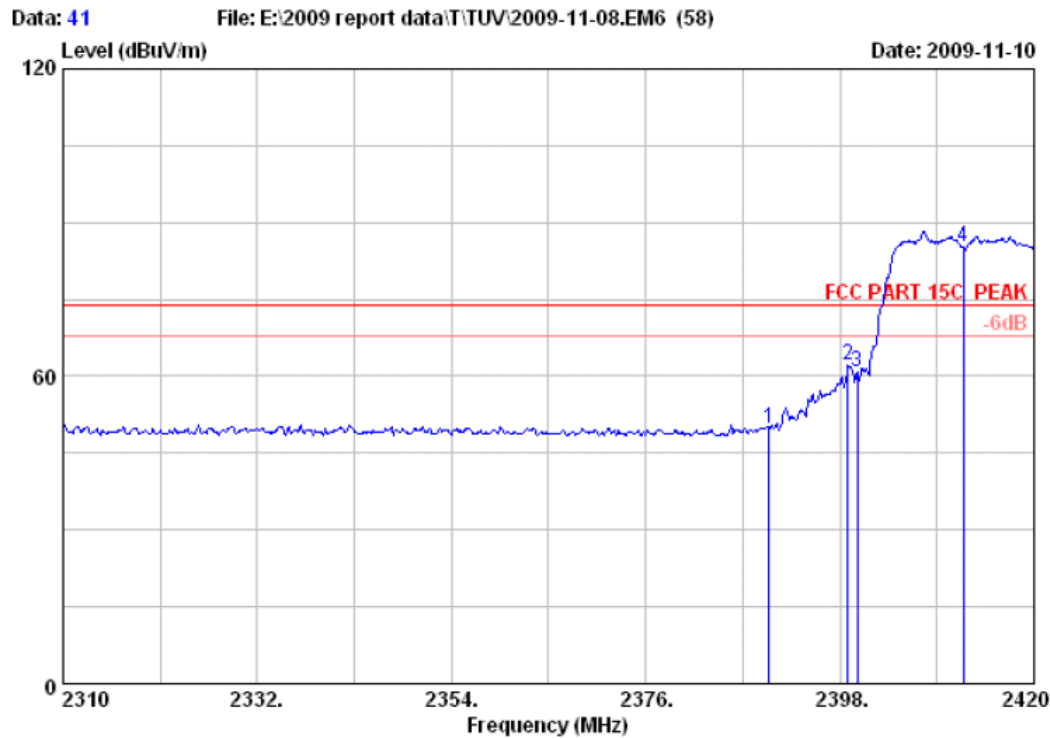
According to §15.247(d), in any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in 15.209(a) (see Section 15.205(c)).

Frequency MHz	Limit Average dBuV/m	Limit Peak dBuV/m
Below 2390 Above 2483.5	54	74

Band edge compliance of RF emissions

IEEE 802.11g modulation (6 Mbps) Test Result

Lower Edge PK plot:



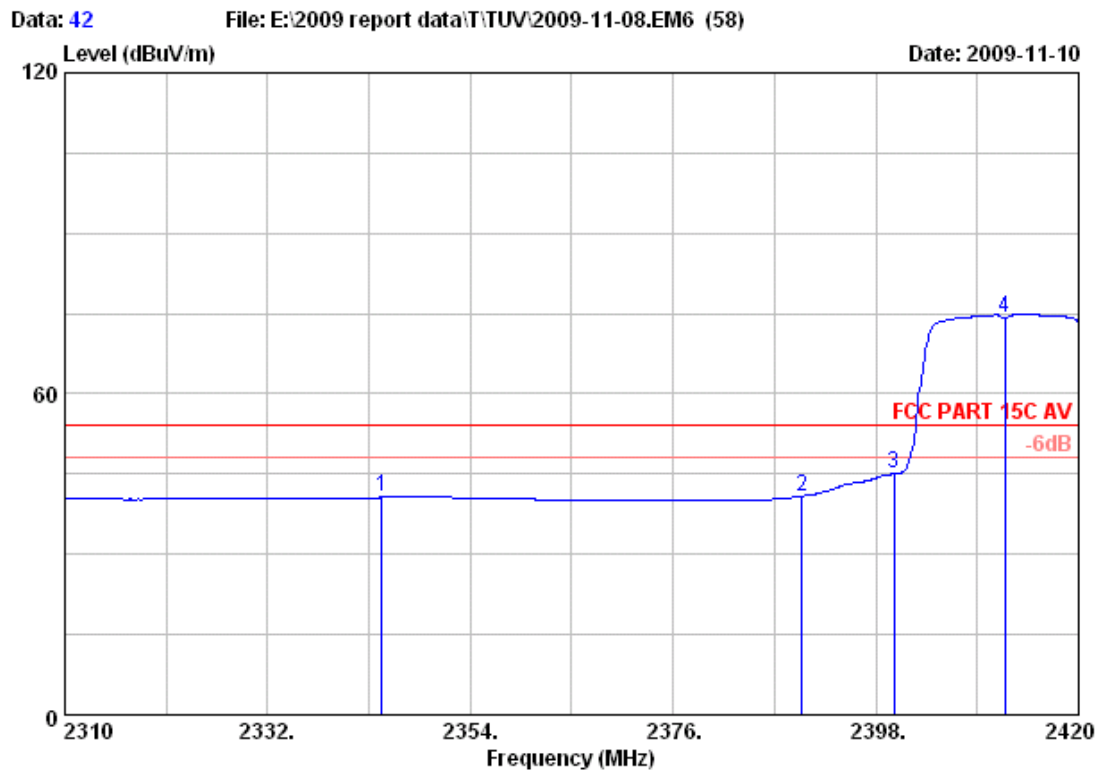
Site no. : 3m Chamber Data no. : 41
 Dis. / Ant. : 3m 3115(0905) Ant. pol. : VERTICAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 23°C/54% Engineer : Leo-LI
 EUT : Wi-Fi
 Power : DC 5V From PC Input AC 230V/50Hz
 Test mode : Tx Mode 11g CH 1
 M/N :

	Ant.	Cable	Amp.		Emission				
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark	
(MHz)	(dB/m)	(dB)	(dB)	(dbuv)	(dBUV/m)	(dBUV/m)	(dB)		
1 2390.000	28.46	8.41	36.09	49.18	49.96	74.00	24.04	Peak	
2 2398.880	28.46	8.60	36.09	61.08	62.05	74.00	11.95	Peak	
3 2400.000	28.46	8.60	36.09	60.01	60.98	74.00	13.02	Peak	
4 2412.000	28.48	8.60	35.95	84.23	85.36	74.00	-11.36	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.

Lower Edge AV plot:



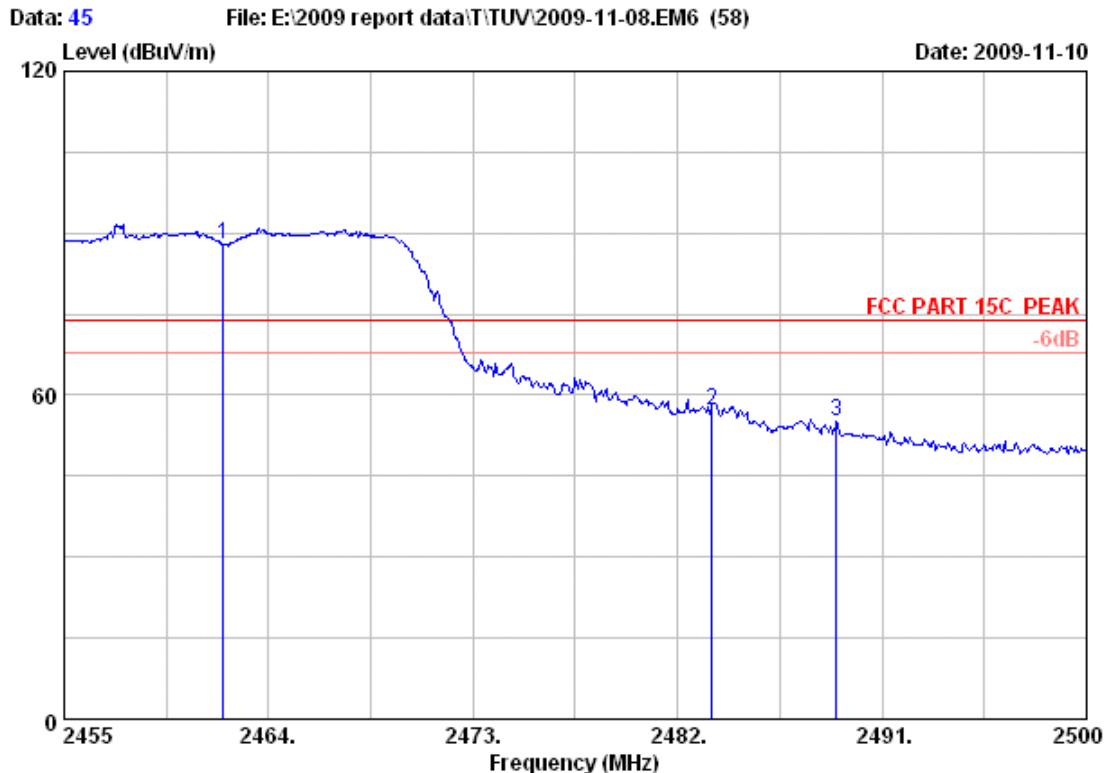
Site no. : 3m Chamber Data no. : 42
Dis. / Ant. : 3m 3115(0905) Ant. pol. : VERTICAL
Limit : FCC PART 15C AV
Env. / Ins. : 23°C/54% Engineer : Leo-LI
EUT : Wi-Fi
Power : DC 5V From PC Input AC 230V/50Hz
Test mode : Tx Mode 11g CH 1
M/N :

	Ant.	Cable	Amp.		Emission				
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark	
(MHz)	(dB/m)	(dB)	(dB)	(dbuv)	(dBuV/m)	(dBuV/m)	(dB)		
1 2344.430	28.38	8.57	35.99	39.72	40.68	54.00	13.32	Peak	
2 2390.000	28.46	8.41	36.09	40.06	40.84	54.00	13.16	Peak	
3 2400.000	28.46	8.60	36.09	44.09	45.06	54.00	8.94	Peak	
4 2412.000	28.48	8.60	35.95	72.95	74.08	54.00	-20.08	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.

Upper Edge PK plot:



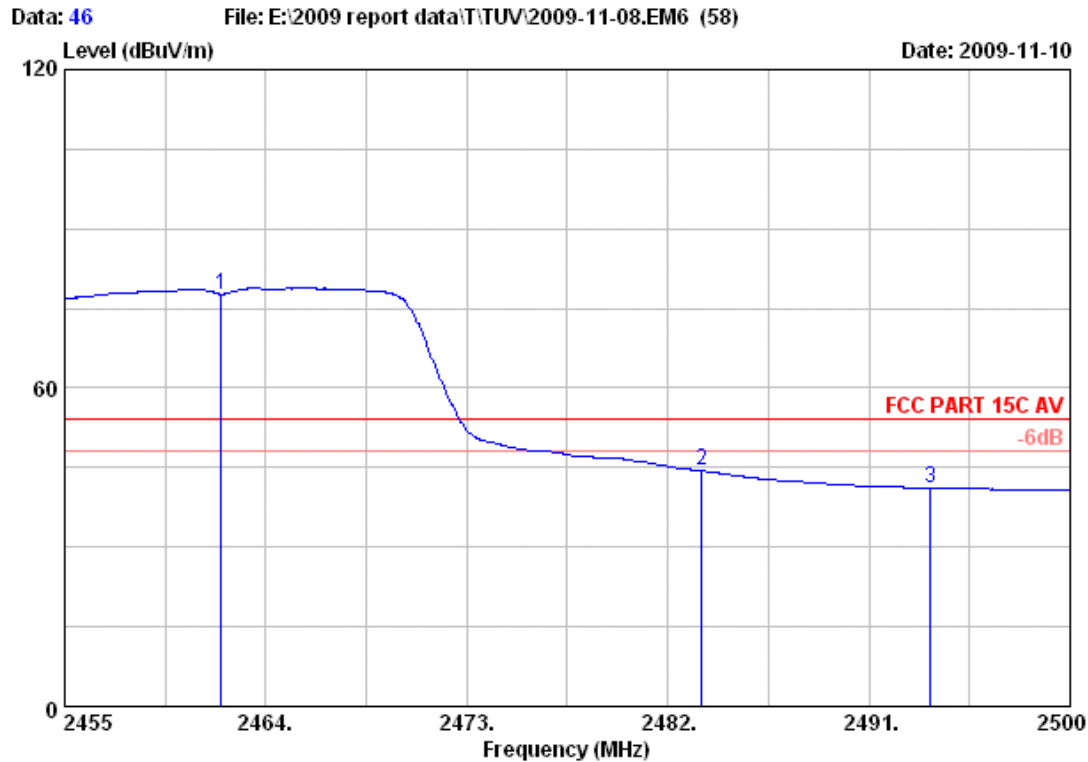
Site no. : 3m Chamber Data no. : 45
 Dis. / Ant. : 3m 3115(0905) Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 23°C/54% Engineer : Leo-LI
 EUT : Wi-Fi
 Power : DC 5V From PC Input AC 230V/50Hz
 Test mode : Tx Mode 11g CH 11
 M/N :

	Ant.	Cable	Amp.		Emission				
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark	
(MHz)	(dB/m)	(dB)	(dB)	(dbuv)	(dBuV/m)	(dBuV/m)	(dB)		
1 2462.000	28.55	8.76	36.02	86.61	87.90	74.00	-13.90	Peak	
2 2483.500	28.58	8.94	35.97	55.59	57.14	74.00	16.86	Peak	
3 2488.975	28.60	8.94	36.00	53.68	55.22	74.00	18.78	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.

Upper Edge AV plot:



Site no. : 3m Chamber Data no. : 46
 Dis. / Ant. : 3m 3115(0905) Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C AV
 Env. / Ins. : 23°C/54% Engineer : Leo-LI
 EUT : Wi-Fi
 Power : DC 5V From PC Input AC 230V/50Hz
 Test mode : Tx Mode 11g CH 11
 M/N :

	Ant.	Cable	Amp.		Emission				
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark	
(MHz)	(dB/m)	(dB)	(dB)	(dbuv)	(dBuV/m)	(dBuV/m)	(dB)		
1 2462.000	28.55	8.76	36.02	76.40	77.69	54.00	-23.69	Peak	
2 2483.500	28.58	8.94	35.97	42.84	44.39	54.00	9.61	Peak	
3 2493.745	28.60	8.94	36.00	39.63	41.17	54.00	12.83	Peak	

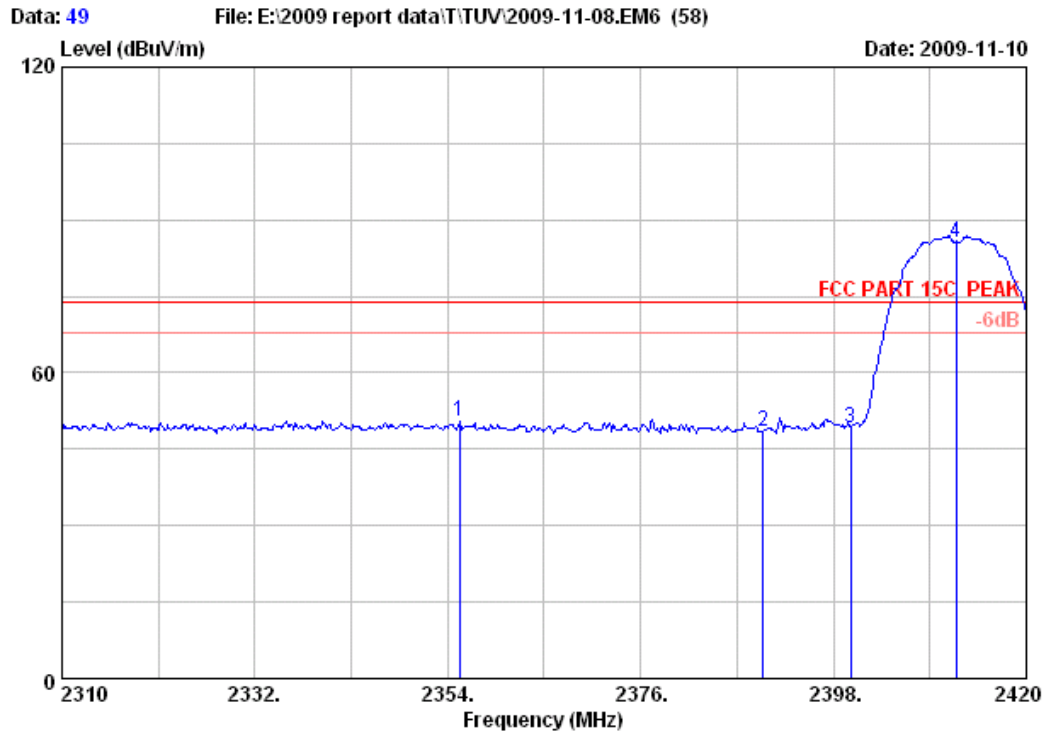
Remarks:

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

Band edge compliance of RF emissions

IEEE 802.11b modulation (6 Mbps) Test Result

Lower Edge PK Plot:



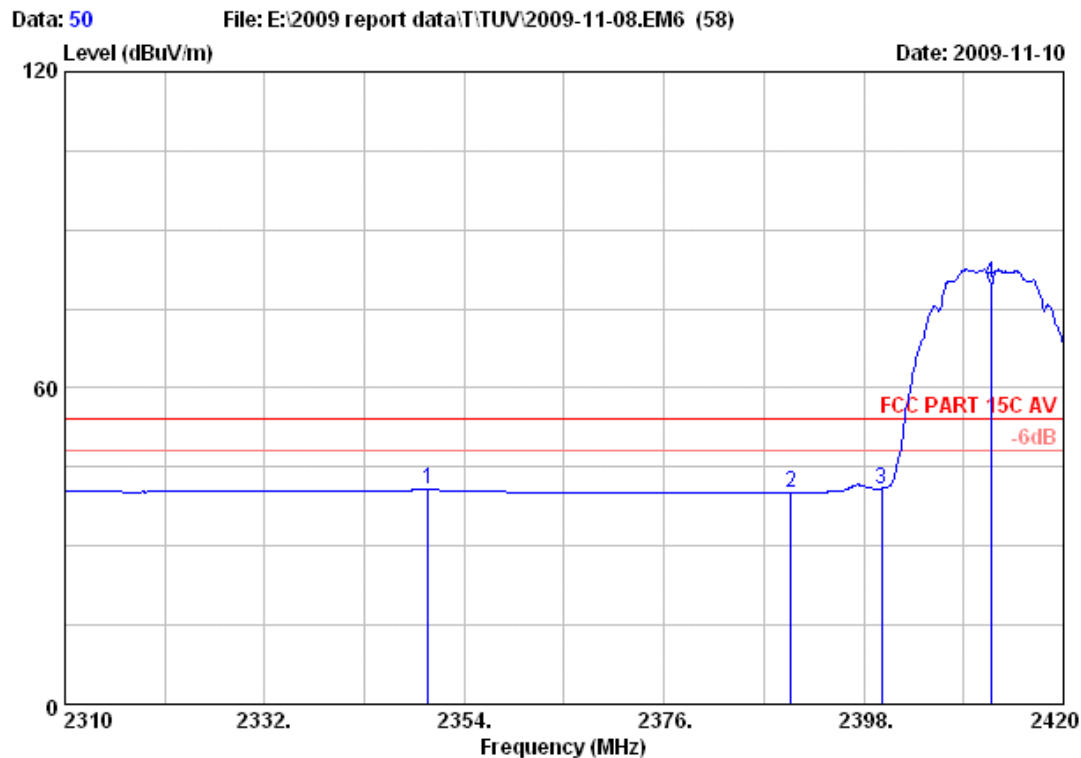
Site no. : 3m Chamber Data no. : 49
 Dis. / Ant. : 3m 3115(0905) Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 23°C/54% Engineer : Leo-LI
 EUT : Wi-Fi
 Power : DC 5V From PC Input AC 230V/50Hz
 Test mode : Tx Mode 11b CH 1
 M/N :

	Ant.	Cable	Amp.			Emission			
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark	
(MHz)	(dB/m)	(dB)	(dB)	(dbuv)	(dBUV/m)	(dBUV/m)	(dB)		
1 2355.320	28.41	8.57	35.91	49.30	50.37	74.00	23.63	Peak	
2 2390.000	28.46	8.41	36.09	47.82	48.60	74.00	25.40	Peak	
3 2400.000	28.46	8.60	36.09	48.31	49.28	74.00	24.72	Peak	
4 2412.000	28.48	8.60	35.95	84.58	85.71	74.00	-11.71	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.

Lower Edge AV Plot:



Site no. : 3m Chamber Data no. : 50
Dis. / Ant. : 3m 3115(0905) Ant. pol. : HORIZONTAL
Limit : FCC PART 15C AV
Env. / Ins. : 23°C/54% Engineer : Leo-LI
EUT : Wi-Fi
Power : DC 5V From PC Input AC 230V/50Hz
Test mode : Tx Mode 11b CH 1
M/N :

	Ant.	Cable	Amp.						
Freq.	Factor	loss	Factor	Reading	Emission				
(MHz)	(dB/m)	(dB)	(dB)	(dbuv)	Level	Limits	Margin	Remark	
					(dBuV/m)	(dBuV/m)	(dB)		
1	2350.040	28.38	8.57	35.99	39.71	40.67	54.00	13.33	Peak
2	2390.000	28.46	8.41	36.09	39.33	40.11	54.00	13.89	Peak
3	2400.000	28.46	8.60	36.09	39.96	40.93	54.00	13.07	Peak
4	2412.000	28.48	8.60	35.95	78.63	79.76	54.00	-25.76	Peak

Remarks:

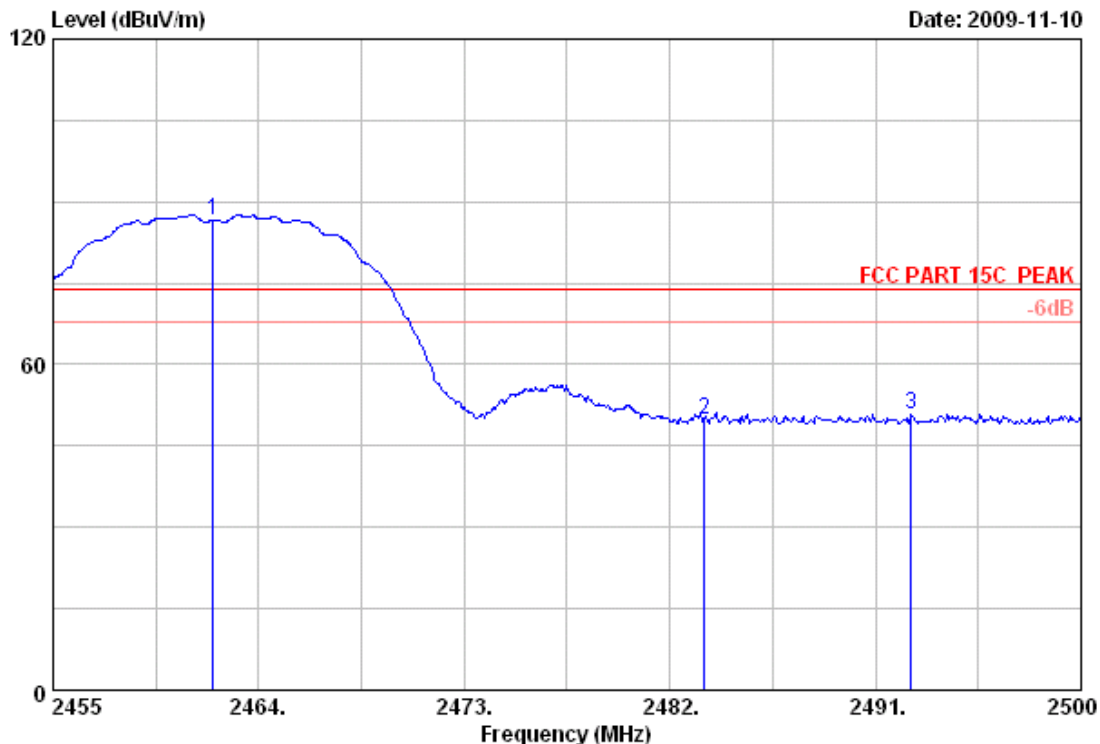
1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

Upper Edge PK Plot:

Data: 47

File: E:\2009 report data\TUV\2009-11-08.EM6 (58)

Date: 2009-11-10



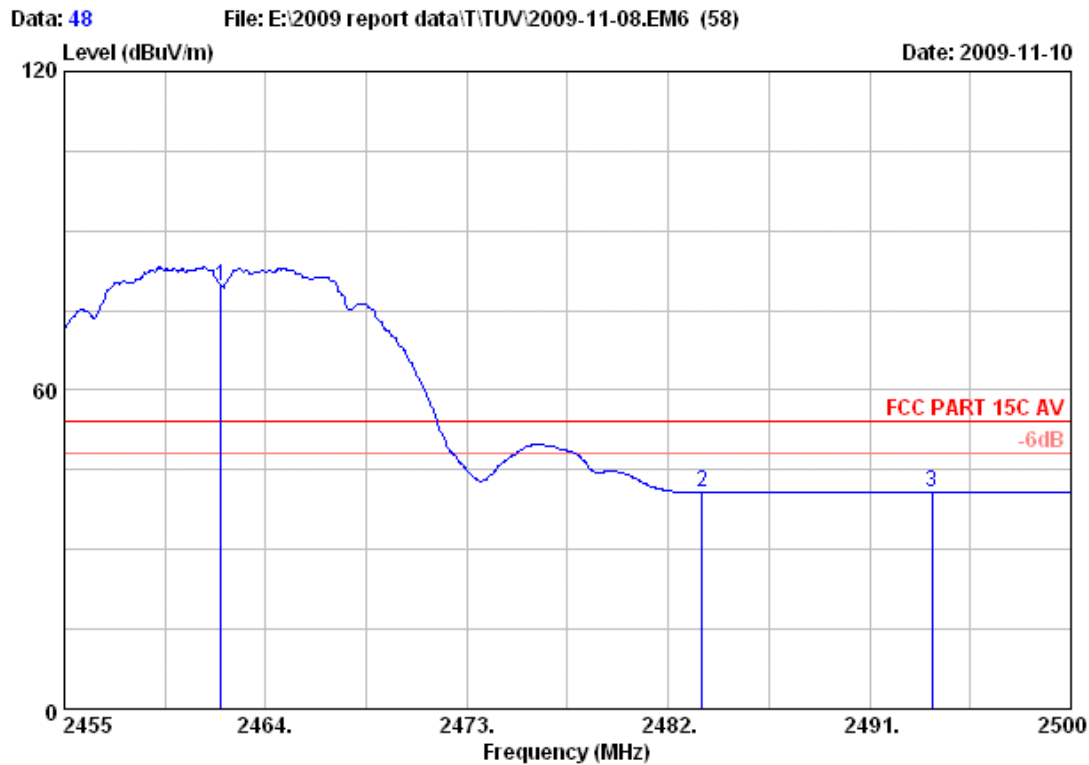
Site no. : 3m Chamber Data no. : 47
Dis. / Ant. : 3m 3115(0905) Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Leo-LI
EUT : Wi-Fi
Power : DC 5V From PC Input AC 230V/50Hz
Test mode : Tx Mode 11b CH 11
M/N :

	Ant.	Cable	Amp.		Emission				
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark	
(MHz)	(dB/m)	(dB)	(dB)	(dbuv)	(dBuV/m)	(dBuV/m)	(dB)		
1 2462.000	28.55	8.76	36.02	85.32	86.61	74.00	-12.61	Peak	
2 2483.500	28.58	8.94	35.97	48.29	49.84	74.00	24.16	Peak	
3 2492.575	28.60	8.94	36.00	49.26	50.80	74.00	23.20	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.

Lower Edge AV Plot:



Site no. : 3m Chamber Data no. : 48
Dis. / Ant. : 3m 3115(0905) Ant. pol. : HORIZONTAL
Limit : FCC PART 15C AV
Env. / Ins. : 23°C/54% Engineer : Leo-LI
EUT : Wi-Fi
Power : DC 5V From PC Input AC 230V/50Hz
Test mode : Tx Mode 11b CH 11
M/N :

	Ant.	Cable	Amp.		Emission				
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark	
(MHz)	(dB/m)	(dB)	(dB)	(dbuv)	(dBuV/m)	(dBuV/m)	(dB)		
1 2462.000	28.55	8.76	36.02	78.38	79.67	54.00	-25.67	Peak	
2 2483.500	28.58	8.94	35.97	39.35	40.90	54.00	13.10	Peak	
3 2493.790	28.60	8.94	36.00	39.25	40.79	54.00	13.21	Peak	

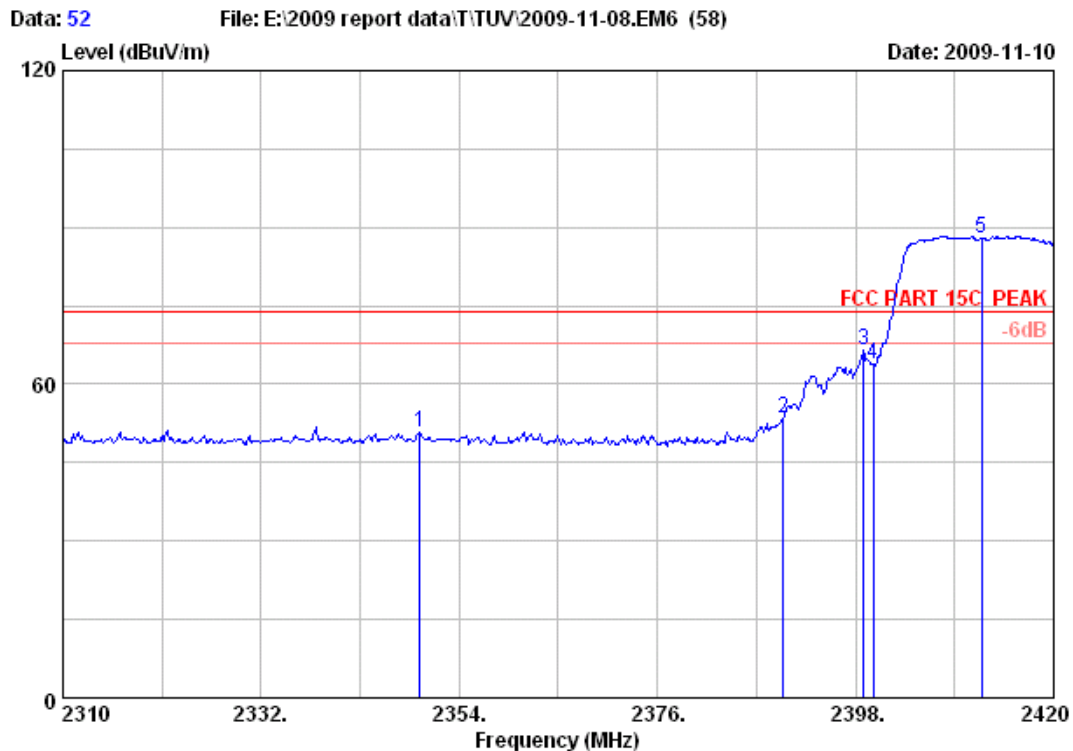
Remarks:

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

Band edge compliance of RF emissions

IEEE 802.11n HT20 modulation (6.5Mbps) Test Result

Lower Edge PK Plot:



Site no. : 3m Chamber Data no. : 52
 Dis. / Ant. : 3m 3115(0905) Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 23°C/54% Engineer : Leo-LI
 EUT : Wi-Fi
 Power : DC 5V From PC Input AC 230V/50Hz
 Test mode : Tx Mode HT20 CH 1
 M/N :

	Ant.	Cable	Amp.			Emission			
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark	
(MHz)	(dB/m)	(dB)	(dB)	(dbuv)	(dBuV/m)	(dBuV/m)	(dB)		
1	2349.600	28.38	8.57	35.99	49.70	50.66	74.00	23.34	Peak
2	2390.000	28.46	8.41	36.09	52.77	53.55	74.00	20.45	Peak
3	2398.880	28.46	8.60	36.09	65.53	66.50	74.00	7.50	Peak
4	2400.000	28.46	8.60	36.09	62.89	63.86	74.00	10.14	Peak
5	2412.000	28.48	8.60	35.95	86.71	87.84	74.00	-13.84	Peak

Remarks:

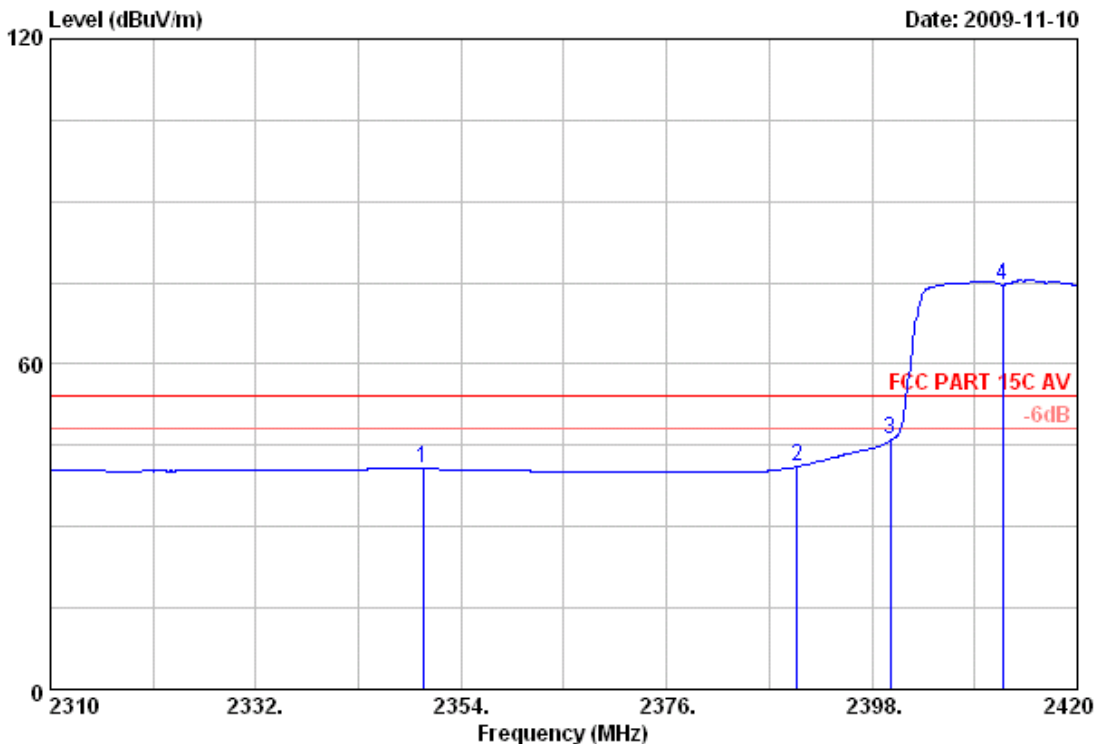
- Emission Level= Antenna Factor + Cable Loss -amp Factor + Reading.
- The emission levels that are 20dB below the official limit are not reported.

Lower Edge AV Plot:

Data: 51

File: E:\2009 report data\T\TUV\2009-11-08.EM6 (58)

Date: 2009-11-10



Site no. : 3m Chamber Data no. : 51
Dis. / Ant. : 3m 3115(0905) Ant. pol. : HORIZONTAL
Limit : FCC PART 15C AV
Env. / Ins. : 23°C/54% Engineer : Leo-LI
EUT : Wi-Fi
Power : DC 5V From PC Input AC 230V/50Hz
Test mode : Tx Mode HT20 CH 1
M/N :

	Ant.	Cable	Amp.		Emission				
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark	
(MHz)	(dB/m)	(dB)	(dB)	(dbuv)	(dBuV/m)	(dBuV/m)	(dB)		
1 2349.930	28.38	8.57	35.99	39.77	40.73	54.00	13.27	Peak	
2 2390.000	28.46	8.41	36.09	40.32	41.10	54.00	12.90	Peak	
3 2400.000	28.46	8.60	36.09	45.02	45.99	54.00	8.01	Peak	
4 2412.000	28.48	8.60	35.95	73.49	74.62	54.00	-20.62	Peak	

Remarks:

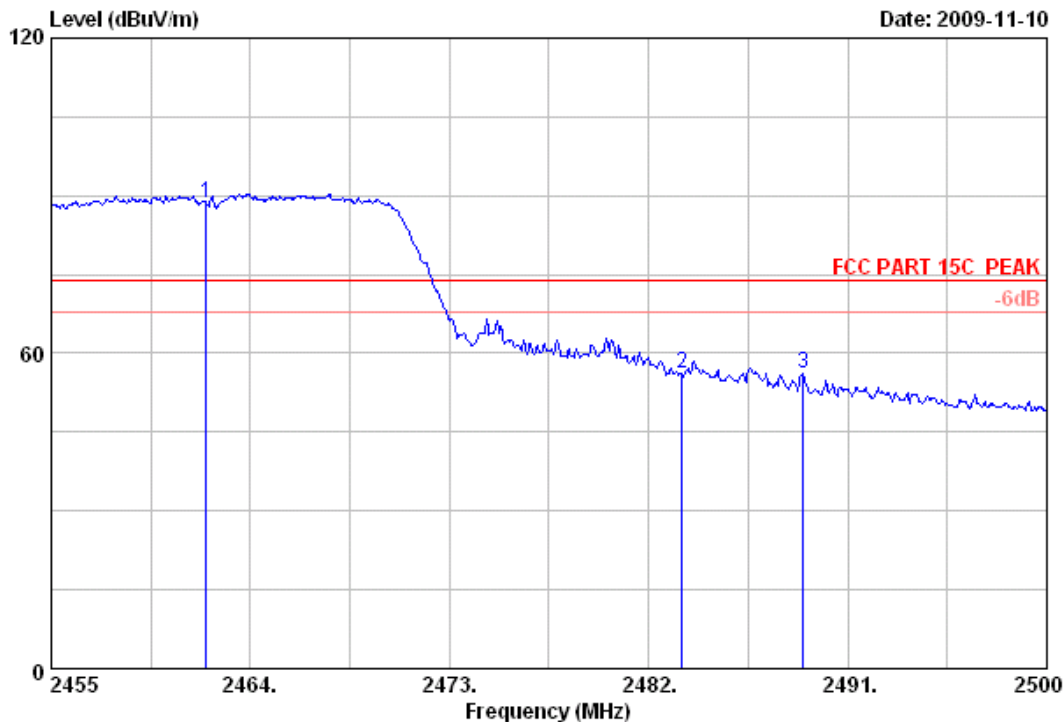
1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

Upper Edge PK Plot:

Data: 53

File: E:\2009 report data\TUV\2009-11-08.EM6 (58)

Date: 2009-11-10



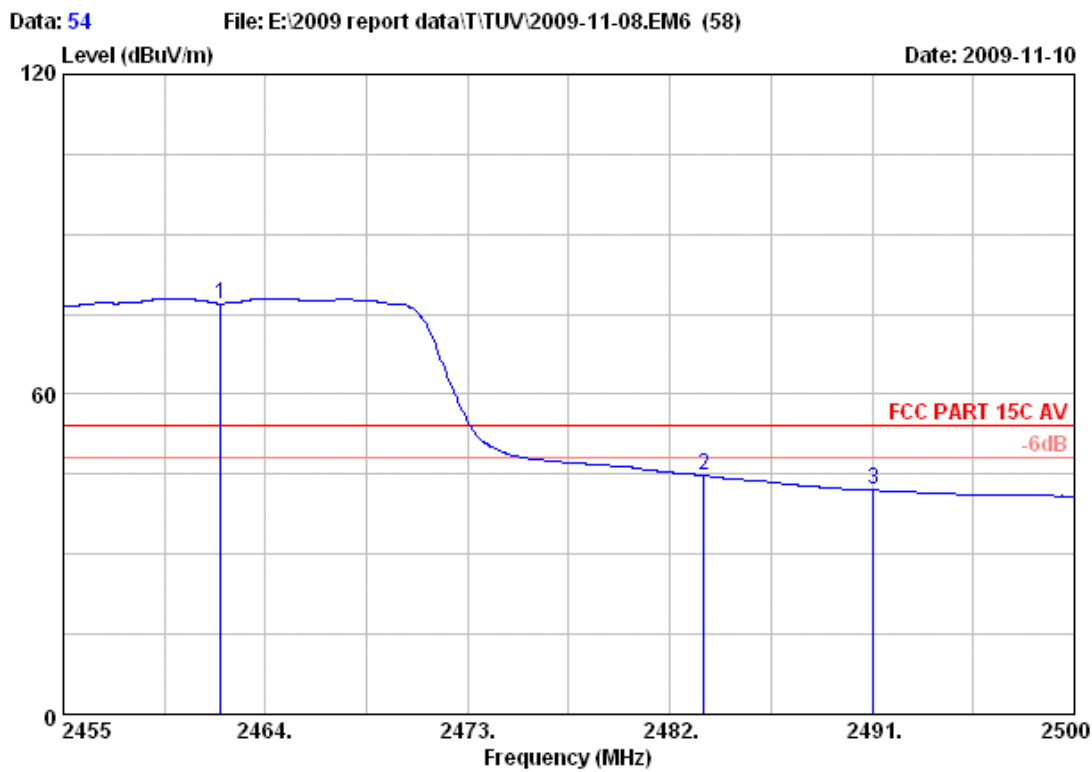
Site no. : 3m Chamber Data no. : 53
 Dis. / Ant. : 3m 3115(0905) Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 23°C/54% Engineer : Leo-LI
 EUT : Wi-Fi
 Power : DC 5V From PC Input AC 230V/50Hz
 Test mode : Tx Mode HT20 CH 11
 M/N :

	Ant.	Cable	Amp.		Emission				
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark	
(MHz)	(dB/m)	(dB)	(dB)	(dbuv)	(dBUV/m)	(dBUV/m)	(dB)		
1 2462.000	28.55	8.76	36.02	87.26	88.55	74.00	-14.55	Peak	
2 2483.500	28.58	8.94	35.97	54.48	56.03	74.00	17.97	Peak	
3 2488.975	28.60	8.94	36.00	54.74	56.28	74.00	17.72	Peak	

Remarks:

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

Lower Edge AV Plot:



Site no. : 3m Chamber Data no. : 54
Dis. / Ant. : 3m 3115 (0905) Ant. pol. : HORIZONTAL
Limit : FCC PART 15C AV
Env. / Ins. : 23°C/54% Engineer : Leo-LI
EUT : Wi-Fi
Power : DC 5V From PC Input AC 230V/50Hz
Test mode : Tx Mode HT20 CH 11
M/N :

	Ant.	Cable	Amp.		Emission				
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark	
(MHz)	(dB/m)	(dB)	(dB)	(dbuv)	(dBuV/m)	(dBuV/m)	(dB)		
1 2462.000	28.55	8.76	36.02	75.62	76.91	54.00	-22.91	Peak	
2 2483.500	28.58	8.94	35.97	43.19	44.74	54.00	9.26	Peak	
3 2491.045	28.60	8.94	36.00	40.46	42.00	54.00	12.00	Peak	

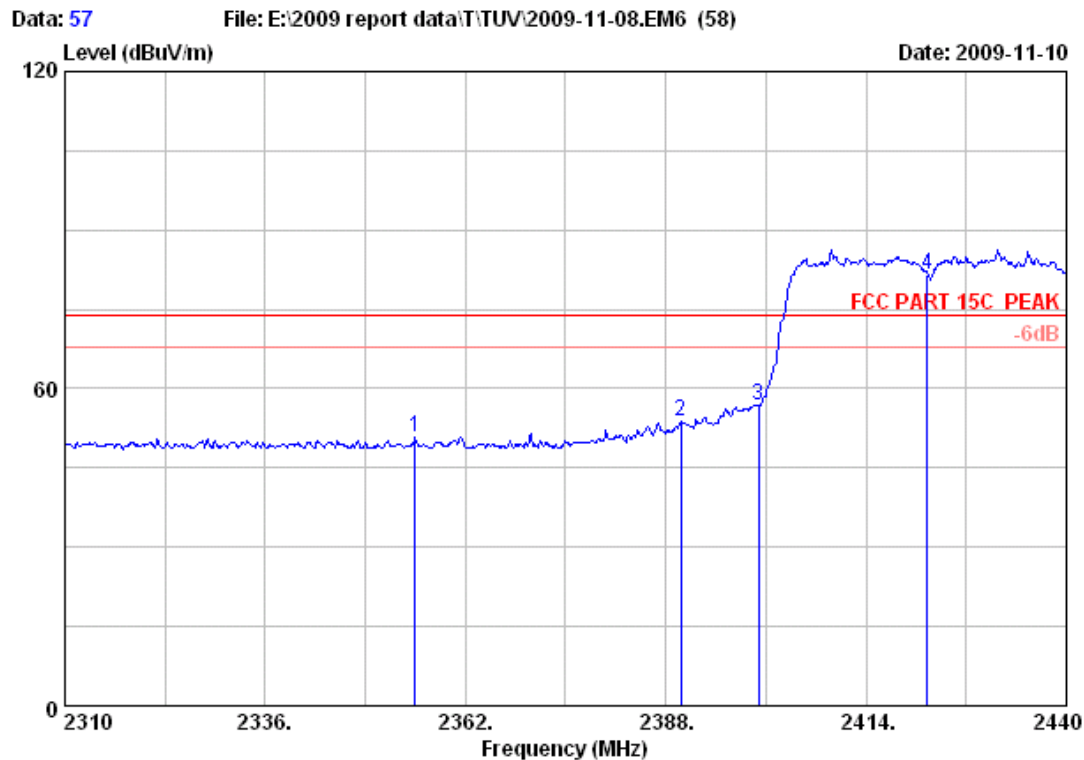
Remarks:

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

Band edge compliance of RF emissions

IEEE 802.11n HT40 modulation (13.5Mbps) Test Result

Lower Edge PK Plot:



Site no. : 3m Chamber Data no. : 57
 Dis. / Ant. : 3m 3115(0905) Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 23°C/54% Engineer : Leo-LI
 EUT : Wi-Fi
 Power : DC 5V From PC Input AC 230V/50Hz
 Test mode : Tx Mode HT40 CH 3
 M/N :

	Ant.	Cable	Amp.		Emission				
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark	
(MHz)	(dB/m)	(dB)	(dB)	(dbuv)	(dBUV/m)	(dBUV/m)	(dB)		
1 2355.500	28.41	8.57	35.91	49.79	50.86	74.00	23.14	Peak	
2 2390.000	28.46	8.41	36.09	53.18	53.96	74.00	20.04	Peak	
3 2400.000	28.46	8.60	36.09	55.77	56.74	74.00	17.26	Peak	
4 2422.000	28.50	8.60	36.01	80.30	81.39	74.00	-7.39	Peak	

Remarks:

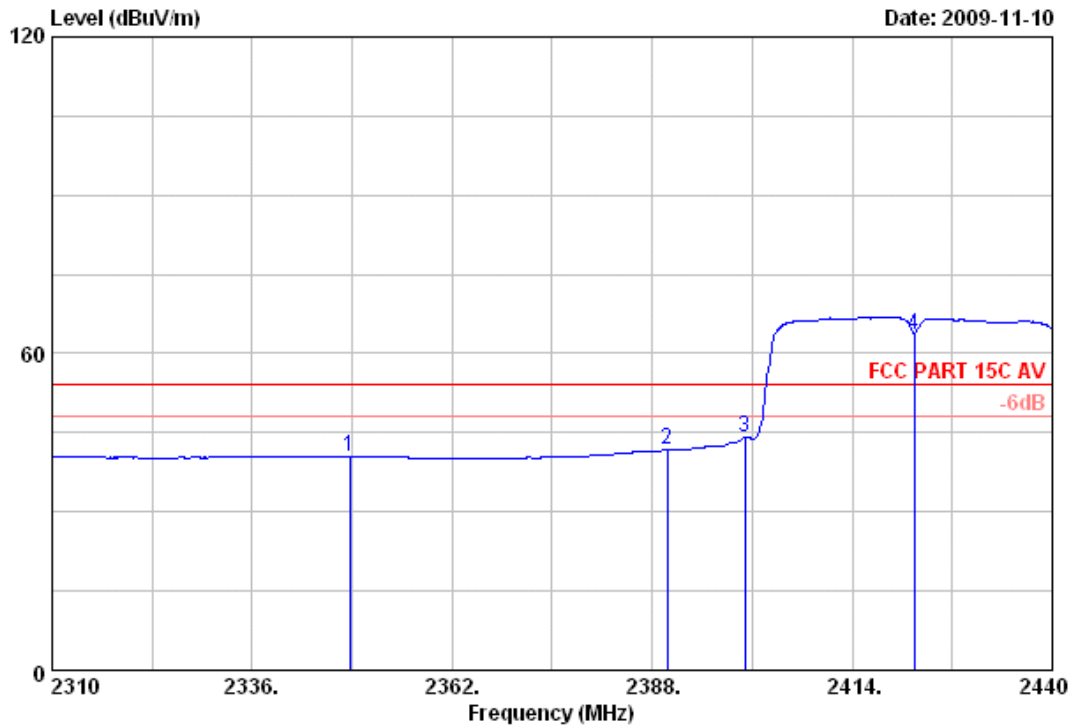
1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

Lower Edge AV Plot:

Data: 58

File: E:\2009 report data\TUV\2009-11-08.EM6 (58)

Date: 2009-11-10



Site no. : 3m Chamber Data no. : 58
Dis. / Ant. : 3m 3115(0905) Ant. pol. : HORIZONTAL
Limit : FCC PART 15C AV
Env. / Ins. : 23°C/54% Engineer : Leo-LI
EUT : Wi-Fi
Power : DC 5V From PC Input AC 230V/50Hz
Test mode : Tx Mode HT40 CH 3
M/N :

	Ant.	Cable	Amp.			Emission			
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark	
(MHz)	(dB/m)	(dB)	(dB)	(dbuv)	(dBuV/m)	(dBuV/m)	(dB)		
1 2348.740	28.38	8.57	35.99	39.41	40.37	54.00	13.63	Peak	
2 2390.000	28.46	8.41	36.09	40.99	41.77	54.00	12.23	Peak	
3 2400.000	28.46	8.60	36.09	43.23	44.20	54.00	9.80	Peak	
4 2422.060	28.50	8.60	36.01	62.32	63.41	54.00	-9.41	Peak	

Remarks:

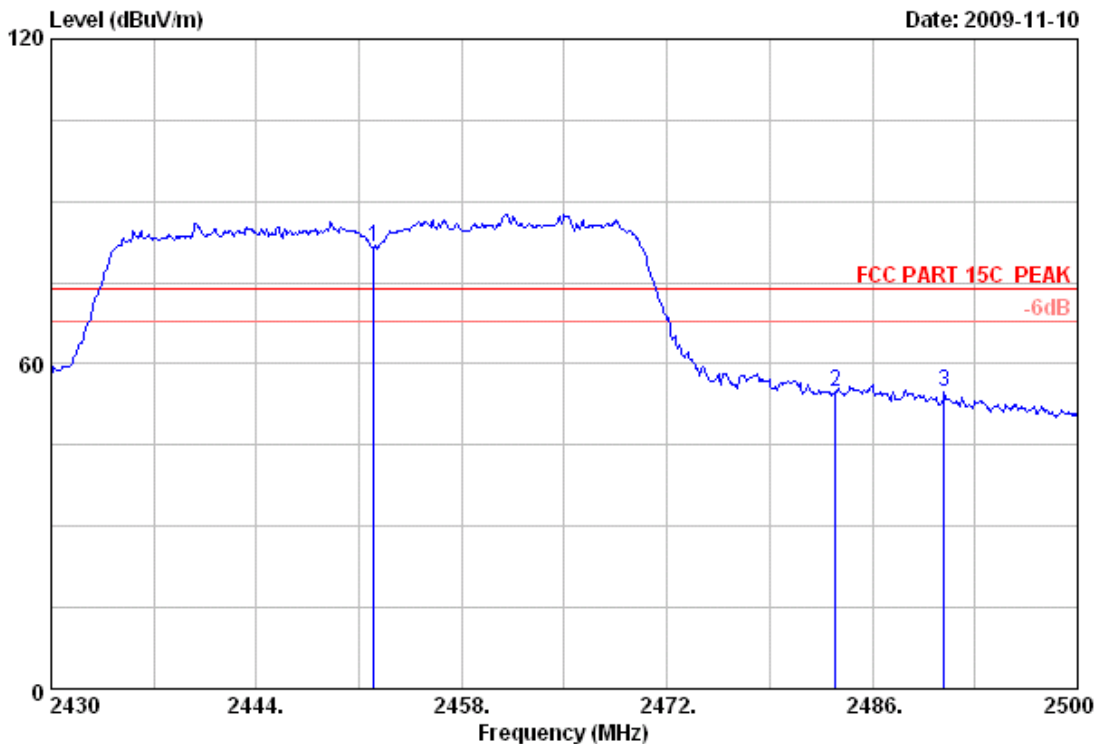
1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

Upper Edge PK Plot:

Data: 55

File: E:\2009 report data\T\TUV\2009-11-08.EM6 (58)

Date: 2009-11-10



Site no.	: 3m Chamber	Data no.	: 55
Dis. / Ant.	: 3m 3115(0905)	Ant. pol.	: HORIZONTAL
Limit	: FCC PART 15C PEAK		
Env. / Ins.	: 23°C/54%	Engineer	: Leo-LI
EUT	: Wi-Fi		
Power	: DC 5V From PC Input AC 230V/50Hz		
Test mode	: Tx Mode HT40 CH 9		
M/N	:		

	Ant.	Cable	Amp.		Emission				
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark	
(MHz)	(dB/m)	(dB)	(dB)	(dbuv)	(dBuV/m)	(dBuV/m)	(dB)		
1 2452.000	28.53	8.48	36.06	80.76	81.71	74.00	-7.71	Peak	
2 2483.500	28.58	8.94	35.97	53.11	54.66	74.00	19.34	Peak	
3 2490.900	28.60	8.94	36.00	53.43	54.97	74.00	19.03	Peak	

Remarks:

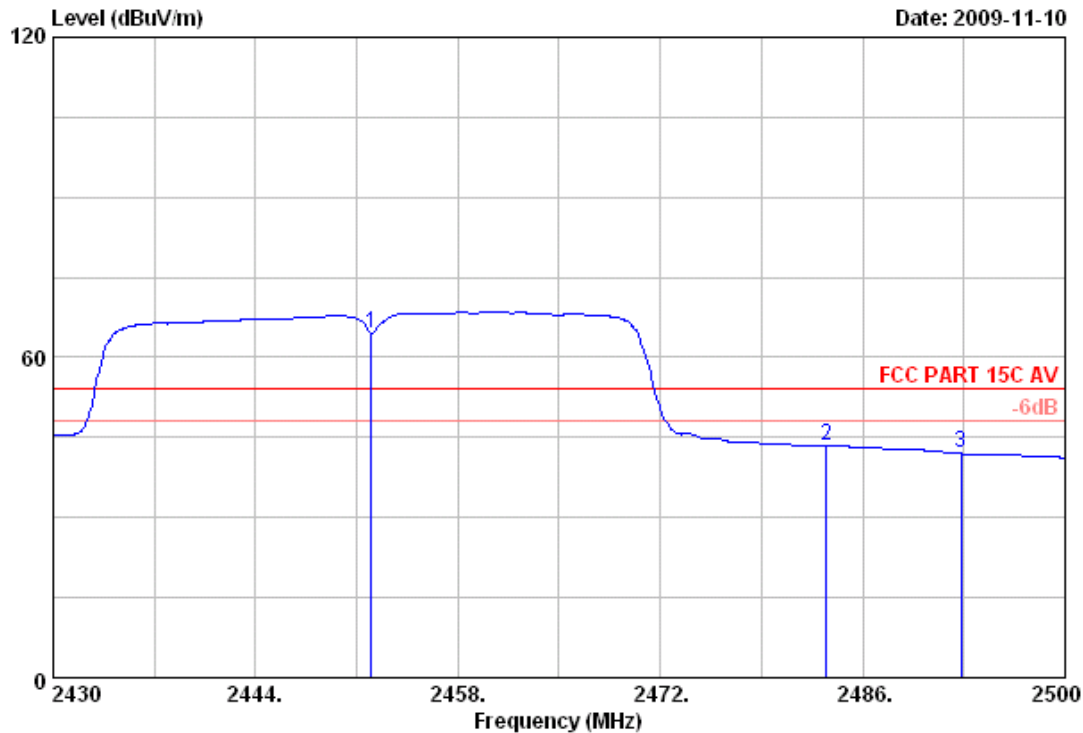
1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

Lower Edge PK Plot:

Data: 56

File: E:\2009 report data\TUV\2009-11-08.EM6 (58)

Date: 2009-11-10



Site no. : 3m Chamber Data no. : 56
Dis. / Ant. : 3m 3115(0905) Ant. pol. : HORIZONTAL
Limit : FCC PART 15C AV
Env. / Ins. : 23°C/54% Engineer : Leo-LI
EUT : Wi-Fi
Power : DC 5V From PC Input AC 230V/50Hz
Test mode : Tx Mode HT40 CH 9
M/N :

	Ant.	Cable	Amp.		Emission				
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark	
(MHz)	(dB/m)	(dB)	(dB)	(dbuv)	(dBuV/m)	(dBuV/m)	(dB)		
1 2452.000	28.53	8.48	36.06	63.63	64.58	54.00	-10.58	Peak	
2 2483.500	28.58	8.94	35.97	41.88	43.43	54.00	10.57	Peak	
3 2492.790	28.60	8.94	36.00	40.41	41.95	54.00	12.05	Peak	

Remarks:

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



Product Service

Test Equipment List

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL DUE DATE
Spectrum	Agilent	E4446A	US44300459	May 10 2010
Amp	HP	8449B	3008A02495	May 10 2010
Antenna	EMCO	3115	9607-4877	May 10 2010
HF Cable	Hubersuhne	Sucoflex104	---	May 10 2010

7.4 Spurious RF conducted emissions

Test Method

The transmitter output is connected to the Spectrum analyzer. The Spectrum analyzer is set to the peak power detection.

Conducted RF measurements of the transmitter output were made to confirm that the EUT antenna port conducted emissions meet the specified limit and to identify any spurious signals that require further investigation or measurements on the radiated emissions site.

The resolution bandwidth(RBW) and the video bandwidth (VBW) of the spectrum analyzer were respectively set to 100kHz and 100kHz.

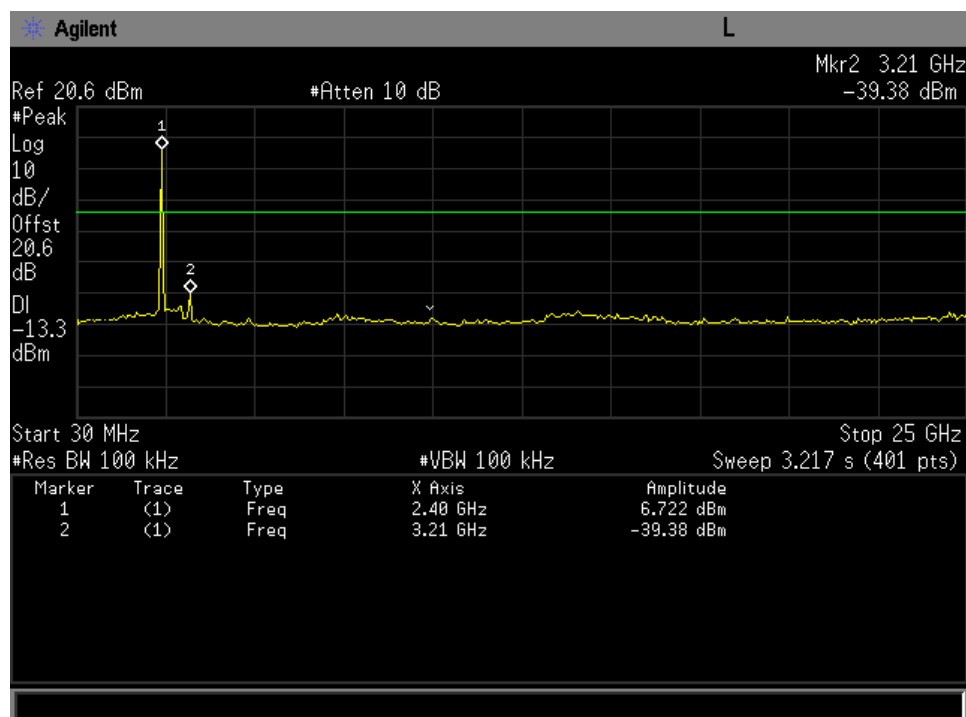
Limit

Frequency Range MHz	Limit (dBc)
1000-25000	-20

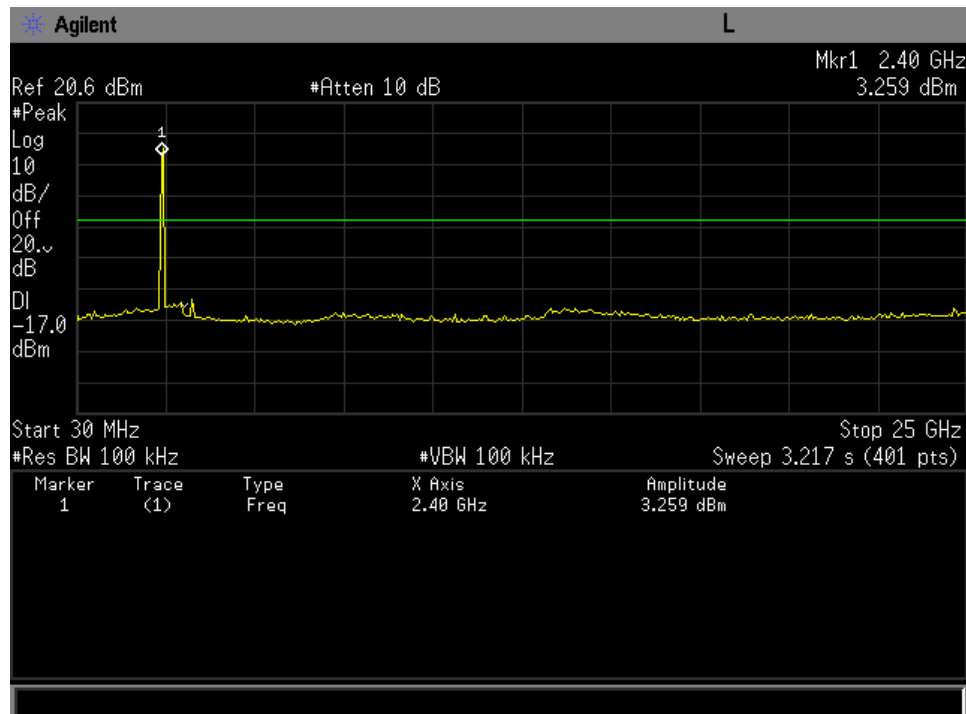
Spurious RF conducted emissions

IEEE 802.11g modulation (6 Mbps) Test Result

2412MHz

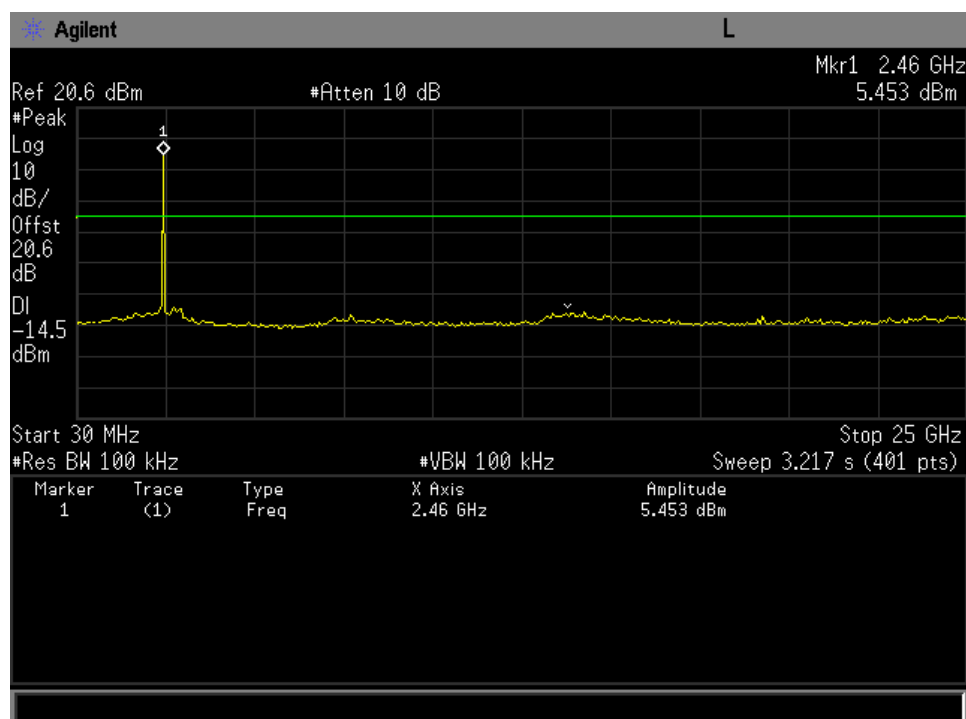


2437MHz



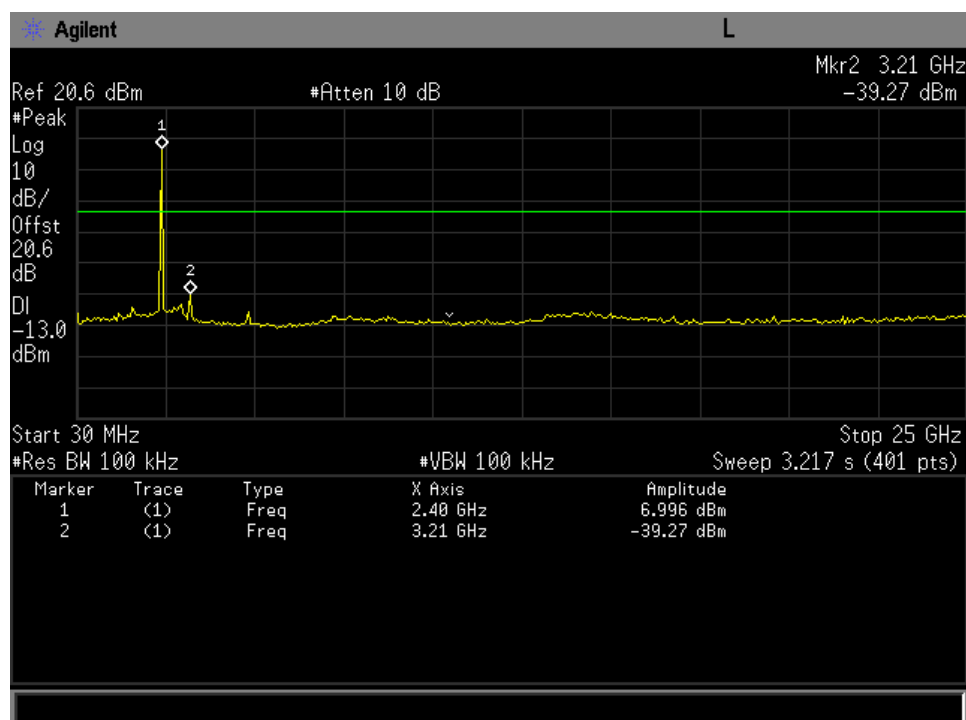
Spurious RF conducted emissions

2462MHz



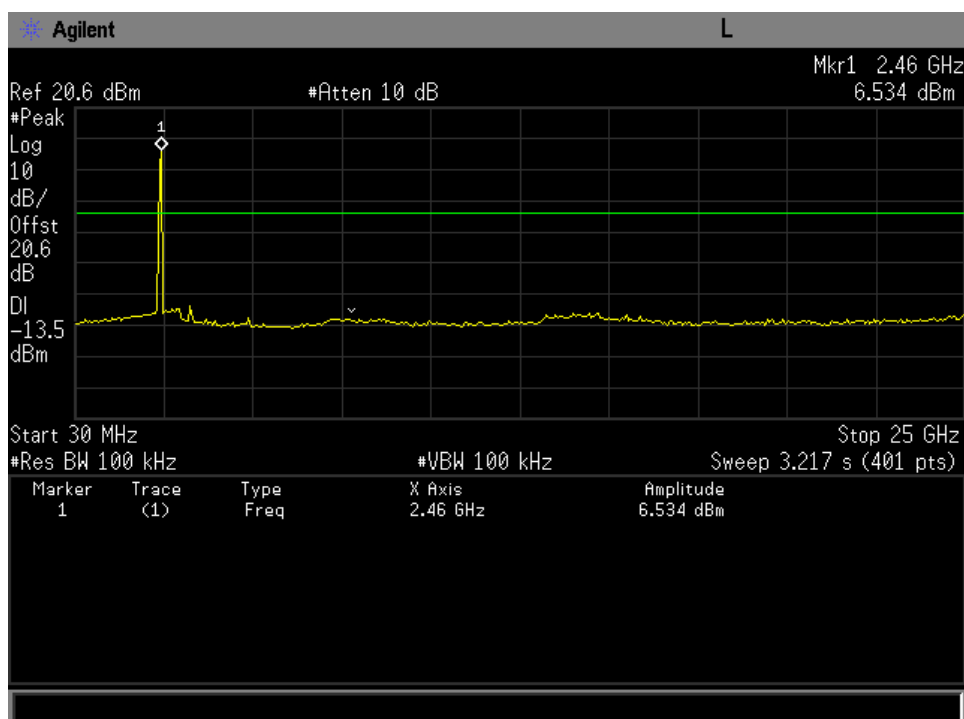
IEEE 802.11b modulation (1 Mbps) Test Result

2412MHz

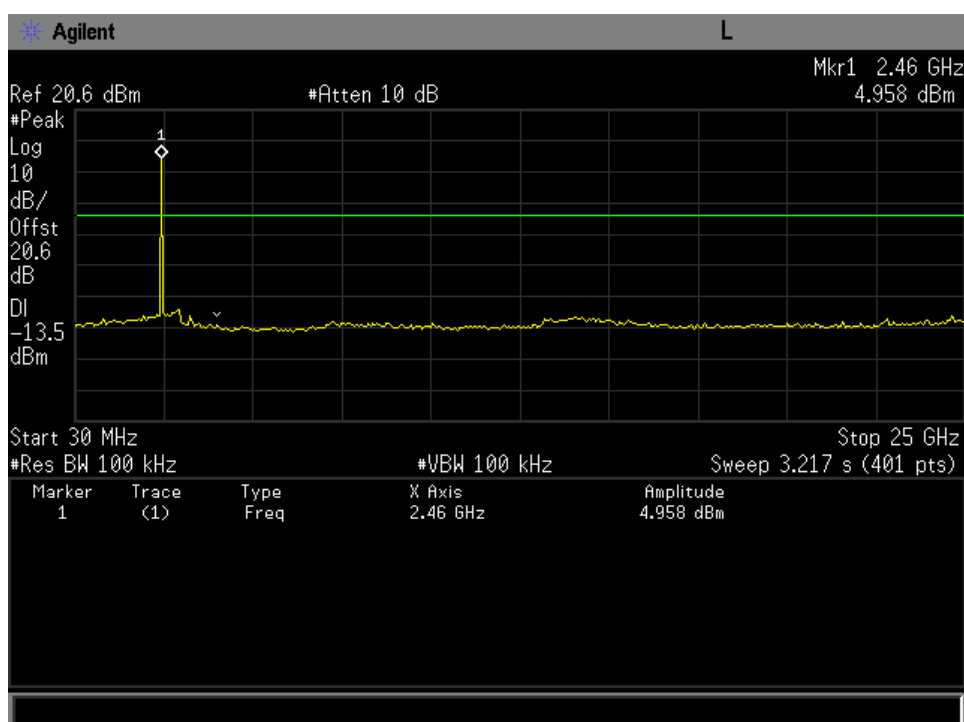


Spurious RF conducted emissions

2437MHz



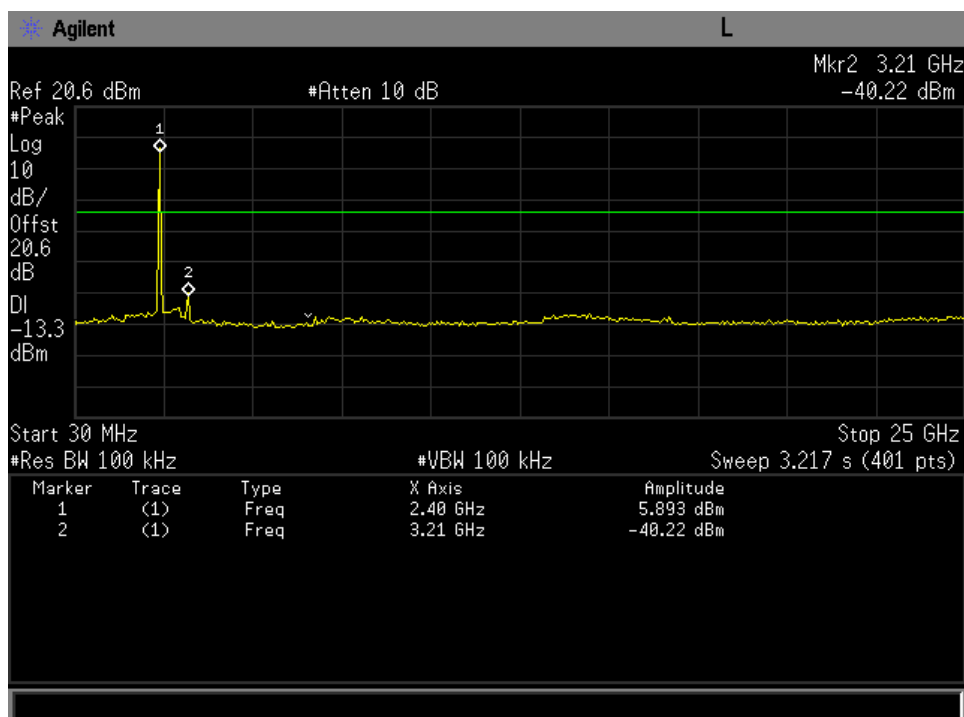
2462MHz



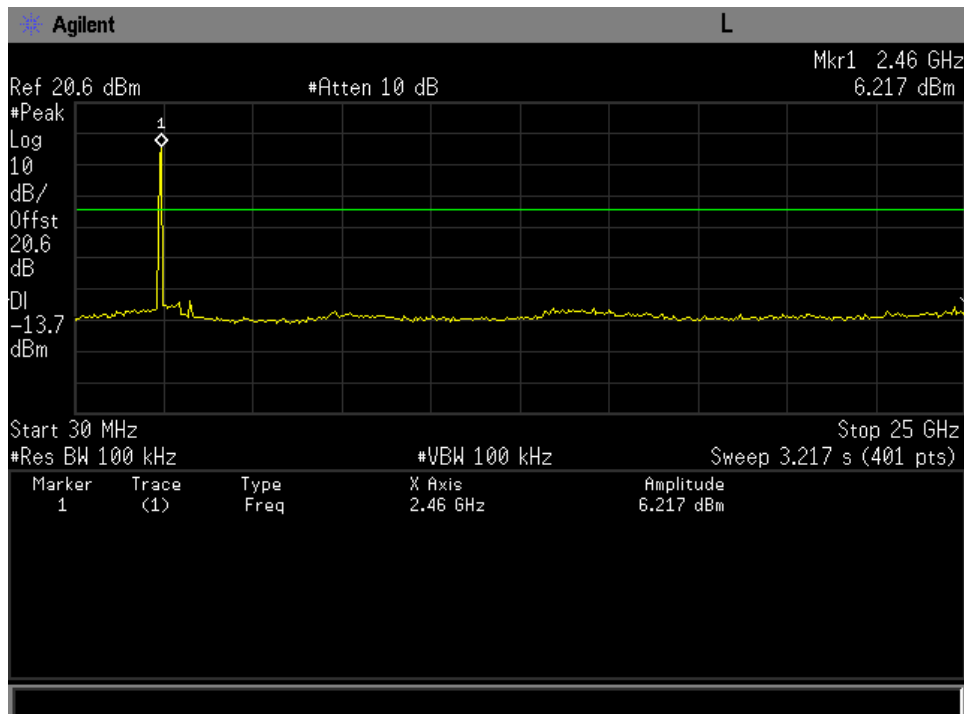
Spurious RF conducted emissions

IEEE 802.11n HT20 modulation (6.5 Mbps) Test Result

2412MHz

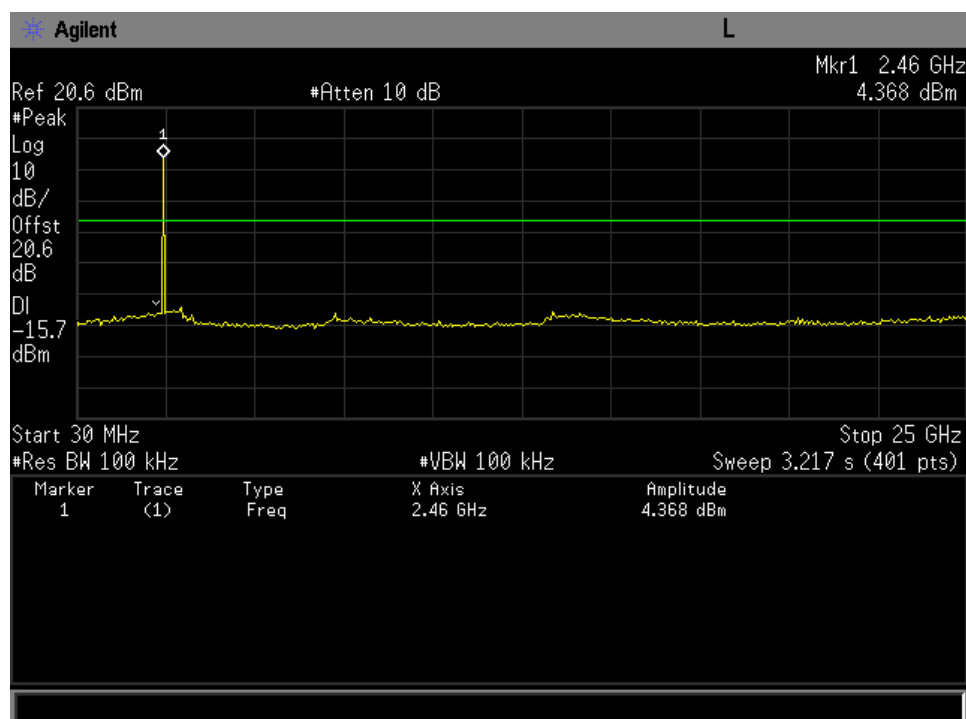


2437MHz



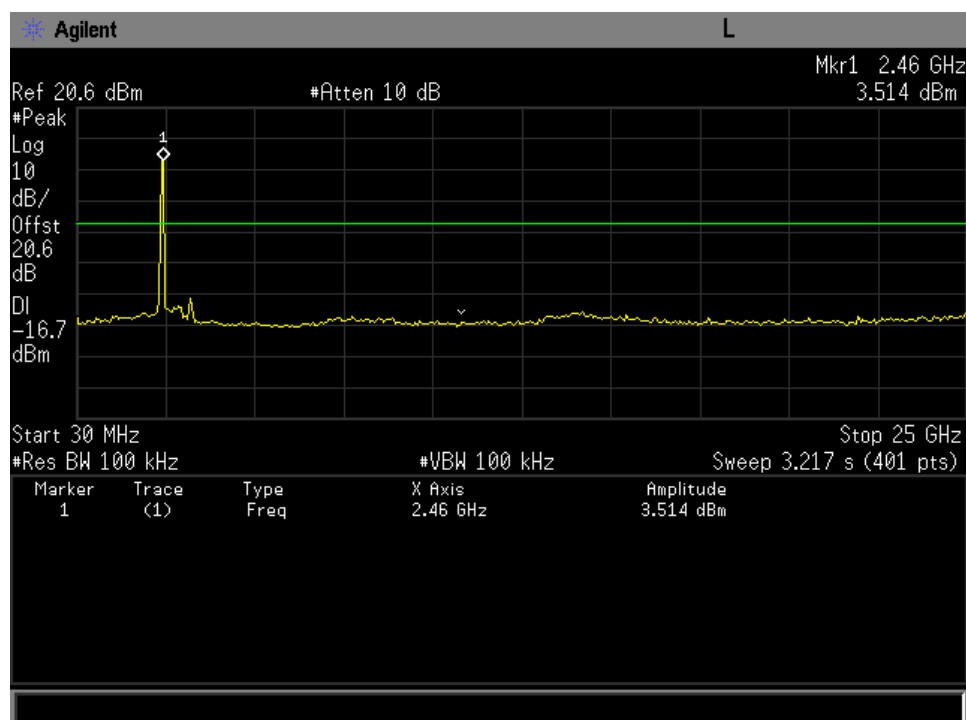
Spurious RF conducted emissions

2462MHz



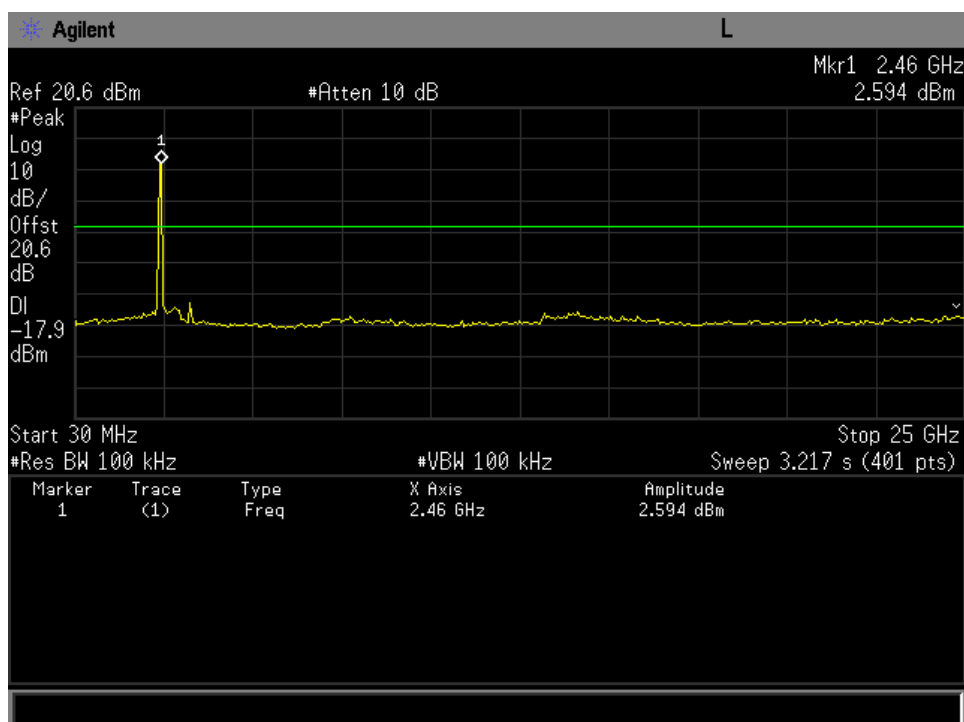
IEEE 802.11n HT40 modulation (13.5 Mbps) Test Result

2422MHz

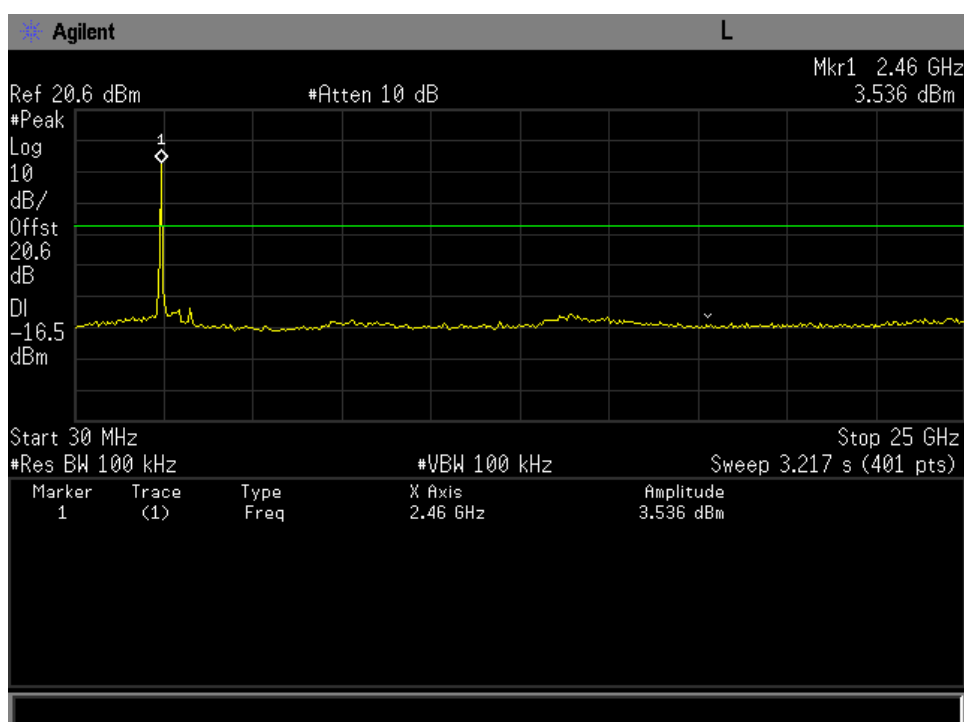


Spurious RF conducted emissions

2437MHz



2452MHz





Product Service

Test Equipment List

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL.DUE.DATE
Spectrum Analyzer	Agilent	E4407B	MY41440292	May 10 2010

7.5 Spurious radiated emissions

Test Method

- 1 The EUT is placed on a turntable, which is 0.8m above ground plane.
- 2 The turntable shall be rotated for 360 degrees to determine the position of maximum emission level
- 3 EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
- 4 Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
- 5 Each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.

Limit

Frequency MHz	Field Strength uV/m	Field Strength dBμV/m	Detector
30-88	100	40	QP
88-216	150	43.5	QP
216-960	200	46	QP
960-1000	500	54	QP
Above 1000	500	54	AV
Above 1000	5000	74	PK

Radiated Emission

IEEE 802.11g modulation (6 Mbps) CH1 2412MHz Test Result

Frequency MHz	Cable Loss dB	Antenna Factor dB/m	Reading dBuV	Emission Level dBuV/m	Polarization	Limit dBuV/m	Detector	Result
107.755	1.6	12.7	23.3	37.6	Horizontal	43.5	QP	Pass
119.918	1.9	12.7	19.2	33.8	Horizontal	43.5	QP	Pass
269.098	2.8	13.2	19.9	35.9	Horizontal	46.0	QP	Pass
323.527	2.9	14.4	20.2	37.5	Horizontal	46.0	QP	Pass
325.470	2.9	14.4	17.9	35.2	Vertical	46.0	QP	Pass
755.070	4.6	20.2	17.3	42.1	Vertical	46.0	QP	Pass
4824.000	4.2	33.3	6.9	44.4	Horizontal	74	PK	Pass
4824.000	4.2	33.3	3.0	40.5	Horizontal	54	AV	Pass
7236.000	-	-	-	-	-	-	-	-
7236.000	-	-	-	-	-	-	-	-

IEEE 802.11g modulation (6 Mbps) CH6 2437MHz Test Result

Frequency MHz	Cable Loss dB	Antenna Factor dB/m	Reading dBuV	Emission Level dBuV/m	Polarization	Limit dBuV/m	Detector	Result
4874.000	4.3	33.3	5.9	43.5	Horizontal	74	PK	Pass
4874.000	4.3	33.3	1.7	39.3	Horizontal	54	AV	Pass
7311.000	-	-	-	-	-	-	-	-
7311.000	-	-	-	-	-	-	-	-

IEEE 802.11g modulation (6 Mbps) CH11 2462MHz Test Result

Frequency MHz	Cable Loss dB	Antenna Factor dB/m	Reading dBuV	Emission Level dBuV/m	Polarization	Limit dBuV/m	Detector	Result
4924.000	4.3	33.3	5.9	43.5	Horizontal	74	PK	Pass
4924.000	4.3	33.3	1.5	39.1	Horizontal	54	AV	Pass
7386.000	-	-	-	-	-	-	-	-
7386.000	-	-	-	-	-	-	-	-

Remark:

- (1) Emission Level= Cable Loss(include amplifier factor) + Antenna Factor + Reading
- (2) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20db below the permissible limits or the field strength is too small to be measured.

Radiated Emission

IEEE 802.11b modulation (1 Mbps) CH1 2412MHz Test Result

Frequency MHz	Cable Loss dB	Antenna Factor dB/m	Reading dBuV	Emission Level dBuV/m	Polarization	Limit dBuV/m	Detector	Result
107.755	1.6	12.7	19.9	34.2	Horizontal	43.5	QP	Pass
325.47	2.9	14.4	22.9	40.2	Horizontal	46.0	QP	Pass
271.042	2.8	13.3	21.4	37.5	Vertical	46.0	QP	Pass
667.595	4.3	19.0	16.0	39.3	Vertical	46.0	QP	Pass
3282.814	3.4	31.4	13.2	48.0	Vertical	74	PK	Pass
3282.814	3.4	31.4	6.9	41.7	Vertical	54	AV	Pass
4824.000	4.2	33.3	6.6	44.1	Horizontal	74	PK	Pass
4824.000	4.2	33.3	2.8	40.3	Horizontal	54	AV	Pass
7236.000	-	-	-	-	-	-	-	-
7236.000	-	-	-	-	-	-	-	-

IEEE 802.11b modulation (1 Mbps) CH6 2437MHz Test Result

Frequency MHz	Cable Loss dB	Antenna Factor dB/m	Reading dBuV	Emission Level dBuV/m	Polarization	Limit dBuV/m	Detector	Result
4874.000	4.3	33.3	6.4	44.0	Horizontal	74	PK	Pass
4874.000	4.3	33.3	1.1	38.7	Horizontal	54	AV	Pass
7311.000	-	-	-	-	-	-	-	-
7311.000	-	-	-	-	-	-	-	-

IEEE 802.11b modulation (1 Mbps) CH11 2462MHz Test Result

Frequency MHz	Cable Loss dB	Antenna Factor dB/m	Reading dBuV	Emission Level dBuV/m	Polarization	Limit dBuV/m	Detector	Result
3282.824	3.4	31.4	14.1	48.9	Vertical	74	PK	Pass
3282.824	3.4	31.4	8.3	43.1	Vertical	54	AV	Pass
4924.000	4.3	33.3	15.8	53.4	Horizontal	74	PK	Pass
4924.000	4.3	33.3	11.4	49.0	Horizontal	54	AV	Pass
7386.000	-	-	-	-	-	-	-	-
7386.000	-	-	-	-	-	-	-	-

Remark:

- (1) Emission Level= Cable Loss(include amplifier factor) + Antenna Factor + Reading
- (2) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20db below the permissible limits or the field strength is too small to be measured.

Radiated Emission

IEEE 802.11n HT20 modulation (6.5 Mbps) CH1 2412MHz Test Result

Frequency MHz	Cable Loss dB	Antenna Factor dB/m	Reading dBuV	Emission Level dBuV/m	Polarization	Limit dBuV/m	Detector	Result
107.755	1.6	12.7	22.0	36.3	Horizontal	43.5	QP	Pass
117.474	1.9	12.7	21.6	36.2	Horizontal	43.5	QP	Pass
325.47	2.9	14.4	20.6	37.9	Horizontal	46.0	QP	Pass
564.569	3.9	18.5	17.2	39.6	Horizontal	46.0	QP	Pass
323.527	2.9	14.4	19.1	36.4	Vertical	46.0	QP	Pass
758.957	4.6	20.2	17.6	42.4	Vertical	46.0	QP	Pass
4824.000	4.2	33.3	7.2	44.7	Horizontal	74	PK	Pass
4824.000	4.2	33.3	3.2	40.7	Horizontal	54	AV	Pass
7236.000	-	-	-	-	-	-	-	-
7236.000	-	-	-	-	-	-	-	-

IEEE 802.11n HT20 modulation (6.5 Mbps) CH6 2437MHz Test Result

Frequency MHz	Cable Loss dB	Antenna Factor dB/m	Reading dBuV	Emission Level dBuV/m	Polarization	Limit dBuV/m	Detector	Result
4874.000	4.3	33.3	6.7	44.3	Horizontal	74	PK	Pass
4874.000	4.3	33.3	2.6	40.2	Horizontal	54	AV	Pass
7311.000	-	-	-	-	-	-	-	-
7311.000	-	-	-	-	-	-	-	-

IEEE 802.11n HT20 modulation (6.5 Mbps) CH11 2462MHz Test Result

Frequency MHz	Cable Loss dB	Antenna Factor dB/m	Reading dBuV	Emission Level dBuV/m	Polarization	Limit dBuV/m	Detector	Result
4924.000	4.3	33.3	5.9	43.5	Horizontal	74	PK	Pass
4924.000	4.3	33.3	2.5	40.1	Horizontal	54	AV	Pass
7386.000	-	-	-	-	-	-	-	-
7386.000	-	-	-	-	-	-	-	-

Remark:

- (1) Emission Level= Cable Loss(include amplifier factor) + Antenna Factor + Reading
- (2) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20db below the permissible limits or the field strength is too small to be measured.

Radiated Emission

IEEE 802.11n HT40 modulation (13.5 Mbps) CH3 2422MHz Test Result

Frequency MHz	Cable Loss dB	Antenna Factor dB/m	Reading dBuV	Emission Level dBuV/m	Polarization	Limit dBuV/m	Detector	Result
107.755	1.6	12.7	22.9	37.2	Horizontal	43.5	QP	Pass
118.416	1.9	12.7	21.9	36.5	Horizontal	43.5	QP	Pass
323.527	2.9	14.4	21.8	39.1	Horizontal	46.0	QP	Pass
576.232	3.9	18.7	16.1	38.7	Horizontal	46.0	QP	Pass
323.527	2.9	14.4	19.4	36.7	Vertical	46.0	QP	Pass
758.957	4.6	20.2	17.6	42.4	Vertical	46.0	QP	Pass
4844.000	4.2	33.3	7.8	45.3	Horizontal	74	PK	Pass
4844.000	4.2	33.3	4.0	41.5	Horizontal	54	AV	Pass
7266.000	-	-	-	-	-	-	-	-
7266.000	-	-	-	-	-	-	-	-

IEEE 802.11n HT40 modulation (13.5 Mbps) CH6 2437MHz Test Result

Frequency MHz	Cable Loss dB	Antenna Factor dB/m	Reading dBuV	Emission Level dBuV/m	Polarization	Limit dBuV/m	Detector	Result
4874.000	4.3	33.3	7.1	44.7	Horizontal	74	PK	Pass
4874.000	4.3	33.3	3.9	41.5	Horizontal	54	AV	Pass
7311.000	-	-	-	-	-	-	-	-
7311.000	-	-	-	-	-	-	-	-

IEEE 802.11n HT40 modulation (13.5 Mbps) CH9 2452MHz Test Result

Frequency MHz	Cable Loss dB	Antenna Factor dB/m	Reading dBuV	Emission Level dBuV/m	Polarization	Limit dBuV/m	Detector	Result
4904.000	4.3	33.3	7.1	44.7	Horizontal	74	PK	Pass
4904.000	4.3	33.3	3.1	40.7	Horizontal	54	AV	Pass
7356.000	-	-	-	-	-	-	-	-
7356.000	-	-	-	-	-	-	-	-

Remark:

- (1) Emission Level= Cable Loss(include amplifier factor) + Antenna Factor + Reading
- (2) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20db below the permissible limits or the field strength is too small to be measured.



Product Service

Test Equipment List

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL DUE DATE
EMI Test Receiver	Rohde & Schwarz	ESi26	838786/013	Sep 23 2010
Bilog Antenna	Chase	CBL6112B	2591	Sep 23 2010
Signal Generator	Rohde & Schwarz	SMR20	100047	Sep 23 2010
Antenna	Schwarzbeck	VUBA9117	115	Sep 23 2010
Horn Antenna	Rohde & Schwarz	HF906	100013	Sep 23 2010

7.6 6 dB bandwidth

Test Method

- 1 Place the EUT on the table and set it in the transmitting mode.
- 2 Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
- 3 Mark the peak frequency and –6dB (upper and lower) frequency.

Limit

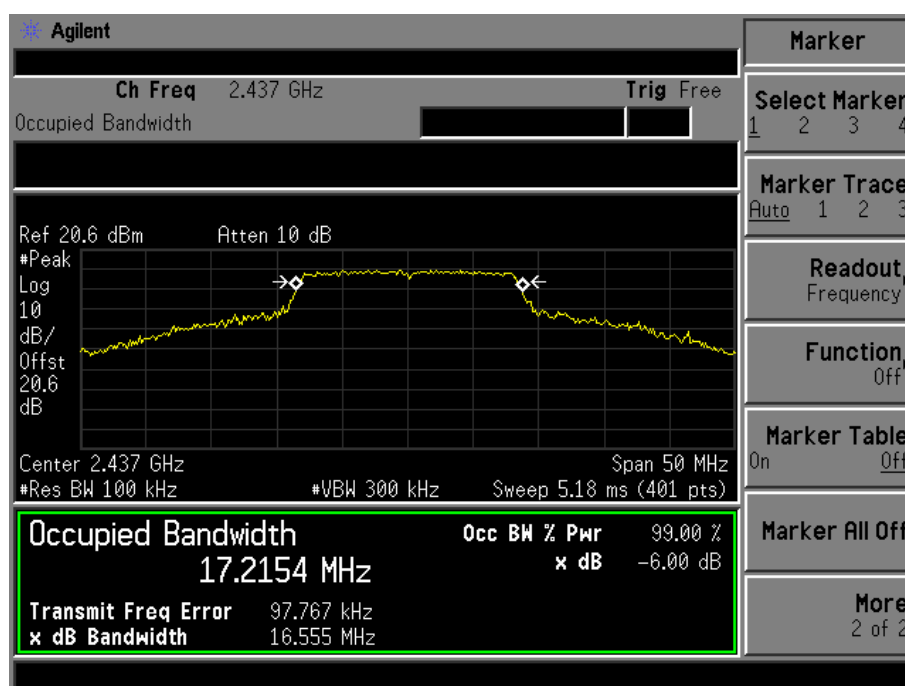
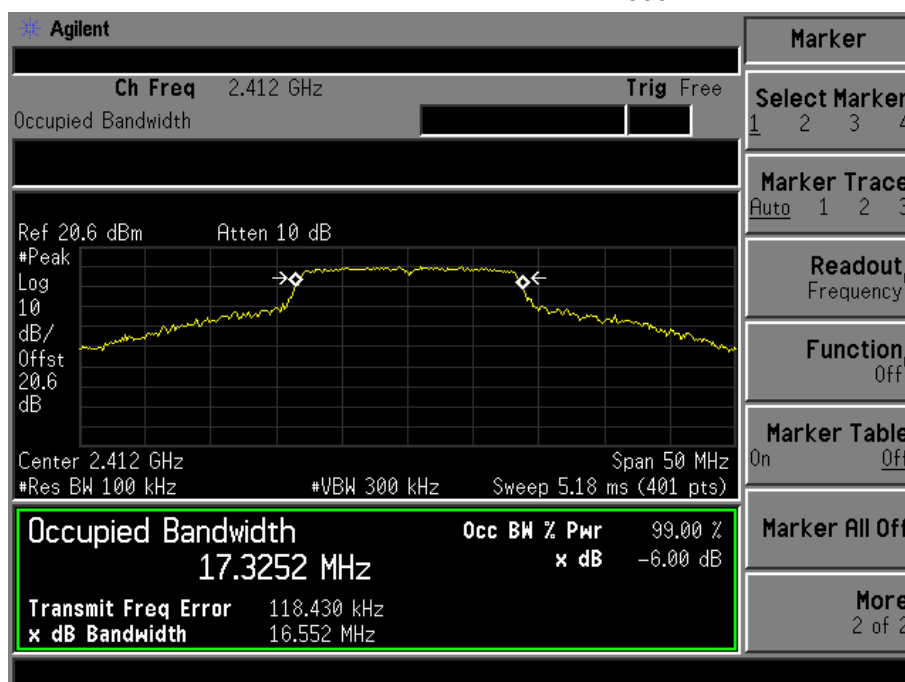
Limit [kHz]

≥ 500

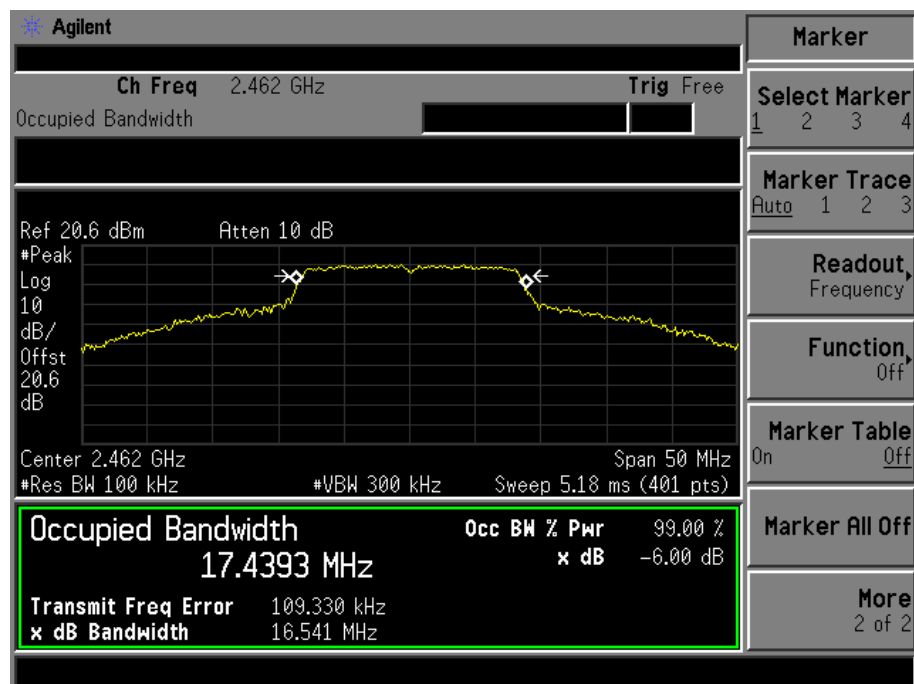
6 dB bandwidth

IEEE 802.11g modulation (6Mbps) Test Result

Frequency MHz	Bandwidth kHz	Limit kHz	Result
2412	17325	≥ 500	Pass
2437	17215	≥ 500	Pass
2462	17439	≥ 500	Pass



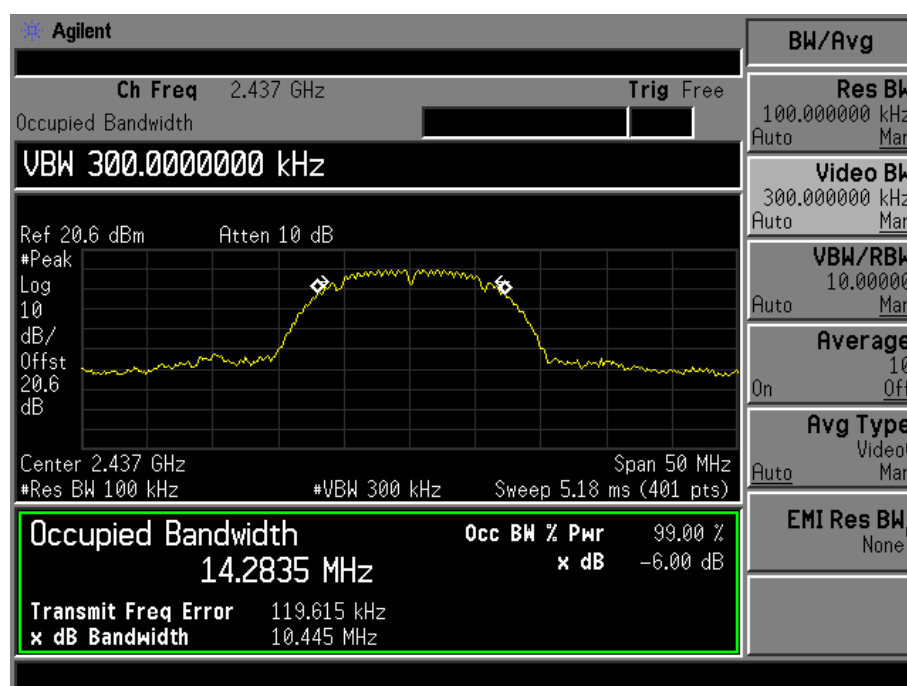
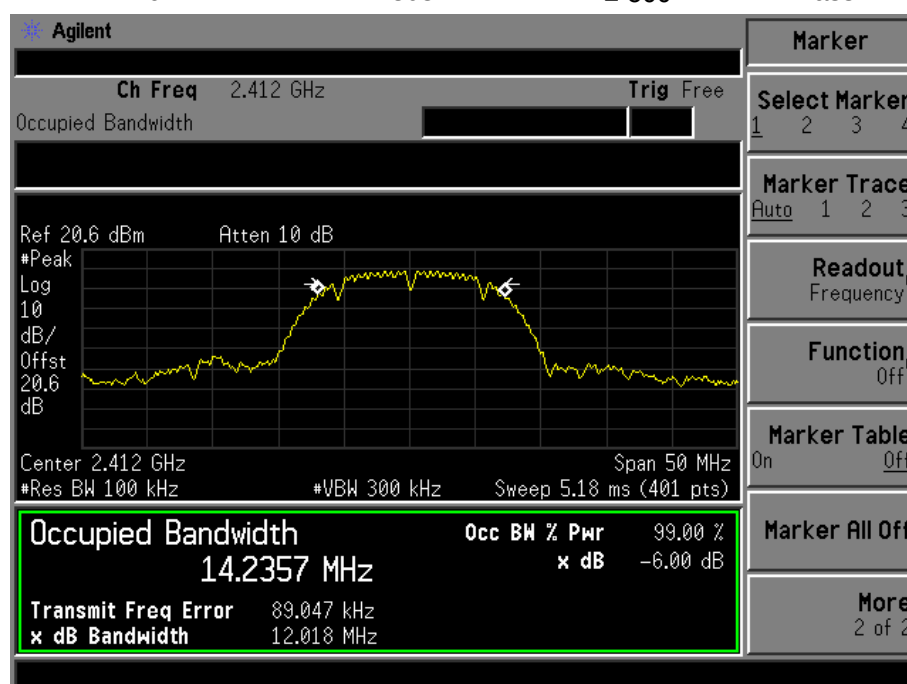
6 dB bandwidth



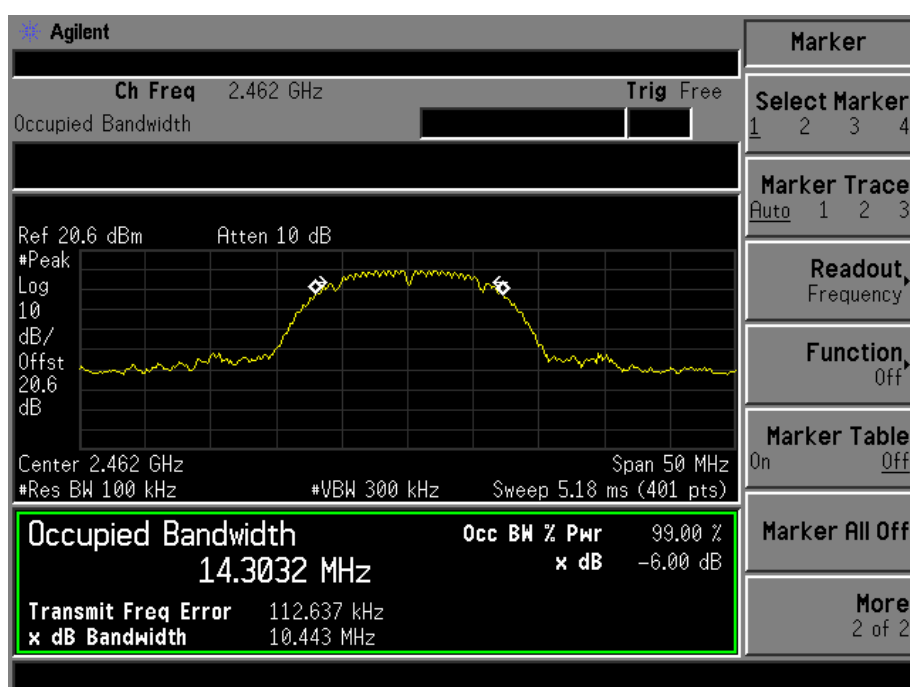
6 dB bandwidth

IEEE 802.11b modulation (1Mbps) Test Result

Frequency MHz	Bandwidth kHz	Limit kHz	Result
2412	14235	≥ 500	Pass
2437	14283	≥ 500	Pass
2462	14303	≥ 500	Pass



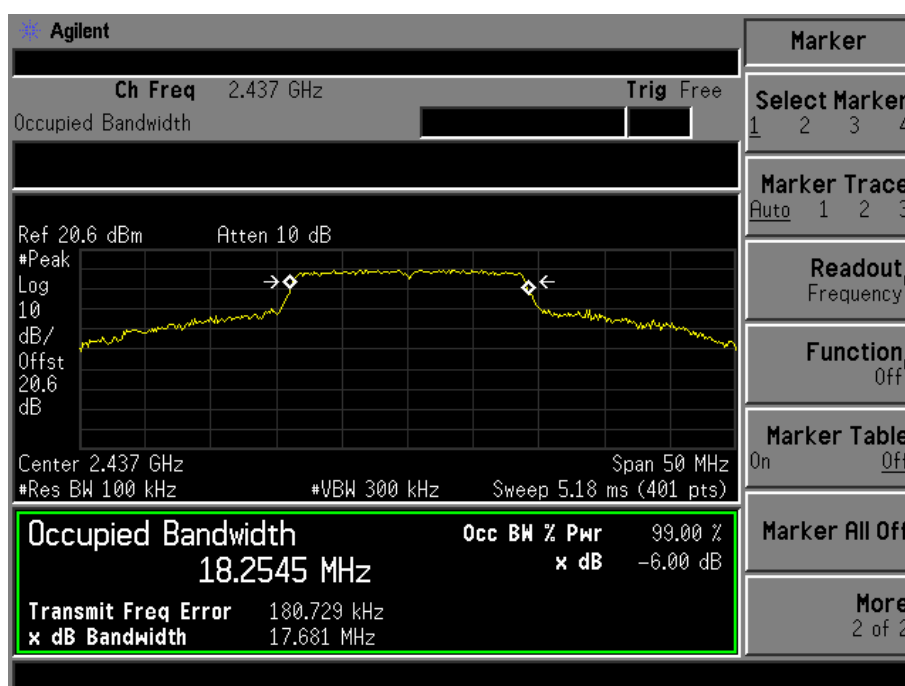
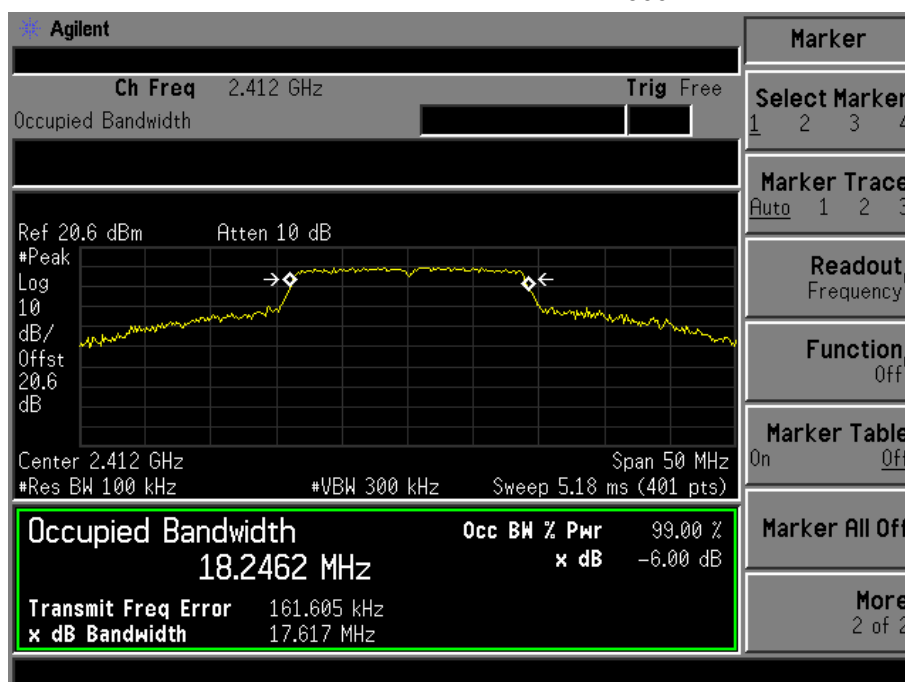
6 dB bandwidth



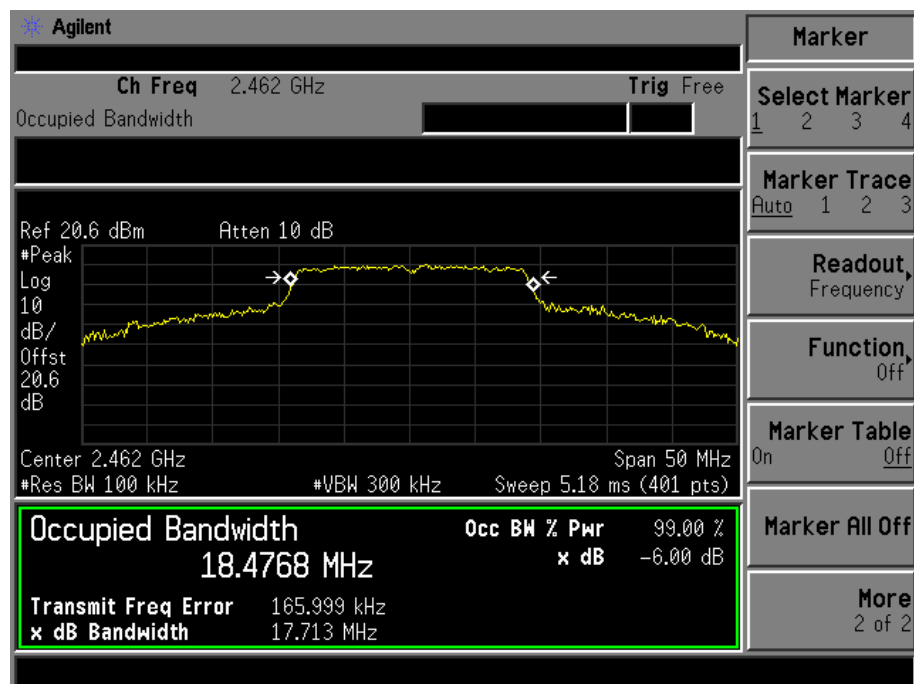
6 dB bandwidth

IEEE 802.11n HT20 modulation (6.5Mbps) Test Result

Frequency MHz	Bandwidth kHz	Limit kHz	Result
2412	18246	≥ 500	Pass
2437	18254	≥ 500	Pass
2462	18476	≥ 500	Pass



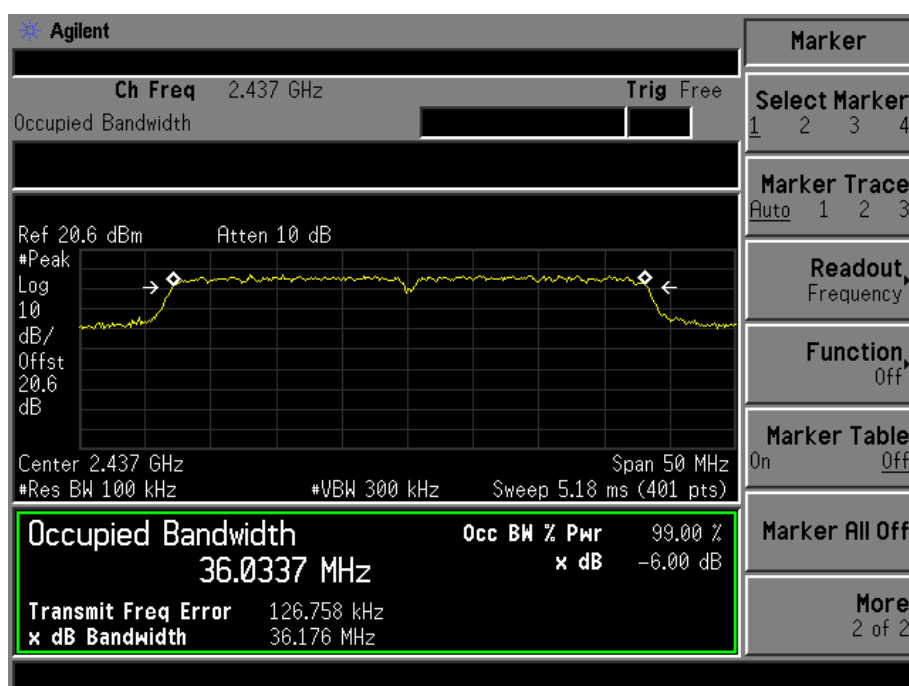
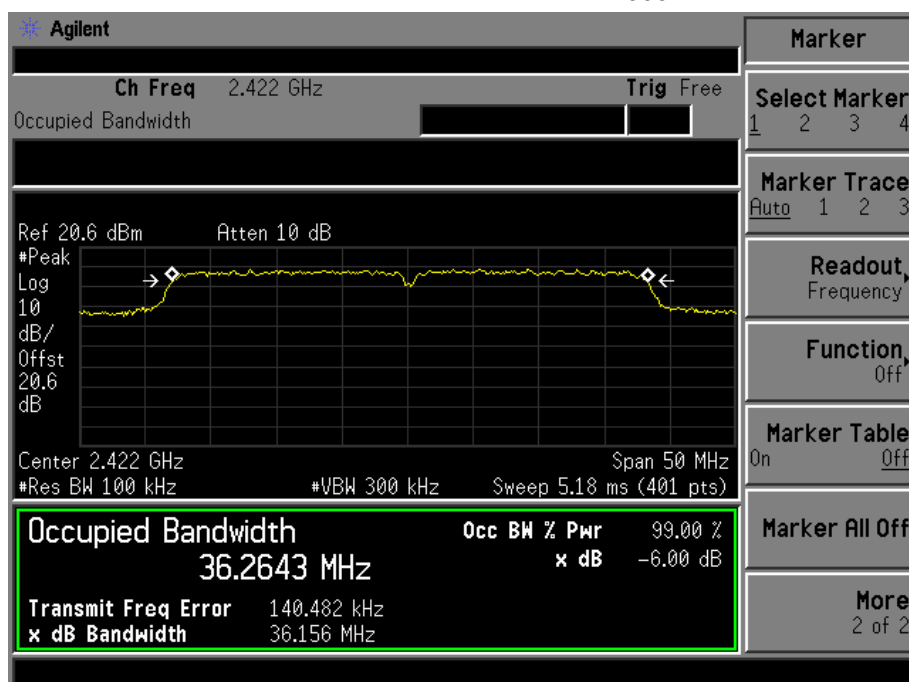
6 dB bandwidth



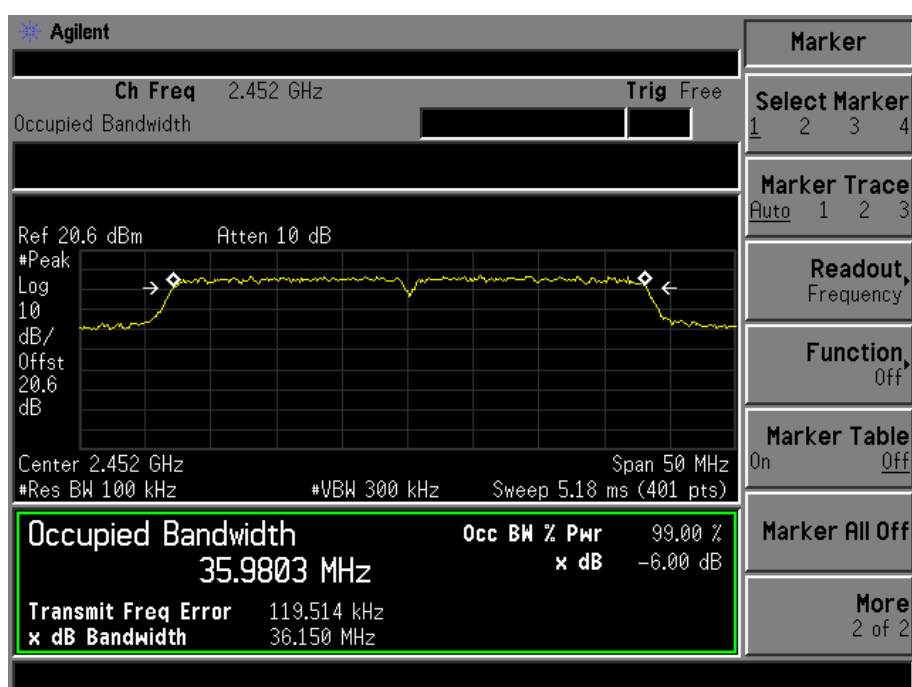
6 dB bandwidth

IEEE 802.11n HT40 modulation (13.5Mbps) Test Result

Frequency MHz	Bandwidth kHz	Limit kHz	Result
2422	36264	≥ 500	Pass
2437	36033	≥ 500	Pass
2452	35980	≥ 500	Pass



6 dB bandwidth





Product Service

Test Equipment

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL.DUE.DATE
Spectrum Analyzer	Agilent	E4446A	MY41440292	May 10 2010

7.7 Power spectral density

Test Method

- 1 Place the EUT on the table and set it in transmitting mode. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
- 2 Set the spectrum analyzer as RBW = 3 kHz, VBW = 10 kHz, Span = 300kHz, Sweep = 100 s
- 3 Record the max reading.

Limit

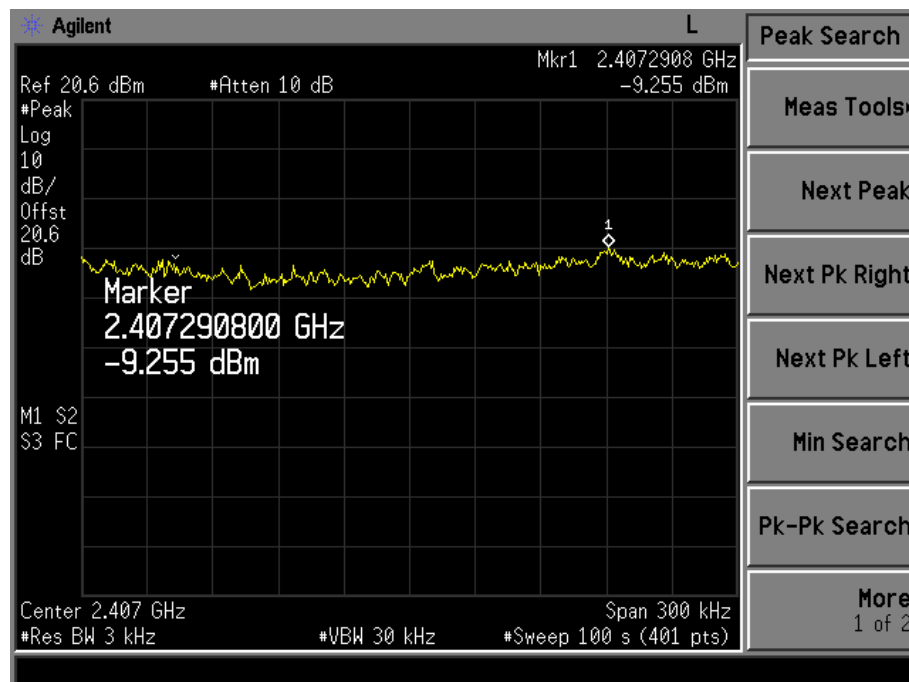
Limit
dBm / 3 kHz

8

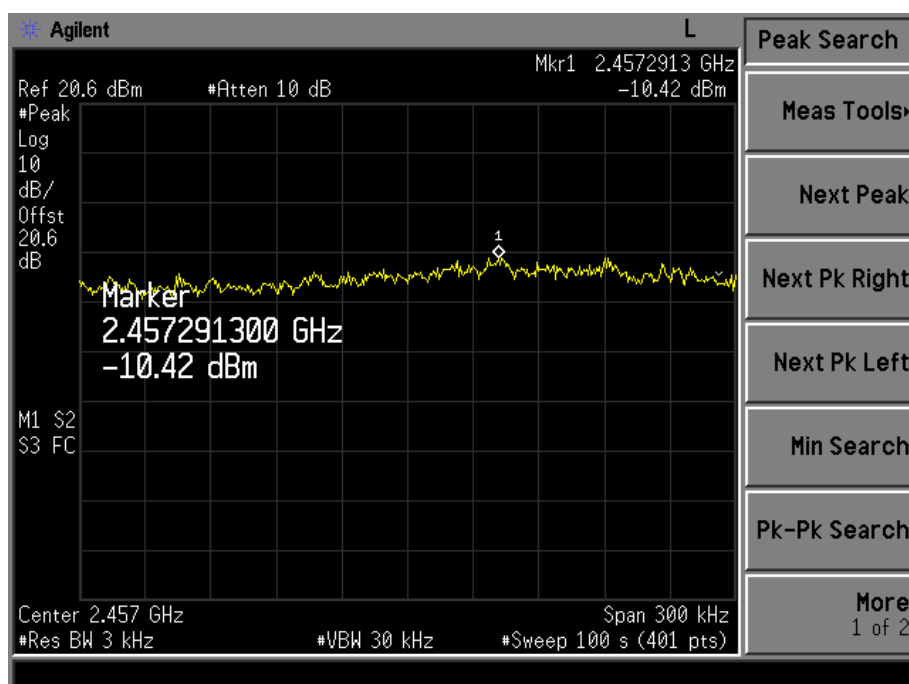
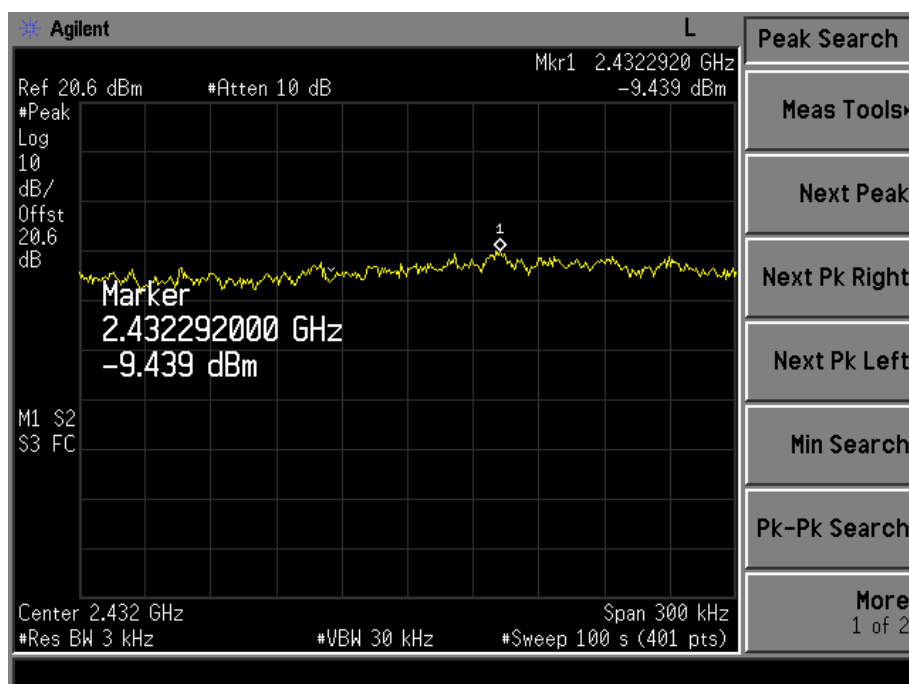
Power spectral density

IEEE 802.11g modulation (6Mbps) Test Result

Frequency MHz	P dBm	Result
2412	-9.25	Pass
2437	-9.43	Pass
2462	-10.42	Pass



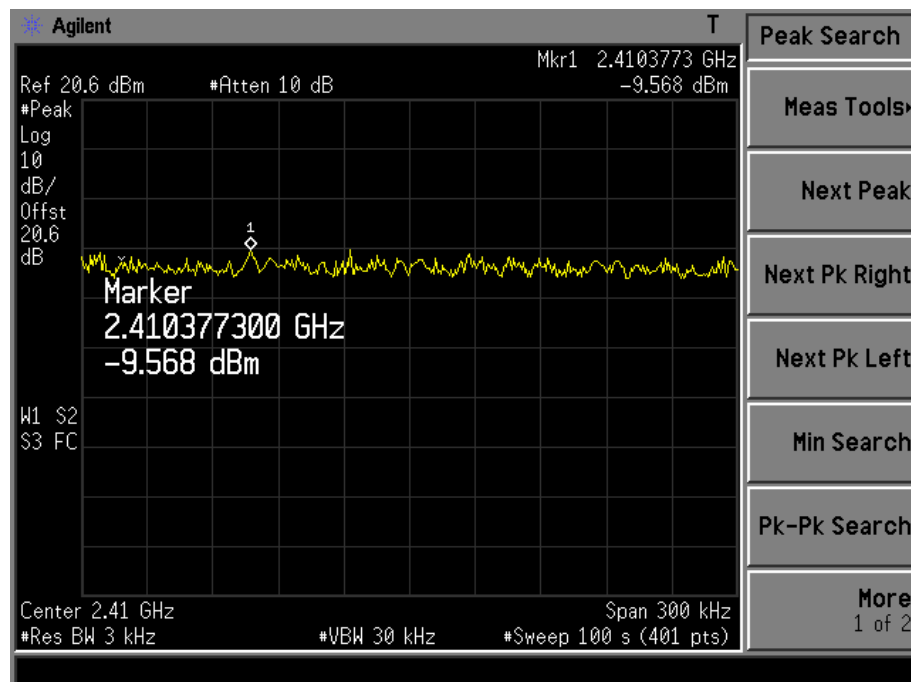
Power spectral density



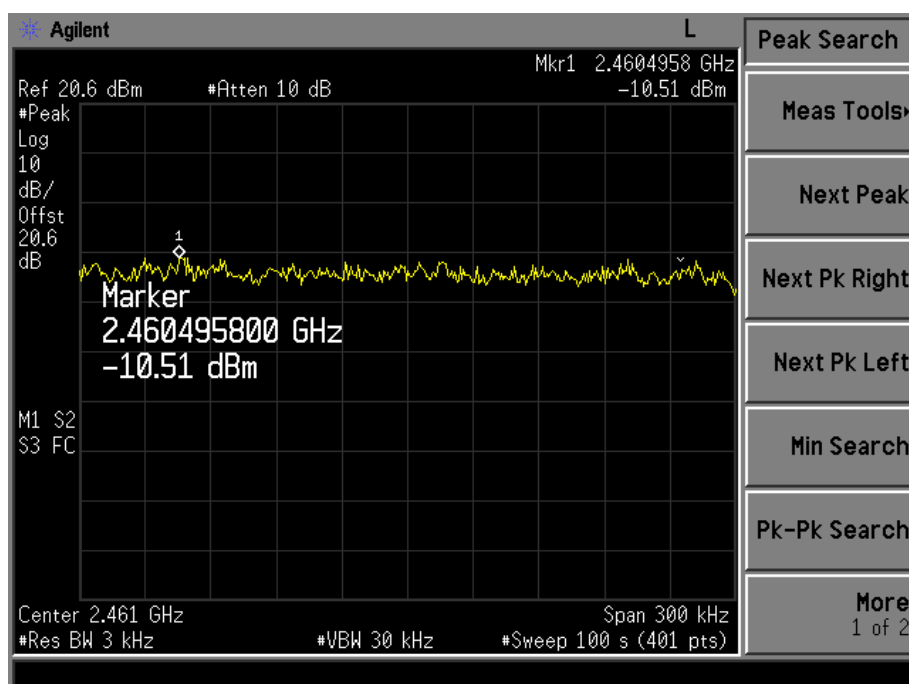
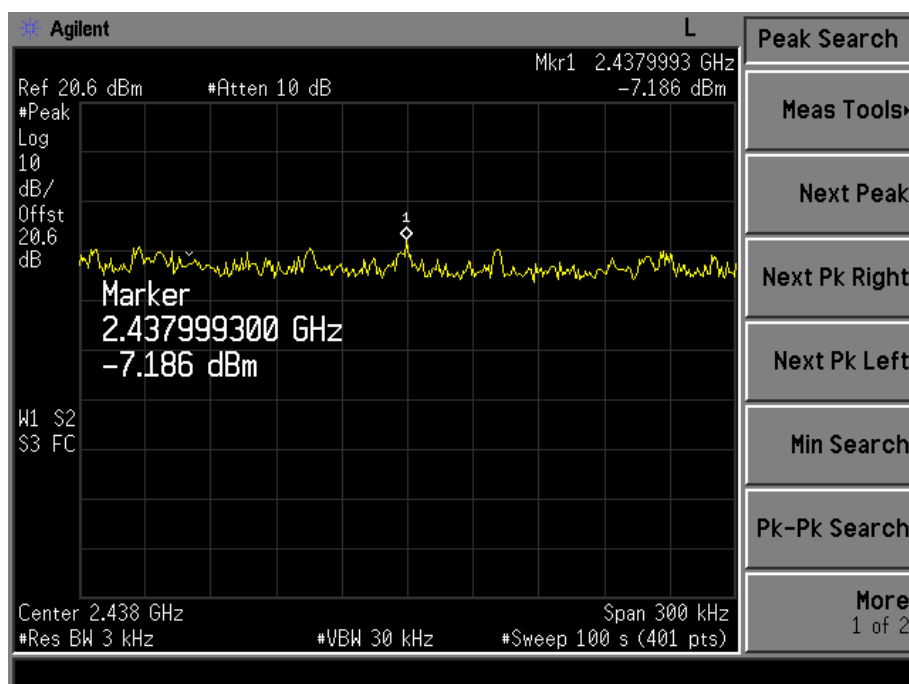
Power spectral density

IEEE 802.11b modulation (1Mbps) Test Result

Frequency	P	Result
MHz	dBm	
2412	-9.56	Pass
2437	-7.18	Pass
2462	-10.51	Pass



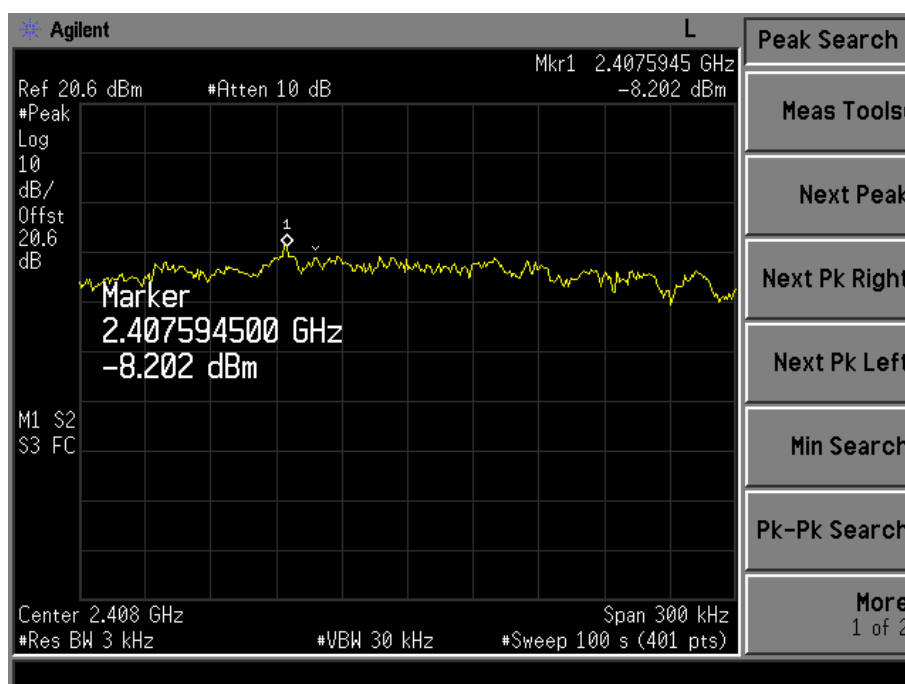
Power spectral density



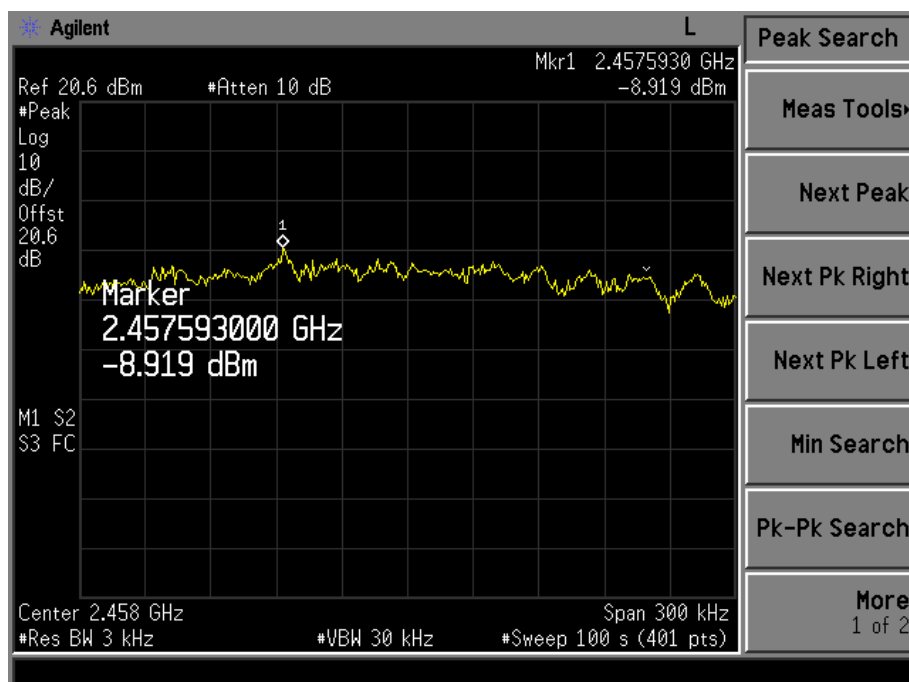
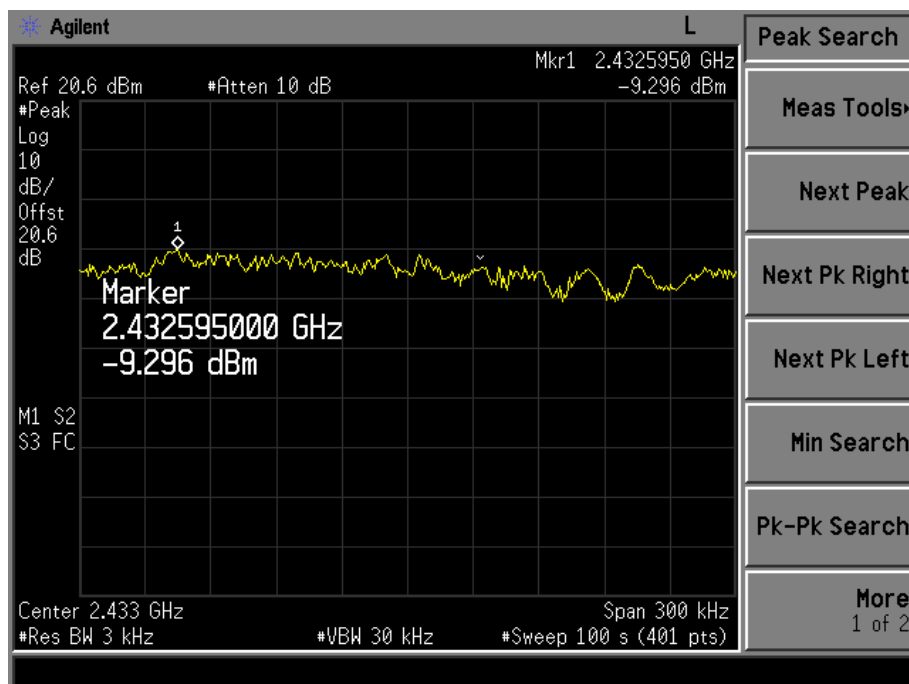
Power spectral density

IEEE 802.11n HT20 modulation (6.5Mbps) Test Result

Frequency	P	Result
MHz	dBm	
2412	-8.20	Pass
2437	-9.29	Pass
2462	-8.91	Pass



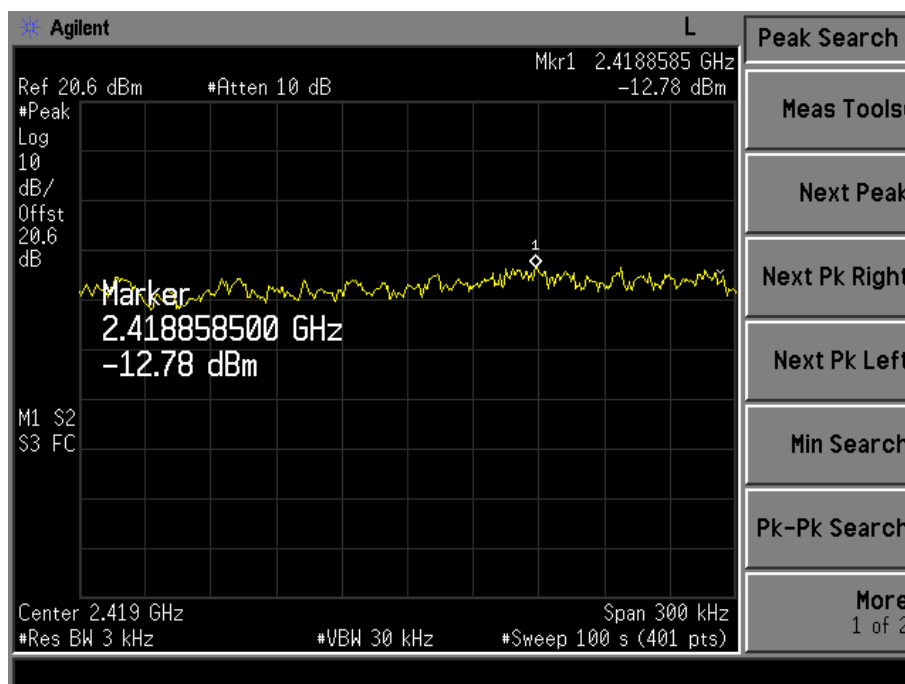
Power spectral density



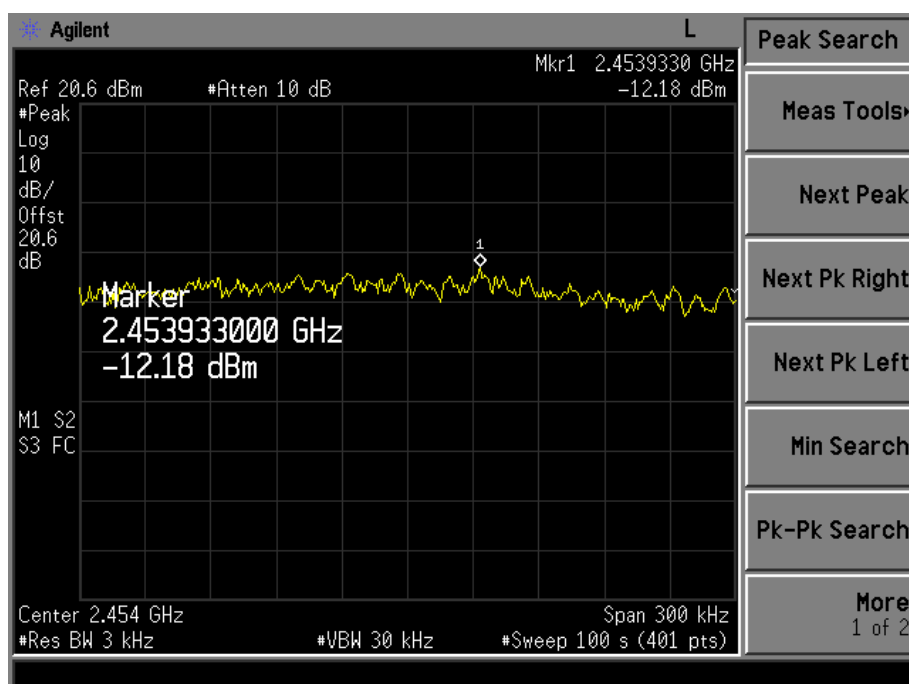
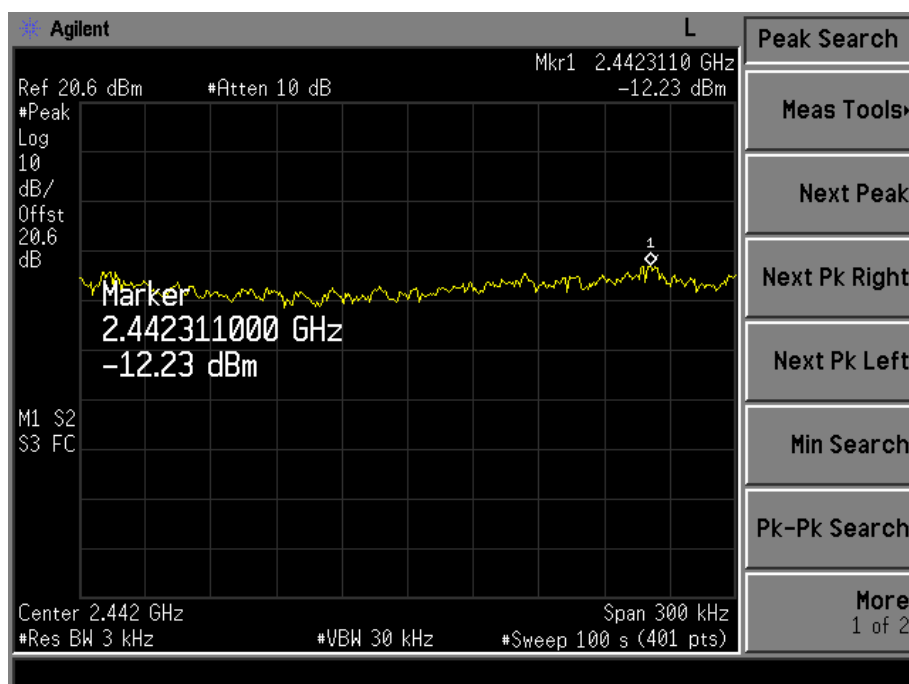
Power spectral density

IEEE 802.11n HT40 modulation (13.5Mbps) Test Result

Frequency MHz	P dBm	Result
2422	-12.78	Pass
2437	-12.23	Pass
2452	-12.18	Pass



Power spectral density





Product Service

Test Equipment

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL.DUE.DATE
Spectrum Analyzer	Agilent	E4407B	MY41440292	May 10 2010

8 System Measurement Uncertainty

For a 95% confidence level, the measurement expanded uncertainties for defined systems, in accordance with the recommendations of ISO 17025 were:

System Measurement Uncertainty

Items		Extended Uncertainty
RE	Field strength (dB μ V/m)	U=4.6dB; k=2(30MHz-1GHz)
CE	Disturbance Voltage (dB μ V)	U=3.3dB; k=2

9 Appendix A

Antennas information:

Model	Type	Gain	Length of feeder line	Manufacturer
C168-JL-901	PIFA	1 dBi	420 mm	Fuzhou Jielei Electronic Technology Co., Ltd.
C168-JL-902	PIFA	1 dBi	260 mm	Fuzhou Jielei Electronic Technology Co., Ltd.
C168-JL-913	PIFA	0.925dBi	350mm	Fuzhou Jielei Electronic Technology Co., Ltd.
C168-JL-915	PIFA	0.925dBi	398mm	Fuzhou Jielei Electronic Technology Co., Ltd.
C168-JL-916	PIFA	1 dBi	537 mm	Fuzhou Jielei Electronic Technology Co., Ltd.
C168-JL-927	PIFA	1 dBi	470mm	Fuzhou Jielei Electronic Technology Co., Ltd.
C168-JL-928	PIFA	0.925dBi	150mm	Fuzhou Jielei Electronic Technology Co., Ltd.
C168-JL-929	PIFA	1dBi	260mm	Fuzhou Jielei Electronic Technology Co., Ltd.
C168-JL-930	PIFA	1 dBi	340 mm	Fuzhou Jielei Electronic Technology Co., Ltd.
C168-JL-931	PIFA	0.975dBi	600 mm	Fuzhou Jielei Electronic Technology Co., Ltd.
C168-JL-935	PIFA	0.925dBi	100mm	Fuzhou Jielei Electronic Technology Co., Ltd.
C168-JL-960	PIFA	0.834dBi	258 mm	Fuzhou Jielei Electronic Technology Co., Ltd.
C168-JL-962	PIFA	1 dBi	400 mm	Fuzhou Jielei Electronic Technology Co., Ltd.
C168-JL-963	PIFA	1 dBi	450 mm	Fuzhou Jielei Electronic Technology Co., Ltd.
C168-JL-976	PIFA	0.834dBi	590 mm	Fuzhou Jielei Electronic Technology Co., Ltd.
C168-JL-981	PIFA	0.834dBi	470 mm	Fuzhou Jielei Electronic Technology Co., Ltd.
C168-JL-995	PIFA	0.834dBi	175 mm	Fuzhou Jielei Electronic Technology Co., Ltd.