Test Report

Product Name	802.11 a/b/g/n module
Model No	WN4502B
FCC ID.	PPQ-WN4502B

Applicant	LITE-ON TECHNOLOGY CORP.
Address	4F, 90, Chien 1 Road, Chung Ho,Taipei Hsien 235, Taiwan, R.O.C.

Date of Receipt	March 08, 2011
Issue Date	March 28, 2011
Report No.	113119R-RFUSP32V01-A
Report Version	V1.0

Test Report Certification

Issue Date: March 28, 2011
Report No.: 113119R-RFUSP32V01-A

Accredited by NIST (NVLAP)
NVLAP Lab Code: 200533-0

Product Name	802.11 a/b/g/n module
Applicant	LITE-ON TECHNOLOGY CORP.
Address	4F, 90, Chien 1 Road, Chung Ho,Taipei Hsien 235, Taiwan, R.O.C.
Manufacturer	1. DONG GUAN G-COM COMPUTER CO., LTD 2. LITE-ON TECHNOLOGY (Changzhou) CO., LTD
Model No.	WN4502B
EUT Rated Voltage	DC 5V (Power by USB)
EUT Test Voltage	DC 5V (Power by USB)
Trade Name	LITEON
Applicable Standard	FCC CFR Title 47 Part 15 Subpart C: 2010 ANSI C63.4: 2009 NVLAP Lab Code: 200533-0
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.
This report must not be used to claim product endorsement by NVLAP any agency of the U.S. Government

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(Senior Adm. Specialist / Rita Huang)

Tested By : Henk Huang
(Engineer / Henk Huang)

Approved By :
(Manager / Vincent Lin)

Testing Laboratory
0914

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1. GENERAL INFORMATION

1.1. EUT Description

Product Name	802.11 a/b/g/n module
Trade Name	LITEON
Model No.	WN4502B
FCC ID.	PPQ-WN4502B
Frequency Range	802.11b/g/n-20MHz:2412-2462MHz, 802.11n-40MHz: 2422-2452MHz 802.11a/n-20MHz:5745-5825MHz, 802.11n-40MHz:5755-5795MHz
Number of Channels	802.11b/g/n-20MHz: 11, n-40MHz: 7 802.11a/n-20MHz: 5, n-40MHz: 2
Data Speed	802.11b: 1-11Mbps, 802.11a/g: 6-54Mbps, 802.11n: up to 300Mbps
Channel separation	802.11b/g/n-20MHz: 5 MHz, 802.11a/n-20MHz: 20MHz 802.11n-40MHz: 40MHz
Type of Modulation	802.11b:DSSS DBPSK, DQPSK, CCK 802.11a/g/n: OFDM BPSK, QPSK, 16QAM, 64QAM
Antenna Type	PIFA
Antenna Gain	Refer to the table “Antenna List”
Channel Control	Auto

Antenna List

No.	Manufacturer	Part No.	Peak Gain	
1	AmTRAN	EDB-18S	2 dBi in 2.4GHz 3 dBi in 5.0GHz	Without metal reflector
2	AmTRAN	EDB-45S	2 dBi in 2.4GHz 3 dBi in 5.0GHz	
3	AmTRAN	MSA-3025-25GC4	2.54 dBi in 2.4GHz 4 dBi in 5.0GHz	
4	AmTRAN	FPA-3025-25GC4	2.75 dBi in 2.4GHz 4.5 dBi in 5.0GHz	

Note:

1. The antenna of EUT is conforming to FCC 15.203.
2. Only the higher gain antenna was tested and recorded in this report.

802.11b/g/n-20MHz Center Frequency of Each Channel:

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 01:	2412 MHz	Channel 02:	2417 MHz	Channel 03:	2422 MHz	Channel 04:	2427 MHz
Channel 05:	2432 MHz	Channel 06:	2437 MHz	Channel 07:	2442 MHz	Channel 08:	2447 MHz
Channel 09:	2452 MHz	Channel 10:	2457 MHz	Channel 11:	2462 MHz		

802.11a/n-20MHz Center Working Frequency of Each Channel:

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 149:	5745 MHz	Channel 153:	5765 MHz	Channel 157:	5785 MHz	Channel 161:	5805 MHz
Channel 165:	5825 MHz						

802.11n-40MHz (2.4G Band) Center Working Frequency of Each Channel:

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 1:	2422 MHz	Channel 2:	2427 MHz	Channel 3:	2432 MHz	Channel 4:	2437 MHz
Channel 5:	2442 MHz	Channel 6:	2447 MHz	Channel 7:	2452 MHz		

802.11n-40MHz (5G Band) Center Working Frequency of Each Channel:

Channel	Frequency	Channel	Frequency
Channel 151:	5755 MHz	Channel 159:	5795 MHz

Note:

1. The EUT is a 802.11 a/b/g/n module with a built-in 2.4GHz and 5GHz WLAN transceiver, 802.11a/b/g/n all functions support 2(Transmit) × 2(Receive) technology.
2. There are two different EUT output power for with metal reflector antenna and without metal reflector antenna, this report for without metal reflector antenna.
3. Regarding to the operation frequency, the lowest, middle and highest frequency are selected to perform the test.
4. Lowest and highest data rates are tested in each mode. Only worst case is shown in the report. (802.11b is 1Mbps、802.11g is 6Mbps、802.11n(20M-BW) is 14.4Mbps and 、802.11n(40M-BW) is 30Mbps)
5. These tests are conducted on a sample for the purpose of demonstrating compliance of 802.11a/b/g/n transmitter with Part 15 Subpart C Paragraph 15.247 of spread spectrum devices

1.2. Operational Description

The EUT is a 802.11 a/b/g/n module with a built-in 2.4GHz and 5GHz WLAN card. This device provided four kinds of transmitting speed 1, 2, 5.5 and 11Mbps and the device of RF carrier is DBPSK, DQPSK and CCK (IEEE 802.11b). The device provided of eight kinds of transmitting speed 6, 9, 12, 18, 24, 36, 48 and 54Mbps the device of RF carrier is BPSK, QPSK, 16QAM and 64QAM (IEEE 802.11a/g).

The device provided of eight kinds of transmitting speed 14.4,28.8,43.4,57.8,86.6,115.6,130 and 144.4Mbps in 802.11n(20M-BW) mode and 30,60,90,120,180,240,270 and 300 Mbps (40M-BW) the device of RF carrier is BPSK, QPSK, 16QAM and 64QAM (IEEE 802.11n), the IEEE 802.11n is Multiple In, Multiple Out" (MIMO) technology.

The device adapts direct sequence spread spectrum modulation. The antenna provides diversity function to improve the receiving function and the antennas to support 2(Transmit) × 2(Receive) MIMO technology.

This 802.11 a/b/g/n module, compliant with IEEE 802.11b and IEEE 802.11a/g/n, is a high-efficiency Wireless LAN adapter. It allows your computer to connect to a wireless network and to share resources, such as files or printers without being bound to the network wires. Operation in 2.4GHz/5GHz Direst Sequence Spread Spectrum (DSSS) radio transmission, the 802.11 a/b/g/n module Wired Equivalent Protection (WEP) algorithm is used. In addition, its standard compliance ensures that it can communicate with any IEEE 802.11b and IEEE 802.11a/g/n network.

There are two different EUT output power for with metal reflector antenna and without metal reflector antenna.

The Device is not radar detection and not ad-hoc operation in the DFS band, another information please refer to users manual.

Test Mode:	Mode 1: Transmit (802.11b 1Mbps)
	Mode 2: Transmit (802.11g 6Mbps)
	Mode 3: Transmit - 802.11a 6Mbps
	Mode 4: Transmit - 802.11n-20BW_14.4Mbps(2.4G Band)
	Mode 5: Transmit - 802.11n-40BW_30Mbps(2.4G Band)
	Mode 6: Transmit - 802.11n-20BW_14.4Mbps(5G Band)
	Mode 7: Transmit - 802.11n-40BW_30Mbps(5G Band)

NOTE: The power combiner is used for conducted test, the factor of combiner is 10dB and offset it in test instrument.

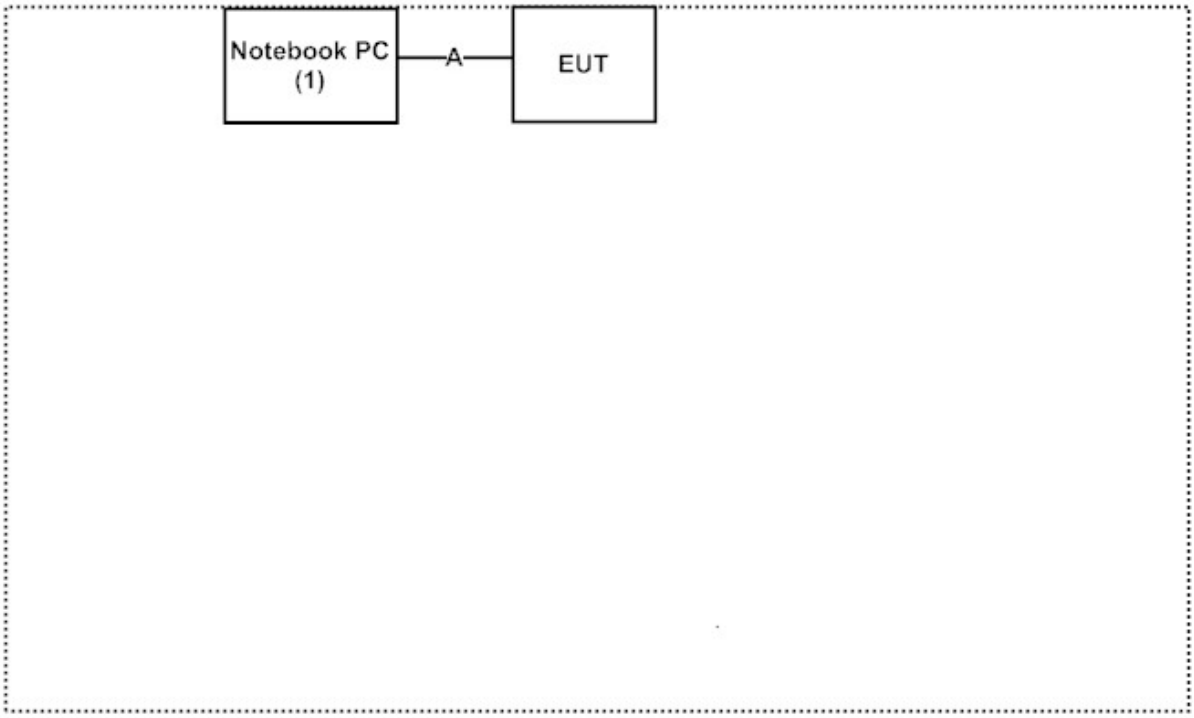
1.3. Tested System Details

For all types of equipment and additional descriptions of all cables, which are used in the tested system (including inserted cards) and listing in below:

Product		Manufacturer	Model No.	Serial No.	Power Cord
1	Notebook PC	DELL	PPT	N/A	Non-Shielded, 0.8m

Signal Cable Type		Signal cable Description
A	Signal Cable	Shielded, 0.1m

1.4. Configuration of Tested System



1.5. EUT Exercise Software

(1) Setup the EUT as shown on 1.4.
(2) Execute the command under DOS mode.
(3) Setup the test mode, the test channel and the data rate.
(4) Start the continuous transmission.
(5) Repeat the above procedure (3) to (4).

1.6. Test Facility

Ambient conditions in the laboratory:

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	20-35
Humidity (%RH)	25-75	50-65
Barometric pressure (mbar)	860-1060	950-1000

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/

Site Description: File on
Federal Communications Commission
FCC Engineering Laboratory
7435 Oakland Mills Road
Columbia, MD 21046
Registration Number: 92195

Accreditation on NVLAP
NVLAP Lab Code: 200533-0

Site Name: Quietek Corporation
Site Address: No. 5-22, Ruei-Shu Valley, Ruei-Ping Tsuen,
Lin-Kou Shiang, Taipei,
Taiwan, R.O.C.
TEL: 886-2-8601-3788 / FAX : 886-2-8601-3789
E-Mail : service@quietek.com

FCC Accreditation Number: TW1014

Testing Laboratory
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2. Conducted Emission

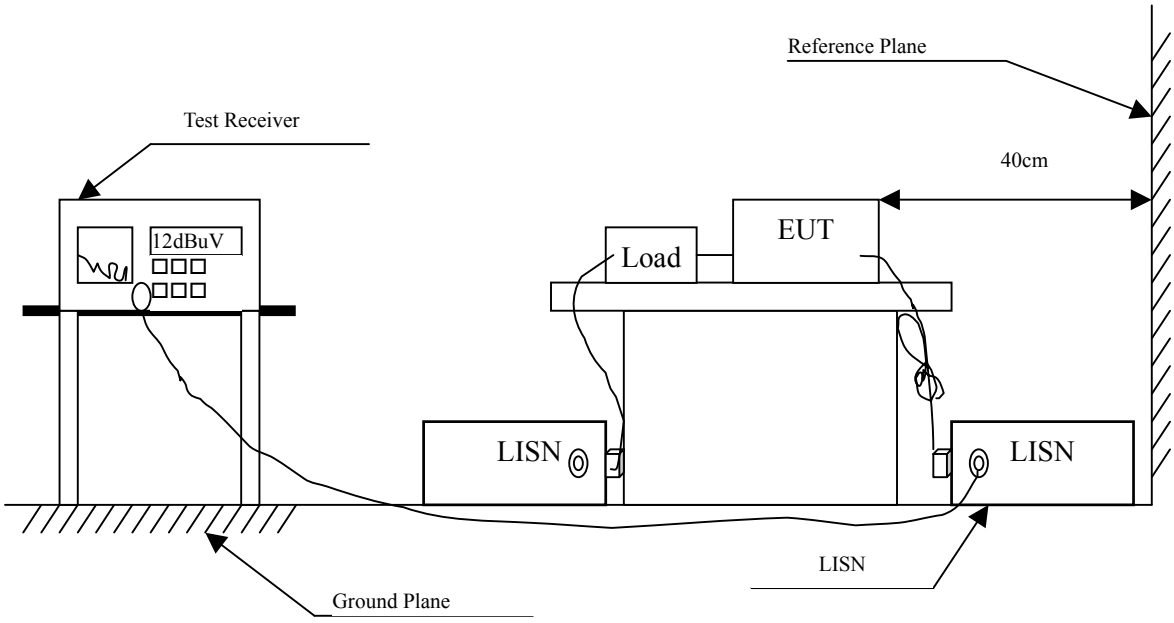
2.1. Test Equipment

The following test equipment are used during the conducted emission test:

Item	Instrument	Manufacturer	Type No./Serial No	Last Cal.	Remark
1	Test Receiver	R & S	ESCS 30/825442/17	May, 2010	
2	L.I.S.N.	R & S	ESH3-Z5/825016/6	May, 2010	EUT
3	L.I.S.N.	Kyoritsu	KNW-407/8-1420-3	May, 2010	Peripherals
4	Pulse Limiter	R & S	ESH3-Z2	May, 2010	
5	No.1 Shielded Room			N/A	

Note: All instruments are calibrated every one year.

2.2. Test Setup



2.3. Limits

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

2.4. Test Procedure

The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm /50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs.)

Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4: 2009 on conducted measurement.

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

2.5. Uncertainty

± 2.26 dB

2.6. Test Result of Conducted Emission

Product : 802.11 a/b/g/n module
Test Item : Conducted Emission Test
Power Line : Line 1
Test Mode : Mode 5: Transmit - 802.11n-40BW_30Mbps(2.4G Band) (2437MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV	dB	dBuV
Line 1					
Quasi-Peak					
0.181	9.724	44.160	53.884	-11.230	65.114
0.244	9.679	39.530	49.209	-14.105	63.314
0.295	9.652	34.880	44.532	-17.325	61.857
0.556	9.640	27.270	36.910	-19.090	56.000
1.220	9.670	24.870	34.540	-21.460	56.000
2.541	9.690	23.870	33.560	-22.440	56.000
Average					
0.181	9.724	22.970	32.694	-22.420	55.114
0.244	9.679	17.670	27.349	-25.965	53.314
0.295	9.652	11.170	20.822	-31.035	51.857
0.556	9.640	20.850	30.490	-15.510	46.000
1.220	9.670	24.550	34.220	-11.780	46.000
2.541	9.690	10.860	20.550	-25.450	46.000

Note:

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

Product : 802.11 a/b/g/n module
Test Item : Conducted Emission Test
Power Line : Line 2
Test Mode : Mode 5: Transmit - 802.11n-40BW_30Mbps(2.4G Band) (2437MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV	dB	dBuV
Line 2					
Quasi-Peak					
0.158	9.756	40.710	50.466	-15.305	65.771
0.279	9.667	39.350	49.017	-13.297	62.314
0.373	9.650	26.410	36.060	-23.569	59.629
1.216	9.670	23.980	33.650	-22.350	56.000
2.548	9.690	26.030	35.720	-20.280	56.000
6.869	9.750	28.980	38.730	-21.270	60.000
Average					
0.158	9.756	26.040	35.796	-19.975	55.771
0.279	9.667	20.490	30.157	-22.157	52.314
0.373	9.650	4.240	13.890	-35.739	49.629
1.216	9.670	23.730	33.400	-12.600	46.000
2.548	9.690	23.810	33.500	-12.500	46.000
6.869	9.750	27.810	37.560	-12.440	50.000

Note:

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

Product : 802.11 a/b/g/n module
Test Item : Conducted Emission Test
Power Line : Line 1
Test Mode : Mode 7: Transmit - 802.11n-40BW_30Mbps(5G Band) (5755MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV	dB	dBuV
Line 1					
Quasi-Peak					
0.166	9.746	48.310	58.055	-7.488	65.543
0.271	9.662	38.640	48.302	-14.241	62.543
0.361	9.650	28.500	38.150	-21.821	59.971
0.775	9.649	27.790	37.439	-18.561	56.000
1.220	9.670	24.710	34.380	-21.620	56.000
2.658	9.690	27.010	36.700	-19.300	56.000
Average					
0.166	9.746	34.710	44.455	-11.088	55.543
0.271	9.662	19.120	28.782	-23.761	52.543
0.361	9.650	6.900	16.550	-33.421	49.971
0.775	9.649	27.380	37.029	-8.971	46.000
1.220	9.670	24.640	34.310	-11.690	46.000
2.658	9.690	25.210	34.900	-11.100	46.000

Note:

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

Product : 802.11 a/b/g/n module
Test Item : Conducted Emission Test
Power Line : Line 2
Test Mode : Mode 7: Transmit - 802.11n-40BW_30Mbps(5G Band) (5755MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV	dB	dBuV
Line 2					
Quasi-Peak					
0.177	9.736	45.260	54.996	-10.233	65.229
0.330	9.660	33.470	43.130	-17.727	60.857
0.634	9.650	26.380	36.030	-19.970	56.000
1.330	9.670	24.480	34.150	-21.850	56.000
2.771	9.690	27.230	36.920	-19.080	56.000
6.869	9.750	29.020	38.770	-21.230	60.000
Average					
0.177	9.736	25.130	34.866	-20.363	55.229
0.330	9.660	23.130	32.790	-18.067	50.857
0.634	9.650	4.890	14.540	-31.460	46.000
1.330	9.670	24.470	34.140	-11.860	46.000
2.771	9.690	25.310	35.000	-11.000	46.000
6.869	9.750	27.870	37.620	-12.380	50.000

Note:

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

3. Peak Power Output

3.1. Test Equipment

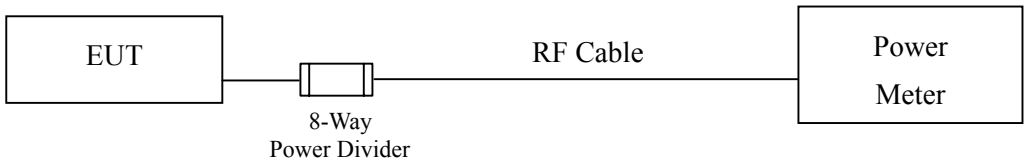
	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X	Power Meter	Anritsu	ML2495A/6K00003357	May, 2010
X	Power Sensor	Anritsu	MA2411B/0738448	Jun, 2010
X	8-WAY Power Divider	JFW	50PD-647 / 526770 0916	Apr., 2010

Note:

1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.
2. The test instruments marked with "X" are used to measure the final test results.
3. The power combiner is used for measure 11n mode.

3.2. Test Setup

Conducted Measurement



3.3. Limits

The maximum peak power shall be less 1 Watt.

3.4. Test Procedure

The EUT was tested according to DTS test procedure of Mar. 2005 KDB558074 for compliance to FCC 47CFR 15.247 requirements.

3.5. Uncertainty

± 1.27 dB

3.6. Test Result of Peak Power Output

Product : 802.11 a/b/g/n module
Test Item : Peak Power Output Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit (802.11b 1Mbps)

CHAIN A

Cable loss=0.5dB		Peak Power Output (dBm)					
Channel No.	Frequency (MHz)	Average Power For different Data Rate (Mbps)				Peak Power	Required Limit
		1	2	5.5	11	1	
1	2412.00	18.95	--	--	--	22.61	1Watt= 30 dBm
6	2437.00	19.03	18.88	18.56	17.98	22.75	1Watt= 30 dBm
11	2462.00	18.04	--	--	--	21.76	1Watt= 30 dBm

Note: Peak Power Output Value =Reading value on peak power meter + cable loss

Product : 802.11 a/b/g/n module
Test Item : Peak Power Output Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit (802.11g 6Mbps)

CHAIN A

Channel No	Frequency (MHz)	Peak Power Output (dBm)										
		Average Power For different Data Rate (Mbps)								Peak Power	Required Limit	Result
		6	9	12	18	24	36	48	54	6		
01	2412	16.11	--	--	--	--	--	--	--	25.43	<30dBm	Pass
06	2437	22.01	21.75	21.41	21.34	20.89	20.49	20.27	20.11	27.23	<30dBm	Pass
11	2462	14.95	--	--	--	--	--	--	--	24.88	<30dBm	Pass

Note: Peak Power Output Value =Reading value on peak power meter + cable loss

Product : 802.11 a/b/g/n module
Test Item : Peak Power Output Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit - 802.11a 6Mbps

CHAIN A

Channel No	Frequency (MHz)	Peak Power Output (dBm)										
		Average Power For different Data Rate (Mbps)								Peak Power	Required Limit	Result
		6	9	12	18	24	36	48	54	6		
149	5745	17.7	--	--	--	--	--	--	--	21.95	<30dBm	Pass
157	5785	17.47	17.34	17.27	16.89	16.74	16.49	16.33	16.21	21.39	<30dBm	Pass
165	5825	17.33	--	--	--	--	--	--	--	20.88	<30dBm	Pass

Note:
1. Peak Power Output Value =Reading value on peak power meter + cable loss

Product : 802.11 a/b/g/n module
Test Item : Peak Power Output Data
Test Site : No.3 OATS
Test Mode : Mode 4: Transmit - 802.11n-20BW_14.4Mbps(2.4G Band)

CHAIN A+B

Channel No	Frequency (MHz)	Peak Power Output (dBm)										
		Average Power For different Data Rate (Mbps)								Peak Power	Required Limit	Result
		14.4	28.8	43.4	57.8	86.6	115.6	130	144.4	14.4		
01	2412	16.24	--	--	--	--	--	--	--	26.77	<30dBm	Pass
06	2437	18.64	18.44	18.35	18.12	18.08	17.96	17.91	17.84	28.77	<30dBm	Pass
11	2462	15.41	--	--	--	--	--	--	--	25.98	<30dBm	Pass

Note: Peak Power Output Value =Reading value on peak power meter + cable loss

Product : 802.11 a/b/g/n module
Test Item : Peak Power Output Data
Test Site : No.3 OATS
Test Mode : Mode 5: Transmit - 802.11n-40BW_30Mbps(2.4G Band)

CHAIN A+B

Channel No	Frequency (MHz)	Peak Power Output (dBm)										
		Average Power For different Data Rate (Mbps)								Peak Power	Required Limit	Result
		30	60	90	120	180	240	270	300	30		
03	2422	17.7	--	--	--	--	--	--	--	21.95	<30dBm	Pass
06	2437	17.47	17.33	17.24	17.1	16.92	16.84	16.51	16.31	21.39	<30dBm	Pass
09	2452	17.33	--	--	--	--	--	--	--	20.88	<30dBm	Pass

Note: Peak Power Output Value =Reading value on peak power meter + cable loss

Product : 802.11 a/b/g/n module
Test Item : Peak Power Output Data
Test Site : No.3 OATS
Test Mode : Mode 6: Transmit - 802.11n-20BW_14.4Mbps(5G Band)

CHAIN A+B

Channel No	Frequency (MHz)	Peak Power Output (dBm)										
		Average Power For different Data Rate (Mbps)								Peak Power	Required Limit	Result
		14.4	28.8	43.4	57.8	86.6	115.6	130	144.4	14.4		
149	5745	20.51	--	--	--	--	--	--	--	27.11	<30dBm	Pass
157	5785	20.17	20.03	19.91	19.76	19.61	19.34	19.15	18.96	26.54	<30dBm	Pass
165	5825	20.06	--	--	--	--	--	--	--	26.01	<30dBm	Pass

Note:
1. Peak Power Output Value =Reading value on peak power meter + cable loss

Product : 802.11 a/b/g/n module
Test Item : Peak Power Output Data
Test Site : No.3 OATS
Test Mode : Mode 7: Transmit - 802.11n-40BW_30Mbps(5G Band)

CHAIN A+B

Channel No	Frequency (MHz)	Peak Power Output (dBm)										
		Average Power For different Data Rate (Mbps)								Peak Power	Required Limit	Result
		30	60	90	120	180	240	270	300	30		
151	5755	20.25	--	--	--	--	--	--	--	26.72	<30dBm	Pass
159	5795	20.24	20.13	20.01	19.84	19.67	19.49	19.31	19.14	26.22	<30dBm	Pass

Note:
1. Peak Power Output Value =Reading value on peak power meter + cable loss

4. Radiated Emission

4.1. Test Equipment

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

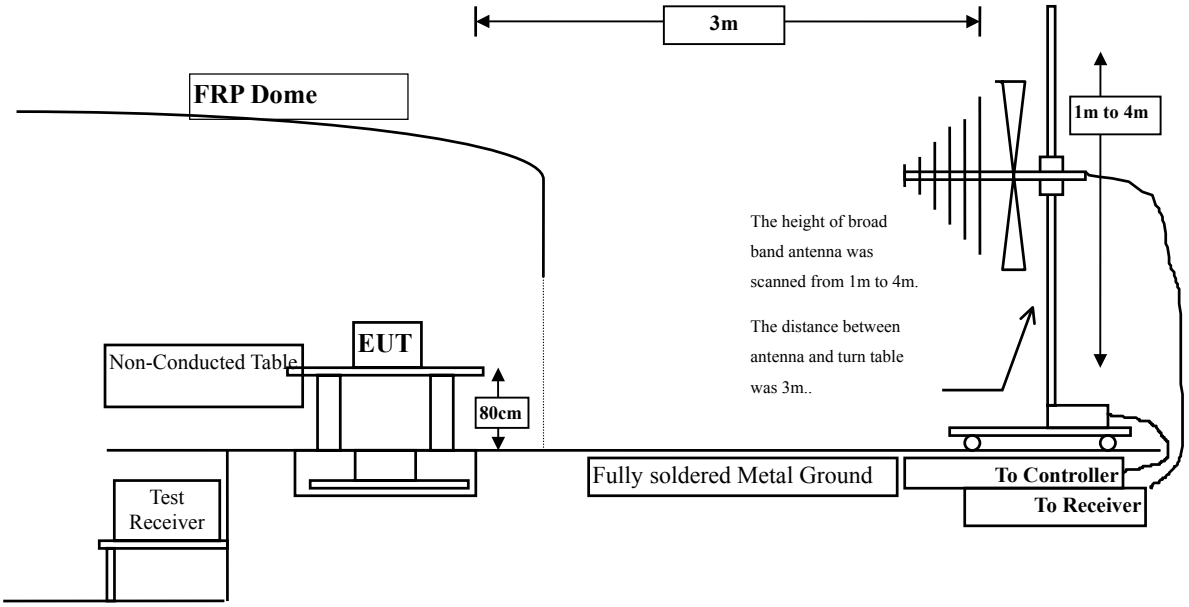
Test Site	Equipment		Manufacturer	Model No./Serial No.	Last Cal.
☒Site # 3	X	Bilog Antenna	Schaffner Chase	CBL6112B/2673	Sep., 2010
	X	Horn Antenna	Schwarzbeck	BBHA9120D/D305	Sep., 2010
	X	Horn Antenna	Schwarzbeck	BBHA9170/208	Jul., 2010
	X	Pre-Amplifier	Agilent	8447D/2944A09549	Sep., 2010
	X	Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2010
	X	Test Receiver	R & S	ESCS 30/ 825442/018	Sep., 2010
	X	Coaxial Cable	QuieTek	QTK-CABLE/ CAB5	Feb., 2011
	X	Controller	QuieTek	QTK-CONTROLLER/ CTRL3	N/A
	X	Coaxial Switch	Anritsu	MP59B/6200265729	N/A

Note: 1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

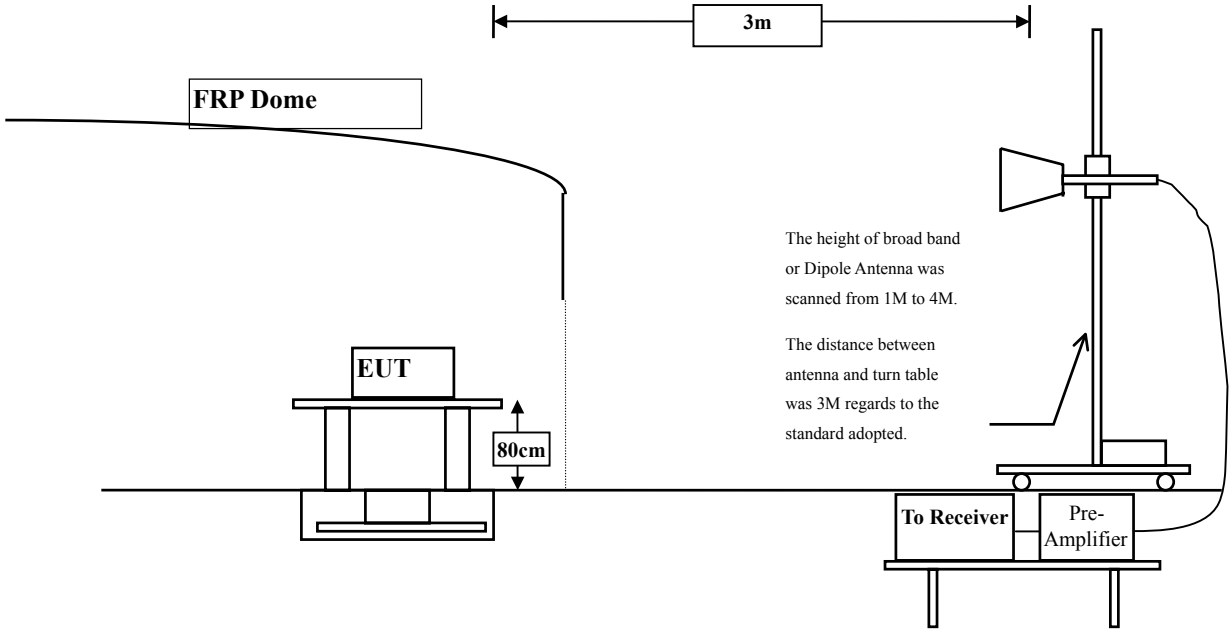
2. The test instruments marked with "X" are used to measure the final test results.

4.2. Test Setup

Radiated Emission Below 1GHz



Radiated Emission Above 1GHz



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(a) 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

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 Mar. 2005 KDB558074 for compliance to FCC 47CFR 15.247 requirements.
The EUT is placed on a turn table which is 0.8 meter above ground. The turn table is rotated 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 is scanned between 1 meter and 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.4: 2009 on radiated measurement.
The resolution bandwidth below 1GHz setting on the field strength meter is 120 kHz and above 1GHz is 1MHz.
Radiated emission measurements below 1GHz are made using broadband Bilog antenna and above 1GHz are made using Horn Antennas.
The measurement is divided into the Preliminary Measurement and the Final Measurement.
The suspected frequencies are searched for in Preliminary Measurement with the measurement antenna kept pointed at the source of the emission both in azimuth and elevation, with the polarization of the antenna oriented for maximum response. The antenna is pointed at an angle towards the source of the emission, and the EUT is rotated in both height and polarization to maximize the measured emission. The emission is kept within the illumination area of the 3 dB bandwidth of the antenna.
The worst radiated emission is measured in the Open Area Test Site on the Final Measurement.
The measurement frequency range form 30MHz - 10th Harmonic of fundamental was investigated.

4.5. Uncertainty

± 3.9 dB above 1GHz
± 3.8 dB below 1GHz

4.6. Test Result of Radiated Emission

Product : 802.11 a/b/g/n module
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2412MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4824.000	3.261	45.250	48.511	-25.489	74.000
7236.000	10.650	38.380	49.030	-24.970	74.000
9648.000	13.337	40.380	53.716	-20.284	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4824.000	6.421	46.180	52.601	-21.399	74.000
7236.000	11.495	39.070	50.565	-23.435	74.000
9648.000	13.807	38.570	52.376	-21.624	74.000
Average Detector:					
--					

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 = 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.

Product : 802.11 a/b/g/n module
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal Peak Detector:					
4874.000	3.038	44.080	47.117	-26.883	74.000
7311.000	11.795	36.880	48.674	-25.326	74.000
9748.000	12.635	41.150	53.785	-20.215	74.000
Average Detector:					
--					
Vertical Peak Detector:					
4874.000	5.812	44.770	50.581	-23.419	74.000
7311.000	12.630	36.790	49.419	-24.581	74.000
9748.000	13.126	40.270	53.396	-20.604	74.000
Average Detector:					
--					

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 = 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.

Product : 802.11 a/b/g/n module
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2462 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal Peak Detector:					
4924.000	2.858	47.410	50.267	-23.733	74.000
7386.000	12.127	36.790	48.918	-25.082	74.000
9848.000	12.852	37.870	50.723	-23.277	74.000
Average Detector:					
--					
Vertical Peak Detector:					
4924.000	5.521	45.920	51.440	-22.560	74.000
7386.000	13.254	38.160	51.414	-22.586	74.000
9848.000	13.367	36.540	49.907	-24.093	74.000
Average Detector:					
--					

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 = 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.

Product : 802.11 a/b/g/n module
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2412MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4824.000	3.261	40.620	43.881	-30.119	74.000
7236.000	10.650	37.730	48.380	-25.620	74.000
9648.000	13.337	38.200	51.536	-22.464	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4824.000	6.421	41.990	48.411	-25.589	74.000
7236.000	11.495	36.570	48.065	-25.935	74.000
9648.000	13.807	37.470	51.276	-22.724	74.000
Average Detector:					
--					

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 = 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.

Product : 802.11 a/b/g/n module
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4874.000	3.038	41.840	44.877	-29.123	74.000
7311.000	11.795	38.070	49.864	-24.136	74.000
9748.000	12.635	40.860	53.495	-20.505	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4874.000	5.812	43.900	49.711	-24.289	74.000
7311.000	12.630	40.600	53.229	-20.771	74.000
9748.000	13.126	40.030	53.156	-20.844	74.000
Average Detector:					
--					

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 = 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.

Product : 802.11 a/b/g/n module
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2462 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4924.000	2.858	40.370	43.227	-30.773	74.000
7386.000	12.127	35.510	47.638	-26.362	74.000
9848.000	12.852	36.880	49.733	-24.267	74.000
Average					
Detector:					
--					
Vertical					
Peak Detector:					
4924.000	5.521	42.300	47.820	-26.180	74.000
7386.000	13.254	35.910	49.164	-24.836	74.000
9848.000	13.367	36.620	49.987	-24.013	74.000
Average					
Detector:					
--					

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 = 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.

Product : 802.11 a/b/g/n module
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit - 802.11a 6Mbps (5745 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal Peak Detector:					
11490.000	17.106	36.360	53.467	-20.533	74.000
Average Detector:					
--					
Vertical Peak Detector:					
11490.000	18.034	35.740	53.775	-20.225	74.000
Average Detector:					
--					

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 = 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.

Product : 802.11 a/b/g/n module
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit - 802.11a 6Mbps (5785 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal Peak Detector:					
11570.000	16.809	36.420	53.229	-20.771	74.000
Average Detector:					
--					
Vertical Peak Detector:					
11570.000	17.698	35.660	53.358	-20.642	74.000
Average Detector:					
--					

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 = 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.

Product : 802.11 a/b/g/n module
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit - 802.11a 6Mbps (5825 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal Peak Detector:					
11650.000	16.158	36.880	53.038	-20.962	74.000
Average Detector:					
--					
Vertical Peak Detector:					
11650.000	17.274	36.420	53.695	-20.305	74.000
Average Detector:					
--					

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 = 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.

Product : 802.11 a/b/g/n module
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 4: Transmit - 802.11n-20BW_14.4Mbps(2.4G Band) (2412MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4824.000	3.261	40.100	43.361	-30.639	74.000
7236.000	10.650	37.710	48.360	-25.640	74.000
9648.000	13.337	37.730	51.066	-22.934	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4824.000	6.421	43.030	49.451	-24.549	74.000
7236.000	11.495	37.660	49.155	-24.845	74.000
9648.000	13.807	36.500	50.306	-23.694	74.000
Average Detector:					
--					

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 = 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.

Product : 802.11 a/b/g/n module
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 4: Transmit - 802.11n-20BW_14.4Mbps(2.4G Band) (2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal Peak Detector:					
4874.000	3.038	43.880	46.917	-27.083	74.000
7311.000	11.795	36.980	48.774	-25.226	74.000
9748.000	12.635	38.150	50.785	-23.215	74.000
Average Detector:					
--					
Vertical Peak Detector:					
4874.000	5.812	45.450	51.261	-22.739	74.000
7311.000	12.630	36.860	49.489	-24.511	74.000
9748.000	13.126	37.900	51.026	-22.974	74.000
Average Detector:					
--					

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 = 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.

Product : 802.11 a/b/g/n module
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 4: Transmit - 802.11n-20BW_14.4Mbps(2.4G Band) (2462 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4924.000	2.858	39.910	42.767	-31.233	74.000
7386.000	12.127	36.530	48.658	-25.342	74.000
9848.000	12.852	36.950	49.803	-24.197	74.000
Average					
Detector:					
--					
Vertical					
Peak Detector:					
4924.000	5.521	41.960	47.480	-26.520	74.000
7386.000	13.254	36.450	49.704	-24.296	74.000
9848.000	13.367	36.430	49.797	-24.203	74.000
Average					
Detector:					
--					

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 = 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.

Product : 802.11 a/b/g/n module
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 5: Transmit - 802.11n-40BW_30Mbps(2.4G Band) (2422MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4844.000	3.171	40.700	43.871	-30.129	74.000
7266.000	11.162	36.910	48.072	-25.928	74.000
9688.000	12.964	37.850	50.815	-23.185	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4844.000	6.178	40.060	46.238	-27.762	74.000
7266.000	11.982	37.010	48.992	-25.008	74.000
9688.000	13.507	37.520	51.028	-22.972	74.000
Average Detector:					
--					

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 = 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.

Product : 802.11 a/b/g/n module
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 5: Transmit - 802.11n-40BW_30Mbps(2.4G Band) (2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal Peak Detector:					
4874.000	3.038	42.360	45.397	-28.603	74.000
7311.000	11.795	36.840	48.634	-25.366	74.000
9748.000	12.635	37.490	50.125	-23.875	74.000
Average Detector:					
--					
Vertical Peak Detector:					
4874.000	5.812	43.920	49.731	-24.269	74.000
7311.000	12.630	36.660	49.289	-24.711	74.000
9748.000	13.126	37.810	50.936	-23.064	74.000
Average Detector:					
--					

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 = 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.

Product : 802.11 a/b/g/n module
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 5: Transmit - 802.11n-40BW_30Mbps(2.4G Band) (2452 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4904.000	2.914	40.890	43.805	-30.195	74.000
7356.000	11.995	36.280	48.274	-25.726	74.000
9808.000	12.475	37.630	50.105	-23.895	74.000
Average					
Detector:					
--					
Vertical					
Peak Detector:					
4904.000	5.530	39.760	45.291	-28.709	74.000
7356.000	13.005	35.910	48.914	-25.086	74.000
9808.000	12.901	37.160	50.061	-23.939	74.000
Average					
Detector:					
--					

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 = 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.

Product : 802.11 a/b/g/n module
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 6: Transmit - 802.11n-20BW_14.4Mbps(5G Band) (5745MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
11490.000	17.106	36.520	53.627	-20.373	74.000
Average					
Detector:					
--					
Vertical					
Peak Detector:					
11490.000	18.034	35.130	53.165	-20.835	74.000
Average					
Detector:					
--					

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 = 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.

Product : 802.11 a/b/g/n module
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 6: Transmit - 802.11n-20BW_14.4Mbps(5G Band) (5785 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal Peak Detector:					
11570.000	16.809	35.360	52.169	-21.831	74.000
Average Detector:					
--					
Vertical Peak Detector:					
11570.000	17.698	36.190	53.888	-20.112	74.000
Average Detector:					
--					

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 = 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.

Product : 802.11 a/b/g/n module
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 6: Transmit - 802.11n-20BW_14.4Mbps(5G Band) (5825 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal Peak Detector:					
11650.000	16.158	36.080	52.238	-21.762	74.000
Average Detector:					
--					
Vertical Peak Detector:					
11650.000	17.274	36.510	53.785	-20.215	74.000
Average Detector:					
--					

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 = 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.

Product : 802.11 a/b/g/n module
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 7: Transmit - 802.11n-40BW_30Mbps(5G Band) (5755MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
11510.000	17.124	35.010	52.134	-21.866	74.000
Average					
Detector:					
--					
Vertical					
Peak Detector:					
11510.000	18.081	34.710	52.791	-21.209	74.000
Average					
Detector:					
--					

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 = 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.

Product : 802.11 a/b/g/n module
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 7: Transmit - 802.11n-40BW_30Mbps(5G Band) (5795 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal Peak Detector:					
11590.000	16.701	36.710	53.410	-20.590	74.000
Average Detector:					
--					
Vertical Peak Detector:					
11590.000	17.567	36.010	53.576	-20.424	74.000
Average Detector:					
--					

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 = 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.

Product : 802.11 a/b/g/n module
Test Item : General Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
97.900	-7.650	38.836	31.185	-12.315	43.500
154.160	-10.091	47.029	36.938	-6.562	43.500
237.580	-7.700	46.479	38.779	-7.221	46.000
353.980	-2.472	41.429	38.957	-7.043	46.000
699.300	2.875	36.822	39.697	-6.303	46.000
798.240	5.148	35.191	40.339	-5.661	46.000
Vertical					
198.780	-8.221	44.669	36.448	-7.052	43.500
299.660	-6.855	38.927	32.072	-13.928	46.000
388.900	-3.064	35.528	32.464	-13.536	46.000
518.880	-0.546	36.209	35.663	-10.337	46.000
699.300	0.695	39.774	40.469	-5.531	46.000
798.240	2.808	37.044	39.852	-6.148	46.000

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 = 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.

Product : 802.11 a/b/g/n module
Test Item : General Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
117.300	-9.196	44.025	34.829	-8.671	43.500
154.160	-10.091	47.238	37.147	-6.353	43.500
239.520	-6.851	45.936	39.086	-6.914	46.000
359.800	-1.680	39.783	38.103	-7.897	46.000
699.300	2.875	36.750	39.625	-6.375	46.000
798.240	5.148	33.406	38.554	-7.446	46.000
Vertical					
61.040	-4.316	37.014	32.698	-7.302	40.000
88.200	-3.516	41.879	38.363	-5.137	43.500
198.780	-8.221	46.219	37.998	-5.502	43.500
258.920	-7.490	44.478	36.988	-9.012	46.000
697.360	1.311	36.476	37.787	-8.213	46.000
798.240	2.808	35.881	38.689	-7.311	46.000

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 = 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.

Product : 802.11 a/b/g/n module
Test Item : General Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit - 802.11a 6Mbps (5785MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
154.160	-10.091	46.900	36.809	-6.691	43.500
239.520	-6.851	46.748	39.898	-6.102	46.000
383.080	-1.164	37.613	36.449	-9.551	46.000
462.620	1.172	37.331	38.503	-7.497	46.000
600.360	3.977	28.805	32.782	-13.218	46.000
798.240	5.148	34.930	40.078	-5.922	46.000
Vertical					
59.100	-4.097	36.511	32.414	-7.586	40.000
97.900	-1.400	37.854	36.453	-7.047	43.500
198.780	-8.221	46.642	38.421	-5.079	43.500
258.920	-7.490	45.346	37.856	-8.144	46.000
518.880	-0.546	35.632	35.086	-10.914	46.000
798.240	2.808	36.434	39.242	-6.758	46.000

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 = 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.

Product : 802.11 a/b/g/n module
Test Item : General Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 4: Transmit - 802.11n-20BW_14.4Mbps(2.4G Band) (2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
154.160	-10.091	46.904	36.813	-6.687	43.500
239.520	-6.851	46.333	39.483	-6.517	46.000
371.440	-1.097	34.377	33.280	-12.720	46.000
480.080	-0.329	34.611	34.282	-11.718	46.000
600.360	3.977	29.854	33.831	-12.169	46.000
798.240	5.148	33.668	38.816	-7.184	46.000
Vertical					
59.100	-4.097	38.012	33.915	-6.085	40.000
105.660	-0.253	37.276	37.023	-6.477	43.500
204.600	-7.666	42.546	34.879	-8.621	43.500
355.920	-3.488	39.198	35.710	-10.290	46.000
518.880	-0.546	34.451	33.905	-12.095	46.000
697.360	1.311	38.331	39.642	-6.358	46.000

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 = 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.

Product : 802.11 a/b/g/n module
Test Item : General Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 5: Transmit - 802.11n-40BW_30Mbps(2.4G Band) (2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
144.460	-10.377	45.710	35.333	-8.167	43.500
249.220	-6.014	46.016	40.002	-5.998	46.000
353.980	-2.472	34.065	31.593	-14.407	46.000
480.080	-0.329	33.960	33.631	-12.369	46.000
699.300	2.875	37.107	39.982	-6.018	46.000
798.240	5.148	35.194	40.342	-5.658	46.000
Vertical					
86.260	-3.908	37.895	33.987	-6.013	40.000
200.720	-7.835	45.538	37.703	-5.797	43.500
359.800	-3.810	39.920	36.110	-9.890	46.000
518.880	-0.546	35.491	34.945	-11.055	46.000
699.300	0.695	36.485	37.180	-8.820	46.000
798.240	2.808	35.620	38.428	-7.572	46.000

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 = 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.

Product : 802.11 a/b/g/n module
Test Item : General Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 6: Transmit - 802.11n-20BW_14.4Mbps(5G Band) (5785 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
146.400	-10.318	45.590	35.272	-8.228	43.500
249.220	-6.014	44.457	38.443	-7.557	46.000
299.660	-3.585	43.599	40.014	-5.986	46.000
388.900	-1.684	33.627	31.943	-14.057	46.000
565.440	1.611	33.568	35.179	-10.821	46.000
800.180	5.141	33.509	38.650	-7.350	46.000
Vertical					
61.040	-4.316	38.843	34.527	-5.473	40.000
88.200	-3.516	38.195	34.679	-8.821	43.500
202.660	-7.739	45.255	37.516	-5.984	43.500
388.900	-3.064	35.654	32.590	-13.410	46.000
518.880	-0.546	36.012	35.466	-10.534	46.000
796.300	2.831	34.508	37.339	-8.661	46.000

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 = 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.

Product : 802.11 a/b/g/n module
Test Item : General Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 7: Transmit - 802.11n-40BW_30Mbps(5G Band) (5755MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
152.220	-10.135	45.789	35.654	-7.846	43.500
258.920	-5.050	43.178	38.128	-7.872	46.000
383.080	-1.164	35.982	34.818	-11.182	46.000
565.440	1.611	37.907	39.518	-6.482	46.000
749.740	3.320	33.624	36.944	-9.056	46.000
798.240	5.148	33.108	38.256	-7.744	46.000
Vertical					
64.920	-5.683	39.888	34.205	-5.795	40.000
105.660	-0.253	35.422	35.169	-8.331	43.500
200.720	-7.835	44.999	37.164	-6.336	43.500
518.880	-0.546	35.569	35.023	-10.977	46.000
749.740	2.510	31.678	34.188	-11.812	46.000
798.240	2.808	36.442	39.250	-6.750	46.000

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 = 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.

5. RF antenna conducted test

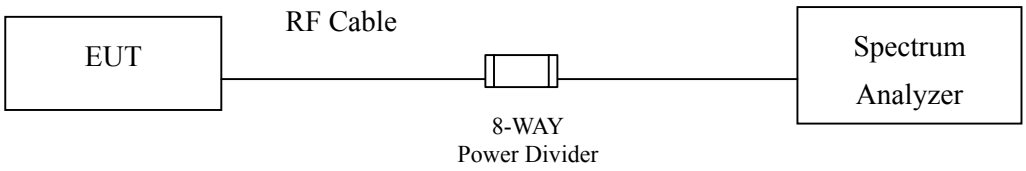
5.1. Test Equipment

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X	Spectrum Analyzer	R&S	FSP40 / 100170	Jun, 2010
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun, 2010
X	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2010
X	8-WAY Power Divider	JFW	50PD-647 / 526770 0916	Apr., 2010

Note: 1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.
2. The test instruments marked with "X" are used to measure the final test results.
3. The power combiner is used for measure 11n mode.

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 either an RF conducted or a 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 tested according to DTS test procedure of Mar. 2005 KDB558074 for compliance to FCC 47CFR 15.247 requirements.
Set RBW = 100 kHz, Set VBW> RBW, scan up through 10th harmonic.

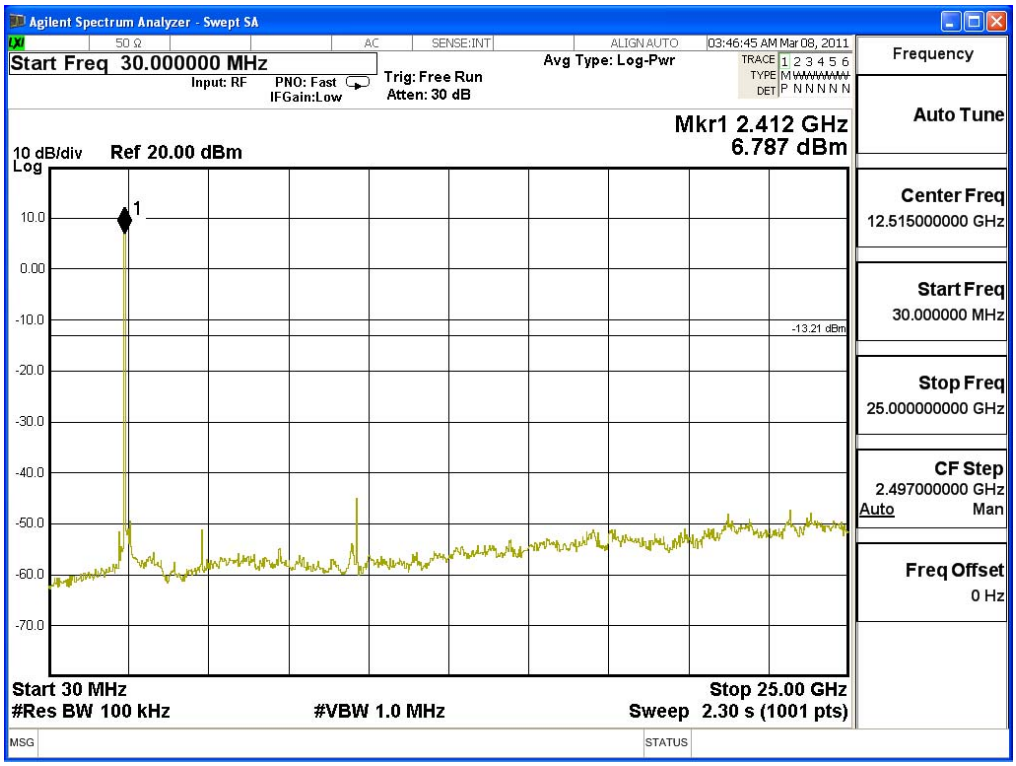
5.5. Uncertainty

The measurement uncertainty
Conducted is defined as ± 1.27dB

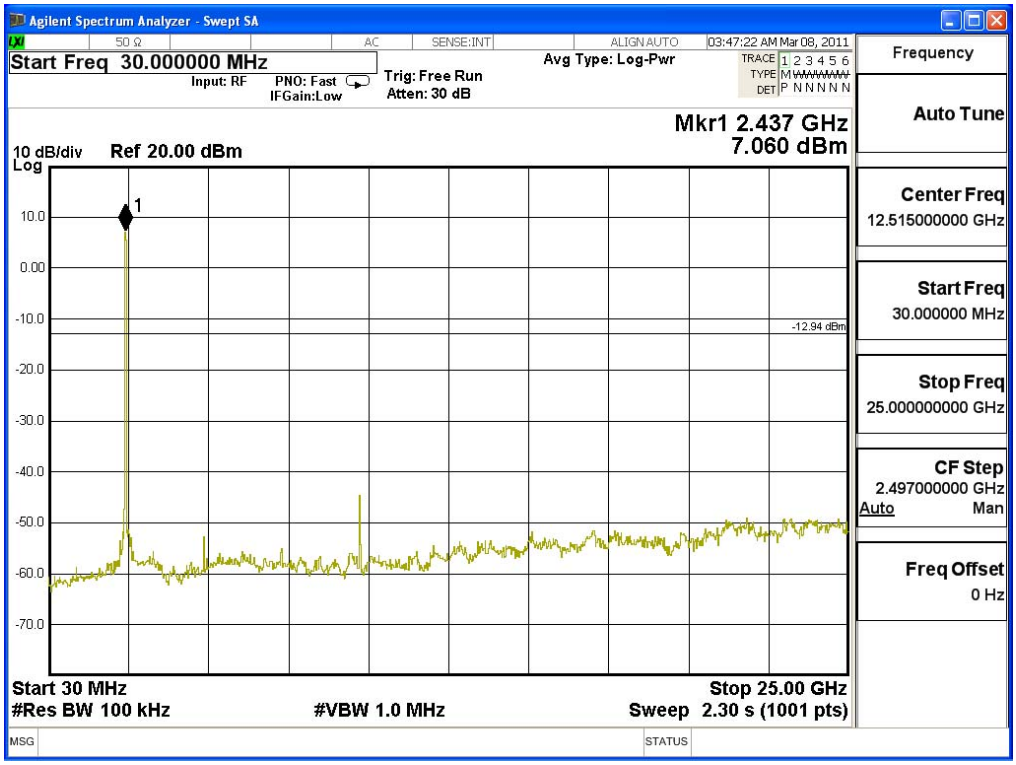
5.6. Test Result of RF antenna conducted test

Product : 802.11 a/b/g/n module
Test Item : RF antenna conducted test
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit (802.11b 1Mbps)

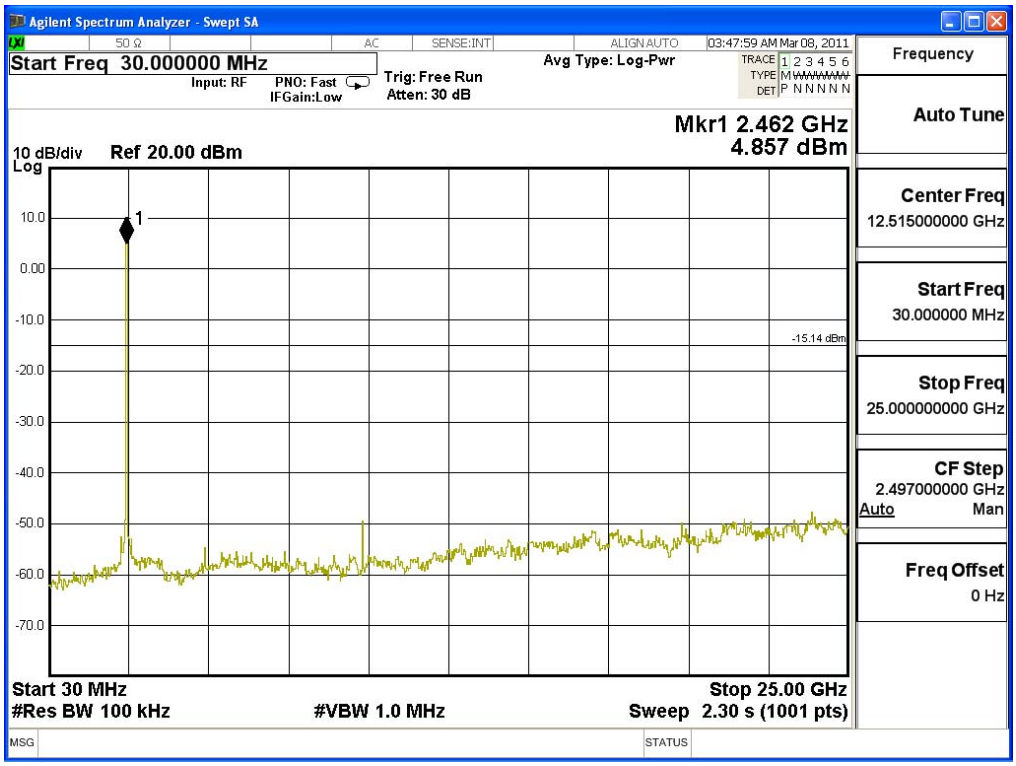
Channel 01 (2412MHz) 30MHz-25GHz



Channel 06 (2437MHz) 30MHz -25GHz

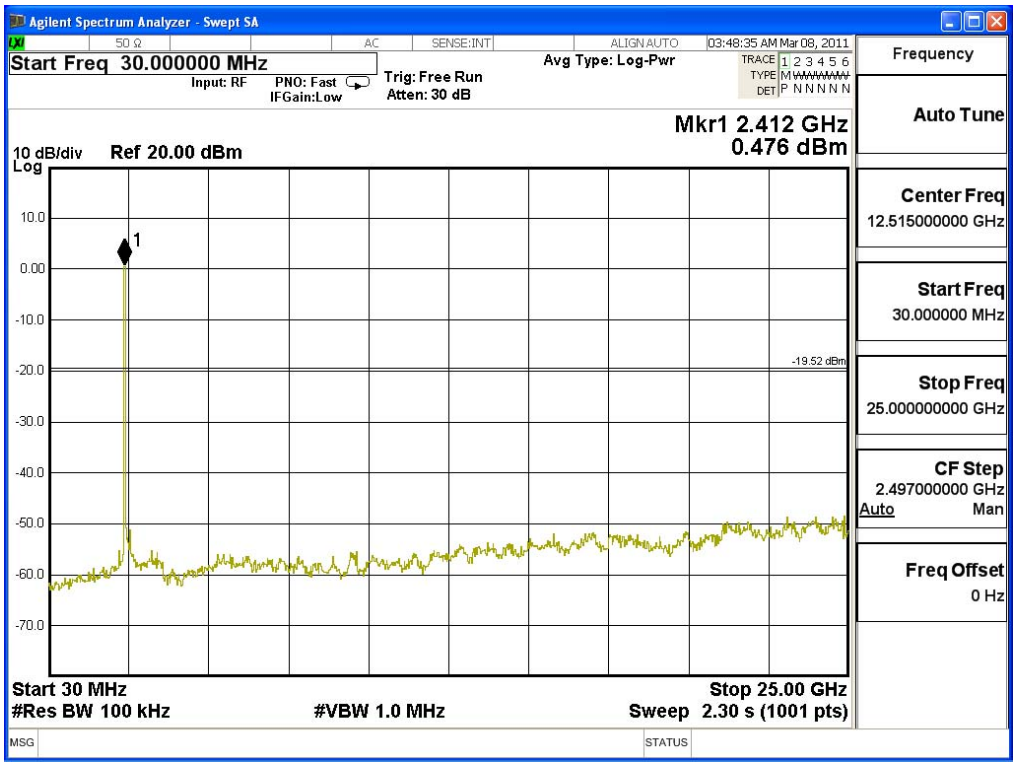


Channel 11 (2462MHz) 30MHz -25GHz

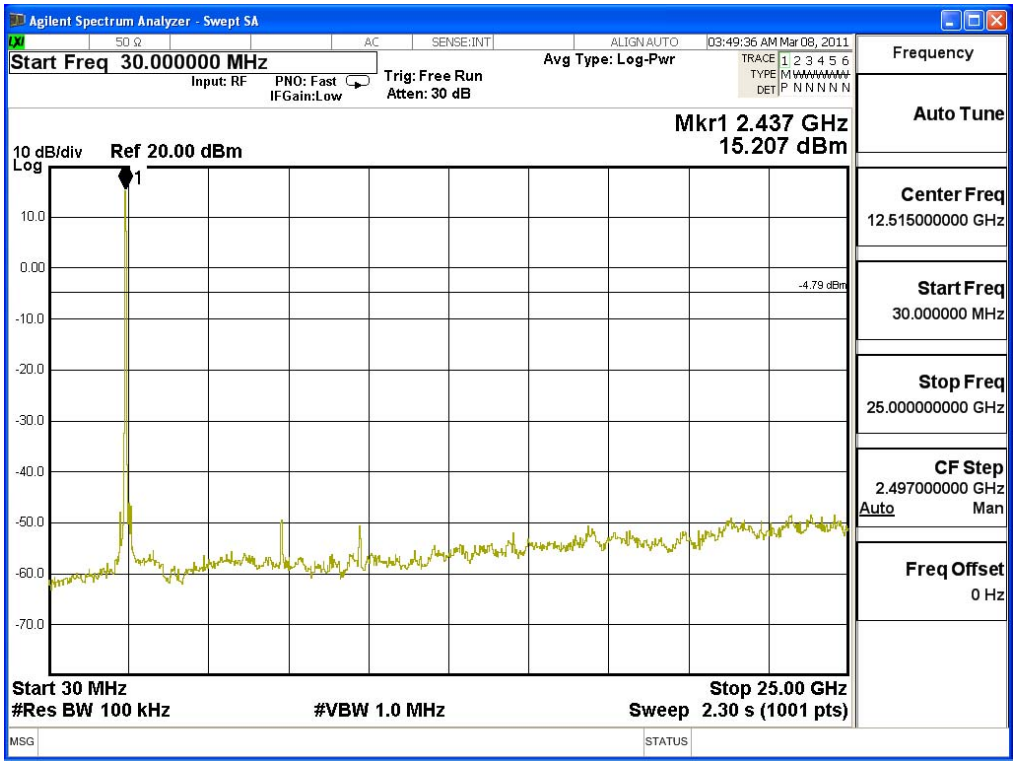


Product : 802.11 a/b/g/n module
Test Item : RF Antenna Conducted Spurious
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit (802.11g 6Mbps)

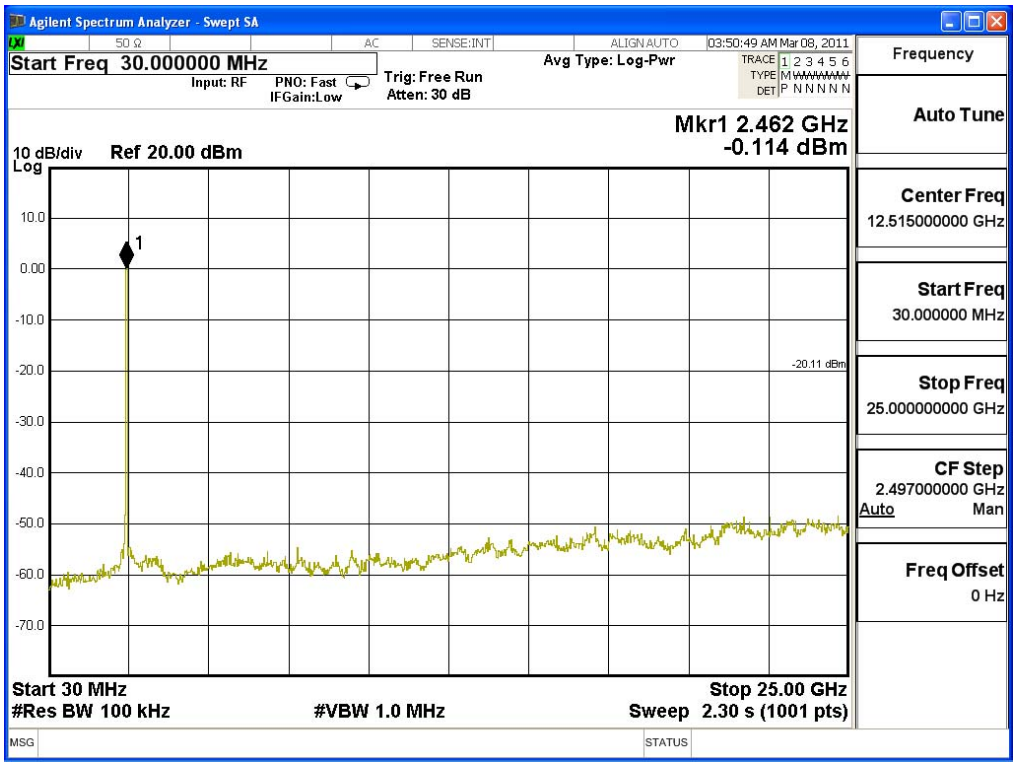
Channel 01 (2412MHz) 30MHz -25GHz



Channel 06 (2437MHz) 30MHz -25GHz



Channel 11 (2462MHz) 30MHz -25GHz



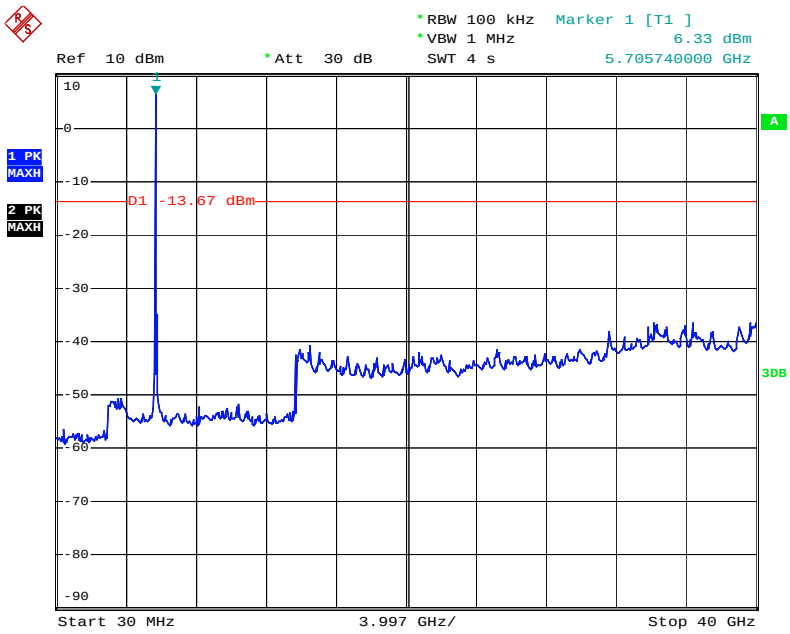
Product : 802.11 a/b/g/n module

Test Item : RF Antenna Conducted Spurious

Test Site : No.3 OATS

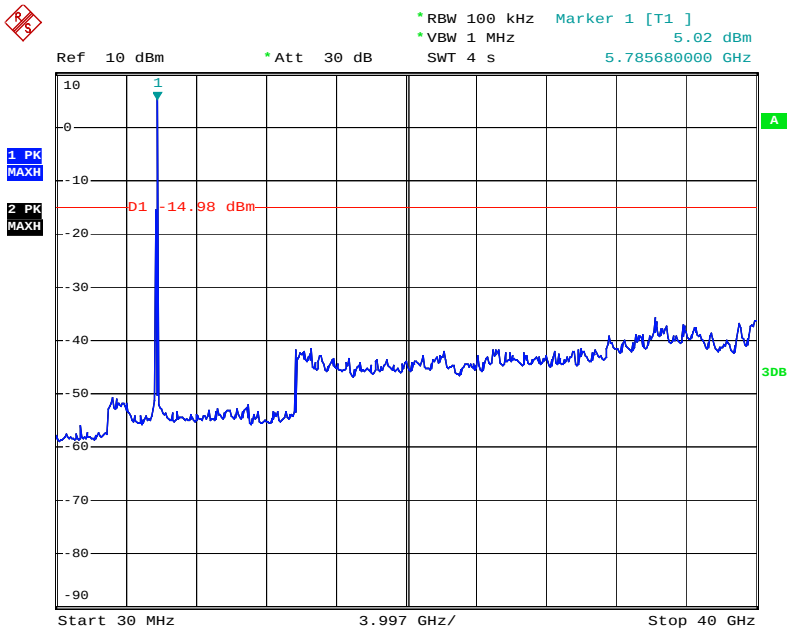
Test Mode : Mode 3: Transmit - 802.11a 6Mbps

Channel 149 (5745MHz) 30MHz -40GHz



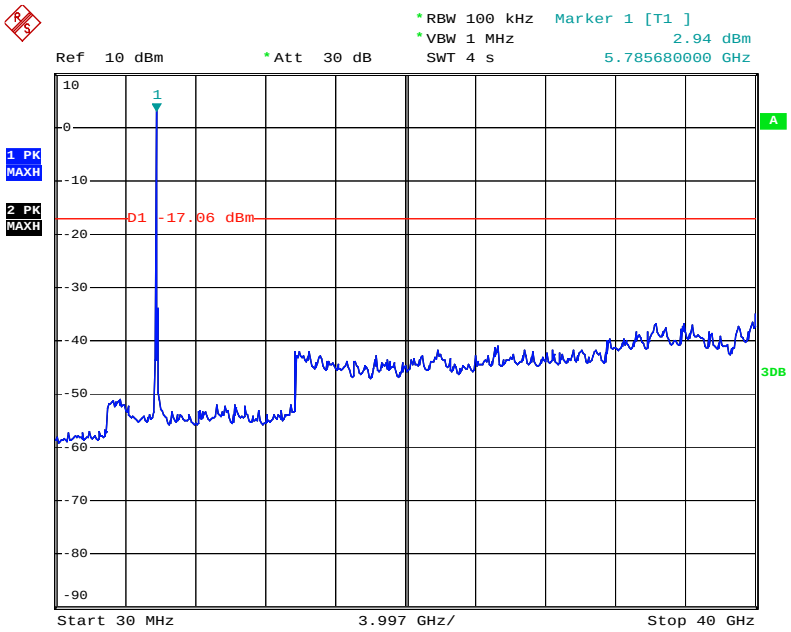
Date: 8.MAR.2011 05:01:45

Channel 157 (5785MHz) 30MHz -40GHz



Date: 8.MAR.2011 05:02:45

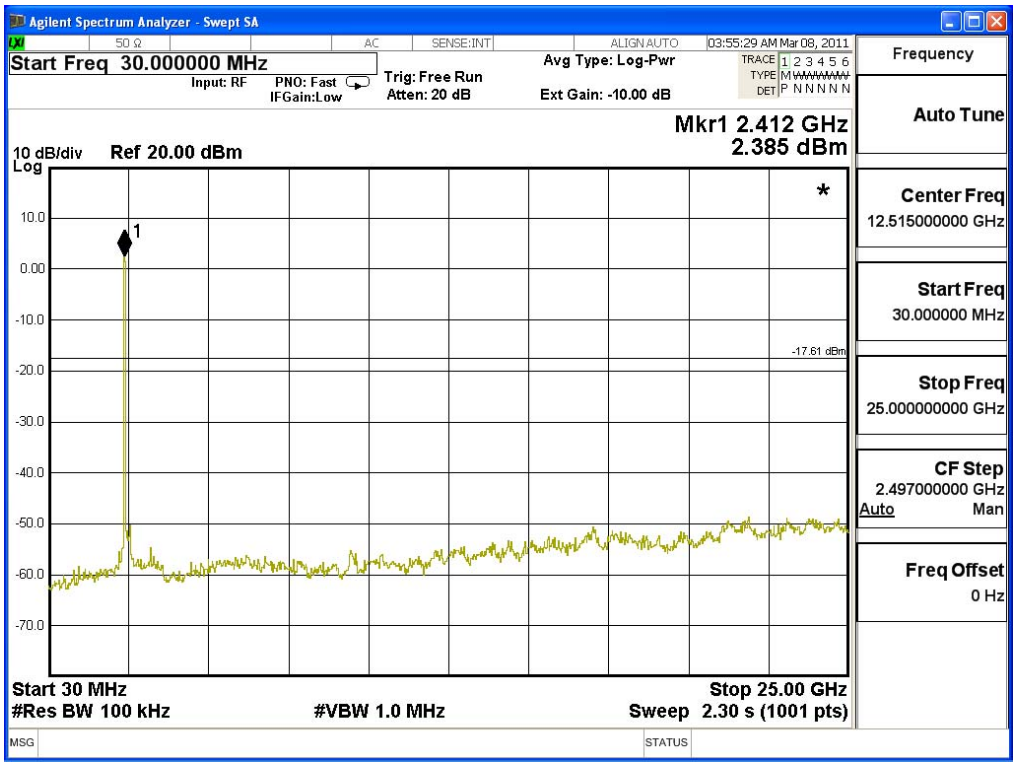
Channel 165 (5825MHz) 30MHz -40GHz



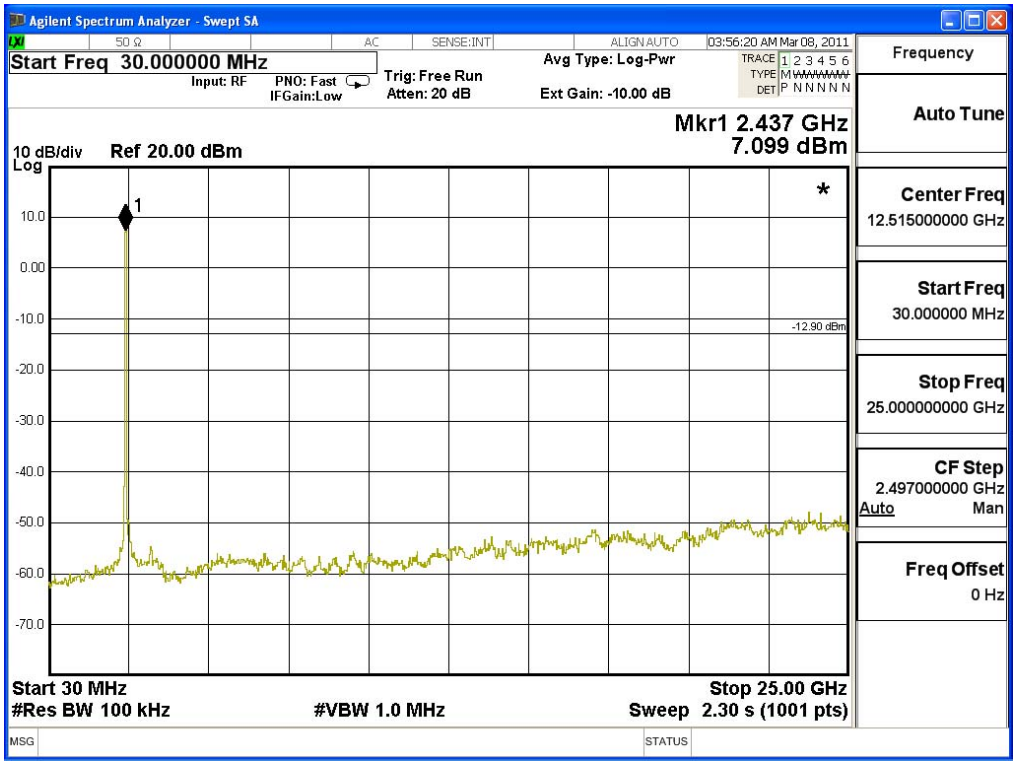
Date: 8.MAR.2011 05:04:05

Product : 802.11 a/b/g/n module
Test Item : RF Antenna Conducted Spurious
Test Site : No.3 OATS
Test Mode : Mode 4: Transmit - 802.11n-20BW_14.4Mbps(2.4G Band)

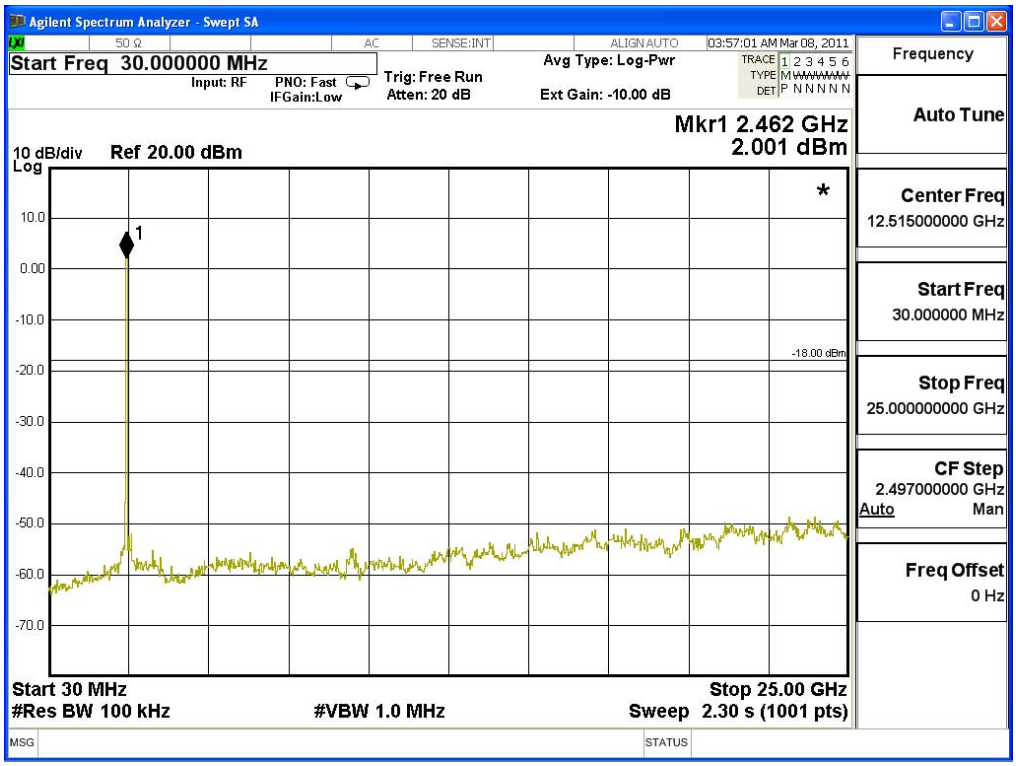
Channel 01 (2412MHz) 30MHz -25GHz



Channel 06 (2437MHz) 30MHz -25GHz

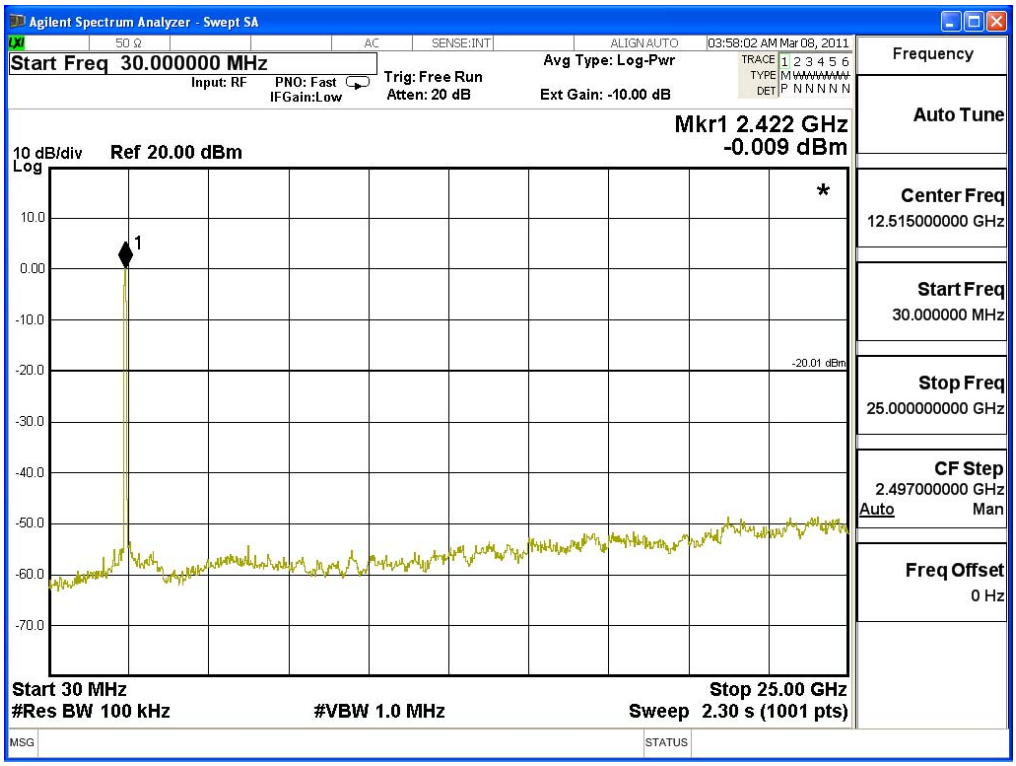


Channel 11 (2462MHz) 30MHz -25GHz

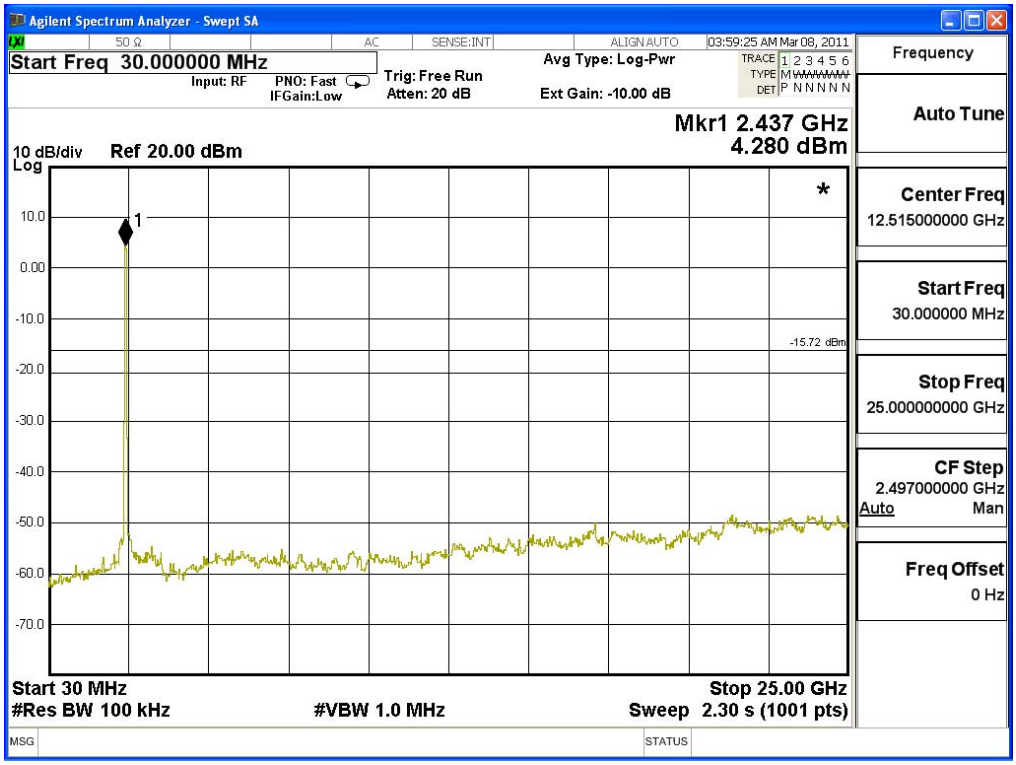


Product : 802.11 a/b/g/n module
Test Item : RF Antenna Conducted Spurious
Test Site : No.3 OATS
Test Mode : Mode 5: Transmit - 802.11n-40BW_30Mbps(2.4G Band)

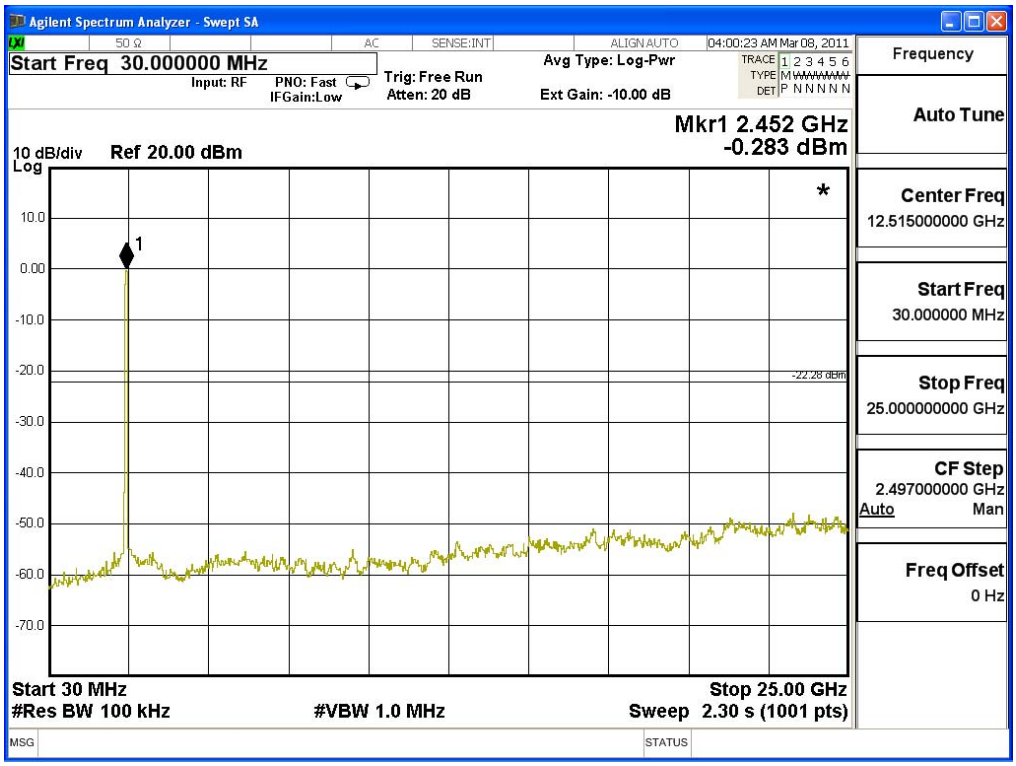
Channel 01 (2422MHz) 30MHz -25GHz



Channel 04 (2437MHz) 30MHz -25GHz

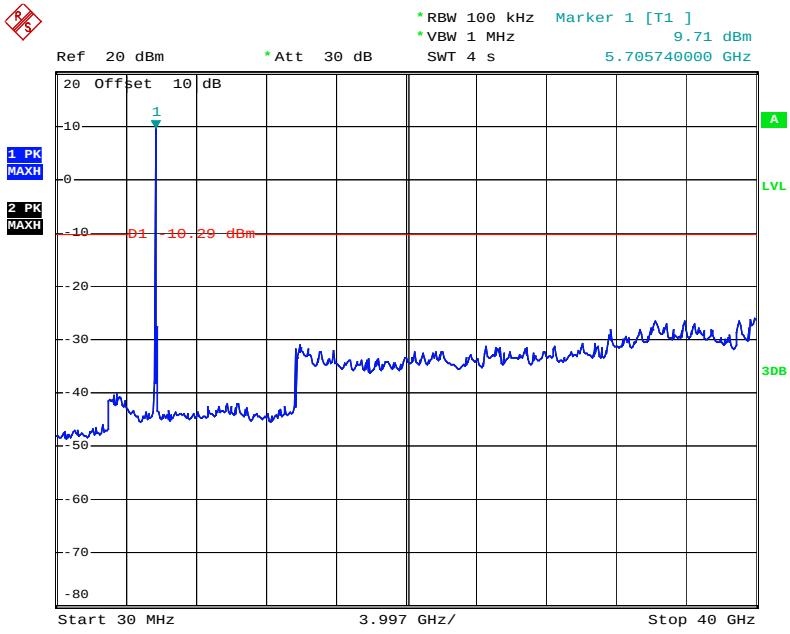


Channel 07 (2452MHz) 30MHz -25GHz



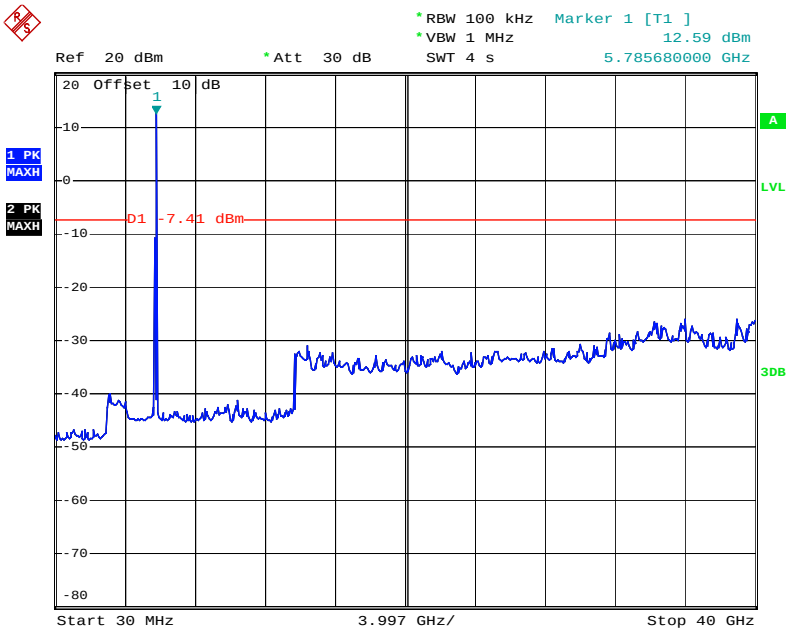
Product : 802.11 a/b/g/n module
Test Item : RF Antenna Conducted Spurious
Test Site : No.3 OATS
Test Mode : Mode 6: Transmit - 802.11n-20BW_14.4Mbps(5G Band)

Channel 49 (5745MHz) 30MHz -40GHz



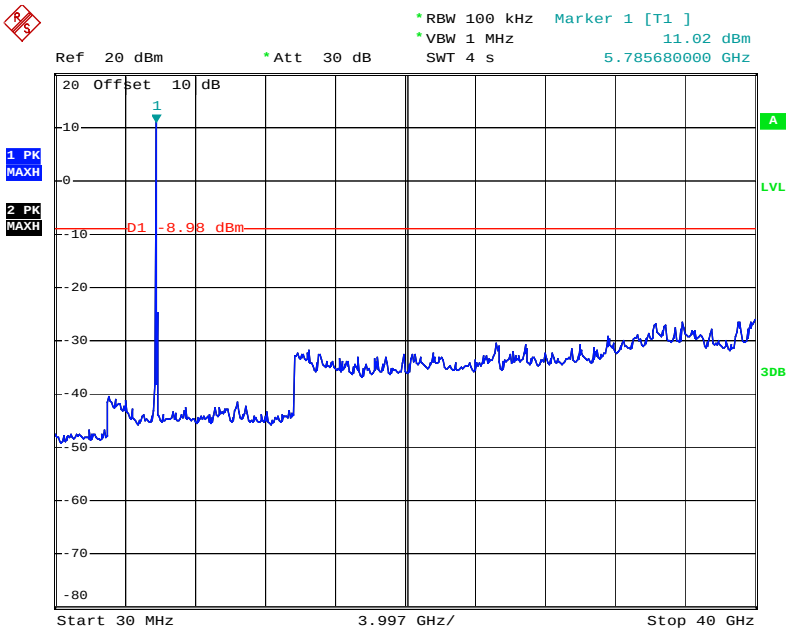
Date: 8.MAR.2011 04:52:11

Channel 157 (5785MHz) 30MHz -40GHz



Date: 8.MAR.2011 04:53:59

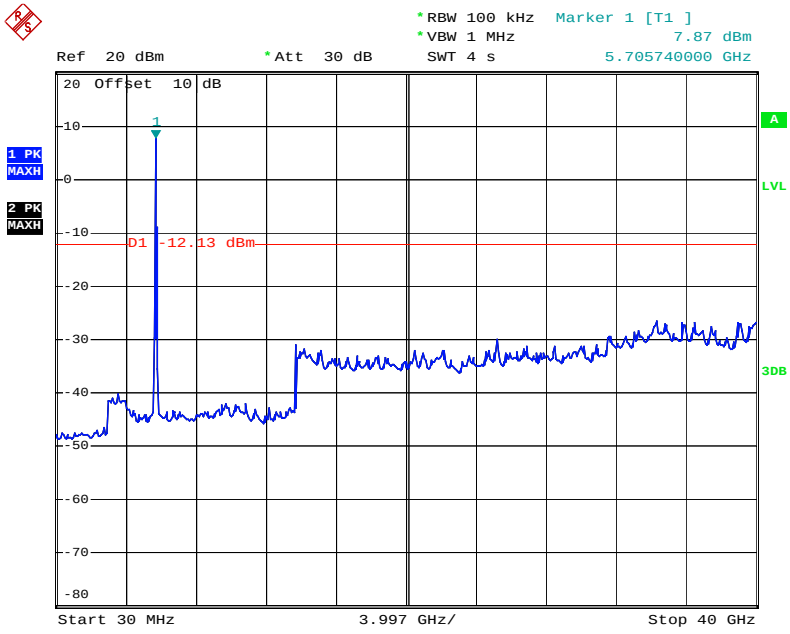
Channel 165 (5825MHz) 30MHz -40GHz



Date: 8.MAR.2011 04:54:55

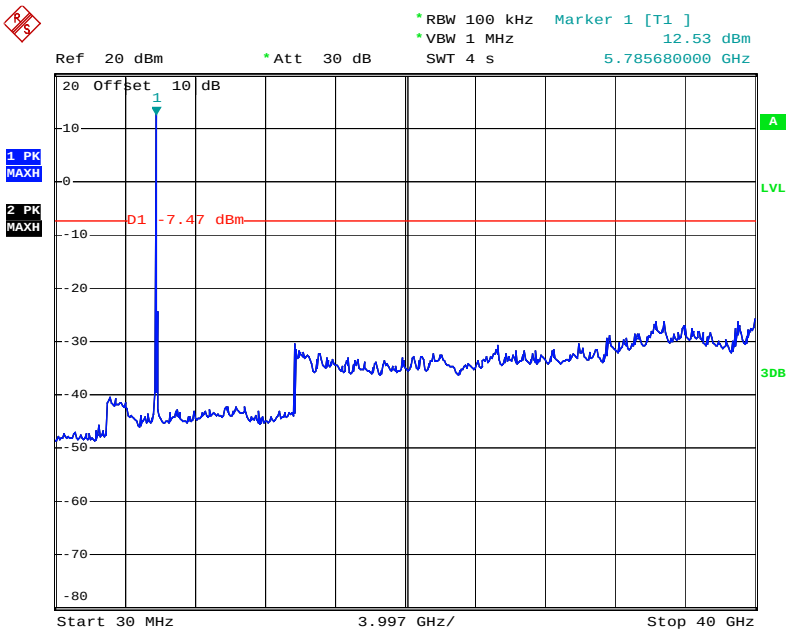
Product : 802.11 a/b/g/n module
Test Item : RF Antenna Conducted Spurious
Test Site : No.3 OATS
Test Mode : Mode 7: Transmit - 802.11n-40BW_30Mbps(5G Band)

Channel 151 (5755MHz) 30MHz -40GHz



Date: 8.MAR.2011 04:57:15

Channel 159 (5795MHz) 30MHz -40GHz



Date: 8.MAR.2011 04:58:54

6. Band Edge

6.1. Test Equipment

RF Conducted Measurement

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

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
	Spectrum Analyzer	R&S	FSP40 / 100170	Jun, 2010
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun, 2010
X	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2010
X	8-WAY Power Divider	JFW	50PD-647 / 526770 0916	Apr., 2010

Note:

1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.
2. The test instruments marked with "X" are used to measure the final test results.
3. The power combiner is used for measure 11n mode.

RF Radiated Measurement:

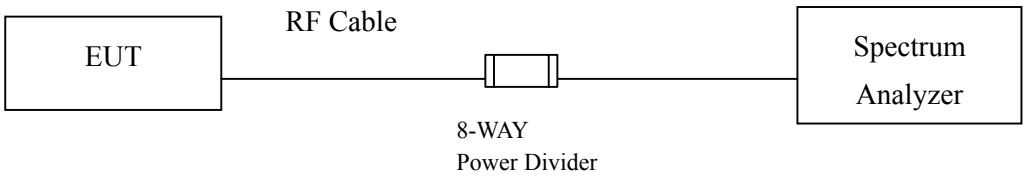
The following test equipments are used during the band edge tests:

Test Site		Equipment	Manufacturer	Model No./Serial No.	Last Cal.
☒Site # 3		Bilog Antenna	Schaffner Chase	CBL6112B/2673	Sep., 2010
	X	Horn Antenna	Schwarzbeck	BBHA9120D/D305	Sep., 2010
		Horn Antenna	Schwarzbeck	BBHA9170/208	Jul., 2010
	X	Pre-Amplifier	Agilent	8447D/2944A09549	Sep., 2010
	X	Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2010
		Test Receiver	R & S	ESCS 30/ 825442/018	Sep., 2010
	X	Coaxial Cable	QuieTek	QTK-CABLE/ CAB5	Feb., 2011
	X	Controller	QuieTek	QTK-CONTROLLER/ CTRL3	N/A
	X	Coaxial Switch	Anritsu	MP59B/6200265729	N/A

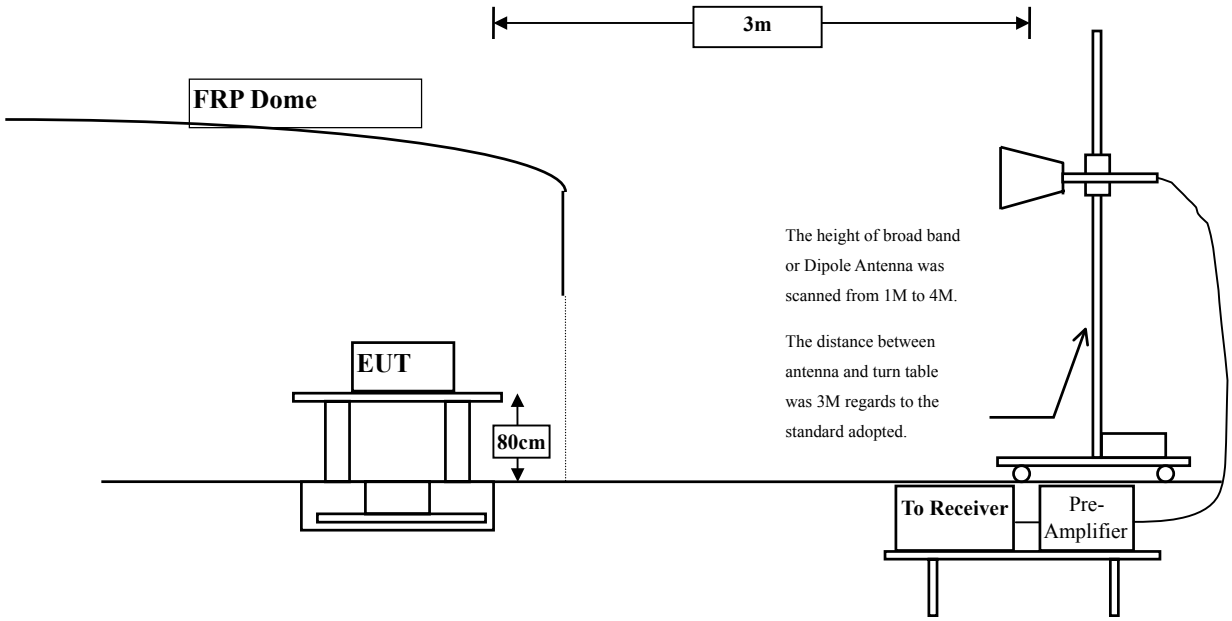
Note: 1. All instruments are calibrated every one year.
2. The test instruments marked by "X" are used to measure the final test results.

6.2. Test Setup

RF Conducted Measurement



RF Radiated Measurement:



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 Mar. 2005 KDB558074 for compliance to FCC 47CFR 15.247 requirements.
The EUT is placed on a turn table which is 0.8 meter above ground. The turn table is rotated 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 is scanned from 1 meter to 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.4: 2009 on radiated measurement.

6.5. Uncertainty

± 3.9 dB above 1GHz
± 3.8 dB below 1GHz

6.6. Test Result of Band Edge

Product : 802.11 a/b/g/n module
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit (802.11b 1Mbps)

Fundamental Filed Strength

Antenna Pole	Frequency [MHz]	Correction Factor [dB/m]	Reading Level [dBuV]	Emission Level [dBuV/m]	Detector
Horizontal	2412	31.639	76.84	108.478	Peak
Horizontal	2412	31.639	73.16	104.798	Average
Vertical	2412	30.95	71.55	102.499	Peak
Vertical	2412	30.95	68.02	98.969	Average

Note: 1: Spectrum Analyzer setting:

Peak detector: RBW=1MHz, VBW=1MHz

Average detector: RBW=1MHz, VBW=10Hz

Band Edge Test Data

Antenna Pole	Test Frequency (MHz)	Fundamental (dBuV/m)	Δ (dB)	Band Edge Field Strength (dBuV/m)	Detector
Horizontal	2390	108.478	45.837	62.641	Peak
Horizontal	2390	104.798	53.849	50.949	Average
Vertical	2390	102.499	45.837	56.662	Peak
Vertical	2390	98.969	53.849	45.12	Average

Note:

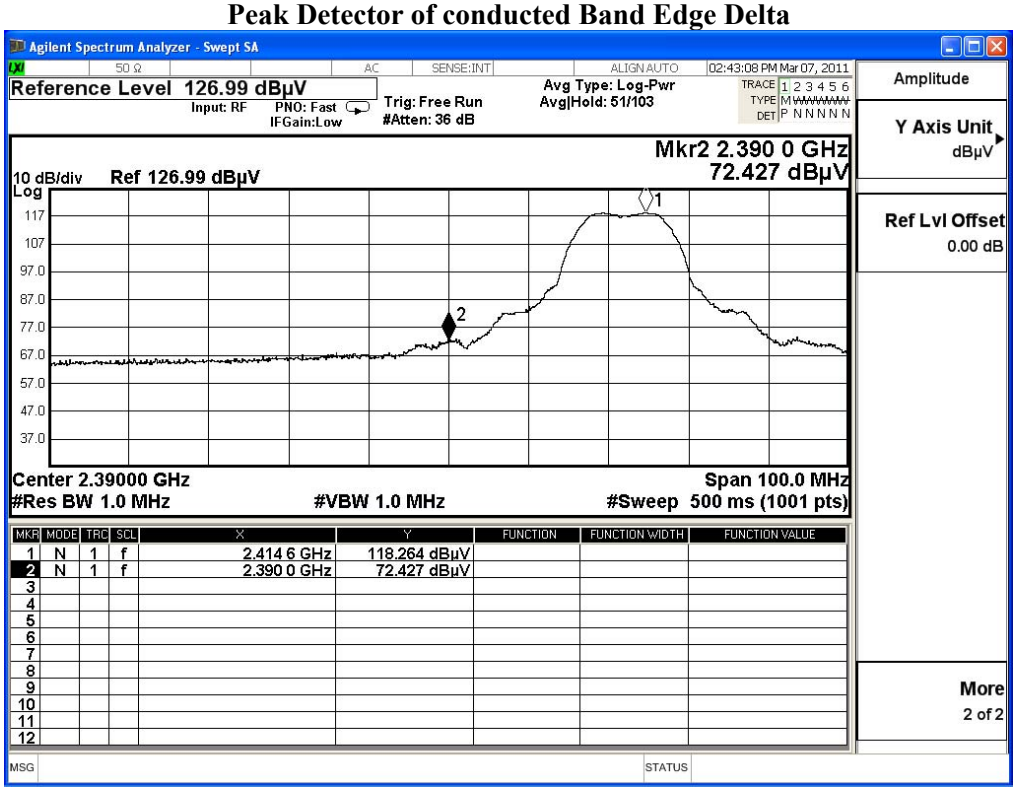
The Band Edge Field Strength was calculated using the Fundamental and Conducted Band Edge measurements per the Marker-Delta Method with the following formula:

Band Edge field Strength = F - Δ

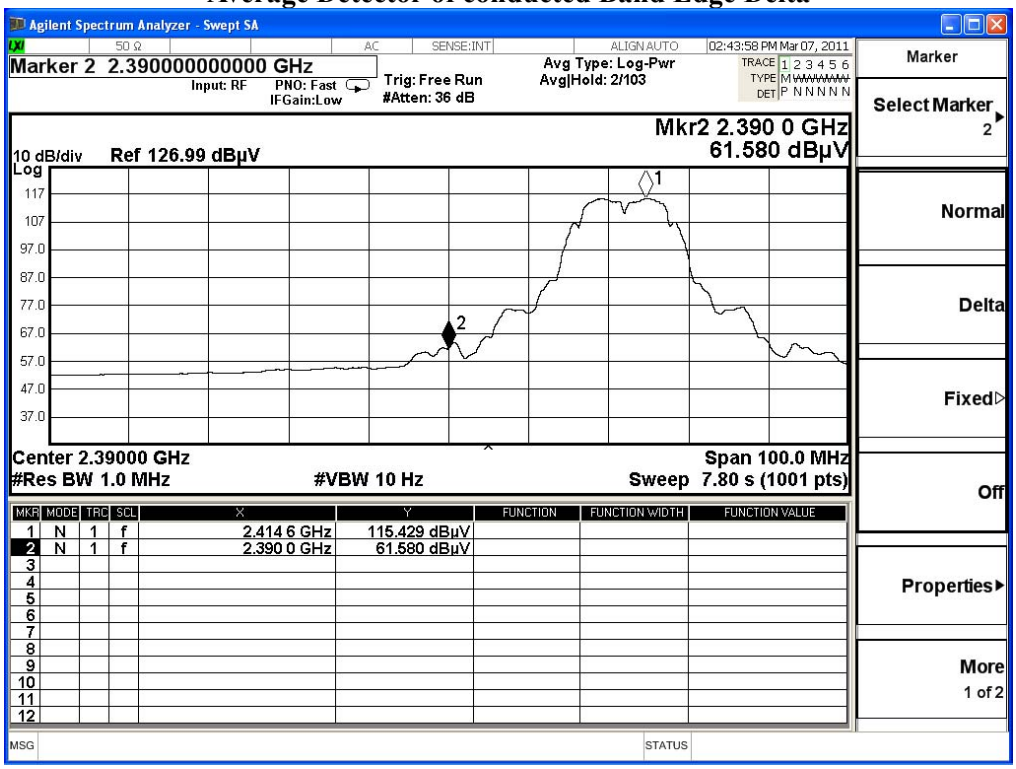
F = Fundamental field Strength (Peak or Average)

Δ = Conducted Band Edge Delta (Peak or Average)

Peak Detector of conducted Band Edge Delta



Average Detector of conducted Band Edge Delta



Product : 802.11 a/b/g/n module
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit (802.11b 1Mbps)

Fundamental Filed Strength

Antenna Pole	Frequency [MHz]	Correction Factor [dB/m]	Reading Level [dBuV]	Emission Level [dBuV/m]	Detector
Horizontal	2462	32.019	75.14	107.159	Peak
Horizontal	2462	32.019	71.61	103.629	Average
Vertical	2462	31.29	70.22	101.51	Peak
Vertical	2462	31.29	66.81	98.1	Average

Note: 1:Spectrum Analyzer setting:

Peak detector: RBW=1MHz, VBW=1MHz

Average detector: RBW=1MHz, VBW=10Hz

Band Edge Test Data

Antenna Pole	Test Frequency (MHz)	Fundamental (dBuV/m)	Δ (dB)	Band Edge Field Strength (dBuV/m)	Detector
Horizontal	2483.7	107.159	46.157	61.002	Peak
Horizontal	2483.5	103.629	52.741	50.888	Average
Vertical	2483.7	101.51	46.157	55.353	Peak
Vertical	2483.5	98.1	52.741	45.359	Average

Note:

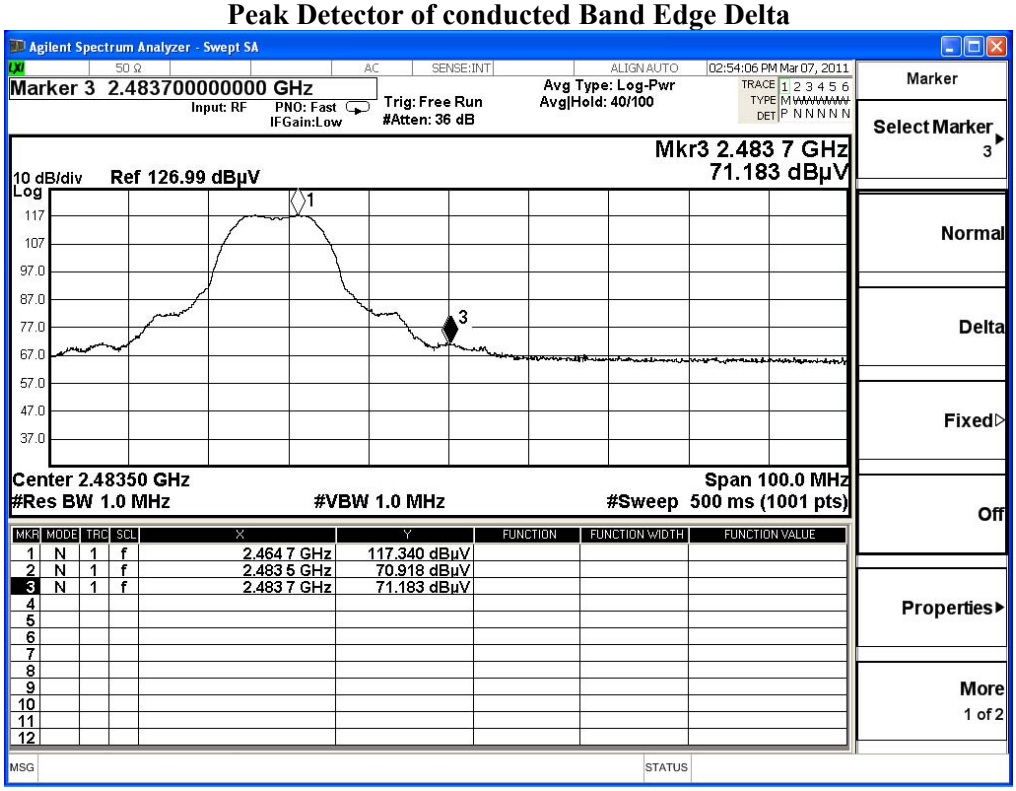
The Band Edge Field Strength was calculated using the Fundamental and Conducted Band Edge measurements per the Marker-Delta Method with the following formula:

Band Edge field Strength = F - Δ

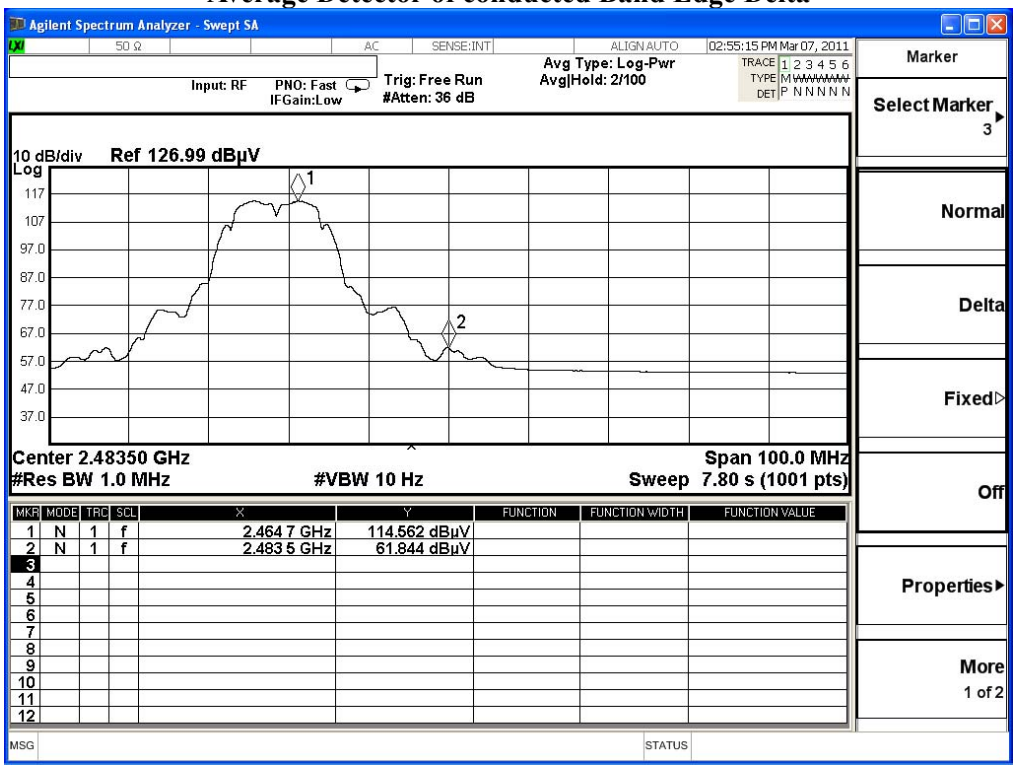
F = Fundamental field Strength (Peak or Average)

Δ = Conducted Band Edge Delta (Peak or Average)

Peak Detector of conducted Band Edge Delta



Average Detector of conducted Band Edge Delta



Product : 802.11 a/b/g/n module
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit (802.11g 6Mbps)

Fundamental Filed Strength

Antenna Pole	Frequency [MHz]	Correction Factor [dB/m]	Reading Level [dBuV]	Emission Level [dBuV/m]	Detector
Horizontal	2412	30.95	78.339	109.288	Peak
Horizontal	2412	30.95	65.839	96.788	Average
Vertical	2412	30.95	72.33	103.279	Peak
Vertical	2412	30.95	60.19	91.139	Average

Note: 1:Spectrum Analyzer setting:

Peak detector: RBW=1MHz, VBW=1MHz

Average detector: RBW=1MHz, VBW=10Hz

Band Edge Test Data

Antenna Pole	Test Frequency (MHz)	Fundamental (dBuV/m)	Δ (dB)	Band Edge Field Strength (dBuV/m)	Detector
Horizontal	2390	109.288	41.2449	68.0431	Peak
Horizontal	2390	96.788	47.462	49.326	Average
Vertical	2390	103.279	41.2449	62.0341	Peak
Vertical	2390	91.139	47.462	43.677	Average

Note:

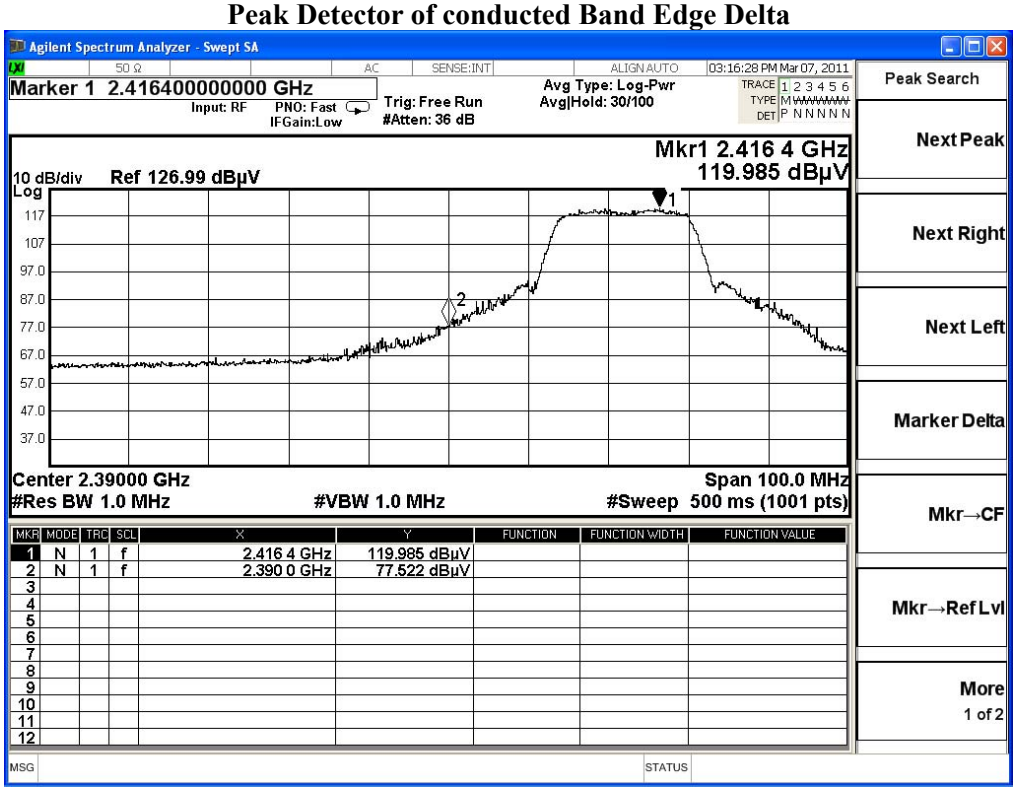
The Band Edge Field Strength was calculated using the Fundamental and Conducted Band Edge measurements per the Marker-Delta Method with the following formula:

Band Edge field Strength = F - Δ

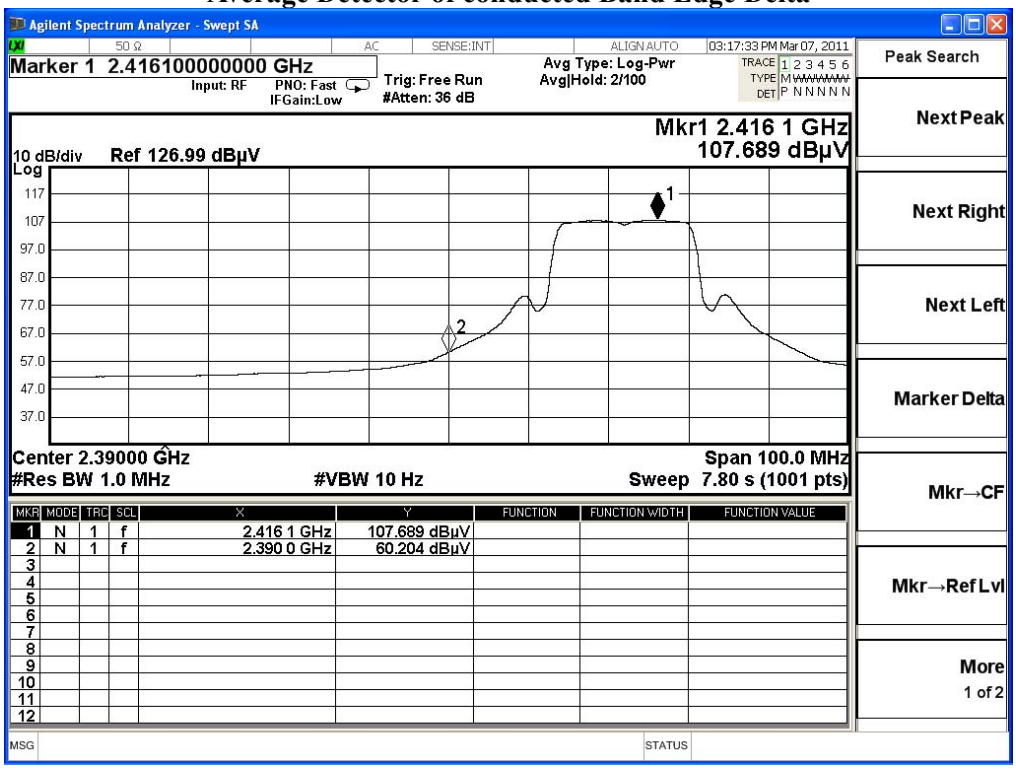
F = Fundamental field Strength (Peak or Average)

Δ = Conducted Band Edge Delta (Peak or Average)

Peak Detector of conducted Band Edge Delta



Average Detector of conducted Band Edge Delta



Product : 802.11 a/b/g/n module
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit (802.11g 6Mbps)

Fundamental Filed Strength

Antenna Pole	Frequency [MHz]	Correction Factor [dB/m]	Reading Level [dBuV]	Emission Level [dBuV/m]	Detector
Horizontal	2462	32.019	77.19	109.209	Peak
Horizontal	2462	32.019	64.43	96.449	Average
Vertical	2462	31.29	72.09	103.38	Peak
Vertical	2462	31.29	59.35	90.64	Average

Note: 1:Spectrum Analyzer setting:

Peak detector: RBW=1MHz, VBW=1MHz

Average detector: RBW=1MHz, VBW=10Hz

Band Edge Test Data

Antenna Pole	Test Frequency (MHz)	Fundamental (dBuV/m)	Δ (dB)	Band Edge Field Strength (dBuV/m)	Detector
Horizontal	2483.5	109.209	40.788	68.421	Peak
Horizontal	2483.5	96.449	46.691	49.758	Average
Vertical	2483.5	103.38	40.788	62.592	Peak
Vertical	2483.5	90.64	46.691	43.949	Average

Note:

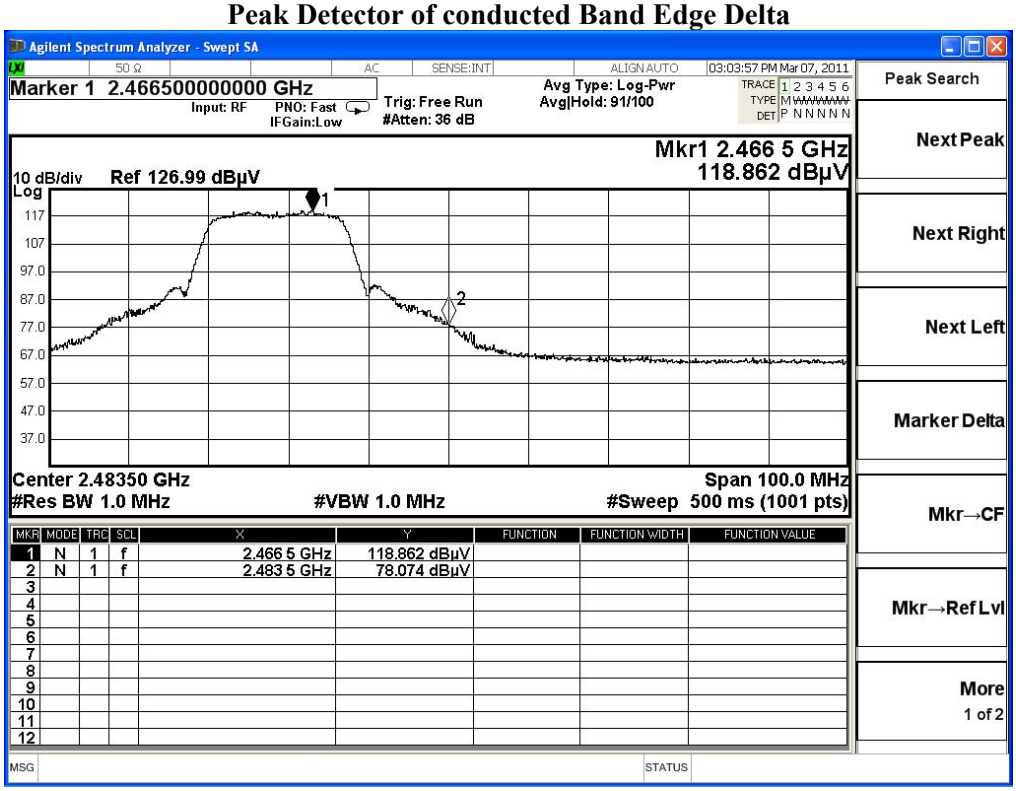
The Band Edge Field Strength was calculated using the Fundamental and Conducted Band Edge measurements per the Marker-Delta Method with the following formula:

Band Edge field Strength = F - Δ

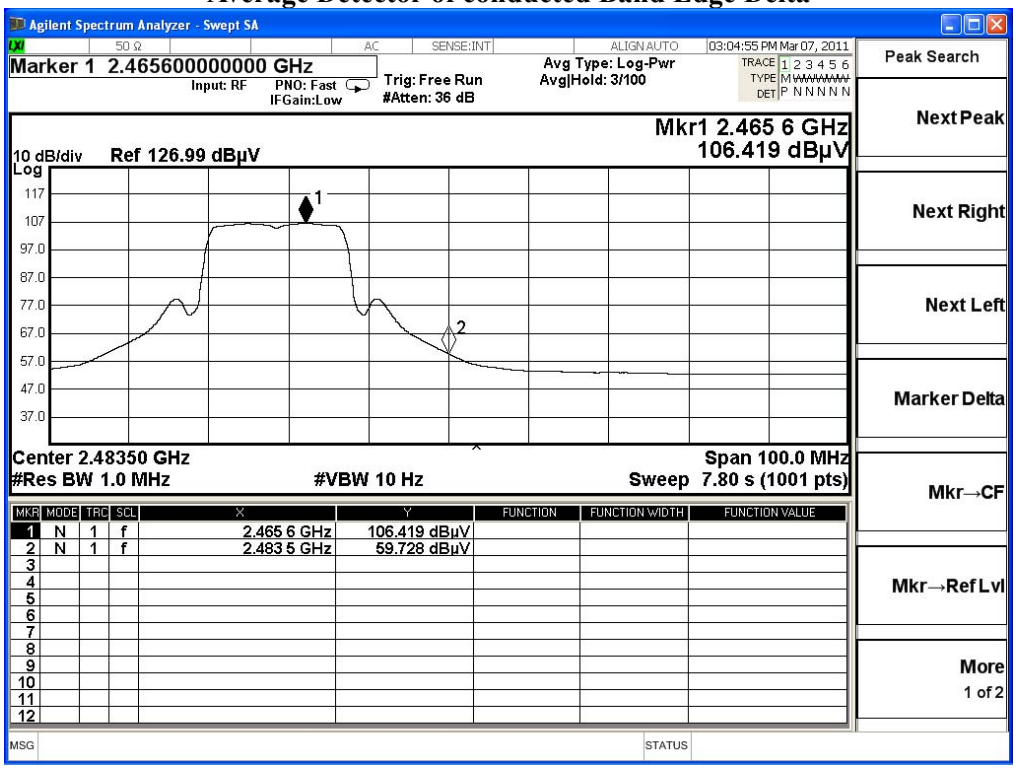
F = Fundamental field Strength (Peak or Average)

Δ = Conducted Band Edge Delta (Peak or Average)

Peak Detector of conducted Band Edge Delta



Average Detector of conducted Band Edge Delta



Product : 802.11 a/b/g/n module
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Mode : Mode 4: Transmit - 802.11n-20BW_14.4Mbps(2.4G Band)

Fundamental Filed Strength

Antenna Pole	Frequency [MHz]	Correction Factor [dB/m]	Reading Level [dBuV]	Emission Level [dBuV/m]	Detector
Horizontal	2412	31.639	75.11	106.748	Peak
Horizontal	2412	31.639	60.49	92.128	Average
Vertical	2412	31.29	77.14	108.43	Peak
Vertical	2412	31.29	62.8	94.09	Average

Note: 1:Spectrum Analyzer setting:

Peak detector: RBW=1MHz, VBW=1MHz

Average detector: RBW=1MHz, VBW=10Hz

Band Edge Test Data

Antenna Pole	Test Frequency (MHz)	Fundamental (dBuV/m)	Δ (dB)	Band Edge Field Strength (dBuV/m)	Detector
Horizontal	2390	106.748	43.509	63.239	Peak
Horizontal	2390	92.128	44.059	48.069	Average
Vertical	2390	108.43	43.509	64.921	Peak
Vertical	2390	94.09	44.059	50.031	Average

Note:

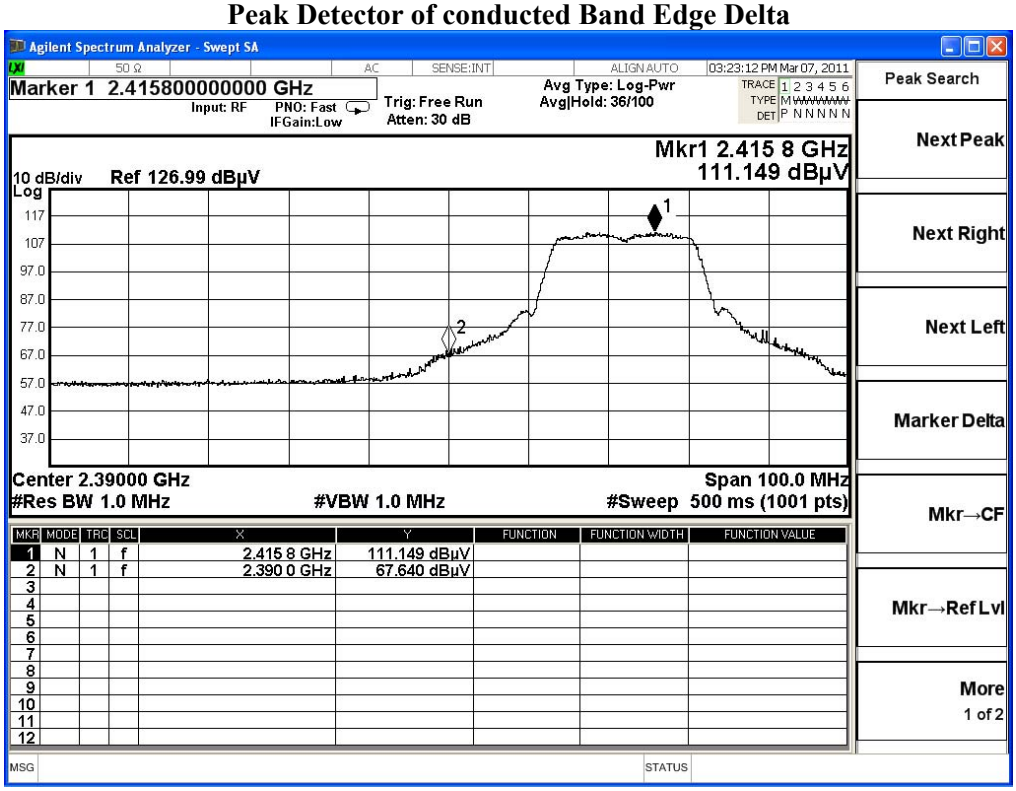
The Band Edge Field Strength was calculated using the Fundamental and Conducted Band Edge measurements per the Marker-Delta Method with the following formula:

Band Edge field Strength = F - Δ

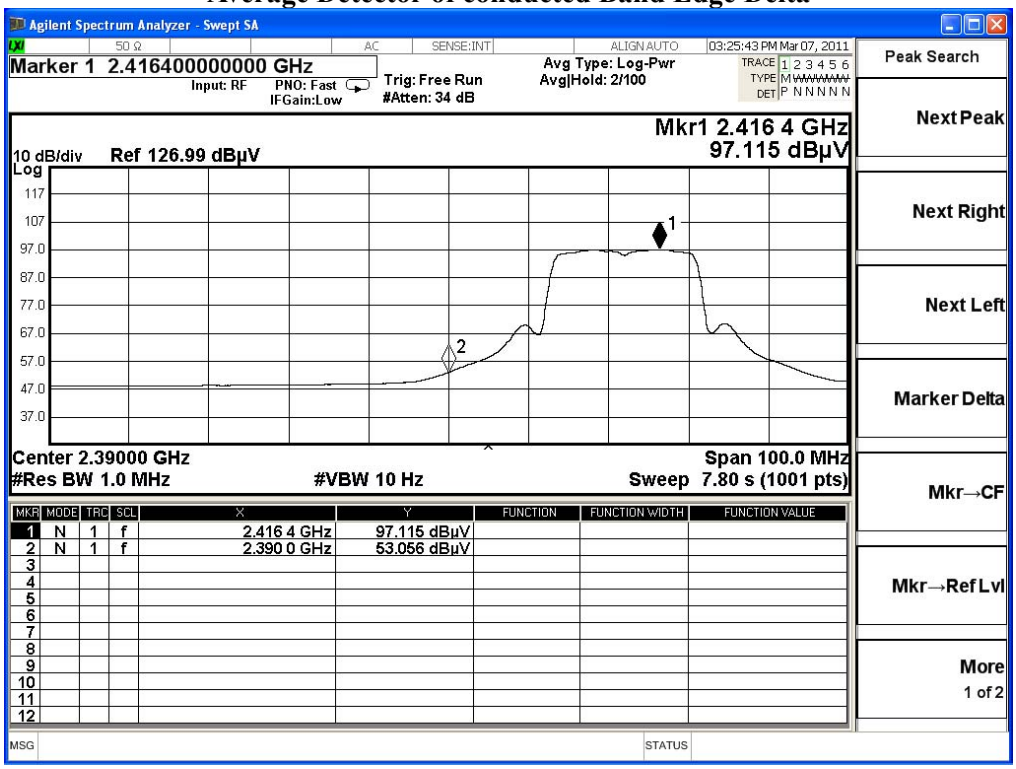
F = Fundamental field Strength (Peak or Average)

Δ = Conducted Band Edge Delta (Peak or Average)

Peak Detector of conducted Band Edge Delta



Average Detector of conducted Band Edge Delta



Product : 802.11 a/b/g/n module
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Mode : Mode 4: Transmit - 802.11n-20BW_14.4Mbps(2.4G Band)

Fundamental Filed Strength

Antenna Pole	Frequency [MHz]	Correction Factor [dB/m]	Reading Level [dBuV]	Emission Level [dBuV/m]	Detector
Horizontal	2462	32.019	73.8	105.819	Peak
Horizontal	2462	32.019	59.2	91.219	Average
Vertical	2462	31.29	77.14	108.43	Peak
Vertical	2462	31.29	62.8	94.09	Average

Note: 1:Spectrum Analyzer setting:

Peak detector: RBW=1MHz, VBW=1MHz

Average detector: RBW=1MHz, VBW=10Hz

Band Edge Test Data

Antenna Pole	Test Frequency (MHz)	Fundamental (dBuV/m)	Δ (dB)	Band Edge Field Strength (dBuV/m)	Detector
Horizontal	2484.1	105.819	40.856	64.963	Peak
Horizontal	2483.5	91.219	43.526	47.693	Average
Vertical	2484.1	108.43	40.856	67.574	Peak
Vertical	2483.5	94.09	43.526	50.564	Average

Note:

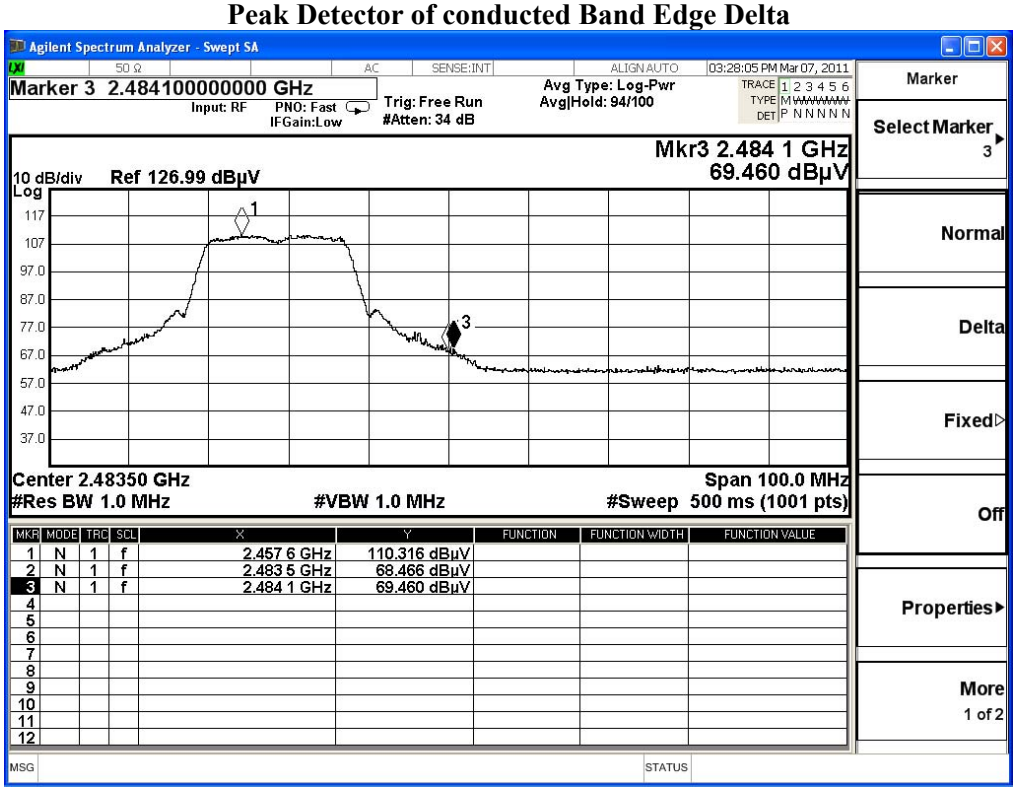
The Band Edge Field Strength was calculated using the Fundamental and Conducted Band Edge measurements per the Marker-Delta Method with the following formula:

Band Edge field Strength = F - Δ

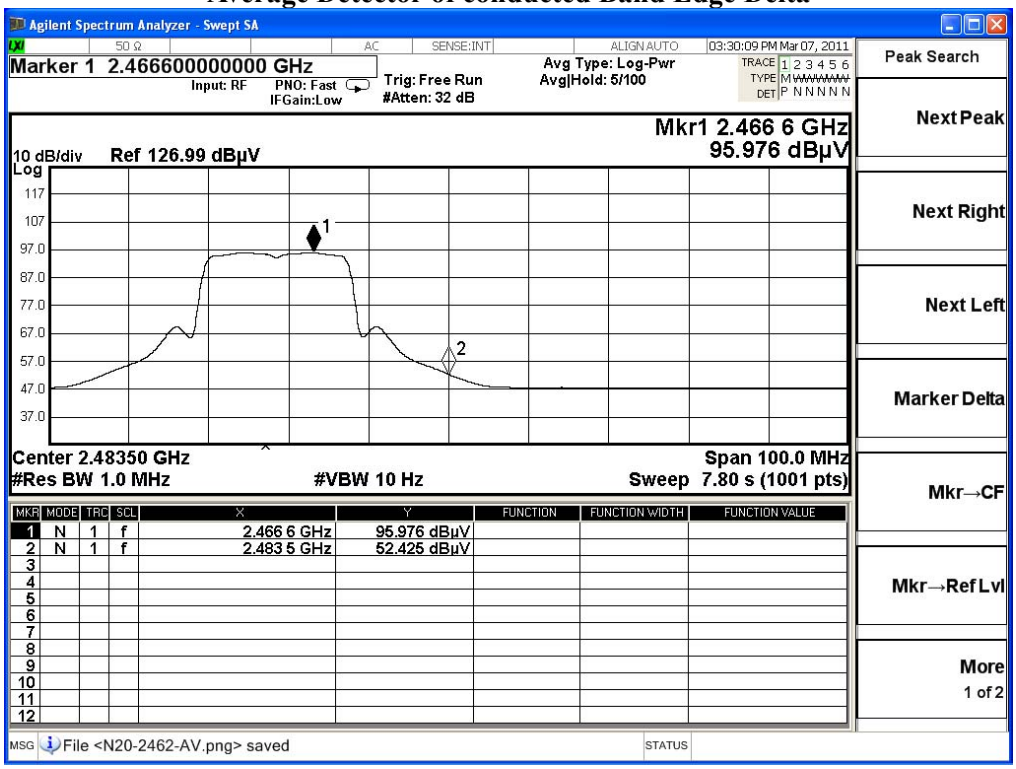
F = Fundamental field Strength (Peak or Average)

Δ = Conducted Band Edge Delta (Peak or Average)

Peak Detector of conducted Band Edge Delta



Average Detector of conducted Band Edge Delta



Product : 802.11 a/b/g/n module
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Mode : Mode 5: Transmit - 802.11n-40BW_30Mbps(2.4G Band)

Fundamental Filed Strength

Antenna Pole	Frequency [MHz]	Correction Factor [dB/m]	Reading Level [dBuV]	Emission Level [dBuV/m]	Detector
Horizontal	2422	31.715	70.59	102.305	Peak
Horizontal	2422	31.715	54.89	86.605	Average
Vertical	2422	31.017	72.56	103.577	Peak
Vertical	2422	31.017	57.2	88.217	Average

Note: 1:Spectrum Analyzer setting:

Peak detector: RBW=1MHz, VBW=1MHz

Average detector: RBW=1MHz, VBW=10Hz

Band Edge Test Data

Antenna Pole	Test Frequency (MHz)	Fundamental (dBuV/m)	Δ (dB)	Band Edge Field Strength (dBuV/m)	Detector
Horizontal	2388	102.305	38	64.305	Peak
Horizontal	2390	86.605	37.401	49.204	Average
Vertical	2388	103.577	38	65.577	Peak
Vertical	2390	88.217	37.401	50.816	Average

Note:

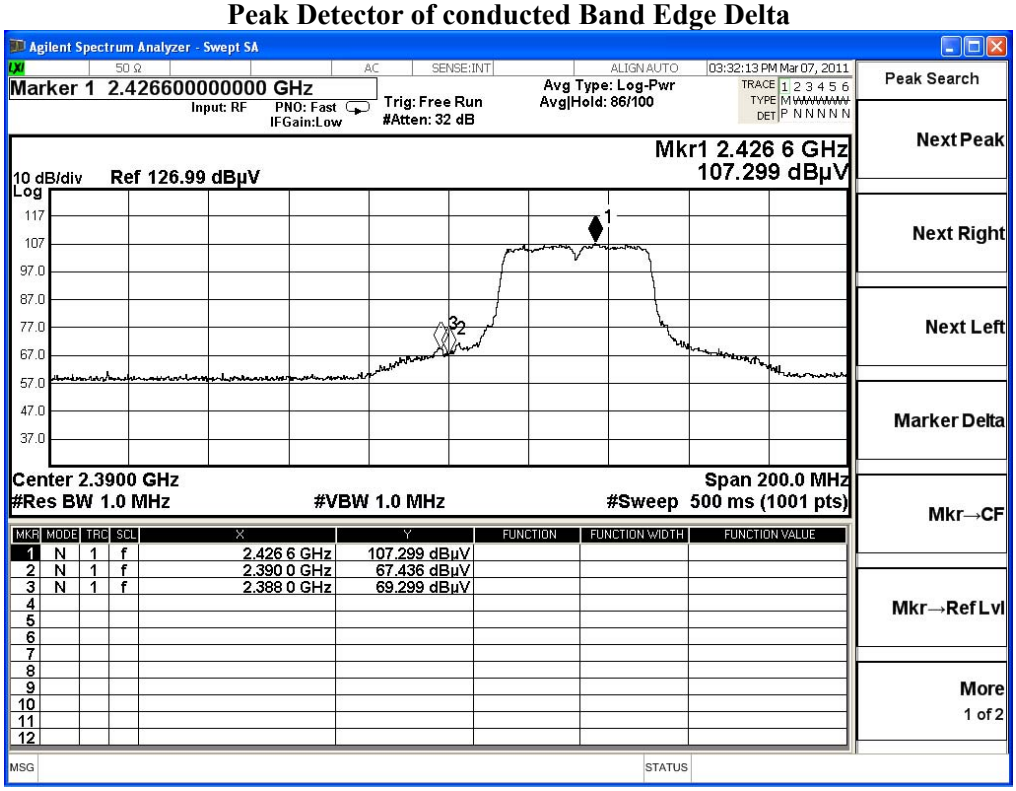
The Band Edge Field Strength was calculated using the Fundamental and Conducted Band Edge measurements per the Marker-Delta Method with the following formula:

Band Edge field Strength = F - Δ

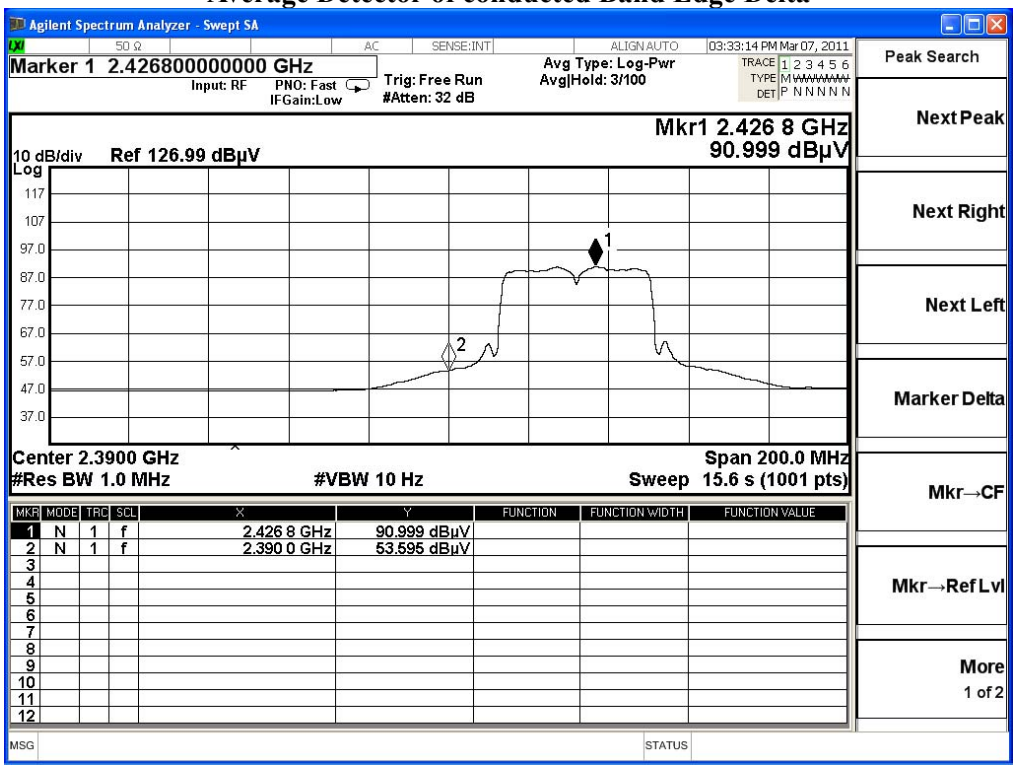
F = Fundamental field Strength (Peak or Average)

Δ = Conducted Band Edge Delta (Peak or Average)

Peak Detector of conducted Band Edge Delta



Average Detector of conducted Band Edge Delta



Product : 802.11 a/b/g/n module
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Mode : Mode 5: Transmit - 802.11n-40BW_30Mbps(2.4G Band)

Fundamental Filed Strength

Antenna Pole	Frequency [MHz]	Correction Factor [dB/m]	Reading Level [dBuV]	Emission Level [dBuV/m]	Detector
Horizontal	2452	31.944	69.61	101.554	Peak
Horizontal	2452	31.944	53.82	85.764	Average
Vertical	2452	31.222	72.43	103.652	Peak
Vertical	2452	31.222	56.87	88.092	Average

Note: 1:Spectrum Analyzer setting:

Peak detector: RBW=1MHz, VBW=1MHz

Average detector: RBW=1MHz, VBW=10Hz

Band Edge Test Data

Antenna Pole	Test Frequency (MHz)	Fundamental (dBuV/m)	Δ (dB)	Band Edge Field Strength (dBuV/m)	Detector
Horizontal	2483.5	101.554	39.012	62.542	Peak
Horizontal	2483.5	85.764	37.253	48.511	Average
Vertical	2483.5	103.652	39.012	64.64	Peak
Vertical	2483.5	88.092	37.253	50.839	Average

Note:

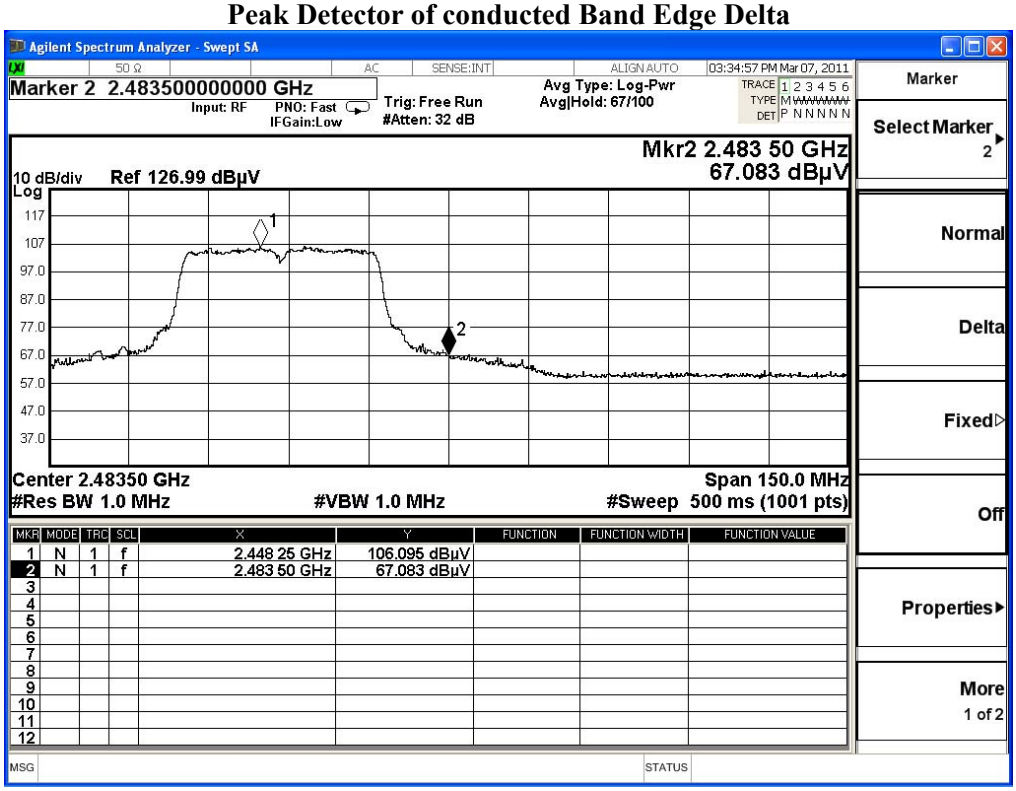
The Band Edge Field Strength was calculated using the Fundamental and Conducted Band Edge measurements per the Marker-Delta Method with the following formula:

Band Edge field Strength = F - Δ

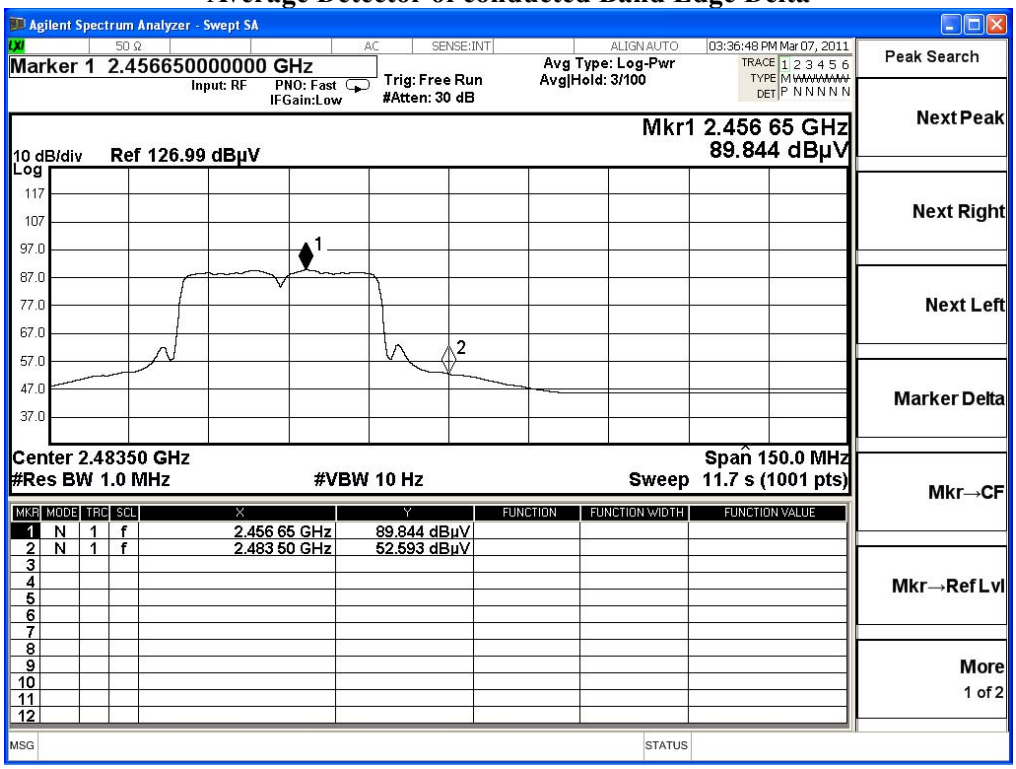
F = Fundamental field Strength (Peak or Average)

Δ = Conducted Band Edge Delta (Peak or Average)

Peak Detector of conducted Band Edge Delta

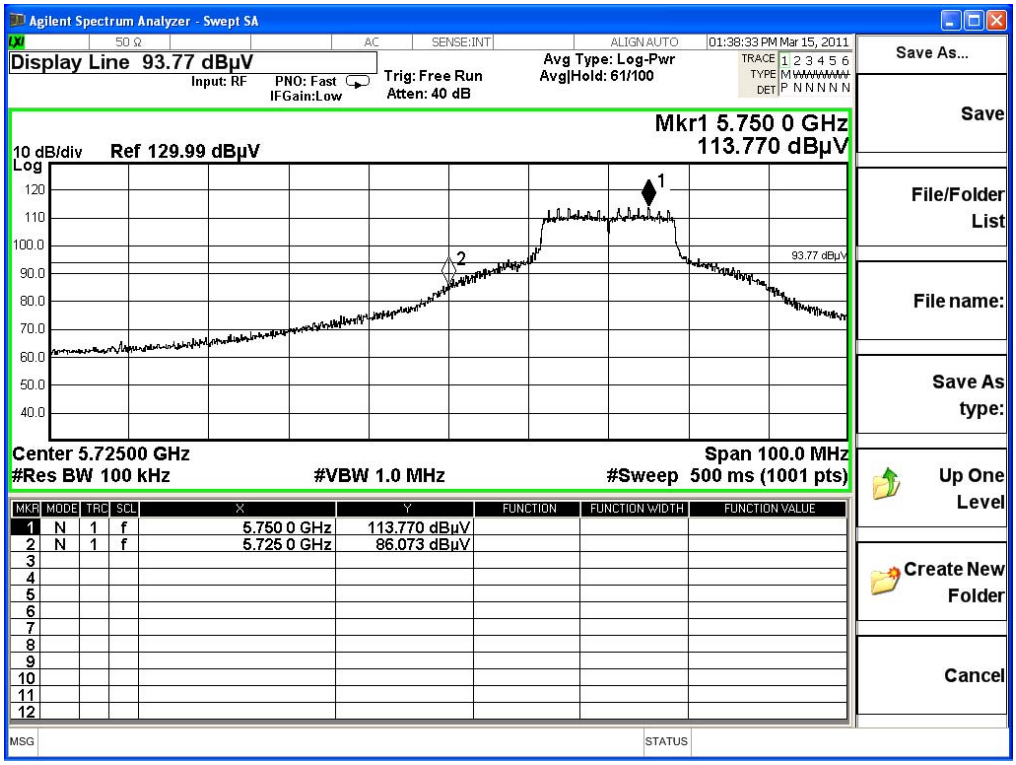


Average Detector of conducted Band Edge Delta



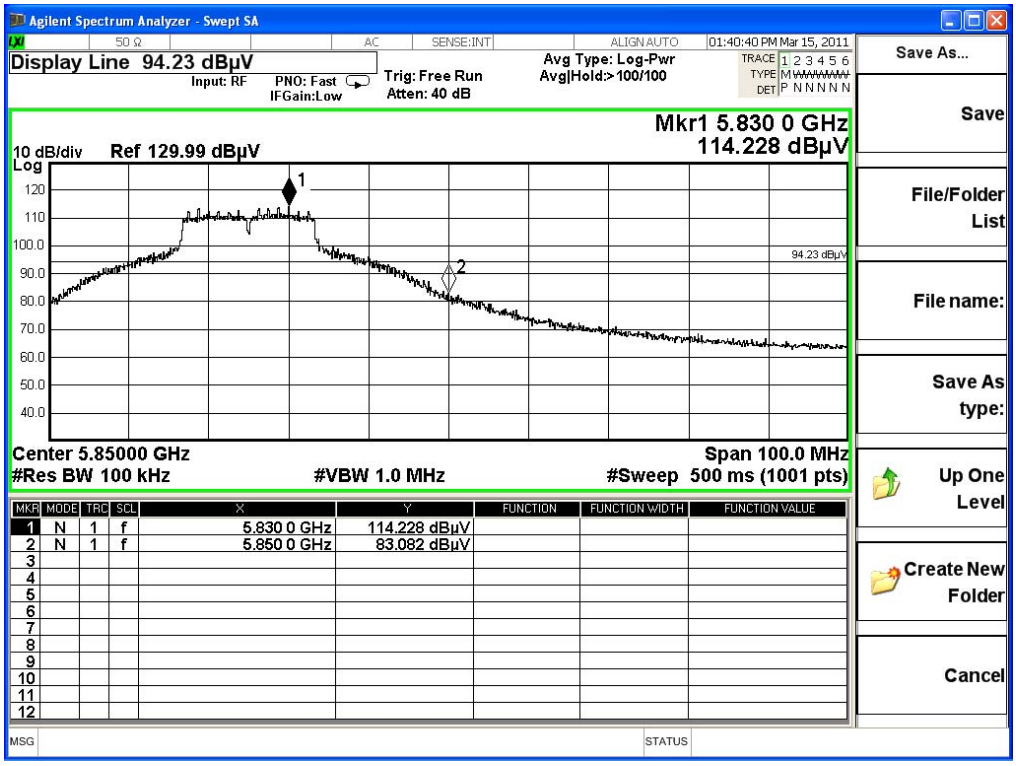
Product : 802.11 a/b/g/n module
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit - 802.11a 6Mbps

Test Frequency (MHz)	Measurement Level Δ (dB)	Limit Δ (dB)	Result
5745	27.697	>20	PASS



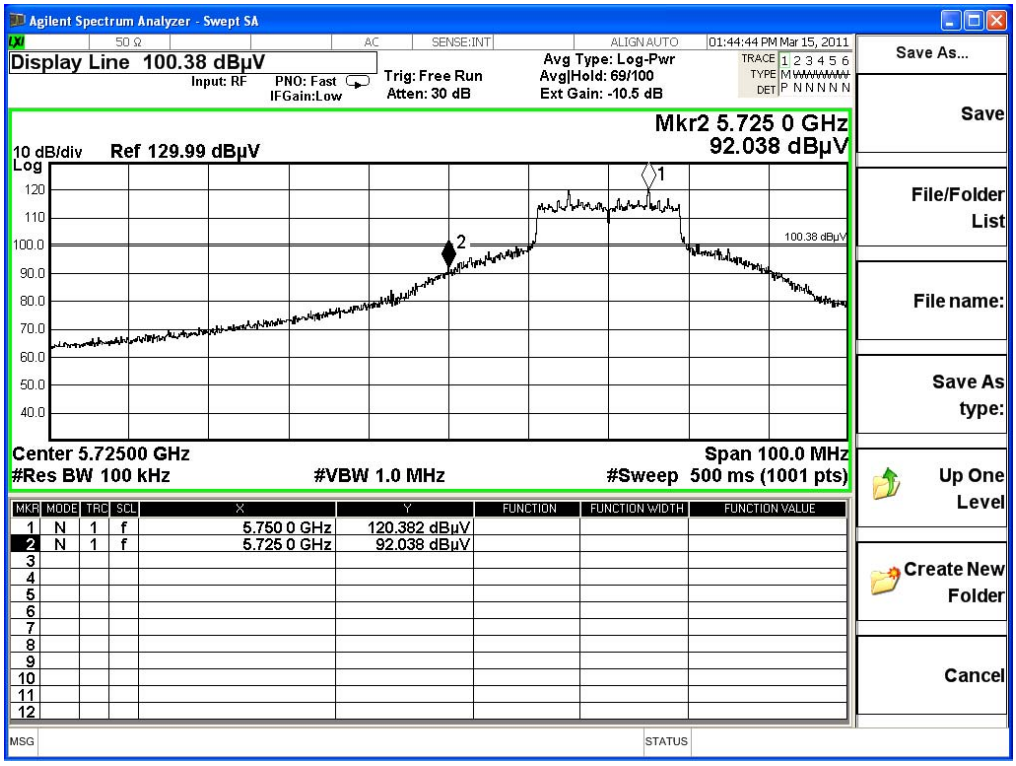
Product : 802.11 a/b/g/n module
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit - 802.11a 6Mbps

Test Frequency (MHz)	Measurement Level Δ (dB)	Limit Δ (dB)	Result
5825	31.146	>20	PASS



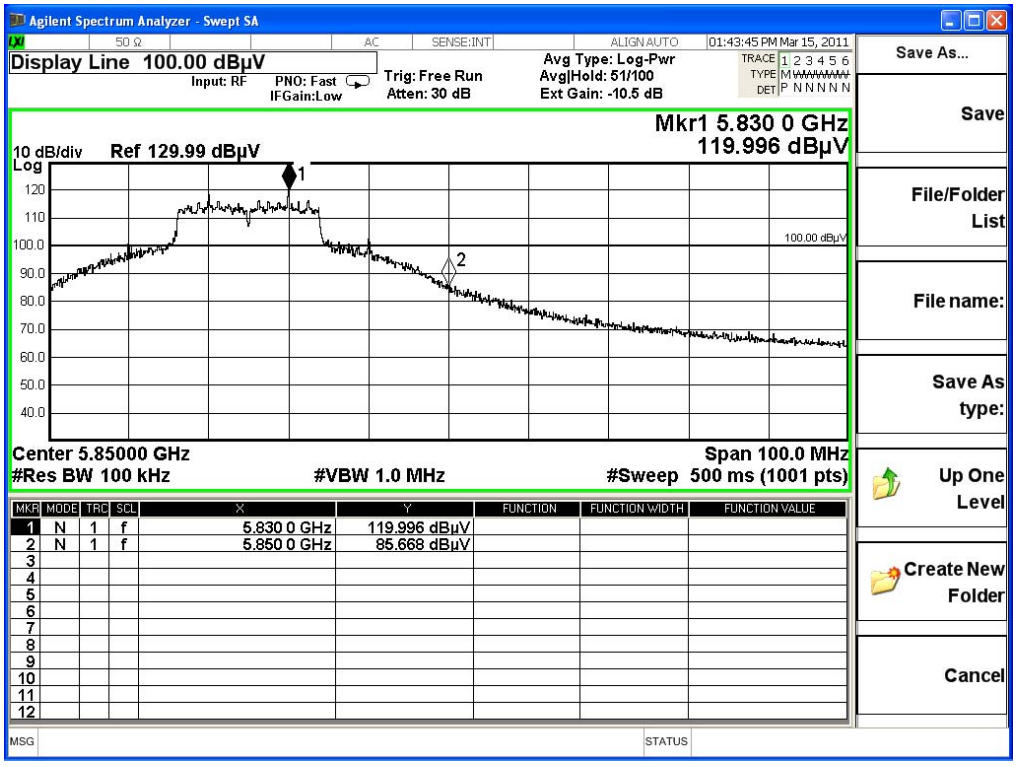
Product : 802.11 a/b/g/n module
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Mode : Mode 6: Transmit - 802.11n-20BW_14.4Mbps(5G Band)

Test Frequency (MHz)	Measurement Level Δ (dB)	Limit Δ (dB)	Result
5745	28.344	>20	PASS



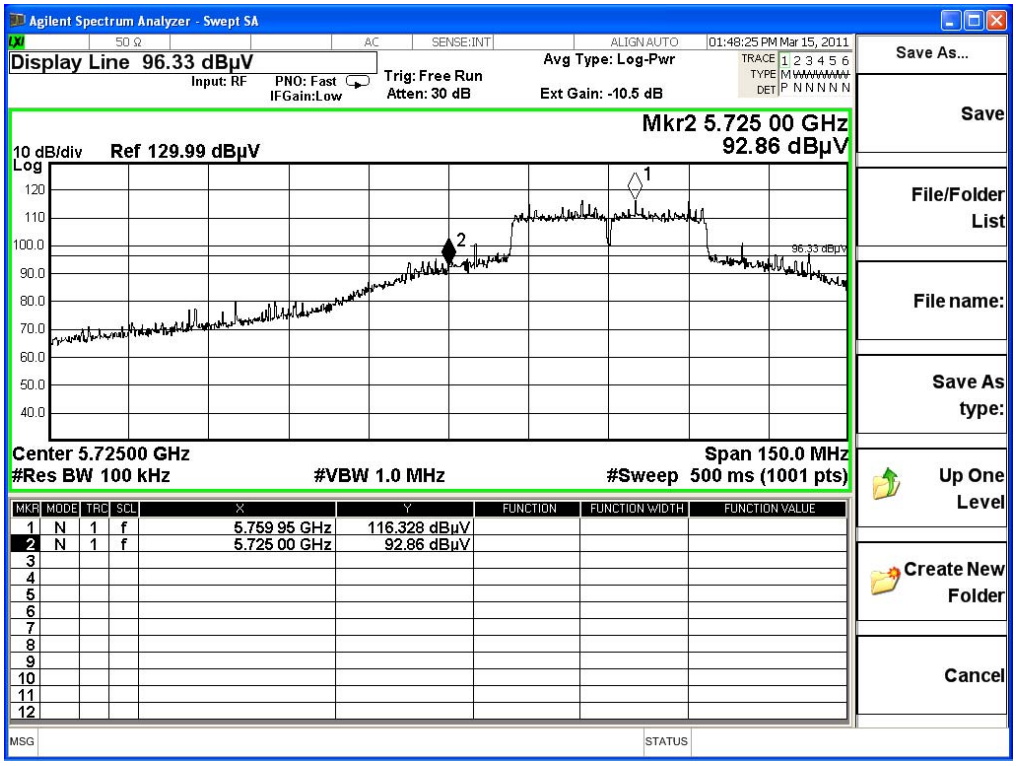
Product : 802.11 a/b/g/n module
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Mode : Mode 6: Transmit - 802.11n-20BW_14.4Mbps(5G Band)

Test Frequency (MHz)	Measurement Level Δ (dB)	Limit Δ (dB)	Result
5825	34.328	>20	PASS



Product : 802.11 a/b/g/n module
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Mode : Mode 7: Transmit - 802.11n-40BW_30Mbps(5G Band)

Test Frequency (MHz)	Measurement Level Δ (dB)	Limit Δ (dB)	Result
5755	23.468	>20	PASS



Product : 802.11 a/b/g/n module
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Mode : Mode 7: Transmit - 802.11n-40BW_30Mbps(5G Band)

Test Frequency (MHz)	Measurement Level Δ (dB)	Limit Δ (dB)	Result
5795	33.639	>20	PASS