FCC 47 CFR PART 15 SUBPART C

Product Type	:	Smartphone
Applicant	:	HTC Corporation
Address	:	No. 23, Xinghua Rd., Taoyuan City, Taoyuan County 330, Taiwan
Trade Name	:	HTC
Model Number	:	PH85110
Test Specification	:	FCC 47 CFR PART 15 SUBPART C: Oct., 2010 ANSI C63.4-2009
Issue Date	:	Jul. 29, 2011

Issue by

A Test Lab Techno Corp.
No. 140-1, Changan Street, Bade City,
Taoyuan County 334, Taiwan R.O.C.
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Taiwan Accreditation Foundation accreditation number: 1330

Revision History

Rev.	Issue Date	Revisions	Revised By
00	Jul. 29, 2011	Initial Issue	

Verification of Compliance

Issued Date: 07/29/2011

Product Type	:	Smartphone
Applicant	:	HTC Corporation
Address	:	No. 23, Xinghua Rd., Taoyuan City, Taoyuan County 330, Taiwan
Trade Name	:	HTC
Model Number	:	PH85110
FCC ID	:	NM8PH85110
EUT Rated Voltage	:	DC 5.0V, 1.0A
Test Voltage	:	120 Vac / 60 Hz
Applicable Standard	:	FCC 47 CFR PART 15 SUBPART C: Oct., 2010 ANSI C63.4-2009
Test Result	:	Complied
Performing Lab.	:	A Test Lab Techno Corp. No. 140-1, Changan Street, Bade City, Taoyuan County 334, Taiwan R.O.C. Tel：+86-3-2710188 / Fax：+86-3-2710190 Taiwan Accreditation Foundation accreditation number: 1330 http://www.atl-lab.com.tw/e-index.htm

The above equipment was tested by A Test Lab Techno Corp. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4: 2009 and the energy emitted by the sample tested as described in this report is in compliance with the requirements of FCC Rules Part 15.207, 15.209, 15.247 .
The test results of this report relate only to the tested sample identified in this report.

Approved By	:		Reviewed By	:	
(Manager)		(Miller Lee)	(Testing Engineer)		(Gary Wu)

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1 General Information

1.1 Summary of Test Result

Standard		Item	Result	Remark
15.247	RSS-GEN			
15.207	7.2.2	AC Power Conducted Emission	PASS	-----
-----	6	Receiver Radiated Emissions	PASS	-----
Standard		Item	Result	Remark
15.247	RSS-210			
15.247(d)	A8.5	Transmitter Radiated Emissions	PASS	-----
15.247(b)(3)	A8.4	Max. Output Power	PASS	-----
15.247(a)(2)	A8.2 (a)	6dB RF Bandwidth	PASS	-----
15.247(e)	A8.2 (b)	Power Spectral Density	PASS	-----
15.247(c)	A8.5	Out of Band Conducted Spurious Emission	PASS	-----
15.247(d)	A8.5	Band Edge Measurement	PASS	-----
15.247(c)	A8.5	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

Conducted Emission

The measurement uncertainty is evaluated as ± 2.24 dB.

Radiated Emission

The measurement uncertainty of 30 MHz - 1GHz is evaluated as ± 3.072dB.

2 EUT Description

Product	:	Smartphone
Trade Name	:	HTC
Model No.	:	PH85110
Applicant	:	HTC Corporation No. 23, Xinghua Rd., Taoyuan City, Taoyuan County 330, Taiwan
Manufacturer	:	HTC Corporation No. 23, Xinghua Rd., Taoyuan City, Taoyuan County 330, Taiwan
FCC ID	:	NM8PH85110
Frequency Range	:	IEEE 802.11b / 802.11g / draft 802.11n Standard-20MHz: 2412 ~ 2462 MHz IEEE 802.11a / draft 802.11n Standard-20MHz U-NII Band IV: 5745 ~ 5825 MHz
Modulation Type	:	IEEE 802.11b: DSSS(DQPSK, DBPSK) IEEE 802.11g: DSSS(DQPSK, DBPSK)+ OFDM(QPSK, BPSK, 16-QAM, 64-QAM) draft 802.11n Standard-20MHz channel mode: OFDM(7.2, 14.4, 21.7, 28.9, 43.3, 57.8, 65, 72.2 Mbps) IEEE 802.11a U-NII Band IV: OFDM (6, 9, 12, 18, 24, 36, 48, 54 Mbps) draft 802.11n Standard-20MHz U-NII Band IV: OFDM(7.2, 14.4, 21.7, 28.9, 43.3, 57.8, 65, 72.2 Mbps)
Antenna Type	:	PIFA Type
Antenna Gain	:	IEEE 802.11b / 802.11g / draft 802.11n Standard-20MHz: 0.8 dBi IEEE 802.11a / draft 802.11n Standard-20MHz U-NII Band IV: 1.5 dBi
RF Output Power	:	IEEE 802.11b: 0.170 W / 22.30 dBm IEEE 802.11g: 0.461 W / 26.64 dBm draft 802.11n Standard-20MHz: 0.409 W / 26.12 dBm IEEE 802.11a U-NII Band IV: 0.361 W / 25.58 dBm draft 802.11n Standard-20MHz U-NII Band IV: 0.397 W / 25.99 dBm

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: IDLE Mode
Mode 2: Normal Operation Mode
Mode 3: IEEE 802.11b Link Mode
Mode 4: IEEE 802.11g Link Mode
Mode 5: draft 802.11n Standard-20MHz Link Mode
Mode 6: IEEE 802.11a U-NII Band IV Link Mode
Mode 7: draft 802.11n Standard-20MHz U-NII Band IV Link Mode
Mode 8: Receiver 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 24Mbps data rate were chosen for full testing.

draft 802.11n Standard-20 MHz Channel mode:
Channel Low (2412MHz), Channel Mid (2437MHz) and Channel High (2462MHz) with 52Mbps data rate were chosen for full testing.

IEEE 802.11a mode / 5745 ~ 5825MHz:

Channel Low (5745MHz), Channel Mid (5785MHz) and Channel High (5825MHz) with 6Mbps data rate were chosen for full testing.

draft 802.11n Standard-20 MHz Channel mode / 5745 ~ 5825MHz:

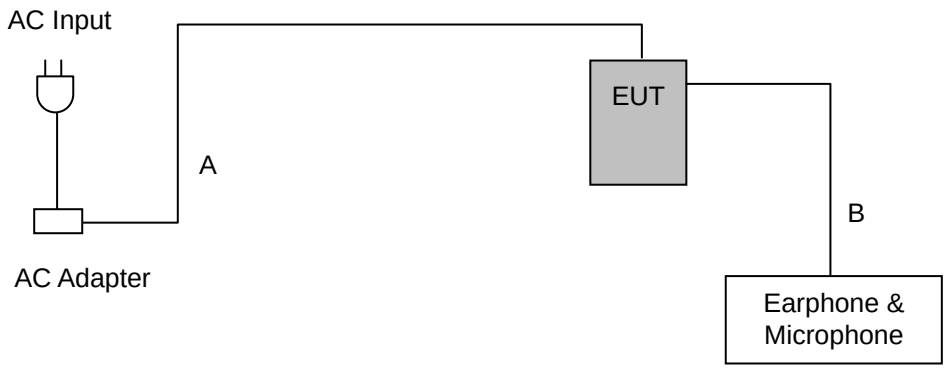
Channel Low (5745MHz), Channel Mid (5785MHz) and Channel High (5825MHz) with 6Mbps data rate were chosen for full testing.

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.

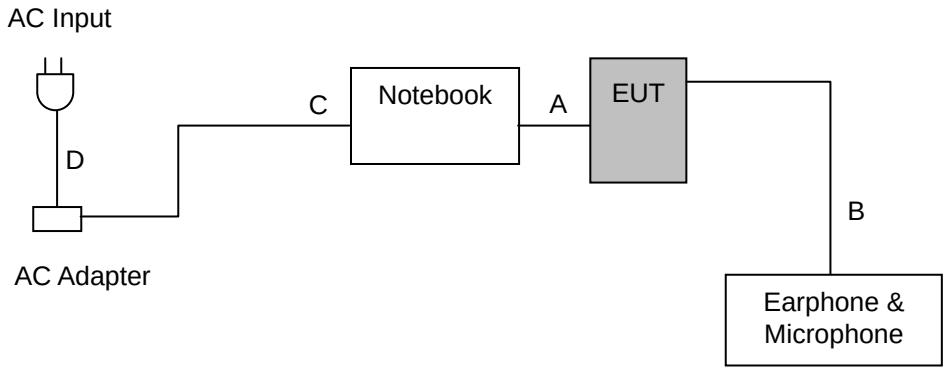
3.3. Configuration of Test System Details

Conducted Emission



Signal Cable Type		Signal Cable Description
A	USB Cable	Shielded, 1.2 m
B	Earphone & Microphone Cable	Non-Shielded, 1.2 m

Radiated Emission



Signal Cable Type		Signal Cable Description
A	USB Cable	Shielded, 1.2 m
B	Earphone & Microphone Cable	Non-Shielded, 1.2 m
C	DC Power Cable	Non-Shielded, 1.8 m
D	AC Power Cable	Non-Shielded, 2.0 m

3.4. Test Site Environment

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	26
Humidity (%RH)	25-75	60
Barometric pressure (mbar)	860-1060	950

4 Conducted Emission Measurement

4.1. Limit

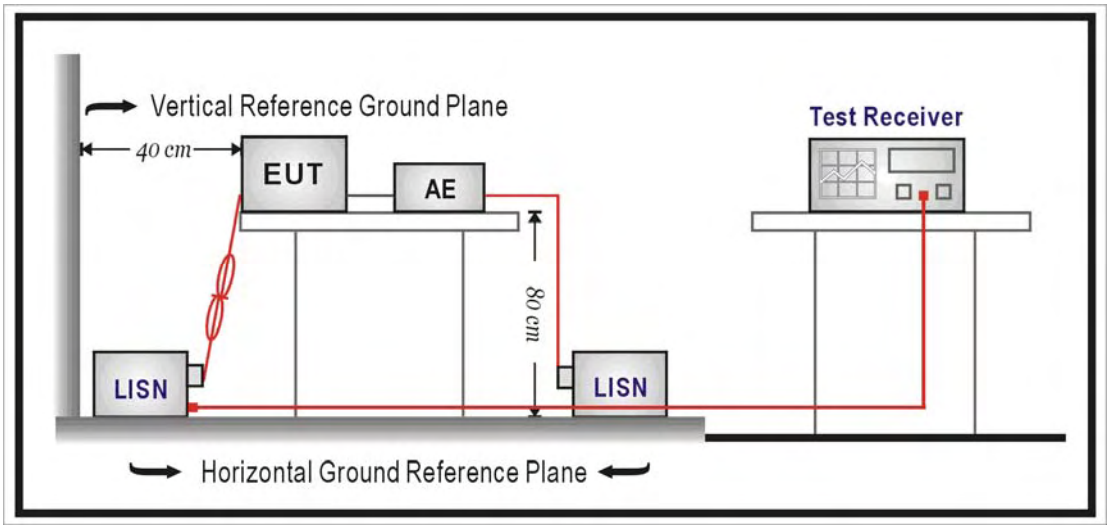
Frequency (MHz)	Quasi-peak	Average
0.15 - 0.5	66 to 56	56 to 46
0.50 - 5.0	56	46
5.0 - 30.0	60	50

4.2. Test Instruments

Describe	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
Test Receiver	R&S	ESCI	100367	06/30/2011	(1)
LISN	R&S	ENV216	101040	03/04/2011	(1)
LISN	R&S	ENV216	101041	03/04/2011	(1)
Test Site	ATL	TE05	TE05	N.C.R.	-----

Remark: (1) Calibration period 1 year. (2) Calibration period 2 years.
NOTE: N.C.R. = No Calibration Request.

4.3. Test Setup



4.4. Test Procedure

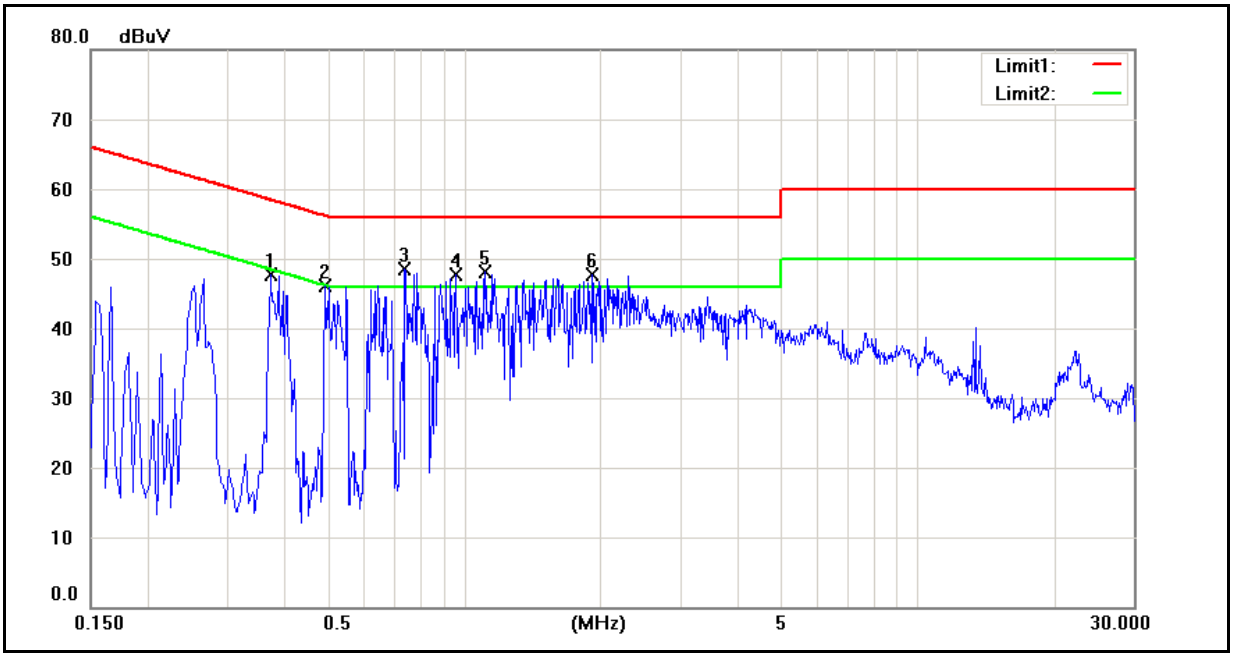
The power line conducted emission measurements were performed in a shielded enclosure. The EUT was assembled on a wooden table which is 80 centimeters high, was placed 40 centimeters from the back wall and at least 1 meter from the sidewall.

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.

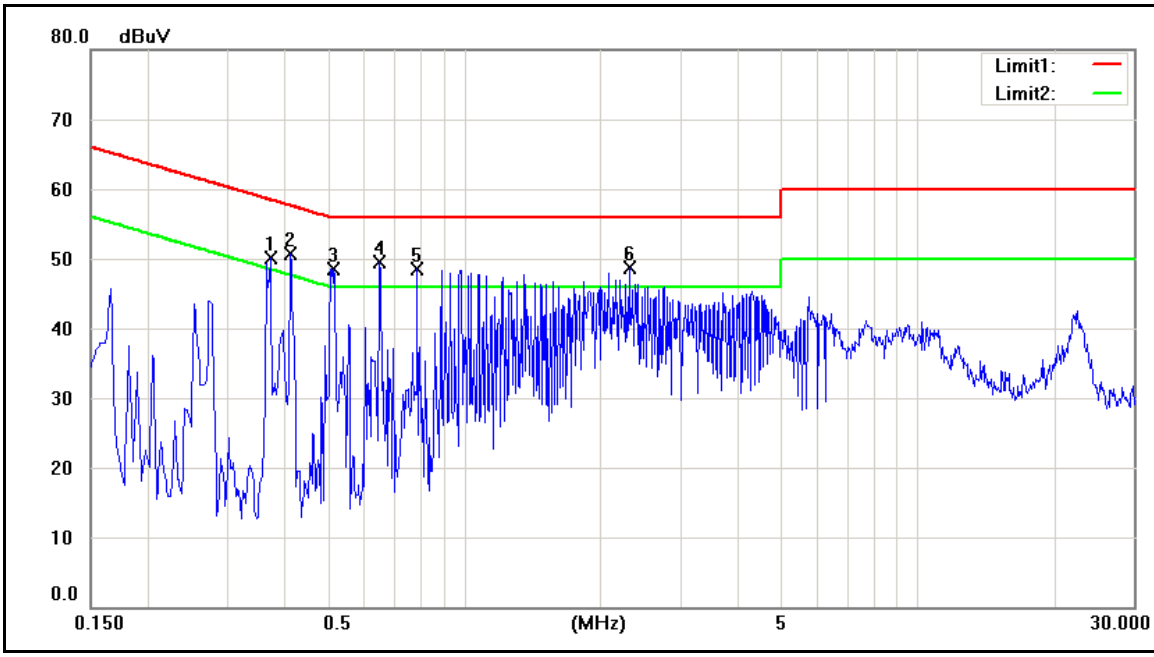
4.5. Test Result

Standard:	FCC Part 15C	Line:	L1
Test item:	Conducted Emission	Power:	AC 120V/60Hz
Model Number:	PH85110	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	Mode 1	Date:	06/24/2011
		Test By:	Gary Wu
Description:			



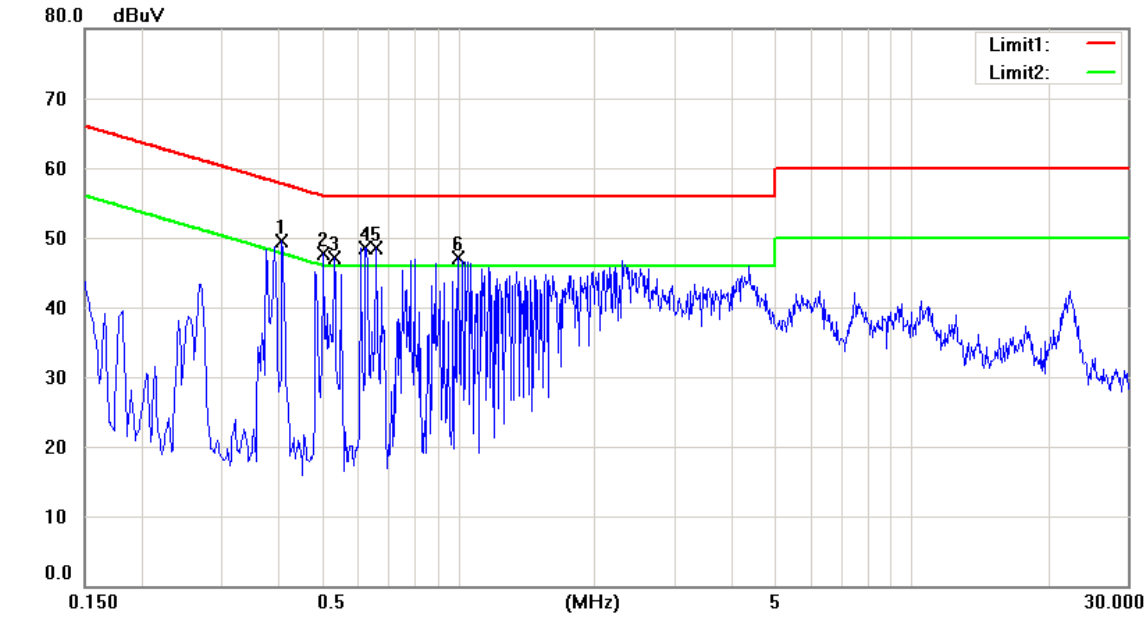
No.	Frequency (MHz)	QP reading (dBuV)	AVG reading (dBuV)	Correction factor (dB)	QP result (dBuV)	AVG result (dBuV)	QP limit (dBuV)	AVG limit (dBuV)	QP margin (dB)	AVG margin (dB)	Remark
1	0.3740	33.80	17.98	9.98	43.78	27.96	58.41	48.41	-14.63	-20.45	Pass
2	0.4940	32.38	15.04	9.93	42.31	24.97	56.10	46.10	-13.79	-21.13	Pass
3	0.7420	33.13	14.84	9.84	42.97	24.68	56.00	46.00	-13.03	-21.32	Pass
4	0.9620	31.73	10.63	9.75	41.48	20.38	56.00	46.00	-14.52	-25.62	Pass
5	1.1140	31.97	12.29	9.72	41.69	22.01	56.00	46.00	-14.31	-23.99	Pass
6	1.9180	30.75	15.93	9.68	40.43	25.61	56.00	46.00	-15.57	-20.39	Pass

Standard:	FCC Part 15C	Line:	N
Test item:	Conducted Emission	Power:	AC 120V/60Hz
Model Number:	PH85110	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	Mode 1	Date:	06/24/2011
		Test By:	Gary Wu
Description:			



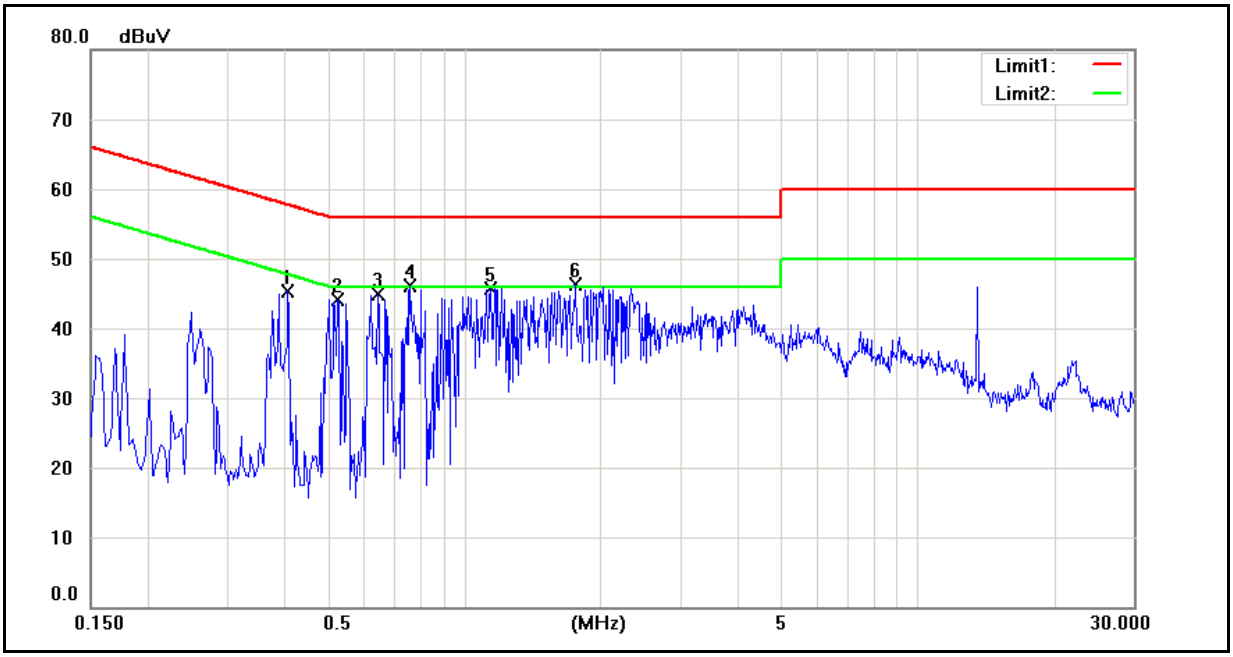
No.	Frequency (MHz)	QP reading (dBuV)	AVG reading (dBuV)	Correction factor (dB)	QP result (dBuV)	AVG result (dBuV)	QP limit (dBuV)	AVG limit (dBuV)	QP margin (dB)	AVG margin (dB)	Remark
1	0.3740	36.14	14.37	10.06	46.20	24.43	58.41	48.41	-12.21	-23.98	Pass
2	0.4140	35.01	10.49	10.05	45.06	20.54	57.57	47.57	-12.51	-27.03	Pass
3	0.5180	34.22	11.30	10.00	44.22	21.30	56.00	46.00	-11.78	-24.70	Pass
4	0.6540	34.76	10.25	9.95	44.71	20.20	56.00	46.00	-11.29	-25.80	Pass
5	0.7900	33.09	8.73	9.89	42.98	18.62	56.00	46.00	-13.02	-27.38	Pass
6	2.3180	29.78	16.62	9.78	39.56	26.40	56.00	46.00	-16.44	-19.60	Pass

Standard:	FCC Part 15C	Line:	L1
Test item:	Conducted Emission	Power:	AC 120V/60Hz
Model Number:	PH85110	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	Mode 2	Date:	07/20/2011
		Test By:	Gary Wu
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	0.4100	35.20	12.52	9.97	45.17	22.49	57.65	47.65	-12.48	-25.16	Pass
2	0.5060	33.54	13.01	9.93	43.47	22.94	56.00	46.00	-12.53	-23.06	Pass
3	0.5340	33.07	11.70	9.92	42.99	21.62	56.00	46.00	-13.01	-24.38	Pass
4	0.6260	33.86	11.59	9.88	43.74	21.47	56.00	46.00	-12.26	-24.53	Pass
5	0.6580	33.72	11.41	9.86	43.58	21.27	56.00	46.00	-12.42	-24.73	Pass
6	1.0020	31.18	9.57	9.73	40.91	19.30	56.00	46.00	-15.09	-26.70	Pass

Standard:	FCC Part 15C	Line:	N
Test item:	Conducted Emission	Power:	AC 120V/60Hz
Model Number:	PH85110	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	Mode 2	Date:	07/20/2011
		Test By:	Gary Wu
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	0.4100	31.91	12.76	10.05	41.96	22.81	57.65	47.65	-15.69	-24.84	Pass
2	0.5260	30.69	14.02	10.00	40.69	24.02	56.00	46.00	-15.31	-21.98	Pass
3	0.6460	30.91	13.71	9.95	40.86	23.66	56.00	46.00	-15.14	-22.34	Pass
4	0.7620	31.10	13.78	9.90	41.00	23.68	56.00	46.00	-15.00	-22.32	Pass
5	1.1420	29.80	12.24	9.79	39.59	22.03	56.00	46.00	-16.41	-23.97	Pass
6	1.7700	29.38	13.46	9.74	39.12	23.20	56.00	46.00	-16.88	-22.80	Pass

5 Radiated Emission Measurement

5.1. Limit

Frequency Range (MHz)	Peak (dBuV)
30 to 88	40
88 to 216	43.5
216 to 960	46
Above 960	54

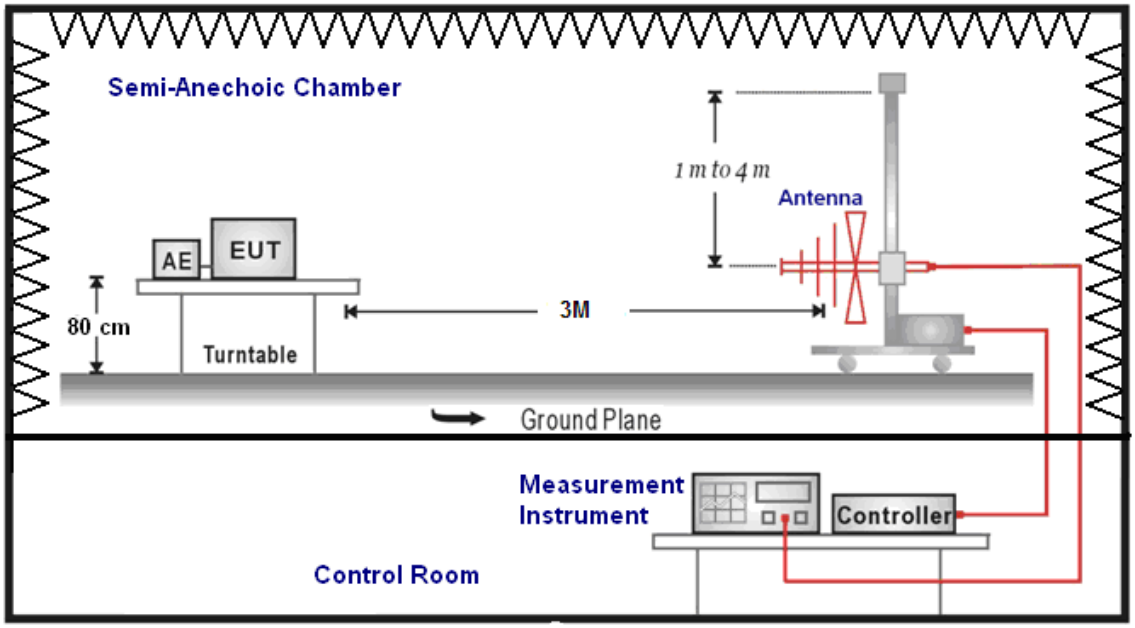
5.2. Test Instruments

3 Meter Chamber					
Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
Spectrum Analyzer	Agilent	E4445A	MY46181986	06/16/2011	(1)
Amplifier	Mini-Circuits	ZKL-1R5+	N/A	05/30/2011	(1)
Amplifier	Mini-Circuits	ZVA-213-S+	N/A	05/30/2011	(1)
RF Pre-selector	Agilent	N9039A	MY46520255	05/16/2011	(1)
Double-Ridged Waveguide Horn	ETS-Lindgren	3117	00128055	08/24/2010	(1)
Trilog-Broadband Antenna	Schwarzbeck Mess-Elektronik	SB AC VULB	9168-419	05/10/2011	(1)
Test Site	ATL	TE09	TE09	05/13/2011	(1)

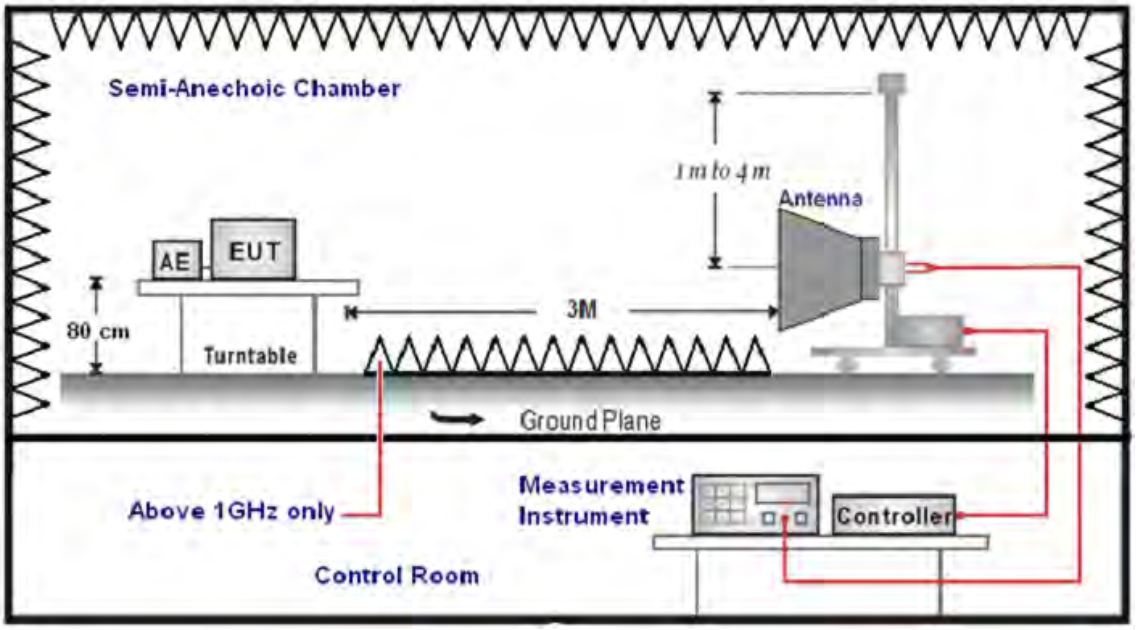
Remark: (1) Calibration period 1 year. (2) Calibration period 2 years.
NOTE: N.C.R. = No Calibration Request.

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 30 MHz 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 tree 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.

ETS-Lindgren Double-Ridged Waveguide Horn (mode 3117) at 3 Meter and the SCHWARZBECK Trilog-Broadband Antenna (model SB AC VULB) 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 colts per meter (dBuV/m).

The actual field is 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.

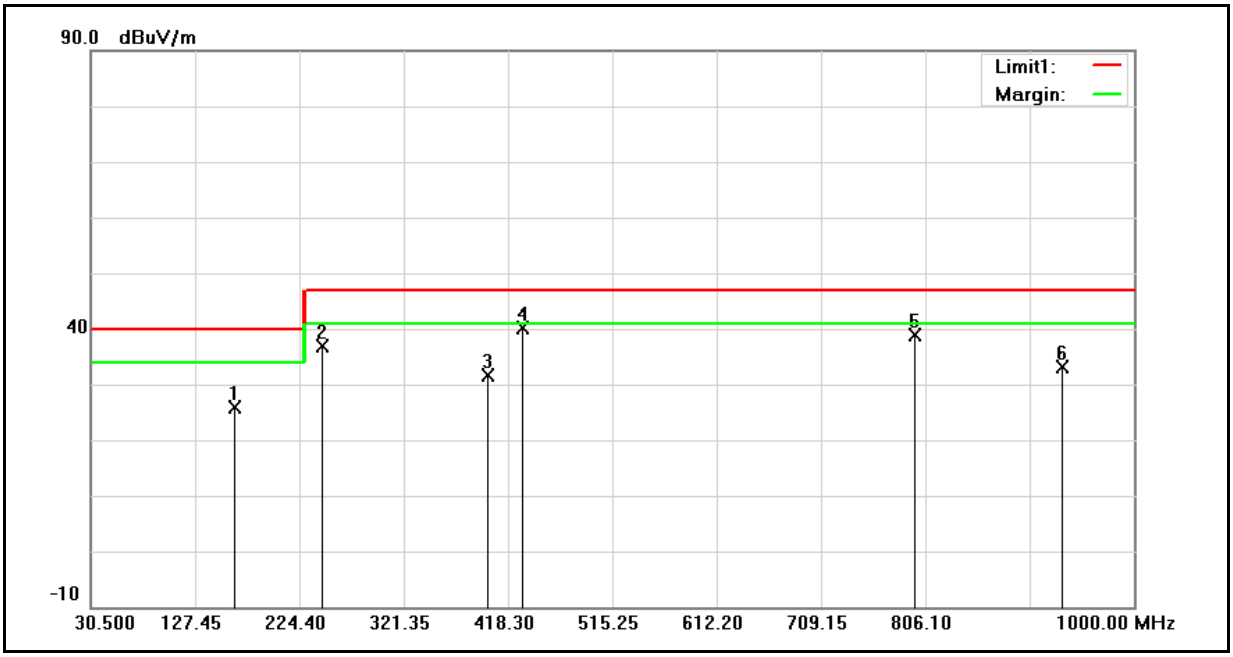
(1) Amplitude (dBuV/m) = FI (dBuV) +AF (dBuV) +CL (dBuV)-Gain (dB)
FI= Reading of the field intensity.
AF= Antenna factor.
CL= Cable loss.
P.S Amplitude is auto calculate in spectrum analyzer.

(2) Actual Amplitude (dBuV/m) = Amplitude (dBuV)-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

5.5. Test Result

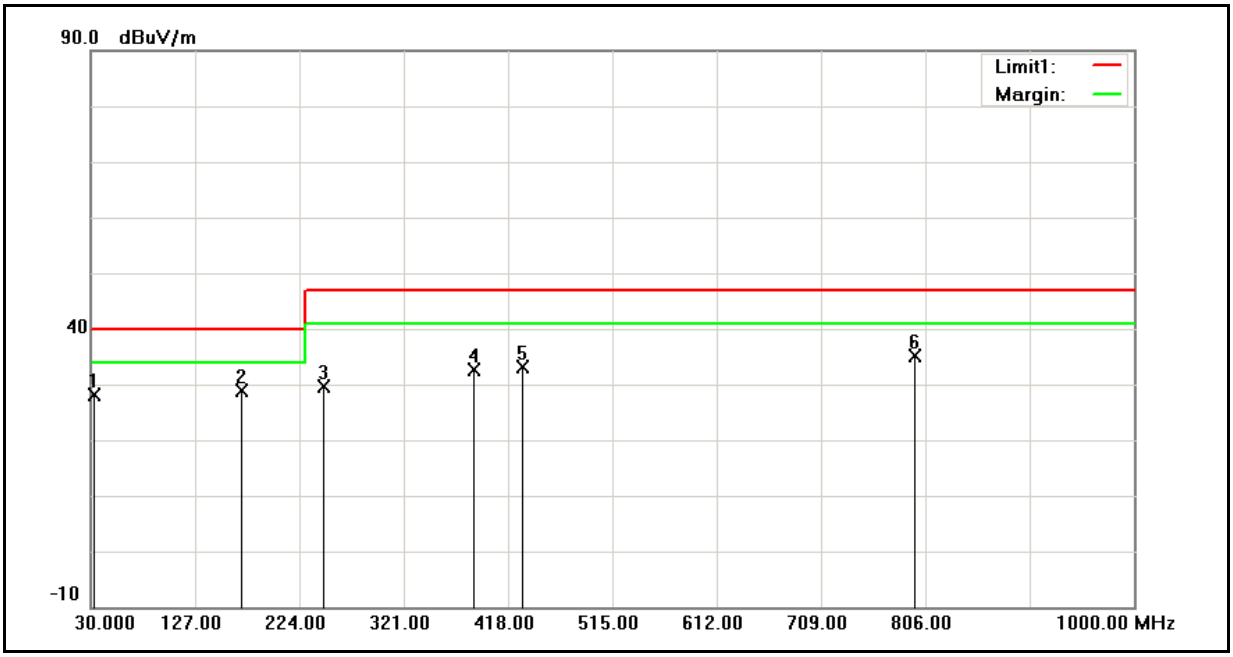
Below 1GHz

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	PH85110	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	Mode 2	Date:	07/20/2011
Ant.Polar.:	Horizontal	Test By:	Gary Wu



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	164.0000	50.46	-24.58	25.88	40.00	-14.12	QP
2	245.5000	61.87	-25.03	36.84	47.00	-10.16	QP
3	400.0000	52.31	-20.58	31.73	47.00	-15.27	QP
4	432.0000	59.63	-19.45	40.18	47.00	-6.82	QP
5	796.5000	51.71	-12.71	39.00	47.00	-8.00	QP
6	933.5000	44.18	-10.96	33.22	47.00	-13.78	QP

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	PH85110	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	Mode 2	Date:	07/20/2011
Ant.Polar.:	Vertical	Test By:	Gary Wu



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	33.0000	53.79	-25.73	28.06	40.00	-11.94	QP
2	170.5000	54.14	-25.15	28.99	40.00	-11.01	QP
3	247.0000	54.62	-24.98	29.64	47.00	-17.36	QP
4	386.0000	53.37	-20.86	32.51	47.00	-14.49	QP
5	432.0000	52.55	-19.45	33.10	47.00	-13.90	QP
6	796.5000	47.95	-12.71	35.24	47.00	-11.76	QP

Above 1GHz

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	PH85110	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	Mode 3	Date:	07/20/2011
Frequency:	2412MHz	Test By:	Gary Wu

Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
1063.000	73.08	-22.80	50.28	74.00	-23.72	peak	H
1329.000	68.13	-21.73	46.40	74.00	-27.60	peak	H
1595.000	66.98	-20.52	46.46	74.00	-27.54	peak	H
1329.000	69.12	-21.73	47.39	74.00	-26.61	peak	V
1595.000	70.18	-20.52	49.66	74.00	-24.34	peak	V
2120.000	68.84	-18.15	50.69	74.00	-23.31	peak	V

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	PH85110	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	Mode 3	Date:	07/20/2011
Frequency:	2437MHz	Test By:	Gary Wu

Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
1329.000	68.26	-21.73	46.53	74.00	-27.47	peak	H
2162.000	64.18	-18.09	46.09	74.00	-27.91	peak	H
4874.000	62.25	-11.19	51.06	74.00	-22.94	peak	H
1329.000	68.26	-21.73	46.53	74.00	-27.47	peak	V
1595.000	69.47	-20.52	48.95	74.00	-25.05	peak	V
3555.000	62.17	-15.07	47.10	74.00	-26.90	peak	V

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	PH85110	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	Mode 3	Date:	07/20/2011
Frequency:	2462MHz	Test By:	Gary Wu

Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
1329.000	68.77	-21.73	47.04	74.00	-26.96	peak	H
1602.000	66.32	-20.48	45.84	74.00	-28.16	peak	H
2701.000	63.39	-17.00	46.39	74.00	-27.61	peak	H
1329.000	68.64	-21.73	46.91	74.00	-27.09	peak	V
1602.000	67.21	-20.48	46.73	74.00	-27.27	peak	V
2750.000	63.87	-16.85	47.02	74.00	-26.98	peak	V

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	PH85110	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	Mode 4	Date:	07/20/2011
Frequency:	2412MHz	Test By:	Gary Wu

Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
1329.000	68.17	-21.73	46.44	74.00	-27.56	peak	H
1595.000	66.15	-20.52	45.63	74.00	-28.37	peak	H
2680.000	63.81	-17.07	46.74	74.00	-27.26	peak	H
1329.000	69.18	-21.73	47.45	74.00	-26.55	peak	V
1595.000	69.07	-20.52	48.55	74.00	-25.45	peak	V
2687.000	64.39	-17.04	47.35	74.00	-26.65	peak	V

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	PH85110	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	Mode 4	Date:	07/20/2011
Frequency:	2437MHz	Test By:	Gary Wu

Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
1329.000	72.08	-21.73	50.35	74.00	-23.65	peak	H
1602.000	65.73	-20.48	45.25	74.00	-28.75	peak	H
2736.000	63.96	-16.90	47.06	74.00	-26.94	peak	H
1329.000	72.15	-21.73	50.42	74.00	-23.58	peak	V
1595.000	68.17	-20.52	47.65	74.00	-26.35	peak	V
2687.000	63.77	-17.04	46.73	74.00	-27.27	peak	V

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	PH85110	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	Mode 4	Date:	07/20/2011
Frequency:	2462MHz	Test By:	Gary Wu

Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
1336.000	70.17	-21.70	48.47	74.00	-25.53	peak	H
1595.000	67.07	-20.52	46.55	74.00	-27.45	peak	H
2708.000	64.94	-16.99	47.95	74.00	-26.05	peak	H
1329.000	69.00	-21.73	47.27	74.00	-26.73	peak	V
1595.000	71.03	-20.52	50.51	74.00	-23.49	peak	V
3023.000	63.22	-16.03	47.19	74.00	-26.81	peak	V

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	PH85110	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	Mode 5	Date:	07/20/2011
Frequency:	2412MHz	Test By:	Gary Wu

Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
1329.000	68.29	-21.73	46.56	74.00	-27.44	peak	H
1595.000	69.34	-20.52	48.82	74.00	-25.18	peak	H
2729.000	63.52	-16.92	46.60	74.00	-27.40	peak	H
1329.000	69.13	-21.73	47.40	74.00	-26.60	peak	V
1602.000	71.76	-20.48	51.28	74.00	-22.72	peak	V
2232.000	66.27	-17.99	48.28	74.00	-25.72	peak	V

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	PH85110	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	Mode 5	Date:	07/20/2011
Frequency:	2437MHz	Test By:	Gary Wu

Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
1063.000	71.28	-22.80	48.48	74.00	-25.52	peak	H
1329.000	69.14	-21.73	47.41	74.00	-26.59	peak	H
1595.000	67.12	-20.52	46.60	74.00	-27.40	peak	H
1329.000	69.18	-21.73	47.45	74.00	-26.55	peak	V
1602.000	69.30	-20.48	48.82	74.00	-25.18	peak	V
2743.000	62.90	-16.87	46.03	74.00	-27.97	peak	V

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	PH85110	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	Mode 5	Date:	07/20/2011
Frequency:	2462MHz	Test By:	Gary Wu

Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
1329.000	68.64	-21.73	46.91	74.00	-27.09	peak	H
1602.000	69.56	-20.48	49.08	74.00	-24.92	peak	H
2736.000	63.81	-16.90	46.91	74.00	-27.09	peak	H
1329.000	71.33	-21.73	49.60	74.00	-24.40	peak	V
1602.000	69.12	-20.48	48.64	74.00	-25.36	peak	V
2666.000	63.90	-17.11	46.79	74.00	-27.21	peak	V

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	PH85110	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	Mode 6	Date:	07/20/2011
Frequency:	5745MHz	Test By:	Gary Wu

Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
1063.000	68.67	-22.80	45.87	74.00	-28.13	peak	H
1329.000	70.13	-21.73	48.40	74.00	-25.60	peak	H
1595.000	67.63	-20.52	47.11	74.00	-26.89	peak	H
1329.000	70.02	-21.73	48.29	74.00	-25.71	peak	V
1595.000	69.98	-20.52	49.46	74.00	-24.54	peak	V
2134.000	63.59	-18.13	45.46	74.00	-28.54	peak	V

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	PH85110	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	Mode 6	Date:	07/20/2011
Frequency:	5785MHz	Test By:	Gary Wu

Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
1329.000	69.85	-21.73	48.12	74.00	-25.88	peak	H
1595.000	67.66	-20.52	47.14	74.00	-26.86	peak	H
1868.000	64.08	-19.03	45.05	74.00	-28.95	peak	H
1329.000	72.48	-21.73	50.75	74.00	-23.25	peak	V
1595.000	67.95	-20.52	47.43	74.00	-26.57	peak	V
2127.000	66.11	-18.14	47.97	74.00	-26.03	peak	V

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	PH85110	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	Mode 6	Date:	07/20/2011
Frequency:	5825MHz	Test By:	Gary Wu

Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
1329.000	70.31	-21.73	48.58	74.00	-25.42	peak	H
1595.000	66.27	-20.52	45.75	74.00	-28.25	peak	H
1861.000	63.59	-19.07	44.52	74.00	-29.48	peak	H
1329.000	69.67	-21.73	47.94	74.00	-26.06	peak	V
1595.000	68.00	-20.52	47.48	74.00	-26.52	peak	V
2127.000	64.54	-18.14	46.40	74.00	-27.60	peak	V

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	PH85110	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	Mode 7	Date:	07/21/2011
Frequency:	5745MHz	Test By:	Gary Wu

Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
1329.000	66.27	-21.73	44.54	74.00	-29.46	peak	H
1595.000	67.60	-20.52	47.08	74.00	-26.92	peak	H
1868.000	65.12	-19.03	46.09	74.00	-27.91	peak	H
1336.000	70.13	-21.70	48.43	74.00	-25.57	peak	V
1595.000	69.69	-20.52	49.17	74.00	-24.83	peak	V
1868.000	67.01	-19.03	47.98	74.00	-26.02	peak	V

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	PH85110	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	Mode 7	Date:	07/21/2011
Frequency:	5785MHz	Test By:	Gary Wu

Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
1329.000	69.35	-21.73	47.62	74.00	-26.38	peak	H
1595.000	66.41	-20.52	45.89	74.00	-28.11	peak	H
1868.000	63.95	-19.03	44.92	74.00	-29.08	peak	H
1329.000	72.86	-21.73	51.13	74.00	-22.87	peak	V
1595.000	69.68	-20.52	49.16	74.00	-24.84	peak	V
2393.000	67.66	-17.78	49.88	74.00	-24.12	peak	V

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	PH85110	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	Mode 7	Date:	07/21/2011
Frequency:	5825MHz	Test By:	Gary Wu

Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
1336.000	69.80	-21.70	48.10	74.00	-25.90	peak	H
1595.000	67.39	-20.52	46.87	74.00	-27.13	peak	H
1861.000	63.81	-19.07	44.74	74.00	-29.26	peak	H
1329.000	71.14	-21.73	49.41	74.00	-24.59	peak	V
1595.000	69.34	-20.52	48.82	74.00	-25.18	peak	V
1868.000	64.74	-19.03	45.71	74.00	-28.29	peak	V

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	PH85110	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	Mode 8	Date:	07/20/2011
Modulation:	draft 802.11n Standard-20MHz	Test By:	Gary Wu
Frequency:	2437MHz		

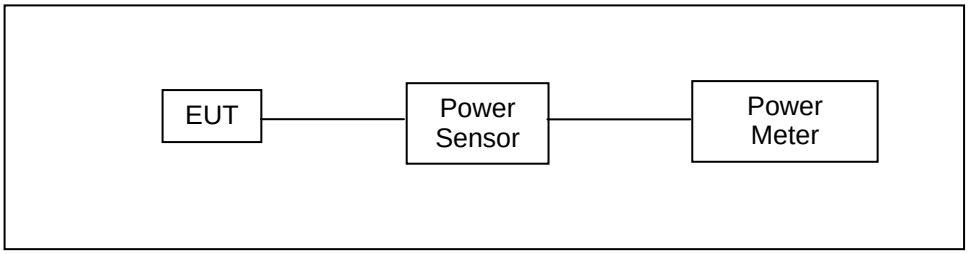
Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Peak Limit (dBuV/m)	AVG. Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
2759.500	64.33	-16.82	47.51	74.00	54.00	-26.49	peak	H
4723.000	61.05	-11.49	49.56	74.00	54.00	-24.44	peak	H
6457.000	57.70	-7.43	50.27	74.00	54.00	-23.73	peak	H
2683.000	63.41	-17.06	46.35	74.00	54.00	-27.65	peak	V
4952.500	59.24	-11.02	48.22	74.00	54.00	-25.78	peak	V
7400.500	57.24	-5.60	51.64	74.00	54.00	-22.36	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	07/19/2010	(2)
Wideband Power Meter	Agilent	N1921A	MY45241957	07/19/2010	(2)
Test Site	ATL	TE02	TE02	N.C.R.	-----

Remark: (1) Calibration period 1 year. (2) Calibration period 2 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 (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	PH85110					
Test Item	Maximum Conducted Output Power					
Test Mode	Mode 3: IEEE 802.11b Link Mode					
Date of Test	07/15/2011			Test Site	TE02	
Frequency (MHz)	Data Rate	Average Power		Peak Power		Limit (dBm)
		(dBm)	(W)	(dBm)	(W)	
2412	1 M	19.54	0.090	21.97	0.157	< 30
2437		19.67	0.093	22.16	0.164	< 30
2462		19.77	0.095	**22.30**	**0.170**	< 30

Model Number	PH85110					
Test Item	Maximum Conducted Output Power					
Test Mode	Mode 4: IEEE 802.11g Link Mode					
Date of Test	07/15/2011			Test Site	TE02	
Frequency (MHz)	Data Rate	Average Power		Peak Power		Limit (dBm)
		(dBm)	(W)	(dBm)	(W)	
2412	24 M	14.30	0.027	**26.64**	**0.461**	< 30
2437		14.36	0.027	26.59	0.456	< 30
2462		14.40	0.028	26.34	0.431	< 30

Model Number	PH85110					
Test Item	Maximum Conducted Output Power					
Test Mode	Mode 5: draft 802.11n Standard-20MHz Link Mode					
Date of Test	07/15/2011			Test Site	TE02	
Frequency (MHz)	Data Rate	Average Power		Peak Power		Limit (dBm)
		(dBm)	(W)	(dBm)	(W)	
2412	52 M	12.83	0.019	**26.12**	**0.409**	< 30
2437		12.90	0.019	25.76	0.377	< 30
2462		12.88	0.019	25.28	0.337	< 30

Model Number	PH85110					
Test Item	Maximum Conducted Output Power					
Test Mode	Mode 6: IEEE 802.11a U-NII Band IV Link Mode					
Date of Test	07/15/2011			Test Site	TE02	
Frequency (MHz)	Data Rate	Average Power		Peak Power		Limit (dBm)
		(dBm)	(W)	(dBm)	(W)	
5745	6 M	14.52	0.028	25.10	0.324	< 30
5785		14.47	0.028	25.48	0.353	< 30
5825		14.00	0.025	**25.58**	**0.361**	< 30

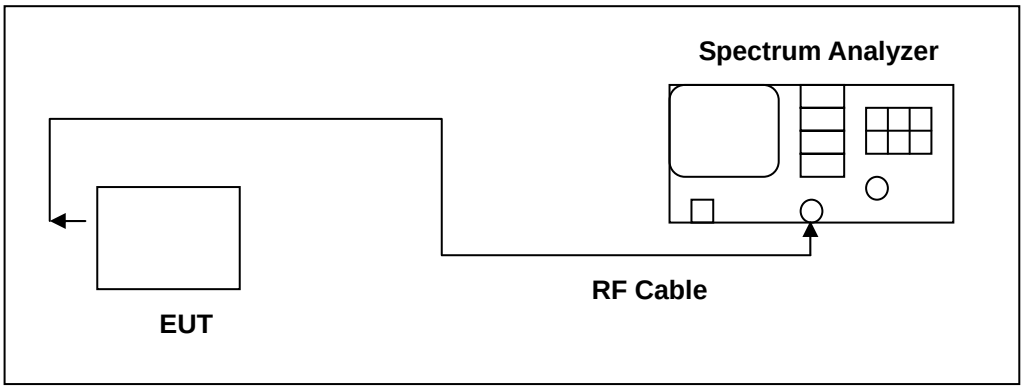
Model Number	PH85110					
Test Item	Maximum Conducted Output Power					
Test Mode	Mode 7: draft 802.11n Standard-20MHz U-NII Band IV Link Mode					
Date of Test	07/15/2011			Test Site	TE02	
Frequency (MHz)	Data Rate	Average Power		Peak Power		Limit (dBm)
		(dBm)	(W)	(dBm)	(W)	
5745	6 M	14.44	0.028	25.94	0.393	< 30
5785		14.57	0.029	**25.99**	**0.397**	< 30
5825		12.83	0.019	24.16	0.261	< 30

7 6dB RF Bandwidth Measurement

7.1. Limit

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.

7.2. Test Setup



7.3. Test Instruments

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
Spectrum Analyzer	Agilent	E4445A	MY45300744	12/28/2010	(2)
Test Site	ATL	TE02	TE02	N.C.R.	-----

Remark: (1) Calibration period 1 year. (2) Calibration period 2 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 Oct 2002 KDB558074 for compliance to FCC 47CFR 15.247 requirements.

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 1, 6, 11)

7.5. Test Result

Model Number	PH85110		
Test Item	6dB RF Bandwidth		
Test Mode	Mode 3: IEEE 802.11b Link Mode		
Date of Test	07/15/2011	Test Site	TE02

Frequency (MHz)	Measurement (kHz)	Limit (kHz)
2412	10000	> 500
2437	95800	> 500
2462	10000	> 500

Model Number	PH85110		
Test Item	6dB RF Bandwidth		
Test Mode	Mode 4: IEEE 802.11g Link Mode		
Date of Test	07/15/2011	Test Site	TE02

Frequency (MHz)	Measurement (kHz)	Limit (kHz)
2412	16500	> 500
2437	16250	> 500
2462	16500	> 500

Model Number	PH85110		
Test Item	6dB RF Bandwidth		
Test Mode	Mode 5: draft 802.11n Standard-20MHz Link Mode		
Date of Test	07/15/2011	Test Site	TE02

Frequency (MHz)	Measurement (kHz)	Limit (kHz)
2412	17500	> 500
2437	17250	> 500
2462	16920	> 500

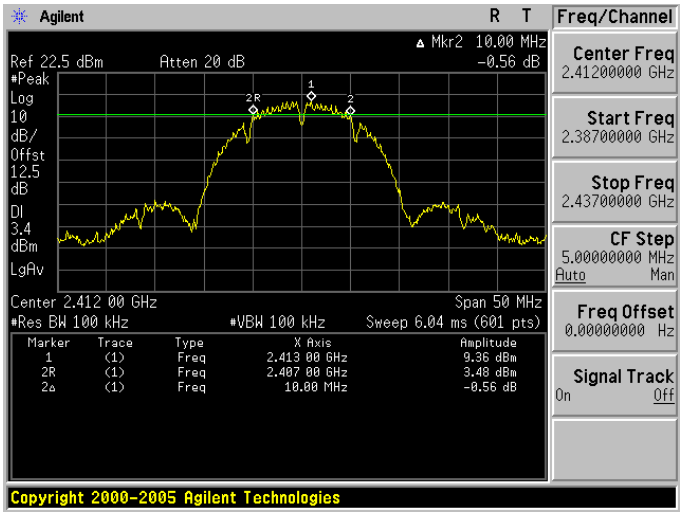
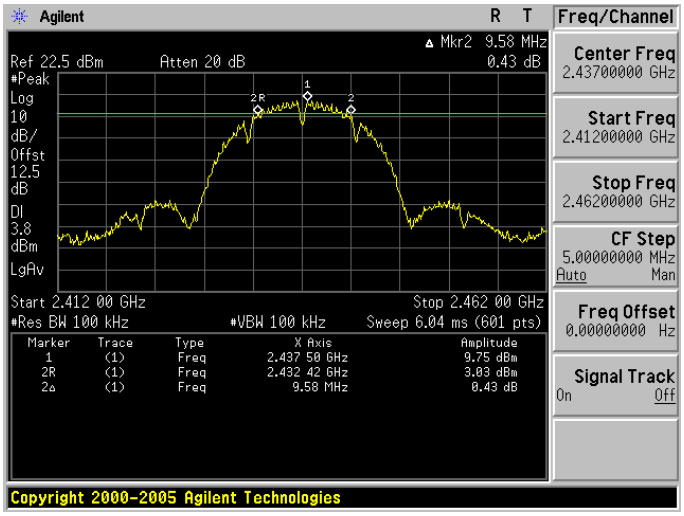
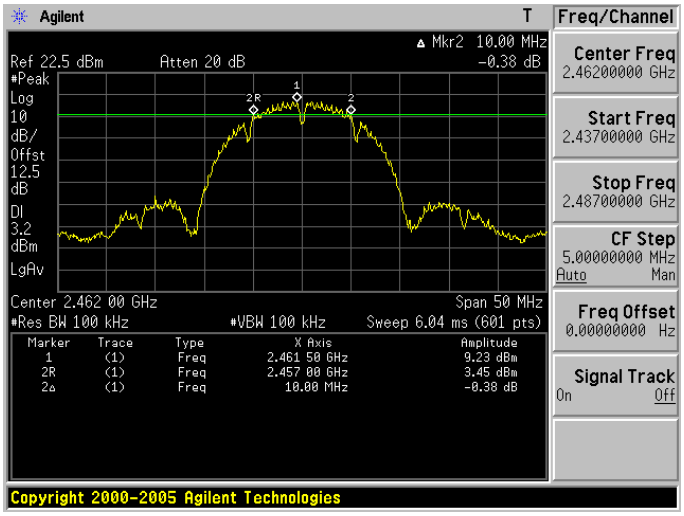
Model Number	PH85110		
Test Item	6dB RF Bandwidth		
Test Mode	Mode 6: IEEE 802.11a U-NII Band IV Link Mode		
Date of Test	07/20/2011	Test Site	TE02

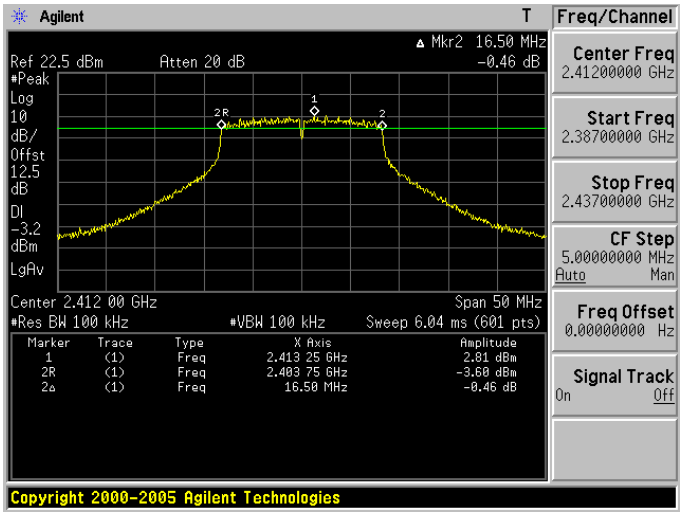
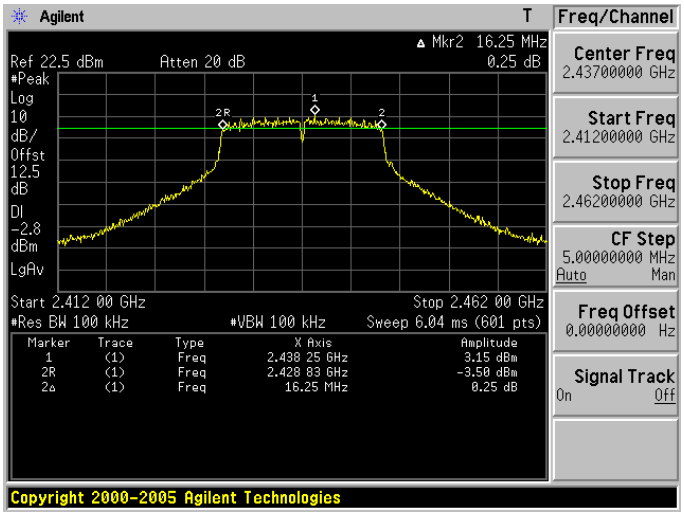
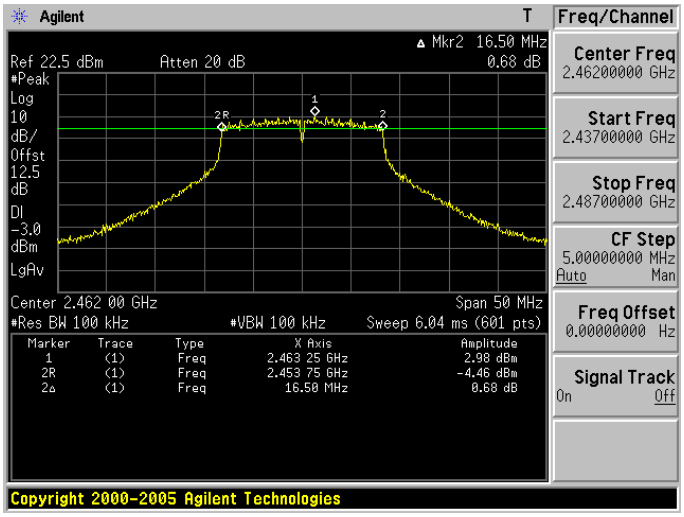
Frequency (MHz)	Measurement (kHz)	Limit (kHz)
5745	15670	> 500
5785	16500	> 500
5825	16330	> 500

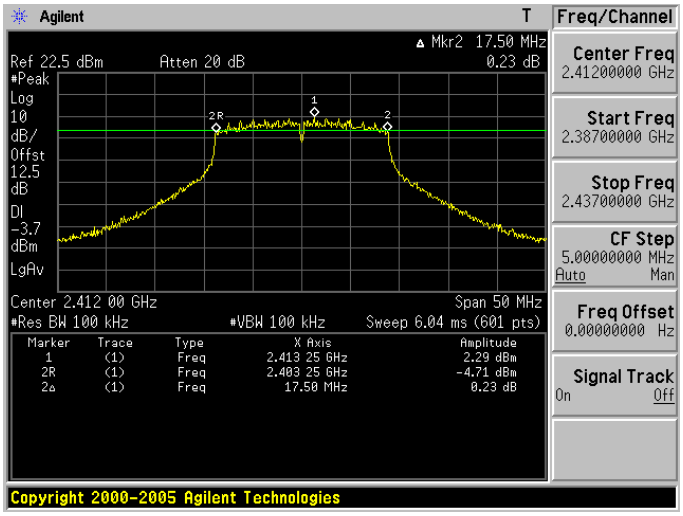
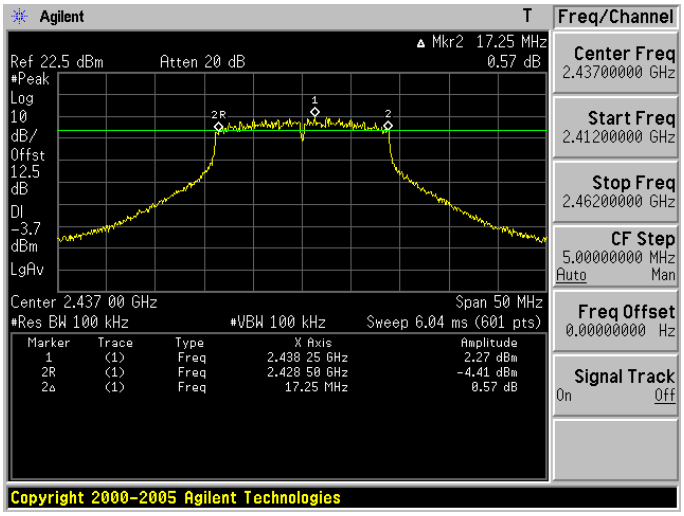
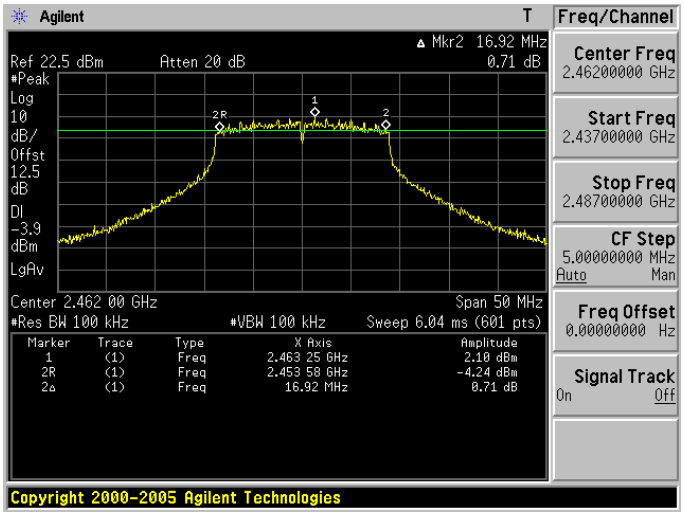
Model Number	PH85110		
Test Item	6dB RF Bandwidth		
Test Mode	Mode 7: draft 802.11n Standard-20MHz U-NII Band IV Link Mode		
Date of Test	07/20/2011	Test Site	TE02

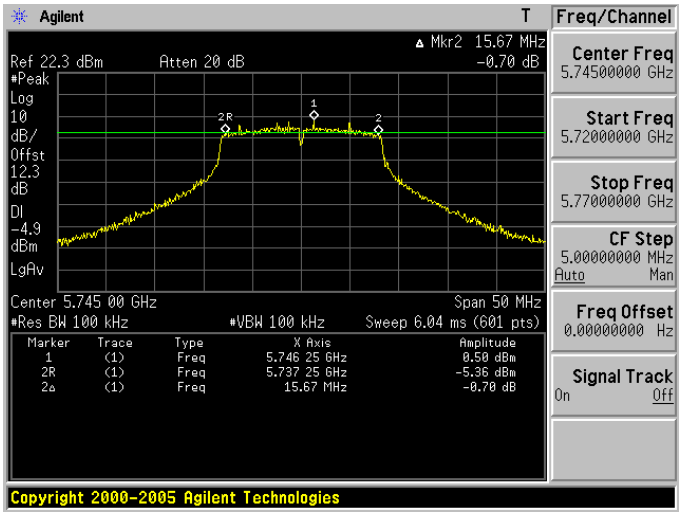
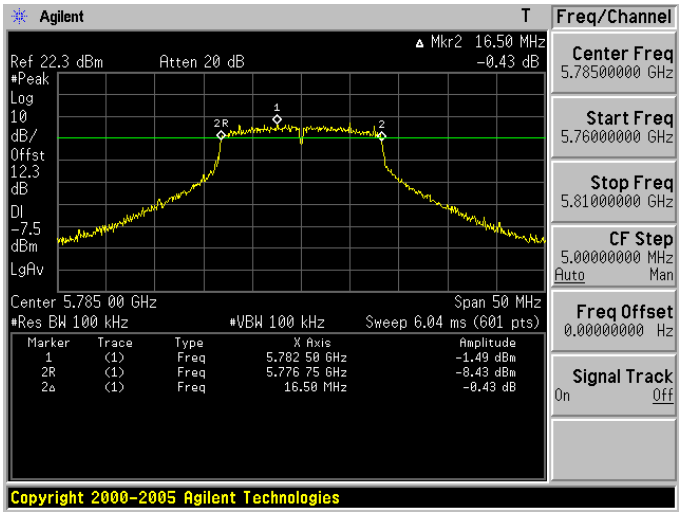
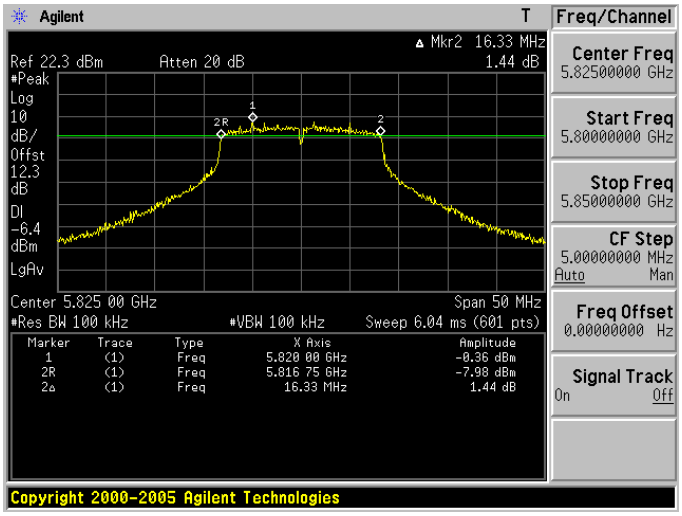
Frequency (MHz)	Measurement (kHz)	Limit (kHz)
5745	17250	> 500
5785	17670	> 500
5825	17250	> 500

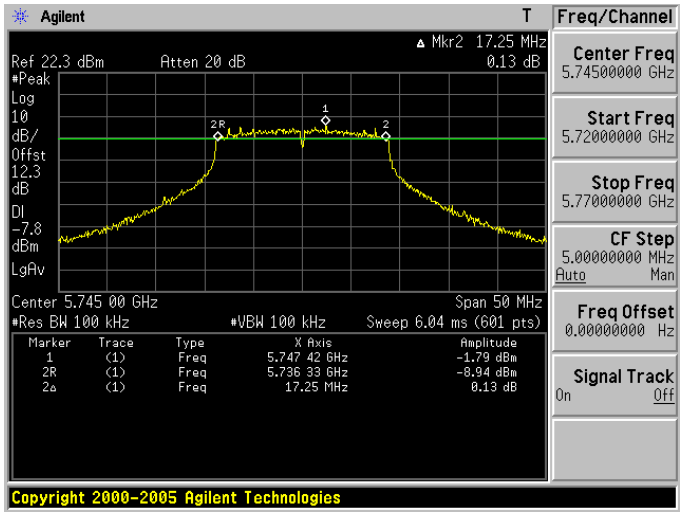
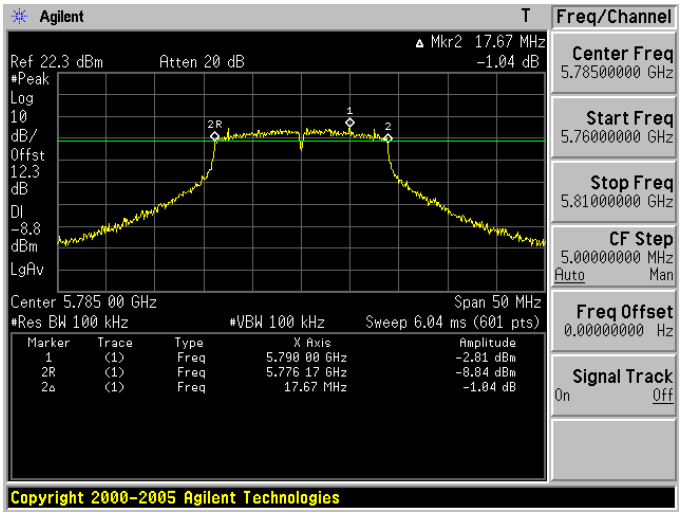
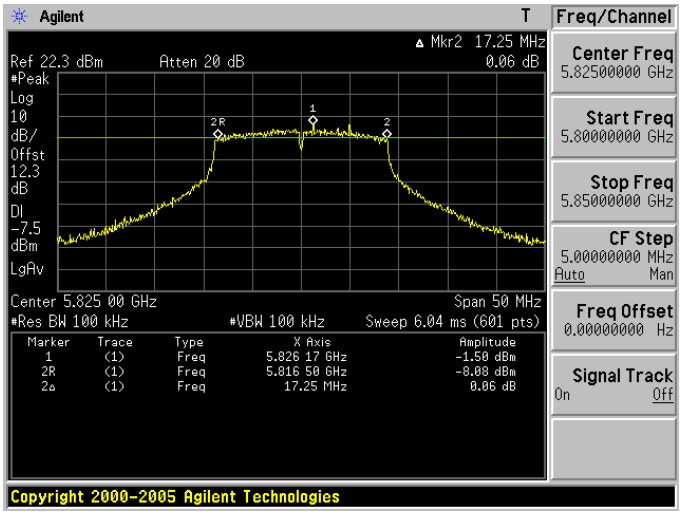
7.6. Test Graphs

Mode 3: IEEE 802.11b Link Mode	
2412	
2437	
2462	

Mode 4: IEEE 802.11g Link Mode	
2412	
2437	
2462	

Mode 5: draft 802.11n Standard-20MHz Link Mode	
2412	
2437	
2462	

Mode 6: IEEE 802.11a U-NII Band IV Link Mode	
5745	
5785	
5825	

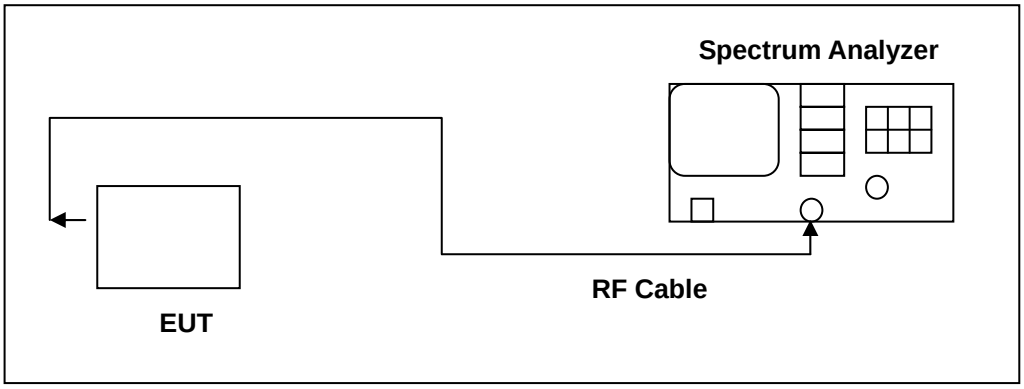
Mode 7: draft 802.11n Standard-20MHz U-NII Band IV Link Mode	
5745	
5785	
5825	

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	12/28/2010	(2)
Test Site	ATL	TE02	TE02	N.C.R.	-----

Remark: (1) Calibration period 1 year. (2) Calibration period 2 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 Oct 2002 KDB558074 for compliance to FCC 47CFR 15.247 requirements.

The spectrum analyzer RES BW was set to 3 kHz. The START and STOP frequencies were set to the band edges of the maximum output pass band. If there is no clear maximum amplitude in any given portion of the band, it may be necessary to make measurements at a number of bands defined by several START and STOP frequency pairs. The specification calls for a 1 second interval at each 3 kHz bandwidth; total SWEEP TIME is calculated as follows:

SWEEP TIME (SEC) = (Fstop, kHz - Fstart, kHz)/3 kHz

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.

8.5. Test Result

Model Number	PH85110		
Test Item	Maximum Power Density		
Test Mode	Mode 3: IEEE 802.11b Link Mode		
Date of Test	07/15/2011	Test Site	TE02

Frequency (MHz)	Measurement (dBm)	Limit (dBm)
2412	-1.26	< 8
2437	-2.28	< 8
2462	-3.20	< 8

Model Number	PH85110		
Test Item	Maximum Power Density		
Test Mode	Mode 4: IEEE 802.11g Link Mode		
Date of Test	07/15/2011	Test Site	TE02

Frequency (MHz)	Measurement (dBm)	Limit (dBm)
2412	-10.78	< 8
2437	-10.31	< 8
2462	-10.96	< 8

Model Number	PH85110		
Test Item	Maximum Power Density		
Test Mode	Mode 5: draft 802.11n Standard-20MHz Link Mode		
Date of Test	07/15/2011	Test Site	TE02

Frequency (MHz)	Measurement (dBm)	Limit (dBm)
2412	-11.97	< 8
2437	-12.34	< 8
2462	-12.49	< 8

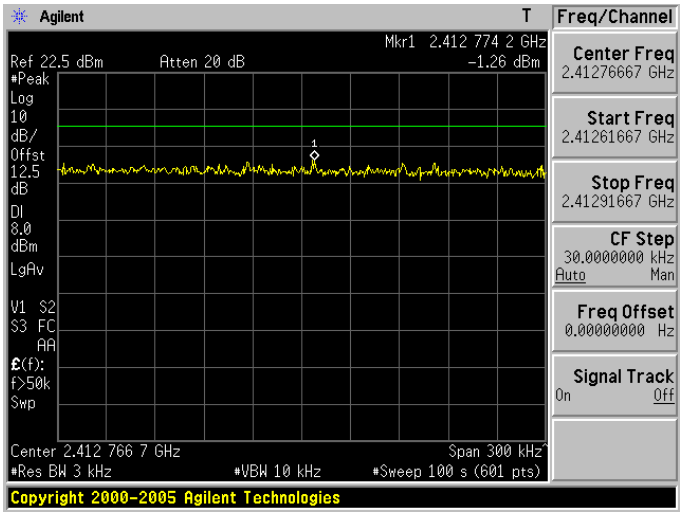
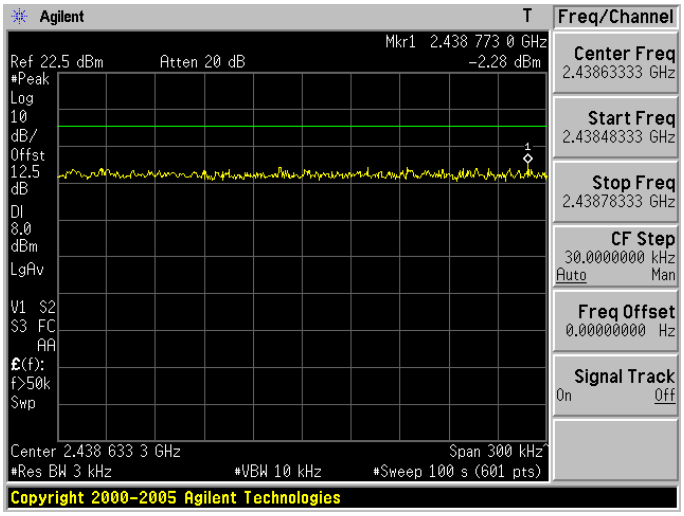
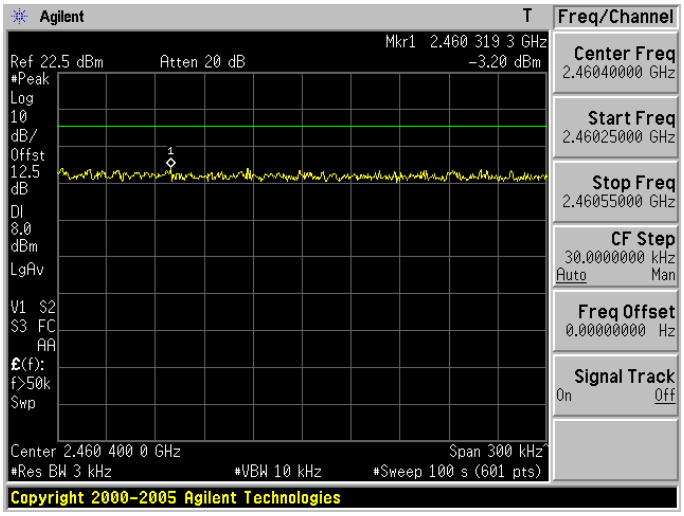
Model Number	PH85110		
Test Item	Maximum Power Density		
Test Mode	Mode 6: IEEE 802.11a U-NII Band IV Link Mode		
Date of Test	07/20/2011	Test Site	TE02

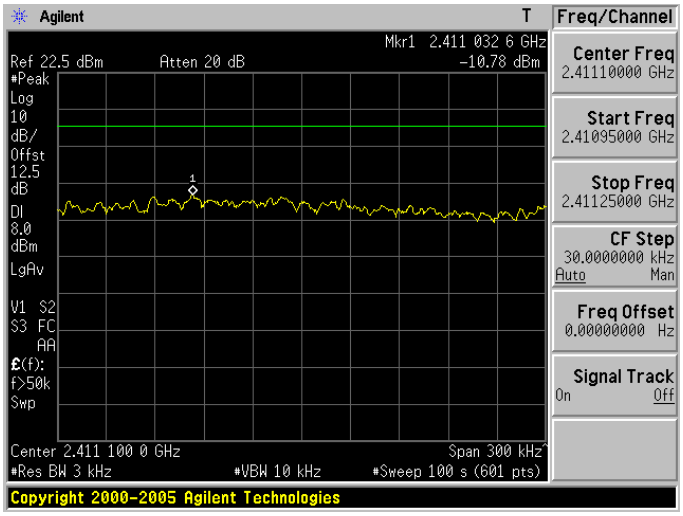
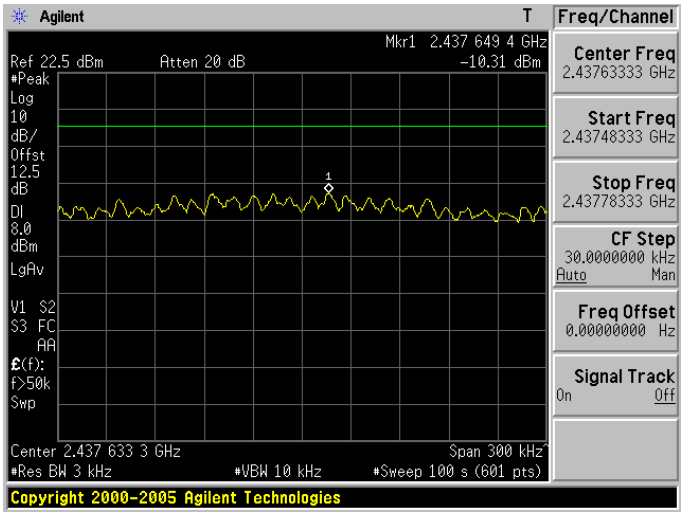
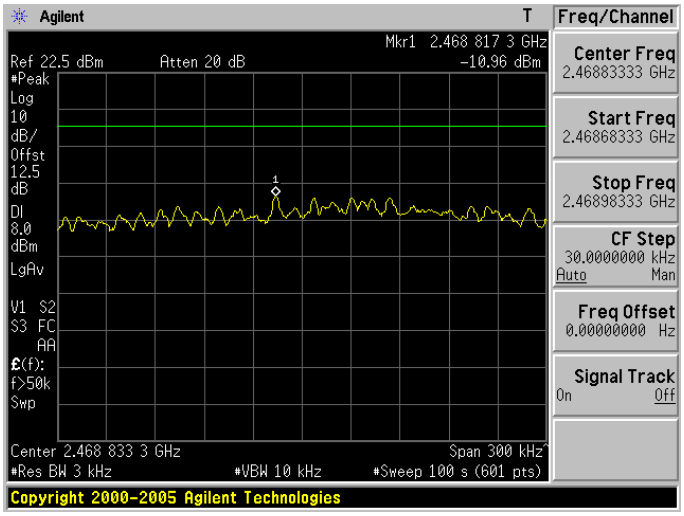
Frequency (MHz)	Measurement (dBm)	Limit (dBm)
5745	-12.14	< 8
5785	-12.57	< 8
5825	-12.89	< 8

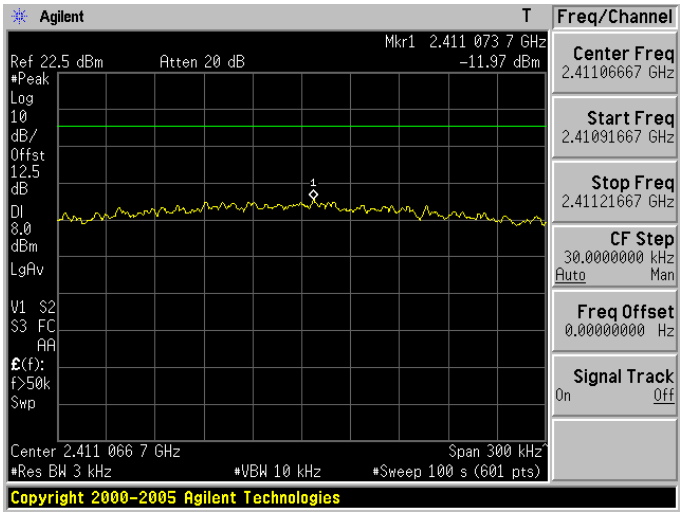
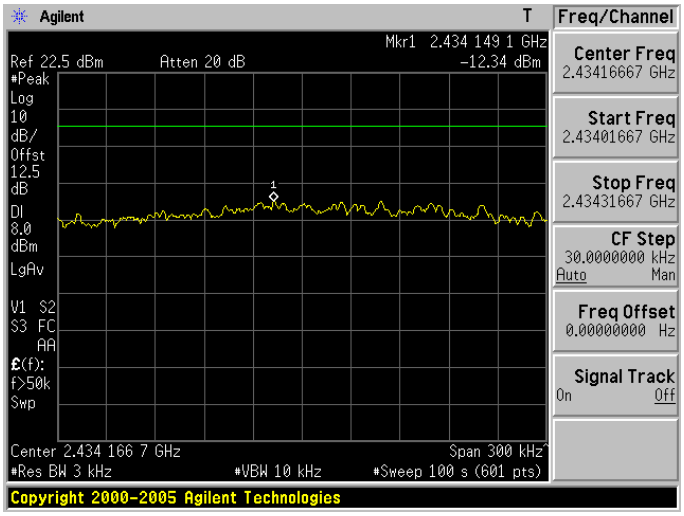
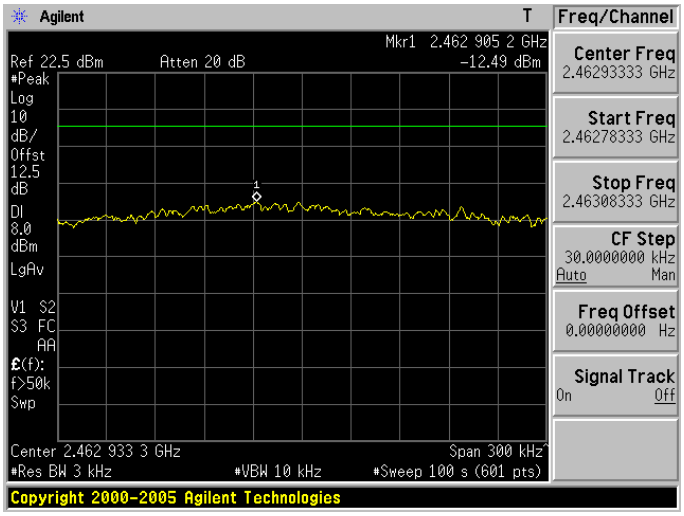
Model Number	PH85110		
Test Item	Maximum Power Density		
Test Mode	Mode 7: draft 802.11n Standard-20MHz U-NII Band IV Link Mode		
Date of Test	07/20/2011	Test Site	TE02

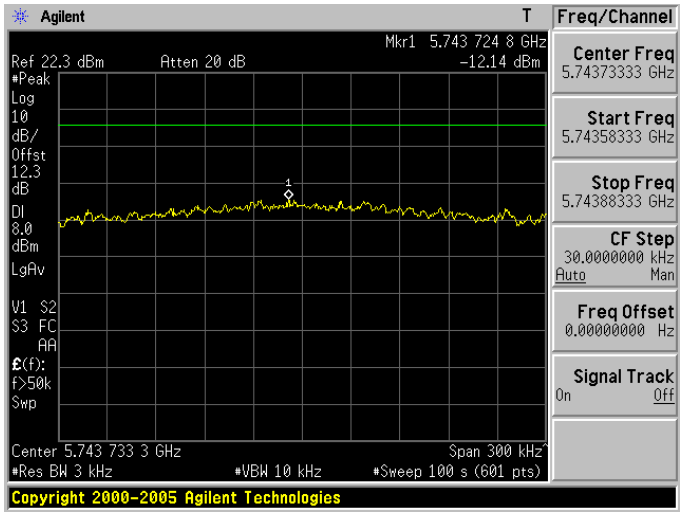
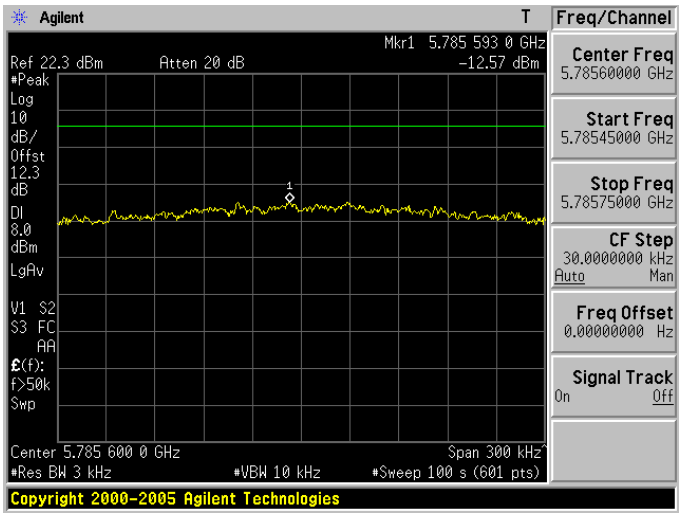
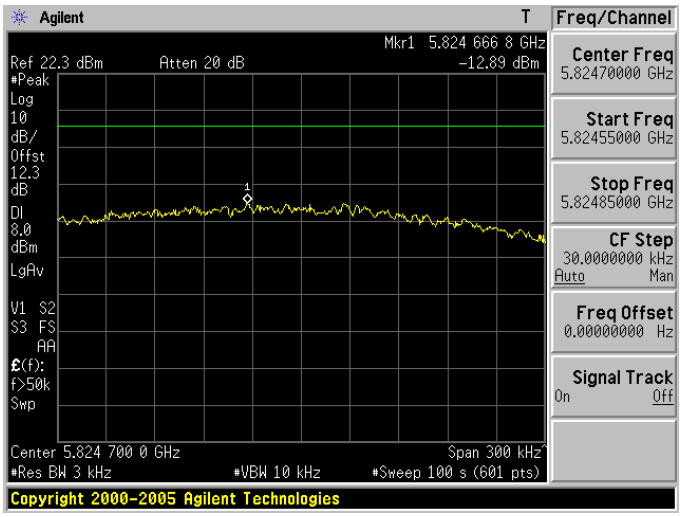
Frequency (MHz)	Measurement (dBm)	Limit (dBm)
5745	-11.52	< 8
5785	-12.28	< 8
5825	-12.41	< 8

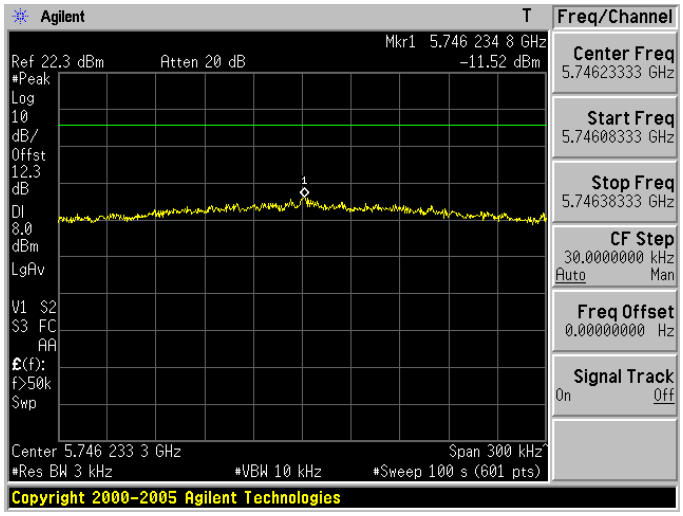
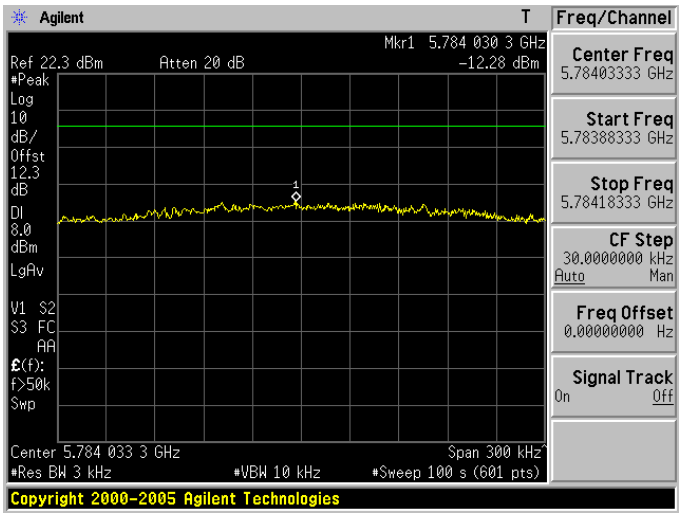
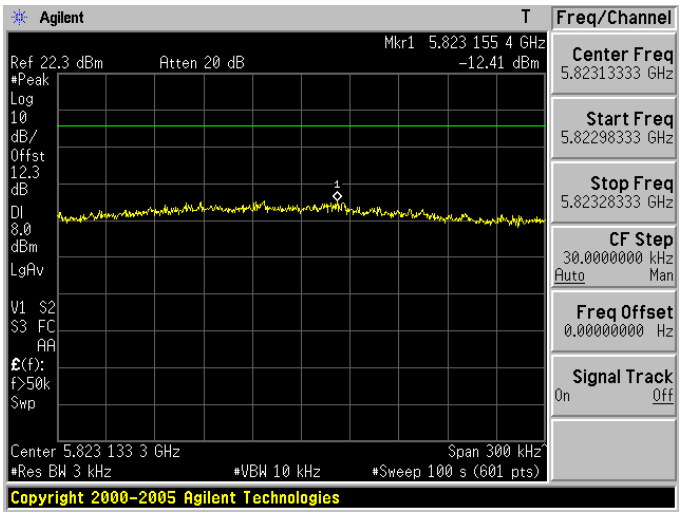
8.6. Test Graphs

Mode 3: IEEE 802.11b Link Mode	
2412	
2437	
2462	

Mode 4: IEEE 802.11g Link Mode	
2412	
2437	
2462	

Mode 5: draft 802.11n Standard-20MHz Link Mode	
2412	
2437	
2462	

Mode 6: IEEE 802.11a U-NII Band IV Link Mode	
5745	
5785	
5825	

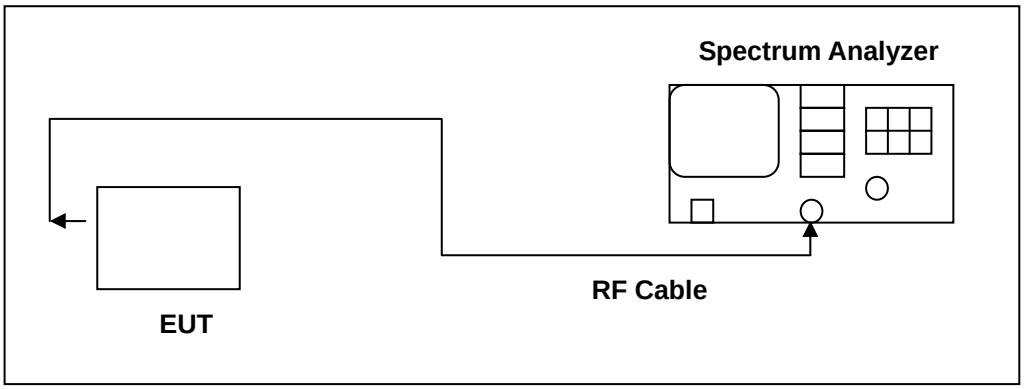
Mode 7: draft 802.11n Standard-20MHz U-NII Band IV Link Mode	
5745	
5785	
5825	

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	12/28/2010	(2)
Spectrum Analyzer	Agilent	E4408B	MY45107753	07/07/2011	(1)
Test Site	ATL	TE02	TE02	N.C.R.	-----

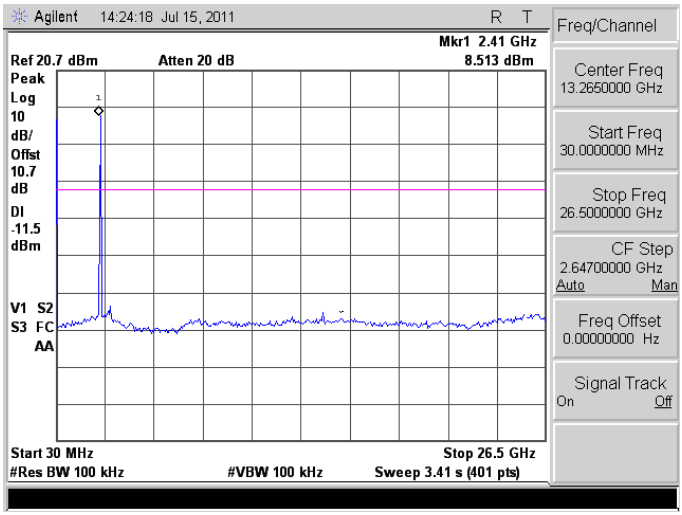
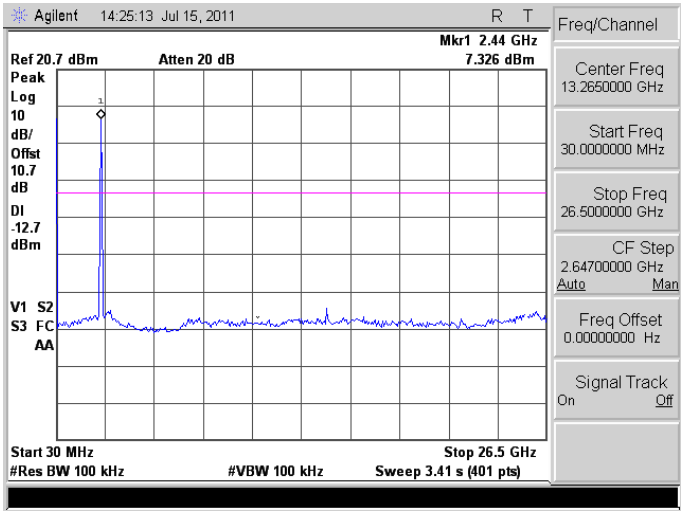
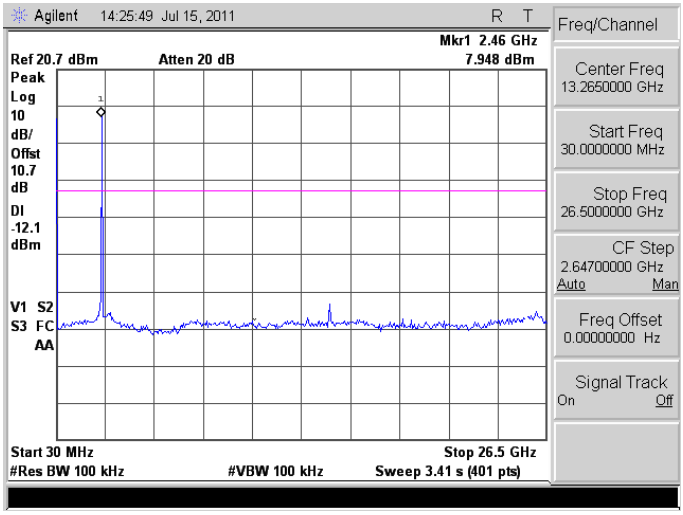
Remark: (1) Calibration period 1 year. (2) Calibration period 2 years.
NOTE: N.C.R. = No Calibration Request.

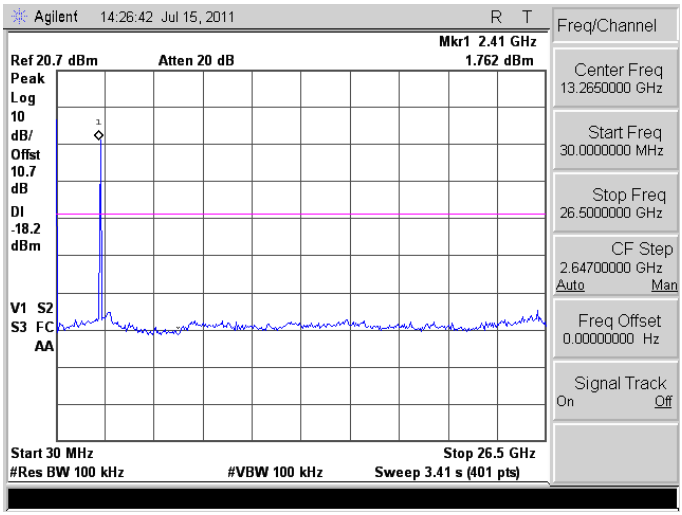
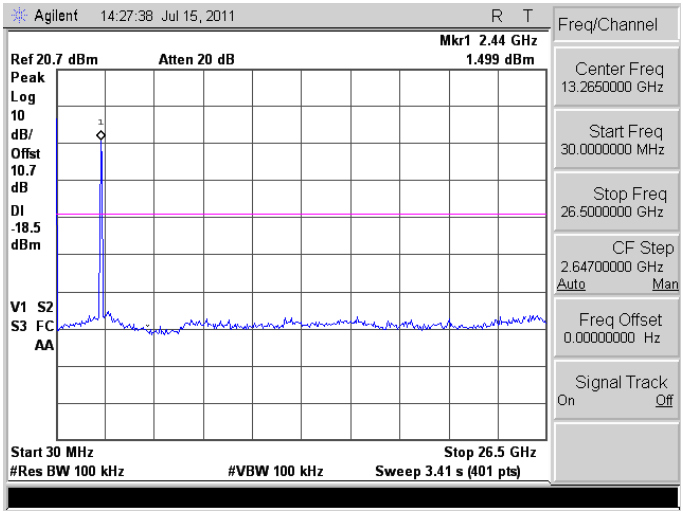
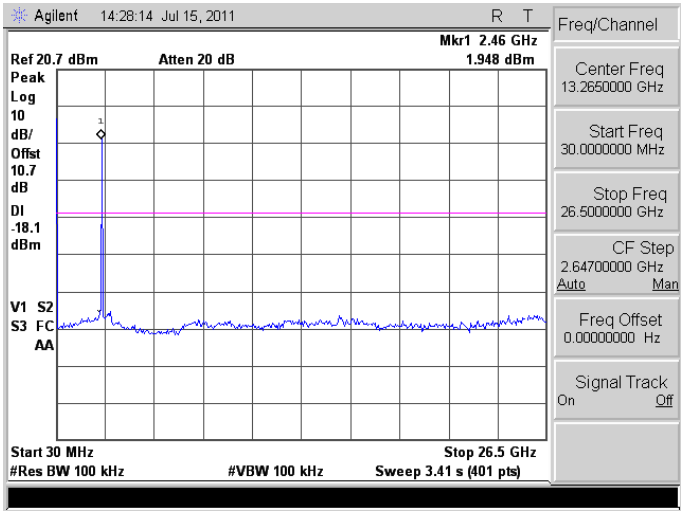
9.4. Test Procedure

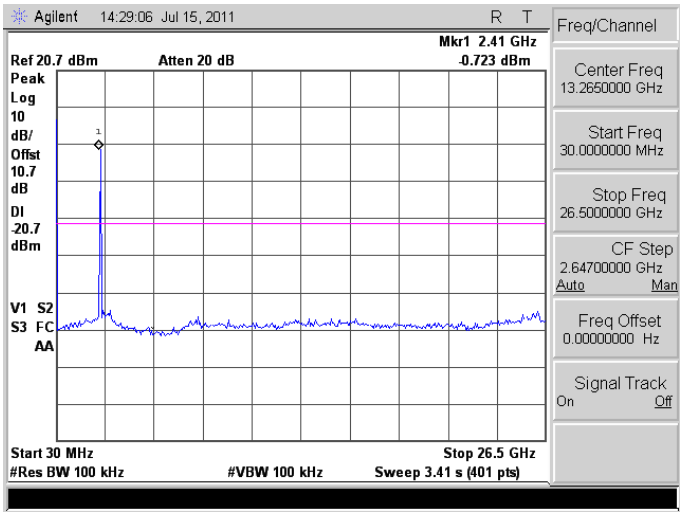
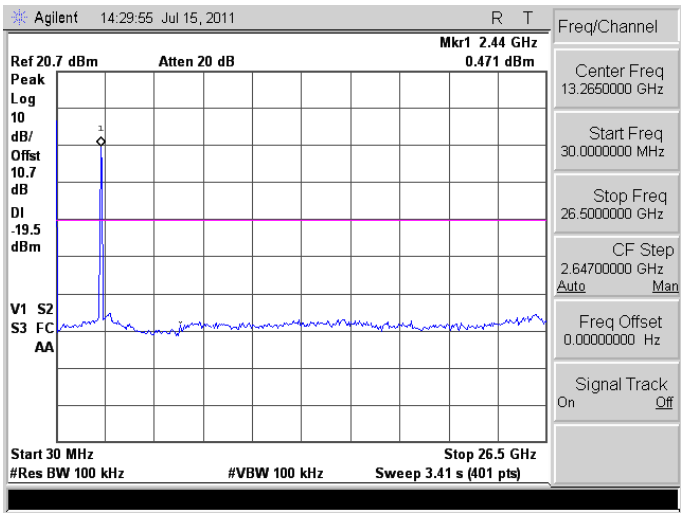
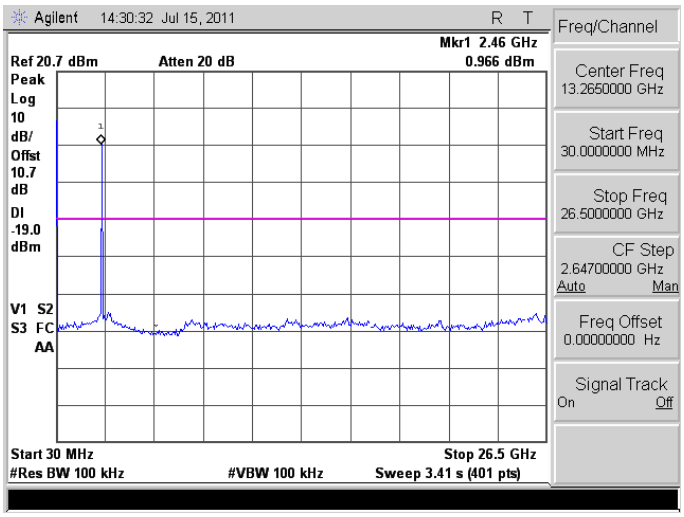
In any 100 kHz bandwidth outside the EUT pass band, the RF power produced by the modulation products of the spreading sequence, the information sequence, and the carrier frequency shall be at least 20 dB below that of the maximum in-band 100 kHz emission, antenna output of the EUT was coupled directly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

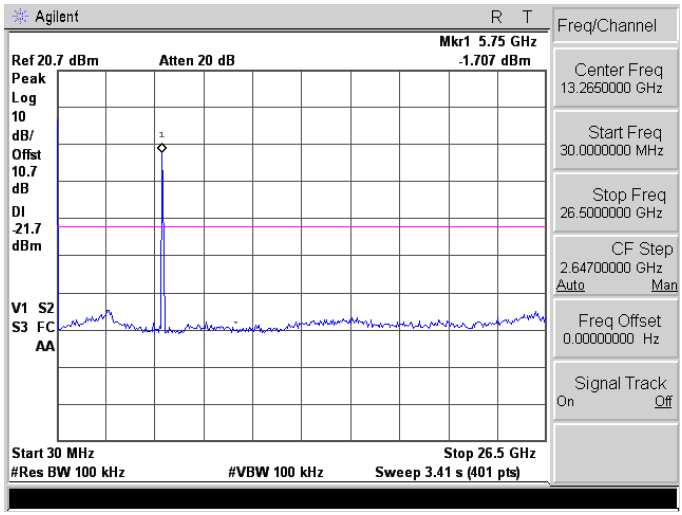
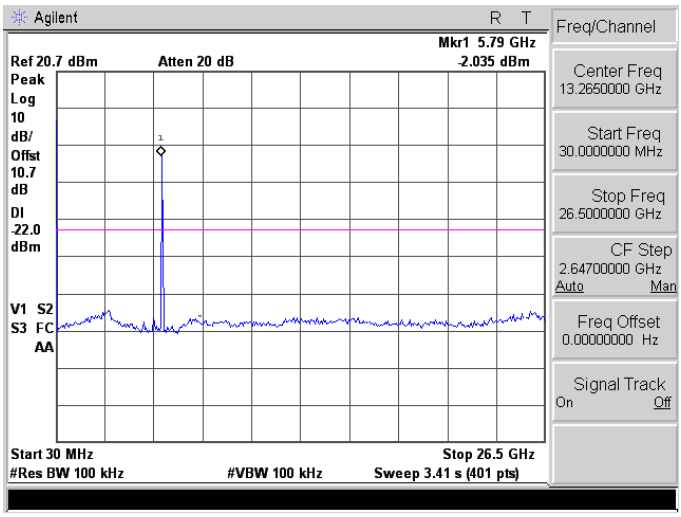
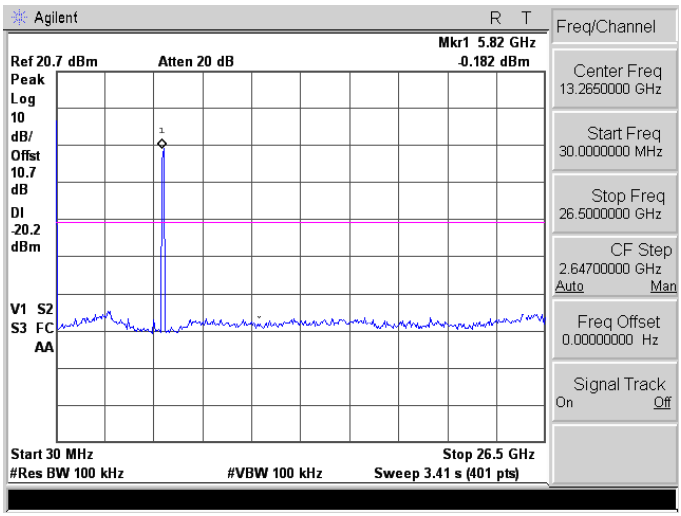
All other types of emissions from the EUT shall meet the general limits for radiated frequencies outside the pass band. The test was performed at 3 channels (Channel 1, 6, 11)

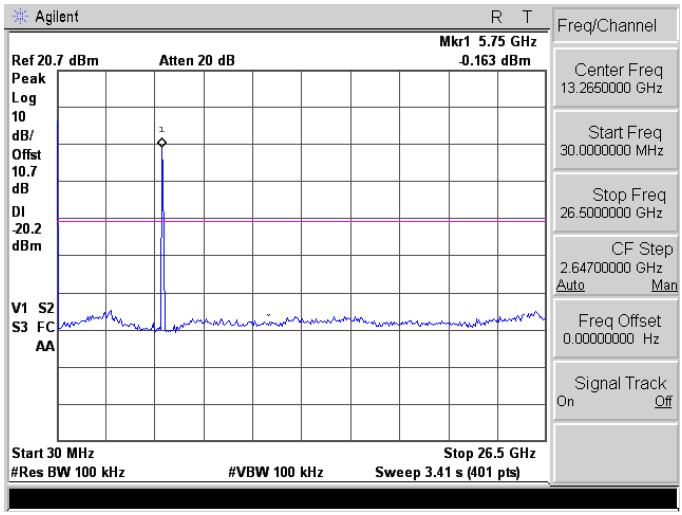
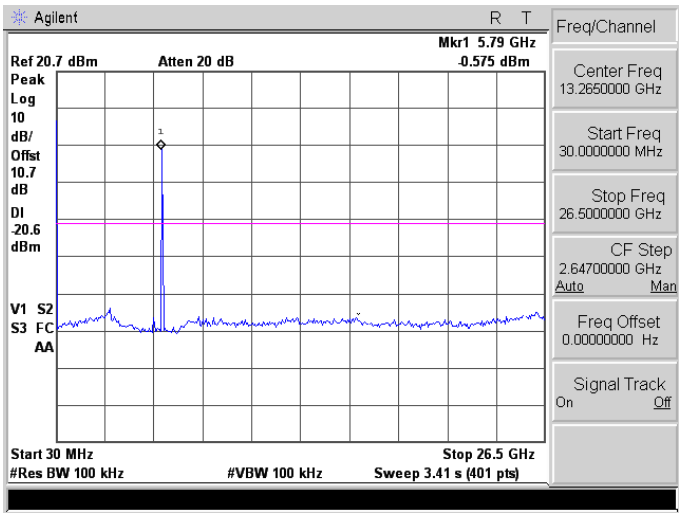
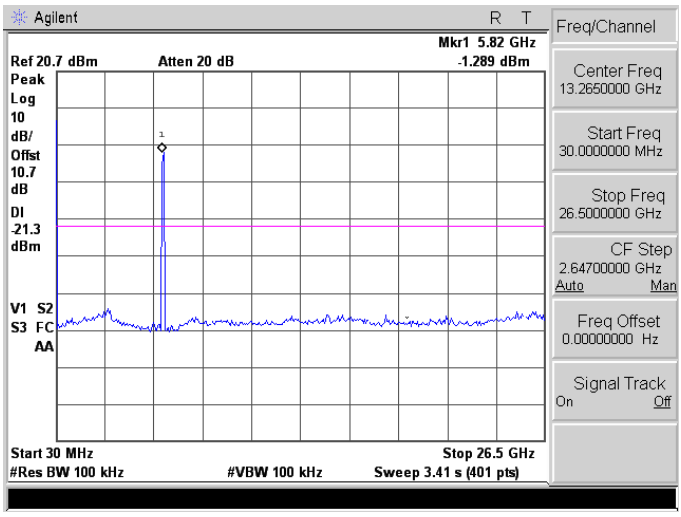
9.5. Test Graphs

Mode 3: IEEE 802.11b Link Mode	
2412	
2437	
2462	

Mode 4: IEEE 802.11g Link Mode	
2412	
2437	
2462	

Mode 5: draft 802.11n Standard-20MHz Link Mode	
2412	
2437	
2462	

Mode 6: IEEE 802.11a U-NII Band IV Link Mode	
5745	
5785	
5825	

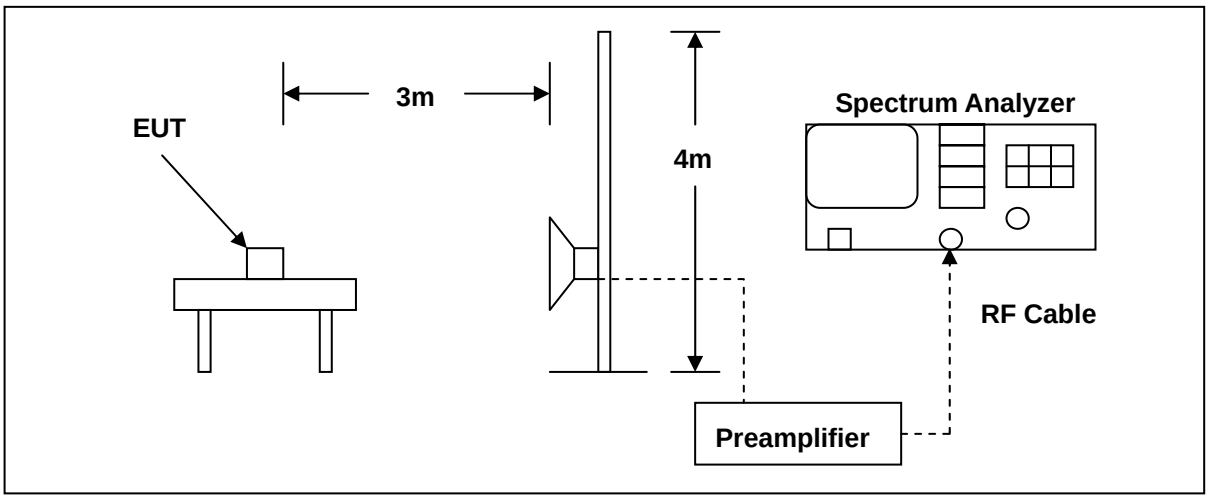
Mode 7: draft 802.11n Standard-20MHz U-NII Band IV Link Mode	
5745	
5785	
5825	

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

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
Spectrum Analyzer	Agilent	E4408B	MY45107753	07/07/2011	(1)
Pre Amplifier	Agilent	8449B	3008A02237	02/23/2011	(1)
Horn Antenna	SCHWARZBECK MESS-ELEKTRONIK	9120D	9120D-550	06/29/2011	(1)
Test Site	ATL	TE01	888001	07/30/2010	-----

Remark: (1) Calibration period 1 year. (2) Calibration period 2 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 Oct 2002 KDB558074 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.

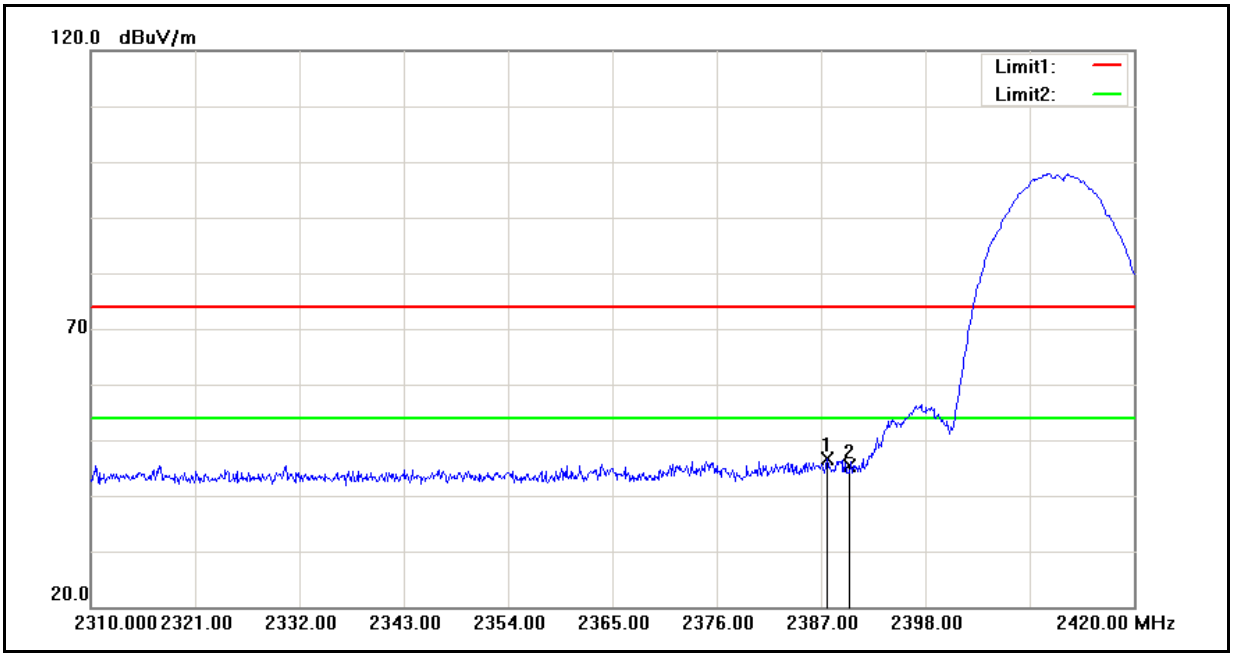
The transmitter was configured with the worst case antenna and setup to transmit at the highest channel. Then the field strength was measured at 2483.5 MHz.

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.

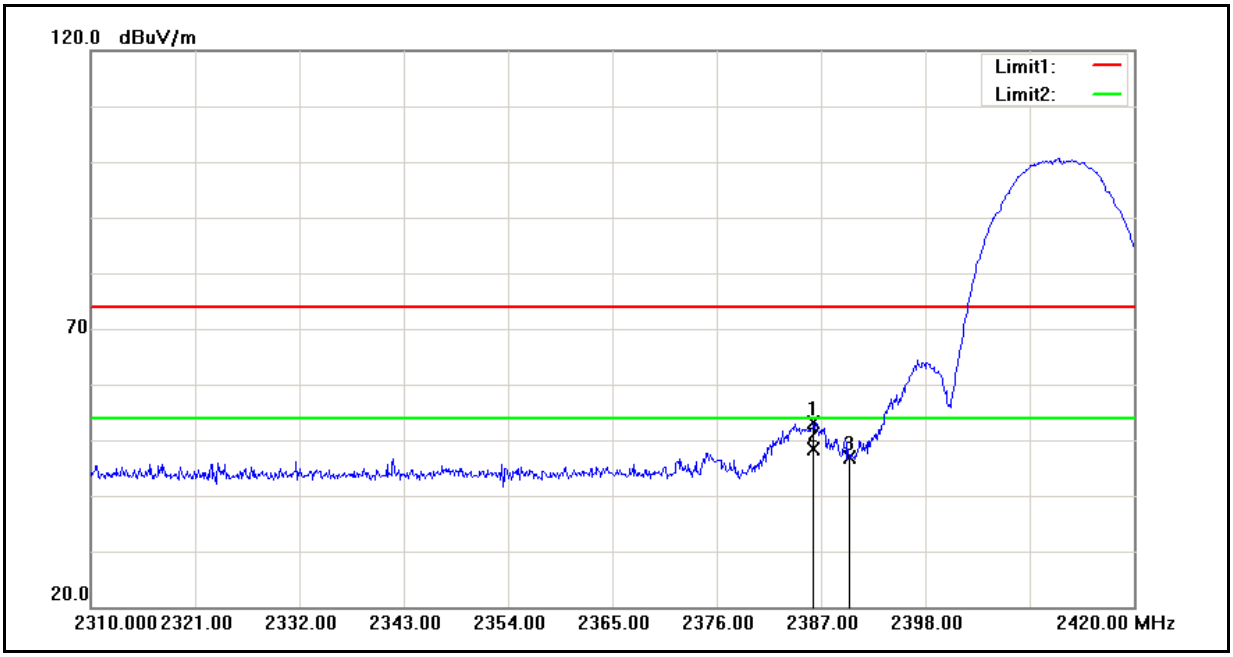
10.5.Test Result

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	PH85110	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	Mode 3	Date:	07/15/2011
Frequency:	2412 MHz	Test By:	Gary Wu
Ant.Polar.:	Horizontal		



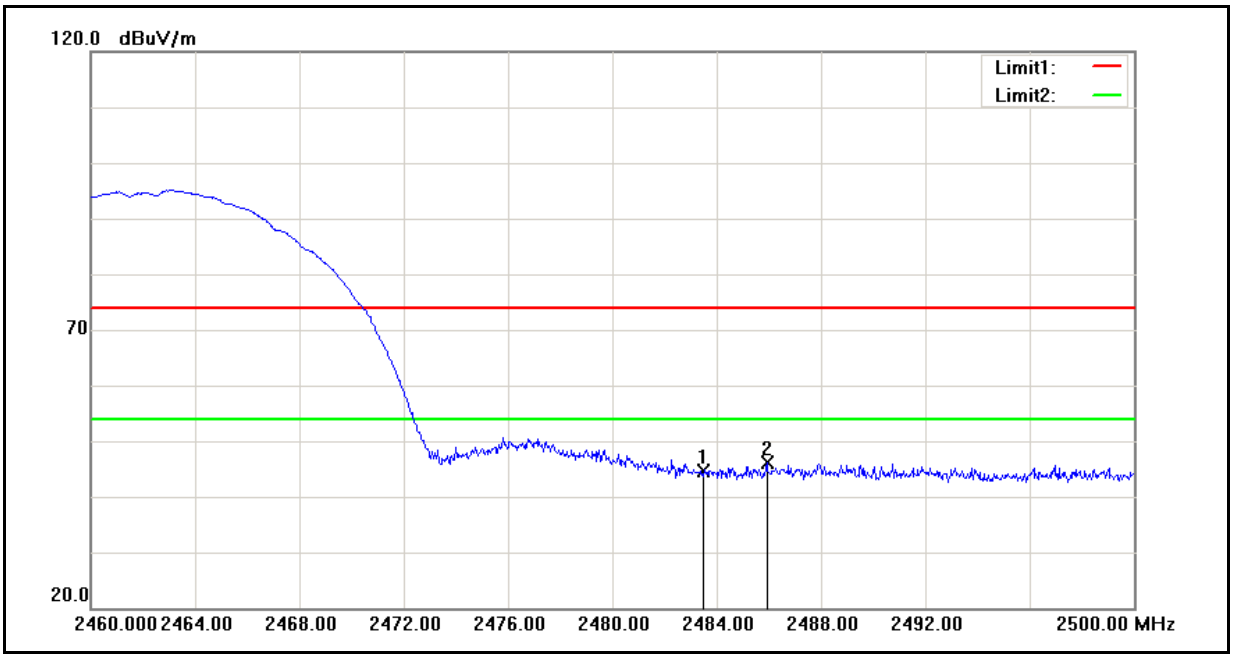
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2387.660	64.29	-17.78	46.51	74.00	-27.49	peak
2	2390.000	63.08	-17.78	45.30	74.00	-28.70	peak

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	PH85110	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	Mode 3	Date:	07/15/2011
Frequency:	2412 MHz	Test By:	Gary Wu
Ant.Polar.:	Vertical		



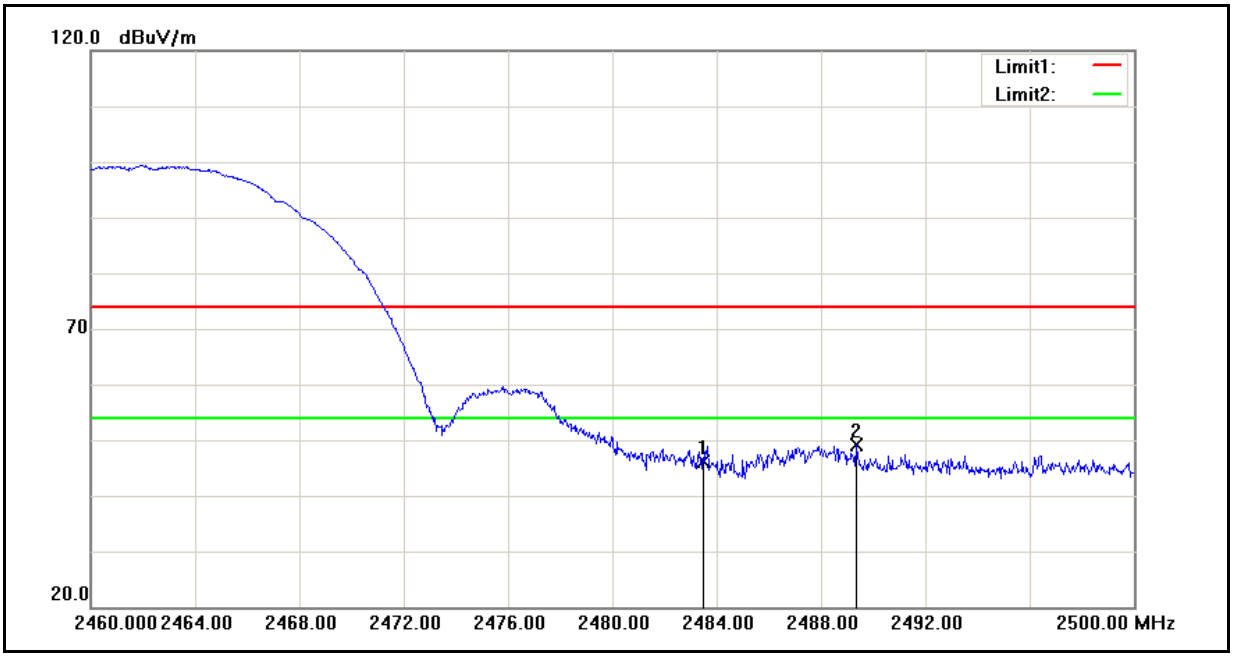
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2386.230	70.80	-17.78	53.02	74.00	-20.98	peak
2	2386.230	66.24	-17.78	48.46	54.00	-5.54	AVG
3	2390.000	64.75	-17.78	46.97	74.00	-27.03	peak

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	PH85110	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	Mode 3	Date:	07/15/2011
Frequency:	2462 MHz	Test By:	Gary Wu
Ant.Polar.:	Horizontal		



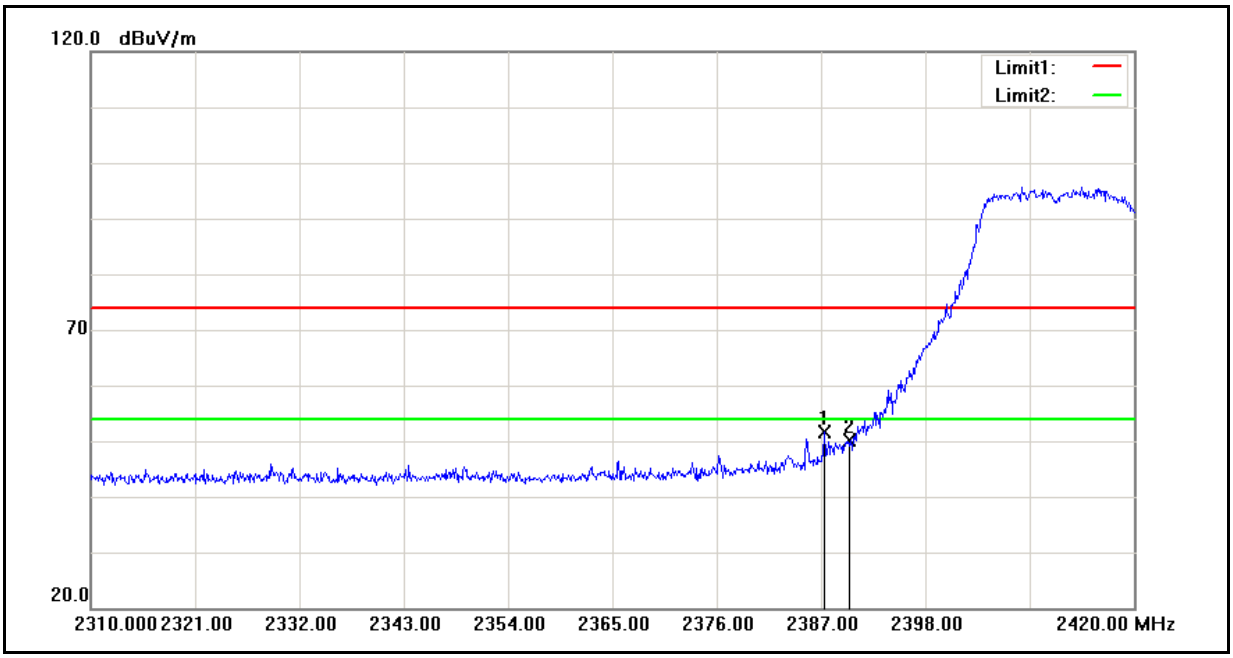
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	62.24	-17.65	44.59	74.00	-29.41	peak
2	2485.920	63.74	-17.65	46.09	74.00	-27.91	peak

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	PH85110	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	Mode 3	Date:	07/15/2011
Frequency:	2462 MHz	Test By:	Gary Wu
Ant.Polar.:	Vertical		



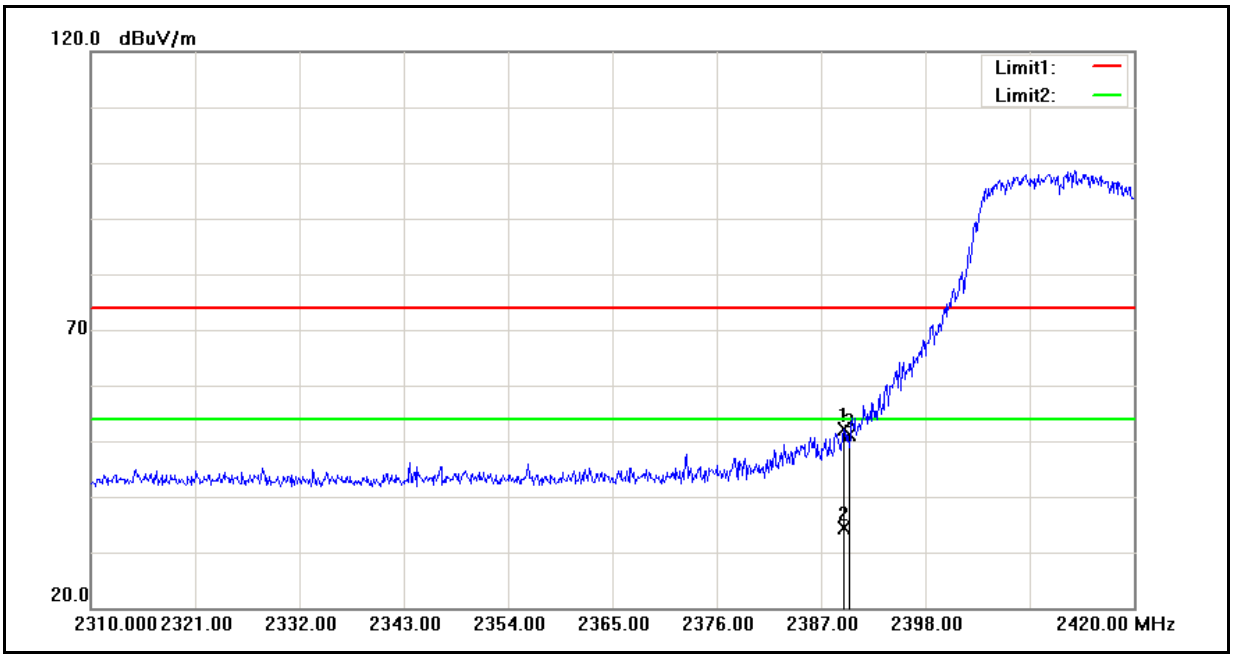
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	63.77	-17.65	46.12	74.00	-27.88	peak
2	2489.360	66.70	-17.65	49.05	74.00	-24.95	peak

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	PH85110	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	Mode 4	Date:	07/15/2011
Frequency:	2412 MHz	Test By:	Gary Wu
Ant.Polar.:	Horizontal		



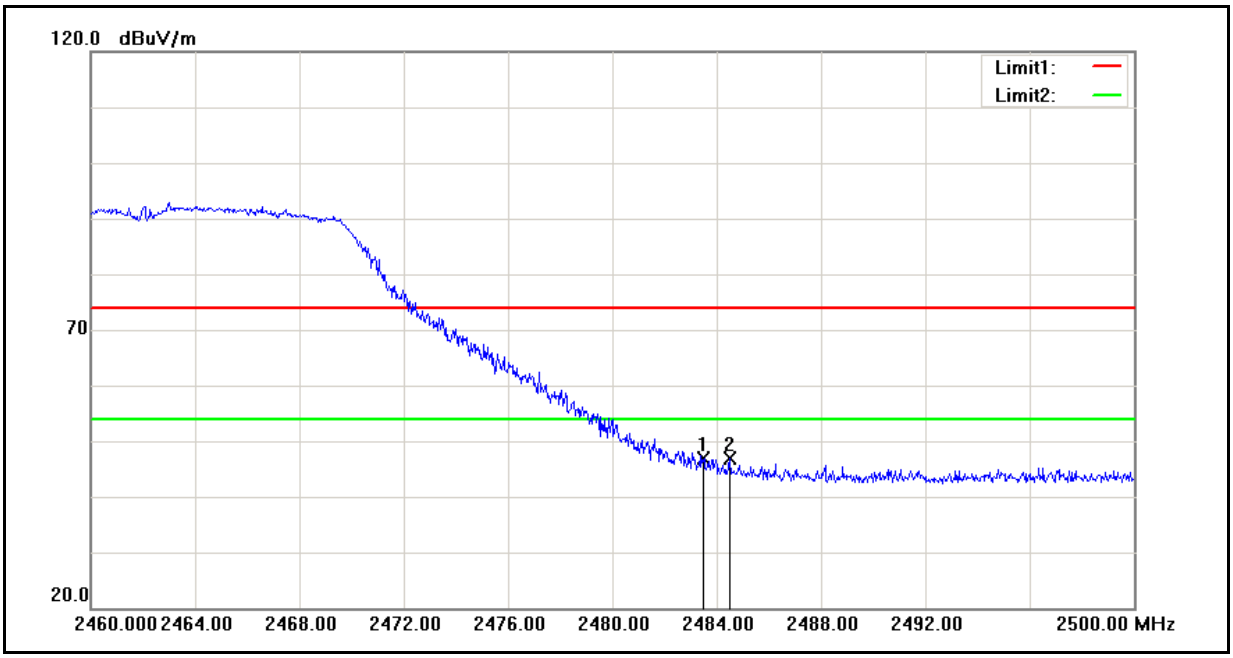
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2387.330	69.38	-17.78	51.60	74.00	-22.40	peak
2	2390.000	67.93	-17.78	50.15	74.00	-23.85	peak

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	PH85110	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	Mode 4	Date:	07/15/2011
Frequency:	2412 MHz	Test By:	Gary Wu
Ant.Polar.:	Vertical		



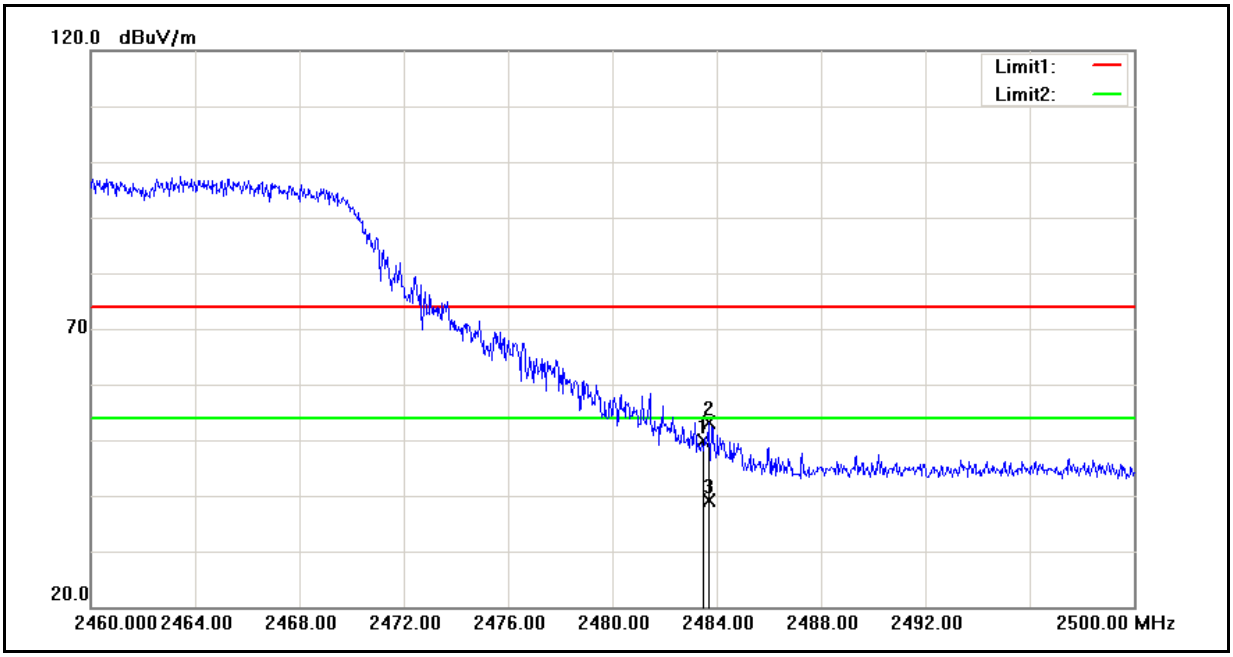
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2389.420	69.99	-17.78	52.21	74.00	-21.79	peak
2	2389.420	52.26	-17.78	34.48	54.00	-19.52	AVG
3	2390.000	69.00	-17.78	51.22	74.00	-22.78	peak

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	PH85110	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	Mode 4	Date:	07/15/2011
Frequency:	2462 MHz	Test By:	Gary Wu
Ant.Polar.:	Horizontal		



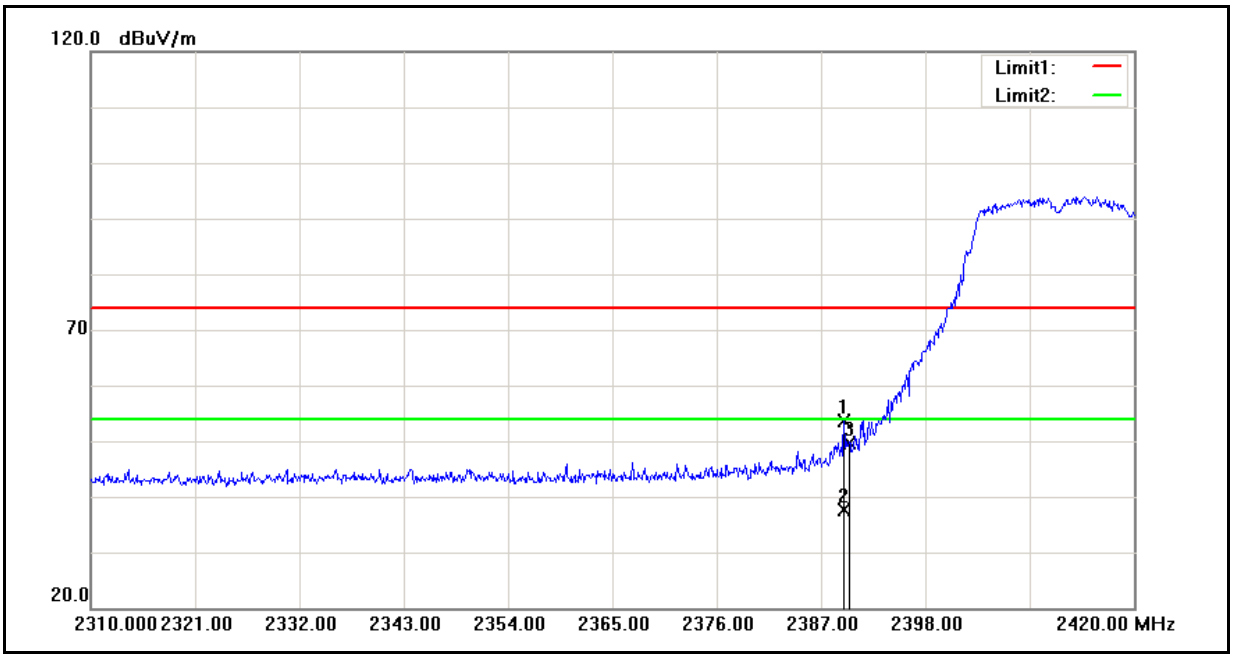
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	64.42	-17.65	46.77	74.00	-27.23	peak
2	2484.480	64.47	-17.65	46.82	74.00	-27.18	peak

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	PH85110	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	Mode 4	Date:	07/15/2011
Frequency:	2462 MHz	Test By:	Gary Wu
Ant.Polar.:	Vertical		



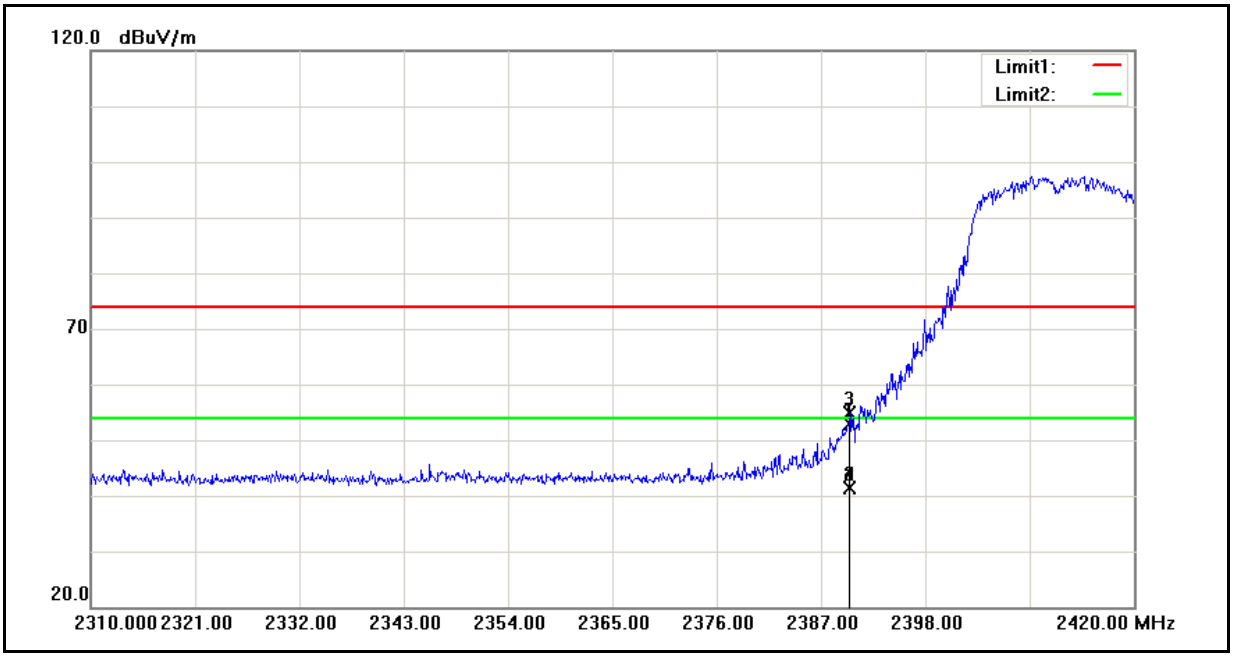
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	67.45	-17.65	49.80	74.00	-24.20	peak
2	2483.680	70.80	-17.65	53.15	74.00	-20.85	peak
3	2483.680	56.87	-17.65	39.22	54.00	-14.78	AVG

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	PH85110	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	Mode 5	Date:	07/15/2011
Frequency:	2412 MHz	Test By:	Gary Wu
Ant.Polar.:	Horizontal		



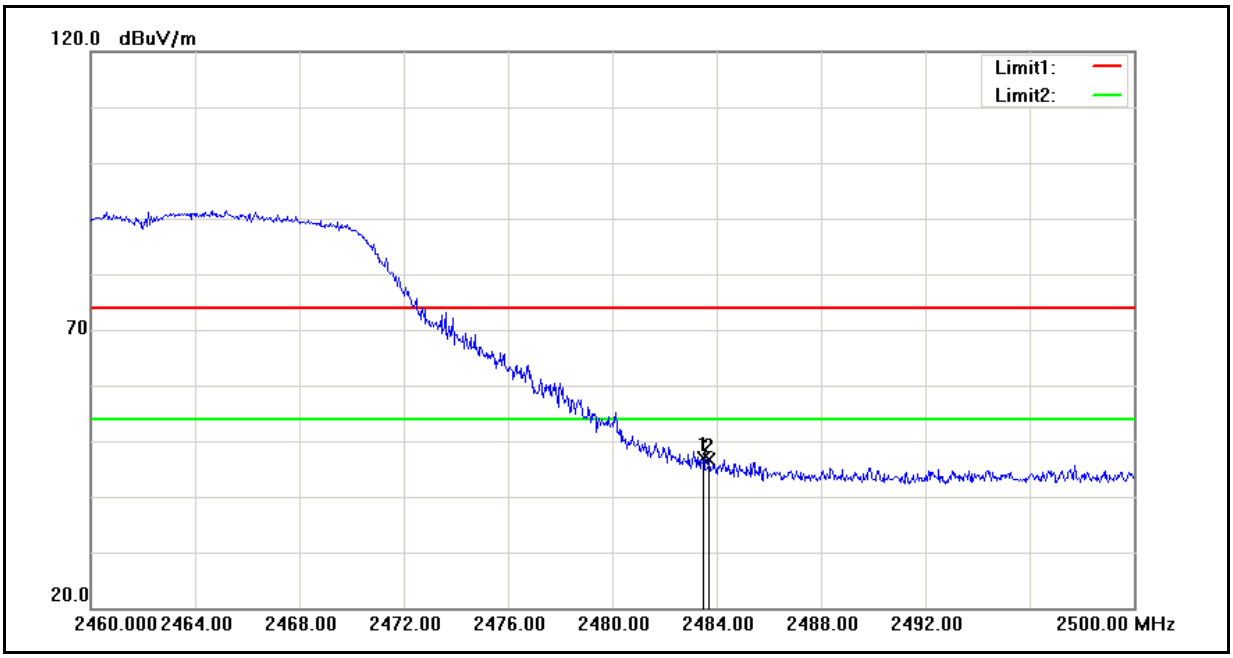
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2389.420	71.52	-17.78	53.74	74.00	-20.26	peak
2	2389.420	55.53	-17.78	37.75	54.00	-16.25	AVG
3	2390.000	67.29	-17.78	49.51	74.00	-24.49	peak

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	PH85110	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	Mode 5	Date:	07/15/2011
Frequency:	2412 MHz	Test By:	Gary Wu
Ant.Polar.:	Vertical		



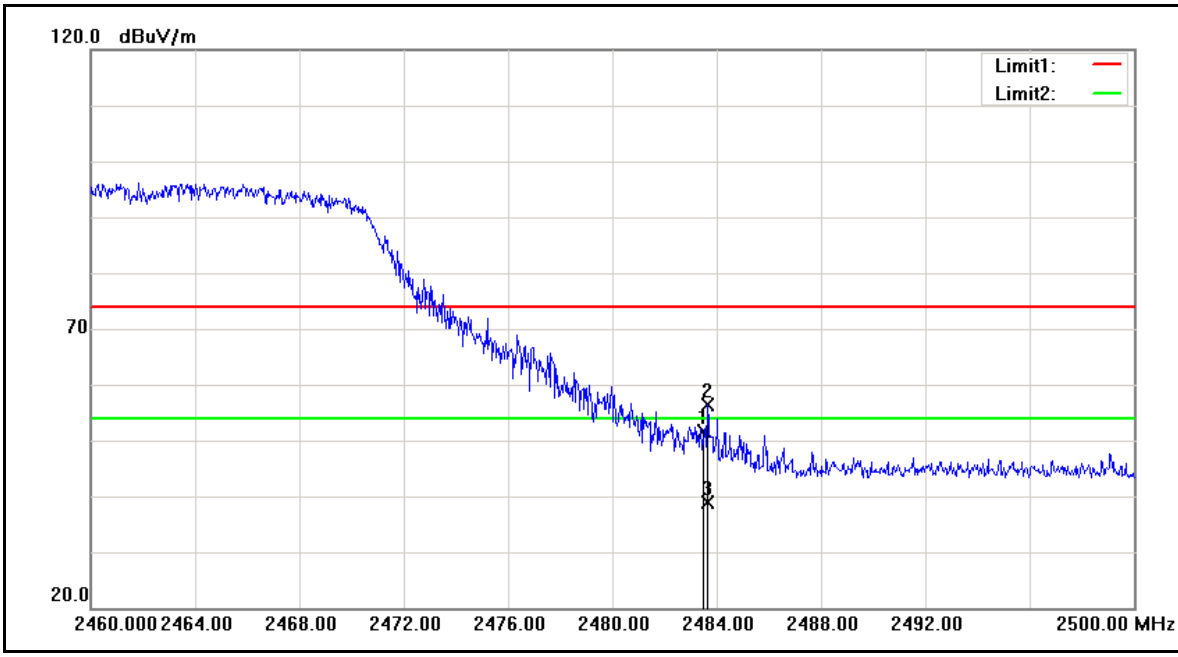
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2389.970	70.73	-17.78	52.95	74.00	-21.05	peak
2	2389.970	59.14	-17.78	41.36	54.00	-12.64	AVG
3	2390.000	72.73	-17.78	54.95	74.00	-19.05	peak
4	2390.000	59.14	-17.78	41.36	54.00	-12.64	AVG

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	PH85110	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	Mode 5	Date:	07/15/2011
Frequency:	2462 MHz	Test By:	Gary Wu
Ant.Polar.:	Horizontal		



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	64.61	-17.65	46.96	74.00	-27.04	peak
2	2483.720	64.31	-17.65	46.66	74.00	-27.34	peak

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	PH85110	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	Mode 5	Date:	07/15/2011
Frequency:	2462 MHz	Test By:	Gary Wu
Ant.Polar.:	Vertical		



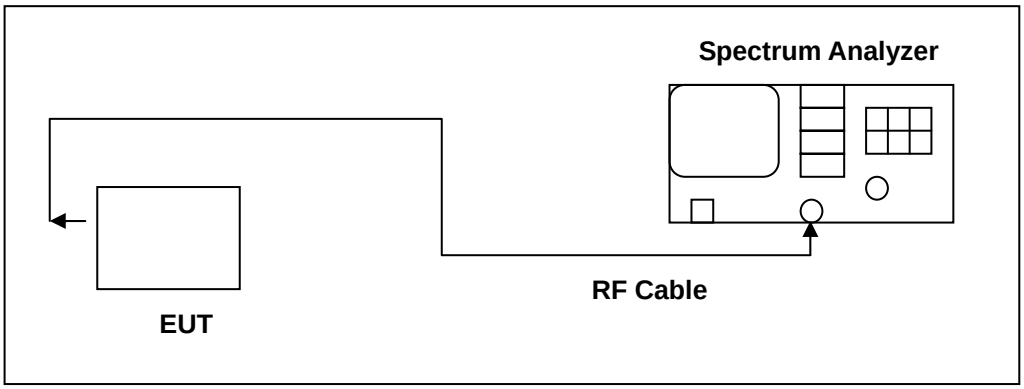
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	69.28	-17.65	51.63	74.00	-22.37	peak
2	2483.640	74.13	-17.65	56.48	74.00	-17.52	peak
3	2483.640	56.60	-17.65	38.95	54.00	-15.05	AVG

11 99 % Occupied Bandwidth Measurement

11.1.Limit

N/A

11.2.Test Setup



11.3.Test Instruments

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
Spectrum Analyzer	Agilent	E4445A	MY45300744	12/28/2010	(2)
Test Site	ATL	TE02	TE02	N.C.R.	-----

Remark: (1) Calibration period 1 year. (2) Calibration period 2 years.
NOTE: N.C.R. = No Calibration Request.

11.4.Test Procedure

The transmitter shall be operated at its maximum carrier power measured under normal test conditions. The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts. The resolution bandwidth shall be set to as close to 1% of the selected span as is possible without being below 1%. 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.

11.5.Test Result

Model Number	PH85110		
Test Item	99 % Occupied Bandwidth		
Test Mode	Mode 3: IEEE 802.11b Link Mode		
Date of Test	07/15/2011	Test Site	TE02

Frequency (MHz)	Measurement (MHz)	Limit (kHz)
2412	13.9509	-----
2437	13.9565	-----
2462	13.9679	-----

Model Number	PH85110		
Test Item	99 % Occupied Bandwidth		
Test Mode	Mode 4: IEEE 802.11g Link Mode		
Date of Test	07/15/2011	Test Site	TE02

Frequency (MHz)	Measurement (MHz)	Limit (kHz)
2412	16.5549	-----
2437	16.5872	-----
2462	16.5517	-----

Model Number	PH85110		
Test Item	99 % Occupied Bandwidth		
Test Mode	Mode 5: draft 802.11n Standard-20MHz Link Mode		
Date of Test	07/15/2011	Test Site	TE02

Frequency (MHz)	Measurement (MHz)	Limit (kHz)
2412	17.7241	-----
2437	17.7220	-----
2462	17.6699	-----

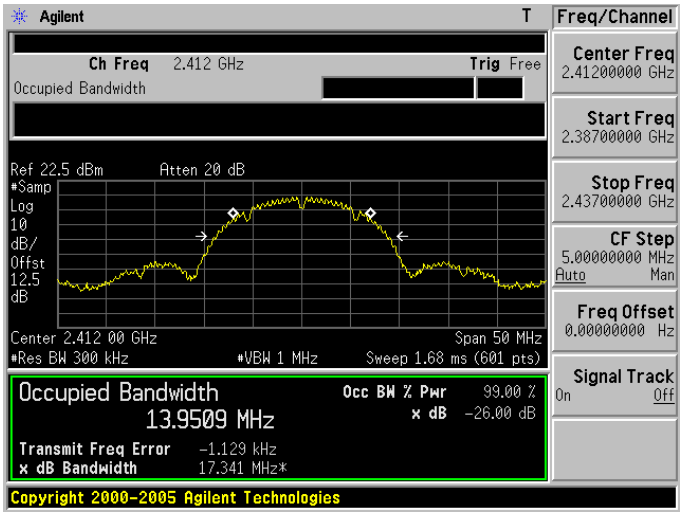
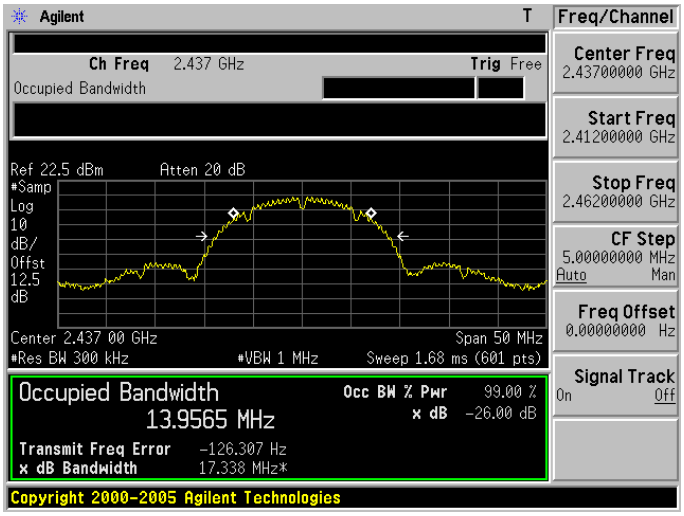
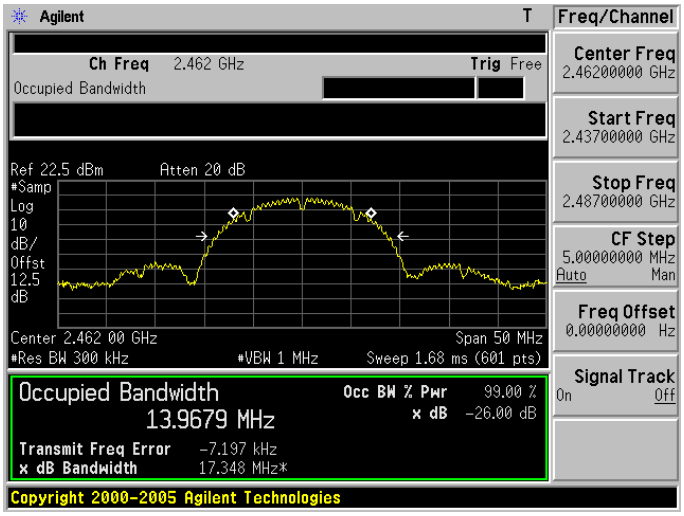
Model Number	PH85110		
Test Item	99 % Occupied Bandwidth		
Test Mode	Mode 6: IEEE 802.11a U-NII Band IV Link Mode		
Date of Test	07/20/2011	Test Site	TE02

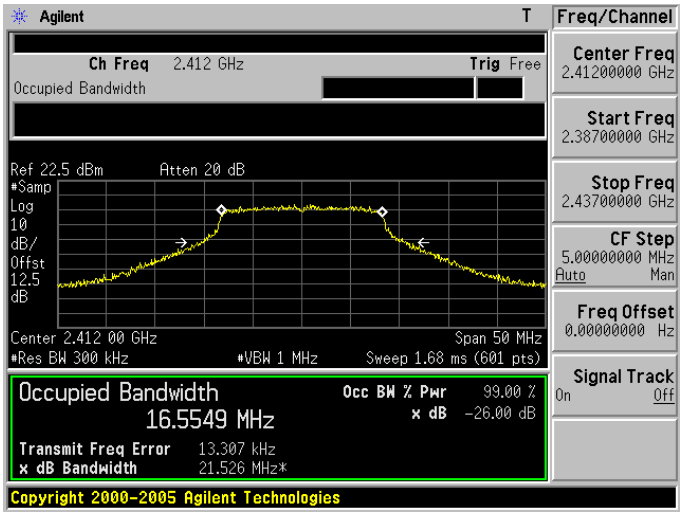
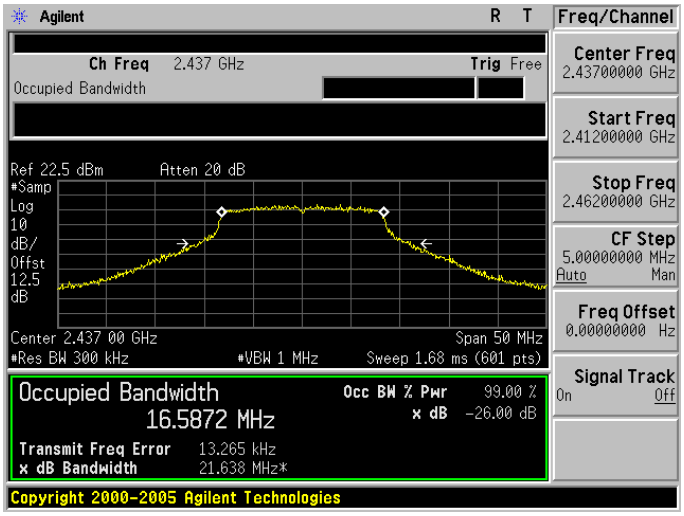
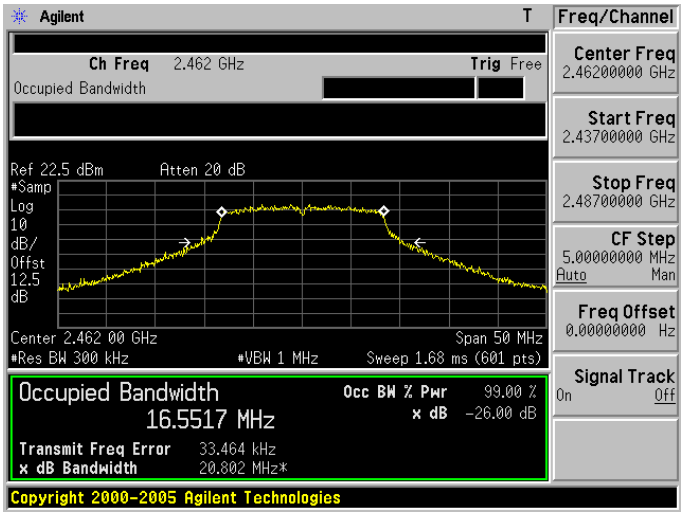
Frequency (MHz)	Measurement (MHz)	Limit (kHz)
5745	16.6843	-----
5785	16.6985	-----
5825	16.6453	-----

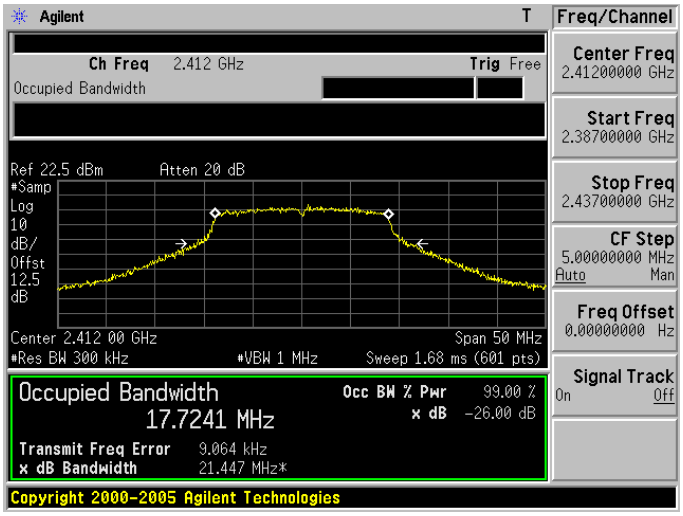
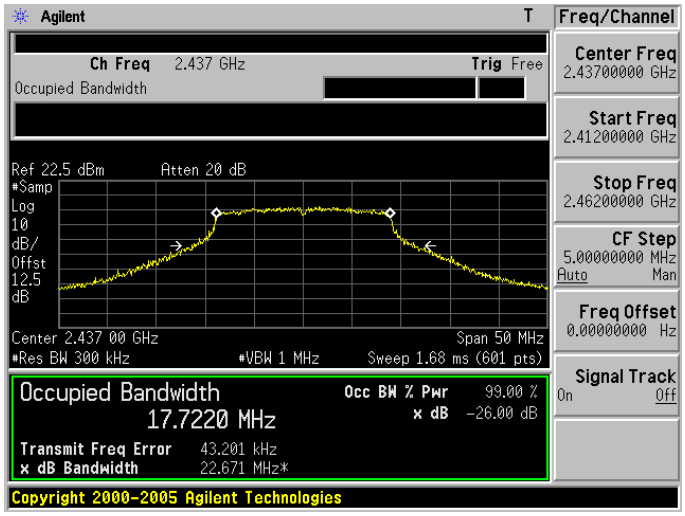
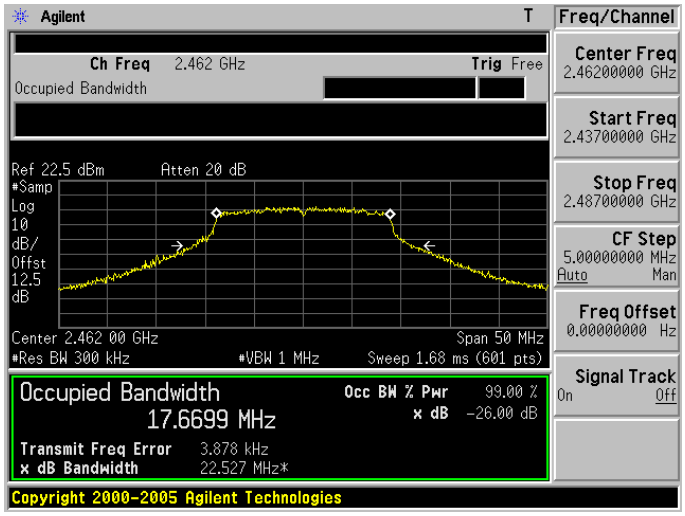
Model Number	PH85110		
Test Item	99 % Occupied Bandwidth		
Test Mode	Mode 7: draft 802.11n Standard-20MHz U-NII Band IV Link Mode		
Date of Test	07/20/2011	Test Site	TE02

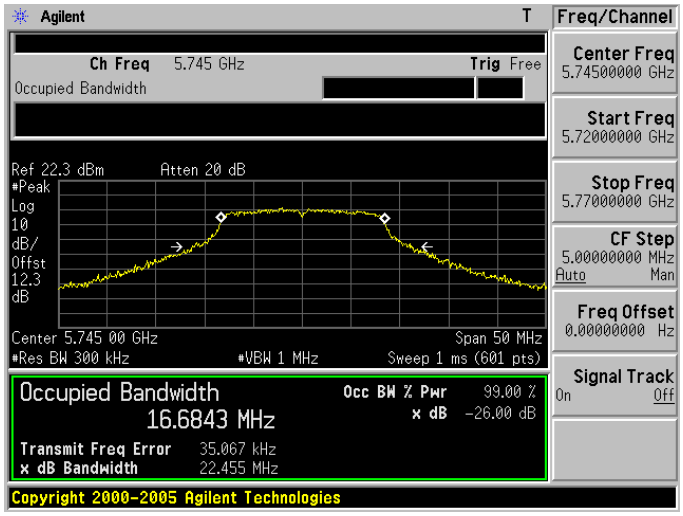
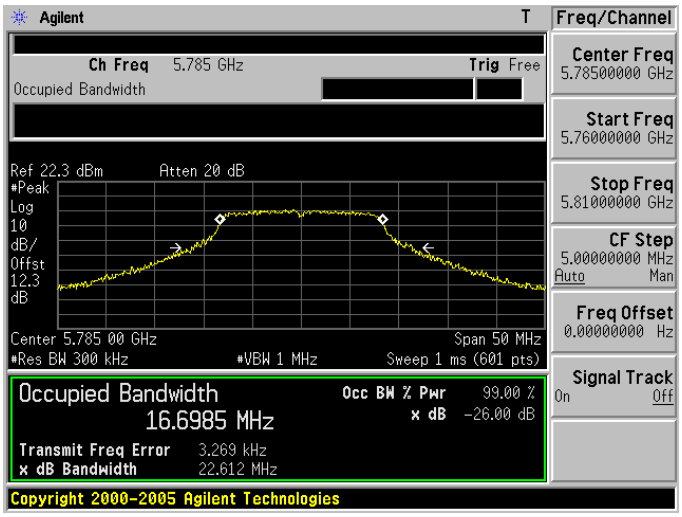
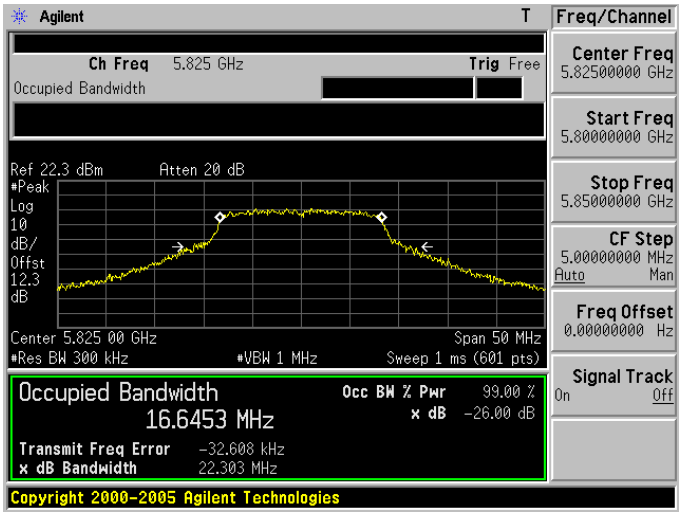
Frequency (MHz)	Measurement (MHz)	Limit (kHz)
5745	17.8229	-----
5785	17.7932	-----
5825	17.7771	-----

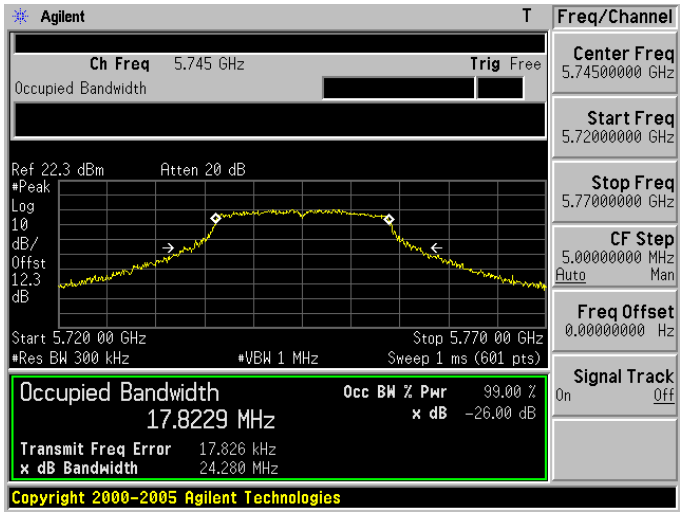
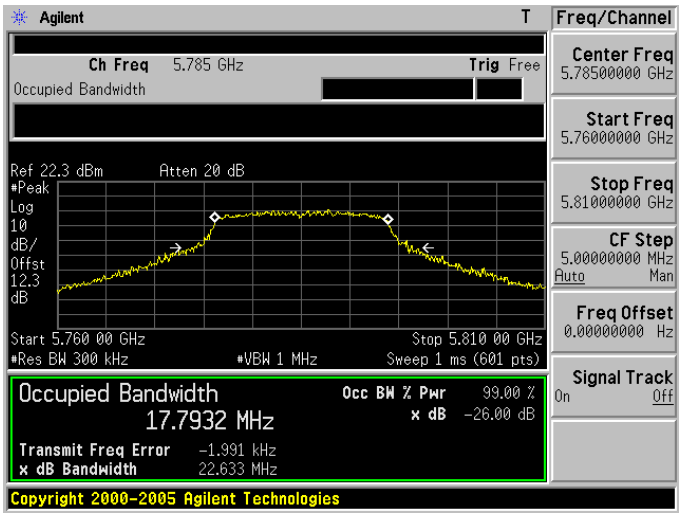
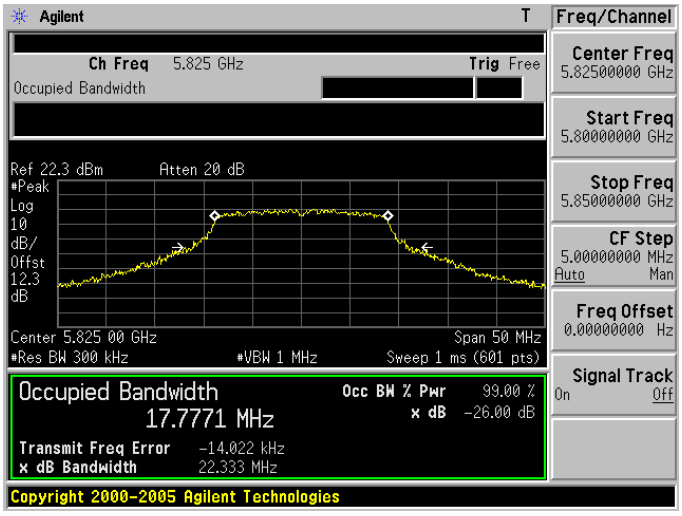
11.6.Test Graphs

Mode 3: IEEE 802.11b Link Mode	
2412	
2437	
2462	

Mode 4: IEEE 802.11g Link Mode	
2412	
2437	
2462	

Mode 5: draft 802.11n Standard-20MHz Link Mode	
2412	
2437	
2462	

Mode 6: IEEE 802.11a U-NII Band IV Link Mode	
5745	
5785	
5825	

Mode 7: draft 802.11n Standard-20MHz U-NII Band IV Link Mode	
5745	
5785	
5825	

12 Antenna Measurement

12.1. 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.

12.2. Antenna Connector Construction

For 2.4GHz antenna used in this product is **PIFA antenna**. And the maximum Gain of this antenna is only **0.8 dBi**.

For 5GHz antenna used in this product is **PIFA antenna**. And the maximum Gain of this antenna is only **1.5 dBi**.