FCC Test Report

Product Name ： Wireless-AC450 USB Adapter

Model No. ： USB-AC50

FCC ID. ： MSQ-USBAC50

Applicant ： ASUSTeK COMPUTER INC.

Address ： 4F, No. 150, Li-Te Rd., Peitou, Taipei, Taiwan

Date of Receipt ： 2013/10/08

Issued Date ： 2013/12/23

Report No. ： 13A0185R-RFUSP46V01

Report Version ： V1.0

Test Report Certification

Issued Date : 2013/12/23
Report No. : 13A0185R-RFUSP46V01

Product Name	:	Wireless-AC450 USB Adapter
Applicant	:	ASUSTeK COMPUTER INC.
Address	:	4F, No. 150, Li-Te Rd., Peitou, Taipei, Taiwan
Manufacturer	:	ASUSTeK COMPUTER INC.
Model No.	:	USB-AC50
FCC ID.	:	MSQ-USBAC50
EUT Voltage	:	DC 5V(Power by PC)
Trade Name	:	ASUS
Applicable Standard	:	FCC CFR Title 47 Part 15 Subpart E Section 15.407: 2012 ANSI C63.4: 2009
Test Result	:	Complied

The test results relate only to the samples tested.
The test report shall not be reproduced except in full without the written approval of QuieTek Corporation.

Documented By :

(Fonbo Fang / Engineering Adm. Assistant)

Reviewed By :

(Bruno Tsai / Assistant Engineer)

Approved By :

(Roy Wang / Director)

Laboratory Information

We, **QuieTek Corporation**, are an independent RF consultancy that was established the whole facility in our laboratories. The test facility has been accredited/accepted (audited or listed) by the following related bodies in compliance with ISO 17025 specified testing scopes:

Taiwan R.O.C.	**:**	**TAF, Accreditation Number: 1313**
USA	**:**	**FCC, Registration Number: 365520**
Canada	**:**	**IC, Submission No: 150981**

The related certificate for our laboratories about the test site and management system can be downloaded from QuieTek Corporation's Web Site:http://www.quietek.com/tw/ctg/cts/accreditations.htm
The address and introduction of QuieTek Corporation's laboratories can be founded in our Web site : http://www.quietek.com/
If you have any comments, Please don't hesitate to contact us. Our contact information is as below:

HsinChu Testing Laboratory:
No.75-2, 3rd Lin, Wangye Keng, Yonghxing Tsuen, Qionglin Shiang, Hsinchu County 307, Taiwan, R.O.C.
TEL:+886-3-592-8858 / FAX:+886-3-592-8859 E-Mail : service@quietek.com

LinKou Testing Laboratory:
No.5-22, Ruishukeng, Linkou Dist., New Taipei City 24451, Taiwan, R.O.C.
TEL : 886-2-8601-3788 / FAX : 886-2-8601-3789 E-Mail : service@quietek.com

TABLE OF CONTENTS

Description Page

1. General Information 6

1.1. EUT Description 6
1.2. Operational Description 11
1.3. Test Mode 12
1.4. Tested System Details 13
1.5. Configuration of tested System 14
1.6. EUT Exercise Software 14
1.7. Test Facility 15

2. Conducted Emission 16

2.1. Test Equipment 16
2.2. Test Setup 16
2.3. Limits 17
2.4. Test Procedure 17
2.5. Test Specification 17
2.6. Uncertainty 17
2.7. Test Result 18
2.8. Test Photo 20

3. 99% & 26dB Bandwidth 21

3.1. Test Equipment 21
3.2. Test Setup 21
3.3. Limits 21
3.4. Test Procedure 21
3.5. Uncertainty 21
3.6. Test Result 22

4. Peak Transmit Output 31

4.1. Test Equipment 31
4.2. Test Setup 31
4.3. Limits 32
4.4. Test Procedure 32
4.5. Uncertainty 32
4.6. Test Result 33

5. Peak Power Spectrum Density 46

5.1. Test Equipment 46
5.2. Test Setup 46

5.3. LIMITS 46
5.4. TEST PROCEDURE 47
5.5. UNCERTAINTY 47
5.6. TEST RESULT 48

6. Peak Excursion 57

6.1. TEST EQUIPMENT 57
6.2. TEST SETUP 57
6.3. LIMITS 57
6.4. TEST PROCEDURE 57
6.5. UNCERTAINTY 57
6.6. TEST RESULT 58

7. Radiated Emission 67

7.1. TEST EQUIPMENT 67
7.2. TEST SETUP 67
7.3. LIMITS 68
7.4. TEST PROCEDURE 69
7.5. UNCERTAINTY 69
7.6. TEST RESULT 70
7.7. TEST PHOTO 96

8. Band Edge 98

8.1. TEST EQUIPMENT 98
8.2. TEST SETUP 98
8.3. LIMITS 99
8.4. TEST PROCEDURE 100
8.5. UNCERTAINTY 100
8.6. TEST RESULT 101

9. Frequency Stability 117

9.1. TEST EQUIPMENT 117
9.2. TEST SETUP 117
9.3. LIMITS 117
9.4. TEST PROCEDURE 117
9.5. UNCERTAINTY 117
9.6. TEST RESULT 118

ATTACHEMENT 125
EUT PHOTOGRAPH 125

1. General Information

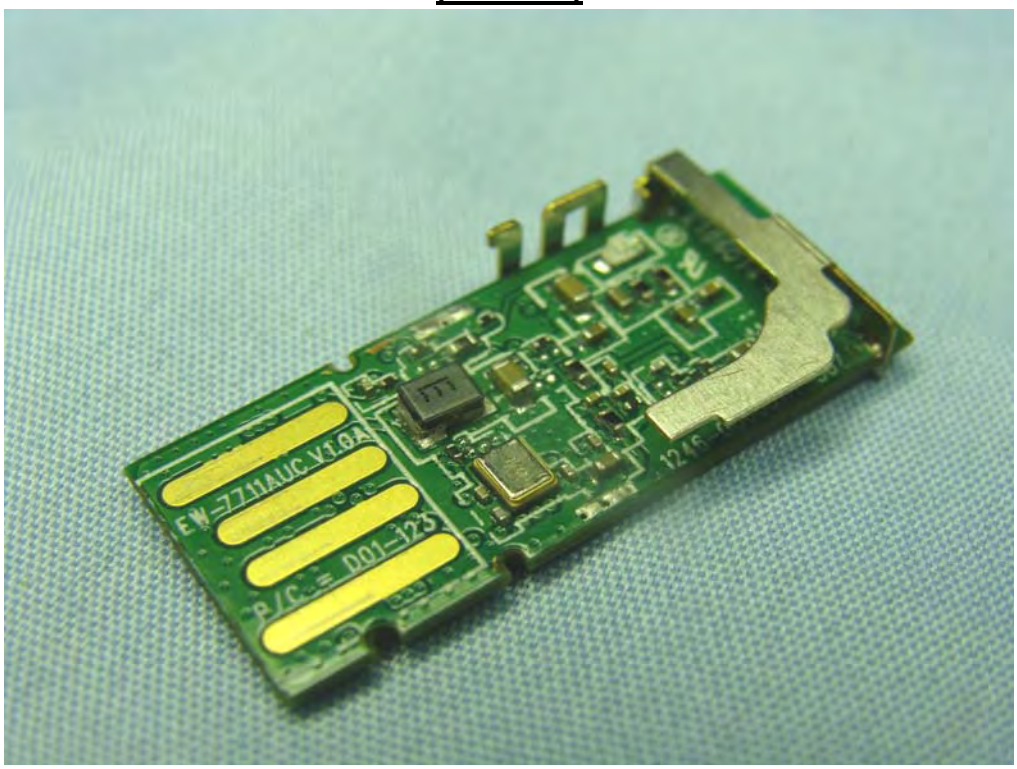
1.1. EUT Description

Product Name	Wireless-AC450 USB Adapter	
Product Type	WLAN(1TX,1RX)	
Trade Name	ASUS	
Model No.	USB-AC50	
Frequency Range/ Channel Number	IEEE 802.11a/ IEEE 802.11n (20MHz) / IEEE 802.11ac (20MHz)	5180~5240MHz / 4 Channels
	IEEE 802.11n (40MHz) / IEEE 802.11ac (40MHz)	5190~5230MHz / 2 Channels
	IEEE 802.11ac (80MHz)	5210~5210MHz / 1 Channel
Type of Modulation	IEEE 802.11a/n	Orthogonal Frequency Division Multiplexing
Data Speed	IEEE 802.11a	6MBPS,9MBPS,12MBPS,18MBPS,24MBPS,36MBPS,48MBPS,54MBPS
	IEEE 802.11n	Support a subset of the combination of GI, MCS 0~MCS 7 and bandwidth defined in 802.11n
	IEEE 802.11ac	Support a subset of the combination of GI, MCS 0~MCS 9 and bandwidth defined in 802.11ac
Antenna Gain	4.56dBi	
Antenna Type	PIFA Antenna	

ANT-TX / RX & Bandwidth

ANT-TX / RX	TX			RX		
Mode/ Channel Bandwidth	20MHz	40MHz	80MHz	20MHz	40MHz	80MHz
IEEE802.11a	✓			✓		
IEEE802.11n	✓	✓		✓	✓	
IEEE802.11ac	✓	✓	✓	✓	✓	✓

(1TX /1RX)



IEEE 802.11n

MCS Index	Modulation	R	N_{BPSCS}	N_{CBPS}		N_{DBPS}		Data Rate(Mb/s)			
				20MHz	40MHz	20MHz	40MHz	800ns GI		400ns GI	
								20MHz	40MHz	20MHz	40MHz
0	BPSK	1/2	1	52	108	26	54	6.5	13.5	7.2	15.0
1	QPSK	1/2	2	104	216	52	108	13.0	27.0	14.4	30.0
2	QPSK	3/4	2	104	216	78	162	19.5	40.5	21.7	45.0
3	16-QAM	1/2	4	208	432	104	216	26.0	54.0	28.9	60.0
4	16-QAM	3/4	4	208	432	156	324	39.0	81.0	43.3	90.0
5	64-QAM	2/3	6	312	648	208	432	52.0	108.0	57.8	120.0
6	64-QAM	3/4	6	312	648	234	486	58.5	121.5	65.0	135.0
7	64-QAM	5/6	6	312	648	260	540	65.0	135.0	72.2	150.0
Note 1: Support of 400ns GI is optional on transmit and receive.											

Table 1 – MCS parameters for TX Antenna number = 1

Symbol	Explanation
R	Code rate
N_{BPSC}	Number of coded bits per single carrier
N_{CBPS}	Number of coded bits per symbol
N_{DBPS}	Number of data bits per symbol
GI	guard interval

Draft IEEE 802.11ac Data Rate

Spatial Streams (Note1)	MCS Index	Modulation type	Coding rate	Data Rate(Mb/s)							
				20 MHz		40 MHz		80 MHz		160 MHz	
				Guard Interval		Guard Interval		Guard Interval		Guard Interval	
				800ns	400ns	800ns	400ns	800ns	400ns	800ns	400ns
1	0	BPSK	1/2	6.5	7.2	13.5	15	29.3	32.5	58.5	65
	1	QPSK	1/2	13	14.4	27	30	58.5	65	117	130
	2	QPSK	3/4	19.5	21.7	40.5	45	87.8	97.5	175.5	195
	3	16-QAM	1/2	26	28.9	54	60	117	130	234	260
	4	16-QAM	3/4	39	43.3	81	90	175.5	195	351	390
	5	64-QAM	2/3	52	57.8	108	120	234	260	468	520
	6	64-QAM	3/4	58.5	65	121.5	135	263.3	292.5	526.5	585
	7	64-QAM	5/6	65	72.2	135	150	292.5	325	585	650
	8	256-QAM	3/4	78	86.7	162	180	351	390	702	780
	9	256-QAM	5/6	N/A	N/A	180	200	390	433.3	780	866.7

IEEE 802.11a & IEEE 802.11n (20MHz) & IEEE 802.11ac (20MHz)

Working Frequency of Each Channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
36	5180MHz	40	5200MHz	44	5220MHz	48	5240MHz

IEEE 802.11n (40MHz) & IEEE 802.11ac (40MHz)

Working Frequency of Each Channel			
Channel	Frequency	Channel	Frequency
38	5190MHz	46	5230MHz

IEEE 802.11ac (80MHz)

Working Frequency of Each Channel	
Channel	Frequency
42	5210MHz

Note:

1. This device is a Wireless-AC450 USB Adapter including 5GHz (1x1) a/n/ac transmitting and receiving function.
2. These test results on a sample of the device are for the purpose of demonstrating Compliance with Part 15 Subpart E Paragraph 15.407.
3. Regards to the frequency band operation; the lowest、middle and highest frequency of channel were selected to perform the test, and then shown on this report.
4. The function of the 5.8GHz transmitting is measured and makes a test report of the report number: 13A0185R-RFUSP42V01.
5. This device has USB and Ethernet ports, which can be connected to computer. The receiving function receiving was tested and its test report number is 13A0185R-RFUSP37V02 under Declaration of Conformity.

1.3. Test Mode

QuieTek has verified the construction and function in typical operation. The preliminary tests were performed in different data rate, and to find the worst condition, which was shown in this test report. The following table is the final test mode.

TX	Mode 1: Transmit

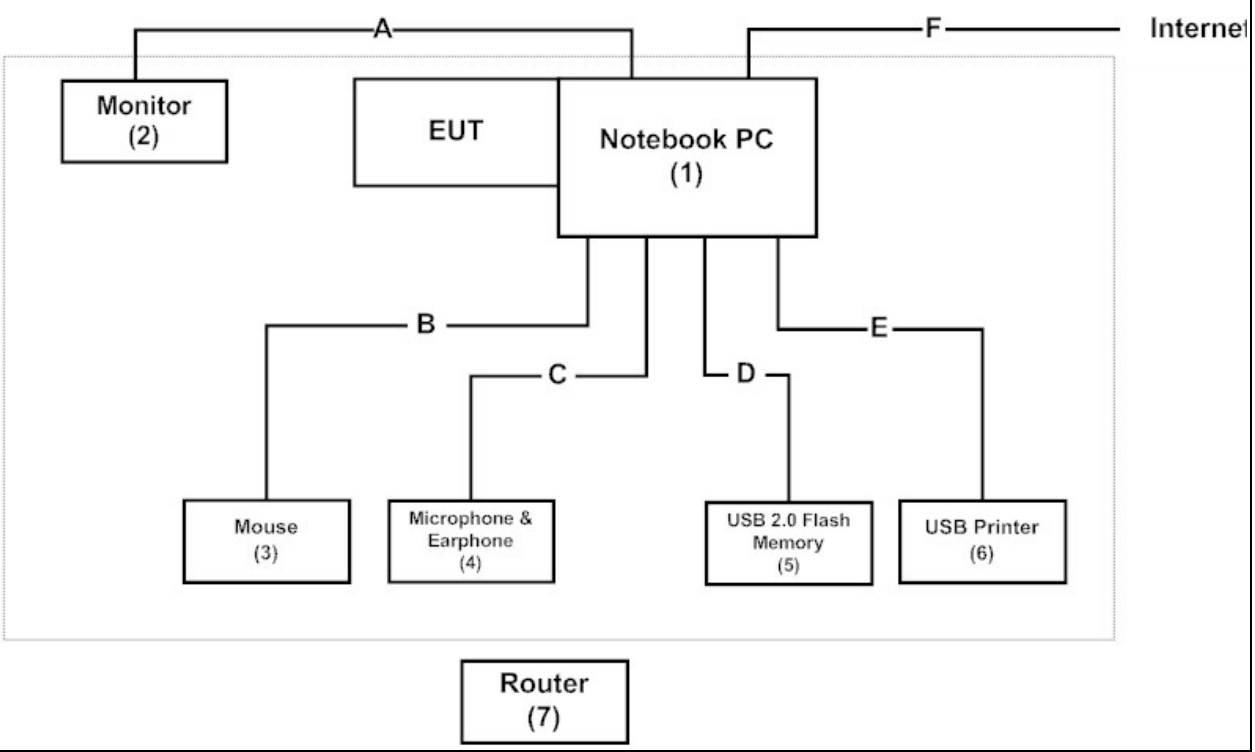
Test Items	Modulation	Channel	Antenna	Result
Conducted Emission	11ac (80MHz)	42	0	Complies
99 % & 26dB Bandwidth	a	36/44/48	0	Complies
	11n/ac (20MHz)	36/44/48	0	Complies
	11n/ac (40MHz)	38/46	0	Complies
	11ac (80MHz)	42	0	Complies
Peak Transmit Output	a	36/44/48	0	Complies
	11n/ac (20MHz)	36/44/48	0	Complies
	11n/ac (40MHz)	38/46	0	Complies
	11ac (80MHz)	42	0	Complies
Peak Power Spectrum Density	a	36/44/48	0	Complies
	11n/ac (20MHz)	36/44/48	0	Complies
	11n/ac (40MHz)	38/46	0	Complies
	11ac (80MHz)	42	0	Complies
Power Excursion	a	36/44/48	0	Complies
	11n/ac (20MHz)	36/44/48	0	Complies
	11n/ac (40MHz)	38/46	0	Complies
	11ac (80MHz)	42	0	Complies
Radiated Emission	a	36/44/48	0	Complies
	11n/ac (20MHz)	36/44/48	0	Complies
	11n/ac (40MHz)	38/46	0	Complies
	11ac (80MHz)	42	0	Complies
Band Edge	a	36	0	Complies
	11n/ac (20MHz)	36	0	Complies
	11n/ac (40MHz)	38	0	Complies
	11ac (80MHz)	42	0	Complies
Frequency Stability	a	36/44/48	0	Complies
	11n/ac (20MHz)	36/44/48	0	Complies
	11n/ac (40MHz)	38/46	0	Complies
	11ac (80MHz)	42	0	Complies

1.4. Tested System Details

The types for all equipments, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product		Manufacturer	Model No.	Serial No.	FCC ID	Power Cord
1	Notebook PC	DELL	PP26L	66TLZ1S	DoC	Non-Shielded, 1.8m
2	Monitor	DELL	U2410f	082WXD-72872-16R-0V7L	DoC	Non-Shielded, 1.8m
3	Mouse	Logitech	M-SBF83	HCA52200185	DoC	--
4	Microphone & Earphone	Fujiei	SBZ-38	N/A	DoC	--
5	USB 2.0 Flash Memory	Apacer	AH223	N/A	DoC	--
6	USB Printer	HP	Deskjet5652	N/A	DoC	--
7	Router	Asus	RT-N10	N/A	DoC	--

1.5. Configuration of tested System

Connection Diagram


Signal Cable Type		Signal cable Description
A	VGA Cable	Shielded, 1.6m
B	Mouse Cable	Shielded, 1.8m
C	Microphone & Earphone Cable	Non-Shielded, 1.2m
D	USB 2.0 Flash Memory Cable	Shielded, 1m
E	USB Cable	Shielded, 1m
F	LAN Cable	Non-Shielded, 10m

1.6. EUT Exercise Software

1	Test system is in accord with EUT user manual (refer to 1.5 configuration of tested system)
2	Turn on the power of all equipment.
3	Execute the“MT76xxU QA V2.0.5.0” on the EUT.
4	Configure the test mode, the test channel, and the data rate.
5	Press “Start TX” to start the continuous transmitting.
6	Verify that the EUT works properly.

1.7. Test Facility

Ambient conditions in the laboratory:

Items	Test Item	Required (IEC 68-1)	Actual
Temperature (°C)	FCC PART 15 E 15.407 Conducted Emission	15 - 35	20
Humidity (%RH)		25 - 75	50
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 E 15.407 99 % & 26dB Bandwidth	15 - 35	25
Humidity (%RH)		25 - 75	45
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 E 15.407 Peal Transmit Power	15 - 35	25
Humidity (%RH)		25 - 75	65
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 E 15.407 Peak Power Spectrum Density	15 - 35	25
Humidity (%RH)		25 - 75	45
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 E 15.407 Power Excursion	15 - 35	25
Humidity (%RH)		25 - 75	45
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 E 15.407 Radiated Emission	15 - 35	25
Humidity (%RH)		25 - 75	48
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 E 15.407 Band Edge	15 - 35	25
Humidity (%RH)		25 - 75	48
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 E 15.407 Frequency Stability	15 - 35	25
Humidity (%RH)		25 - 75	48
Barometric pressure (mbar)		860 - 1060	950-1000

2. Conducted Emission

2.1. Test Equipment

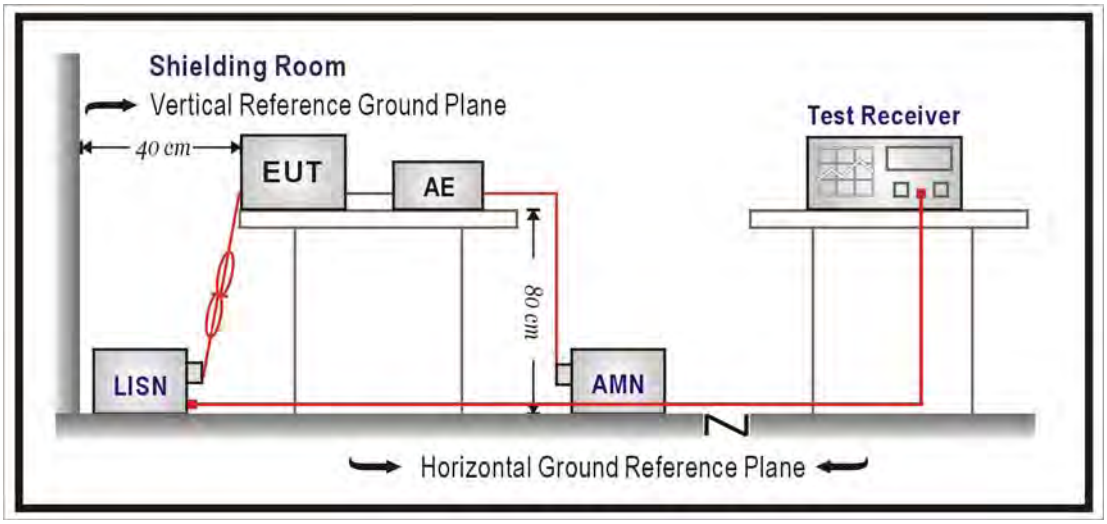
The following test equipments are used during the test:

Conducted Emission / SR3

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
LISN	R&S	ENV216	100096	2014/08/01
LISN	R&S	ESH3-Z5	836679/022	2014/01/20
Test Receiver	R&S	ESCS 30	825442/017	2014/01/01

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

2.2. Test Setup



2.3. Limits

FCC Part 15 Subpart C Paragraph 15.207 Limits (dBuV)		
Frequency MHz	QP	AV
0.15 - 0.50	66-56	56-46
0.50 - 5.0	56	46
5.0 - 30	60	50

Remarks: In the above table, the tighter limit applies at the band edges.

2.4. Test Procedure

The EUT was setup according to ANSI C63.4: 2009. The EUT was placed on a platform of nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 80 cm from any other grounded conducting surface. The EUT and simulators are connected to the main power through a line impedance stabilization network (LISN). The LISN provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN. (Please refer to the block diagram of the test setup and photographs.)

Each current-carrying conductor of the EUT power cord, except the ground (safety) conductor, was individually connected through a LISN to the input power source.

The excess length of the power cord between the EUT and the LISN receptacle were folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length.

Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9 kHz.

2.5. Test Specification

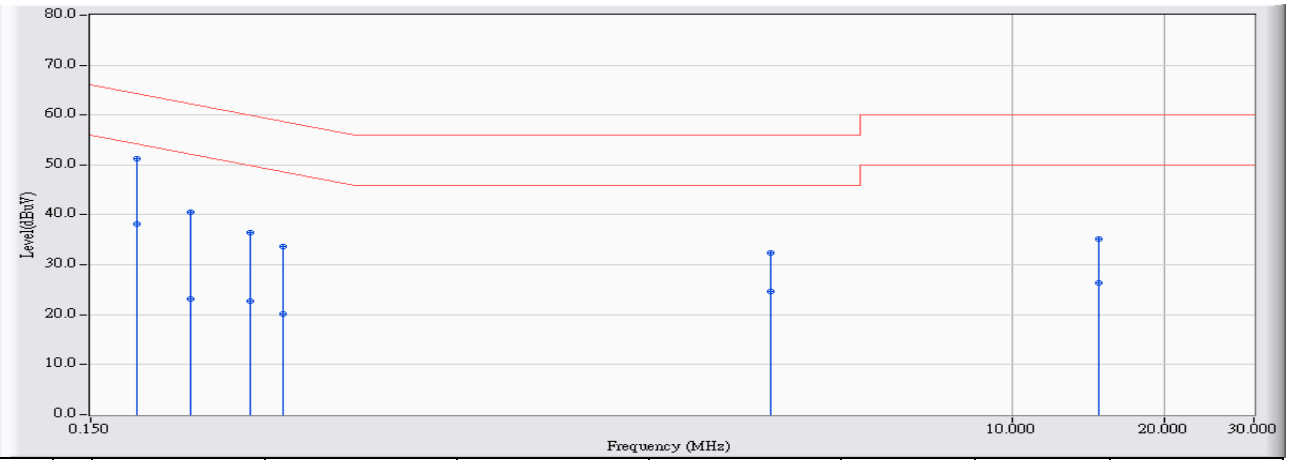
According to FCC Part 15 Subpart C Paragraph 15.207: 2012

2.6. Uncertainty

The measurement uncertainty is defined as ± 2.26 dB.

2.7. Test Result

Site : SR2	**Time : 2013/09/14 - 19:26**
Limit : CISPR_B_00M_QP	**Margin : 10**
Probe : SR2_LISN(16A)-3_0822 - Line1	**Power : DC 5V**
EUT : Wireless-AC450 USB Adapter	**Note : 802.11ac(80M)_5210MHz**

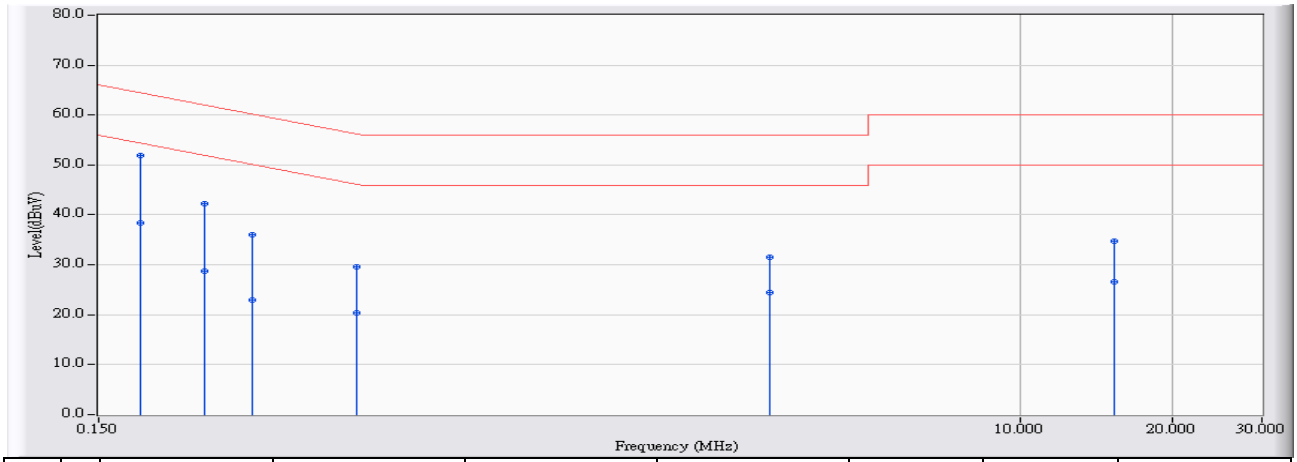


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1	*	0.185	9.642	41.620	51.261	-12.990	64.251	QUASIPEAK
2		0.185	9.642	28.430	38.071	-16.180	54.251	AVERAGE
3		0.236	9.654	30.970	40.624	-21.614	62.238	QUASIPEAK
4		0.236	9.654	13.500	23.154	-29.084	52.238	AVERAGE
5		0.310	9.675	26.770	36.445	-23.521	59.966	QUASIPEAK
6		0.310	9.675	13.040	22.715	-27.251	49.966	AVERAGE
7		0.361	9.690	23.990	33.680	-25.027	58.707	QUASIPEAK
8		0.361	9.690	10.530	20.220	-28.487	48.707	AVERAGE
9		3.326	9.901	22.470	32.371	-23.629	56.000	QUASIPEAK
10		3.326	9.901	14.820	24.721	-21.279	46.000	AVERAGE
11		14.814	10.235	25.010	35.245	-24.755	60.000	QUASIPEAK
12		14.814	10.235	16.150	26.385	-23.615	50.000	AVERAGE

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measure Level = Reading Level + Correct Factor

Site : SR2	**Time : 2013/09/14 - 19:35**
Limit : CISPR_B_00M_QP	**Margin : 10**
Probe : SR2_LISN(16A)-3_0822 - Line2	**Power : DC 5V**
EUT : Wireless-AC450 USB Adapter	**Note : 802.11ac(80M)_5210MHz**



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1	*	0.181	9.629	42.240	51.869	-12.560	64.428	QUASIPEAK
2		0.181	9.629	28.700	38.329	-16.100	54.428	AVERAGE
3		0.244	9.645	32.530	42.174	-19.793	61.967	QUASIPEAK
4		0.244	9.645	19.160	28.804	-23.163	51.967	AVERAGE
5		0.302	9.658	26.430	36.088	-24.090	60.178	QUASIPEAK
6		0.302	9.658	13.250	22.908	-27.270	50.178	AVERAGE
7		0.486	9.707	19.900	29.607	-26.630	56.237	QUASIPEAK
8		0.486	9.707	10.660	20.367	-25.870	46.237	AVERAGE
9		3.193	9.882	21.730	31.612	-24.388	56.000	QUASIPEAK
10		3.193	9.882	14.530	24.412	-21.588	46.000	AVERAGE
11		15.298	10.283	24.460	34.743	-25.257	60.000	QUASIPEAK
12		15.298	10.283	16.330	26.613	-23.387	50.000	AVERAGE

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measure Level = Reading Level + Correct Factor

3. 99% & 26dB Bandwidth

3.1. Test Equipment

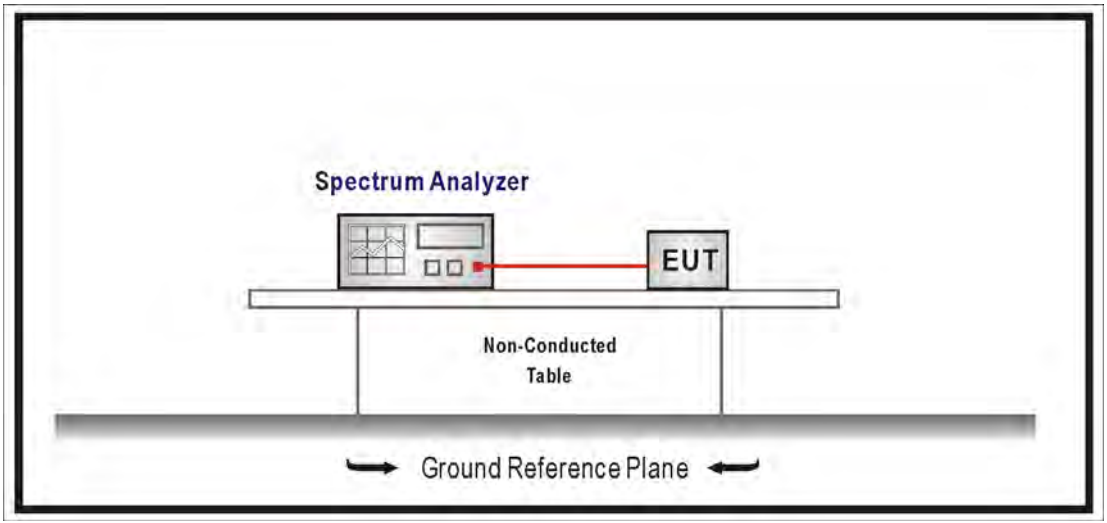
The following test equipments are used during the radiated emission tests:

99% & 26dB Bandwidth / SR7

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Spectrum Analyzer	Agilent	N9010A-EXA	US47140172	2014/08/05

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

3.2. Test Setup



3.3. Limits

No Required

3.4. Test Procedure

The EUT was tested according to U-NII test procedure of March 2012 KDB 789033.
Set RBW 1% of the emission bandwidth, VBW equal to 3 times the RBW.

3.5. Uncertainty

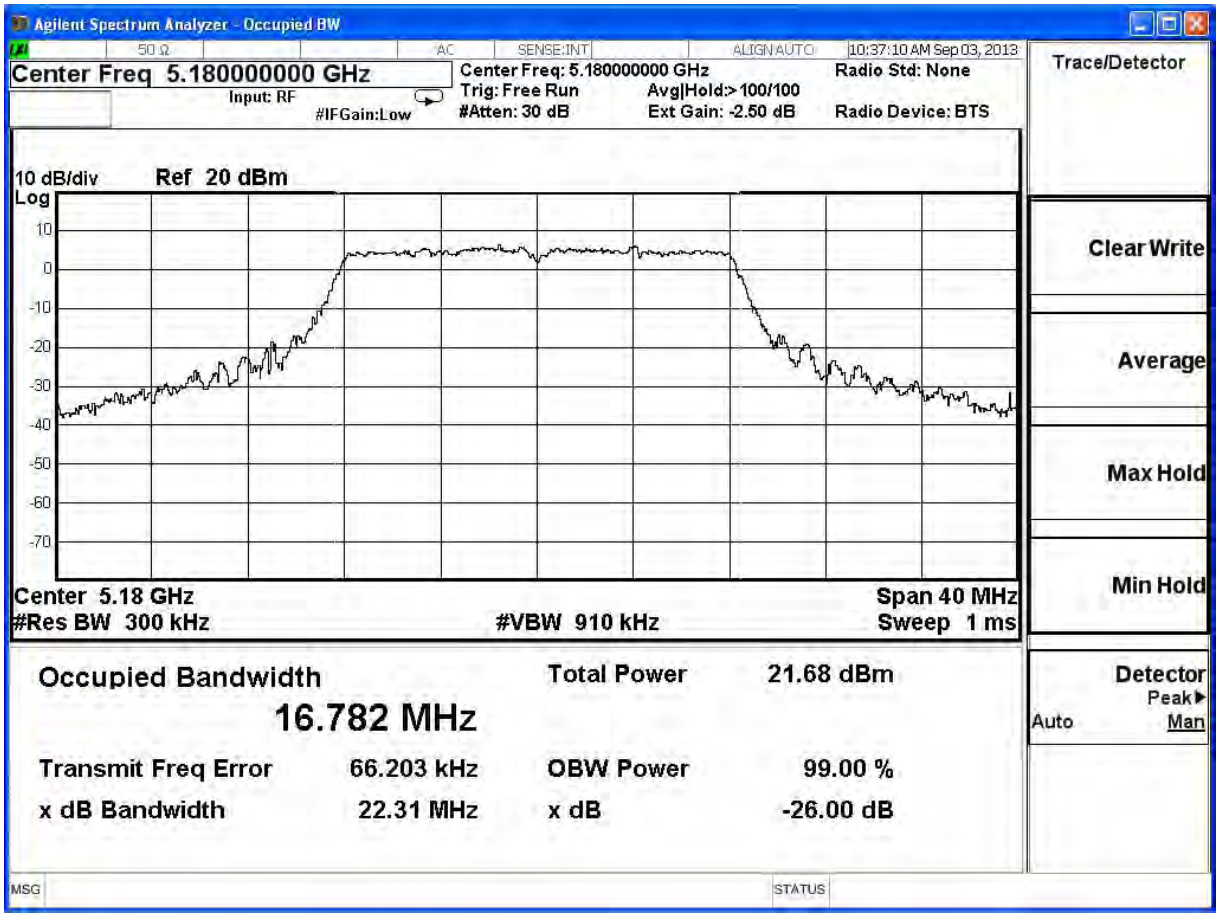
The measurement uncertainty is defined as ±150Hz

3.6. Test Result

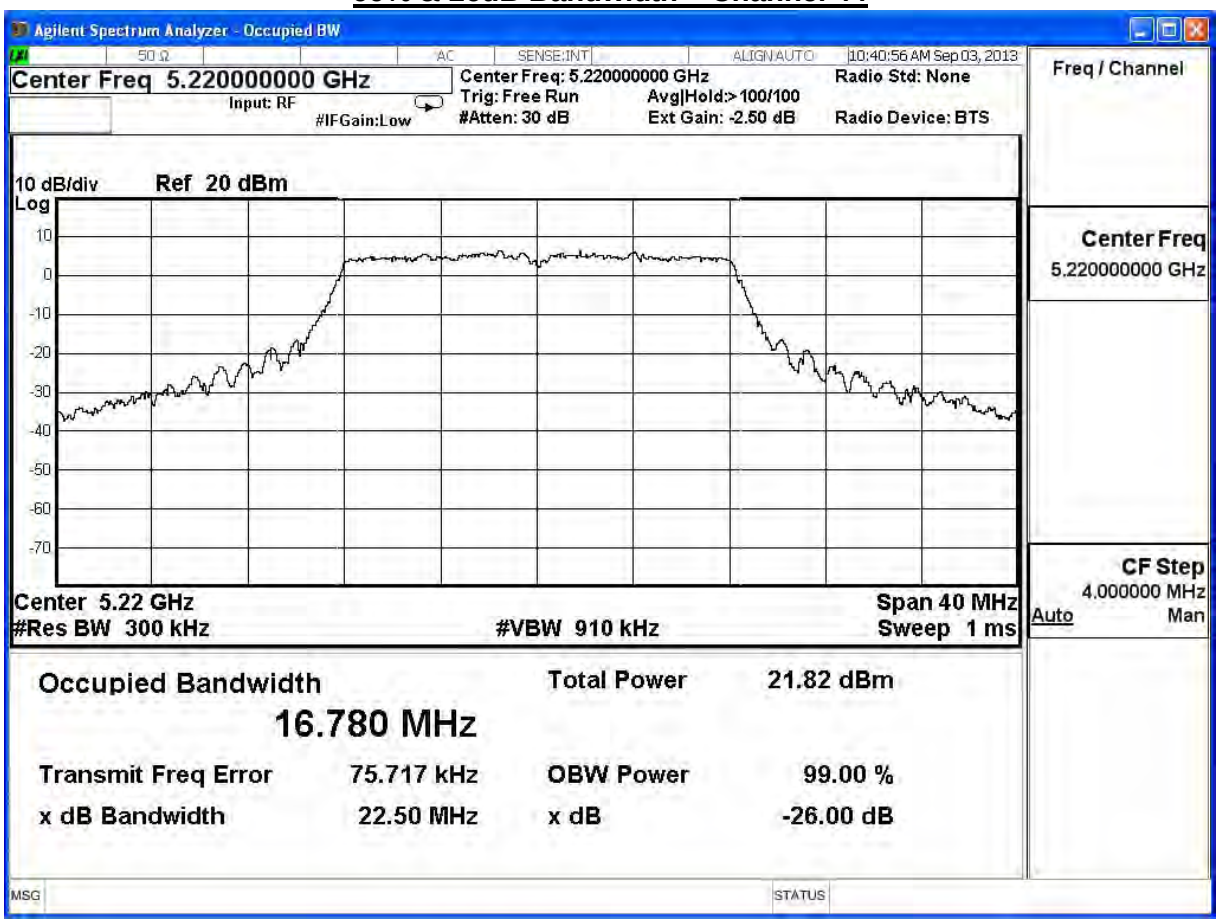
Product	Wireless-AC450 USB Adapter		
Test Item	99% & 26dB Bandwidth		
Test Mode	Mode 1: Transmit		
Date of Test	2013/09/03	Test Site	SR7

802.11a, ANT 0				
Channel No.	Frequency (MHz)	26dB	99%BW	Result
		Measure Level (MHz)		
36	5180	22.31	16.78	Pass
44	5220	22.50	16.78	Pass
48	5240	22.41	16.78	Pass

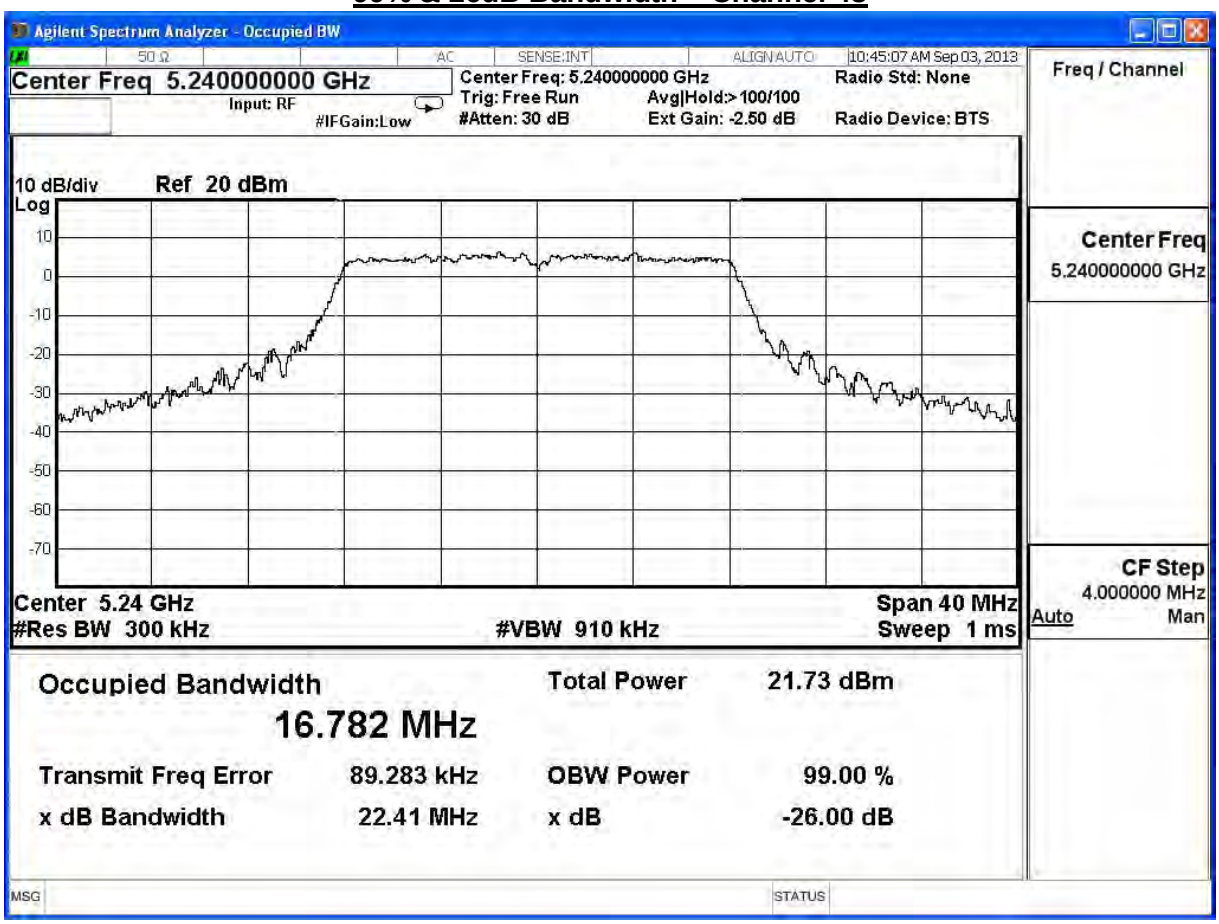
99% & 26dB Bandwidth – Channel 36



99% & 26dB Bandwidth – Channel 44



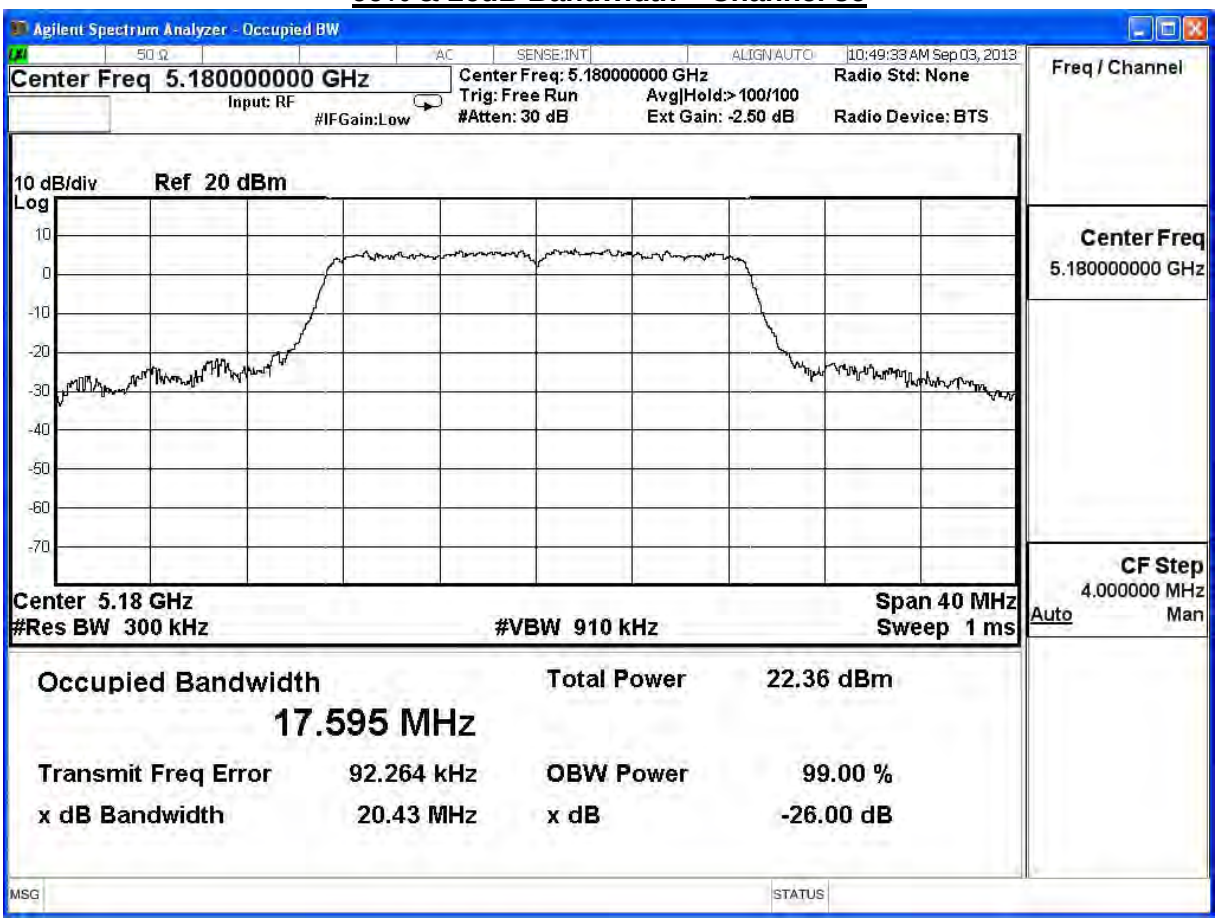
99% & 26dB Bandwidth – Channel 48



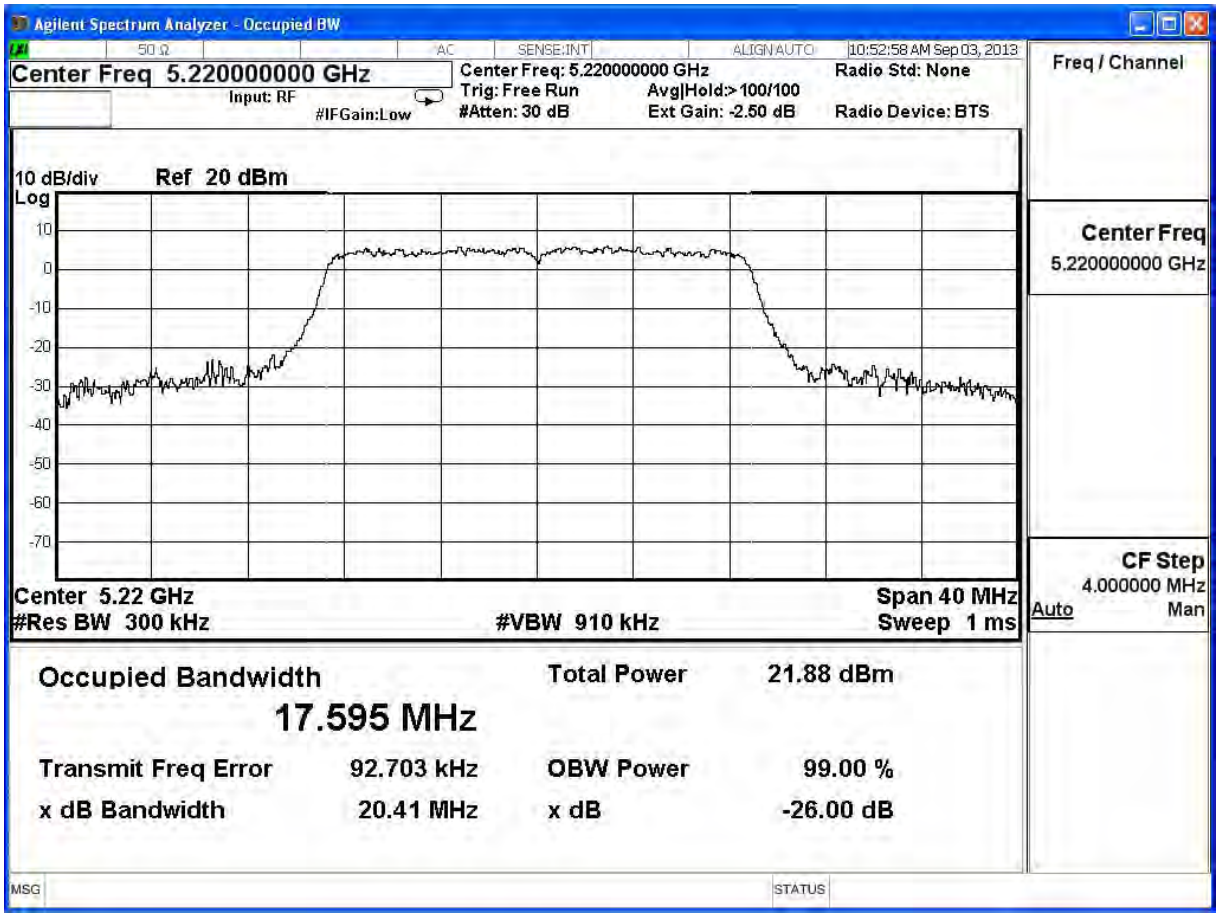
Product	Wireless-AC450 USB Adapter		
Test Item	99% & 26dB Bandwidth		
Test Mode	Mode 1: Transmit		
Date of Test	2013/09/03	Test Site	SR7

802.11n (20MHz), ANT 0				
Channel No.	Frequency (MHz)	26dB	99%BW	Result
		Measure Level (MHz)		
36	5180	20.43	17.60	Pass
44	5220	20.41	17.60	Pass
48	5240	20.43	17.59	Pass

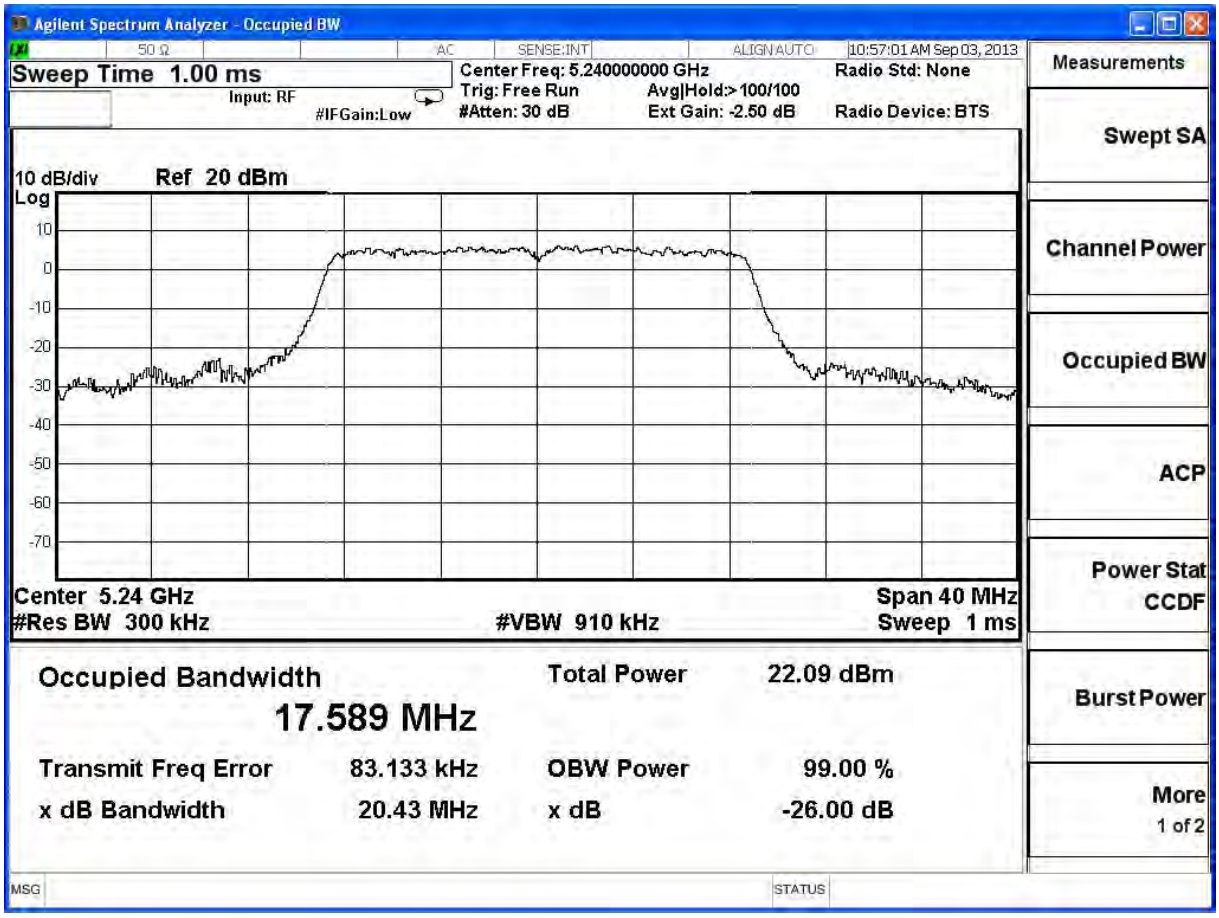
99% & 26dB Bandwidth – Channel 36



99% & 26dB Bandwidth – Channel 44



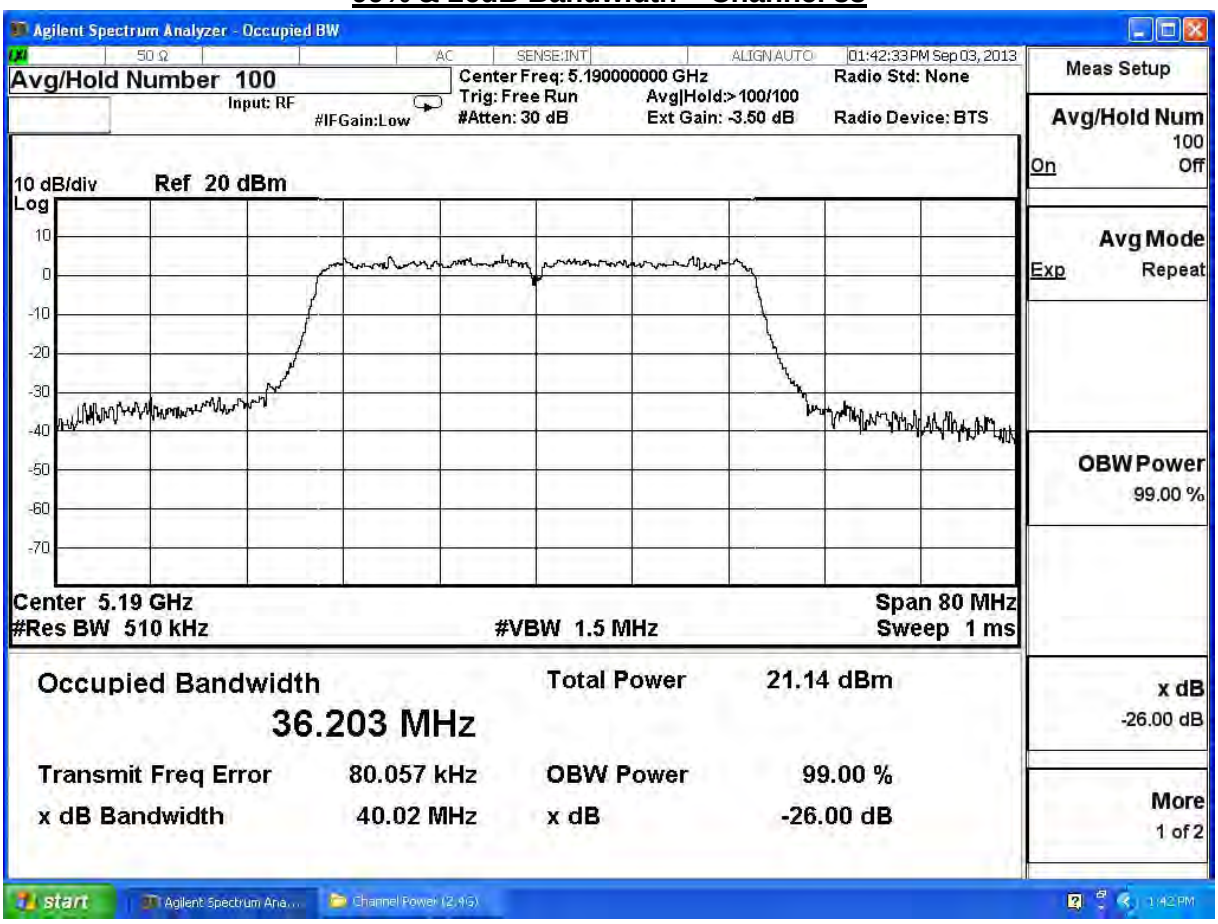
99% & 26dB Bandwidth – Channel 48



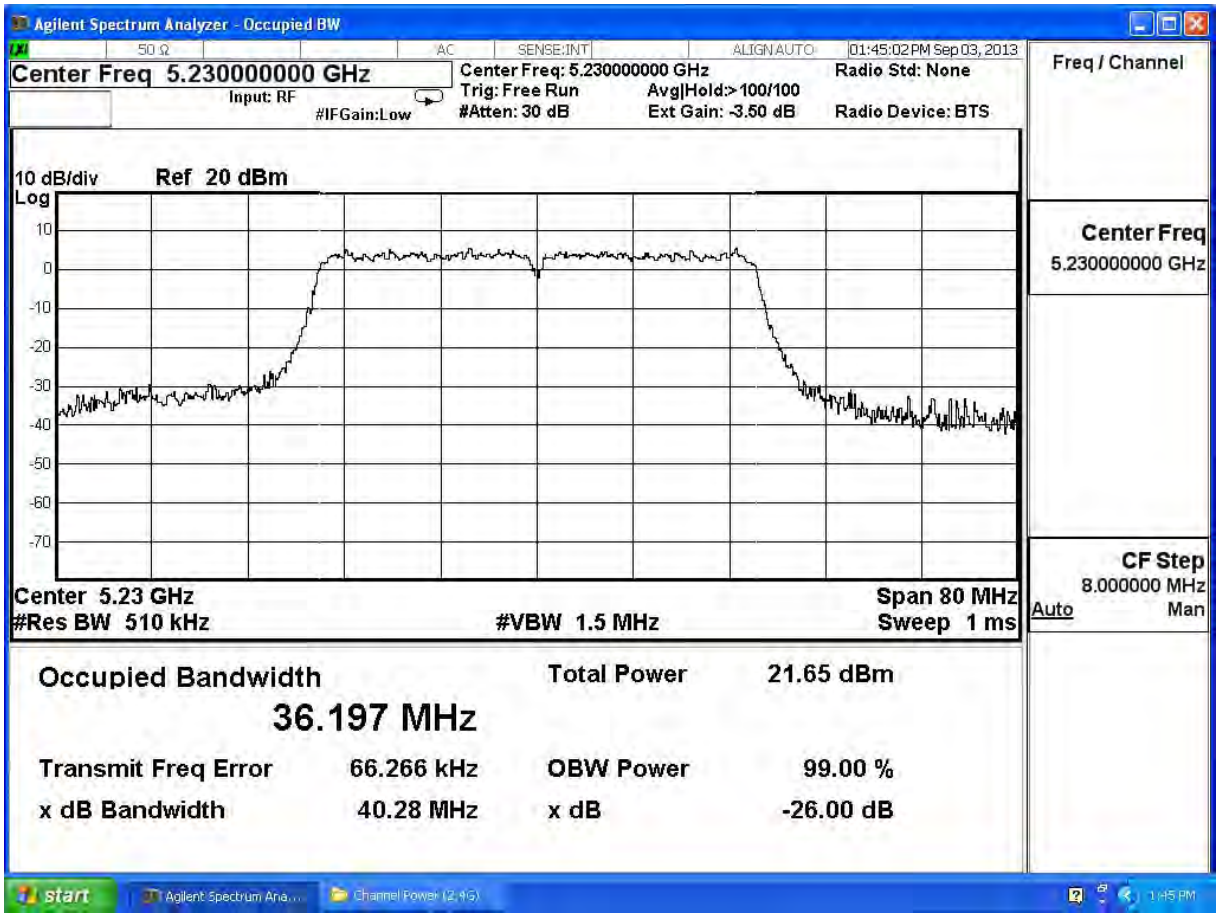
Product	Wireless-AC450 USB Adapter		
Test Item	99% & 26dB Bandwidth		
Test Mode	Mode 1: Transmit		
Date of Test	2013/09/03	Test Site	SR7

802.11n (40MHz), ANT 0				
Channel No.	Frequency (MHz)	26dB	99%BW	Result
		Measure Level (MHz)		
38	5190	40.02	36.20	Pass
46	5230	40.28	36.20	Pass

99% & 26dB Bandwidth – Channel 38



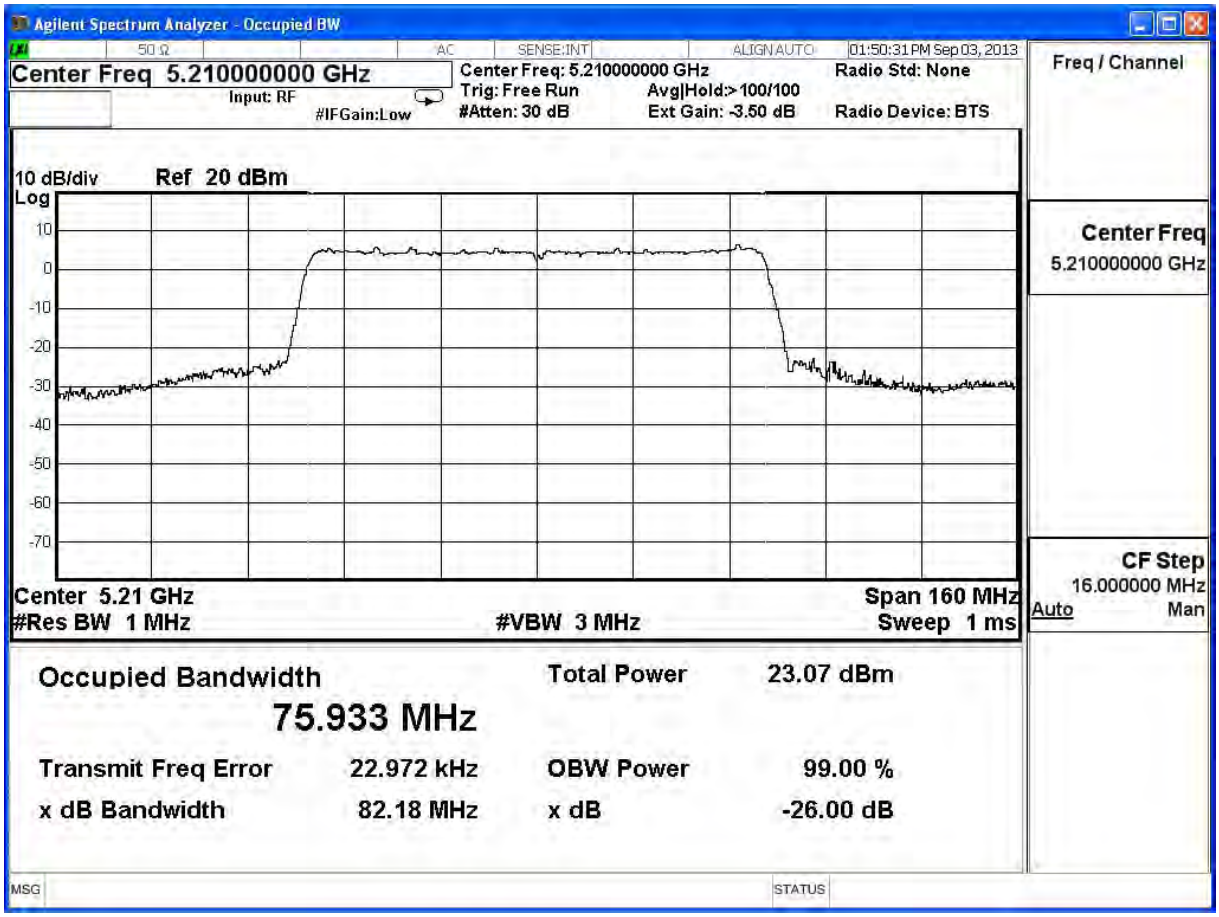
99% & 26dB Bandwidth – Channel 46



Product	Wireless-AC450 USB Adapter		
Test Item	99% & 26dB Bandwidth		
Test Mode	Mode 1: Transmit		
Date of Test	2013/09/03	Test Site	SR7

802.11ac (80MHz), ANT 0				
Channel No.	Frequency (MHz)	26dB	99%BW	Result
		Measure Level (MHz)		
42	5210	82.18	75.93	Pass

99% & 26dB Bandwidth – Channel 42



4. Peak Transmit Output

4.1. Test Equipment

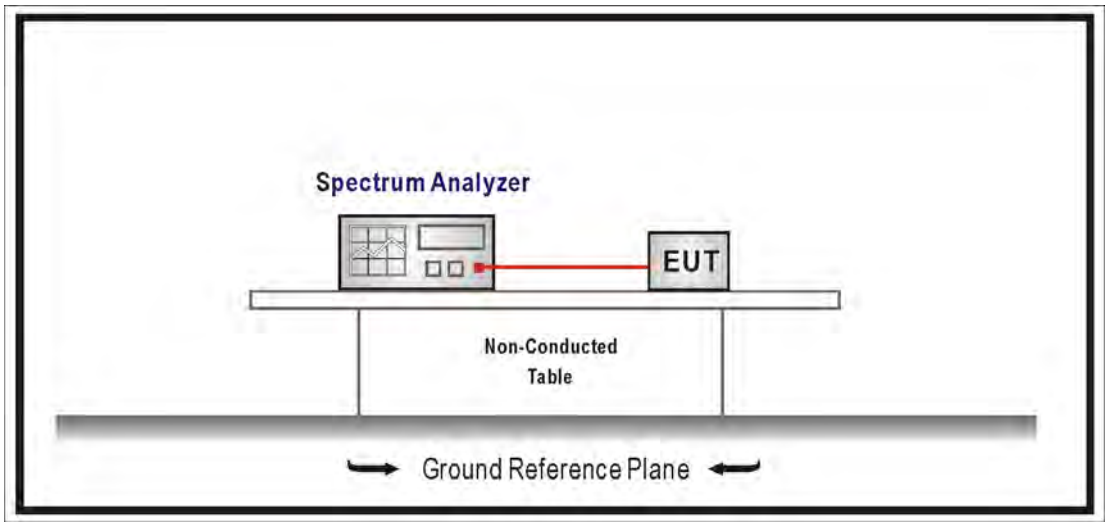
The following test equipments are used during the radiated emission tests:

Peak Transmit Output / SR7

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Spectrum Analyzer	Agilent	N9010A-EXA	US47140172	2014/08/05

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

4.2. Test Setup



4.3. Limits

1. For the band 5.15-5.25 GHz, the peak transmit power over the frequency band of operation shall not exceed the lesser of 50 mW or 4 dBm + 10log B, where B is the 26dB emission bandwidth in MHz. If transmitting antenna of directional gain greater than 6 dBi are used, the peak transmit power shall be reduced by the amount in dB that directional gain of the antenna exceeds 6 dBi.
2. For the band 5.25-5.35 GHz, the peak transmit power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10log B, where B is the 26dB emission bandwidth in MHz. If transmitting antenna of directional gain greater than 6 dBi are used, the peak transmit power shall be reduced by the amount in dB that directional gain of the antenna exceeds 6 dBi.
3. For the band 5.725-5.825 GHz, the peak transmit power over the frequency band of operation shall not exceed the lesser of 1W or 17 dBm + 10log B, where B is the 26dB emission bandwidth in MHz. If transmitting antenna of directional gain greater than 6 dBi are used, the peak transmit power shall be reduced by the amount in dB that directional gain of the antenna exceeds 6 dBi.

4.4. Test Procedure

The EUT was setup to ANSI C63.4, 2009; tested to U-NII test procedure of March 2012 KDB 789033 for compliance to FCC 47CFR Subpart E requirements. The Method SA-1 of the Maximum conducted output power was used.

Set RBW=1MHz, VBW=3MHz with RMS detector and trace average 100 traces in power averaging mode. Set span to encompass the entire emission bandwidth (EBW) of the signal. Compute power by integrating the spectrum across the 26 dB EBW of the signal.

4.5. Uncertainty

The measurement uncertainty is defined as ± 1.27 dB

4.6. Test Result

Product	Wireless-AC450 USB Adapter		
Test Item	Peak Transmit Output		
Test Mode	Mode 1: Transmit		
Date of Test	2013/11/26	Test Site	SR7

802.11a

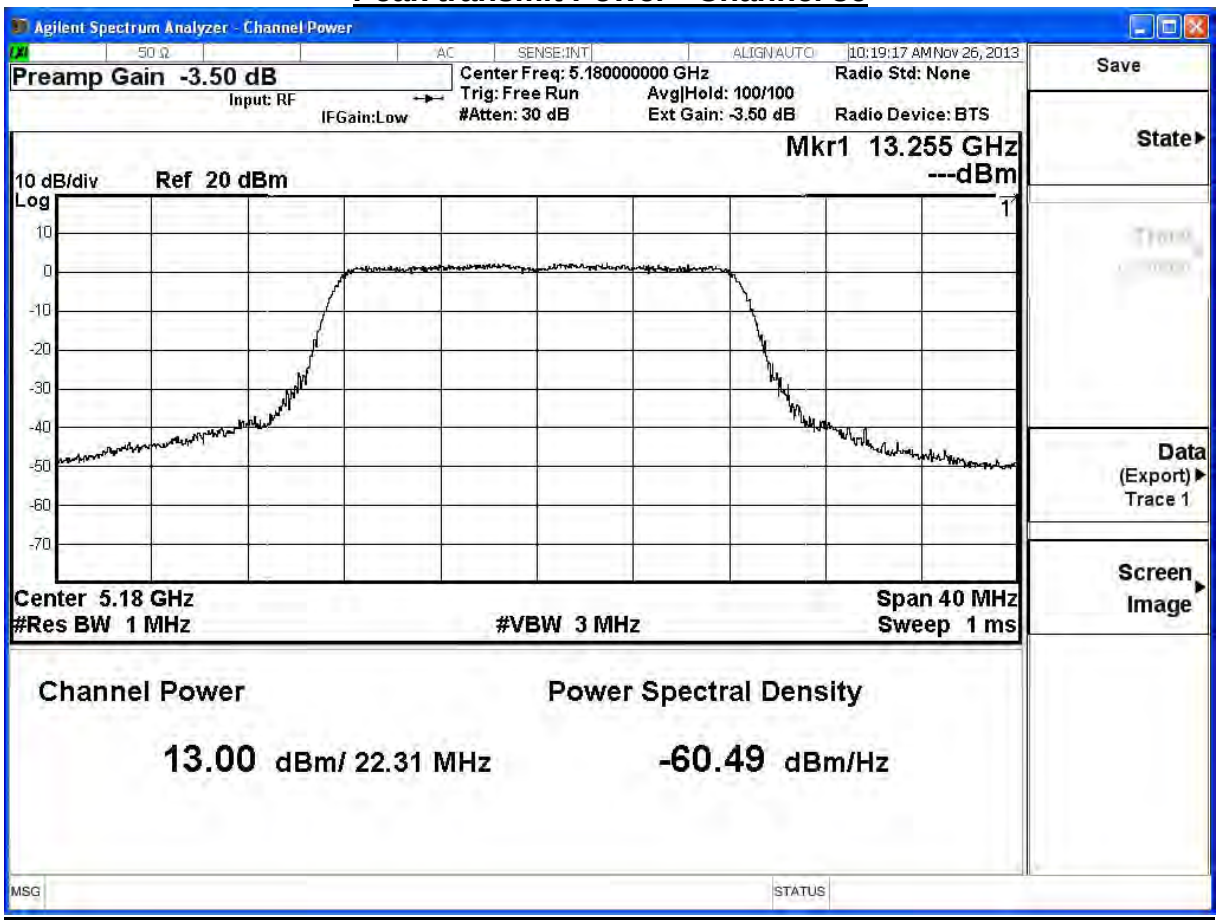
Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
36	5180	13.00	≦17	Pass
44	5220	13.06	≦17	Pass
48	5240	12.64	≦17	Pass

The worst emission of data rate is 6 Mbps.

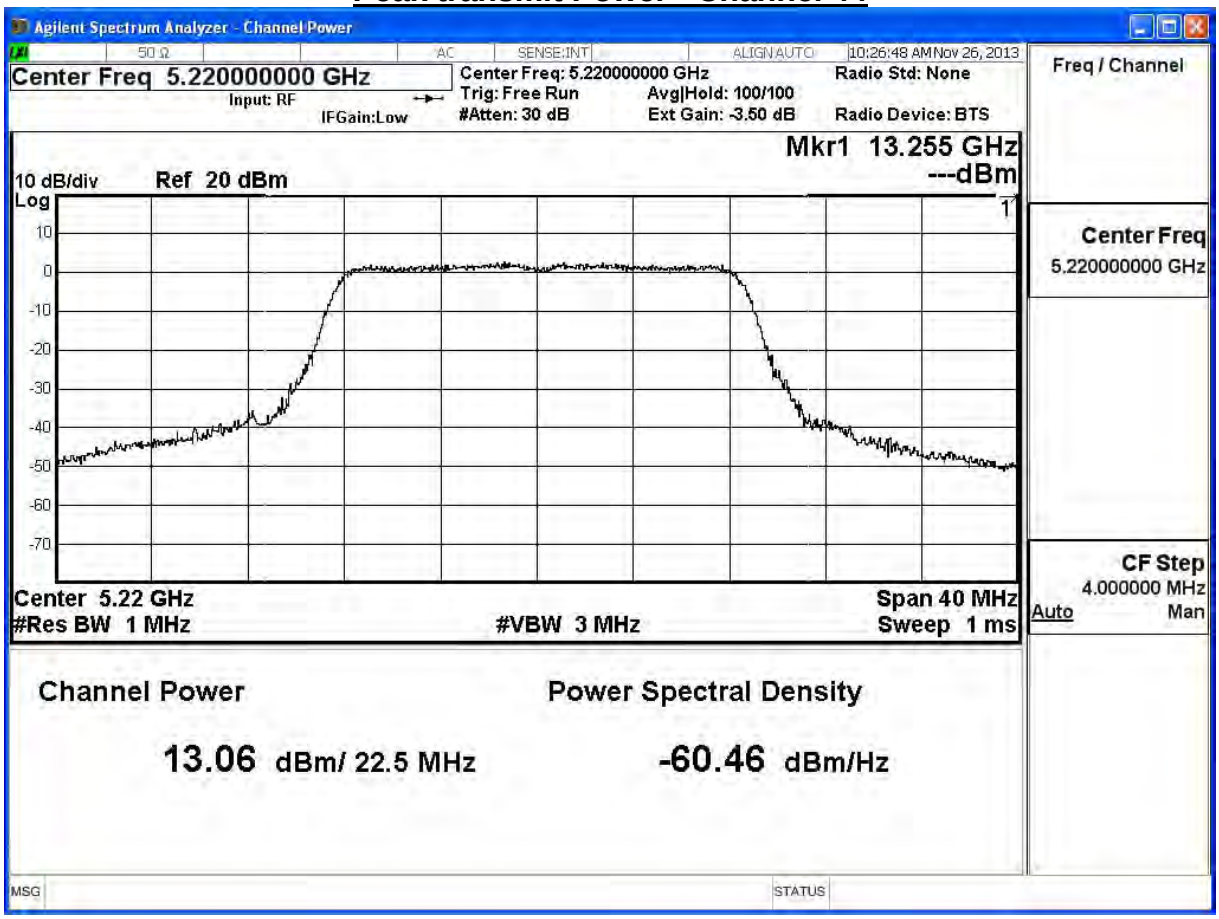
Peak Power Output (dBm)									
Channel No	Frequency (MHz)	Data Rate							Required Limit
		6	12	18	24	36	48	54	
36	5180	13.00	--	--	--	--	--	--	17dBm or 4dBm+10logB
44	5220	13.06	12.86	12.76	12.66	12.54	12.42	12.18	
48	5240	12.64	--	--	--	--	--	--	

Note: Measure Level =Reading value + cable loss

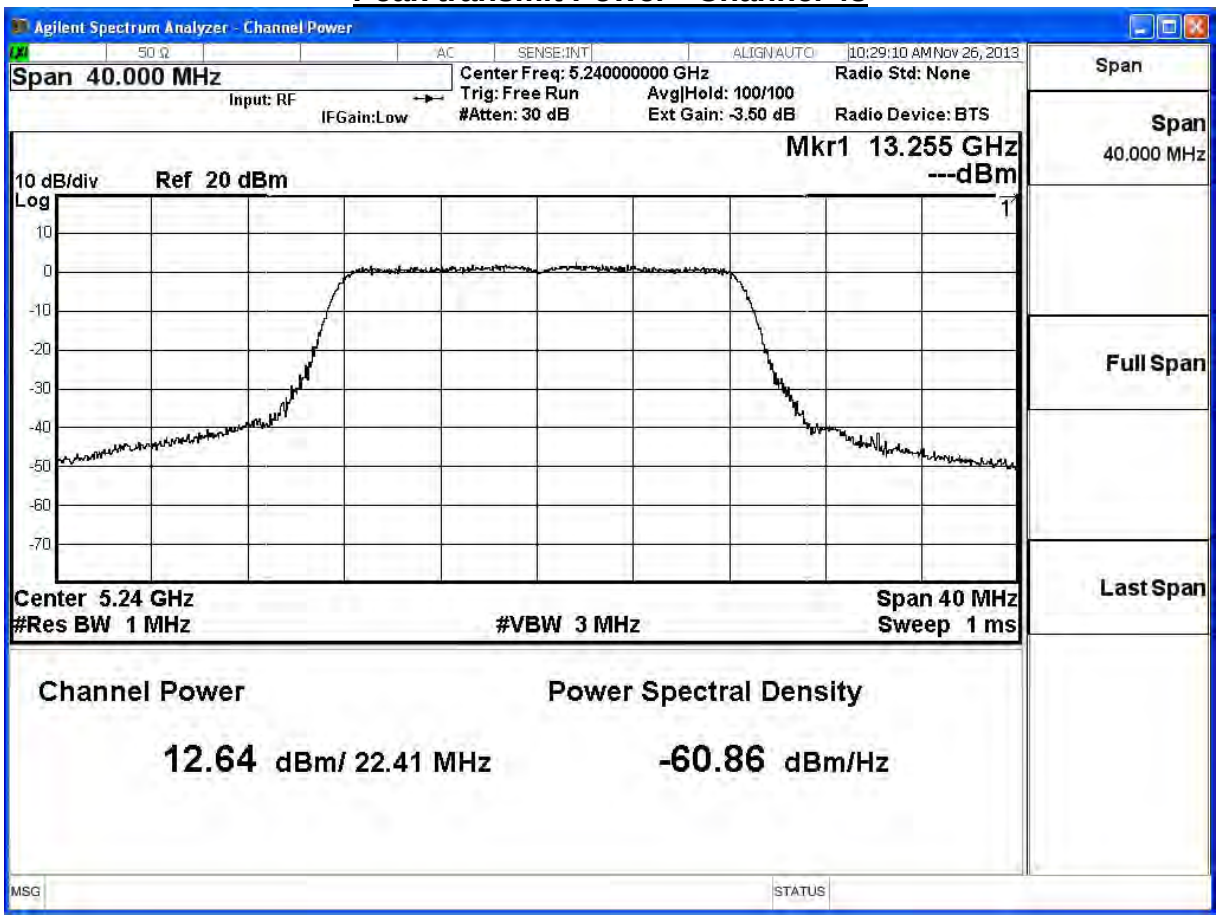
Peak transmit Power - Channel 36



Peak transmit Power - Channel 44



Peak transmit Power - Channel 48



Product	Wireless-AC450 USB Adapter		
Test Item	Peak Transmit Output		
Test Mode	Mode 1: Transmit		
Date of Test	2013/11/26	Test Site	SR7

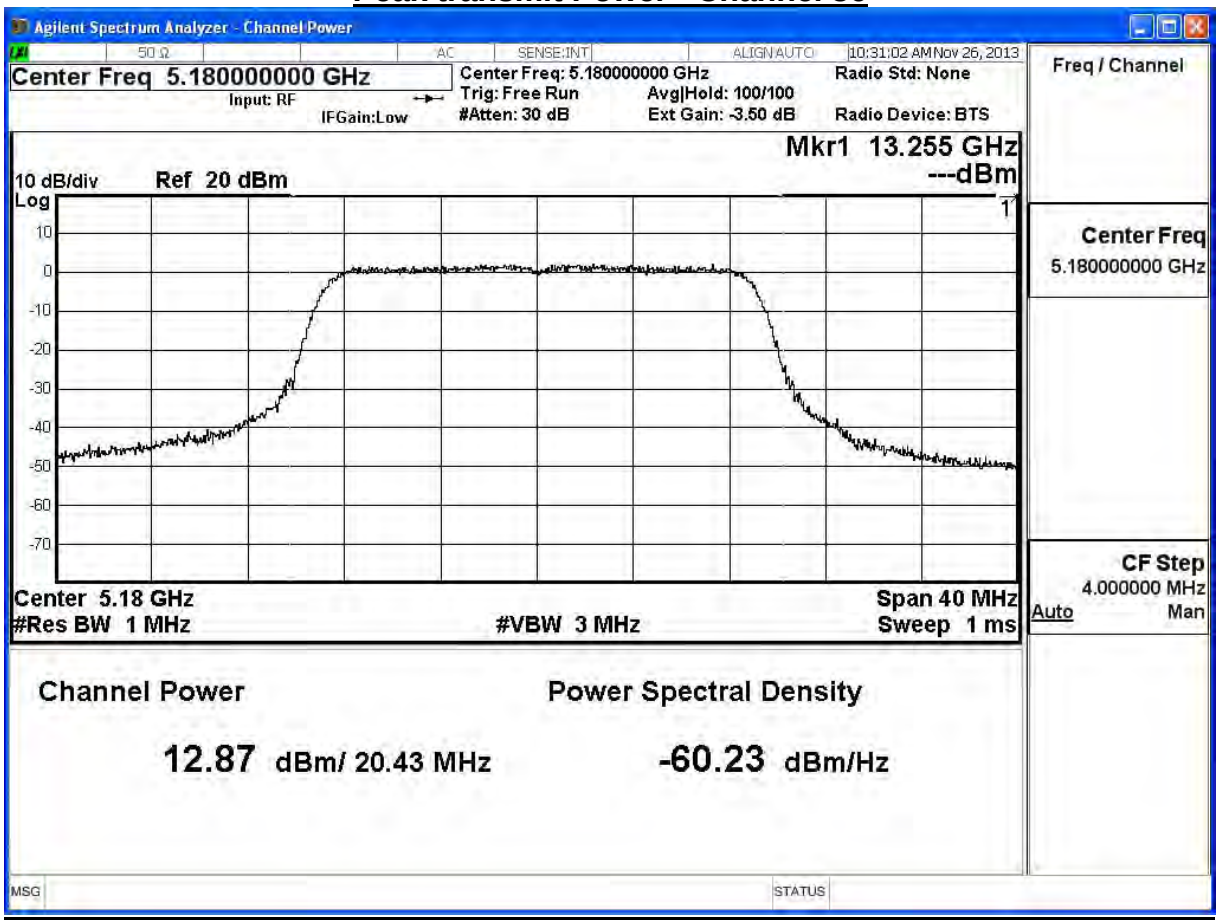
802.11n(20MHz), ANT 0				
Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
36	5180	12.87	≦17	Pass
44	5220	12.95	≦17	Pass
48	5240	12.57	≦17	Pass

The worst emission of data rate is 6.5Mbps.

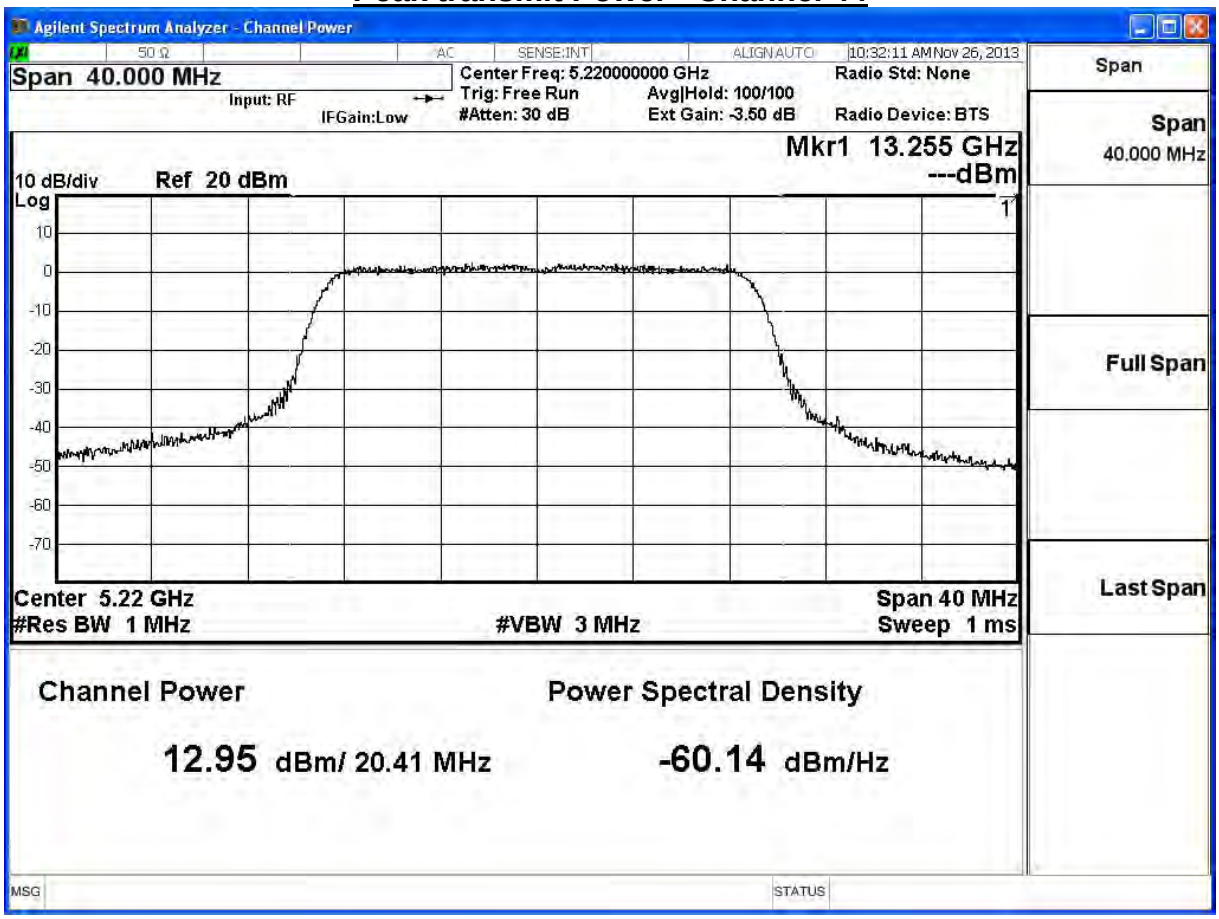
Peak Power Output (dBm)										
MCS Index		0	1	2	3	4	5	6	7	Required Limit
Channel No	Frequency (MHz)	Data Rate								
		6.5	13	19.5	26	39	52	58.5	65	
36	5180	12.87	--	--	--	--	--	--	--	17dBm or 4dBm+10logB
44	5220	12.95	12.85	12.75	12.55	12.45	12.21	12.09	11.97	
48	5240	12.57	--	--	--	--	--	--	--	

Note: Measure Level =Reading value + cable loss

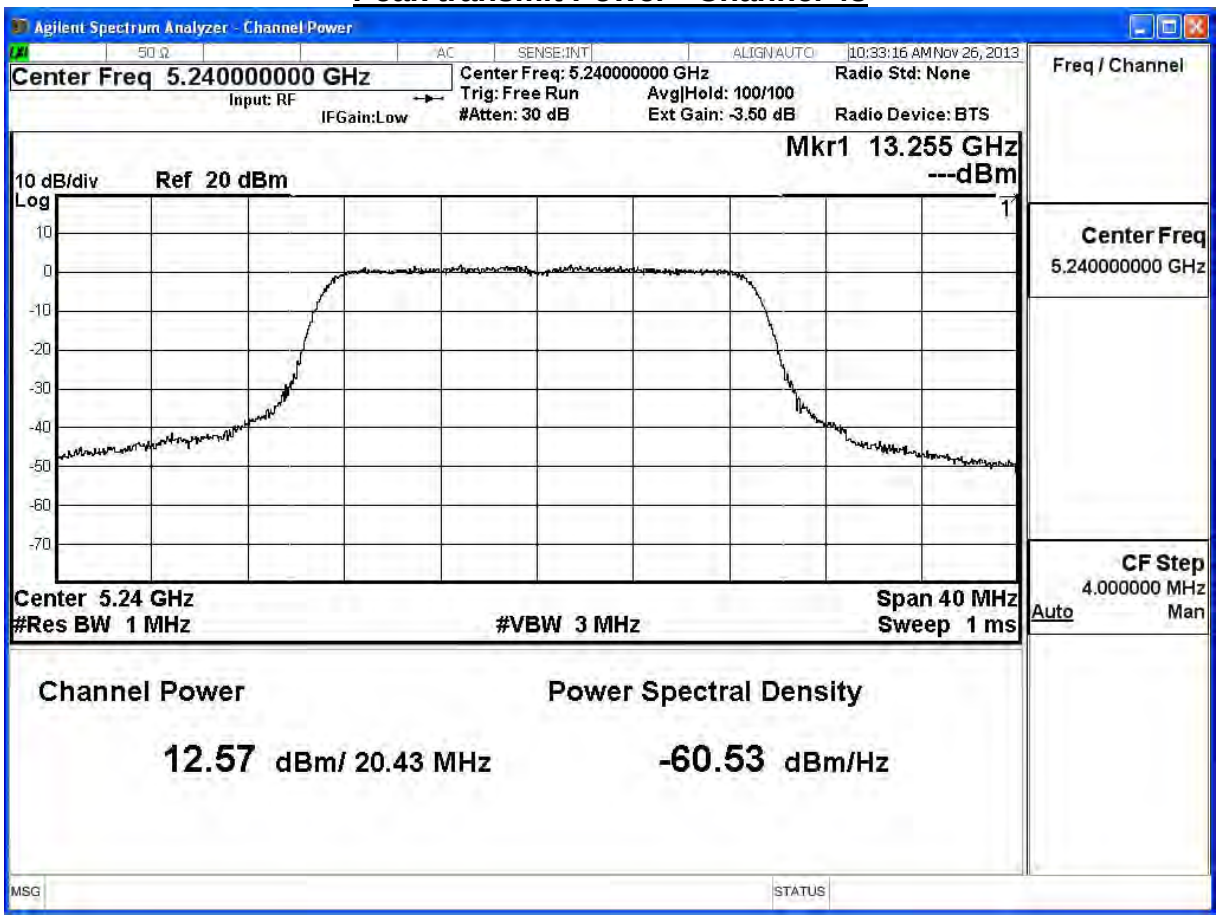
Peak transmit Power - Channel 36



Peak transmit Power - Channel 44



Peak transmit Power - Channel 48



Product	Wireless-AC450 USB Adapter		
Test Item	Peak Transmit Output		
Test Mode	Mode 1: Transmit		
Date of Test	2013/11/26	Test Site	SR7

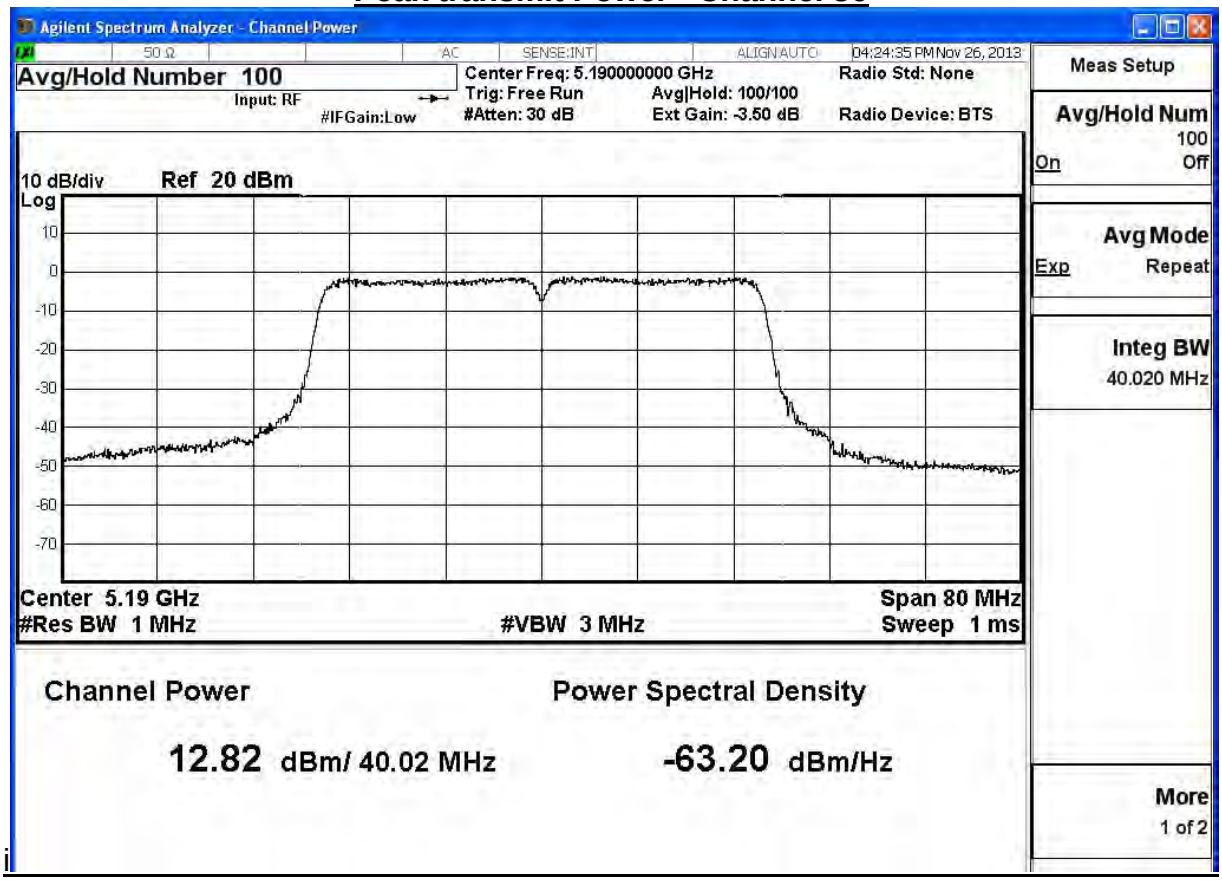
IEEE 802.11n(40MHz)_ANT 0				
Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
38	5190	12.82	≦17	Pass
46	5230	12.54	≦17	Pass

The worst emission of data rate is 13.5 Mbps.

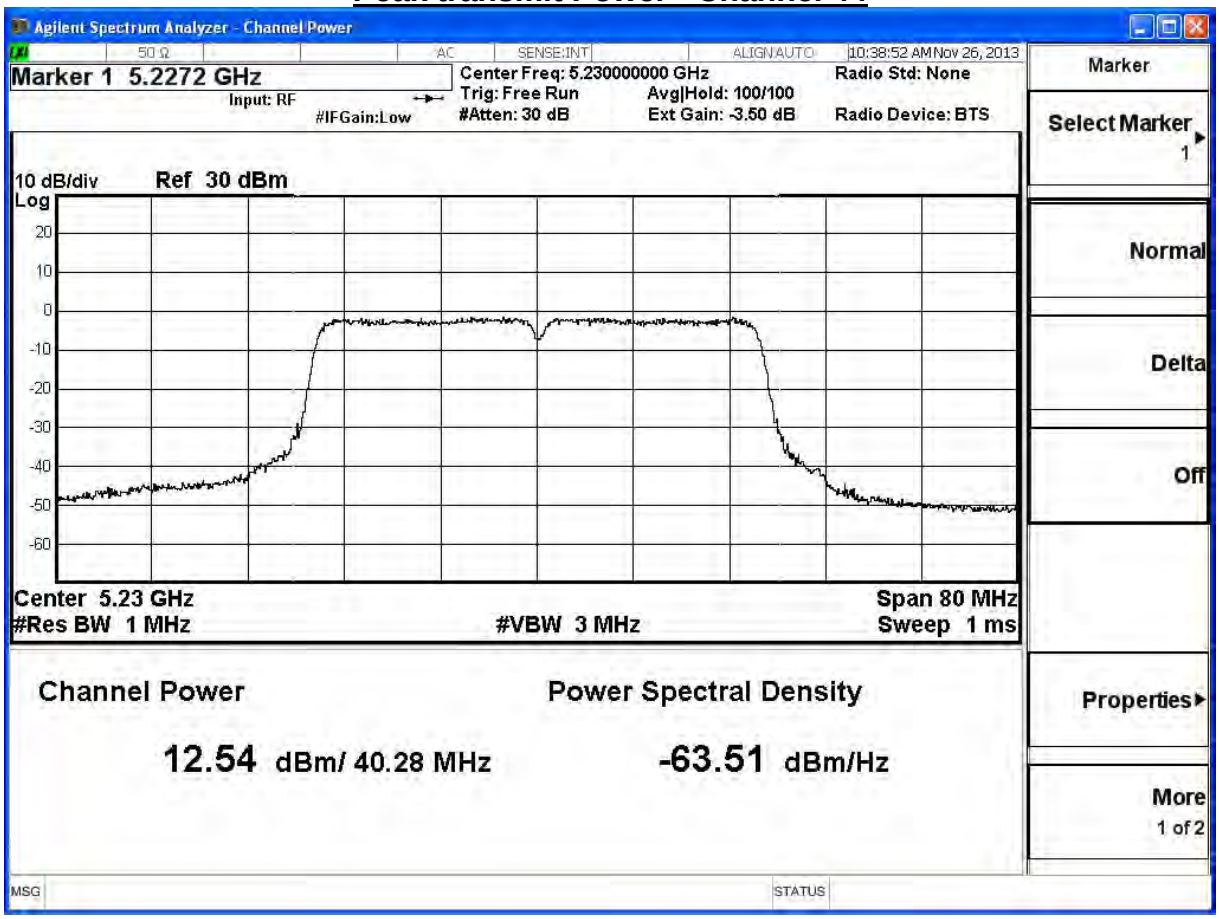
Peak Power Output (dBm)										
MCS Index		0	1	2	3	4	5	6	7	Required Limit
Channel No	Frequency (MHz)	Data Rate								
		13.5	27	40.5	54	81	108	121.5	135	
38	5190	12.82	--	--	--	--	--	--	--	17dBm or 4dBm+10logB
46	5230	12.54	12.44	12.24	12.14	11.94	11.70	11.46	11.22	

Note: Measure Level =Reading value + cable loss

Peak transmit Power - Channel 36



Peak transmit Power - Channel 44



Product	Wireless-AC450 USB Adapter		
Test Item	Peak Transmit Output		
Test Mode	Mode 1: Transmit		
Date of Test	2013/11/26	Test Site	SR7

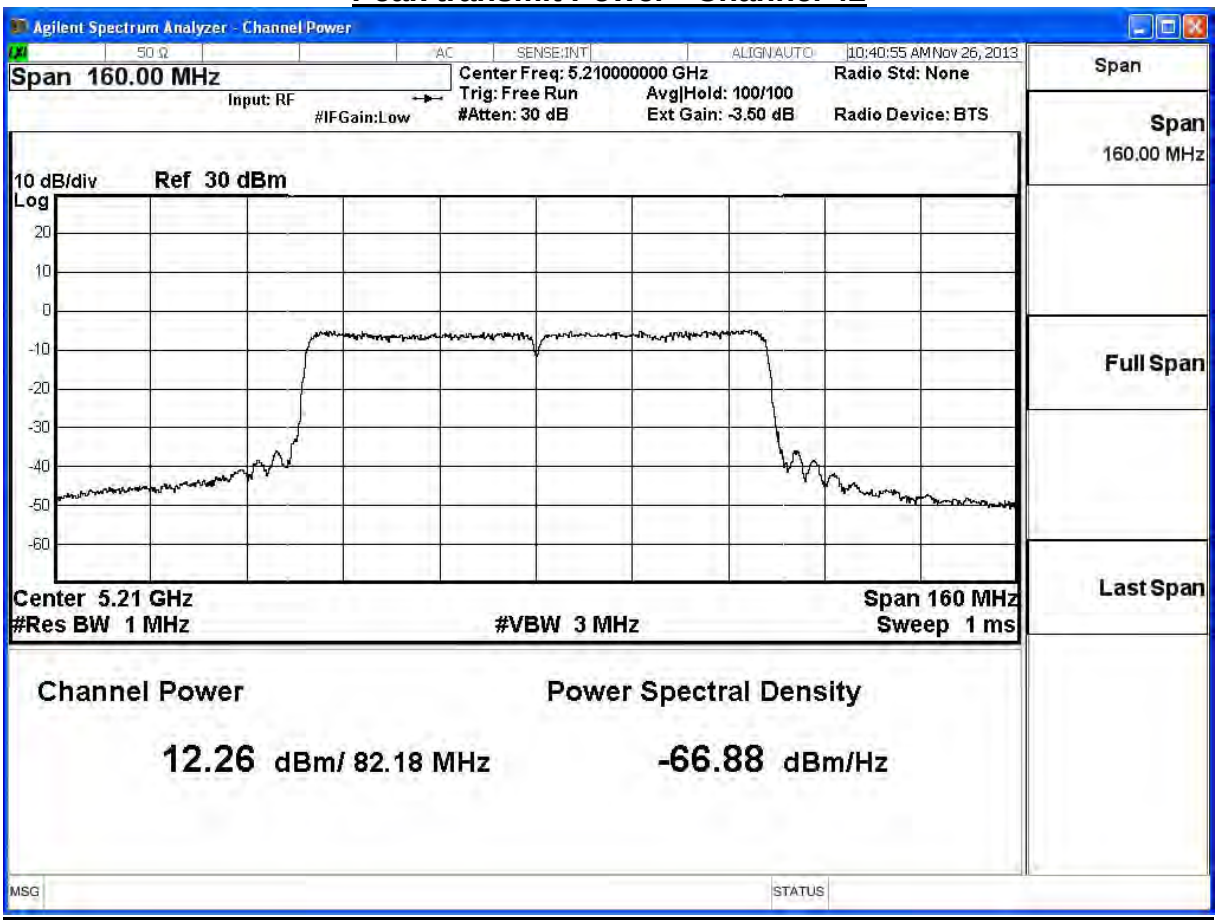
IEEE 802.11ac(80MHz)_ANT 0				
Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
42	5210	12.26	≦17	Pass

The worst emission of data rate is 29.3 Mbps.

Peak Power Output (dBm)										
MCS Index		0	1	2	3	4	5	6	7	8	9
Channel No	Frequency (MHz)	Data Rate									
		29.3	58.5	87.8	117	175.5	234	263.3	292.5	351	390
42	5210	12.26	12.06	11.96	11.86	11.76	11.56	11.44	11.32	11.20	11.08

Note: Measure Level =Reading value + cable loss

Peak transmit Power - Channel 42



5. Peak Power Spectrum Density

5.1. Test Equipment

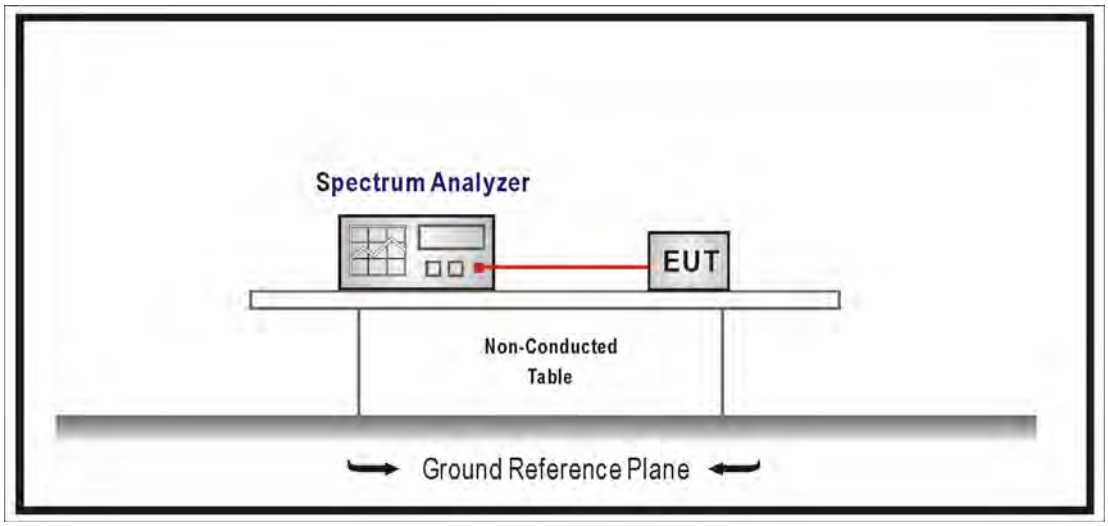
The following test equipments are used during the radiated emission tests:

Peak Power Spectrum Density / SR7

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Spectrum Analyzer	Agilent	N9010A-EXA	US47140172	2014/08/05

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

5.2. Test Setup



5.3. Limits

1. For the band 5.15-5.25 GHz, the peak power spectral density shall not exceed 4 dBm in any 1-MHz band. If transmitting antenna of directional gain greater than 6 dBi are used, the peak power spectral density shall be reduced by the amount in dB that directional gain of the antenna exceeds 6 dBi.
2. For the band 5.25-5.35 GHz, the peak power spectral density shall not exceed 11 dBm in any 1-MHz band. If transmitting antenna of directional gain greater than 6 dBi are used, the peak power spectral density shall be reduced by the amount in dB that directional gain of the antenna exceeds 6 dBi.
3. For the band 5.725-5.825 GHz, the peak power spectral density shall not exceed 17 dBm in any 1-MHz band. If transmitting antenna of directional gain greater than 6 dBi are used, the peak power spectral density shall be reduced by the amount in dB that directional gain of the antenna exceeds 6 dBi.

5.4. Test Procedure

The EUT was setup to ANSI C63.4, 2009; tested to U-NII test procedure of March 2012 KDB 789033 for compliance to FCC 47CFR Subpart E requirements.

Set RBW=1MHz, VBW=3MHz with RMS detector. The PPSD is the highest level found across the emission in any 1-MHz band after 100 sweeps of averaging.

5.5. Uncertainty

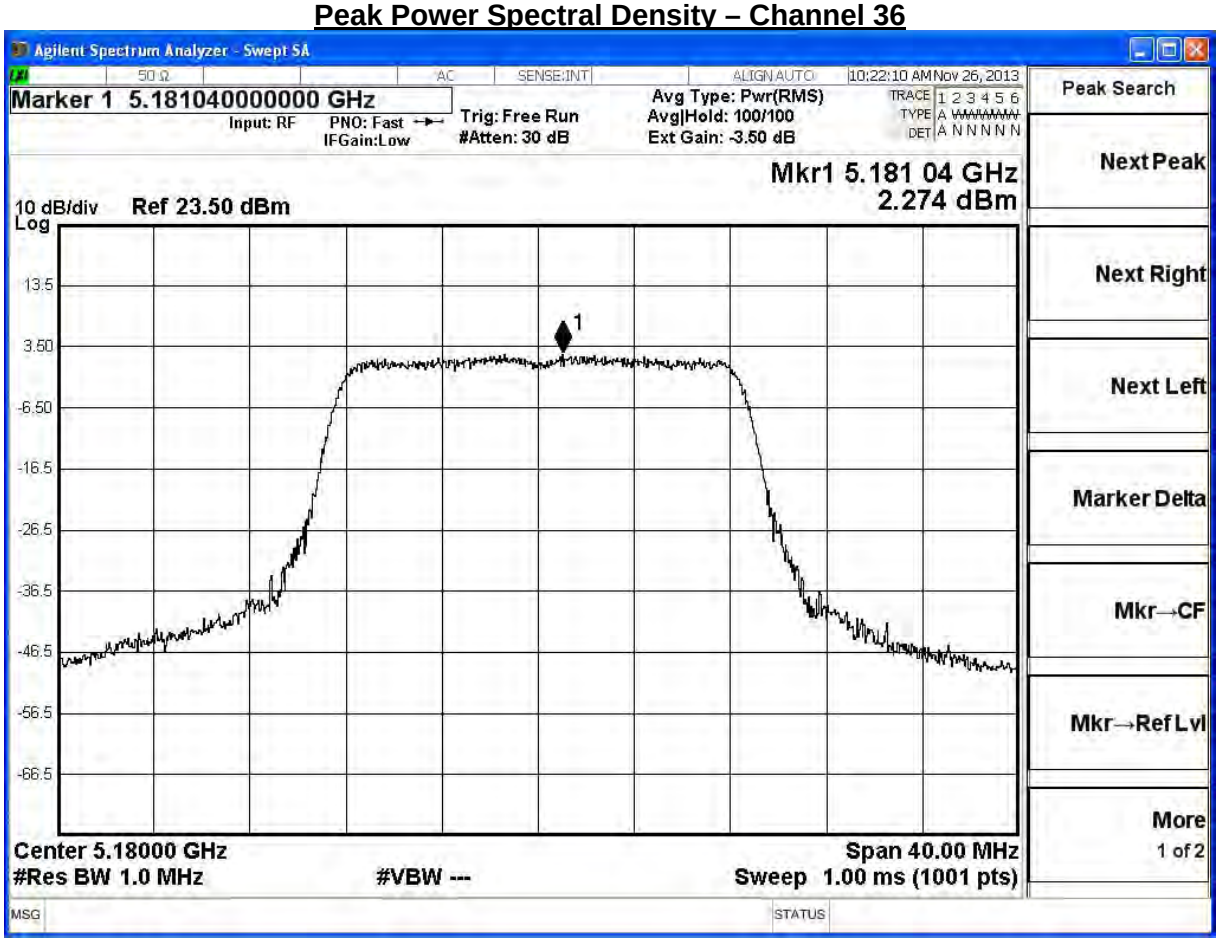
The measurement uncertainty is defined as ± 1.27 dB

5.6. Test Result

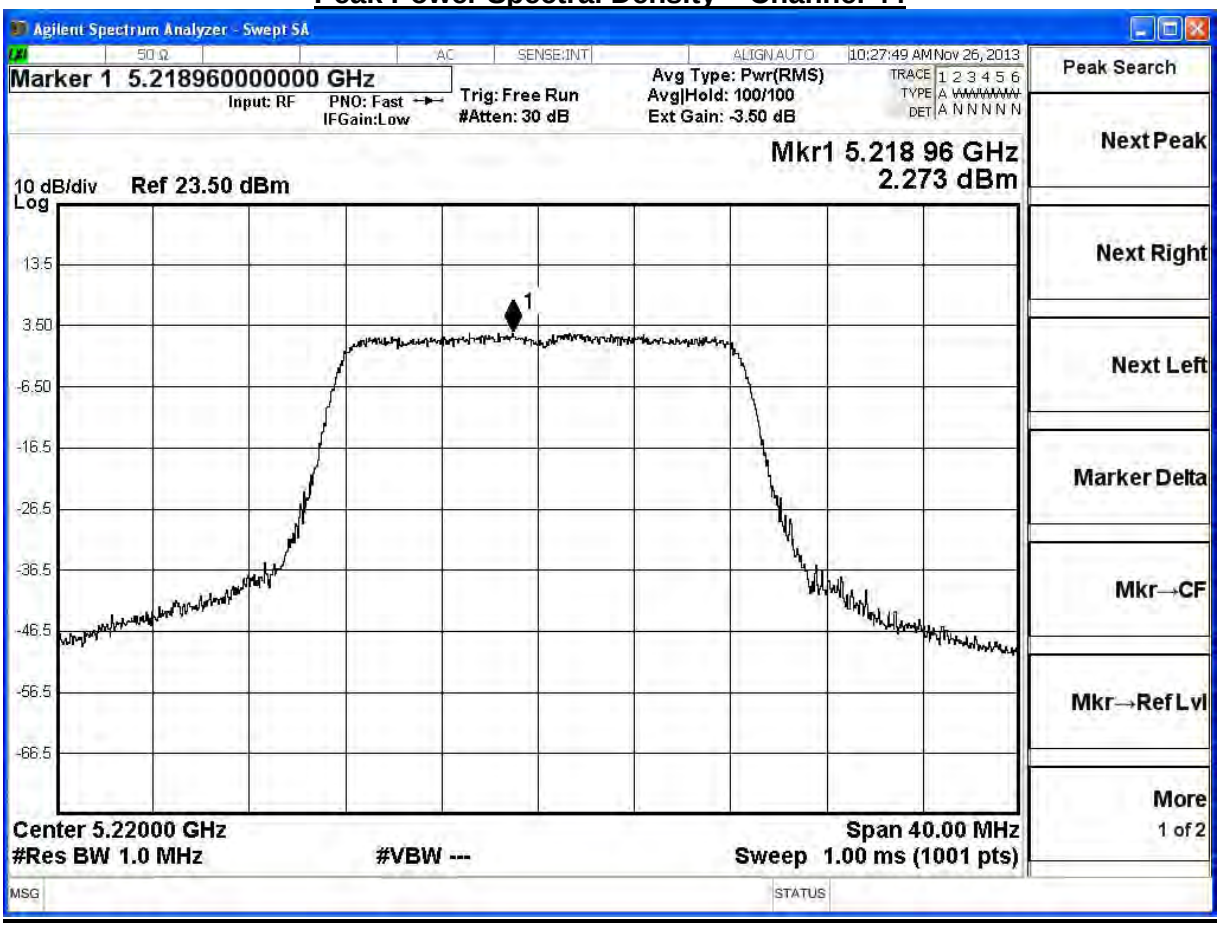
Product	Wireless-AC450 USB Adapter		
Test Item	Peak Power Spectral Density		
Test Mode	Mode 1: Transmit		
Date of Test	2013/11/26	Test Site	SR7

IEEE802.11a, ANT 0				
Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
36	5180	2.27	≦4	Pass
44	5220	2.27	≦4	Pass
48	5240	2.54	≦4	Pass

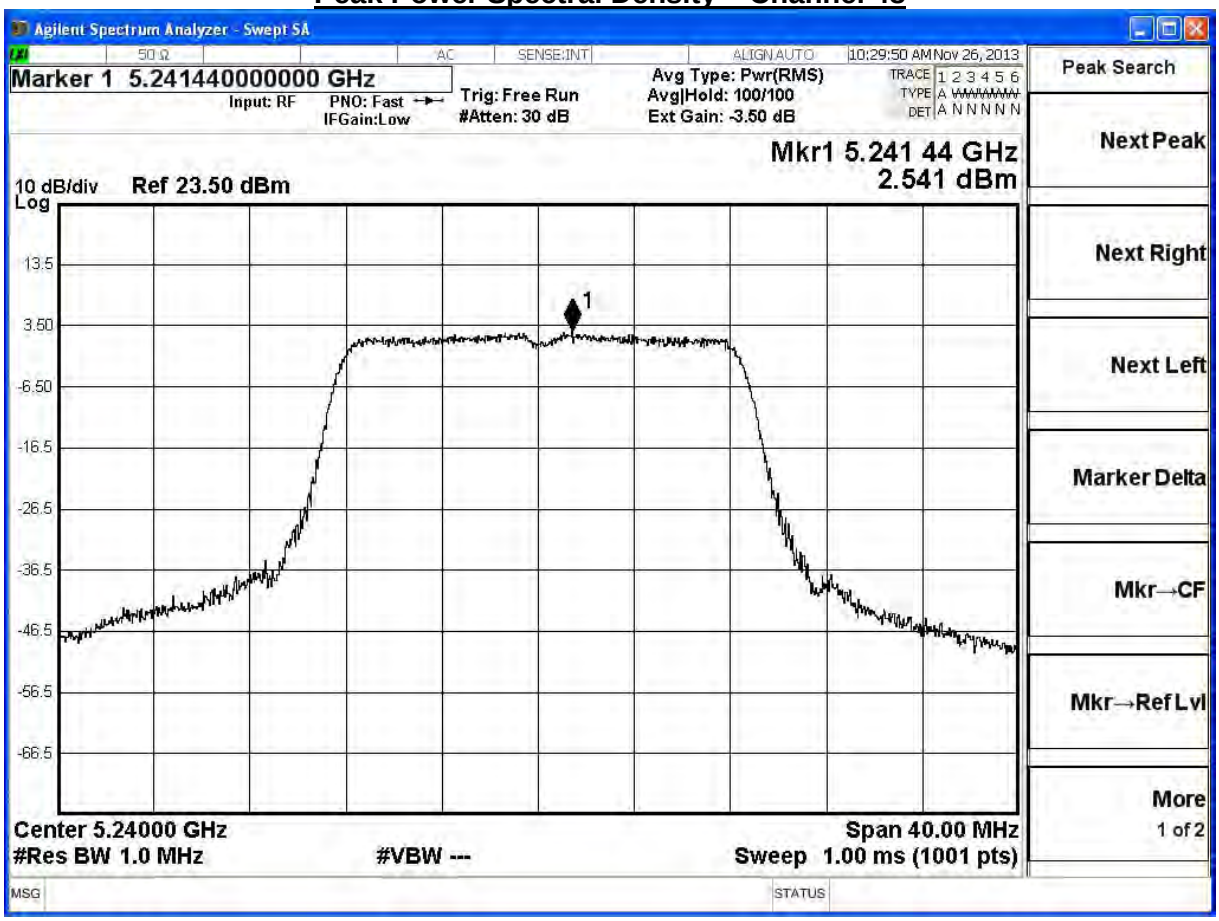
Peak Power Spectral Density – Channel 36



Peak Power Spectral Density – Channel 44



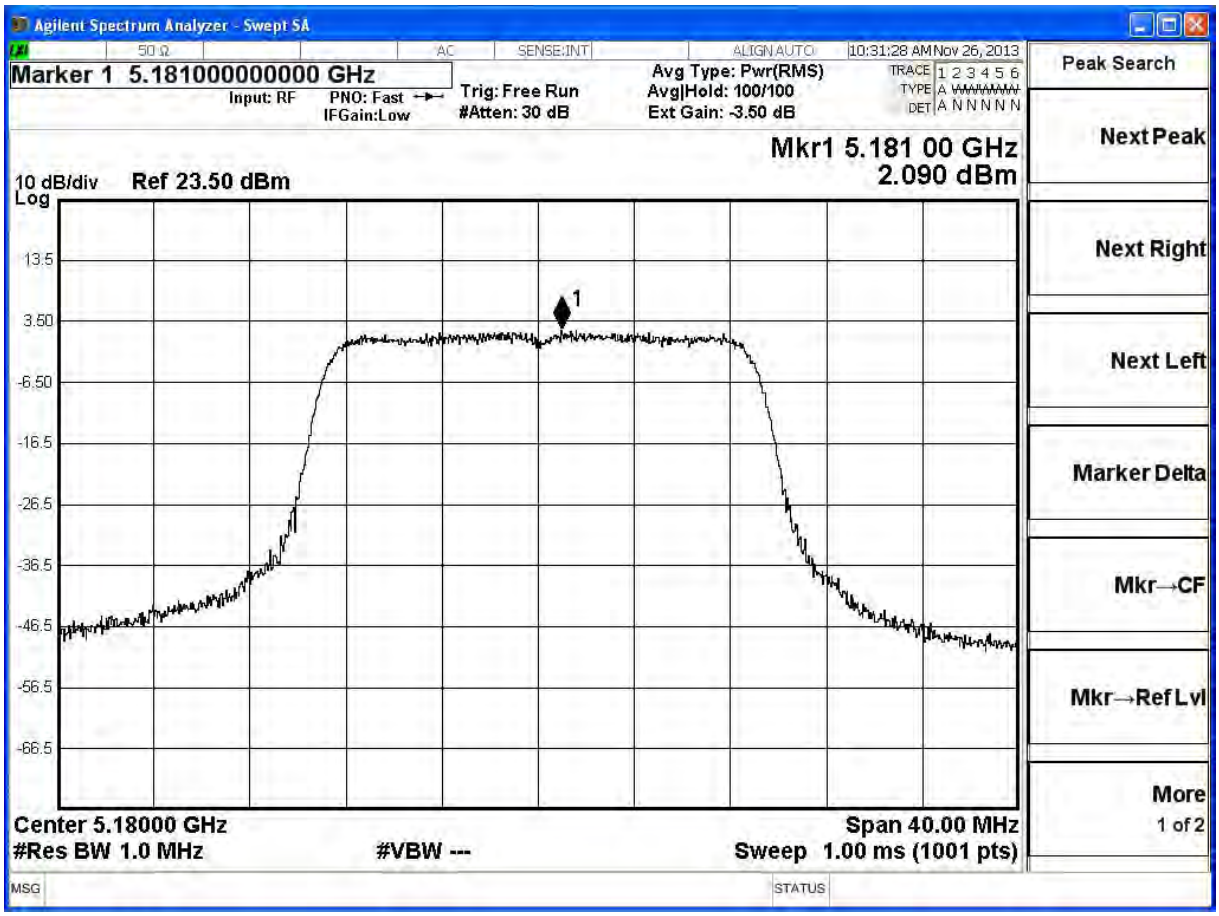
Peak Power Spectral Density – Channel 48



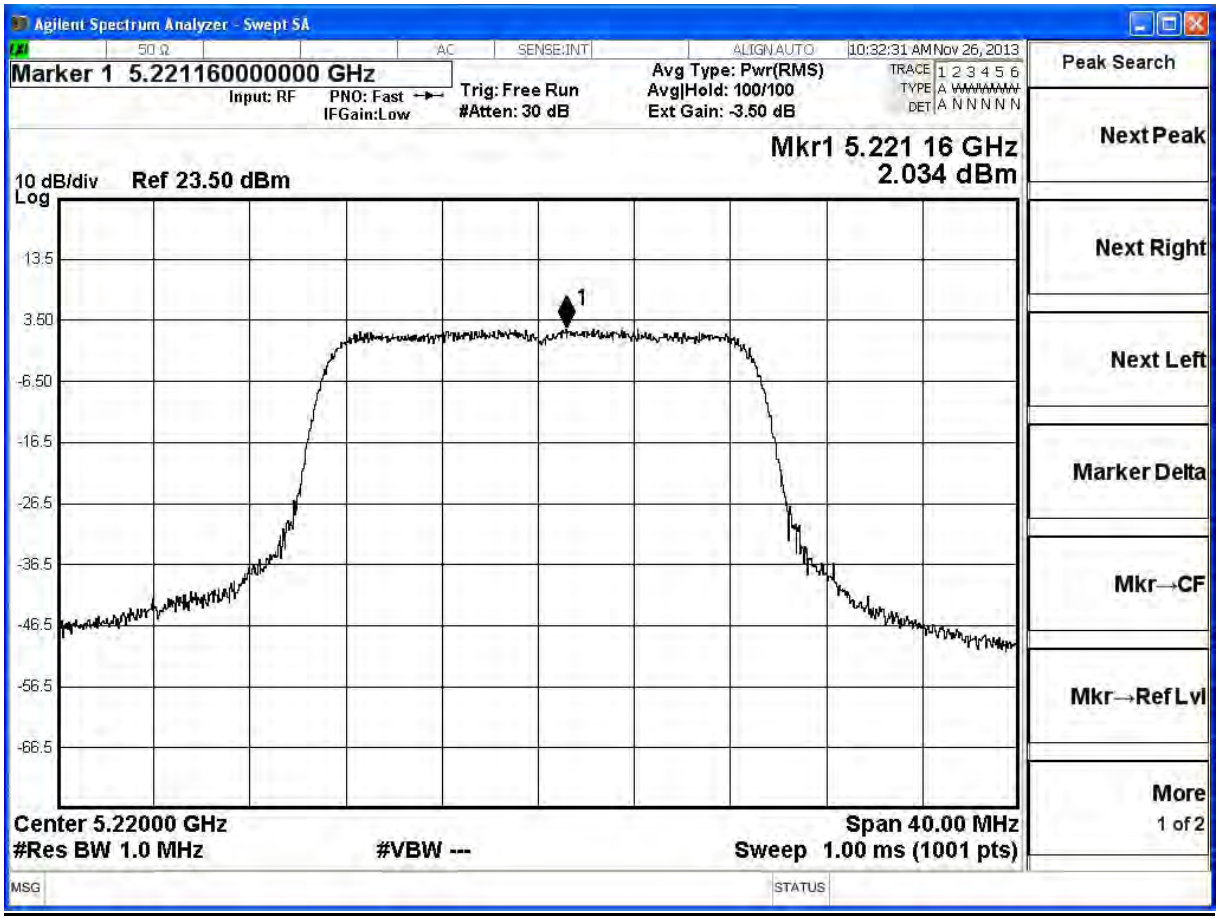
Product	Wireless-AC450 USB Adapter		
Test Item	Peak Power Spectral Density		
Test Mode	Mode 1: Transmit		
Date of Test	2013/11/26	Test Site	SR7

IEEE802.11n_20MHz, ANT 0				
Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
36	5180	2.09	≦4	Pass
44	5220	2.03	≦4	Pass
48	5240	1.76	≦4	Pass

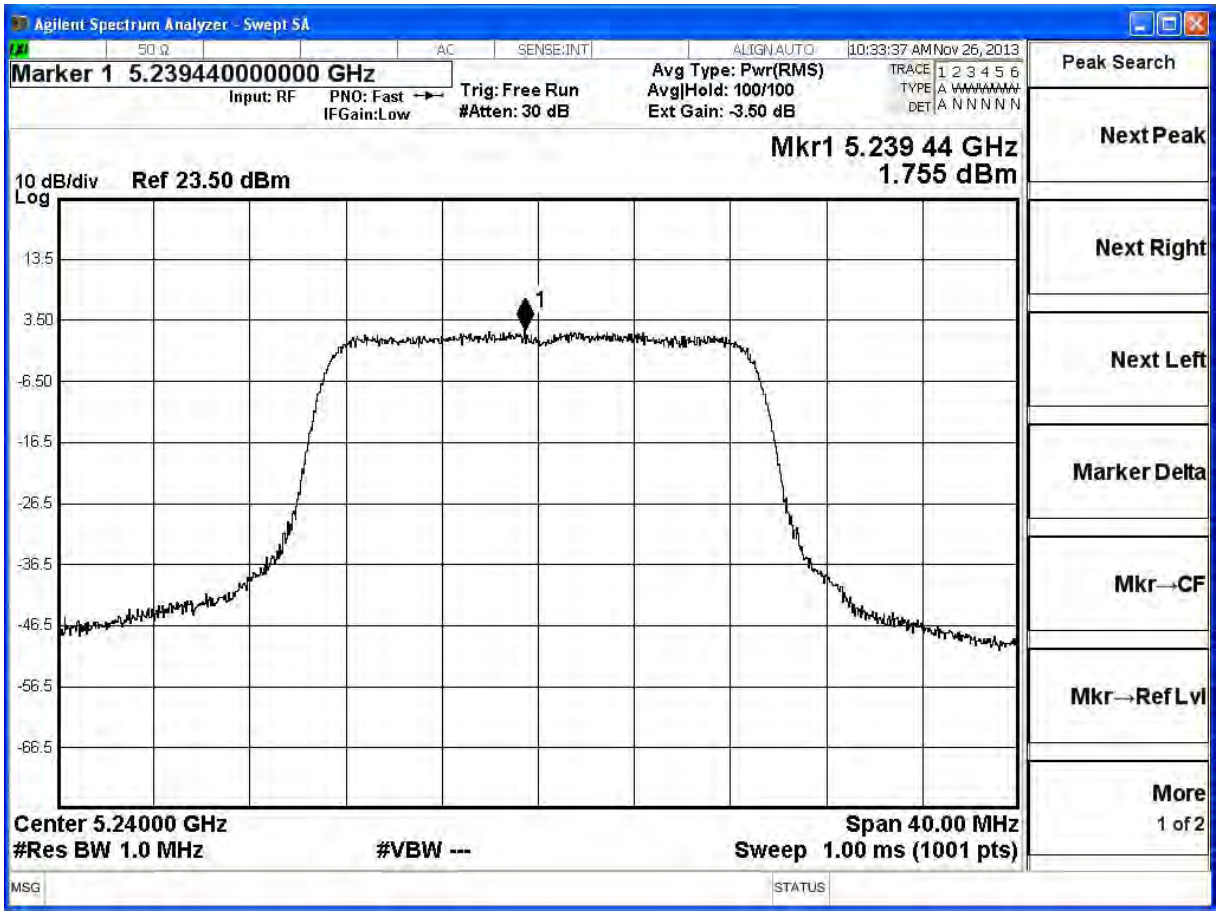
Peak Power Spectral Density – Channel 36



Peak Power Spectral Density – Channel 44



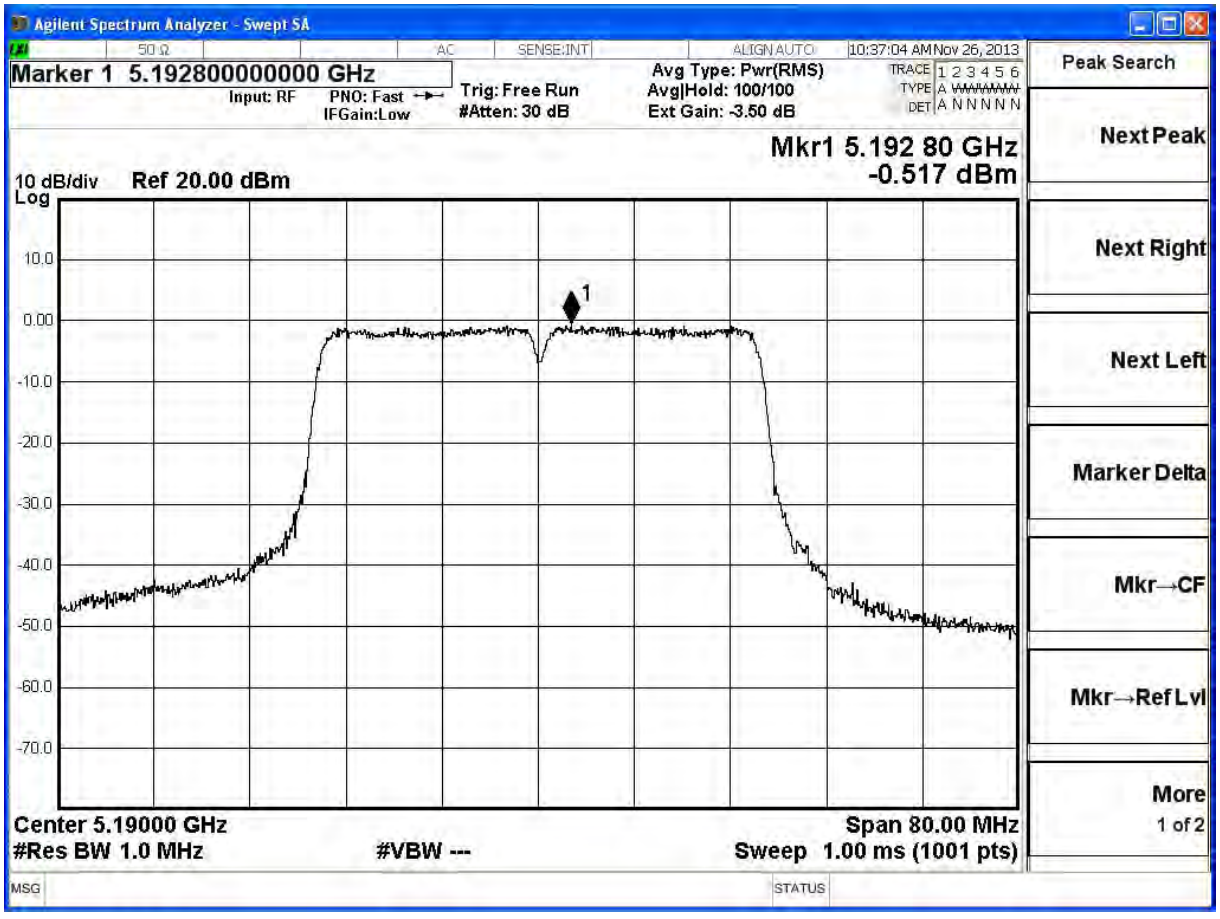
Peak Power Spectral Density – Channel 48



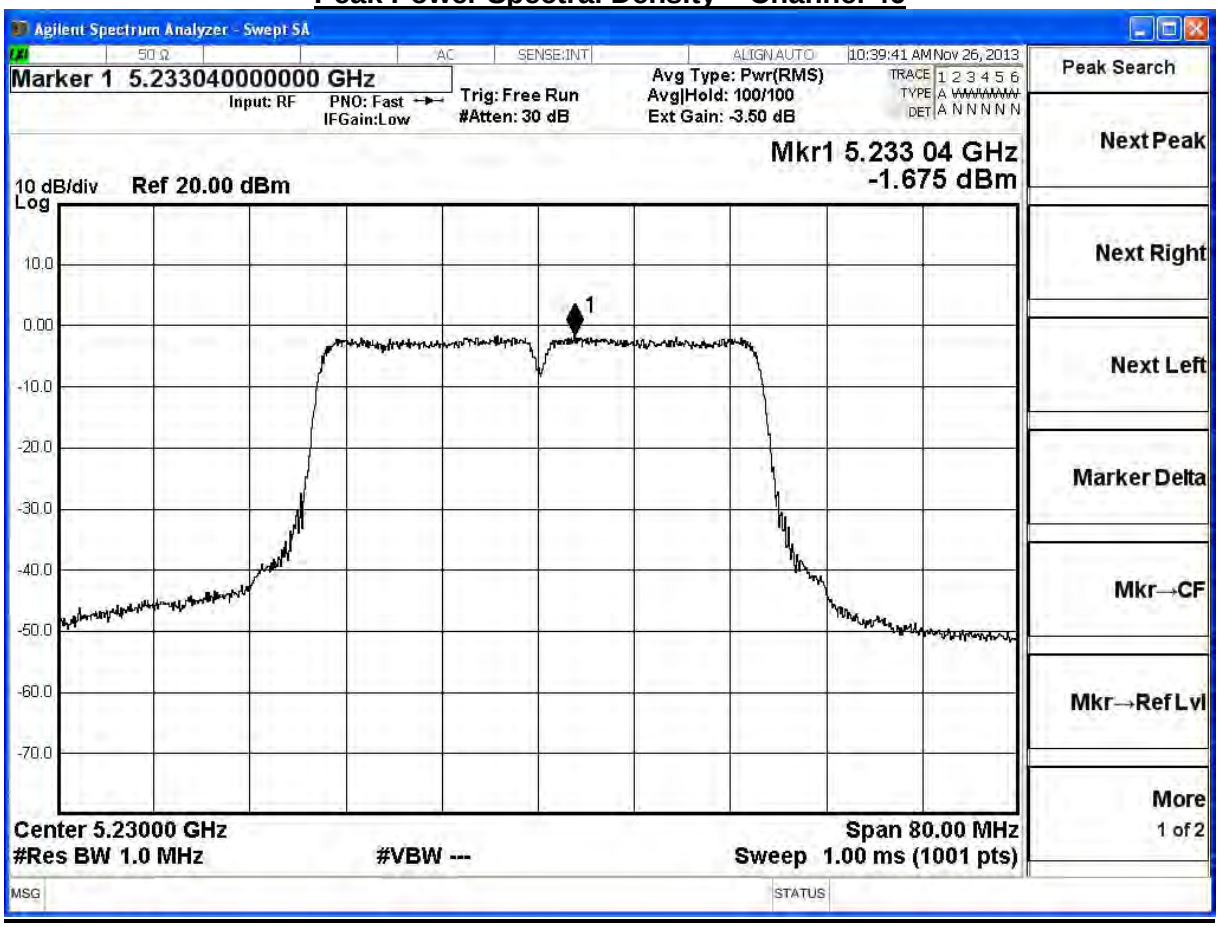
Product	Wireless-AC450 USB Adapter		
Test Item	Peak Power Spectral Density		
Test Mode	Mode 1: Transmit		
Date of Test	2013/11/26	Test Site	SR7

IEEE802.11n_40MHz, ANT 0				
Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
38	5190	-0.50	≦4	Pass
46	5230	-1.66	≦4	Pass

Peak Power Spectral Density – Channel 36



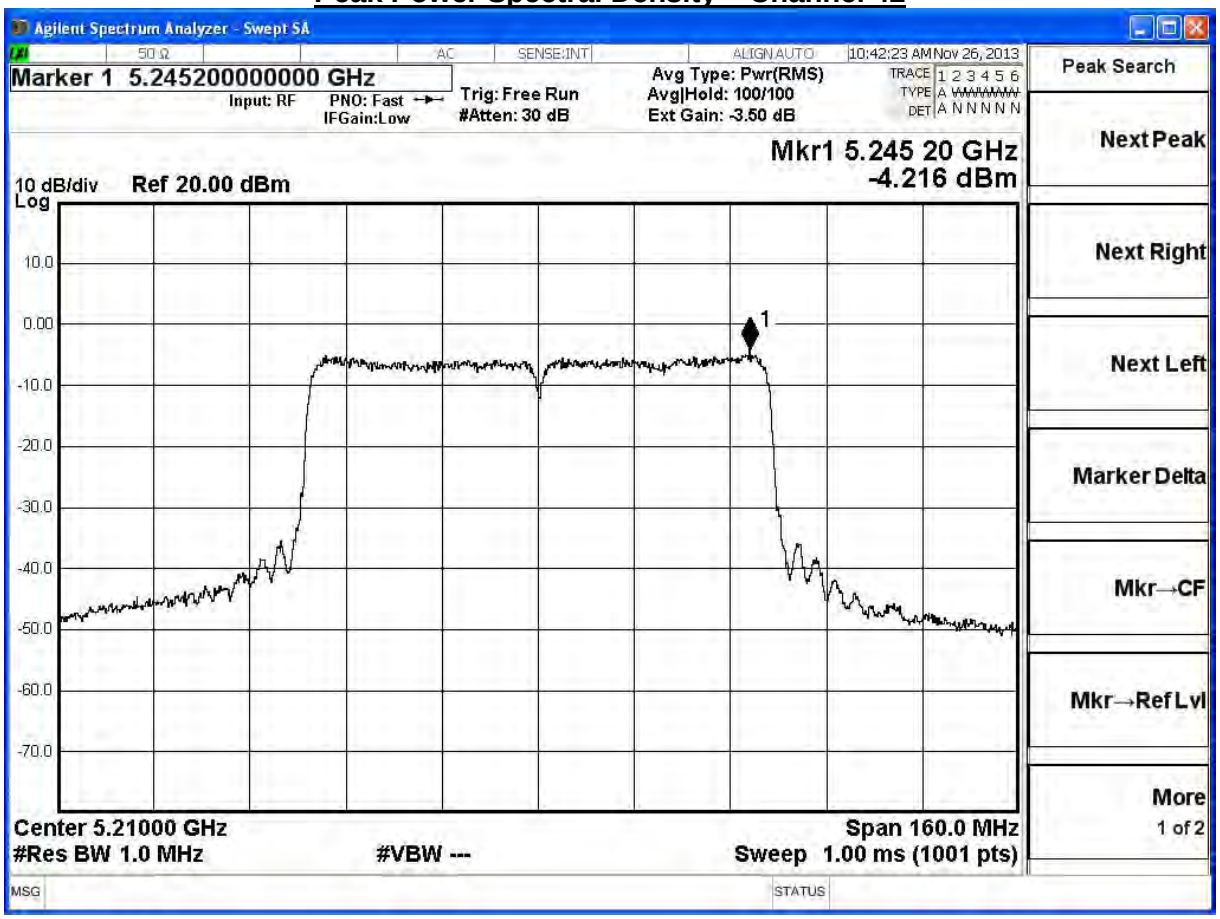
Peak Power Spectral Density – Channel 46



Product	Wireless-AC450 USB Adapter		
Test Item	Peak Power Spectral Density		
Test Mode	Mode 1: Transmit		
Date of Test	2013/11/26	Test Site	SR7

IEEE802.11ac_80MHz, ANT 0				
Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
42	5210	-4.20	≦4	Pass

Peak Power Spectral Density – Channel 42



6. Peak Excursion

6.1. Test Equipment

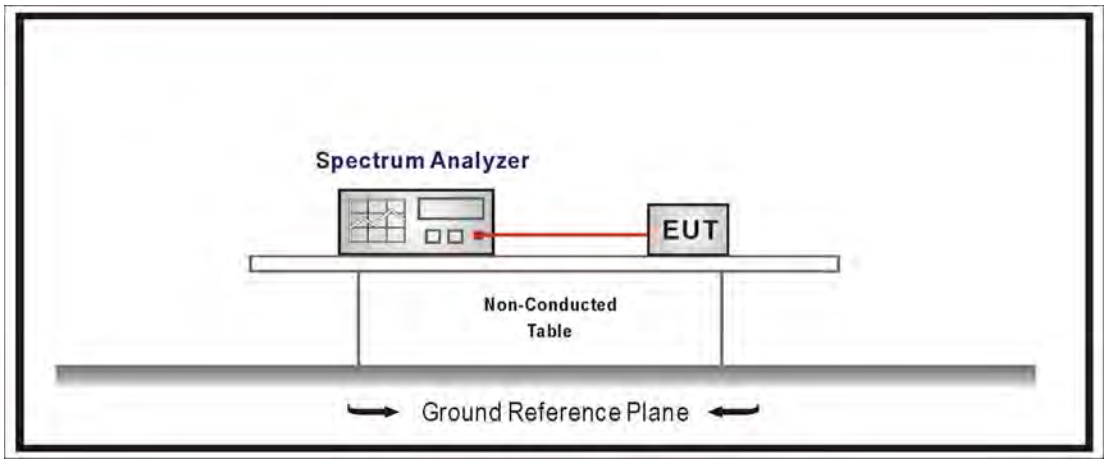
The following test equipments are used during the radiated emission tests:

Peak Excursion / SR7

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Spectrum Analyzer	Agilent	N9010A-EXA	US47140172	2014/08/05

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

6.2. Test Setup



6.3. Limits

The ratio of the peak excursion of the modulation envelope (measured suing a peak hold function) to the peak transmit power (measured as specified above) shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.

6.4. Test Procedure

The EUT was setup to ANSI C63.4, 2009; tested to U-NII test procedure of March 2012 KDB 789033 for compliance to FCC 47CFR Subpart E requirements.

1st Trace:

Set RBW = 1MHz, VBW = 3MHz with peak detector and max-hold settings.

2nd Trace:

Set RBW = 1MHz, VBW = 3MHz with RMS detector and trace average 100 traces in power averaging mode.

6.5. Uncertainty

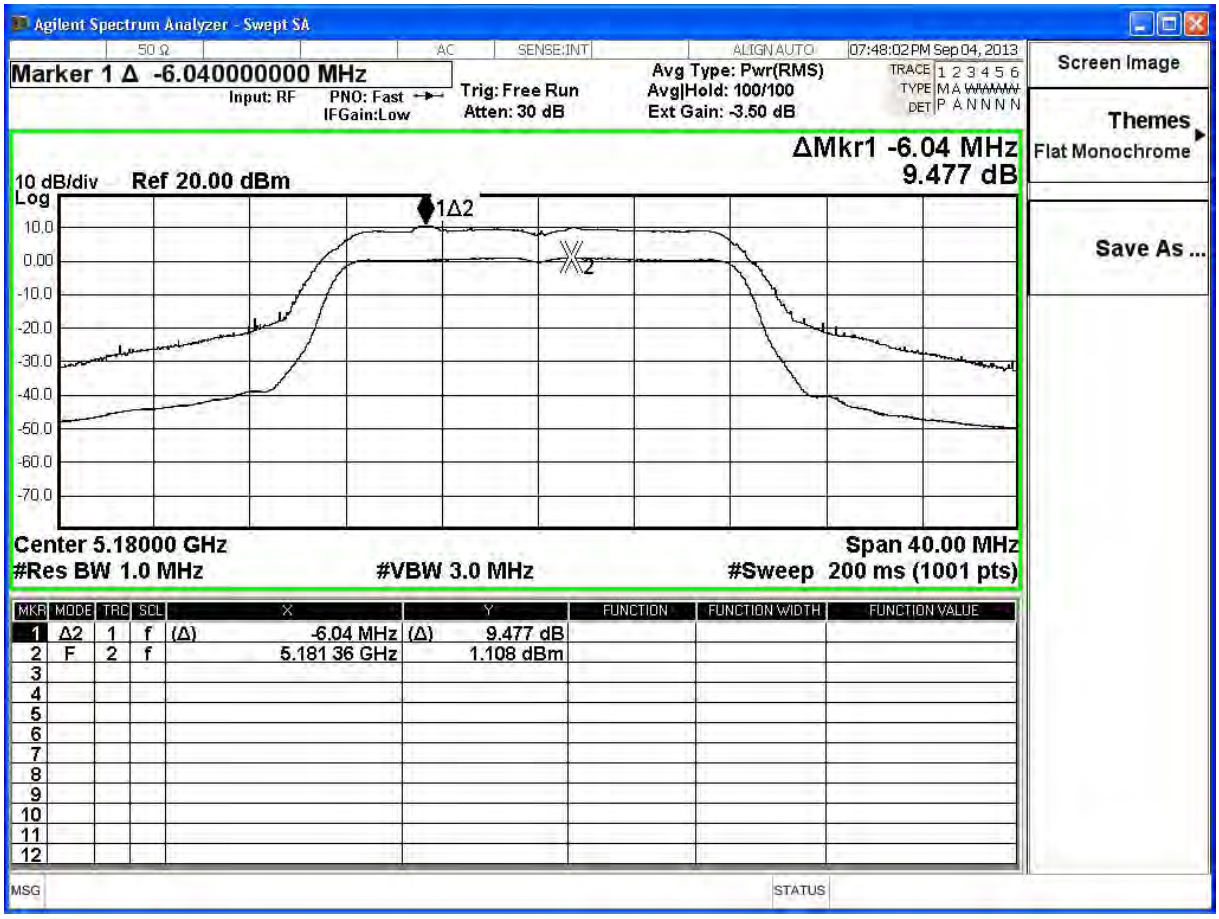
The measurement uncertainty is defined as ± 1.27 dB

6.6. Test Result

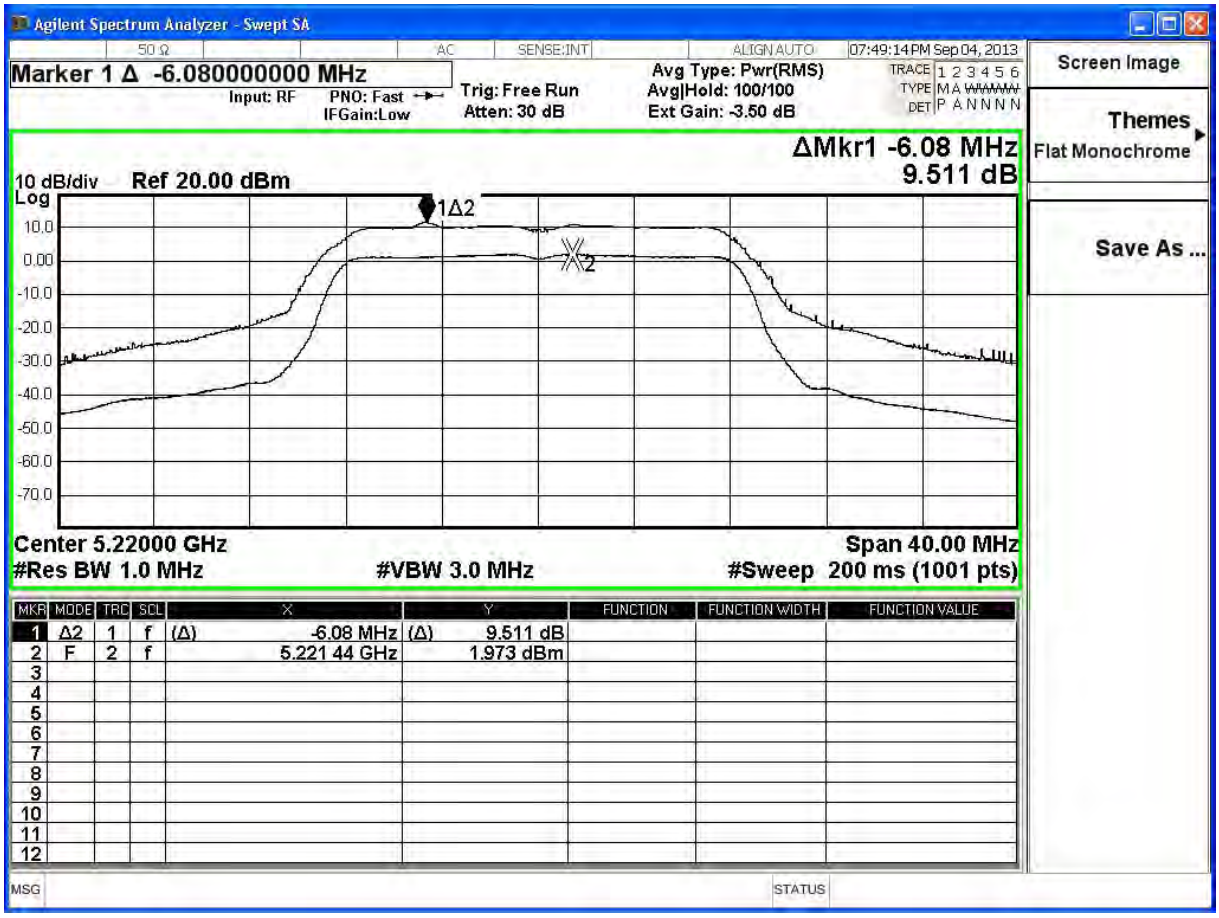
Product	Wireless-AC450 USB Adapter		
Test Item	Peak Excursion		
Test Mode	Mode 1: Transmit		
Date of Test	2013/09/04	Test Site	SR7

IEEE 802.11a, ANT 0, Duty Cycle: 1				
Channel No.	Frequency (MHz)	Measure Level (dBc)	Limit (dBc)	Result
36	5180	9.48	≦13	Pass
44	5220	9.51	≦13	Pass
48	5240	9.41	≦13	Pass

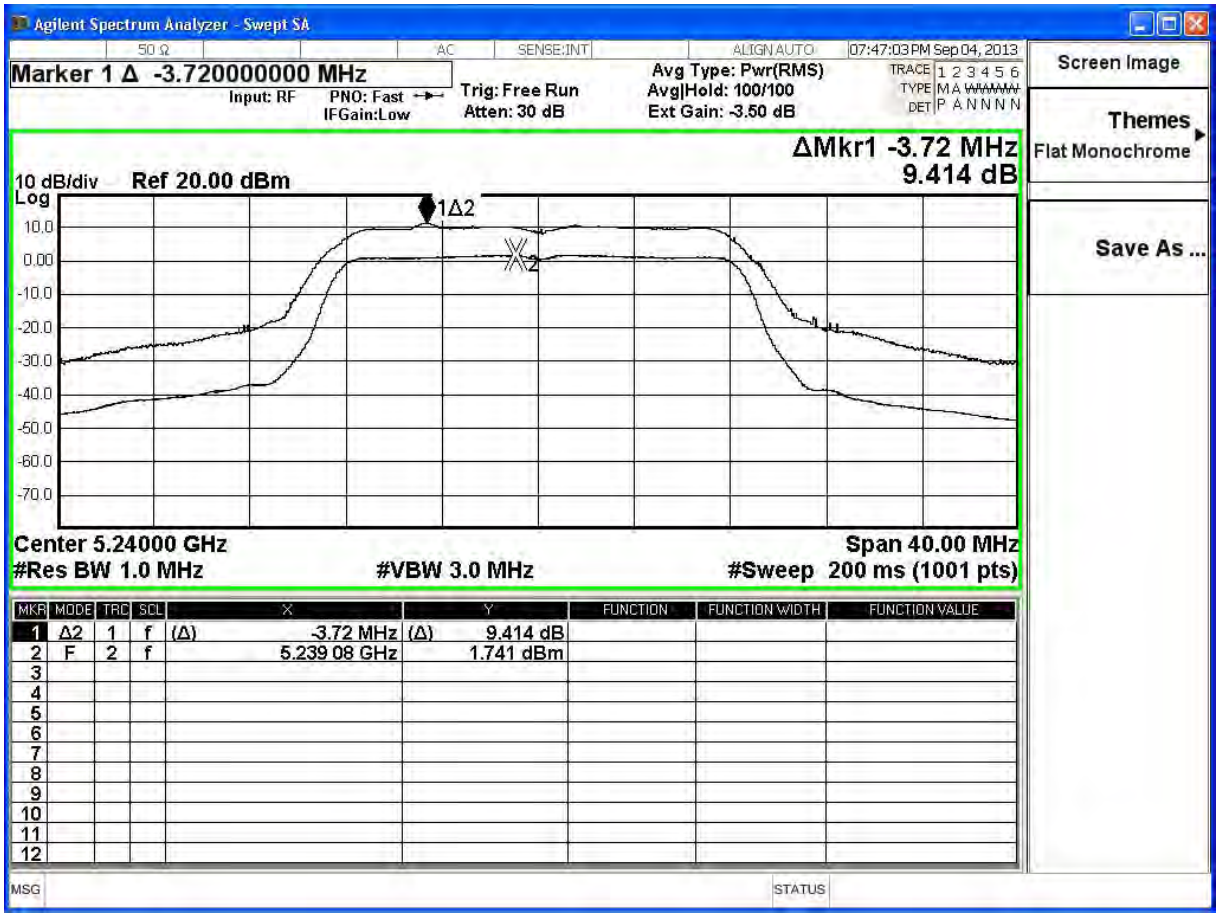
Power Excursion – Channel 36



Power Excursion – Channel 44



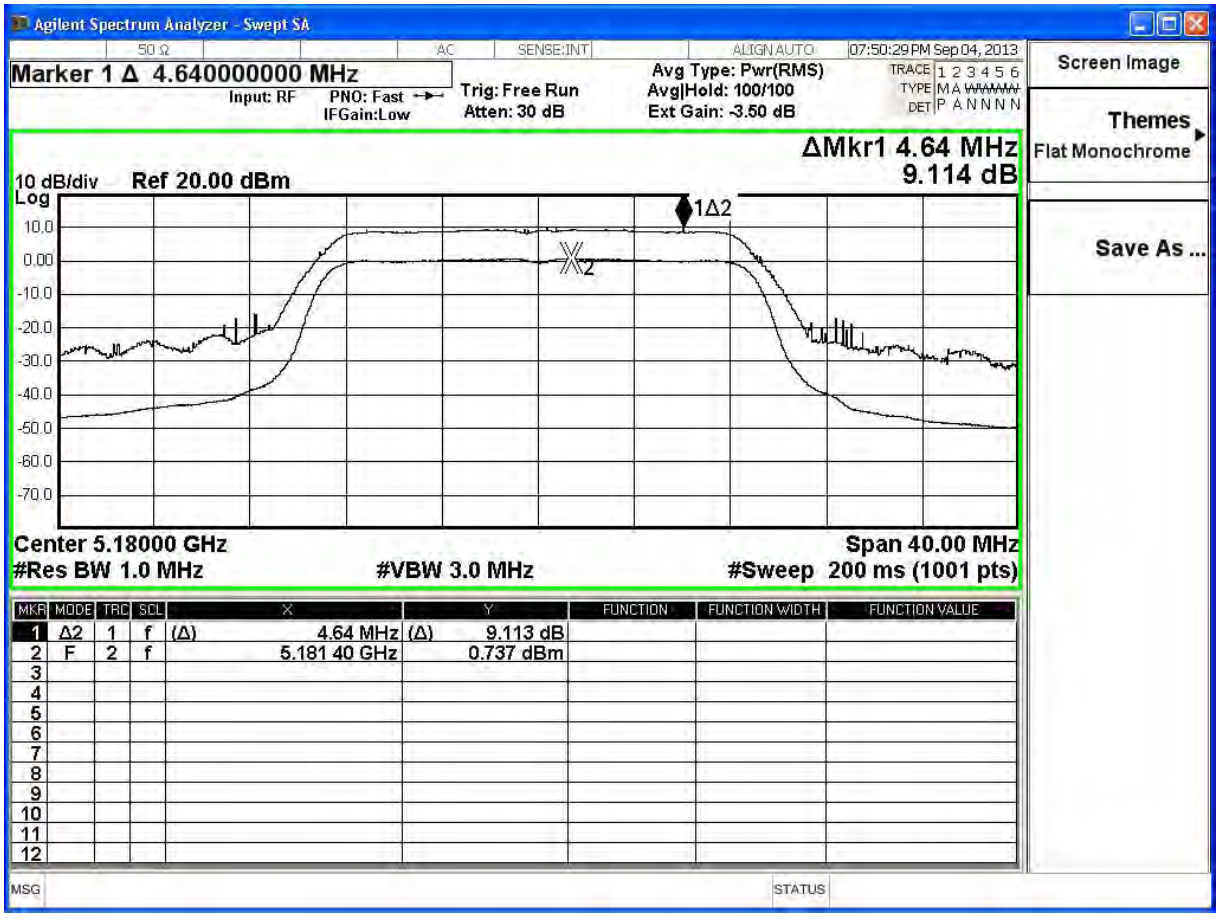
Power Excursion – Channel 48



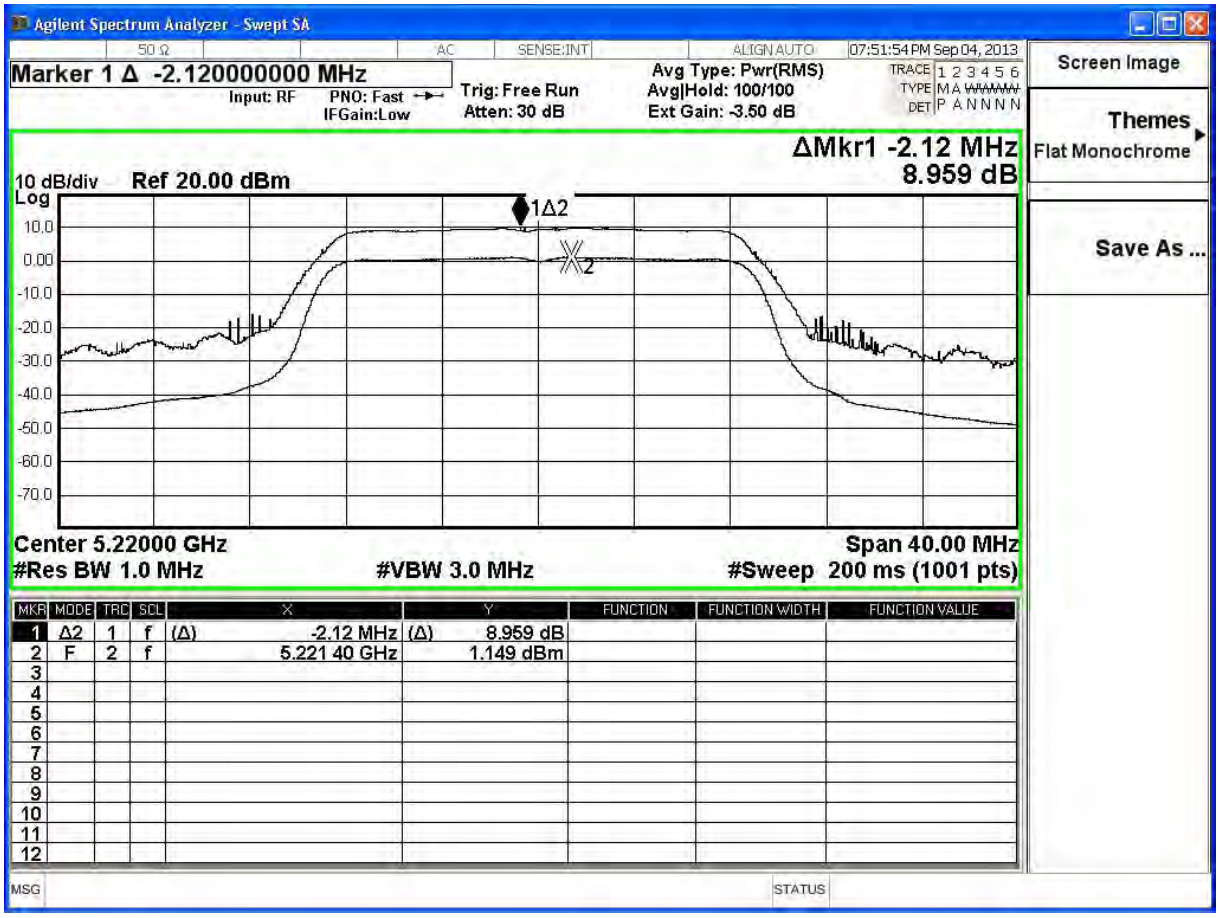
Product	Wireless-AC450 USB Adapter		
Test Item	Peak Excursion		
Test Mode	Mode 1: Transmit		
Date of Test	2013/09/04	Test Site	SR7

IEEE 802.11n(20MHz), ANT 0, Duty Cycle: 1				
Channel No.	Frequency (MHz)	Measure Level (dBc)	Limit (dBc)	Result
36	5180	9.11	≦13	Pass
44	5220	8.96	≦13	Pass
48	5240	9.14	≦13	Pass

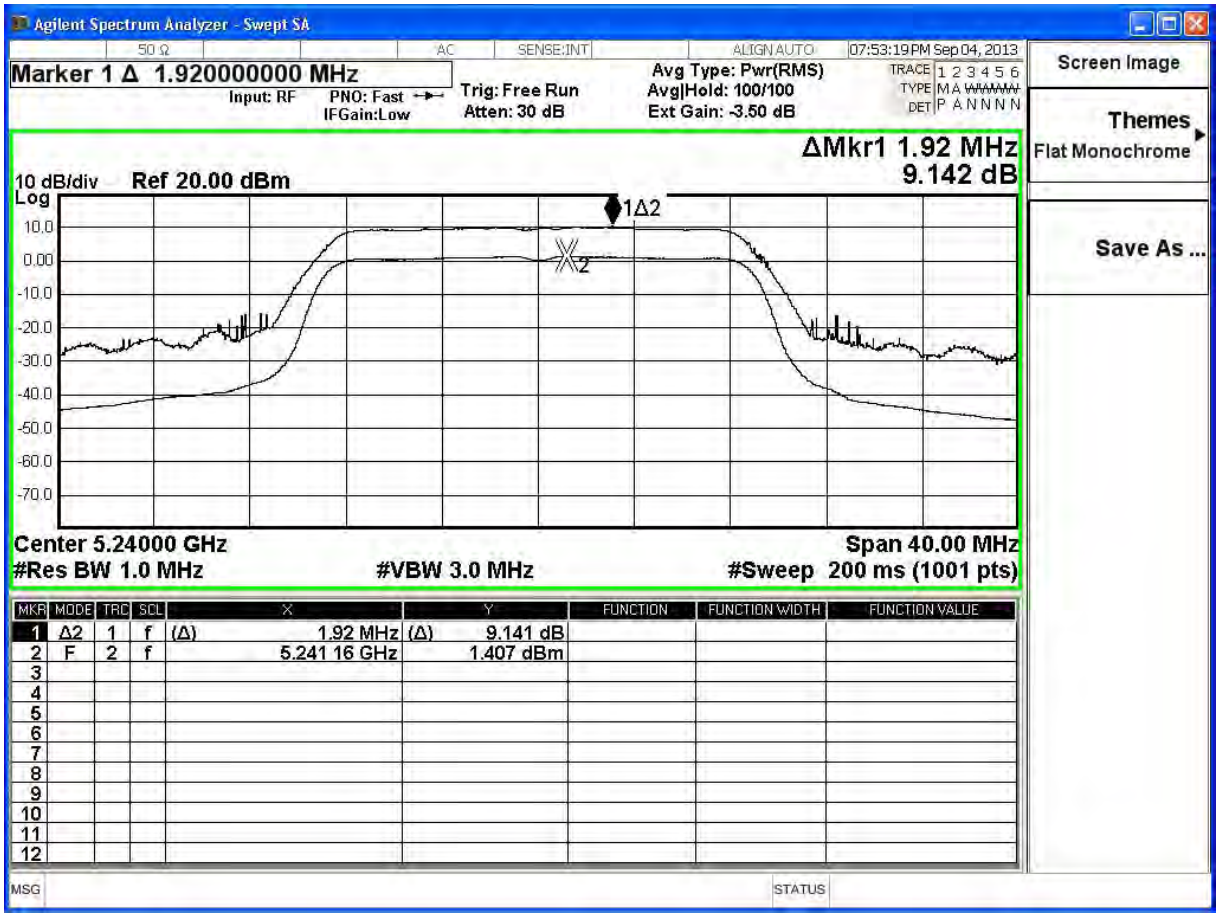
Power Excursion – Channel 36



Power Excursion – Channel 44



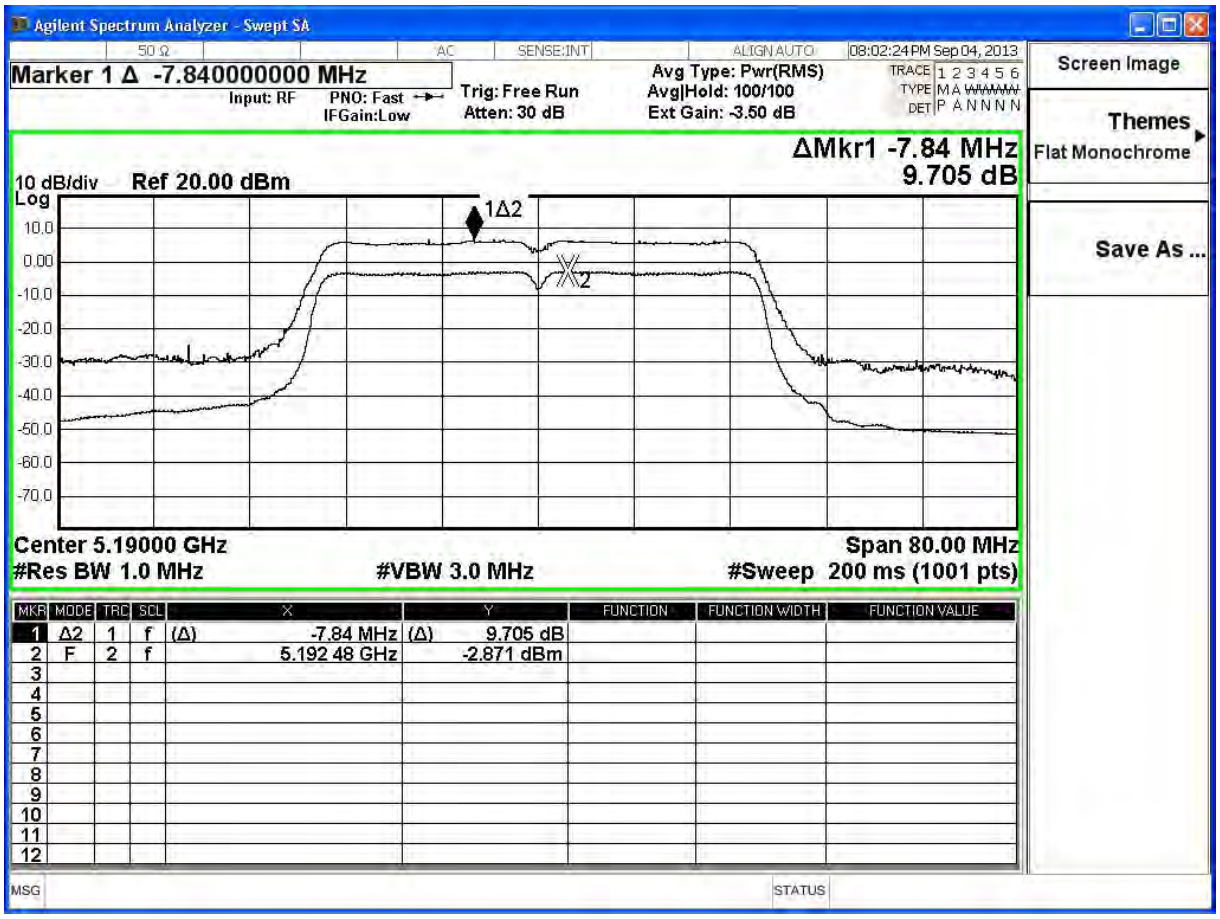
Power Excursion – Channel 48



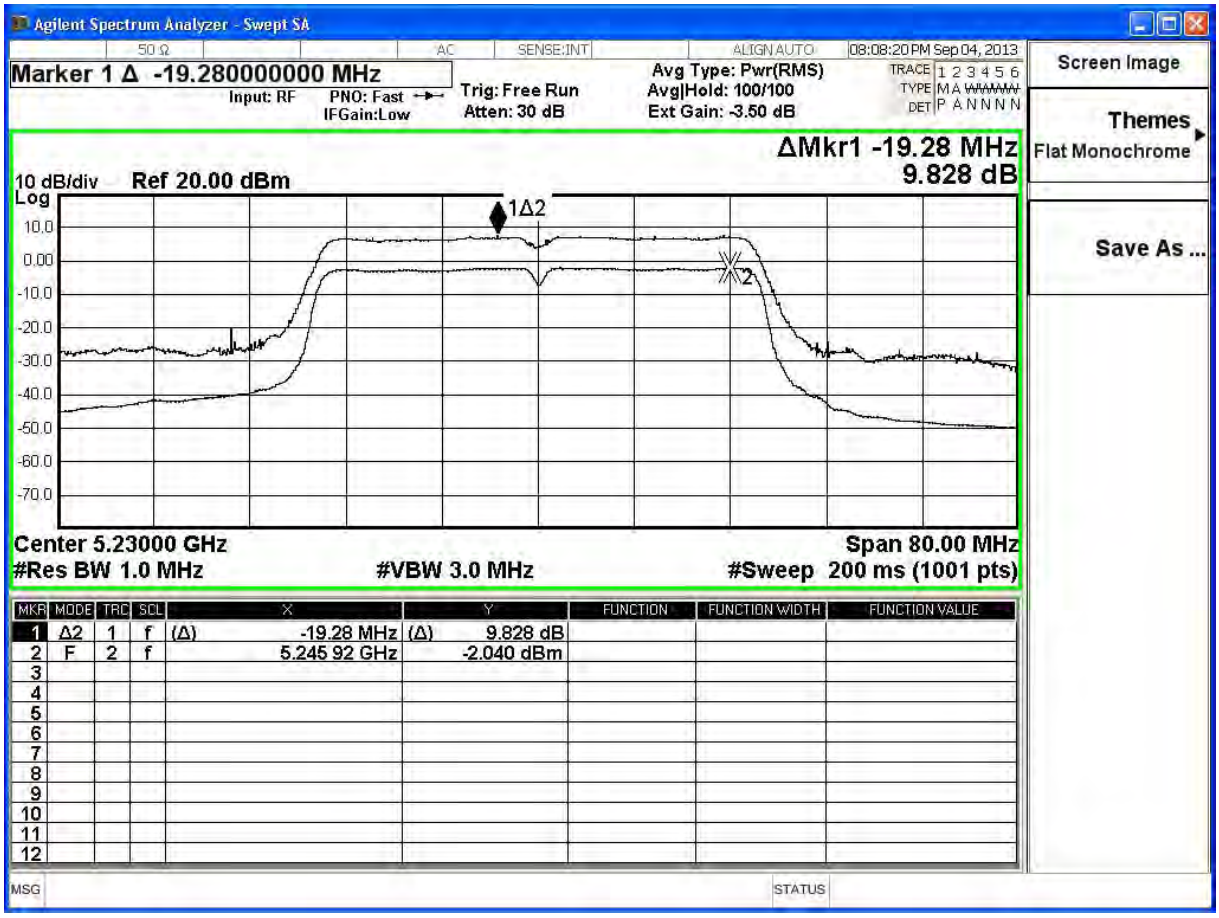
Product	Wireless-AC450 USB Adapter		
Test Item	Peak Excursion		
Test Mode	Mode 1: Transmit		
Date of Test	2013/09/04	Test Site	SR7

IEEE 802.11n (40MHz), ANT 0, Duty Cycle: 1				
Channel No.	Frequency (MHz)	Measure Level (dBc)	Limit (dBc)	Result
38	5190	9.71	≦13	Pass
46	5230	9.83	≦13	Pass

Power Excursion – Channel 38



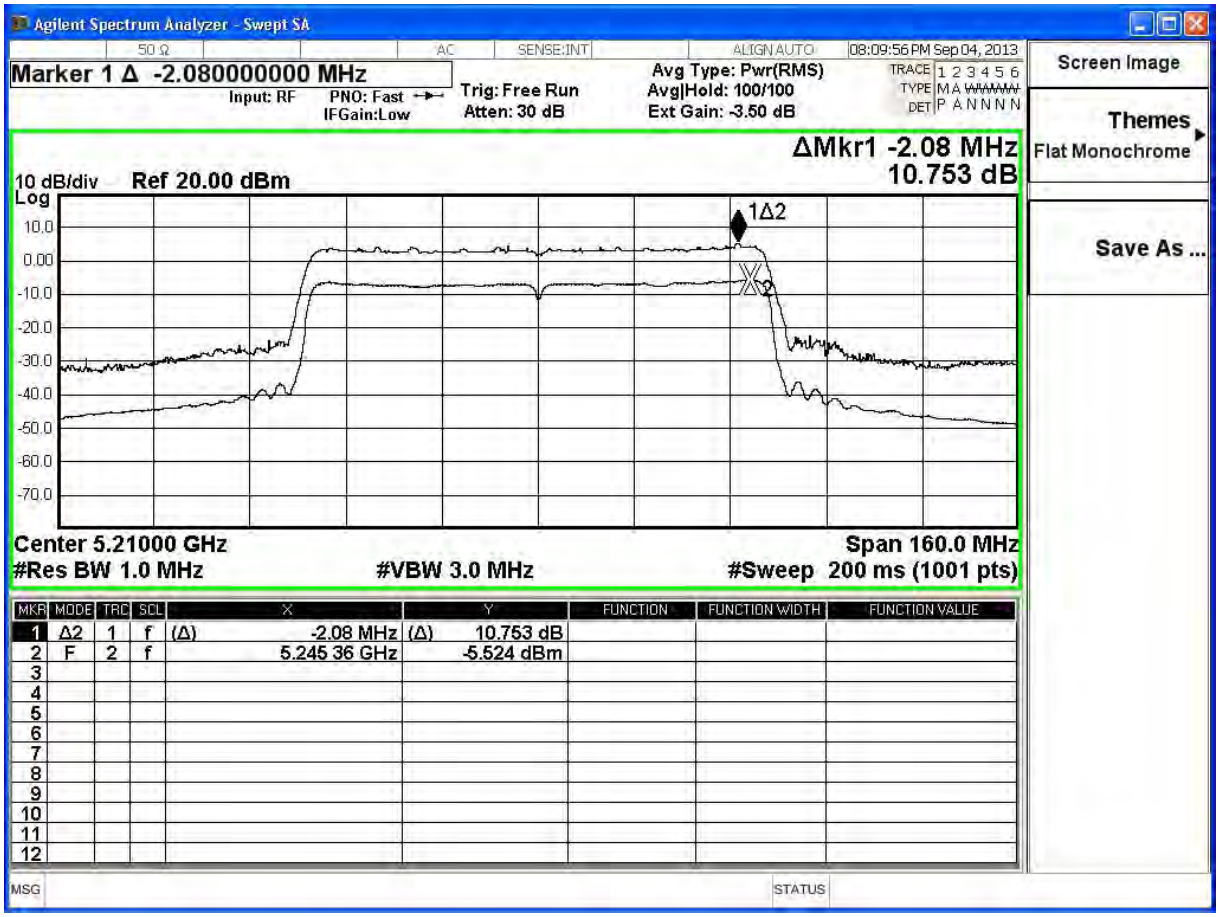
Power Excursion – Channel 46



Product	Wireless-AC450 USB Adapter		
Test Item	Peak Excursion		
Test Mode	Mode 1: Transmit		
Date of Test	2013/09/04	Test Site	SR7

IEEE 802.11ac (80MHz), ANT 0, Duty Cycle: 1				
Channel No.	Frequency (MHz)	Measure Level (dBc)	Limit (dBc)	Result
42	5210	10.75	≦13	Pass

Power Excursion – Channel 42



7. Radiated Emission

7.1. Test Equipment

The following test equipments are used during the radiated emission test:

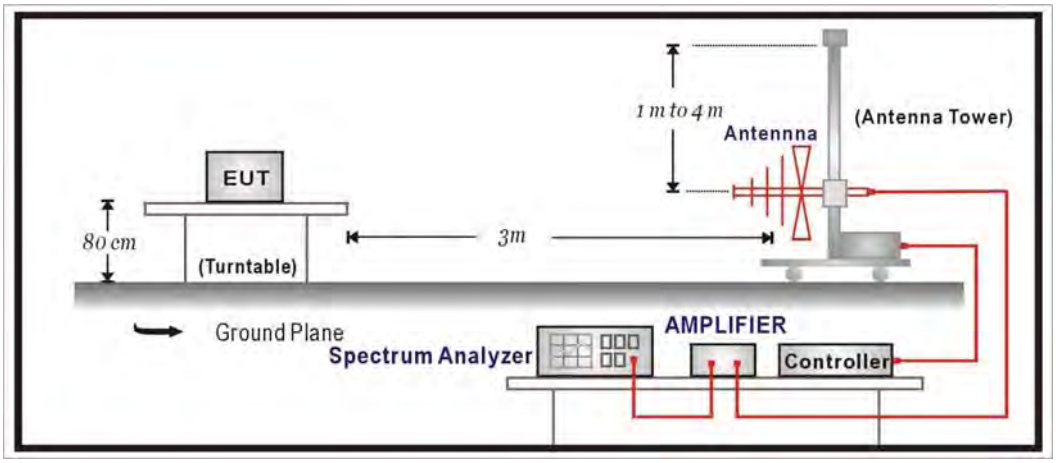
Radiated Emission / CB1

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Bilog Antenna	SCHAFFNER	CBL6112B	2895(CB1)	2014/08/14
Double Ridged Guide Horn Antenna	Schwarzback	BBHA 9120	D743	2014/02/17
Pre-Amplifier	MITEQ	AMF-4D-005180-24-10P	888003	2014/06/09
Pre-Amplifier	QuieTek	AP-025C	CHM-0706049	2014/02/19
Spectrum Analyzer	Agilent	E4440A	MY46187335	2014/01/27
k Type Cable	Huber Suhner	Sucoflex 102	25623/2	2014/02/21

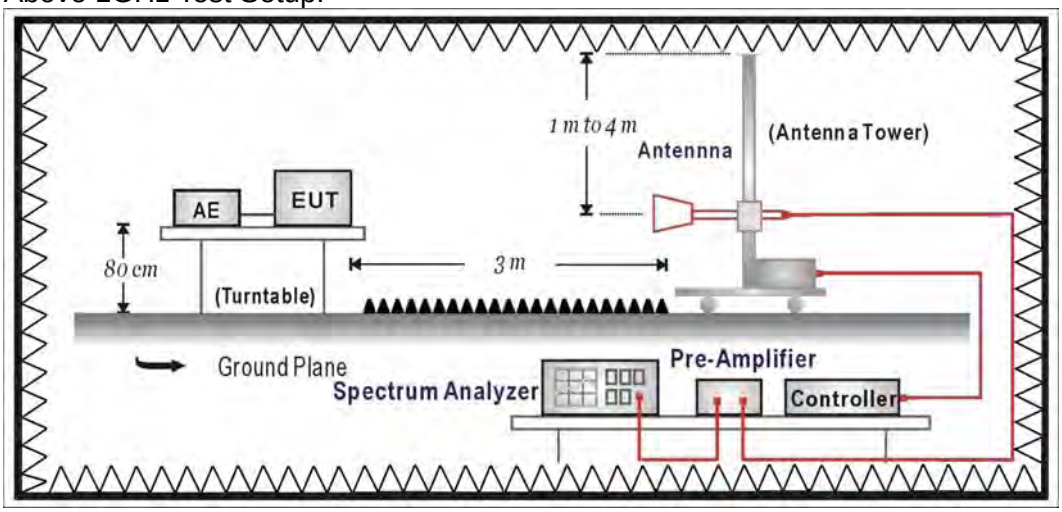
Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

7.2. Test Setup

Under 1GHz Test Setup:



Above 1GHz Test Setup:



7.3. Limits

➢ **General Radiated Emission Limits**

The provisions of Section 15.205 of this part apply to intentional radiators operating under this section. Radiated emissions which fall in the restricted bands, as defined in Section 15.205, must also comply with the radiated emission limits specified in Section 15.209:

FCC Part 15 Subpart C Paragraph 15.209 Limits		
Frequency MHz	uV/m @3m	dBuV/m@3m
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

Remark:

1. RF Voltage (dBuV) = 20 log RF Voltage (uV)
2. In the Above Table, the tighter limit applies at the band edges.
3. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

➢ **Unwanted Emission out of the restricted bands Limits**

FCC Part 15 Subpart C Paragraph 15.407(b) Limits		
Frequency (MHz)	EIRP Limit (dBm)	Equivalent Field Strength (dBuV/m@3m)
5150~5250	-27	68.3
5250~5350	-27	68.3
5470~5725	-27	68.3
5725~5825	-27 (Note1)	68.3
	-17 (Note2)	78.3

Remark:

1. For frequencies more than 10 MHz above or below the band edges.
2. For frequency range from the band edges to 10 MHz above or below the band edges.
3. uV/m = $\frac{1000000\sqrt{30 \times EIRP}}{3}$, RF Voltage (dBuV/m) = 20 log RF Voltage (uV/m)

7.4. Test Procedure

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.
The antenna can move 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 measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.4: 2009 on radiated measurement.
The additional latch filter below 1GHz was used to measure the level of harmonics radiated emission during field dtrength of harmonics measurement.
The bandwidth below 1GHz setting on the field strength meter is 120 KHz, above 1GHz are 1 MHz.
The frequency range from 30MHz to 10th harminics is checked.

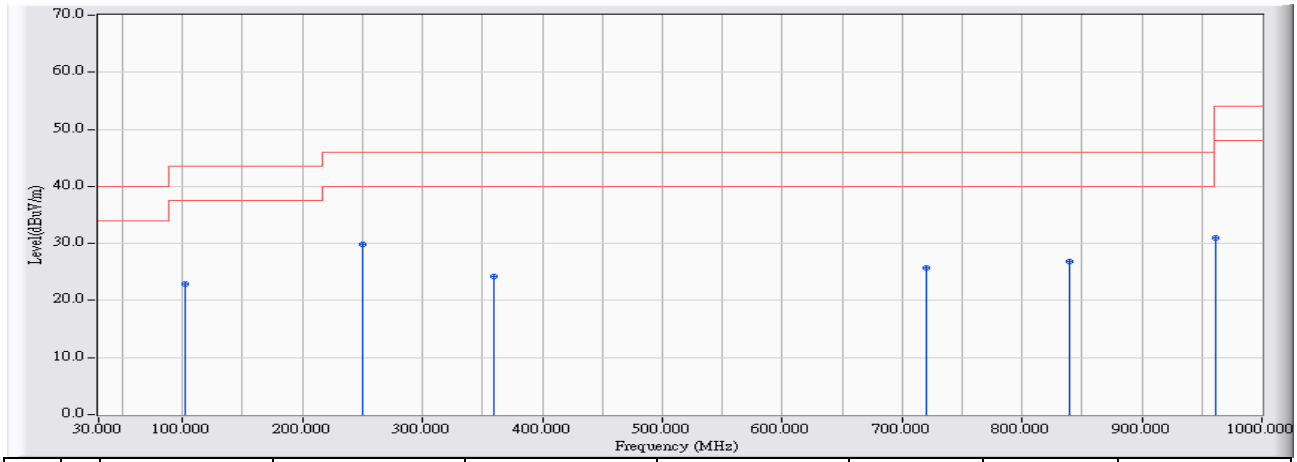
7.5. Uncertainty

The measurement uncertainty
30MHz～1GHz as ±3.43dB
1GHz～26.5Ghz as ±3.65dB

7.6. Test Result

30MHz-1GHz Spurious

Site : CB1	**Time : 2013/10/09 - 15:11**
Limit : FCC_CLASS_B_03M_QP	**Margin : 6**
Probe : CB1_FCC_EFS_30-1G-1_0901 - HORIZONTAL	**Power : DC5V(Power by PC)**
EUT : Wireless-AC450 USB Adapter	**Note : 802.11a_5220MHz**

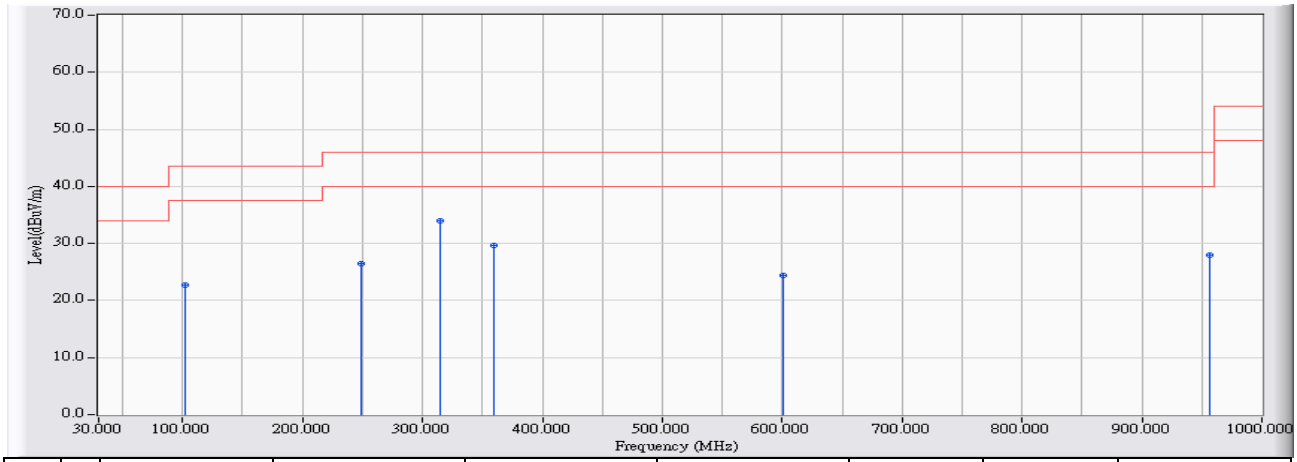


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		101.780	-23.402	46.297	22.896	-20.604	43.500	QUASIPEAK
2	*	250.190	-20.648	50.565	29.917	-16.083	46.000	QUASIPEAK
3		359.800	-18.475	42.687	24.212	-21.788	46.000	QUASIPEAK
4		719.670	-14.170	39.886	25.716	-20.284	46.000	QUASIPEAK
5		839.950	-12.961	39.812	26.851	-19.149	46.000	QUASIPEAK
6		961.200	-12.109	43.123	31.014	-22.986	54.000	QUASIPEAK

Note:

1. All Reading Levels are Quasi-Peak value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Site : CB1	**Time : 2013/10/09 - 15:13**
Limit : FCC_CLASS_B_03M_QP	**Margin : 6**
Probe : CB1_FCC_EFS_30-1G-1_0901 - VERTICAL	**Power : DC5V(Power by PC)**
EUT : Wireless-AC450 USB Adapter	**Note : 802.11a _5220MHz**

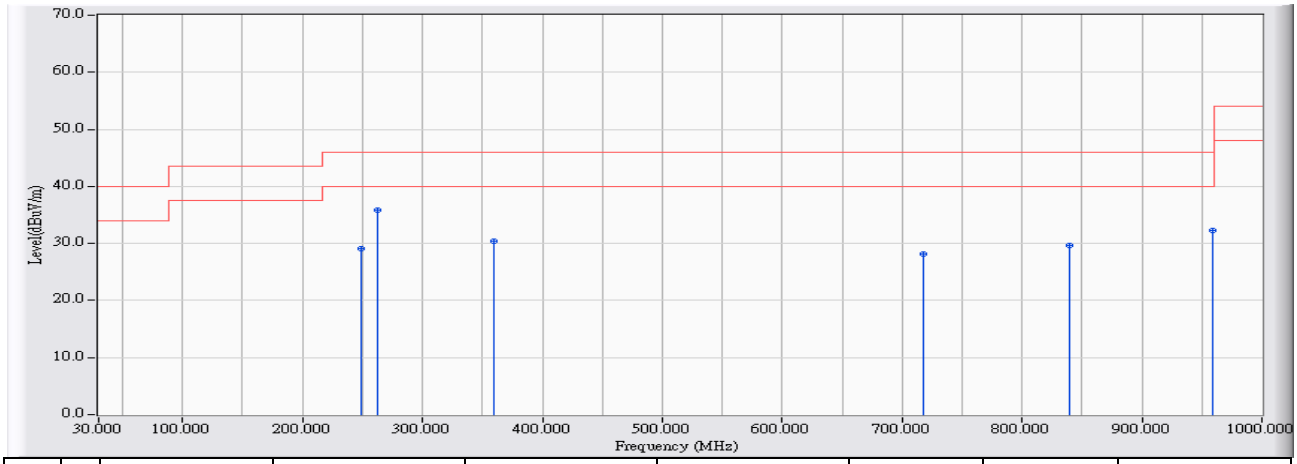


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		101.780	-23.402	46.097	22.696	-20.804	43.500	QUASIPEAK
2		249.220	-20.719	47.211	26.493	-19.507	46.000	QUASIPEAK
3	*	314.210	-19.771	53.684	33.913	-12.087	46.000	QUASIPEAK
4		359.800	-18.475	48.043	29.568	-16.432	46.000	QUASIPEAK
5		600.360	-14.857	39.291	24.434	-21.566	46.000	QUASIPEAK
6		956.350	-12.152	40.046	27.894	-18.106	46.000	QUASIPEAK

Note:

1. All Reading Levels are Quasi-Peak value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Site : CB1	**Time : 2013/10/09 - 15:17**
Limit : FCC_CLASS_B_03M_QP	**Margin : 6**
Probe : CB1_FCC_EFS_30-1G-1_0901 - HORIZONTAL	**Power : DC5V(Power by PC)**
EUT : Wireless-AC450 USB Adapter	**Note : 802.11n 20M_5220MHz**

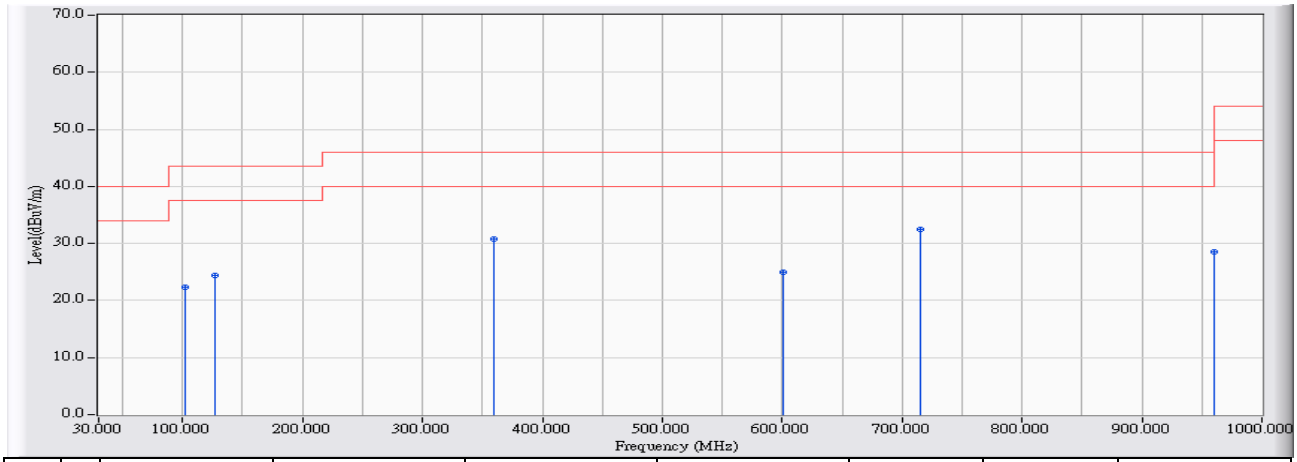


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		249.220	-20.719	49.809	29.091	-16.909	46.000	QUASIPEAK
2	*	262.800	-20.527	56.331	35.803	-10.197	46.000	QUASIPEAK
3		359.800	-18.475	48.880	30.405	-15.595	46.000	QUASIPEAK
4		717.730	-14.195	42.377	28.183	-17.817	46.000	QUASIPEAK
5		839.950	-12.961	42.598	29.637	-16.363	46.000	QUASIPEAK
6		959.260	-12.126	44.479	32.353	-13.647	46.000	QUASIPEAK

Note:

1. All Reading Levels are Quasi-Peak value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Site : CB1	**Time : 2013/10/09 - 15:19**
Limit : FCC_CLASS_B_03M_QP	**Margin : 6**
Probe : CB1_FCC_EFS_30-1G-1_0901 - VERTICAL	**Power : DC5V(Power by PC)**
EUT : Wireless-AC450 USB Adapter	**Note : 802.11n 20M_5220MHz**

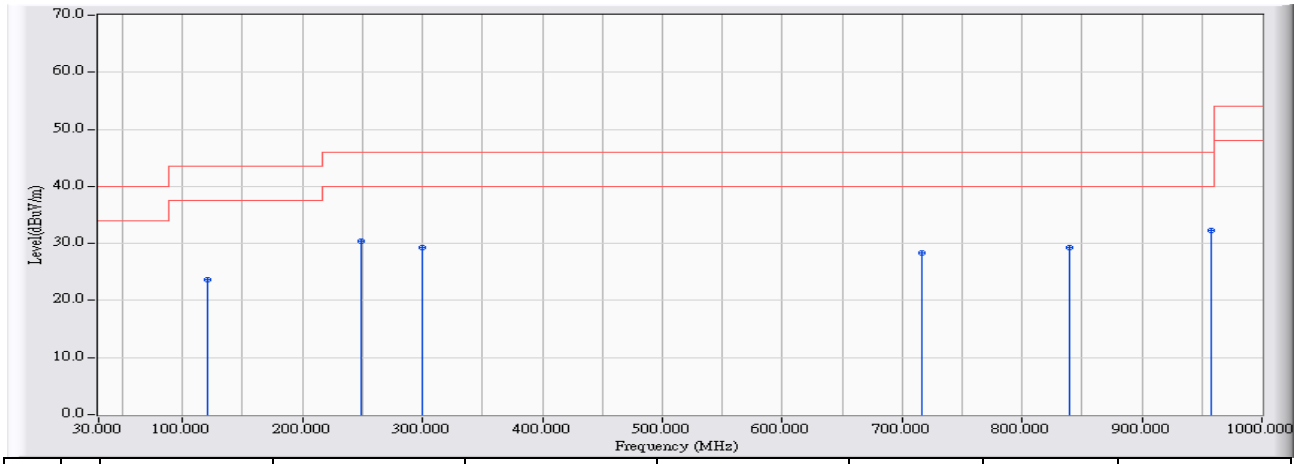


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		101.780	-23.402	45.768	22.367	-21.133	43.500	QUASIPEAK
2		127.000	-22.210	46.555	24.344	-19.156	43.500	QUASIPEAK
3		359.800	-18.475	49.234	30.759	-15.241	46.000	QUASIPEAK
4		600.360	-14.857	39.783	24.926	-21.074	46.000	QUASIPEAK
5	*	714.820	-14.231	46.711	32.480	-13.520	46.000	QUASIPEAK
6		960.230	-12.117	40.590	28.472	-25.528	54.000	QUASIPEAK

Note:

1. All Reading Levels are Quasi-Peak value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Site : CB1	**Time : 2013/10/09 - 15:30**
Limit : FCC_CLASS_B_03M_QP	**Margin : 6**
Probe : CB1_FCC_EFS_30-1G-1_0901 - HORIZONTAL	**Power : DC5V(Power by PC)**
EUT : Wireless-AC450 USB Adapter	**Note : 802.11n 40M_5230MHz**

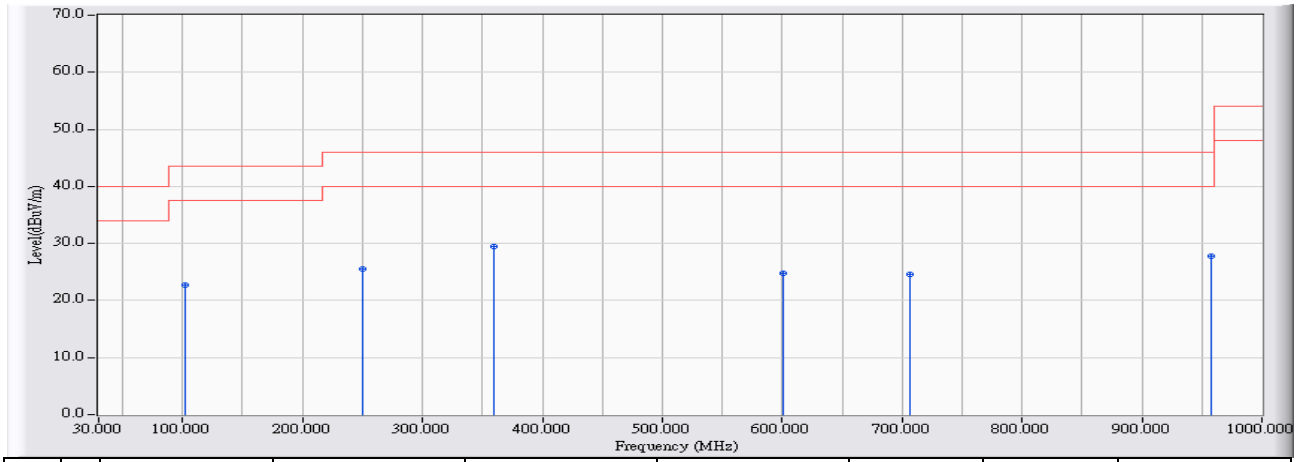


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		120.210	-21.823	45.388	23.565	-19.935	43.500	QUASIPEAK
2		249.220	-20.719	51.185	30.467	-15.533	46.000	QUASIPEAK
3		299.660	-20.178	49.442	29.264	-16.736	46.000	QUASIPEAK
4		716.760	-14.206	42.585	28.379	-17.621	46.000	QUASIPEAK
5		839.950	-12.961	42.272	29.311	-16.689	46.000	QUASIPEAK
6	*	958.290	-12.135	44.365	32.230	-13.770	46.000	QUASIPEAK

Note:

1. All Reading Levels are Quasi-Peak value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Site : CB1	**Time : 2013/10/09 - 15:36**
Limit : FCC_CLASS_B_03M_QP	**Margin : 6**
Probe : CB1_FCC_EFS_30-1G-1_0901 - VERTICAL	**Power : DC5V(Power by PC)**
EUT : Wireless-AC450 USB Adapter	**Note : 802.11n 40M_5230MHz**

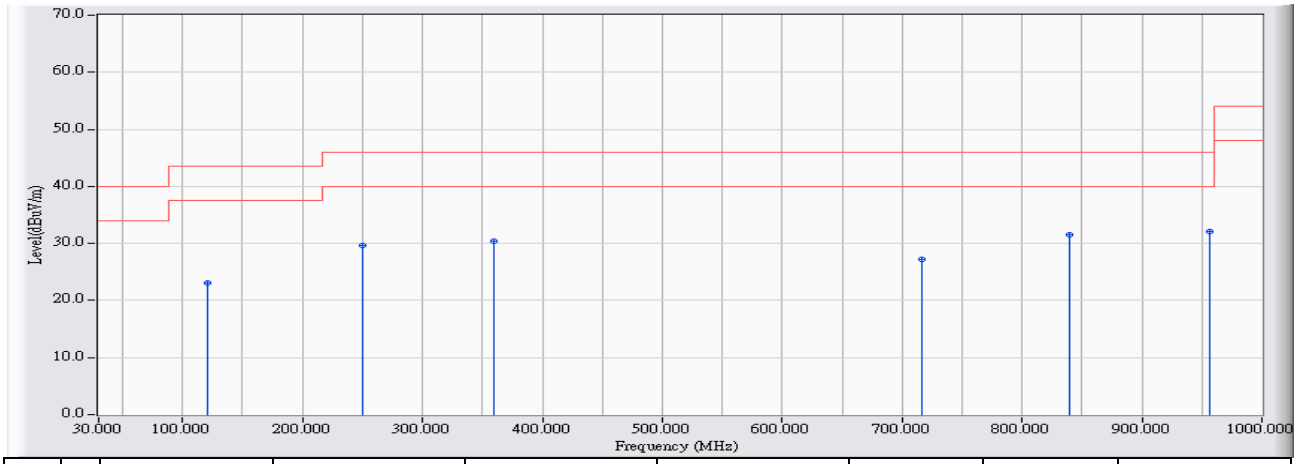


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		101.780	-23.402	46.089	22.688	-20.812	43.500	QUASIPEAK
2		250.190	-20.648	46.133	25.485	-20.515	46.000	QUASIPEAK
3	*	359.800	-18.475	47.956	29.481	-16.519	46.000	QUASIPEAK
4		600.360	-14.857	39.719	24.862	-21.138	46.000	QUASIPEAK
5		707.060	-14.328	38.920	24.592	-21.408	46.000	QUASIPEAK
6		958.290	-12.135	39.922	27.787	-18.213	46.000	QUASIPEAK

Note:

1. All Reading Levels are Quasi-Peak value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Site : CB1	**Time : 2013/10/09 - 15:37**
Limit : FCC_CLASS_B_03M_QP	**Margin : 6**
Probe : CB1_FCC_EFS_30-1G-1_0901 - HORIZONTAL	**Power : DC5V(Power by PC)**
EUT : Wireless-AC450 USB Adapter	**Note : 802.11ac 80M_5210MHz**

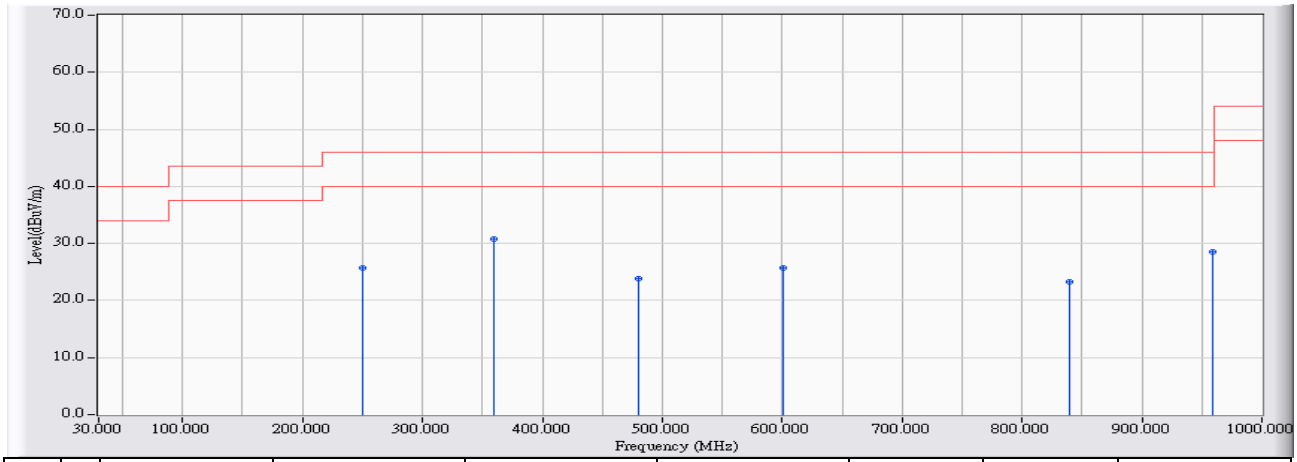


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		120.210	-21.823	44.987	23.164	-20.336	43.500	QUASIPEAK
2		250.190	-20.648	50.256	29.608	-16.392	46.000	QUASIPEAK
3		359.800	-18.475	48.964	30.489	-15.511	46.000	QUASIPEAK
4		716.760	-14.206	41.327	27.121	-18.879	46.000	QUASIPEAK
5		839.950	-12.961	44.576	31.615	-14.385	46.000	QUASIPEAK
6	*	956.350	-12.152	44.279	32.127	-13.873	46.000	QUASIPEAK

Note:

1. All Reading Levels are Quasi-Peak value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Site : CB1	**Time : 2013/10/09 - 15:40**
Limit : FCC_CLASS_B_03M_QP	**Margin : 6**
Probe : CB1_FCC_EFS_30-1G-1_0901 - VERTICAL	**Power : DC5V(Power by PC)**
EUT : Wireless-AC450 USB Adapter	**Note : 802.11ac 80M_5210MHz**



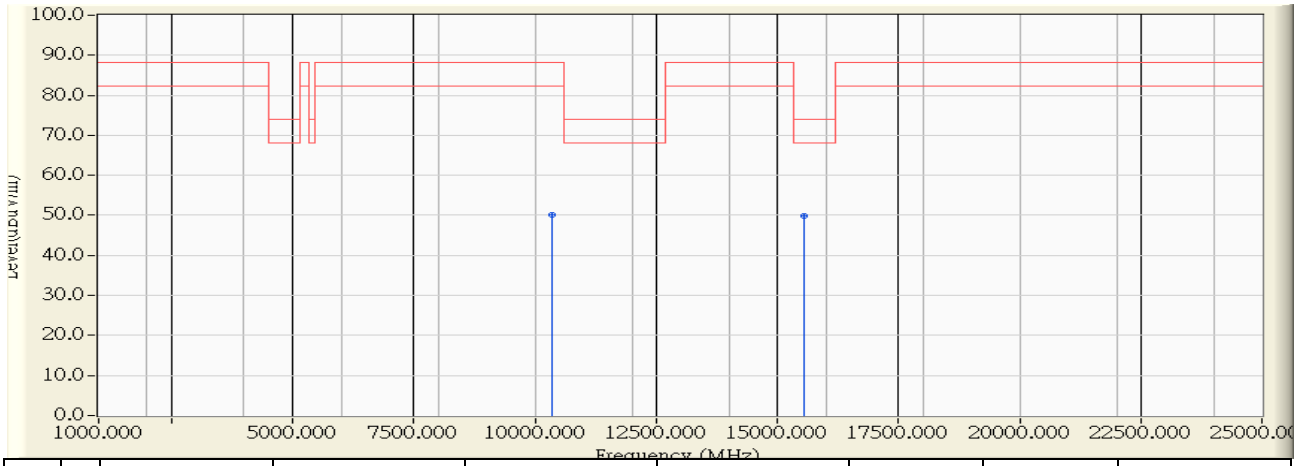
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		250.190	-20.648	46.319	25.671	-20.329	46.000	QUASIPEAK
2	*	359.800	-18.475	49.287	30.812	-15.188	46.000	QUASIPEAK
3		480.080	-16.004	39.754	23.751	-22.249	46.000	QUASIPEAK
4		600.360	-14.857	40.617	25.760	-20.240	46.000	QUASIPEAK
5		839.950	-12.961	36.233	23.272	-22.728	46.000	QUASIPEAK
6		959.260	-12.126	40.607	28.481	-17.519	46.000	QUASIPEAK

Note:

1. All Reading Levels are Quasi-Peak value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Harmonic & Spurious:

Site : CB1	**Time : 2013/09/12 - 14:15**
Limit : FCC_SpartE_15.407_H_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	**Power : DC 5V**
EUT : Wireless-AC450 USB Adapter	**Note : 802.11a_5180MHz**

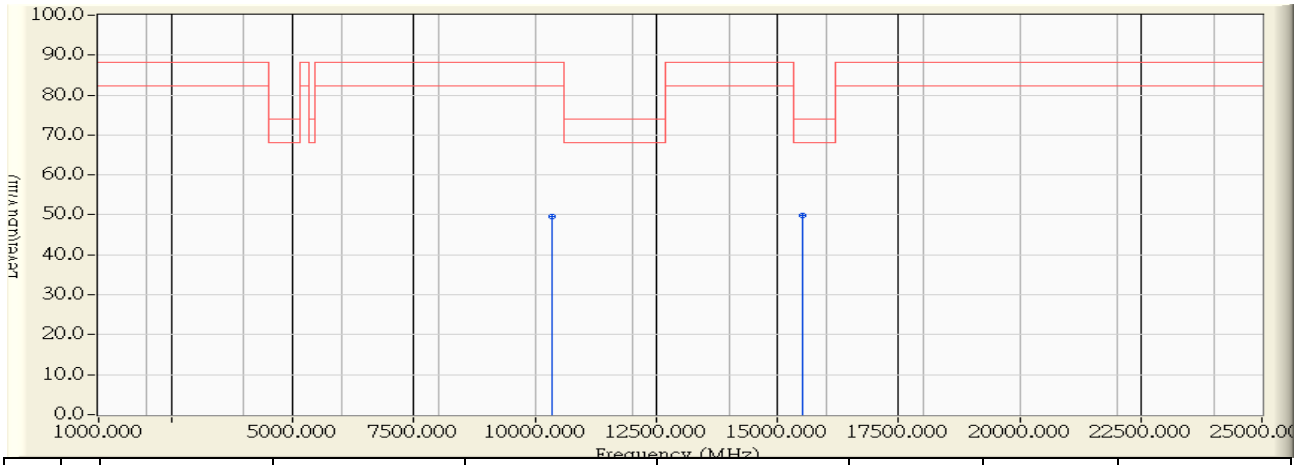


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		10354.470	45.036	39.760	50.209	-38.091	88.300	PEAK
2	*	15540.470	45.360	38.820	49.929	-24.071	74.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 1MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	**Time : 2013/09/12 - 14:17**
Limit : FCC_SpartE_15.407_H_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	**Power : DC 5V**
EUT : Wireless-AC450 USB Adapter	**Note : 802.11a_5180MHz**

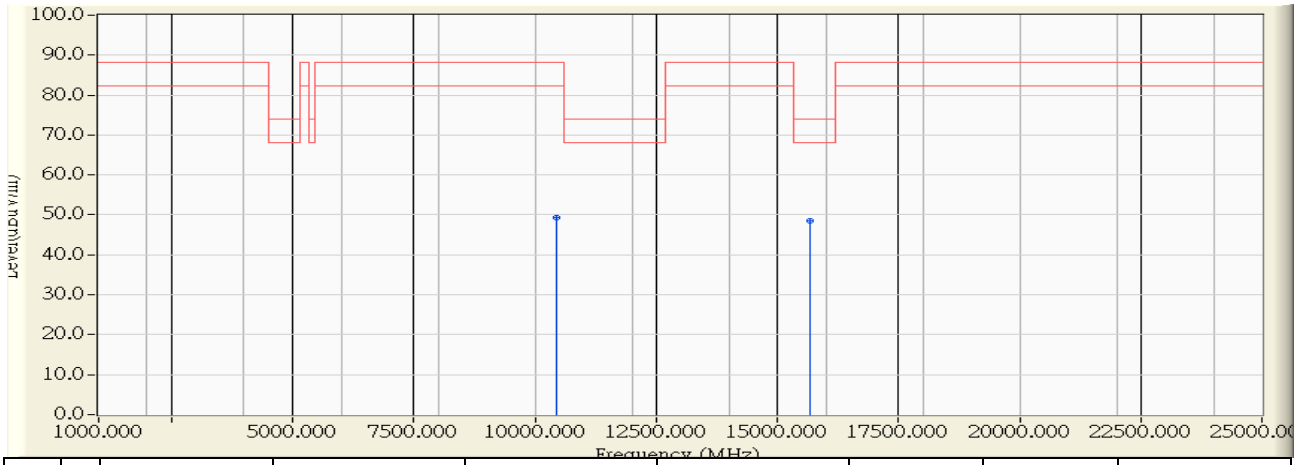


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		10356.300	10.443	39.080	49.523	-38.777	88.300	PEAK
2	*	15533.100	11.118	38.730	49.847	-24.153	74.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 1MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	**Time : 2013/09/12 - 14:19**
Limit : FCC_SpartE_15.407_H_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	**Power : DC 5V**
EUT : Wireless-AC450 USB Adapter	**Note : 802.11a_5220MHz**

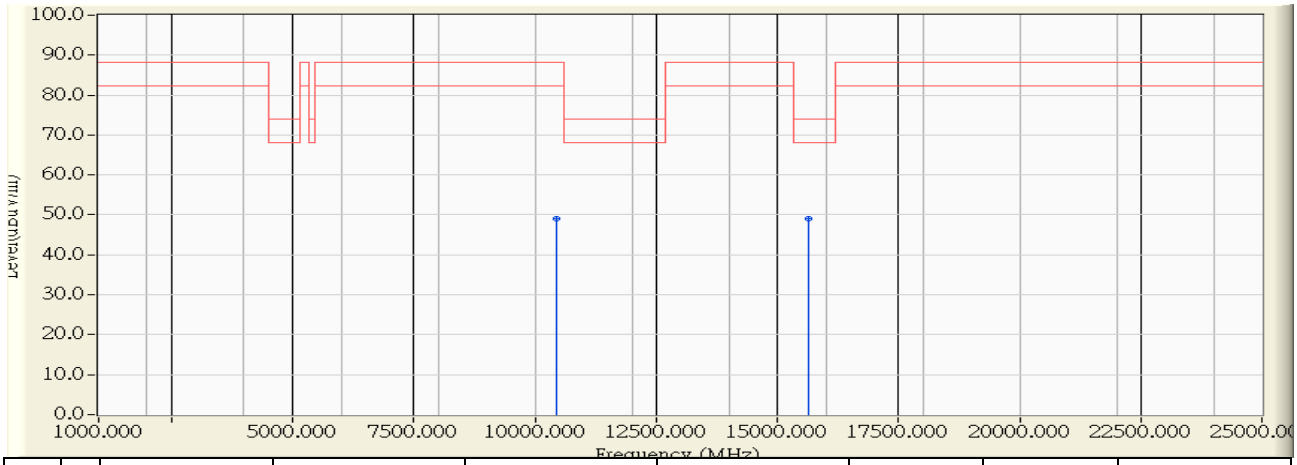


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		10448.200	10.169	39.070	49.240	-39.060	88.300	PEAK
2	*	15661.670	10.973	37.590	48.563	-25.437	74.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 1MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	**Time : 2013/09/12 - 14:20**
Limit : FCC_SpartE_15.407_H_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	**Power : DC 5V**
EUT : Wireless-AC450 USB Adapter	**Note : 802.11a_5220MHz**

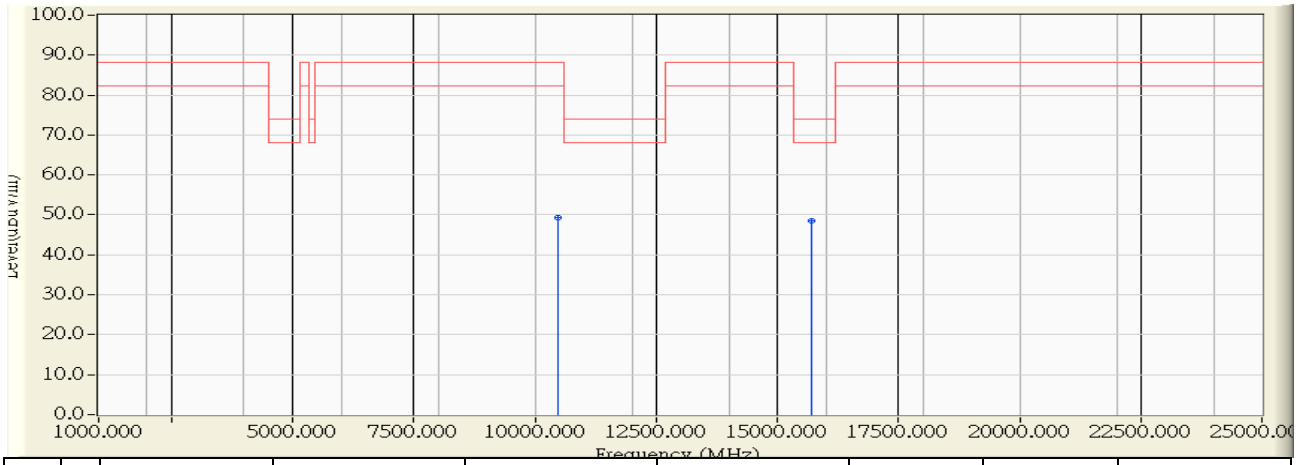


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		10442.600	10.187	38.960	49.146	-39.154	88.300	PEAK
2	*	15657.300	10.978	37.950	48.928	-25.072	74.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 1MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	**Time : 2013/09/12 - 14:56**
Limit : FCC_SpartE_15.407_H_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	**Power : DC 5V**
EUT : Wireless-AC450 USB Adapter	**Note : 802.11a_5240MHz**

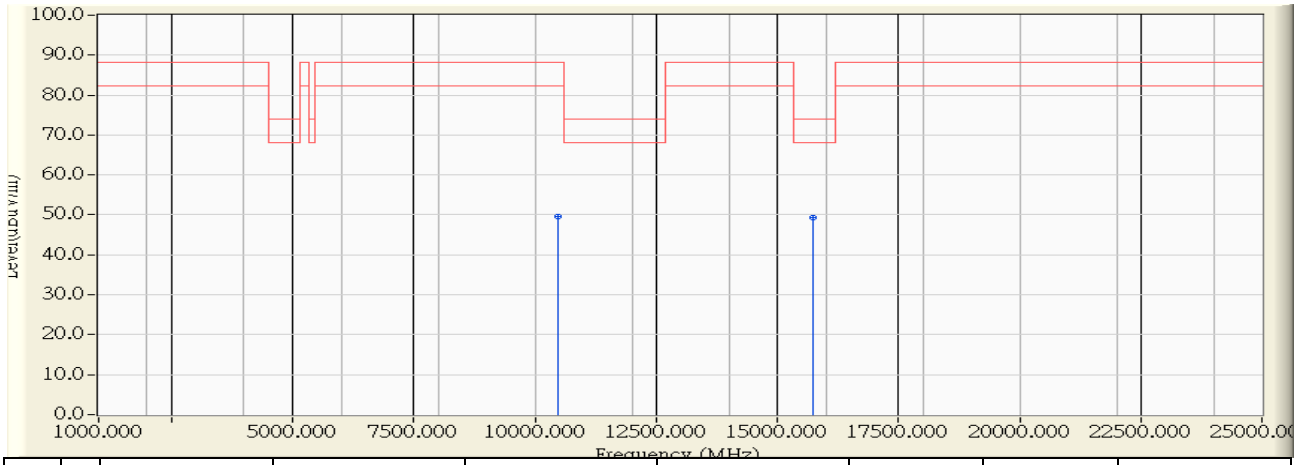


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		10488.800	10.051	39.380	49.431	-38.869	88.300	PEAK
2	*	15716.570	10.912	37.480	48.392	-25.608	74.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 1MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	**Time : 2013/09/12 - 15:07**
Limit : FCC_SpartE_15.407_H_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	**Power : DC 5V**
EUT : Wireless-AC450 USB Adapter	**Note : 802.11a_5240MHz**

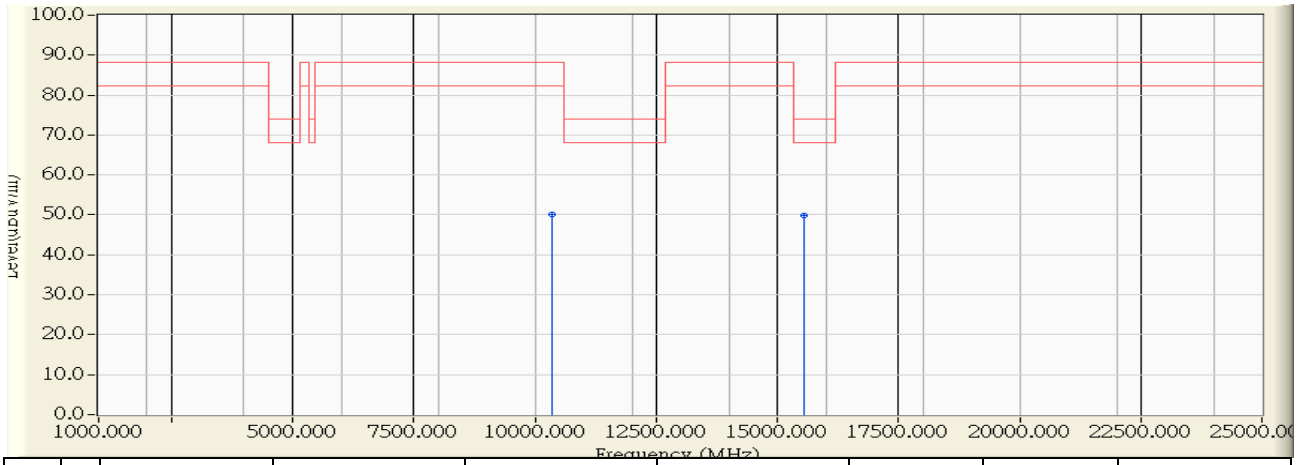


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		10472.100	10.098	39.390	49.488	-38.812	88.300	PEAK
2	*	15726.600	10.901	38.480	49.381	-24.619	74.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 1MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	**Time : 2013/09/12 - 15:14**
Limit : FCC_SpartE_15.407_H_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	**Power : DC 5V**
EUT : Wireless-AC450 USB Adapter	**Note : 802.11n(20M)_5180MHz**

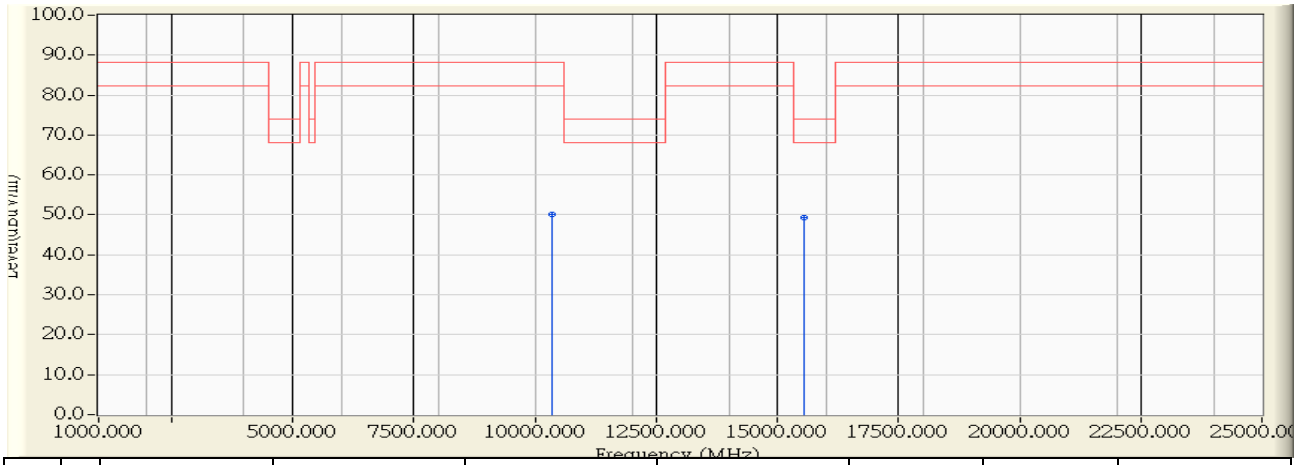


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		10365.970	10.415	39.850	50.265	-38.035	88.300	PEAK
2	*	15549.470	11.098	38.790	49.889	-24.111	74.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 1MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	**Time : 2013/09/12 - 15:15**
Limit : FCC_SpartE_15.407_H_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	**Power : DC 5V**
EUT : Wireless-AC450 USB Adapter	**Note : 802.11n(20M)_5180MHz**

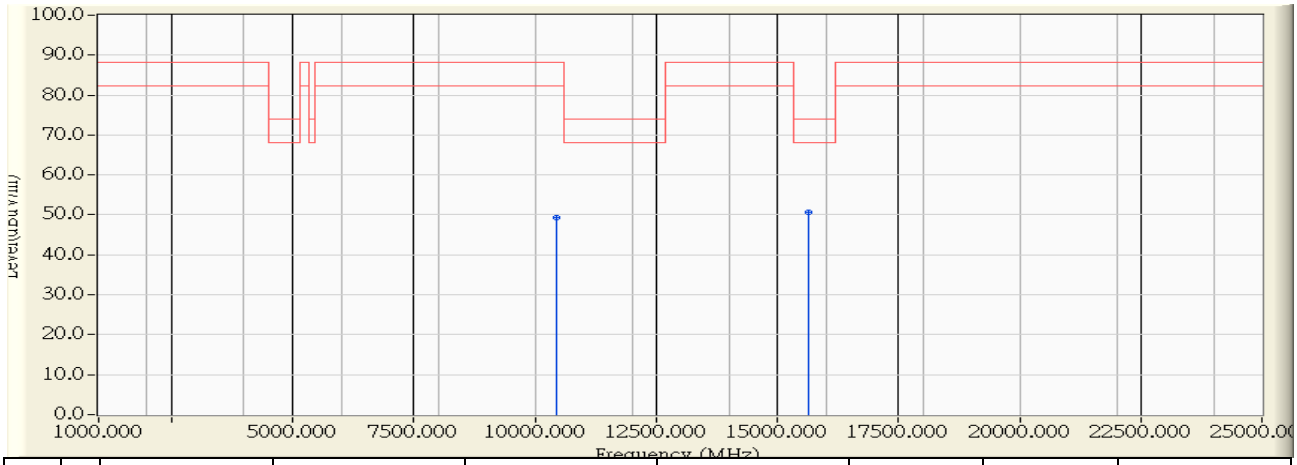


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		10350.710	45.049	39.780	50.240	-38.060	88.300	PEAK
2	*	15546.930	45.345	38.210	49.311	-24.689	74.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 1MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	**Time : 2013/09/12 - 15:17**
Limit : FCC_SpartE_15.407_H_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	**Power : DC 5V**
EUT : Wireless-AC450 USB Adapter	**Note : 802.11n(20M)_5220MHz**

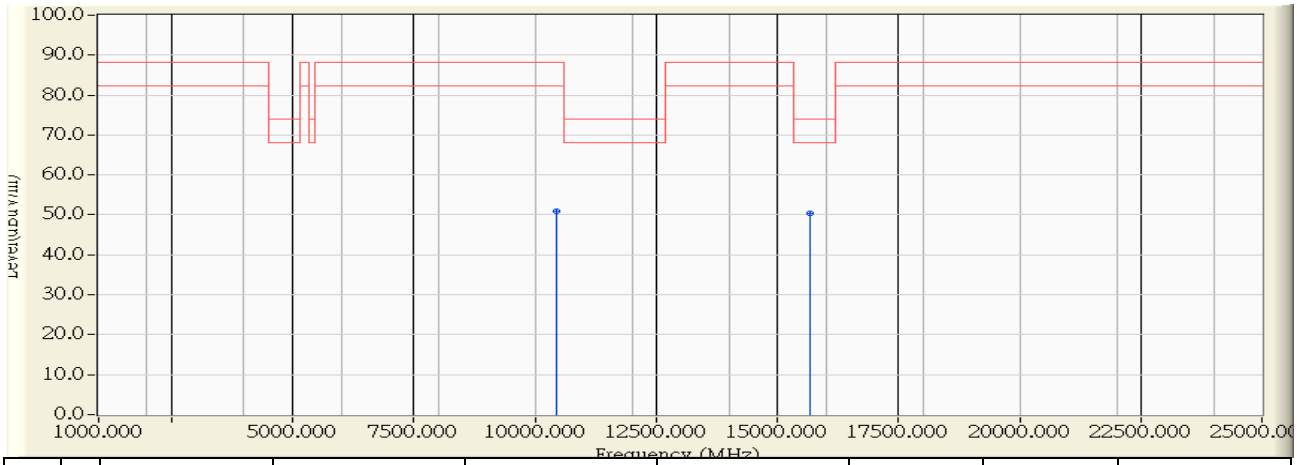


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		10441.030	10.191	39.240	49.431	-38.869	88.300	PEAK
2	*	15661.230	10.973	39.730	50.704	-23.296	74.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 1MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	**Time : 2013/09/12 - 15:18**
Limit : FCC_SpartE_15.407_H_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	**Power : DC 5V**
EUT : Wireless-AC450 USB Adapter	**Note : 802.11n(20M)_5220MHz**

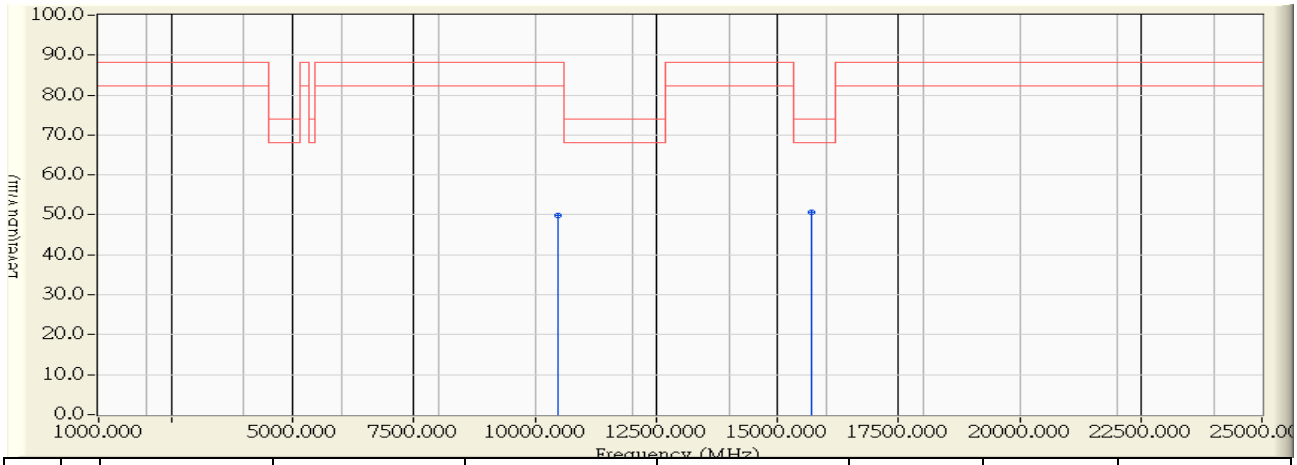


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		10438.900	10.197	40.700	50.897	-37.403	88.300	PEAK
2	*	15664.100	10.971	39.480	50.451	-23.549	74.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 1MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	**Time : 2013/09/12 - 15:20**
Limit : FCC_SpartE_15.407_H_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	**Power : DC 5V**
EUT : Wireless-AC450 USB Adapter	**Note : 802.11n(20M)_5240MHz**

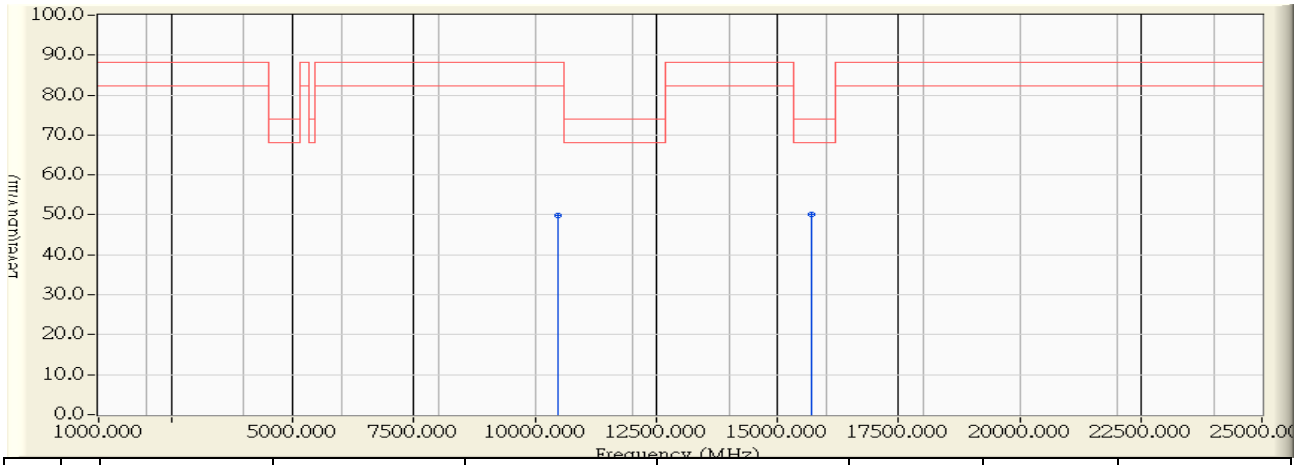


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		10474.630	10.091	39.900	49.991	-38.309	88.300	PEAK
2	*	15712.030	10.917	39.840	50.757	-23.243	74.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 1MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	**Time : 2013/09/12 - 15:21**
Limit : FCC_SpartE_15.407_H_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	**Power : DC 5V**
EUT : Wireless-AC450 USB Adapter	**Note : 802.11n(20M)_5240MHz**

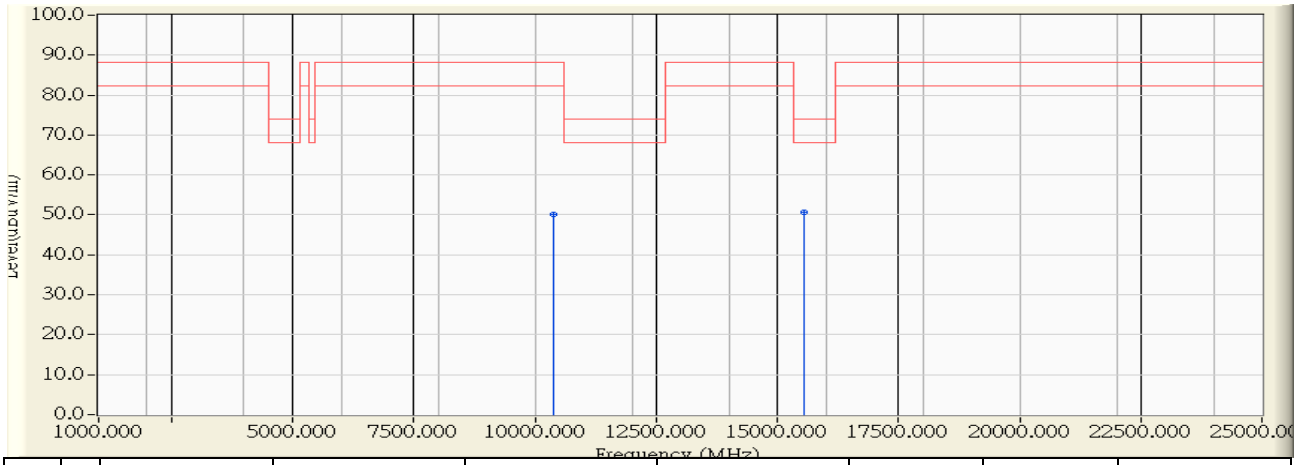


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		10484.000	10.063	39.820	49.883	-38.417	88.300	PEAK
2	*	15713.570	10.915	39.160	50.076	-23.924	74.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 1MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	**Time : 2013/09/12 - 15:25**
Limit : FCC_SpartE_15.407_H_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	**Power : DC 5V**
EUT : Wireless-AC450 USB Adapter	**Note : 802.11n(40M)_5190MHz**

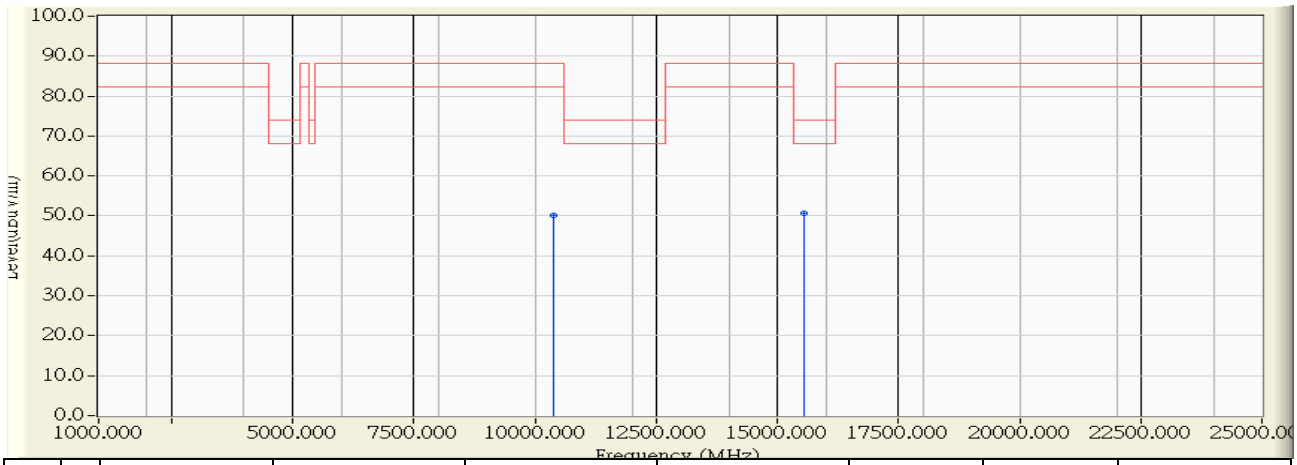


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		10397.170	10.321	39.880	50.202	-38.098	88.300	PEAK
2	*	15552.170	11.096	39.480	50.576	-23.424	74.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 1MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	**Time : 2013/09/12 - 15:26**
Limit : FCC_SpartE_15.407_H_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	**Power : DC 5V**
EUT : Wireless-AC450 USB Adapter	**Note : 802.11n(40M)_5190MHz**

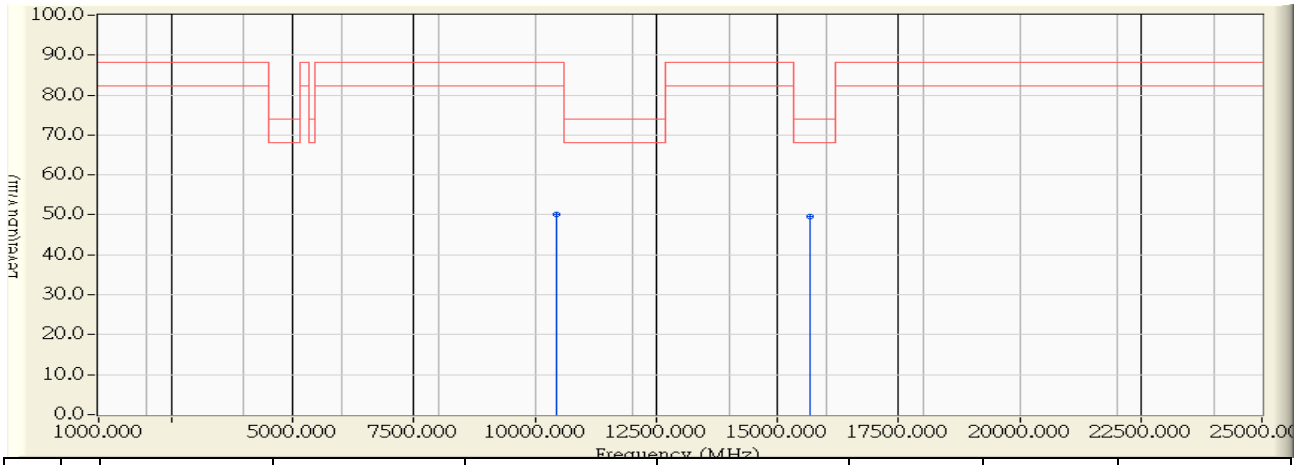


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		10384.420	10.360	39.800	50.160	-38.140	88.300	PEAK
2	*	15546.420	11.103	39.540	50.642	-23.358	74.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 1MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	**Time : 2013/09/12 - 15:27**
Limit : FCC_SpartE_15.407_H_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	**Power : DC 5V**
EUT : Wireless-AC450 USB Adapter	**Note : 802.11n(40M)_5230MHz**

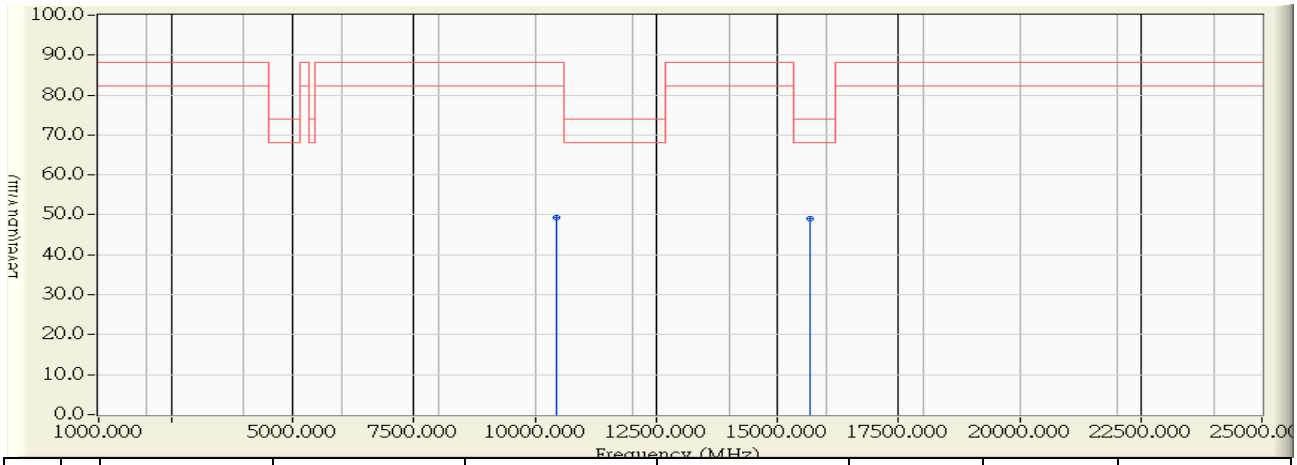


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		10456.830	10.143	39.930	50.074	-38.226	88.300	PEAK
2	*	15689.330	10.943	38.640	49.583	-24.417	74.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 1MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	**Time : 2013/09/12 - 15:29**
Limit : FCC_SpartE_15.407_H_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	**Power : DC 5V**
EUT : Wireless-AC450 USB Adapter	**Note : 802.11n(40M)_5230MHz**

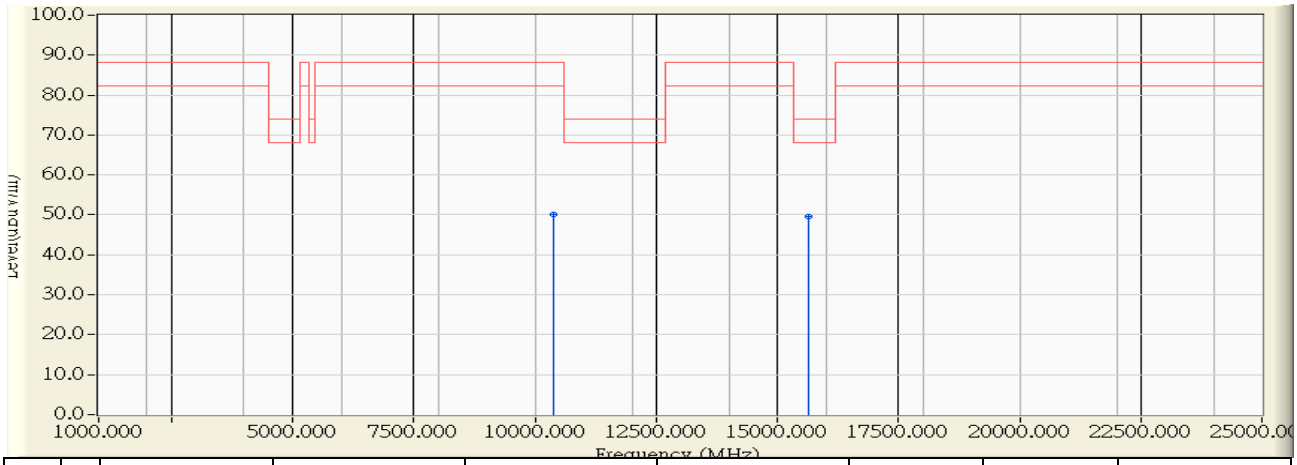


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		10454.000	10.152	39.100	49.252	-39.048	88.300	PEAK
2	*	15676.080	10.957	38.020	48.977	-25.023	74.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 1MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	**Time : 2013/09/12 - 15:31**
Limit : FCC_SpartE_15.407_H_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	**Power : DC 5V**
EUT : Wireless-AC450 USB Adapter	**Note : 802.11ac(80M)_5210MHz**

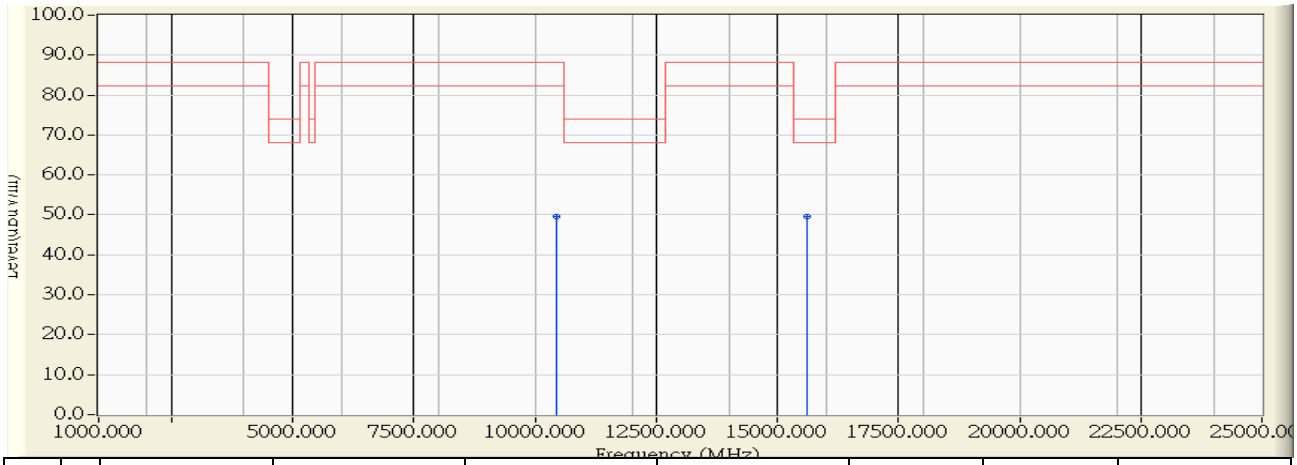


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		10384.330	10.360	39.780	50.140	-38.160	88.300	PEAK
2	*	15639.000	10.999	38.640	49.639	-24.361	74.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 1MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	**Time : 2013/09/12 - 15:32**
Limit : FCC_SpartE_15.407_H_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	**Power : DC 5V**
EUT : Wireless-AC450 USB Adapter	**Note : 802.11ac(80M)_5210MHz**



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		10445.830	10.176	39.320	49.497	-38.803	88.300	PEAK
2	*	15623.670	11.015	38.610	49.626	-24.374	74.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 1MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

8. Band Edge

8.1. Test Equipment

The following test equipments are used during the band edge tests:

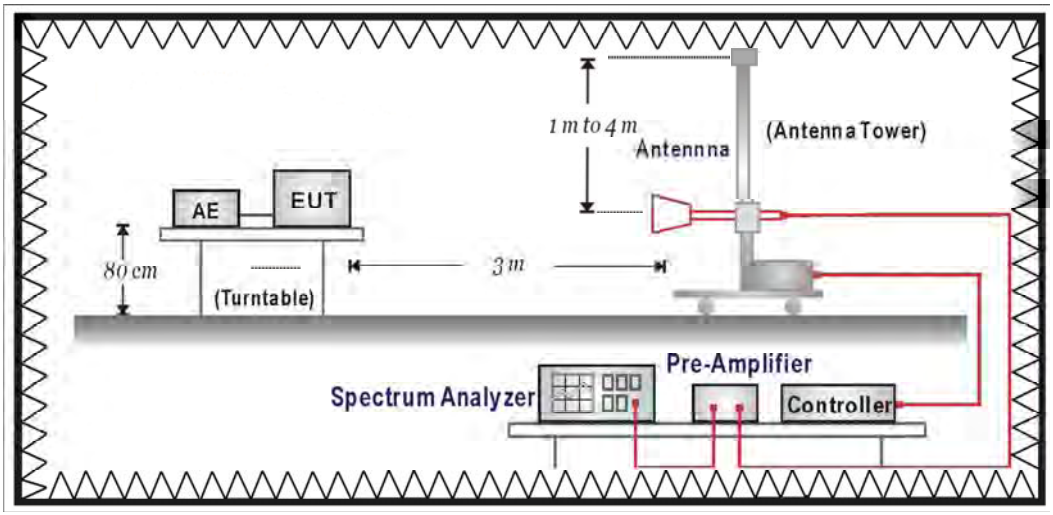
Radiated Emission Band Edge / CB1

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Double Ridged Guide Horn Antenna	Schwarzback	BBHA 9120	D743	2014/02/17
Spectrum Analyzer	Agilent	E4440A	MY46187335	2014/01/27
k Type Cable	Huber Suhner	Sucoflex 102	25623/2	2014/02/21

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

8.2. Test Setup

RF Radiated Measurement:



8.3. Limits

➢ **General Radiated Emission Limits**

The provisions of Section 15.205 of this part apply to intentional radiators operating under this section. Radiated emissions which fall in the restricted bands, as defined in Section 15.205, must also comply with the radiated emission limits specified in Section 15.209:

FCC Part 15 Subpart C Paragraph 15.209 Limits		
Frequency MHz	uV/m @3m	dBuV/m@3m
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

Remark:

4. RF Voltage (dBuV) = 20 log RF Voltage (uV)
5. In the Above Table, the tighter limit applies at the band edges.
6. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

➢ **Unwanted Emission out of the restricted bands Limits**

FCC Part 15 Subpart C Paragraph 15.407(b) Limits		
Frequency (MHz)	EIRP Limit (dBm)	Equivalent Field Strength (dBuV/m@3m)
5150~5250	-27	68.3
5250~5350	-27	68.3
5470~5725	-27	68.3
5725~5825	-27 (Note1)	68.3
	-17 (Note2)	78.3

Remark:

4. For frequencies more than 10 MHz above or below the band edges.
5. For frequency range from the band edges to 10 MHz above or below the band edges.
6. uV/m = $\frac{1000000\sqrt{30 \times EIRP}}{3}$, RF Voltage (dBuV/m) = 20 log RF Voltage (uV/m)

8.4. Test Procedure

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna can move 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 measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.4: 2009on radiated measurement.

The bandwidth below 1GHz setting on the field strength meter is 120 KHz, above 1GHz are 1 MHz.

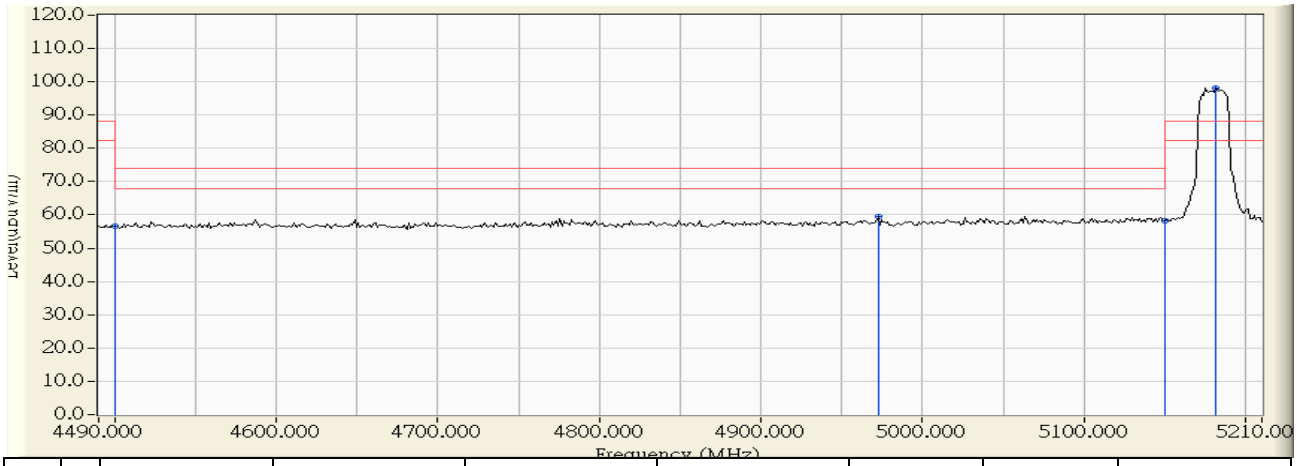
8.5. Uncertainty

The measurement uncertainty is defined as ± 3.65dB

8.6. Test Result

Radiated is defined as

Site : CB1	**Time : 2013/09/04 - 11:01**
Limit : FCC_SpartE_15.407_H_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	**Power : DC 5V**
EUT : Wireless-AC450 USB Adapter	**Note : 802.11a_5180MHz**

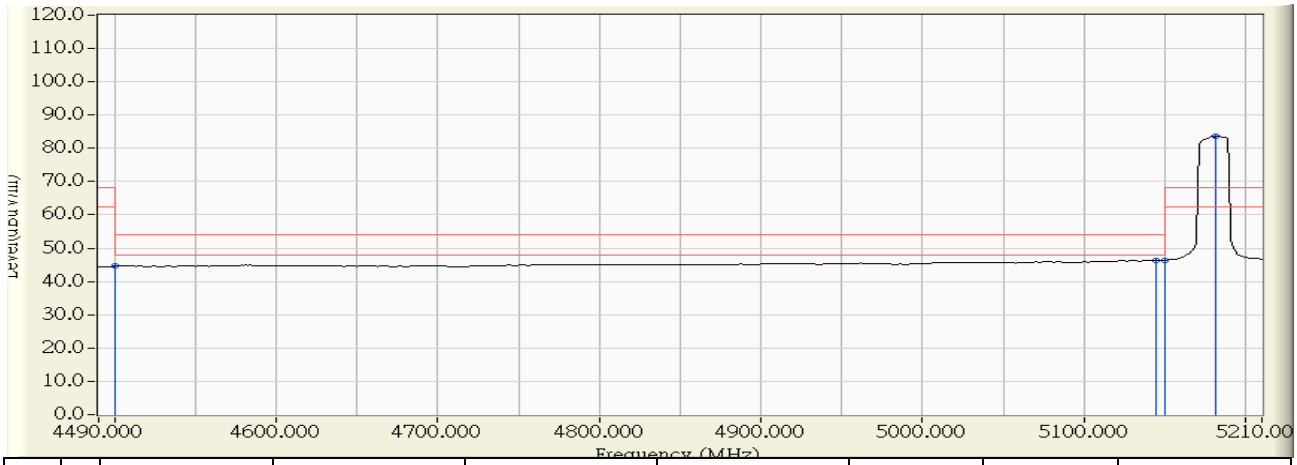


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4500.000	-1.406	58.060	56.655	-17.345	74.000	PEAK
2		4972.400	-0.255	59.670	59.415	-14.585	74.000	PEAK
3		5150.000	0.975	57.262	58.237	-15.763	74.000	PEAK
4	*	5181.200	1.218	97.060	98.277	9.977	88.300	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 1MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	**Time : 2013/09/04 - 11:04**
Limit : FCC_SpartE_15.407_H_03M_AV	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	**Power : DC 5V**
EUT : Wireless-AC450 USB Adapter	**Note : 802.11a_5180MHz**

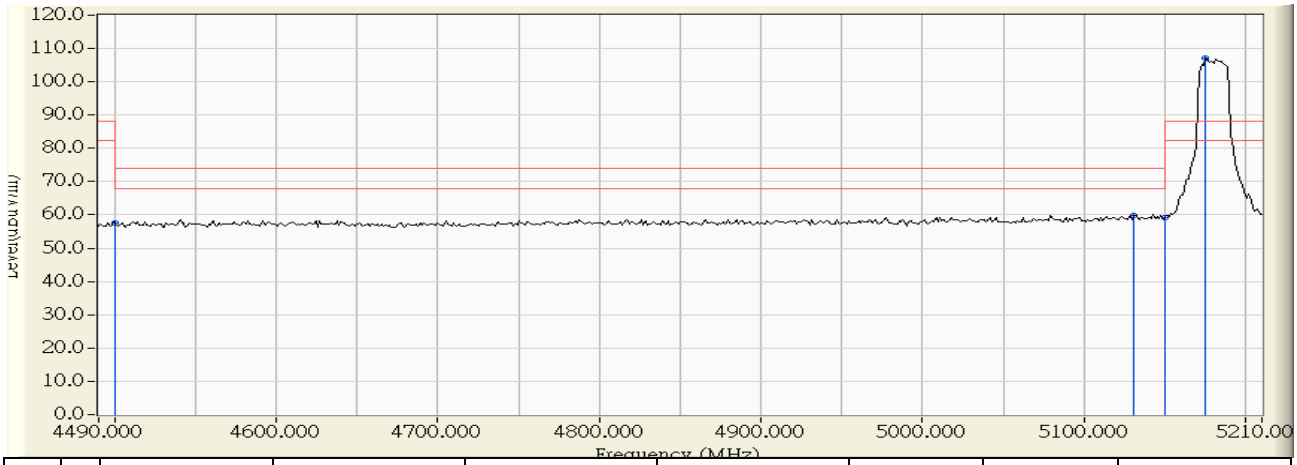


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4500.000	-1.406	45.963	44.558	-9.442	54.000	AVERAGE
2		5144.000	0.929	45.397	46.326	-7.674	54.000	AVERAGE
3		5150.000	0.975	45.429	46.404	-7.596	54.000	AVERAGE
4	*	5181.200	1.218	82.540	83.757	15.457	68.300	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 1MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	**Time : 2013/09/04 - 11:08**
Limit : FCC_SpartE_15.407_H_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	**Power : DC 5V**
EUT : Wireless-AC450 USB Adapter	**Note : 802.11a_5180MHz**

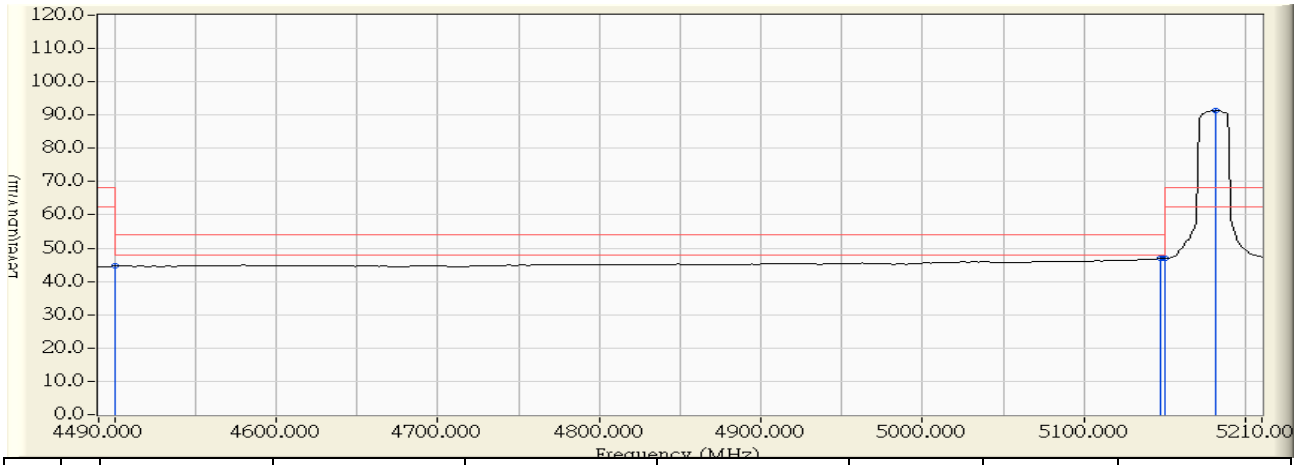


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4500.000	-1.406	58.872	57.467	-16.533	74.000	PEAK
2		5130.800	0.827	58.939	59.766	-14.234	74.000	PEAK
3		5150.000	0.975	58.123	59.098	-14.902	74.000	PEAK
4	*	5175.200	1.170	106.025	107.196	18.896	88.300	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 1MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	**Time : 2013/09/04 - 11:10**
Limit : FCC_SpartE_15.407_H_03M_AV	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	**Power : DC 5V**
EUT : Wireless-AC450 USB Adapter	**Note : 802.11a_5180MHz**

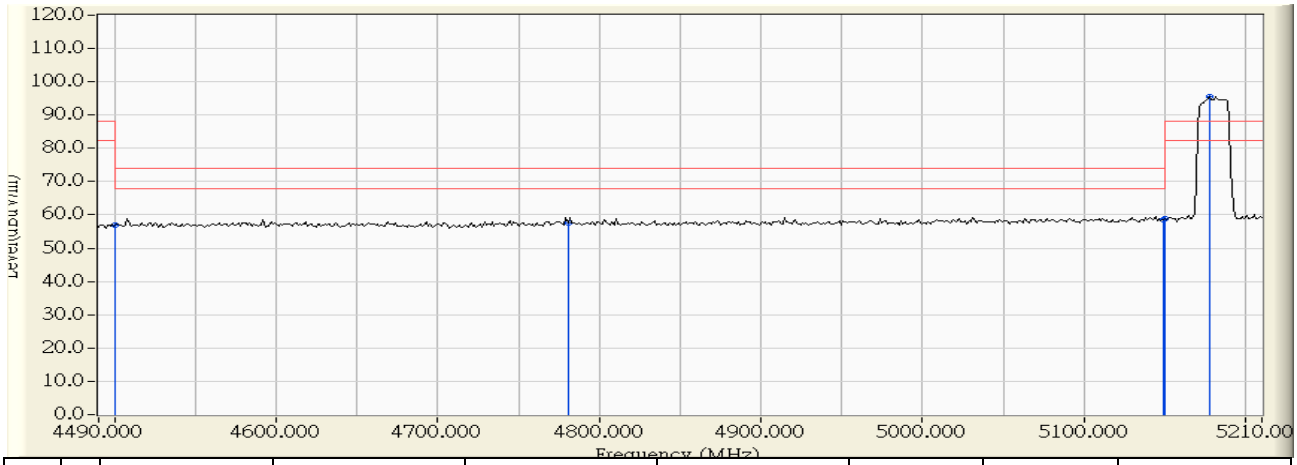


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4500.000	33.193	45.984	44.579	-9.421	54.000	AVERAGE
2		5147.600	35.486	46.143	47.100	-6.900	54.000	AVERAGE
3		5150.000	35.505	45.975	46.950	-7.050	54.000	AVERAGE
4	*	5181.200	35.754	90.188	91.405	23.105	68.300	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 1MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	**Time : 2013/09/04 - 11:17**
Limit : FCC_SpartE_15.407_H_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	**Power : DC 5V**
EUT : Wireless-AC450 USB Adapter	**Note : 802.11n(20M)_5180MHz**

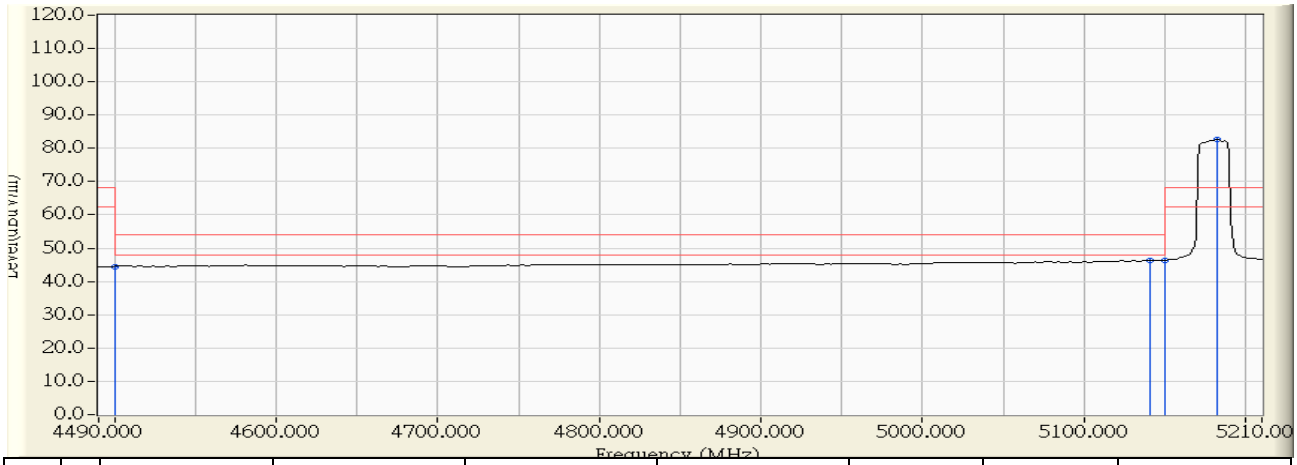


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4500.000	-1.406	58.246	56.841	-17.159	74.000	PEAK
2		4780.400	-0.723	58.280	57.557	-16.443	74.000	PEAK
3		5148.800	0.966	57.444	58.410	-15.590	74.000	PEAK
4		5150.000	0.975	57.991	58.966	-15.034	74.000	PEAK
5	*	5177.600	1.189	94.215	95.404	7.104	88.300	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 1MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	**Time : 2013/09/04 - 11:23**
Limit : FCC_SpartE_15.407_H_03M_AV	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	**Power : DC 5V**
EUT : Wireless-AC450 USB Adapter	**Note : 802.11n(20M)_5180MHz**

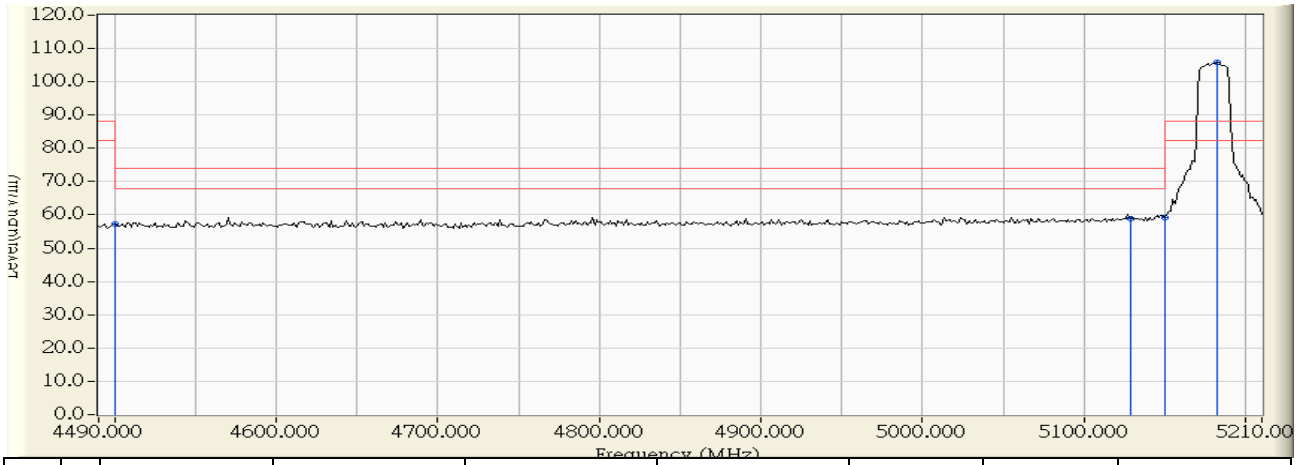


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4500.000	-1.406	45.945	44.540	-9.460	54.000	AVERAGE
2		5140.400	0.901	45.371	46.272	-7.728	54.000	AVERAGE
3		5150.000	0.975	45.411	46.386	-7.614	54.000	AVERAGE
4	*	5182.400	1.227	81.444	82.671	14.371	68.300	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 1MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	**Time : 2013/09/04 - 11:29**
Limit : FCC_SpartE_15.407_H_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	**Power : DC 5V**
EUT : Wireless-AC450 USB Adapter	**Note : 802.11n(20M)_5180MHz**

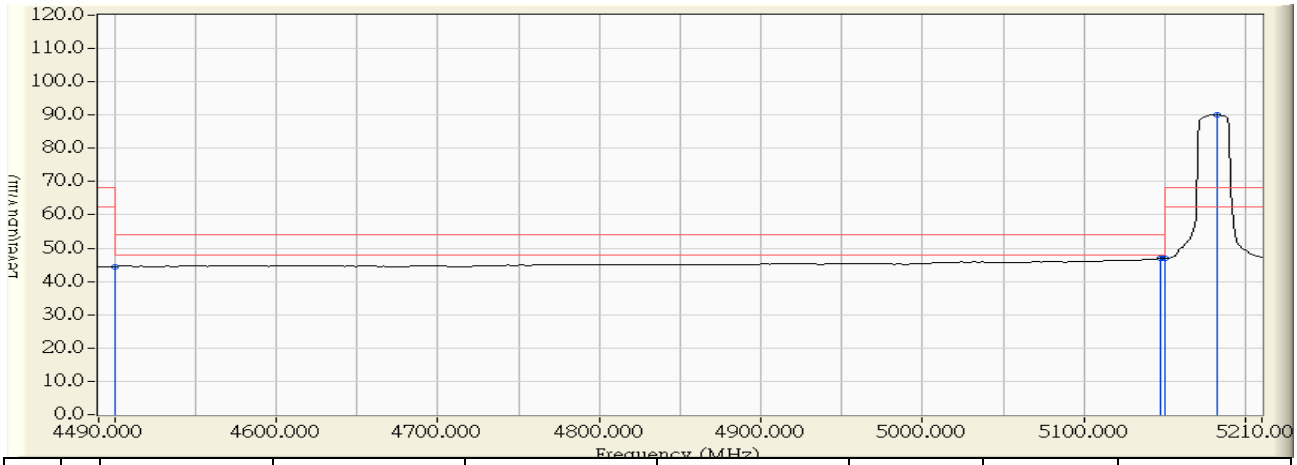


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4500.000	-1.406	58.667	57.262	-16.738	74.000	PEAK
2		5128.400	0.807	57.993	58.801	-15.199	74.000	PEAK
3		5150.000	0.975	58.328	59.303	-14.697	74.000	PEAK
4	*	5182.400	1.227	104.631	105.858	17.558	88.300	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 1MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	**Time : 2013/09/04 - 11:30**
Limit : FCC_SpartE_15.407_H_03M_AV	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	**Power : DC 5V**
EUT : Wireless-AC450 USB Adapter	**Note : 802.11n(20M)_5180MHz**

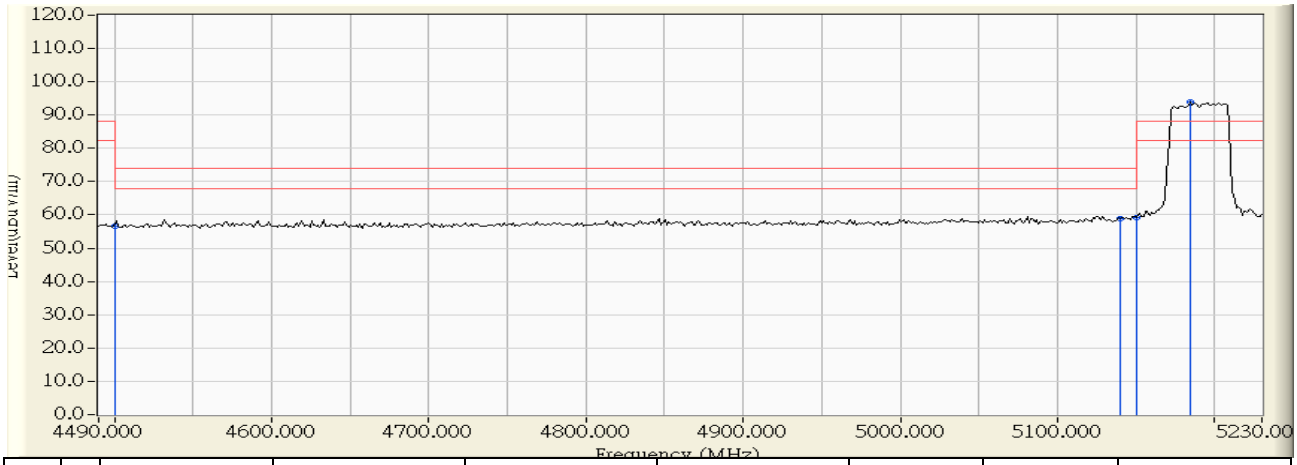


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4500.000	-1.406	45.934	44.529	-9.471	54.000	AVERAGE
2		5147.600	0.956	46.009	46.966	-7.034	54.000	AVERAGE
3		5150.000	0.975	45.881	46.856	-7.144	54.000	AVERAGE
4	*	5182.400	1.227	88.979	90.206	21.906	68.300	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 1MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	**Time : 2013/09/04 - 11:39**
Limit : FCC_SpartE_15.407_H_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	**Power : DC 5V**
EUT : Wireless-AC450 USB Adapter	**Note : 802.11n(40M)_5190MHz**

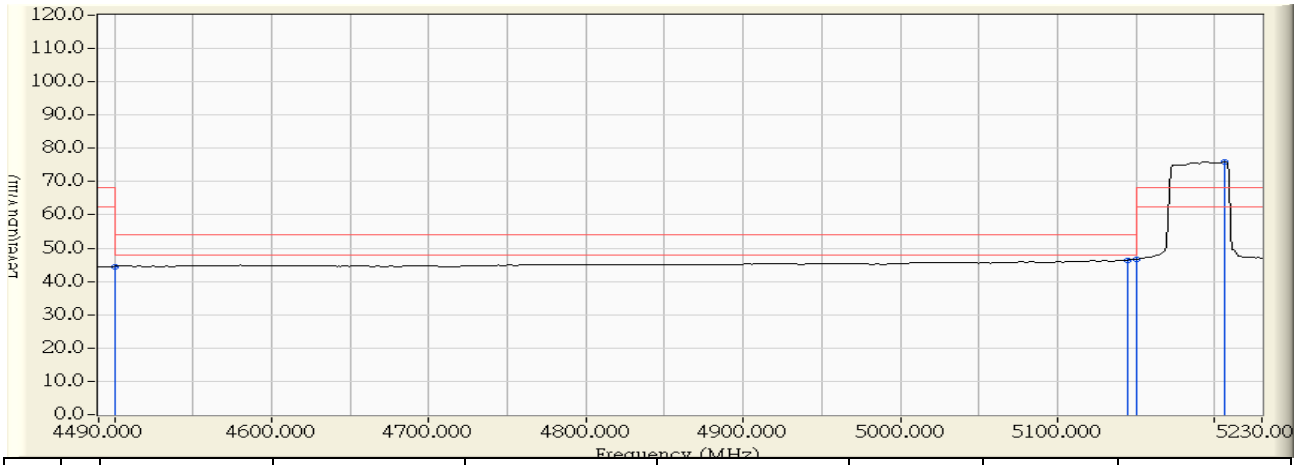


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4500.000	-1.406	58.183	56.778	-17.222	74.000	PEAK
2		5139.967	0.898	57.918	58.816	-15.184	74.000	PEAK
3		5150.000	0.975	58.273	59.248	-14.752	74.000	PEAK
4	*	5184.367	1.241	92.597	93.839	5.539	88.300	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 1MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	**Time : 2013/09/04 - 11:41**
Limit : FCC_SpartE_15.407_H_03M_AV	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	**Power : DC 5V**
EUT : Wireless-AC450 USB Adapter	**Note : 802.11n(40M)_5190MHz**

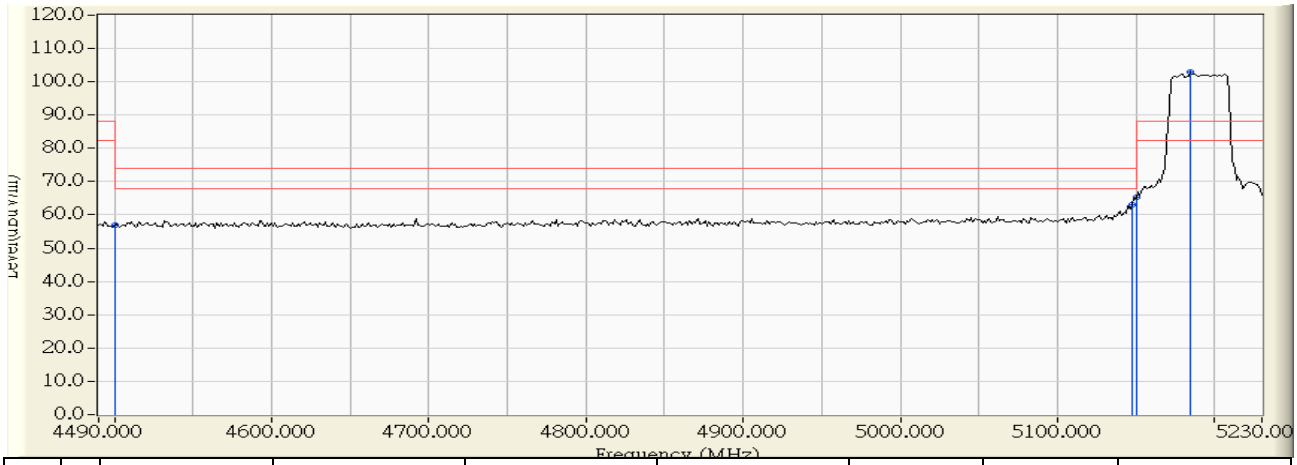


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4500.000	-1.406	45.938	44.533	-9.467	54.000	AVERAGE
2		5144.900	0.936	45.551	46.487	-7.513	54.000	AVERAGE
3		5150.000	0.975	45.706	46.681	-7.319	54.000	AVERAGE
4	*	5206.567	1.415	74.534	75.948	7.648	68.300	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 1MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	**Time : 2013/09/04 - 11:49**
Limit : FCC_SpartE_15.407_H_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	**Power : DC 5V**
EUT : Wireless-AC450 USB Adapter	**Note : 802.11n(40M)_5190MHz**

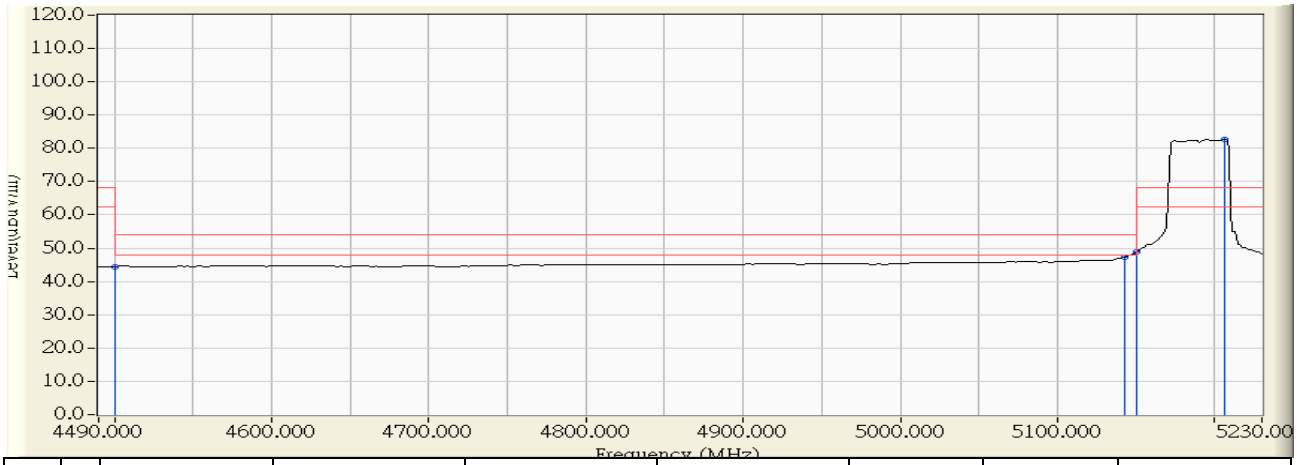


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4500.000	-1.406	58.233	56.828	-17.172	74.000	PEAK
2		5147.367	0.956	62.061	63.016	-10.984	74.000	PEAK
3		5150.000	0.975	64.410	65.385	-8.615	74.000	PEAK
4	*	5184.367	1.241	101.567	102.809	14.509	88.300	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 1MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	**Time : 2013/09/04 - 11:51**
Limit : FCC_SpartE_15.407_H_03M_AV	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	**Power : DC 5V**
EUT : Wireless-AC450 USB Adapter	**Note : 802.11n(40M)_5190MHz**

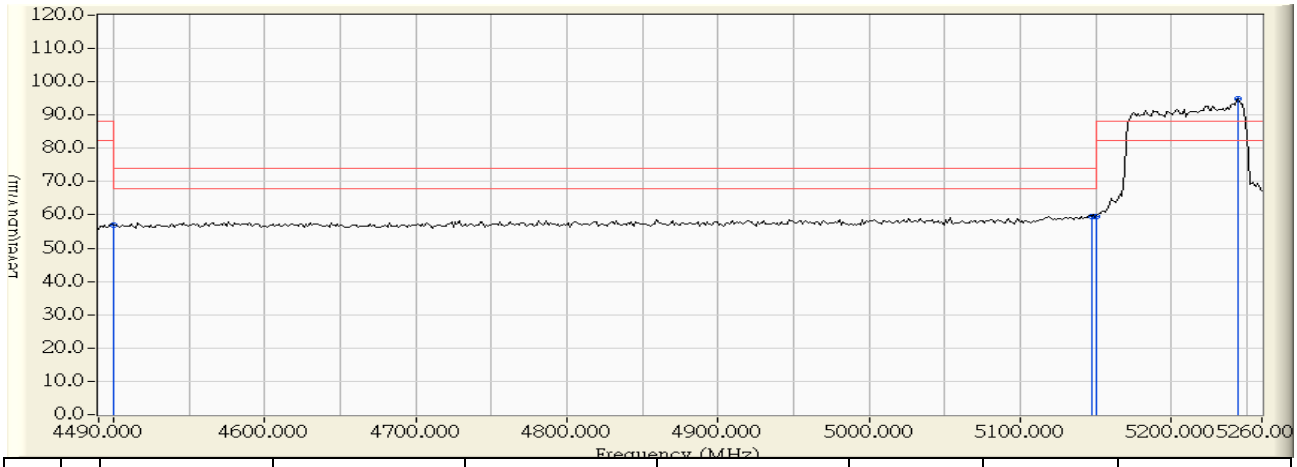


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4500.000	-1.406	45.913	44.508	-9.492	54.000	AVERAGE
2		5142.433	0.917	46.367	47.284	-6.716	54.000	AVERAGE
3		5150.000	0.975	47.939	48.914	-5.086	54.000	AVERAGE
4	*	5206.567	1.415	81.196	82.610	14.310	68.300	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 1MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	**Time : 2013/09/04 - 11:56**
Limit : FCC_SpartE_15.407_H_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	**Power : DC 5V**
EUT : Wireless-AC450 USB Adapter	**Note : 802.11ac(80M)_5210MHz**

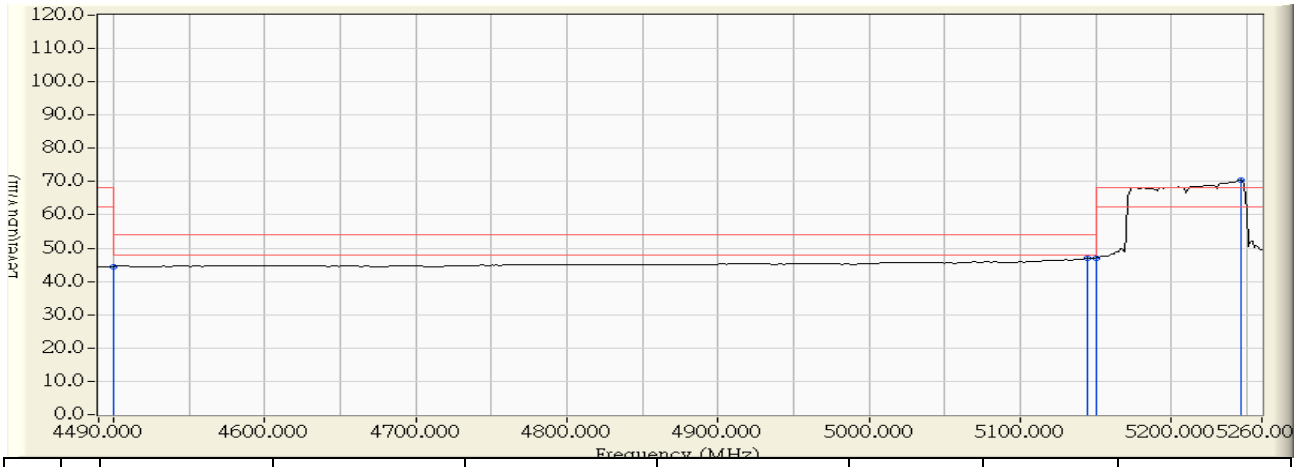


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4500.000	-1.406	58.424	57.019	-16.981	74.000	PEAK
2		5147.067	0.953	58.435	59.388	-14.612	74.000	PEAK
3		5150.000	0.975	58.510	59.485	-14.515	74.000	PEAK
4	*	5244.600	1.709	93.172	94.881	6.581	88.300	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 1MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	**Time : 2013/09/04 - 11:58**
Limit : FCC_SpartE_15.407_H_03M_AV	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	**Power : DC 5V**
EUT : Wireless-AC450 USB Adapter	**Note : 802.11ac(80M)_5210MHz**

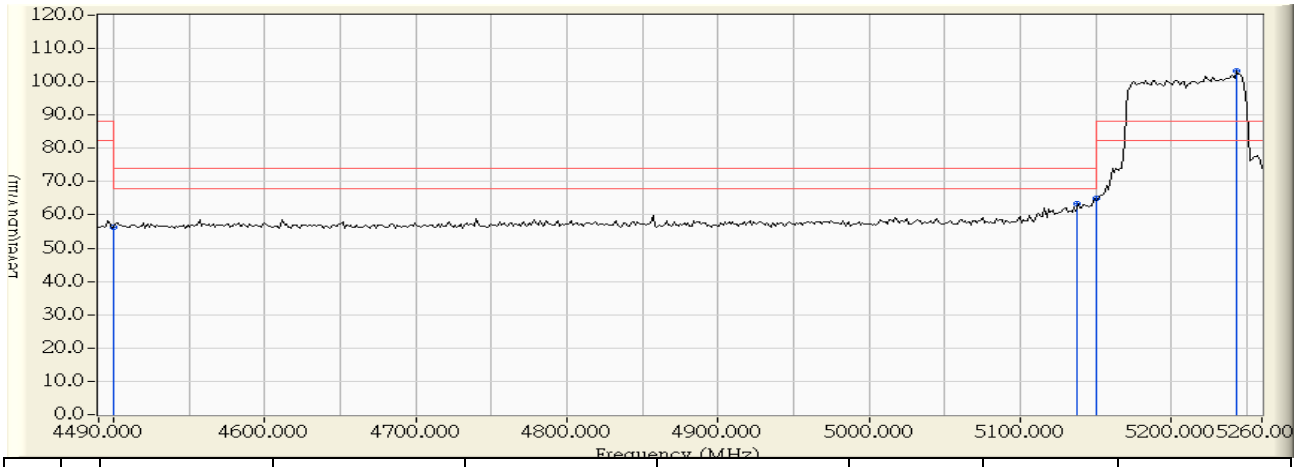


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4500.000	-1.406	45.907	44.502	-9.498	54.000	AVERAGE
2		5144.500	0.932	45.955	46.888	-7.112	54.000	AVERAGE
3		5150.000	0.975	46.151	47.126	-6.874	54.000	AVERAGE
4	*	5245.883	1.720	68.619	70.338	2.038	68.300	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 1MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	**Time : 2013/09/04 - 13:16**
Limit : FCC_SpartE_15.407_H_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	**Power : DC 5V**
EUT : Wireless-AC450 USB Adapter	**Note : 802.11ac(80M)_5210MHz**

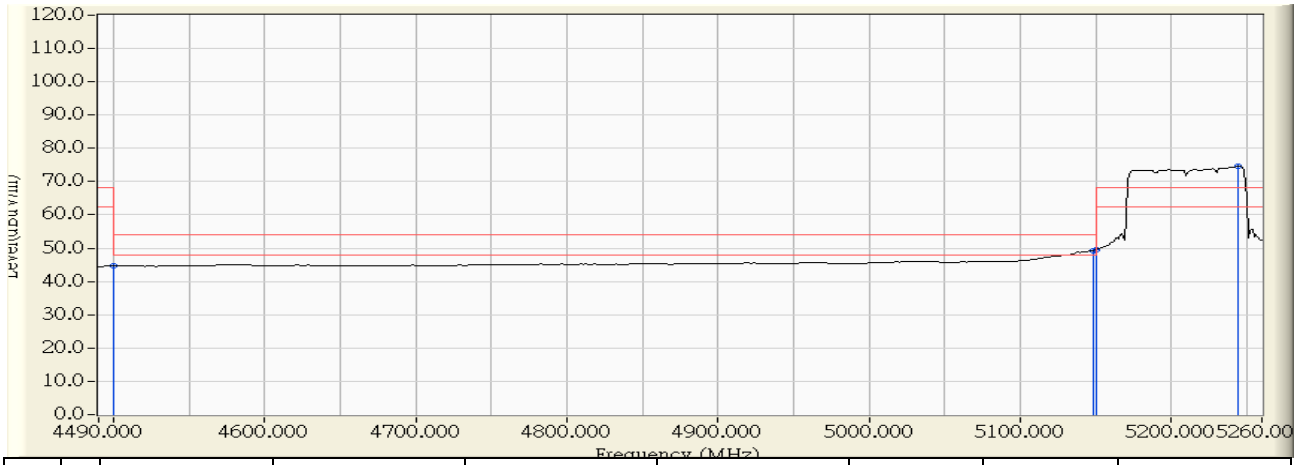


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4500.000	-1.406	57.587	56.182	-17.818	74.000	PEAK
2		5138.083	0.883	62.486	63.369	-10.631	74.000	PEAK
3		5150.000	0.975	63.899	64.874	-9.126	74.000	PEAK
4	*	5243.317	1.699	101.598	103.297	14.997	88.300	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 1MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	**Time : 2013/09/04 - 13:18**
Limit : FCC_SpartE_15.407_H_03M_AV	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	**Power : DC 5V**
EUT : Wireless-AC450 USB Adapter	**Note : 802.11ac(80M)_5210MHz**



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4500.000	-1.406	46.055	44.650	-9.350	54.000	AVERAGE
2		5148.350	0.962	48.388	49.351	-4.649	54.000	AVERAGE
3		5150.000	0.975	48.560	49.535	-4.465	54.000	AVERAGE
4	*	5244.600	1.709	73.017	74.726	6.426	68.300	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 1MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

9. Frequency Stability

9.1. Test Equipment

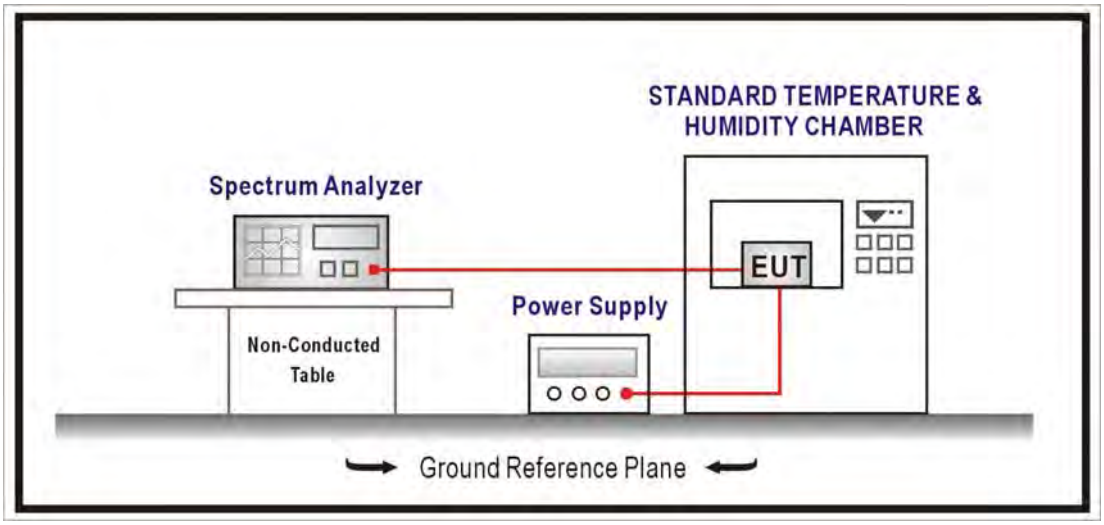
The following test equipments are used during the radiated emission tests:

Frequency Stability / SR7

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Spectrum Analyzer	Agilent	N9010A-EXA	US47140172	2014/08/05
Standard Temperature & Humidity Chamber	WIT	TH-1S-B	1082101	2014/01/27

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

9.2. Test Setup



9.3. Limits

Manufactures of aII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified

9.4. Test Procedure

The EUT was setup to ANSI C63.4, 2009; tested to U-NII test procedure of March 2012 KDB 789033 for compliance to FCC 47CFR Subpart E requirements.

9.5. Uncertainty

The measurement uncertainty is defined as ± 150 Hz

9.6. Test Result

Product	Wireless-AC450 USB Adapter		
Test Item	Frequency Stability		
Test Mode	Mode 1: Transmit - 802.11a - 5180MHz		
Date of Test	2013/09/14	Test Site	SR7

Temperature Interval (oC)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
-20	120	5180.0737	14.2373	Pass
-10		5180.6249	120.6298	Pass
0		5180.4070	78.5704	Pass
10		5180.7379	142.4468	Pass
20		5180.0767	14.8141	Pass
30		5180.2374	45.8353	Pass
40		5180.0522	10.0772	Pass
50		5180.3309	63.8730	Pass

Temperature Interval (oC)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
25	102	5180.4654	89.8530	Pass
	120	5180.4532	87.4840	Pass
	138	5180.8854	170.9235	Pass

Product	Wireless-AC450 USB Adapter		
Test Item	Frequency Stability		
Test Mode	Mode 1: Transmit - 802.11a - 5240MHz		
Date of Test	2013/09/14	Test Site	SR7

Temperature Interval (oC)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
-20	120	5240.5036	96.1067	Pass
-10		5240.2553	48.7237	Pass
0		5240.7980	152.2882	Pass
10		5240.6164	117.6425	Pass
20		5240.7389	141.0204	Pass
30		5240.5547	105.8595	Pass
40		5240.7345	140.1679	Pass
50		5240.8626	164.6135	Pass

Temperature Interval (oC)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
25	102	5240.7942	151.5624	Pass
	120	5240.3801	72.5315	Pass
	138	5240.2889	55.1429	Pass

Product	Wireless-AC450 USB Adapter		
Test Item	Frequency Stability		
Test Mode	Mode 1: Transmit - 802.11n_20M - 5180MHz(Ant.0)		
Date of Test	2013/09/14	Test Site	SR7

Temperature Interval (oC)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
-20	120	5180.8855	170.9447	Pass
-10		5180.5042	97.3268	Pass
0		5180.3622	69.9259	Pass
10		5180.6587	127.1592	Pass
20		5180.2537	48.9807	Pass
30		5180.8465	163.4197	Pass
40		5180.1055	20.3626	Pass
50		5180.0775	14.9548	Pass

Temperature Interval (oC)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
25	102	5180.5060	97.6827	Pass
	120	5180.5613	108.3640	Pass
	138	5180.5612	108.3375	Pass

Product	Wireless-AC450 USB Adapter		
Test Item	Frequency Stability		
Test Mode	Mode 1: Transmit - 802.11n_20M - 5240MHz(Ant.0)		
Date of Test	2013/09/14	Test Site	SR7

Temperature Interval (oC)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
-20	120	5240.8200	156.4835	Pass
-10		5240.5744	109.6201	Pass
0		5240.7146	136.3772	Pass
10		5240.8339	159.1479	Pass
20		5240.7765	148.1812	Pass
30		5240.5057	96.5107	Pass
40		5240.1916	36.5708	Pass
50		5240.4850	92.5496	Pass

Temperature Interval (oC)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
25	102	5240.6818	130.1143	Pass
	120	5240.4668	89.0903	Pass
	138	5240.0205	3.9217	Pass

Product	Wireless-AC450 USB Adapter		
Test Item	Frequency Stability		
Test Mode	Mode 1: Transmit - 802.11n_40M - 5190MHz(Ant.0)		
Date of Test	2013/09/14	Test Site	SR7

Temperature Interval (oC)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
-20	120	5190.2792	53.7900	Pass
-10		5190.3569	68.7753	Pass
0		5190.7350	141.6179	Pass
10		5190.7660	147.5996	Pass
20		5190.4687	90.3059	Pass
30		5190.3193	61.5214	Pass
40		5190.7067	136.1603	Pass
50		5190.7226	139.2279	Pass

Temperature Interval (oC)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
25	102	5190.8562	164.9661	Pass
	120	5190.7959	153.3514	Pass
	138	5190.5082	97.9105	Pass

Product	Wireless-AC450 USB Adapter		
Test Item	Frequency Stability		
Test Mode	Mode 1: Transmit - 802.11n_40M - 5230MHz(Ant.0)		
Date of Test	2013/09/14	Test Site	SR7

Temperature Interval (oC)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
-20	120	5230.5091	97.3427	Pass
-10		5230.2421	46.2819	Pass
0		5230.0176	3.3606	Pass
10		5230.4948	94.6109	Pass
20		5230.3305	63.2019	Pass
30		5230.6537	124.9956	Pass
40		5230.2633	50.3388	Pass
50		5230.2156	41.2291	Pass

Temperature Interval (oC)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
25	102	5230.3113	59.5185	Pass
	120	5230.7296	139.5021	Pass
	138	5230.3278	62.6762	Pass

Product	Wireless-AC450 USB Adapter		
Test Item	Frequency Stability		
Test Mode	Mode 1: Transmit - 802.11ac_80M-5210MHz(ANT.0)		
Date of Test	2013/09/14	Test Site	SR7

Temperature Interval (oC)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
-20	120	5210.3479	66.7779	Pass
-10		5210.6924	132.8915	Pass
0		5210.4021	77.1827	Pass
10		5210.2311	44.3485	Pass
20		5210.4888	93.8265	Pass
30		5210.4467	85.7450	Pass
40		5210.0407	7.8172	Pass
50		5210.5782	110.9741	Pass

Temperature Interval (oC)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
25	102	5210.2086	40.0431	Pass
	120	5210.5304	101.8005	Pass
	138	5210.7564	145.1826	Pass