Test Report

Product Name ： Wireless Scanner

Model No. ： S400W

FCC ID. ： HWFS400W

Applicant ： Mustek Systems Inc.

Address ： No.25, R&D Road II, Science-Based Industrial Park, Hsin-Chu, Taiwan, R.O.C.

Date of Report ： 2012/12/13

Report No. ： 12B374R-RFUSP42V01

Report Version ： V1.0

Testing Laboratory

1313

Test Report Certification

Date of Report : 2012/12/13
Report No. : 12B374R-RFUSP42V01

QuieTek

Product Name	:	Wireless Scanner
Applicant	:	Mustek Systems Inc.
Address	:	No.25, R&D Road II, Science-Based Industrial Park, Hsin-Chu, Taiwan, R.O.C.
Manufacturer	:	(1) Mustek Systems Inc. (2) MUSTEK ELECTRONICS CO., LTD.
Model No.	:	S400W
FCC ID.	:	HWFS400W
EUT Test Voltage	:	DC 3.7V (Power by Battery)
Trade Name	:	Mustek
Applicable Standard	:	FCC CFR Title 47 Part 15 Subpart C Section 15.247: 2011 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 : Carol Tsai
(Carol Tsai / Engineering Adm. Specialist)

Reviewed By : Quale Tang
(Quale Tang / Engineer)

Approved By : Roy Wang
(Roy Wang / Manager)

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

1. General Information

1.1. EUT Description

Product Name	Wireless Scanner
Product Type	WLAN (1TX, 1RX)
Trade Name	Mustek
Model No.	S400W
Frequency Range	2412~2462MHz
Channel Number	11
Type of Modulation	Orthogonal Frequency Division Multiplexing (OFDM)
Data Speed (IEEE 802.11g)	6Mbps,9Mbps,12Mbps,18Mbps,24Mbps,36Mbps,48Mbps,54Mbps
Data Speed (IEEE 802.11n)	Support a subset of the combination of GI, MCS 0~MCS 7 and bandwidth defined in 802.11n
Antenna Gain	2.23dBi
Channel Control	Manual
Antenna Type	PCB Antenna

Component	
USB Cable	Shielded, 0.5m

ANT-TX / Rx & Bandwidth

ANT-TX / Rx	TX		Rx	
Mode/ Channel Bandwidth	20MHz	40MHz	20MHz	40MHz
IEEE802.11g	✓			
IEEE802.11n	✓		✓	

IEEE802.11n Spec.

MCS Index	Modulation	R	N_{BPSCS}	N_{CBPS}	N_{DBPS}	Data Rate(Mb/s)	
				20MHz	20MHz	800ns GI	400ns GI (Note1)
						20MHz	20MHz
0	BPSK	1/2	1	52	26	6.5	7.2
1	QPSK	1/2	2	104	52	13.0	14.4
2	QPSK	3/4	2	104	78	19.5	21.7
3	16-QAM	1/2	4	208	104	26.0	28.9
4	16-QAM	3/4	4	208	156	39.0	43.3
5	64-QAM	2/3	6	312	208	52.0	57.8
6	64-QAM	3/4	6	312	234	58.5	65.0
7	64-QAM	5/6	6	312	260	65.0	72.2

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

Working Frequency of Each Channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
001	2412 MHz	002	2417 MHz	003	2422 MHz	004	2427 MHz
005	2432 MHz	006	2437 MHz	007	2442 MHz	008	2447 MHz
009	2452 MHz	010	2457 MHz	011	2462 MHz		

Note:

1. This device is a Wireless Scanner including 2.4GHz g/n 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 C Paragraph 15.247.
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. This device is a composite device in accordance with Part 15 regulations. The receiving function receiving was tested and its test report number is 12B374R-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	Mode	Channel	Result
Conducted Emission	11n(20MHz)	6	Complies
Peak Power Output	g	1/ 6/ 11	Complies
	11n(20MHz)	1/ 6/ 11	Complies
Radiated Emission	g	1/ 6/ 11	Complies
	11n(20MHz)	1/ 6/ 11	Complies
RF antenna conducted test	g	1/ 11	Complies
	11n(20MHz)	1/ 11	Complies
Radiated Emission Band Edge	g	1/ 11	Complies
	11n(20MHz)	1/ 11	Complies
Occupied Bandwidth	g	1/ 6/ 11	Complies
	11n(20MHz)	1/ 6/ 11	Complies
Power Density	g	1/ 6/ 11	Complies
	11n(20MHz)	1/ 6/ 11	Complies

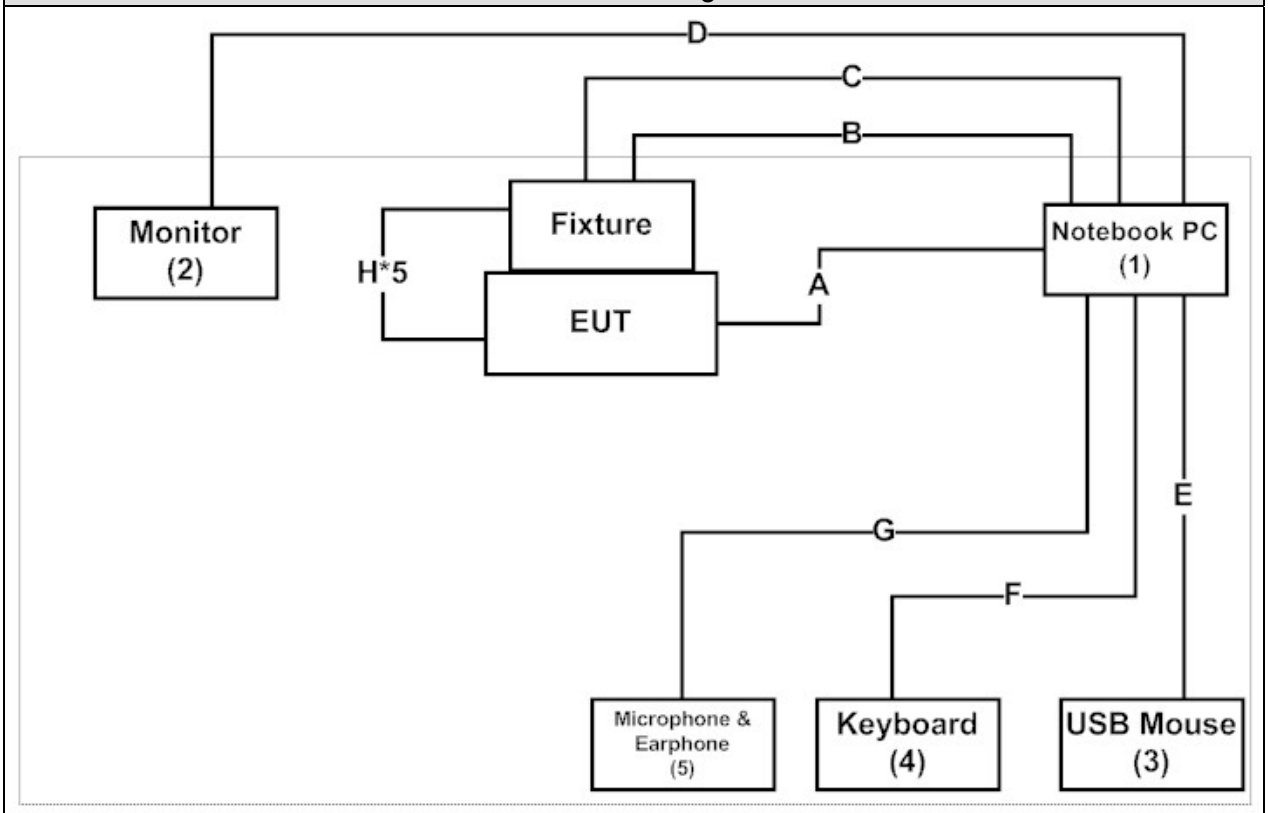
1.4. Tested System Details

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	HP Compaq	NX6320FF	CNU7020BXT	DoC	Non-Shielded, 1.8m
2	Monitor	DELL	U2410f	082WXD-72872-16R-0V8L	DoC	Non-Shielded, 1.8m
3	USB Mouse	Logitech	M-UV83	LZE35005997	DoC	--
4	Keyboard	Logitech	Y-SM46	SY525U18098	DoC	--
5	Microphone & Earphone	Fujiei	SBZ-38	N/A	DoC	--

1.5. Configuration of tested System

Connection Diagram



Signal Cable Type		Signal cable Description
A	USB Cable	Shielded, 0.4m
B	USB Cable	Shielded, 1.8m
C	Printer Cable	Non-Shielded, 1.8m
D	VGA Cable	Shielded, 1.0m
E	USB Mouse Cable	Shielded, 1.5m
F	USB Keyboard Cable	Shielded, 1.8m
G	Microphone & Earphone Cable	Non-Shielded, 2.0m
H	Signal Cable	Non-Shielded, 0.2m, 5 PCS

1.6. EUT Exercise Software

1	Setup the EUT as shown in Section 1.5.
2	Execute the test program “UnitTest App V7.2.1.5” on the notebook.
3	Configure the test mode, the test channel, and the data rate.
4	Press “Start TX” to start the continuous transmitting.
5	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 C 15.207 Conducted Emission	15 - 35	25
Humidity (%RH)		25 - 75	45
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Peak Power Output (ODFM)	15 - 35	25
Humidity (%RH)		25 - 75	45
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Radiated Emission (ODFM)	15 - 35	20
Humidity (%RH)		25 - 75	50
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 RF antenna conducted test (ODFM)	15 - 35	25
Humidity (%RH)		25 - 75	45
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Band Edge (ODFM)	15 - 35	20
Humidity (%RH)		25 - 75	50
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Occupied Bandwidth (ODFM)	15 - 35	25
Humidity (%RH)		25 - 75	45
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Power Density (ODFM)	15 - 35	25
Humidity (%RH)		25 - 75	45
Barometric pressure (mbar)		860 - 1060	950-1000

2. Conducted Emission

2.1. Test Equipment

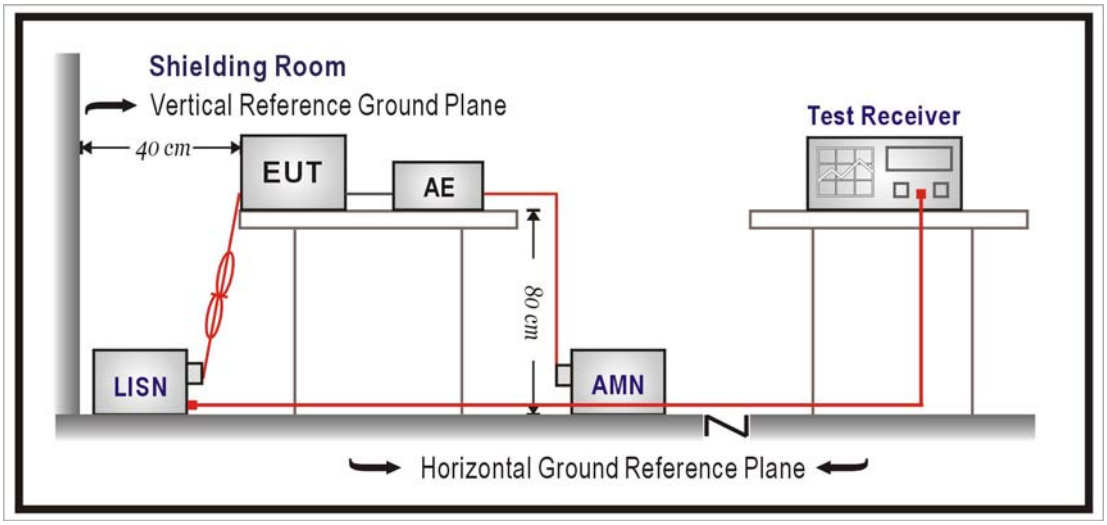
The following test equipments are used during the test:

Conducted Emission / SR3

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
LISN	R&S	ENV216	100096	2013/08/12
LISN	R&S	ESH3-Z5	836679/022	2013/02/06
Test Receiver	R&S	ESCS 30	825442/017	2013/01/01

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 and tested according to DTS test procedure of Jan. 2012 KDB558074 for compliance to FCC 47CFR 15.247 requirements. 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

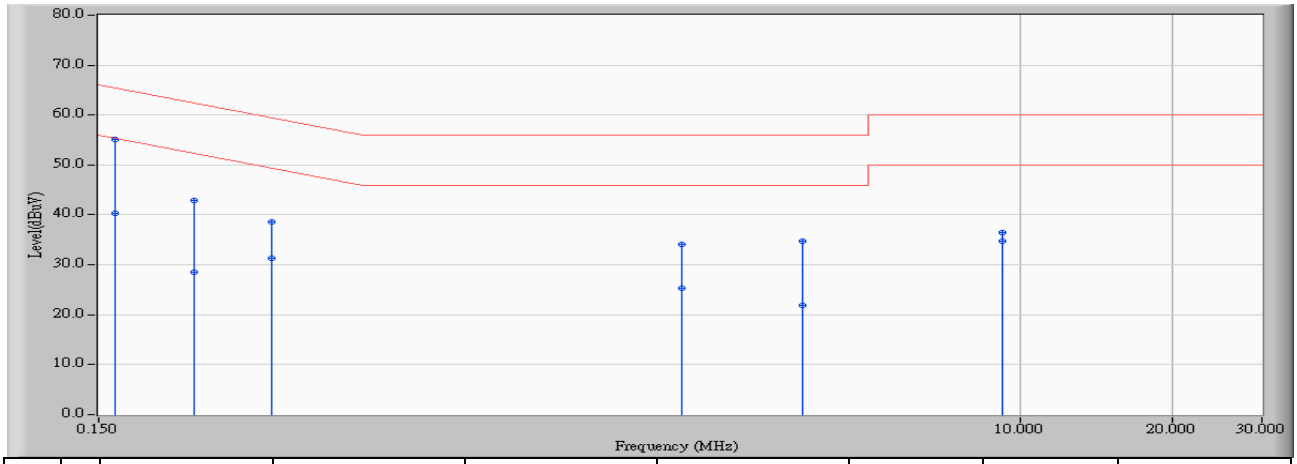
According to FCC Part 15 Subpart C Paragraph 15.207: 2011

2.6. Uncertainty

The measurement uncertainty is defined as ± 2.26 dB.

2.7. Test Result

Site : SR3	**Time : 2012/12/10 - 20:39**
Limit : CISPR_B_00M_QP	**Margin : 10**
Probe : SR3_LISN(16A)-2_0813 - Line1	**Power : DC 3.7V (Power by Battery)**
EUT : Wireless Scanner	**Note :**

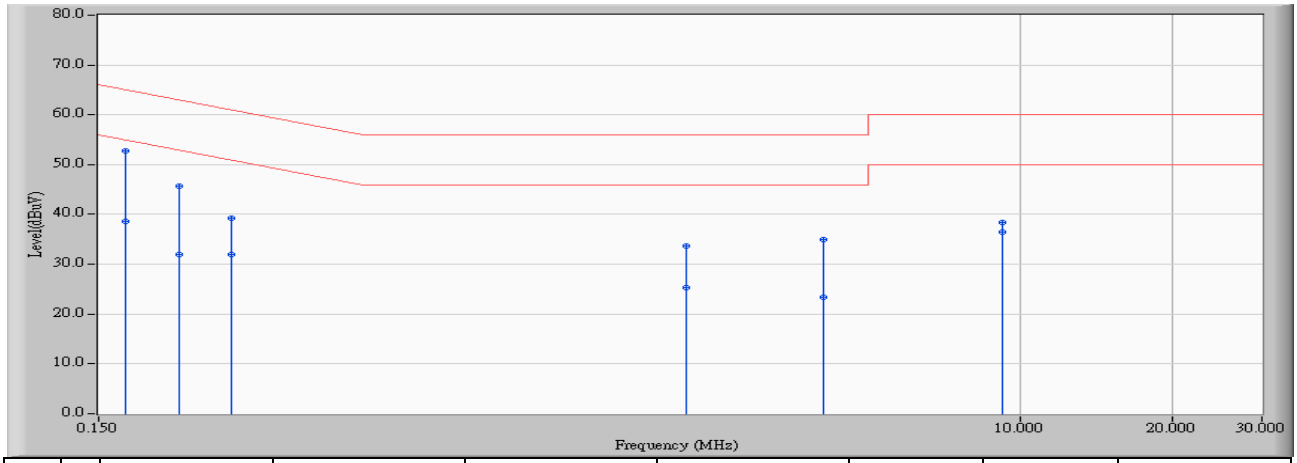


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1	*	0.162	9.785	45.250	55.035	-10.340	65.375	QUASIPEAK
2		0.162	9.785	30.640	40.425	-14.950	55.375	AVERAGE
3		0.232	9.676	33.300	42.976	-19.400	62.377	QUASIPEAK
4		0.232	9.676	18.820	28.496	-23.880	52.377	AVERAGE
5		0.330	9.732	28.880	38.612	-20.847	59.459	QUASIPEAK
6		0.330	9.732	21.670	31.402	-18.057	49.459	AVERAGE
7		2.130	9.967	24.060	34.028	-21.972	56.000	QUASIPEAK
8		2.130	9.967	15.390	25.358	-20.642	46.000	AVERAGE
9		3.701	10.059	24.650	34.709	-21.291	56.000	QUASIPEAK
10		3.701	10.059	11.910	21.969	-24.031	46.000	AVERAGE
11		9.205	10.110	26.410	36.520	-23.480	60.000	QUASIPEAK
12		9.205	10.110	24.530	34.640	-15.360	50.000	AVERAGE

Note:

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

Site : SR3	**Time : 2012/12/10 - 20:42**
Limit : CISPR_B_00M_QP	**Margin : 10**
Probe : SR3_LISN(16A)-2_0813 - Line2	**Power : DC 3.7V (Power by Battery)**
EUT : Wireless Scanner	**Note :**



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1	*	0.170	9.644	43.090	52.734	-12.250	64.983	QUASIPEAK
2		0.170	9.644	29.040	38.684	-16.300	54.983	AVERAGE
3		0.216	9.666	35.990	45.657	-17.299	62.956	QUASIPEAK
4		0.216	9.666	22.350	32.017	-20.939	52.956	AVERAGE
5		0.275	9.697	29.500	39.197	-21.768	60.966	QUASIPEAK
6		0.275	9.697	22.320	32.017	-18.948	50.966	AVERAGE
7		2.181	9.948	23.790	33.738	-22.262	56.000	QUASIPEAK
8		2.181	9.948	15.360	25.308	-20.692	46.000	AVERAGE
9		4.060	10.030	24.860	34.890	-21.110	56.000	QUASIPEAK
10		4.060	10.030	13.320	23.350	-22.650	46.000	AVERAGE
11		9.209	10.138	28.270	38.408	-21.592	60.000	QUASIPEAK
12		9.209	10.138	26.250	36.388	-13.612	50.000	AVERAGE

Note:

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

3. Peak Power Output

3.1. Test Equipment

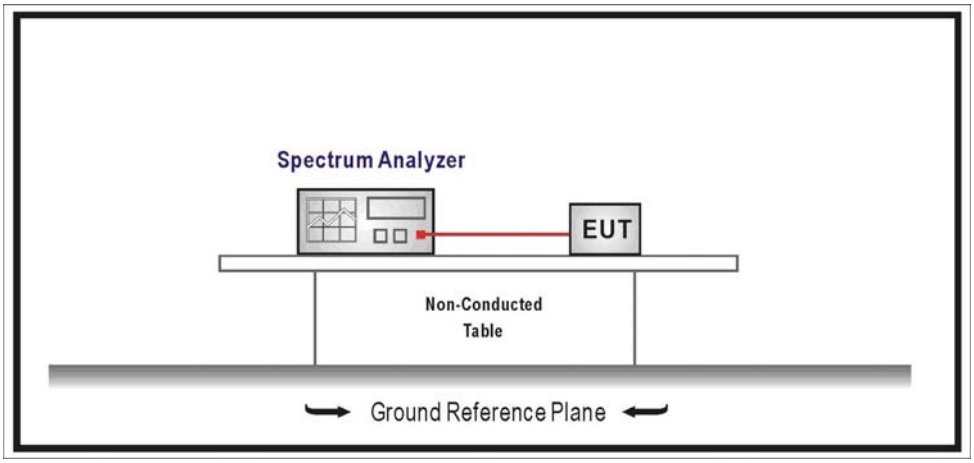
The following test equipments are used during the test:

Peak Power / SR7

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
EXA Signal Analyzer	Agilent	N9010A-EXA	US47140172	2013/07/31

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

3.2. Test Setup



3.3. Test procedures

The EUT was tested according to DTS test procedure of Jan. 2012 KDB558074, Section 5.2.1.2 Measurement Procedure PK2 for compliance to FCC 47CFR 15.247 requirements.

3.4. Limits

The maximum peak power shall be less 1 Watt.

3.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247: 2011

3.6. Uncertainty

The measurement uncertainty is defined as ± 1.27 dB.

3.7. Test Result

Product	Wireless Scanner		
Test Item	Peak Power Output		
Test Mode	Mode 1: Transmit		
Date of Test	2012/11/30	Test Site	SR7

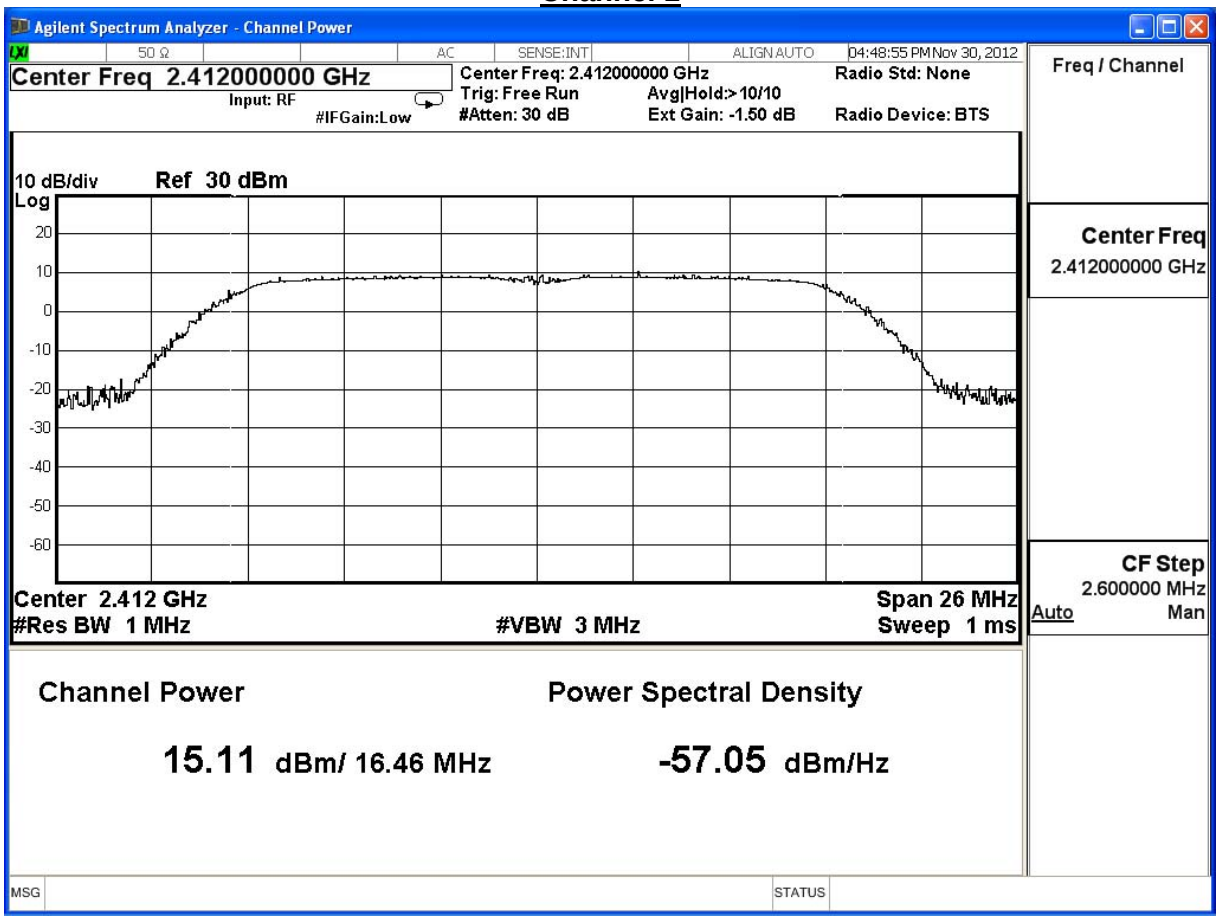
IEEE 802.11g				
Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
1	2412	15.110	30	Pass
6	2437	15.210	30	Pass
11	2462	15.210	30	Pass

The worst emission of data rate is 6Mbps.

Peak Power Output Value(dBm)									
Channel No.	Frequency (MHz)	Data Rate (Mbps)							Required Limit
		6	12	18	24	36	48	54	
1	2412	15.110	--	--	-	--	--	-	30 dBm
6	2437	15.210	15.150	15.110	15.072	15.026	14.980	14.957	30 dBm
11	2462	15.210	--	--	-	--	--	-	30 dBm

Note: Measure Level =Reading value + cable loss

Channel 1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SENSE:INT
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Center Freq 2.412000000 GHz
Input: RF
#IFGain:Low
Center Freq: 2.412000000 GHz
Trig: Free Run
Avg|Hold:>10/10
#Atten: 30 dB
Ext Gain: -1.50 dB
Radio Std: None
Radio Device: BTS
Freq / Channel
10 dB/div
Log
Ref 30 dBm
20
10
0
-10
-20
-30
-40
-50
-60
Center Freq
2.412000000 GHz
CF Step
2.600000 MHz
Auto
Man
Center 2.412 GHz
#Res BW 1 MHz
#VBW 3 MHz
Span 26 MHz
Sweep 1 ms
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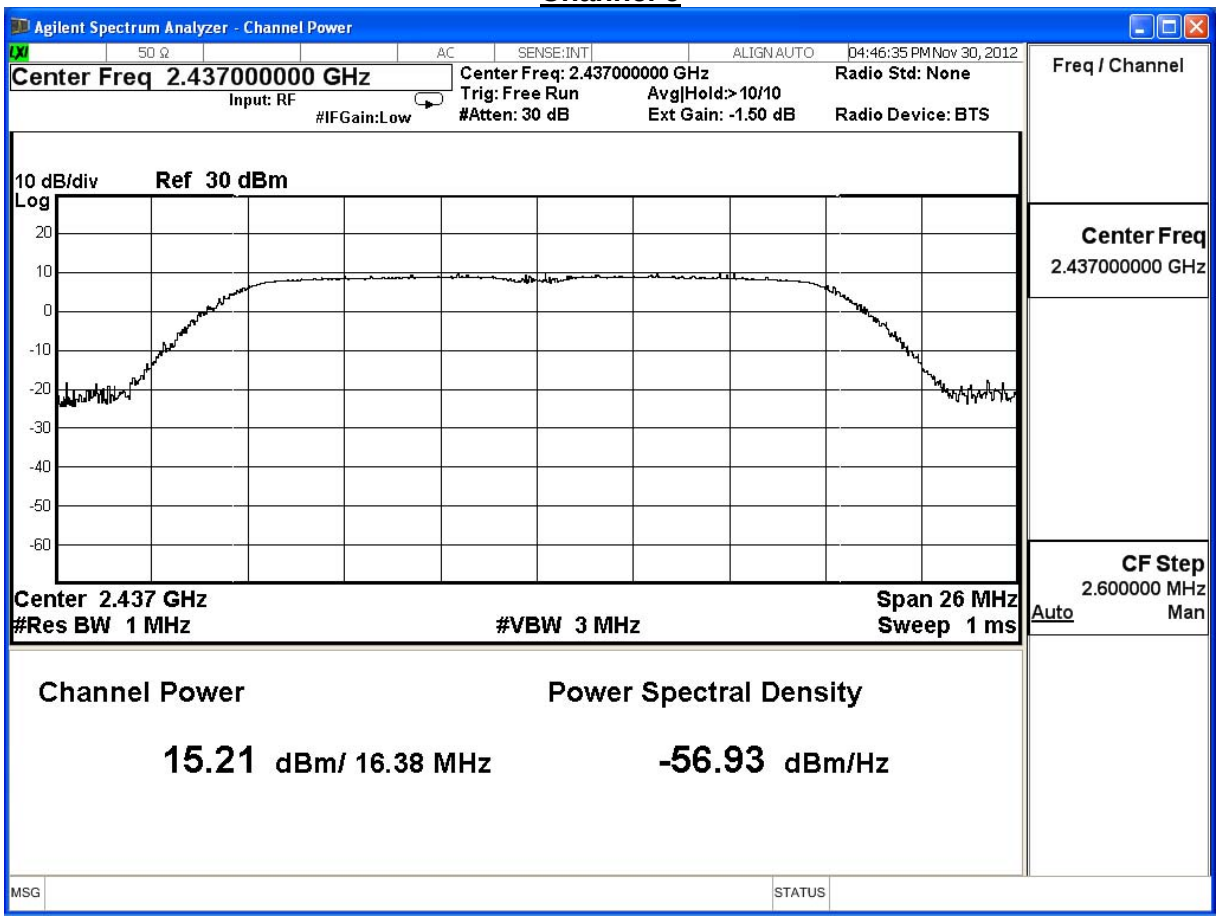
MSG
STATUS

Channel 6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50 Ω
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SENSE:INT
ALIGN AUTO
04:46:35 PM Nov 30, 2012
Center Freq 2.437000000 GHz
Input: RF
#IFGain:Low
Center Freq: 2.437000000 GHz
Trig: Free Run
Avg|Hold:>10/10
#Atten: 30 dB
Ext Gain: -1.50 dB
Radio Std: None
Radio Device: BTS
Freq / Channel
10 dB/div
Log
Ref 30 dBm
20
10
0
-10
-20
-30
-40
-50
-60
Center Freq
2.437000000 GHz
CF Step
2.600000 MHz
Auto
Man
Center 2.437 GHz
#Res BW 1 MHz
#VBW 3 MHz
Span 26 MHz
Sweep 1 ms
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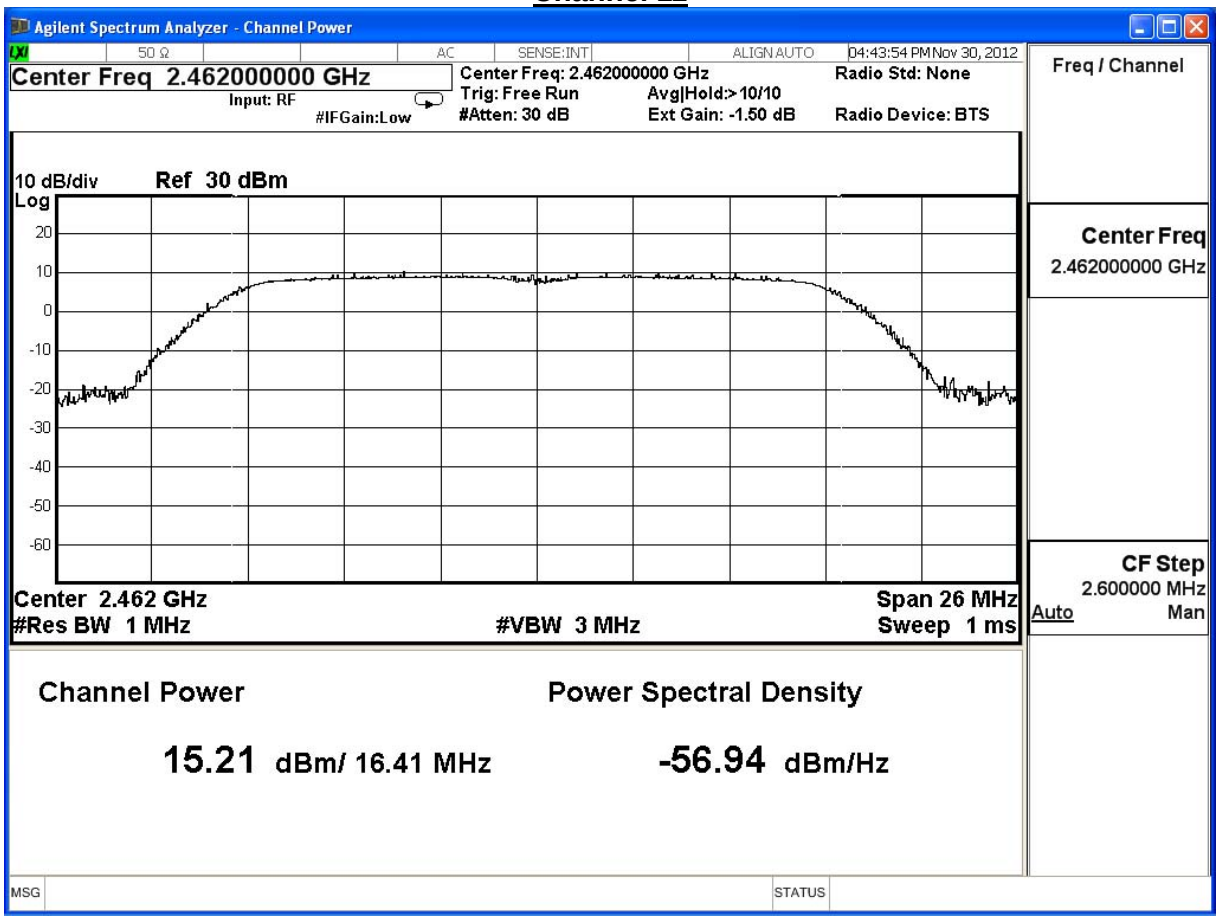
Power Spectral Density
-56.93 dBm/Hz
MSG
STATUS

Channel 11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AC
SENSE:INT
ALIGN AUTO
04:43:54 PM Nov 30, 2012
Center Freq 2.462000000 GHz
Input: RF
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Center Freq: 2.462000000 GHz
Trig: Free Run
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#Atten: 30 dB
Ext Gain: -1.50 dB
Radio Std: None
Radio Device: BTS
Freq / Channel
10 dB/div
Log
Ref 30 dBm
20
10
0
-10
-20
-30
-40
-50
-60
Center Freq
2.462000000 GHz
CF Step
2.600000 MHz
Auto
Man
Center 2.462 GHz
#Res BW 1 MHz
#VBW 3 MHz
Span 26 MHz
Sweep 1 ms
Channel Power
15.21 dBm/ 16.41 MHz
Power Spectral Density
-56.94 dBm/Hz
MSG
STATUS

Product	Wireless Scanner		
Test Item	Peak Power Output		
Test Mode	Mode 1: Transmit		
Date of Test	2012/11/30	Test Site	SR7

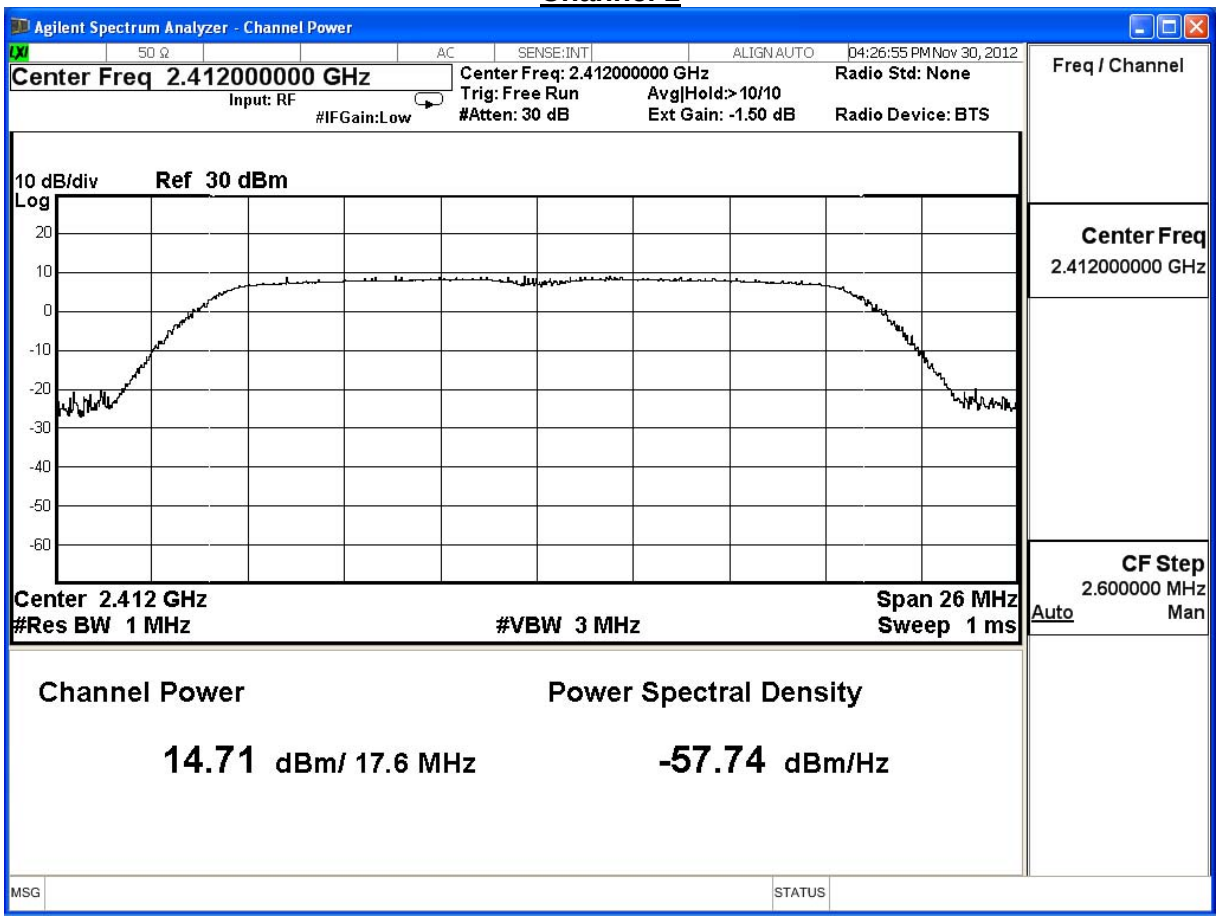
IEEE 802.11n 20MHz

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
1	2412	14.710	30	Pass
6	2437	15.070	30	Pass
11	2462	15.160	30	Pass

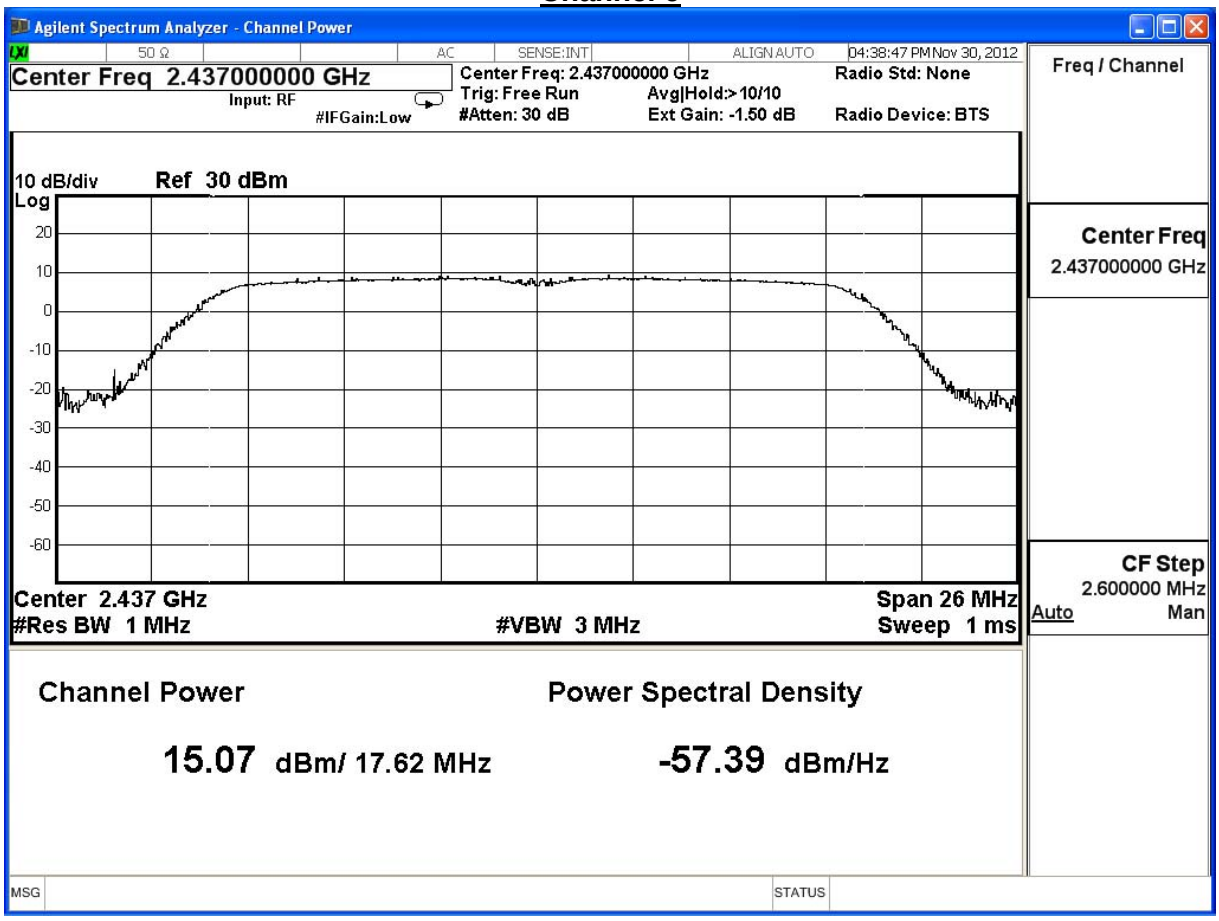
The worst emission of data rate is 6.5 Mbps.

Peak Power Output (dBm)										
MCS Index		0	1	2	3	4	5	6	7	Required Limit
Channel No	Frequency (MHz)	Data Rate								
		6.5	13.0	19.5	26.0	39.0	52.0	58.5	65.0	
1	2412	14.710	--	--	-	--	--	-	--	30dBm
6	2437	15.070	15.010	14.960	14.905	14.860	14.825	14.776	14.723	30dBm
11	2462	15.160	--	--	-	--	--	-	--	30dBm

Channel 1


Agilent Spectrum Analyzer - Channel Power
50 Ω
AC
SENSE:INT
ALIGN AUTO
04:26:55 PM Nov 30, 2012
Center Freq 2.412000000 GHz
Input: RF
#IFGain:Low
Center Freq: 2.412000000 GHz
Trig: Free Run
Avg|Hold:>10/10
#Atten: 30 dB
Ext Gain: -1.50 dB
Radio Std: None
Radio Device: BTS
Freq / Channel
10 dB/div
Log
Ref 30 dBm
20
10
0
-10
-20
-30
-40
-50
-60
Center Freq
2.412000000 GHz
CF Step
2.600000 MHz
Auto
Man
Center 2.412 GHz
#Res BW 1 MHz
#VBW 3 MHz
Span 26 MHz
Sweep 1 ms
Channel Power
14.71 dBm/ 17.6 MHz
Power Spectral Density
-57.74 dBm/Hz
MSG
STATUS

Channel 6


Agilent Spectrum Analyzer - Channel Power
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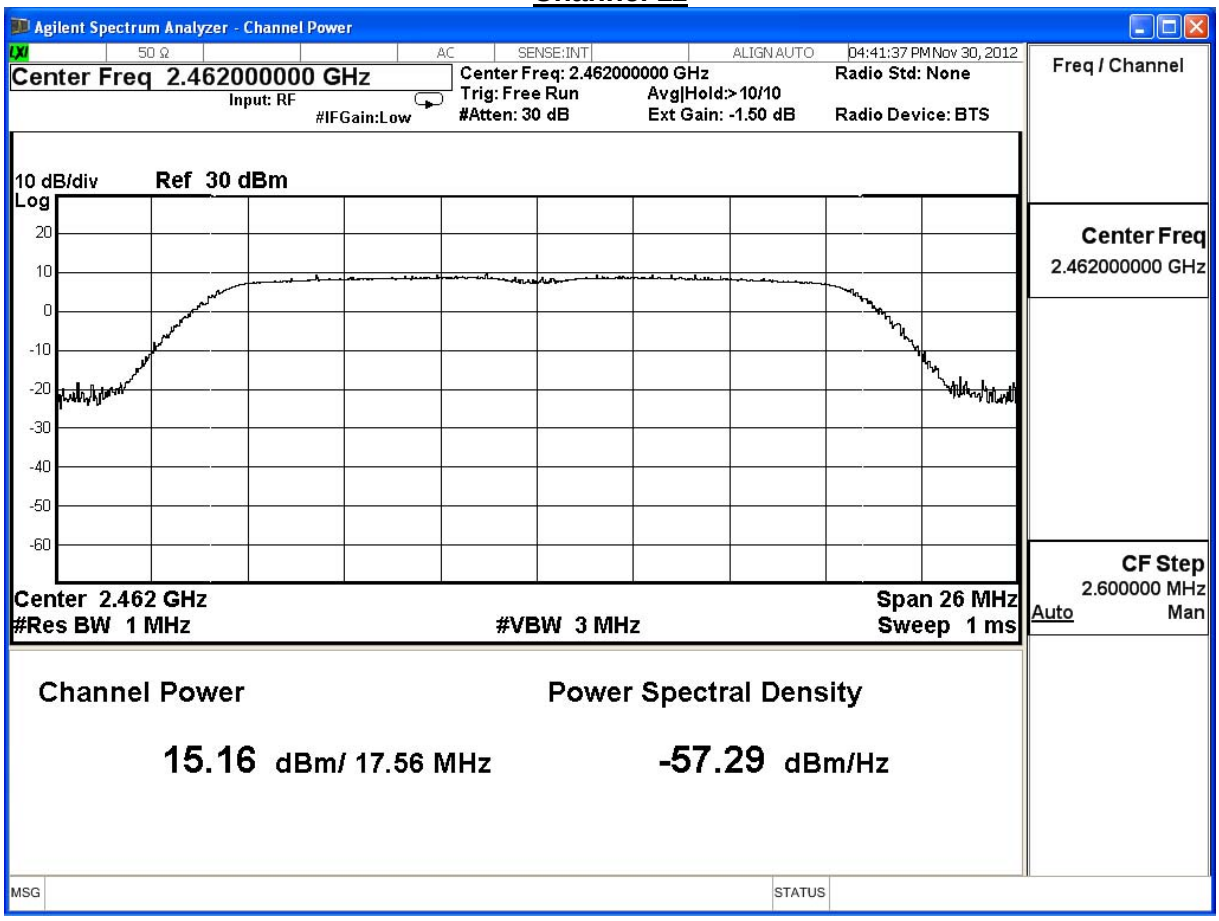
AC
SENSE:INT
ALIGN AUTO
04:38:47 PM Nov 30, 2012
Center Freq 2.437000000 GHz
Input: RF
#IFGain:Low
Center Freq: 2.437000000 GHz
Trig: Free Run
Avg|Hold:>10/10
#Atten: 30 dB
Ext Gain: -1.50 dB
Radio Std: None
Radio Device: BTS
Freq / Channel
10 dB/div
Log
Ref 30 dBm
20
10
0
-10
-20
-30
-40
-50
-60
Center Freq
2.437000000 GHz
CF Step
2.600000 MHz
Auto
Man
Center 2.437 GHz
#Res BW 1 MHz
#VBW 3 MHz
Span 26 MHz
Sweep 1 ms
Channel Power
15.07 dBm/ 17.62 MHz
Power Spectral Density
-57.39 dBm/Hz
MSG
STATUS

Channel 11


Agilent Spectrum Analyzer - Channel Power
50 Ω
AC
SENSE:INT
ALIGN AUTO
04:41:37 PM Nov 30, 2012
Center Freq 2.462000000 GHz
Input: RF
#IFGain:Low
Center Freq: 2.462000000 GHz
Trig: Free Run
Avg|Hold:>10/10
#Atten: 30 dB
Ext Gain: -1.50 dB
Radio Std: None
Radio Device: BTS
Freq / Channel
10 dB/div
Log
Ref 30 dBm
20
10
0
-10
-20
-30
-40
-50
-60
Center Freq
2.462000000 GHz
CF Step
2.600000 MHz
Auto
Man
Center 2.462 GHz
#Res BW 1 MHz
#VBW 3 MHz
Span 26 MHz
Sweep 1 ms
Channel Power
15.16 dBm/ 17.56 MHz
Power Spectral Density
-57.29 dBm/Hz
MSG
STATUS

4. Radiated Emission

4.1. Test Equipment

The following test equipments are used during the test:

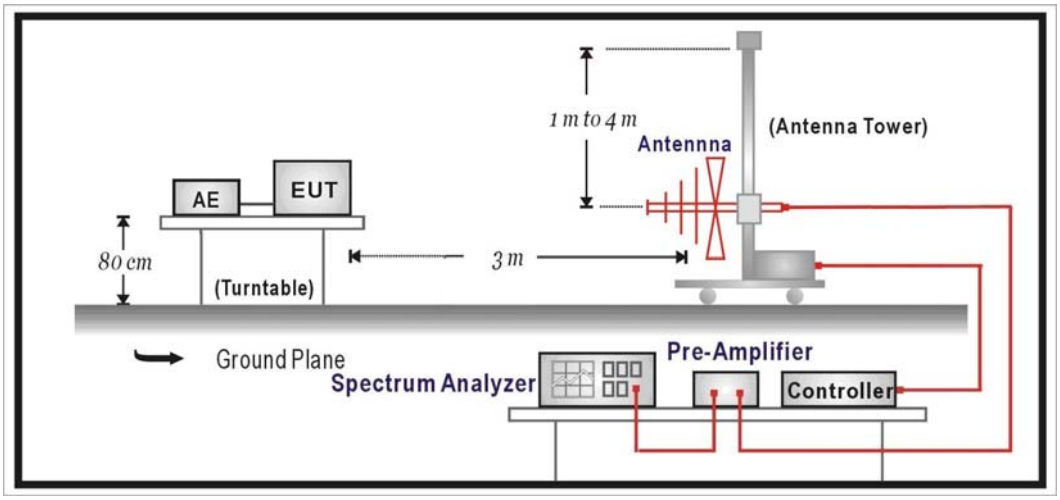
Radiated Emission / CB1

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Bilog Antenna	SCHAFFNER	CBL6112B	2895	2013/08/14
Double Ridged Guide Horn Antenna	Schwarzback	BBHA 9120	D743	2013/02/02
Pre-Amplifier	MITEQ	AMF-4D-005180-24-10P	888003	2013/12/02
Pre-Amplifier	QuieTek	AP-025C	CHM-0706049	2013/03/01
Spectrum Analyzer	Agilent	E4440A	MY46187335	2013/02/07
Coaxial Cable	Huber+Suhner AG	Sucoflex 102	25623/2	2013/03/04

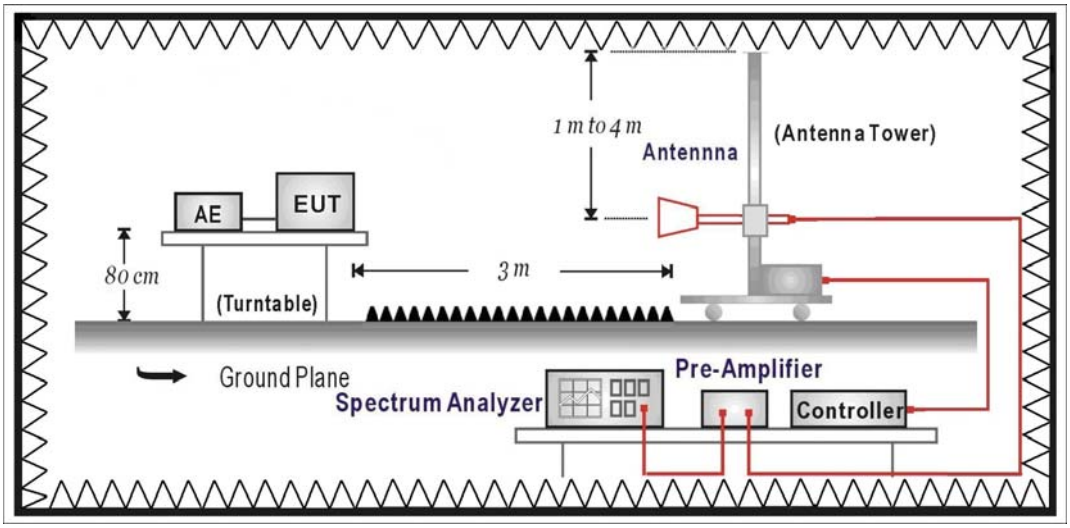
Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

4.2. Test Setup

Under 1GHz Test Setup:



Above 1GHz Test Setup:



4.3. Limits

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

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

Remarks: E field strength (dBuV/m) = 20 log E field strength (uV/m)

4.4. Test Procedure

The EUT was setup according to ANSI C63.4: 2009 and tested according to DTS test procedure of Jan. 2012 KDB558074 for compliance to FCC 47CFR 15.247 requirements.
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 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.
On any frequency or frequencies below or equal to 1000 MHz, the limits shown are based on measuring equipment employing a quasi-peak detector function and on any frequency or frequencies above 1000 MHz the radiated limits shown are based upon the use of measurement instrumentation employing an average detector function. When average radiated emission measurement are included emission measurement below 1000 MHz, there also is a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit.
The bandwidth below 1GHz setting on the field strength meter is 120 kHz and above 1GHz is 1MHz.

4.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247: 2011

4.6. Uncertainty

The measurement uncertainty

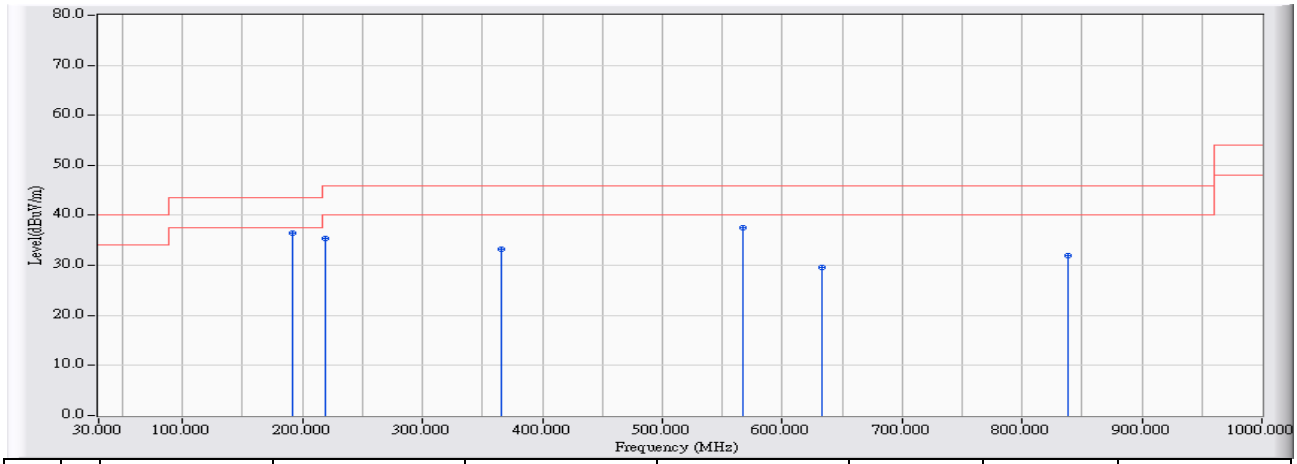
30MHz～1GHz as ±3.43dB

1GHz～26.5Ghz as ±3.65dB

4.7. Test Result

30MHz-1GHz Spurious

Site : CB1	Time : 2012/12/06 - 11:11
Limit : FCC_CLASS_B_03M_QP	Margin : 6
Probe : CB1_FCC_EFS_30-1G-2_1011 - HORIZONTAL	Power : DC 3.7V (Power by Battery)
EUT : Wireless Scanner	Note : 802.11g_2437MHz

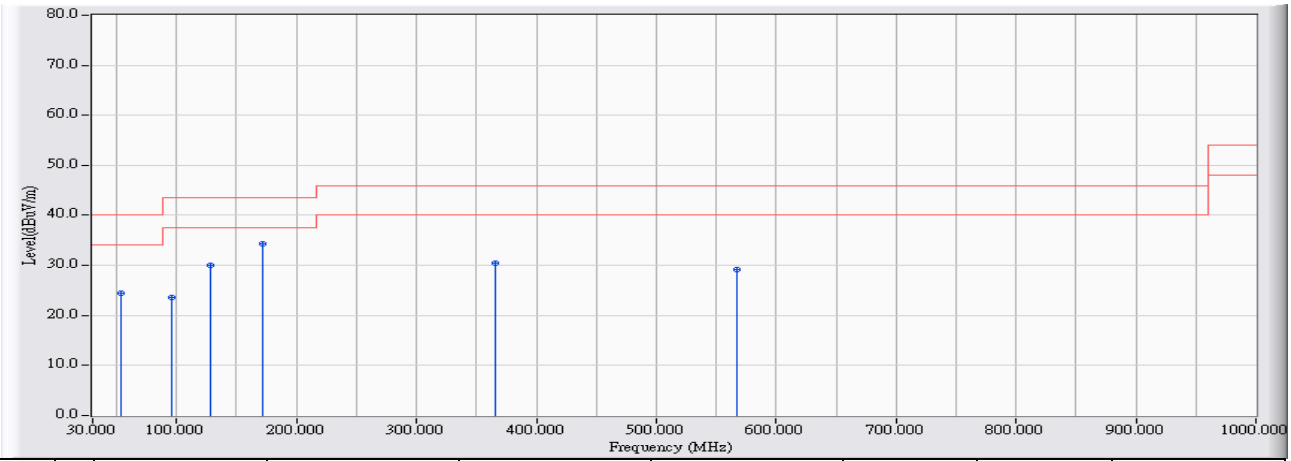


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	191.667	-14.606	51.005	36.399	-7.101	43.500	QUASIPEAK
2		219.150	-13.234	48.537	35.304	-10.696	46.000	QUASIPEAK
3		366.267	-8.274	41.477	33.203	-12.797	46.000	QUASIPEAK
4		566.733	-4.939	42.509	37.571	-8.429	46.000	QUASIPEAK
5		633.017	-4.666	34.191	29.526	-16.474	46.000	QUASIPEAK
6		838.333	-2.779	34.642	31.863	-14.137	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 : 2012/12/06 - 11:28**
Limit : FCC_CLASS_B_03M_QP	**Margin : 6**
Probe : CB1_FCC_EFS_30-1G-2_1011 - VERTICAL	**Power : DC 3.7V (Power by Battery)**
EUT : Wireless Scanner	**Note : 802.11g_2437MHz**

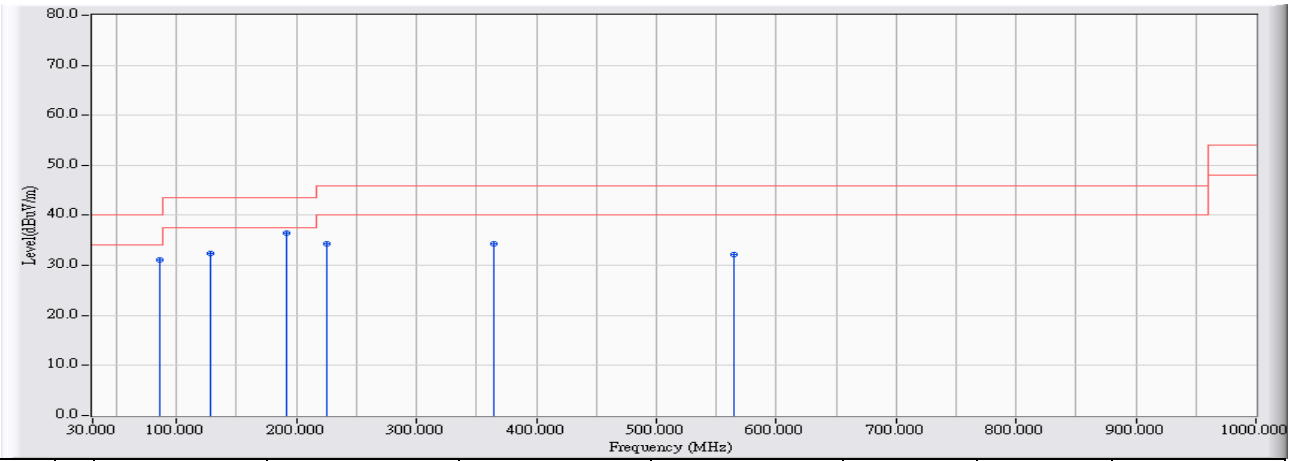


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		54.250	-16.369	40.866	24.497	-15.503	40.000	PEAK
2		96.283	-13.627	37.157	23.530	-19.970	43.500	PEAK
3		128.617	-12.135	42.175	30.040	-13.460	43.500	PEAK
4	*	172.267	-14.161	48.473	34.312	-9.188	43.500	PEAK
5		366.267	-8.274	38.722	30.448	-15.552	46.000	PEAK
6		566.733	-4.939	34.096	29.158	-16.842	46.000	PEAK

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 : 2012/12/06 - 11:35**
Limit : FCC_CLASS_B_03M_QP	**Margin : 6**
Probe : CB1_FCC_EFS_30-1G-2_1011 - HORIZONTAL	**Power : DC 3.7V (Power by Battery)**
EUT : Wireless Scanner	**Note : 802.11n20_2437MHz**

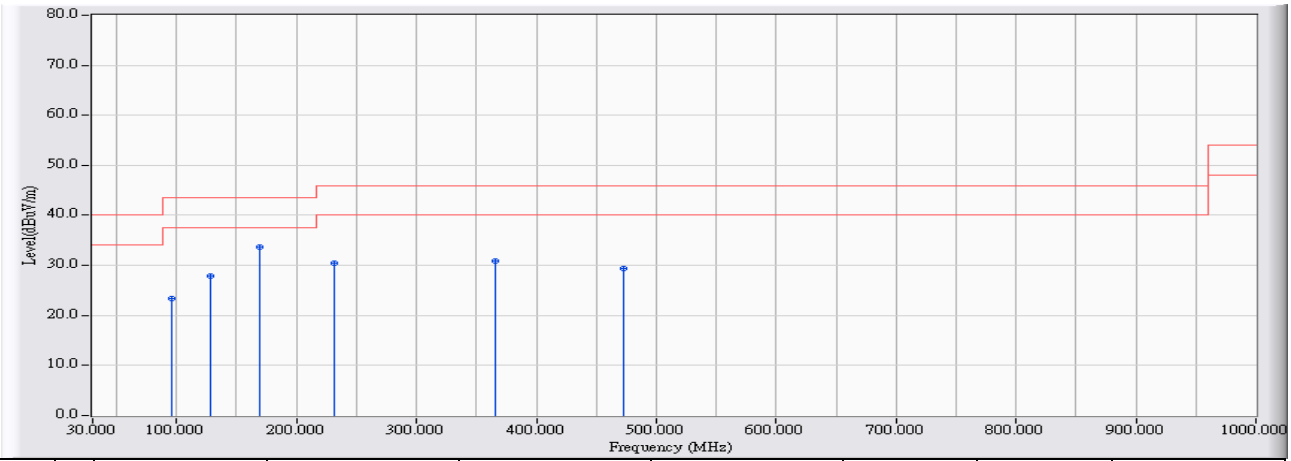


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		86.583	-15.501	46.679	31.178	-8.822	40.000	PEAK
2		128.617	-12.135	44.606	32.471	-11.029	43.500	PEAK
3	*	191.667	-14.606	51.091	36.485	-7.015	43.500	PEAK
4		225.617	-12.749	47.016	34.267	-11.733	46.000	PEAK
5		364.650	-8.316	42.635	34.319	-11.681	46.000	PEAK
6		565.117	-4.941	37.134	32.193	-13.807	46.000	PEAK

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 : 2012/12/06 - 11:40**
Limit : FCC_CLASS_B_03M_QP	**Margin : 6**
Probe : CB1_FCC_EFS_30-1G-2_1011 - VERTICAL	**Power : DC 3.7V (Power by Battery)**
EUT : Wireless Scanner	**Note : 802.11n20_2437MHz**



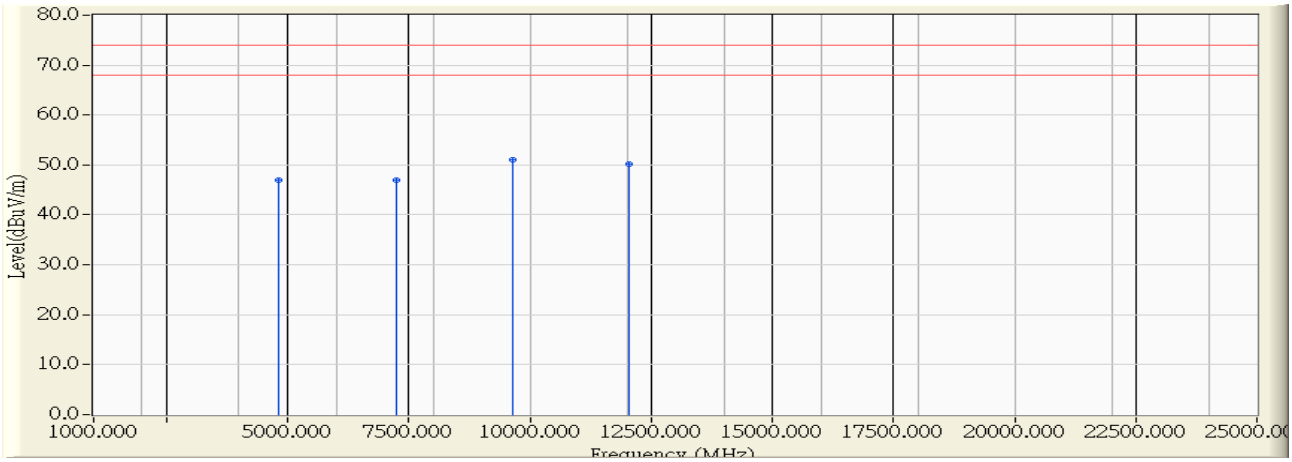
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		96.283	-13.627	37.020	23.393	-20.107	43.500	PEAK
2		128.617	-12.135	40.109	27.974	-15.526	43.500	PEAK
3	*	169.033	-14.011	47.755	33.744	-9.756	43.500	PEAK
4		232.083	-12.264	42.646	30.382	-15.618	46.000	PEAK
5		366.267	-8.274	39.082	30.808	-15.192	46.000	PEAK
6		472.967	-5.739	35.081	29.341	-16.659	46.000	PEAK

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.

Above 1GHz Spurious

Site : CB1	**Time : 2012/12/07 - 10:15**
Limit : FCC_SpartC_15.247_H_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	**Power : DC 3.7V (Power by Battery)**
EUT : Wireless Scanner	**Note : 802.11g_2412MHz**

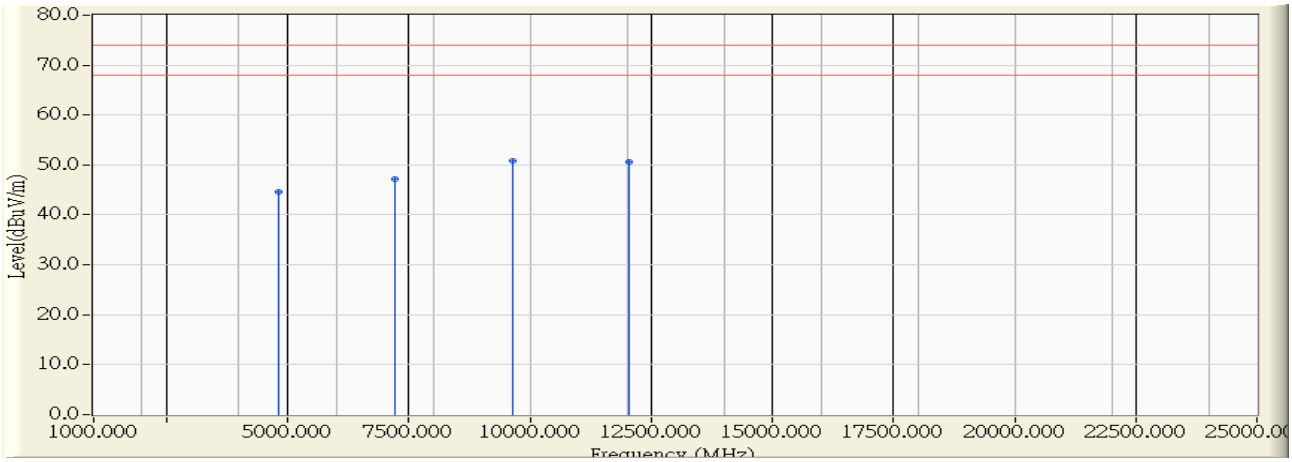


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Average Limit (dBuV/m)	Peak Limit (dBuV/m)	Detector Type
1		4824.000	-0.803	47.760	46.957	-27.043	54.000	74.000	PEAK
2		7236.000	5.497	41.470	46.966	-27.034	54.000	74.000	PEAK
3	*	9648.000	9.230	41.780	51.011	-22.989	54.000	74.000	PEAK
4		12060.000	11.525	38.600	50.125	-23.875	54.000	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, 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.
7. The Emission above 18GHz were not included is because their levels are too low.

Site : CB1	**Time : 2012/12/07 - 10:24**
Limit : FCC_SpartC_15.247_H_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	**Power : DC 3.7V (Power by Battery)**
EUT : Wireless Scanner	**Note : 802.11g_2412MHz**

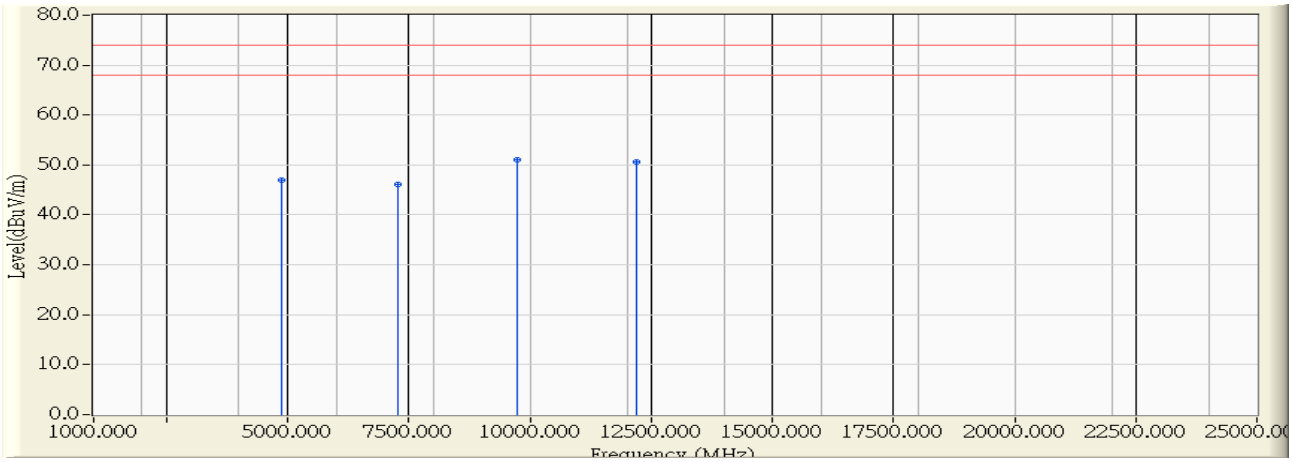


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Average Limit (dBuV/m)	Peak Limit (dBuV/m)	Detector Type
1		4826.600	-0.797	45.450	44.654	-29.346	54.000	74.000	PEAK
2		7223.500	5.466	41.740	47.206	-26.794	54.000	74.000	PEAK
3	*	9651.300	9.255	41.570	50.825	-23.175	54.000	74.000	PEAK
4		12060.000	11.525	39.060	50.585	-23.415	54.000	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, 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.
7. The Emission above 18GHz were not included is because their levels are too low.

Site : CB1	**Time : 2012/12/07 - 10:36**
Limit : FCC_SpartC_15.247_H_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	**Power : DC 3.7V (Power by Battery)**
EUT : Wireless Scanner	**Note : 802.11g_2437MHz**

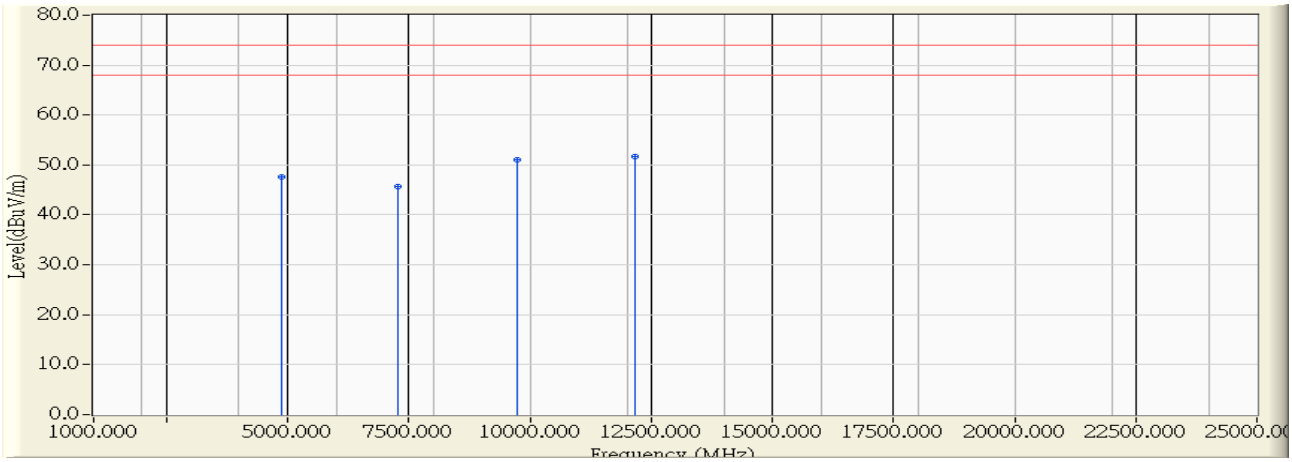


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Average Limit (dBuV/m)	Peak Limit (dBuV/m)	Detector Type
1		4870.000	-0.682	47.730	47.048	-26.952	54.000	74.000	PEAK
2		7292.000	5.632	40.440	46.072	-27.928	54.000	74.000	PEAK
3	*	9726.600	9.801	41.190	50.990	-23.010	54.000	74.000	PEAK
4		12188.000	11.480	39.210	50.690	-23.310	54.000	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, 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.
7. The Emission above 18GHz were not included is because their levels are too low.

Site : CB1	**Time : 2012/12/07 - 10:43**
Limit : FCC_SpartC_15.247_H_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	**Power : DC 3.7V (Power by Battery)**
EUT : Wireless Scanner	**Note : 802.11g_2437MHz**

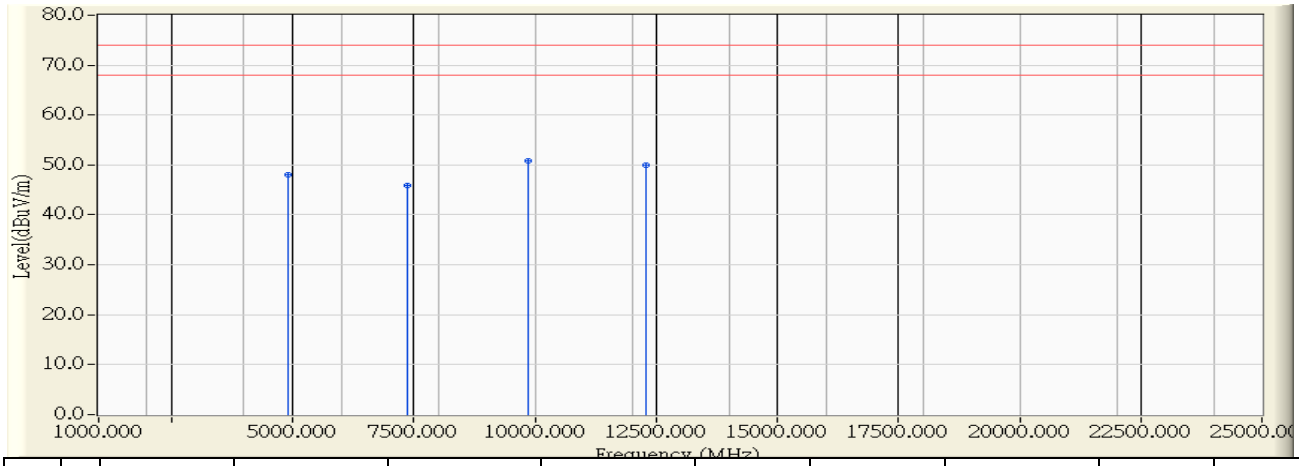


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Average Limit (dBuV/m)	Peak Limit (dBuV/m)	Detector Type
1		4869.000	-0.685	48.250	47.565	-26.435	54.000	74.000	PEAK
2		7290.000	5.627	39.950	45.577	-28.423	54.000	74.000	PEAK
3		9732.000	9.840	41.300	51.140	-22.860	54.000	74.000	PEAK
4	*	12163.000	11.489	40.210	51.699	-22.301	54.000	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, 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.
7. The Emission above 18GHz were not included is because their levels are too low.

Site : CB1	**Time : 2012/12/07 - 10:50**
Limit : FCC_SpartC_15.247_H_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	**Power : DC 3.7V (Power by Battery)**
EUT : Wireless Scanner	**Note : 802.11g_2462MHz**

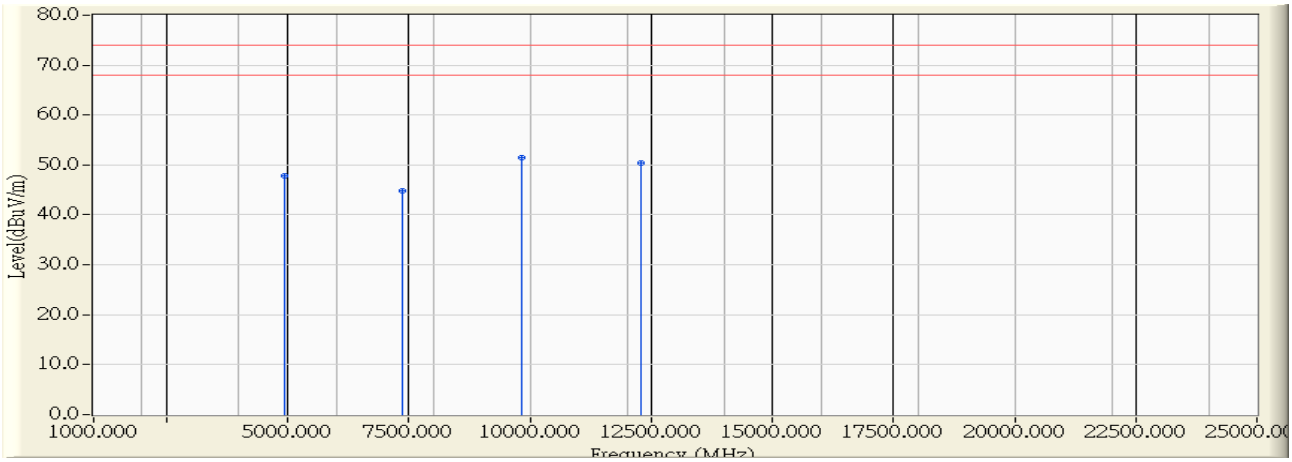


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type	Ant Pos (cm)	Table Pos (deg)
1		4919.100	-0.554	48.560	48.006	-25.994	74.000	PEAK	0.000	0.000
2		7370.500	5.821	40.060	45.881	-28.119	74.000	PEAK	0.000	0.000
3	*	9849.900	10.694	40.120	50.814	-23.186	74.000	PEAK	0.000	0.000
4		12302.000	11.440	38.580	50.020	-23.980	74.000	PEAK	0.000	0.000

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, 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.
7. The Emission above 18GHz were not included is because their levels are too low.

Site : CB1	**Time : 2012/12/07 - 10:55**
Limit : FCC_SpartC_15.247_H_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	**Power : DC 3.7V (Power by Battery)**
EUT : Wireless Scanner	**Note : 802.11g_2462MHz**

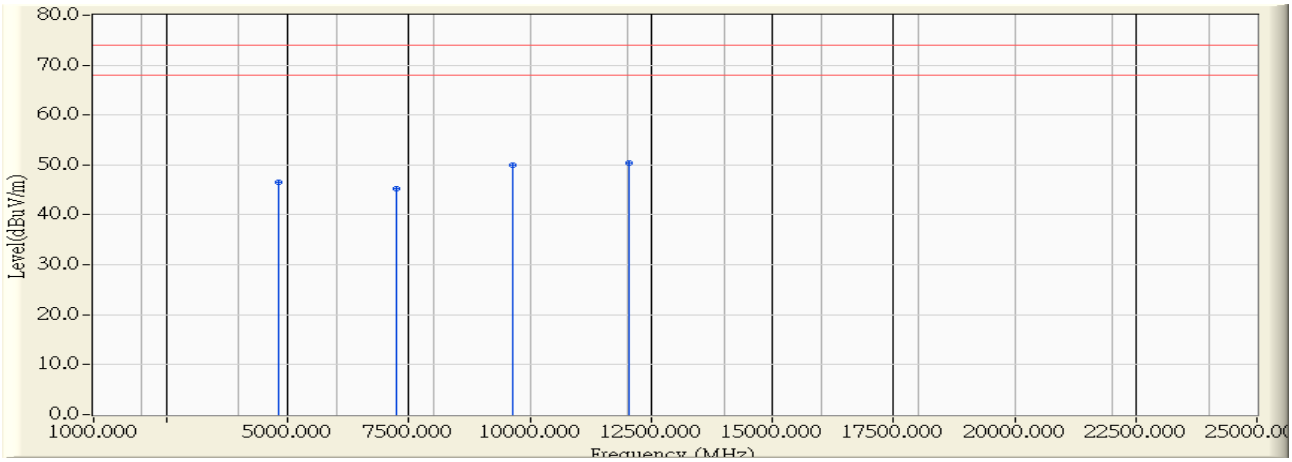


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Average Limit (dBuV/m)	Peak Limit (dBuV/m)	Detector Type
1		4928.200	-0.529	48.370	47.840	-26.160	54.000	74.000	PEAK
2		7375.200	5.832	39.080	44.912	-29.088	54.000	74.000	PEAK
3	*	9828.000	10.535	40.840	51.375	-22.625	54.000	74.000	PEAK
4		12305.000	11.439	38.940	50.379	-23.621	54.000	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, 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.
7. The Emission above 18GHz were not included is because their levels are too low.

Site : CB1	**Time : 2012/12/07 - 11:05**
Limit : FCC_SpartC_15.247_H_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	**Power : DC 3.7V (Power by Battery)**
EUT : Wireless Scanner	**Note : 802.11n20_2412MHz**

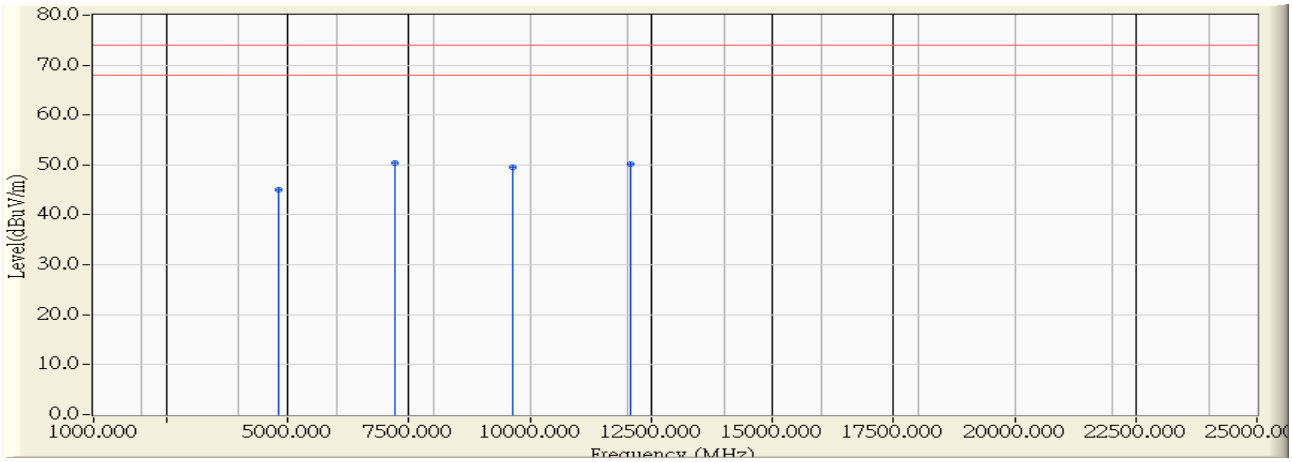


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Average Limit (dBuV/m)	Peak Limit (dBuV/m)	Detector Type
1		4826.000	-0.798	47.410	46.612	-27.388	54.000	74.000	PEAK
2		7253.600	5.538	39.720	45.259	-28.741	54.000	74.000	PEAK
3		9631.300	9.110	40.870	49.980	-24.020	54.000	74.000	PEAK
4	*	12046.300	11.530	38.880	50.410	-23.590	54.000	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, 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.
7. The Emission above 18GHz were not included is because their levels are too low.

Site : CB1	**Time : 2012/12/07 - 11:14**
Limit : FCC_SpartC_15.247_H_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	**Power : DC 3.7V (Power by Battery)**
EUT : Wireless Scanner	**Note : 802.11n20_2412MHz**

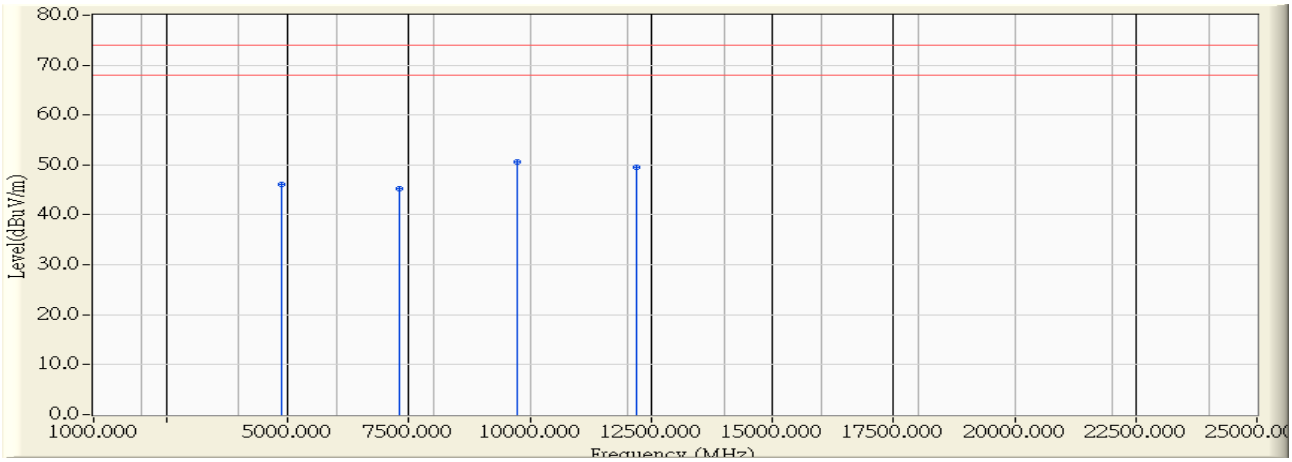


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Average Limit (dBuV/m)	Peak Limit (dBuV/m)	Detector Type
1		4823.400	-0.804	45.750	44.945	-29.055	54.000	74.000	PEAK
2	*	7219.800	5.458	45.040	50.497	-23.503	54.000	74.000	PEAK
3		9642.800	9.193	40.260	49.453	-24.547	54.000	74.000	PEAK
4		12061.600	11.525	38.730	50.255	-23.745	54.000	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, 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.
7. The Emission above 18GHz were not included is because their levels are too low.

Site : CB1	**Time : 2012/12/07 - 11:23**
Limit : FCC_SpartC_15.247_H_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	**Power : DC 3.7V (Power by Battery)**
EUT : Wireless Scanner	**Note : 802.11n20_2437MHz**

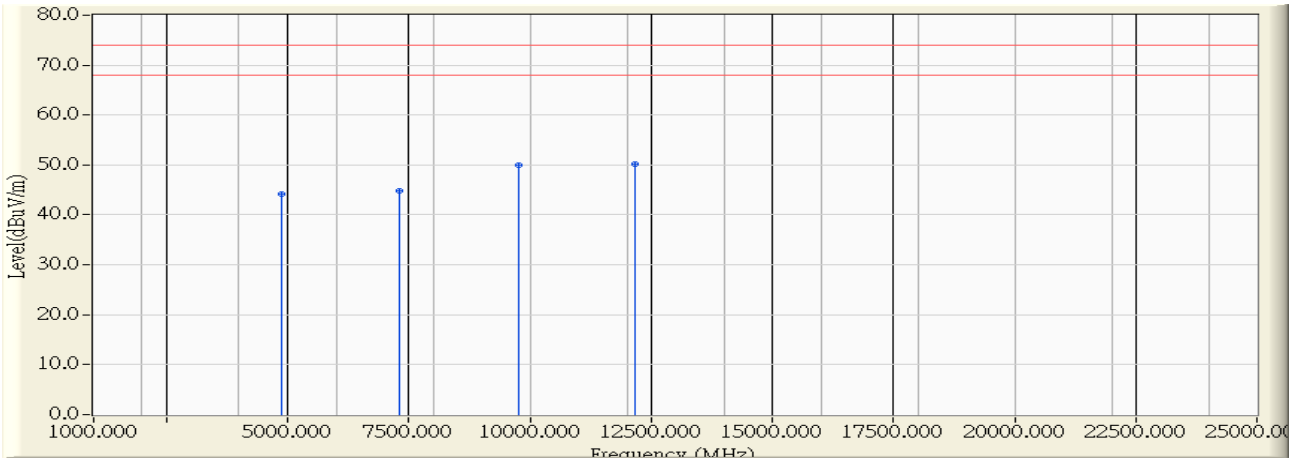


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Average Limit (dBuV/m)	Peak Limit (dBuV/m)	Detector Type
1		4874.900	-0.669	46.850	46.180	-27.820	54.000	74.000	PEAK
2		7295.500	5.640	39.510	45.150	-28.850	54.000	74.000	PEAK
3	*	9740.500	9.901	40.620	50.521	-23.479	54.000	74.000	PEAK
4		12192.600	11.478	37.990	49.468	-24.532	54.000	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, 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.
7. The Emission above 18GHz were not included is because their levels are too low.

Site : CB1	**Time : 2012/12/07 - 11:28**
Limit : FCC_SpartC_15.247_H_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	**Power : DC 3.7V (Power by Battery)**
EUT : Wireless Scanner	**Note : 802.11n20_2437MHz**

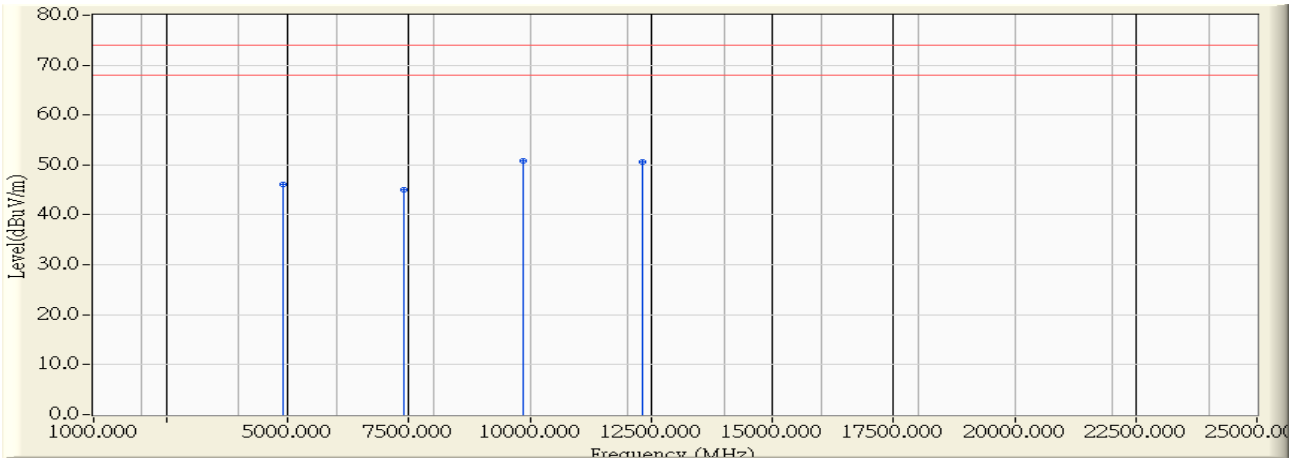


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Average Limit (dBuV/m)	Peak Limit (dBuV/m)	Detector Type
1		4878.500	-0.660	44.900	44.240	-29.760	54.000	74.000	PEAK
2		7295.700	5.640	39.110	44.750	-29.250	54.000	74.000	PEAK
3		9770.700	10.119	39.960	50.080	-23.920	54.000	74.000	PEAK
4	*	12184.300	11.481	38.790	50.271	-23.729	54.000	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, 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.
7. The Emission above 18GHz were not included is because their levels are too low.

Site : CB1	**Time : 2012/12/07 - 11:36**
Limit : FCC_SpartC_15.247_H_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	**Power : DC 3.7V (Power by Battery)**
EUT : Wireless Scanner	**Note : 802.11n20_2462MHz**

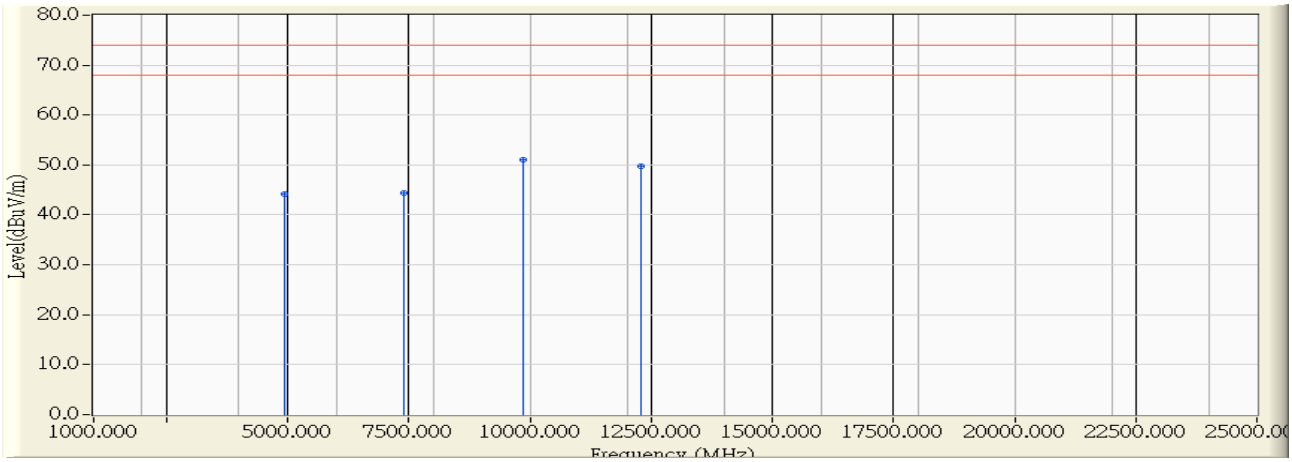


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Average Limit (dBuV/m)	Peak Limit (dBuV/m)	Detector Type
1		4922.900	-0.543	46.700	46.156	-27.844	54.000	74.000	PEAK
2		7400.700	5.894	39.180	45.074	-28.926	54.000	74.000	PEAK
3	*	9848.000	10.680	40.070	50.750	-23.250	54.000	74.000	PEAK
4		12308.800	11.438	39.130	50.567	-23.433	54.000	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, 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.
7. The Emission above 18GHz were not included is because their levels are too low.

Site : CB1	**Time : 2012/12/07 - 11:40**
Limit : FCC_SpartC_15.247_H_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	**Power : DC 3.7V (Power by Battery)**
EUT : Wireless Scanner	**Note : 802.11n20_2462MHz**



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Average Limit (dBuV/m)	Peak Limit (dBuV/m)	Detector Type
1		4925.800	-0.537	44.780	44.244	-29.756	54.000	74.000	PEAK
2		7396.500	5.884	38.480	44.364	-29.636	54.000	74.000	PEAK
3	*	9850.000	10.695	40.390	51.085	-22.915	54.000	74.000	PEAK
4		12302.500	11.440	38.230	49.670	-24.330	54.000	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, 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.
7. The Emission above 18GHz were not included is because their levels are too low.

5. RF antenna conducted test

5.1. Test Equipment

The following test equipments are used during the test:

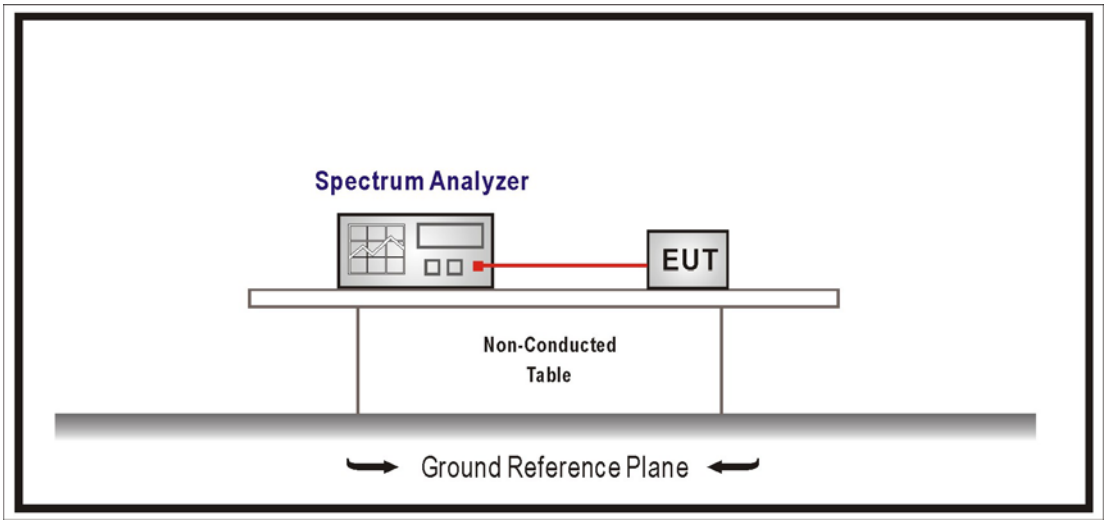
RF antenna conducted test / SR7

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Spectrum Analyzer	R&S	FSP	100561	2013/02/19

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

5.2. Test Setup

RF Antenna Conducted Measurement:



5.3. Limits

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on an RF conducted or radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

5.4. Test Procedure

The EUT was setup according to ANSI C63.4: 2009 and tested according to DTS test procedure of Jan. 2012 KDB558074 for compliance to FCC 47CFR 15.247 requirements Set RBW = 100 kHz, Set VBW> RBW, scan up through 10th harmonic.

5.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247: 2011

5.6. Uncertainty

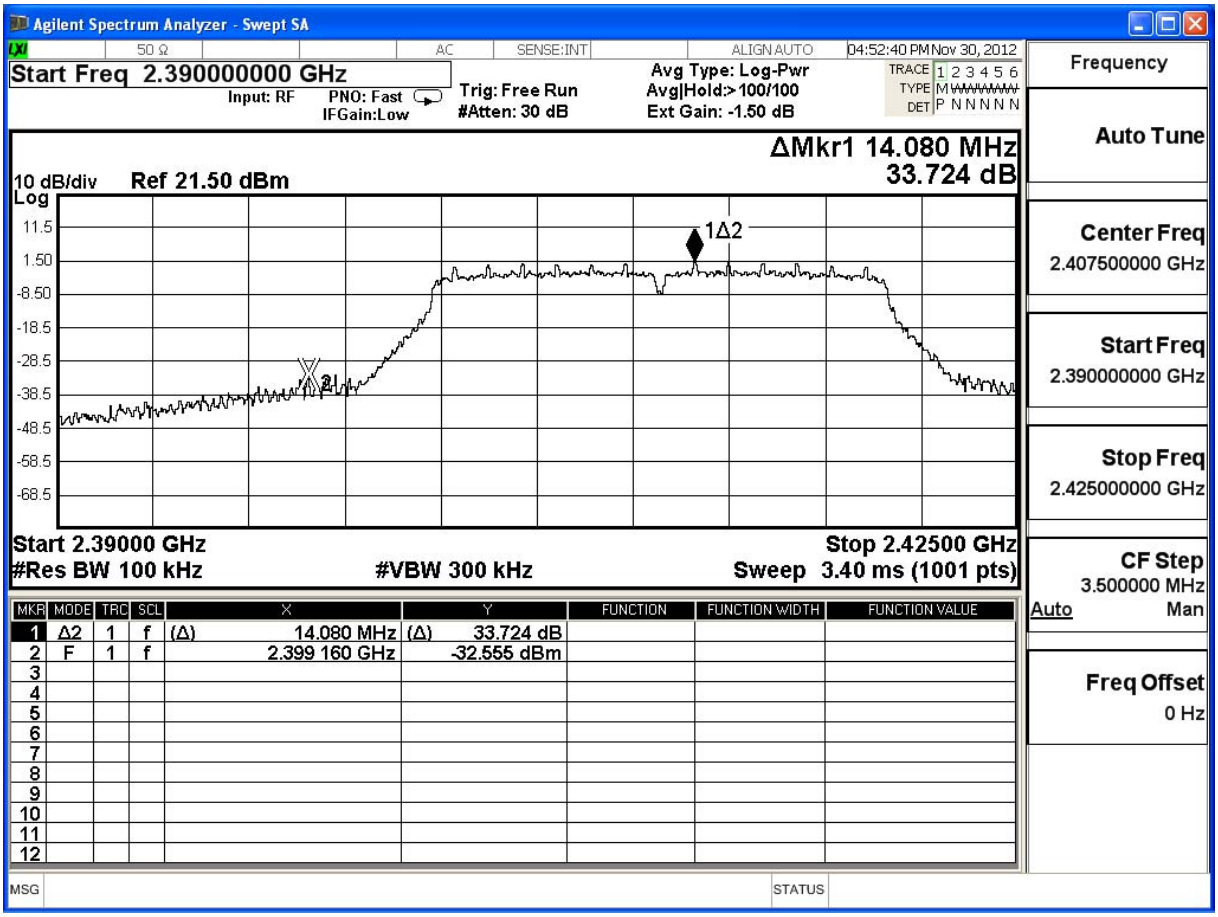
Conducted is defined as ± 1.27dB

5.7. Test Result

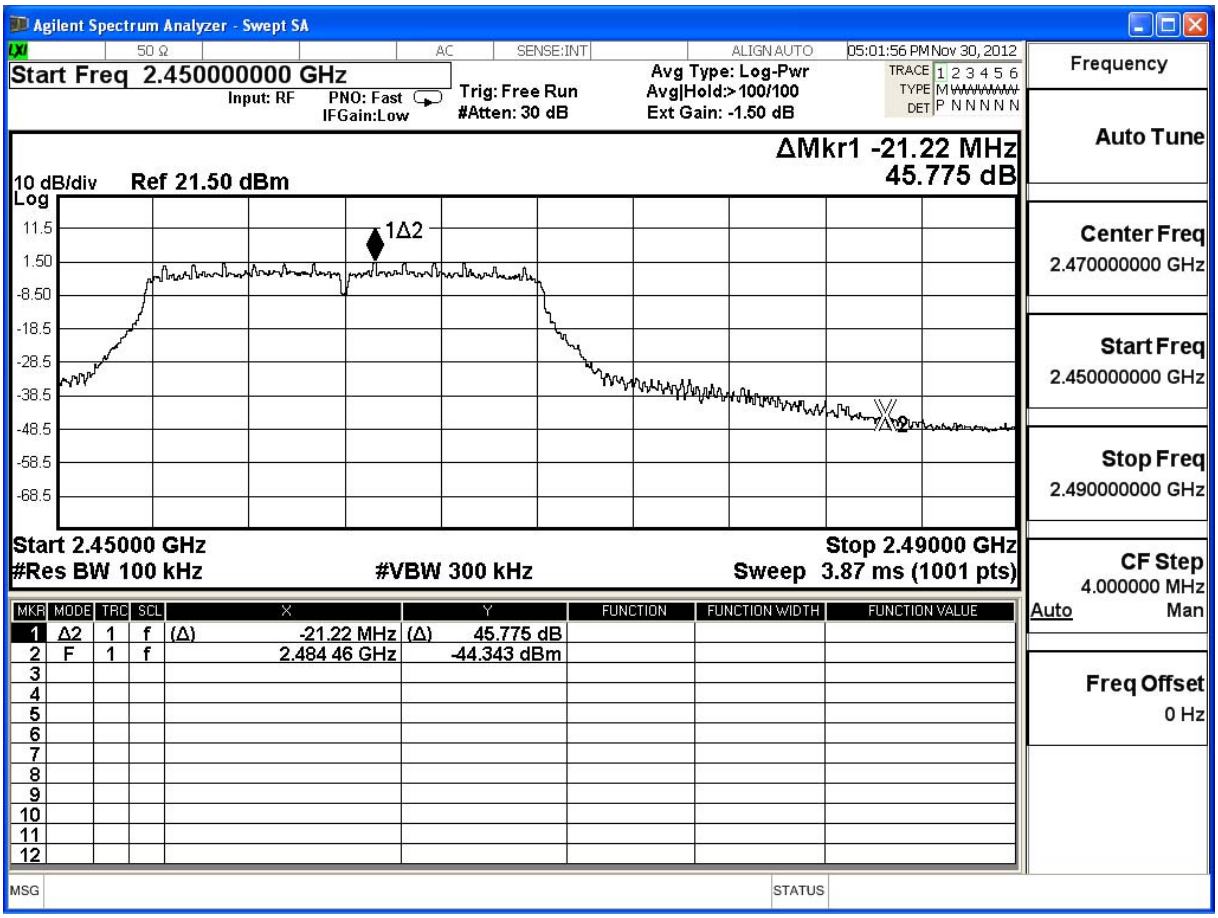
Product	Wireless Scanner		
Test Item	RF antenna conducted test		
Test Mode	Mode 1: Transmit		
Date of Test	2012/11/30	Test Site	SR7

IEEE 802.11g, Antenna Gain: 2dBi Duty Cycle: 1				
Channel No.	Frequency (MHz)	Measure Level (dBc)	Limit (dBc)	Result
1	2412	33.724	≥20	Pass
11	2462	45.775	≥20	Pass

Channel 01 (2412MHz)



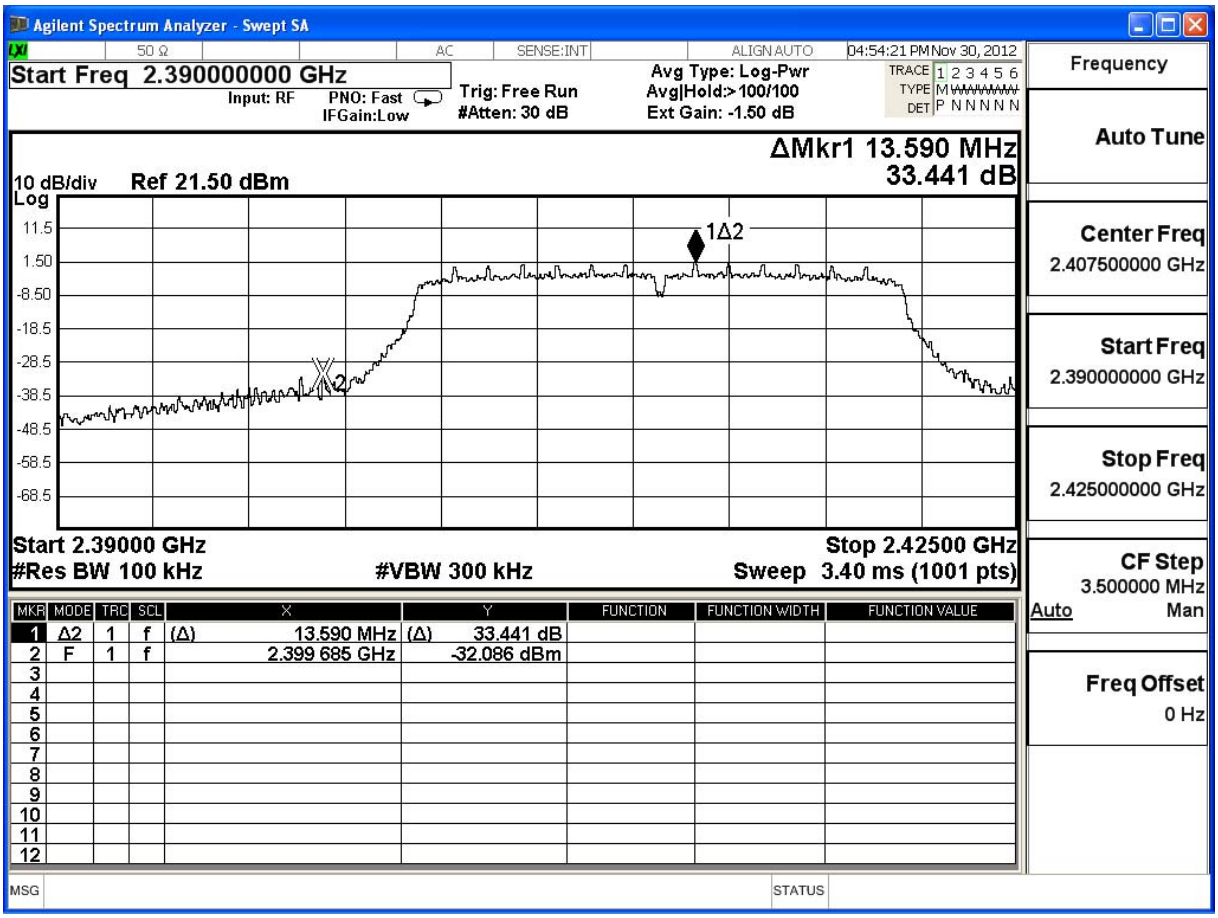
Channel 11 (2462MHz)



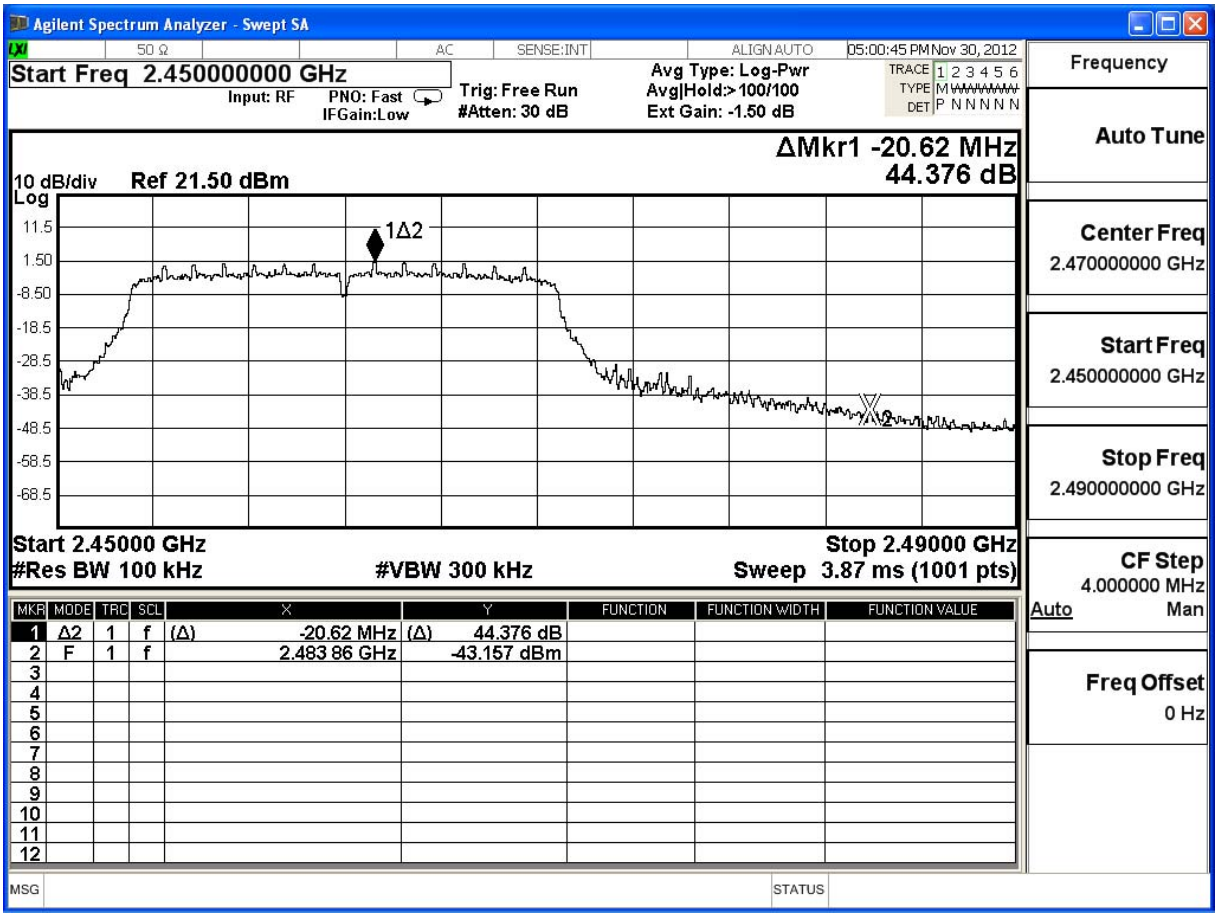
Product	Wireless Scanner		
Test Item	RF antenna conducted test		
Test Mode	Mode 1: Transmit		
Date of Test	2012/10/22	Test Site	SR7

IEEE 802.11n (20MHz), Duty Cycle: 1				
Channel No.	Frequency (MHz)	Measure Level (dBc)	Limit (dBc)	Result
1	2412	33.441	≥20	Pass
11	2462	44.376	≥20	Pass

Channel 1 (2412MHz)

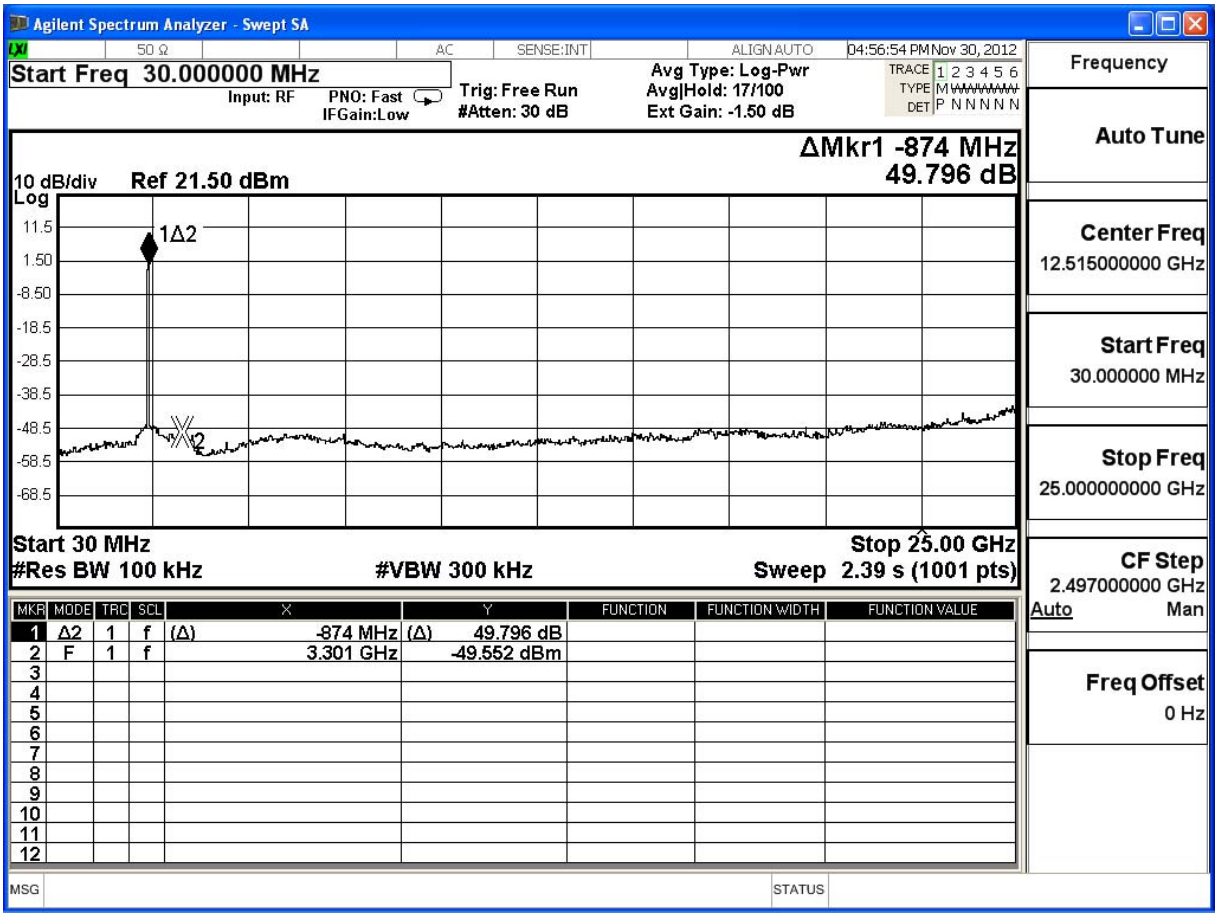


Channel 11 (2462MHz)

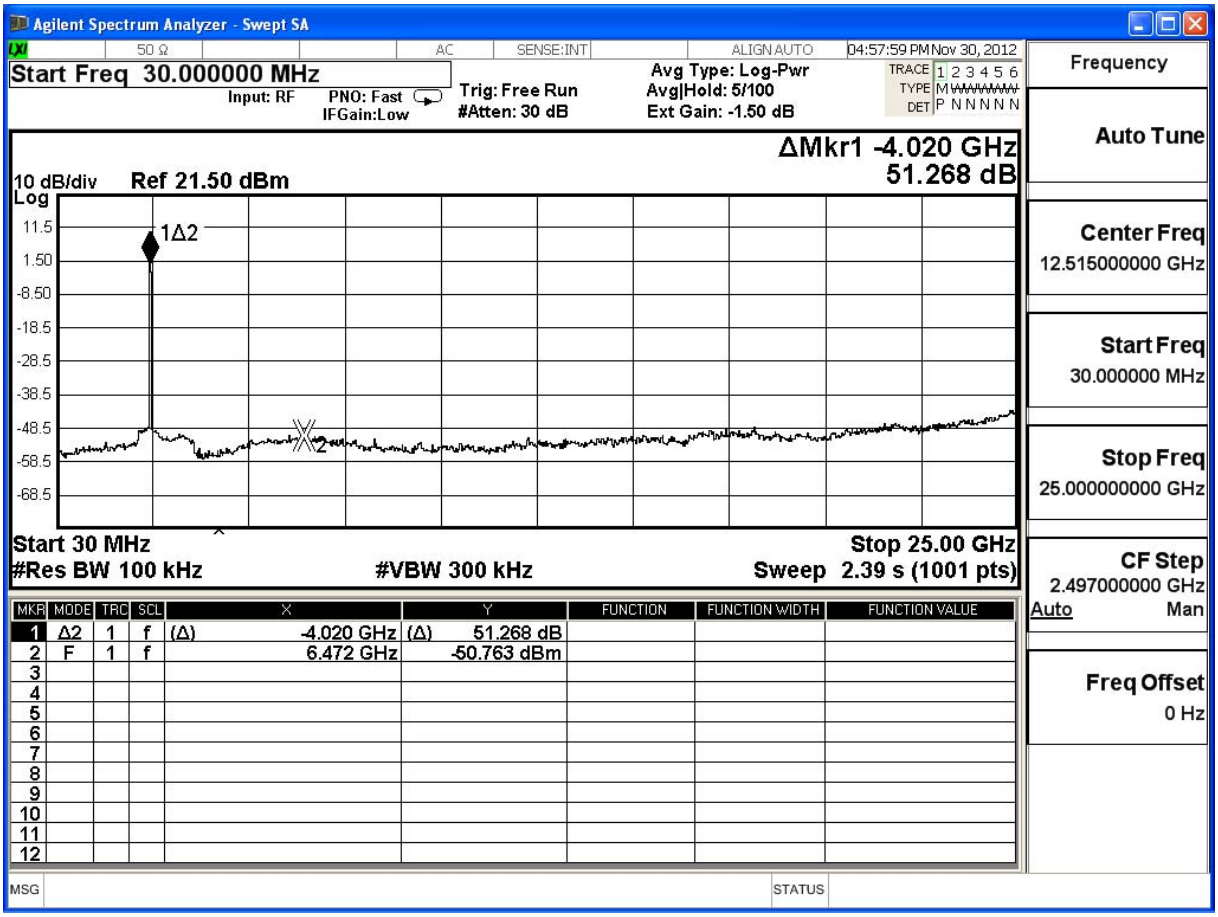


Product	Dual Band 3x3 802.11ac PCI-E Adapter		
Test Item	RF antenna conducted test		
Test Mode	Mode 1: Transmit		
Date of Test	2012/11/30	Test Site	SR7

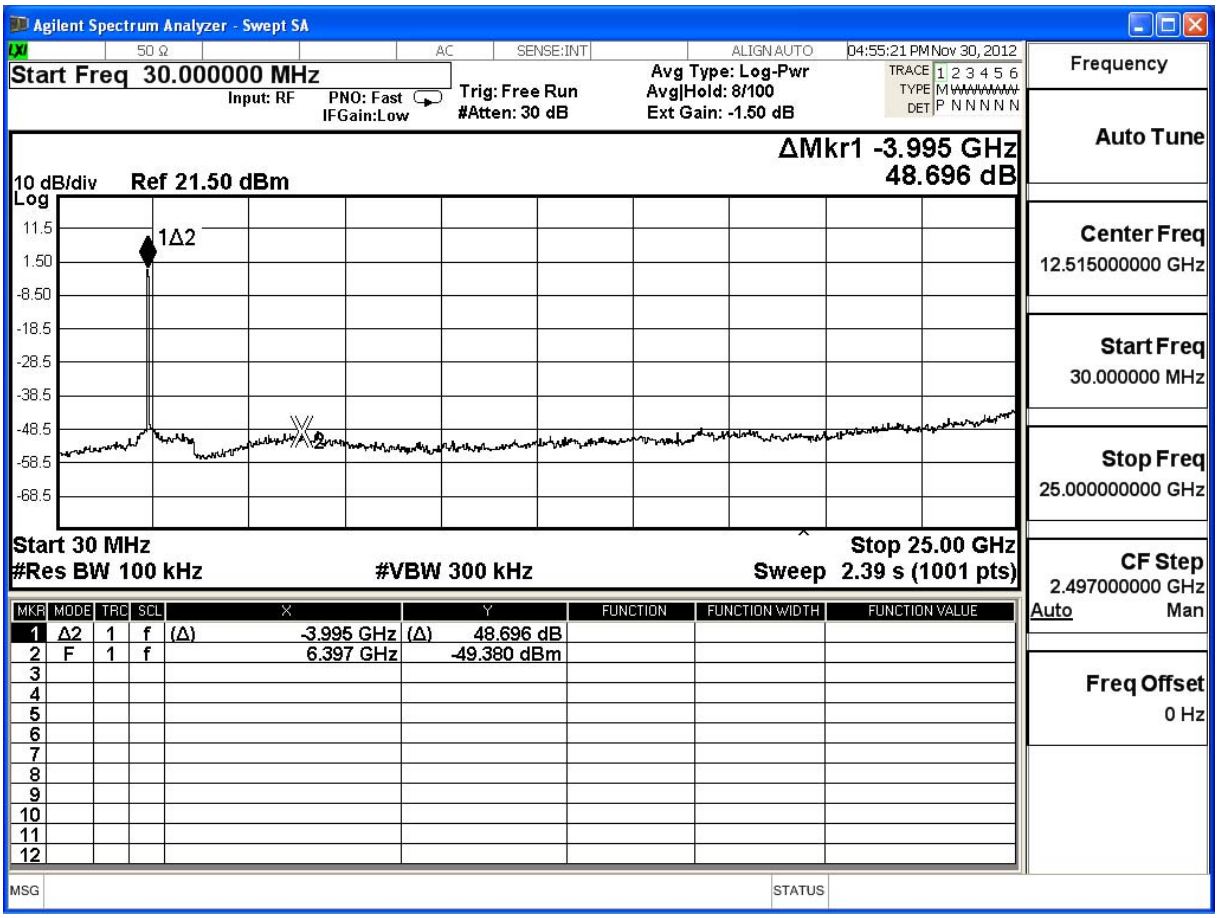
2412MHz (30MHz-25GHz)-802.11g



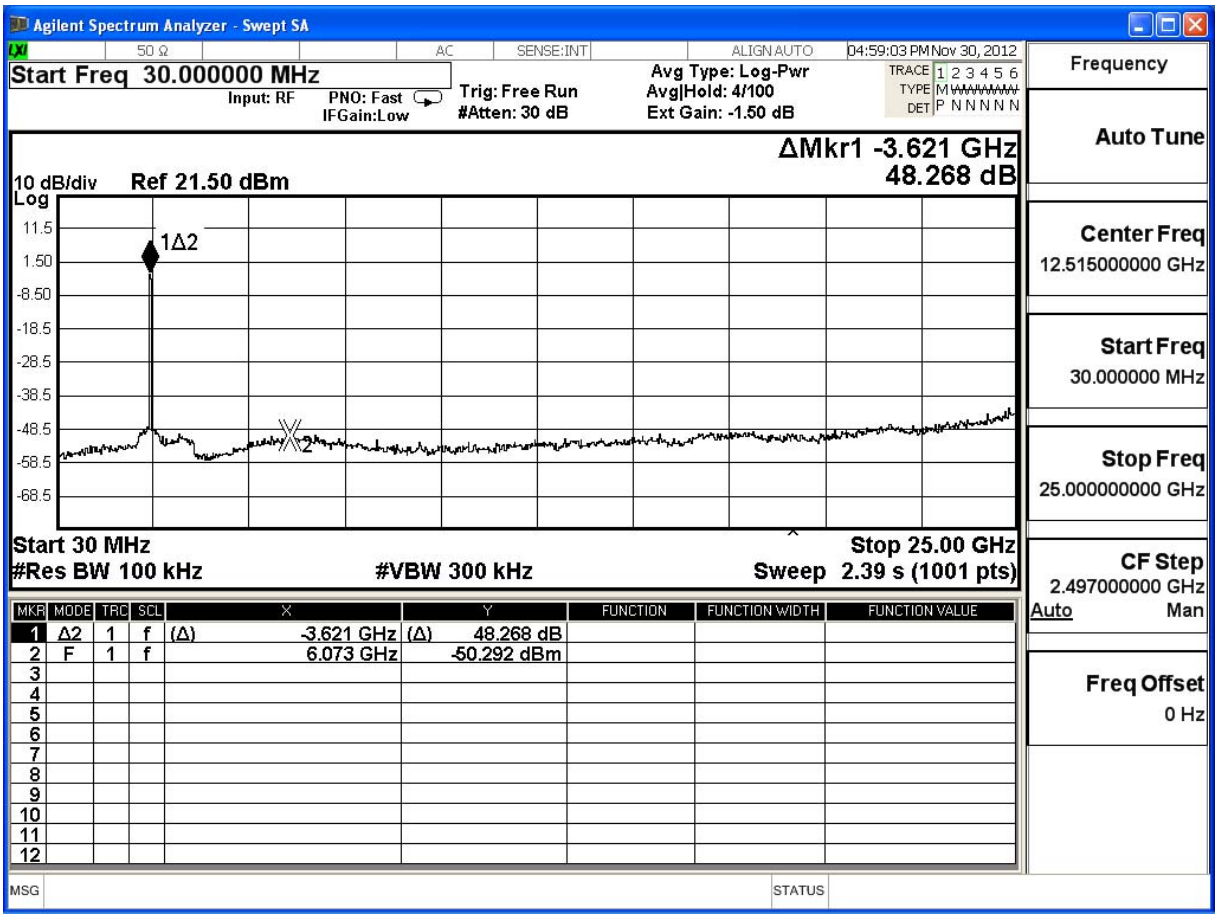
2462MHz (30MHz-25GHz) -802.11g



2412MHz (30MHz-25GHz)-802.11n(20MHz)



2462MHz (30MHz-25GHz) -802.11n(20MHz)



6. Radiated Emission Band Edge

6.1. Test Equipment

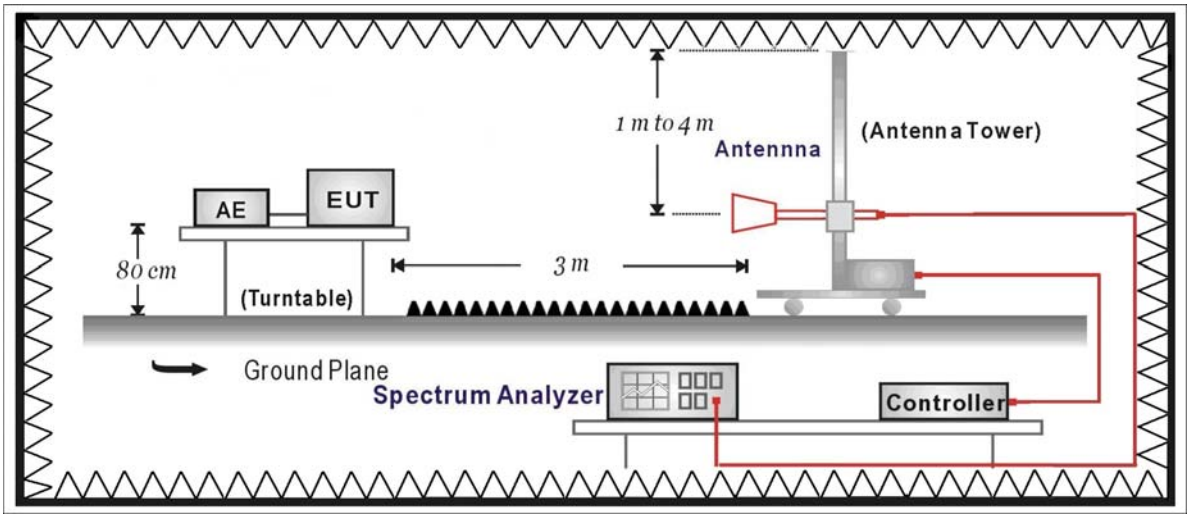
The following test equipments are used during the test:

Radiated Emission Band Edge / CB1

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Double Ridged Guide Horn Antenna	Schwarzback	BBHA 9120	D743	2013/02/02
Spectrum Analyzer	Agilent	E4440A	MY46187335	2013/02/07
Coaxial Cable	Huber+Suhner AG	Sucoflex 102	25623/2	2013/03/04

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

6.2. Test Setup



6.3. Limits

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

6.4. Test Procedure

The EUT was setup according to ANSI C63.4: 2009 and tested according to DTS test procedure of Jan. 2012 KDB558074 for compliance to FCC 47CFR 15.247 requirements.
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.

6.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247: 2011

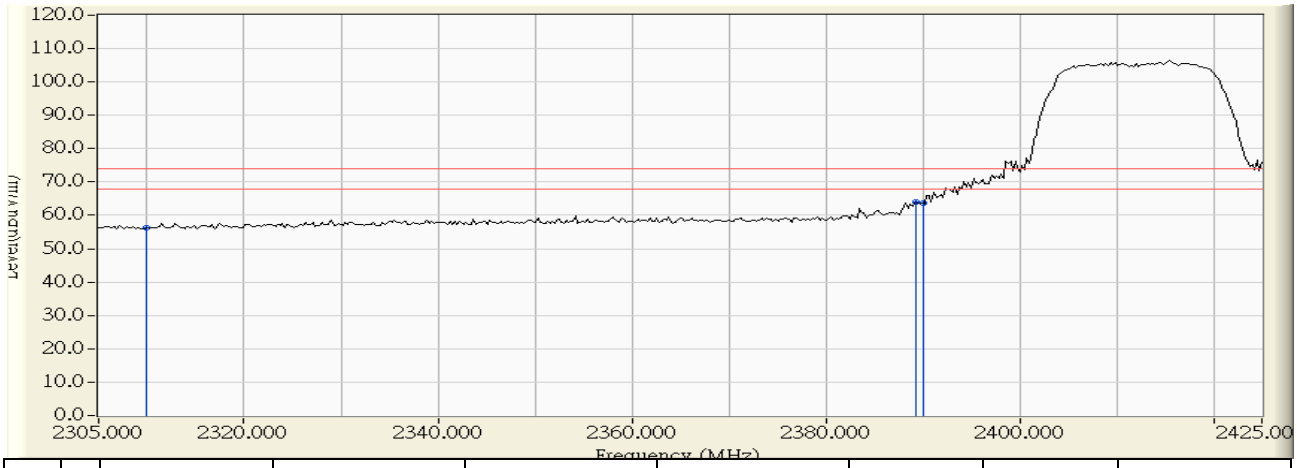
6.6. Uncertainty

The measurement uncertainty
± 3.9 dB above 1GHz

6.7. Test Result

Radiated is defined as

Site : CB1	**Time : 2012/12/10 - 19:00**
Limit : FCC_SpartC_15.209_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	**Power : DC 3.7V (Power by Battery)**
EUT : Wireless Scanner	**Note : 802.11g_2412MHz**

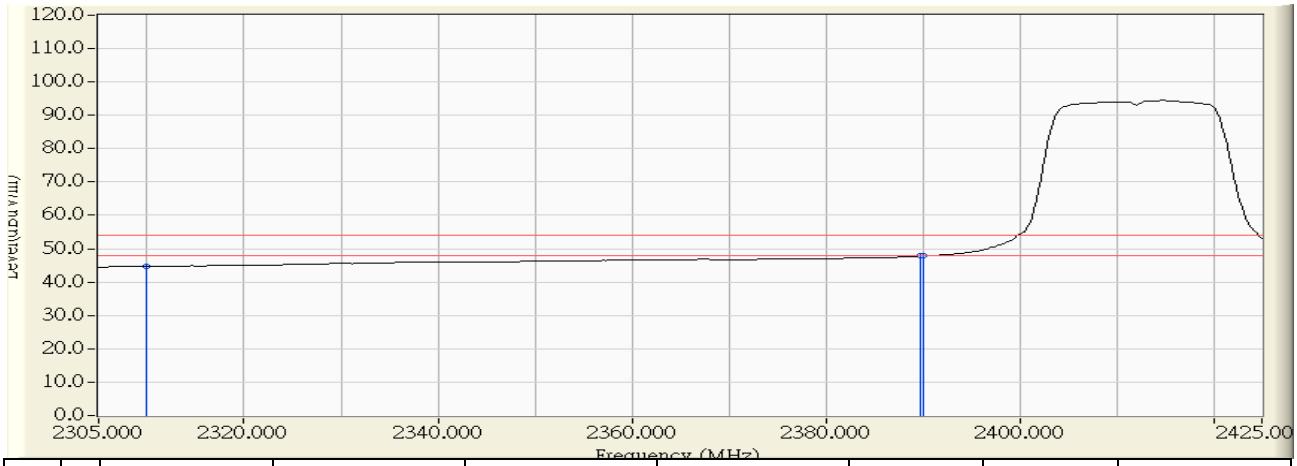


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	29.779	26.444	56.223	-17.777	74.000	PEAK
2	*	2389.240	30.570	33.385	63.955	-10.045	74.000	PEAK
3		2390.000	30.578	33.059	63.637	-10.363	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, 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 : 2012/12/10 - 19:01**
Limit : FCC_SpartC_15.209_03M_AV	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	**Power : DC 3.7V (Power by Battery)**
EUT : Wireless Scanner	**Note : 802.11g_2412MHz**

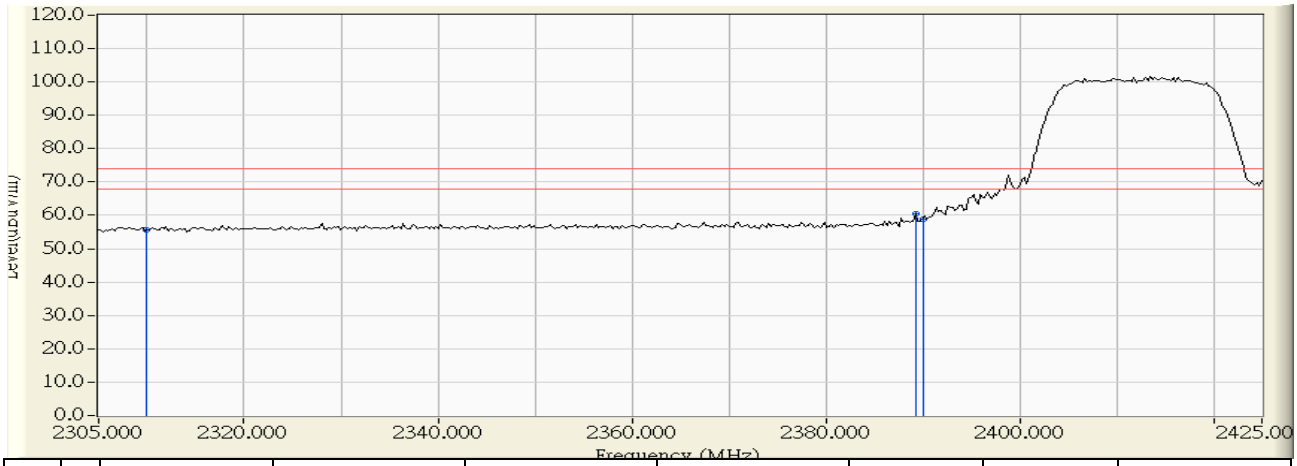


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	29.779	14.891	44.670	-9.330	54.000	AVERAGE
2		2389.720	30.575	17.202	47.777	-6.223	54.000	AVERAGE
3	*	2390.000	30.578	17.243	47.821	-6.179	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, 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 : 2012/12/10 - 19:04**
Limit : FCC_SpartC_15.209_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	**Power : DC 3.7V (Power by Battery)**
EUT : Wireless Scanner	**Note : 802.11g_2412MHz**

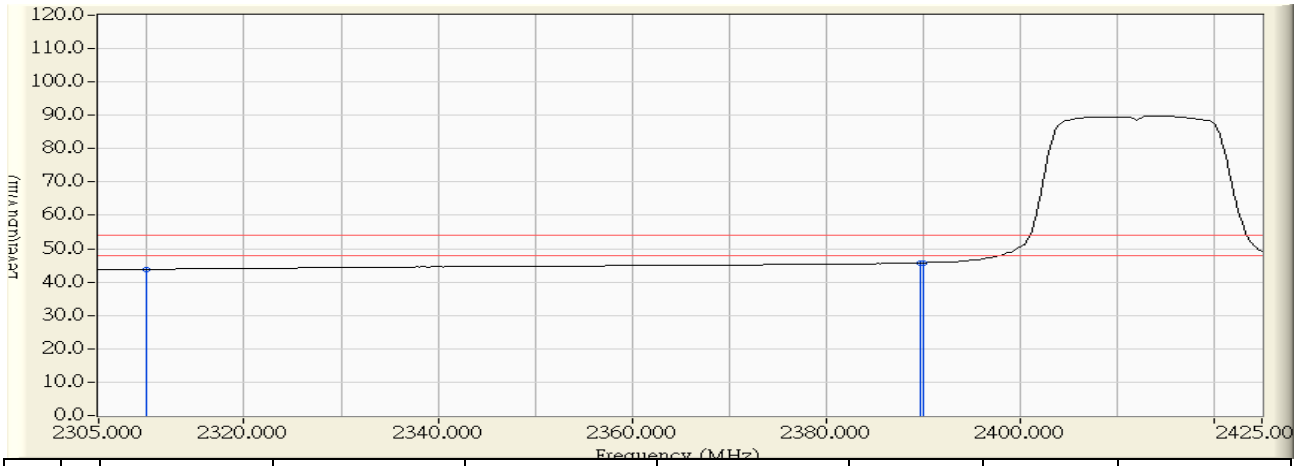


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	29.779	25.831	55.610	-18.390	74.000	PEAK
2	*	2389.240	30.570	29.922	60.492	-13.508	74.000	PEAK
3		2390.000	30.578	28.382	58.960	-15.040	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, 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 : 2012/12/10 - 19:05**
Limit : FCC_SpartC_15.209_03M_AV	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	**Power : DC 3.7V (Power by Battery)**
EUT : Wireless Scanner	**Note : 802.11g_2412MHz**

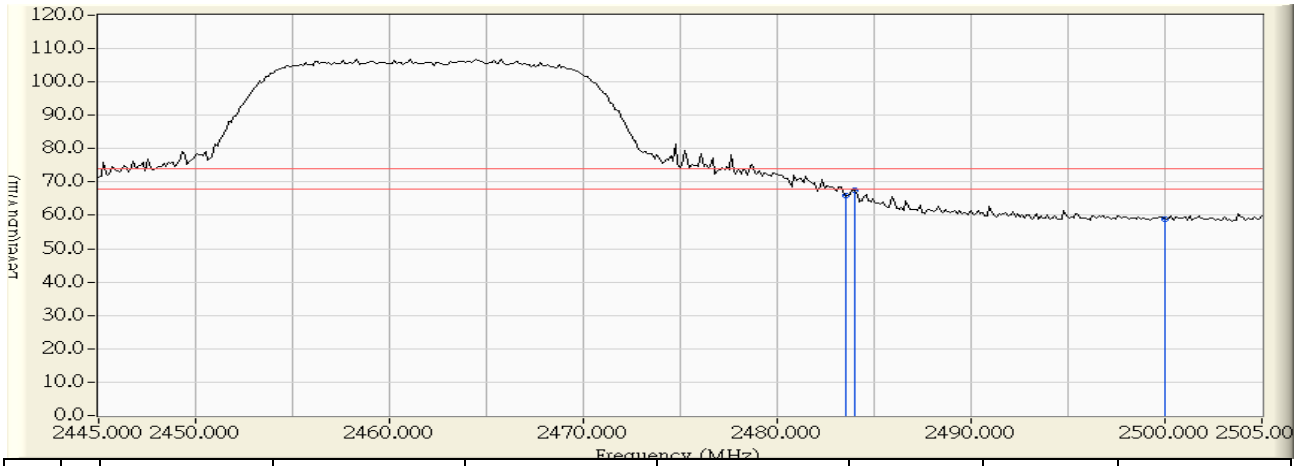


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	29.779	14.060	43.839	-10.161	54.000	AVERAGE
2		2389.720	30.575	15.192	45.767	-8.233	54.000	AVERAGE
3	*	2390.000	30.578	15.194	45.772	-8.228	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, 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 : 2012/12/10 - 19:26**
Limit : FCC_SpartC_15.209_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	**Power : DC 3.7V (Power by Battery)**
EUT : Wireless Scanner	**Note : 802.11g_2462MHz**

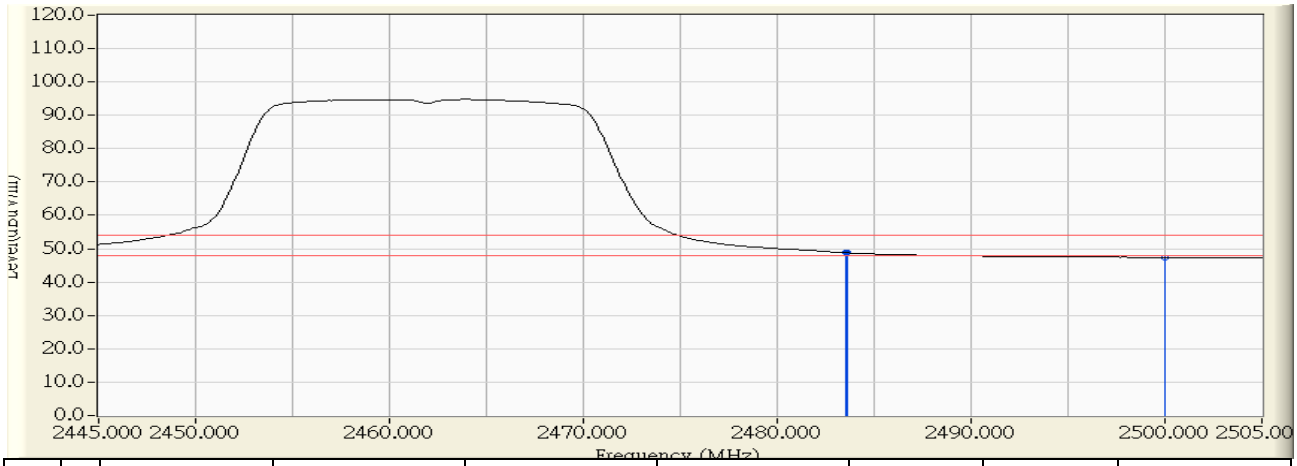


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2483.500	31.512	34.450	65.962	-8.038	74.000	PEAK
2	*	2484.000	31.517	35.915	67.432	-6.568	74.000	PEAK
3		2500.000	31.638	27.359	58.998	-15.002	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, 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 : 2012/12/10 - 19:27**
Limit : FCC_SpartC_15.209_03M_AV	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	**Power : DC 3.7V (Power by Battery)**
EUT : Wireless Scanner	**Note : 802.11g_2462MHz**

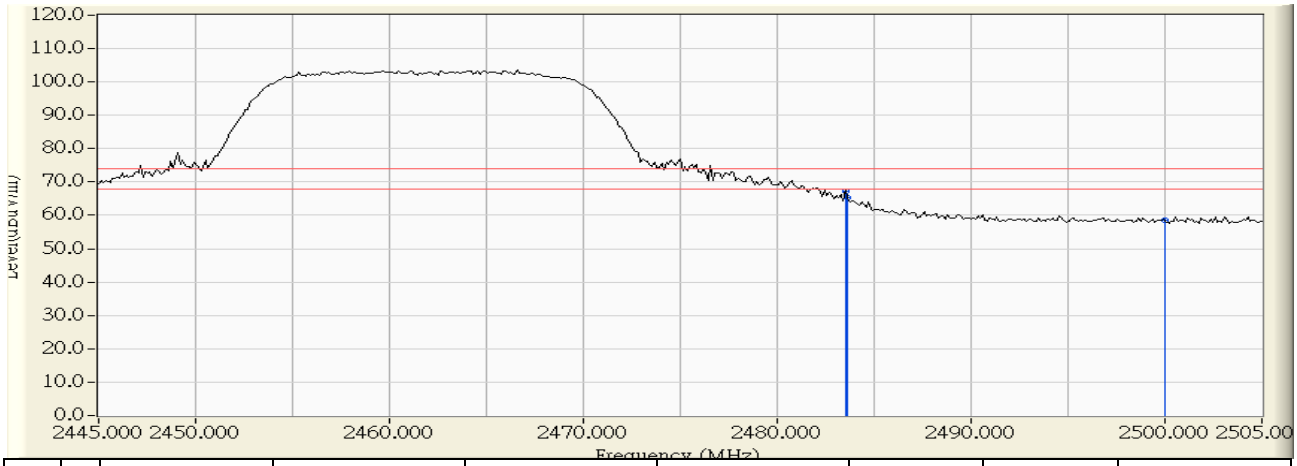


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2483.500	31.512	17.308	48.820	-5.180	54.000	AVERAGE
2		2483.640	31.513	17.268	48.781	-5.219	54.000	AVERAGE
3		2500.000	31.638	15.698	47.337	-6.663	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, 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 : 2012/12/10 - 19:32**
Limit : FCC_SpartC_15.209_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	**Power : DC 3.7V (Power by Battery)**
EUT : Wireless Scanner	**Note : 802.11g_2462MHz**

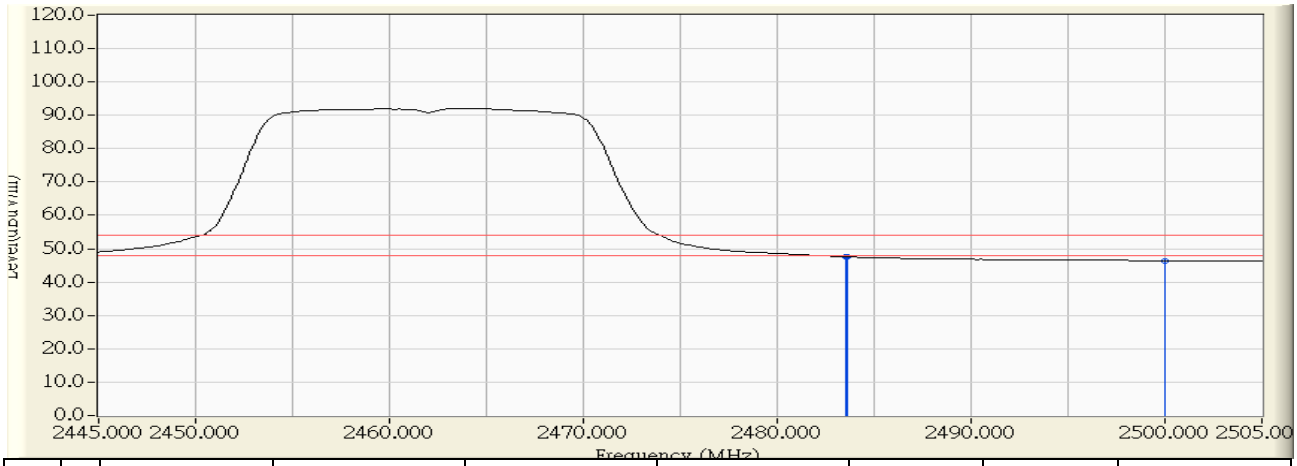


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2483.500	31.512	35.653	67.165	-6.835	74.000	PEAK
2		2483.640	31.513	33.741	65.254	-8.746	74.000	PEAK
3		2500.000	31.638	26.839	58.478	-15.522	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, 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 : 2012/12/10 - 19:33**
Limit : FCC_SpartC_15.209_03M_AV	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	**Power : DC 3.7V (Power by Battery)**
EUT : Wireless Scanner	**Note : 802.11g_2462MHz**



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2483.500	31.512	16.063	47.575	-6.425	54.000	AVERAGE
2		2483.640	31.513	16.045	47.558	-6.442	54.000	AVERAGE
3		2500.000	31.638	14.762	46.401	-7.599	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, 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.

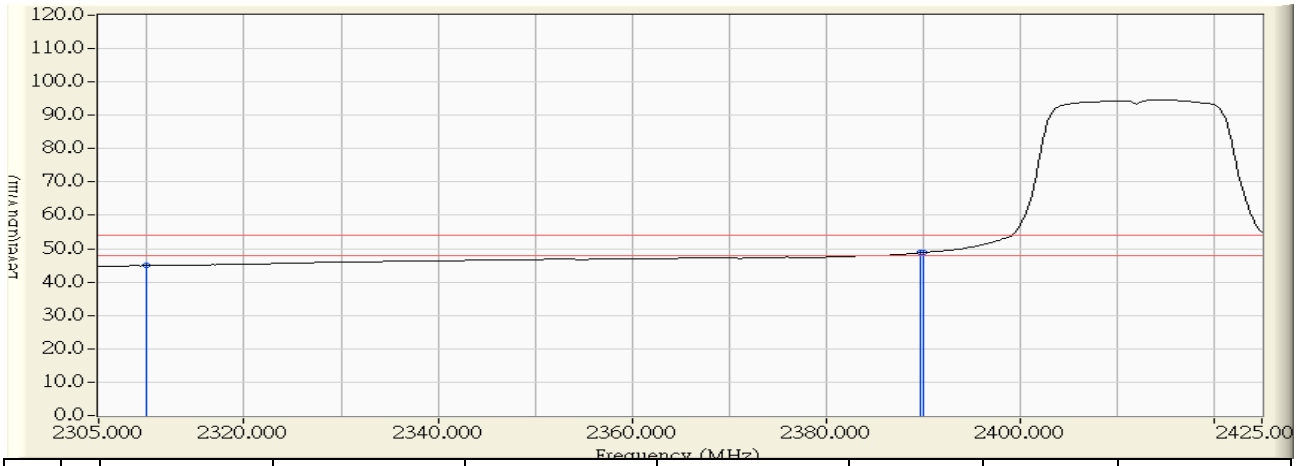
Site : CB1	**Time : 2012/12/10 - 19:08**
Limit : FCC_SpartC_15.209_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	**Power : DC 3.7V (Power by Battery)**
EUT : Wireless Scanner	**Note : 802.11n20_2412MHz**

		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	29.779	26.581	56.360	-17.640	74.000	PEAK
2		2389.000	30.568	36.580	67.148	-6.852	74.000	PEAK
3	*	2390.000	30.578	37.946	68.524	-5.476	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, 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 : 2012/12/10 - 19:09**
Limit : FCC_SpartC_15.209_03M_AV	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	**Power : DC 3.7V (Power by Battery)**
EUT : Wireless Scanner	**Note : 802.11n20_2412MHz**

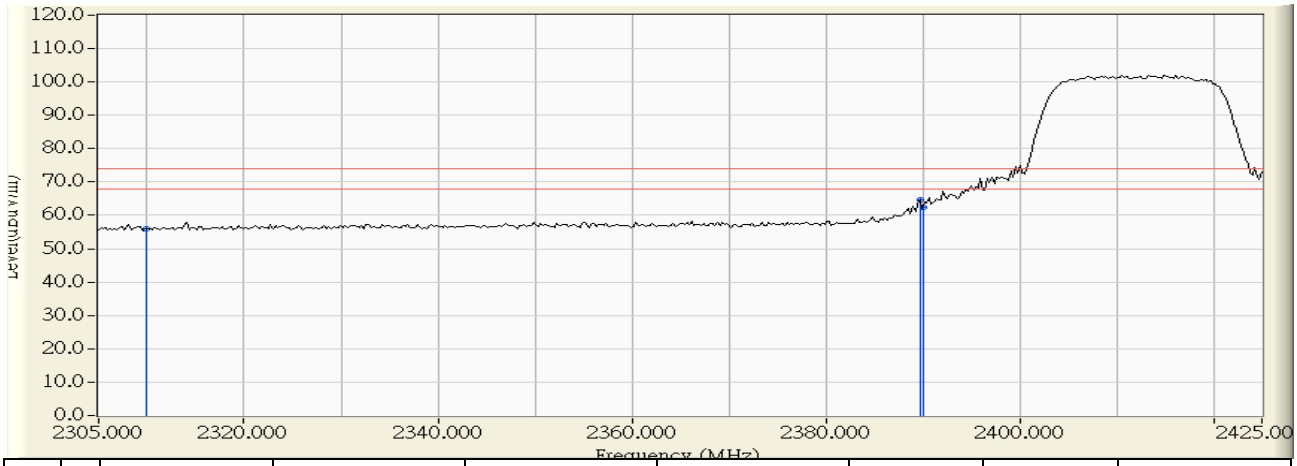


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	29.779	15.159	44.938	-9.062	54.000	AVERAGE
2		2389.720	30.575	18.206	48.781	-5.219	54.000	AVERAGE
3	*	2390.000	30.578	18.242	48.820	-5.180	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, 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 : 2012/12/10 - 19:13**
Limit : FCC_SpartC_15.209_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	**Power : DC 3.7V (Power by Battery)**
EUT : Wireless Scanner	**Note : 802.11n20_2412MHz**

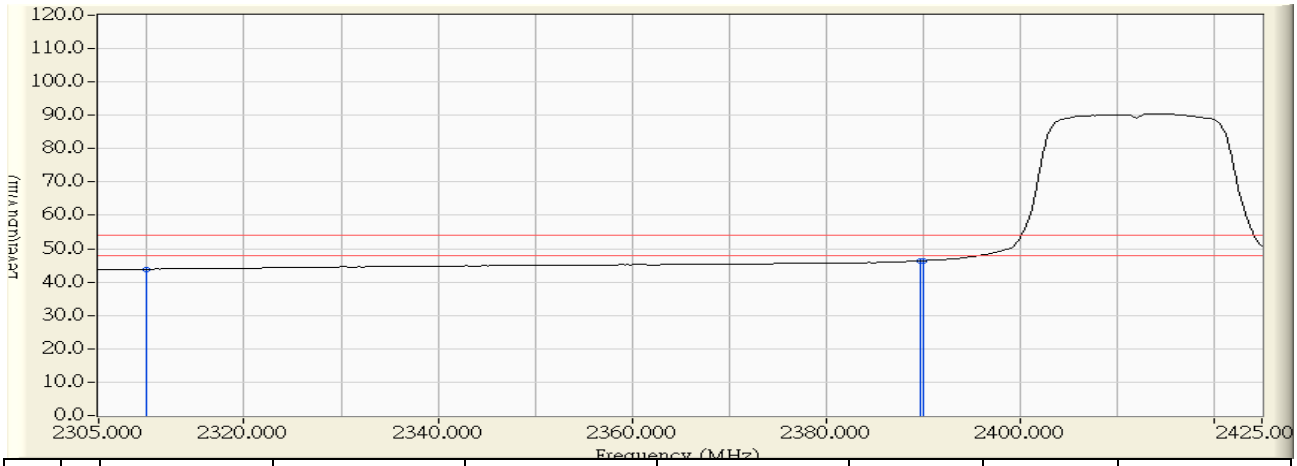


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	29.779	26.061	55.840	-18.160	74.000	PEAK
2	*	2389.720	30.575	34.066	64.641	-9.359	74.000	PEAK
3		2390.000	30.578	31.780	62.358	-11.642	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, 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 : 2012/12/10 - 19:14**
Limit : FCC_SpartC_15.209_03M_AV	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	**Power : DC 3.7V (Power by Battery)**
EUT : Wireless Scanner	**Note : 802.11n20_2412MHz**

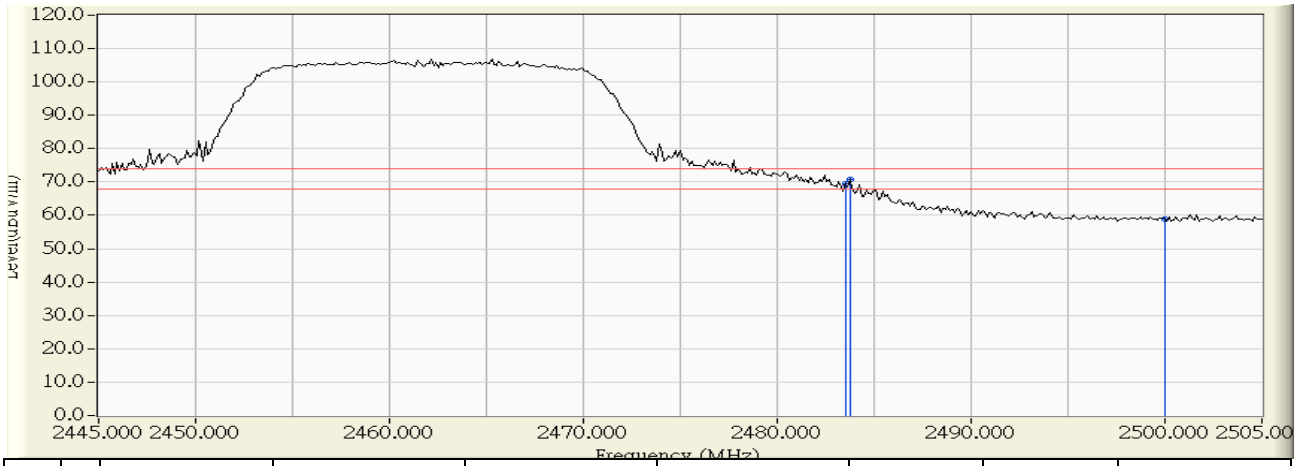


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	29.779	14.114	43.893	-10.107	54.000	AVERAGE
2		2389.720	30.575	15.749	46.324	-7.676	54.000	AVERAGE
3	*	2390.000	30.578	15.819	46.397	-7.603	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, 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 : 2012/12/10 - 19:18**
Limit : FCC_SpartC_15.209_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	**Power : DC 3.7V (Power by Battery)**
EUT : Wireless Scanner	**Note : 802.11n20_2462MHz**

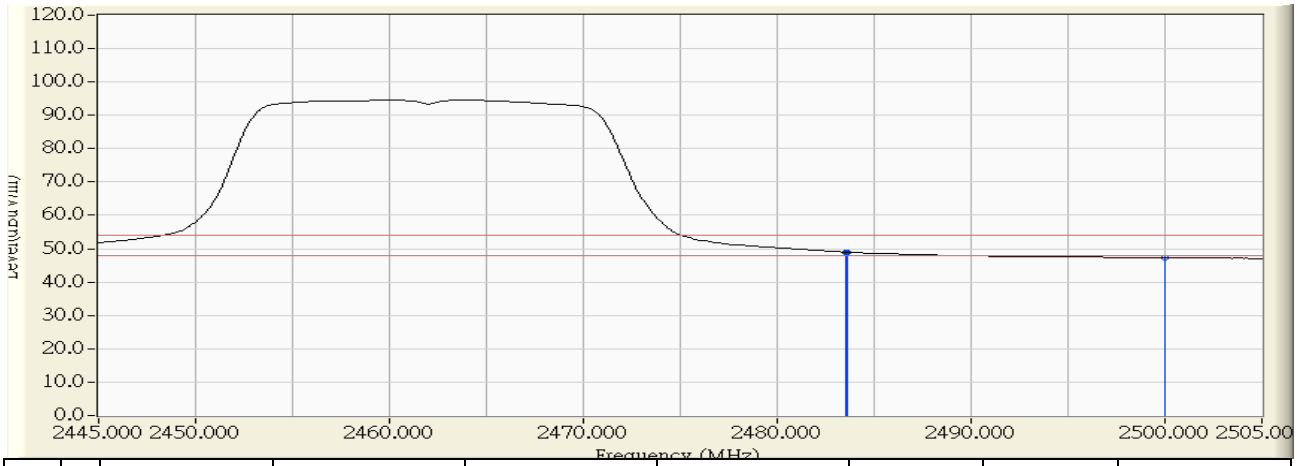


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2483.500	31.512	37.840	69.352	-4.648	74.000	PEAK
2	*	2483.760	31.515	39.276	70.790	-3.210	74.000	PEAK
3		2500.000	31.638	27.271	58.910	-15.090	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, 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 : 2012/12/10 - 19:19**
Limit : FCC_SpartC_15.209_03M_AV	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	**Power : DC 3.7V (Power by Battery)**
EUT : Wireless Scanner	**Note : 802.11n20_2462MHz**

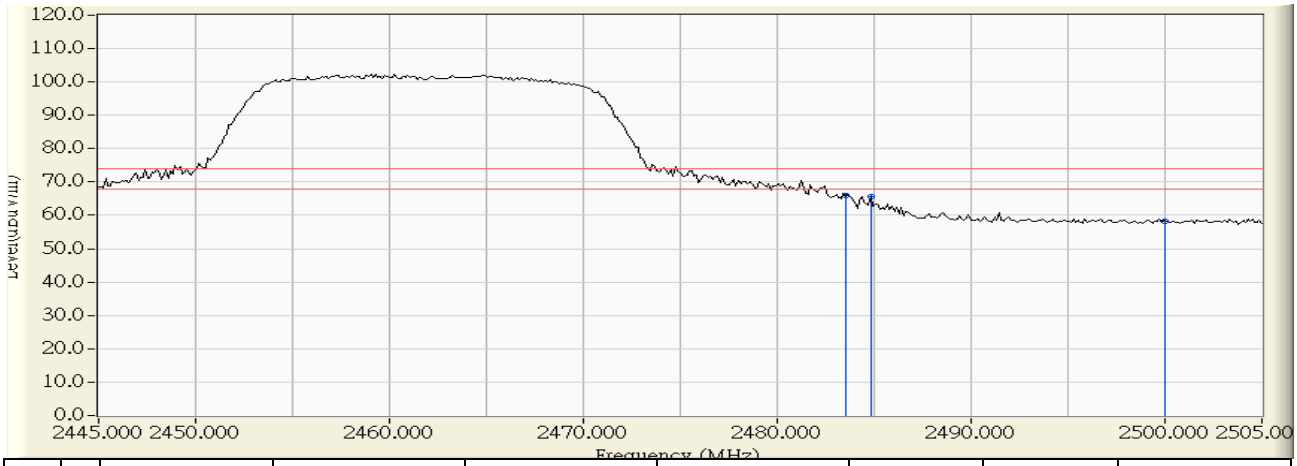


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2483.500	31.512	17.475	48.987	-5.013	54.000	AVERAGE
2		2483.640	31.513	17.447	48.960	-5.040	54.000	AVERAGE
3		2500.000	31.638	15.613	47.252	-6.748	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, 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 : 2012/12/10 - 19:22**
Limit : FCC_SpartC_15.209_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	**Power : DC 3.7V (Power by Battery)**
EUT : Wireless Scanner	**Note : 802.11n20_2462MHz**

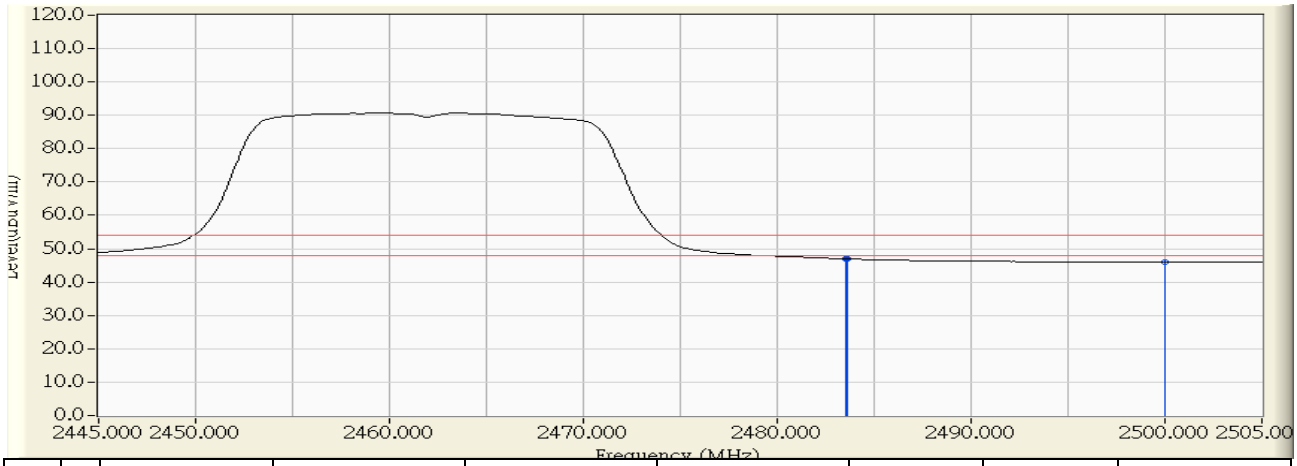


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2483.500	31.512	34.369	65.881	-8.119	74.000	PEAK
2		2484.840	31.526	34.089	65.614	-8.386	74.000	PEAK
3		2500.000	31.638	26.694	58.333	-15.667	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, 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 : 2012/12/10 - 19:23**
Limit : FCC_SpartC_15.209_03M_AV	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	**Power : DC 3.7V (Power by Battery)**
EUT : Wireless Scanner	**Note : 802.11n20_2462MHz**



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2483.500	31.512	15.443	46.955	-7.045	54.000	AVERAGE
2		2483.640	31.513	15.397	46.910	-7.090	54.000	AVERAGE
3		2500.000	31.638	14.379	46.018	-7.982	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, 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.

7. Occupied Bandwidth

7.1. Test Equipment

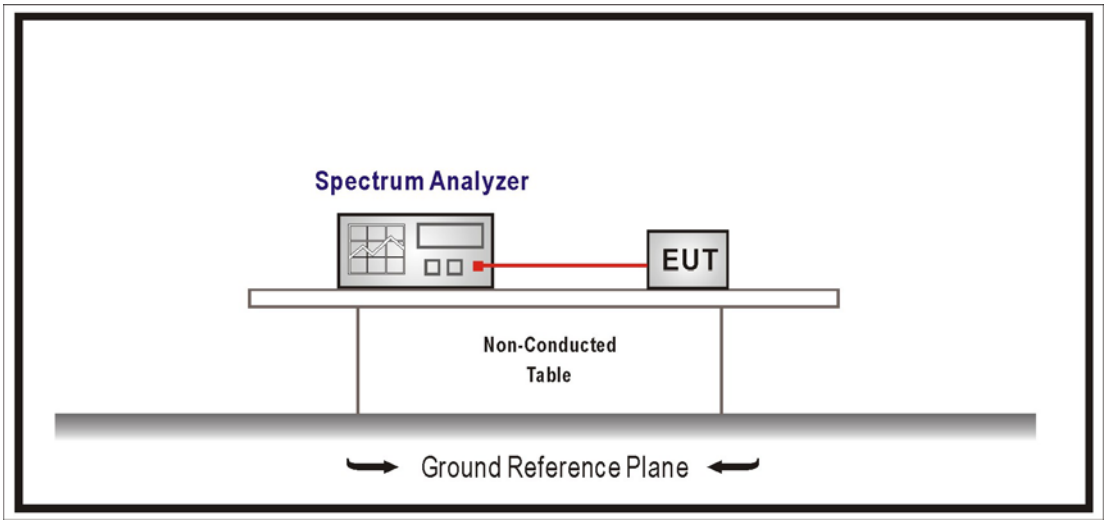
The following test equipments are used during the test:

Occupied Bandwidth / SR7

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Spectrum Analyzer	R&S	FSP	100561	2013/02/19

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

7.2. Test Setup



7.3. Test Procedures

The EUT was setup according to ANSI C63.4: 2009; tested according to DTS test procedure of Jan. 2012 KDB558074 for compliance to FCC 47CFR 15.247 requirements.
Set RBW = 1% of EBW, Span greater than RBW.

7.4. Limits

The 6 dB bandwidth must be greater than 500 kHz.

7.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247: 2011

7.6. Uncertainty

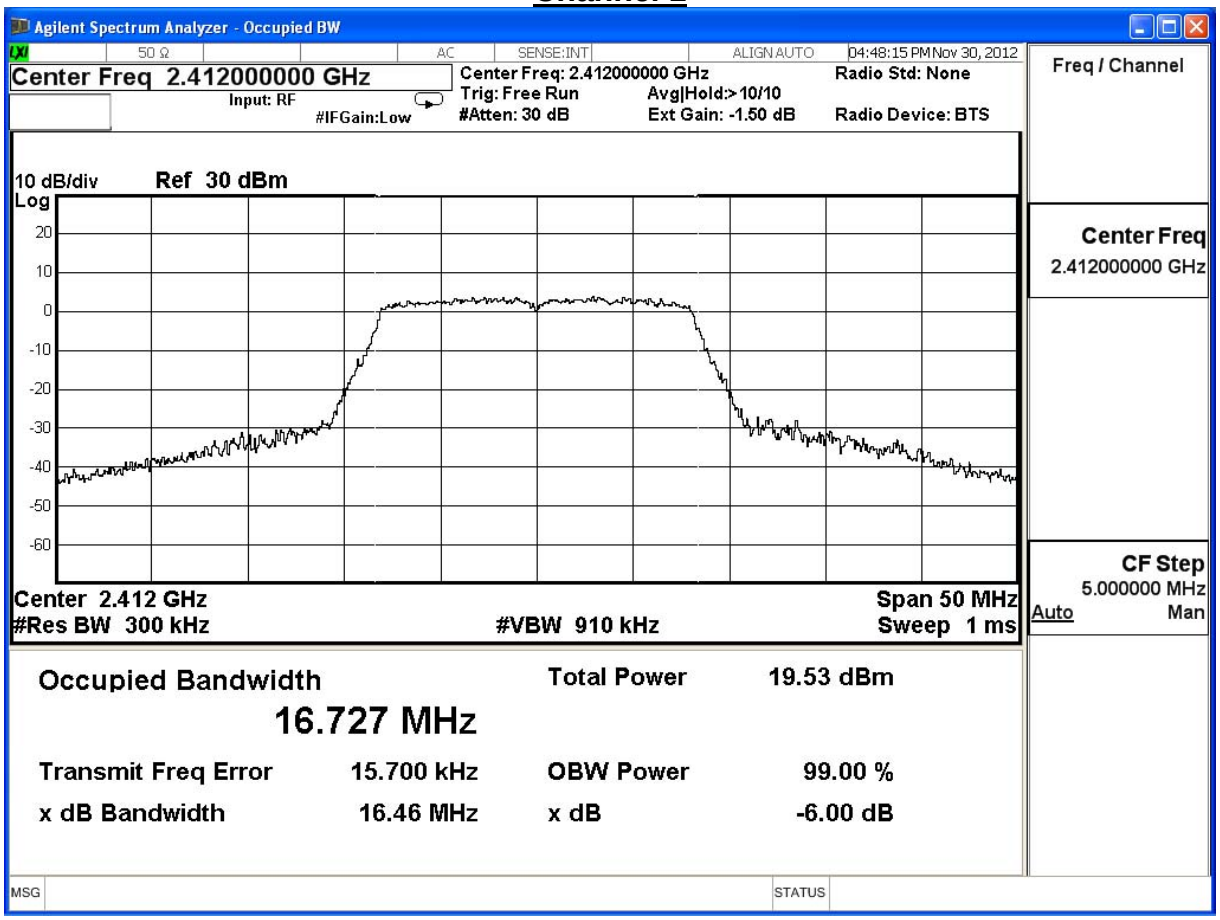
The measurement uncertainty is defined as ±150Hz

7.7. Test Result

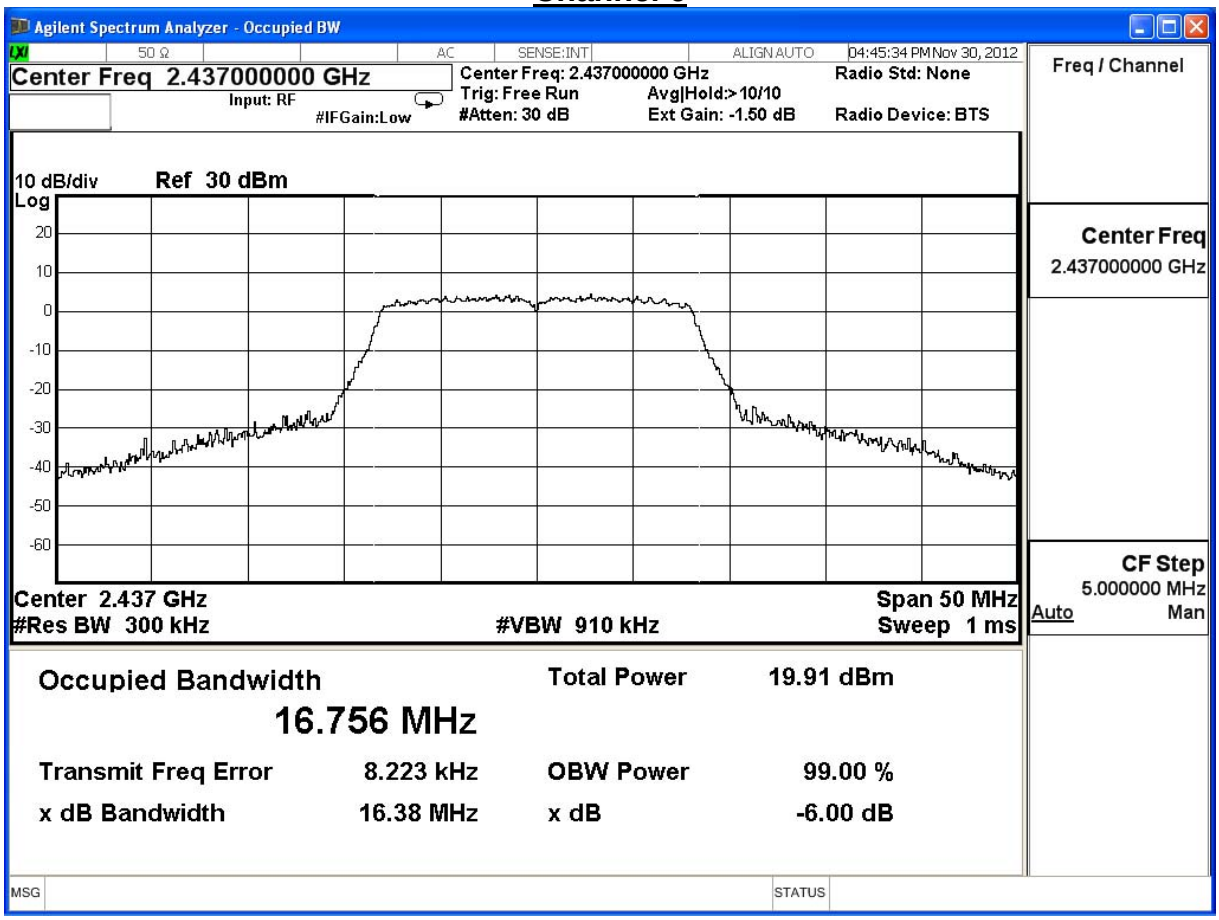
Product	Wireless Scanner		
Test Item	Occupied Bandwidth		
Test Mode	Mode 1: Transmit		
Date of Test	2012/11/30	Test Site	SR7

IEEE 802.11g				
Channel No.	Frequency (MHz)	Measurement Level (MHz)	Required Limit (MHz)	Result
1	2412	16.460	≧0.5	Pass
6	2437	16.380	≧0.5	Pass
11	2462	16.410	≧0.5	Pass

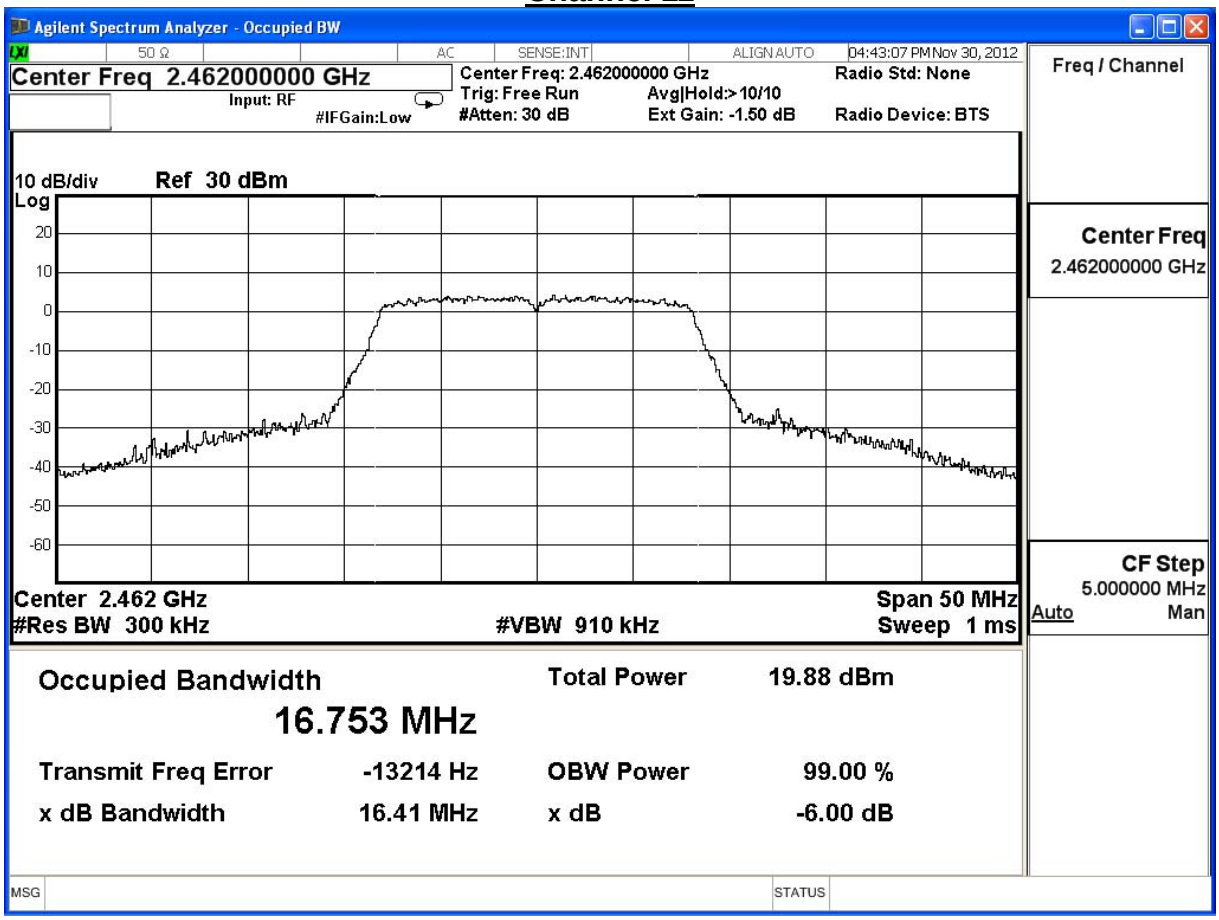
Channel 1



Channel 6


Agilent Spectrum Analyzer - Occupied BW
50 Ω
AC
SENSE:INT
ALIGN AUTO
04:45:34 PM Nov 30, 2012
Center Freq 2.437000000 GHz
Input: RF
#IFGain:Low
Center Freq: 2.437000000 GHz
Trig: Free Run
Avg|Hold:>10/10
#Atten: 30 dB
Ext Gain: -1.50 dB
Radio Std: None
Radio Device: BTS
Freq / Channel
10 dB/div
Log
Ref 30 dBm
20
10
0
-10
-20
-30
-40
-50
-60
Center Freq
2.437000000 GHz
Center 2.437 GHz
#Res BW 300 kHz
#VBW 910 kHz
Span 50 MHz
Sweep 1 ms
CF Step
5.000000 MHz
Auto
Man
Occupied Bandwidth
16.756 MHz
Total Power
19.91 dBm
Transmit Freq Error
8.223 kHz
OBW Power
99.00 %
x dB Bandwidth
16.38 MHz
x dB
-6.00 dB
MSG
STATUS

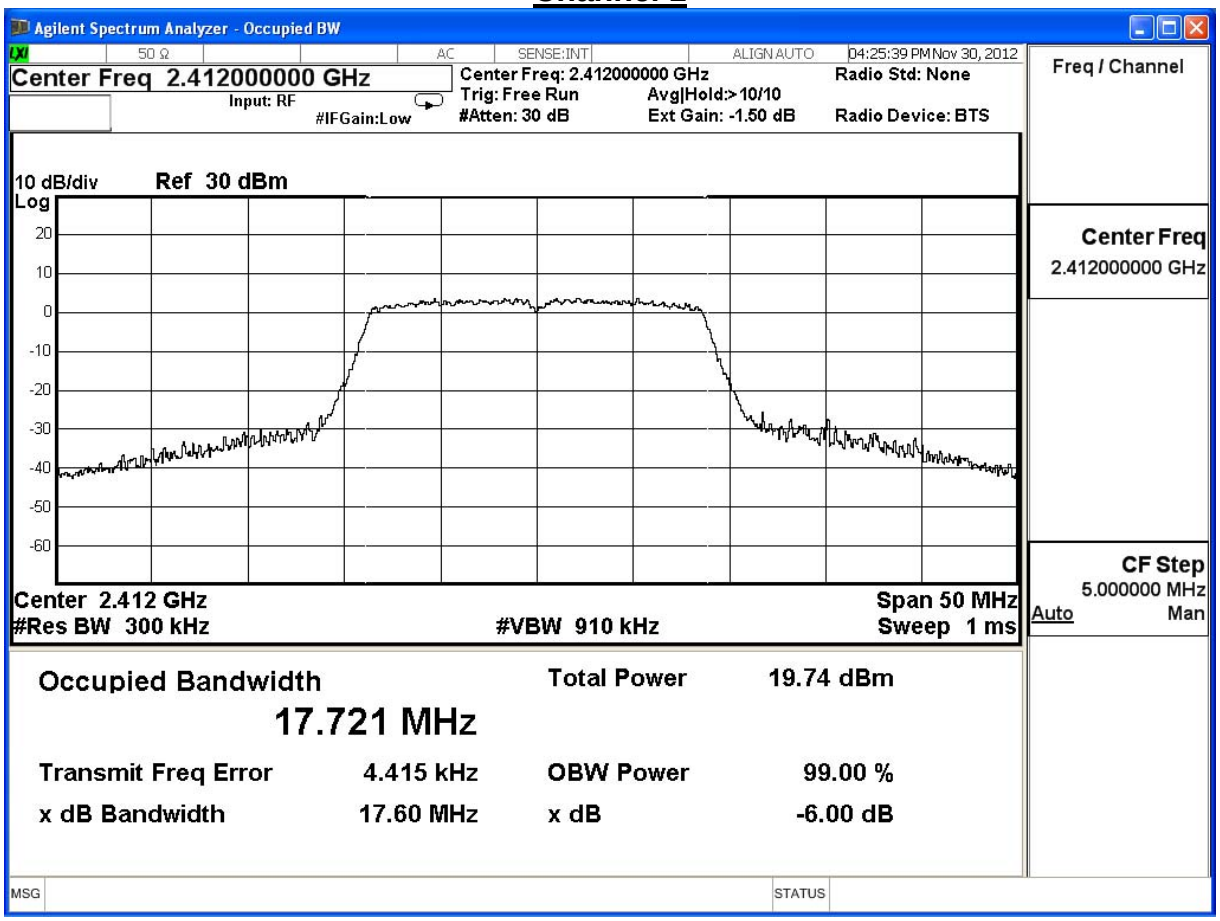
Channel 11


Agilent Spectrum Analyzer - Occupied BW
50 Ω
AC
SENSE:INT
ALIGN AUTO
04:43:07 PM Nov 30, 2012
Center Freq 2.462000000 GHz
Input: RF
#IFGain:Low
Center Freq: 2.462000000 GHz
Trig: Free Run
Avg|Hold:>10/10
#Atten: 30 dB
Ext Gain: -1.50 dB
Radio Std: None
Radio Device: BTS
Freq / Channel
10 dB/div
Log
Ref 30 dBm
20
10
0
-10
-20
-30
-40
-50
-60
Center Freq
2.462000000 GHz
CF Step
5.000000 MHz
Auto
Man
Center 2.462 GHz
#Res BW 300 kHz
#VBW 910 kHz
Span 50 MHz
Sweep 1 ms
Occupied Bandwidth
16.753 MHz
Total Power
19.88 dBm
Transmit Freq Error
-13214 Hz
OBW Power
99.00 %
x dB Bandwidth
16.41 MHz
x dB
-6.00 dB
MSG
STATUS

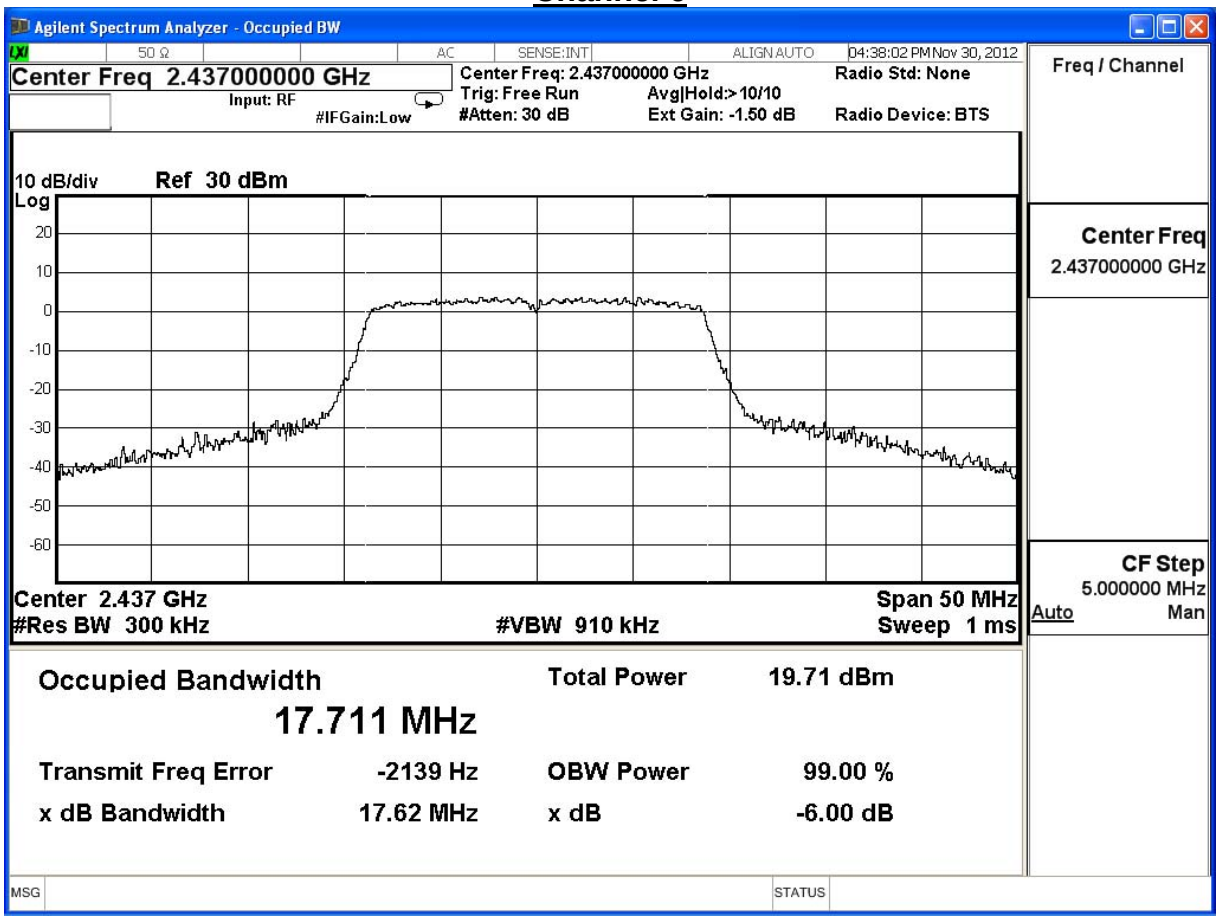
Product	Wireless Scanner		
Test Item	Occupied Bandwidth		
Test Mode	Mode 1: Transmit		
Date of Test	2012/11/30	Test Site	SR7

IEEE 802.11n (20MHz)				
Channel No.	Frequency (MHz)	Measurement Level (MHz)	Required Limit (MHz)	Result
1	2412	17.600	≧0.5	Pass
6	2437	17.620	≧0.5	Pass
11	2462	17.560	≧0.5	Pass

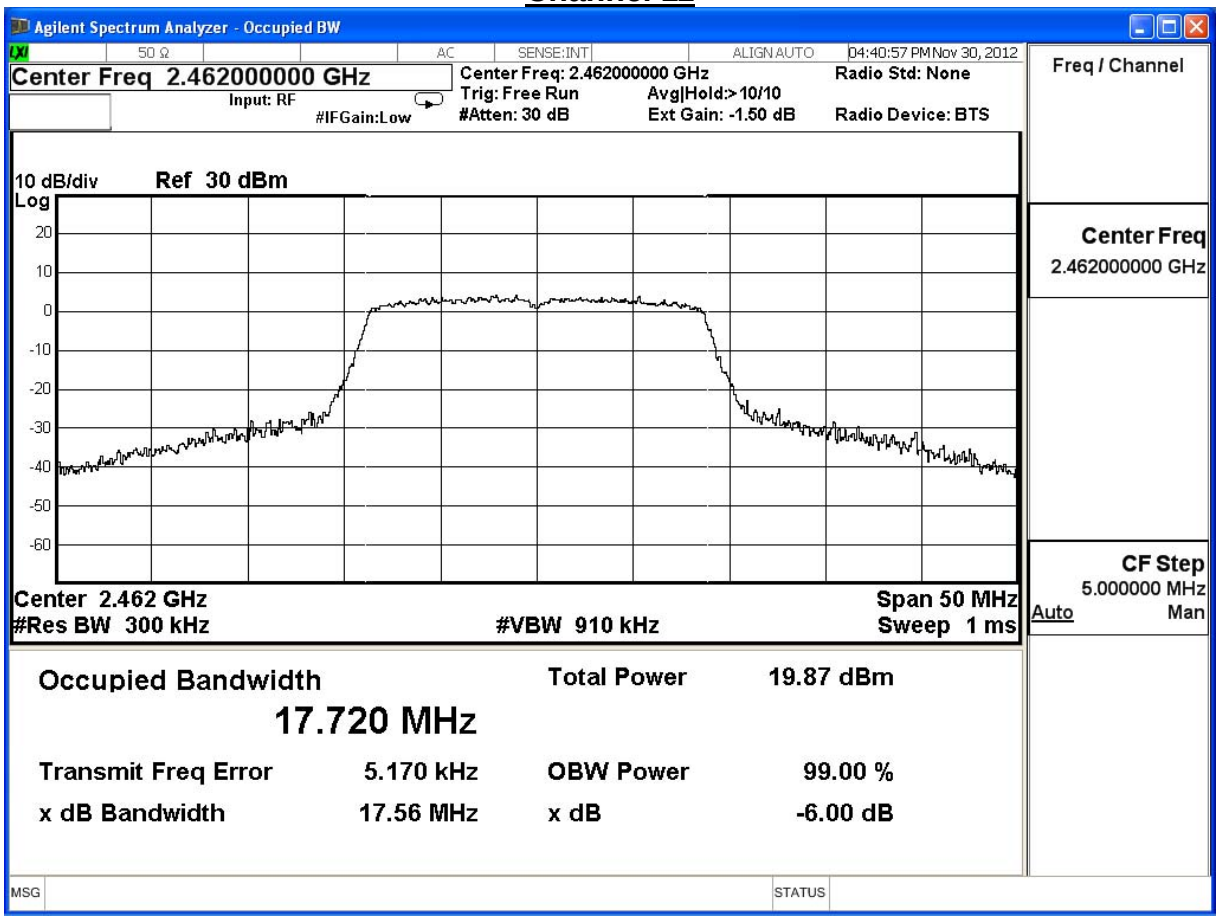
Channel 1



Channel 6


Agilent Spectrum Analyzer - Occupied BW
50 Ω
AC
SENSE:INT
ALIGN AUTO
04:38:02 PM Nov 30, 2012
Center Freq 2.437000000 GHz
Input: RF
#IFGain:Low
Center Freq: 2.437000000 GHz
Trig: Free Run
Avg|Hold:>10/10
#Atten: 30 dB
Ext Gain: -1.50 dB
Radio Std: None
Radio Device: BTS
Freq / Channel
10 dB/div
Log
Ref 30 dBm
20
10
0
-10
-20
-30
-40
-50
-60
Center Freq
2.437000000 GHz
CF Step
5.000000 MHz
Auto
Man
Center 2.437 GHz
#Res BW 300 kHz
#VBW 910 kHz
Span 50 MHz
Sweep 1 ms
Occupied Bandwidth
17.711 MHz
Total Power
19.71 dBm
Transmit Freq Error
-2139 Hz
OBW Power
99.00 %
x dB Bandwidth
17.62 MHz
x dB
-6.00 dB
MSG
STATUS

Channel 11


Agilent Spectrum Analyzer - Occupied BW
50 Ω
AC
SENSE:INT
ALIGN AUTO
04:40:57 PM Nov 30, 2012
Center Freq 2.462000000 GHz
Input: RF
#IFGain:Low
Center Freq: 2.462000000 GHz
Trig: Free Run
#Atten: 30 dB
Avg|Hold:>10/10
Ext Gain: -1.50 dB
Radio Std: None
Radio Device: BTS
Freq / Channel
10 dB/div
Log
Ref 30 dBm
20
10
0
-10
-20
-30
-40
-50
-60
Center Freq
2.462000000 GHz
Center 2.462 GHz
#Res BW 300 kHz
#VBW 910 kHz
Span 50 MHz
Sweep 1 ms
CF Step
5.000000 MHz
Auto
Man
Occupied Bandwidth
17.720 MHz
Total Power
19.87 dBm
Transmit Freq Error
5.170 kHz
OBW Power
99.00 %
x dB Bandwidth
17.56 MHz
x dB
-6.00 dB
MSG
STATUS

8. Power Density

8.1. Test Equipment

The following test equipment is used during the test:

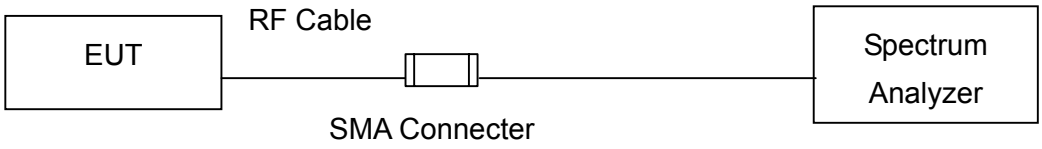
Power Density / SR7

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Spectrum Analyzer	R&S	FSP	100561	2013/02/19

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

8.2. Test Setup

IEEE 802.11 b / g / a / n (20M / 40M) MODE



8.3. Limits

The peak power spectral density conducted from the intentional radiated to the antenna shall not be greater than +8dBm in any 3kHz band during any time interval of continuous transmission.

8.4. Test Procedures

The EUT was setup according to ANSI C63.4: 2009; tested according to DTS test procedure of Jan. 2012 KDB558074 for compliance to FCC 47CFR 15.247 requirements.
Set RBW= 100 kHz, Set VBW= 300 kHz, Sweep time=Auto, Set detector=Peak detector

8.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247: 2011

8.6. Uncertainty

The measurement uncertainty is defined as ±1.27dB.

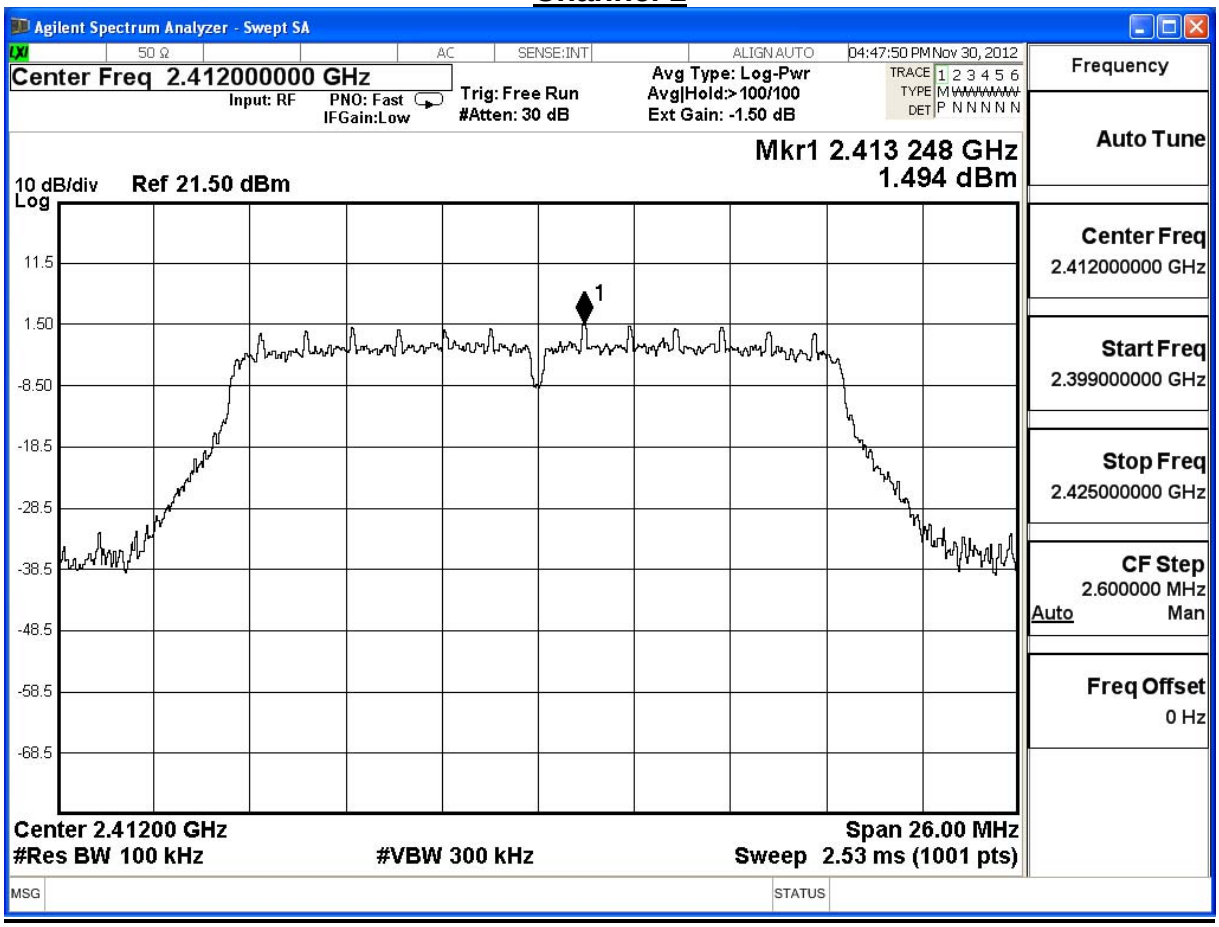
8.7. Test Result

Product	Wireless Scanner		
Test Item	Power Density		
Test Mode	Mode 1: Transmit		
Date of Test	2012/11/30	Test Site	SR7

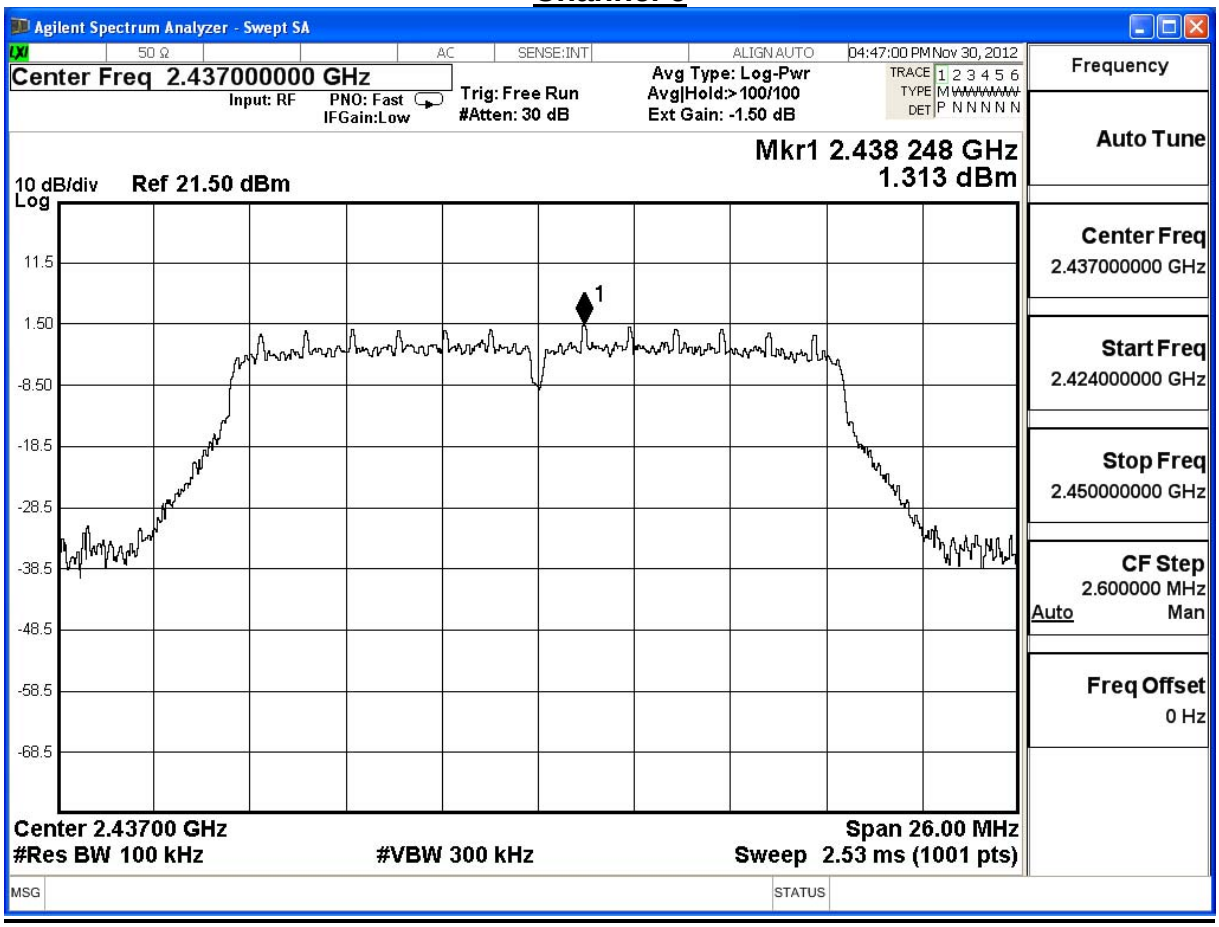
IEEE 802.11g					
Channel No.	Frequency (MHz)	Reading Level (dBm)	Measurement (dBm)	Limit (dBm)	Result
1	2412	1.494	-13.706	≦8	Pass
6	2437	1.313	-13.887	≦8	Pass
11	2462	1.300	-13.900	≦8	Pass

Note: Measure Level = Reading level + BWCF = Reading level -15.2 dB
Bandwidth correction factor (BWCF) = 10log (3 kHz/100kHz)

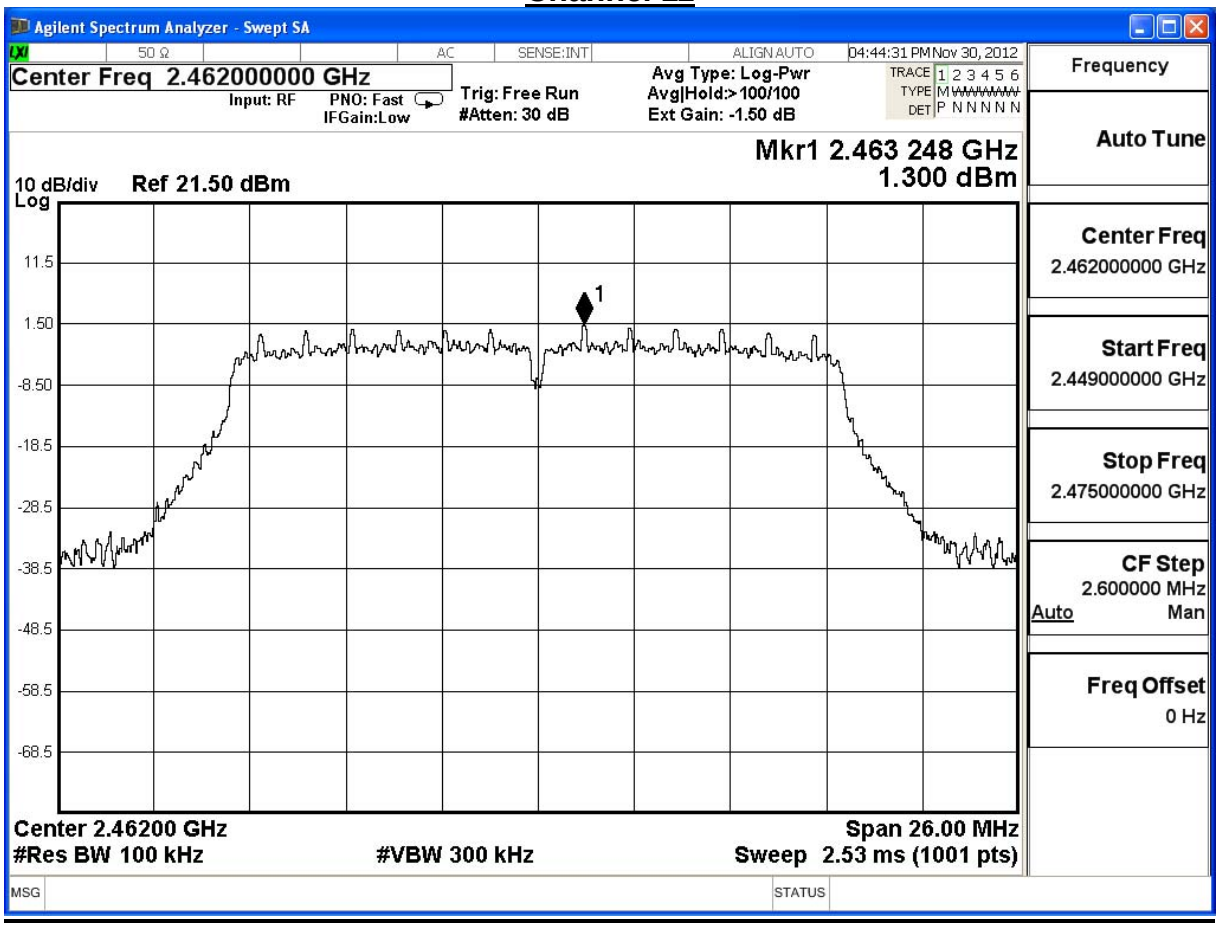
Channel 1



Channel 6


Agilent Spectrum Analyzer - Swept SA
50 Ω
AC
SENSE:INT
ALIGN AUTO
04:47:00 PM Nov 30, 2012
Center Freq 2.437000000 GHz
Input: RF
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Ext Gain: -1.50 dB
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Mkr1 2.438 248 GHz
1.313 dBm
10 dB/div
Log
Ref 21.50 dBm
11.5
1.50
-8.50
-18.5
-28.5
-38.5
-48.5
-58.5
-68.5
1
Center 2.43700 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 26.00 MHz
Sweep 2.53 ms (1001 pts)
MSG
STATUS
Frequency
Auto Tune
Center Freq
2.437000000 GHz
Start Freq
2.424000000 GHz
Stop Freq
2.450000000 GHz
CF Step
2.600000 MHz
Auto
Man
Freq Offset
0 Hz

Channel 11

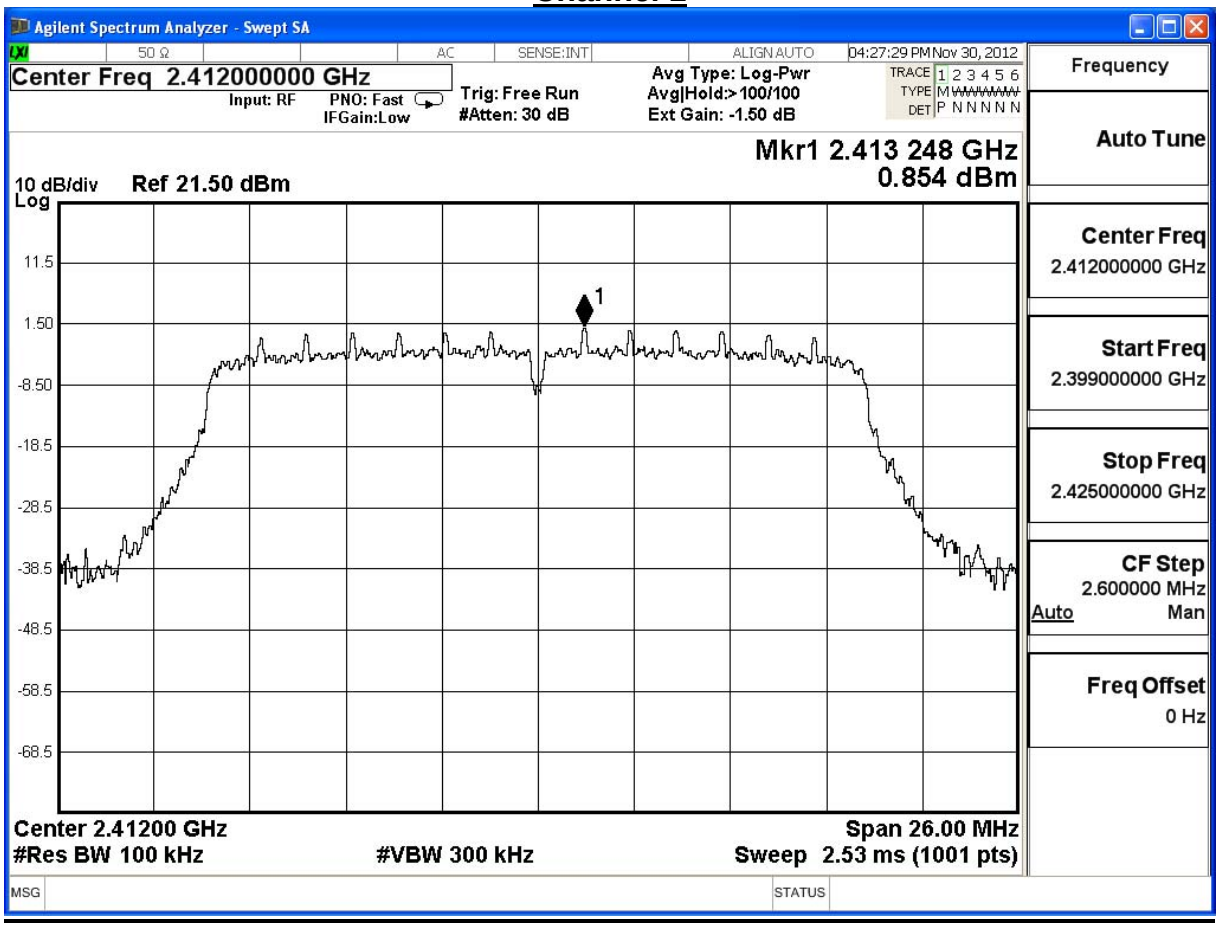

Agilent Spectrum Analyzer - Swept SA
50 Ω
AC
SENSE:INT
ALIGN AUTO
04:44:31 PM Nov 30, 2012
Center Freq 2.462000000 GHz
Input: RF
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Ext Gain: -1.50 dB
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Mkr1 2.463 248 GHz
1.300 dBm
10 dB/div
Log
Ref 21.50 dBm
11.5
1.50
-8.50
-18.5
-28.5
-38.5
-48.5
-58.5
-68.5
1
Center 2.46200 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 26.00 MHz
Sweep 2.53 ms (1001 pts)
MSG
STATUS
Frequency
Auto Tune
Center Freq
2.462000000 GHz
Start Freq
2.449000000 GHz
Stop Freq
2.475000000 GHz
CF Step
2.600000 MHz
Auto
Man
Freq Offset
0 Hz

Product	Wireless Scanner		
Test Item	Power Density		
Test Mode	Mode 1: Transmit		
Date of Test	2012/11/30	Test Site	SR7

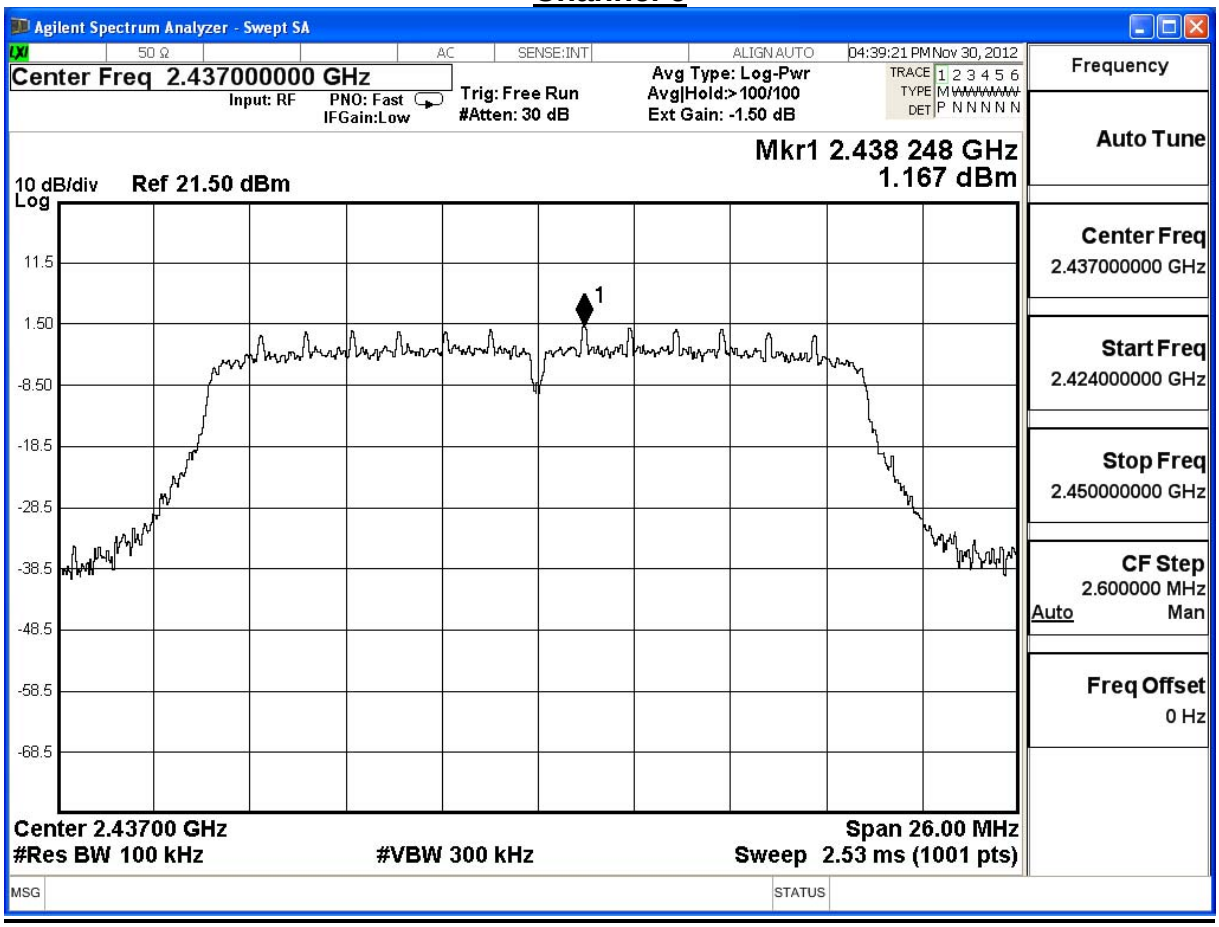
IEEE802.11n_20MHz					
Channel No.	Frequency (MHz)	Reading Level (dBm)	Measure Level (dBm)	Limit (dBm)	Result
1	2412	0.854	-14.346	≦8	Pass
6	2437	1.167	-14.033	≦8	Pass
11	2462	1.297	-13.903	≦8	Pass

Note: Measure Level = Reading level + BWCF = Reading level -15.2 dB
Bandwidth correction factor (BWCF) = 10log (3 kHz/100kHz)

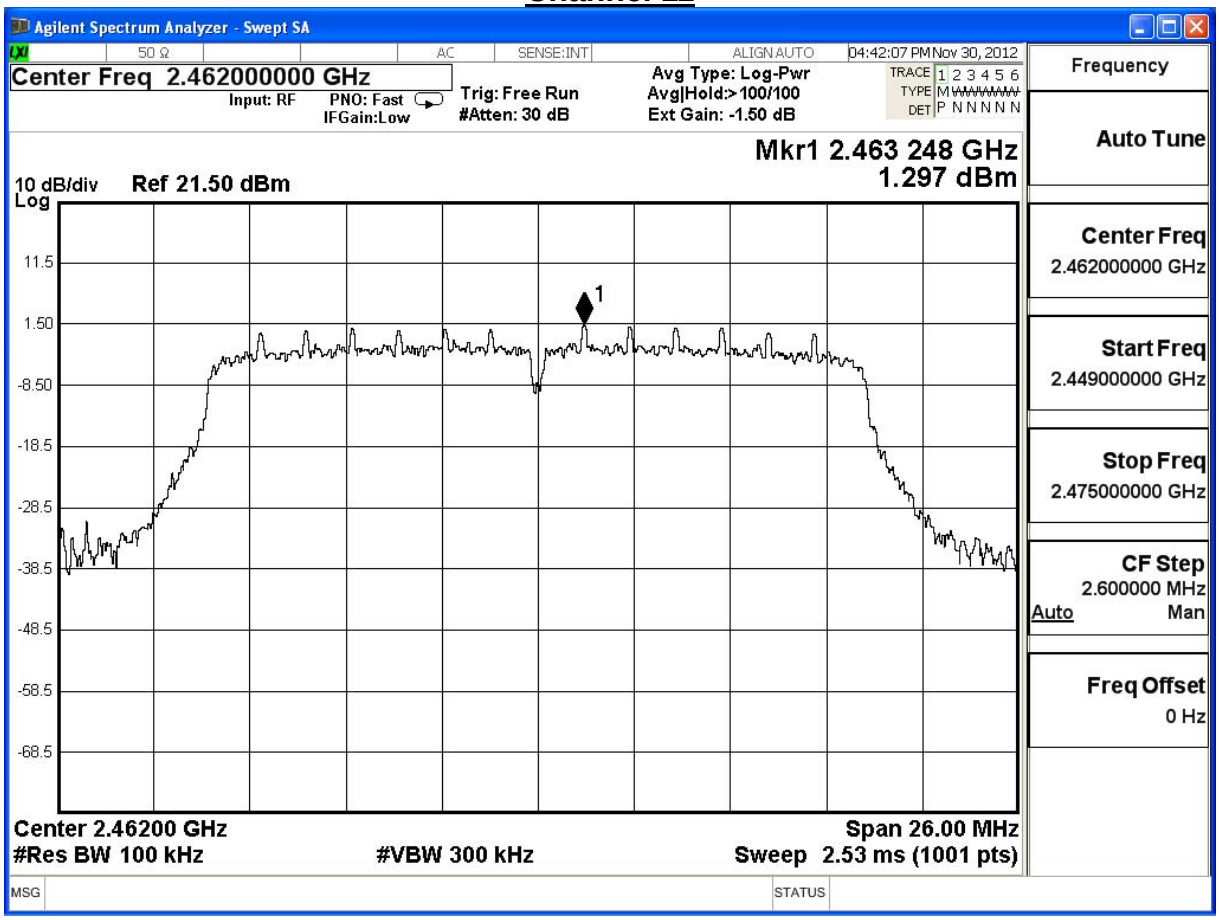
Channel 1



Channel 6


Agilent Spectrum Analyzer - Swept SA
50 Ω
AC
SENSE:INT
ALIGN AUTO
04:39:21 PM Nov 30, 2012
Center Freq 2.437000000 GHz
Input: RF
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Ext Gain: -1.50 dB
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Mkr1 2.438 248 GHz
1.167 dBm
10 dB/div
Log
Ref 21.50 dBm
11.5
1.50
-8.50
-18.5
-28.5
-38.5
-48.5
-58.5
-68.5
1
Center 2.43700 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 26.00 MHz
Sweep 2.53 ms (1001 pts)
MSG
STATUS
Frequency
Auto Tune
Center Freq
2.437000000 GHz
Start Freq
2.424000000 GHz
Stop Freq
2.450000000 GHz
CF Step
2.600000 MHz
Auto
Man
Freq Offset
0 Hz

Channel 11


Agilent Spectrum Analyzer - Swept SA
50 Ω
AC
SENSE:INT
ALIGN AUTO
04:42:07 PM Nov 30, 2012
Center Freq 2.462000000 GHz
Input: RF
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Ext Gain: -1.50 dB
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Mkr1 2.463 248 GHz
1.297 dBm
10 dB/div
Log
Ref 21.50 dBm
11.5
1.50
-8.50
-18.5
-28.5
-38.5
-48.5
-58.5
-68.5
1
Center 2.46200 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 26.00 MHz
Sweep 2.53 ms (1001 pts)
MSG
STATUS
Frequency
Auto Tune
Center Freq
2.462000000 GHz
Start Freq
2.449000000 GHz
Stop Freq
2.475000000 GHz
CF Step
2.600000 MHz
Auto
Man
Freq Offset
0 Hz