



FCC TEST REPORT

for

Automotive Diagnosis Computer

MODEL: X-431 PAD

Brand: LAUNCH

Test Report Number:

SZ120619B03-RP

Issued Date: September 25, 2012

Issued for

Launch Tech Co., Ltd.

Launch Industrial Park, North of Wuhe Rd., Banxuegang, Longgang,
Shenzhen, China

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	SZ120619B03-RP	Initial Issue	ALL	Amay Tang



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1 TEST CERTIFICATION

Product	Automotive Diagnosis Computer
Model	X-431 PAD
Brand	LAUNCH
Tested	June 19~ September 13, 2012
Applicant	Launch Tech Co., Ltd. Launch Industrial Park, North of Wuhe Rd., Banxuegang, Longgang, Shenzhen, China
Manufacturer	Launch Tech Co., Ltd. Launch Industrial Park, North of Wuhe Rd., Banxuegang, Longgang, Shenzhen, China

APPLICABLE STANDARDS	
STANDARD	TEST RESULT
FCC 47 CFR Part 15 Subpart C	No non-compliance noted

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:

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

Reviewed by:

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



2 EUT DESCRIPTION

Product	Automotive Diagnosis Computer
Brand	LAUNCH
Model Number	X-431 PAD
Model Discrepancy	N/A
Serial Number	SZ120619B03-RP
Received Date	June 19, 2012
Power Supply	DC 12V supplied by the adapter
Adapter Manufacturer / Model No.	WT1203000 I/P: 100-240Vac, 50/60Hz, 1.60A O/P: 12Vdc, 3.00A, DC Output Cable: Unshielded,2.70m
Frequency Range	IEEE 802.11b/g: 2412 ~ 2462 MHz IEEE 802.11n HT20 : 2412 ~ 2462 MHz IEEE 802.11n HT40 : 2422MHz~ 2452MHz Bluetooth: 2402 ~ 2480 MHz
Transmit Power	IEEE 802.11b mode: 10.05dBm IEEE 802.11g mode: 9.14dBm IEEE 802.11n HT20 MHz mode: 9.01dBm IEEE 802.11n HT40 MHz mode: 8.31dBm Bluetooth: GFSK : 12.25dBm 8DPSK :10.40dBm
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) FHSS(GFSK for 1Mbps, $\pi/4$ -DQPSK for 2Mbps, 8DPSK for 3Mbps)
Transmit Data Rate	IEEE 802.11b: 11Mbps(CCK) with fall back rates of 5.5/2/1Mbps IEEE 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 Bluetooth: (GFSK for 1Mbps, $\pi/4$ -DQPSK for 2Mbps, 8DPSK for 3Mbps)
Channels Spacing	IEEE 802.11b/g , IEEE 802.11n HT20/HT40 : 5MHz Bluetooth: 1MHz
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 Bluetooth: 79 Channels
Antenna Specification	WIFI: Linear antenna with 3.0dBi gain (Max) Bluetooth: Linear antenna with 3.0dBi 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: **XUJX431PAD** filing to comply with Section 15.207, 15.209 and 15.247 of the FCC Part 15, Subpart C Rules.



3 TEST METHODOLOGY

3.1. 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: FULL SYSYTEM+HDMI OUTPUT Mode 2: FULL SYSYTEM+VGA OUTPUT	Mode 1
Radiated Emission	Mode 1: TX	Mode 1

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 TX mode only, and power line conducted emission below 30MHz, which worst case was in FULL SYSYTEM+HDMI OUTPUT mode.

WIFI:

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.

Bluetooth:

Channel Low (2402MHz) , Mid (2441MHz) and High (2480MHz) were chosen for full testing for GFSK and 8DPSK.



4 SETUP OF EQUIPMENT UNDER TEST

4.1. 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	Brand	Data Cable	Power Cord
1	Mouse	WB365PA# AB2	2HT JMB101178417	N/A	DELL	Unshielded, 1.80m	N/A
2	Monitor	CT2420LB	CN-OUTTDZ-7 4261-110-2D5U	N/A	DELL	Shielded, 1.50m	Unshielded, 1.60m
3	Keyboard	SK-8115	CN-0DJ313-71 616-03P-04SG	N/A	N/A	Unshielded, 1.80m	N/A
4.	Earphone	N/A	N/A	N/A	N/A	Unshielded, 2.00m	N/A

Note: Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use

4.2. CONFIGURATION OF SYSTEM UNDER TEST

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



5 FACILITIES AND ACCREDITATIONS

5.1. FACILITIES

All measurement facilities used to collect the measurement data are located at
**No.10-1 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."

5.2. 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>

5.3. 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.



6 FCC PART 15.247 REQUIREMENTS

6.1. POWER LINE CONDUCTED EMISSIONS MEASUREMENT

6.1.1. 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 μ H/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 (dB μ V)	
	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.

6.1.2. TEST INSTRUMENTS

Conducted Emission Test Site					
Name of Equipment	Manufacturer	Model Number	Serial Number	Last Calibration	Due Calibration
ESCI EMI TEST RECEIVER.ESCI	ROHDE&SCHWARZ	ESCI	100783	03/17/2012	03/17/2013
LISN(EUT)	SCHAFFNER	NNB42	2001/001	03/19/2012	03/19/2013
LISN	EMCO	3825/2	8901-1459	03/19/2012	03/19/2013
Temp. / Humidity Meter	VICTOR	HTC-1	2	03/20/2012	03/20/2013
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.

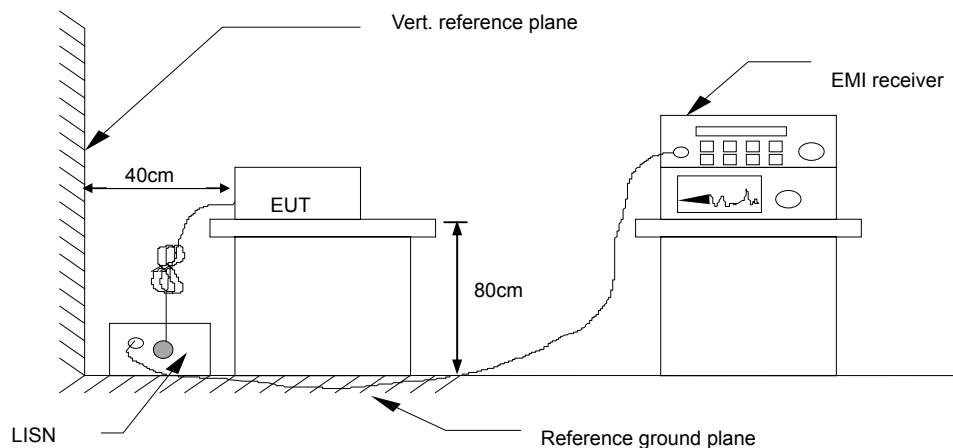


6.1.3. TEST PROCEDURES (please refer to measurement standard)

- 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.



6.1.4. TEST SETUP



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

6.1.5. 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
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)



6.1.6. TEST RESULTS

Model No.	X-431 PAD				RBW,VBW	9 kHz		
Environmental Conditions	22°C, 45% 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	49.73	25.26	0.52	50.25	25.78	65.99	56.00	-15.74	-30.22	Pass
0.2020	47.47	32.04	0.31	47.78	32.35	63.52	53.53	-15.74	-21.18	Pass
0.6340	35.54	24.71	0.40	35.94	25.11	56.00	46.00	-20.06	-20.89	Pass
3.5940	33.12	15.55	0.50	33.62	16.05	56.00	46.00	-22.38	-29.95	Pass
17.2060	33.11	19.63	0.70	33.81	20.33	60.00	50.00	-26.19	-29.67	Pass
24.0020	28.44	25.99	0.71	29.15	26.70	60.00	50.00	-30.85	-23.30	Pass

REMARKS: L1 = Line One (Live Line)

Model No.	X-431 PAD				RBW,VBW	9 kHz		
Environmental Conditions	22°C, 45% 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)
0.1500	49.43	21.17	0.45	49.88	21.62	65.99	56.00	-16.11	-34.38	Pass
0.2060	46.45	30.27	0.49	46.94	30.76	63.36	53.37	-16.42	-22.61	Pass
0.6340	34.59	23.43	0.56	35.15	23.99	56.00	46.00	-20.85	-22.01	Pass
1.3779	26.20	13.33	0.62	26.82	13.95	56.00	46.00	-29.18	-32.05	Pass
3.4740	30.29	14.55	0.60	30.89	15.15	56.00	46.00	-25.11	-30.85	Pass
16.7180	32.64	18.81	0.66	33.30	19.47	60.00	50.00	-26.70	-30.53	Pass

REMARKS: L2 = Line Two (Neutral Line)



6.2. SPURIOUS EMISSIONS MEASUREMENT

6.2.1. LIMITS OF CONDUCTED EMISSIONS MEASUREMENT

§15.247(d) specifies that in any 100 kHz bandwidth outside of the authorized frequency band, the power shall be attenuated according to the following conditions:

If the peak output power procedure is used to measure the fundamental emission power to demonstrate compliance to 15.247(b)(3) requirements, then the peak conducted output power measured within any 100 kHz outside the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum measured in-band peak PSD level.

If the average output power procedure is used to measure the fundamental emission power to demonstrate compliance to 15.247(b)(3) requirements, then the power in any 100 kHz outside of the authorized frequency band shall be attenuated by at least 30 dB relative to the maximum measured in-band average PSD level.

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)).

6.2.2. TEST INSTRUMENTS

Name of Equipment	Manufacturer	Model	Serial Number	Last Calibration	Due Calibration
Spectrum Analyzer	Agilent	E4446A	US44300399	03/19/2012	03/19/2013

6.2.3. 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 300 kHz.

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



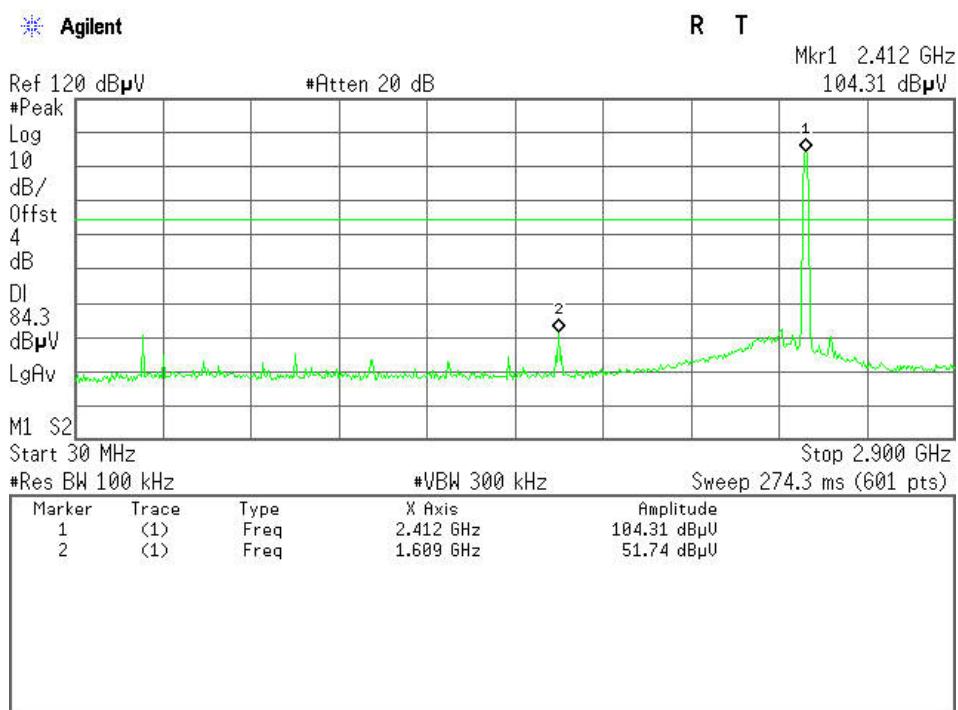
6.2.4. TEST RESULTS

WIFI

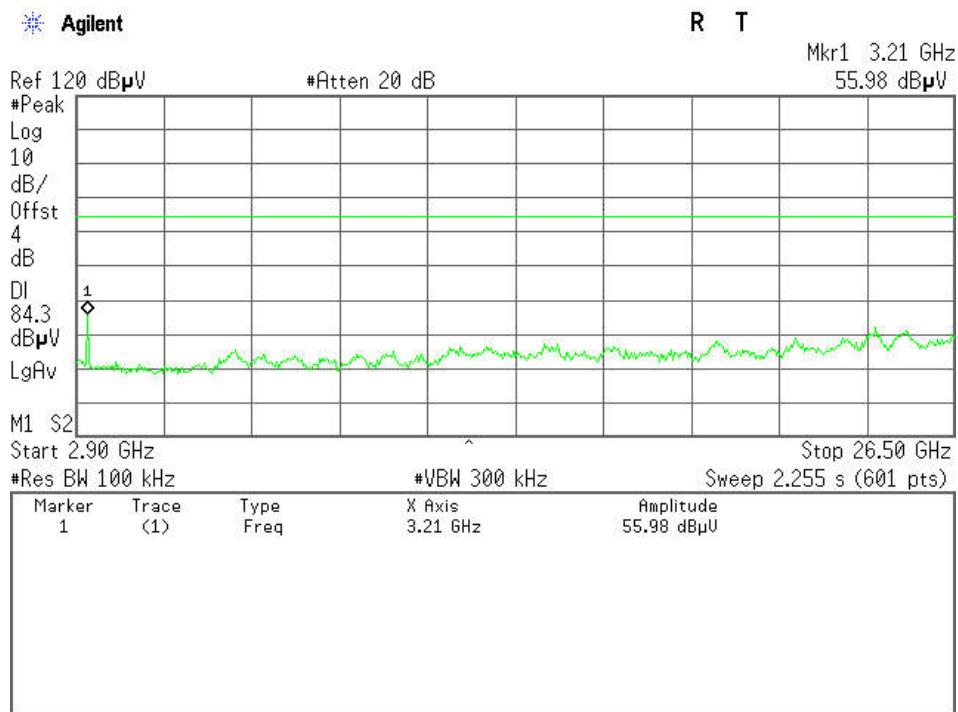
Test Plot

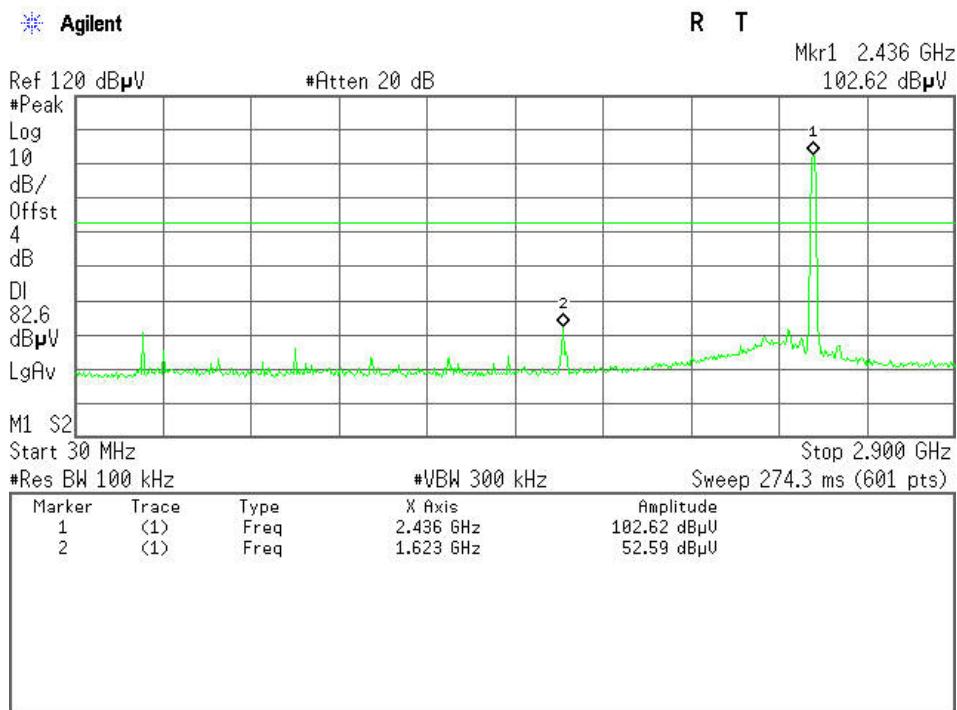
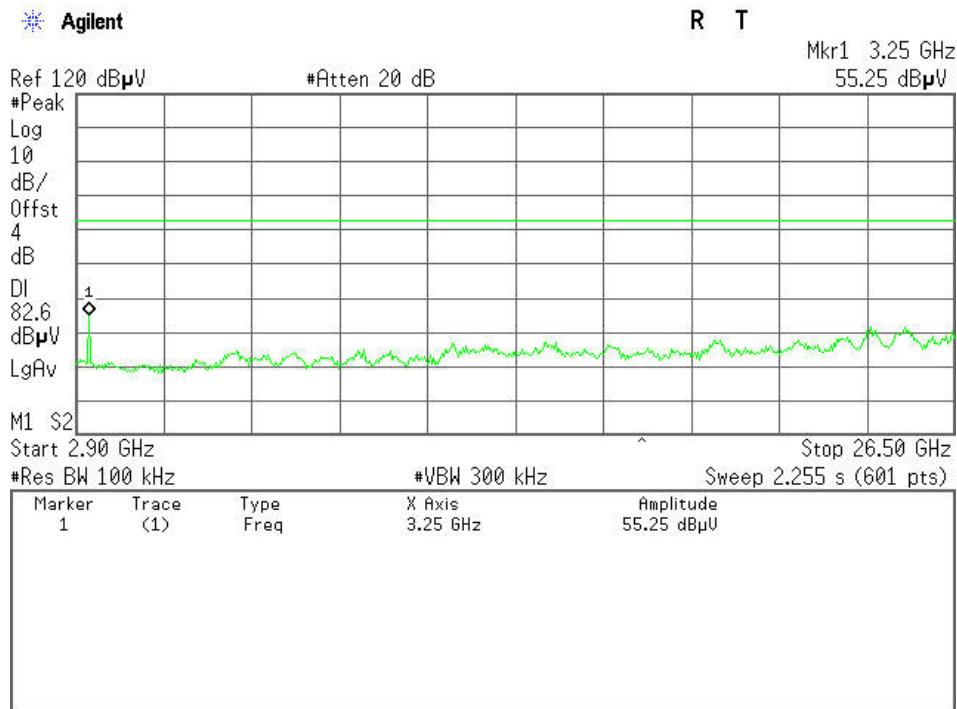
IEEE 802.11b mode

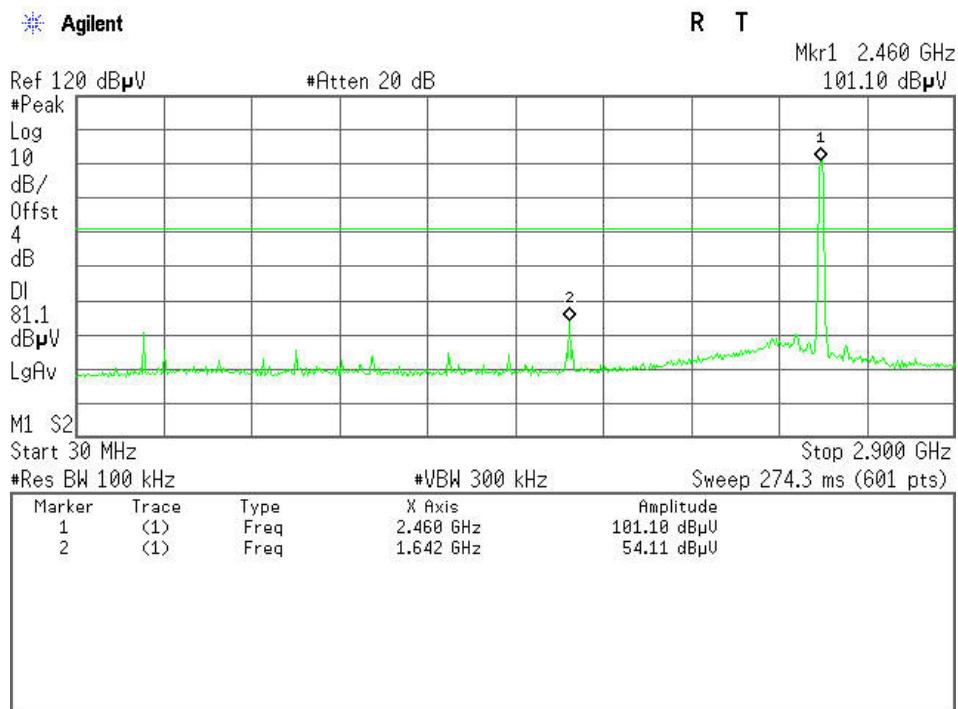
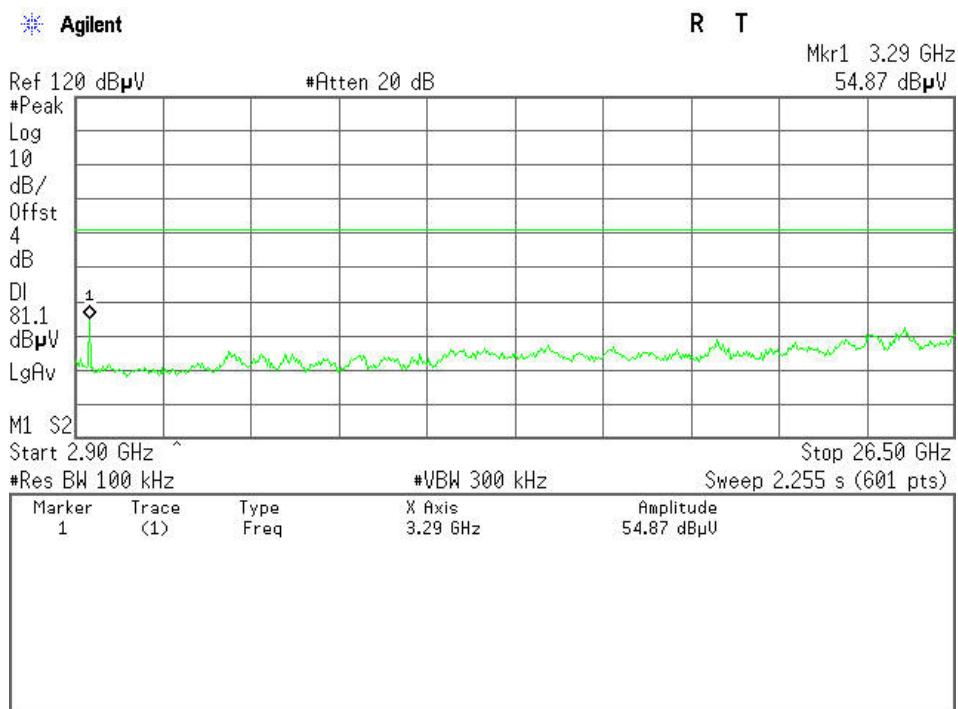
CH Low (30MHz ~2.9GHz)



CH Low (2.9GHz ~26.5GHz)

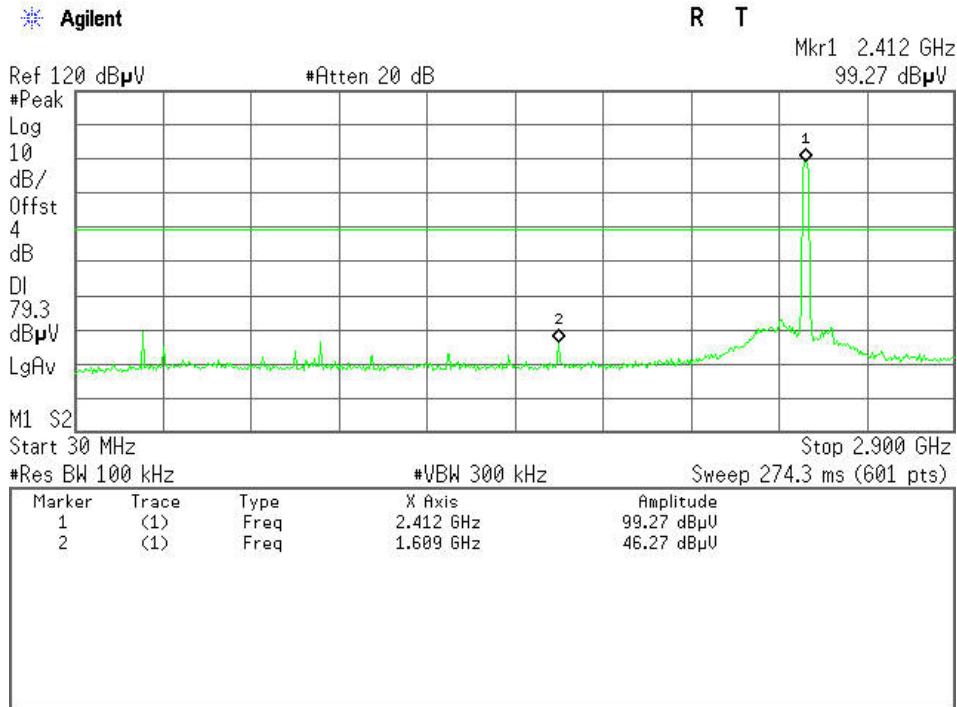


**CH Mid (30MHz ~2.9GHz)****CH Mid (2.9GHz ~26.5GHz)**

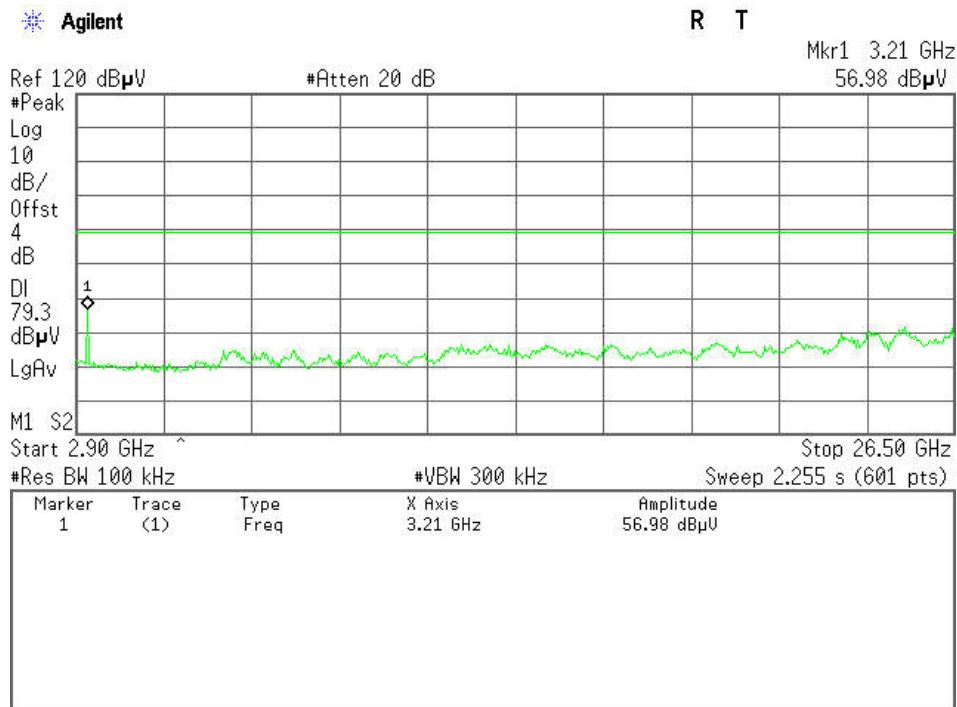
**CH High (30MHz ~2.9GHz)****CH High(2.9GHz ~26.5GHz)**

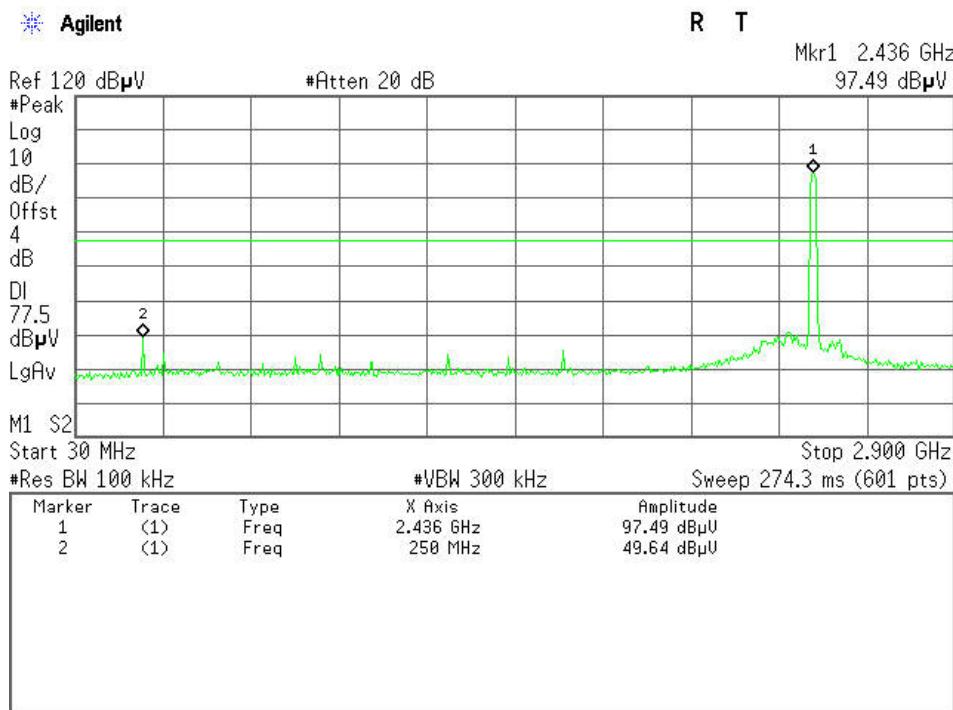
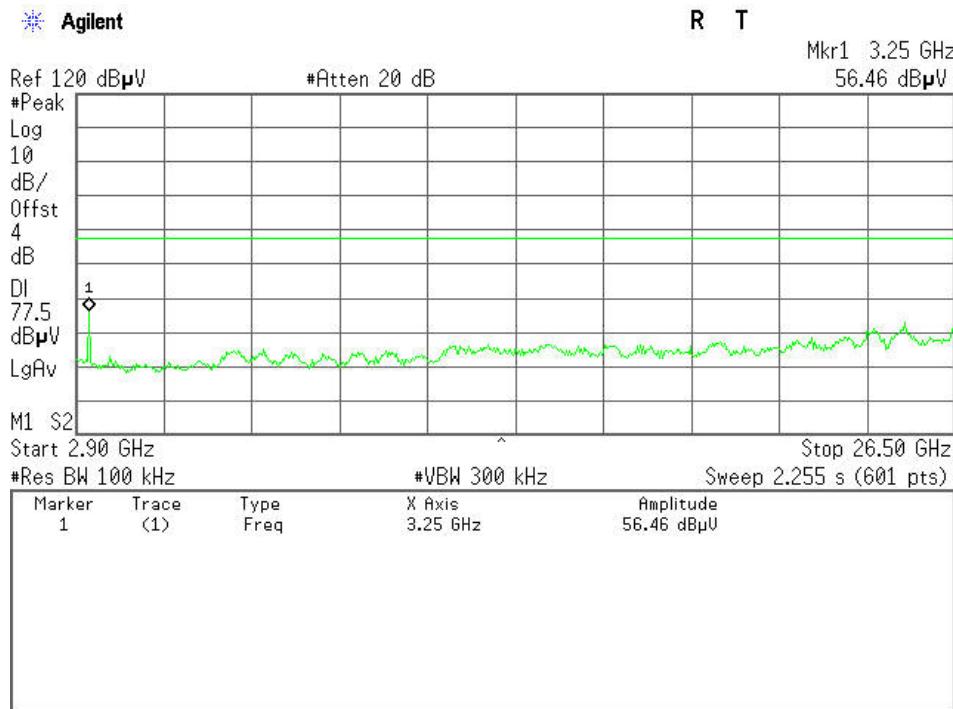


**IEEE 802.11g mode
CH Low (30MHz ~2.9GHz)**



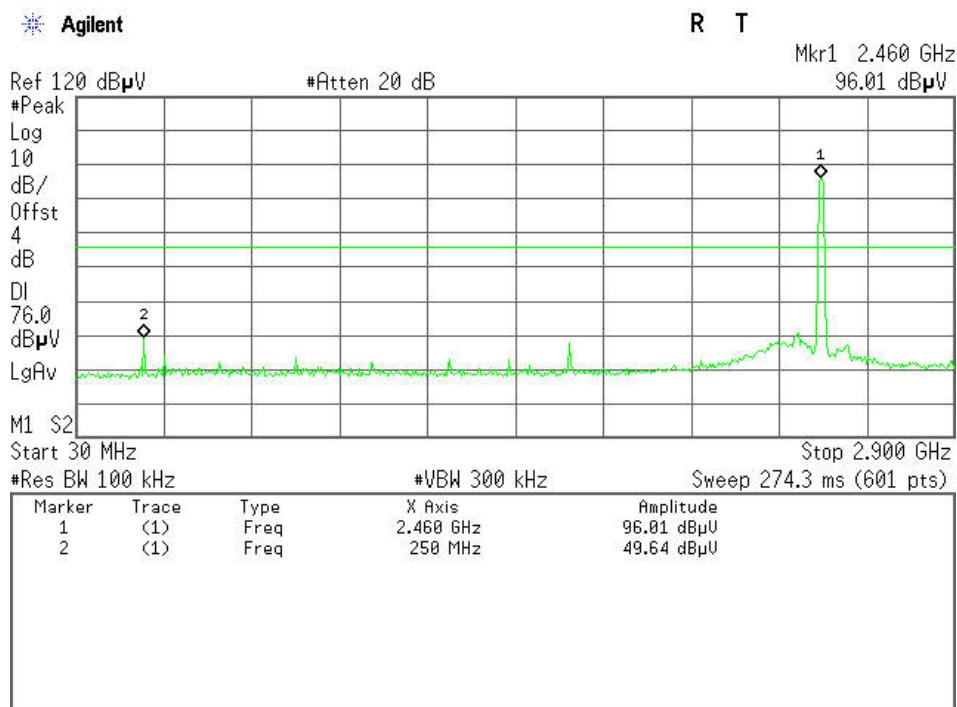
CH Low (2.9GHz ~26.5GHz)



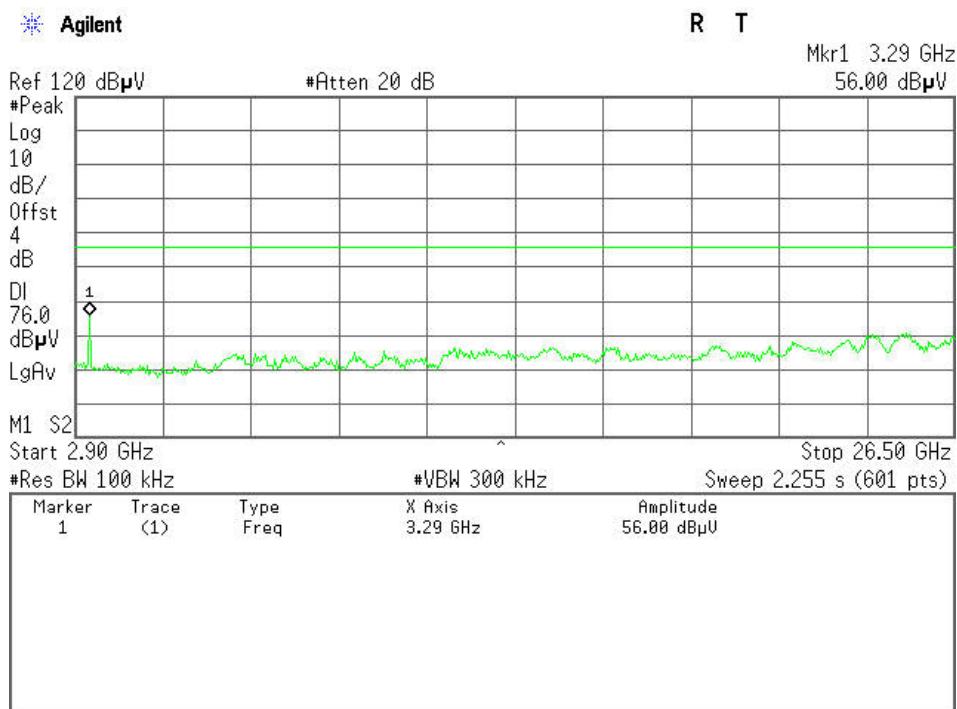
**CH Mid (30MHz ~2.9GHz)****CH Mid (2.9GHz ~26.5GHz)**

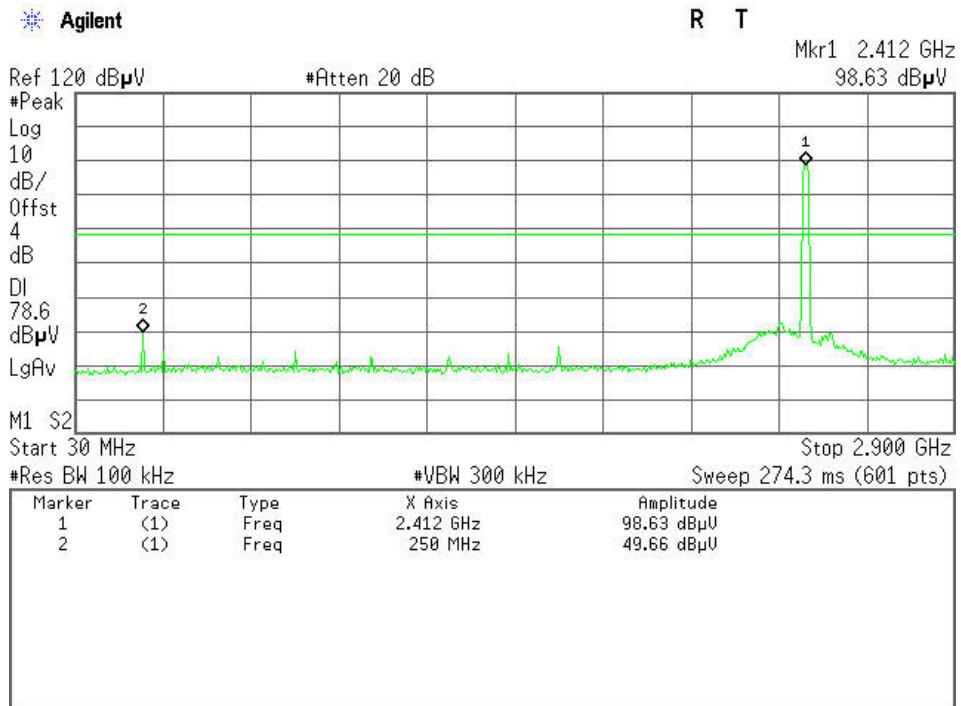
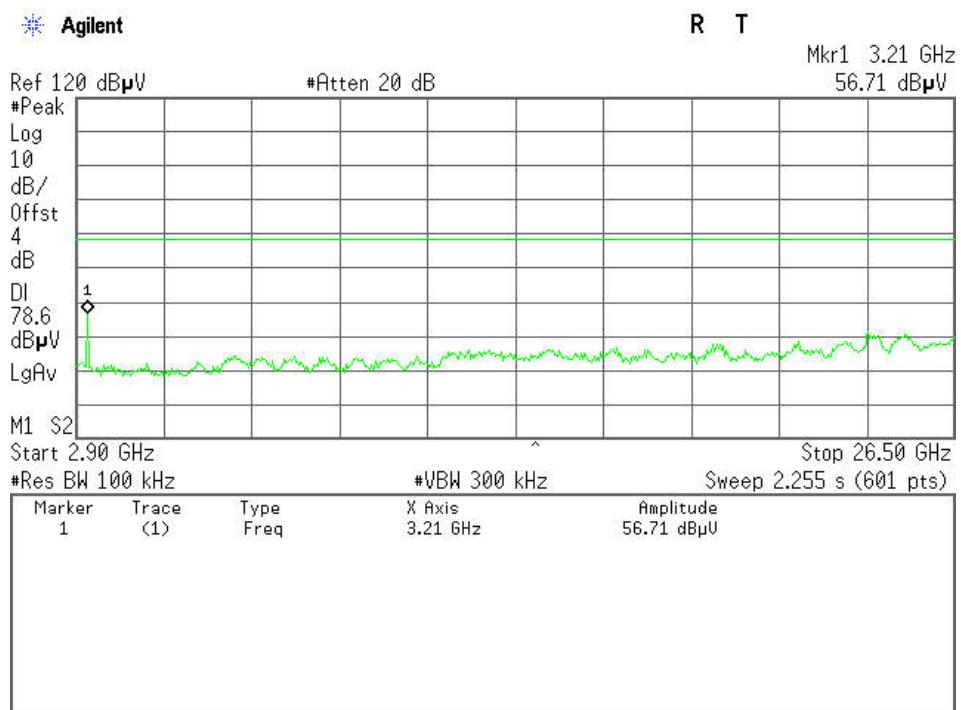


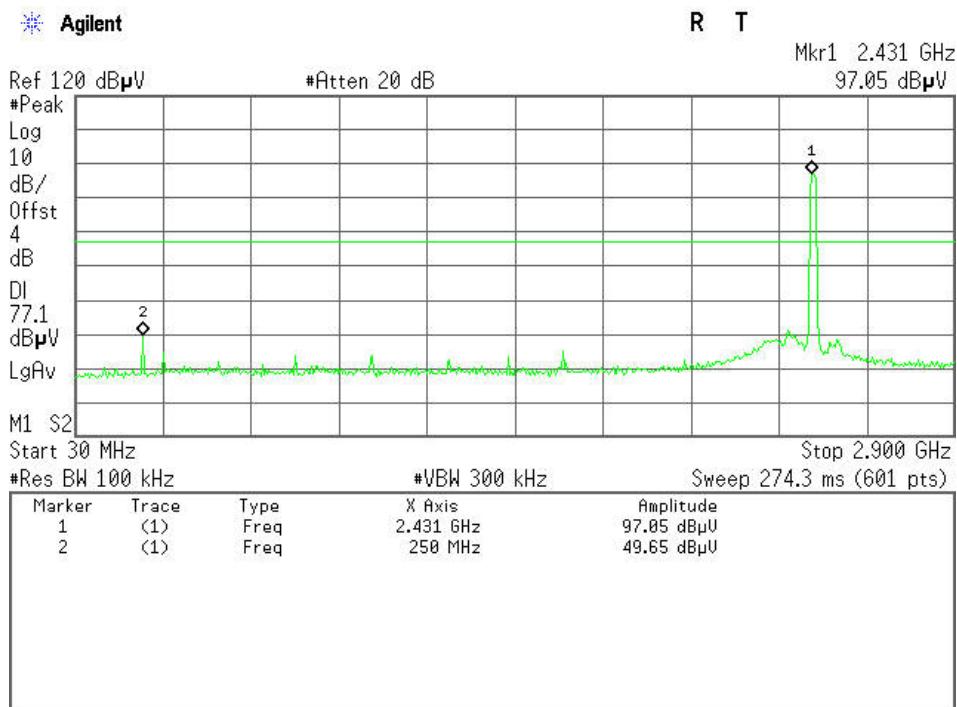
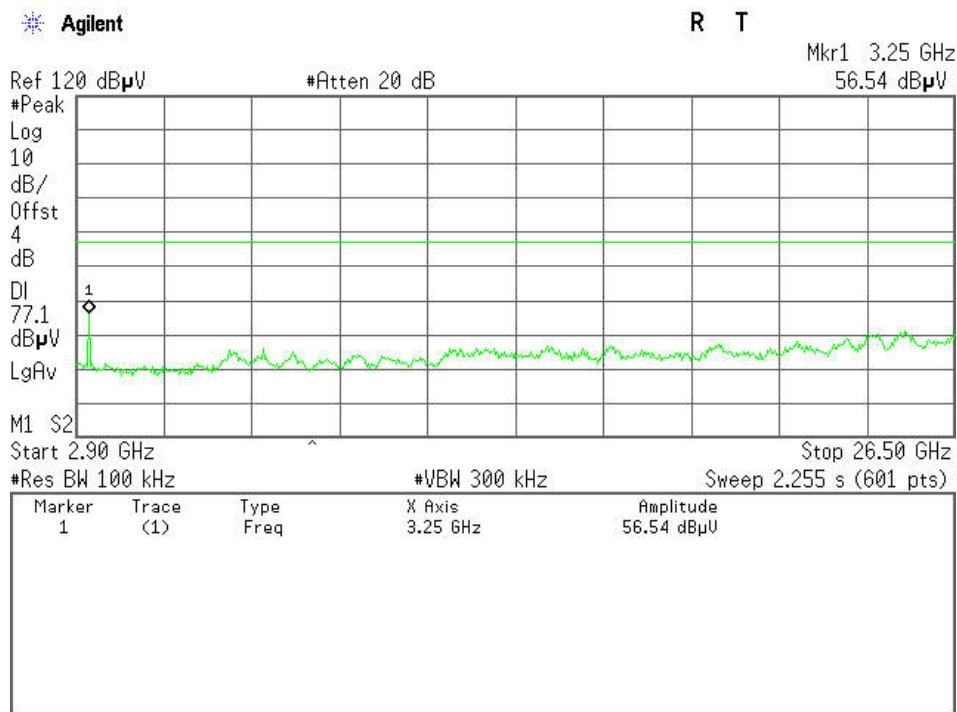
CH High (30MHz ~2.9GHz)

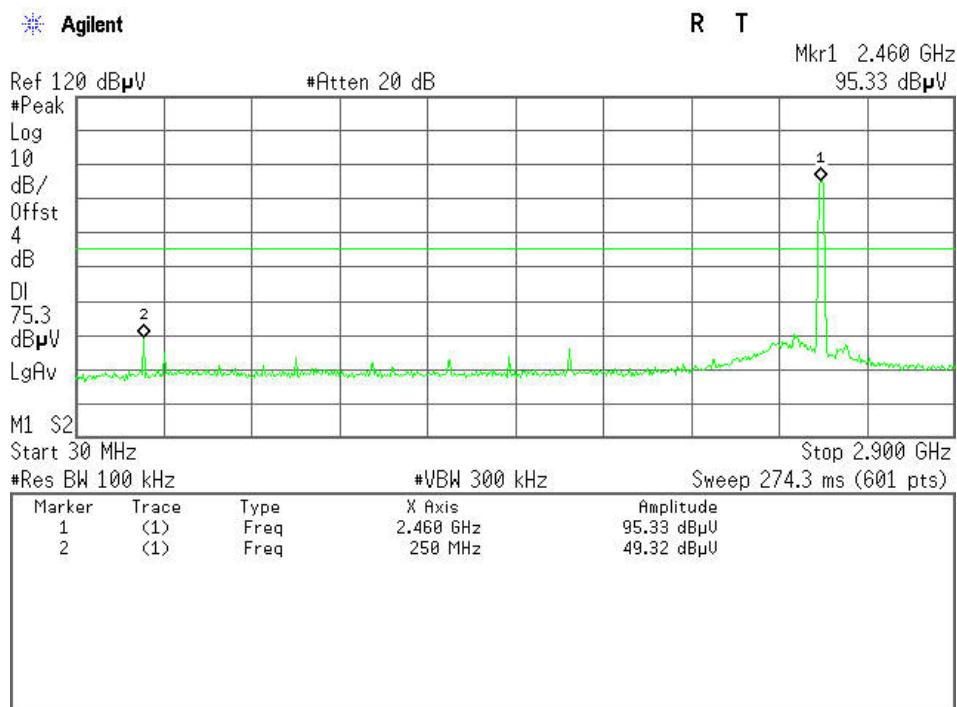
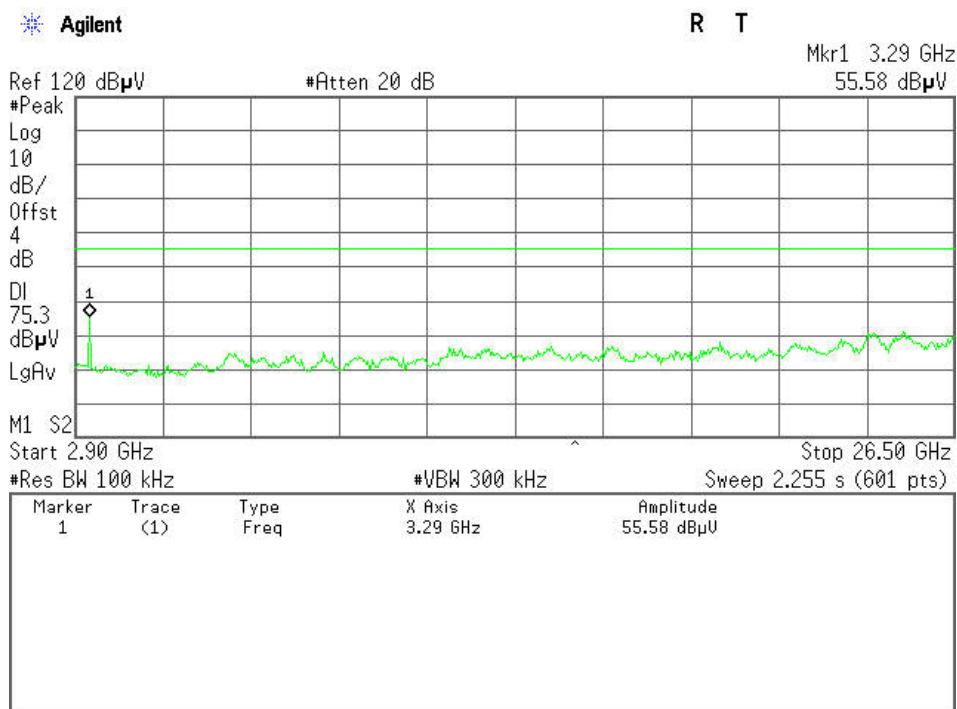


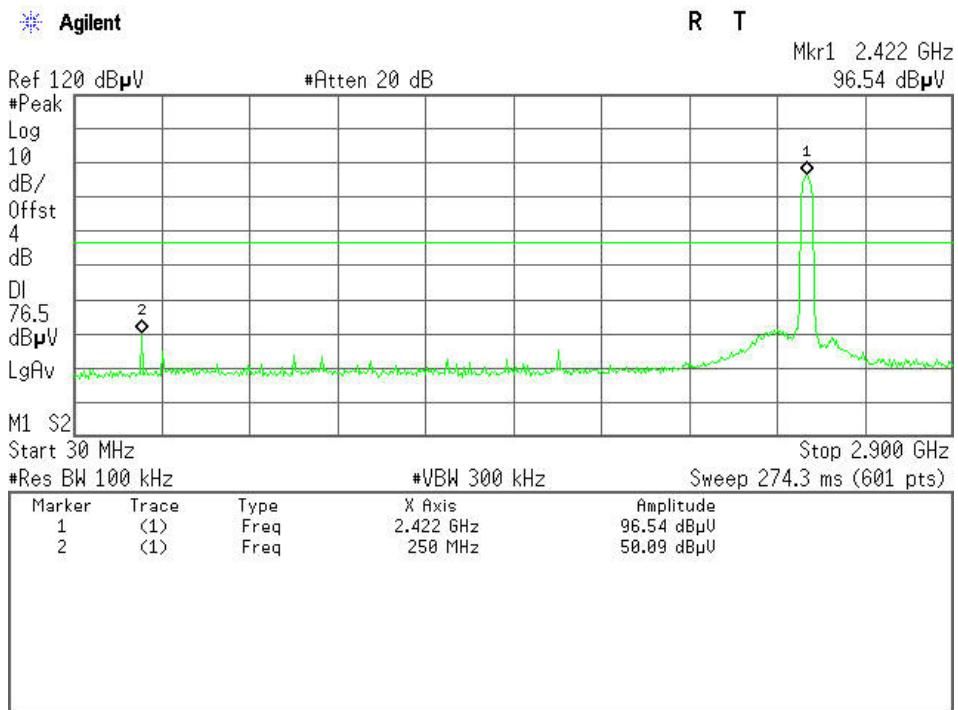
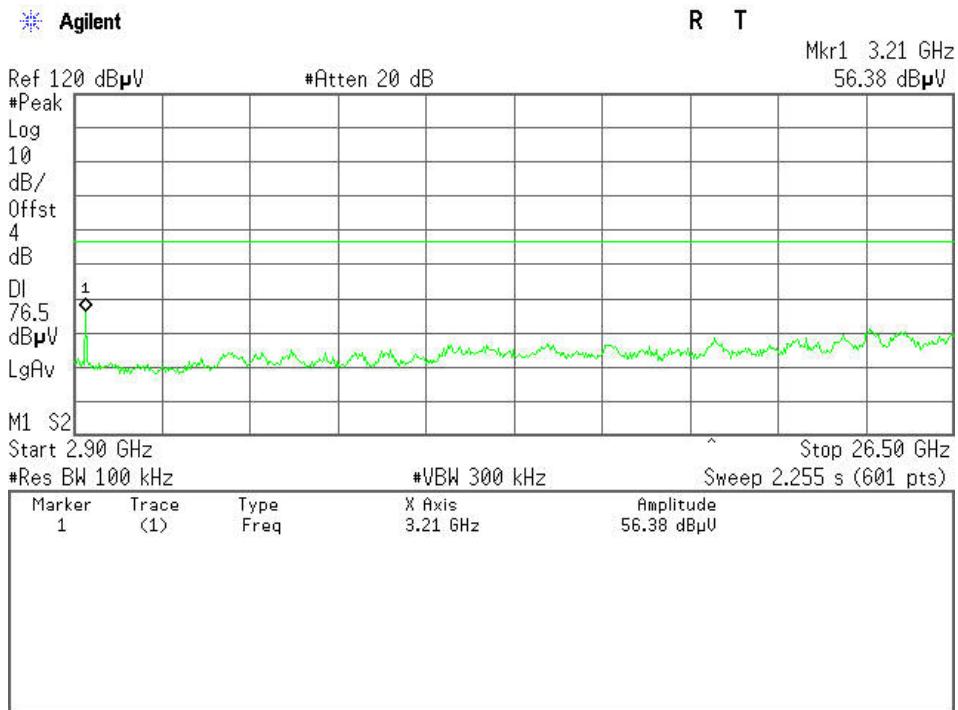
CH High(2.9GHz ~26.5GHz)



**Test Plot****IEEE 802.11n HT20 MHz mode****CH Low (30MHz ~2.9GHz)****CH Low (2.9GHz ~26.5GHz)**

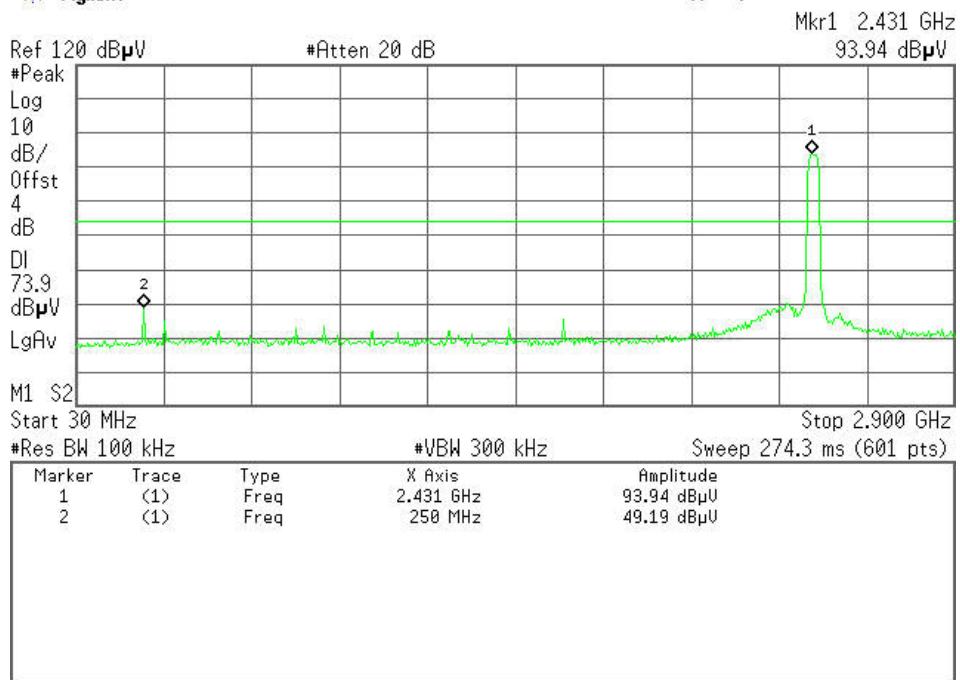
**CH Mid (30MHz ~2.9GHz)****CH Mid (2.9GHz ~26.5GHz)**

**CH High (30MHz ~2.9GHz)****CH High(2.9GHz ~26.5GHz)**

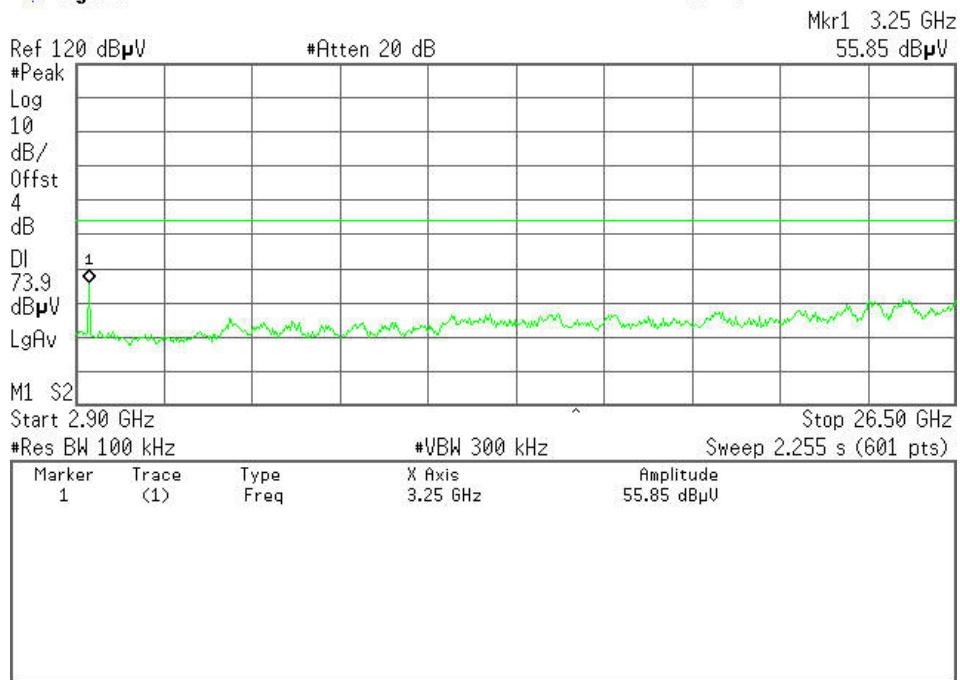
**IEEE 802.11n HT40 MHz mode****CH Low (30MHz ~2.9GHz)****CH Low (2.9GHz ~26.5GHz)**

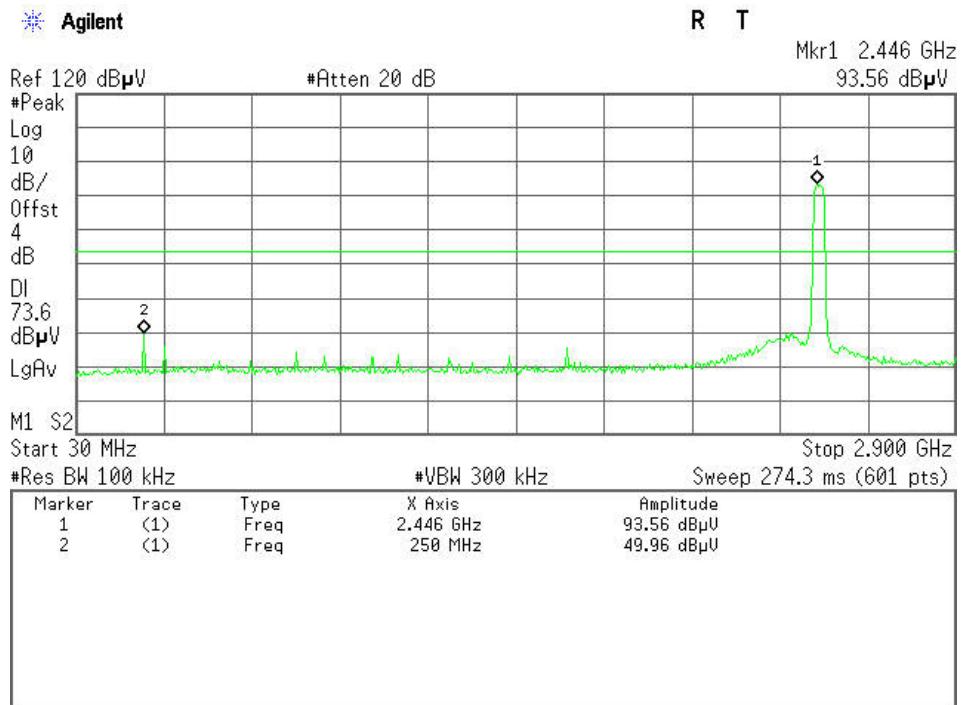
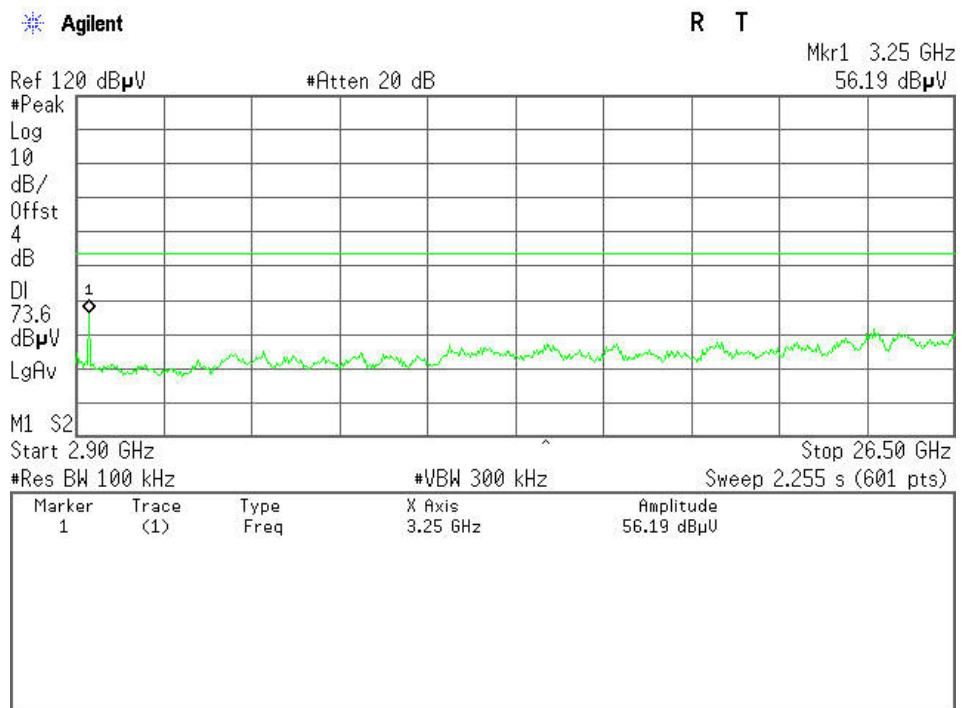
**CH Mid (30MHz ~2.9GHz)**

Agilent

**CH Mid (2.9GHz ~26.5GHz)**

Agilent

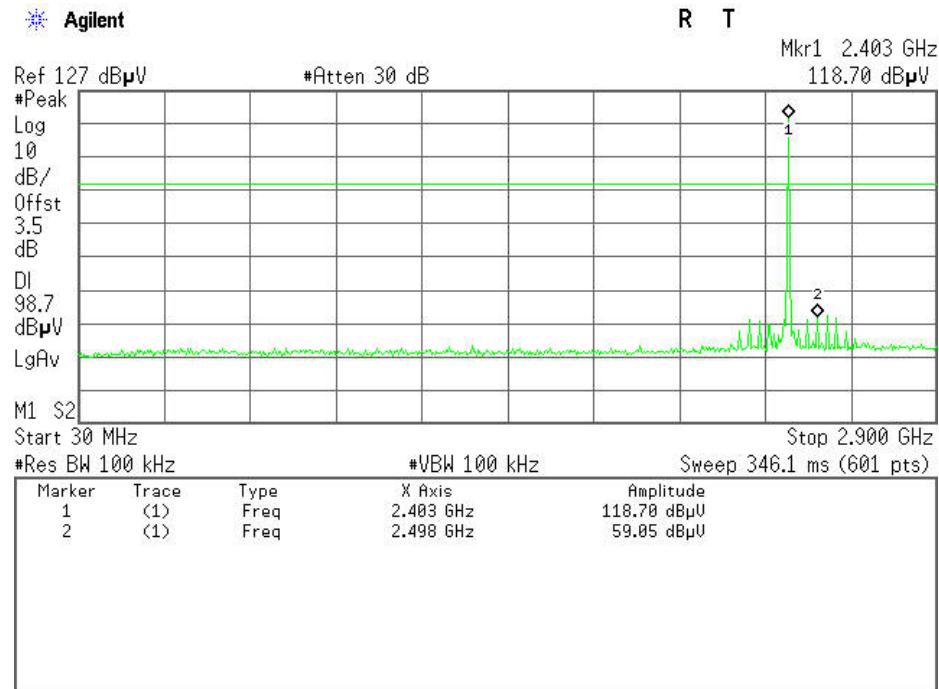


**CH High (30MHz ~2.9GHz)****CH High(2.9GHz ~26.5GHz)**

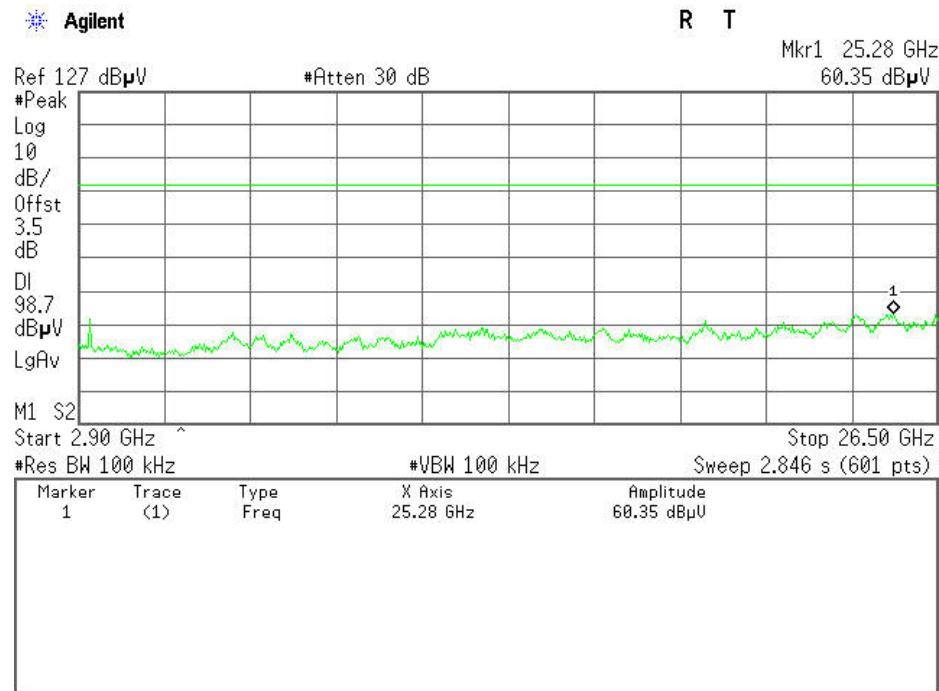


Bluetooth
Test Plot (GFSK)

CH Low (30MHz ~2.9GHz)

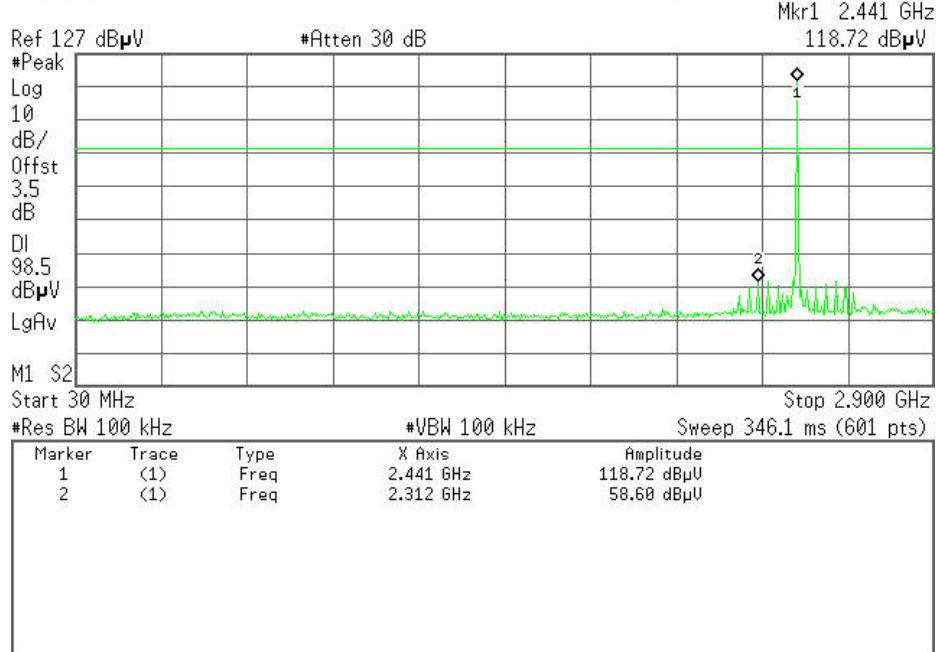


CH Low (2.9MHz ~26.5GHz)

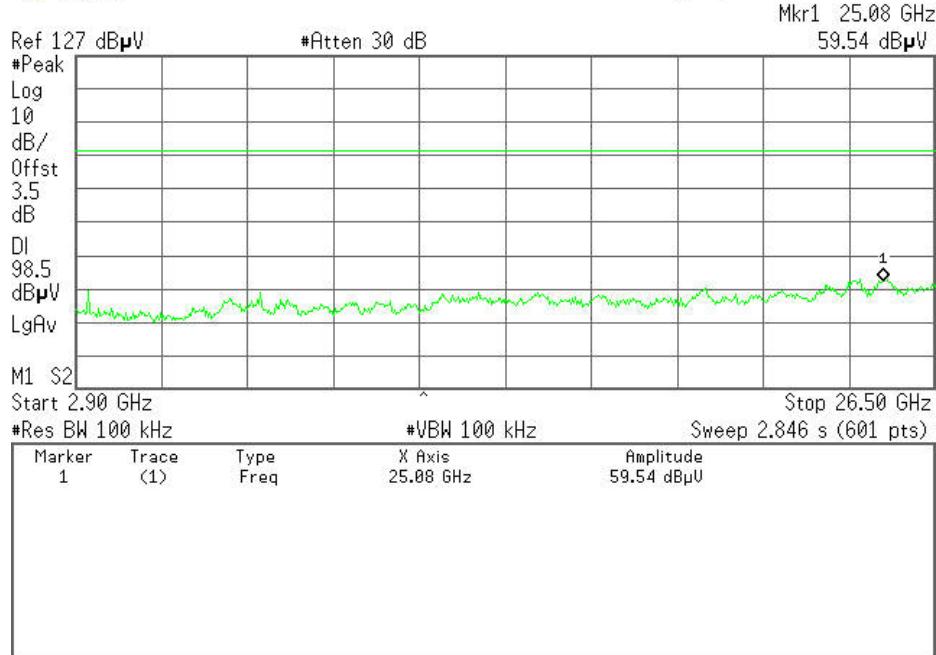


**CH Mid (30MHz ~ 2.9GHz)**

Agilent

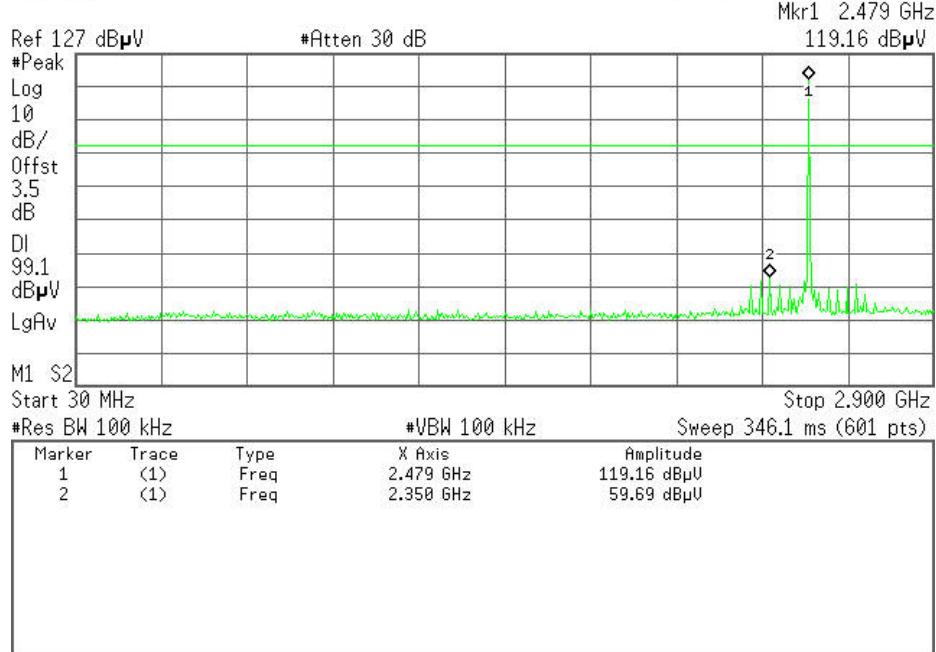
**CH Mid (2.9GHz ~ 26.5GHz)**

Agilent

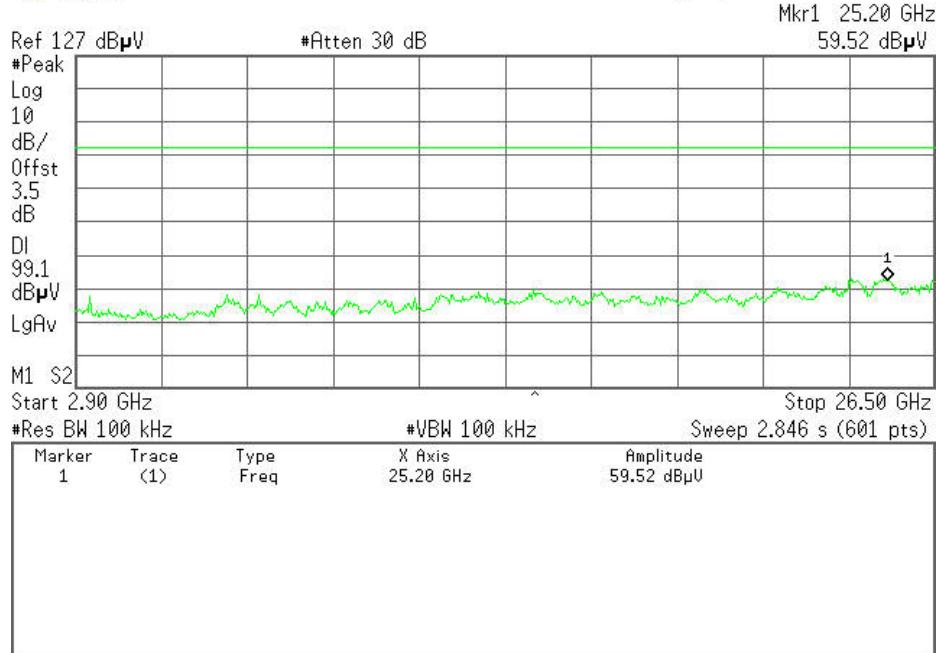


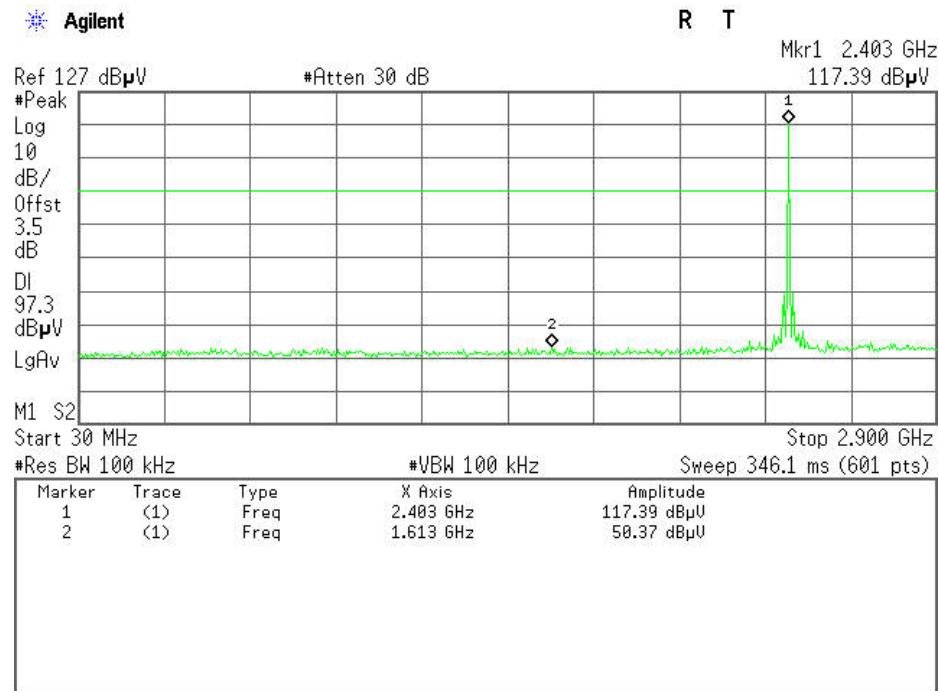
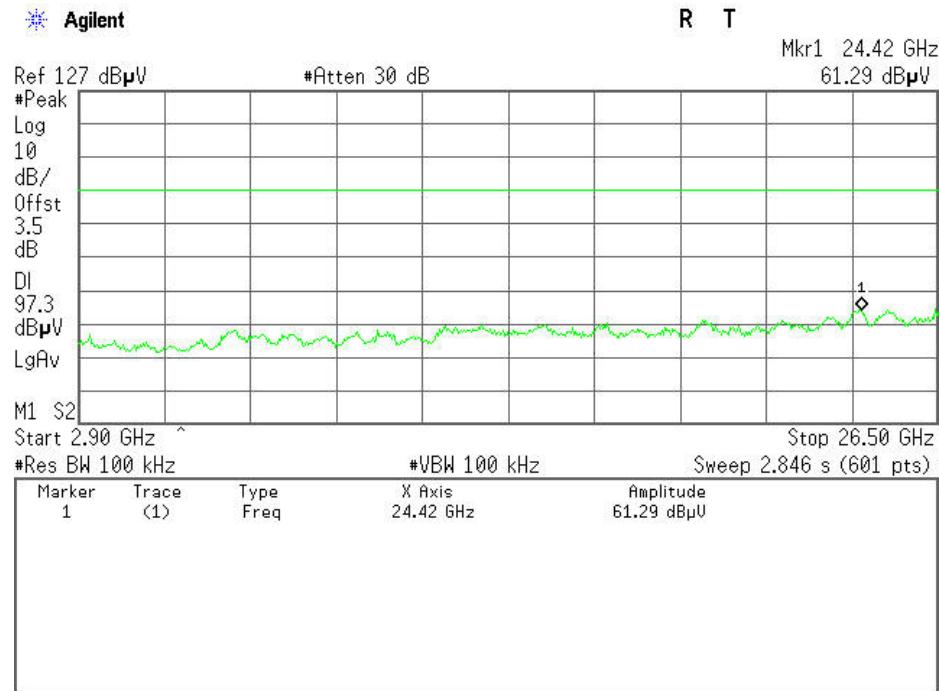
**CH High (30MHz ~ 2.9GHz)**

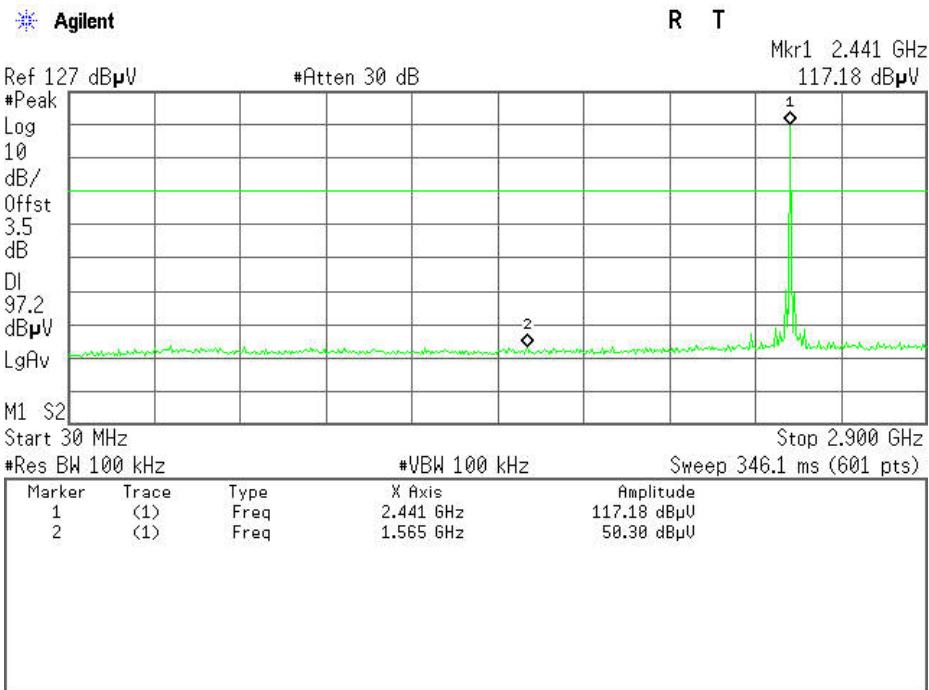
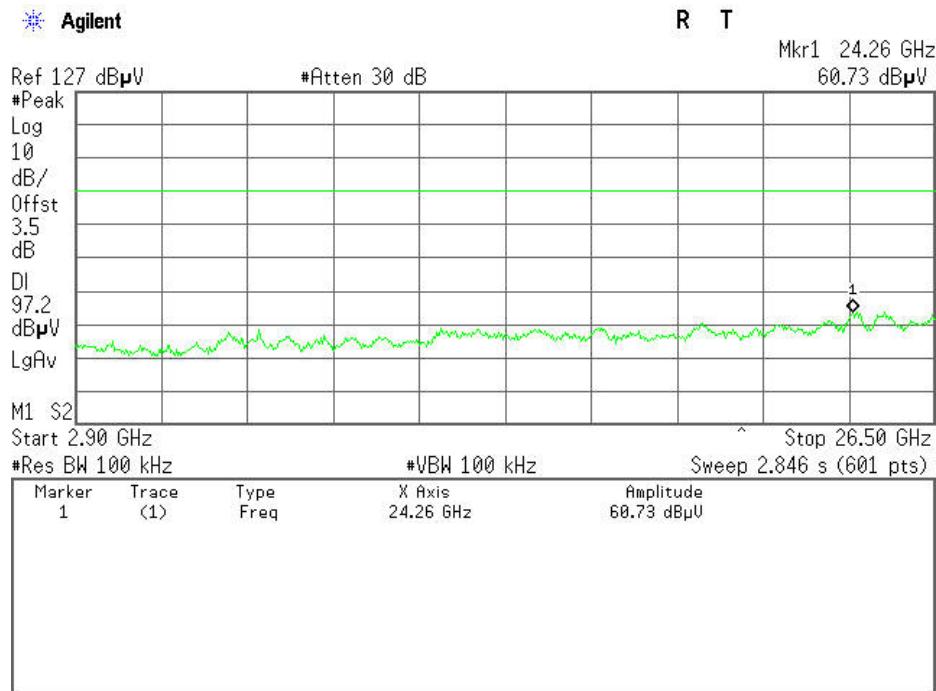
Agilent

**CH High (2.9GHz ~ 26.5GHz)**

Agilent

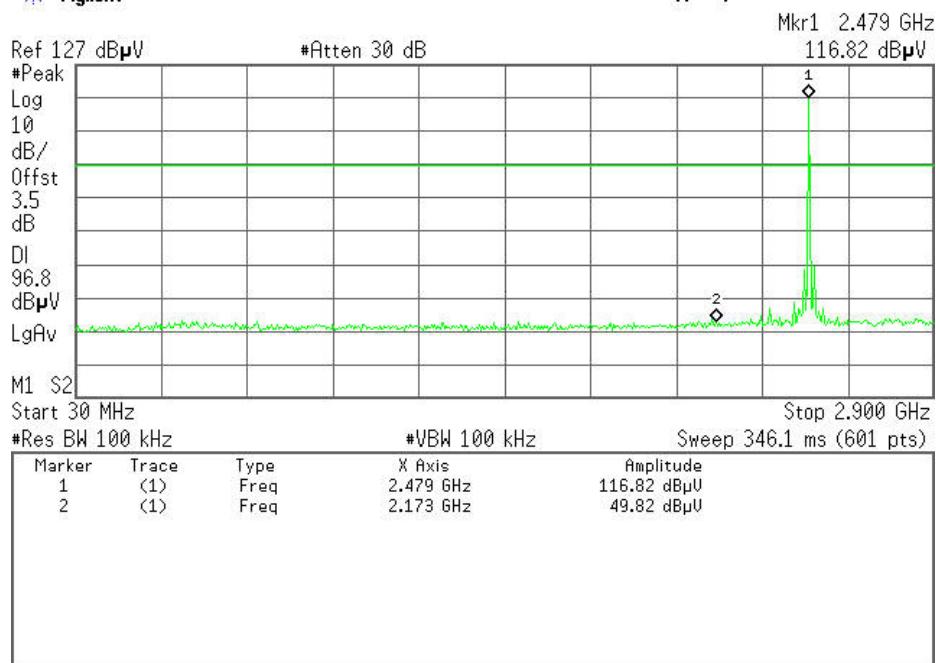


**Test Plot (8DPSK)****CH Low (30MHz ~2.9GHz)****CH Low (2.9MHz ~26.5GHz)**

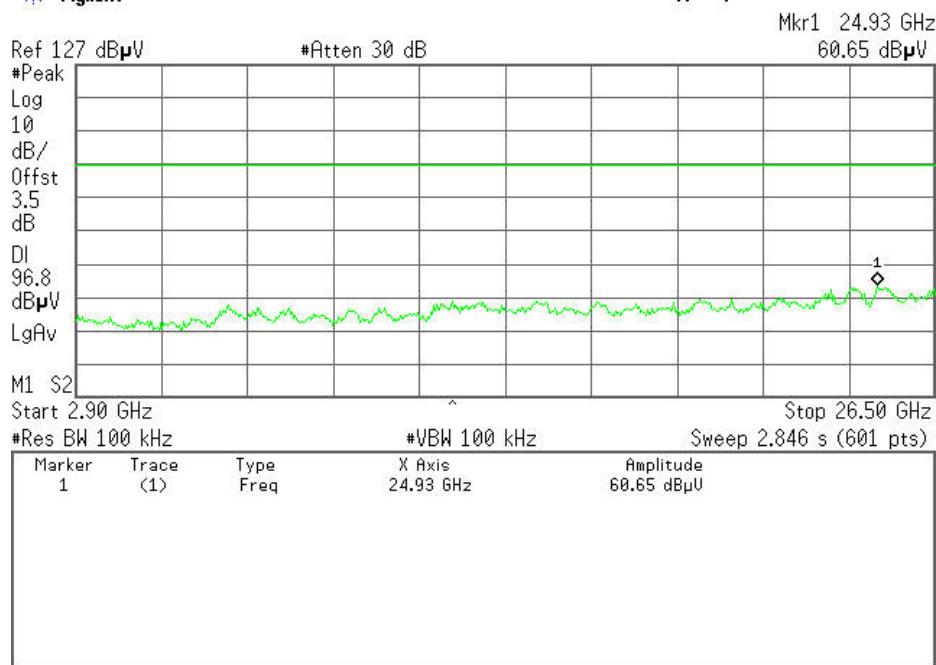
**CH Mid****CH Mid (30MHz ~ 2.9GHz)****CH Mid (2.9GHz ~ 26.5GHz)**

**CH High (30MHz ~ 2.9GHz)**

Agilent

**CH High (2.9GHz ~ 26.5GHz)**

Agilent





6.2.5. 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 (μ V/m at 3-meter)	Field Strength (dB μ V/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 (dB μ V/m) = 20 log Emission level (μ V/m).



6.2.5.1. 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	03/19/2012	03/19/2013
ESCI EMI TEST RECEIVER.ESCI	ROHDE&SCHWARZ	ESCI	100783	03/17/2012	03/17/2013
Amplifier	MITEQ	AM-1604-3000	1123808	03/18/2012	03/18/2013
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	03/18/2012	03/18/2013
Bilog Antenna	SCHAFFNER	CBL6143	5082	03/17/2012	03/17/2013
Horn Antenna	SCHWARZBECK	BBHA9120	D286	03/17/2012	03/17/2013
Loop Antenna	A. R. A	PLA-1030/B	1029	03/23/2012	03/23/2013
Temp. / Humidity Meter	VICTOR	VC230	N/A	03/19/2012	03/19/2013
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.

6.2.5.2. TEST PROCEDURE (please refer to measurement standard)

1. The EUT is placed on a turntable, which is 0.8m above 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 emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Set the spectrum analyzer in the following setting as:

Below 1GHz:

RBW=100kHz / VBW=300kHz / Sweep=AUTO

Above 1GHz:

(a) PEAK: RBW=1MHz,VBW=3MHz / Sweep=AUTO

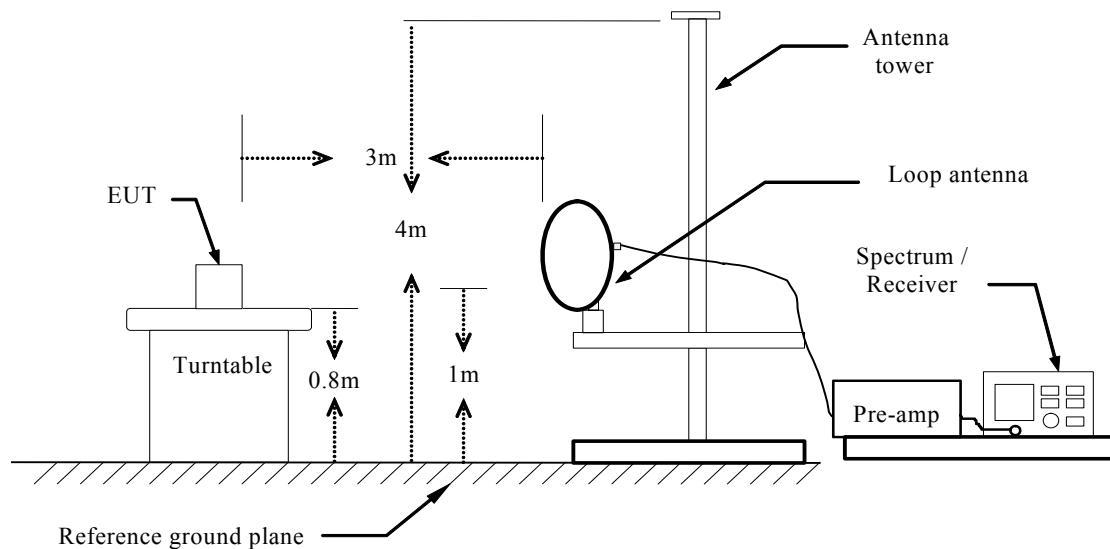
(b) AVERAGE: RBW=1MHz / VBW=10Hz / Sweep=AUTO

7. Repeat above procedures until the measurements for all frequencies are complete.

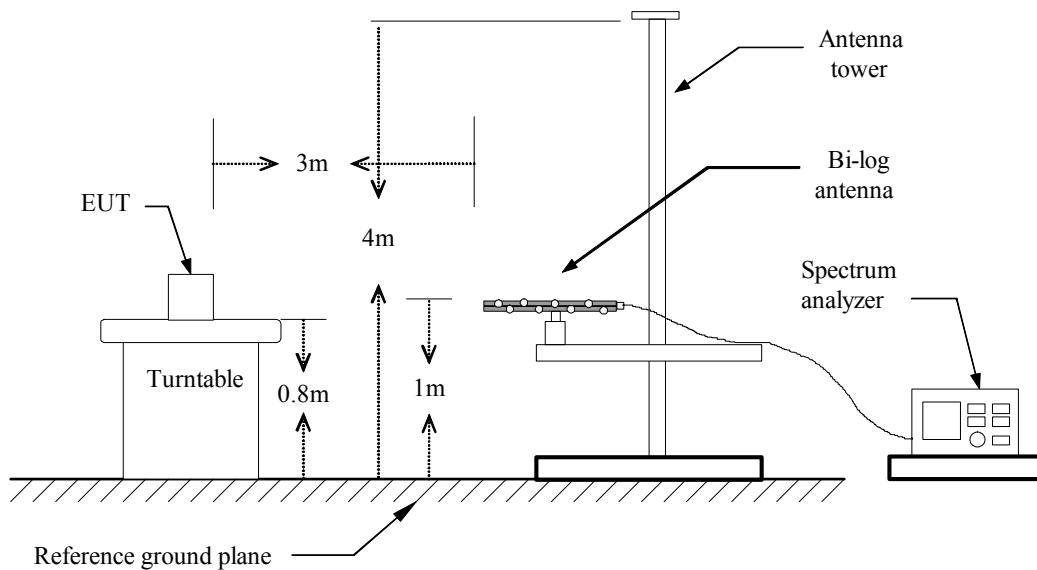


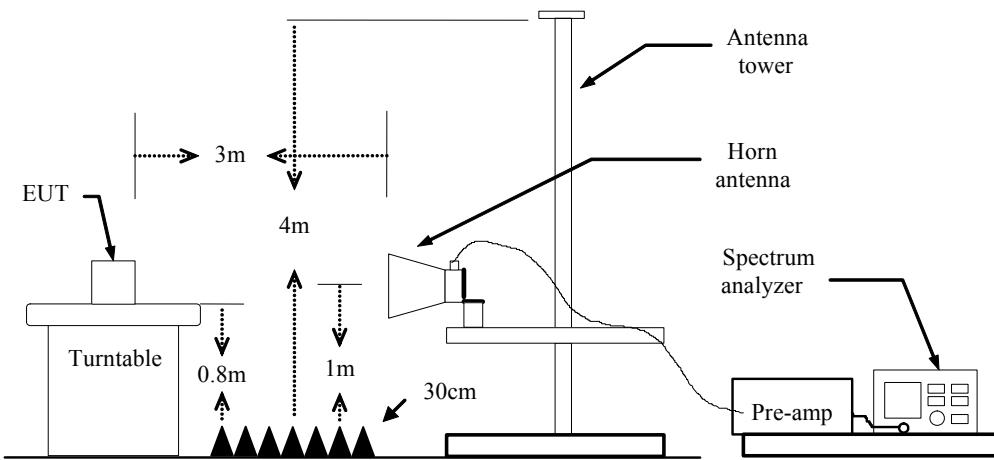
6.2.5.3. TEST SETUP

Below 30MHz



Below 1 GHz



**Above 1 GHz**

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



6.2.5.4. DATA SAMPLE

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



6.2.5.5. TEST RESULTS

Below 1 GHz

WIFI

Operation Mode: TX

Test Date: September 7, 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
257.9500	47.80	-11.35	36.45	46.00	-9.55	V	QP
442.2500	43.39	-7.19	36.20	46.00	-9.80	V	QP
505.3000	45.23	-5.76	39.47	46.00	-6.53	V	QP
552.8300	43.32	-4.21	39.11	46.00	-6.89	V	QP
586.7800	43.66	-4.47	39.19	46.00	-6.81	V	QP
701.2400	37.15	-1.06	36.09	46.00	-9.91	V	QP
<hr/>							
290.9300	51.18	-10.94	40.24	46.00	-5.76	H	QP
405.3900	47.25	-7.61	39.64	46.00	-6.36	H	QP
479.1100	45.91	-6.44	39.47	46.00	-6.53	H	QP
552.8300	41.75	-4.21	37.54	46.00	-8.46	H	QP
701.2400	39.35	-1.06	38.29	46.00	-7.71	H	QP
774.9600	38.02	-0.40	37.62	46.00	-8.38	H	QP

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

Notes:

1. Radiated emissions measured in frequency range from 9kHz to 1GHz were made with an instrument using Quasi-peak detector mode.
2. 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.
3. The IF bandwidth of Receiver between 30MHz to 1GHz was 120kHz.
4. Frequency (MHz) = Emission frequency in MHz
Reading (dB μ V/m) = Receiver reading
Correction Factor (dB) = Antenna factor + Cable loss – Amplifier gain
Limit (dB μ V/m) = Limit stated in standard
Margin (dB) = Measured (dB μ V/m) – Limits (dB μ V/m)
Antenna Pol e(H/V) = Current carrying line of reading

**Bluetooth****Operation Mode:** TX**Test Date:** September 7, 2012**Temperature:** 24°C**Tested by:** Sunday Hu**Humidity:** 52% RH**Polarity:** Ver. / Hor.

Frequency (MHz)	Reading (dB μ V)	Correction Factor (dB/m)	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Antenna Pole (V/H)	Remark
35.8200	38.15	-4.50	33.65	40.00	-6.35	V	QP
257.9500	47.30	-11.35	35.95	46.00	-10.05	V	QP
294.8100	45.34	-11.00	34.34	46.00	-11.66	V	QP
505.3000	45.23	-5.76	39.47	46.00	-6.53	V	QP
552.8300	43.82	-4.21	39.61	46.00	-6.39	V	QP
586.7800	44.16	-4.47	39.69	46.00	-6.31	V	QP
<hr/>							
257.9500	51.98	-11.35	40.63	46.00	-5.37	H	QP
290.9300	51.18	-10.94	40.24	46.00	-5.76	H	QP
405.3900	42.25	-7.61	34.64	46.00	-11.36	H	QP
552.8300	40.75	-4.21	36.54	46.00	-9.46	H	QP
701.2400	36.85	-1.06	35.79	46.00	-10.21	H	QP
797.2700	35.32	-0.16	35.16	46.00	-10.84	H	QP

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

1. Radiated emissions measured in frequency range from 9kHz to 1GHz were made with an instrument using Quasi-peak detector mode.
2. 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.
3. The IF bandwidth of Receiver between 30MHz to 1GHz was 120kHz.
4. Frequency (MHz).
Reading (dB μ V/m) = Emission frequency in MHz
Correction Factor (dB) = Receiver reading
Limit (dB μ V/m) = Antenna factor + Cable loss – Amplifier gain
Margin (dB) = Limit stated in standard
Antenna Pol e(H/V) = Measured (dB μ V/m) – Limits (dB μ V/m)
= Current carrying line of reading

**Above 1 GHz****WIFI****Operation Mode:** TX / IEEE 802.11b / CH Low**Test Date:** September 6, 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
1105.0000	54.94	-9.49	45.45	74.00	-28.55	V	Peak
2800.0000	48.42	-5.04	43.38	74.00	-30.62	V	Peak
3370.0000	47.14	-4.01	43.13	74.00	-30.87	V	Peak
4570.0000	45.34	-0.51	44.83	74.00	-29.17	V	Peak
5245.0000	45.29	1.54	46.83	74.00	-27.17	V	Peak
6460.0000	46.33	4.43	50.76	74.00	-23.24	V	Peak
1195.0000	56.34	-8.77	47.57	74.00	-26.43	H	Peak
1300.0000	52.68	-8.28	44.40	74.00	-29.60	H	Peak
1720.0000	51.67	-9.14	42.53	74.00	-31.47	H	Peak
2875.0000	47.37	-4.74	42.63	74.00	-31.37	H	Peak
4510.0000	45.42	-0.62	44.80	74.00	-29.20	H	Peak
5005.0000	45.87	1.33	47.20	74.00	-26.80	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:** September 6, 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
1105.0000	51.47	-9.49	41.98	74.00	-32.02	V	Peak
1300.0000	52.20	-8.28	43.92	74.00	-30.08	V	Peak
2890.0000	47.45	-4.68	42.77	74.00	-31.23	V	Peak
3250.0000	46.05	-4.07	41.98	74.00	-32.02	V	Peak
4270.0000	45.29	-1.31	43.98	74.00	-30.02	V	Peak
4975.0000	46.24	1.21	47.45	74.00	-26.55	V	Peak
1105.0000	52.21	-9.49	42.72	74.00	-31.28	H	Peak
1300.0000	52.04	-8.28	43.76	74.00	-30.24	H	Peak
3025.0000	46.98	-4.22	42.76	74.00	-31.24	H	Peak
3310.0000	46.56	-4.04	42.52	74.00	-31.48	H	Peak
4435.0000	45.81	-0.76	45.05	74.00	-28.95	H	Peak
5245.0000	45.52	1.54	47.06	74.00	-26.94	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:** September 6, 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
1090.0000	54.16	-9.61	44.55	74.00	-29.45	V	Peak
1300.0000	52.22	-8.28	43.94	74.00	-30.06	V	Peak
1900.0000	51.93	-10.37	41.56	74.00	-32.44	V	Peak
2785.0000	48.12	-5.10	43.02	74.00	-30.98	V	Peak
3415.0000	46.84	-3.93	42.91	74.00	-31.09	V	Peak
4315.0000	45.52	-1.14	44.38	74.00	-29.62	V	Peak
1195.0000	52.69	-8.77	43.92	74.00	-30.08	H	Peak
1300.0000	51.96	-8.28	43.68	74.00	-30.32	H	Peak
2950.0000	46.94	-4.44	42.50	74.00	-31.50	H	Peak
3580.0000	46.13	-3.11	43.02	74.00	-30.98	H	Peak
4150.0000	45.73	-1.82	43.91	74.00	-30.09	H	Peak
4825.0000	45.00	0.52	45.52	74.00	-28.48	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**Test Date:** September 12, 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
1090.0000	54.76	-9.61	45.15	74.00	-28.85	V	Peak
3265.0000	47.87	-4.06	43.81	74.00	-30.19	V	Peak
3820.0000	46.48	-2.49	43.99	74.00	-30.01	V	Peak
4960.0000	44.93	1.14	46.07	74.00	-27.93	V	Peak
5740.0000	45.59	2.52	48.11	74.00	-25.89	V	Peak
7450.0000	44.34	7.63	51.97	74.00	-22.03	V	Peak
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1195.0000	54.39	-8.77	45.62	74.00	-28.38	H	Peak
3010.0000	47.16	-4.23	42.93	74.00	-31.07	H	Peak
3685.0000	46.34	-2.79	43.55	74.00	-30.45	H	Peak
4135.0000	45.81	-1.89	43.92	74.00	-30.08	H	Peak
4810.0000	45.90	0.46	46.36	74.00	-27.64	H	Peak
5530.0000	45.31	1.79	47.10	74.00	-26.90	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:** September 12, 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
1105.0000	54.90	-9.49	45.41	74.00	-28.59	V	Peak
1300.0000	53.49	-8.28	45.21	74.00	-28.79	V	Peak
1990.0000	52.89	-11.21	41.68	74.00	-32.32	V	Peak
3805.0000	45.84	-2.49	43.35	74.00	-30.65	V	Peak
4135.0000	45.45	-1.89	43.56	74.00	-30.44	V	Peak
4870.0000	44.68	0.73	45.41	74.00	-28.59	V	Peak
<hr/>							
1090.0000	55.77	-9.61	46.16	74.00	-27.84	H	Peak
1195.0000	51.99	-8.77	43.22	74.00	-30.78	H	Peak
3220.0000	47.48	-4.08	43.40	74.00	-30.60	H	Peak
3715.0000	45.95	-2.71	43.24	74.00	-30.76	H	Peak
4495.0000	44.95	-0.65	44.30	74.00	-29.70	H	Peak
5035.0000	44.84	1.36	46.20	74.00	-27.80	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:** September 12, 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	54.36	-8.77	45.59	74.00	-28.41	V	Peak
2290.0000	47.30	-7.32	39.98	74.00	-34.02	V	Peak
3265.0000	47.41	-4.06	43.35	74.00	-30.65	V	Peak
3880.0000	46.01	-2.51	43.50	74.00	-30.50	V	Peak
4195.0000	45.83	-1.60	44.23	74.00	-29.77	V	Peak
5005.0000	44.70	1.33	46.03	74.00	-27.97	V	Peak
1195.0000	52.92	-8.77	44.15	74.00	-29.85	H	Peak
1300.0000	53.41	-8.28	45.13	74.00	-28.87	H	Peak
3010.0000	46.51	-4.23	42.28	74.00	-31.72	H	Peak
3280.0000	47.50	-4.05	43.45	74.00	-30.55	H	Peak
3880.0000	45.92	-2.51	43.41	74.00	-30.59	H	Peak
4495.0000	44.90	-0.65	44.25	74.00	-29.75	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:** September 12, 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	53.17	-8.77	44.40	74.00	-29.60	V	Peak
1300.0000	52.37	-8.28	44.09	74.00	-29.91	V	Peak
2005.0000	52.16	-11.22	40.94	74.00	-33.06	V	Peak
3220.0000	47.74	-4.08	43.66	74.00	-30.34	V	Peak
4105.0000	45.57	-2.03	43.54	74.00	-30.46	V	Peak
4480.0000	45.70	-0.68	45.02	74.00	-28.98	V	Peak
1195.0000	55.90	-8.77	47.13	74.00	-26.87	H	Peak
3010.0000	47.39	-4.23	43.16	74.00	-30.84	H	Peak
4135.0000	45.09	-1.89	43.20	74.00	-30.80	H	Peak
5005.0000	44.74	1.33	46.07	74.00	-27.93	H	Peak
5560.0000	45.29	1.85	47.14	74.00	-26.86	H	Peak
6130.0000	44.59	3.48	48.07	74.00	-25.93	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:** September 12, 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
1090.0000	53.33	-9.61	43.72	74.00	-30.28	V	Peak
1195.0000	52.60	-8.77	43.83	74.00	-30.17	V	Peak
1300.0000	52.45	-8.28	44.17	74.00	-29.83	V	Peak
1720.0000	52.23	-9.14	43.09	74.00	-30.91	V	Peak
1990.0000	51.44	-11.21	40.23	74.00	-33.77	V	Peak
2785.0000	48.50	-5.10	43.40	74.00	-30.60	V	Peak
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1090.0000	52.48	-9.61	42.87	74.00	-31.13	H	Peak
1195.0000	53.56	-8.77	44.79	74.00	-29.21	H	Peak
1300.0000	53.75	-8.28	45.47	74.00	-28.53	H	Peak
2980.0000	46.85	-4.32	42.53	74.00	-31.47	H	Peak
3895.0000	45.41	-2.51	42.90	74.00	-31.10	H	Peak
5050.0000	45.63	1.38	47.01	74.00	-26.99	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:** September 12, 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
1090.0000	52.81	-9.61	43.20	74.00	-30.80	V	Peak
1195.0000	53.67	-8.77	44.90	74.00	-29.10	V	Peak
1900.0000	50.90	-10.37	40.53	74.00	-33.47	V	Peak
3460.0000	46.96	-3.70	43.26	74.00	-30.74	V	Peak
4180.0000	45.21	-1.68	43.53	74.00	-30.47	V	Peak
4810.0000	45.13	0.46	45.59	74.00	-28.41	V	Peak
1090.0000	53.07	-9.61	43.46	74.00	-30.54	H	Peak
1195.0000	52.62	-8.77	43.85	74.00	-30.15	H	Peak
1300.0000	52.96	-8.28	44.68	74.00	-29.32	H	Peak
2965.0000	47.48	-4.38	43.10	74.00	-30.90	H	Peak
4810.0000	44.49	0.46	44.95	74.00	-29.05	H	Peak
5845.0000	45.06	2.85	47.91	74.00	-26.09	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:** September 12, 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	52.51	-8.77	43.74	74.00	-30.26	V	Peak
3235.0000	47.72	-4.07	43.65	74.00	-30.35	V	Peak
3880.0000	45.78	-2.51	43.27	74.00	-30.73	V	Peak
4495.0000	45.11	-0.65	44.46	74.00	-29.54	V	Peak
5215.0000	44.28	1.55	45.83	74.00	-28.17	V	Peak
5920.0000	44.64	2.97	47.61	74.00	-26.39	V	Peak
1195.0000	56.07	-8.77	47.30	74.00	-26.70	H	Peak
3040.0000	46.38	-4.21	42.17	74.00	-31.83	H	Peak
3895.0000	45.26	-2.51	42.75	74.00	-31.25	H	Peak
4675.0000	44.48	-0.13	44.35	74.00	-29.65	H	Peak
4885.0000	45.19	0.80	45.99	74.00	-28.01	H	Peak
5605.0000	44.89	1.95	46.84	74.00	-27.16	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:** September 12, 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	54.81	-8.77	46.04	74.00	-27.96	V	Peak
1990.0000	54.47	-11.21	43.26	74.00	-30.74	V	Peak
3250.0000	47.25	-4.07	43.18	74.00	-30.82	V	Peak
3700.0000	45.77	-2.75	43.02	74.00	-30.98	V	Peak
4285.0000	45.00	-1.26	43.74	74.00	-30.26	V	Peak
5575.0000	44.62	1.88	46.50	74.00	-27.50	V	Peak
1300.0000	53.43	-8.28	45.15	74.00	-28.85	H	Peak
3190.0000	46.37	-4.10	42.27	74.00	-31.73	H	Peak
4255.0000	45.64	-1.37	44.27	74.00	-29.73	H	Peak
4900.0000	45.23	0.86	46.09	74.00	-27.91	H	Peak
5485.0000	44.43	1.69	46.12	74.00	-27.88	H	Peak
5875.0000	44.59	2.90	47.49	74.00	-26.51	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:** September 12, 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	54.21	-8.77	45.44	74.00	-28.56	V	Peak
3610.0000	46.36	-2.98	43.38	74.00	-30.62	V	Peak
4525.0000	44.87	-0.59	44.28	74.00	-29.72	V	Peak
5350.0000	44.95	1.53	46.48	74.00	-27.52	V	Peak
5995.0000	44.79	3.08	47.87	74.00	-26.13	V	Peak
6250.0000	45.10	3.83	48.93	74.00	-25.07	V	Peak
1195.0000	54.30	-8.77	45.53	74.00	-28.47	H	Peak
3010.0000	46.85	-4.23	42.62	74.00	-31.38	H	Peak
3805.0000	45.24	-2.49	42.75	74.00	-31.25	H	Peak
4210.0000	45.51	-1.54	43.97	74.00	-30.03	H	Peak
4765.0000	45.94	0.26	46.20	74.00	-27.80	H	Peak
5005.0000	45.14	1.33	46.47	74.00	-27.53	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).

BluetoothGFSK

Operation Mode: TX(CH Low)

Test Date: August 7, 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
1300.0000	55.04	-7.66	47.38	74.00	-26.62	V	Peak
1990.0000	51.89	-8.50	43.39	74.00	-30.61	V	Peak
2860.0000	47.53	-3.82	43.71	74.00	-30.29	V	Peak
3910.0000	46.47	-1.17	45.30	74.00	-28.70	V	Peak
4810.0000	46.52	1.83	48.35	74.00	-25.65	V	Peak
5785.0000	45.15	4.15	49.30	74.00	-24.70	V	Peak
1300.0000	54.24	-7.66	46.58	74.00	-27.42	H	Peak
2815.0000	48.32	-4.00	44.32	74.00	-29.68	H	Peak
3520.0000	45.62	-2.24	43.38	74.00	-30.62	H	Peak
4060.0000	45.84	-0.76	45.08	74.00	-28.92	H	Peak
5155.0000	45.45	2.84	48.29	74.00	-25.71	H	Peak
6235.0000	45.02	5.58	50.60	74.00	-23.40	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(CH Mid)**Test Date:** August 7, 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	56.31	-8.19	48.12	74.00	-25.88	V	Peak
1300.0000	54.88	-7.66	47.22	74.00	-26.78	V	Peak
1795.0000	52.55	-8.80	43.75	74.00	-30.25	V	Peak
2815.0000	49.31	-4.00	45.31	74.00	-28.69	V	Peak
3010.0000	47.60	-3.25	44.35	74.00	-29.65	V	Peak
4885.0000	49.78	2.16	51.94	74.00	-22.06	V	Peak
1105.0000	54.07	-8.98	45.09	74.00	-28.91	H	Peak
1300.0000	55.34	-7.66	47.68	74.00	-26.32	H	Peak
3040.0000	47.33	-3.21	44.12	74.00	-29.88	H	Peak
4030.0000	45.57	-0.84	44.73	74.00	-29.27	H	Peak
4660.0000	44.51	1.57	46.08	74.00	-27.92	H	Peak
5185.0000	44.78	2.87	47.65	74.00	-26.35	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(CH High)**Test Date:** August 7, 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	55.78	-8.19	47.59	74.00	-26.41	V	Peak
1300.0000	55.25	-7.66	47.59	74.00	-26.41	V	Peak
1705.0000	54.22	-8.44	45.78	74.00	-28.22	V	Peak
1990.0000	53.63	-8.50	45.13	74.00	-28.87	V	Peak
2515.0000	49.15	-5.24	43.91	74.00	-30.09	V	Peak
4960.0000	53.16	2.49	55.65	74.00	-18.35	V	Peak
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1105.0000	54.24	-8.98	45.26	74.00	-28.74	H	Peak
1735.0000	54.73	-8.56	46.17	74.00	-27.83	H	Peak
3265.0000	47.09	-2.97	44.12	74.00	-29.88	H	Peak
4405.0000	45.20	0.62	45.82	74.00	-28.18	H	Peak
4960.0000	46.59	2.49	49.08	74.00	-24.92	H	Peak
5860.0000	44.44	4.35	48.79	74.00	-25.21	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).

**8DPSK****Operation Mode:** TX(CH Low)**Test Date:** August 7, 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	54.86	-8.19	46.67	74.00	-27.33	V	Peak
1300.0000	53.78	-7.66	46.12	74.00	-27.88	V	Peak
1990.0000	55.69	-8.50	47.19	74.00	-26.81	V	Peak
3190.0000	46.59	-3.00	43.59	74.00	-30.41	V	Peak
4375.0000	45.74	0.47	46.21	74.00	-27.79	V	Peak
5545.0000	44.72	3.43	48.15	74.00	-25.85	V	Peak
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1090.0000	54.51	-9.11	45.40	74.00	-28.60	H	Peak
1300.0000	51.69	-7.66	44.03	74.00	-29.97	H	Peak
2845.0000	47.74	-3.88	43.86	74.00	-30.14	H	Peak
4210.0000	46.18	-0.37	45.81	74.00	-28.19	H	Peak
5080.0000	45.30	2.75	48.05	74.00	-25.95	H	Peak
6145.0000	44.73	5.25	49.98	74.00	-24.02	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(CH Mid)**Test Date:** August 7, 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
1090.0000	55.97	-9.11	46.86	74.00	-27.14	V	Peak
1300.0000	54.77	-7.66	47.11	74.00	-26.89	V	Peak
2005.0000	52.08	-8.45	43.63	74.00	-30.37	V	Peak
2515.0000	49.24	-5.24	44.00	74.00	-30.00	V	Peak
4885.0000	46.86	2.16	49.02	74.00	-24.98	V	Peak
7015.0000	46.10	8.53	54.63	74.00	-19.37	V	Peak
1105.0000	55.26	-8.98	46.28	74.00	-27.72	H	Peak
1300.0000	53.92	-7.66	46.26	74.00	-27.74	H	Peak
1720.0000	55.05	-8.50	46.55	74.00	-27.45	H	Peak
3160.0000	47.26	-3.04	44.22	74.00	-29.78	H	Peak
4285.0000	46.17	0.01	46.18	74.00	-27.82	H	Peak
5245.0000	45.59	2.93	48.52	74.00	-25.48	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(CH High)**Test Date:** August 7, 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	55.06	-8.19	46.87	74.00	-27.13	V	Peak
1300.0000	56.43	-7.66	48.77	74.00	-25.23	V	Peak
2005.0000	53.08	-8.45	44.63	74.00	-29.37	V	Peak
3880.0000	46.05	-1.26	44.79	74.00	-29.21	V	Peak
4960.0000	49.14	2.49	51.63	74.00	-22.37	V	Peak
5950.0000	44.76	4.58	49.34	74.00	-24.66	V	Peak
<hr/>							
1105.0000	55.55	-8.98	46.57	74.00	-27.43	H	Peak
1300.0000	52.26	-7.66	44.60	74.00	-29.40	H	Peak
1720.0000	54.06	-8.50	45.56	74.00	-28.44	H	Peak
3265.0000	46.82	-2.97	43.85	74.00	-30.15	H	Peak
3640.0000	46.49	-1.73	44.76	74.00	-29.24	H	Peak
4735.0000	44.76	1.69	46.45	74.00	-27.55	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).



6.3. 6DB BANDWIDTH MEASUREMENT

6.3.1. 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.

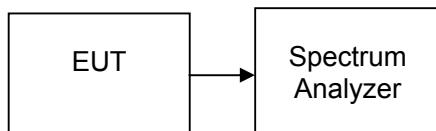
6.3.2. TEST INSTRUMENTS

Name of Equipment	Manufacturer	Model	Serial Number	Last Calibration	Calibration Due
Spectrum Analyzer	Agilent	E4446A	US44300399	03/19/2012	03/19/2013

6.3.3. 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 = 1-5 % of the emission bandwidth (EBW), VBW = $\geq 3 \times$ RBW, Sweep = auto.
4. Mark the peak frequency and -6dB (upper and lower) frequency.
5. Repeat until all the rest channels are investigated.

6.3.4. TEST SETUP





6.3.5. TEST RESULTS

No non-compliance noted

WIFI

Test Data

Test mode: IEEE 802.11b

Channel	Frequency (MHz)	Bandwidth (kHz)	Limit (kHz)	Test Result
Low	2412	10361	>500	PASS
Mid	2437	10359		PASS
High	2462	10359		PASS

Test mode: IEEE 802.11g

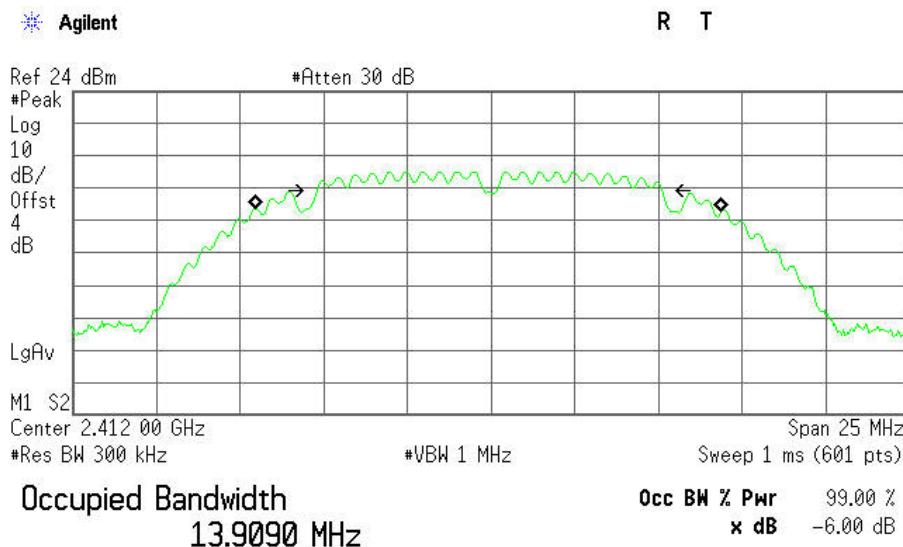
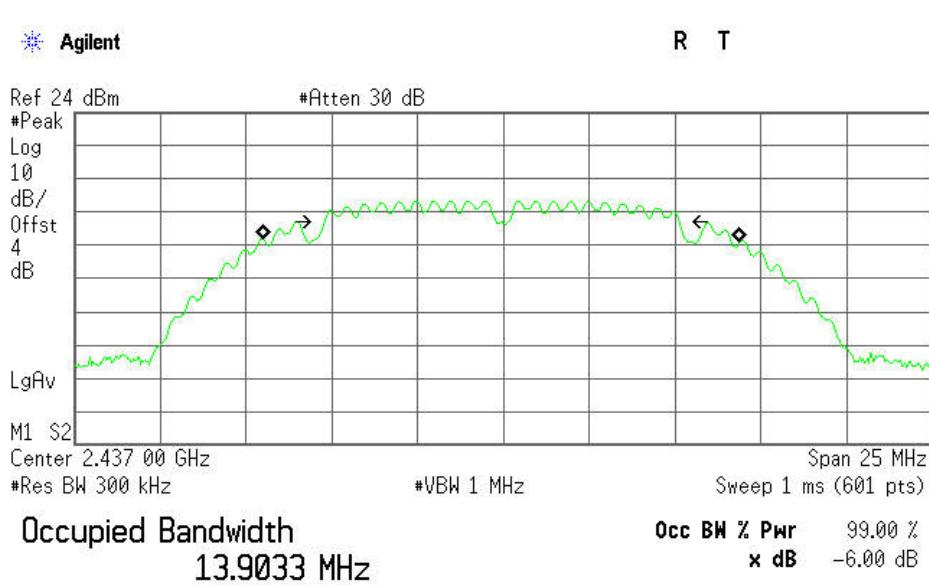
Channel	Frequency (MHz)	Bandwidth (kHz)	Limit (kHz)	Test Result
Low	2412	15946	>500	PASS
Mid	2437	15912		PASS
High	2462	15926		PASS

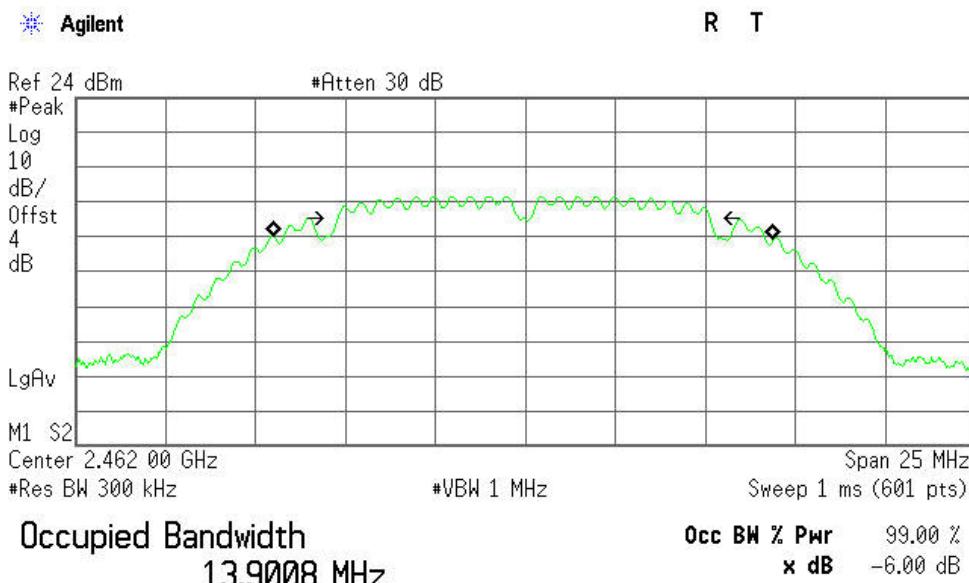
Test mode: IEEE 802.11n HT20 MHz

Channel	Frequency (MHz)	Bandwidth (kHz)	Limit (kHz)	Test Result
Low	2412	16832	>500	PASS
Mid	2437	16487		PASS
High	2462	16434		PASS

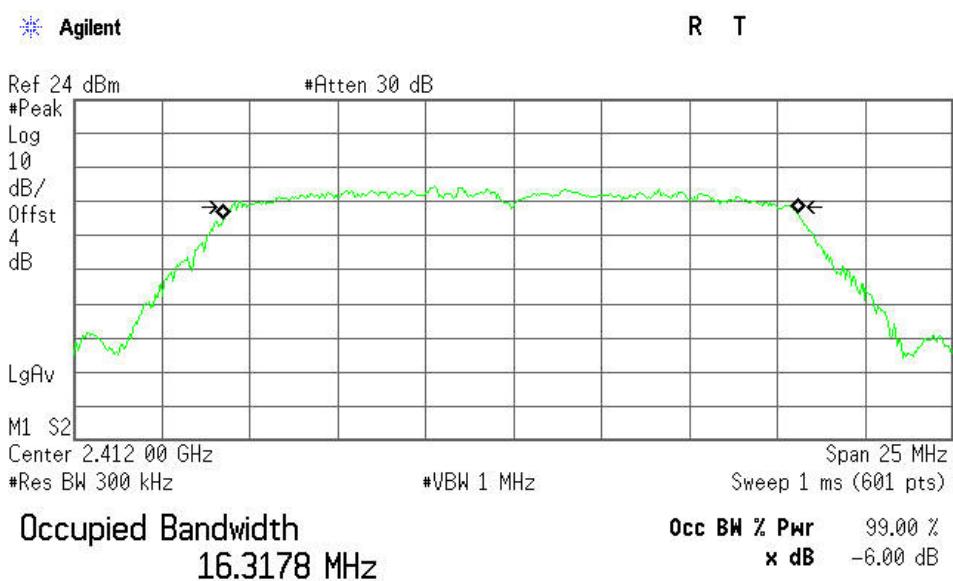
Test mode: IEEE 802.11n HT40 MHz

Channel	Frequency (MHz)	Bandwidth (kHz)	Limit (kHz)	Test Result
Low	2422	33799	>500	PASS
Mid	2437	33615		PASS
High	2452	33779		PASS

**Test Plot****IEEE 802.11b mode****6dB Bandwidth (CH Low)****6dB Bandwidth (CH Mid)**

**6dB Bandwidth (CH High)**

Transmit Freq Error -60.297 kHz
x dB Bandwidth 10.359 MHz

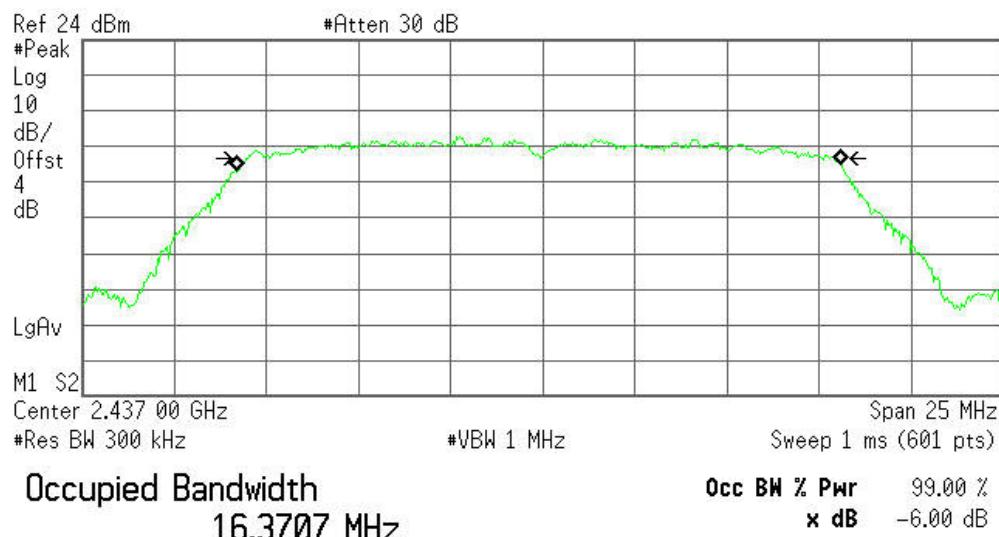
IEEE 802.11g mode**6dB Bandwidth (CH Low)**

Transmit Freq Error -72.064 kHz
x dB Bandwidth 15.946 MHz

**6dB Bandwidth (CH Mid)**

Agilent

R T

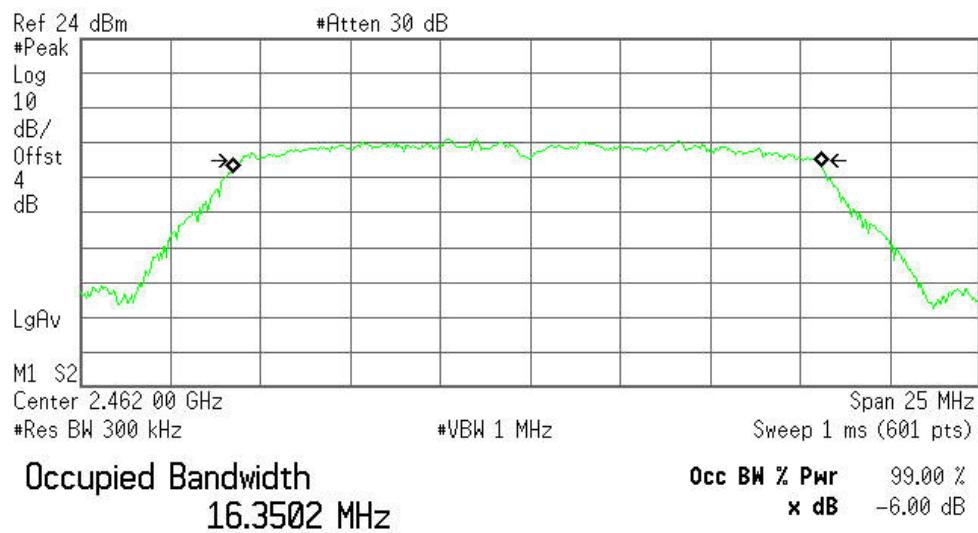


Transmit Freq Error -94.001 kHz
x dB Bandwidth 15.912 MHz

6dB Bandwidth (CH High)

Agilent

R T

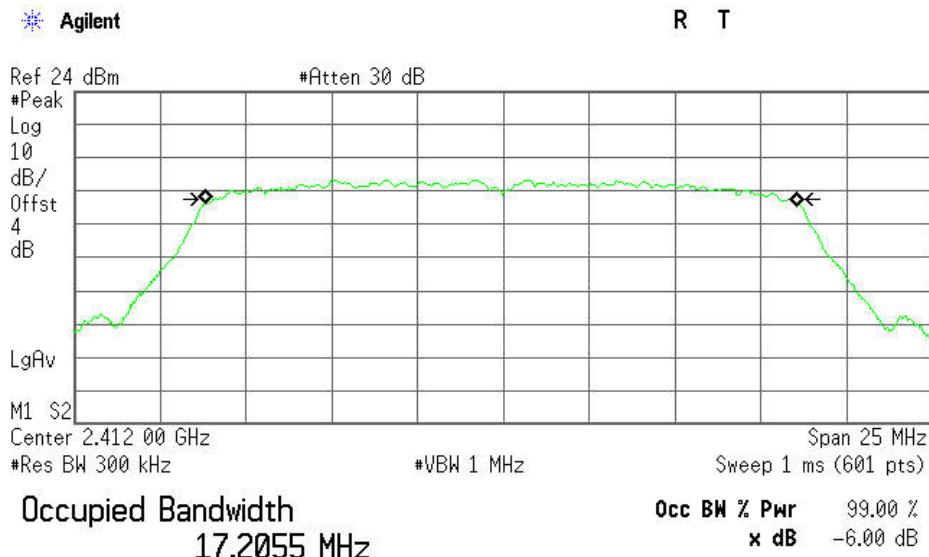


Transmit Freq Error -89.523 kHz
x dB Bandwidth 15.926 MHz



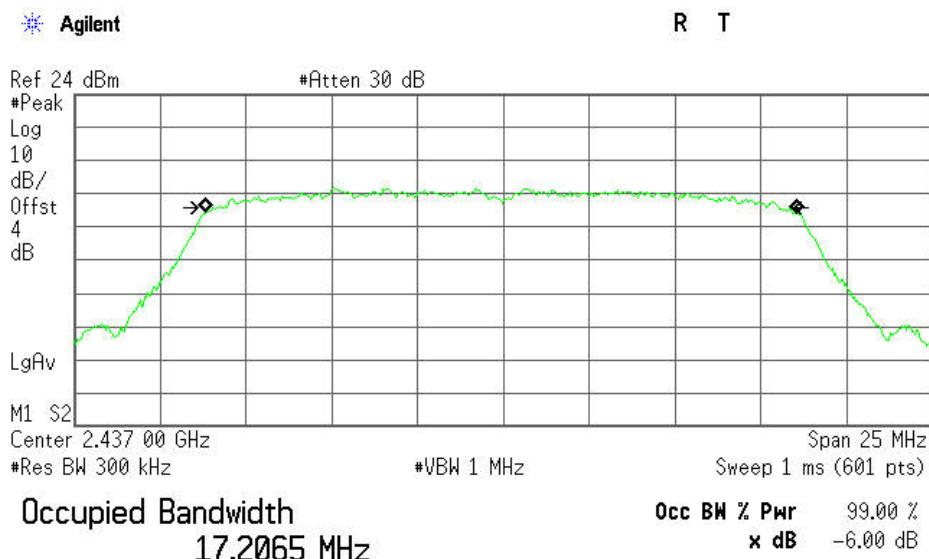
IEEE 802.11n HT20 MHz mode

6dB Bandwidth (CH Low)

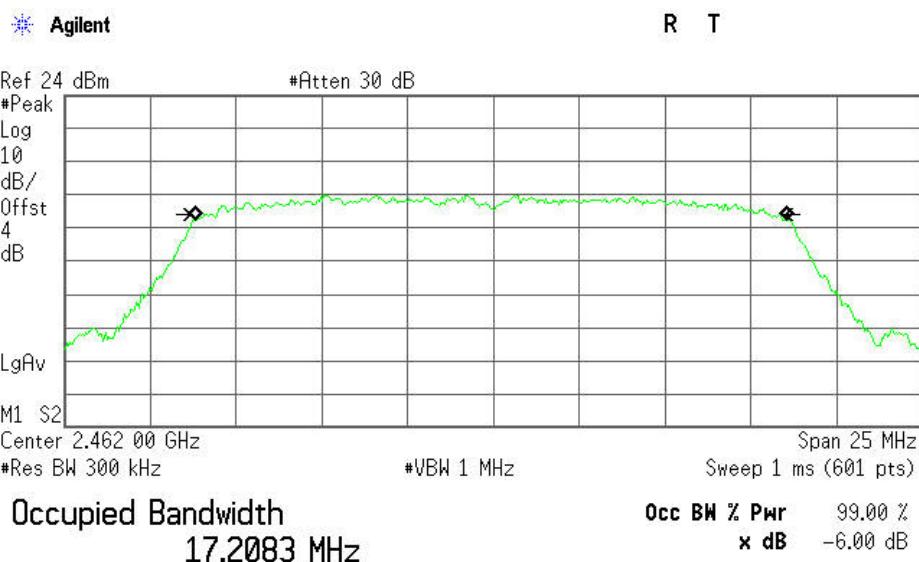


Transmit Freq Error -51.478 kHz
x dB Bandwidth 16.832 MHz

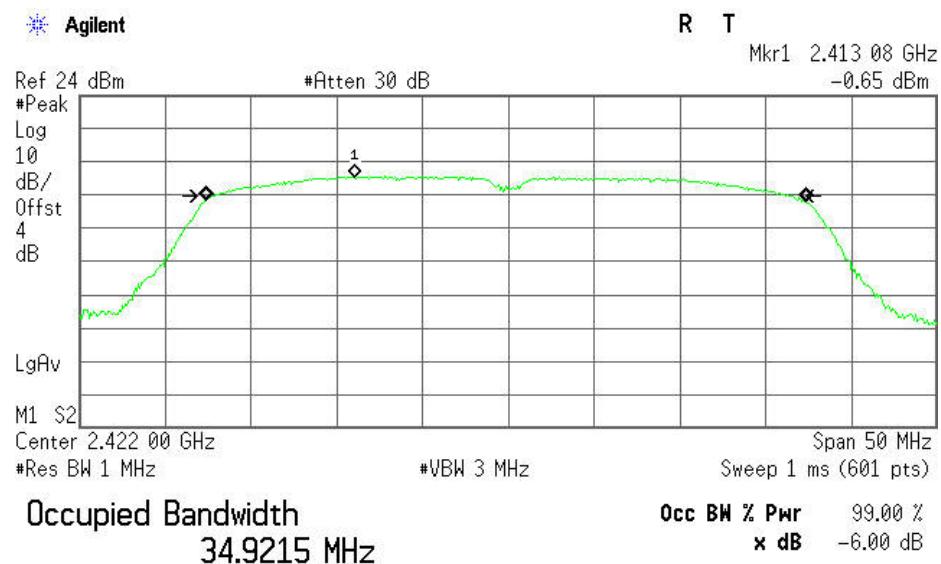
6dB Bandwidth (CH Mid)



Transmit Freq Error -52.846 kHz
x dB Bandwidth 16.487 MHz

**6dB Bandwidth (CH High)**

Transmit Freq Error -46.046 kHz
x dB Bandwidth 16.434 MHz

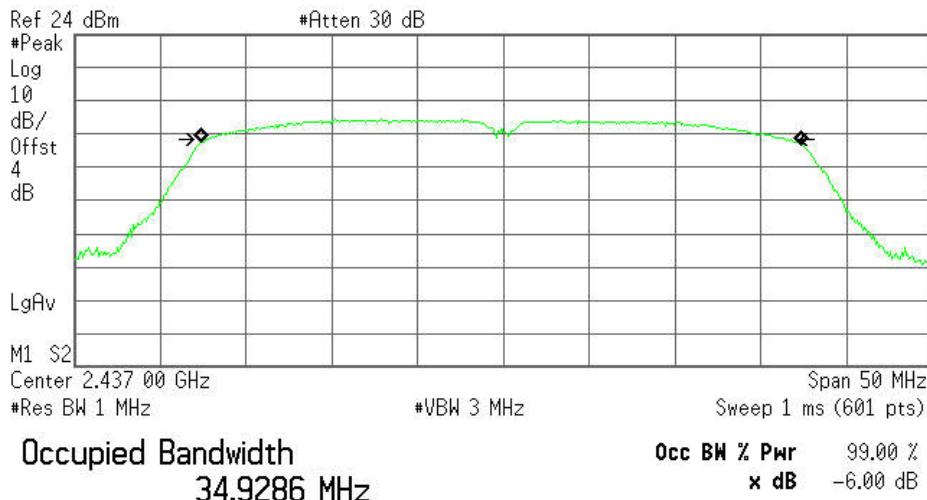
IEEE 802.11n HT40 MHz mode**6dB Bandwidth (CH Low)**

Transmit Freq Error -119.747 kHz
x dB Bandwidth 33.799 MHz

**6dB Bandwidth (CH Mid)**

* Agilent

R T

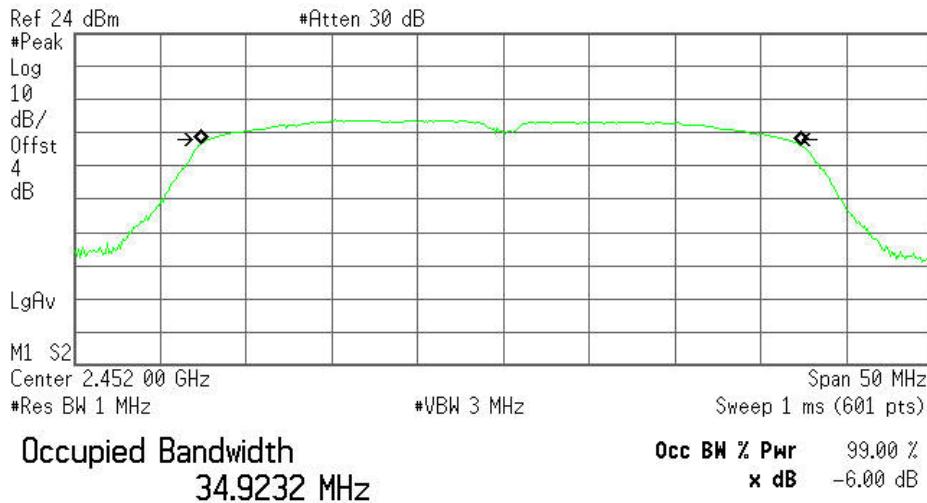


Transmit Freq Error -124.958 kHz
x dB Bandwidth 33.615 MHz

6dB Bandwidth (CH High)

* Agilent

R T



Transmit Freq Error -113.463 kHz
x dB Bandwidth 33.779 MHz

Bluetooth: Not applicable



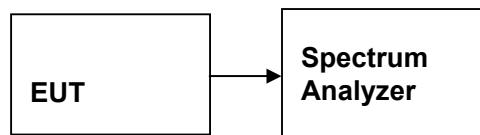
6.4. 20DB BANDWIDTH

None; for reporting purpose only.

MEASUREMENT EQUIPMENT USED

Name of Equipment	Manufacturer	Model	Serial Number	Last Calibration	Due Calibration
Spectrum Analyzer	Agilent	E4446A	US44300399	03/19/2012	03/19/2013

Remark: Each piece of equipment is scheduled for calibration once a year.



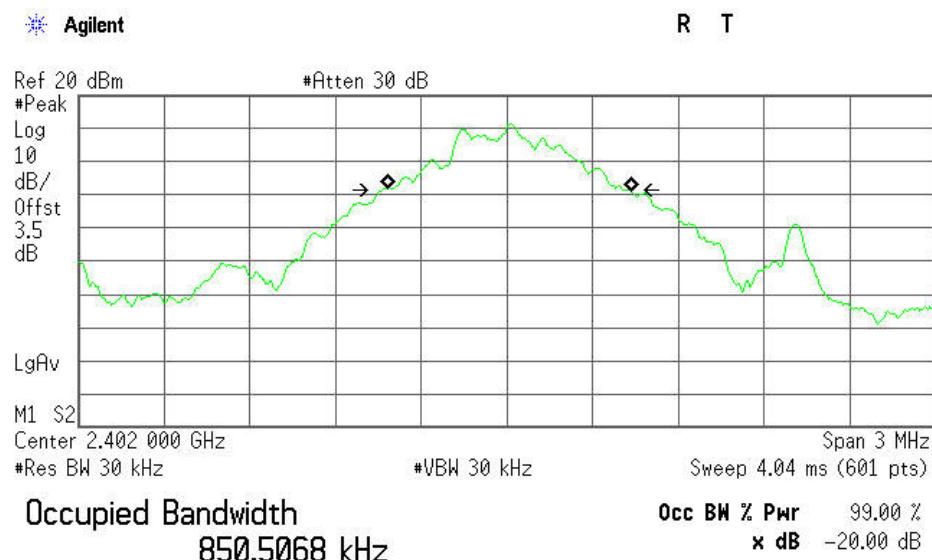
TEST CONFIGURATION

TEST PROCEDURE

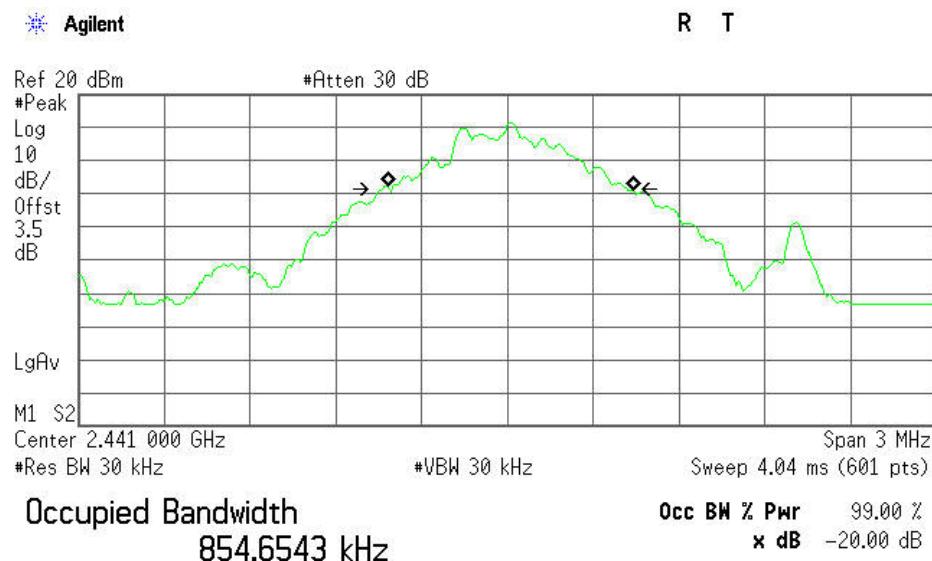
1. Place the EUT on the table and set it in the transmitting mode.
2. Remove the antenna from the EUT, then connect a low loss RF cable from antenna port to the spectrum analyzer.
3. Set the spectrum analyzer as RBW=30kHz, VBW=30kHz, Span=3MHz, Sweep = auto.
4. Mark the peak frequency and 20dB (upper and lower) frequency.
5. Repeat until all the test channels are investigated.

TEST RESULTS

WIFI: Not applicable

**Bluetooth
Test plot (GFSK)****20dB Bandwidth (CH Low)**

Transmit Freq Error 9.265 kHz
x dB Bandwidth 862.891 kHz

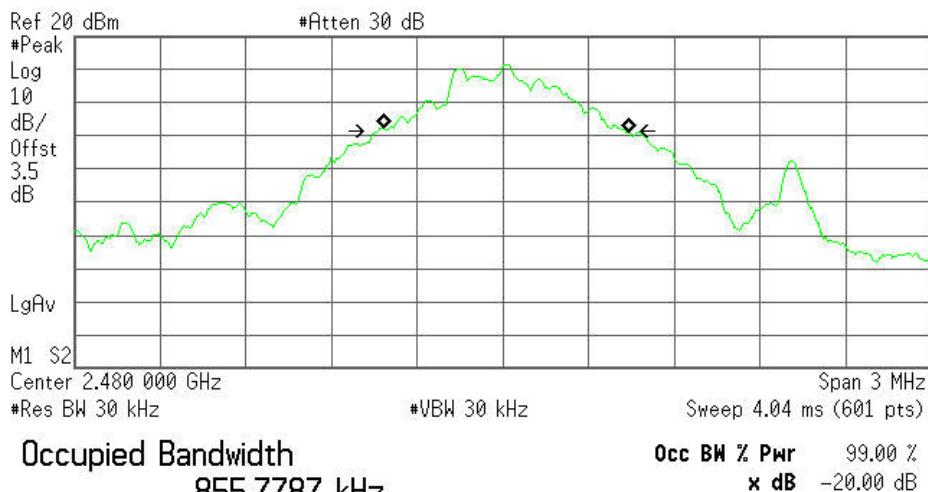
20dB Bandwidth (CH Mid)

Transmit Freq Error 10.473 kHz
x dB Bandwidth 854.805 kHz

**20dB Bandwidth (CH High)**

Agilent

R T

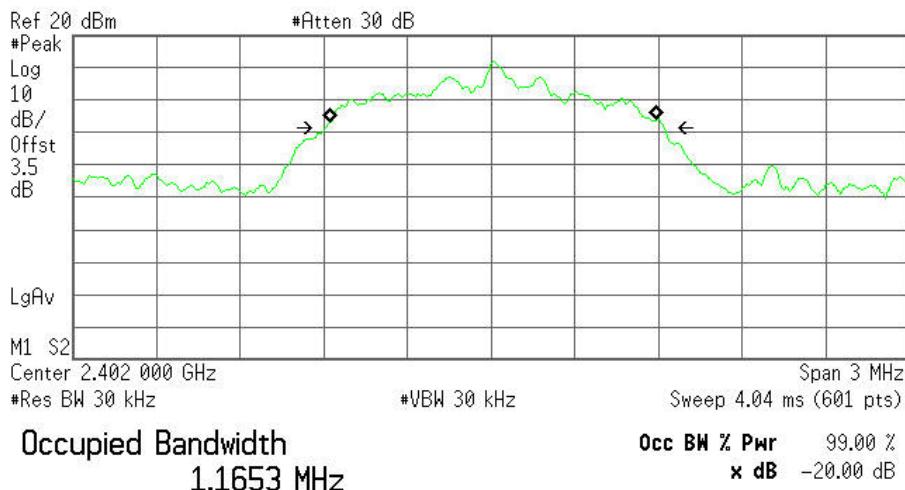


Transmit Freq Error 12.802 kHz
x dB Bandwidth 861.399 kHz

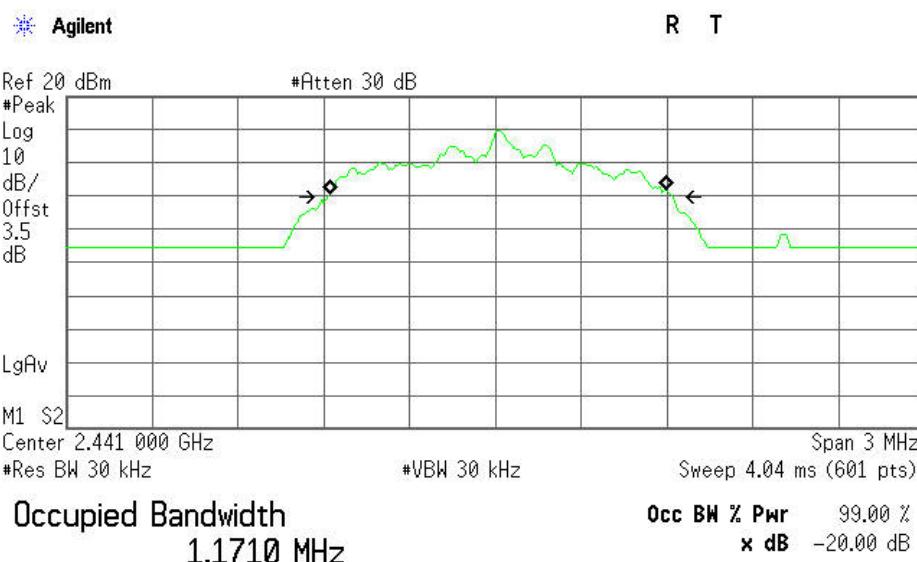
Test plot (8DPSK)**20dB Bandwidth (CH Low)**

Agilent

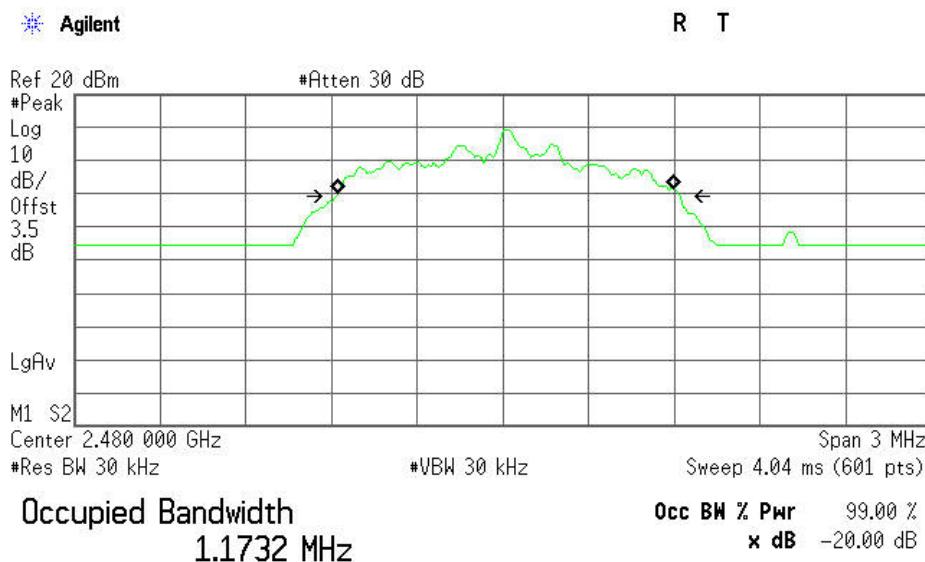
R T



Transmit Freq Error 8.956 kHz
x dB Bandwidth 1.212 MHz

**20dB Bandwidth (CH Mid)**

Transmit Freq Error 10.766 kHz
x dB Bandwidth 1.203 MHz

20dB Bandwidth (CH High)

Transmit Freq Error 11.415 kHz
x dB Bandwidth 1.204 MHz



6.5. PEAK OUTPUT POWER (WIFI)

6.5.1. 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.

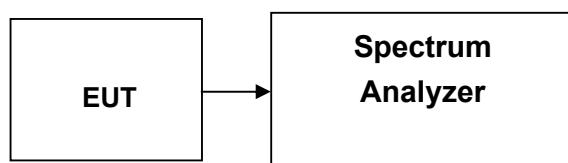
6.5.2. TEST INSTRUMENTS

Name of Equipment	Manufacturer	Model	Serial Number	Last Calibration	Calibration Due
Spectrum Analyzer	Agilent	E4446A	US44300399	03/19/2012	03/19/2013

6.5.3. TEST PROCEDURES (please refer to measurement standard)

1. This procedure provides an integrated measurement alternative when the maximum available RBW < EBW.
2. Set the RBW = 1 MHz.
3. Set the VBW = 3 MHz.
4. Set the span to a value that is 5-30 % greater than the EBW.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the spectrum analyzer's integrated band power measurement function with band limits set equal to the EBW band edges(for some analyzers, this may require a manual override to ensure use of peak detector). If the spectrum analyzer does not have a band power function, sum the spectrum levels (in linear power units) at 1 MHz intervals extending across the EBW of the spectrum.

6.5.4. TEST SETUP





6.5.5. TEST RESULTS

WIFI

Test Data

Test mode: IEEE 802.11b

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2412	10.05	0.01012	1	PASS
Mid	2437	8.23	0.00665		PASS
High	2462	6.50	0.00447		PASS

Test mode: IEEE 802.11g

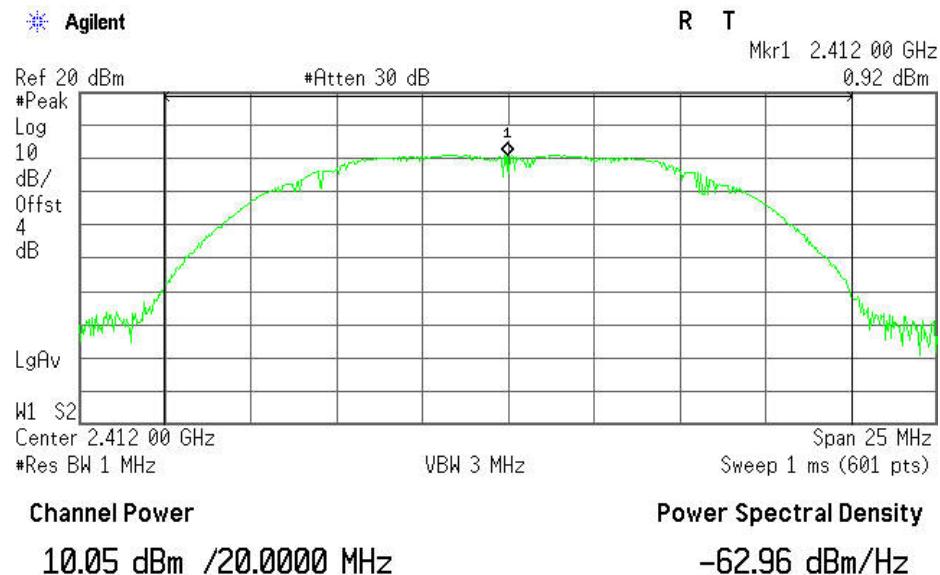
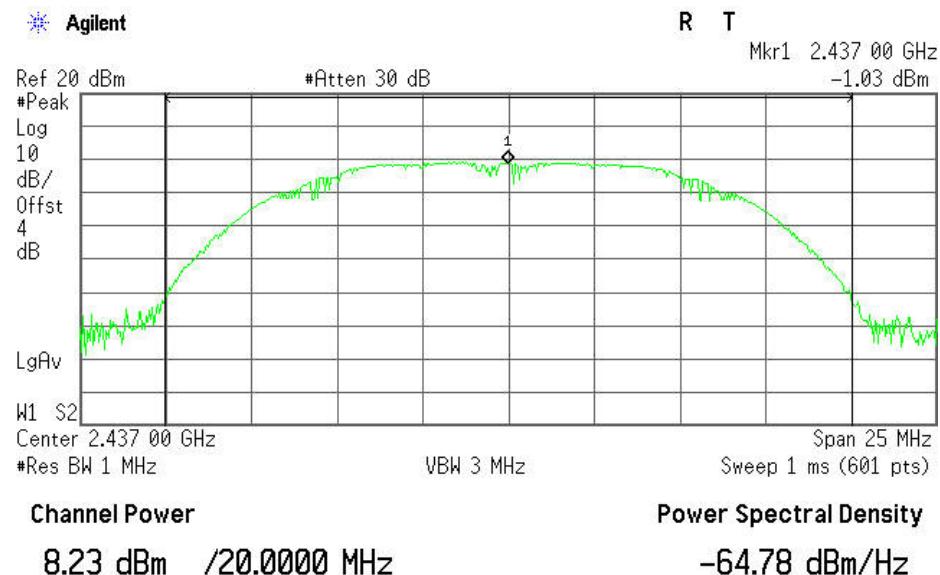
Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2412	9.14	0.00820	1	PASS
Mid	2437	7.54	0.00568		PASS
High	2462	5.67	0.00369		PASS

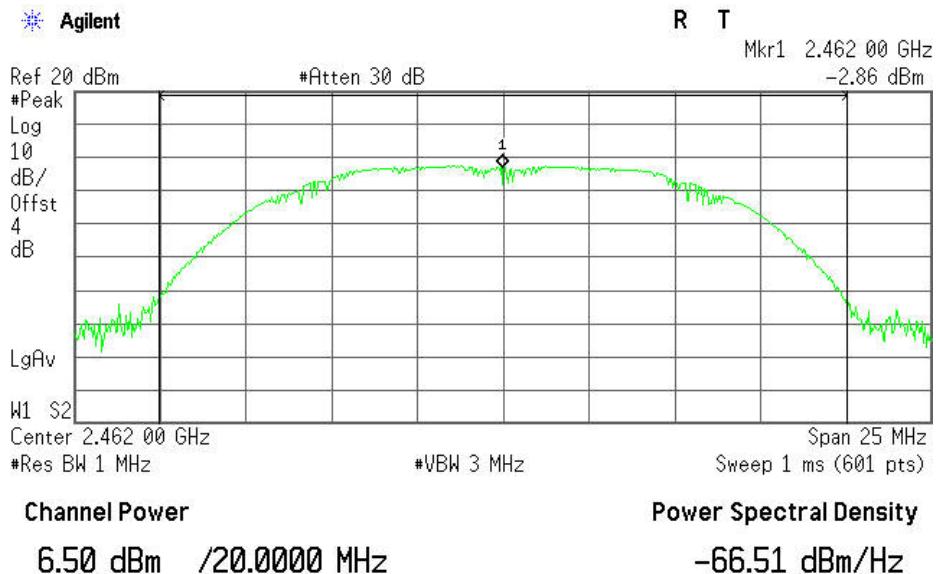
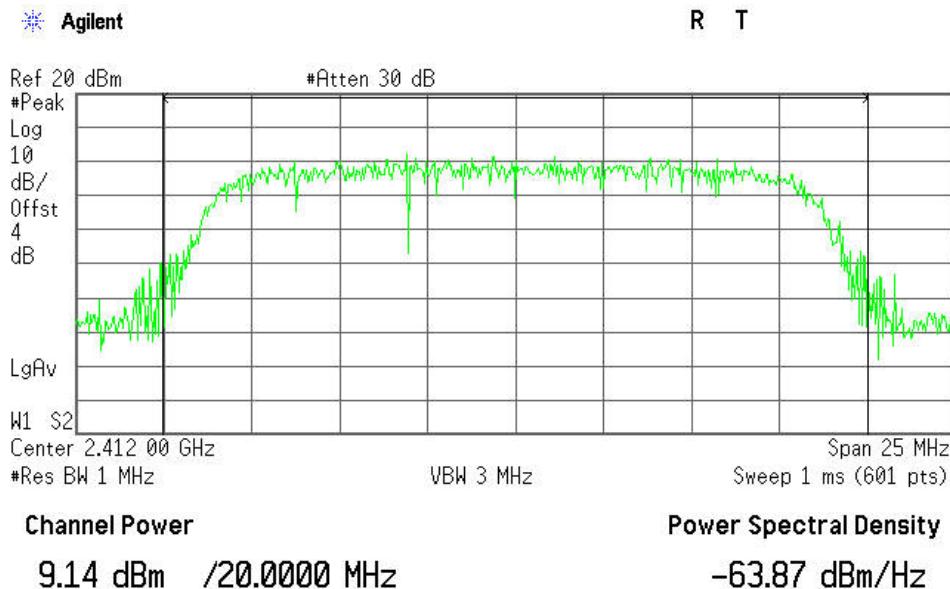
Test mode: IEEE 802.11n HT20 MHz

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2412	9.01	0.00796	1	PASS
Mid	2437	7.34	0.00542		PASS
High	2462	5.68	0.00370		PASS

Test mode: IEEE 802.11n HT40 MHz

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2422	8.31	0.00678	1	PASS
Mid	2437	7.04	0.00506		PASS
High	2452	6.32	0.00429		PASS

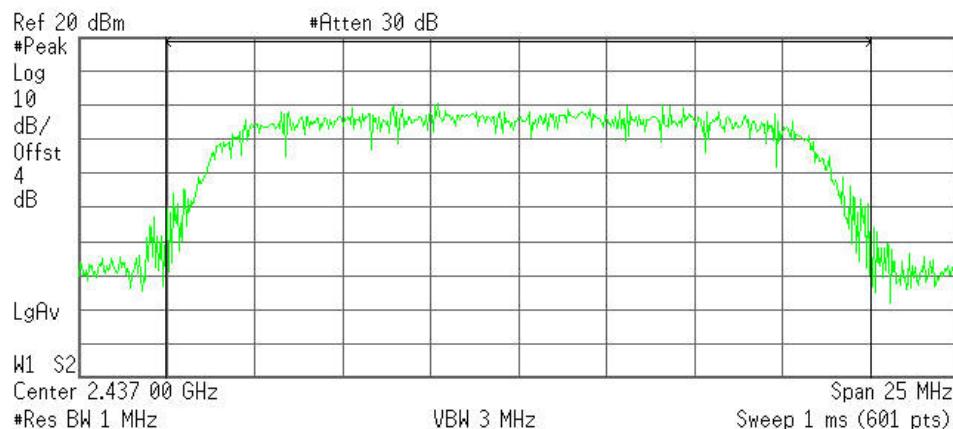
**Test Plot****IEEE 802.11b mode****Peak power (CH Low)****Peak power (CH Mid)**

**Peak power (CH High)****IEEE 802.11g mode****Peak power (CH Low)**

**Peak power (CH Mid)**

Agilent

R T

**Channel Power**

7.54 dBm /20.0000 MHz

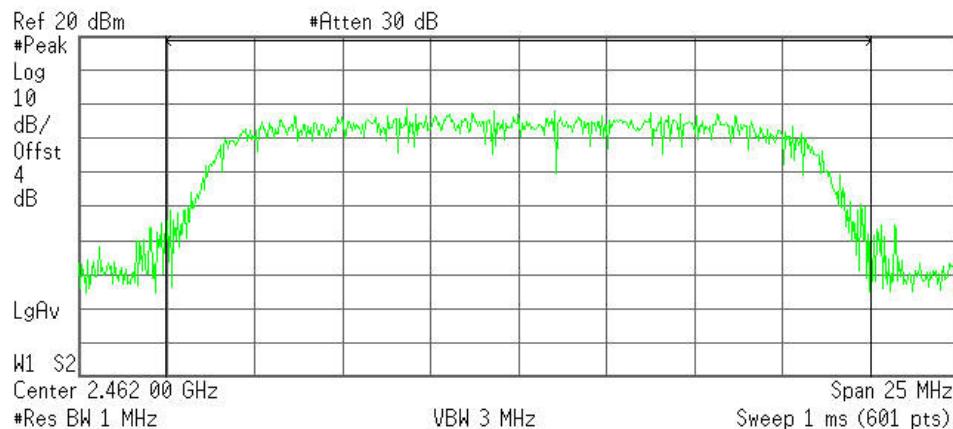
Power Spectral Density

-65.47 dBm/Hz

Peak power (CH High)

Agilent

R T

**Channel Power**

5.67 dBm /20.0000 MHz

Power Spectral Density

-67.34 dBm/Hz

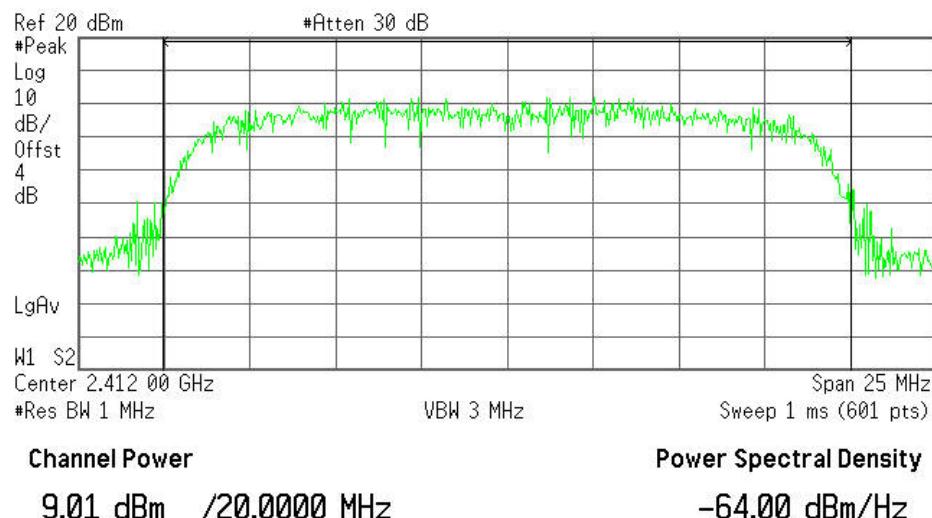


IEEE 802.11n HT20 MHz mode

Peak power (CH Low)

Agilent

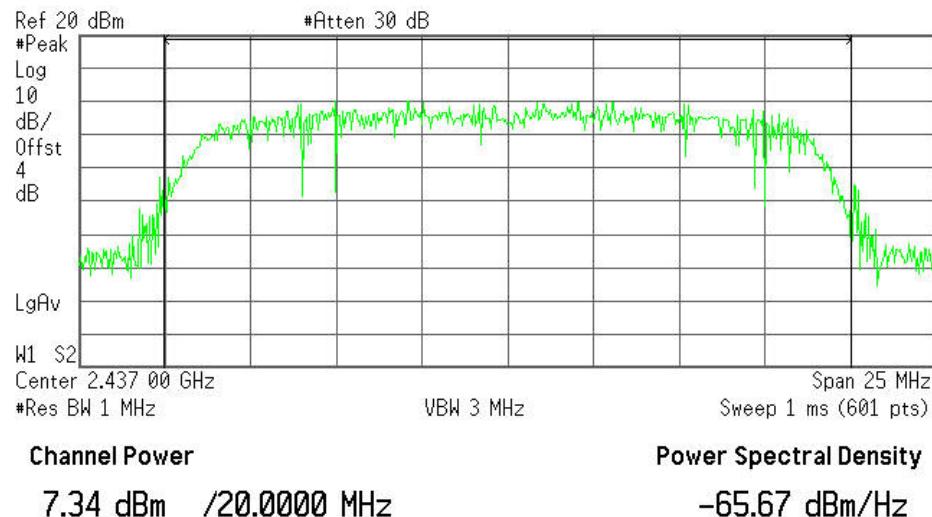
R T



Peak power (CH Mid)

Agilent

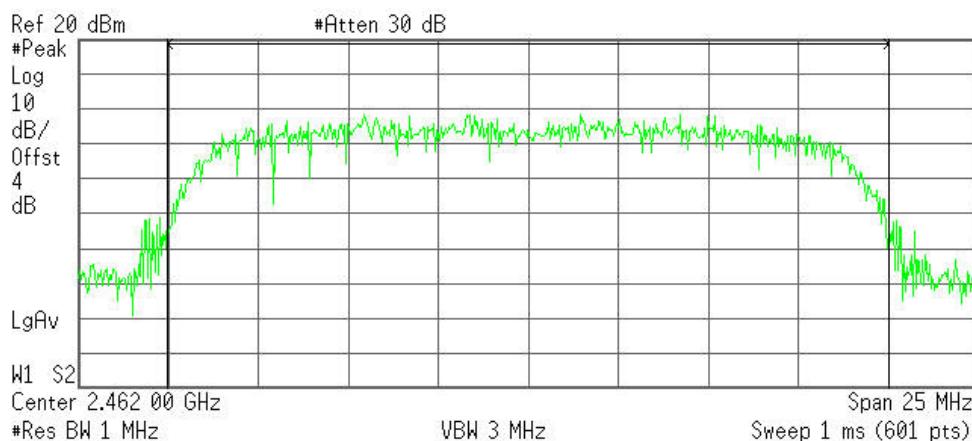
R T



**Peak power (CH High)**

Agilent

R T

**Channel Power**

5.68 dBm /20.0000 MHz

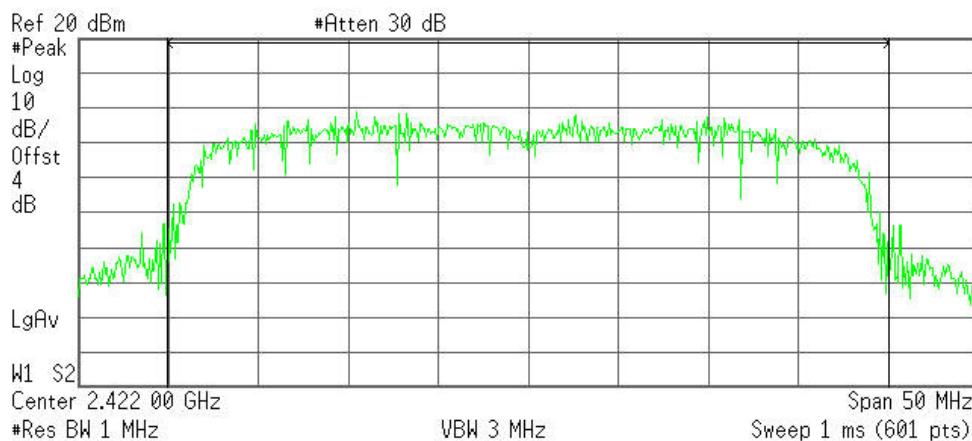
Power Spectral Density

-67.33 dBm/Hz

IEEE 802.11n HT40 MHz mode**Peak power (CH Low)**

Agilent

R T

**Channel Power**

8.31 dBm /40.0000 MHz

Power Spectral Density

-67.71 dBm/Hz