FCC 47 CFR PART 15 SUBPART C

TEST REPORT

For

Product Name: Wireless Router
Brand Name: UTT
Model No.: AC650W
Series Model: A650W, AC651W, AC652W,AC653W, AC655W, AC656W
FCC ID: XPF-REG03-UTT
Test Report Number:
C140516R01-RPW

Issued for

Shanghai UTT Technologies Co.,Ltd
Room 301,No.9 Building,No.518,Xinzhuan Rd,Songjiang District,Shanghai,China

Issued by

Compliance Certification Services Inc.
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TESTING CERT #2541.01

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1. TEST RESULT CERTIFICATION

Product Name:	Wireless Router
Trade Name:	UTT
Model Name.:	AC650W
Series Model:	A650W, AC651W,AC652W, AC653W, AC655W, AC656W
Applicant Discrepancy:	Initial
Device Category:	Mobile Device
Date of Test:	June 4, 2014 ~ June 25, 2014
Applicant:	**Shanghai UTT Technologies Co.,Ltd** Room 301,No.9 Building,No.518,Xinzhuan Rd,Songjiang District,Shanghai,China
Manufacturer:	**Shanghai UTT Technologies Co.,Ltd** Room 301,No.9 Building,No.518,Xinzhuan Rd,Songjiang District,Shanghai,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

Jeff.Fang
RF Manager
Compliance Certification Service Inc.

Tested by:

James.Yan

James.Yan
Test Engineer
Compliance Certification Service Inc.

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2. EUT DESCRIPTION

Product Name:	Wireless Router
Brand Name:	UTT
Model Name:	AC650W
Series Model:	A650W, AC651W,AC652W, AC653W, AC655W, AC656W
Model Discrepancy:	Only for market segment
Power Adapter Power Rating :	Model:FJ-SW1201000DC Input: AC 100V~240V 50/60Hz 0.35A Output: DC 12V 1000mA
Frequency Range:	2.4G:2412MHz-2462MHz 5 G:5725MHz-5850MHz
Transmit Power:	IEEE 802.11b mode: 24.51 dBm IEEE 802.11g mode: 20.79 dBm IEEE 802.11n HT20 mode: 21.14 dBm IEEE 802.11n HT40 mode: 19.74 dBm IEEE 802.11a mode: 20.65 dBm IEEE 802.11an HT20 mode: 20.09 dBm IEEE 802.11an HT40 mode: 18.01 dBm
Modulation Technique:	802.11b mode: DSSS (1,2,5.5 and 11 Mbps) 802.11g mode: DSSS /OFDM (6,9,12,18,24,36,48 and 54 Mbps) 802.11n HT20 mode: OFDM (6.5,13,19.5,26,39,52,58.5 and 65 Mbps) 802.11n HT40 mode: OFDM (13.5,27,40.5,54,81,108,121.5 and 135 Mbps) 802.11a mode: OFDM (6,9,12,18,24,36,48 and 54 Mbps) 802.11an Standard-20 MHz Channel mode: OFDM (6.5,13,19.5,26,39,52,58.5 and 65 Mbps) 802.11an Wide-40 MHz Channel mode: OFDM (13.5,27,40.5,54,81,108,121.5 and 135 Mbps)
Number of Channels:	IEEE 802.11b/g/n HT20 mode: 11 Channels IEEE 802.11n HT40 mode: 7 Channels IEEE 802.11a mode: 5 Channels 802.11an 20MHz/ac 20MHz mode: 5 Channels 802.11an 40MHz/ac 40MHz mode: 3 Channels
Antenna Specification:	Dipole antennas for 2.4GHz Gain 5 dBi and Dipole antennas for 5 GHz Gain 5 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: XPF-REG03-UTT_*** filing to comply with Section 15.207, 15.209 and 15.247 of the FCC Part 15, Subpart C Rules.

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3. TEST METHODOLOGY

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

3.4.FCC PART 15.205 RESTRICTED BANDS OF OPERATIONS

Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the

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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

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 two antennas simultaneously working at b/g/n mode, so 2x2 configuration was used for all testing in this report.

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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 PPSD 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 11Mbps data rate was chosen for full testing.

IEEE802.11g mode:

Channel Low (2412MHz)

Channel Mid (2437MHz)

Channel High (2462MHz) with 54Mbps data rate was chosen for full testing.

Draft 802.11gn Standard-20 MHz Channel mode:

Channel Low (2412MHz)

Channel Mid (2437MHz)

Channel High (2462MHz) with 65Mbps data rate was chosen for full testing.

Draft 802.11gn Wide-40 MHz Channel mode:

Channel Low (2422MHz)

Channel Mid (2437MHz)

Channel High (2452MHz) with 135Mbps data rate was chosen for full testing.

Draft 802.11a mode:

Channel Low (5745MHz)

Channel Mid (5785MHz)

Channel High (5825MHz) with 54Mbps data rate was chosen for full testing

Draft 802.11an Standard-20 MHz Channel mode:

Channel Low (5745MHz)

Channel Mid (5785MHz)

Channel High (5825MHz) with MCS9 data rate was chosen for full testing.

Draft 802.11gan Wide-40 MHz Channel mode:

Channel Low (5755MHz)

Channel High (5795MHz) with MCS9 data rate was chosen for full testing.

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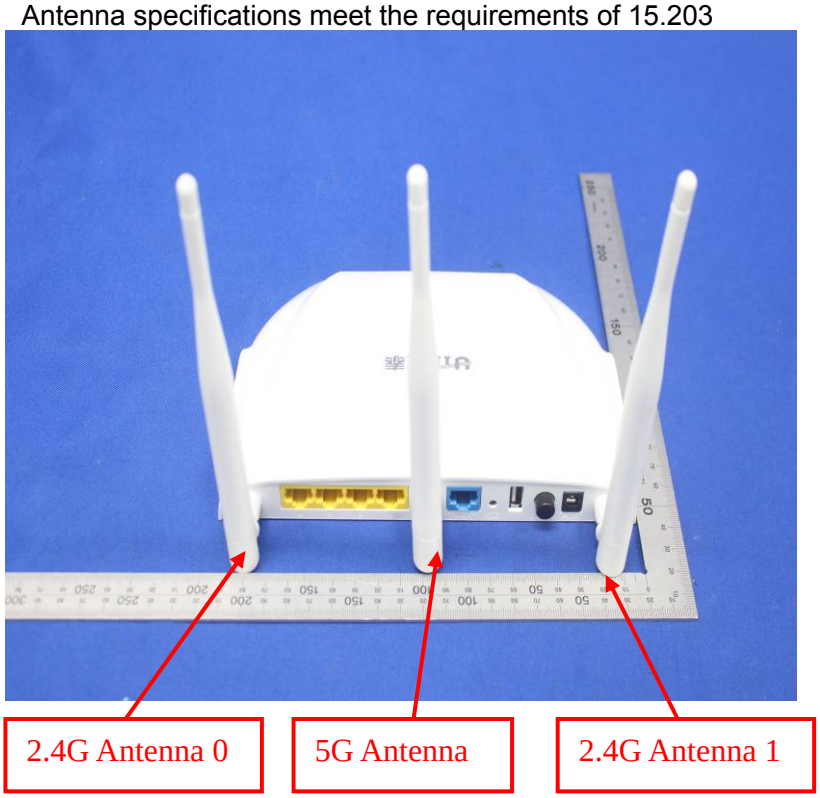
3.6.ANTENNA DESCRIPTION

Antenna specifications meet the requirements of 15.203



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	2015-4-9
DETECTOR NEGATIVE	Agilent	8473B	MY42240176	2015-5-11
OSCILLOSCOPE	Agilent	DSO6104A	MY44002585	2015-3-16
Power Sensor	Anritsu	MA2411A	0917072	2015-6-3
Power Meter	Aglient	U2021XA	MY53120005	2014-9-13
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			

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977 Chamber				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
Spectrum Analyzer	Agilent	E4446A	MY44020154	2014-11-13
EMI Test Receiver	R&S	ESCI	101378	2015-1-22
Pre-Amplfier	MINI	ZFL-1000VH2	d041703	2015-1-22
Pre-Amplfier	Miteq	JS41-00101800-32-10P	1675713	2015-1-22
Bilog Antenna	Sunol	JB1	A062604	2015-3-6
Horn-antenna	SCHWARZBECK	BBHA9120D	D:266	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			

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	N.C.R
LISN (EUT)	FCC	FCC-LISN-50/250-50-2-02	05012	2015-3-16
Pulse LIMITER	R&S	ESH3-Z2	100524	2014-9-25
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

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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.

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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 :2009); 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

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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	DELL	E5430	CN8YYW1	N/A

Remark:

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

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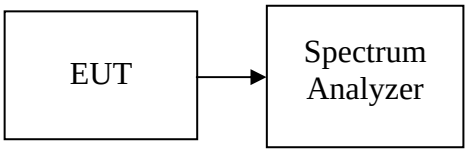
4. FCC PART 15.247 REQUIREMENTS

4.1.6DB BANDWIDTH

LIMIT

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

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 /Chain 0

Channel	Frequency (MHz)	Bandwidth (MHz)	Limit (kHz)	Result
Low	2412	10.090	>500	PASS
Mid	2437	10.083		PASS
High	2462	10.123		PASS

IEEE 802.11b mode /Chain 1

Channel	Frequency (MHz)	Bandwidth (MHz)	Limit (kHz)	Result
Low	2412	10.098	>500	PASS
Mid	2437	9.639		PASS
High	2462	10.077		PASS

IEEE 802.11g mode /Chain 0

Channel	Frequency (MHz)	Bandwidth (MHz)	Limit (kHz)	Result
Low	2412	16.370	>500	PASS
Mid	2437	16.399		PASS
High	2462	16.442		PASS

IEEE 802.11g mode /Chain 1

Channel	Frequency (MHz)	Bandwidth (MHz)	Limit (kHz)	Result
Low	2412	16.392	>500	PASS
Mid	2437	16.447		PASS
High	2462	16.415		PASS

IEEE 802.11n Standard-20 MHz Channel mode / Chain 0

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Channel	Frequency (MHz)	Bandwidth (MHz)	Limit (kHz)	Result
Low	2412	17.600	>500	PASS
Mid	2437	17.632		PASS
High	2462	17.630		PASS

IEEE 802.11n Standard-20 MHz Channel mode / Chain 1

Channel	Frequency (MHz)	Bandwidth (MHz)	Limit (kHz)	Result
Low	2412	17.601	>500	PASS
Mid	2437	16.967		PASS
High	2462	17.236		PASS

IEEE 802.11n wide-40 MHz Channel mode / Chain 0

Channel	Frequency (MHz)	Bandwidth (MHz)	Limit (kHz)	Result
Low	2422	36.161	>500	PASS
Mid	2437	36.087		PASS
High	2452	35.855		PASS

IEEE 802.11n wide-40 MHz Channel mode / Chain 1

Channel	Frequency (MHz)	Bandwidth (MHz)	Limit (kHz)	Result
Low	2422	36.157	>500	PASS
Mid	2437	35.816		PASS
High	2452	35.825		PASS

IEEE 802.11a mode

Channel	Frequency (MHz)	Bandwidth (B) (MHz)	Limit (kHz)	Result
Low	5745	16.398	500	PASS
Mid	5785	16.421		PASS
High	5825	16.509		PASS

IEEE 802.11an Standard-20 MHz Channel mode

Channel	Frequency (MHz)	Bandwidth (MHz)	Limit (kHz)	Result
Low	5745	17.585	>500	PASS
Mid	5785	17.702		PASS
High	5825	17.736		PASS

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IEEE 802.11an Standard -40 MHz Channel mode

Channel	Frequency (MHz)	Bandwidth (MHz)	Limit (kHz)	Result
Low	5755	36.342	>500	PASS
High	5795	36.458		PASS

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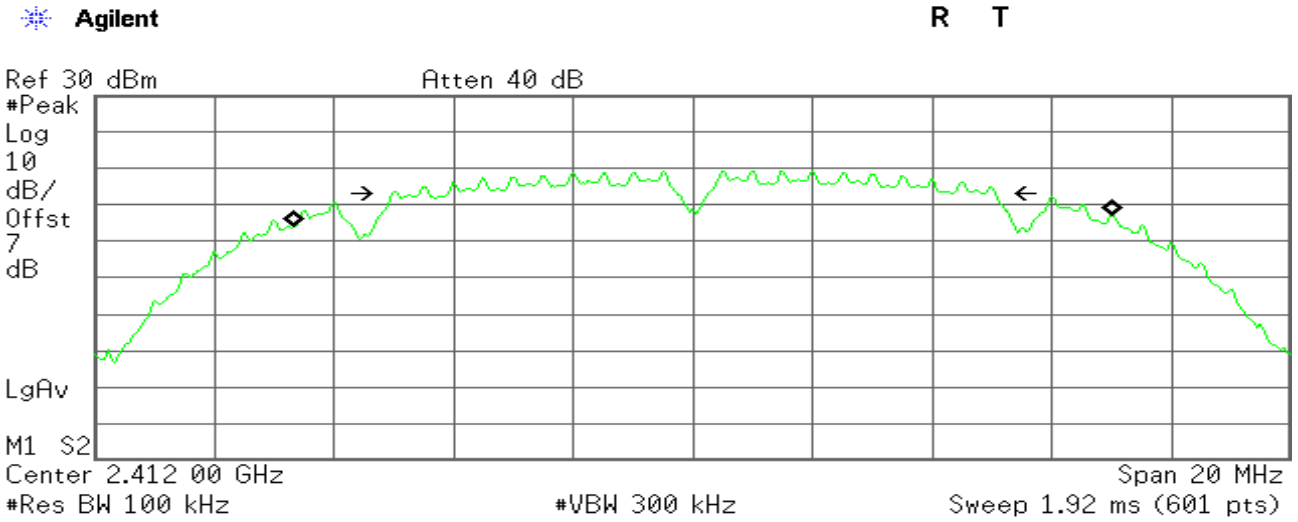
Test Plot

IEEE 802.11b MODE /Chain 0

6dB Bandwidth (CH Low)

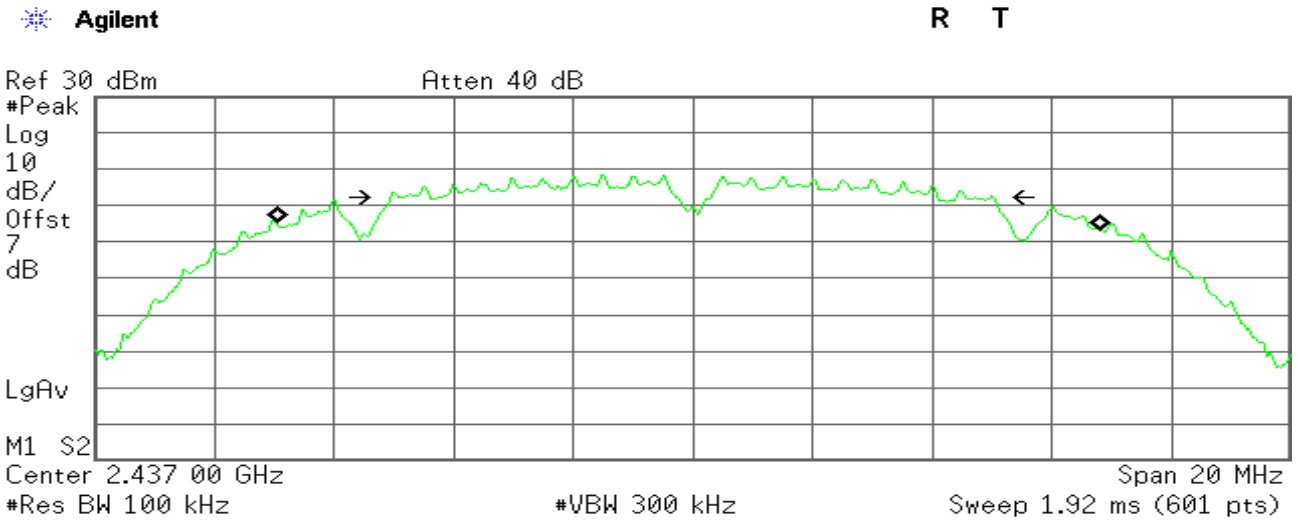


Occupied Bandwidth
13.6666 MHz

Occ BW % Pwr 99.00 %
x dB -6.00 dB

Transmit Freq Error 158.749 kHz
x dB Bandwidth 10.090 MHz

6dB Bandwidth (CH Mid)



Occupied Bandwidth
13.7527 MHz

Occ BW % Pwr 99.00 %
x dB -6.00 dB

Transmit Freq Error -71.612 kHz
x dB Bandwidth 10.083 MHz

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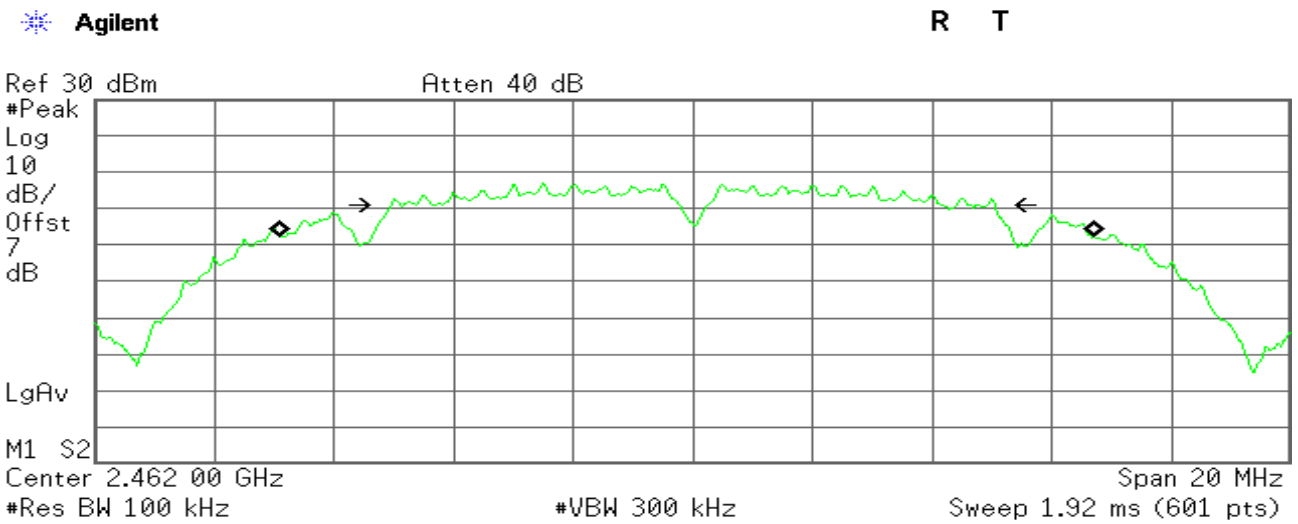
6dB Bandwidth (CH High)



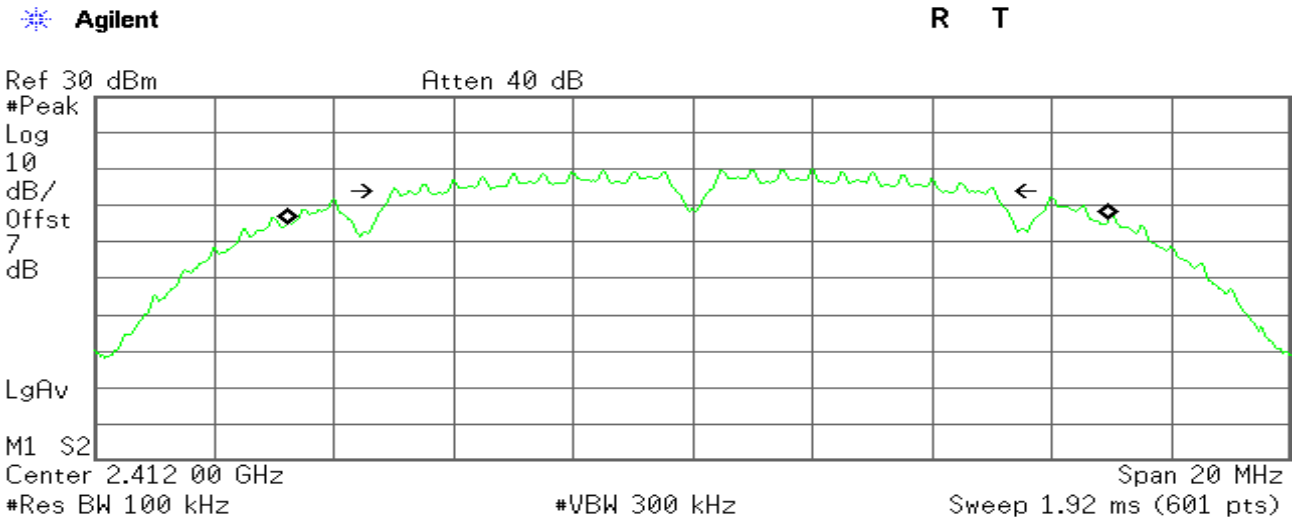
Occupied Bandwidth
13.6131 MHz

Occ BW % Pwr 99.00 %
x dB -6.00 dB

Transmit Freq Error -92.591 kHz
x dB Bandwidth 10.123 MHz

IEEE 802.11b MODE /Chain 1

6dB Bandwidth (CH Low)



Occupied Bandwidth
13.7222 MHz

Occ BW % Pwr 99.00 %
x dB -6.00 dB

Transmit Freq Error 82.328 kHz
x dB Bandwidth 10.098 MHz

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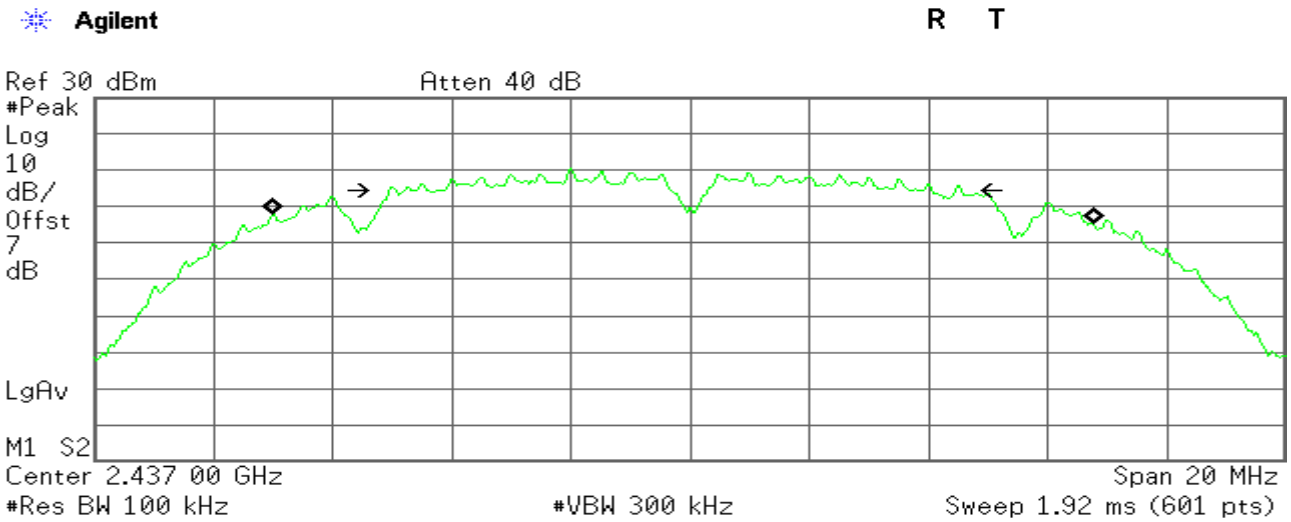
6dB Bandwidth (CH Mid)

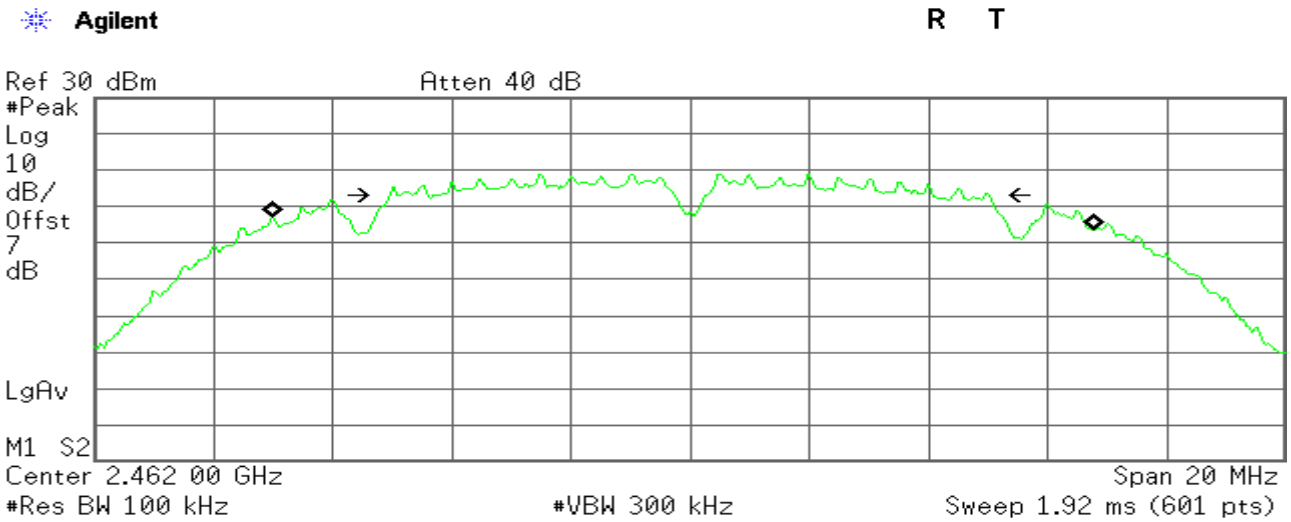


Occupied Bandwidth
13.7503 MHz

Occ BW % Pwr 99.00 %
x dB -6.00 dB

Transmit Freq Error -122.279 kHz
x dB Bandwidth 9.639 MHz

6dB Bandwidth (CH High)



Occupied Bandwidth
13.7764 MHz

Occ BW % Pwr 99.00 %
x dB -6.00 dB

Transmit Freq Error -121.140 kHz
x dB Bandwidth 10.077 MHz

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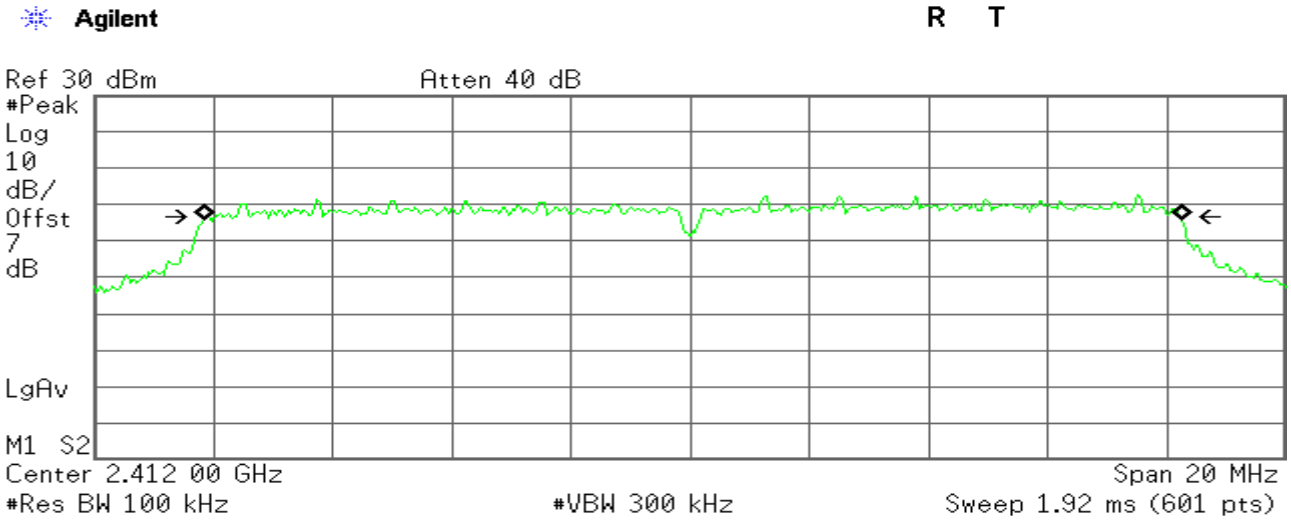
IEEE 802.11g MODE /Chain 0

6dB Bandwidth (CH Low)

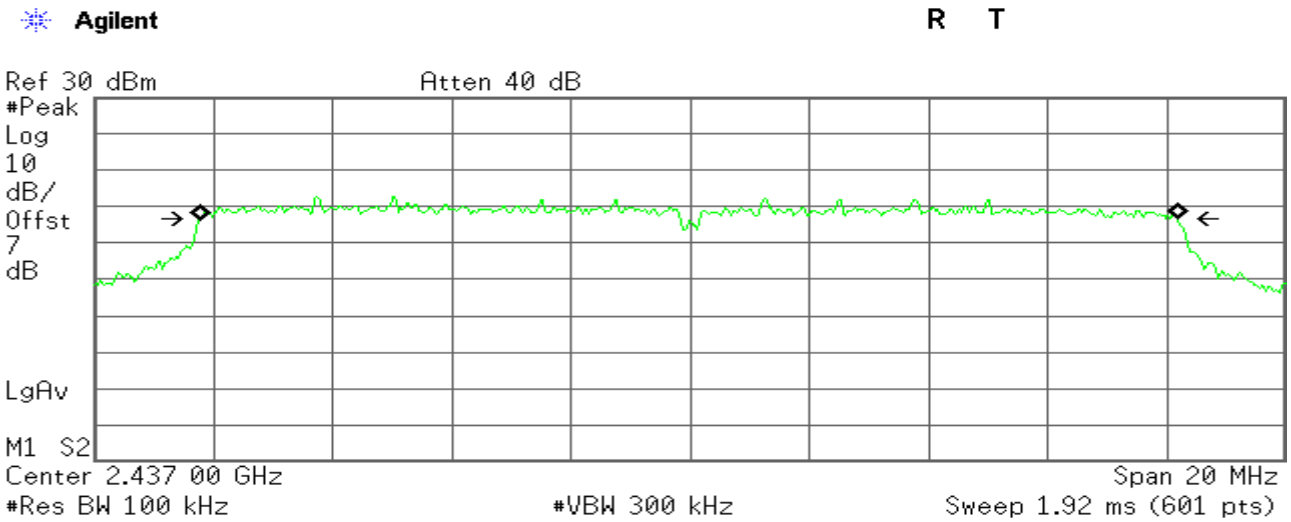


Occupied Bandwidth
16.4273 MHz

Occ BW % Pwr 99.00 %
x dB -6.00 dB

Transmit Freq Error 40.223 kHz
x dB Bandwidth 16.370 MHz

6dB Bandwidth (CH Mid)



Occupied Bandwidth
16.4421 MHz

Occ BW % Pwr 99.00 %
x dB -6.00 dB

Transmit Freq Error -24.110 kHz
x dB Bandwidth 16.399 MHz

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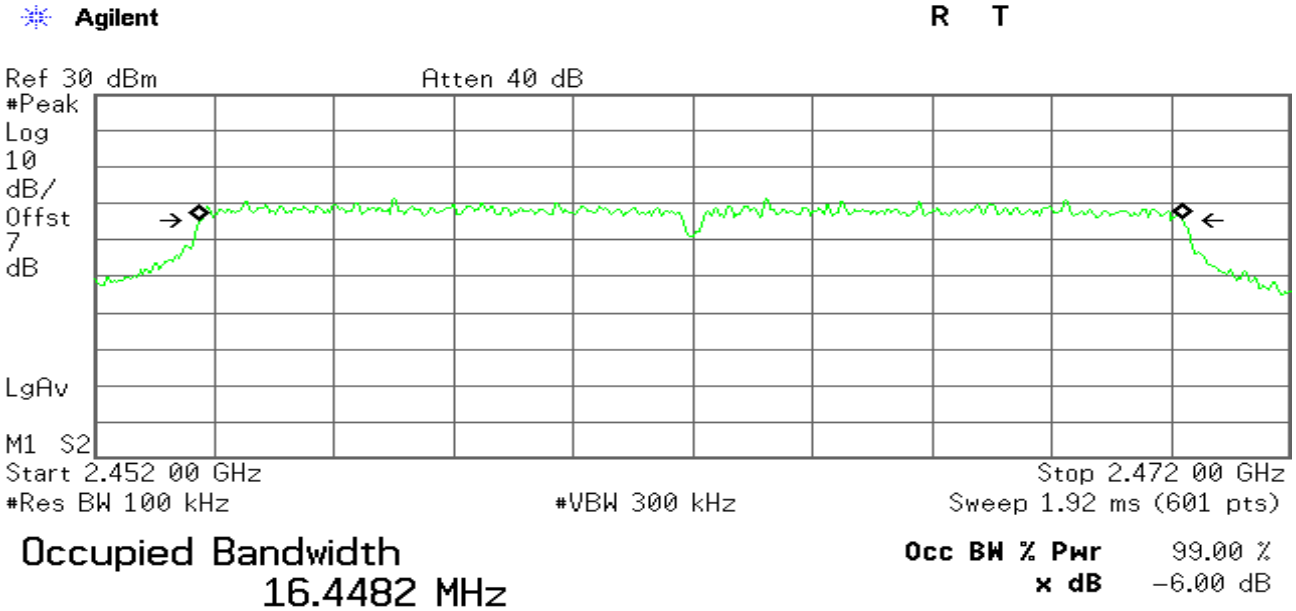
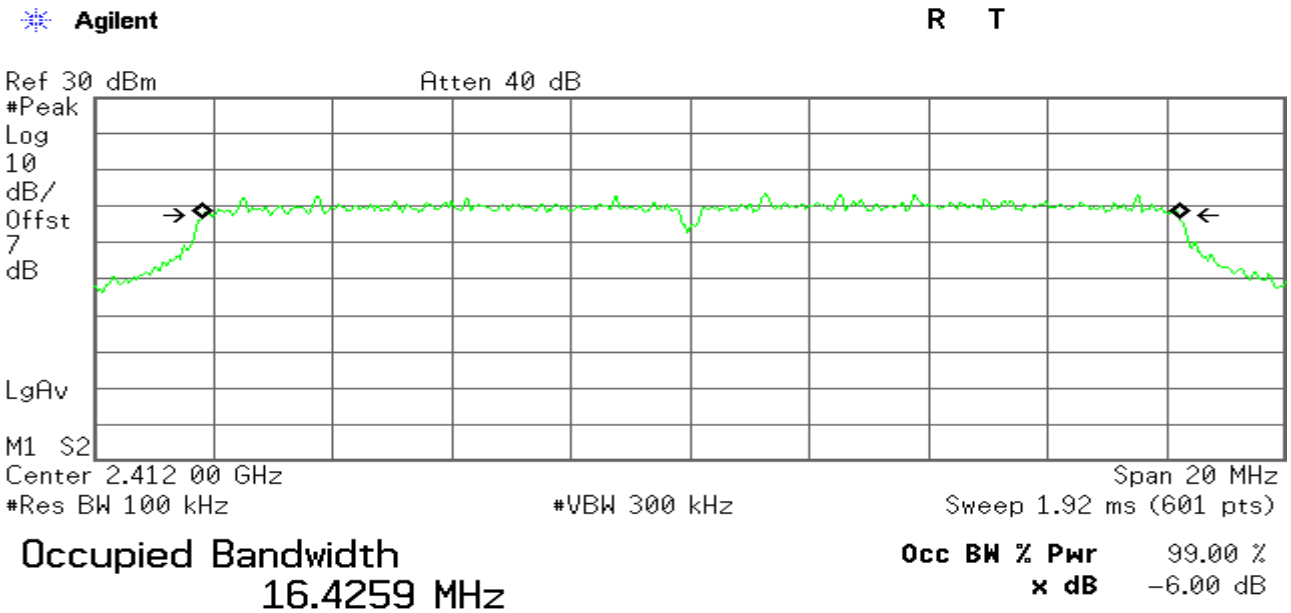
6dB Bandwidth (CH High)



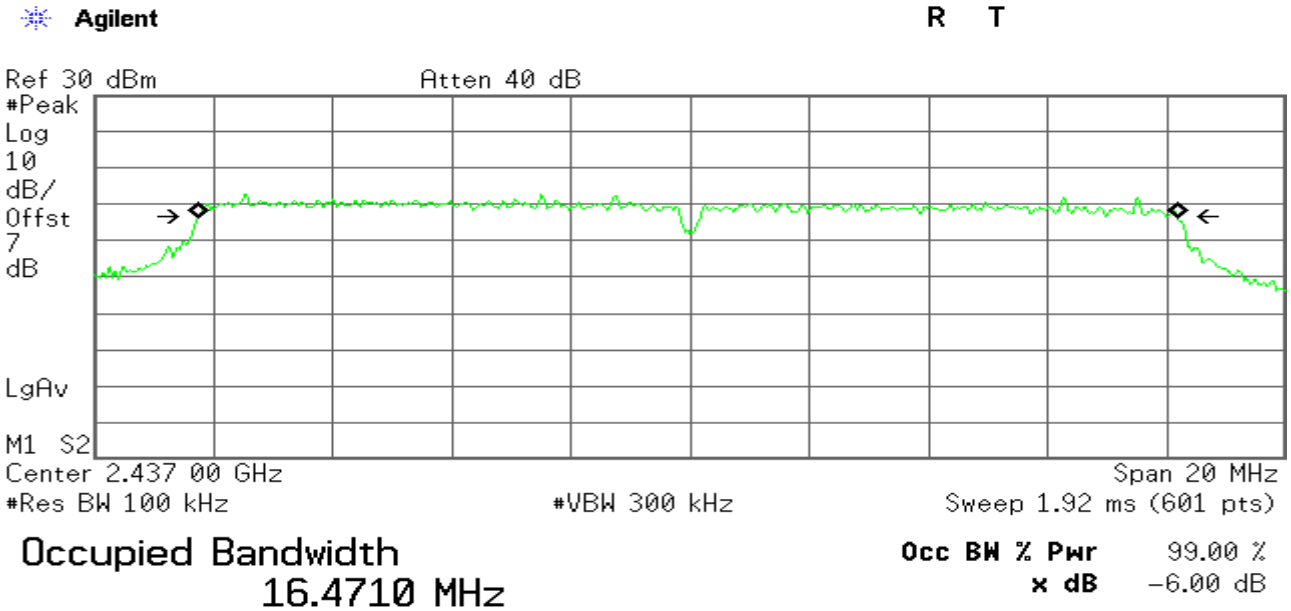
IEEE 802.11g MODE /Chain 1

6dB Bandwidth (CH Low)

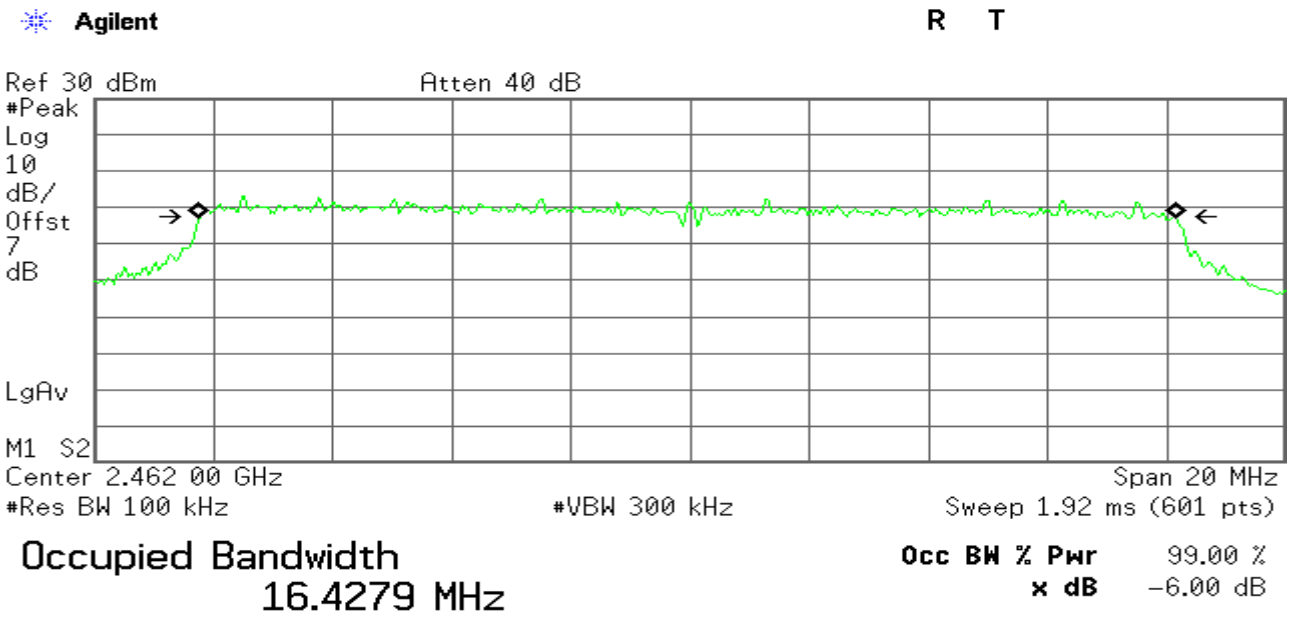


This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

6dB Bandwidth (CH Mid)



6dB Bandwidth (CH High)



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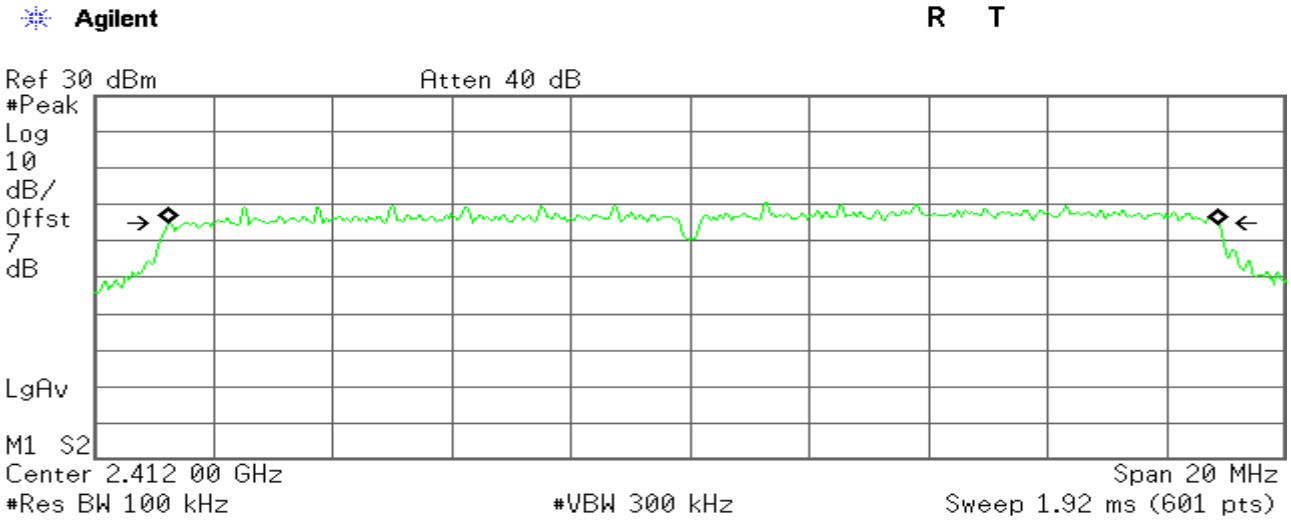
IEEE 802.11n Standard-20 MHz Channel mode / Chain 0

6dB Bandwidth (CH Low)

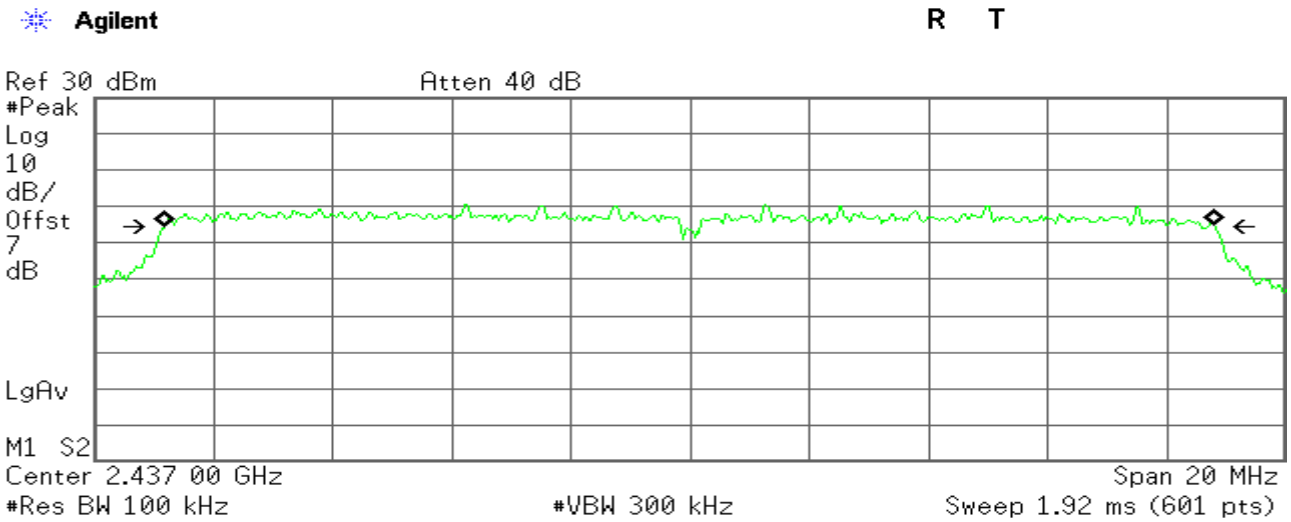


Occupied Bandwidth
17.6070 MHz

Occ BW % Pwr 99.00 %
x dB -6.00 dB

Transmit Freq Error 49.532 kHz
x dB Bandwidth 17.600 MHz

6dB Bandwidth (CH Mid)



Occupied Bandwidth
17.6159 MHz

Occ BW % Pwr 99.00 %
x dB -6.00 dB

Transmit Freq Error -16.524 kHz
x dB Bandwidth 17.632 MHz

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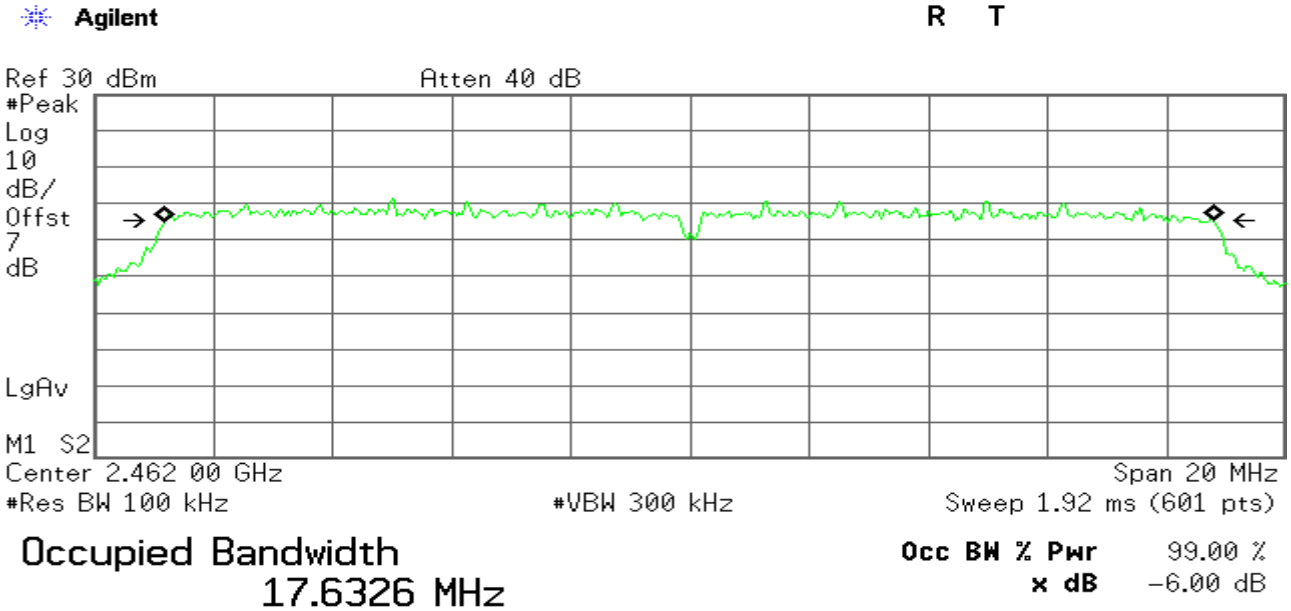
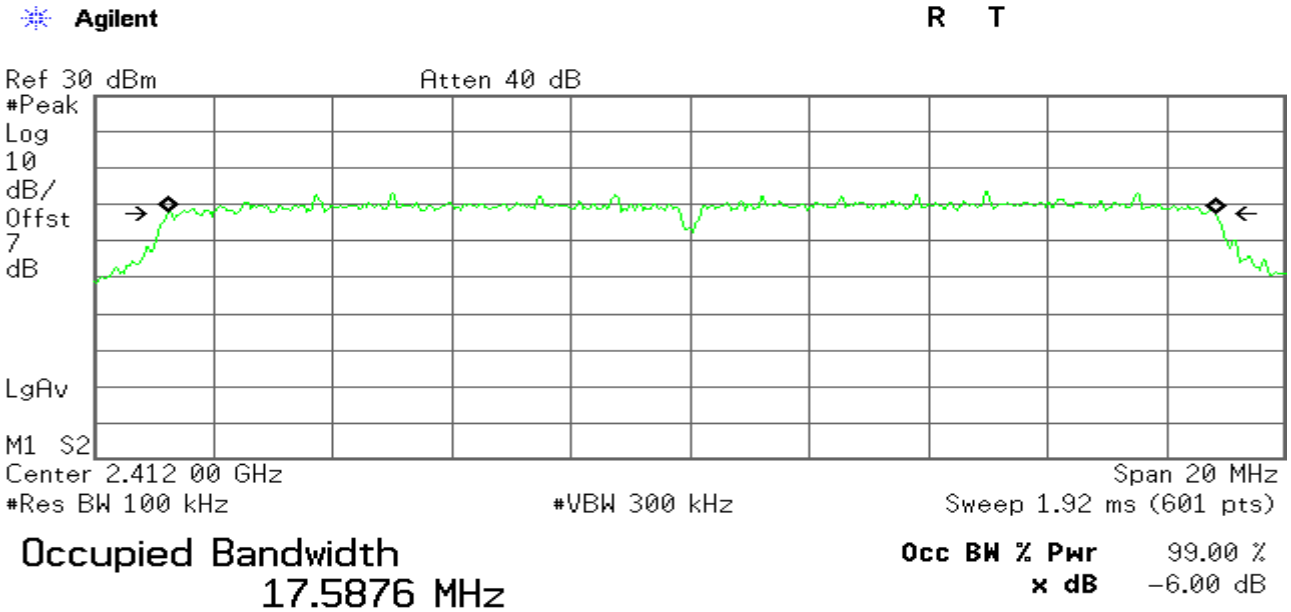
6dB Bandwidth (CH High)



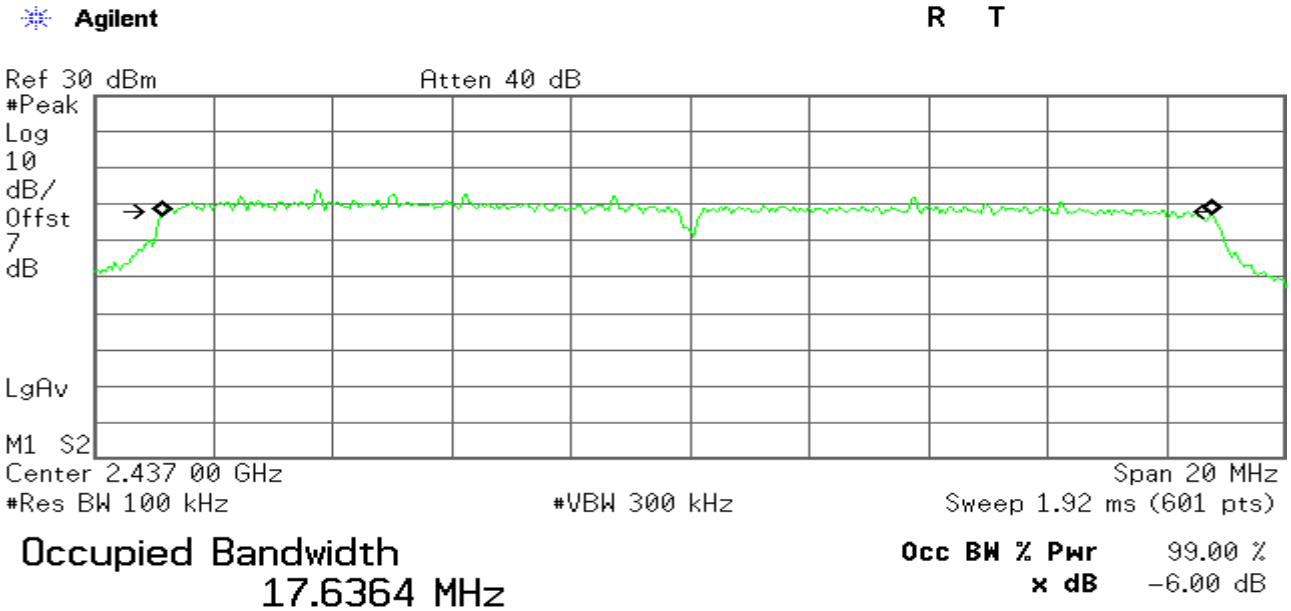
IEEE 802.11n Standard-20 MHz Channel mode / Chain 1

6dB Bandwidth (CH Low)

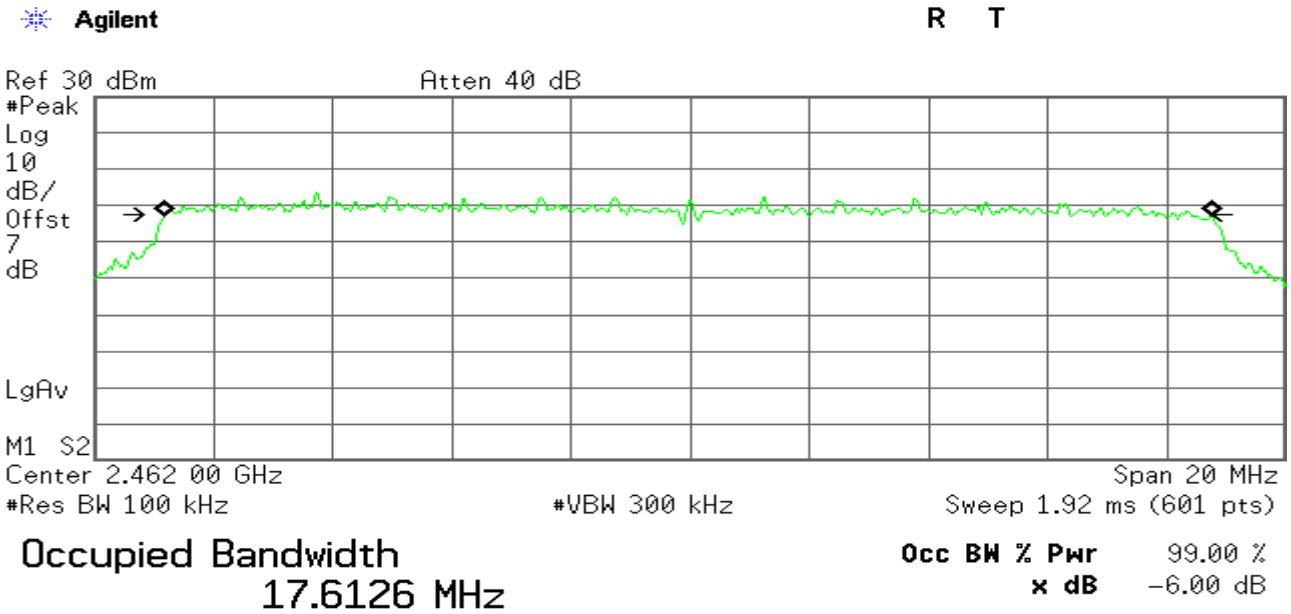


This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

6dB Bandwidth (CH Mid)



6dB Bandwidth (CH High)



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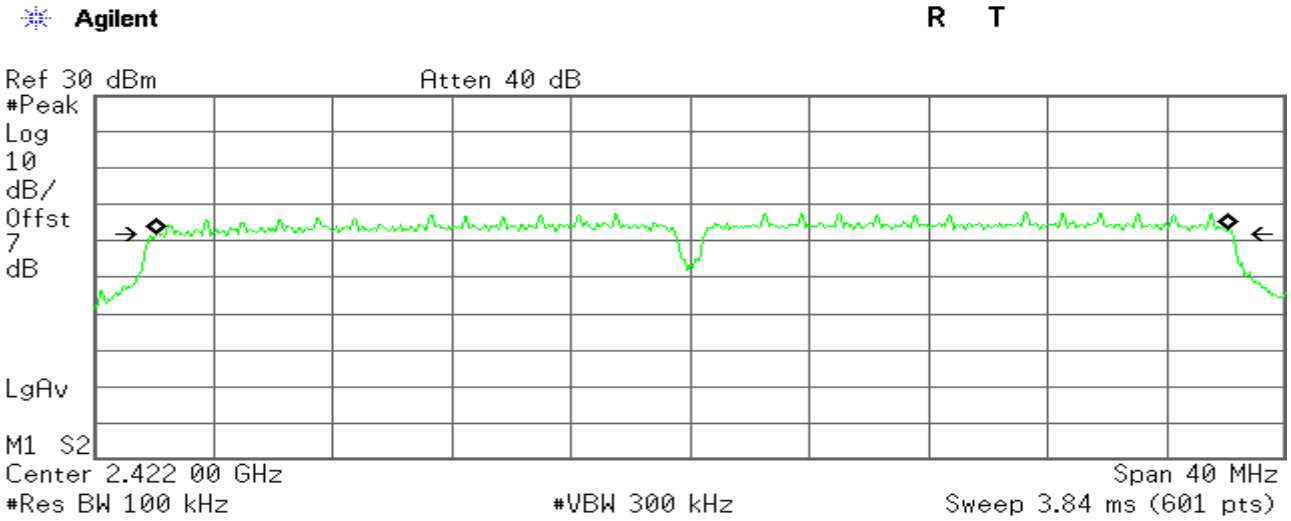
IEEE 802.11n Standard-40 MHz Channel mode / Chain 0

6dB Bandwidth (CH Low)

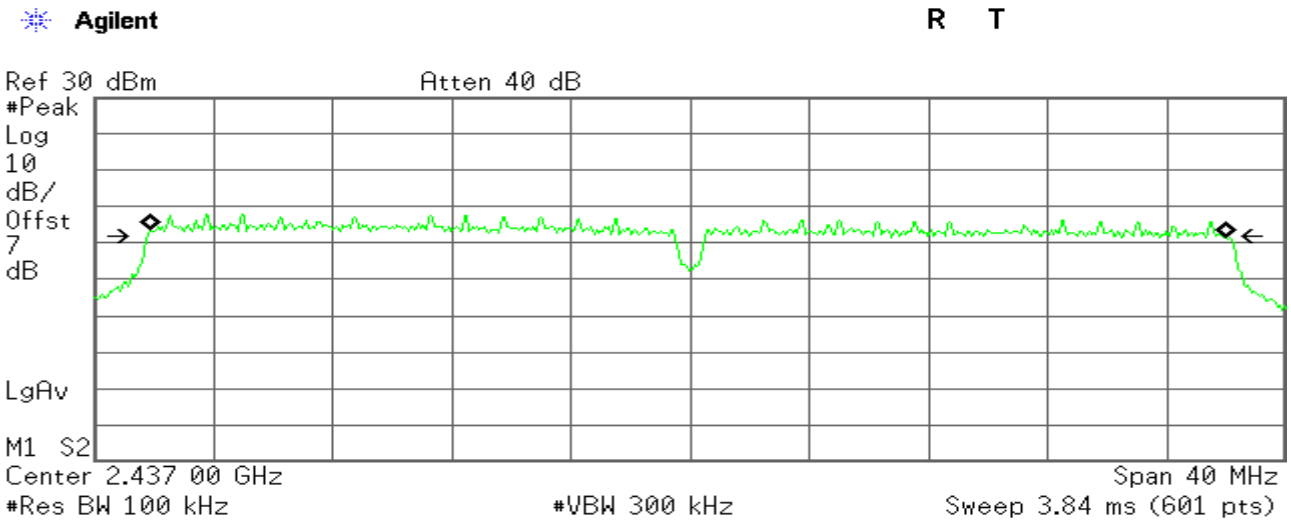


Occupied Bandwidth
36.0332 MHz

Occ BW % Pwr 99.00 %
x dB -6.00 dB

Transmit Freq Error 76.113 kHz
x dB Bandwidth 36.161 MHz

6dB Bandwidth (CH Mid)



Occupied Bandwidth
36.1169 MHz

Occ BW % Pwr 99.00 %
x dB -6.00 dB

Transmit Freq Error -54.051 kHz
x dB Bandwidth 36.087 MHz

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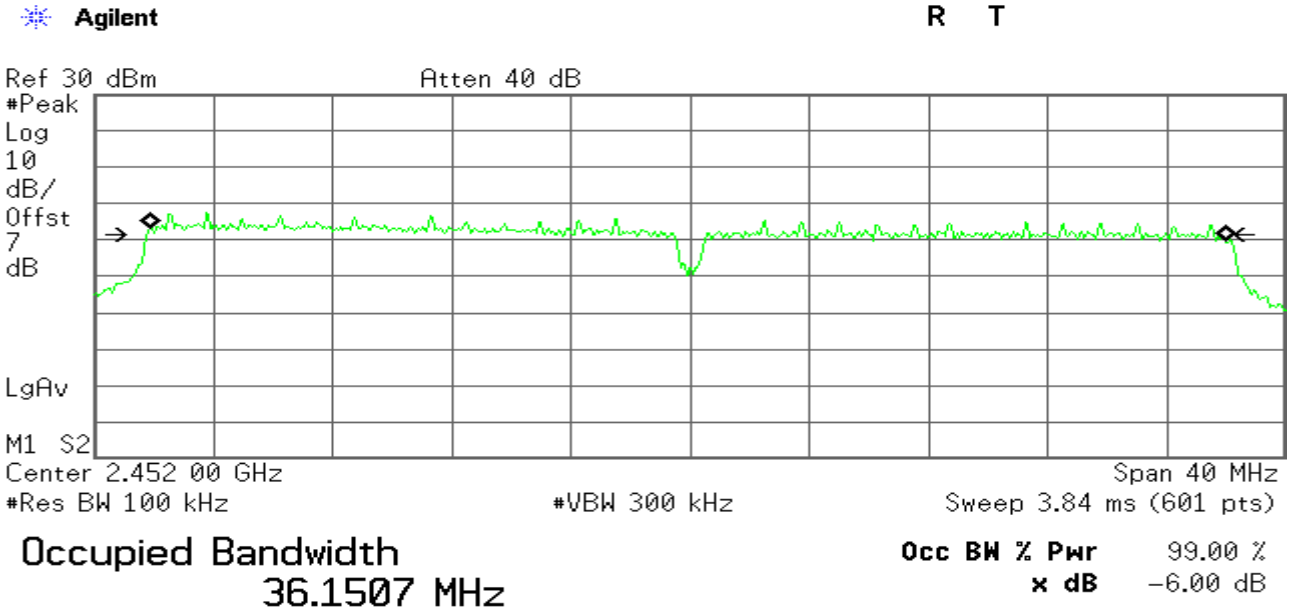
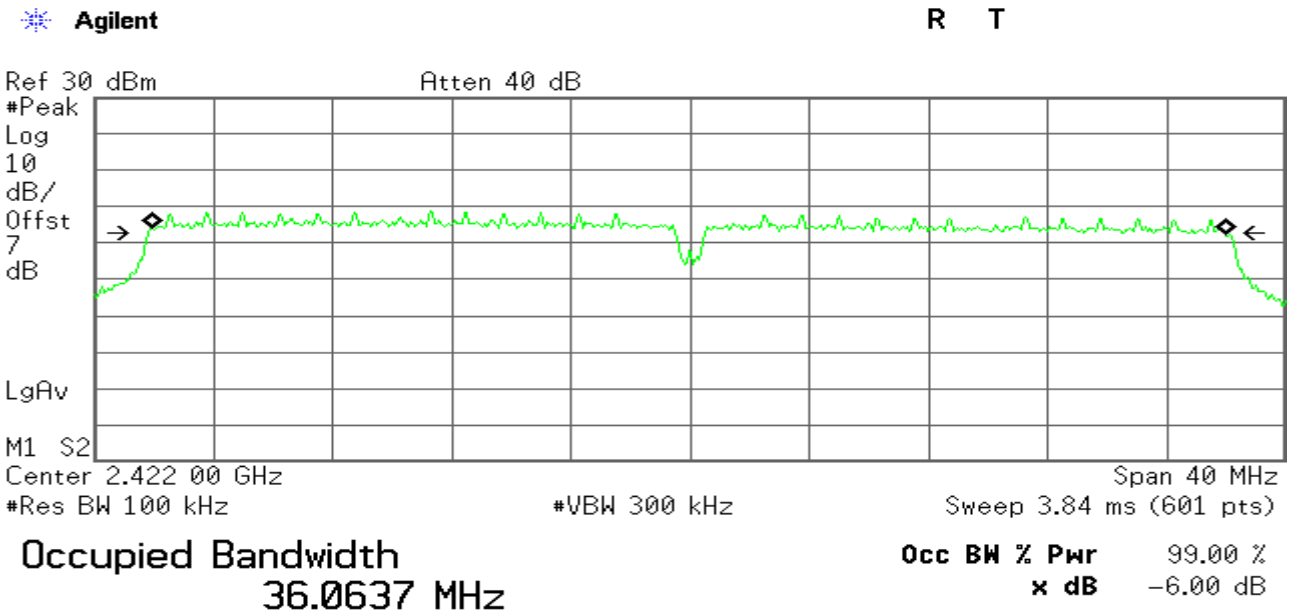
6dB Bandwidth (CH High)



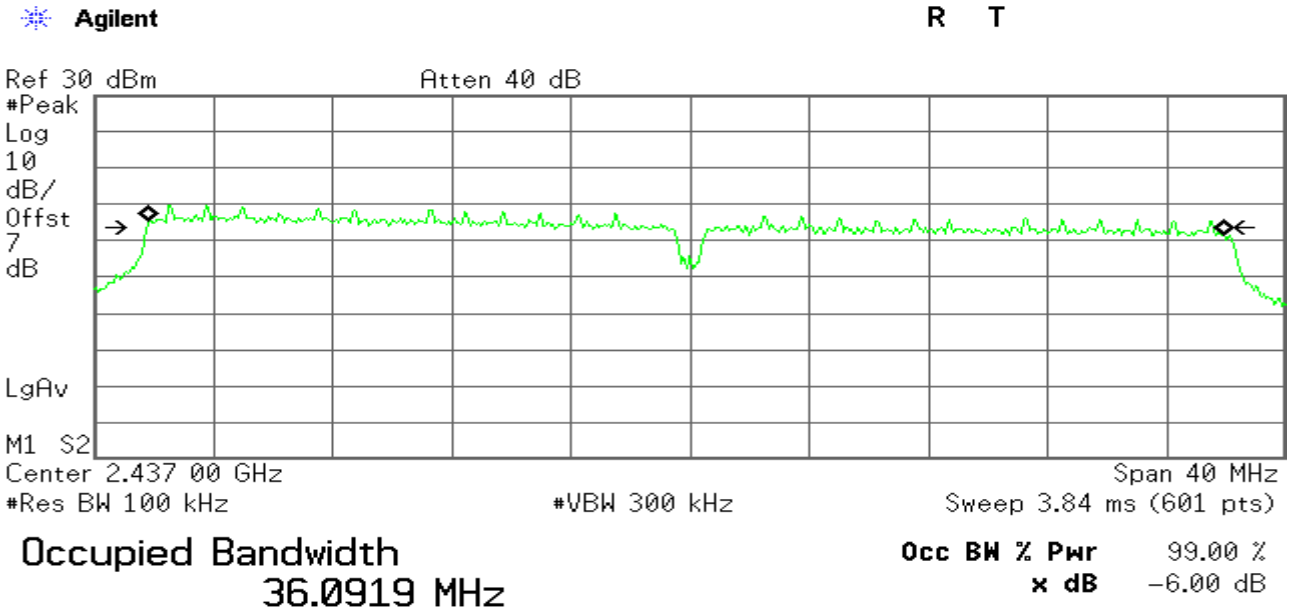
IEEE 802.11n Standard-40 MHz Channel mode / Chain 1

6dB Bandwidth (CH Low)

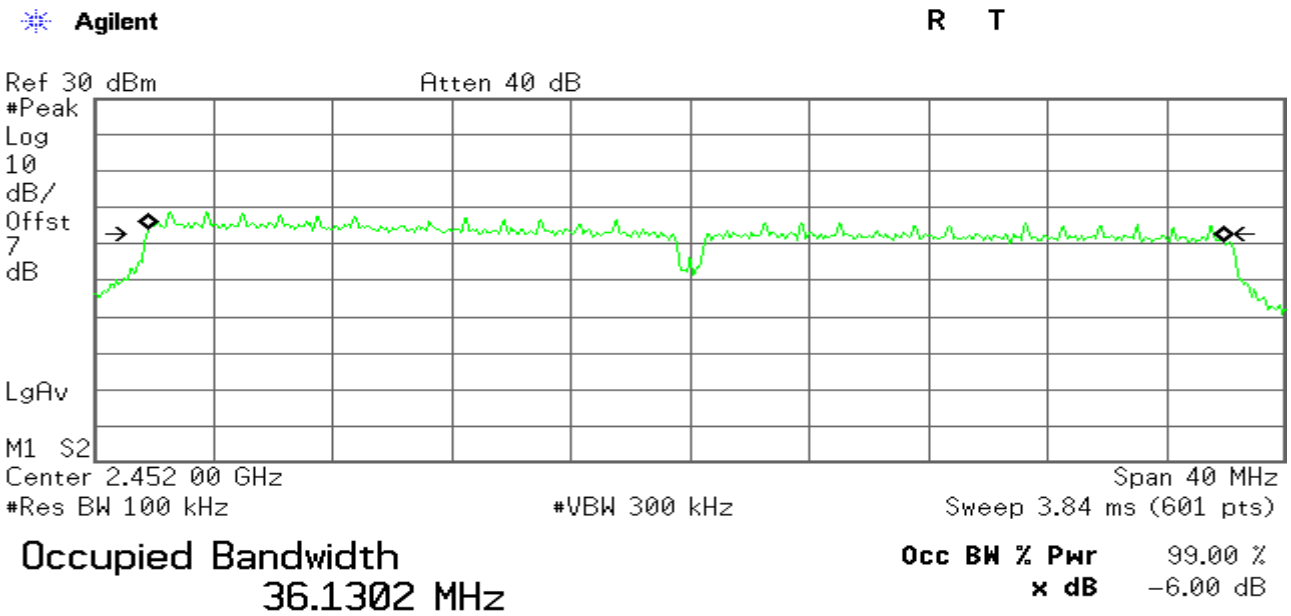


This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

6dB Bandwidth (CH Mid)



6dB Bandwidth (CH High)



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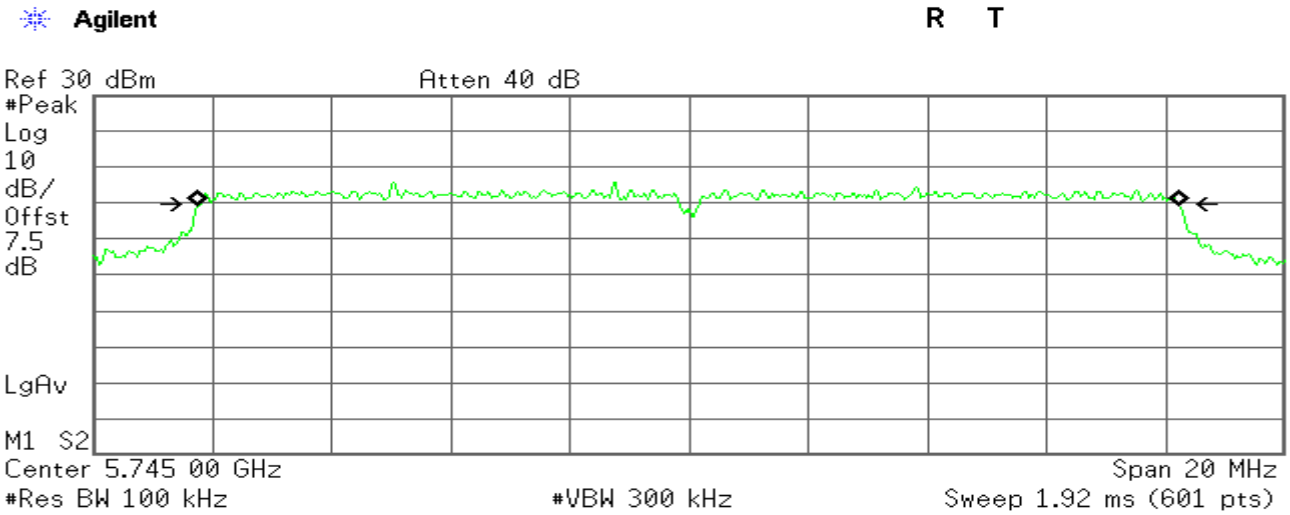
IEEE 802.11a mode:

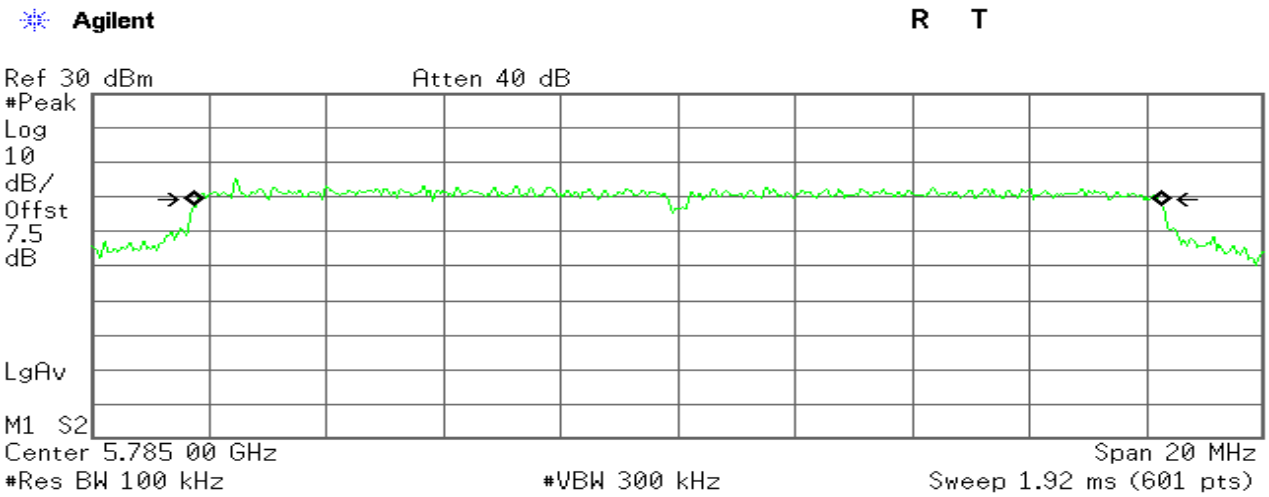
5725~5825MHz

CH Low



Transmit Freq Error -13.022 kHz
x dB Bandwidth 16.398 MHz

CH Mid



Transmit Freq Error -2.145 kHz
x dB Bandwidth 16.421 MHz

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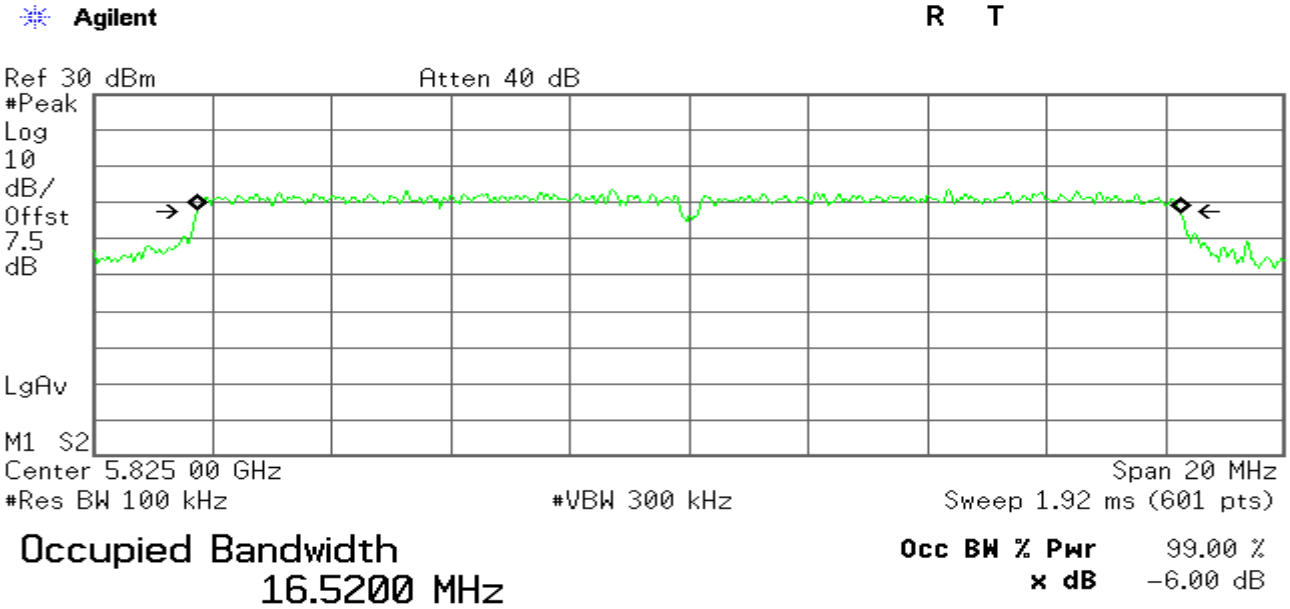
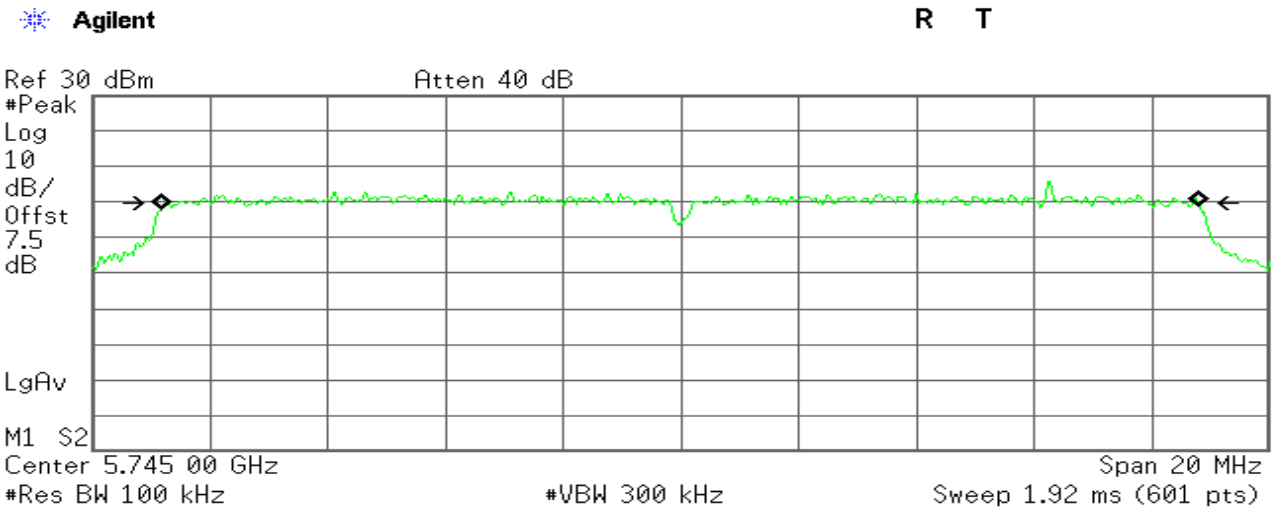
CH High



IEEE 802.11an HT20 mode

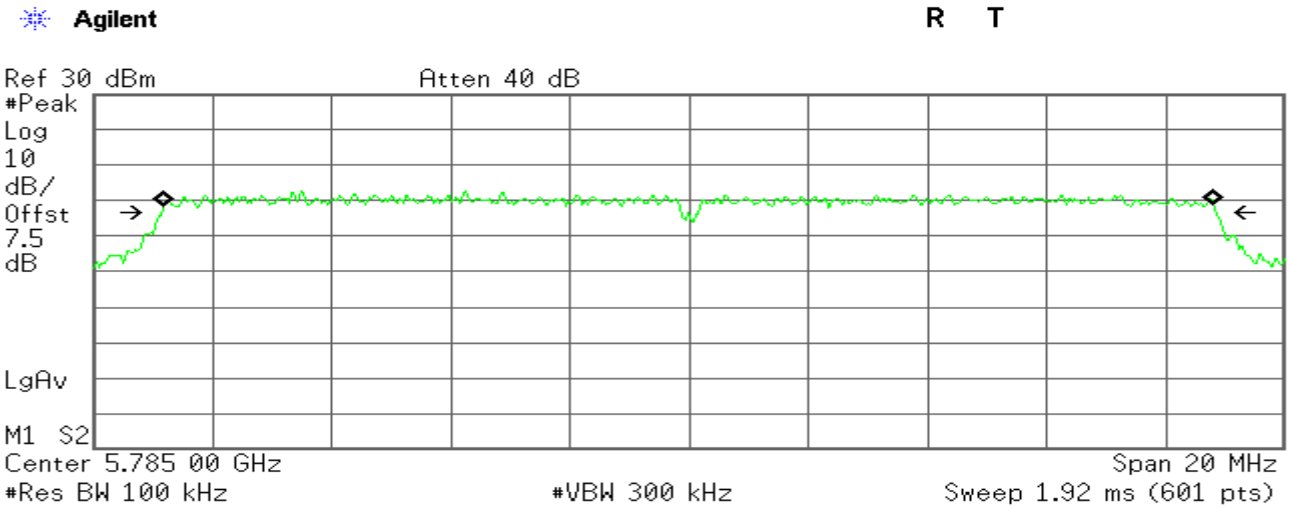
5725~5825MHz

CH Low

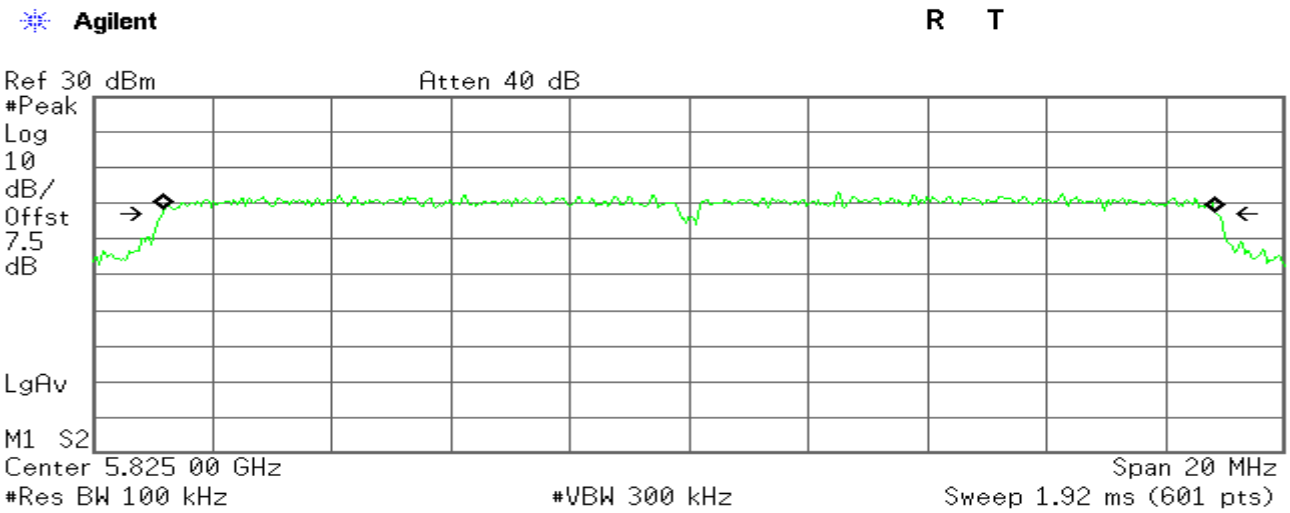


This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

CH Mid



CH High

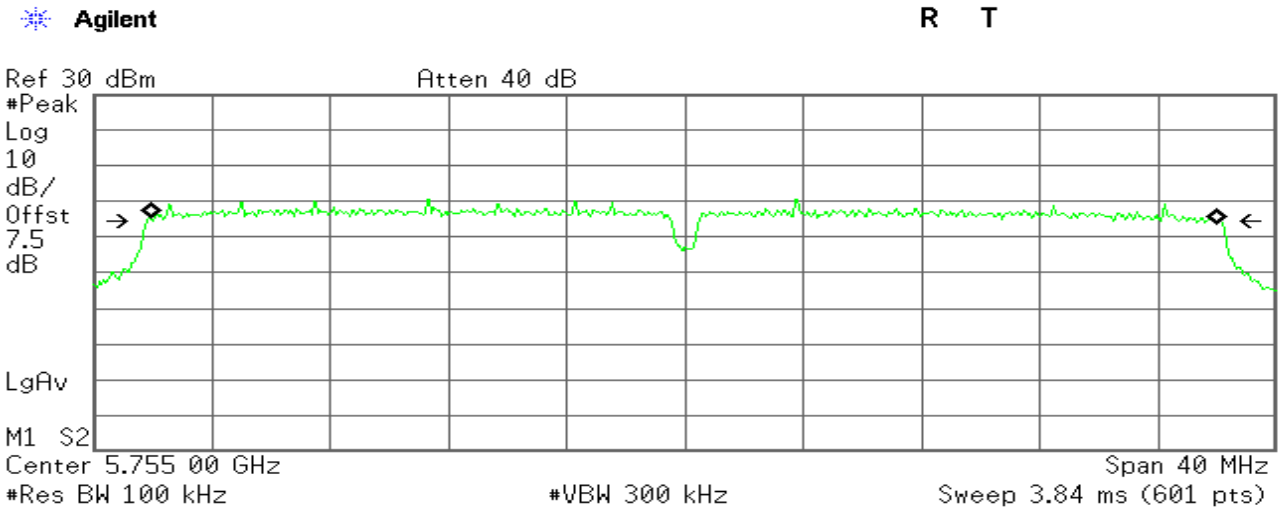


This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

IEEE 802.11an HT40 mode

5725~5825MHz

CH Low

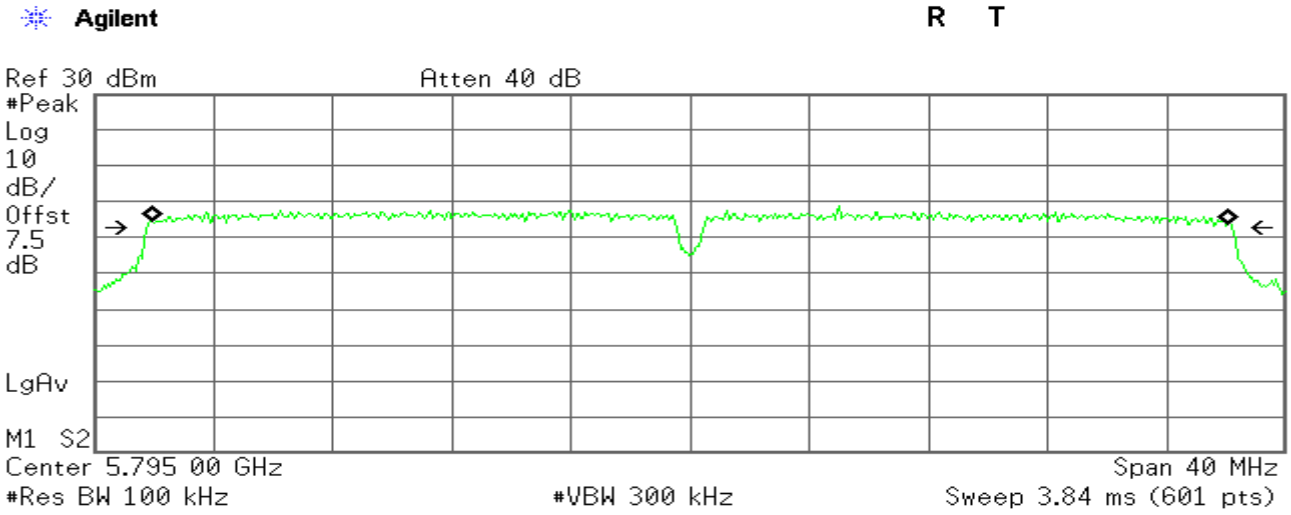


Occupied Bandwidth
36.0942 MHz

Occ BW % Pwr 99.00 %
x dB -6.00 dB

Transmit Freq Error -36.867 kHz
x dB Bandwidth 36.342 MHz

CH High



Occupied Bandwidth
36.1075 MHz

Occ BW % Pwr 99.00 %
x dB -6.00 dB

Transmit Freq Error -20.427 kHz
x dB Bandwidth 36.458 MHz

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4.2. PEAK POWER

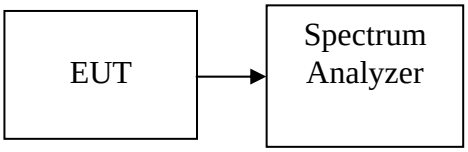
LIMIT

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, and 2400-2483.5 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

This procedure may be used when the maximum available RBW of the measurement instrument is less than the DTS bandwidth.

1. Set the RBW = 1 MHz.
2. Set the VBW ≥ 3 RBW
3. Set the span ≥ 1.5 x DTS bandwidth.
4. Detector = peak.
5. Sweep time = auto couple.
6. Trace mode = max hold.
7. Allow trace to fully stabilize.
8. Use the instrument's band/channel power measurement function with the band limits set equal to the DTS bandwidth edges (for some instruments, this may require a manual override to select peak detector). If the instrument does not have a band power function, sum the spectrum levels (in linear power units) at intervals equal to the RBW extending across the DTS bandwidth.

TEST RESULTS

No non-compliance noted

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Test Data

Test mode: IEEE 802.11b mode

Channel	Frequency (MHz)	Chain 0 Output Power (dBm)	Chain 1 Output Power (dBm)	Total Maximum Conducted Output Power (dBm)	Limit (dBm)
Low	2412	21.20	21.76	24.51	30
Mid	2437	21.08	21.36	24.25	30
High	2462	20.14	21.10	23.68	30

Test mode: IEEE 802.11g mode

Channel	Frequency (MHz)	Chain 0 Output Power (dBm)	Chain 1 Output Power (dBm)	Total Maximum Conducted Output Power (dBm)	Limit (dBm)
Low	2412	16.86	18.42	20.76	30
Mid	2437	17.10	18.30	20.79	30
High	2462	17.32	17.99	20.72	30

Test mode: IEEE 802.11n HT20 mode

Channel	Frequency (MHz)	Chain 0 Output Power (dBm)	Chain 1 Output Power (dBm)	Total Maximum Conducted Output Power (dBm)	Limit (dBm)
Low	2412	17.47	18.64	21.14	30
Mid	2437	17.43	18.21	20.88	30
High	2462	17.05	16.84	20.00	30

Test mode: IEEE 802.11n HT40 mode

Channel	Frequency (MHz)	Chain 0 Output Power (dBm)	Chain 1 Output Power (dBm)	Total Maximum Conducted Output Power (dBm)	Limit (dBm)
Low	2422	17.34	15.92	19.74	30
Mid	2437	16.41	16.03	19.29	30
High	2452	15.20	14.63	18.00	30

Test mode: IEEE 802.11a mode

Channel	Frequency (MHz)	Conducted Output Power (dBm)	Limit (dBm)
Low	5745	20.65	30.00
Mid	5785	19.74	30.00
High	5825	19.85	30.00

Test mode: IEEE 802.11n HT20 mode

Channel	Frequency (MHz)	Total Maximum Conducted Output Power (dBm)	Limit (dBm)
Low	5745	20.09	30.00
Mid	5785	19.27	30.00
High	5825	19.95	30.00

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Test mode: IEEE 802.11n HT40 mode

Channel	Frequency (MHz)	Total Maximum Conducted Output Power (dBm)	Limit (dBm)
Low	5755	18.01	30.00
High	5795	17.86	30.00

Remark: *Total Output Power (dBm) = 10*LOG(10^(Chain 0 Output Power / 10)+10^(Chain 1 Output Power /10)))*

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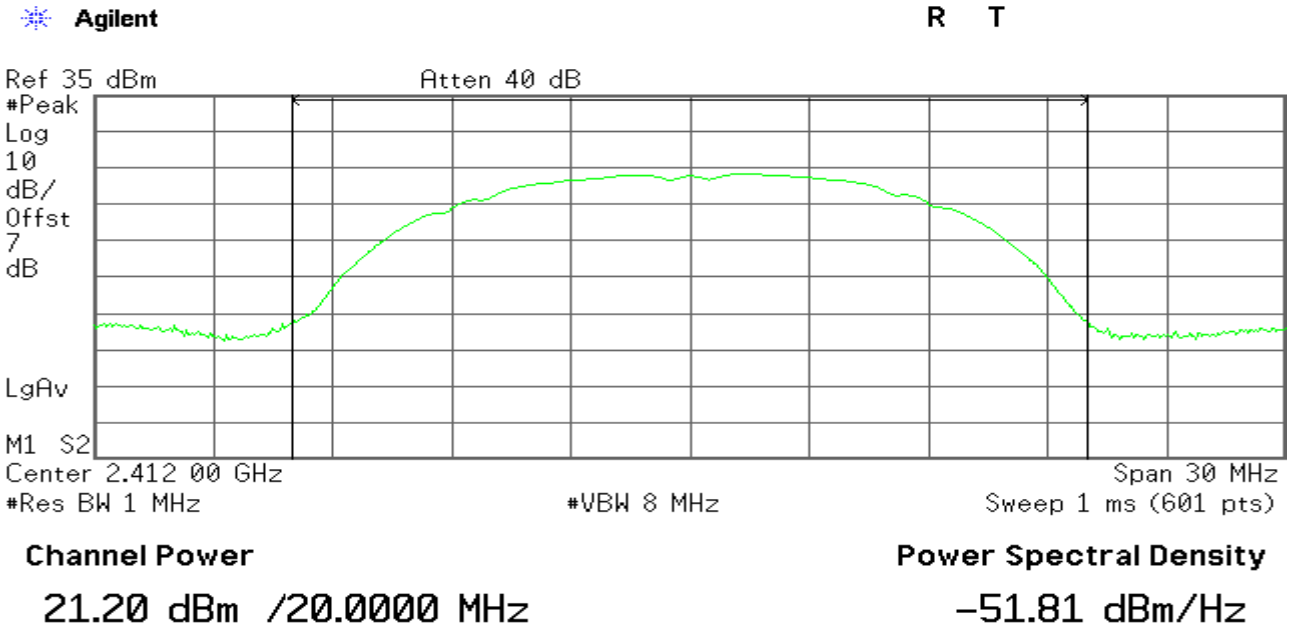
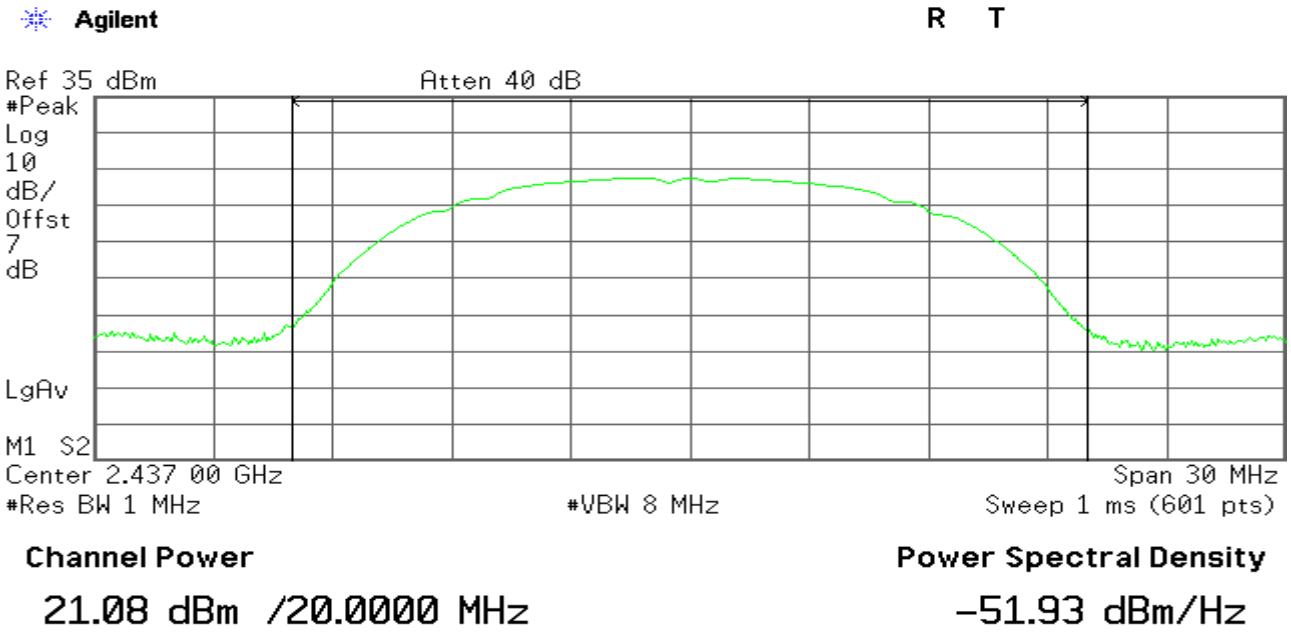
Test Plot

IEEE 802.11b mode/ Chain 0

Peak Power (CH Low)



Peak Power (CH Mid)



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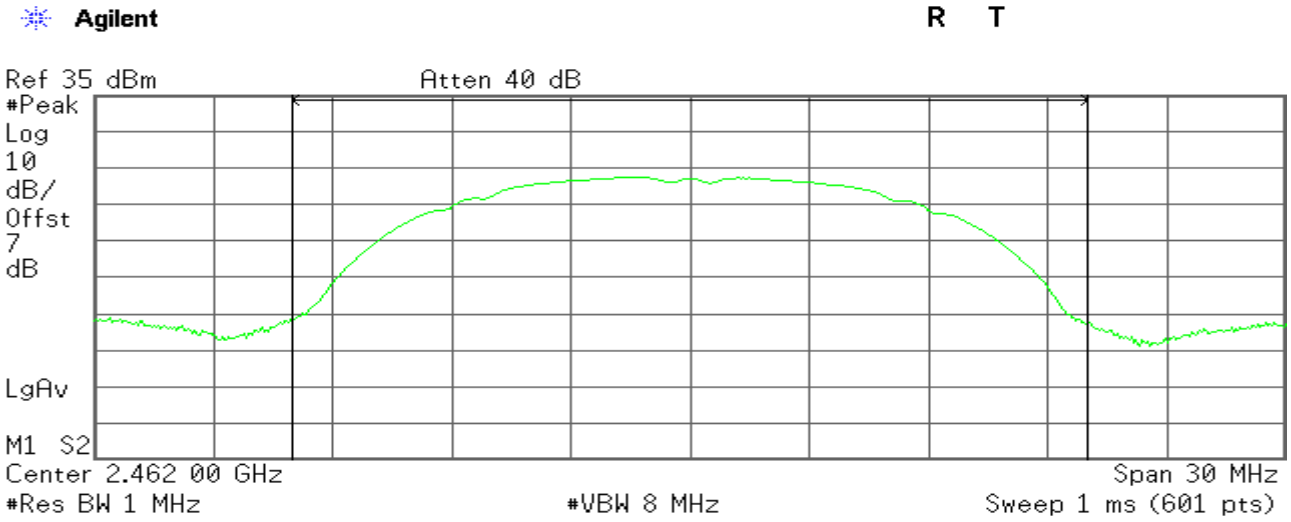
Peak Power (CH High)

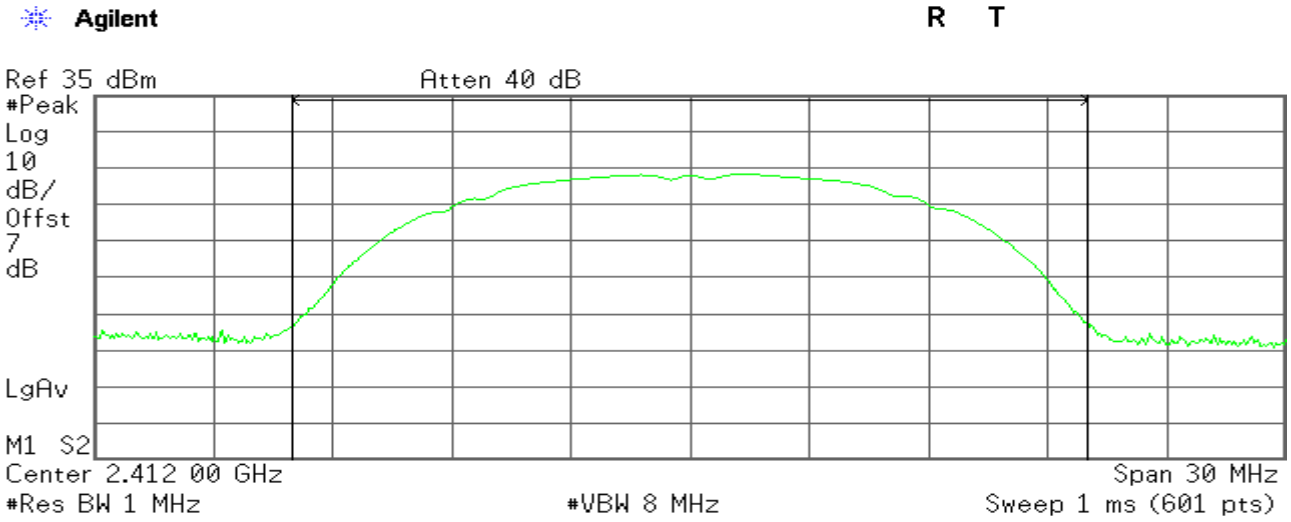


Channel Power 20.14 dBm /20.0000 MHz

Power Spectral Density -52.87 dBm/Hz

IEEE 802.11b mode/ Chain 1

Peak Power (CH Low)



Channel Power 21.76 dBm /20.0000 MHz

Power Spectral Density -51.25 dBm/Hz

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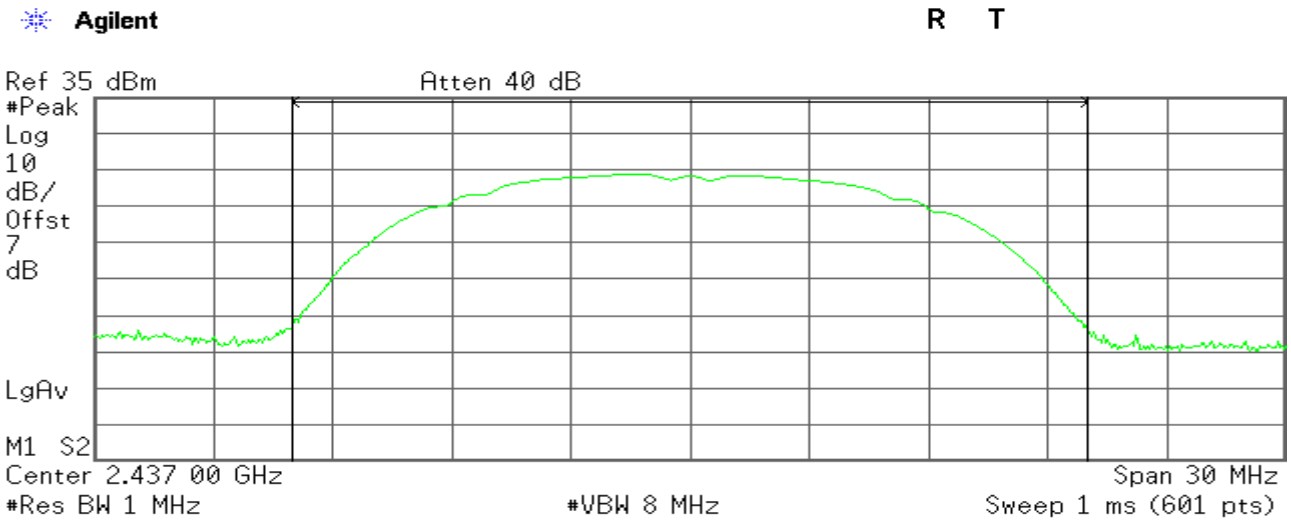
Peak Power (CH Mid)



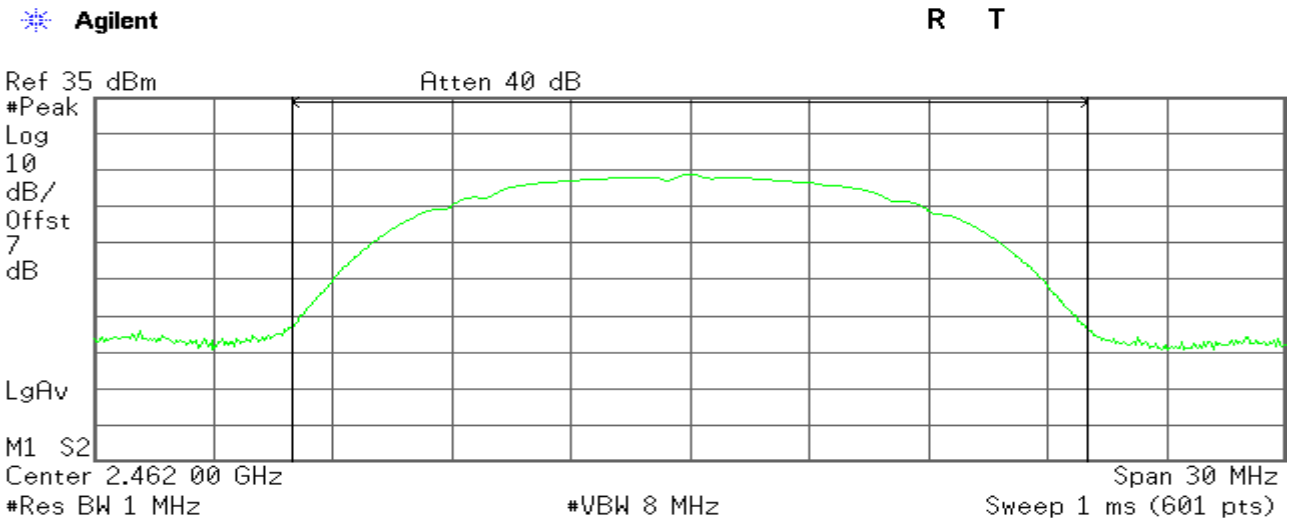
Channel Power

21.36 dBm /20.0000 MHz

Power Spectral Density

-51.65 dBm/Hz

Peak Power (CH High)



Channel Power

21.10 dBm /20.0000 MHz

Power Spectral Density

-51.91 dBm/Hz

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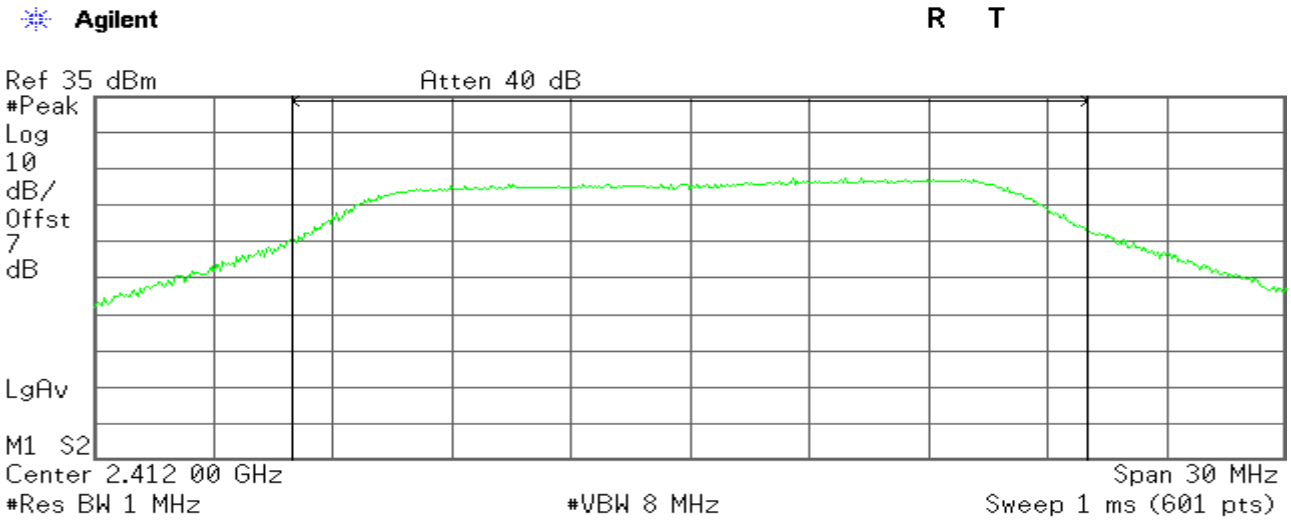
IEEE 802.11g mode /Chain 0

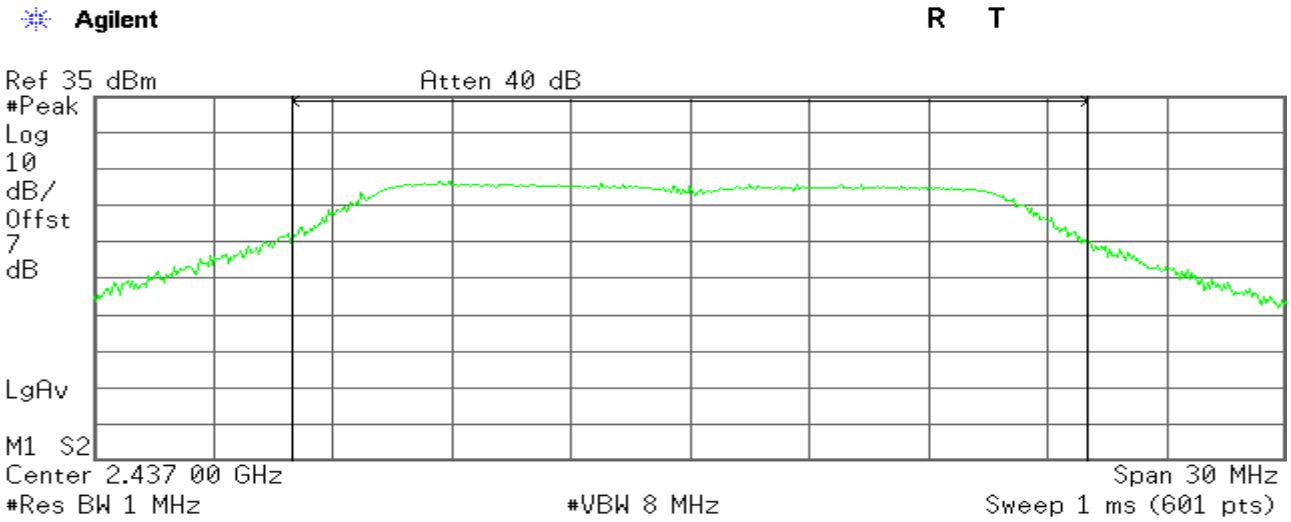
Peak Power (CH Low)



Channel Power 16.86 dBm /20.0000 MHz

Power Spectral Density -56.15 dBm/Hz

Peak Power (CH Mid)

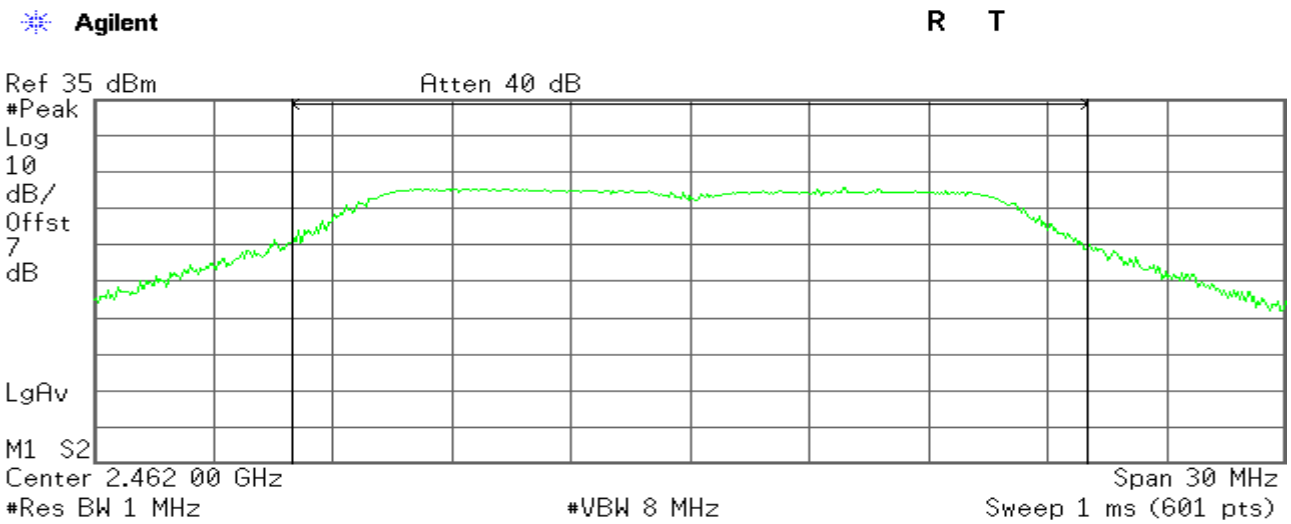


Channel Power 17.10 dBm /20.0000 MHz

Power Spectral Density -55.91 dBm/Hz

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

Peak Power (CH High)



Channel Power

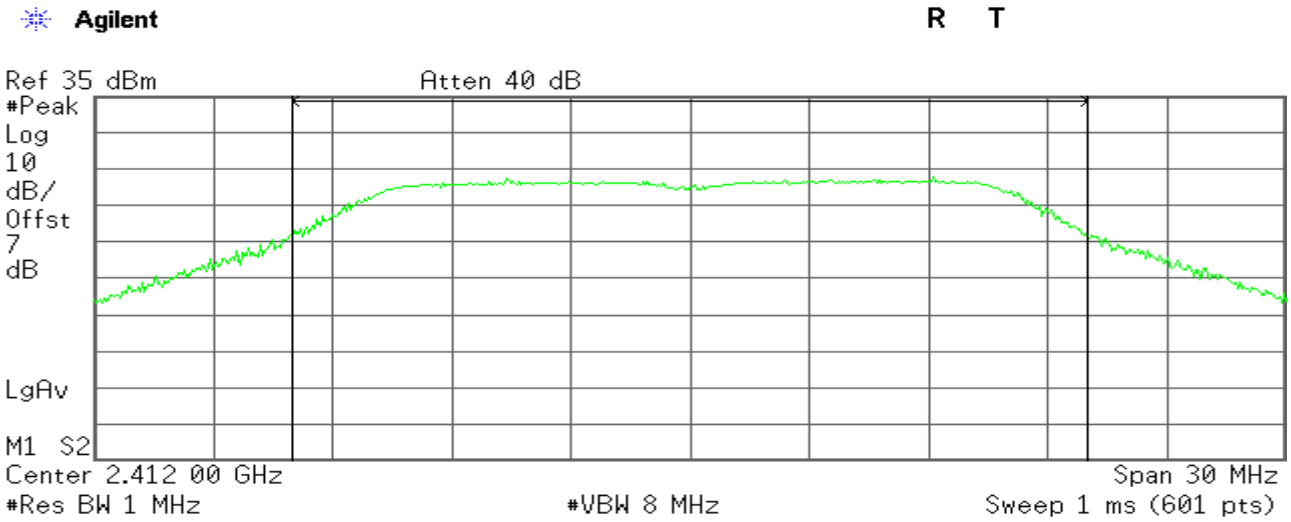
17.32 dBm /20.0000 MHz

Power Spectral Density

-55.69 dBm/Hz

<u>IEEE 802.11g mode /Chain 1</u>

Peak Power (CH Low)



Channel Power

18.42 dBm /20.0000 MHz

Power Spectral Density

-54.59 dBm/Hz

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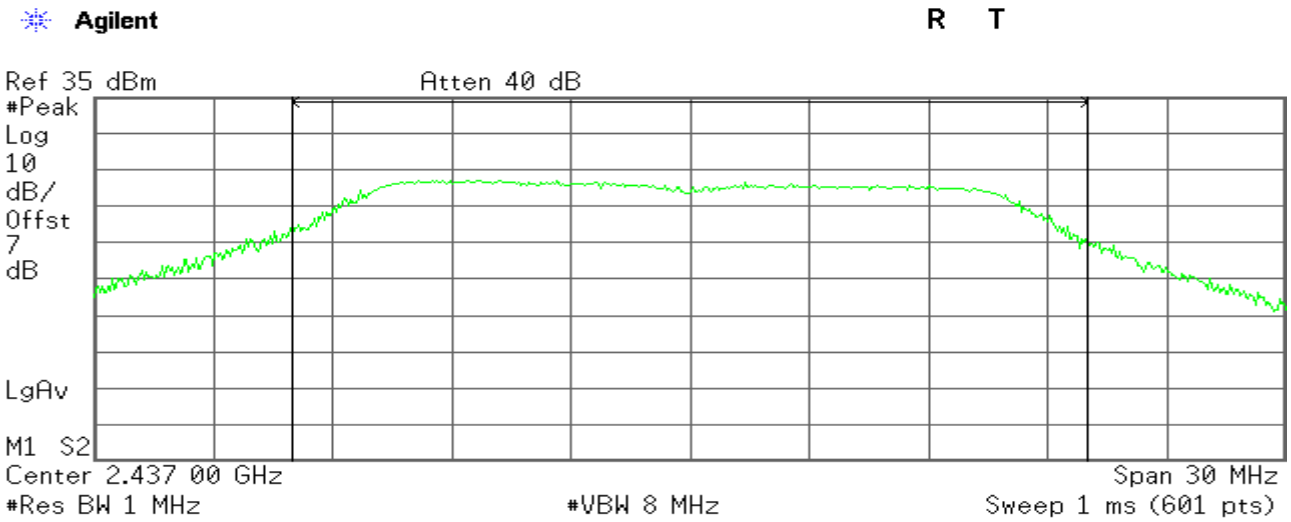
Peak Power (CH Mid)



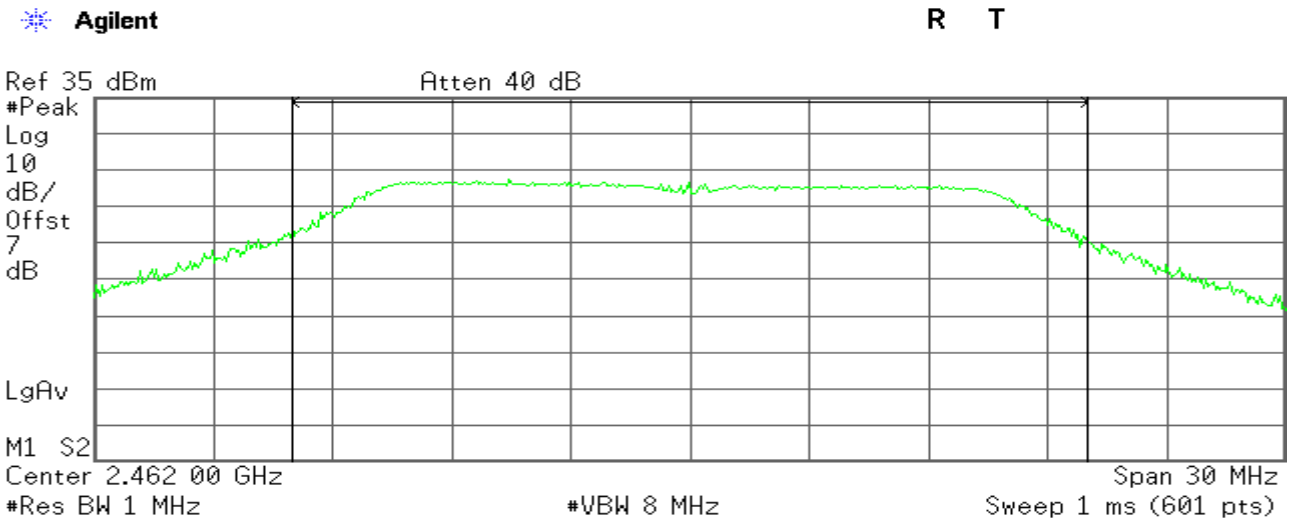
Channel Power

18.30 dBm /20.0000 MHz

Power Spectral Density

-54.71 dBm/Hz

Peak Power (CH High)



Channel Power

17.99 dBm /20.0000 MHz

Power Spectral Density

-55.02 dBm/Hz

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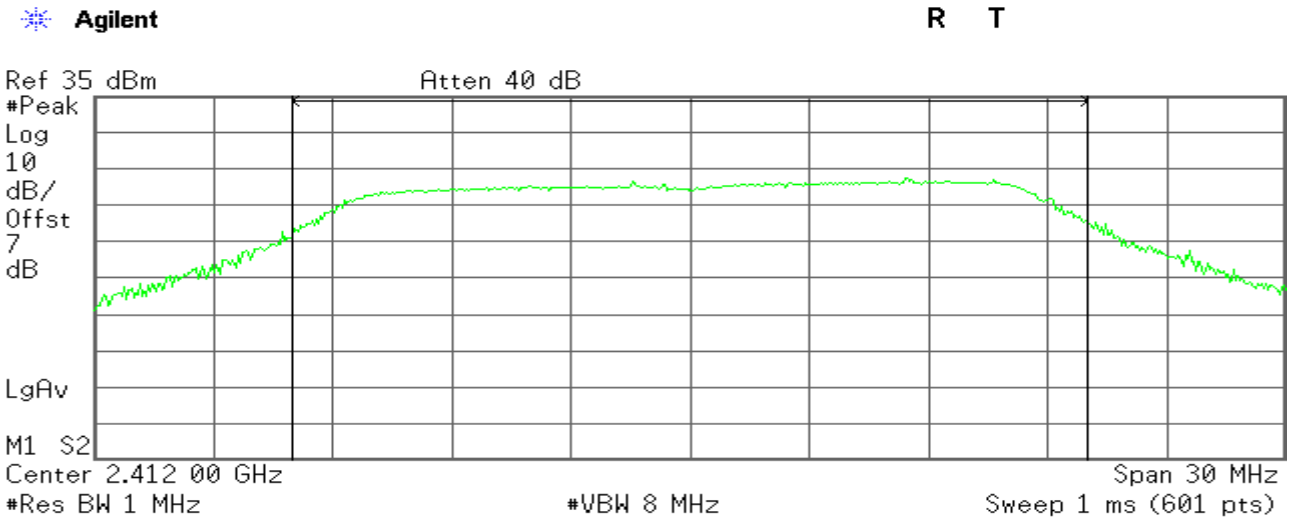
IEEE 802.11n HT20 mode / Chain 0

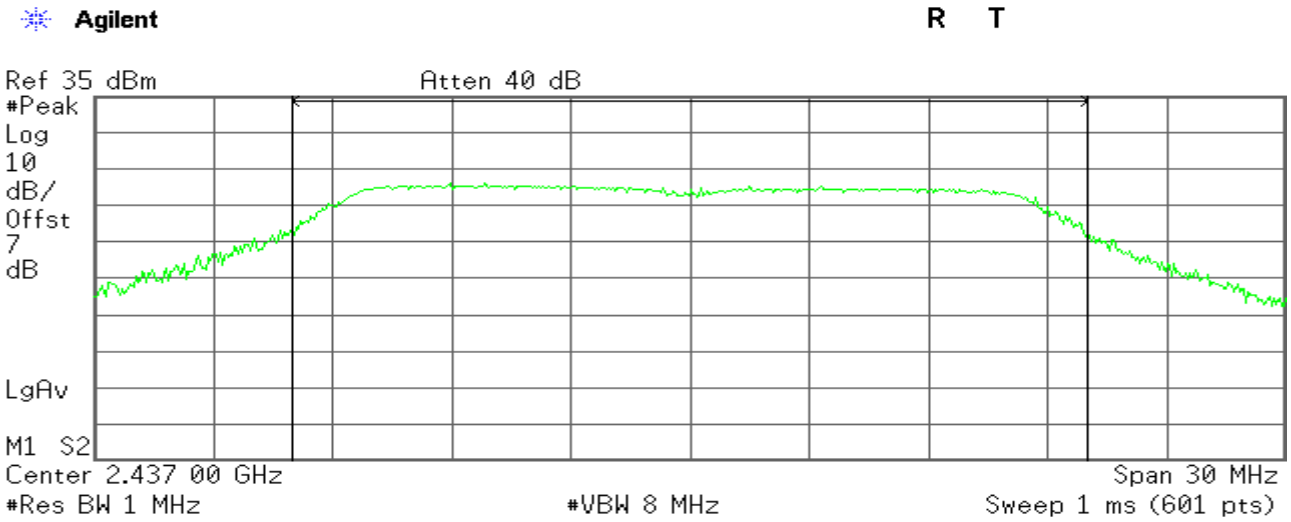
Peak Power (CH Low)



Channel Power 17.47 dBm /20.0000 MHz

Power Spectral Density -55.54 dBm/Hz

Peak Power (CH Mid)



Channel Power 17.43 dBm /20.0000 MHz

Power Spectral Density -55.58 dBm/Hz

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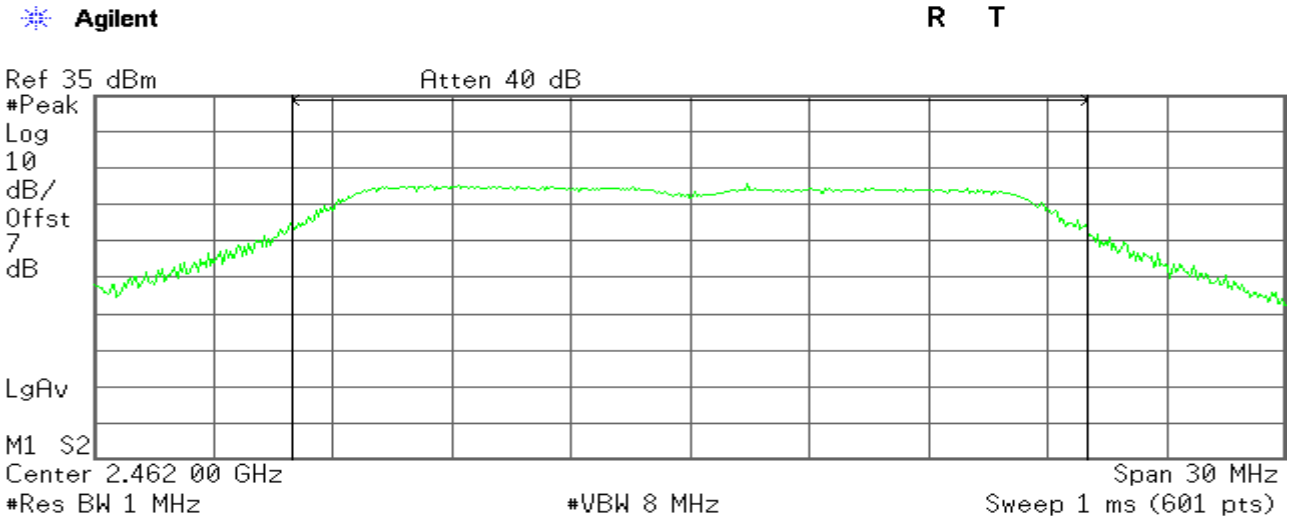
Peak Power (CH High)

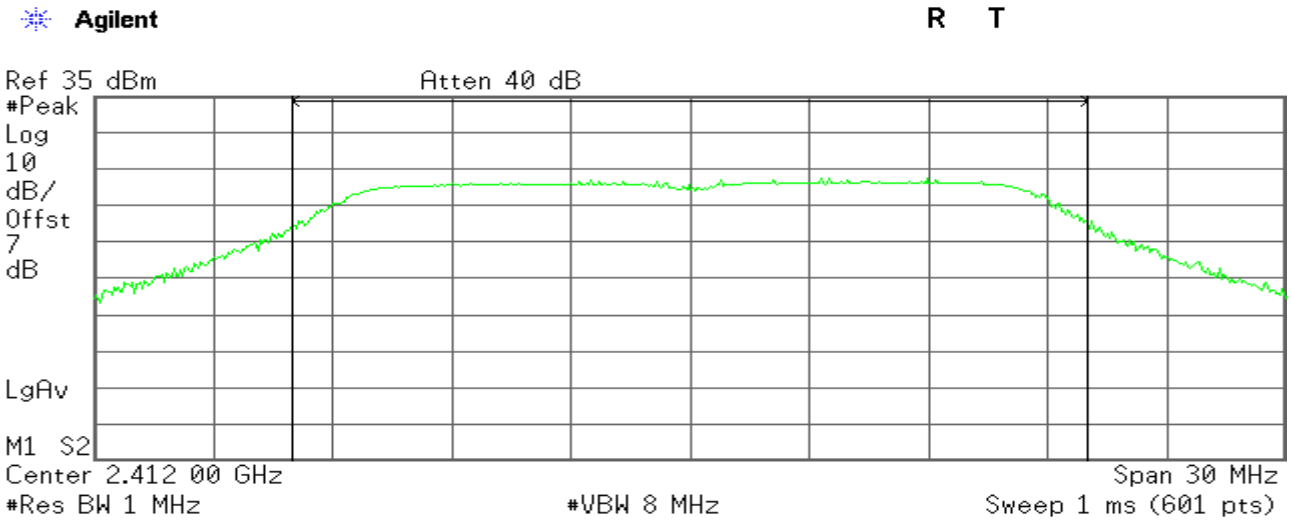


Channel Power 17.05 dBm /20.0000 MHz

Power Spectral Density -55.96 dBm/Hz

IEEE 802.11n HT20 mode / Chain 1

Peak Power (CH Low)



Channel Power 18.64 dBm /20.0000 MHz

Power Spectral Density -54.37 dBm/Hz

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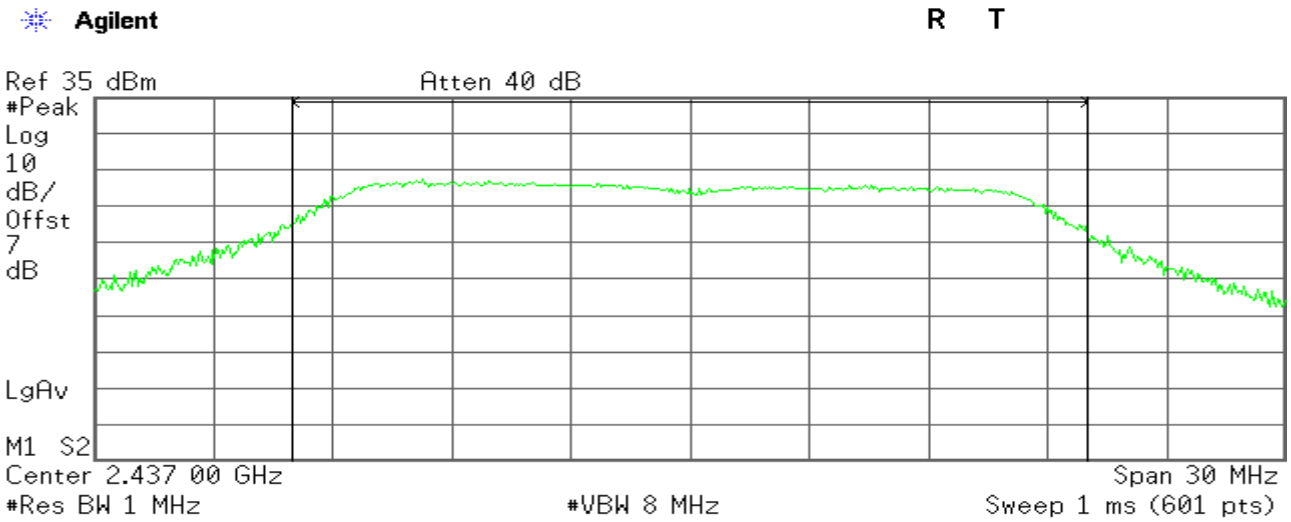
Peak Power (CH Mid)



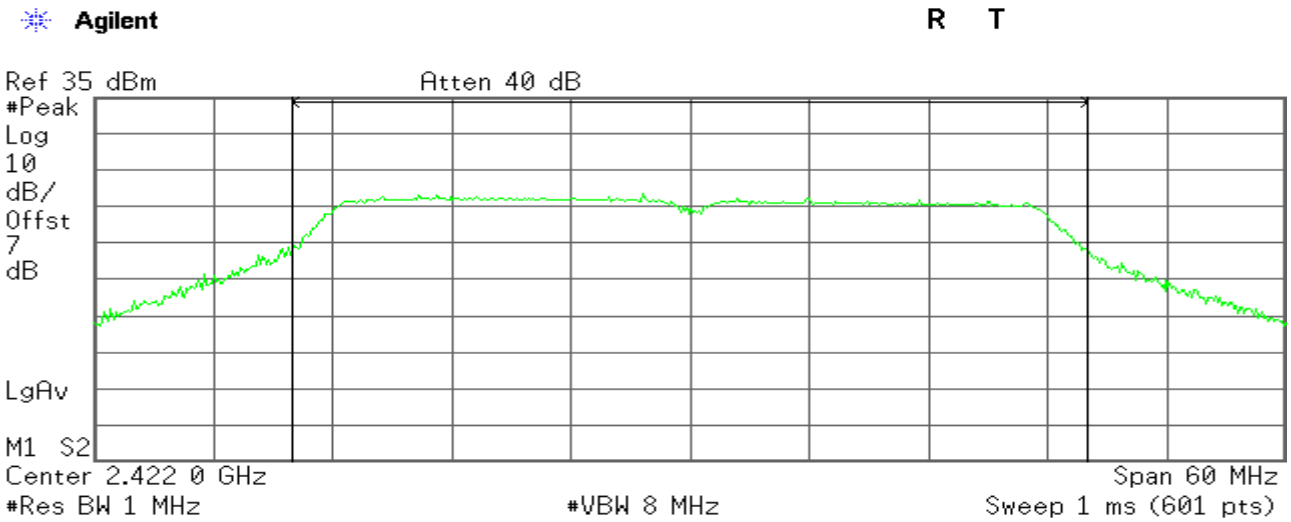
Channel Power

18.21 dBm /20.0000 MHz

Power Spectral Density

-54.80 dBm/Hz

Peak Power (CH High)



Channel Power

16.84 dBm /40.0000 MHz

Power Spectral Density

-59.18 dBm/Hz

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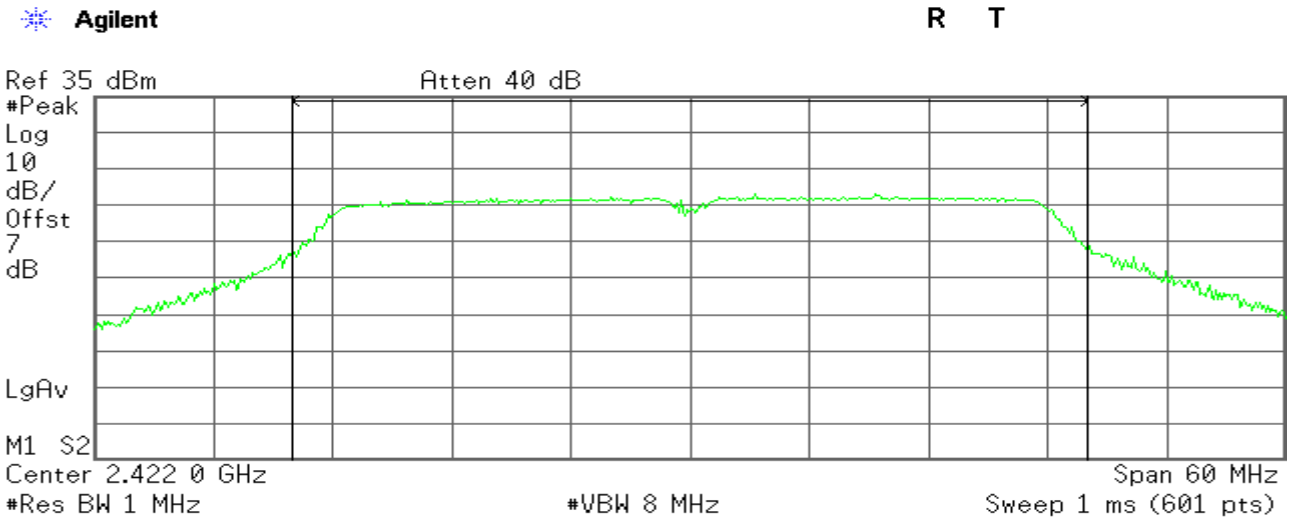
IEEE 802.11n HT40 mode / Chain 0

Peak Power (CH Low)



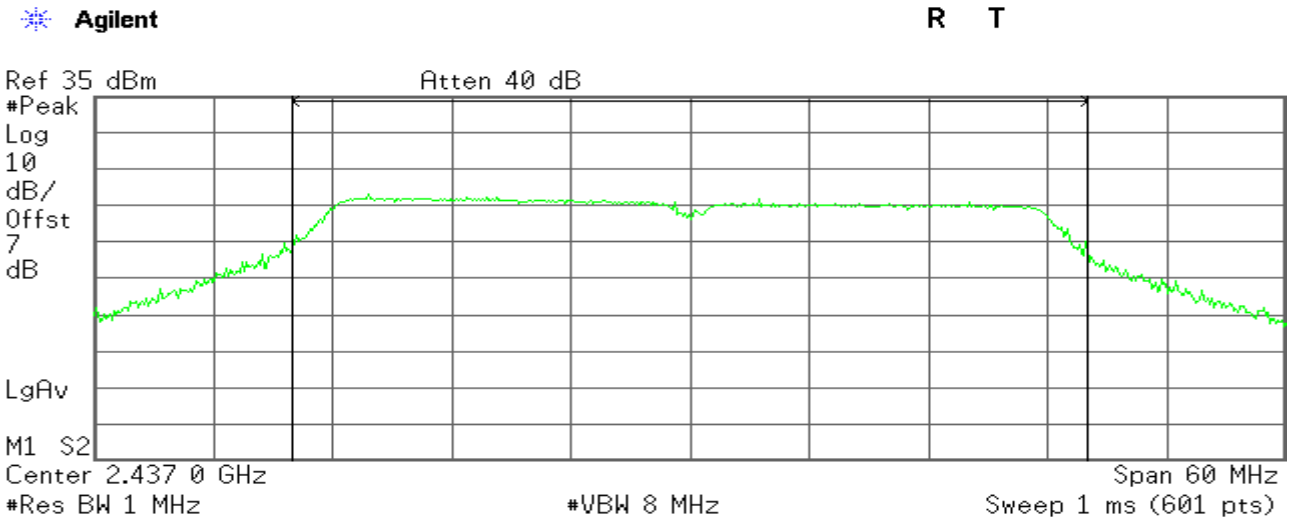
Channel Power

17.34 dBm /40.0000 MHz

Power Spectral Density

-58.68 dBm/Hz

Peak Power (CH Mid)



Channel Power

16.41 dBm /40.0000 MHz

Power Spectral Density

-59.61 dBm/Hz

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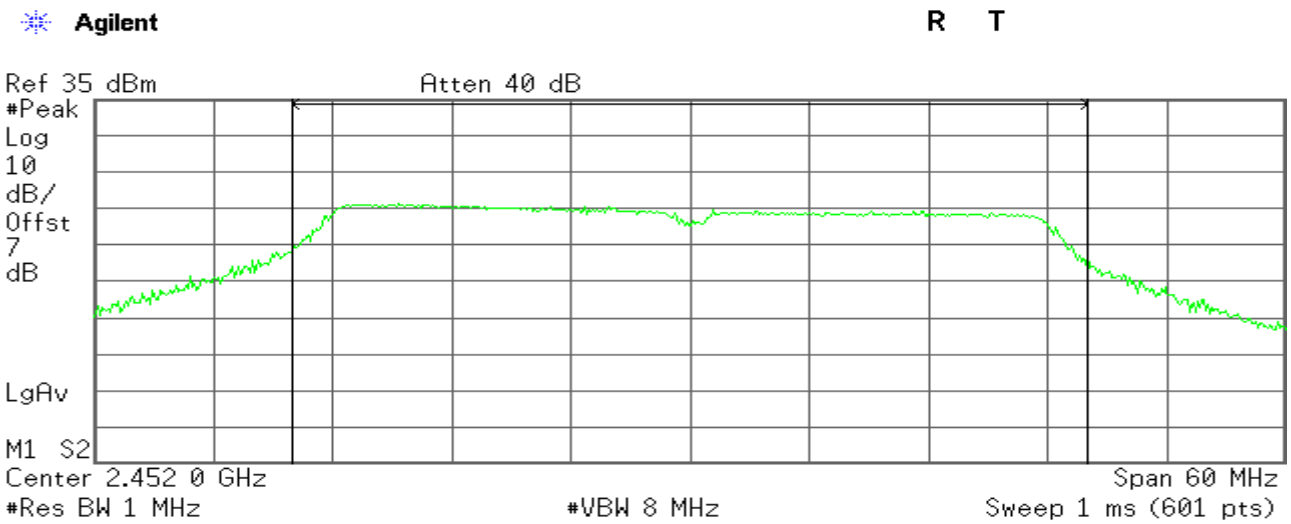
Peak Power (CH High)



Channel Power

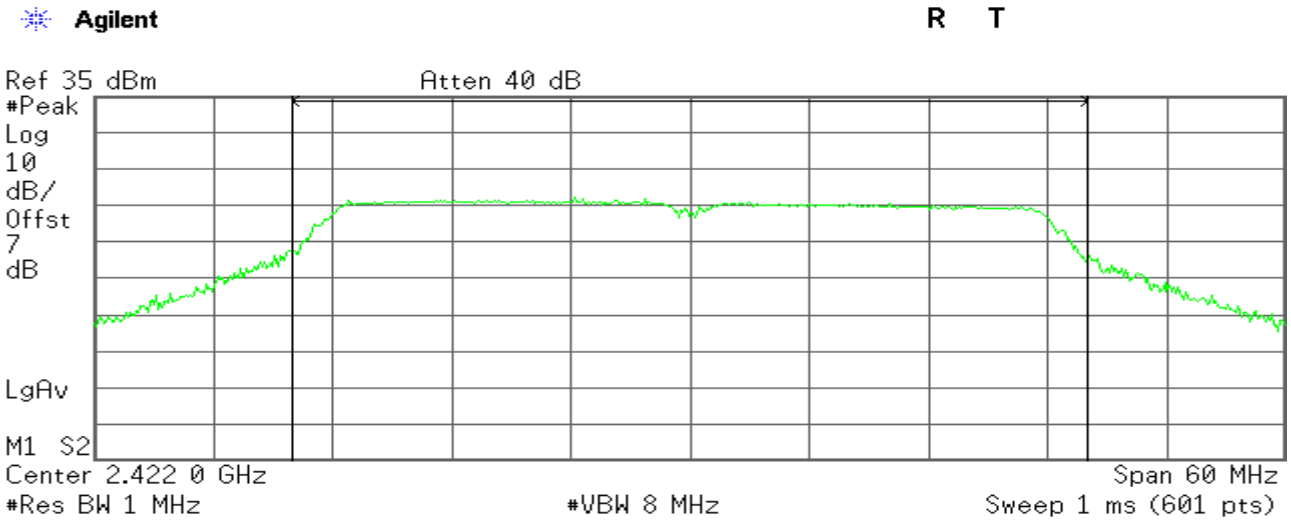
15.20 dBm /40.0000 MHz

Power Spectral Density

-60.82 dBm/Hz

IEEE 802.11n HT40 mode / Chain 1

Peak Power (CH Low)



Channel Power

15.92 dBm /40.0000 MHz

Power Spectral Density

-60.10 dBm/Hz

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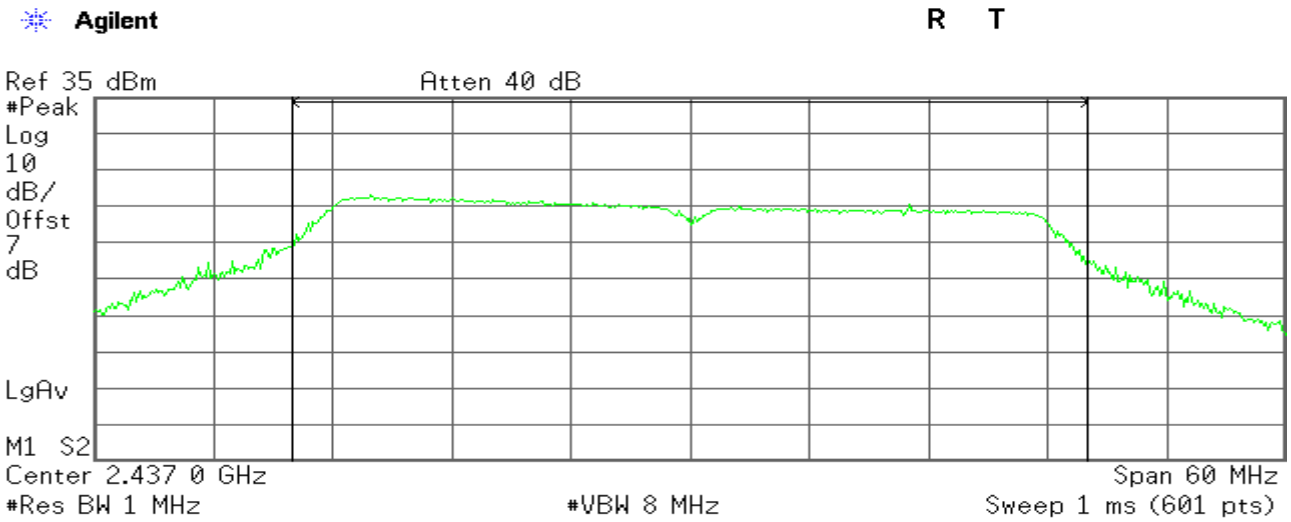
Peak Power (CH Mid)



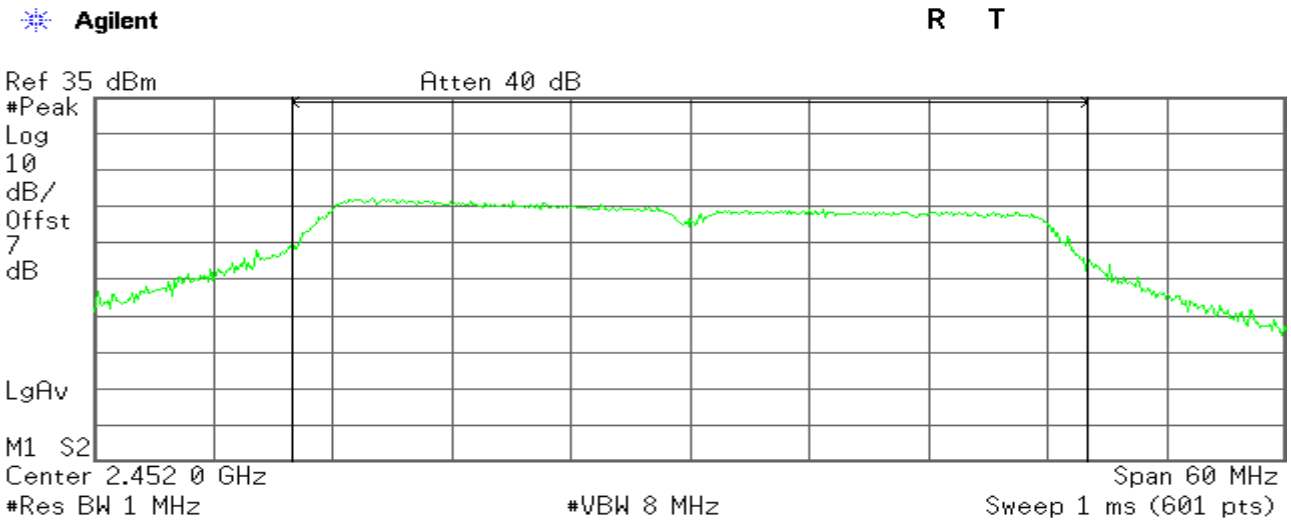
Channel Power

16.03 dBm /40.0000 MHz

Power Spectral Density

-59.99 dBm/Hz

Peak Power (CH High)



Channel Power

14.63 dBm /40.0000 MHz

Power Spectral Density

-61.39 dBm/Hz

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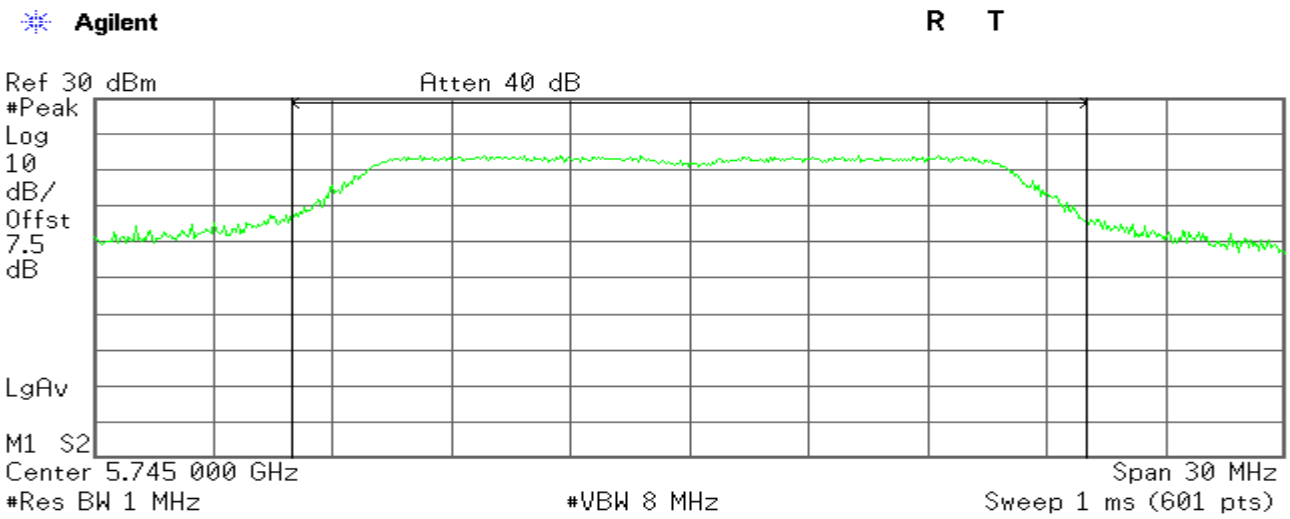
IEEE 802.11a mode:

5725~5785MHz

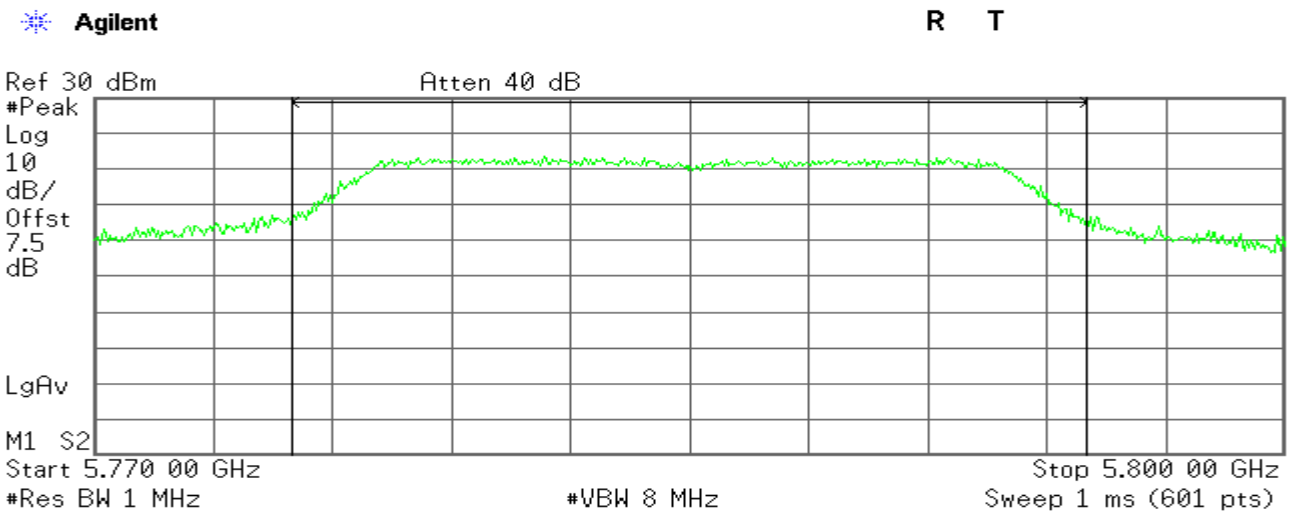
CH Low



Channel Power 20.65 dBm /20.0000 MHz

Power Spectral Density -52.36 dBm/Hz

CH Mid



Channel Power 19.74 dBm /20.0000 MHz

Power Spectral Density -53.27 dBm/Hz

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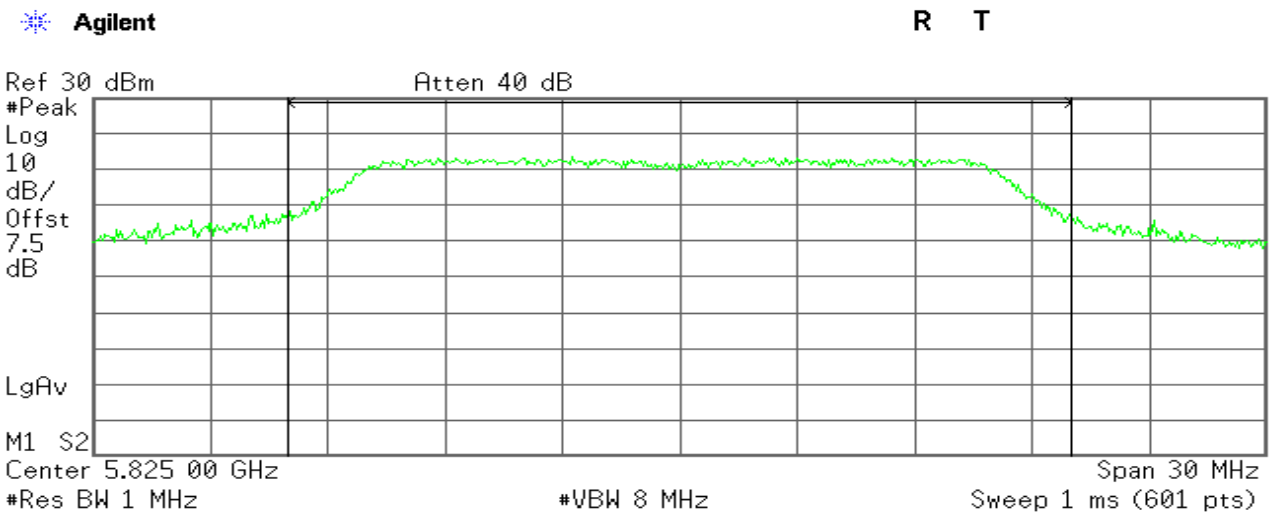
CH High



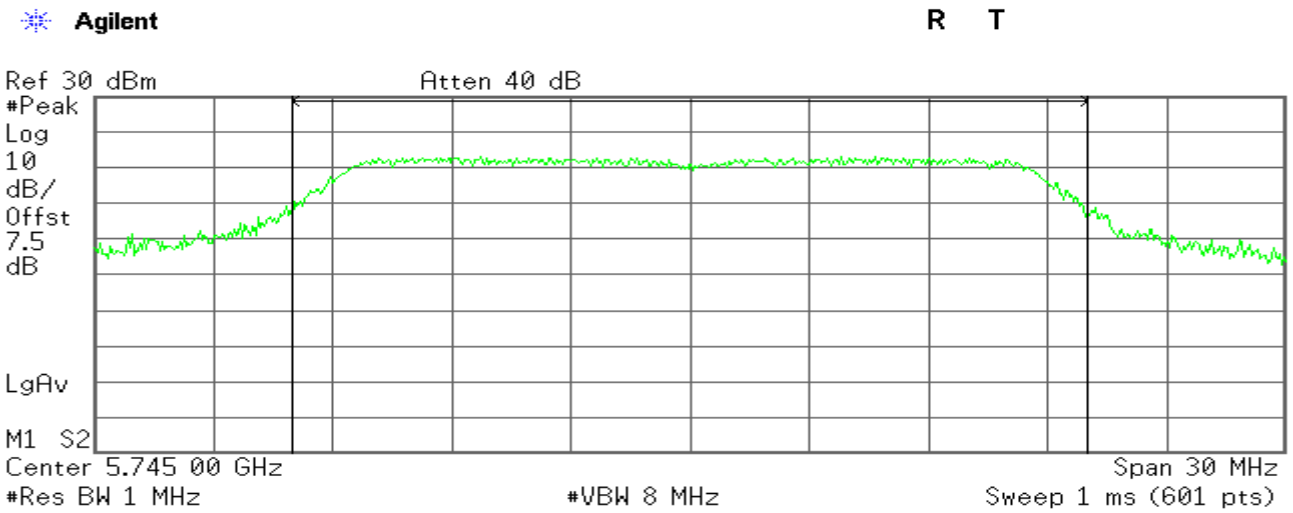
Channel Power 19.85 dBm /20.0000 MHz

Power Spectral Density -53.16 dBm/Hz

IEEE 802.11an HT20 mode

5725~5785MHz

CH Low



Channel Power 20.09 dBm /20.0000 MHz

Power Spectral Density -52.92 dBm/Hz

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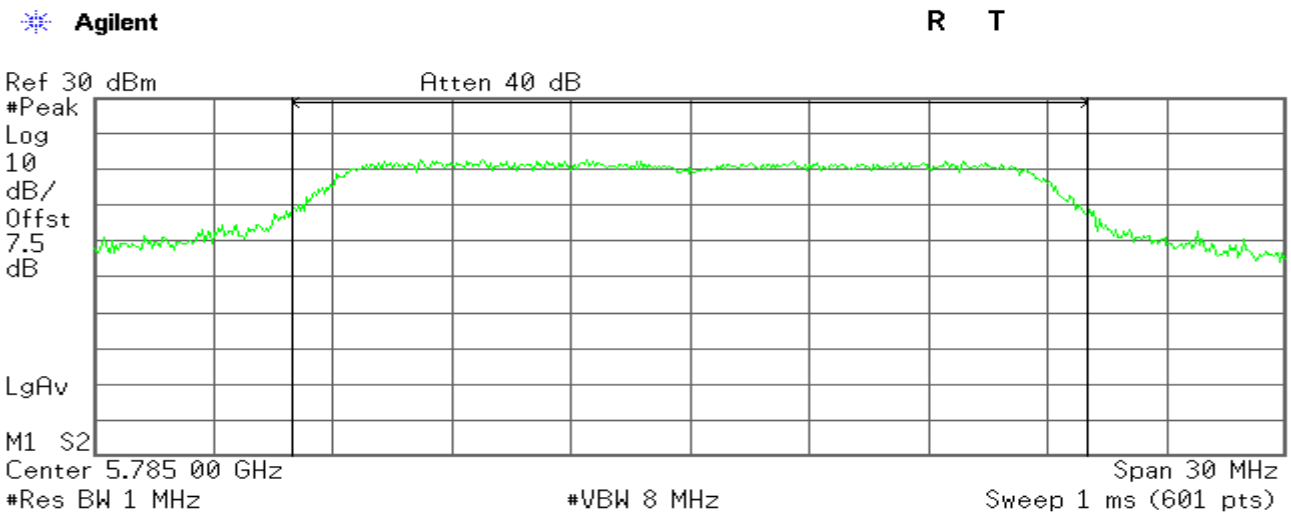
CH Mid



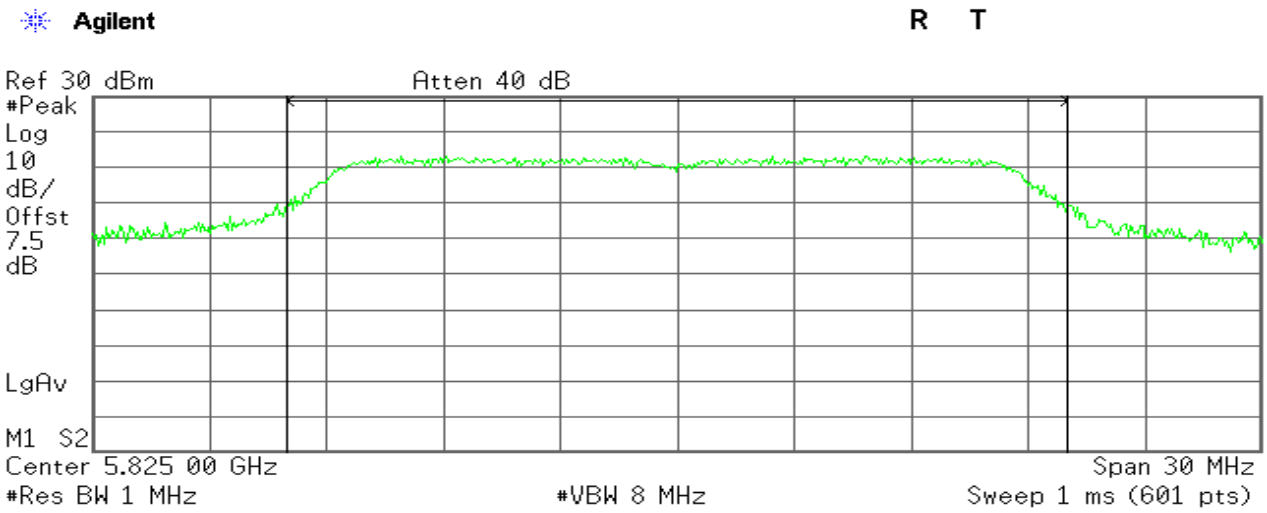
Channel Power

19.27 dBm /20.0000 MHz

Power Spectral Density

-53.74 dBm/Hz

CH High



Channel Power

19.95 dBm /20.0000 MHz

Power Spectral Density

-53.06 dBm/Hz

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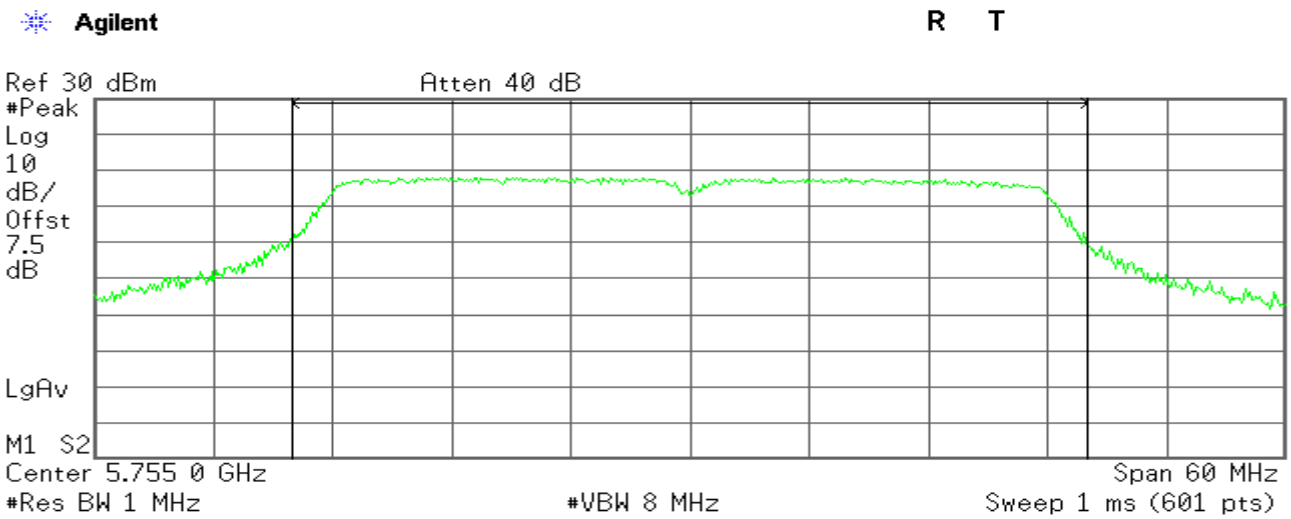
IEEE 802.11an HT40 mode

5725~5785MHz

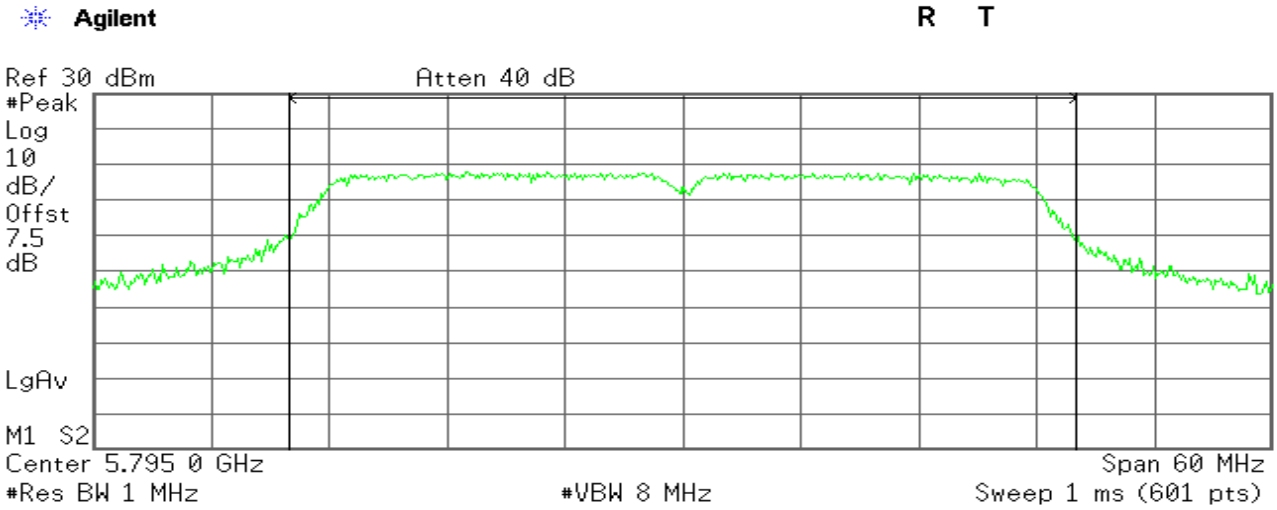
CH Low



Channel Power 18.01 dBm /40.0000 MHz

Power Spectral Density -58.01 dBm/Hz

CH High



Channel Power 17.86 dBm /40.0000 MHz

Power Spectral Density -58.16 dBm/Hz

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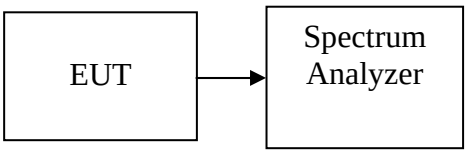
4.3.PEAK POWER SPECTRAL DENSITY

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

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 = 1.5 times the DTS bandwidth, Sweep = auto

3.Record the max reading.

4.Repeat the above procedure until the measurements for all frequencies are completed.

TEST RESULTS

No non-compliance noted

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Test mode: IEEE 802.11b mode

Channel	Frequency (MHz)	Chain 0 PPSD (dBm)	Chain 1 PPSD (dBm)	Total PPSD (dBm)	Limit (dBm)	Result
Low	2412	-4.16	-3.99	2.51	8.00	PASS
Mid	2437	-6.11	-4.08	2.14	8.00	PASS
High	2462	-5.06	-4.22	2.28	8.00	PASS

Test mode: IEEE 802.11g mode

Channel	Frequency (MHz)	Chain 0 PPSD (dBm)	Chain 1 PPSD (dBm)	Total PPSD (dBm)	Limit (dBm)	Result
Low	2412	-13.83	-9.86	0.59	8.00	PASS
Mid	2437	-9.13	-10.09	0.86	8.00	PASS
High	2462	-10.68	-0.59	2.92	8.00	PASS

Test mode: IEEE 802.11n HT20 mode

Channel	Frequency (MHz)	Chain 0 PPSD (dBm)	Chain 1 PPSD (dBm)	Total PPSD (dBm)	Limit (dBm)	Result
Low	2412	-9.88	-10.47	0.76	8.00	PASS
Mid	2437	-8.95	-11.32	0.80	8.00	PASS
High	2462	-10.01	-0.51	2.99	8.00	PASS

Test mode: IEEE 802.11n HT40 mode

Channel	Frequency (MHz)	Chain 0 PPSD (dBm)	Chain 1 PPSD (dBm)	Total PPSD (dBm)	Limit (dBm)	Result
Low	2422	-13.83	-14.16	0.33	8.00	PASS
Mid	2437	-14.67	-13.90	0.31	8.00	PASS
High	2452	-15.14	-16.05	0.23	8.00	PASS

Test mode: IEEE 802.11a mode

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Result
Low	5745	-0.99	8.00	PASS
Mid	5785	-3.33	8.00	PASS
High	5825	-3.21	8.00	PASS

Test mode: IEEE 802.11n HT20 mode

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Result
Low	5745	-2.69	8.00	PASS
Mid	5785	-3.63	8.00	PASS
High	5825	-3.64	8.00	PASS

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Test mode: IEEE 802.11n HT40 mode

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Result
Low	5755	-9.85	8.00	PASS
High	5795	-8.06	8.00	PASS

Remark: *Total PPSD (dBm) = 10*LOG(10^(Chain 0 PPSD / 10)+10^(Chain 1 PPSD /10)))*

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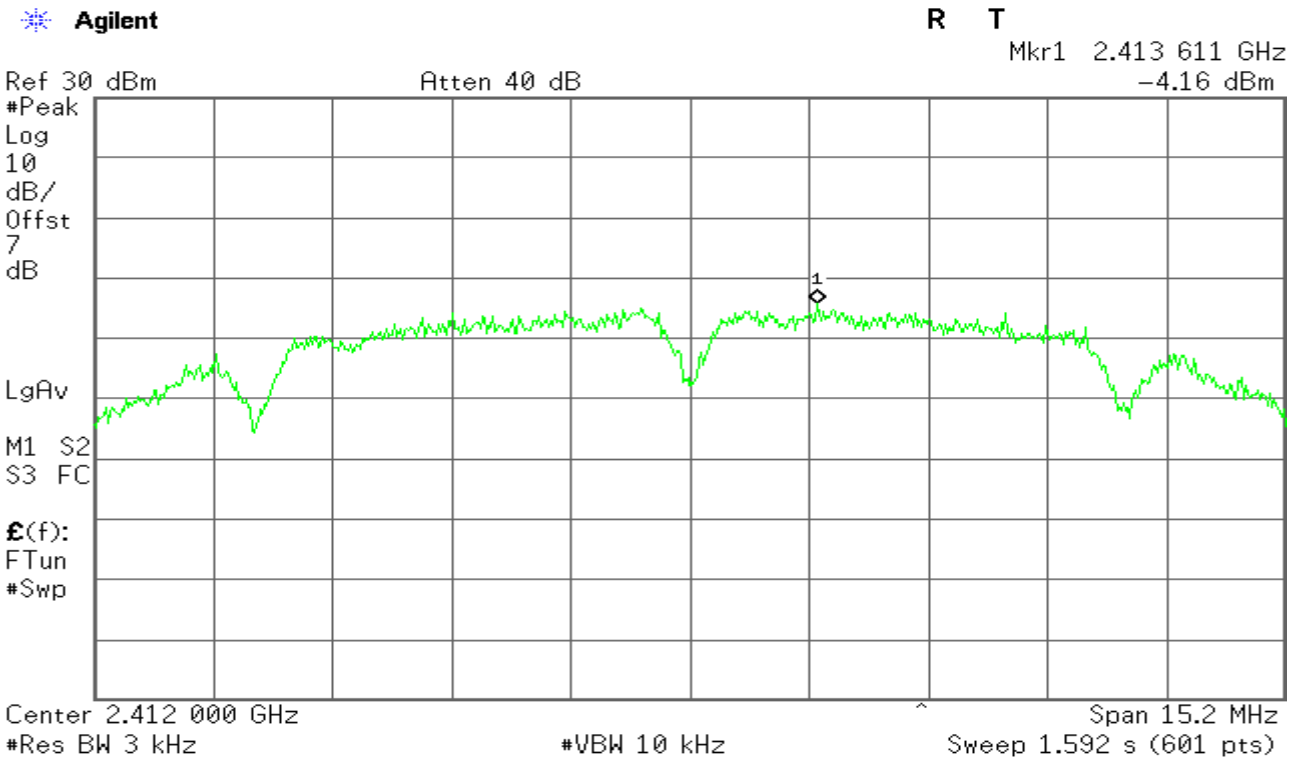
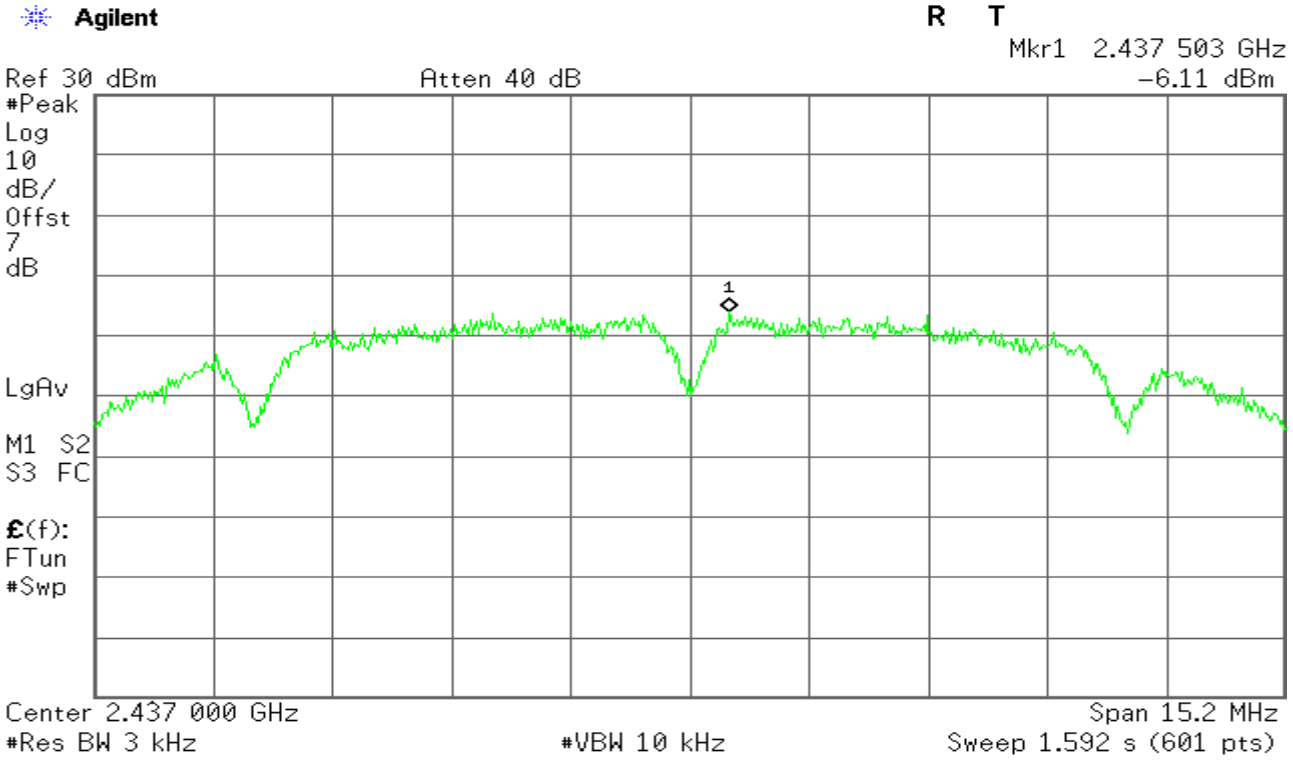
Test Plot

IEEE 802.11b mode/Chain 0

PPSD (CH Low)



PPSD (CH Mid)



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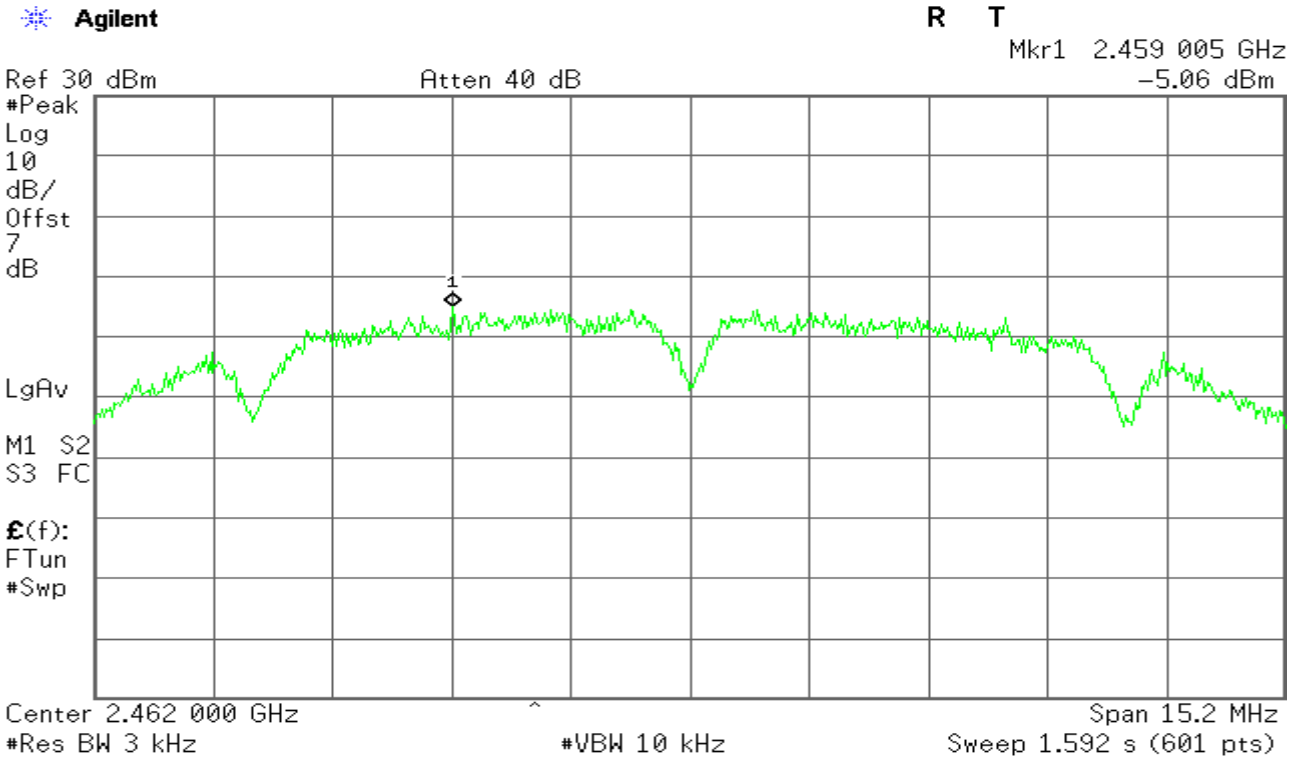
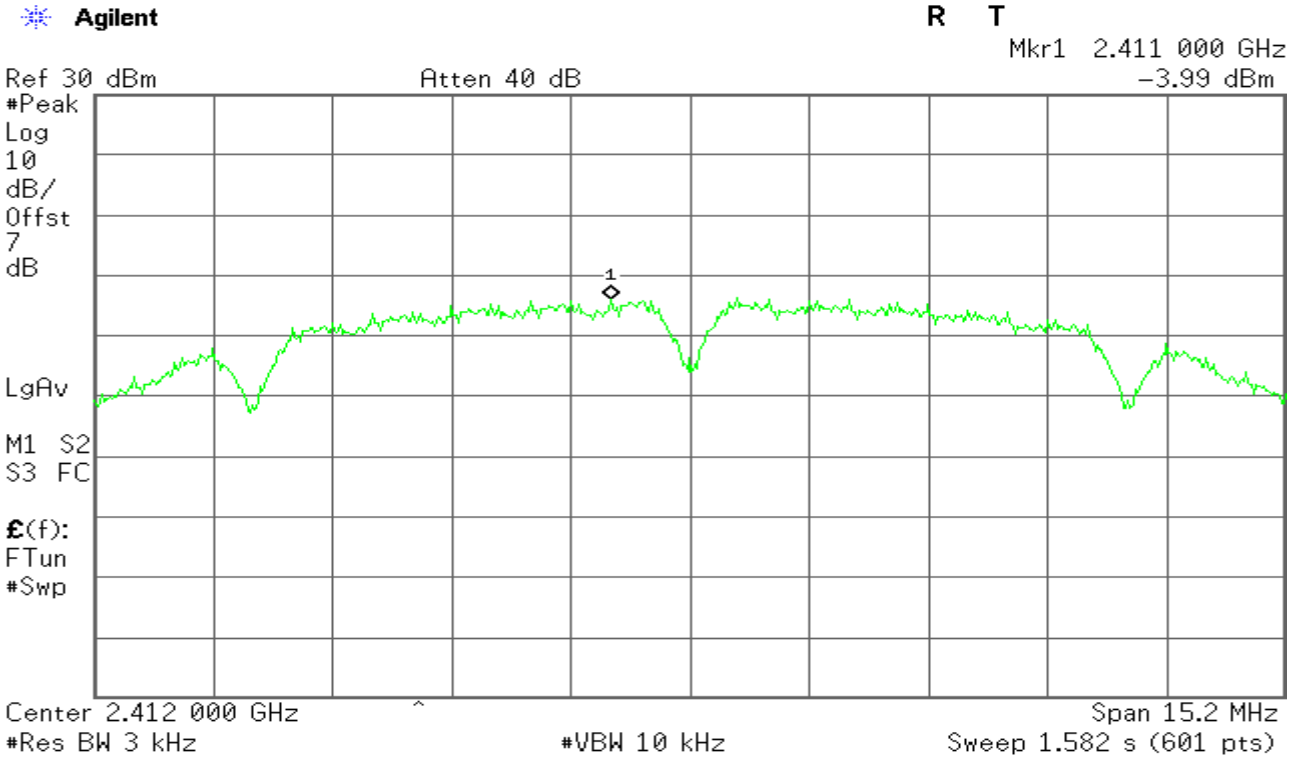
PPSD (CH High)



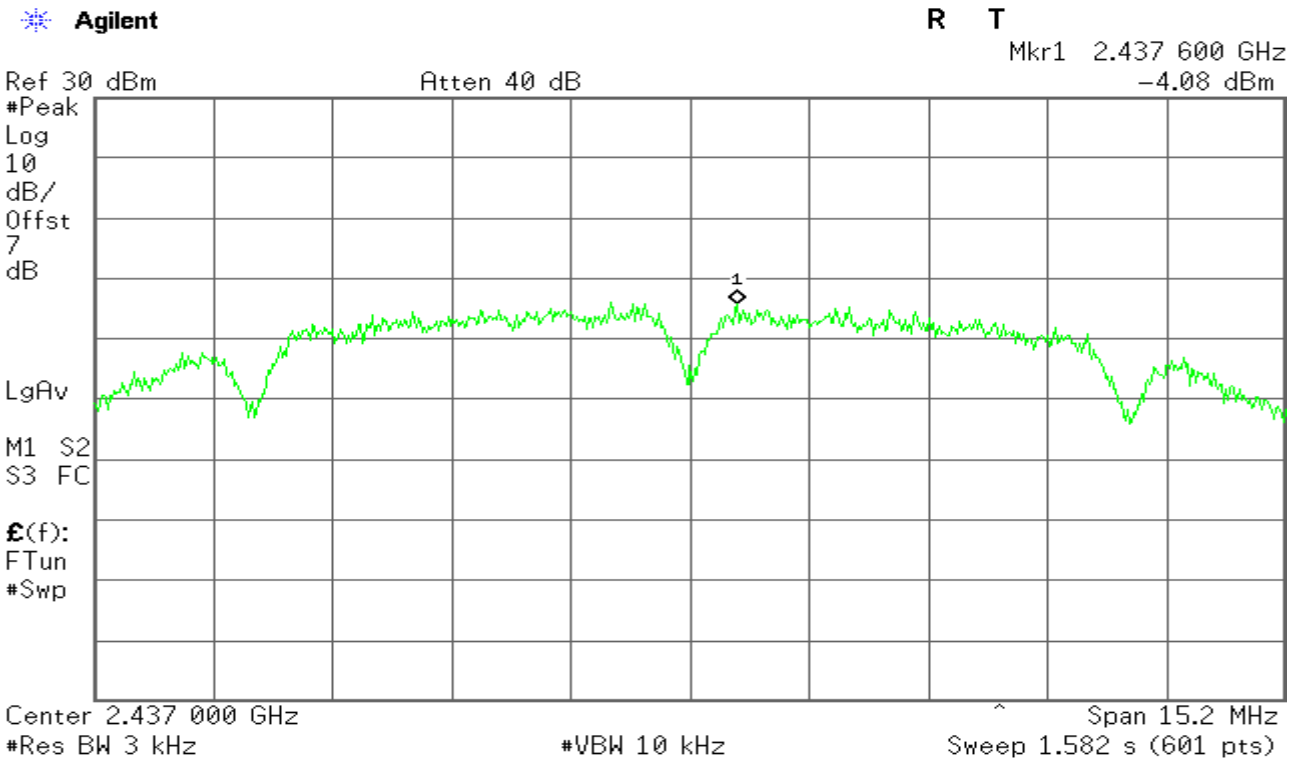
IEEE 802.11b mode/Chain 1

PPSD (CH Low)

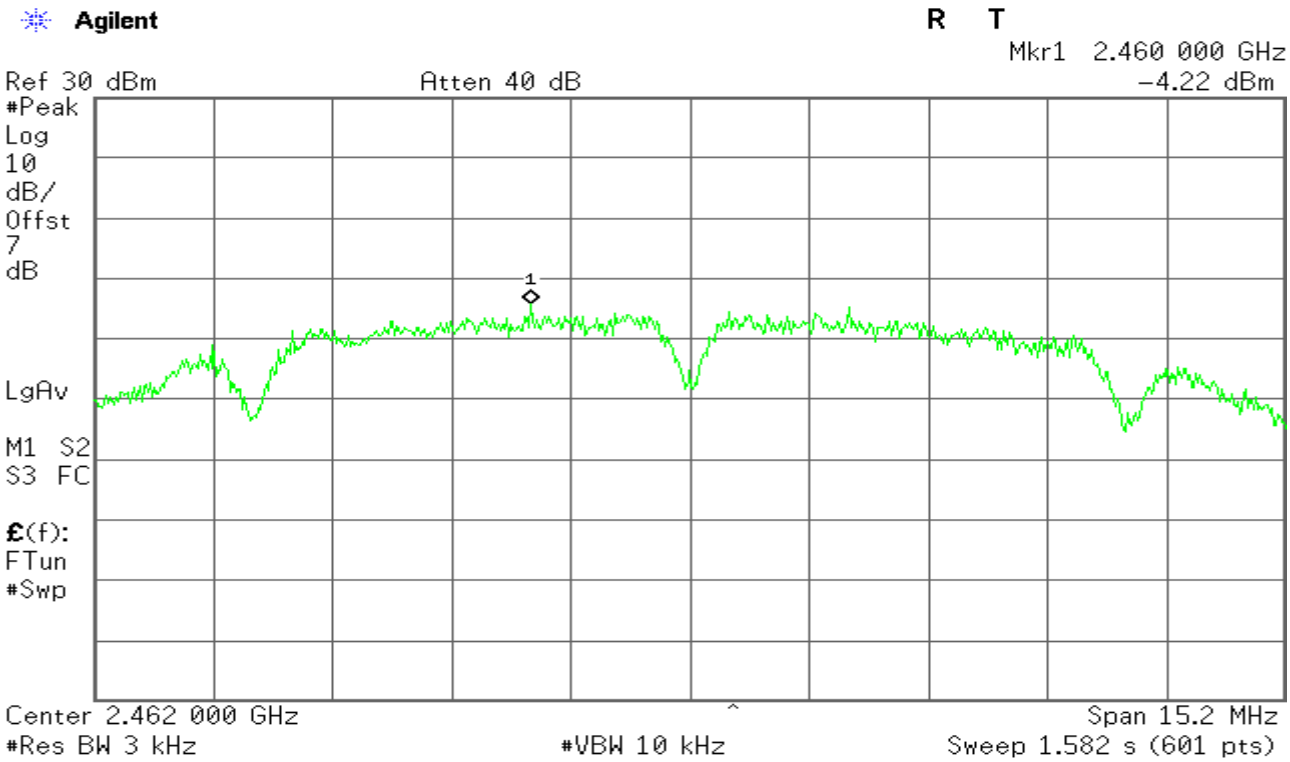


This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

PPSD (CH Mid)



PPSD (CH High)



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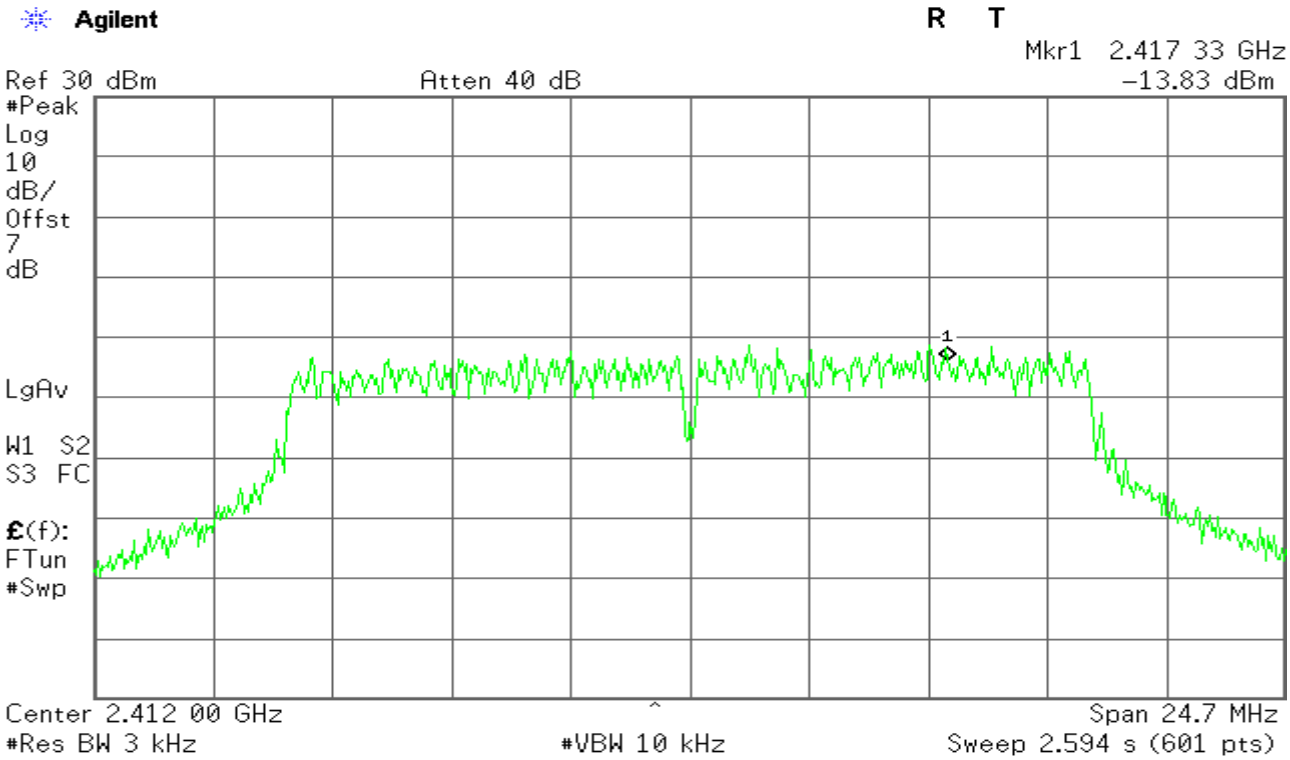
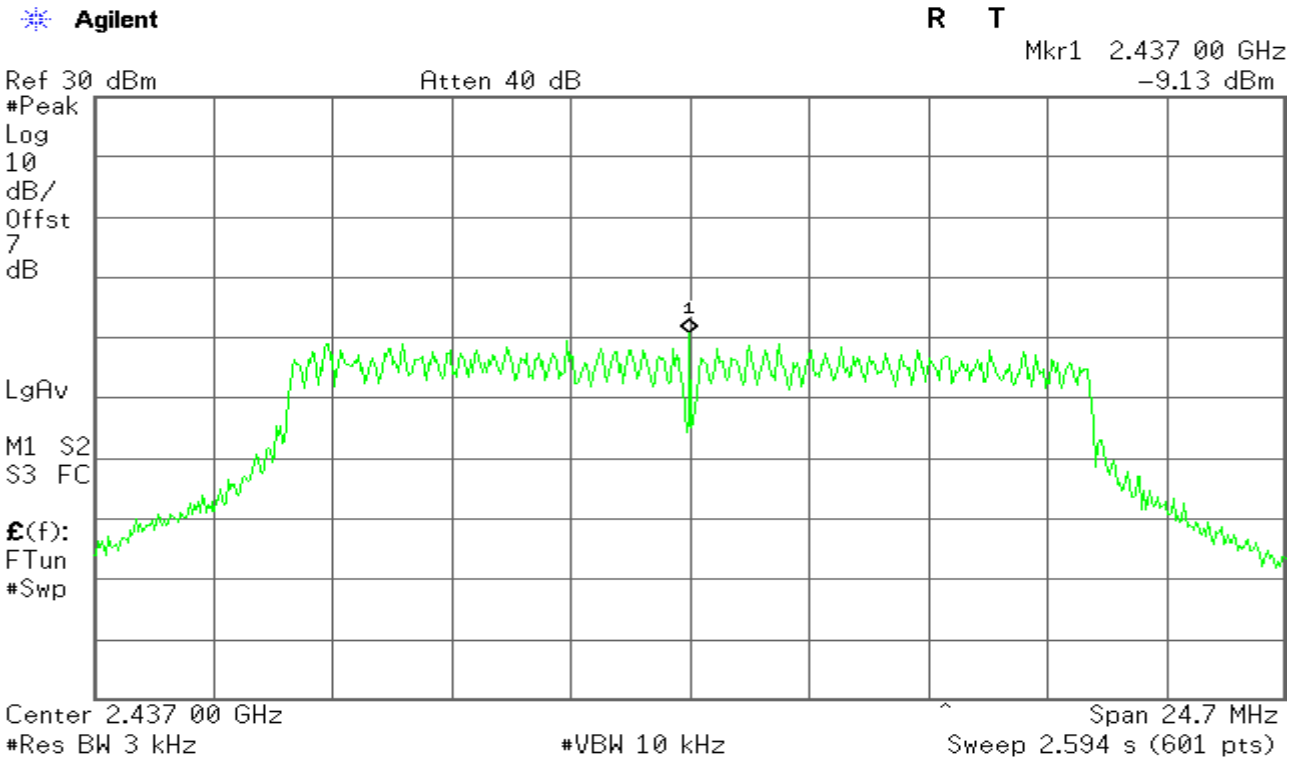
IEEE 802.11g mode/Chain 0

PPSD (CH Low)



PPSD (CH Mid)



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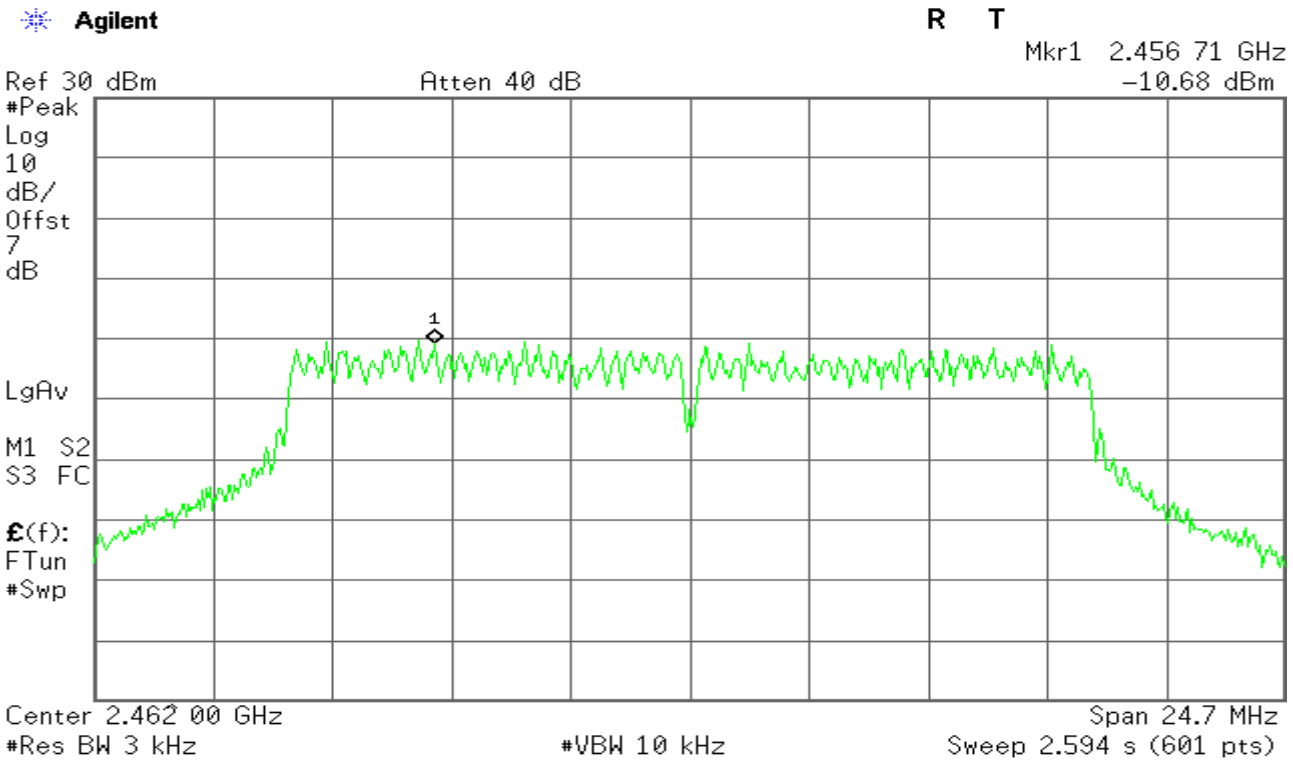
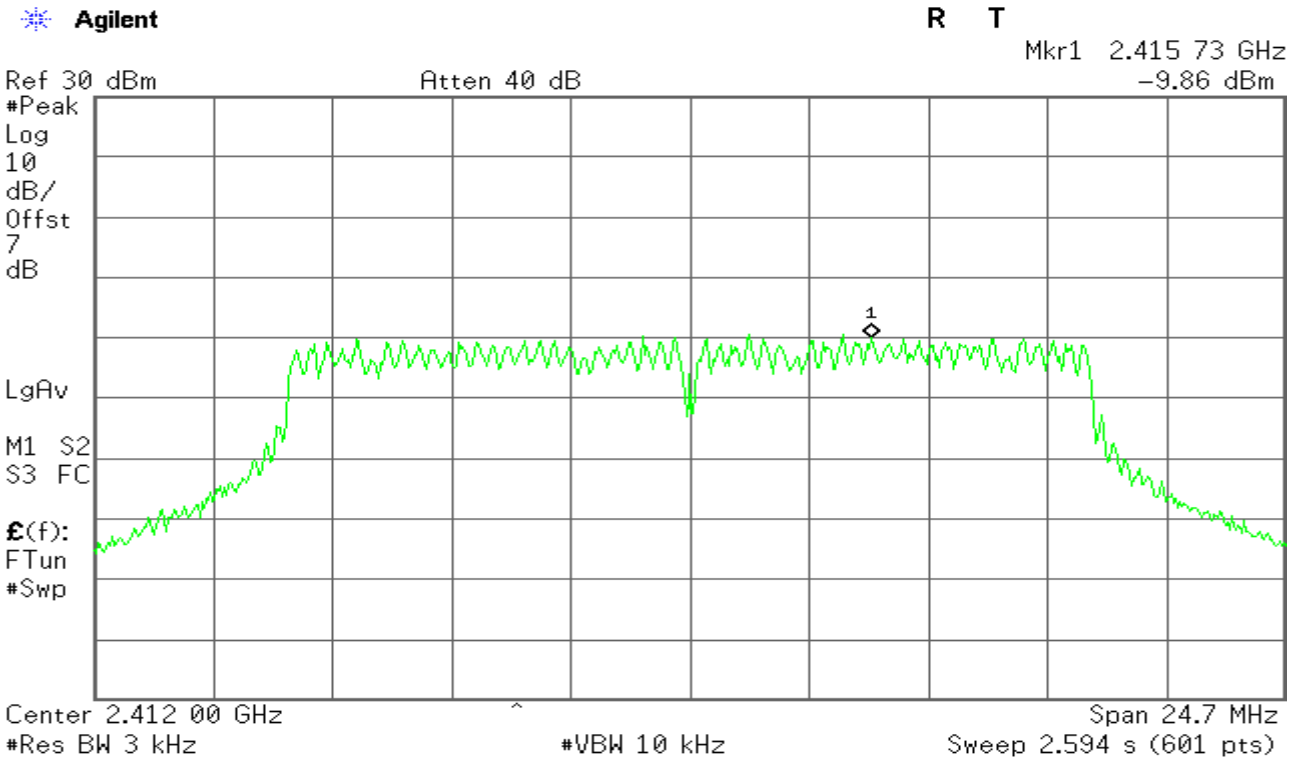
PPSD (CH High)



IEEE 802.11g mode/Chain 1

PPSD (CH Low)



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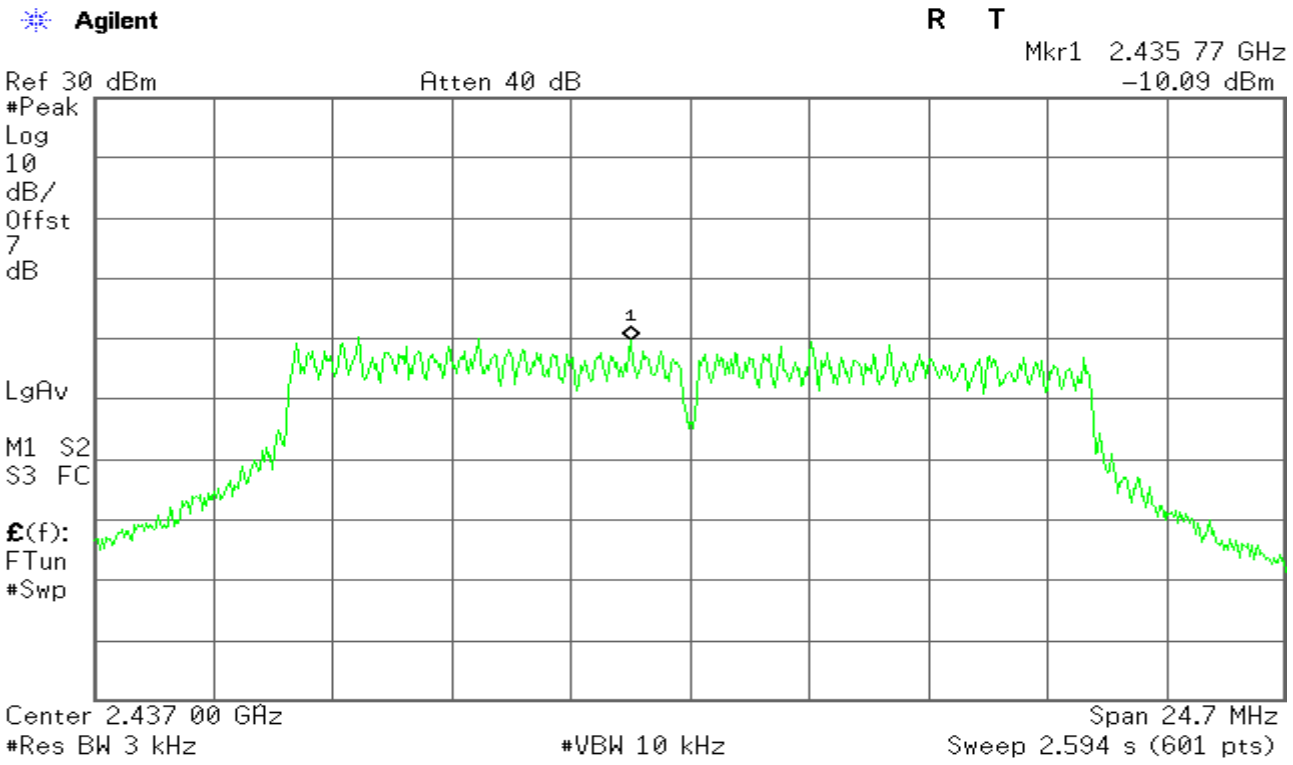
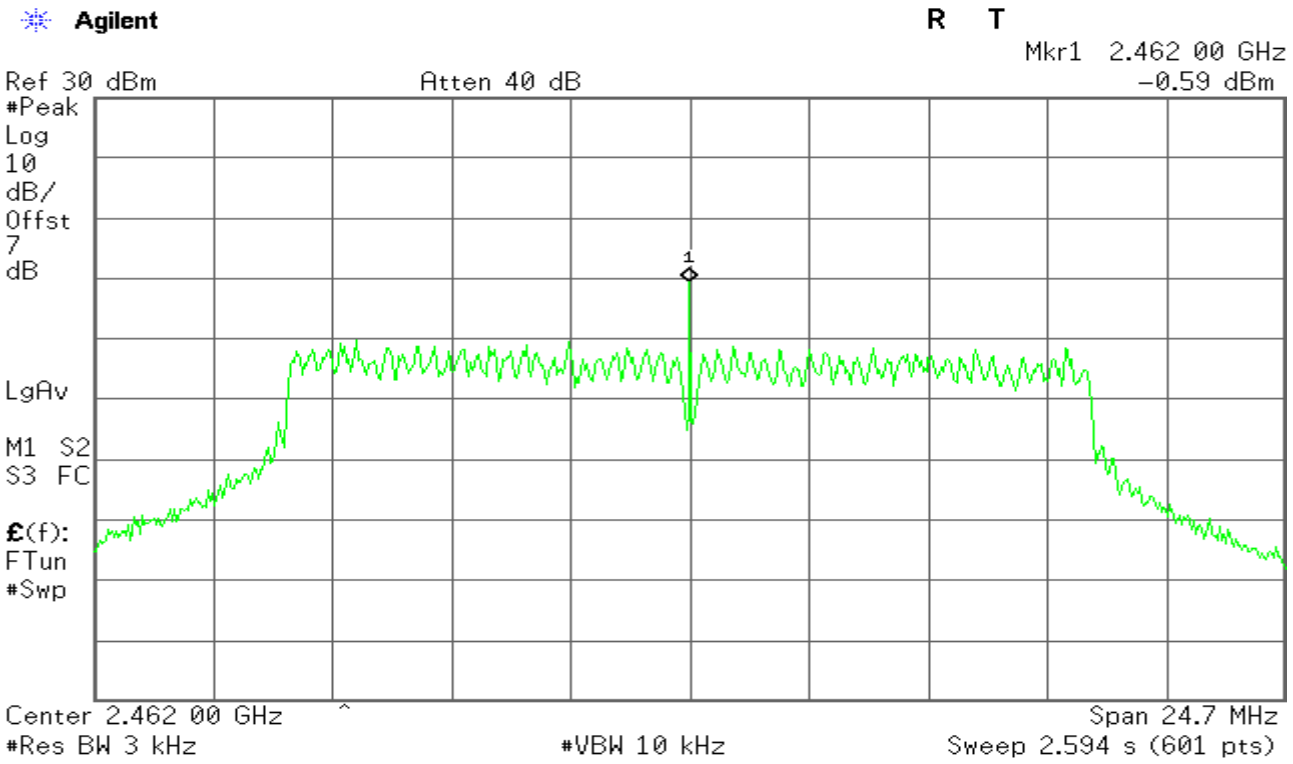
PPSD (CH Mid)



PPSD (CH High)



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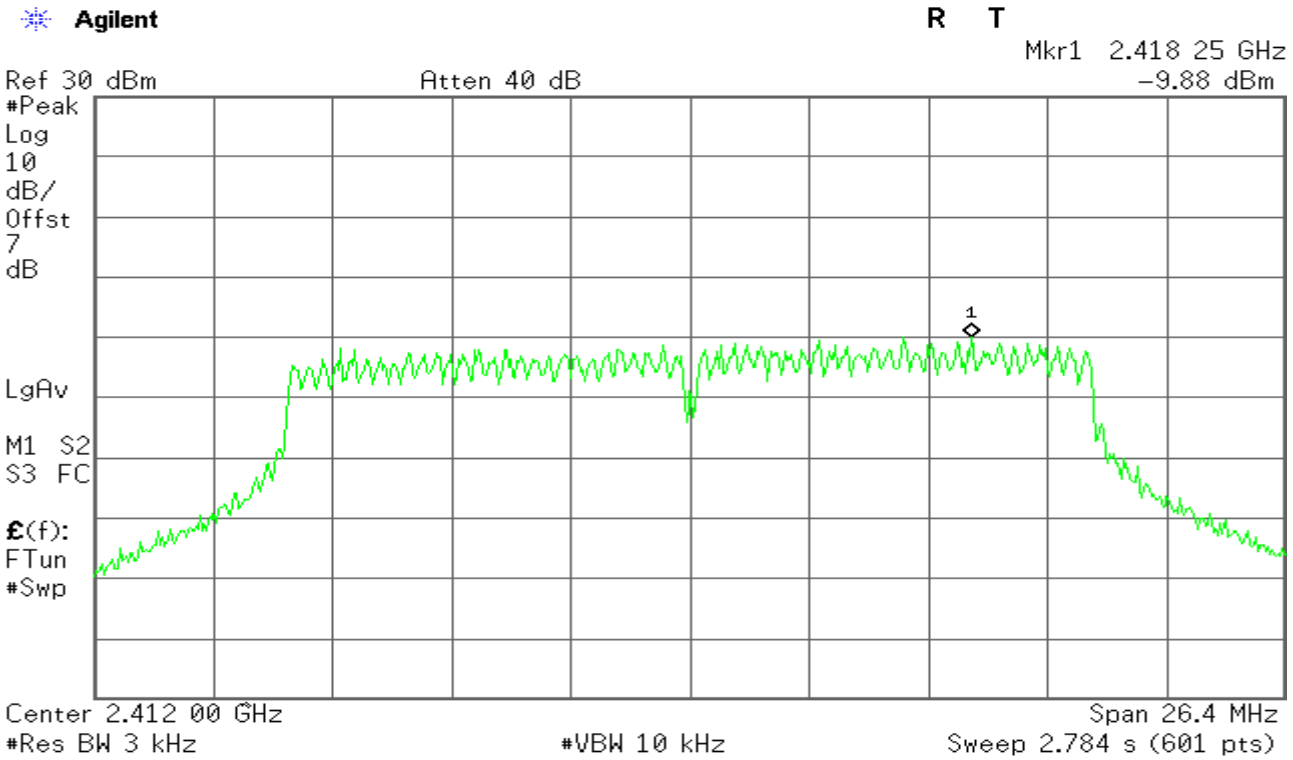
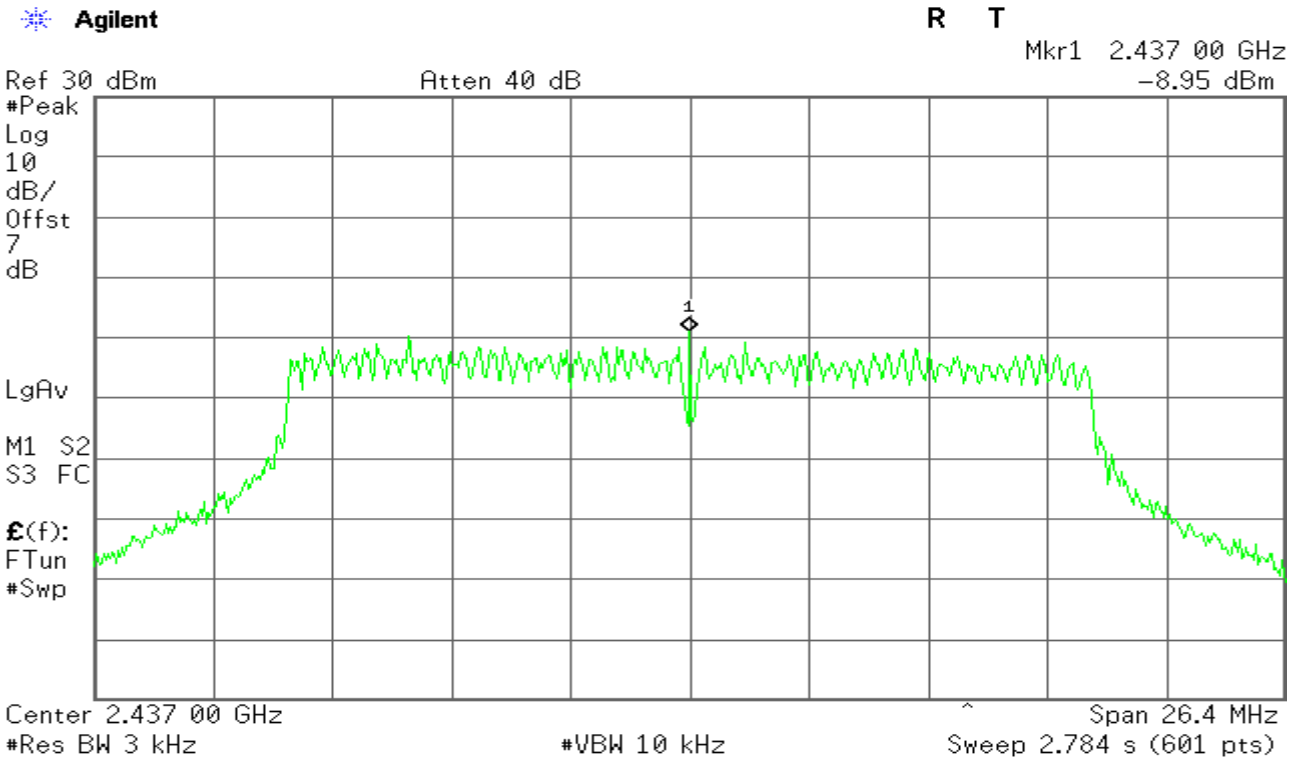
IEEE 802.11n HT20 mode / Chain 0

PPSD (CH Low)



PPSD (CH Mid)



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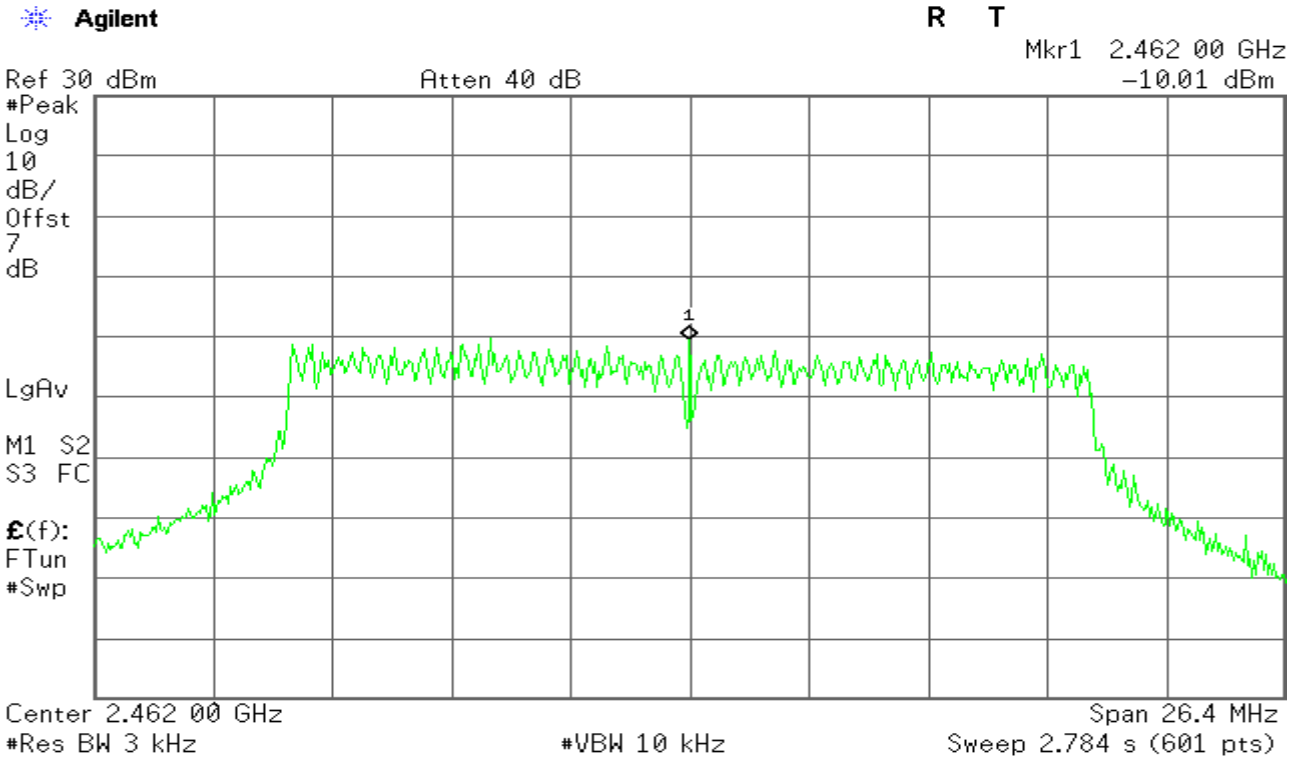
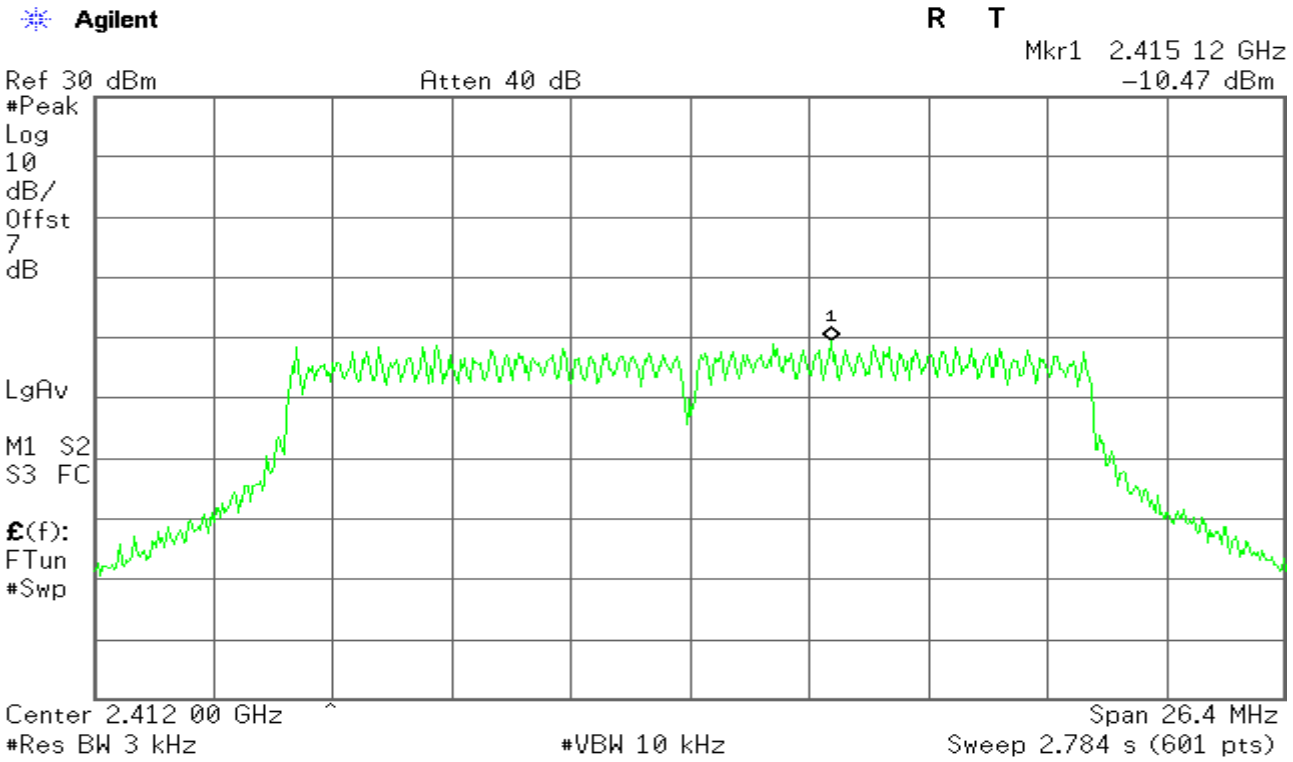
PPSD (CH High)



IEEE 802.11n HT20 mode / Chain 1

PPSD (CH Low)



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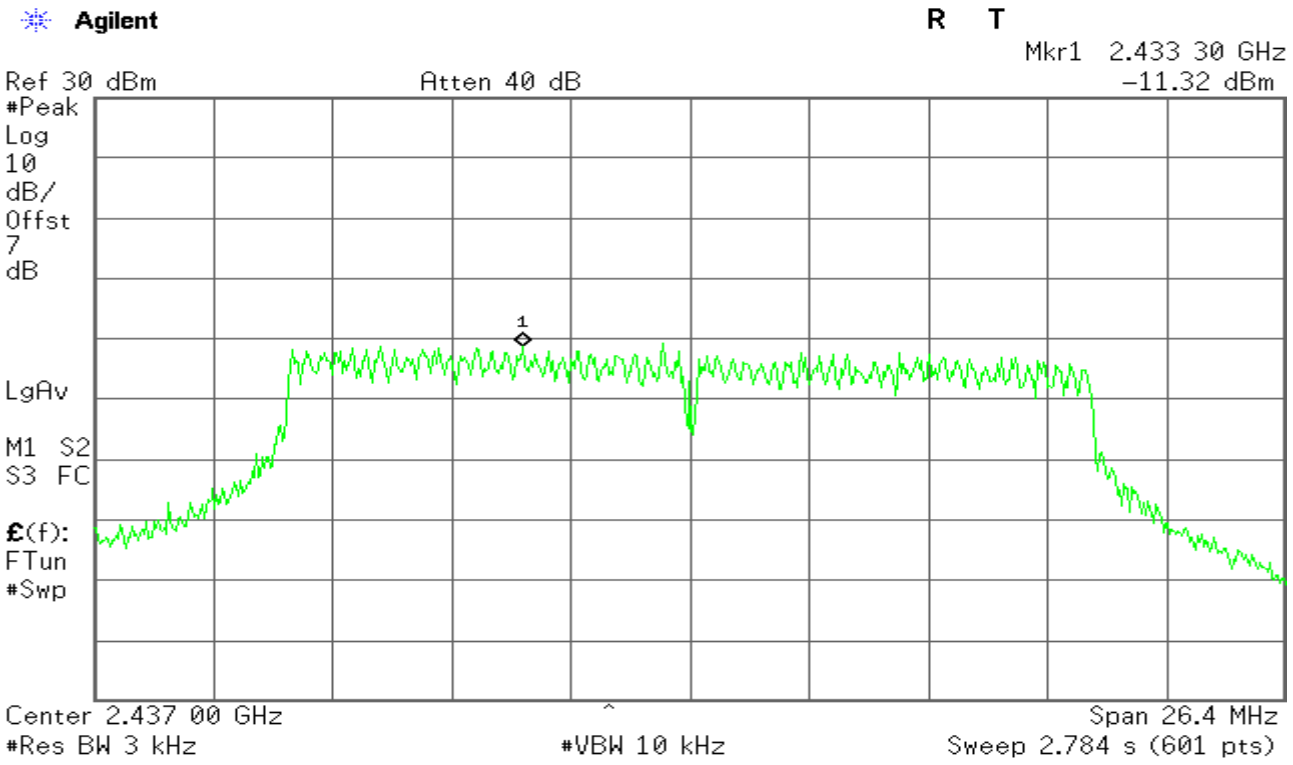
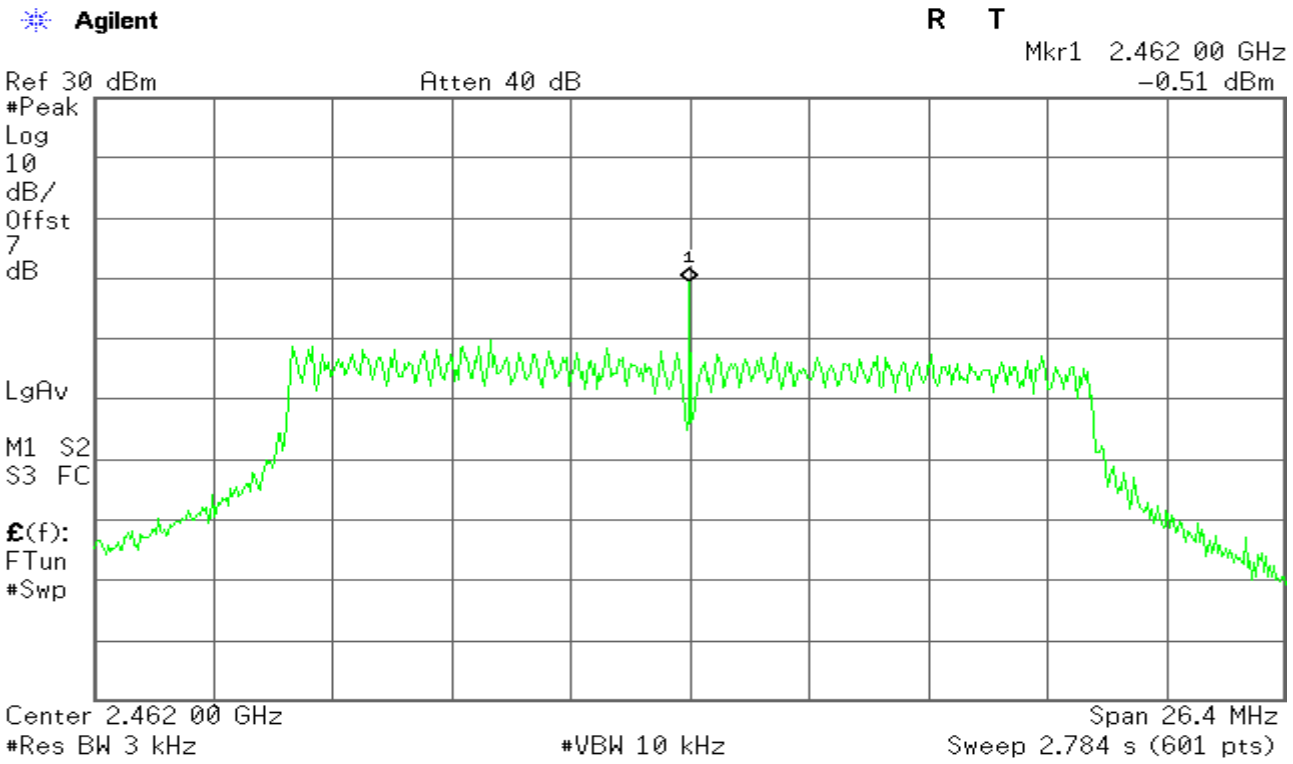
PPSD (CH Mid)



PPSD (CH High)



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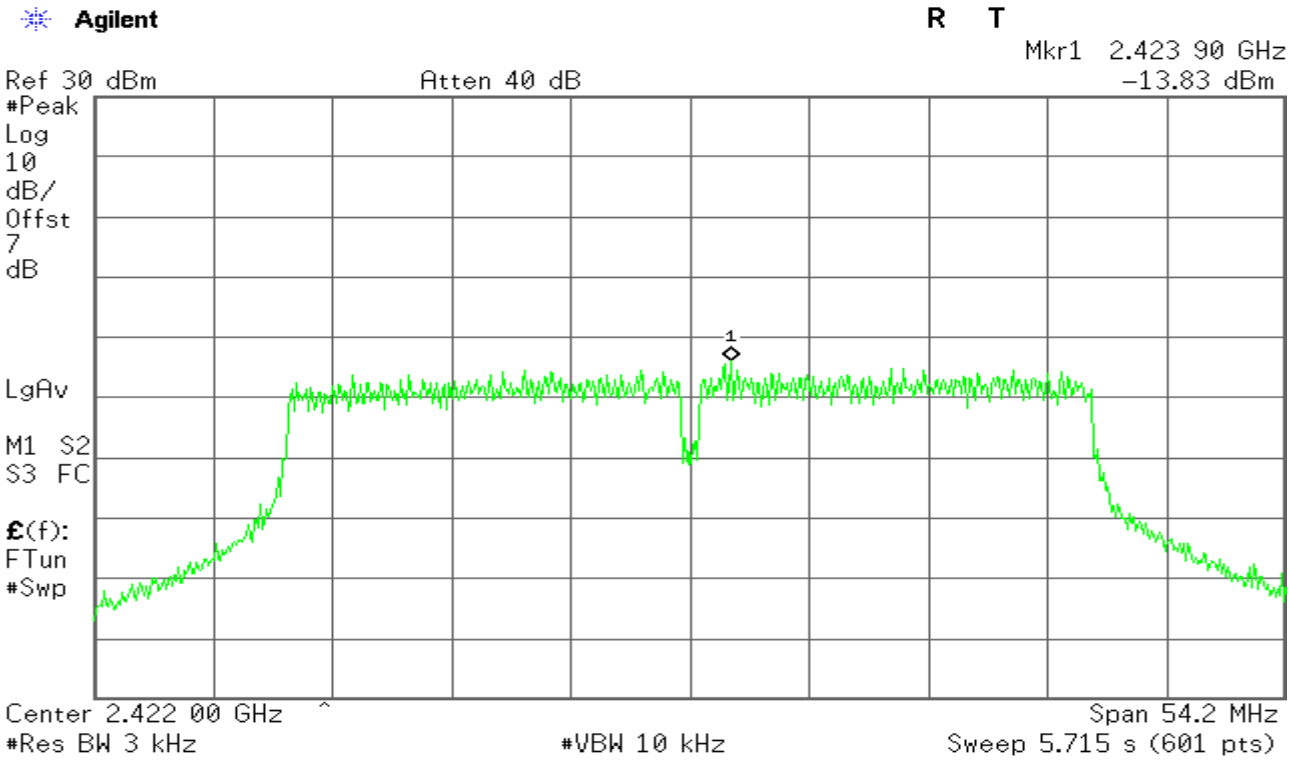
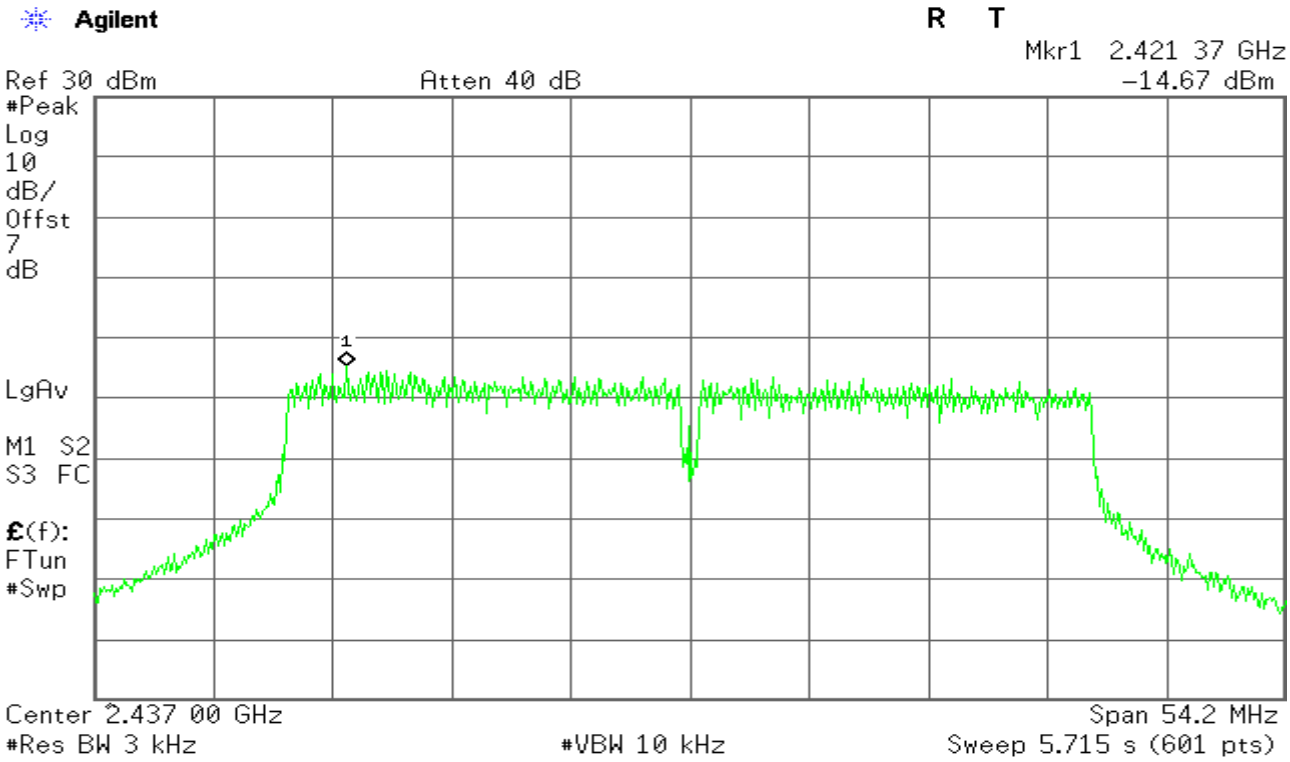
IEEE 802.11n HT40 mode / Chain 0

PPSD (CH Low)



PPSD (CH Mid)



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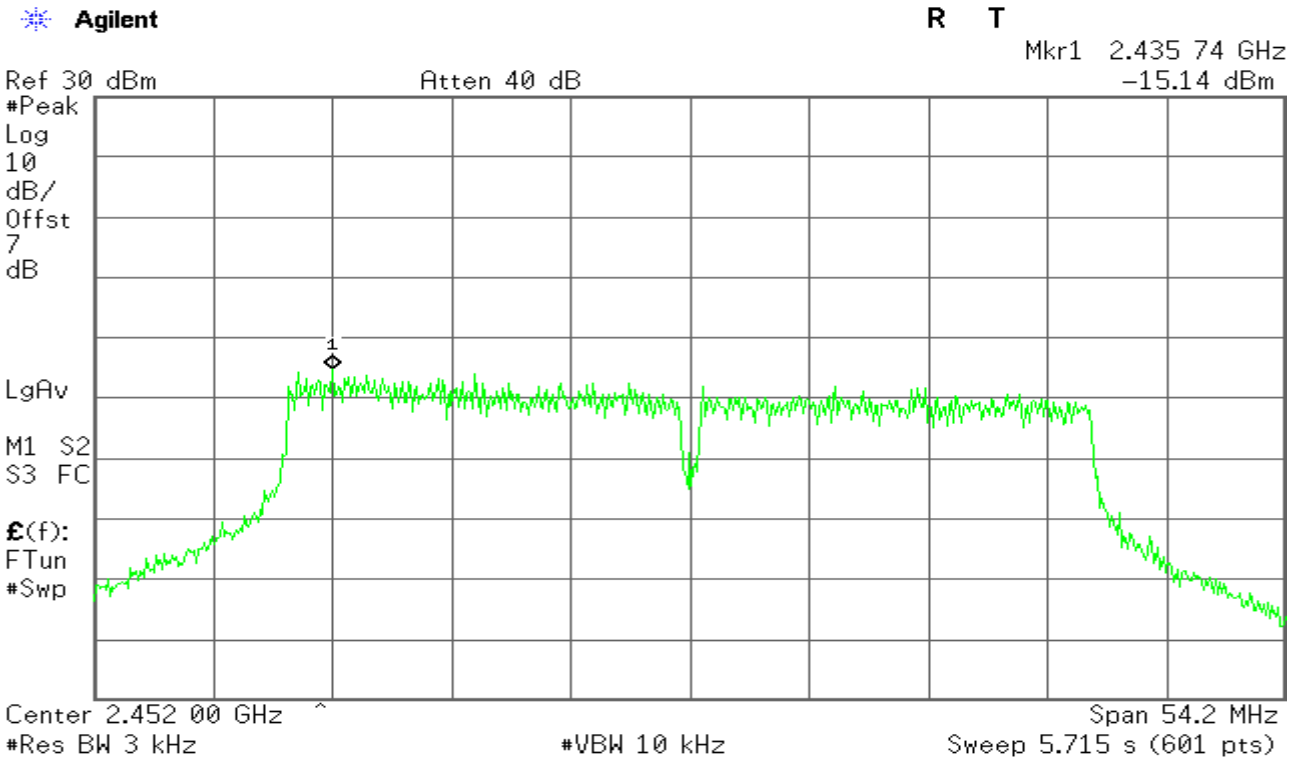
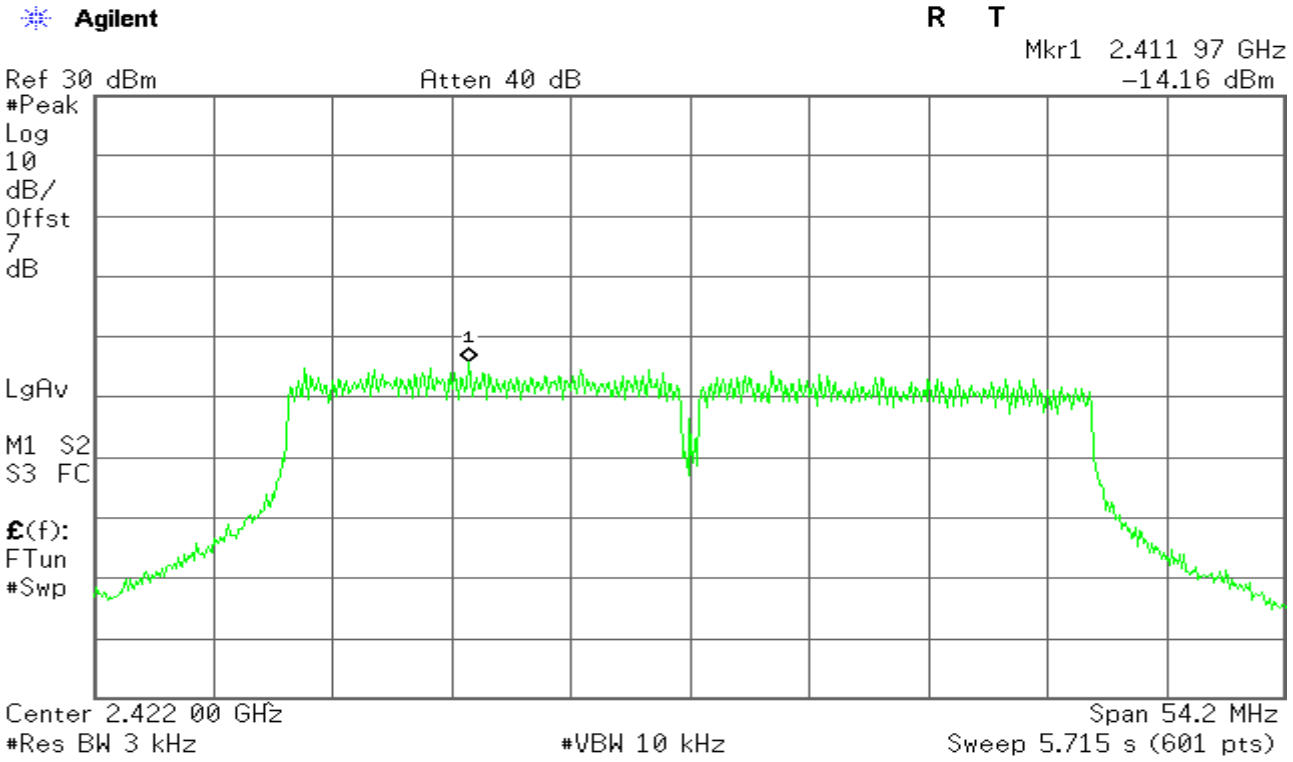
PPSD (CH High)



IEEE 802.11n HT40 mode / Chain 1

PPSD (CH Low)



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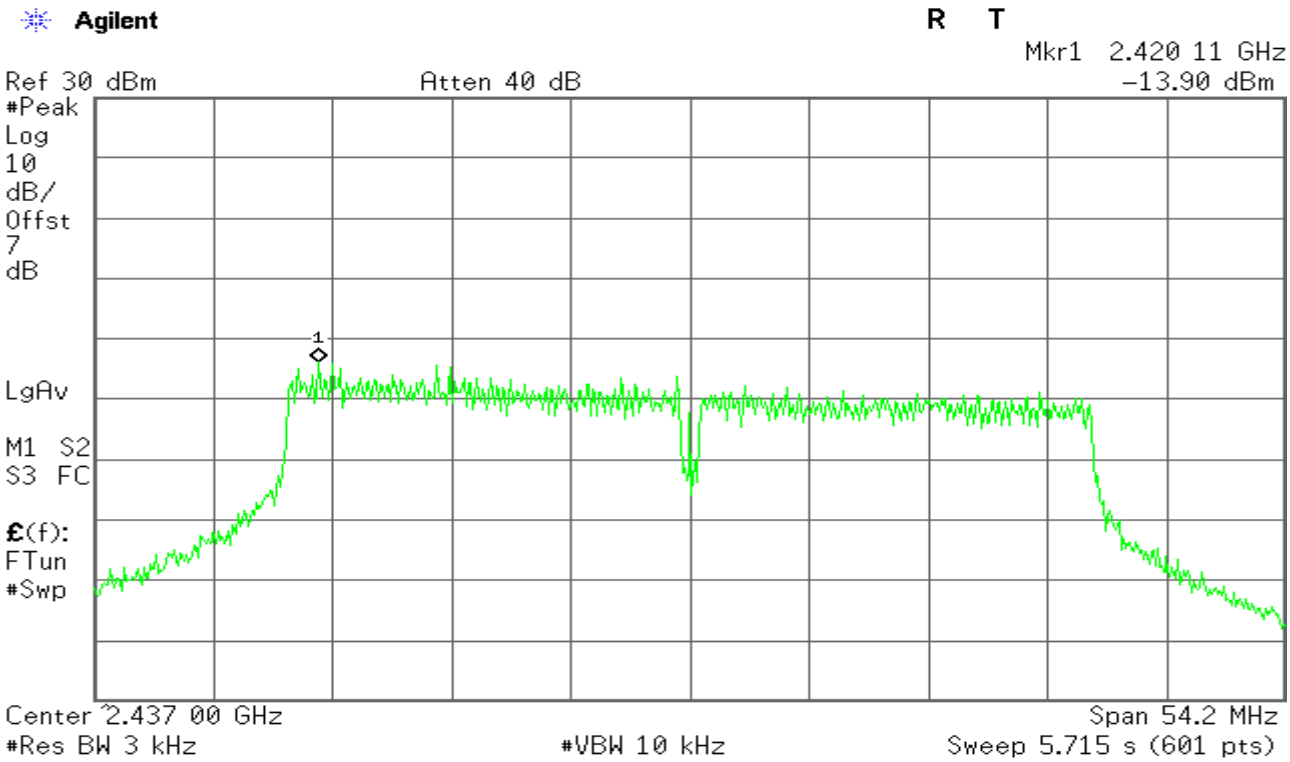
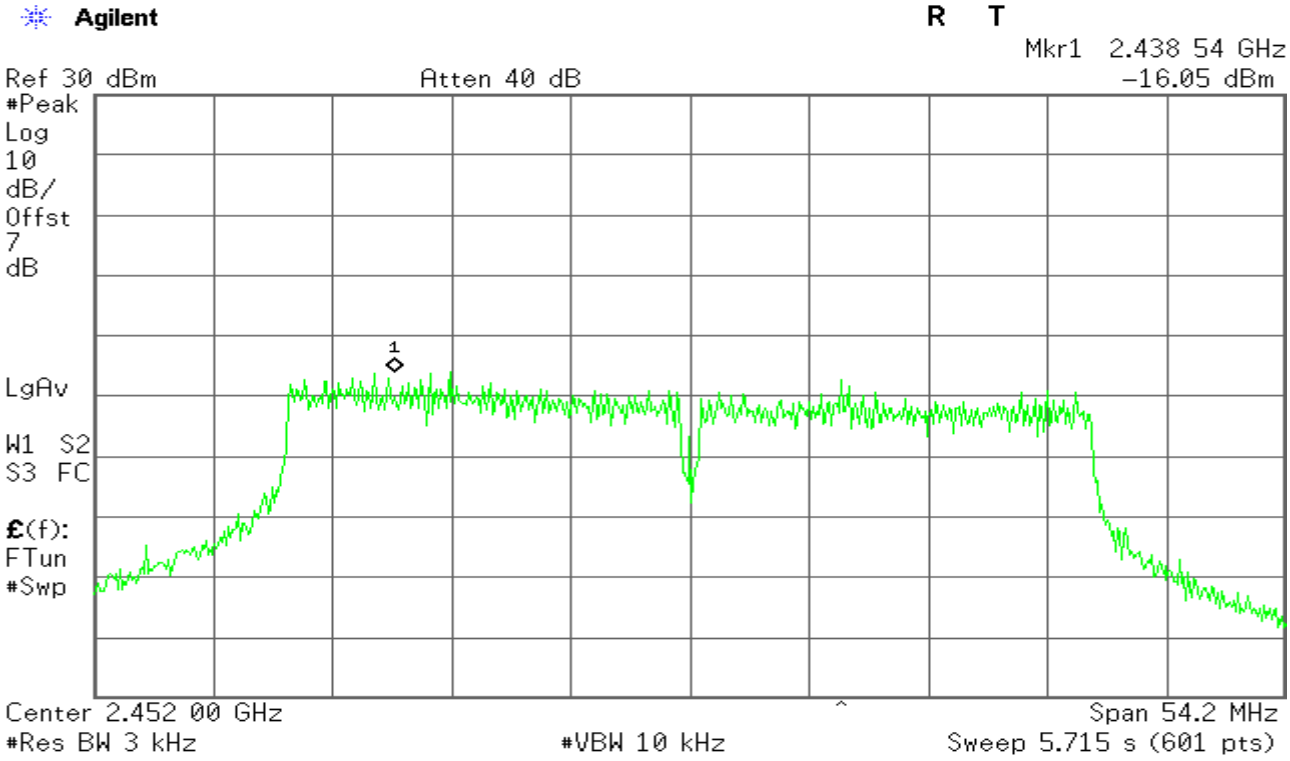
PPSD (CH Mid)



PPSD (CH High)



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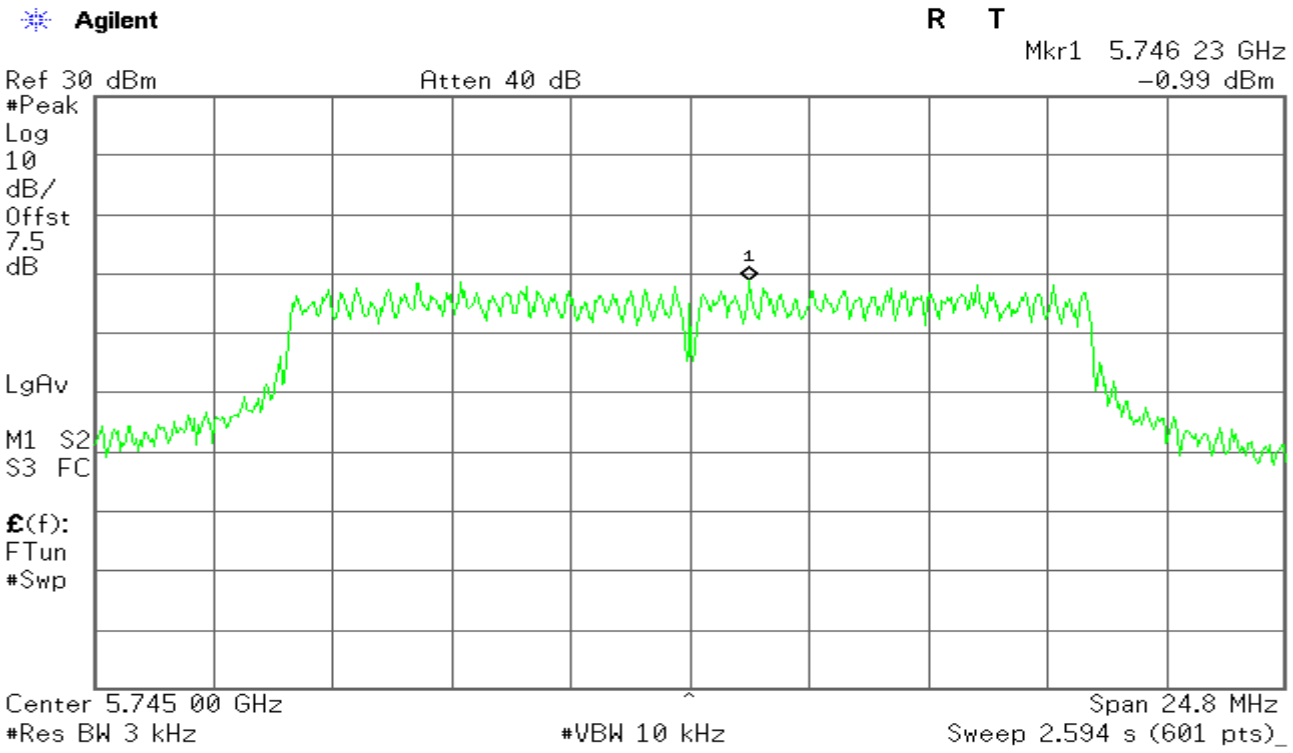
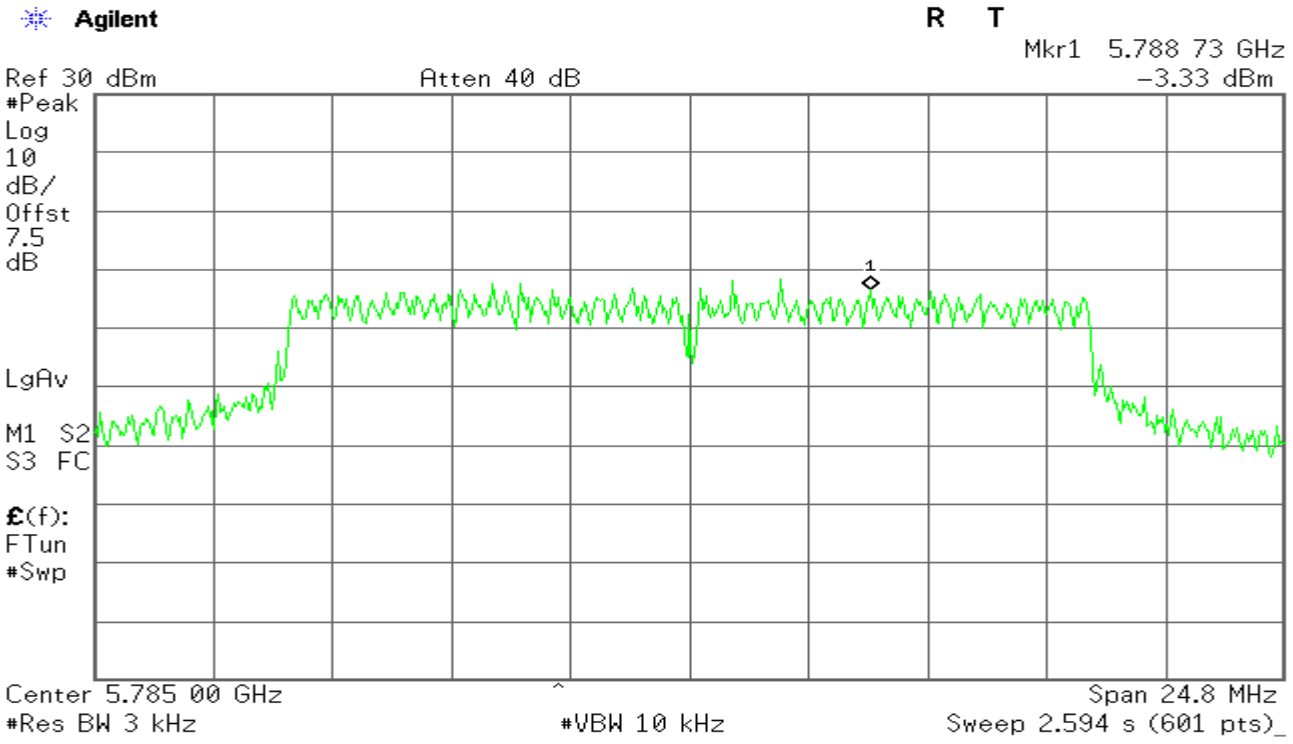
Test Plot
IEEE 802.11a mode:

5725~5825MHz

CH Low



CH Mid



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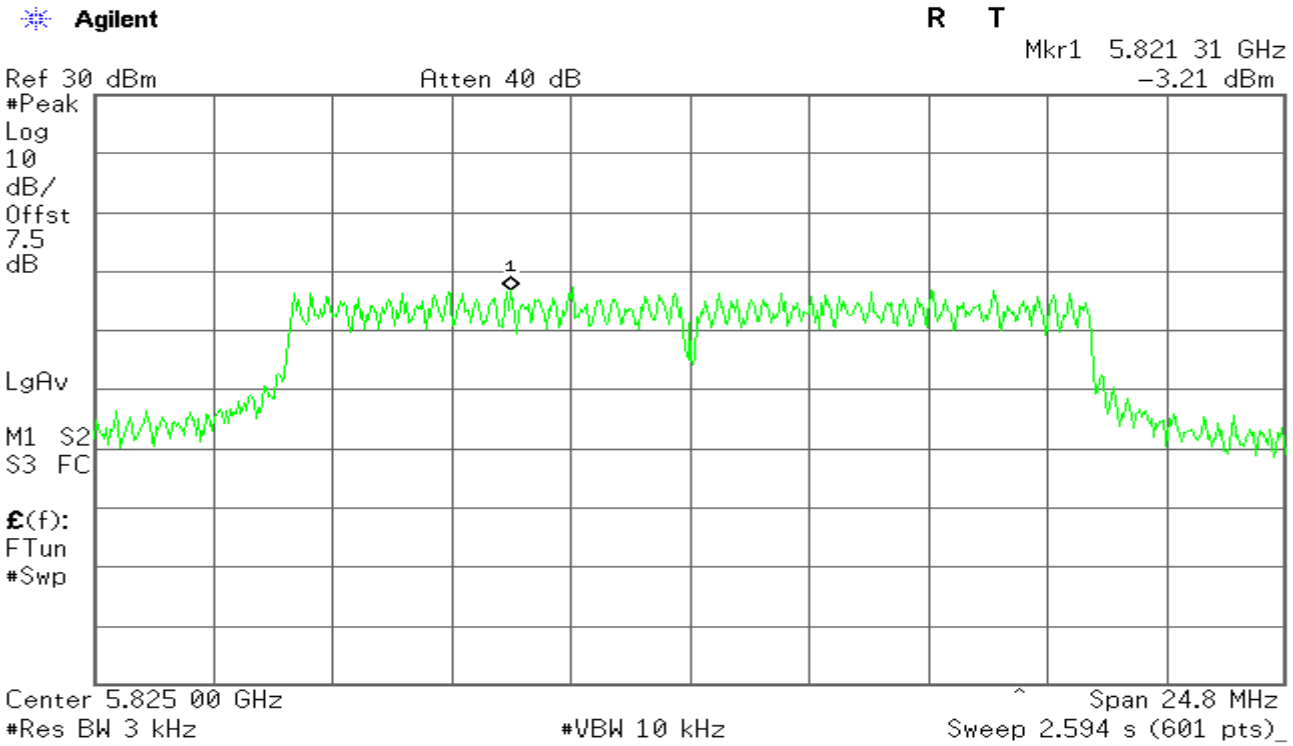
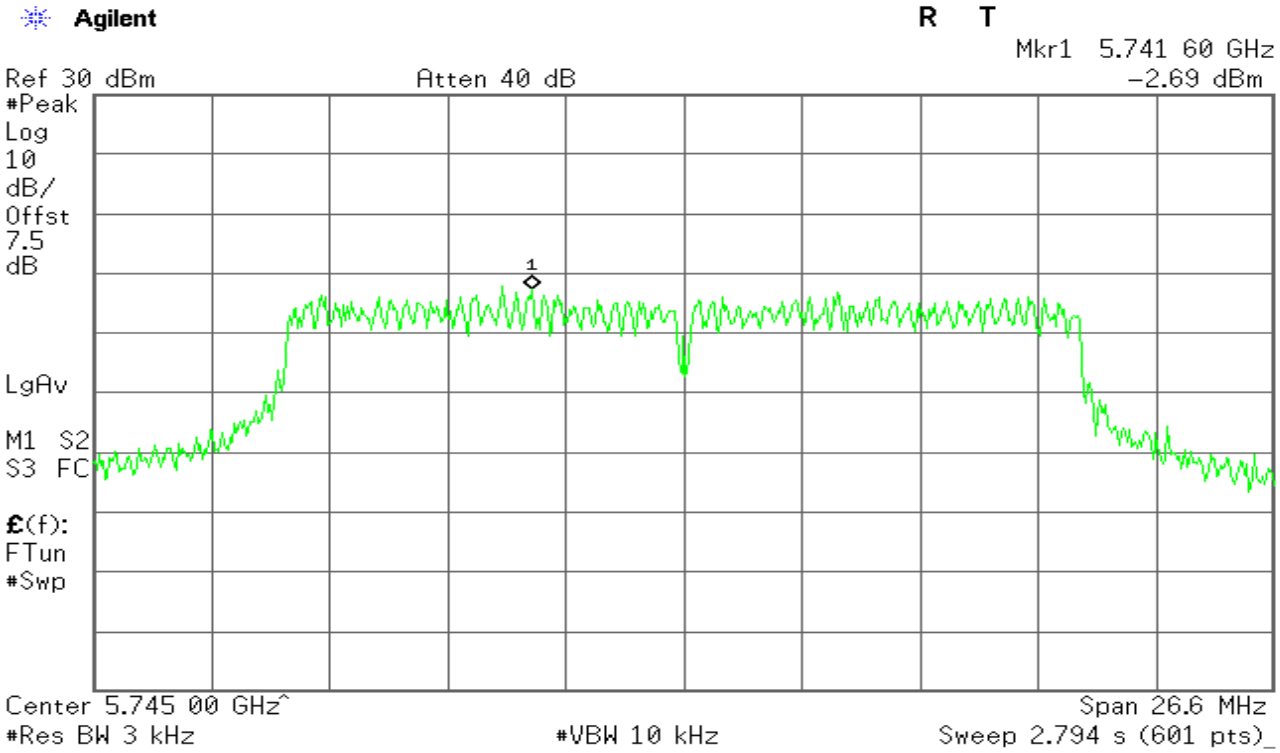
CH High



IEEE 802.11an HT20 mode

5725~5825MHz

CH Low



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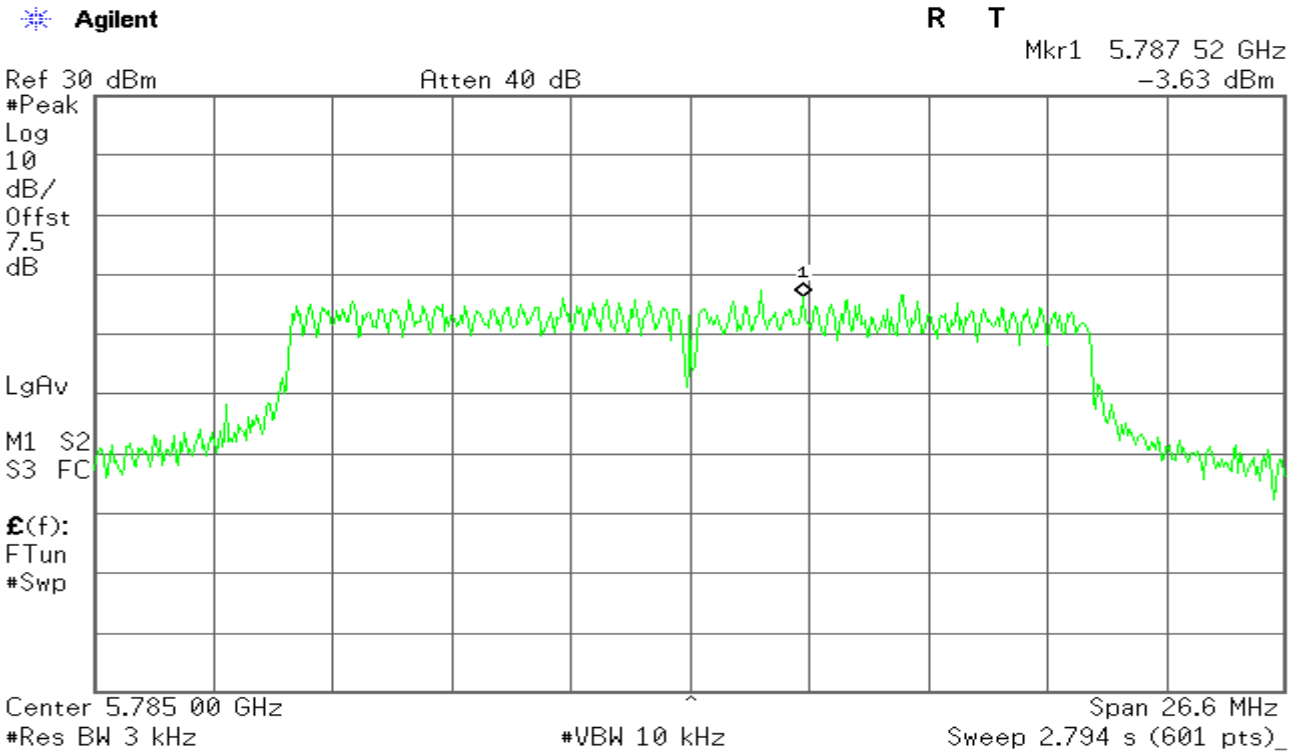
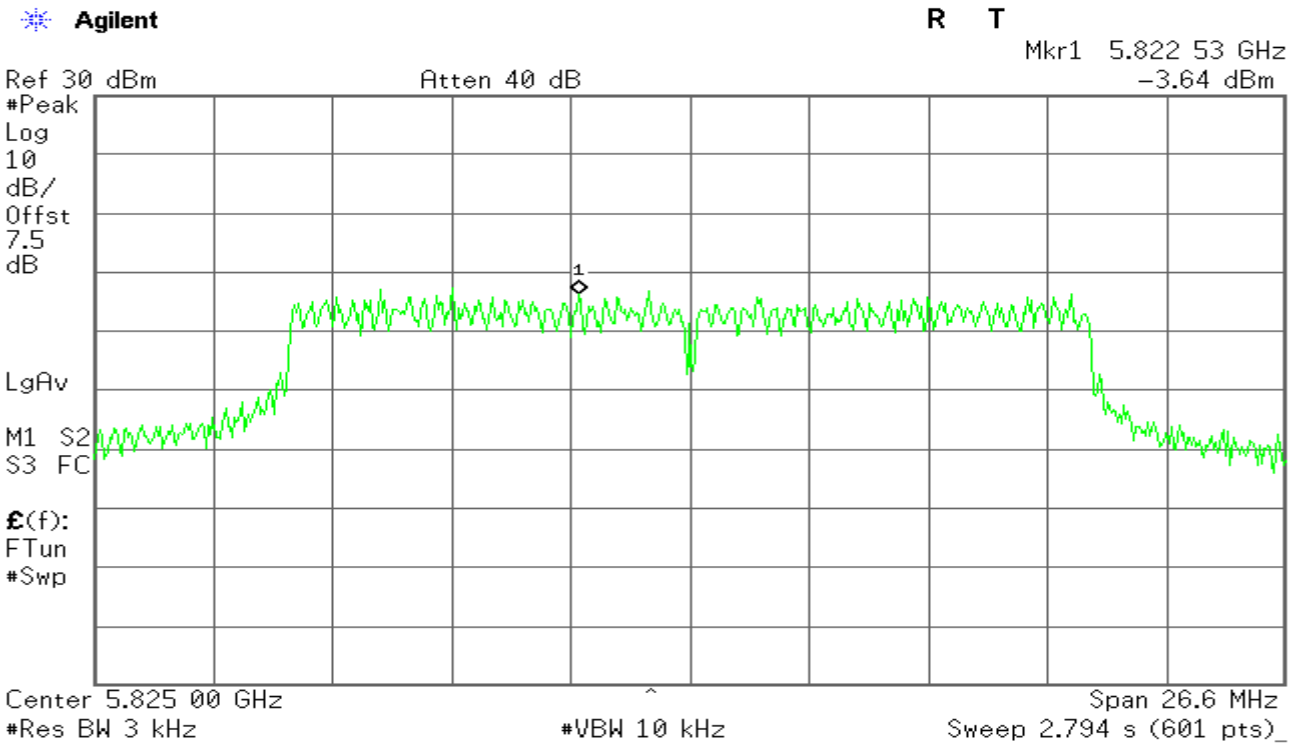
CH Mid



CH High



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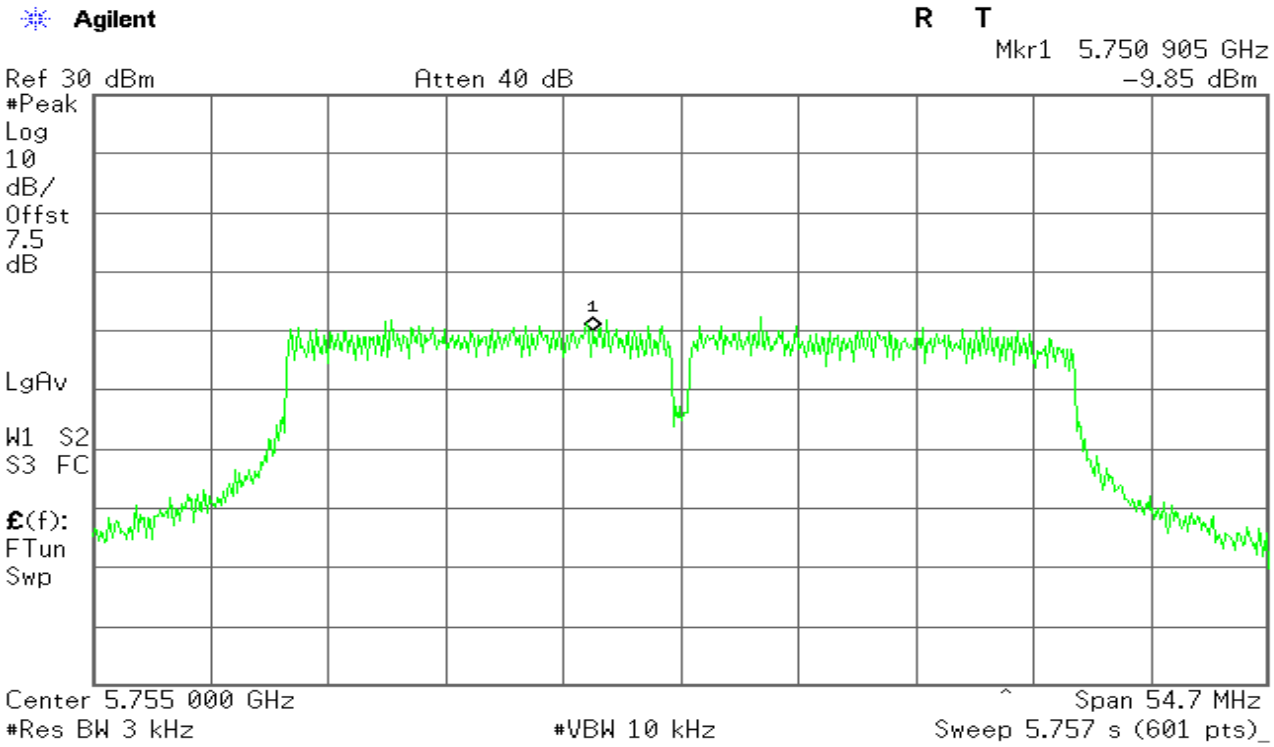
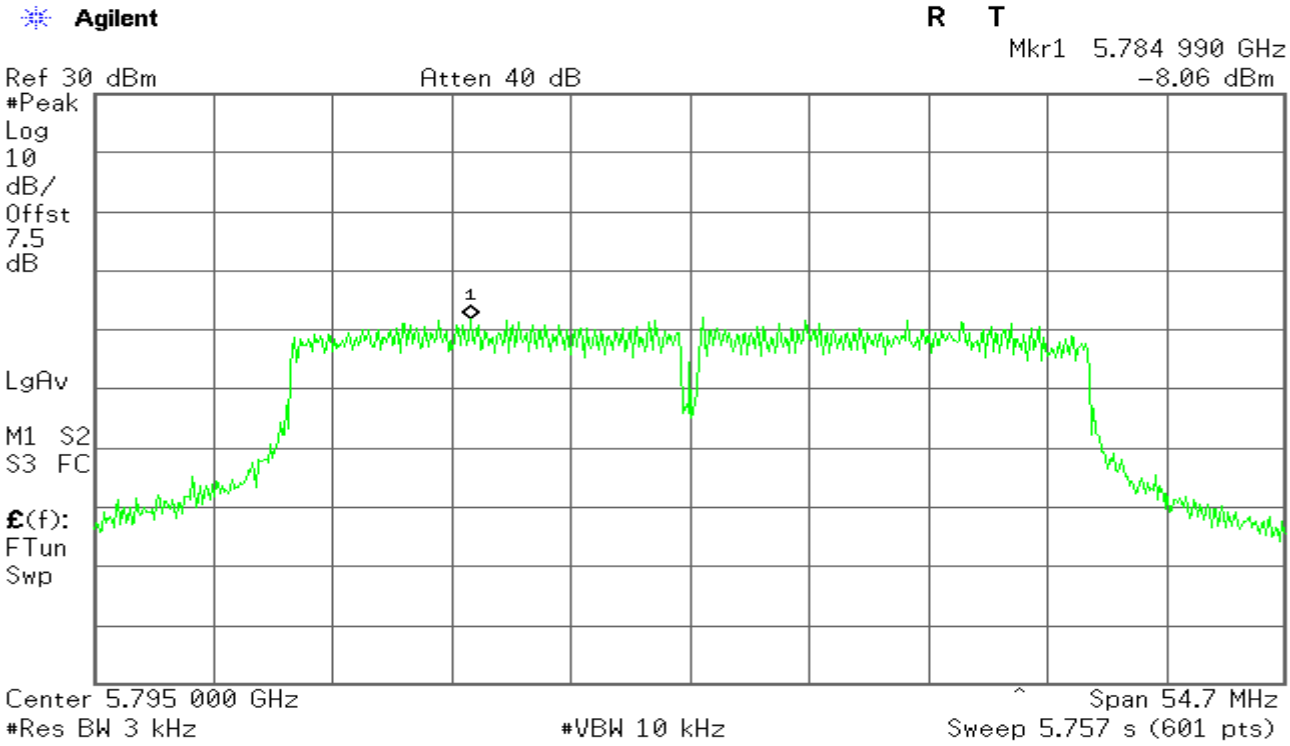
IEEE 802.11an HT40 mode

5725~5825MHz

CH Low



CH High



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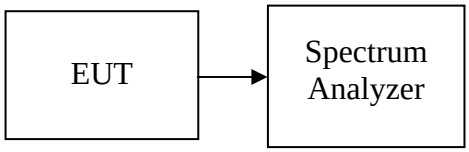
4.4.SPURIOUS EMISSIONS
Conducted Measurement

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 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

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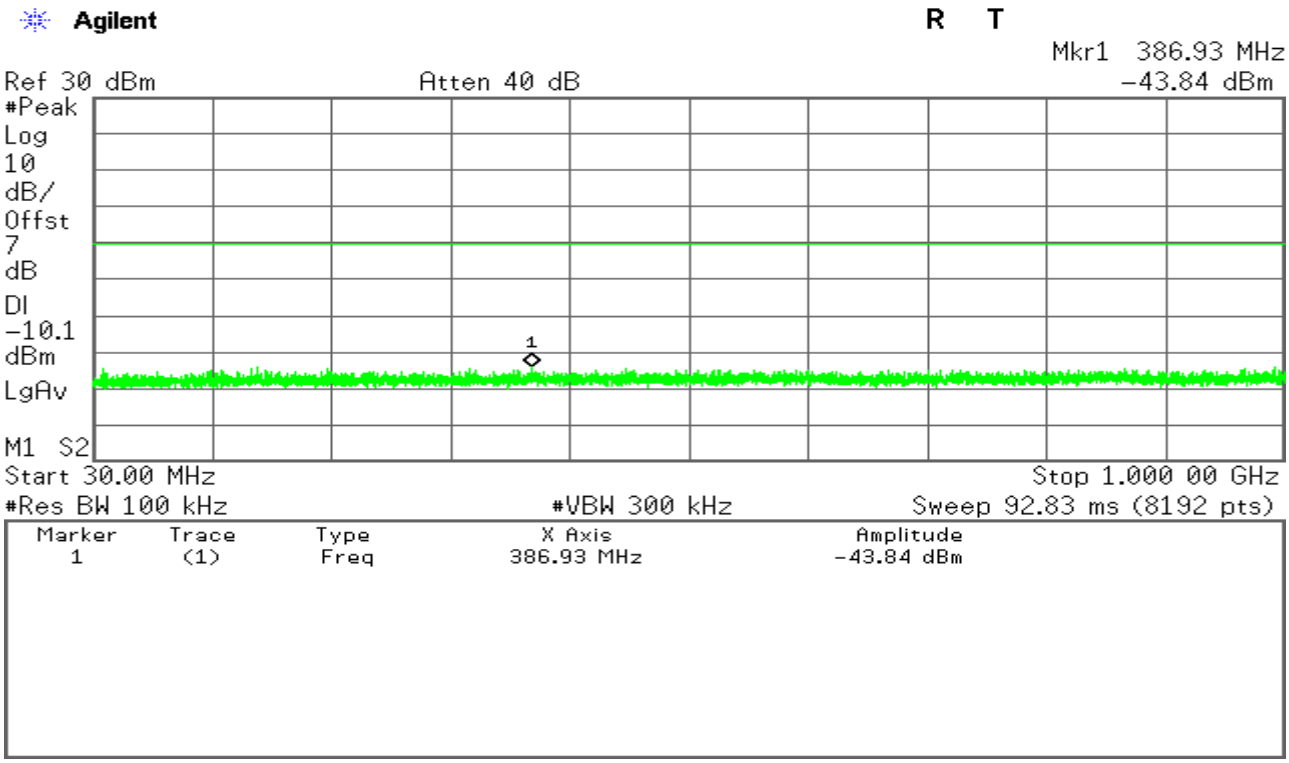
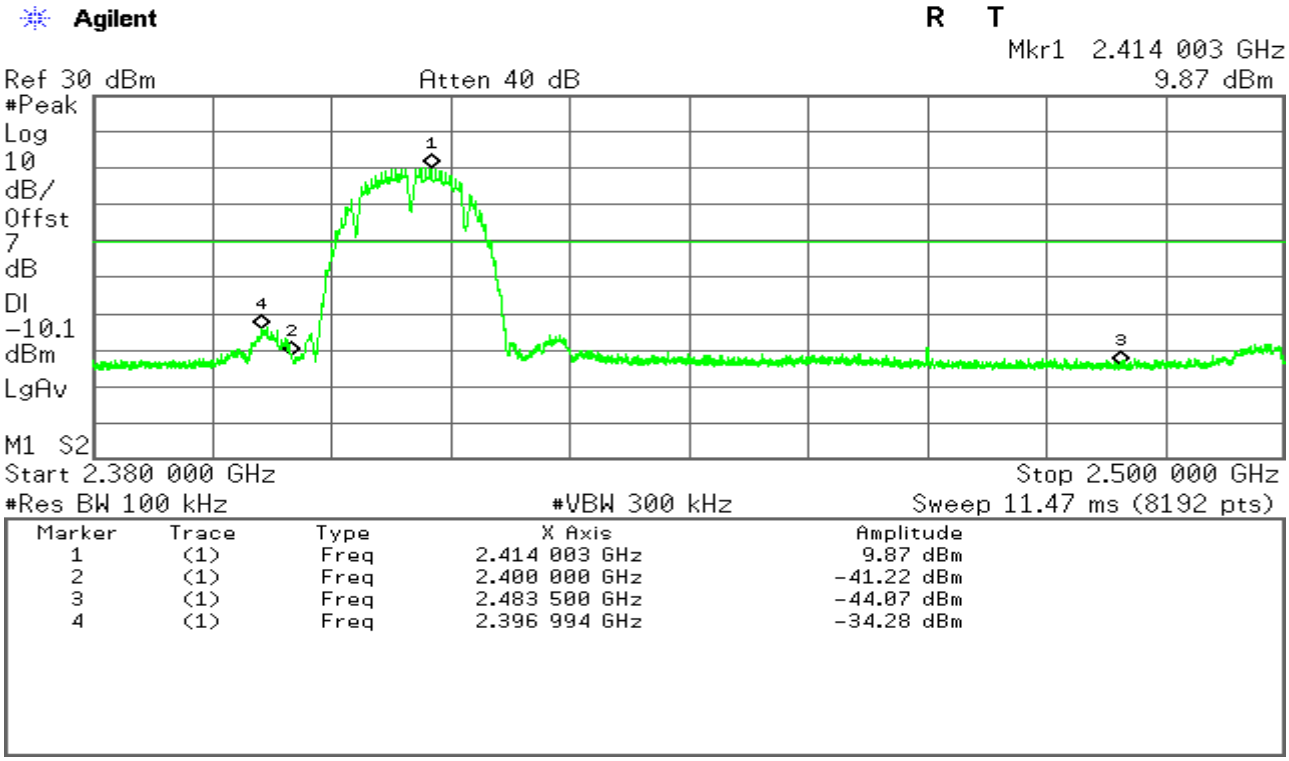
Test Plot
OUT-OF-BAND SPURIOUS EMISSIONS-CONDUCTED MEASUREMENT

IEEE 802.11b mode/Chain 0

CH Low





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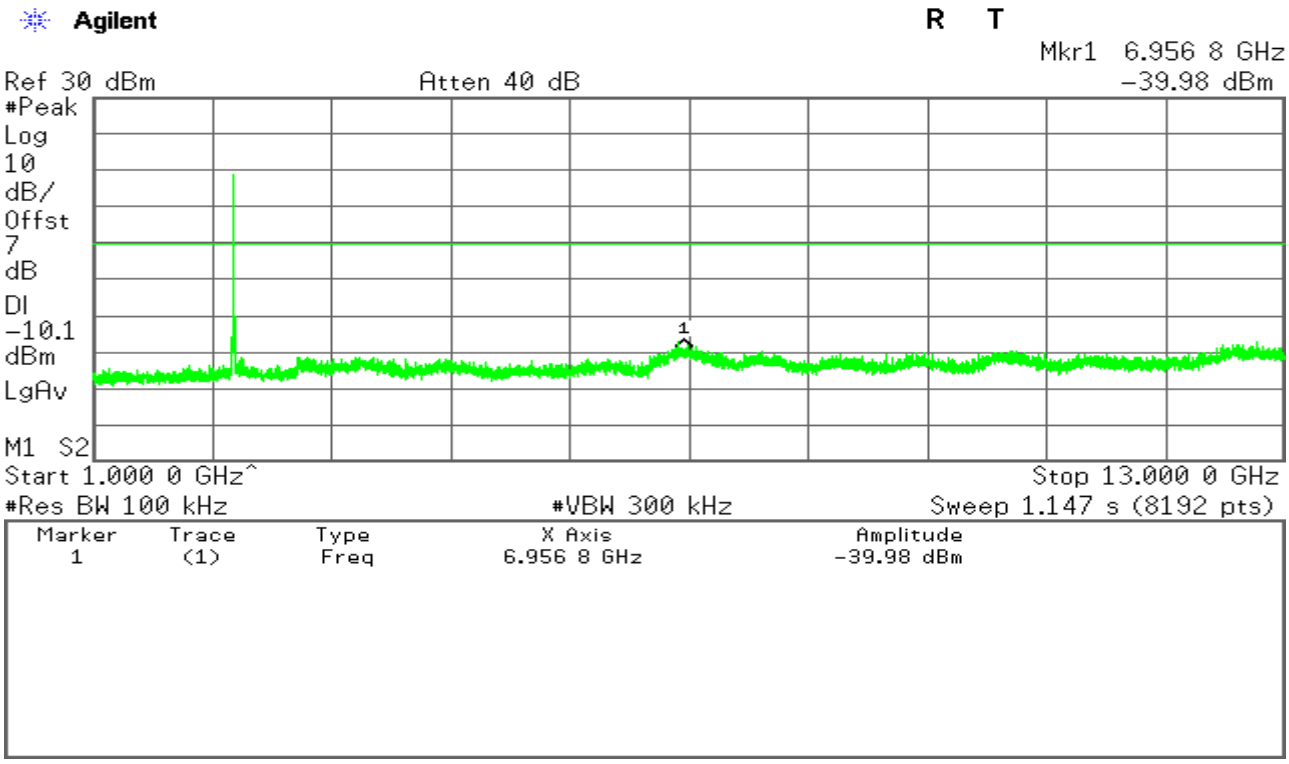

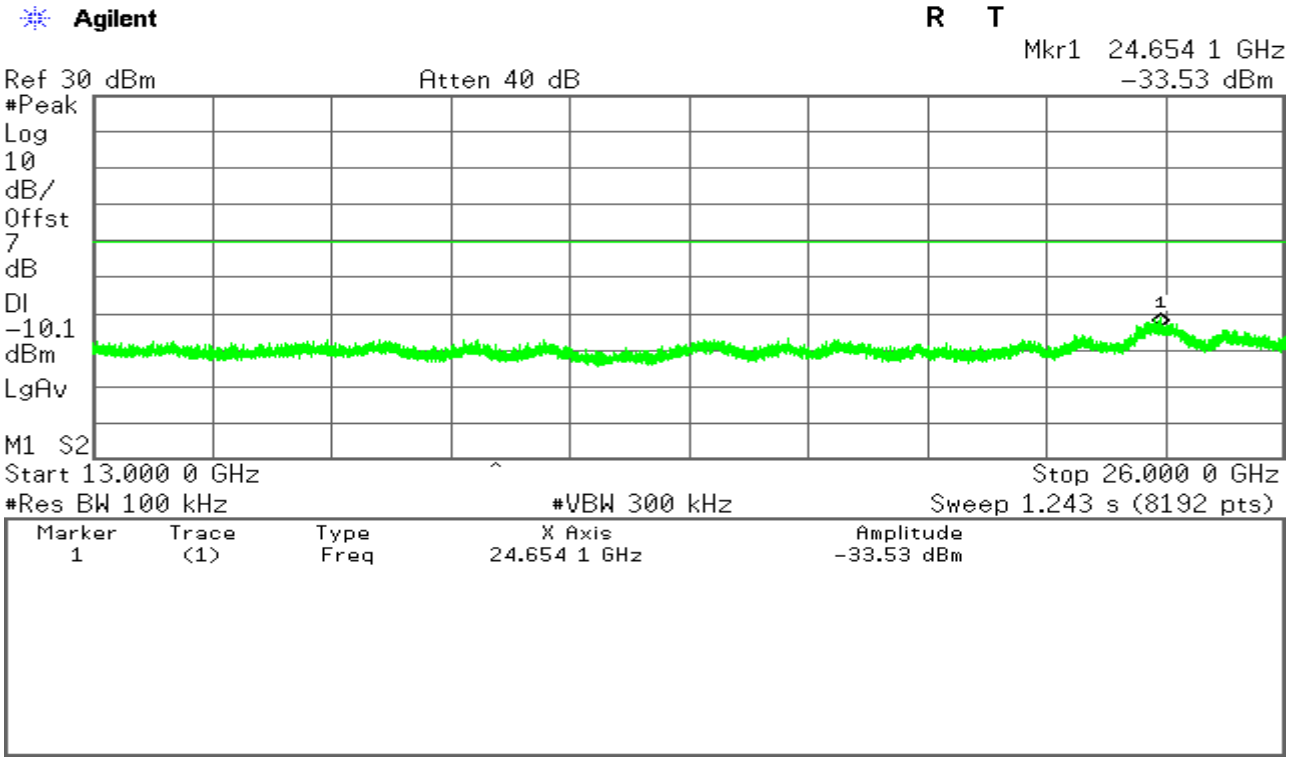

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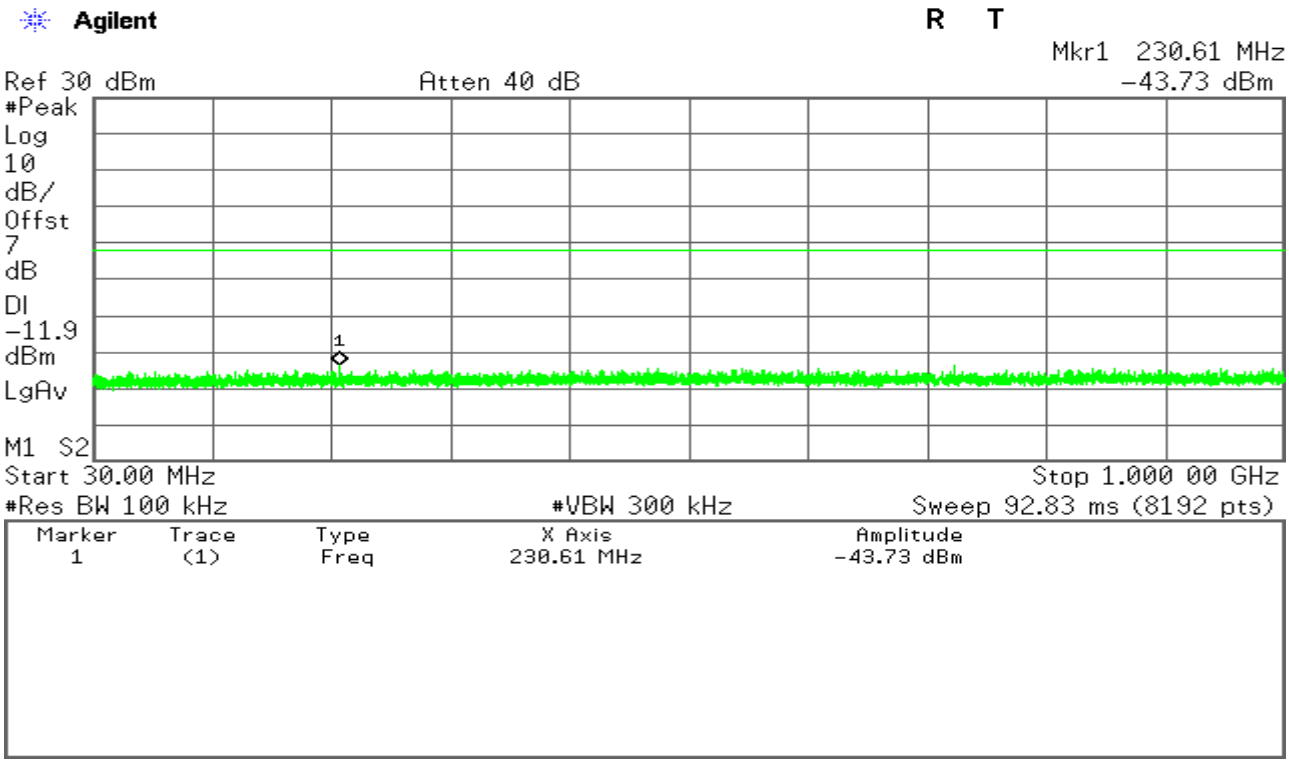
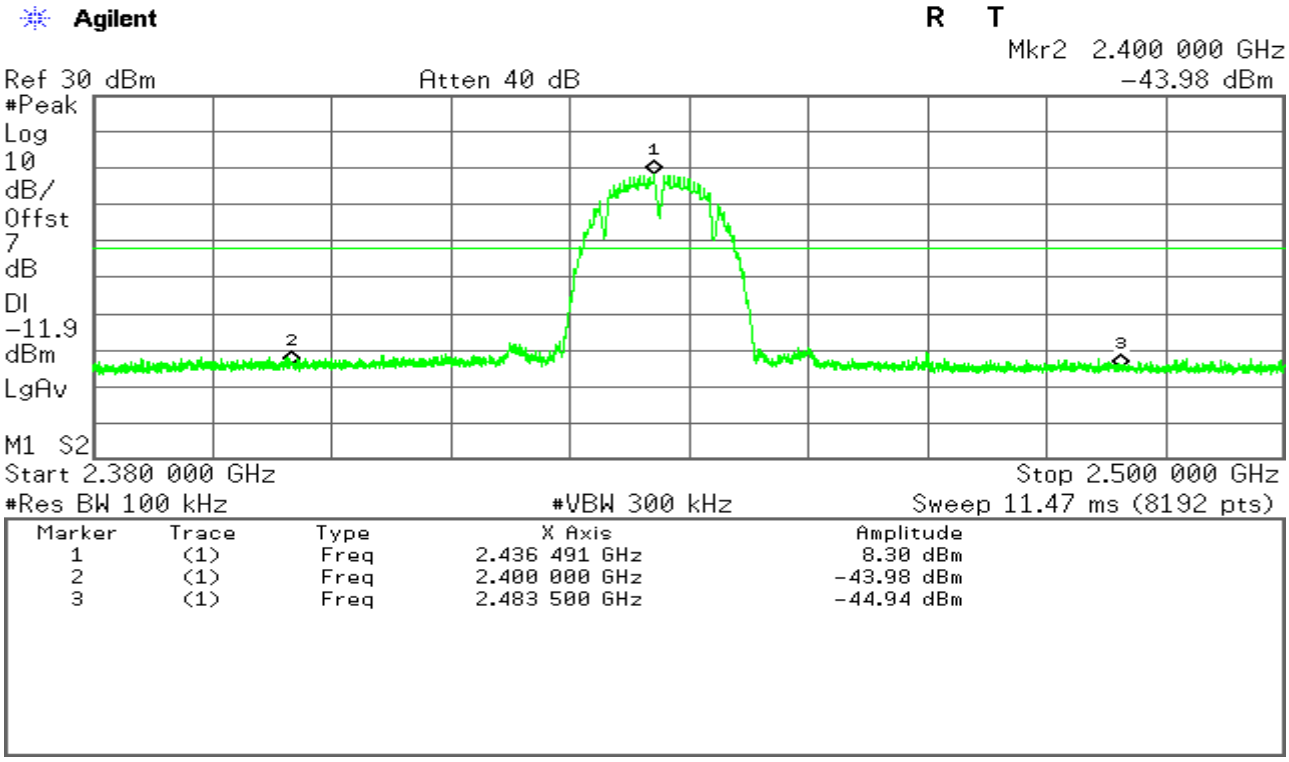
CH Mid





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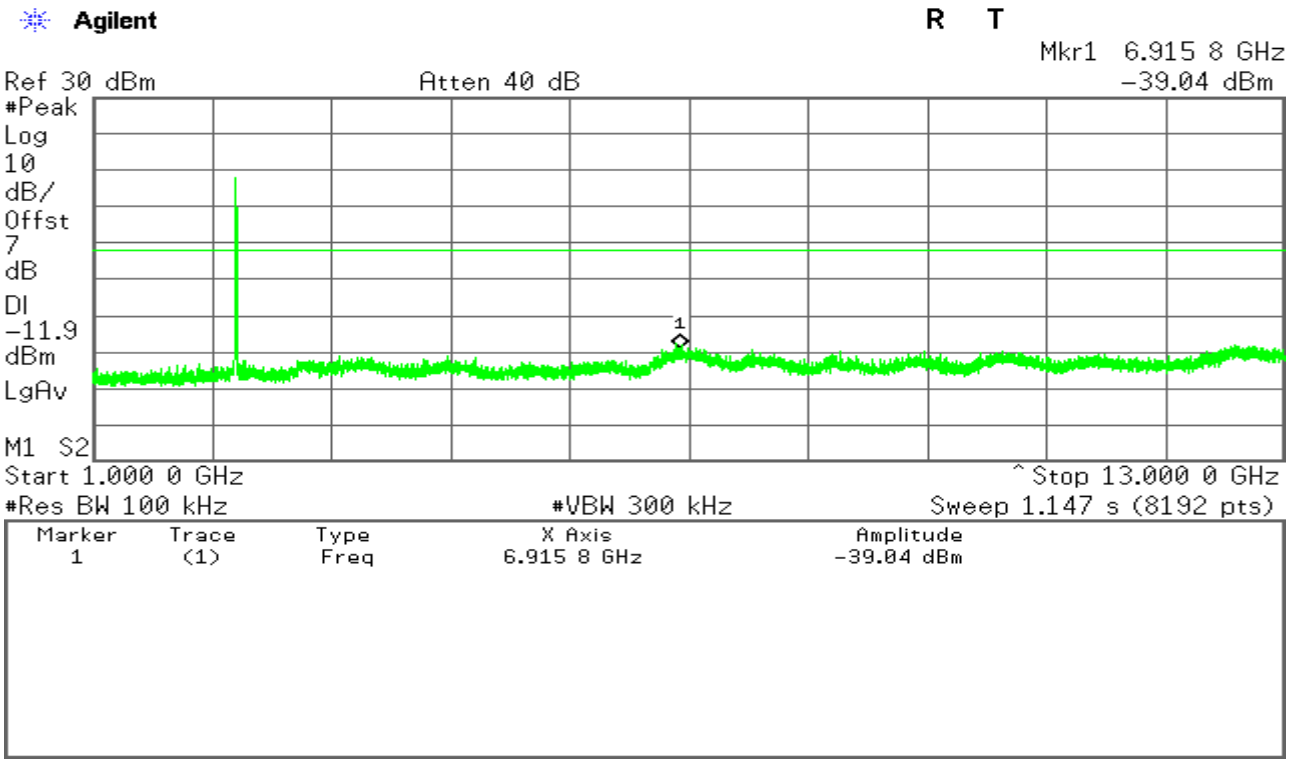

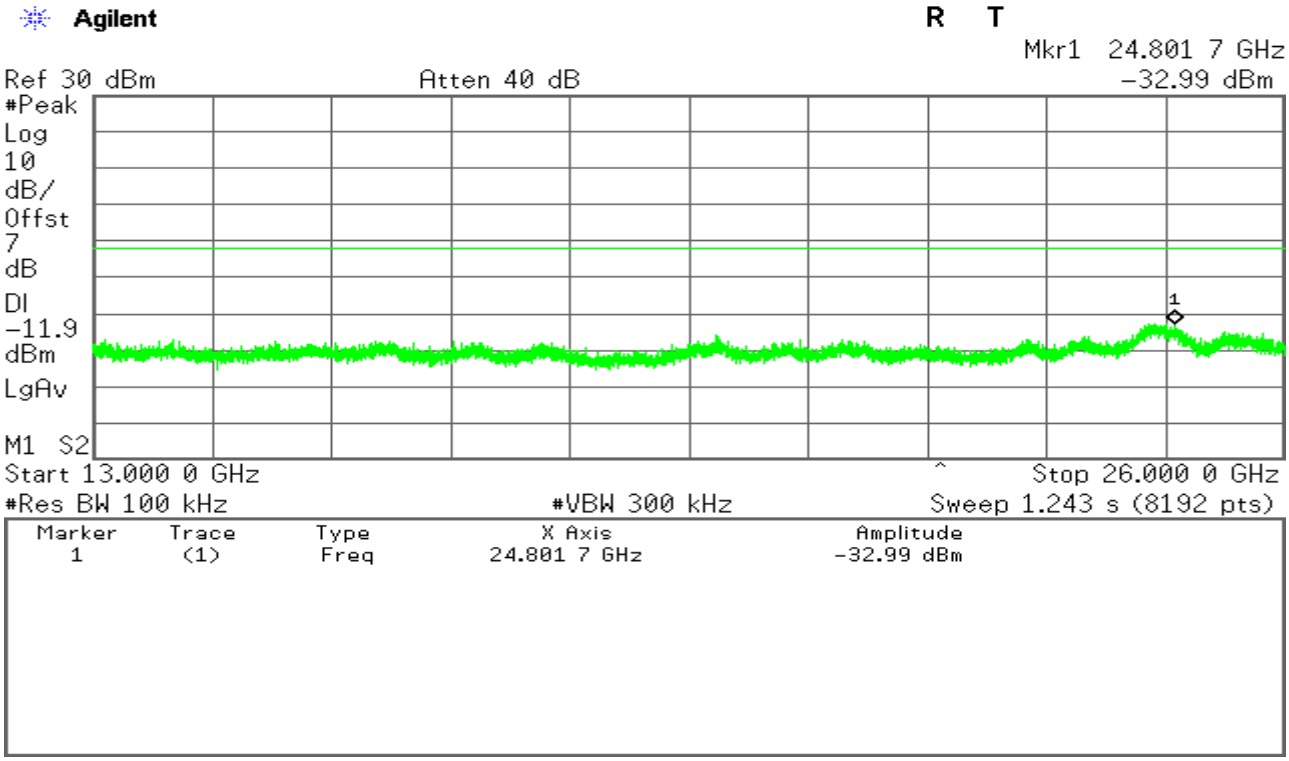

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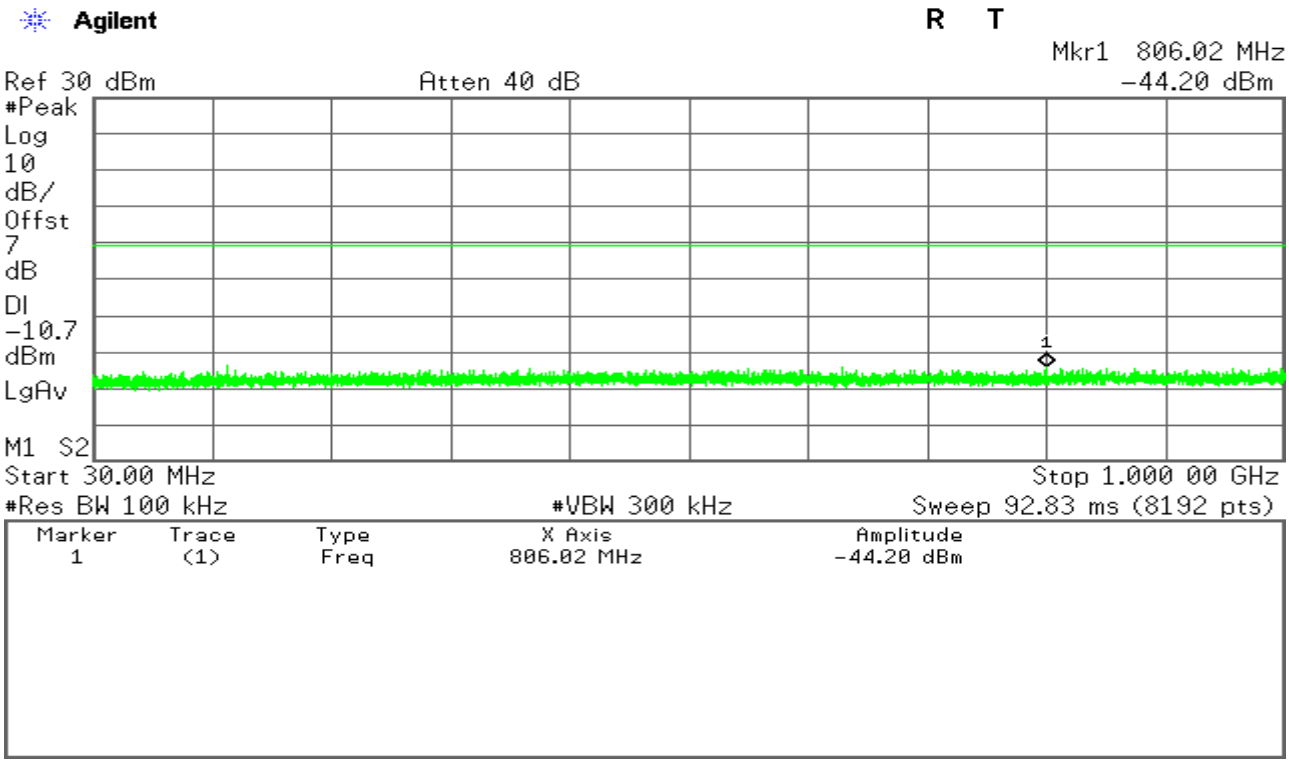
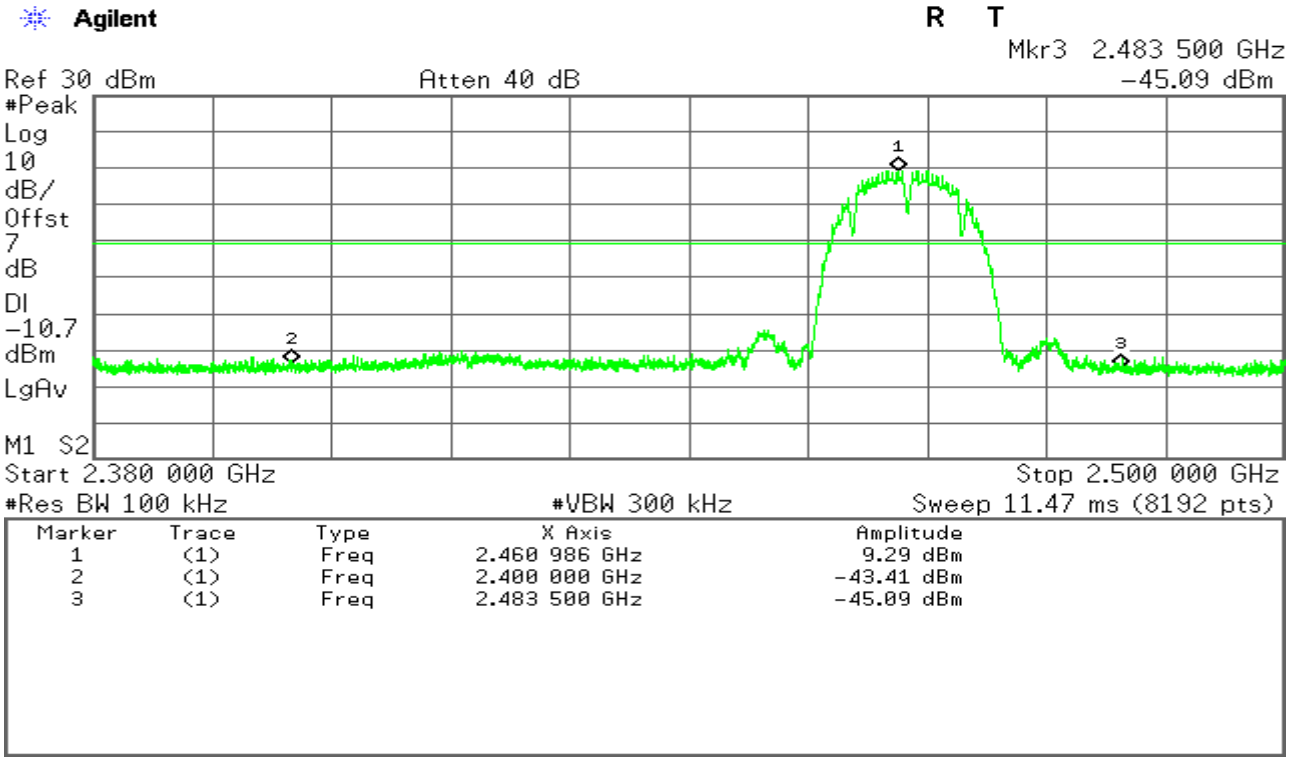
CH High





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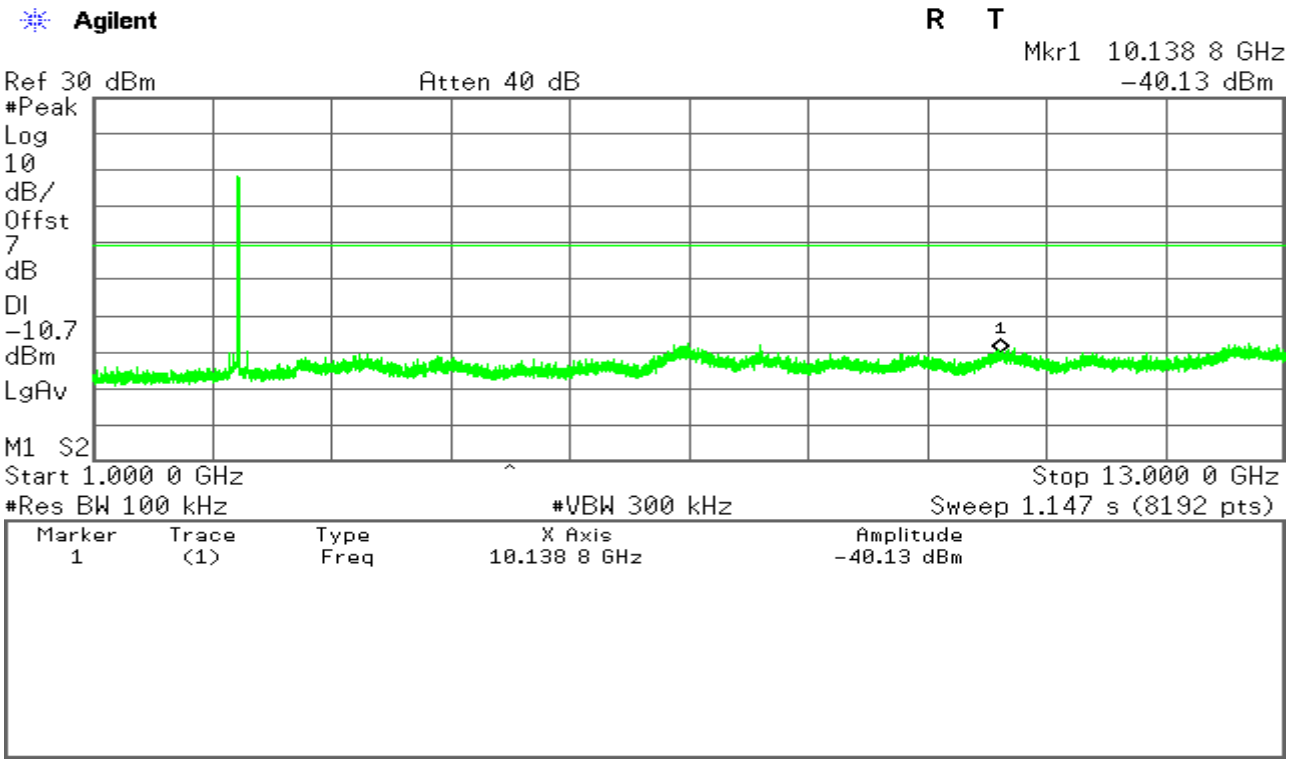

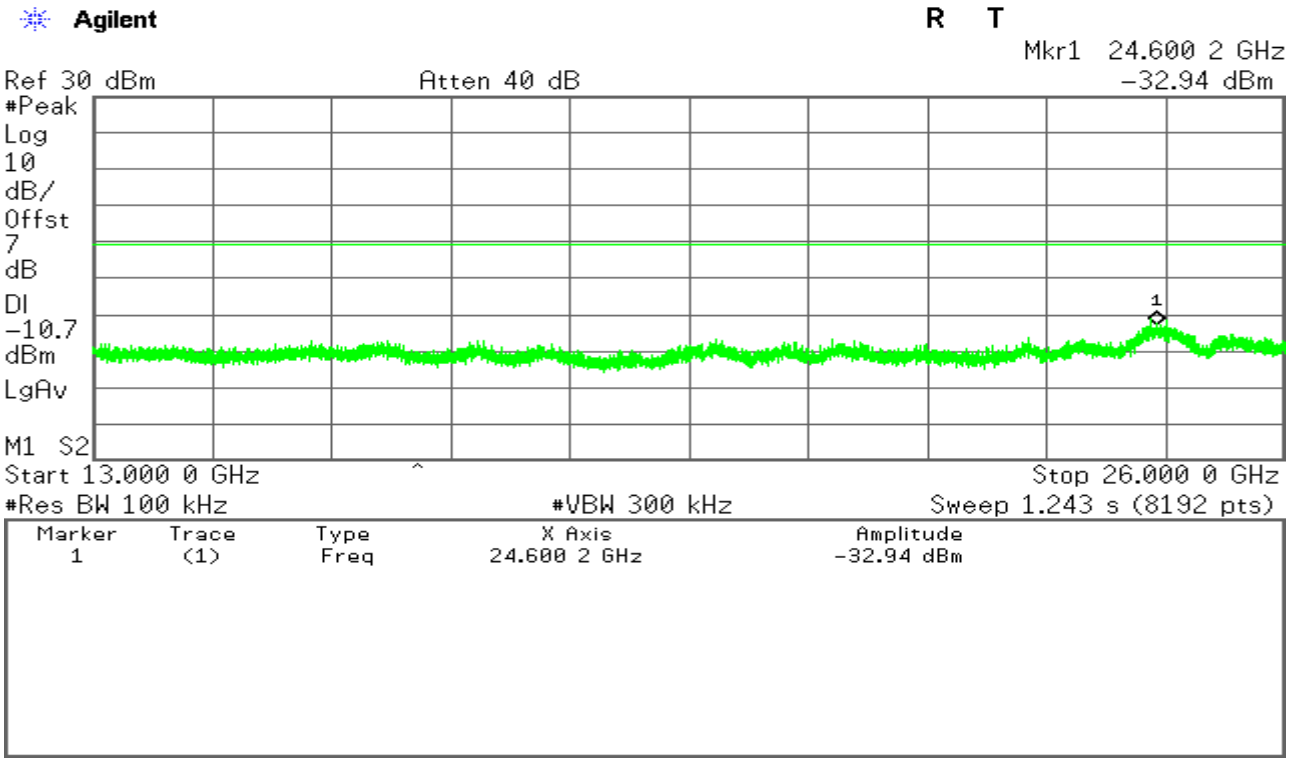

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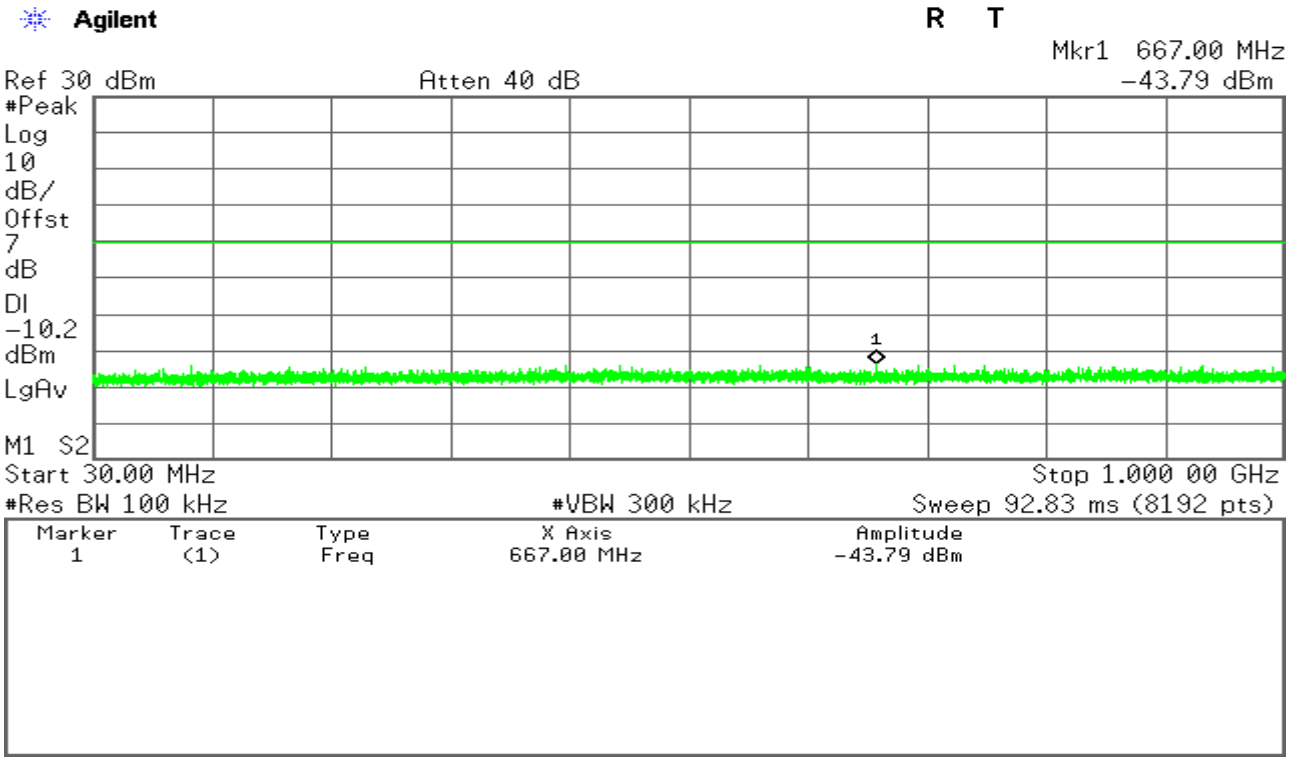
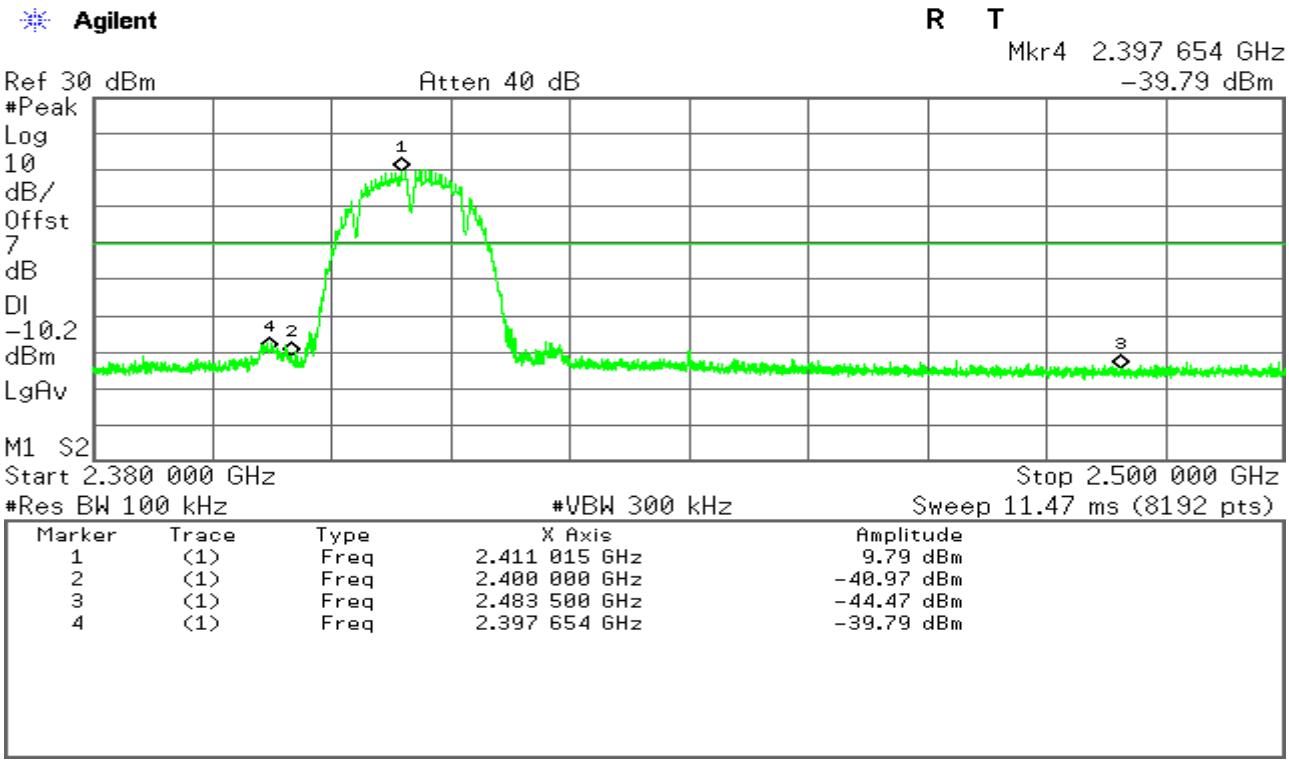
IEEE 802.11b mode/Chain 1

CH Low





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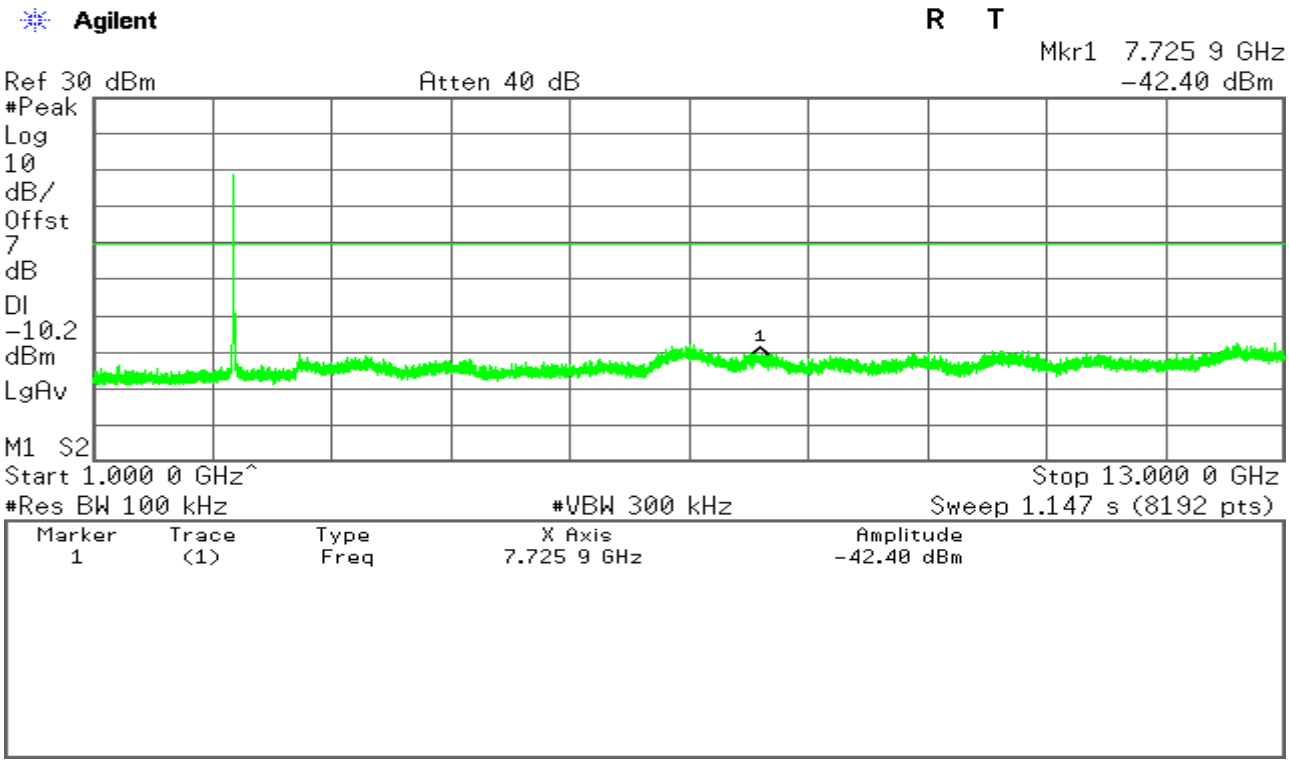

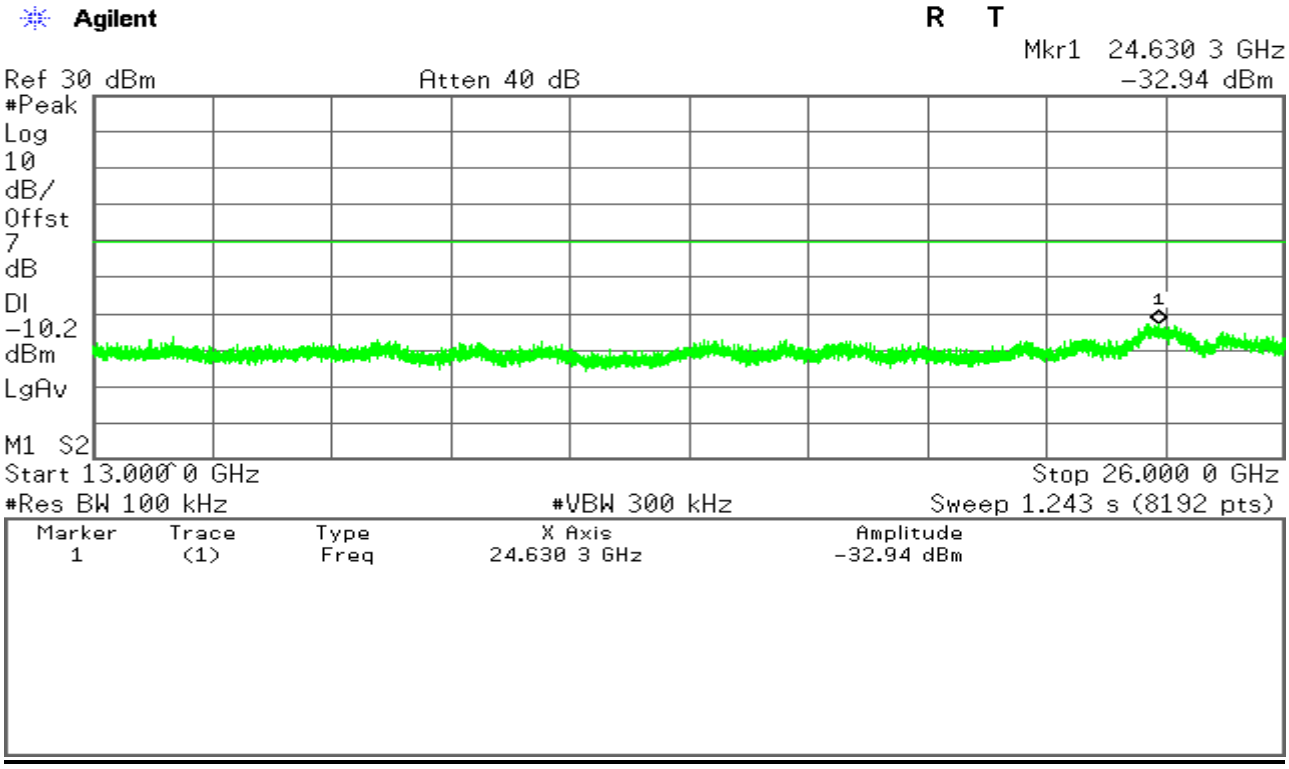

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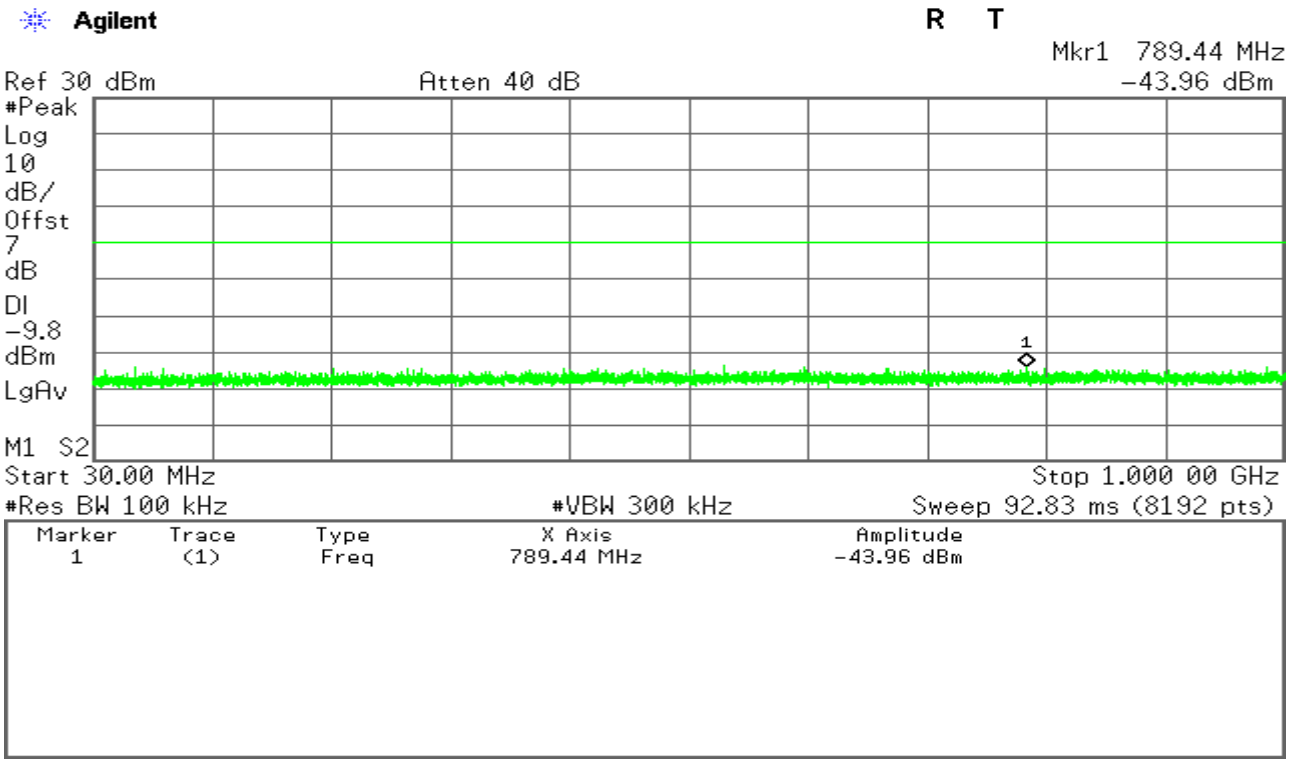
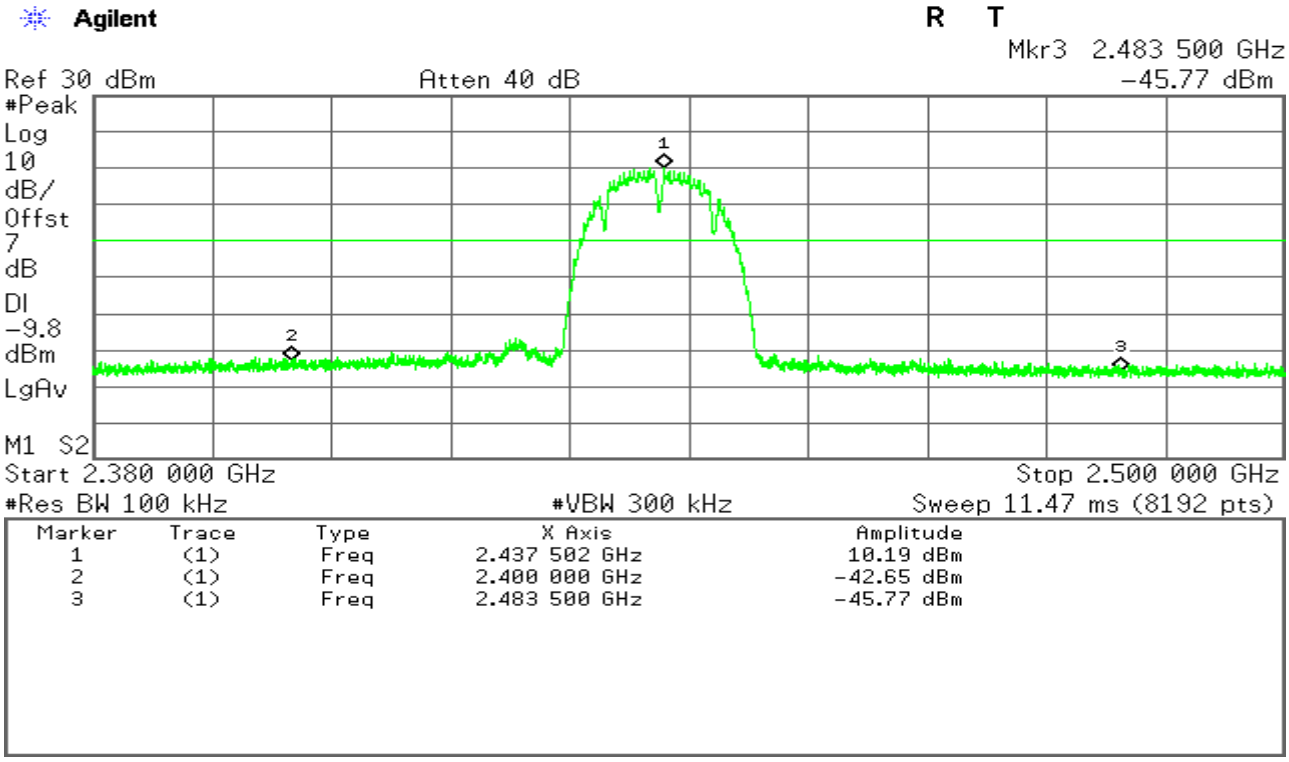
CH Mid





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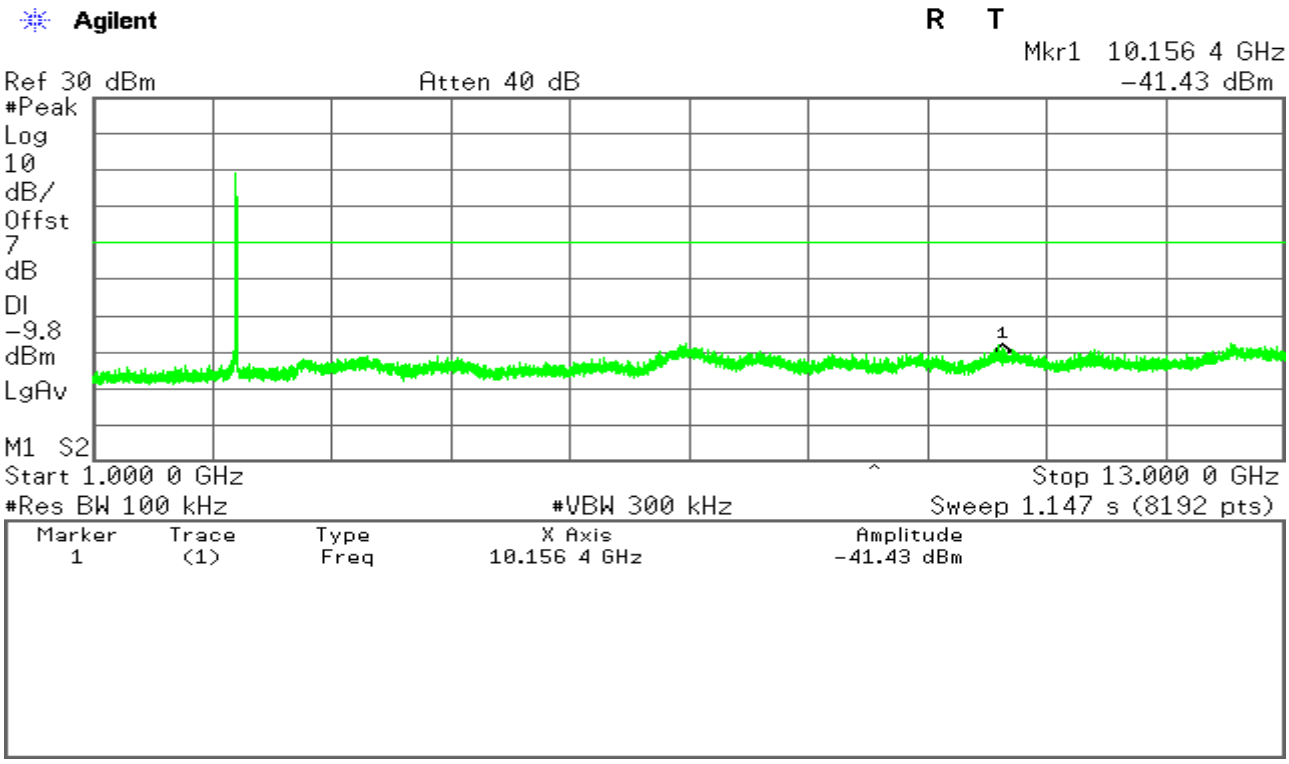

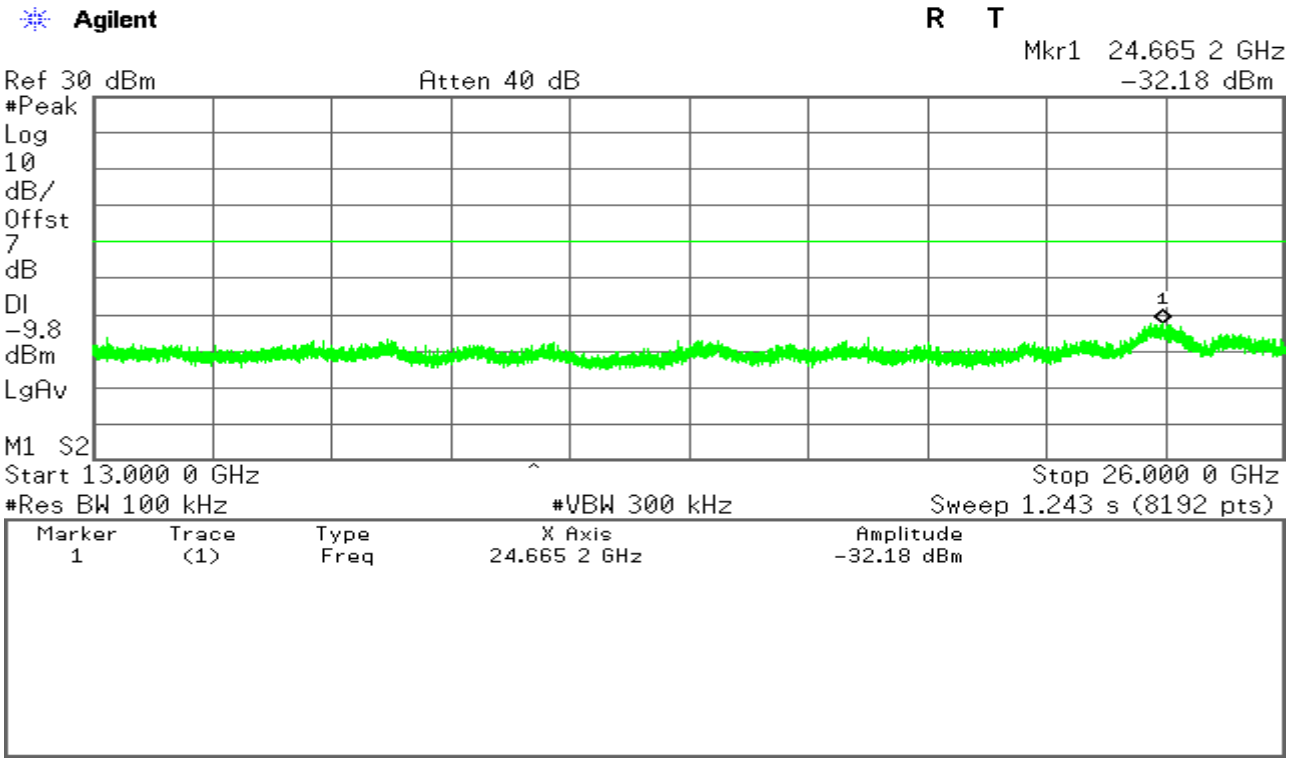

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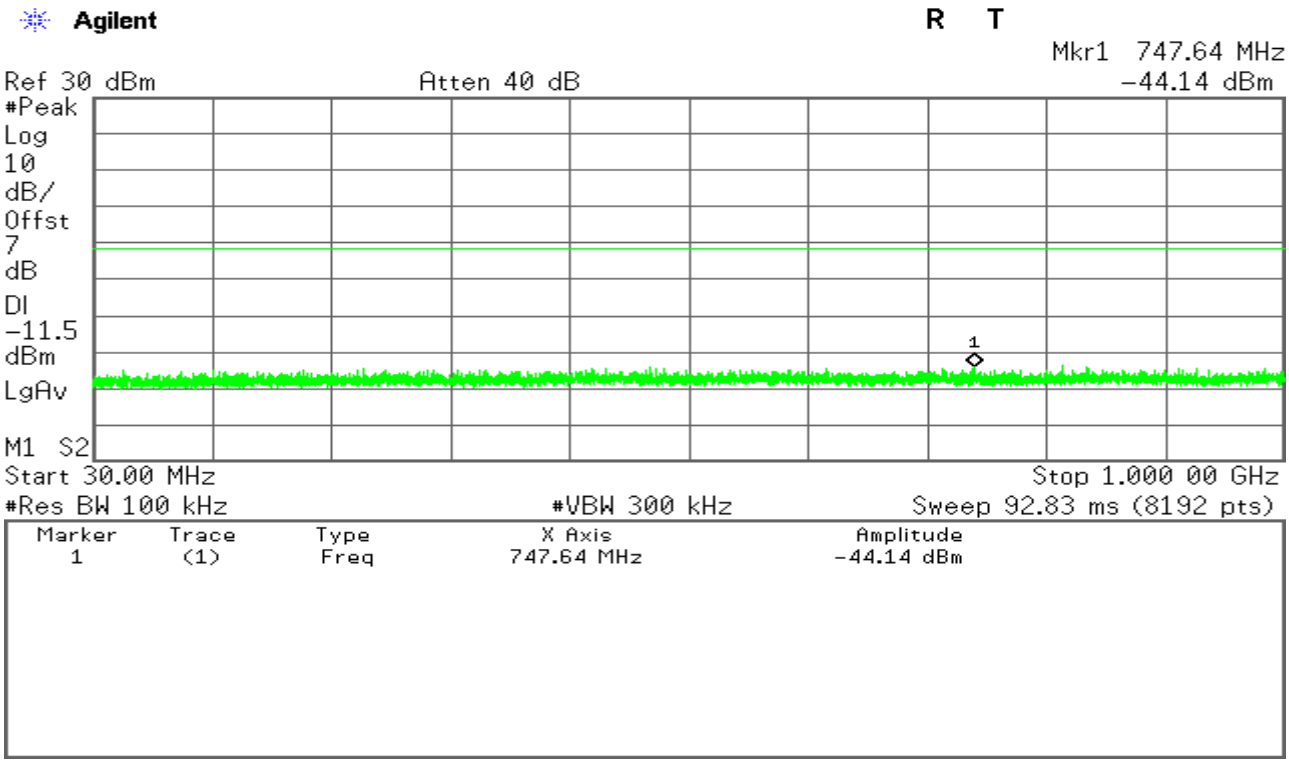
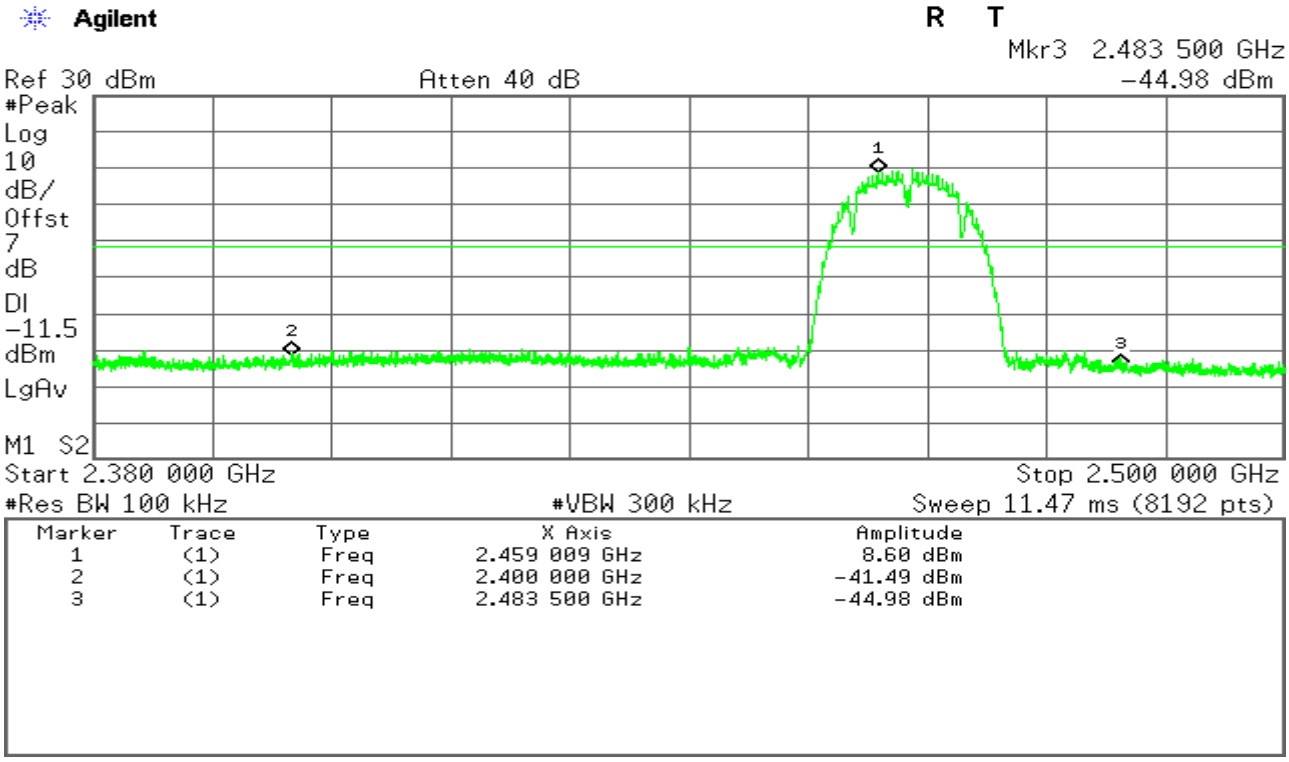
CH High





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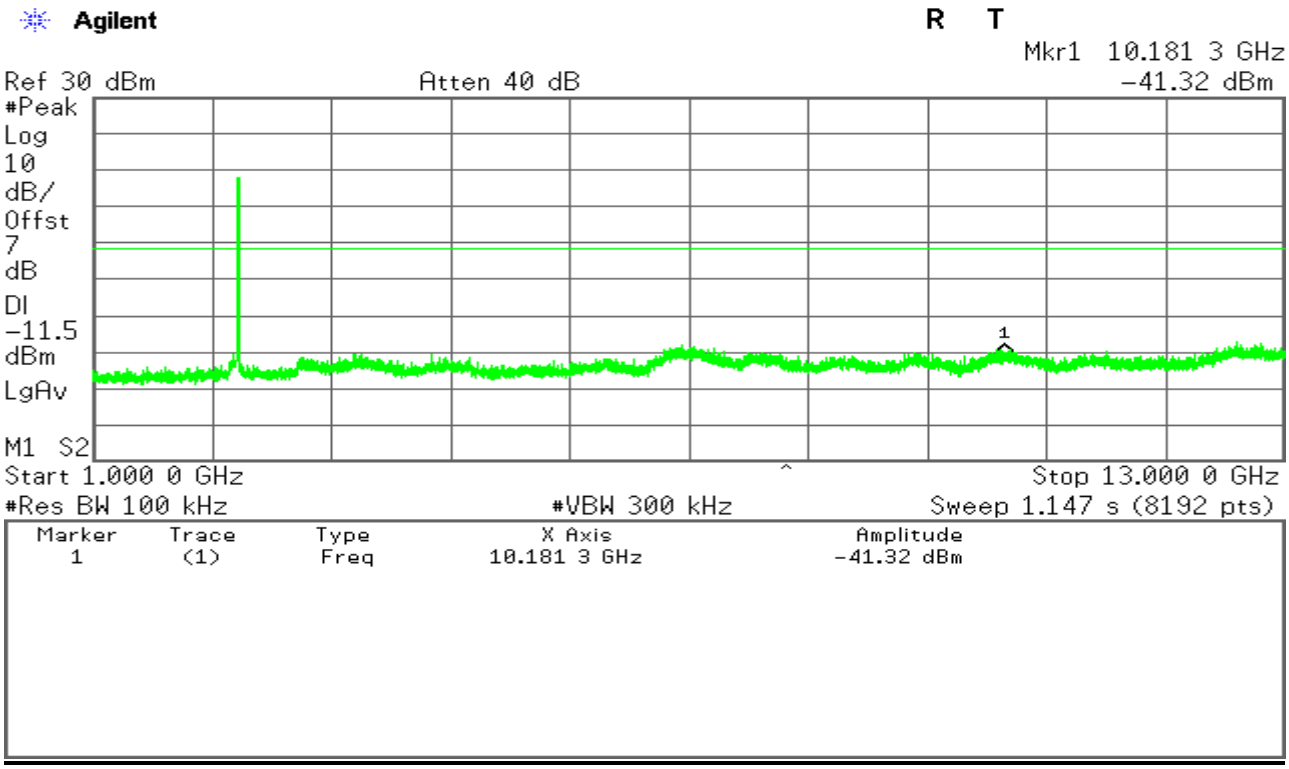

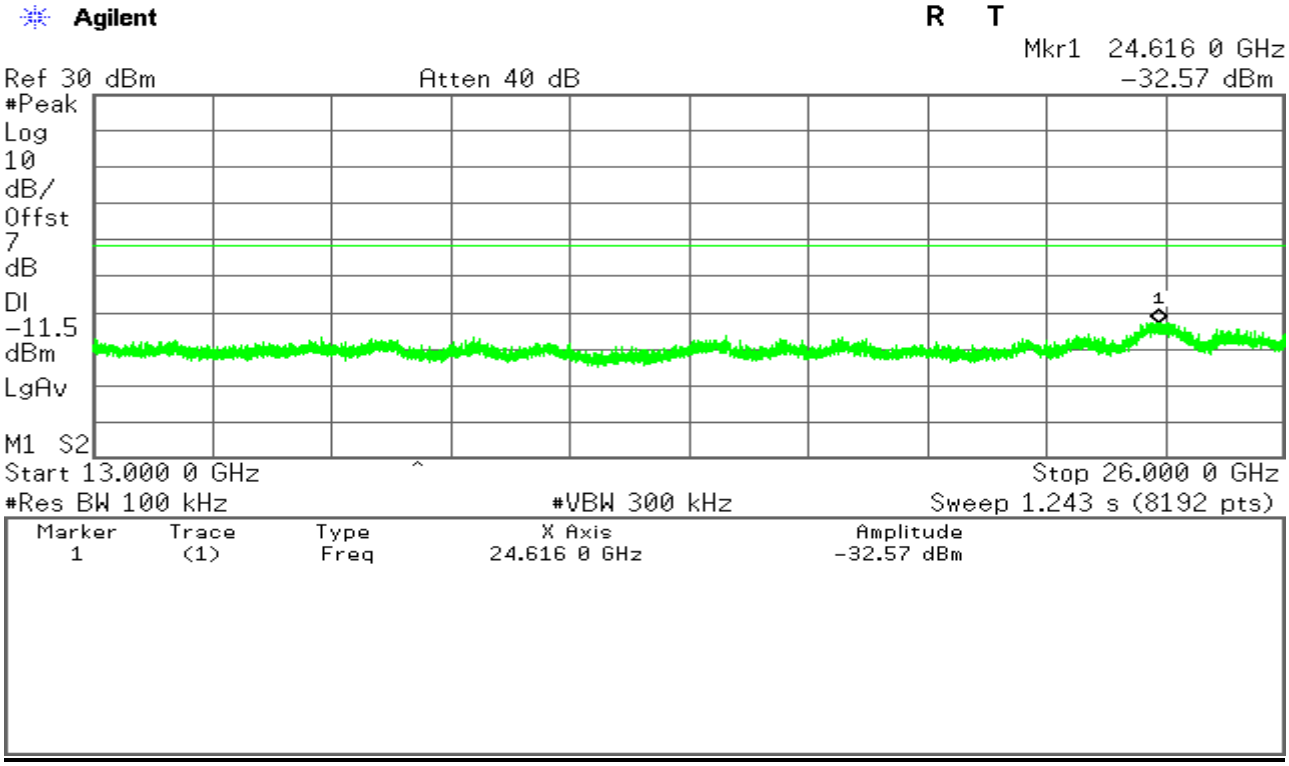

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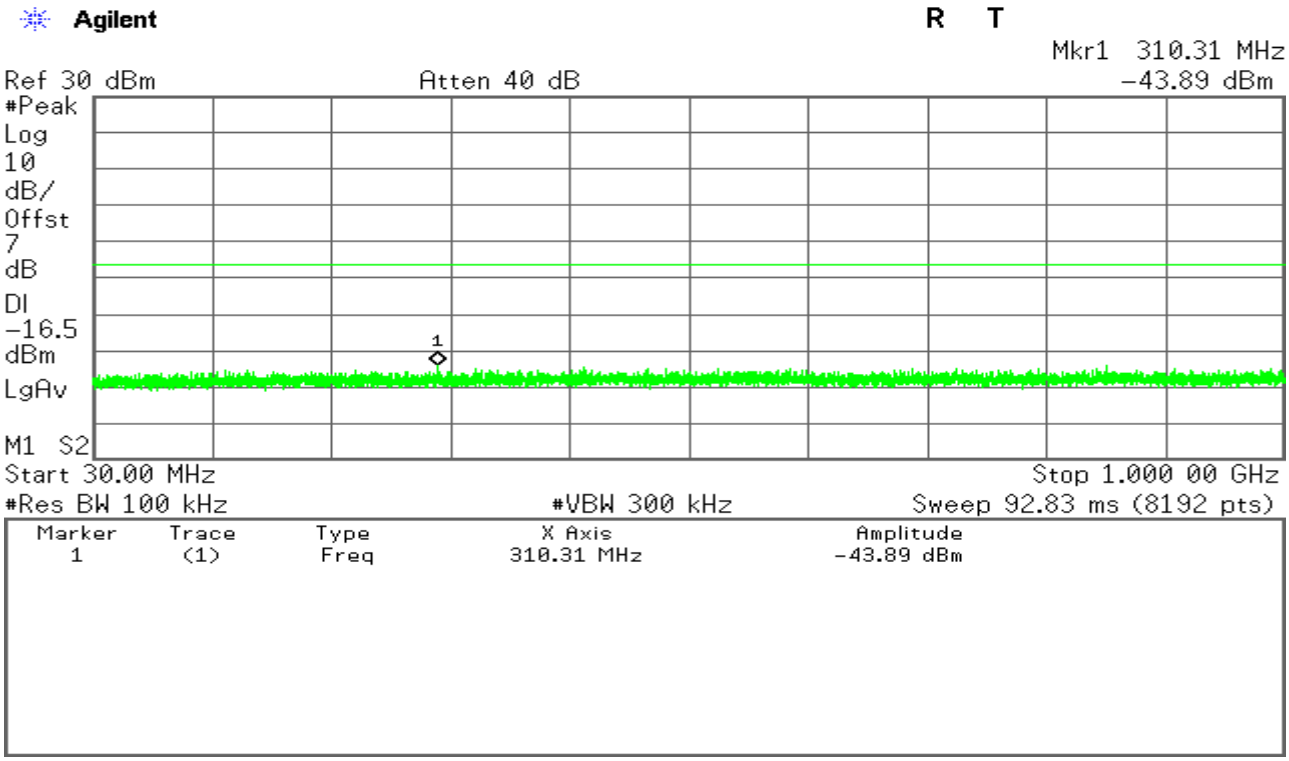
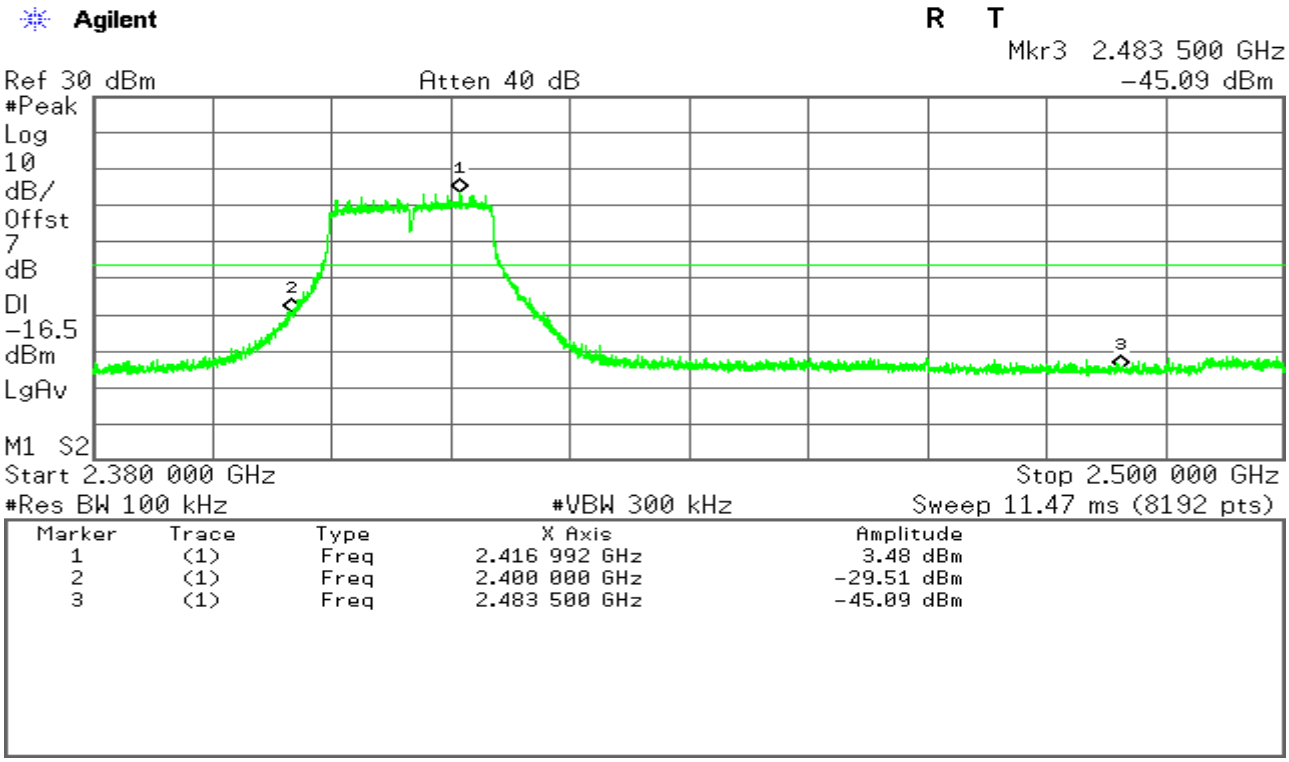
IEEE 802.11g mode/Chain 0

CH Low





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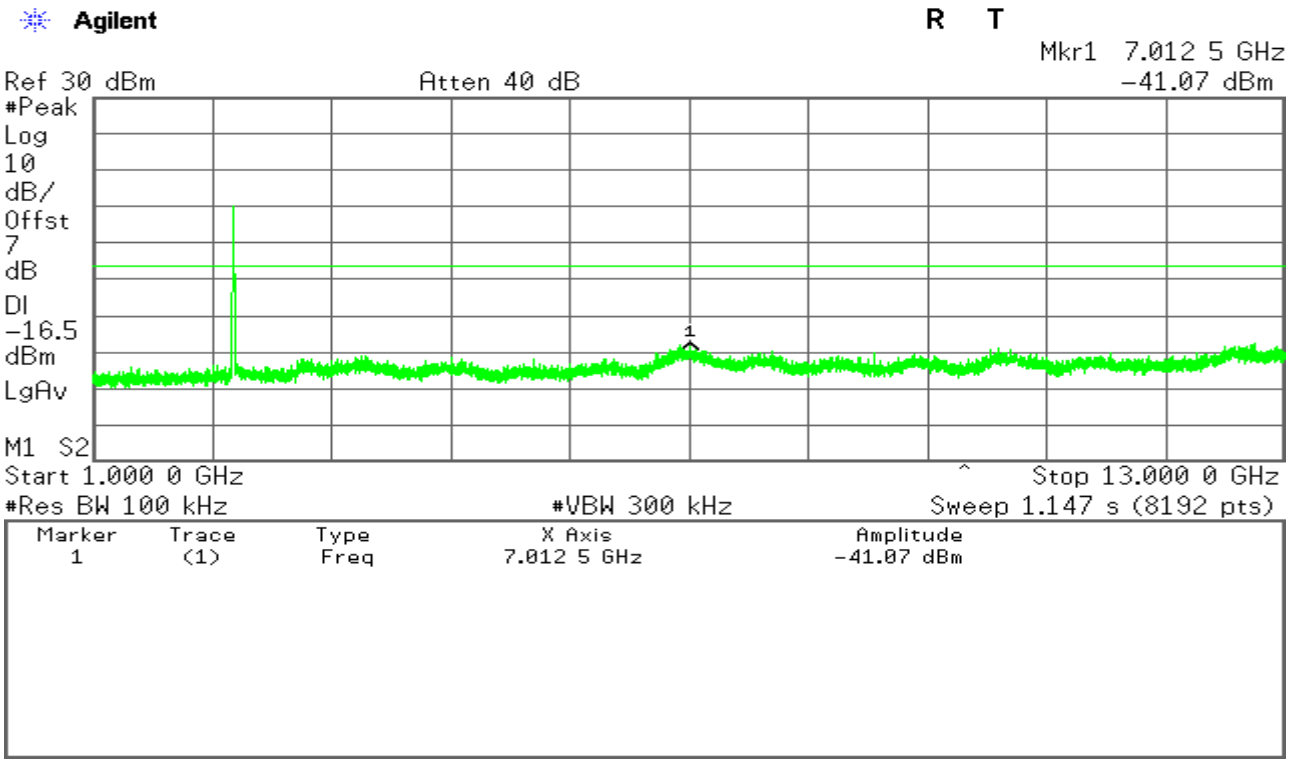

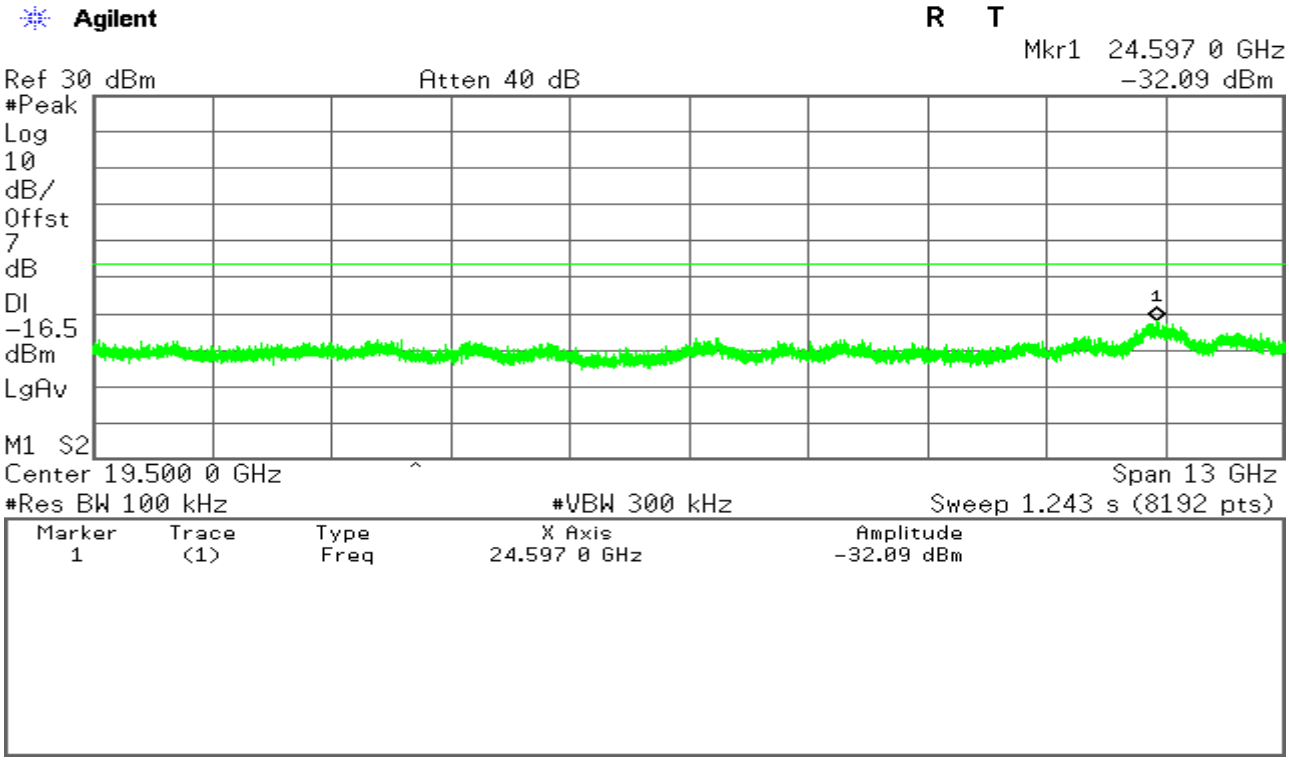

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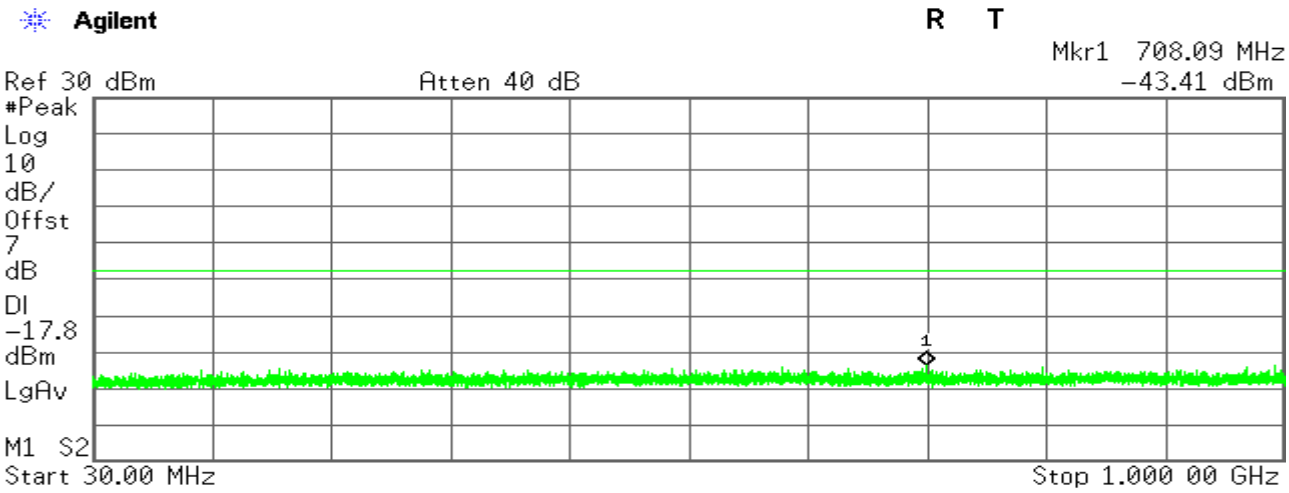
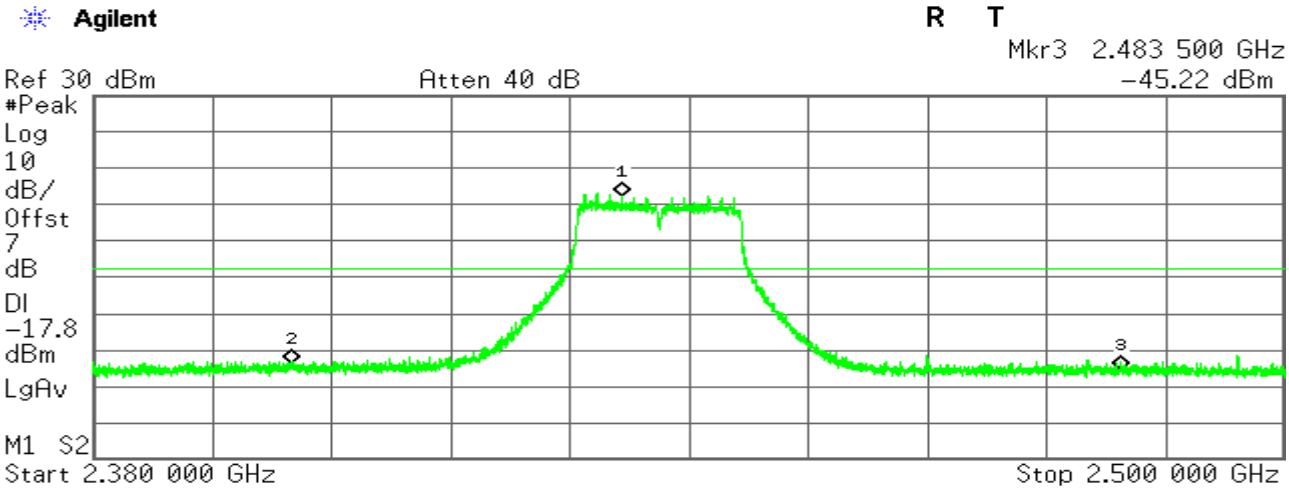
CH Mid



Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	708.09 MHz	-43.41 dBm



Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.433 239 GHz	2.21 dBm
2	(1)	Freq	2.400 000 GHz	-43.74 dBm
3	(1)	Freq	2.483 500 GHz	-45.22 dBm

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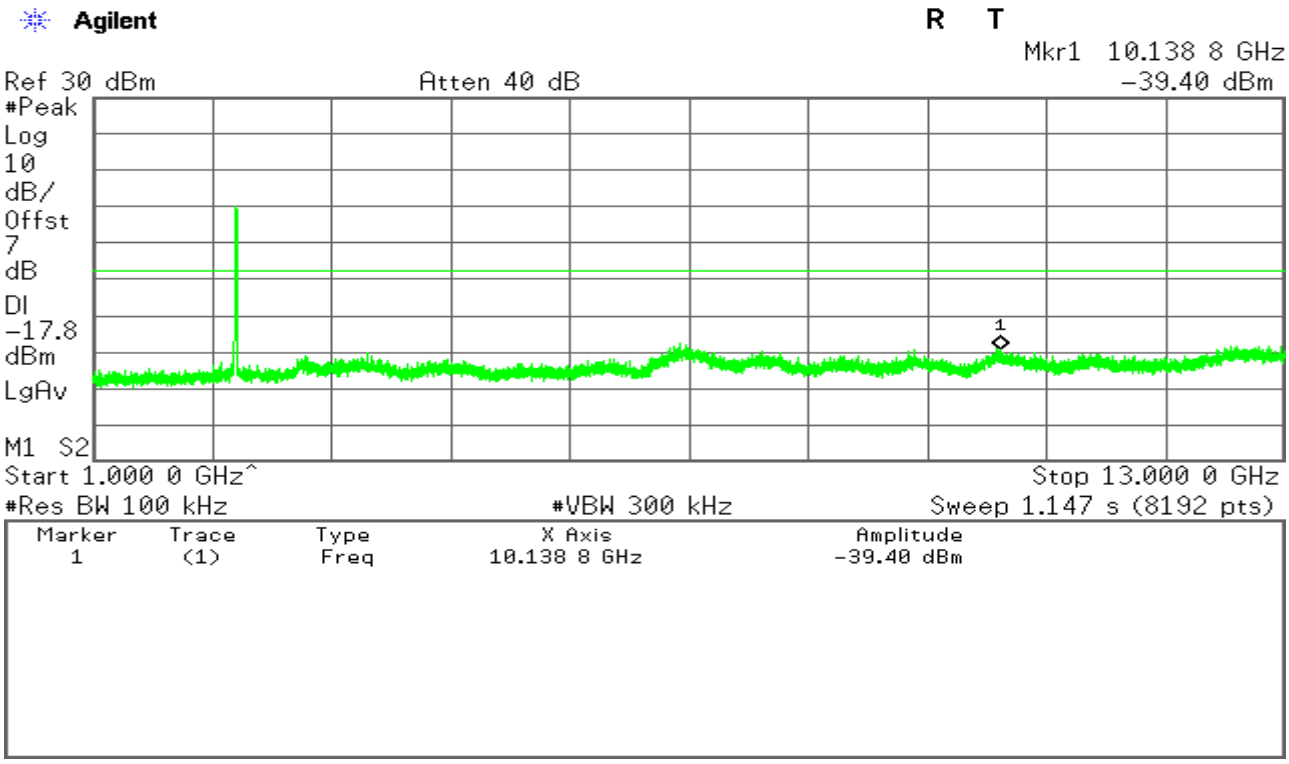

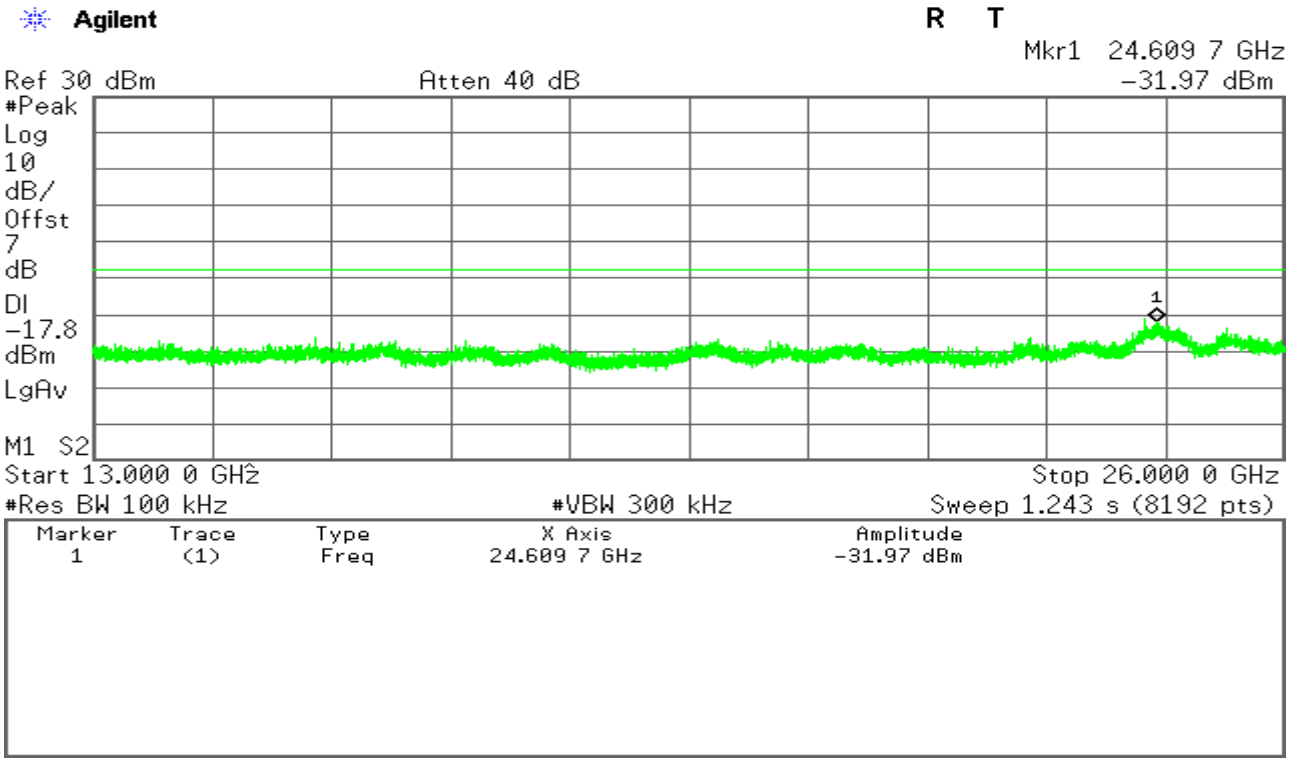

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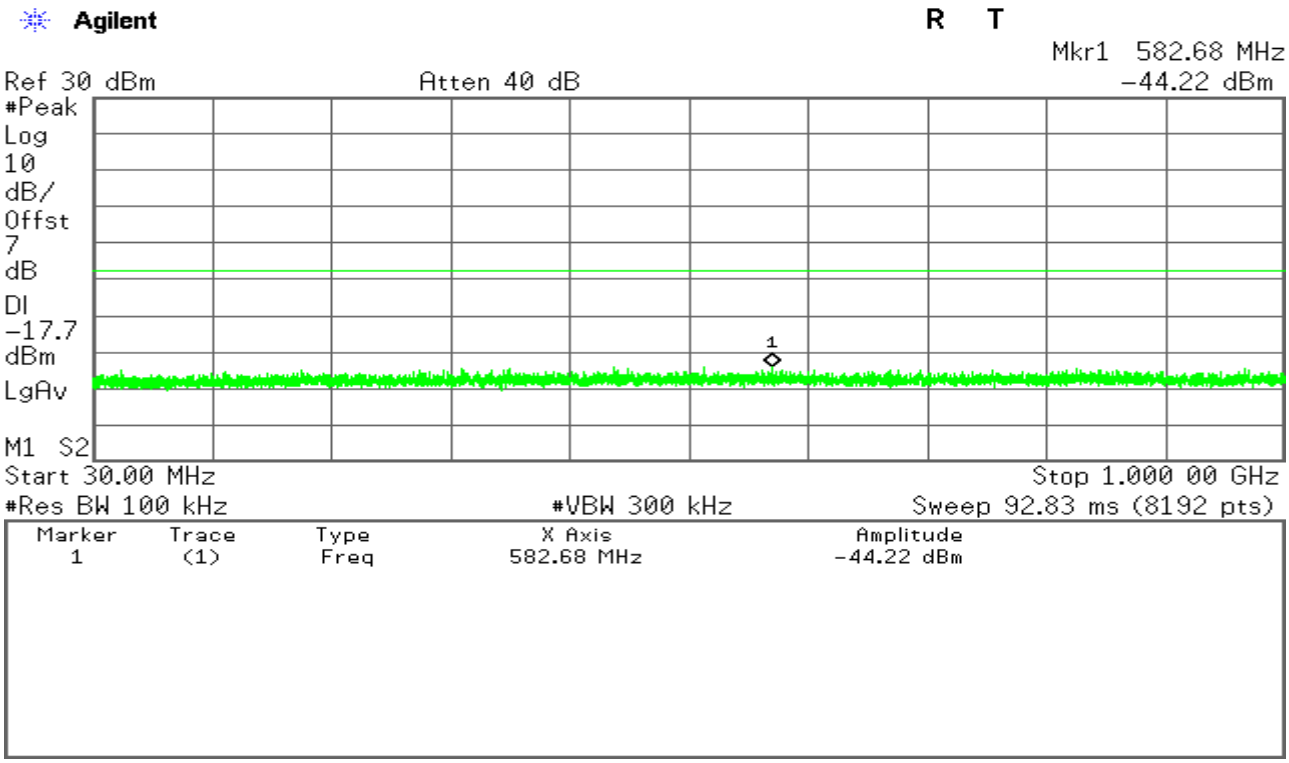
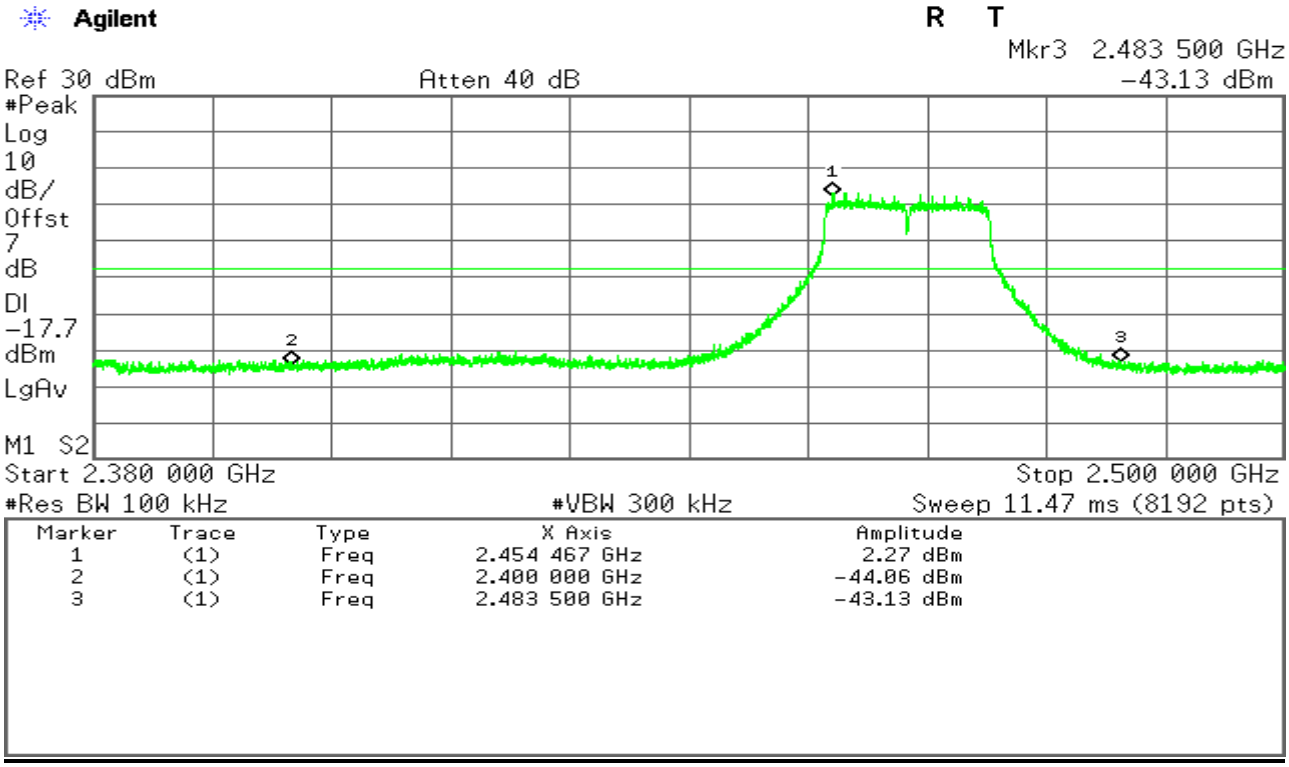
CH High





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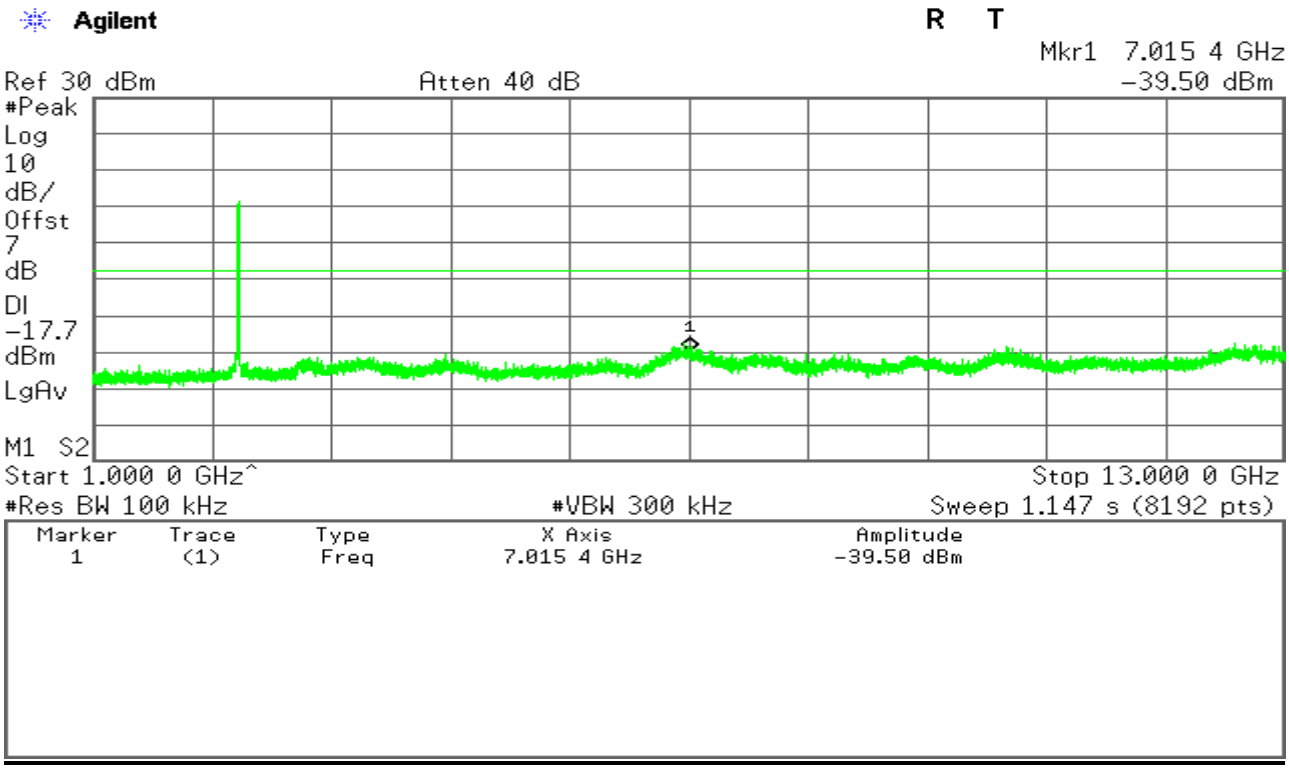

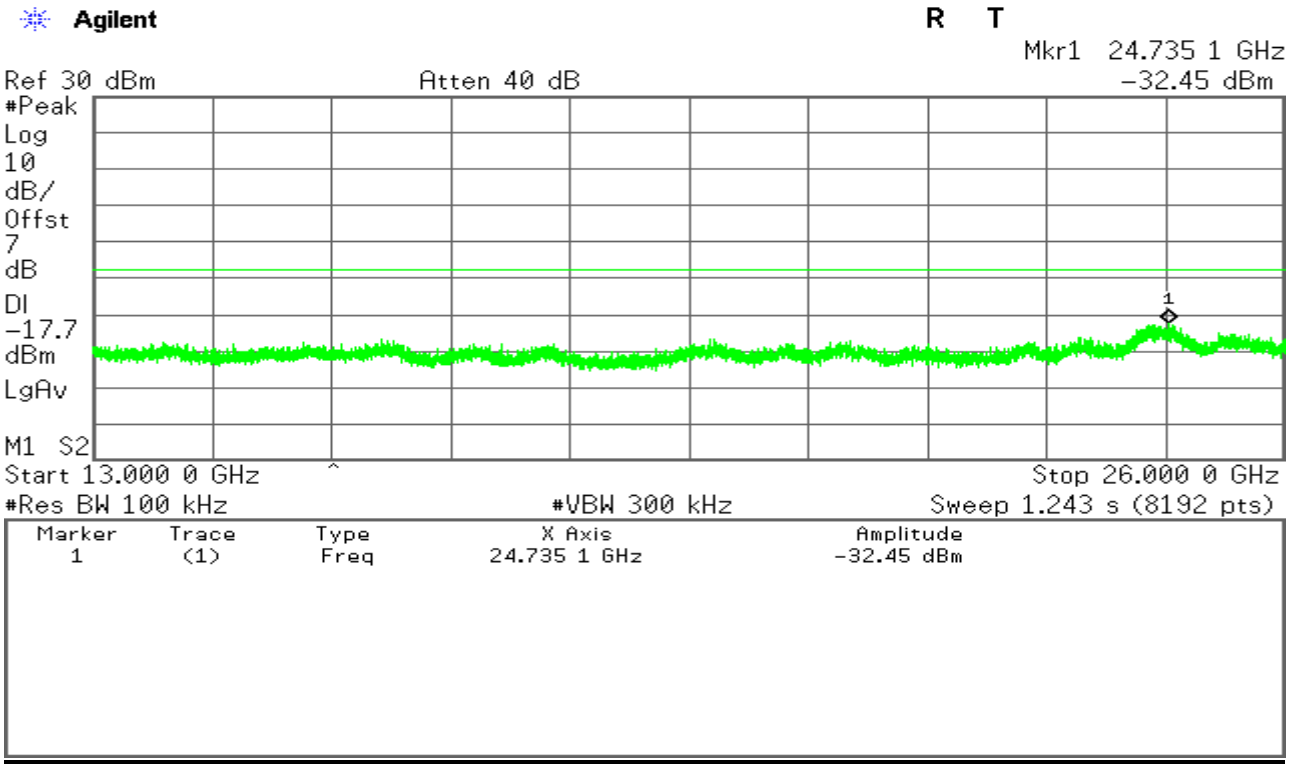

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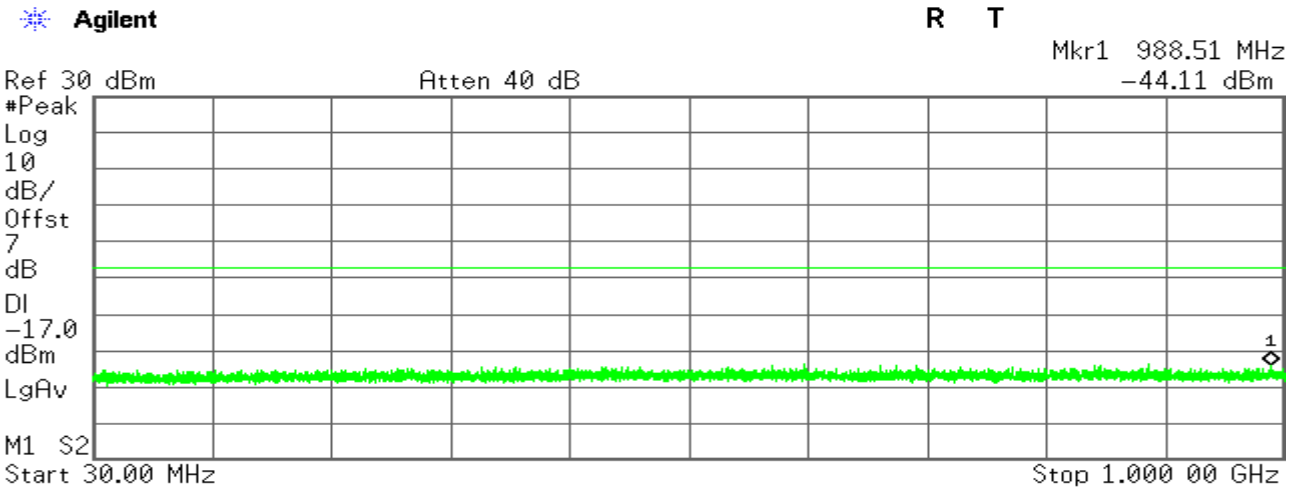
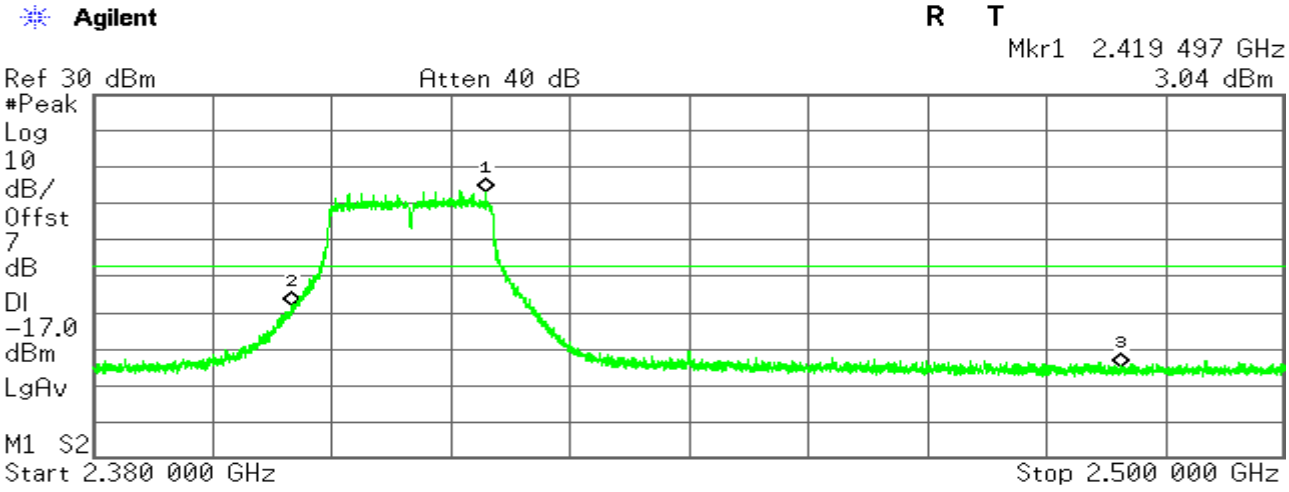
IEEE 802.11g mode/Chain 1

CH Low



Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	988.51 MHz	-44.11 dBm



Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.419 497 GHz	3.04 dBm
2	(1)	Freq	2.400 000 GHz	-27.98 dBm
3	(1)	Freq	2.483 500 GHz	-44.87 dBm

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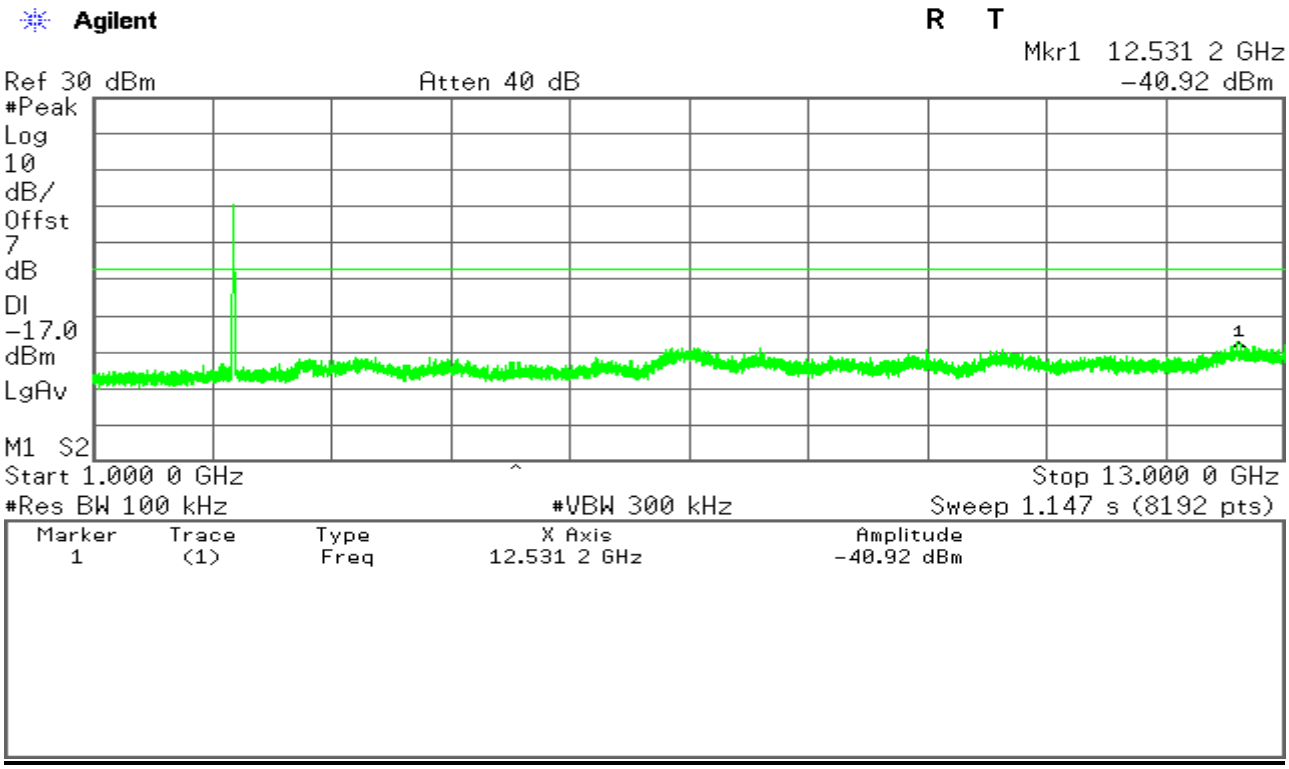

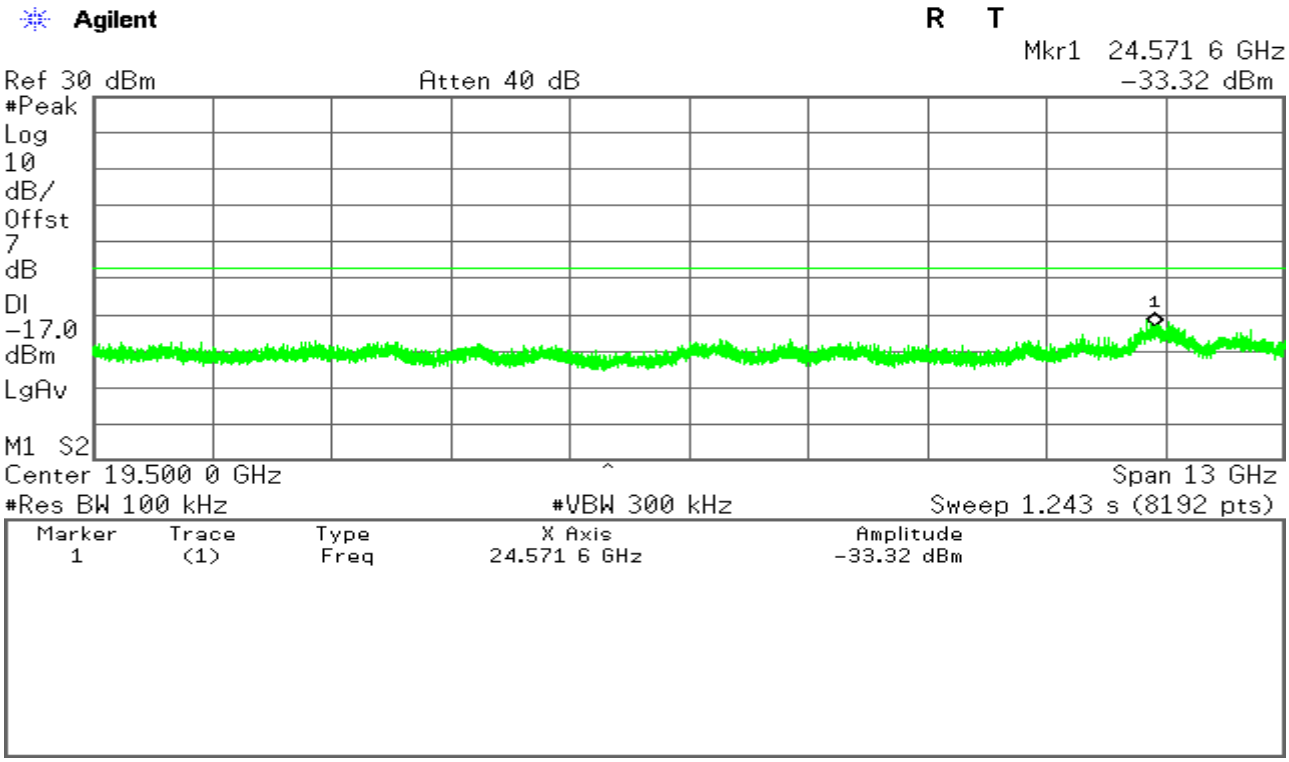

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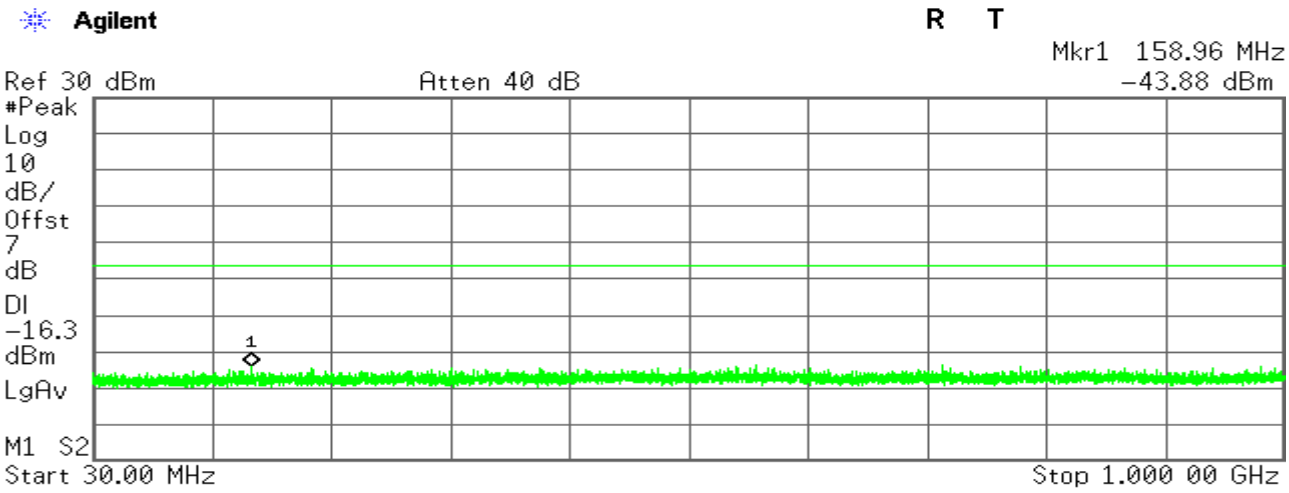
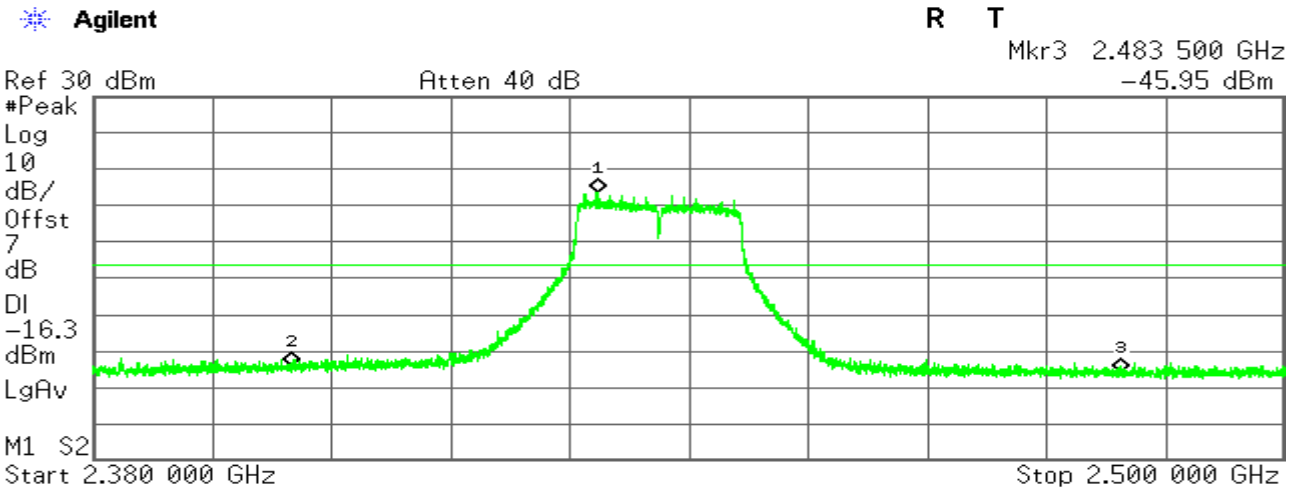
CH Mid



Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	158.96 MHz	-43.88 dBm



Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.430 734 GHz	3.75 dBm
2	(1)	Freq	2.400 000 GHz	-43.89 dBm
3	(1)	Freq	2.483 500 GHz	-45.95 dBm

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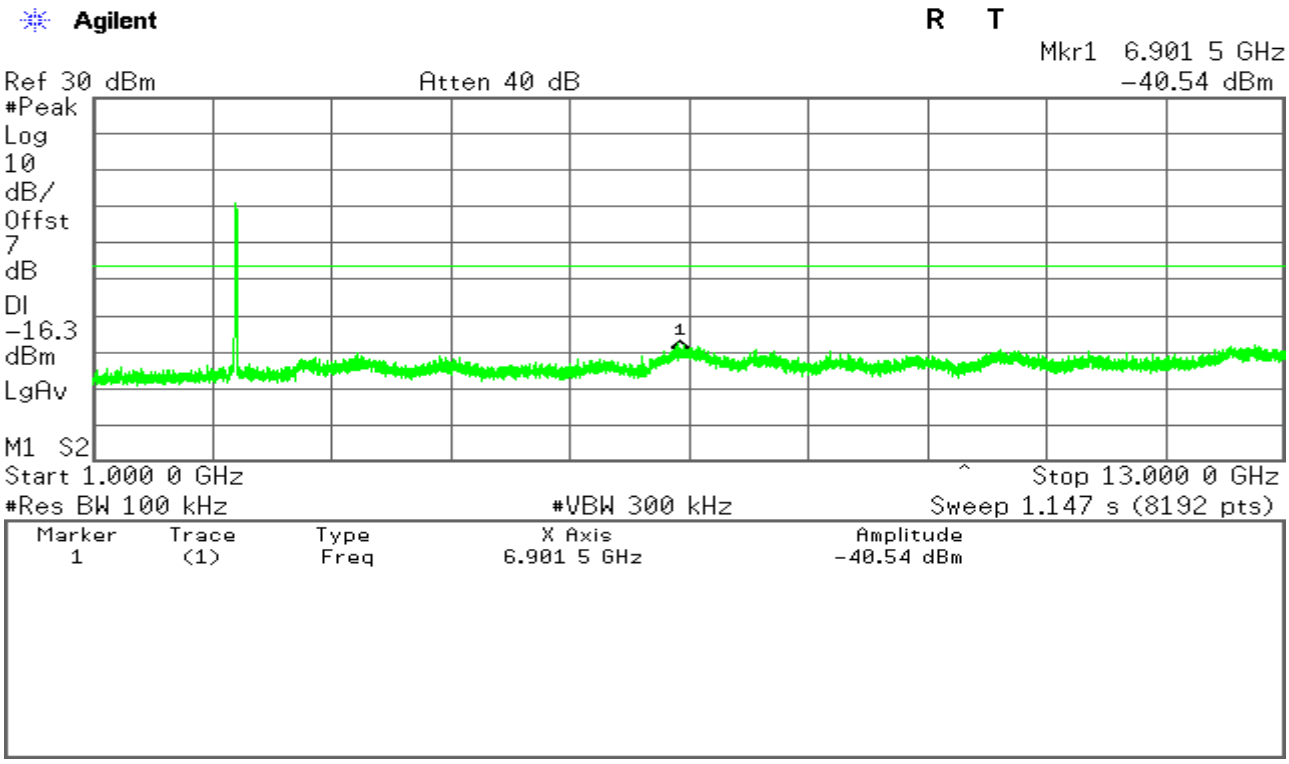

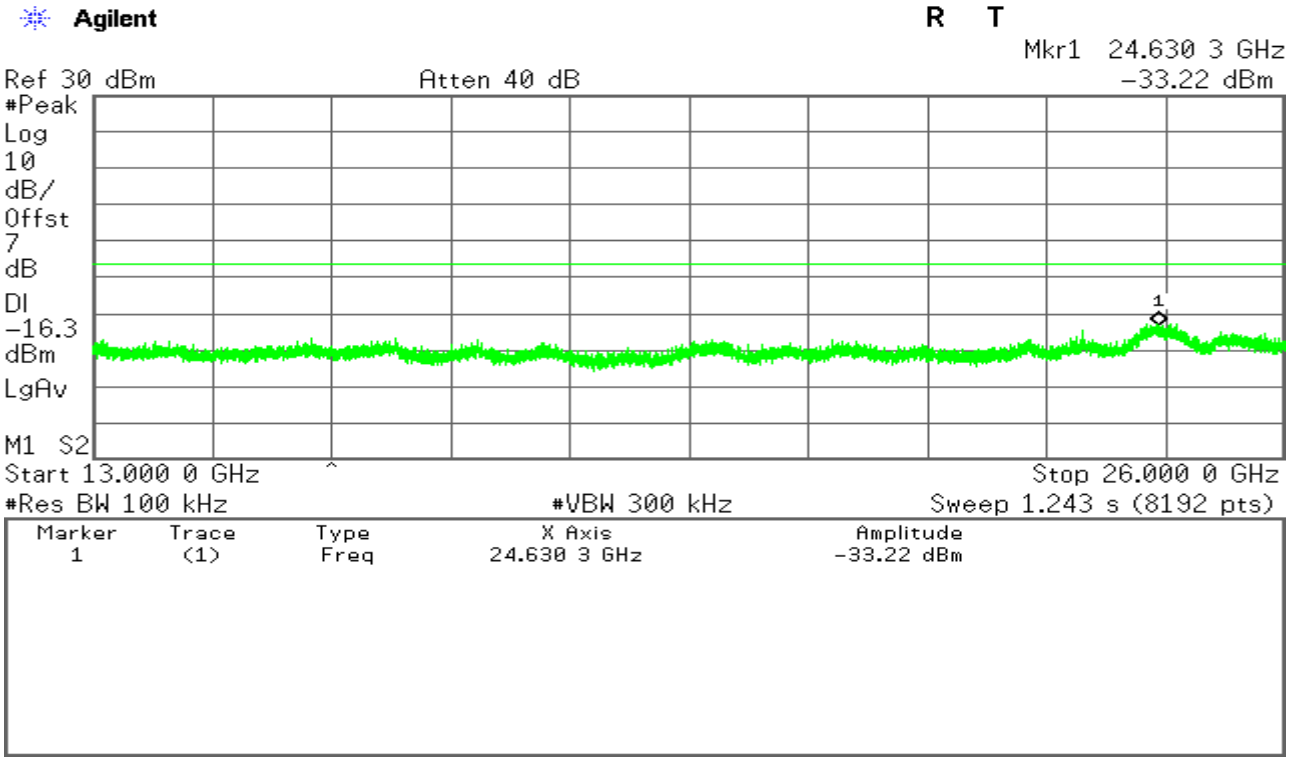

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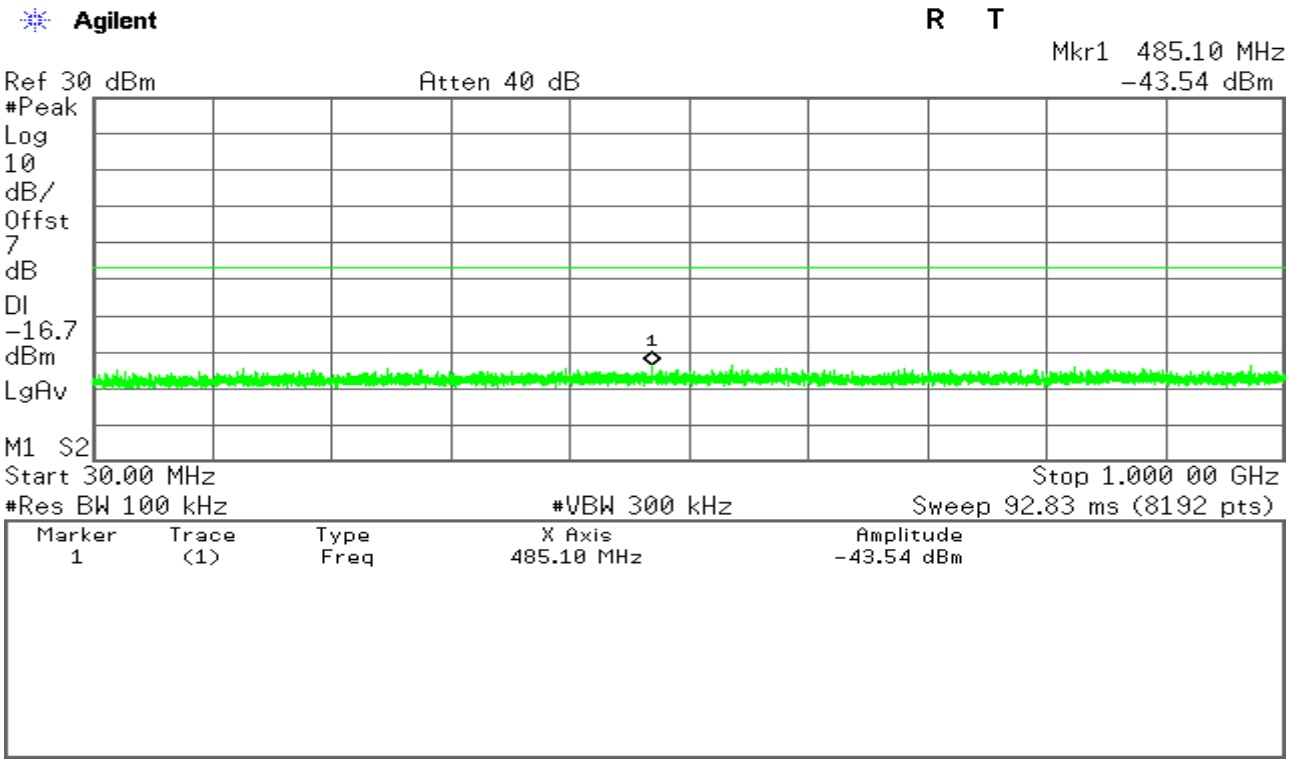
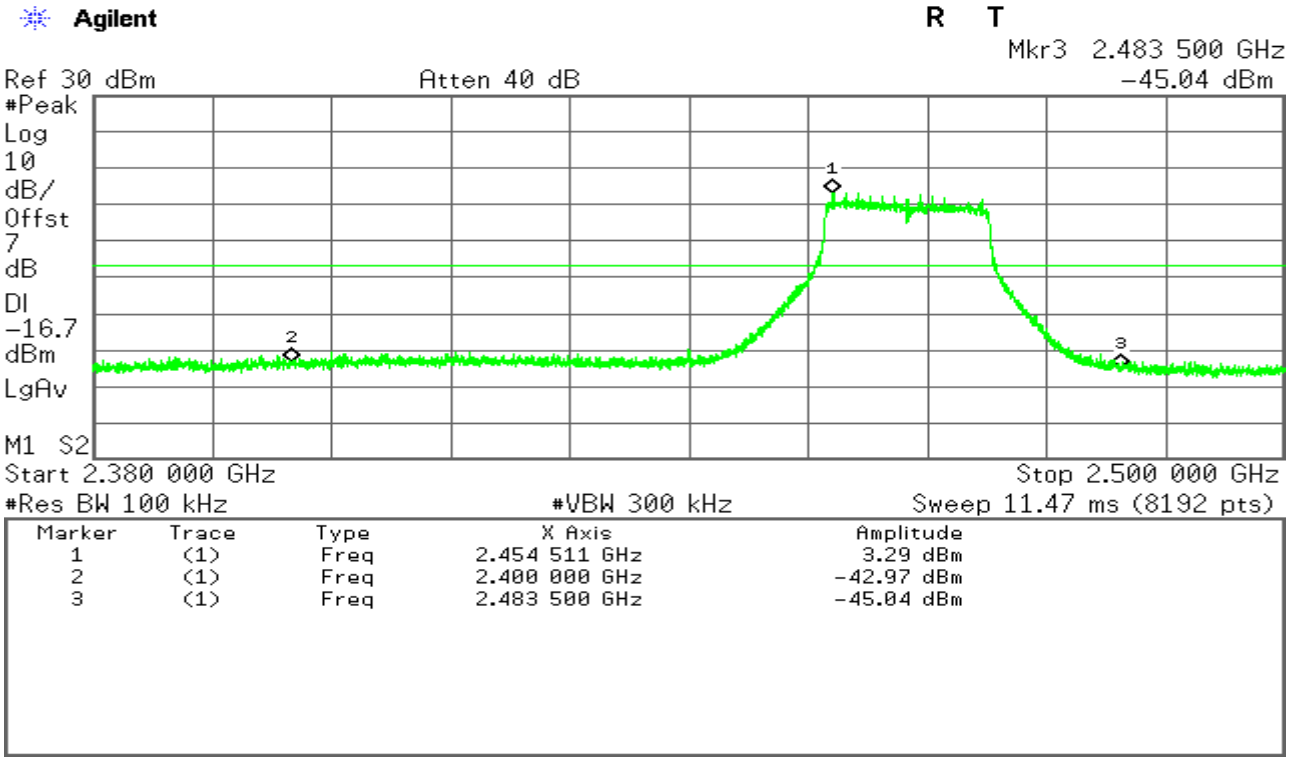
CH High





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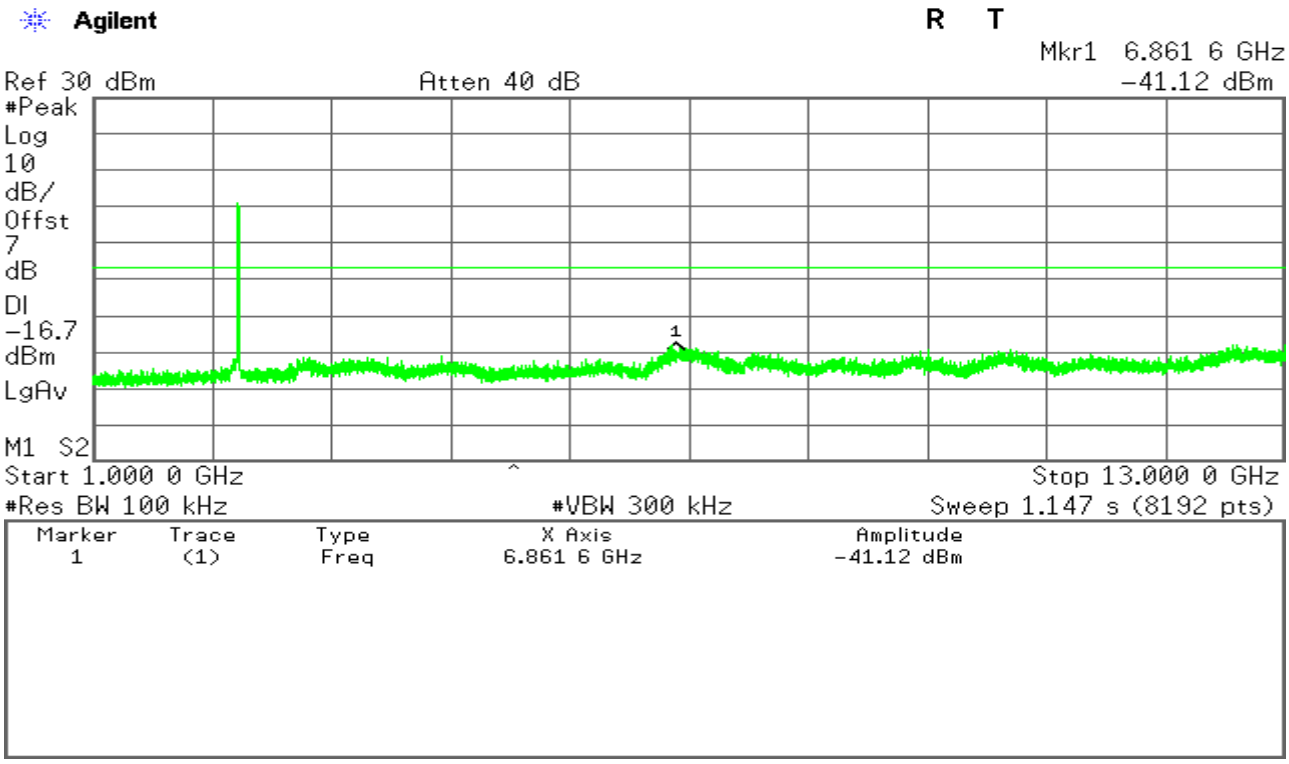

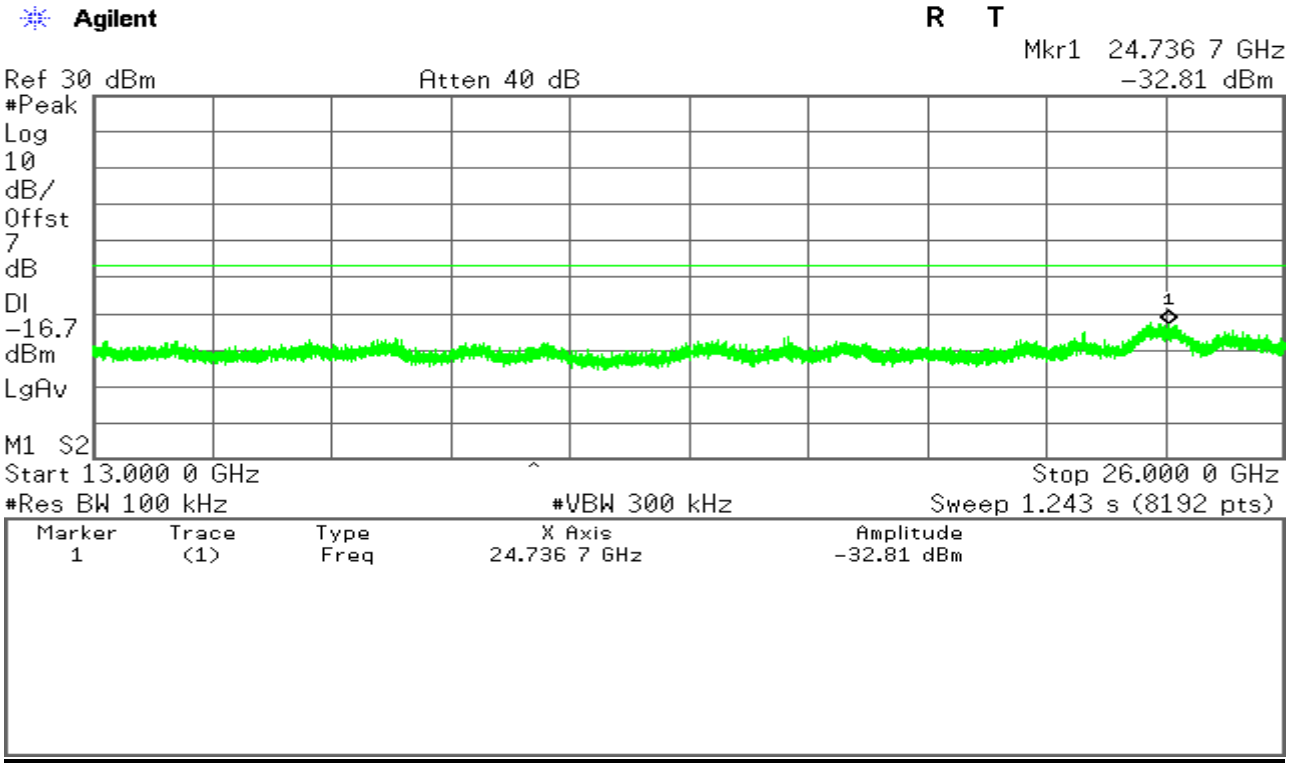

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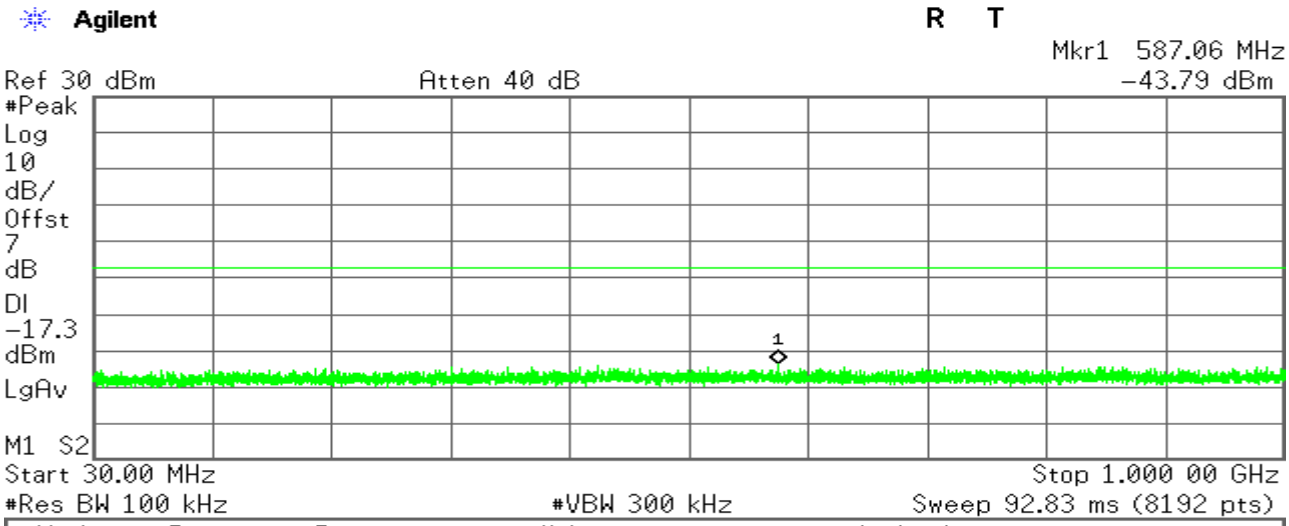
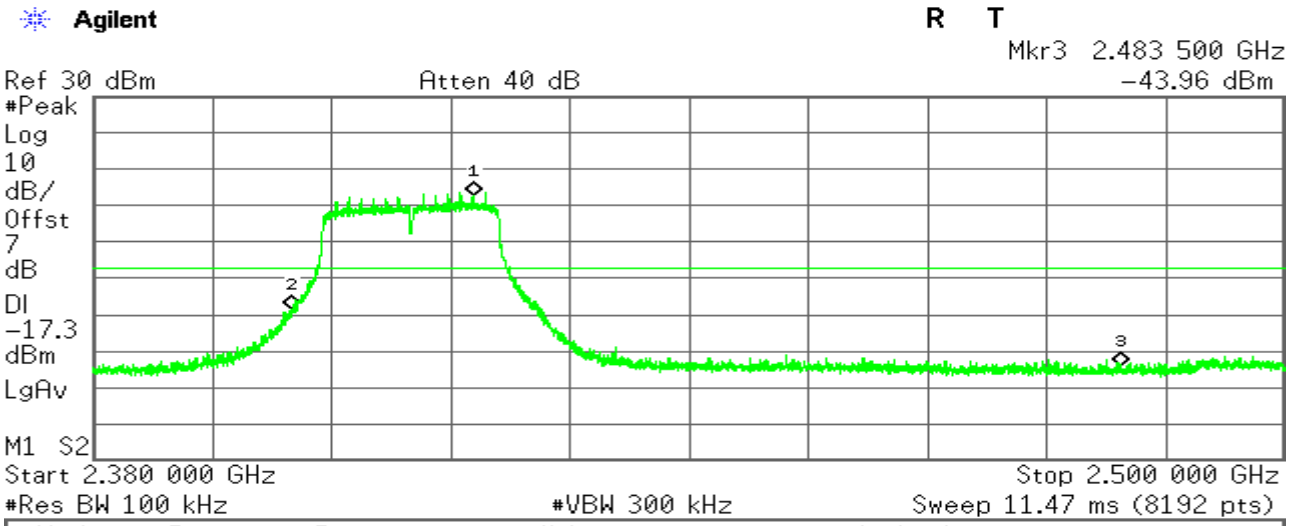
IEEE 802.11n HT20 mode / Chain 0

CH Low



Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	587.06 MHz	-43.79 dBm



Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.418 281 GHz	2.73 dBm
2	(1)	Freq	2.400 000 GHz	-28.63 dBm
3	(1)	Freq	2.483 500 GHz	-43.96 dBm

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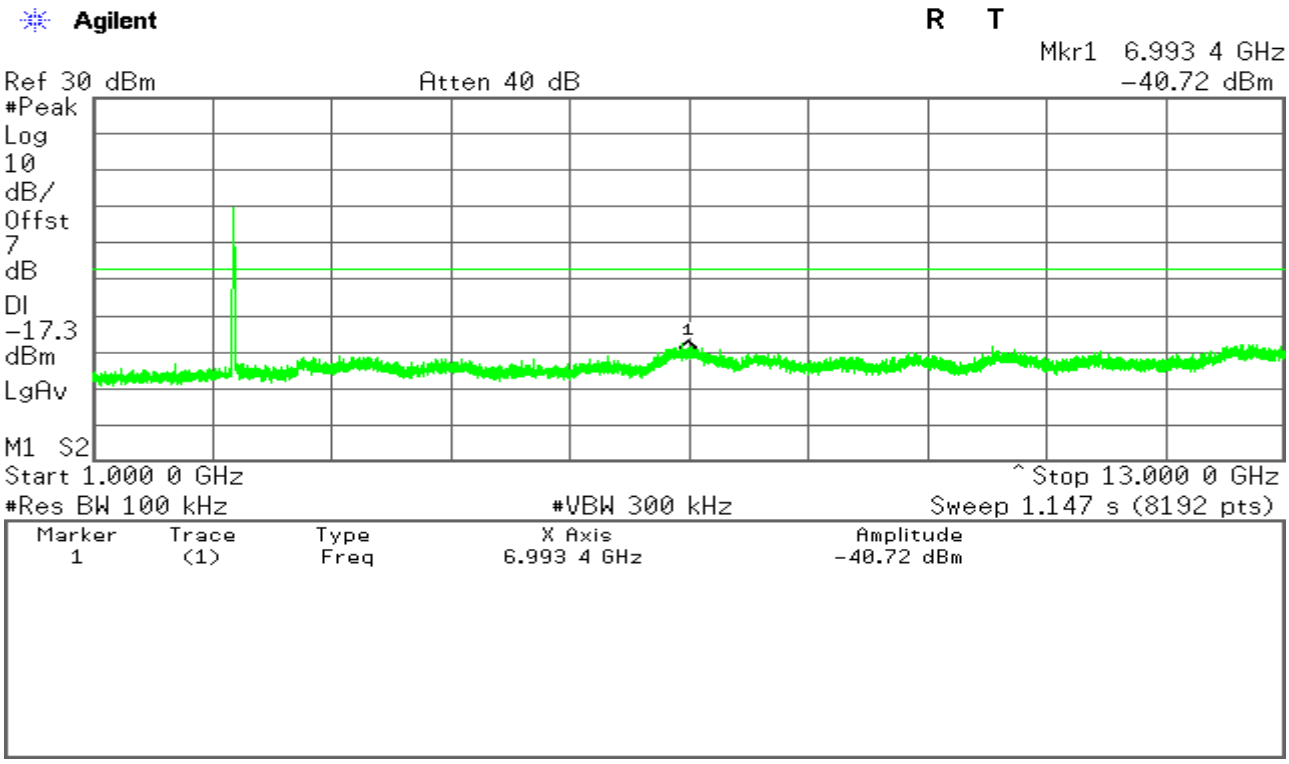

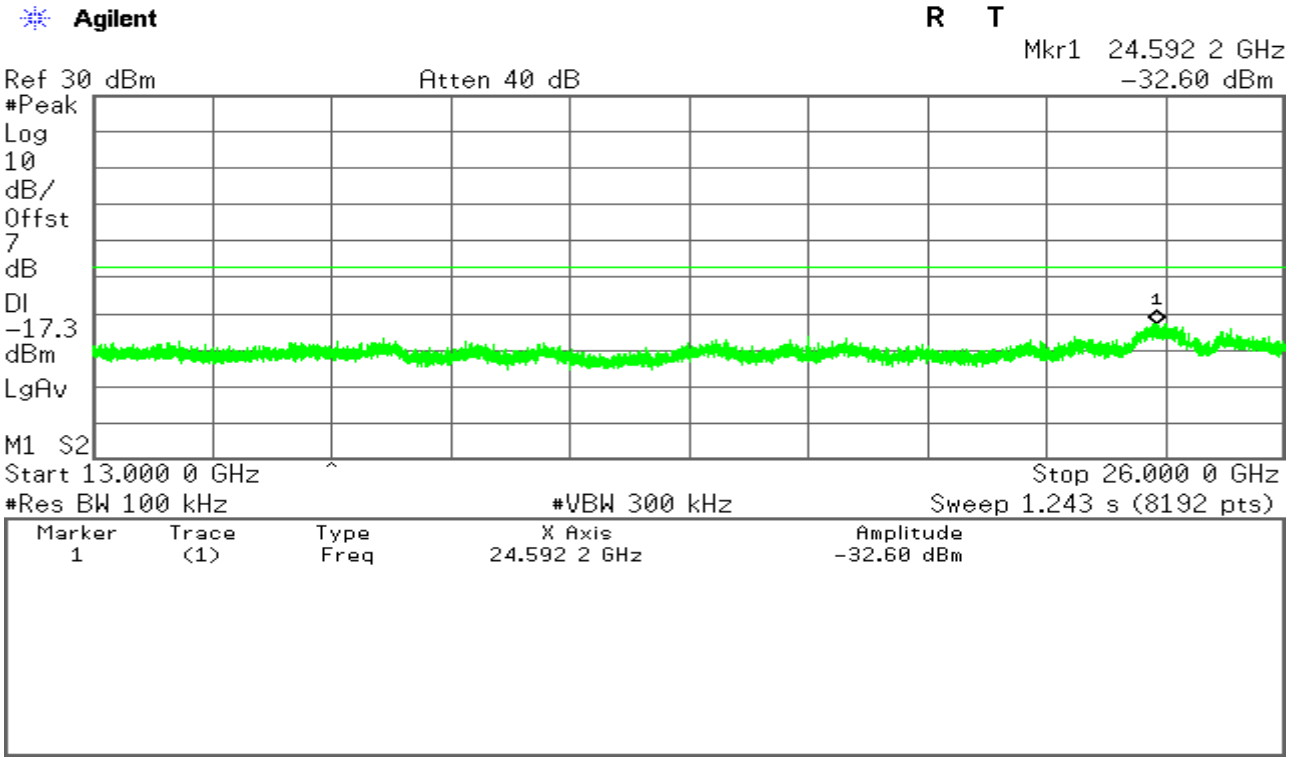

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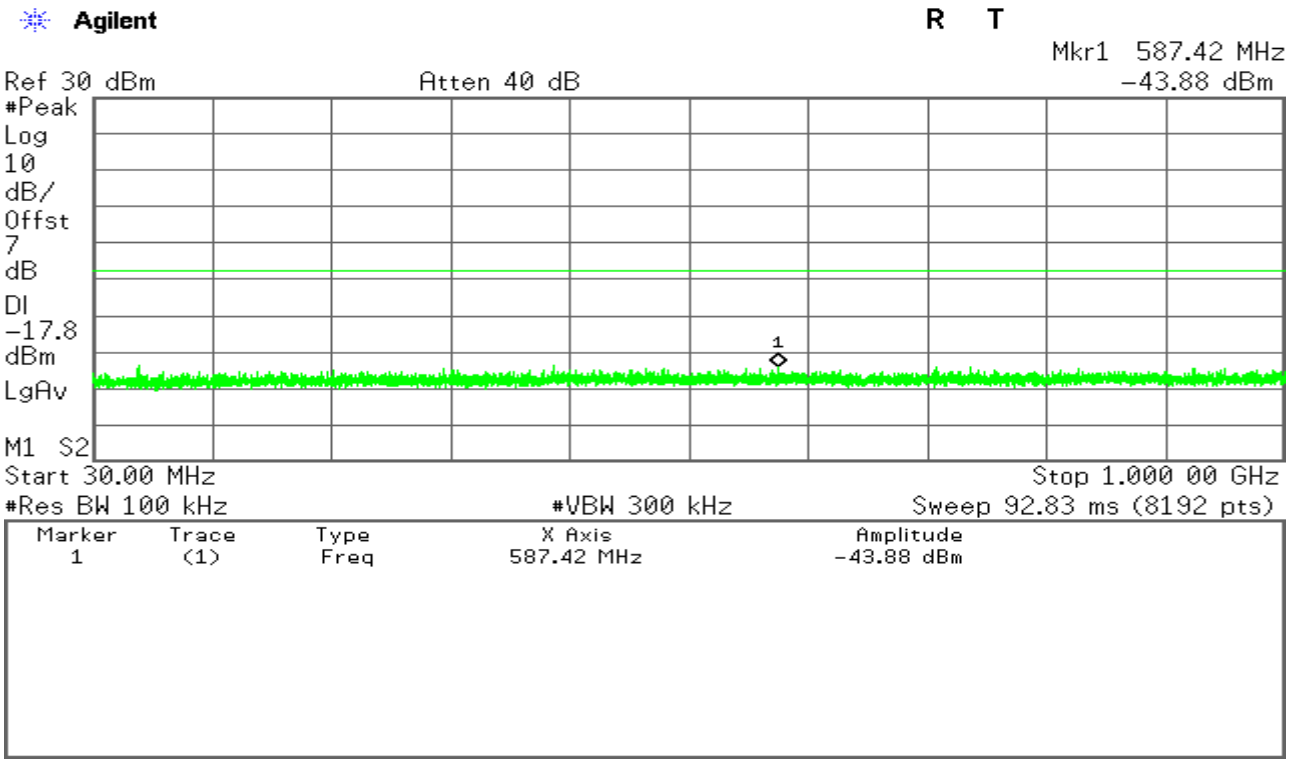
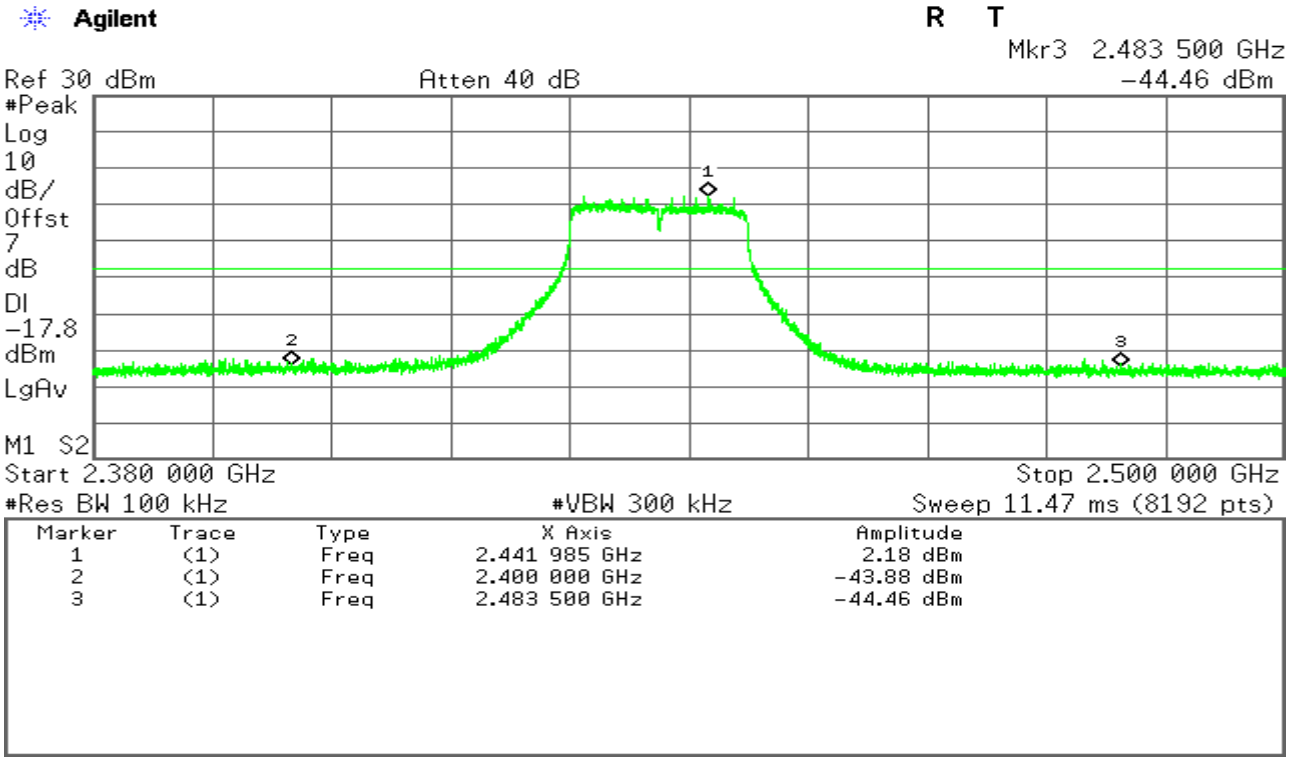
CH Mid





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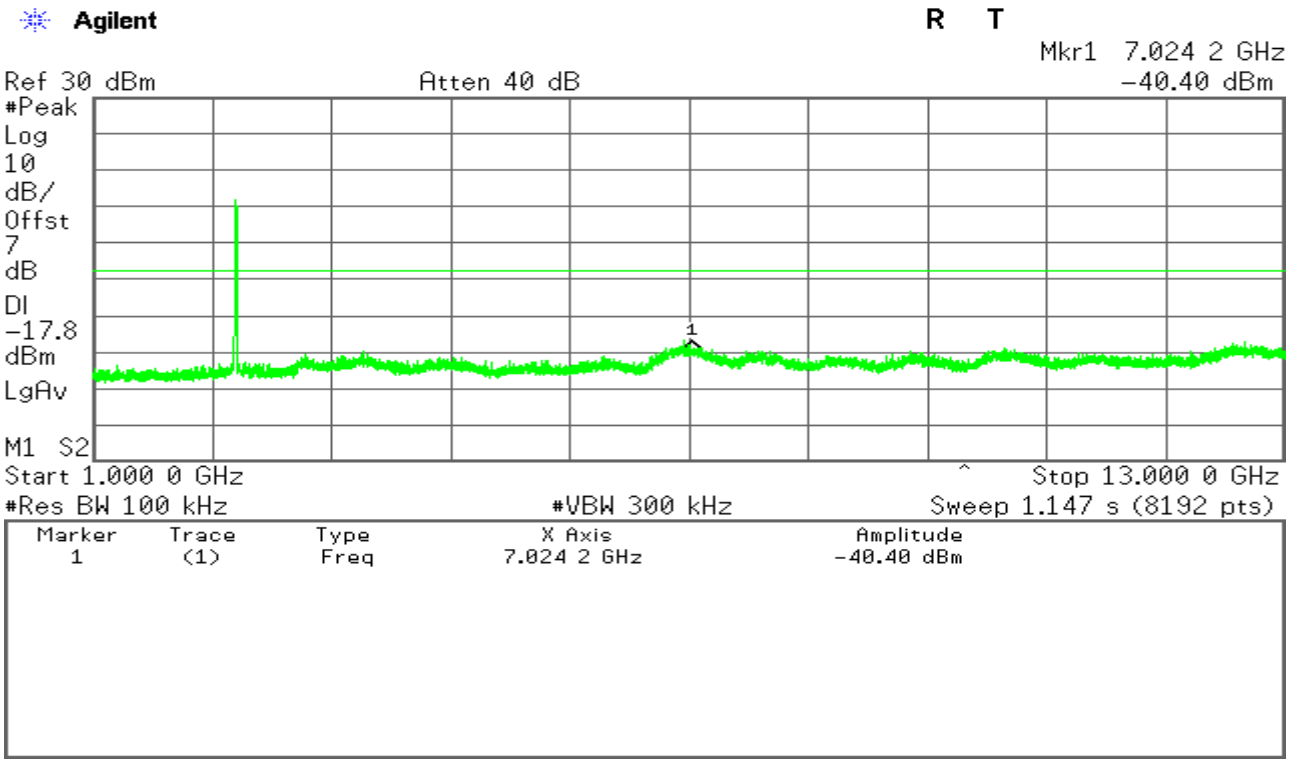

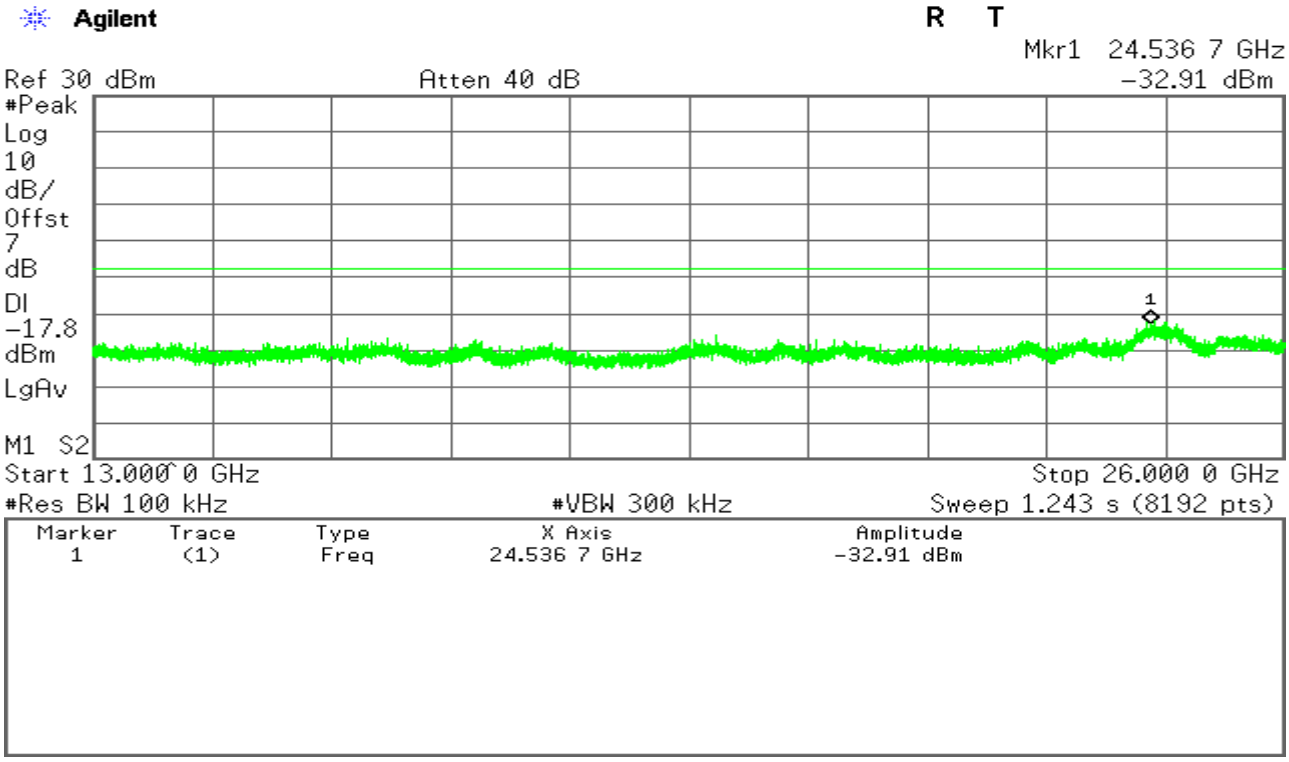

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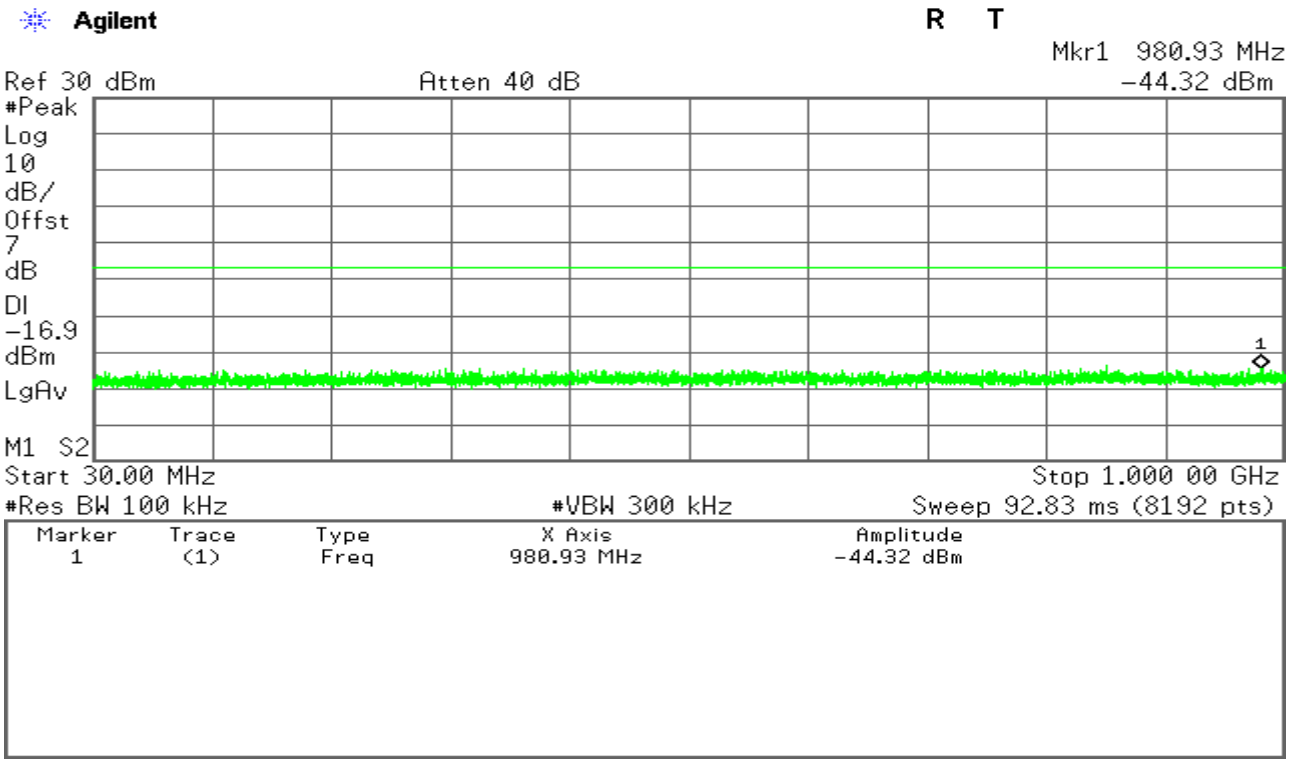
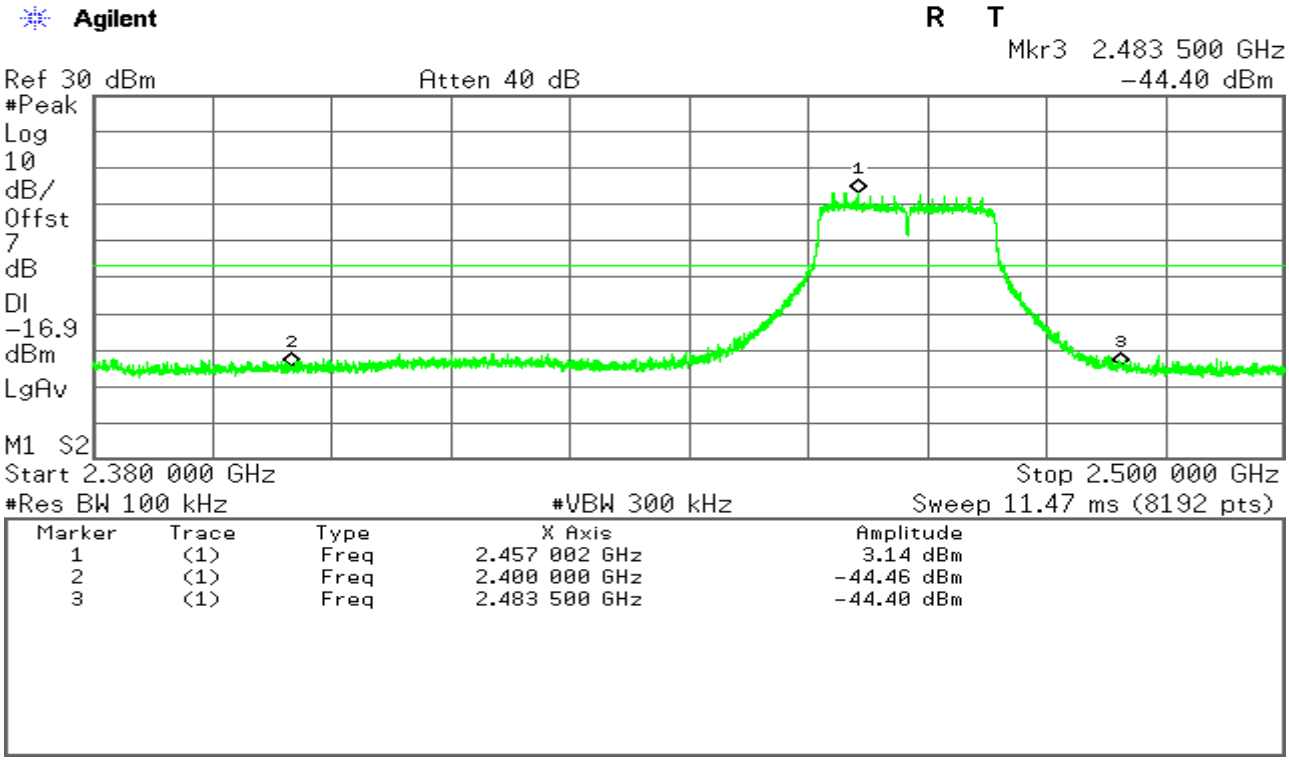
CH High





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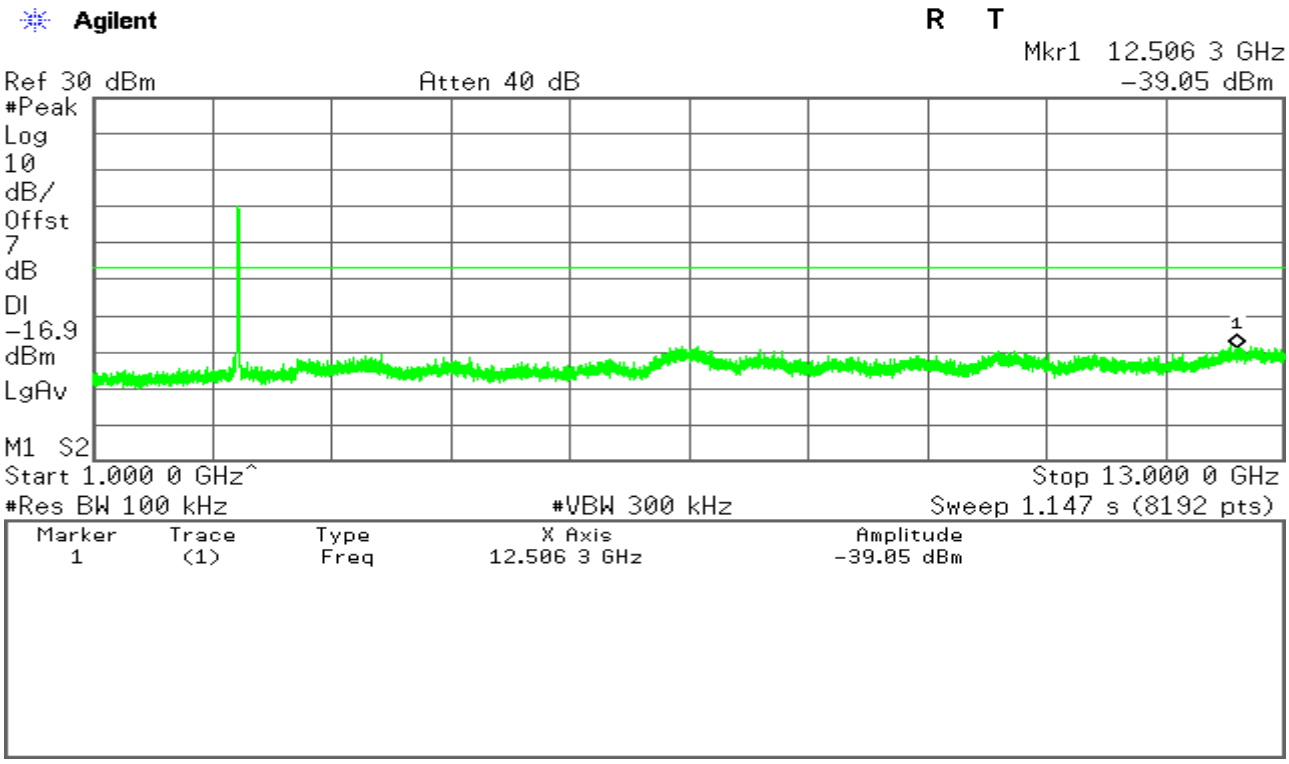

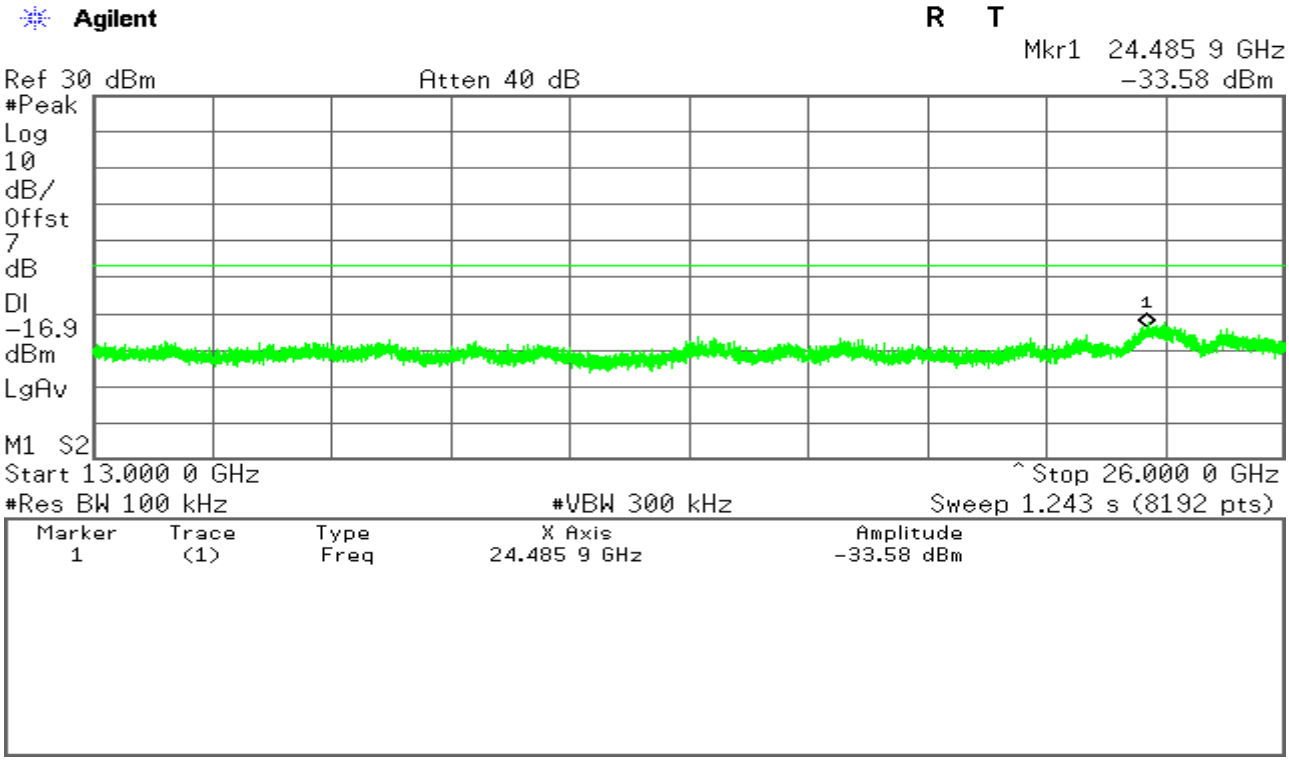

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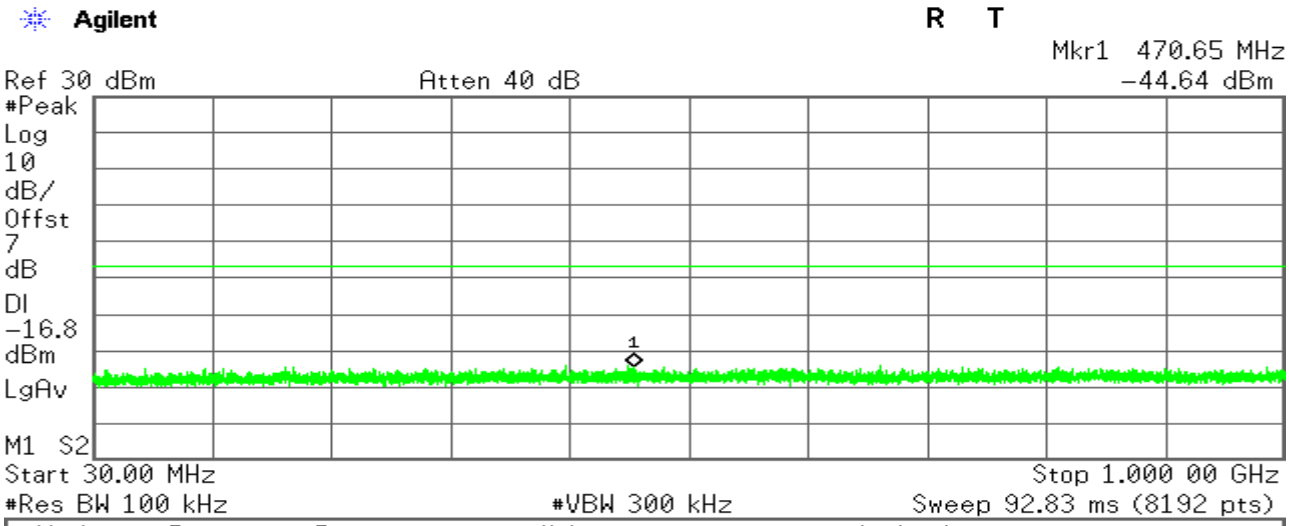
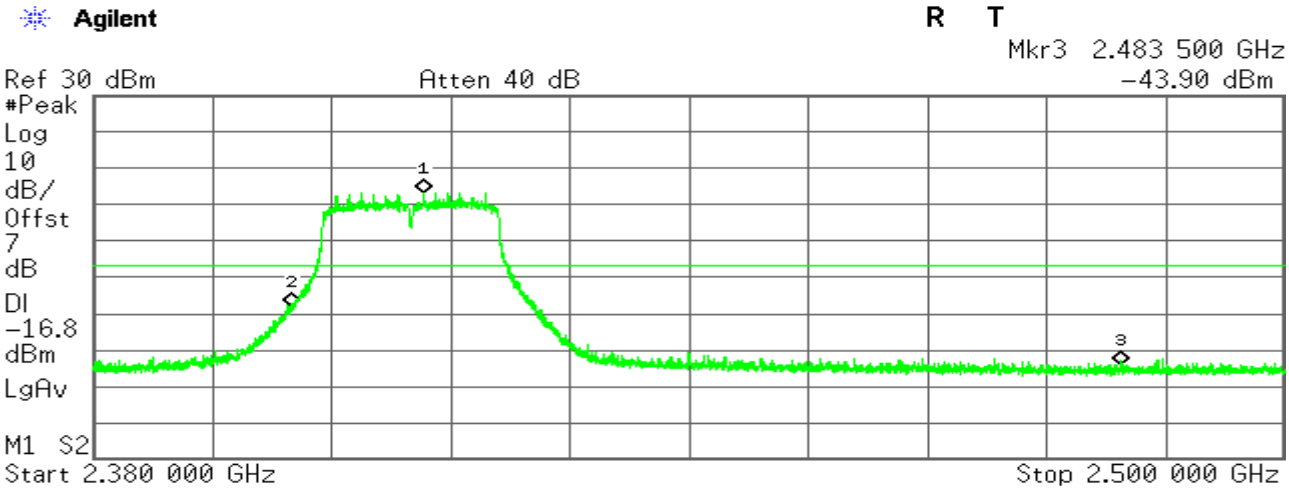
IEEE 802.11n HT20 mode / Chain 1

CH Low



Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	470.65 MHz	-44.64 dBm



Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.413 285 GHz	3.25 dBm
2	(1)	Freq	2.400 000 GHz	-28.23 dBm
3	(1)	Freq	2.483 500 GHz	-43.90 dBm

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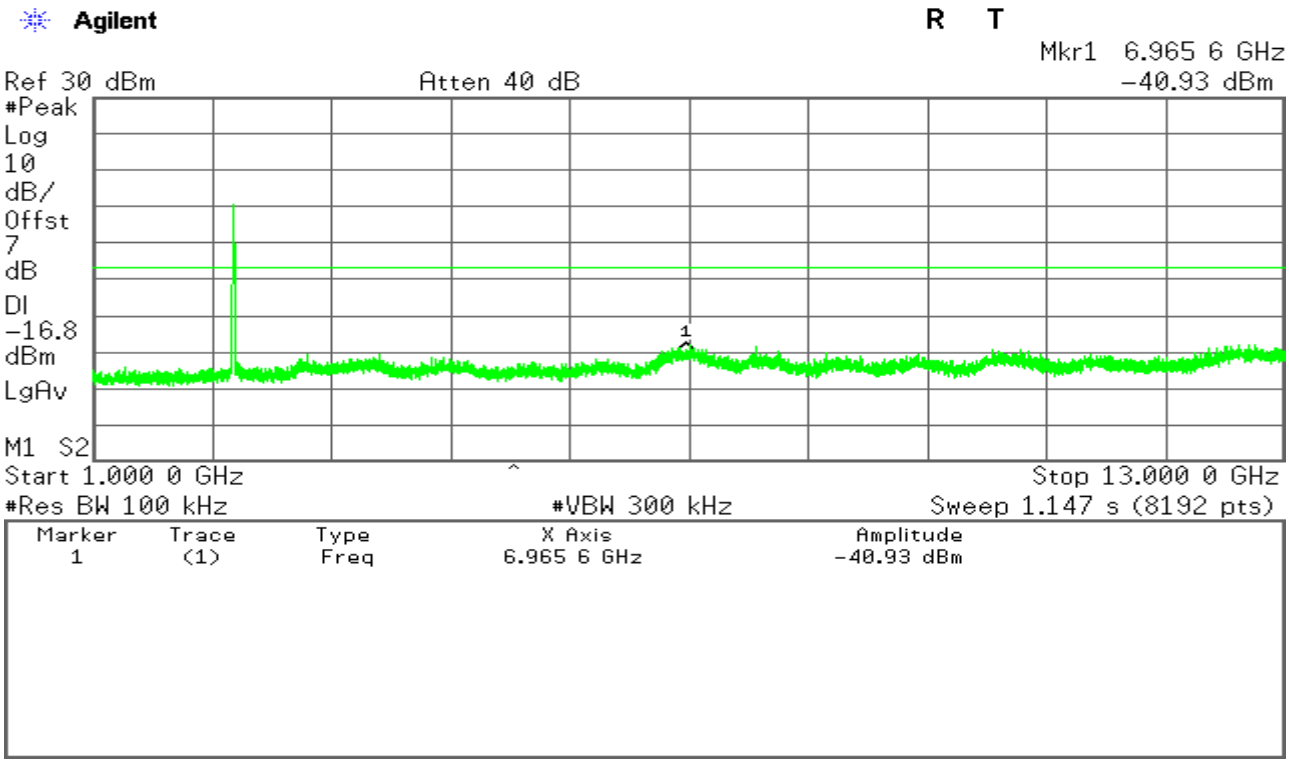

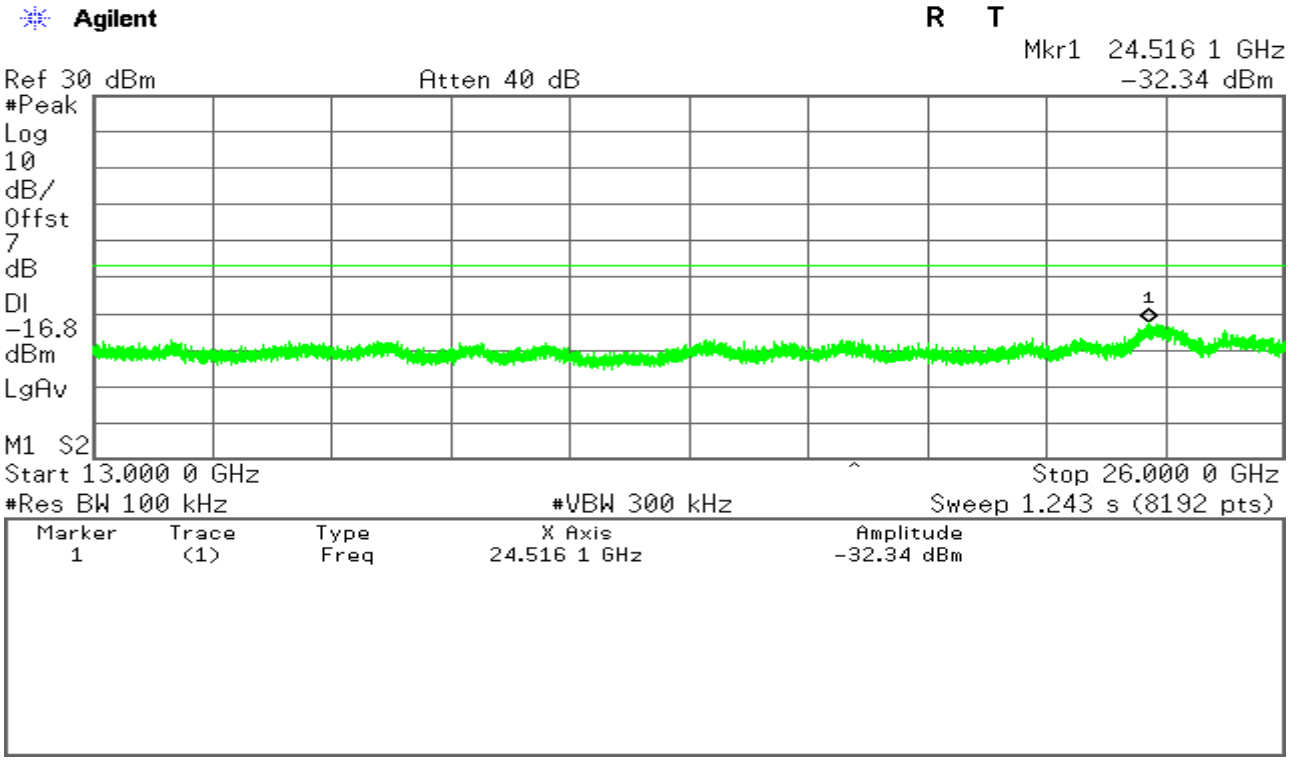

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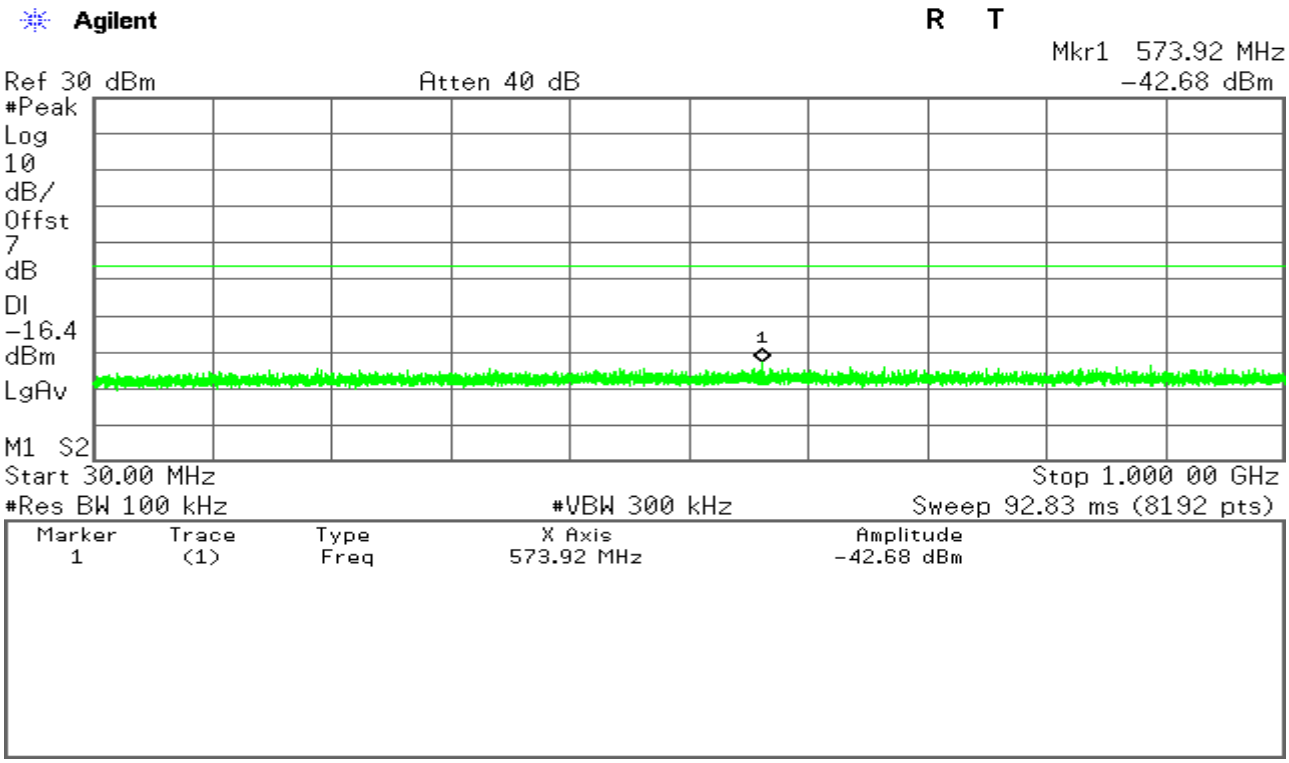
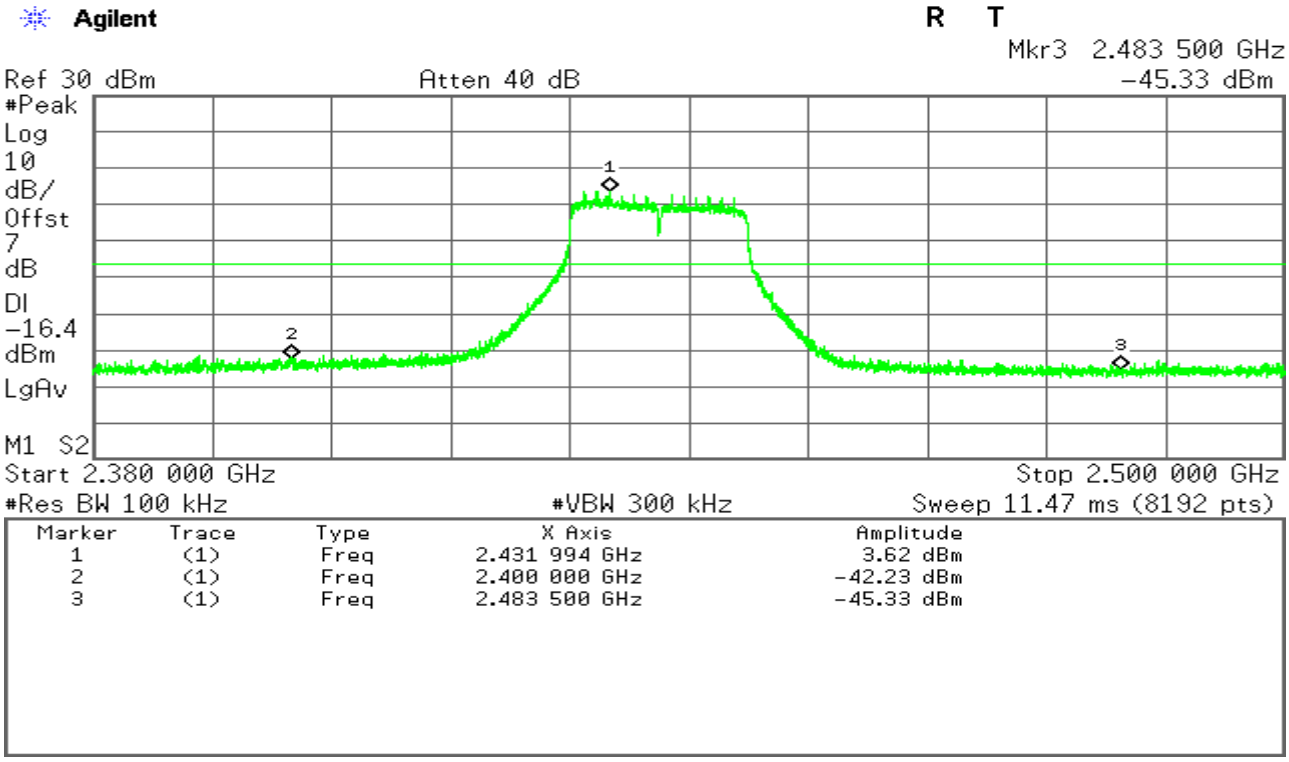
CH Mid





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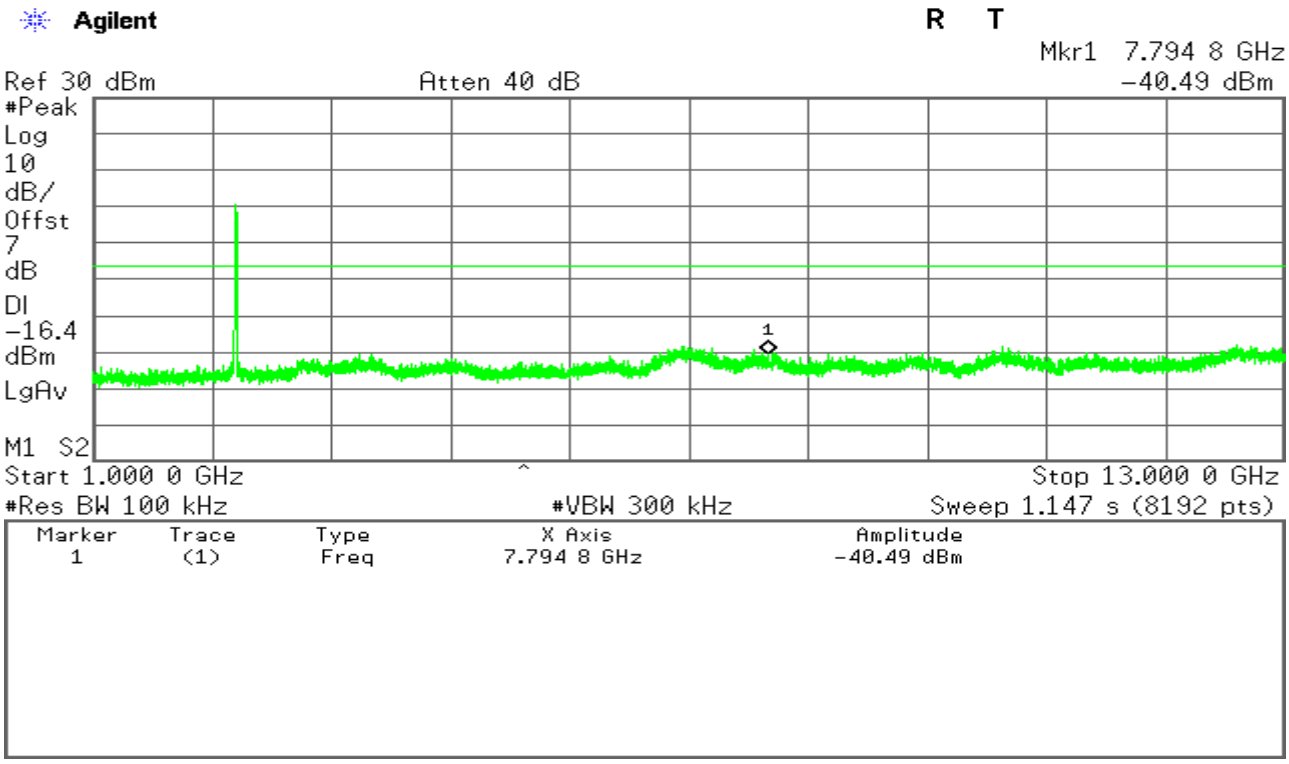

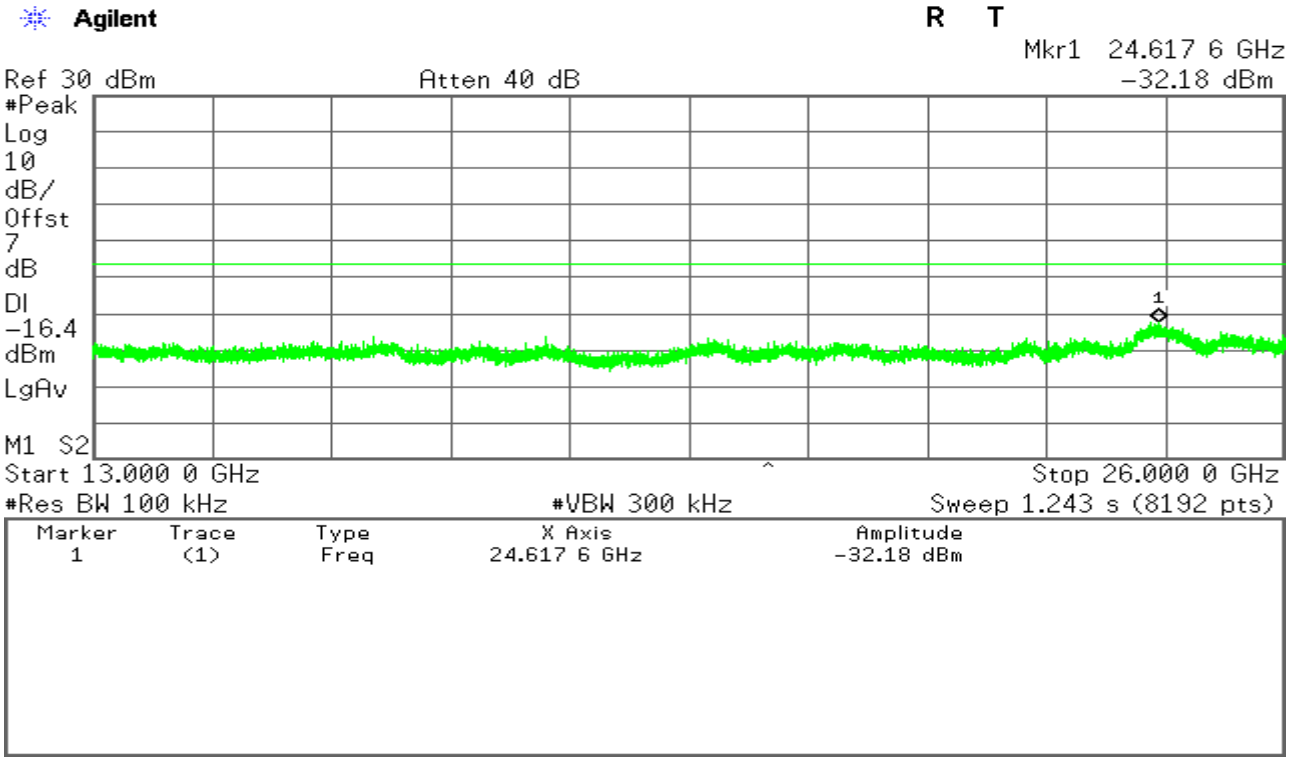

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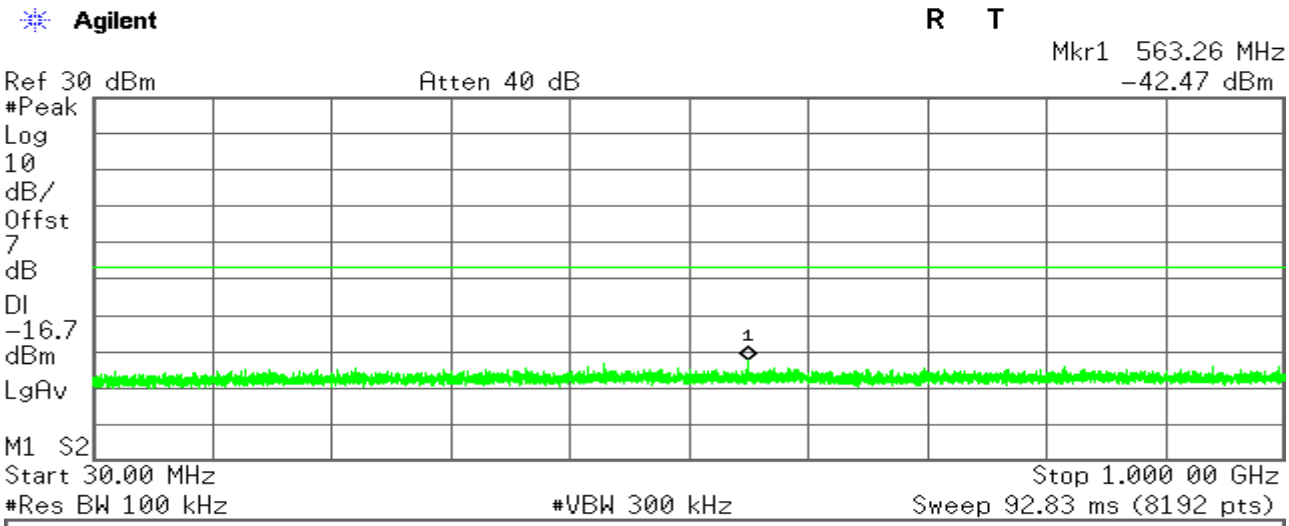
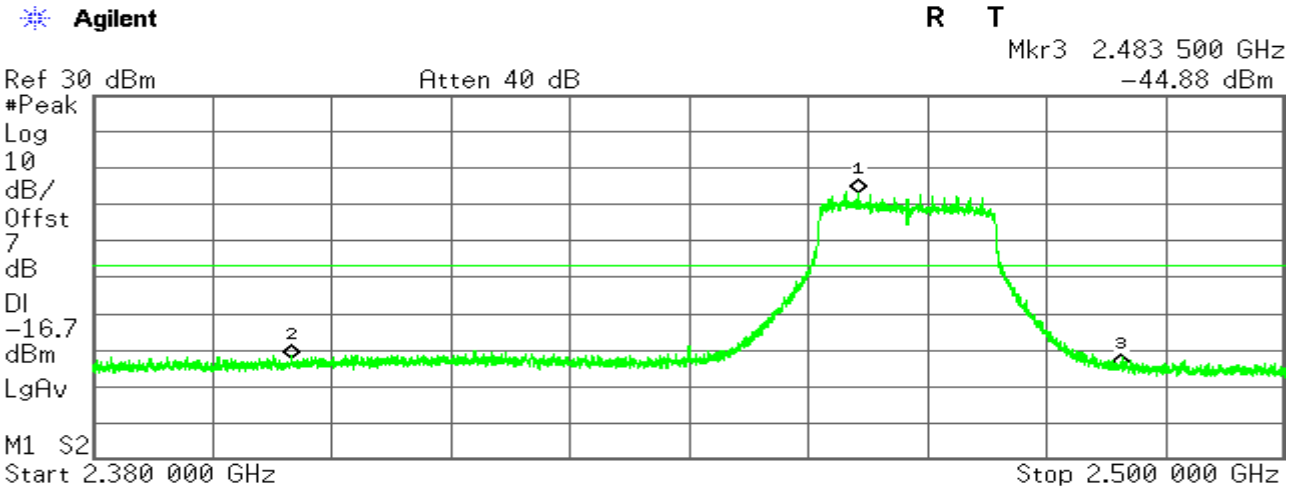
CH High



Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	563.26 MHz	-42.47 dBm



Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.456 987 GHz	3.32 dBm
2	(1)	Freq	2.400 000 GHz	-42.31 dBm
3	(1)	Freq	2.483 500 GHz	-44.88 dBm

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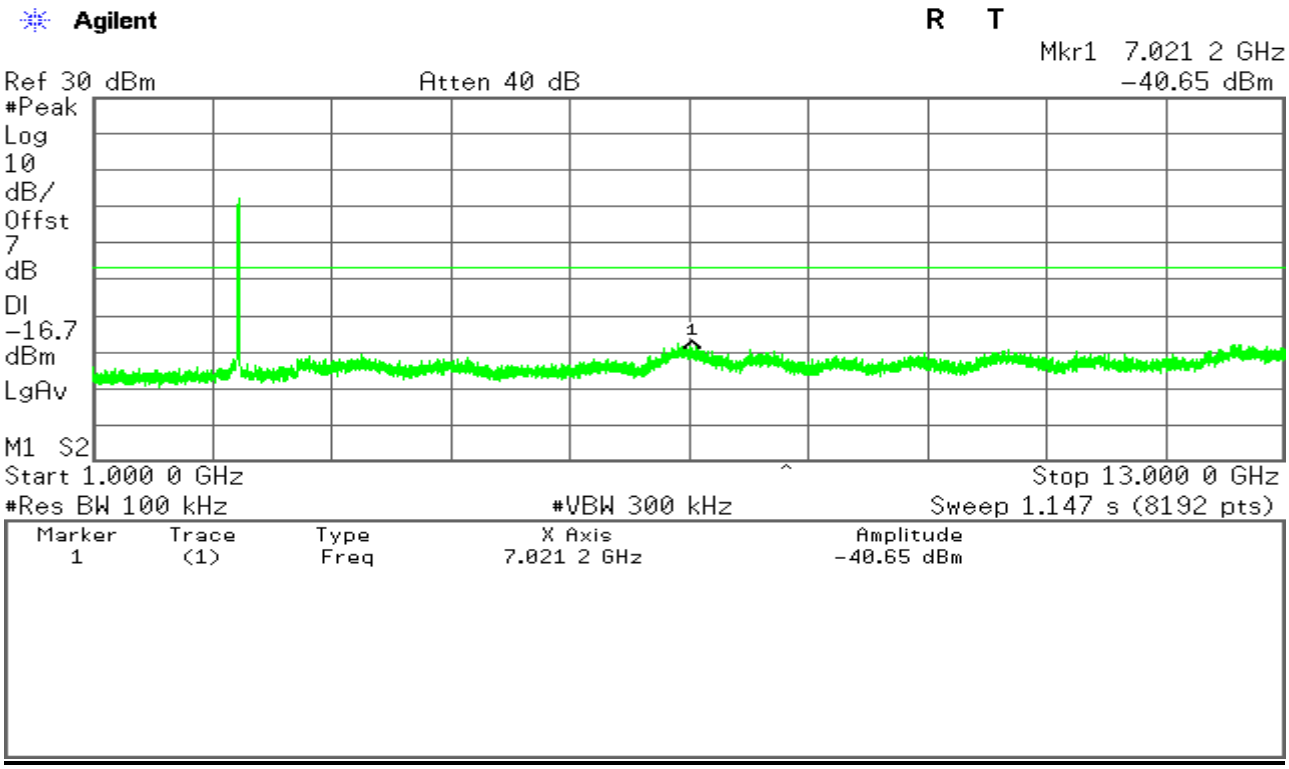

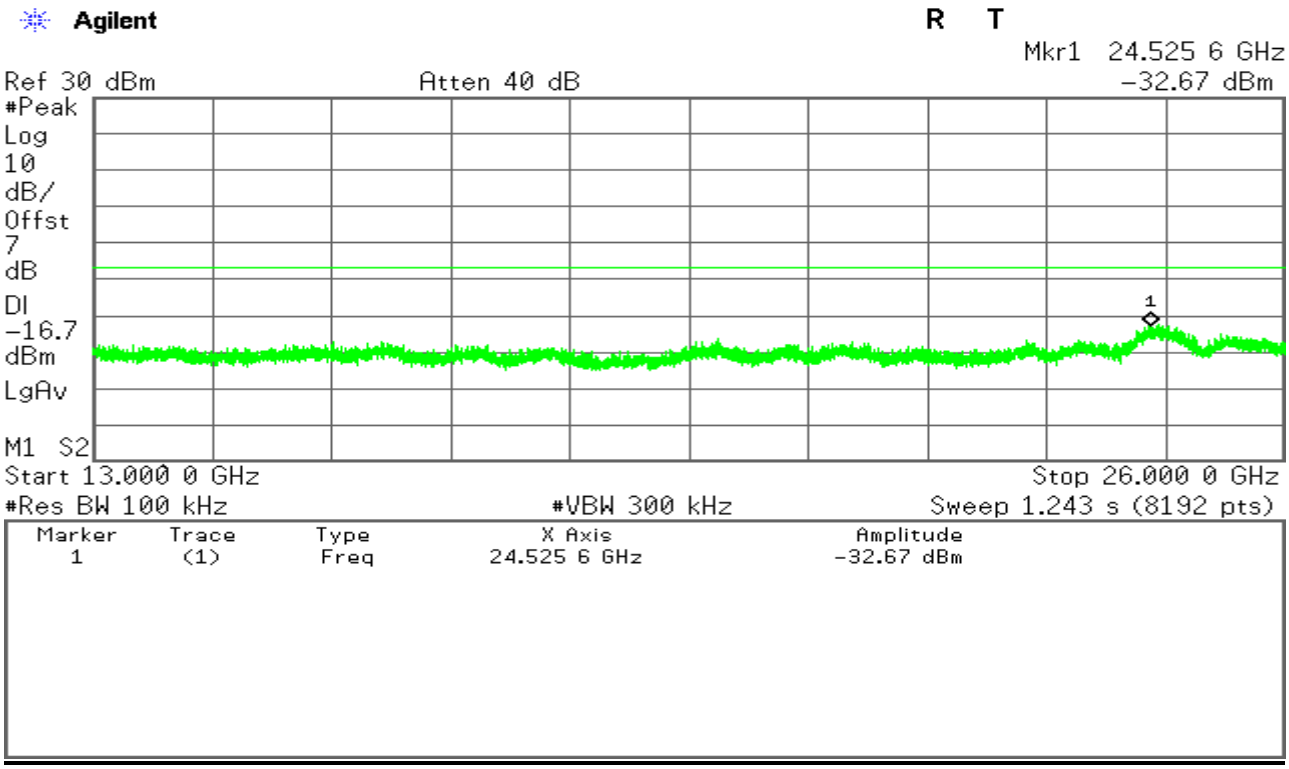

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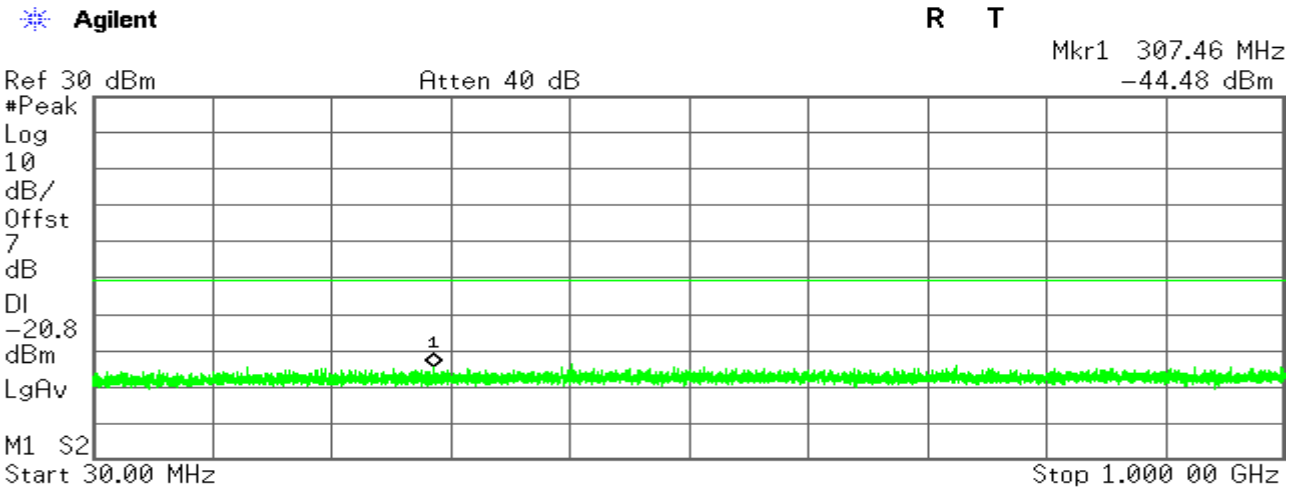
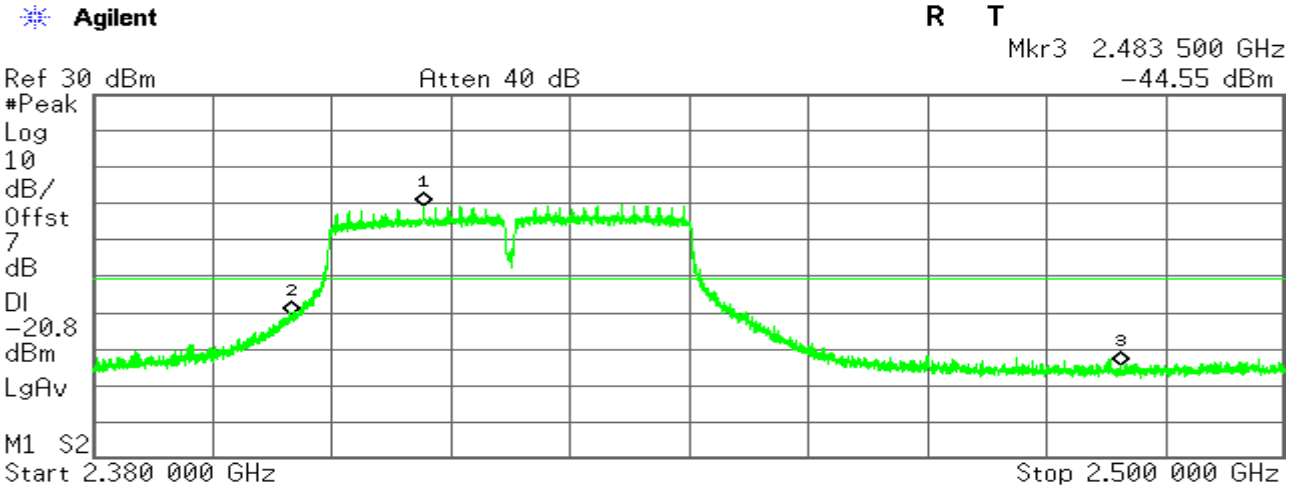
IEEE 802.11n HT40 mode / Chain 0

CH Low



Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	307.46 MHz	-44.48 dBm



Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.413 271 GHz	-0.79 dBm
2	(1)	Freq	2.400 000 GHz	-30.66 dBm
3	(1)	Freq	2.483 500 GHz	-44.55 dBm

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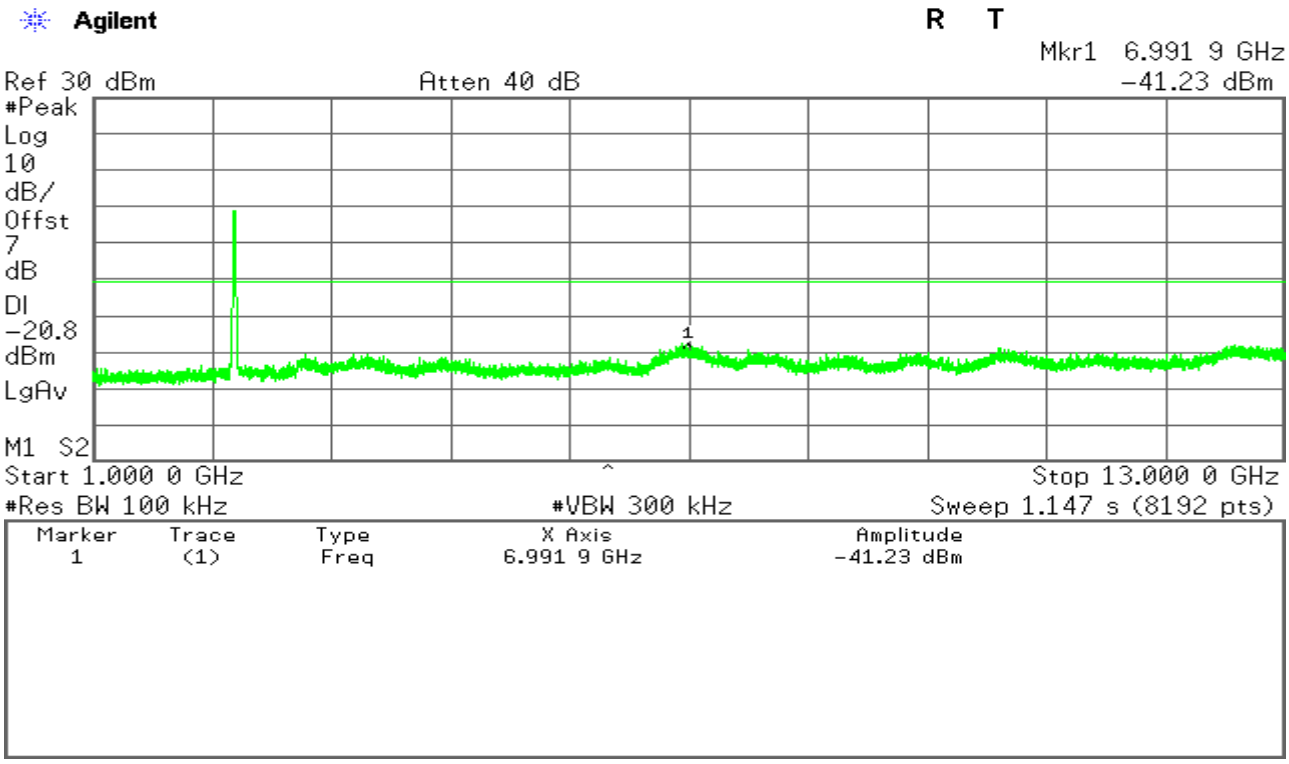

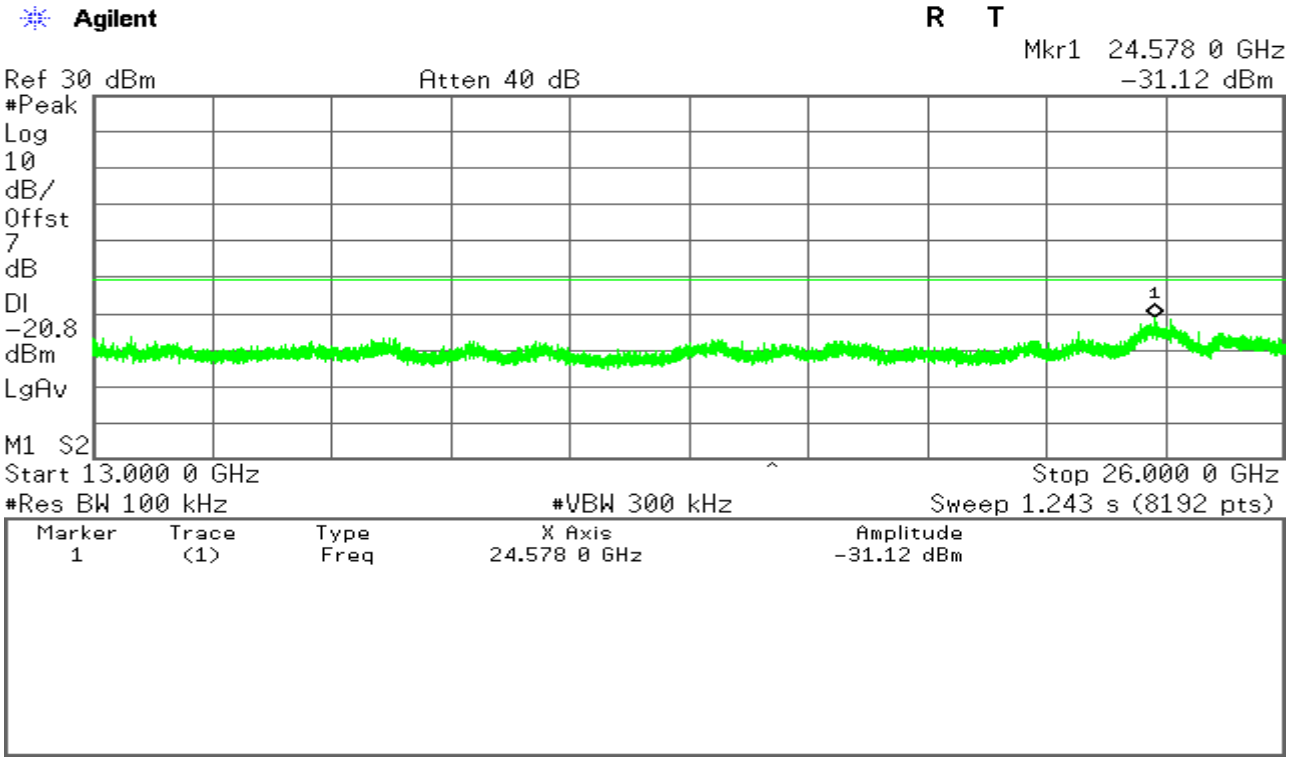

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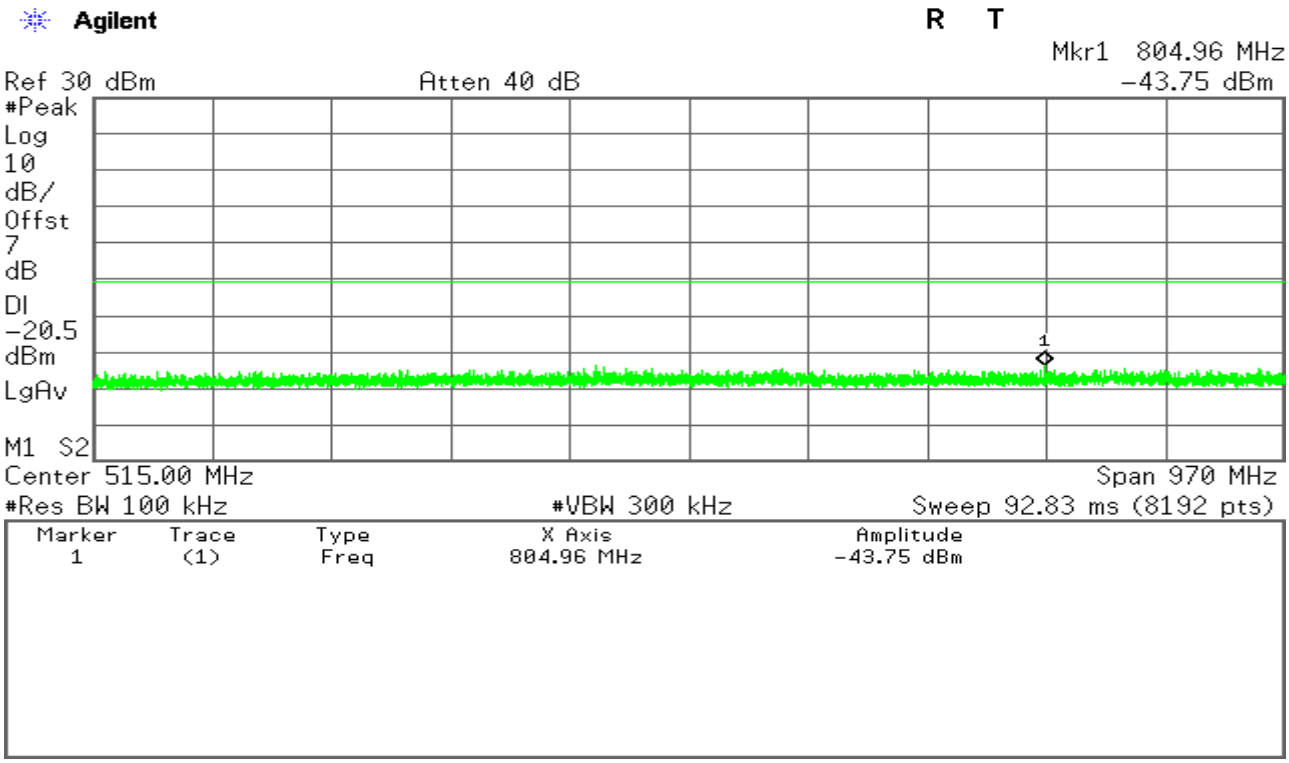
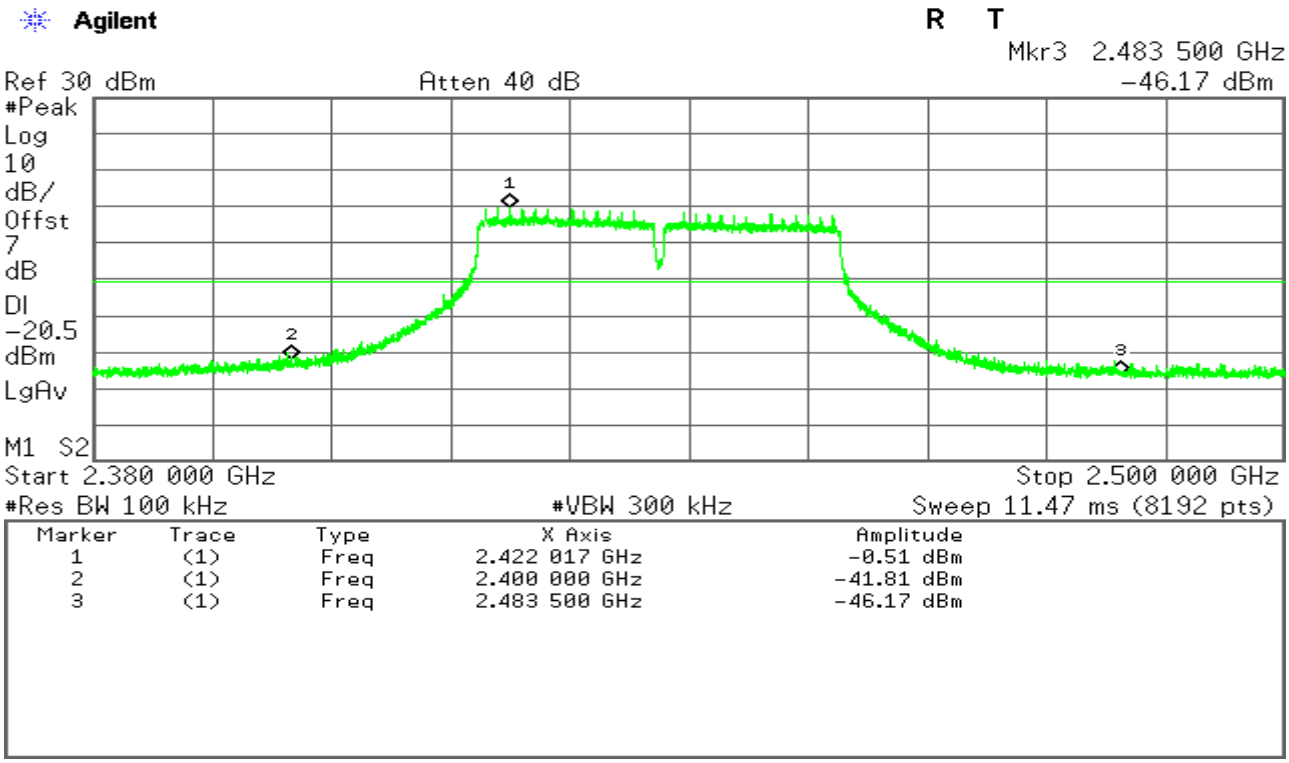
CH Mid





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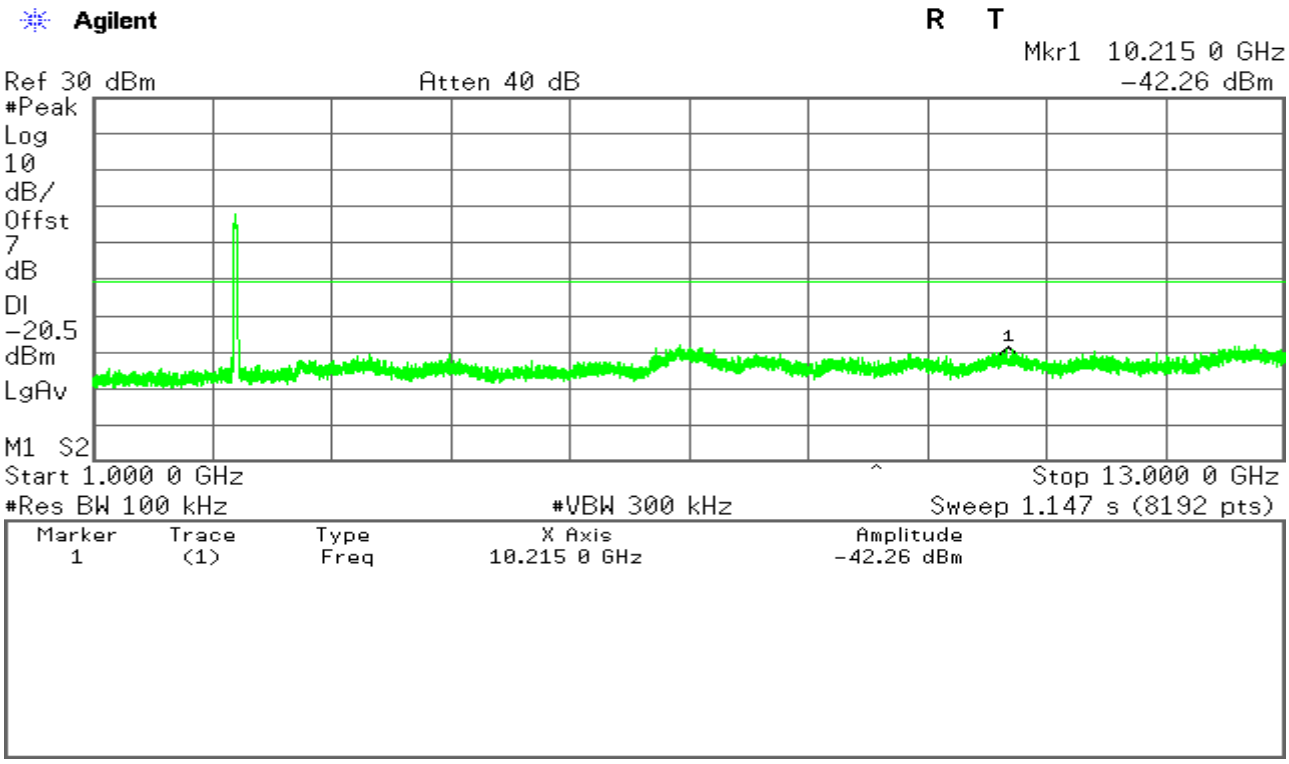

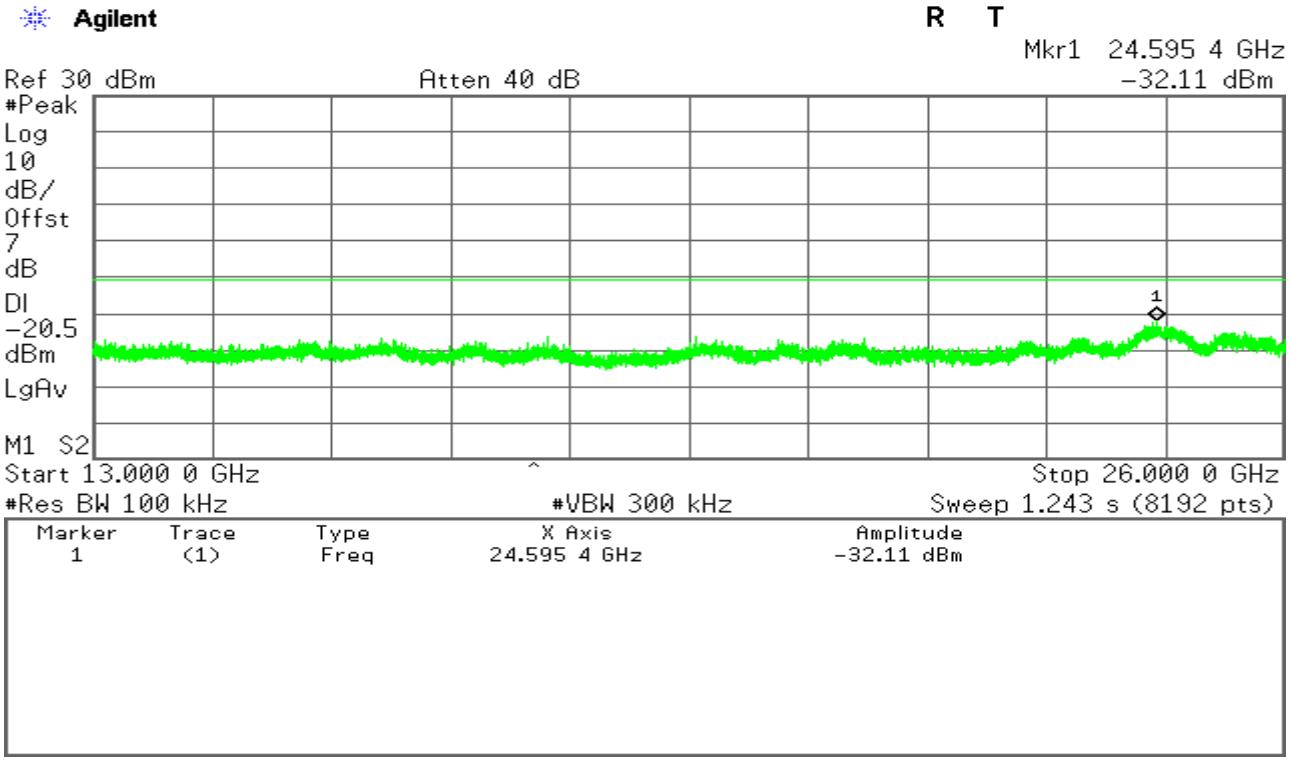

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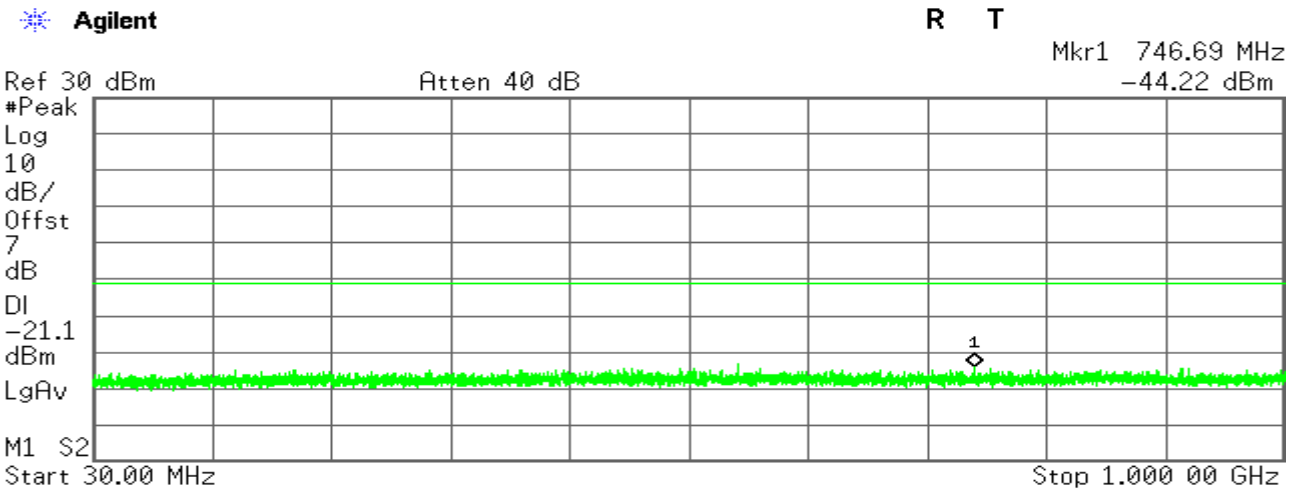
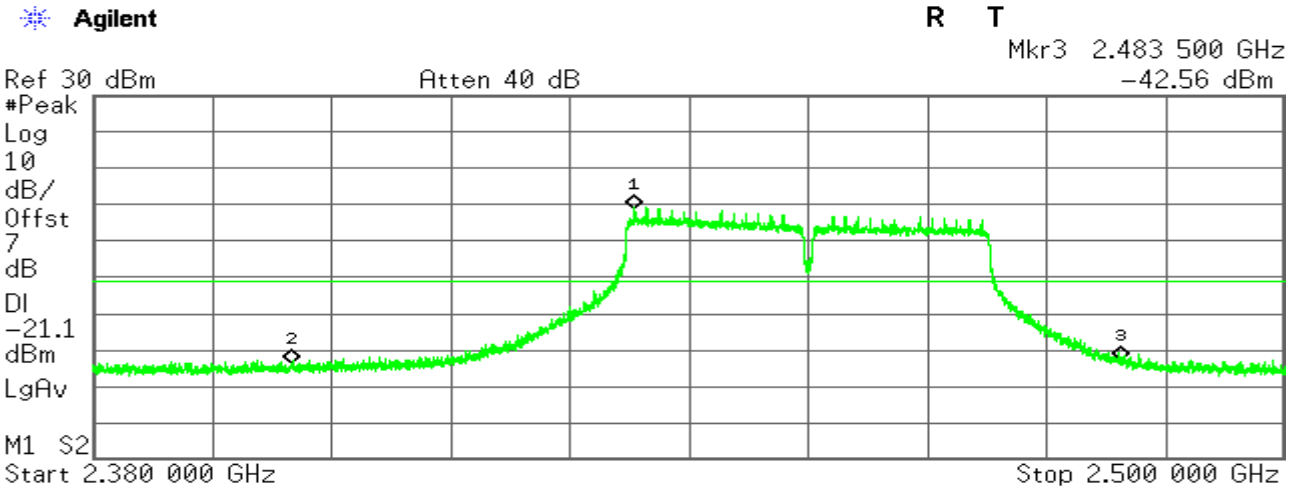
CH High



Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	746.69 MHz	-44.22 dBm



Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.434 499 GHz	-1.07 dBm
2	(1)	Freq	2.400 000 GHz	-43.63 dBm
3	(1)	Freq	2.483 500 GHz	-42.56 dBm

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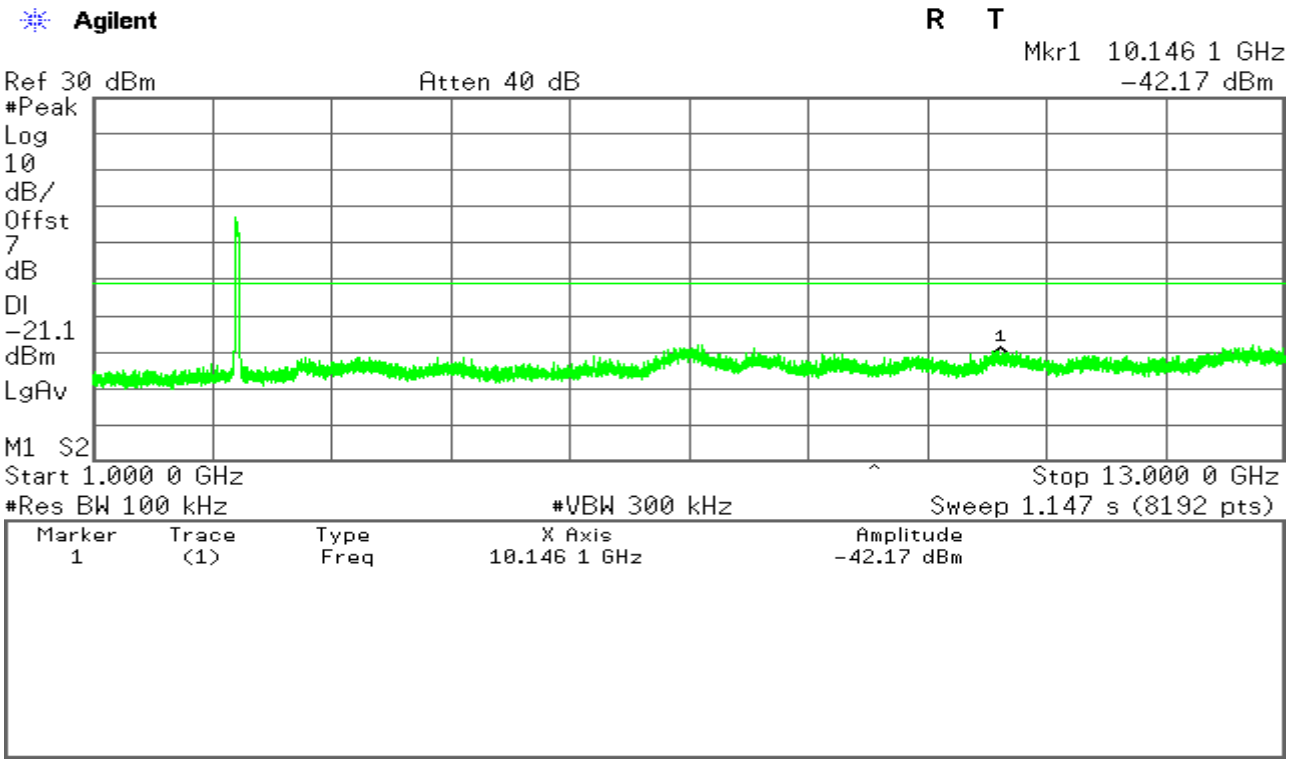

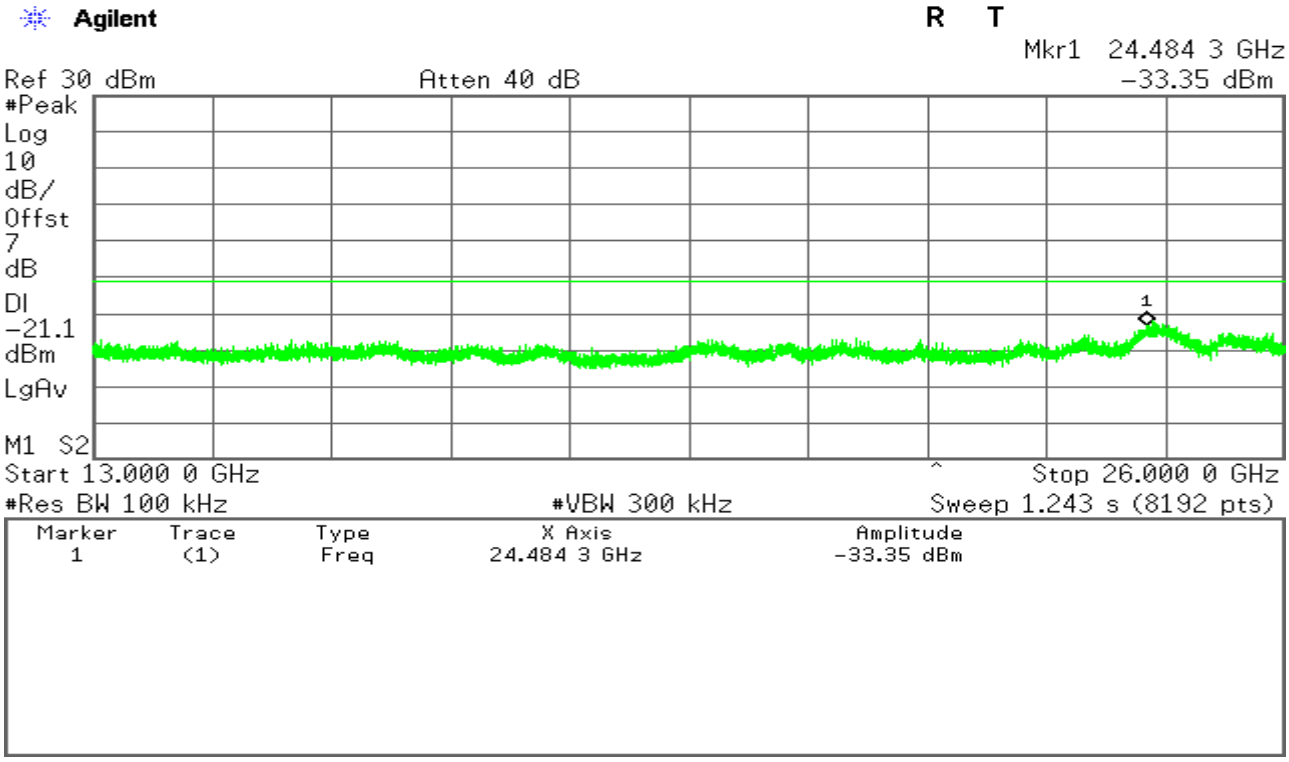

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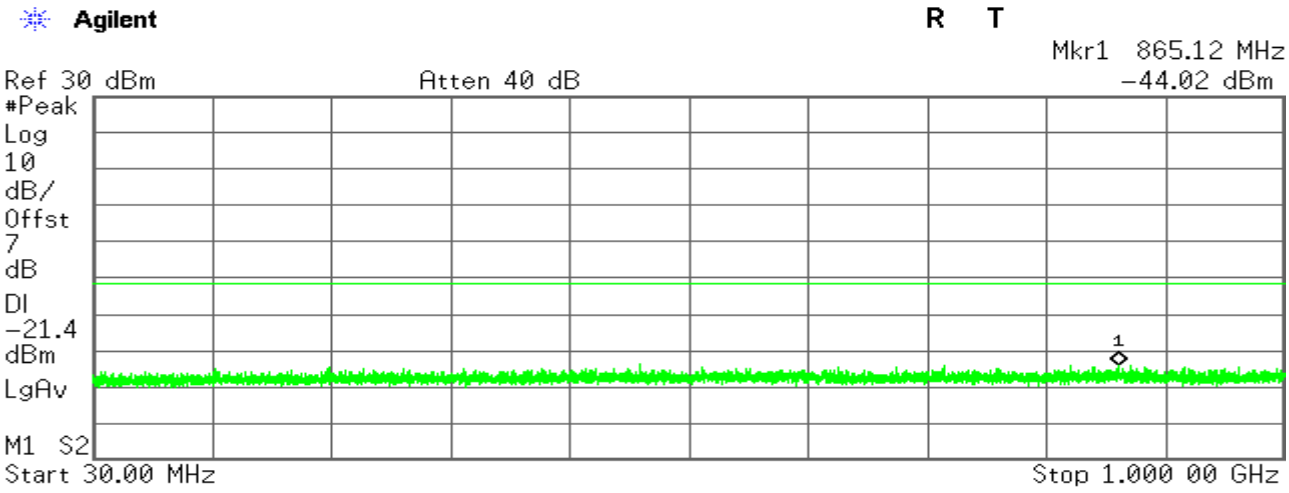
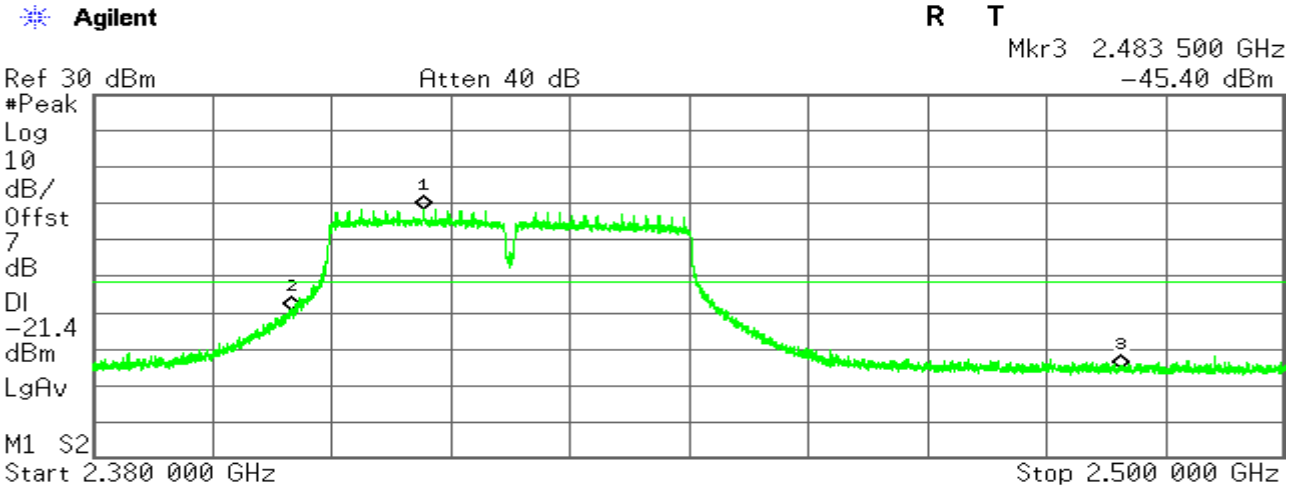
IEEE 802.11n HT40 mode / Chain 1

CH Low



Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	865.12 MHz	-44.02 dBm



Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.413 271 GHz	-1.42 dBm
2	(1)	Freq	2.400 000 GHz	-29.43 dBm
3	(1)	Freq	2.483 500 GHz	-45.40 dBm

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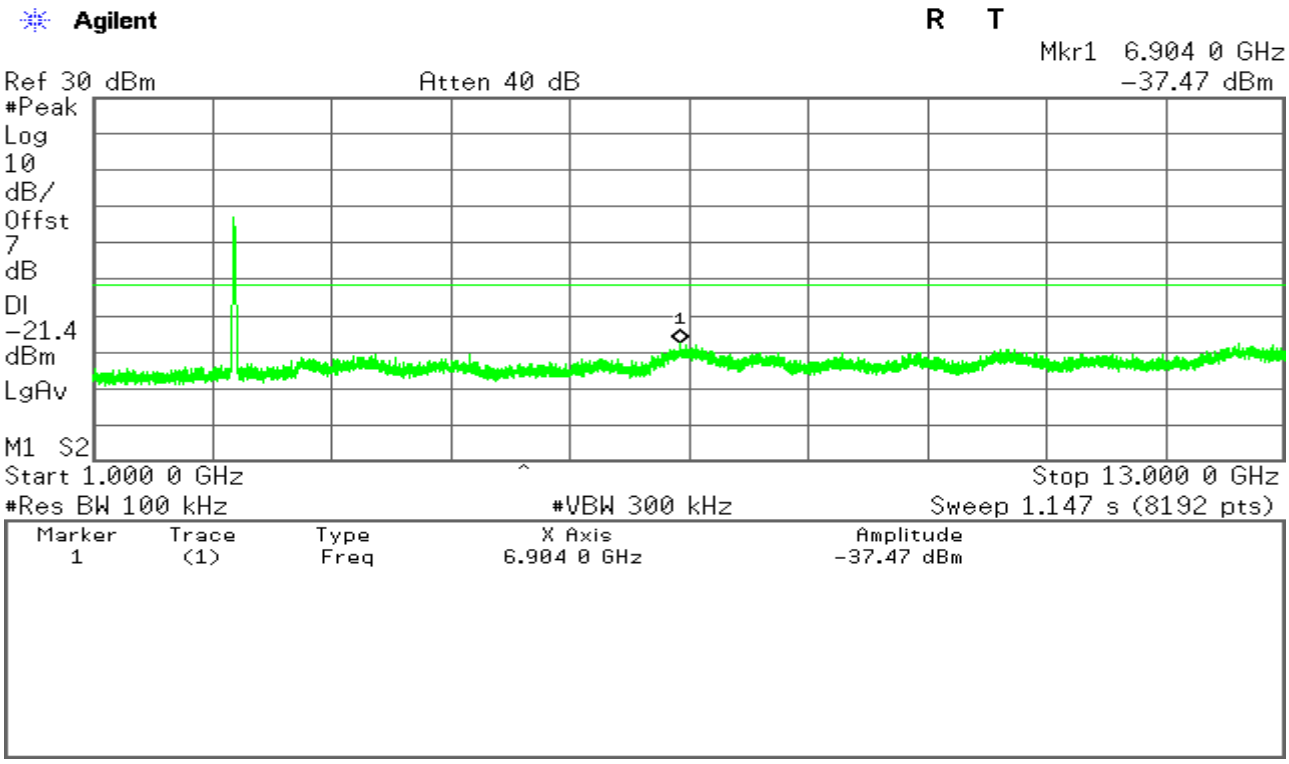

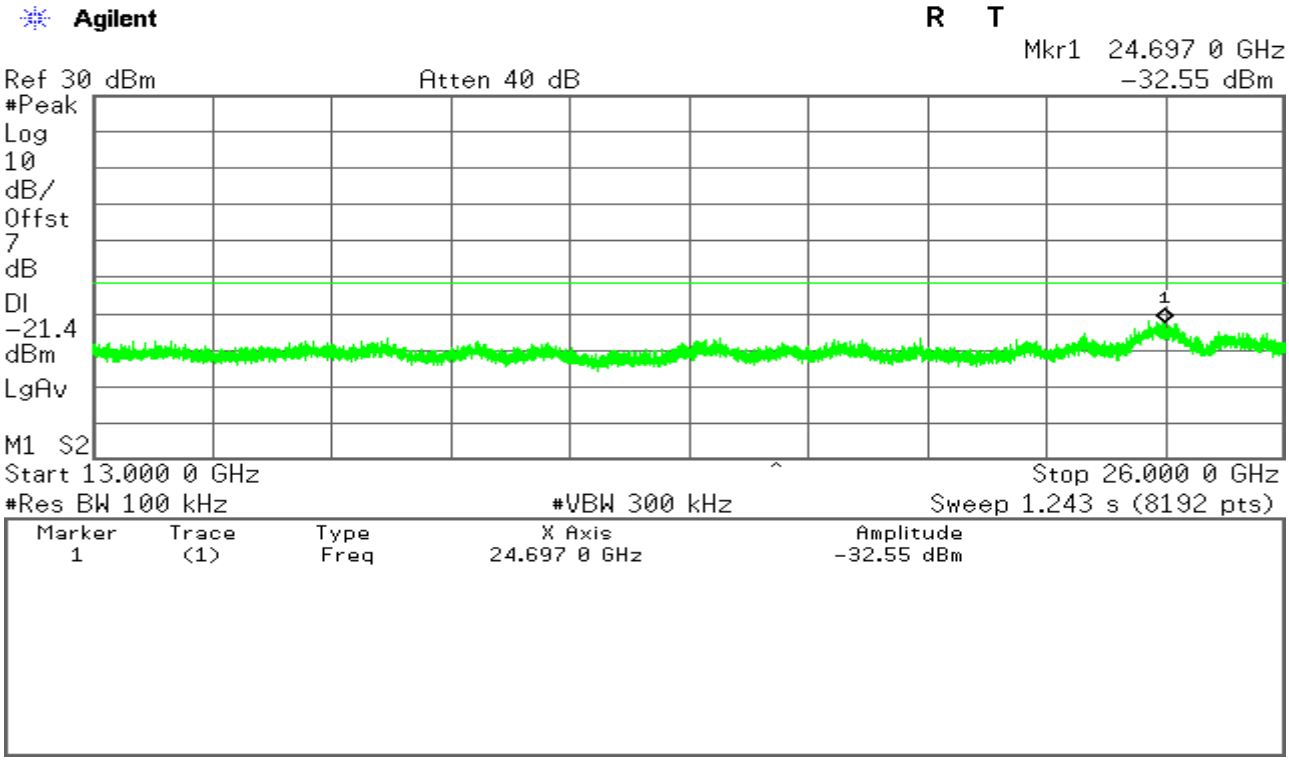

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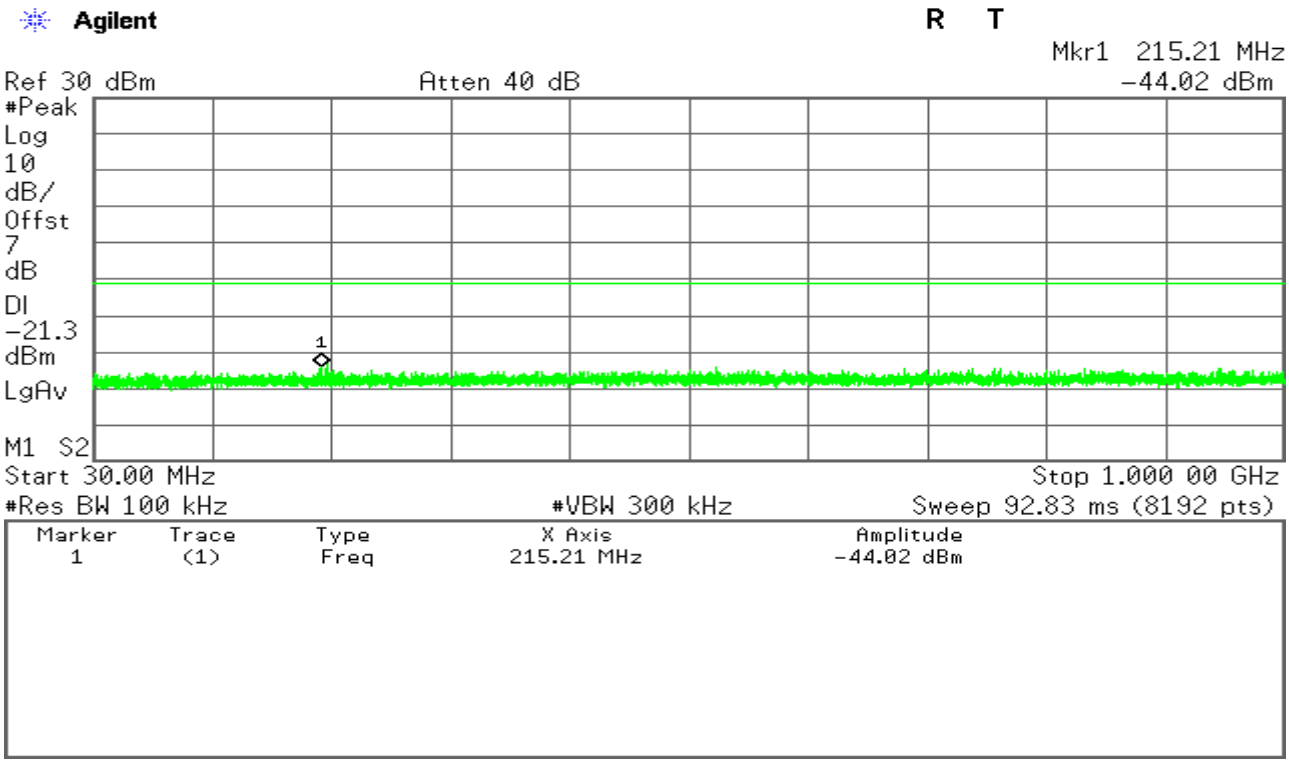

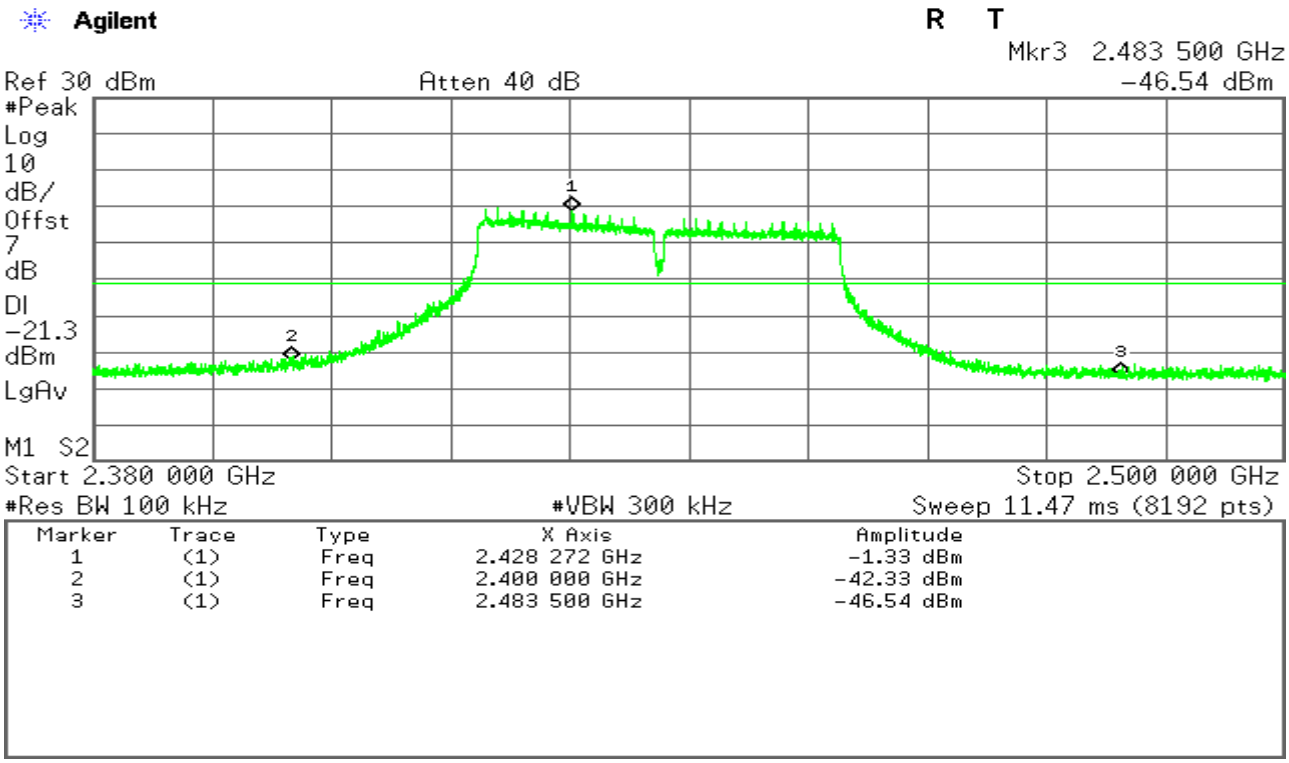

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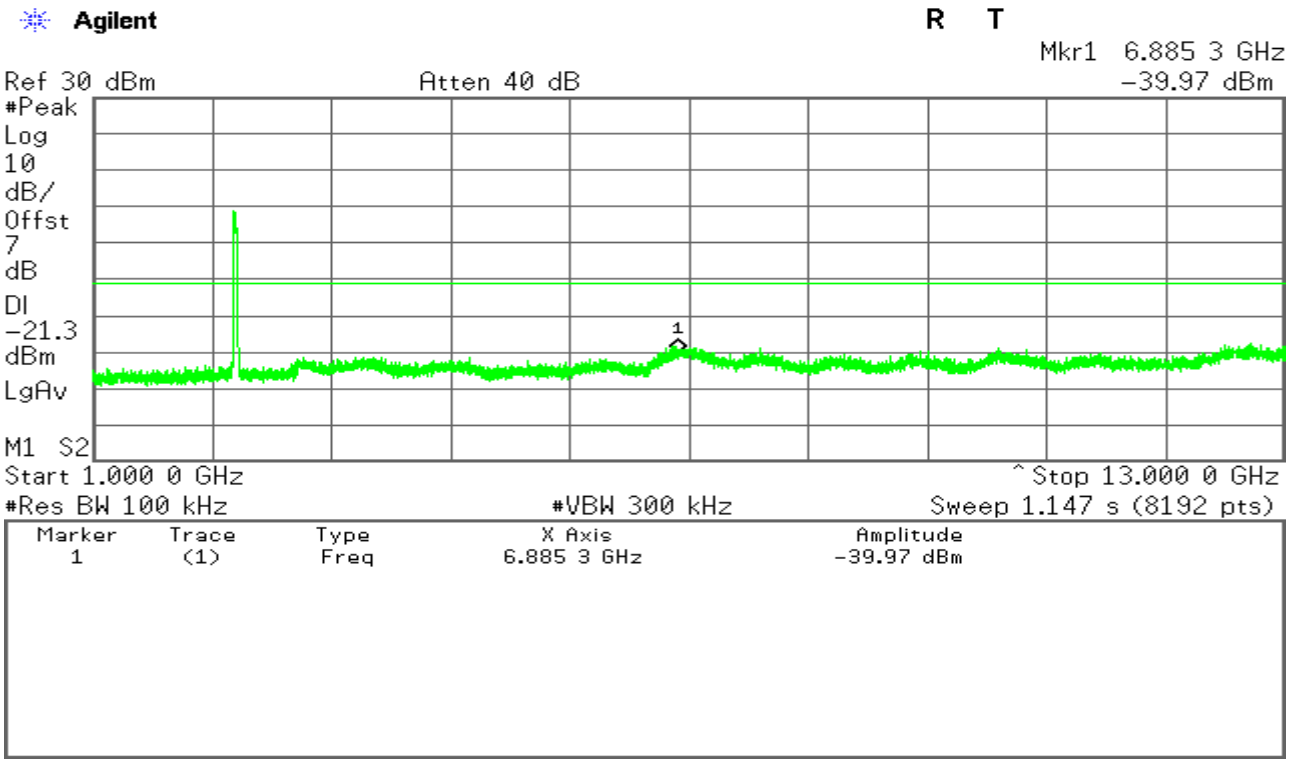

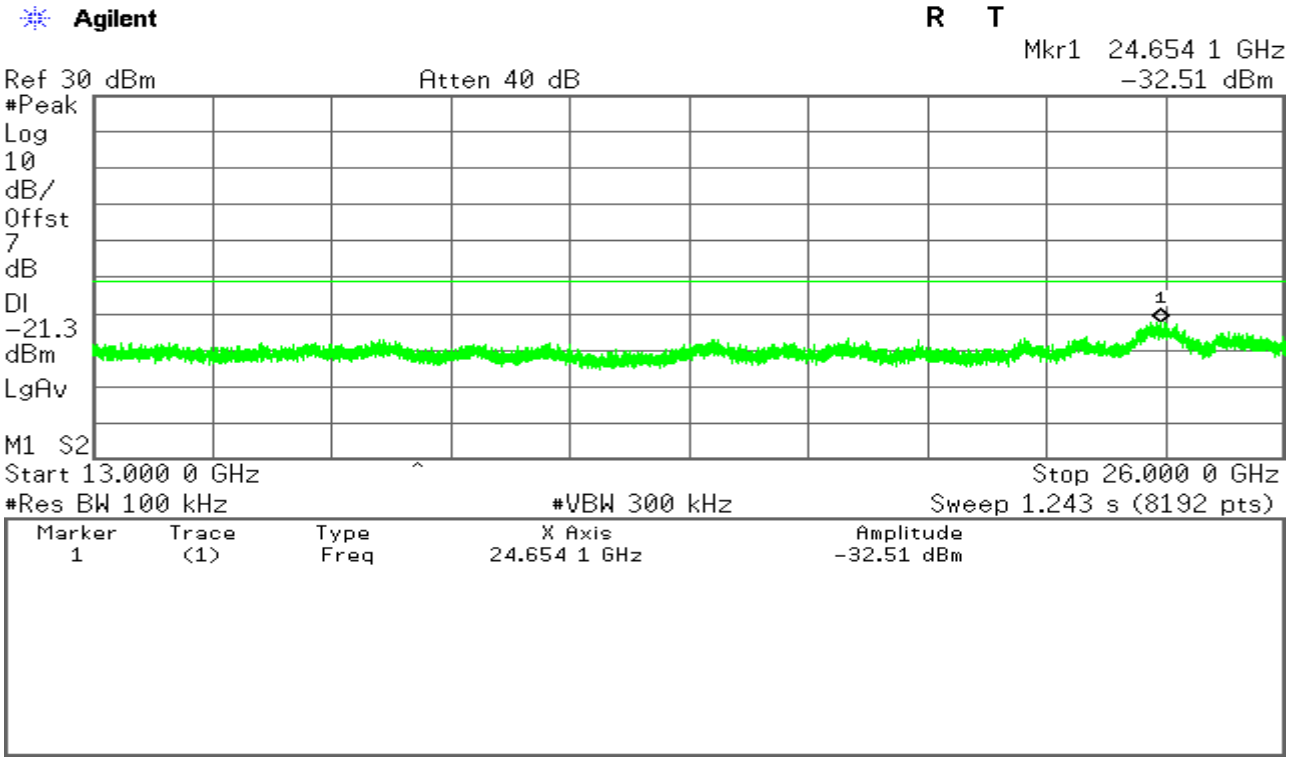

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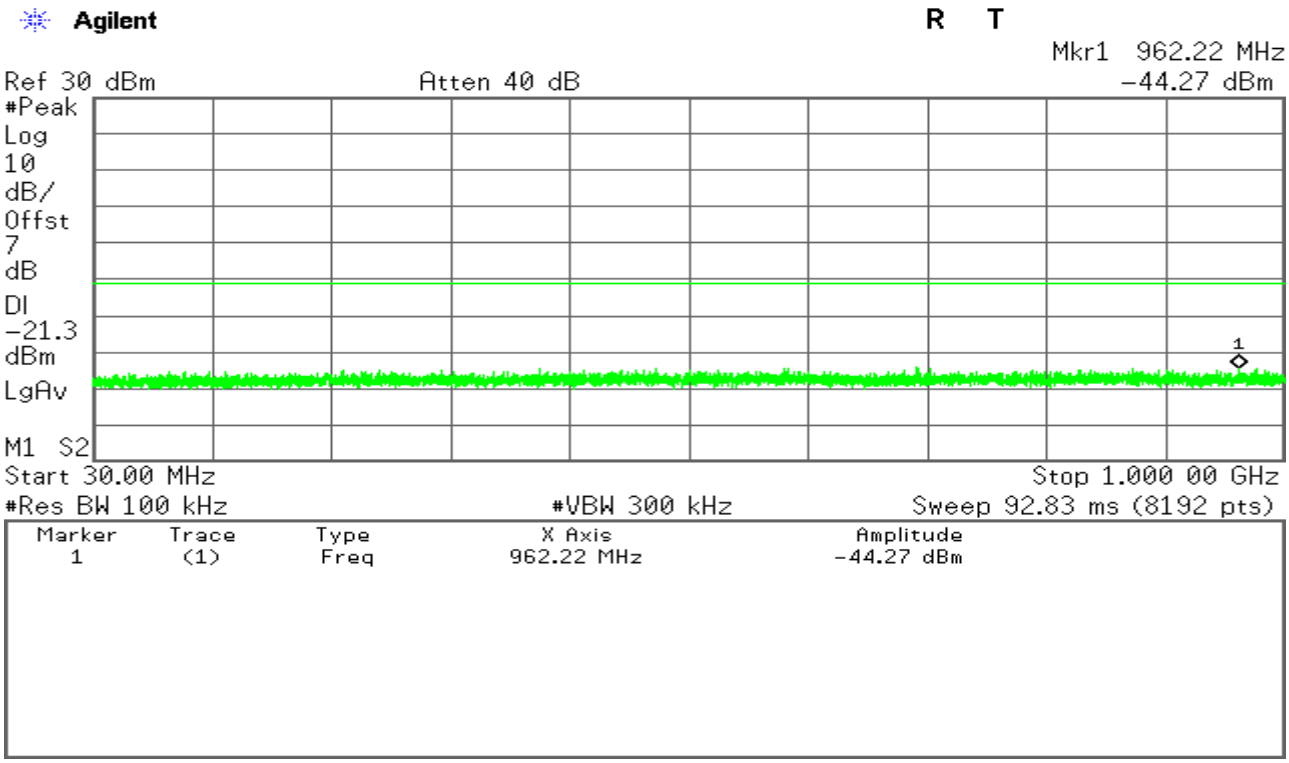

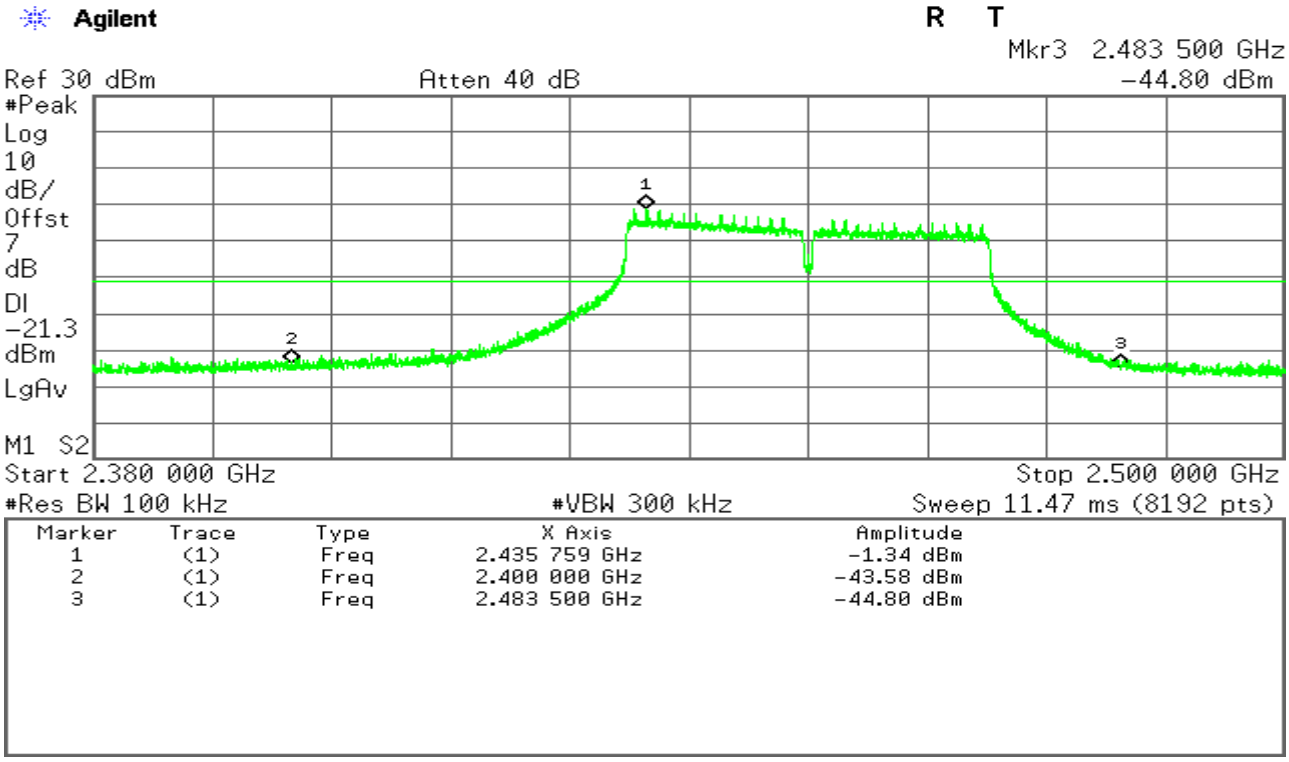

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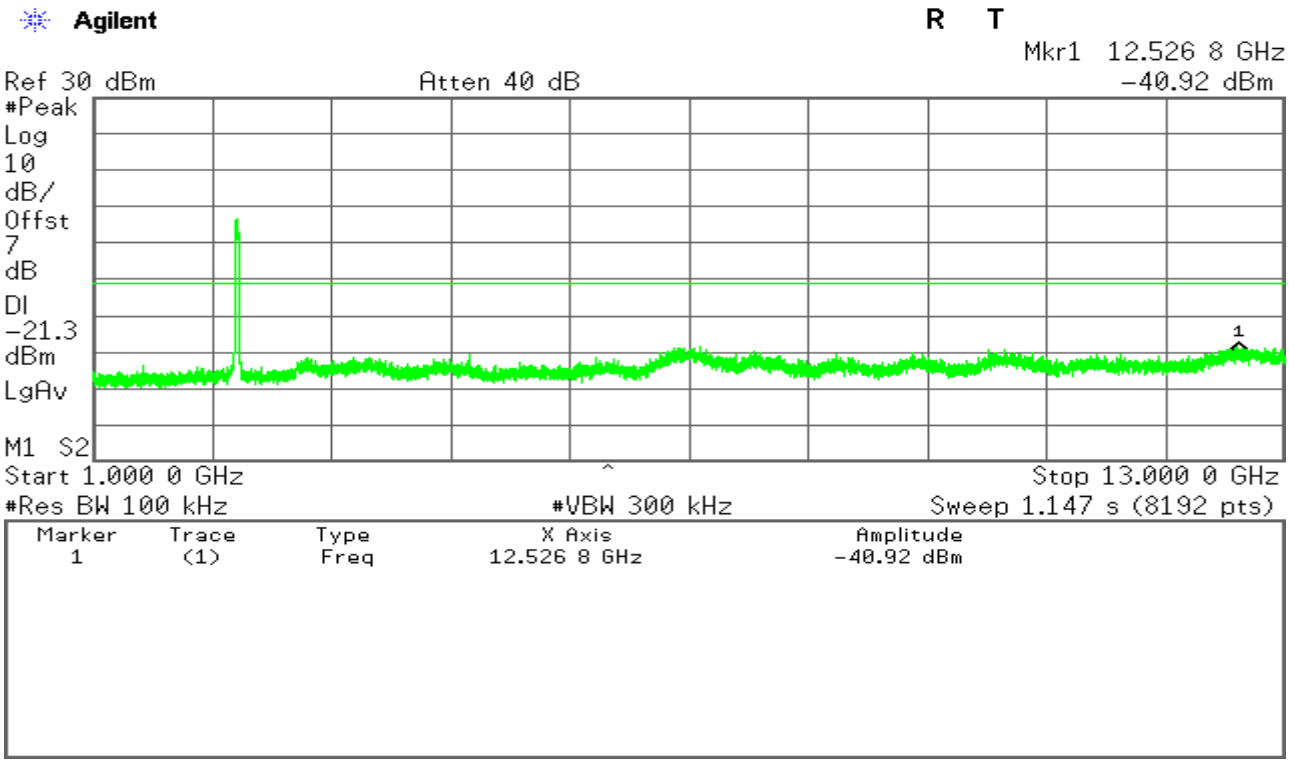

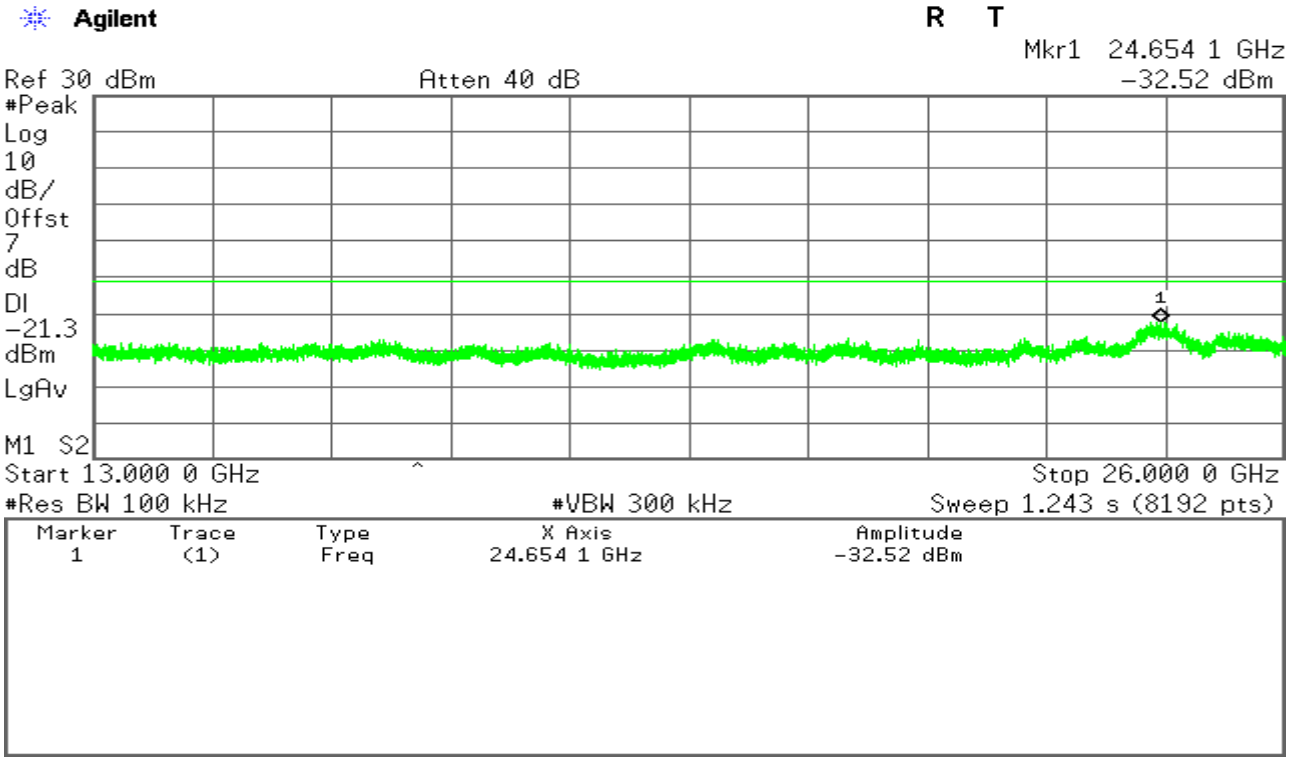

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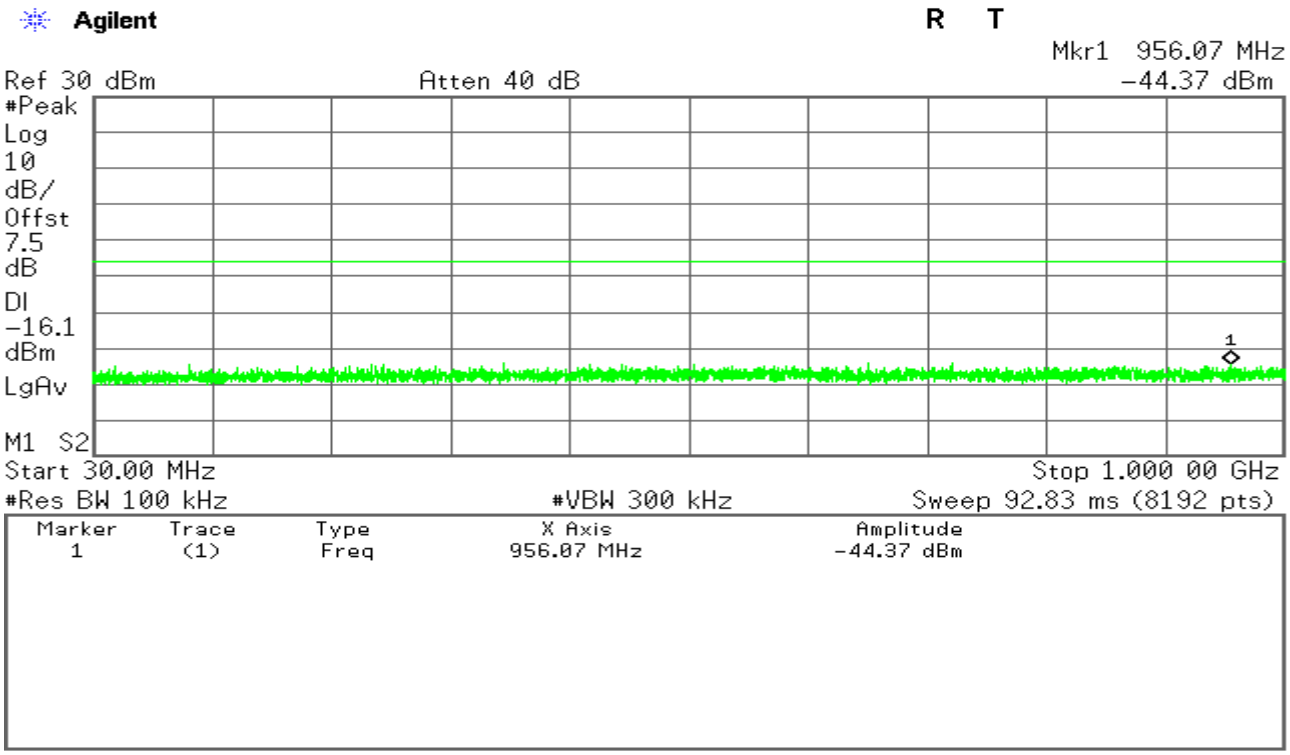
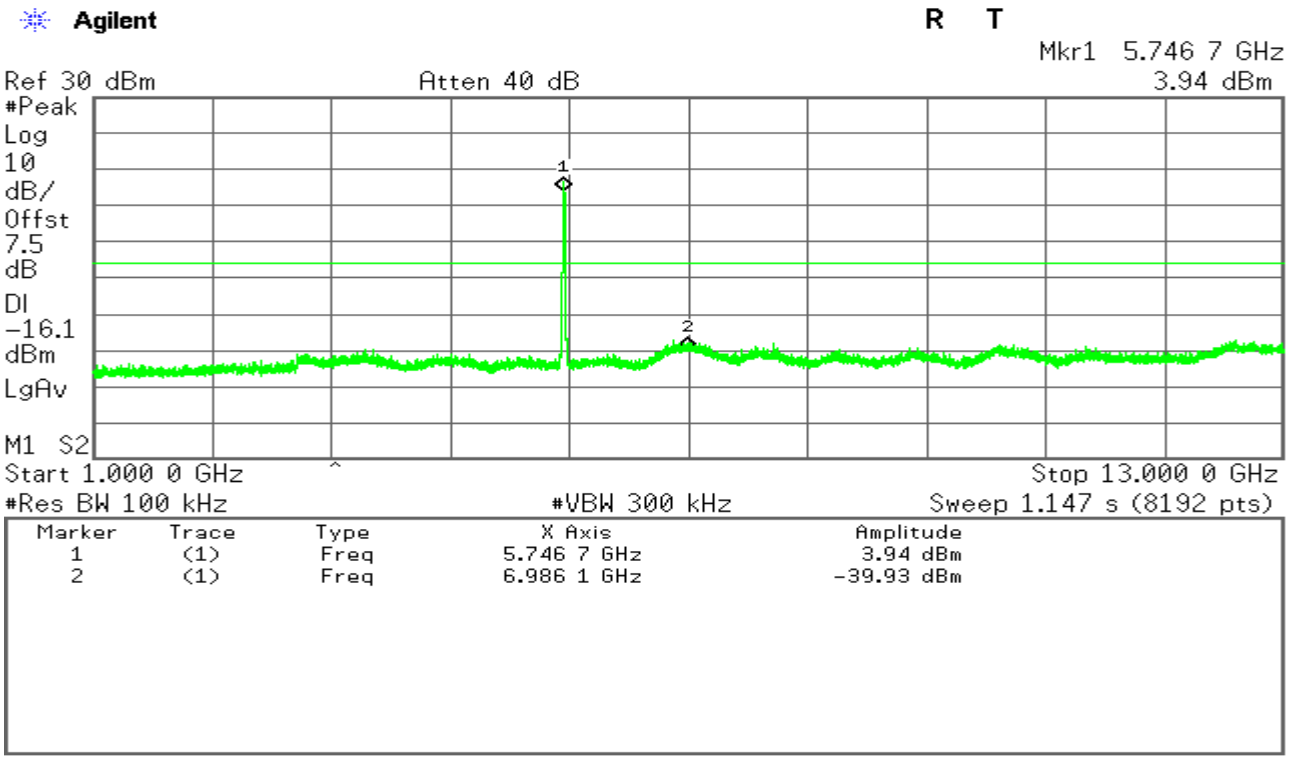
IEEE 802.11a mode

CH Low





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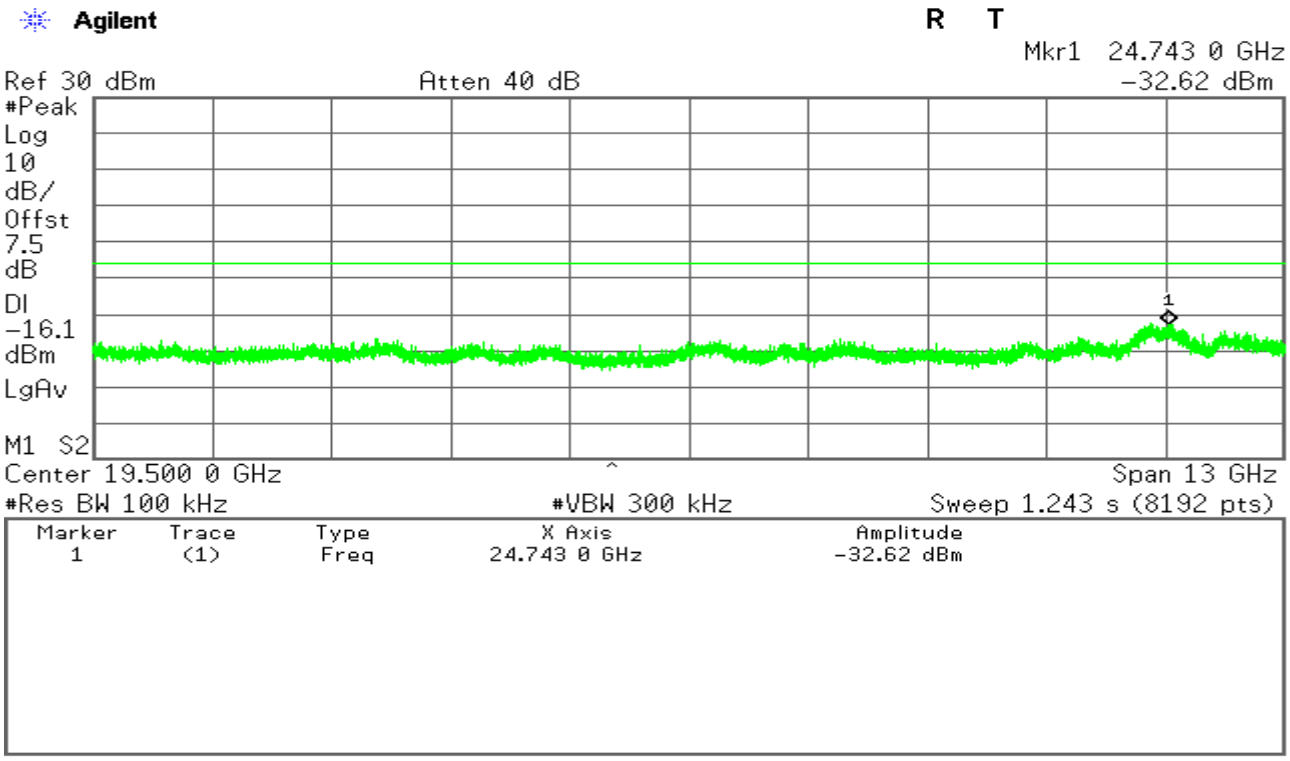

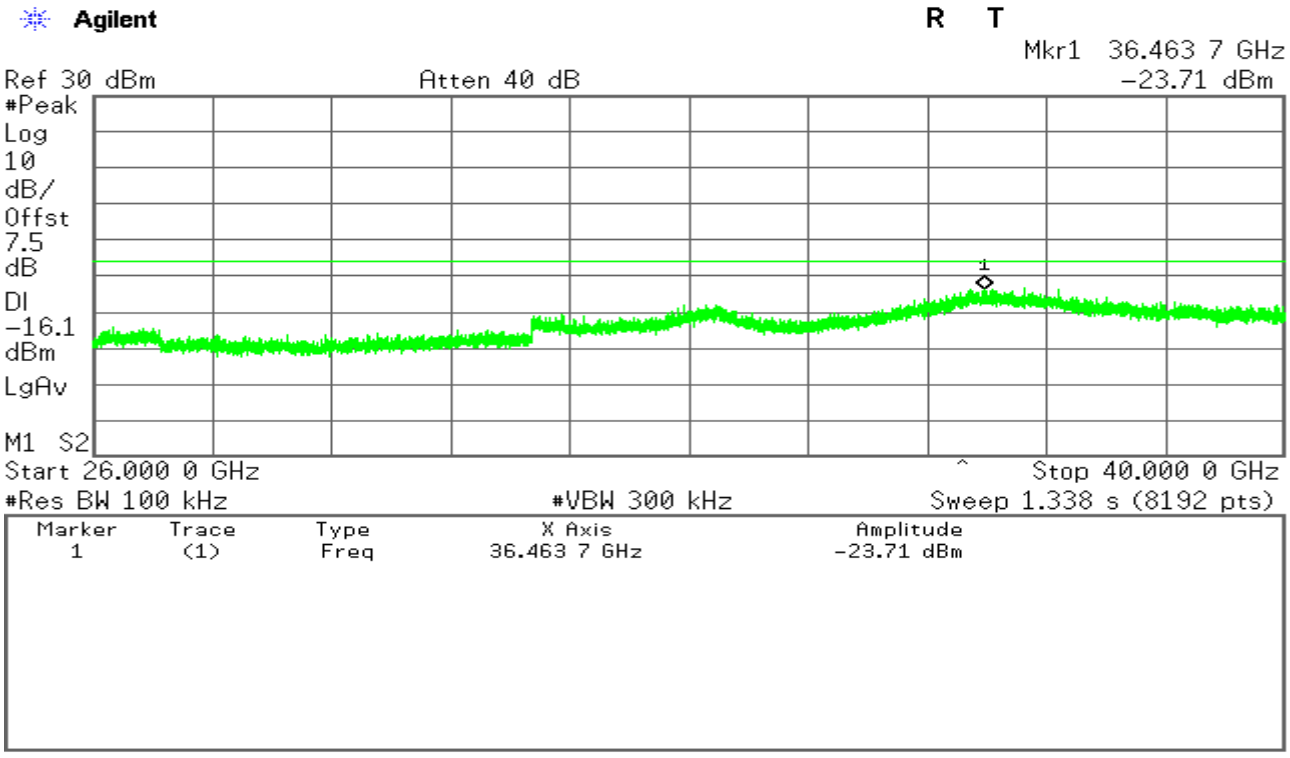

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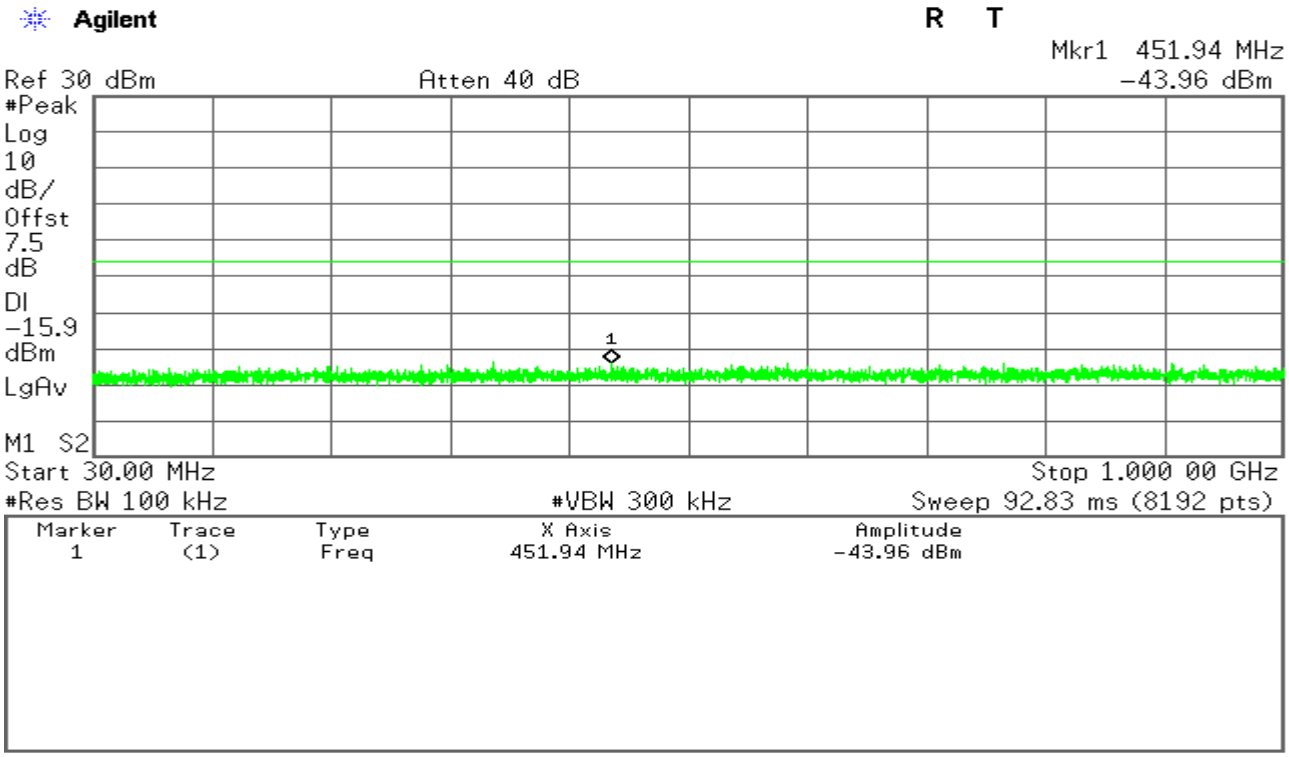
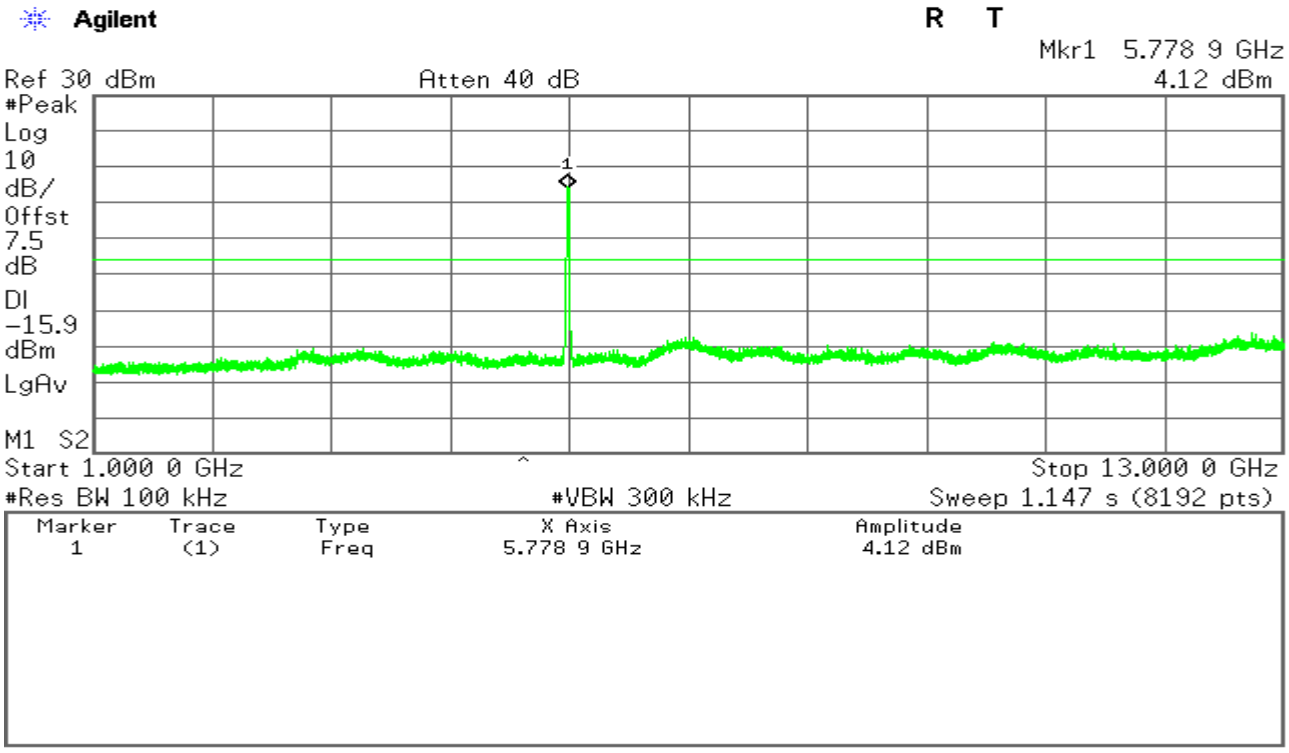
CH Mid





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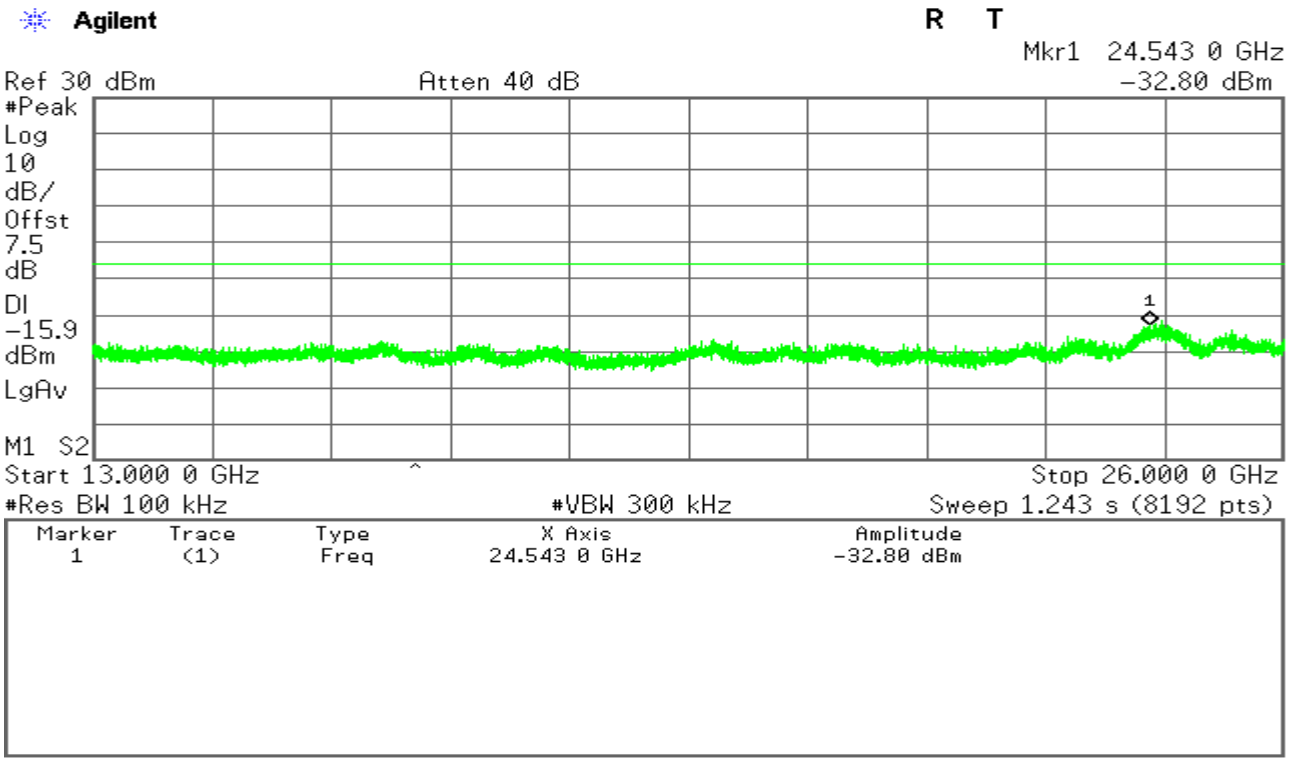

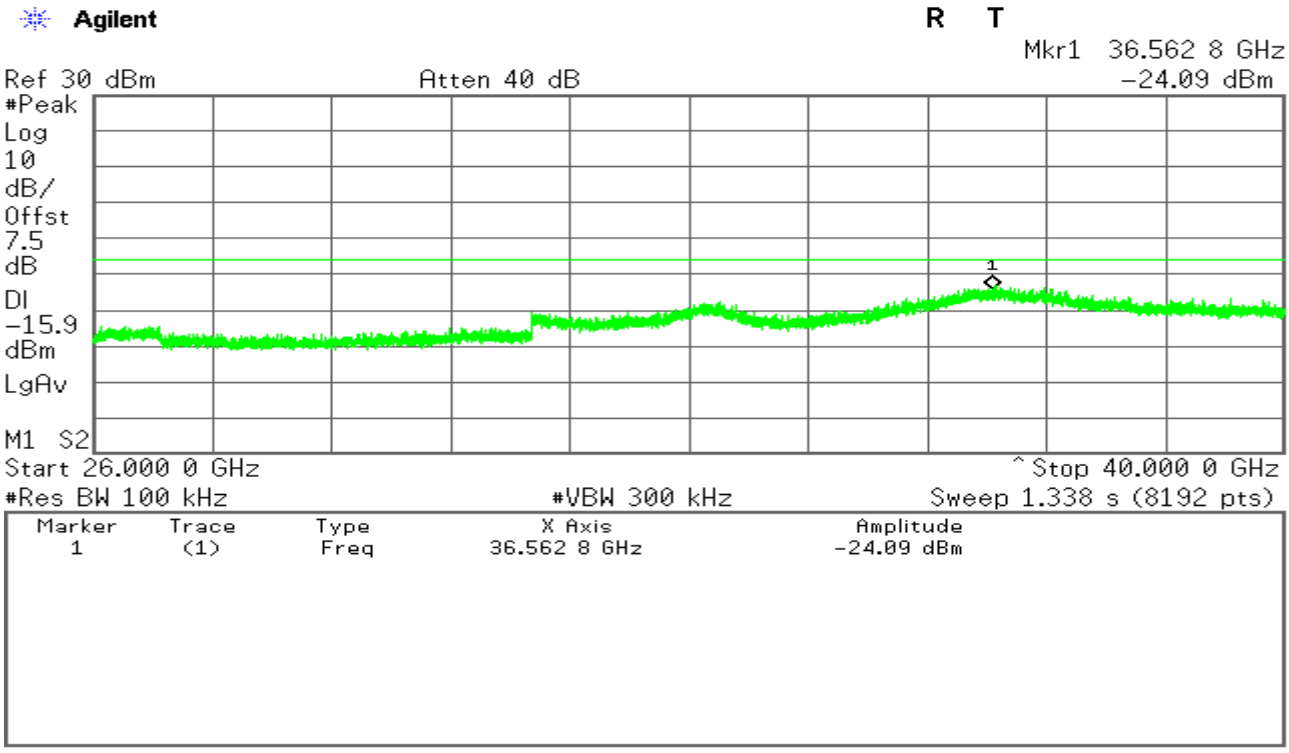

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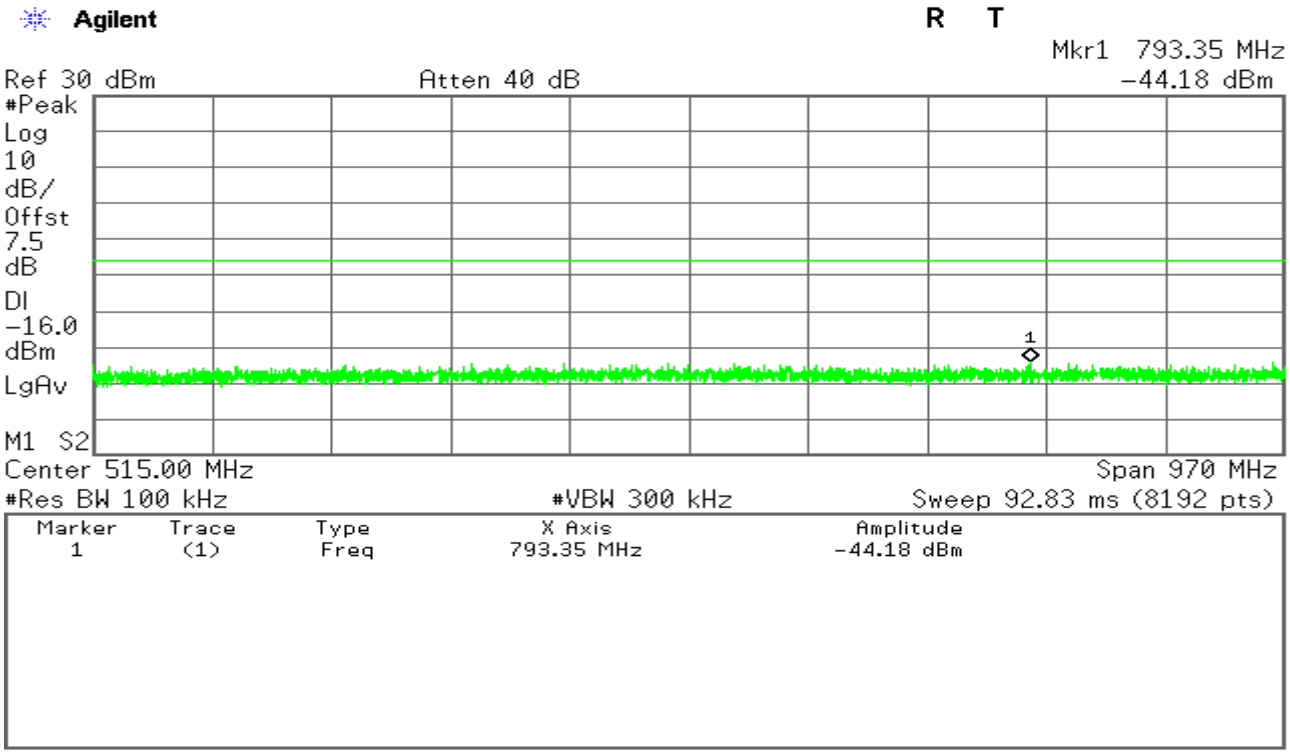

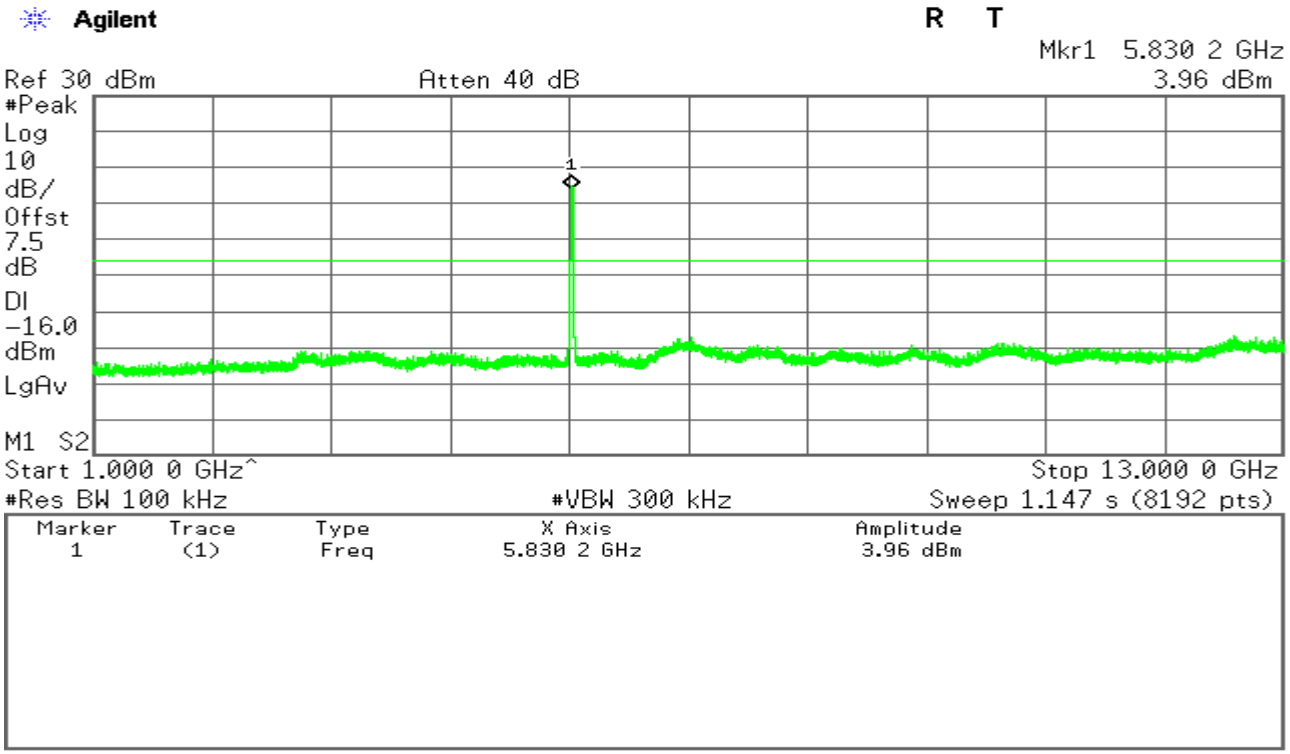

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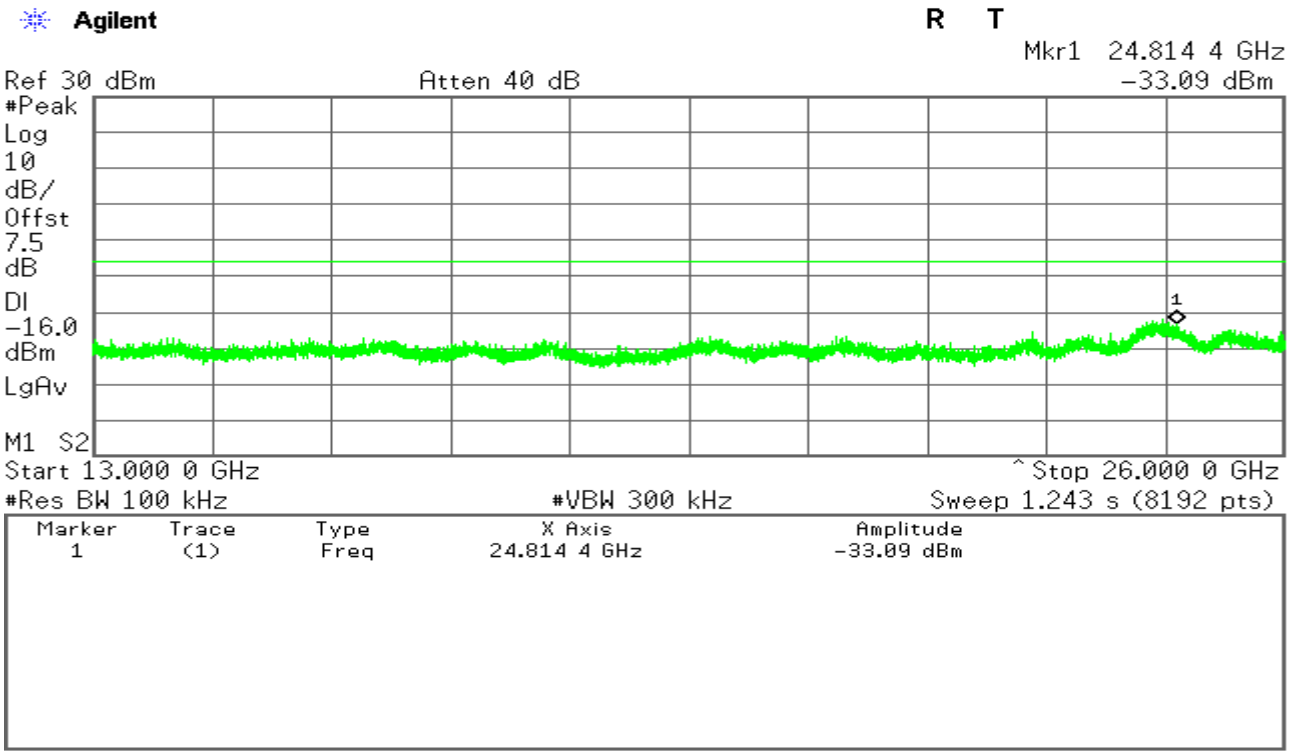

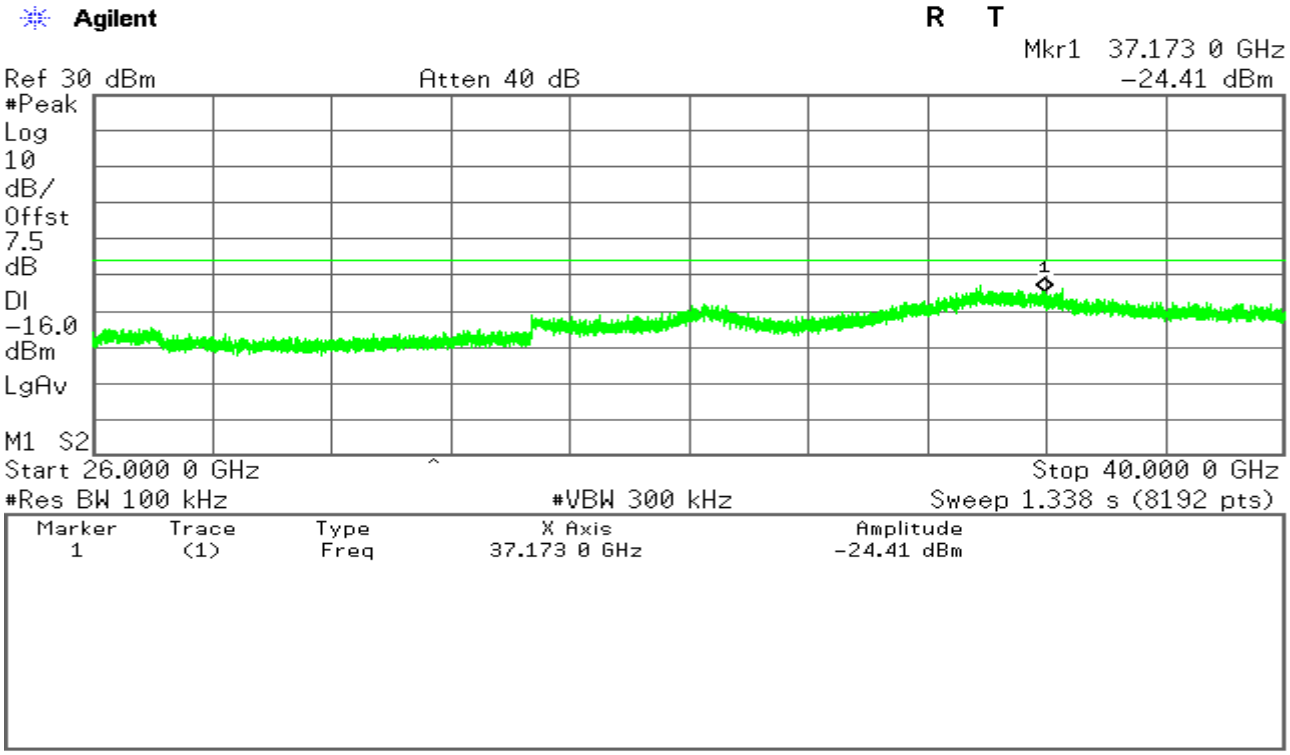

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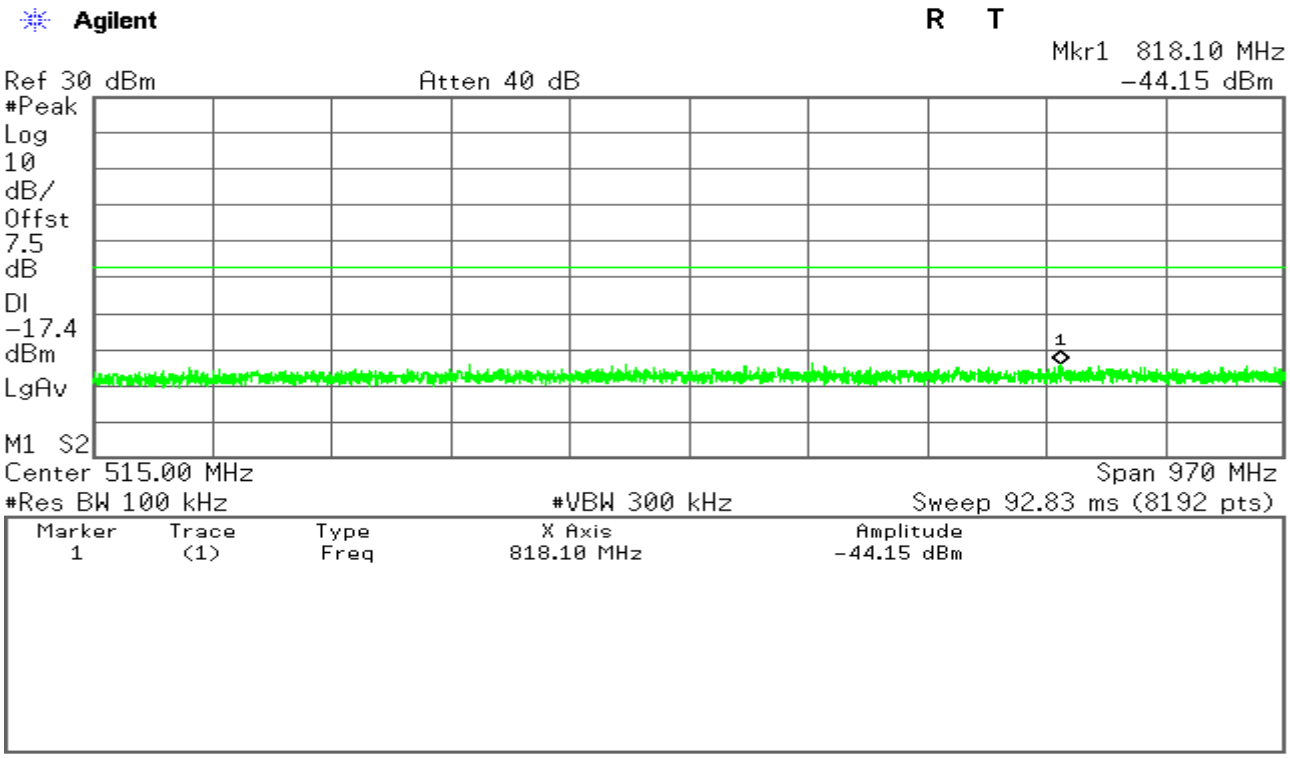
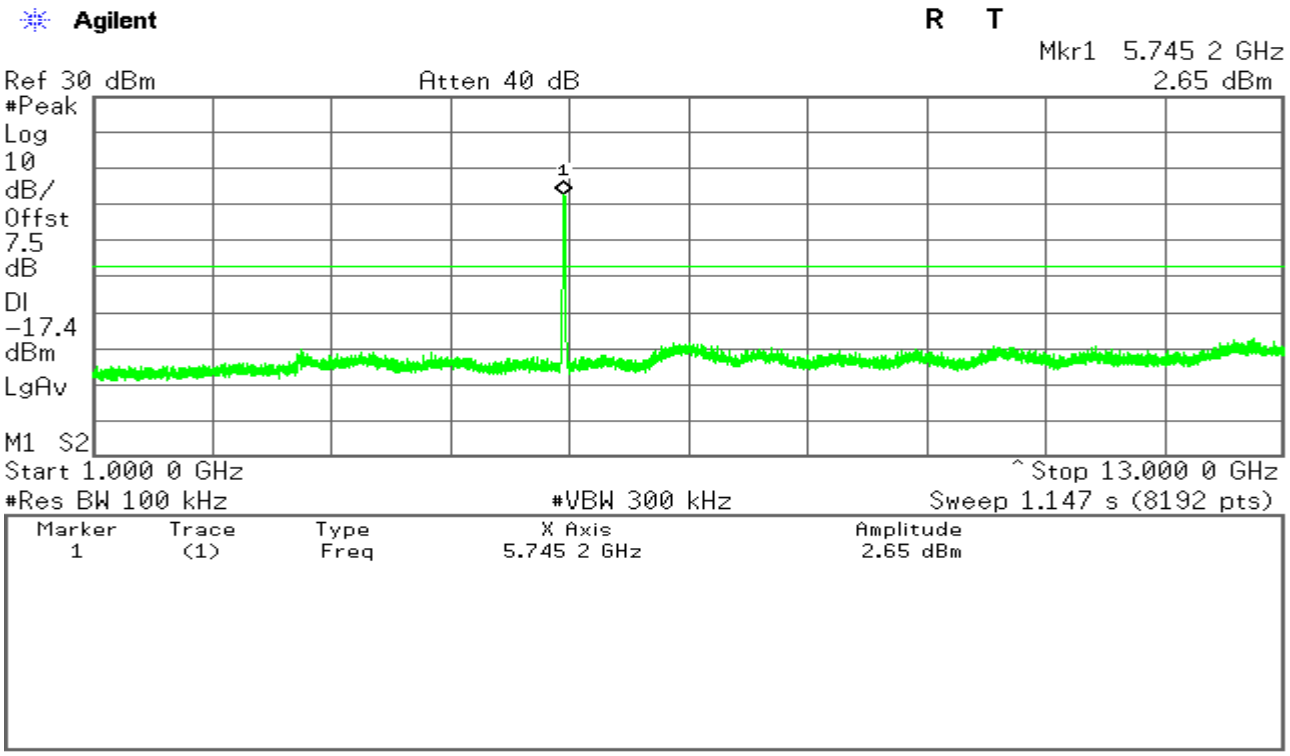
IEEE 802.11an HT20 mode

CH Low





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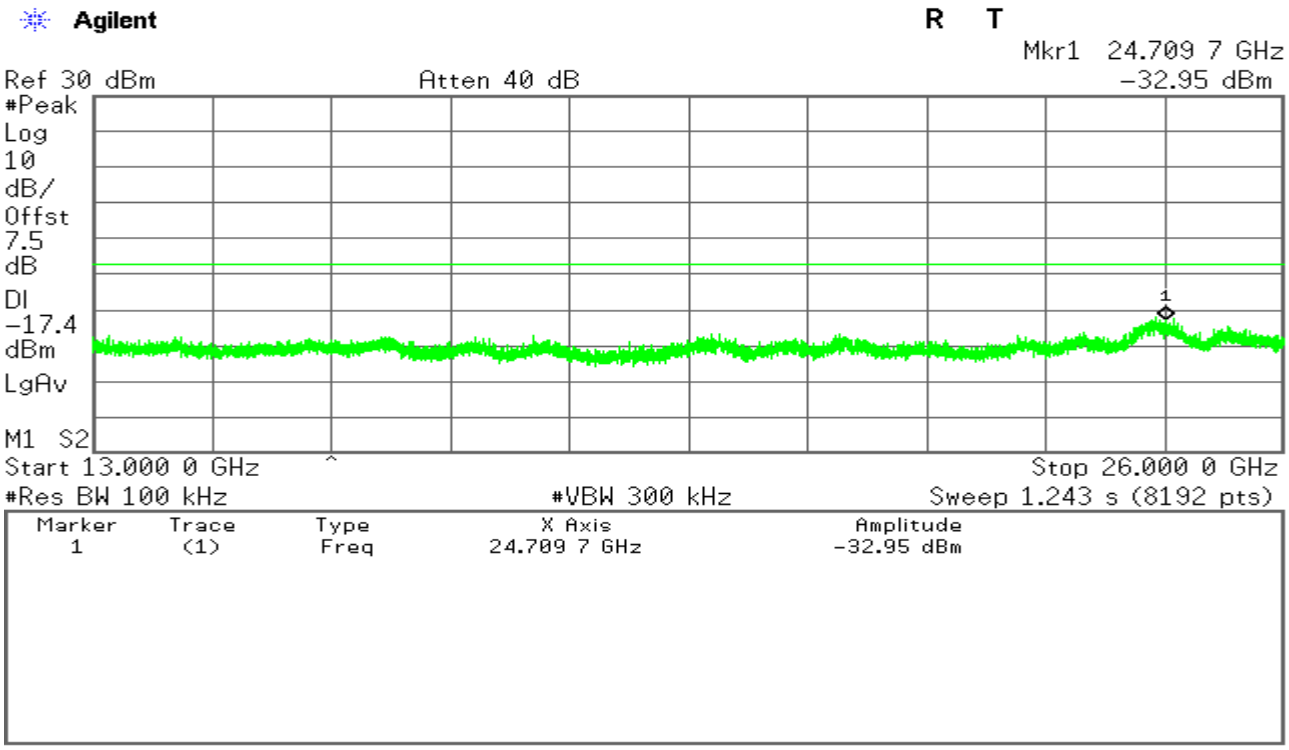

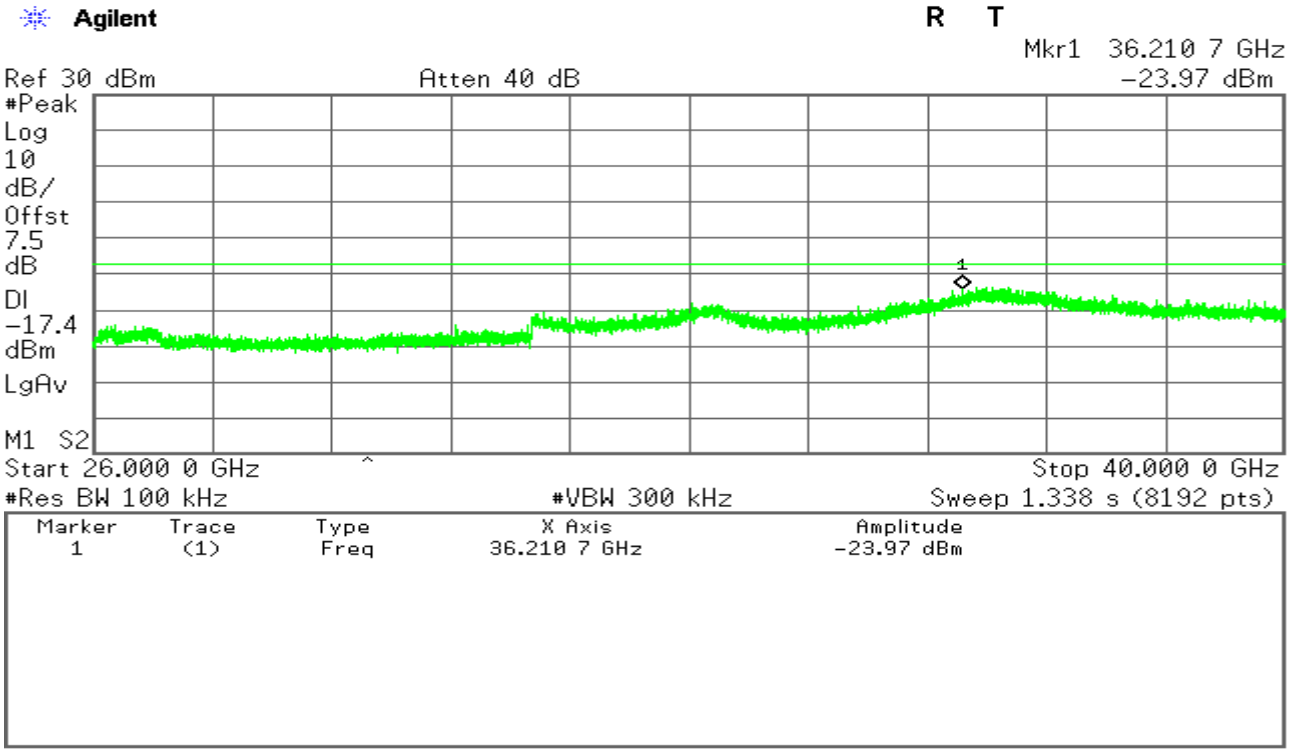

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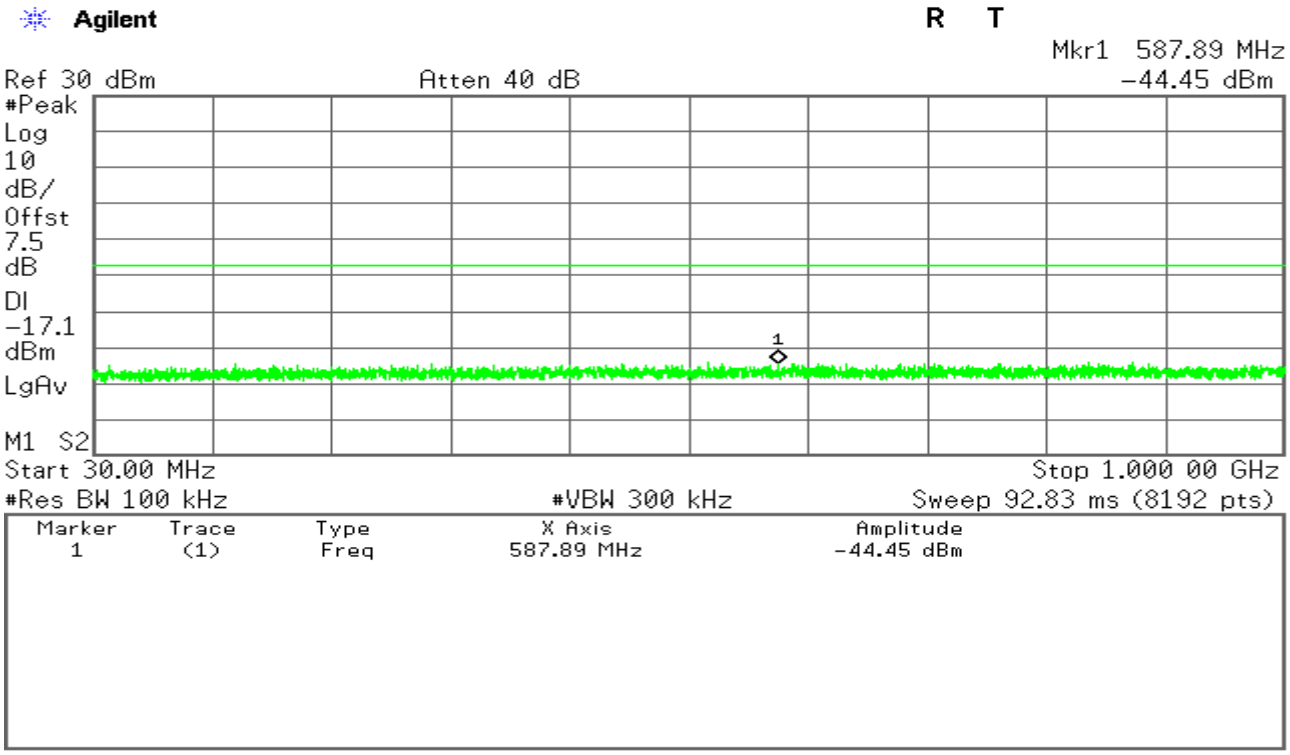
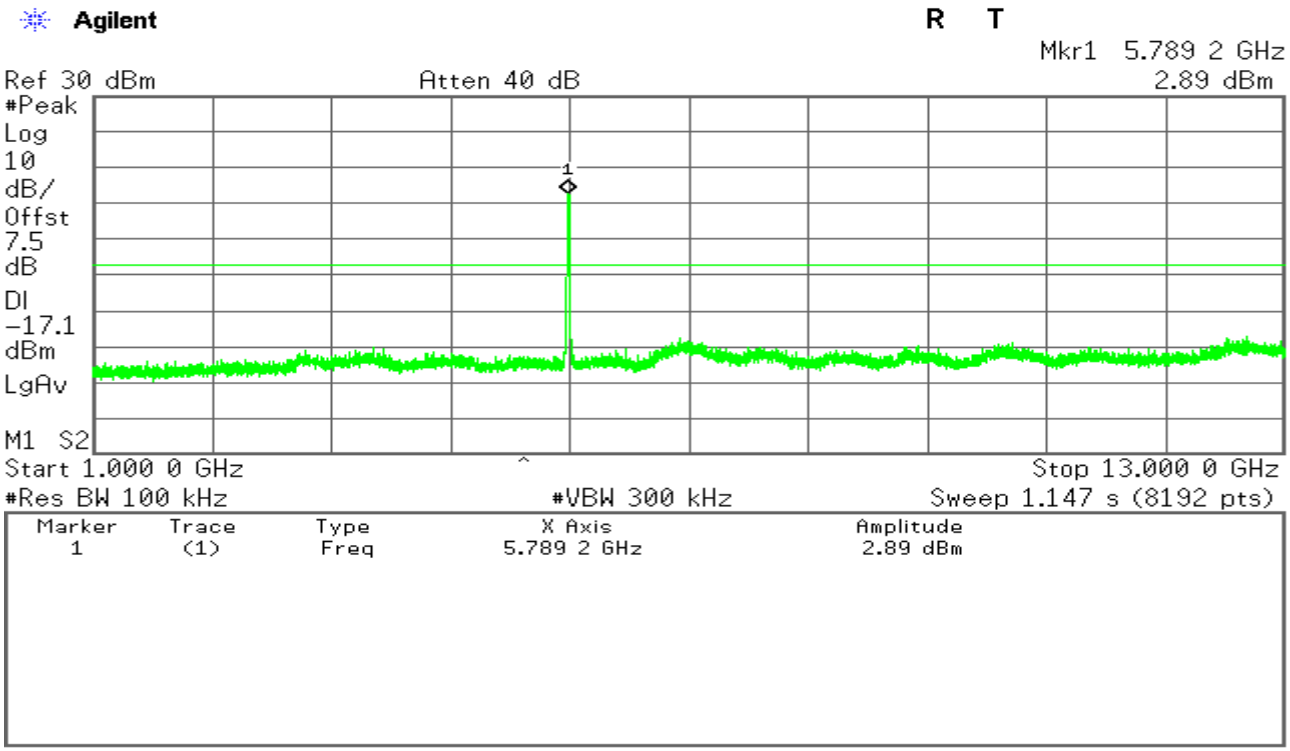
CH Mid





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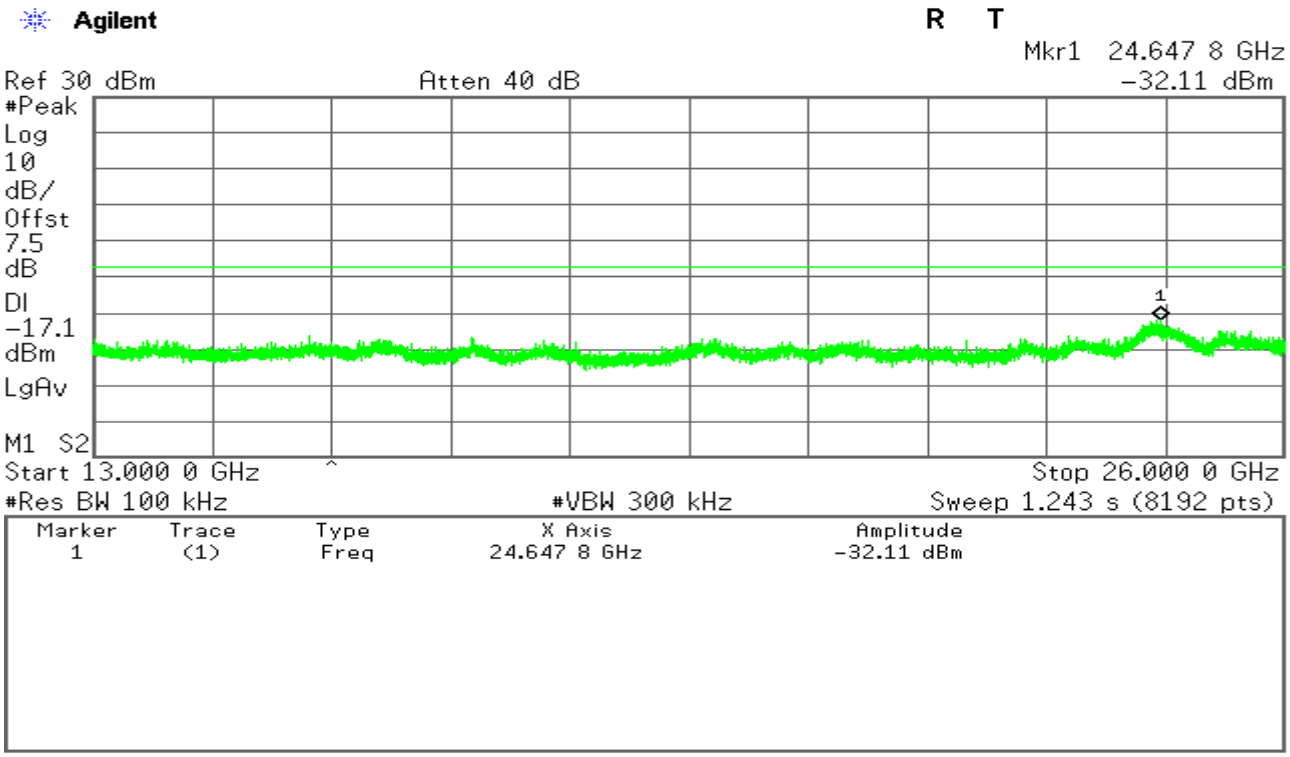

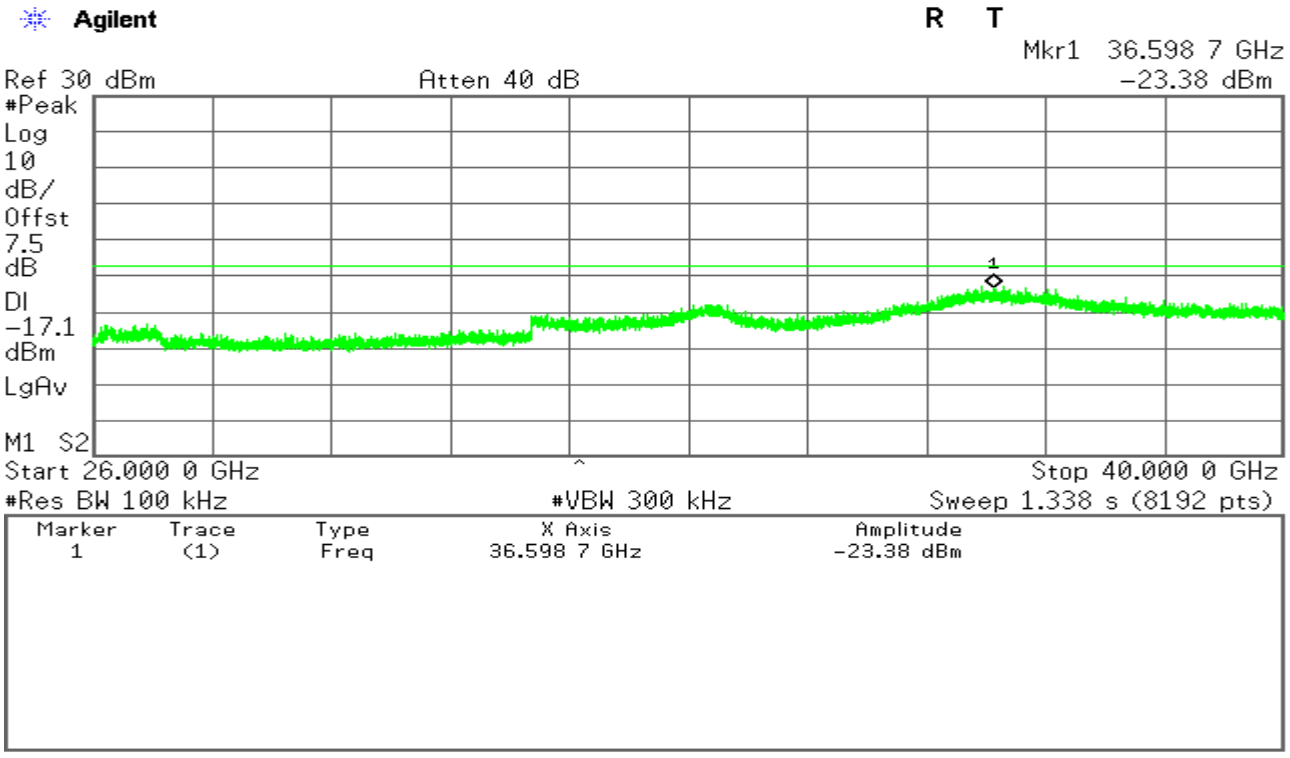

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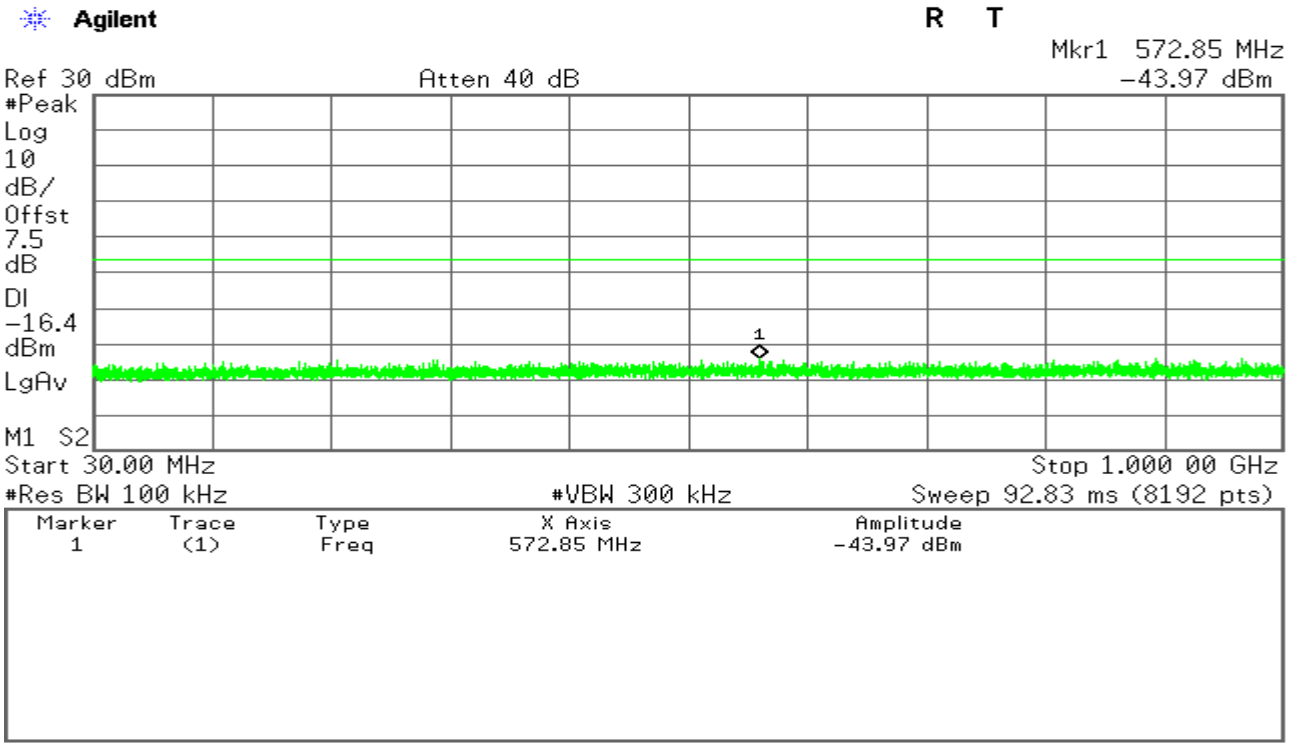

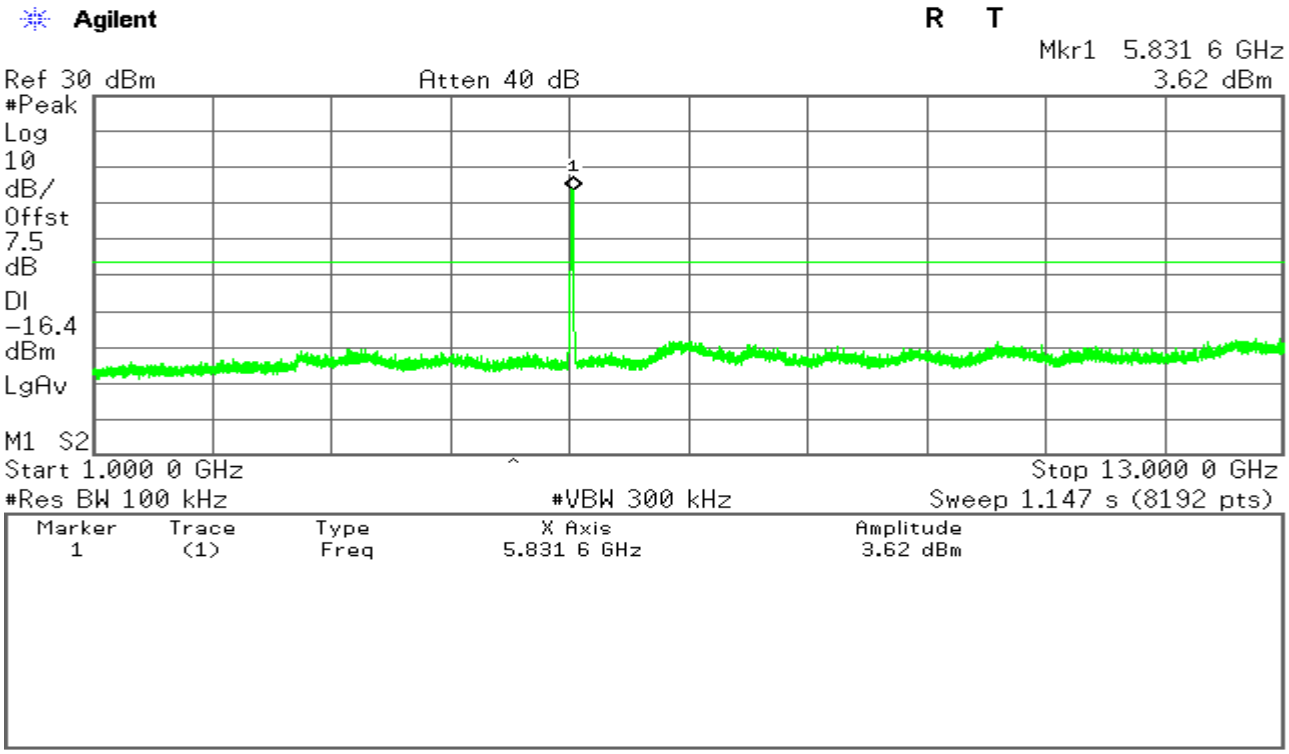

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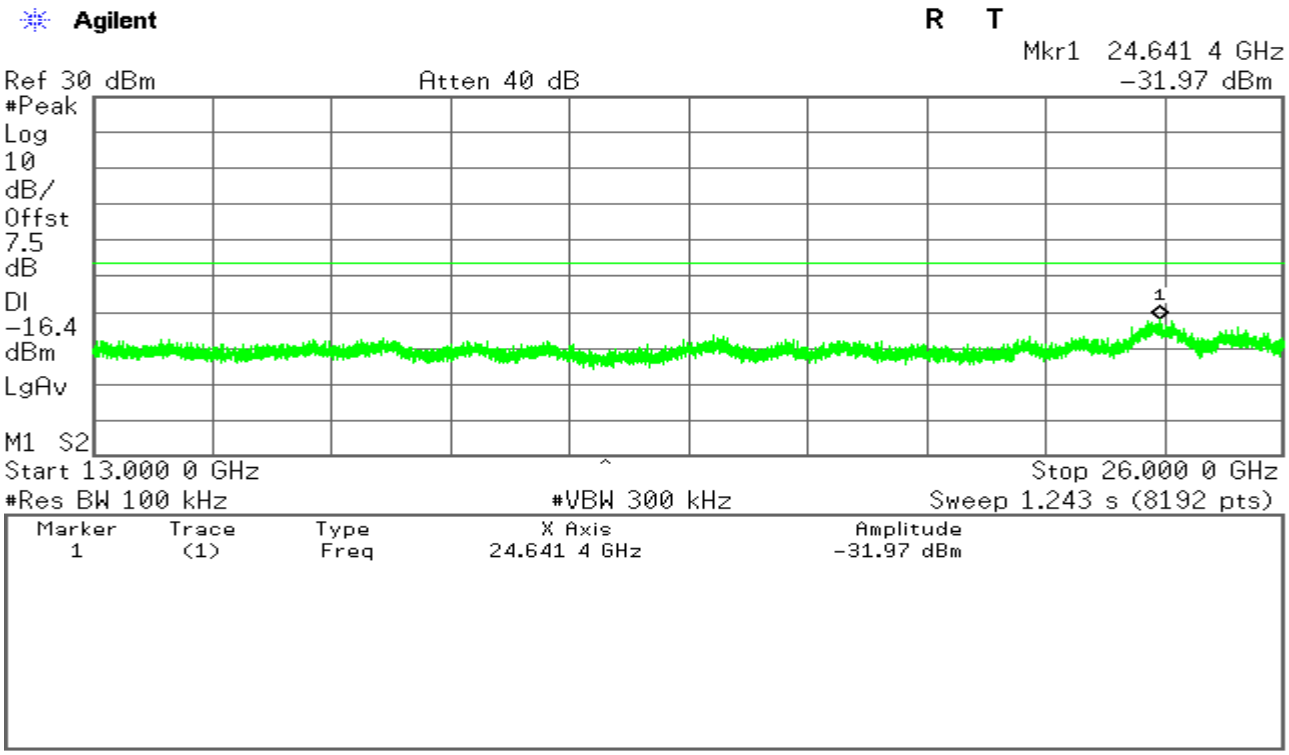

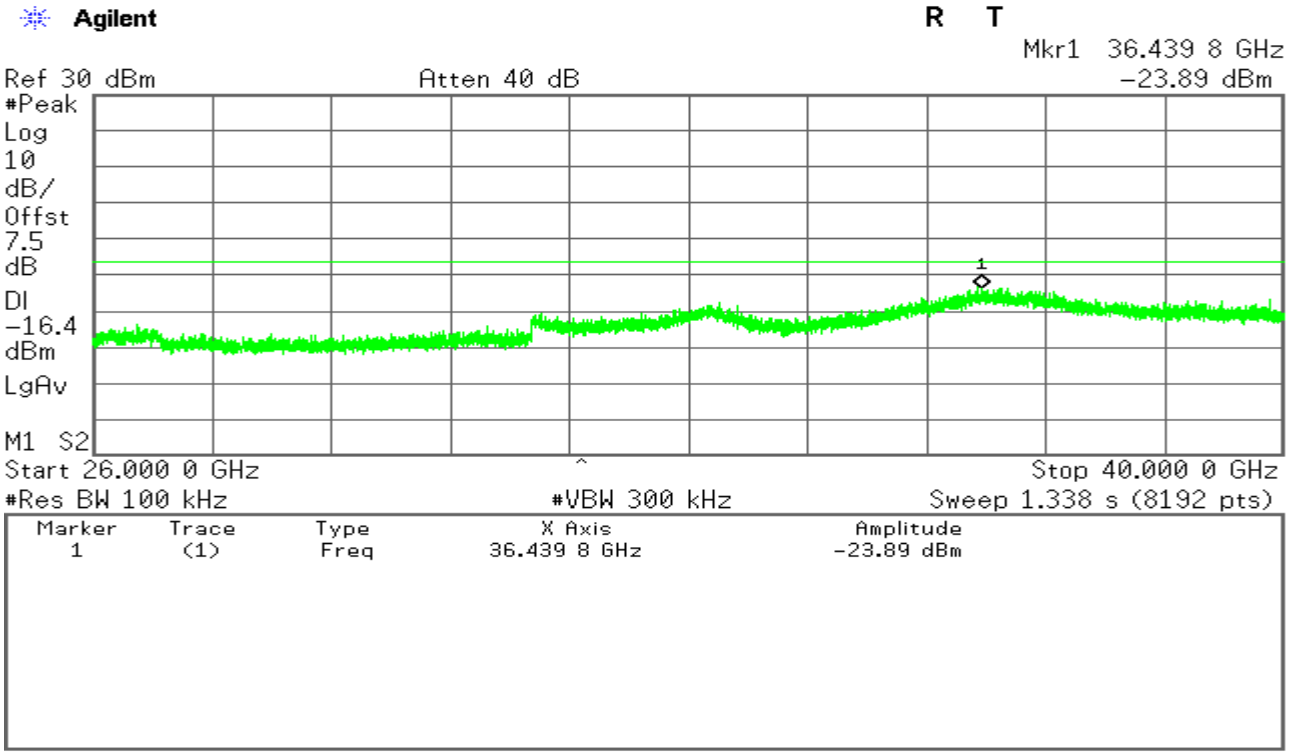

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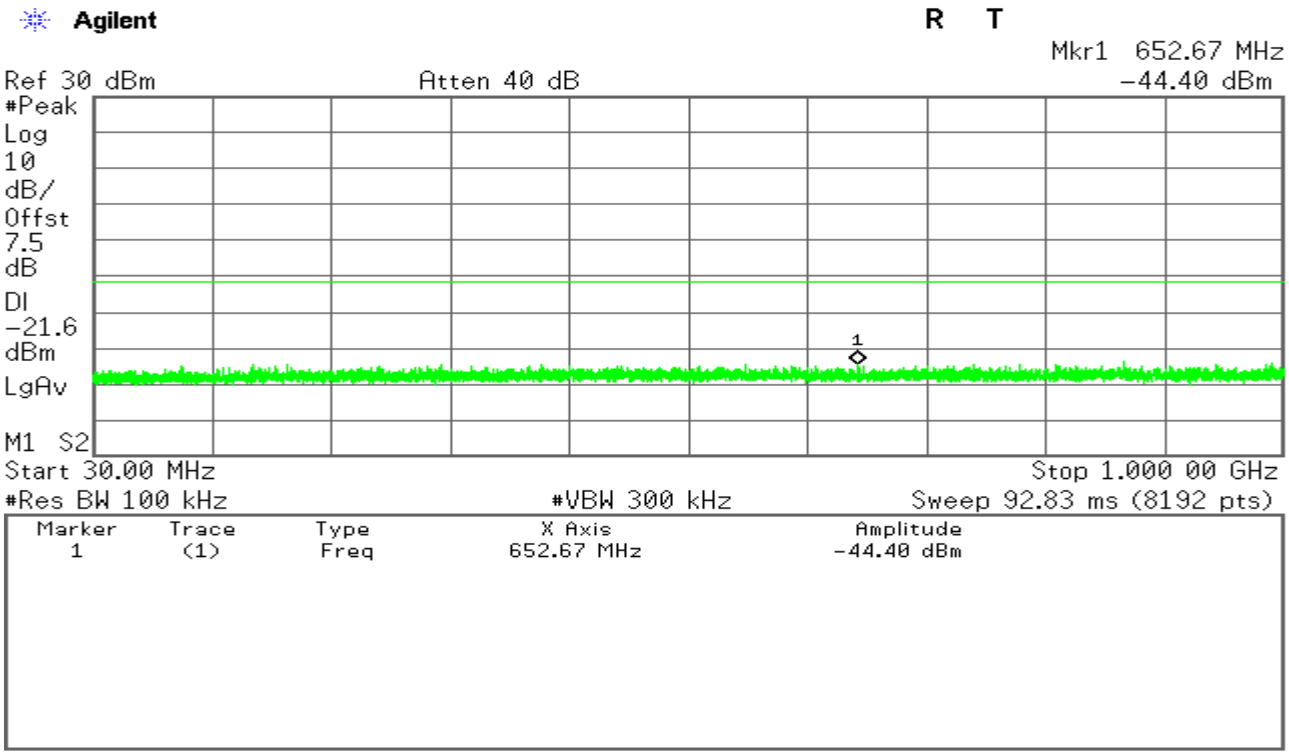
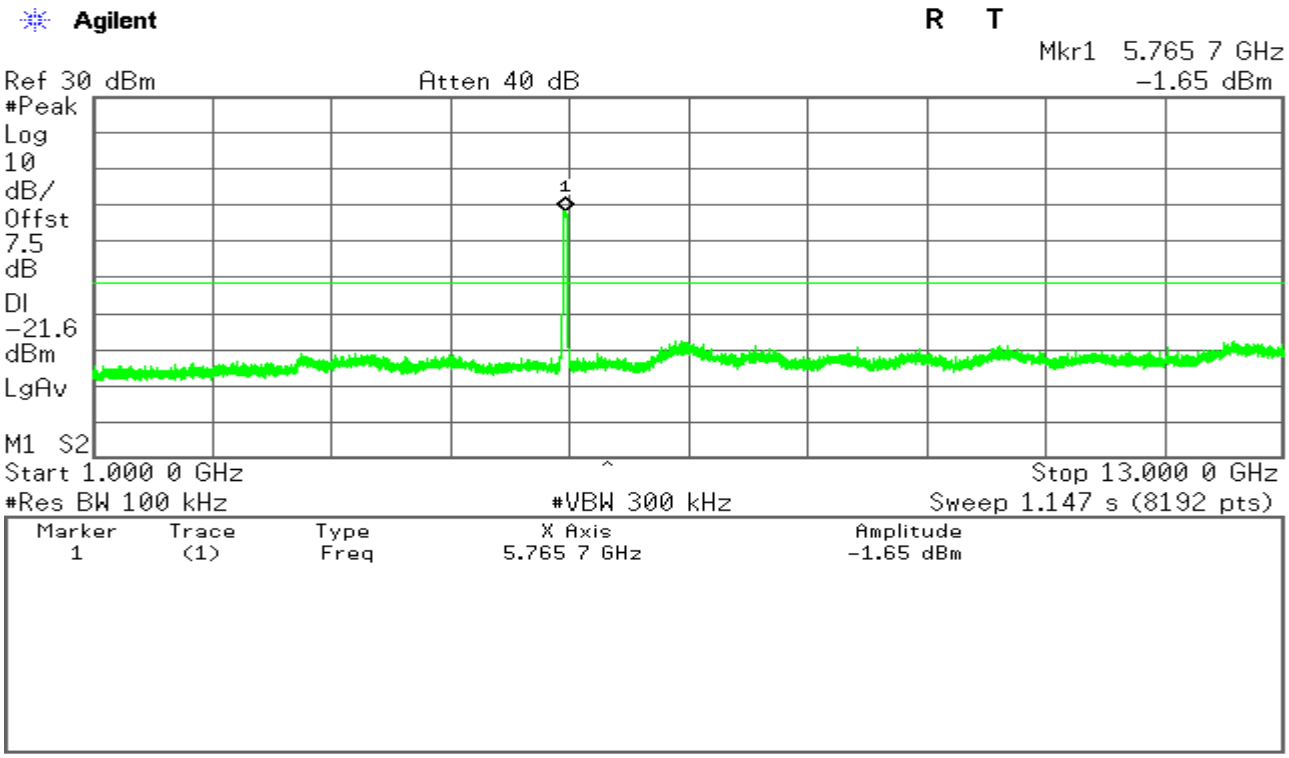
IEEE 802.11an HT40 mode

CH Low





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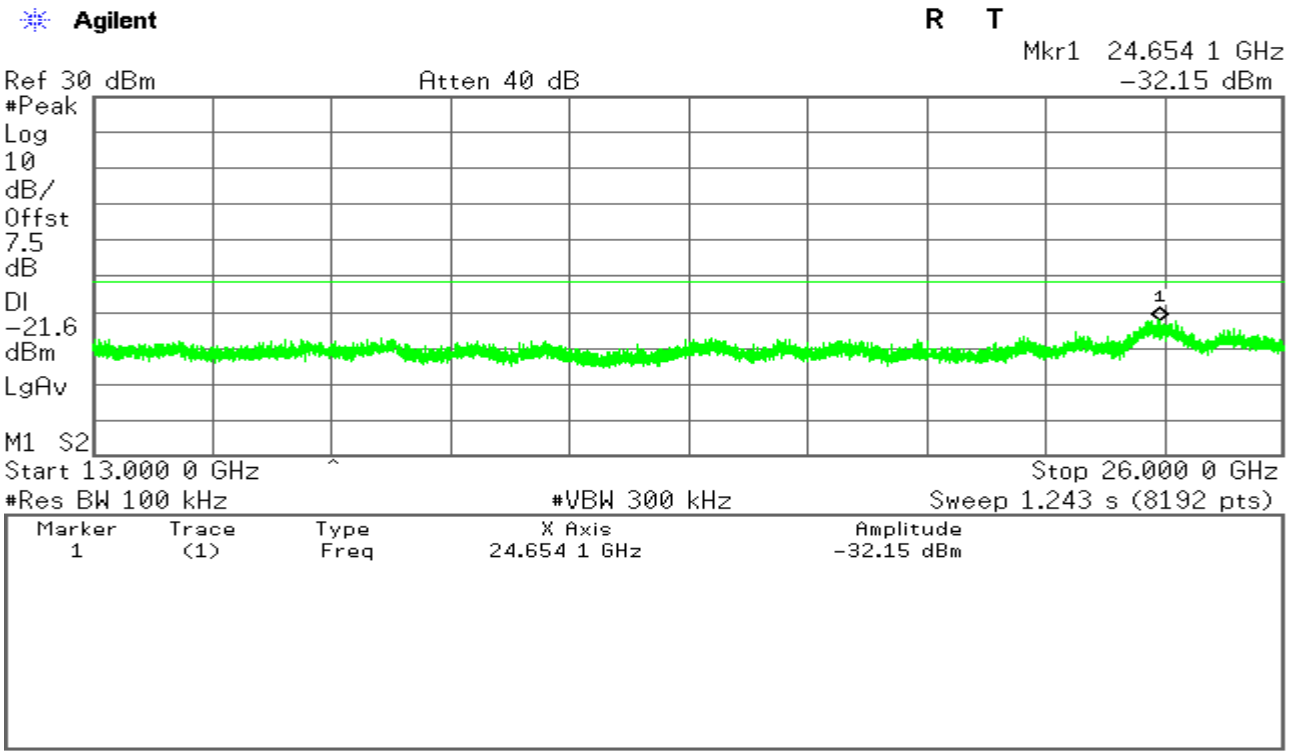

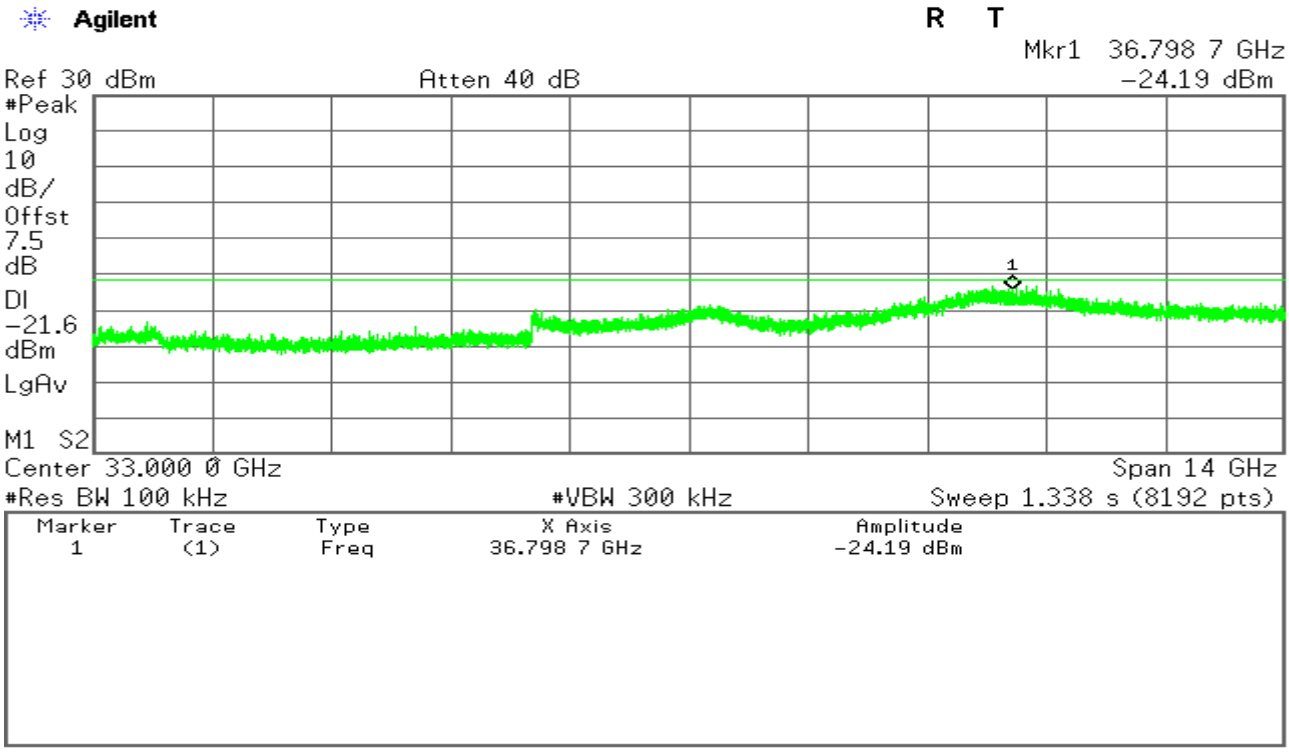

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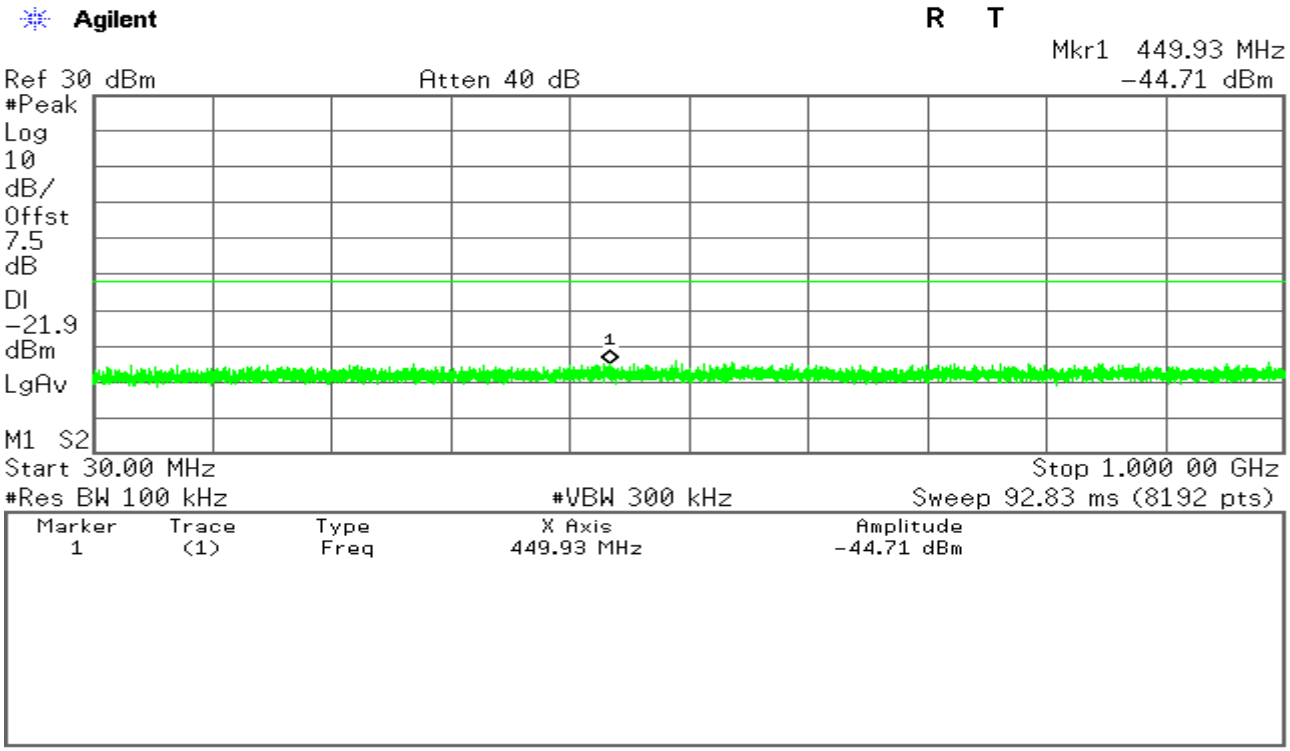

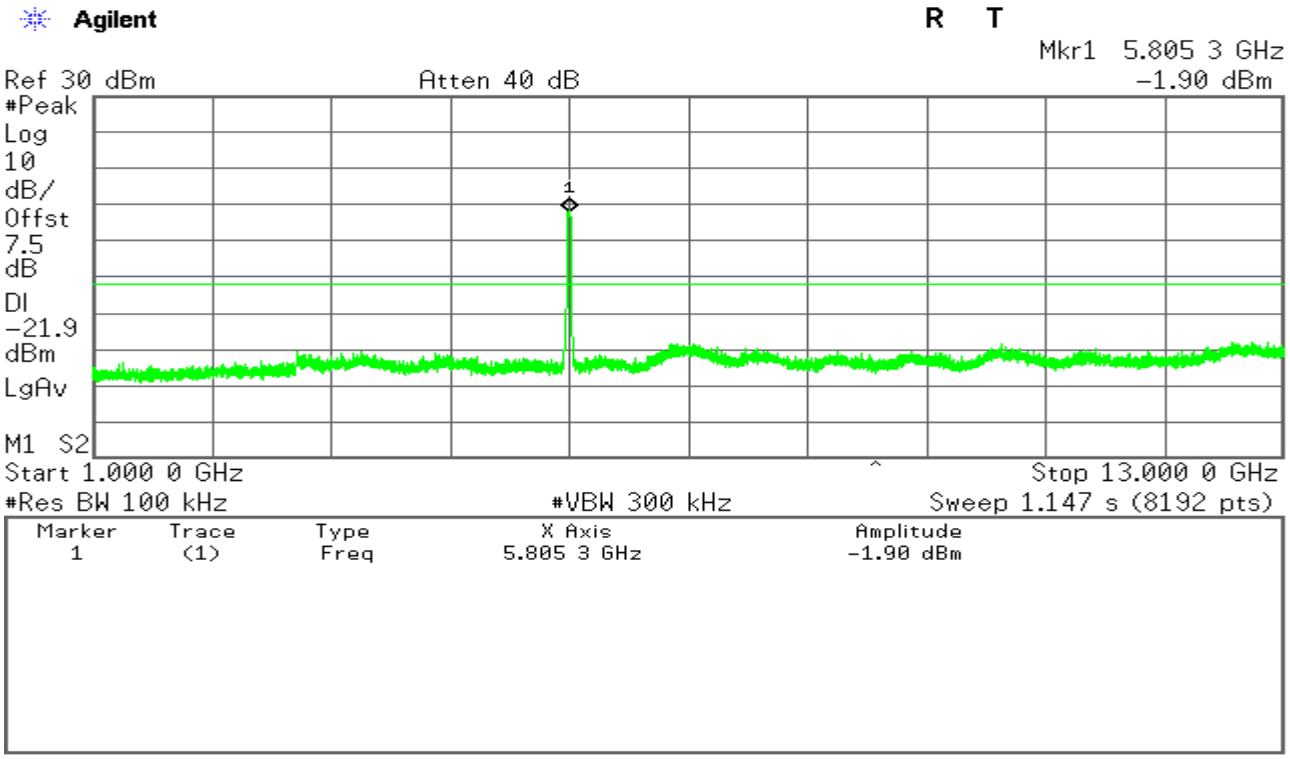

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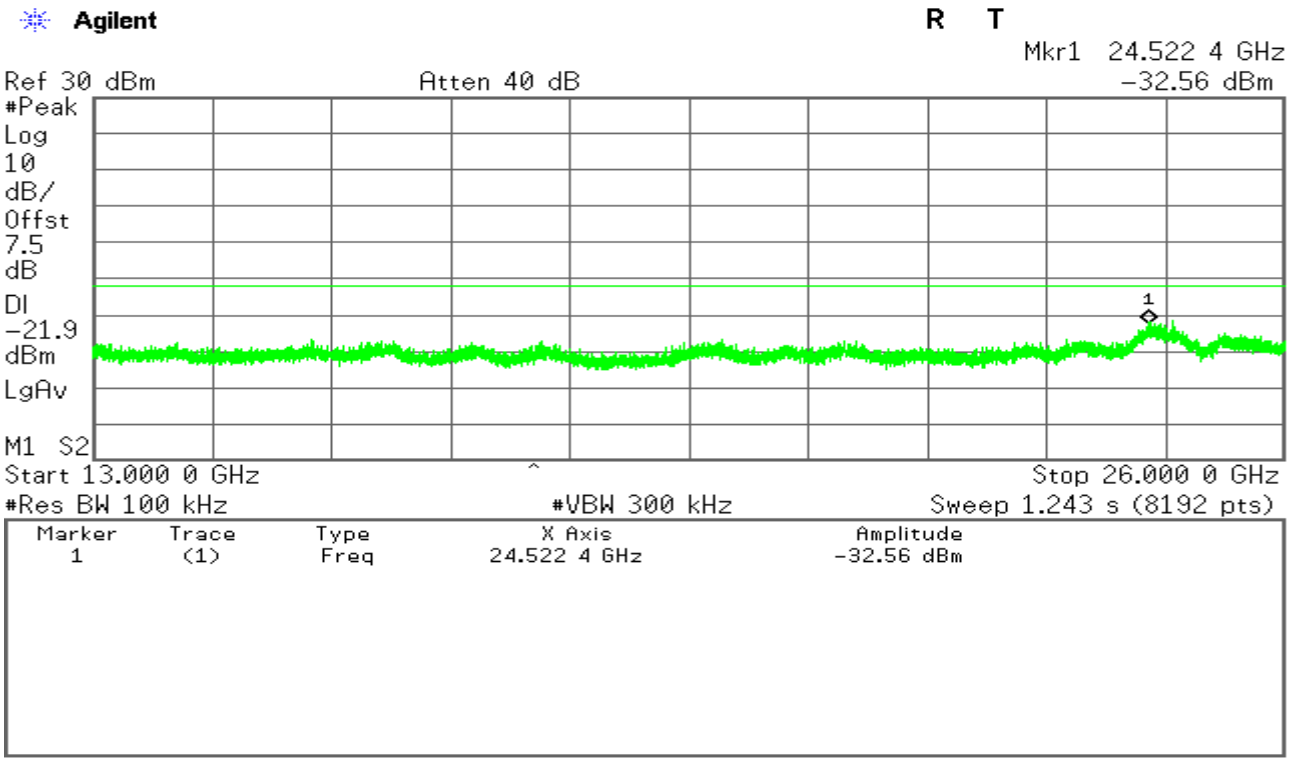

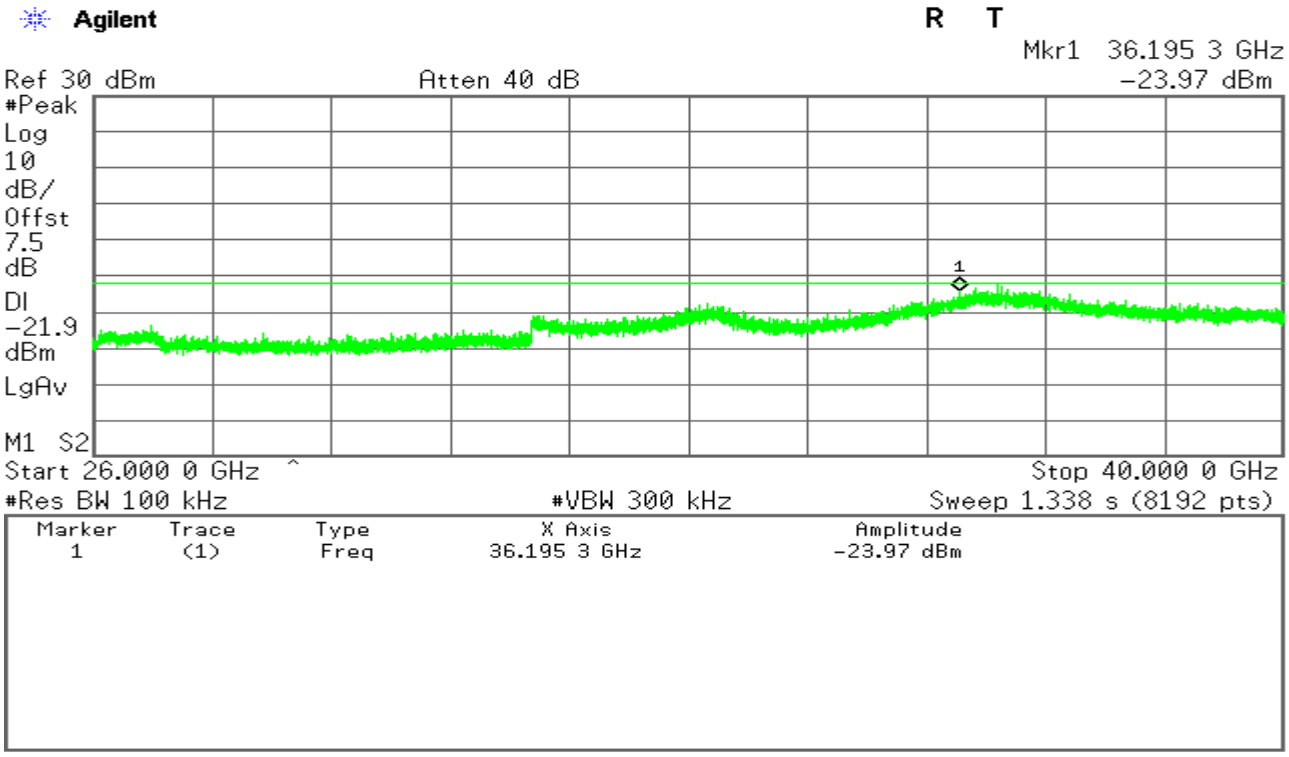

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4.5.RADIATED EMISSIONS

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

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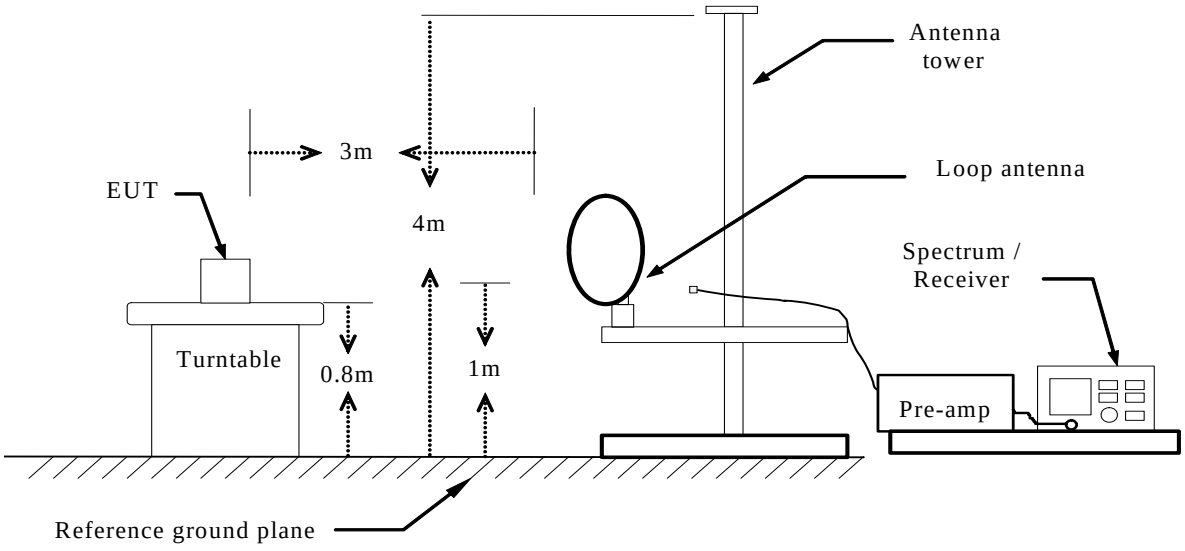
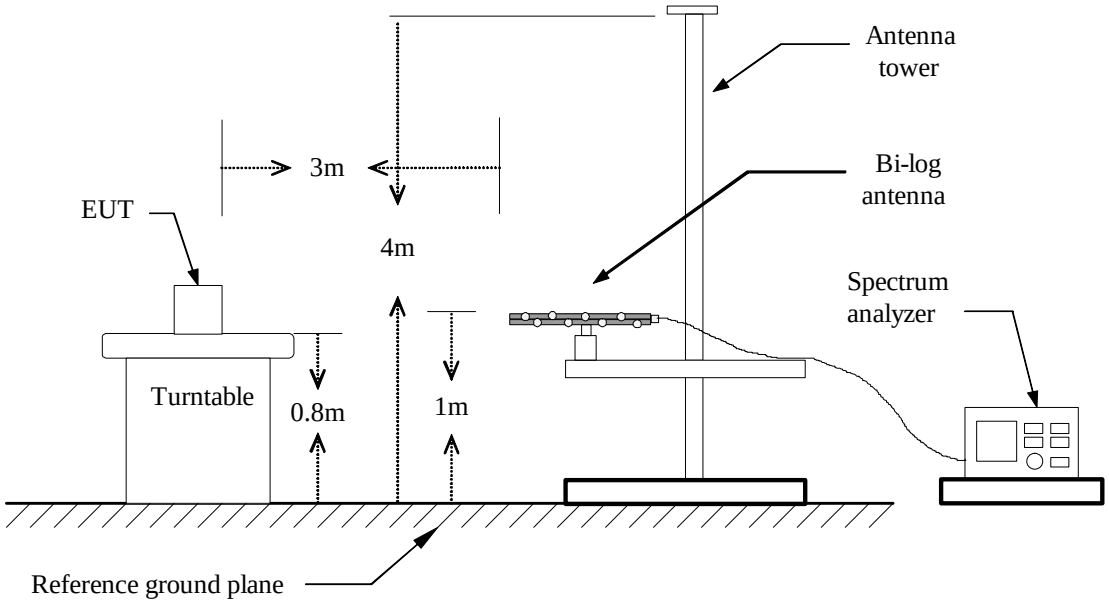
Below 30MHz



Below 1 GHz



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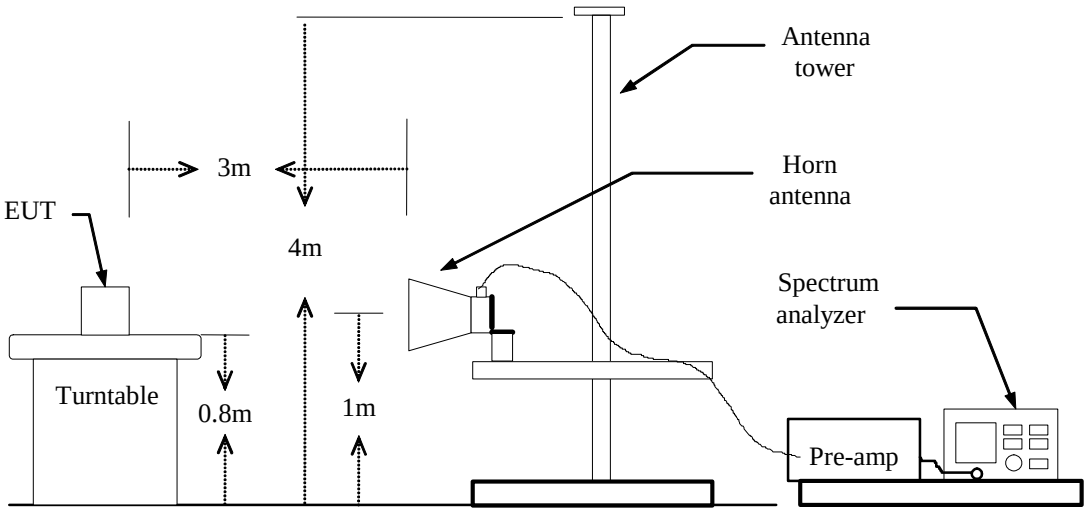
Above 1 GHz



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

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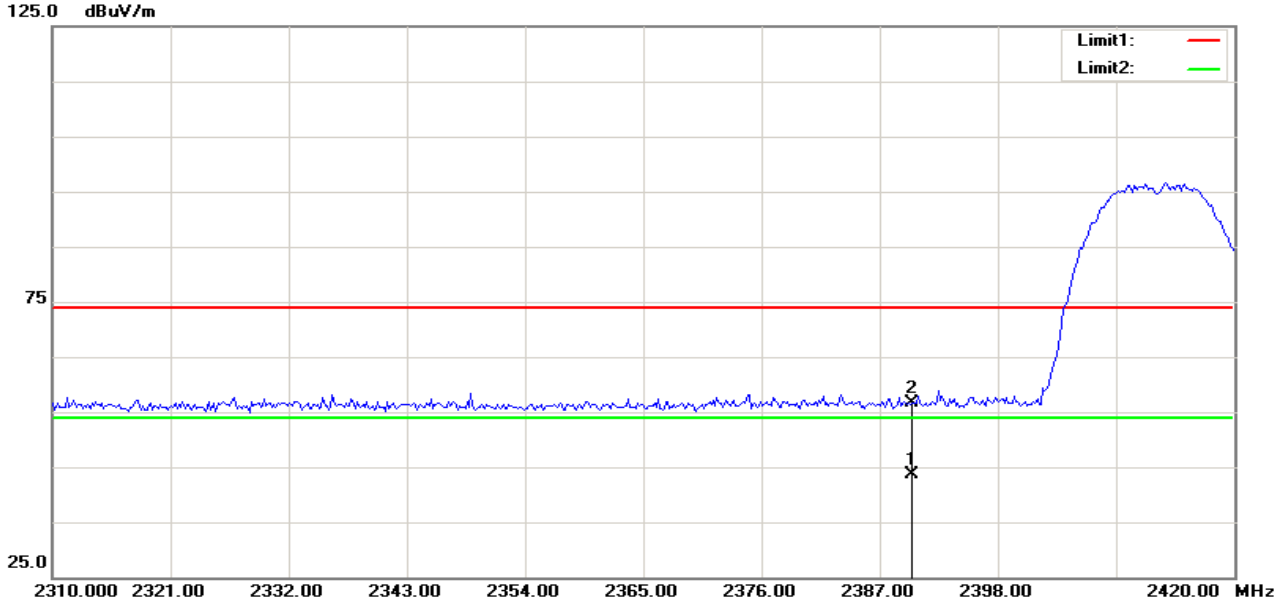
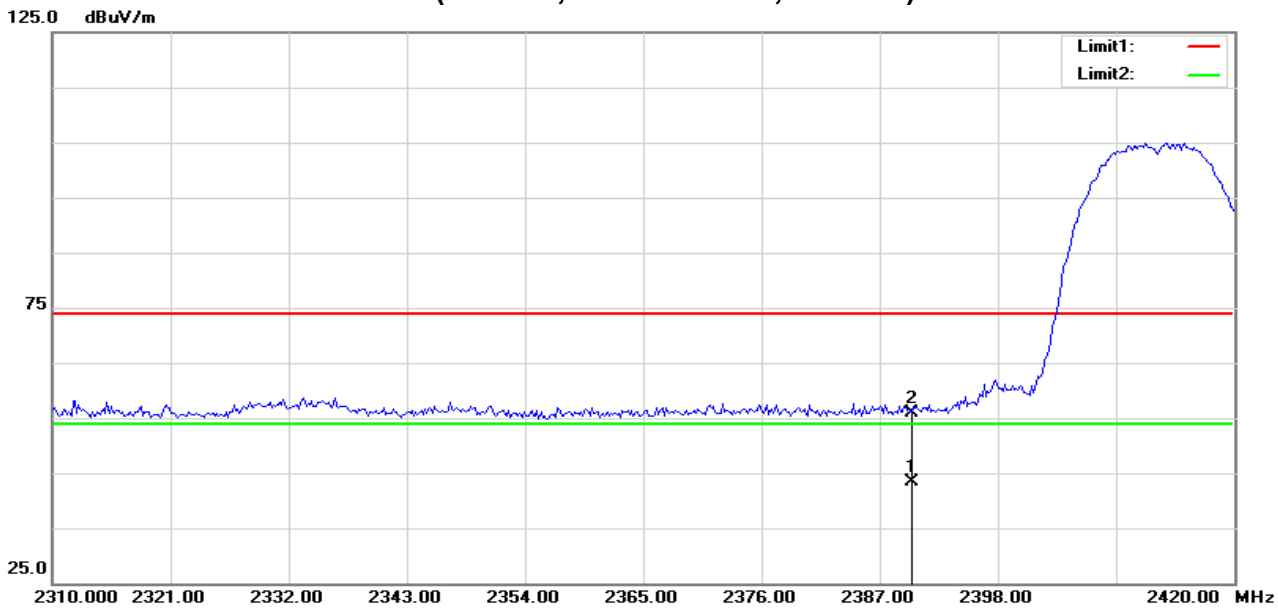
RESTRICTED BANDEDGE (b Mode, Low Channel, Horizontal)



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2389.950	52.10	-8.45	43.65	54.00	-10.35	99	271	AVG
2	2390.000	65.07	-8.45	56.62	74.00	-17.38	100	273	peak

RESTRICTED BANDEDGE (b 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	2389.979	51.75	-8.45	43.30	54.00	-10.70	103	360	AVG
2	2390.000	64.33	-8.45	55.88	74.00	-18.12	100	359	peak

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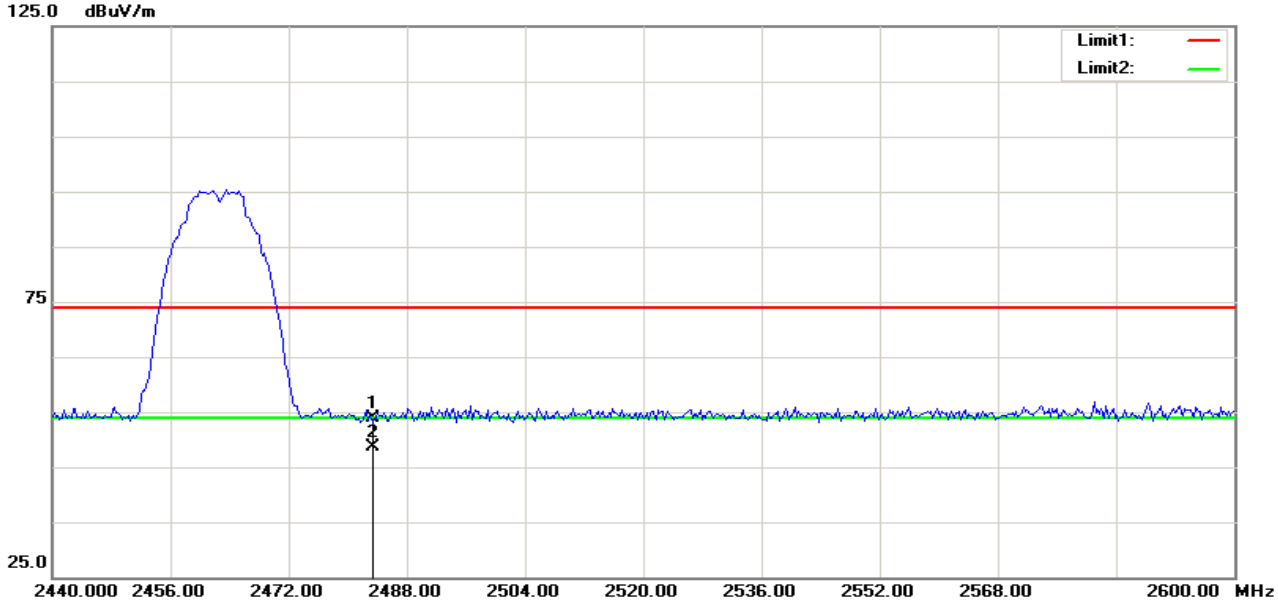
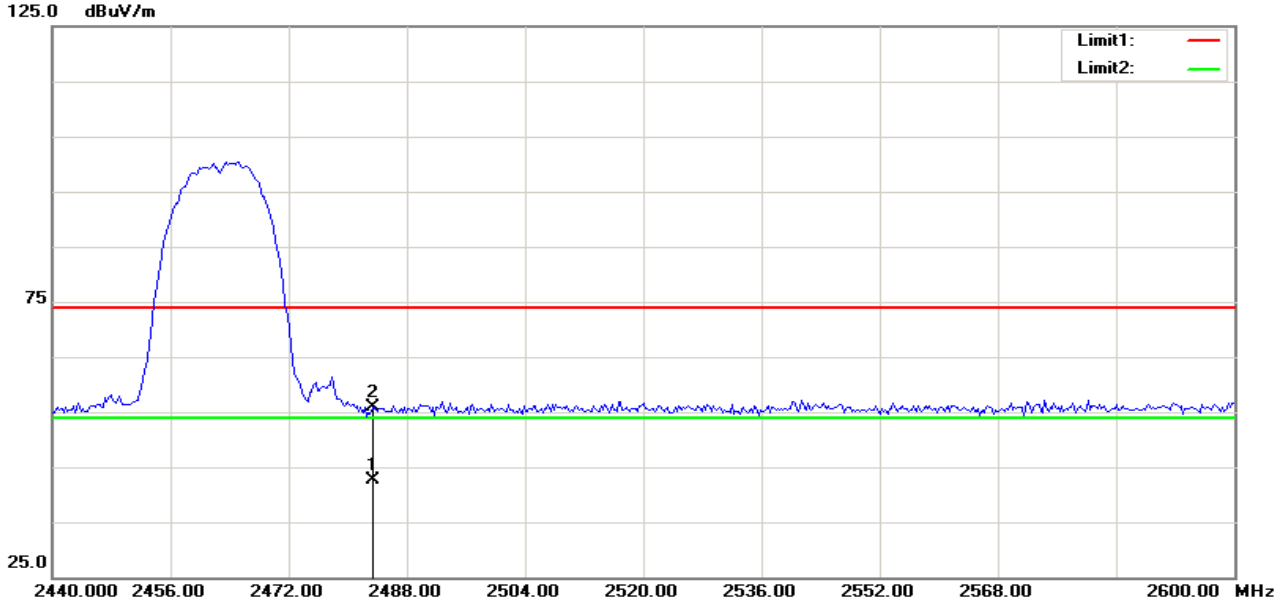
RESTRICTED BANDEDGE (b Mode, High Channel, Horizontal)



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	62.06	-8.09	53.97	74.00	-20.03	100	200	peak
2	2483.502	56.77	-8.09	48.68	54.00	-5.32	100	200	AVG

RESTRICTED BANDEDGE (b 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	2483.470	50.76	-8.09	42.67	54.00	-11.33	100	199	AVG
2	2483.500	63.90	-8.09	55.81	74.00	-18.19	100	200	peak

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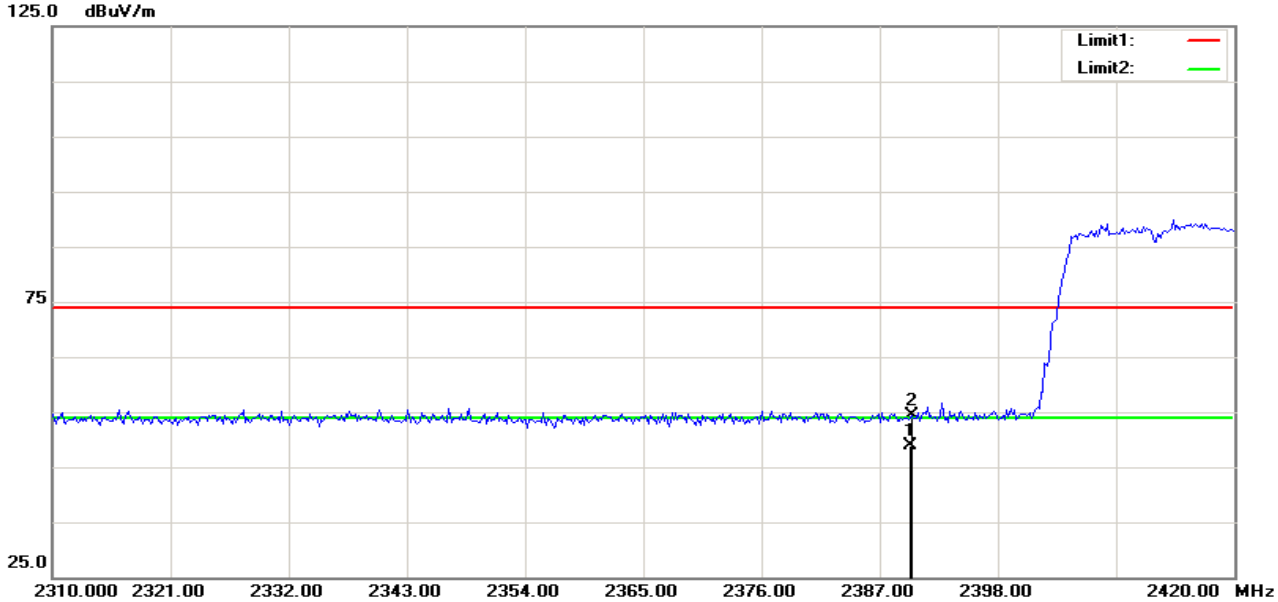
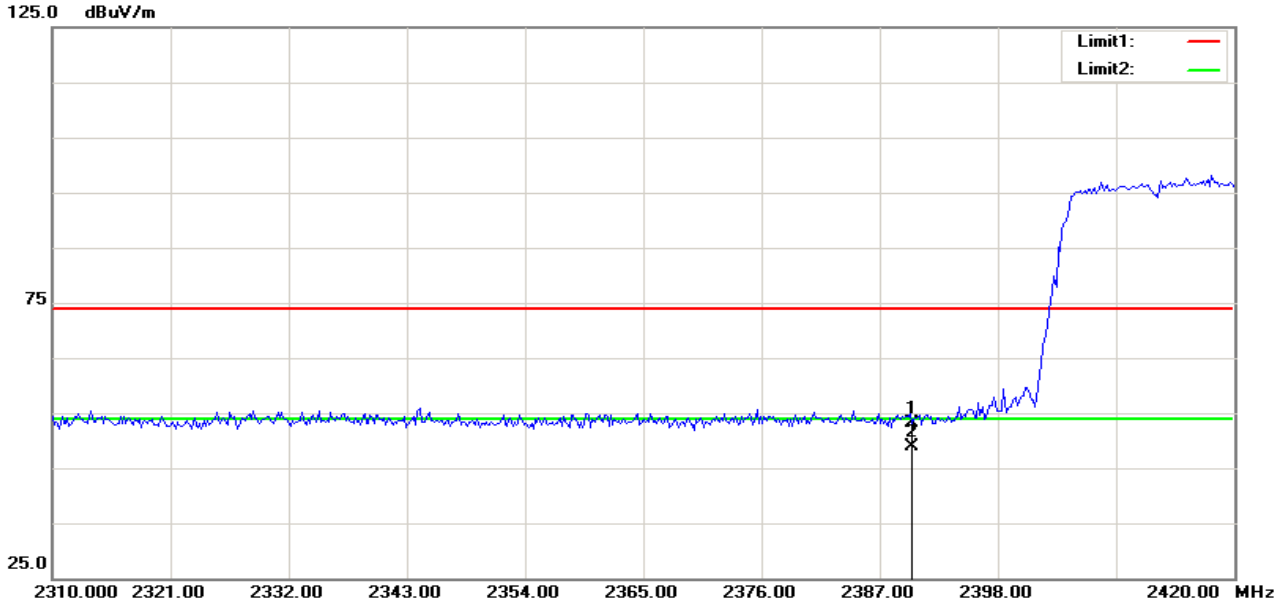
RESTRICTED BANDEDGE (g Mode, Low Channel, Horizontal)



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2389.925	57.43	-8.45	48.98	54.00	-5.02	100	360	AVG
2	2390.000	62.79	-8.45	54.34	74.00	-19.66	100	360	peak

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	61.52	-8.45	53.07	74.00	-20.93	100	18	peak
2	2390.058	57.33	-8.45	48.88	54.00	-5.12	100	131	AVG

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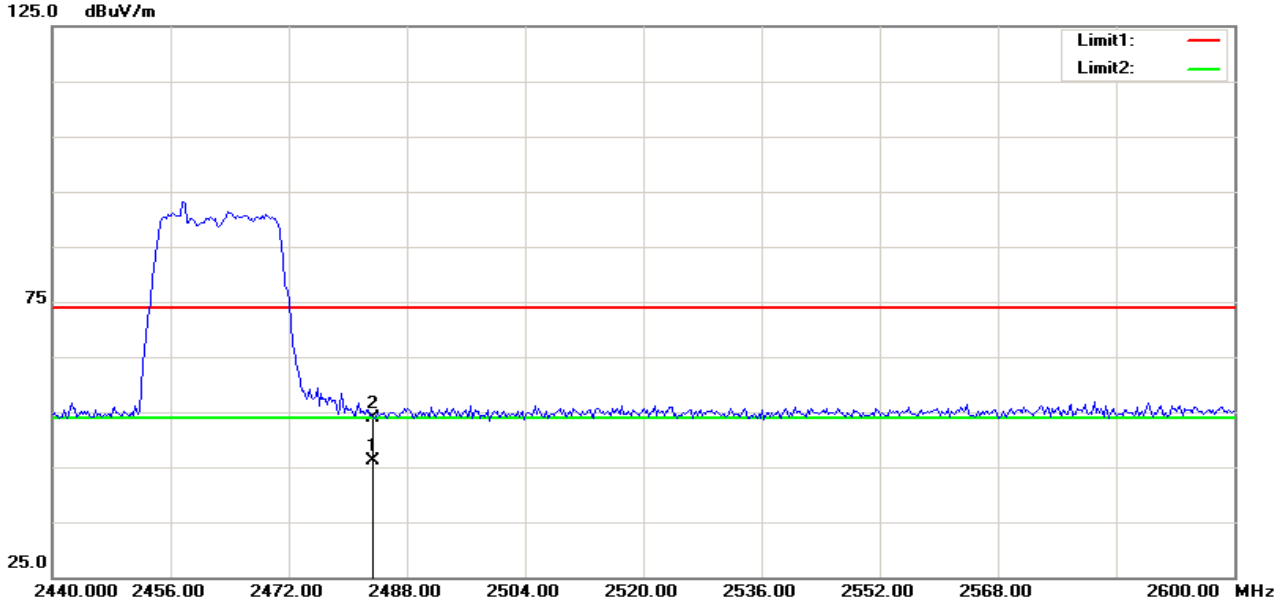
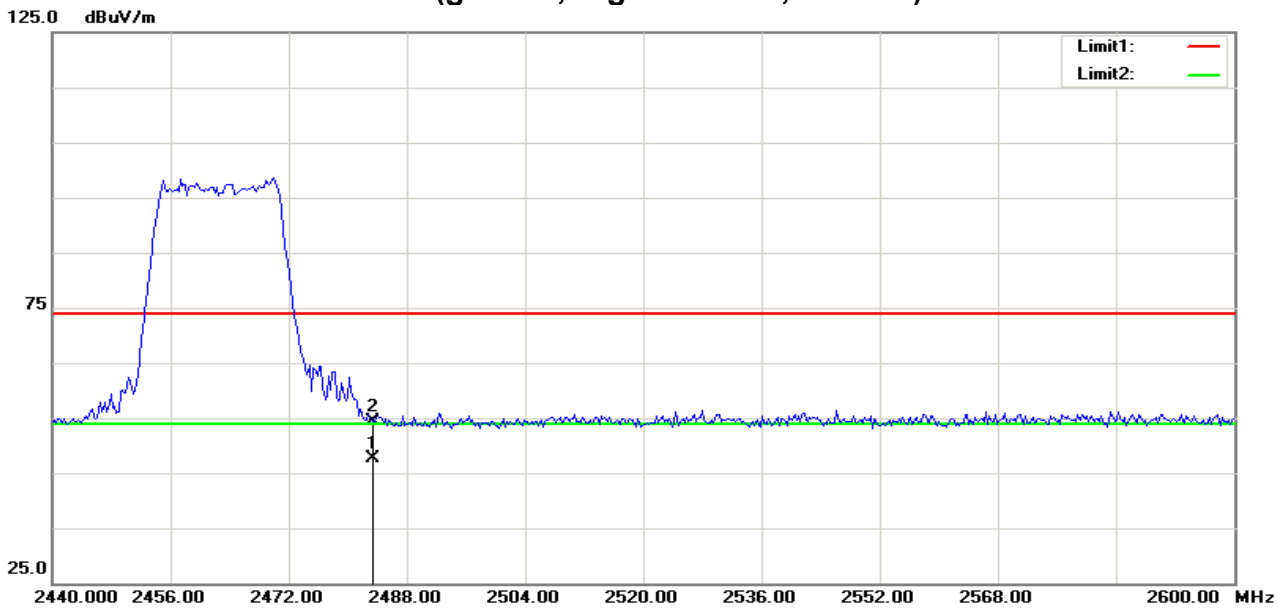
RESTRICTED BANDEDGE (g Mode, High Channel, Horizontal)



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2483.480	54.34	-8.09	46.25	54.00	-7.75	100	200	AVG
2	2483.500	62.06	-8.09	53.97	74.00	-20.03	100	200	peak

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	2483.495	55.67	-8.09	47.58	54.00	-6.42	100	200	AVG
2	2483.500	62.50	-8.09	54.41	74.00	-19.59	100	200	peak

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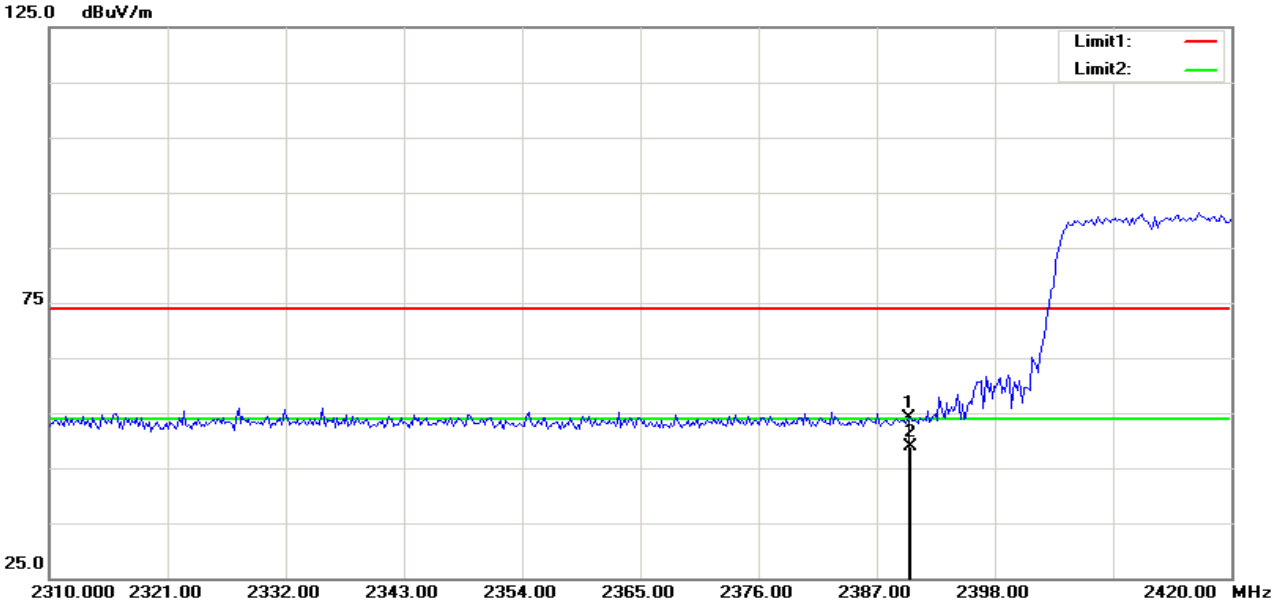
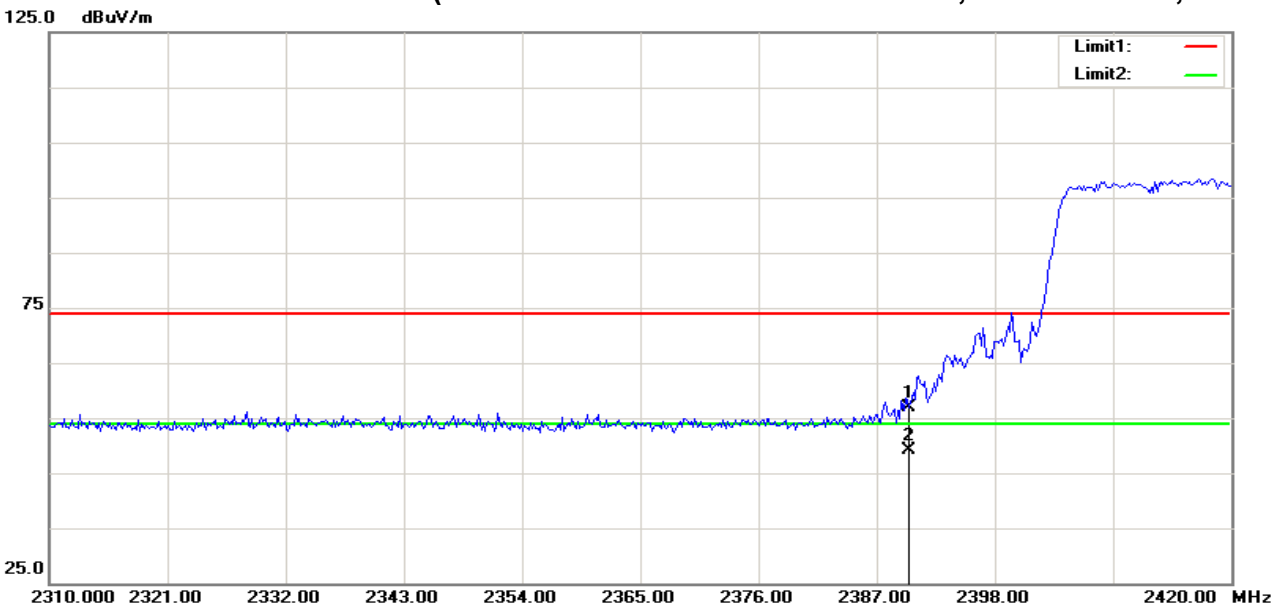
RESTRICTED BANDEDGE (n Standard-20 MHz Channel mode, Low Channel, Horizontal)



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	62.54	-8.45	54.09	74.00	-19.91	100	360	peak
2	2390.154	57.40	-8.45	48.95	54.00	-5.05	100	299	AVG

RESTRICTED BANDEDGE (n Standard-20 MHz Channel 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	65.26	-8.45	56.81	74.00	-17.19	100	360	peak
2	2390.014	57.66	-8.45	49.21	54.00	-4.79	100	360	AVG

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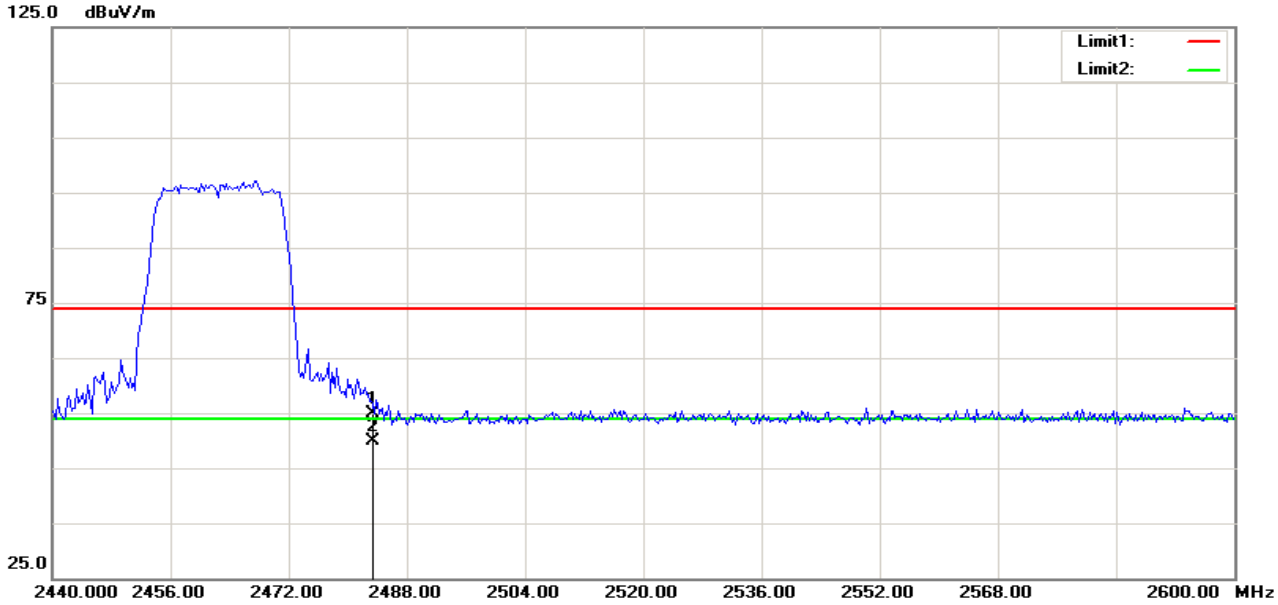
RESTRICTED BANDEDGE (n Standard-20 MHz Channel mode, High Channel, Horizontal)



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	63.03	-8.09	54.94	74.00	-19.06	100	290	peak
2	2483.502	58.07	-8.09	49.98	54.00	-4.02	100	290	AVG

RESTRICTED BANDEDGE (n Standard-20 MHz Channel 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	73.76	-8.09	65.67	74.00	-8.33	100	290	peak
2	2483.509	56.57	-8.09	48.48	54.00	-5.52	100	340	AVG

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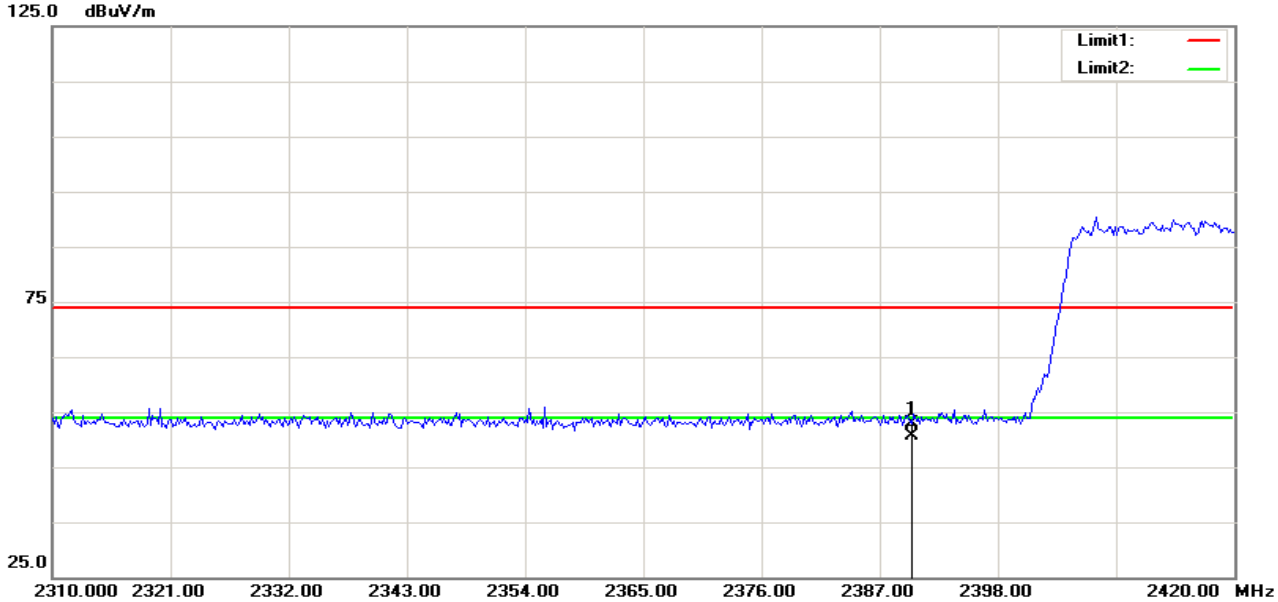
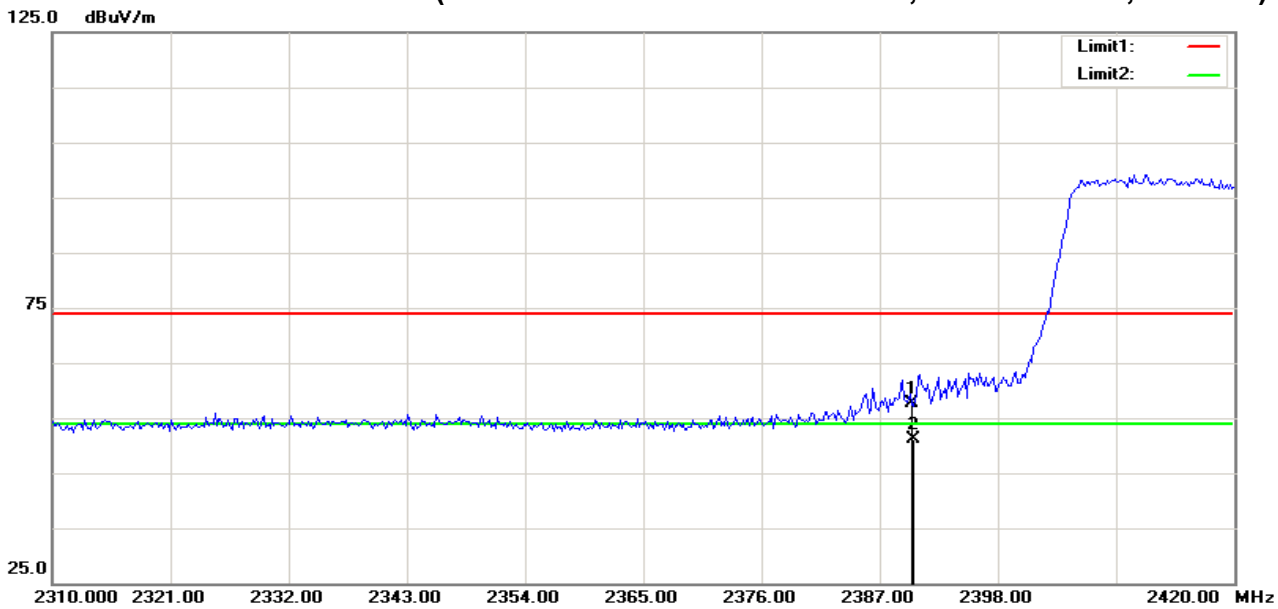
RESTRICTED BANDEDGE (n Wide -40 MHz Channel mode, Low Channel, Horizontal)



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	61.37	-8.45	52.92	74.00	-21.08	100	360	peak
2	2390.058	59.14	-8.45	50.69	54.00	-3.31	100	299	AVG

RESTRICTED BANDEDGE (n Wide -40 MHz Channel 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	66.00	-8.45	57.55	74.00	-16.45	100	360	peak
2	2390.102	59.69	-8.45	51.24	54.00	-2.76	100	299	AVG

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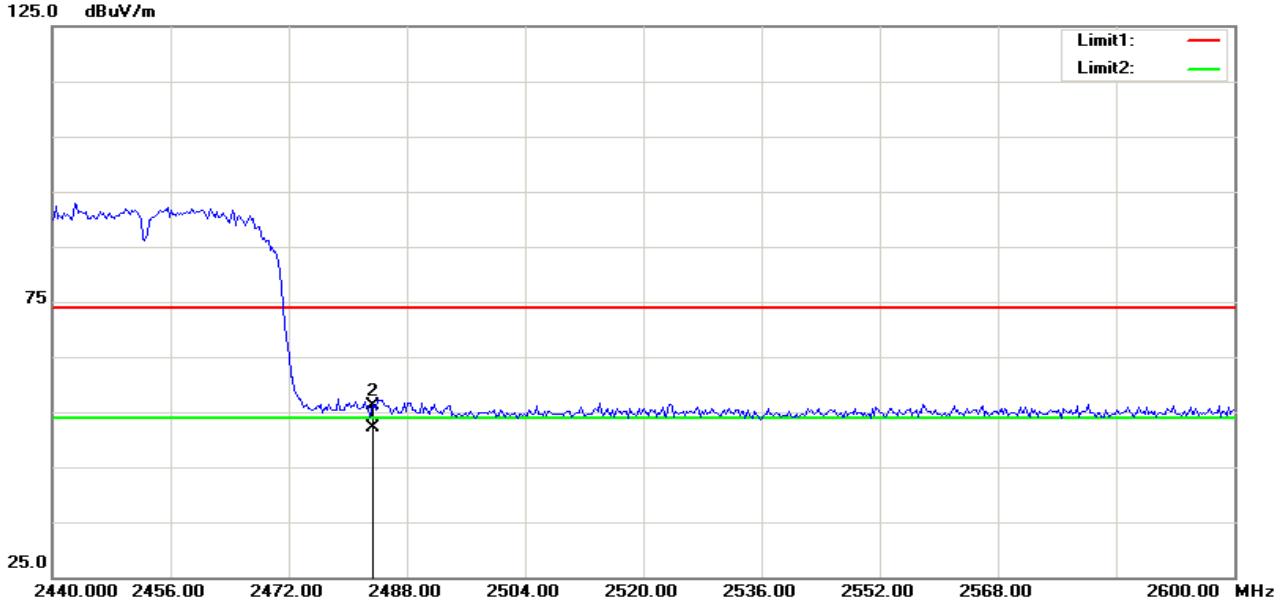
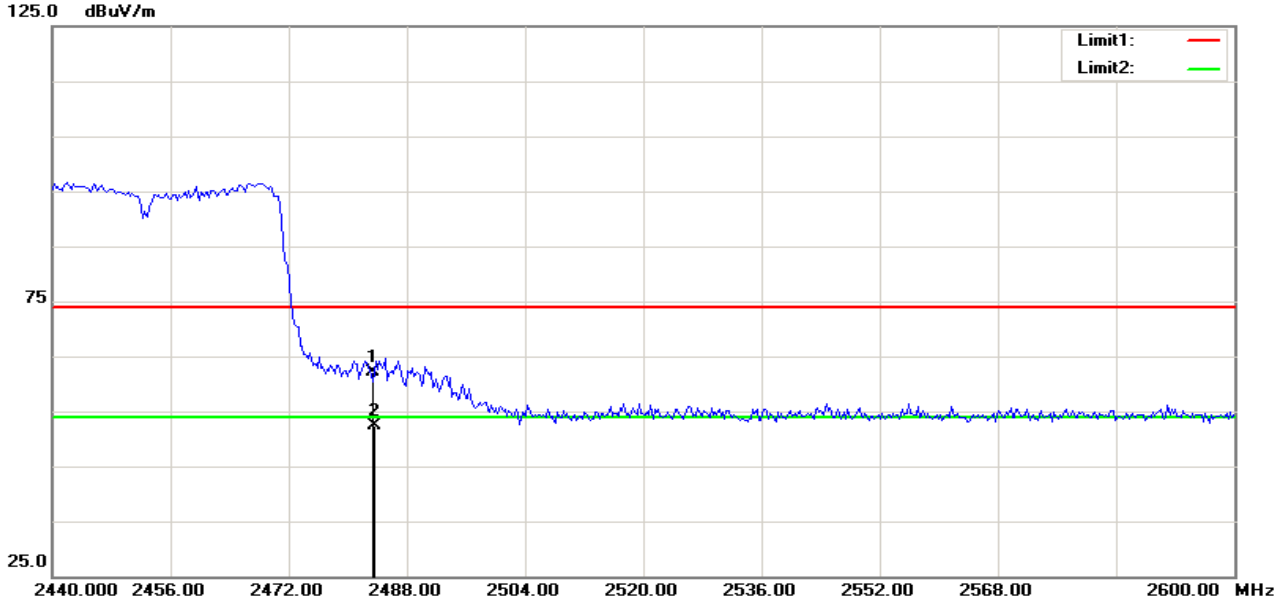
RESTRICTED BANDEDGE (n Wide -40 MHz Channel mode, High Channel, Horizontal)



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2483.468	60.25	-8.09	52.16	54.00	-1.84	100	290	AVG
2	2483.500	64.17	-8.09	56.08	74.00	-17.92	100	290	peak

RESTRICTED BANDEDGE (n Wide -40 MHz Channel 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	70.10	-8.09	62.01	74.00	-11.99	100	290	peak
2	2483.521	60.43	-8.09	52.34	54.00	-1.66	100	290	AVG

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Below 1GHz

Operation Mode: Normal Link **Test Date:** 2014-6-15

Temperature: 24°C **Tested by:** Charly.xue

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
66.8600	V	20.84	9.03	29.87	40.00	-10.13	Peak
147.3700	V	13.87	14.03	27.90	43.50	-15.60	Peak
299.6600	V	17.12	14.72	31.84	46.00	-14.16	Peak
562.5300	V	15.42	20.91	36.33	46.00	-9.67	Peak
844.8000	V	10.80	25.23	36.03	46.00	-9.97	Peak
66.8600	V	20.84	9.03	29.87	40.00	-10.13	Peak
49.4000	H	23.54	9.06	32.60	40.00	-7.40	Peak
119.2400	H	16.86	15.03	31.89	43.50	-11.61	Peak
236.6100	H	24.92	13.61	38.53	46.00	-7.47	Peak
375.3200	H	24.25	17.45	41.70	46.00	-4.30	Peak
549.9200	H	14.32	21.03	35.35	46.00	-10.65	Peak
935.9800	H	15.38	25.30	40.68	46.00	-5.32	Peak

Remark:

1. *Measuring frequencies from 30 MHz to the 1GHz (No emission found between lowest internal used/generated frequency to 30 MH).*
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).*

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Above 1 GHz

Operation Mode: TX / IEEE 802.11b / CH Low **Test Date:** 2014-6-15

Temperature: 24°C **Tested by:** Charly.xue

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	2389.423	59.76	-8.45	51.31	74.00	-22.69	100	125	peak
2	4868.590	41.58	-1.28	40.30	74.00	-33.70	100	22	peak
3	7293.269	42.01	4.13	46.14	74.00	-27.86	100	54	peak
4	9745.192	38.70	6.49	45.19	74.00	-28.81	100	32	peak
N/A									

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2389.423	59.44	-8.45	50.99	74.00	-23.01	100	156	peak
2	4786.859	42.94	-1.39	41.55	74.00	-32.45	100	6	peak
3	7266.025	41.17	4.18	45.35	74.00	-28.65	100	325	peak
4	9717.949	38.98	6.63	45.61	74.00	-28.39	100	25	peak
N/A									

Operation Mode: TX / IEEE 802.11b / CH Mid **Test Date:** 2014-6-15

Temperature: 24°C **Tested by:** Charly.xue

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	2443.910	55.36	-8.24	47.12	74.00	-26.88	100	55	peak
2	4868.590	40.61	-1.28	39.33	74.00	-34.67	100	48	peak
3	7211.538	40.33	4.29	44.62	74.00	-29.38	100	65	peak
4	9527.244	39.37	7.07	46.44	74.00	-27.56	100	159	peak
N/A									

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2498.397	55.40	-8.03	47.37	74.00	-26.63	100	97	peak
2	4868.590	41.63	-1.28	40.35	74.00	-33.65	100	314	peak
3	7320.513	40.22	4.07	44.29	74.00	-29.71	100	21	peak
4	9608.974	38.06	7.18	45.24	74.00	-28.76	100	265	peak
N/A									

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Operation Mode: TX / IEEE 802.11b / CH High **Test Date:** 2014-6-15

Temperature: 24°C **Tested by:** Charly.xue

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	2443.910	58.87	-8.24	50.63	74.00	-23.37	100	99	peak
2	4895.833	41.27	-1.30	39.97	74.00	-34.03	100	56	peak
3	7347.756	40.21	4.02	44.23	74.00	-29.77	100	154	peak
4	9772.436	39.12	6.36	45.48	74.00	-28.52	100	216	peak
N/A									

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2443.910	58.38	-8.24	50.14	74.00	-23.86	100	69	peak
2	4923.077	41.16	-1.32	39.84	74.00	-34.16	100	15	peak
3	7347.756	41.19	4.02	45.21	74.00	-28.79	100	154	peak
4	9799.680	40.37	6.22	46.59	74.00	-27.41	100	48	peak
N/A									

Operation Mode: TX / IEEE 802.11g / CH Low **Test Date:** 2014-6-15

Temperature: 24°C **Tested by:** Charly.xue

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	2389.423	57.76	-8.45	49.31	74.00	-24.69	100	67	peak
2	4868.590	41.27	-1.28	39.99	74.00	-34.01	100	48	peak
3	7211.538	40.79	4.29	45.08	74.00	-28.92	100	85	peak
4	9608.974	38.81	7.18	45.99	74.00	-28.01	100	256	peak
N/A									

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2416.667	56.71	-8.35	48.36	74.00	-25.64	100	98	peak
2	4786.859	42.34	-1.39	40.95	74.00	-33.05	100	145	peak
3	7211.538	40.61	4.29	44.90	74.00	-29.10	100	55	peak
4	9581.731	38.62	7.18	45.80	74.00	-28.20	100	62	peak
N/A									

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Operation Mode: TX / IEEE 802.11g / CH Mid **Test Date:** 2014-6-15

Temperature: 24°C **Tested by:** Charly.xue

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	2389.425	57.76	-8.45	49.36	74.00	-24.64	100	95	peak
1	4882.971	47.16	-1.29	45.87	74.00	-28.13	100	41	peak
2	7345.680	37.15	4.07	41.25	74.00	-32.75	100	142	peak
4	9678.911	38.81	7.18	45.98	74.00	-28.02	100	298	peak
N/A									

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2471.154	57.46	-8.14	49.32	74.00	-24.68	100	98	peak
2	4868.590	41.63	-1.28	40.35	74.00	-33.65	100	59	peak
3	7375.000	38.81	3.97	42.78	74.00	-31.22	100	114	peak
4	9663.461	38.82	6.90	45.72	74.00	-28.28	100	64	peak

Operation Mode: TX / IEEE 802.11g / CH High **Test Date:** 2014-6-15

Temperature: 24°C **Tested by:** Charly.xue

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	2443.910	56.90	-8.24	48.66	74.00	-25.34	100	64	peak
2	4895.833	40.49	-1.30	39.19	74.00	-34.81	100	66	peak
3	7347.756	40.07	4.02	44.09	74.00	-29.91	100	51	peak
4	9799.680	39.43	6.22	45.65	74.00	-28.35	100	226	peak
N/A									

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2443.910	57.00	-8.24	48.76	74.00	-25.24	100	5	peak
2	4977.564	40.04	-1.36	38.68	74.00	-35.32	100	48	peak
3	7456.731	39.03	4.37	43.40	74.00	-30.60	100	65	peak
4	9908.654	38.33	6.79	45.12	74.00	-28.88	100	8	peak
N/A									

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Operation Mode: TX / IEEE 802.11n HT20 mode / CH Low **Test Date:** 2014-6-15

Temperature: 24°C **Tested by:** Charly.xue

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	2389.423	58.41	-8.45	49.96	74.00	-24.04	100	49	peak
2	4786.859	42.21	-1.39	40.82	74.00	-33.18	100	284	peak
3	7211.538	39.84	4.29	44.13	74.00	-29.87	100	5	peak
4	9608.974	38.51	7.18	45.69	74.00	-28.31	100	59	peak
N/A									

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2389.423	56.84	-8.45	48.39	74.00	-25.61	100	54	peak
2	4786.859	41.77	-1.39	40.38	74.00	-33.62	100	56	peak
3	7211.538	39.48	4.29	43.77	74.00	-30.23	100	314	peak
4	9636.218	36.77	7.04	43.81	74.00	-30.19	100	15	peak
N/A									

Operation Mode: TX / IEEE 802.11n HT20 mode / CH Mid **Test Date:** 2014-6-15

Temperature: 24°C **Tested by:** Charly.xue

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	2443.910	58.86	-8.24	50.62	74.00	-23.38	100	169	peak
2	4786.859	42.11	-1.39	40.72	74.00	-33.28	100	56	peak
3	7293.269	40.58	4.13	44.71	74.00	-29.29	100	48	peak
4	9636.218	37.64	7.04	44.68	74.00	-29.32	100	47	peak
N/A									

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2416.667	58.67	-8.35	50.32	74.00	-23.68	100	97	peak
2	4923.077	39.70	-1.32	38.38	74.00	-35.62	100	48	peak
3	7347.756	39.63	4.02	43.65	74.00	-30.35	100	41	peak
4	9690.705	37.23	6.77	44.00	74.00	-30.00	100	65	peak
N/A									

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Operation Mode: TX / IEEE 802.11n HT20 mode / CH High **Test Date:** 2014-6-15

Temperature: 24°C **Tested by:** Charly.xue

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	2443.910	57.97	-8.24	49.73	74.00	-24.27	100	58	peak
2	5004.808	41.75	-1.40	40.35	74.00	-33.65	100	209	peak
3	7456.731	38.71	4.37	43.08	74.00	-30.92	100	90	peak
4	9799.680	39.41	6.22	45.63	74.00	-28.37	100	44	peak
N/A									

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2498.397	62.05	-8.03	54.02	74.00	-19.98	100	97	peak
2	4923.077	41.29	-1.32	39.97	74.00	-34.03	100	145	peak
3	7347.756	39.91	4.02	43.93	74.00	-30.07	100	54	peak
4	9772.436	38.79	6.36	45.15	74.00	-28.85	100	305	peak
N/A									

Operation Mode: TX / IEEE 802.11n HT40 mode / CH Low **Test Date:** 2014-6-15

Temperature: 24°C **Tested by:** Charly.xue

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	2443.910	48.89	-8.24	40.65	74.00	-33.35	100	298	peak
2	4786.859	41.77	-1.39	40.38	74.00	-33.62	100	48	peak
3	7293.269	41.12	4.13	45.25	74.00	-28.75	100	87	peak
4	9608.974	38.43	7.18	45.61	74.00	-28.39	100	49	peak
N/A									

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2443.910	48.74	-8.24	40.50	74.00	-33.50	100	94	peak
2	4786.859	41.53	-1.39	40.14	74.00	-33.86	100	197	peak
3	7293.269	41.41	4.13	45.54	74.00	-28.46	100	87	peak
4	9636.218	38.23	7.04	45.27	74.00	-28.73	100	256	peak
N/A									

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Operation Mode: TX / IEEE 802.11n HT40 mode / CH Mid **Test Date:** 2014-6-15

Temperature: 24°C **Tested by:** Charly.xue

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	2471.154	55.05	-8.14	46.91	74.00	-27.09	100	48	peak
2	5004.808	40.97	-1.40	39.57	74.00	-34.43	100	354	peak
3	7293.269	40.58	4.13	44.71	74.00	-29.29	100	59	peak
4	9608.974	38.98	7.18	46.16	74.00	-27.84	100	91	peak
N/A									

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2416.667	58.17	-8.35	49.82	74.00	-24.18	100	187	peak
2	4786.859	42.27	-1.39	40.88	74.00	-33.12	100	45	peak
3	7320.513	40.22	4.07	44.29	74.00	-29.71	100	354	peak
4	9636.218	38.65	7.04	45.69	74.00	-28.31	100	59	peak
N/A									

Operation Mode: TX / IEEE 802.11n HT40 mode / CH High **Test Date:** 2014-6-15

Temperature: 24°C **Tested by:** Charly.xue

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	2389.423	64.26	-8.45	55.81	74.00	-18.19	100	94	peak
2	4895.833	42.44	-1.30	41.14	74.00	-32.86	100	46	peak
3	7347.756	41.48	4.02	45.50	74.00	-28.50	100	99	peak
4	9772.436	39.74	6.36	46.10	74.00	-27.90	100	158	peak
N/A									

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2498.397	58.71	-8.03	50.68	74.00	-23.32	100	360	peak
2	4895.833	41.05	-1.30	39.75	74.00	-34.25	100	84	peak
3	7347.756	40.17	4.02	44.19	74.00	-29.81	100	48	peak
4	9908.654	38.76	6.79	45.55	74.00	-28.45	100	124	peak
N/A									

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Operation Mode: TX / IEEE 802.11a / CH Low **Test Date:** 2014-6-15

Temperature: 24°C **Tested by:** Charly.xue

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	5740.385	53.30	-6.31	46.99	74.00	-27.01	100	125	peak
2	11434.295	43.19	6.61	49.80	74.00	-24.20	100	32	peak
3	17237.179	41.49	9.29	50.78	74.00	-23.22	100	315	peak
N/A									

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	5767.628	61.14	-6.24	54.90	74.00	-19.10	100	265	peak
2	5767.628	55.14	-6.24	48.90	54.00	-5.10	100	51	AVG
3	11461.539	44.75	6.39	51.14	74.00	-22.86	100	216	peak
4	17237.179	44.75	9.29	54.04	74.00	-19.96	100	102	peak
N/A									

Operation Mode: TX / IEEE 802.11a / CH Mid **Test Date:** 2014-6-15

Temperature: 24°C **Tested by:** Charly.xue

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	5767.628	53.97	-6.24	47.73	74.00	-26.27	100	164	peak
2	11570.473	43.43	6.55	49.98	54.00	-4.02	100	45	AVG
3	11570.513	55.70	6.55	62.25	74.00	-11.75	100	79	peak
4	17346.154	40.92	9.81	50.73	74.00	-23.27	100	48	peak
N/A									

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	5767.628	50.43	-6.24	44.19	74.00	-29.81	100	62	peak
2	11516.026	41.42	6.18	47.60	74.00	-26.40	100	97	peak
3	17346.154	41.03	9.81	50.84	74.00	-23.16	100	49	peak
N/A									

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Operation Mode: TX / IEEE 802.11a / CH High **Test Date:** 2014-6-15

Temperature: 24°C **Tested by:** Charly.xue

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	5822.115	50.70	-6.08	44.62	74.00	-29.38	100	69	peak
2	11652.244	43.80	6.41	50.21	54.00	-3.79	100	198	AVG
3	11679.487	50.60	6.23	56.83	74.00	-17.17	100	44	peak
4	17455.128	40.37	9.68	50.05	74.00	-23.95	100	85	peak
N/A									

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	5822.115	51.45	-6.08	45.37	74.00	-28.63	100	97	peak
2	11570.513	42.43	6.55	48.98	74.00	-25.02	100	45	peak
3	17400.641	40.80	9.77	50.57	74.00	-23.43	100	11	peak
N/A									

Operation Mode: TX / draft 802.11n Standard-20 MHz mode / CH Low **Test Date:** 2014-6-15

Temperature: 24°C **Tested by:** Charly.xue

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	5740.385	51.54	-6.31	45.23	74.00	-28.77	100	64	peak
2	11461.539	42.57	6.39	48.96	74.00	-25.04	100	54	peak
3	17455.128	40.18	9.68	49.86	74.00	-24.14	100	48	peak
N/A									

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	11488.732	44.26	6.16	50.42	54.00	-3.58	100	92	AVG
2	11488.782	49.32	6.16	55.48	74.00	-18.52	100	156	peak
3	17237.179	40.55	9.29	49.84	74.00	-24.16	100	360	peak
N/A									

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Operation Mode: TX / draft 802.11n Standard-20 MHz mode / CH Mid **Test Date:** 2014-6-15

Temperature: 24°C **Tested by:** Charly.xue

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	5767.628	50.53	-6.24	44.29	74.00	-29.71	100	169	peak
2	11652.244	43.54	6.41	49.95	74.00	-24.05	100	94	peak
3	17482.372	41.46	9.64	51.10	74.00	-22.90	100	14	peak
N/A									

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	5767.628	50.62	-6.24	44.38	74.00	-29.62	100	264	peak
2	11570.513	50.30	6.55	56.85	74.00	-17.15	100	148	peak
3	11571.756	42.97	6.56	49.53	54.00	-4.47	100	45	AVG
4	17346.154	40.44	9.81	50.25	74.00	-23.75	100	67	peak
N/A									

Operation Mode: TX / draft 802.11n Standard-20 MHz mode / CH High **Test Date:** 2014-6-15

Temperature: 24°C **Tested by:** Charly.xue

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	5822.115	48.86	-6.08	42.78	74.00	-31.22	100	154	peak
2	11652.244	53.02	6.41	59.43	74.00	-14.57	100	8	peak
3	11654.487	42.94	6.39	49.33	54.00	-4.67	100	321	AVG
4	17482.372	40.15	9.64	49.79	74.00	-24.21	100	145	peak
N/A									

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	5822.115	48.46	-6.08	42.38	74.00	-31.62	100	95	peak
2	11652.244	51.51	6.41	57.92	74.00	-16.08	100	187	peak
3	11659.487	43.35	6.36	49.71	54.00	-4.29	100	54	AVG
4	17482.372	40.49	9.64	50.13	74.00	-23.87	100	247	peak
N/A									

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Operation Mode: TX / draft 802.11n Wide-40 MHz Channel mode / CH Low **Test Date:** 2014-6-15

Temperature: 24°C **Tested by:** Charly.xue

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	5740.385	49.36	-6.31	43.05	74.00	-30.95	100	154	peak
2	11488.782	42.67	6.16	48.83	74.00	-25.17	100	25	peak
3	17373.397	41.80	9.80	51.60	74.00	-22.40	100	255	peak
N/A									

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	5740.385	46.66	-6.31	40.35	74.00	-33.65	100	94	peak
2	11597.756	42.14	6.73	48.87	74.00	-25.13	100	48	peak
3	17373.397	41.07	9.80	50.87	74.00	-23.13	100	55	peak
N/A									

Operation Mode: TX / draft 802.11n Wide-40 MHz Channel mode / CH High **Test Date:** 2014-6-15

Temperature: 24°C **Tested by:** Charly.xue

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	5794.872	48.66	-6.17	42.49	74.00	-31.51	100	164	peak
2	11597.756	45.39	6.73	52.12	74.00	-21.88	100	6	peak
3	17400.641	40.66	9.77	50.43	74.00	-23.57	100	57	peak
N/A									

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	5794.872	45.52	-6.17	39.35	74.00	-34.65	100	126	peak
2	11625.000	44.55	6.59	51.14	74.00	-22.86	100	97	peak
3	17318.910	40.59	9.84	50.43	74.00	-23.57	100	46	peak
N/A									

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4.6.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.

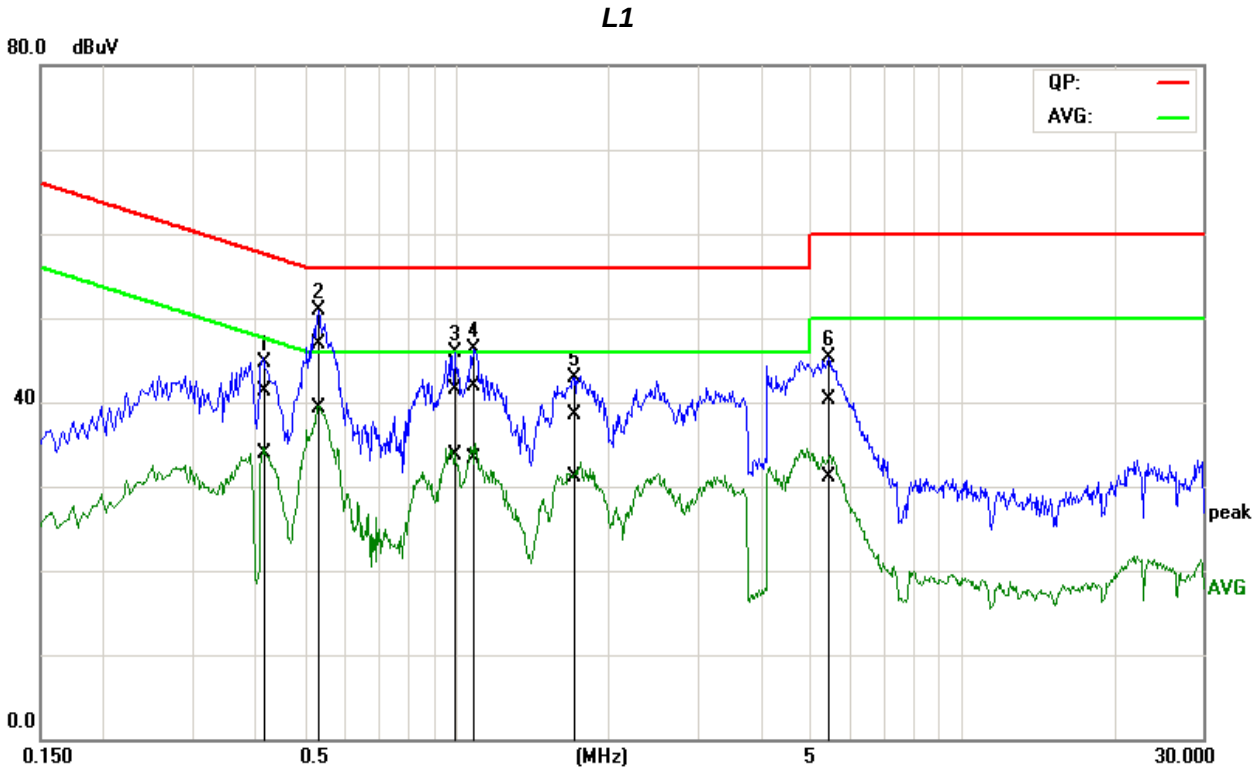
3.Repeat above procedures until all frequency measured were complete.

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

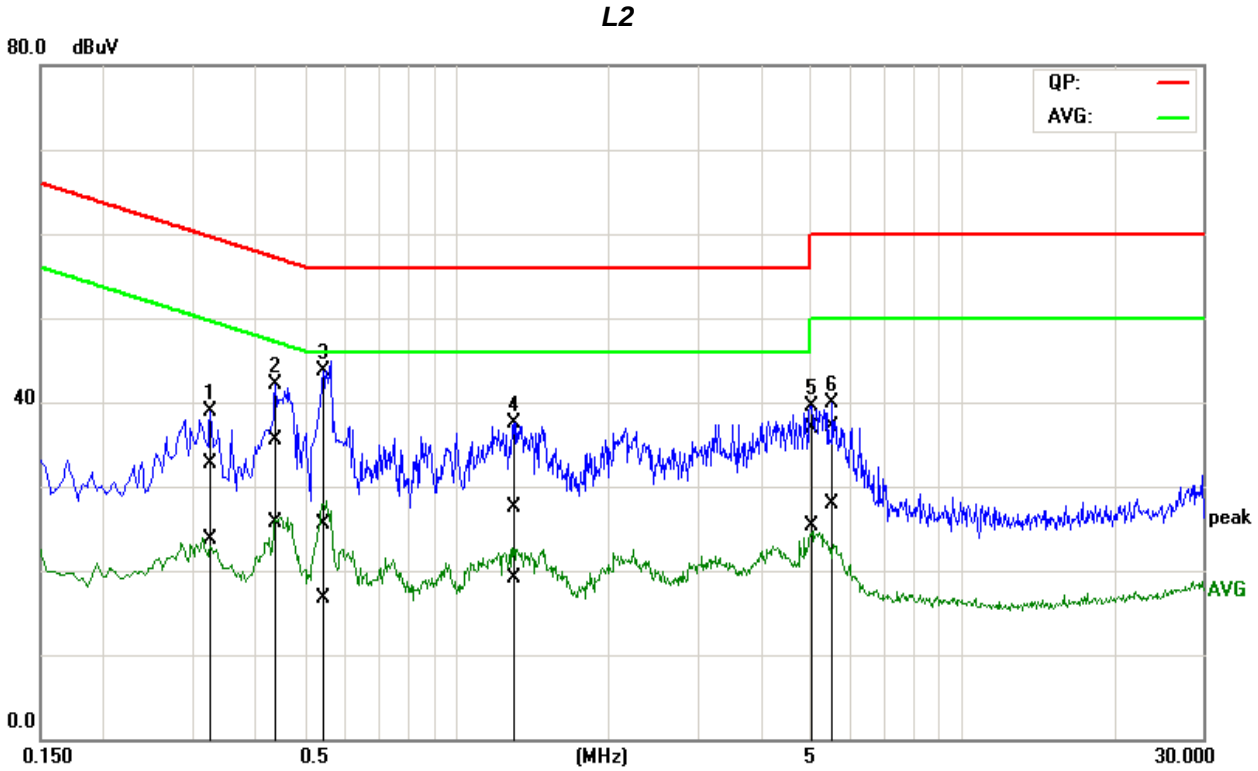
Job No.:	C140516R01	Date:	2014-6-24
Model:	AC650W	Time:	11:19:42
Standard:	FCC Class B	Temp.(C)/Hum.(%):	22(C)/48%
Test item:	Conduction test	Test By:	Charly.xue
Line:	L1	Test Voltage:	AC 120V/60Hz
Model:		Description:	



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	0.4174	21.47	14.17	19.77	41.24	33.94	57.50	47.50	-16.26	-13.56	Pass
2	0.5348	27.06	19.54	19.83	46.89	39.37	56.00	46.00	-9.11	-6.63	Pass
3	0.9775	21.61	13.79	19.84	41.45	33.63	56.00	46.00	-14.55	-12.37	Pass
4	1.0773	22.08	13.52	19.85	41.93	33.37	56.00	46.00	-14.07	-12.63	Pass
5	1.7186	18.67	11.20	19.90	38.57	31.10	56.00	46.00	-17.43	-14.90	Pass
6	5.4625	19.93	10.67	20.34	40.27	31.01	60.00	50.00	-19.73	-18.99	Pass

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

Job No.:	C140516R01	Date:	2014-6-24
Model:	AC650W	Time:	11:23:47
Standard:	FCC Class B	Temp.(C)/Hum.(%):	22(C)/48%
Test item:	Conduction test	Test By:	Charly.xue
Line:	L2	Test Voltage:	AC 120V/60Hz
Model:		Description:	



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	0.3263	13.05	3.88	19.73	32.78	23.61	59.54	49.54	-26.76	-25.93	Pass
2	0.4344	15.76	5.94	19.80	35.56	25.74	57.17	47.17	-21.61	-21.43	Pass
3	0.5471	5.72	-3.14	19.85	25.57	16.71	56.00	46.00	-30.43	-29.29	Pass
4	1.3001	7.55	-0.78	19.87	27.42	19.09	56.00	46.00	-28.58	-26.91	Pass
5	5.0555	16.60	5.06	20.31	36.91	25.37	60.00	50.00	-23.09	-24.63	Pass
6	5.5358	16.77	7.51	20.35	37.12	27.86	60.00	50.00	-22.88	-22.14	Pass

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