



FCC 47 CFR PART 15 SUBPART C

TEST REPORT

For

Product Name: Tablet PC

Brand Name: Kaissen

Model No.: I7003G

Series Model: N/A

Test Report Number:
KS110726B02-RPB

Issued for

Technology Brokers, INC

7412 SW 48ST Suite B, Miami, FL, 33133

Issued by

Compliance Certification Services Inc.

Kun shan Laboratory

**No.10 Weiye Rd., Innovation park, Eco&Tec,
Development Zone, Kunshan City, Jiangsu, China**

TEL: 86-512-57355888

FAX: 86-512-57370818



Note: This report shall not be reproduced except in full, without the written approval of Compliance Certification Services Inc. This document may be altered or revised by Compliance Certification Services Inc. personnel only, and shall be noted in the revision section of the document. The client should not use it to claim product endorsement by A2LA or any government agencies. The test results in the report only apply to the tested sample.



TABLE OF CONTENTS

1. TEST RESULT CERTIFICATION.....	3
2. EUT DESCRIPTION.....	4
3. TEST METHODOLOGY	5
3.1. EUT CONFIGURATION	5
3.2. EUT EXERCISE.....	5
3.3. GENERAL TEST PROCEDURES.....	5
3.4. FCC PART 15.205 RESTRICTED BANDS OF OPERATIONS.....	6
3.5. DESCRIPTION OF TEST MODES.....	7
4. INSTRUMENT CALIBRATION.....	8
4.1. MEASURING INSTRUMENT CALIBRATION	8
5. FACILITIES AND ACCREDITATIONS	10
5.1. FACILITIES	10
5.2. EQUIPMENT	10
5.3. LABORATORY ACCREDITATIONS AND LISTING	10
5.4. TABLE OF ACCREDITATIONS AND LISTINGS	11
6. SETUP OF EQUIPMENT UNDER TEST	12
6.1. SETUP CONFIGURATION OF EUT.....	12
6.2. SUPPORT EQUIPMENT	12
7. FCC PART 15.247 REQUIREMENTS.....	13
7.1. 6DB BANDWIDTH	13
7.2. PEAK POWER.....	17
7.3. AVERAGE POWER	22
7.4. PEAK POWER SPECTRAL DENSITY.....	23
7.5. sPURIOuS EMISSIONS	28
7.6. RADIATED EMISSIONS.....	32
7.7. POWERLINE CONDUCTED EMISSIONS.....	49



1. TEST RESULT CERTIFICATION

Product Name:	Tablet PC
Trade Name:	Kaissen
Model Name.:	I7003G
Series Model:	N/A
Applicant Discrepancy:	Initial
Device Category:	PORTABLE DEVICES
Date of Test:	August 1, 2011~August 3, 2011
Applicant:	Technology Brokers, INC 7412 SW 48ST Suite B, Miami, FL, 33133
Manufacturer:	Yangzhou Mastone Communication & Electronics Development Co.,Ltd Mastone Industrial Park, Yizheng Economic Development Zone, Yanjiang Road, Yezheng City, Jiangsu Province, China
Application Type:	Certification

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: 2003 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:

Hadiif Hoo
RF Manager
Compliance Certification Service Inc.

Tested by:

Sean Yu
Test Engineer
Compliance Certification Service Inc.



2. EUT DESCRIPTION

Product Name:	Tablet PC
Brand Name:	Kaissen
Model Name:	I7003G
Series Model:	N/A
Model Discrepancy:	N/A
Frequency Range:	BT:2402 ~ 2480 MHz WIFI(B/G):2412~2462MHz
Transmit Power:	IEEE 802.11b mode: 12.22dBm IEEE 802.11g mode: 13.28dBm
Modulation Technique:	IEEE 802.11b mode: DSSS (1, 2, 5.5 and 11 Mbps) IEEE 802.11g mode: DSSS /OFDM (6, 9, 12, 18, 24, 36, 48 and 54 Mbps)
Number of Channels:	IEEE 802.11b/g mode: 11 Channels
Antenna Specification:	PIFA antennas for 2.4GHz Gain -0.3 dBi

Remark:

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: ZTP-I7003G** filing to comply with Section 15.207, 15.209 and 15.247 of the FCC Part 15, Subpart C Rules.



3. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4 2003 and FCC CFR 47 15.207, 15.209 and 15.247.

3.1. EUT CONFIGURATION

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

3.2. EUT EXERCISE

The EUT was operated in the engineering mode to fix the TX frequency that was for the purpose of the measurements.

According to its specifications, the EUT must comply with the requirements of the Section 15.207, 15.209 and 15.247 under the FCC Rules Part 15 Subpart C.

3.3. GENERAL TEST PROCEDURES

Conducted Emissions

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 13.1.4.1 of ANSI C63.4 2003 Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-peak and average detector modes.

Radiated Emissions

The EUT is placed on a turn table, which is 0.8 m above ground plane. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the maximum emissions, exploratory radiated emission measurements were made according to the requirements in Section 13.1.4.1 of ANSI C63.4 2003.



3.4. FCC PART 15.205 RESTRICTED BANDS OF OPERATIONS

(a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
¹ 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	(²)
13.36 - 13.41			

¹ Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

² Above 38.6

(b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.



3.5.DESCRIPTION OF TEST MODES

The EUT transmitting and receiving with one (chain 0) antenna working at a/b/g mode, so one antenna working configuration was used for a/b/g mode testing in this report.

The EUT transmitting and receiving with two antennas simultaneously working at n mode, so 2x2 configuration was used for all testing in this report.

The worst-case data rates are determined to be as follows for each mode based on investigation by measuring the average power, peak power and PPSSD across all data rates, bandwidths, and modulations.

The worst-case data rates:

IEEE802.11b mode:

Channel Low (2412MHz)

Channel Mid (2437MHz)

Channel High (2462MHz) with 1Mbps data rate were chosen for full testing.

IEEE802.11g mode:

Channel Low (2412MHz)

Channel Mid (2437MHz)

Channel High (2462MHz) with 6Mbps data rate were chosen for full testing.



4. INSTRUMENT CALIBRATION

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment, which is traceable to recognized national standards.

Equipment Used for Emissions Measurement

Conducted Emissions Test Site				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	E4446A	MY44020154	2012-5-13
DETECTOR NEGATIVE	Agilent	8473B	MY42240176	2012-5-13
OSCILLOSCOPE	Agilent	DSO6104A	MY44002585	2012-3-25
Peak and Avg Power Sensor	Agilent	E9327A	US40441788	2012-3-25
EPM-P Series Power Meter	Agilent	E4416A	GB41292714	2012-5-13
Power SPLITTER	Mini-Circuits	ZN2PD-9G	SF078500430	2012-5-13
DC POWER SUPPLY	GW instek	GPS-3303C	E903131	2012-5-13
Temp. / Humidity Chamber	Kingson	THS-M1	242	2012-3-13
Test Software	EZ-EMC			

977 Chamber

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	E4446A	MY44020154	2012-5-13
EMI Test Receiver	R&S	ESPI3	101026	2012-3-16
Pre-Amplifier	MINI	ZFL-1000VH2	d041703	2012-5-13
Pre-Amplifier	Miteq	NSP4000-NF	870629	2012-5-13
Bilog Antenna	Sunol	JB1	A110204-2	2012-5-13
Horn-antenna	SCHWARZBECK	BBHA9120D	D:266	2012-6-8
Turn Table	CT	CT123	4165	N.C.R
Antenna Tower	CT	CTERG23	3256	N.C.R
Controller	CT	CT100	95637	N.C.R
Test Software	EZ-EMC			



Conducted Emission				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
EMI TEST RECEIVER	R&S	ESCI3	100781	2012-3-16
V (V-LISN)	Schwarzbeck	NNLK 8129	8129-143	2012-3-16
LISN (EUT)	FCC	FCC-LISN-50/250-50-2-02	SN:05012	2012-3-16
TRANSIENT LIMITER	SCHAFFNER	CFL9206	1710	2012-4-9
Test Software	EZ-EMC			

Remark: The measurement uncertainty is less than +/- 2.81dB, which is evaluated as per the NAMAS NIS 81 and CISPR/A/291/CDV.

Expanded Uncertainty (95% CONFIDENCE INTERVAL): K=2



5. FACILITIES AND ACCREDITATIONS

5.1. FACILITIES

All measurement facilities used to collect the measurement data are located at CCS China Kunshan Lab at 10#Weiye Rd, Innovation Park Eco. & Tec. Development Zone Kunshan city JiangSu, (215300), CHINA.

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 2003 and CISPR Publication 22.

5.2. EQUIPMENT

Radiated emissions are measured with one or more of the following types of linearly polarized antennas: tuned dipole, biconical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with pre-selectors and quasi-peak detectors are used to perform radiated measurements.

Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers.

Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

5.3. LABORATORY ACCREDITATIONS AND LISTING

The test facilities used to perform radiated and conducted emissions tests are accredited by American Association for Laboratory Accreditation Program for the specific scope accreditation under Lab Code: 200581-0 to perform Electromagnetic Interference tests according to FCC Part 15 and CISPR 22 requirements. In addition, the test facilities are listed with Industry Canada, Certification and Engineering Bureau, IC5743 for 10m chamber 10m, IC5743 for 10m chamber 3m.



5.4. TABLE OF ACCREDITATIONS AND LISTINGS

Country	Agency	Scope of Accreditation	Logo
USA	A2LA	47 CFR FCC Part 15/18 (using ANSI C63.4 :2003); VCCI V3; CNS 13438; CNS 13439; CNS 13803; CISPR 11; EN 55011; CISPR 13; EN 55013; CISPR 22:2005; CISPR 22:1997 +A1 :2000+A2 :2002; EN 55022:2006; EN55022 :1998 +A1 :2001+A2 :2003; EN 61000-6-3 (excluding discontinuous interference); EN 61000-6-4; AS/NZS CISPR 22; CAN/CSA-CEI/IEC CISPR 22; EN 61000-3-2; EN 61000-3-3; EN550024; EN 61000-4-2; EN 61000-4-3; EN61000-4-4; EN 61000-4-5; EN 61000-4-6; IEC 61000-4-8; EN 61000-4-11; IEC61000-3-2; IEC61000-3-3; IEC 61000-4-2; IEC 61000-4-3; IEC 61000-4-4; IEC 61000-4-5; IEC 61000-4-6; IEC 61000-4-8; IEC 61000-4-11; EN 300 220-3; EN 300 328; EN 300 330-2; EN 300 440-1; EN 300-440-2; EN 300 893; EN 301 489-01; EN 301 489-3; EN 301 489-07; EN 301 489-17; 47 CFR FCC Part 15, 22, 24	 TESTING CERT #2541.01
USA	FCC	3/10 meter Sites to perform FCC Part 15/18 measurements	 93105, 90471
Japan	VCCI	3/10 meter Sites and conducted test sites to perform radiated/conducted measurements	VCCI R-1600 C-1707 G-216

* No part of this report may be used to claim or imply product endorsement by A2LA or any agency of the US Government.



6. SETUP OF EQUIPMENT UNDER TEST

6.1. SETUP CONFIGURATION OF EUT

See test photographs attached in Appendix 1 for the actual connections between EUT and support equipment.

6.2. SUPPORT EQUIPMENT

No.	Device Type	Brand	Model	Series No.	FCC ID
1.	Notebook PC (Remote)	IBM	2672 (X31)	99KPZYN	WLAN: ANO20030400LEG Bluetooth: ANO20020100MTN

Remark:

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.



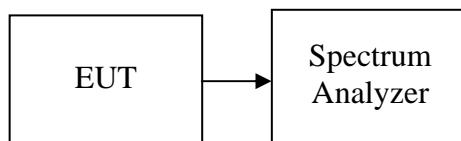
7. FCC PART 15.247 REQUIREMENTS

7.1.6DB BANDWIDTH

LIMIT

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 6dB bandwidth shall be at least 500 kHz.

Test Configuration



TEST PROCEDURE

The transmitter output is connected to the spectrum analyzer. The RBW is set to 1% to 3% of the selected span. The VBW is set to 3 times the RBW. The sweep time is occupied.

TEST RESULTS

No non-compliance noted

Test Data

IEEE 802.11b mode

Channel	Frequency (MHz)	Bandwidth (MHz)	Limit (kHz)	Result
Low	2412	12.432	>500	PASS
Mid	2437	12.720		PASS
High	2462	12.419		PASS

IEEE 802.11g mode

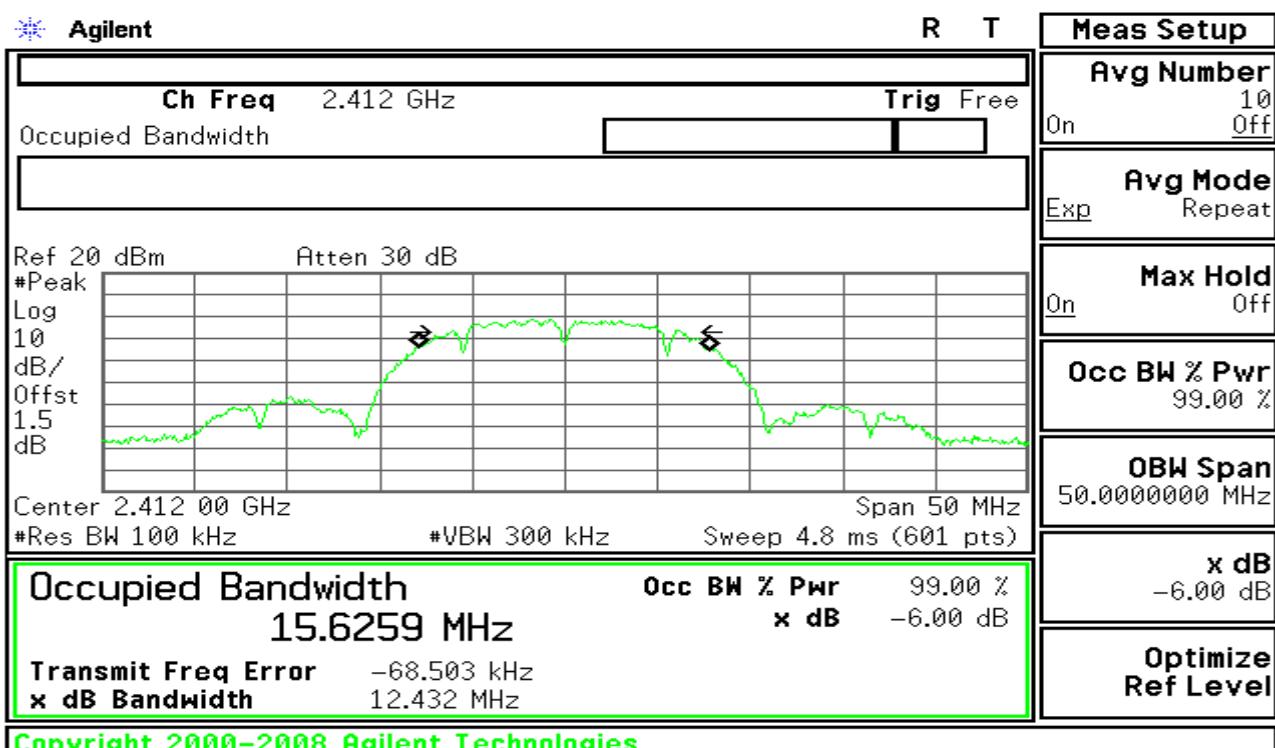
Channel	Frequency (MHz)	Bandwidth (MHz)	Limit (kHz)	Result
Low	2412	16.467	>500	PASS
Mid	2437	16.414		PASS
High	2462	16.371		PASS



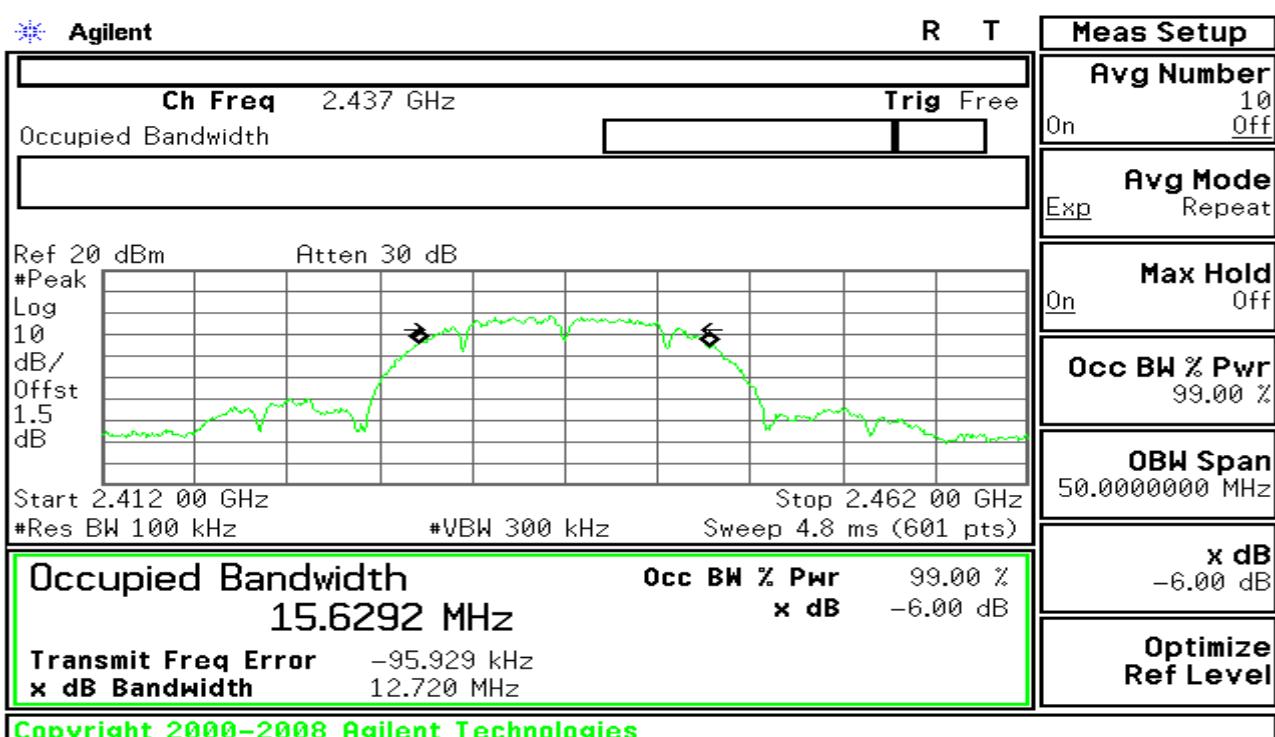
Test Plot

IEEE 802.11b MODE

6dB Bandwidth (CH Low)

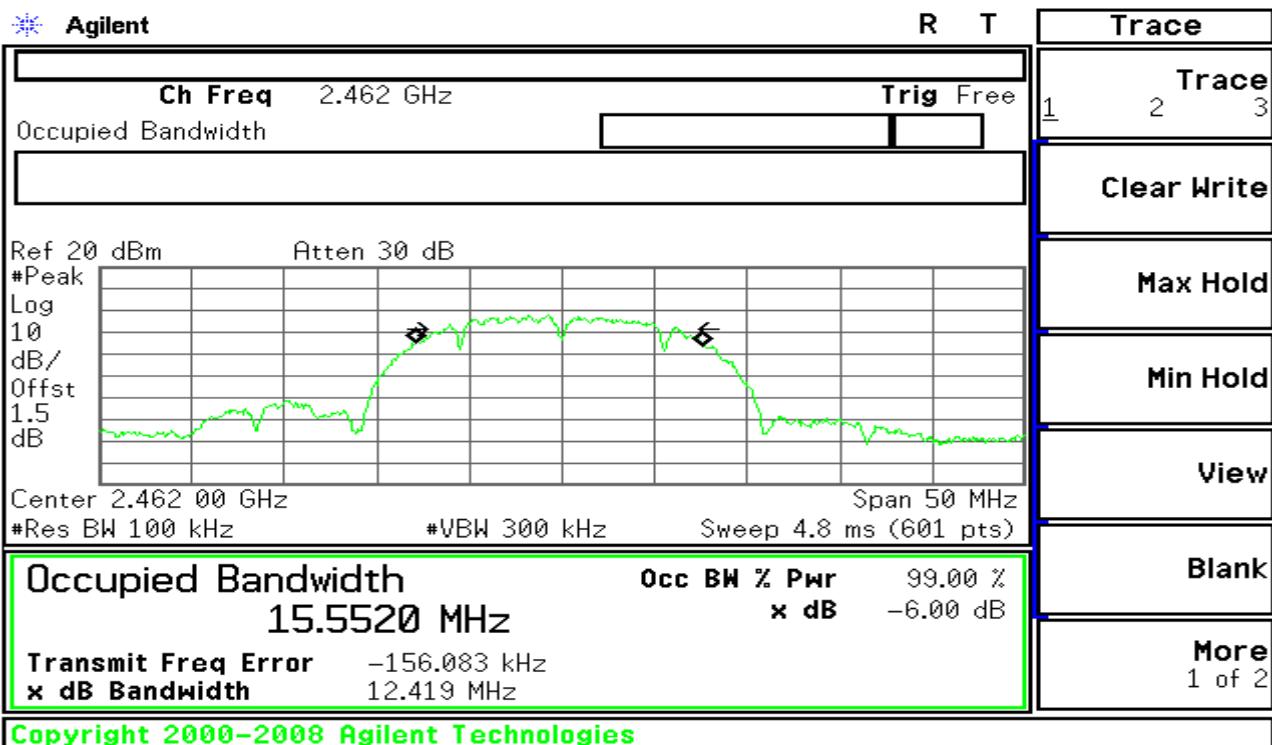


6dB Bandwidth (CH Mid)



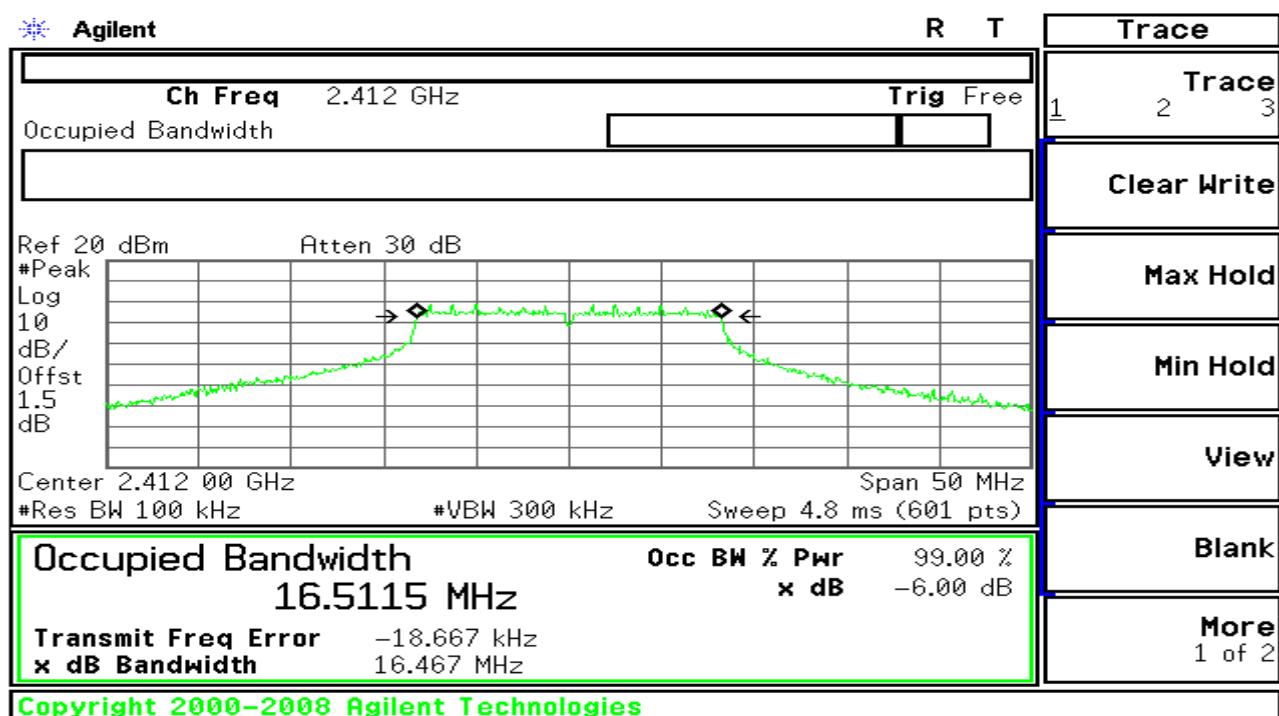


6dB Bandwidth (CH High)



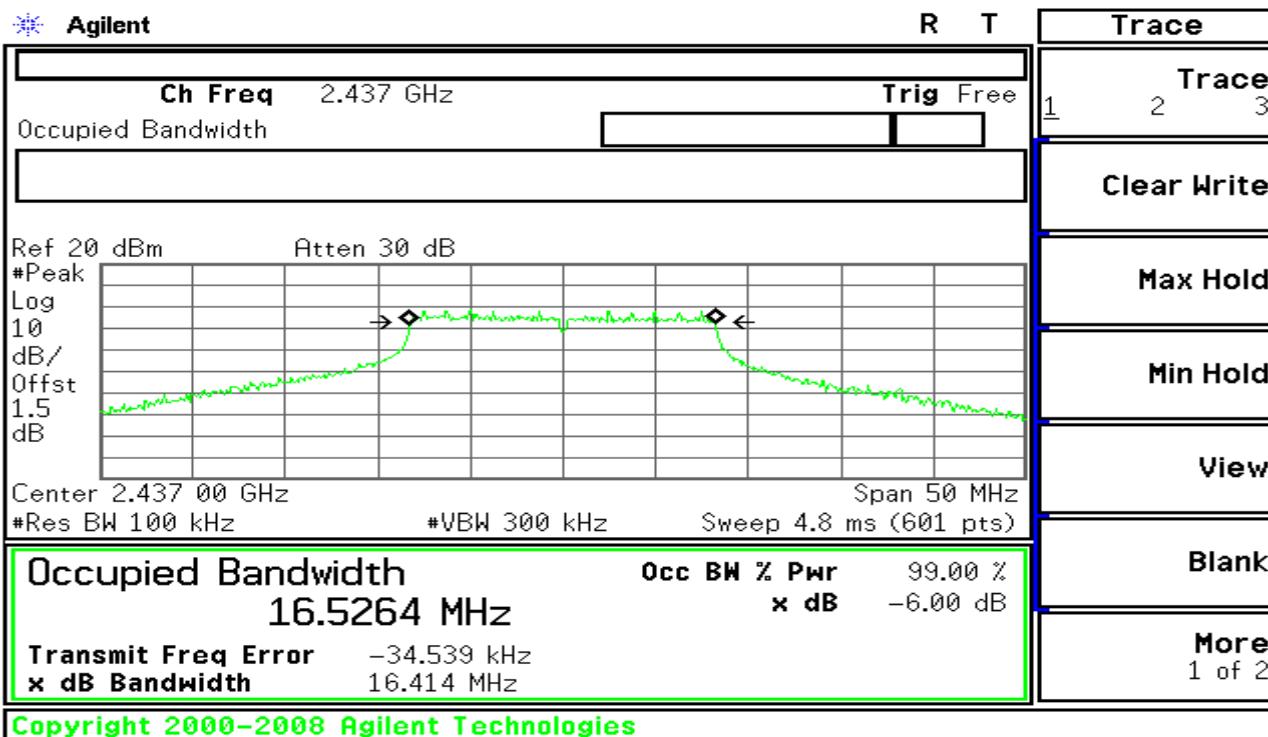
IEEE 802.11q MODE

6dB Bandwidth (CH Low)

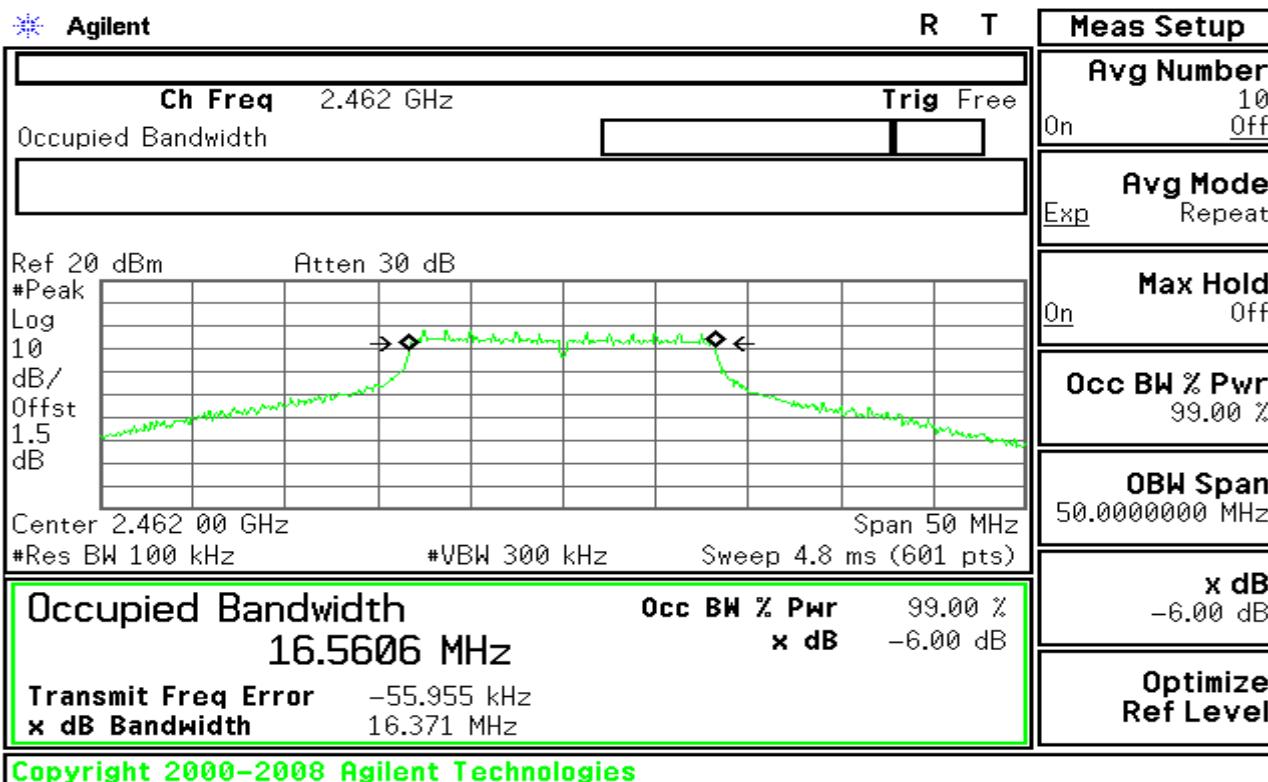




6dB Bandwidth (CH Mid)



6dB Bandwidth (CH High)





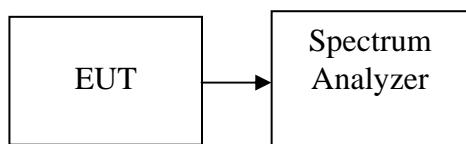
7.2. PEAK POWER

LIMIT

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.

Test Configuration



TEST PROCEDURE

- 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 *high*free run*high*.
- 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.

TEST RESULTS

No non-compliance noted



Test Data

Test mode: IEEE 802.11b mode

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2412	12.22	0.0166	1.00	PASS
Mid	2437	12.07	0.0161		PASS
High	2462	10.74	0.0186		PASS

Test mode: IEEE 802.11g mode

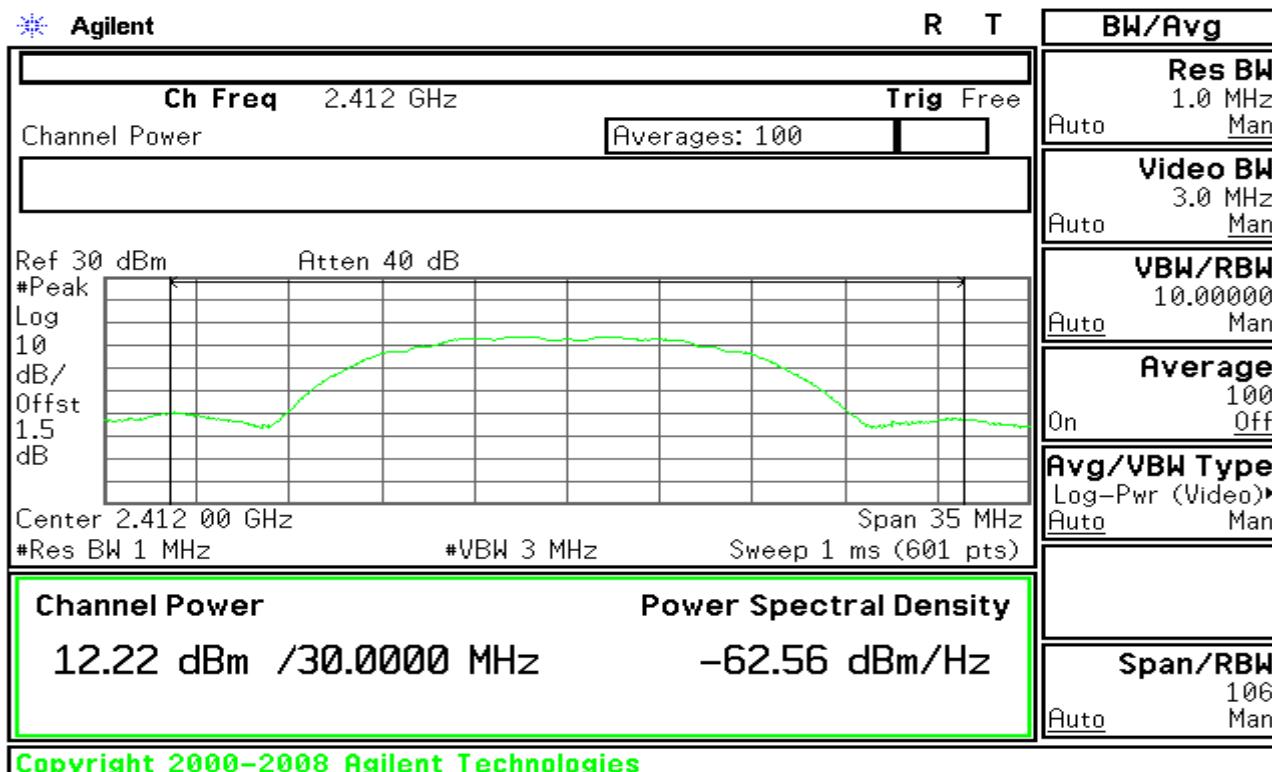
Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2412	13.28	0.0213	1.00	PASS
Mid	2437	13.22	0.0210		PASS
High	2462	12.02	0.0159		PASS



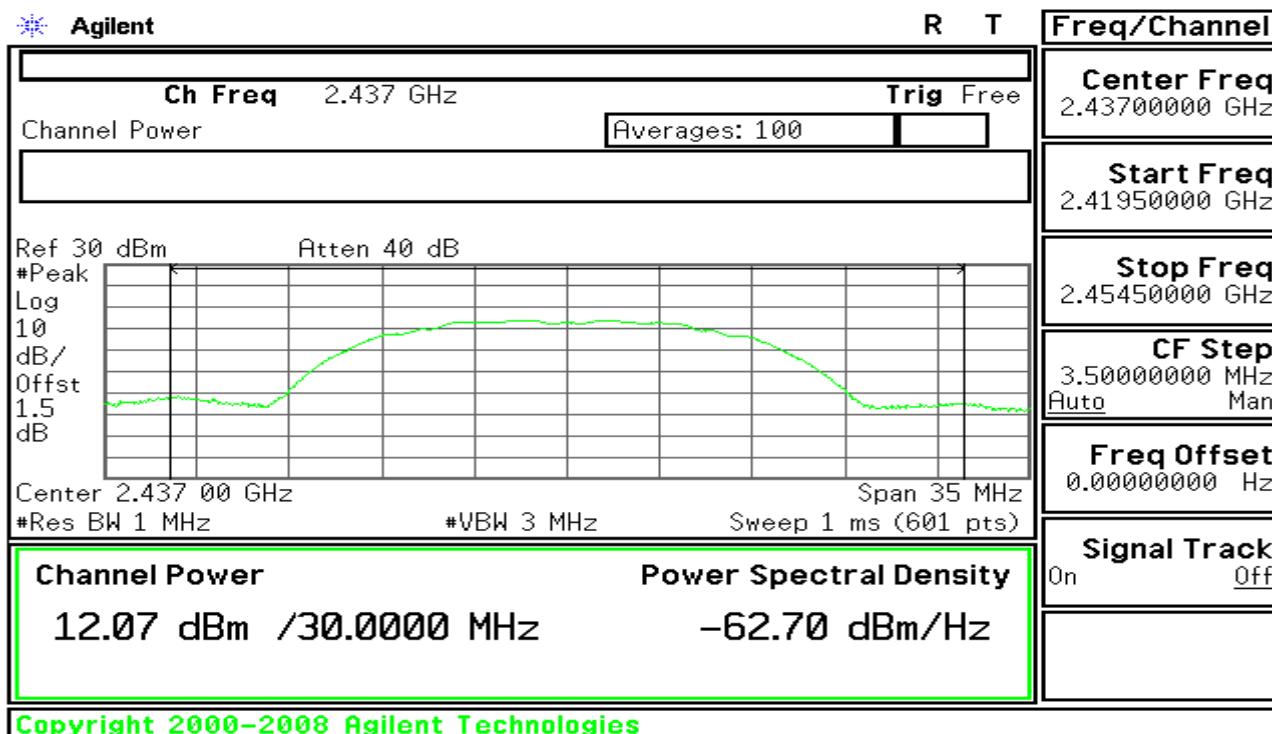
Test Plot

IEEE 802.11b mode

Peak Power (CH Low)

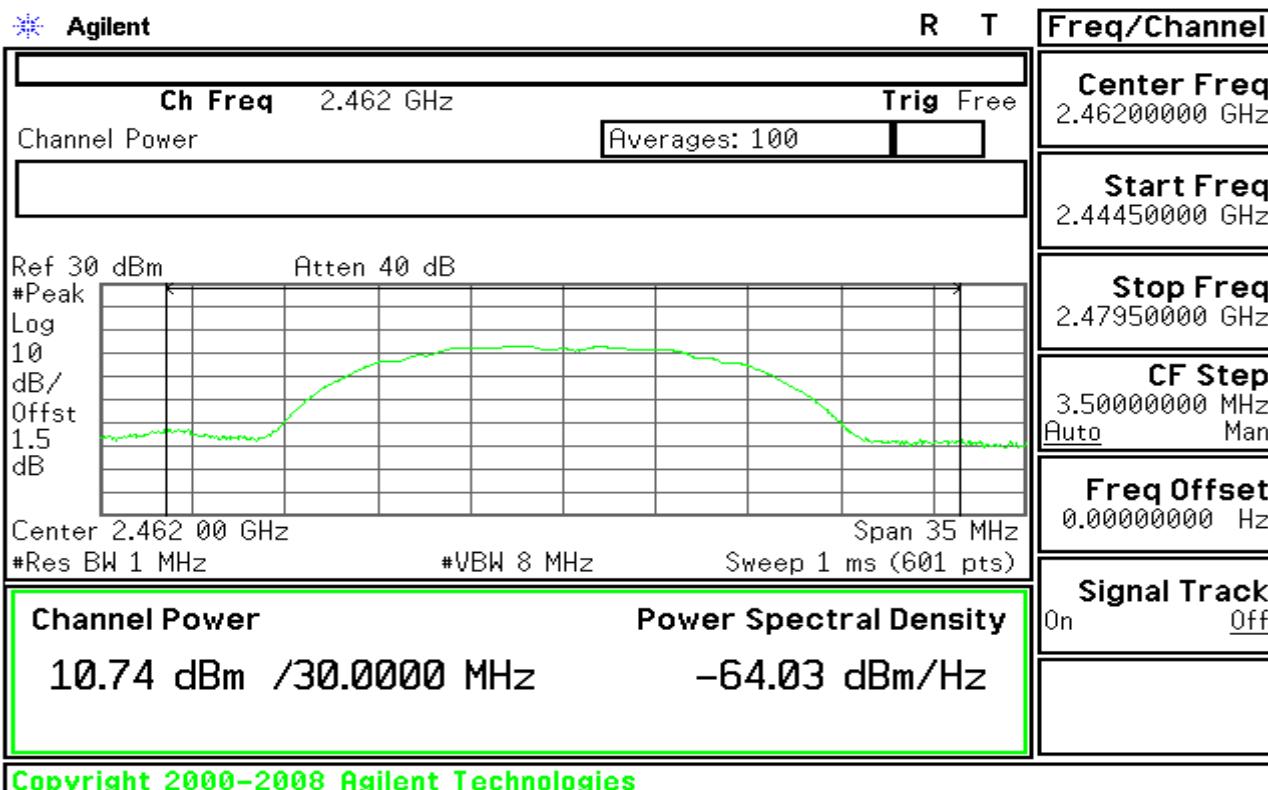


Peak Power (CH Mid)



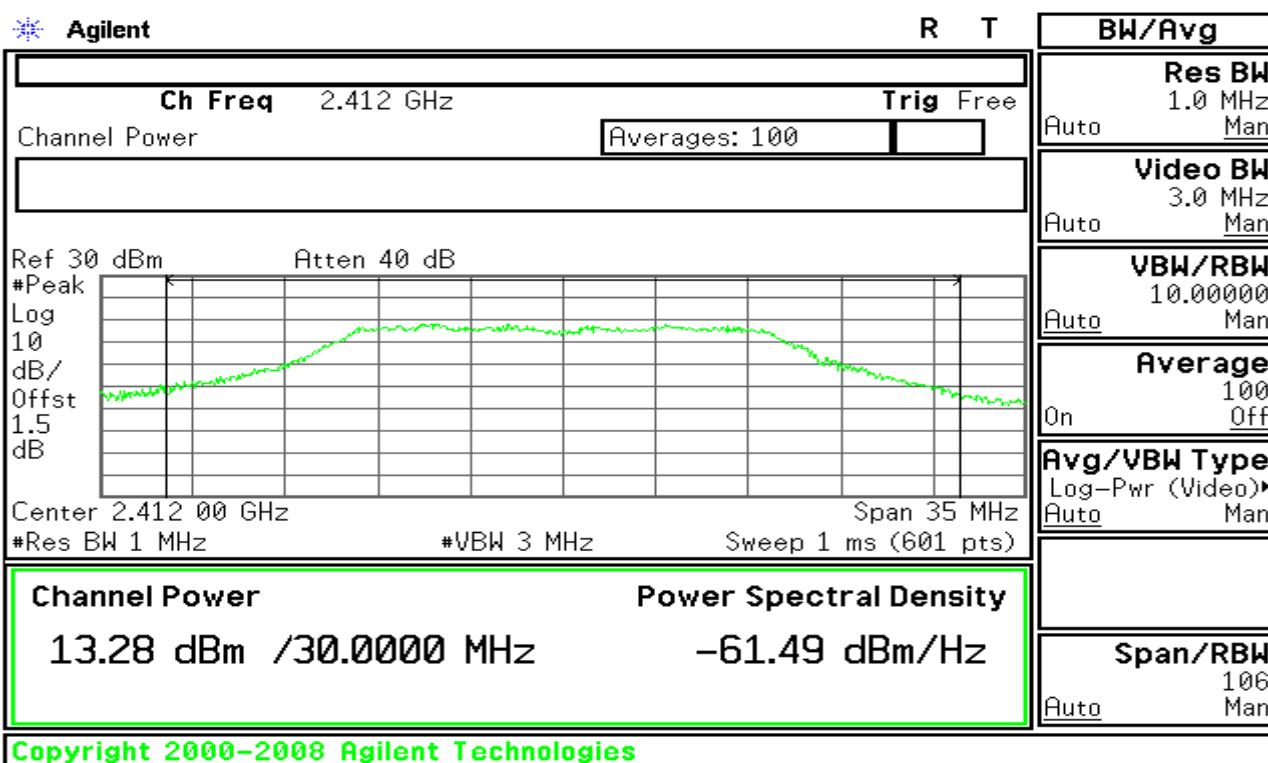


Peak Power (CH High)



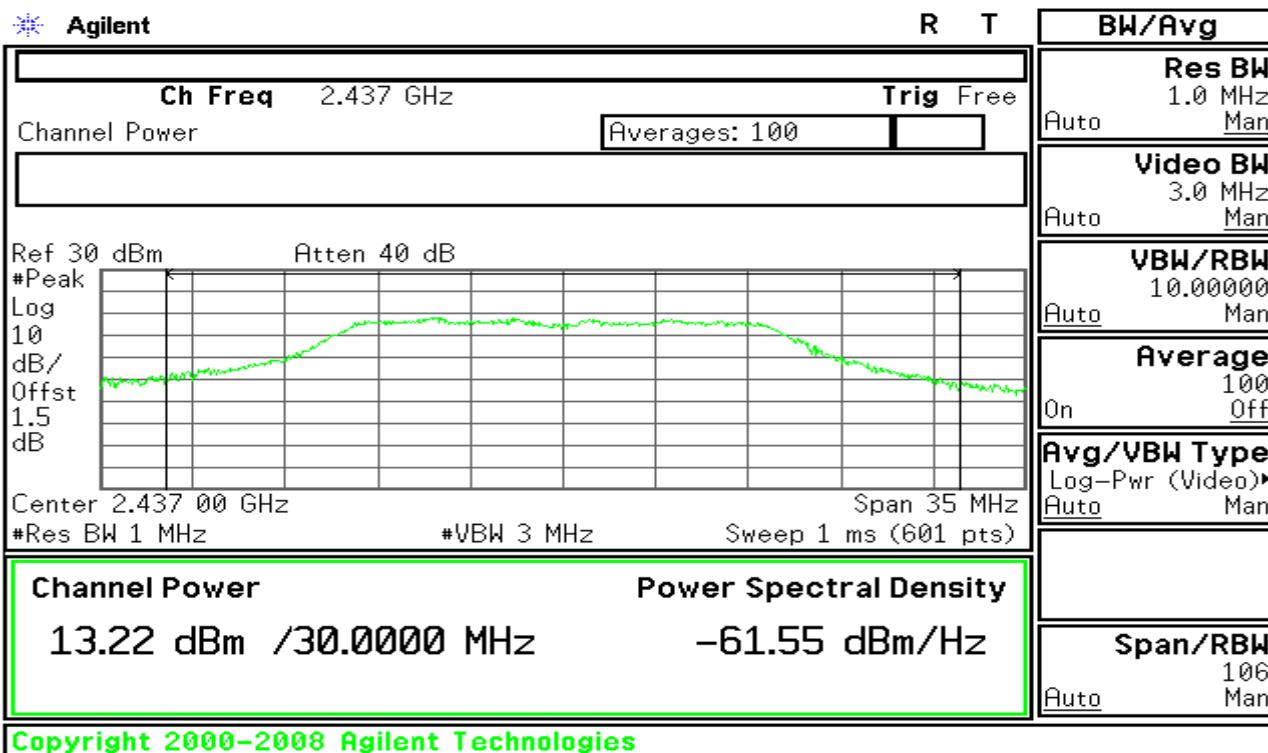
IEEE 802.11g mode

Peak Power (CH Low)

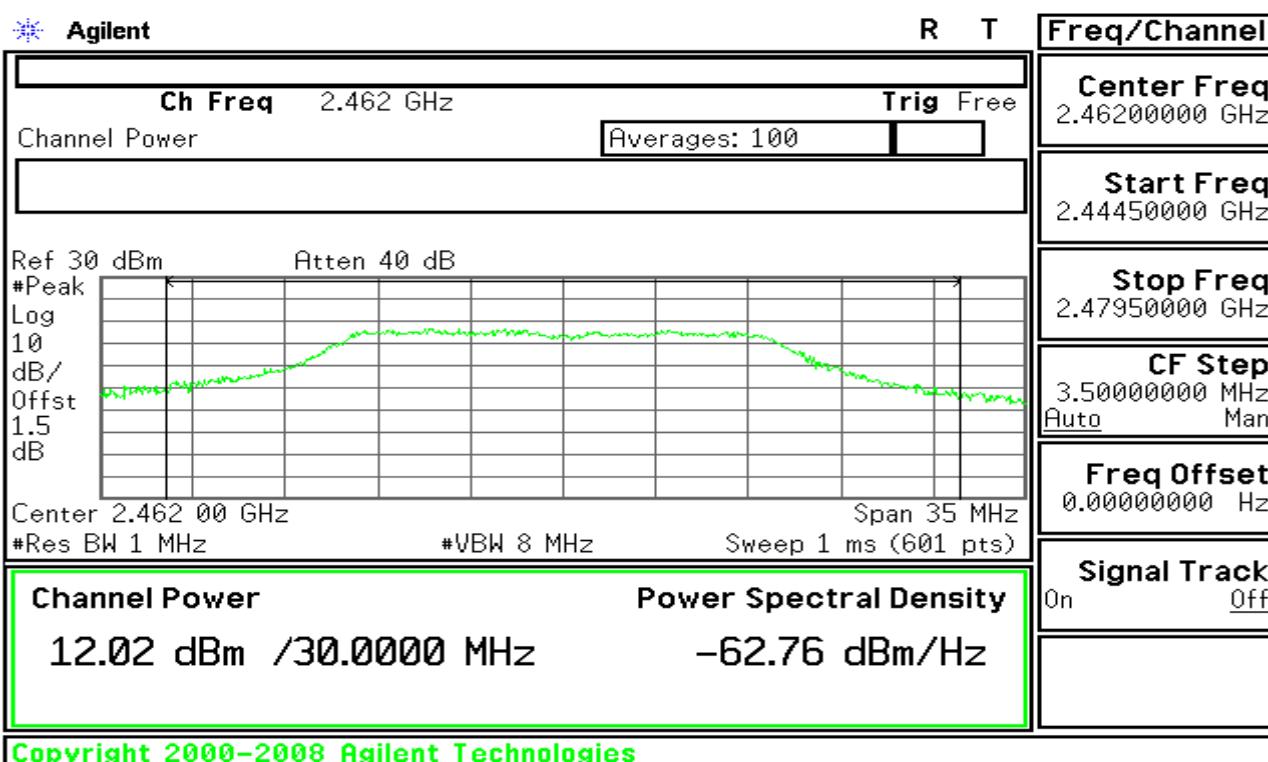




Peak Power (CH Mid)



Peak Power (CH High)



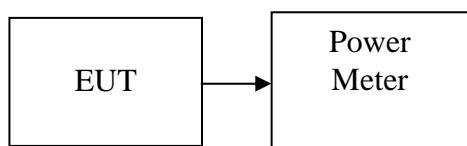


7.3. AVERAGE POWER

LIMIT

None; for reporting purposes only.

Test Configuration



TEST PROCEDURE

The transmitter output is connected to the Power meter.

TEST RESULTS

No non-compliance noted

Test Data

Test mode: IEEE 802.11b mode

Channel	Frequency (MHz)	Output Power (dBm)
Low	2412	11.20
Mid	2437	11.01
High	2462	9.25

Test mode: IEEE 802.11g mode

Channel	Frequency (MHz)	Output Power (dBm)
Low	2412	11.31
Mid	2437	11.00
High	2462	10.98

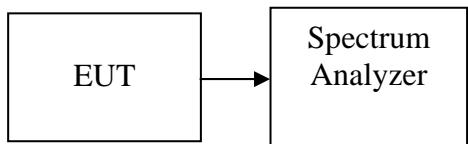


7.4. PEAK POWER SPECTRAL DENSITY

LIMIT

1. 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.
2. 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.

Test Configuration



TEST PROCEDURE

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 = 3 kHz, VBW = 10 kHz, Span = 300 kHz, Sweep = 100 s
3. Record the max reading.
4. Repeat the above procedure until the measurements for all frequencies are completed.

TEST RESULTS

No non-compliance noted



Test Data

Test mode: IEEE 802.11b mode

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Result
Low	2412	-24.10	8.00	PASS
Mid	2437	-24.70	8.00	PASS
High	2462	-25.21	8.00	PASS

Test mode: IEEE 802.11g mode

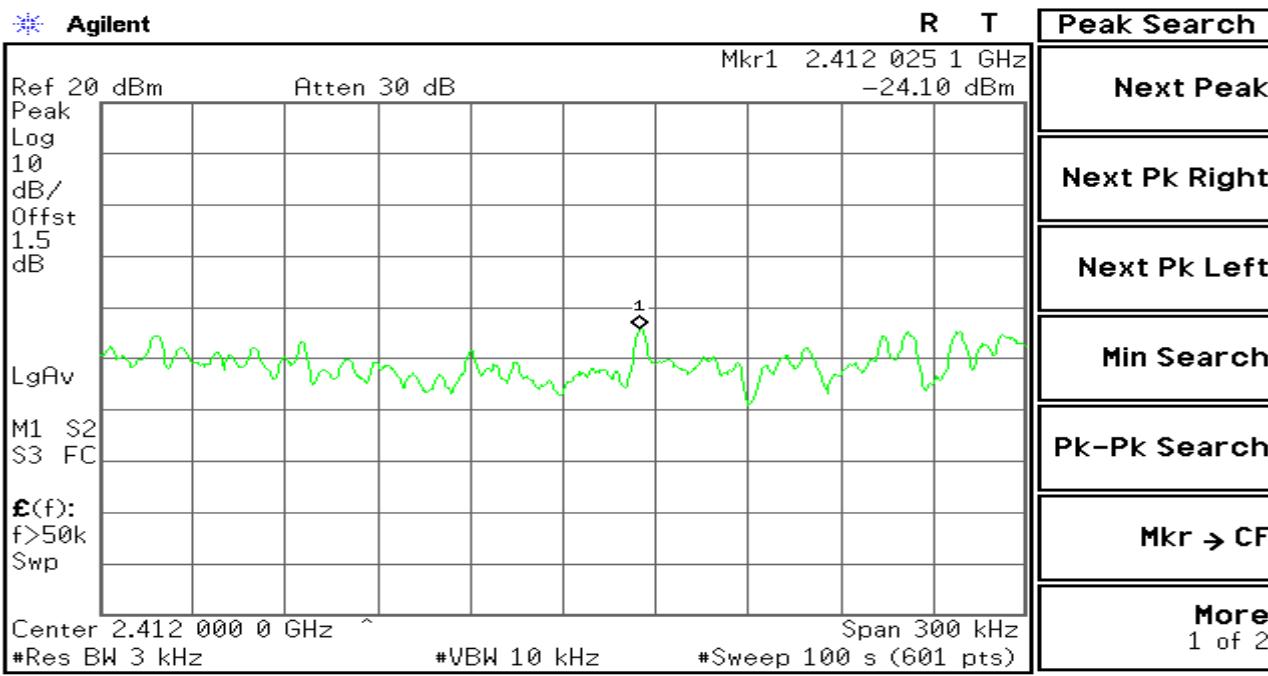
Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Result
Low	2412	-22.22	8.00	PASS
Mid	2437	-23.20	8.00	PASS
High	2462	-23.65	8.00	PASS



Test Plot

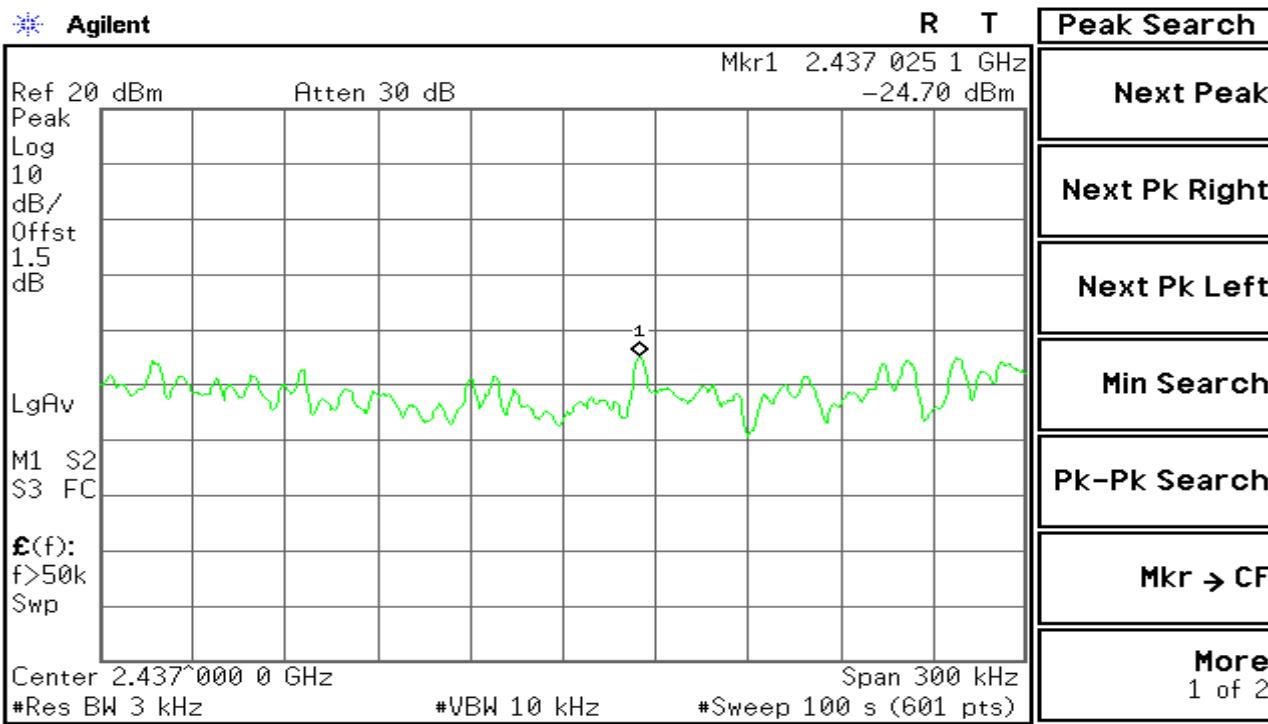
IEEE 802.11b mode

PPSD (CH Low)



Copyright 2000-2008 Agilent Technologies

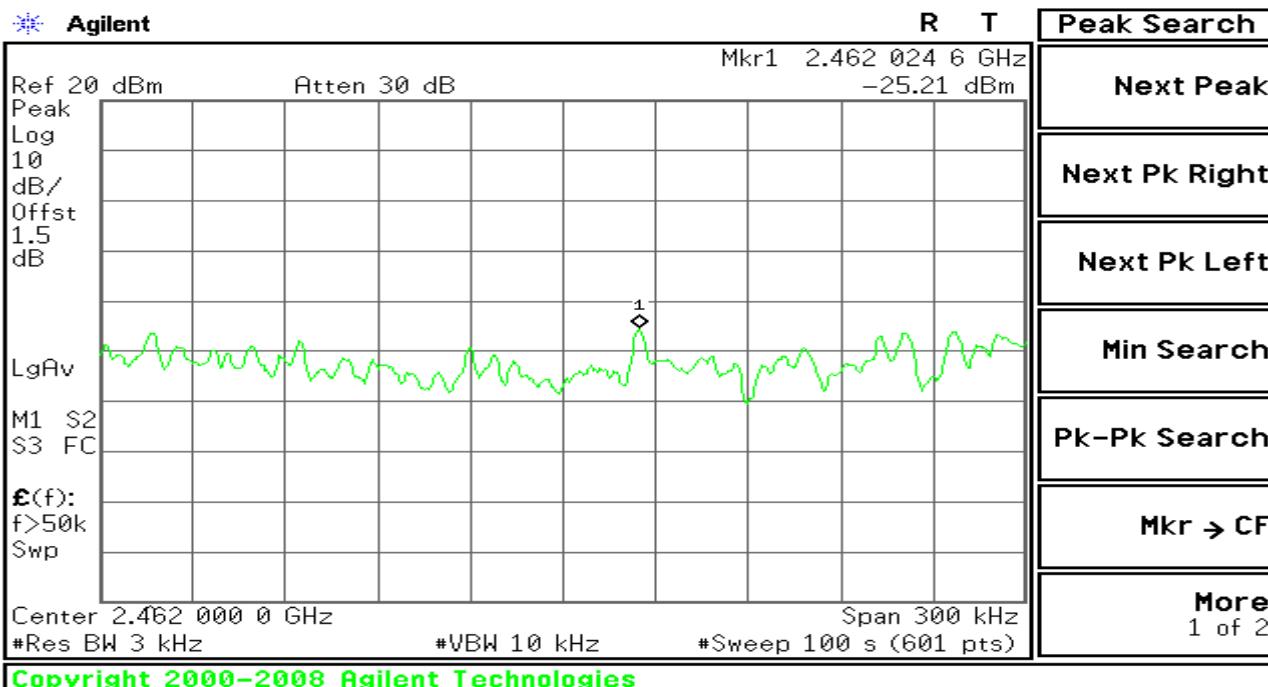
PPSD (CH Mid)



Copyright 2000-2008 Agilent Technologies

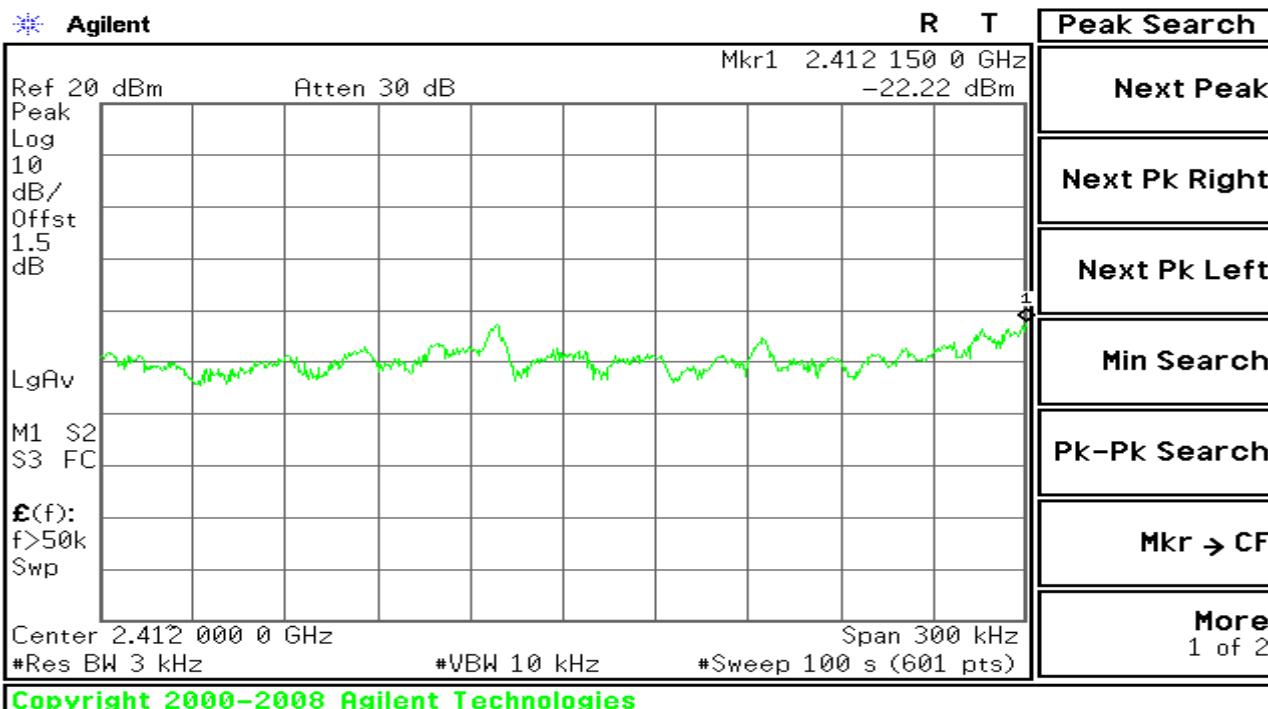


PPSD (CH High)



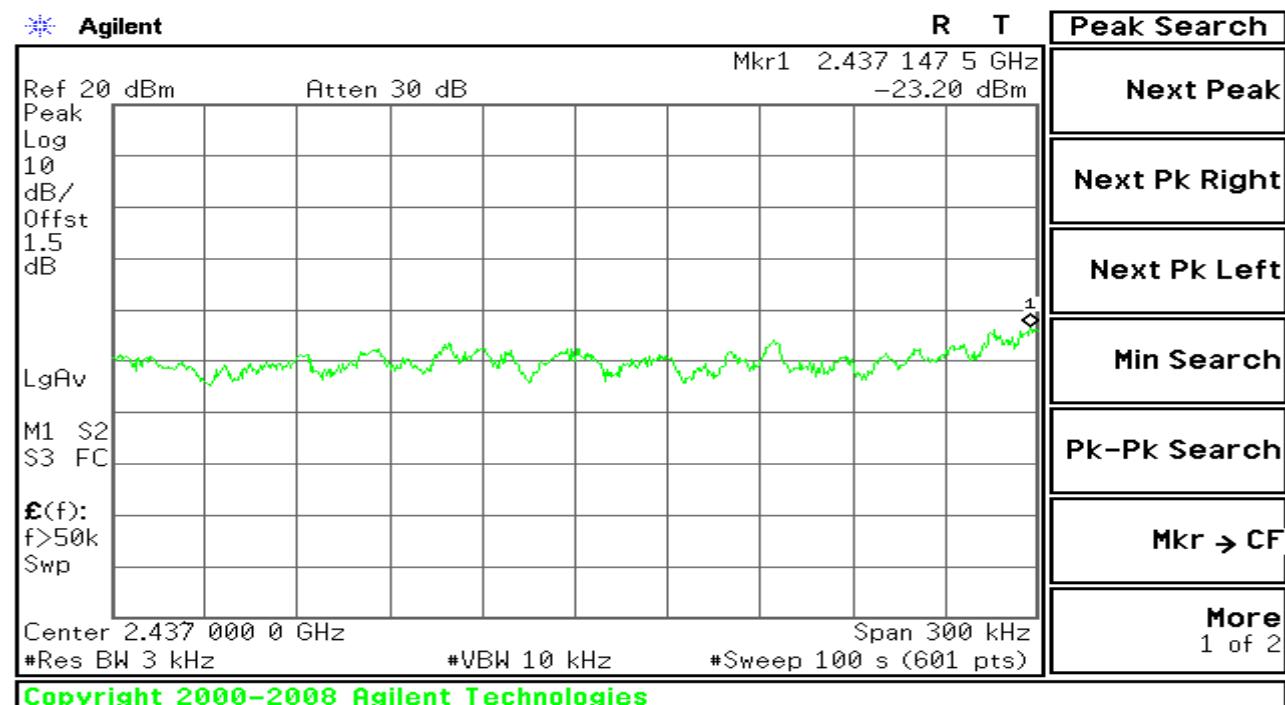
IEEE 802.11g mode

PPSD (CH Low)

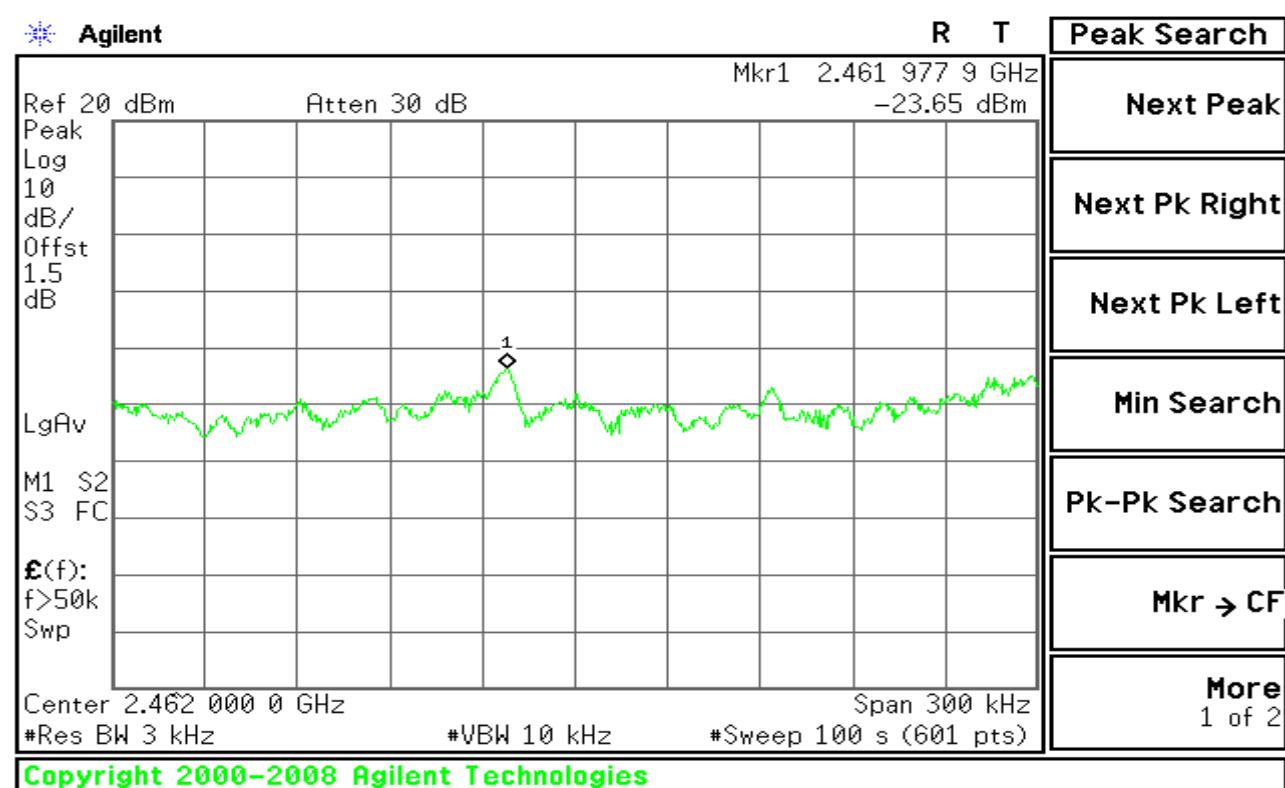




PPSD (CH Mid)



PPSD (CH High)





7.5. SPURIOUS EMISSIONS

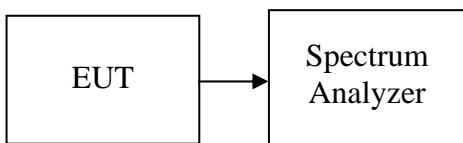
1.1.1. CONDUCTED MEASUREMENT

LIMIT

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)).

Conducted power was measured based on the use of RMS averaging over a time interval, therefore the required attenuation is 30 dB.

Test Configuration



TEST PROCEDURE

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 40GHz range with the transmitter set to the lowest, middle, and highest channels.

TEST RESULTS

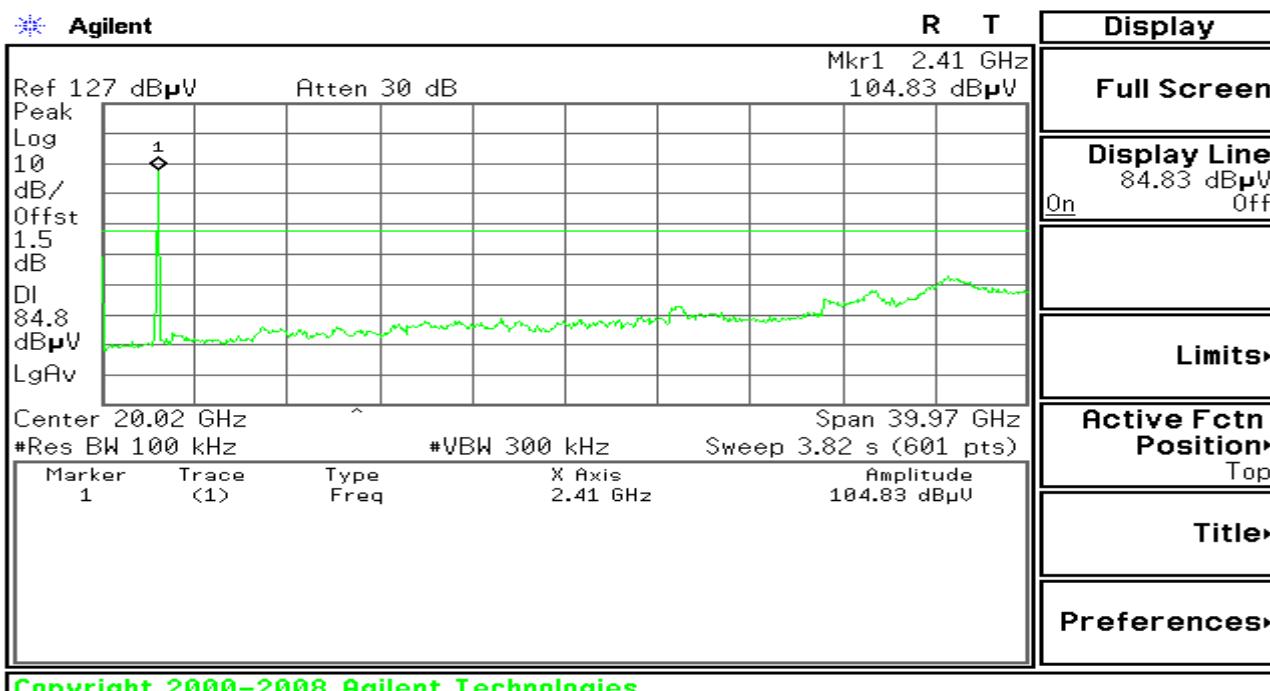
No non-compliance noted



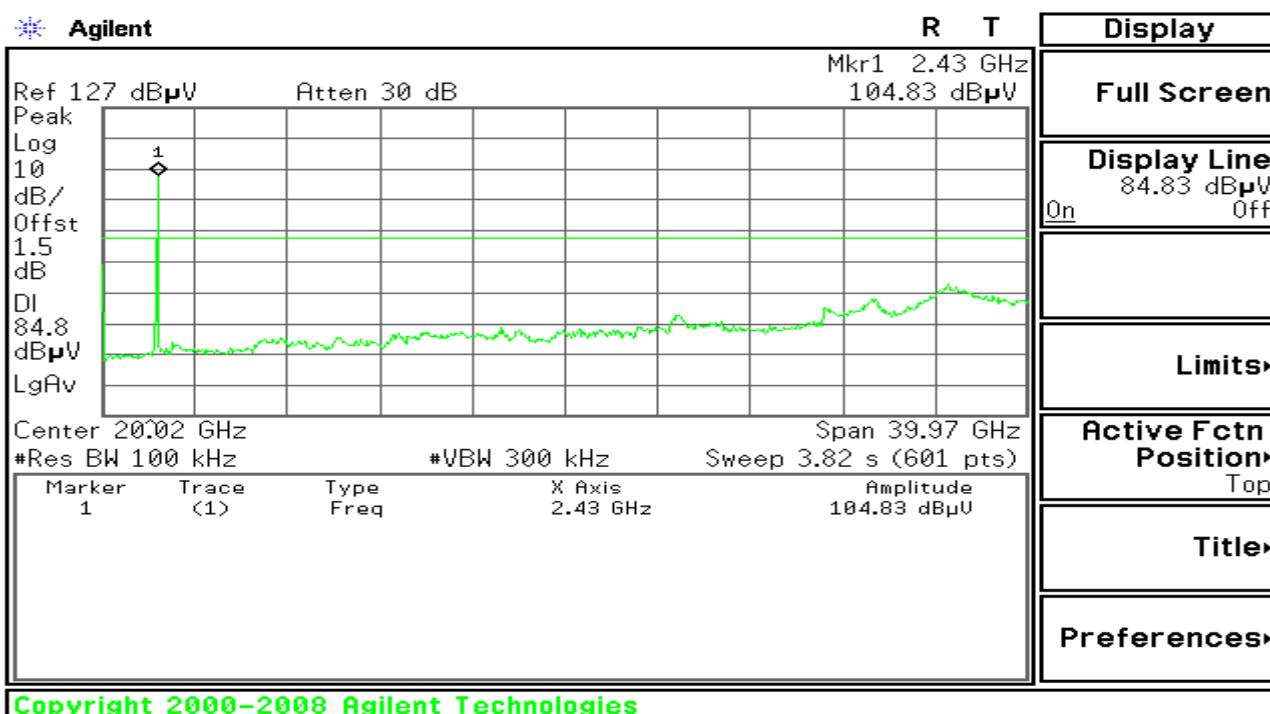
Test Plot

IEEE 802.11b mode

CH Low



CH Mid



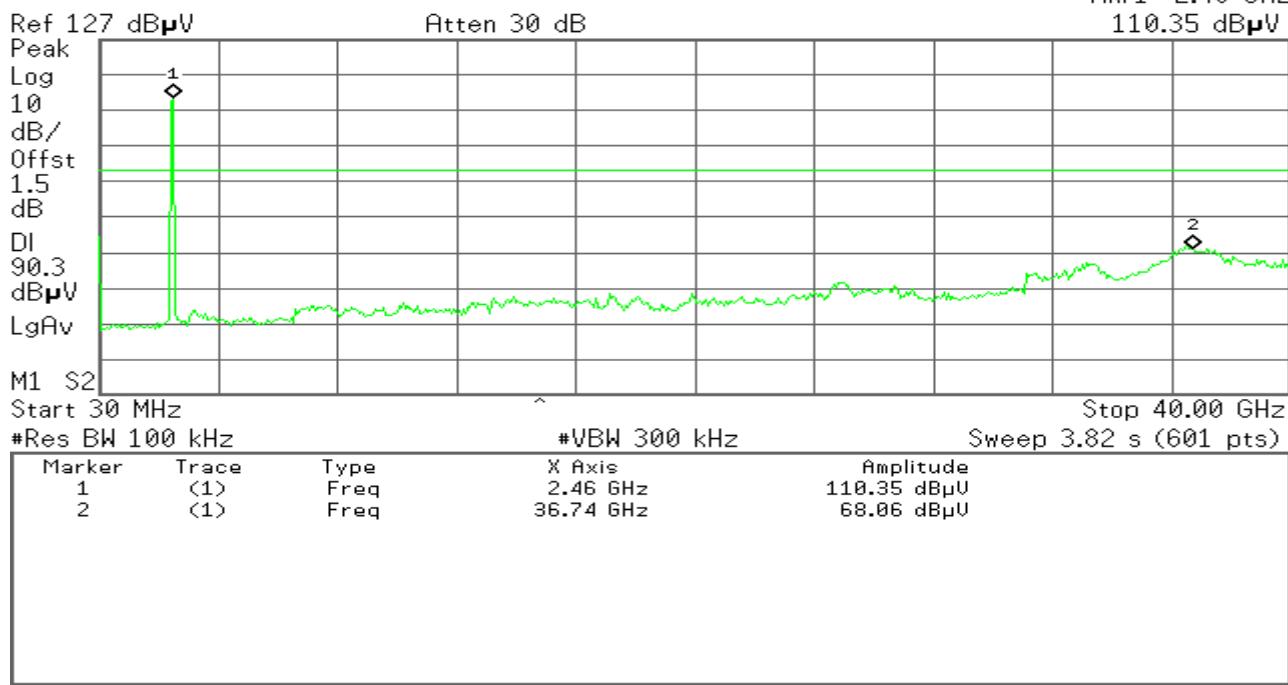


CH High

Agilent

R T

Mkr1 2.46 GHz
110.35 dB μ V



IEEE 802.11g mode

CH Low

Agilent

R T

Display

Full Screen

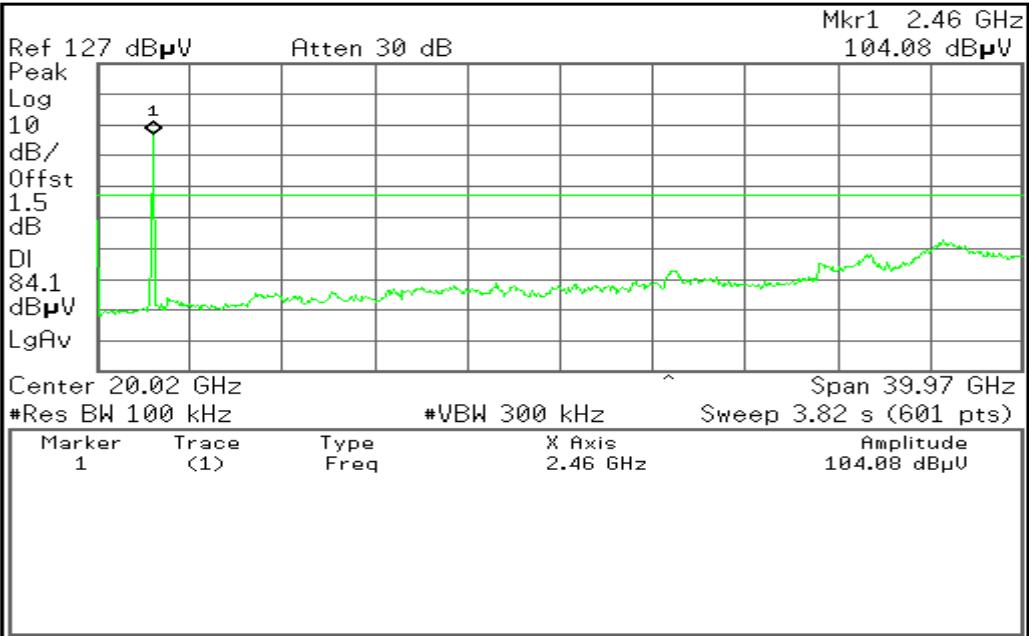
Display Line
84.08 dB μ V
On

Limits

Active Fctn
Position
Top

Title

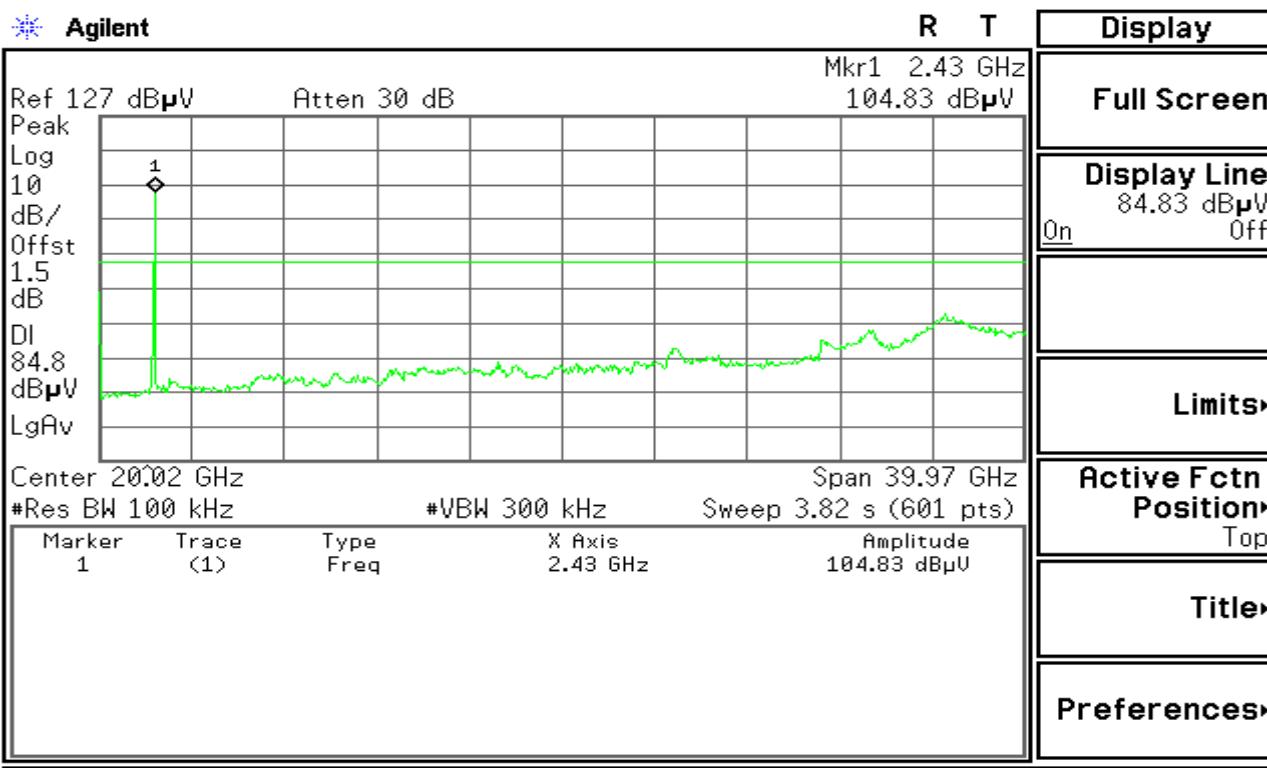
Preferences



Copyright 2000-2008 Agilent Technologies

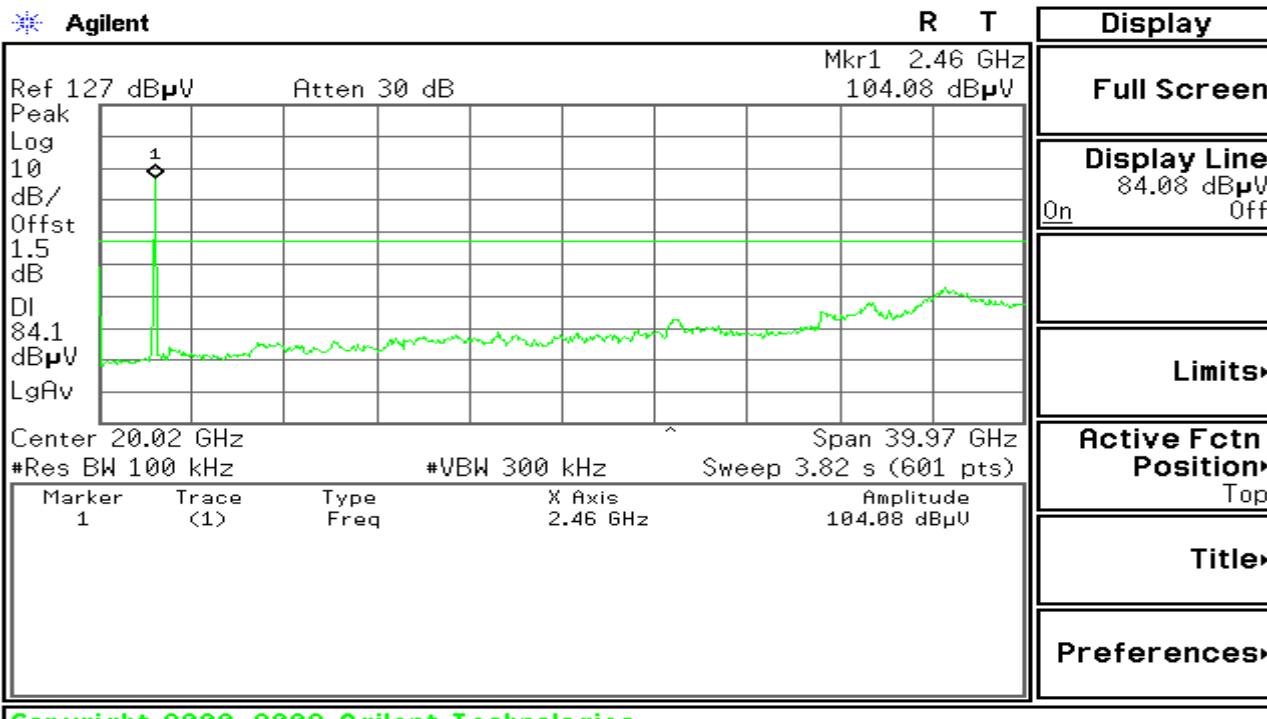


CH Mid



Copyright 2000-2008 Agilent Technologies

CH High



Copyright 2000-2008 Agilent Technologies



7.6. RADIATED EMISSIONS

LIMIT

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

Frequency (MHz)	Field Strength ($\mu\text{V/m}$)	Measurement Distance (m)
30-88	100*	3
88-216	150*	3
216-960	200*	3
Above 960	500	3

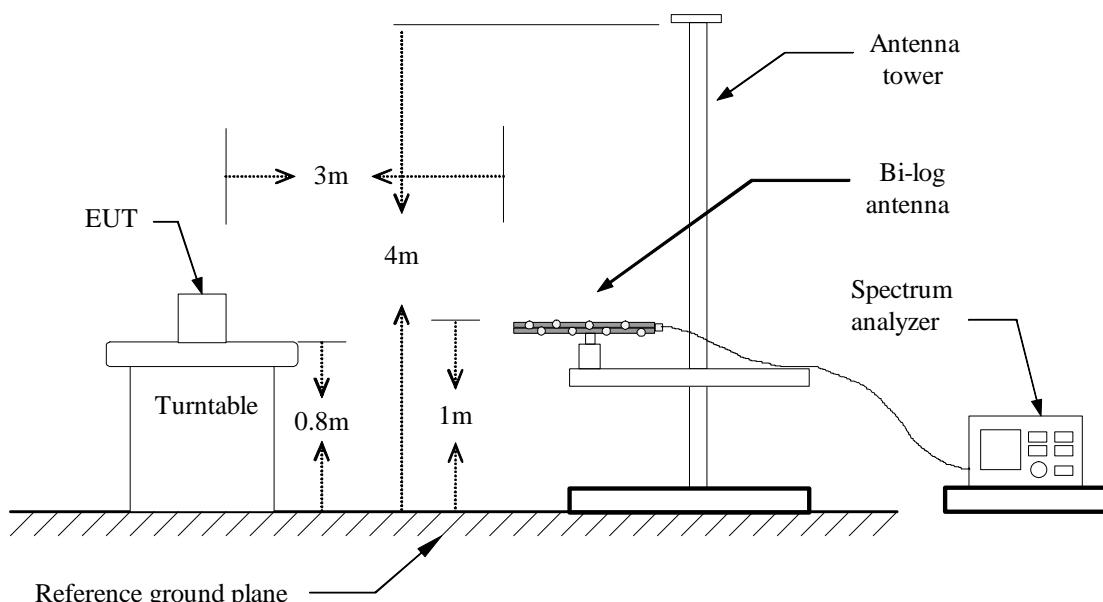
Remark: Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of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

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

Frequency (MHz)	Field Strength ($\mu\text{V/m}$ at 3-meter)	Field Strength ($\text{dB}\mu\text{V/m}$ at 3-meter)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

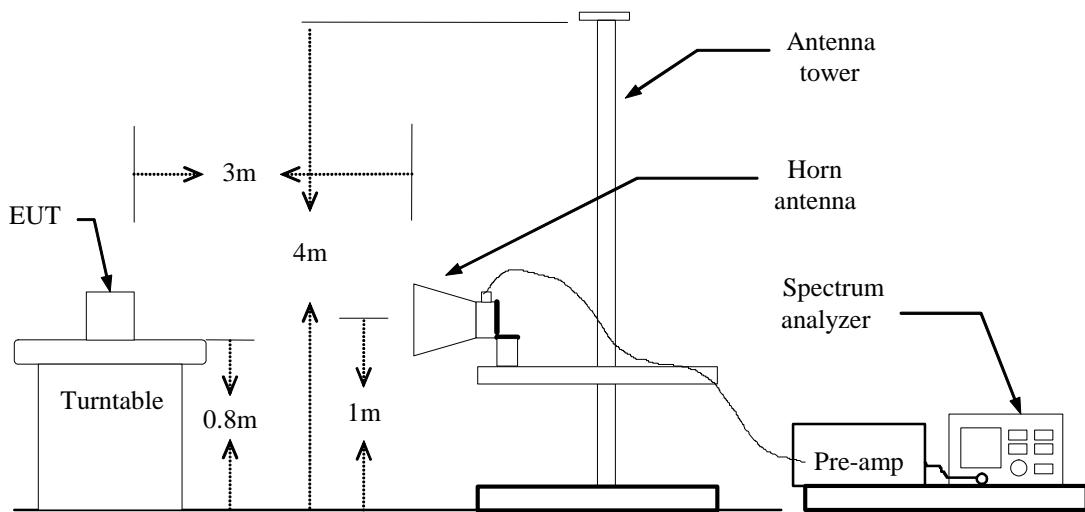
Test Configuration

Below 1 GHz





Above 1 GHz



TEST PROCEDURE

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=VBW=1MHz / Sweep=AUTO

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

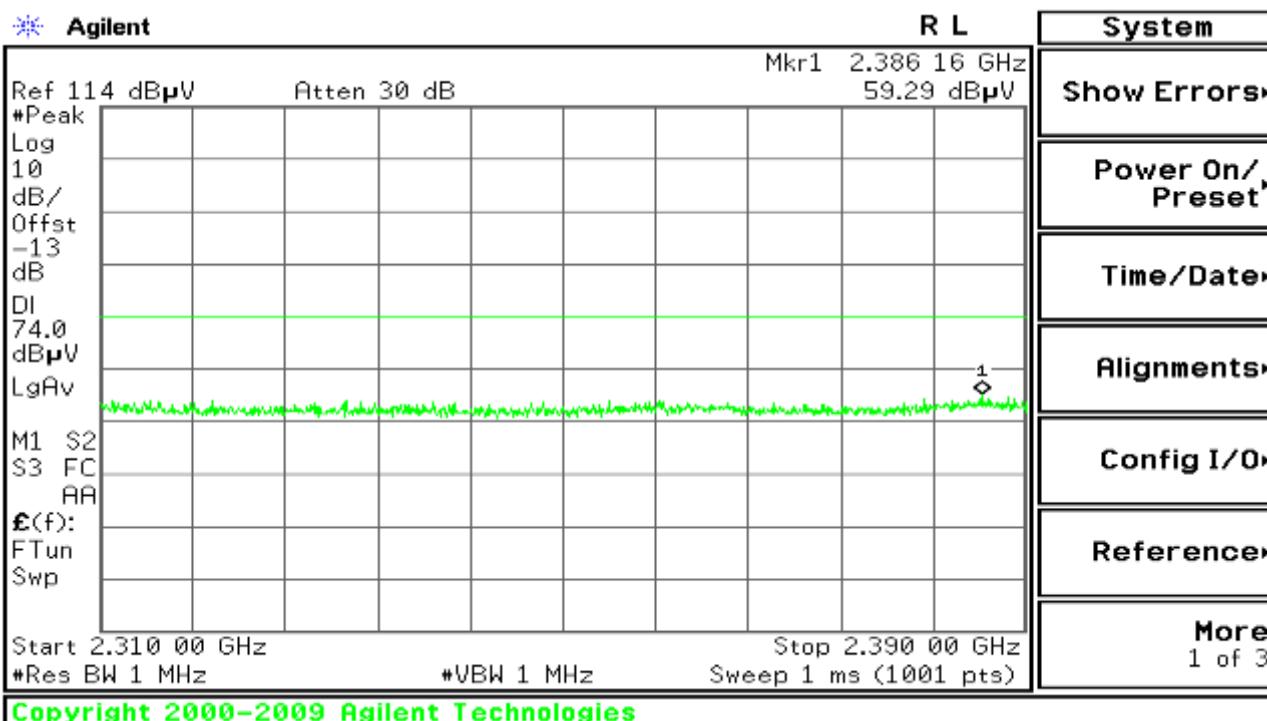
7. Repeat above procedures until the measurements for all frequencies are complete.

TEST RESULTS

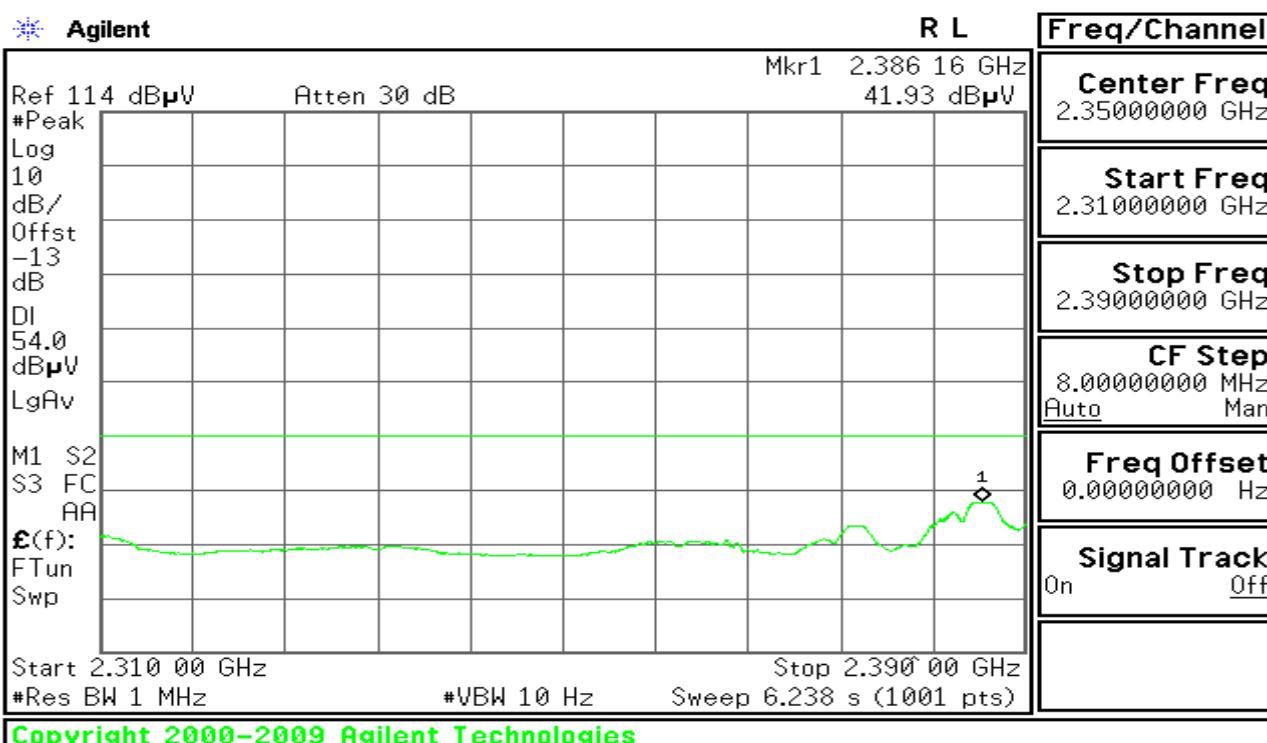


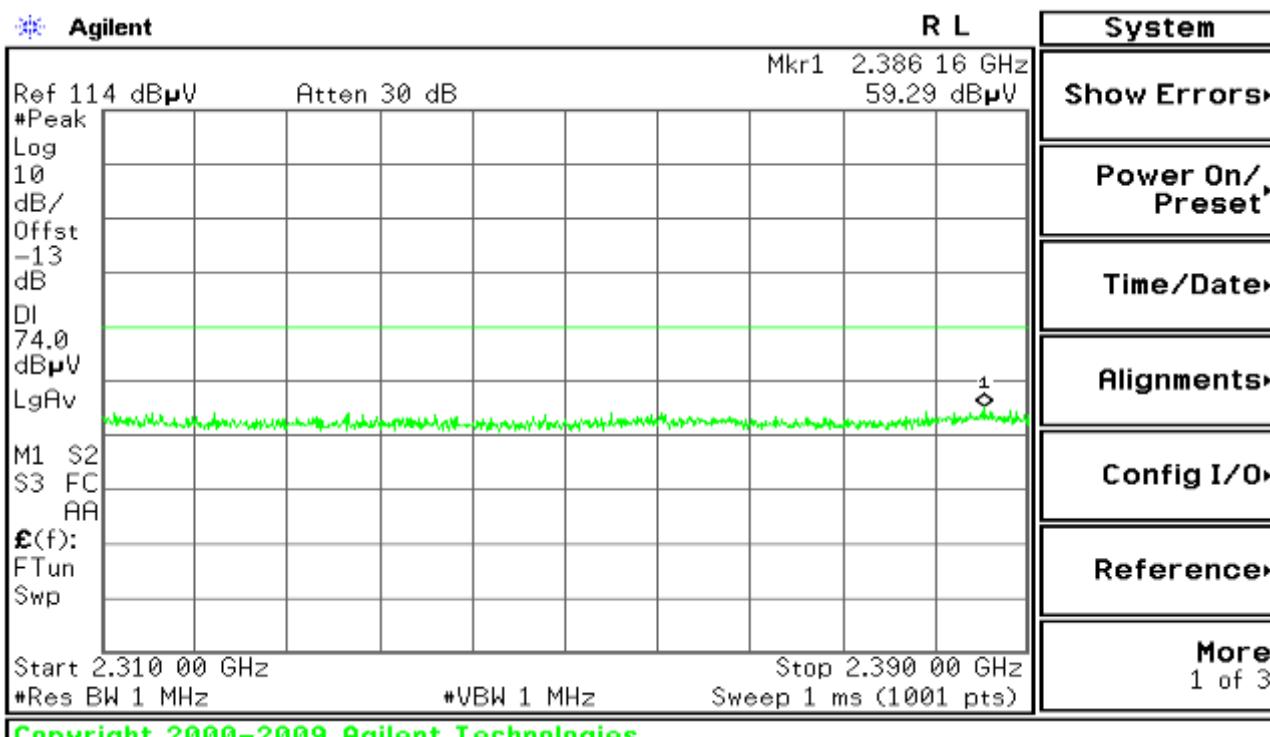
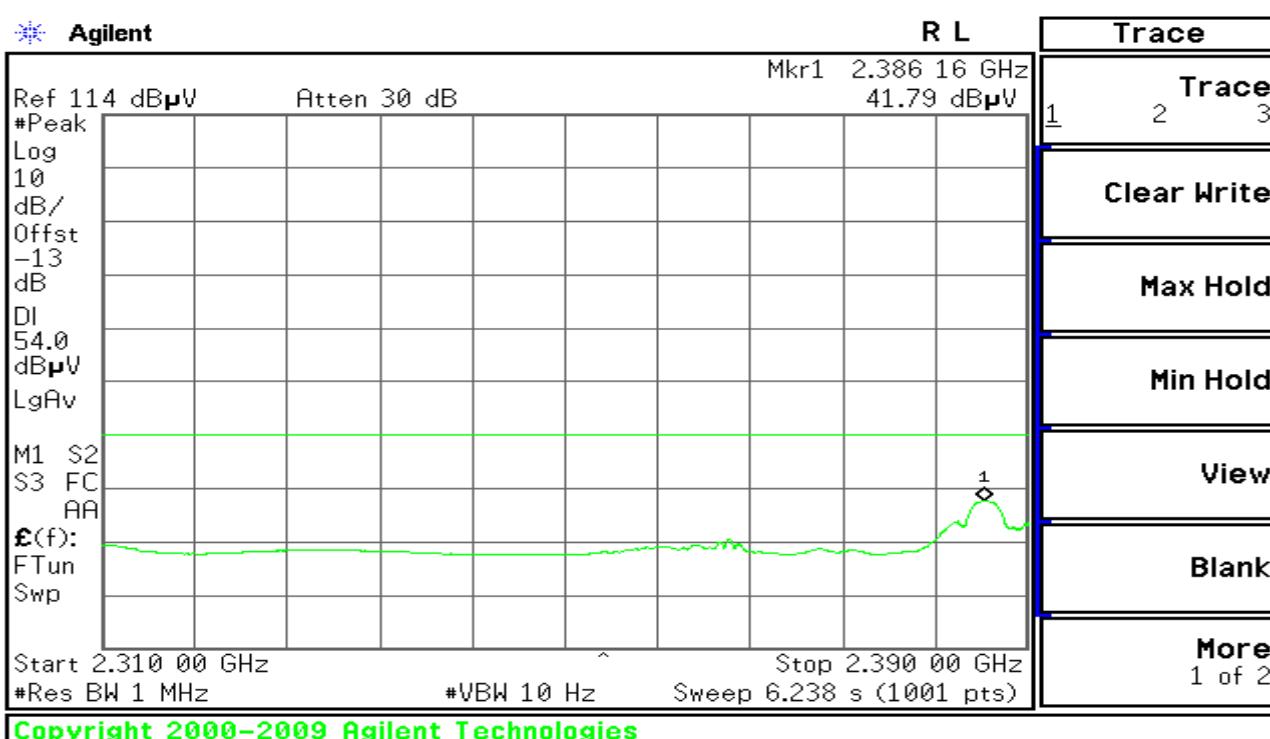
RESTRICTED BANDEDGE (b Mode, Low Channel, Horizontal)

PEAK



AVG

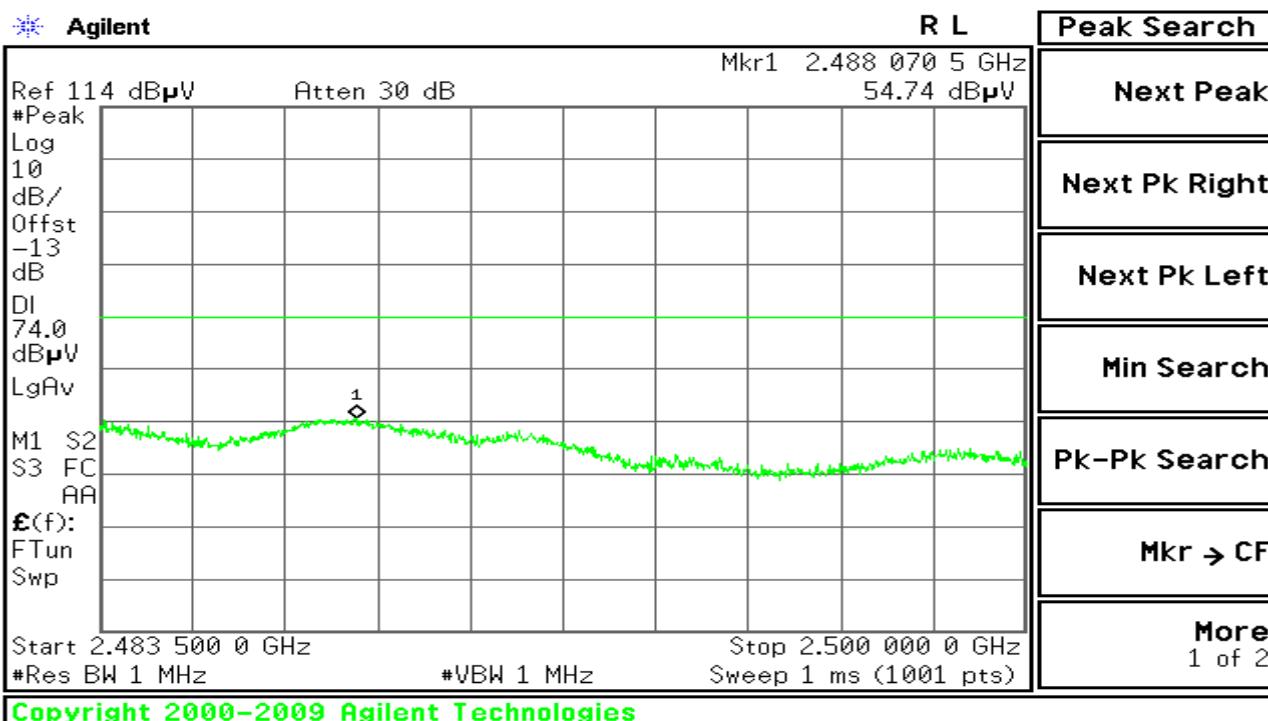


**RESTRICTED BANDEDGE (b Mode, Low Channel, Vertical)****PEAK****AVG**

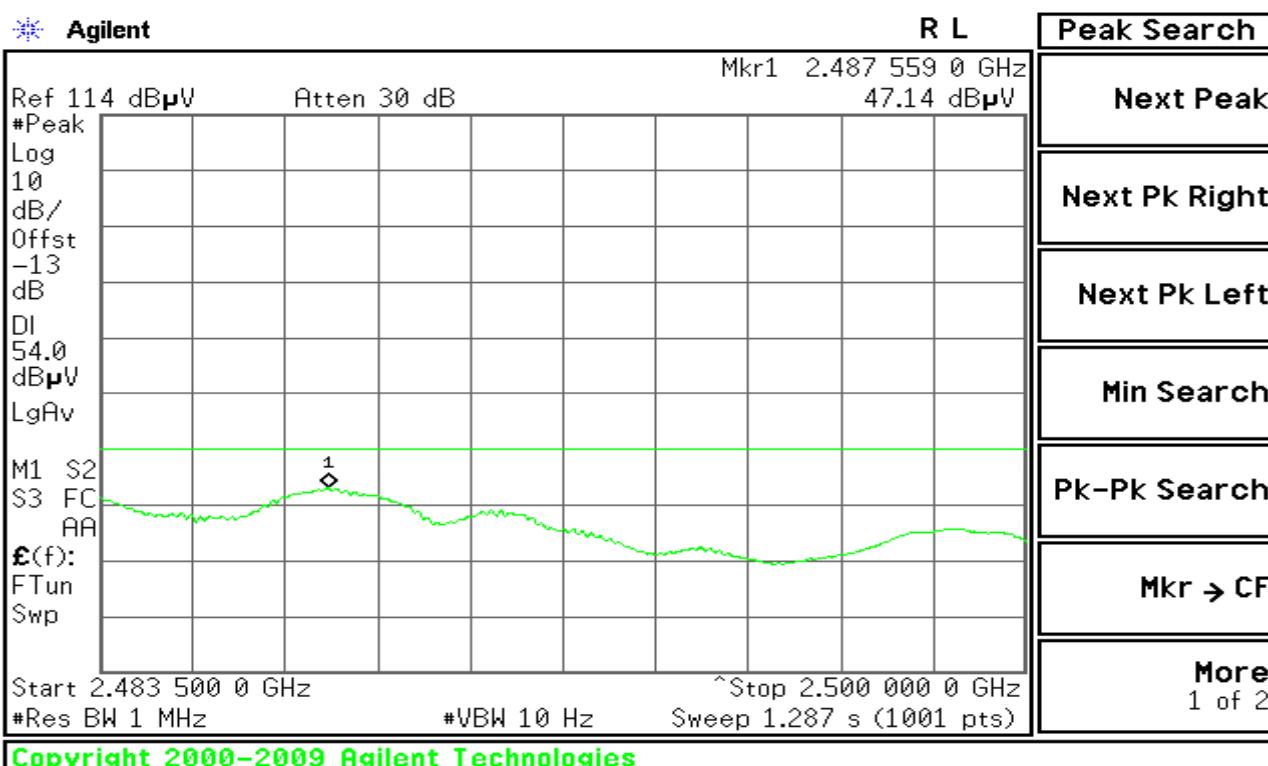


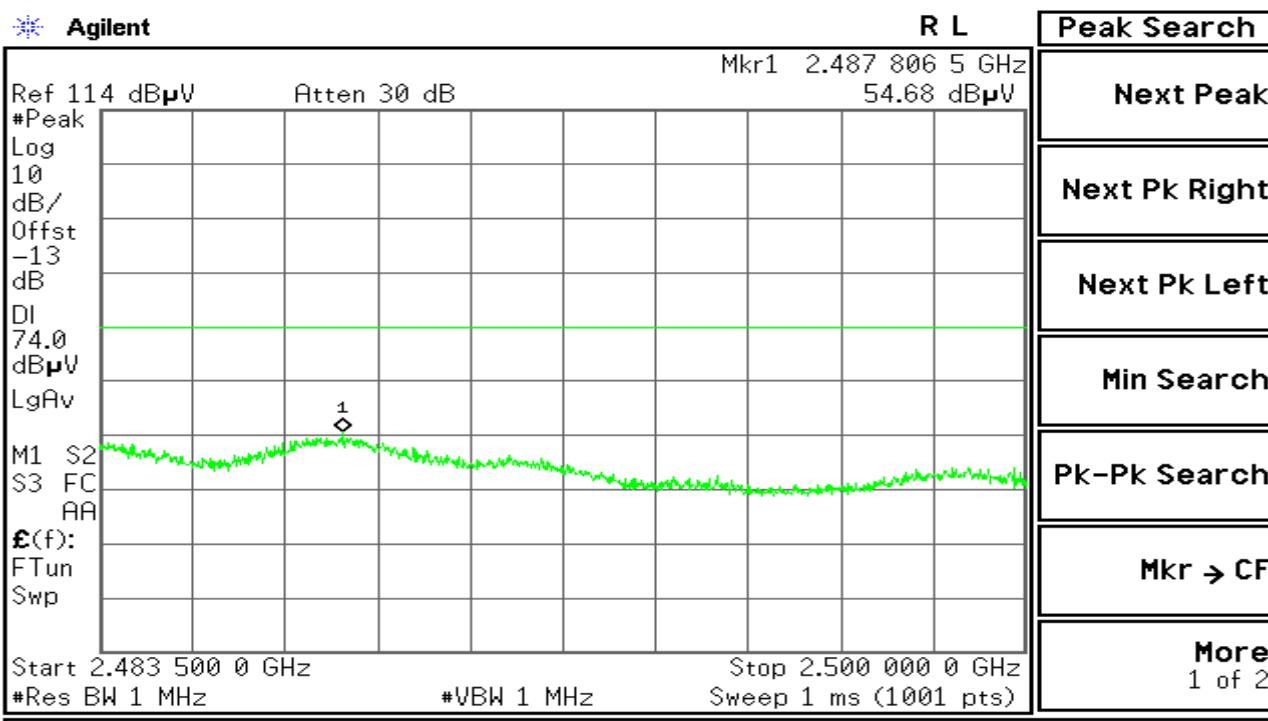
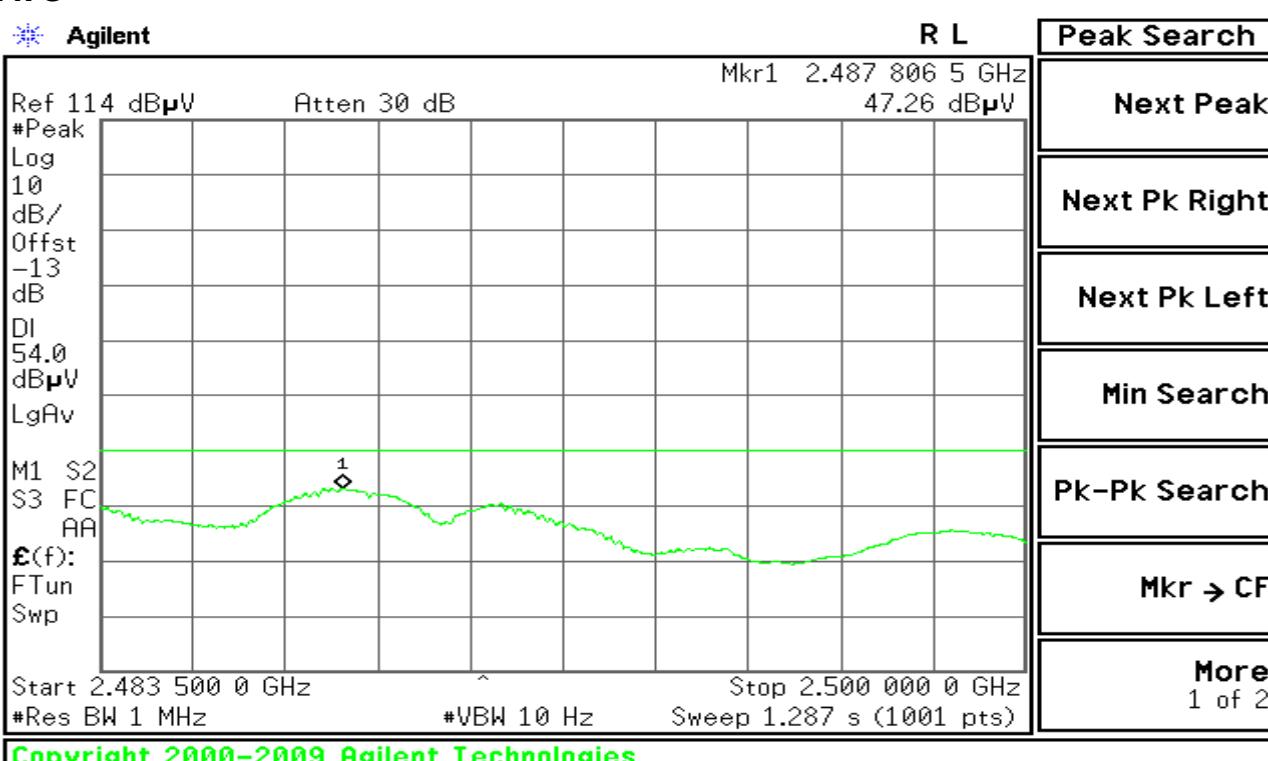
RESTRICTED BANDEDGE (b Mode, High Channel, Horizontal)

PEAK



AVG

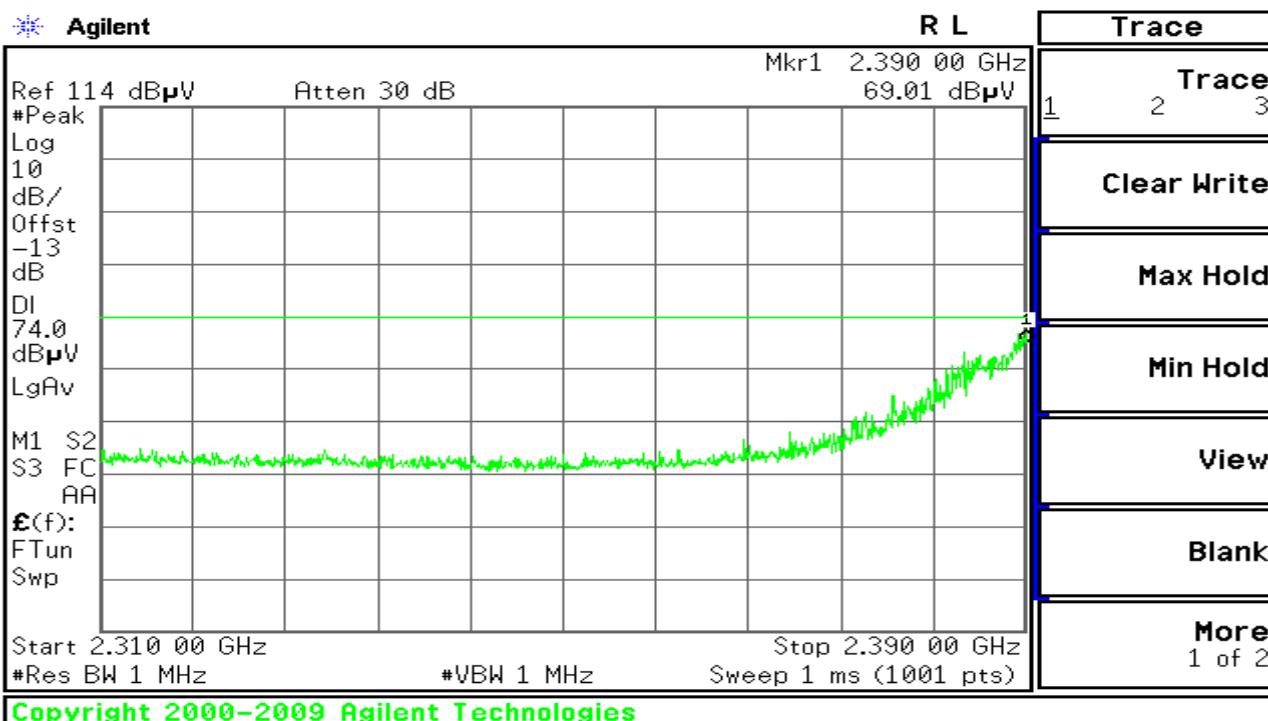


**RESTRICTED BANDEDGE (b Mode, High Channel, Vertical)****PEAK****AVG**

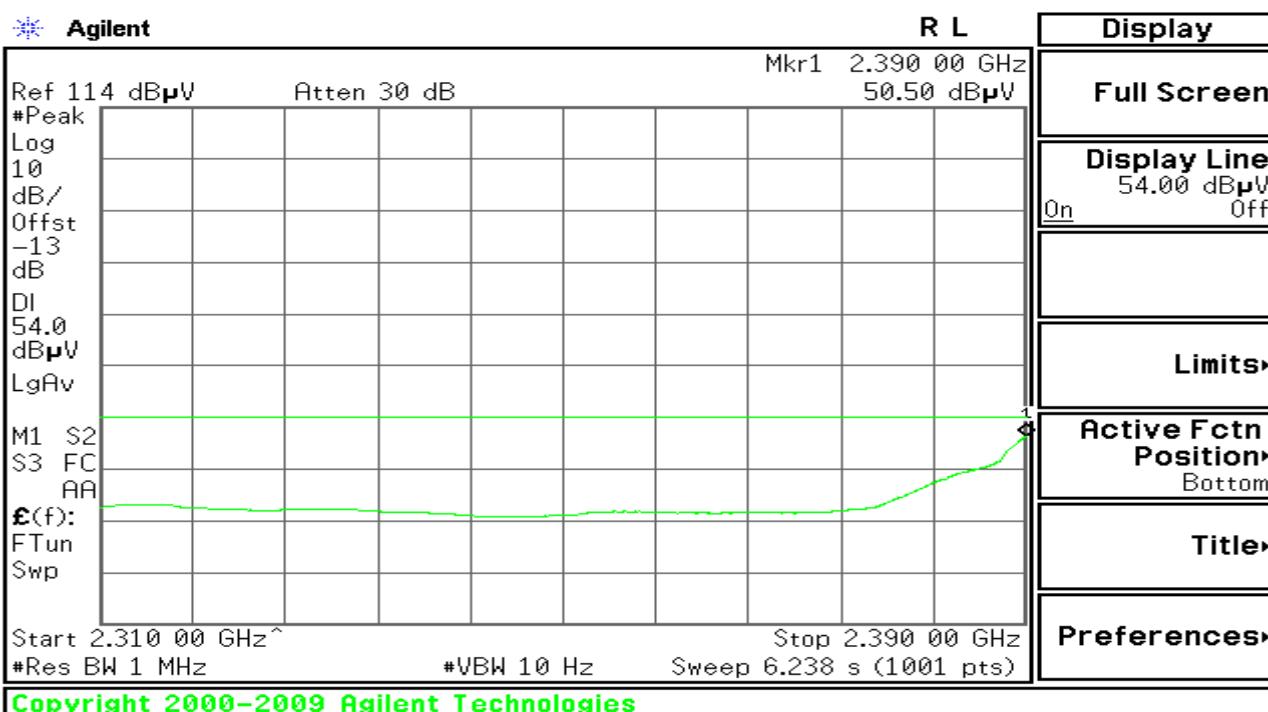


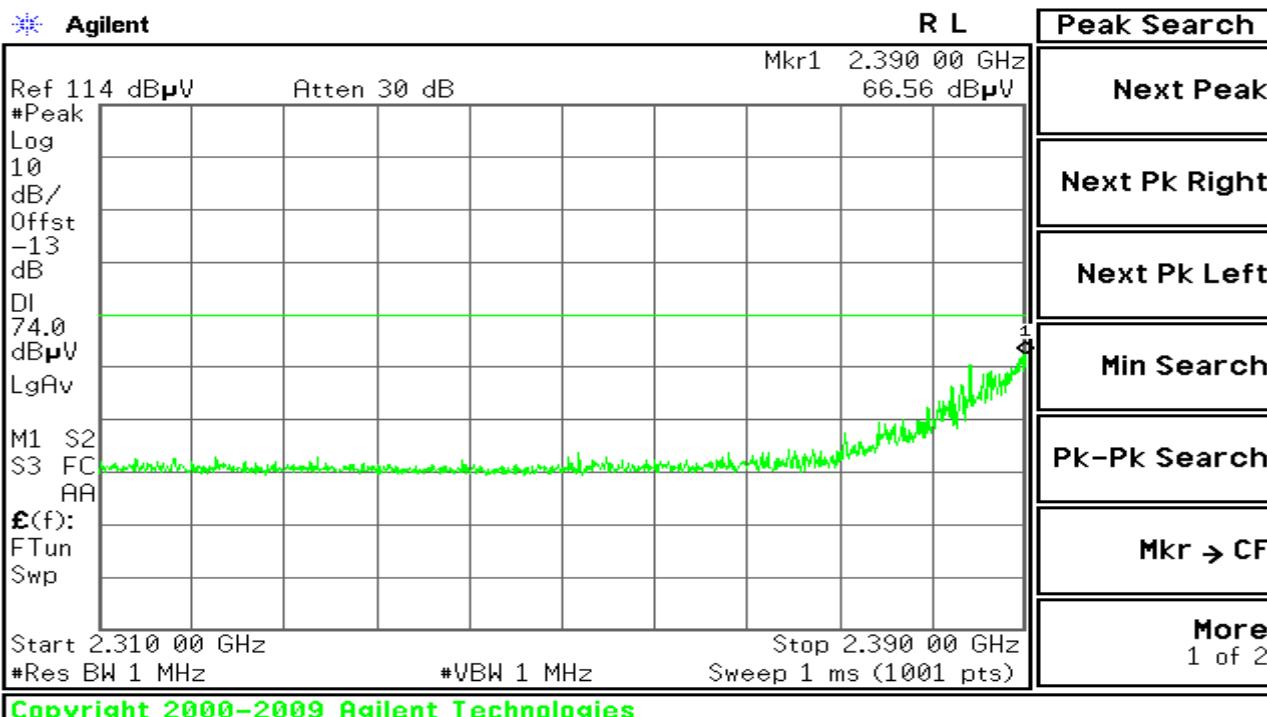
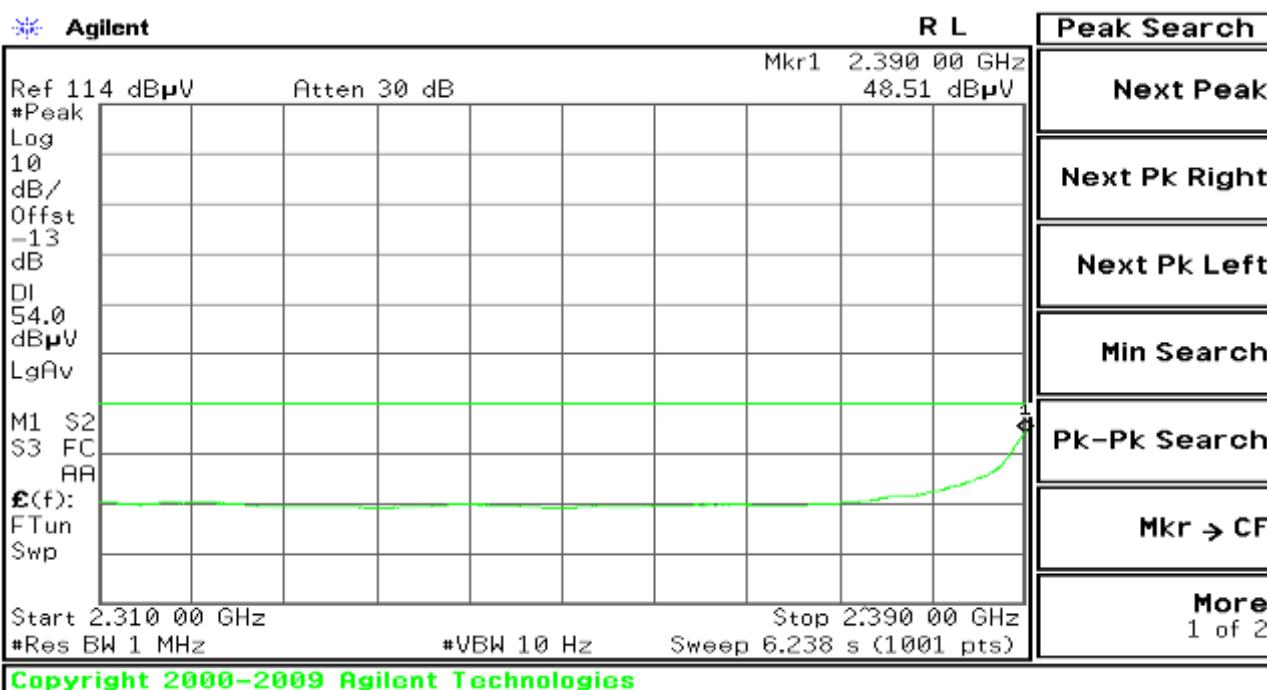
RESTRICTED BANDEDGE (g Mode, Low Channel, Horizontal)

PEAK



AVG

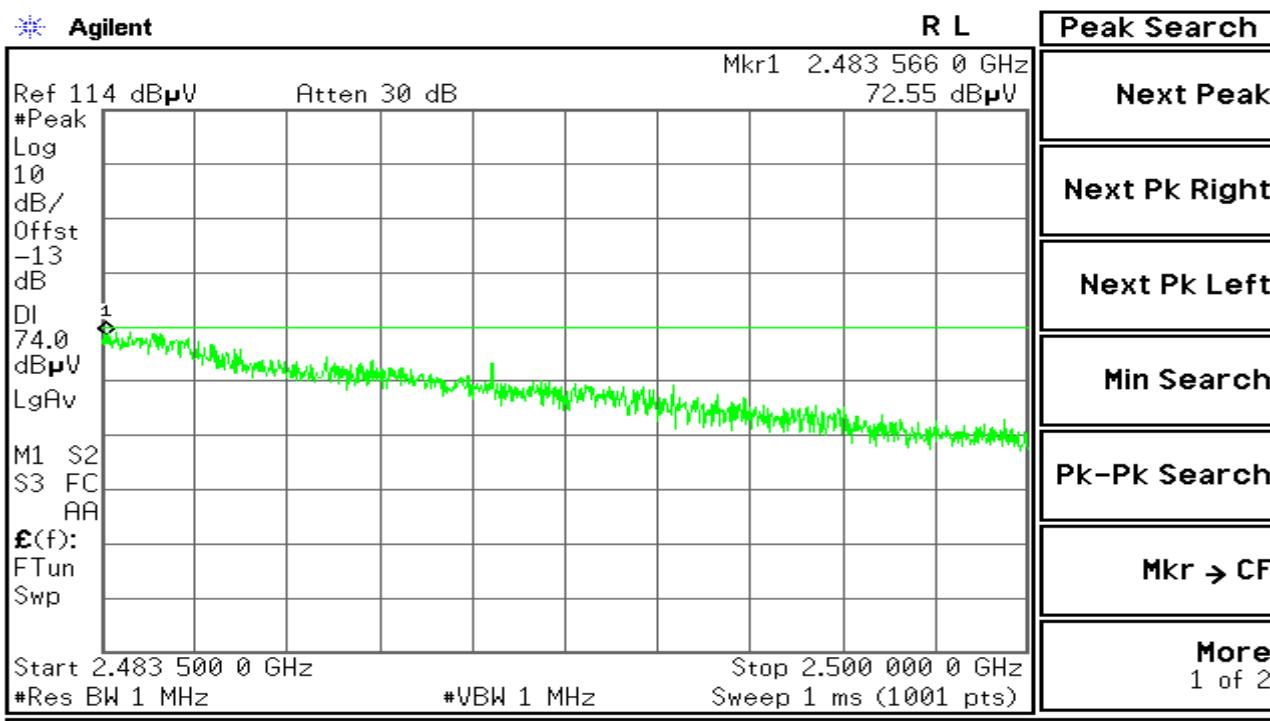


**RESTRICTED BANDEDGE (g Mode, Low Channel, Vertical)****PEAK****AVG**

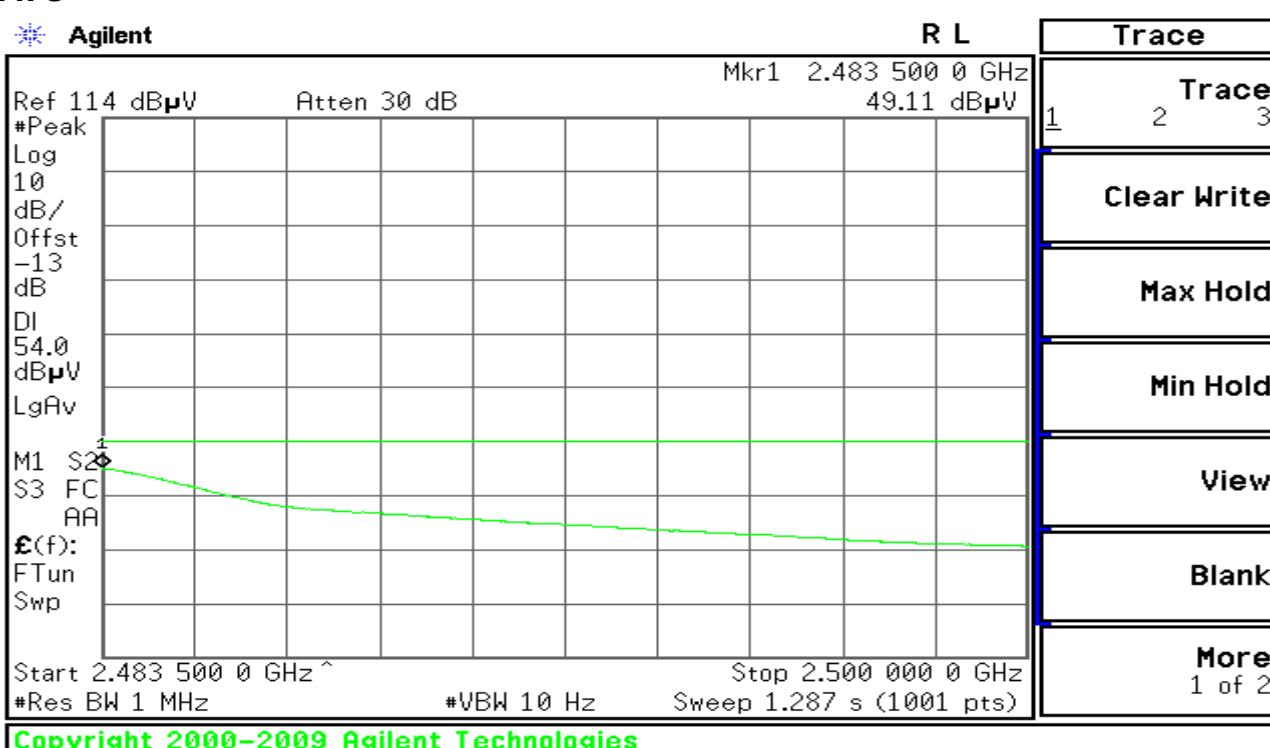


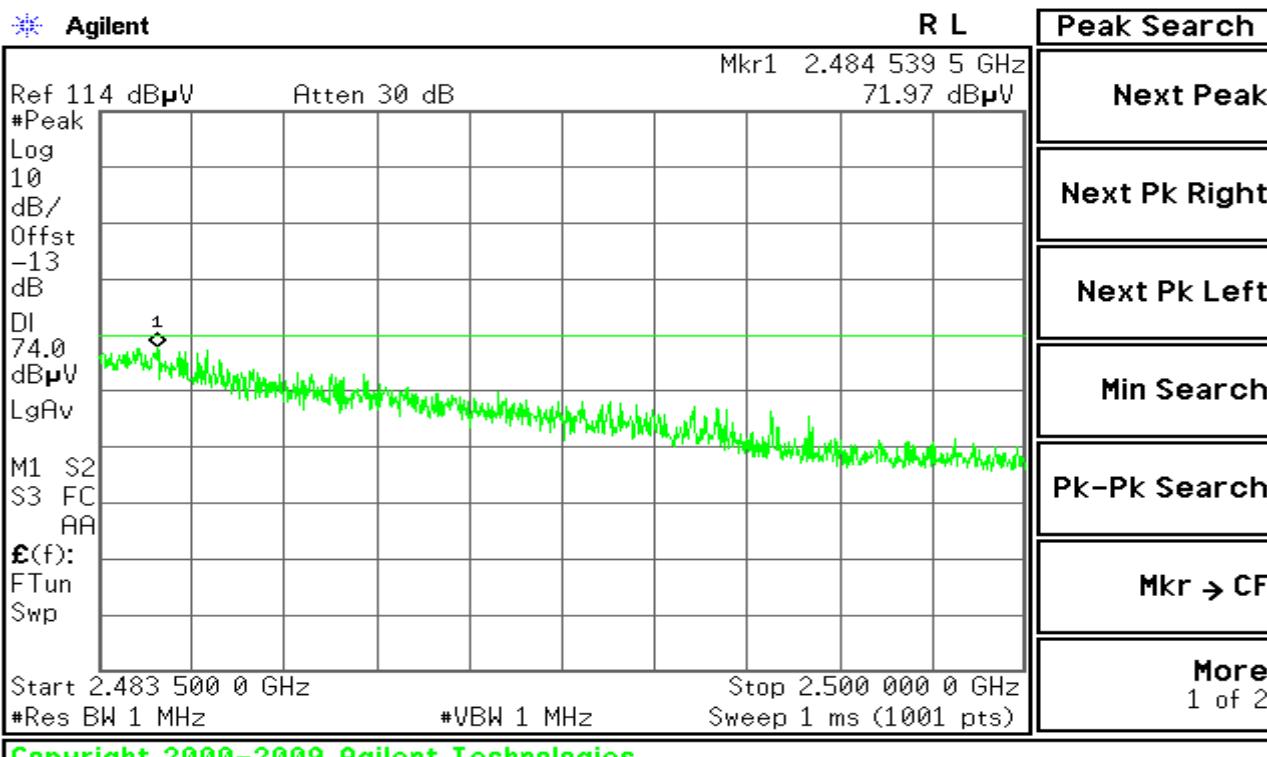
RESTRICTED BANDEDGE (g Mode, High Channel, Horizontal)

PEAK

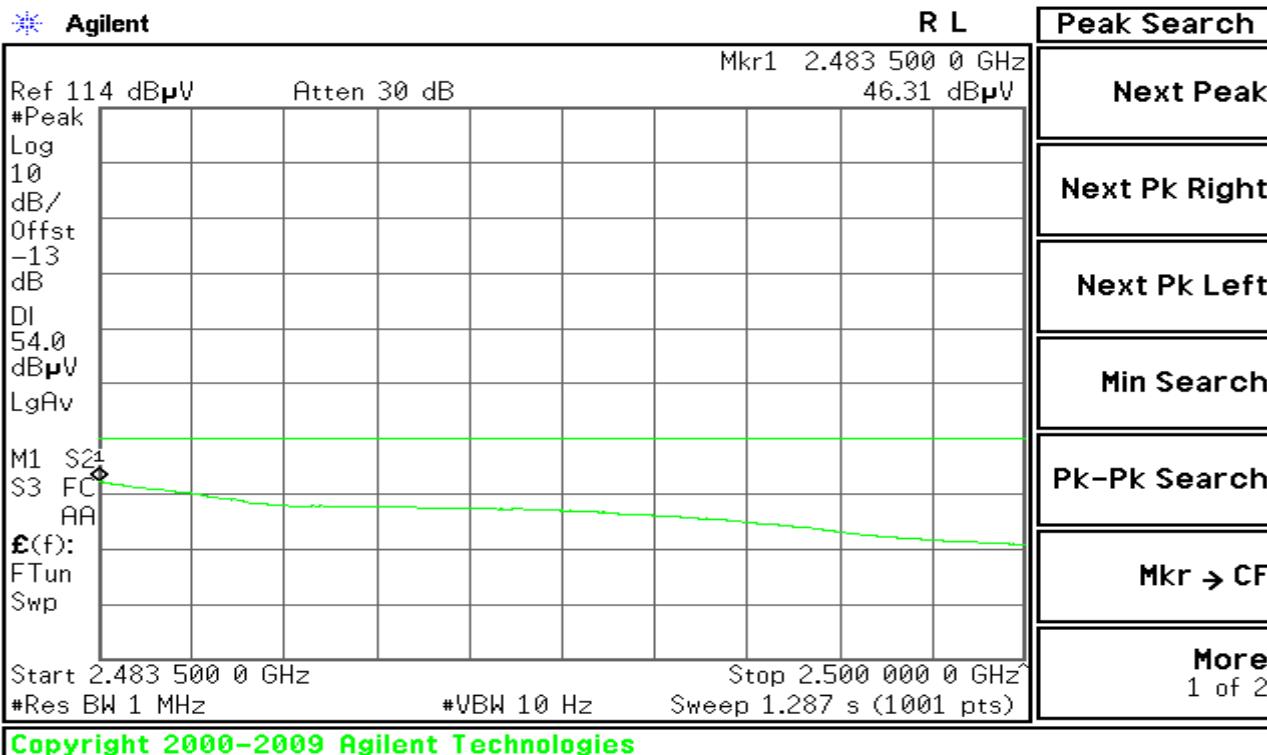


AVG



**RESTRICTED BANDEDGE (g Mode, High Channel, Vertical)****PEAK**

Copyright 2000-2009 Agilent Technologies

AVG

Copyright 2000-2009 Agilent Technologies



Below 1GHz

Operation Mode: Normal Link+BT on

Test Date: August 2,2011

Temperature: 22°C

Tested by: Sean Yu

Humidity: 48% RH

Polarity: Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
51.02	V	54.95	-18.54	36.41	40.00	-3.59	Peak
59.10	V	56.47	-19.60	36.87	40.00	-3.13	Peak
249.87	V	51.33	-14.56	36.77	46.00	-9.23	Peak
299.98	V	55.24	-12.43	42.81	46.00	-3.19	Peak
400.22	V	47.24	-10.00	37.24	46.00	-8.76	Peak
500.45	V	45.09	-7.86	37.23	46.00	-8.77	Peak
301.60	H	55.25	-12.34	42.91	46.00	-3.09	Peak
374.35	H	46.50	-10.20	36.30	46.00	-9.70	Peak
400.22	H	48.09	-10.00	38.09	46.00	-7.91	Peak
500.45	H	45.70	-7.86	37.84	46.00	-8.16	Peak
749.42	H	38.51	-4.15	34.36	46.00	-11.64	Peak
919.17	H	36.62	-1.62	35.00	46.00	-11.00	Peak

Remark:

1. Measuring frequencies from 30 MHz to the 1GHz (No emission found between lowest internal used/generated frequency to 30 MHz).
2. Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using peak/quasi-peak detector mode.
3. 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.
4. Margin (dB) = Result (dBuV/m) – Limit (dBuV/m).



Above 1 GHz

Operation Mode: TX / IEEE 802.11b / CH Low+BT on

Test Date: August 2,2011

Temperature: 22°C

Tested by: Sean Yu

Humidity: 48 % RH

Polarity: Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
4825.44	V	36.18	26.25	12.41	48.59	38.66	74	54	-15.34	Average
7236.21	V	38.85	27.71	15.48	54.33	43.19	74	54	-10.81	Average
4824.17	H	34.36	25.89	12.41	46.77	38.3	74	54	-15.7	Average
7233.28	H	38.35	27.48	15.47	53.82	42.95	74	54	-11.05	Average

Remark:

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).



Compliance Certification Services Inc.

Report No: KS110726B02-RPB

FCC ID: ZTP-I7003G

Date of Issue :August 3, 2011

Operation Mode: TX / IEEE 802.11b / CH Mid+BT on**Test Date:** August 2,2011**Temperature:** 22°C**Tested by:** Sean Yu**Humidity:** 48 % RH**Polarity:** Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
4865.48	V	36.43	26.54	12.68	49.11	39.22	74	54	-14.78	Average
7307.17	V	37.74	26.17	15.72	53.46	41.89	74	54	-12.11	Average
N/A										
4866.01	H	35.15	25.96	12.68	47.83	38.64	74	54	-15.36	Average
7321.23	H	36.82	25.57	15.76	52.58	41.33	74	54	-12.67	Average
N/A										

Remark:

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).



Compliance Certification Services Inc.

Report No: KS110726B02-RPB

FCC ID: ZTP-I7003G

Date of Issue :August 3, 2011

Operation Mode: TX / IEEE 802.11b / CH High+BT on

Test Date: August 2,2011

Temperature: 22°C

Tested by: Sean Yu

Humidity: 48 % RH

Polarity: Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
4921.36	V	35.63	26.33	12.93	48.56	39.26	74	54	-14.74	Average
7378.15	V	39.64	27.89	15.82	55.46	43.71	74	54	-10.29	Average
N/A										
4923.74	H	34.28	28.32	12.93	47.21	41.25	74	54	-12.75	Average
7380.58	H	38.94	26.06	15.82	54.76	41.88	74	54	-12.12	Average
N/A										

Remark:

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).



Compliance Certification Services Inc.

Report No: KS110726B02-RPB

FCC ID: ZTP-I7003G

Date of Issue :August 3, 2011

Operation Mode: TX / IEEE 802.11g / CH Low+BT on

Test Date: August 2,2011

Temperature: 24°C

Tested by: Sean Yu

Humidity: 48 % RH

Polarity: Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
4819.55	V	35.14	28.11	12.41	47.55	40.52	74	54	-13.48	Average
7233.45	V	36.85	27.28	15.48	52.33	42.76	74	54	-11.24	Average
N/A										
4823.65	H	34.02	27.56	12.41	46.43	39.97	74	54	-14.03	Average
7238.66	H	35.3	25.54	15.48	50.78	41.02	74	54	-12.98	Average
N/A										

Remark:

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).



Compliance Certification Services Inc.

Report No: KS110726B02-RPB

FCC ID: ZTP-I7003G

Date of Issue :August 3, 2011

Operation Mode: TX / IEEE 802.11g / CH Mid+BT on**Test Date:** August 2,2011**Temperature:** 24°C**Tested by:** Sean Yu**Humidity:** 48 % RH**Polarity:** Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
4876.58	V	33.61	28.21	12.68	46.29	40.89	74	54	-13.11	Average
7320.24	V	37.35	25.06	15.76	53.11	40.82	74	54	-13.18	Average
N/A										
4875.36	H	32.88	27.66	12.68	45.56	40.34	74	54	-13.66	Average
7318.28	H	37.27	24.56	15.74	53.01	40.3	74	54	-13.7	Average
N/A										

Remark:

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).



Compliance Certification Services Inc.

Report No: KS110726B02-RPB

FCC ID: ZTP-I7003G

Date of Issue :August 3, 2011

Operation Mode: TX / IEEE 802.11g / CH High+BT on**Test Date:** August 2,2011**Temperature:** 24°C**Tested by:** Sean Yu**Humidity:** 48 % RH**Polarity:** Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
4935.44	V	33.6	28.33	12.94	46.54	41.27	74	54	-12.73	Average
7391.28	V	37.38	26.35	15.82	53.2	42.17	74	54	-11.83	Average
N/A										
4925.58	H	34.38	28.01	12.93	47.31	40.94	74	54	-13.06	Average
7389.63	H	37.16	25.92	15.82	52.98	41.74	74	54	-12.26	Average
N/A										

Remark:

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).



7.7. POWERLINE CONDUCTED EMISSIONS

LIMIT

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

* Decreases with the logarithm of the frequency.

Test Configuration

See test photographs attached in Appendix 1 for the actual connections between EUT and support equipment.

TEST PROCEDURE

1. The EUT was placed on a table, which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all frequency measured were complete.

TEST RESULTS

The initial step in collecting conducted data is a spectrum analyzer peak scan of the measurement range. Significant peaks are then marked as shown on the following data page, and these signals are then quasi-peaked.

Test Data



Operation Mode:

Normal Link+BT on

Test Date:

August 3,2011

Temperature:

23°C

Tested by:

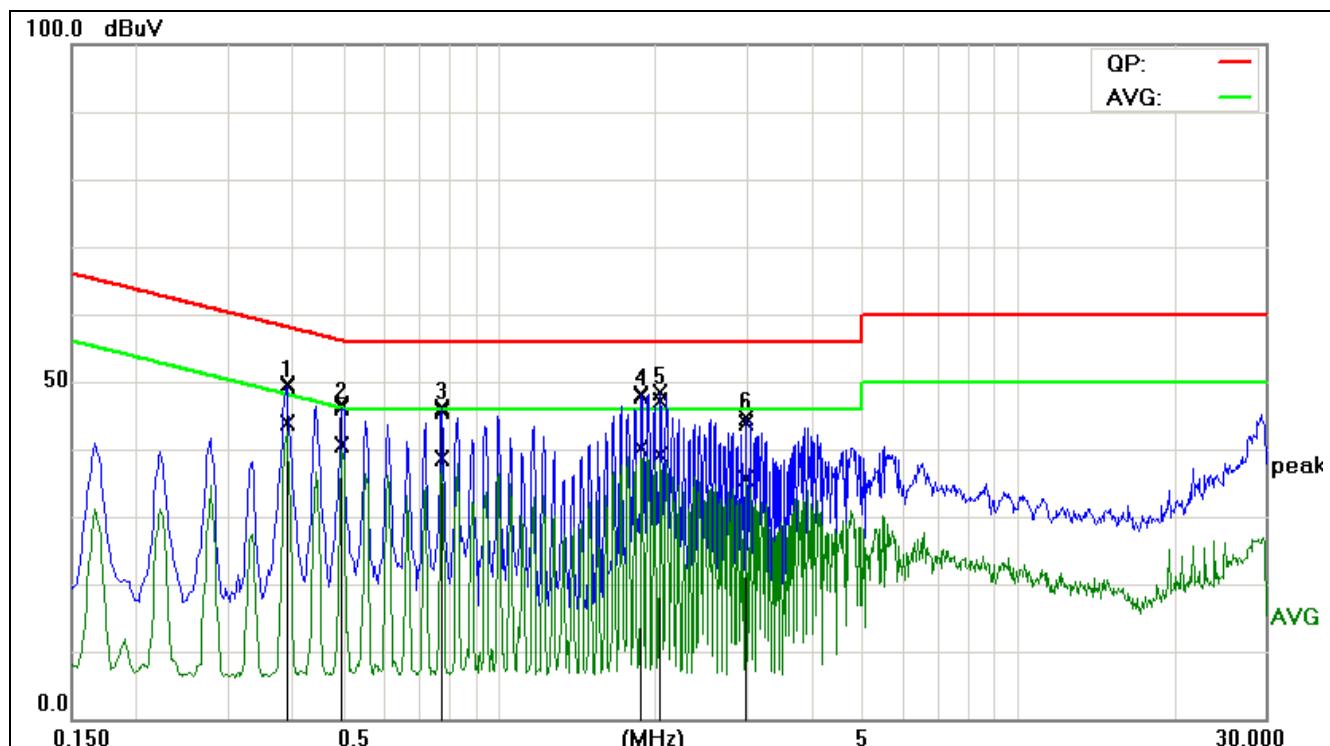
Sean Yu

Humidity:

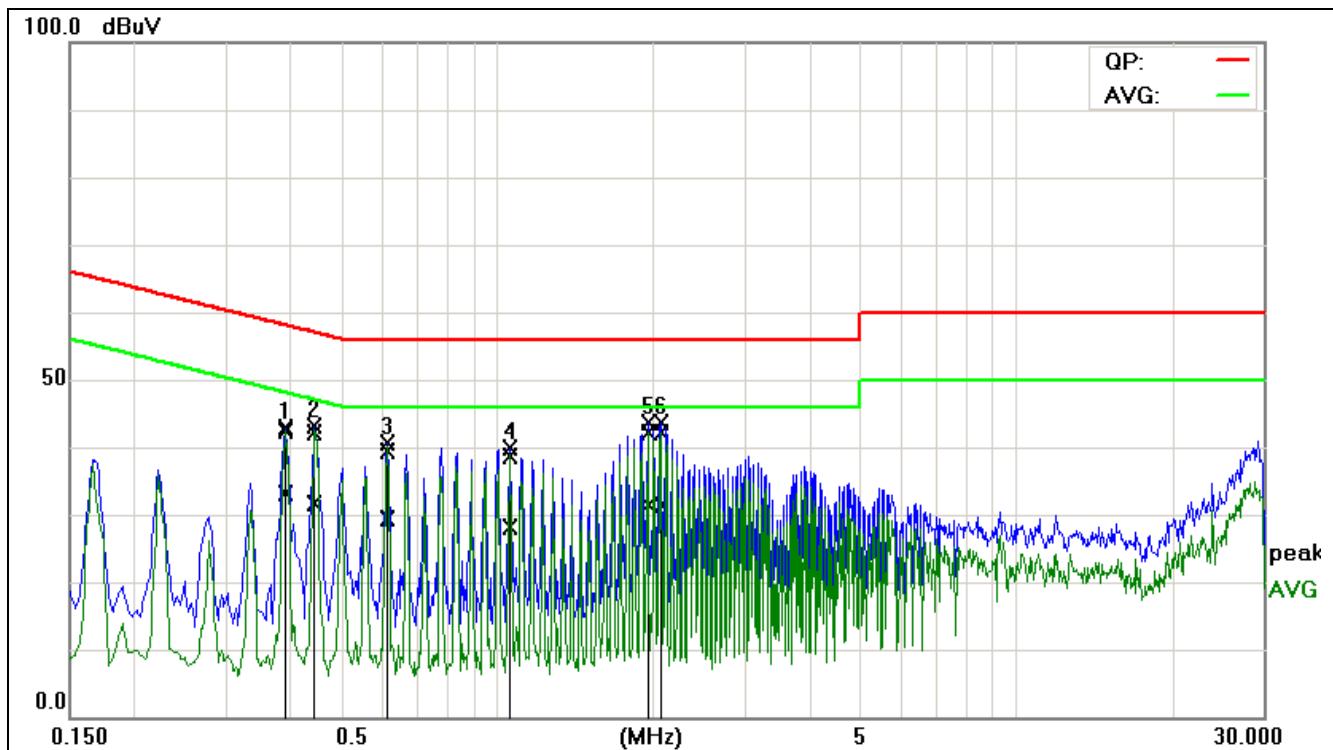
50% RH

Test Voltage:

AC 120V/60Hz

L1

No.	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
1*	0.3898	39.11	33.50	10.40	49.51	43.90	58.07	48.07	-8.56	-4.17	Pass
2	0.5010	35.81	29.93	10.82	46.63	40.75	56.00	46.00	-9.37	-5.25	Pass
3	0.7801	34.59	27.69	10.98	45.57	38.67	56.00	46.00	-10.43	-7.33	Pass
4	1.8908	36.90	28.94	11.08	47.98	40.02	56.00	46.00	-8.02	-5.98	Pass
5	2.0589	36.11	28.10	11.09	47.20	39.19	56.00	46.00	-8.80	-6.81	Pass
6	3.0067	32.65	24.60	11.11	43.76	35.71	56.00	46.00	-12.24	-10.29	Pass

**L2**

No.	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
1	0.3916	32.13	22.89	10.13	42.26	33.02	58.03	48.03	-15.77	-15.01	Pass
2	0.4465	31.89	21.47	10.13	42.02	31.60	56.94	46.94	-14.92	-15.34	Pass
3	0.6157	29.14	19.26	10.14	39.28	29.40	56.00	46.00	-16.72	-16.60	Pass
4	1.0623	28.49	17.92	10.23	38.72	28.15	56.00	46.00	-17.28	-17.85	Pass
5	1.9557	31.51	20.92	10.55	42.06	31.47	56.00	46.00	-13.94	-14.53	Pass
6*	2.0671	31.60	20.77	10.58	42.18	31.35	56.00	46.00	-13.82	-14.65	Pass

Remark:

1. Measuring frequencies from 0.15 MHz to 30MHz.
2. The emissions measured in frequency range from 0.15 MHz to 30MHz were made with an instrument using Quasi-peak detector and average detector.
3. The IF bandwidth of SPA between 0.15MHz and 30MHz was 10 kHz; the IF bandwidth of Test Receiver between 0.15MHz and 30MHz was 9 kHz;
4. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line)