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
Report Version	V1.0

Test Report Certification

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

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 with metal reflector	2.5 dBi in 2.4GHz 4.5 dBi in 5.0GHz	With metal reflector
2	AmTRAN	EDB-45S with metal reflector	2.5 dBi in 2.4GHz 4.5 dBi in 5.0GHz	
3	AmTRAN	MSA-3025-25GC4 with metal reflector	4.21 dBi in 2.4GHz 4.5 dBi in 5.0GHz	
4	AmTRAN	FPA-3025-25GC4 with metal reflector	4.26 dBi in 2.4GHz 6 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 with 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.

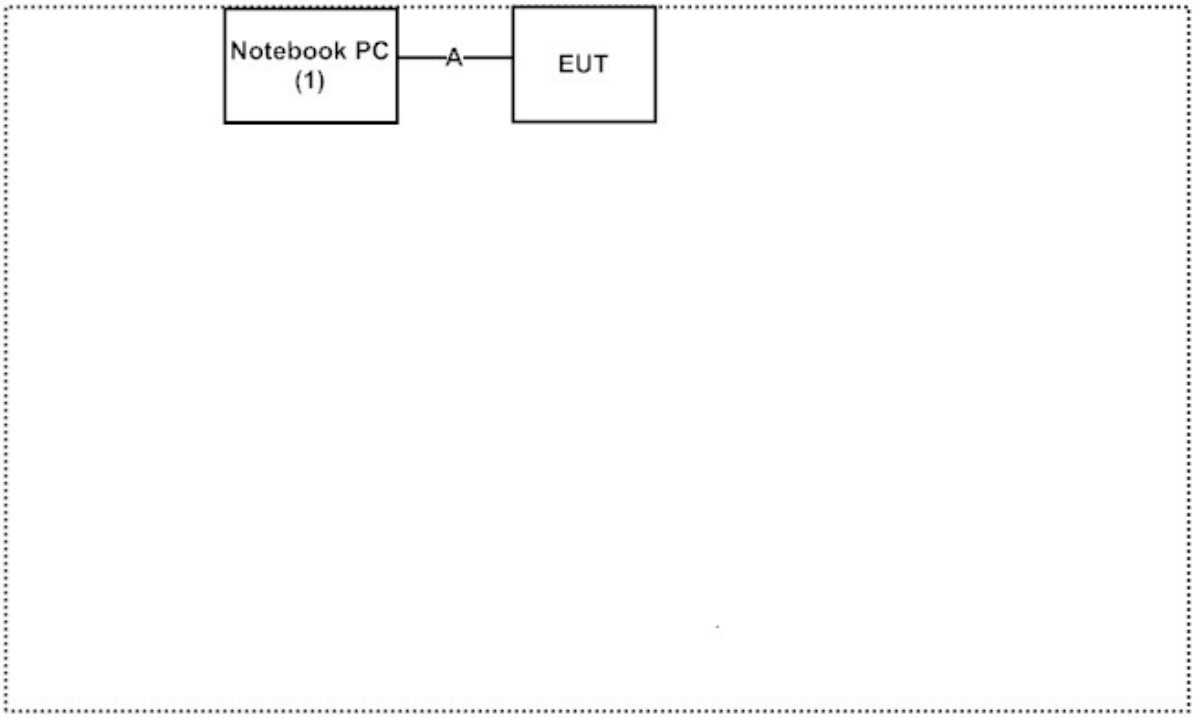
1.3. Tested System Details

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

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2. Conducted Emission

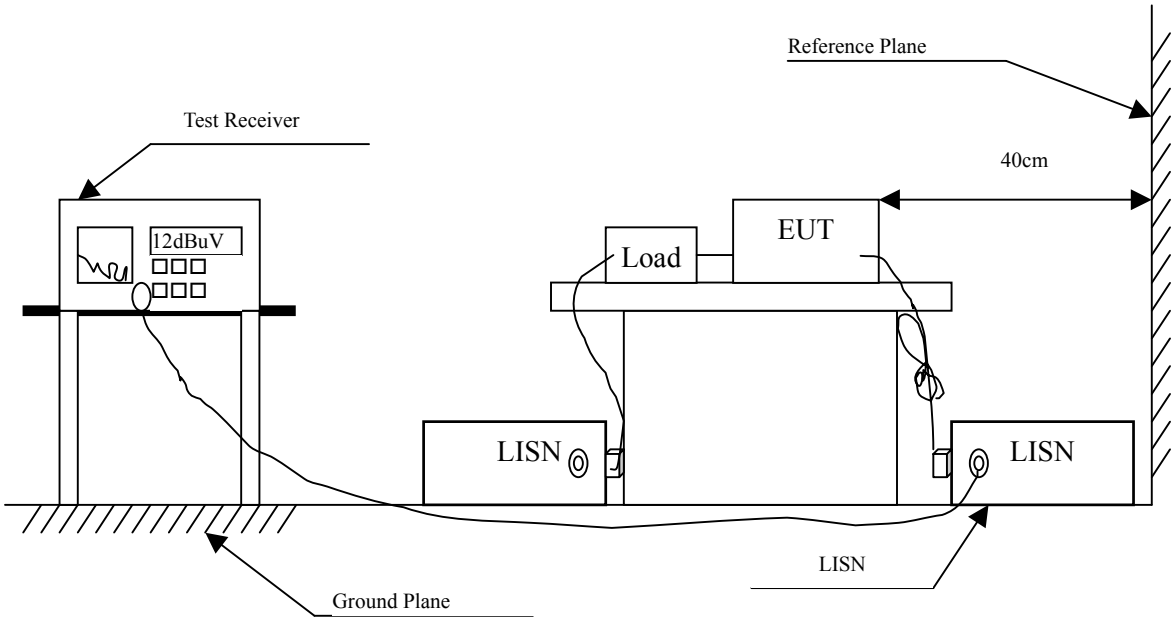
2.1. Test Equipment

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					
0.150	9.766	49.370	59.136	-6.864	66.000
0.177	9.730	43.330	53.059	-12.170	65.229
0.240	9.680	39.890	49.570	-13.859	63.429
0.295	9.652	36.630	46.282	-15.575	61.857
0.505	9.640	26.200	35.840	-20.160	56.000
2.658	9.690	22.900	32.590	-23.410	56.000
Average					
0.150	9.766	31.780	41.546	-14.454	56.000
0.177	9.730	19.900	29.629	-25.600	55.229
0.240	9.680	19.920	29.600	-23.829	53.429
0.295	9.652	20.130	29.782	-22.075	51.857
0.505	9.640	6.230	15.870	-30.130	46.000
2.658	9.690	19.900	29.590	-16.410	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					
0.173	9.739	43.670	53.409	-11.934	65.343
0.244	9.689	39.750	49.439	-13.875	63.314
0.279	9.667	35.440	45.107	-17.207	62.314
0.326	9.660	29.520	39.180	-21.791	60.971
0.490	9.640	21.830	31.470	-24.816	56.286
0.884	9.670	24.080	33.750	-22.250	56.000
Average					
0.173	9.739	20.210	29.949	-25.394	55.343
0.244	9.689	19.300	28.989	-24.325	53.314
0.279	9.667	12.740	22.407	-29.907	52.314
0.326	9.660	10.680	20.340	-30.631	50.971
0.490	9.640	3.240	12.880	-33.406	46.286
0.884	9.670	22.850	32.520	-13.480	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 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					
0.173	9.734	43.900	53.635	-11.708	65.343
0.228	9.688	40.450	50.138	-13.633	63.771
0.255	9.673	38.690	48.362	-14.638	63.000
0.310	9.650	30.920	40.570	-20.859	61.429
0.478	9.640	22.010	31.650	-24.979	56.629
1.216	9.670	23.070	32.740	-23.260	56.000
Average					
0.173	9.734	20.350	30.085	-25.258	55.343
0.228	9.688	19.730	29.418	-24.353	53.771
0.255	9.673	18.720	28.392	-24.608	53.000
0.310	9.650	10.330	19.980	-31.449	51.429
0.478	9.640	3.470	13.110	-33.519	46.629
1.216	9.670	21.280	30.950	-15.050	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					
0.162	9.751	46.180	55.931	-9.726	65.657
0.252	9.685	39.960	49.645	-13.441	63.086
0.380	9.650	22.940	32.590	-26.839	59.429
0.494	9.640	23.250	32.890	-23.281	56.171
2.439	9.680	25.190	34.870	-21.130	56.000
6.650	9.740	25.470	35.210	-24.790	60.000
Average					
0.162	9.751	24.010	33.761	-21.896	55.657
0.252	9.685	22.120	31.805	-21.281	53.086
0.380	9.650	1.830	11.480	-37.949	49.429
0.494	9.640	4.210	13.850	-32.321	46.171
2.439	9.680	22.520	32.200	-13.800	46.000
6.650	9.740	21.680	31.420	-18.580	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

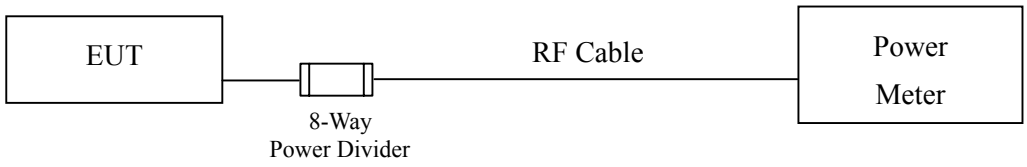
	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X	Power Meter	Anritsu	ML2495A/6K00003357	May, 2010
X	Power Sensor	Anritsu	MA2411B/0738448	Jun, 2010
X	8-WAY Power Divider	JFW	50PD-647 / 526770 0916	Apr., 2010

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	16.04	--	--	--	19.68	1Watt= 30 dBm
6	2437.00	15.94	15.67	15.33	15.22	19.80	1Watt= 30 dBm
11	2462.00	14.81	--	--	--	18.55	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	13	--	--	--	--	--	--	--	22.95	<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	11.66	--	--	--	--	--	--	--	22.03	<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	12.89	--	--	--	--	--	--	--	23.87	<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	13.08	--	--	--	--	--	--	--	23.42	<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	12.55	--	--	--	--	--	--	--	23.45	<30dBm	Pass
06	2437	17.75	17.33	17.24	17.1	16.92	16.84	16.51	16.31	28.39	<30dBm	Pass
09	2452	11.43	--	--	--	--	--	--	--	22.05	<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:

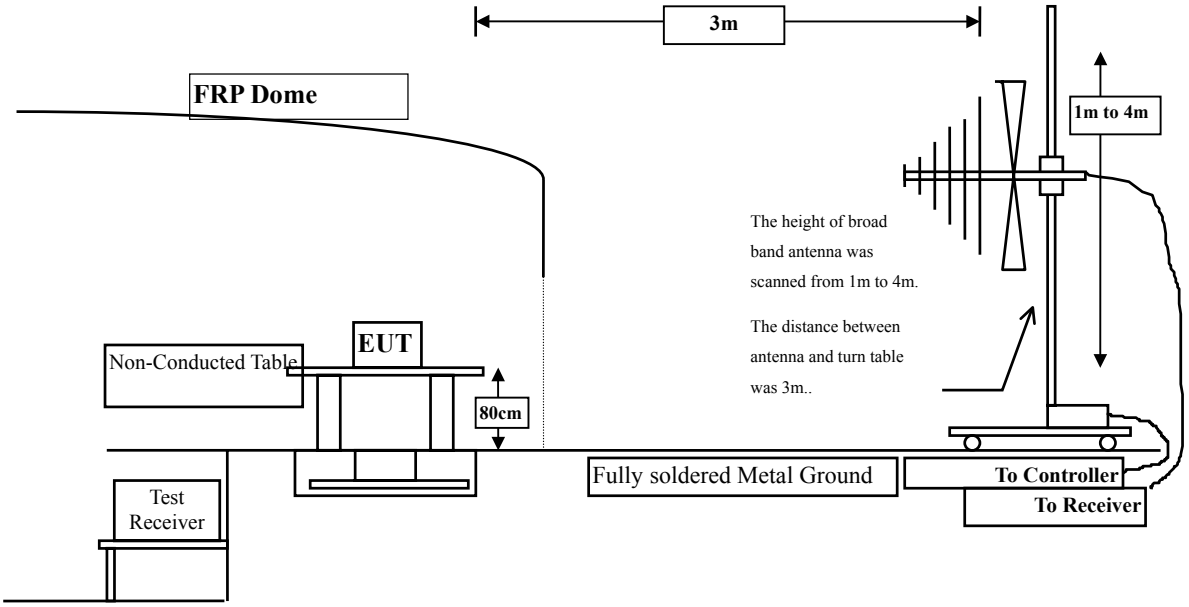
Test Site	Equipment		Manufacturer	Model No./Serial No.	Last Cal.
☒Site # 3	X	Bilog Antenna	Schaffner Chase	CBL6112B/2673	Sep., 2010
	X	Horn Antenna	Schwarzbeck	BBHA9120D/D305	Sep., 2010
	X	Horn Antenna	Schwarzbeck	BBHA9170/208	Jul., 2010
	X	Pre-Amplifier	Agilent	8447D/2944A09549	Sep., 2010
	X	Spectrum 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.

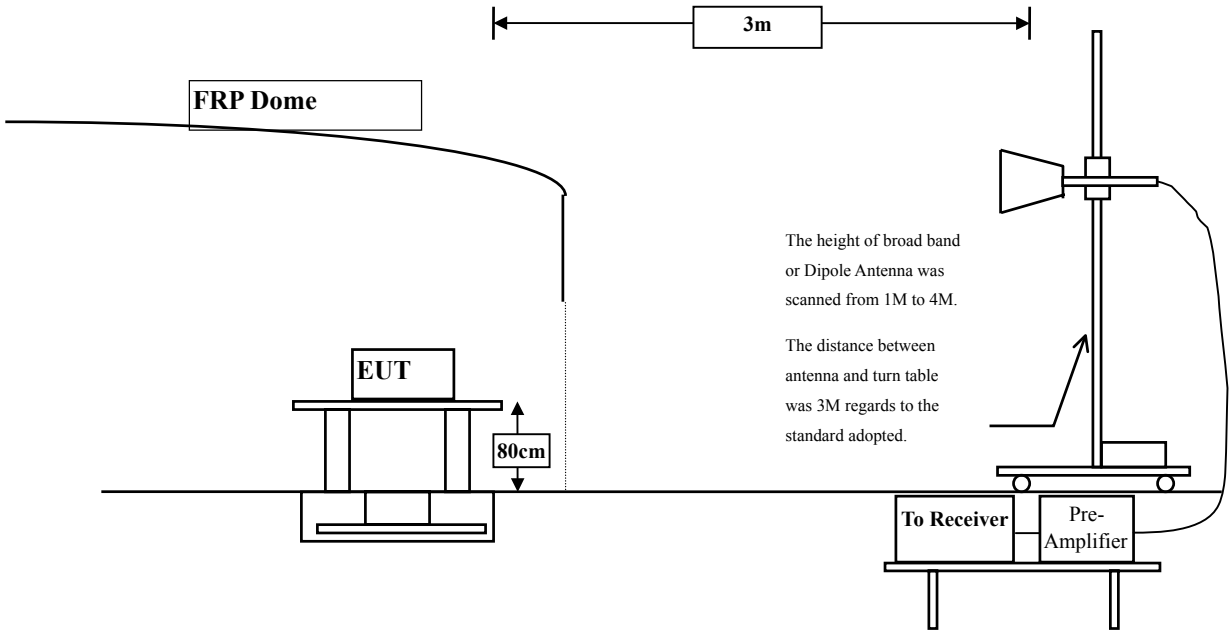
2. The test instruments marked with "X" are used to measure the final test results.

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	44.610	47.871	-26.129	74.000
	7236.000	10.650	38.770	49.420	-24.580	74.000
	9648.000	13.337	36.950	50.286	-23.714	74.000
	Average Detector:					
	--					
	Vertical					
	Peak Detector:					
	4824.000	6.421	46.710	53.131	-20.869	74.000
	7236.000	11.495	40.210	51.705	-22.295	74.000
◆	9648.000	13.807	44.910	58.716	-21.973	80.689
	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 non-restricted bands, limit=fundamental level down 20dBc.
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	44.330	47.367	-26.633	74.000
	7311.000	11.795	36.170	47.964	-26.036	74.000
	9748.000	12.635	38.490	51.125	-22.875	74.000
	Average Detector:					
	--					
	Vertical Peak Detector:					
	4874.000	5.812	46.980	52.791	-21.209	74.000
	7311.000	12.630	38.020	50.649	-23.351	74.000
◆	9748.000	13.126	43.930	57.056	-29.753	86.509
	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 non-restricted bands, limit=fundamental level down 20dBc.
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	40.980	43.837	-30.163	74.000
7386.000	12.127	35.680	47.808	-26.192	74.000
9848.000	12.852	36.880	49.733	-24.267	74.000
Average					
Detector:					
--					
Vertical					
Peak Detector:					
4924.000	5.521	44.450	49.970	-24.030	74.000
7386.000	13.254	36.350	49.604	-24.396	74.000
9848.000	13.367	37.280	50.647	-23.353	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	38.860	42.121	-31.879	74.000
7236.000	10.650	35.690	46.340	-27.660	74.000
9648.000	13.337	37.180	50.516	-23.484	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4824.000	6.421	38.250	44.671	-29.329	74.000
7236.000	11.495	35.770	47.265	-26.735	74.000
9648.000	13.807	37.810	51.616	-22.384	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	45.910	48.947	-25.053	74.000
7311.000	11.795	46.220	58.014	-15.986	74.000
9748.000	12.635	41.080	53.715	-20.285	74.000
Average					
Detector:					
7311.000	11.795	31.800	43.594	-10.406	54.000
Vertical					
Peak Detector:					
4874.000	5.812	53.180	58.991	-15.009	74.000
7311.000	11.795	51.470	63.264	-10.736	74.000
9748.000	12.635	50.860	63.495	-10.505	74.000
Average					
Detector:					
4874.000	5.812	39.720	45.531	-8.469	54.000
7311.000	12.630	35.520	48.149	-5.851	54.000
9748.000	13.126	36.450	49.576	-4.424	54.000

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 : 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	38.190	41.047	-32.953	74.000
7386.000	12.127	36.550	48.678	-25.322	74.000
9848.000	12.852	37.240	50.093	-23.907	74.000
Average					
Detector:					
--					
Vertical					
Peak Detector:					
4924.000	5.521	39.870	45.390	-28.610	74.000
7386.000	13.254	36.520	49.774	-24.226	74.000
9848.000	13.367	37.920	51.287	-22.713	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	41.940	59.047	-14.953	74.000
Average Detector:					
11490.000	17.106	27.090	44.197	-9.803	54.000
Vertical Peak Detector:					
11490.000	18.034	37.340	55.375	-18.625	74.000
Average Detector:					
11490.000	18.034	23.980	42.015	-11.985	54.000

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 : 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	43.390	60.199	-13.801	74.000
Average Detector:					
11570.000	16.809	28.810	45.619	-8.381	54.000
Vertical Peak Detector:					
11570.000	17.698	39.940	57.638	-16.362	74.000
Average Detector:					
11570.000	17.698	25.330	43.028	-10.972	54.000

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 : 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	47.020	63.178	-10.822	74.000
Average Detector:					
11650.000	16.158	31.200	47.358	-6.642	54.000
Vertical Peak Detector:					
11650.000	17.274	42.440	59.715	-14.285	74.000
Average Detector:					
11650.000	17.274	25.480	42.755	-11.245	54.000

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 : 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	42.010	45.271	-28.729	74.000
7236.000	10.650	36.970	47.620	-26.380	74.000
9648.000	13.337	37.850	51.186	-22.814	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4824.000	6.421	42.270	48.691	-25.309	74.000
7236.000	11.495	37.940	49.435	-24.565	74.000
9648.000	13.807	37.840	51.646	-22.354	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	44.590	47.627	-26.373	74.000
7311.000	11.795	37.910	49.704	-24.296	74.000
9748.000	12.635	38.390	51.025	-22.975	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4874.000	5.812	47.890	53.701	-20.299	74.000
7311.000	12.630	39.820	52.449	-21.551	74.000
9748.000	13.126	37.910	51.036	-22.964	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	39.560	42.417	-31.583	74.000
7386.000	12.127	36.340	48.468	-25.532	74.000
9848.000	12.852	37.580	50.433	-23.567	74.000
Average					
Detector:					
--					
Vertical					
Peak Detector:					
4924.000	5.521	41.830	47.350	-26.650	74.000
7386.000	13.254	36.090	49.344	-24.656	74.000
9848.000	13.367	38.230	51.597	-22.403	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	39.480	42.651	-31.349	74.000
7266.000	11.162	37.820	48.982	-25.018	74.000
9688.000	12.964	38.150	51.115	-22.885	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4844.000	6.178	41.550	47.728	-26.272	74.000
7266.000	11.982	37.380	49.362	-24.638	74.000
9688.000	13.507	38.460	51.968	-22.032	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	44.670	47.707	-26.293	74.000
7311.000	11.795	35.980	47.774	-26.226	74.000
9748.000	12.635	39.100	51.735	-22.265	74.000
Average Detector:					
--					
Vertical Peak Detector:					
4874.000	5.812	46.090	51.901	-22.099	74.000
7311.000	12.630	38.650	51.279	-22.721	74.000
9768.000	13.004	38.950	51.953	-22.047	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	38.540	41.455	-32.545	74.000
7356.000	11.995	37.360	49.354	-24.646	74.000
9808.000	12.475	37.750	50.225	-23.775	74.000
Average					
Detector:					
--					
Vertical					
Peak Detector:					
4904.000	5.530	39.450	44.981	-29.019	74.000
7356.000	13.005	37.390	50.394	-23.606	74.000
9808.000	12.901	37.740	50.641	-23.359	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	40.110	57.217	-16.783	74.000
Average					
Detector:					
11490.000	17.106	26.080	43.187	-10.813	54.000
Vertical					
Peak Detector:					
11490.000	18.034	42.150	60.185	-13.815	74.000
Average					
Detector:					
11490.000	18.034	28.140	46.175	-7.825	54.000

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 : 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	44.160	60.969	-13.031	74.000
Average Detector:					
11570.000	16.809	30.020	46.829	-7.171	54.000
Vertical Peak Detector:					
11570.000	17.698	46.140	63.838	-10.162	74.000
Average Detector:					
11570.000	17.698	32.130	49.828	-4.172	54.000

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 : 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	47.790	63.948	-10.052	74.000
Average Detector:					
11650.000	16.158	33.740	49.898	-4.102	54.000
Vertical Peak Detector:					
11650.000	17.274	45.720	62.995	-11.005	74.000
Average Detector:					
11650.000	17.274	31.680	48.955	-5.045	54.000

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 : 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	39.490	56.614	-17.386	74.000
Average					
Detector:					
11510.000	17.124	24.320	41.444	-12.556	54.000
Vertical					
Peak Detector:					
11510.000	18.081	41.820	59.901	-14.099	74.000
Average					
Detector:					
11510.000	18.081	26.260	44.341	-9.659	54.000

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 : 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	43.330	60.030	-13.970	74.000
Average Detector:					
11590.000	16.701	28.950	45.650	-8.350	54.000
Vertical Peak Detector:					
11590.000	17.567	46.530	64.096	-9.904	74.000
Average Detector:					
11590.000	17.567	31.290	48.856	-5.144	54.000

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 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					
62.980	-13.103	46.532	33.429	-6.571	40.000
156.100	-10.461	48.308	37.846	-5.654	43.500
239.520	-6.851	45.273	38.423	-7.577	46.000
342.340	-3.272	39.885	36.613	-9.387	46.000
480.080	-0.329	39.950	39.621	-6.379	46.000
699.300	2.875	34.793	37.668	-8.332	46.000
Vertical					
361.740	-3.129	37.304	34.175	-11.825	46.000
437.400	-8.730	44.877	36.147	-9.853	46.000
499.480	-0.852	36.139	35.287	-10.713	46.000
528.580	-0.462	40.043	39.581	-6.419	46.000
699.300	0.695	30.820	31.515	-14.485	46.000
879.720	2.335	36.868	39.203	-6.797	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					
154.160	-10.091	48.508	38.417	-5.083	43.500
241.460	-6.531	45.387	38.856	-7.144	46.000
336.520	-3.860	42.988	39.128	-6.872	46.000
359.800	-1.680	39.097	37.417	-8.583	46.000
699.300	2.875	35.662	38.537	-7.463	46.000
798.240	5.148	31.627	36.775	-9.225	46.000
Vertical					
117.300	-3.106	39.745	36.639	-6.861	43.500
237.580	-8.970	49.130	40.160	-5.840	46.000
353.980	-3.652	40.689	37.037	-8.963	46.000
528.580	-0.462	36.028	35.566	-10.434	46.000
699.300	0.695	36.763	37.458	-8.542	46.000
875.840	1.621	37.593	39.214	-6.786	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					
53.280	-12.652	41.898	29.246	-10.754	40.000
154.160	-10.091	45.036	34.945	-8.555	43.500
237.580	-7.700	45.666	37.966	-8.034	46.000
350.100	-2.332	42.825	40.493	-5.507	46.000
798.240	5.148	33.838	38.986	-7.014	46.000
864.200	5.671	28.152	33.823	-12.177	46.000
Vertical					
97.900	-1.400	36.335	34.934	-8.566	43.500
200.720	-7.835	43.907	36.072	-7.428	43.500
274.440	-8.718	40.983	32.265	-13.735	46.000
388.900	-3.064	34.834	31.770	-14.230	46.000
518.880	-0.546	35.363	34.817	-11.183	46.000
800.180	2.801	37.173	39.974	-6.026	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					
117.300	-9.196	45.459	36.263	-7.237	43.500
154.160	-10.091	47.220	37.129	-6.371	43.500
245.340	-6.346	43.773	37.427	-8.573	46.000
357.860	-2.084	42.451	40.367	-5.633	46.000
697.360	3.171	34.190	37.361	-8.639	46.000
798.240	5.148	32.603	37.751	-8.249	46.000
Vertical					
61.040	-4.316	36.407	32.091	-7.909	40.000
97.900	-1.400	36.617	35.216	-8.284	43.500
206.540	-7.705	45.099	37.394	-6.106	43.500
365.620	-2.179	38.889	36.710	-9.290	46.000
480.080	-4.359	42.580	38.221	-7.779	46.000
697.360	1.311	37.946	39.257	-6.743	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					
117.300	-9.196	43.517	34.321	-9.179	43.500
239.520	-6.851	44.524	37.674	-8.326	46.000
363.680	-1.433	41.930	40.497	-5.503	46.000
458.740	0.833	36.864	37.697	-8.303	46.000
699.300	2.875	37.126	40.001	-5.999	46.000
798.240	5.148	32.941	38.089	-7.911	46.000
Vertical					
62.980	-5.003	36.240	31.237	-8.763	40.000
115.360	-2.630	36.922	34.292	-9.208	43.500
196.840	-8.766	45.224	36.458	-7.042	43.500
365.620	-2.179	38.485	36.306	-9.694	46.000
518.880	-0.546	35.362	34.816	-11.184	46.000
699.300	0.695	37.827	38.522	-7.478	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					
55.220	-13.109	47.815	34.706	-5.294	40.000
154.160	-10.091	47.241	37.150	-6.350	43.500
243.400	-6.441	45.555	39.114	-6.886	46.000
480.080	-0.329	35.407	35.078	-10.922	46.000
600.360	3.977	27.922	31.899	-14.101	46.000
798.240	5.148	33.052	38.200	-7.800	46.000
Vertical					
111.480	-0.954	37.379	36.425	-7.075	43.500
196.840	-8.766	46.811	38.045	-5.455	43.500
258.920	-7.490	41.939	34.449	-11.551	46.000
388.900	-3.064	36.146	33.082	-12.918	46.000
518.880	-0.546	36.643	36.097	-9.903	46.000
798.240	2.808	32.995	35.803	-10.197	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					
53.280	-12.652	46.859	34.207	-5.793	40.000
154.160	-10.091	48.168	38.077	-5.423	43.500
237.580	-7.700	47.492	39.792	-6.208	46.000
480.080	-0.329	34.259	33.930	-12.070	46.000
565.440	1.611	33.313	34.924	-11.076	46.000
798.240	5.148	34.568	39.716	-6.284	46.000
Vertical					
109.540	-0.418	38.841	38.423	-5.077	43.500
198.780	-8.221	44.556	36.335	-7.165	43.500
258.920	-7.490	41.097	33.607	-12.393	46.000
499.480	-0.852	36.271	35.419	-10.581	46.000
625.580	-2.600	31.186	28.586	-17.414	46.000
798.240	2.808	35.243	38.051	-7.949	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

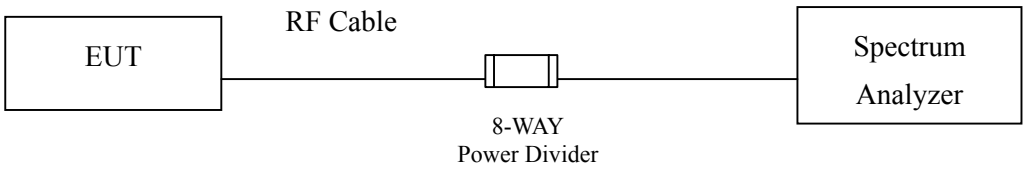
5.1. Test Equipment

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X	Spectrum Analyzer	R&S	FSP40 / 100170	Jun, 2010
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun, 2010
	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.

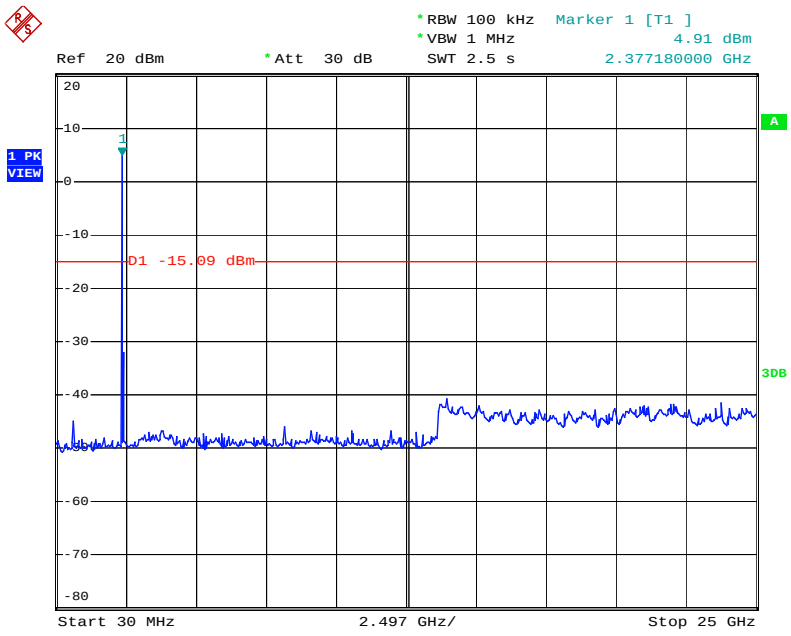
5.5. Uncertainty

The measurement uncertainty
Conducted is defined as ± 1.27dB

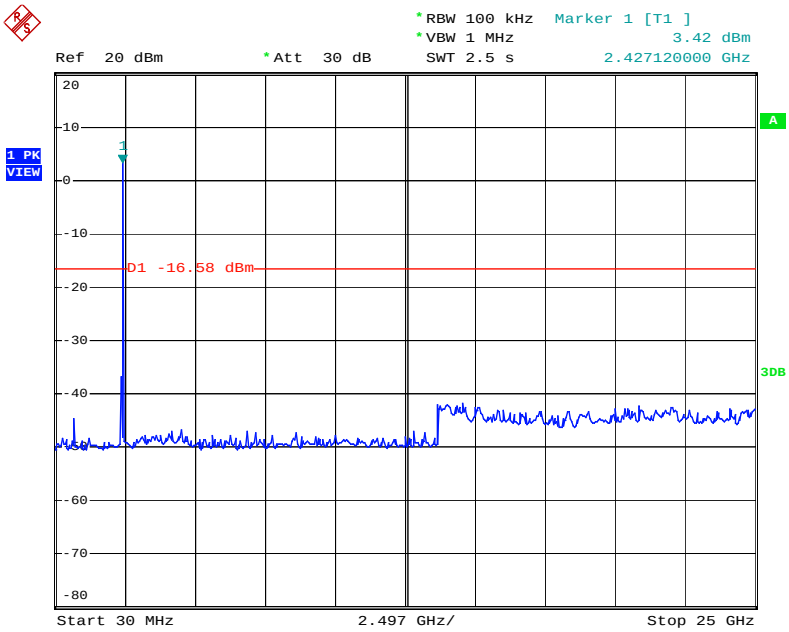
5.6. Test Result of RF antenna conducted test

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

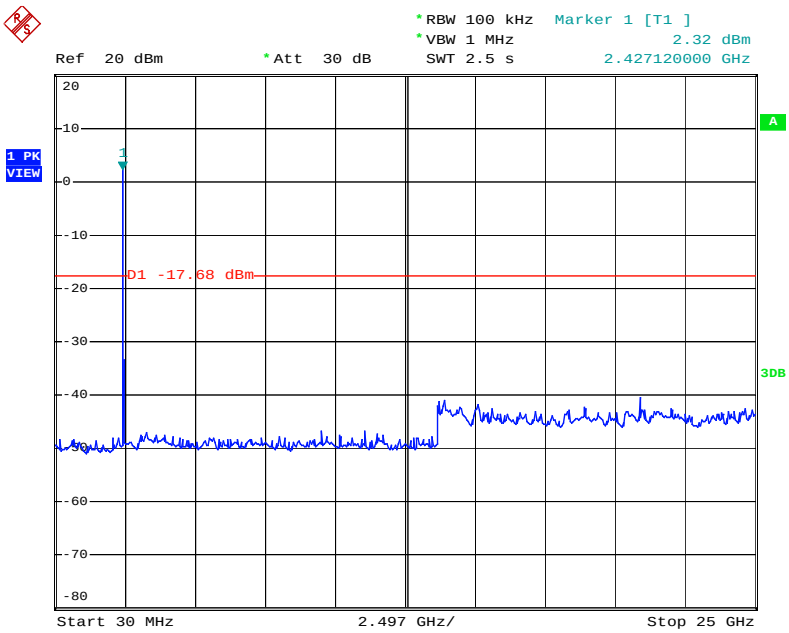


Channel 06 (2437MHz) 30MHz -25GHz



Date: 10.MAR.2011 04:05:56

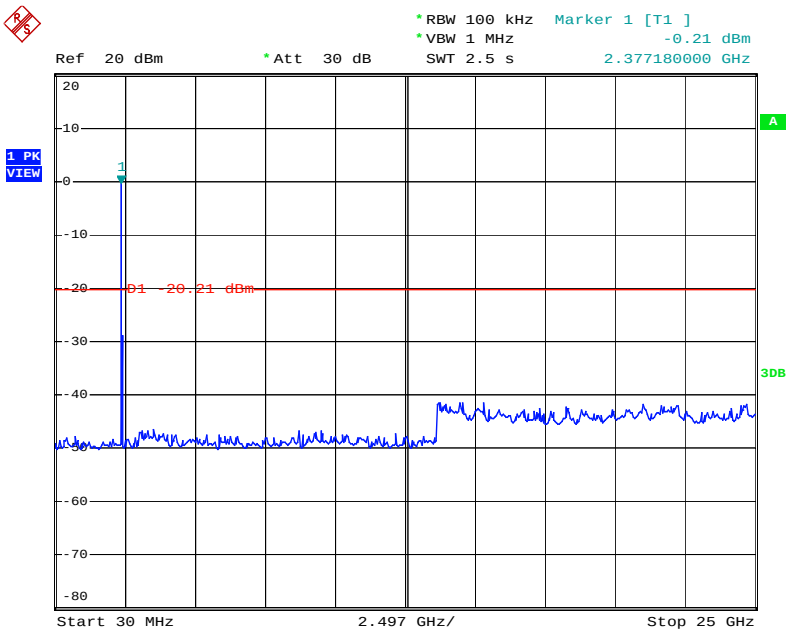
Channel 11 (2462MHz) 30MHz -25GHz



Date: 10.MAR.2011 04:06:52

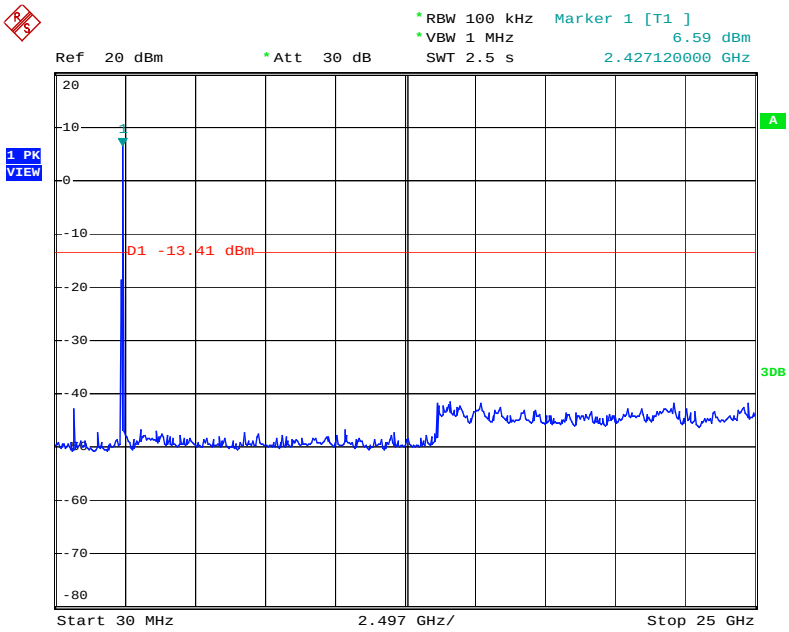
Product : 802.11 a/b/g/n module
Test Item : RF Antenna Conducted Spurious
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit (802.11g 6Mbps)

Channel 01 (2412MHz) 30MHz -25GHz



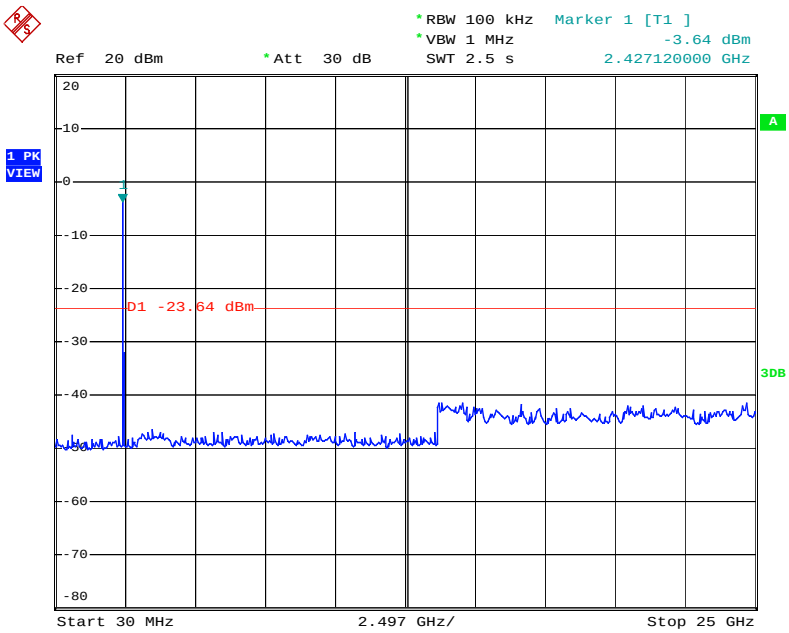
Date: 10.MAR.2011 04:08:05

Channel 06 (2437MHz) 30MHz -25GHz



Date: 10.MAR.2011 04:08:51

Channel 11 (2462MHz) 30MHz -25GHz



Date: 10.MAR.2011 04:09:49

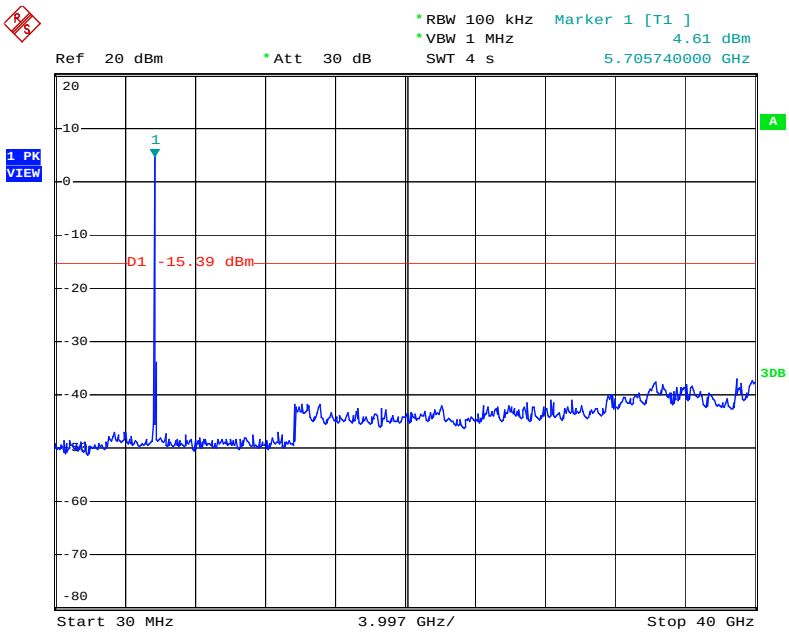
Product : 802.11 a/b/g/n module

Test Item : RF Antenna Conducted Spurious

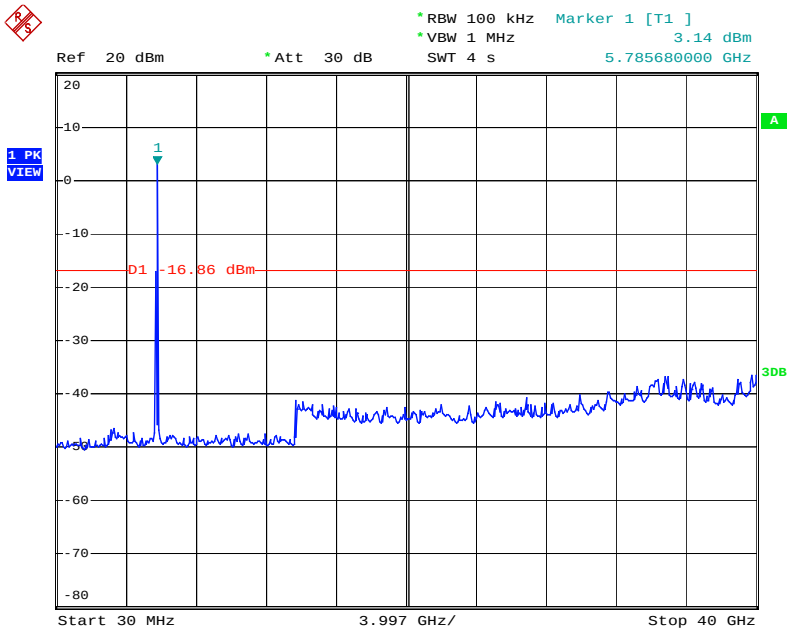
Test Site : No.3 OATS

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

Channel 149 (5745MHz) 30MHz -40GHz

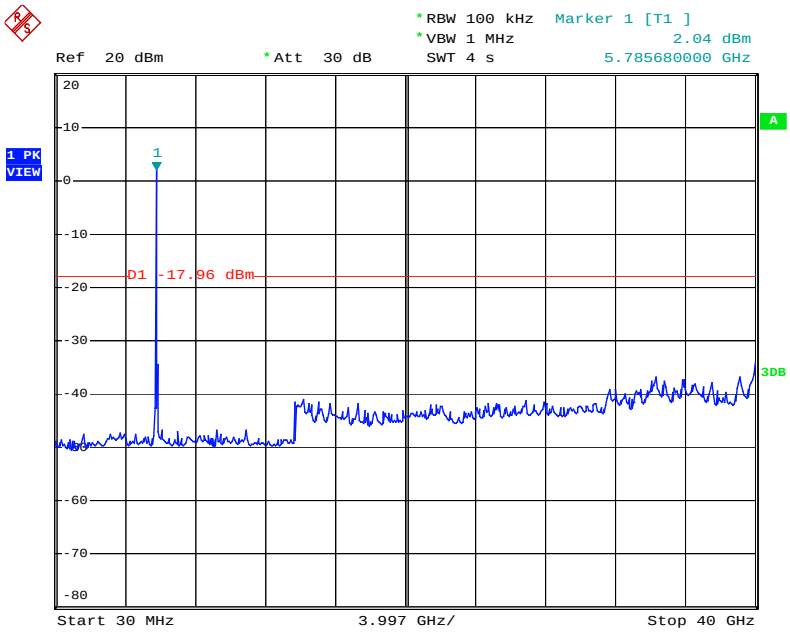


Channel 157 (5785MHz) 30MHz -40GHz



Date: 10.MAR.2011 04:01:53

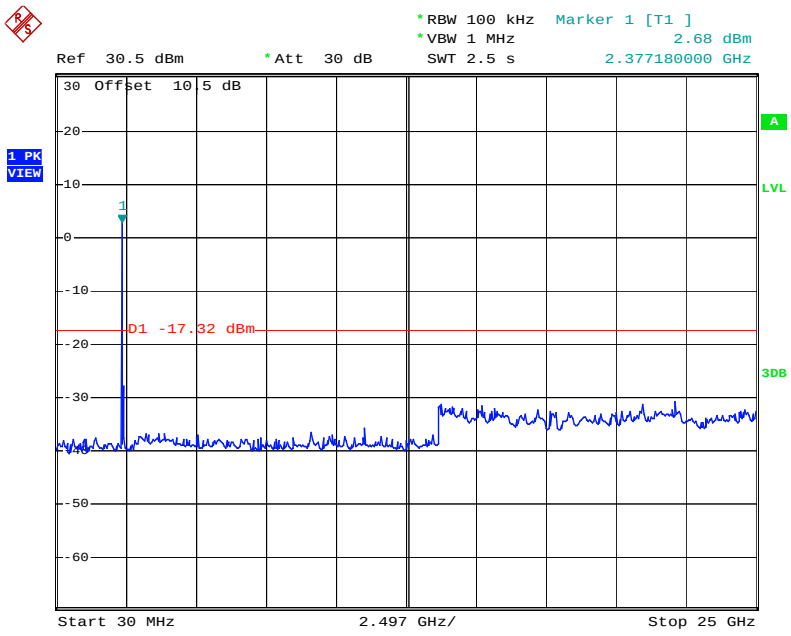
Channel 165 (5825MHz) 30MHz -40GHz



Date: 10.MAR.2011 04:00:54

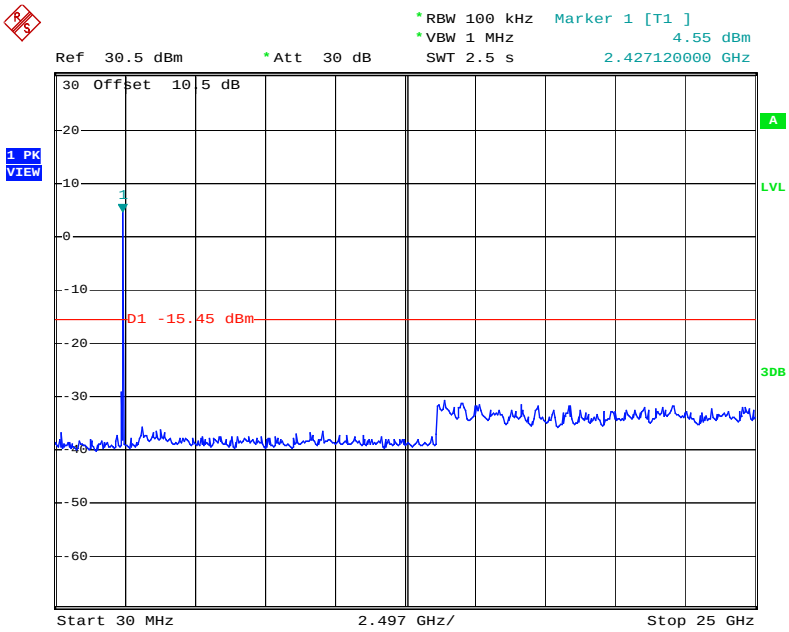
Product : 802.11 a/b/g/n module
Test Item : RF Antenna Conducted Spurious
Test Site : No.3 OATS
Test Mode : Mode 4: Transmit - 802.11n-20BW_14.4Mbps(2.4G Band)

Channel 01 (2412MHz) 30MHz -25GHz



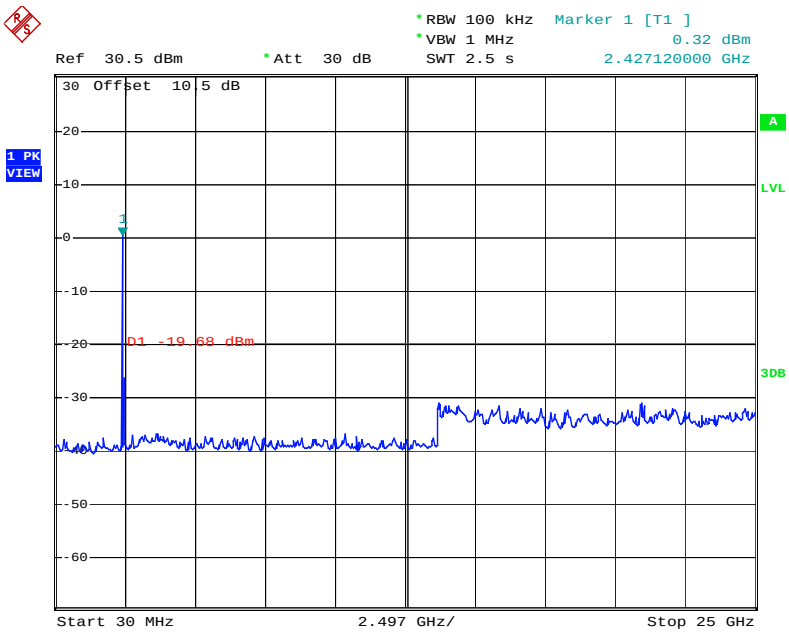
Date: 10.MAR.2011 04:13:31

Channel 06 (2437MHz) 30MHz -25GHz



Date: 10.MAR.2011 04:14:49

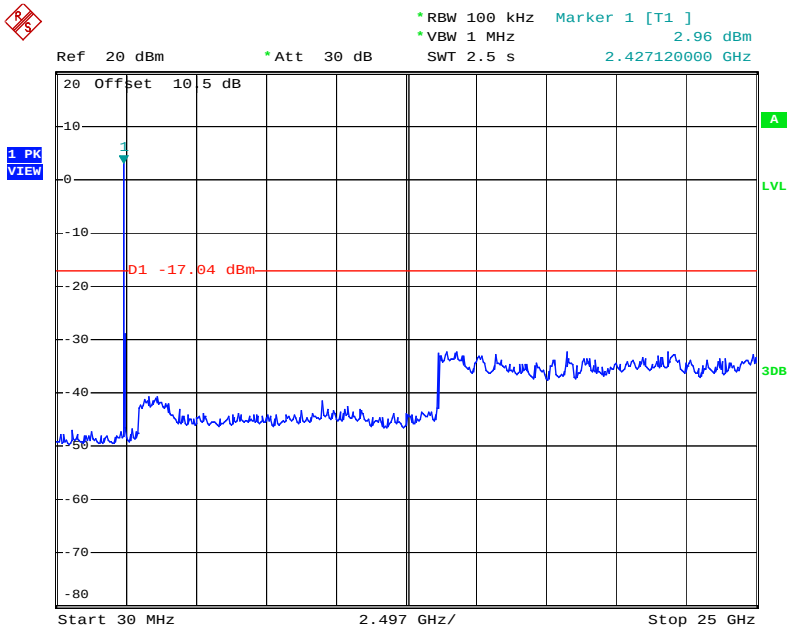
Channel 11 (2462MHz) 30MHz -25GHz



Date: 10.MAR.2011 04:15:28

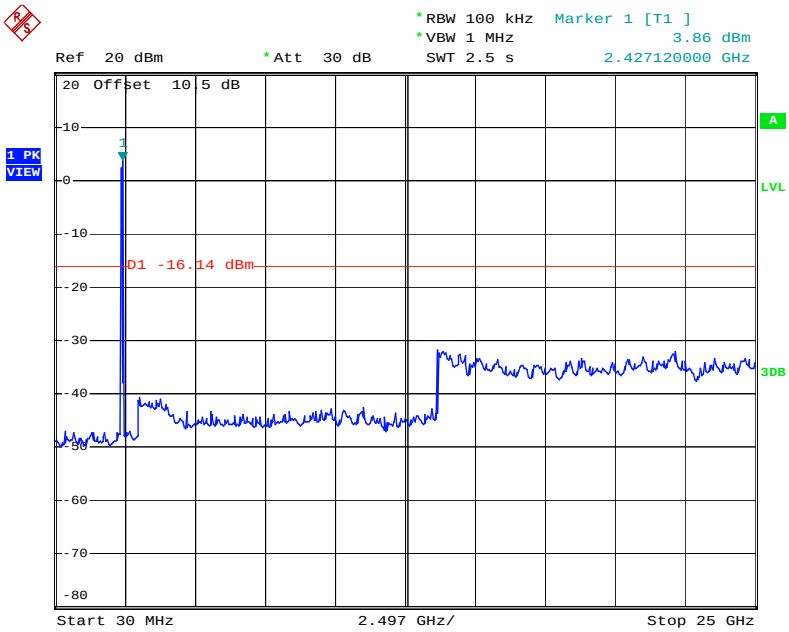
Product : 802.11 a/b/g/n module
Test Item : RF Antenna Conducted Spurious
Test Site : No.3 OATS
Test Mode : Mode 5: Transmit - 802.11n-40BW_30Mbps(2.4G Band)

Channel 01 (2422MHz) 30MHz -25GHz



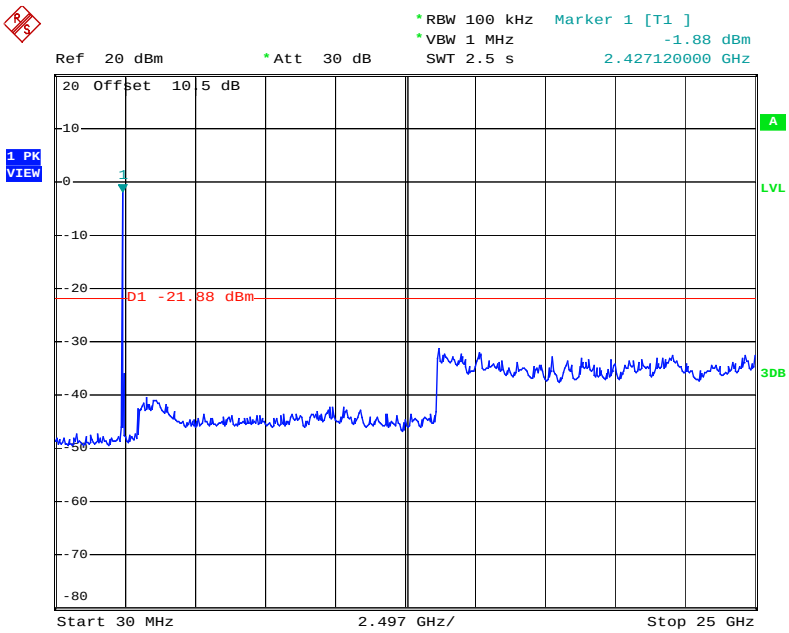
Date: 10.MAR.2011 04:16:52

Channel 04 (2437MHz) 30MHz -25GHz



Date: 10.MAR.2011 04:17:34

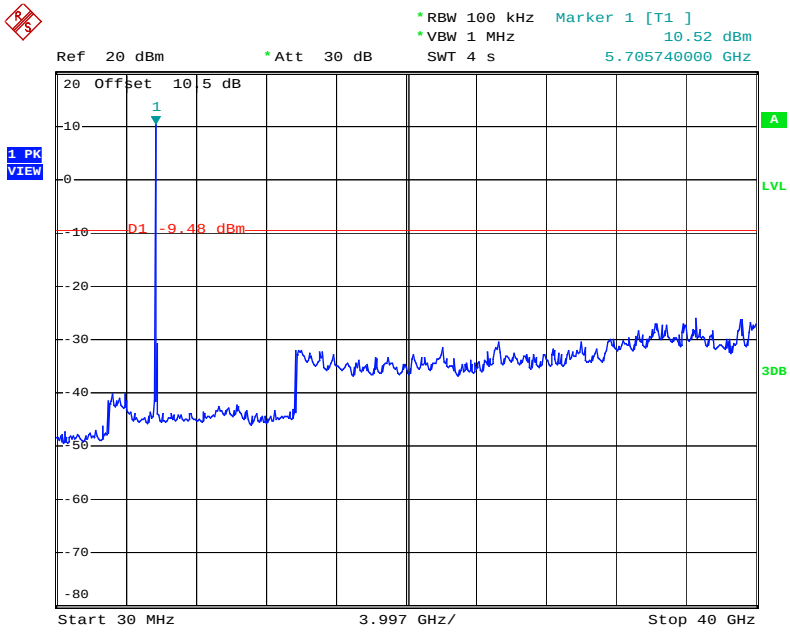
Channel 07 (2452MHz) 30MHz -25GHz



Date: 10.MAR.2011 04:18:16

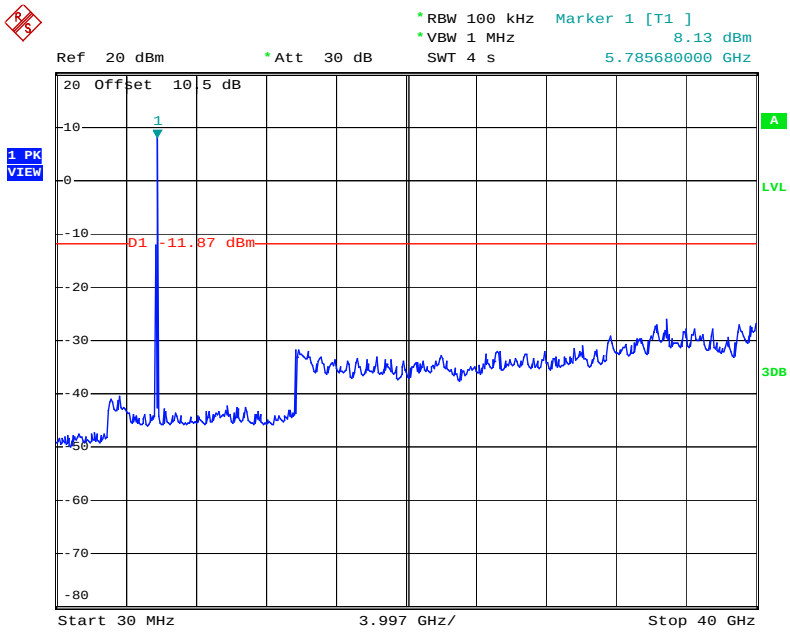
Product : 802.11 a/b/g/n module
Test Item : RF Antenna Conducted Spurious
Test Site : No.3 OATS
Test Mode : Mode 6: Transmit - 802.11n-20BW_14.4Mbps(5G Band)

Channel 49 (5745MHz) 30MHz -40GHz



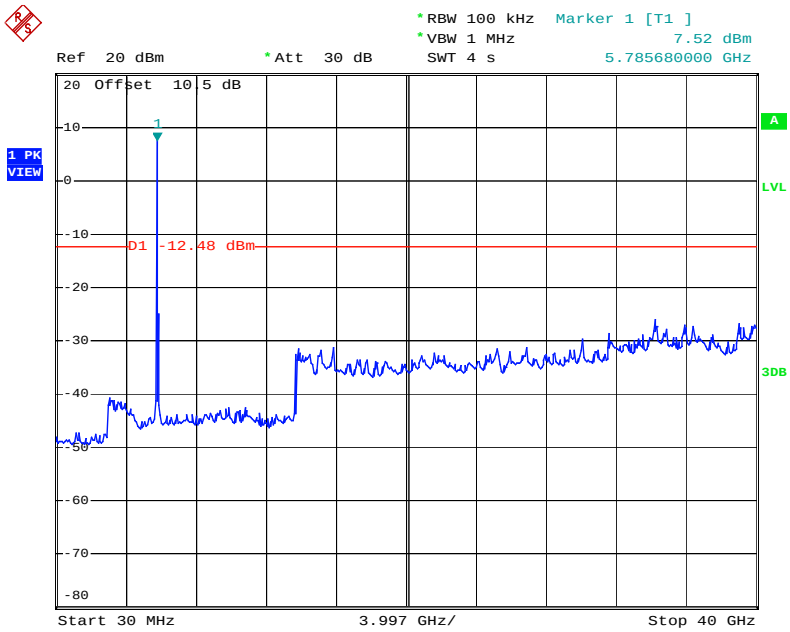
Date: 10.MAR.2011 04:19:59

Channel 157 (5785MHz) 30MHz -40GHz



Date: 10.MAR.2011 04:20:57

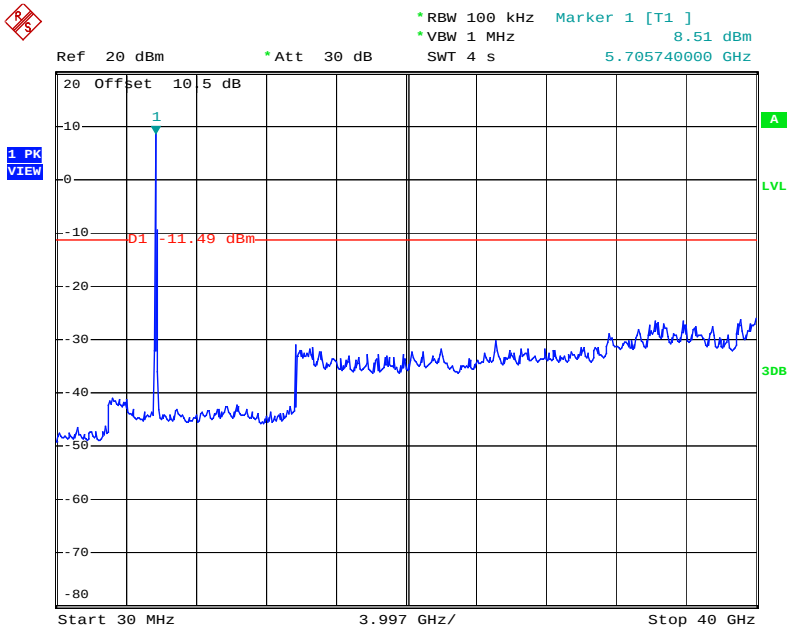
Channel 165 (5825MHz) 30MHz -40GHz



Date: 10.MAR.2011 04:21:44

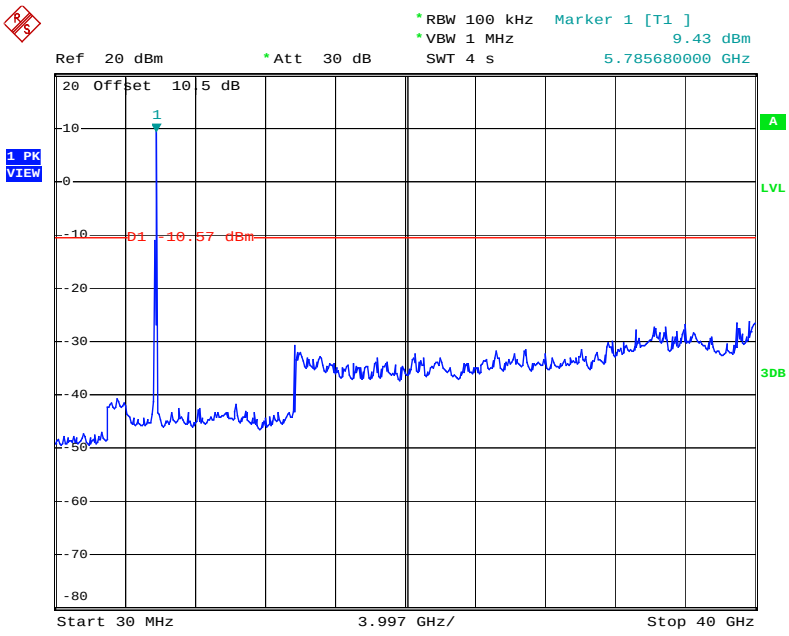
Product : 802.11 a/b/g/n module
Test Item : RF Antenna Conducted Spurious
Test Site : No.3 OATS
Test Mode : Mode 7: Transmit - 802.11n-40BW_30Mbps(5G Band)

Channel 151 (5755MHz) 30MHz -40GHz



Date: 10.MAR.2011 04:23:17

Channel 159 (5795MHz) 30MHz -40GHz



Date: 10.MAR.2011 04:24:16

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:

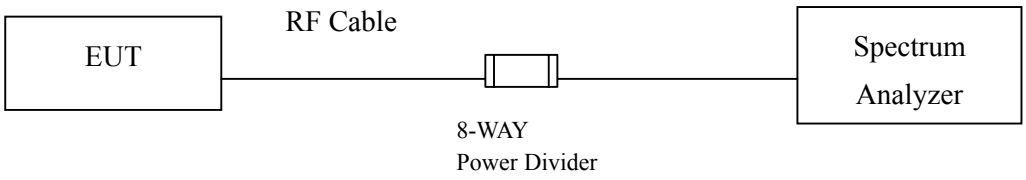
The following test equipments are used during the band edge tests:

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

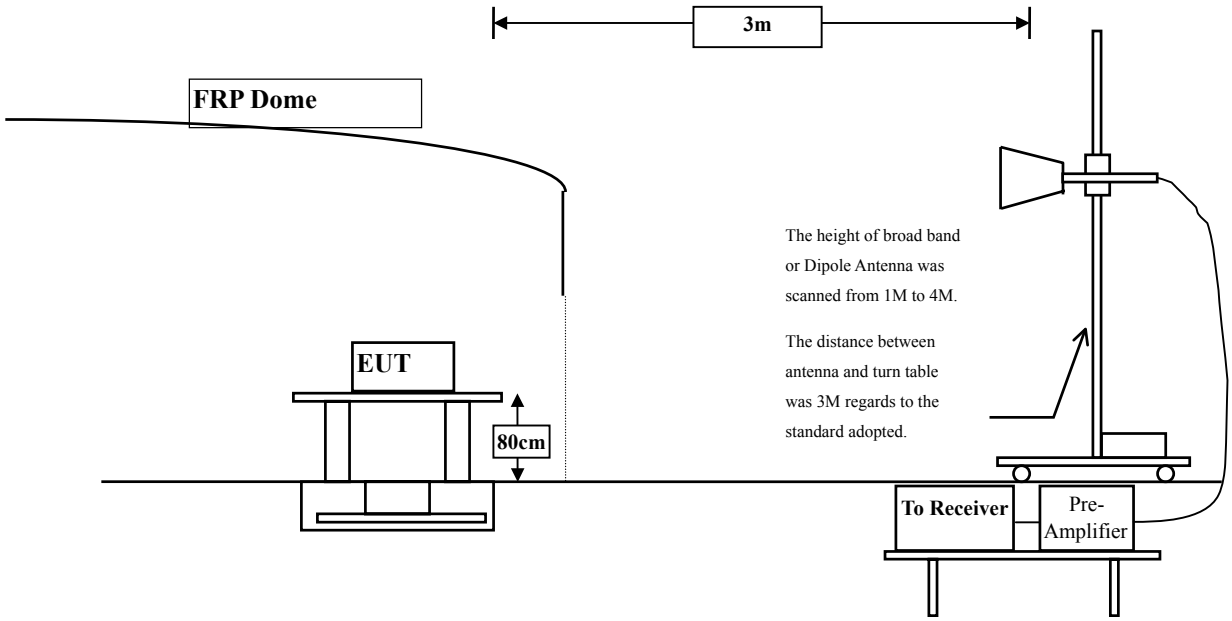
Note: 1. All instruments are calibrated every one year.
2. The test instruments marked by "X" are used to measure the final test results.

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	80.39	112.028	Peak
Horizontal	2412	31.639	76.384	108.022	Average
Vertical	2412	30.95	69.74	100.689	Peak
Vertical	2412	30.95	66.24	97.189	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	112.028	48.367	63.661	Peak
Horizontal	2390	108.022	57.212	50.81	Average
Vertical	2390	100.689	48.367	52.322	Peak
Vertical	2390	97.189	57.212	39.977	Average

Note:

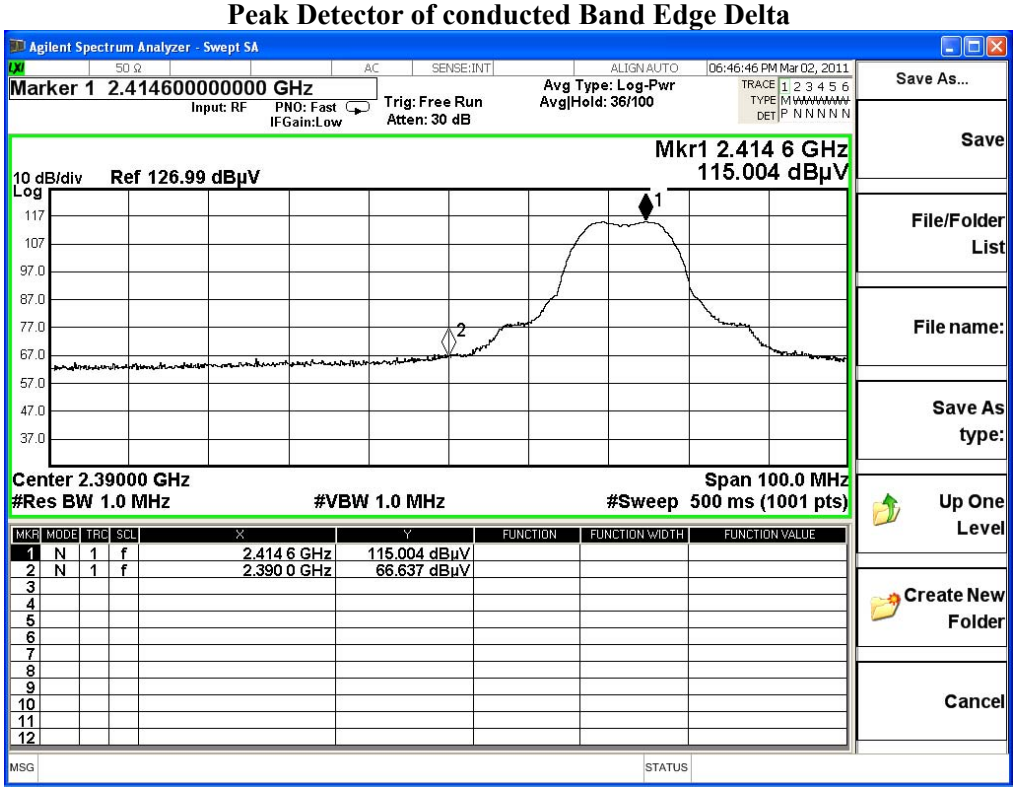
The Band Edge Field Strength was calculated using the Fundamental and Conducted Band Edge measurements per the Marker-Delta Method with the following formula:

Band Edge field Strength = F - Δ

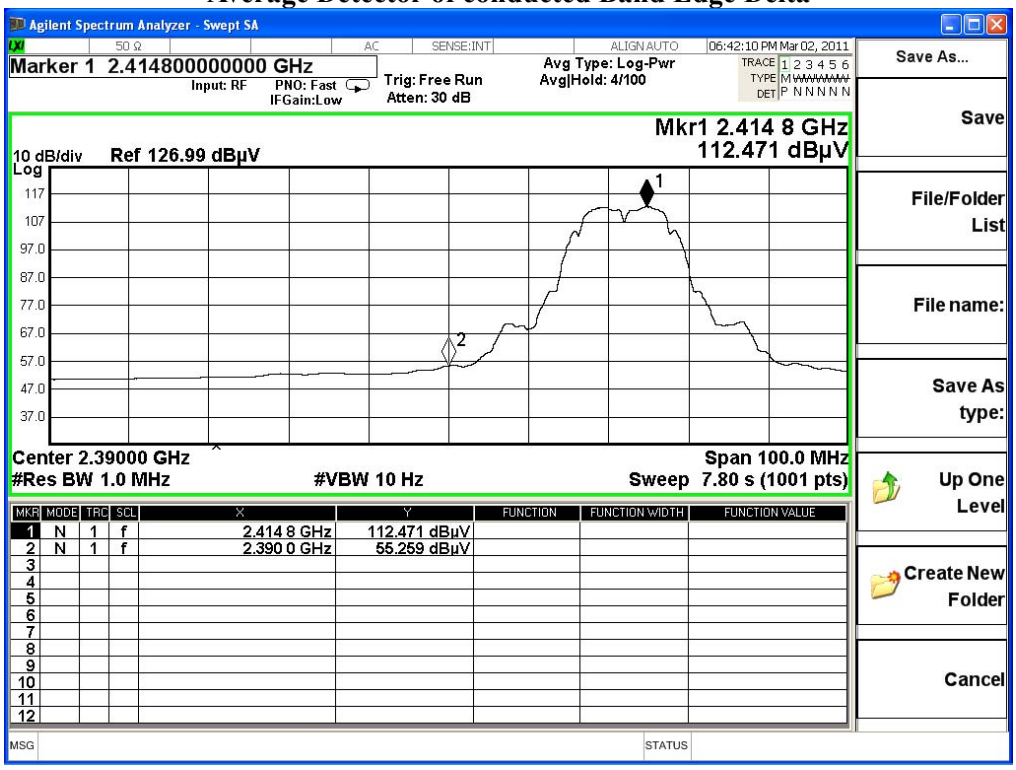
F = Fundamental field Strength (Peak or Average)

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	78.63	110.649	Peak
Horizontal	2462	32.019	75.5	107.519	Average
Vertical	2462	31.29	68.45	99.74	Peak
Vertical	2462	31.29	64.99	96.28	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	110.649	49.643	61.006	Peak
Horizontal	2483.5	107.519	58.718	48.801	Average
Vertical	2483.5	99.74	49.643	50.097	Peak
Vertical	2483.5	96.28	58.718	37.562	Average

Note:

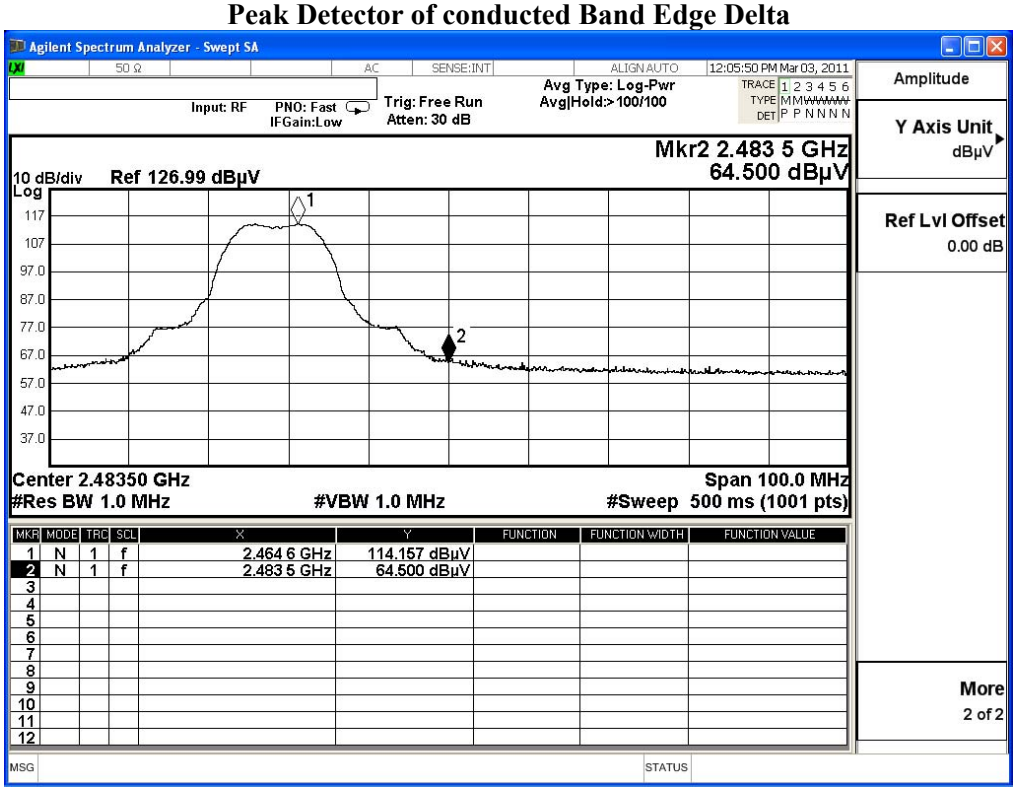
The Band Edge Field Strength was calculated using the Fundamental and Conducted Band Edge measurements per the Marker-Delta Method with the following formula:

Band Edge field Strength = F - Δ

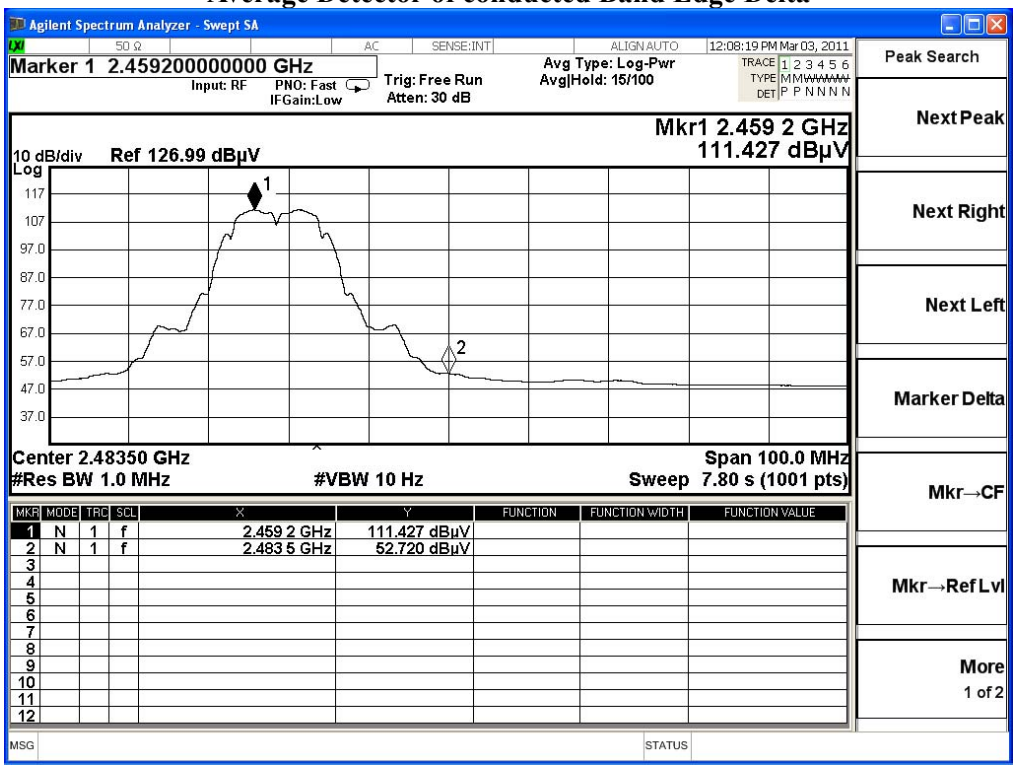
F = Fundamental field Strength (Peak or Average)

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	31.639	81.73	113.368	Peak
Horizontal	2412	31.639	69	100.638	Average
Vertical	2412	30.95	71.01	101.959	Peak
Vertical	2412	30.95	59.34	90.289	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	113.368	44.718	68.65	Peak
Horizontal	2390	100.638	50.216	50.422	Average
Vertical	2390	101.959	44.718	57.241	Peak
Vertical	2390	90.289	50.216	40.073	Average

Note:

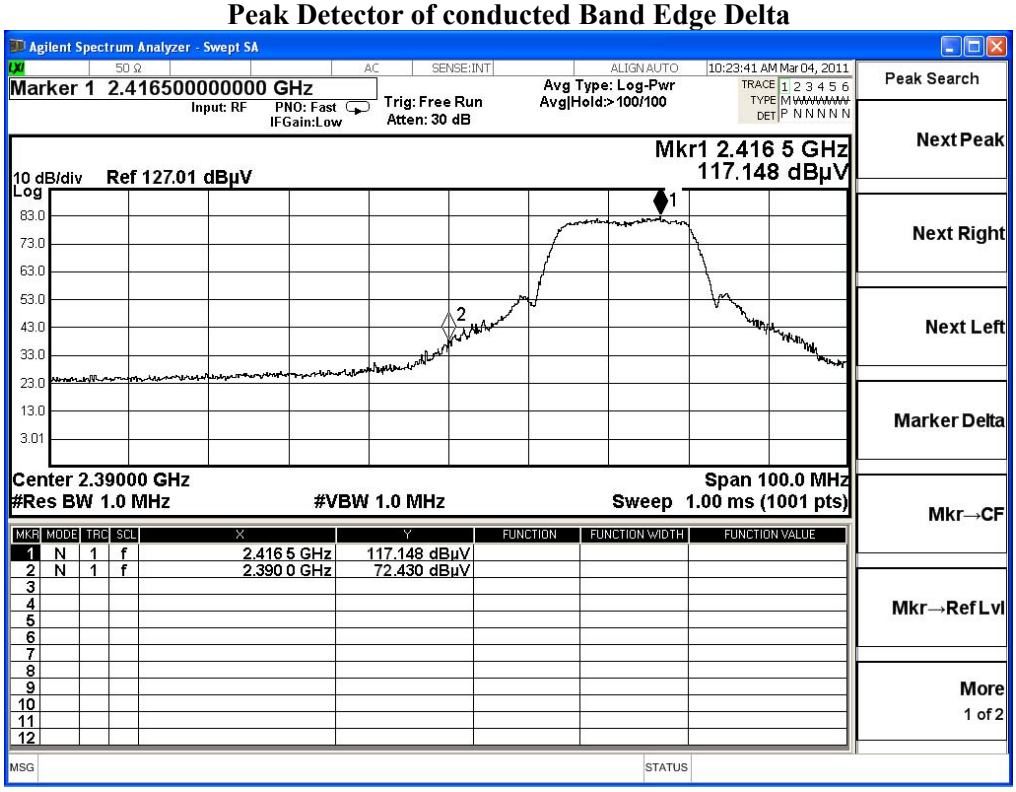
The Band Edge Field Strength was calculated using the Fundamental and Conducted Band Edge measurements per the Marker-Delta Method with the following formula:

Band Edge field Strength = F - Δ

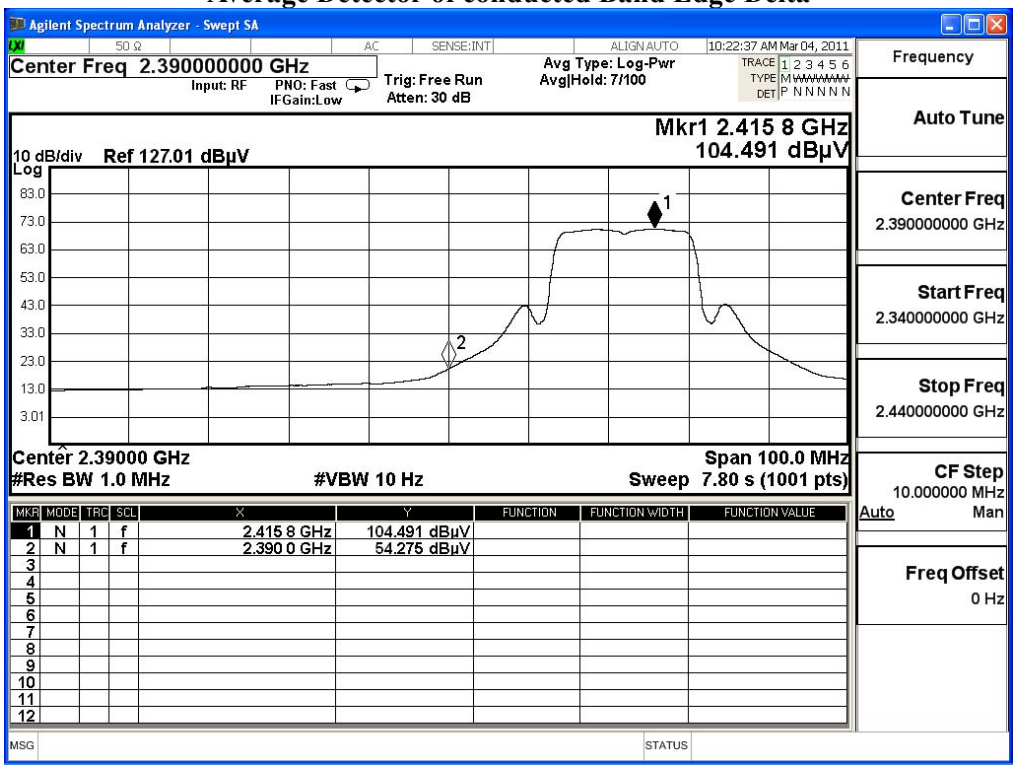
F = Fundamental field Strength (Peak or Average)

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	79.99	112.009	Peak
Horizontal	2462	32.019	67.519	99.538	Average
Vertical	2462	31.29	68.44	99.73	Peak
Vertical	2462	31.29	56.91	88.2	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	112.009	44.067	67.942	Peak
Horizontal	2483.5	99.538	48.758	50.78	Average
Vertical	2483.5	99.73	44.067	55.663	Peak
Vertical	2483.5	88.2	48.758	39.442	Average

Note:

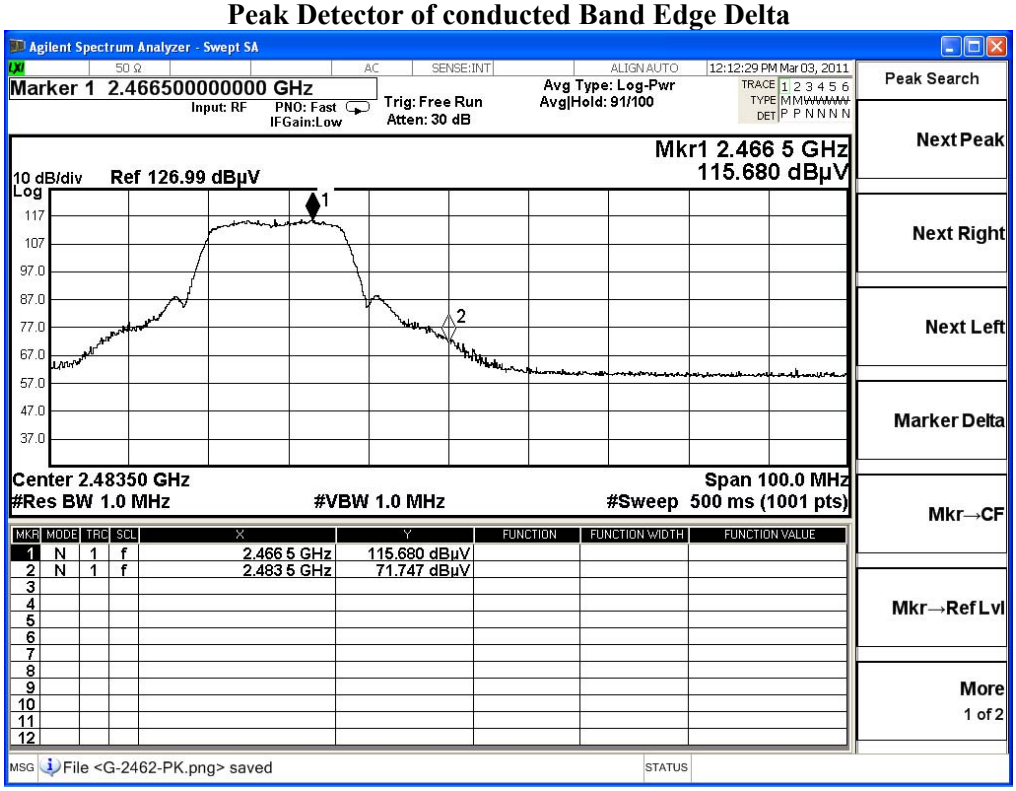
The Band Edge Field Strength was calculated using the Fundamental and Conducted Band Edge measurements per the Marker-Delta Method with the following formula:

Band Edge field Strength = F - Δ

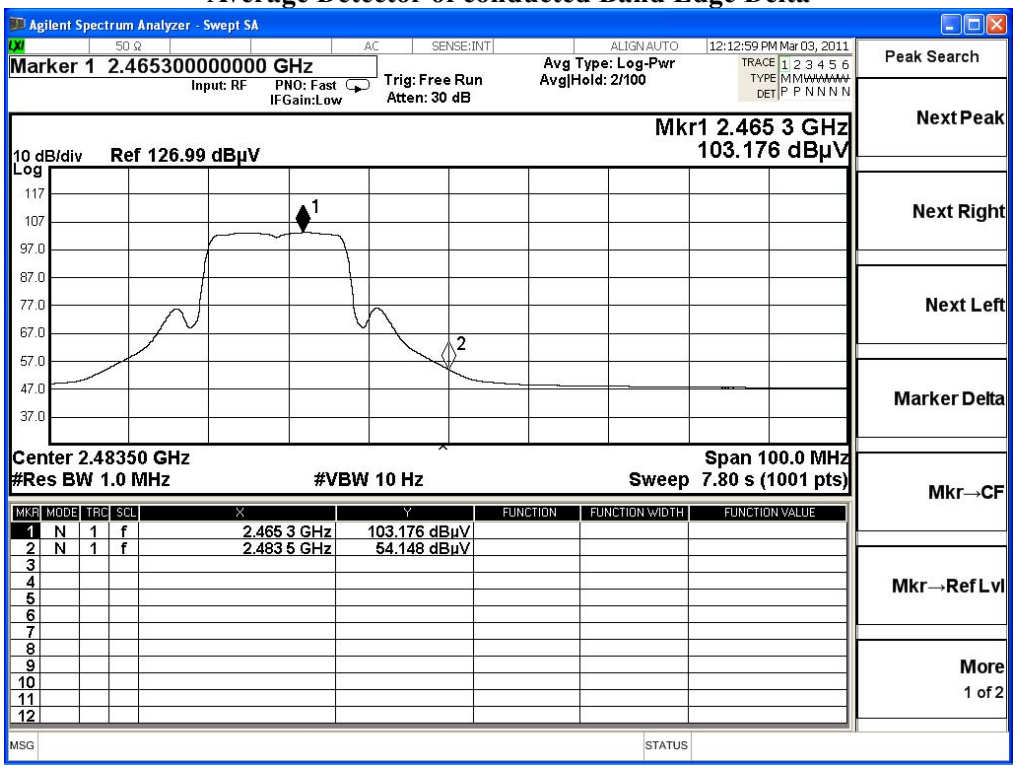
F = Fundamental field Strength (Peak or Average)

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	30.95	78.59	109.539	Peak
Horizontal	2412	30.95	64.34	95.289	Average
Vertical	2412	30.95	77.73	108.679	Peak
Vertical	2412	30.95	63.74	94.689	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	2389.8	109.539	43.599	65.94	Peak
Horizontal	2390	95.289	45.853	49.436	Average
Vertical	2389.8	108.679	43.599	65.08	Peak
Vertical	2390	94.689	45.853	48.836	Average

Note:

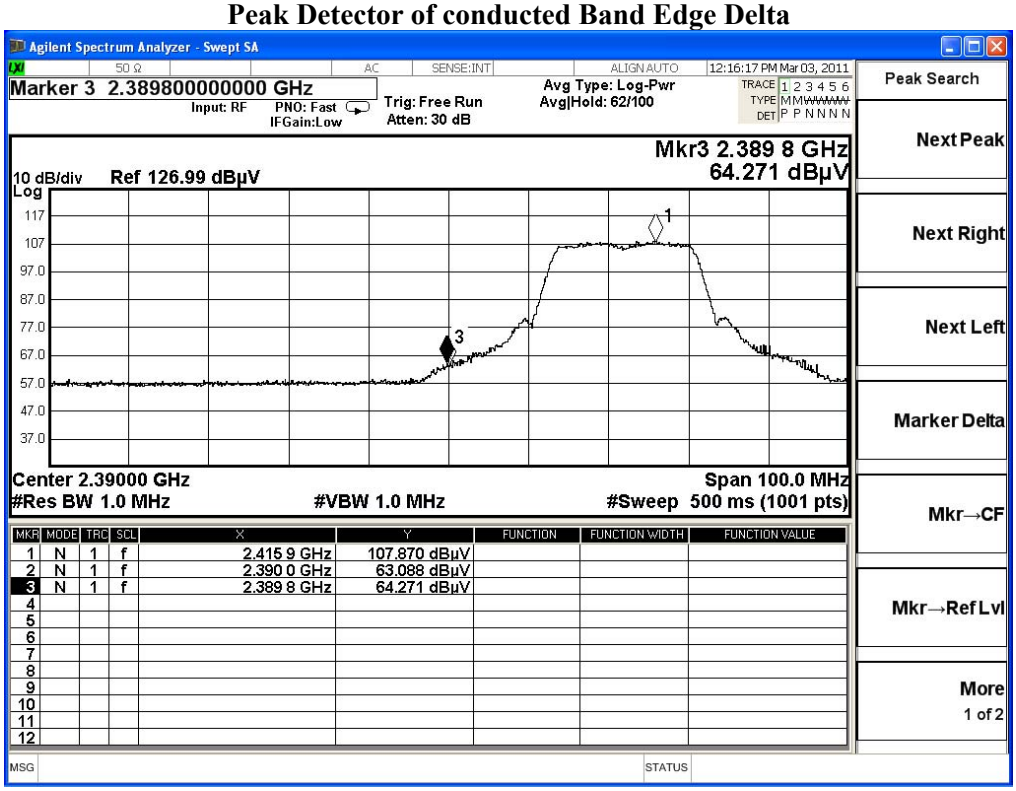
The Band Edge Field Strength was calculated using the Fundamental and Conducted Band Edge measurements per the Marker-Delta Method with the following formula:

Band Edge field Strength = F - Δ

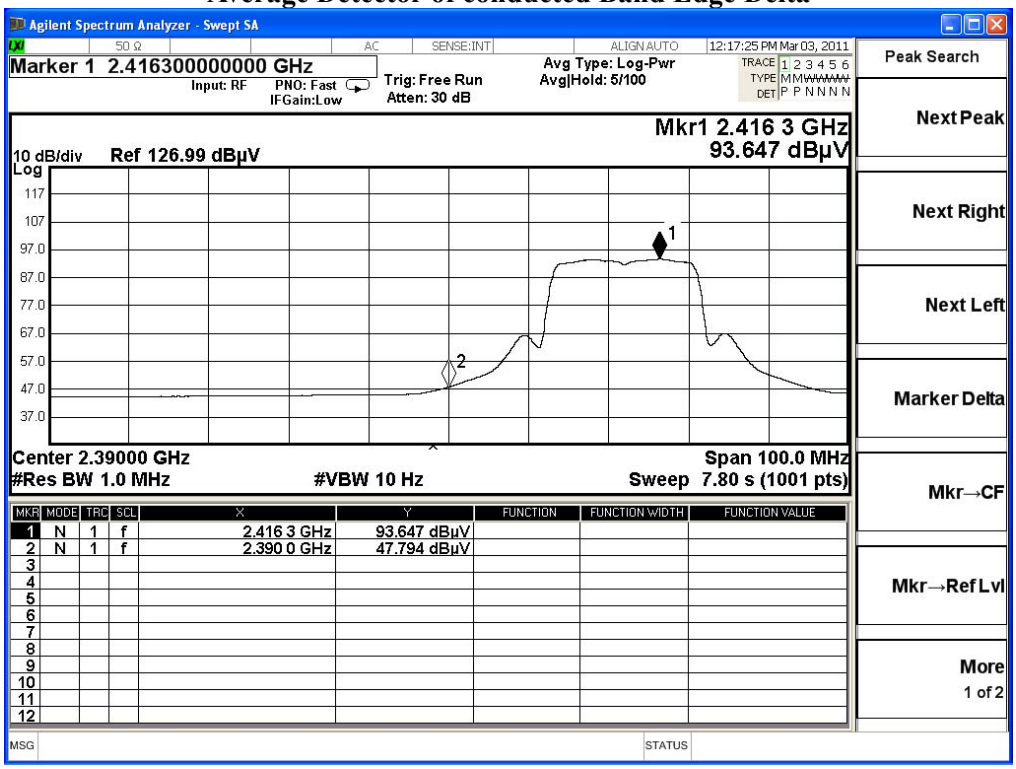
F = Fundamental field Strength (Peak or Average)

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	76.85	108.869	Peak
Horizontal	2462	32.019	62.95	94.969	Average
Vertical	2462	31.29	77.21	108.5	Peak
Vertical	2462	31.29	63.38	94.67	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	108.869	42.486	66.383	Peak
Horizontal	2483.5	94.969	44.615	50.354	Average
Vertical	2484.1	108.5	42.486	66.014	Peak
Vertical	2483.5	94.67	44.615	50.055	Average

Note:

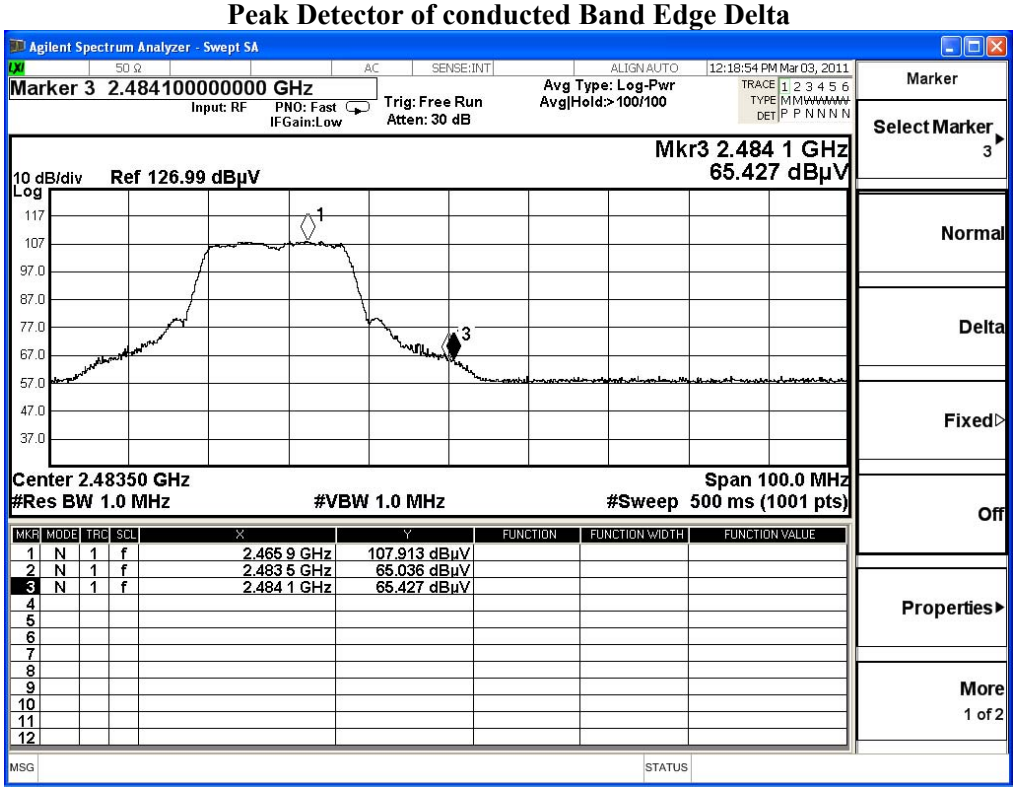
The Band Edge Field Strength was calculated using the Fundamental and Conducted Band Edge measurements per the Marker-Delta Method with the following formula:

Band Edge field Strength = F - Δ

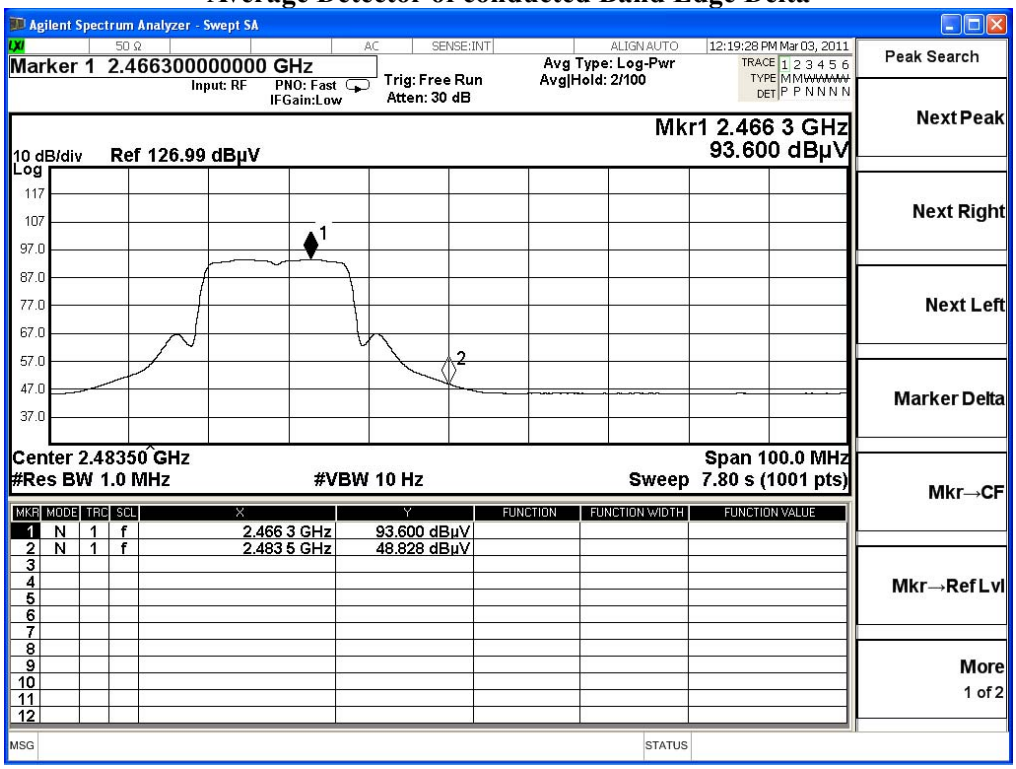
F = Fundamental field Strength (Peak or Average)

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	74.89	106.605	Peak
Horizontal	2422	31.715	58.472	90.187	Average
Vertical	2422	31.017	74.81	105.827	Peak
Vertical	2422	31.017	58.88	89.897	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	106.605	38.986	67.619	Peak
Horizontal	2390	90.187	39.609	50.578	Average
Vertical	2388	105.827	38.986	66.841	Peak
Vertical	2390	89.897	39.609	50.288	Average

Note:

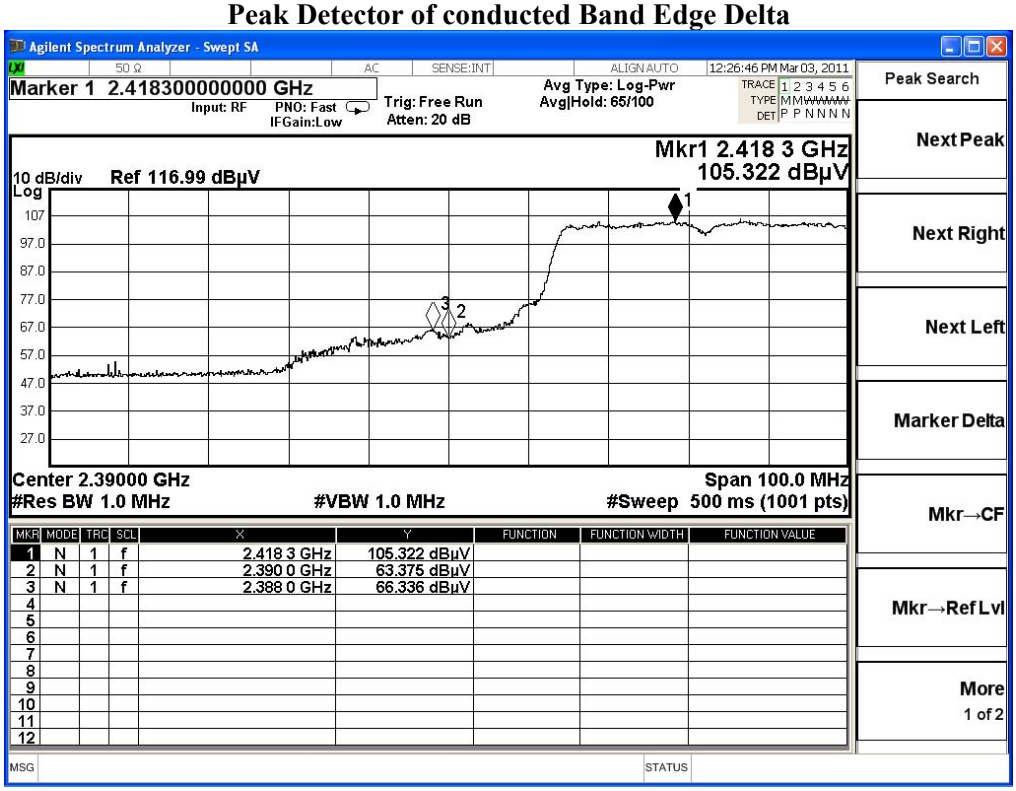
The Band Edge Field Strength was calculated using the Fundamental and Conducted Band Edge measurements per the Marker-Delta Method with the following formula:

Band Edge field Strength = F - Δ

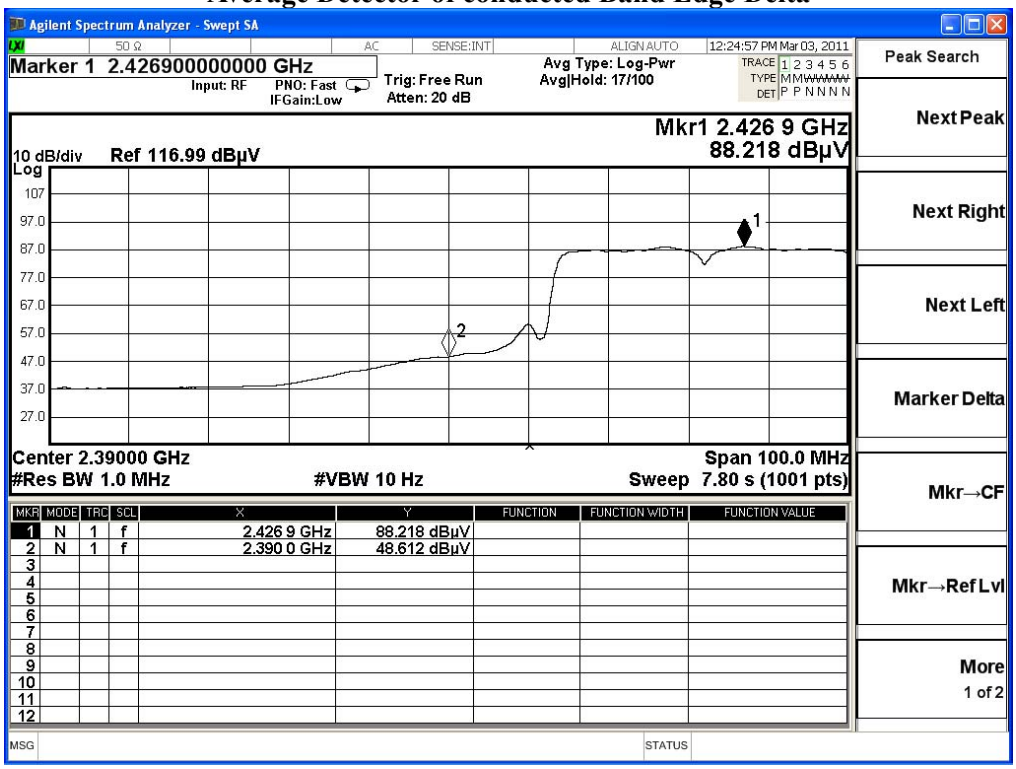
F = Fundamental field Strength (Peak or Average)

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	74.99	106.934	Peak
Horizontal	2452	31.944	57.88	89.824	Average
Vertical	2452	31.222	72.47	103.692	Peak
Vertical	2452	31.222	56.45	87.672	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	106.934	40.747	66.187	Peak
Horizontal	2483.5	89.824	39.562	50.262	Average
Vertical	2483.5	103.692	40.747	62.945	Peak
Vertical	2483.5	87.672	39.562	48.11	Average

Note:

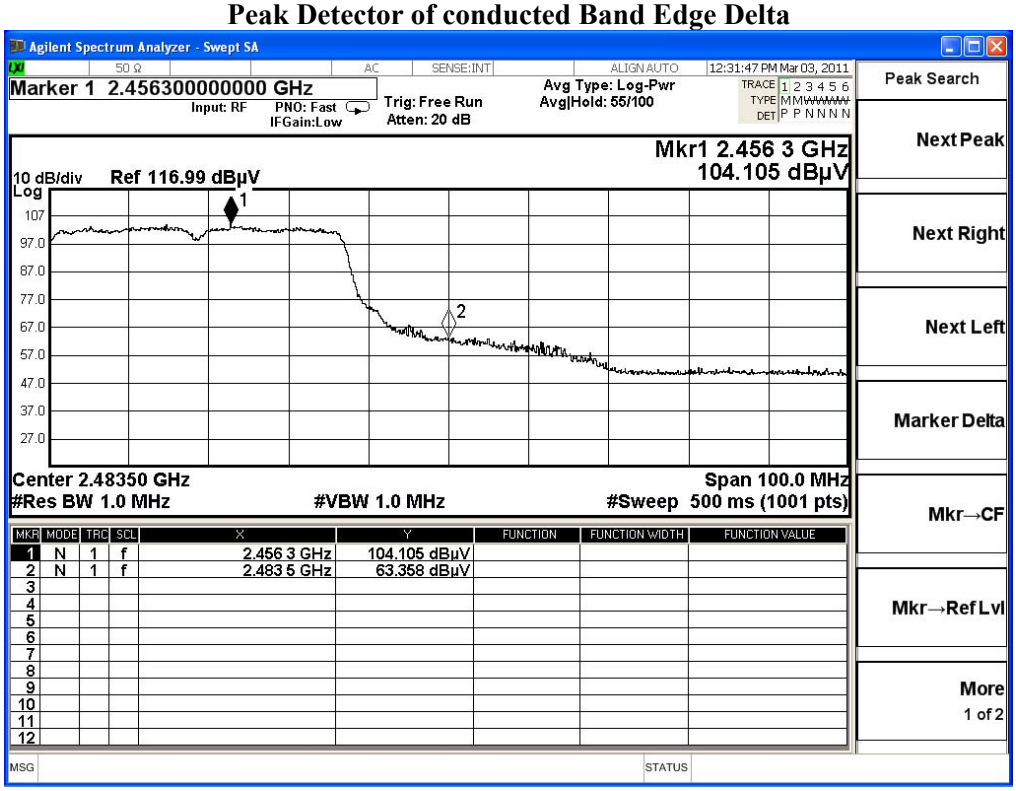
The Band Edge Field Strength was calculated using the Fundamental and Conducted Band Edge measurements per the Marker-Delta Method with the following formula:

Band Edge field Strength = F - Δ

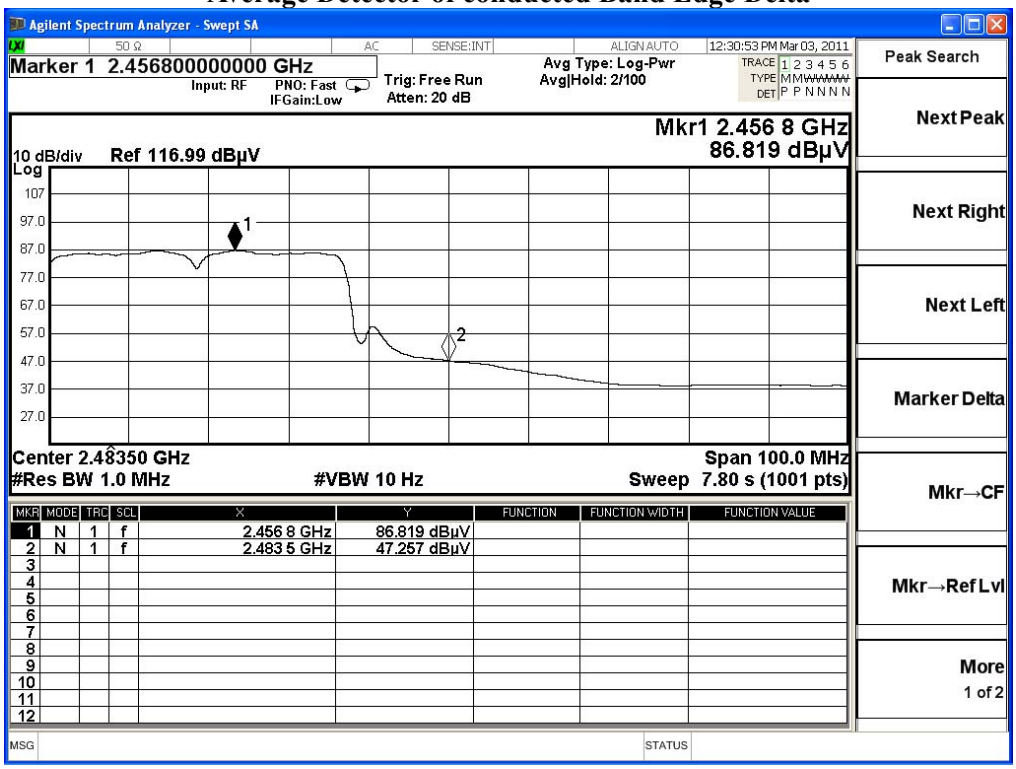
F = Fundamental field Strength (Peak or Average)

Δ = Conducted Band Edge Delta (Peak or Average)

Peak Detector of conducted Band Edge Delta

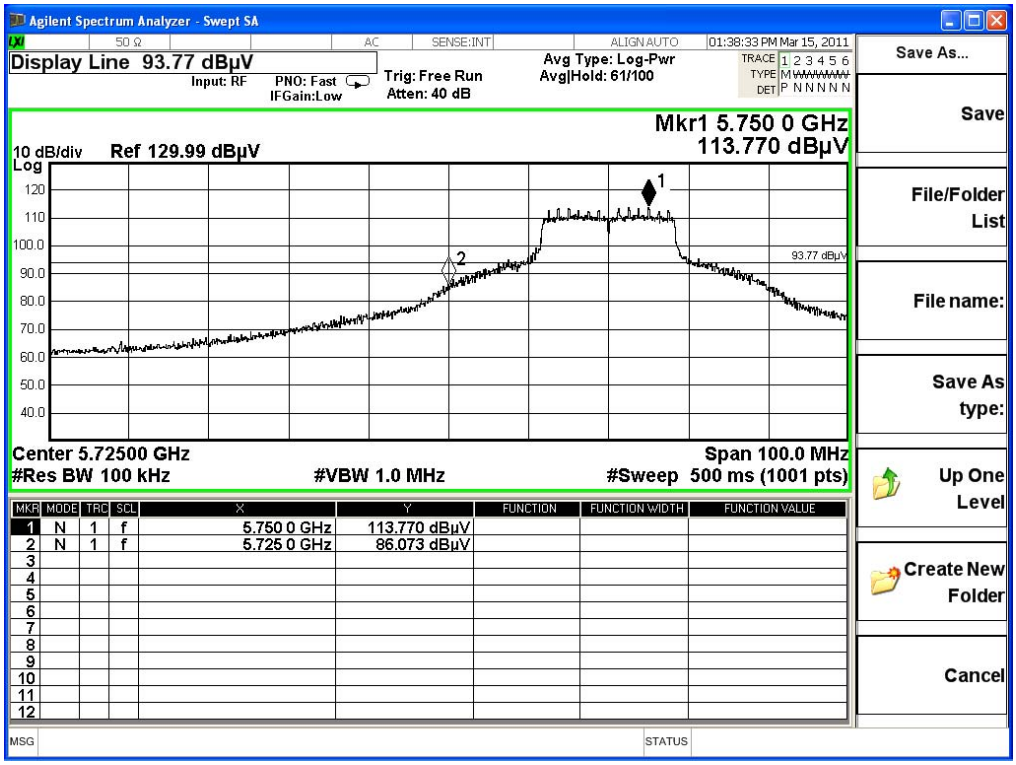


Average Detector of conducted Band Edge Delta



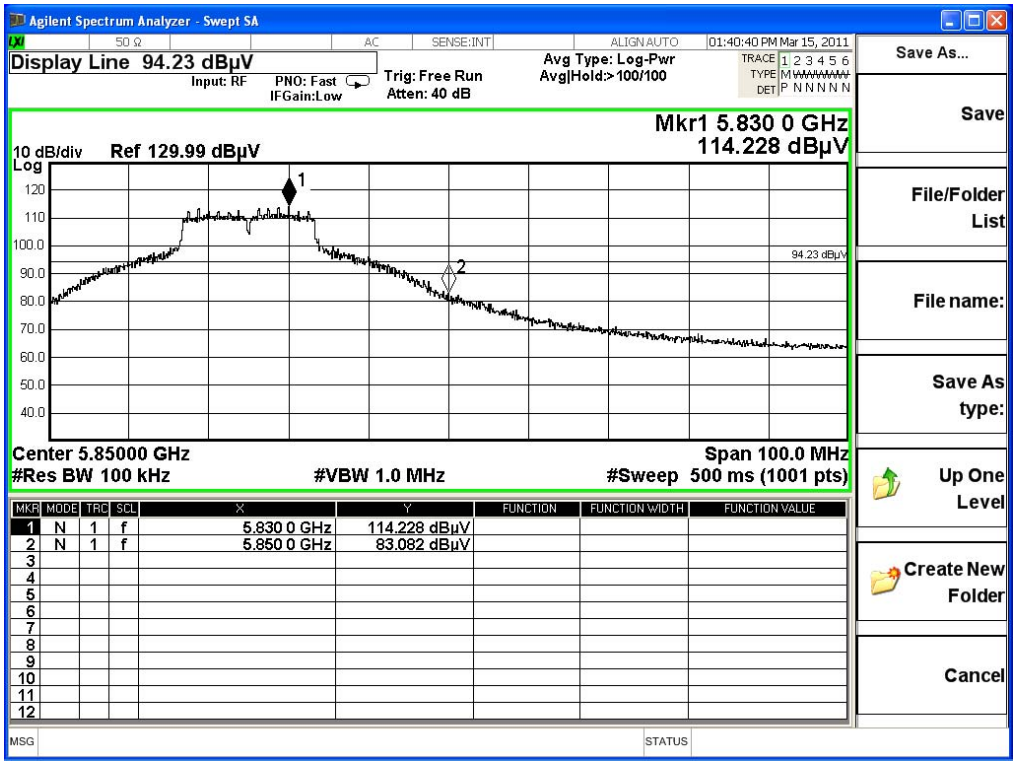
Product : 802.11 a/b/g/n module
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit - 802.11a 6Mbps

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



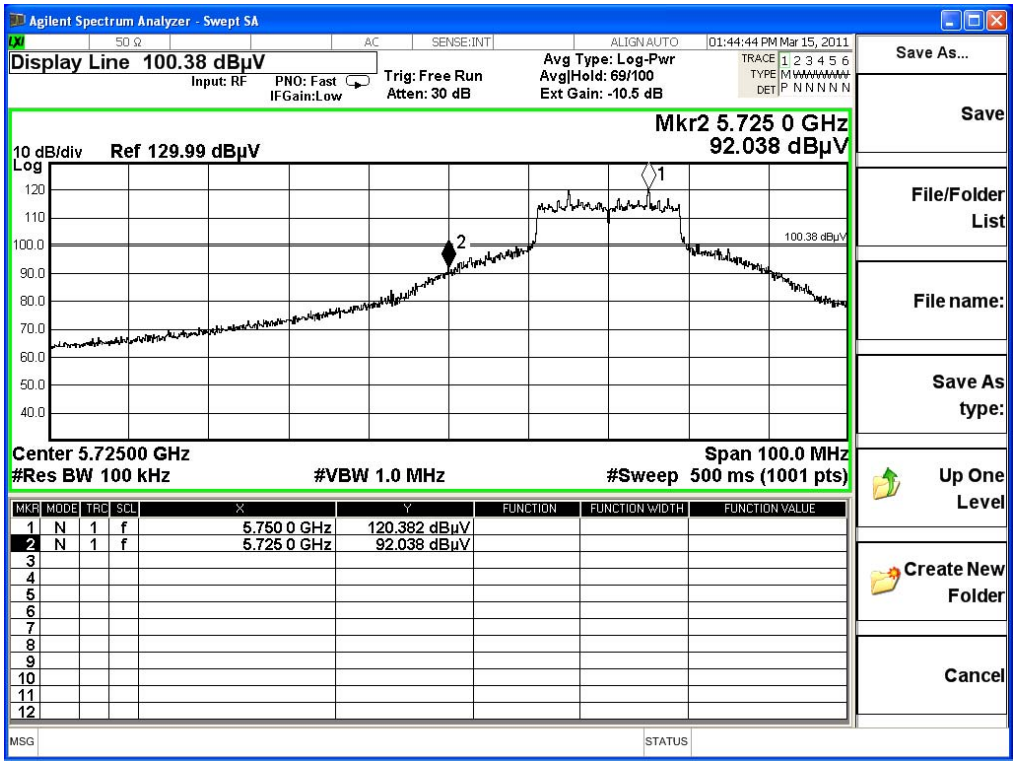
Product : 802.11 a/b/g/n module
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit - 802.11a 6Mbps

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



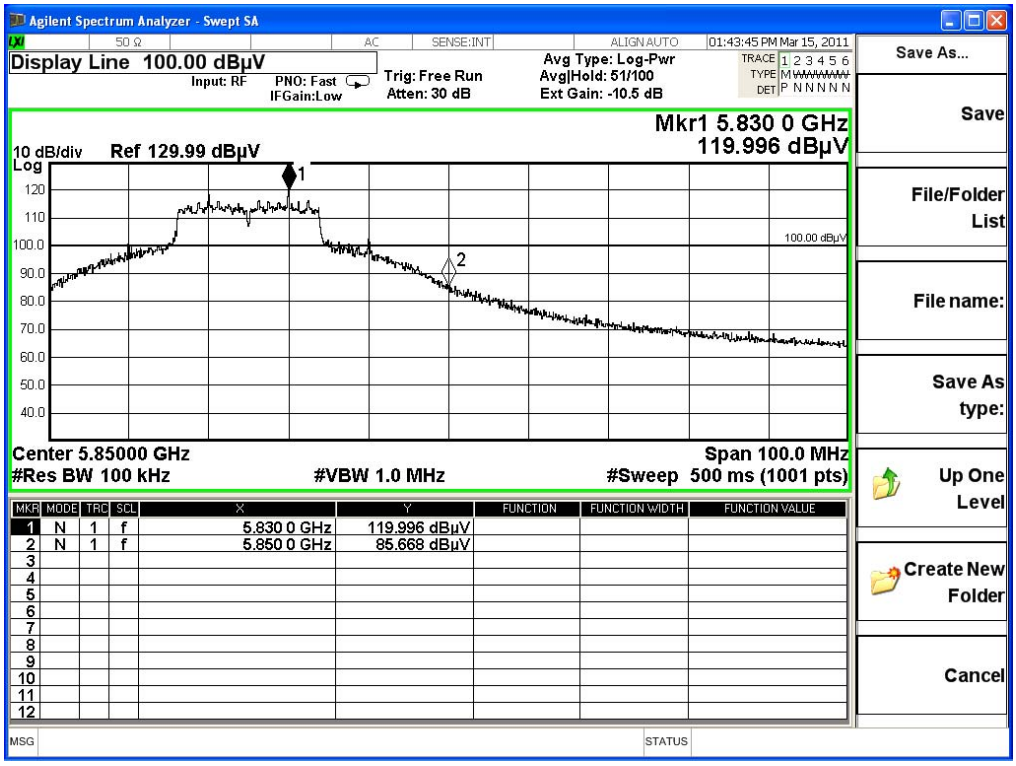
Product : 802.11 a/b/g/n module
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Mode : Mode 6: Transmit - 802.11n-20BW_14.4Mbps(5G Band)

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



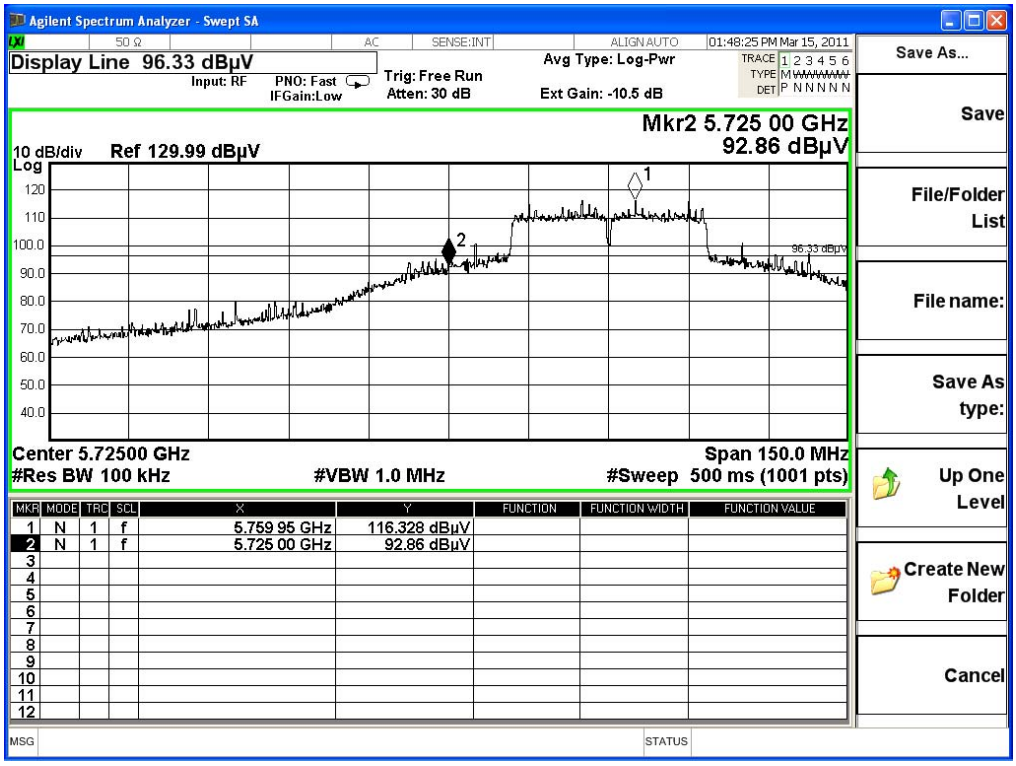
Product : 802.11 a/b/g/n module
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Mode : Mode 6: Transmit - 802.11n-20BW_14.4Mbps(5G Band)

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