FCC 47 CFR PART 15 SUBPART C

TEST REPORT

For

Product Name: Mobile Phone
Brand Name: HYUNDAI
Model No.: D350
FCC ID: RQQHLT-D350
Test Report Number:
C140425R01-RPW

Issued for

HYUNDAI CORPORATION
140-2, GYE-DONG, JONGNO-GU, SEOUL, 110-793, KOREA

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

TESTING CERT #2541.01

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.*

REVISION HISTORY

Rev.	Issue Date	Report NO.	Effect Page	Contents
00	May 16, 2014	C140425R01-RPW	ALL	N/A

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

TABLE OF CONTENTS

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result
3.1	15.247(a)(2)	6dB Bandwidth	≥ 0.5MHz	Pass
3.2	15.247(b)	Peak Output Power	≤ 30dBm	Pass
3.5	15.247(e)	Power Spectral Density	≤ 8dBm/3kHz	Pass
3.4	15.247(d)	Conducted Band Edges and Spurious Emission	≤ 20dBc	Pass
3.5	15.247(d)	Radiated Band Edges and Spurious Emission	15.209(a) & 15.247(d)	Pass
3.6	15.207	AC Conducted Emission	15.207(a)	Pass
3.7	15.203 & 15.247(b)	Antenna Requirement	N/A	Pass

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

1. TEST RESULT CERTIFICATION

Product Name:	Mobile Phone
Trade Name:	HYUNDAI
Model Name.:	D350
Series Model:	N/A
Applicant Discrepancy:	Initial
Device Category:	PORTABLE DEVICES
Date of Test:	April 28, 2014~May 13, 2014
Applicant:	**HYUNDAI CORPORATION** 140-2, GYE-DONG, JONGNO-GU, SEOUL, 110-793, KOREA
Manufacturer:	**WASAM TECHNOLOGY (SHEN ZHEN) CO.,LTD.** B,F Building, (Hengqiang Industrial Park), Bogang Taifeng Industrial Zone, Shajing Town, Bao'an District, Shenzhen, China
Application Type:	Certification

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

We hereby certify that:

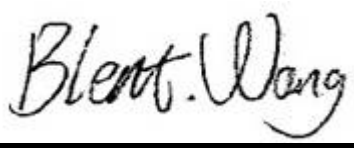
The above equipment was tested by Compliance Certification Services Inc. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4: 2009 and the energy emitted by the sample EUT tested as described 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:

Jeff.Fang
RF Manager
Compliance Certification Service Inc.

Tested by:



Blent.Wang
Test Engineer
Compliance Certification Service Inc.

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

2. EUT DESCRIPTION

Product Name:	Mobile Phone
Brand Name:	HYUNDAI
Model Name:	D350
Series Model:	N/A
Model Discrepancy:	N/A
Power Adapter Power Rating :	Power supply and ADP(rating): Model:D205 INPUT: 100-300V 50/60Hz 0.15A Output: DC 5V 500mA Battery(rating): Model:D350 Capacitance:3.7V 1200mAh
Frequency Range:	IEEE 802.11b/g:2412 MHz~ 2462 MHz IEEE 802.11n HT20:2412 MHz~ 2462 MHz IEEE 802.11n HT40:2422 MHz~ 2452 MHz
Transmit Power:	IEEE 802.11b: 18.60dBm IEEE 802.11g: 14.56dBm IEEE 802.11n HT20:14.41dBm IEEE 802.11n HT40:11.97dBm
Modulation Technique:	IEEE 802.11b: DSSS (CCK, DQPSK, DBPSK) IEEE 802.11g: DSSS /OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11n HT20/40:OFDM (64QAM, 16QAM, QPSK, BPSK)
Number of Channels:	IEEE 802.11b /g :11 Channels IEEE 802.11n HT20 :11 Channels IEEE 802.11n HT40: 9 Channels
Antenna Specification:	PIFA antenna: 2.6 dBi gain (Max)

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: RQQHLT-D350*** filing to comply with Section 15.207, 15.209 and 15.247 of the FCC Part 15, Subpart C Rules.

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

3. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4 2003and 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 2009 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 2009.

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

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.

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

3.5 DESCRIPTION OF TEST MODES

The EUT transmitting and receiving with one (chain 0) antenna working at b/g/n mode, so one antenna working configuration was used for b/g/ n(HT20 and HT40) mode testing in this report.

The test data rates:

IEEE802.11b mode:

Channel Low (2412MHz)

Channel Mid (2437MHz)

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

IEEE802.11g mode:

Channel Low (2412MHz)

Channel Mid (2437MHz)

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

IEEE802.11n HT20 mode:

Channel Low (2412MHz)

Channel Mid (2437MHz)

Channel High (2462MHz) with MCS0 data rate was chosen for full testing.

IEEE802.11n HT40 mode:

Channel Low (2422MHz)

Channel Mid (2437MHz)

Channel High (2452MHz) with MCS0 data rate was chosen for full testing.

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

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	RS	FSU26	200789	2014-8-19
DETECTOR NEGATIVE	Agilent	8473B	MY42240176	2015-5-11
OSCILLOSCOPE	Agilent	DSO6104A	MY44002585	2015-3-16
Power Sensor	Agilent	E9327A	US40441788	2015-3-17
Power Meter	Agilent	E4416A	QB41292714	2015-3-17
Power SPLITTER	Mini-Circuits	ZN2PD-9G	SF078500430	N.C.R
DC Power Supply	AGILENT	E3632A	MY50340053	N.C.R
Temp. / Humidity Chamber	TERCHY	MHK-120AK	X30109	2015-1-22
Test Software	EZ-EMC			

977 Chamber				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
Spectrum Analyzer	RS	FSU26	200789	2014-8-19
EMI Test Receiver	R&S	ESPI3	101378	2015-1-22
Pre-Amplfier	MINI	ZFL-1000VH2	070306	2015-1-22
Pre-Amplfier	Miteq	NSP400-NF	N/A	N.C.R
Bilog Antenna	Sunol	JB1	A110204-1	2015-3-7
Horn-antenna	SCHWARZBECK	BBHA9120D	D:267	2015-3-7
Turn Table	CT	CT123	4165	N.C.R
Antenna Tower	CT	CTERG23	3256	N.C.R
Controller	CT	CT1OO	95637	N.C.R
Test Software	EZ-EMC			

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

Conducted Emission				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
EMI TEST RECEIVER	R&S	ESCI	100781	2015-3-16
V (V-LISN)	Schwarzbeck	NNLK 8129	8129-143	2014-8-19
LISN (EUT)	FCC	FCC-LISN-50/250-50-2-02	SN:05012	2015-3-16
10dB Attenuation	SCHAFFNER	CFL9206	1710	N.C.R
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

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

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 2009 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.

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

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	ACCREDITED 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.*

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

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.	N/A	N/A	N/A	N/A	N/A

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.*

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

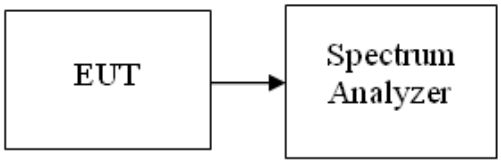
7. FCC PART 15.247 REQUIREMENTS

7.1 6 dB EMISSION 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

KDB 558074 D01 DTS Measurement Guidance v03r01 dated 04-09-2013.

TEST RESULTS

No non-compliance noted

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

Test Data

IEEE 802.11b mode

Channel	Frequency (MHz)	Bandwidth (MHz)	Limit (kHz)	Result
Low	2412	10.062	>500	PASS
Mid	2437	9.126		PASS
High	2462	9.134		PASS

IEEE 802.11g mode

Channel	Frequency (MHz)	Bandwidth (MHz)	Limit (kHz)	Result
Low	2412	15.787	>500	PASS
Mid	2437	15.158		PASS
High	2462	16.030		PASS

IEEE 802.11n HT20 mode

Channel	Frequency (MHz)	Bandwidth (MHz)	Limit (kHz)	Result
Low	2412	15.961	>500	PASS
Mid	2437	15.449		PASS
High	2462	16.921		PASS

IEEE 802.11n HT40 mode

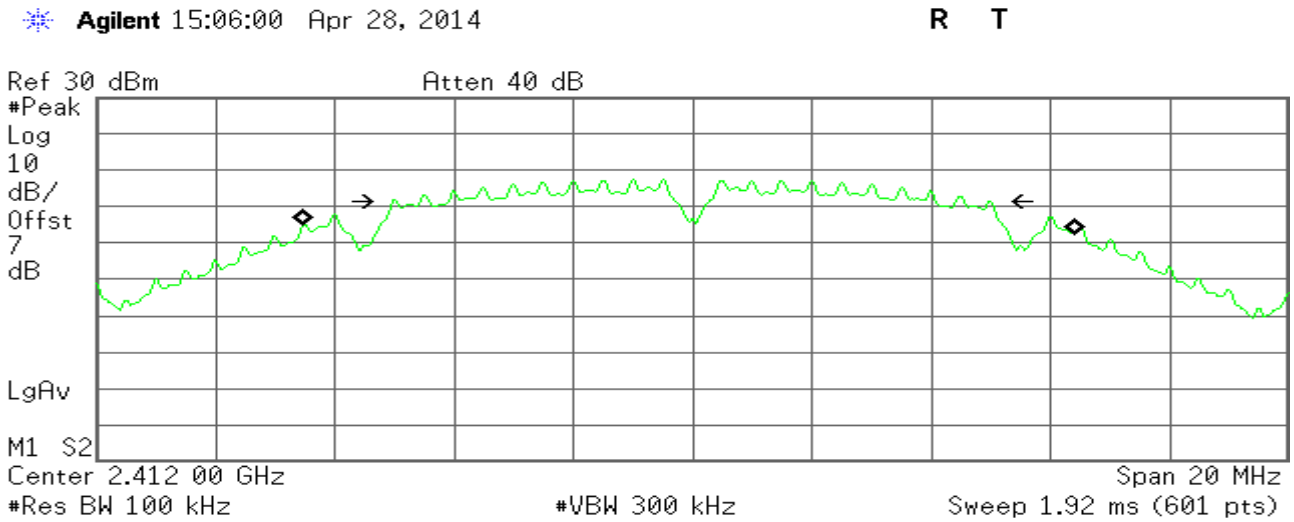
Channel	Frequency (MHz)	Bandwidth (MHz)	Limit (kHz)	Result
Low	2422	35.277	>500	PASS
Mid	2437	35.286		PASS
High	2452	35.400		PASS

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

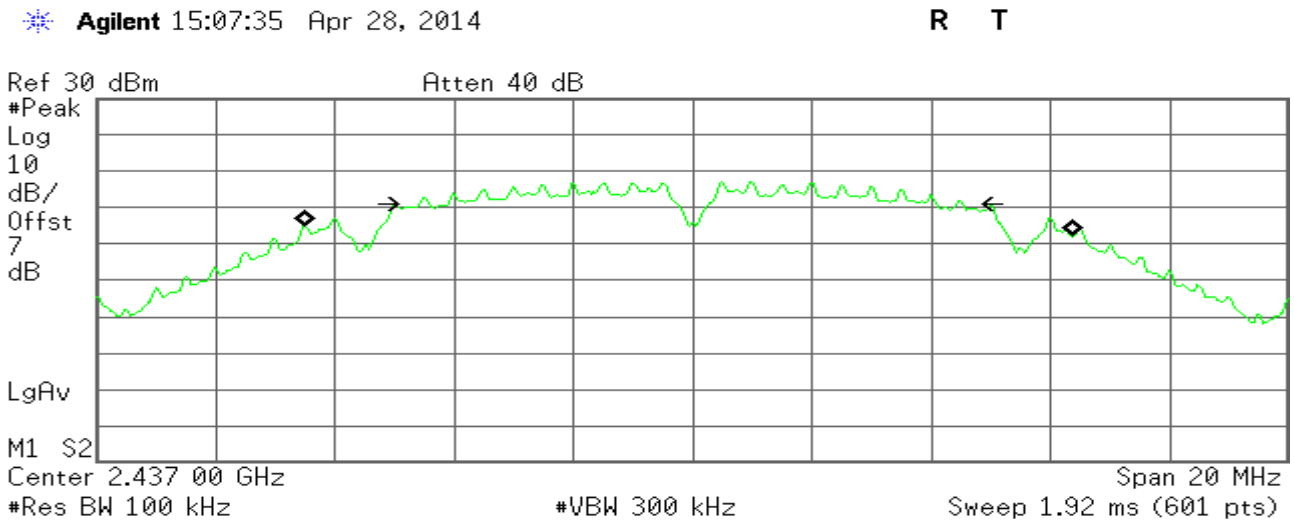
Test Plot

IEEE 802.11b Mode

CH Low

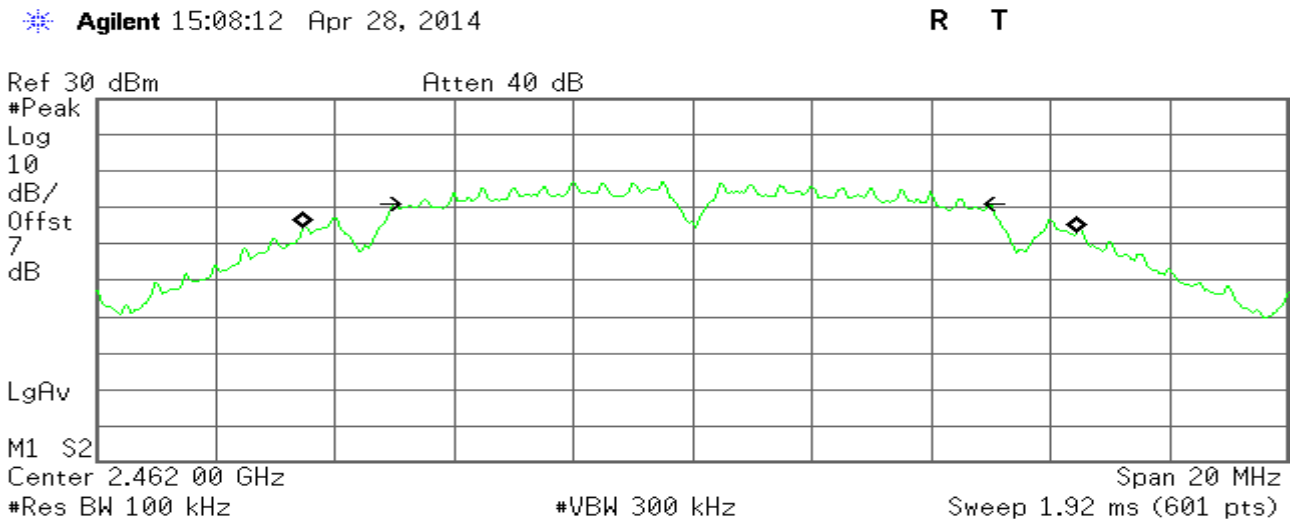


CH Mid



This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

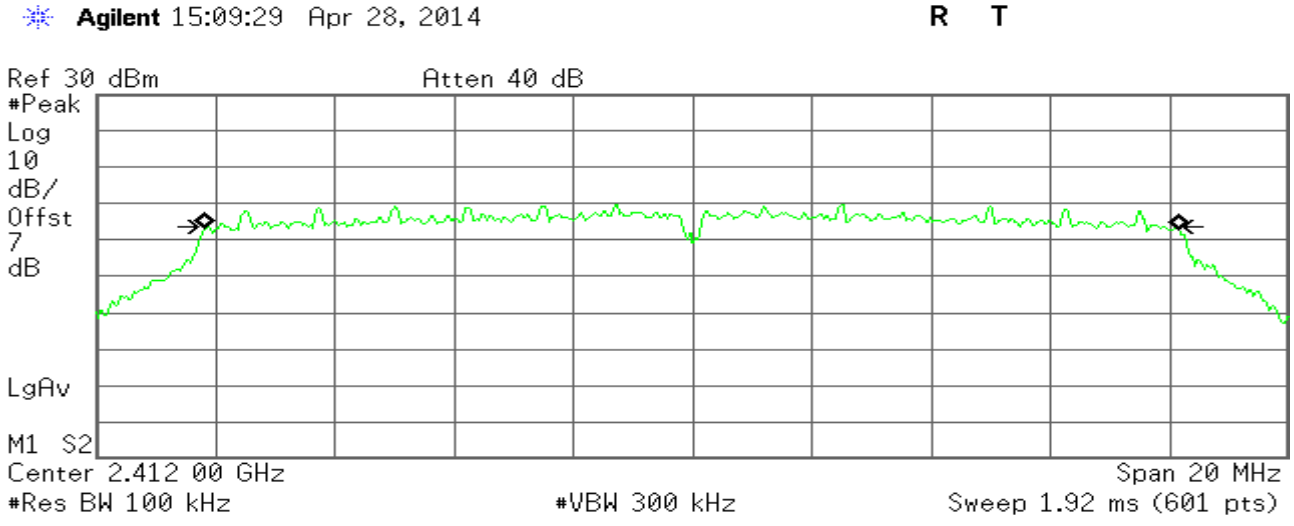
CH High



Transmit Freq Error −42.151 kHz
x dB Bandwidth 9.134 MHz

IEEE 802.11g Mode

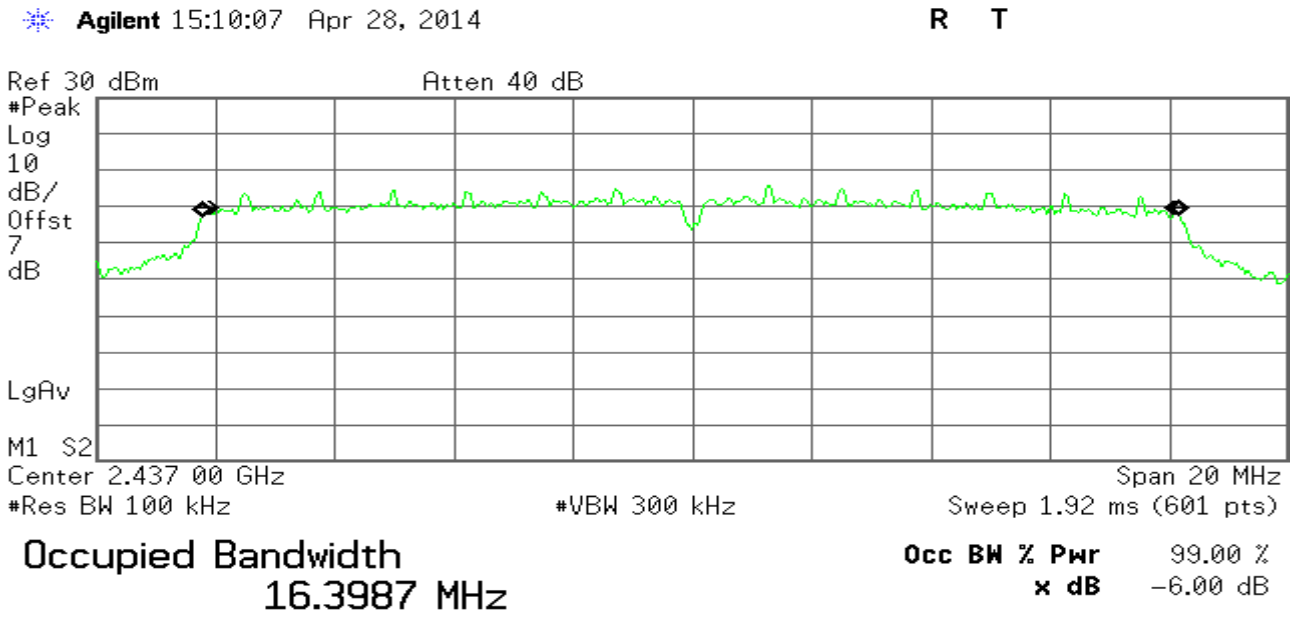
CH Low



Transmit Freq Error −5.234 kHz
x dB Bandwidth 15.787 MHz

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

CH Mid

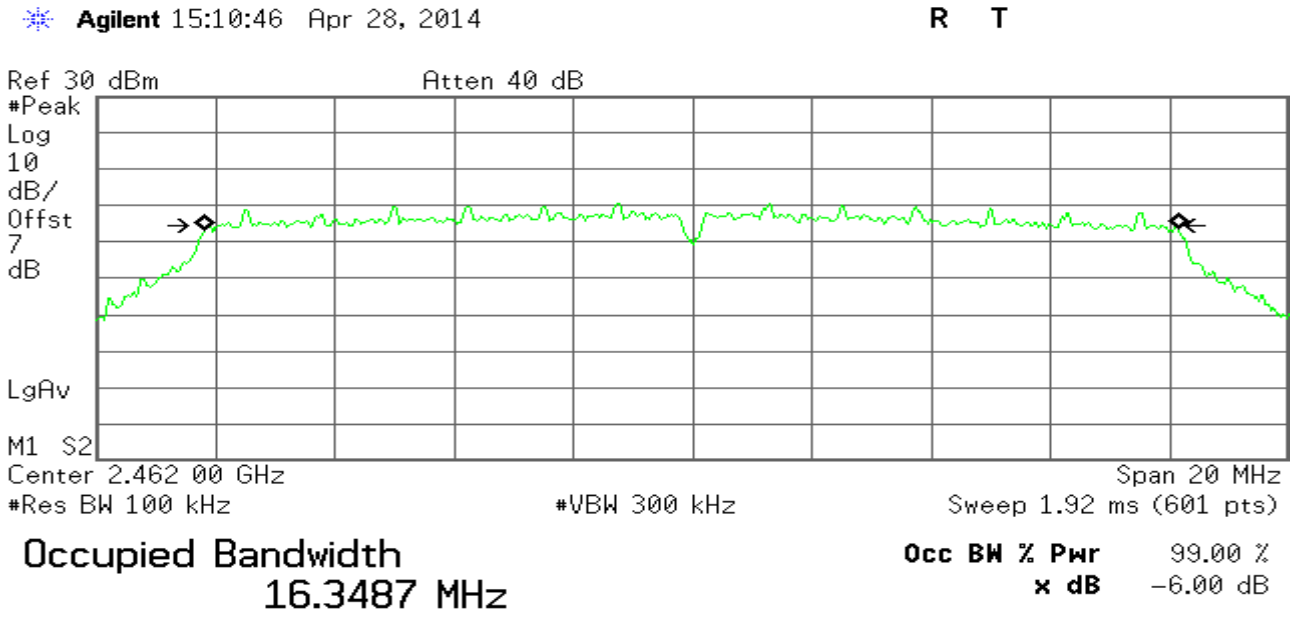


Occupied Bandwidth
16.3987 MHz

Occ BW % Pwr 99.00 %
x dB -6.00 dB

Transmit Freq Error -27.950 kHz
x dB Bandwidth 15.158 MHz

CH High



Occupied Bandwidth
16.3487 MHz

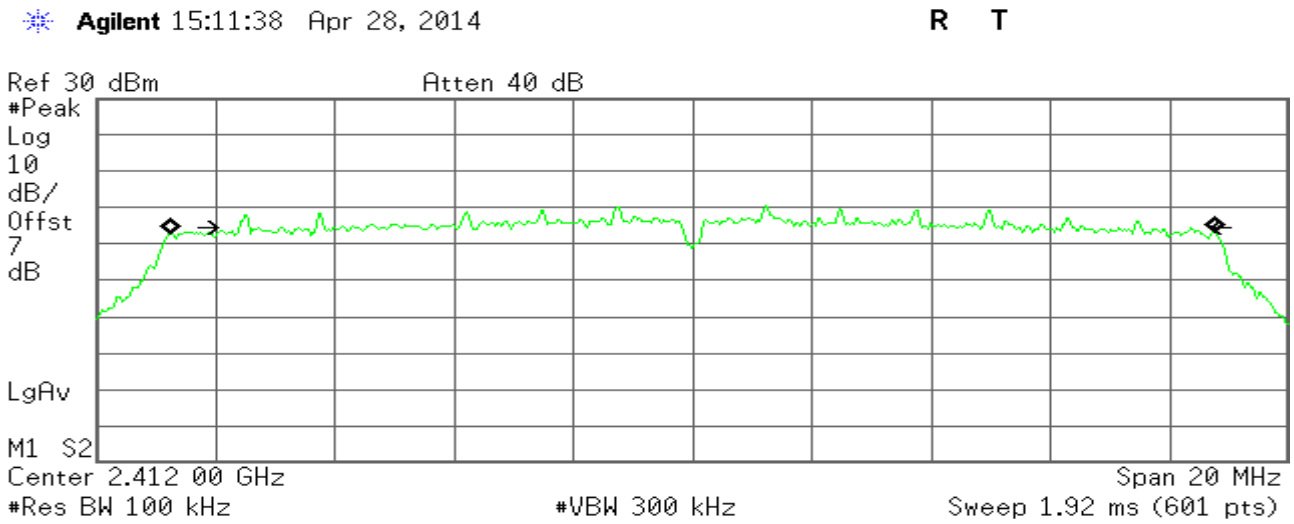
Occ BW % Pwr 99.00 %
x dB -6.00 dB

Transmit Freq Error -21.989 kHz
x dB Bandwidth 16.030 MHz

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

IEEE 802.11n HT20 Mode

CH Low

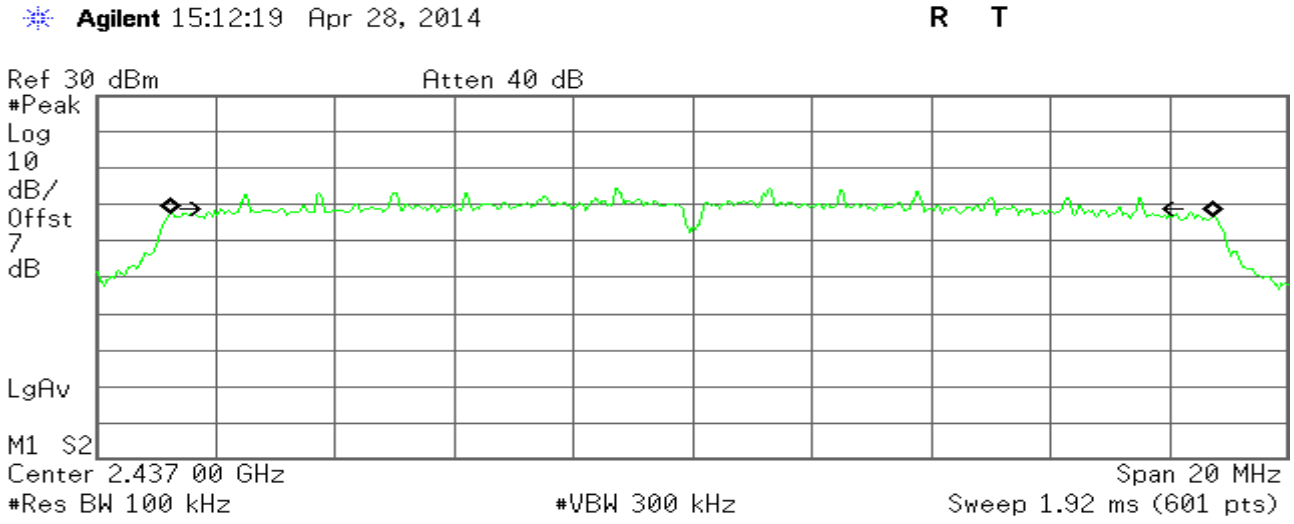


Occupied Bandwidth
17.5194 MHz

Occ BW % Pwr 99.00 %
x dB -6.00 dB

Transmit Freq Error -5.083 kHz
x dB Bandwidth 15.961 MHz

CH Mid



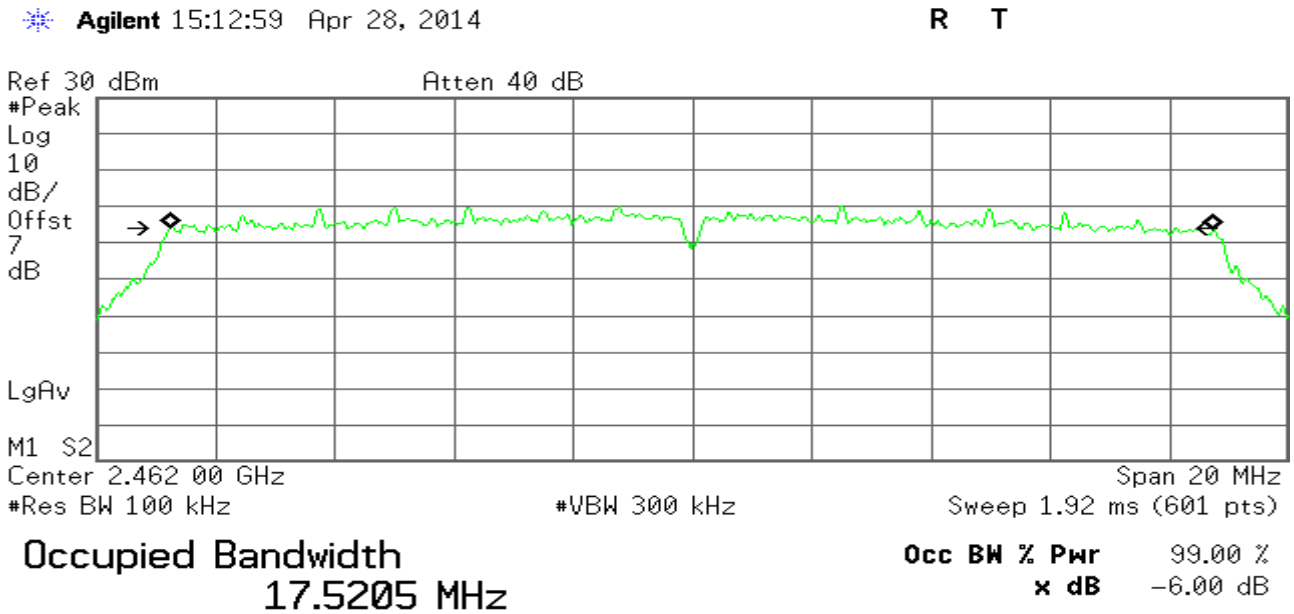
Occupied Bandwidth
17.5203 MHz

Occ BW % Pwr 99.00 %
x dB -6.00 dB

Transmit Freq Error -20.260 kHz
x dB Bandwidth 15.449 MHz

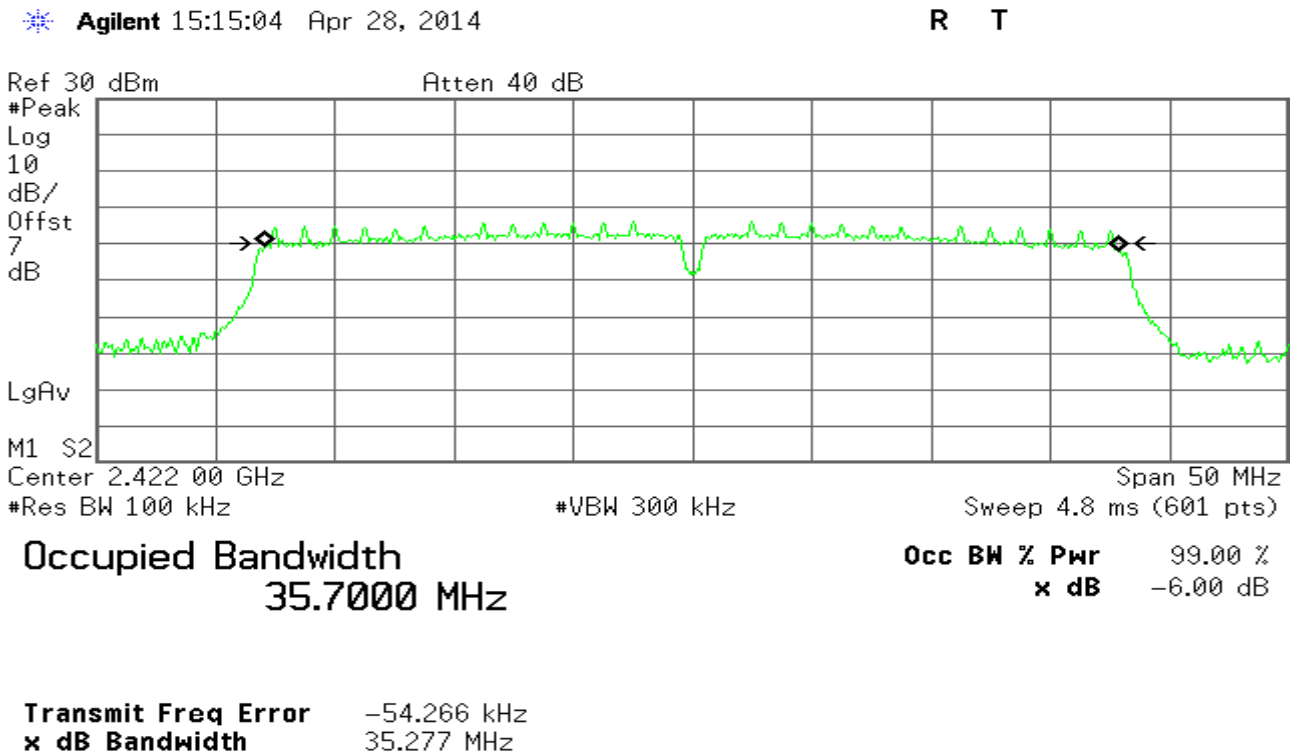
This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

CH High



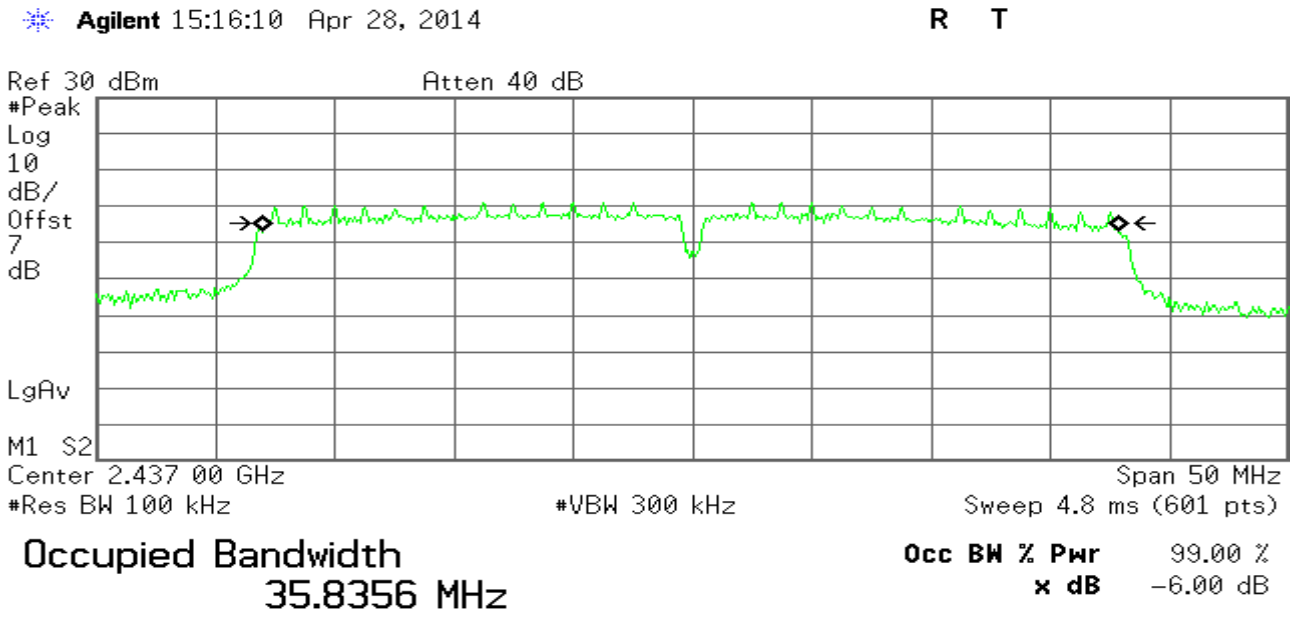
IEEE 802.11n HT40 Mode

CH Low



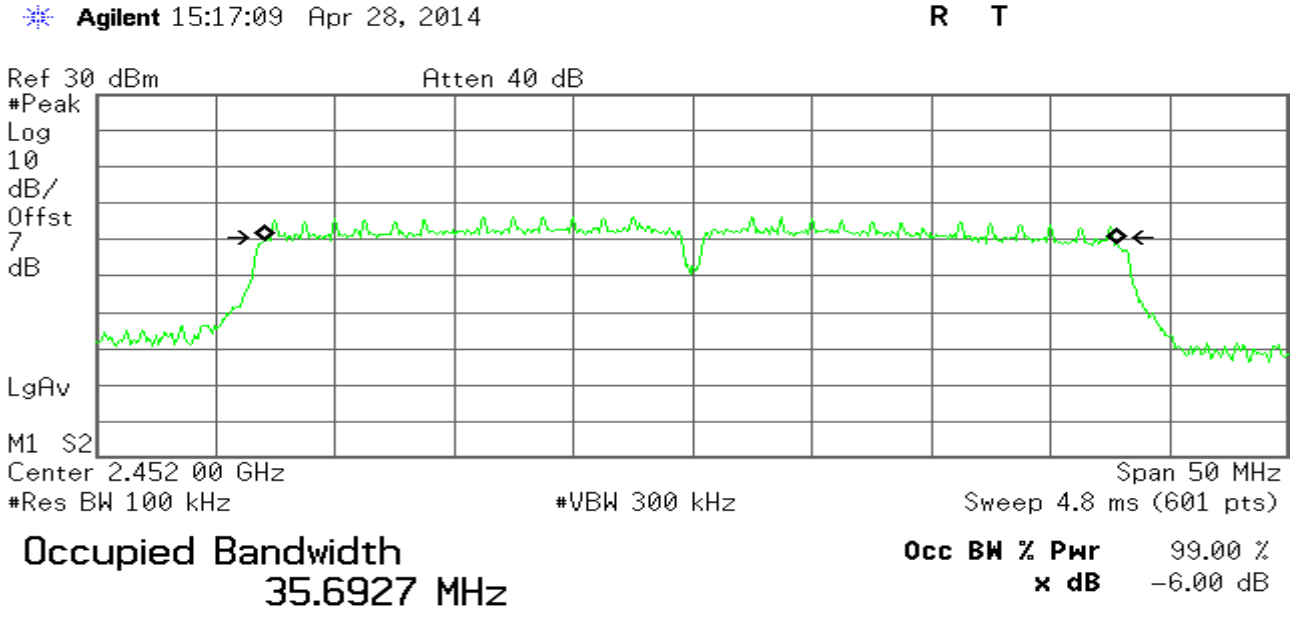
This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

CH Mid



Transmit Freq Error −113.979 kHz
x dB Bandwidth 35.286 MHz

CH High



Transmit Freq Error −96.508 kHz
x dB Bandwidth 35.400 MHz

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

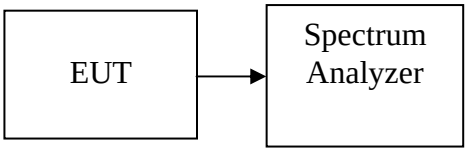
7.2 POWER OUTPUT

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

KDB 558074 D01 DTS Measurement Guidance v03r01 dated 04-09-2013..

TEST RESULTS

No non-compliance noted

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

Test Data

Test mode: IEEE 802.11b mode

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (mW)	Limit (dBm)	Result
Low	2412	**18.60**	**72.444**	30.00	PASS
Mid	2437	18.57	71.945	30.00	PASS
High	2462	18.58	72.111	30.00	PASS

Test mode: IEEE 802.11g mode

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (mW)	Limit (dBm)	Result
Low	2412	13.97	24.946	30.00	PASS
Mid	2437	14.24	26.546	30.00	PASS
High	2462	**14.56**	**28.576**	30.00	PASS

Test mode: IEEE 802.11n HT20 Mode

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (mW)	Limit (dBm)	Result
Low	2412	13.87	24.378	30.00	PASS
Mid	2437	13.47	22.233	30.00	PASS
High	2462	**14.41**	**27.606**	30.00	PASS

Test mode: IEEE 802.11n HT40 Mode

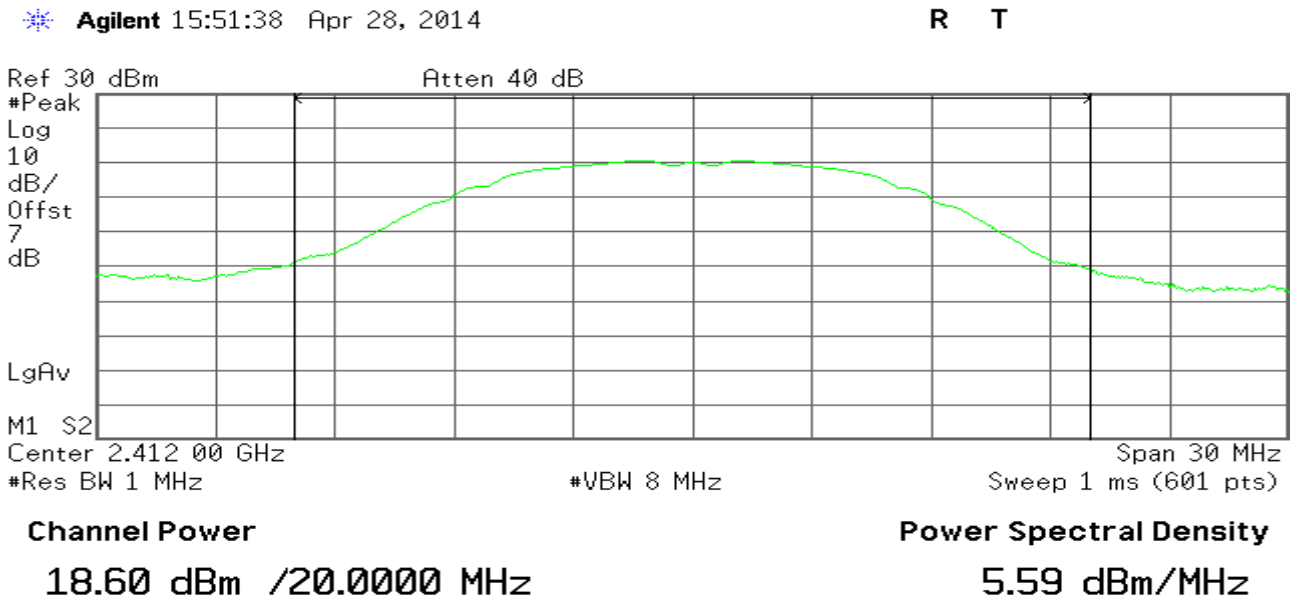
Channel	Frequency (MHz)	Output Power (dBm)	Output Power (mW)	Limit (dBm)	Result
Low	2422	11.67	14.689	30.00	PASS
Mid	2437	**11.97**	**15.740**	30.00	PASS
High	2452	11.92	15.560	30.00	PASS

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

Test Plot

IEEE 802.11b mode

Peak Power (CH Low)



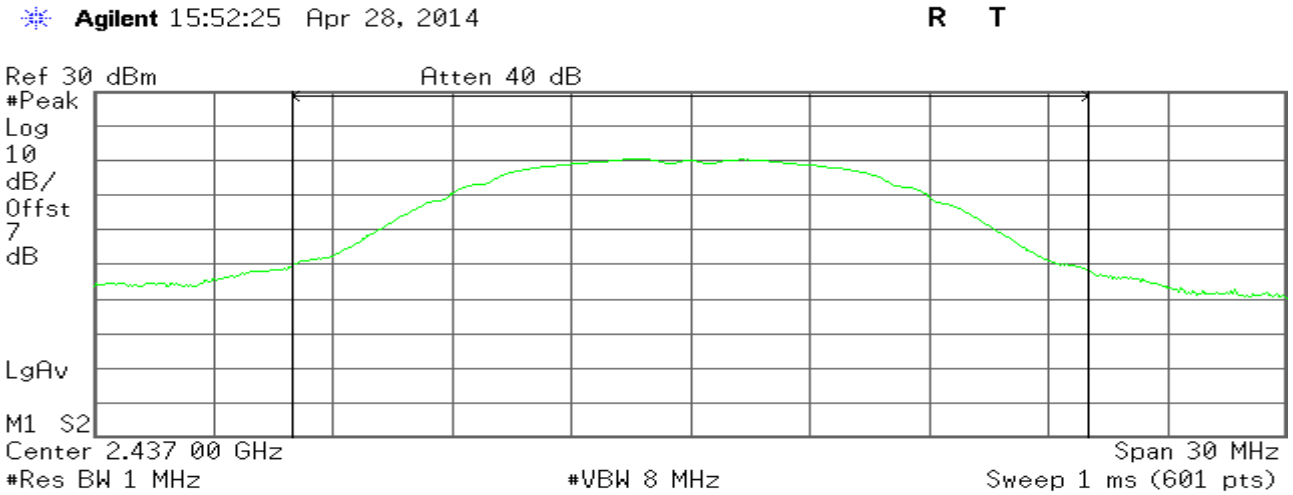
Channel Power

18.60 dBm /20.0000 MHz

Power Spectral Density

5.59 dBm/MHz

Peak Power (CH Mid)



Channel Power

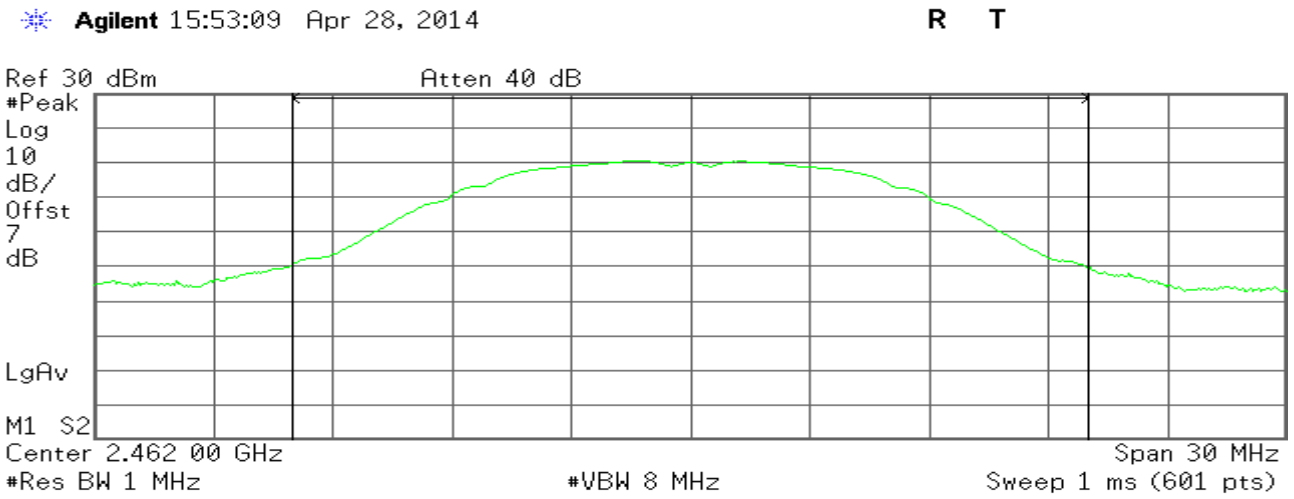
18.57 dBm /20.0000 MHz

Power Spectral Density

5.56 dBm/MHz

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

Peak Power (CH High)

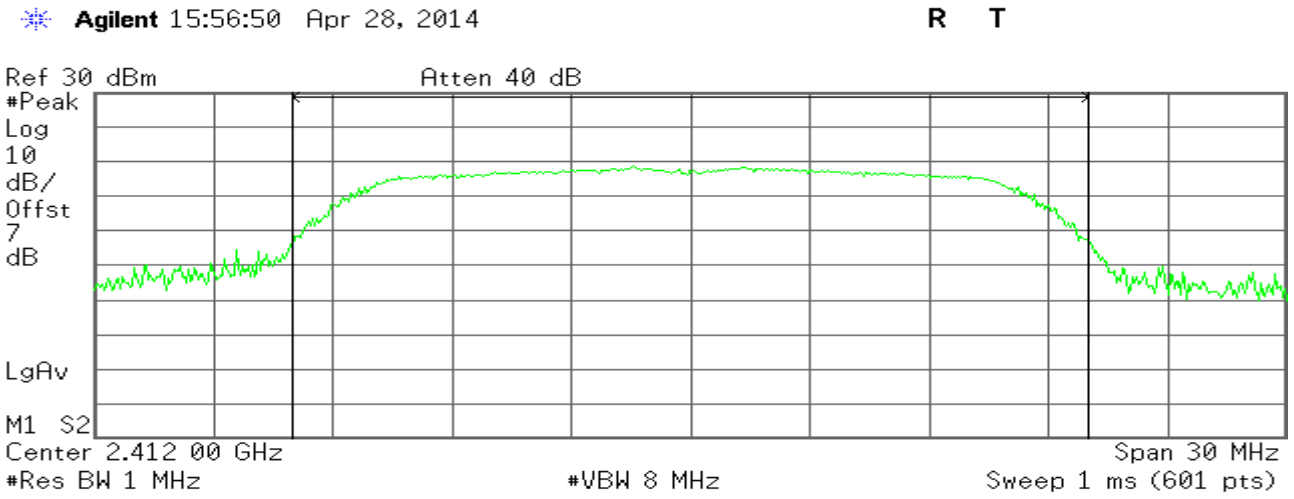


Channel Power
18.58 dBm /20.0000 MHz

Power Spectral Density
5.57 dBm/MHz

IEEE 802.11g mode

Peak Power (CH Low)

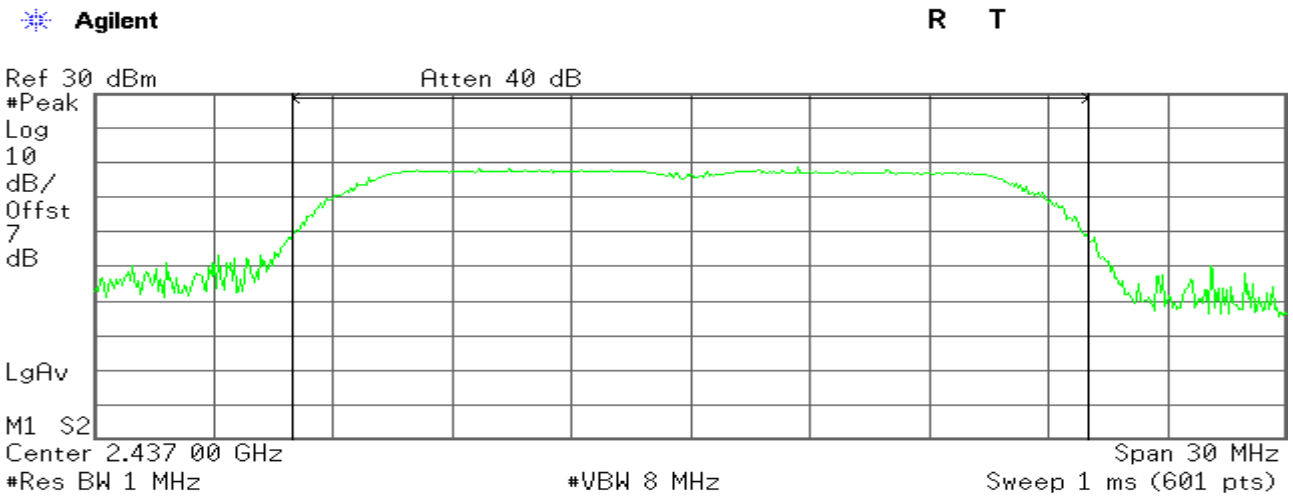


Channel Power
13.97 dBm /20.0000 MHz

Power Spectral Density
0.96 dBm/MHz

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

Peak Power (CH Mid)



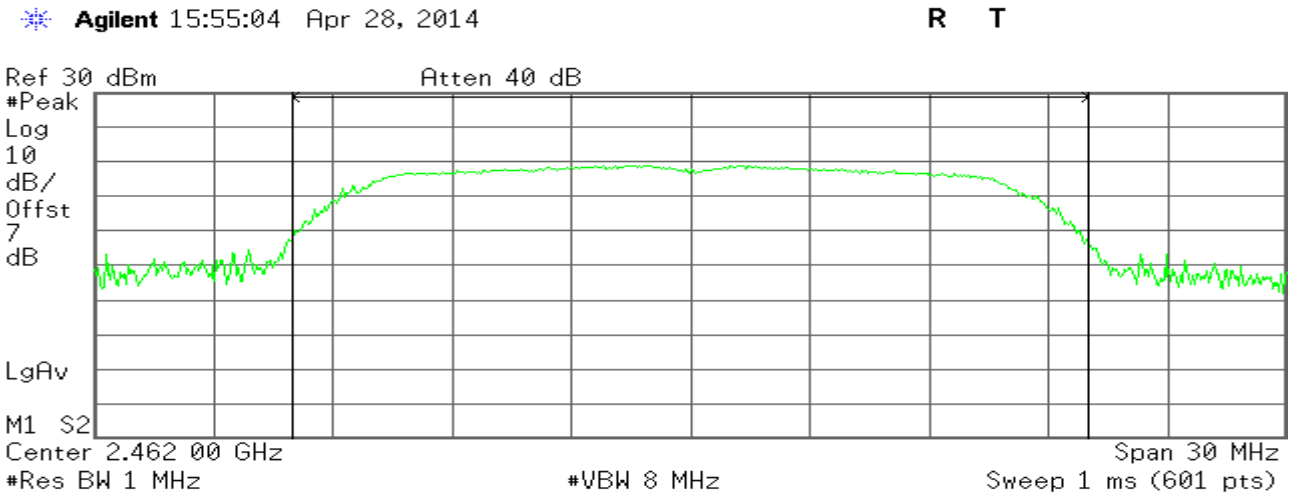
Channel Power

14.24 dBm /20.0000 MHz

Power Spectral Density

1.23 dBm/MHz

Peak Power (CH High)



Channel Power

14.56 dBm /20.0000 MHz

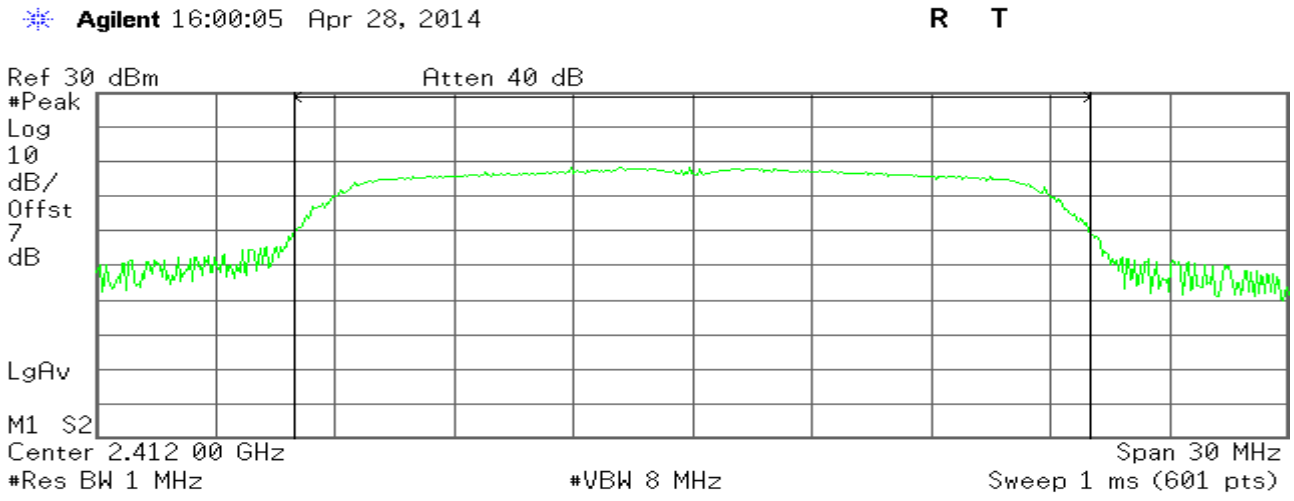
Power Spectral Density

1.54 dBm/MHz

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

IEEE 802.11n HT20 Mode

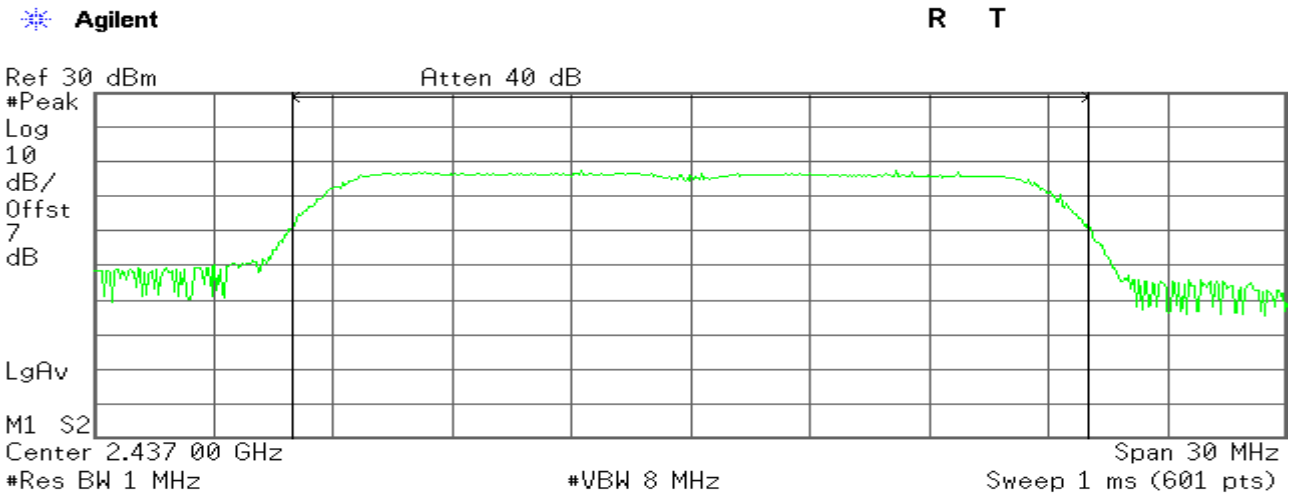
Peak Power (CH Low)



Channel Power
13.87 dBm /20.0000 MHz

Power Spectral Density
0.86 dBm/MHz

Peak Power (CH Mid)

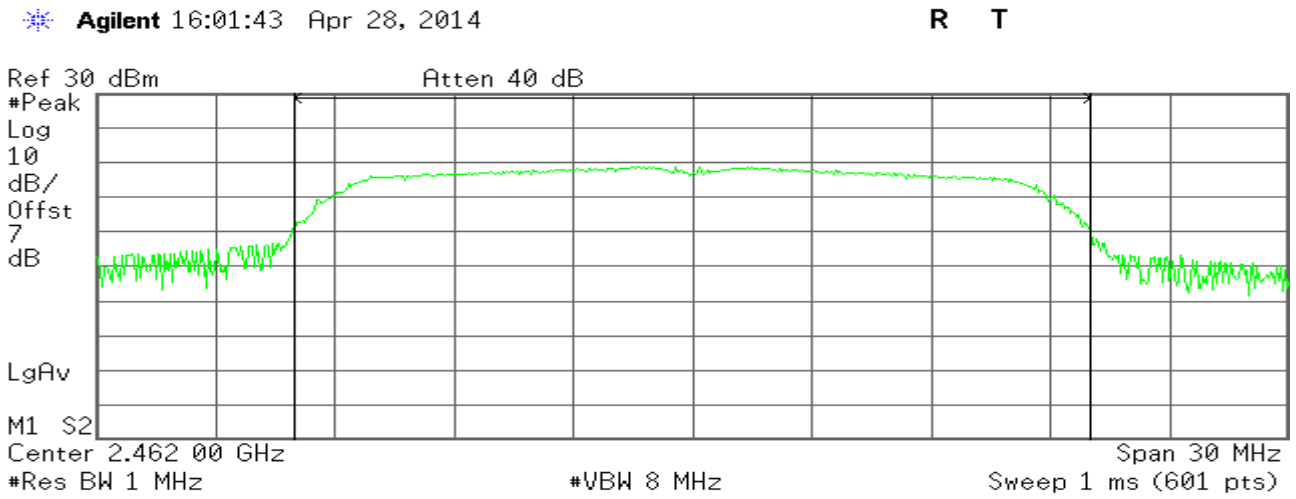


Channel Power
13.47 dBm /20.0000 MHz

Power Spectral Density
0.46 dBm/MHz

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

Peak Power (CH High)



Channel Power

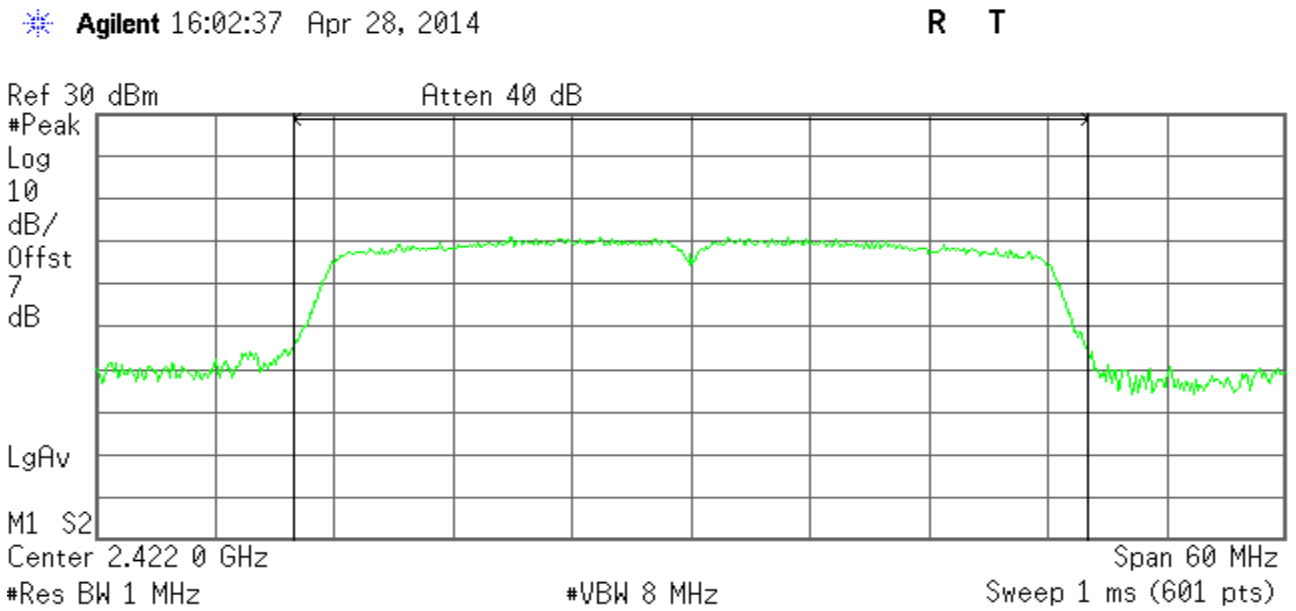
14.41 dBm /20.0000 MHz

Power Spectral Density

1.40 dBm/MHz

IEEE 802.11n HT40 Mode

Peak Power (CH Low)



Channel Power

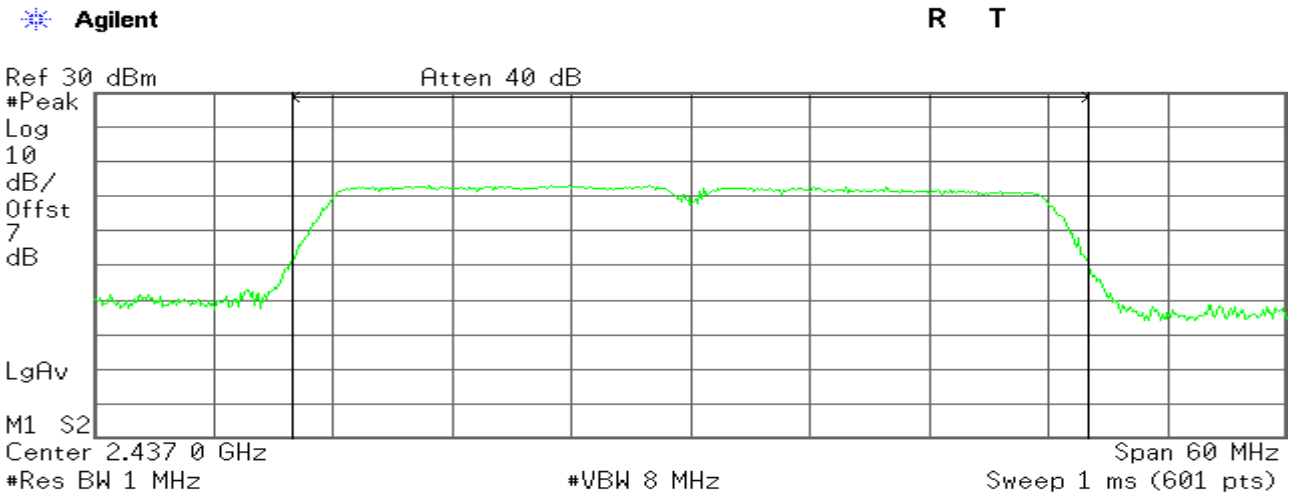
11.67 dBm /40.0000 MHz

Power Spectral Density

-4.35 dBm/MHz

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

Peak Power (CH Mid)



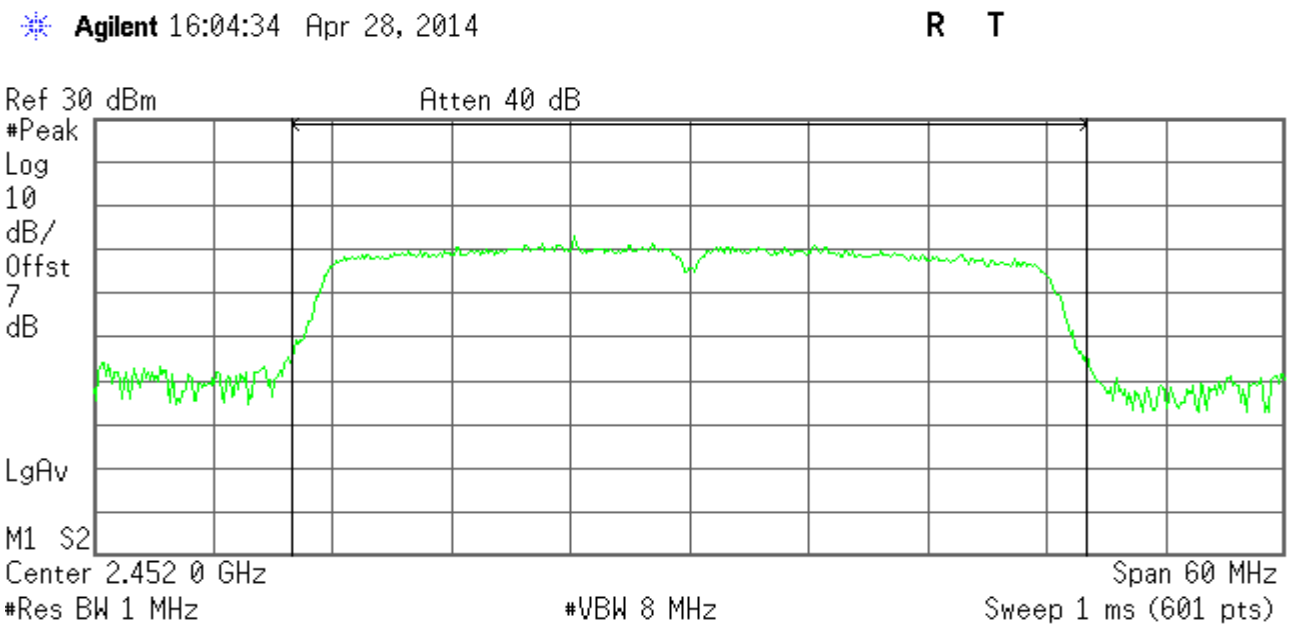
Channel Power

11.97 dBm /40.0000 MHz

Power Spectral Density

-4.05 dBm/MHz

Peak Power (CH High)



Channel Power

11.92 dBm /40.0000 MHz

Power Spectral Density

-4.10 dBm/MHz

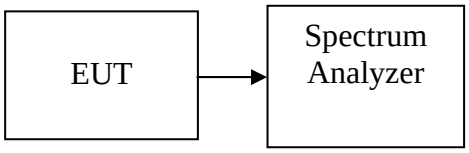
This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

7.3 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

KDB 558074 D01 DTS Measurement Guidance v03r01 dated 04-09-2013..

TEST RESULTS

No non-compliance noted

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

Test Data

Test mode: IEEE 802.11b mode

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Result
Low	2412	-7.03	8.00	PASS
Mid	2437	-6.27	8.00	PASS
High	2462	-7.94	8.00	PASS

Test mode: IEEE 802.11g mode

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Result
Low	2412	-12.62	8.00	PASS
Mid	2437	-8.47	8.00	PASS
High	2462	11.70	8.00	PASS

Test mode: IEEE 802.11n HT20 Mode

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Result
Low	2412	-12.65	8.00	PASS
Mid	2437	-9.84	8.00	PASS
High	2462	-13.94	8.00	PASS

Test mode: IEEE 802.11n HT40 Mode

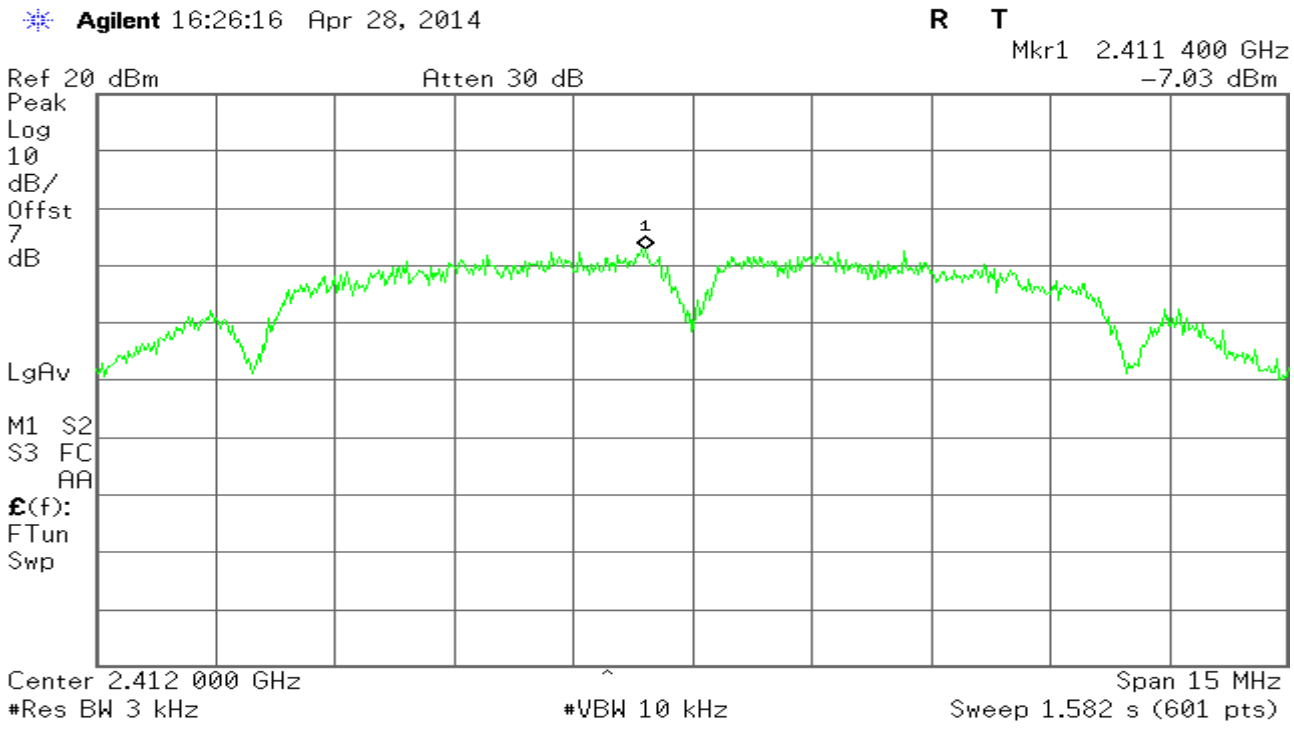
Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Result
Low	2422	-18.33	8.00	PASS
Mid	2437	-13.39	8.00	PASS
High	2452	-16.96	8.00	PASS

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

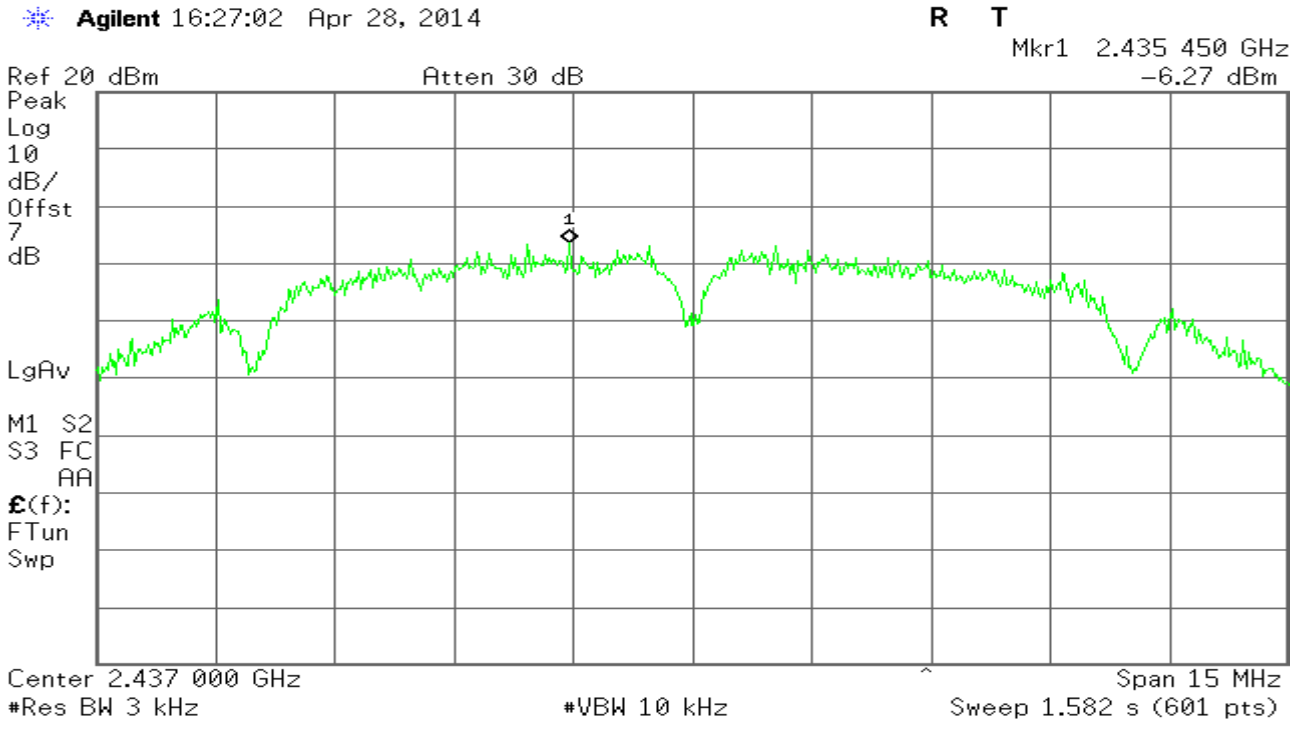
Test Plot

IEEE 802.11b mode

PPSD (CH Low)

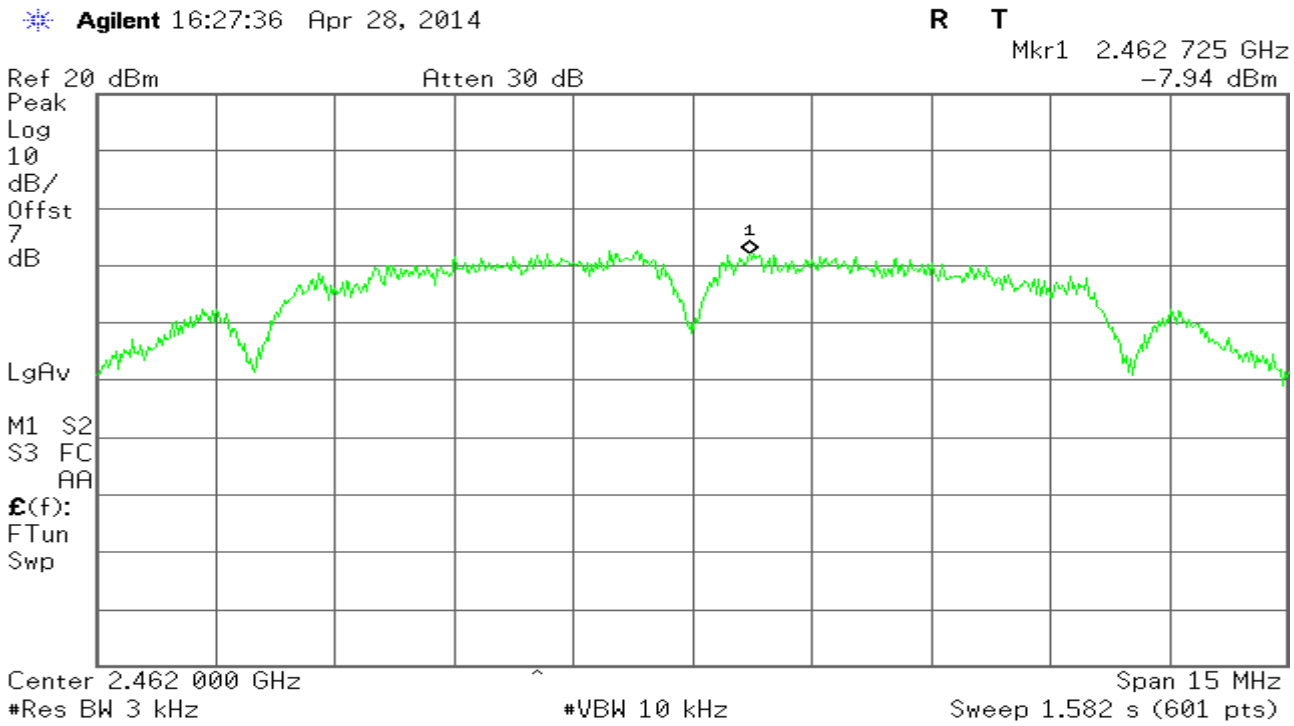


PPSD (CH Mid)



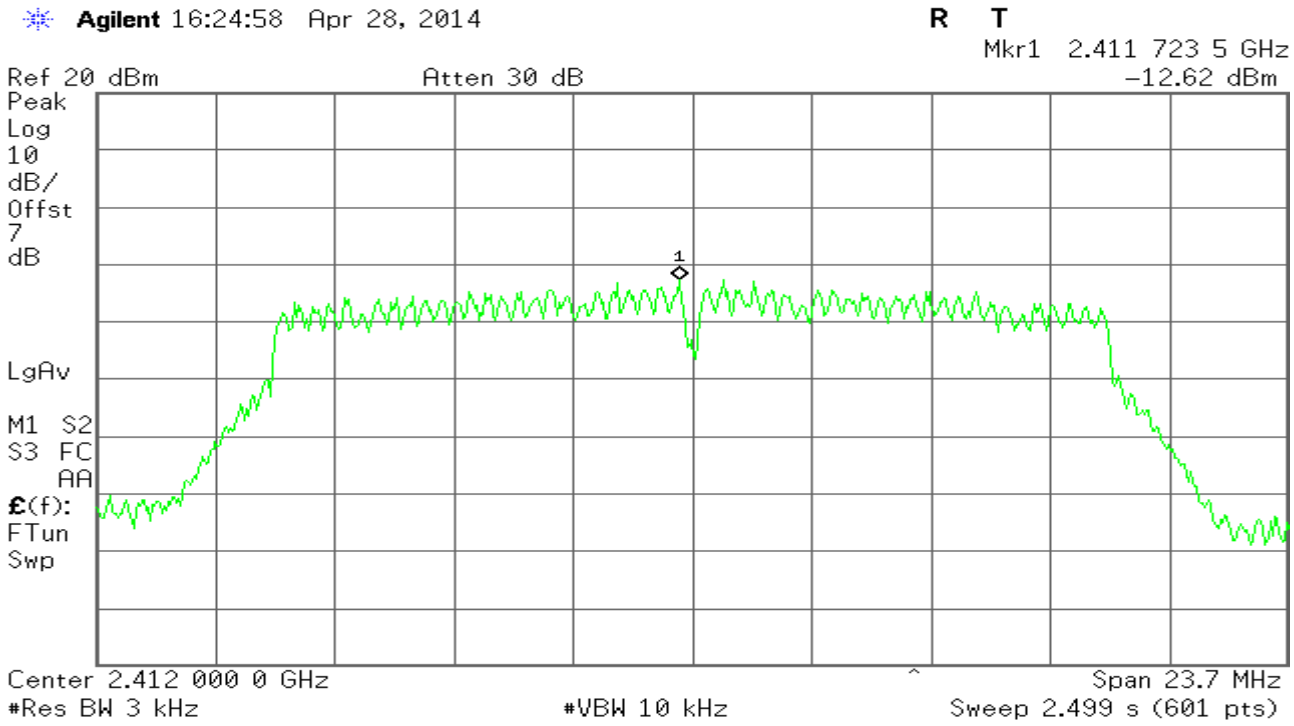
This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

PPSD (CH High)



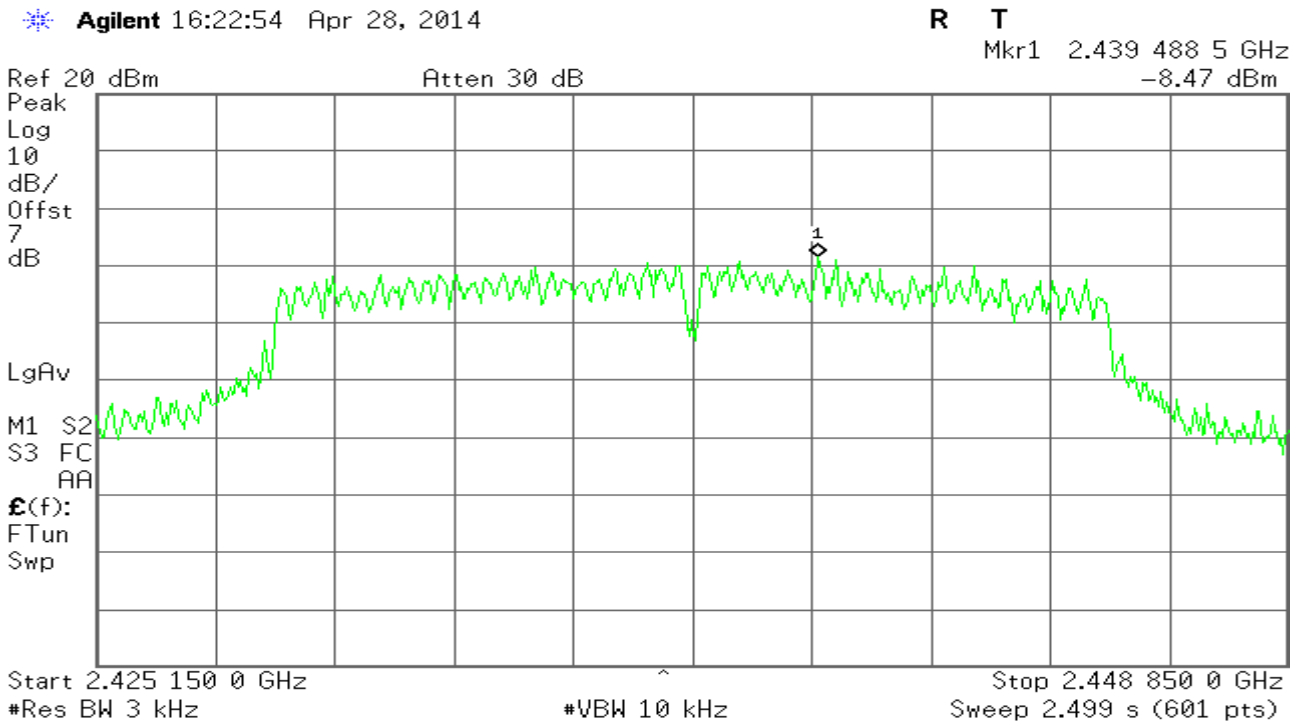
IEEE 802.11g mode

PPSD (CH Low)

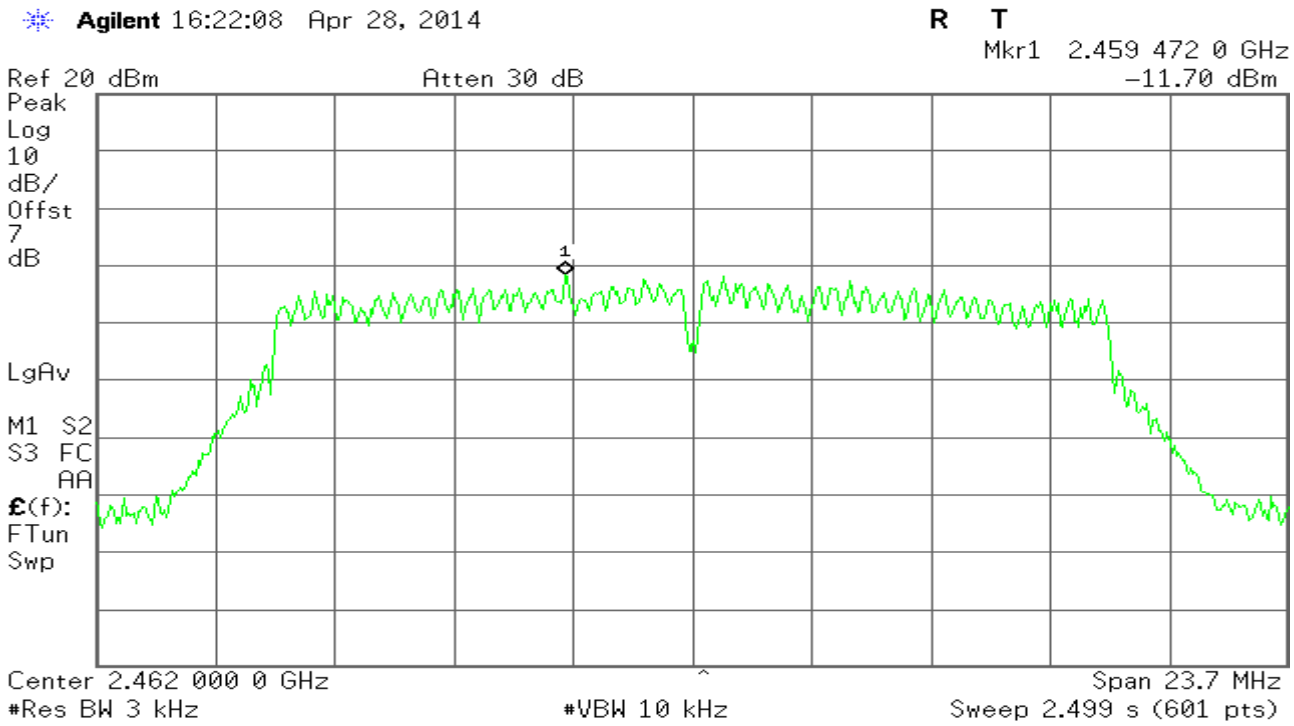


This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

PPSD (CH Mid)



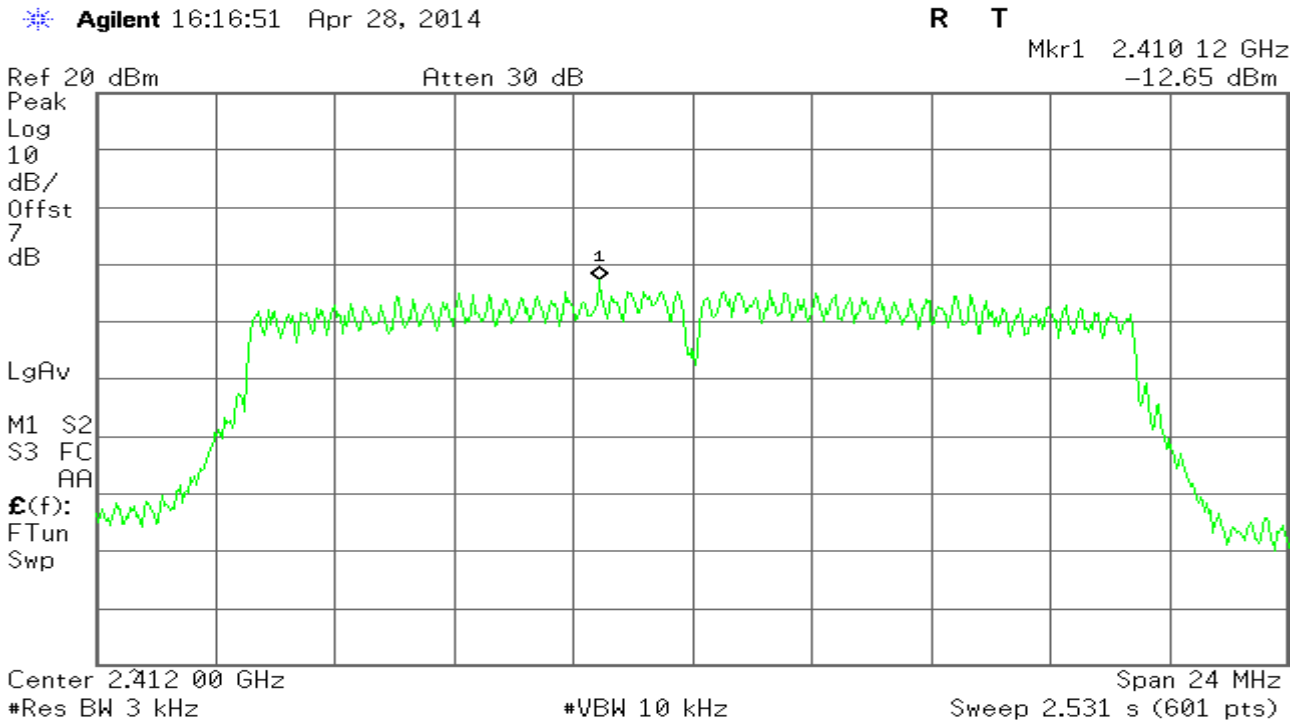
PPSD (CH High)



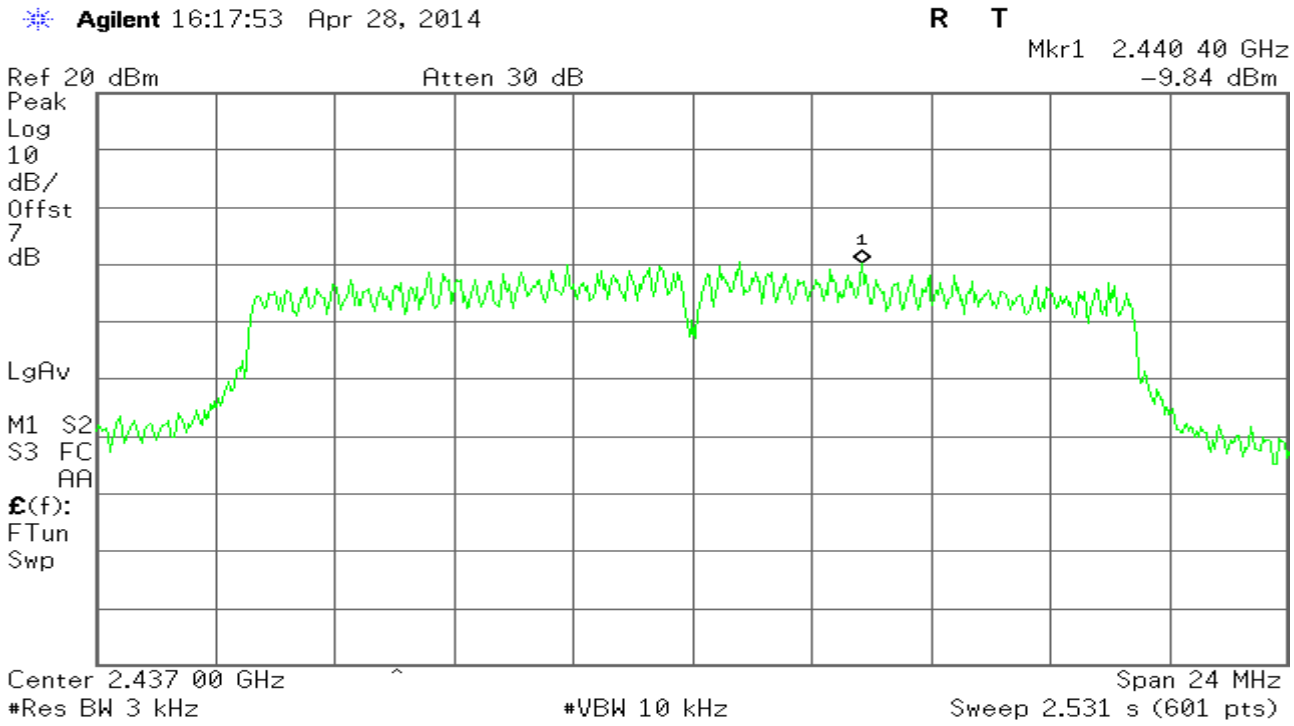
This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

IEEE 802.11n HT20 Mode

PPSD (CH Low)

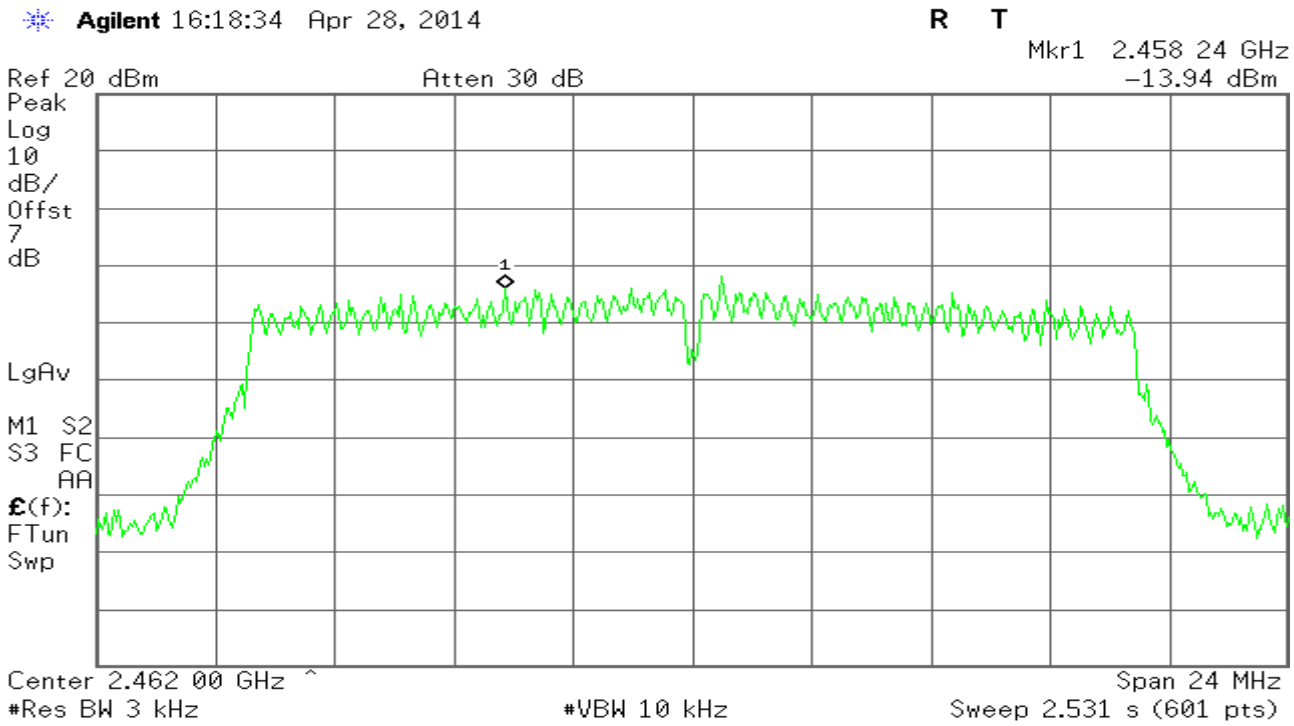


PPSD (CH Mid)



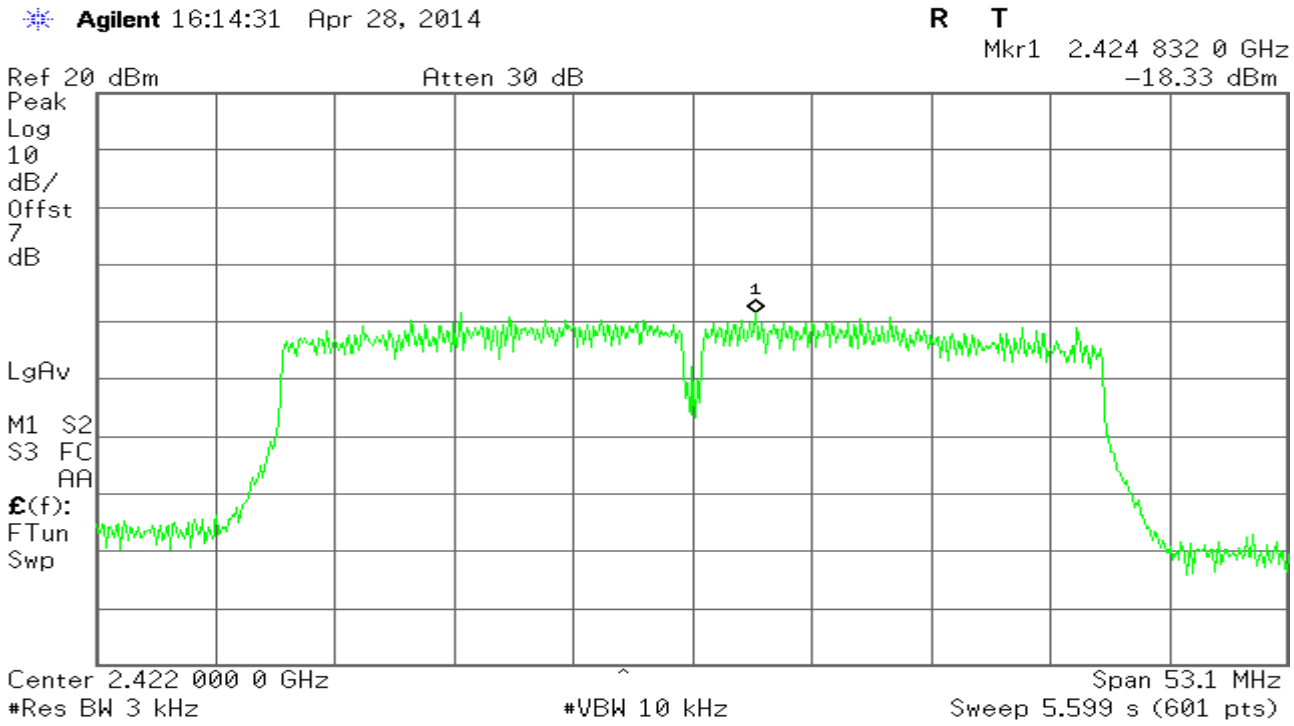
This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

PPSD (CH High)



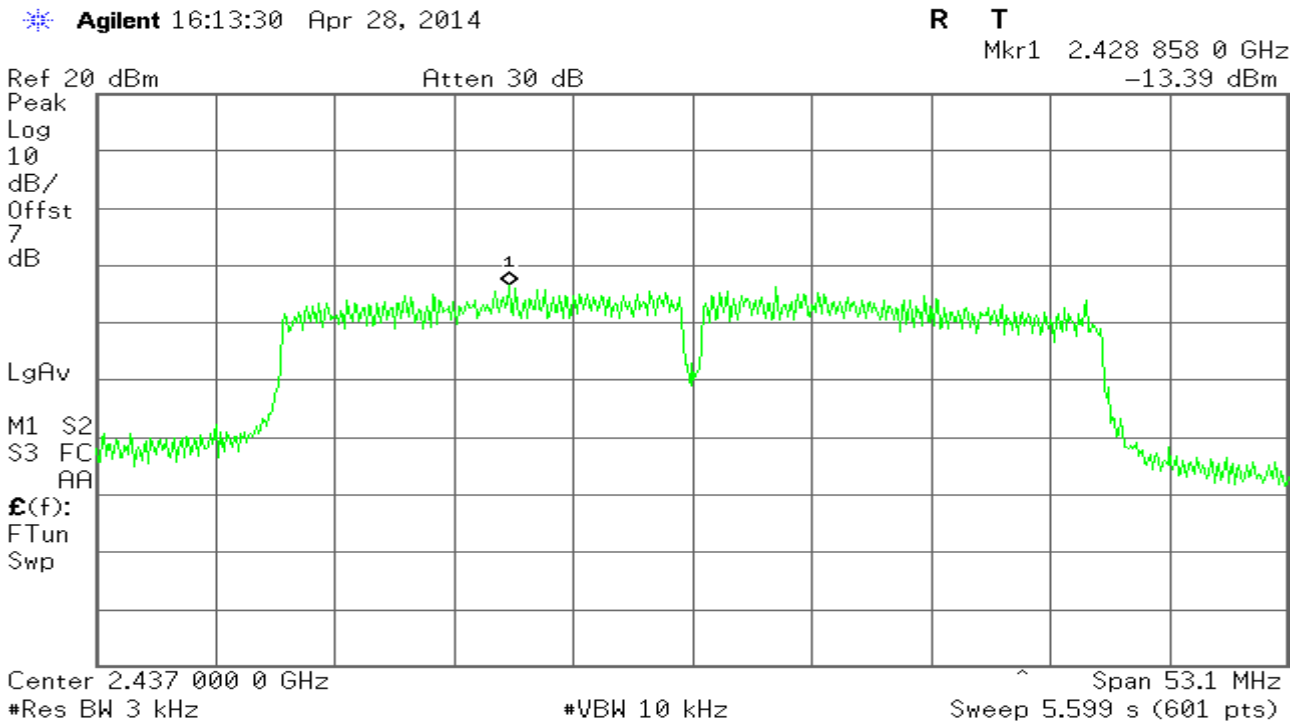
IEEE 802.11n HT40 Mode

PPSD (CH Low)

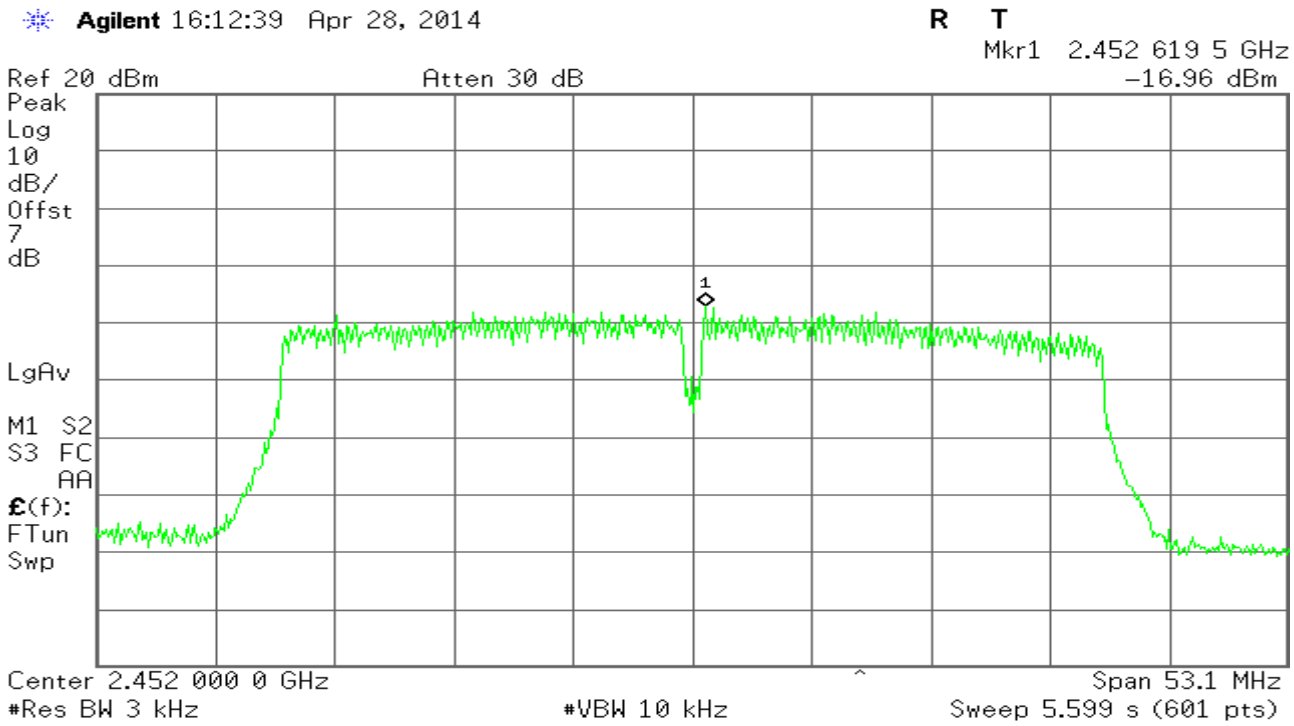


This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

PPSD (CH Mid)



PPSD (CH High)



This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

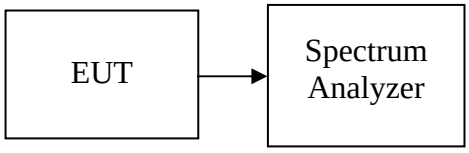
7.4 SPURIOUS EMISSIONS

Conducted Measurement

LIMIT

According to §15.247(d), in any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator in 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)).

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 100kHz. The video bandwidth is set to 100kHz.

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

TEST RESULTS

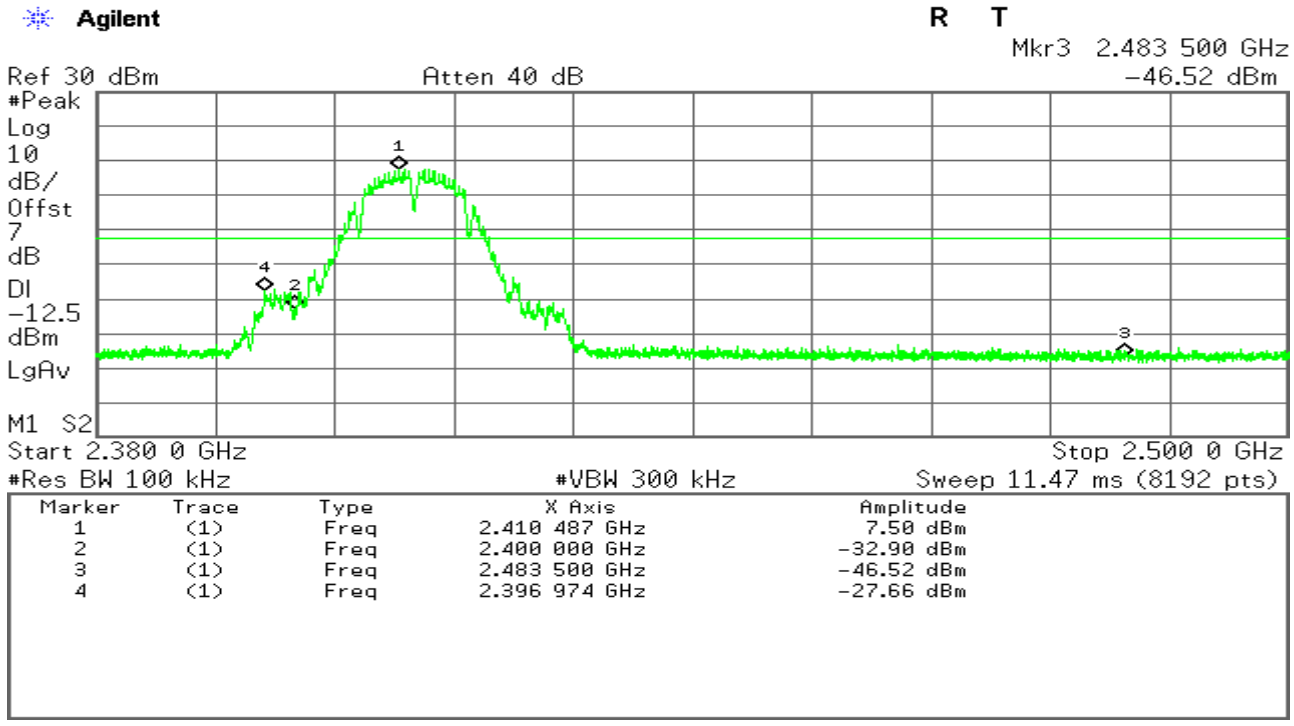
No non-compliance noted

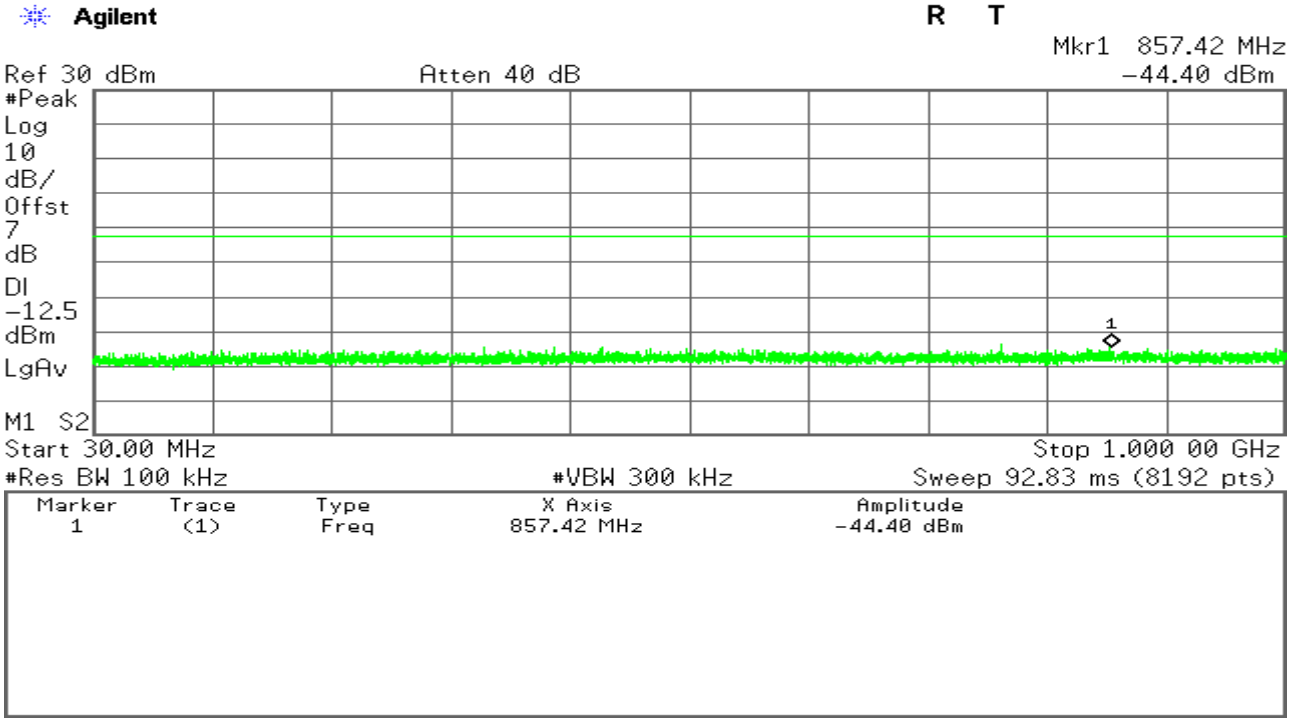
This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

Test Plot

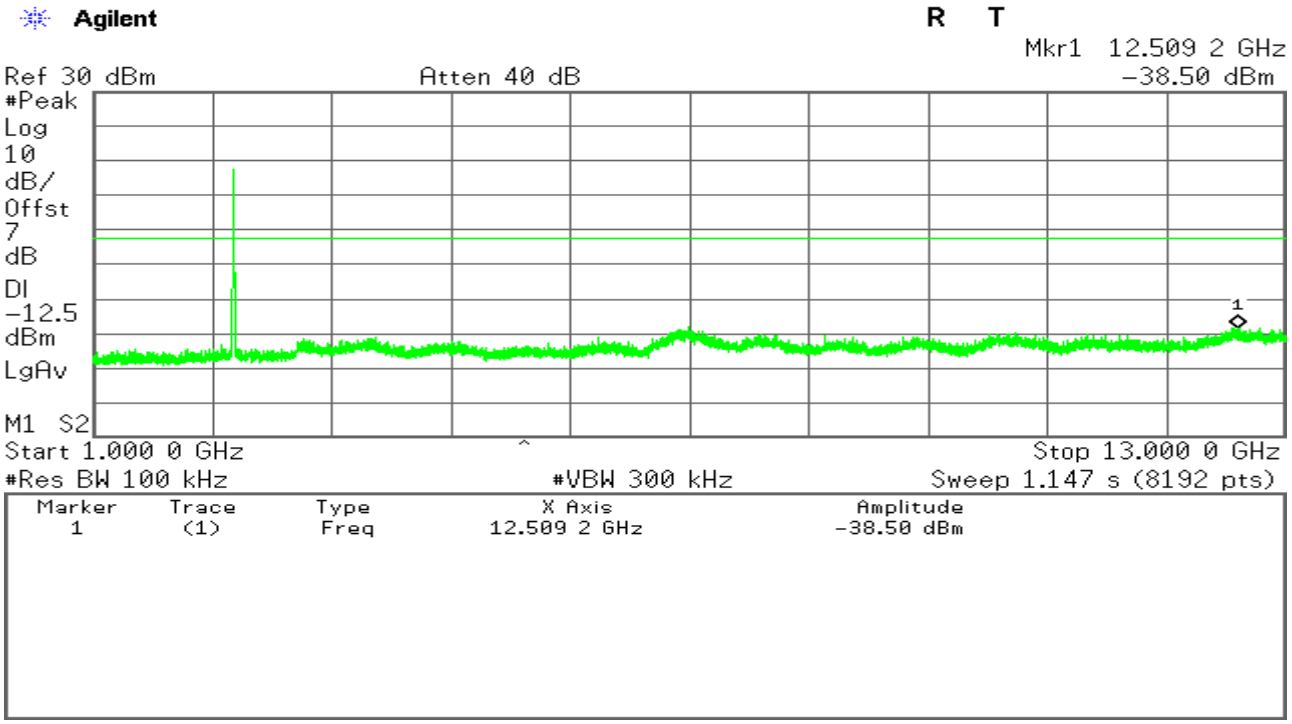
IEEE 802.11b mode

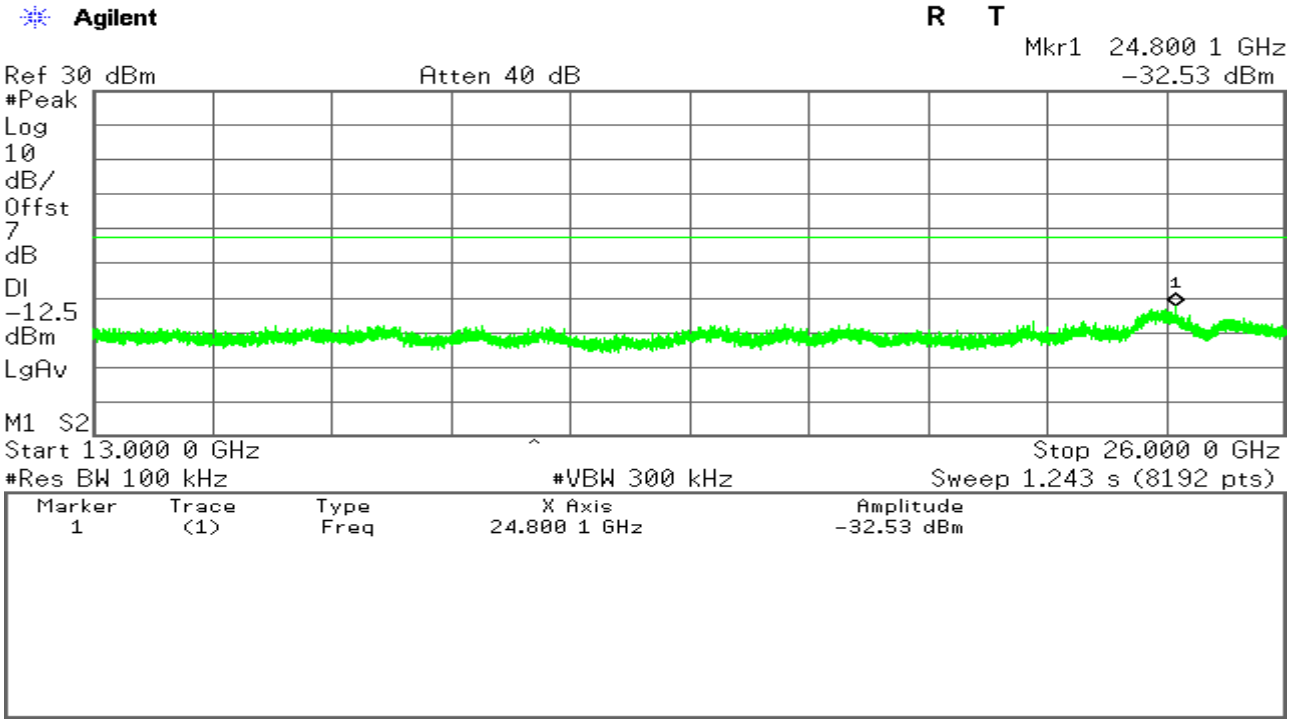
CH Low





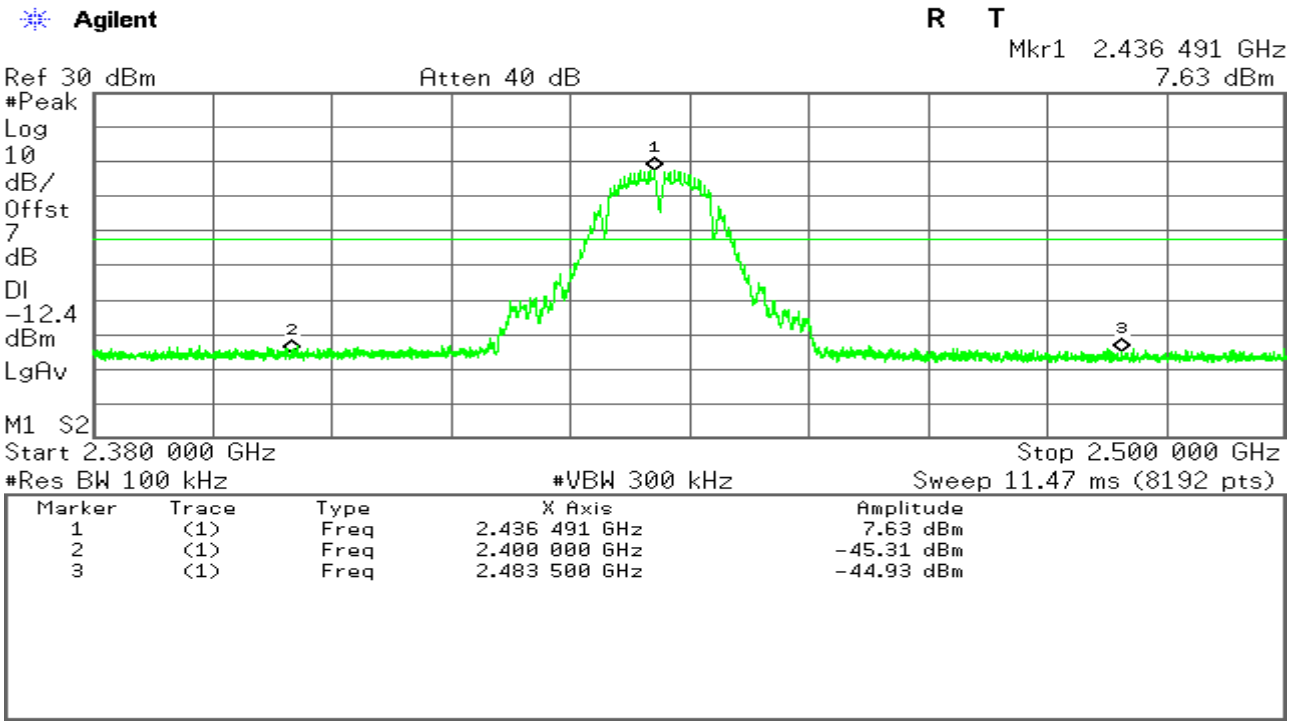
This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

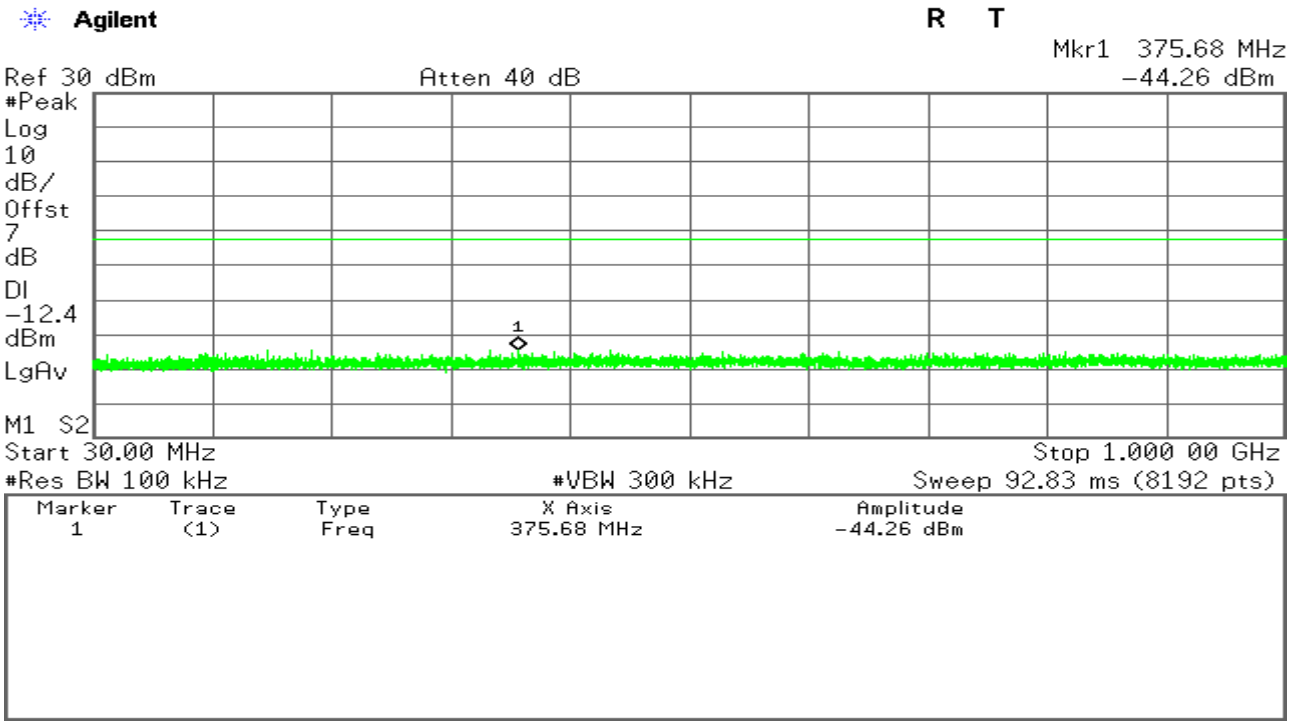




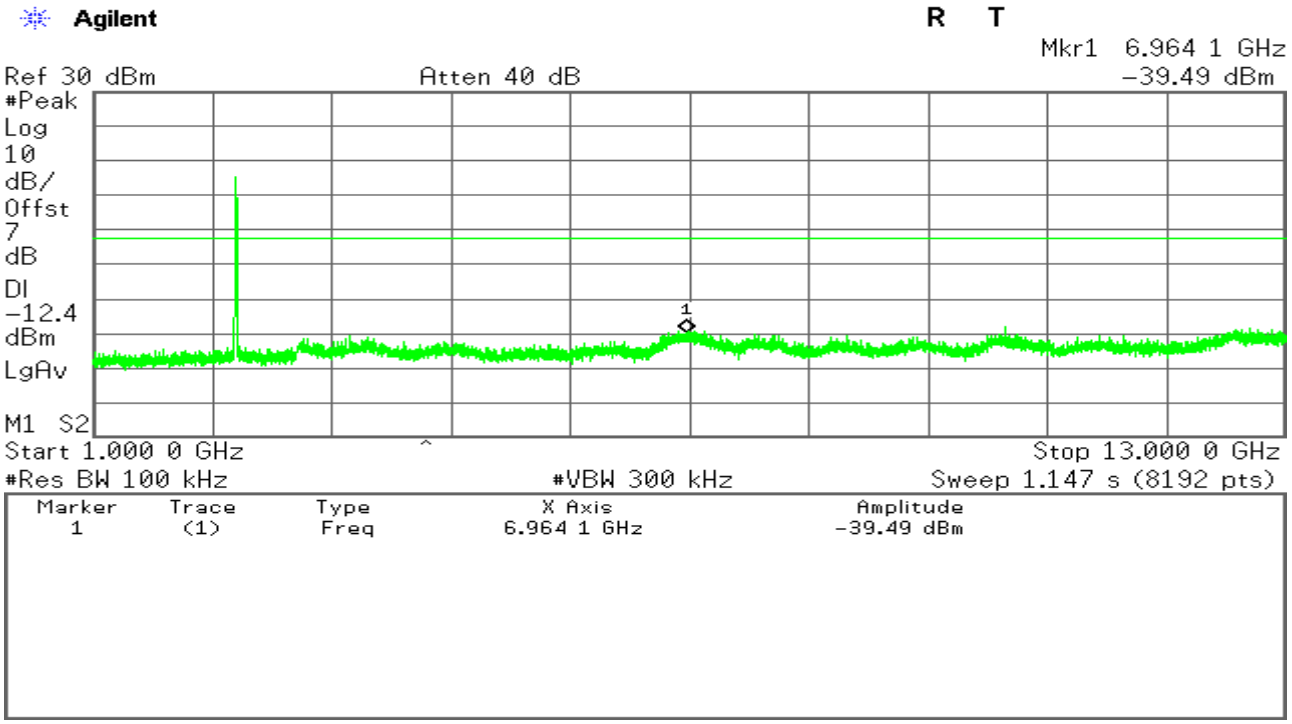
This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

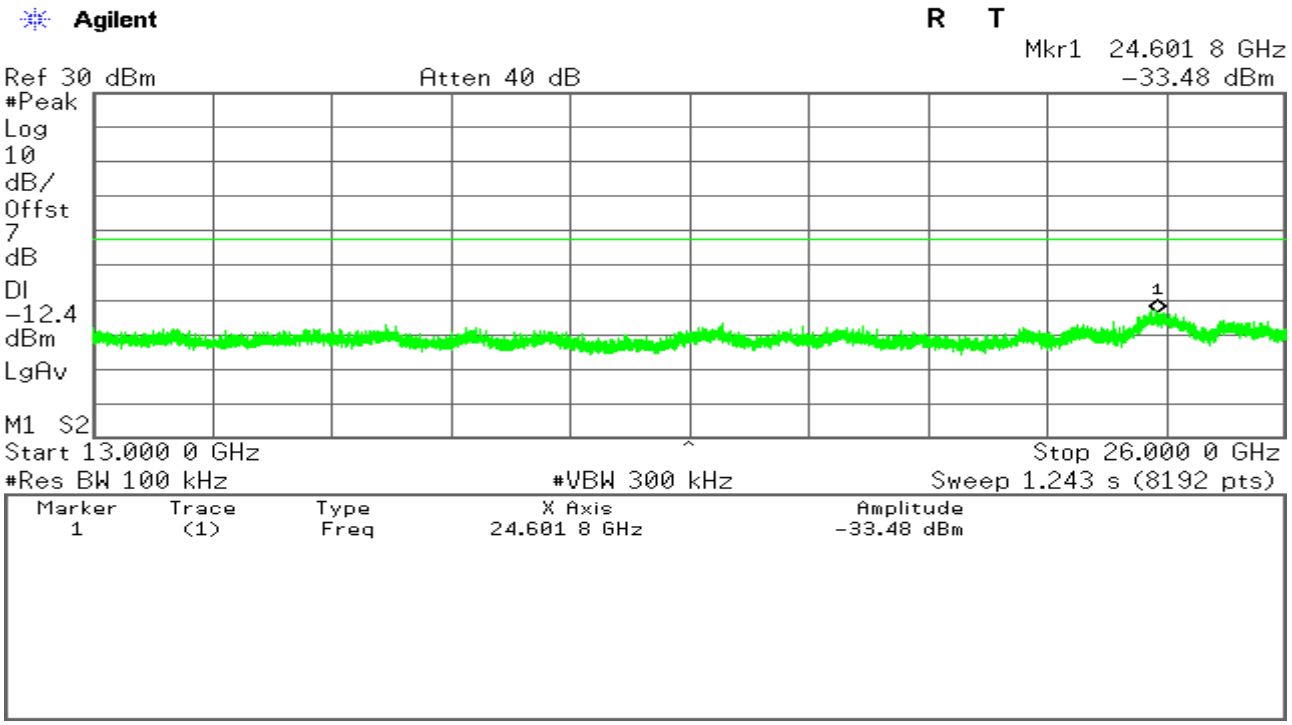
CH Mid





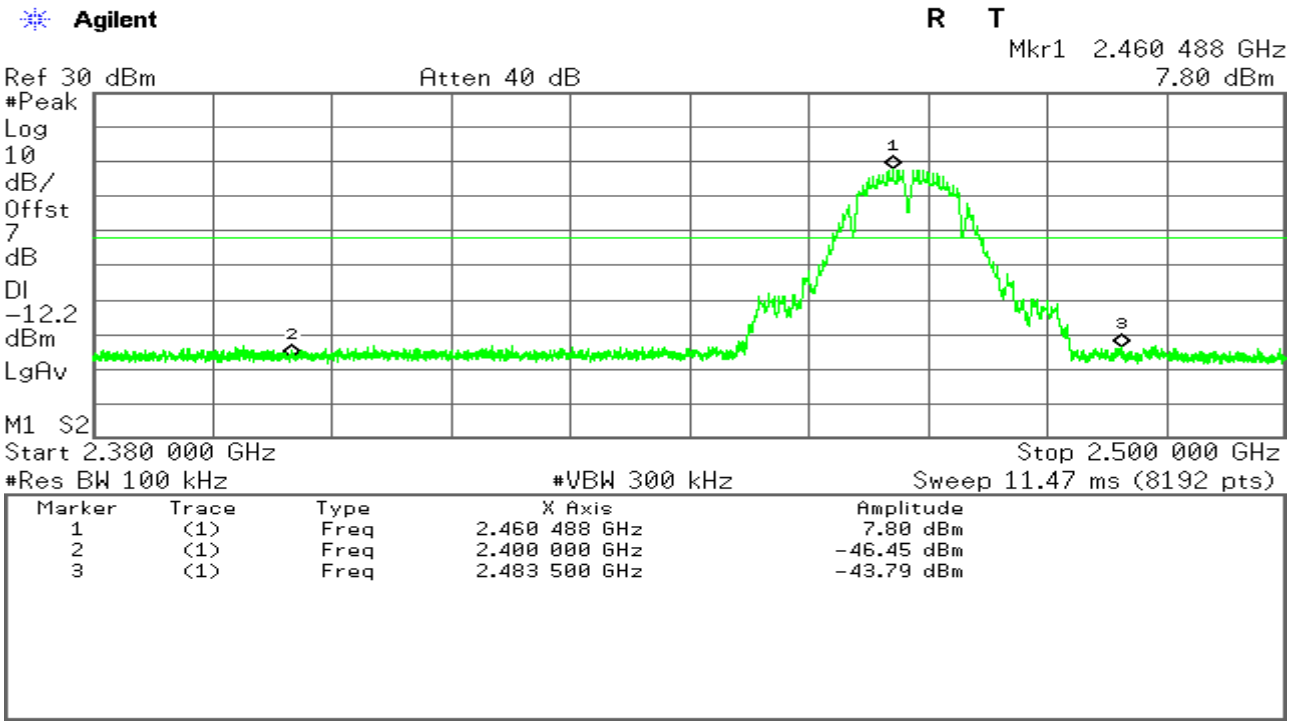
This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

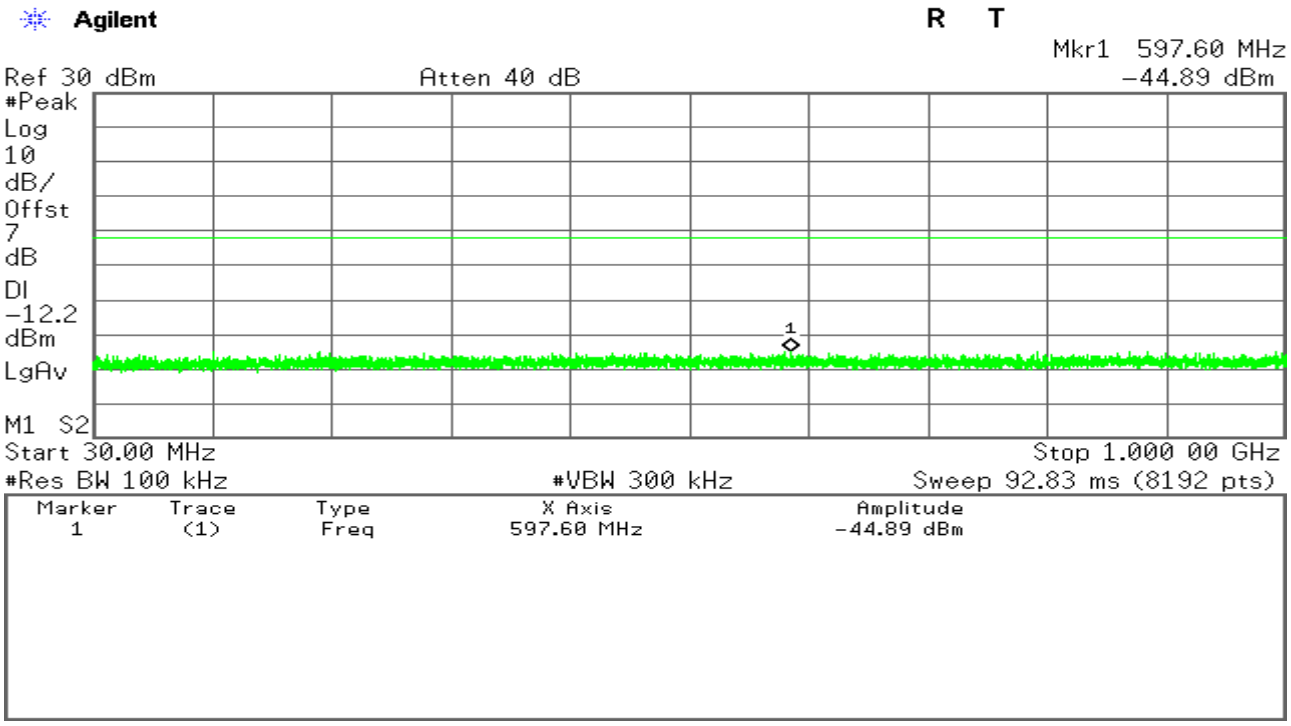




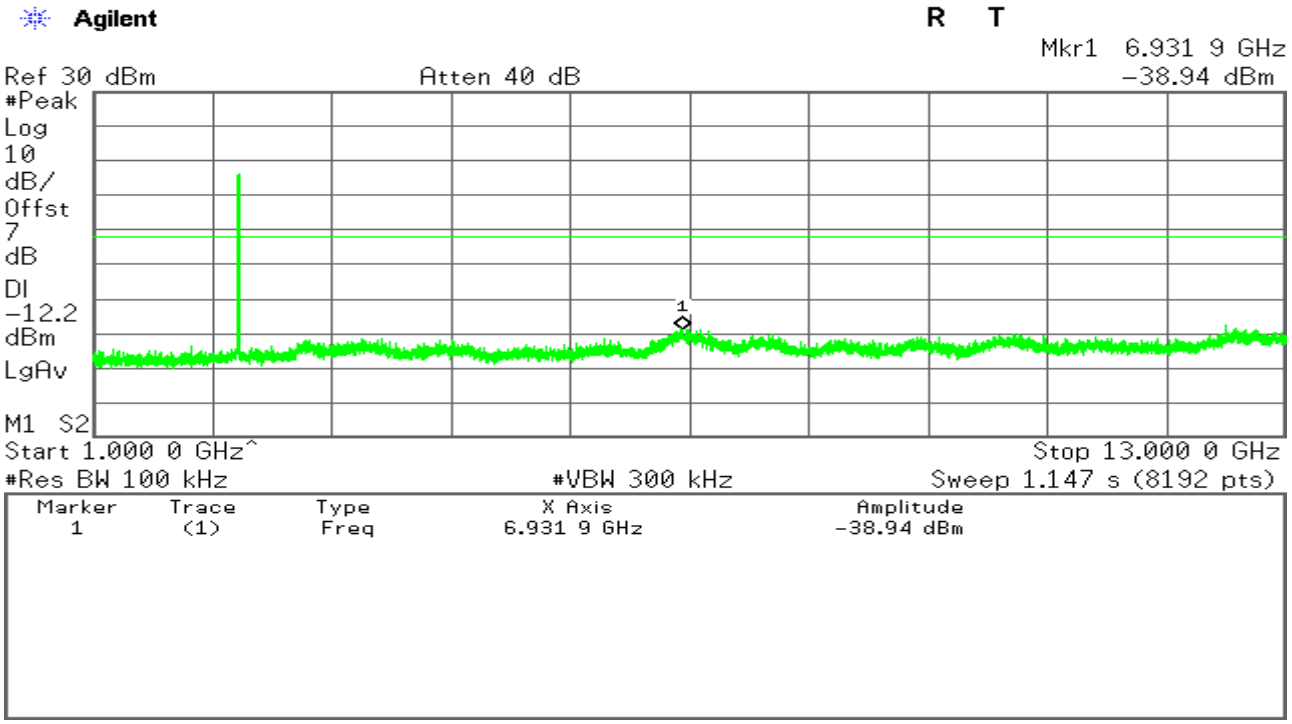
This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

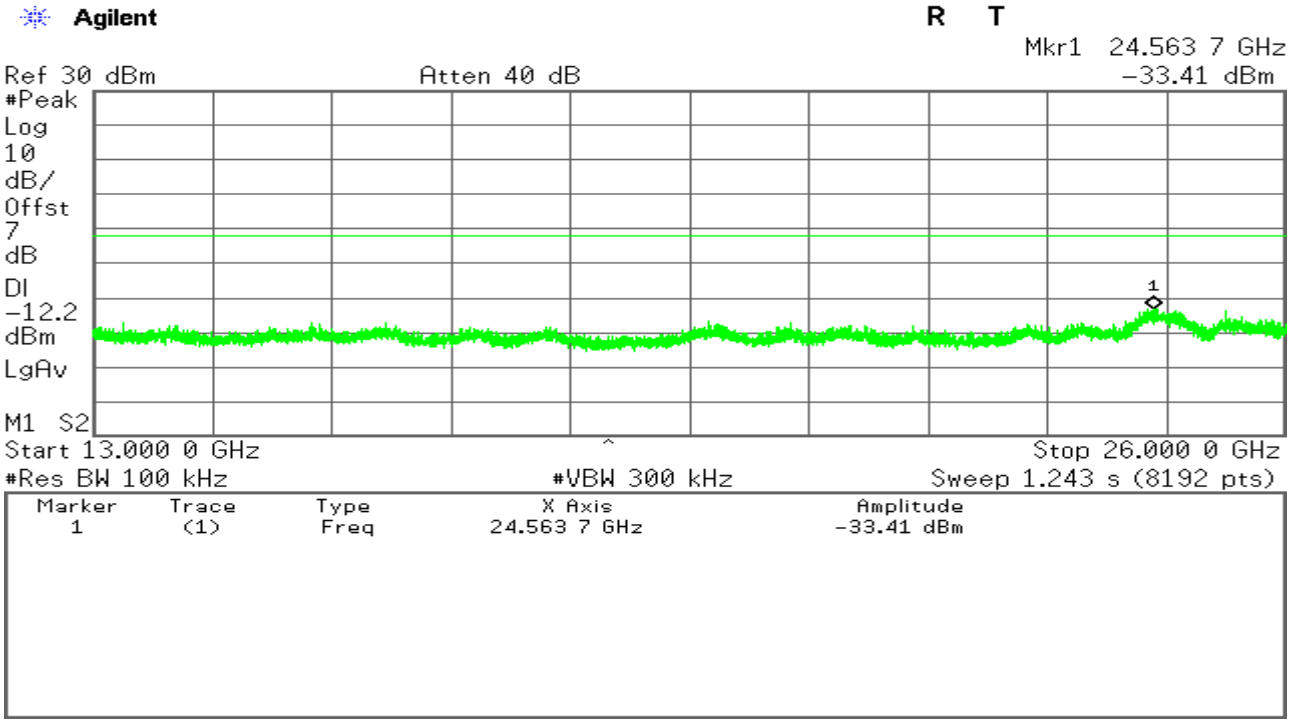
CH High





This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

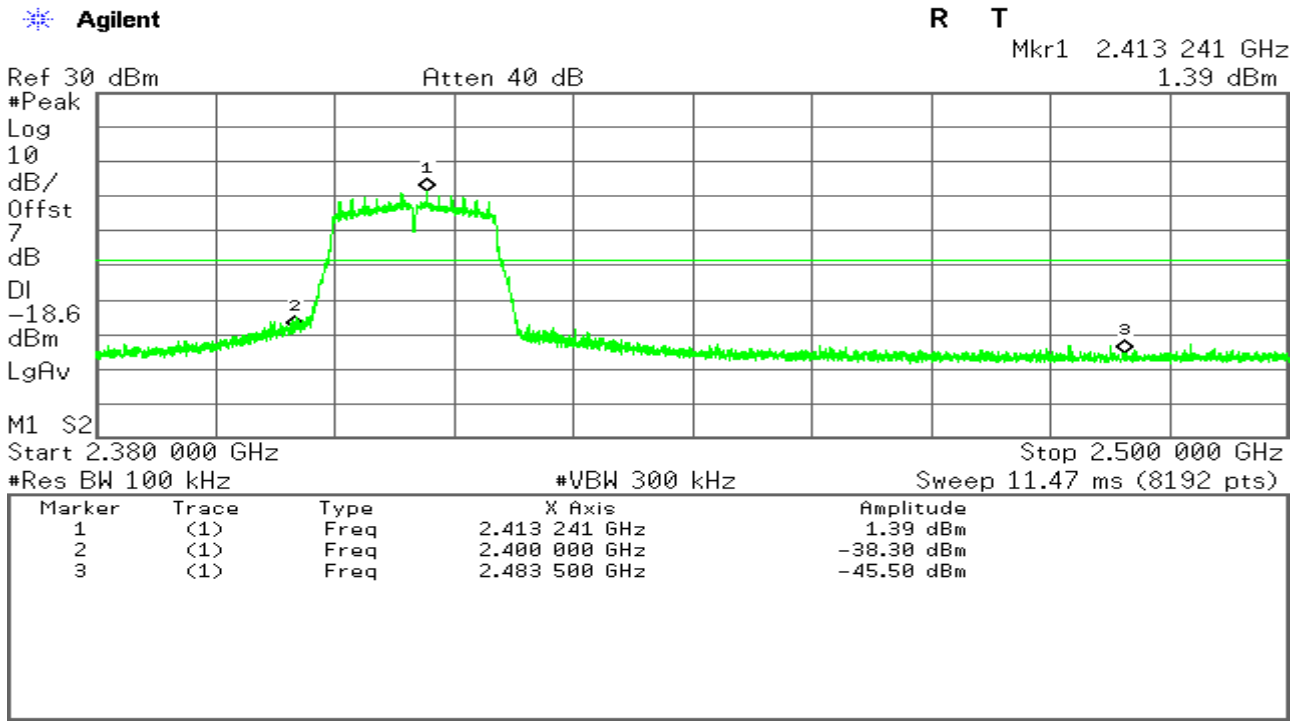


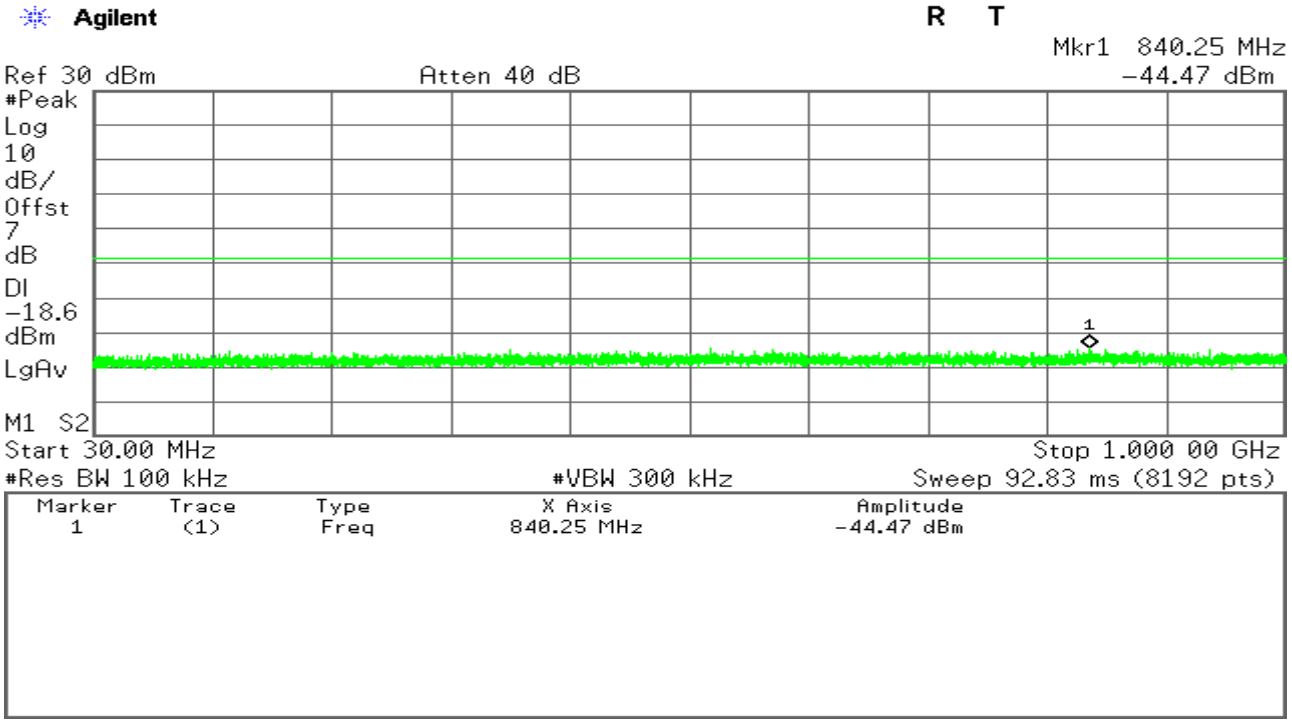


This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

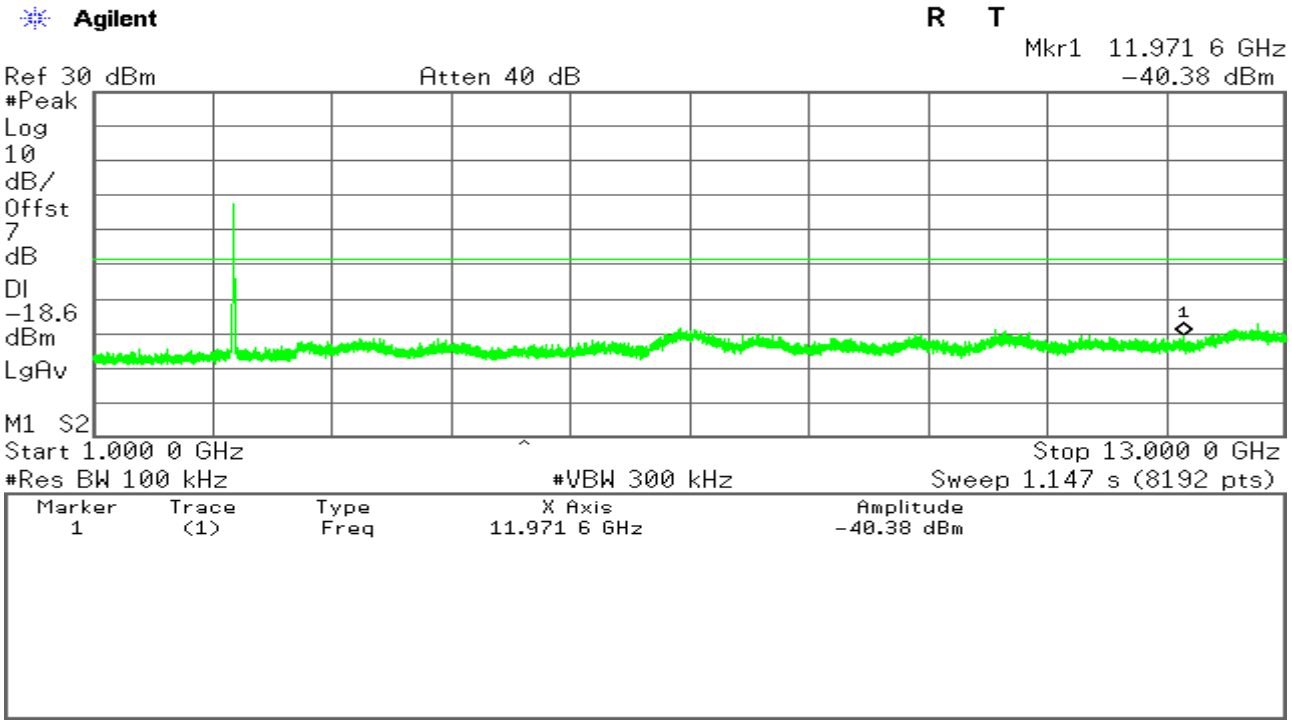
IEEE 802.11g mode

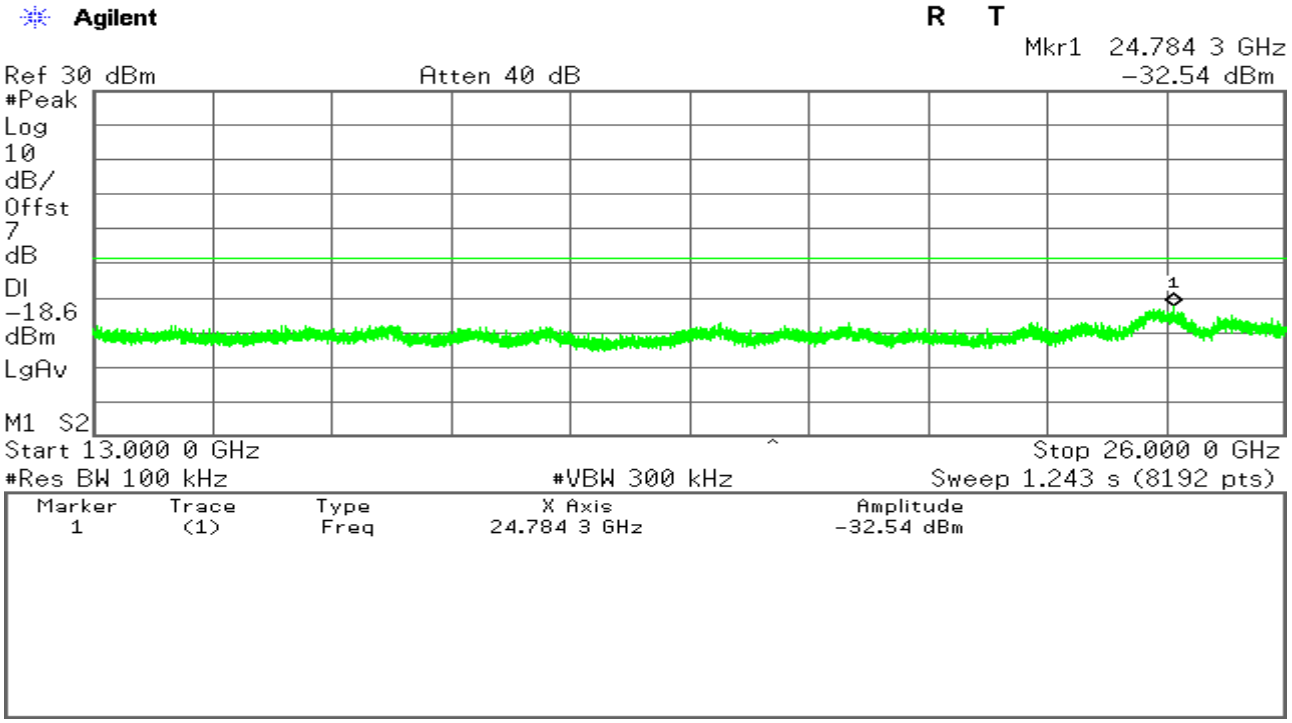
CH Low





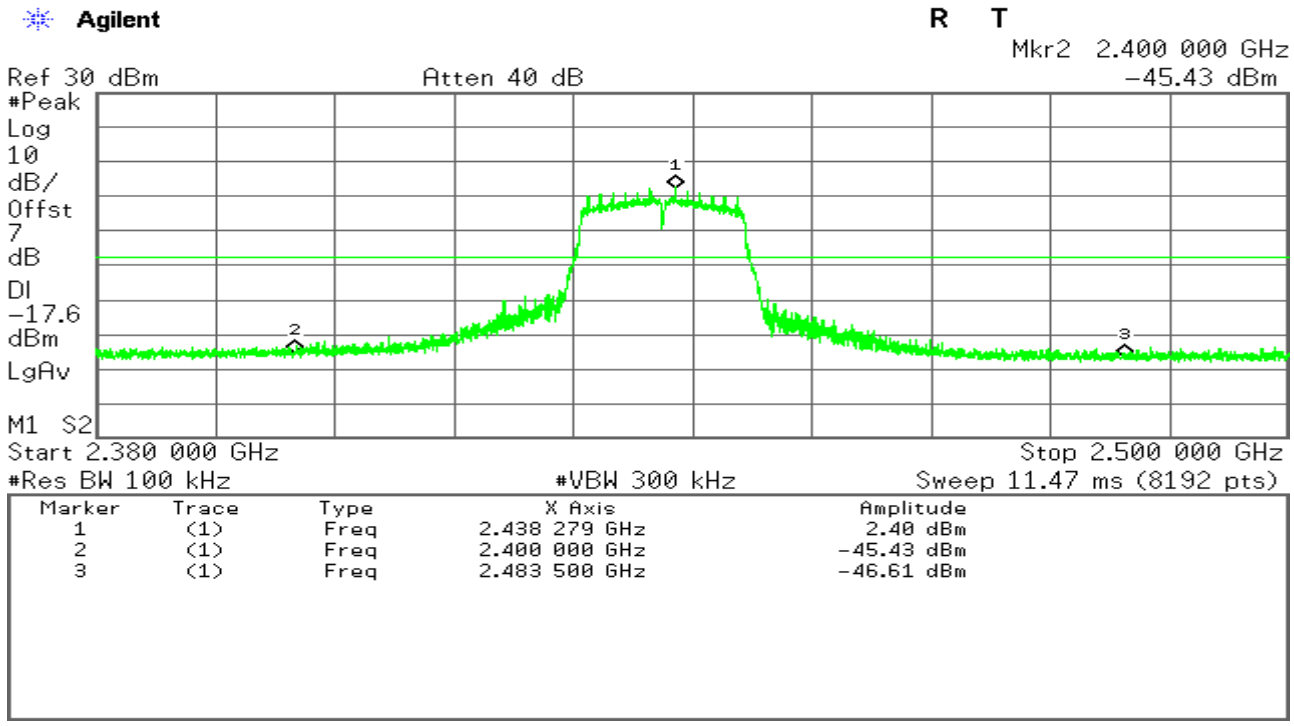
This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

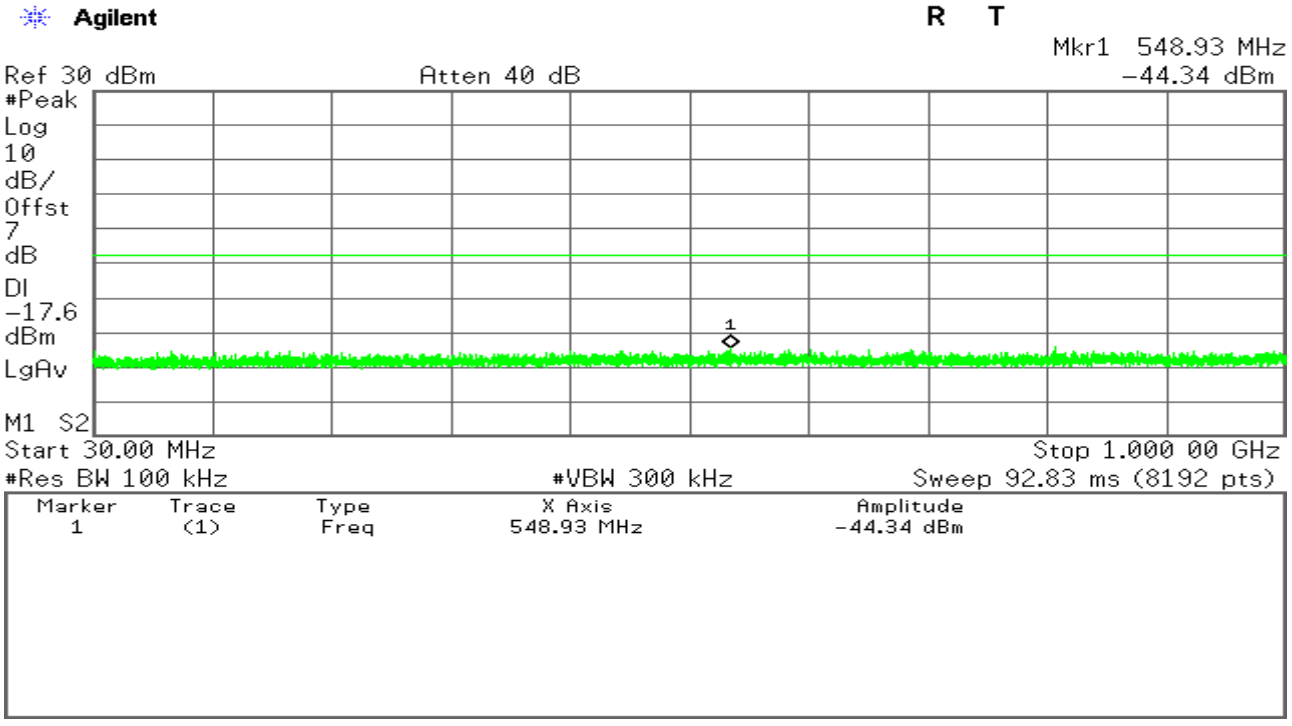




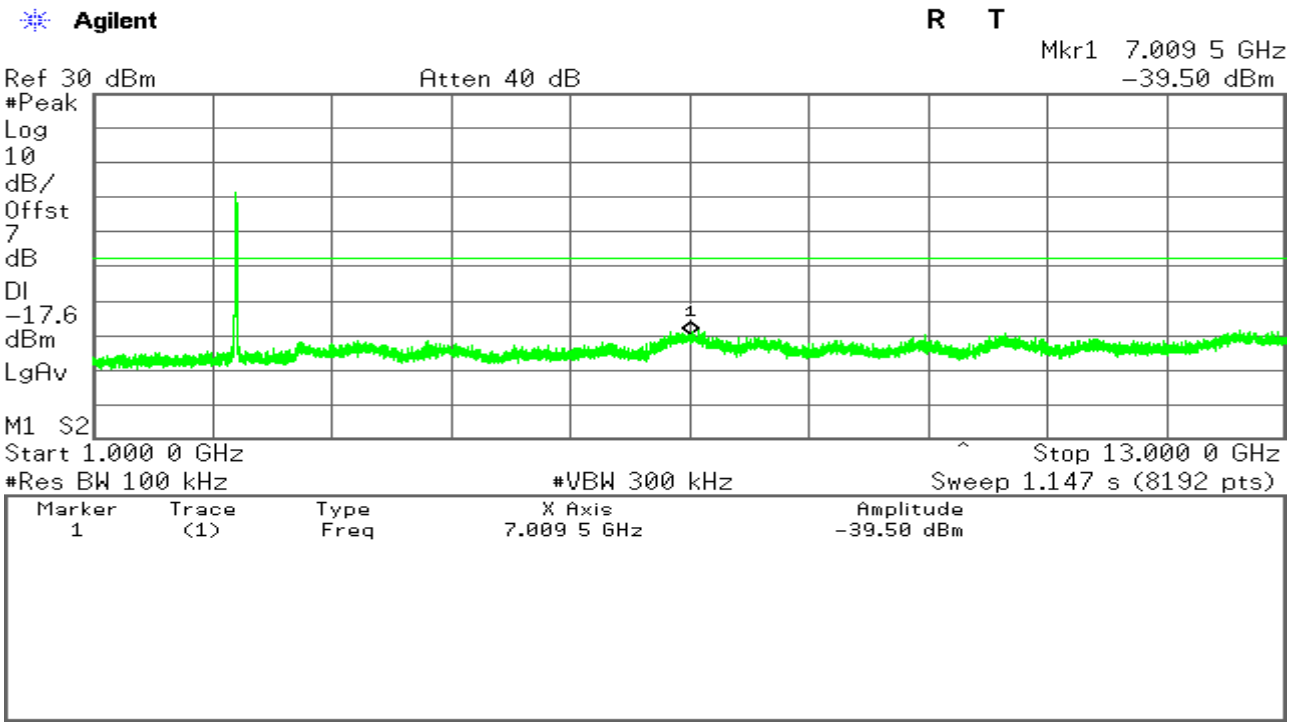
This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

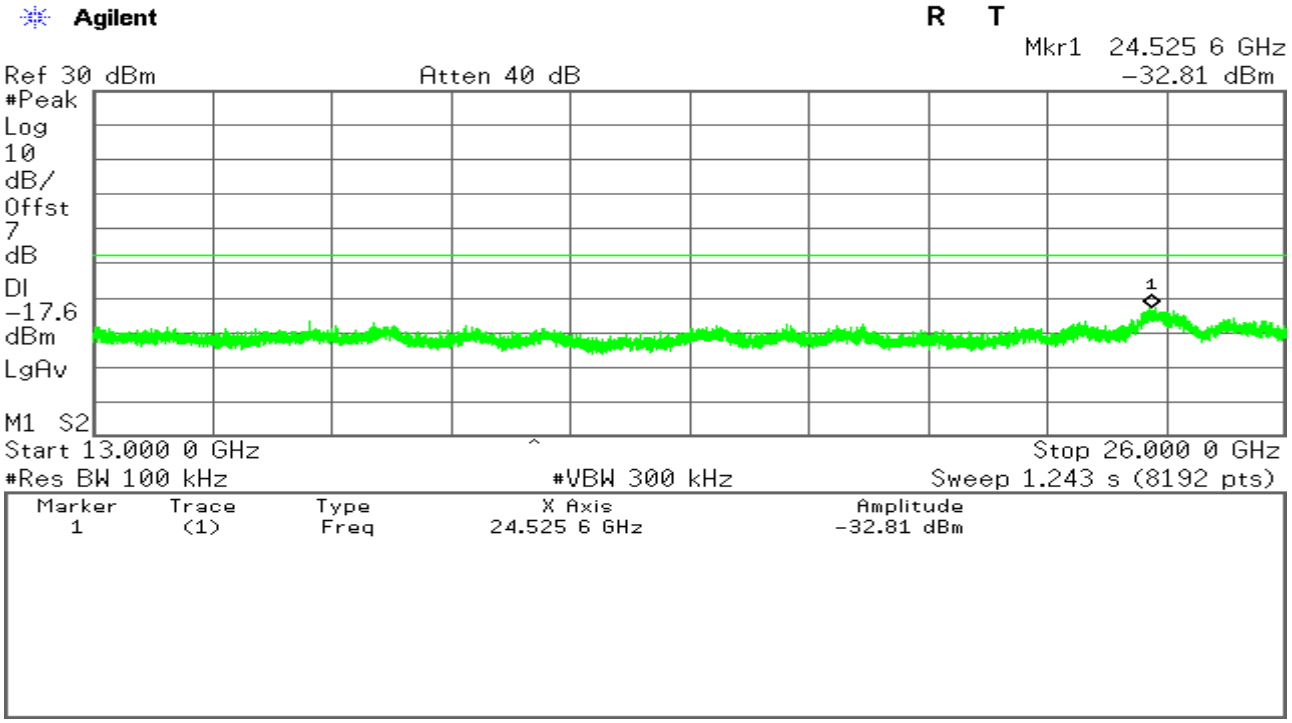
CH Mid





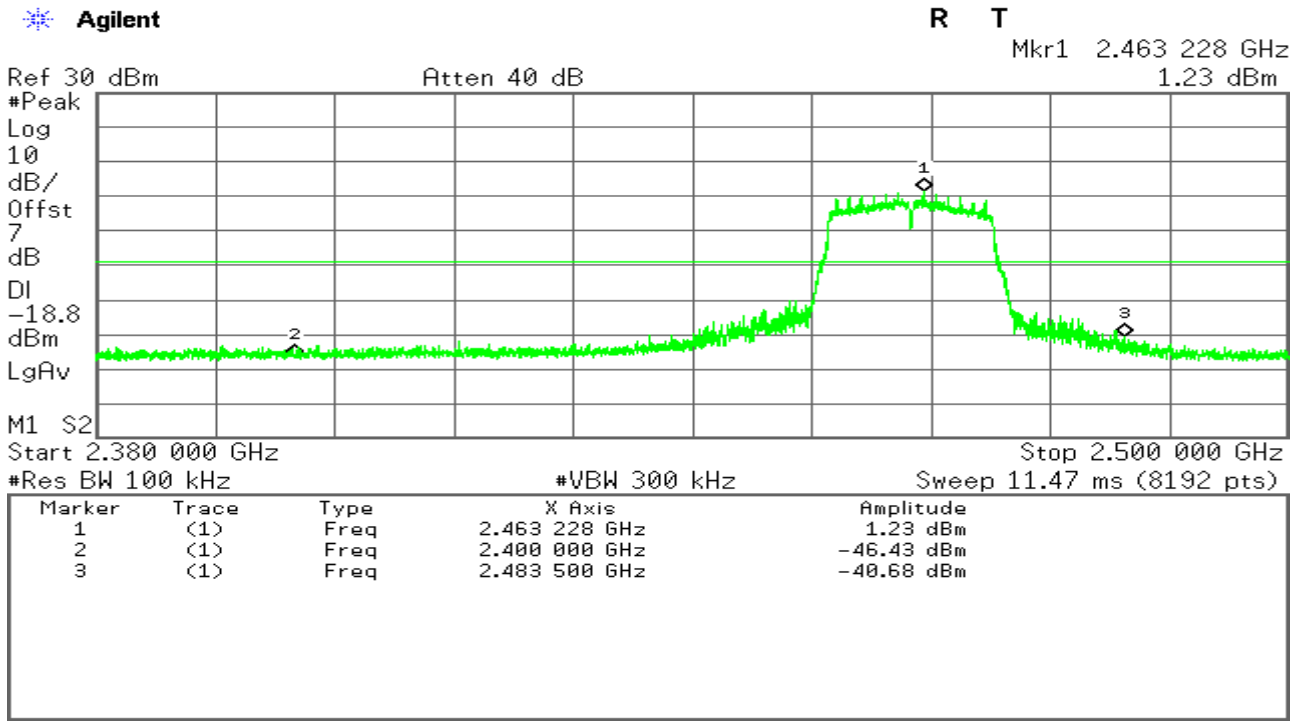
This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

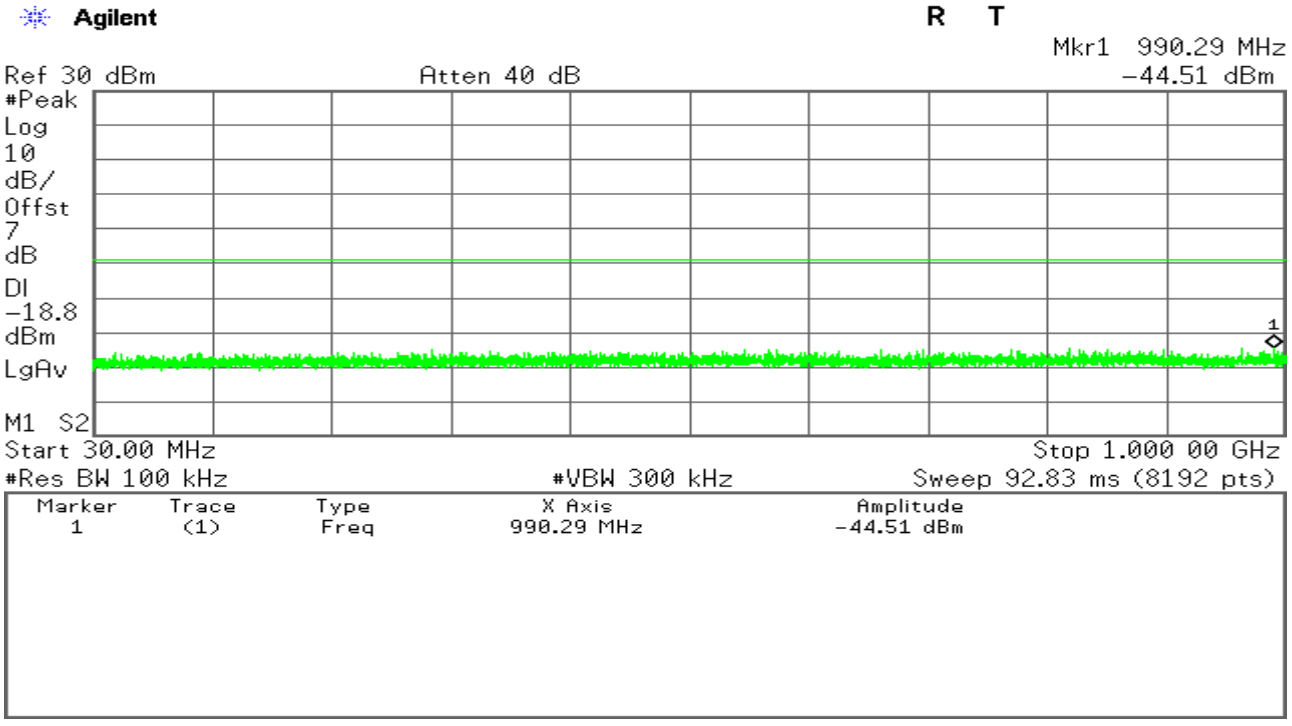




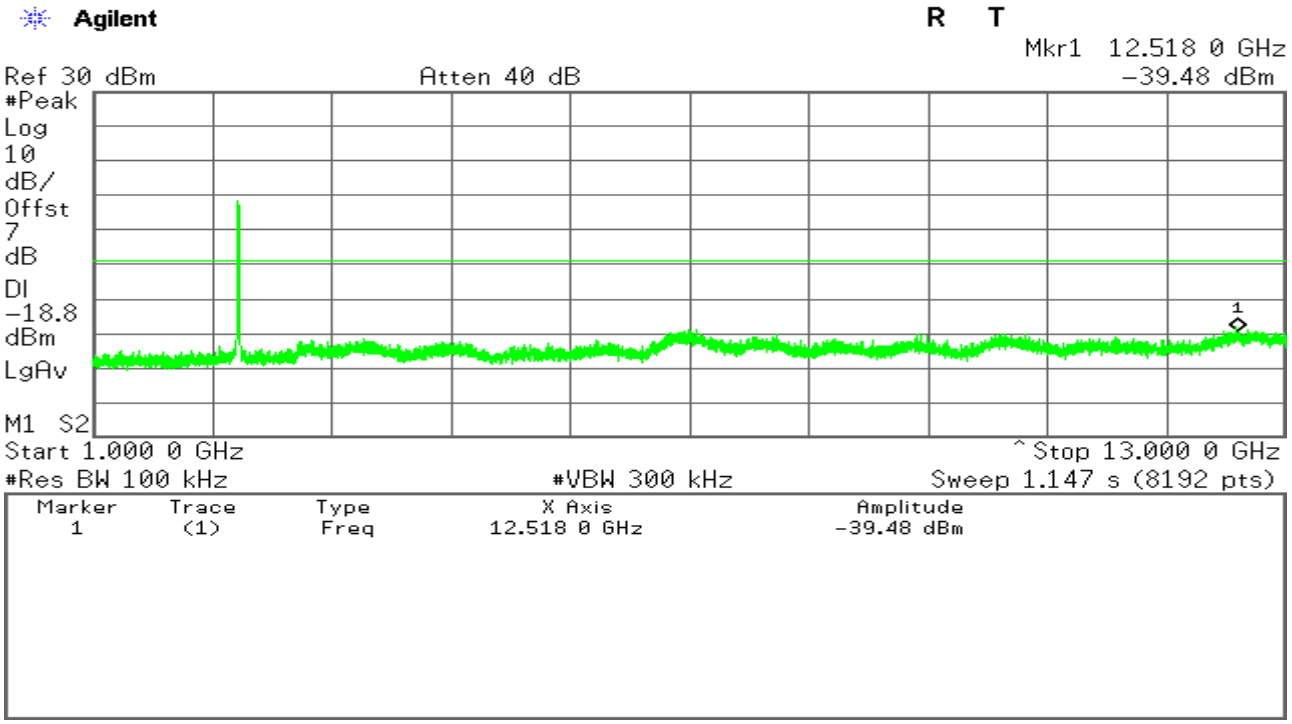
This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

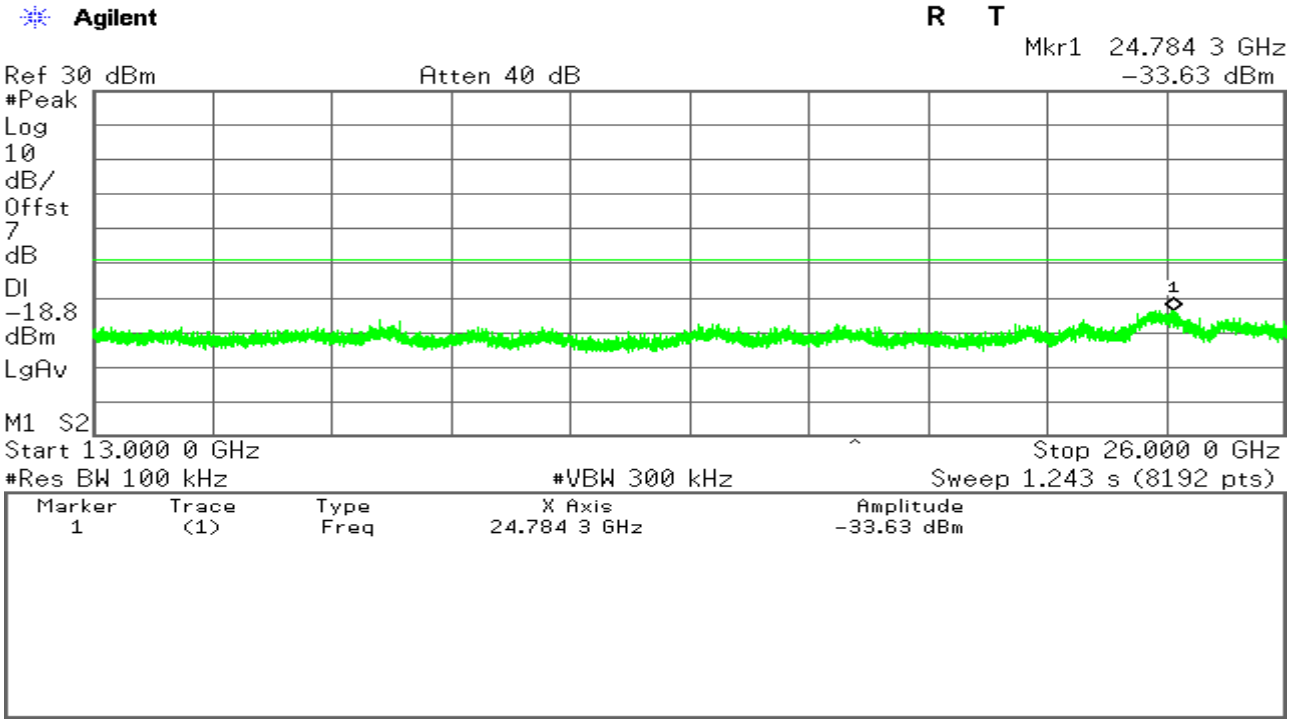
CH High





This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

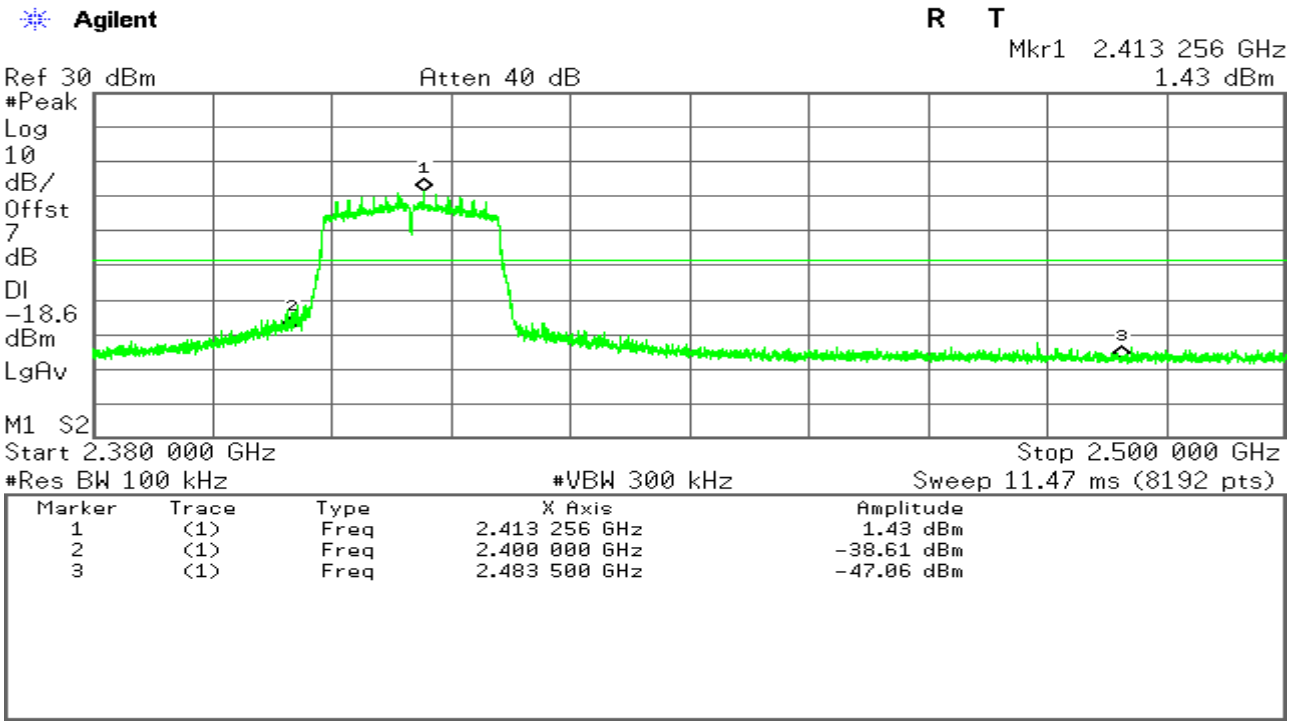


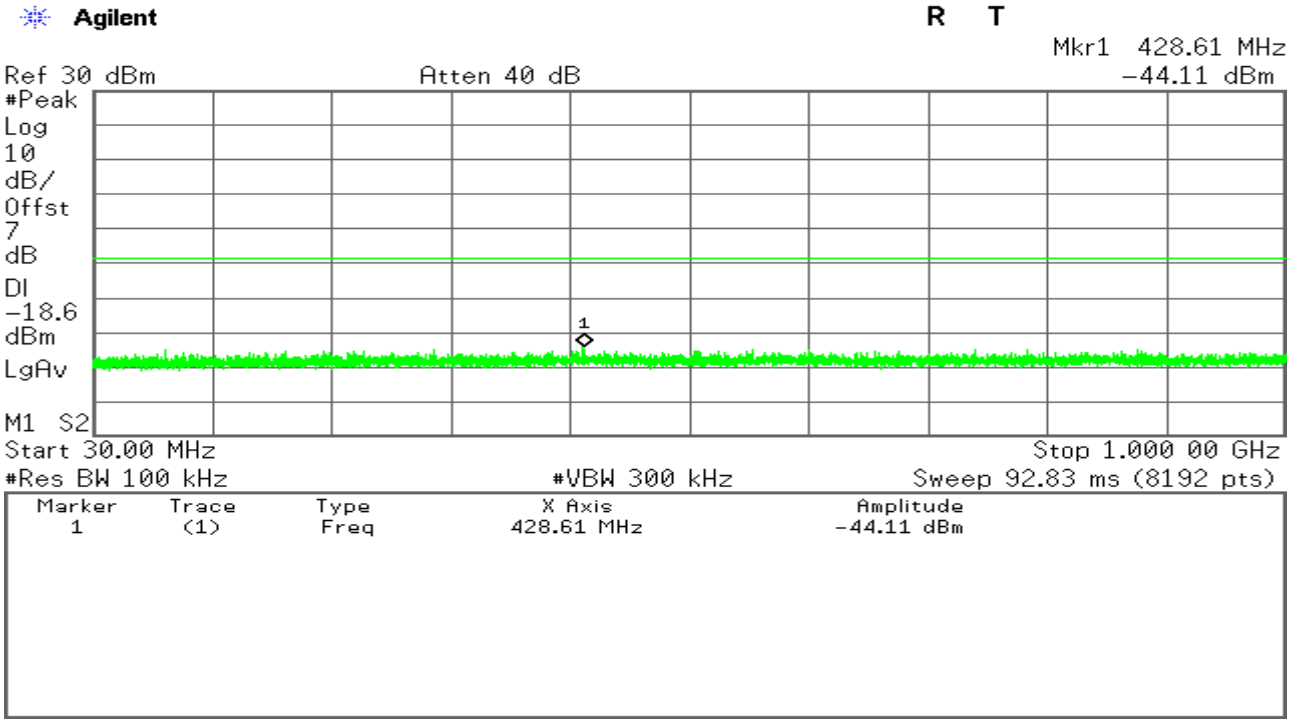


This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

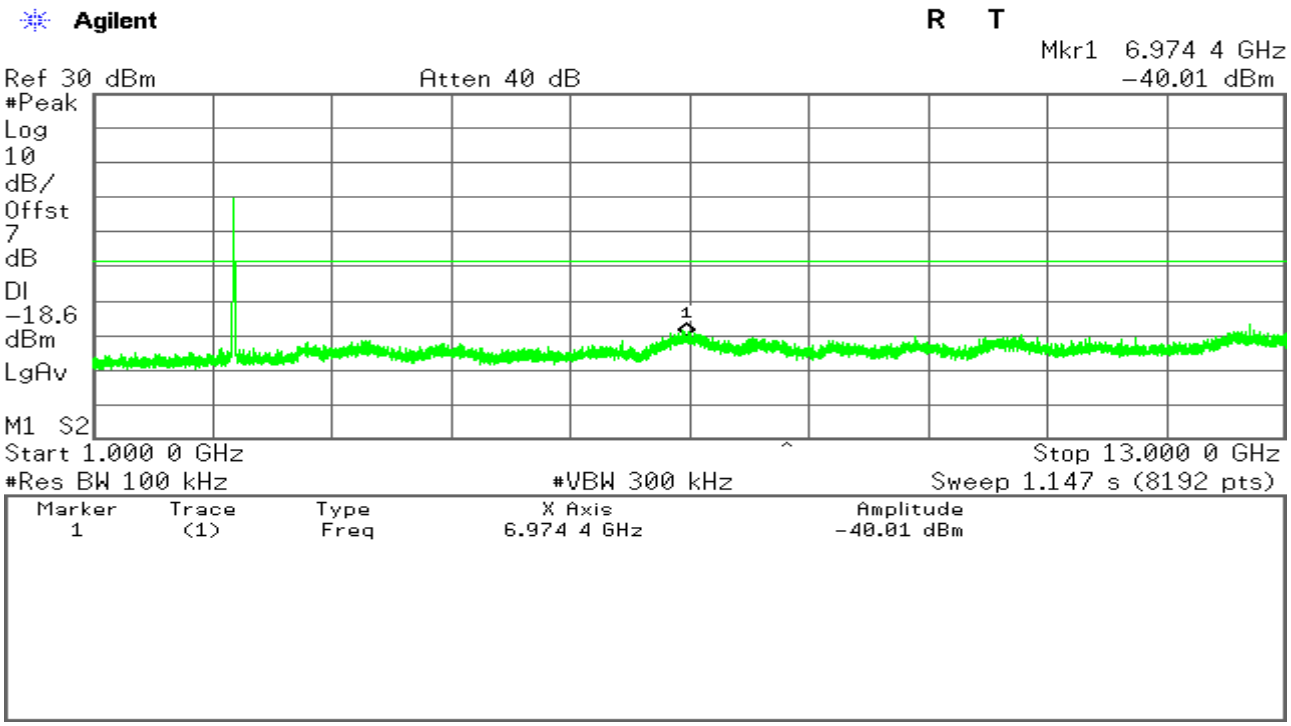
IEEE 802.11n HT20 Mode

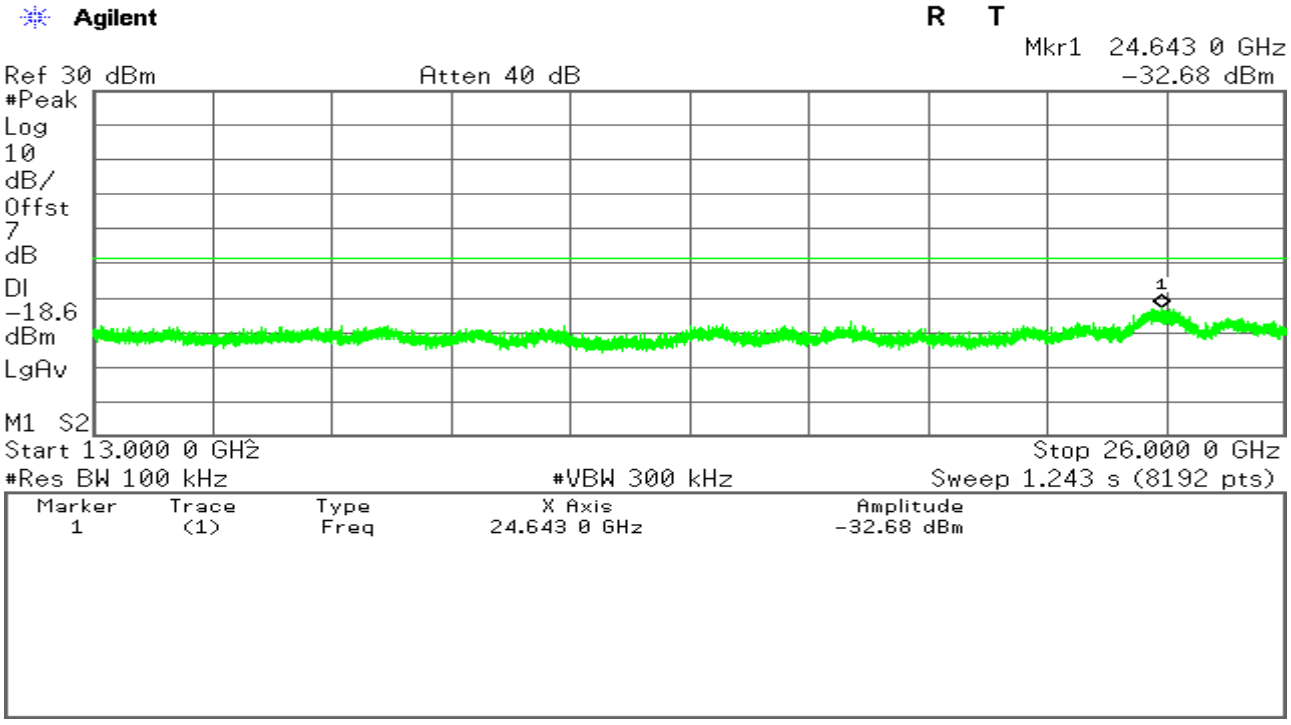
CH Low





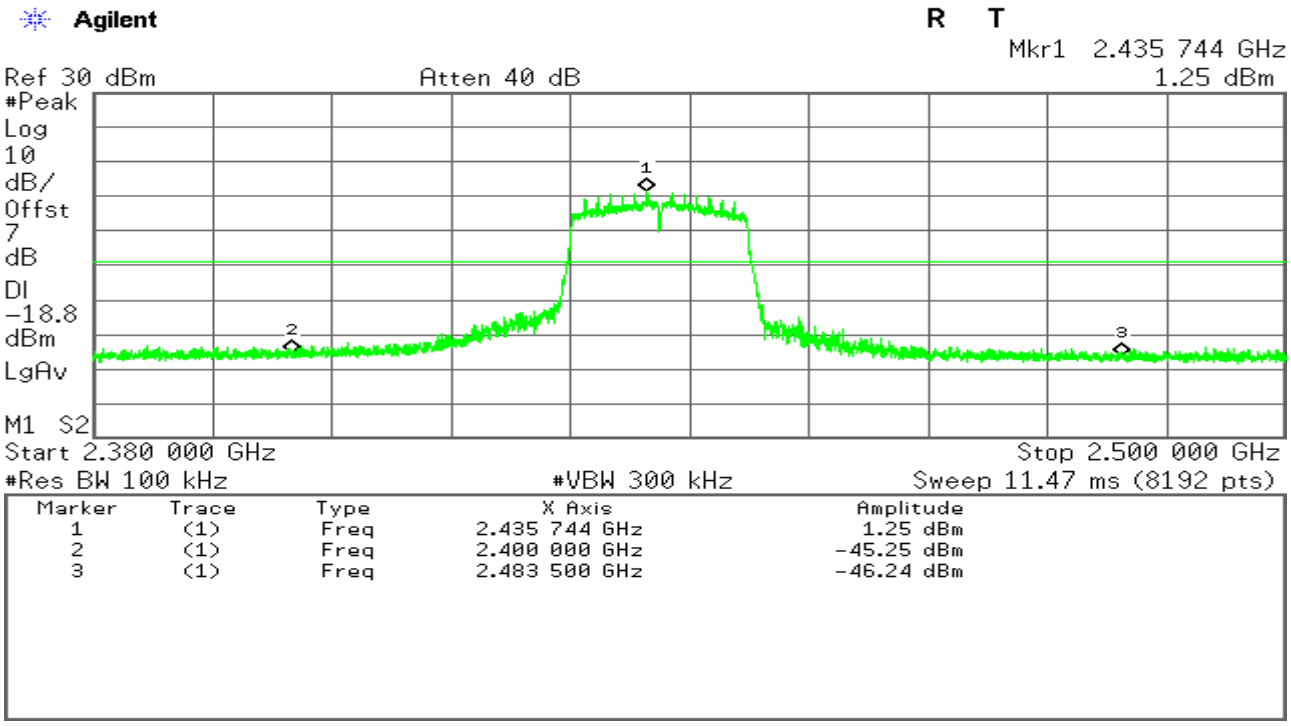
This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

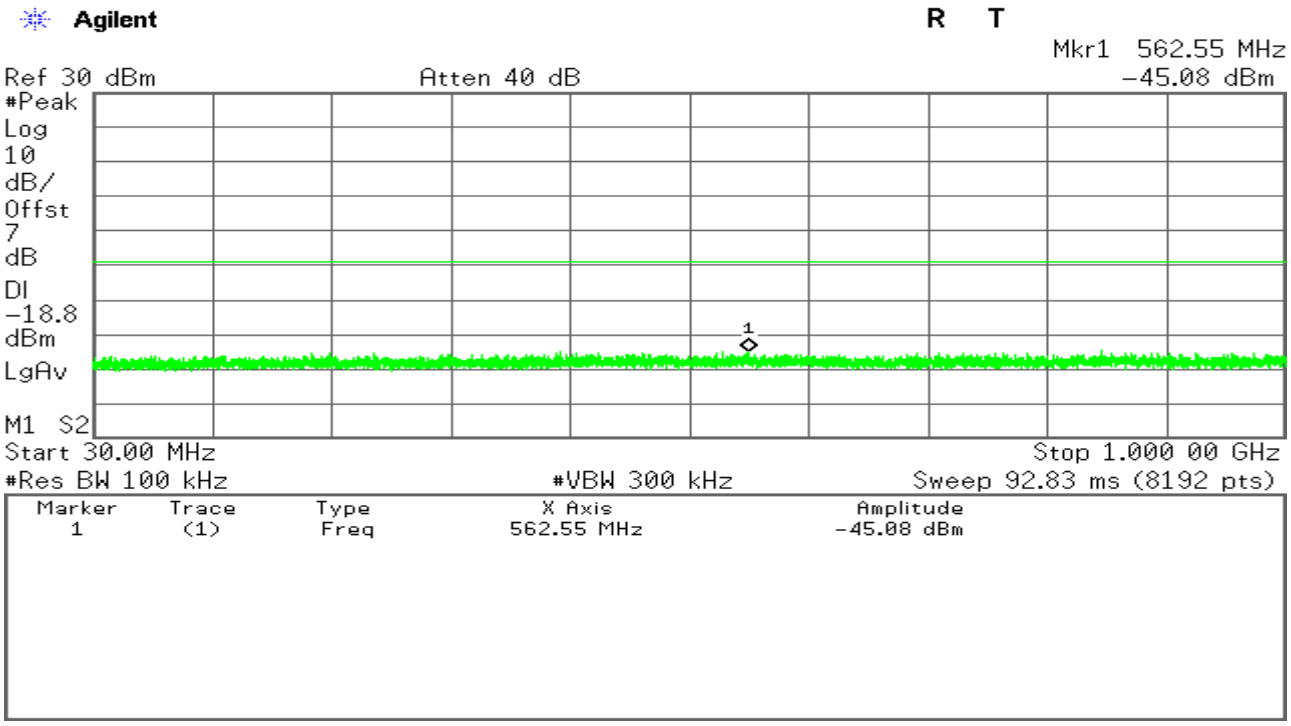




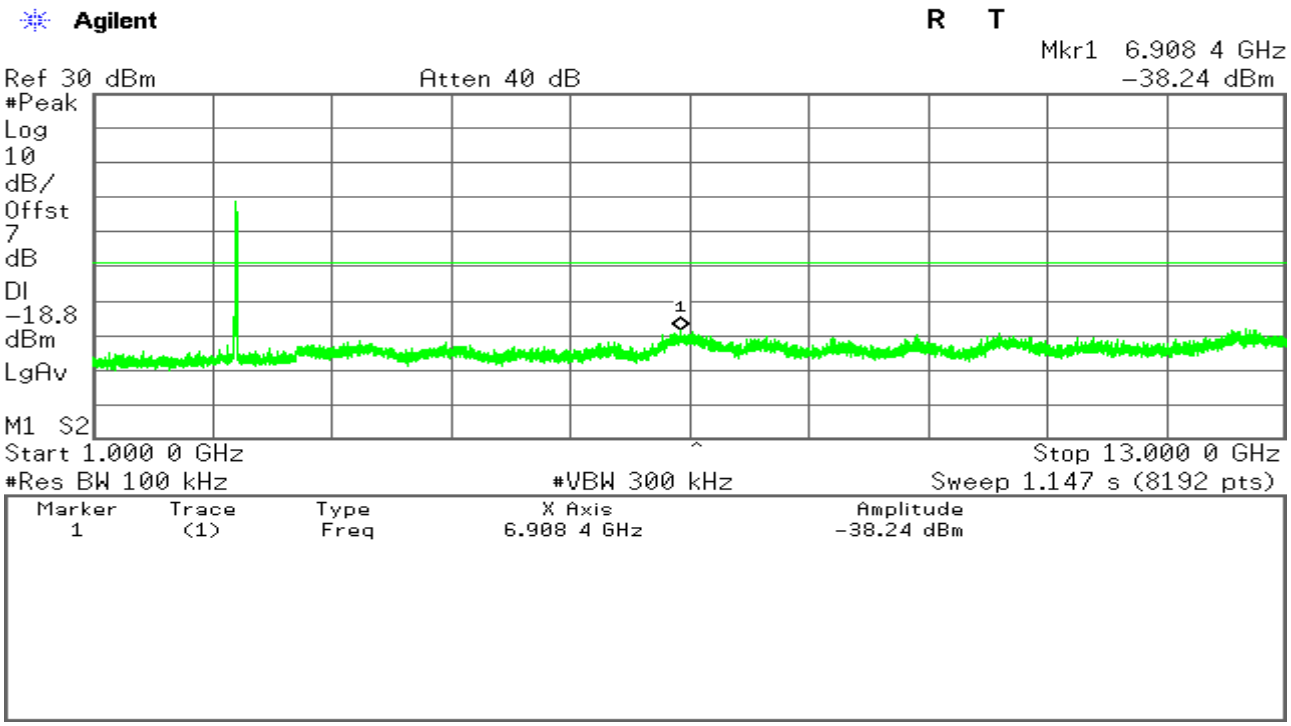
This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

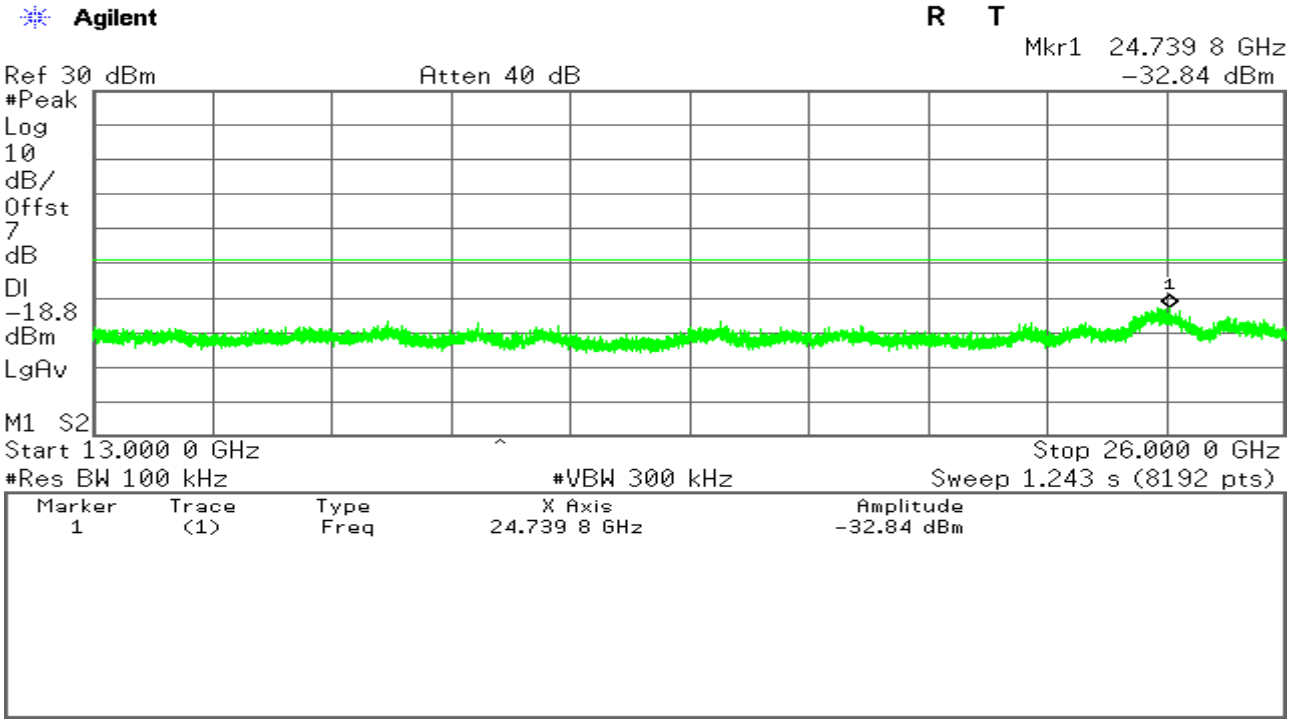
CH Mid





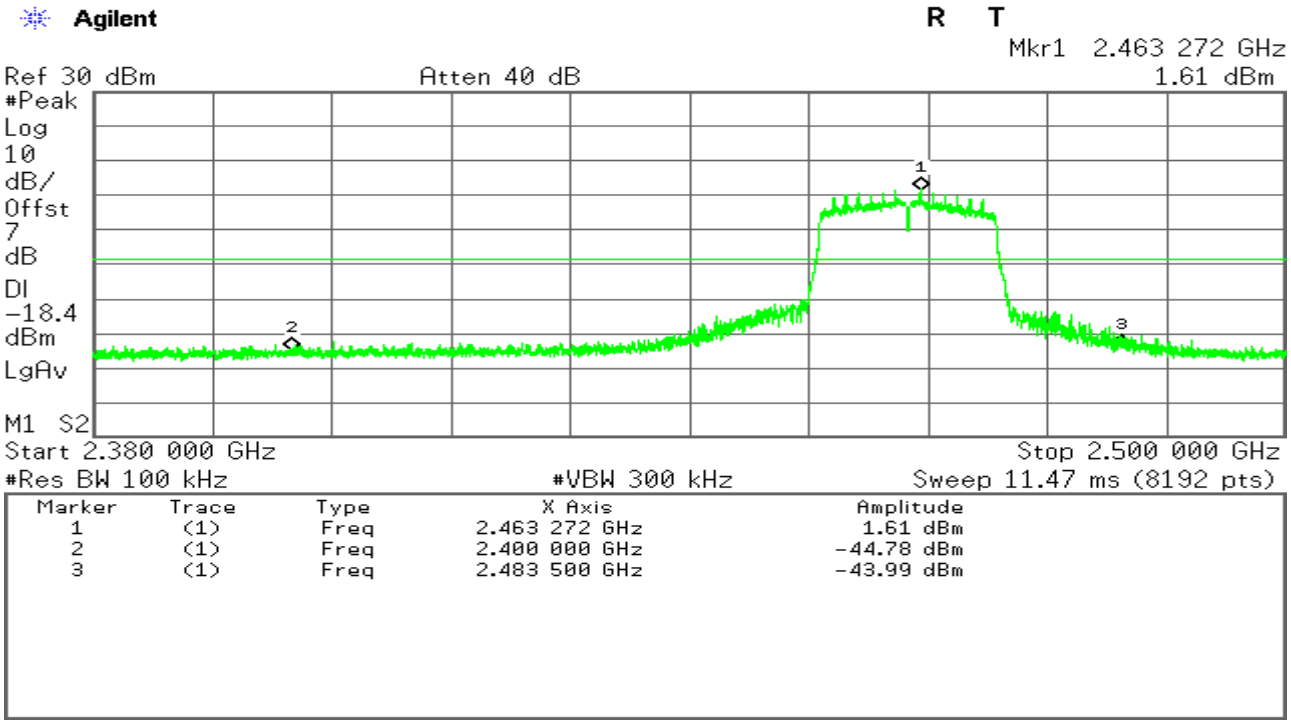
This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

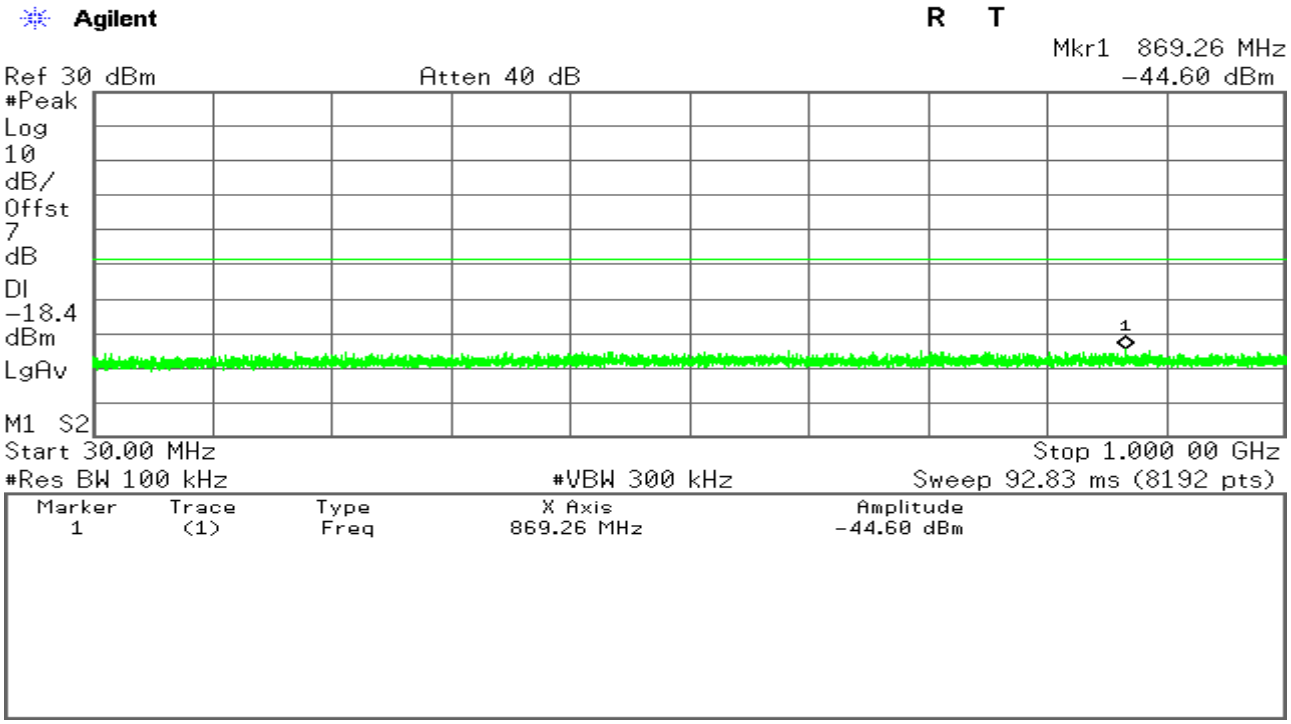




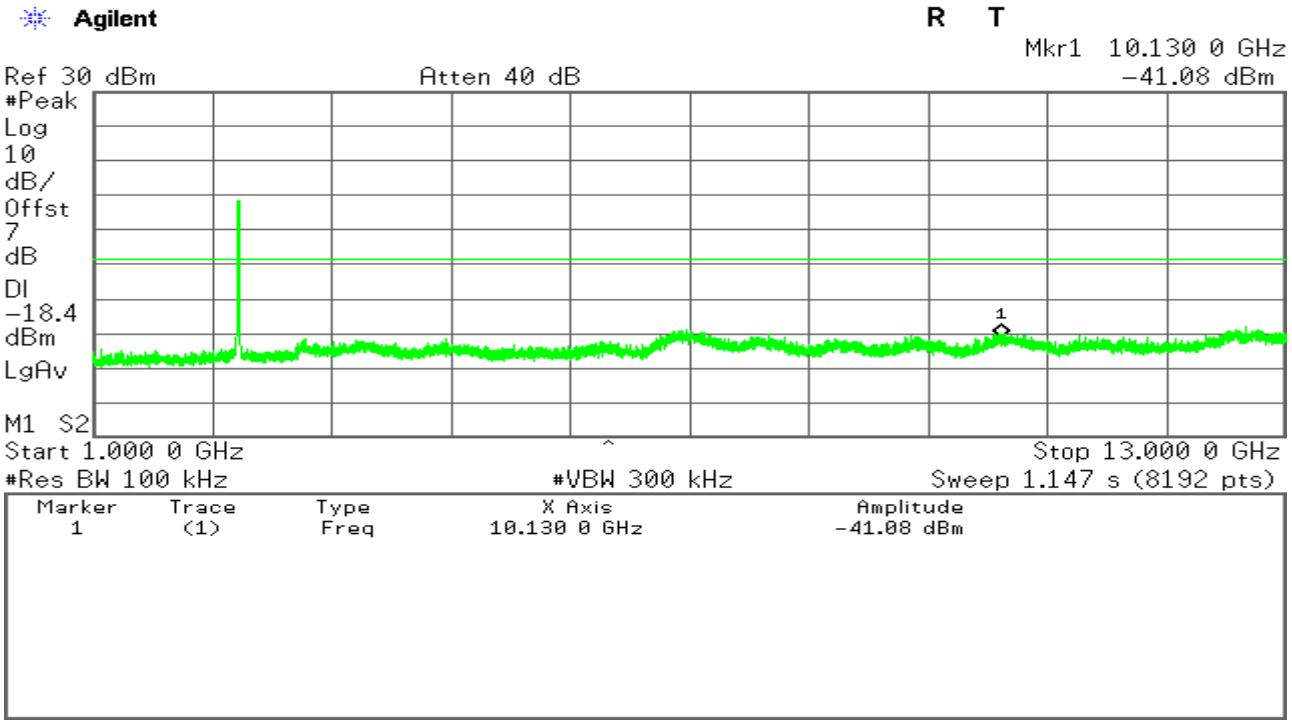
This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

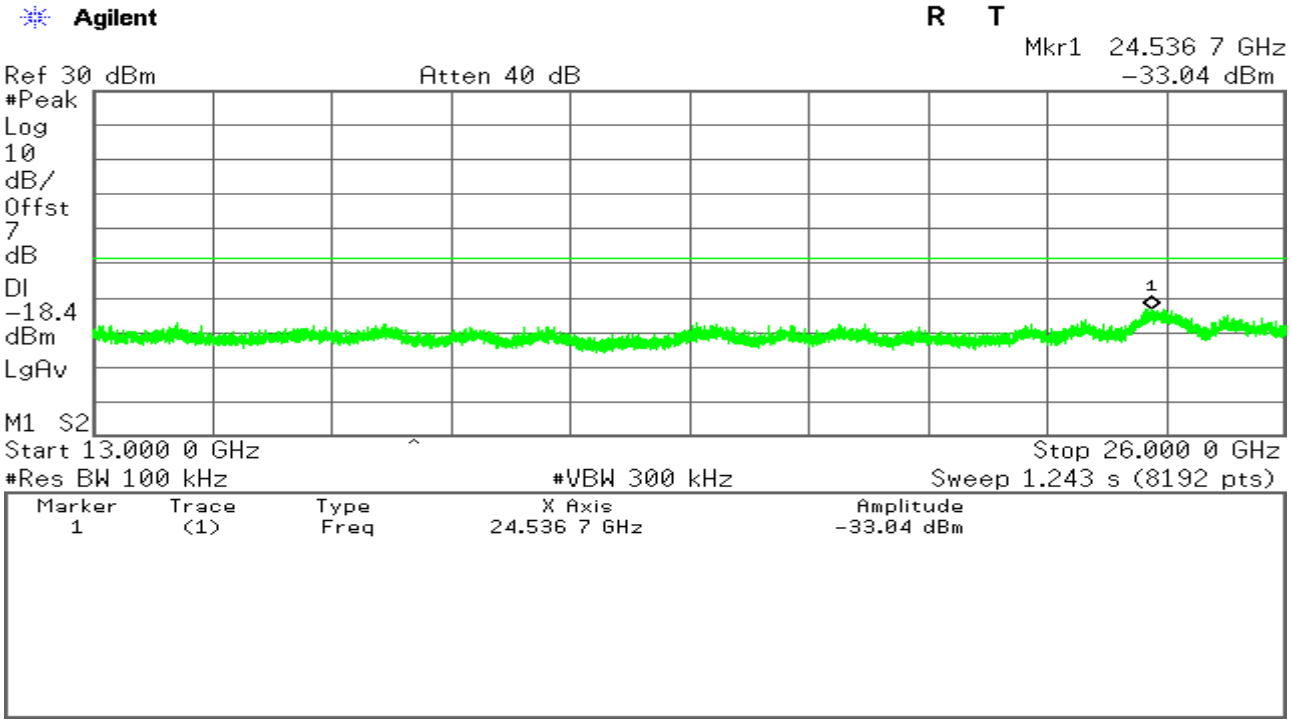
CH High





This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

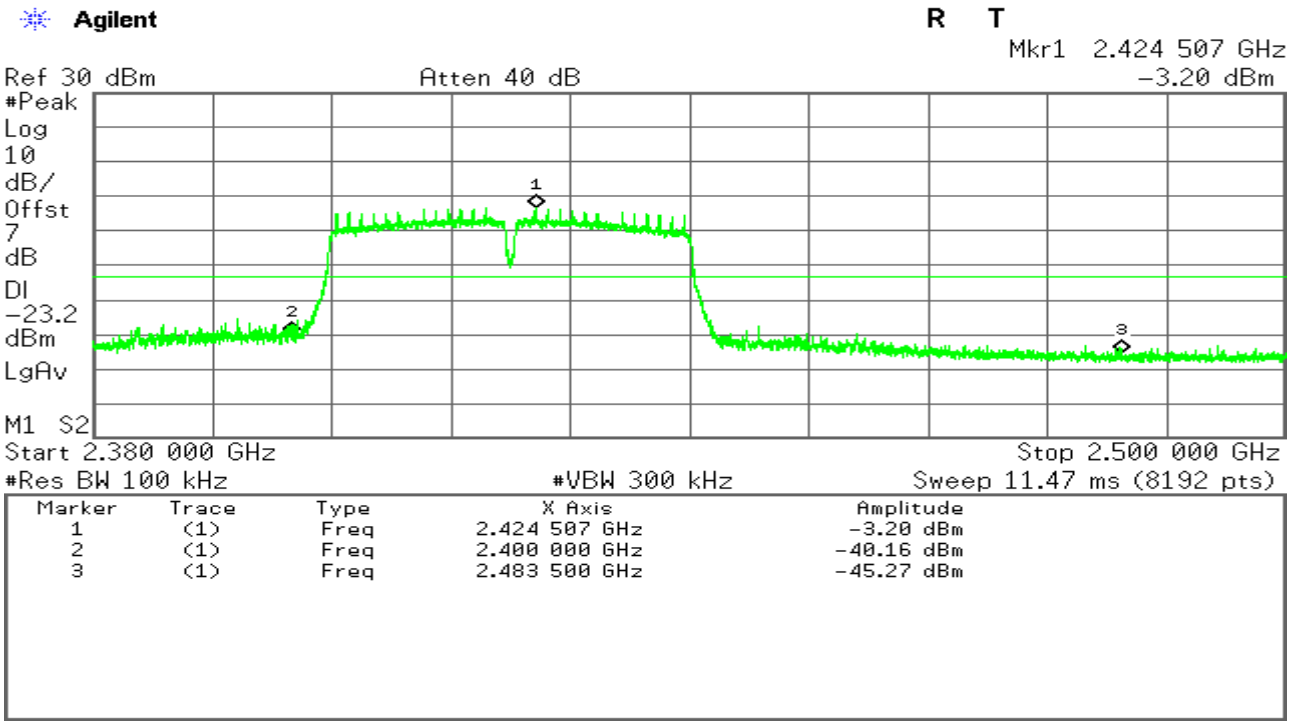


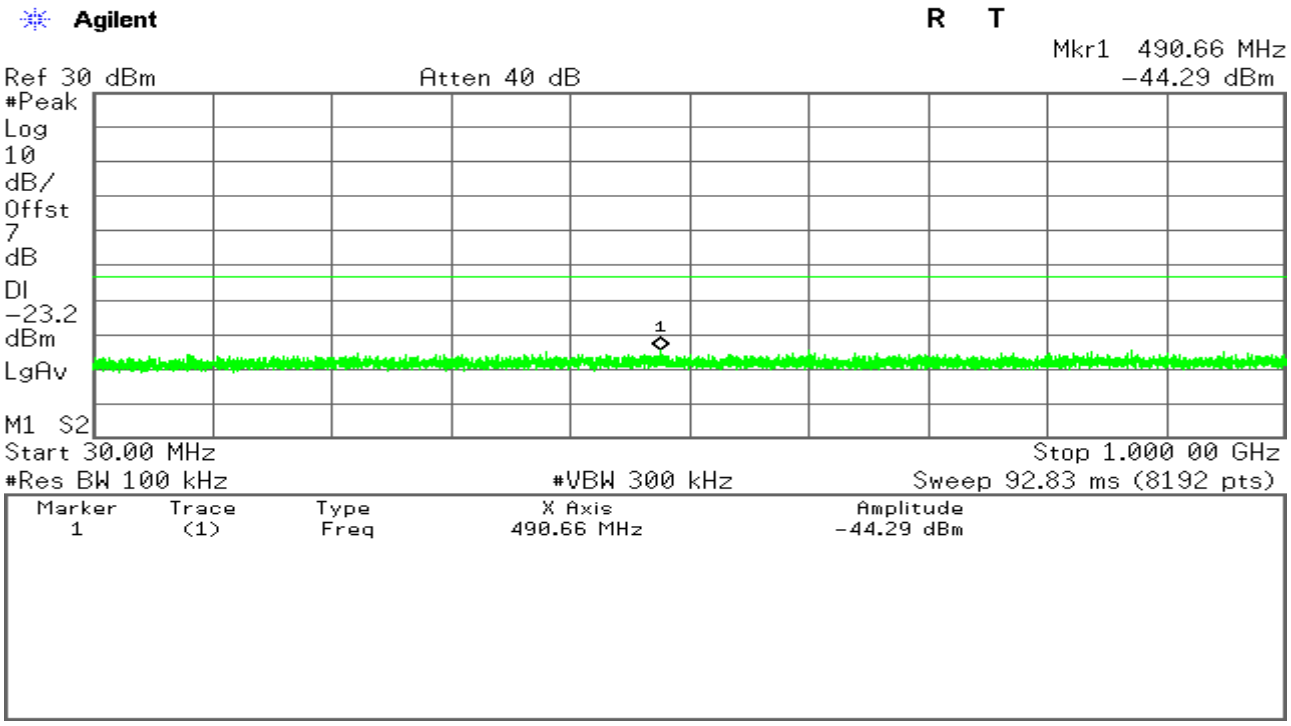


This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

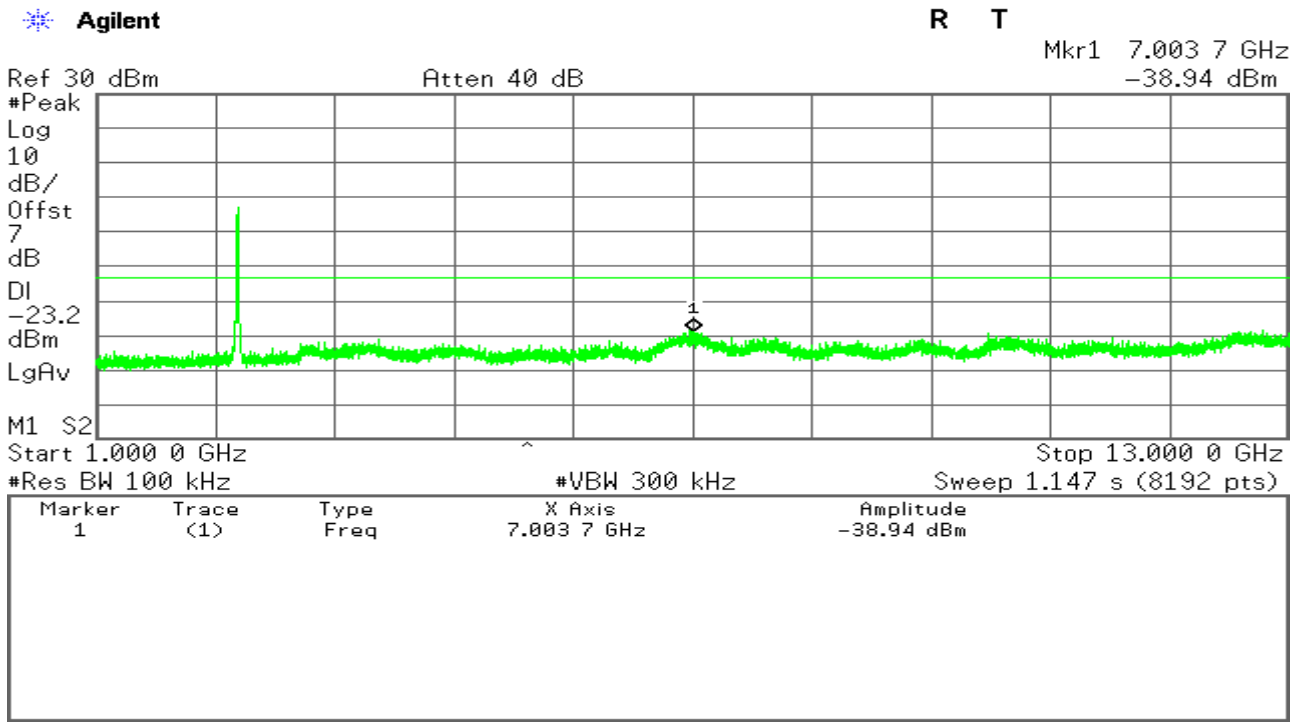
IEEE 802.11n HT40 Mode

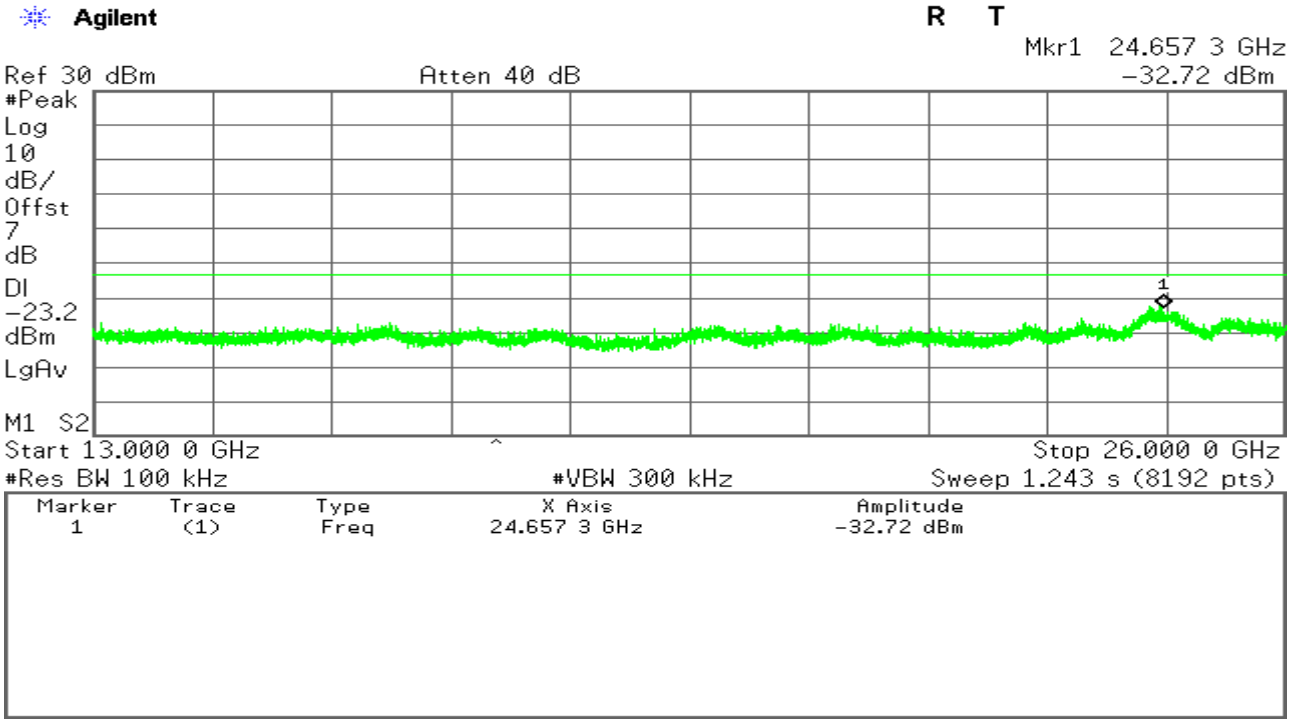
CH Low





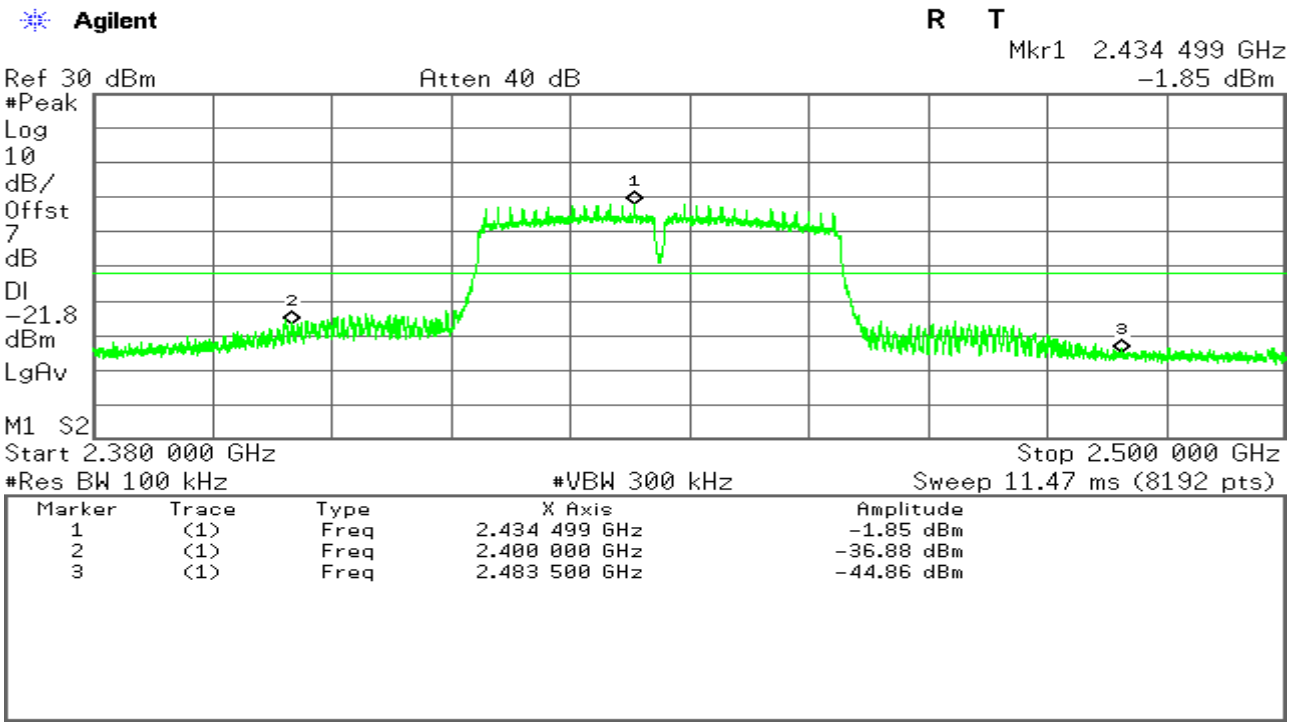
This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

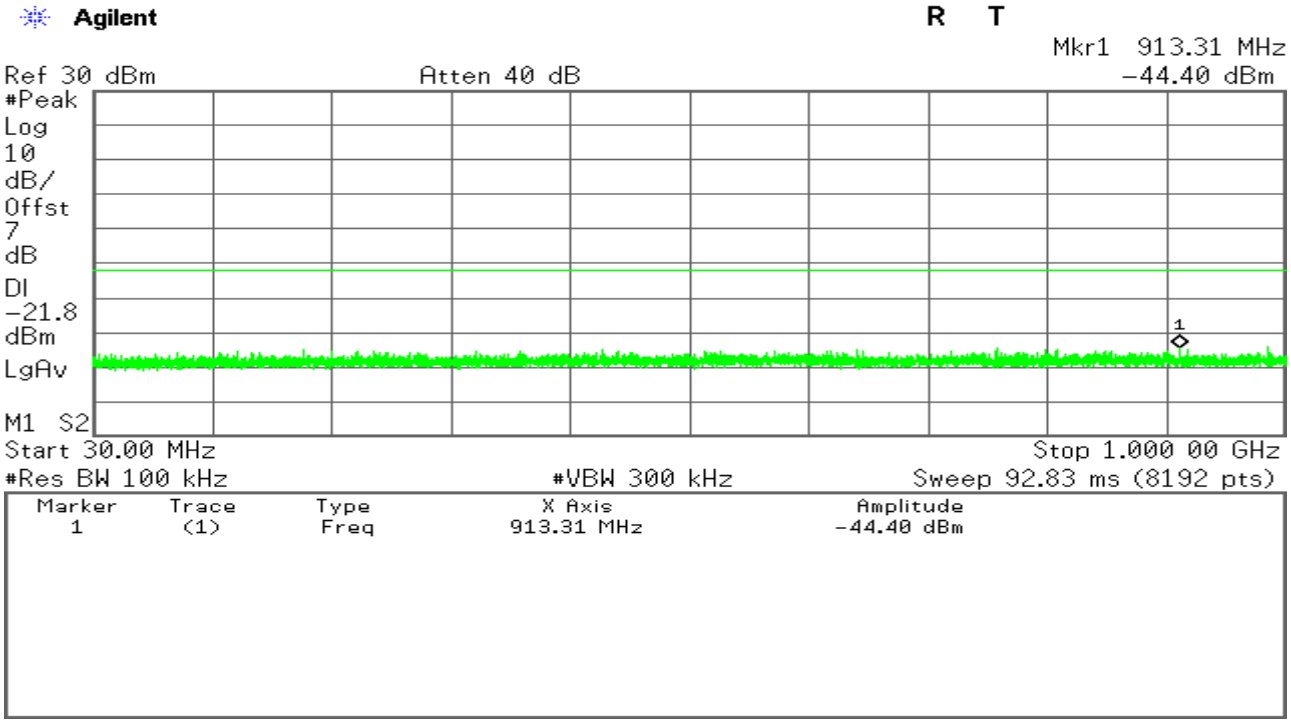




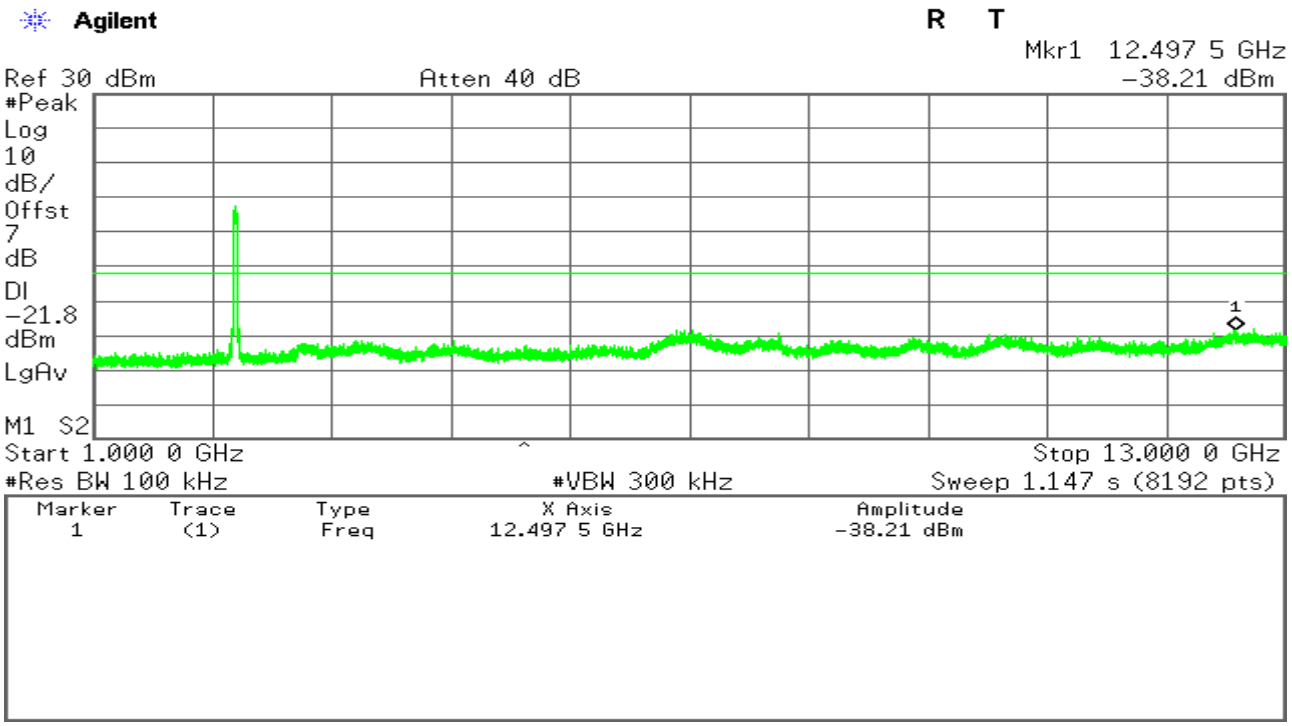
This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

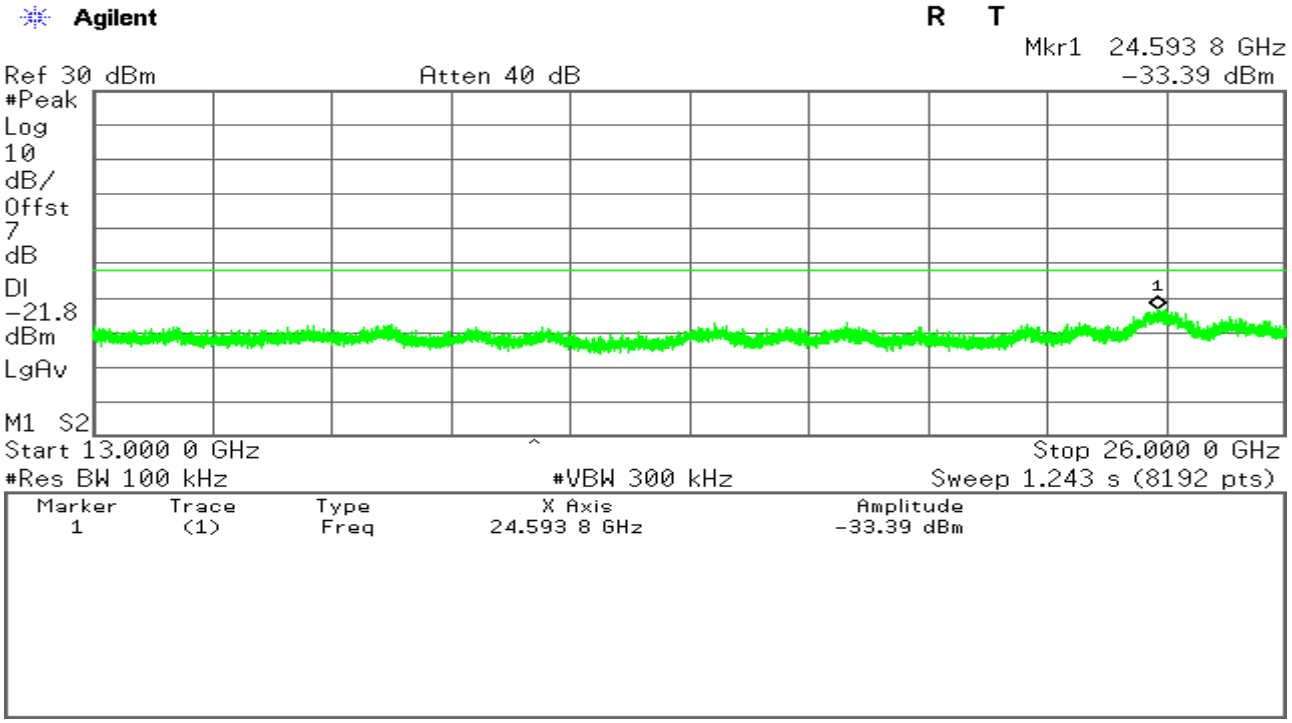
CH Mid





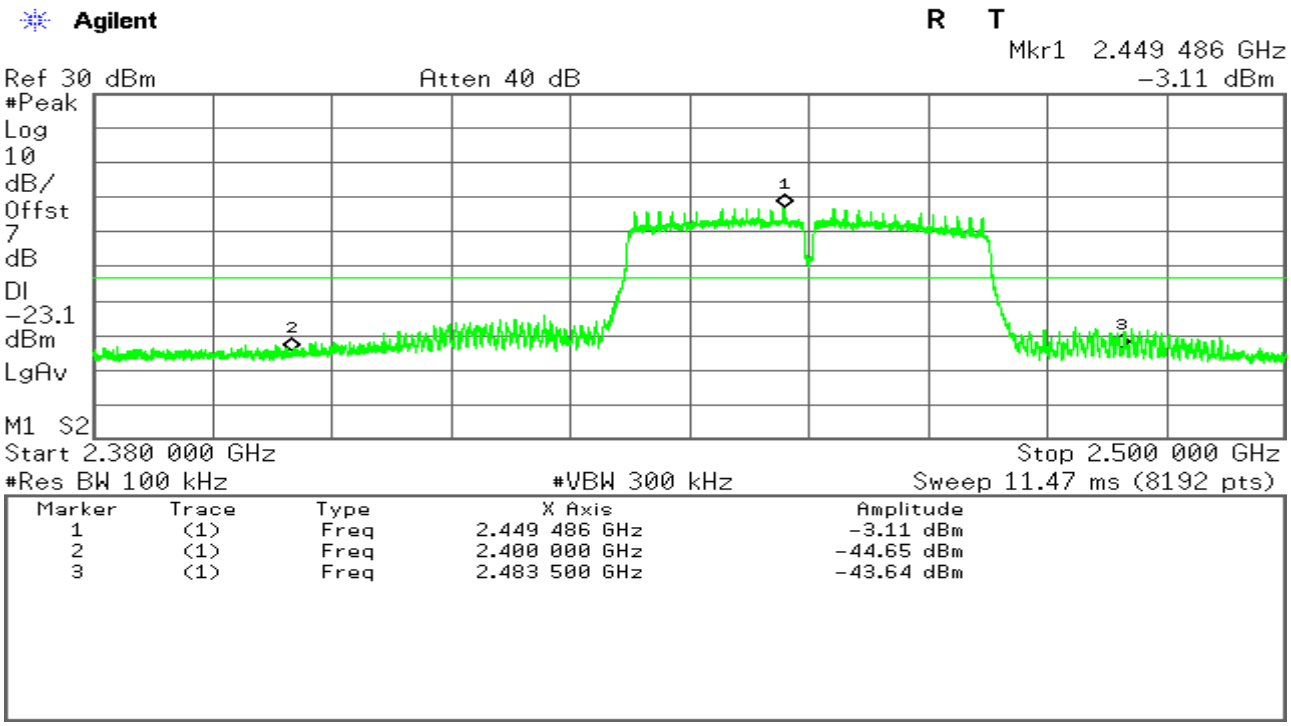
This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.



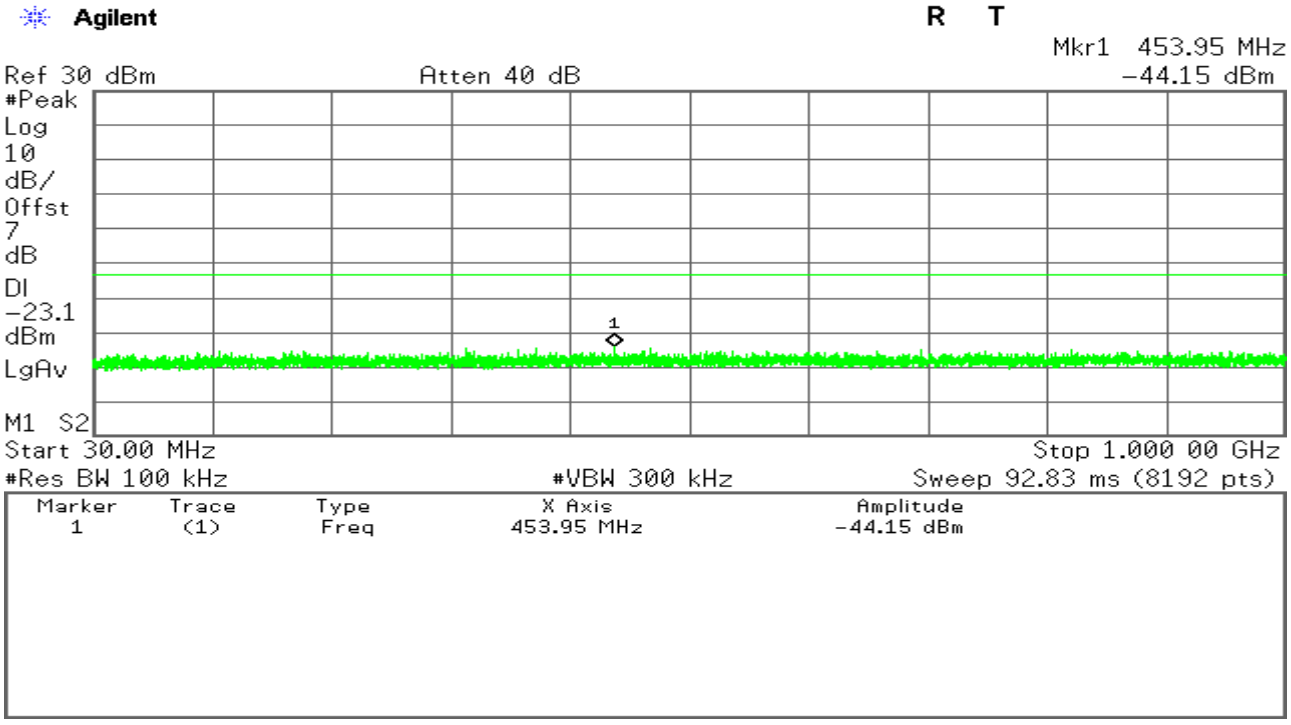


This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

CH High

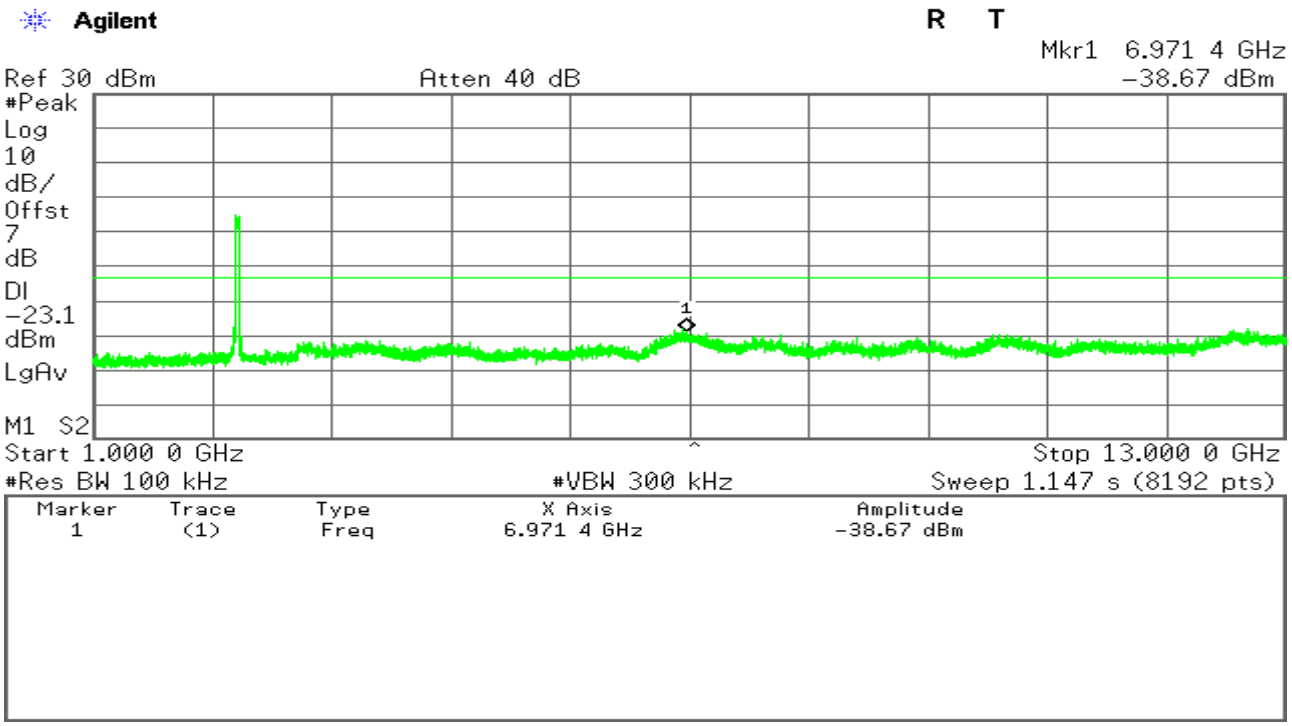


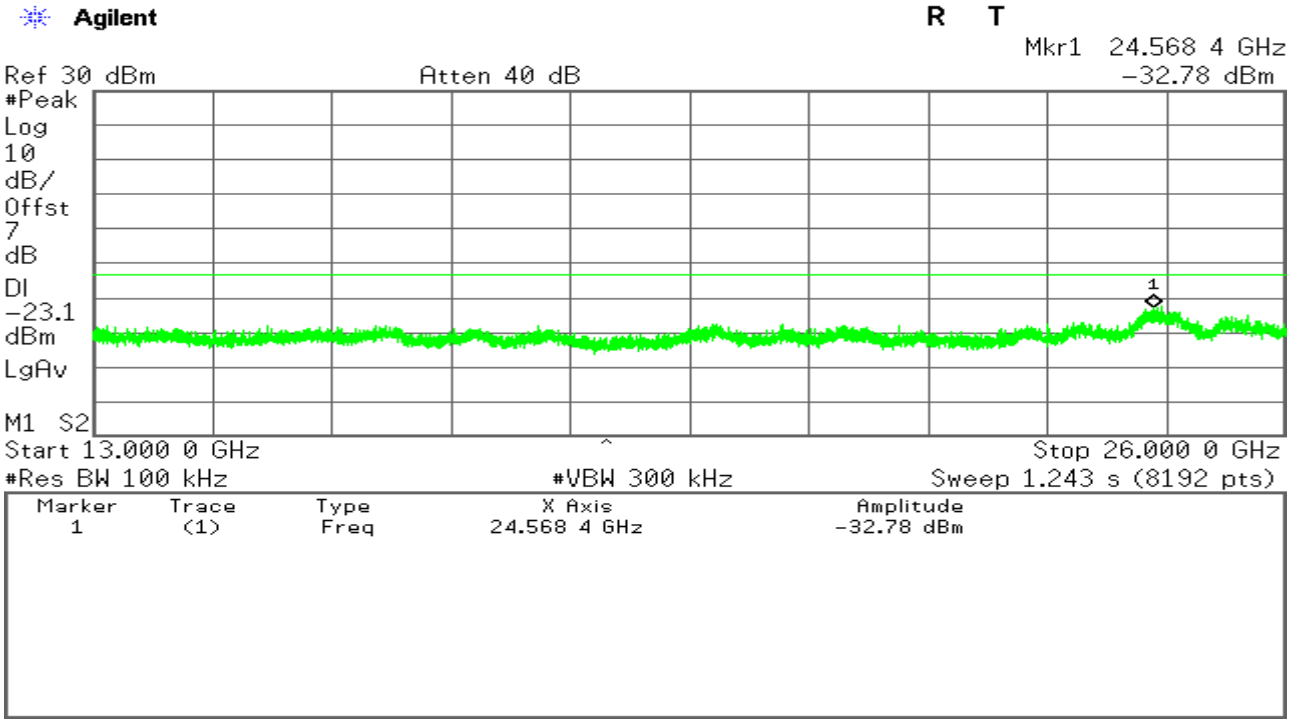
Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.449 486 GHz	-3.11 dBm
2	(1)	Freq	2.400 000 GHz	-44.65 dBm
3	(1)	Freq	2.483 500 GHz	-43.64 dBm



Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	453.95 MHz	-44.15 dBm

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.





This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

7.5 RADIATED EMISSIONS

LIMIT

Radiated emissions from 9 kHz to 25 GHz were measured according to the methods defines in ANSI C63.4-2009. The EUT was placed, 0.8 meter above the ground plane, as shown in section 5.6.3. The interface cables and equipment positions were varied within limits of reasonable applications to determine the positions producing maximum radiated emissions

1. 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:

FREQUENCIES(MHz)	FIELD STRENGTH (microvolts/meter)	MEASUREMENT DISTANCE(meters)
0.009~0.490	2400/F(kHz)	300
0.490~1.705	24000/F(kHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

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.*

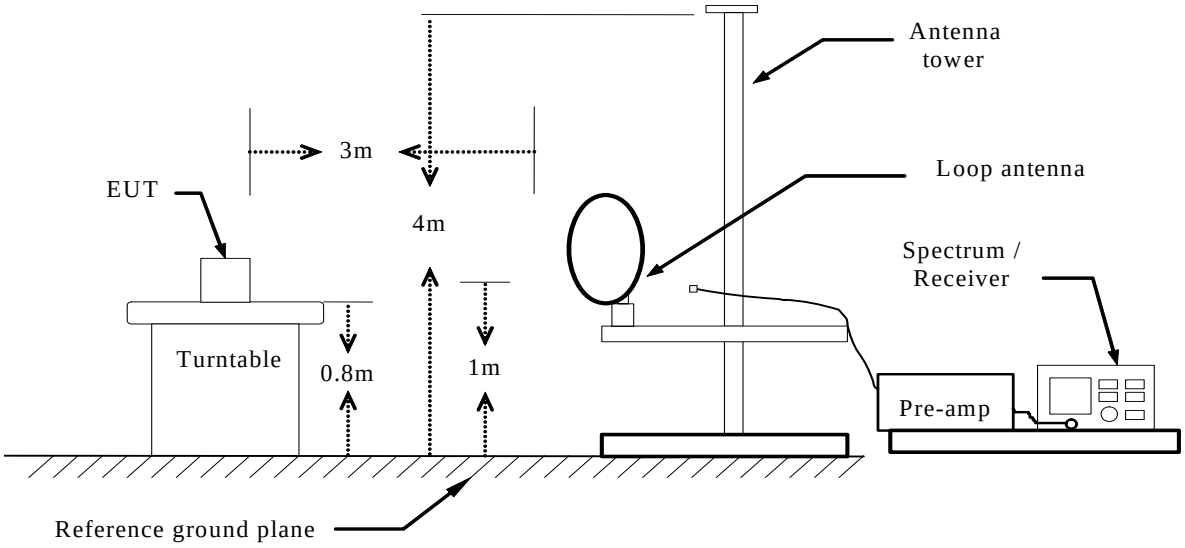
2. In the emission table above, the tighter limit applies at the band edges.

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

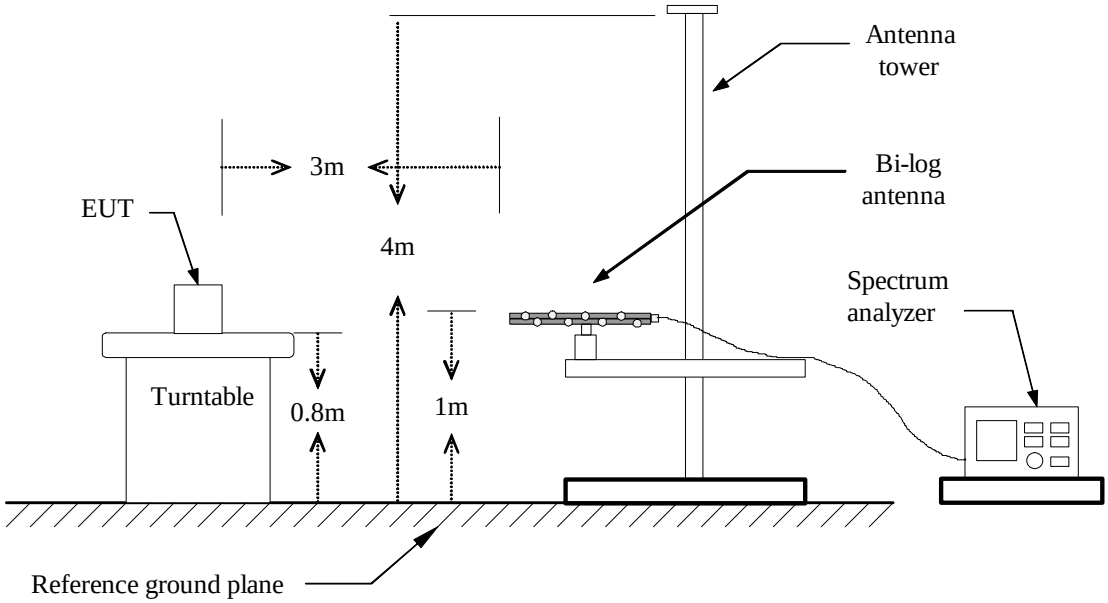
Test Configuration

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

Below 30MHz

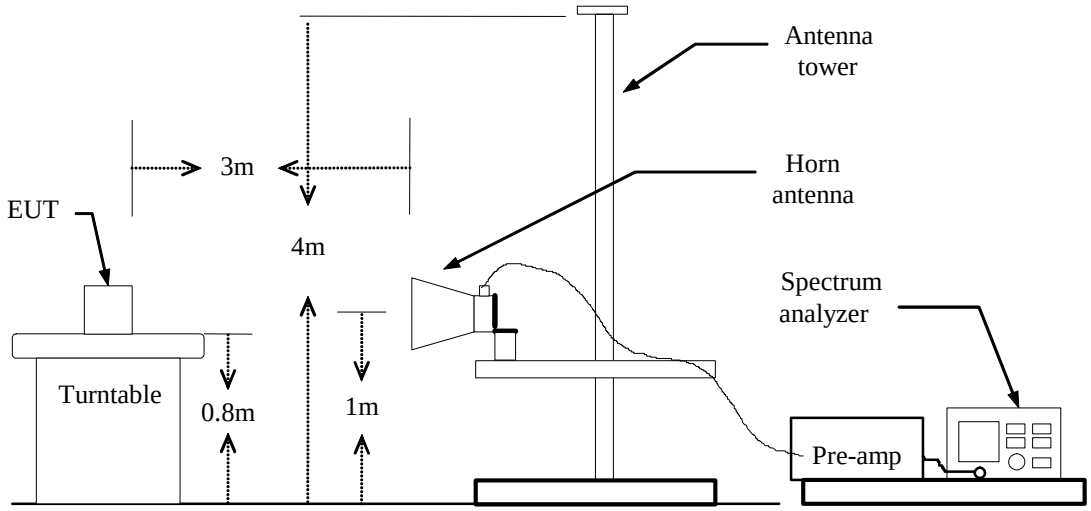


Below 1 GHz



This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

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:

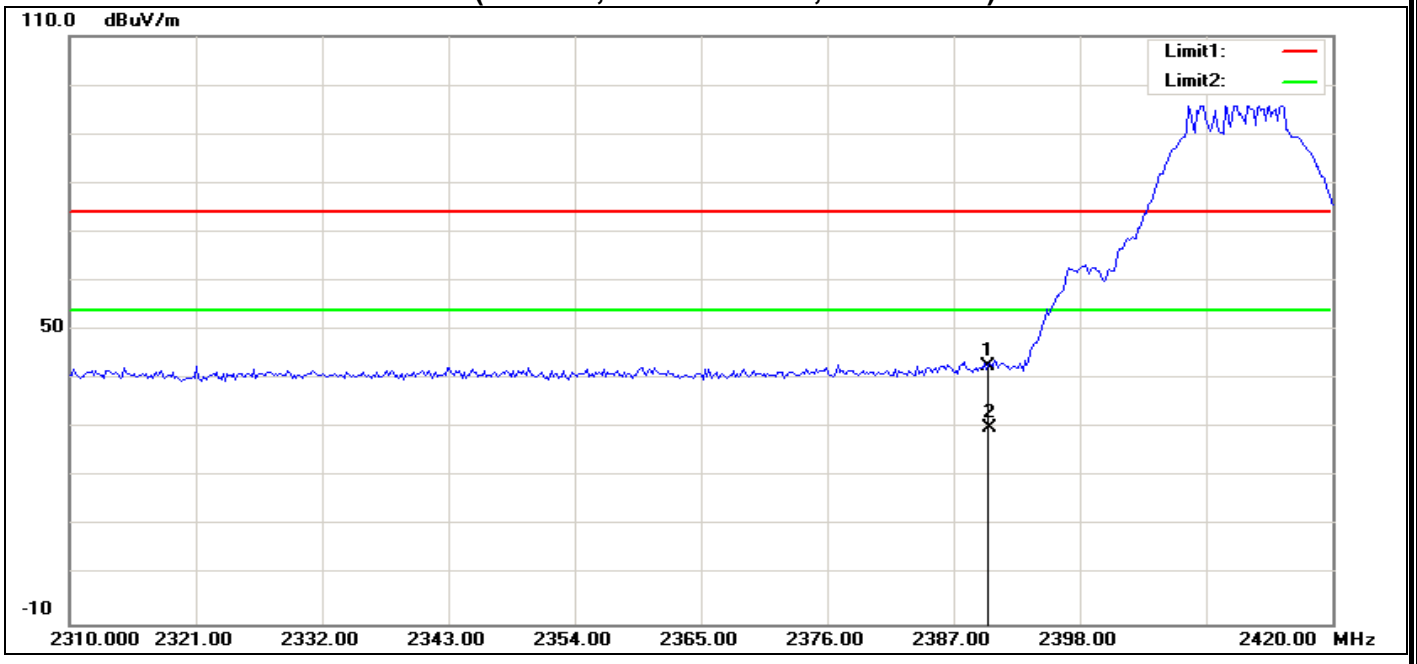
   (a) PEAK: RBW=VBW=1MHz / Sweep=AUTO

   (b) AVERAGE: RBW=1MHz / VBW=10Hz / Sweep=AUTO
7. Repeat above procedures until the measurements for all frequencies are complete.

TEST RESULTS

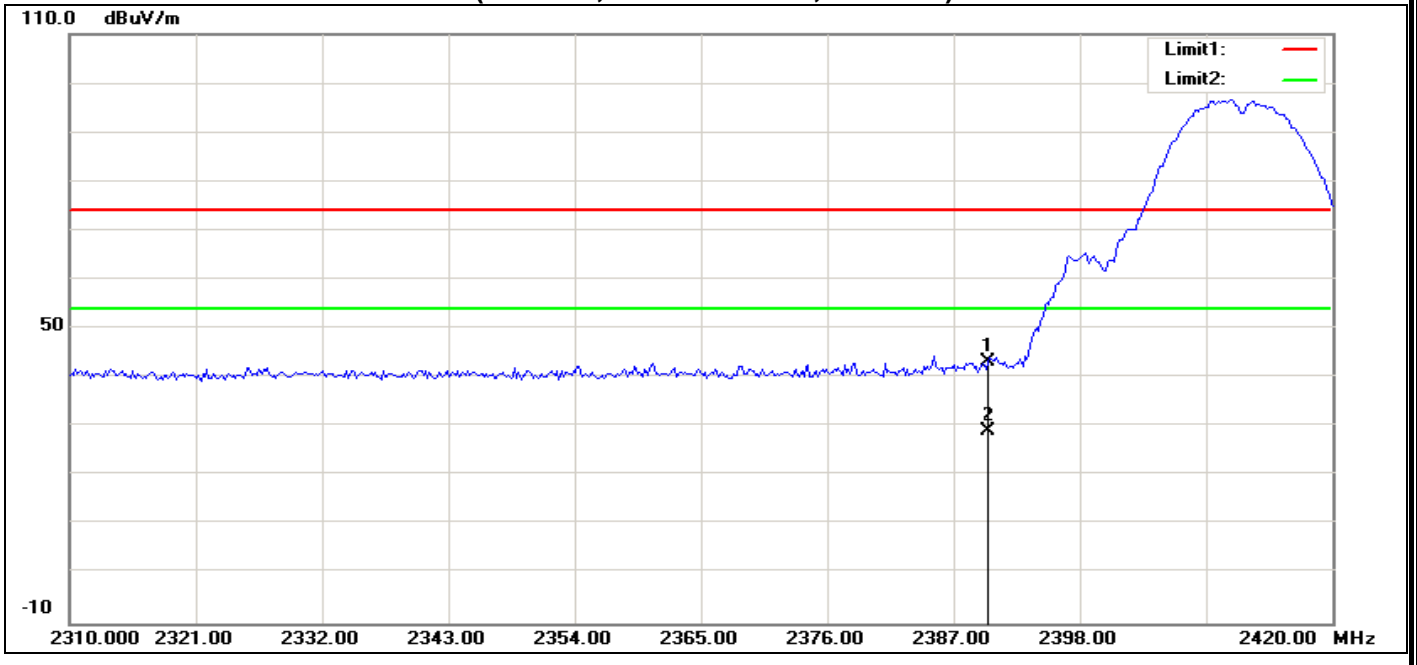
This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

RESTRICTED BANDEDGE (b Mode, Low Channel, Horizontal)



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	2390.000	57.07	-14.28	42.79	74.00	-31.21	100	360	peak
2	2390.000	44.27	-14.29	29.98	54.00	-24.02	100	360	AVG

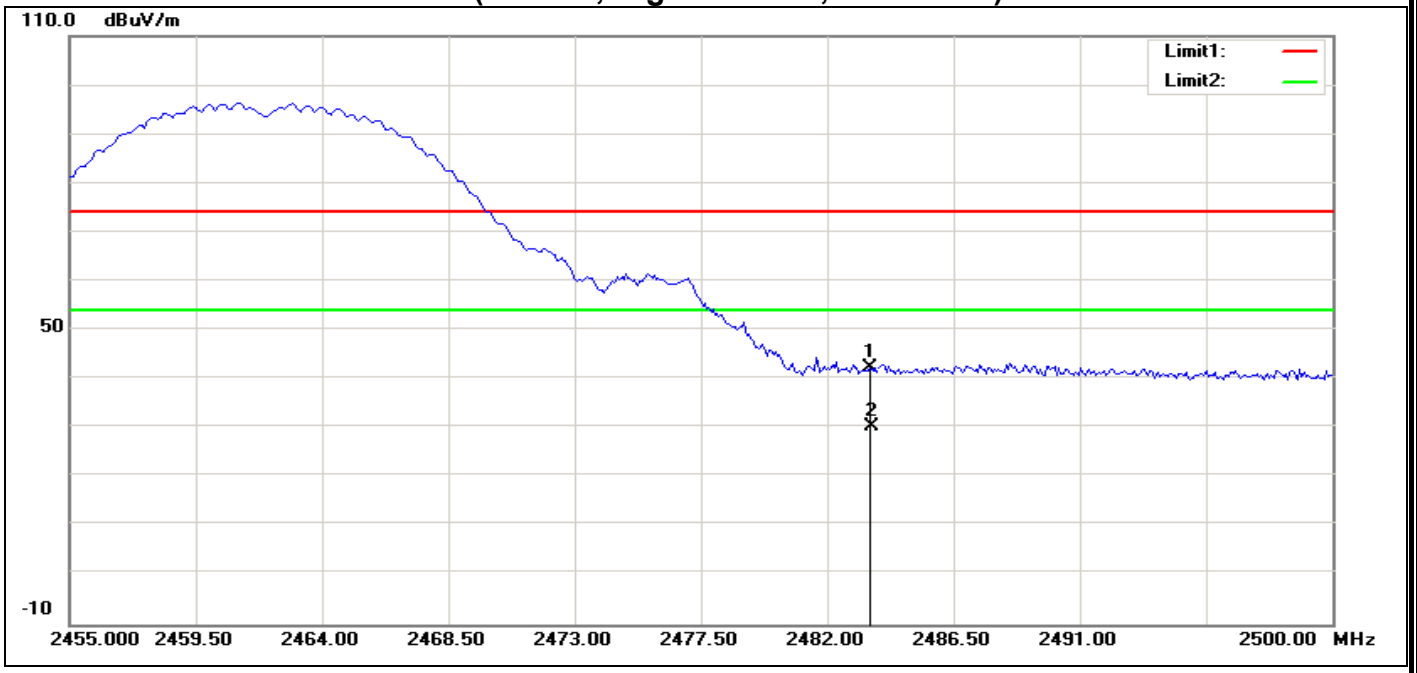
RESTRICTED BANDEDGE (b Mode, Low Channel, Vertical)



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	2390.000	57.58	-14.28	43.30	74.00	-30.70	100	34	peak
2	2390.000	43.46	-14.29	29.17	54.00	-24.83	100	34	AVG

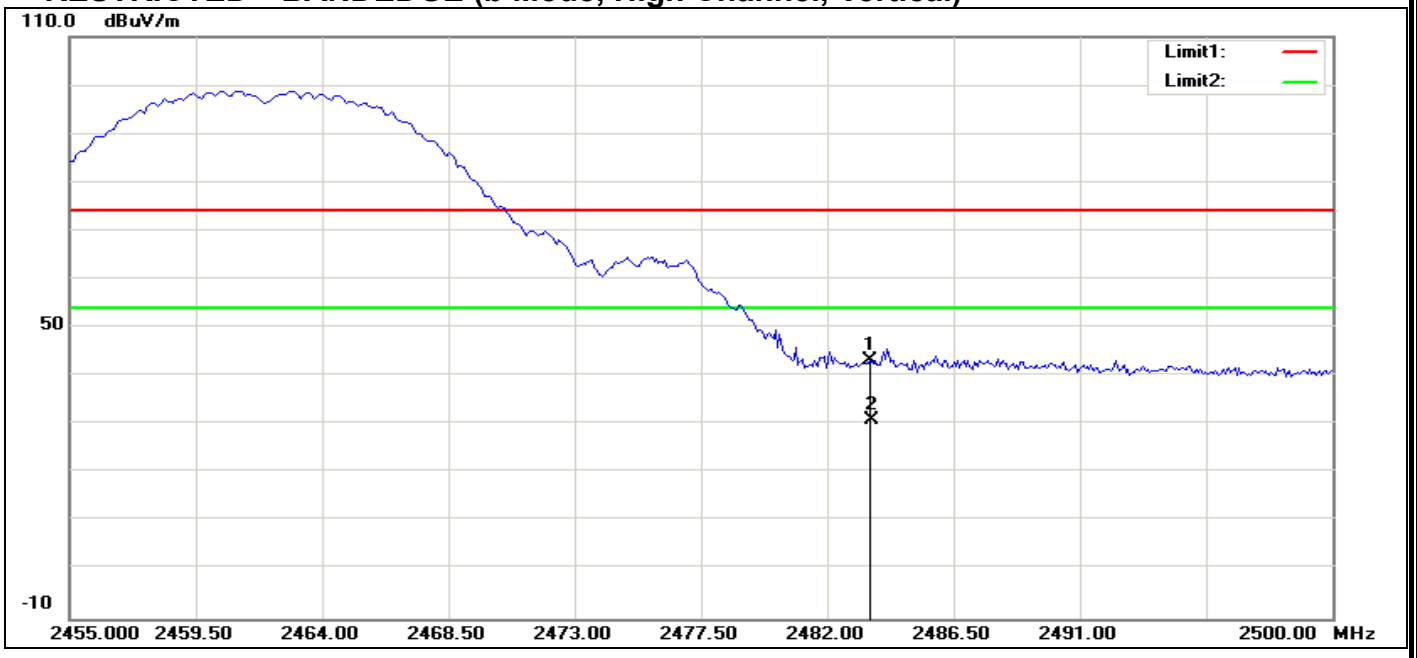
This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

RESTRICTED BANDEDGE (b Mode, High Channel, Horizontal)



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	2483.500	56.09	-13.65	42.44	74.00	-31.56	100	314	peak
2	2483.500	44.00	-13.65	30.35	54.00	-23.65	100	314	AVG

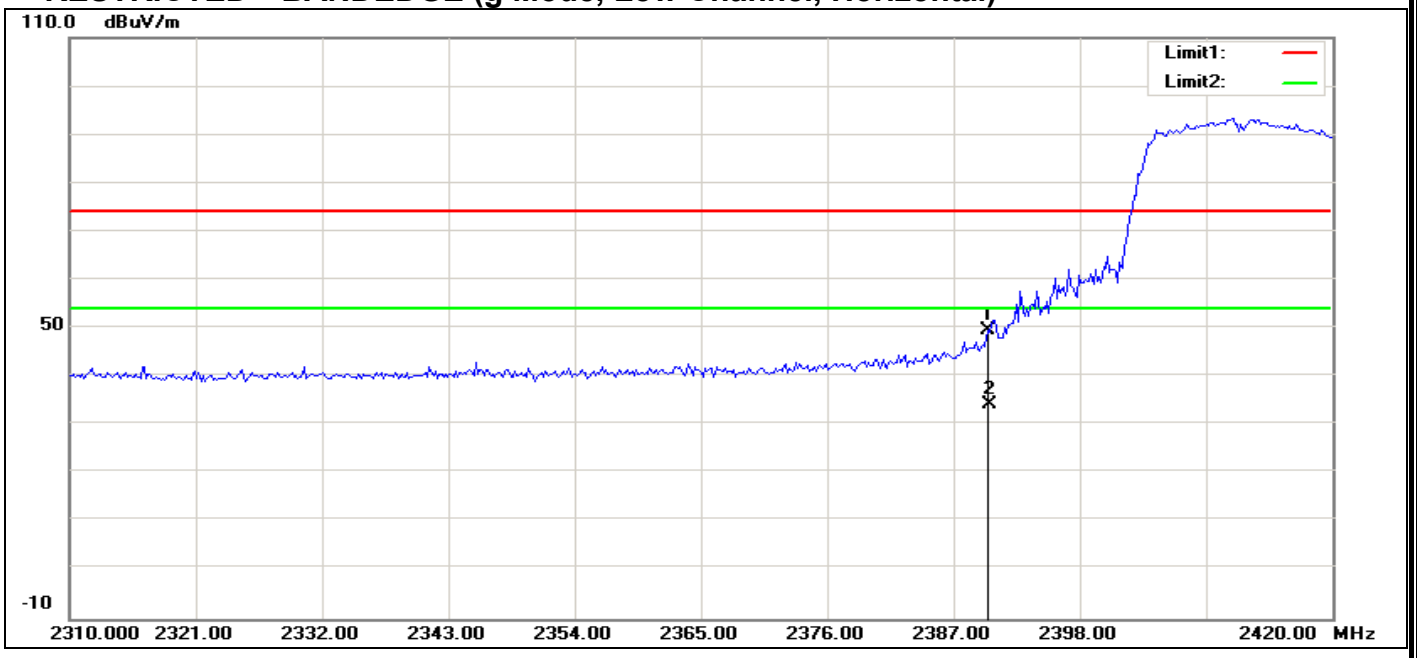
RESTRICTED BANDEDGE (b Mode, High Channel, Vertical)



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	2483.500	56.76	-13.65	43.11	74.00	-30.89	100	90	peak
2	2483.500	44.74	-13.65	31.09	54.00	-22.91	100	90	AVG

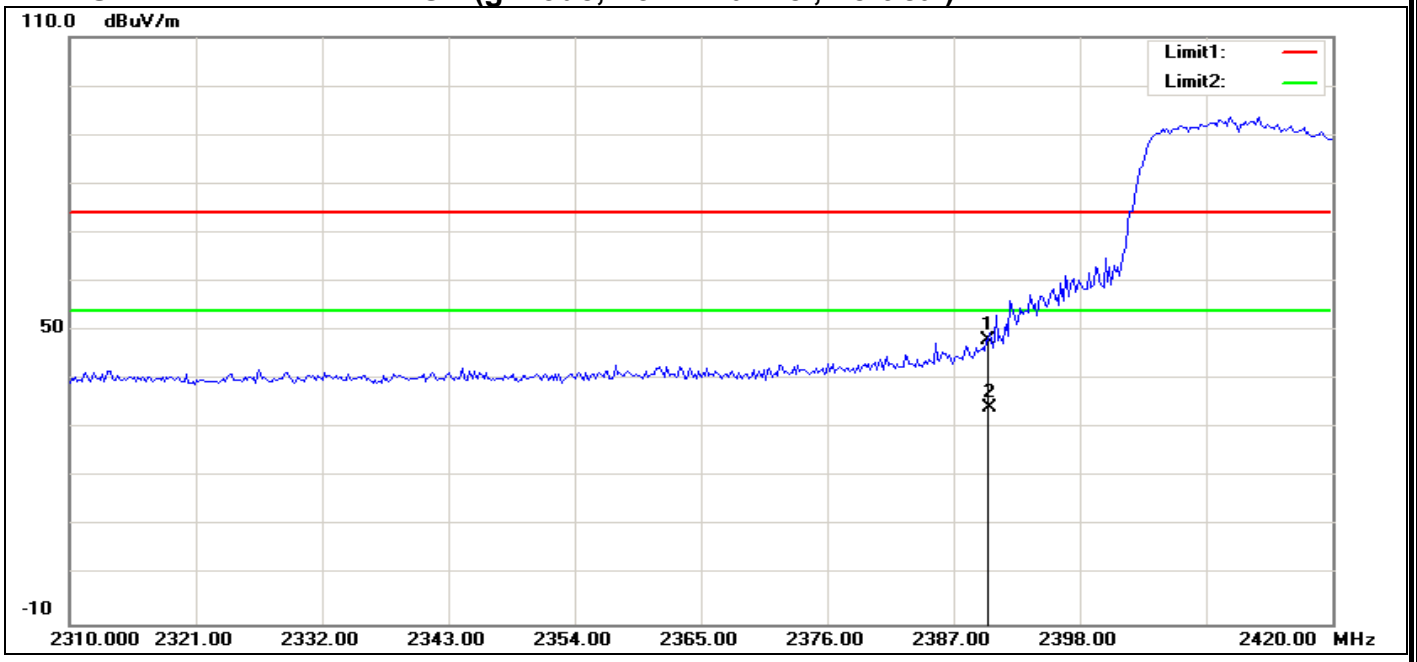
This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

RESTRICTED BANDEDGE (g Mode, Low Channel, Horizontal)



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2390.000	63.88	-14.28	49.60	74.00	-24.40	100	313	peak
2	2390.000	48.41	-14.29	34.12	54.00	-19.88	100	313	AVG

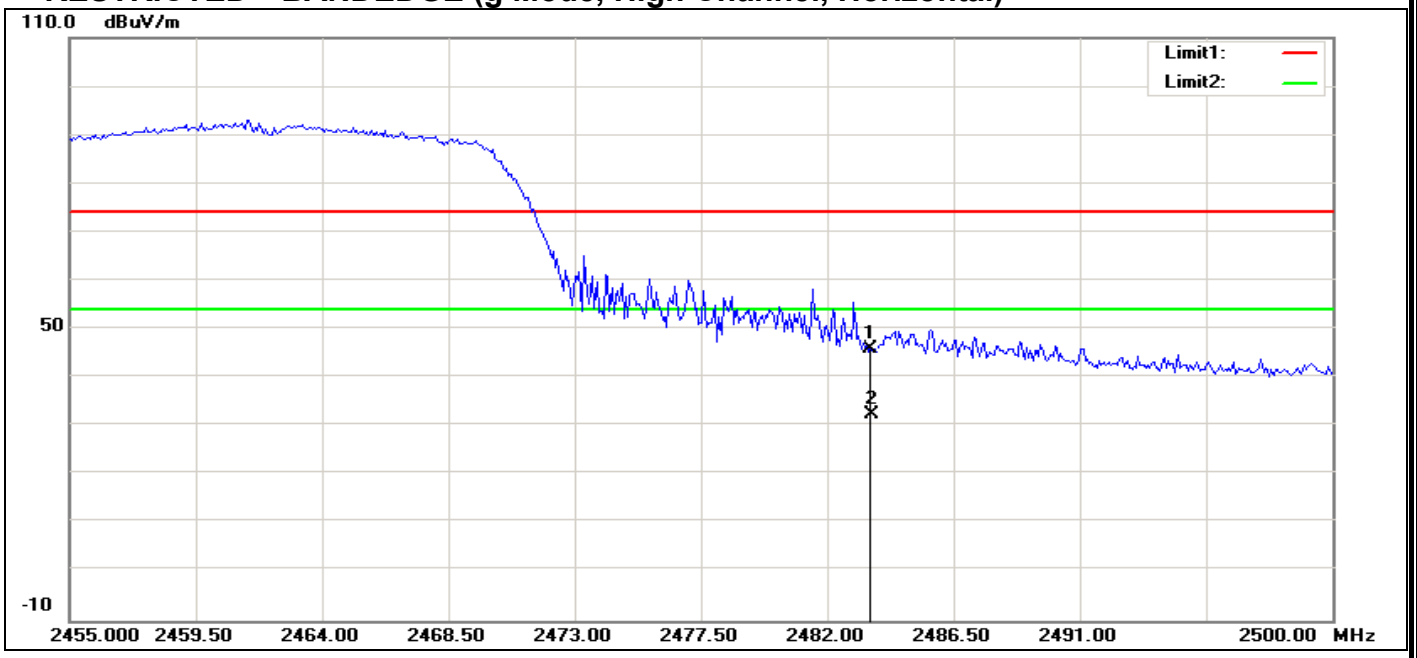
RESTRICTED BANDEDGE (g Mode, Low Channel, Vertical)



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2390.000	62.31	-14.28	48.03	74.00	-25.97	100	46	peak
2	2390.000	48.48	-14.29	34.19	54.00	-19.81	100	46	AVG

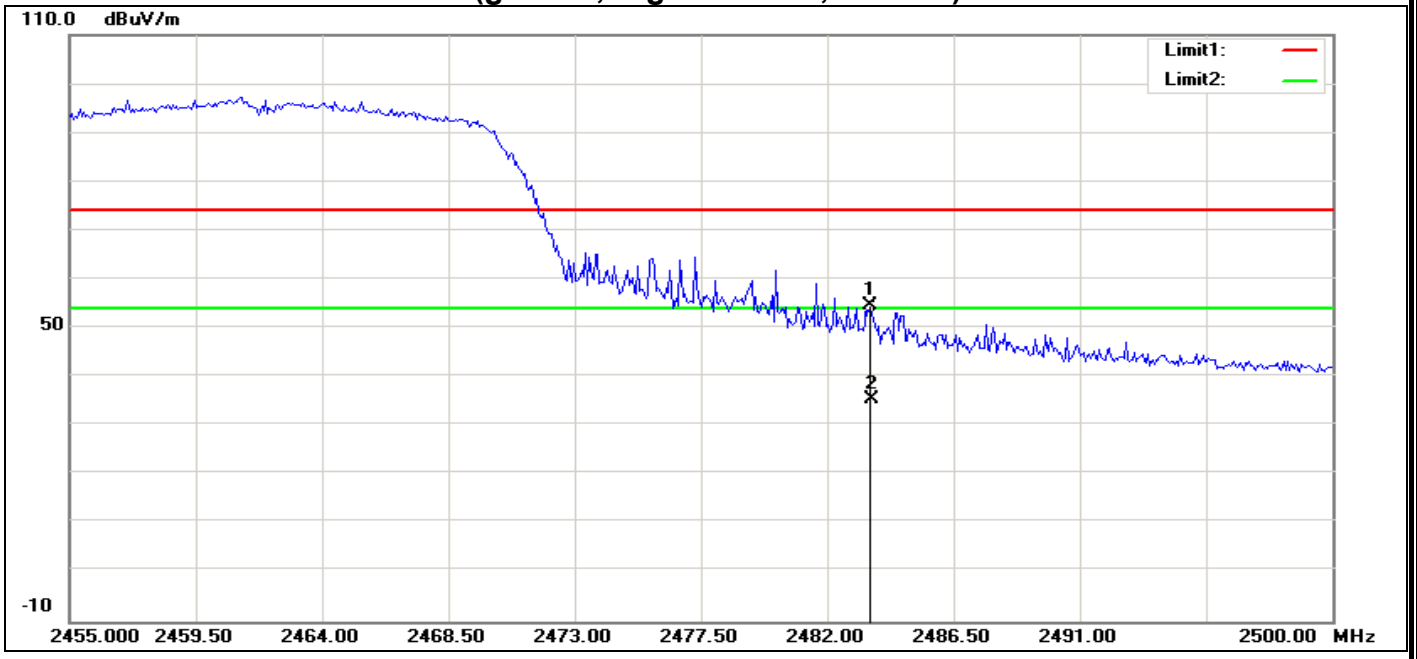
This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

RESTRICTED BANDEDGE (g Mode, High Channel, Horizontal)



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2483.500	59.33	-13.65	45.68	74.00	-28.32	100	332	peak
2	2483.500	46.19	-13.65	32.54	54.00	-21.46	100	332	AVG

RESTRICTED BANDEDGE (g Mode, High Channel, Vertical)



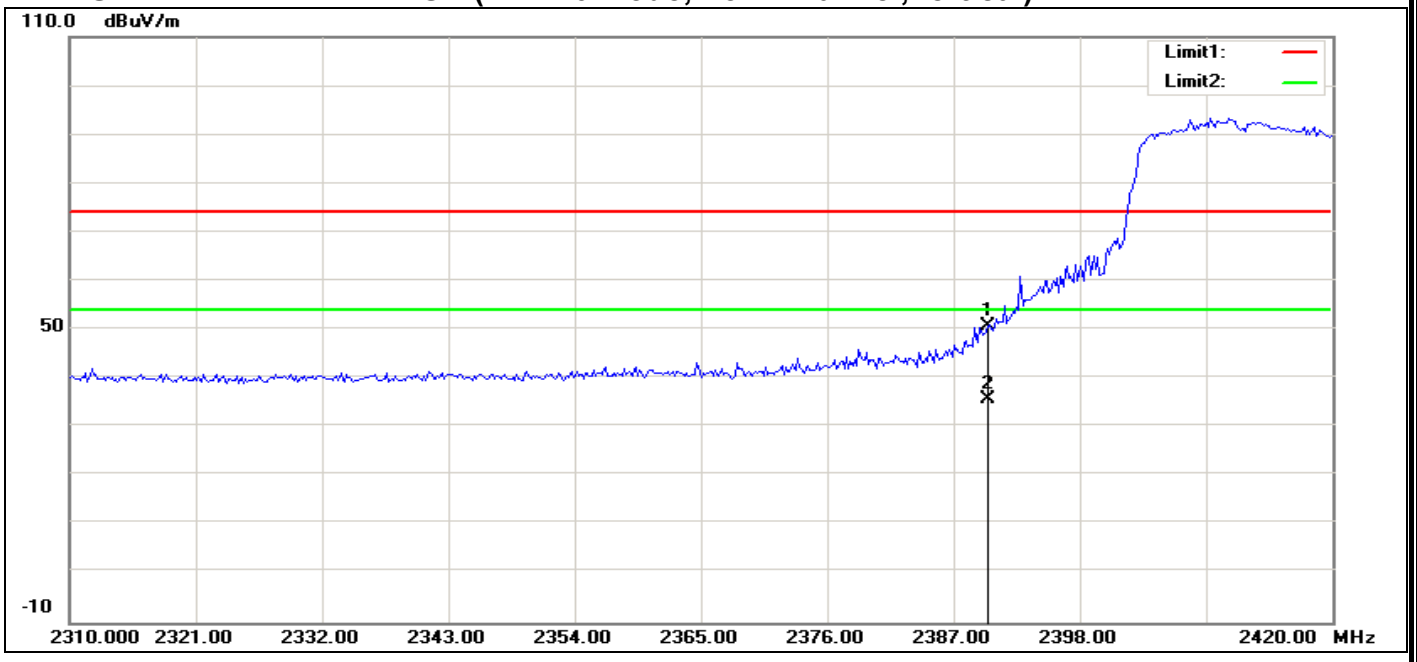
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2483.500	68.01	-13.65	54.36	74.00	-19.64	100	277	peak
2	2483.500	48.96	-13.65	35.31	54.00	-18.69	100	277	AVG

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

RESTRICTED BANDEDGE (n HT20 Mode, Low Channel, Horizontal)

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2390.000	63.09	-14.28	48.81	74.00	-25.19	100	349	peak
2	2390.000	47.28	-14.29	32.99	54.00	-21.01	98	349	AVG

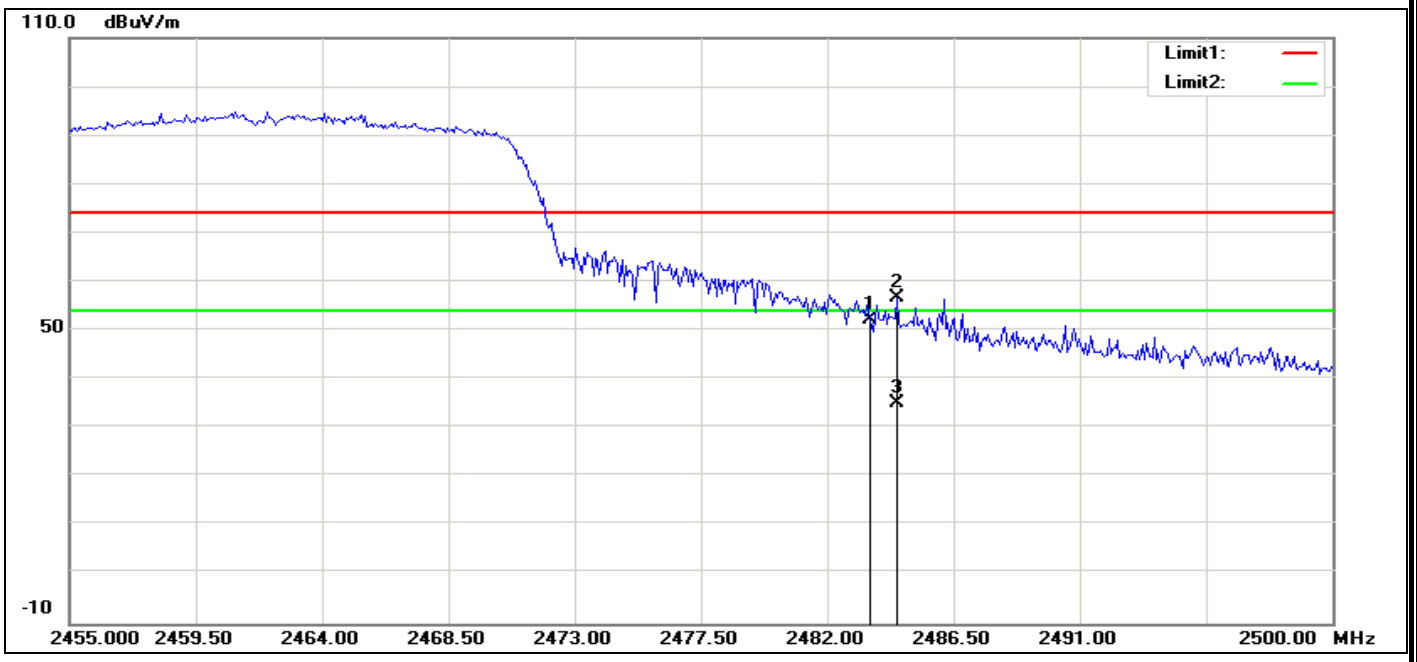
RESTRICTED BANDEDGE (n HT20 Mode, Low Channel,Vertical)



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2390.000	65.04	-14.28	50.76	74.00	-23.24	100	131	peak
2	2390.000	50.02	-14.29	35.73	54.00	-18.27	100	130	AVG

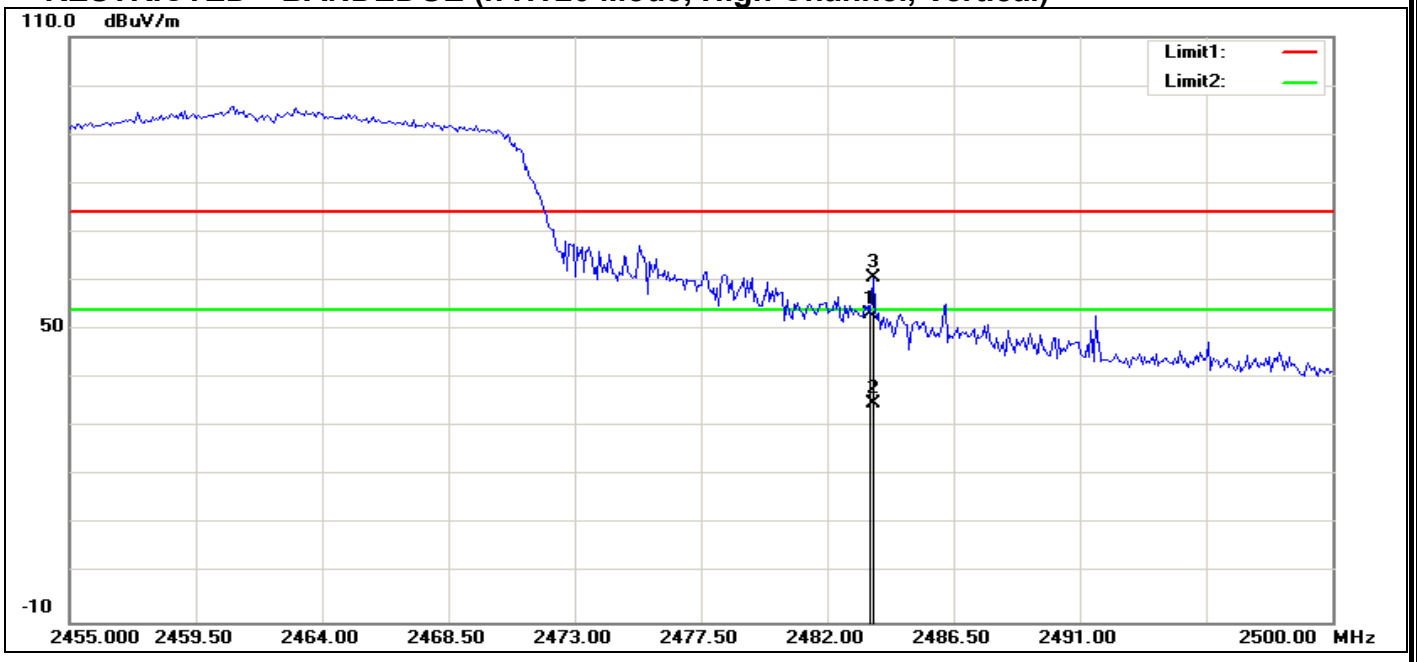
RESTRICTED BANDEDGE (n HT20 Mode, High Channel, Horizontal)

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2483.500	65.95	-13.65	52.30	74.00	-21.70	100	173	peak
2	2484.495	70.33	-13.64	56.69	74.00	-17.31	100	124	peak
3	2484.495	48.70	-13.64	35.06	54.00	-18.94	100	124	AVG

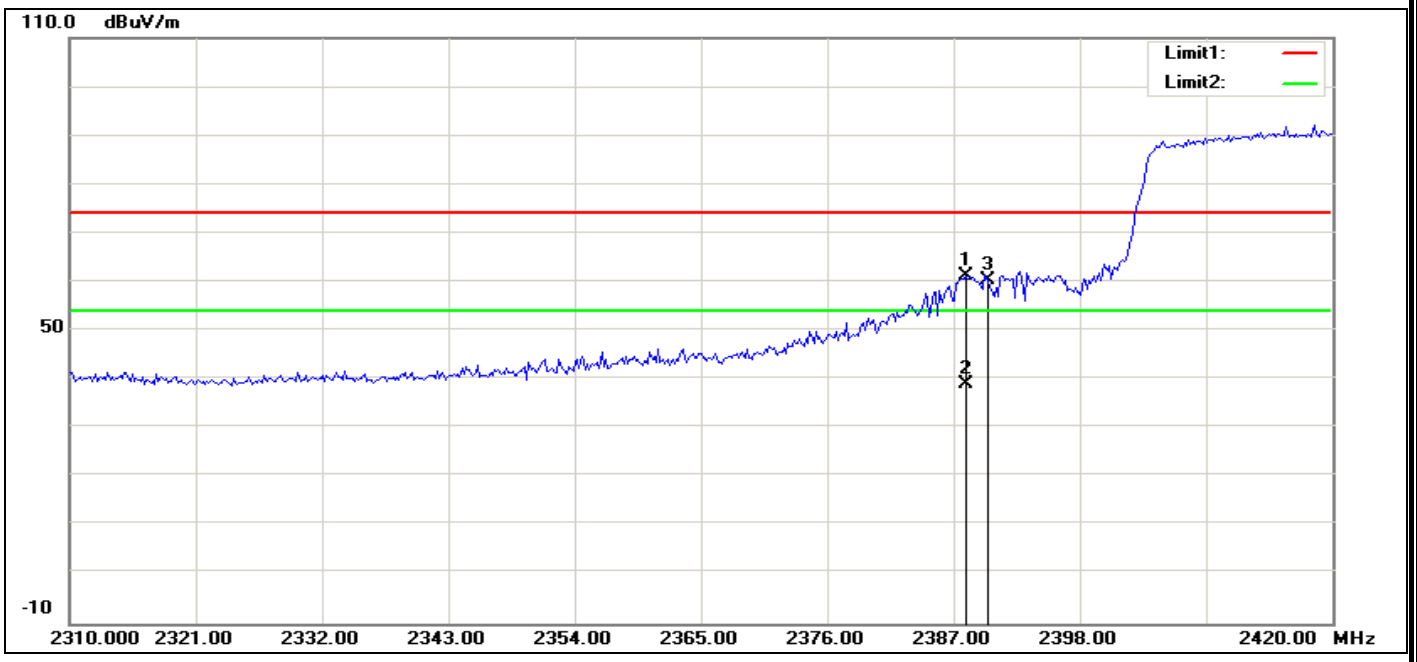
RESTRICTED BANDEDGE (n HT20 Mode, High Channel, Vertical)



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2483.500	66.72	-13.65	53.07	74.00	-20.93	100	129	peak
2	2483.623	48.57	-13.65	34.92	54.00	-19.08	102	90	AVG
3	2483.623	74.18	-13.65	60.53	74.00	-13.47	102	90	peak

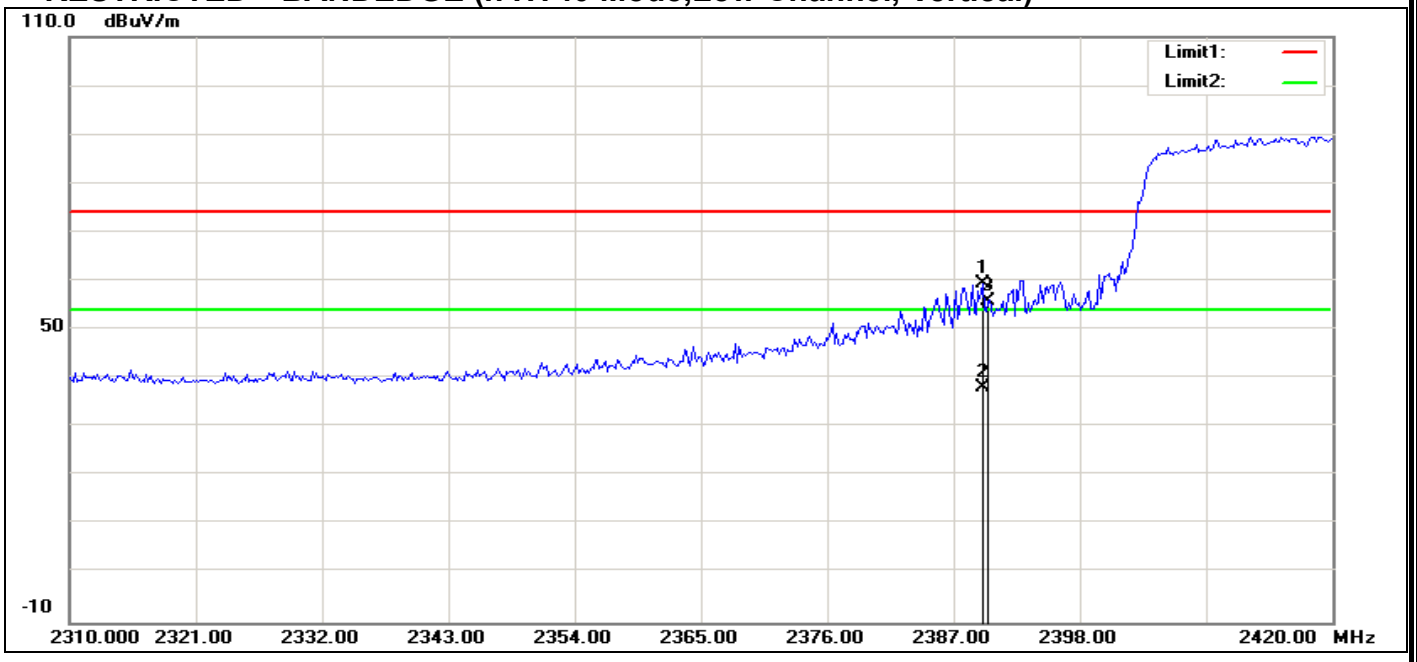
RESTRICTED BANDEDGE (n HT40 Mode, Low Channel, Horizontal)

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2388.093	75.52	-14.29	61.23	74.00	-12.77	100	167	peak
2	2388.093	53.39	-14.29	39.10	54.00	-14.90	102	166	AVG
3	2390.000	74.62	-14.28	60.34	74.00	-13.66	100	137	peak

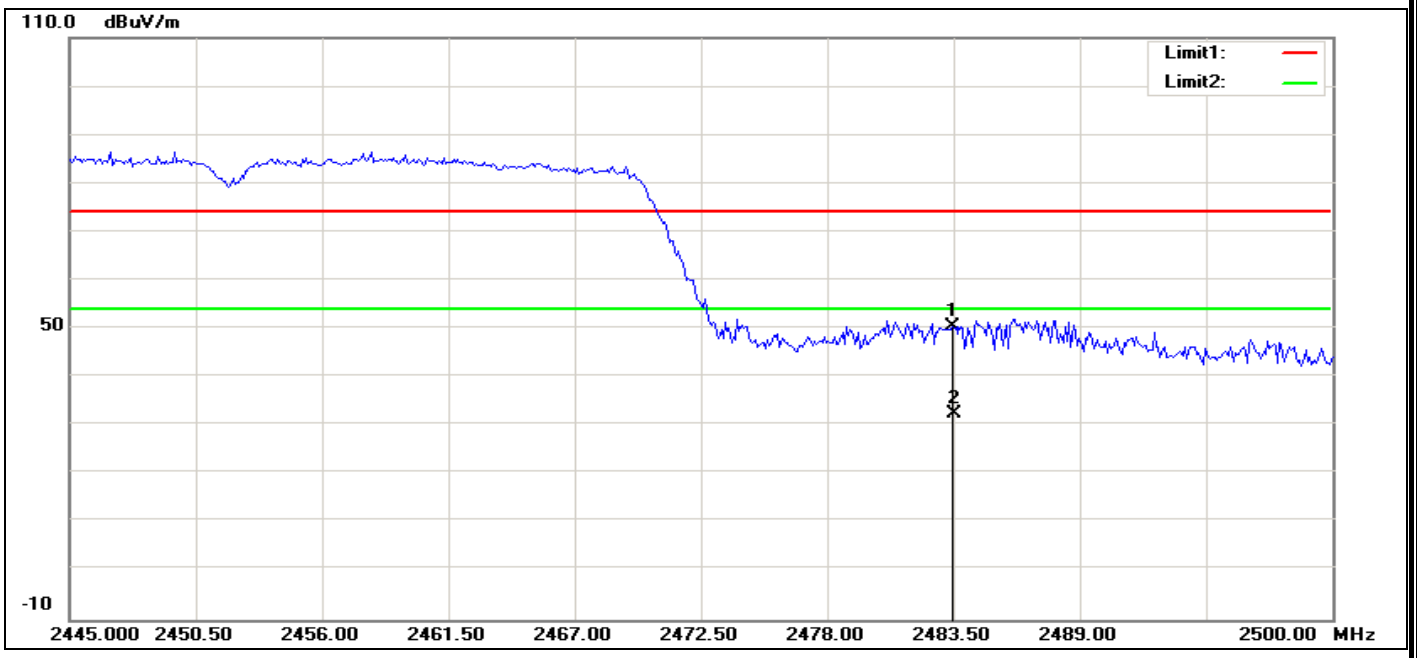
RESTRICTED BANDEDGE (n HT40 Mode,Low Channel, Vertical)



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2389.503	73.62	-14.28	59.34	74.00	-14.66	100	84	peak
2	2389.503	52.53	-14.28	38.25	54.00	-15.75	100	84	AVG
3	2390.000	69.99	-14.28	55.71	74.00	-18.29	100	88	peak

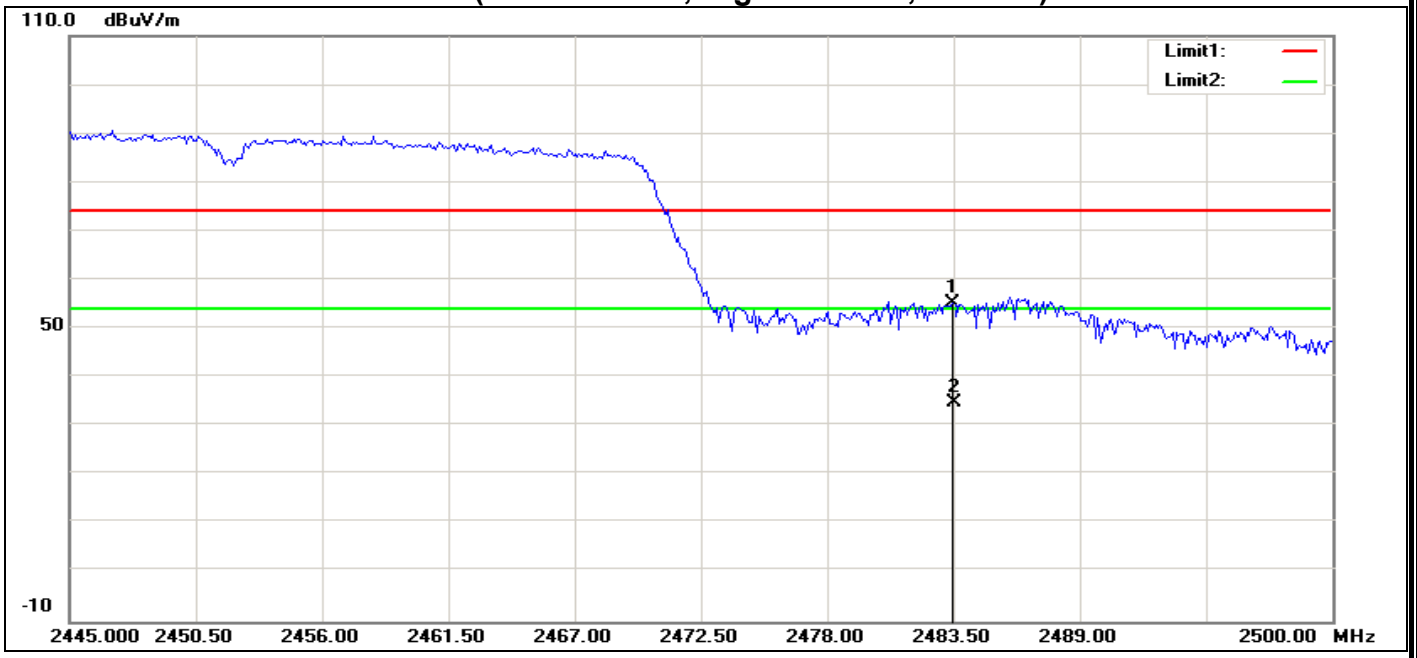
RESTRICTED BANDEDGE (n HT40 Mode, High Channel, Horizontal)

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	2483.500	64.00	-13.65	50.35	74.00	-23.65	100	166	peak
2	2483.500	45.98	-13.65	32.33	54.00	-21.67	100	166	AVG

RESTRICTED BANDEDGE (n HT40 Mode, High Channel, Vertical)



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	2483.500	48.47	-13.65	34.82	54.00	-19.18	100	83	AVG
2	2483.500	68.84	-13.65	55.19	74.00	-18.81	100	84	peak

Below 1GHz

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

Operation Mode:	Normal Link	**Test Date:**	2014-5-7
Temperature:	22°C	**Tested by:**	Blent.Wang
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
46.4900	H	22.42	11.11	33.53	40.00	-6.47	peak
109.5400	H	23.46	13.01	36.47	43.50	-7.03	peak
152.2200	H	20.95	13.52	34.47	43.50	-9.03	peak
204.6000	H	24.53	13.26	37.79	43.50	-5.71	peak
296.7500	H	26.39	14.83	41.22	46.00	-4.78	peak
935.9800	H	13.93	25.30	39.23	46.00	-6.77	peak
34.8500	V	20.11	15.69	35.80	40.00	-4.20	peak
48.4300	V	26.16	9.73	35.89	40.00	-4.11	peak
109.5400	V	23.04	13.01	36.05	43.50	-7.45	peak
287.0500	V	19.95	15.13	35.08	46.00	-10.92	peak
516.9400	V	12.96	20.47	33.43	46.00	-12.57	peak
946.6500	V	14.83	25.66	40.49	46.00	-5.51	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).*

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

Above 1 GHz

Operation Mode: TX / IEEE 802.11b / CH Low **Test Date:** 2014-5-7

Temperature: 22°C **Tested by:** Blent.Wang

Humidity: 48 % RH **Polarity:** Ver. / Hor.

Horizontal

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	4841.346	45.23	-7.86	37.37	74.00	-36.63	100	142	peak
2	7238.782	45.71	-0.68	45.03	74.00	-28.97	100	290	peak

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	4841.346	45.86	-7.86	38.00	74.00	-36.00	100	0	peak
2	7266.026	46.27	-0.77	45.50	74.00	-28.50	100	171	peak

Operation Mode: TX / IEEE 802.11b / CH Mid **Test Date:** 2014-5-7

Temperature: 22°C **Tested by:** Blent.Wang

Humidity: 48 % RH **Polarity:** Ver. / Hor.

Horizontal

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	4868.590	58.43	-7.72	50.71	74.00	-23.29	100	128	peak
2	7483.974	46.48	-0.34	46.14	74.00	-27.86	100	145	peak

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	4868.590	64.67	-7.72	56.95	74.00	-17.05	100	157	peak
2	7483.974	46.89	-0.34	46.55	74.00	-27.45	100	156	peak

Operation Mode: TX / IEEE 802.11b / CH High **Test Date:** 2014-5-7

Temperature: 22°C **Tested by:** Blent.Wang

Humidity: 48 % RH **Polarity:** Ver. / Hor.

Horizontal

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	4950.320	45.40	-7.58	37.82	74.00	-36.18	100	237	peak
2	7402.244	44.68	-0.66	44.02	74.00	-29.98	100	169	peak

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	4923.077	45.02	-7.57	37.45	74.00	-36.55	100	197	peak
2	7375.000	43.59	-0.72	42.87	74.00	-31.13	100	258	peak

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

Operation Mode: TX / IEEE 802.11g / CH Low **Test Date:** 2014-5-7

Temperature: 24°C **Tested by:** Blent.Wang

Humidity: 48 % RH **Polarity:** Ver. / Hor.

Horizontal

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	4895.833	44.41	-7.58	36.83	74.00	-37.17	100	29	peak
2	7266.026	43.01	-0.77	42.24	74.00	-31.76	100	357	peak

Vertical

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	4868.590	49.09	-7.72	41.37	74.00	-32.63	100	109	peak
2	7211.538	44.17	-0.59	43.58	74.00	-30.42	100	77	peak

Operation Mode: TX / IEEE 802.11g / CH Mid **Test Date:** 2014-5-7

Temperature: 24°C **Tested by:** Blent.Wang

Humidity: 48 % RH **Polarity:** Ver. / Hor.

Horizontal

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	4868.590	56.75	-7.72	49.03	74.00	-24.97	100	300	peak
2	7701.923	46.60	0.67	47.27	74.00	-26.73	100	264	peak

Vertical

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	4868.833	56.21	-7.72	48.49	74.00	-25.51	100	139	peak
2	7266.026	45.42	-0.77	44.65	74.00	-29.35	100	351	peak

Operation Mode: TX / IEEE 802.11g / CH High **Test Date:** 2014-5-7

Temperature: 24°C **Tested by:** Blent.Wang

Humidity: 48 % RH **Polarity:** Ver. / Hor.

Horizontal

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	4895.833	47.99	-7.58	40.41	74.00	-33.59	100	307	peak
2	7402.244	44.80	-0.66	44.14	74.00	-29.86	100	93	peak

Vertical

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	4895.833	51.18	-7.58	43.60	74.00	-30.40	100	108	peak
2	7375.000	43.83	-0.72	43.11	74.00	-30.89	100	55	peak

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

Operation Mode: TX / IEEE 802.11n HT20 / CH Low **Test Date:** 2014-5-7

Temperature: 22°C **Tested by:** Blent.Wang

Humidity: 48 % RH **Polarity:** Ver. / Hor.

Horizontal

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	4841.346	45.08	-7.86	37.22	74.00	-36.78	100	352	peak
2	7238.782	43.75	-0.68	43.07	74.00	-30.93	100	113	peak

Vertical

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	4868.590	44.49	-7.72	36.77	74.00	-37.23	100	97	peak
2	7266.026	43.99	-0.77	43.22	74.00	-30.78	100	121	peak

Operation Mode: TX / IEEE 802.11n HT20 / CH Mid **Test Date:** 2014-5-7

Temperature: 22°C **Tested by:** Blent.Wang

Humidity: 48 % RH **Polarity:** Ver. / Hor.

Horizontal

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	4868.103	52.62	-7.72	44.90	74.00	-29.10	100	159	peak
2	7483.974	46.44	-0.34	46.10	74.00	-27.90	100	281	peak

Vertical

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	4868.103	58.38	-7.72	50.66	74.00	-23.34	100	165	peak
2	7048.077	46.72	-1.16	45.56	74.00	-28.44	187	0	peak

Operation Mode: TX / IEEE 802.11n HT20 / CH High **Test Date:** 2014-5-7

Temperature: 22°C **Tested by:** Blent.Wang

Humidity: 48 % RH **Polarity:** Ver. / Hor.

Horizontal

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	4923.077	44.41	-7.57	36.84	74.00	-37.16	100	351	peak
2	7375.000	43.94	-0.72	43.22	74.00	-30.78	100	190	peak

Vertical

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	4923.077	42.84	-7.57	35.27	74.00	-38.73	100	24	peak
2	7375.000	43.12	-0.72	42.40	74.00	-31.60	100	49	peak

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

Operation Mode: TX / IEEE 802.11n HT40 / CH Low **Test Date:** 2014-5-7

Temperature: 24°C **Tested by:** Blent.Wang

Humidity: 48 % RH **Polarity:** Ver. / Hor.

Horizontal

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	4868.590	44.28	-7.72	36.56	74.00	-37.44	100	58	peak
2	7266.026	43.01	-0.77	42.24	74.00	-31.76	100	130	peak

Vertical

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	4868.590	44.13	-7.72	36.41	74.00	-37.59	100	165	peak
2	7293.269	43.37	-0.85	42.52	74.00	-31.48	100	181	peak

Operation Mode: TX / IEEE 802.11n HT40 / CH Mid **Test Date:** 2014-5-7

Temperature: 24°C **Tested by:** Blent.Wang

Humidity: 48 % RH **Polarity:** Ver. / Hor.

Horizontal

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	4868.590	50.46	-7.72	42.74	74.00	-31.26	100	360	peak
2	7483.974	46.84	-0.34	46.50	74.00	-27.50	100	133	peak

Vertical

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	4868.590	55.43	-7.72	47.71	74.00	-26.29	100	172	peak
2	7402.244	46.71	-0.66	46.05	74.00	-27.95	100	106	peak

Operation Mode: TX / IEEE 802.11n HT40 / CH High **Test Date:** 2014-5-7

Temperature: 24°C **Tested by:** Blent.Wang

Humidity: 48 % RH **Polarity:** Ver. / Hor.

Horizontal

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	4923.077	43.30	-7.57	35.73	74.00	-38.27	100	299	peak
2	7347.756	43.83	-0.77	43.06	74.00	-30.94	100	200	peak

Vertical

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	4923.077	43.22	-7.57	35.65	74.00	-38.35	100	92	peak
2	7347.756	43.22	-0.77	42.45	74.00	-31.55	100	24	peak

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

7.6 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 μH/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

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

** 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

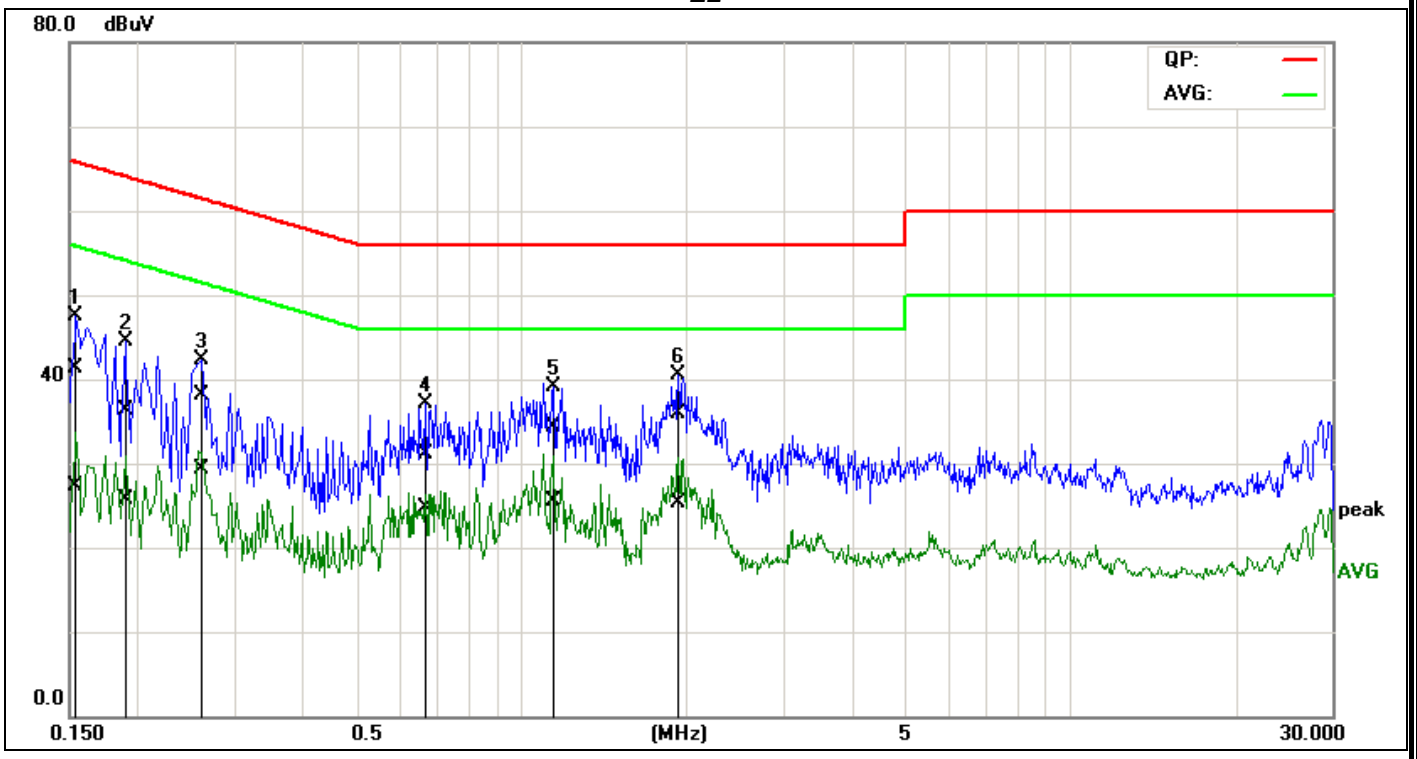
The initial step in collecting conducted data is a spectrum analyzer peak scan of the measurement range. Significant peaks are then marked as shown on the following data page, and these signals are then quasi-peaked.

Test Data

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

Job No.:	C140425R01-RPW	Date:	2014-5-13
Standard:	FCC Class B	Time:	15:32:29
Test item:	Conduction test	Temp.(C)/Hum.(%):	22(C)/48%
Line:	L1	Test By:	Blent.Wang
Model:	D350	Test Voltage:	AC 120V/60Hz

L1



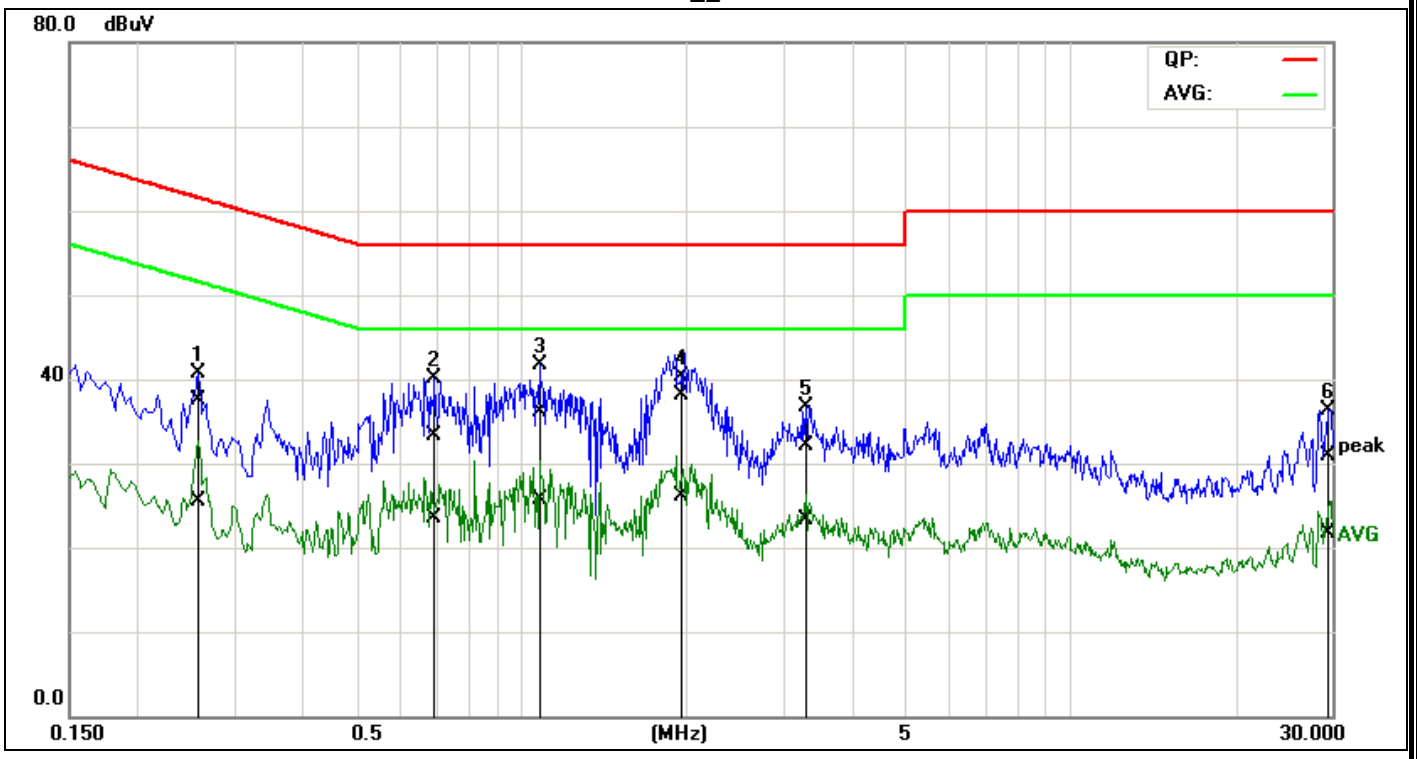
No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1	0.1536	21.59	7.53	19.79	41.38	27.32	65.80	55.80	-24.42	-28.48	Pass
2	0.1863	16.72	5.96	19.66	36.38	25.62	64.20	54.20	-27.82	-28.58	Pass
3*	0.2616	18.41	9.73	19.65	38.06	29.38	61.38	51.38	-23.32	-22.00	Pass
4	0.6734	11.29	4.97	19.83	31.12	24.80	56.00	46.00	-24.88	-21.20	Pass
5	1.1338	14.44	5.70	19.85	34.29	25.55	56.00	46.00	-21.71	-20.45	Pass
6	1.9201	15.99	5.41	19.92	35.91	25.33	56.00	46.00	-20.09	-20.67	Pass

Note: 1. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

Job No.:	C140425R01-RPW	Date:	2014-5-13
Standard:	FCC Class B	Time:	15:36:59
Test item:	Conduction test	Temp.(C)/Hum.(%):	22(C)/48%
Line:	L2	Test By:	Blent.Wang
Model:	D350	Test Voltage:	AC 120V/60Hz

L2



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1	0.2589	17.78	5.82	19.68	37.46	25.50	61.47	51.47	-24.01	-25.97	Pass
2*	0.6925	13.56	3.73	19.84	33.40	23.57	56.00	46.00	-22.60	-22.43	Pass
3	1.0782	16.23	5.83	19.83	36.06	25.66	56.00	46.00	-19.94	-20.34	Pass
4	1.9444	18.21	6.15	19.96	38.17	26.11	56.00	46.00	-17.83	-19.89	Pass
5	3.2924	12.02	3.16	20.11	32.13	23.27	56.00	46.00	-23.87	-22.73	Pass
6	29.6373	9.42	0.29	21.41	30.83	21.70	60.00	50.00	-29.17	-28.30	Pass

Note: 1. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).

END OF REPORT

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.