

FCC 47 CFR PART 15 SUBPART C

Product Type : 10.1" Tablet
Applicant : VIA Technologies, Inc.
Address : 8F, 533, Chung-Cheng Rd. Hsin-Tien, New Taipei City, Taiwan
Trade Name : Viega
Model Number : VT6081
Test Specification : FCC 47 CFR PART 15 SUBPART C: Oct., 2013
ANSI C63.4:2009
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Issue by

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Revision History

Rev.	Issue Date	Revisions	Revised By
00	Jun. 16, 2014	Initial Issue	

TABLE OF CONTENTS

1	General Information	6
2	EUT Description	7
3	Test Methodology	8
3.1.	Mode of Operation.....	8
3.2.	EUT Exercise Software	8
3.3.	Configuration of Test System Details	9
3.4.	Test Site Environment	9
4	Conducted Emission Measurement	10
4.1.	Limit	10
4.2.	Test Instruments	10
4.3.	Test Setup.....	10
4.4.	Test Procedure	11
4.5.	Test Result.....	12
5	Radiated Emission Measurement.....	14
5.1.	Limit	14
5.2.	Test Instruments	14
5.3.	Setup	15
5.4.	Test Procedure	16
5.5.	Test Result.....	18
6	Maximum Conducted Output Power Measurement.....	28
6.1.	Limit	28
6.2.	Test Setup.....	28
6.3.	Test Instruments	28
6.4.	Test Procedure	28
6.5.	Test Result.....	29
7	6dB RF Bandwidth and 99 % Occupied Bandwidth Measurement	32
7.1.	Limit	32
7.2.	Test Setup.....	32
7.3.	Test Instruments	32
7.4.	Test Procedure	32
7.5.	Test Result.....	33
7.6.	Test Graphs	35
8	Maximum Power Density Measurement	40
8.1.	Limit	40
8.2.	Test Setup.....	40
8.3.	Test Instruments	40
8.4.	Test Procedure	40
8.5.	Test Result.....	41
8.6.	Test Graphs	43

9	Out of Band Conducted Emissions Measurement	48
9.1.	Limit	48
9.2.	Test Setup.....	48
9.3.	Test Instruments	48
9.4.	Test Procedure	48
9.5.	Test Graphs	49
10	Band Edges Measurement	118
10.1.	Limit	118
10.2.	Test Setup.....	118
10.3.	Test Instruments	118
10.4.	Test Procedure	119
10.5.	Test Result.....	120
11	Antenna Measurement.....	125
11.1.	Limit	125
11.2.	Antenna Connector Construction	125

1 General Information

1.1 Summary of Test Result

Standard	Item	Result	Remark
15.247			
15.207	AC Power Conducted Emission	PASS	-----
Standard	Item	Result	Remark
15.247			
15.247(d)	Transmitter Radiated Emissions	PASS	-----
15.247(b)(3)	Max. Output Power	PASS	-----
15.247(a)(2)	6dB RF Bandwidth	PASS	-----
15.247(e)	Power Spectral Density	PASS	-----
15.247(c)	Out of Band Conducted Spurious Emission	PASS	-----
15.247(d)	Band Edge Measurement	PASS	-----
15.247(c)	Occupied Bandwidth Measurement	PASS	-----
15.203	Antenna Requirement	PASS	-----

The test results of this report relate only to the tested sample(s) identified in this report. Manufacturer or whom it may concern should recognize the pass or fail of the test result.

1.2 Measurement Uncertainty

Test Item	Frequency Range	Uncertainty (dB)	
Conducted Emission	9kHz ~ 30MHz	± 2.02	
Radiated Emission	30MHz ~ 1000MHz	Horizontal	± 3.98
		Vertical	± 3.62
	1000MHz ~ 18000MHz	Horizontal	± 3.11
		Vertical	± 3.07
	18000MHz ~ 40000MHz	Horizontal	± 3.66
		Vertical	± 3.54

2 EUT Description

Product Type	10.1" Tablet
Trade Name	Viega
Model No.	VT6081
Applicant	VIA Technologies, Inc. 8F, 533, Chung-Cheng Rd. Hsin-Tien, New Taipei City, Taiwan
Manufacturer	VIA Technologies, Inc. 8F, 533, Chung-Cheng Rd. Hsin-Tien, New Taipei City, Taiwan
IMEI No.	358901048976879
FCC ID	NCI-VEVT6081A1
Frequency Range	IEEE 802.11b / 802.11g / 802.11n 2.4GHz 20MHz: 2412 ~ 2462 MHz IEEE 802.11n 2.4GHz 40MHz: 2422 ~ 2452 MHz Bluetooth v4.0 LE: 2402 ~ 2480 MHz
Modulation Type	IEEE 802.11b:DSSS IEEE 802.11g:DSSS + OFDM IEEE 802.11n 2.4GHz 20MHz: OFDM IEEE 802.11n 2.4GHz 40MHz: OFDM Bluetooth v4.0 LE: GFSK
Antenna Type	PCB Antenna
Antenna Gain	WLAN 2.4G: 4.3 dBi Bluetooth: 4.3 dBi
RF Output Power	IEEE 802.11b: 0.038 W / 15.78 dBm IEEE 802.11g: 0.122 W / 20.85 dBm IEEE 802.11n 2.4GHz 20MHz: 0.092 W / 19.63 dBm IEEE 802.11n 2.4GHz 40MHz: 0.079 W / 18.95 dBm Bluetooth v4.0 LE: 0.010 W / 9.97 dBm
99 % Occupied Bandwidth	IEEE 802.11b: 14.79 MHz IEEE 802.11g: 16.48 MHz IEEE 802.11n 2.4GHz 20MHz: 17.67 MHz IEEE 802.11n 2.4GHz 40MHz: 35.97 MHz Bluetooth v4.0 LE: 1.06 MHz

3 Test Methodology

3.1. Mode of Operation

Decision of Test ATL has verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:

Test Mode
Mode 1: Normal Operation Mode
Mode 2: IEEE 802.11b Link Mode
Mode 3: IEEE 802.11g Link Mode
Mode 4: IEEE 802.11n 2.4GHz 20MHz Link Mode
Mode 5: IEEE 802.11n 2.4GHz 40MHz Link Mode
Mode 6: Bluetooth v4.0 LE Link Mode

Software used to control the EUT for staying in continuous transmitting mode was programmed.

After verification, all tests were carried out with the worst case test modes as shown below except radiated spurious emission below 1GHz and power line conducted emissions below 30MHz, which worst case was in normal link mode only.

IEEE 802.11b mode:

Channel Low (2412MHz), Channel Mid (2437MHz) and Channel High (2462MHz) with 1Mbps data rate were chosen for full testing.

IEEE 802.11g mode:

Channel Low (2412MHz), Channel Mid (2437MHz) and Channel High (2462MHz) with 6Mbps data rate were chosen for full testing.

IEEE 802.11n 2.4GHz 20MHz mode:

Channel Low (2412MHz), Channel Mid (2437MHz) and Channel High (2462MHz) with 6.5Mbps data rate were chosen for full testing.

IEEE 802.11n 2.4GHz 40MHz mode:

Channel Low (2422MHz), Channel Mid (2437MHz) and Channel High (2452MHz) with 13.5Mbps data rate were chosen for full testing.

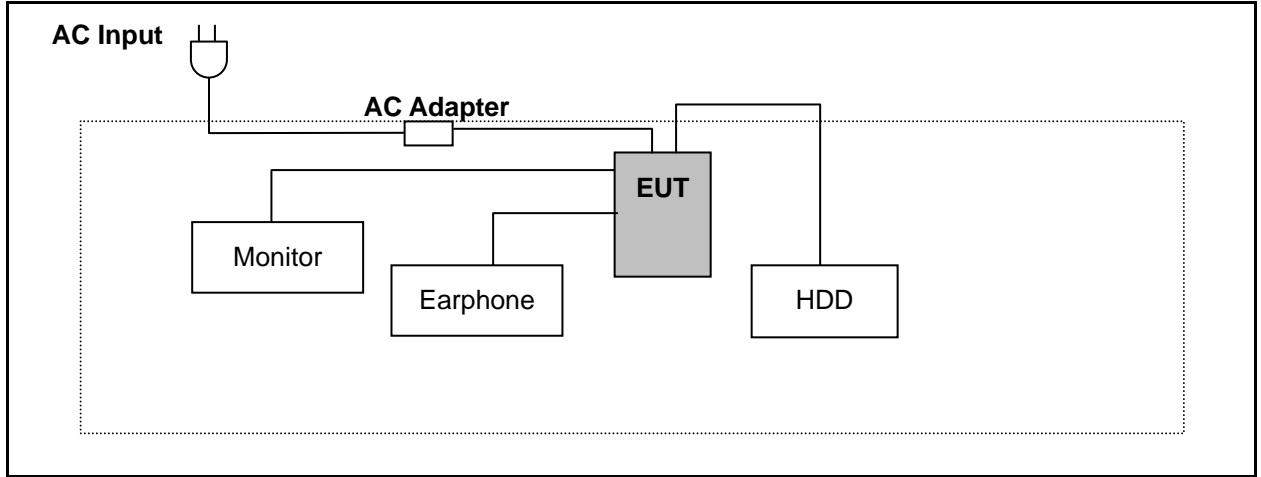
By preliminary testing and verifying three axis (X, Y and Z) position of EUT transmitted status, it was found that "X axis" position was the worst, then the final test was executed the worst condition and test data were recorded in this report.

3.2. EUT Exercise Software

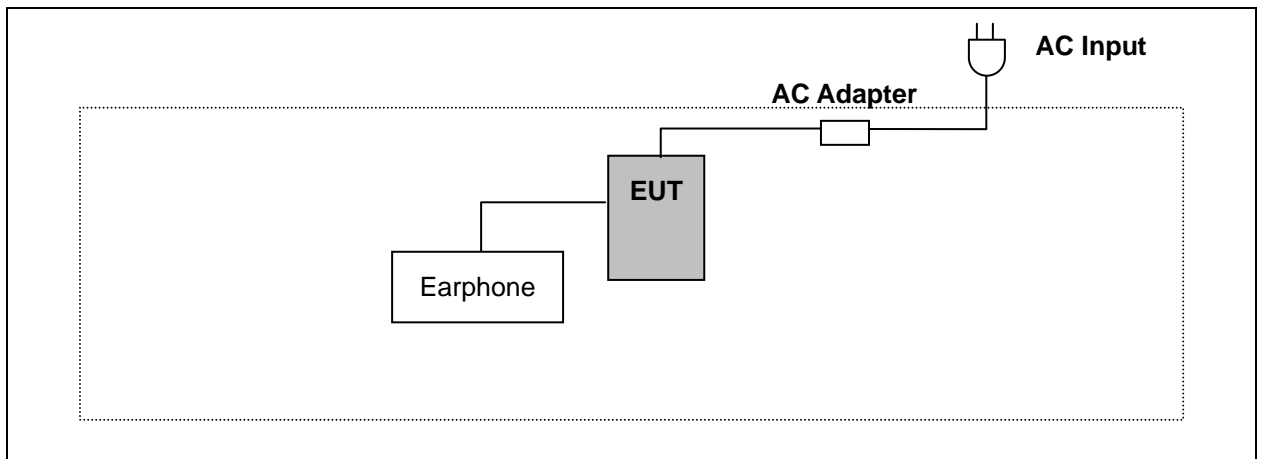
1. Setup the EUT shown on 3.3.
2. Turn on the power of all equipment.
3. Turn on Wi-Fi function link to AP.
4. EUT run test program.
5. Turn Bluetooth function link to CBT.

3.3. Configuration of Test System Details

Conducted Emissions



Radiated Emissions



3.4. Test Site Environment

Items	Required (IEC 60068-1)	Actual
Temperature (°C)	15-35	26
Humidity (%RH)	25-75	60
Barometric pressure (mbar)	860-1060	950

4 Conducted Emission Measurement

4.1. Limit

Frequency (MHz)	Quasi-peak	Average
0.15 - 0.5	66 to 56	56 to 46
0.50 - 5.0	56	46
5.0 - 30.0	60	50

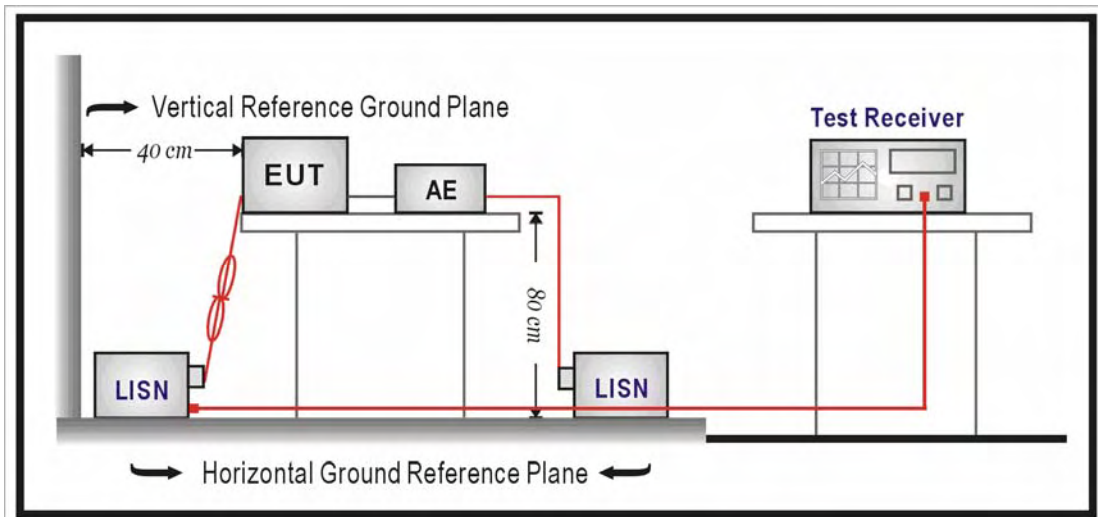
4.2. Test Instruments

Describe	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
Test Receiver	R&S	ESCI	100367	06/06/2014	(1)
LISN	R&S	ENV216	101040	03/07/2014	(1)
LISN	R&S	ENV216	101041	03/07/2014	(1)
Test Site	ATL	TE02	TE02	N.C.R.	-----

Remark: (1) Calibration period 1 year. (2) Calibration period 2 years. (3) Calibration period 3 years.

Note: N.C.R. = No Calibration Request.

4.3. Test Setup



4.4. Test Procedure

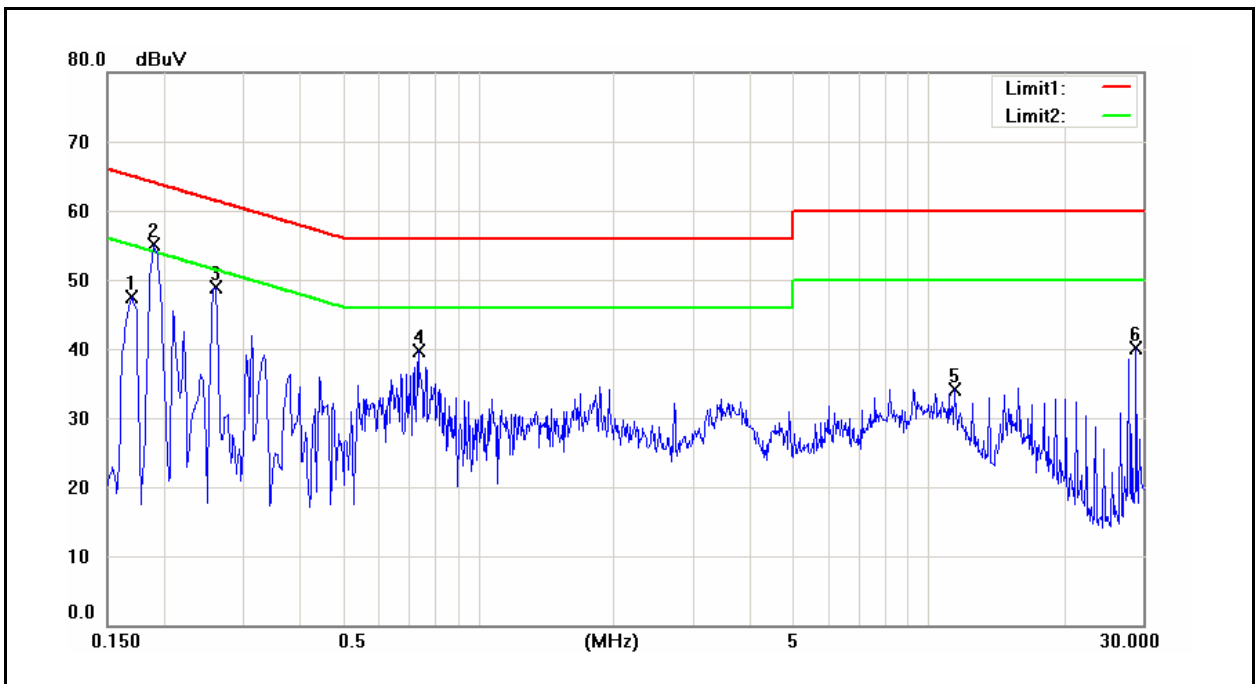
The power line conducted emission measurements were performed in a shielded enclosure. The EUT was assembled on a wooden table which is 80 centimeters high, was placed 40 centimeters from the back wall and at least 1 meter from the sidewall.

Power was fed to the EUT from the public utility power grid through a line filter and EMCO Model 3162/2 SH Line Impedance Stabilization Networks (LISN). The LISN housing, measuring instrumentation case, ground plane, etc., were electrically bonded together at the same RF potential. The Spectrum analyzer was connected to the AC line through an isolation transformer. The 50-ohm output of the LISN was connected to the spectrum analyzer directly. Conducted emission levels were in the CISPR quasi-peak detection mode. The analyzer's 6 dB bandwidth was set to 9 KHz. No post-detector video filter was used.

The spectrum was scanned from 150 KHz to 30 MHz. The physical arrangement of the test system and associated cabling was varied (within the scope of arrangements likely to be encountered in actual use) to determine the effect on the unit's emanations in amplitude and frequency. All spurious emission frequencies were observed. The highest emission amplitudes relative to the appropriate limit were measured and have been recorded in paragraph 4.1.

4.5. Test Result

Standard:	FCC Part 15C	Line:	L1
Test item:	Conducted Emission	Power:	AC 120V/60Hz
Model Number:	VT6081	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	1	Date:	06/04/2014
		Test By:	Eric Ou Yang
Description:			

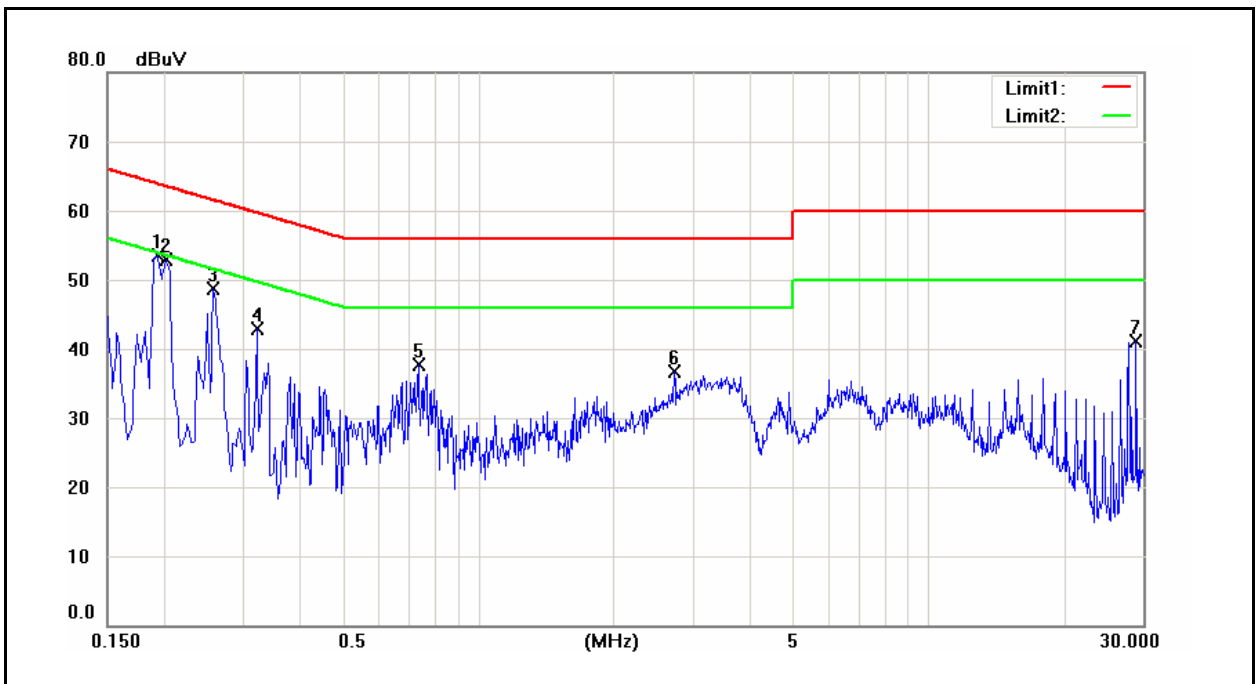


No.	Frequency (MHz)	QP reading (dBuV)	AVG reading (dBuV)	Correction factor (dB)	QP result (dBuV)	AVG result (dBuV)	QP limit (dBuV)	AVG limit (dBuV)	QP margin (dB)	AVG margin (dB)	Remark
1	0.1700	30.17	15.01	9.58	39.75	24.59	64.96	54.96	-25.21	-30.37	Pass
2	0.1900	43.29	26.26	9.58	52.87	35.84	64.04	54.04	-11.17	-18.20	Pass
3	0.2620	36.55	19.55	9.58	46.13	29.13	61.37	51.37	-15.24	-22.24	Pass
4	0.7380	26.86	20.24	9.59	36.45	29.83	56.00	46.00	-19.55	-16.17	Pass
5	11.4820	21.47	17.15	9.90	31.37	27.05	60.00	50.00	-28.63	-22.95	Pass
6	28.9740	28.53	23.17	10.07	38.60	33.24	60.00	50.00	-21.40	-16.76	Pass

Note: 1. Result (dBuV) = Correction factor (dB) + Reading(dBuV).

2. Correction factor (dB) = Cable loss (dB) + L.I.S.N. factor (dB).

Standard:	FCC Part 15C	Line:	N
Test item:	Conducted Emission	Power:	AC 120V/60Hz
Model Number:	VT6081	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	1	Date:	06/04/2014
		Test By:	Eric Ou Yang
Description:			



No.	Frequency (MHz)	QP reading (dBuV)	AVG reading (dBuV)	Correction factor (dB)	QP result (dBuV)	AVG result (dBuV)	QP limit (dBuV)	AVG limit (dBuV)	QP margin (dB)	AVG margin (dB)	Remark
1	0.1940	41.64	25.34	9.58	51.22	34.92	63.86	53.86	-12.64	-18.94	Pass
2	0.2020	40.31	22.64	9.58	49.89	32.22	63.53	53.53	-13.64	-21.31	Pass
3	0.2580	35.95	17.55	9.58	45.53	27.13	61.50	51.50	-15.97	-24.37	Pass
4	0.3220	29.00	14.89	9.58	38.58	24.47	59.66	49.66	-21.08	-25.19	Pass
5	0.7380	26.96	21.37	9.59	36.55	30.96	56.00	46.00	-19.45	-15.04	Pass
6	2.7340	23.36	18.60	9.67	33.03	28.27	56.00	46.00	-22.97	-17.73	Pass
7	28.9620	29.32	23.21	10.14	39.46	33.35	60.00	50.00	-20.54	-16.65	Pass

Note: 1. Result (dBuV) = Correction factor (dB) + Reading(dBuV).

2. Correction factor (dB) = Cable loss (dB) + L.I.S.N. factor (dB).

5 Radiated Emission Measurement

5.1. Limit

According to §15.209(a), except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength ($\mu\text{V}/\text{m}$ at meter)	Measurement Distance (meters)
0.009 – 0.490	2400 / F (kHz)	300
0.490 – 1.705	24000 / F (kHz)	30
1.705 – 30.0	30	30
30 - 88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

5.2. Test Instruments

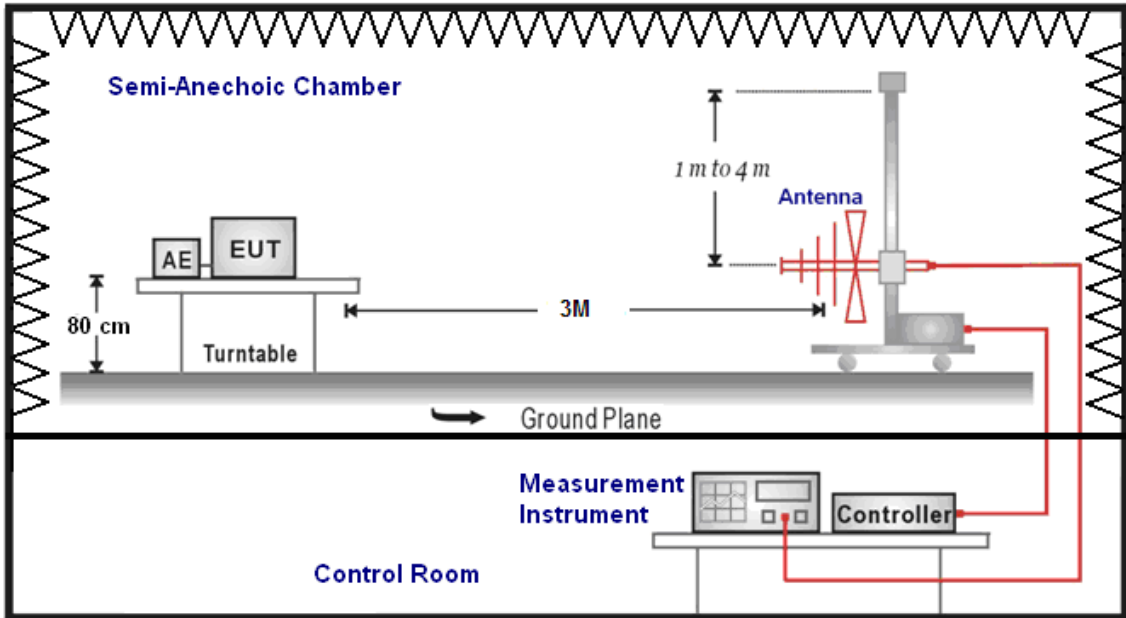
3 Meter Chamber					
Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
RF Pre-selector	Agilent	N9039A	MY46520256	01/10/2014	(1)
Spectrum Analyzer	Agilent	E4446A	MY46180578	01/10/2014	(1)
Pre Amplifier	Agilent	8449B	3008A02237	02/21/2014	(1)
Pre Amplifier	Agilent	8447D	2944A10961	02/21/2014	(1)
Broadband Antenna (30MHz~1GHz)	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	9163-270	07/16/2013	(1)
Horn Antenna (1~18GHz)	SCHWARZBECK MESS-ELEKTRONIK	BBHA9120D	9120D-550	06/10/2013	(1)
Horn Antenna (18~40GHz)	SCHWARZBECK MESS-ELEKTRONIK	BBHA9170	9170-320	06/13/2013	(1)
Loop Antenna	COM-POWER CORPORATION	AL-130	121014	08/14/2012	(3)
Test Site	ATL	TE01	888001	08/28/2013	(1)

Remark: (1) Calibration period 1 year. (2) Calibration period 2 years. (3) Calibration period 3 years.

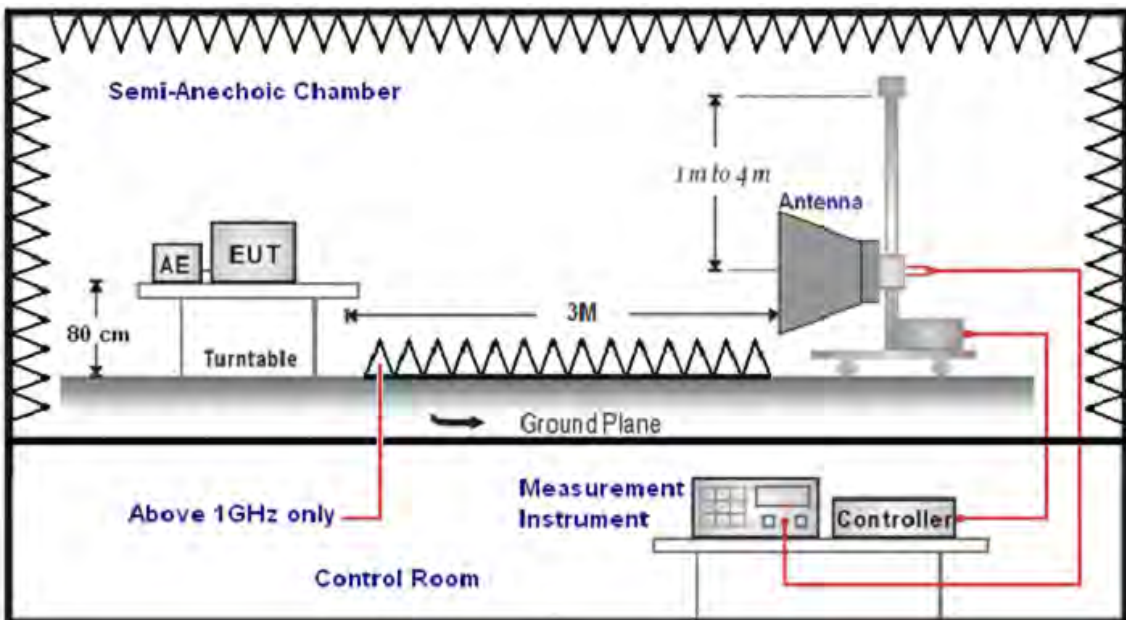
Note: N.C.R. = No Calibration Request.

5.3. Setup

Below 1GHz



Above 1GHz



5.4. Test Procedure

Final radiation measurements were made on a three-meter, Semi Anechoic Chamber. The EUT system was placed on a nonconductive turntable which is 0.8 meters height, top surface 1.0 x 1.5 meter. The spectrum was examined from 250 MHz to 2.5 GHz in order to cover the whole spectrum below 10th harmonic which could generate from the EUT. During the test, EUT was set to transmit continuously & Measurements spectrum range from 9 kHz to 26.5 GHz is investigated.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, and then the video bandwidth is set to 1 MHz for peak measurements and 10 Hz for average measurements.

A nonconductive material surrounded the EUT to supporting the EUT for standing on three orthogonal planes. At each condition, the EUT was rotated 360 degrees, and the antenna was raised and lowered from one to four meters to find the maximum emission levels. Measurements were taken using both horizontal and vertical antenna polarization.

SCHWARZBECK MESS-ELEKTRONIK Biconilog Antenna (mode VULB9163) at 3 Meter and the SCHWARZBECK Double Ridged Guide Antenna (model BBHA9120D&9170) was used in frequencies 1 – 26.5 GHz at a distance of 1 meter. All test results were extrapolated to equivalent signal at 3 meters utilizing an inverse linear distance extrapolation Factor (20dB/decade).

For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

Appropriate preamplifiers were used for improving sensitivity and precautions were taken to avoid overloading or desensitizing the spectrum analyzer. No post – detector video filters were used in the test.

The spectrum analyzer's 6 dB bandwidth was set to 1 MHz, and the analyzer was operated in the peak detection mode, for frequencies both below and up 1 GHz. The average levels were obtained by subtracting the duty cycle correction factor from the peak readings.

The following procedures were used to convert the emission levels measured in decibels referenced to 1 microvolt (dBuV) into field intensity in micro volts pre meter (uV/m).

The actual field intensity in decibels referenced to 1 microvolt in to field intensity in micro volts per meter (dBuV/m).

The actual field intensity in referenced to 1 microvolt per meter (dBuV/m) is determined by algebraically adding the measured reading in dBuV, the antenna factor (dB), and cable loss (dB) and Subtracting the gain of preamplifier (dB) is auto calculate in spectrum analyzer.

(1) $\text{Amplitude (dBuV/m)} = \text{FI (dBuV)} + \text{AF (dBuV)} + \text{CL (dBuV)} - \text{Gain (dB)}$

FI= Reading of the field intensity.

AF= Antenna factor.

CL= Cable loss.

P.S Amplitude is auto calculate in spectrum analyzer.

(2) $\text{Actual Amplitude (dBuV/m)} = \text{Amplitude (dBuV)} - \text{Dis(dB)}$

The FCC specified emission limits were calculated according the EUT operating frequency and by following linear interpolation equations:

(a) For fundamental frequency : Transmitter Output < +30dBm

(b) For spurious frequency : Spurious emission limits = fundamental emission limit /10

Data of measurement within this frequency range without mark in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

5.5. Test Result

9kHz ~ 30MHz:

Standard:	FCC Part 15C	Test Distance:	300m/30m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	VT6081	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	Mode 1	Date:	05/29/2014
		Test By:	Eric Ou Yang

Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
0.1290	-44.83	14.03	-30.80	25.88	-56.68	QP	H
2.1684	-45.38	15.20	-30.18	29.55	-59.73	QP	H
5.9172	-46.68	15.85	-30.83	29.55	-60.38	QP	H
16.8640	-44.83	14.04	-30.79	29.55	-60.34	QP	H
20.2530	-45.38	14.26	-31.12	29.55	-60.67	QP	H
22.2023	-48.38	13.67	-34.71	29.55	-64.26	QP	H
0.1290	-45.33	14.03	-31.30	25.88	-57.18	QP	V
2.2282	-46.89	15.26	-31.63	29.55	-61.18	QP	V
5.1675	-45.74	16.01	-29.73	29.55	-59.28	QP	V
9.9660	-51.46	14.98	-36.48	29.55	-66.03	QP	V
17.5837	-46.55	14.12	-32.43	29.55	-61.98	QP	V
23.1321	-47.08	13.39	-33.69	29.55	-63.24	QP	V

Note: The level is measured at 1 meter and is converted into result at 300 or 30 meter.

The converted formula listed below:

Measure result (1 meter distance): a

Compute result (30 or 300 meter distance): A

$A = a + (40 \cdot \log(1/300 \text{ or } 1/30))$

ex. a (0.0090 MHz) = 54.25 dBuV, $A = 54.25 + (40 \cdot \log(1/300)) = -44.83 \text{ dBuV}$

Below 1GHz

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	VT6081	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	1	Date:	05/29/2014
		Test By:	Eric Ou Yang

Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
180.0000	49.12	-13.12	36.00	43.50	-7.50	QP	H
252.0000	50.21	-12.08	38.13	46.00	-7.87	QP	H
288.0000	46.83	-10.59	36.24	46.00	-9.76	QP	H
414.0000	43.53	-7.91	35.62	46.00	-10.38	QP	H
483.0000	39.55	-6.57	32.98	46.00	-13.02	QP	H
621.0000	36.48	-3.70	32.78	46.00	-13.22	QP	H
150.5000	44.43	-11.65	32.78	43.50	-10.72	QP	V
194.5000	50.55	-14.23	36.32	43.50	-7.18	QP	V
414.0000	43.56	-7.91	35.65	46.00	-10.35	QP	V
483.0000	45.05	-6.57	38.48	46.00	-7.52	QP	V
621.0000	34.02	-3.70	30.32	46.00	-15.68	QP	V
828.0000	29.12	0.24	29.36	46.00	-16.64	QP	V

Above 1GHz

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	VT6081	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	2	Date:	05/29/2014
Frequency:	2412MHz	Test By:	Eric Ou Yang

Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
3002.000	38.23	-0.20	38.03	74.00	-35.97	peak	H
4570.000	34.99	4.38	39.37	74.00	-34.63	peak	H
6719.000	34.96	10.09	45.05	74.00	-28.95	peak	H
3051.000	38.35	-0.06	38.29	74.00	-35.71	peak	V
4542.000	34.07	4.31	38.38	74.00	-35.62	peak	V
6649.000	34.23	9.90	44.13	74.00	-29.87	peak	V

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	VT6081	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	2	Date:	05/29/2014
Frequency:	2437MHz	Test By:	Eric Ou Yang

Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
3023.000	36.86	-0.14	36.72	74.00	-37.28	peak	H
4577.000	33.76	4.39	38.15	74.00	-35.85	peak	H
6677.000	34.80	9.97	44.77	74.00	-29.23	peak	H
3051.000	36.92	-0.06	36.86	74.00	-37.14	peak	V
4619.000	33.98	4.51	38.49	74.00	-35.51	peak	V
6677.000	34.24	9.97	44.21	74.00	-29.79	peak	V

Standard:	FCC Part 15C			Test Distance:	3m		
Test item:	Radiated Emission			Power:	AC 120V/60Hz		
Model Number:	VT6081			Temp.(°C)/Hum.(%RH):	26(°C)/60%RH		
Mode:	2			Date:	05/29/2014		
Frequency:	2462MHz			Test By:	Eric Ou Yang		
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
3002.000	37.45	-0.20	37.25	74.00	-36.75	peak	H
4647.000	34.39	4.57	38.96	74.00	-35.04	peak	H
6761.000	34.06	10.21	44.27	74.00	-29.73	peak	H
3002.000	36.43	-0.20	36.23	74.00	-37.77	peak	V
4591.000	34.20	4.43	38.63	74.00	-35.37	peak	V
6670.000	34.60	9.95	44.55	74.00	-29.45	peak	V

Standard:	FCC Part 15C			Test Distance:	3m		
Test item:	Radiated Emission			Power:	AC 120V/60Hz		
Model Number:	VT6081			Temp.(°C)/Hum.(%RH):	26(°C)/60%RH		
Mode:	3			Date:	05/29/2014		
Frequency:	2412MHz			Test By:	Eric Ou Yang		
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
3023.000	37.24	-0.14	37.10	74.00	-36.90	peak	H
4654.000	33.44	4.60	38.04	74.00	-35.96	peak	H
6719.000	33.11	10.09	43.20	74.00	-30.80	peak	H
3030.000	36.63	-0.11	36.52	74.00	-37.48	peak	V
4591.000	33.62	4.43	38.05	74.00	-35.95	peak	V
6705.000	33.37	10.05	43.42	74.00	-30.58	peak	V

Standard:	FCC Part 15C			Test Distance:	3m		
Test item:	Radiated Emission			Power:	AC 120V/60Hz		
Model Number:	VT6081			Temp.(°C)/Hum.(%RH):	26(°C)/60%RH		
Mode:	3			Date:	05/29/2014		
Frequency:	2437MHz			Test By:	Eric Ou Yang		
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
3009.000	36.76	-0.17	36.59	74.00	-37.41	peak	H
4577.000	33.33	4.39	37.72	74.00	-36.28	peak	H
6705.000	34.07	10.05	44.12	74.00	-29.88	peak	H
3030.000	36.41	-0.11	36.30	74.00	-37.70	peak	V
4598.000	34.92	4.45	39.37	74.00	-34.63	peak	V
6691.000	32.98	10.01	42.99	74.00	-31.01	peak	V

Standard:	FCC Part 15C			Test Distance:	3m		
Test item:	Radiated Emission			Power:	AC 120V/60Hz		
Model Number:	VT6081			Temp.(°C)/Hum.(%RH):	26(°C)/60%RH		
Mode:	3			Date:	05/29/2014		
Frequency:	2462MHz			Test By:	Eric Ou Yang		
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
3030.000	38.39	-0.11	38.28	74.00	-35.72	peak	H
4591.000	33.97	4.43	38.40	74.00	-35.60	peak	H
6719.000	34.07	10.09	44.16	74.00	-29.84	peak	H
3037.000	37.28	-0.10	37.18	74.00	-36.82	peak	V
4549.000	34.15	4.33	38.48	74.00	-35.52	peak	V
6691.000	33.86	10.01	43.87	74.00	-30.13	peak	V

Standard:	FCC Part 15C			Test Distance:	3m		
Test item:	Radiated Emission			Power:	AC 120V/60Hz		
Model Number:	VT6081			Temp.(°C)/Hum.(%RH):	26(°C)/60%RH		
Mode:	4			Date:	05/29/2014		
Frequency:	2412MHz			Test By:	Eric Ou Yang		
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
3002.000	36.51	-0.20	36.31	74.00	-37.69	peak	H
4570.000	33.67	4.38	38.05	74.00	-35.95	peak	H
6747.000	34.75	10.16	44.91	74.00	-29.09	peak	H
3023.000	37.08	-0.14	36.94	74.00	-37.06	peak	V
4598.000	34.51	4.45	38.96	74.00	-35.04	peak	V
6698.000	33.86	10.03	43.89	74.00	-30.11	peak	V

Standard:	FCC Part 15C			Test Distance:	3m		
Test item:	Radiated Emission			Power:	AC 120V/60Hz		
Model Number:	VT6081			Temp.(°C)/Hum.(%RH):	26(°C)/60%RH		
Mode:	4			Date:	05/29/2014		
Frequency:	2437MHz			Test By:	Eric Ou Yang		
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
3051.000	37.29	-0.06	37.23	74.00	-36.77	peak	H
4633.000	33.30	4.54	37.84	74.00	-36.16	peak	H
6159.000	33.71	8.00	41.71	74.00	-32.29	peak	H
3002.000	37.60	-0.20	37.40	74.00	-36.60	peak	V
4605.000	34.59	4.47	39.06	74.00	-34.94	peak	V
6698.000	34.73	10.03	44.76	74.00	-29.24	peak	V

Standard:	FCC Part 15C			Test Distance:	3m		
Test item:	Radiated Emission			Power:	AC 120V/60Hz		
Model Number:	VT6081			Temp.(°C)/Hum.(%RH):	26(°C)/60%RH		
Mode:	4			Date:	05/29/2014		
Frequency:	2462MHz			Test By:	Eric Ou Yang		
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
3023.000	37.81	-0.14	37.67	74.00	-36.33	peak	H
4633.000	33.62	4.54	38.16	74.00	-35.84	peak	H
6691.000	34.97	10.01	44.98	74.00	-29.02	peak	H
3009.000	36.83	-0.17	36.66	74.00	-37.34	peak	V
4591.000	34.31	4.43	38.74	74.00	-35.26	peak	V
6726.000	34.02	10.10	44.12	74.00	-29.88	peak	V

Standard:	FCC Part 15C			Test Distance:	3m		
Test item:	Radiated Emission			Power:	AC 120V/60Hz		
Model Number:	VT6081			Temp.(°C)/Hum.(%RH):	26(°C)/60%RH		
Mode:	5			Date:	05/29/2014		
Frequency:	2422MHz			Test By:	Eric Ou Yang		
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
3023.000	36.46	-0.14	36.32	74.00	-37.68	peak	H
4563.000	34.13	4.36	38.49	74.00	-35.51	peak	H
6677.000	34.03	9.97	44.00	74.00	-30.00	peak	H
3023.000	37.92	-0.14	37.78	74.00	-36.22	peak	V
4570.000	34.15	4.38	38.53	74.00	-35.47	peak	V
6719.000	33.91	10.09	44.00	74.00	-30.00	peak	V

Standard:	FCC Part 15C		Test Distance:	3m			
Test item:	Radiated Emission		Power:	AC 120V/60Hz			
Model Number:	VT6081		Temp.(°C)/Hum.(%RH):	26(°C)/60%RH			
Mode:	5		Date:	05/29/2014			
Frequency:	2437MHz		Test By:	Eric Ou Yang			
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
3058.000	37.33	-0.04	37.29	74.00	-36.71	peak	H
4605.000	34.06	4.47	38.53	74.00	-35.47	peak	H
6726.000	34.43	10.10	44.53	74.00	-29.47	peak	H
3009.000	37.84	-0.17	37.67	74.00	-36.33	peak	V
4598.000	33.81	4.45	38.26	74.00	-35.74	peak	V
6670.000	33.80	9.95	43.75	74.00	-30.25	peak	V

Standard:	FCC Part 15C		Test Distance:	3m			
Test item:	Radiated Emission		Power:	AC 120V/60Hz			
Model Number:	VT6081		Temp.(°C)/Hum.(%RH):	26(°C)/60%RH			
Mode:	5		Date:	05/29/2014			
Frequency:	2452MHz		Test By:	Eric Ou Yang			
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
2967.000	37.31	-0.29	37.02	74.00	-36.98	peak	H
4591.000	34.89	4.43	39.32	74.00	-34.68	peak	H
6670.000	33.65	9.95	43.60	74.00	-30.40	peak	H
3002.000	36.41	-0.20	36.21	74.00	-37.79	peak	V
4570.000	33.33	4.38	37.71	74.00	-36.29	peak	V
6677.000	33.95	9.97	43.92	74.00	-30.08	peak	V

Standard:	FCC Part 15C			Test Distance:	3m		
Test item:	Radiated Emission			Power:	AC 120V/60Hz		
Model Number:	VT6081			Temp.(°C)/Hum.(%RH):	26(°C)/60%RH		
Mode:	6			Date:	07/18/2013		
Frequency:	2402MHz			Test By:	Eric Ou Yang		
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
3030.000	37.34	-0.11	37.23	74.00	-36.77	peak	H
4577.000	36.02	4.39	40.41	74.00	-33.59	peak	H
6677.000	34.17	9.97	44.14	74.00	-29.86	peak	H
3023.000	37.51	-0.14	37.37	74.00	-36.63	peak	V
4577.000	34.86	4.39	39.25	74.00	-34.75	peak	V
6670.000	33.97	9.95	43.92	74.00	-30.08	peak	V

Standard:	FCC Part 15C			Test Distance:	3m		
Test item:	Radiated Emission			Power:	AC 120V/60Hz		
Model Number:	VT6081			Temp.(°C)/Hum.(%RH):	26(°C)/60%RH		
Mode:	6			Date:	07/18/2013		
Frequency:	2440MHz			Test By:	Eric Ou Yang		
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
3037.000	37.52	-0.10	37.42	74.00	-36.58	peak	H
4591.000	35.17	4.43	39.60	74.00	-34.40	peak	H
6691.000	34.23	10.01	44.24	74.00	-29.76	peak	H
3037.000	38.40	-0.10	38.30	74.00	-35.70	peak	V
4591.000	35.42	4.43	39.85	74.00	-34.15	peak	V
6719.000	33.85	10.09	43.94	74.00	-30.06	peak	V

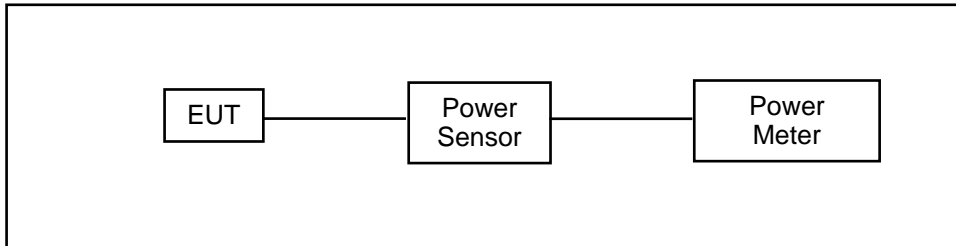
Standard:	FCC Part 15C		Test Distance:	3m			
Test item:	Radiated Emission		Power:	AC 120V/60Hz			
Model Number:	VT6081		Temp.(°C)/Hum.(%RH):	26(°C)/60%RH			
Mode:	6		Date:	07/18/2013			
Frequency:	2480MHz		Test By:	Eric Ou Yang			
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
3023.000	36.55	-0.14	36.41	74.00	-37.59	peak	H
4563.000	35.34	4.36	39.70	74.00	-34.30	peak	H
6733.000	33.84	10.13	43.97	74.00	-30.03	peak	H
3009.000	37.27	-0.17	37.10	74.00	-36.90	peak	V
4577.000	35.24	4.39	39.63	74.00	-34.37	peak	V
6677.000	33.61	9.97	43.58	74.00	-30.42	peak	V

6 Maximum Conducted Output Power Measurement

6.1. Limit

For systems using digital modulation in the 2400-2483.5MHz, the limit for peak output power is 30dBm.

6.2. Test Setup



6.3. Test Instruments

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
Single Channel PK Power Sensor	Agilent	N1911A	MY45101619	12/21/2013	(1)
Wideband Power Meter	Agilent	N1921A	MY45241957	12/21/2013	(1)
Test Site	ATL	TE05	TE05	N.C.R.	-----

Remark: (1) Calibration period 1 year. (2) Calibration period 2 years. (3) Calibration period 3 years.

Note: N.C.R. = No Calibration Request.

6.4. Test Procedure

The tests below are run with the EUT's transmitter set at high power in TX mode. The EUT is needed to force selection of output power level and channel number. While testing, EUT was set to transmit continuously. Remove the Subjective device's antenna and connect the RF output port to power sensor. The maximum peak output power shall not exceed 1 watt.

Use a direct connection between the antenna port of transmitter and the power sensor, for prevent the power sensor input attenuation 40-50 dB. Set the RBW Bandwidth of the emission or use a channel power meter mode.

For antennas with gains of 6 dBi or less, maximum allowed transmitter output is 1 watt (+30 dBm). For antennas with gains greater than 6 dBi, transmitter output level must be decreased by an amount equal to $(\text{GAIN} - 6)/3$ dBm.

The antenna port of the EUT was connected to the input of a power sensor. Power was read directly and cable loss correction was added to the reading to obtain power at the EUT antenna terminals.

6.5. Test Result

Model Number	VT6081					
Test Item	Maximum Conducted Output Power					
Test Mode	Mode 2: IEEE 802.11b Link Mode					
Date of Test	05/29/2014			Test Site	TE05	
Frequency (MHz)	Data Rate	Average Power		Peak Power		Limit (dBm)
		(dBm)	(W)	(dBm)	(W)	
2412	1M	13.45	0.022	15.78	0.038	< 30
2437		13.14	0.021	15.50	0.035	< 30
2462		12.70	0.019	15.03	0.032	< 30
2437	2M	13.09	0.020	15.42	0.035	< 30
2437	5.5M	13.04	0.020	15.39	0.035	< 30
2437	11M	12.98	0.020	15.23	0.033	< 30

Model Number	VT6081					
Test Item	Maximum Conducted Output Power					
Test Mode	Mode 3: IEEE 802.11g Link Mode					
Date of Test	05/29/2014			Test Site	TE05	
Frequency (MHz)	Data Rate	Average Power		Peak Power		Limit (dBm)
		(dBm)	(W)	(dBm)	(W)	
2412	6M	12.84	0.019	20.85	0.122	< 30
2437		12.54	0.018	20.52	0.113	< 30
2462		12.13	0.016	20.22	0.105	< 30
2437	9M	12.48	0.018	20.46	0.111	< 30
2437	12M	12.41	0.017	20.41	0.110	< 30
2437	18M	12.32	0.017	20.35	0.108	< 30
2437	24M	12.24	0.017	20.27	0.106	< 30
2437	36M	12.16	0.016	20.18	0.104	< 30
2437	48M	12.11	0.016	20.07	0.102	< 30
2437	54M	12.05	0.016	19.93	0.098	< 30

Model Number	VT6081					
Test Item	Maximum Conducted Output Power					
Test Mode	Mode 4: IEEE 802.11n 2.4GHz 20MHz Link Mode					
Date of Test	05/29/2014			Test Site	TE05	
Frequency (MHz)	Data Rate	Average Power		Peak Power		Limit (dBm)
		(dBm)	(W)	(dBm)	(W)	
2412	6.5M	11.67	0.015	19.63	0.092	< 30
2437		11.40	0.014	19.38	0.087	< 30
2462		10.84	0.012	18.94	0.078	< 30
2437	13M	11.33	0.014	19.31	0.085	< 30
2437	19.5M	11.28	0.013	19.23	0.084	< 30
2437	26M	11.23	0.013	19.19	0.083	< 30
2437	39M	11.17	0.013	19.11	0.081	< 30
2437	52M	11.12	0.013	19.03	0.080	< 30
2437	58.5M	11.04	0.013	18.95	0.079	< 30
2437	65M	10.98	0.013	18.89	0.077	< 30

Model Number	VT6081					
Test Item	Maximum Conducted Output Power					
Test Mode	Mode 5: IEEE 802.11n 2.4GHz 40MHz Link Mode					
Date of Test	05/29/2014			Test Site	TE05	
Frequency (MHz)	Data Rate	Average Power		Peak Power		Limit (dBm)
		(dBm)	(W)	(dBm)	(W)	
2422	13.5M	10.09	0.010	18.95	0.079	< 30
2437		9.84	0.010	18.74	0.075	< 30
2452		9.77	0.009	18.56	0.072	< 30
2437	27M	9.79	0.010	18.66	0.073	< 30
2437	40.5M	9.72	0.009	18.61	0.073	< 30
2437	54M	9.67	0.009	18.55	0.072	< 30
2437	81M	9.61	0.009	18.51	0.071	< 30
2437	108M	9.57	0.009	18.44	0.070	< 30
2437	121.5M	9.47	0.009	18.35	0.068	< 30
2437	135M	9.42	0.009	18.29	0.067	< 30

Model Number	VT6081					
Test Item	Maximum Conducted Output Power					
Test Mode	Mode 6: Bluetooth v4.0 LE Link Mode					
Date of Test	05/29/2014			Test Site	TE05	
Frequency (MHz)	Data Rate	Average Power		Peak Power		Limit (dBm)
		(dBm)	(W)	(dBm)	(W)	
2402	---	8.99	0.008	9.87	0.010	< 30
2440	---	8.53	0.007	9.47	0.009	< 30
2480	---	9.41	0.009	9.97	0.010	< 30

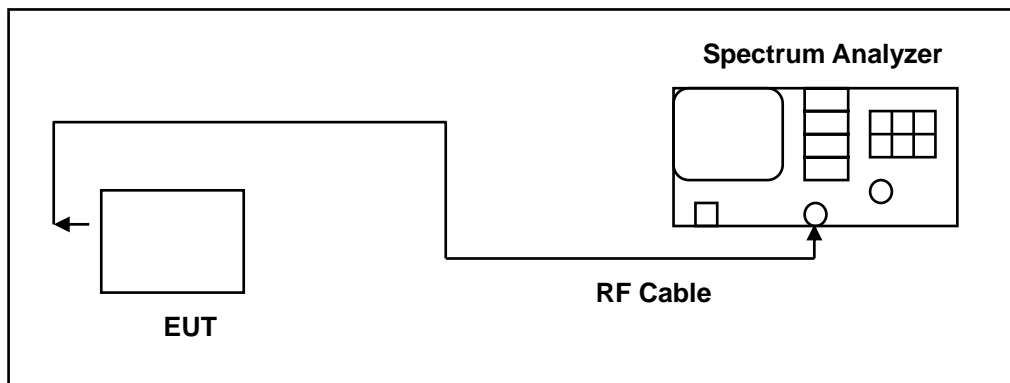
7 6dB RF Bandwidth and 99 % Occupied Bandwidth Measurement

7.1. Limit

6dB RF Bandwidth: Systems using digital modulation techniques may operate in the 2400–2483.5 MHz bands. The minimum 6 dB band-width shall be at least 500 kHz.

99 % Occupied Bandwidth: N/A

7.2. Test Setup



7.3. Test Instruments

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
Spectrum Analyzer	Agilent	E4445A	MY45300744	12/19/2012	(2)
Test Site	ATL	TE05	TE05	N.C.R.	-----

dRemark: (1) Calibration period 1 year. (2) Calibration period 2 years. (3) Calibration period 3 years.

Note: N.C.R. = No Calibration Request.

7.4. Test Procedure

The EUT was setup to ANSI C63.4, 2009; tested to DTS test procedure of KDB558074D01 for compliance to FCC 47CFR 15.247 requirements.

6dB RF Bandwidth: The antenna port of the EUT was connected to the input of a spectrum analyzer. Analyzer RES BW was set to 100 kHz. For each RF output channel investigated, the spectrum analyzer center frequency was set to the channel carrier. A peak output reading was taken, a DISPLAY line was drawn 6 dB lower than peak level. The 6 dB bandwidth was determined from where the channel output spectrum intersected the display line.

The test was performed at 3 channels (Channel low, middle, high)

99 % Occupied Bandwidth: The transmitter shall be operated at its maximum carrier power measured under normal test conditions.

The video bandwidth shall be set to 3 times the resolution bandwidth. Video averaging is not permitted. Where practical, a sampling detector shall be used since a peak or, peak hold, may produce a wider bandwidth than actual.

The trace data points are recovered and are directly summed in linear terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached and that frequency recorded. The process is repeated for the highest frequency data points. This frequency is recorded.

7.5. Test Result

Model Number	VT6081		
Test Item	6dB RF Bandwidth and 99 % Occupied Bandwidth		
Test Mode	Mode 2: IEEE 802.11b Link Mode		
Date of Test	05/29/2014	Test Site	TE05
Frequency (MHz)	6dB RF Bandwidth (MHz)	99 % Occupied Bandwidth (MHz)	6dB RF Bandwidth Limit (MHz)
2412	10.118	14.7426	> 0.500
2437	10.083	14.7384	> 0.500
2462	10.117	14.7922	> 0.500

Model Number	VT6081		
Test Item	6dB RF Bandwidth and 99 % Occupied Bandwidth		
Test Mode	Mode 3: IEEE 802.11g Link Mode		
Date of Test	05/29/2014	Test Site	TE05
Frequency (MHz)	6dB RF Bandwidth (MHz)	99 % Occupied Bandwidth (MHz)	6dB RF Bandwidth Limit (MHz)
2412	16.607	16.4788	> 0.500
2437	16.570	16.4590	> 0.500
2462	16.577	16.4735	> 0.500

Model Number	VT6081		
Test Item	6dB RF Bandwidth and 99 % Occupied Bandwidth		
Test Mode	Mode 4: IEEE 802.11n 2.4GHz 20MHz Link Mode		
Date of Test	05/29/2014	Test Site	TE05
Frequency (MHz)	6dB RF Bandwidth (MHz)	99 % Occupied Bandwidth (MHz)	6dB RF Bandwidth Limit (MHz)
2412	17.817	17.6646	> 0.500
2437	17.786	17.6577	> 0.500
2462	17.796	17.6708	> 0.500

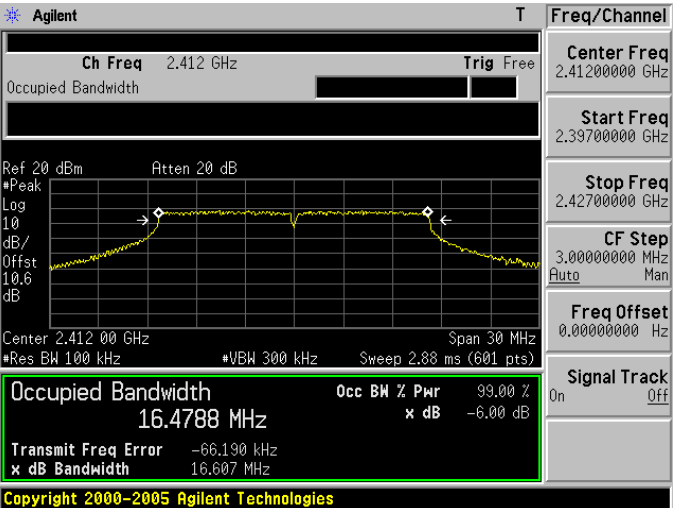
Model Number	VT6081		
Test Item	6dB RF Bandwidth and 99 % Occupied Bandwidth		
Test Mode	Mode 5: IEEE 802.11n 2.4GHz 40MHz Link Mode		
Date of Test	05/29/2014	Test Site	TE05
Frequency (MHz)	6dB RF Bandwidth (MHz)	99 % Occupied Bandwidth (MHz)	6dB RF Bandwidth Limit (MHz)
2422	36.485	35.9657	> 0.500
2437	36.491	35.9542	> 0.500
2452	36.463	35.9622	> 0.500

Model Number	VT6081		
Test Item	6dB RF Bandwidth & 99 % Occupied Bandwidth		
Test Mode	Mode 6: Bluetooth v4.0 LE Link Mode		
Date of Test	05/29/2014	Test Site	TE05
Frequency (MHz)	6dB Bandwidth (kHz)	99% Occupied Bandwidth (MHz)	Limit (kHz)
2402	638.596	1.0613	> 500
2440	639.575	1.0615	> 500
2480	636.312	1.0602	> 500

7.6. Test Graphs

Mode 2: IEEE 802.11b Link Mode	
2412	<p>Agilent T</p> <p>Ch Freq 2.412 GHz Trig Free</p> <p>Center Freq 2.41200000 GHz</p> <p>Start Freq 2.39700000 GHz</p> <p>Stop Freq 2.42700000 GHz</p> <p>CF Step 3.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Ref 20 dBm Atten 20 dB</p> <p>#Peak Log 10 dB/Offst 10.6 dB</p> <p>Center 2.412 00 GHz Span 30 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 2.88 ms (601 pts)</p> <p>Occupied Bandwidth 14.7426 MHz</p> <p>Occ BW % Pwr 99.00 % x dB -6.00 dB</p> <p>Transmit Freq Error -121.276 kHz</p> <p>x dB Bandwidth 10.118 MHz</p> <p>Copyright 2000-2005 Agilent Technologies</p>
2437	<p>Agilent T</p> <p>Ch Freq 2.437 GHz Trig Free</p> <p>Center Freq 2.43700000 GHz</p> <p>Start Freq 2.42200000 GHz</p> <p>Stop Freq 2.45200000 GHz</p> <p>CF Step 3.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Ref 20 dBm Atten 20 dB</p> <p>#Peak Log 10 dB/Offst 10.6 dB</p> <p>Center 2.437 00 GHz Span 30 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 2.88 ms (601 pts)</p> <p>Occupied Bandwidth 14.7384 MHz</p> <p>Occ BW % Pwr 99.00 % x dB -6.00 dB</p> <p>Transmit Freq Error -137.197 kHz</p> <p>x dB Bandwidth 10.083 MHz</p> <p>Copyright 2000-2005 Agilent Technologies</p>
2462	<p>Agilent T</p> <p>Ch Freq 2.462 GHz Trig Free</p> <p>Center Freq 2.46200000 GHz</p> <p>Start Freq 2.44700000 GHz</p> <p>Stop Freq 2.47700000 GHz</p> <p>CF Step 3.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Ref 20 dBm Atten 20 dB</p> <p>#Peak Log 10 dB/Offst 10.6 dB</p> <p>Center 2.462 00 GHz Span 30 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 2.88 ms (601 pts)</p> <p>Occupied Bandwidth 14.7922 MHz</p> <p>Occ BW % Pwr 99.00 % x dB -6.00 dB</p> <p>Transmit Freq Error -135.518 kHz</p> <p>x dB Bandwidth 10.117 MHz</p> <p>Copyright 2000-2005 Agilent Technologies</p>

Mode 3: IEEE 802.11g Link Mode

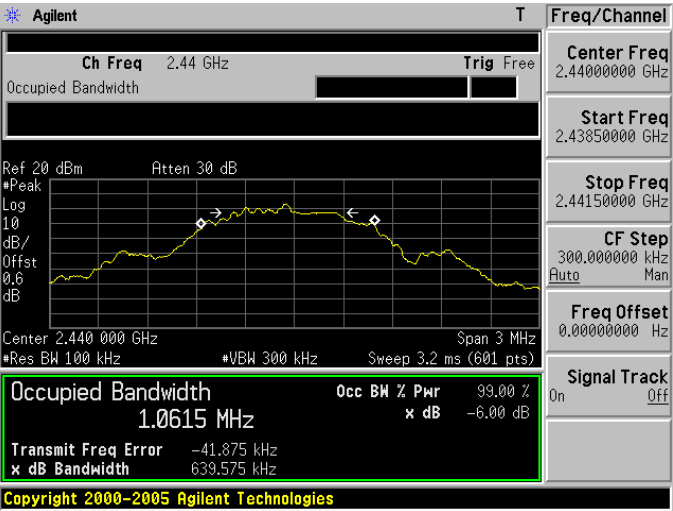
2412	 <p>Agilent T</p> <p>Ch Freq 2.412 GHz Trig Free</p> <p>Center Freq 2.41200000 GHz</p> <p>Start Freq 2.39700000 GHz</p> <p>Stop Freq 2.42700000 GHz</p> <p>CF Step 3.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Occupied Bandwidth 16.4788 MHz</p> <p>Transmit Freq Error -66.190 kHz</p> <p>x dB Bandwidth 16.607 MHz</p> <p>Copyright 2000-2005 Agilent Technologies</p>
2437	 <p>Agilent T</p> <p>Ch Freq 2.437 GHz Trig Free</p> <p>Center Freq 2.43700000 GHz</p> <p>Start Freq 2.42200000 GHz</p> <p>Stop Freq 2.45200000 GHz</p> <p>CF Step 3.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Occupied Bandwidth 16.4590 MHz</p> <p>Transmit Freq Error -66.128 kHz</p> <p>x dB Bandwidth 16.570 MHz</p> <p>Copyright 2000-2005 Agilent Technologies</p>
2462	 <p>Agilent T</p> <p>Ch Freq 2.462 GHz Trig Free</p> <p>Center Freq 2.46200000 GHz</p> <p>Start Freq 2.44700000 GHz</p> <p>Stop Freq 2.47700000 GHz</p> <p>CF Step 3.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Occupied Bandwidth 16.4735 MHz</p> <p>Transmit Freq Error -74.815 kHz</p> <p>x dB Bandwidth 16.577 MHz</p> <p>Copyright 2000-2005 Agilent Technologies</p>

Mode 4: IEEE 802.11n 2.4GHz 20MHz Link Mode

2412	<p>Agilent T</p> <p>Ch Freq 2.412 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Ref 20 dBm Atten 20 dB</p> <p>#Peak Log 10 dB/Offst 10.6 dB</p> <p>Center 2.412 00 GHz Span 30 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 2.88 ms (601 pts)</p> <p>Occupied Bandwidth 17.6646 MHz</p> <p>Occ BW % PWR 99.00 % x dB -6.00 dB</p> <p>Transmit Freq Error -48.667 kHz</p> <p>x dB Bandwidth 17.817 MHz</p> <p>Copyright 2000-2005 Agilent Technologies</p> <p>Freq/Channel</p> <p>Center Freq 2.41200000 GHz</p> <p>Start Freq 2.39700000 GHz</p> <p>Stop Freq 2.42700000 GHz</p> <p>CF Step 3.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p>
2437	<p>Agilent T</p> <p>Ch Freq 2.437 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Ref 20 dBm Atten 20 dB</p> <p>#Peak Log 10 dB/Offst 10.6 dB</p> <p>Center 2.437 00 GHz Span 30 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 2.88 ms (601 pts)</p> <p>Occupied Bandwidth 17.6577 MHz</p> <p>Occ BW % PWR 99.00 % x dB -6.00 dB</p> <p>Transmit Freq Error -53.966 kHz</p> <p>x dB Bandwidth 17.786 MHz</p> <p>Copyright 2000-2005 Agilent Technologies</p> <p>Freq/Channel</p> <p>Center Freq 2.43700000 GHz</p> <p>Start Freq 2.42200000 GHz</p> <p>Stop Freq 2.45200000 GHz</p> <p>CF Step 3.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p>
2462	<p>Agilent T</p> <p>Ch Freq 2.462 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Ref 20 dBm Atten 20 dB</p> <p>#Peak Log 10 dB/Offst 10.6 dB</p> <p>Center 2.462 00 GHz Span 30 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 2.88 ms (601 pts)</p> <p>Occupied Bandwidth 17.6708 MHz</p> <p>Occ BW % PWR 99.00 % x dB -6.00 dB</p> <p>Transmit Freq Error -56.791 kHz</p> <p>x dB Bandwidth 17.796 MHz</p> <p>Copyright 2000-2005 Agilent Technologies</p> <p>Freq/Channel</p> <p>Center Freq 2.46200000 GHz</p> <p>Start Freq 2.44700000 GHz</p> <p>Stop Freq 2.47700000 GHz</p> <p>CF Step 3.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p>

Mode 5: IEEE 802.11n 2.4GHz 40MHz Link Mode

2422	<p>Agilent T</p> <p>Ch Freq 2.422 GHz Trig Free</p> <p>Center Freq 2.42200000 GHz</p> <p>Start Freq 2.39200000 GHz</p> <p>Stop Freq 2.45200000 GHz</p> <p>CF Step 6.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Occupied Bandwidth 35.9657 MHz Occ BW % Pwr 99.00 % x dB -6.00 dB</p> <p>Transmit Freq Error -53.339 kHz</p> <p>x dB Bandwidth 36.485 MHz</p> <p>Copyright 2000-2005 Agilent Technologies</p>
2437	<p>Agilent T</p> <p>Ch Freq 2.437 GHz Trig Free</p> <p>Center Freq 2.43700000 GHz</p> <p>Start Freq 2.40700000 GHz</p> <p>Stop Freq 2.46700000 GHz</p> <p>CF Step 6.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Occupied Bandwidth 35.9542 MHz Occ BW % Pwr 99.00 % x dB -6.00 dB</p> <p>Transmit Freq Error -64.831 kHz</p> <p>x dB Bandwidth 36.491 MHz</p> <p>Copyright 2000-2005 Agilent Technologies</p>
2452	<p>Agilent T</p> <p>Ch Freq 2.452 GHz Trig Free</p> <p>Center Freq 2.45200000 GHz</p> <p>Start Freq 2.42200000 GHz</p> <p>Stop Freq 2.48200000 GHz</p> <p>CF Step 6.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Occupied Bandwidth 35.9622 MHz Occ BW % Pwr 99.00 % x dB -6.00 dB</p> <p>Transmit Freq Error -68.403 kHz</p> <p>x dB Bandwidth 36.463 MHz</p> <p>Copyright 2000-2005 Agilent Technologies</p>

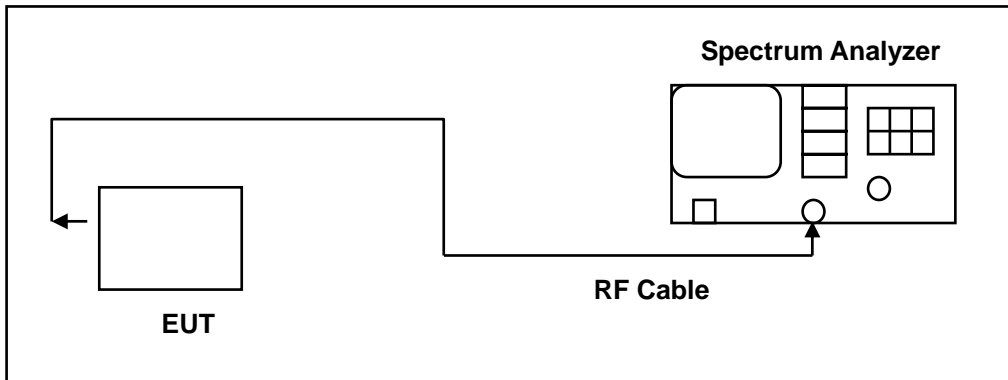
Mode 6: Bluetooth v4.0 LE Link Mode	
2402	 <p>Agilent R T</p> <p>Ch Freq 2.402 GHz Trig Free</p> <p>Center Freq 2.40200000 GHz</p> <p>Start Freq 2.40050000 GHz</p> <p>Stop Freq 2.40350000 GHz</p> <p>CF Step 300.000000 kHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Occupied Bandwidth 1.0613 MHz</p> <p>Occ BW % Pwr 99.00 %</p> <p>x dB -6.00 dB</p> <p>Transmit Freq Error -34.307 kHz</p> <p>x dB Bandwidth 638.596 kHz</p> <p>Copyright 2000-2005 Agilent Technologies</p>
2440	 <p>Agilent T</p> <p>Ch Freq 2.44 GHz Trig Free</p> <p>Center Freq 2.44000000 GHz</p> <p>Start Freq 2.43850000 GHz</p> <p>Stop Freq 2.44150000 GHz</p> <p>CF Step 300.000000 kHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Occupied Bandwidth 1.0615 MHz</p> <p>Occ BW % Pwr 99.00 %</p> <p>x dB -6.00 dB</p> <p>Transmit Freq Error -41.875 kHz</p> <p>x dB Bandwidth 639.575 kHz</p> <p>Copyright 2000-2005 Agilent Technologies</p>
2480	 <p>Agilent T</p> <p>Ch Freq 2.48 GHz Trig Free</p> <p>Center Freq 2.48000000 GHz</p> <p>Start Freq 2.47850000 GHz</p> <p>Stop Freq 2.48150000 GHz</p> <p>CF Step 300.000000 kHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Occupied Bandwidth 1.0602 MHz</p> <p>Occ BW % Pwr 99.00 %</p> <p>x dB -6.00 dB</p> <p>Transmit Freq Error -48.979 kHz</p> <p>x dB Bandwidth 636.312 kHz</p> <p>Copyright 2000-2005 Agilent Technologies</p>

8 Maximum Power Density Measurement

8.1. Limit

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

8.2. Test Setup



8.3. Test Instruments

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
Spectrum Analyzer	Agilent	E4445A	MY45300744	12/19/2012	(2)
Test Site	ATL	TE05	TE05	N.C.R.	-----

Remark: (1) Calibration period 1 year. (2) Calibration period 2 years. (3) Calibration period 3 years.

Note: N.C.R. = No Calibration Request.

8.4. Test Procedure

The EUT was setup to ANSI C63.4, 2009; tested to DTS test procedure of KDB558074D01 for compliance to FCC 47CFR 15.247 requirements.

1. Set analyzer center frequency to DTS channel center frequency.
2. Set the span to 1.5 times the DTS bandwidth.
3. Set the RBW to: $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$.
4. Set the VBW $\geq 3 \times \text{RBW}$.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum amplitude level within the RBW.
10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

8.5. Test Result

Model Number	VT6081		
Test Item	Maximum Power Density		
Test Mode	Mode 2: IEEE 802.11b Link Mode		
Date of Test	05/29/2014	Test Site	TE05
Frequency (MHz)	Reading (dBm/3KHz)		Limit (dBm)
2412	-11.71		< 8
2437	-12.06		< 8
2462	-12.73		< 8

Model Number	VT6081		
Test Item	Maximum Power Density		
Test Mode	Mode 3: IEEE 802.11g Link Mode		
Date of Test	05/29/2014	Test Site	TE05
Frequency (MHz)	Reading (dBm/3KHz)		Limit (dBm)
2412	-15.98		< 8
2437	-16.47		< 8
2462	-16.98		< 8

Model Number	VT6081		
Test Item	Maximum Power Density		
Test Mode	Mode 4: IEEE 802.11n 2.4GHz 20MHz Link Mode		
Date of Test	05/29/2014	Test Site	TE05
Frequency (MHz)	Reading (dBm/3KHz)		Limit (dBm)
2412	-17.07		< 8
2437	-17.84		< 8
2462	-18.15		< 8

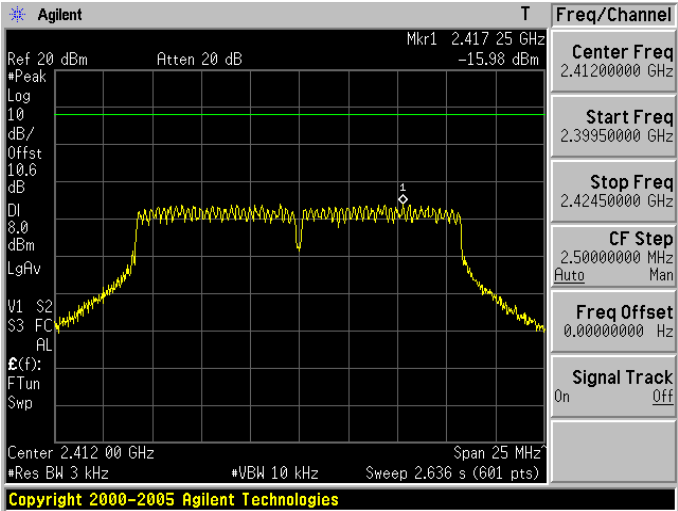
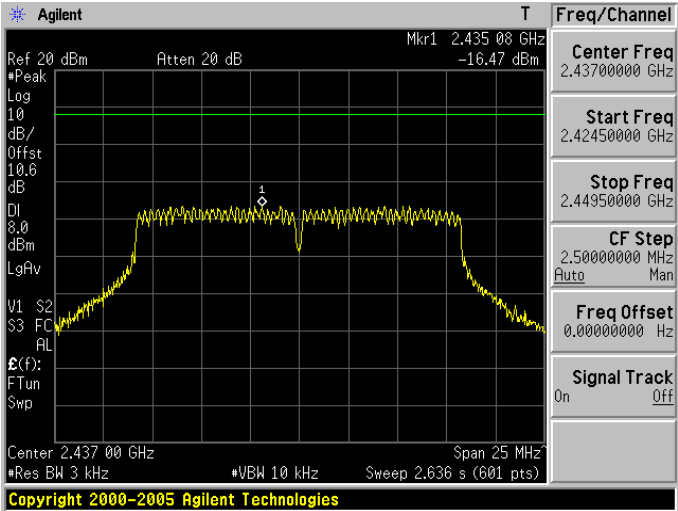
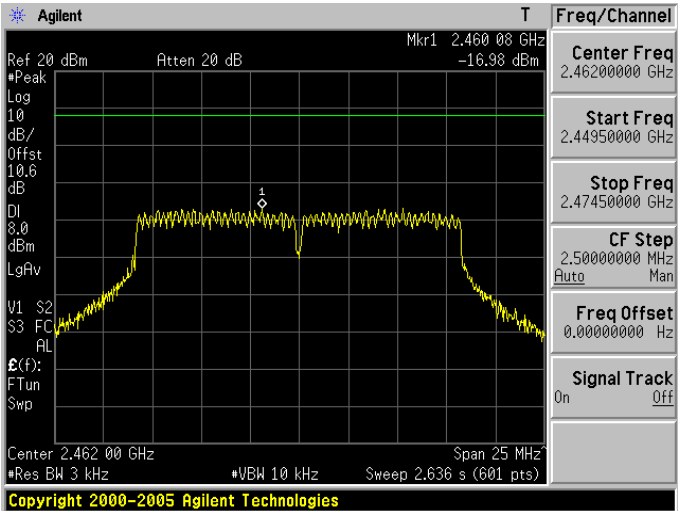
Model Number	VT6081		
Test Item	Maximum Power Density		
Test Mode	Mode 5: IEEE 802.11n 2.4GHz 40MHz Link Mode		
Date of Test	05/29/2014	Test Site	TE05
Frequency (MHz)	Reading (dBm/3KHz)		Limit (dBm)
2422	-21.37		< 8
2437	-19.55		< 8
2452	-20.65		< 8

Model Number	VT6081		
Test Item	Maximum Power Density		
Test Mode	Mode 6: Bluetooth v4.0 LE Link Mode		
Date of Test	05/29/2014	Test Site	TE05
Frequency (MHz)	Reading (dBm/3KHz)		Limit (dBm)
2402	-10.84		< 8
2440	-8.73		< 8
2480	-8.34		< 8

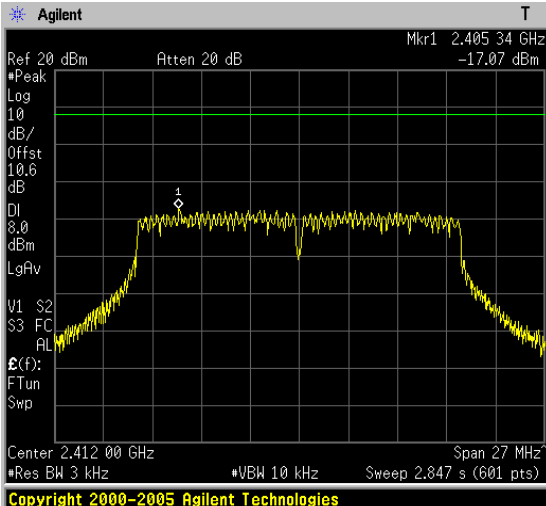
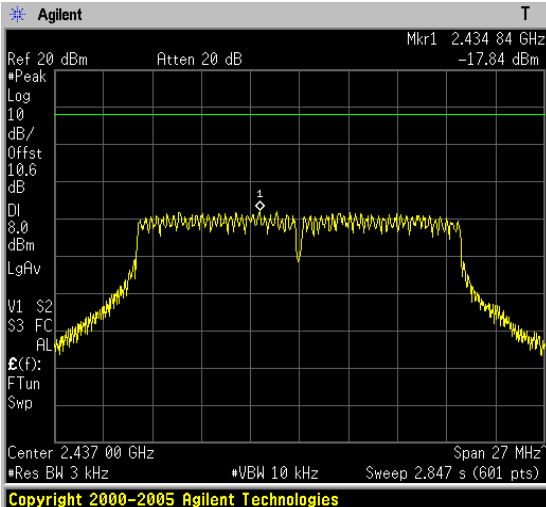
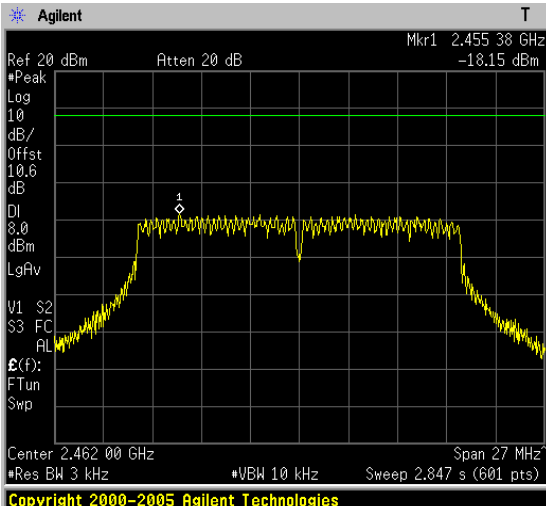
8.6. Test Graphs

Mode 2: IEEE 802.11b Link Mode	
2412	<p>Agilent T Freq/Channel</p> <p>Ref 20 dBm Atten 20 dB Mkr1 2.411 25 GHz #Peak -11.71 dBm Log 10 dB/ Offst 10.6 dB DI 8.0 dBm LgAv</p> <p>V1 S2 S3 FC AL E(f): FTun Swp</p> <p>Center 2.412 00 GHz Span 16 MHz #Res BW 3 kHz #VBW 10 kHz Sweep 1.687 s (601 pts)</p> <p>Copyright 2000-2005 Agilent Technologies</p> <p>Center Freq 2.41200000 GHz Start Freq 2.40400000 GHz Stop Freq 2.42000000 GHz CF Step 1.60000000 MHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off</p>
2437	<p>Agilent T Freq/Channel</p> <p>Ref 20 dBm Atten 20 dB Mkr1 2.437 69 GHz #Peak -12.06 dBm Log 10 dB/ Offst 10.6 dB DI 8.0 dBm LgAv</p> <p>V1 S2 S3 FC AL E(f): FTun Swp</p> <p>Center 2.437 00 GHz Span 16 MHz #Res BW 3 kHz #VBW 10 kHz Sweep 1.687 s (601 pts)</p> <p>Copyright 2000-2005 Agilent Technologies</p> <p>Center Freq 2.43700000 GHz Start Freq 2.42900000 GHz Stop Freq 2.44500000 GHz CF Step 1.60000000 MHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off</p>
2462	<p>Agilent T Freq/Channel</p> <p>Ref 20 dBm Atten 20 dB Mkr1 2.462 75 GHz #Peak -12.73 dBm Log 10 dB/ Offst 10.6 dB DI 8.0 dBm LgAv</p> <p>V1 S2 S3 FC AL E(f): FTun Swp</p> <p>Center 2.462 00 GHz Span 16 MHz #Res BW 3 kHz #VBW 10 kHz Sweep 1.687 s (601 pts)</p> <p>Copyright 2000-2005 Agilent Technologies</p> <p>Center Freq 2.46200000 GHz Start Freq 2.45400000 GHz Stop Freq 2.47000000 GHz CF Step 1.60000000 MHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off</p>

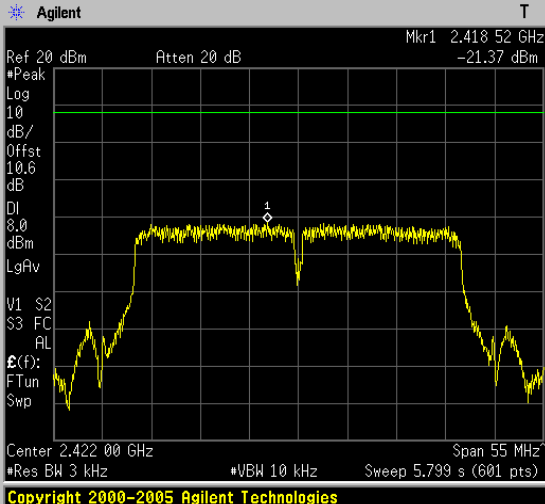
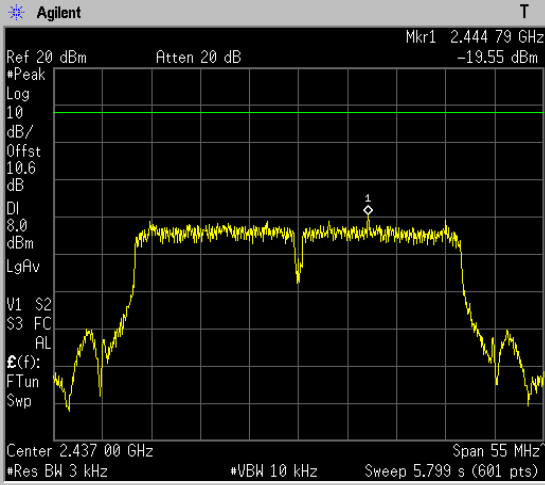
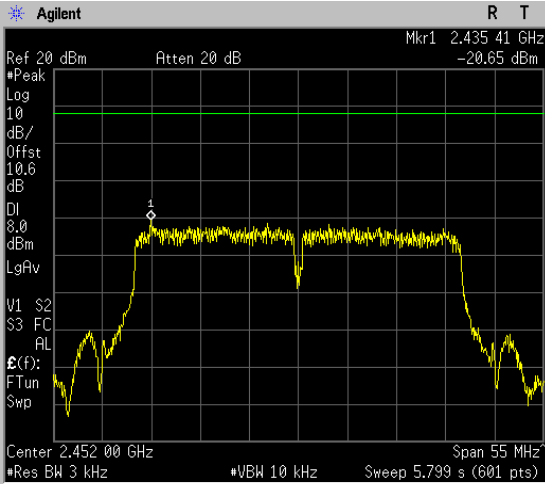
Mode 3: IEEE 802.11g Link Mode

2412	 <p>Agilent T Freq/Channel</p> <p>Ref 20 dBm Atten 20 dB Mkr1 2.417 25 GHz #Peak -15.98 dBm Log 10 dB/ Offst 10.6 dB DI 8.0 dBm LgAv</p> <p>V1 S2 S3 FC AL</p> <p>E(f): FTun Swp</p> <p>Center 2.412 00 GHz Span 25 MHz #Res BW 3 kHz #VBW 10 kHz Sweep 2.636 s (601 pts)</p> <p>Copyright 2000-2005 Agilent Technologies</p> <p>Center Freq 2.41200000 GHz Start Freq 2.39950000 GHz Stop Freq 2.42450000 GHz CF Step 2.50000000 MHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off</p>
2437	 <p>Agilent T Freq/Channel</p> <p>Ref 20 dBm Atten 20 dB Mkr1 2.435 08 GHz #Peak -16.47 dBm Log 10 dB/ Offst 10.6 dB DI 8.0 dBm LgAv</p> <p>V1 S2 S3 FC AL</p> <p>E(f): FTun Swp</p> <p>Center 2.437 00 GHz Span 25 MHz #Res BW 3 kHz #VBW 10 kHz Sweep 2.636 s (601 pts)</p> <p>Copyright 2000-2005 Agilent Technologies</p> <p>Center Freq 2.43700000 GHz Start Freq 2.42450000 GHz Stop Freq 2.44950000 GHz CF Step 2.50000000 MHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off</p>
2462	 <p>Agilent T Freq/Channel</p> <p>Ref 20 dBm Atten 20 dB Mkr1 2.460 08 GHz #Peak -16.98 dBm Log 10 dB/ Offst 10.6 dB DI 8.0 dBm LgAv</p> <p>V1 S2 S3 FC AL</p> <p>E(f): FTun Swp</p> <p>Center 2.462 00 GHz Span 25 MHz #Res BW 3 kHz #VBW 10 kHz Sweep 2.636 s (601 pts)</p> <p>Copyright 2000-2005 Agilent Technologies</p> <p>Center Freq 2.46200000 GHz Start Freq 2.44950000 GHz Stop Freq 2.47450000 GHz CF Step 2.50000000 MHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off</p>

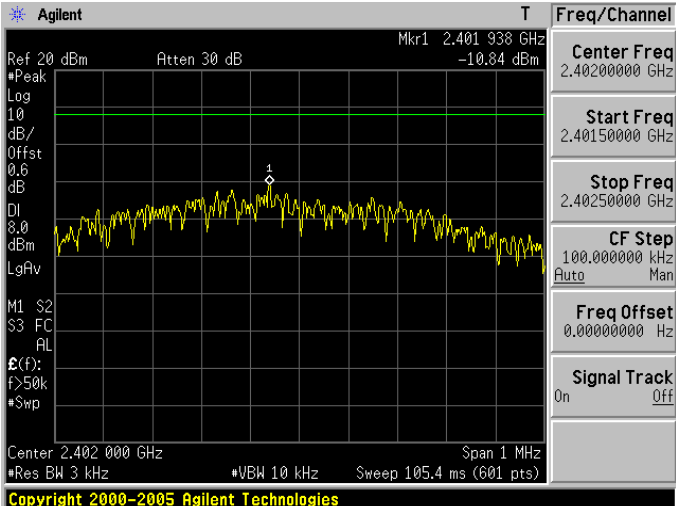
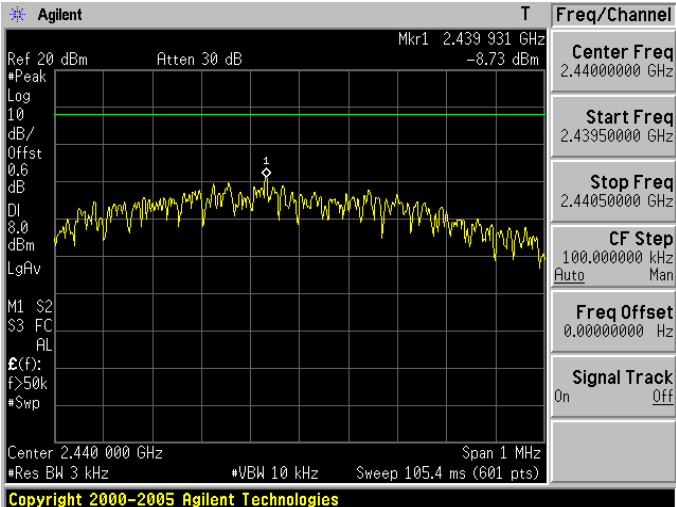
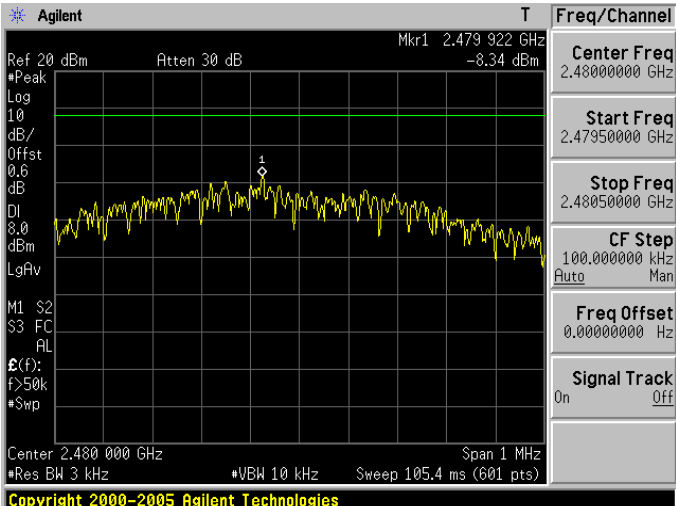
Mode 4: IEEE 802.11n 2.4GHz 20MHz Link Mode

<p>2412</p>	 <p>Agilent T</p> <p>Ref 20 dBm Atten 20 dB Mkr1 2.405 34 GHz -17.07 dBm</p> <p>Center 2.412 00 GHz Span 27 MHz</p> <p>Res BW 3 kHz VBW 10 kHz Sweep 2.847 s (601 pts)</p> <p>Copyright 2000-2005 Agilent Technologies</p> <table border="1" data-bbox="1197 387 1324 891"> <thead> <tr> <th colspan="2">Freq/Channel</th> </tr> </thead> <tbody> <tr> <td>Center Freq</td> <td>2.41200000 GHz</td> </tr> <tr> <td>Start Freq</td> <td>2.39850000 GHz</td> </tr> <tr> <td>Stop Freq</td> <td>2.42550000 GHz</td> </tr> <tr> <td>CF Step</td> <td>2.70000000 MHz</td> </tr> <tr> <td>Freq Offset</td> <td>0.00000000 Hz</td> </tr> <tr> <td>Signal Track</td> <td>On Off</td> </tr> </tbody> </table>	Freq/Channel		Center Freq	2.41200000 GHz	Start Freq	2.39850000 GHz	Stop Freq	2.42550000 GHz	CF Step	2.70000000 MHz	Freq Offset	0.00000000 Hz	Signal Track	On Off
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Center Freq	2.41200000 GHz														
Start Freq	2.39850000 GHz														
Stop Freq	2.42550000 GHz														
CF Step	2.70000000 MHz														
Freq Offset	0.00000000 Hz														
Signal Track	On Off														
<p>2437</p>	 <p>Agilent T</p> <p>Ref 20 dBm Atten 20 dB Mkr1 2.434 84 GHz -17.84 dBm</p> <p>Center 2.437 00 GHz Span 27 MHz</p> <p>Res BW 3 kHz VBW 10 kHz Sweep 2.847 s (601 pts)</p> <p>Copyright 2000-2005 Agilent Technologies</p> <table border="1" data-bbox="1197 916 1324 1420"> <thead> <tr> <th colspan="2">Freq/Channel</th> </tr> </thead> <tbody> <tr> <td>Center Freq</td> <td>2.43700000 GHz</td> </tr> <tr> <td>Start Freq</td> <td>2.42350000 GHz</td> </tr> <tr> <td>Stop Freq</td> <td>2.45050000 GHz</td> </tr> <tr> <td>CF Step</td> <td>2.70000000 MHz</td> </tr> <tr> <td>Freq Offset</td> <td>0.00000000 Hz</td> </tr> <tr> <td>Signal Track</td> <td>On Off</td> </tr> </tbody> </table>	Freq/Channel		Center Freq	2.43700000 GHz	Start Freq	2.42350000 GHz	Stop Freq	2.45050000 GHz	CF Step	2.70000000 MHz	Freq Offset	0.00000000 Hz	Signal Track	On Off
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Start Freq	2.42350000 GHz														
Stop Freq	2.45050000 GHz														
CF Step	2.70000000 MHz														
Freq Offset	0.00000000 Hz														
Signal Track	On Off														
<p>2462</p>	 <p>Agilent T</p> <p>Ref 20 dBm Atten 20 dB Mkr1 2.455 38 GHz -18.15 dBm</p> <p>Center 2.462 00 GHz Span 27 MHz</p> <p>Res BW 3 kHz VBW 10 kHz Sweep 2.847 s (601 pts)</p> <p>Copyright 2000-2005 Agilent Technologies</p> <table border="1" data-bbox="1197 1442 1324 1946"> <thead> <tr> <th colspan="2">Freq/Channel</th> </tr> </thead> <tbody> <tr> <td>Center Freq</td> <td>2.46200000 GHz</td> </tr> <tr> <td>Start Freq</td> <td>2.44850000 GHz</td> </tr> <tr> <td>Stop Freq</td> <td>2.47550000 GHz</td> </tr> <tr> <td>CF Step</td> <td>2.70000000 MHz</td> </tr> <tr> <td>Freq Offset</td> <td>0.00000000 Hz</td> </tr> <tr> <td>Signal Track</td> <td>On Off</td> </tr> </tbody> </table>	Freq/Channel		Center Freq	2.46200000 GHz	Start Freq	2.44850000 GHz	Stop Freq	2.47550000 GHz	CF Step	2.70000000 MHz	Freq Offset	0.00000000 Hz	Signal Track	On Off
Freq/Channel															
Center Freq	2.46200000 GHz														
Start Freq	2.44850000 GHz														
Stop Freq	2.47550000 GHz														
CF Step	2.70000000 MHz														
Freq Offset	0.00000000 Hz														
Signal Track	On Off														

Mode 5: IEEE 802.11n 2.4GHz 40MHz Link Mode

<p>2422</p>	 <p>Agilent T</p> <p>Ref 20 dBm Atten 20 dB Mkr1 2.418 52 GHz -21.37 dBm</p> <p>Center 2.422 00 GHz Span 55 MHz</p> <p>Res BW 3 kHz VBW 10 kHz Sweep 5.799 s (601 pts)</p> <p>Copyright 2000-2005 Agilent Technologies</p> <table border="1" data-bbox="1198 389 1326 891"> <thead> <tr> <th colspan="2">Freq/Channel</th> </tr> </thead> <tbody> <tr> <td>Center Freq</td> <td>2.42200000 GHz</td> </tr> <tr> <td>Start Freq</td> <td>2.39450000 GHz</td> </tr> <tr> <td>Stop Freq</td> <td>2.44950000 GHz</td> </tr> <tr> <td>CF Step</td> <td>5.50000000 MHz</td> </tr> <tr> <td>Freq Offset</td> <td>0.00000000 Hz</td> </tr> <tr> <td>Signal Track</td> <td>On Off</td> </tr> </tbody> </table>	Freq/Channel		Center Freq	2.42200000 GHz	Start Freq	2.39450000 GHz	Stop Freq	2.44950000 GHz	CF Step	5.50000000 MHz	Freq Offset	0.00000000 Hz	Signal Track	On Off
Freq/Channel															
Center Freq	2.42200000 GHz														
Start Freq	2.39450000 GHz														
Stop Freq	2.44950000 GHz														
CF Step	5.50000000 MHz														
Freq Offset	0.00000000 Hz														
Signal Track	On Off														
<p>2437</p>	 <p>Agilent T</p> <p>Ref 20 dBm Atten 20 dB Mkr1 2.444 79 GHz -19.55 dBm</p> <p>Center 2.437 00 GHz Span 55 MHz</p> <p>Res BW 3 kHz VBW 10 kHz Sweep 5.799 s (601 pts)</p> <p>Copyright 2000-2005 Agilent Technologies</p> <table border="1" data-bbox="1198 918 1326 1400"> <thead> <tr> <th colspan="2">Freq/Channel</th> </tr> </thead> <tbody> <tr> <td>Center Freq</td> <td>2.43700000 GHz</td> </tr> <tr> <td>Start Freq</td> <td>2.40950000 GHz</td> </tr> <tr> <td>Stop Freq</td> <td>2.46450000 GHz</td> </tr> <tr> <td>CF Step</td> <td>5.50000000 MHz</td> </tr> <tr> <td>Freq Offset</td> <td>0.00000000 Hz</td> </tr> <tr> <td>Signal Track</td> <td>On Off</td> </tr> </tbody> </table>	Freq/Channel		Center Freq	2.43700000 GHz	Start Freq	2.40950000 GHz	Stop Freq	2.46450000 GHz	CF Step	5.50000000 MHz	Freq Offset	0.00000000 Hz	Signal Track	On Off
Freq/Channel															
Center Freq	2.43700000 GHz														
Start Freq	2.40950000 GHz														
Stop Freq	2.46450000 GHz														
CF Step	5.50000000 MHz														
Freq Offset	0.00000000 Hz														
Signal Track	On Off														
<p>2452</p>	 <p>Agilent R T</p> <p>Ref 20 dBm Atten 20 dB Mkr1 2.435 41 GHz -20.65 dBm</p> <p>Center 2.452 00 GHz Span 55 MHz</p> <p>Res BW 3 kHz VBW 10 kHz Sweep 5.799 s (601 pts)</p> <p>Copyright 2000-2005 Agilent Technologies</p> <table border="1" data-bbox="1198 1444 1326 1926"> <thead> <tr> <th colspan="2">Freq/Channel</th> </tr> </thead> <tbody> <tr> <td>Center Freq</td> <td>2.45200000 GHz</td> </tr> <tr> <td>Start Freq</td> <td>2.42450000 GHz</td> </tr> <tr> <td>Stop Freq</td> <td>2.47950000 GHz</td> </tr> <tr> <td>CF Step</td> <td>5.50000000 MHz</td> </tr> <tr> <td>Freq Offset</td> <td>0.00000000 Hz</td> </tr> <tr> <td>Signal Track</td> <td>On Off</td> </tr> </tbody> </table>	Freq/Channel		Center Freq	2.45200000 GHz	Start Freq	2.42450000 GHz	Stop Freq	2.47950000 GHz	CF Step	5.50000000 MHz	Freq Offset	0.00000000 Hz	Signal Track	On Off
Freq/Channel															
Center Freq	2.45200000 GHz														
Start Freq	2.42450000 GHz														
Stop Freq	2.47950000 GHz														
CF Step	5.50000000 MHz														
Freq Offset	0.00000000 Hz														
Signal Track	On Off														

Mode 6: Bluetooth v4.0 LE Link Mode

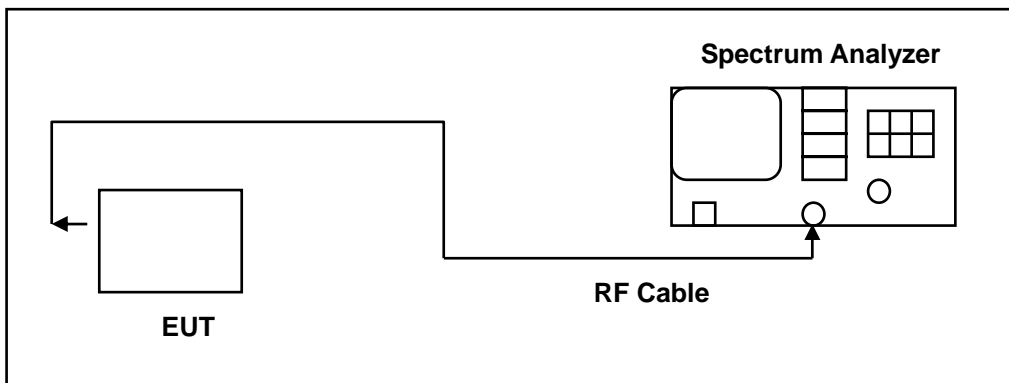
2402	 <p>Agilent T Freq/Channel</p> <p>Ref 20 dBm Atten 30 dB Mkr1 2.401 938 GHz #Peak -10.84 dBm Center Freq 2.40200000 GHz</p> <p>Log 10 Start Freq 2.40150000 GHz</p> <p>dB/ dB/ Stop Freq 2.40250000 GHz</p> <p>Offst 0.6 dB CF Step 100.000000 kHz Auto Man</p> <p>DI 8.0 dBm Freq Offset 0.00000000 Hz</p> <p>LgAv Signal Track On Off</p> <p>M1 S2 S3 FC AL</p> <p>E(f): f>50k #Swp</p> <p>Center 2.402 000 GHz Span 1 MHz #Res BW 3 kHz #VBW 10 kHz Sweep 105.4 ms (601 pts)</p> <p>Copyright 2000-2005 Agilent Technologies</p>
2440	 <p>Agilent T Freq/Channel</p> <p>Ref 20 dBm Atten 30 dB Mkr1 2.439 931 GHz #Peak -8.73 dBm Center Freq 2.44000000 GHz</p> <p>Log 10 Start Freq 2.43950000 GHz</p> <p>dB/ dB/ Stop Freq 2.44050000 GHz</p> <p>Offst 0.6 dB CF Step 100.000000 kHz Auto Man</p> <p>DI 8.0 dBm Freq Offset 0.00000000 Hz</p> <p>LgAv Signal Track On Off</p> <p>M1 S2 S3 FC AL</p> <p>E(f): f>50k #Swp</p> <p>Center 2.440 000 GHz Span 1 MHz #Res BW 3 kHz #VBW 10 kHz Sweep 105.4 ms (601 pts)</p> <p>Copyright 2000-2005 Agilent Technologies</p>
2480	 <p>Agilent T Freq/Channel</p> <p>Ref 20 dBm Atten 30 dB Mkr1 2.479 922 GHz #Peak -8.34 dBm Center Freq 2.48000000 GHz</p> <p>Log 10 Start Freq 2.47950000 GHz</p> <p>dB/ dB/ Stop Freq 2.48050000 GHz</p> <p>Offst 0.6 dB CF Step 100.000000 kHz Auto Man</p> <p>DI 8.0 dBm Freq Offset 0.00000000 Hz</p> <p>LgAv Signal Track On Off</p> <p>M1 S2 S3 FC AL</p> <p>E(f): f>50k #Swp</p> <p>Center 2.480 000 GHz Span 1 MHz #Res BW 3 kHz #VBW 10 kHz Sweep 105.4 ms (601 pts)</p> <p>Copyright 2000-2005 Agilent Technologies</p>

9 Out of Band Conducted Emissions Measurement

9.1. Limit

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated 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

9.2. Test Setup



9.3. Test Instruments

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
Spectrum Analyzer	Agilent	E4445A	MY45300744	12/19/2012	(2)
Spectrum Analyzer	Agilent	E4408B	MY45107753	07/11/2013	(1)
Test Site	ATL	TE05	TE05	N.C.R.	-----

Remark: (1) Calibration period 1 year. (2) Calibration period 2 years. (3) Calibration period 3 years.

Note: N.C.R. = No Calibration Request.

9.4. Test Procedure

In any 100 kHz bandwidth outside the EUT pass band, the RF power produced by the modulation products of the spreading sequence, the information sequence, and the carrier frequency shall be at least 20 dB below that of the maximum in-band 100 kHz emission, antenna output of the EUT was coupled directly to spectrum analyzer; if an external attenuator and/or cable was used, these losses are compensated for with the analyzer OFFSET function.

All other types of emissions from the EUT shall meet the general limits for radiated frequencies outside the pass band.

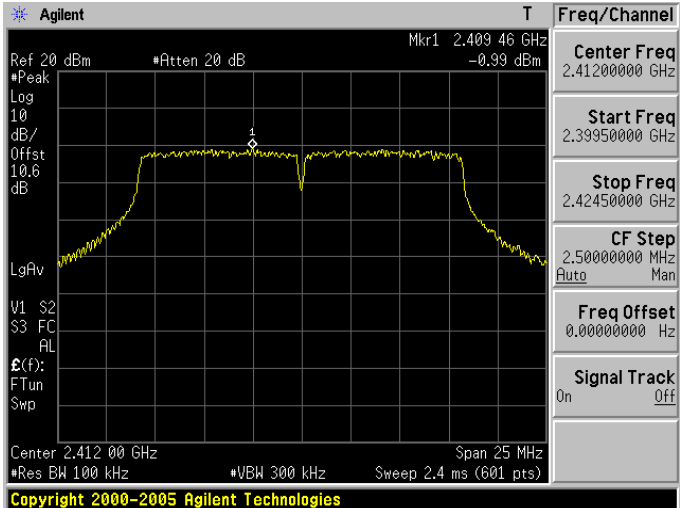
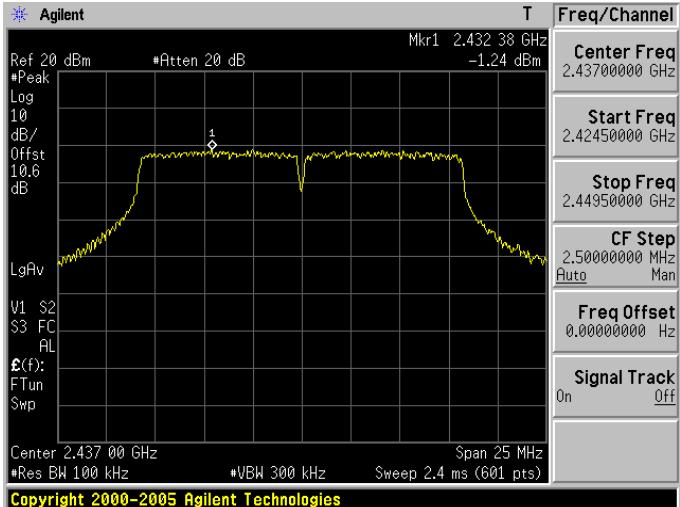
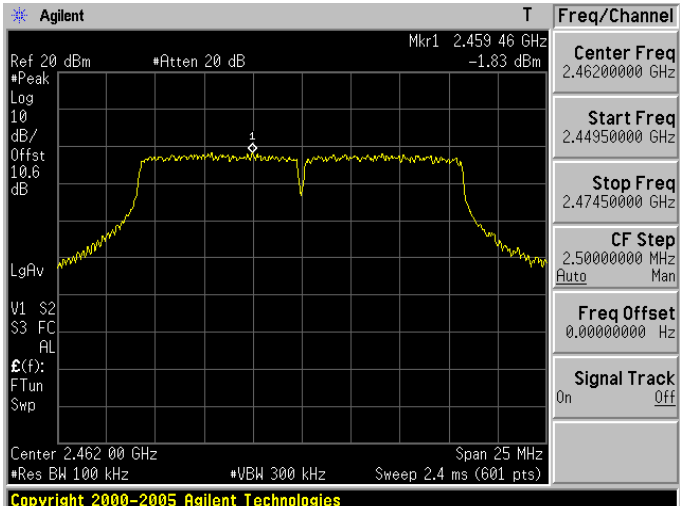
The test was performed at 3 channels.

9.5. Test Graphs

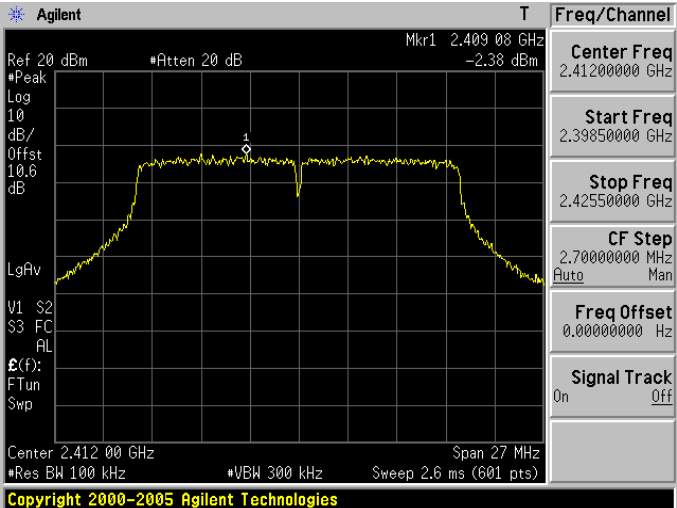
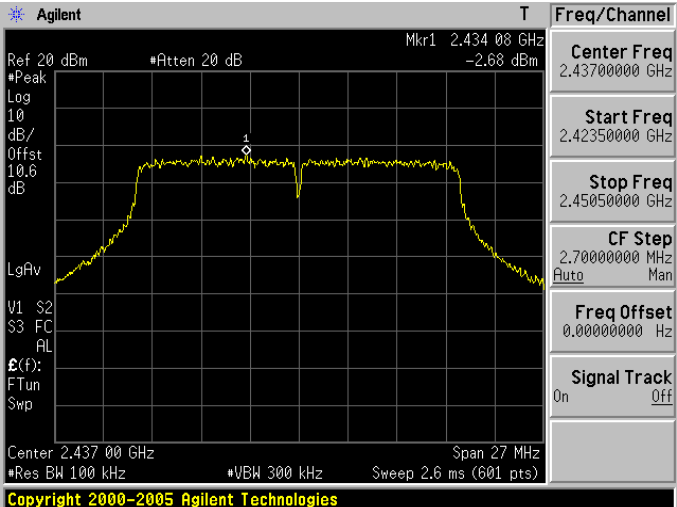
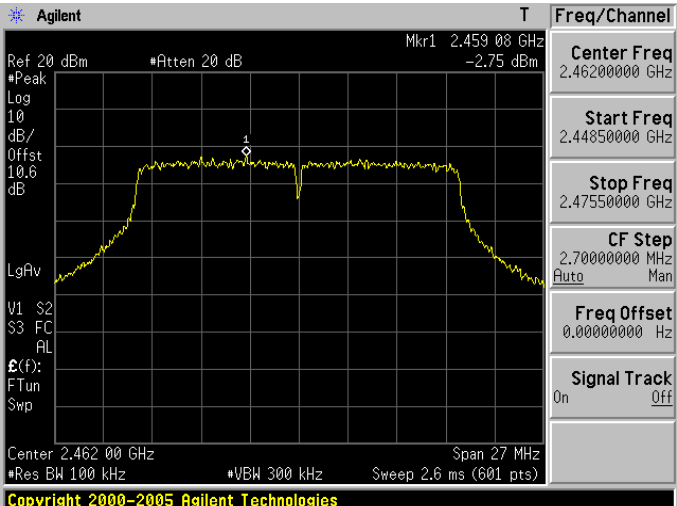
Reference level

Mode 2: IEEE 802.11b Link Mode	
2412	<p>Agilent T Freq/Channel</p> <p>Ref 20 dBm *Atten 20 dB Mkr1 2.412 45 GHz 8.27 dBm</p> <p>Center Freq 2.41200000 GHz</p> <p>Start Freq 2.40400000 GHz</p> <p>Stop Freq 2.42000000 GHz</p> <p>CF Step 1.60000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Center 2.412 00 GHz Span 16 MHz</p> <p>*Res BW 100 kHz *VBW 300 kHz Sweep 1.56 ms (601 pts)</p> <p>Copyright 2000-2005 Agilent Technologies</p>
2437	<p>Agilent T Freq/Channel</p> <p>Ref 20 dBm *Atten 20 dB Mkr1 2.437 45 GHz 8.22 dBm</p> <p>Center Freq 2.43700000 GHz</p> <p>Start Freq 2.42900000 GHz</p> <p>Stop Freq 2.44500000 GHz</p> <p>CF Step 1.60000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Center 2.437 00 GHz Span 16 MHz</p> <p>*Res BW 100 kHz *VBW 300 kHz Sweep 1.56 ms (601 pts)</p> <p>Copyright 2000-2005 Agilent Technologies</p>
2462	<p>Agilent T Freq/Channel</p> <p>Ref 20 dBm *Atten 20 dB Mkr1 2.462 45 GHz 7.69 dBm</p> <p>Center Freq 2.46200000 GHz</p> <p>Start Freq 2.45400000 GHz</p> <p>Stop Freq 2.47000000 GHz</p> <p>CF Step 1.60000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Center 2.462 00 GHz Span 16 MHz</p> <p>*Res BW 100 kHz *VBW 300 kHz Sweep 1.56 ms (601 pts)</p> <p>Copyright 2000-2005 Agilent Technologies</p>

Mode 3: IEEE 802.11g Link Mode

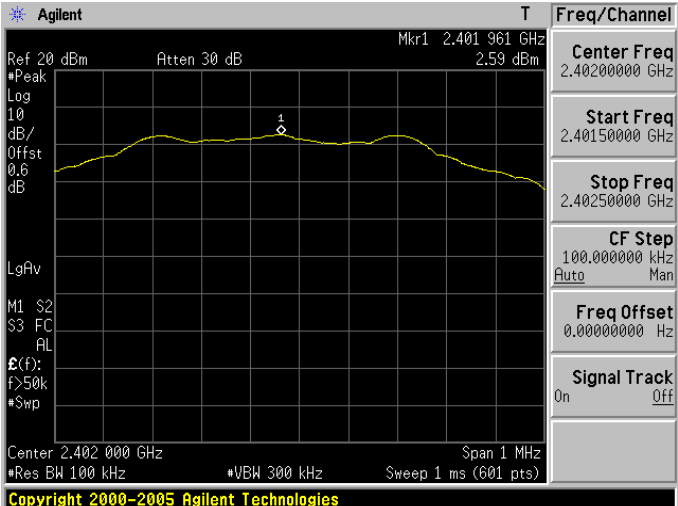
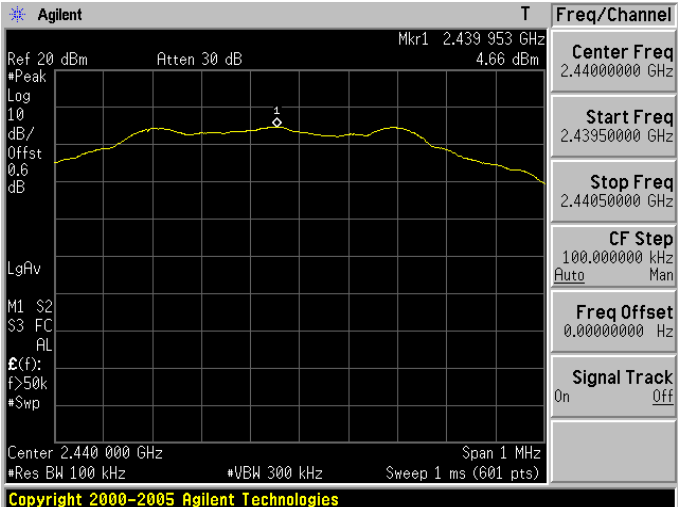
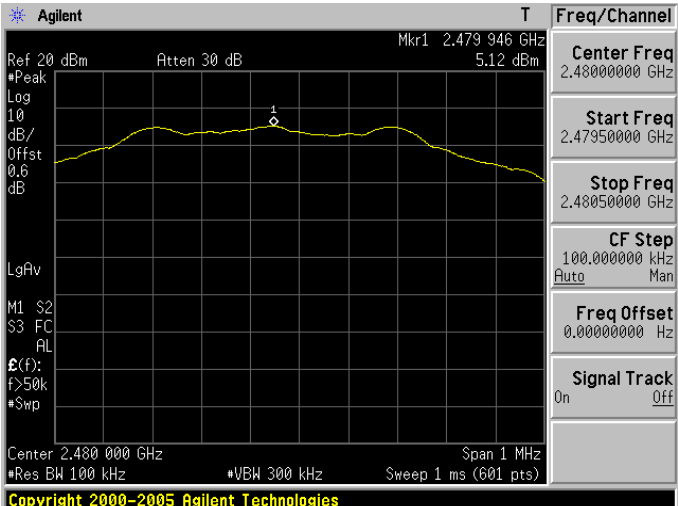
<p>2412</p>	 <p>Agilent T</p> <p>Ref 20 dBm *Atten 20 dB Mkr1 2.409 46 GHz -0.99 dBm</p> <p>Center 2.412 00 GHz Span 25 MHz</p> <p>*Res BW 100 kHz *VBW 300 kHz Sweep 2.4 ms (601 pts)</p> <p>Copyright 2000-2005 Agilent Technologies</p> <table border="1"> <thead> <tr> <th colspan="2">Freq/Channel</th> </tr> </thead> <tbody> <tr> <td>Center Freq</td> <td>2.41200000 GHz</td> </tr> <tr> <td>Start Freq</td> <td>2.39950000 GHz</td> </tr> <tr> <td>Stop Freq</td> <td>2.42450000 GHz</td> </tr> <tr> <td>CF Step</td> <td>2.50000000 MHz</td> </tr> <tr> <td>Freq Offset</td> <td>0.00000000 Hz</td> </tr> <tr> <td>Signal Track</td> <td>On Off</td> </tr> </tbody> </table>	Freq/Channel		Center Freq	2.41200000 GHz	Start Freq	2.39950000 GHz	Stop Freq	2.42450000 GHz	CF Step	2.50000000 MHz	Freq Offset	0.00000000 Hz	Signal Track	On Off
Freq/Channel															
Center Freq	2.41200000 GHz														
Start Freq	2.39950000 GHz														
Stop Freq	2.42450000 GHz														
CF Step	2.50000000 MHz														
Freq Offset	0.00000000 Hz														
Signal Track	On Off														
<p>2437</p>	 <p>Agilent T</p> <p>Ref 20 dBm *Atten 20 dB Mkr1 2.432 38 GHz -1.24 dBm</p> <p>Center 2.437 00 GHz Span 25 MHz</p> <p>*Res BW 100 kHz *VBW 300 kHz Sweep 2.4 ms (601 pts)</p> <p>Copyright 2000-2005 Agilent Technologies</p> <table border="1"> <thead> <tr> <th colspan="2">Freq/Channel</th> </tr> </thead> <tbody> <tr> <td>Center Freq</td> <td>2.43700000 GHz</td> </tr> <tr> <td>Start Freq</td> <td>2.42450000 GHz</td> </tr> <tr> <td>Stop Freq</td> <td>2.44950000 GHz</td> </tr> <tr> <td>CF Step</td> <td>2.50000000 MHz</td> </tr> <tr> <td>Freq Offset</td> <td>0.00000000 Hz</td> </tr> <tr> <td>Signal Track</td> <td>On Off</td> </tr> </tbody> </table>	Freq/Channel		Center Freq	2.43700000 GHz	Start Freq	2.42450000 GHz	Stop Freq	2.44950000 GHz	CF Step	2.50000000 MHz	Freq Offset	0.00000000 Hz	Signal Track	On Off
Freq/Channel															
Center Freq	2.43700000 GHz														
Start Freq	2.42450000 GHz														
Stop Freq	2.44950000 GHz														
CF Step	2.50000000 MHz														
Freq Offset	0.00000000 Hz														
Signal Track	On Off														
<p>2462</p>	 <p>Agilent T</p> <p>Ref 20 dBm *Atten 20 dB Mkr1 2.459 46 GHz -1.83 dBm</p> <p>Center 2.462 00 GHz Span 25 MHz</p> <p>*Res BW 100 kHz *VBW 300 kHz Sweep 2.4 ms (601 pts)</p> <p>Copyright 2000-2005 Agilent Technologies</p> <table border="1"> <thead> <tr> <th colspan="2">Freq/Channel</th> </tr> </thead> <tbody> <tr> <td>Center Freq</td> <td>2.46200000 GHz</td> </tr> <tr> <td>Start Freq</td> <td>2.44950000 GHz</td> </tr> <tr> <td>Stop Freq</td> <td>2.47450000 GHz</td> </tr> <tr> <td>CF Step</td> <td>2.50000000 MHz</td> </tr> <tr> <td>Freq Offset</td> <td>0.00000000 Hz</td> </tr> <tr> <td>Signal Track</td> <td>On Off</td> </tr> </tbody> </table>	Freq/Channel		Center Freq	2.46200000 GHz	Start Freq	2.44950000 GHz	Stop Freq	2.47450000 GHz	CF Step	2.50000000 MHz	Freq Offset	0.00000000 Hz	Signal Track	On Off
Freq/Channel															
Center Freq	2.46200000 GHz														
Start Freq	2.44950000 GHz														
Stop Freq	2.47450000 GHz														
CF Step	2.50000000 MHz														
Freq Offset	0.00000000 Hz														
Signal Track	On Off														

Mode 4: IEEE 802.11n 2.4GHz 20MHz Link Mode

<p>2412</p>	 <p>Agilent T Freq/Channel</p> <p>Ref 20 dBm *Atten 20 dB Mkr1 2.409 08 GHz -2.38 dBm</p> <p>Center Freq 2.41200000 GHz</p> <p>Start Freq 2.39850000 GHz</p> <p>Stop Freq 2.42550000 GHz</p> <p>CF Step 2.70000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Center 2.412 00 GHz Span 27 MHz *Res BW 100 kHz *VBW 300 kHz Sweep 2.6 ms (601 pts)</p> <p>Copyright 2000-2005 Agilent Technologies</p>
<p>2437</p>	 <p>Agilent T Freq/Channel</p> <p>Ref 20 dBm *Atten 20 dB Mkr1 2.434 08 GHz -2.68 dBm</p> <p>Center Freq 2.43700000 GHz</p> <p>Start Freq 2.42350000 GHz</p> <p>Stop Freq 2.45050000 GHz</p> <p>CF Step 2.70000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Center 2.437 00 GHz Span 27 MHz *Res BW 100 kHz *VBW 300 kHz Sweep 2.6 ms (601 pts)</p> <p>Copyright 2000-2005 Agilent Technologies</p>
<p>2462</p>	 <p>Agilent T Freq/Channel</p> <p>Ref 20 dBm *Atten 20 dB Mkr1 2.459 08 GHz -2.75 dBm</p> <p>Center Freq 2.46200000 GHz</p> <p>Start Freq 2.44850000 GHz</p> <p>Stop Freq 2.47550000 GHz</p> <p>CF Step 2.70000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Center 2.462 00 GHz Span 27 MHz *Res BW 100 kHz *VBW 300 kHz Sweep 2.6 ms (601 pts)</p> <p>Copyright 2000-2005 Agilent Technologies</p>

Mode 5: IEEE 802.11n 2.4GHz 40MHz Link Mode	
2422	<p>Agilent T Freq/Channel</p> <p>Ref 20 dBm #Atten 20 dB Mkr1 2.417 23 GHz -7.11 dBm</p> <p>#Peak Log 10 dB/ Offst 10.6 dB</p> <p>LgAv</p> <p>V1 S2 S3 FC AL</p> <p>E(f): FTun Swp</p> <p>Center 2.422 00 GHz Span 55 MHz #Res BW 100 kHz #VBW 300 kHz Sweep 5.28 ms (601 pts)</p> <p>Copyright 2000-2005 Agilent Technologies</p> <p>Center Freq 2.42200000 GHz Start Freq 2.39450000 GHz Stop Freq 2.44950000 GHz CF Step 5.50000000 MHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off</p>
2437	<p>Agilent T Freq/Channel</p> <p>Ref 20 dBm #Atten 20 dB Mkr1 2.432 78 GHz -7.20 dBm</p> <p>#Peak Log 10 dB/ Offst 10.6 dB</p> <p>LgAv</p> <p>V1 S2 S3 FC AL</p> <p>E(f): FTun Swp</p> <p>Center 2.437 00 GHz Span 55 MHz #Res BW 100 kHz #VBW 300 kHz Sweep 5.28 ms (601 pts)</p> <p>Copyright 2000-2005 Agilent Technologies</p> <p>Center Freq 2.43700000 GHz Start Freq 2.40950000 GHz Stop Freq 2.46450000 GHz CF Step 5.50000000 MHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off</p>
2452	<p>Agilent T Freq/Channel</p> <p>Ref 20 dBm #Atten 20 dB Mkr1 2.447 78 GHz -7.40 dBm</p> <p>#Peak Log 10 dB/ Offst 10.6 dB</p> <p>LgAv</p> <p>V1 S2 S3 FC AL</p> <p>E(f): FTun Swp</p> <p>Center 2.452 00 GHz Span 55 MHz #Res BW 100 kHz #VBW 300 kHz Sweep 5.28 ms (601 pts)</p> <p>Copyright 2000-2005 Agilent Technologies</p> <p>Center Freq 2.45200000 GHz Start Freq 2.42450000 GHz Stop Freq 2.47950000 GHz CF Step 5.50000000 MHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off</p>

Mode 6: Bluetooth v4.0 LE Link Mode

<p>2402</p>	 <p>Agilent T Freq/Channel</p> <p>Ref 20 dBm Atten 30 dB Mkr1 2.401 961 GHz 2.59 dBm</p> <p>Center Freq 2.4020000 GHz</p> <p>Start Freq 2.4015000 GHz</p> <p>Stop Freq 2.4025000 GHz</p> <p>CF Step 100.000000 kHz Auto Man</p> <p>Freq Offset 0.0000000 Hz</p> <p>Signal Track On Off</p> <p>Center 2.402 000 GHz Span 1 MHz</p> <p>*Res BW 100 kHz *VBW 300 kHz Sweep 1 ms (601 pts)</p> <p>Copyright 2000-2005 Agilent Technologies</p>
<p>2440</p>	 <p>Agilent T Freq/Channel</p> <p>Ref 20 dBm Atten 30 dB Mkr1 2.439 953 GHz 4.66 dBm</p> <p>Center Freq 2.4400000 GHz</p> <p>Start Freq 2.4395000 GHz</p> <p>Stop Freq 2.4405000 GHz</p> <p>CF Step 100.000000 kHz Auto Man</p> <p>Freq Offset 0.0000000 Hz</p> <p>Signal Track On Off</p> <p>Center 2.440 000 GHz Span 1 MHz</p> <p>*Res BW 100 kHz *VBW 300 kHz Sweep 1 ms (601 pts)</p> <p>Copyright 2000-2005 Agilent Technologies</p>
<p>2480</p>	 <p>Agilent T Freq/Channel</p> <p>Ref 20 dBm Atten 30 dB Mkr1 2.479 946 GHz 5.12 dBm</p> <p>Center Freq 2.4800000 GHz</p> <p>Start Freq 2.4795000 GHz</p> <p>Stop Freq 2.4805000 GHz</p> <p>CF Step 100.000000 kHz Auto Man</p> <p>Freq Offset 0.0000000 Hz</p> <p>Signal Track On Off</p> <p>Center 2.480 000 GHz Span 1 MHz</p> <p>*Res BW 100 kHz *VBW 300 kHz Sweep 1 ms (601 pts)</p> <p>Copyright 2000-2005 Agilent Technologies</p>

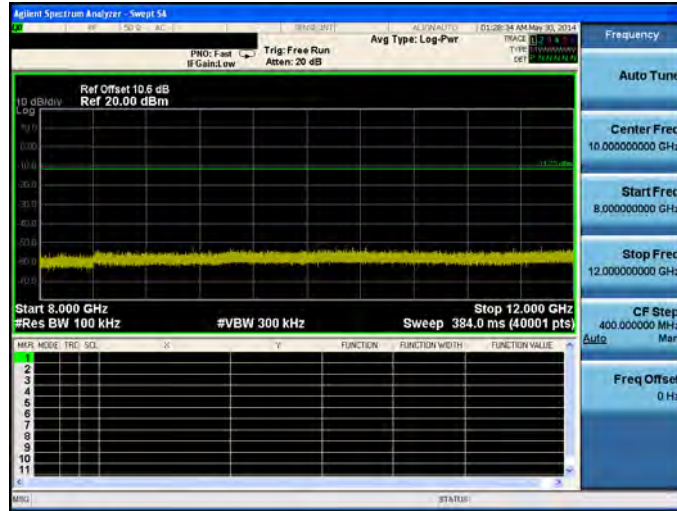
Out of Band Conducted Emissions

Mode 2: IEEE 802.11b Link Mode

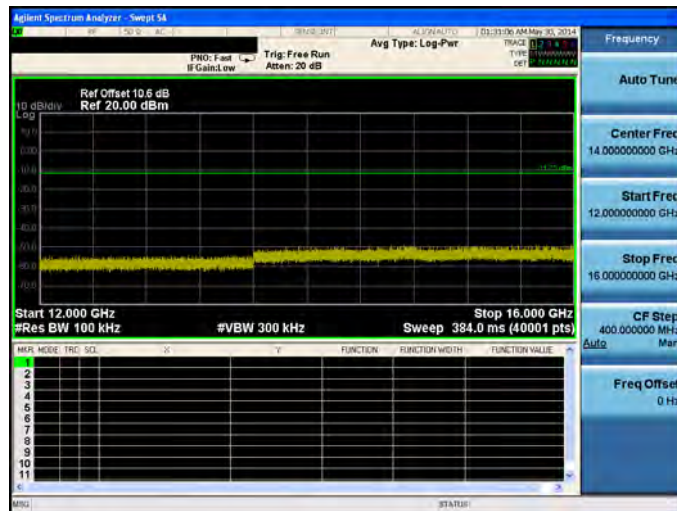
<p>2412</p>	
<p>2412</p>	

Mode 2: IEEE 802.11b Link Mode

2412

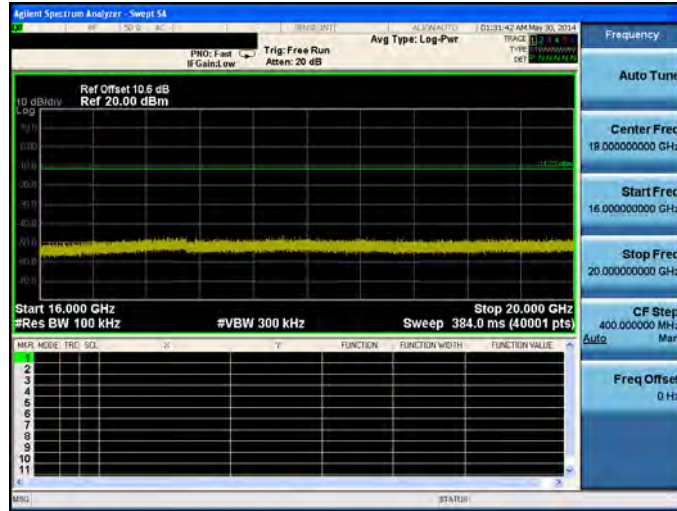


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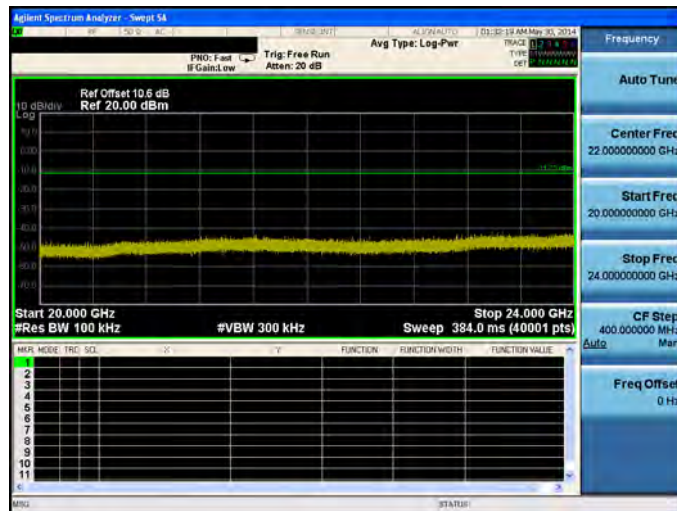


Mode 2: IEEE 802.11b Link Mode

2412

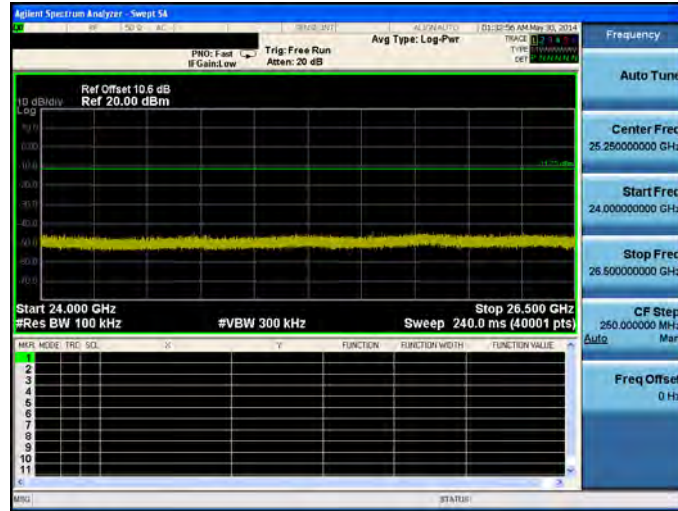


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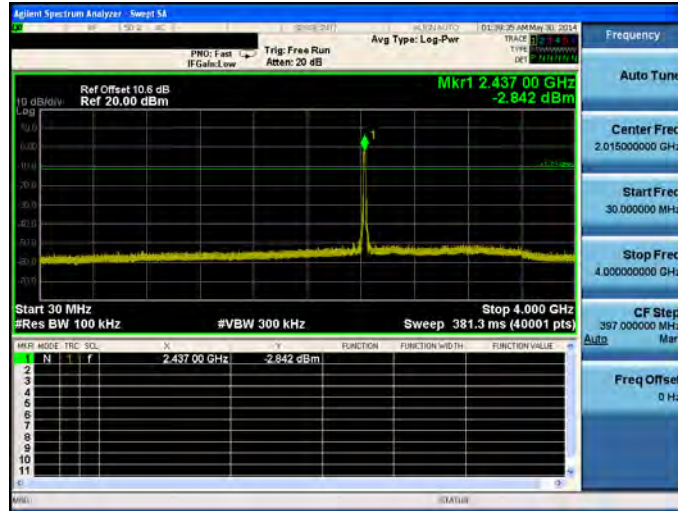
Mode 2: IEEE 802.11b Link Mode

2412

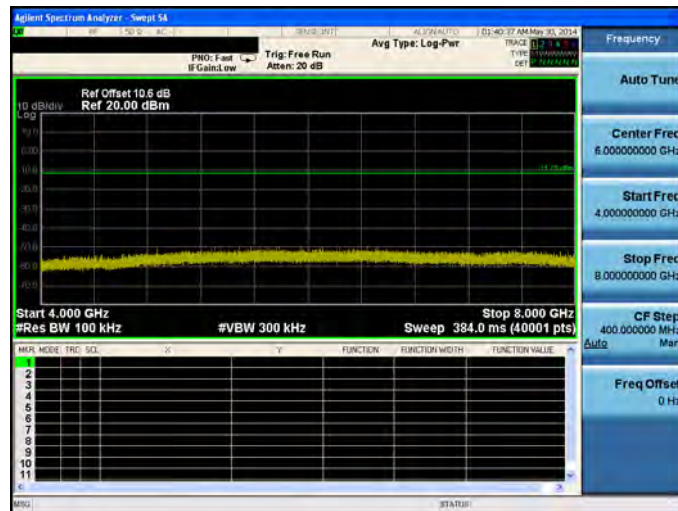


Mode 2: IEEE 802.11b Link Mode

2437

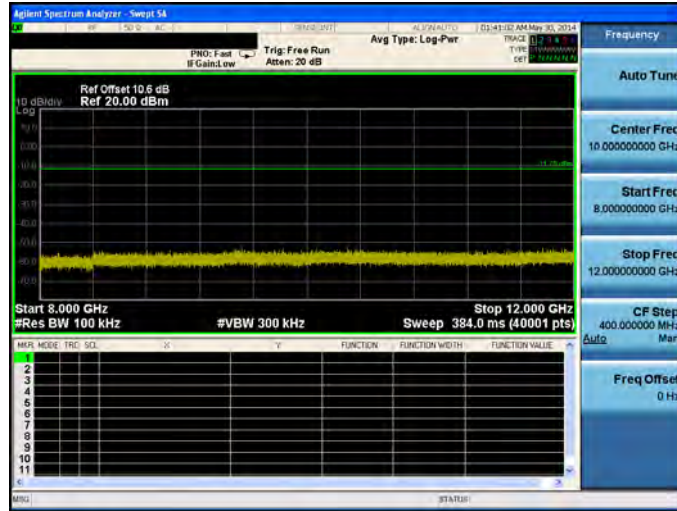


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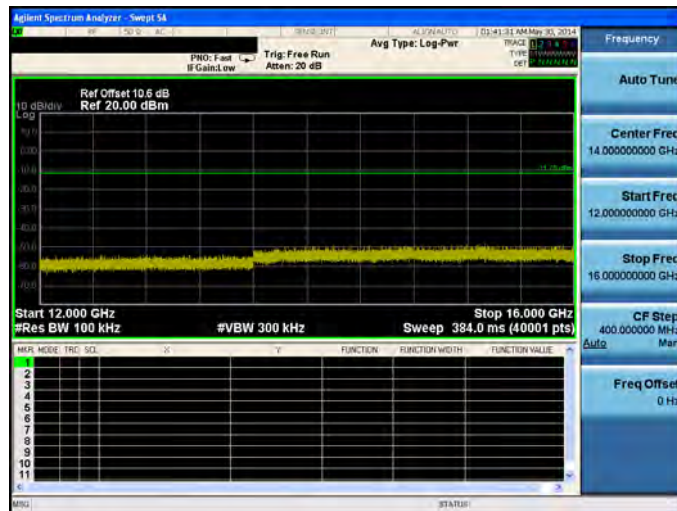


Mode 2: IEEE 802.11b Link Mode

2437

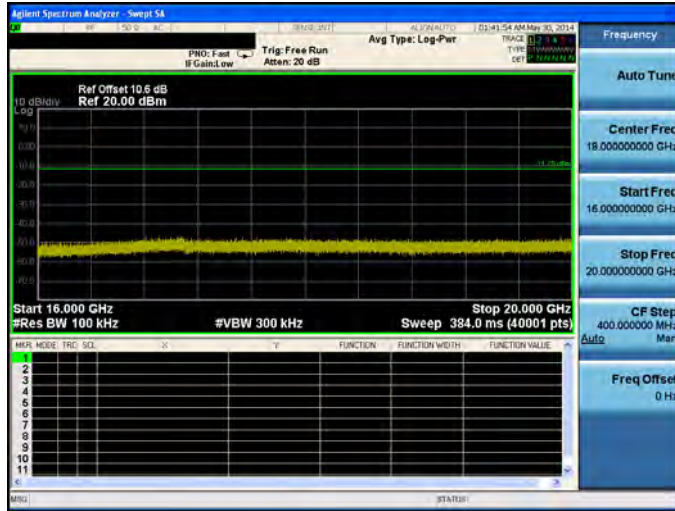


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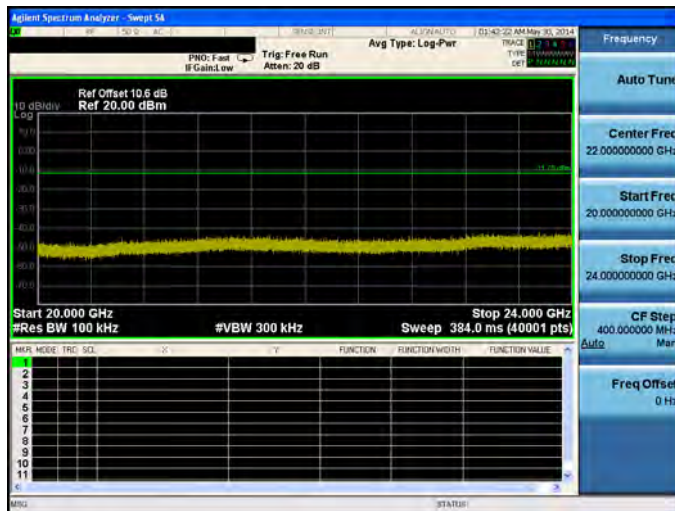


Mode 2: IEEE 802.11b Link Mode

2437

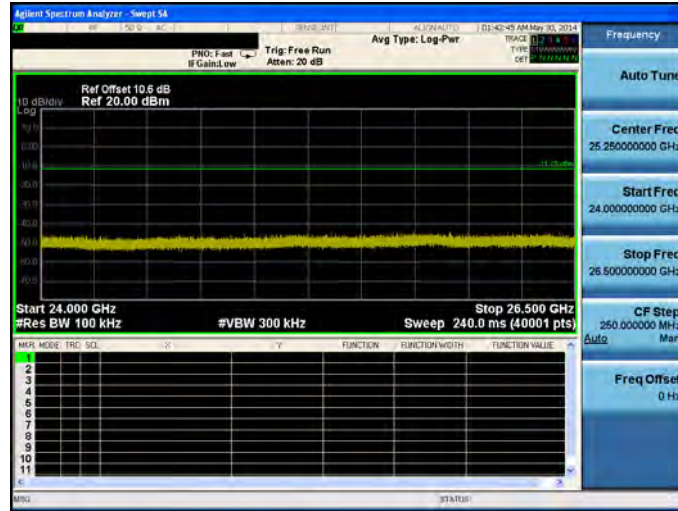


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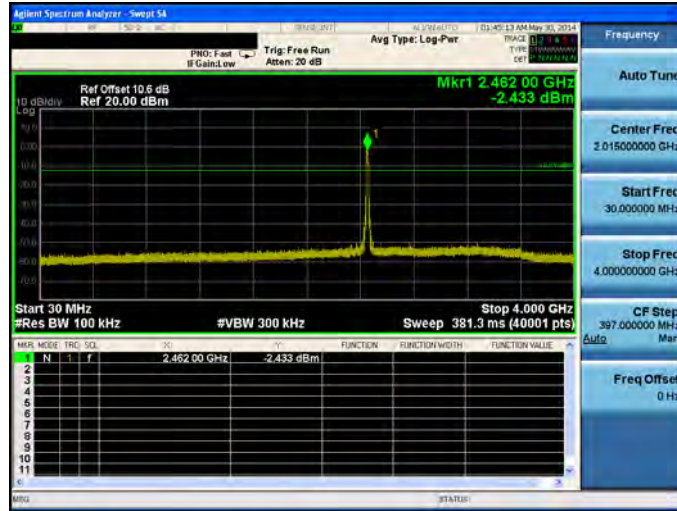
Mode 2: IEEE 802.11b Link Mode

2437

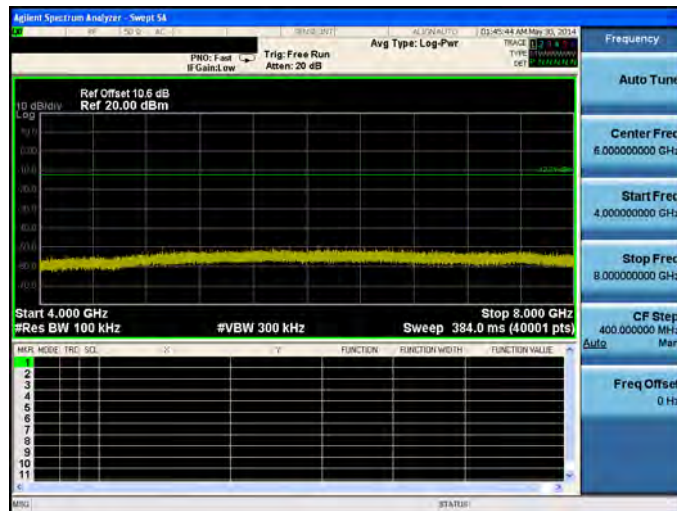


Mode 2: IEEE 802.11b Link Mode

2462

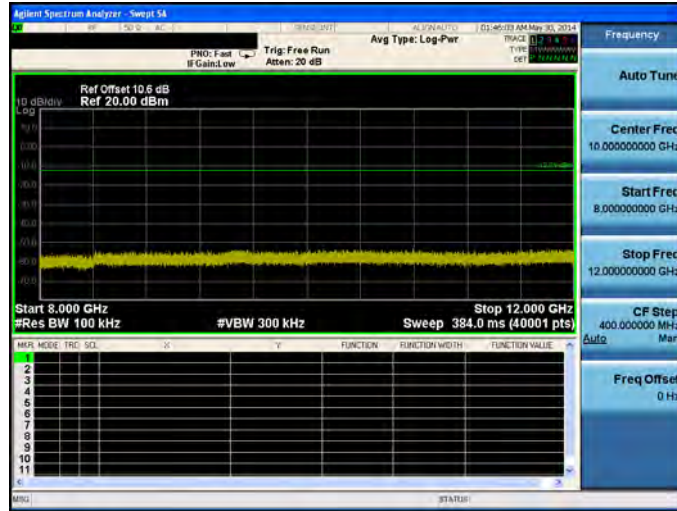


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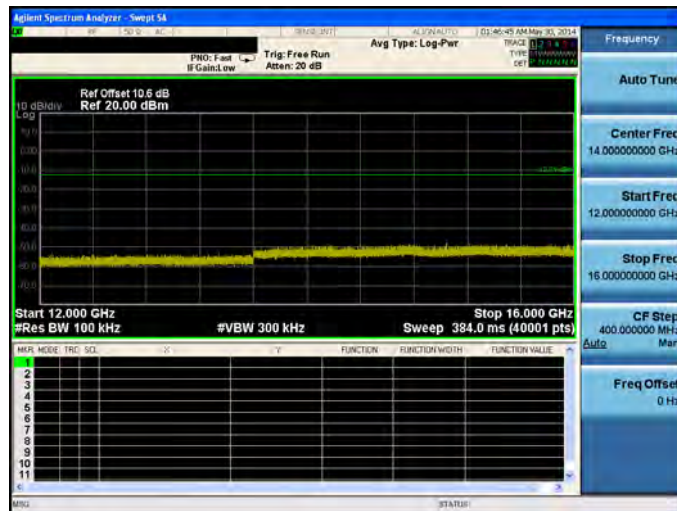


Mode 2: IEEE 802.11b Link Mode

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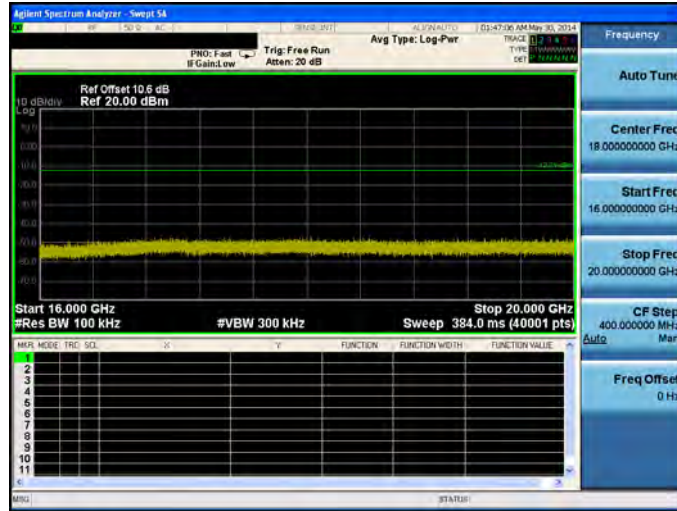


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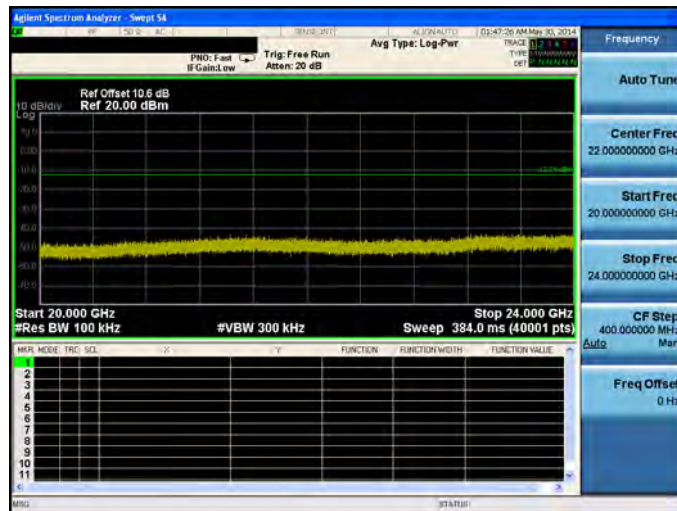


Mode 2: IEEE 802.11b Link Mode

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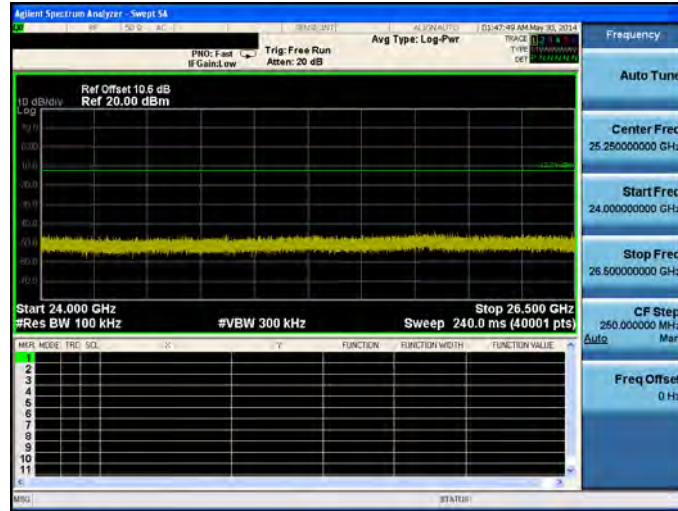


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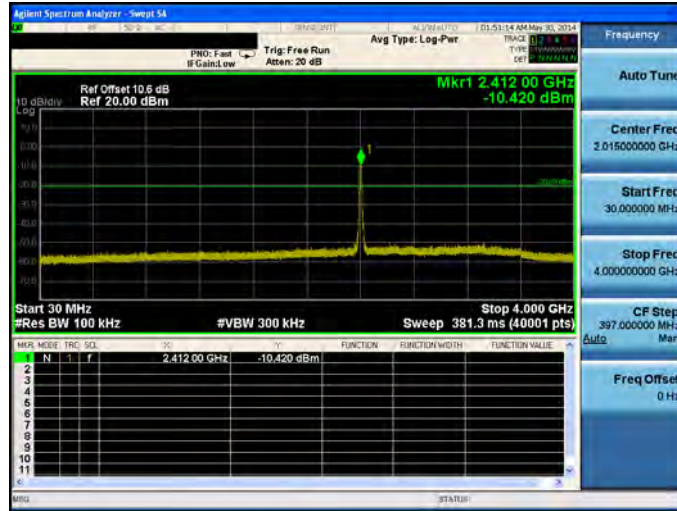
Mode 2: IEEE 802.11b Link Mode

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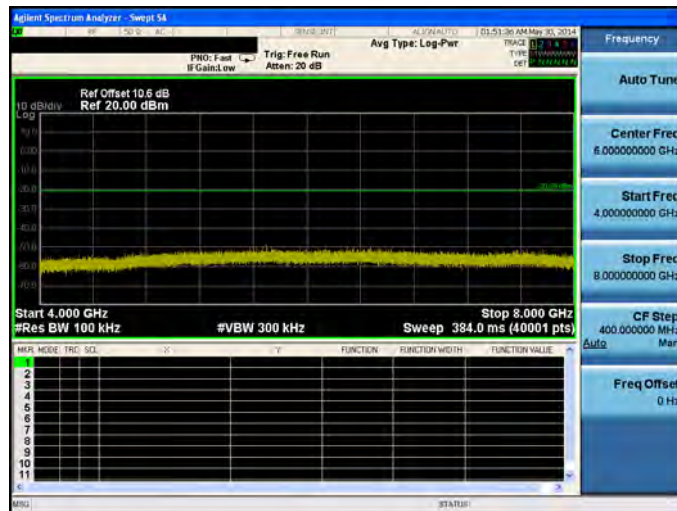


Mode 3: IEEE 802.11g Link Mode

2412

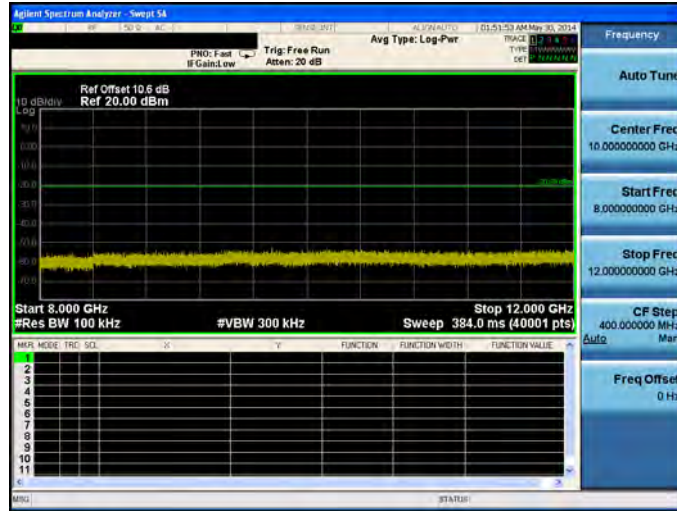


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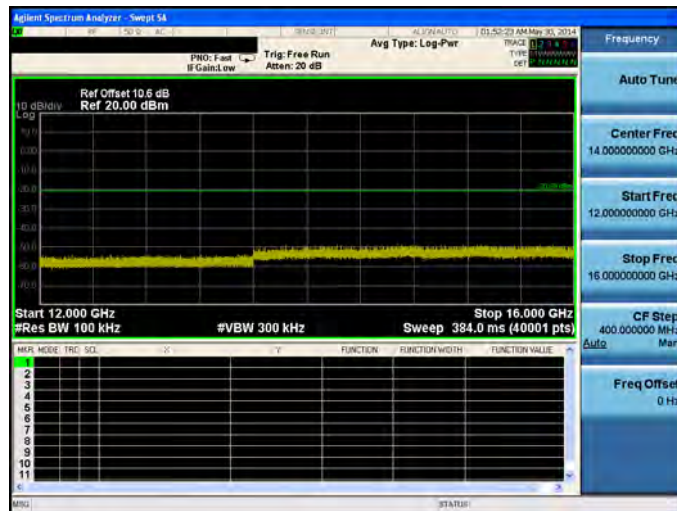


Mode 3: IEEE 802.11g Link Mode

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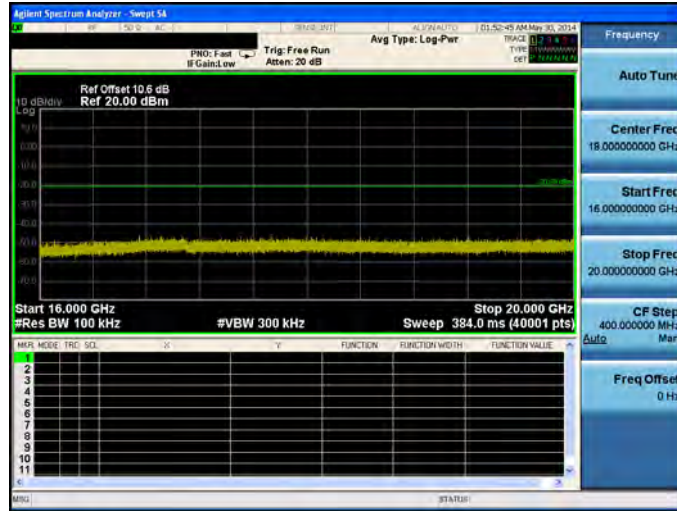


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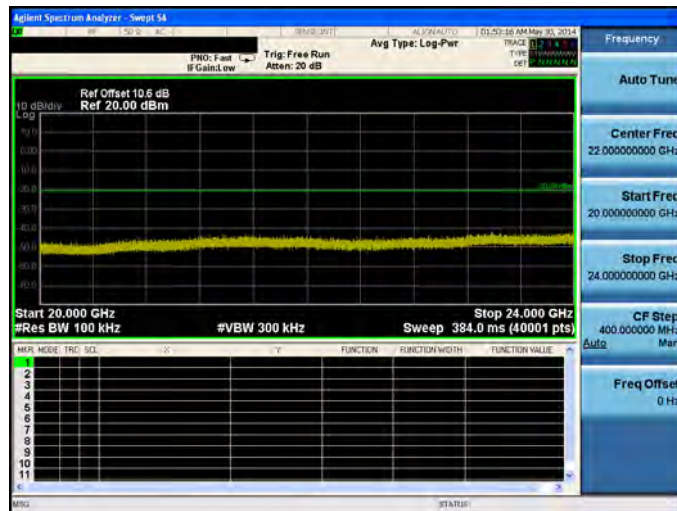


Mode 3: IEEE 802.11g Link Mode

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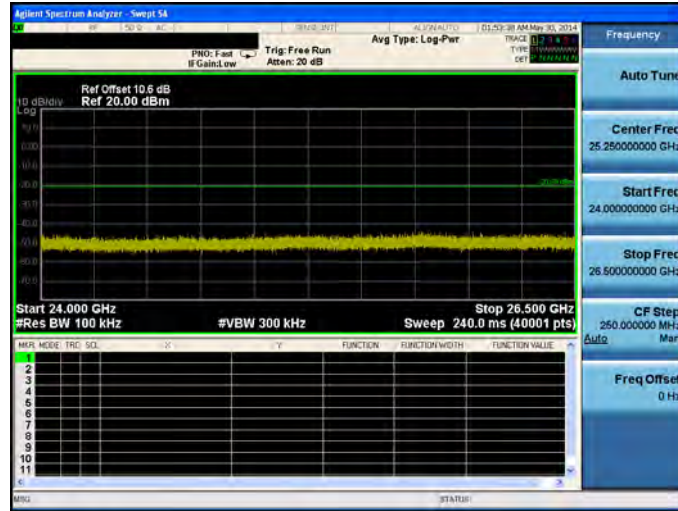


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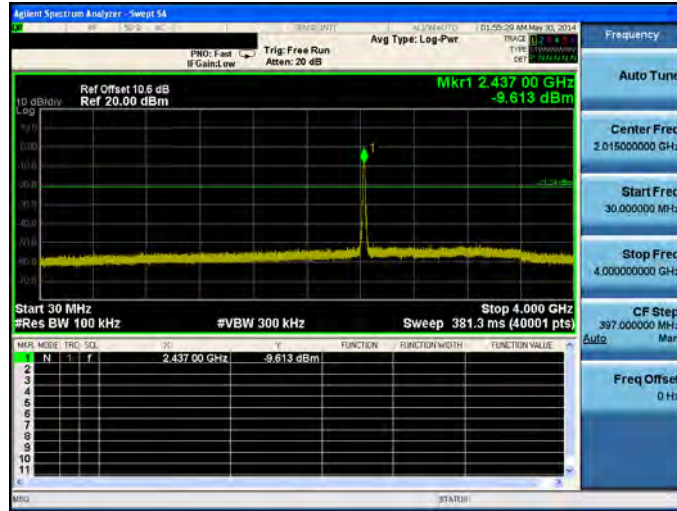
Mode 3: IEEE 802.11g Link Mode

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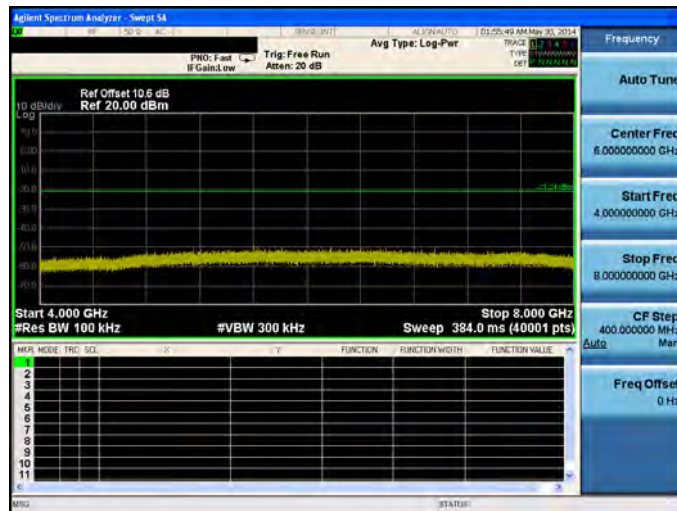


Mode 3: IEEE 802.11g Link Mode

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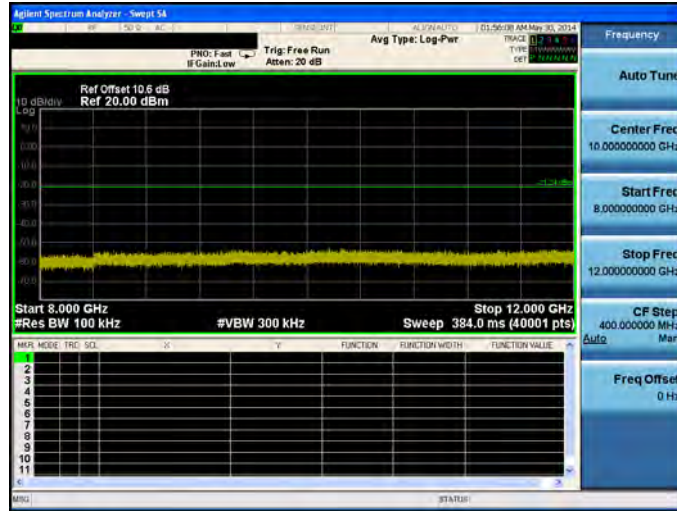


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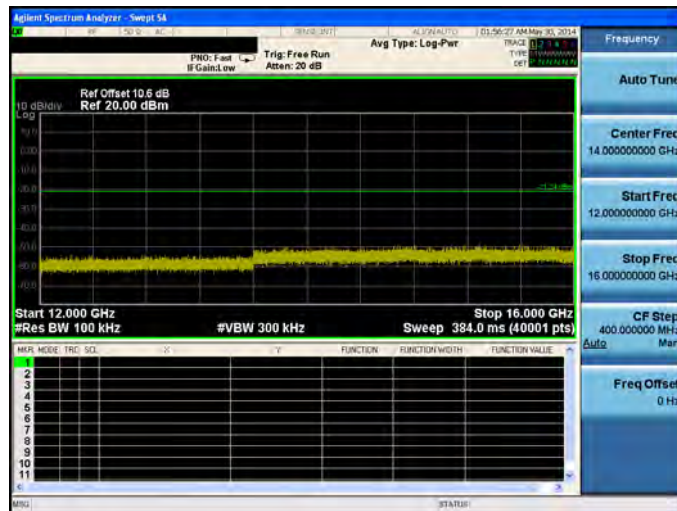


Mode 3: IEEE 802.11g Link Mode

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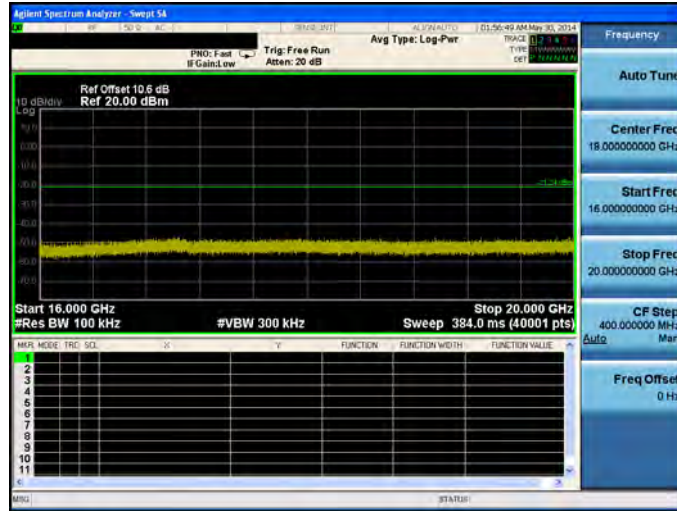


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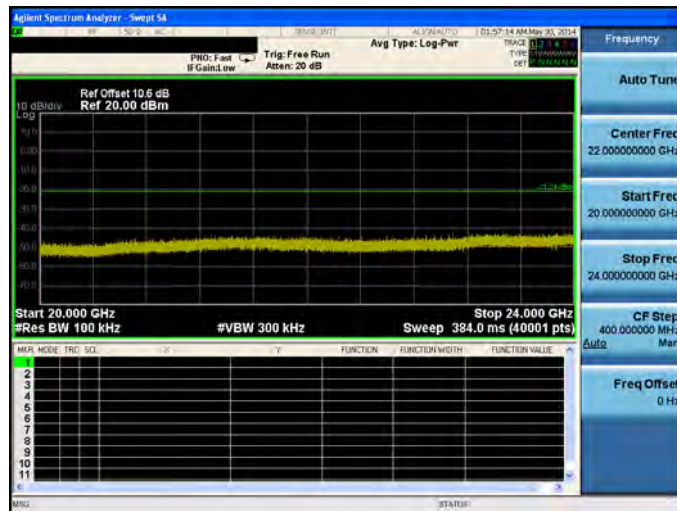


Mode 3: IEEE 802.11g Link Mode

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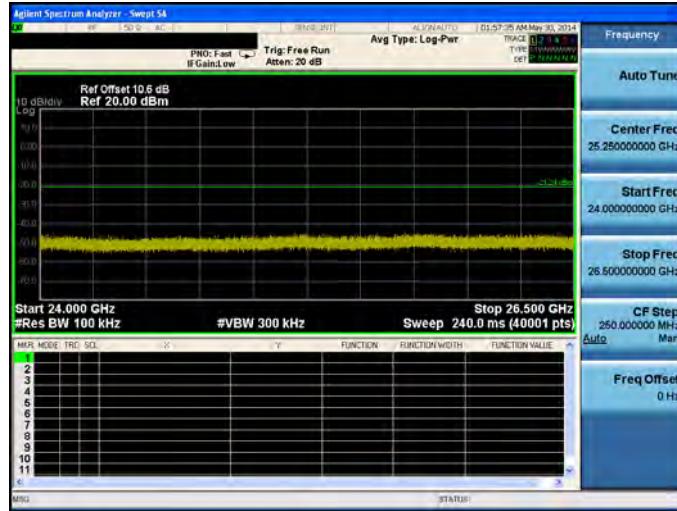


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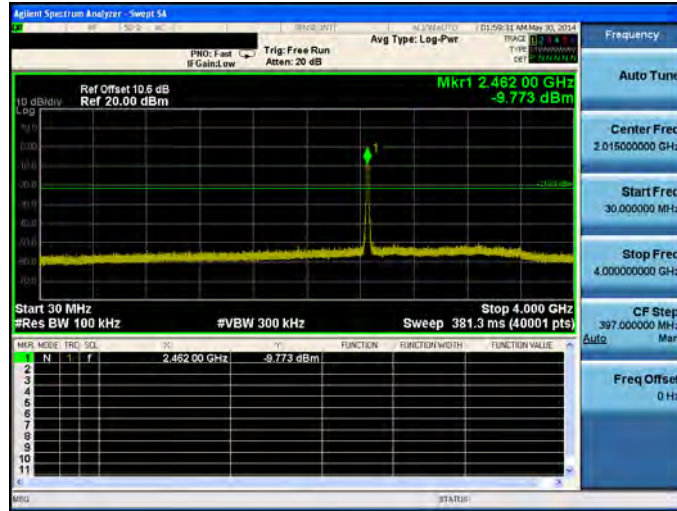
Mode 3: IEEE 802.11g Link Mode

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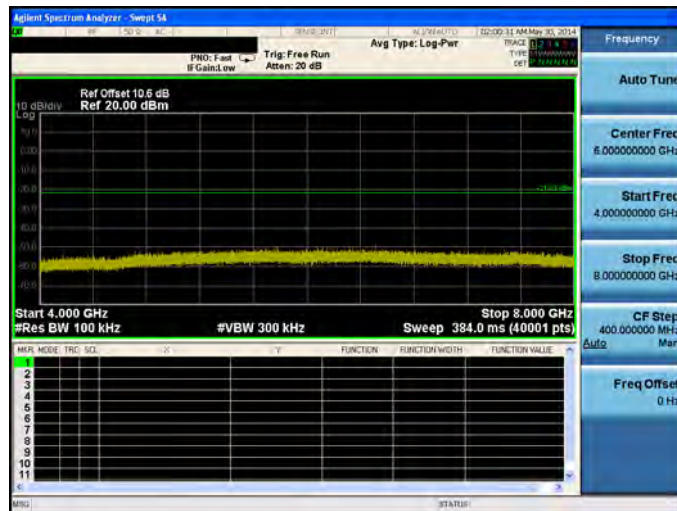


Mode 3: IEEE 802.11g Link Mode

2462

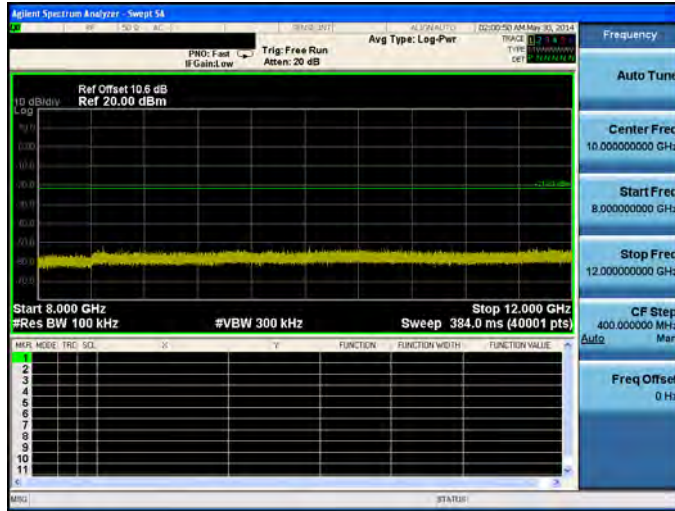


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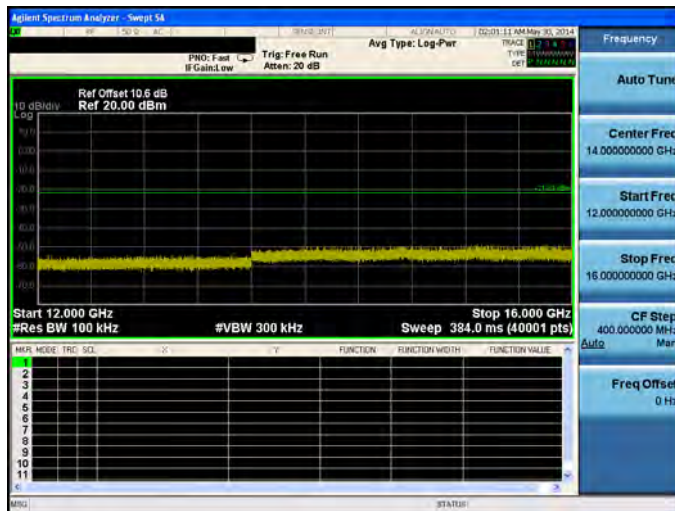


Mode 3: IEEE 802.11g Link Mode

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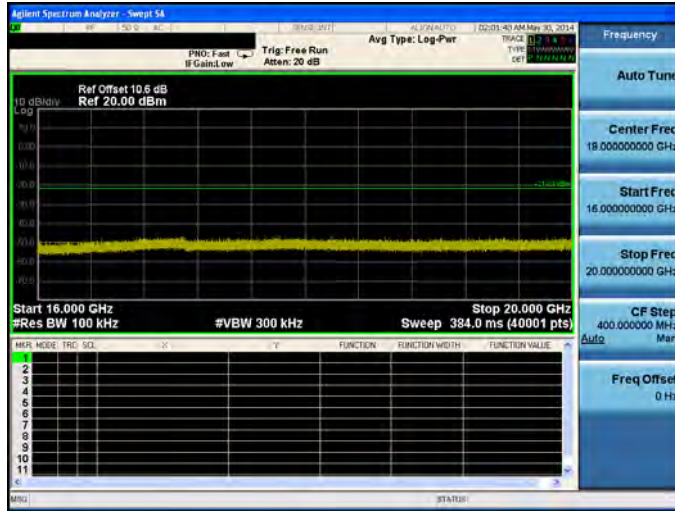


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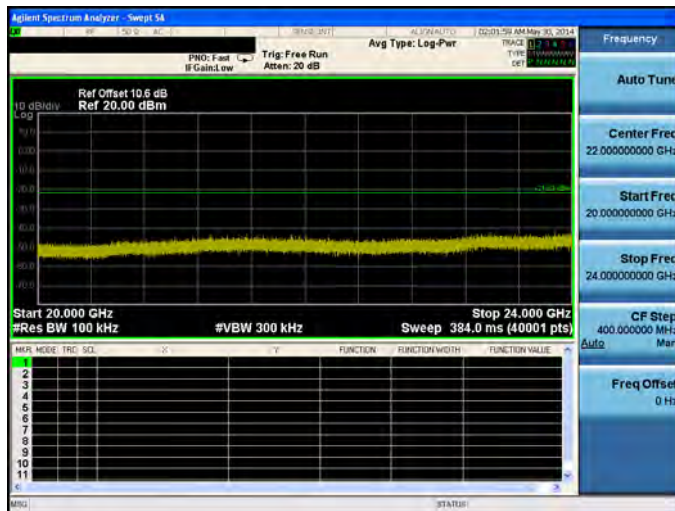


Mode 3: IEEE 802.11g Link Mode

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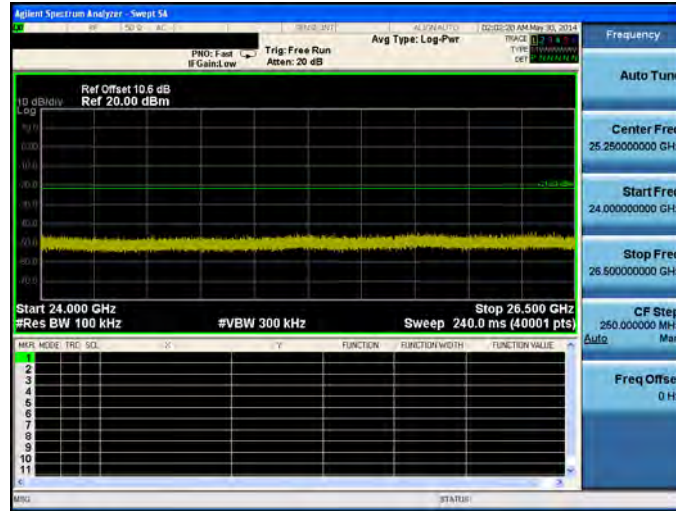


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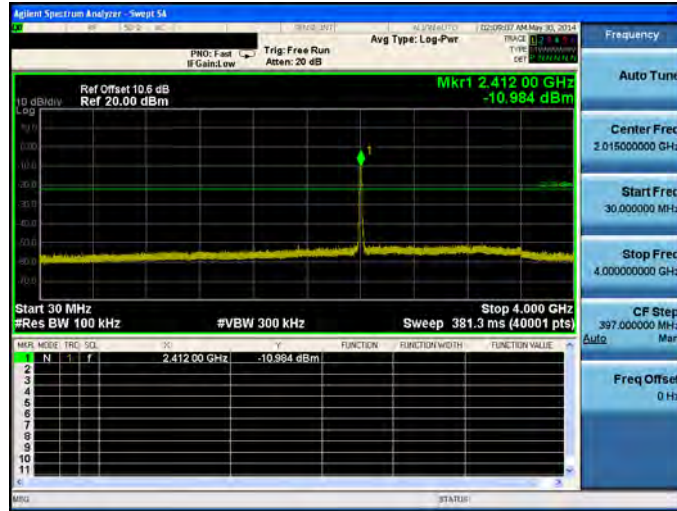
Mode 3: IEEE 802.11g Link Mode

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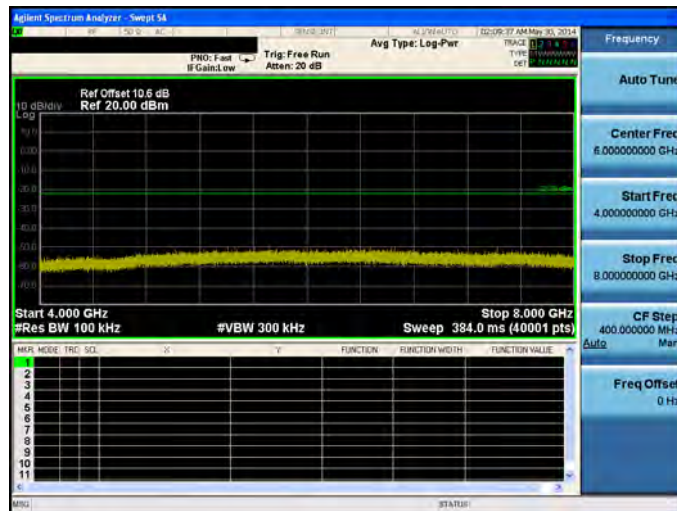


Mode 4: IEEE 802.11n 2.4GHz 20MHz Link Mode

2412

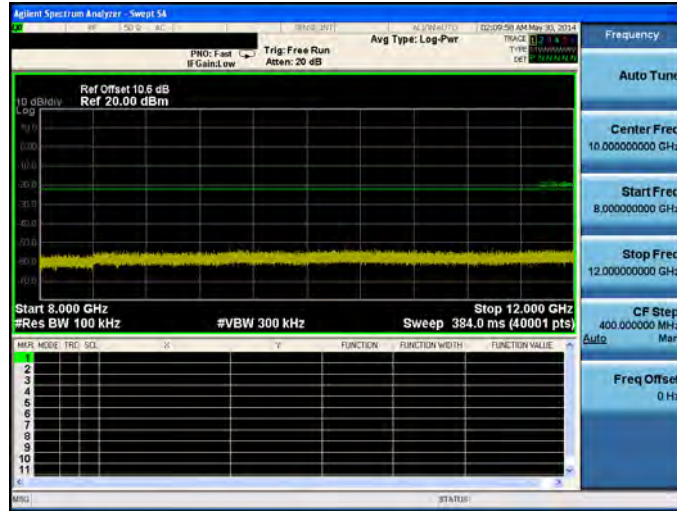


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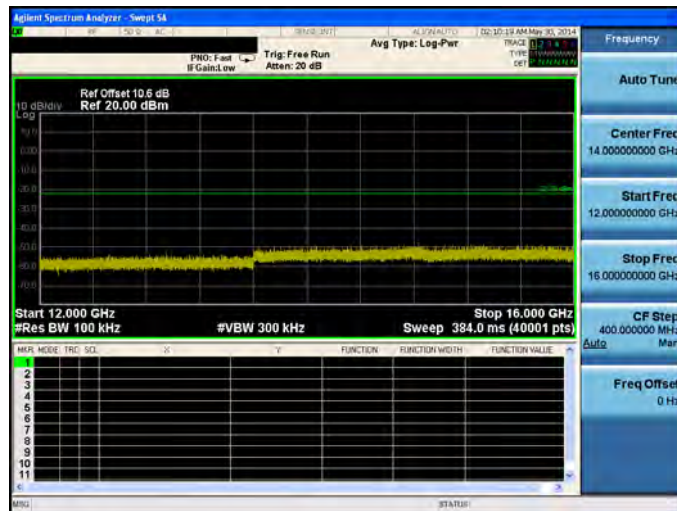


Mode 4: IEEE 802.11n 2.4GHz 20MHz Link Mode

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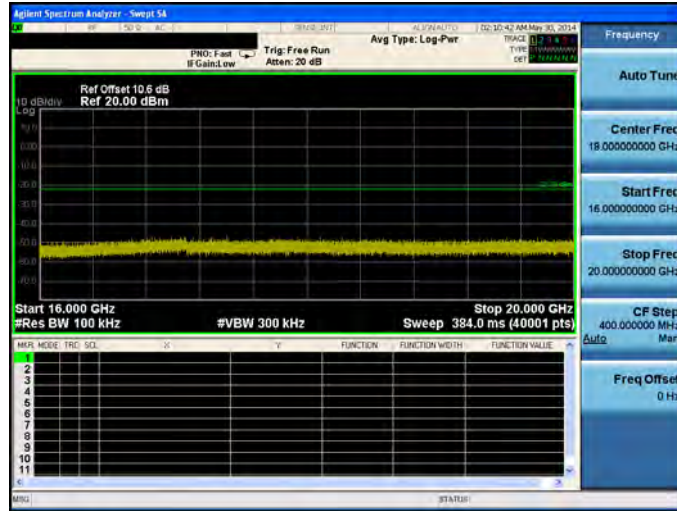


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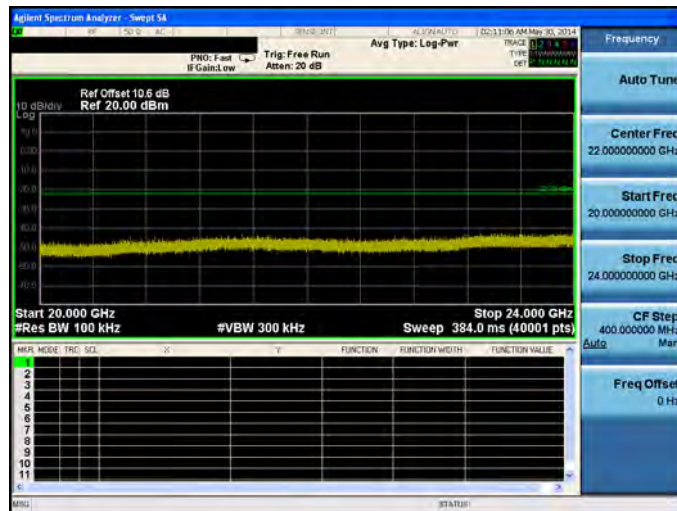


Mode 4: IEEE 802.11n 2.4GHz 20MHz Link Mode

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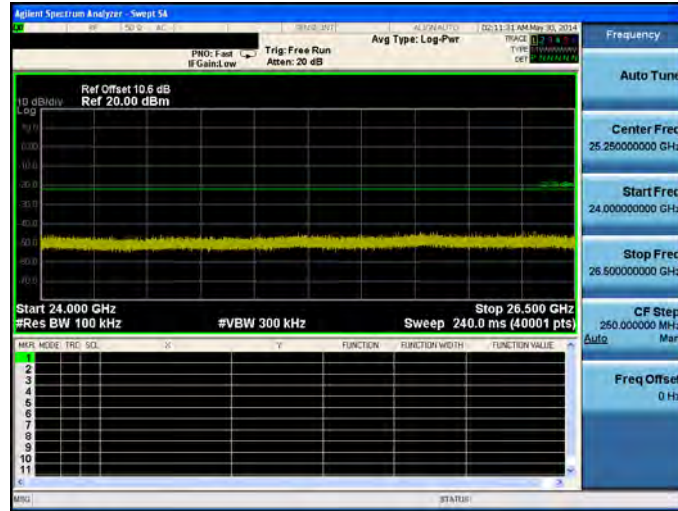


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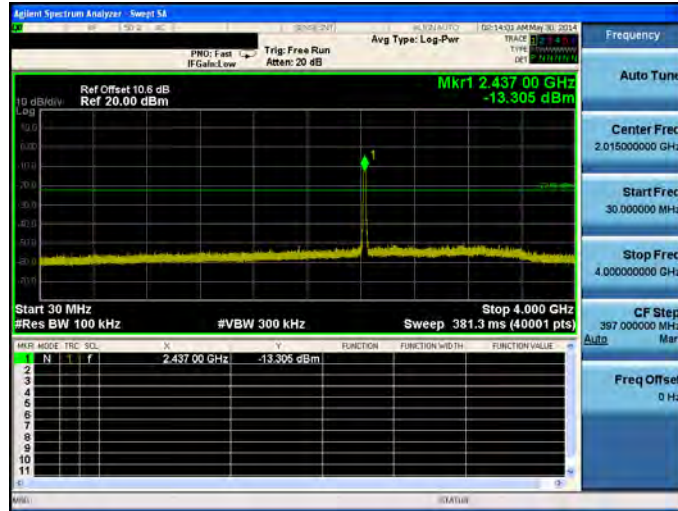
Mode 4: IEEE 802.11n 2.4GHz 20MHz Link Mode

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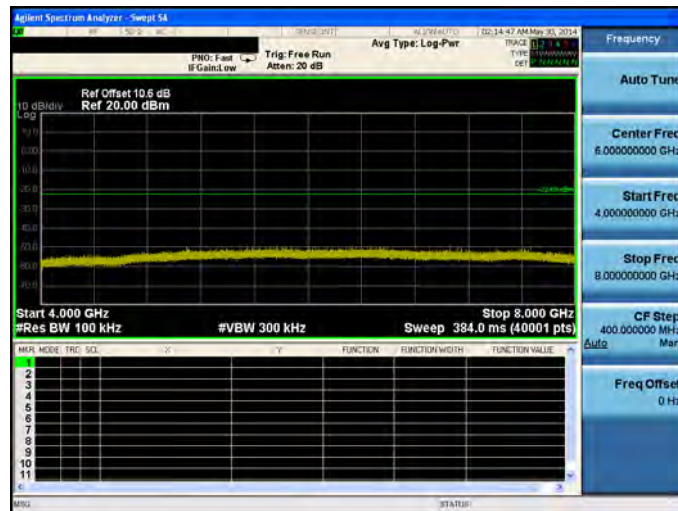


Mode 4: IEEE 802.11n 2.4GHz 20MHz Link Mode

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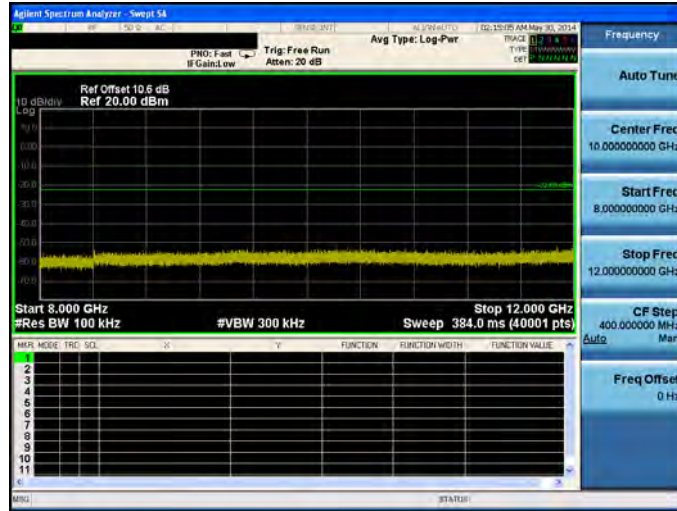


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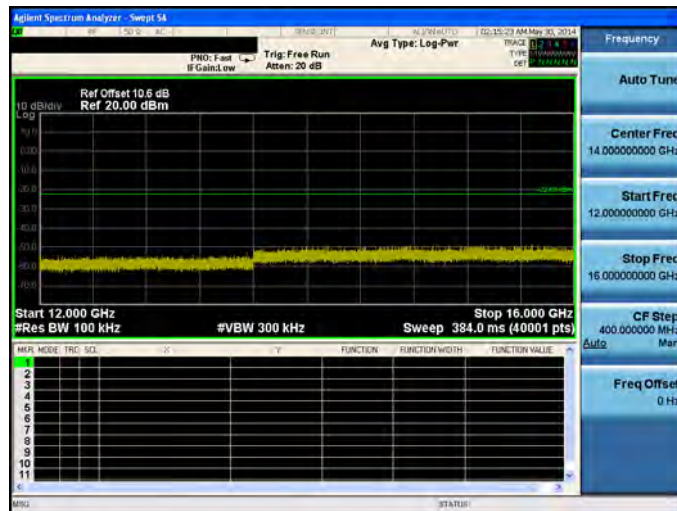


Mode 4: IEEE 802.11n 2.4GHz 20MHz Link Mode

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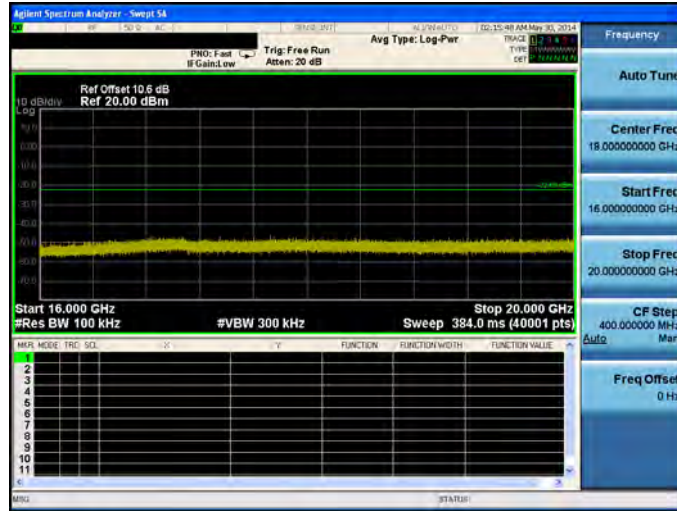


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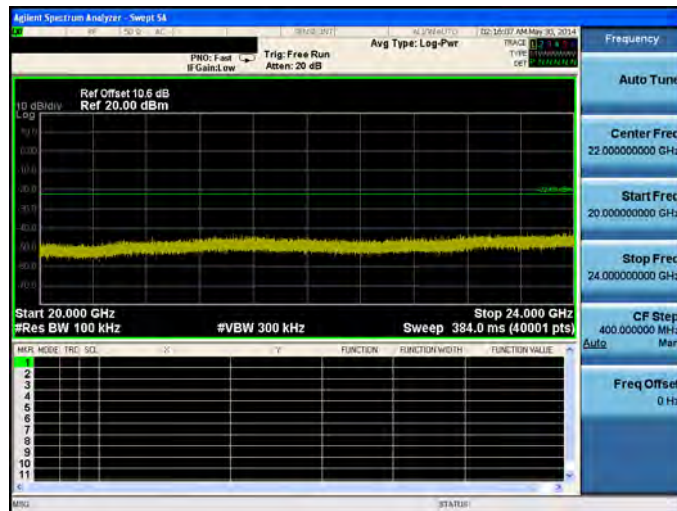


Mode 4: IEEE 802.11n 2.4GHz 20MHz Link Mode

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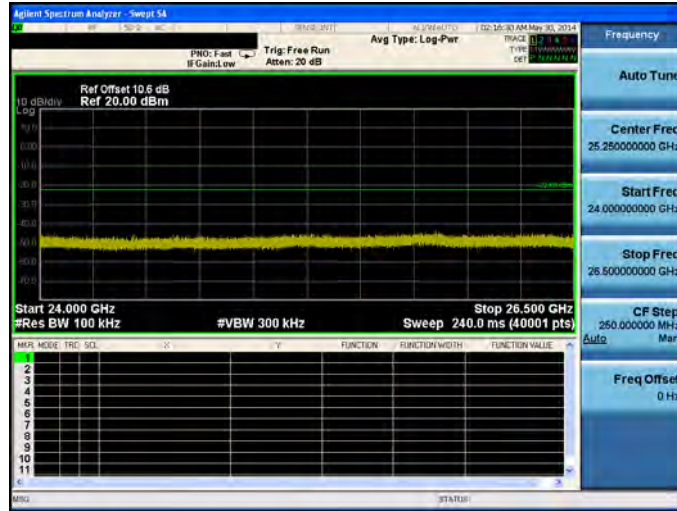


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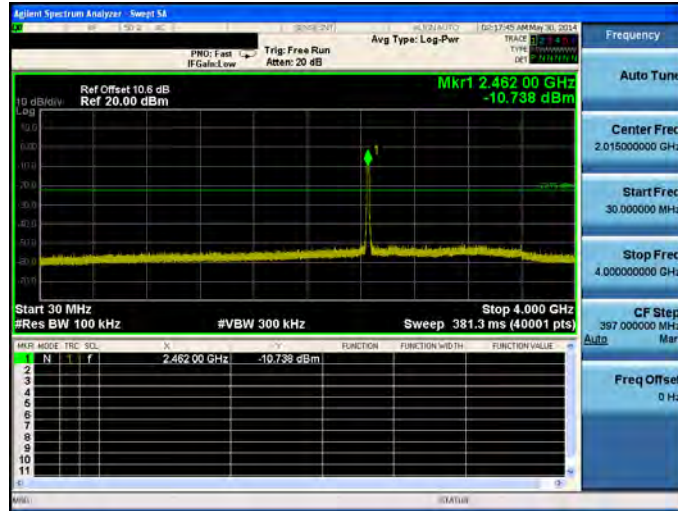
Mode 4: IEEE 802.11n 2.4GHz 20MHz Link Mode

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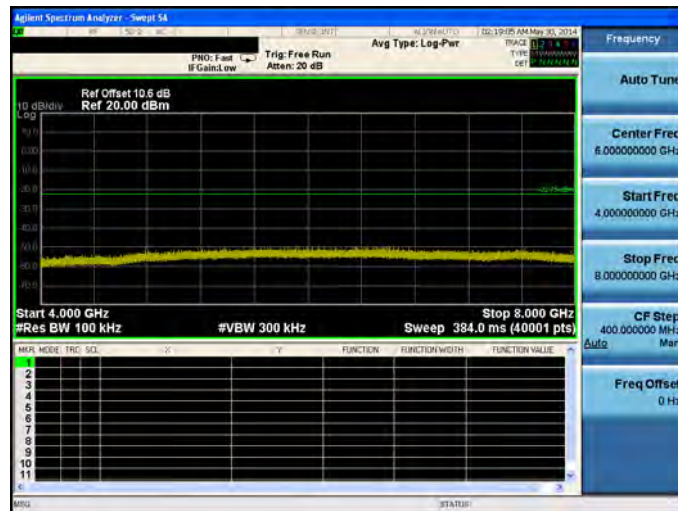


Mode 4: IEEE 802.11n 2.4GHz 20MHz Link Mode

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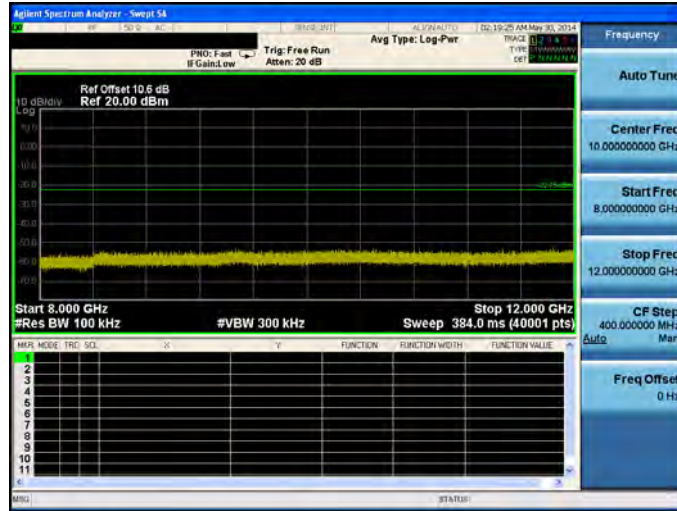


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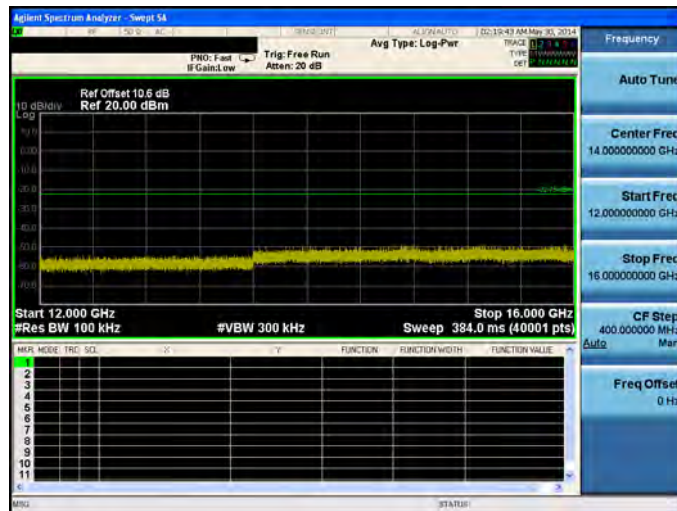


Mode 4: IEEE 802.11n 2.4GHz 20MHz Link Mode

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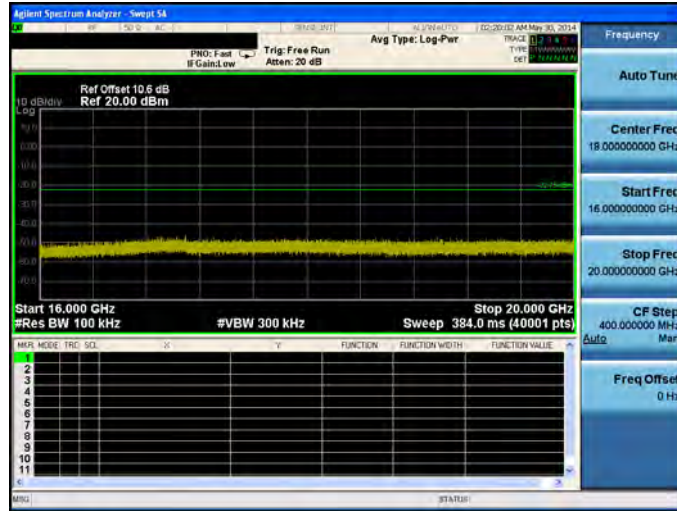


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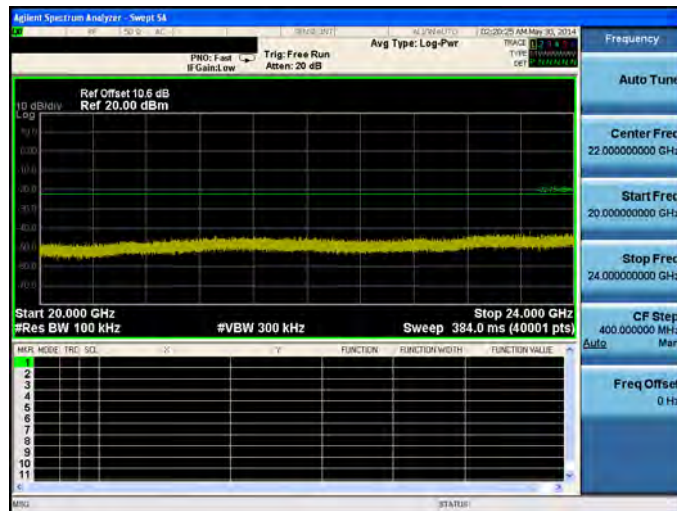


Mode 4: IEEE 802.11n 2.4GHz 20MHz Link Mode

2462

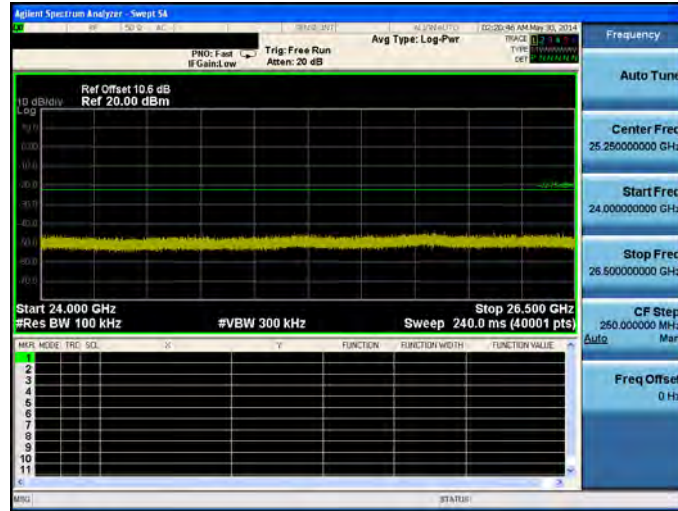


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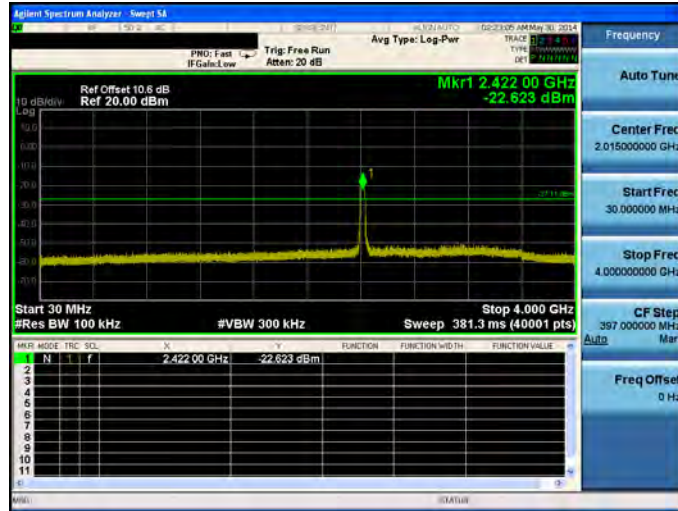
Mode 4: IEEE 802.11n 2.4GHz 20MHz Link Mode

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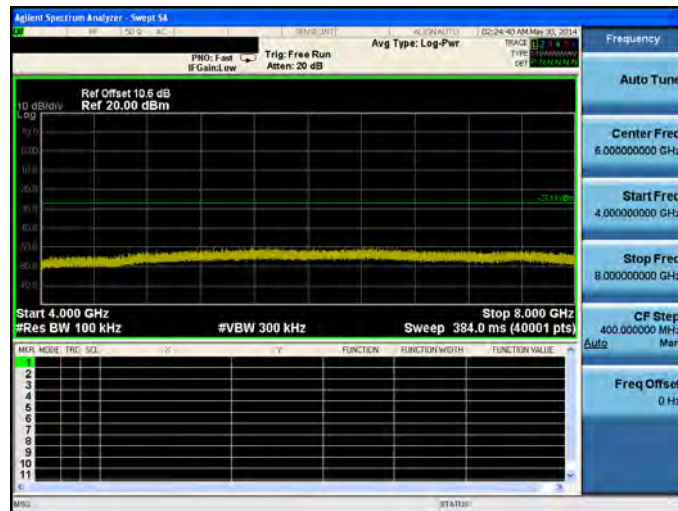


Mode 5: IEEE 802.11n 2.4GHz 40MHz Link Mode

2422

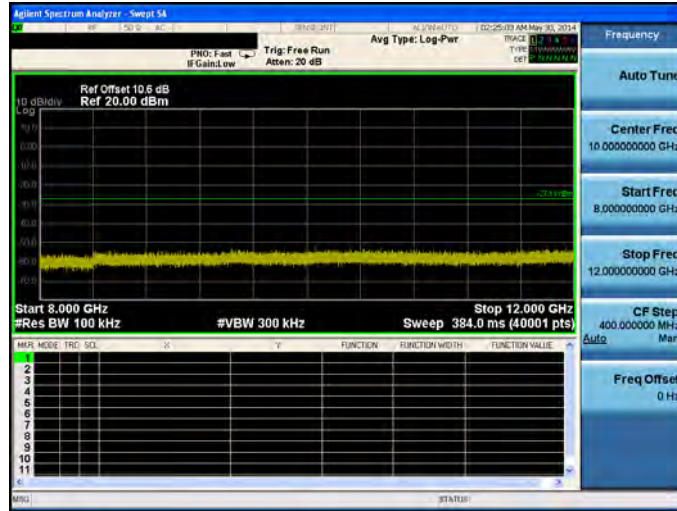


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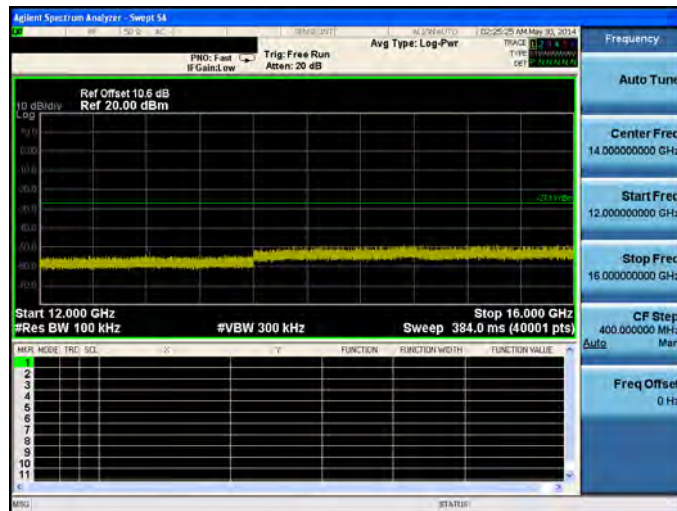


Mode 5: IEEE 802.11n 2.4GHz 40MHz Link Mode

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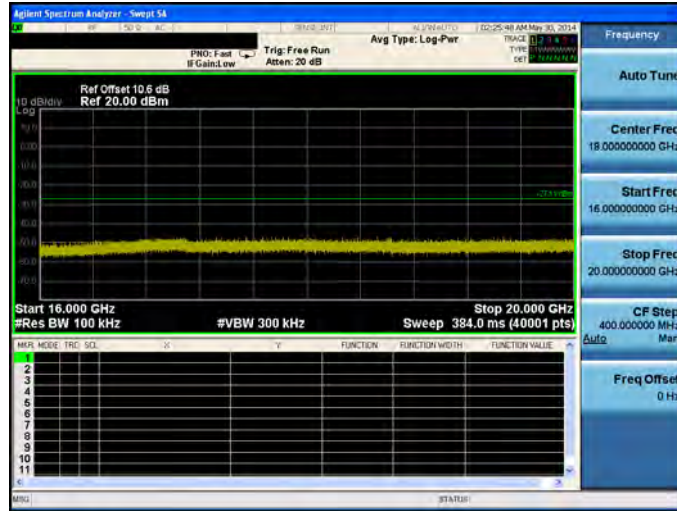


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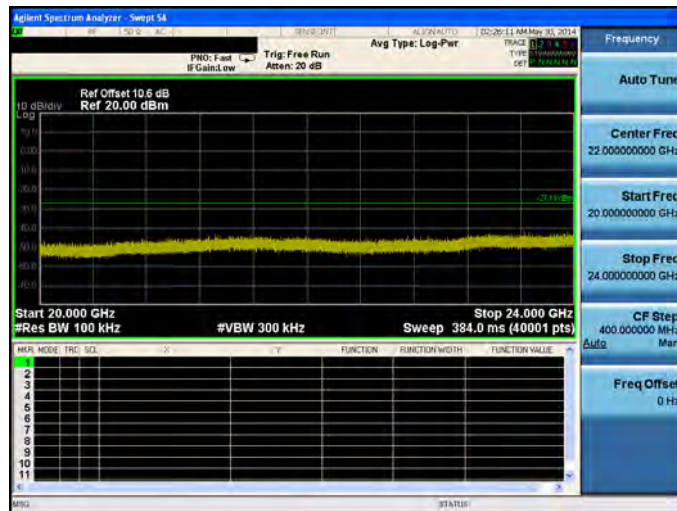


Mode 5: IEEE 802.11n 2.4GHz 40MHz Link Mode

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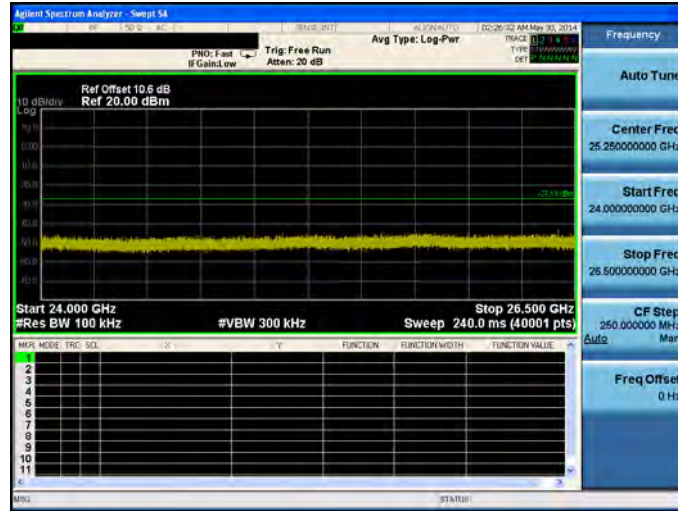


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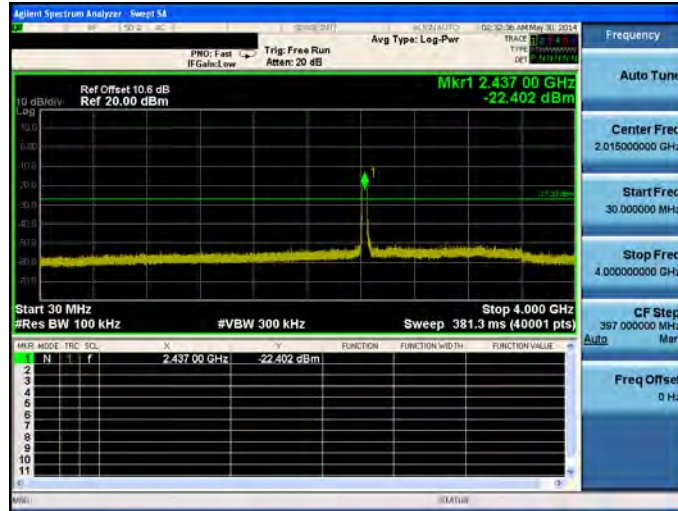
Mode 5: IEEE 802.11n 2.4GHz 40MHz Link Mode

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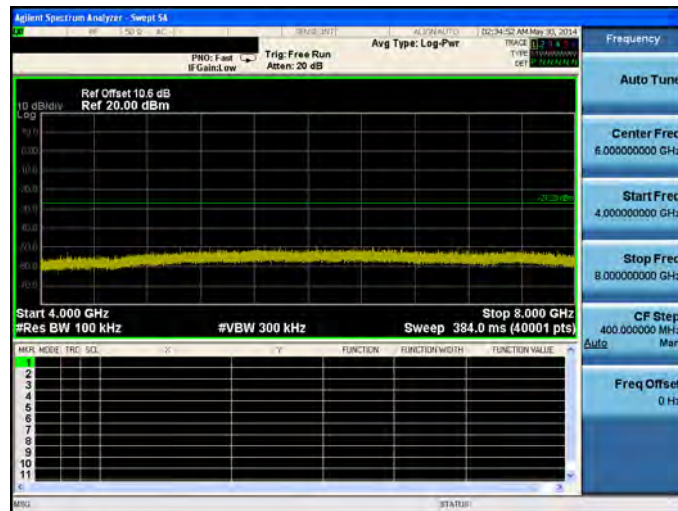


Mode 5: IEEE 802.11n 2.4GHz 40MHz Link Mode

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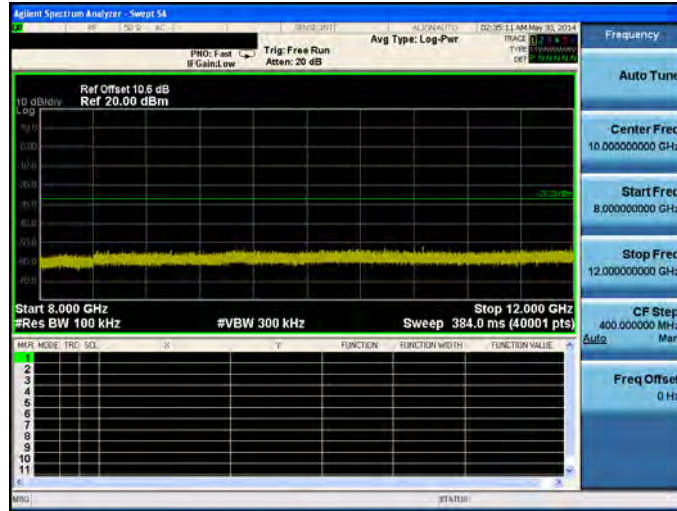


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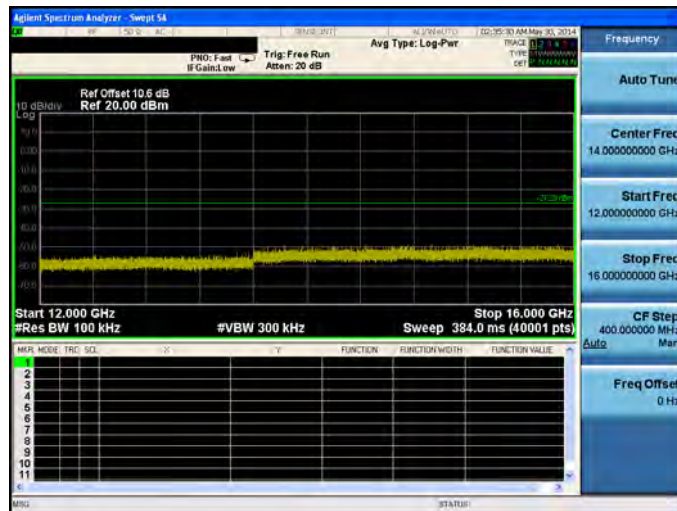


Mode 5: IEEE 802.11n 2.4GHz 40MHz Link Mode

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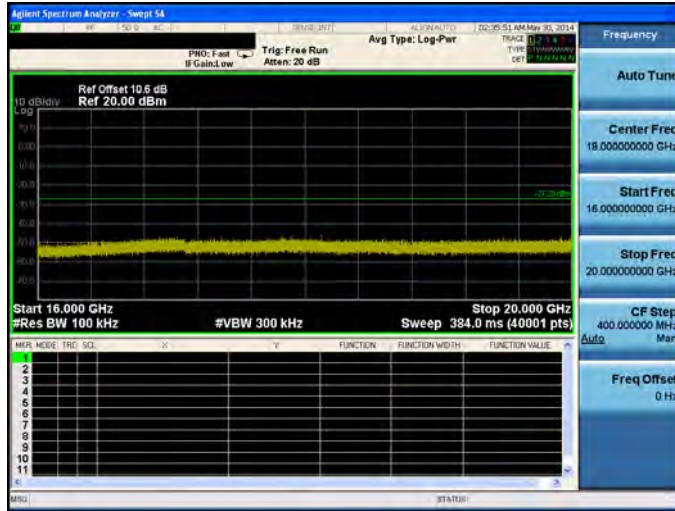


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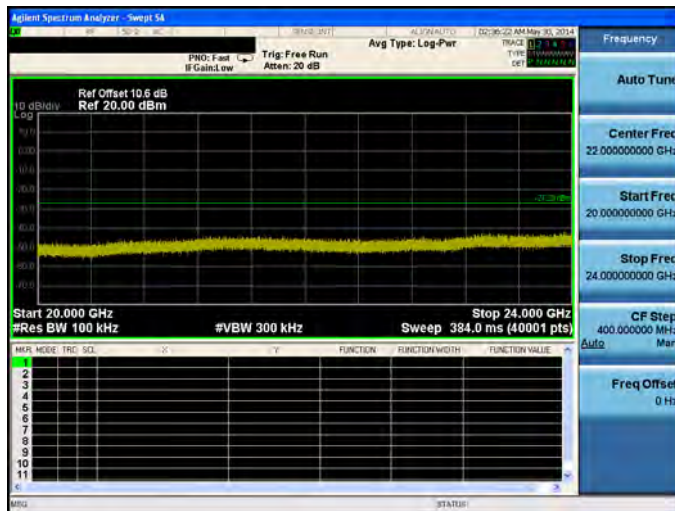


Mode 5: IEEE 802.11n 2.4GHz 40MHz Link Mode

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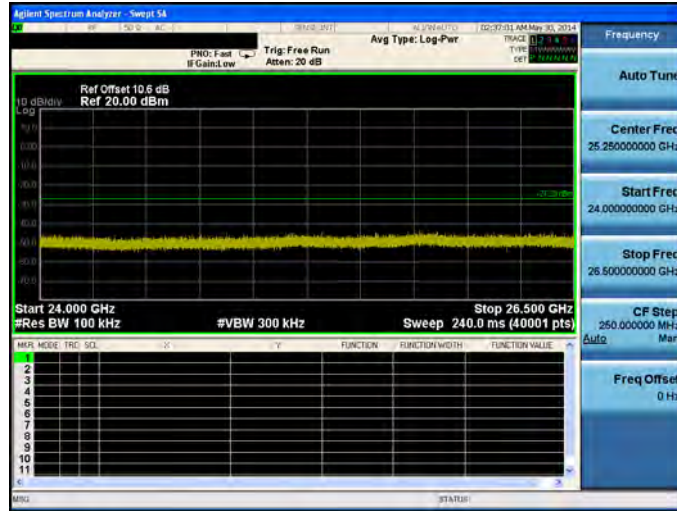


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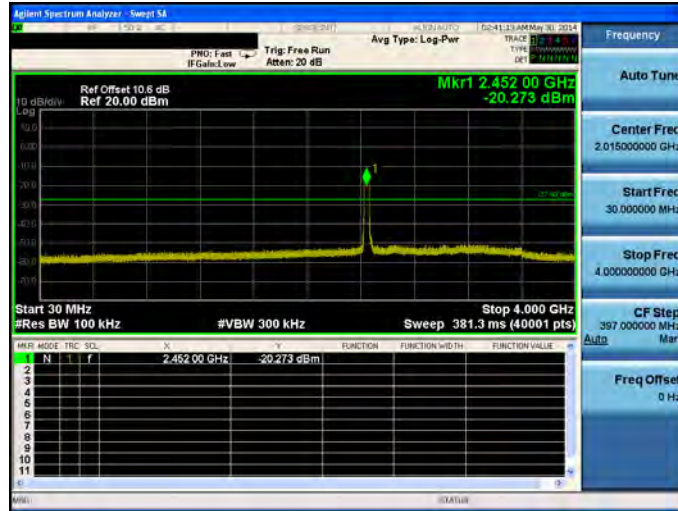
Mode 5: IEEE 802.11n 2.4GHz 40MHz Link Mode

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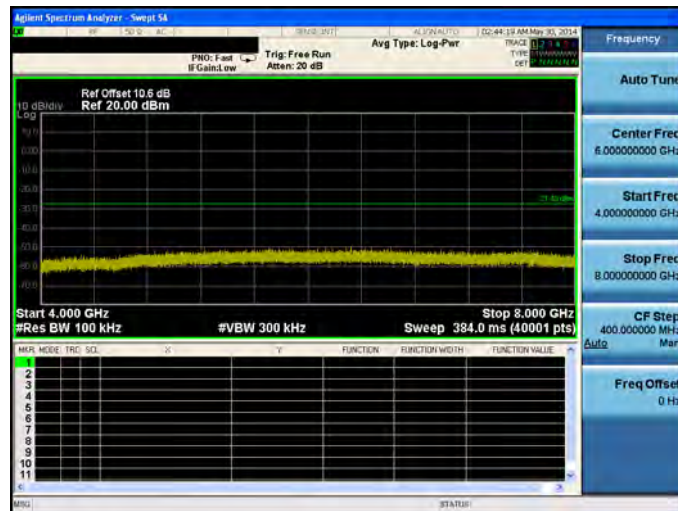


Mode 5: IEEE 802.11n 2.4GHz 40MHz Link Mode

2452

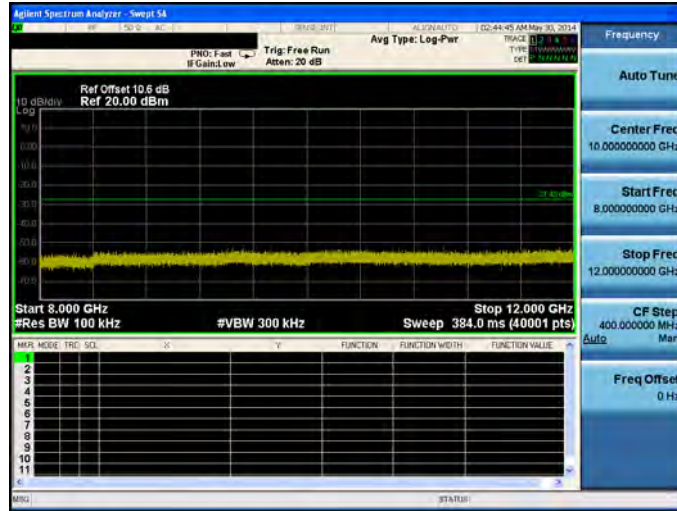


2452

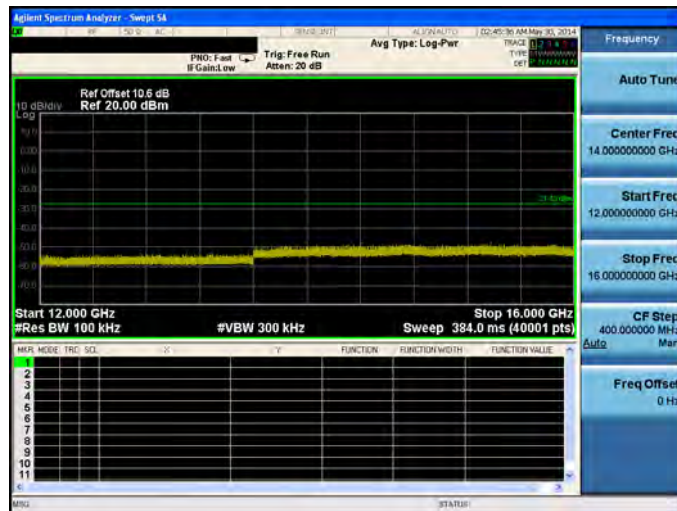


Mode 5: IEEE 802.11n 2.4GHz 40MHz Link Mode

2452

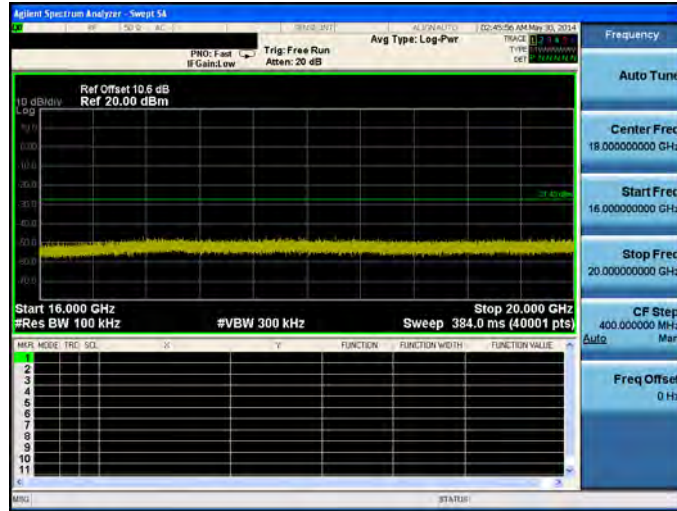


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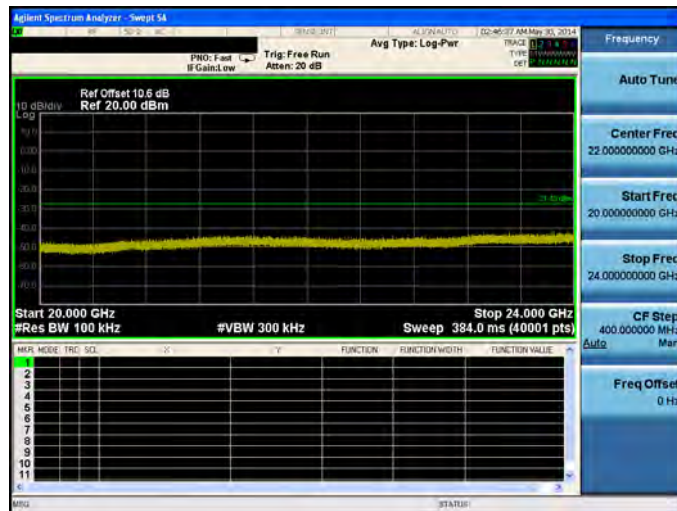


Mode 5: IEEE 802.11n 2.4GHz 40MHz Link Mode

2452

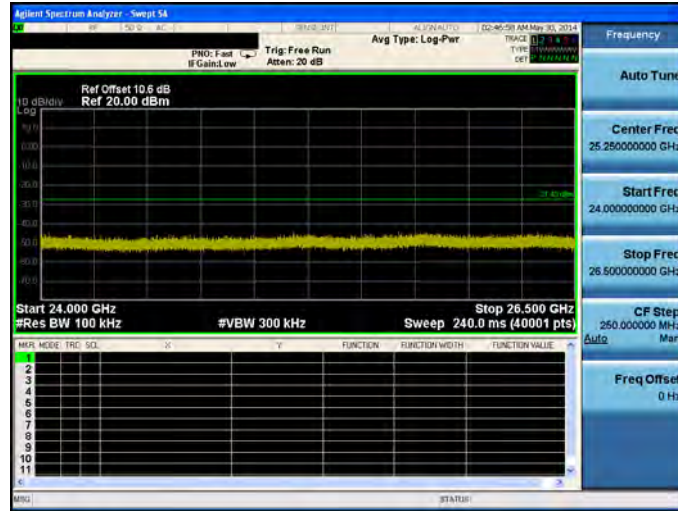


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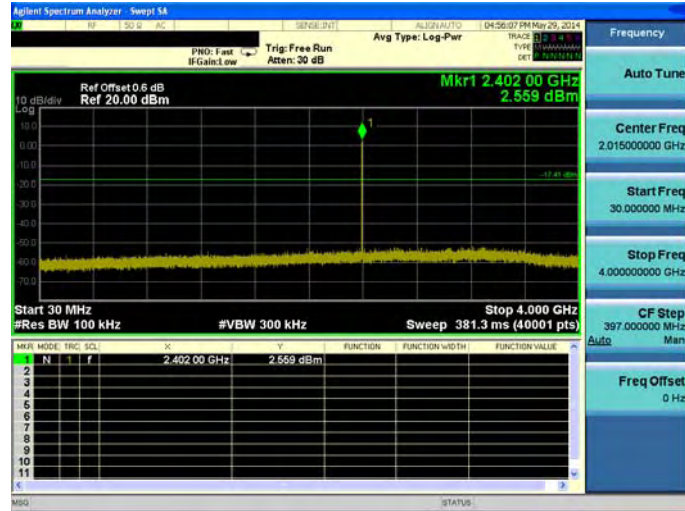
Mode 5: IEEE 802.11n 2.4GHz 40MHz Link Mode

2452

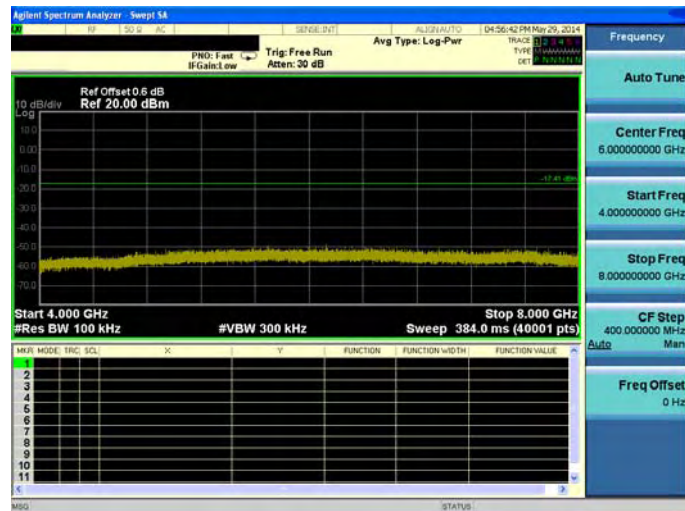


Mode 6: Bluetooth v4.0 LE Link Mode

2402

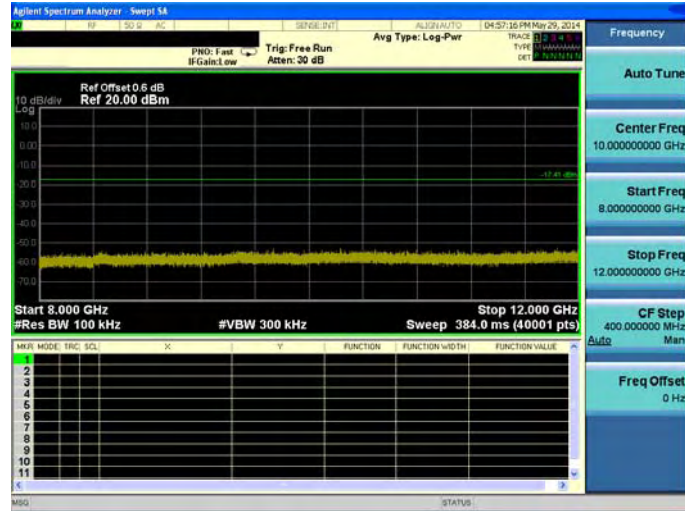


2402

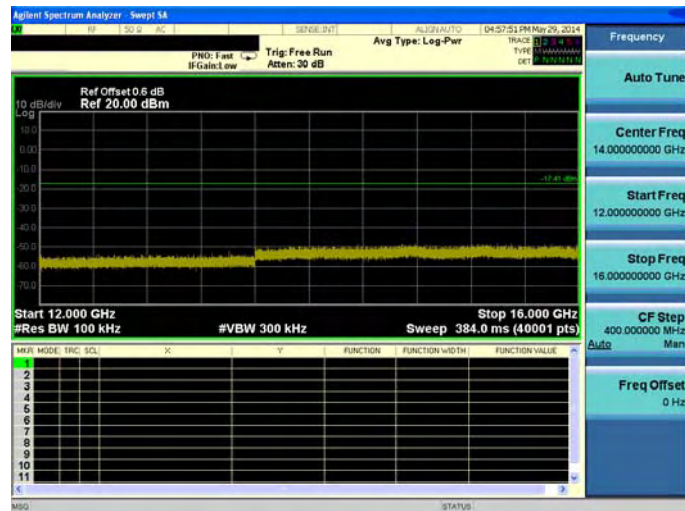


Mode 6: Bluetooth v4.0 LE Link Mode

2402

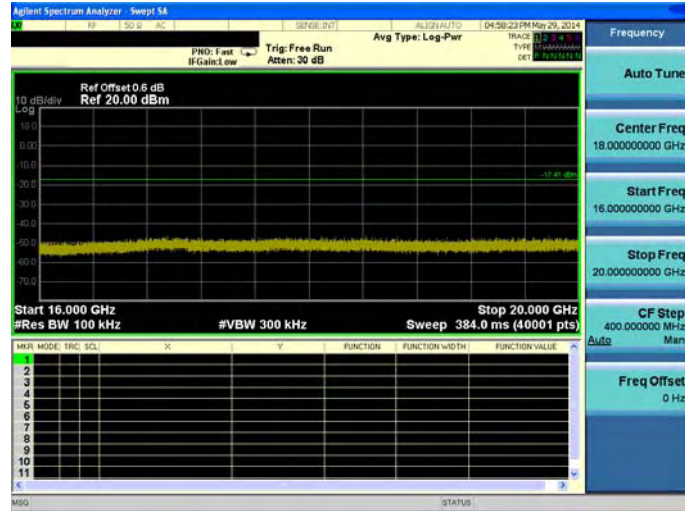


2402

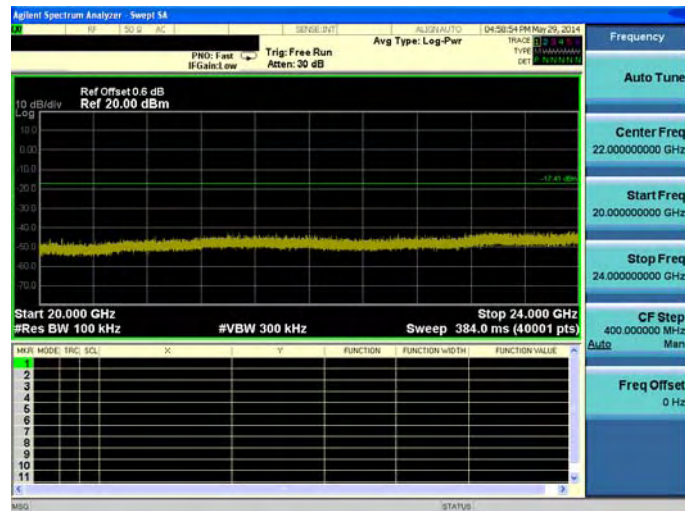


Mode 6: Bluetooth v4.0 LE Link Mode

2402



2402

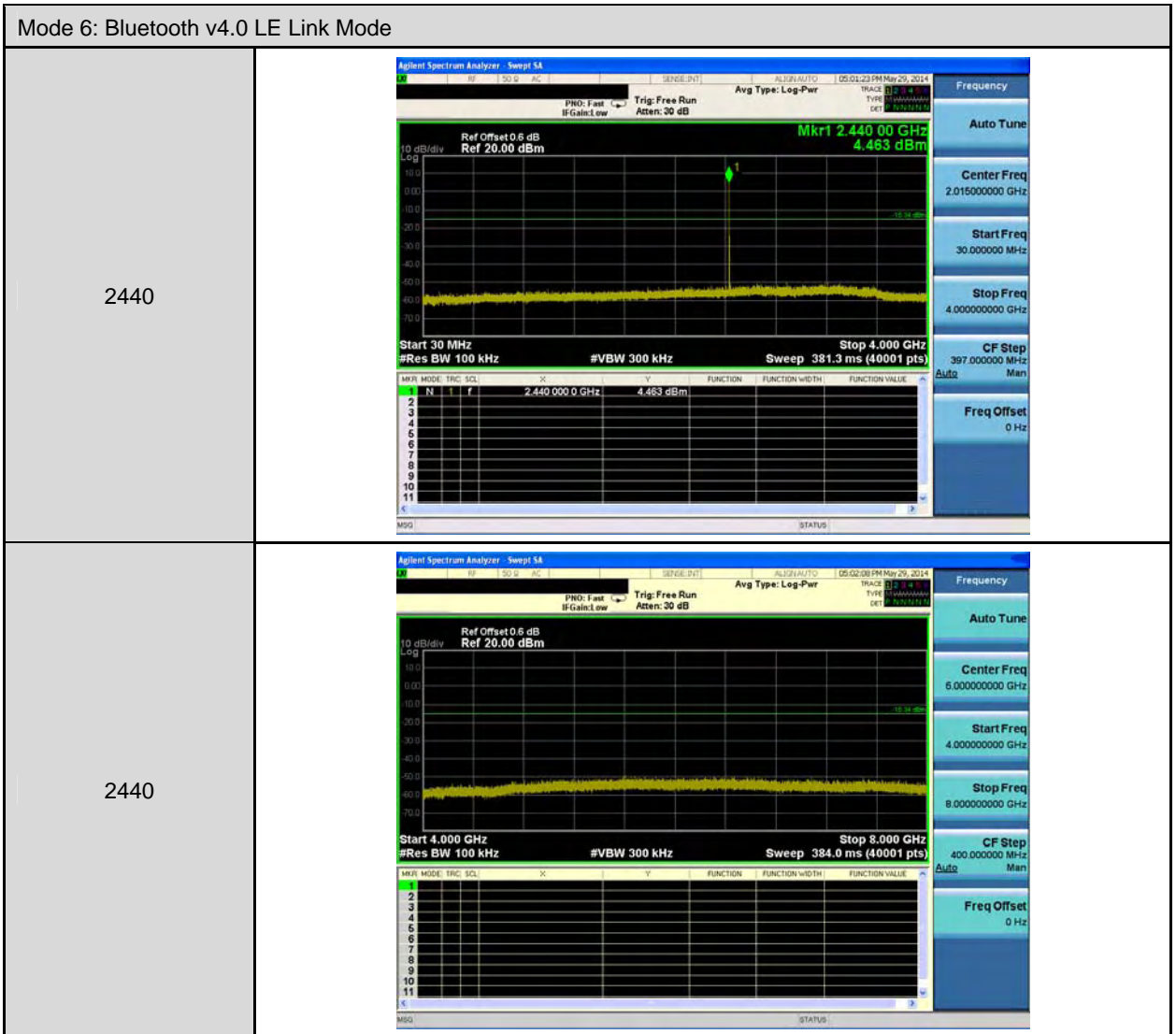


Mode 6: Bluetooth v4.0 LE Link Mode

2402

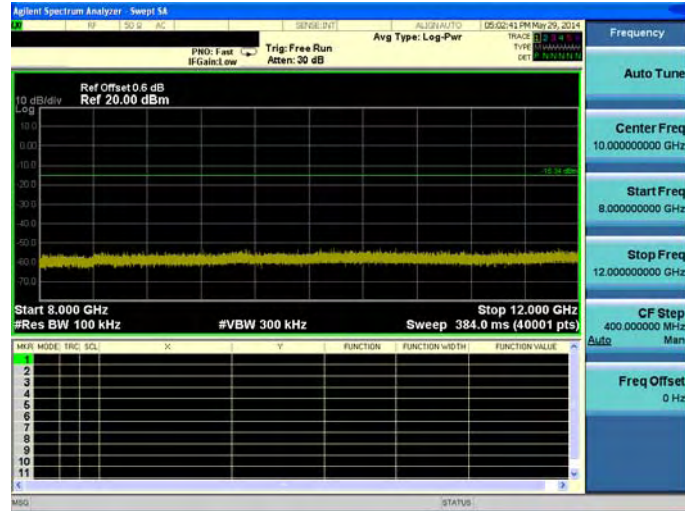


Mode 6: Bluetooth v4.0 LE Link Mode

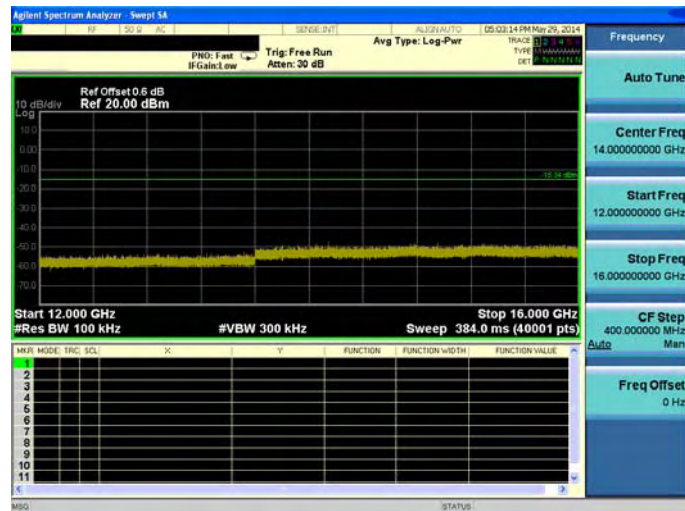


Mode 6: Bluetooth v4.0 LE Link Mode

2440

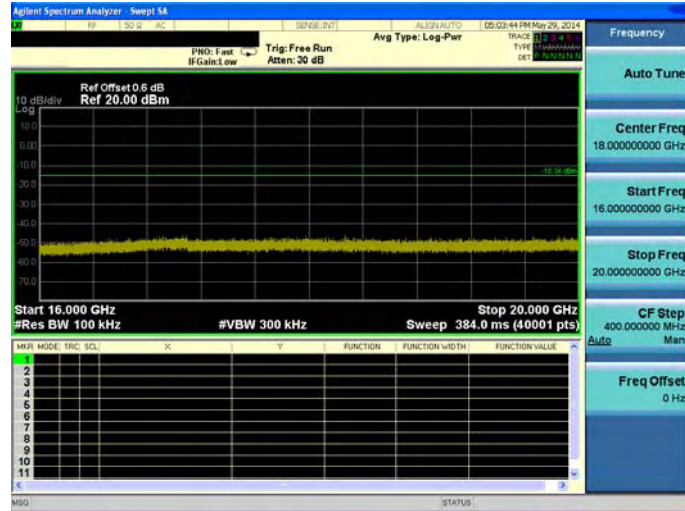


2440

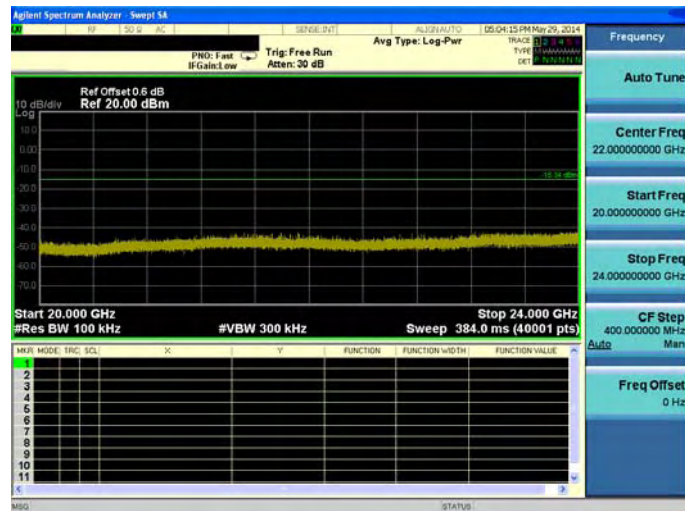


Mode 6: Bluetooth v4.0 LE Link Mode

2440

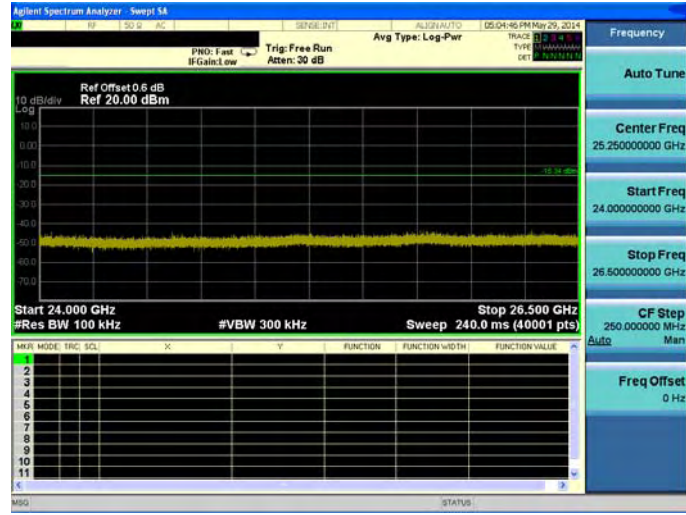


2440

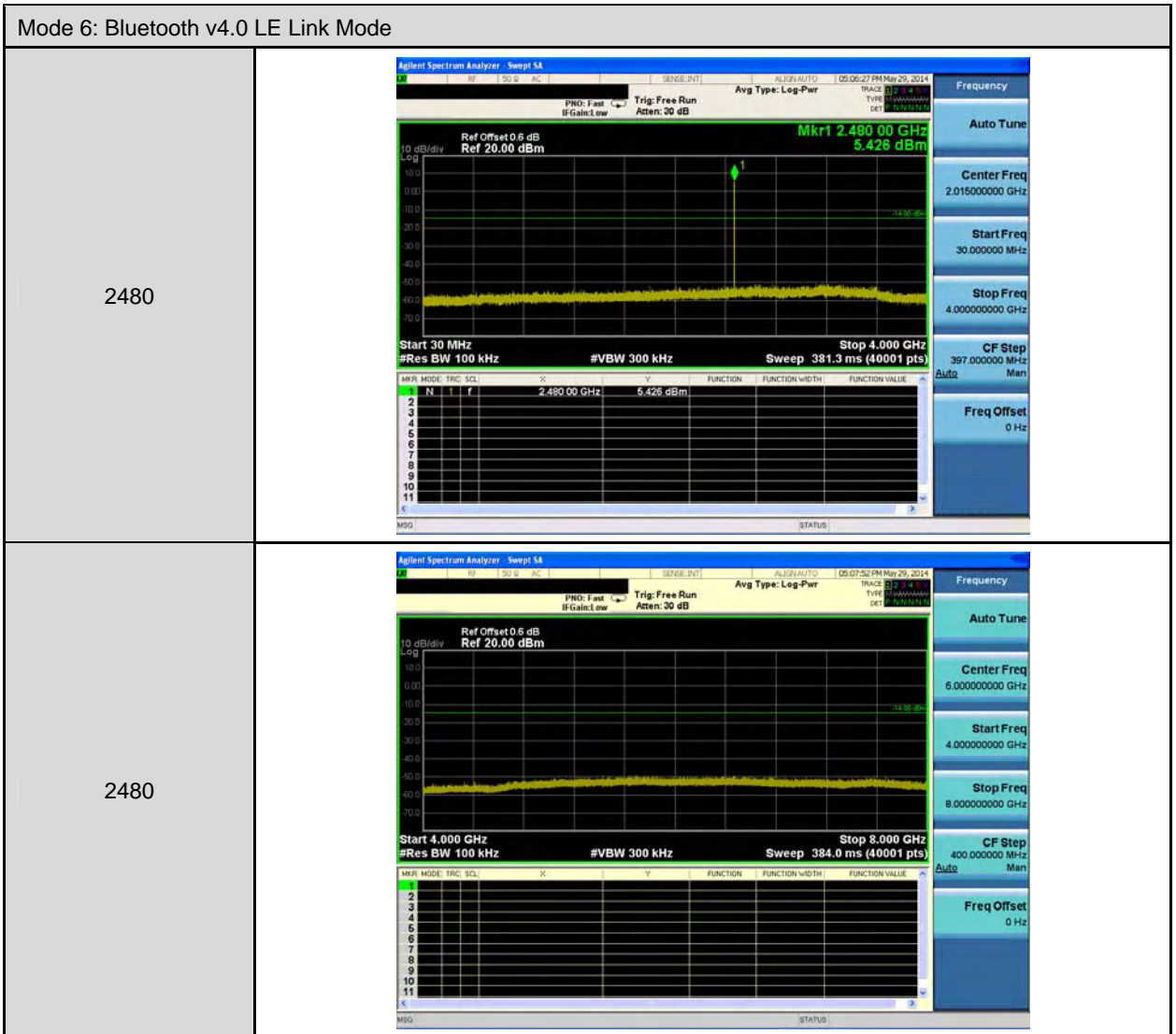


Mode 6: Bluetooth v4.0 LE Link Mode

2440

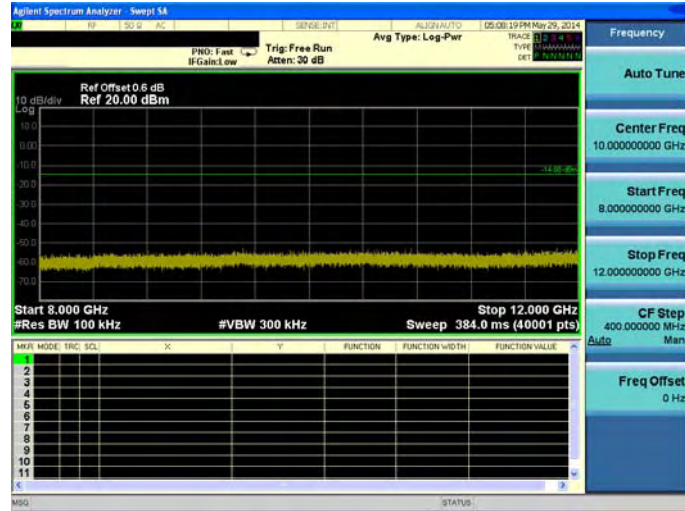


Mode 6: Bluetooth v4.0 LE Link Mode

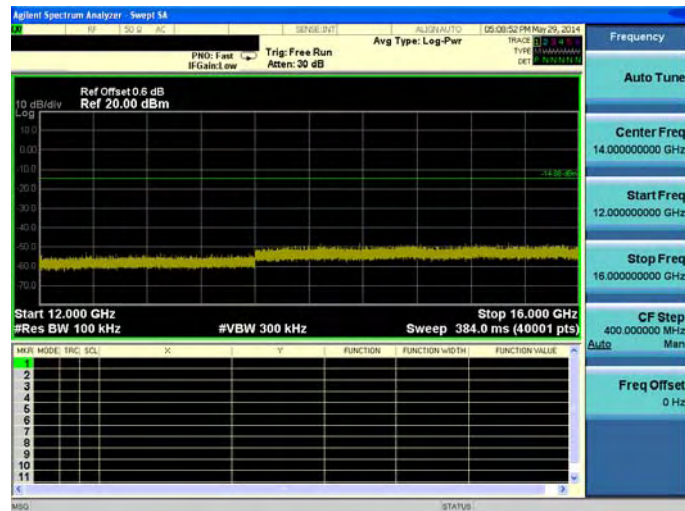


Mode 6: Bluetooth v4.0 LE Link Mode

2480

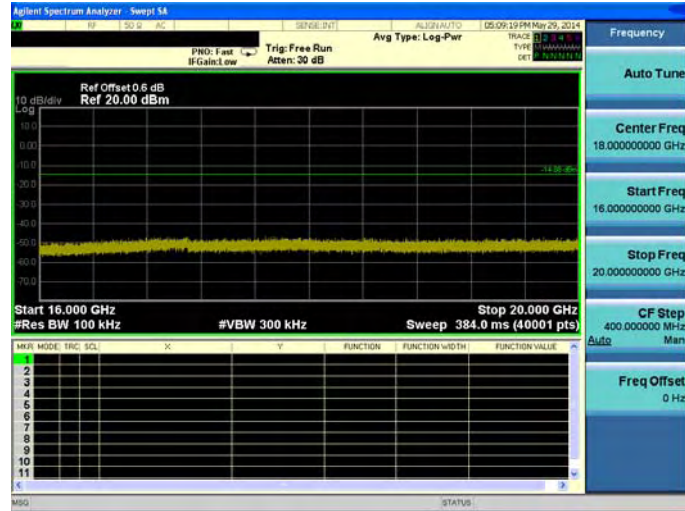


2480

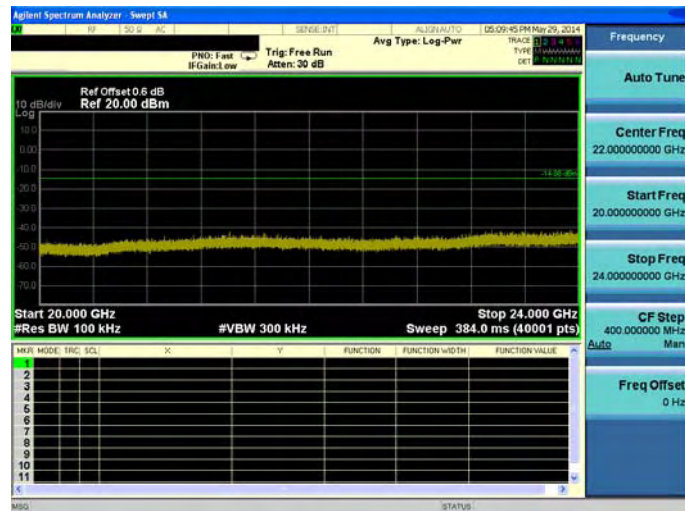


Mode 6: Bluetooth v4.0 LE Link Mode

2480



2480



Mode 6: Bluetooth v4.0 LE Link Mode

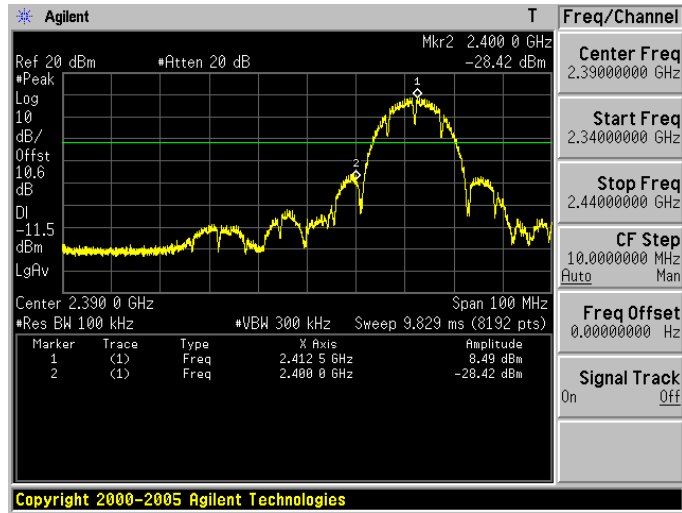
2480



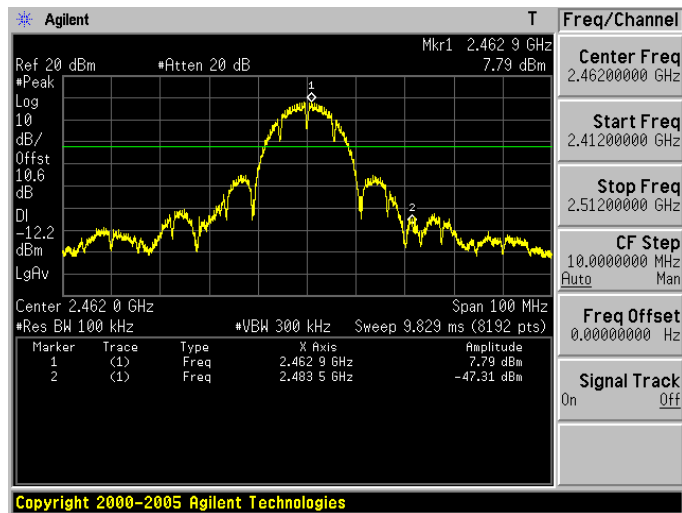
Conducted Band Edge

Mode 2: IEEE 802.11b Link Mode

2412

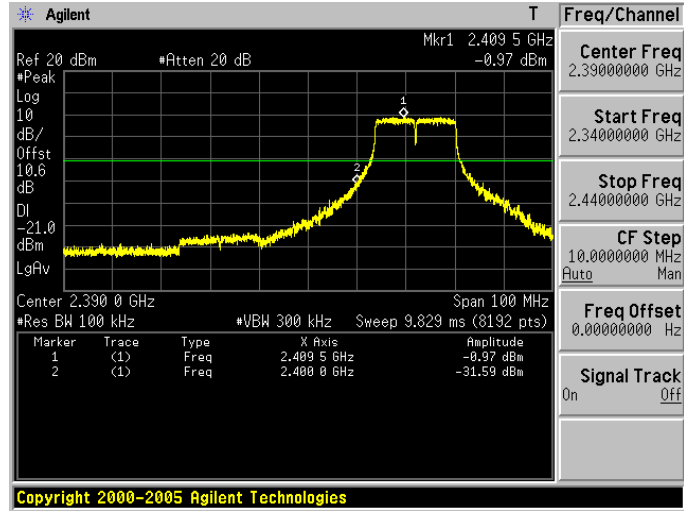


2462

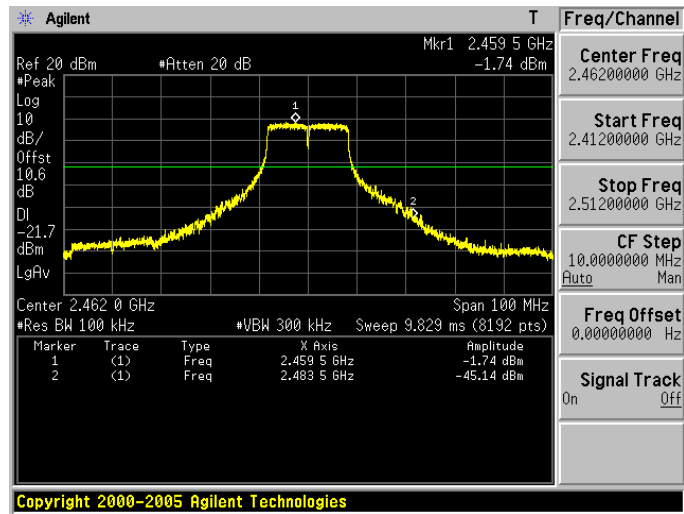


Mode 3: IEEE 802.11g Link Mode

2412

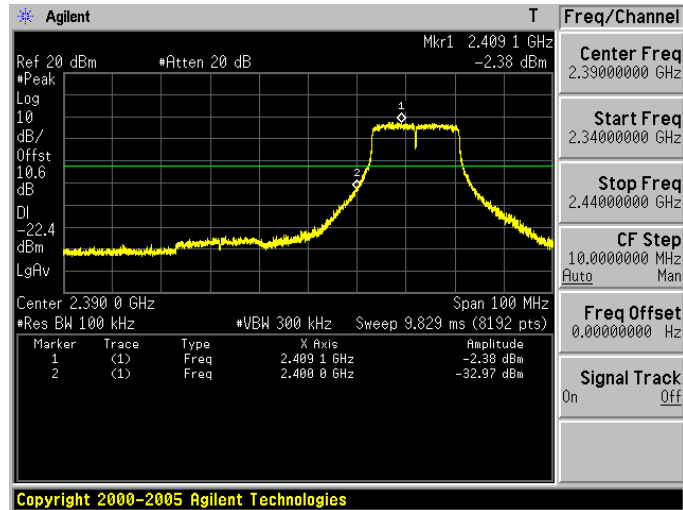


2462

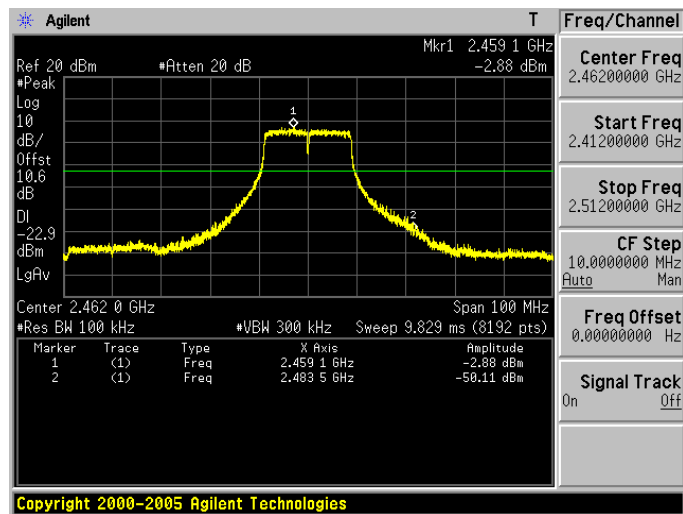


Mode 4: IEEE 802.11n 2.4GHz 20MHz Link Mode

2412

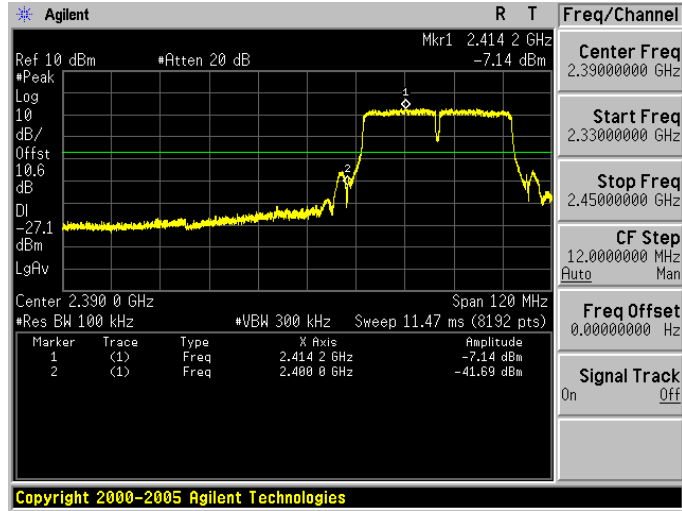


2462

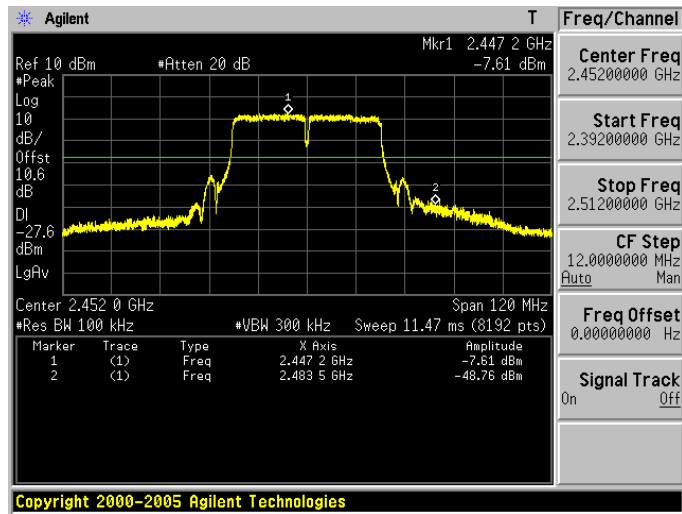


Mode 5: IEEE 802.11n 2.4GHz 40MHz Link Mode

2422



2452

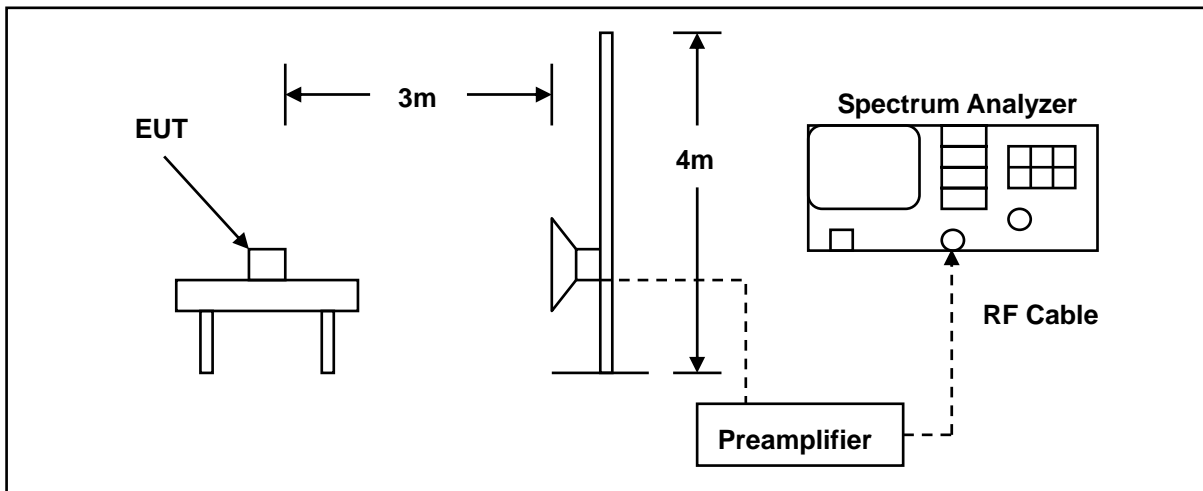


10 Band Edges Measurement

10.1.Limit

In any 100 kHz bandwidth outside the intentional radiation frequency band, the radio frequency power shall be at least 20 dB below the highest level of the radiated power. In addition, radiated emissions which fall in the restricted bands must also comply with the radiated emission limits.

10.2.Test Setup



10.3.Test Instruments

3 Meter Chamber					
Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
RF Pre-selector	Agilent	N9039A	MY46520256	01/10/2014	(2)
Spectrum Analyzer	Agilent	E4446A	MY46180578	01/10/2014	(1)
Pre Amplifier	Agilent	8449B	3008A02237	02/21/2014	(1)
Pre Amplifier	Agilent	8447D	2944A10961	02/21/2014	(1)
Horn Antenna (1~18GHz)	SCHWARZBECK MESS-ELEKTRONIK	BBHA9120D	9120D-550	06/10/2013	(1)
Test Site	ATL	TE01	888001	08/28/2013	(1)

Remark: (1) Calibration period 1 year. (2) Calibration period 2 years. (3) Calibration period 3 years.

Note: N.C.R. = No Calibration Request.

10.4. Test Procedure

The EUT was setup to ANSI C63.4, 2009; tested to DTS test procedure of KDB558074D01 for compliance to FCC 47CFR 15.247 requirements.

The emissions on the harmonics frequencies, the limits, and the margin of compliance are presented. These tests were made when the transmitter was in full radiated power. The additional test was performed to show compliance with the requirement at the band-edge frequency 2483.5 MHz and up to 2500 MHz and at 2390.0 MHz.

The transmitter was configured with the worst case antenna and setup to transmit at the highest channel. Then the field strength was measured at 2483.5 MHz.

The transmitter was then configured with the worst case antenna and setup to transmit at the lowest channel. Then the field strength was measured at 2390.0 MHz. These tests were performed at 4 different bit rates.

For measurements the resolution bandwidth is set to 1 MHz, and then the video bandwidth is set to 1 MHz for peak measurements and 10 Hz for average measurements.

10.5. Test Result

Standard:	FCC Part 15C		Test Distance:	3m			
Test item:	Radiated Emission		Power:	AC 120V/60Hz			
Model Number:	VT6081		Temp.(°C)/Hum.(%RH):	26(°C)/60%RH			
Mode:	2		Date:	05/29/2014			
Frequency:	2412 MHz		Test By:	Eric Ou Yang			
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
2385.900	61.22	-1.97	59.25	74.00	-14.75	peak	H
2385.900	54.08	-1.97	52.11	54.00	-1.89	AVG	H
2390.000	58.49	-1.94	56.55	74.00	-17.45	peak	H
2390.000	50.81	-1.94	48.87	54.00	-5.13	AVG	H
2386.450	58.48	-1.97	56.51	74.00	-17.49	peak	V
2386.450	52.94	-1.97	50.97	54.00	-3.03	AVG	V
2390.000	56.19	-1.94	54.25	74.00	-19.75	peak	V
2390.000	46.86	-1.94	44.92	54.00	-9.08	AVG	V

Standard:	FCC Part 15C		Test Distance:	3m			
Test item:	Radiated Emission		Power:	AC 120V/60Hz			
Model Number:	VT6081		Temp.(°C)/Hum.(%RH):	26(°C)/60%RH			
Mode:	2		Date:	05/29/2014			
Frequency:	2462 MHz		Test By:	Eric Ou Yang			
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
2483.500	62.06	-1.52	60.54	74.00	-13.46	peak	H
2483.500	53.48	-1.52	51.96	54.00	-2.04	AVG	H
2484.080	63.18	-1.51	61.67	74.00	-12.33	peak	H
2484.080	52.72	-1.51	51.21	54.00	-2.79	AVG	H
2483.500	55.69	-1.52	54.17	74.00	-19.83	peak	V
2483.500	47.55	-1.52	46.03	54.00	-7.97	AVG	V
2487.800	55.26	-1.49	53.77	74.00	-20.23	peak	V
2487.800	48.08	-1.49	46.59	54.00	-7.41	AVG	V

Standard:	FCC Part 15C			Test Distance:	3m		
Test item:	Radiated Emission			Power:	AC 120V/60Hz		
Model Number:	VT6081			Temp.(°C)/Hum.(%RH):	26(°C)/60%RH		
Mode:	3			Date:	05/29/2014		
Frequency:	2412 MHz			Test By:	Eric Ou Yang		
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
2389.090	69.46	-1.96	67.50	74.00	-6.50	peak	H
2389.090	53.69	-1.96	51.73	54.00	-2.27	AVG	H
2390.000	68.37	-1.94	66.43	74.00	-7.57	peak	H
2390.000	54.23	-1.94	52.29	54.00	-1.71	AVG	H
2388.980	72.65	-1.96	70.69	74.00	-3.31	peak	V
2388.980	51.92	-1.96	49.96	54.00	-4.04	AVG	V
2390.000	70.30	-1.94	68.36	74.00	-5.64	peak	V
2390.000	52.65	-1.94	50.71	54.00	-3.29	AVG	V

Standard:	FCC Part 15C			Test Distance:	3m		
Test item:	Radiated Emission			Power:	AC 120V/60Hz		
Model Number:	VT6081			Temp.(°C)/Hum.(%RH):	26(°C)/60%RH		
Mode:	3			Date:	05/29/2014		
Frequency:	2462 MHz			Test By:	Eric Ou Yang		
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
2483.500	63.18	-1.52	61.66	74.00	-12.34	peak	H
2483.500	51.88	-1.52	50.36	54.00	-3.64	AVG	H
2484.200	67.20	-1.51	65.69	74.00	-8.31	peak	H
2484.200	50.70	-1.51	49.19	54.00	-4.81	AVG	H
2483.500	70.16	-1.52	68.64	74.00	-5.36	peak	V
2483.500	52.39	-1.52	50.87	54.00	-3.13	AVG	V
2483.680	70.77	-1.52	69.25	74.00	-4.75	peak	V
2483.680	52.27	-1.52	50.75	54.00	-3.25	AVG	V

Standard:	FCC Part 15C			Test Distance:	3m		
Test item:	Radiated Emission			Power:	AC 120V/60Hz		
Model Number:	VT6081			Temp.(°C)/Hum.(%RH):	26(°C)/60%RH		
Mode:	4			Date:	05/29/2014		
Frequency:	2412 MHz			Test By:	Eric Ou Yang		
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
2389.530	64.00	-1.95	62.05	74.00	-11.95	peak	H
2389.530	47.80	-1.95	45.85	54.00	-8.15	AVG	H
2390.000	66.50	-1.94	64.56	74.00	-9.44	peak	H
2390.000	47.93	-1.94	45.99	54.00	-8.01	AVG	H
2384.360	60.07	-1.97	58.10	74.00	-15.90	peak	V
2384.360	45.19	-1.97	43.22	54.00	-10.78	AVG	V
2390.000	58.58	-1.94	56.64	74.00	-17.36	peak	V
2390.000	45.97	-1.94	44.03	54.00	-9.97	AVG	V

Standard:	FCC Part 15C			Test Distance:	3m		
Test item:	Radiated Emission			Power:	AC 120V/60Hz		
Model Number:	VT6081			Temp.(°C)/Hum.(%RH):	26(°C)/60%RH		
Mode:	4			Date:	05/29/2014		
Frequency:	2462 MHz			Test By:	Eric Ou Yang		
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
2483.500	73.83	-1.52	72.31	74.00	-1.69	peak	H
2483.500	52.24	-1.52	50.72	54.00	-3.28	AVG	H
2483.640	73.74	-1.52	72.22	74.00	-1.78	peak	H
2483.640	52.34	-1.52	50.82	54.00	-3.18	AVG	H
2483.500	66.23	-1.52	64.71	74.00	-9.29	peak	V
2483.500	51.84	-1.52	50.32	54.00	-3.68	AVG	V
2484.000	67.90	-1.51	66.39	74.00	-7.61	peak	V
2484.000	51.56	-1.51	50.05	54.00	-3.95	AVG	V

Standard:	FCC Part 15C		Test Distance:	3m			
Test item:	Radiated Emission		Power:	AC 120V/60Hz			
Model Number:	VT6081		Temp.(°C)/Hum.(%RH):	26(°C)/60%RH			
Mode:	5		Date:	05/29/2014			
Frequency:	2422 MHz		Test By:	Eric Ou Yang			
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
2386.440	68.31	-1.97	66.34	74.00	-7.66	peak	H
2386.440	51.96	-1.97	49.99	54.00	-4.01	AVG	H
2390.000	65.87	-1.94	63.93	74.00	-10.07	peak	H
2390.000	53.05	-1.94	51.11	54.00	-2.89	AVG	H
2388.120	64.83	-1.96	62.87	74.00	-11.13	peak	V
2388.120	49.33	-1.96	47.37	54.00	-6.63	AVG	V
2390.000	61.43	-1.94	59.49	74.00	-14.51	peak	V
2390.000	50.04	-1.94	48.10	54.00	-5.90	AVG	V

Standard:	FCC Part 15C		Test Distance:	3m			
Test item:	Radiated Emission		Power:	AC 120V/60Hz			
Model Number:	VT6081		Temp.(°C)/Hum.(%RH):	26(°C)/60%RH			
Mode:	5		Date:	05/29/2014			
Frequency:	2452 MHz		Test By:	Eric Ou Yang			
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
2483.500	73.11	-1.52	71.59	74.00	-2.41	peak	H
2483.500	51.99	-1.52	50.47	54.00	-3.53	AVG	H
2485.700	73.93	-1.51	72.42	74.00	-1.58	peak	H
2485.700	53.74	-1.51	52.23	54.00	-1.77	AVG	H
2483.500	64.73	-1.52	63.21	74.00	-10.79	peak	V
2483.500	50.71	-1.52	49.19	54.00	-4.81	AVG	V
2486.800	67.67	-1.50	66.17	74.00	-7.83	peak	V
2486.800	49.37	-1.50	47.87	54.00	-6.13	AVG	V

Standard:	FCC Part 15C			Test Distance:	3m		
Test item:	Radiated Emission			Power:	AC 120V/60Hz		
Model Number:	VT6081			Temp.(°C)/Hum.(%RH):	26(°C)/60%RH		
Mode:	6			Date:	05/29/2014		
Frequency:	2402 MHz			Test By:	Eric Ou Yang		
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
2387.770	39.59	-1.96	37.63	74.00	-36.37	peak	H
2390.000	37.76	-1.94	35.82	74.00	-38.18	peak	H
2384.470	39.63	-1.97	37.66	74.00	-36.34	peak	V
2390.000	37.46	-1.94	35.52	74.00	-38.48	peak	V

Standard:	FCC Part 15C			Test Distance:	3m		
Test item:	Radiated Emission			Power:	AC 120V/60Hz		
Model Number:	VT6081			Temp.(°C)/Hum.(%RH):	26(°C)/60%RH		
Mode:	6			Date:	05/29/2014		
Frequency:	2480 MHz			Test By:	Eric Ou Yang		
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
2483.500	37.05	-1.52	35.53	74.00	-38.47	peak	H
2494.940	39.58	-1.47	38.11	74.00	-35.89	peak	H
2483.500	38.80	-1.52	37.28	74.00	-36.72	peak	V
2484.260	40.42	-1.51	38.91	74.00	-35.09	peak	V

11 Antenna Measurement

11.1.Limit

For intentional device, according to 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

And According to 15.247 (b), if transmitting antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

11.2.Antenna Connector Construction

The antenna used in this product is PCB antenna. And the maximum Gain of this antenna is as below:

WLAN 2.4G: 4.3dBi

Bluetooth: 4.3 dBi