



Product Service

RF - TEST REPORT

Report Number : **68.850.10.055.01** Date of Issue: 18 September 2010

Model : **SMB-A1002**

Product Type : Tablet PC

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 : 57

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1 Table of Contents

1	Table of Contents.....	2
2	Details about the Test Laboratory.....	3
3	Description of the Equipment Under Test.....	4
4	Summary of Test Standards.....	5
5	Summary of Test Results.....	6
6	General Remarks.....	7
7	Technical Requirements.....	9
7.1	Conducted Emission AC Power Port.....	9
7.2	Conducted Peak Power.....	13
7.3	Band edge compliance of RF emission.....	15
7.4	Spurious RF Conducted emission.....	29
7.5	Spurious radiated emissions.....	36
7.6	6dB bandwidth.....	41
7.7	Power spectral density.....	49
8	System Measurement Uncertainty.....	57

2 Details about the Test Laboratory

Details about the Test Laboratory

Company name: Jiangsu TÜV Product Service Ltd. – Shenzhen Branch
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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: Tablet PC

Model no.: SMB-A1002

Brand Name: MALATA

Options and accessories: NIL

Rating: DC 12V, 2A
Test with adaptor:
Input: AC 100-240V, 50/60Hz, 1A
Output: DC 12V, 2A

RF Transmission
Frequency: 2412-2462MHz(Wi-Fi, 802.11b/g/n(HT20))

Description of the EUT: NIL

Auxiliary Equipment Used during Test:

DESCRIPTION	MANUFACTURER	MODEL NO.(SHIELD)	S/N(LENGTH)
Laptop	Lenovo	X61	L3-L3729 08/03
Headphone	Ouyun	OH601	----
SD card	Kingston	SD4/4GBFE	----
USB flash drive	Kingston	USB/4GB	---

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	9	☒	☐	☐
15.247 (b) (1) Conducted peak output power	13	☒	☐	☐
15.247(d) Band edge compliance of RF emissions	15	☒	☐	☐
15.247(d) Spurious RF conducted emissions	29	☒	☐	☐
15.247(d) 15.209 Spurious radiated emissions	36	☒	☐	☐
15.247(a)(2) 6dB bandwidth	41	☒	☐	☐
15.247(e) Power spectral density	49	☒	☐	☐

6 General Remarks

Remarks

This submittal(s) (test report) is intended for FCC ID: SMFSMBA1002 comply with Section 15.207, 15.209, 15.247 of the FCC Part 15, Subpart C Rules.

The product SMB-A1002 alternative 3 kinds of components as listed:

Items	Model	Manufacturer
Speaker	RZD221405	Xiamen Rong Zhong Da Electronics Co., Ltd
	MA2014FBOX	Nanjing Xin Rui Sheng Electronic Co.,Ltd.
Touch Panel	3FA16-A1CC47	Sintek Photronic Corp.
	1013F04	CANDO
Battery	BT-A0B1	YUKO Energy (Zhangzhou) Co., Ltd.
	BT-A0B2	Amperex Technology Limited

All the configurations of the product were tested and only the worst test results are listed in the report.

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: 2 September 2010

Testing Start Date: 4 September 2010

Testing End Date: 11 September 2010

- Jiangsu TÜV Product Service Ltd. – Shenzhen Branch -

Reviewed by:

Prepared by:



Paul Yu
Assistant EMC Manager



Ken Li
Senior 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 is used to test the emissions from both sides of AC line

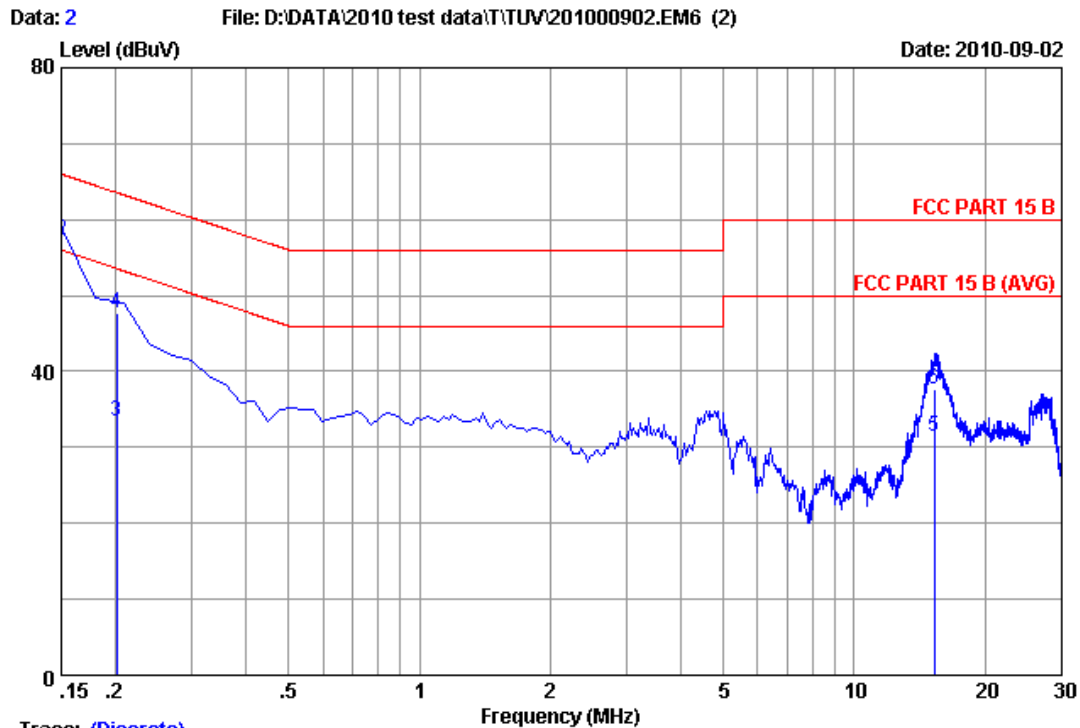
Limit

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

Remark: This test was carried out in all the test modes, here only the worst test result was shown.

Conducted Emission



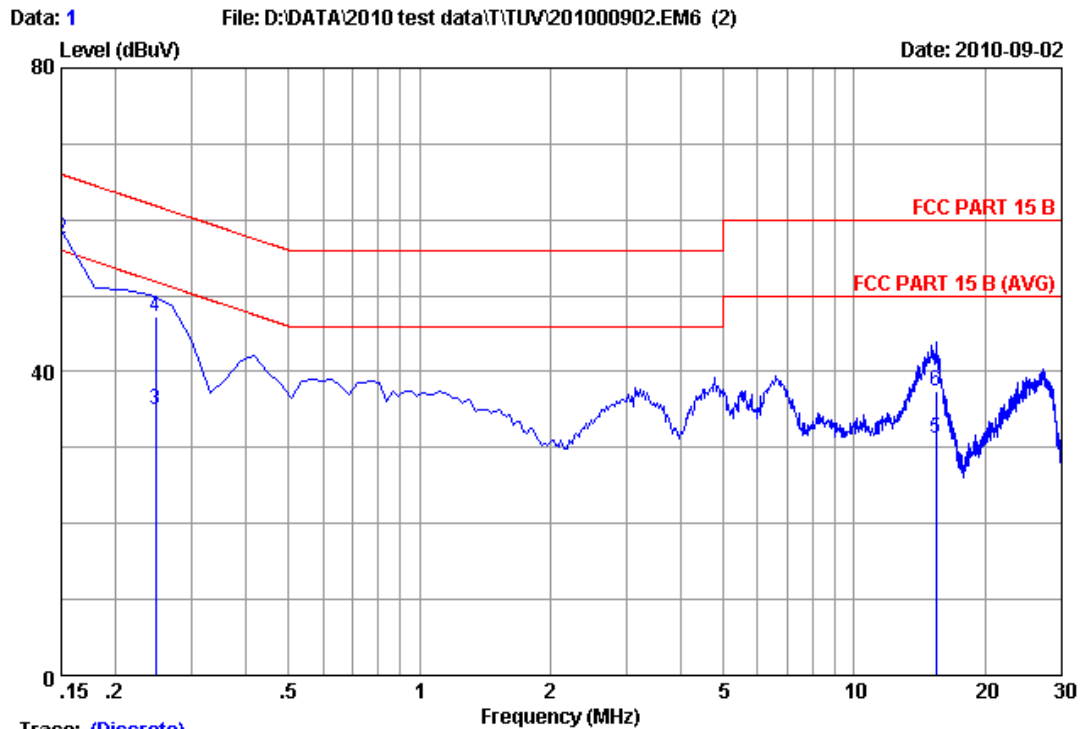
Trace: (Discrete)

Site no :1#conduction Data No :2
 Dis./Ant. :** 2010 ESH2-Z5 LINE
 Limit :FCC PART 15 B
 Env./Ins. :29.5°C/55% Engineer :Paul Tian
 EUT :SMB-A1002
 Power Rating :AC 120V/60Hz
 Test Mode :WIFI

No	Freq (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.15000	0.23	9.88	31.50	41.61	56.00	14.39	Average
2	0.15000	0.23	9.88	47.10	57.21	66.00	8.79	QP
3	0.20120	0.22	9.88	23.40	33.50	53.56	20.06	Average
4	0.20120	0.22	9.88	37.50	47.60	63.56	15.96	QP
5	15.291	0.51	10.03	20.80	31.34	50.00	18.66	Average
6	15.291	0.51	10.03	27.10	37.64	60.00	22.36	QP

Remarks: 1.Emission Level=LISN Factor+Cable Loss(Include 10dB pulse limit)
 +Reading.
 2.If the average limit is met when using a quasi-peak detector.
 the EUT shall be deemed to meet both limits and measurement
 with average detector is unnecessary.

Conducted Emission



Trace: (Discrete)

Site no :1#conduction Data No :1
 Dis./Ant. :** 2010 ESH2-Z5 NEUTRAL
 Limit :FCC PART 15 B
 Env./Ins. :29.5°C/55% Engineer :Paul Tian
 EUT :SMB-A1002
 Power Rating :AC 120V/60Hz
 Test Mode :WIFI

No	Freq (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.15000	0.21	9.88	31.20	41.29	56.00	14.71	Average
2	0.15000	0.21	9.88	47.50	57.59	66.00	8.41	QP
3	0.24720	0.21	9.88	25.00	35.09	51.85	16.76	Average
4	0.24720	0.21	9.88	37.20	47.29	61.85	14.56	QP
5	15.428	0.59	10.03	20.51	31.13	50.00	18.87	Average
6	15.428	0.59	10.03	26.91	37.53	60.00	22.47	QP

Remarks: 1.Emission Level=LISN Factor+Cable Loss(Include 10dB pulse limit)+Reading.

2.If the average limit is met when using a quasi-peak detector.
 the EUT shall be deemed to meet both limits and measurement
 with average detector is unnecessary.

Test Equipment List

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL. DUE DATE
Test Receiver	Rohde & Schwarz	ESHS10	838693/001	Dec.18, 10
L.I.S.N.#1	Rohde & Schwarz	ESH2-Z5	834066/011	Mar.30, 11
L.I.S.N.#3	Kyoritsu	KNW-242C	8-1920-1	May.08, 11
Terminator	Hubersuhner	50Ω	No. 1	May.08, 11
Terminator	Hubersuhner	50Ω	No. 2	May.08, 11
RF Cable	Fujikura	3D-2W	LISN Cable 1#	May.08, 11
Coaxial Switch	Anritsu	MP59B	M55367	May.08, 11
Passive Probe	Rohde & Schwarz	ESH2-Z3	299.7810.52	May.08, 11
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100341	May.08, 11

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

WIFI Mode IEEE 802.11b modulation (1Mbps) Test Result

Frequency MHz	Conducted Peak Output Power dBm	Result
CH1 2412MHz	23.54	Pass
CH6 2437MHz	22.76	Pass
CH11 2462MHz	22.29	Pass

WIFI Mode IEEE 802.11g modulation (6Mbps) Test Result

Frequency MHz	Conducted Peak Output Power dBm	Result
CH1 2412MHz	23.45	Pass
CH6 2437MHz	22.96	Pass
CH11 2462MHz	22.07	Pass

WIFI Mode IEEE 802.11n HT20 modulation (6.5Mbps) Test Result

Frequency MHz	Conducted Peak Output Power dBm	Result
CH1 2412MHz	23.22	Pass
CH6 2437MHz	22.73	Pass
CH11 2462MHz	22.03	Pass



Product Service

Test Equipment

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL DUE DATE
Spectrum Analyzer	Agilent	E4446A	US44300459	May 08, 2011

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

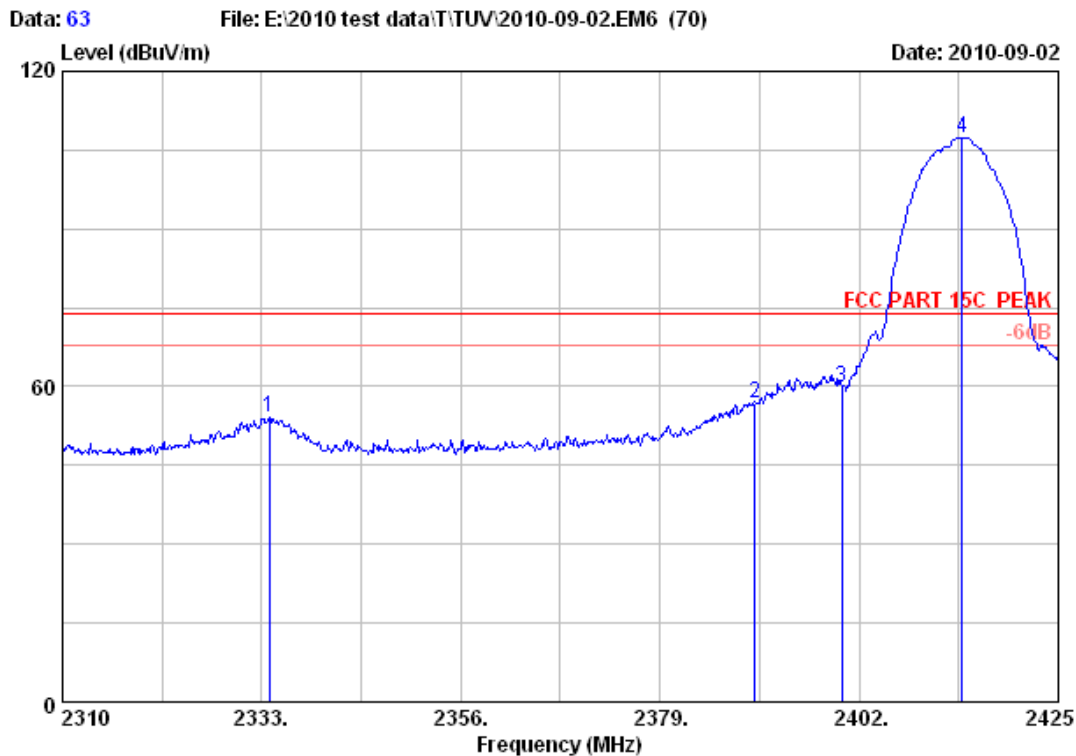
According to §15.247(d), in any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains 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

WIFI Mode IEEE 802.11b modulation (1 Mbps) Test Result

Lower Edge PK plot:



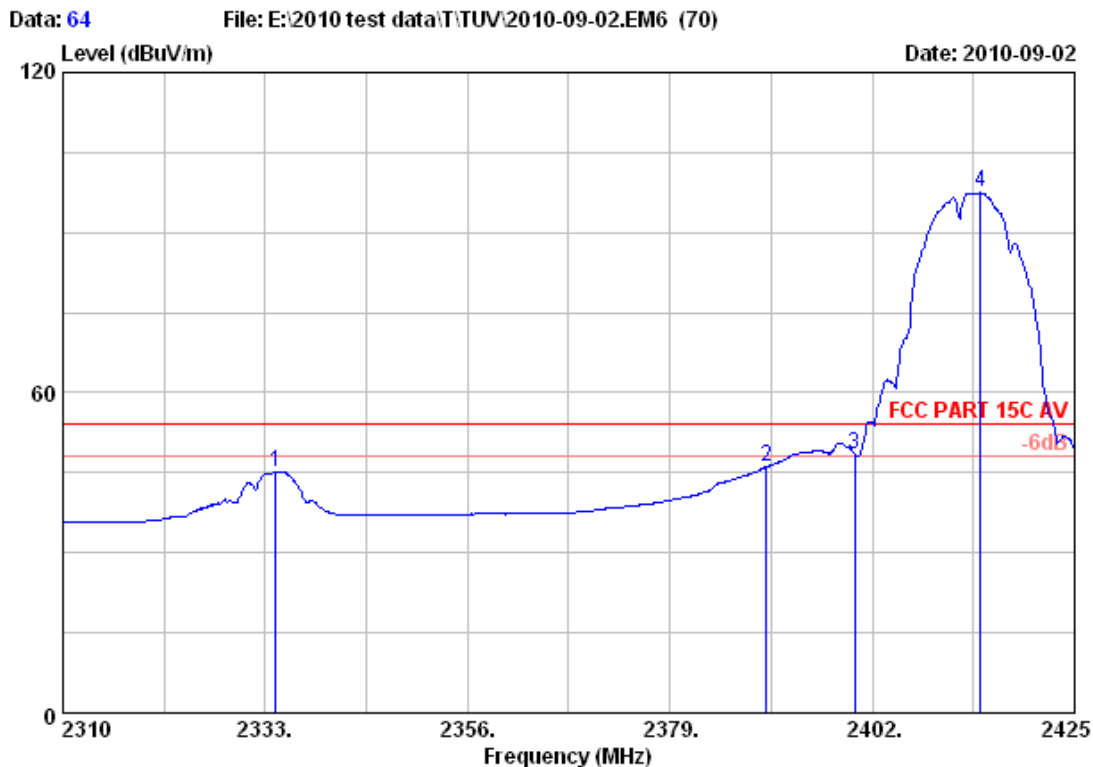
Site no. : RF Chamber Data no. : 63
 Dis. / Ant. : 3m 3115(0911) Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 23°C/54% Engineer : Paul Tian
 EUT : SMB-A1002
 Power : AC 120V/60Hz
 Test mode : 11b 2412MHz Tx
 M/N :

	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 2333.920	29.40	7.27	36.63	54.23	54.27	74.00	19.73	Peak	
2 2390.000	29.44	7.39	36.62	56.78	56.99	74.00	17.01	Peak	
3 2400.000	29.44	7.43	36.62	59.49	59.74	74.00	14.26	Peak	
4 2413.845	29.45	7.43	36.62	107.11	107.37	74.00	-33.37	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:



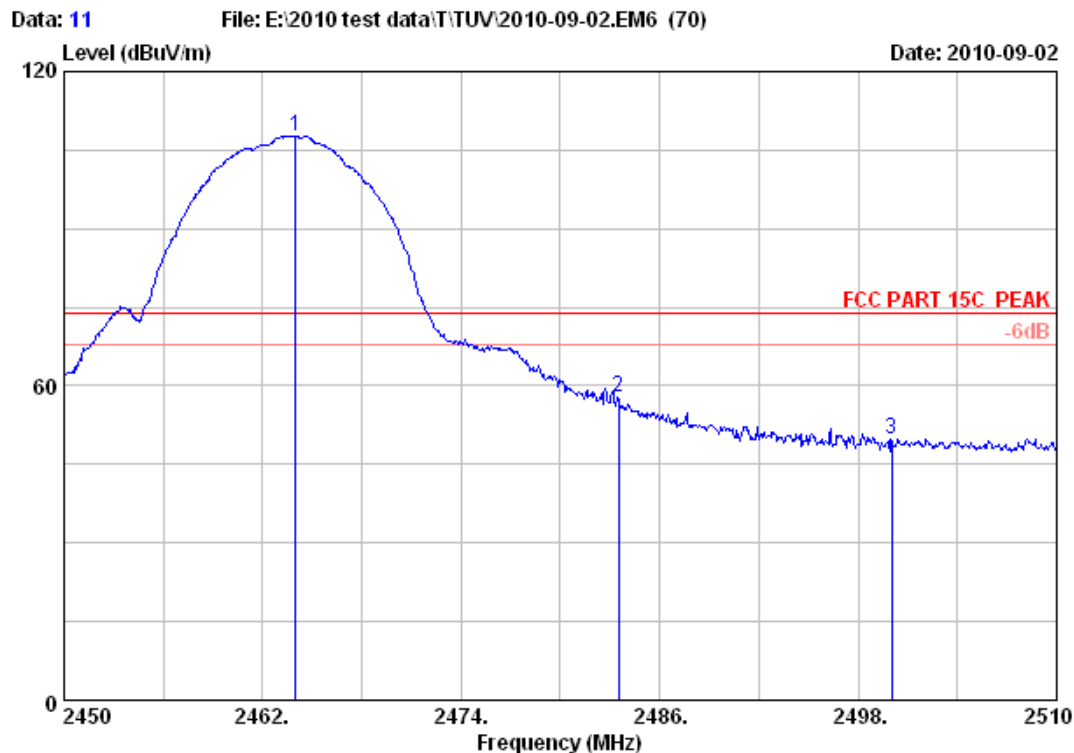
Site no. : RF Chamber Data no. : 64
Dis. / Ant. : 3m 3115(0911) Ant. pol. : HORIZONTAL
Limit : FCC PART 15C AV
Env. / Ins. : 23°C/54% Engineer : Paul Tian
EUT : SMB-A1002
Power : AC 120V/60Hz
Test mode : 11b 2412MHz Tx
M/N :

	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	2334.150	29.40	7.27	36.63	45.12	45.16	54.00	8.84	Average
2	2390.000	29.44	7.39	36.62	45.90	46.11	54.00	7.89	Average
3	2400.000	29.44	7.43	36.62	48.10	48.35	54.00	5.65	Average
4	2414.305	29.45	7.43	36.62	97.30	97.56	54.00	-43.56	Average

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:



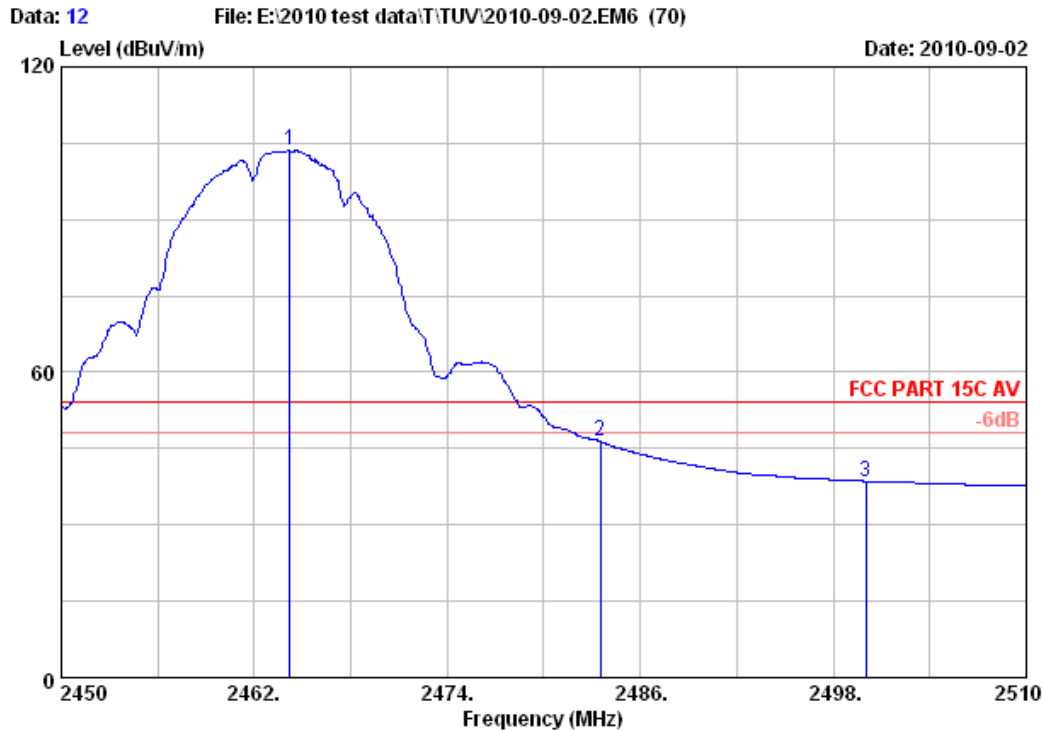
Site no. : RF Chamber Data no. : 11
Dis. / Ant. : 3m 3115(0911) Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Paul Tian
EUT : SMB-A1002
Power : AC 120V/60Hz
Test mode : 11b 2462MHz Tx
M/N :

	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 2463.980	29.48	7.54	36.61	107.28	107.69	74.00	-33.69	Peak	
2 2483.500	29.49	7.58	36.60	57.31	57.78	74.00	16.22	Peak	
3 2500.000	29.50	7.62	36.60	49.22	49.74	74.00	24.26	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. : RF Chamber Data no. : 12
 Dis. / Ant. : 3m 3115(0911) Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C AV
 Env. / Ins. : 23°C/54% Engineer : Paul Tian
 EUT : SMB-A1002
 Power : AC 120V/60Hz
 Test mode : 11b 2462MHz Tx
 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 2464.220	29.48	7.54	36.61	103.25	103.66	54.00	-49.66	Average	
2 2483.500	29.49	7.58	36.60	45.95	46.42	54.00	7.58	Average	
3 2500.000	29.50	7.62	36.60	38.02	38.54	54.00	15.46	Average	

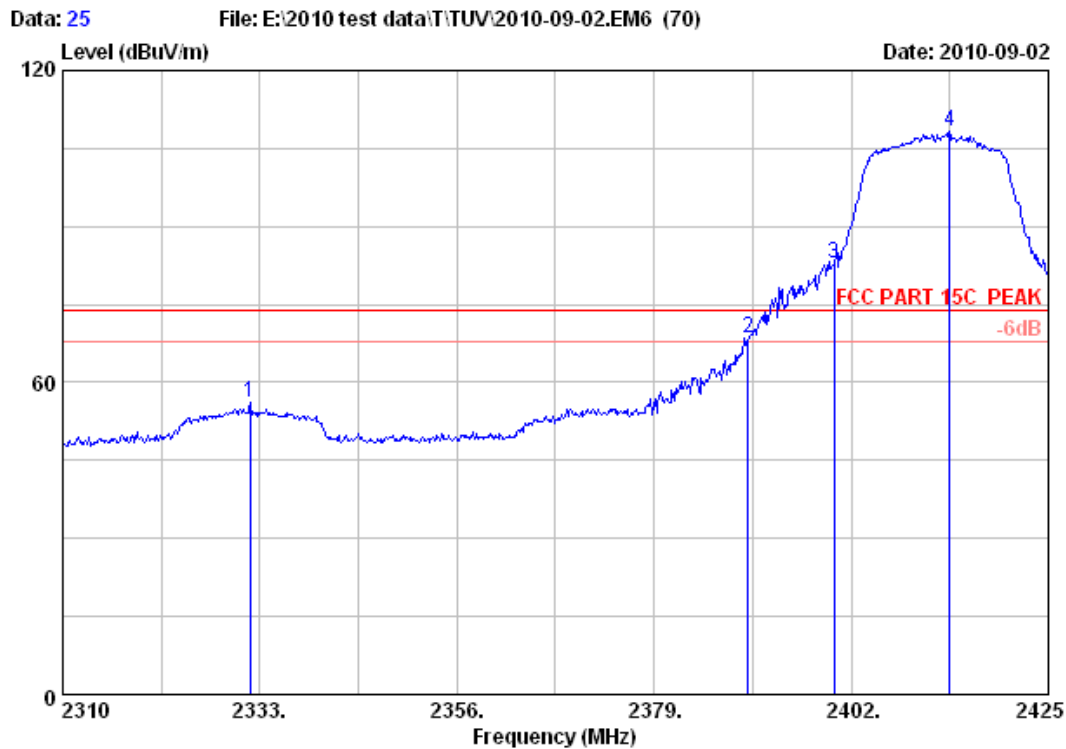
Remarks:

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

WIFI Mode IEEE 802.11g modulation (6 Mbps) Test Result

Lower Edge PK Plot:



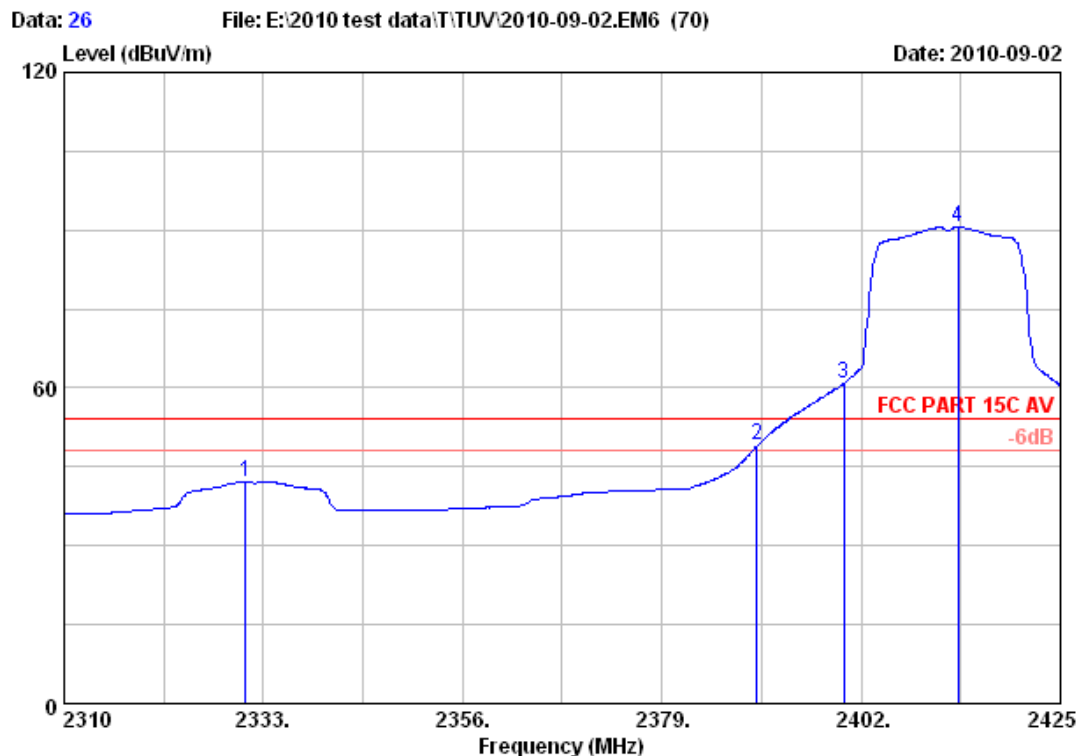
Site no.	: RF Chamber	Data no.	: 25
Dis. / Ant.	: 3m 3115(0911)	Ant. pol.	: HORIZONTAL
Limit	: FCC PART 15C PEAK		
Env. / Ins.	: 23°C/54%	Engineer	: Paul Tian
EUT	: SMB-A1002		
Power	: AC 120V/60Hz		
Test mode	: 11g 2412MHz Tx		
M/N	:		

	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 2331.850	29.40	7.27	36.63	56.06	56.10	74.00	17.90	Peak	
2 2390.000	29.44	7.39	36.62	68.21	68.42	74.00	5.58	Peak	
3 2400.000	29.44	7.43	36.62	82.59	82.84	74.00	-8.84	Peak	
4 2413.500	29.45	7.43	36.62	107.92	108.18	74.00	-34.18	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:



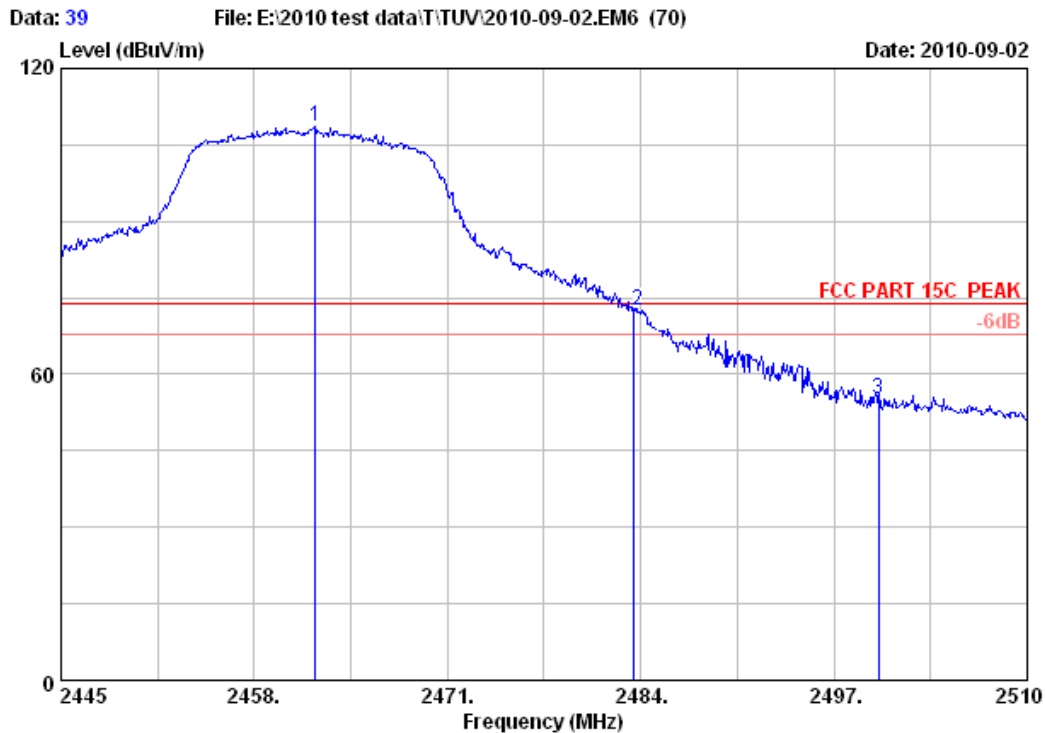
Site no.	: RF Chamber	Data no.	: 26
Dis. / Ant.	: 3m 3115(0911)	Ant. pol.	: HORIZONTAL
Limit	: FCC PART 15C AV		
Env. / Ins.	: 23°C/54%	Engineer	: Paul Tian
EUT	: SMB-A1002		
Power	: AC 120V/60Hz		
Test mode	: 11g 2412MHz Tx		
M/N	:		

	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 2330.930	29.40	7.27	36.63	42.22	42.26	54.00	11.74	Average	
2 2390.000	29.44	7.39	36.62	48.76	48.97	54.00	5.03	Average	
3 2400.000	29.44	7.43	36.62	60.73	60.98	54.00	-6.98	Average	
4 2413.155	29.45	7.43	36.62	90.33	90.59	54.00	-36.59	Average	

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:



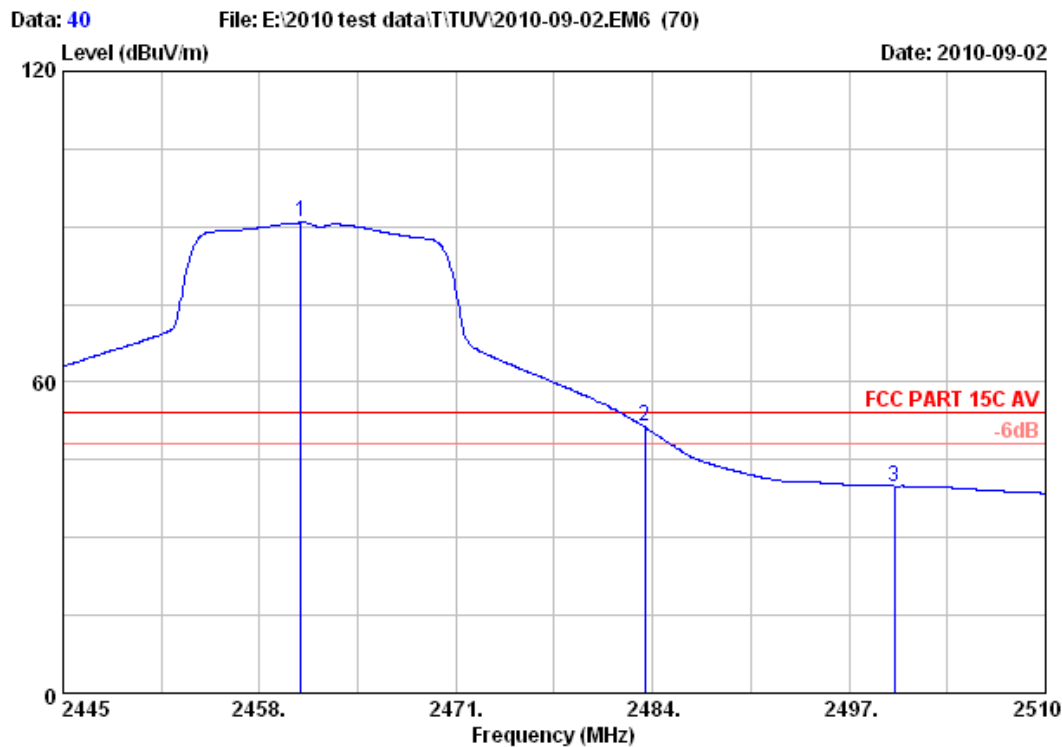
Site no. : RF Chamber Data no. : 39
Dis. / Ant. : 3m 3115(0911) Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Paul Tian
EUT : SMB-A1002
Power : AC 120V/60Hz
Test mode : 11g 2462MHz Tx
M/N :

	Ant. Freq. (MHz)	Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2462.095	29.48	7.54	36.61	108.37	108.78	74.00	-34.78	Peak
2	2483.500	29.49	7.58	36.60	72.30	72.77	74.00	1.23	Peak
3	2500.000	29.50	7.62	36.60	54.77	55.29	74.00	18.71	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.	: RF Chamber	Data no.	: 40
Dis. / Ant.	: 3m 3115(0911)	Ant. pol.	: HORIZONTAL
Limit	: FCC PART 15C AV		
Env. / Ins.	: 23°C/54%	Engineer	: Paul Tian
EUT	: SMB-A1002		
Power	: AC 120V/60Hz		
Test mode	: 11g 2462MHz Tx		
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 2460.730	29.48	7.54	36.61	90.38	90.79	54.00	-36.79	Average	
2 2483.500	29.49	7.58	36.60	50.91	51.38	54.00	2.62	Average	
3 2500.000	29.50	7.62	36.60	39.42	39.94	54.00	14.06	Average	

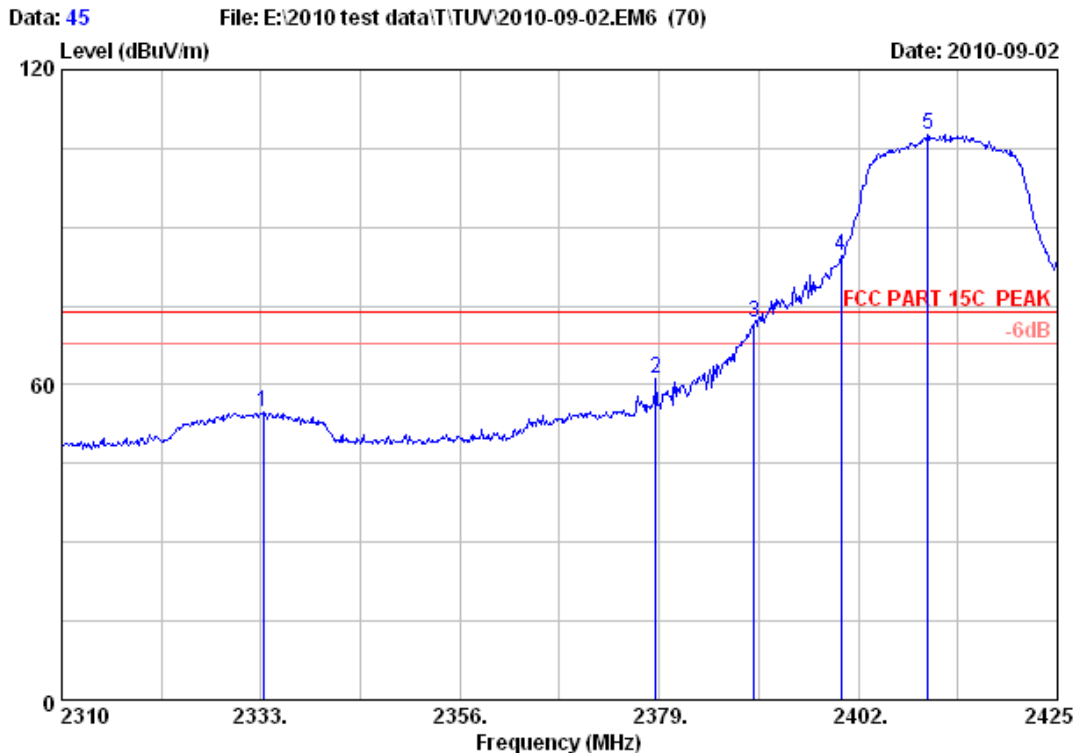
Remarks:

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

WIFI Mode IEEE 802.11n HT20 modulation (6.5Mbps) Test Result

Lower Edge PK Plot:



Site no.	: RF Chamber	Data no.	: 45
Dis. / Ant.	: 3m 3115(0911)	Ant. pol.	: HORIZONTAL
Limit	: FCC PART 15C PEAK		
Env. / Ins.	: 23°C/54%	Engineer	: Paul Tian
EUT	: SMB-A1002		
Power	: AC 120V/60Hz		
Test mode	: 11nHT20 2412MHz Tx		
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 2333.230	29.40	7.27	36.63	54.66	54.70	74.00	19.30	Peak	
2 2378.655	29.43	7.35	36.62	61.06	61.22	74.00	12.78	Peak	
3 2390.000	29.44	7.39	36.62	71.68	71.89	74.00	2.11	Peak	
4 2400.000	29.44	7.43	36.62	84.28	84.53	74.00	-10.53	Peak	
5 2410.050	29.45	7.43	36.62	107.44	107.70	74.00	-33.70	Peak	

Remarks:

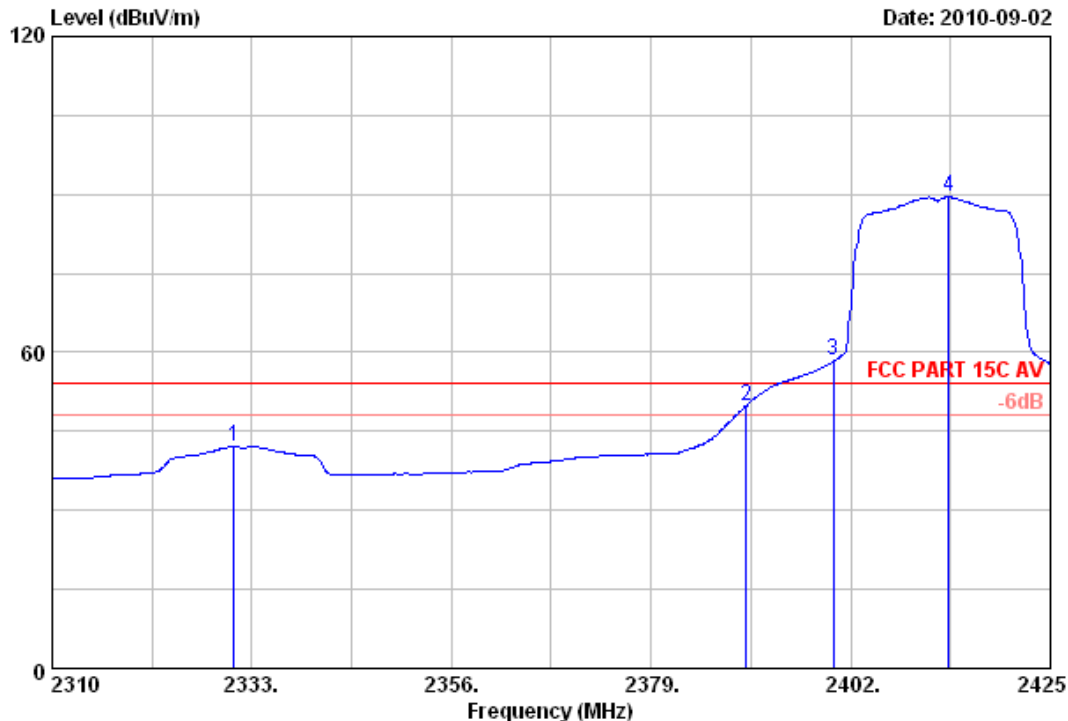
1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

Lower Edge AV Plot:

Data: 46

File: E:\2010 test data\T\TUV\2010-09-02.EM6 (70)

Date: 2010-09-02



Site no.	: RF Chamber	Data no.	: 46
Dis. / Ant.	: 3m 3115(0911)	Ant. pol.	: HORIZONTAL
Limit	: FCC PART 15C AV		
Env. / Ins.	: 23°C/54%	Engineer	: Paul Tian
EUT	: SMB-A1002		
Power	: AC 120V/60Hz		
Test mode	: 11nHT20 2412MHz Tx		
M/N	:		

	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	2330.930	29.40	7.27	36.63	42.09	42.13	54.00	11.87	Average
2	2390.000	29.44	7.39	36.62	49.75	49.96	54.00	4.04	Average
3	2400.000	29.44	7.43	36.62	58.08	58.33	54.00	-4.33	Average
4	2413.270	29.45	7.43	36.62	89.21	89.47	54.00	-35.47	Average

Remarks:

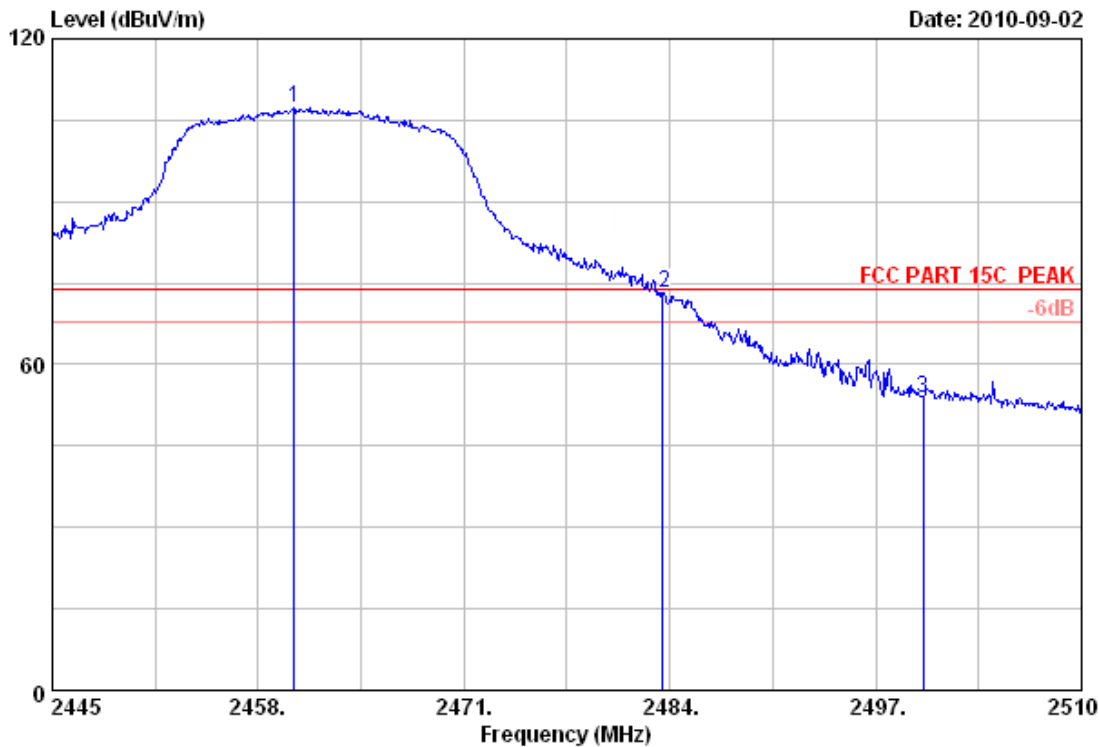
1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

Upper Edge PK Plot:

Data: 61

File: E:\2010 test data\TUV\2010-09-02.EM6 (70)

Date: 2010-09-02



Site no.	: RF Chamber	Data no.	: 61
Dis. / Ant.	: 3m 3115(0911)	Ant. pol.	: HORIZONTAL
Limit	: FCC PART 15C PEAK		
Env. / Ins.	: 23°C/54%	Engineer	: Paul Tian
EUT	: SMB-A1002		
Power	: AC 120V/60Hz		
Test mode	: 11nHT20 2462MHz Tx		
M/N	:		

	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	2460.275	29.48	7.54	36.61	106.94	107.35	74.00	-33.35	Peak
2	2483.500	29.49	7.58	36.60	71.97	72.44	74.00	1.56	Peak
3	2500.000	29.50	7.62	36.60	53.44	53.96	74.00	20.04	Peak

Remarks:

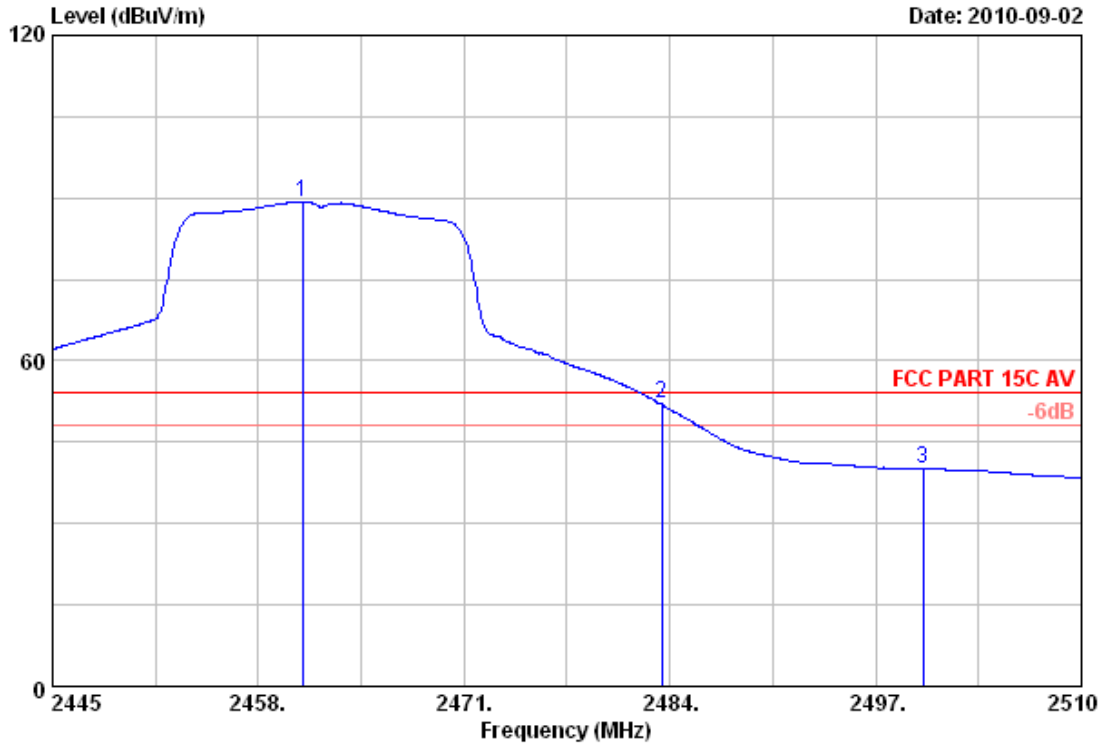
1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

Upper Edge AV Plot:

Data: 62

File: E:\2010 test data\T\TUV\2010-09-02.EM6 (70)

Date: 2010-09-02



Site no.	: RF Chamber	Data no.	: 62
Dis. / Ant.	: 3m 3115(0911)	Ant. pol.	: HORIZONTAL
Limit	: FCC PART 15C AV		
Env. / Ins.	: 23°C/54%	Engineer	: Paul Tian
EUT	: SMB-A1002		
Power	: AC 120V/60Hz		
Test mode	: 11nHT20 2462MHz Tx		
M/N	:		

	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	2460.795	29.48	7.54	36.61	88.96	89.37	54.00	-35.37	Average
2	2483.500	29.49	7.58	36.60	51.57	52.04	54.00	1.96	Average
3	2500.000	29.50	7.62	36.60	39.63	40.15	54.00	13.85	Average

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.

Test Equipment List

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL DUE DATE
Spectrum	Agilent	E4446A	US44300459	May 08, 2011
Amp	HP	8449B	3008A02495	May 08, 2011
Antenna	EMCO	3115	9607-4877	May 17, 2011
Bilog Antenna	Schaffner	CBL6111C	2598	Dec.14, 2010
HF Cable	Hubersuhne	Sucoflex104	---	May 08, 2011

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.

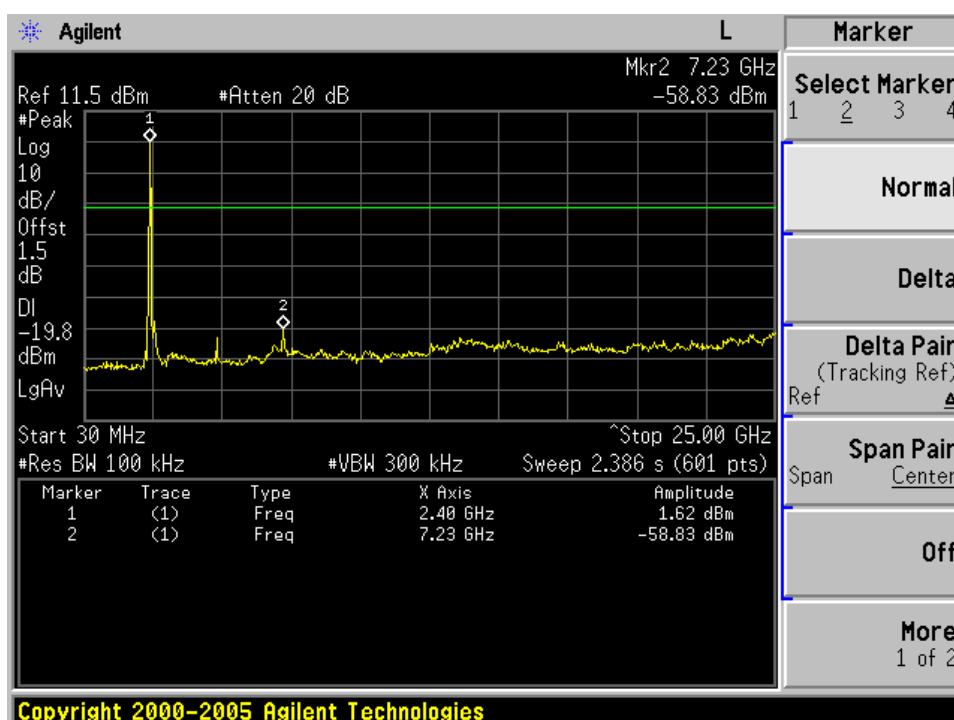
Limit

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

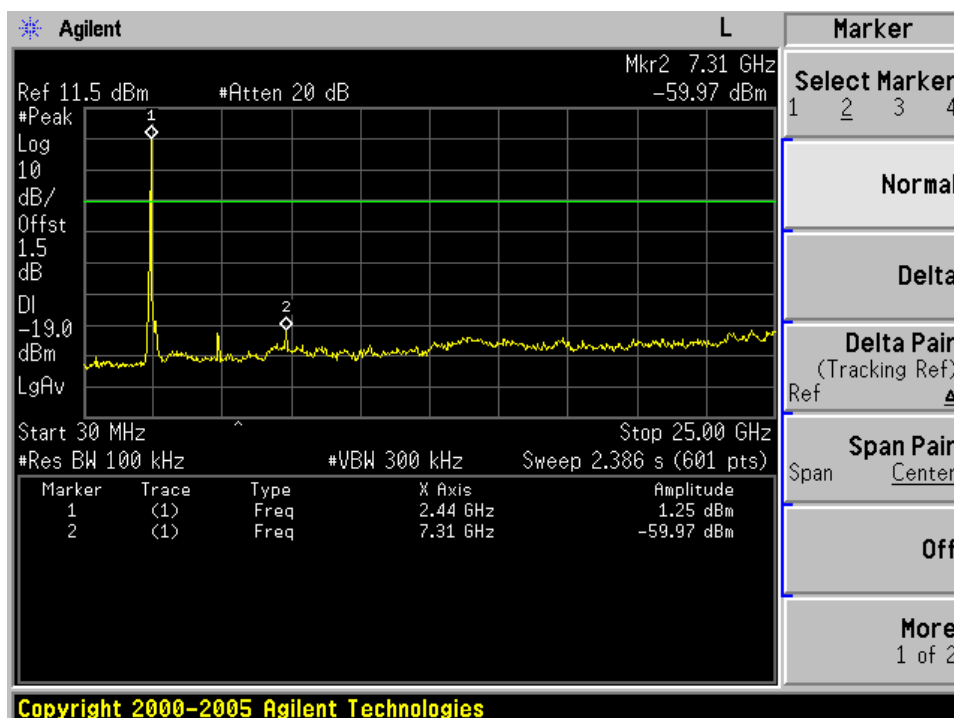
Spurious RF conducted emissions

WIFI Mode IEEE 802.11b modulation (1 Mbps) Test Result

2412MHz

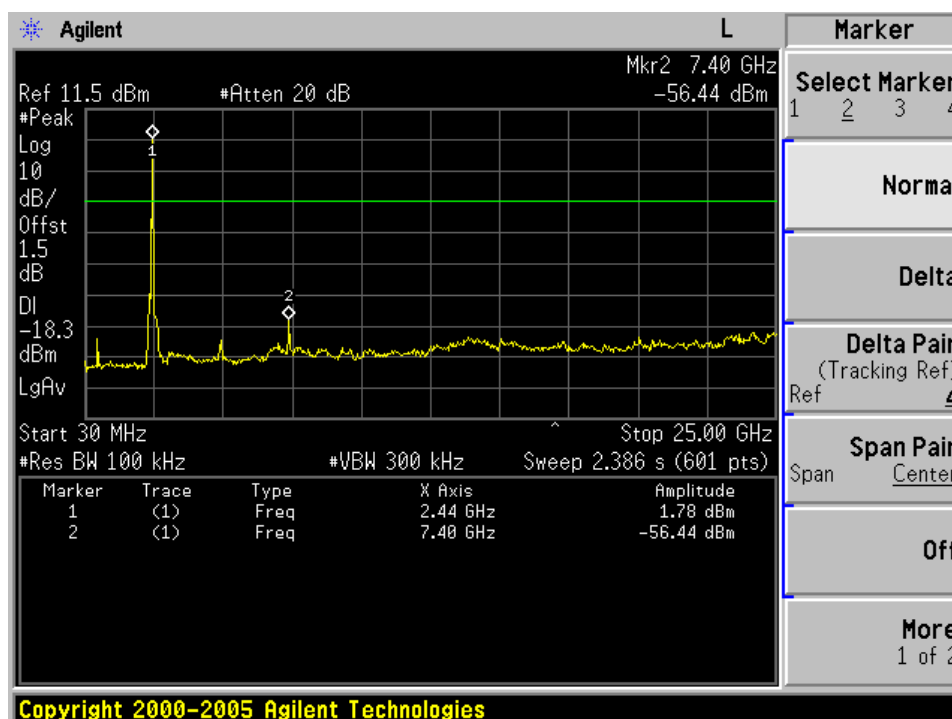


2437MHz



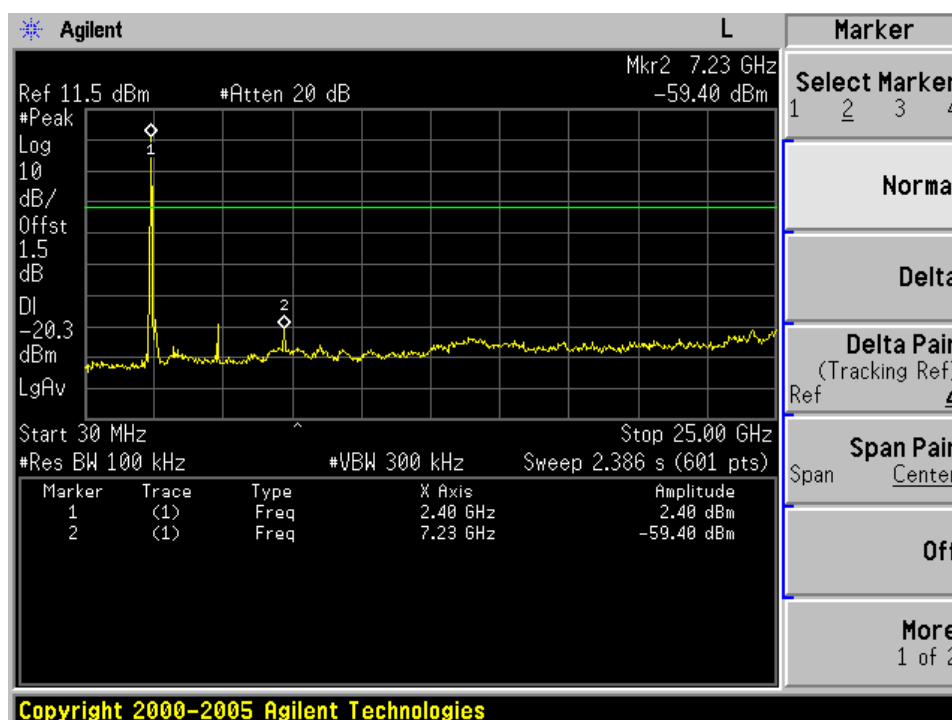
Spurious RF conducted emissions

2462MHz



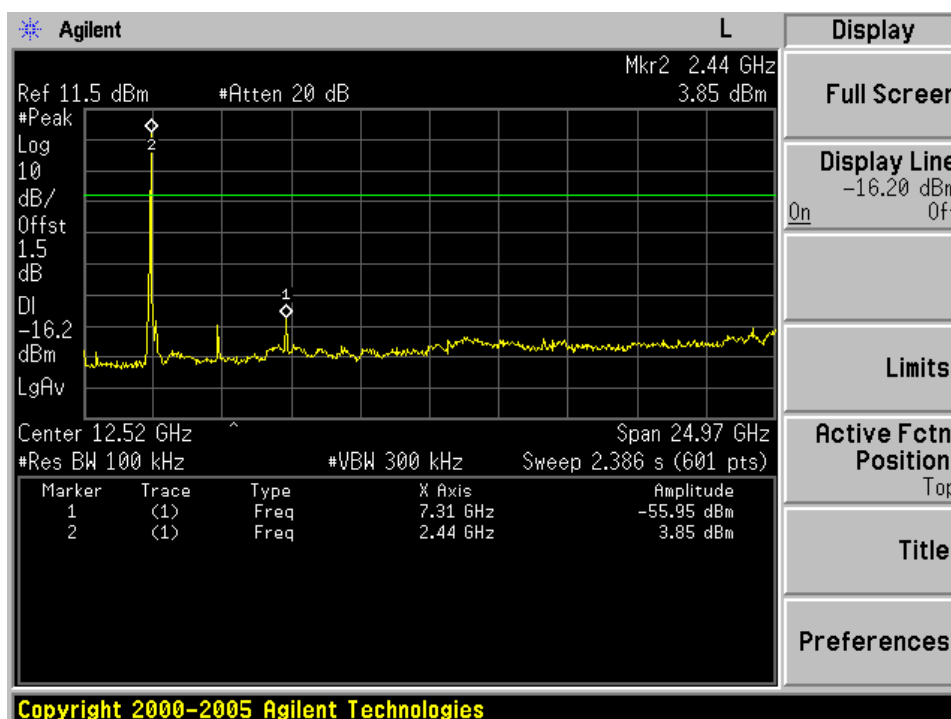
WIFI Mode IEEE 802.11g modulation (6 Mbps) Test Result

2412MHz

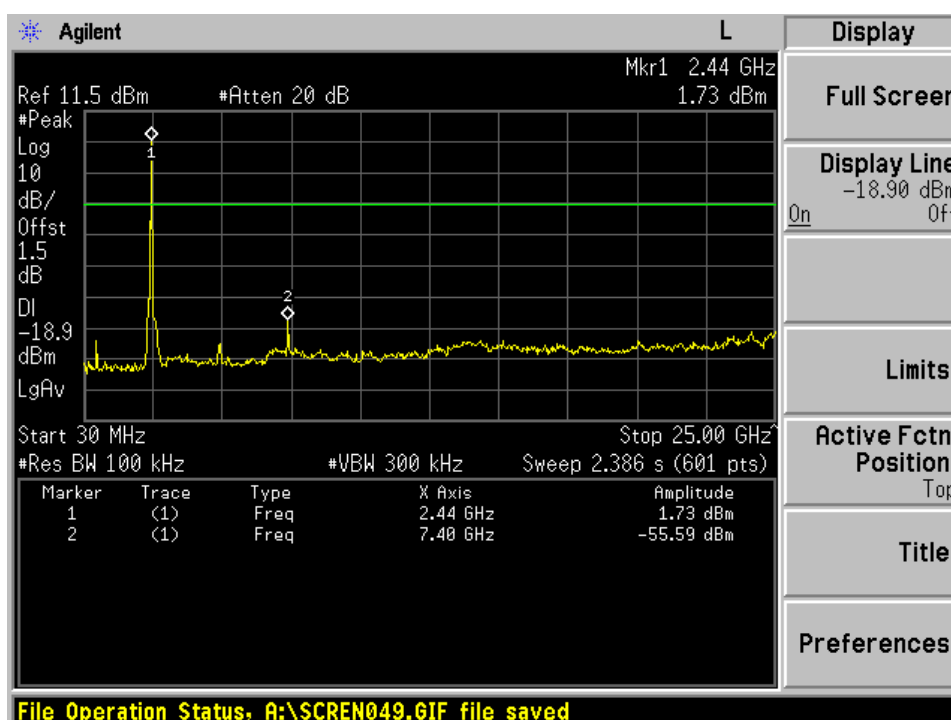


Spurious RF conducted emissions

2437MHz

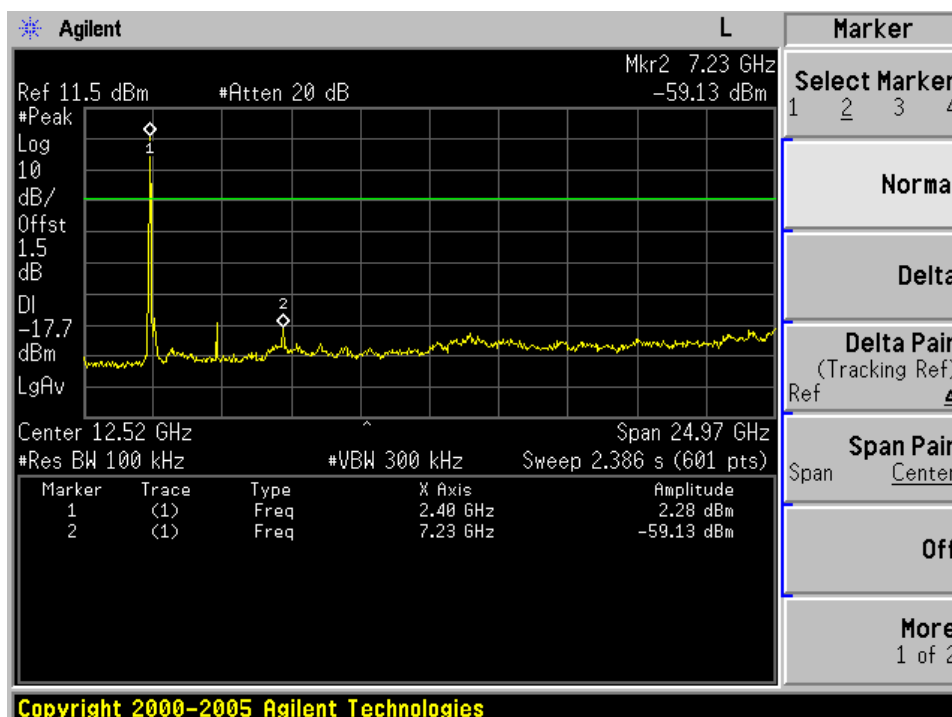


2462MHz

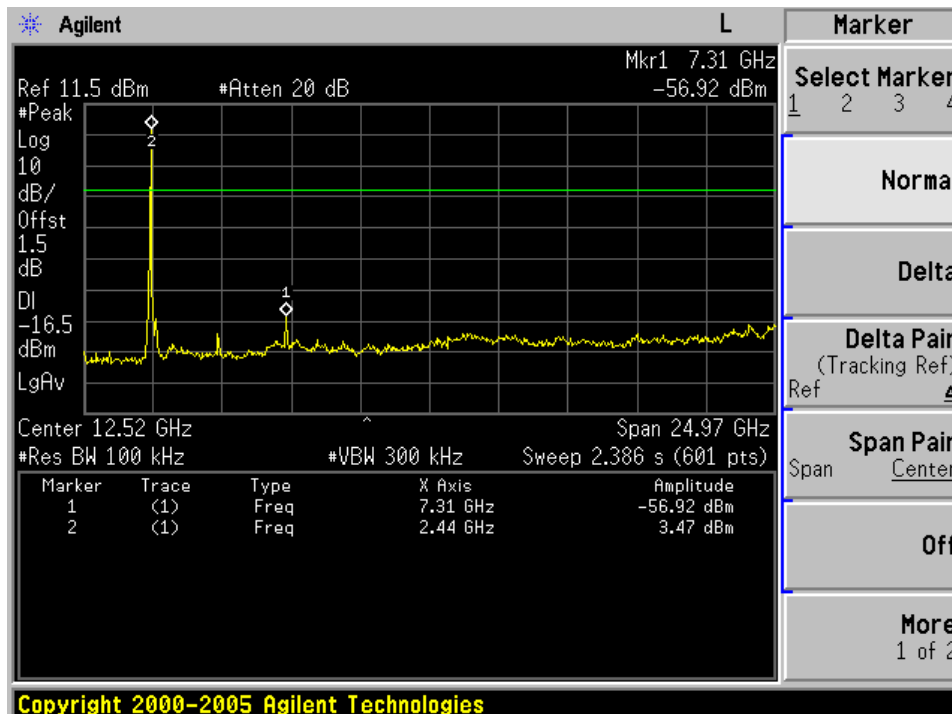


Spurious RF conducted emissions

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

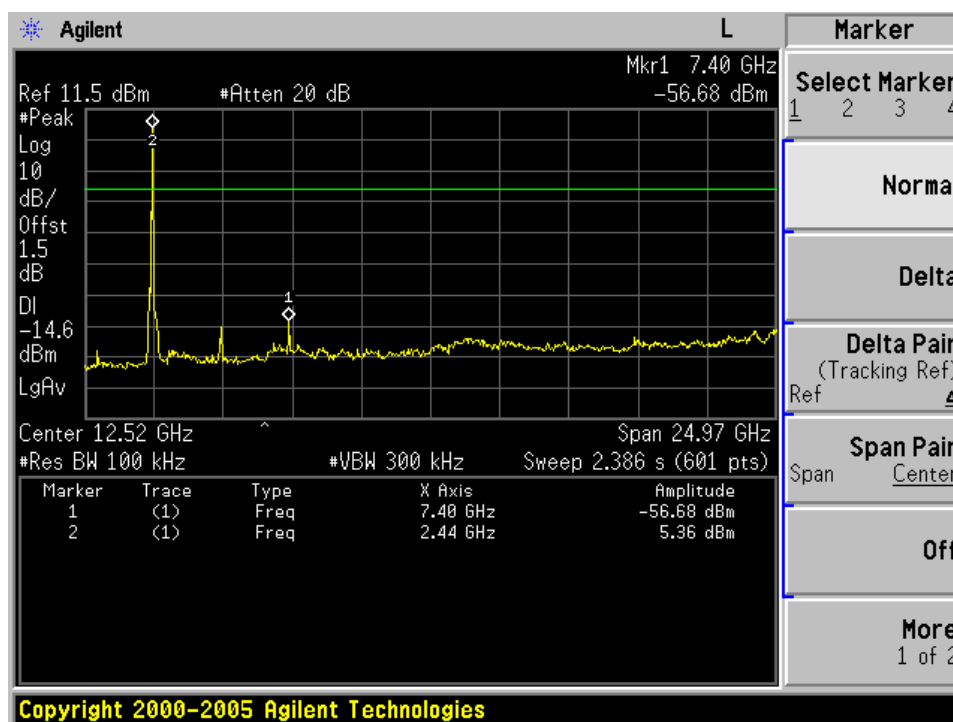


2437MHz



Spurious RF conducted emissions

2462MHz





Product Service

Test Equipment List

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL.DUE.DATE
Spectrum Analyzer	Agilent	E4446A	US44300459	May 08, 2011

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 dB μ V/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

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

Frequency	Antenna Factor	Cable Loss	Amp. Factor	Reading	Emission Level	Polarization	Limit	Detector	Result
MHz	dB/m	dB	dB	dBuV	dBuV/m		dBμV/m		
219.150	10.20	2.07	27.49	42.95	27.73	Horizontal	46.00	QP	Pass
303.540	13.69	2.61	27.16	41.64	30.78	Horizontal	46.00	QP	Pass
4824.000	34.32	10.64	35.08	45.39	55.27	Horizontal	74	PK	Pass
4824.000	34.32	10.64	35.08	36.69	46.57	Horizontal	54	AV	Pass
7236.000	-	-	-	-	-	-	-	-	-
7236.000	-	-	-	-	-	-	-	-	-

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

Frequency	Antenna Factor	Cable Loss	Amp. Factor	Reading	Emission Level	Polarization	Limit	Detector	Result
MHz	dB/m	dB	dB	dBuV	dBuV/m		dBμV/m		
4874.000	34.41	10.69	35.03	54.38	64.45	Horizontal	74	PK	Pass
4874.000	34.41	10.69	35.03	31.57	41.64	Horizontal	54	AV	Pass
7311.000	-	-	-	-	-	-	-	-	-
7311.000	-	-	-	-	-	-	-	-	-

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

Frequency	Antenna Factor	Cable Loss	Amp. Factor	Reading	Emission Level	Polarization	Limit	Detector	Result
MHz	dB/m	dB	dB	dBuV	dBuV/m		dBμV/m		
4924.000	34.49	10.76	34.98	44.11	54.38	Horizontal	74	PK	Pass
4924.000	34.49	10.76	34.98	30.28	40.55	Horizontal	54	AV	Pass
7386.000	-	-	-	-	-	-	-	-	-
7386.000	-	-	-	-	-	-	-	-	-

Remark:

- (1) Emission Level= Antenna Factor +Cable Loss - Amp. 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****WIFI Mode IEEE 802.11g modulation (6 Mbps) CH1 2412MHz Test Result**

Frequency	Antenna Factor	Cable Loss	Amp. Factor	Reading	Emission Level	Polarization	Limit	Detector	Result
MHz	dB/m	dB	dB	dBuV	dBuV/m		dBμV/m		
229.820	11.00	2.18	27.44	43.22	28.96	Horizontal	46.00	QP	Pass
332.640	14.61	2.68	27.34	39.72	29.67	Horizontal	46.00	QP	Pass
4824.000	34.32	10.64	35.08	43.88	53.76	Horizontal	74	PK	Pass
4824.000	34.32	10.64	35.08	30.53	40.41	Horizontal	54	AV	Pass
7236.000	-	-	-	-	-	-	-	-	-
7236.000	-	-	-	-	-	-	-	-	-

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

Frequency	Antenna Factor	Cable Loss	Amp. Factor	Reading	Emission Level	Polarization	Limit	Detector	Result
MHz	dB/m	dB	dB	dBuV	dBuV/m		dBμV/m		
4874.000	34.41	10.69	35.03	45.20	55.27	Horizontal	74	PK	Pass
4874.000	34.41	10.69	35.03	30.53	40.60	Horizontal	54	AV	Pass
7311.000	-	-	-	-	-	-	-	-	-
7311.000	-	-	-	-	-	-	-	-	-

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

Frequency	Antenna Factor	Cable Loss	Amp. Factor	Reading	Emission Level	Polarization	Limit	Detector	Result
MHz	dB/m	dB	dB	dBuV	dBuV/m		dBμV/m		
4924.000	34.49	10.76	34.98	46.25	56.52	Horizontal	74	PK	Pass
4924.000	34.49	10.76	34.98	30.37	40.64	Horizontal	54	AV	Pass
7386.000	-	-	-	-	-	-	-	-	-
7386.000	-	-	-	-	-	-	-	-	-

Remark:

- (1) Emission Level= Antenna Factor +Cable Loss - Amp. 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

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

Frequency	Antenna Factor	Cable Loss	Amp. Factor	Reading	Emission Level	Polarization	Limit	Detector	Result
MHz	dB/m	dB	dB	dBuV	dBuV/m		dBμV/m		
204.600	10.20	2.07	27.55	41.81	26.53	Horizontal	46.00	QP	Pass
474.260	17.83	3.21	28.05	37.37	30.36	Horizontal	46.00	QP	Pass
4824.000	34.32	10.64	35.08	44.27	54.15	Horizontal	74	PK	Pass
4824.000	34.32	10.64	35.08	30.58	40.46	Horizontal	54	AV	Pass
7236.000	-	-	-	-	-	-	-	-	-
7236.000	-	-	-	-	-	-	-	-	-

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

Frequency	Antenna Factor	Cable Loss	Amp. Factor	Reading	Emission Level	Polarization	Limit	Detector	Result
MHz	dB/m	dB	dB	dBuV	dBuV/m		dBμV/m		
4874.000	34.41	10.69	35.03	46.87	56.94	Horizontal	74	PK	Pass
4874.000	34.41	10.69	35.03	30.87	40.94	Horizontal	54	AV	Pass
7311.000	-	-	-	-	-	-	-	-	-
7311.000	-	-	-	-	-	-	-	-	-

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

Frequency	Antenna Factor	Cable Loss	Amp. Factor	Reading	Emission Level	Polarization	Limit	Detector	Result
MHz	dB/m	dB	dB	dBuV	dBuV/m		dBμV/m		
4924.000	34.49	10.76	34.98	46.81	57.08	Horizontal	74	PK	Pass
4924.000	34.49	10.76	34.98	30.85	41.12	Horizontal	54	AV	Pass
7386.000	-	-	-	-	-	-	-	-	-
7386.000	-	-	-	-	-	-	-	-	-

Remark:

- (1) Emission Level= Antenna Factor +Cable Loss - Amp. 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
Spectrum	Agilent	E4446A	US44300459	May 08, 2011
Amp	HP	8449B	3008A02495	May 08, 2011
Antenna	EMCO	3115	9607-4877	May 17, 2011
Bilog Antenna	Schaffner	CBL6111C	2598	Dec.14, 2010
HF Cable	Hubersuhne	Sucoflex104	---	May 08, 2011

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

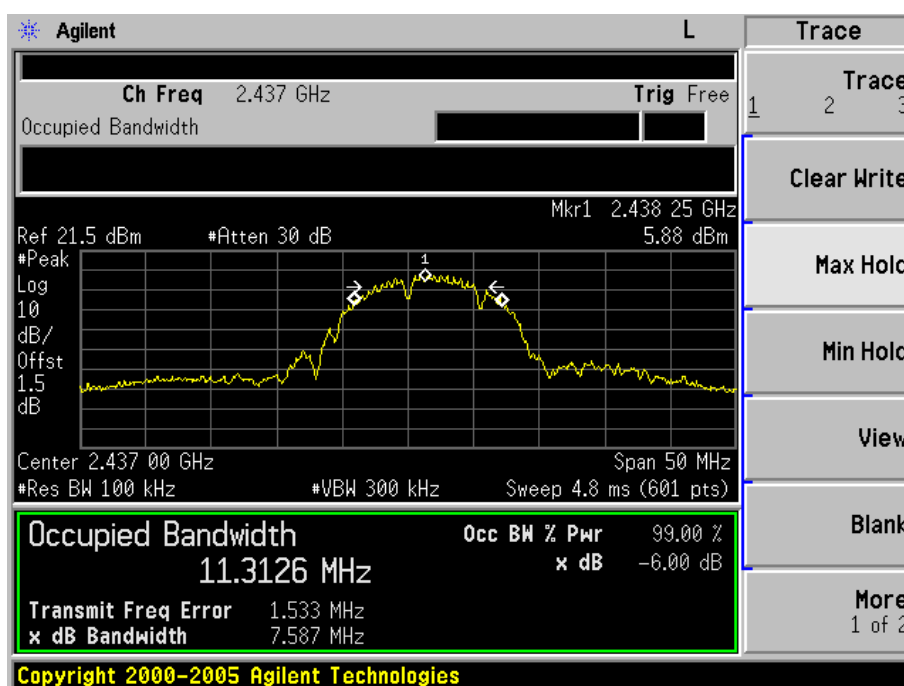
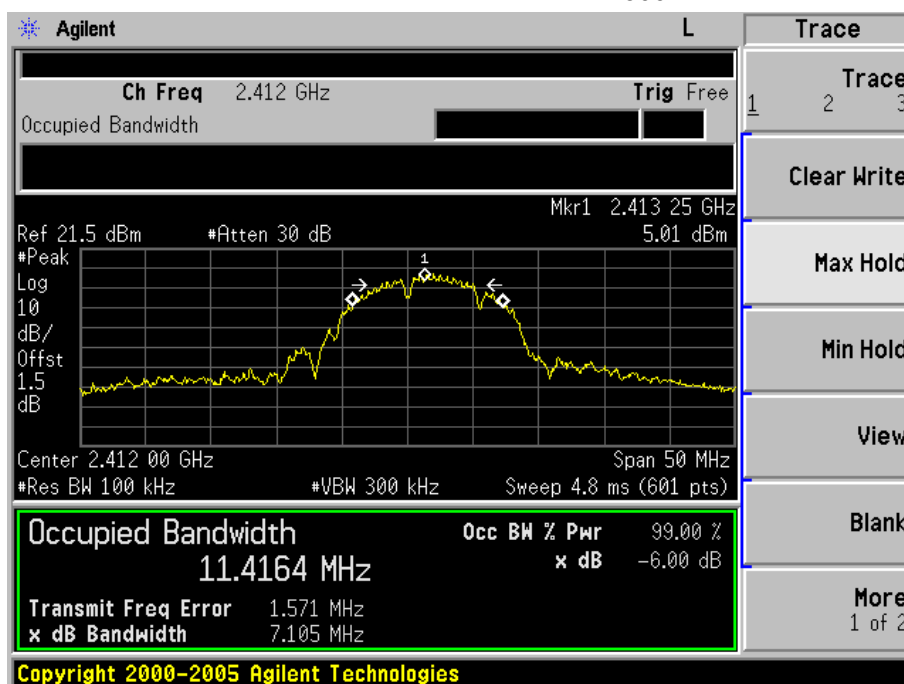
Limit [kHz]

≥ 500

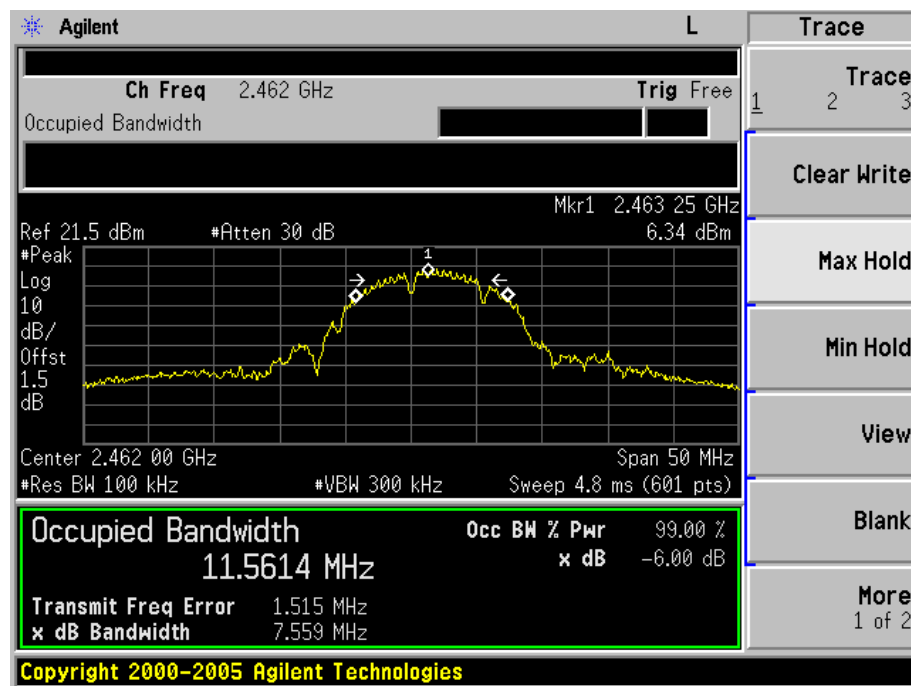
6 dB bandwidth

WIFI Mode IEEE 802.11b modulation (1Mbps) Test Result

Frequency MHz	Bandwidth kHz	Limit kHz	Result
2412	11416	≥ 500	Pass
2437	11312	≥ 500	Pass
2462	11561	≥ 500	Pass



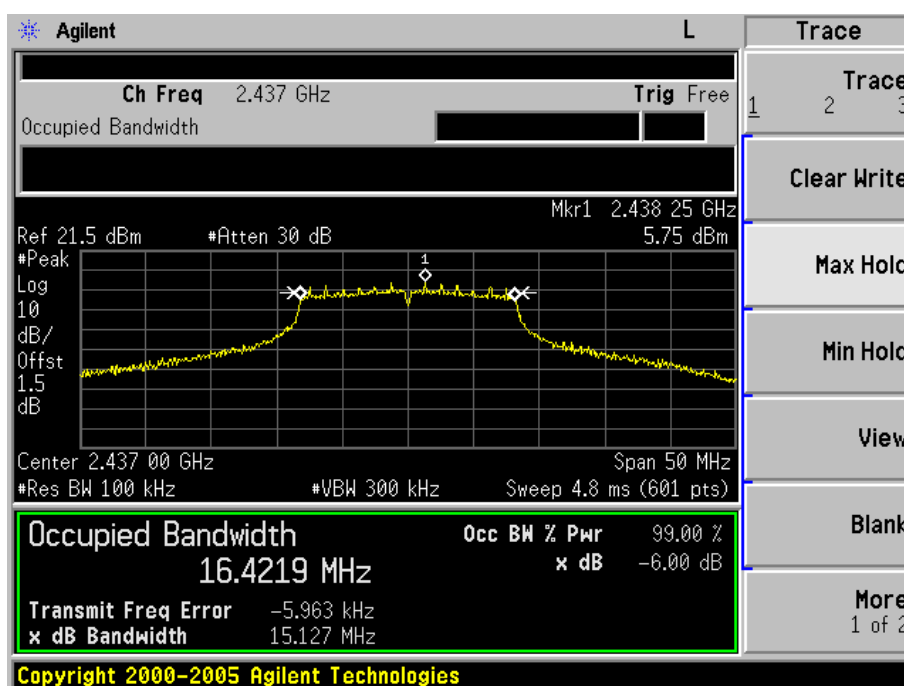
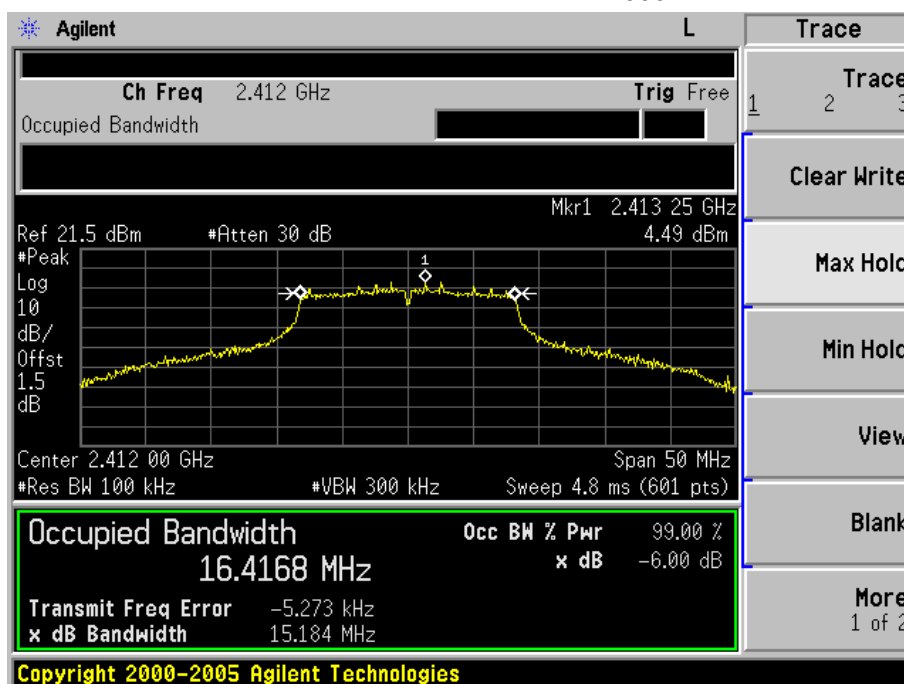
6 dB bandwidth



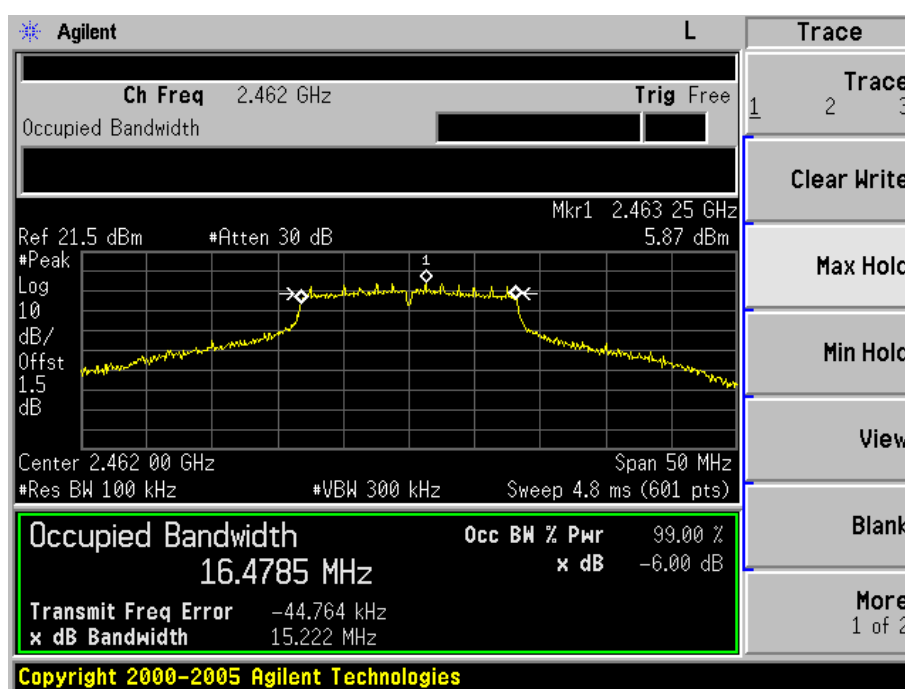
6 dB bandwidth

WIFI Mode IEEE 802.11g modulation (6Mbps) Test Result

Frequency MHz	Bandwidth kHz	Limit kHz	Result
2412	16416	≥ 500	Pass
2437	16421	≥ 500	Pass
2462	16478	≥ 500	Pass



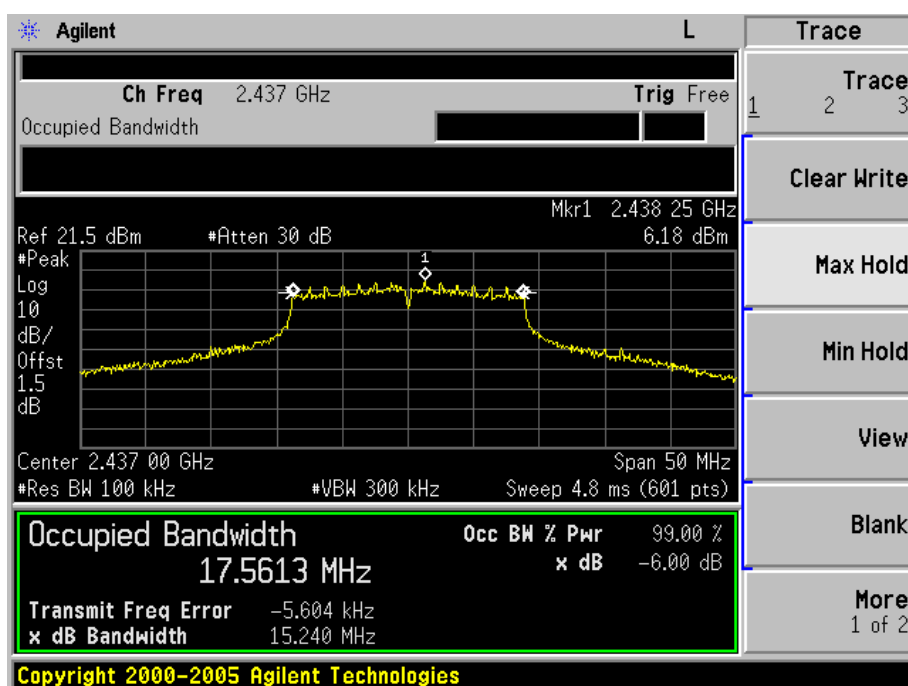
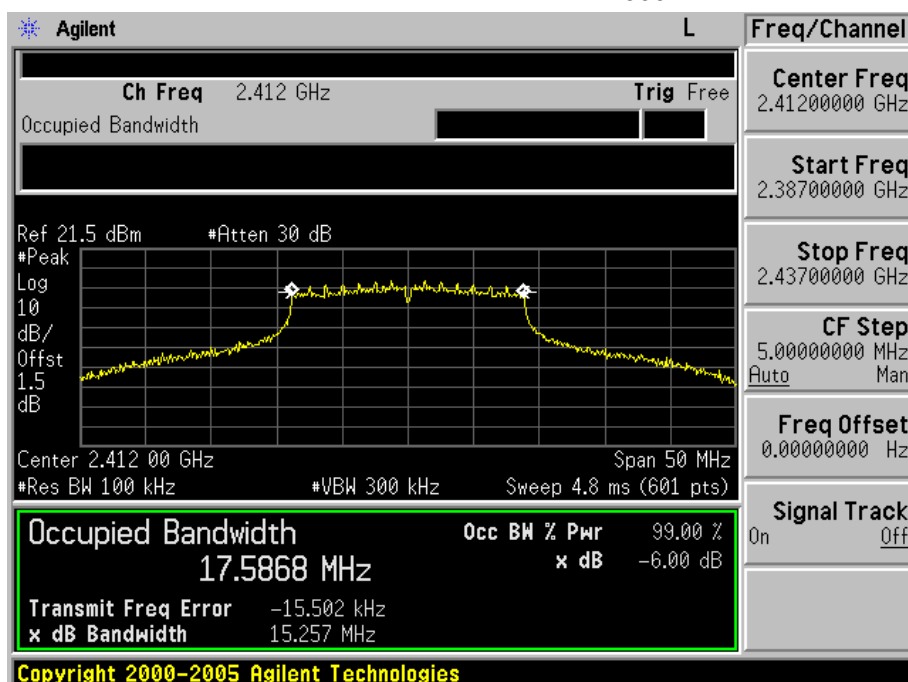
6 dB bandwidth



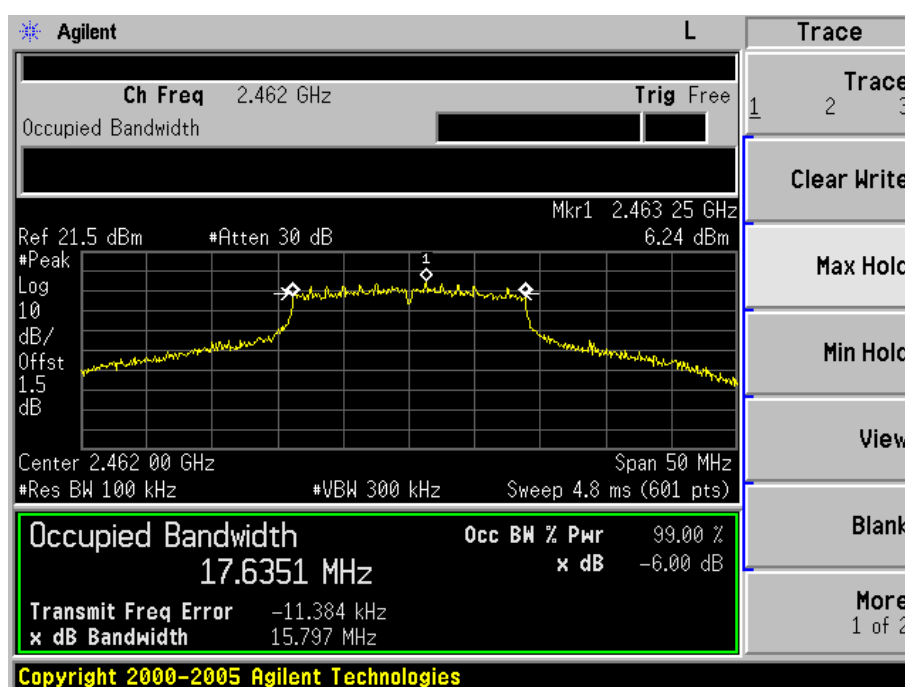
6 dB bandwidth

WIFI Mode IEEE 802.11n HT20 modulation (6.5Mbps) Test Result

Frequency MHz	Bandwidth kHz	Limit kHz	Result
2412	17586	≥ 500	Pass
2437	17561	≥ 500	Pass
2462	17635	≥ 500	Pass



6 dB bandwidth





Product Service

Test Equipment

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL.DUE.DATE
Spectrum Analyzer	Agilent	E4446A	MY41440292	May 08, 2011

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

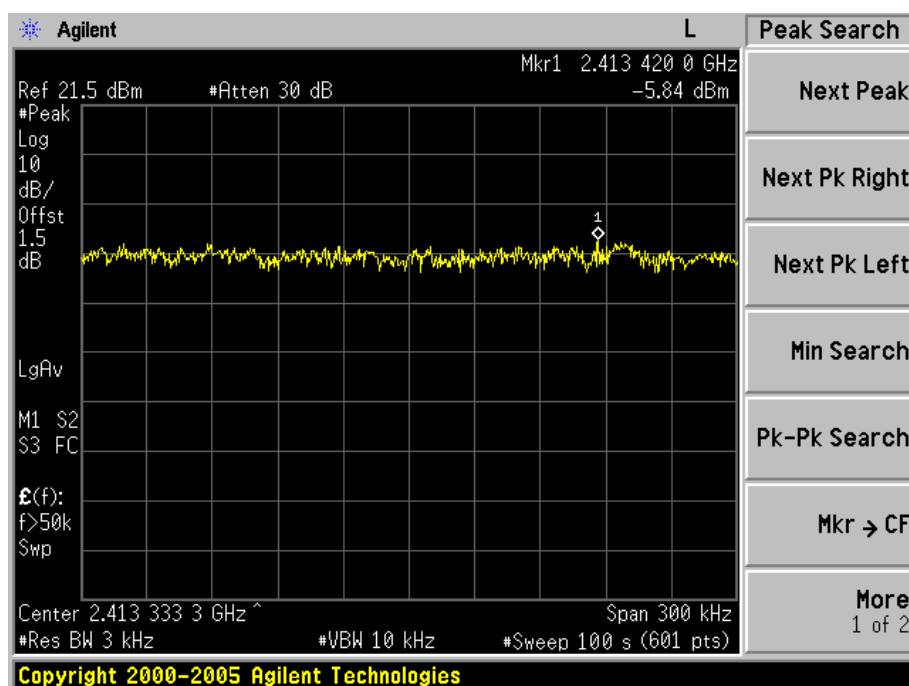
Limit
dBm / 3 kHz

8

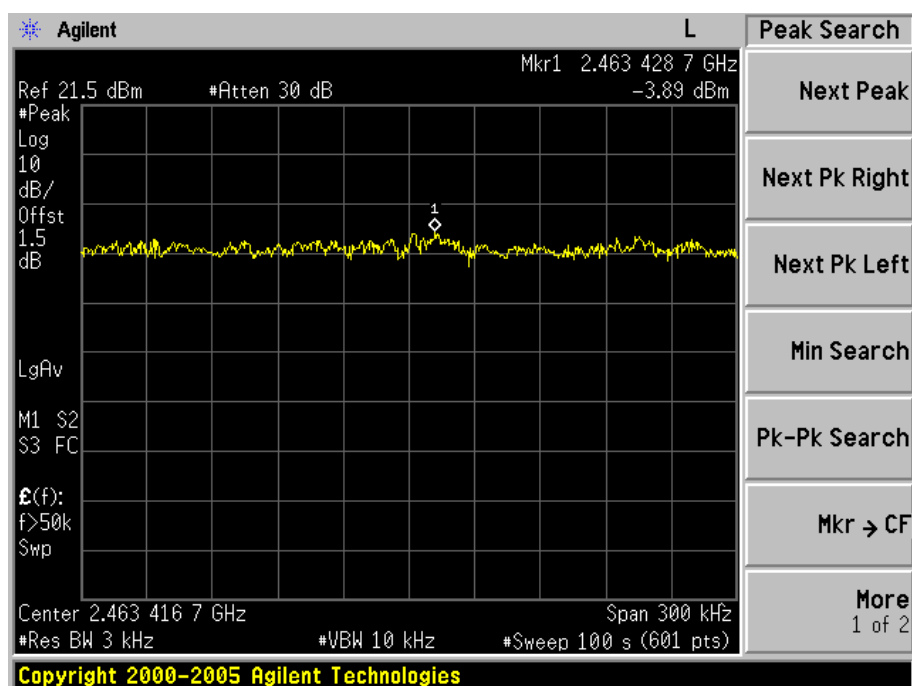
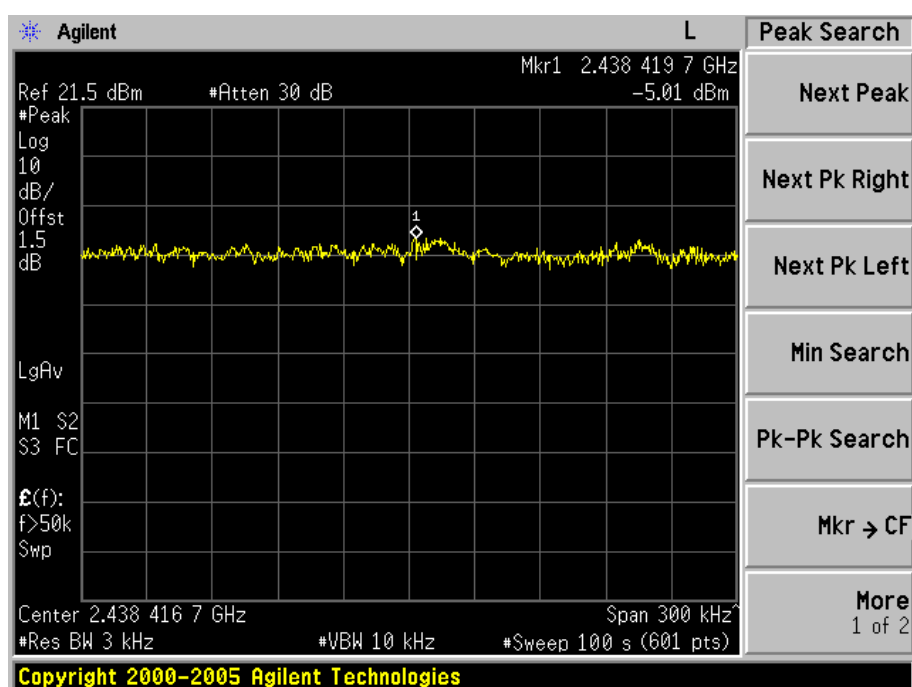
Power spectral density

WIFI Mode IEEE 802.11b modulation (1Mbps) Test Result

Frequency	P	Result
MHz	dBm	
2412	-5.84	Pass
2437	-5.01	Pass
2462	-3.89	Pass



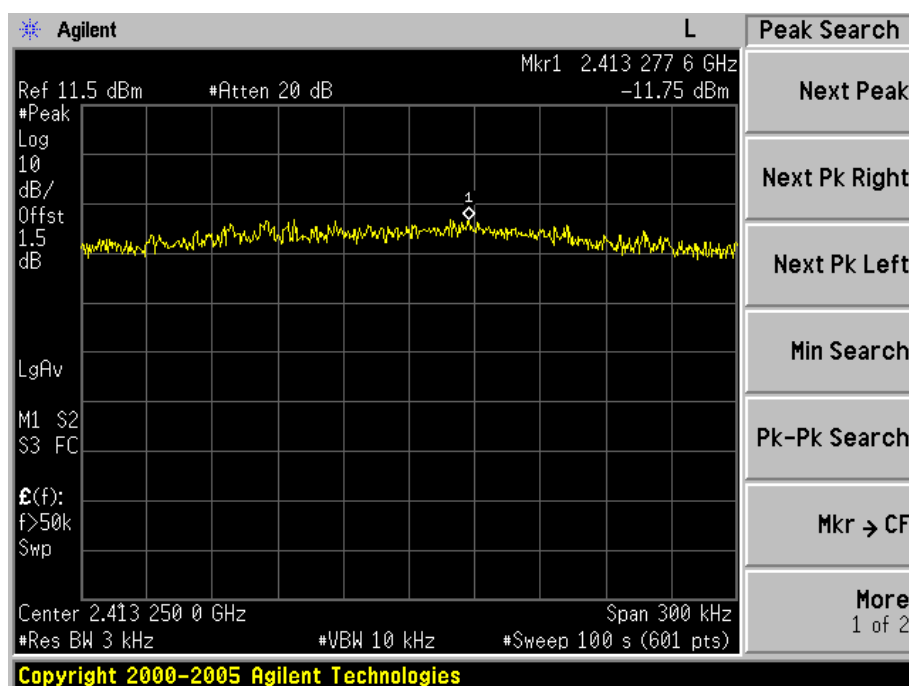
Power spectral density



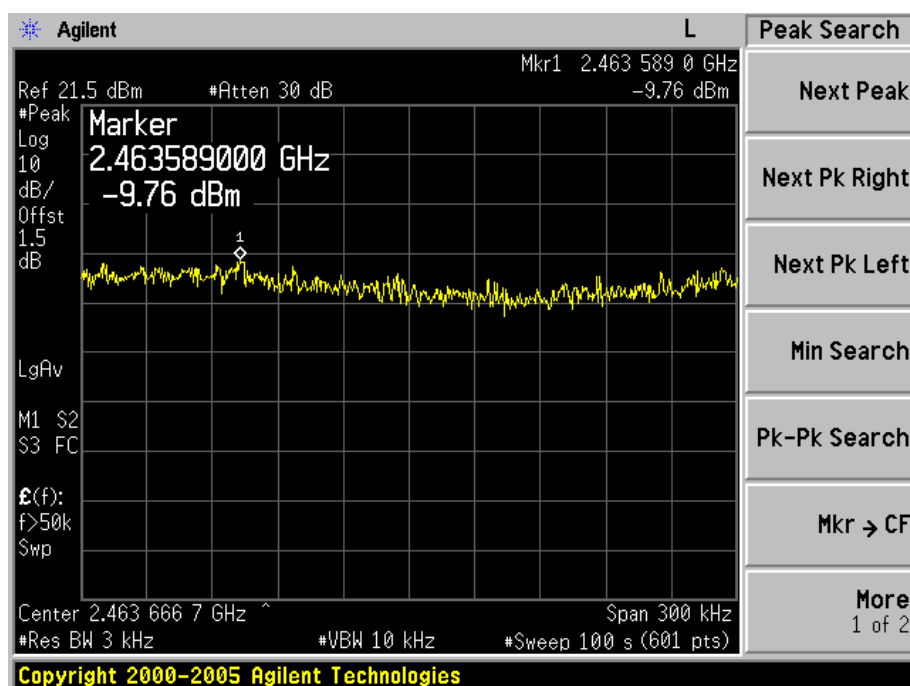
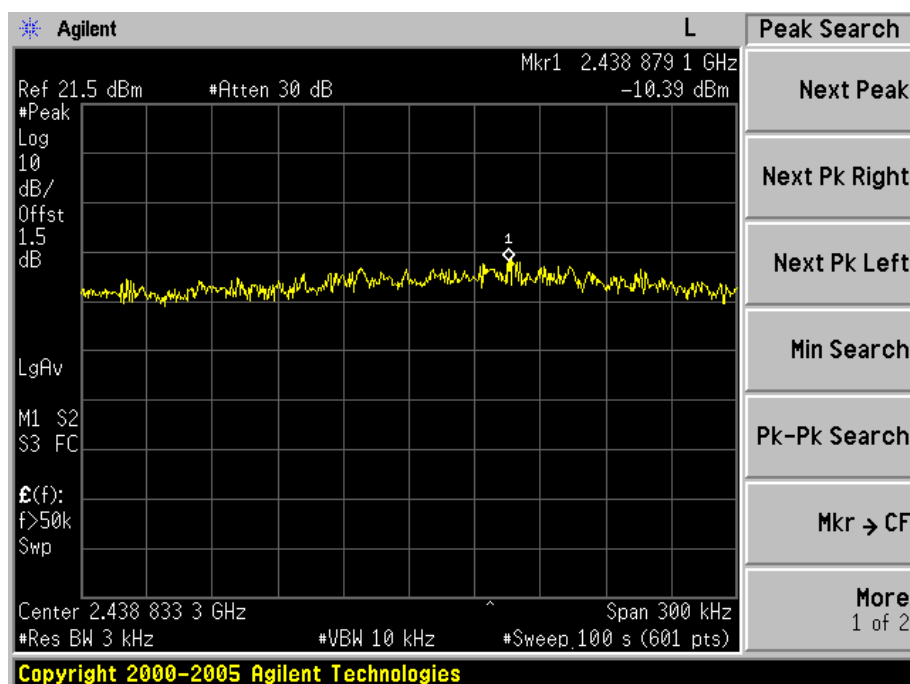
Power spectral density

WIFI Mode IEEE 802.11g modulation (6Mbps) Test Result

Frequency	P	Result
MHz	dBm	
2412	-11.75	Pass
2437	-10.39	Pass
2462	-9.76	Pass



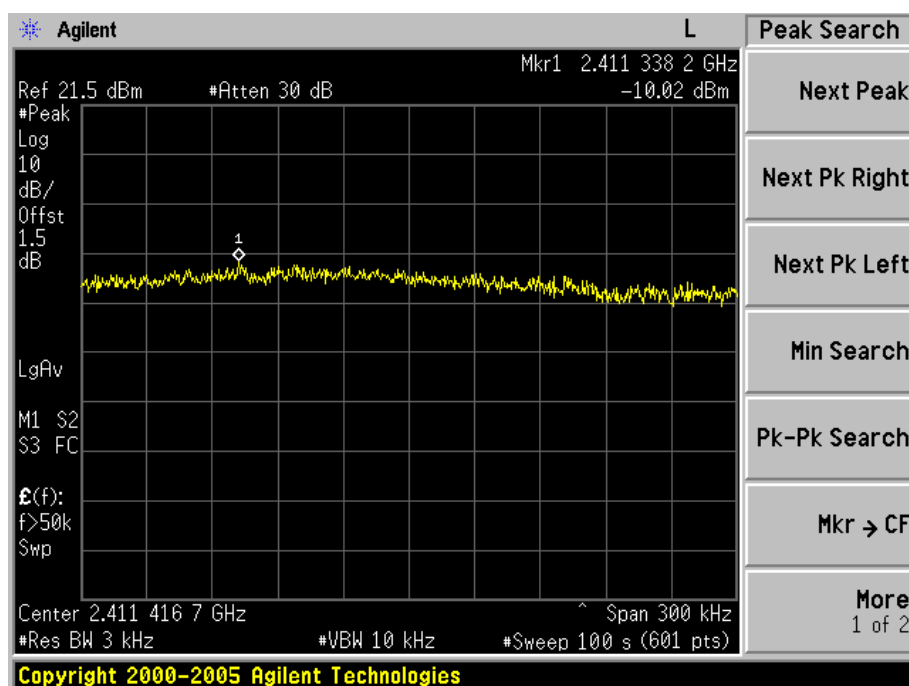
Power spectral density



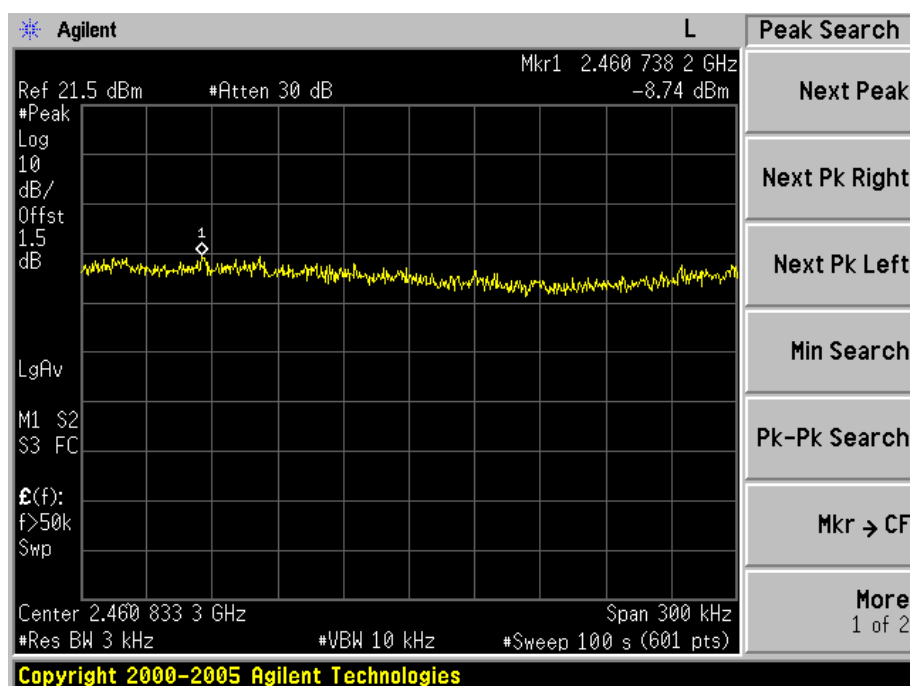
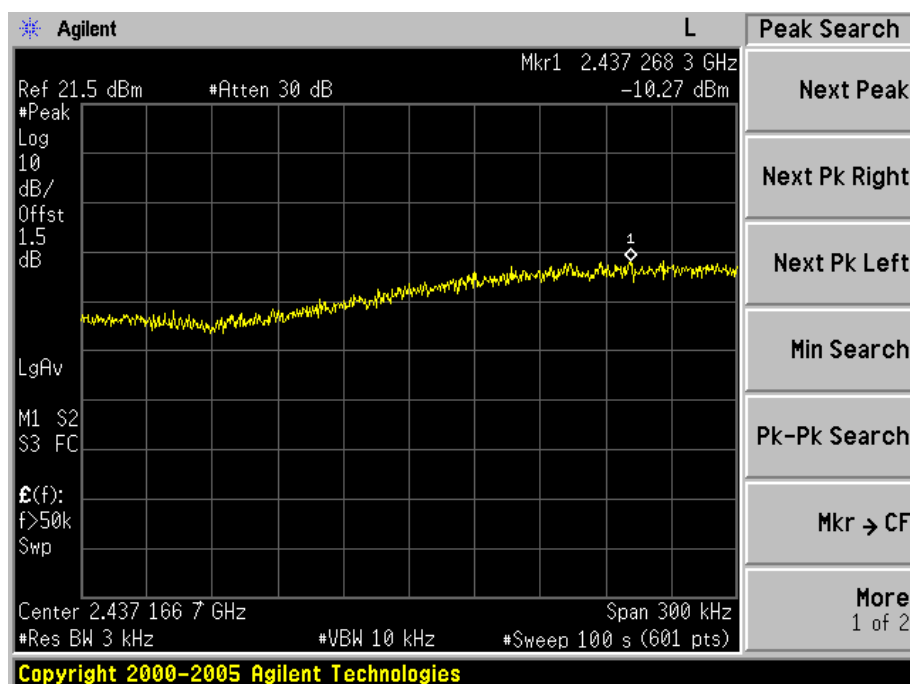
Power spectral density

WIFI Mode IEEE 802.11n HT20 modulation (6.5Mbps) Test Result

Frequency	P	Result
MHz	dBm	
2412	-10.02	Pass
2437	-10.27	Pass
2462	-8.74	Pass



Power spectral density





Product Service

Test Equipment

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL.DUE.DATE
Spectrum Analyzer	Agilent	E4407B	MY41440292	May 8, 2011

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=4.32dB (30MHz-25GHz)
CE	Disturbance Voltage (dB μ V)	U=2.4dB