

FC

Test Report

Product Name	Notebook PC
Model No	TAICHI21
FCC ID.	MSQTAICHI21

Applicant	ASUSTeK COMPUTER INC.
Address	4F, No. 150, Li-Te Rd., Peitou, Taipei, Taiwan, R.O.C.

Date of Receipt	Aug. 20, 2012
Issue Date	Sep. 28, 2012
Report No.	128392R-RFUSP42V01
Report Version	V1.0



The test results relate only to the samples tested.

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Test Report Certification

Issue Date: Sep. 28, 2012

Report No.: 128392R-RFUSP42V01


Accredited by NIST (NVLAP)

NVLAP Lab Code: 200533-0

Product Name	Notebook PC
Applicant	ASUSTeK COMPUTER INC.
Address	4F, No. 150, Li-Te Rd., Peitou, Taipei, Taiwan, R.O.C.
Manufacturer	1. PEGATRON CORPORATION Taoyuan Mfg 2. Protek (Shanghai) Limited. 3. Tech-Com(Shanghai) Computer Co. Ltd. 4. Tech-Front (Chongqing) Computer Co.,Ltd. 5. Compal Information Technology (Kunshan) Co., Ltd 6. Digitek (Chongqing) Limited
Model No.	TAICHI21
FCC ID.	MSQTAICHI21
EUT Rated Voltage	AC 100-240V, 50-60Hz
EUT Test Voltage	AC 120V/60Hz
Trade Name	ASUS
Applicable Standard	FCC CFR Title 47 Part 15 Subpart C: 2010 ANSI C63.4: 2003
Test Result	Complied

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Documented By

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Tested By

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(Engineer / Jack Hsu)

Approved By

:



(Manager /Vincent Lin)

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1. GENERAL INFORMATION

1.1. EUT Description

Product Name	Notebook PC
Trade Name	ASUS
Model No.	TAICHI21
FCC ID.	MSQTAICHI21
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
Power Adapter	MFR: Delta (ASUS), M/N: ADP-45AW A Input: AC 100-240V~1.2A, 50-60Hz Output: DC 19V, 2.37A Cable Out: Non-shielded, 2.5m
Battery	ASUS, C32-TAICHI21 (+11.1V, 3200mAh, 32Wh)
Contain Module	Intel / 6235ANHMW

Antenna List

No.	Manufacturer	Model No.	Peak Gain
1	INPAQ	WA-F-LB-04-004	2.61dBi For 2.4GHz 2.19dBi For 5.725~5.85GHz
2	Foxconn	WDAN-IJU26V01-DH	2.77dBi For 2.4GHz 2.97dBi For 5.725~5.85GHz

Note:

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

Note:

1. This device is a Notebook PC , Contains functions and so on WiFi 、Bluetooth 、NFC , This report for WiFi.
2. Regarding to the operation frequency, the lowest, middle and highest frequency are selected to perform the test.
3. 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).
4. At result of pretests, module supports dual-channel transmission, only the worst case is shown in the report. (802.11b is chain A 、802.11g is chain A 、802.11a is chain B 、802.11n is chain A+ chain B)
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.
6. The radiation measurements are performed in X, Y, Z axis positioning. Only the worst case is shown in the report.
7. At result of pretests, EUT support NB mode and PAD mode, only the worst case (NB mode) is shown in the 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 3:	2422 MHz	Channel 4:	2427 MHz	Channel 5:	2432 MHz	Channel 6:	2437 MHz
Channel 7:	2442 MHz	Channel 8:	2447 MHz	Channel 9:	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

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)

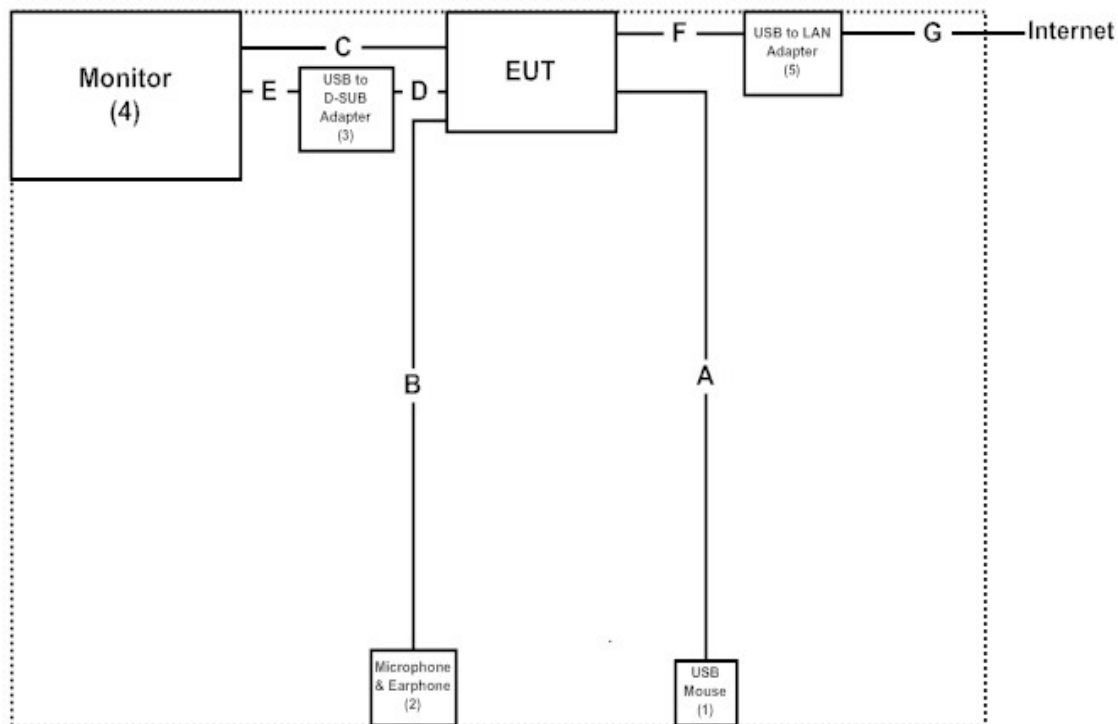
1.3. Tested System Details

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

Product	Manufacturer	Model No.	Serial No.	Power Cord
(1) USB Mouse	DELL	MO56UOA	G0Y02ERZ	N/A
(2) Microphone & Earphone	Ergotech	ET-E201	N/A	N/A
(3) USB to D-SUB Adapter	ASUS	N/A	N/A	N/A
(4) Monitor	DELL	ST2320LF	CN-OM2NN6-72872-22I-C9VS	Non-Shielded, 1.8m
(5) USB to LAN Adapter	ASUS	N/A	N/A	N/A

Signal Cable Type	Signal cable Description
A Mouse Cable	Non-Shielded, 1.8m
B Earphone & Microphone Cable	Non-Shielded, 1.8m
C HDMI Cable	Non-Shielded, 1.7m
D USB to D-SUB Cable	Non-Shielded, 0.025m
E D-SUB Cable	Non-Shielded, 1.7m
F USB to LAN Cable	Non-Shielded, 0.08m
G LAN Cable	Non-Shielded, 2.0m

1.4. Configuration of Tested System



1.5. EUT Exercise Software

- (1) Setup the EUT as shown in Section 1.4
- (2) Execute software on the EUT.
- (3) Configure the test mode, the test channel, and the data rate.
- (4) Press “OK” to start the continuous Transmit.
- (5) Verify that the EUT works properly.

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, Ruishukeng Linkou Dist., New Taipei City
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TEL: 886-2-8601-3788 / FAX : 886-2-8601-3789
E-Mail : service@quietek.com

FCC Accreditation Number: TW1014

2. Conducted Emission

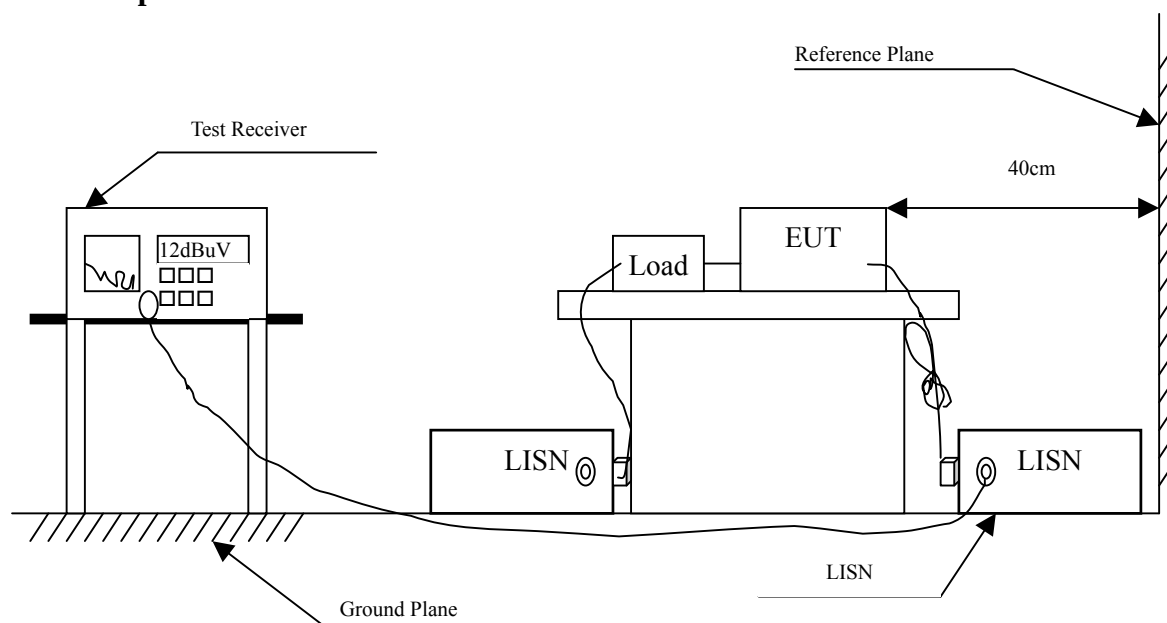
2.1. Test Equipment

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

	Equipment	Manufacturer	Model No. / Serial No.	Last Cal.	Remark
X	Test Receiver	R & S	ESCS 30 / 825442/018	Sep., 2012	
X	Artificial Mains Network	R & S	ENV4200 / 848411/10	Feb., 2012	Peripherals
X	LISN	R & S	ESH3-Z5 / 825562/002	Feb., 2012	EUT
	DC LISN	Schwarzbeck	8226 / 176	Mar, 2012	EUT
X	Pulse Limiter	R & S	ESH3-Z2 / 357.8810.52	Feb., 2012	
	No.1 Shielded Room				

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: 2003 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 : Notebook PC
 Test Item : Conducted Emission Test
 Power Line : Line 1
 Test Mode : Mode 5: Transmit - 802.11n-40BW_30Mbps(2.4G Band) (2437MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV	Margin dB	Limit dBuV
Line 1					
Quasi-Peak					
0.154	9.830	37.810	47.640	-18.246	65.886
0.189	9.830	31.460	41.290	-23.596	64.886
0.263	9.830	22.270	32.100	-30.671	62.771
0.447	9.830	22.810	32.640	-24.874	57.514
1.318	9.830	19.290	29.120	-26.880	56.000
3.810	9.860	15.530	25.390	-30.610	56.000
Average					
0.154	9.830	25.060	34.890	-20.996	55.886
0.189	9.830	18.290	28.120	-26.766	54.886
0.263	9.830	10.060	19.890	-32.881	52.771
0.447	9.830	17.120	26.950	-20.564	47.514
1.318	9.830	14.930	24.760	-21.240	46.000
3.810	9.860	6.280	16.140	-29.860	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 : Notebook PC
Test Item : Conducted Emission Test
Power Line : Line 2
Test Mode : Mode 5: Transmit - 802.11n-40BW_30Mbps(2.4G Band) (2437MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV	dB	dBuV
Line 2					
Quasi-Peak					
0.150	9.840	40.600	50.440	-15.560	66.000
0.177	9.834	32.200	42.034	-23.195	65.229
0.240	9.830	26.790	36.620	-26.809	63.429
0.423	9.840	22.670	32.510	-25.690	58.200
1.607	9.860	17.970	27.830	-28.170	56.000
10.431	10.069	17.710	27.779	-32.221	60.000
Average					
0.150	9.840	25.590	35.430	-20.570	56.000
0.177	9.834	16.360	26.194	-29.035	55.229
0.240	9.830	12.670	22.500	-30.929	53.429
0.423	9.840	15.010	24.850	-23.350	48.200
1.607	9.860	13.510	23.370	-22.630	46.000
10.431	10.069	12.410	22.479	-27.521	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 : Notebook PC
 Test Item : Conducted Emission Test
 Power Line : Line 1
 Test Mode : Mode 7: Transmit - 802.11n-40BW_30Mbps(5G Band) (5755MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV	dB	dBuV
Line 1					
Quasi-Peak					
0.154	9.830	37.910	47.740	-18.146	65.886
0.185	9.830	30.690	40.520	-24.480	65.000
0.232	9.830	25.440	35.270	-28.387	63.657
0.443	9.830	23.210	33.040	-24.589	57.629
1.662	9.840	19.270	29.110	-26.890	56.000
10.681	10.004	17.740	27.744	-32.256	60.000
Average					
0.154	9.830	24.980	34.810	-21.076	55.886
0.185	9.830	16.010	25.840	-29.160	55.000
0.232	9.830	13.630	23.460	-30.197	53.657
0.443	9.830	17.170	27.000	-20.629	47.629
1.662	9.840	14.800	24.640	-21.360	46.000
10.681	10.004	12.590	22.594	-27.406	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 : Notebook PC
 Test Item : Conducted Emission Test
 Power Line : Line 2
 Test Mode : Mode 7: Transmit - 802.11n-40BW_30Mbps(5G Band) (5755MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV	dB	dBuV
Line 2					
Quasi-Peak					
0.154	9.840	40.120	49.960	-15.926	65.886
0.185	9.832	31.300	41.132	-23.868	65.000
0.228	9.830	28.120	37.950	-25.821	63.771
0.451	9.840	22.270	32.110	-25.290	57.400
1.650	9.860	17.670	27.530	-28.470	56.000
11.521	10.099	16.220	26.319	-33.681	60.000
Average					
0.154	9.840	23.260	33.100	-22.786	55.886
0.185	9.832	14.840	24.672	-30.328	55.000
0.228	9.830	11.990	21.820	-31.951	53.771
0.451	9.840	16.650	26.490	-20.910	47.400
1.650	9.860	12.700	22.560	-23.440	46.000
11.521	10.099	11.590	21.689	-28.311	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

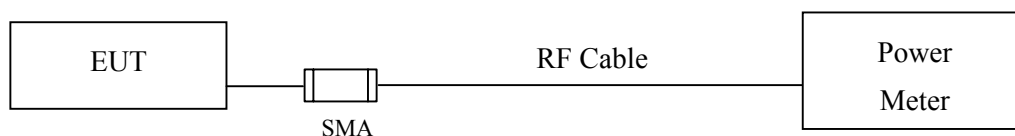
3.1. Test Equipment

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X	Power Meter	Anritsu	ML2495A/6K00003357	May, 2012
X	Power Sensor	Anritsu	MA2411B/0738448	Jun, 2012

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.

3.2. Test Setup



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 Jan. 2012 KDB558074 for compliance to FCC 47CFR 15.247 requirements.

3.5. Uncertainty

± 1.27 dB

3.6. Test Result of Peak Power Output

Product : Notebook PC
Test Item : Peak Power Output Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit - 802.11b 1Mbps

CHAIN A

Channel No	Frequency (MHz)	Average Power For different Data Rate (Mbps)				Peak Power	Required Limit	Result
		1	2	5.5	11	1		
		Measurement Level (dBm)						
01	2412	12.41	--	--	--	15.61	<30dBm	Pass
06	2437	12.71	12.68	12.65	12.62	15.93	<30dBm	Pass
11	2462	13.05	--	--	--	16.22	<30dBm	Pass

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

CHAIN B

Channel No	Frequency (MHz)	Average Power For different Data Rate (Mbps)				Peak Power	Required Limit	Result
		1	2	5.5	11	1		
		Measurement Level (dBm)						
01	2412	11.64	--	--	--	14.91	<30dBm	Pass
06	2437	11.97	11.94	11.92	11.89	15.18	<30dBm	Pass
11	2462	11.76	--	--	--	14.97	<30dBm	Pass

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

Product : Notebook PC
 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)	Average Power For different Data Rate (Mbps)								Peak Power	Required Limit	Result
		6	9	12	18	24	36	48	54	6		
		Measurement Level (dBm)										
01	2412	10.59	--	--	--	--	--	--	--	20.04	<30dBm	Pass
06	2437	14.02	14	13.9	13.7	13.52	13.48	13.33	13.29	21.28	<30dBm	Pass
11	2462	10.17	--	--	--	--	--	--	--	19.73	<30dBm	Pass

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

CHAIN B

Channel No	Frequency (MHz)	Average Power For different Data Rate (Mbps)								Peak Power	Required Limit	Result
		6	9	12	18	24	36	48	54	6		
		Measurement Level (dBm)										
01	2412	10.88	--	--	--	--	--	--	--	19.73	<30dBm	Pass
06	2437	14.72	14.68	14.61	14.58	14.49	14.41	14.37	14.32	21.03	<30dBm	Pass
11	2462	11.02	--	--	--	--	--	--	--	19.54	<30dBm	Pass

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

Product : Notebook PC
 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)	Average Power For different Data Rate (Mbps)								Peak Power	Required Limit	Result
		6	9	12	18	24	36	48	54	6		
		Measurement Level (dBm)										
149	5745	10.31	--	--	--	--	--	--	--	18.8	<30dBm	Pass
157	5785	11.25	11.14	11.09	11.01	10.96	10.92	10.87	10.74	19.5	<30dBm	Pass
165	5825	11.3	--	--	--	--	--	--	--	19.43	<30dBm	Pass

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

CHAIN B

Channel No	Frequency (MHz)	Average Power For different Data Rate (Mbps)								Peak Power	Required Limit	Result
		6	9	12	18	24	36	48	54	6		
		Measurement Level (dBm)										
149	5745	13.51	--	--	--	--	--	--	--	20.82	<30dBm	Pass
157	5785	13.92	13.83	13.77	13.71	13.66	13.61	13.53	13.49	21.09	<30dBm	Pass
165	5825	13.69	--	--	--	--	--	--	--	20.94	<30dBm	Pass

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

Product : Notebook PC
 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

Channel No	Frequency (MHz)	Average Power For different Data Rate (Mbps)								Peak Power
		14.4	28.9	43.3	57.8	86.7	115.6	130	144.4	14.4
		Measurement Level (dBm)								
01	2412	10.15	--	--	--	--	--	--	--	19.11
06	2437	10.37	10.34	10.28	10.25	10.21	10.17	10.12	10.09	19.23
11	2462	9.45	--	--	--	--	--	--	--	18.42

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

CHAIN B

Channel No	Frequency (MHz)	Average Power For different Data Rate (Mbps)								Peak Power
		14.4	28.9	43.3	57.8	86.7	115.6	130	144.4	14.4
		Measurement Level (dBm)								
01	2412	10.56	--	--	--	--	--	--	--	19.18
06	2437	11.49	11.45	11.38	11.34	11.29	11.24	11.16	11.11	19.43
11	2462	9.91	--	--	--	--	--	--	--	18.64

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

CHAIN A+B

Channel	Frequency (MHz)	Data Rata (Mbps)	Chain A Power (dBm)	Chain B Power (dBm)	Chain A+B Power (dBm)	Limit (dBm)	Result
1	2412	HT8	19.11	19.18	22.16	<30dBm	Pass
6	2437	HT8	19.23	19.43	22.34	<30dBm	Pass
11	2462	HT8	18.42	18.64	21.54	<30dBm	Pass

Note: Peak Power Output Value (dBm) = 10*LOG (Chain A (mW)+ Chain B (mW))

Product : Notebook PC
 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

Channel No	Frequency (MHz)	Average Power For different Data Rate (Mbps)								Peak Power
		30	60	90	120	180	240	270	300	30
		Measurement Level (dBm)								
3	2422	7.72	--	--	--	--	--	--	--	16.71
6	2437	9.19	9.14	9.1	9.06	9.01	8.84	8.81	8.75	18.78
9	2452	7.61	--	--	--	--	--	--	--	16.78

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

CHAIN B

Channel No	Frequency (MHz)	Average Power For different Data Rate (Mbps)								Peak Power
		30	60	90	120	180	240	270	300	30
		Measurement Level (dBm)								
3	2422	8.25	--	--	--	--	--	--	--	16.45
6	2437	10.33	10.27	10.14	10.09	10.03	9.94	9.91	9.87	18.68
9	2452	8.38	--	--	--	--	--	--	--	16.61

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

CHAIN A+B

Channel	Frequency (MHz)	Data Rate (Mbps)	Chain A Power (dBm)	Chain B Power (dBm)	Chain A+B Power (dBm)	Limit (dBm)	Result
3	2422	HT8	16.71	16.45	19.59	<30dBm	Pass
6	2437	HT8	18.78	18.68	21.74	<30dBm	Pass
9	2452	HT8	16.78	16.61	19.71	<30dBm	Pass

Note: Peak Power Output Value (dBm) = 10*LOG (Chain A (mW)+ Chain B (mW))

Product : Notebook PC
 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

Channel No	Frequency (MHz)	Average Power For different Data Rate (Mbps)								Peak Power
		14.4	28.9	43.3	57.8	86.7	115.6	130	144.4	14.4
		Measurement Level (dBm)								
149	5745	11.07	--	--	--	--	--	--	--	19.14
157	5785	10.93	10.84	10.79	10.74	10.69	10.63	10.54	10.47	19.01
165	5825	11.08	--	--	--	--	--	--	--	19.06

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

CHAIN B

Channel No	Frequency (MHz)	Average Power								Peak Power
		For different Data Rate (Mbps)								
		14.4	28.9	43.3	57.8	86.7	115.6	130	144.4	14.4
		Measurement Level (dBm)								
149	5745	10.86	--	--	--	--	--	--	--	18.94
157	5785	10.77	10.73	10.69	10.61	10.58	10.51	10.47	10.41	18.89
165	5825	10.98	--	--	--	--	--	--	--	18.92

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

CHAIN A+B

Channel	Frequency (MHz)	Data Rata (Mbps)	Chain A Power (dBm)	Chain B Power (dBm)	Chain A+B Power (dBm)	Limit (dBm)	Result
149	5745	HT8	19.14	18.94	22.05	<30dBm	Pass
157	5785	HT8	19.01	18.89	21.96	<30dBm	Pass
165	5825	HT8	19.06	18.92	22.00	<30dBm	Pass

Note: Peak Power Output Value (dBm) = 10*LOG (Chain A (mW)+ Chain B (mW))

Product : Notebook PC
 Test Item : Peak Power Output Data
 Test Site : No.3 OATS
 Test Mode : Mode 7: Transmit - 802.11n-40BW_30Mbps(5G Band)

CHAIN A

Channel No	Frequency (MHz)	Average Power For different Data Rate (Mbps)								Peak Power
		30	60	90	120	180	240	270	300	
		Measurement Level (dBm)								
151	5755	10.32	--	--	--	--	--	--	--	19.55
159	5795	9.99	9.92	9.87	9.81	9.74	9.71	9.66	9.59	19.43

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

CHAIN B

Channel No	Frequency (MHz)	Average Power For different Data Rate (Mbps)								Peak Power
		30	60	90	120	180	240	270	300	
		Measurement Level (dBm)								
151	5755	10.37	--	--	--	--	--	--	--	18.96
159	5795	9.67	9.62	9.54	9.49	9.43	9.39	9.34	9.28	18.55

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

CHAIN A+B

Channel	Frequency (MHz)	Data Rate (Mbps)	Chain A Power (dBm)	Chain B Power (dBm)	Chain A+B Power (dBm)	Limit (dBm)	Result
151	5755	HT8	19.55	18.96	22.28	<30dBm	Pass
159	5795	HT8	19.43	18.55	22.02	<30dBm	Pass

Note: Peak Power Output Value (dBm) = 10*LOG (Chain A (mW)+ Chain B (mW))

4. Radiated Emission

4.1. Test Equipment

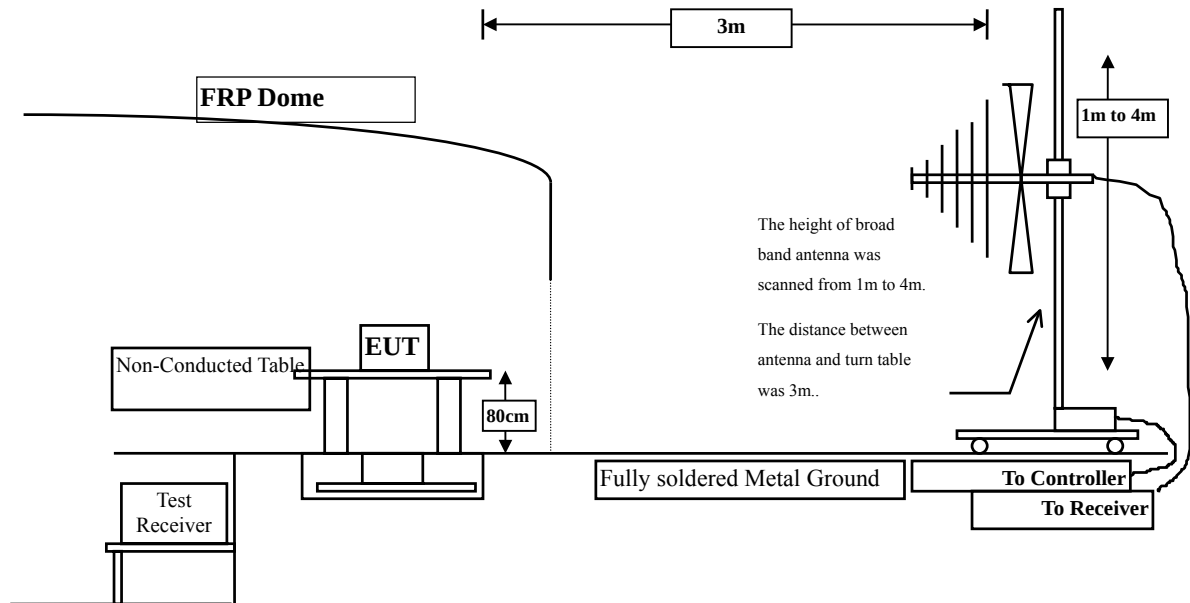
The following test equipment are used during the radiated emission test:

Test Site		Equipment	Manufacturer	Model No./Serial No.	Last Cal.
☒ Site # 3	X	Bilog Antenna	Schaffner Chase	CBL6112B/2673	Sep., 2012
	X	Horn Antenna	Schwarzbeck	BBHA9120D/D305	Sep., 2012
	X	Horn Antenna	Schwarzbeck	BBHA9170/208	Jul., 2012
	X	Pre-Amplifier	QTK	QTK-AMP-03 / 0003	May, 2012
	X	Pre-Amplifier	QTK	AP-180C / CHM_0906076	Sep., 2012
	X	Pre-Amplifier	MITEQ	AMF-4D-180400-45-6P/ 925975	Mar, 2012
	X	Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2012
	X	Test Receiver	R & S	ESCS 30/ 825442/018	Sep., 2012
	X	Coaxial Cable	QuieTek	QTK-CABLE/ CAB5	Feb., 2012
	X	Controller	QuieTek	QTK-CONTROLLER/ CTRL3	N/A
	X	Coaxial Switch	Anritsu	MP59B/6200265729	N/A

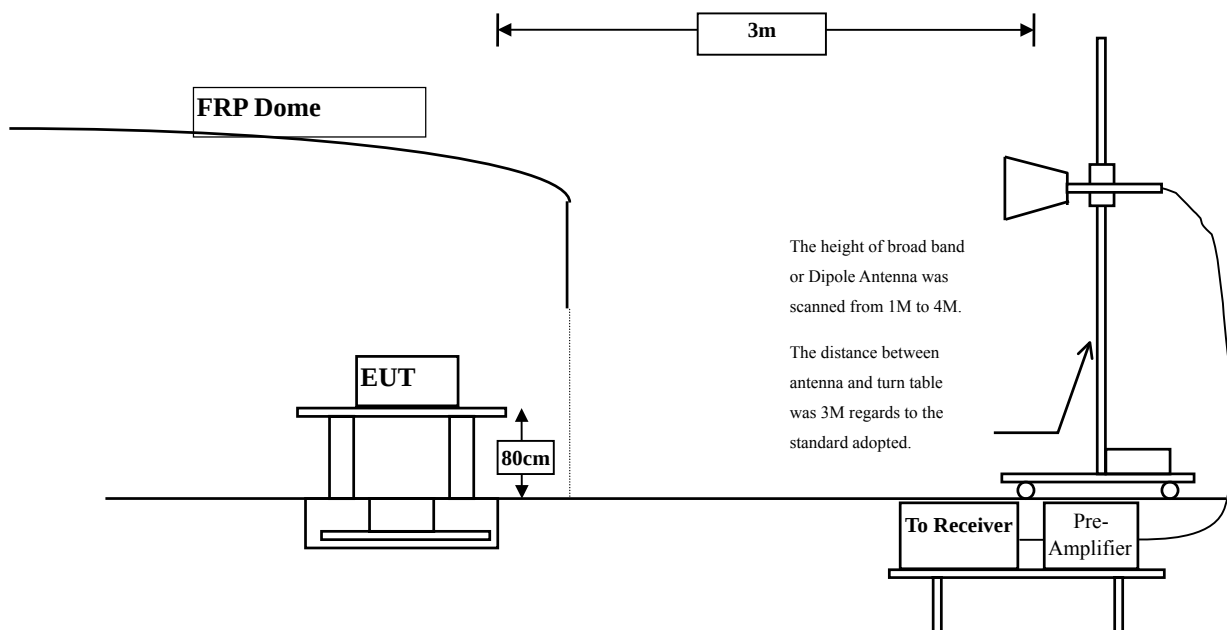
- Note:
1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.
 2. The test instruments marked with "X" are used to measure the final test results.

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, 2003 and tested according to DTS test procedure of Jan. 2012 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 C63.4:2003 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 from 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 : Notebook PC
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit - 802.11b 1Mbps (2412MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
Peak Detector:					
4824.000	3.261	34.290	37.551	-36.449	74.000
7236.000	10.650	35.550	46.200	-27.800	74.000
9648.000	13.337	36.800	50.136	-23.864	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4824.000	6.421	35.800	42.221	-31.779	74.000
7236.000	11.495	36.150	47.645	-26.355	74.000
9648.000	13.807	36.000	49.806	-24.194	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. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Notebook PC
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit - 802.11b 1Mbps (2437 MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4874.000	3.038	40.660	43.697	-30.303	74.000
7311.000	11.795	34.900	46.694	-27.306	74.000
9748.000	12.635	35.200	47.835	-26.165	74.000
Average					
Detector:					
--					
Vertical					
Peak Detector:					
4874.000	5.812	41.200	47.011	-26.989	74.000
7311.000	12.630	35.420	48.049	-25.951	74.000
9748.000	13.126	36.120	49.246	-24.754	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. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Notebook PC
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit - 802.11b 1Mbps (2462 MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
Peak Detector:					
4924.000	2.858	37.830	40.687	-33.313	74.000
7386.000	12.127	34.830	46.958	-27.042	74.000
9848.000	12.852	35.500	48.353	-25.647	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4924.000	5.521	37.190	42.710	-31.290	74.000
7386.000	13.254	35.000	48.254	-25.746	74.000
9848.000	13.367	35.830	49.197	-24.803	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. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Notebook PC
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit - 802.11g 6Mbps (2412MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV/m	dB	dBuV/m

Horizontal

Peak Detector:

4824.000	3.261	35.330	38.591	-35.409	74.000
7236.000	10.650	36.210	46.860	-27.140	74.000
9648.000	13.337	35.690	49.026	-24.974	74.000

Average

Detector:

--

Vertical

Peak Detector:

4824.000	6.421	36.420	42.841	-31.159	74.000
7236.000	11.495	36.260	47.755	-26.245	74.000
9648.000	13.807	35.820	49.626	-24.374	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. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Notebook PC
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit - 802.11g 6Mbps (2437 MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4874.000	3.038	39.870	42.907	-31.093	74.000
7311.000	11.795	35.010	46.804	-27.196	74.000
9748.000	12.635	36.230	48.865	-25.135	74.000
Average					
Detector:					
--					
Vertical					
Peak Detector:					
4874.000	5.812	40.860	46.671	-27.329	74.000
7311.000	12.630	35.020	47.649	-26.351	74.000
9748.000	13.126	36.210	49.336	-24.664	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. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Notebook PC
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit - 802.11g 6Mbps (2462 MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
Peak Detector:					
4924.000	2.858	36.280	39.137	-34.863	74.000
7386.000	12.127	35.690	47.818	-26.182	74.000
9848.000	12.852	35.940	48.793	-25.207	74.000
Average					
Detector:					
--					
Vertical					
Peak Detector:					
4924.000	5.521	36.890	42.410	-31.590	74.000
7386.000	13.254	35.010	48.264	-25.736	74.000
9848.000	13.367	36.600	49.967	-24.033	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. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Notebook PC
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 3: Transmit - 802.11a 6Mbps (5745 MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
11490.000	17.676	35.630	53.307	-20.693	74.000
Average					
Detector:					
--					
Vertical					
Peak Detector:					
11490.000	18.604	35.240	53.845	-20.155	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. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Notebook PC
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 3: Transmit - 802.11a 6Mbps (5785 MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
11570.000	17.459	36.010	53.469	-20.531	74.000
Average					
Detector:					
--					
Vertical					
Peak Detector:					
11570.000	18.348	35.480	53.828	-20.172	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. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Notebook PC
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 3: Transmit - 802.11a 6Mbps (5825 MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV/m	dB	dBuV/m

Horizontal

Peak Detector:

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
11650.000	16.715	36.150	52.866	-21.134	74.000

Average

Detector:

--

Vertical

Peak Detector:

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
11650.000	17.831	35.680	53.512	-20.488	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. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Notebook PC
 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	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV/m	dB	dBuV/m

Horizontal

Peak Detector:

4824.000	3.261	36.380	39.641	-34.359	74.000
7236.000	10.650	36.220	46.870	-27.130	74.000
9648.000	13.337	35.790	49.126	-24.874	74.000

Average

Detector:

--

Vertical

Peak Detector:

4824.000	6.421	36.180	42.601	-31.399	74.000
7236.000	11.495	36.370	47.865	-26.135	74.000
9648.000	13.807	35.310	49.116	-24.884	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. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Notebook PC
 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	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4874.000	3.038	36.130	39.167	-34.833	74.000
7311.000	11.795	35.000	46.794	-27.206	74.000
9748.000	12.635	36.060	48.695	-25.305	74.000
Average					
Detector:					
--					
Vertical					
Peak Detector:					
4874.000	5.812	36.690	42.501	-31.499	74.000
7311.000	12.630	35.490	48.119	-25.881	74.000
9748.000	13.126	36.340	49.466	-24.534	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. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Notebook PC
 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 MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
Peak Detector:					
4924.000	2.858	35.120	37.977	-36.023	74.000
7386.000	12.127	35.380	47.508	-26.492	74.000
9848.000	12.852	36.520	49.373	-24.627	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4924.000	5.521	36.210	41.730	-32.270	74.000
7386.000	13.254	35.670	48.924	-25.076	74.000
9848.000	13.367	35.470	48.837	-25.163	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. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Notebook PC
 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	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV/m	dB	dBuV/m

Horizontal

Peak Detector:

4844.000	3.171	36.110	39.281	-34.719	74.000
7266.000	11.162	35.700	46.862	-27.138	74.000
9688.000	12.964	36.010	48.975	-25.025	74.000

Average

Detector:

--

Vertical

Peak Detector:

4844.000	6.178	36.780	42.958	-31.042	74.000
7266.000	11.982	35.680	47.662	-26.338	74.000
9688.000	13.507	36.140	49.648	-24.352	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. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Notebook PC
 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	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4874.000	3.038	36.380	39.417	-34.583	74.000
7311.000	11.795	35.930	47.724	-26.276	74.000
9748.000	12.635	36.030	48.665	-25.335	74.000
Average					
Detector:					
--					
Vertical					
Peak Detector:					
4874.000	5.812	36.120	41.931	-32.069	74.000
7311.000	12.630	35.610	48.239	-25.761	74.000
9748.000	13.126	36.810	49.936	-24.064	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. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Notebook PC
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 MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
Peak Detector:					
4904.000	2.914	36.150	39.065	-34.935	74.000
7356.000	11.995	35.990	47.984	-26.016	74.000
9808.000	12.475	35.130	47.605	-26.395	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4904.000	5.530	36.310	41.841	-32.159	74.000
7356.000	13.005	35.090	48.094	-25.906	74.000
9808.000	12.901	35.910	48.811	-25.189	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. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Notebook PC
 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	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
11490.000	17.676	35.970	53.647	-20.353	74.000
Average					
Detector:					
--					
Vertical					
Peak Detector:					
11490.000	18.604	35.390	53.995	-20.005	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. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Notebook PC
 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	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
11570.000	17.459	36.090	53.549	-20.451	74.000
Average					
Detector:					
--					
Vertical					
Peak Detector:					
11570.000	18.348	35.420	53.768	-20.232	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. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Notebook PC
 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	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
11650.000	16.715	36.130	52.846	-21.154	74.000
Average					
Detector:					
--					
Vertical					
Peak Detector:					
11650.000	17.831	35.470	53.302	-20.698	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. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Notebook PC
 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	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
11510.000	17.714	36.270	53.984	-20.016	74.000
Average					
Detector:					
--					
Vertical					
Peak Detector:					
11510.000	18.671	35.320	53.991	-20.009	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. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Notebook PC
 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	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
11590.000	17.371	36.010	53.380	-20.620	74.000
Average					
Detector:					
--					
Vertical					
Peak Detector:					
11590.000	18.237	35.440	53.676	-20.324	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. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Notebook PC
 Test Item : General Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit - 802.11b 1Mbps (2437 MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
39.700	-3.616	33.327	29.711	-10.289	40.000
258.920	-5.050	41.861	36.811	-9.189	46.000
388.900	-1.684	35.280	33.596	-12.404	46.000
584.840	3.391	31.949	35.340	-10.660	46.000
699.300	2.875	31.138	34.013	-11.987	46.000
802.120	5.091	28.204	33.295	-12.705	46.000
Vertical					
113.420	-1.849	29.713	27.864	-15.636	43.500
258.920	-7.490	40.719	33.229	-12.771	46.000
388.900	-3.064	38.412	35.348	-10.652	46.000
540.220	0.121	24.837	24.958	-21.042	46.000
699.300	0.695	32.887	33.582	-12.418	46.000
802.120	3.161	27.107	30.268	-15.732	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. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Notebook PC
 Test Item : General Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit - 802.11g 6Mbps (2437 MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
264.740	-4.991	40.986	35.995	-10.005	46.000
388.900	-1.684	35.725	34.041	-11.959	46.000
584.840	3.391	30.591	33.982	-12.018	46.000
699.300	2.875	29.478	32.353	-13.647	46.000
800.180	5.141	27.974	33.115	-12.885	46.000
928.220	6.893	22.988	29.881	-16.119	46.000
Vertical					
39.700	-1.056	35.233	34.177	-5.823	40.000
198.780	-8.221	36.977	28.756	-14.744	43.500
388.900	-3.064	36.936	33.872	-12.128	46.000
518.880	-0.546	26.399	25.853	-20.147	46.000
699.300	0.695	31.956	32.651	-13.349	46.000
802.120	3.161	25.740	28.901	-17.099	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. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Notebook PC
 Test Item : General Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 3: Transmit - 802.11a 6Mbps (5785MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
258.920	-5.050	41.837	36.787	-9.213	46.000
388.900	-1.684	35.425	33.741	-12.259	46.000
454.860	-0.779	29.325	28.545	-17.455	46.000
582.900	3.445	31.427	34.872	-11.128	46.000
712.880	3.569	26.571	30.140	-15.860	46.000
831.220	6.121	22.012	28.133	-17.867	46.000
Vertical					
39.700	-1.056	36.197	35.141	-4.859	40.000
198.780	-8.221	38.440	30.219	-13.281	43.500
266.680	-8.213	40.038	31.825	-14.175	46.000
388.900	-3.064	35.904	32.840	-13.160	46.000
511.120	-0.261	28.372	28.111	-17.889	46.000
802.120	3.161	27.511	30.672	-15.328	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. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Notebook PC
 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	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
39.700	-3.616	31.500	27.884	-12.116	40.000
284.140	-4.894	40.108	35.214	-10.786	46.000
388.900	-1.684	36.013	34.329	-11.671	46.000
544.100	3.512	26.739	30.251	-15.749	46.000
646.920	1.793	25.062	26.855	-19.145	46.000
802.120	5.091	32.317	37.408	-8.592	46.000
Vertical					
39.700	-1.056	35.481	34.425	-5.575	40.000
113.420	-1.849	29.880	28.031	-15.469	43.500
286.080	-8.097	37.505	29.408	-16.592	46.000
388.900	-3.064	36.032	32.968	-13.032	46.000
503.360	-0.852	28.296	27.444	-18.556	46.000
699.300	0.695	34.803	35.498	-10.502	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. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Notebook PC
 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	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
39.700	-3.616	31.894	28.278	-11.722	40.000
266.680	-4.963	41.296	36.333	-9.667	46.000
388.900	-1.684	35.377	33.693	-12.307	46.000
582.900	3.445	29.208	32.653	-13.347	46.000
699.300	2.875	28.478	31.353	-14.647	46.000
802.120	5.091	30.189	35.280	-10.720	46.000
Vertical					
39.700	-1.056	32.769	31.713	-8.287	40.000
258.920	-7.490	38.525	31.035	-14.965	46.000
388.900	-3.064	36.824	33.760	-12.240	46.000
513.060	-0.670	31.515	30.845	-15.155	46.000
697.360	1.311	27.651	28.962	-17.038	46.000
802.120	3.161	26.263	29.424	-16.576	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. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Notebook PC
 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	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
39.700	-3.616	34.538	30.922	-9.078	40.000
264.740	-4.991	41.048	36.057	-9.943	46.000
388.900	-1.684	36.662	34.978	-11.022	46.000
584.840	3.391	30.254	33.645	-12.355	46.000
714.820	3.562	26.998	30.560	-15.440	46.000
802.120	5.091	27.266	32.357	-13.643	46.000
Vertical					
39.700	-1.056	37.991	36.935	-3.065	40.000
113.420	-1.849	30.357	28.508	-14.992	43.500
258.920	-7.490	38.151	30.661	-15.339	46.000
388.900	-3.064	36.440	33.376	-12.624	46.000
497.540	-1.393	28.502	27.109	-18.891	46.000
802.120	3.161	27.220	30.381	-15.619	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. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Notebook PC
 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	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
266.680	-4.963	39.840	34.877	-11.123	46.000
388.900	-1.684	36.187	34.503	-11.497	46.000
518.880	1.714	28.673	30.387	-15.613	46.000
582.900	3.445	30.662	34.107	-11.893	46.000
679.900	2.870	26.843	29.713	-16.287	46.000
802.120	5.091	28.097	33.188	-12.812	46.000
Vertical					
39.700	-1.056	34.603	33.547	-6.453	40.000
264.740	-7.681	38.258	30.577	-15.423	46.000
388.900	-3.064	36.659	33.595	-12.405	46.000
518.880	-0.546	27.096	26.550	-19.450	46.000
691.540	2.421	23.132	25.553	-20.447	46.000
802.120	3.161	27.342	30.503	-15.497	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. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

5. RF antenna conducted test

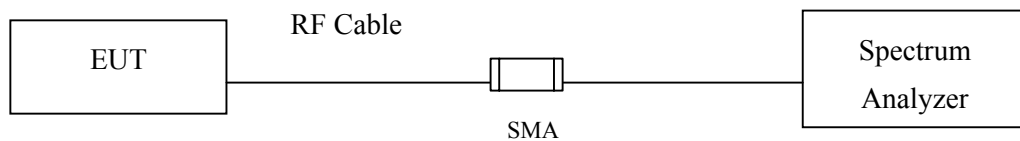
5.1. Test Equipment

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X	Spectrum Analyzer	R&S	FSP40 / 100170	Jun, 2012
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun, 2012
X	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2012

- 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.

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 Jan. 2012 KDB558074 for compliance to FCC 47CFR 15.247 requirements.

Set RBW = 100 kHz, Set VBW > RBW, scan up through 10th harmonic.

5.5. Uncertainty

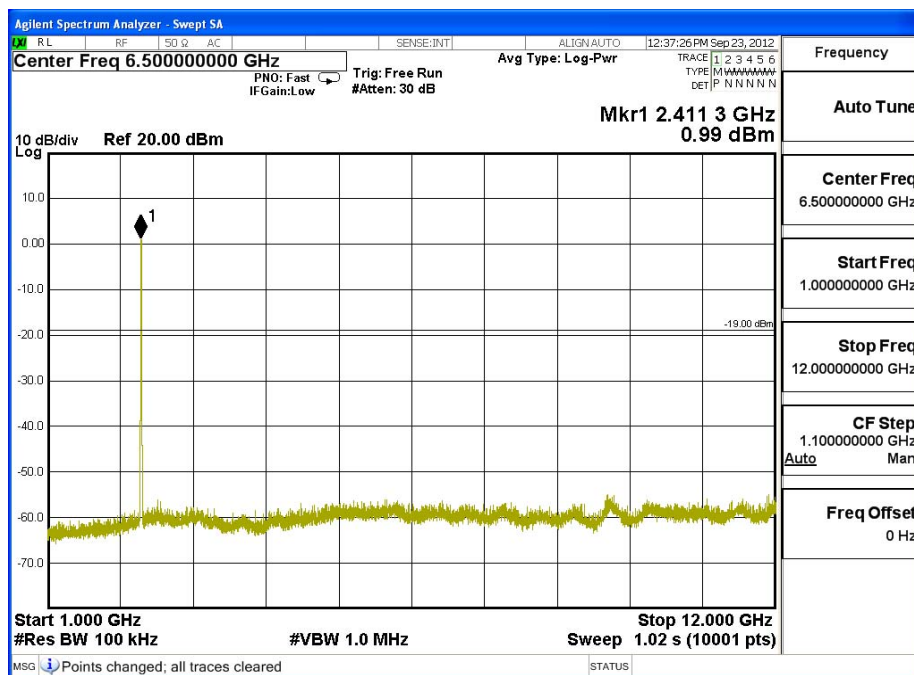
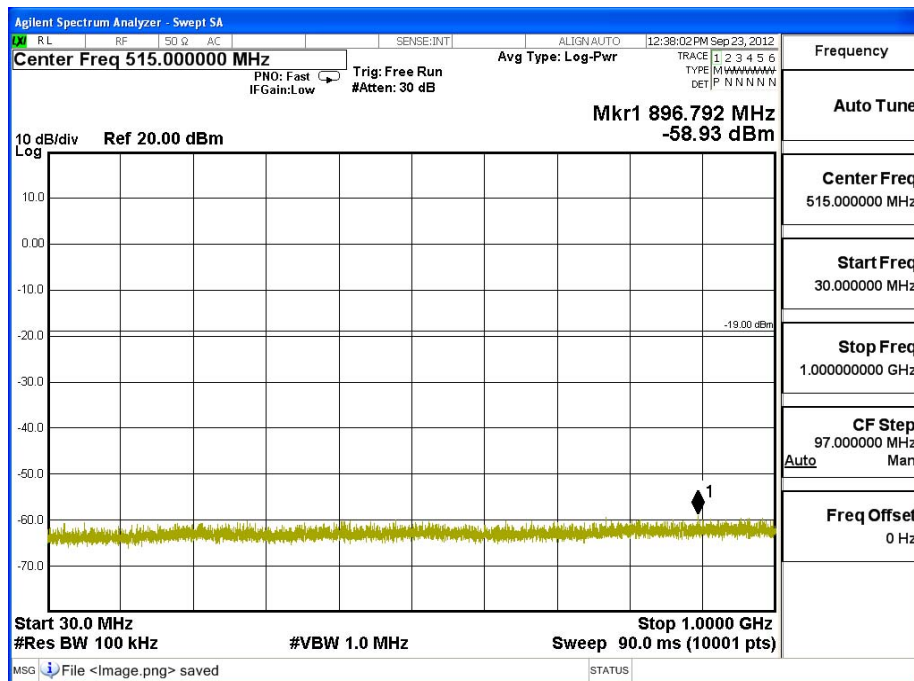
The measurement uncertainty

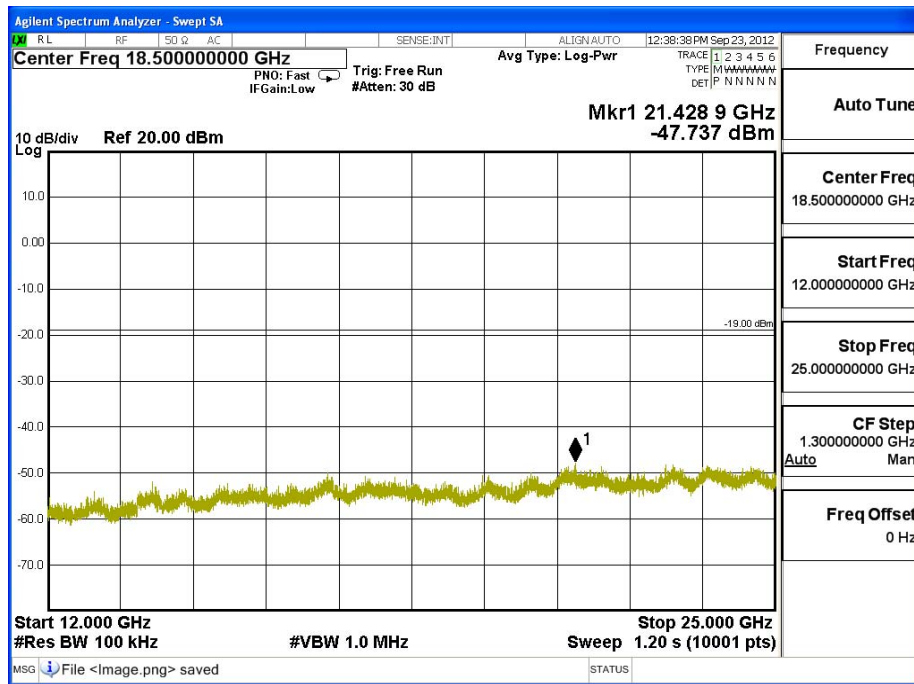
Conducted is defined as $\pm 1.27\text{dB}$

5.6. Test Result of RF antenna conducted test

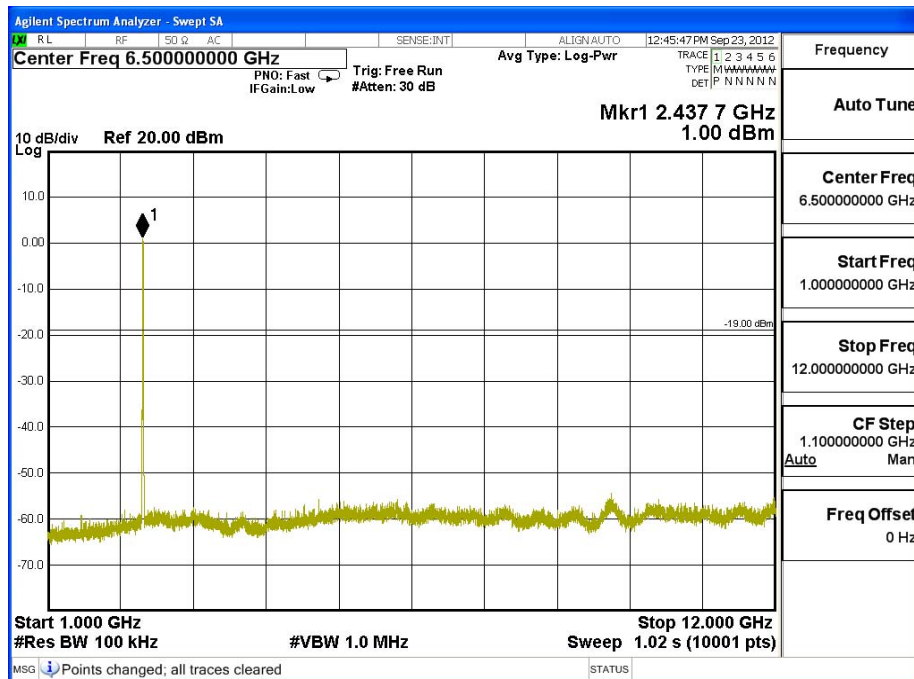
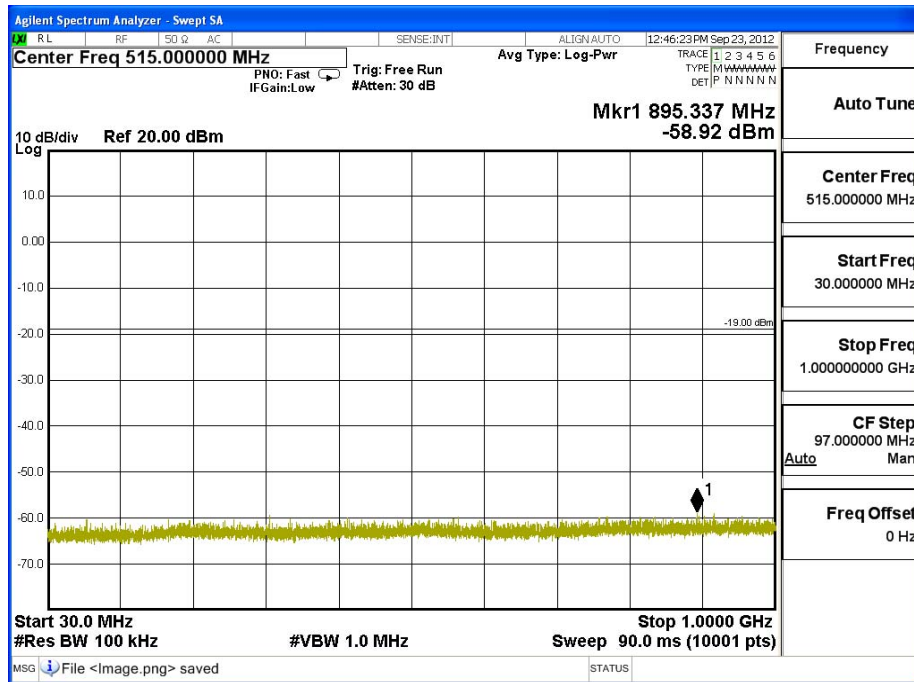
Product : Notebook PC
 Test Item : RF antenna conducted test
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit - 802.11b 1Mbps

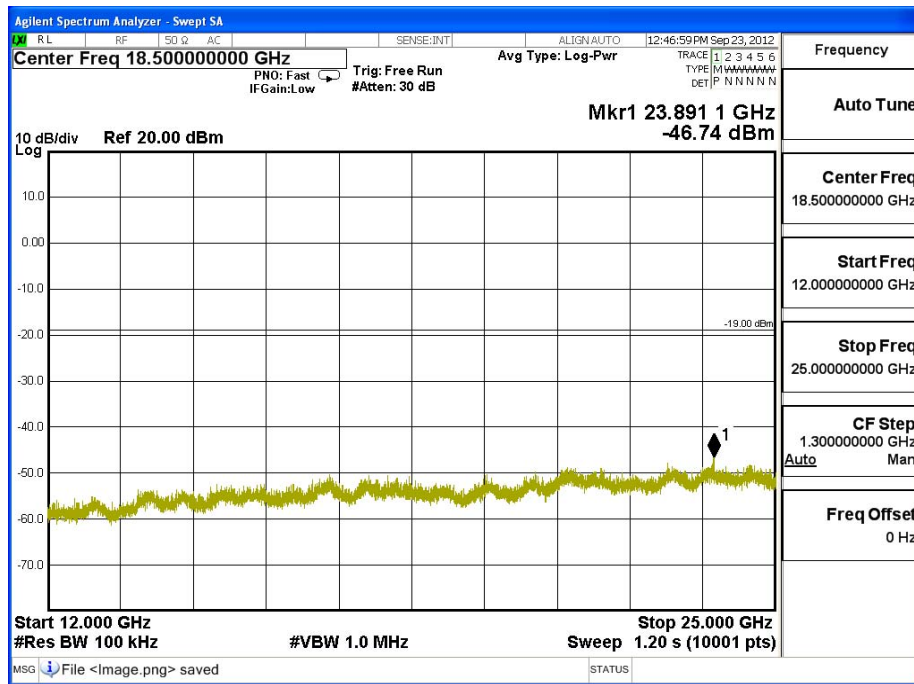
Channel 01 (2412MHz) 30MHz-25GHz-Chain A



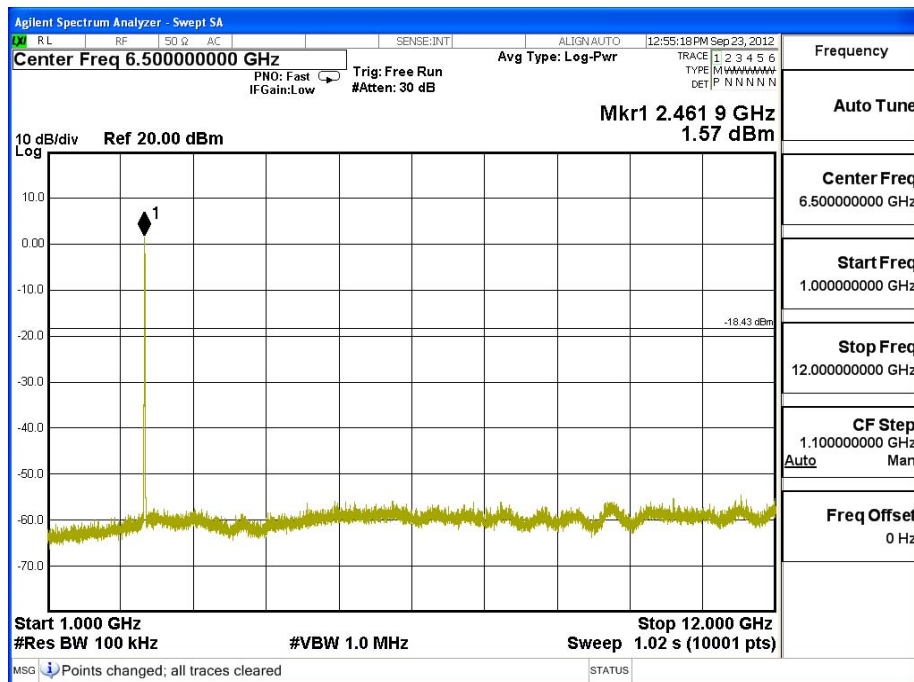
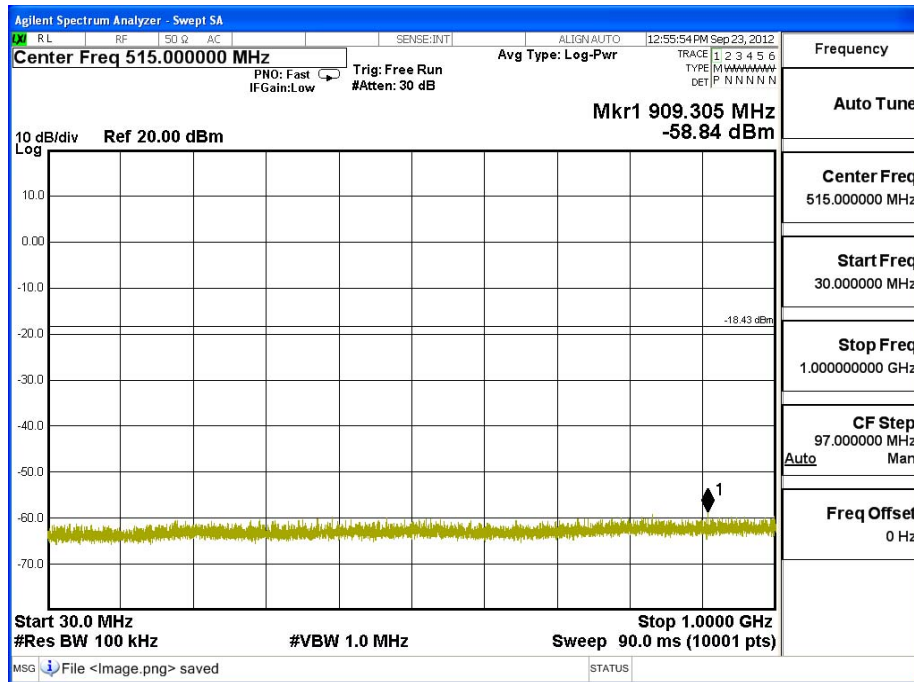


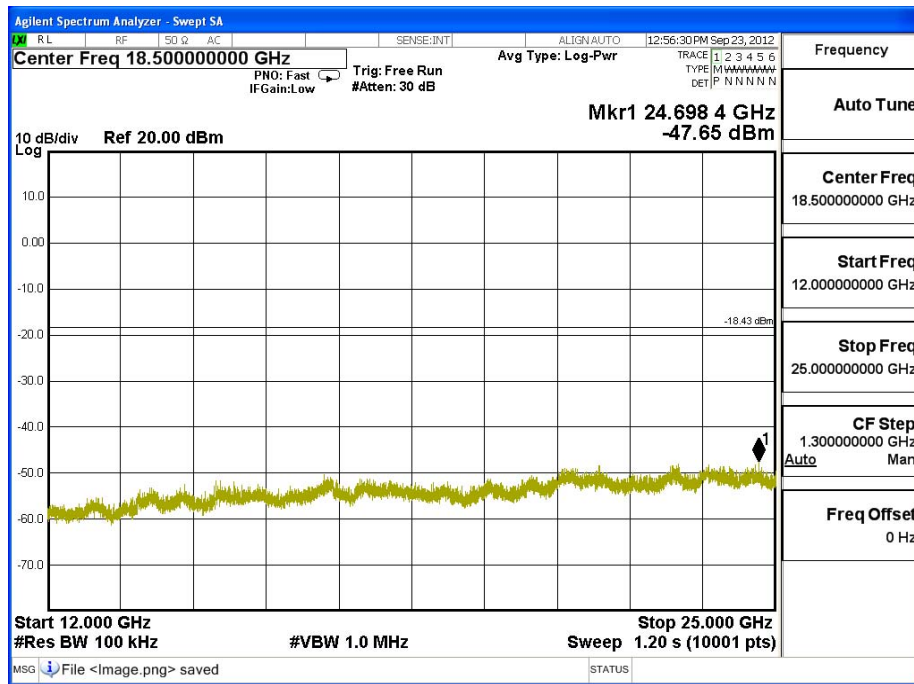
Channel 06 (2437MHz) 30MHz -25GHz-Chain A





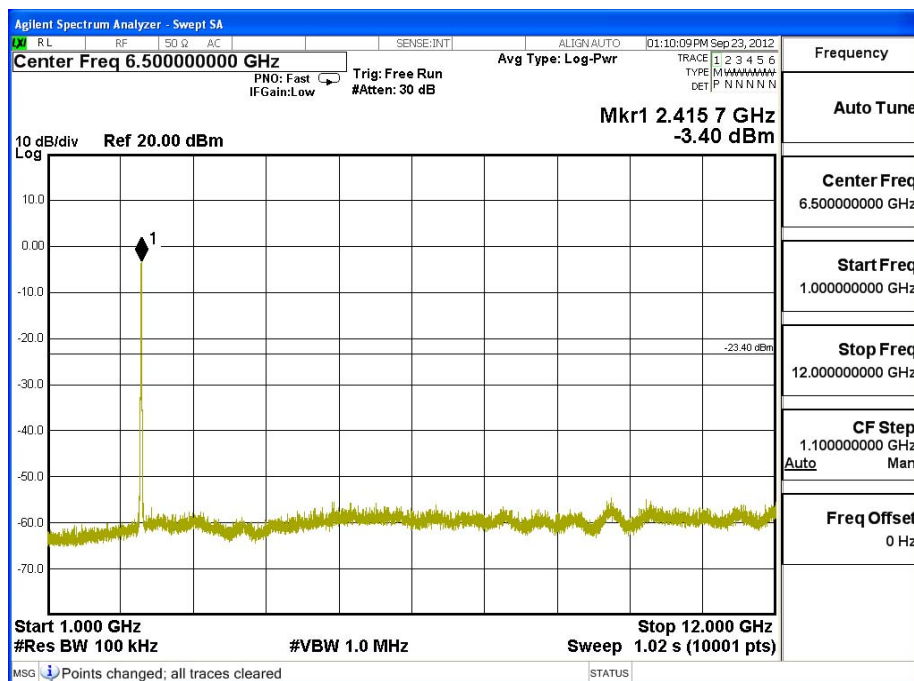
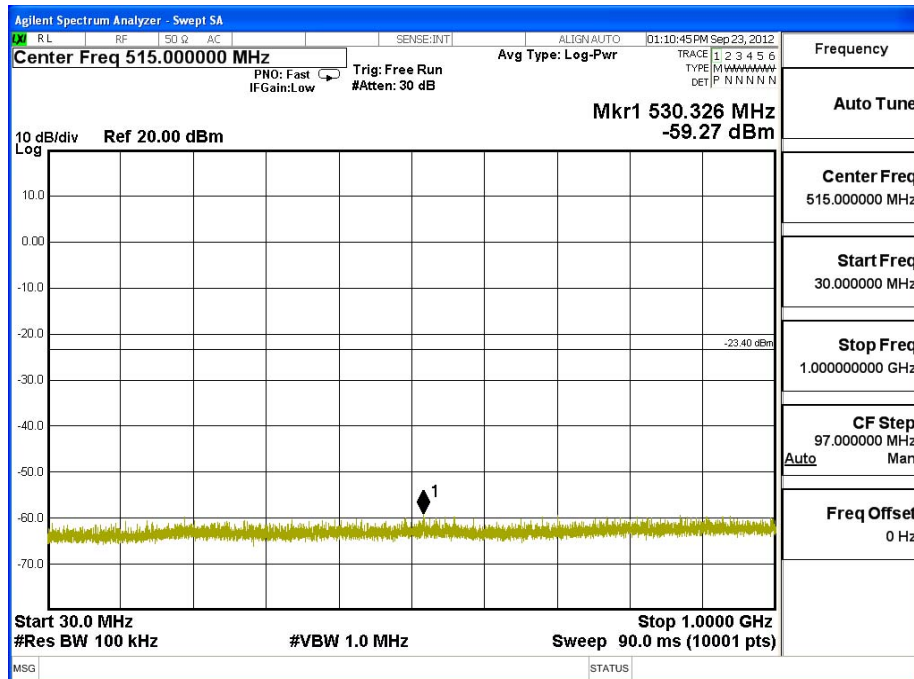
Channel 11 (2462MHz) 30MHz -25GHz-Chain A

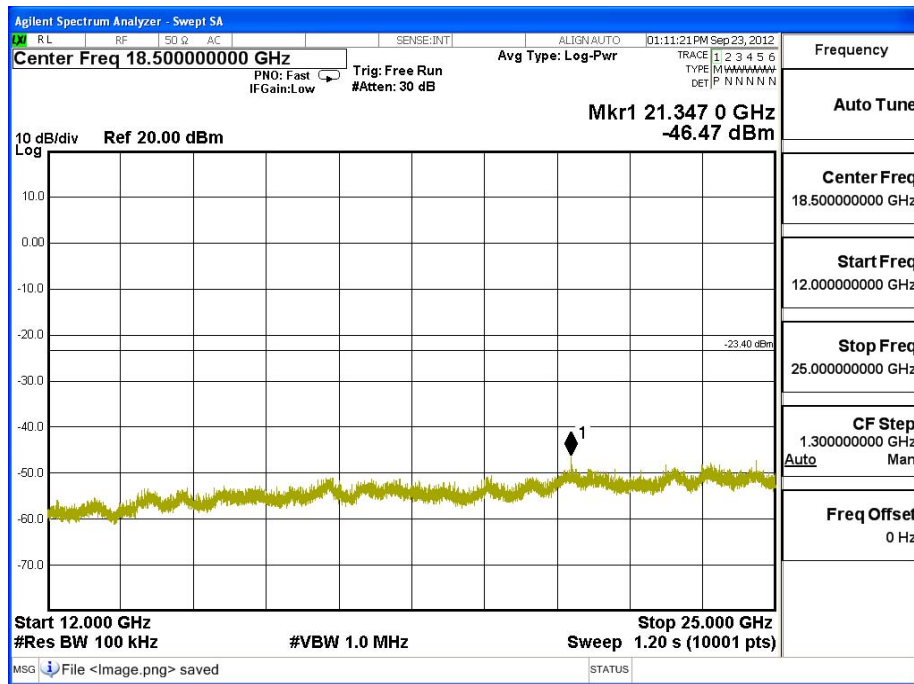




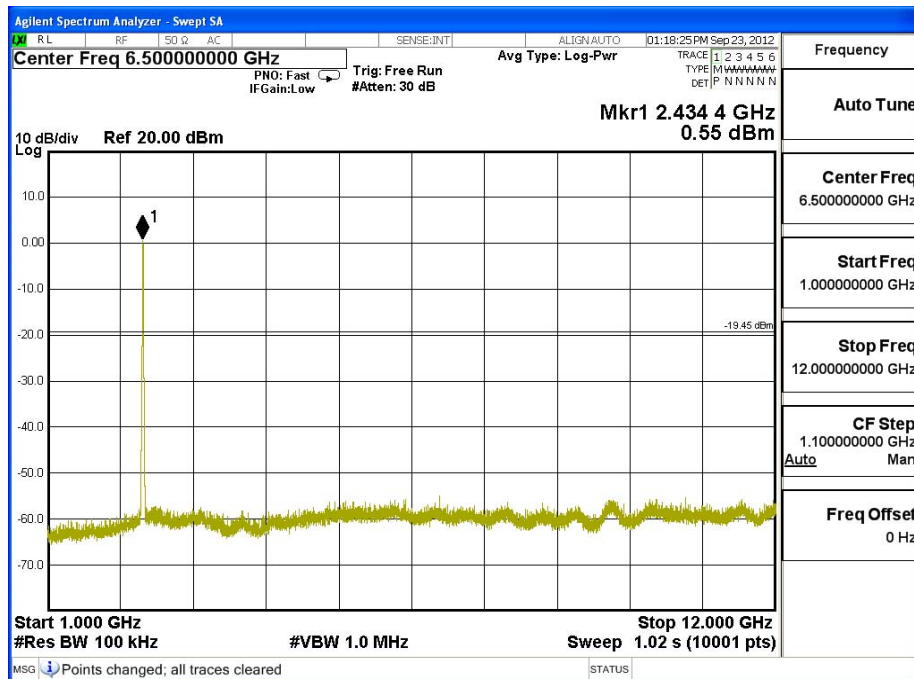
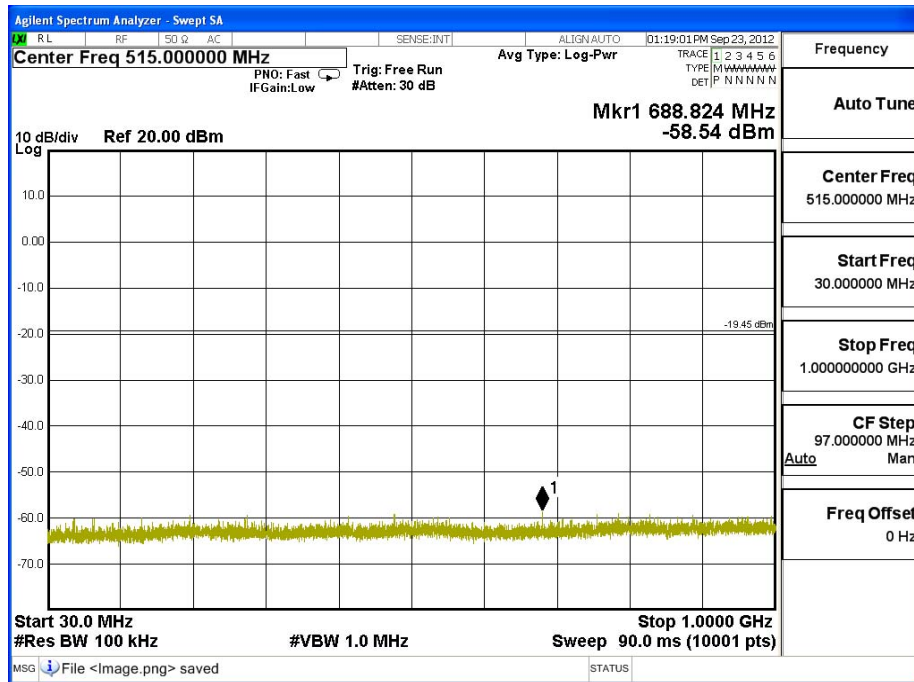
Product : Notebook PC
 Test Item : RF Antenna Conducted Spurious
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit - 802.11g 6Mbps

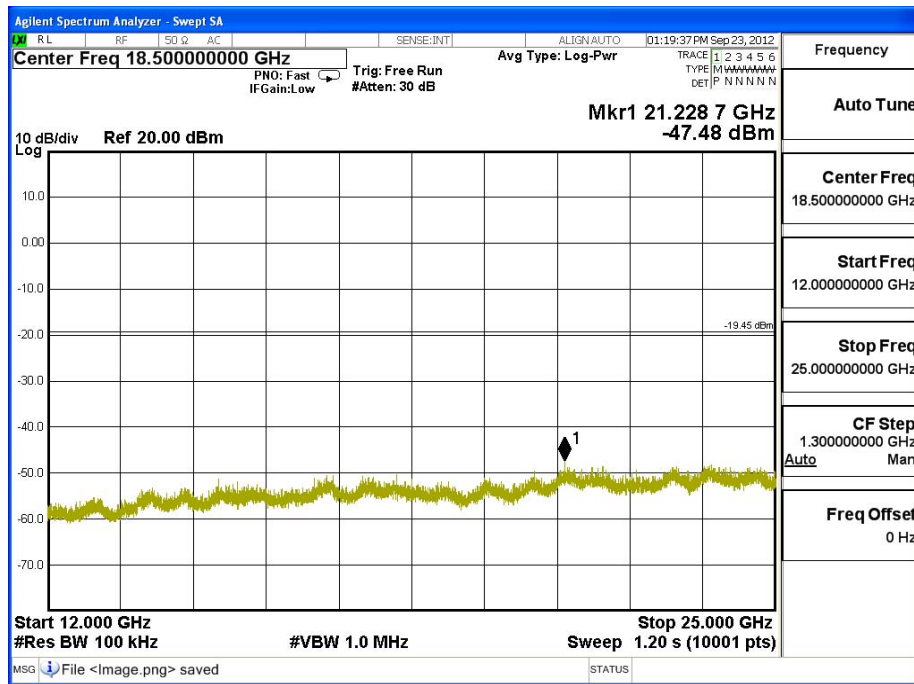
Channel 01 (2412MHz) 30MHz -25GHz-Chain A



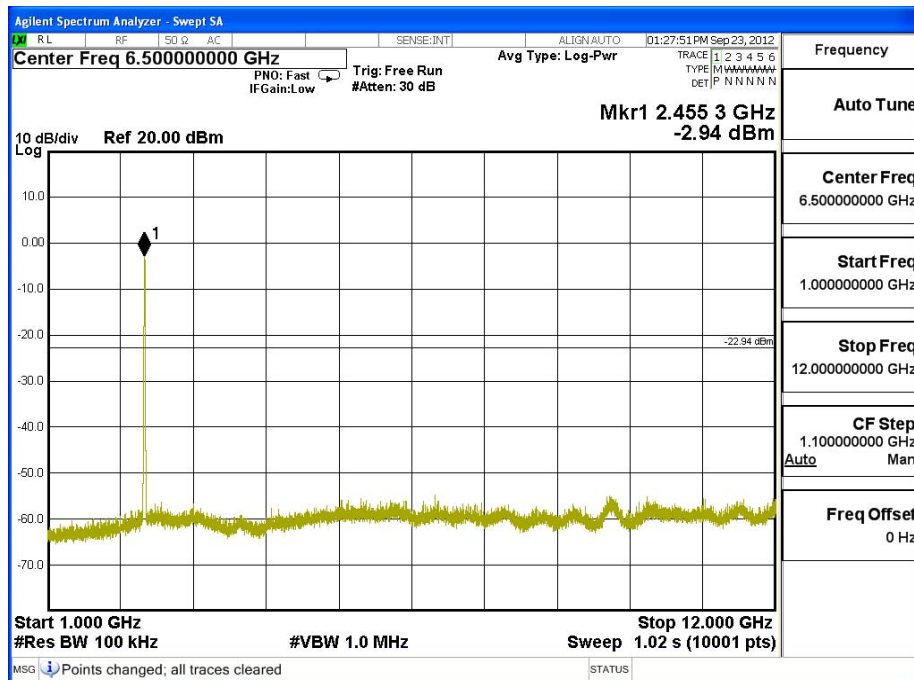
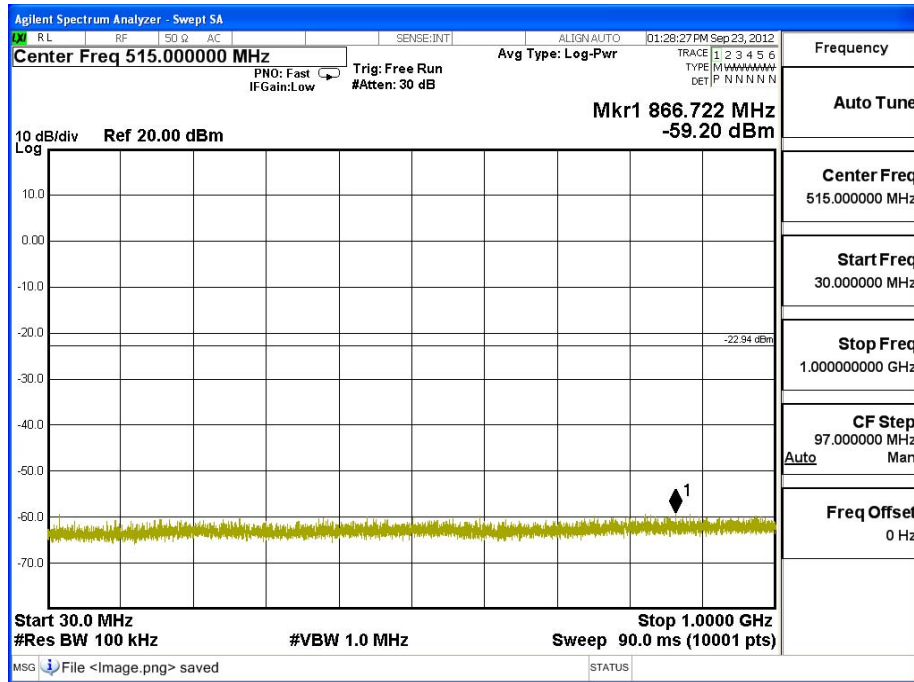


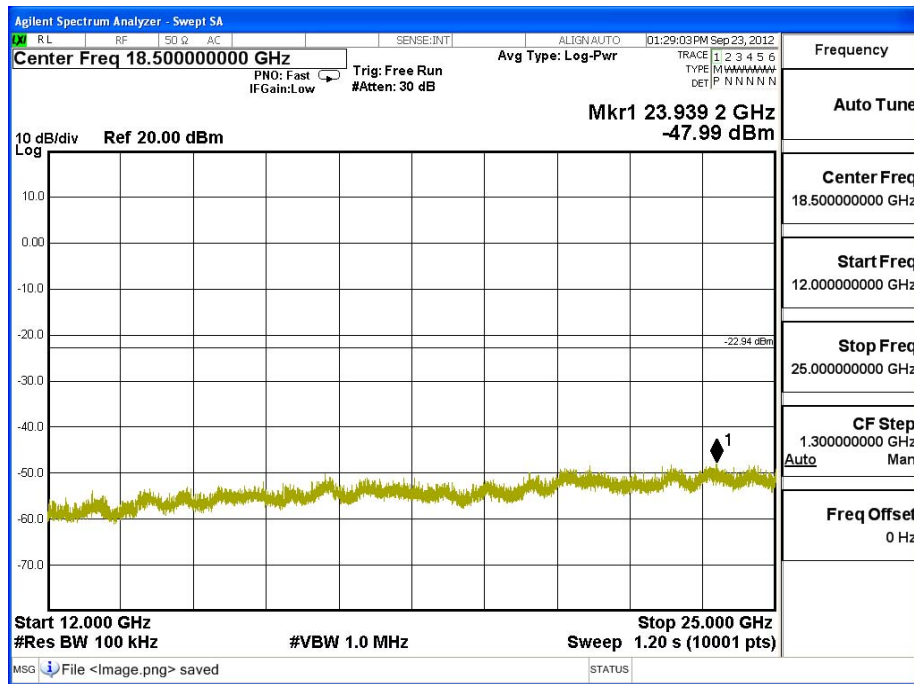
Channel 06 (2437MHz) 30MHz -25GHz-Chain A





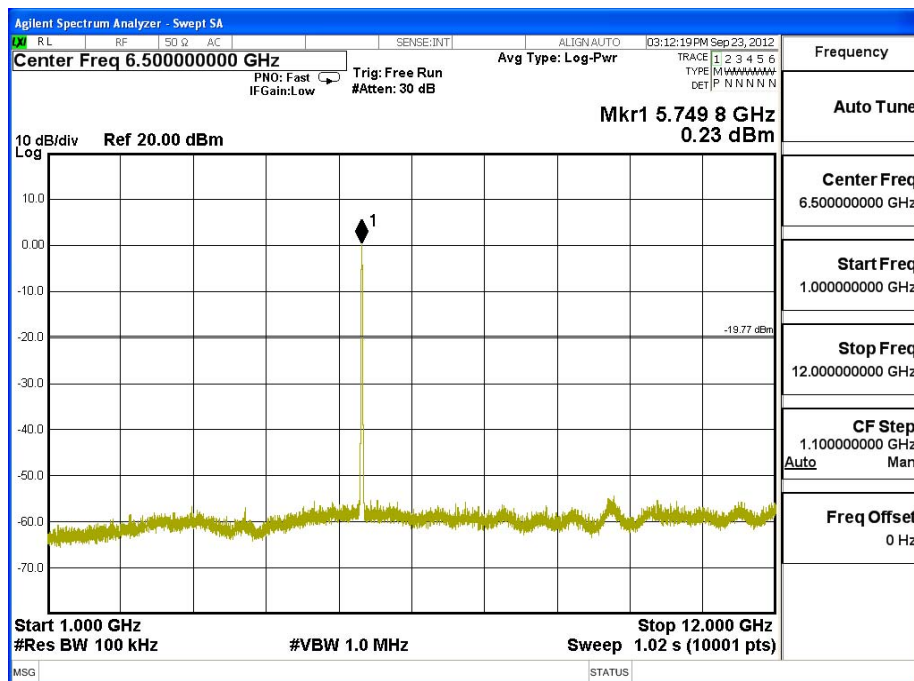
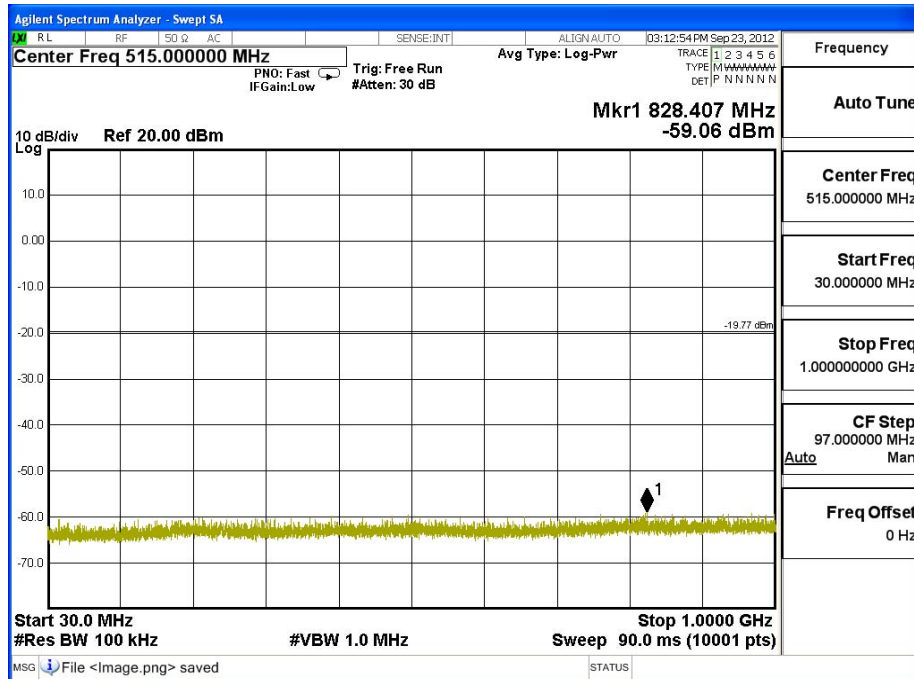
Channel 11 (2462MHz) 30MHz -25GHz-Chain A

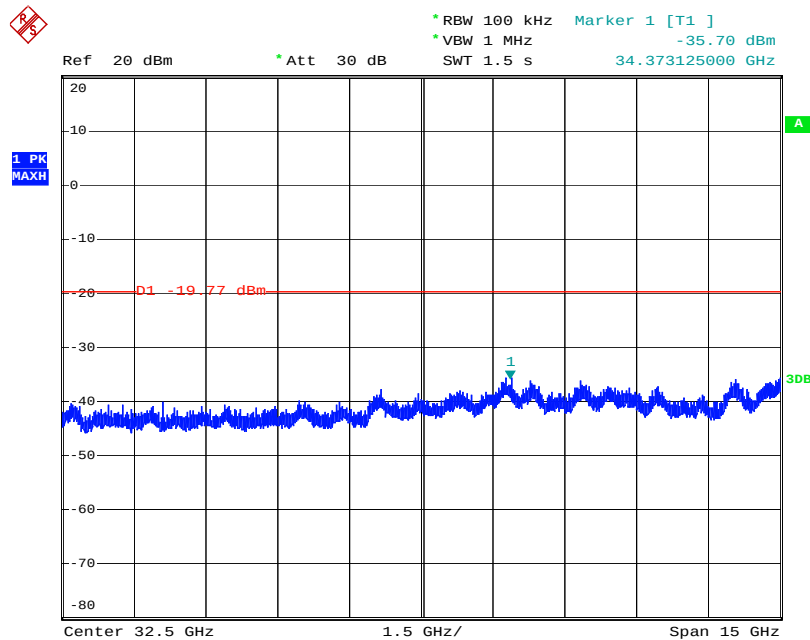
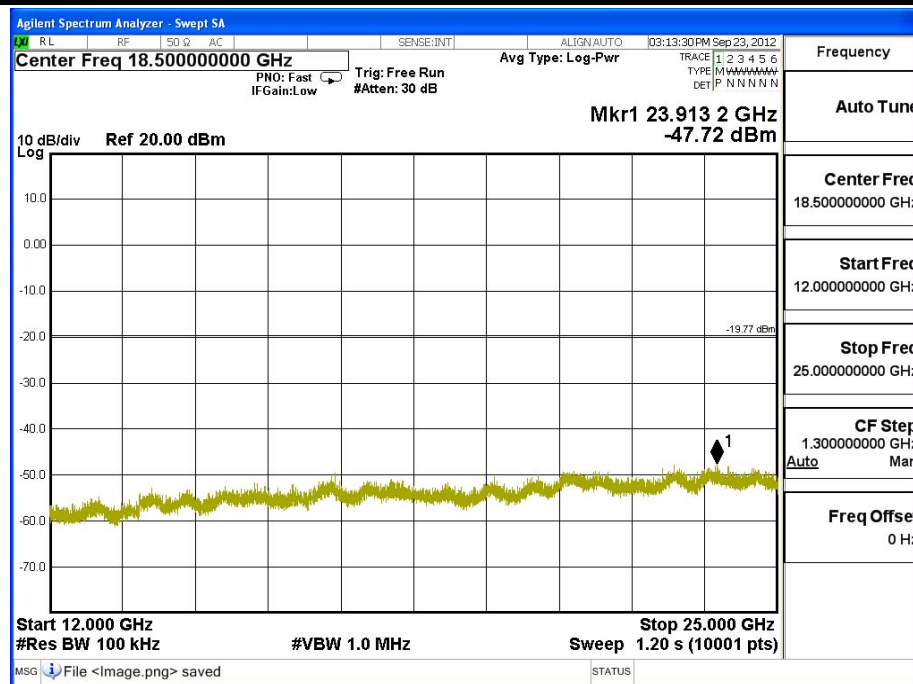




Product : Notebook PC
 Test Item : RF Antenna Conducted Spurious
 Test Site : No.3 OATS
 Test Mode : Mode 3: Transmit - 802.11a 6Mbps

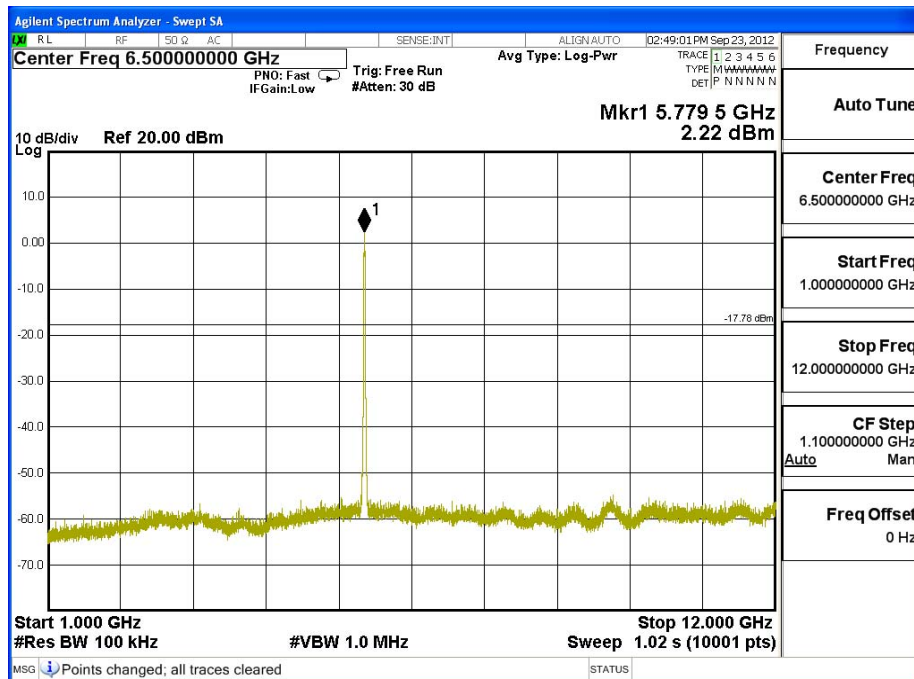
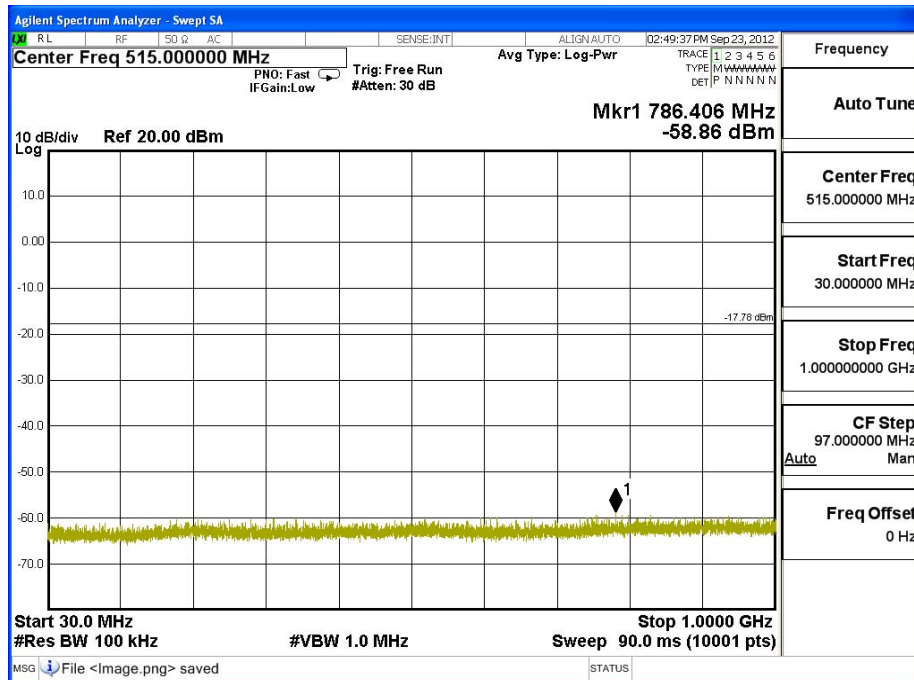
Channel 149 (5745MHz) 30MHz -40GHz-Chain B

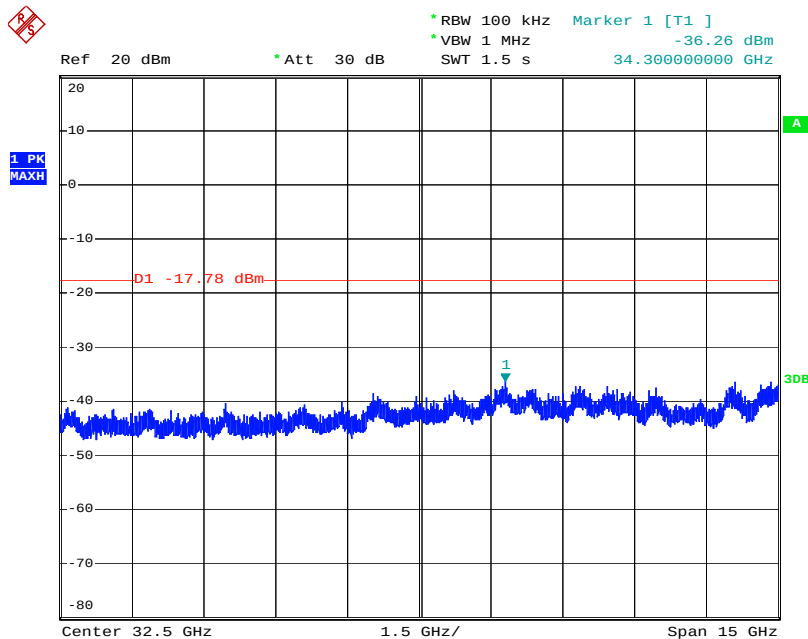
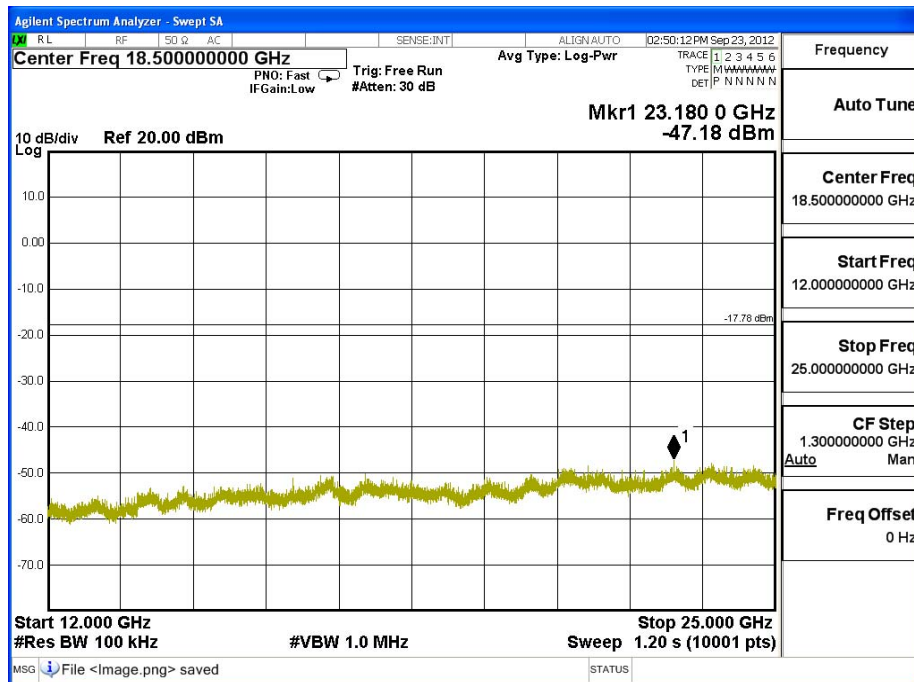




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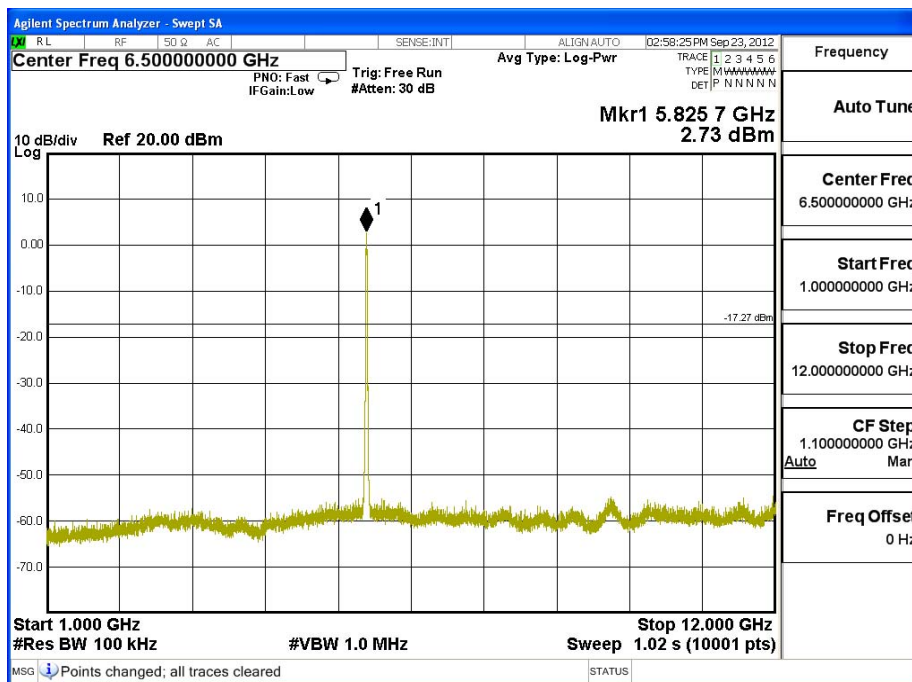
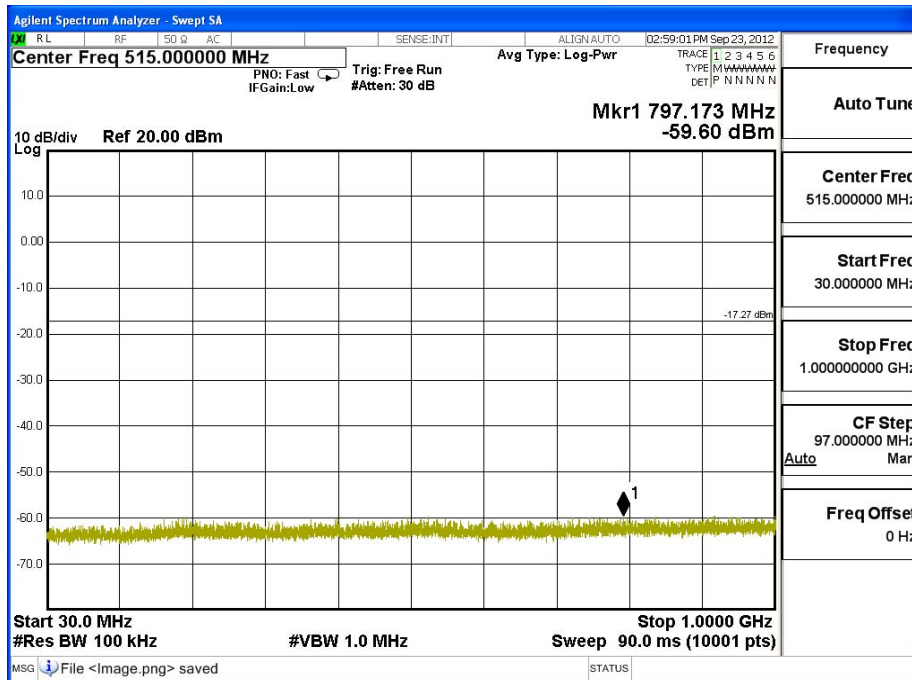
Channel 157 (5785MHz) 30MHz -40GHz-Chain B

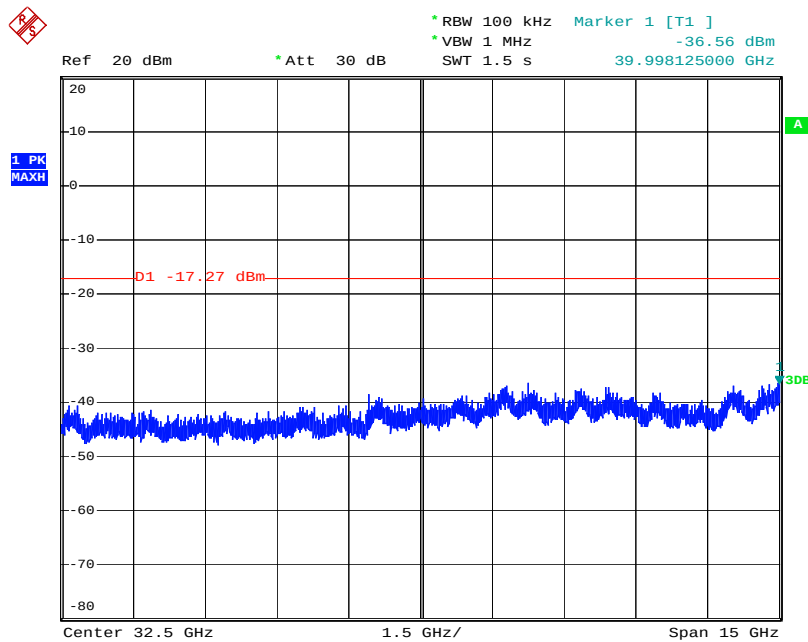
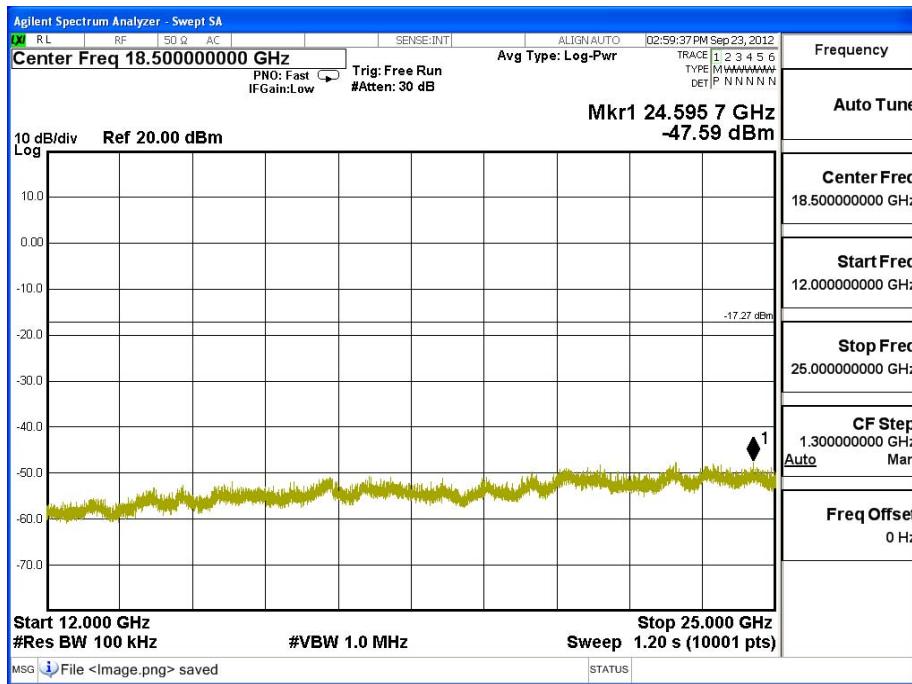




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Channel 165 (5825MHz) 30MHz -40GHz-Chain B





Date: 25.SEP.2012 18:18:55