Test Report

Product Name	Printer
Model No	TSC-30W, CN-30W, BP-30W, PR30W, GR30W, 3300W, TSC-30RW, CN-30RW, BP-30RW, PR30RW, GR30RW, 3300RW, Alpha-3RW
FCC ID.	VTV0481202

Applicant	TSC Auto ID Technology Co., Ltd.
Address	9F., No. 95, Minquan Rd. Xindian Dist. New Taipei City 23141, Taiwan (R.O.C.)

Date of Receipt	April 23, 2012
Issue Date	July 17, 2012
Report No.	124446R-RFUSP28V01
Report Version	V1.0

Testing Laboratory
0914

Test Report Certification

Issue Date: July 17, 2012
Report No.: 124446R-RFUSP28V01

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

Product Name	Printer
Applicant	TSC Auto ID Technology Co., Ltd.
Address	9F., No. 95, Minquan Rd. Xindian Dist. New Taipei City 23141, Taiwan (R.O.C.)
Manufacturer	TSC Auto ID Technology Co., Ltd.
Model No.	TSC-30W, CN-30W, BP-30W, PR30W, GR30W, 3300W, TSC-30RW, CN-30RW, BP-30RW, PR30RW, GR30RW, 3300RW, Alpha-3RW
FCC ID.	VTV0481202
EUT Rated Voltage	DC 7.4V (Power by Battery), DC 12V(Power by Adapter)
EUT Test Voltage	AC 120V/60Hz
Trade Name	TSC
Applicable Standard	FCC CFR Title 47 Part 15 Subpart C: 2010 ANSI C63.4: 2003
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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Tested By : Alan Chen
(Engineer / Alan Chen)

Approved By :
(Manager / Vincent Lin)

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1. GENERAL INFORMATION

1.1. EUT Description

Product Name	Printer
Trade Name	TSC
Model No.	TSC-30W, CN-30W, BP-30W, PR30W, GR30W, 3300W, TSC-30RW, CN-30RW, BP-30RW, PR30RW, GR30RW, 3300RW, Alpha-3RW
FCC ID.	VTV0481202
Frequency Range	2412-2462MHz for 802.11b/g/n-20BW
Number of Channels	802.11b/g/n-20MHz: 11
Data Speed	802.11b: 1-11Mbps, 802.11g: 6-54Mbps, 802.11n: up to 72.2Mbps
Type of Modulation	802.11b:DSSS (DBPSK, DQPSK, CCK) 802.11g/n:OFDM (BPSK, QPSK, 16QAM, 64QAM)
Antenna Type	Printed on PCB
Antenna Gain	Refer to the table “Antenna List”
Channel Control	Auto
USB Cable	Shielded, 1.0m, with one ferrite core bonded.
RS-232 to USB Cable	Shielded, 1.0m
Power Adapter (1)	MFR: Li Tone Electronics Co., LTD. (Trade Mark：L.T.E.), M/N: LTE12W-S2 Input: AC 100-240V, 1A, 50/60Hz Output: DC 12V⎓1A MAX: 12W Cable Out: Non-shielded, 1.8m, with one ferrite core bonded.
Power Adapter (2)	MFR: Powertron Electronics Corp. (Trade Mark：Powertron), M/N: PA1015-2DU Input: AC 100-240V, 0.4A, 50-60Hz Output: AC 12V⎓1.0A 12W Max Cable Out: Non-shielded, 1.2m, with one ferrite core bonded.
Power Adapter (3)	MFR: Atech OEM Inc.(Trade Mark：OEM), M/N: ADS0128-W 120100 Input: AC 100-240V, 0.5A, 50-60Hz Output: DC 12V⎓1.0A Cable Out: Non-shielded, 1.5m
Power Adapter (4) Car Charge	MFR: Atech OEM Inc.(Trade Mark：OEM), M/N: C11A-1215CD0-S0 Input: DC 12 ~ 24V Output: DC 12V⎓1.5A(MAX) Cable Out: Non-shielded, 1.5m

Antenna List

No.	Manufacturer	Part No.	Antenna Type	Peak Gain
1	GainSpan	GS-AN042	Printed on PCB	2.26 dBi for 2.4 GHz

Note:
1. The antenna of EUT is conform to FCC 15.203.

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		

Note:
1. The EUT is a Printer with a built-in 2.4GHz WLAN transceiver.
2. Each model through the pretest, only the worst case (Alpha-3RW :USB to RS232 Cable) is shown in the test report
3. The different of the thirteen model is shown as below:

	Control Method	
Model No.	Shipment Control	Firmware Control
Alpha-3RW	USB, RS-232	1.5, 2, 2.5, 3, 3.5, 4
TSC-30W	USB	1.5, 2, 3, 4
CN-30W	USB	2, 3, 3.5, 4
BP-30W	USB	2, 2.5, 3, 3.5, 4
PR30W	USB	2, 2.5, 3, 4
GR30W	USB	2, 3, 4
3300W	USB	1.5, 2, 3, 3.5, 4
TSC-30RW	RS-232	1.5, 2, 3, 4
CN-30RW	RS-232	2, 3, 3.5, 4
BP-30RW	RS-232	2, 2.5, 3, 3.5, 4
PR30RW	RS-232	2, 2.5, 3, 4
GR30RW	RS-232	2, 3, 4
3300RW	RS-232	1.5, 2, 3, 3.5, 4
(1)The different models of the system where the module is identical. (2) The different model with different Cable, but electrical characteristic and I/O Port are the same. (3) The print speed is firmware control		

4. Regarding to the operation frequency, the lowest, middle and highest frequency are selected to perform the test.
5. 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 7.2Mbps and)
6. These tests are conducted on a sample for the purpose of demonstrating compliance of 802.11b/g/n transmitter with Part 15 Subpart C Paragraph 15.247 of spread spectrum devices.
7. The radiation measurements are performed in X, Y, Z axis positioning. Only the worst case is shown in the report.

Test Mode:	Mode 1: Transmit (802.11b 1Mbps)
	Mode 2: Transmit (802.11g 6Mbps)
	Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)

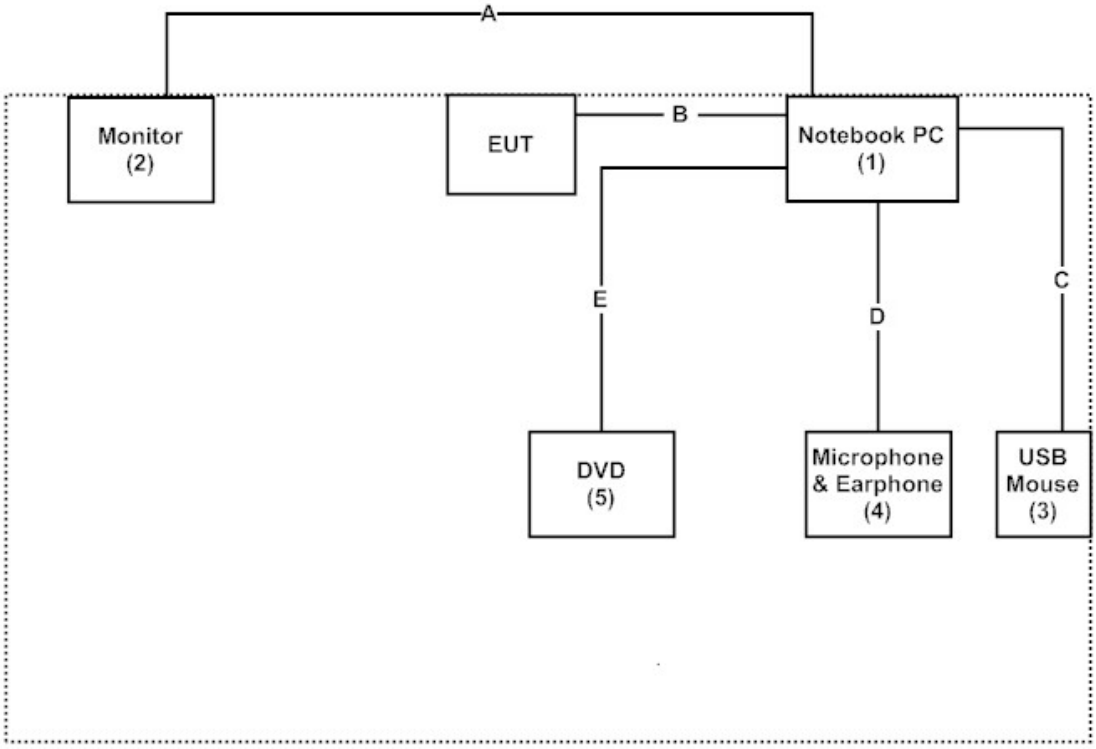
1.3. Tested System Details

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	Notebook PC	DELL	PPT	N/A	Non-Shielded, 0.8m
2	Monitor	LG	W2261VT	907YHZK07373	Non-Shielded, 1.8m
3	USB Mouse	DELL	MO56UC	G0X01JK0	N/A
4	Microphone & Earphone	PCHOME	N/A	N/A	N/A
5	DVD	DELL	PD01S	N/A	Non-Shielded, 1.8m

Signal Cable Type		Signal cable Description
A	VGA Cable	Non-Shielded, 1.8m, with two ferrite cores bonded.
B	USB to RS-232 Cable	Non-Shielded, 2.0m, with one ferrite core bonded.
C	Mouse Cable	Non-Shielded, 1.8m
D	Microphone & Earphone	Non-Shielded, 2.0m
E	DVD Cable	Non-Shielded, 0.3m

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

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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

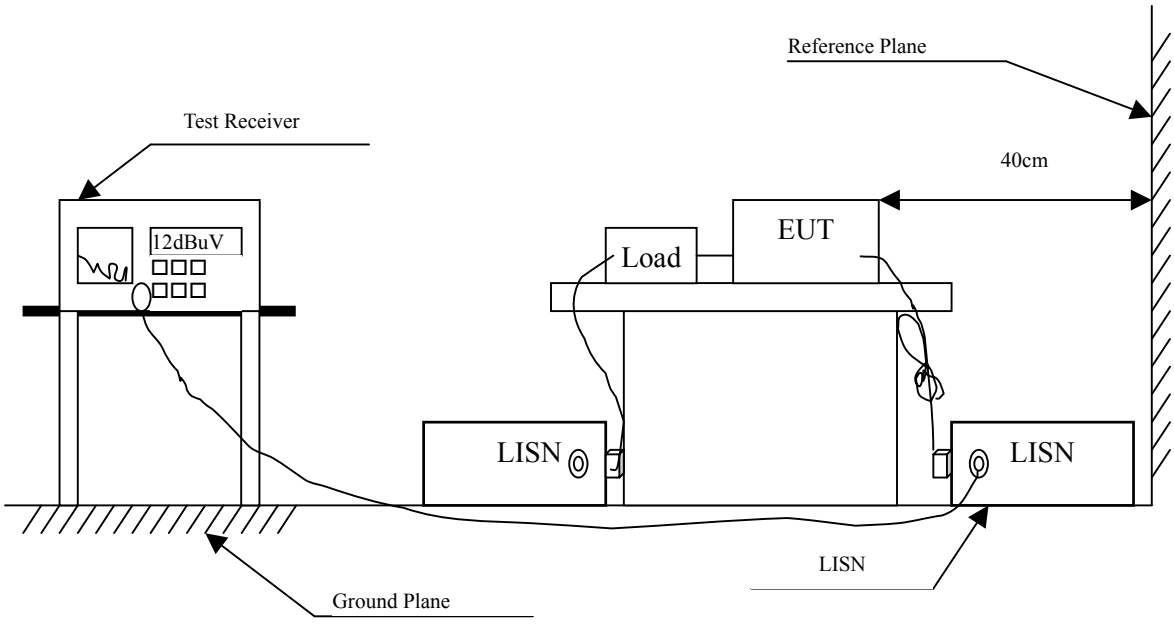
2.1. Test Equipment

	Equipment	Manufacturer	Model No. / Serial No.	Last Cal.	Remark
X	Test Receiver	R & S	ESCS 30 / 825442/018	Sep., 2011	
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:

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

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 : Printer
Test Item : Conducted Emission Test
Power Line : Line 1
Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) -Adapter(1) (2437MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV	dB	dBuV
Line 1					
Quasi-Peak					
0.302	9.640	20.610	30.250	-31.407	61.657
0.388	9.640	34.140	43.780	-15.420	59.200
0.685	9.640	28.060	37.700	-18.300	56.000
0.943	9.670	26.970	36.640	-19.360	56.000
5.732	9.710	30.690	40.400	-19.600	60.000
11.865	9.820	21.720	31.540	-28.460	60.000
Average					
0.302	9.640	8.970	18.610	-33.047	51.657
0.388	9.640	29.250	38.890	-10.310	49.200
0.685	9.640	20.570	30.210	-15.790	46.000
0.943	9.670	17.740	27.410	-18.590	46.000
5.732	9.710	23.750	33.460	-16.540	50.000
11.865	9.820	15.610	25.430	-24.570	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 : Printer
Test Item : Conducted Emission Test
Power Line : Line 2
Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) -Adapter(1) (2437MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV	dB	dBuV
Line 2					
Quasi-Peak					
0.181	9.702	41.270	50.972	-14.142	65.114
0.236	9.662	33.000	42.662	-20.881	63.543
0.373	9.650	34.900	44.550	-15.079	59.629
0.986	9.690	26.050	35.740	-20.260	56.000
3.670	9.710	23.490	33.200	-22.800	56.000
5.900	9.740	23.050	32.790	-27.210	60.000
Average					
0.181	9.702	29.490	39.192	-15.922	55.114
0.236	9.662	19.230	28.892	-24.651	53.543
0.373	9.650	24.220	33.870	-15.759	49.629
0.986	9.690	17.600	27.290	-18.710	46.000
3.670	9.710	16.750	26.460	-19.540	46.000
5.900	9.740	16.570	26.310	-23.690	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 : Printer
Test Item : Conducted Emission Test
Power Line : Line 1
Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) -Adapter(2) (2437MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV	dB	dBuV
Line 1					
Quasi-Peak					
0.201	9.840	25.310	35.150	-29.393	64.543
0.322	9.840	18.460	28.300	-32.786	61.086
0.459	9.840	28.350	38.190	-18.981	57.171
1.130	9.850	23.530	33.380	-22.620	56.000
5.330	9.891	23.760	33.651	-26.349	60.000
29.728	10.104	12.640	22.744	-37.256	60.000
Average					
0.201	9.840	11.740	21.580	-32.963	54.543
0.322	9.840	8.960	18.800	-32.286	51.086
0.459	9.840	19.200	29.040	-18.131	47.171
1.130	9.850	2.100	11.950	-34.050	46.000
5.330	9.891	6.960	16.851	-33.149	50.000
29.728	10.104	1.820	11.924	-38.076	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 : Printer
Test Item : Conducted Emission Test
Power Line : Line 2
Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) -Adapter(2) (2437MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV	dB	dBuV
Line 2					
Quasi-Peak					
0.166	9.840	9.370	19.210	-46.333	65.543
0.205	9.840	24.990	34.830	-29.599	64.429
0.298	9.840	17.720	27.560	-34.211	61.771
0.498	9.840	22.350	32.190	-23.867	56.057
1.384	9.850	3.640	13.490	-42.510	56.000
9.474	10.040	7.870	17.910	-42.090	60.000
Average					
0.166	9.840	0.970	10.810	-44.733	55.543
0.205	9.840	13.490	23.330	-31.099	54.429
0.298	9.840	7.580	17.420	-34.351	51.771
0.498	9.840	18.300	28.140	-17.917	46.057
1.384	9.850	-2.380	7.470	-38.530	46.000
9.474	10.040	-1.610	8.430	-41.570	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 : Printer
Test Item : Conducted Emission Test
Power Line : Line 1
Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) -Adapter(3)(2437MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV	dB	dBuV
Line 1					
Quasi-Peak					
0.170	9.707	39.400	49.107	-16.322	65.429
0.279	9.647	29.100	38.747	-23.567	62.314
0.396	9.640	30.950	40.590	-18.381	58.971
3.955	9.700	21.540	31.240	-24.760	56.000
8.201	9.750	21.040	30.790	-29.210	60.000
25.998	9.960	22.860	32.820	-27.180	60.000
Average					
0.170	9.707	24.250	33.957	-21.472	55.429
0.279	9.647	18.020	27.667	-24.647	52.314
0.396	9.640	23.890	33.530	-15.441	48.971
3.955	9.700	14.340	24.040	-21.960	46.000
8.201	9.750	15.510	25.260	-24.740	50.000
25.998	9.960	22.030	31.990	-18.010	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 : Printer
Test Item : Conducted Emission Test
Power Line : Line 2
Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) -Adapter(3) (2437MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV	dB	dBuV
Line 2					
Quasi-Peak					
0.162	9.721	33.340	43.062	-22.595	65.657
0.224	9.670	30.300	39.970	-23.916	63.886
0.392	9.650	30.280	39.930	-19.156	59.086
0.470	9.650	25.570	35.220	-21.637	56.857
5.736	9.730	26.120	35.850	-24.150	60.000
25.998	10.190	22.480	32.670	-27.330	60.000
Average					
0.162	9.721	17.680	27.402	-28.255	55.657
0.224	9.670	24.790	34.460	-19.426	53.886
0.392	9.650	23.530	33.180	-15.906	49.086
0.470	9.650	18.310	27.960	-18.897	46.857
5.736	9.730	19.190	28.920	-21.080	50.000
25.998	10.190	21.510	31.700	-18.300	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 : Printer
Test Item : Peak Power Output Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit (802.11b 1Mbps) -Adapter(1)

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	12.97	--	--	--	15.40	<30dBm	Pass
06	2437	12.87	12.85	12.54	12.53	15.56	<30dBm	Pass
11	2462	12.91	--	--	--	15.50	<30dBm	Pass

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

Product : Printer
Test Item : Peak Power Output Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit (802.11g 6Mbps) -Adapter(1)

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	12.70	--	--	--	--	--	--	--	21.09	<30dBm	Pass
06	2437	12.58	12.57	12.56	12.53	12.52	12.5	12.49	12.49	21.35	<30dBm	Pass
11	2462	12.45	--	--	--	--	--	--	--	21.22	<30dBm	Pass

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

Product : Printer
Test Item : Peak Power Output Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) -Adapter(1)

Channel No	Frequency (MHz)	Average Power For different Data Rate (Mbps)								Peak Power	Required Limit	Result
		7.2	14.4	21.7	28.9	43.3	57.8	65	72.2	7.2		
		Measurement Level (dBm)										
01	2412	11.52	--	--	--	--	--	--	--	20.81	<30dBm	Pass
06	2437	11.51	11.5	11.49	11.48	11.47	11.46	11.45	11.43	20.76	<30dBm	Pass
11	2462	11.68	--	--	--	--	--	--	--	20.66	<30dBm	Pass

Note: 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:

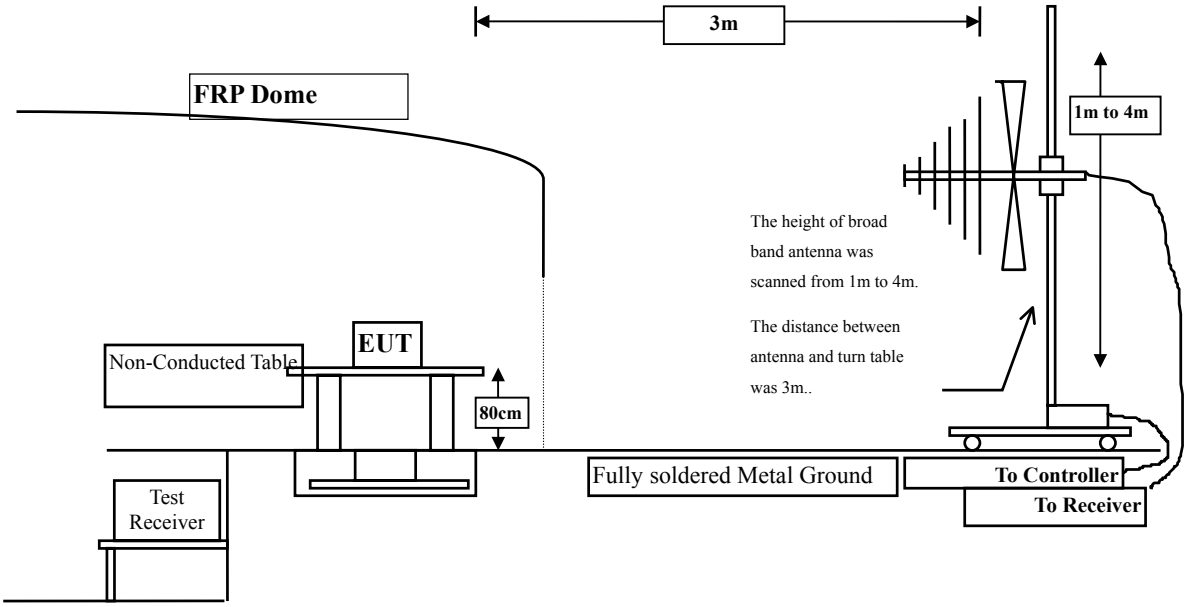
Test Site		Equipment	Manufacturer	Model No./Serial No.	Last Cal.
☒Site # 3	X	Bilog Antenna	Schaffner Chase	CBL6112B/2673	Sep., 2011
	X	Horn Antenna	Schwarzbeck	BBHA9120D/D305	Sep., 2011
	X	Horn Antenna	Schwarzbeck	BBHA9170/208	Jul., 2012
	X	Pre-Amplifier	Agilent	8447D/2944A09549	Sep., 2011
	X	Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2012
	X	Test Receiver	R & S	ESCS 30/ 825442/018	Sep., 2011
	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.

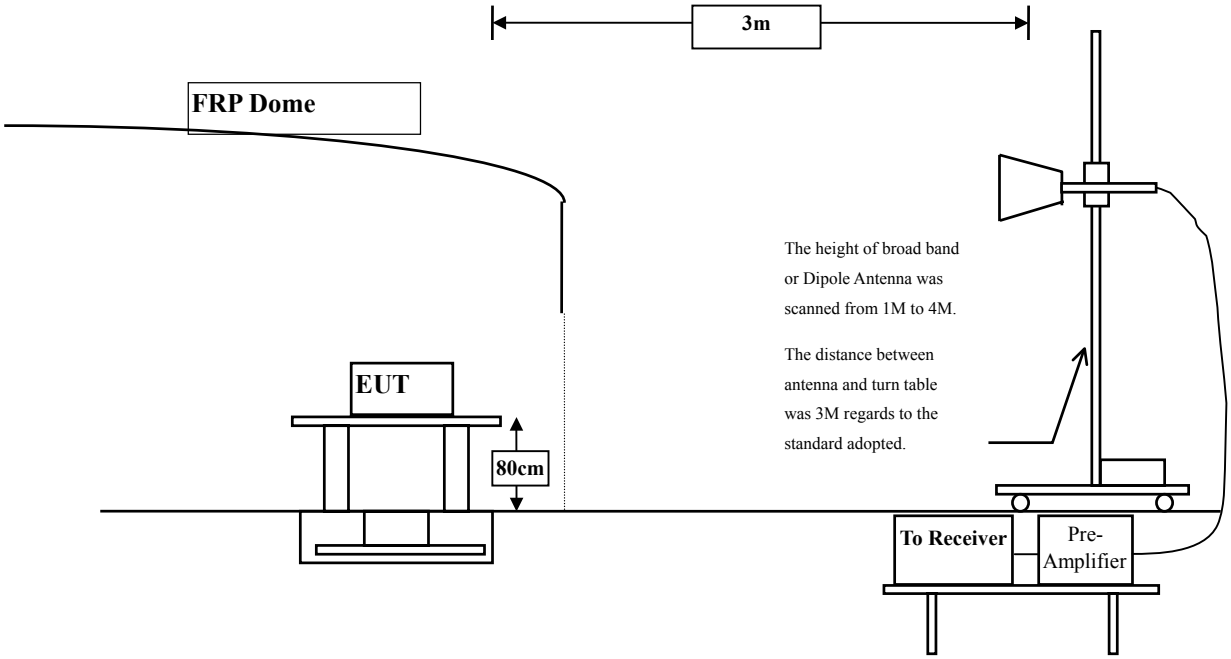
2. The test instruments marked with "X" are used to measure the final test results.

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 frequency range from 30MHz to 10th harminics is checked.

4.5. Uncertainty

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

4.6. Test Result of Radiated Emission

Product : Printer
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2412MHz) -Adapter(1)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4824.000	3.261	36.470	39.731	-34.269	74.000
7236.000	10.650	36.790	47.440	-26.560	74.000
9648.000	13.337	36.200	49.536	-24.464	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4824.000	6.421	37.280	43.701	-30.299	74.000
7236.000	11.495	35.470	46.965	-27.035	74.000
9648.000	13.807	36.640	50.446	-23.554	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 : Printer
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2437 MHz) -Adapter(1)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4874.000	3.038	36.540	39.577	-34.423	74.000
7311.000	11.795	35.140	46.934	-27.066	74.000
9748.000	12.635	37.280	49.915	-24.085	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4874.000	5.812	36.260	42.071	-31.929	74.000
7311.000	12.630	34.490	47.119	-26.881	74.000
9748.000	13.126	37.370	50.496	-23.504	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 : Printer
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2462 MHz) -Adapter(1)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4924.000	2.858	36.940	39.797	-34.203	74.000
7386.000	12.127	34.820	46.948	-27.052	74.000
9848.000	12.852	36.670	49.523	-24.477	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4924.000	5.521	36.340	41.860	-32.140	74.000
7386.000	13.254	34.480	47.734	-26.266	74.000
9848.000	13.367	36.690	50.057	-23.943	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 : Printer
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2412MHz) -Adapter(1)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4824.000	3.261	37.020	40.281	-33.719	74.000
7236.000	10.650	35.930	46.580	-27.420	74.000
9648.000	13.337	36.240	49.576	-24.424	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4824.000	6.421	37.280	43.701	-30.299	74.000
7236.000	11.495	36.160	47.655	-26.345	74.000
9648.000	13.807	36.140	49.946	-24.054	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 : Printer
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2437 MHz) -Adapter(1)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4874.000	3.038	36.600	39.637	-34.363	74.000
7311.000	11.795	34.770	46.564	-27.436	74.000
9748.000	12.635	37.000	49.635	-24.365	74.000
Average Detector:					
--					
Peak Detector:					
4874.000	5.812	36.530	42.341	-31.659	74.000
7311.000	12.630	34.680	47.309	-26.691	74.000
9748.000	13.126	36.750	49.876	-24.124	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 : Printer
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2462 MHz) -Adapter(1)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4924.000	2.858	37.430	40.287	-33.713	74.000
7386.000	12.127	35.150	47.278	-26.722	74.000
9848.000	12.852	36.250	49.103	-24.897	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4924.000	5.521	40.380	45.900	-28.100	74.000
7386.000	13.254	35.260	48.514	-25.486	74.000
9848.000	13.367	36.610	49.977	-24.023	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 : Printer
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)(2412MHz) -Adapter(1)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4824.000	3.261	37.820	41.081	-32.919	74.000
7236.000	10.650	35.600	46.250	-27.750	74.000
9648.000	13.337	35.940	49.276	-24.724	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4824.000	6.421	36.840	43.261	-30.739	74.000
7236.000	11.495	35.540	47.035	-26.965	74.000
9648.000	13.807	35.850	49.656	-24.344	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 : Printer
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) (2437 MHz) -Adapter(1)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4874.000	3.038	37.510	40.547	-33.453	74.000
7311.000	11.795	35.130	46.924	-27.076	74.000
9748.000	12.635	36.700	49.335	-24.665	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4874.000	5.812	36.940	42.751	-31.249	74.000
7311.000	12.630	35.080	47.709	-26.291	74.000
9748.000	13.126	37.280	50.406	-23.594	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 : Printer
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) (2462 MHz) -Adapter(1)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4924.000	2.858	37.610	40.467	-33.533	74.000
7386.000	12.127	35.490	47.618	-26.382	74.000
9848.000	12.852	36.190	49.043	-24.957	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4924.000	5.521	37.580	43.100	-30.900	74.000
7386.000	13.254	34.560	47.814	-26.186	74.000
9848.000	13.367	37.200	50.567	-23.433	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 : Printer
Test Item : General Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit (802.11b 1Mbps) -Adapter(1) (2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
249.220	-6.014	41.629	35.615	-10.385	46.000
299.660	-3.585	39.947	36.362	-9.638	46.000
400.540	-2.276	35.811	33.535	-12.465	46.000
602.300	4.287	28.903	33.190	-12.810	46.000
901.060	5.591	34.713	40.304	-5.696	46.000
949.560	6.695	28.058	34.753	-11.247	46.000
Vertical					
101.780	-0.021	35.211	35.189	-8.311	43.500
249.220	-7.634	41.988	34.354	-11.646	46.000
398.600	-4.678	38.278	33.600	-12.400	46.000
499.480	-0.852	33.670	32.818	-13.182	46.000
751.680	2.850	35.032	37.882	-8.118	46.000
899.120	3.063	37.977	41.040	-4.960	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 : Printer
Test Item : General Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit (802.11g 6Mbps) -Adapter(1) (2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
249.220	-6.014	41.526	35.512	-10.488	46.000
299.660	-3.585	39.981	36.396	-9.604	46.000
398.600	-2.268	36.617	34.349	-11.651	46.000
460.680	1.589	32.753	34.342	-11.658	46.000
701.240	2.668	31.891	34.559	-11.441	46.000
901.060	5.591	34.439	40.030	-5.970	46.000
Vertical					
198.780	-8.221	40.824	32.603	-10.897	43.500
398.600	-4.678	39.072	34.394	-11.606	46.000
499.480	-0.852	33.235	32.383	-13.617	46.000
751.680	2.850	35.526	38.376	-7.624	46.000
901.060	3.331	37.063	40.394	-5.606	46.000
967.020	8.071	28.801	36.872	-17.128	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. 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 : Printer
Test Item : General Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)-Adapter(1) (2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
299.660	-3.585	40.059	36.474	-9.526	46.000
460.680	1.589	33.590	35.179	-10.821	46.000
600.360	3.977	30.714	34.691	-11.309	46.000
848.680	5.776	34.007	39.782	-6.218	46.000
901.060	5.591	34.109	39.700	-6.300	46.000
949.560	6.695	28.858	35.553	-10.447	46.000
Vertical					
249.220	-7.634	41.801	34.167	-11.833	46.000
398.600	-4.678	38.820	34.142	-11.858	46.000
499.480	-0.852	33.504	32.652	-13.348	46.000
751.680	2.850	35.259	38.109	-7.891	46.000
899.120	3.063	37.138	40.201	-5.799	46.000
967.020	8.071	28.578	36.649	-17.351	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. 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 : Printer
Test Item : General Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit (802.11b 1Mbps) -Adapter(2) (2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
194.900	-11.012	47.415	36.403	-7.097	43.500
282.200	-5.211	37.794	32.583	-13.417	46.000
472.320	0.637	34.162	34.799	-11.201	46.000
625.580	1.770	37.736	39.506	-6.494	46.000
802.120	5.091	36.061	41.152	-4.848	46.000
912.700	6.132	34.010	40.142	-5.858	46.000
Vertical					
107.600	-0.318	36.273	35.955	-7.545	43.500
224.000	-8.699	41.584	32.885	-13.115	46.000
472.320	-4.613	40.868	36.255	-9.745	46.000
662.440	-2.026	34.534	32.508	-13.492	46.000
817.640	3.272	34.699	37.971	-8.029	46.000
912.700	1.762	34.476	36.238	-9.762	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 : Printer
Test Item : General Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit (802.11g 6Mbps) -Adapter(2) (2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
194.900	-11.012	46.968	35.956	-7.544	43.500
336.520	-3.860	37.889	34.029	-11.971	46.000
528.580	1.848	34.380	36.228	-9.772	46.000
625.580	1.770	36.759	38.529	-7.471	46.000
782.720	4.325	35.096	39.421	-6.579	46.000
912.700	6.132	33.642	39.774	-6.226	46.000
Vertical					
61.040	-4.316	35.126	30.810	-9.190	40.000
194.900	-9.322	46.147	36.825	-6.675	43.500
472.320	-4.613	38.369	33.756	-12.244	46.000
687.660	2.444	31.245	33.689	-12.311	46.000
782.720	3.035	37.954	40.989	-5.011	46.000
928.220	6.203	32.236	38.439	-7.561	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 : Printer
Test Item : General Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) -Adapter(2) (2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
97.900	-7.650	43.451	35.800	-7.700	43.500
194.900	-11.012	47.561	36.549	-6.951	43.500
336.520	-3.860	37.005	33.145	-12.855	46.000
460.680	1.589	32.522	34.111	-11.889	46.000
625.580	1.770	37.216	38.986	-7.014	46.000
848.680	5.776	35.372	41.147	-4.853	46.000
Vertical					
57.160	-4.403	38.266	33.863	-6.137	40.000
194.900	-9.322	45.799	36.477	-7.023	43.500
472.320	-4.613	39.831	35.218	-10.782	46.000
782.720	3.035	37.631	40.666	-5.334	46.000
848.680	1.066	38.459	39.524	-6.476	46.000
941.800	6.585	29.941	36.526	-9.474	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 : Printer
Test Item : General Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit (802.11b 1Mbps) -Adapter(3) (2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
398.600	-2.268	31.253	28.985	-17.015	46.000
497.540	-0.273	33.181	32.908	-13.092	46.000
598.420	3.991	27.986	31.977	-14.023	46.000
697.360	3.171	31.460	34.631	-11.369	46.000
806.000	4.968	32.987	37.955	-8.045	46.000
897.180	5.182	29.249	34.431	-11.569	46.000
Vertical					
398.600	-4.678	35.042	30.364	-15.636	46.000
497.540	-1.393	32.886	31.493	-14.507	46.000
598.420	-2.979	33.193	30.214	-15.786	46.000
697.360	1.311	33.144	34.455	-11.545	46.000
798.240	2.808	32.837	35.645	-10.355	46.000
897.180	2.332	29.637	31.969	-14.031	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 : Printer
Test Item : General Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit (802.11g 6Mbps) -Adapter(3) (2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
398.600	-2.268	31.529	29.261	-16.739	46.000
497.540	-0.273	32.233	31.960	-14.040	46.000
598.420	3.991	27.694	31.685	-14.315	46.000
697.360	3.171	31.694	34.865	-11.135	46.000
806.000	4.968	32.069	37.037	-8.963	46.000
897.180	5.182	29.400	34.582	-11.418	46.000
Vertical					
99.840	-0.021	30.666	30.645	-12.855	43.500
398.600	-4.678	34.634	29.956	-16.044	46.000
497.540	-1.393	33.196	31.803	-14.197	46.000
697.360	1.311	33.659	34.970	-11.030	46.000
798.240	2.808	32.754	35.562	-10.438	46.000
897.180	2.332	28.936	31.268	-14.732	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 : Printer
Test Item : General Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) -Adapter(3) (2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
299.660	-3.585	40.059	36.474	-9.526	46.000
460.680	1.589	33.590	35.179	-10.821	46.000
600.360	3.977	30.714	34.691	-11.309	46.000
848.680	5.776	34.007	39.782	-6.218	46.000
901.060	5.591	34.109	39.700	-6.300	46.000
949.560	6.695	28.858	35.553	-10.447	46.000
Vertical					
249.220	-7.634	41.801	34.167	-11.833	46.000
398.600	-4.678	38.820	34.142	-11.858	46.000
499.480	-0.852	33.504	32.652	-13.348	46.000
751.680	2.850	35.259	38.109	-7.891	46.000
899.120	3.063	37.138	40.201	-5.799	46.000
967.020	8.071	28.578	36.649	-17.351	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. 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 : Printer
Test Item : General Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit (802.11b 1Mbps)-Adapter(4) (2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
194.900	-11.012	47.415	36.403	-7.097	43.500
282.200	-5.211	37.794	32.583	-13.417	46.000
472.320	0.637	34.162	34.799	-11.201	46.000
625.580	1.770	37.736	39.506	-6.494	46.000
802.120	5.091	36.061	41.152	-4.848	46.000
912.700	6.132	34.010	40.142	-5.858	46.000
Vertical					
107.600	-0.318	36.273	35.955	-7.545	43.500
224.000	-8.699	41.584	32.885	-13.115	46.000
472.320	-4.613	40.868	36.255	-9.745	46.000
662.440	-2.026	34.534	32.508	-13.492	46.000
817.640	3.272	34.699	37.971	-8.029	46.000
912.700	1.762	34.476	36.238	-9.762	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 : Printer
Test Item : General Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit (802.11g 6Mbps) -Adapter(4) (2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
198.780	-10.661	30.841	20.180	-23.320	43.500
297.720	-3.633	30.711	27.079	-18.921	46.000
398.600	-2.268	32.266	29.998	-16.002	46.000
596.480	4.017	28.659	32.676	-13.324	46.000
796.300	5.161	27.606	32.767	-13.233	46.000
897.180	5.182	28.268	33.450	-12.550	46.000
Vertical					
198.780	-8.221	33.490	25.269	-18.231	43.500
297.720	-7.143	31.684	24.542	-21.458	46.000
365.620	-2.179	27.903	25.724	-20.276	46.000
460.680	-3.221	25.460	22.239	-23.761	46.000
596.480	-3.113	33.050	29.937	-16.063	46.000
749.740	2.510	28.755	31.265	-14.735	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 : Printer
Test Item : General Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) -Adapter(4) (2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
198.780	-10.661	29.952	19.291	-24.209	43.500
297.720	-3.633	28.755	25.123	-20.877	46.000
497.540	-0.273	36.676	36.403	-9.597	46.000
598.420	3.991	28.726	32.717	-13.283	46.000
697.360	3.171	29.906	33.077	-12.923	46.000
897.180	5.182	27.832	33.014	-12.986	46.000
Vertical					
198.780	-8.221	32.181	23.960	-19.540	43.500
249.220	-7.634	31.082	23.448	-22.552	46.000
344.280	-3.171	29.950	26.780	-19.220	46.000
596.480	-3.113	32.251	29.138	-16.862	46.000
749.740	2.510	29.642	32.152	-13.848	46.000
844.800	3.181	25.210	28.391	-17.609	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

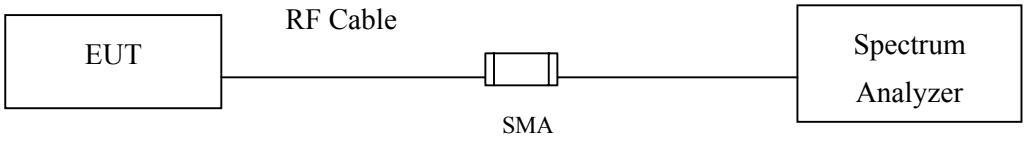
	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
	Spectrum Analyzer	R&S	FSP40 / 100170	Jun, 2012
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun, 2012
X	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2012

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.

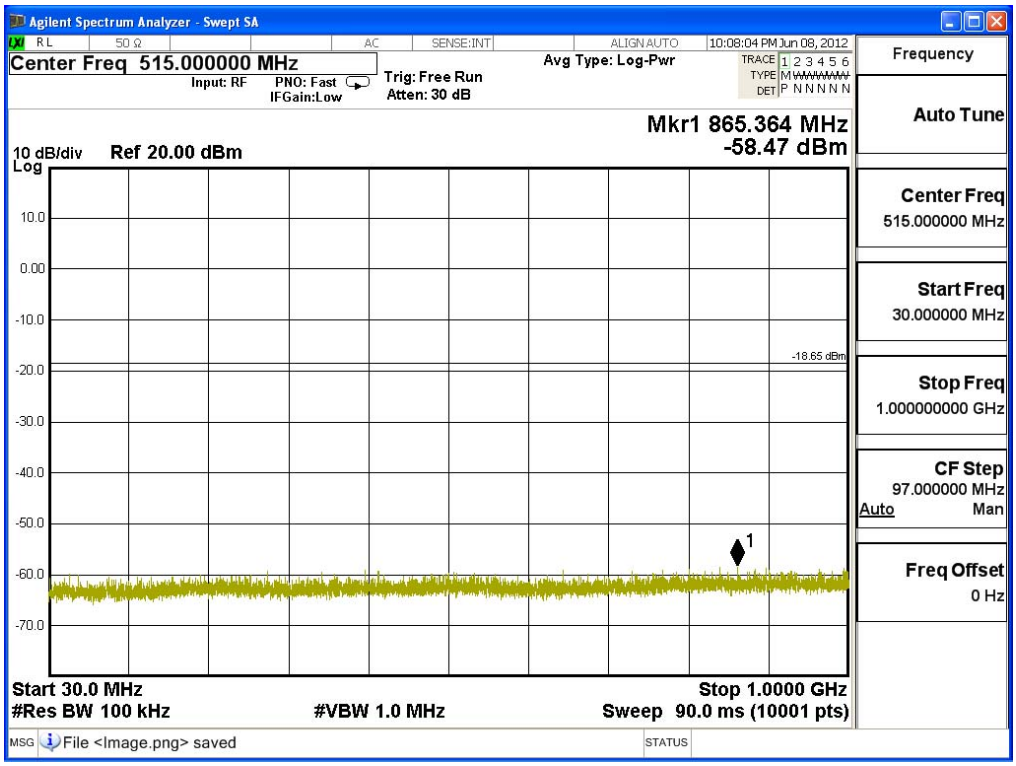
5.5. Uncertainty

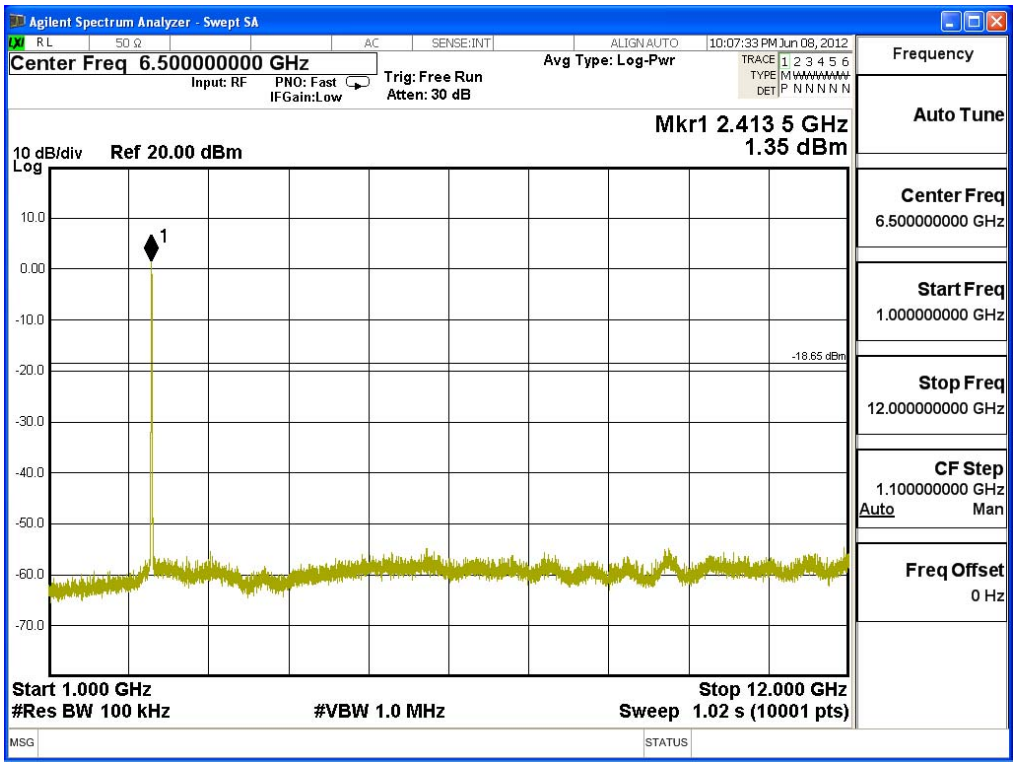
The measurement uncertainty
Conducted is defined as ± 1.27dB

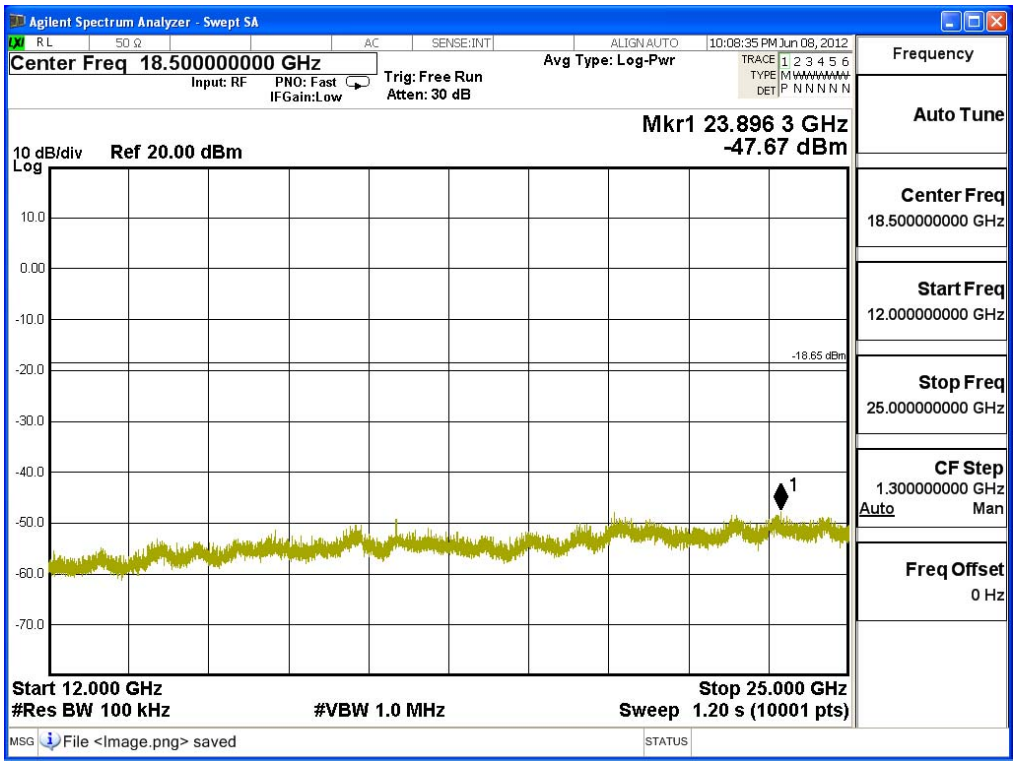
5.6. Test Result of RF antenna conducted test

Product : Printer
Test Item : RF antenna conducted test
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit (802.11b 1Mbps) -Adapter(1)

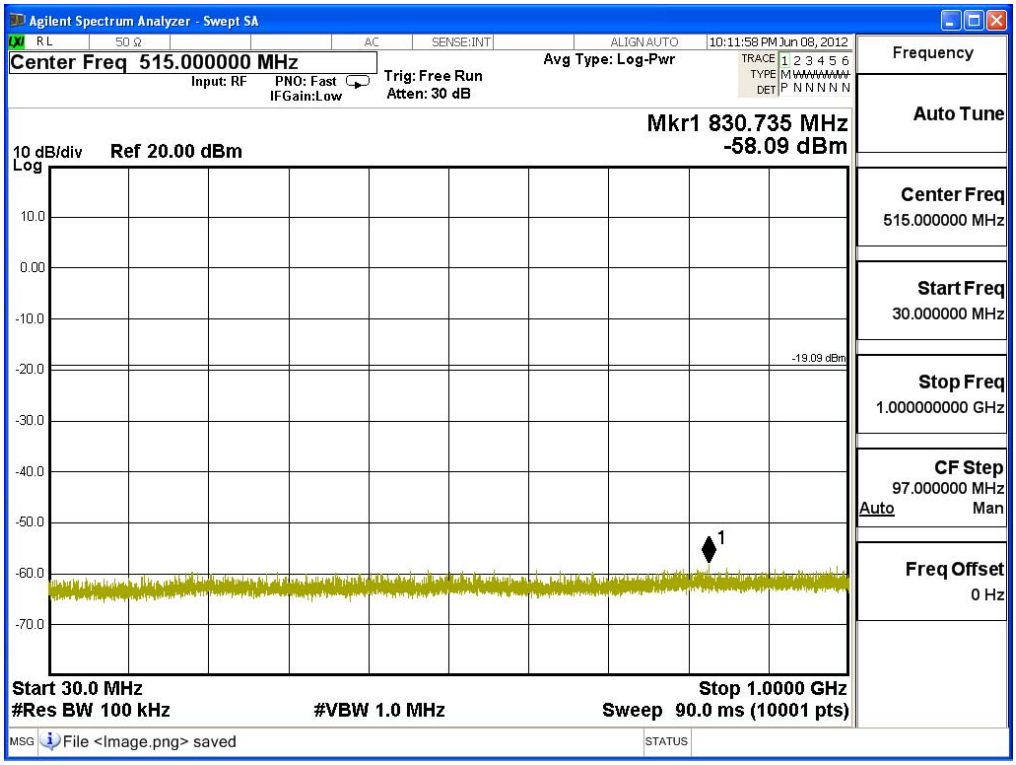
Channel 01 (2412MHz)

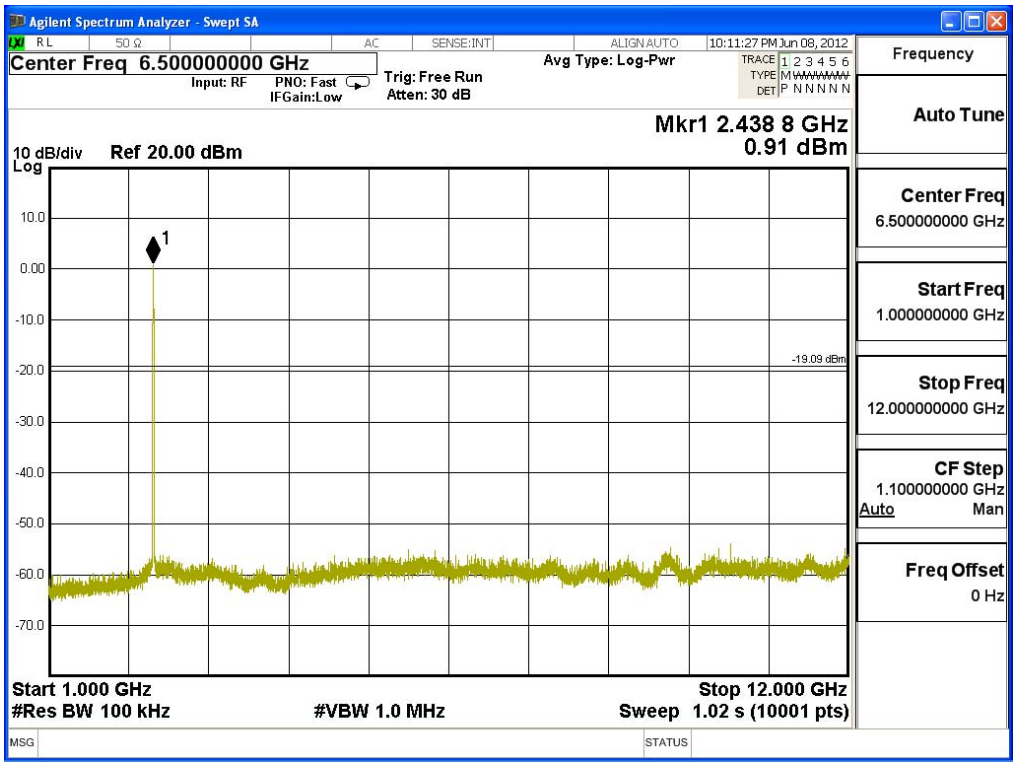


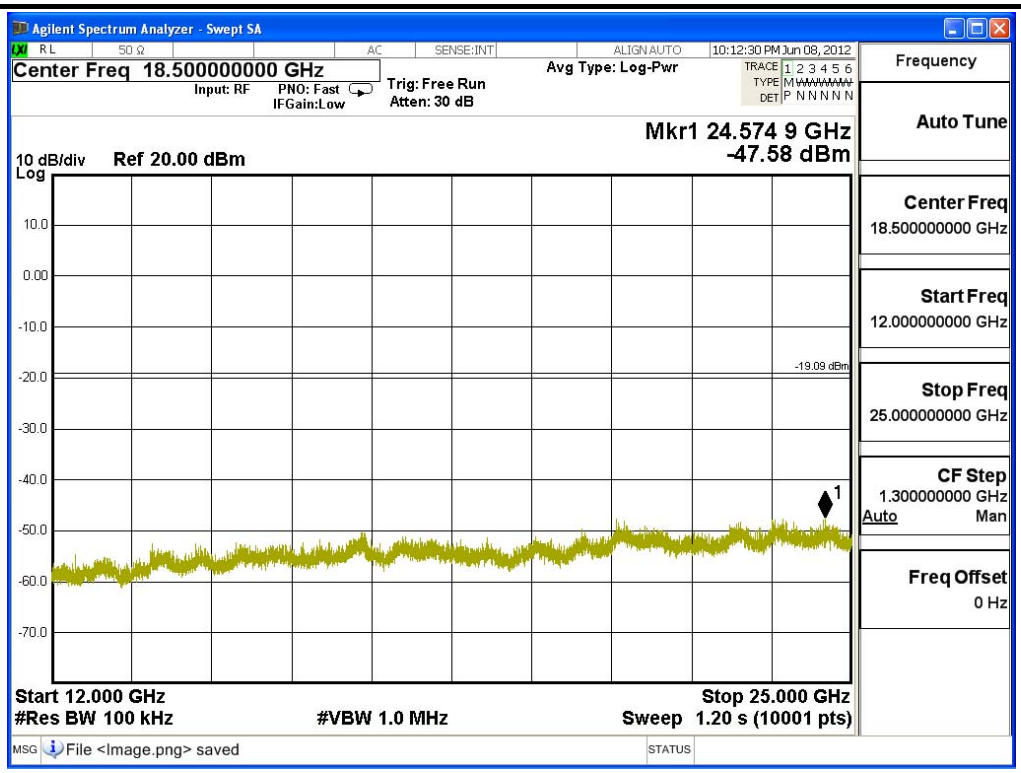

Agilent Spectrum Analyzer - Swept SA
Center Freq 6.500000000 GHz
Input: RF
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 30 dB
Avg Type: Log-Pwr
10:07:33 PM Jun 08, 2012
Mkr1 2.413 5 GHz
1.35 dBm
10 dB/div
Log
Ref 20.00 dBm
-18.65 dBm
Start 1.000 GHz
#Res BW 100 kHz
#VBW 1.0 MHz
Stop 12.000 GHz
Sweep 1.02 s (10001 pts)
Frequency
Auto Tune
Center Freq
6.500000000 GHz
Start Freq
1.000000000 GHz
Stop Freq
12.000000000 GHz
CF Step
1.100000000 GHz
Auto
Man
Freq Offset
0 Hz
MSG
STATUS


Agilent Spectrum Analyzer - Swept SA
Center Freq 18.500000000 GHz
Input: RF
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 30 dB
Avg Type: Log-Pwr
10:08:35 PM Jun 08, 2012
Mkr1 23.896 3 GHz
-47.67 dBm
10 dB/div
Log
Ref 20.00 dBm
-18.65 dBm
Start 12.000 GHz
#Res BW 100 kHz
#VBW 1.0 MHz
Stop 25.000 GHz
Sweep 1.20 s (10001 pts)
Frequency
Auto Tune
Center Freq
18.500000000 GHz
Start Freq
12.000000000 GHz
Stop Freq
25.000000000 GHz
CF Step
1.300000000 GHz
Auto
Man
Freq Offset
0 Hz
MSG
File <Image.png> saved
STATUS

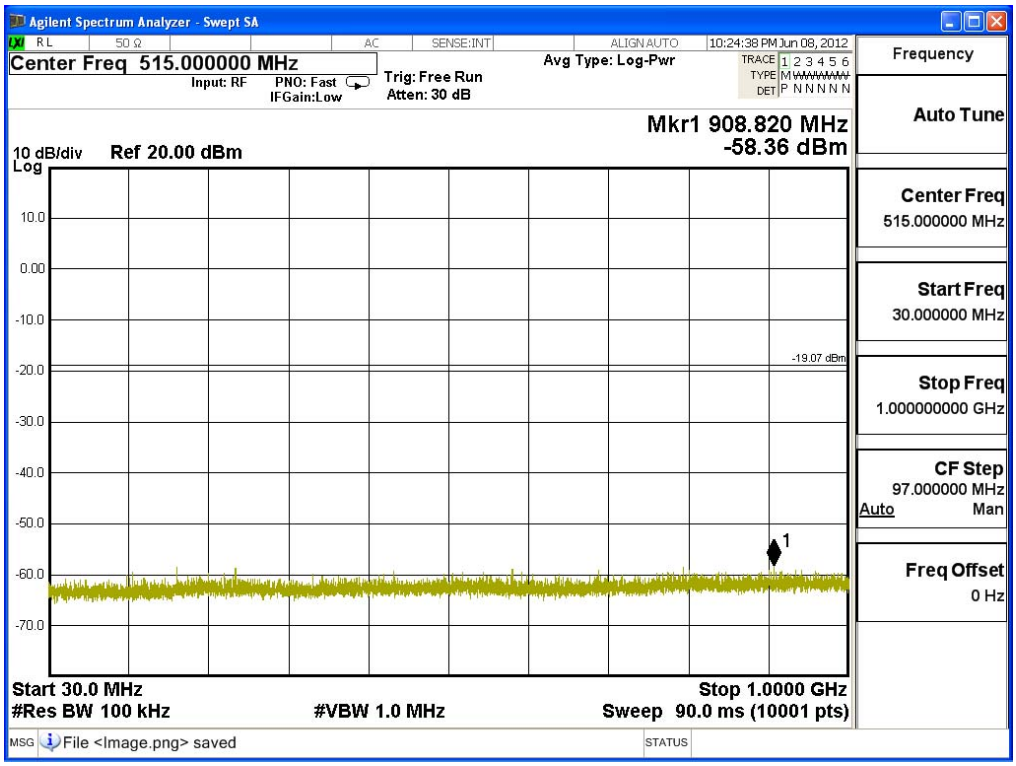
Channel 06 (2437MHz)

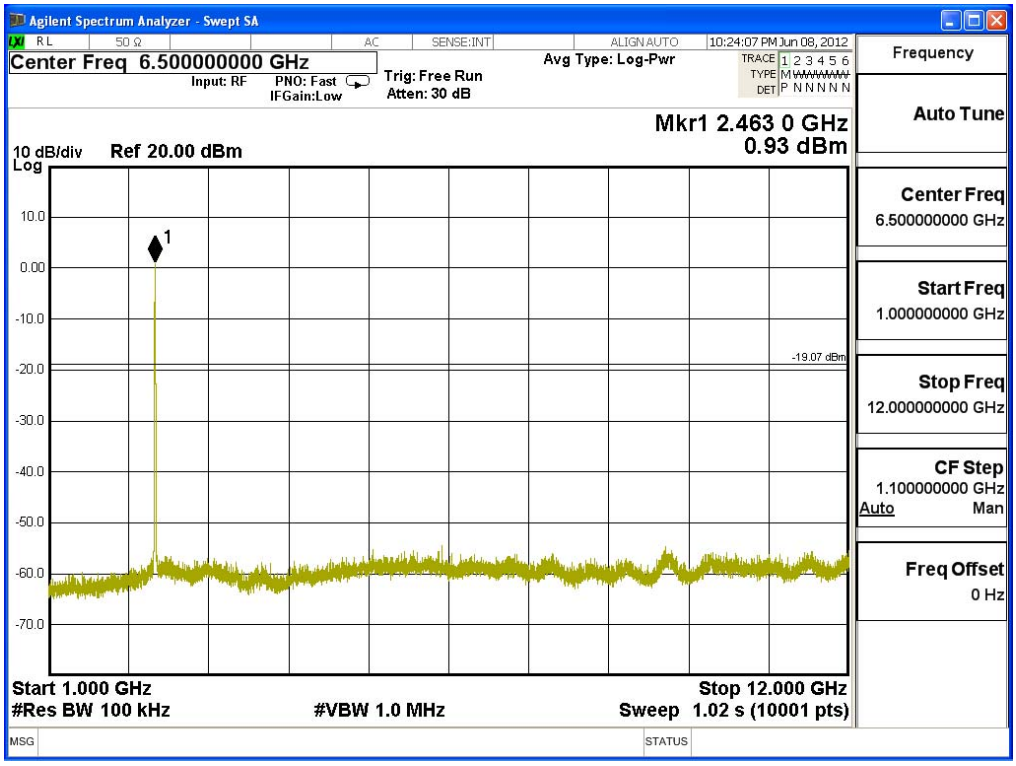


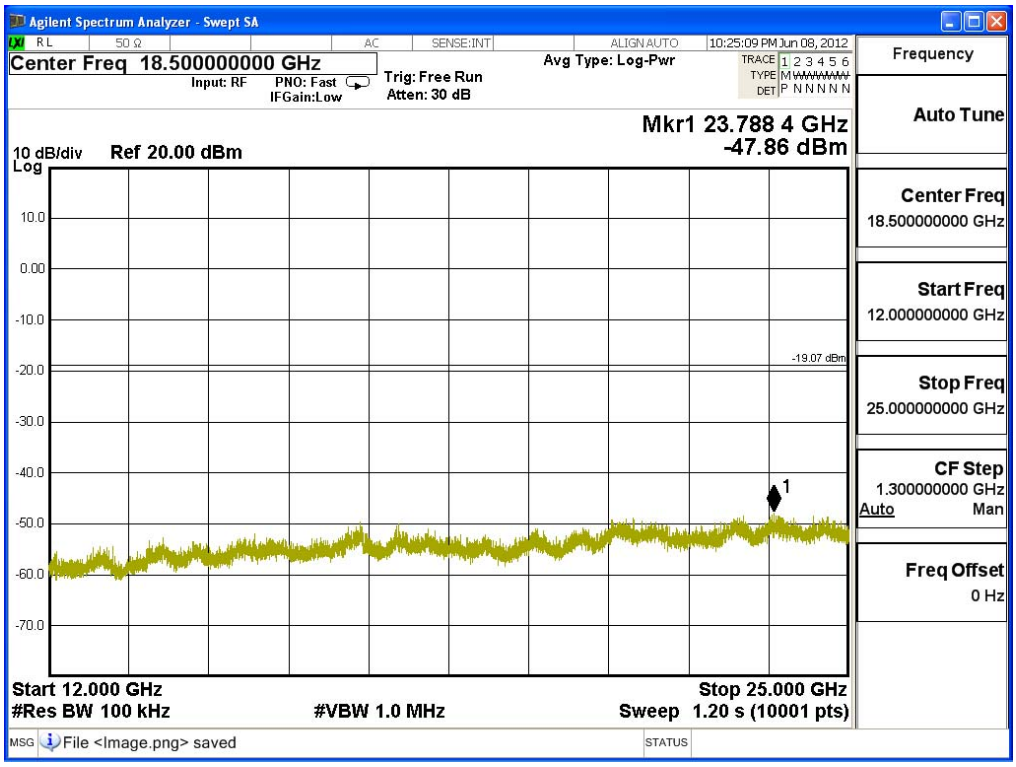



Agilent Spectrum Analyzer - Swept SA
RL
50 Ω
AC
SENSE:INT
ALIGN AUTO
10:12:30 PM Jun 08, 2012
Center Freq 18.500000000 GHz
Input: RF
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 30 dB
Avg Type: Log-Pwr
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P N N N N N
Mkr1 24.574 9 GHz
-47.58 dBm
10 dB/div
Log
Ref 20.00 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-19.09 dBm
1
Start 12.000 GHz
#Res BW 100 kHz
#VBW 1.0 MHz
Stop 25.000 GHz
Sweep 1.20 s (10001 pts)
MSG
File <Image.png> saved
STATUS
Frequency
Auto Tune
Center Freq
18.500000000 GHz
Start Freq
12.000000000 GHz
Stop Freq
25.000000000 GHz
CF Step
1.300000000 GHz
Auto
Man
Freq Offset
0 Hz

Channel 11 (2462MHz)

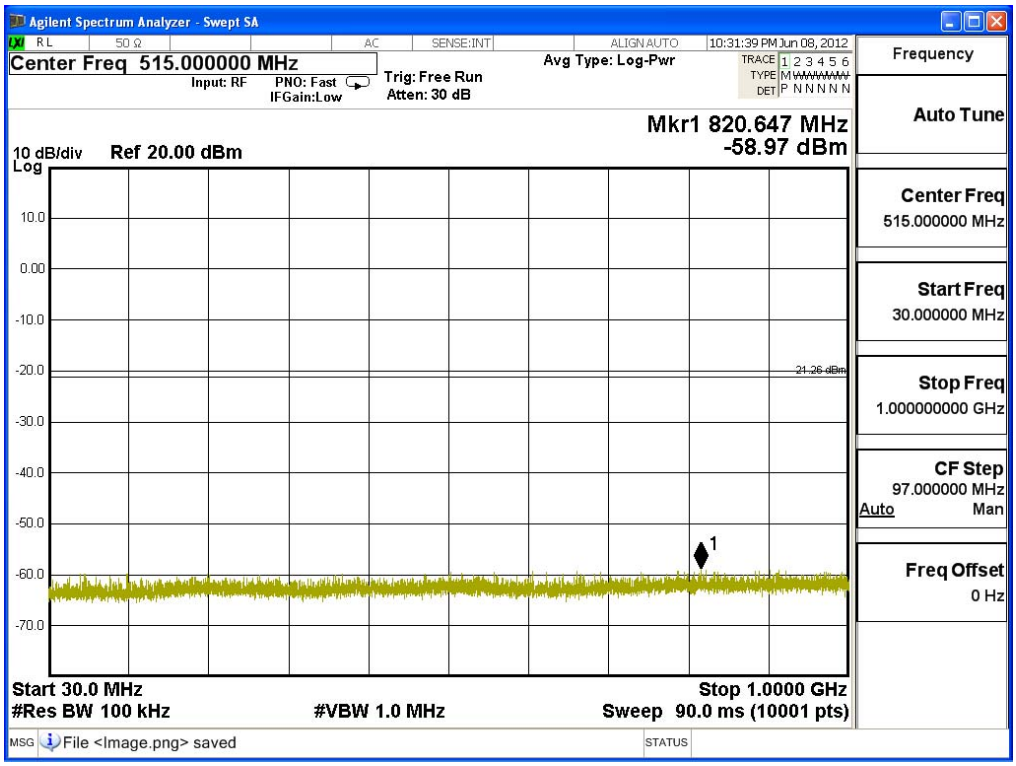


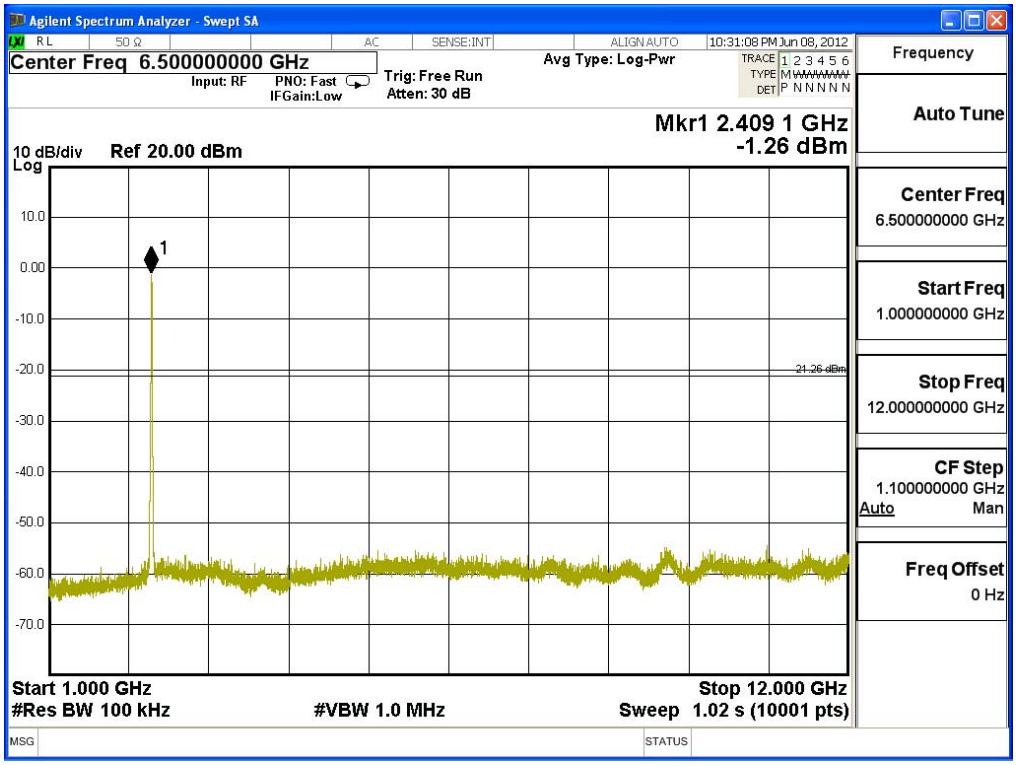


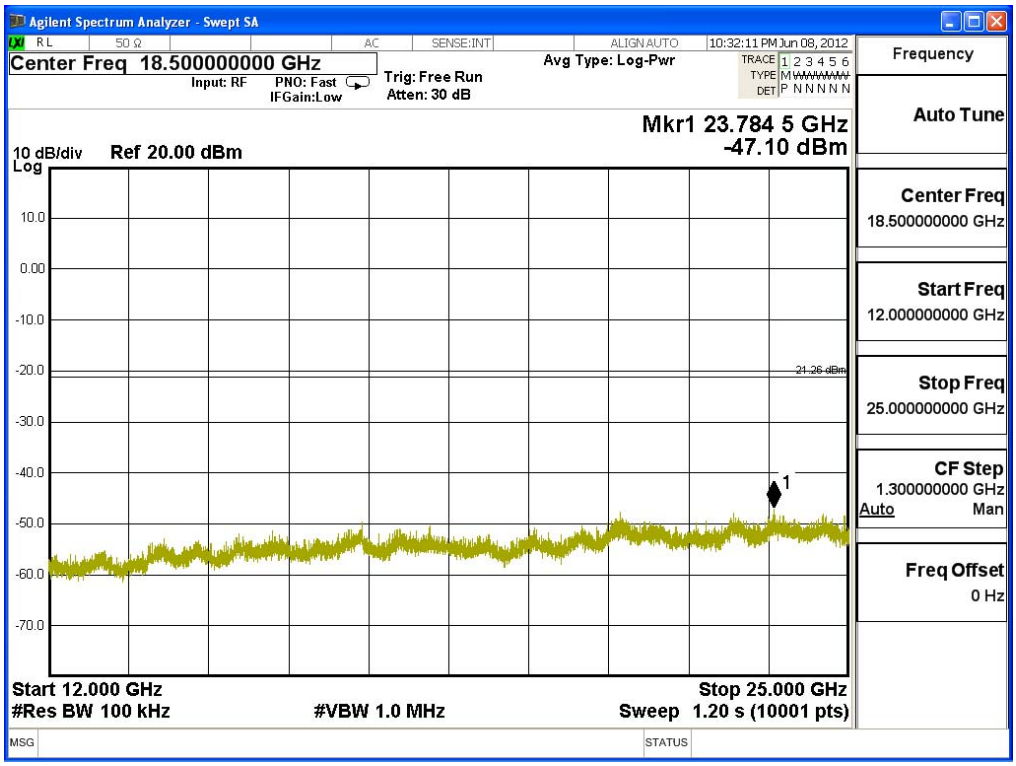

Agilent Spectrum Analyzer - Swept SA
RL
50 Ω
AC
SENSE:INT
ALIGN AUTO
10:25:09 PM Jun 08, 2012
Center Freq 18.500000000 GHz
Input: RF
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 30 dB
Avg Type: Log-Pwr
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P N N N N N
Mkr1 23.788 4 GHz
-47.86 dBm
10 dB/div
Log
Ref 20.00 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-19.07 dBm
1
Start 12.000 GHz
#Res BW 100 kHz
#VBW 1.0 MHz
Stop 25.000 GHz
Sweep 1.20 s (10001 pts)
MSG
File <Image.png> saved
STATUS
Frequency
Auto Tune
Center Freq
18.500000000 GHz
Start Freq
12.000000000 GHz
Stop Freq
25.000000000 GHz
CF Step
1.300000000 GHz
Auto
Man
Freq Offset
0 Hz

Product : Printer
Test Item : RF Antenna Conducted Spurious
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit (802.11g 6Mbps) -Adapter(1)

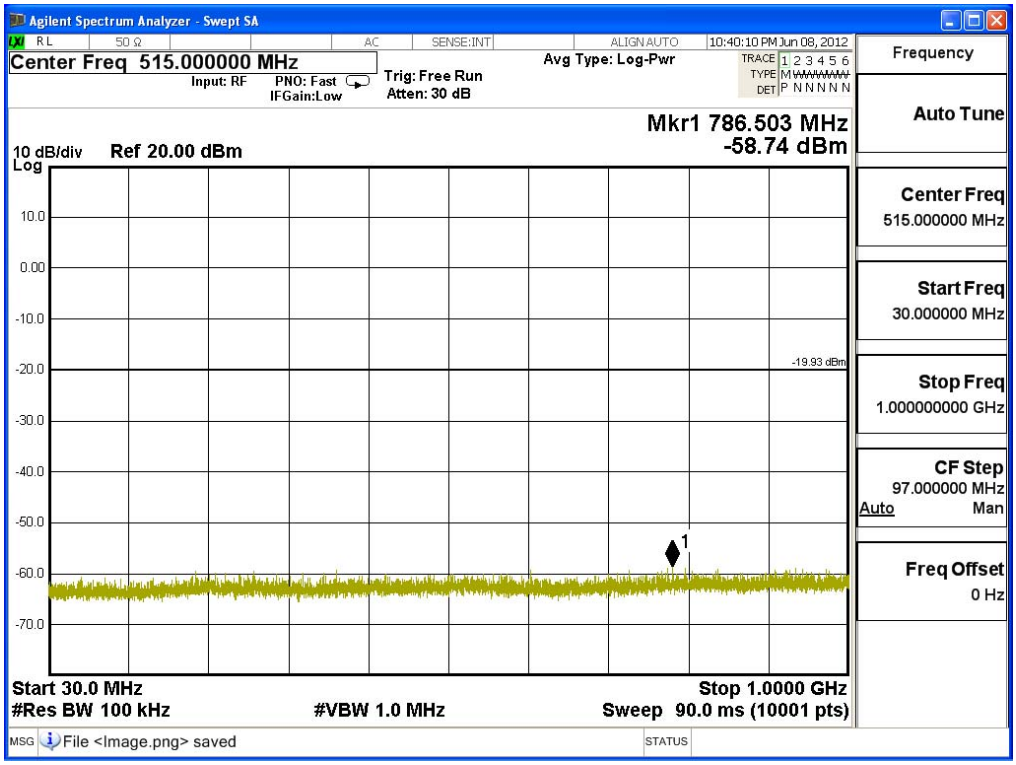
Channel 01 (2412MHz)

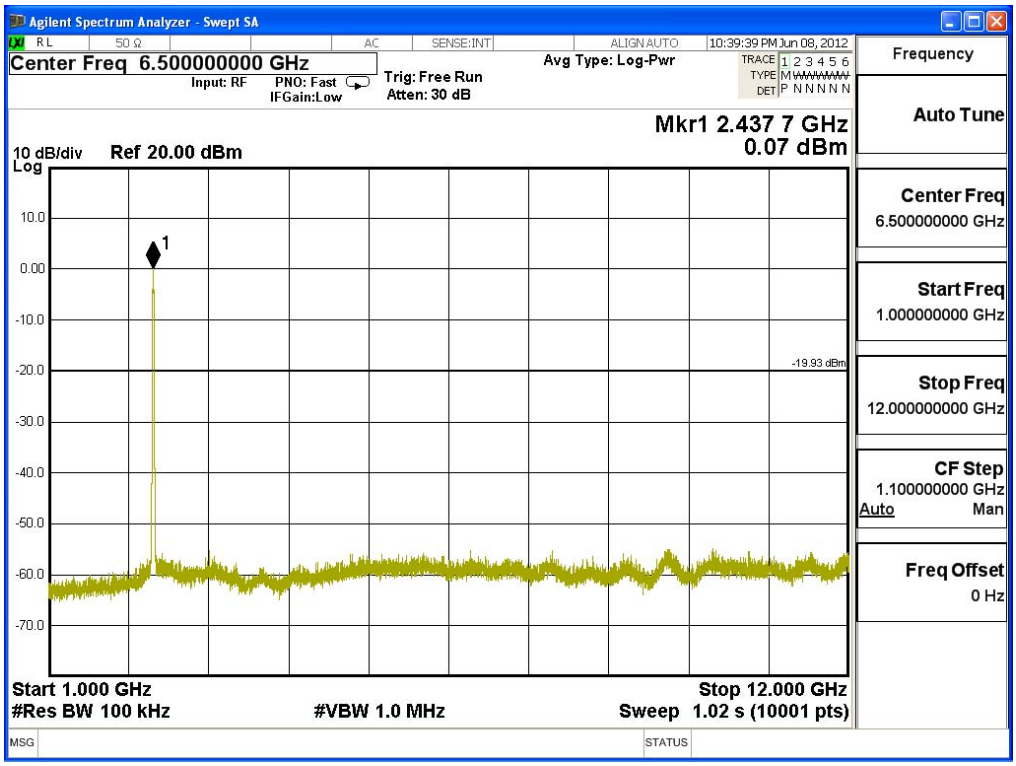


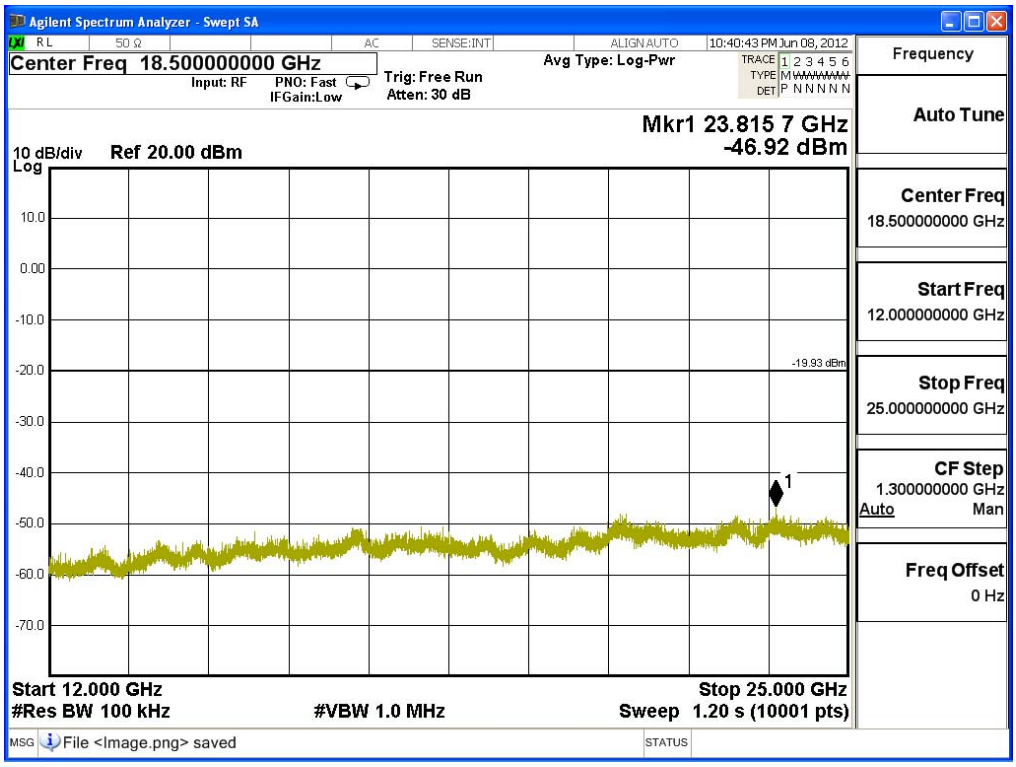

Agilent Spectrum Analyzer - Swept SA
Center Freq 6.500000000 GHz
Input: RF
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 30 dB
Avg Type: Log-Pwr
10:31:08 PM Jun 08, 2012
Mkr1 2.409 1 GHz
-1.26 dBm
10 dB/div
Log
Ref 20.00 dBm
21.26 dBm
Start 1.000 GHz
#Res BW 100 kHz
#VBW 1.0 MHz
Stop 12.000 GHz
Sweep 1.02 s (10001 pts)
Frequency
Auto Tune
Center Freq
6.500000000 GHz
Start Freq
1.000000000 GHz
Stop Freq
12.000000000 GHz
CF Step
1.100000000 GHz
Auto
Man
Freq Offset
0 Hz
MSG
STATUS


Agilent Spectrum Analyzer - Swept SA
Center Freq 18.500000000 GHz
Input: RF
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 30 dB
Avg Type: Log-Pwr
10:32:11 PM Jun 08, 2012
Mkr1 23.784 5 GHz
-47.10 dBm
10 dB/div
Log
Ref 20.00 dBm
21.26 dBm
Start 12.000 GHz
#Res BW 100 kHz
#VBW 1.0 MHz
Stop 25.000 GHz
Sweep 1.20 s (10001 pts)
Frequency
Auto Tune
Center Freq
18.500000000 GHz
Start Freq
12.000000000 GHz
Stop Freq
25.000000000 GHz
CF Step
1.300000000 GHz
Auto
Man
Freq Offset
0 Hz
MSG
STATUS

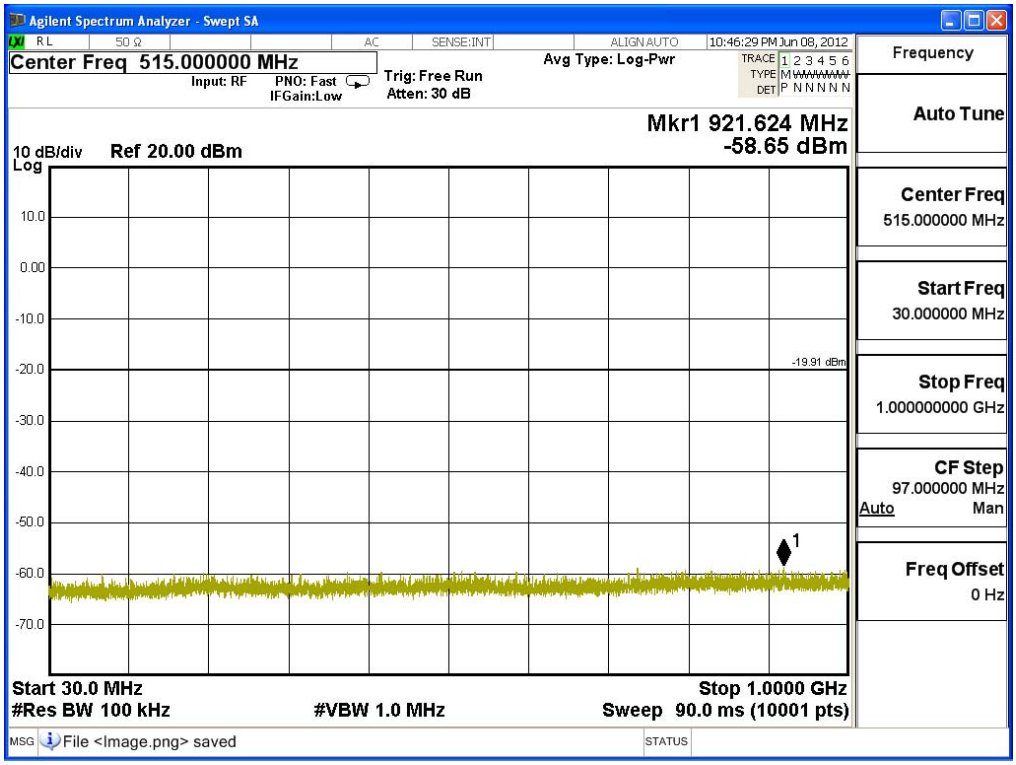
Channel 06 (2437MHz)

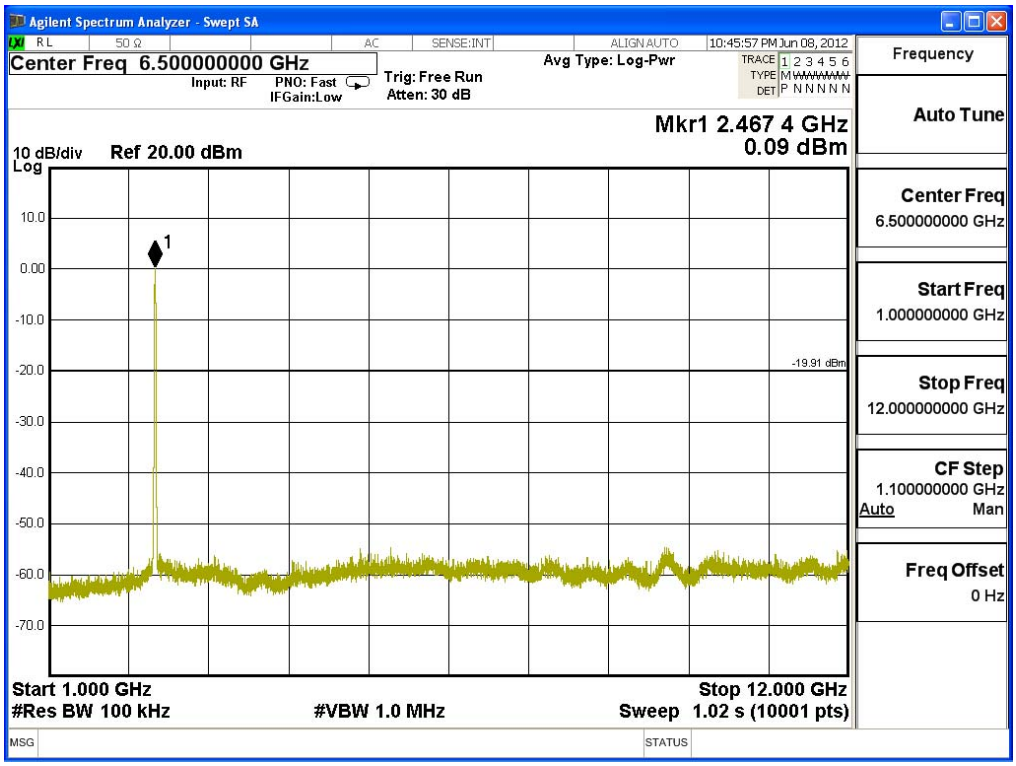


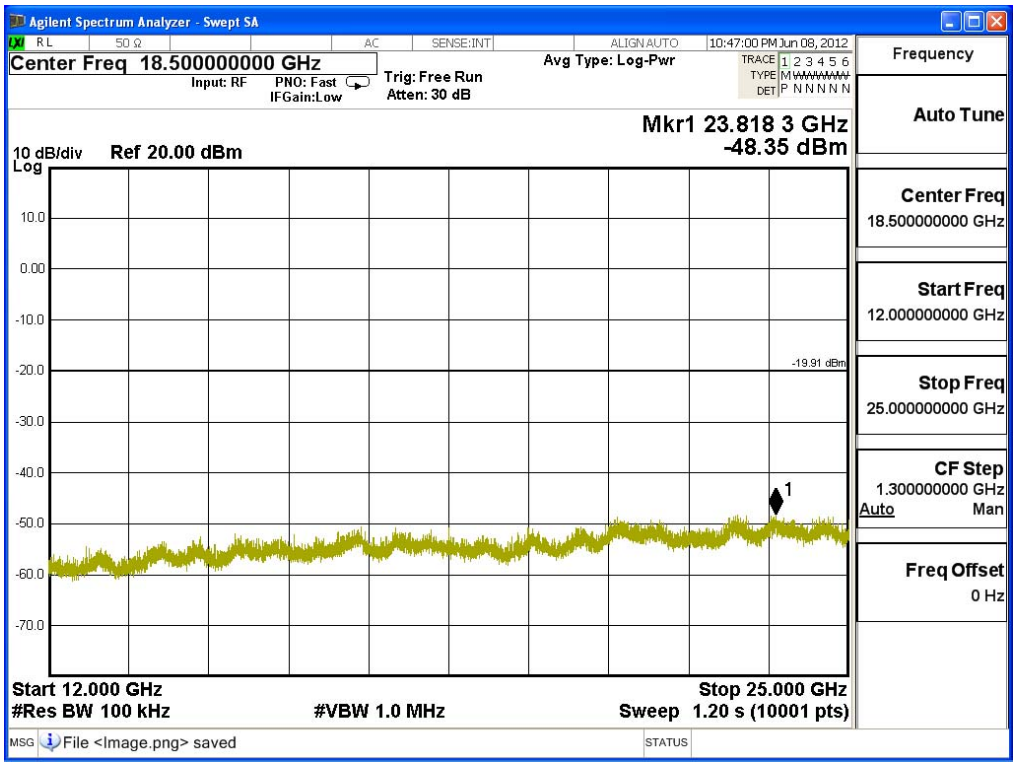



Agilent Spectrum Analyzer - Swept SA
RL
50 Ω
AC
SENSE:INT
ALIGN AUTO
10:40:43 PM Jun 08, 2012
Center Freq 18.500000000 GHz
Input: RF
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 30 dB
Avg Type: Log-Pwr
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P N N N N N
Mkr1 23.815 7 GHz
-46.92 dBm
10 dB/div
Log
Ref 20.00 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-19.93 dBm
1
Start 12.000 GHz
#Res BW 100 kHz
#VBW 1.0 MHz
Stop 25.000 GHz
Sweep 1.20 s (10001 pts)
MSG
File <Image.png> saved
STATUS
Frequency
Auto Tune
Center Freq
18.500000000 GHz
Start Freq
12.000000000 GHz
Stop Freq
25.000000000 GHz
CF Step
1.300000000 GHz
Auto
Man
Freq Offset
0 Hz

Channel 11 (2462MHz)

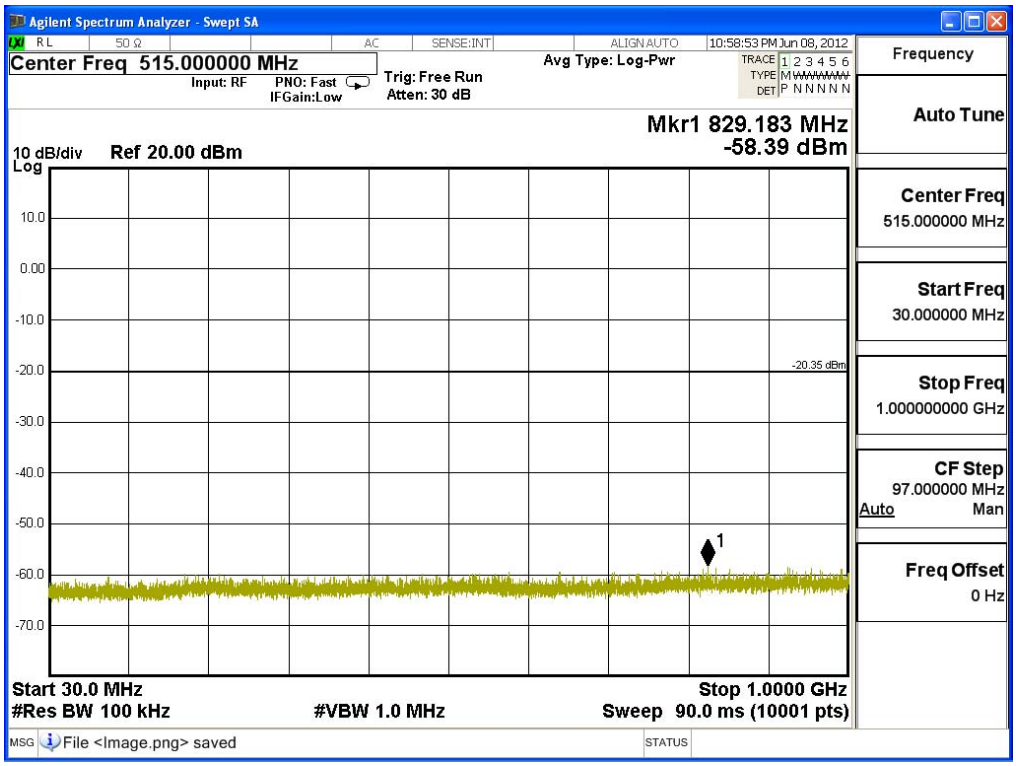


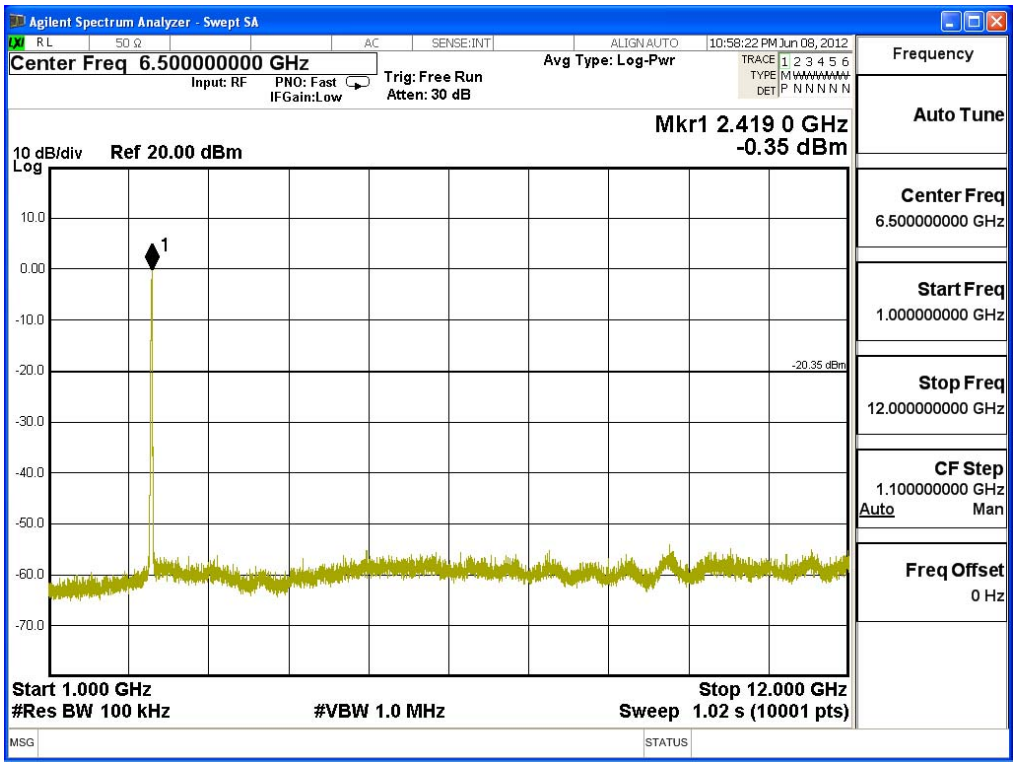


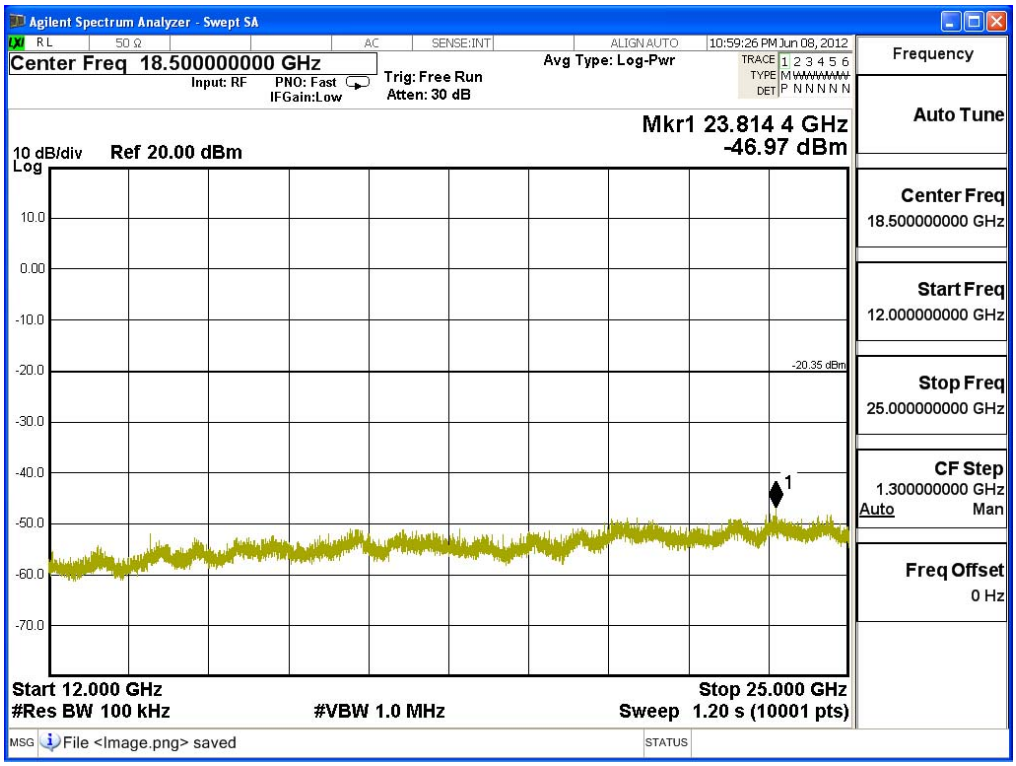

Agilent Spectrum Analyzer - Swept SA
RL
50 Ω
AC
SENSE:INT
ALIGN AUTO
10:47:00 PM Jun 08, 2012
Center Freq 18.500000000 GHz
Input: RF
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 30 dB
Avg Type: Log-Pwr
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P N N N N N
Mkr1 23.818 3 GHz
-48.35 dBm
10 dB/div
Log
Ref 20.00 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-19.91 dBm
1
Start 12.000 GHz
#Res BW 100 kHz
#VBW 1.0 MHz
Stop 25.000 GHz
Sweep 1.20 s (10001 pts)
MSG
File <Image.png> saved
STATUS
Frequency
Auto Tune
Center Freq
18.500000000 GHz
Start Freq
12.000000000 GHz
Stop Freq
25.000000000 GHz
CF Step
1.300000000 GHz
Auto
Man
Freq Offset
0 Hz

Product : Printer
Test Item : RF Antenna Conducted Spurious
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) -Adapter(1)

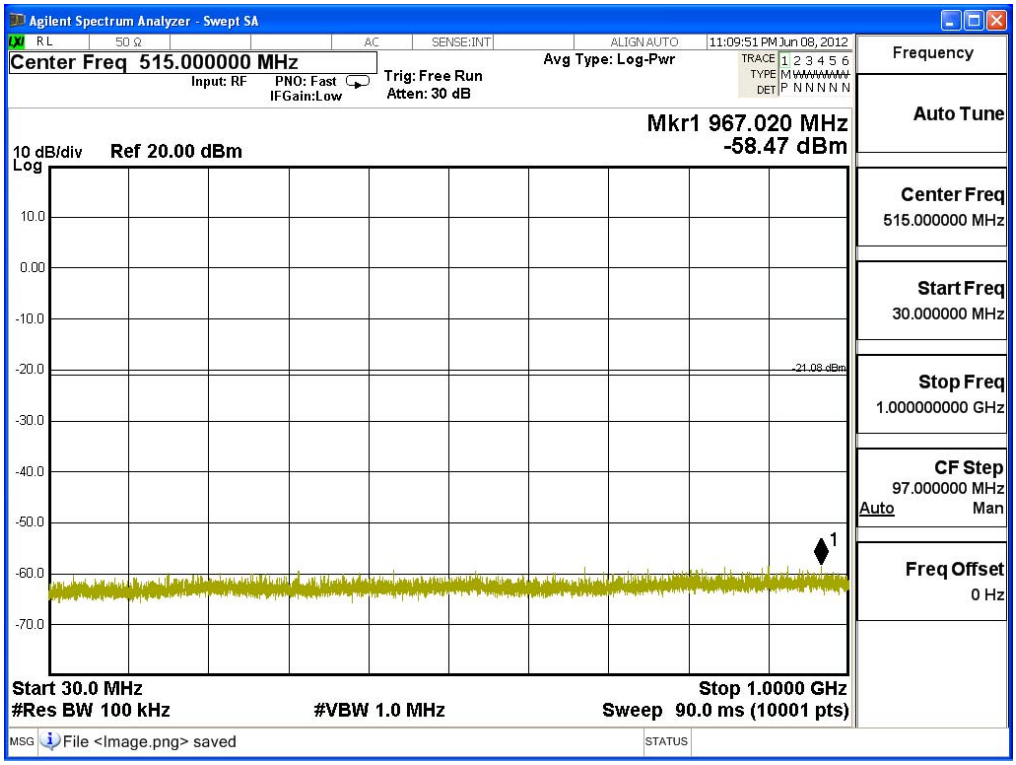
Channel 01 (2412MHz)

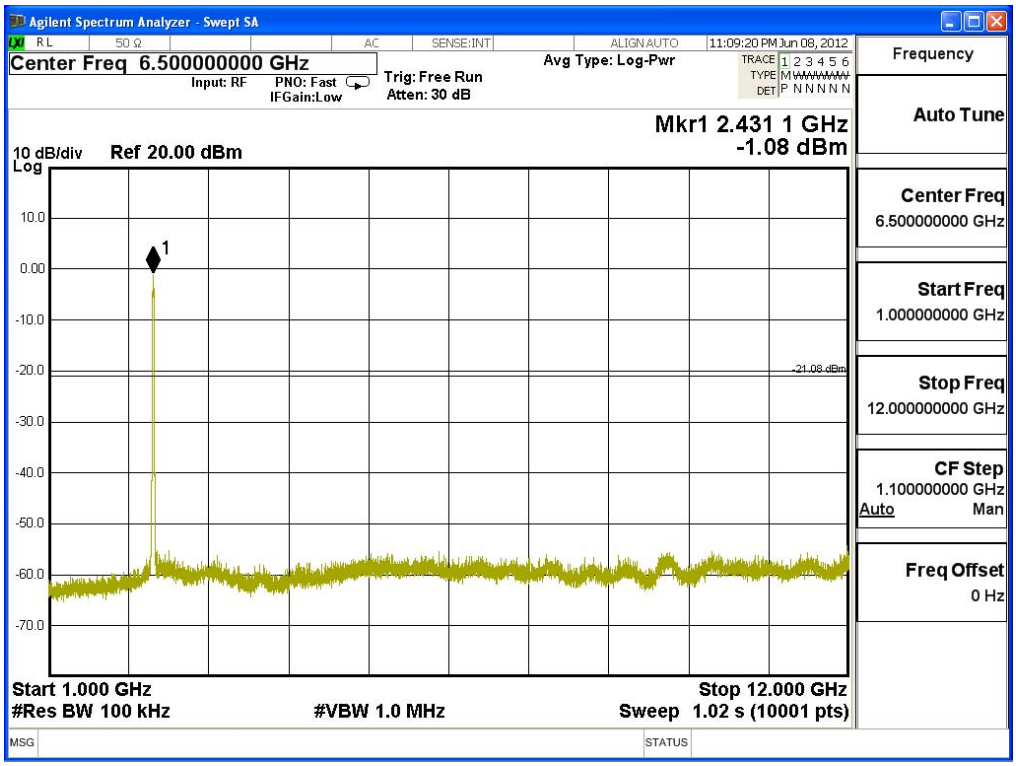


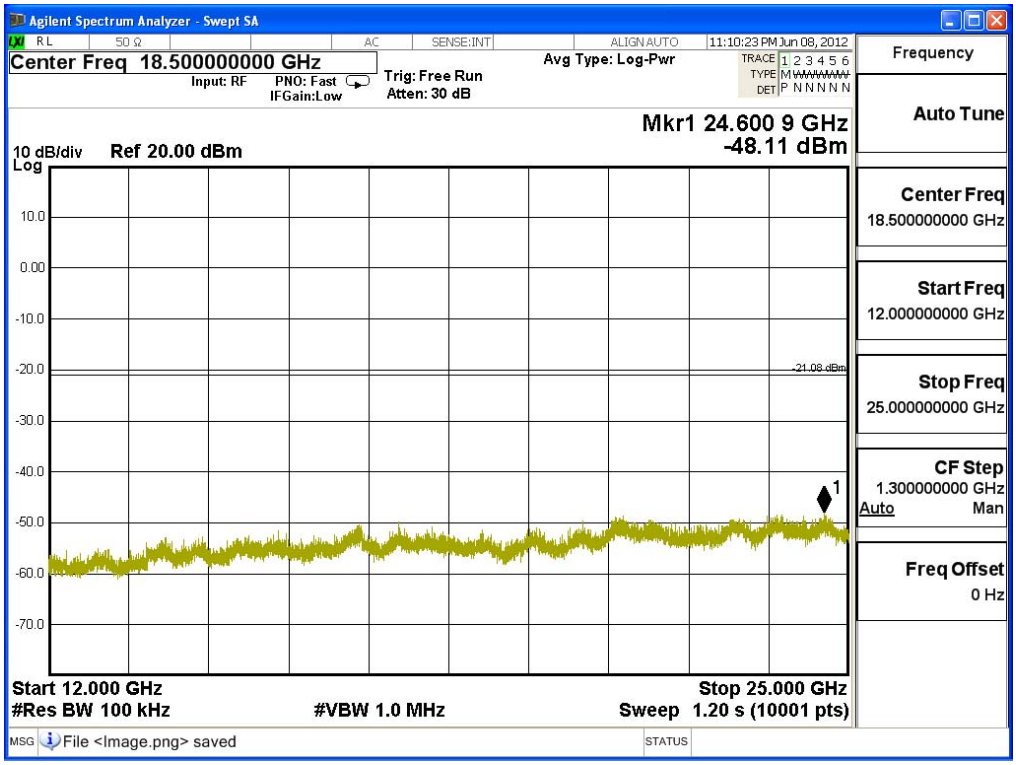

Agilent Spectrum Analyzer - Swept SA
Center Freq 6.500000000 GHz
Input: RF
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 30 dB
Avg Type: Log-Pwr
10:58:22 PM Jun 08, 2012
Mkr1 2.419 0 GHz
-0.35 dBm
10 dB/div
Log
Ref 20.00 dBm
-20.35 dBm
Start 1.000 GHz
#Res BW 100 kHz
#VBW 1.0 MHz
Stop 12.000 GHz
Sweep 1.02 s (10001 pts)
Frequency
Auto Tune
Center Freq
6.500000000 GHz
Start Freq
1.000000000 GHz
Stop Freq
12.000000000 GHz
CF Step
1.100000000 GHz
Auto
Man
Freq Offset
0 Hz
MSG
STATUS


Agilent Spectrum Analyzer - Swept SA
Center Freq 18.500000000 GHz
Input: RF
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 30 dB
Avg Type: Log-Pwr
10:59:26 PM Jun 08, 2012
Mkr1 23.814 4 GHz
-46.97 dBm
10 dB/div
Log
Ref 20.00 dBm
-20.35 dBm
Start 12.000 GHz
#Res BW 100 kHz
#VBW 1.0 MHz
Stop 25.000 GHz
Sweep 1.20 s (10001 pts)
Frequency
Auto Tune
Center Freq
18.500000000 GHz
Start Freq
12.000000000 GHz
Stop Freq
25.000000000 GHz
CF Step
1.300000000 GHz
Auto
Man
Freq Offset
0 Hz
MSG
File <Image.png> saved
STATUS

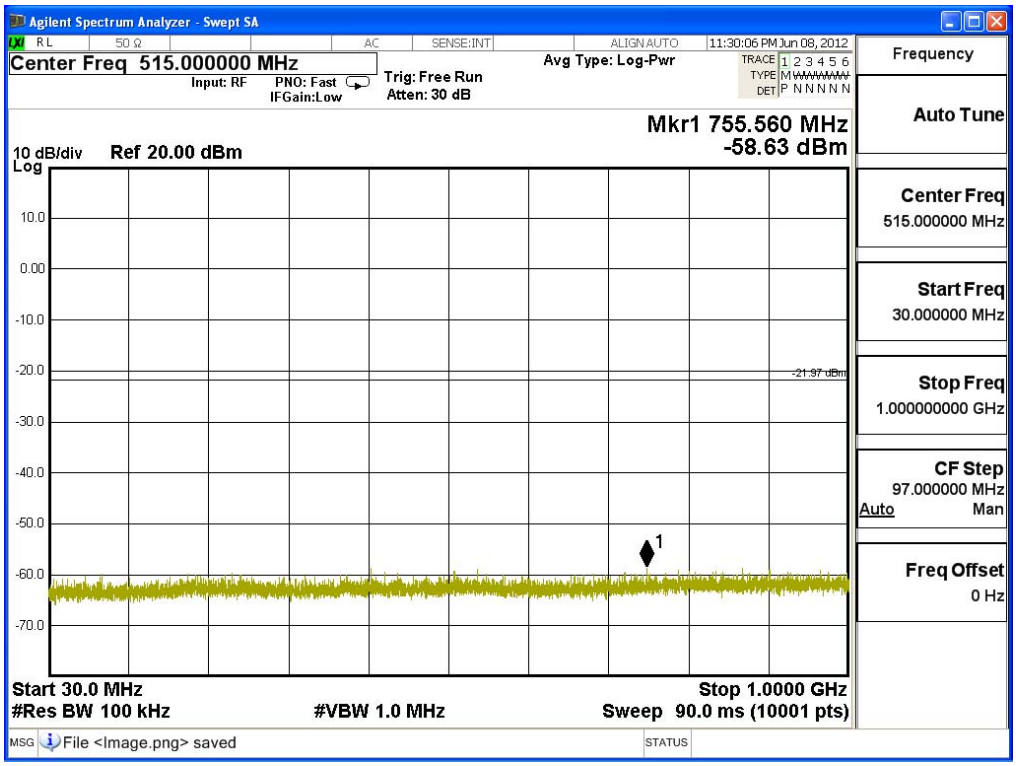
Channel 06 (2437MHz)

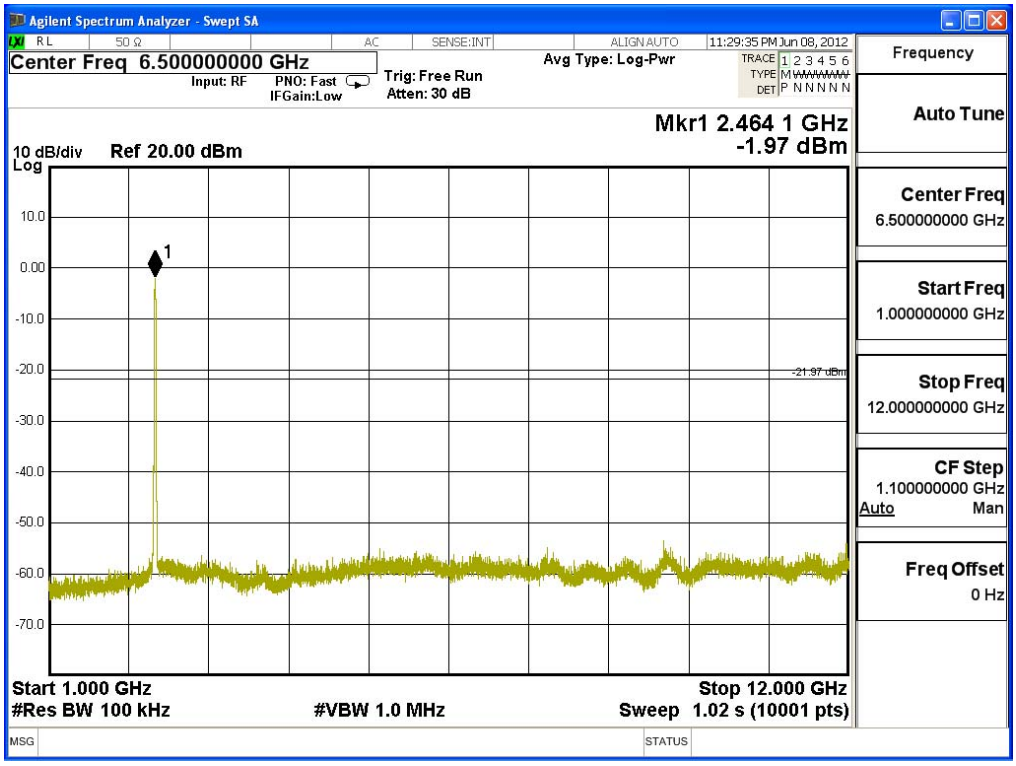


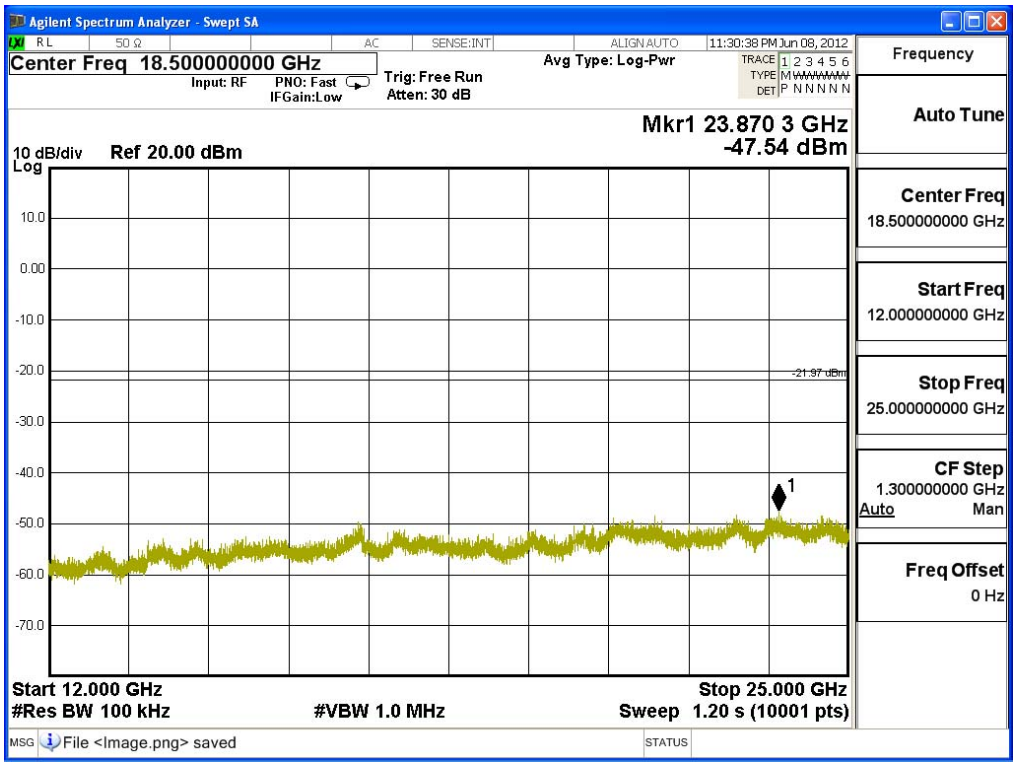



Agilent Spectrum Analyzer - Swept SA
RL
50 Ω
AC
SENSE:INT
ALIGN AUTO
11:10:23 PM Jun 08, 2012
Center Freq 18.500000000 GHz
Input: RF
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 30 dB
Avg Type: Log-Pwr
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P N N N N N
Mkr1 24.600 9 GHz
-48.11 dBm
10 dB/div
Log
Ref 20.00 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-21.08 dBm
1
Start 12.000 GHz
#Res BW 100 kHz
#VBW 1.0 MHz
Stop 25.000 GHz
Sweep 1.20 s (10001 pts)
MSG
File <Image.png> saved
STATUS
Frequency
Auto Tune
Center Freq
18.500000000 GHz
Start Freq
12.000000000 GHz
Stop Freq
25.000000000 GHz
CF Step
1.300000000 GHz
Auto
Man
Freq Offset
0 Hz

Channel 11 (2462MHz)






Agilent Spectrum Analyzer - Swept SA
RL
50 Ω
AC
SENSE:INT
ALIGN AUTO
11:30:38 PM Jun 08, 2012
Center Freq 18.500000000 GHz
Input: RF
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 30 dB
Avg Type: Log-Pwr
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P N N N N N
Mkr1 23.870 3 GHz
-47.54 dBm
10 dB/div
Log
Ref 20.00 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-21.97 dBm
1
Start 12.000 GHz
#Res BW 100 kHz
#VBW 1.0 MHz
Stop 25.000 GHz
Sweep 1.20 s (10001 pts)
MSG
File <Image.png> saved
STATUS
Frequency
Auto Tune
Center Freq
18.500000000 GHz
Start Freq
12.000000000 GHz
Stop Freq
25.000000000 GHz
CF Step
1.300000000 GHz
Auto
Man
Freq Offset
0 Hz