



FCC TEST REPORT

for

N150 Wireless Router

MODEL: WNR612v3

Brand: NETGEAR

Test Report Number:

SZ120208B01-RP

Issued Date: March 5, 2012

Issued for

NETGEAR, INC.

350 East Plumeria Drive San Jose, CA 95134

Issued by:

Compliance Certification Services (Shenzhen) Inc.

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TESTING CERT #2861.01

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Revision History

Rev.	Issue No.	Revisions	Effect Page	Revised By
00	SZ120208B01-RP	Initial Issue	ALL	Amay Tang



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1 TEST CERTIFICATION

Product	N150 Wireless Router
Model	WNR612v3
Brand	NETGEAR
Tested	February 8 ~March 5, 2012
Applicant	NETGEAR, INC. 350 East Plumeria Drive San Jose, CA 95134
Manufacturer	Shenzhen Gongjin Electronics Co., Ltd B116, B118, A211-213, B201-213, A311-313 and B411-413, Nanshan Medical Instrument Industry Park, 1019# Nanhai RD, Shenzhen, P.R.China

APPLICABLE STANDARDS			
Standard	Test Type	Standard	Test Type
15.207(a)	Power Line Conducted Emissions	15.247(d) 15.209(a)	<ul style="list-style-type: none"> ● Spurious Emissions ● Conducted Measurement ● Radiated Emissions
15.247(a)(2)	6dB Bandwidth Measurement	15.247(b)(3) 15.247(b)(4)	Peak Power Measurement
15.247(d)	Band Edges Measurement	15.247(e)	Peak Power Spectral Density

We hereby certify that:

The above equipment was tested by Compliance Certification Services Inc. 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 EUT 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 EUT identified in this report.

Approved by:

Reviewed by:

Tom Gan
Supervisor of EMC Dept.
Compliance Certification Service Inc.

Aven Zhou
Supervisor of Report Dept.
Compliance Certification Service Inc.



2 TEST RESULT SUMMARY

APPLICABLE STANDARDS			
Standard	Test Type	Result	Remark
15.247(a)(2)	6dB Bandwidth Measurement	Pass	Meet the requirement of limit.
15.247(b)(3) 15.247(b)(4)	Peak Power Measurement	Pass	Meet the requirement of limit.
15.247(d)	Band Edges Measurement	Pass	Meet the requirement of limit.
15.247(e)	Peak Power Spectral Density	Pass	Meet the requirement of limit.
15.247(d) 15.209(a)	<ul style="list-style-type: none">● Spurious Emissions● Conducted Measurement● Radiated Emissions	Pass	Meet the requirement of limit.
15.207(a)	Power line Conducted Emissions	Pass	Meet the requirement of limit.

- Note:
1. The statements of test result on the above are decided by the request of test standard only; the measurement uncertainties are not factored into this compliance determination.
 2. The information of measurement uncertainty is available upon the customer's request.



3 EUT DESCRIPTION

Product	N150 Wireless Router
Trade Name	NETGEAR
Model Number	WNR612v3
Model Discrepancy	N/A
Serial Number	SZ120208B01-RP
Received Date	February 8, 2012
Power Supply	DC 5V supplied by the adapter
Adapter Manufacturer / Model No.	Adapter1: Shenzhen Gongjin Electronics Co., Ltd. S06A22-050A100-PB I/P: 100-240Vac, 50/60Hz, 0.30A max O/P: 5Vdc, 1.0A, DC Output Cable: Unshielded,1.50m Adapter2:RUIDE RD0501000-C55-8MG I/P: 100-240Vac, 50/60Hz, 0.25A max O/P: 5Vdc, 1.0A, DC Output Cable: Unshielded,1.50m
Frequency Range	IEEE 802.11b/g: 2412 ~ 2462 MHz IEEE 802.11n HT20 : 2412 ~ 2462 MHz IEEE 802.11n HT40 : 2422MHz~ 2452MHz
Transmit Power	IEEE 802.11b mode: 17.55dBm IEEE 802.11g mode: 14.27dBm IEEE 802.11n HT20 MHz mode: 14.43dBm IEEE 802.11n HT40 MHz mode: 13.93dBm
Modulation Technique	IEEE 802.11b mode: DSSS(CCK,QPSK, BPSK) IEEE 802.11g mode: OFDM (BPSK/QPSK/16QAM/64QAM) IEEE 802.11n HT20 MHz mode: OFDM (BPSK/QPSK/16QAM/64QAM) IEEE 802.11n HT40 MHz mode: OFDM (BPSK/QPSK/16QAM/64QAM)
Transmit Data Rate	802.11b: 11Mbps(CCK) with fall back rates of 5.5/2/1Mbps 802.11g: 54Mbps with fall back rates of 48/36/24/18/12/11 /6Mbps IEEE 802.11n HT20: 135.0Mbps with fall back rates of 121.5/ 108.0/81.0 /65.0/58.5/54.0/52.0/40.5/39.0/27.0/26.0/19.5/13.5/13.0/6.5 Mbps IEEE 802.11n HT40: 135.0Mbps with fall back rates of 121.5/ 108.0/81.0 /65.0/58.5/54.0/52.0/40.5/39.0/27.0/26.0/19.5/13.5 Mbps
Number of Channels	IEEE 802.11b mode: 11 Channels IEEE 802.11g mode: 11 Channels IEEE 802.11n HT20 MHz mode: 11 Channels IEEE 802.11n HT40 MHz mode: 7 Channels
Antenna Specification	Dipole Antenna with 2.0dBi gain (Max)

Note: 1. The sample selected for test was engineering sample that approximated to production product and was provided by manufacturer.

2. This submittal(s) (test report) is intended for FCC ID: **PY312100183** filing to comply with Section 15.207, 15.209 and 15.247 of the FCC Part 15, Subpart C Rules.

3. The EUT had been tested under operating condition:
For IEEE 802.11b mode and IEEE 802.11g mode used with antenna 1 and antenna 2 but can't work at the same time. for IEEE 802.11n HT20 MHz mode and IEEE 802.11n HT40 MHz mode Combined with antenna 1 and antenna 2 .



4 TEST METHODOLOGY

4.1. DESCRIPTION OF TEST MODES

The EUT has been tested under operating condition.

Software used to control the EUT for staying in continuous transmitting and receiving mode is programmed.

Test Item	Test mode	Worse mode
Conducted Emission	Mode 1: Normal Link	☒
Radiated Emission	Mode 1: Normal Link	☒

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

IEEE802.11b mode: Channel Low (2412MHz), Channel Mid (2437MHz) and Channel High(2462MHz) with 1Mbps data rate were chosen for full testing.

IEEE802.11g mode: Channel Low (2412MHz), Channel Mid (2437MHz) and Channel High (2462MHz) with 6Mbps data rate were chosen for full testing.

IEEE 802.11n HT20 MHz mode: Channel Low (2412MHz), Channel Mid(2437MHz) and Channel High (2462MHz) with 6.5Mbps data rate were chosen for full testing.

IEEE 802.11n HT40 MHz mode: Channel Low (2422MHz), Channel Mid (2437MHz) and Channel High (2452MHz) with 13.5Mbps data rate were chosen for full testing.



5 SETUP OF EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

No.	Equipment	Model No.	Serial No.	FCC ID	Trade Name	Data Cable	Power Cord
1	Notebook	2672	992F2VG	N/A	IBM	Unshielded 1.80m	Shielded 1.80m
2	Notebook	Studio 1435	531544868 6549	N/A	DELL	Unshielded 1.80m	Shielded 1.80m

Note:

- 1) All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
- 2) Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

5.2. CONFIGURATION OF SYSTEM UNDER TEST

See test photographs attached in Appendix II for the actual connections between EUT and support equipment.



6 FACILITIES AND ACCREDITATIONS

6.1. FACILITIES

All measurement facilities used to collect the measurement data are located at **No10-1, Mingkeda Logistics Park, No.18 Huanguan South RD. Guan lan Town, Baoan District, Shenzhen China**

The sites are constructed in conformance with the requirements of ANSI C63.4, ANSI C63.7 and CISPR Publication 22. All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

6.2. ACCREDITATIONS

Our laboratories are accredited and approved by the following accreditation body according to ISO/IEC 17025.

USA	A2LA
China	CNAS

The measuring facility of laboratories has been authorized or registered by the following approval agencies.

USA	FCC
Japan	VCCI(C-3478, R-3135, T-652)
Canada	INDUSTRY CANADA
Taiwan	BSMI
Norway	Nemko

Copies of granted accreditation certificates are available for downloading from our web site, <http://www.ccsrf.com>

6.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Measurement	Frequency	Uncertainty
Conducted emissions	9kHz~30MHz	+/- 3.18dB
Radiated emissions	30MHz ~ 200MHz	+/- 3.79dB
	200MHz ~1000MHz	+/- 3.62dB
	Above 1000MHz	+/- 5.04dB
Band Edges	+/-0.182 dB	

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

The measured result is above (below) the specification limit by a margin less than the measurement uncertainty; it is therefore not possible to state compliance based on the 95% level of confidence. However, the result indicates that compliance (non-compliance) is more probable than non-compliance) with the specification limit.



7 FCC PART 15.247 REQUIREMENTS

7.1. POWER LINE CONDUCTED EMISSIONS MEASUREMENT

7.1.1. LIMITS OF CONDUCTED EMISSIONS MEASUREMENT

According to §15.207(a), except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 µH/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

Frequency Range (MHz)	Limits (dBµV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56*	56 to 46*
0.50 to 5	56	46
5 to 30	60	50

NOTE:

- (1) The lower limit shall apply at the transition frequencies.
- (2) The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.
- (3) All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

7.1.2. TEST INSTRUMENTS

Conducted Emission Test Site					
Name of Equipment	Manufacturer	Model Number	Serial Number	Last Calibration	Due Calibration
ESCI EMI TEST RECEIVE.ESCI	ROHDE&SCHWARZ	ESCI	100783	03/19/2011	03/19/2012
LISN	SCHAFFNER	NNB42	2001/001	05/26/2011	05/26/2012
LISN	EMCO	3825/2	8901-1459	03/19/2011	03/19/2012
Temp. / Humidity Meter	VICTOR	VC230	N/A	03/31/2011	03/31/2012
Test S/W	FARAD	EZ-EMC/ CCS-3A1-CE			

NOTE: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

2. N.C.R = No Calibration Request.

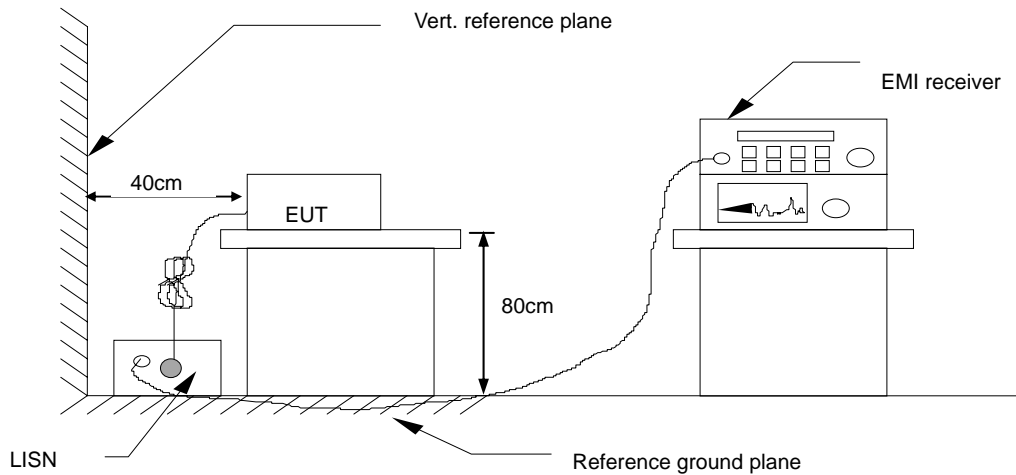


7.1.3. TEST PROCEDURES (please refer to measurement standard)

- The EUT and Support equipment, if needed, was placed on a non-conducted table, which is 0.8m above the ground plane and 0.4m away from the conducted wall.
- The test equipment EUT installed received AC main power, through a Line Impedance Stabilization Network (LISN), which supplied power source and was grounded to the ground plane. All support equipment power received from a second LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- The EUT test program was started. Emissions were measured on each current carrying line of the EUT using an EMI Test Receiver connected to the LISN powering the EUT.
- The frequency range from 150 kHz to 30 MHz was searched. The test data of the worst-case condition(s) was recorded. Emission levels under limit 20dB were not recorded.



7.1.4. TEST SETUP



- For the actual test configuration, please refer to the related item - Photographs of the Test Configuration.

7.1.5. Data Sample:

Frequency (MHz)	QuasiPeak Reading (dBuV)	Average Reading (dBuV)	Correction Factor (dB)	QuasiPeak Result (dBuV)	Average Result (dBuV)	QuasiPeak Limit (dBuV)	Average Limit (dBuV)	QuasiPeak Margin (dB)	Average Margin (dB)	Remark (Pass/Fail)
X.XXXX	32.69	25.65	11.52	44.21	37.17	65.78	55.79	-21.57	-18.62	Pass

Factor = Insertion loss of LISN + Cable Loss
Result = Quasi-peak Reading/ Average Reading + Factor
Limit = Limit stated in standard
Margin = Result (dBuV) – Limit (dBuV)



7.1.6. TEST RESULTS

Model No.	WNR612v3	RBW,VBW	9 kHz
Environmental Conditions	26°C, 60% RH	Test Mode	Mode 1
Tested by	Sunday Hu	Line	L1

(The chart below shows the highest readings taken from the final data.)

Frequency (MHz)	QuasiPeak Reading (dBuV)	Average Reading (dBuV)	Correction Factor (dB)	QuasiPeak Result (dBuV)	Average Result (dBuV)	QuasiPeak Limit (dBuV)	Average Limit (dBuV)	QuasiPeak Margin (dB)	Average Margin (dB)	Remark (Pass/Fail)
0.1500	33.71	13.00	11.52	45.23	24.52	65.99	56.00	-20.76	-31.48	Pass
0.4100	33.48	14.67	11.53	45.01	26.20	57.65	47.65	-12.64	-21.45	Pass
1.2020	21.45	3.20	11.52	32.97	14.72	56.00	46.00	-23.03	-31.28	Pass
4.4780	25.05	5.97	11.65	36.70	17.62	56.00	46.00	-19.30	-28.38	Pass
6.4580	30.87	10.97	11.76	42.63	22.73	60.00	50.00	-17.37	-27.27	Pass
12.7500	27.51	12.18	12.15	39.66	24.33	60.00	50.00	-20.34	-25.67	Pass

REMARKS: L1 = Line One (Live Line)

Model No.	WNR612v3	RBW,VBW	9 kHz
Environmental Conditions	26°C, 60% RH	Test Mode	Mode 1
Tested by	Sunday Hu	Line	L2

(The chart below shows the highest readings taken from the final data.)

Frequency (MHz)	QuasiPeak Reading (dBuV)	Average Reading (dBuV)	Correction Factor (dB)	QuasiPeak Result (dBuV)	Average Result (dBuV)	QuasiPeak Limit (dBuV)	Average Limit (dBuV)	QuasiPeak Margin (dB)	Average Margin (dB)	Remark (Pass/Fail)
0.4060	35.58	24.38	11.53	47.11	35.91	57.73	47.73	-10.62	-11.82	Pass
0.5780	24.82	12.87	11.54	36.36	24.41	56.00	46.00	-19.64	-21.59	Pass
0.8980	24.29	10.64	11.52	35.81	22.16	56.00	46.00	-20.19	-23.84	Pass
5.1700	29.94	16.46	11.68	41.62	28.14	60.00	50.00	-18.38	-21.86	Pass
7.0940	34.64	18.15	11.80	46.44	29.95	60.00	50.00	-13.56	-20.05	Pass
12.1980	31.24	17.88	12.12	43.36	30.00	60.00	50.00	-16.64	-20.00	Pass

REMARKS: L2 = Line Two (Neutral Line)



7.2. SPURIOUS EMISSIONS MEASUREMENT

7.2.1. LIMITS OF CONDUCTED EMISSIONS MEASUREMENT

According to §15.247(d), in any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in 15.209(a) (see Section 15.205(c)).

7.2.2. TEST INSTRUMENTS

Name of Equipment	Manufacturer	Model	Serial Number	Last Calibration	Due Calibration
Spectrum Analyzer	Agilent	E4446A	US44300399	03/19/2011	03/19/2012

7.2.3. TEST PROCEDURE (please refer to measurement standard)

Conducted RF measurements of the transmitter output were made to confirm that the EUT antenna port conducted emissions meet the specified limit and to identify any spurious signals that require further investigation or measurements on the radiated emissions site.

The transmitter output is connected to the spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 100 kHz.

Measurements are made over the 30MHz to 26GHz range with the transmitter set to the lowest, middle, and highest channels.

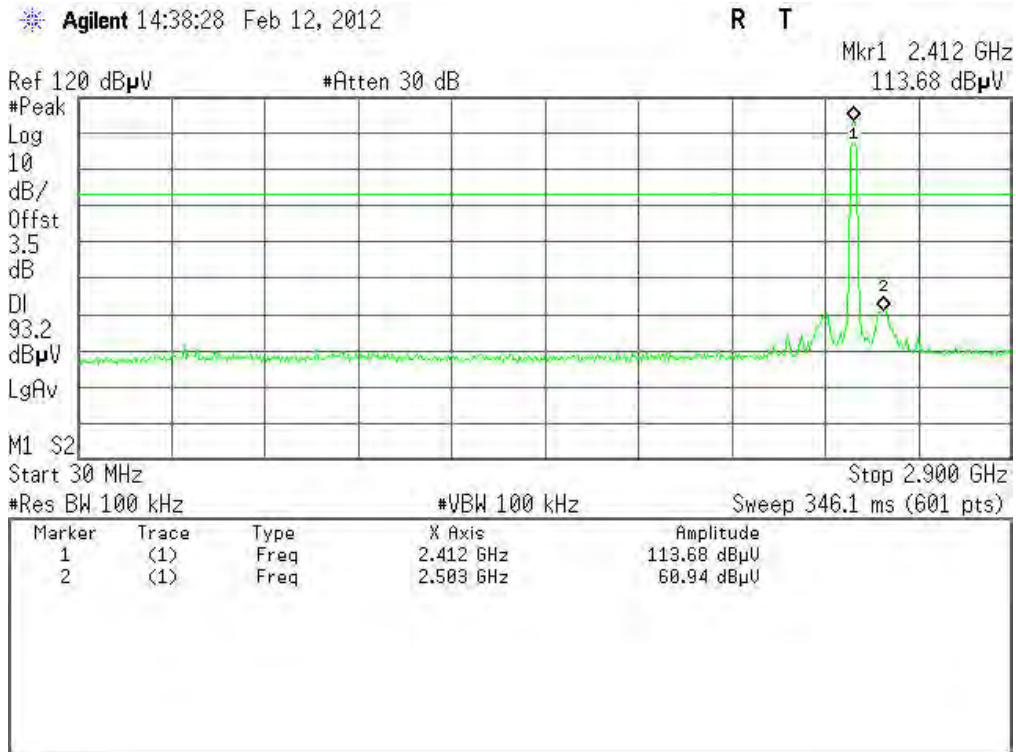


7.2.4. TEST RESULTS

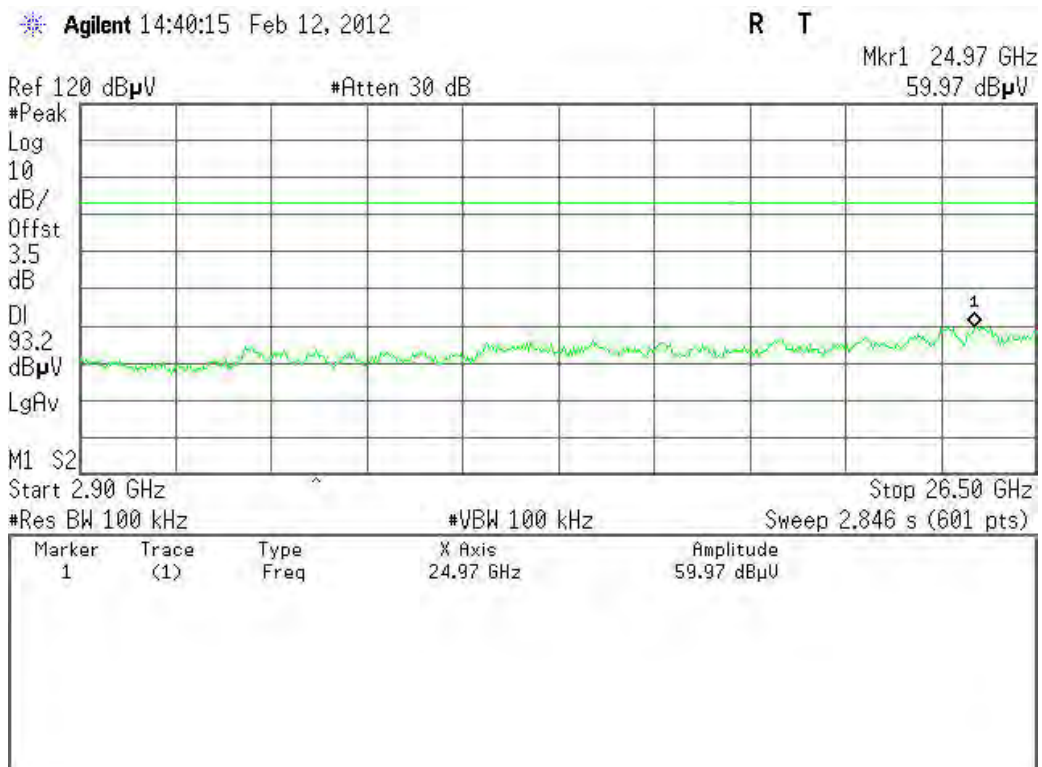
Test Plot

IEEE 802.11b mode

CH Low (30MHz ~2.9GHz)



CH Low (2.9GHz ~26.5GHz)

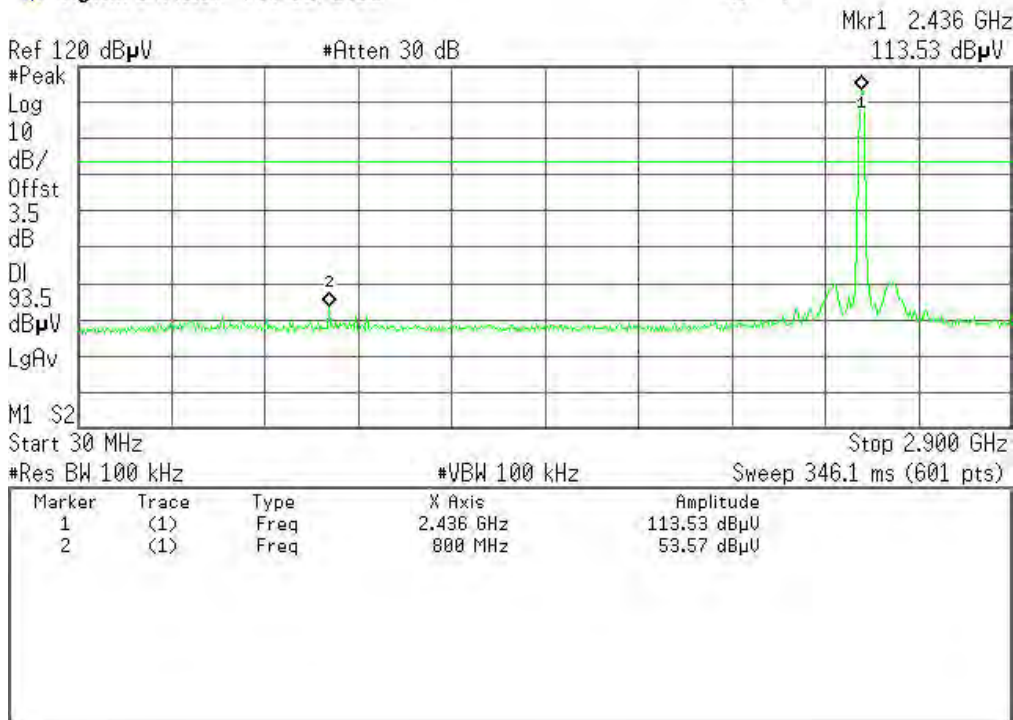




CH Mid (30MHz ~2.9GHz)

Agilent 14:41:17 Feb 12, 2012

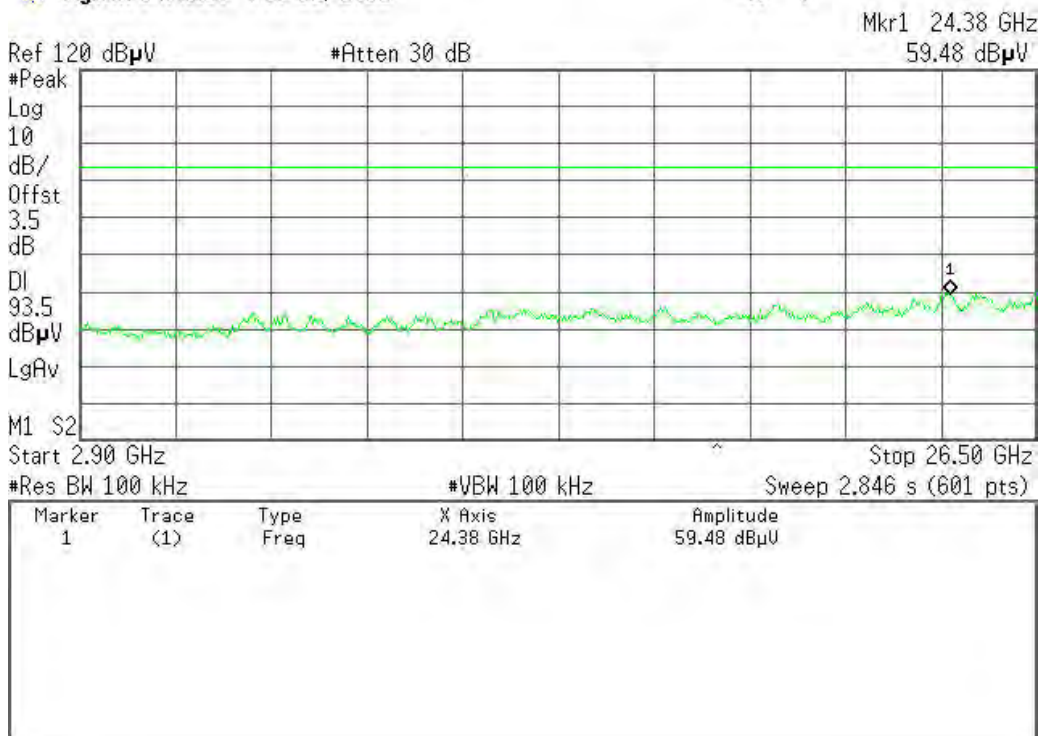
R T



CH Mid (2.9GHz ~26.5GHz)

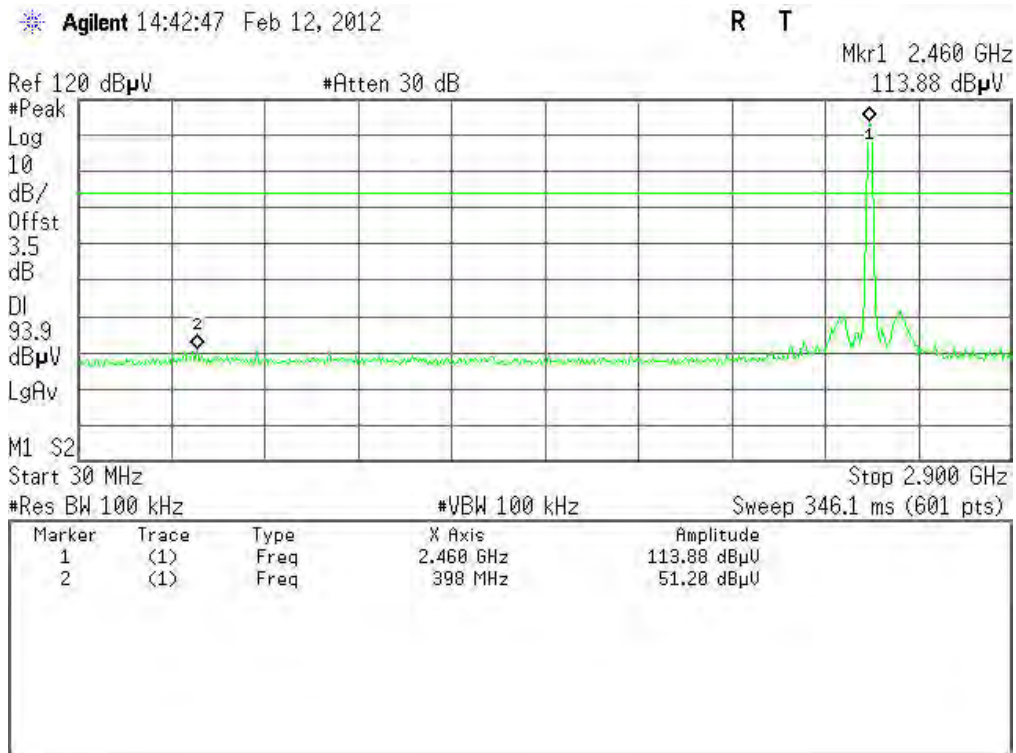
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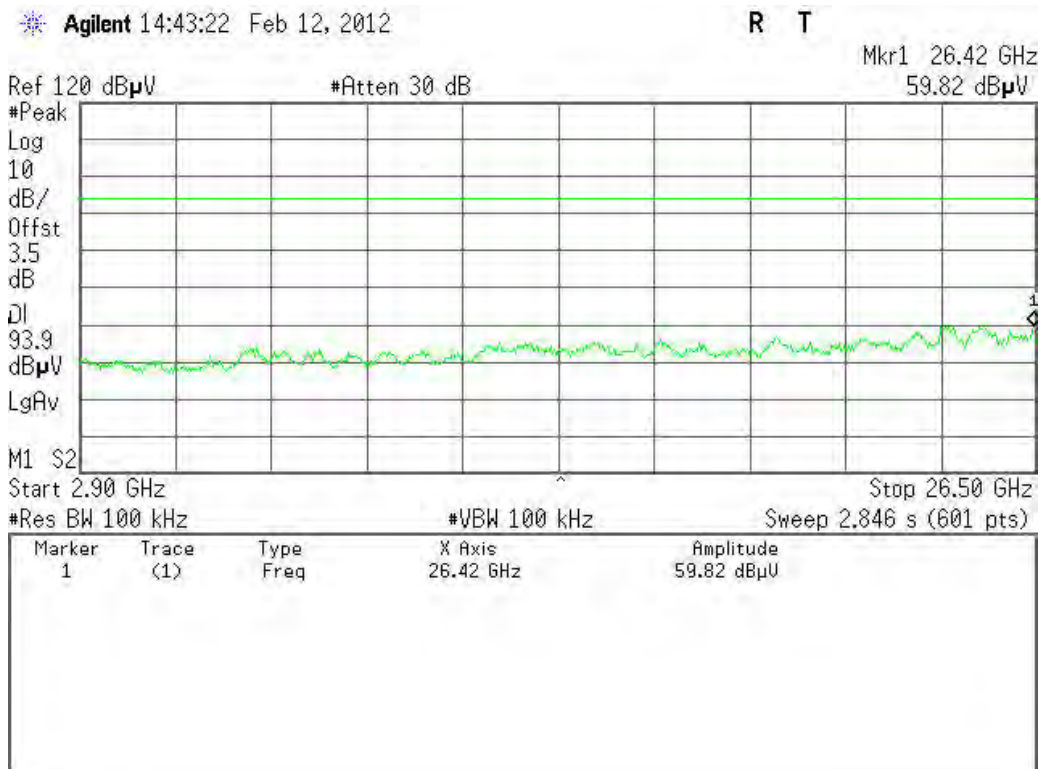




CH High (30MHz ~2.9GHz)



CH High(2.9GHz ~26.5GHz)

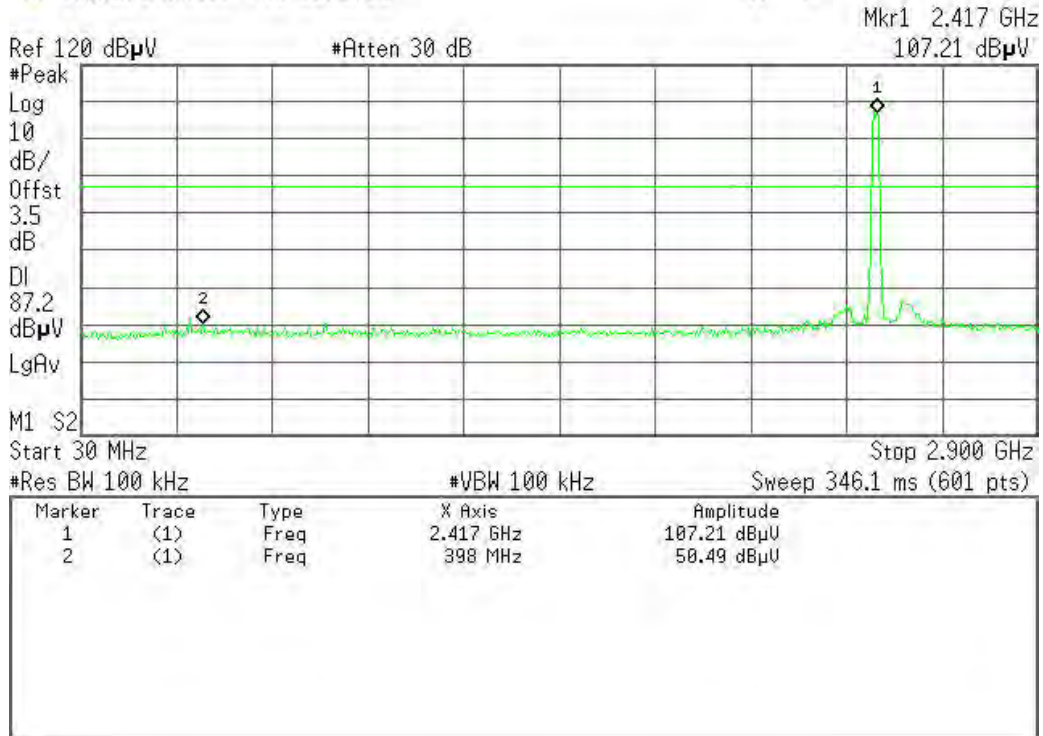




IEEE 802.11g mode
CH Low (30MHz ~2.9GHz)

Agilent 14:47:50 Feb 12, 2012

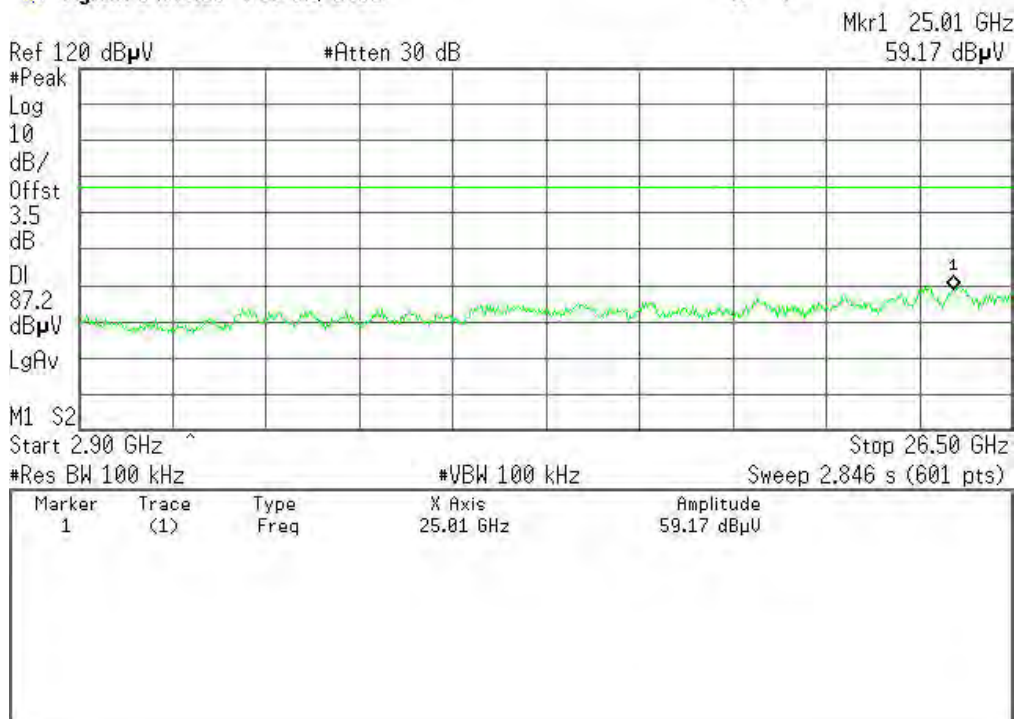
R T



CH Low (2.9GHz ~26.5GHz)

Agilent 14:48:21 Feb 12, 2012

R T

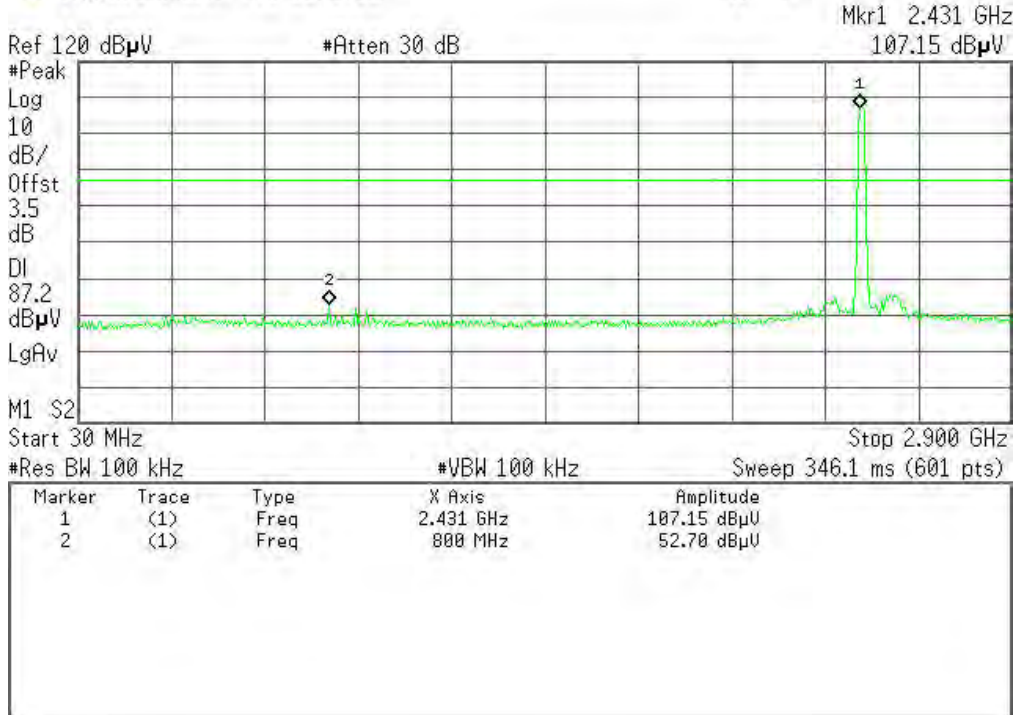




CH Mid (30MHz ~2.9GHz)

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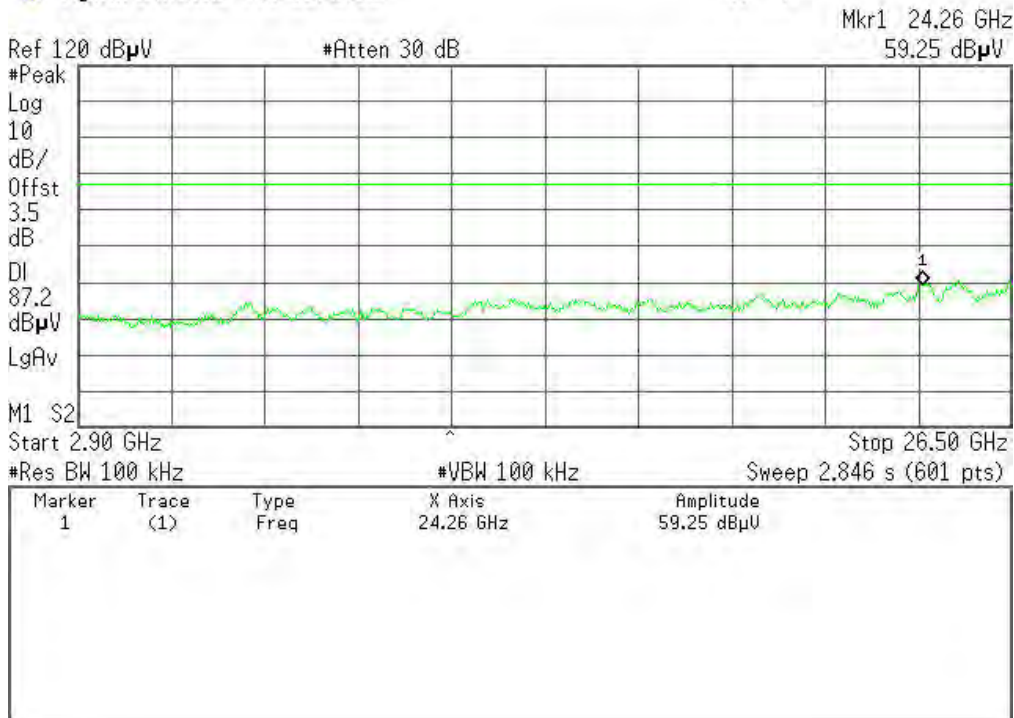
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CH Mid (2.9GHz ~26.5GHz)

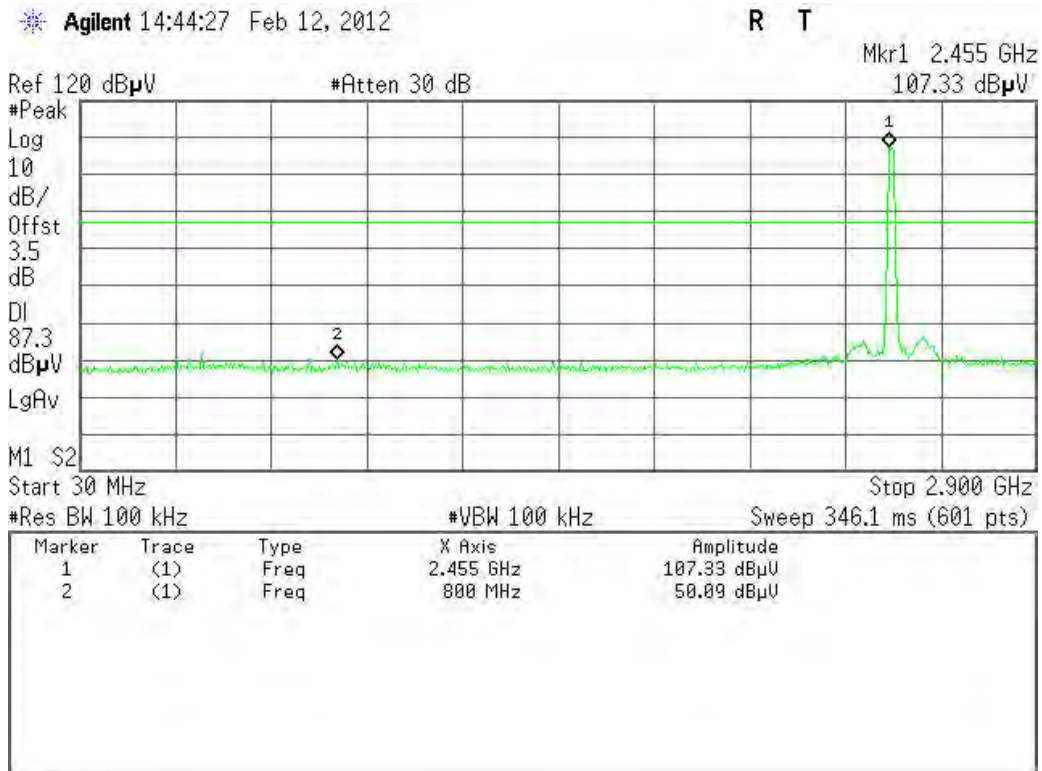
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R T

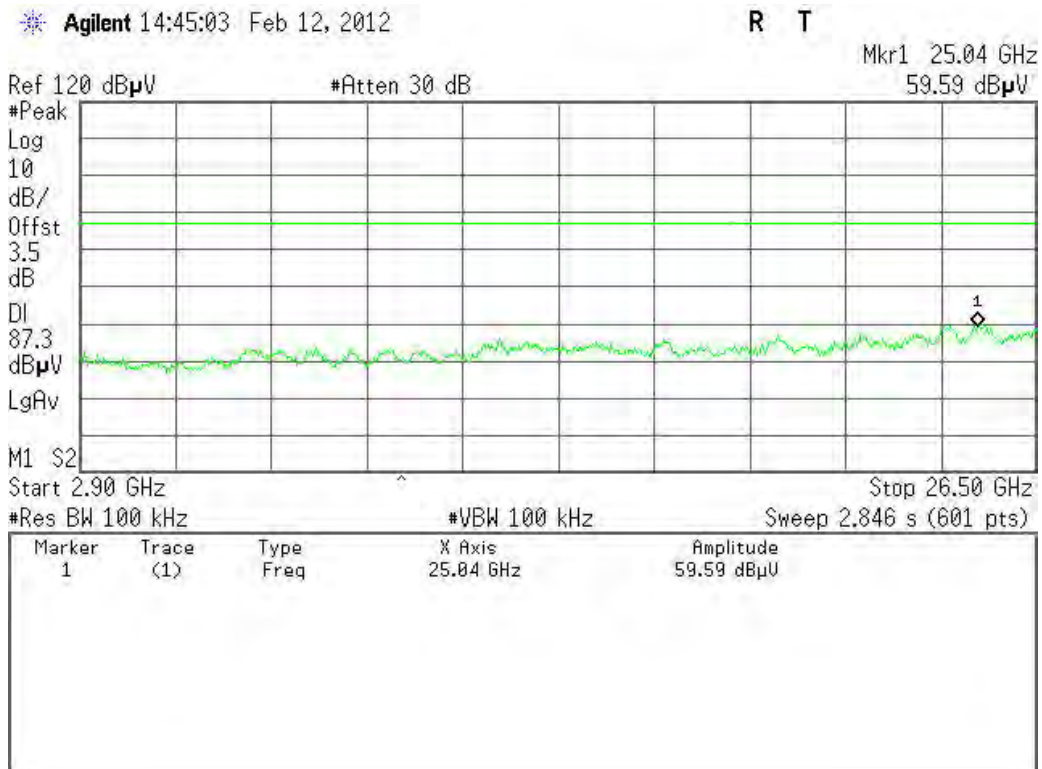




CH High (30MHz ~2.9GHz)

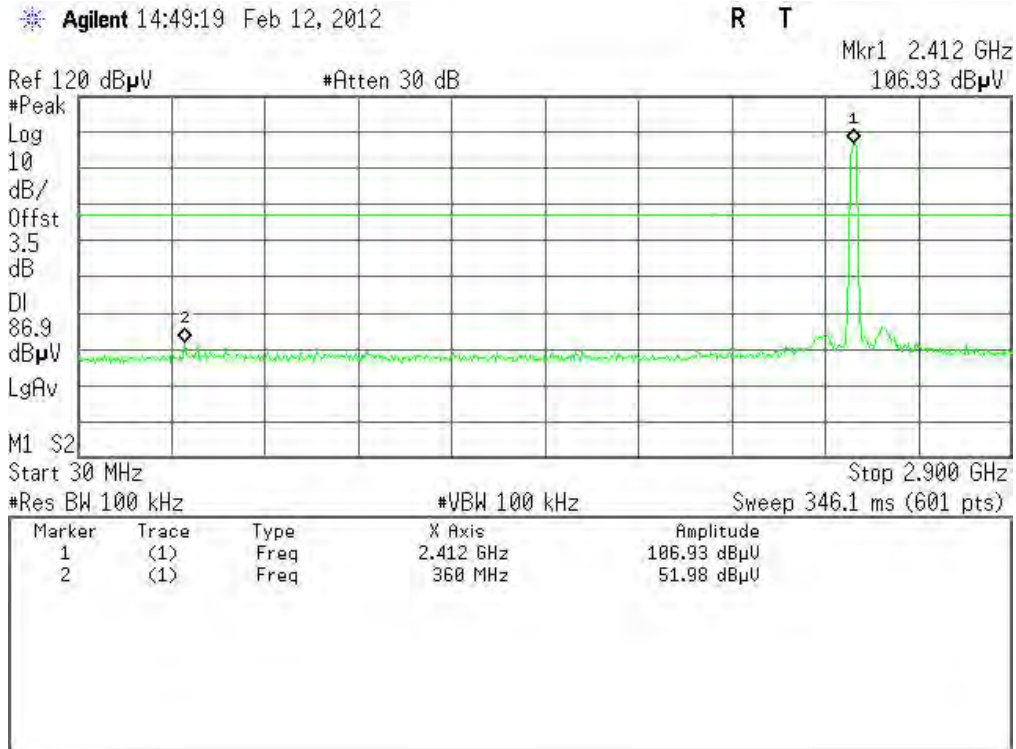


CH High(2.9GHz ~26.5GHz)

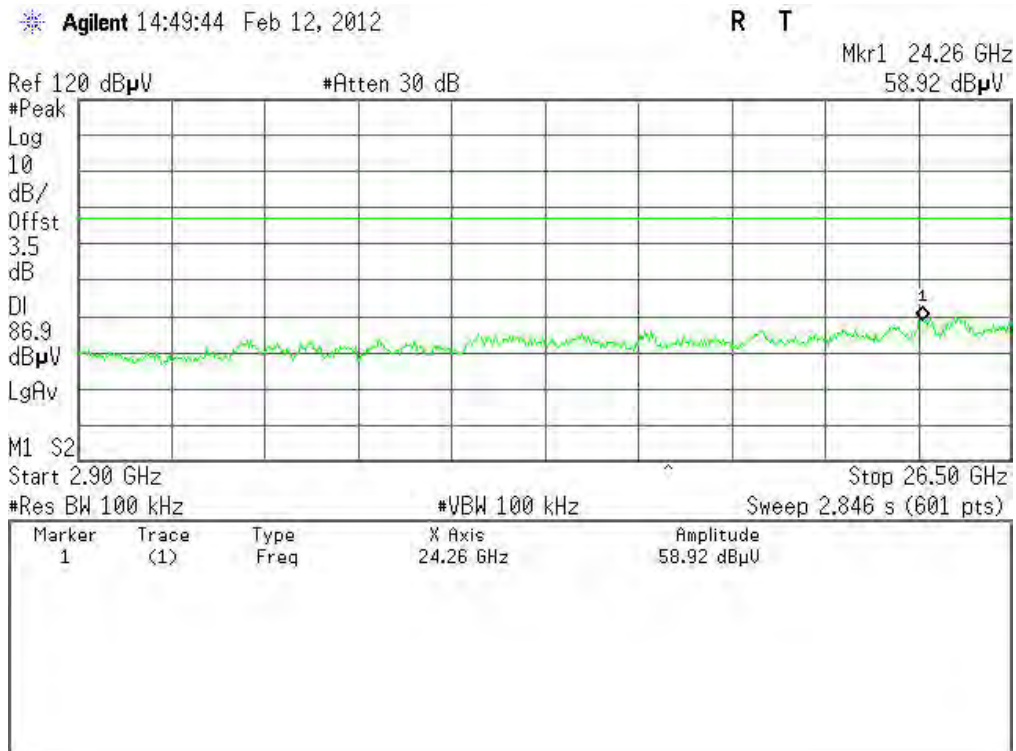




Test Plot
IEEE 802.11n HT20 MHz mode
CH Low (30MHz ~2.9GHz)

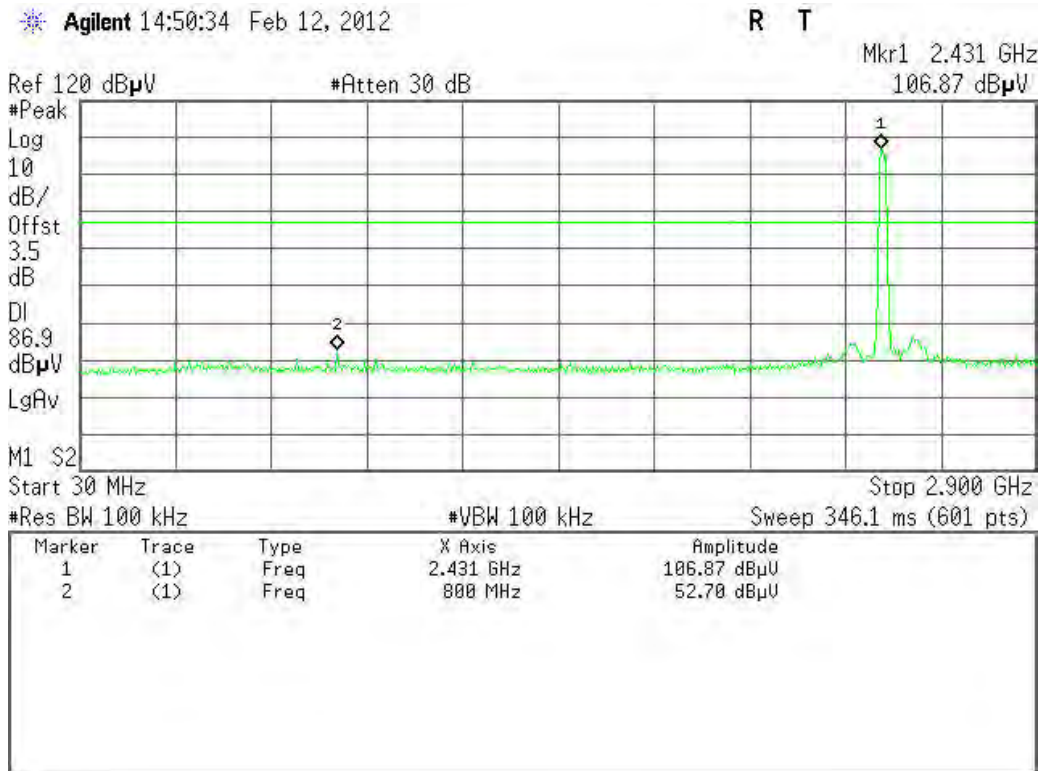


CH Low (2.9GHz ~26.5GHz)

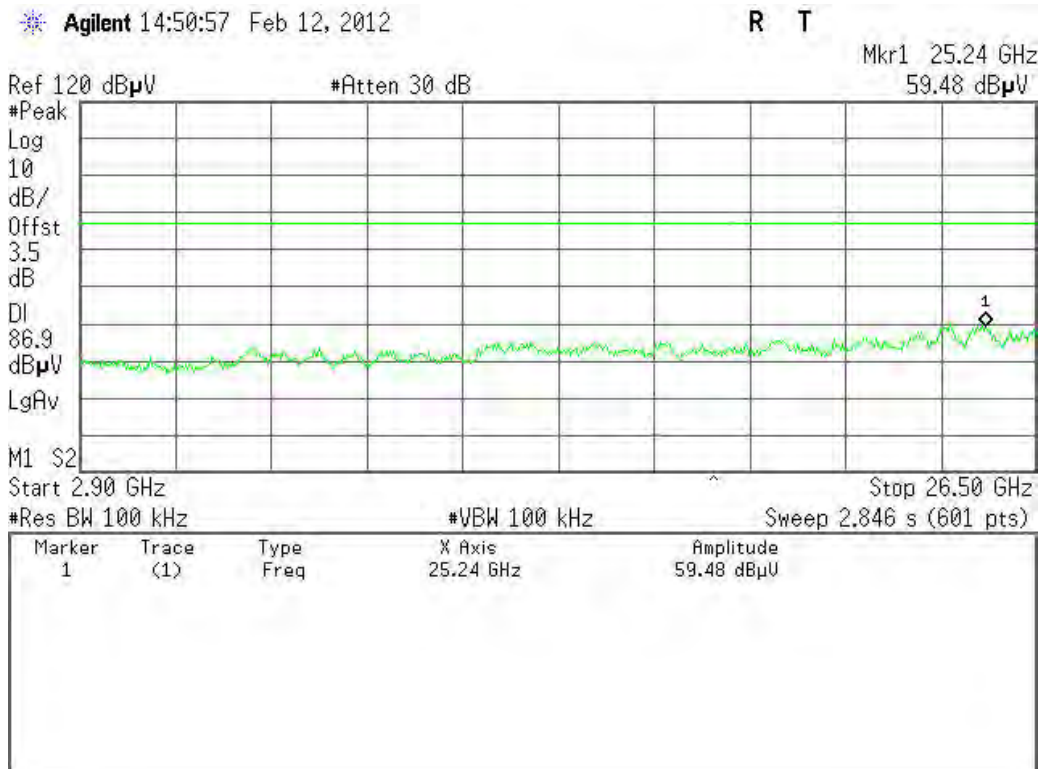




CH Mid (30MHz ~2.9GHz)



CH Mid (2.9GHz ~26.5GHz)

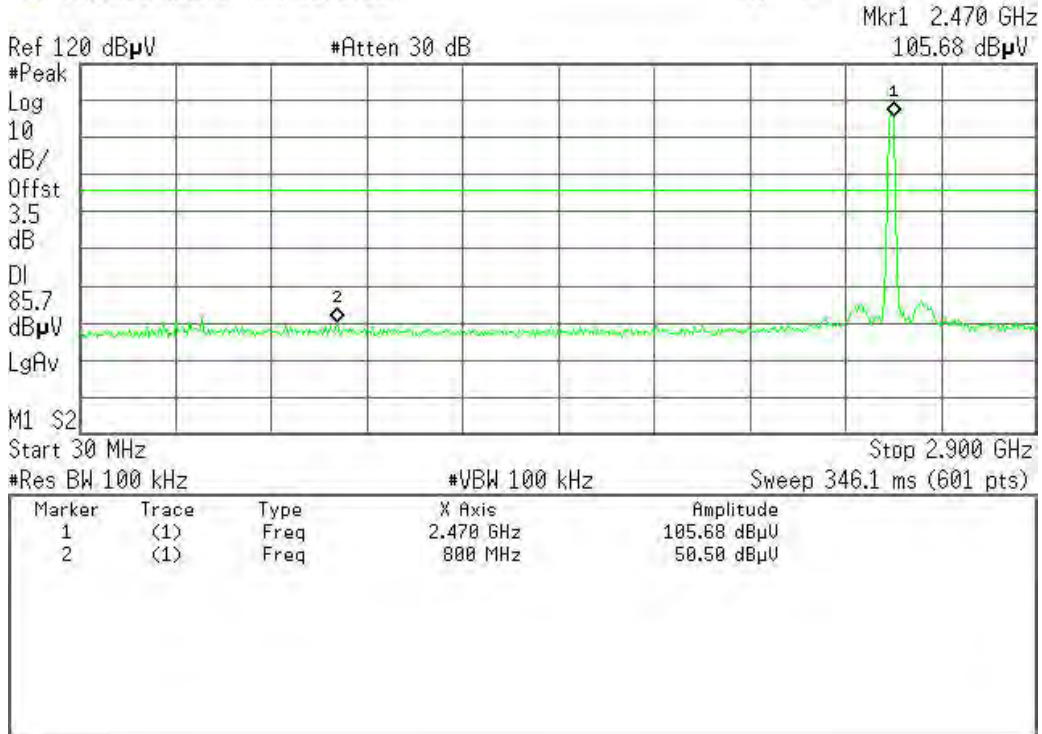




CH High (30MHz ~2.9GHz)

Agilent 14:51:41 Feb 12, 2012

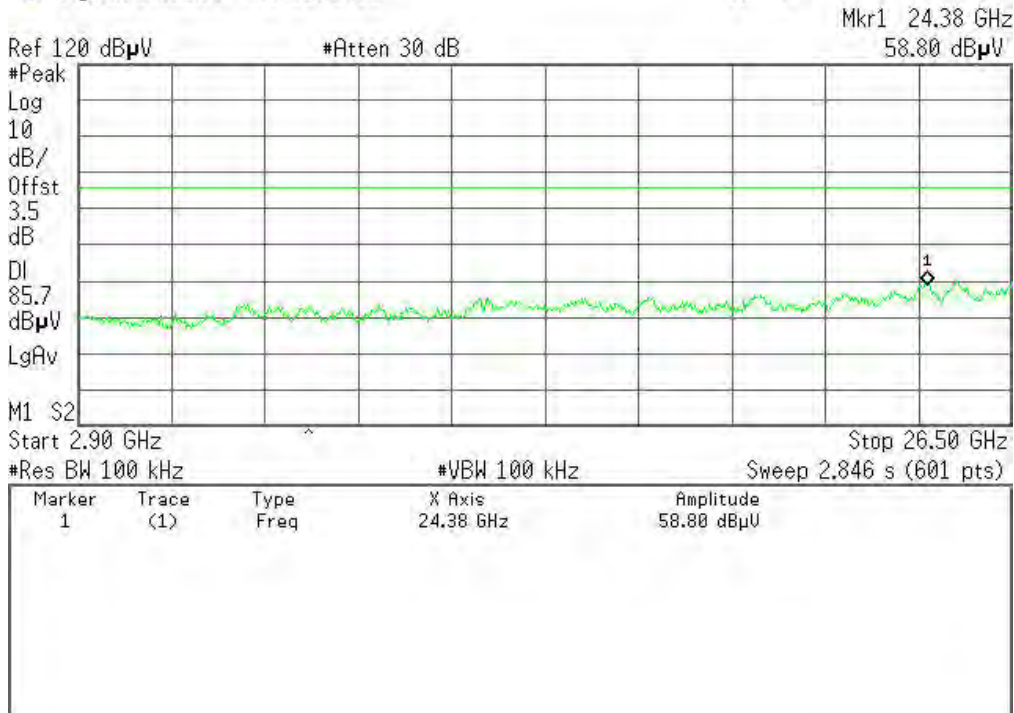
R T



CH High(2.9GHz ~26.5GHz)

Agilent 14:52:08 Feb 12, 2012

R T

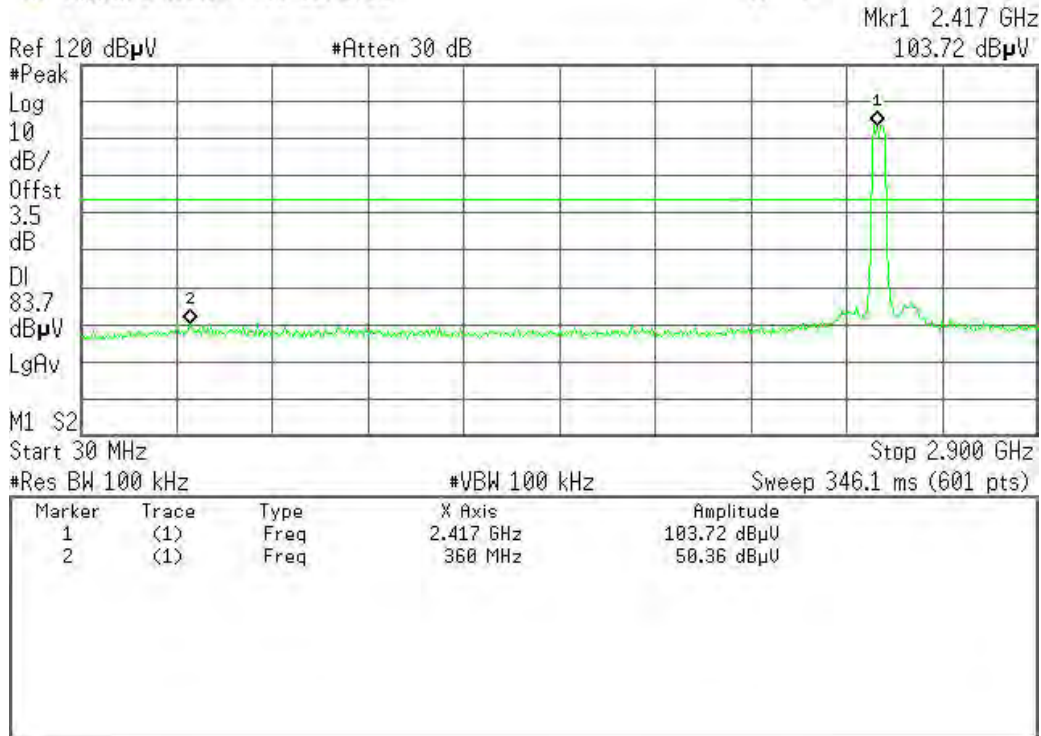




IEEE 802.11n HT40 MHz mode
CH Low (30MHz ~2.9GHz)

Agilent 14:52:54 Feb 12, 2012

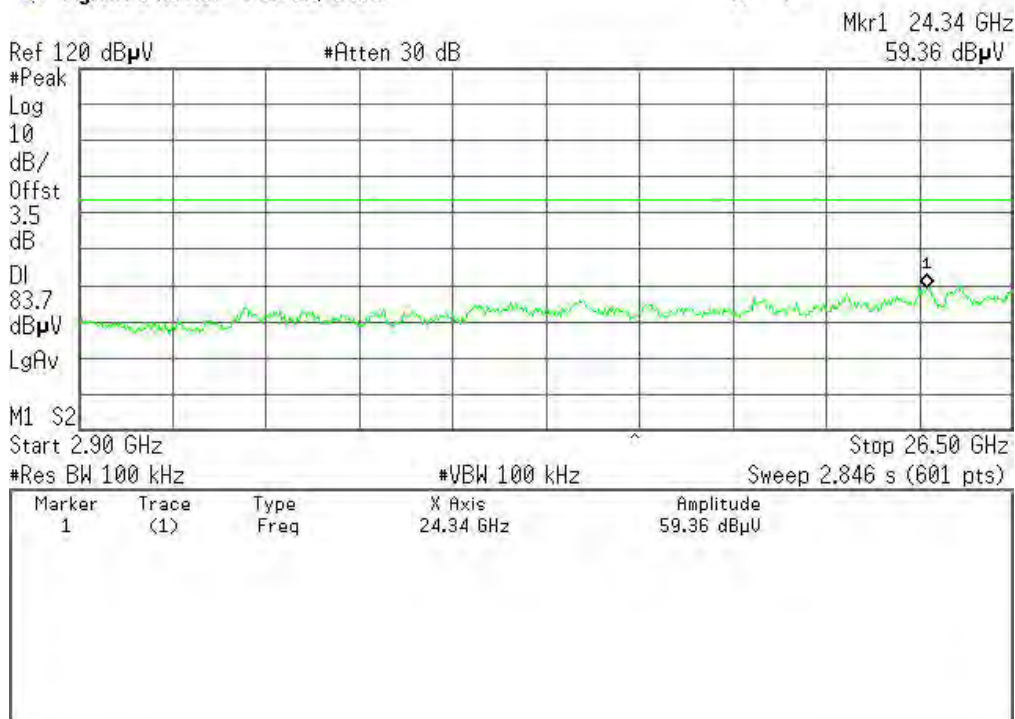
R T



CH Low (2.9GHz ~26.5GHz)

Agilent 14:53:17 Feb 12, 2012

R T

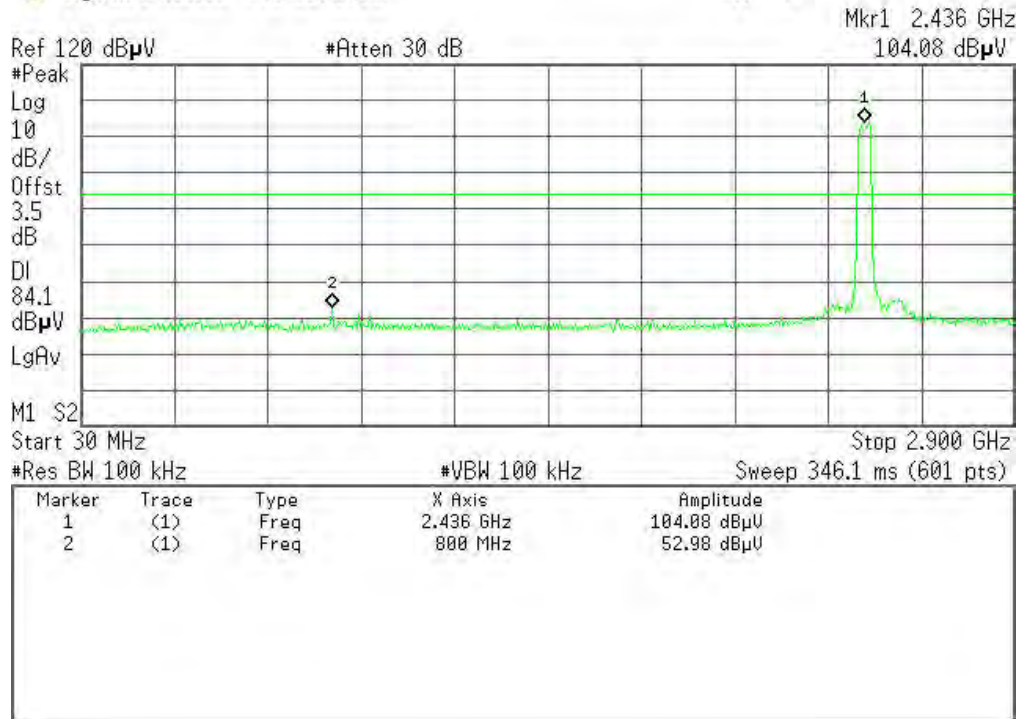




CH Mid (30MHz ~2.9GHz)

Agilent 14:53:55 Feb 12, 2012

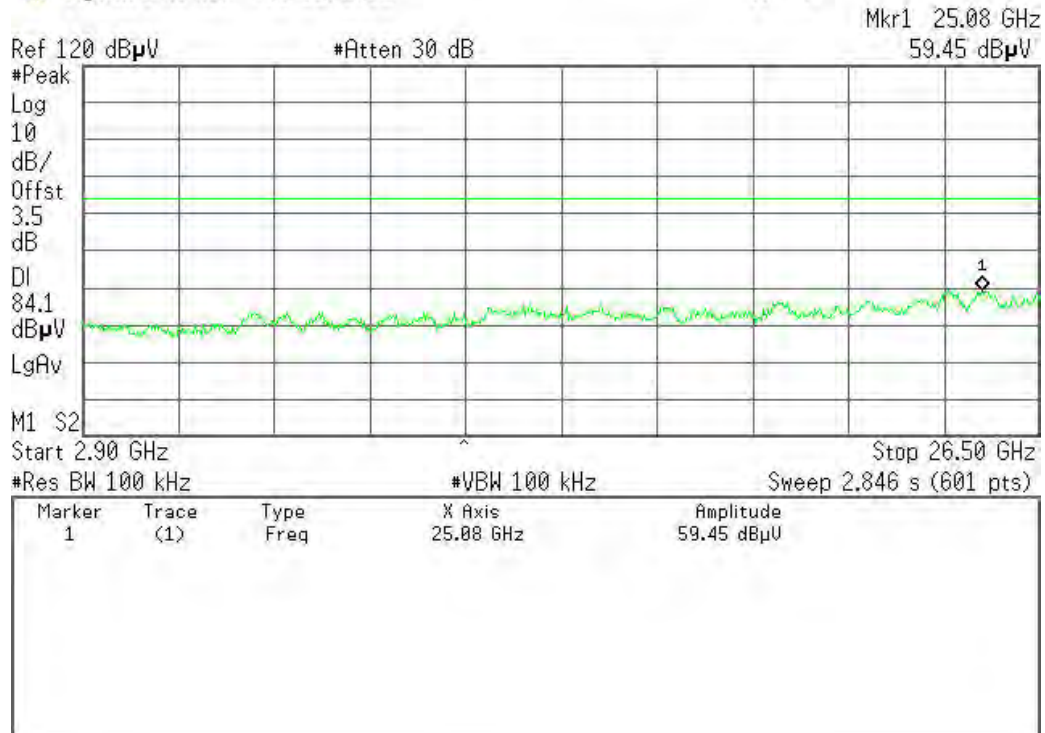
R T



CH Mid (2.9GHz ~26.5GHz)

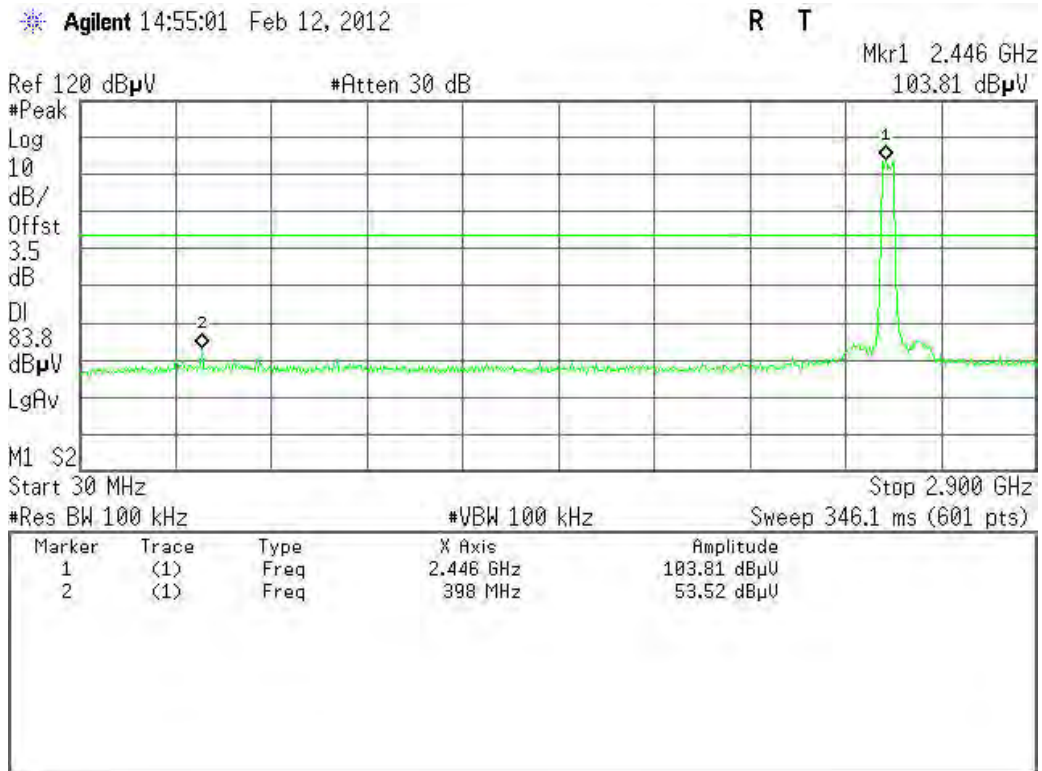
Agilent 14:54:17 Feb 12, 2012

R T

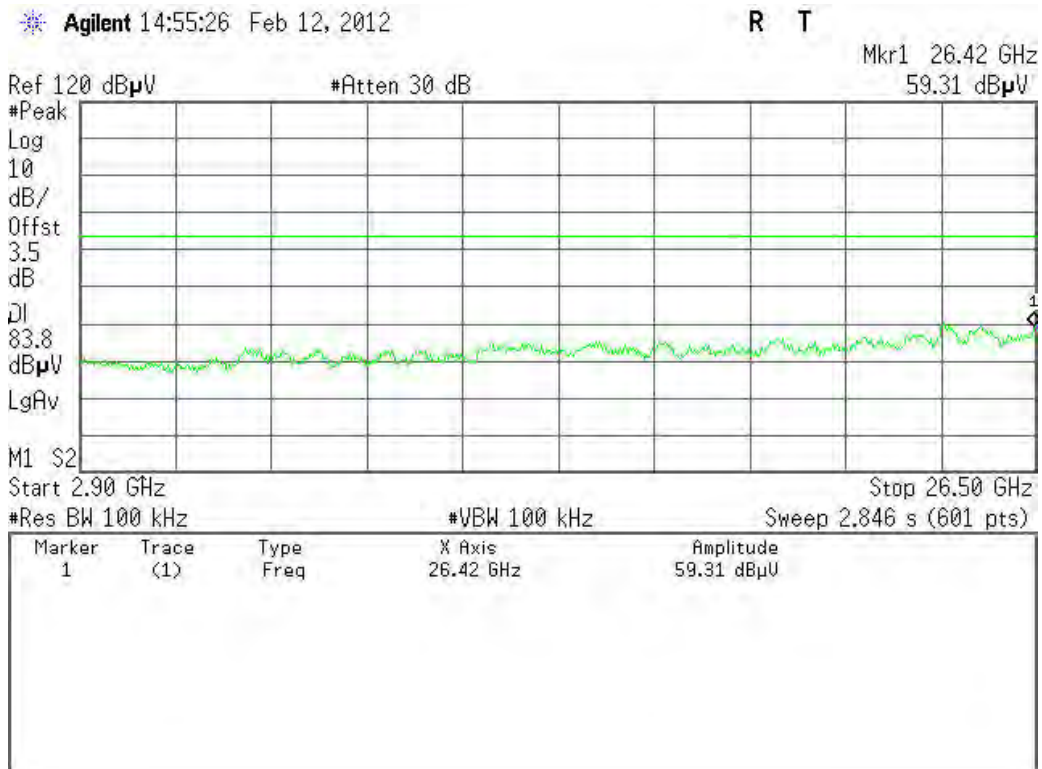




CH High (30MHz ~2.9GHz)



CH High(2.9GHz ~26.5GHz)





7.2.4.1. LIMITS OF RADIATED EMISSIONS MEASUREMENT

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 (mV/m)	Measurement Distance (m)
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

Remark: 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.

1. In the emission table above, the tighter limit applies at the band edges.

Frequency (MHz)	Field Strength (µV/m at 3-meter)	Field Strength (dBµV/m at 3-meter)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

NOTE: (1) The lower limit shall apply at the transition frequencies.
(2) Emission level (dBuV/m) = 20 log Emission level (uV/m).



7.2.4.2. TEST INSTRUMENTS

Radiated Emission Test Site 966 (2)					
Name of Equipment	Manufacturer	Model Number	Serial Number	Last Calibration	Due Calibration
PSA Series Spectrum Analyzer	Agilent	E4446A	US44300399	03/19/2011	03/19/2012
Amplifier	MITEQ	AM-1604-3000	1411843	03/18/2011	03/18/2012
Turn Table	EMCO	2081-1.21	N/A	N.C.R	N.C.R
Controller	CT	N/A	N/A	N.C.R	N.C.R
High Noise Amplifier	Agilent	8449B	3008A01838	03/18/2011	03/18/2012
Bilog Antenna	SCHAFFNER	CBL6143	5082	06/03/2011	06/03/2012
Horn Antenna	SCHWARZBECK	BBHA9120D	D286	03/19/2011	03/19/2012
Loop Antenna	A、R、A	PLA-1030/B	1029	03/19/2011	03/19/2012
Temp. / Humidity Meter	VICTOR	VC230	N/A	03/31/2011	03/31/2012
Antenna Tower	SUNOL	TLT2	N/A	N.C.R	N.C.R
Test S/W	FARAD	LZ-RF / CCS-SZ-3A2			

- NOTE:** 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
 2. The FCC Site Registration number is 101879.
 3. N.C.R = No Calibration Required.

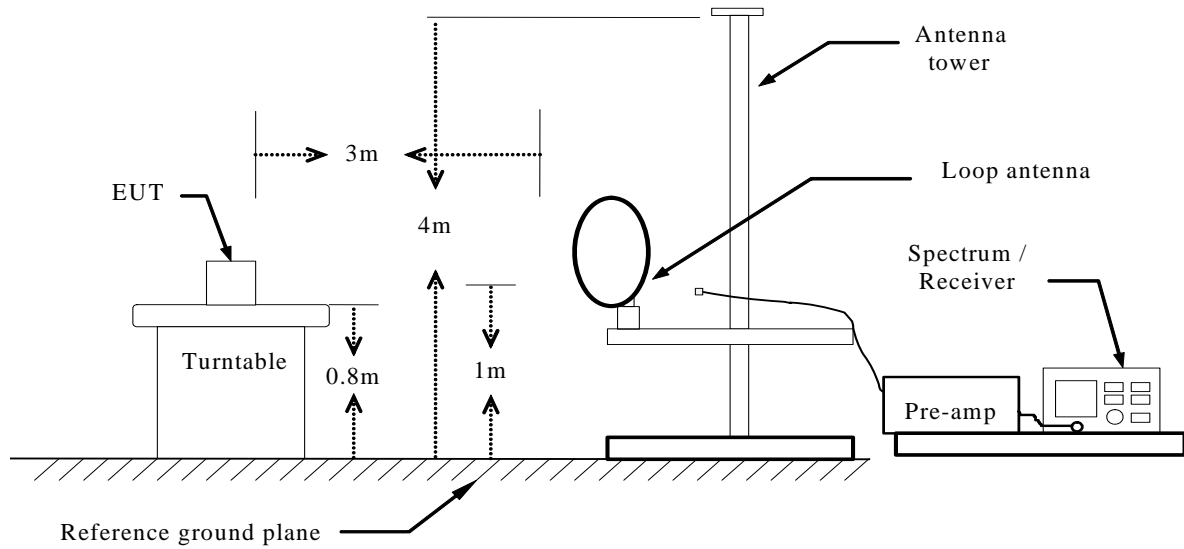
7.2.4.3. TEST PROCEDURE (please refer to measurement standard)

- The EUT is placed on a turntable, which is 0.8m above ground plane.
- The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
- EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
- Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
- And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
- Set the spectrum analyzer in the following setting as:
 - Below 1GHz:
 - RBW=100kHz / VBW=300kHz / Sweep=AUTO
 - Above 1GHz:
 - (a) PEAK: RBW=VBW=1MHz / Sweep=AUTO
 - (b) AVERAGE: RBW=1MHz / VBW=10Hz / Sweep=AUTO
- Repeat above procedures until the measurements for all frequencies are complete.

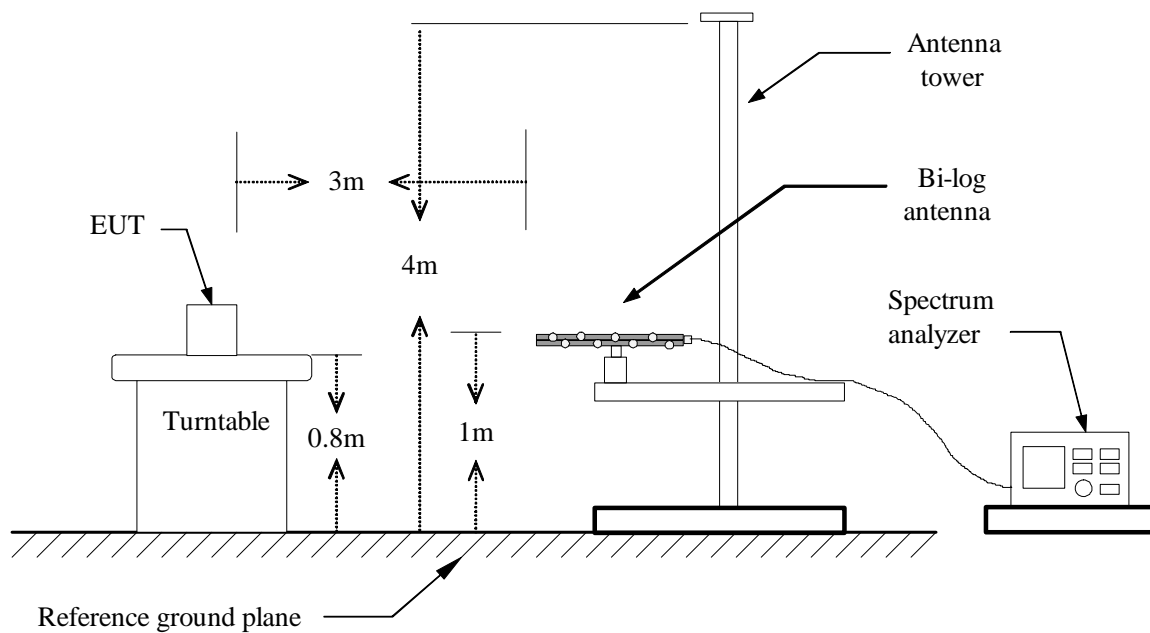


7.2.4.4. TEST SETUP

Below 30MHz

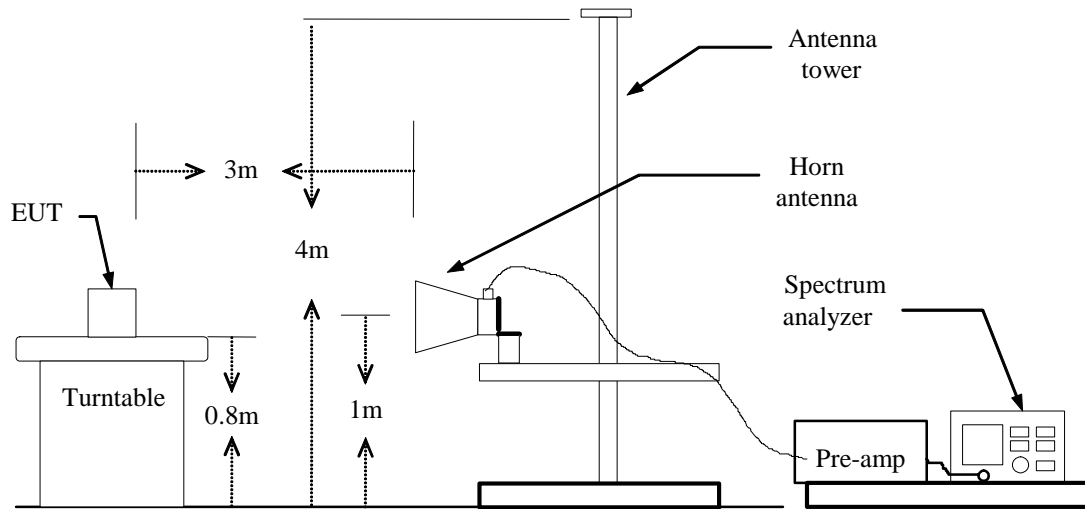


Below 1 GHz





Above 1 GHz



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.



7.2.4.5. DATA SAPLE

Below 1GHz

Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
XXX.XXXX	36.37	-12.20	24.17	40.00	-15.83	V	QP

Frequency (MHz) = Emission frequency in MHz
 Reading (dBuV) = Uncorrected Analyzer / Receiver reading
 Correct Factor (dB/m) = Antenna factor + Cable loss – Amplifier gain
 Result (dBuV/m) = Reading (dBuV) + Corr. Factor (dB/m)
 Limit (dBuV/m) = Limit stated in standard
 Margin (dB) = Result (dBuV/m) – Limit (dBuV/m)
 Q.P. = Quasi-peak Reading

Above 1GHz

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
XXXX.XXXX	62.09	-11.42	50.67	74.00	-23.33	V	Peak
XXXX.XXXX	49.78	-11.42	38.36	54.00	-15.64	V	AVG

Frequency (MHz) = Emission frequency in MHz
 Reading (dBuV) = Uncorrected Analyzer / Receiver reading
 Correction Factor (dB/m) = Antenna factor + Cable loss – Amplifier gain
 Result (dBuV/m) = Reading (dBuV) + Corr. Factor (dB/m)
 Limit (dBuV/m) = Limit stated in standard
 Margin (dB) = Result (dBuV/m) – Limit (dBuV/m)
 Peak = Peak Reading
 AVG = Average Reading

Calculation Formula

Margin (dB) = Result (dBuV/m) – Limits (dBuV/m)
 Result (dBuV/m) = Reading (dBuV) + Correction Factor



7.2.4.6. TEST RESULTS

Below 1 GHz

Operation Mode: Normal Link

Test Date: March 1, 2012

Temperature: 24°C

Tested by: Sunday Hu

Humidity: 52% RH

Polarity: Vertical

(The chart below shows the highest readings taken from the final data.)

Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
400.2167	43.20	-15.40	27.80	46.00	-18.20	QP
450.3333	44.41	-14.84	29.57	46.00	-16.43	QP
500.4500	53.59	-13.92	39.67	46.00	-6.33	QP
600.6833	45.13	-12.36	32.77	46.00	-13.23	QP
649.1833	43.44	-12.06	31.38	46.00	-14.62	QP
833.4833	46.83	-9.68	37.15	46.00	-8.85	QP

**Remark: No emission found between lowest internal used/generated frequency to 30MHz.

Notes:

1. Measuring frequencies from 9kHz to the 1GHz.
2. Radiated emissions measured in frequency range from 30MHz to 1GHz were made with an instrument using Peak/Quasi-peak detector mode.
3. Data of measurement within this frequency range shown " --- " 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.
4. The IF bandwidth of SPA between 30MHz to 1GHz was 100kHz.
5. Frequency (MHz). = Emission frequency in MHz
 Reading (dBuV/m) = Receiver reading
 Correction Factor (dB) = Antenna factor + Cable loss – Amplifier gain
 Limit (dBuV/m) = Limit stated in standard
 Margin (dB) = Measured (dBuV/m) – Limits (dBuV/m)
 Antenna Pol e(H/V) = Current carrying line of reading



Operation Mode: Normal Link

Test Date: March 1, 2012

Temperature: 24°C

Tested by: Sunday Hu

Humidity: 52% RH

Polarity: Horizontal

(The chart below shows the highest readings taken from the final data.)

Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
167.4167	59.13	-22.32	36.81	43.50	-6.69	QP
400.2167	45.70	-15.40	30.30	46.00	-15.70	QP
500.4500	56.96	-13.92	43.04	46.00	-2.96	QP
600.6833	47.41	-12.36	35.05	46.00	-10.95	QP
650.8000	43.35	-12.05	31.30	46.00	-14.70	QP
833.4833	44.99	-9.68	35.31	46.00	-10.69	QP

****Remark:** No emission found between lowest internal used/generated frequency to 30MHz.

Notes:

1. Measuring frequencies from 9kHz to the 1GHz.
2. Radiated emissions measured in frequency range from 30MHz to 1GHz were made with an instrument using Peak/Quasi-peak detector mode.
3. Data of measurement within this frequency range shown " --- " 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.
4. The IF bandwidth of SPA between 30MHz to 1GHz was 100kHz.
5. Frequency (MHz). = Emission frequency in MHz
 Reading (dBuV/m) = Receiver reading
 Correction Factor (dB) = Antenna factor + Cable loss – Amplifier gain
 Limit (dBuV/m) = Limit stated in standard
 Margin (dB) = Measured (dBuV/m) – Limits (dBuV/m)
 Antenna Pol e(H/V) = Current carrying line of reading



Above 1 GHz

Operation Mode: TX / IEEE 802.11b / CH Low

Test Date: February 13, 2012

Temperature: 24°C

Tested by: Sunday Hu

Humidity: 52% RH

Polarity: Ver. / Hor.

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
1645.0000	51.37	-10.27	41.10	74.00	-32.90	V	Peak
3010.0000	47.51	-5.94	41.57	74.00	-32.43	V	Peak
3490.0000	48.11	-4.50	43.61	74.00	-30.39	V	Peak
4825.0000	50.96	-0.57	50.39	74.00	-23.61	V	Peak
7240.0000	46.49	5.07	51.56	74.00	-22.44	V	Peak
7735.0000	46.12	5.97	52.09	74.00	-21.91	V	Peak
1198.3333	51.72	-11.42	40.30	74.00	-33.70	H	Peak
1618.3333	52.65	-10.29	42.36	74.00	-31.64	H	Peak
2855.0000	47.18	-6.95	40.23	74.00	-33.77	H	Peak
4126.6667	45.34	-3.16	42.18	74.00	-31.82	H	Peak
5958.3333	45.04	2.86	47.90	74.00	-26.10	H	Peak
6401.6667	45.97	3.68	49.65	74.00	-24.35	H	Peak

REMARKS:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " 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. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



Operation Mode: TX / IEEE 802.11b / CH Mid

Test Date: February 13, 2012

Temperature: 24°C

Tested by: Sunday Hu

Humidity: 52% RH

Polarity: Ver. / Hor.

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
1045.0000	53.04	-11.82	41.22	74.00	-32.78	V	Peak
1225.0000	51.92	-11.29	40.63	74.00	-33.37	V	Peak
1510.0000	50.19	-10.31	39.88	74.00	-34.12	V	Peak
3475.0000	45.86	-4.59	41.27	74.00	-32.73	V	Peak
4870.0000	51.83	-0.43	51.40	74.00	-22.60	V	Peak
7315.0000	48.96	5.26	54.22	74.00	-19.78	V	Peak
1195.0000	54.33	-11.43	42.90	74.00	-31.10	H	Peak
1465.0000	53.78	-10.29	43.49	74.00	-30.51	H	Peak
3760.0000	46.28	-3.86	42.42	74.00	-31.58	H	Peak
4870.0000	51.02	-0.43	50.59	74.00	-23.41	H	Peak
6250.0000	44.32	3.79	48.11	74.00	-25.89	H	Peak
7315.0000	45.83	5.26	51.09	74.00	-22.91	H	Peak

REMARKS:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " 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. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



Operation Mode: TX / IEEE 802.11b / CH High **Test Date:** February 13, 2012
Temperature: 24°C **Tested by:** Sunday Hu
Humidity: 52% RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
1195.0000	57.45	-11.43	46.02	74.00	-27.98	V	Peak
2950.0000	47.72	-6.30	41.42	74.00	-32.58	V	Peak
3520.0000	47.06	-4.31	42.75	74.00	-31.25	V	Peak
4930.0000	49.69	-0.23	49.46	74.00	-24.54	V	Peak
6580.0000	45.71	4.14	49.85	74.00	-24.15	V	Peak
6910.0000	46.32	4.36	50.68	74.00	-23.32	V	Peak
1465.0000	59.02	-10.29	48.73	74.00	-25.27	H	Peak
2950.0000	48.78	-6.30	42.48	74.00	-31.52	H	Peak
4180.0000	46.33	-2.99	43.34	74.00	-30.66	H	Peak
4930.0000	52.00	-0.23	51.77	74.00	-22.23	H	Peak
6145.0000	45.06	3.58	48.64	74.00	-25.36	H	Peak
6925.0000	47.09	4.36	51.45	74.00	-22.55	H	Peak

REMARKS:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " 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. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



Operation Mode: TX / IEEE 802.11g / CH Low
Temperature: 24°C
Humidity: 52% RH

Test Date: February 13, 2012
Tested by: Sunday Hu
Polarity: Ver. / Hor.

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
1480.0000	49.91	-10.30	39.61	74.00	-34.39	V	Peak
3535.0000	45.90	-4.21	41.69	74.00	-32.31	V	Peak
4360.0000	46.21	-2.39	43.82	74.00	-30.18	V	Peak
5785.0000	44.26	2.51	46.77	74.00	-27.23	V	Peak
6100.0000	44.72	3.38	48.10	74.00	-25.90	V	Peak
6910.0000	45.66	4.36	50.02	74.00	-23.98	V	Peak
1090.0000	52.90	-11.71	41.19	74.00	-32.81	H	Peak
1165.0000	55.99	-11.51	44.48	74.00	-29.52	H	Peak
1330.0000	56.67	-10.70	45.97	74.00	-28.03	H	Peak
2965.0000	47.98	-6.20	41.78	74.00	-32.22	H	Peak
4135.0000	46.78	-3.14	43.64	74.00	-30.36	H	Peak
5500.0000	44.18	1.25	45.43	74.00	-28.57	H	Peak

REMARKS:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " 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. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



Operation Mode: TX / IEEE 802.11g / CH Mid

Test Date: February 13, 2012

Temperature: 24°C

Tested by: Sunday Hu

Humidity: 52 % RH

Polarity: Ver. / Hor.

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
1045.0000	56.74	-11.82	44.92	74.00	-29.08	V	Peak
1330.0000	56.40	-10.70	45.70	74.00	-28.30	V	Peak
4870.0000	46.06	-0.43	45.63	74.00	-28.37	V	Peak
6250.0000	44.97	3.79	48.76	74.00	-25.24	V	Peak
7315.0000	45.51	5.26	50.77	74.00	-23.23	V	Peak
8185.0000	43.95	7.26	51.21	74.00	-22.79	V	Peak
2695.0000	49.23	-8.00	41.23	74.00	-32.77	H	Peak
4405.0000	46.60	-2.25	44.35	74.00	-29.65	H	Peak
4870.0000	45.01	-0.43	44.58	74.00	-29.42	H	Peak
5800.0000	45.10	2.59	47.69	74.00	-26.31	H	Peak
6160.0000	45.06	3.64	48.70	74.00	-25.30	H	Peak
7735.0000	45.64	5.97	51.61	74.00	-22.39	H	Peak

REMARKS:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " 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. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).

**Operation Mode:** TX / IEEE 802.11g / CH High**Test Date:** February 13, 2012**Temperature:** 24°C**Tested by:** Sunday Hu**Humidity:** 52 % RH**Polarity:** Ver. / Hor.

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
1225.0000	57.44	-11.29	46.15	74.00	-27.85	V	Peak
1435.0000	52.13	-10.27	41.86	74.00	-32.14	V	Peak
2395.0000	49.16	-9.70	39.46	74.00	-34.54	V	Peak
4135.0000	46.26	-3.14	43.12	74.00	-30.88	V	Peak
4930.0000	48.00	-0.23	47.77	74.00	-26.23	V	Peak
7585.0000	45.39	5.78	51.17	74.00	-22.83	V	Peak
1330.0000	56.34	-10.70	45.64	74.00	-28.36	H	Peak
3040.0000	46.87	-5.87	41.00	74.00	-33.00	H	Peak
4165.0000	46.24	-3.04	43.20	74.00	-30.80	H	Peak
4930.0000	49.54	-0.23	49.31	74.00	-24.69	H	Peak
5410.0000	45.70	1.03	46.73	74.00	-27.27	H	Peak
7735.0000	46.07	5.97	52.04	74.00	-21.96	H	Peak

REMARKS:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " 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. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



Operation Mode: TX / IEEE 802.11n HT20 MHz / CH Low Test Date: February 13, 2012

Temperature: 24°C

Tested by: Sunday Hu

Humidity: 52% RH

Polarity: Ver. / Hor.

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
1360.0000	54.31	-10.51	43.80	74.00	-30.20	V	Peak
1480.0000	54.73	-10.30	44.43	74.00	-29.57	V	Peak
2710.0000	49.41	-7.90	41.51	74.00	-32.49	V	Peak
3610.0000	46.89	-3.80	43.09	74.00	-30.91	V	Peak
4480.0000	45.84	-2.06	43.78	74.00	-30.22	V	Peak
6190.0000	45.06	3.78	48.84	74.00	-25.16	V	Peak
1330.0000	54.54	-10.70	43.84	74.00	-30.16	H	Peak
1510.0000	55.21	-10.31	44.90	74.00	-29.10	H	Peak
3010.0000	47.98	-5.94	42.04	74.00	-31.96	H	Peak
4975.0000	44.96	-0.09	44.87	74.00	-29.13	H	Peak
5245.0000	44.98	0.68	45.66	74.00	-28.34	H	Peak
5815.0000	45.54	2.62	48.16	74.00	-25.84	H	Peak

REMARKS:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " 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. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



Operation Mode: TX / IEEE 802.11n HT20 MHz / CH Mid **Test Date:** February 13, 2012
Temperature: 24°C **Tested by:** Sunday Hu
Humidity: 52% RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
1255.0000	53.18	-11.13	42.05	74.00	-31.95	V	Peak
1645.0000	51.85	-10.27	41.58	74.00	-32.42	V	Peak
2710.0000	48.04	-7.90	40.14	74.00	-33.86	V	Peak
2965.0000	46.82	-6.20	40.62	74.00	-33.38	V	Peak
3565.0000	46.03	-4.02	42.01	74.00	-31.99	V	Peak
5245.0000	44.95	0.68	45.63	74.00	-28.37	V	Peak
1165.0000	52.76	-11.51	41.25	74.00	-32.75	H	Peak
1360.0000	53.56	-10.51	43.05	74.00	-30.95	H	Peak
2965.0000	48.23	-6.20	42.03	74.00	-31.97	H	Peak
4810.0000	45.84	-0.62	45.22	74.00	-28.78	H	Peak
5305.0000	45.23	0.81	46.04	74.00	-27.96	H	Peak
6250.0000	45.40	3.79	49.19	74.00	-24.81	H	Peak

REMARKS:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " 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. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



Operation Mode: TX / IEEE 802.11n HT20 MHz / CH High Test Date: February 13, 2012

Temperature: 24°C

Tested by: Sunday Hu

Humidity: 52% RH

Polarity: Ver. / Hor.

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
1165.0000	54.42	-11.51	42.91	74.00	-31.09	V	Peak
1360.0000	56.01	-10.51	45.50	74.00	-28.50	V	Peak
1930.0000	50.37	-9.57	40.80	74.00	-33.20	V	Peak
2950.0000	49.22	-6.30	42.92	74.00	-31.08	V	Peak
4930.0000	46.87	-0.23	46.64	74.00	-27.36	V	Peak
6145.0000	45.26	3.58	48.84	74.00	-25.16	V	Peak
1360.0000	57.64	-10.51	47.13	74.00	-26.87	H	Peak
1435.0000	52.64	-10.27	42.37	74.00	-31.63	H	Peak
3610.0000	46.01	-3.80	42.21	74.00	-31.79	H	Peak
4990.0000	45.02	-0.04	44.98	74.00	-29.02	H	Peak
5875.0000	45.00	2.72	47.72	74.00	-26.28	H	Peak
7525.0000	44.63	5.68	50.31	74.00	-23.69	H	Peak

REMARKS:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " 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. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



Operation Mode: TX / IEEE 802.11n HT40 MHz / CH Low

Test Date: February 13, 2012

Temperature: 24°C

Tested by: Sunday Hu

Humidity: 52% RH

Polarity: Ver. / Hor.

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
1225.0000	56.61	-11.29	45.32	74.00	-28.68	V	Peak
1330.0000	57.44	-10.70	46.74	74.00	-27.26	V	Peak
2965.0000	47.22	-6.20	41.02	74.00	-32.98	V	Peak
3565.0000	45.93	-4.02	41.91	74.00	-32.09	V	Peak
5620.0000	44.92	1.61	46.53	74.00	-27.47	V	Peak
6565.0000	45.06	4.10	49.16	74.00	-24.84	V	Peak
1195.0000	55.96	-11.43	44.53	74.00	-29.47	H	Peak
1300.0000	55.94	-10.89	45.05	74.00	-28.95	H	Peak
4285.0000	47.77	-2.65	45.12	74.00	-28.88	H	Peak
4795.0000	46.08	-0.68	45.40	74.00	-28.60	H	Peak
6220.0000	45.03	3.81	48.84	74.00	-25.16	H	Peak
6820.0000	45.52	4.31	49.83	74.00	-24.17	H	Peak

REMARKS:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " 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. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



Operation Mode: TX / IEEE 802.11n HT40 MHz / CH Mid Test Date: February 13, 2012

Temperature: 24°C Tested by: Sunday Hu

Humidity: 52% RH Polarity: Ver. / Hor.

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
1045.0000	56.49	-11.82	44.67	74.00	-29.33	V	Peak
1330.0000	56.11	-10.70	45.41	74.00	-28.59	V	Peak
1465.0000	54.93	-10.29	44.64	74.00	-29.36	V	Peak
4135.0000	46.74	-3.14	43.60	74.00	-30.40	V	Peak
5725.0000	45.28	2.18	47.46	74.00	-26.54	V	Peak
6475.0000	46.16	3.87	50.03	74.00	-23.97	V	Peak
1150.0000	55.40	-11.55	43.85	74.00	-30.15	H	Peak
1300.0000	55.58	-10.89	44.69	74.00	-29.31	H	Peak
1465.0000	54.89	-10.29	44.60	74.00	-29.40	H	Peak
5320.0000	46.01	0.84	46.85	74.00	-27.15	H	Peak
5770.0000	45.48	2.43	47.91	74.00	-26.09	H	Peak
6490.0000	46.14	3.91	50.05	74.00	-23.95	H	Peak

REMARKS:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " 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. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



Operation Mode: TX / IEEE 802.11n HT40 MHz / CH High **Test Date:** February 13, 2012

Temperature: 24°C

Tested by: Sunday Hu

Humidity: 52% RH

Polarity: Ver. / Hor.

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
1045.0000	57.36	-11.82	45.54	74.00	-28.46	V	Peak
1165.0000	56.16	-11.51	44.65	74.00	-29.35	V	Peak
1360.0000	54.85	-10.51	44.34	74.00	-29.66	V	Peak
4885.0000	45.75	-0.38	45.37	74.00	-28.63	V	Peak
5830.0000	44.93	2.64	47.57	74.00	-26.43	V	Peak
6220.0000	45.35	3.81	49.16	74.00	-24.84	V	Peak
1090.0000	54.94	-11.71	43.23	74.00	-30.77	H	Peak
1330.0000	56.85	-10.70	46.15	74.00	-27.85	H	Peak
3340.0000	47.00	-5.20	41.80	74.00	-32.20	H	Peak
4975.0000	45.67	-0.09	45.58	74.00	-28.42	H	Peak
6220.0000	44.59	3.81	48.40	74.00	-25.60	H	Peak
7660.0000	45.54	5.88	51.42	74.00	-22.58	H	Peak

REMARKS:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " 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. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



7.3. 6dB BANDWIDTH MEASUREMENT

7.3.1. LIMITS

According to §15.247(a)(2), systems using digital modulation techniques may operate in the 902 - 928 MHz, 2400 - 2483.5 MHz, and 5725 - 5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

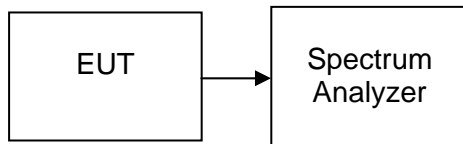
7.3.2. TEST INSTRUMENTS

Name of Equipment	Manufacturer	Model	Serial Number	Last Calibration	Calibration Due
Spectrum Analyzer	Agilent	E4446A	US44300399	03/19/2011	03/19/2012

7.3.3. TEST PROCEDURES (please refer to measurement standard)

1. Place the EUT on the table and set it in the transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3. Set the spectrum analyzer as RBW = 100kHz, VBW = 300kHz, Span = 25MHz, Sweep = auto.
4. Mark the peak frequency and -6dB (upper and lower) frequency.
5. Repeat until all the rest channels are investigated.

7.3.4. TEST SETUP





7.3.5. TEST RESULTS

No non-compliance noted

Test Data

Test mode: IEEE 802.11b

Channel	Frequency (MHz)	Bandwidth (kHz)	Limit (kHz)	Test Result
Low	2412	10047	>500	PASS
Mid	2437	9584		PASS
High	2462	9797		PASS

Test mode: IEEE 802.11g

Channel	Frequency (MHz)	Bandwidth (kHz)	Limit (kHz)	Test Result
Low	2412	16366	>500	PASS
Mid	2437	16364		PASS
High	2462	16365		PASS

Test mode: IEEE 802.11n HT20 MHz

Channel	Frequency (MHz)	Bandwidth (kHz)	Limit (kHz)	Test Result
Low	2412	17567	>500	PASS
Mid	2437	17534		PASS
High	2462	17585		PASS

Test mode: IEEE 802.11n HT40 MHz

Channel	Frequency (MHz)	Bandwidth (kHz)	Limit (kHz)	Test Result
Low	2422	35506	>500	PASS
Mid	2437	35723		PASS
High	2452	35515		PASS



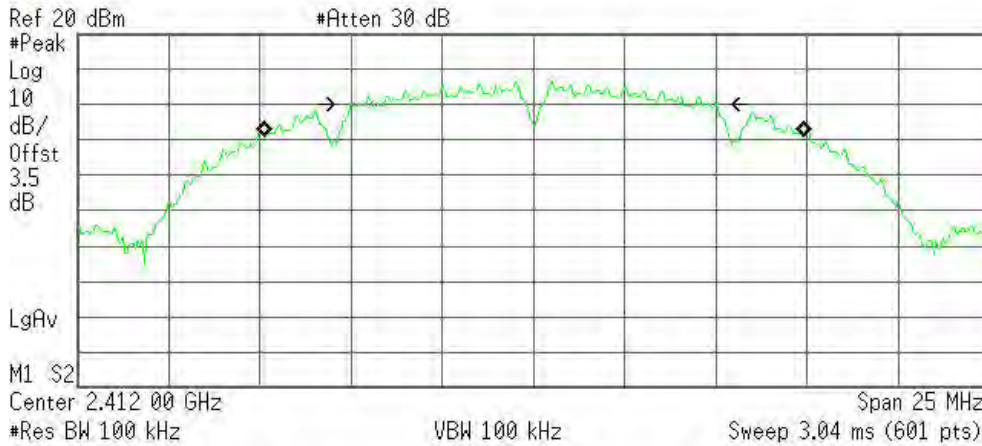
Test Plot

IEEE 802.11b mode

6dB Bandwidth (CH Low)

Agilent 10:05:37 Feb 6, 2012

R T



Occupied Bandwidth
14.8077 MHz

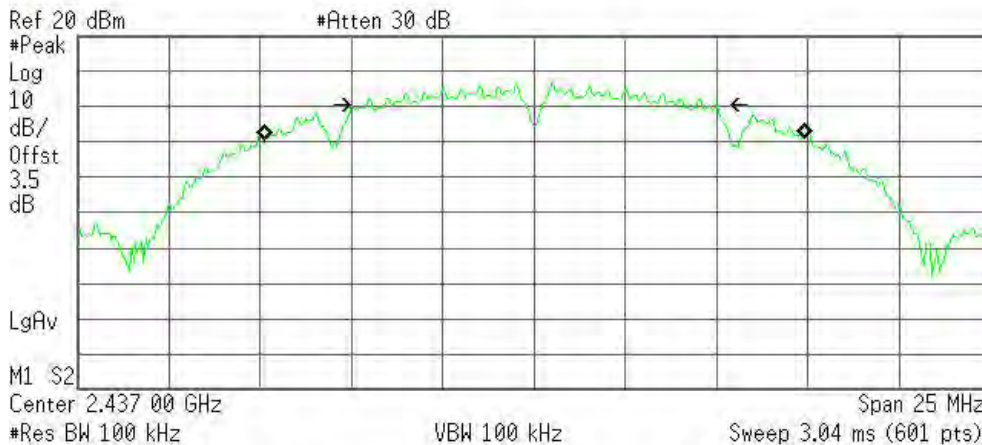
Occ BW % Pwr 99.00 %
x dB -6.00 dB

Transmit Freq Error 24.564 kHz
x dB Bandwidth 10.047 MHz

6dB Bandwidth (CH Mid)

Agilent 10:07:35 Feb 6, 2012

R T



Occupied Bandwidth
14.7875 MHz

Occ BW % Pwr 99.00 %
x dB -6.00 dB

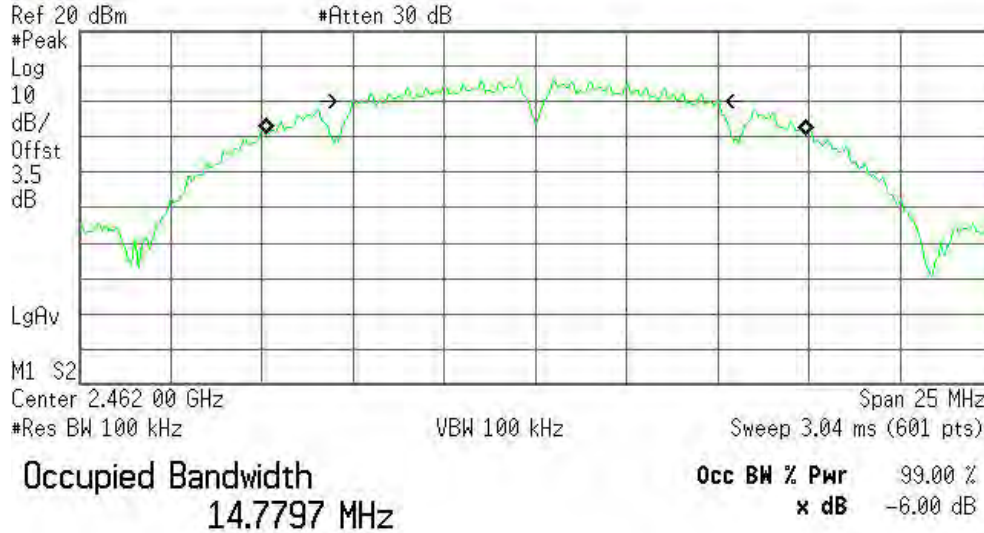
Transmit Freq Error 27.875 kHz
x dB Bandwidth 9.584 MHz



6dB Bandwidth (CH High)

Agilent 10:07:09 Feb 6, 2012

R T



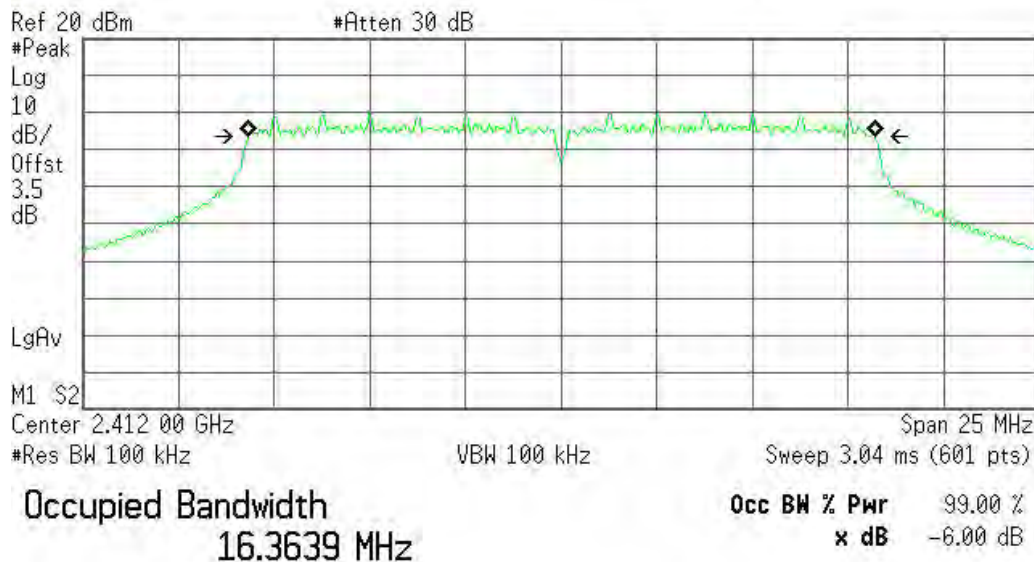
Transmit Freq Error 21.659 kHz
x dB Bandwidth 9.797 MHz

IEEE 802.11g mode

6dB Bandwidth (CH Low)

Agilent 10:08:27 Feb 6, 2012

R T



Transmit Freq Error 12.666 kHz
x dB Bandwidth 16.366 MHz



6dB Bandwidth (CH Mid)

Agilent 10:09:24 Feb 6, 2012

R T



Center 2.437 00 GHz Span 25 MHz
#Res BW 100 kHz VBW 100 kHz Sweep 3.04 ms (601 pts)

Occupied Bandwidth
16.3675 MHz

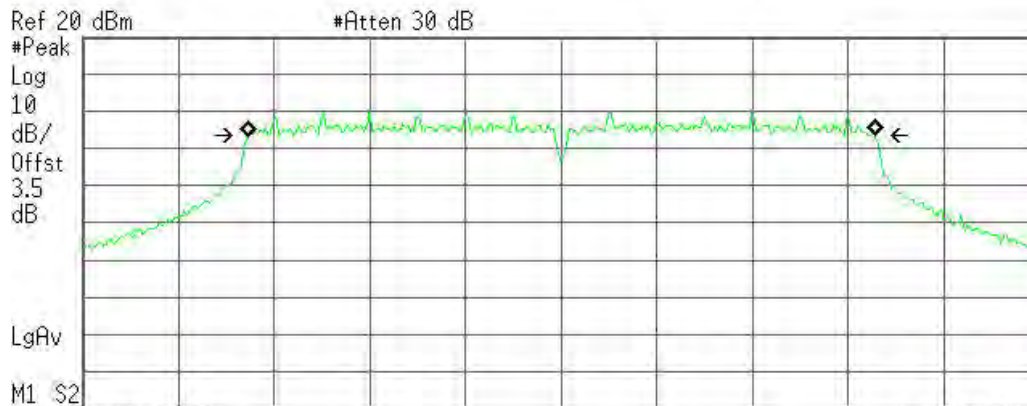
Occ BW % Pwr 99.00 %
x dB -6.00 dB

Transmit Freq Error 12.828 kHz
x dB Bandwidth 16.364 MHz

6dB Bandwidth (CH High)

Agilent 10:10:05 Feb 6, 2012

R T



Center 2.462 00 GHz Span 25 MHz
#Res BW 100 kHz VBW 100 kHz Sweep 3.04 ms (601 pts)

Occupied Bandwidth
16.3719 MHz

Occ BW % Pwr 99.00 %
x dB -6.00 dB

Transmit Freq Error 10.643 kHz
x dB Bandwidth 16.365 MHz

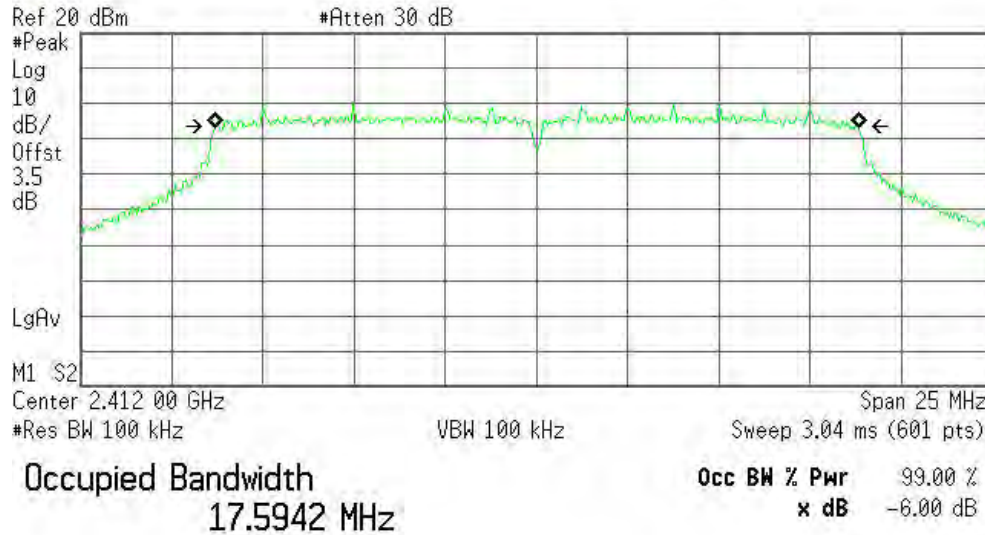


IEEE 802.11n HT20 MHz mode

6dB Bandwidth (CH Low)

Agilent 10:11:16 Feb 6, 2012

R T

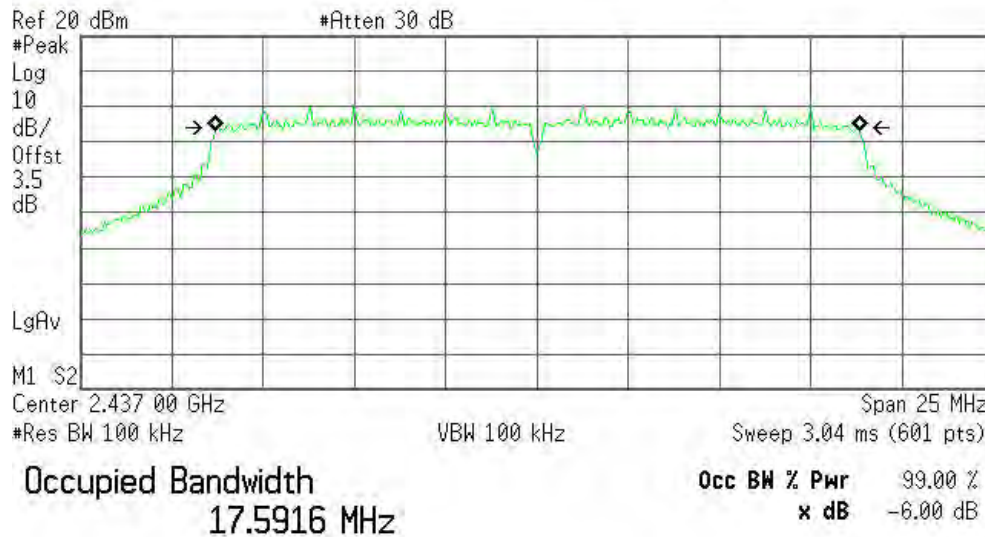


Transmit Freq Error 18.873 kHz
x dB Bandwidth 17.567 MHz

6dB Bandwidth (CH Mid)

Agilent 10:10:58 Feb 6, 2012

R T



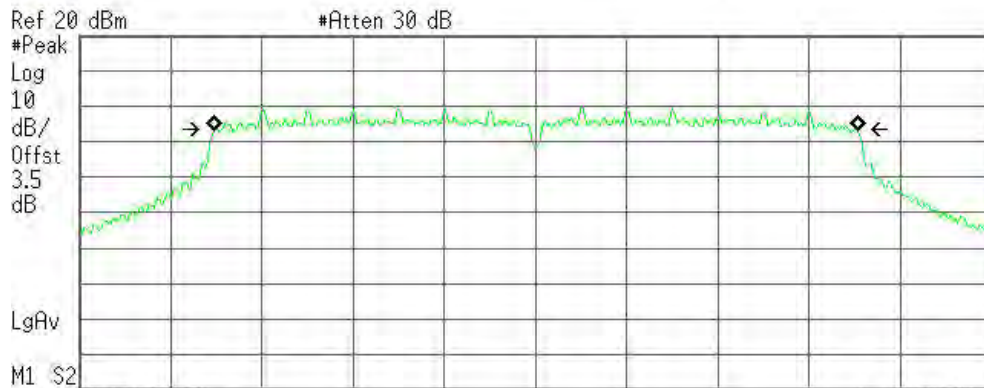
Transmit Freq Error 19.509 kHz
x dB Bandwidth 17.534 MHz



6dB Bandwidth (CH High)

Agilent 10:10:38 Feb 6, 2012

R T



Center 2.462 00 GHz Span 25 MHz
 #Res BW 100 kHz VBW 100 kHz Sweep 3.04 ms (601 pts)

Occupied Bandwidth
 17.5967 MHz

Occ BW % Pwr 99.00 %
 x dB -6.00 dB

Transmit Freq Error 21.113 kHz
 x dB Bandwidth 17.585 MHz

IEEE 802.11n HT40 MHz mode

6dB Bandwidth (CH Low)

Agilent 00:04:11 Feb 7, 2012

R T



Center 2.422 00 GHz Span 50 MHz
 #Res BW 100 kHz VBW 100 kHz Sweep 6.04 ms (601 pts)

Occupied Bandwidth
 35.7903 MHz

Occ BW % Pwr 99.00 %
 x dB -6.00 dB

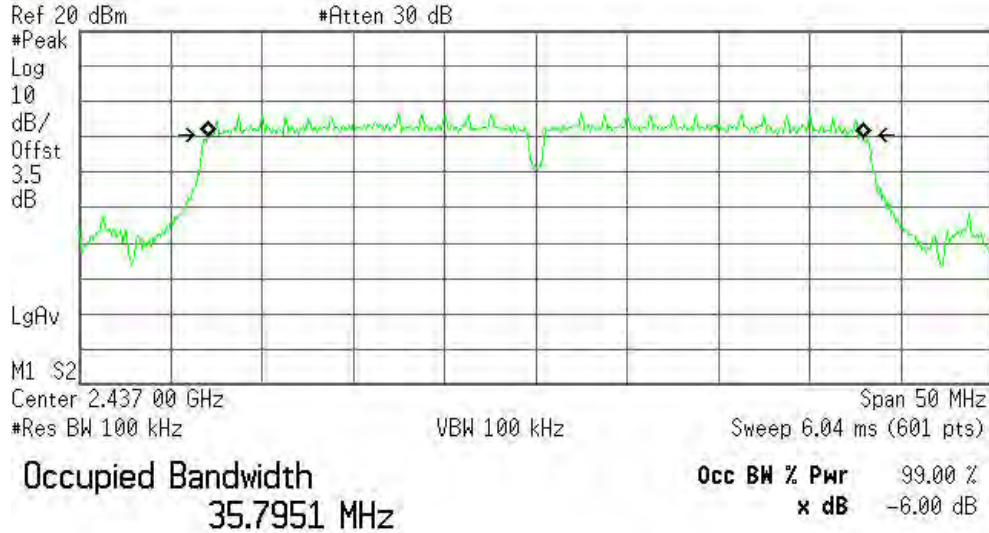
Transmit Freq Error 20.760 kHz
 x dB Bandwidth 35.506 MHz



6dB Bandwidth (CH Mid)

Agilent 00:05:49 Feb 7, 2012

R T

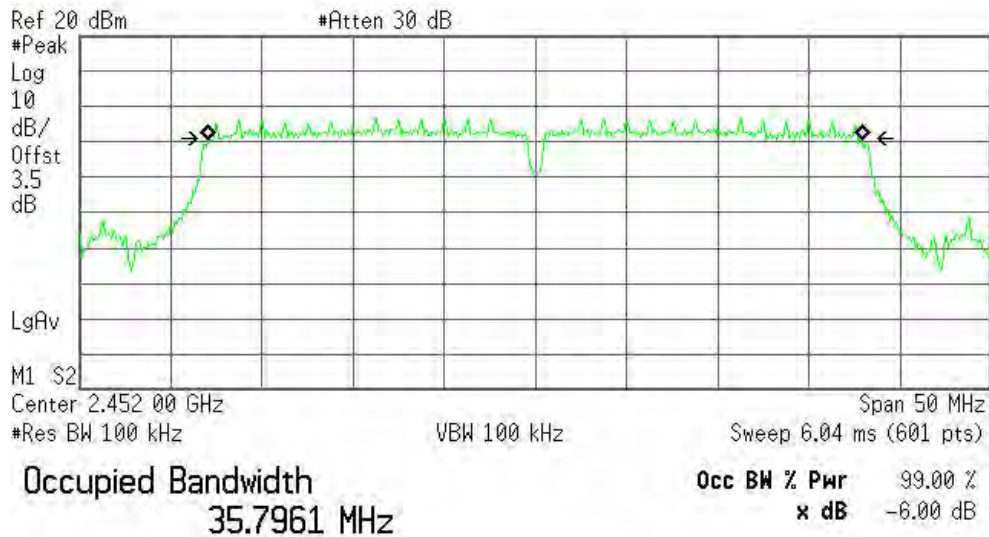


Transmit Freq Error 12.089 kHz
x dB Bandwidth 35.723 MHz

6dB Bandwidth (CH High)

Agilent 00:06:29 Feb 7, 2012

R T



Transmit Freq Error 14.467 kHz
x dB Bandwidth 35.515 MHz



7.4. PEAK OUTPUT POWER

7.4.1. LIMITS

The maximum peak output power of the intentional radiator shall not exceed the following:

1. According to §15.247(b)(3), for systems using digital modulation in the bands of 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz: 1 Watt.
2. According to §15.247(b)(4), the conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

7.4.2. TEST INSTRUMENTS

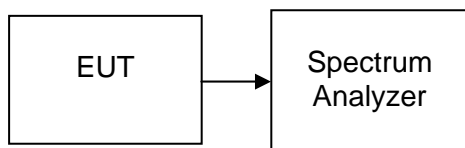
Name of Equipment	Manufacturer	Model	Serial Number	Last Calibration	Calibration Due
Spectrum Analyzer	Agilent	E4446A	US44300399	03/21/2011	03/21/2012

7.4.3. TEST PROCEDURES (please refer to measurement standard)

1. Set span to encompass the entire emission bandwidth (EBW) of the signal.
2. Set RBW = 1 MHz.
3. Set VBW \geq 3 MHz.
4. Use sample detector mode if bin width (i.e., span/number of points in spectrum display) $<$ 0.5 RBW. Otherwise use peak detector mode.
5. Use a video trigger with the trigger level set to enable triggering only on full power pulses. Transmitter must operate at full control power for entire sweep of every sweep. If the device transmits continuously, with no off intervals or reduced power intervals, the trigger may be set to "free run".
6. Trace average 100 traces in power averaging mode.
7. Compute power by integrating the spectrum across the 26 dB EBW of the signal. The integration can be performed using the spectrum analyzer's band power measurement function with band limits set equal to the EBW band edges or by summing power levels in each 1 MHz band in linear power terms. The 1 MHz band power levels to be summed can be obtained by averaging, in linear power terms, power levels in each frequency bin across the 1 MHz.



7.4.4. TEST SETUP



7.4.5. TEST RESULTS

No non-compliance noted

Test Data

Test mode: IEEE 802.11b

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2412	17.31	0.05383	1	PASS
Mid	2437	17.51	0.05636		PASS
High	2462	17.55	0.05689		PASS

Test mode: IEEE 802.11g

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2412	14.22	0.02642	1	PASS
Mid	2437	14.27	0.02673		PASS
High	2462	14.15	0.02600		PASS

Test mode: IEEE 802.11n HT20 MHz

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2412	14.20	0.02630	1	PASS
Mid	2437	14.43	0.02773		PASS
High	2462	14.23	0.02649		PASS

Test mode: IEEE 802.11n HT40 MHz

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2422	13.77	0.02382	1	PASS
Mid	2437	13.93	0.02472		PASS
High	2452	13.67	0.02328		PASS



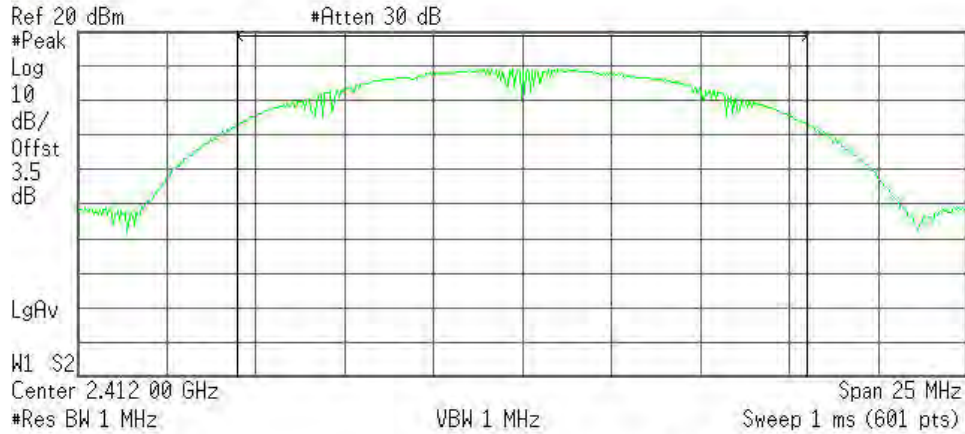
Test Plot

IEEE 802.11b mode

Peak power (CH Low)

Agilent 00:09:57 Feb 7, 2012

R T



Channel Power

17.31 dBm /16.0000 MHz

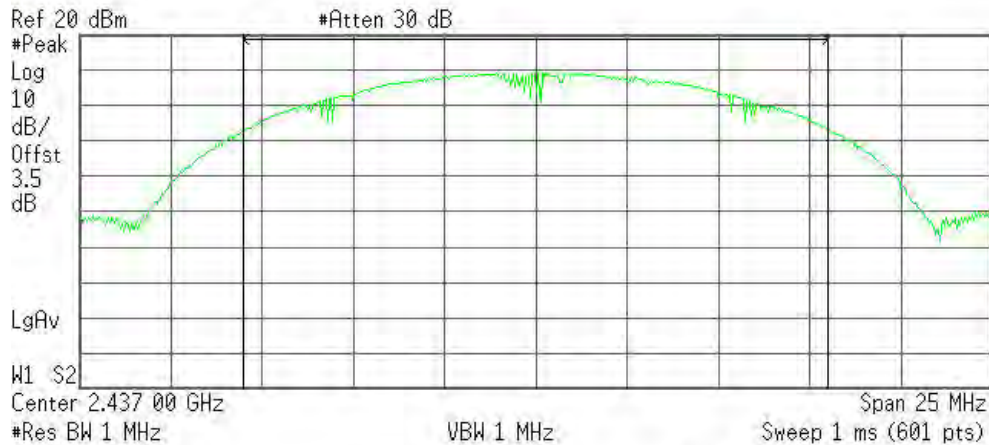
Power Spectral Density

-54.73 dBm/Hz

Peak power (CH Mid)

Agilent 00:10:47 Feb 7, 2012

R T



Channel Power

17.51 dBm /16.0000 MHz

Power Spectral Density

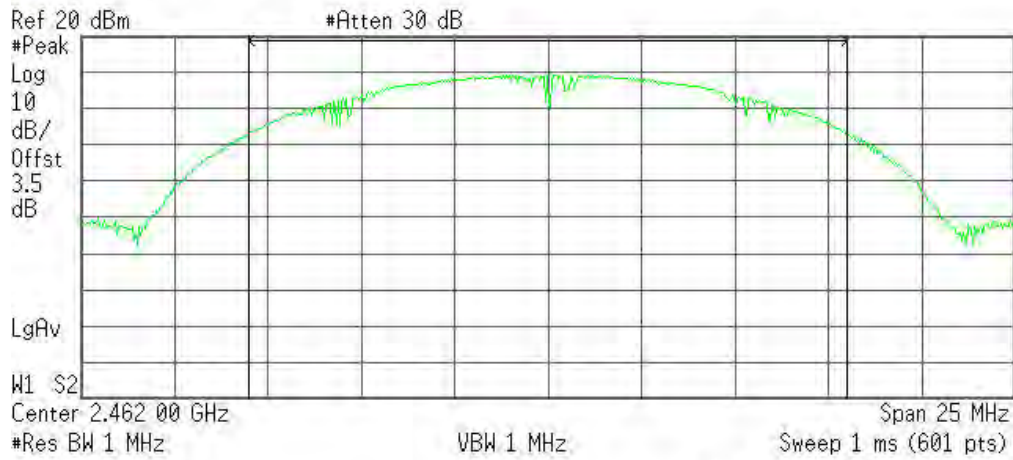
-54.53 dBm/Hz



Peak power (CH High)

Agilent 00:11:40 Feb 7, 2012

R T



Channel Power

17.55 dBm /16.0000 MHz

Power Spectral Density

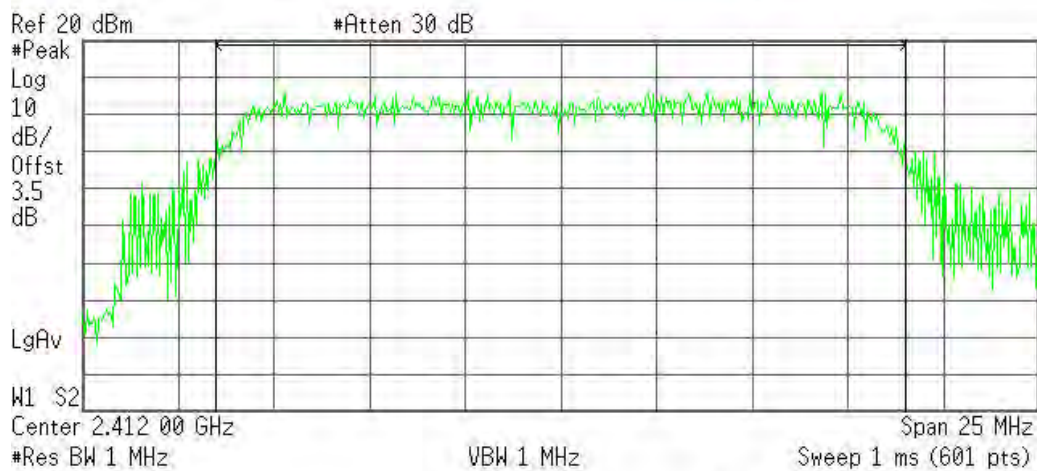
-54.49 dBm/Hz

IEEE 802.11g mode

Peak power (CH Low)

Agilent 00:14:26 Feb 7, 2012

R T



Channel Power

14.22 dBm /18.0000 MHz

Power Spectral Density

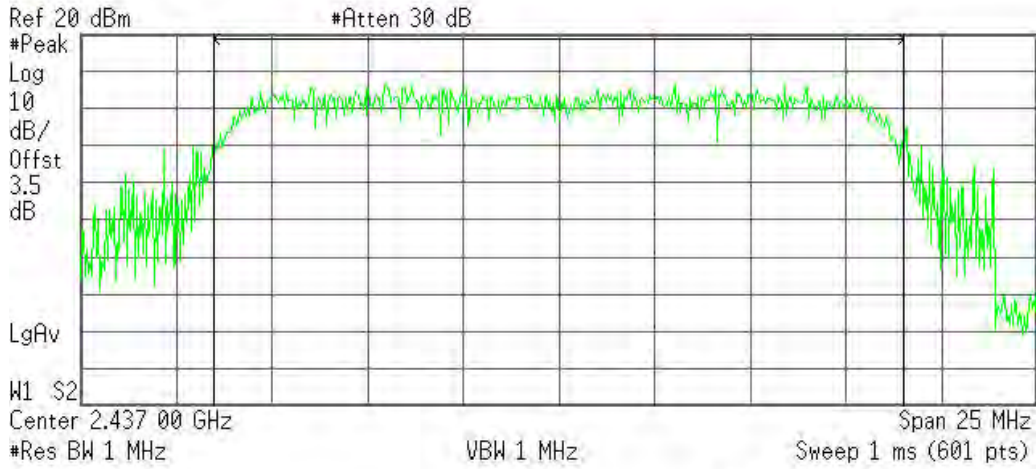
-58.33 dBm/Hz



Peak power (CH Mid)

Agilent 00:13:26 Feb 7, 2012

R T



Channel Power

14.27 dBm /18.0000 MHz

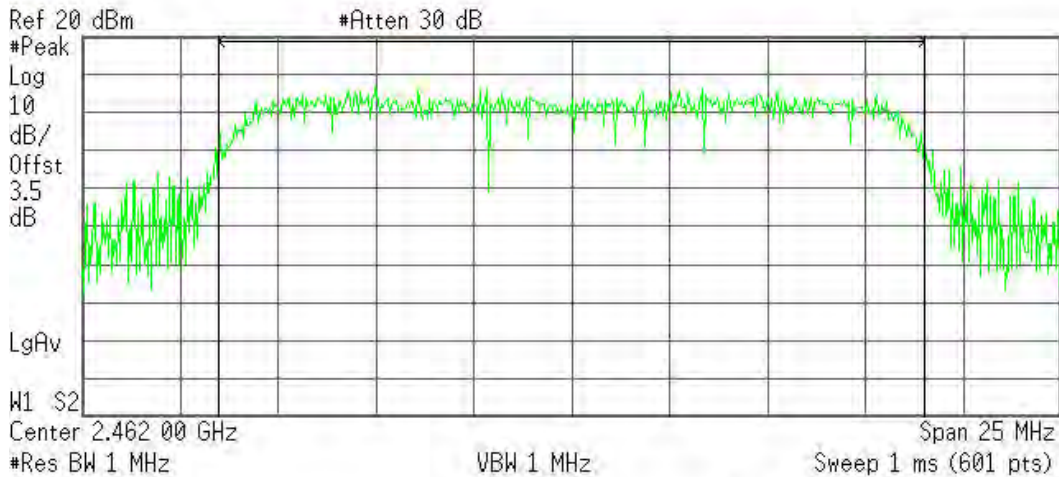
Power Spectral Density

-58.28 dBm/Hz

Peak power (CH High)

Agilent 00:12:43 Feb 7, 2012

R T



Channel Power

14.15 dBm /18.0000 MHz

Power Spectral Density

-58.41 dBm/Hz

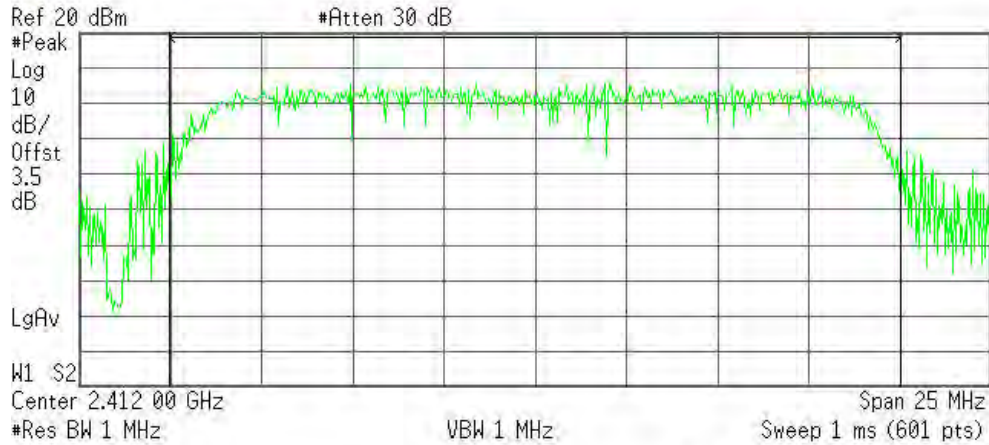


IEEE 802.11n HT20 MHz mode

Peak power (CH Low)

Agilent 00:15:39 Feb 7, 2012

R T



Channel Power

14.20 dBm /20.0000 MHz

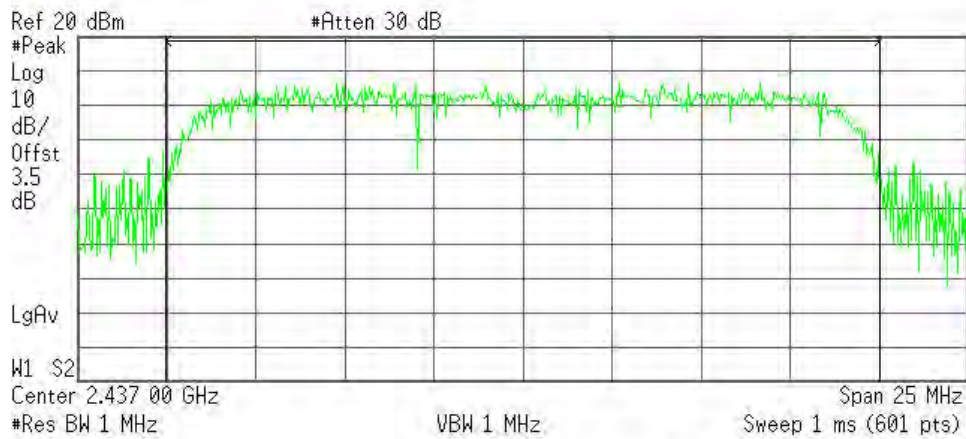
Power Spectral Density

-58.81 dBm/Hz

Peak power (CH Mid)

Agilent 00:19:51 Feb 7, 2012

R T



Channel Power

14.43 dBm /20.0000 MHz

Power Spectral Density

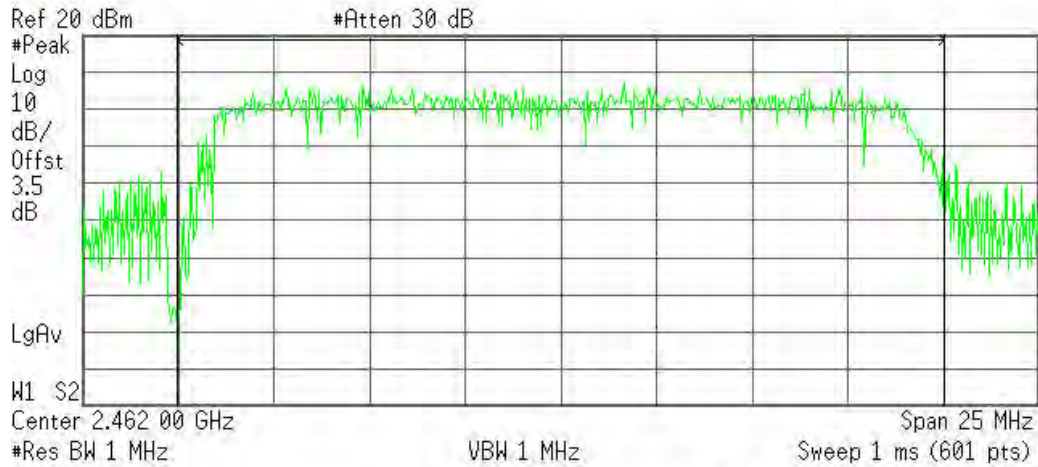
-58.58 dBm/Hz



Peak power (CH High)

Agilent 00:20:46 Feb 7, 2012

R T



Channel Power

14.23 dBm /20.0000 MHz

Power Spectral Density

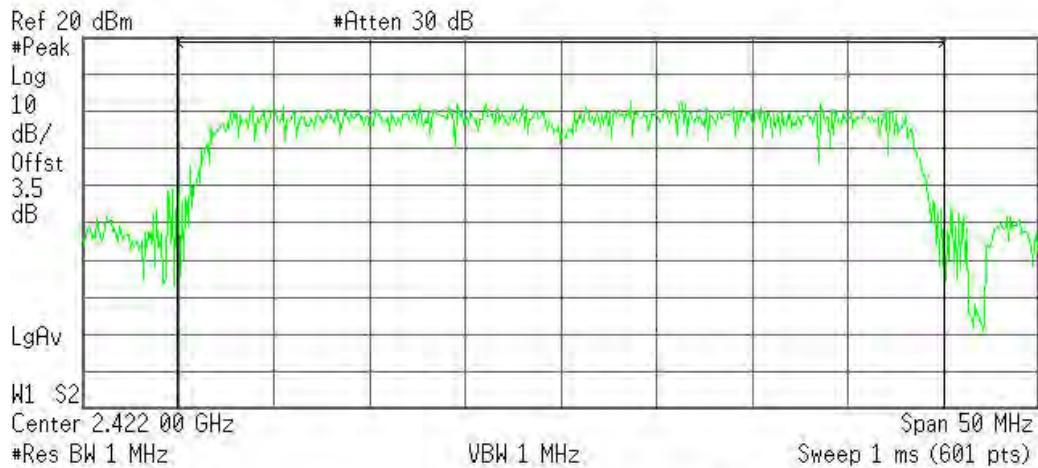
-58.78 dBm/Hz

IEEE 802.11n HT40 MHz mode

Peak power (CH Low)

Agilent 00:21:47 Feb 7, 2012

R T



Channel Power

13.77 dBm /40.0000 MHz

Power Spectral Density

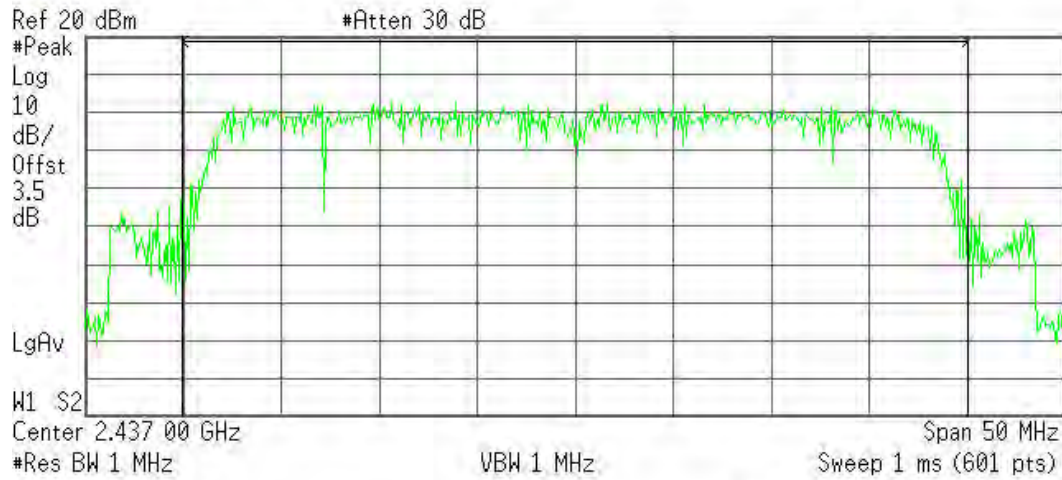
-62.25 dBm/Hz



Peak power (CH Mid)

Agilent 00:23:11 Feb 7, 2012

R T



Channel Power

13.93 dBm /40.0000 MHz

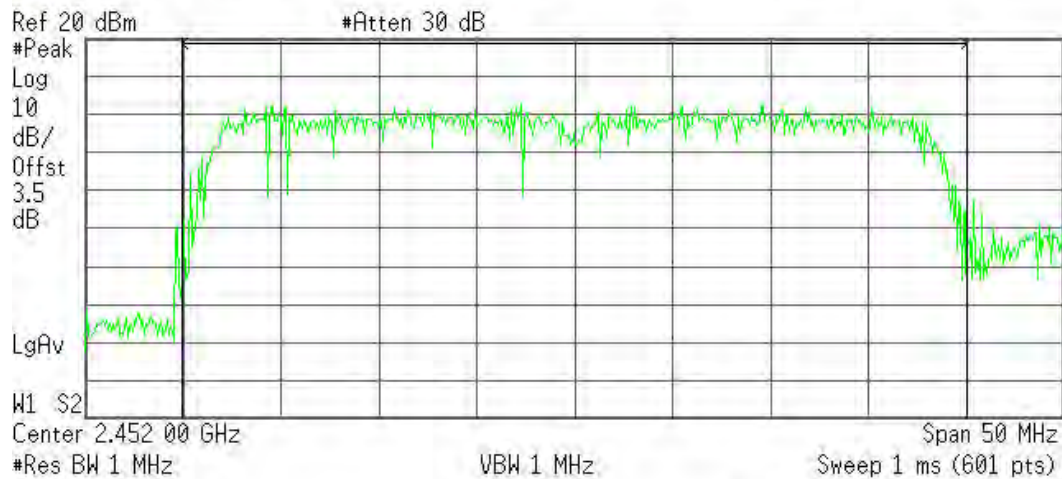
Power Spectral Density

-62.09 dBm/Hz

Peak power (CH High)

Agilent 00:24:17 Feb 7, 2012

R T



Channel Power

13.67 dBm /40.0000 MHz

Power Spectral Density

-62.35 dBm/Hz



7.5. BAND EDGES MEASUREMENT

7.5.1. LIMITS

According to §15.247(d), in any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in 15.209(a) (see Section 15.205(c)).

7.5.2. TEST INSTRUMENTS

Radiated Emission Test Site 966 (2)						
Name of Equipment	Manufacturer	Model Number	Serial Number	Last Calibration	Due Calibration	
PSA Series Spectrum Analyzer	Agilent	E4446A	US44300399	03/21/2011	03/21/2012	
Amplifier	MITEQ	AM-1604-3000	1411843	03/21/2011	03/21/2012	
Turn Table	EMCO	2081-1.21	N/A	N.C.R	N.C.R	
Controller	CT	N/A	N/A	N.C.R	N.C.R	
High Noise Amplifier	Agilent	8449B	3008A01838	06/18/2011	06/18/2012	
Site NSA	C&C	N/A	N/A	N.C.R	N.C.R	
Bilog Antenna	SCHAFFNER	CBL6143	5082	06/18/2011	06/18/2012	
Horn Antenna	SCHWARZBECK	BBHA9120D	D286	03/19/2011	03/19/2012	
Signal Generator	Anritsu	MG3694A	#050125	03/21/2011	03/21/2012	
Horn Antenna	TRC	HA0301	N/A	03/19/2011	03/19/2012	
Loop Antenna	A.R.A	PLA-1030/B	1029	03/19/2011	03/19/2012	
Power Sensor	Anritsu	MA2491A	030619	06/18/2011	06/18/2012	
Power Meter	Anritsu	ML2487A	6K00001491	06/18/2011	06/18/2012	
Temp. / Humidity Meter	VICTOR	VC230	N/A	03/30/2011	03/30/2012	

NOTE: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

2. The FCC Site Registration number is 101879.

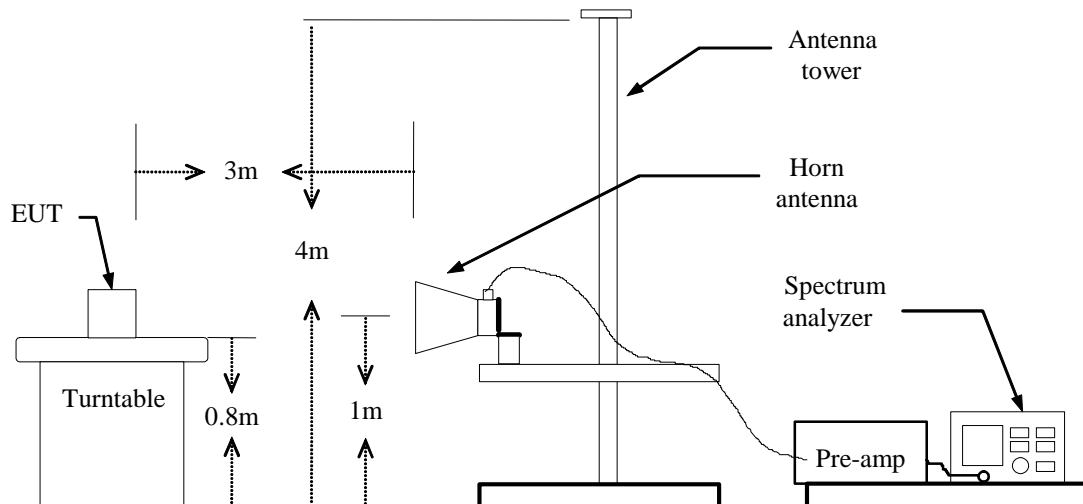
3. N.C.R = No Calibration Required.



7.5.3. TEST PROCEDURES (please refer to measurement standard)

1. The EUT is placed on a turntable, which is 0.8m above the ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission.
4. Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of the emission:
 - (a) PEAK: RBW=VBW=1MHz / Sweep=AUTO
 - (b) AVERAGE: RBW=1MHz / VBW=10Hz / Sweep=AUTO
5. Repeat the procedures until all the PEAK and AVERAGE versus POLARIZATION are

7.5.4. TEST SETUP





7.5.5. TEST RESULTS

IEEE 802.11b mode / CH Low

Freq. (MHz)	Ant. Pol H/V	Peak Reading (dBuV)	AV Reading (dBuV)	Ant. / CL CF (dB)	Actual Fs		Peak Limit (dBuV/m)	AV Limit (dBuV/m)	Peak Margin (dB)	AV Margin (dB)
					Peak (dBuV/m)	AV (dBuV/m)				
2390.00	V	113.57	110.28	-9.75	103.82	100.53	74	54	29.82	46.53
N/A										
2390.00	H	105.82	102.64	-9.75	96.07	92.89	74	54	22.07	38.89
N/A										

IEEE 802.11b mode / CH High

Freq. (MHz)	Ant. Pol H/V	Peak Reading (dBuV)	AV Reading (dBuV)	Ant. / CL CF (dB)	Actual Fs		Peak Limit (dBuV/m)	AV Limit (dBuV/m)	Peak Margin (dB)	AV Margin (dB)
					Peak (dBuV/m)	AV (dBuV/m)				
2483.50	V	115.23	113.10	-9.78	105.45	103.32	74	54	31.45	49.32
N/A										
2483.50	H	104.84	102.25	-9.78	95.06	92.47	74	54	21.06	38.47
N/A										



IEEE 802.11g mode / CH Low

Freq. (MHz)	Ant. Pol H/V	Peak Reading (dBuV)	AV Reading (dBuV)	Ant. / CL CF (dB)	Actual Fs		Peak Limit (dBuV/m)	AV Limit (dBuV/m)	Peak Margin (dB)	AV Margin (dB)
					Peak (dBuV/m)	AV (dBuV/m)				
2390.00	V	110.97	100.78	-9.75	101.22	91.03	74	54	27.22	37.03
N/A										
2390.00	H	102.05	42.68	-9.75	92.30	82.91	74	54	18.30	28.91
N/A										

IEEE 802.11g mode / CH High

Freq. (MHz)	Ant. Pol H/V	Peak Reading (dBuV)	AV Reading (dBuV)	Ant. / CL CF (dB)	Actual Fs		Peak Limit (dBuV/m)	AV Limit (dBuV/m)	Peak Margin (dB)	AV Margin (dB)
					Peak (dBuV/m)	AV (dBuV/m)				
2483.50	V	111.75	101.87	-9.78	101.97	92.09	74	54	27.97	38.09
N/A										
2483.50	H	103.53	93.23	-9.78	93.75	83.45	74	54	19.75	29.45
N/A										



IEEE 802.11n HT20 MHz mode / CH Low

Freq. (MHz)	Ant. Pol H/V	Peak Reading (dBuV)	AV Reading (dBuV)	Ant. / CL CF (dB)	Actual Fs		Peak Limit (dBuV/m)	AV Limit (dBuV/m)	Peak Margin (dB)	AV Margin (dB)
					Peak (dBuV/m)	AV (dBuV/m)				
2390.00	V	111.10	100.07	-9.75	101.35	90.32	74	54	27.35	36.32
N/A										
2390.00	H	102.02	92.46	-9.75	92.27	82.71	74	54	18.27	28.71
N/A										

IEEE 802.11n HT20 MHz mode / CH High

Freq. (MHz)	Ant. Pol H/V	Peak Reading (dBuV)	AV Reading (dBuV)	Ant. / CL CF (dB)	Actual Fs		Peak Limit (dBuV/m)	AV Limit (dBuV/m)	Peak Margin (dB)	AV Margin (dB)
					Peak (dBuV/m)	AV (dBuV/m)				
2483.50	V	112.59	101.41	-9.78	102.81	91.63	74	54	28.81	37.63
N/A										
2483.50	H	103.08	92.08	-9.78	93.30	82.30	74	54	19.30	28.30
N/A										



IEEE 802.11n HT40 MHz mode / CH Low

Freq. (MHz)	Ant. Pol H/V	Peak Reading (dBuV)	AV Reading (dBuV)	Ant. / CL CF (dB)	Actual Fs		Peak Limit (dBuV/m)	AV Limit (dBuV/m)	Peak Margin (dB)	AV Margin (dB)
					Peak (dBuV/m)	AV (dBuV/m)				
2390.00	V	109.53	97.54	-9.75	99.78	87.79	74	54	25.78	33.79
N/A										
2390.00	H	100.09	86.56	-9.75	90.34	76.81	74	54	16.34	22.81
N/A										

IEEE 802.11n HT40 MHz mode / CH High

Freq. (MHz)	Ant. Pol H/V	Peak Reading (dBuV)	AV Reading (dBuV)	Ant. / CL CF (dB)	Actual Fs		Peak Limit (dBuV/m)	AV Limit (dBuV/m)	Peak Margin (dB)	AV Margin (dB)
					Peak (dBuV/m)	AV (dBuV/m)				
2483.50	V	107.51	97.81	-9.78	97.73	88.03	74	54	23.73	34.03
N/A										
2483.50	H	99.72	38.88	-9.78	89.94	77.66	74	54	15.94	23.66
N/A										



Test Plot IEEE 802.11b mode

Band Edges (CH Low)

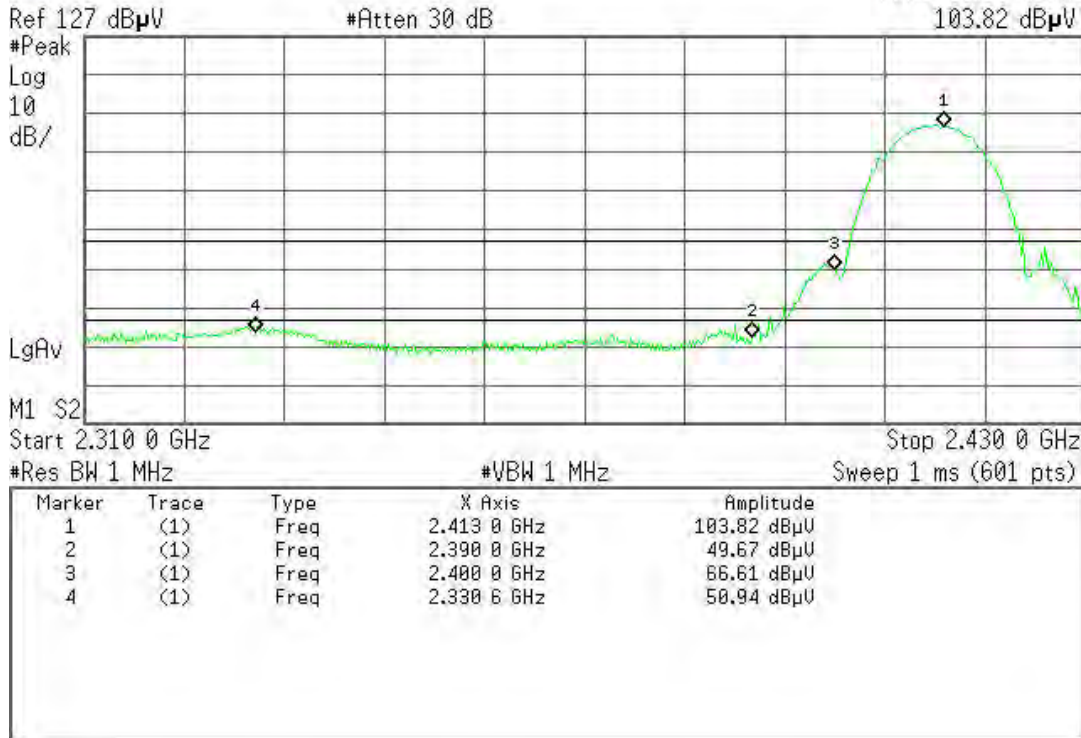
Detector mode: Peak

Polarity: Vertical

Agilent 01:47:54 Feb 7, 2012

R T

Mkr1 2.413 0 GHz
103.82 dBµV



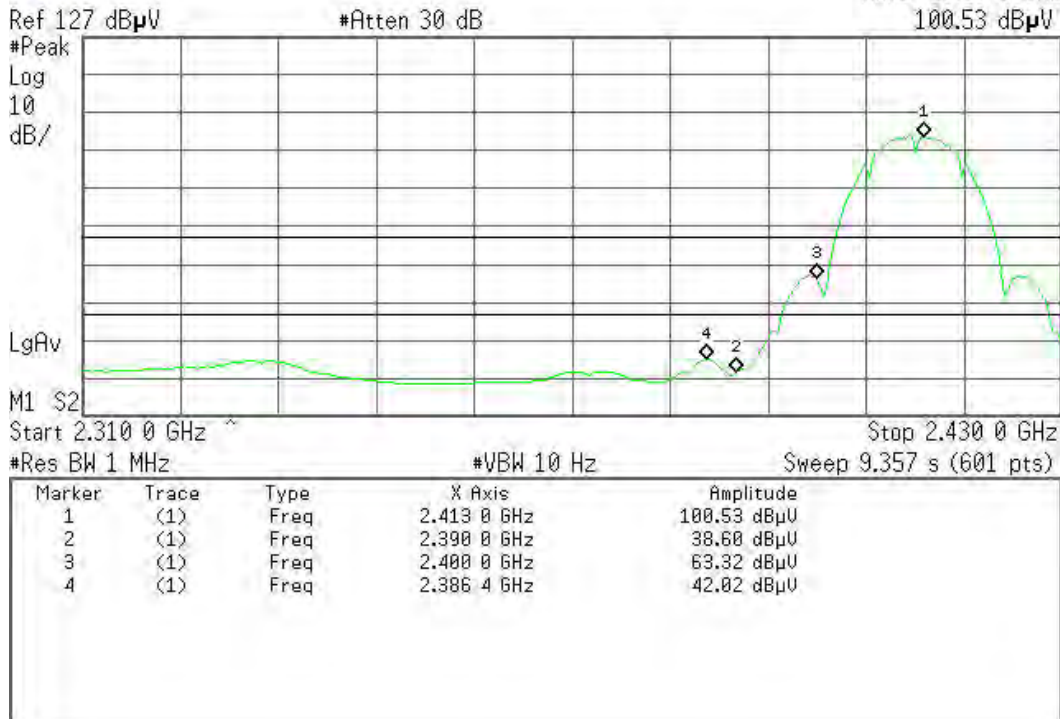
Detector mode: Average

Polarity: Vertical

Agilent 01:48:43 Feb 7, 2012

R T

Mkr1 2.413 0 GHz
100.53 dBµV





Detector mode: Peak

Polarity: Horizontal

Agilent 01:41:55 Feb 7, 2012

R T

Mkr1 2.413 0 GHz
96.07 dBµV

Ref 117 dBµV

#Atten 20 dB

#Peak
Log
10
dB/

LgAv

M1 S2

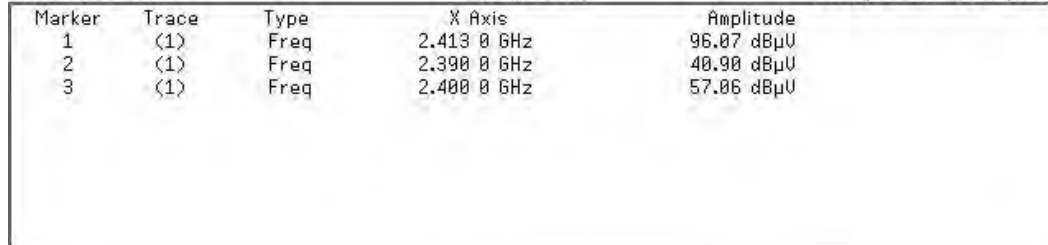
Start 2.310 0 GHz

Stop 2.430 0 GHz

#Res BW 1 MHz

#VBW 1 MHz

Sweep 1 ms (601 pts)



Detector mode: Average

Polarity: Horizontal

Agilent 01:43:06 Feb 7, 2012

R T

Mkr1 2.413 0 GHz
92.89 dBµV

Ref 117 dBµV

#Atten 20 dB

#Peak
Log
10
dB/

LgAv

M1 S2

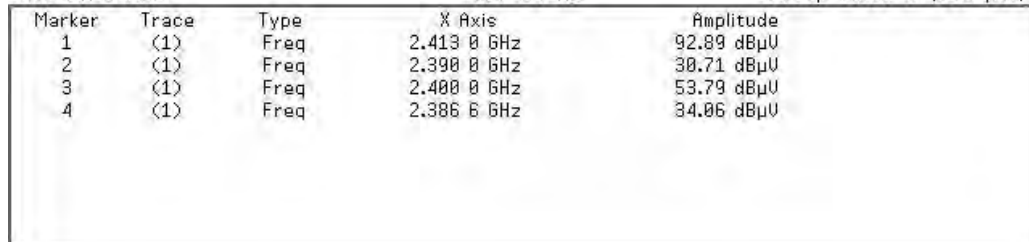
Start 2.310 0 GHz

Stop 2.430 0 GHz

#Res BW 1 MHz

#VBW 10 Hz

Sweep 9.357 s (601 pts)





Band Edges (CH High)

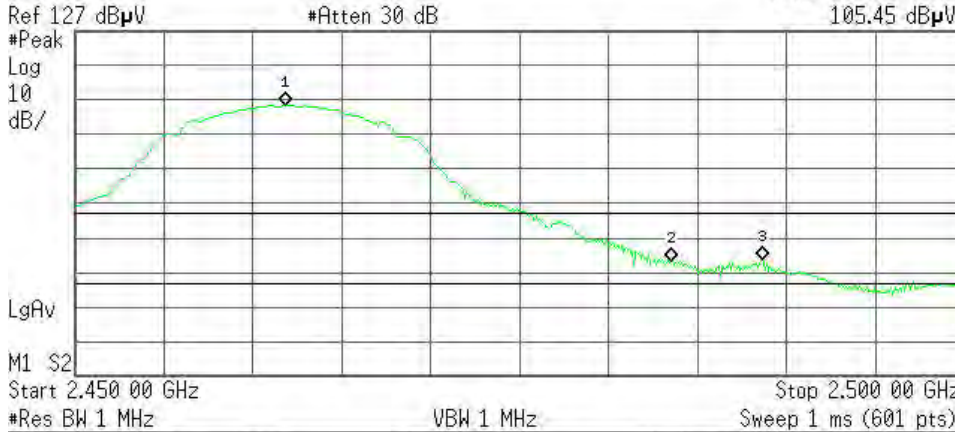
Detector mode: Peak

Polarity: Vertical

Agilent 01:55:49 Feb 7, 2012

R T

Mkr1 2.461 83 GHz
105.45 dBμV



Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.461 83 GHz	105.45 dBμV
2	(1)	Freq	2.483 50 GHz	60.48 dBμV
3	(1)	Freq	2.488 67 GHz	60.69 dBμV

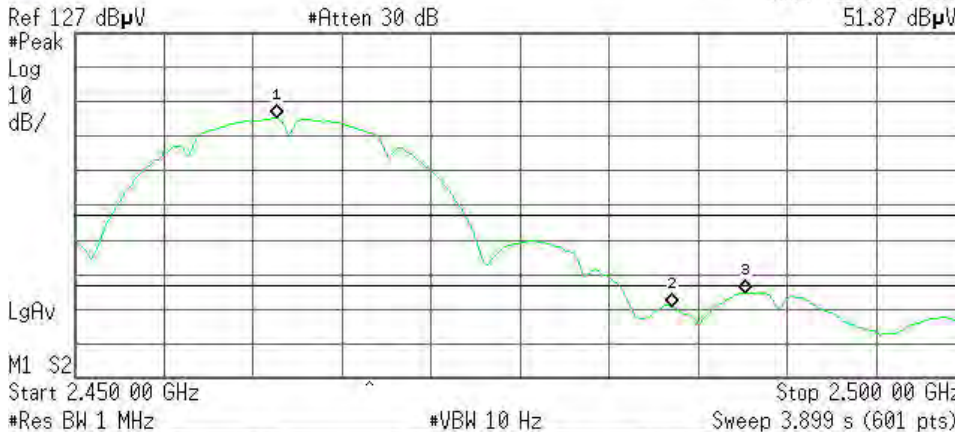
Detector mode: Average

Polarity: Vertical

Agilent 01:56:33 Feb 7, 2012

R T

Mkr3 2.487 67 GHz
51.87 dBμV



Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.461 33 GHz	102.32 dBμV
2	(1)	Freq	2.483 50 GHz	47.89 dBμV
3	(1)	Freq	2.487 67 GHz	51.87 dBμV



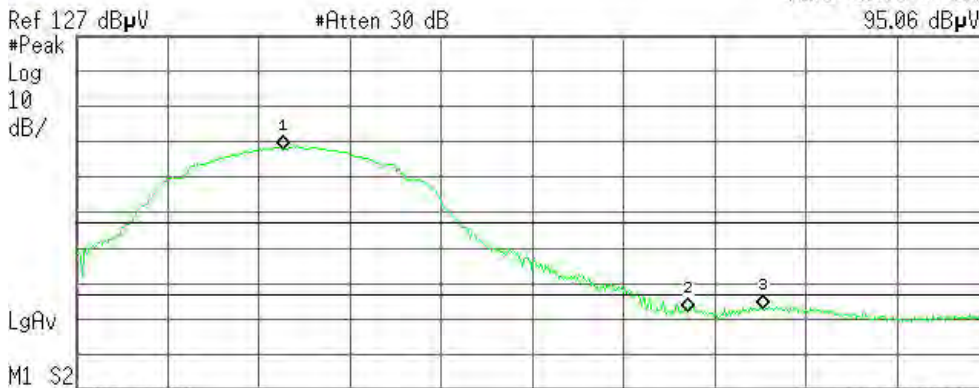
Detector mode: Peak

Polarity: Horizontal

Agilent 01:58:31 Feb 7, 2012

R T

Mkr1 2.461 33 GHz
95.06 dBμV



Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.461 33 GHz	95.06 dBμV
2	(1)	Freq	2.483 50 GHz	49.04 dBμV
3	(1)	Freq	2.487 67 GHz	49.99 dBμV

Detector mode: Average

Polarity: Horizontal

Agilent 01:59:01 Feb 7, 2012

R T

Mkr1 2.461 25 GHz
92.47 dBμV



Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.461 25 GHz	92.47 dBμV
2	(1)	Freq	2.483 50 GHz	37.87 dBμV
3	(1)	Freq	2.487 67 GHz	40.37 dBμV



IEEE 802.11g mode

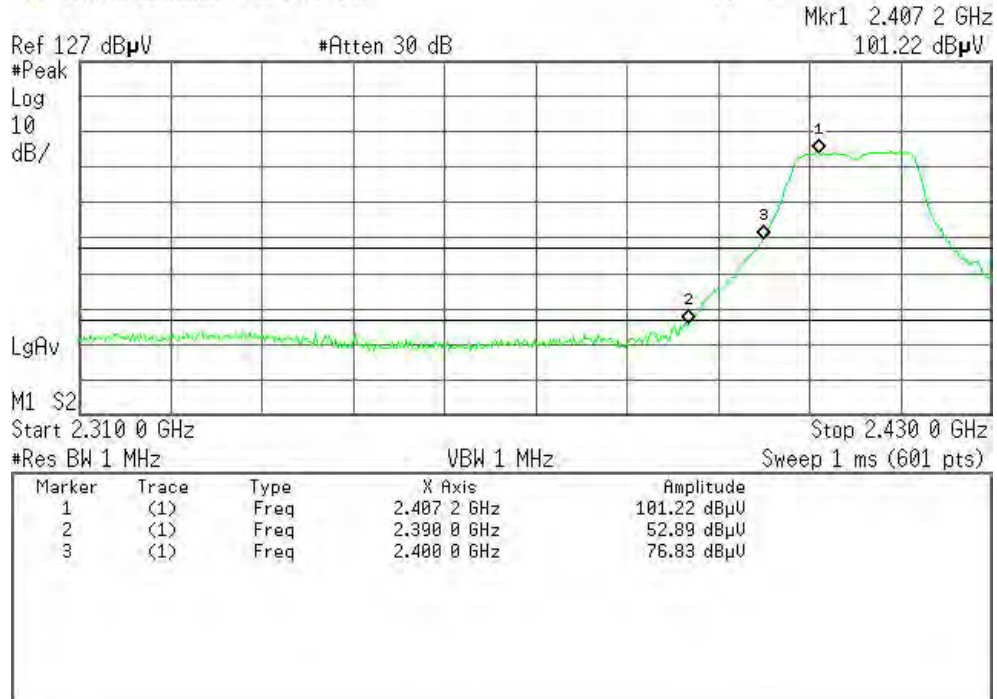
Band Edges (CH Low)

Detector mode: Peak

Polarity: Vertical

Agilent 02:12:23 Feb 7, 2012

R T

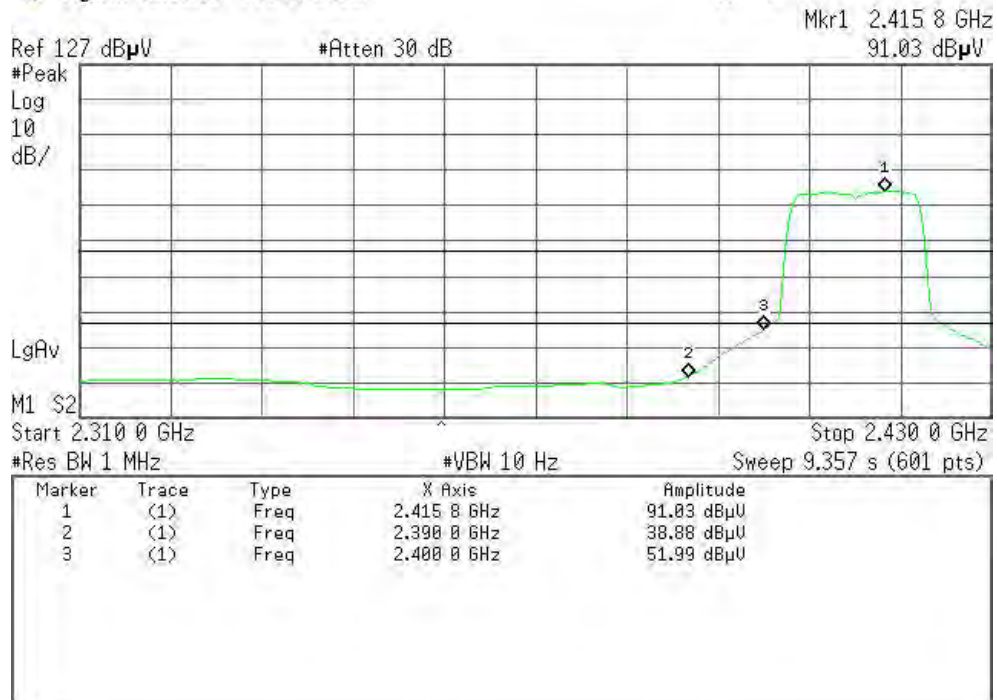


Detector mode: Average

Polarity: Vertical

Agilent 02:15:13 Feb 7, 2012

R T





Detector mode: Peak

Polarity: Horizontal

Agilent 02:16:37 Feb 7, 2012

R T

Mkr1 2.415 8 GHz
92.30 dBµV



Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.415 8 GHz	92.30 dBµV
2	(1)	Freq	2.390 0 GHz	47.28 dBµV
3	(1)	Freq	2.400 0 GHz	66.44 dBµV

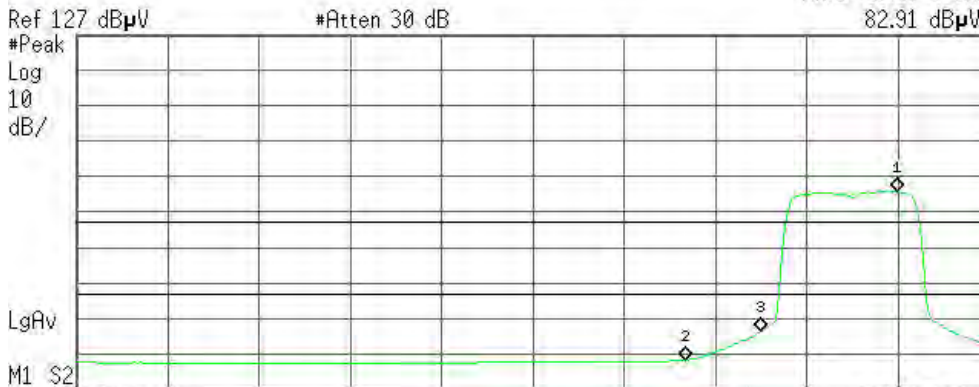
Detector mode: Average

Polarity: Horizontal

Agilent 02:20:18 Feb 7, 2012

R T

Mkr1 2.417 8 GHz
82.91 dBµV



Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.417 8 GHz	82.91 dBµV
2	(1)	Freq	2.390 0 GHz	35.32 dBµV
3	(1)	Freq	2.400 0 GHz	43.36 dBµV



Band Edges (CH High)

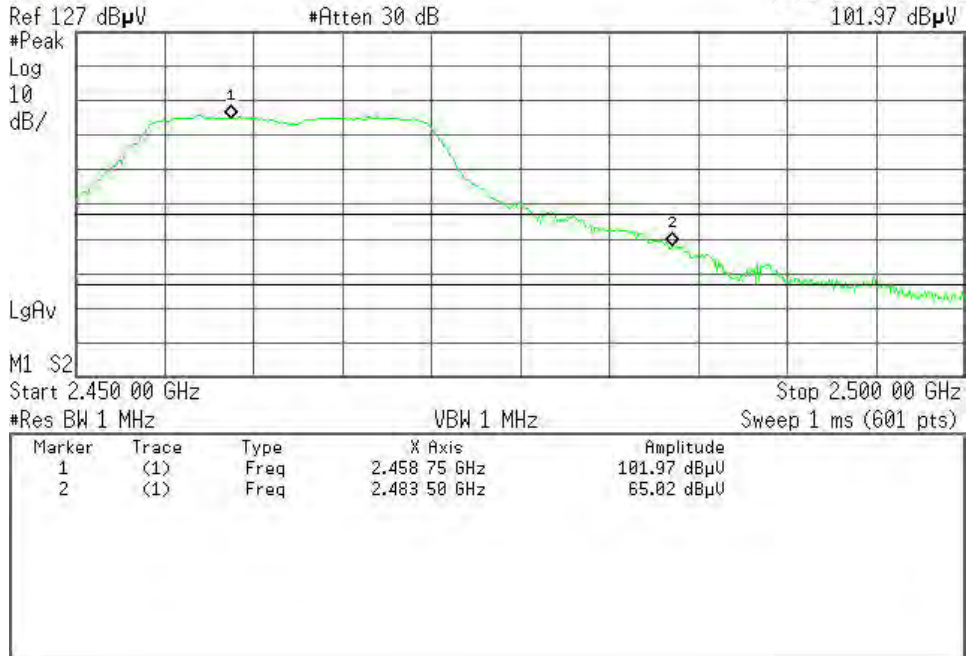
Detector mode: Peak

Polarity: Vertical

Agilent 02:09:08 Feb 7, 2012

R T

Mkr1 2.458 75 GHz
101.97 dBμV



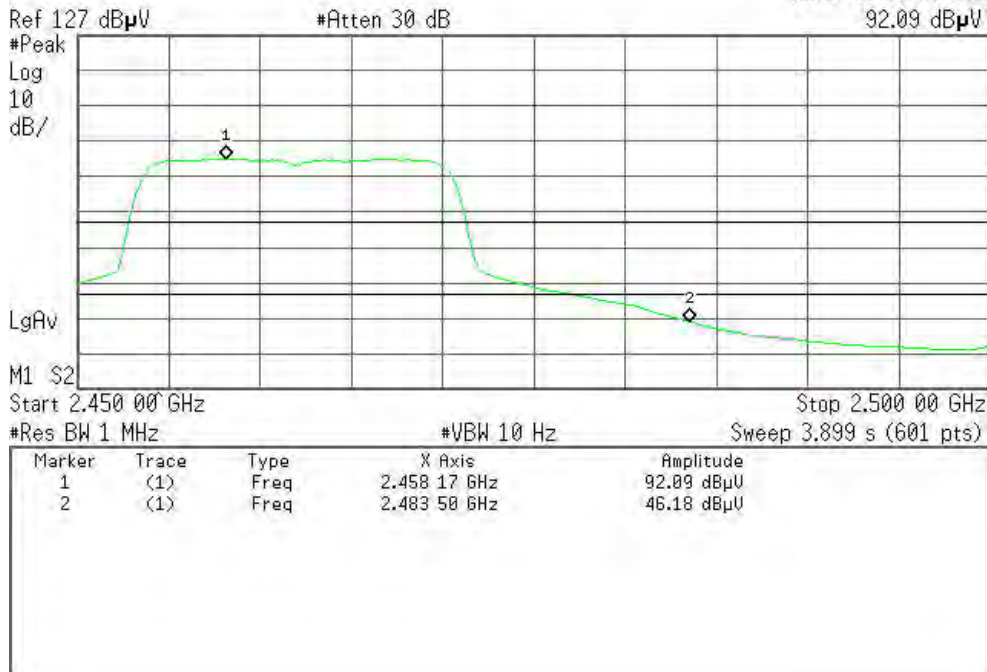
Detector mode: Average

Polarity: Vertical

Agilent 02:09:39 Feb 7, 2012

R T

Mkr1 2.458 17 GHz
92.09 dBμV





Detector mode: Peak

Polarity: Horizontal

Agilent 02:02:17 Feb 7, 2012

R T

Mkr1 2.457 00 GHz
93.75 dB μ V



M1 S2
 Start 2.450 00 GHz Stop 2.500 00 GHz
 #Res BW 1 MHz VBW 1 MHz Sweep 1 ms (601 pts)

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.457 00 GHz	93.75 dB μ V
2	(1)	Freq	2.483 50 GHz	53.51 dB μ V

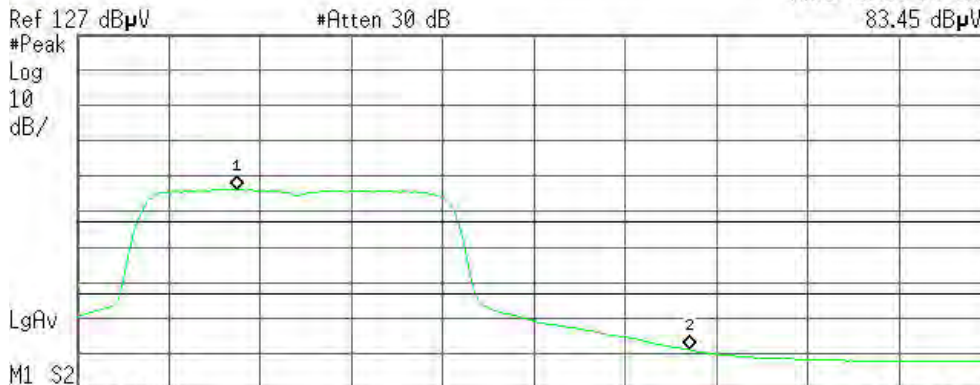
Detector mode: Average

Polarity: Horizontal

Agilent 02:02:50 Feb 7, 2012

R T

Mkr1 2.458 75 GHz
83.45 dB μ V



M1 S2
 Start 2.450 00 GHz Stop 2.500 00 GHz
 #Res BW 1 MHz #VBW 10 Hz Sweep 3.899 s (601 pts)

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.458 75 GHz	83.45 dB μ V
2	(1)	Freq	2.483 50 GHz	38.03 dB μ V



IEEE 802.11n HT20 MHz mode

Band Edges (CH Low)

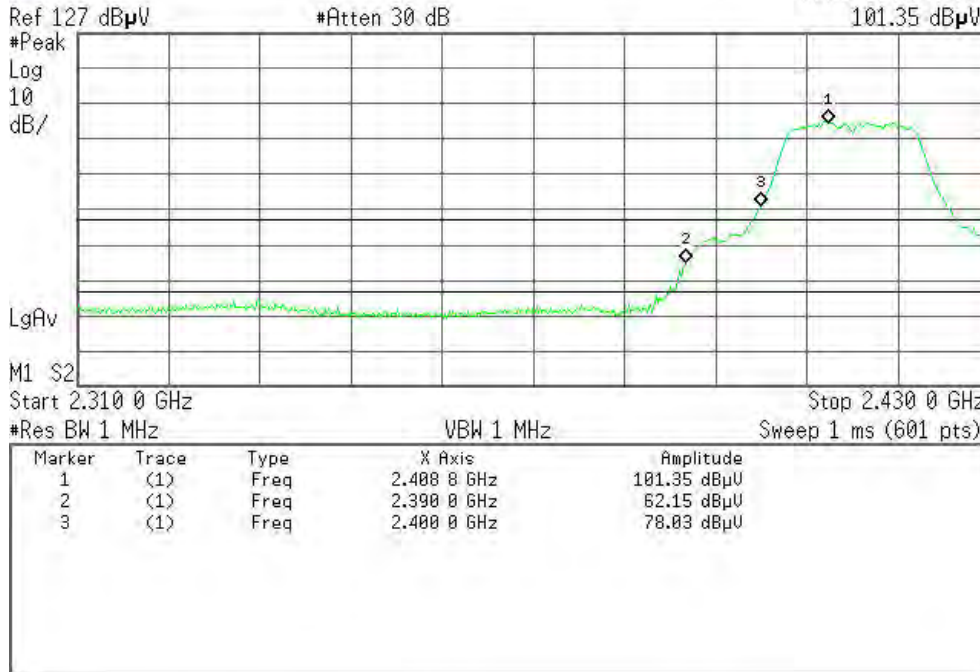
Detector mode: Peak

Polarity: Vertical

Agilent 03:35:39 Feb 7, 2012

R T

Mkr1 2.408 8 GHz
101.35 dBμV



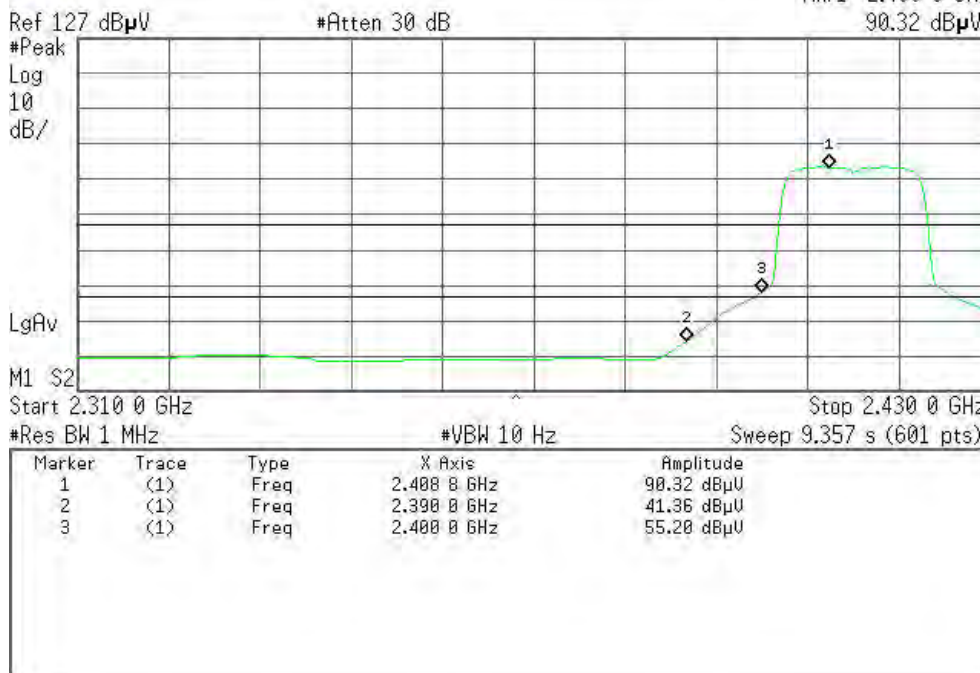
Detector mode: Average

Polarity: Vertical

Agilent 03:34:50 Feb 7, 2012

R T

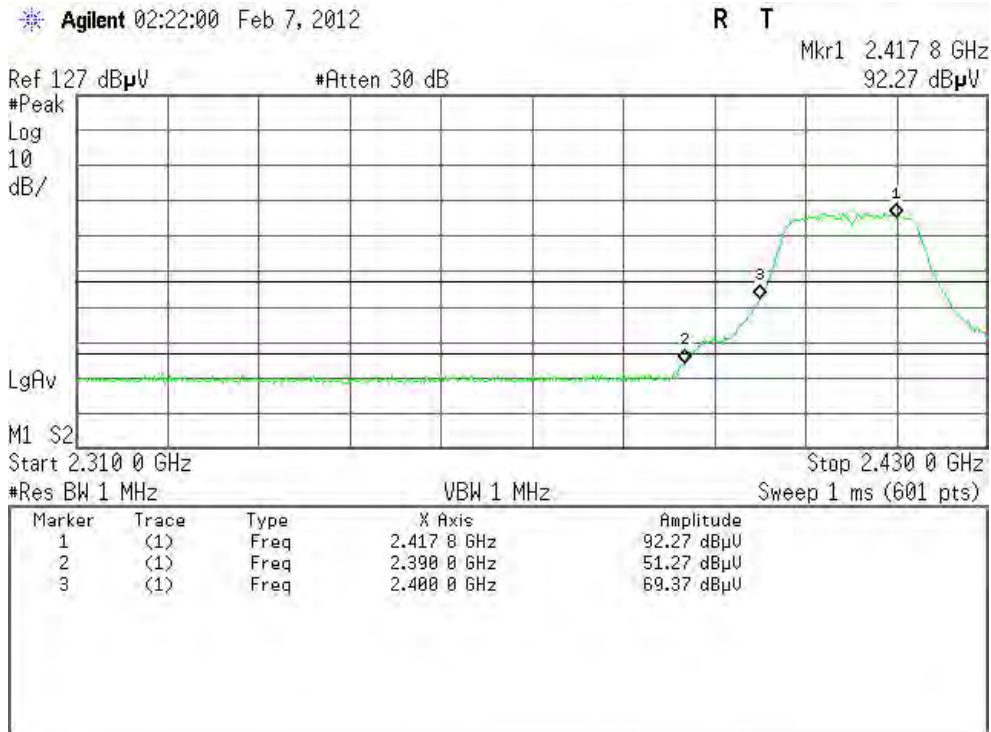
Mkr1 2.408 8 GHz
90.32 dBμV





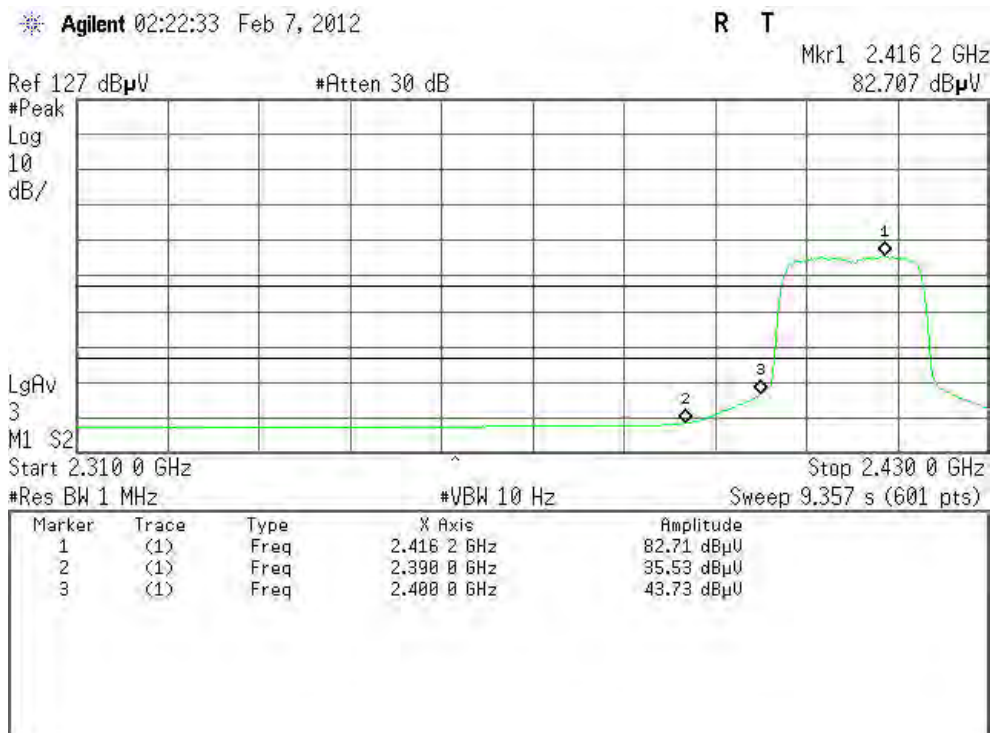
Detector mode: Peak

Polarity: Horizontal



Detector mode: Average

Polarity: Horizontal





Band Edges (CH High)

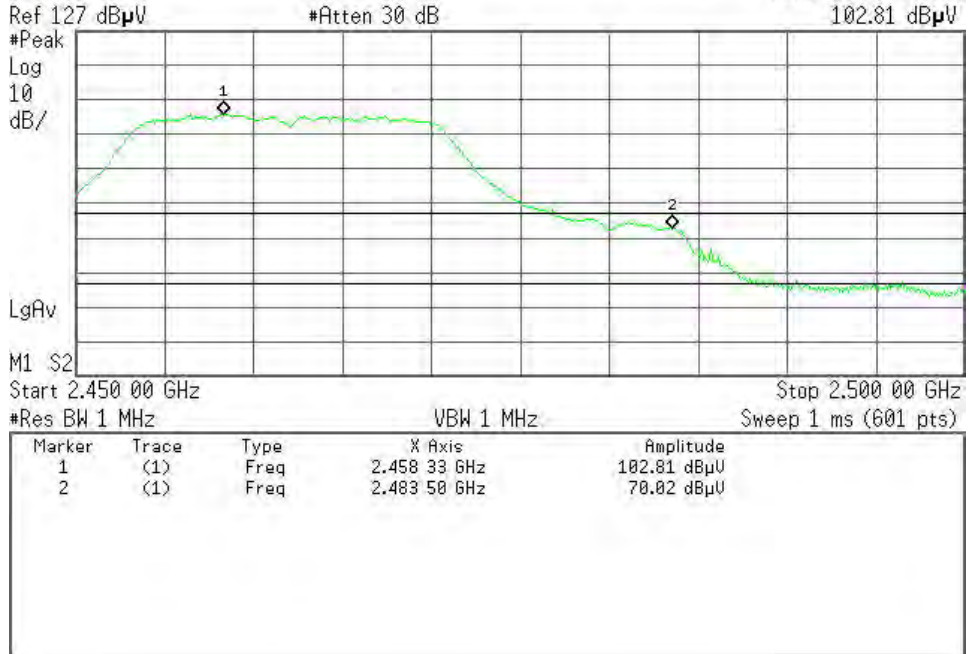
Detector mode: Peak

Polarity: Vertical

Agilent 03:44:59 Feb 7, 2012

R T

Mkr1 2.458 33 GHz
102.81 dBµV



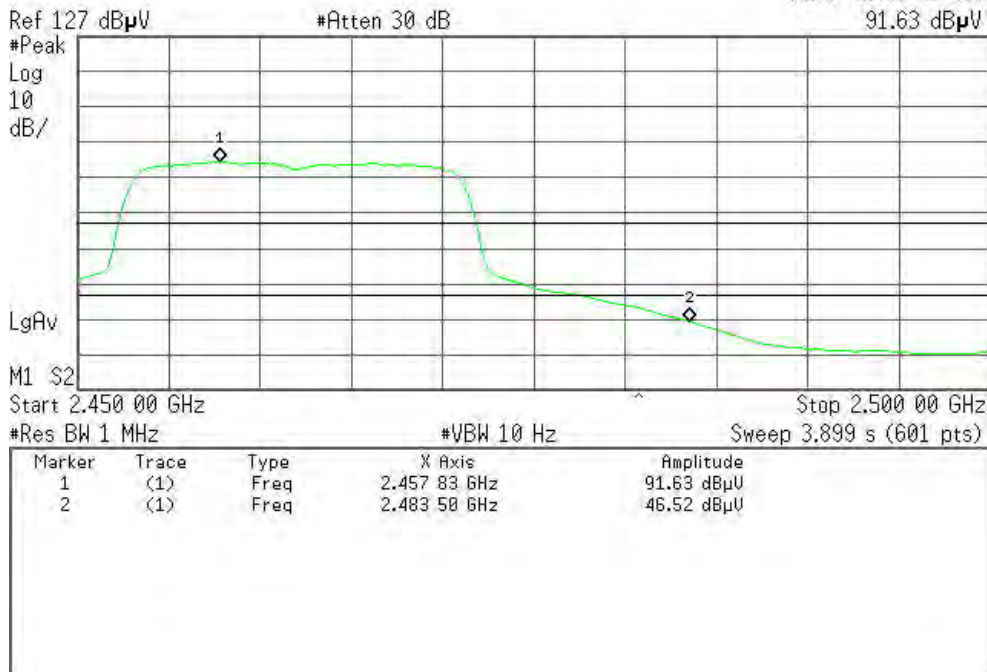
Detector mode: Average

Polarity: Vertical

Agilent 03:45:21 Feb 7, 2012

R T

Mkr1 2.457 83 GHz
91.63 dBµV





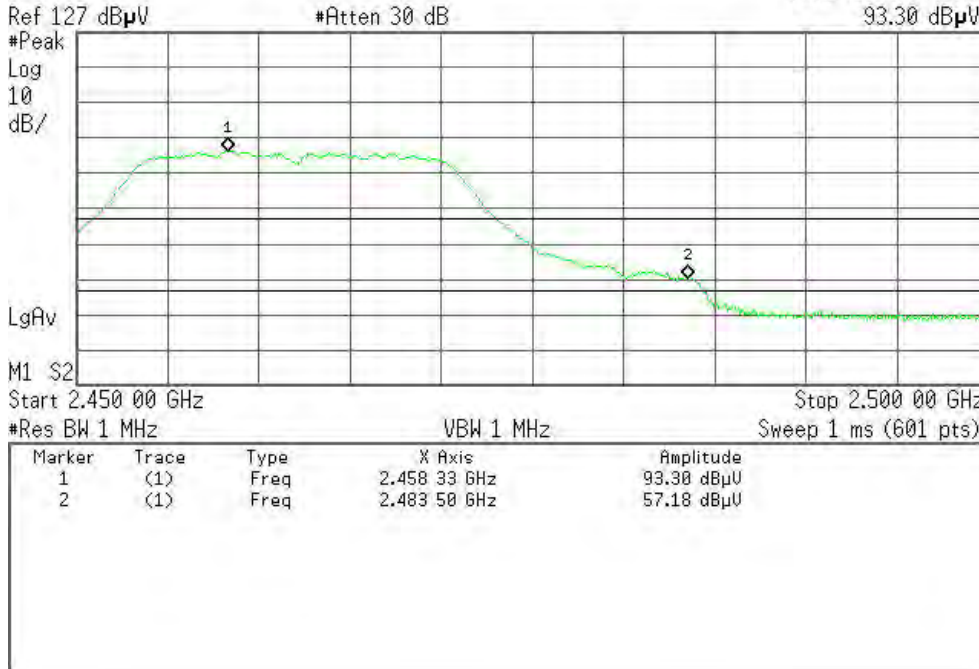
Detector mode: Peak

Polarity: Horizontal

Agilent 03:46:36 Feb 7, 2012

R T

Mkr1 2.458 33 GHz
93.30 dBμV



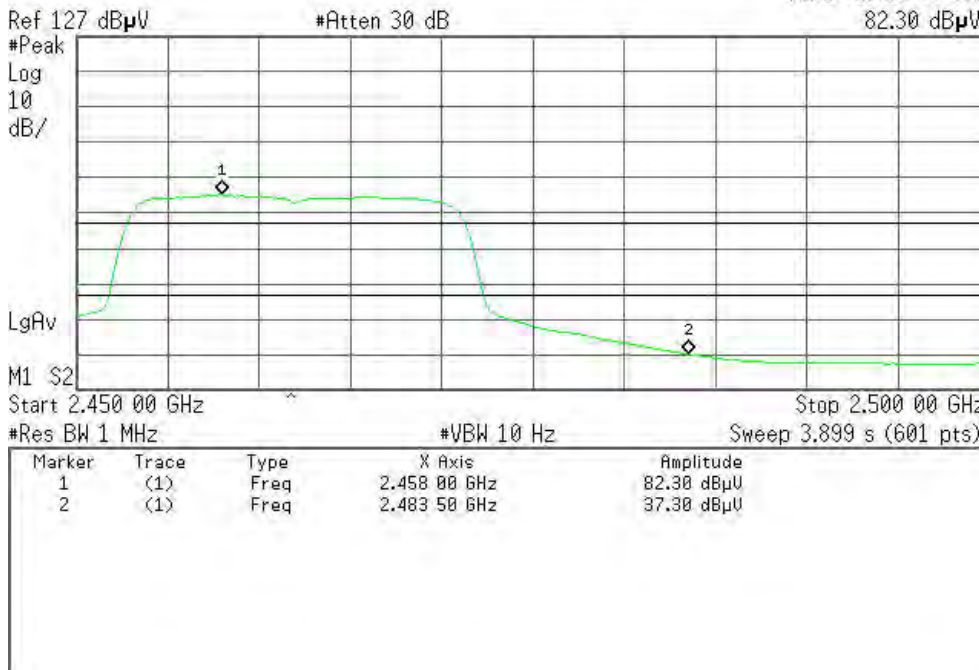
Detector mode: Average

Polarity: Horizontal

Agilent 03:47:02 Feb 7, 2012

R T

Mkr1 2.458 00 GHz
82.30 dBμV





IEEE 802.11n HT40 MHz mode

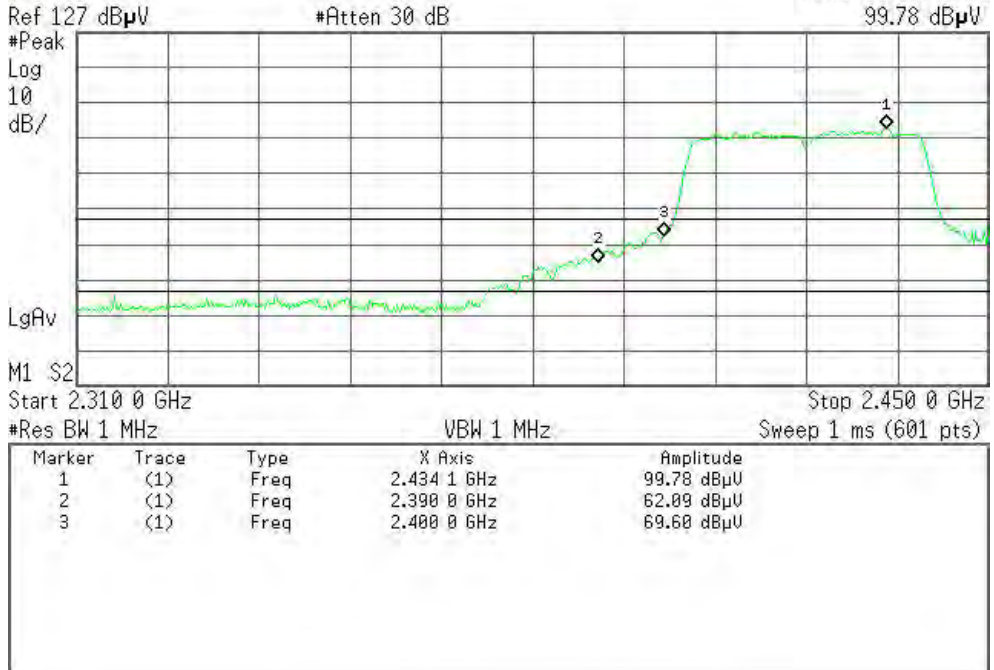
Band Edges (CH Low)

Detector mode: Peak

Polarity: Vertical

Agilent 04:07:13 Feb 7, 2012

R T

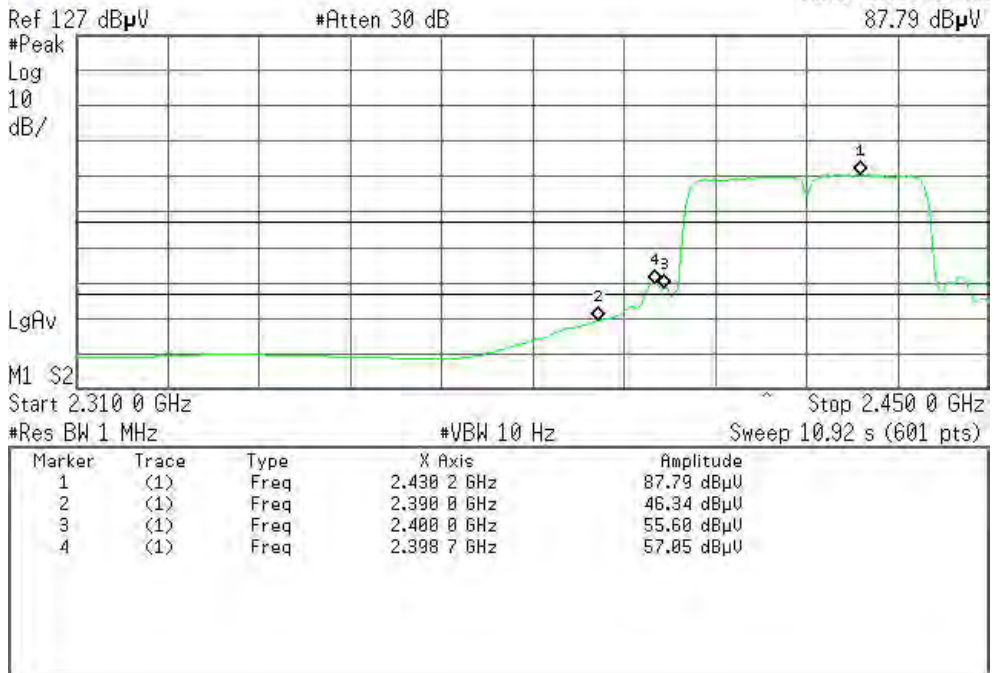


Detector mode: Average

Polarity: Vertical

Agilent 04:01:38 Feb 7, 2012

R T





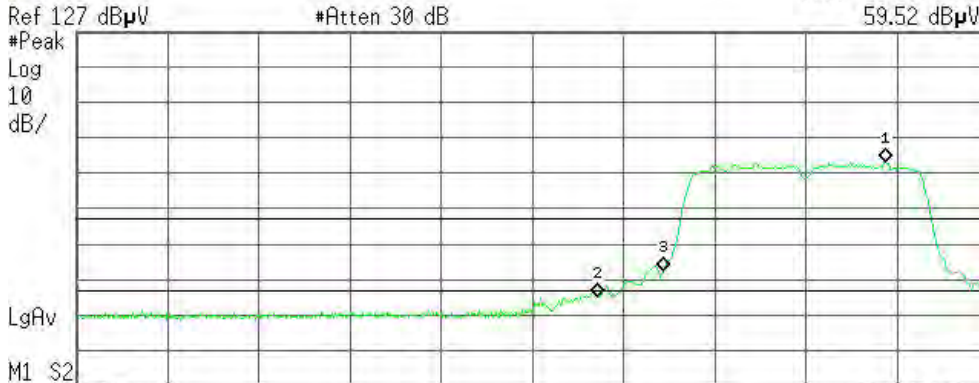
Detector mode: Peak

Polarity: Horizontal

Agilent 03:49:09 Feb 7, 2012

R T

Mkr3 2.400 0 GHz
59.52 dBµV



Ref 127 dBµV #Atten 30 dB

M1 S2

Start 2.310 0 GHz Stop 2.450 0 GHz

#Res BW 1 MHz VBW 1 MHz Sweep 20 ms (601 pts)

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.434 1 GHz	90.34 dBµV
2	(1)	Freq	2.390 0 GHz	52.26 dBµV
3	(1)	Freq	2.400 0 GHz	59.52 dBµV

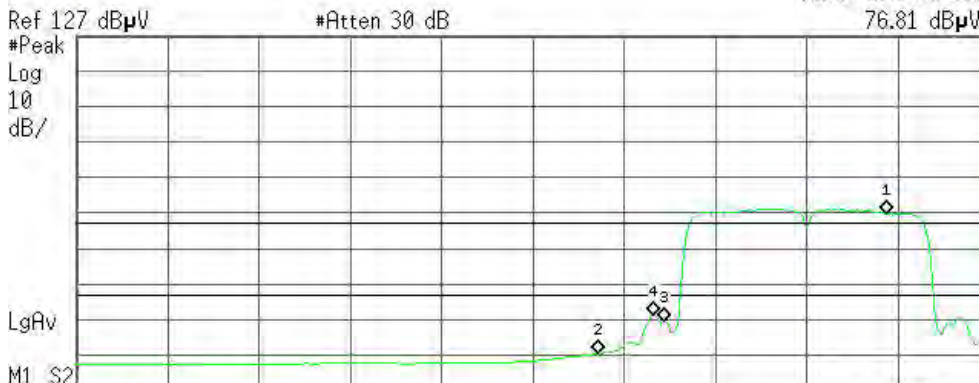
Detector mode: Average

Polarity: Horizontal

Agilent 03:50:35 Feb 7, 2012

R T

Mkr1 2.434 1 GHz
76.81 dBµV



Ref 127 dBµV #Atten 30 dB

M1 S2

Start 2.310 0 GHz Stop 2.450 0 GHz

#Res BW 1 MHz #VBW 10 Hz Sweep 10.92 s (601 pts)

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.434 1 GHz	76.81 dBµV
2	(1)	Freq	2.390 0 GHz	37.45 dBµV
3	(1)	Freq	2.400 0 GHz	46.34 dBµV
4	(1)	Freq	2.398 4 GHz	48.11 dBµV



Band Edges (CH High)

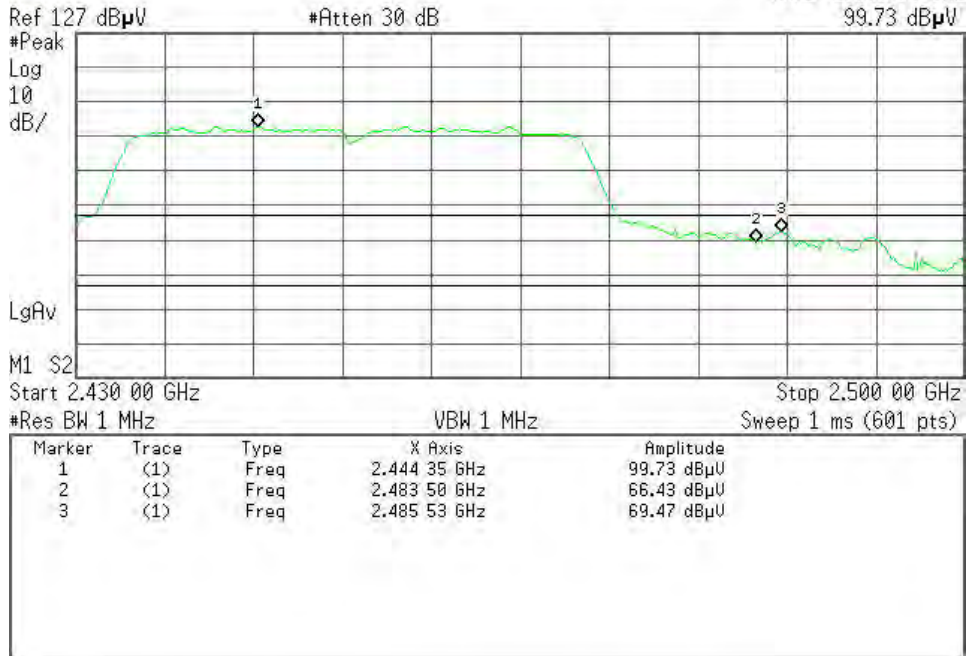
Detector mode: Peak

Polarity: Vertical

Agilent 03:55:51 Feb 7, 2012

R T

Mkr1 2.444 35 GHz
99.73 dBμV



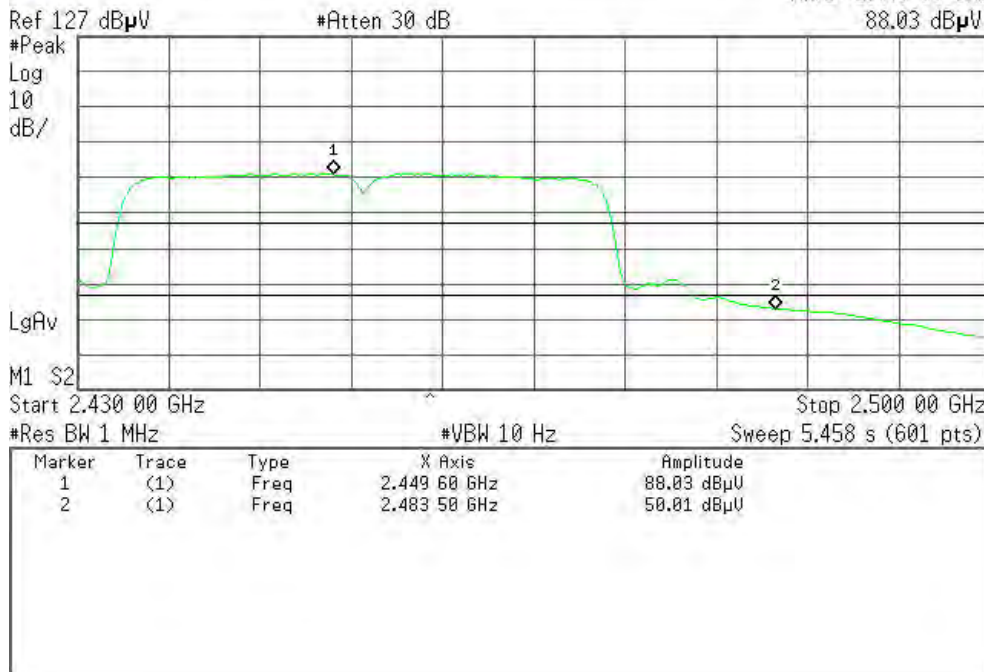
Detector mode: Average

Polarity: Vertical

Agilent 03:56:18 Feb 7, 2012

R T

Mkr1 2.449 60 GHz
88.03 dBμV





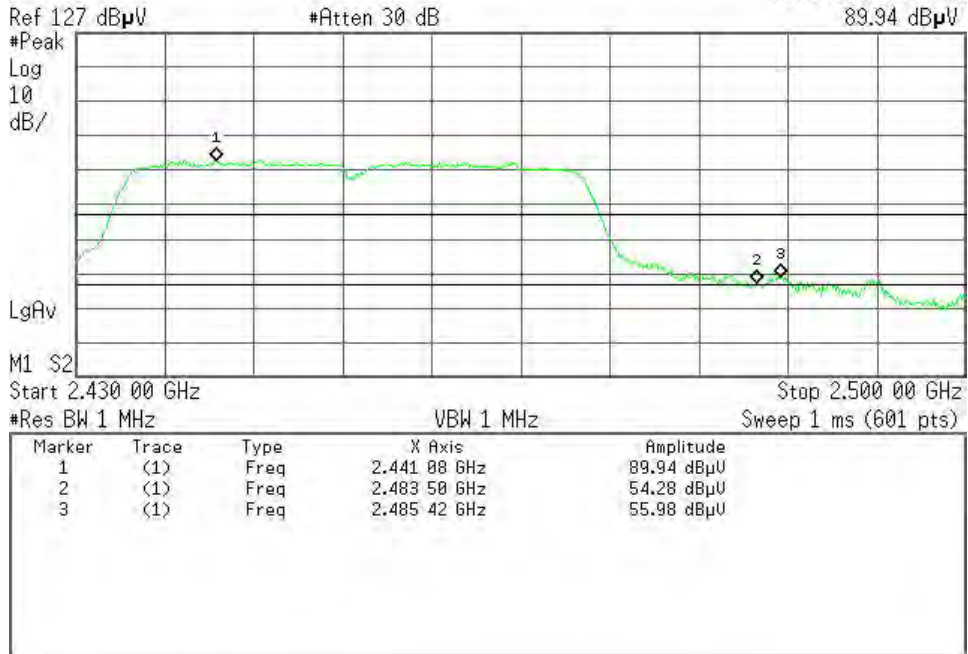
Detector mode: Peak

Polarity: Horizontal

Agilent 03:53:15 Feb 7, 2012

R T

Mkr1 2.441 08 GHz
89.94 dBµV



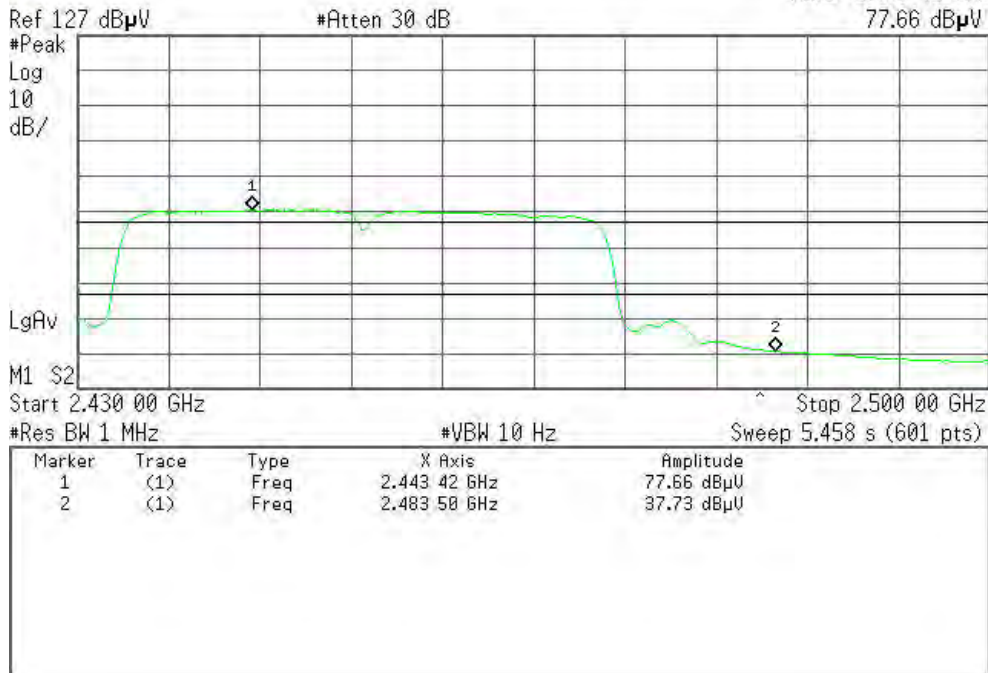
Detector mode: Average

Polarity: Horizontal

Agilent 03:54:04 Feb 7, 2012

R T

Mkr1 2.443 42 GHz
77.66 dBµV





7.6. PEAK POWER SPECTRAL DENSITY MEASUREMENT

7.6.1. LIMITS

According to §15.247(e), 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.

According to §15.247(f), the digital modulation operation of the hybrid system, with the frequency hopping turned off, shall comply with the power density requirements of paragraph (d) of this section.

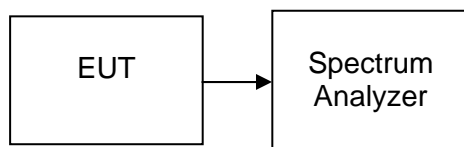
7.6.2. TEST INSTRUMENTS

Name of Equipment	Manufacturer	Model	Serial Number	Last Calibration	Calibration Due
Spectrum Analyzer	Agilent	E4446A	US44300399	03/21/2011	03/21/2012

7.6.3. TEST PROCEDURES (please refer to measurement standard)

1. Place the EUT on the table and set it in transmitting mode. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
2. Set the spectrum analyzer as RBW = 3kHz, VBW = 10kHz, Span = 500kHz, Sweep=100s
3. Record the max. reading.
4. Repeat the above procedure until the measurements for all frequencies are completed.

7.6.4. TEST SETUP





7.6.5. TEST RESULTS

No non-compliance noted

Test Data

Test mode: IEEE 802.11b

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Test Result
Low	2412	-6.79	8.00	PASS
Mid	2437	-7.49		PASS
High	2462	-5.55		PASS

Test mode: IEEE 802.11g

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Test Result
Low	2412	-15.79	8.00	PASS
Mid	2437	-15.65		PASS
High	2462	-15.75		PASS

Test mode: IEEE 802.11n HT20 MHz

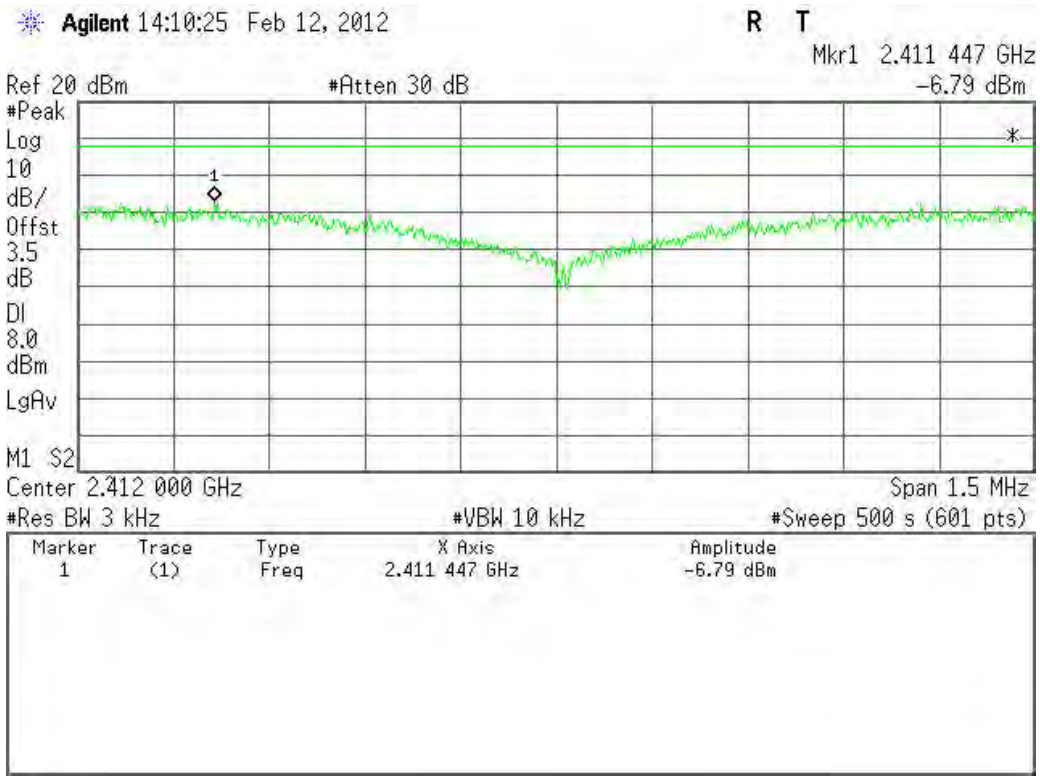
Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Test Result
Low	2412	-15.50	8.00	PASS
Mid	2437	-15.49		PASS
High	2462	-15.33		PASS

Test mode: IEEE 802.11n HT40 MHz

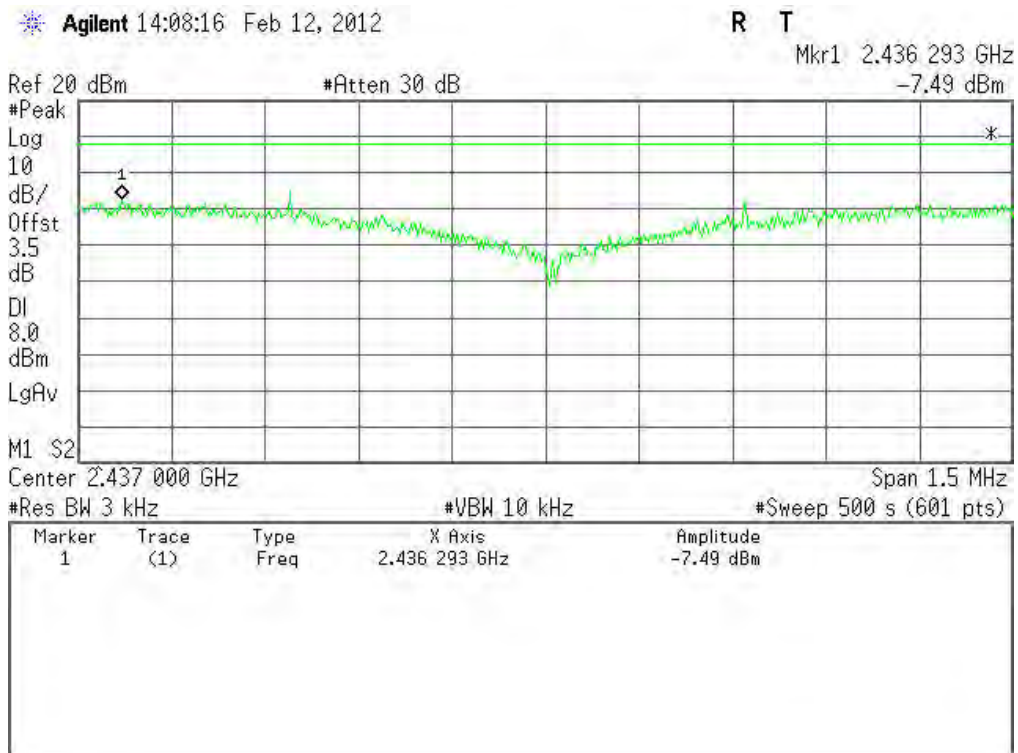
Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Test Result
Low	2422	-19.64	8.00	PASS
Mid	2437	-19.60		PASS
High	2452	-20.34		PASS



Test Plot IEEE 802.11b mode
PPSD (CH Low)

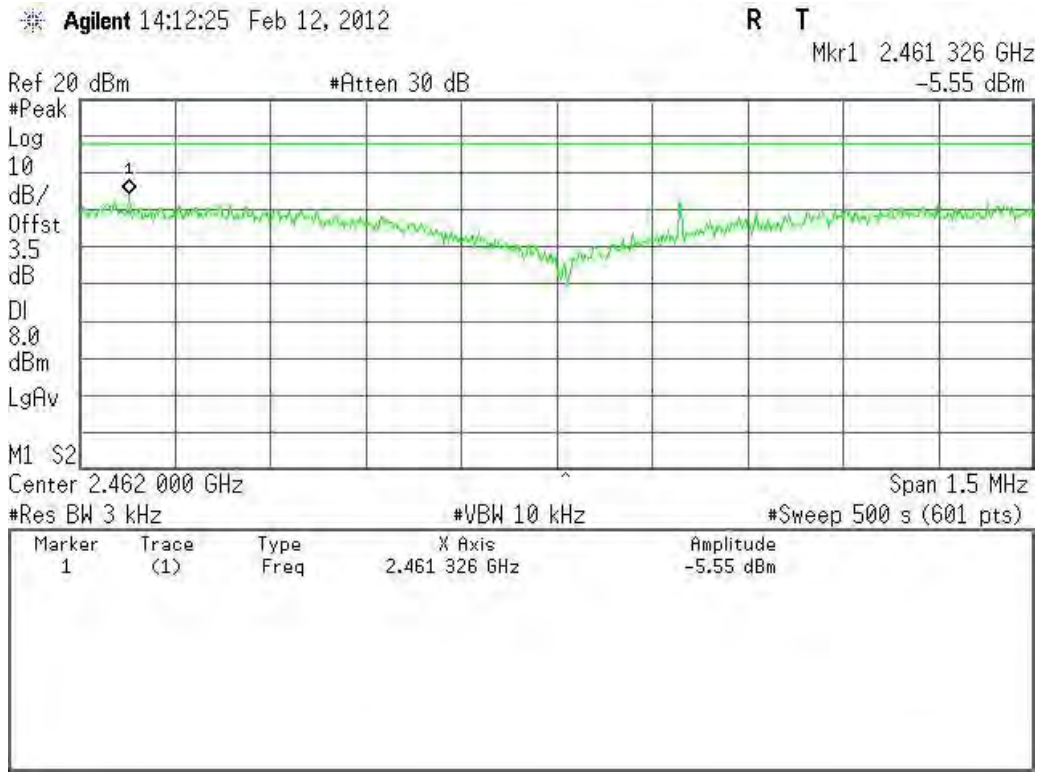


PPSD (CH Mid)



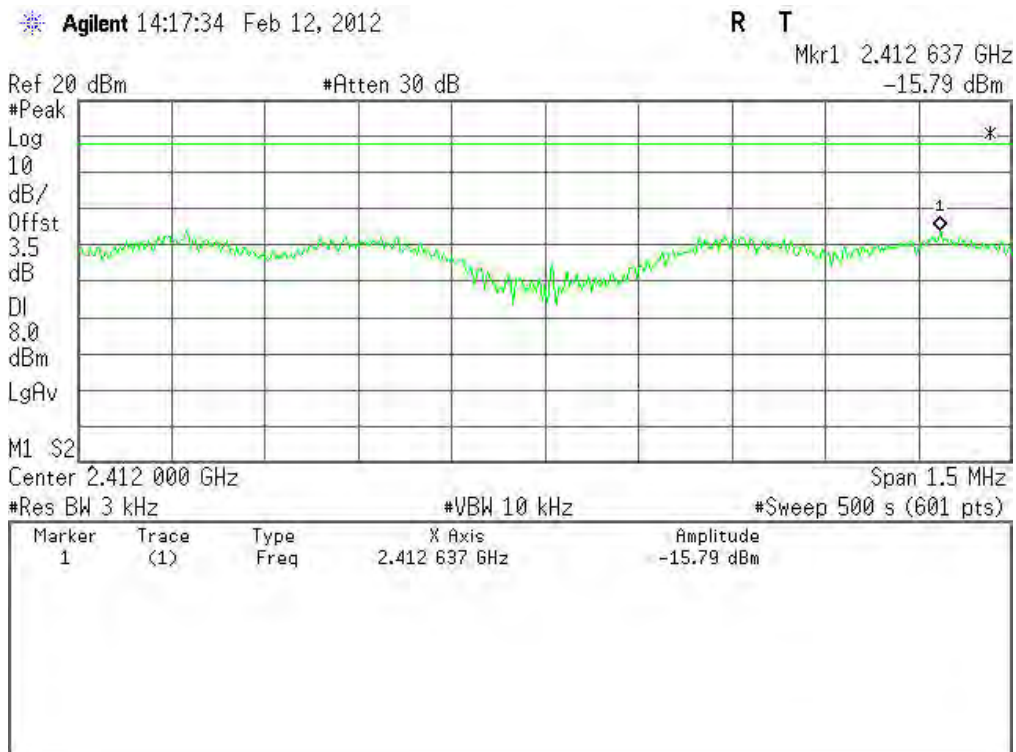


PPSD (CH High)



IEEE 802.11g mode

PPSD (CH Low)



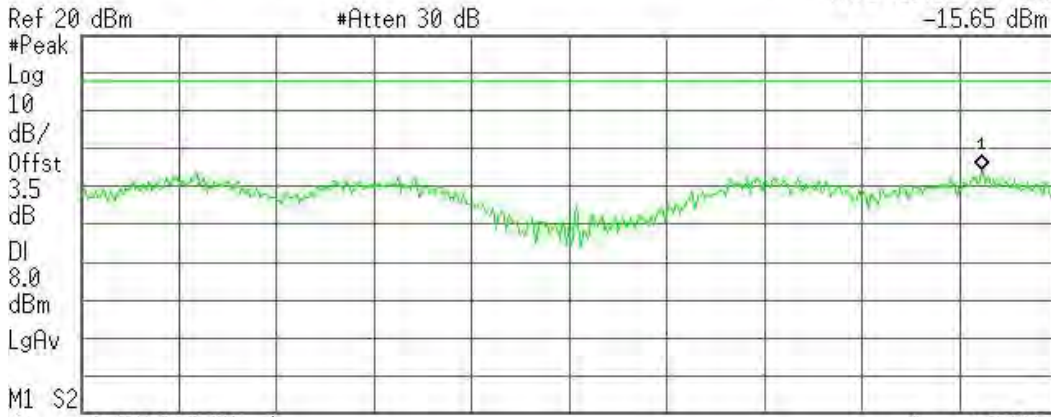


PPSD (CH Mid)

Agilent 14:15:42 Feb 12, 2012

R T

Mkr1 2.437 637 GHz
-15.65 dBm



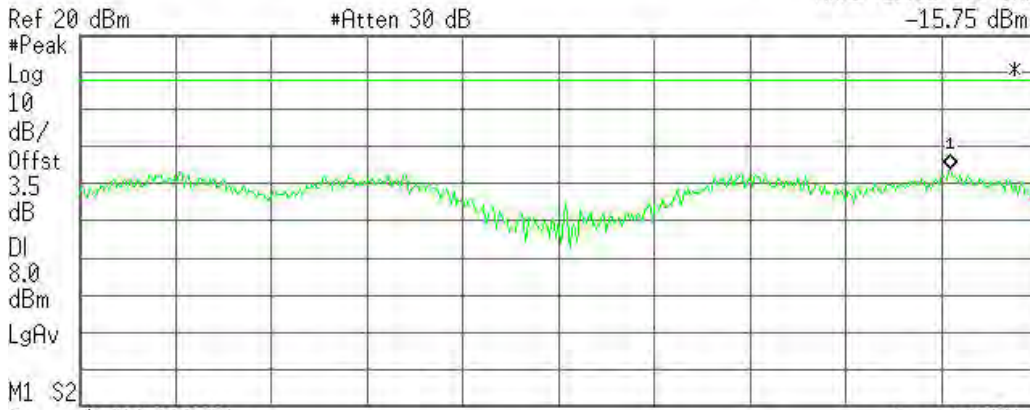
Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.437 637 GHz	-15.65 dBm

PPSD (CH High)

Agilent 14:14:12 Feb 12, 2012

R T

Mkr1 2.462 638 GHz
-15.75 dBm



Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.462 638 GHz	-15.75 dBm



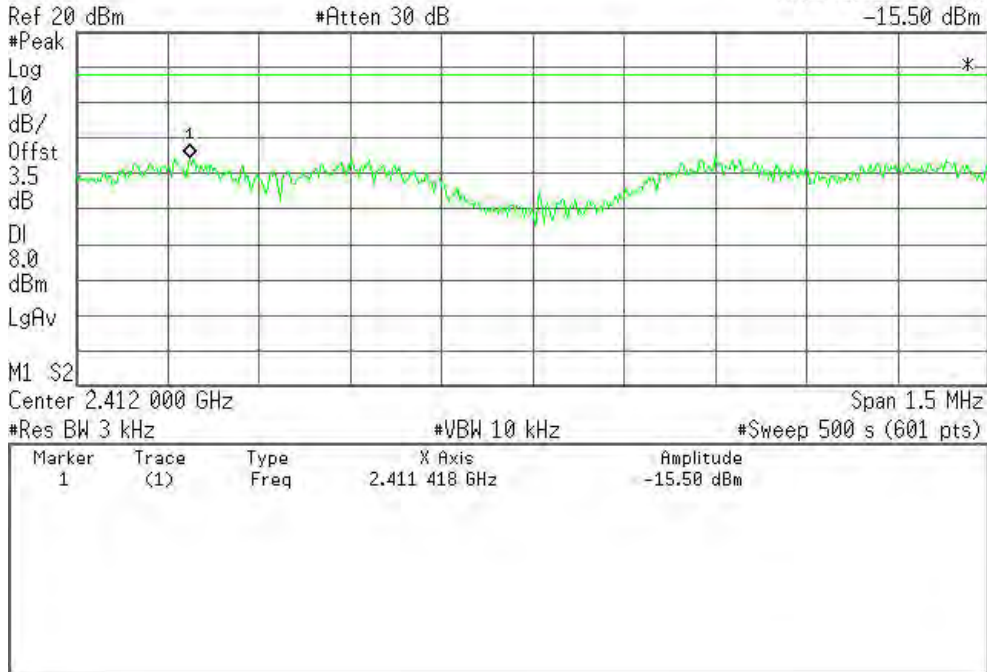
IEEE 802.11n HT20 MHz mode

PPSD (CH Low)

Agilent 14:19:29 Feb 12, 2012

R T

Mkr1 2.411 418 GHz
-15.50 dBm

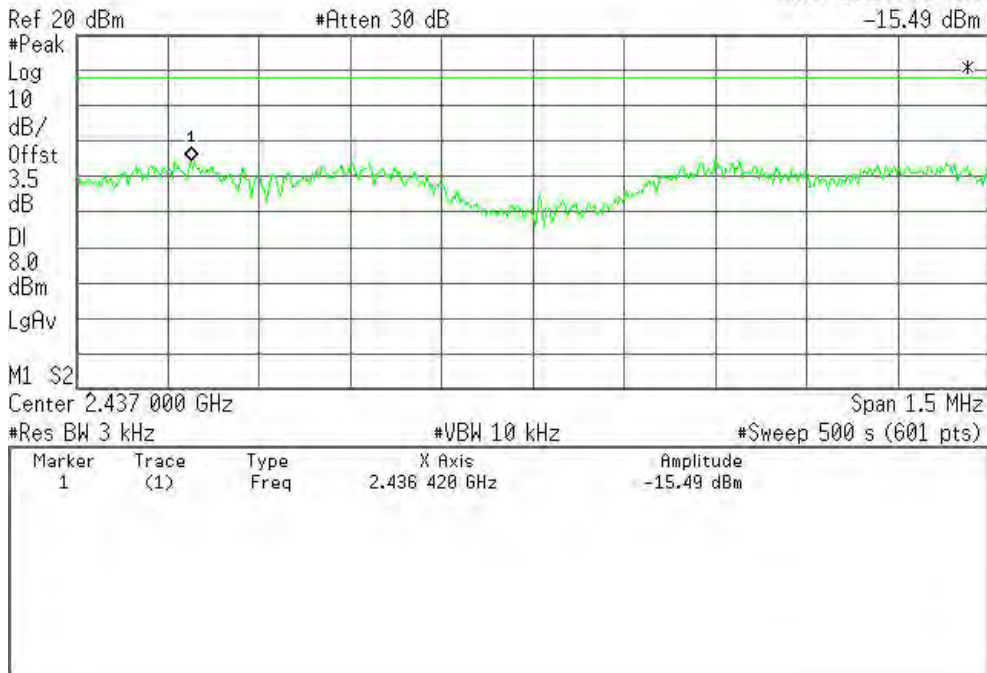


PPSD (CH Mid)

Agilent 14:21:38 Feb 12, 2012

R T

Mkr1 2.436 420 GHz
-15.49 dBm



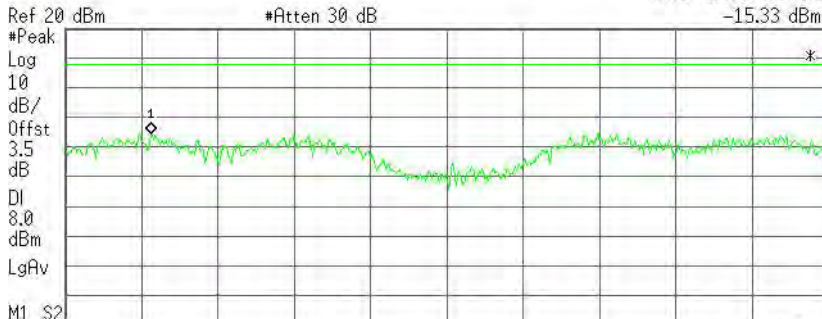


PPSD (CH High)

Agilent 14:26:40 Feb 12, 2012

R T

Mkr1 2.461 417 GHz
-15.33 dBm



Center 2.462 000 GHz Span 1.5 MHz
#Res BW 3 kHz #VBW 10 kHz #Sweep 500 s (601 pts)

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.461 417 GHz	-15.33 dBm

IEEE 802.11n HT40 MHz mode

PPSD (CH Low)

Agilent 14:28:56 Feb 12, 2012

R T

Mkr1 2.422 642 GHz
-19.64 dBm

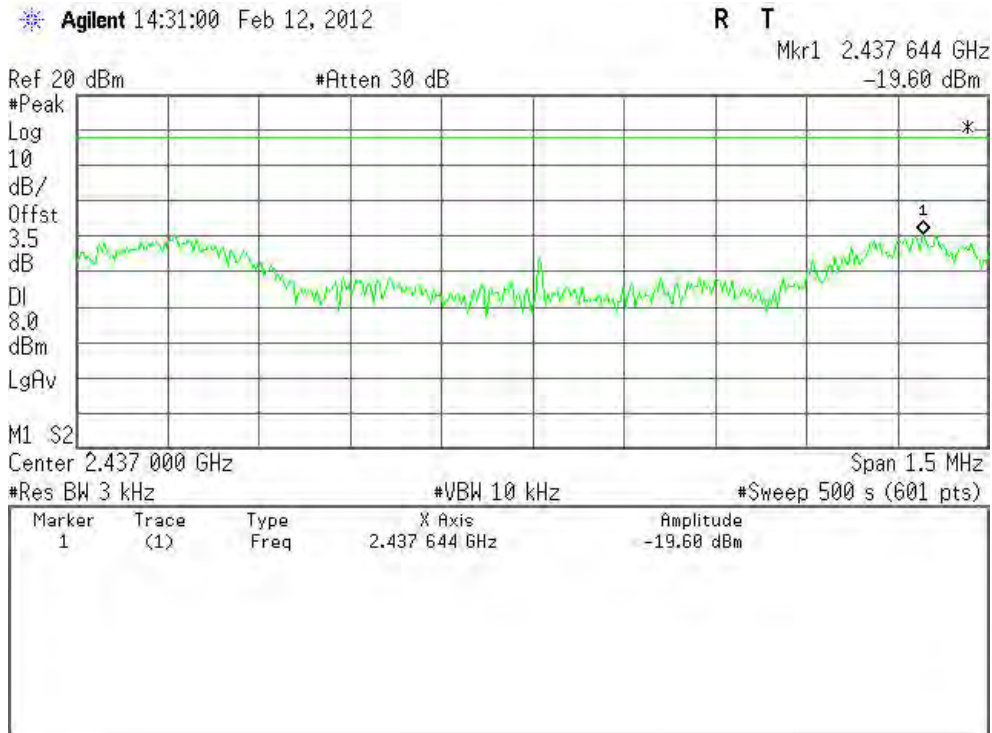


Center 2.422 000 GHz Span 1.5 MHz
#Res BW 3 kHz #VBW 10 kHz #Sweep 500 s (601 pts)

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.422 642 GHz	-19.64 dBm



PPSD (CH Mid)



PPSD (CH High)

