FCC 47 CFR PART 15 SUBPART C

TEST REPORT

For

Product Name: 4K Media Player
Brand Name: LYNX
Model No.: 850-046445
Series Model.: N/A
FCC ID: 2ABMA-850-046445
Test Report Number:
C170811R01-RPW

Issued for

Lynx Innovation Limited
Unit 8A, 331 Rosedale Road, Albany 0632, North Shore City , New Zealand

Issued by

Compliance Certification Services Inc.
Kun shan Laboratory
No.10 Weiye Rd., Innovation park, Eco&Tec,
Development Zone, Kunshan City, Jiangsu, China
TEL: 86-512-57355888
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TESTING CERT #2541.01

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Revision History

Rev.	Issue Date	Report NO.	Effect Page	Contents
00	September 12, 2017	C170811R01-RPW	ALL	N/A

1. TEST RESULT CERTIFICATION

Product Name:	4K Media Player
Trade Name:	LYNX
Model Name.:	850-046445
Series Model:	N/A
Applicant Discrepancy:	Initial
Device Category:	Mobile unit
Date of Test:	September 4, 2017~September 8, 2017
Applicant:	**Lynx Innovation Limited** Unit 8A, 331 Rosedale Road, Albany 0632, North Shore City , New Zealand
Manufacturer:	**Jiaxing Lynx Displays Limited** 1F,Bldg#7,No.3288,Zhongshan Xi Road,Xiuzhou Industrial Park,Jiaxing, Zhejiang,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 C63.10: 2013 and the energy emitted by the sample EUT tested as described in this report is in compliance with the requirements of FCC Rules Part 15.207, 15.209, 15.247.

The test results of this report relate only to the tested sample EUT identified in this report.

Approved by:

Jeff.Fang
RF Manager
Compliance Certification Service Inc.

Tested by:

James.Yan
Test Engineer
Compliance Certification Service Inc.

2. EUT DESCRIPTION

Product Name:	4K Media Player
Brand Name:	LYNX
Model Name:	850-046445
Series Model:	N/A
Model Discrepancy:	N/A
EUT Power Rating:	DC 12V
Frequency Range:	IEEE 802.11b/g: 2412MHz to 2462 MHz IEEE 802.11n HT20: 2412MHz to 2462 MHz
peak Transmit Power:	IEEE 802.11b mode: 18.27dBm IEEE 802.11g mode: 23.39dBm IEEE 802.11n HT20 mode: 23.04dBm
Modulation Technique:	IEEE802.11b mode: DSSS (1,2,5.5 and 11 Mbps) IEEE802.11g mode: DSSS /OFDM (6,9,12,18,24,36,48 and 54 Mbps) IEEE802.11n HT20 mode: OFDM (MCS0~MCS7)
Number of Channels:	IEEE 802.11b/g mode: 11 Channels IEEE 802.11n HT20 : 11 Channels
Antenna Specification:	Dipole antenna Gain: 2 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: 2ABMA-850-046445*** filing to comply with Section 15.207, 15.209 and 15.247 of the FCC Part 15, Subpart C Rules.

3. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.10 2013 and FCC CFR 47 15.207, 15.209 and 15.247.

3.1. EUT CONFIGURATION

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

3.2. EUT EXERCISE

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

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

3.3. GENERAL TEST PROCEDURES

Conducted Emissions

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 13.1.4.1 of ANSI C63.10 2013 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

Under 1GHz

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 C63.10:2013.

Above 1GHz

The EUT is placed on a turn table, which is 1.5 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 C63.10:2013.

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 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 worst-case data rates:
IEEE802.11b mode:

Channel Low (2412MHz)

Channel Mid (2437MHz)

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

IEEE802.11g mode:

Channel Low (2412MHz)

Channel Mid (2437MHz)

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

IEEE 802.11n HT20 MHz Channel mode:

Channel Low (2412MHz)

Channel Mid (2437MHz)

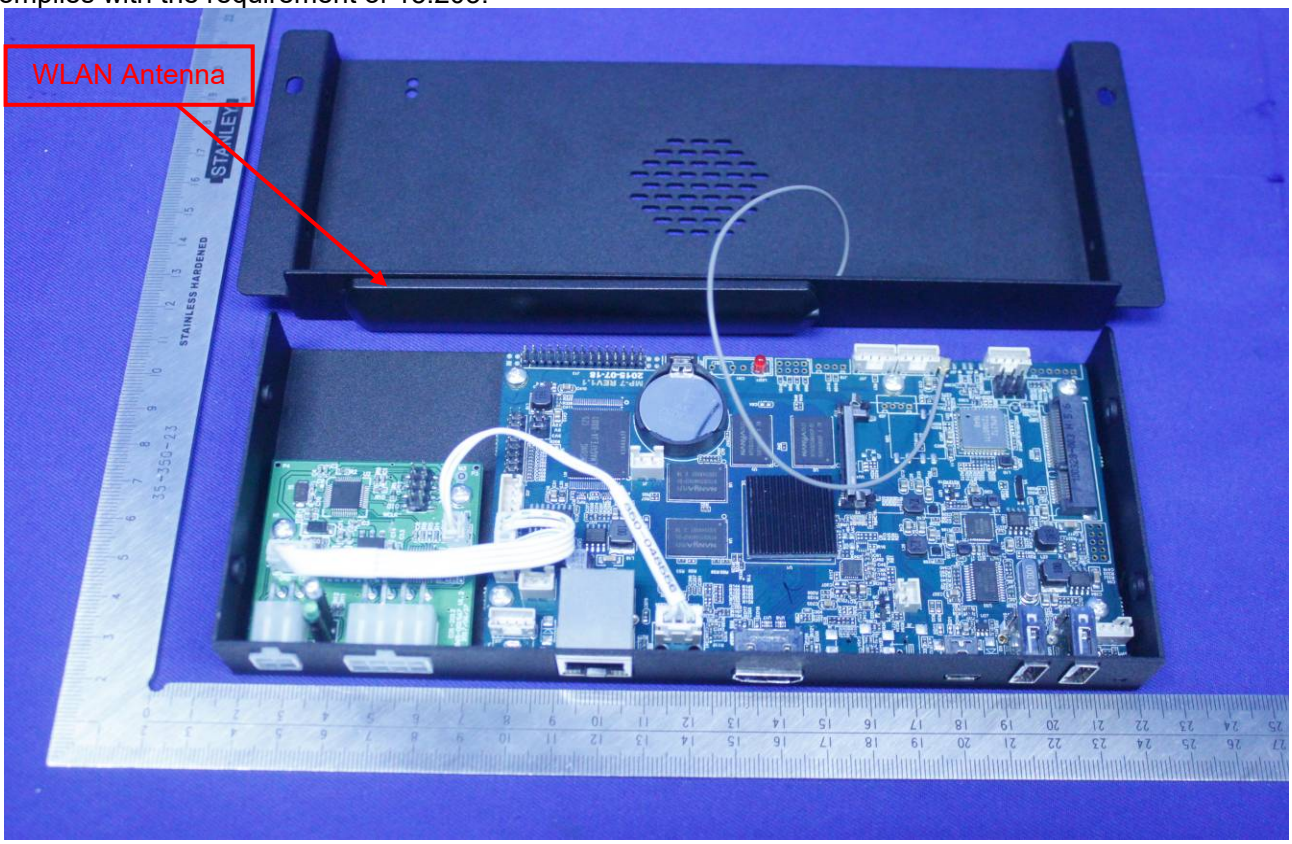
Channel High (2462MHz) with MCS0 data rate was chosen for full testing.

3.6.ANTENNA DESCRIPTION

According to FCC 47 CFR 15.203

“an intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can be used with the device. The use of a permanently attached or an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section”

As the photo below, the EUT use a unique coupling to the intentional radiator attached antenna, so the EUT complies with the requirement 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 Data**	**Calibration Due**
Spectrum Analyzer	Agilent	E4446A	MY44020154	2017-9-4	2018-9-3
Spectrum Analyzer	RS	FSU26	200789	2017-7-20	2018-7-19
Power meter	Anritsu	ML2495A	1445010	2017-4-26	2018-4-25
Power sensor	Anritsu	MA2411B	1339220	2017-4-26	2018-4-25
Power SPLITTER	Mini-Circuits	ZN2PD-9G	SF078500430	N.C.R	N.C.R
DC Power Supply	AGILENT	E3632A	MY50340053	N.C.R	N.C.R
Temp. / Humidity Gauge	Anymetre	TH603	CCS007	2016-11-1	2017-10-31
Test Software			EZ-EMC		

977 Chamber					
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Data**	**Calibration Due**
Spectrum Analyzer	Agilent	E4446A	MY44020154	2017-9-4	2018-9-3
Spectrum Analyzer	RS	FSU26	200789	2017-7-20	2018-7-19
EMI Test Receiver	R&S	ESCI	101378	2017-1-5	2018-1-4
Pre-Amplfier	MITEQ	AMF-6F-260400-40-8P	1037496	2016-11-15	2017-11-14
Amplifier	MITEQ	JS41-00101800-32-10P	1675713	2017-7-20	2018-7-19
Broad-Band Horn Antenna	SCHWARZBECK	BBHA 9170	9170-515	2017-3-6	2018-3-5
Bilog Antenna	Sunol	JB1	A062604	2017-5-27	2018-5-26
Bilog Antenna	Sunol	JB1	A110204-1	2017-5-27	2018-5-26
Loop Antenna	Hengweiyi	39501C	2014012	2017-1-5	2018-1-4
Horn-antenna	SCHWARZBECK	9120D	D:266	2017-2-28	2018-2-27
Horn-antenna	SCHWARZBECK	9120D	D:267	2016-11-10	2017-11-9
Turn Table	CT	CT123	4165	N.C.R	N.C.R
Antenna Tower	CT	CTERG23	3256	N.C.R	N.C.R
Controller	CT	CT1OO	95637	N.C.R	N.C.R
Test Software			EZ-EMC		

Conducted Emission					
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Data**	**Calibration Due**
EMI TEST RECEIVER	R&S	ESCI	100781	2017-2-28	2018-2-27
V (V-LISN)	SCHWARZBECK	NNLK 8129	8129-143	2016-11-1	2017-10-31
TWO-LINE V-NETWORK	R&S	ENV216	101604	2016-11-1	2017-10-31
Pulse LIMITER	R&S	ESH3-Z2	100524	2017-1-5	2018-1-4
Test Software			EZ-EMC		

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

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

5. FACILITIES AND ACCREDITATIONS

5.1.FACILITIES

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

Kunshan city JiangSu, (215300), CHINA.

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.10 2013 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

FCC –Designation Number: CN1172.

Compliance Certification Services Inc. Kun shan Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files and the Designation Number: CN1172.

5.4.TABLE OF ACCREDITATIONS AND LISTINGS

Country	Agency	Scope of Accreditation	Logo
USA	A2LA	47 CFR FCC Part 15/18 (using ANSI C63.10 :2013)；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	CN1172
Japan	VCCI	3/10 meter Sites and conducted test sites to perform radiated/conducted measurements	VCCI R-1600 C-1707 G-216

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

6. SETUP OF EQUIPMENT UNDER TEST

6.1.SETUP CONFIGURATION OF EUT

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

6.2.SUPPORT EQUIPMENT

No.	Device Type	Brand	Model	Series No.	FCC ID
1.	N/A	N/A	N/A	N/A	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.*

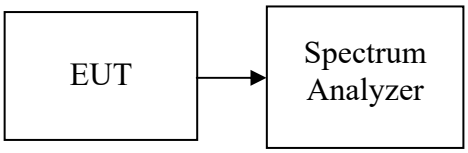
7. FCC PART 15.247 REQUIREMENTS

7.1.6DB BANDWIDTH

LIMIT

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

Test Configuration



TEST PROCEDURE

Set the spectrum analyzer as RBW = 100 kHz, VBW = 300 kHz, Sweep = auto couple.

TEST RESULTS

No non-compliance noted

Test Data

IEEE 802.11b mode

Channel	Frequency (MHz)	Bandwidth (MHz)	Limit (kHz)	Result
Low	2412	9.903	>500	PASS
Mid	2437	9.558		PASS
High	2462	9.076		PASS

IEEE 802.11g mode

Channel	Frequency (MHz)	Bandwidth (MHz)	Limit (kHz)	Result
Low	2412	15.129	>500	PASS
Mid	2437	15.105		PASS
High	2462	15.160		PASS

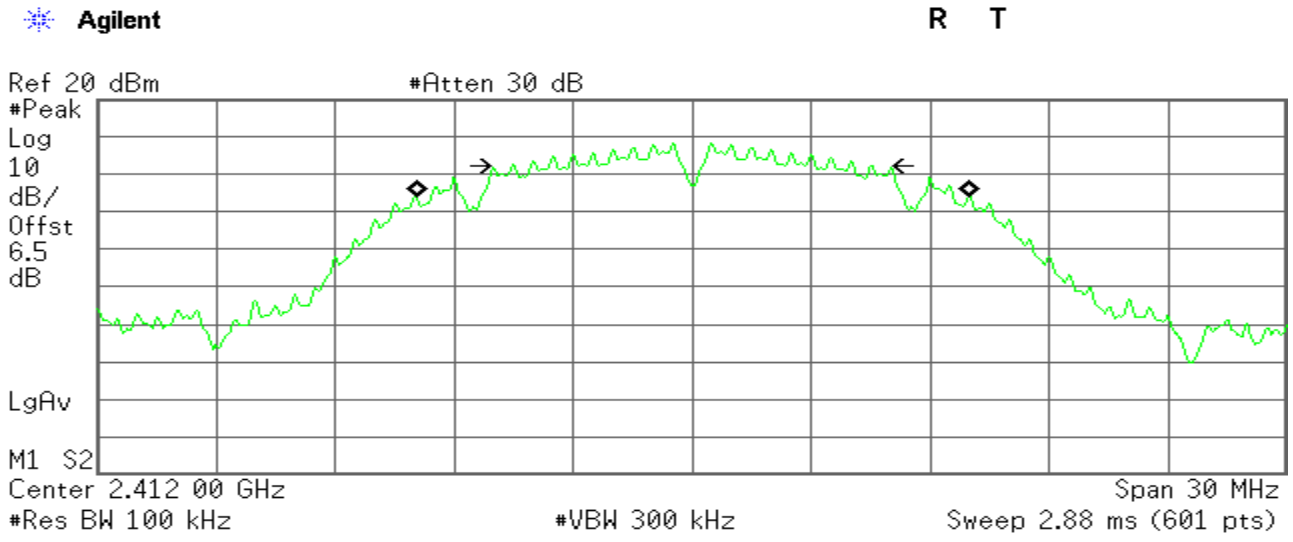
IEEE 802.11n HT20 mode

Channel	Frequency (MHz)	Bandwidth (MHz)	Limit (kHz)	Result
Low	2412	15.161	>500	PASS
Mid	2437	15.162		PASS
High	2462	15.108		PASS

Test Plot

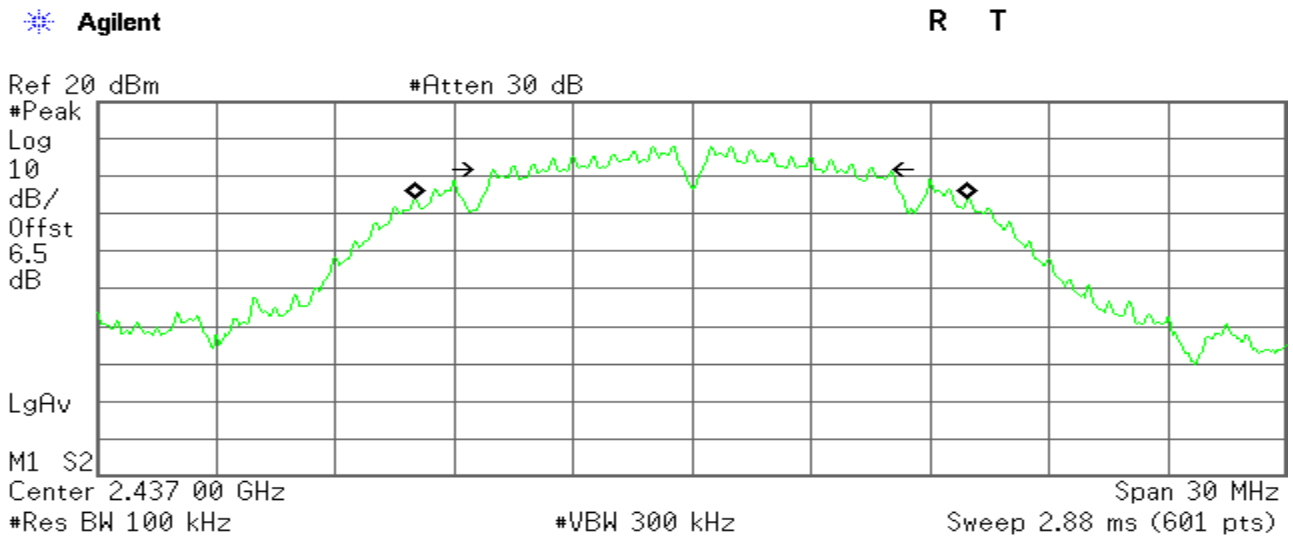
IEEE 802.11b MODE

6dB Bandwidth (CH Low)



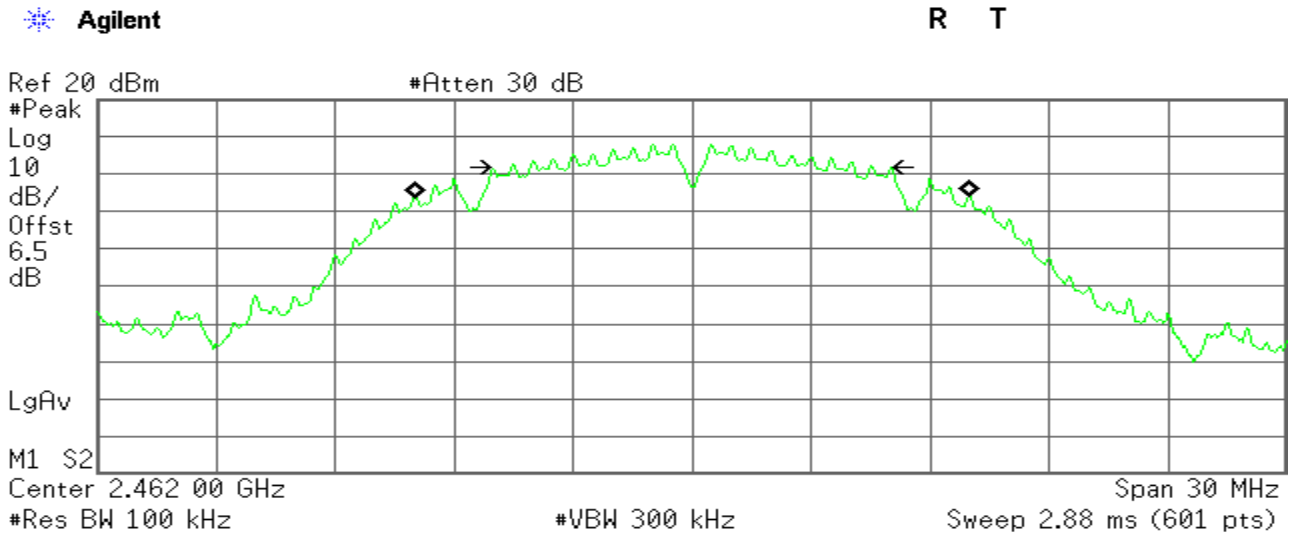
Transmit Freq Error 6.713 kHz
x dB Bandwidth 9.093 MHz

6dB Bandwidth (CH Mid)



Transmit Freq Error -4.155 kHz
x dB Bandwidth 9.558 MHz

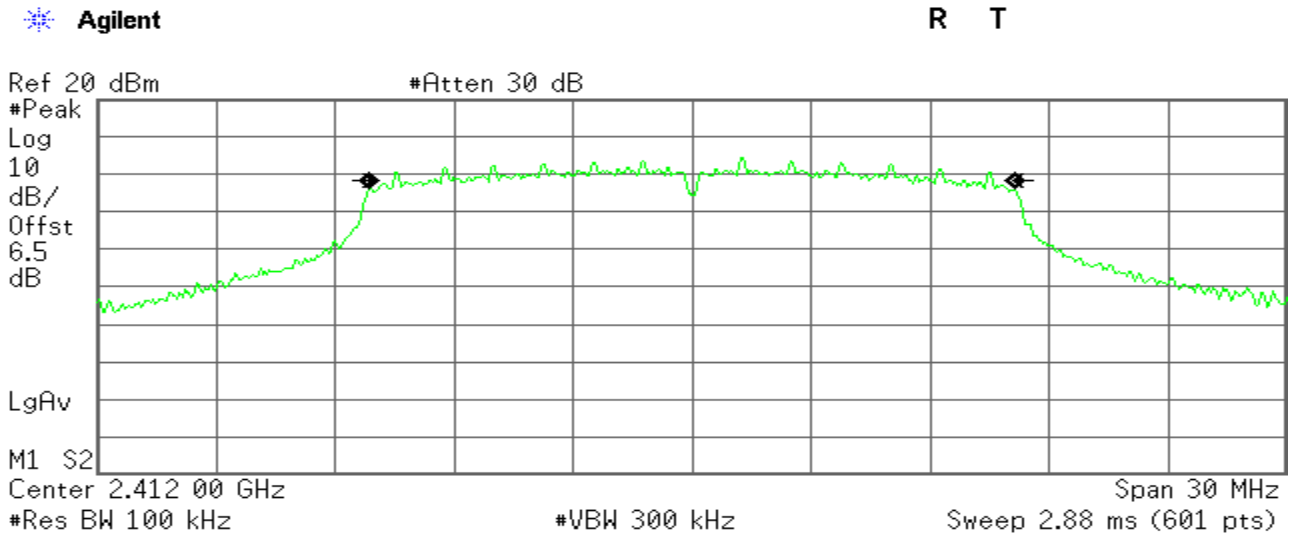
6dB Bandwidth (CH High)



Transmit Freq Error -3.542 kHz
x dB Bandwidth 9.076 MHz

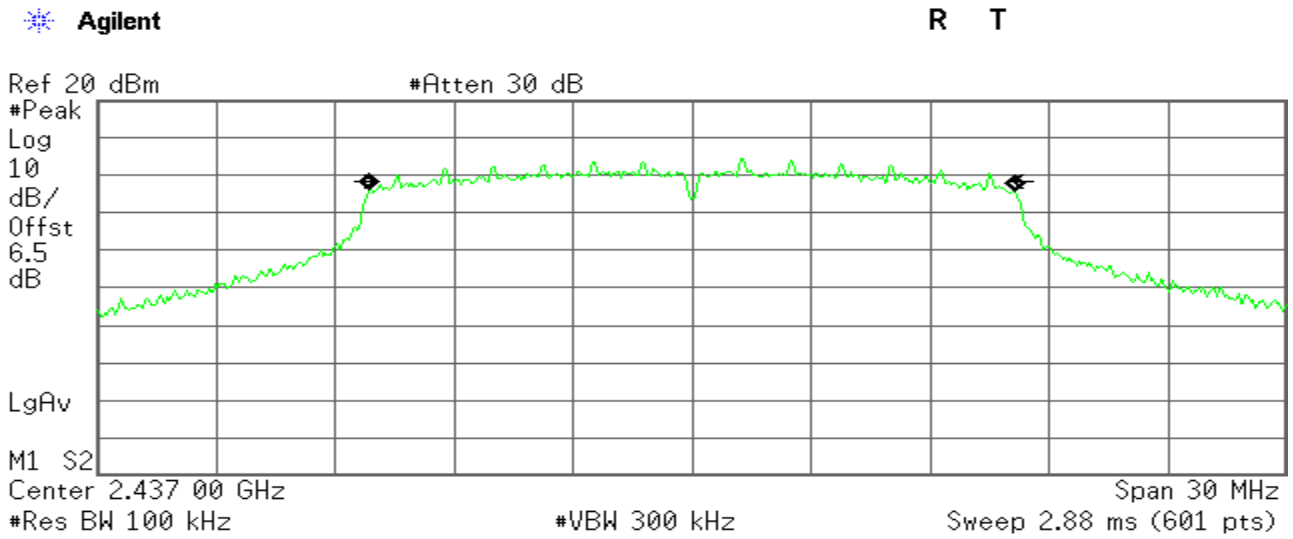
IEEE 802.11g MODE

6dB Bandwidth (CH Low)



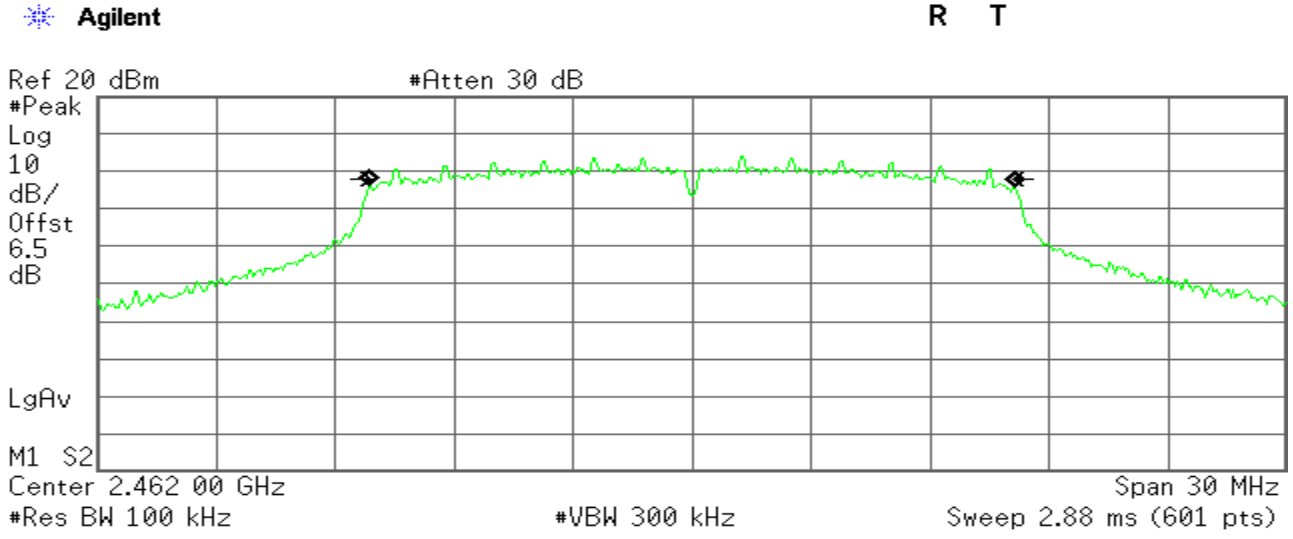
Transmit Freq Error 6.795 kHz
x dB Bandwidth 15.129 MHz

6dB Bandwidth (CH Mid)



Transmit Freq Error 3.226 kHz
x dB Bandwidth 15.105 MHz

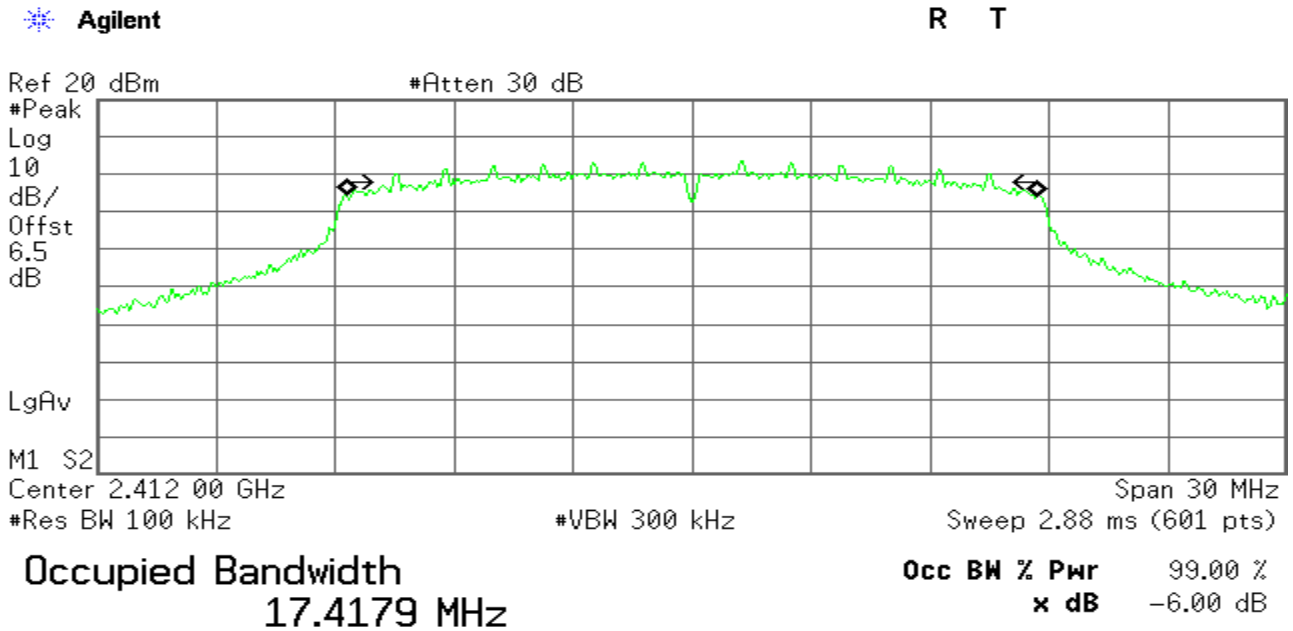
6dB Bandwidth (CH High)



Transmit Freq Error -1.945 kHz
x dB Bandwidth 15.160 MHz

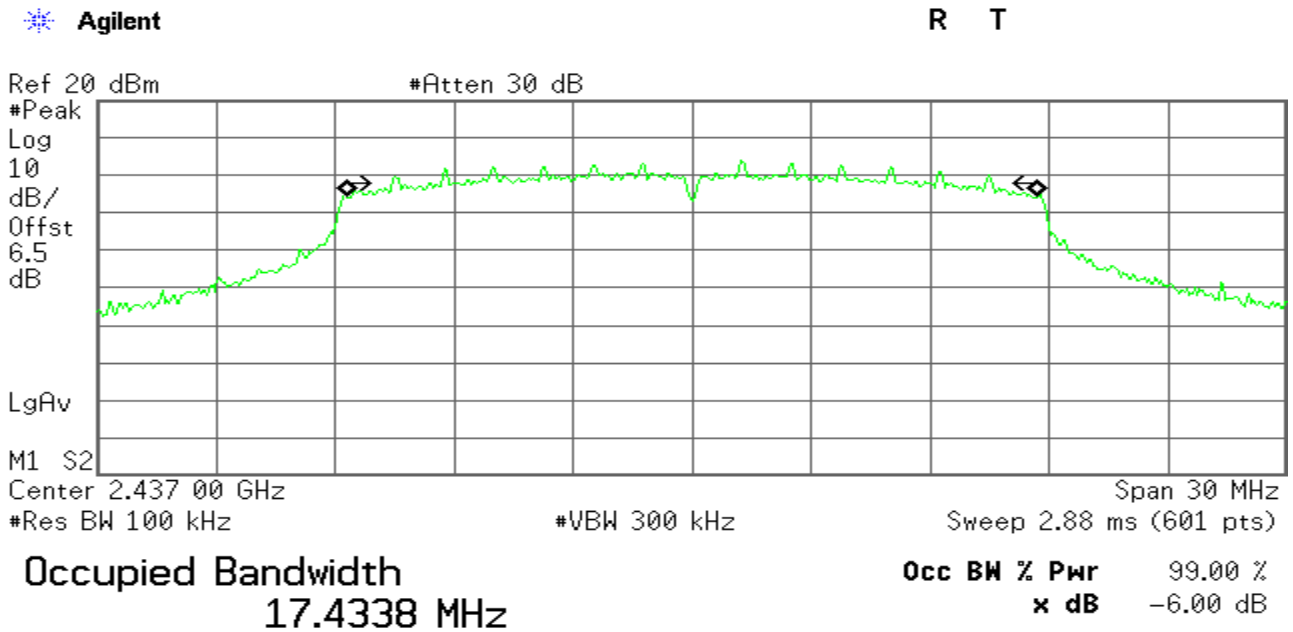
IEEE 802.11n HT20 mode

6dB Bandwidth (CH Low)



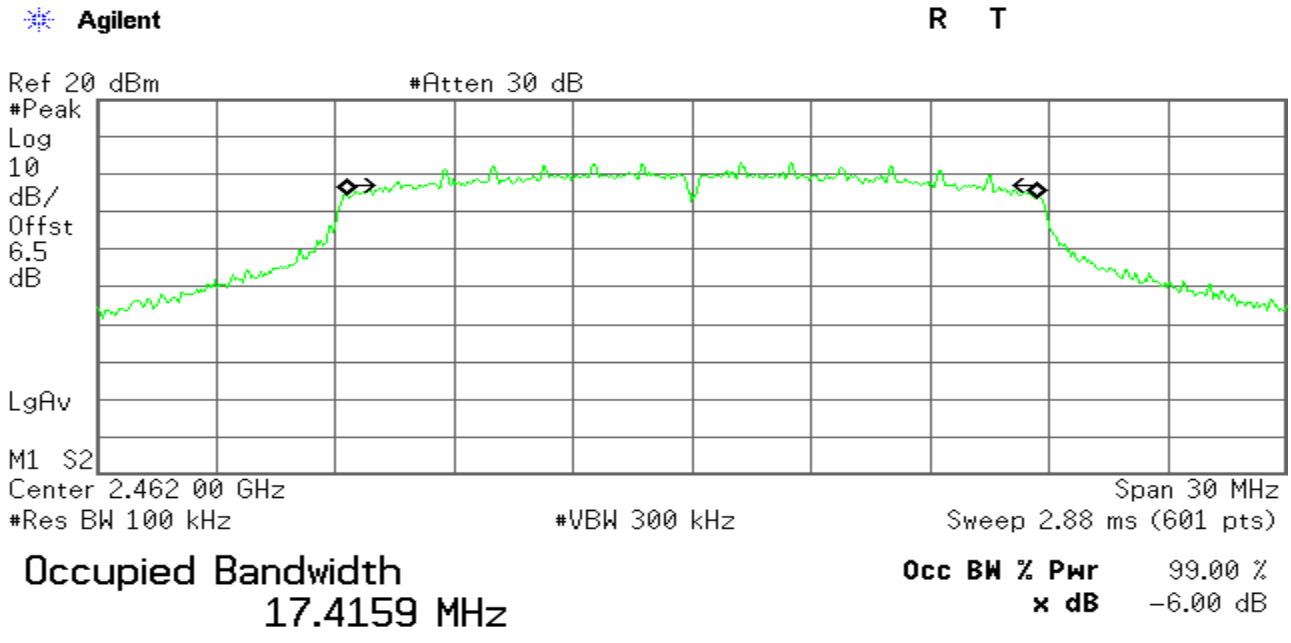
Transmit Freq Error 6.734 kHz
x dB Bandwidth 15.161 MHz

6dB Bandwidth (CH Mid)



Transmit Freq Error 3.047 kHz
x dB Bandwidth 15.162 MHz

6dB Bandwidth (CH High)



Transmit Freq Error −10.915 kHz
x dB Bandwidth 15.108 MHz

7.2.PEAK POWER

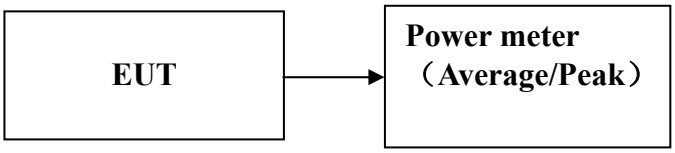
LIMIT

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

1.According to §15.247(b)(3), for systems using digital modulation in the bands of 902-928 MHz, 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 6dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6dBi 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 6dBi.

Test Configuration



TEST PROCEDURE

1. The EUT transmitter output is connected to the Power meter.
   The Power meter is set to the peak power detection.
2. The testing follows the Measurement Procedure FCC KDB No. 558074 D01 DTS Meas. Guidance v04. 9.1.3 PKPM1 Peak-reading power meter method.

TEST RESULTS

No non-compliance noted

Test Data

Test mode: IEEE 802.11b mode

Channel	Frequency (MHz)	Peak Output Power (dBm)	Average Output Power (dBm)	Limit (dBm)
Low	2412	18.27	15.84	30.00
Mid	2437	18.20	15.78	30.00
High	2462	18.14	15.77	30.00

Test mode: IEEE 802.11g mode

Channel	Frequency (MHz)	Peak Output Power (dBm)	Average Output Power (dBm)	Limit (dBm)
Low	2412	23.36	13.96	30.00
Mid	2437	23.39	14.03	30.00
High	2462	23.34	14.02	30.00

Test mode: IEEE 802.11n HT20 mode

Channel	Frequency (MHz)	Peak Output Power (dBm)	Average Output Power (dBm)	Limit (dBm)
Low	2412	23.04	13.50	30.00
Mid	2437	23.02	13.45	30.00
High	2462	22.93	13.41	30.00

Note:Duty factor has been offseted with cableloss

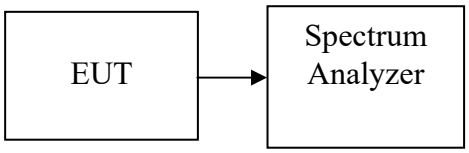
7.3.PEAK POWER SPECTRAL DENSITY

LIMIT

1.According to §15.247(e), for digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

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

Test Configuration



TEST PROCEDURE

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

Test Data

Test mode: IEEE 802.11b mode

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Result
Low	2412	-5.05	8.00	PASS
Mid	2437	-5.65	8.00	PASS
High	2462	-5.15	8.00	PASS

Test mode: IEEE 802.11g mode

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Result
Low	2412	-9.75	8.00	PASS
Mid	2437	-9.73	8.00	PASS
High	2462	-9.35	8.00	PASS

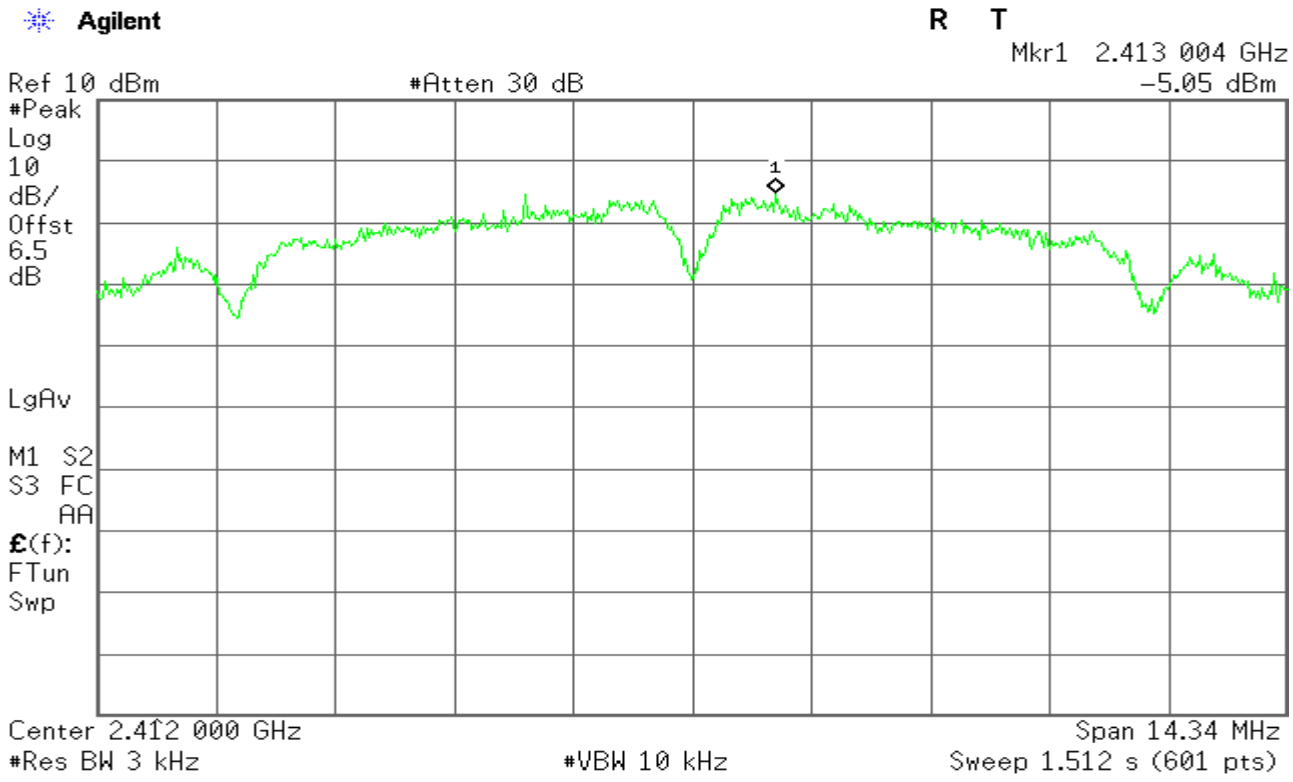
Test mode: IEEE 802.11n HT20 mode

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Result
Low	2412	-10.35	8.00	PASS
Mid	2437	-10.05	8.00	PASS
High	2462	-10.53	8.00	PASS

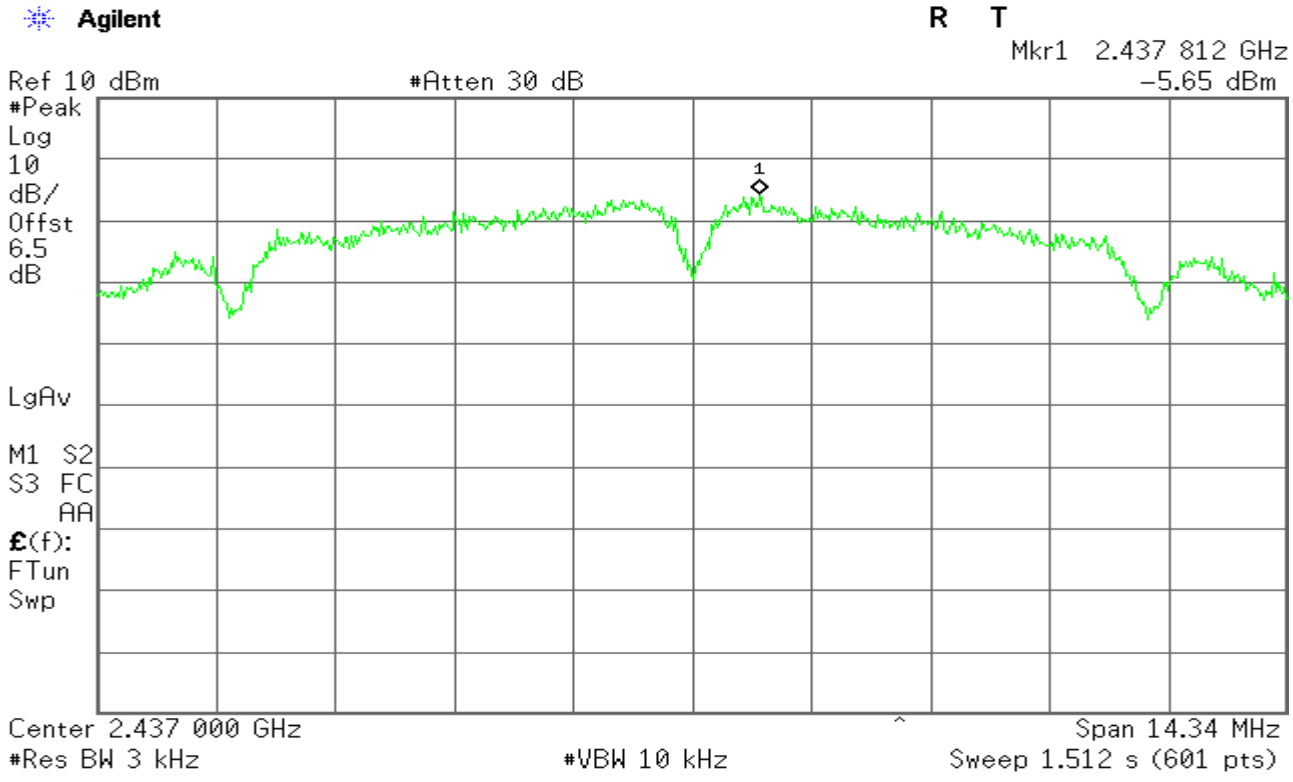
Test Plot

IEEE 802.11b mode

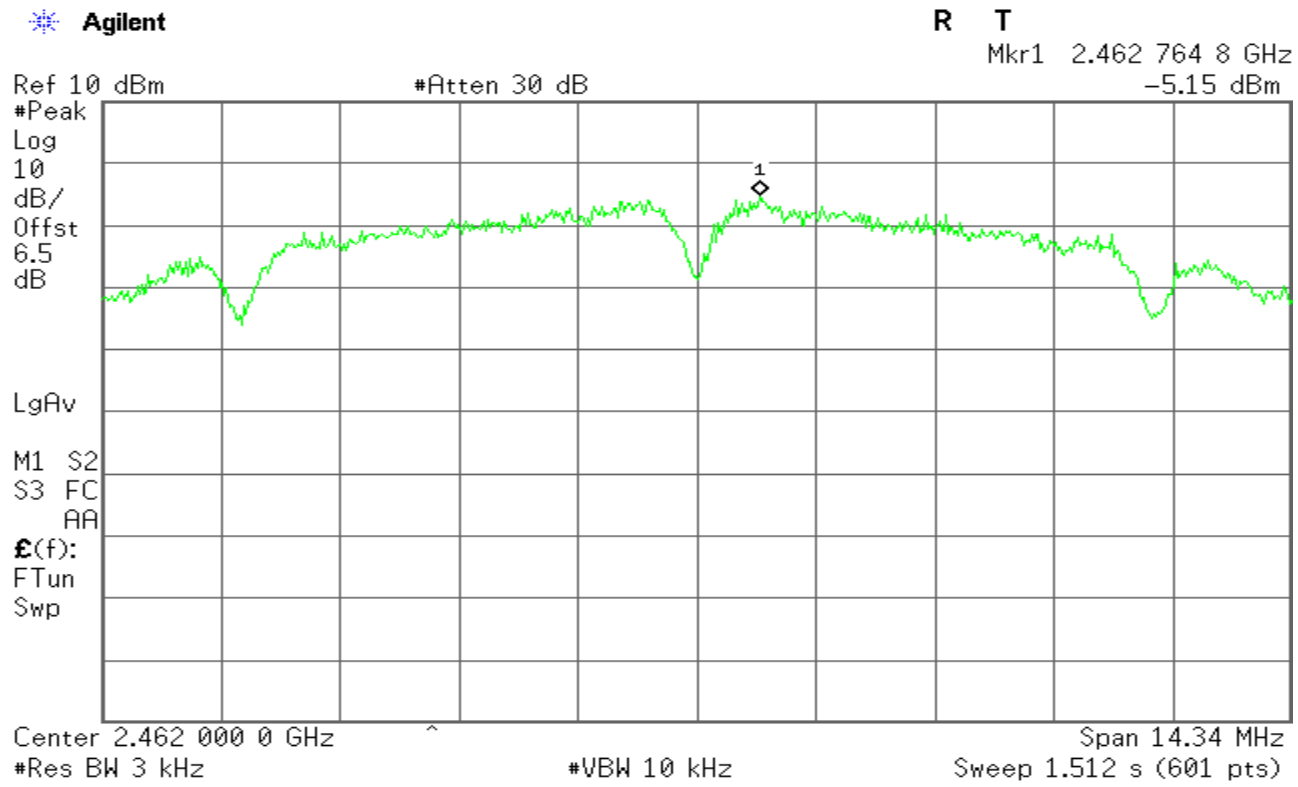
PPSD (CH Low)



PPSD(CH Mid)

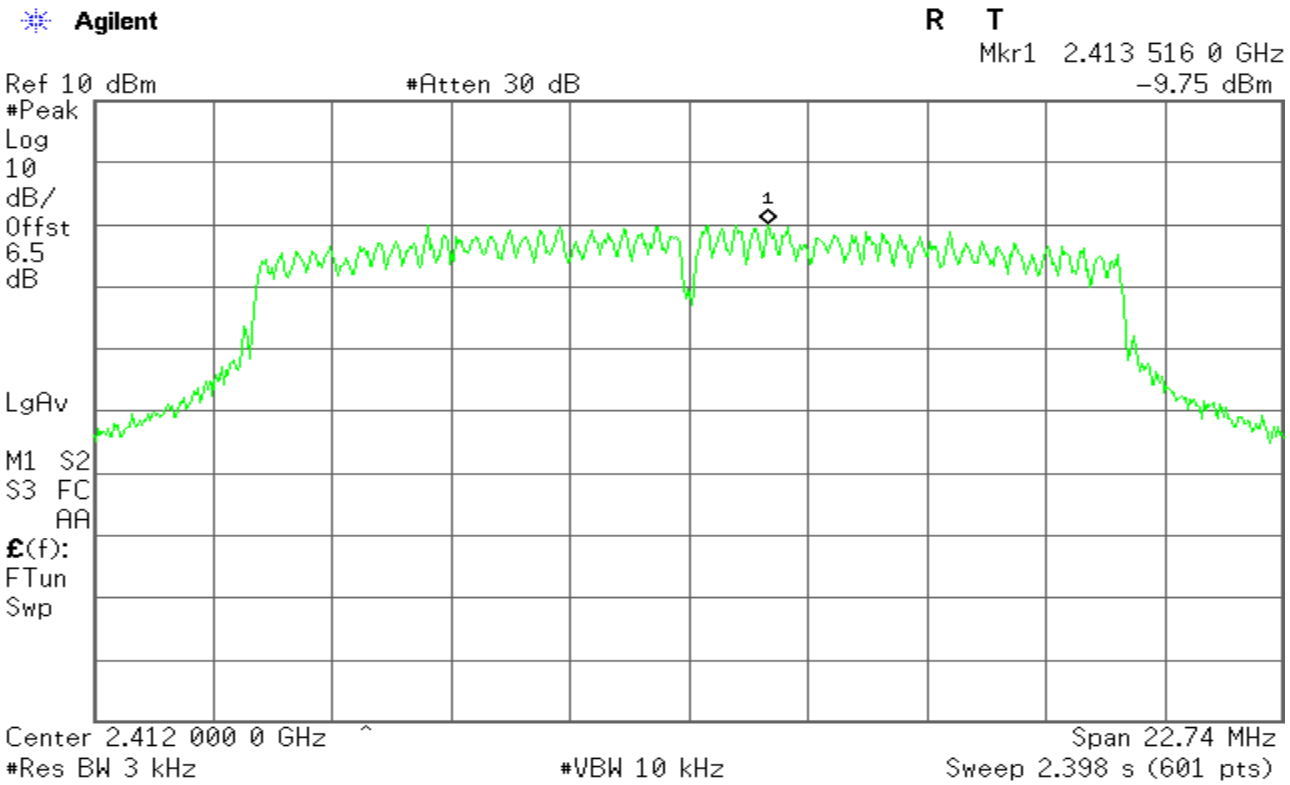


PPSD (CH High)

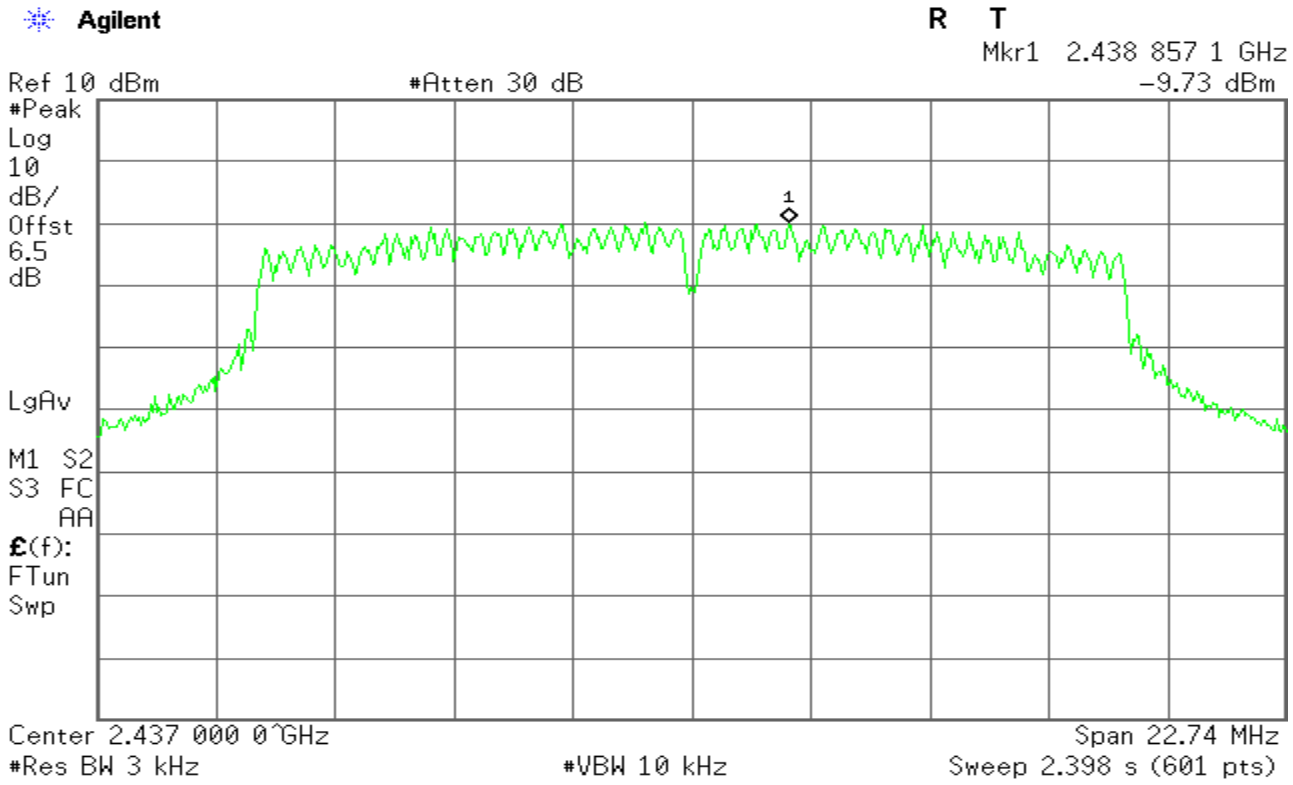


IEEE 802.11g mode

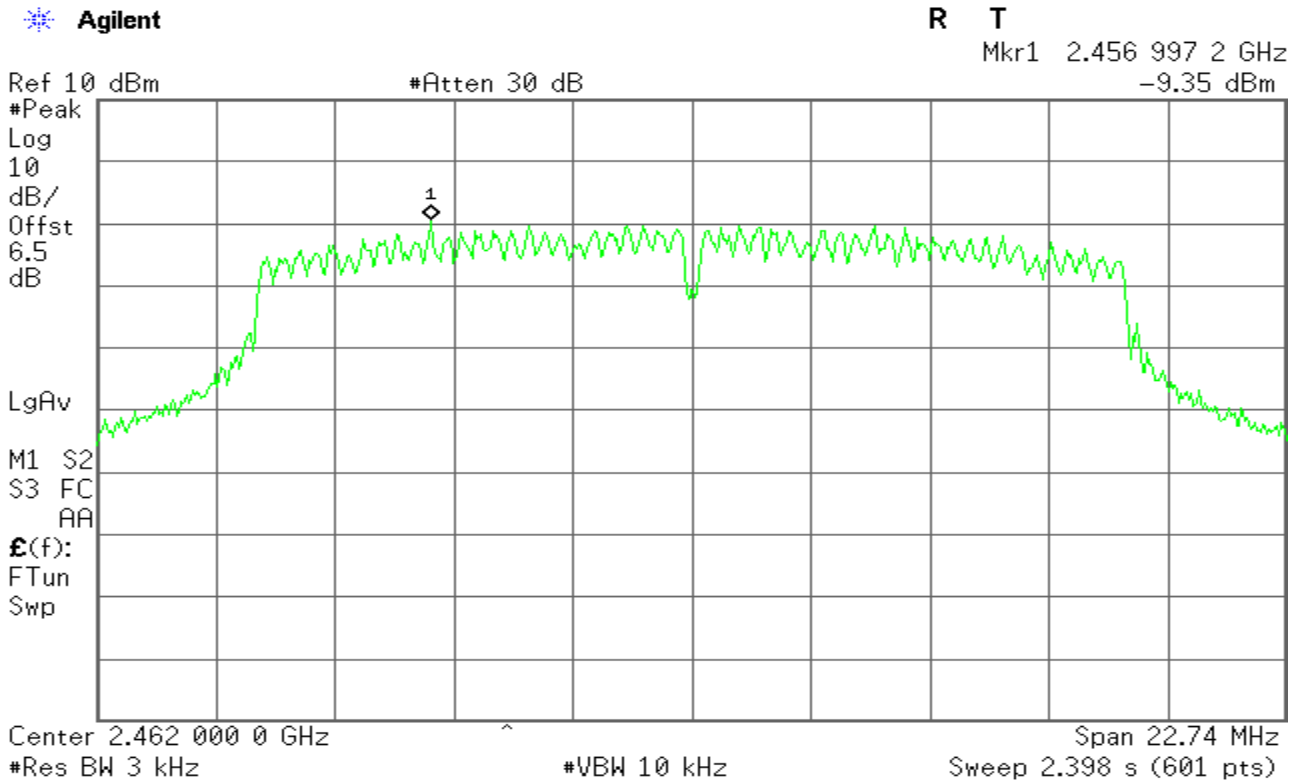
PPSD (CH Low)



PPSD (CH Mid)

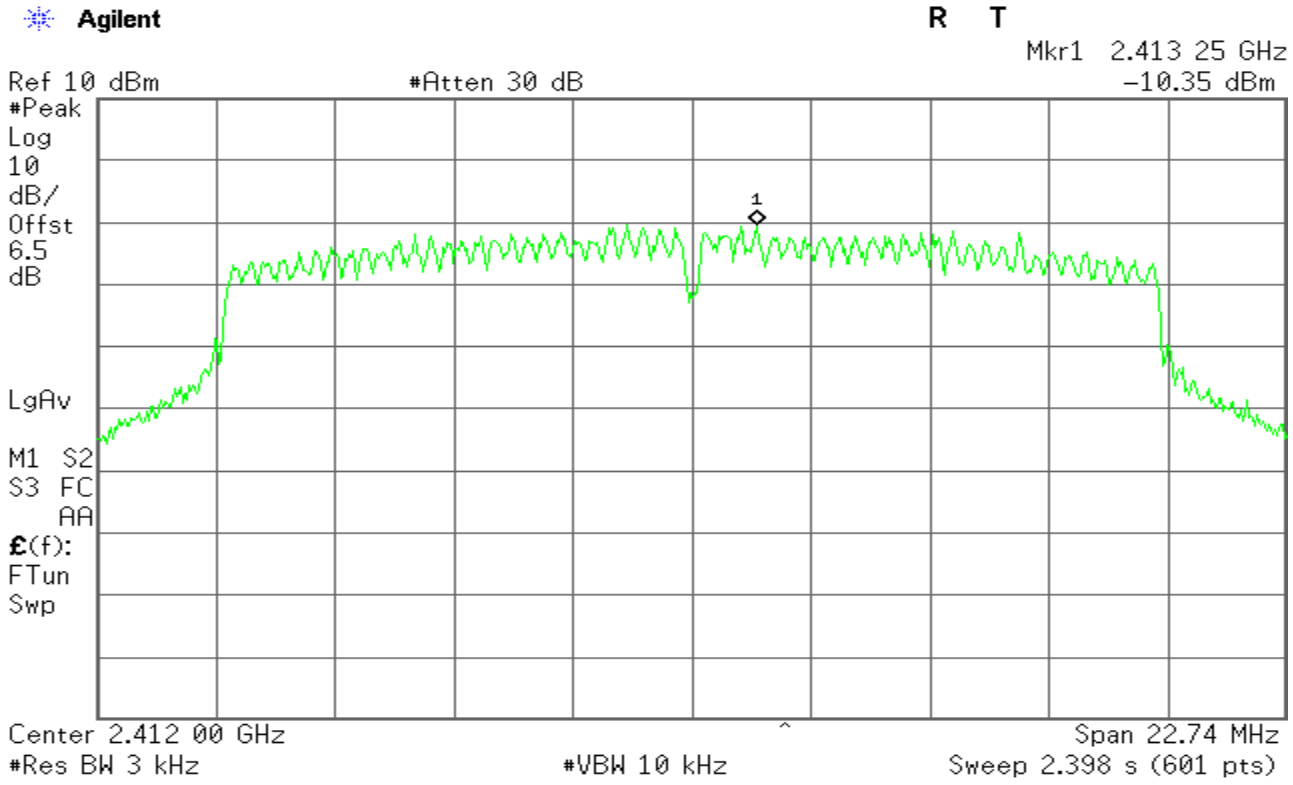


PPSD (CH High)

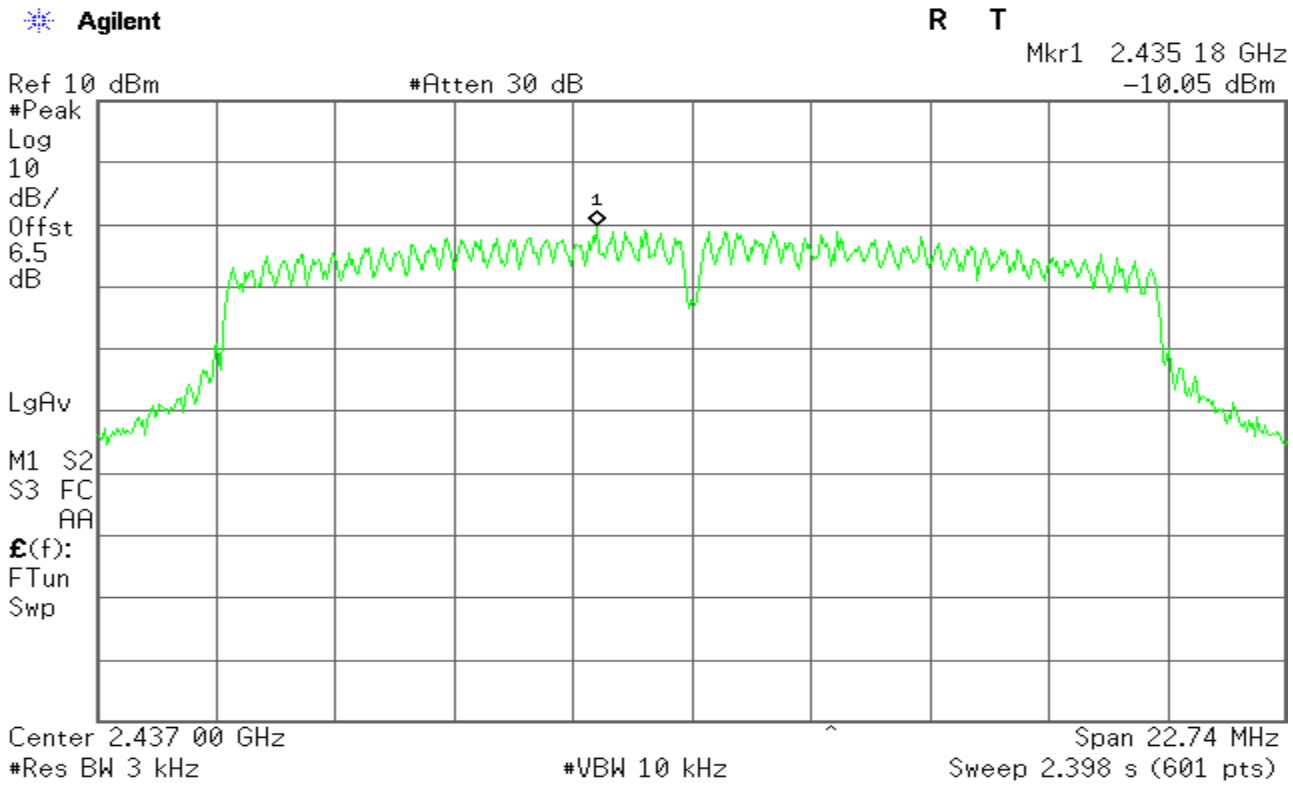


IEEE 802.11n HT20 mode

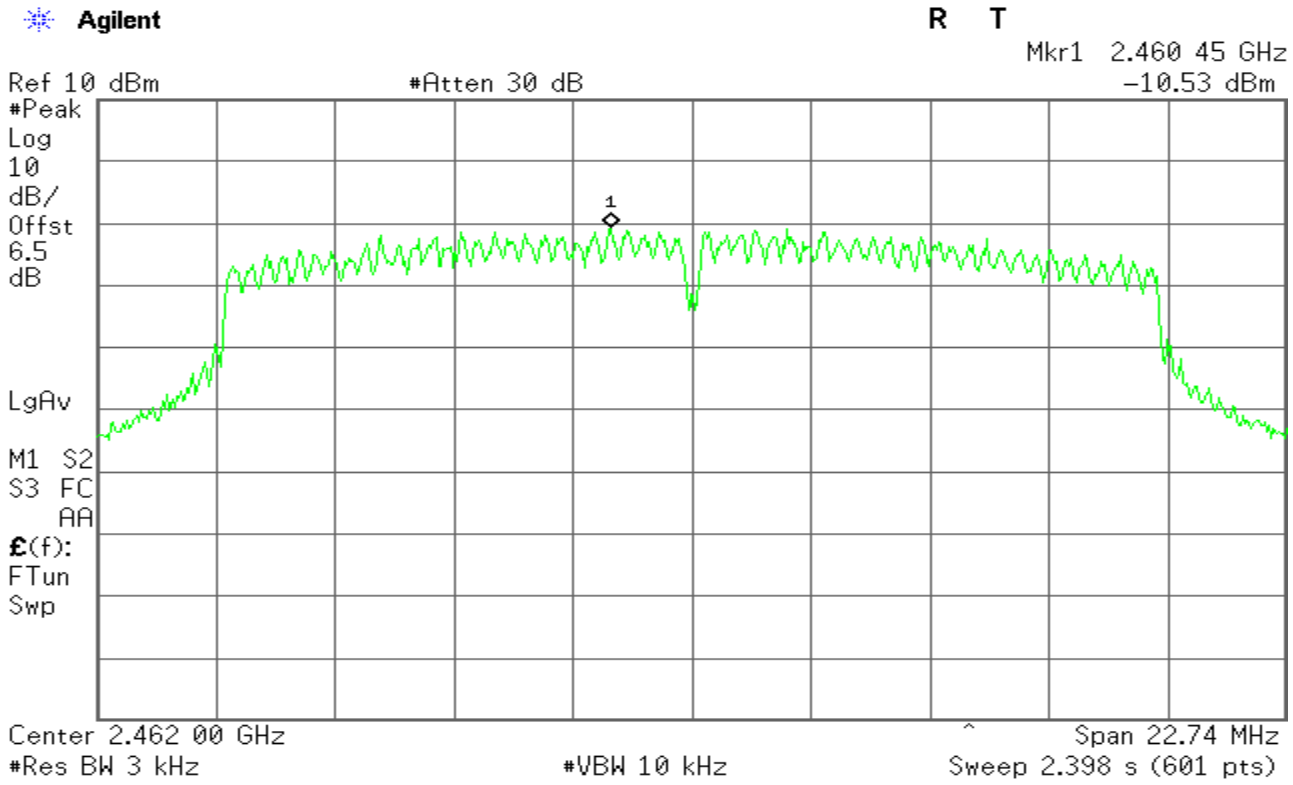
PPSD (CH Low)



PPSD (CH Mid)



PPSD (CH High)

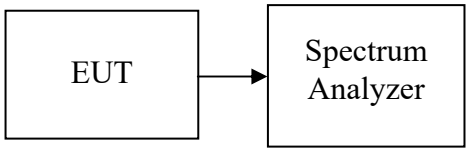

Agilent
R T
Mkr1 2.460 45 GHz
-10.53 dBm
Ref 10 dBm
#Atten 30 dB
#Peak
Log
10
dB/
Offst
6.5
dB
LgAv
M1 S2
S3 FC
AA
£(f):
FTun
Swp
1
Center 2.462 00 GHz
#Res BW 3 kHz
#VBW 10 kHz
Span 22.74 MHz
Sweep 2.398 s (601 pts)

7.4.SPURIOUS EMISSIONS
Conducted Measurement

LIMIT

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

Test Configuration



TEST PROCEDURE

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

The transmitter output is connected to the spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

Measurements are made over the 30MHz to 25GHz range with the transmitter set to the lowest, middle, and highest channels.

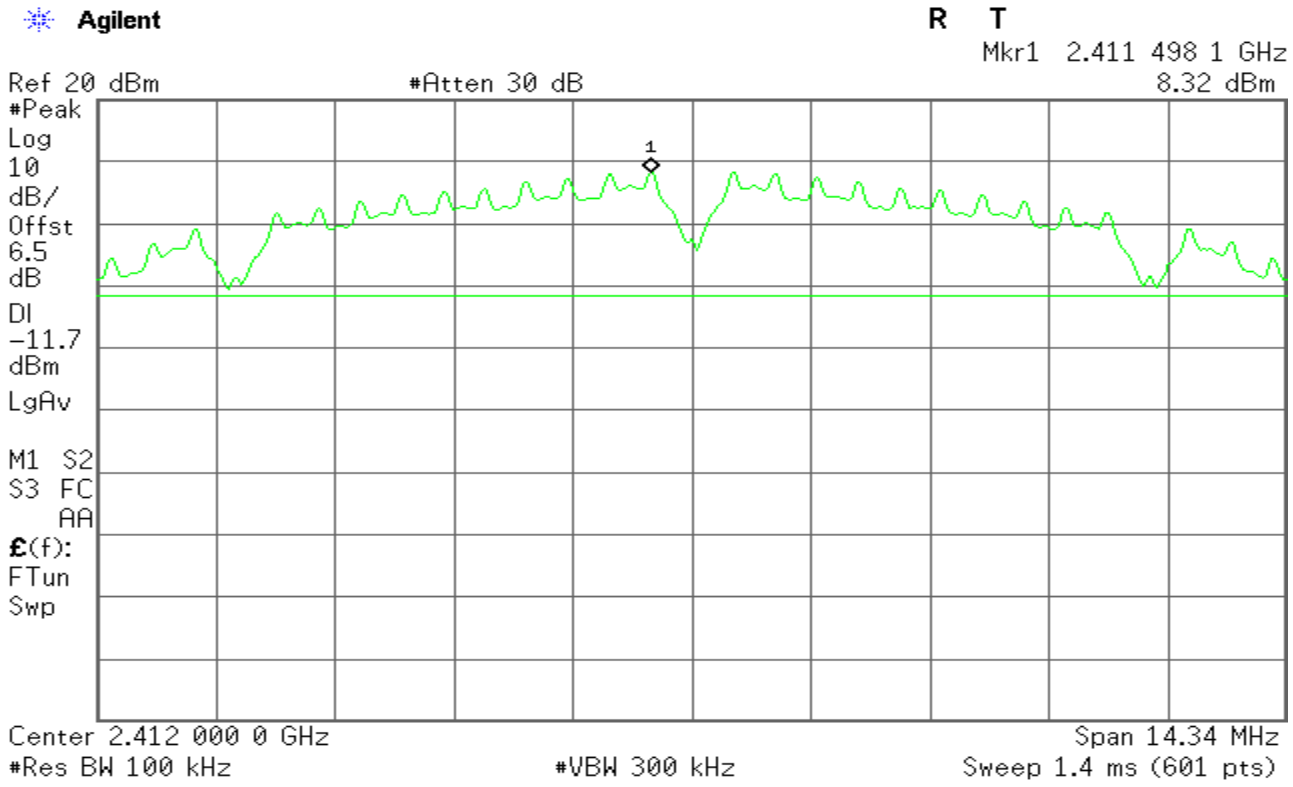
TEST RESULTS

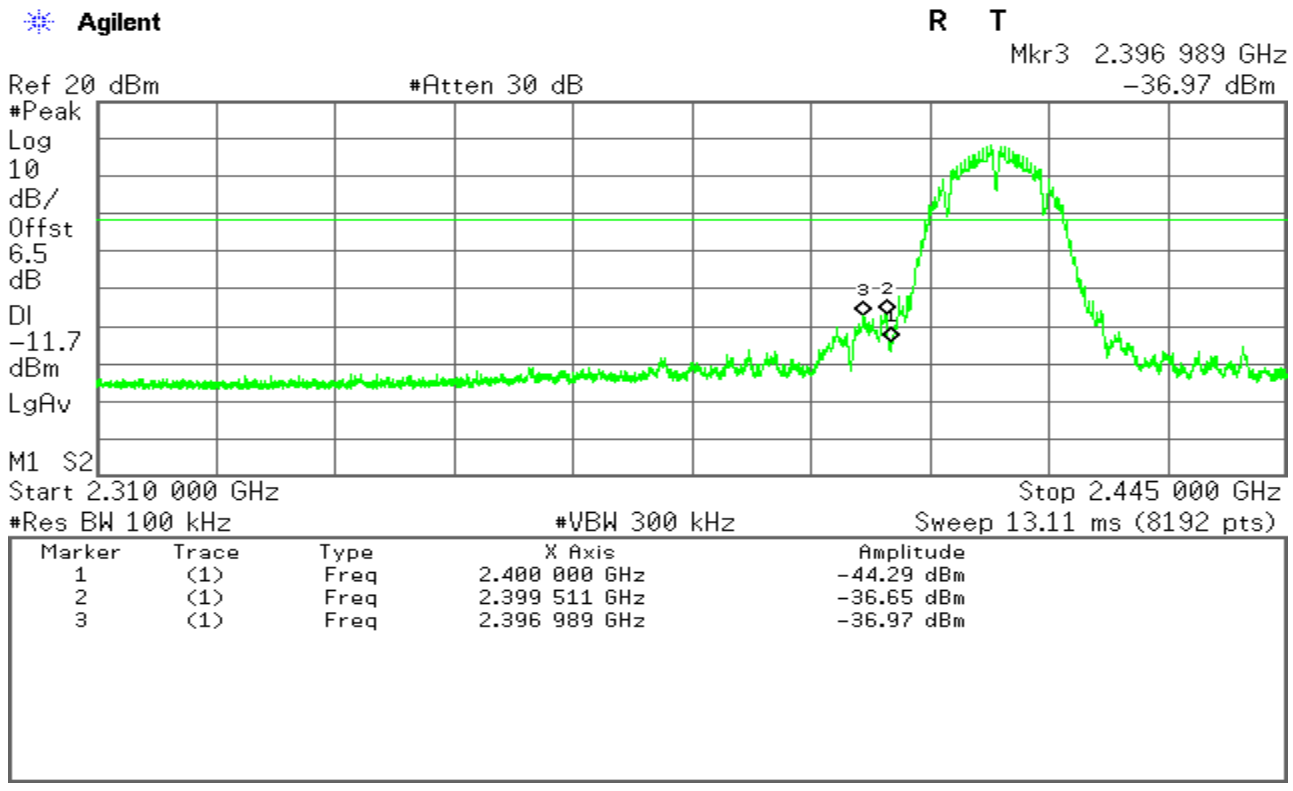
No non-compliance noted

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

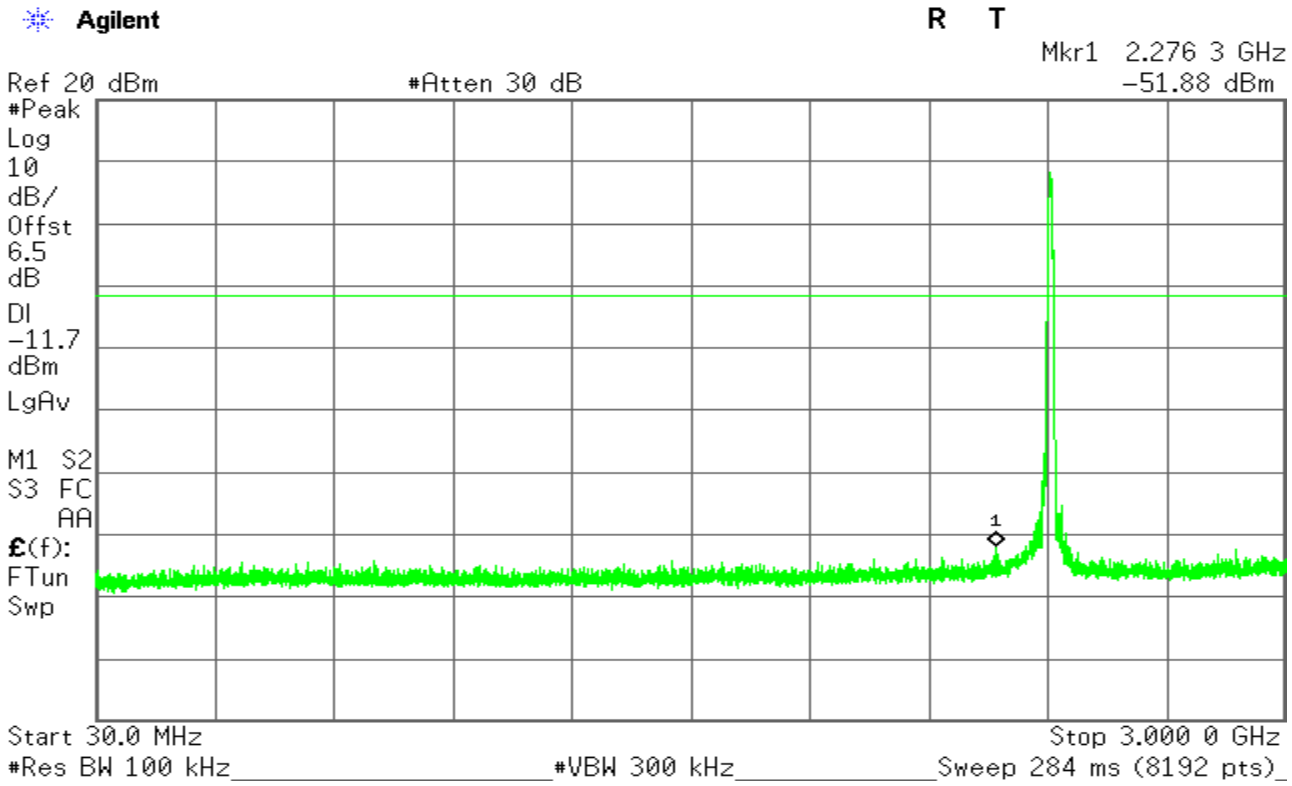
IEEE 802.11b mode

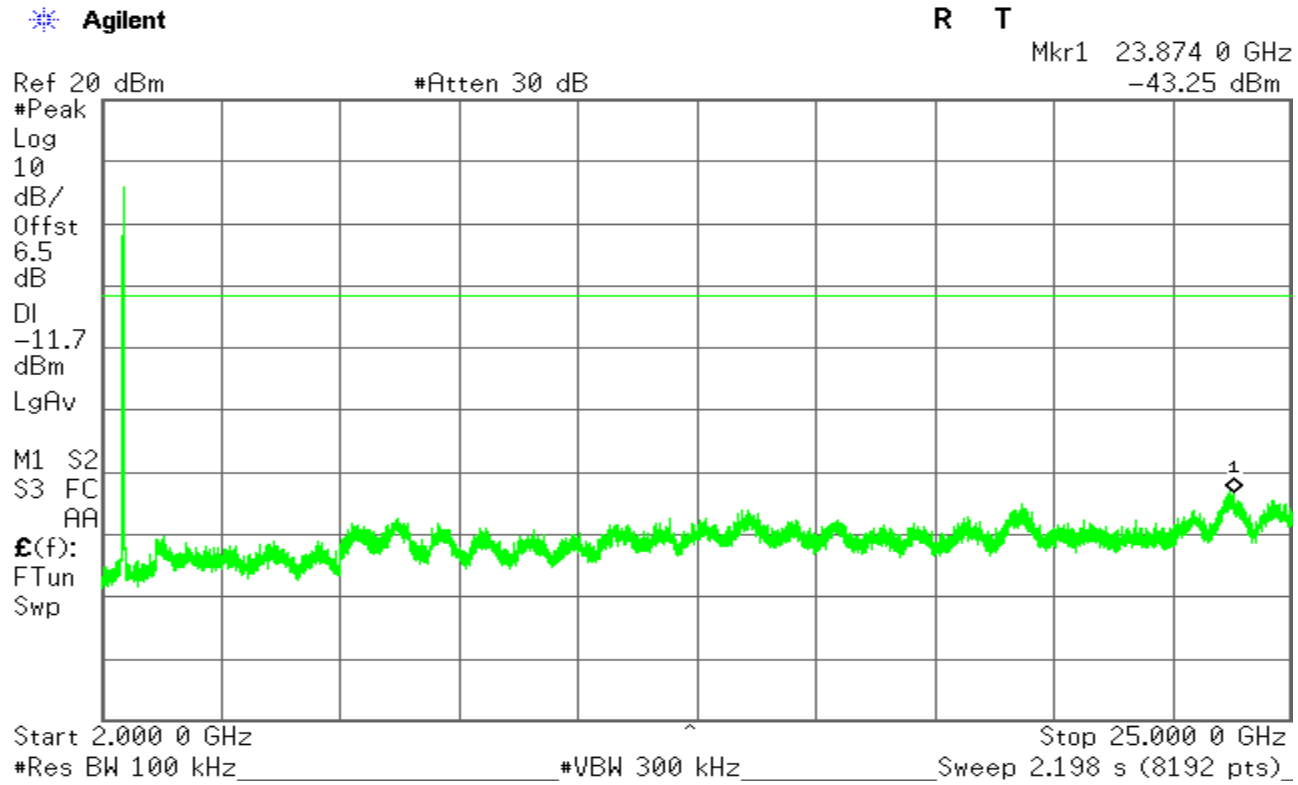
CH Low



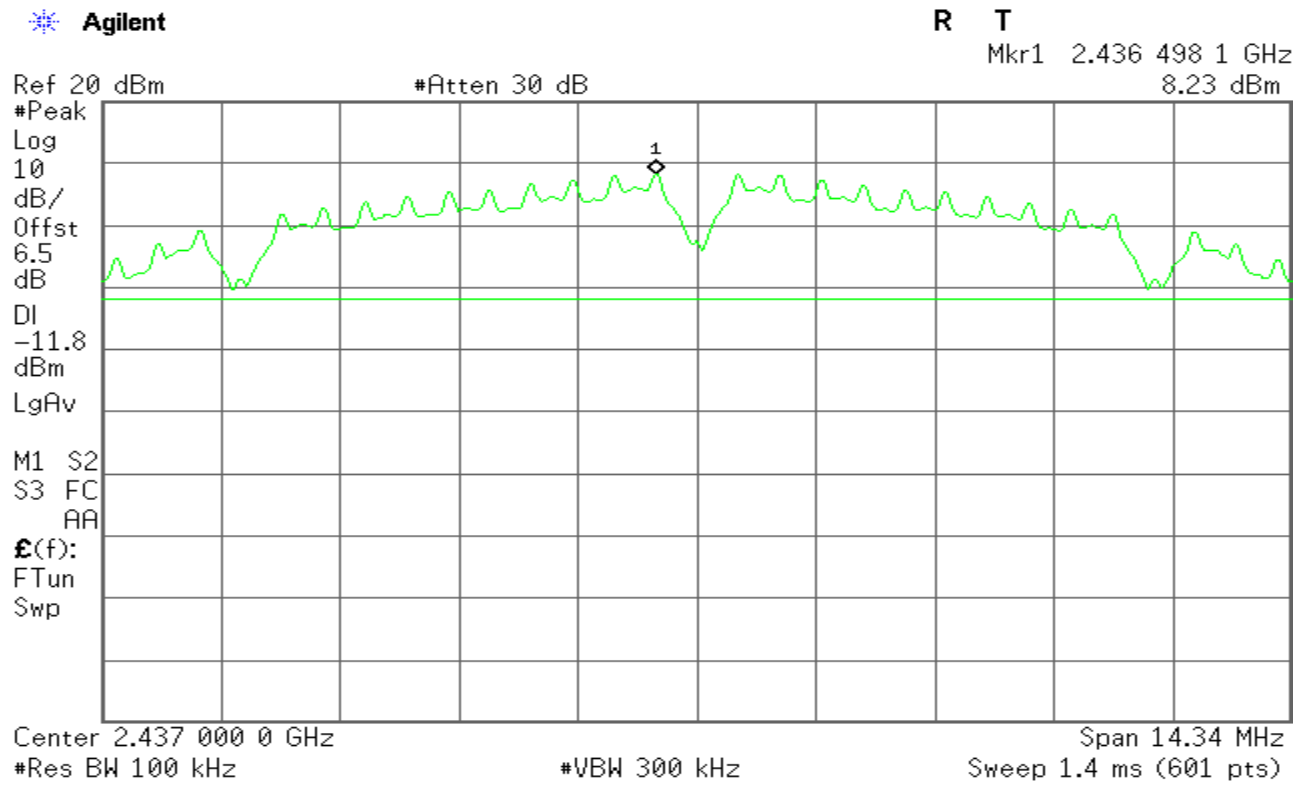


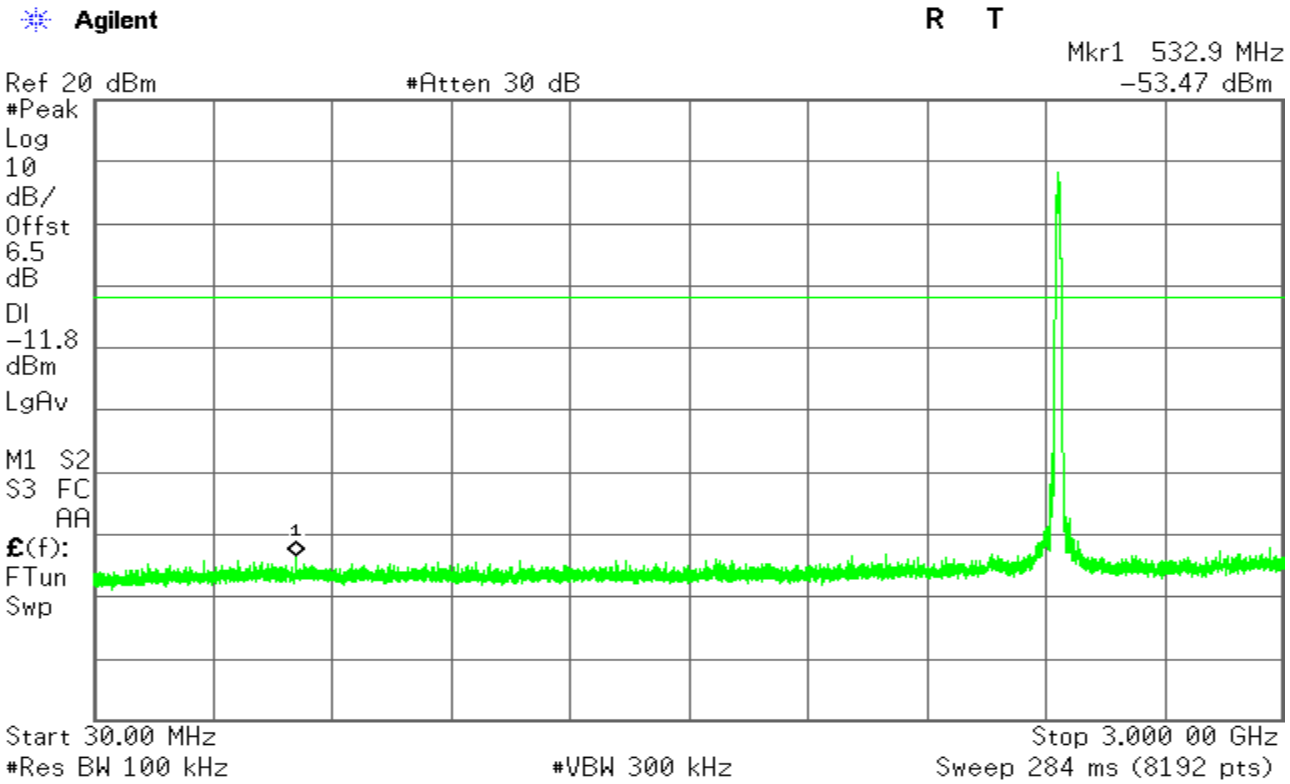
Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.400 000 GHz	-44.29 dBm
2	(1)	Freq	2.399 511 GHz	-36.65 dBm
3	(1)	Freq	2.396 989 GHz	-36.97 dBm

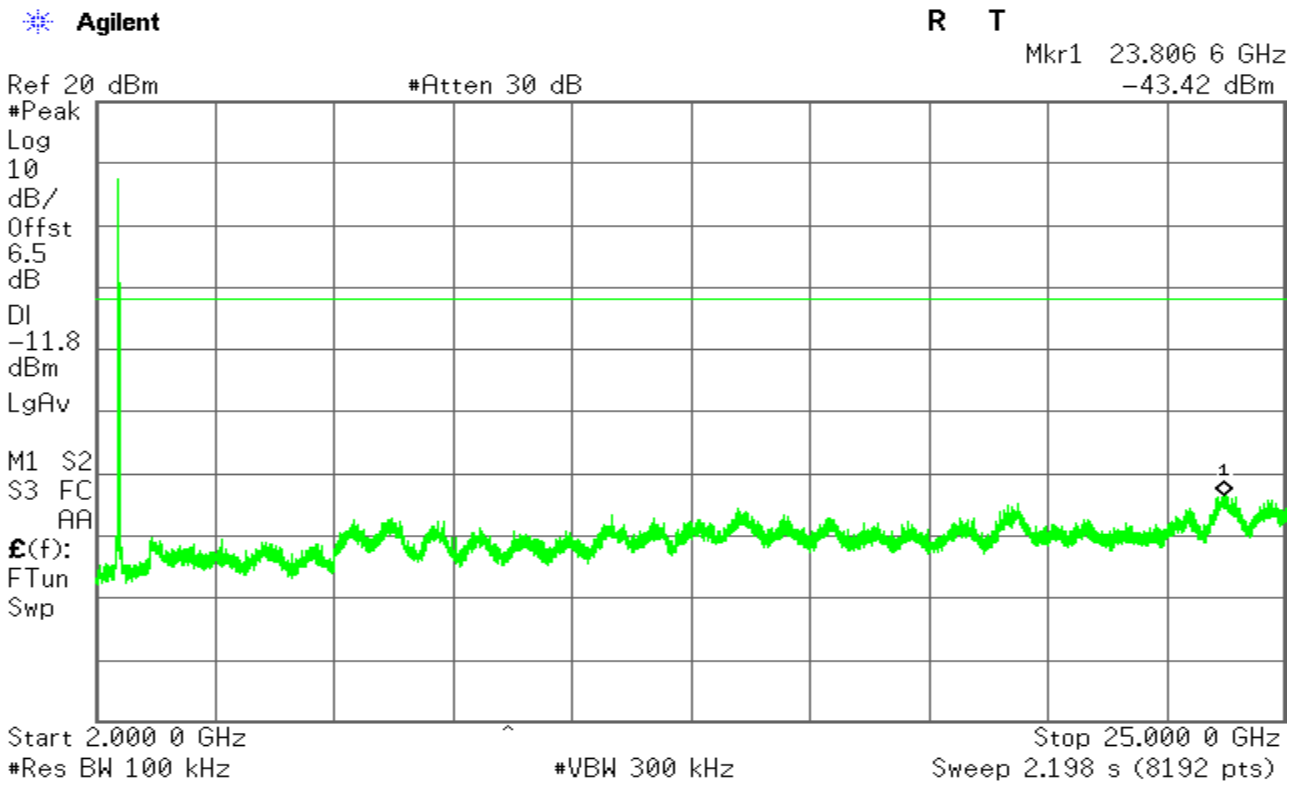

Agilent
R T
Mkr1 2.276 3 GHz
-51.88 dBm
Ref 20 dBm
#Atten 30 dB
#Peak
Log
10
dB/
Offst
6.5
dB
Dl
-11.7
dBm
LgAv
M1 S2
S3 FC
AA
£(f):
FTun
Swp
Start 30.0 MHz
Stop 3.000 0 GHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 284 ms (8192 pts)


Agilent
R T
Mkr1 23.874 0 GHz
-43.25 dBm
Ref 20 dBm
#Atten 30 dB
#Peak
Log
10
dB/
Offst
6.5
dB
Dl
-11.7
dBm
LgAv
M1 S2
S3 FC
AA
£(f):
FTun
Swp
Start 2.000 0 GHz
Stop 25.000 0 GHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 2.198 s (8192 pts)

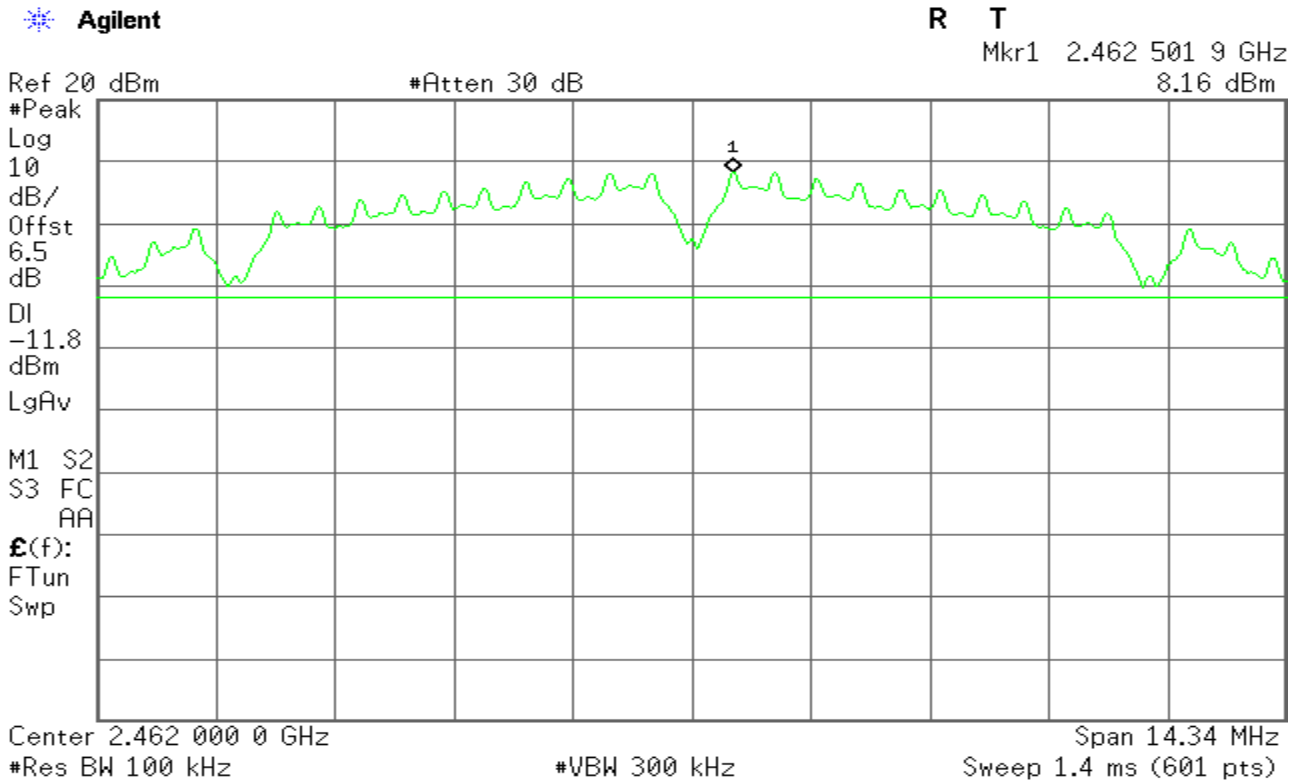
CH Mid

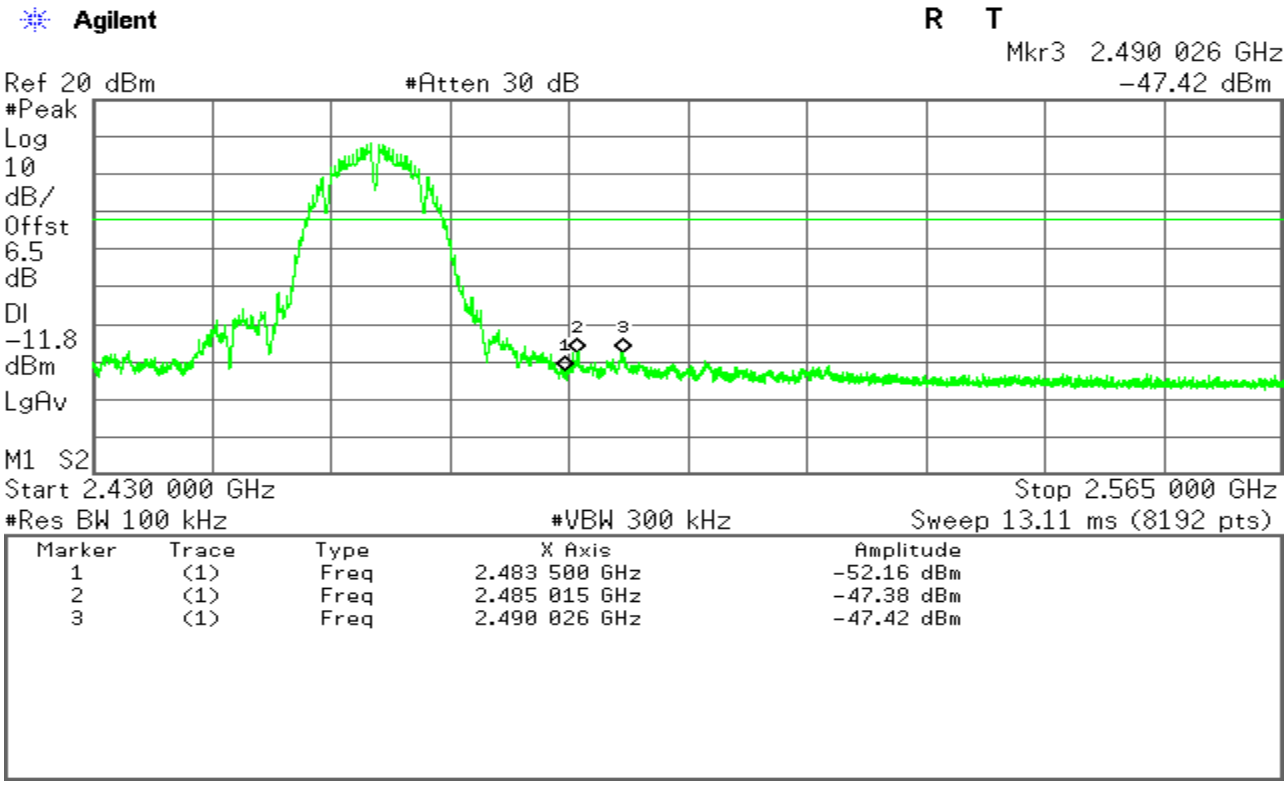

Agilent
R T
Mkr1 2.436 498 1 GHz
8.23 dBm
Ref 20 dBm
#Atten 30 dB
#Peak
Log
10
dB/
Offst
6.5
dB
Dl
-11.8
dBm
LgAv
M1 S2
S3 FC
AA
£(f):
FTun
Swp
Center 2.437 000 0 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 14.34 MHz
Sweep 1.4 ms (601 pts)

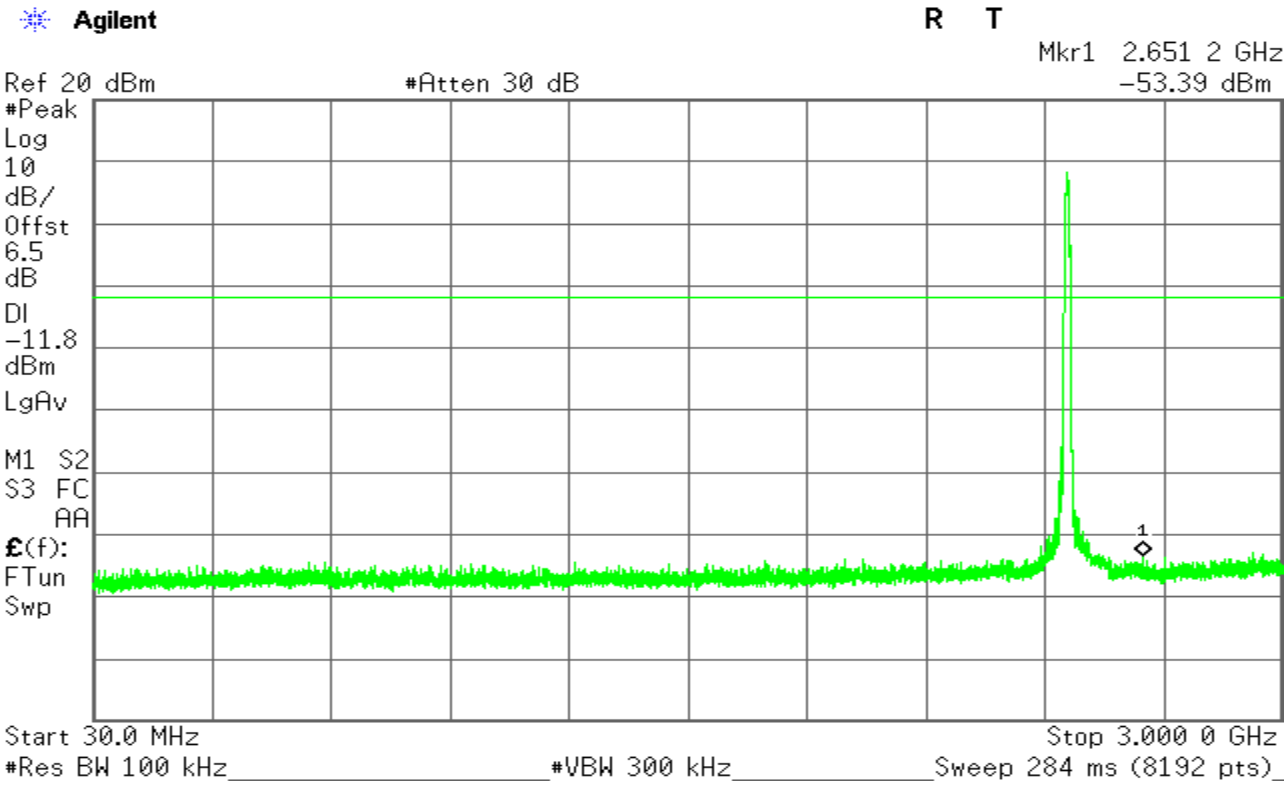

Agilent
R T
Mkr1 532.9 MHz
-53.47 dBm
Ref 20 dBm
#Atten 30 dB
#Peak
Log
10
dB/
Offst
6.5
dB
Dl
-11.8
dBm
LgAv
M1 S2
S3 FC
AA
£(f):
FTun
Swp
Start 30.00 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 3.000 00 GHz
Sweep 284 ms (8192 pts)

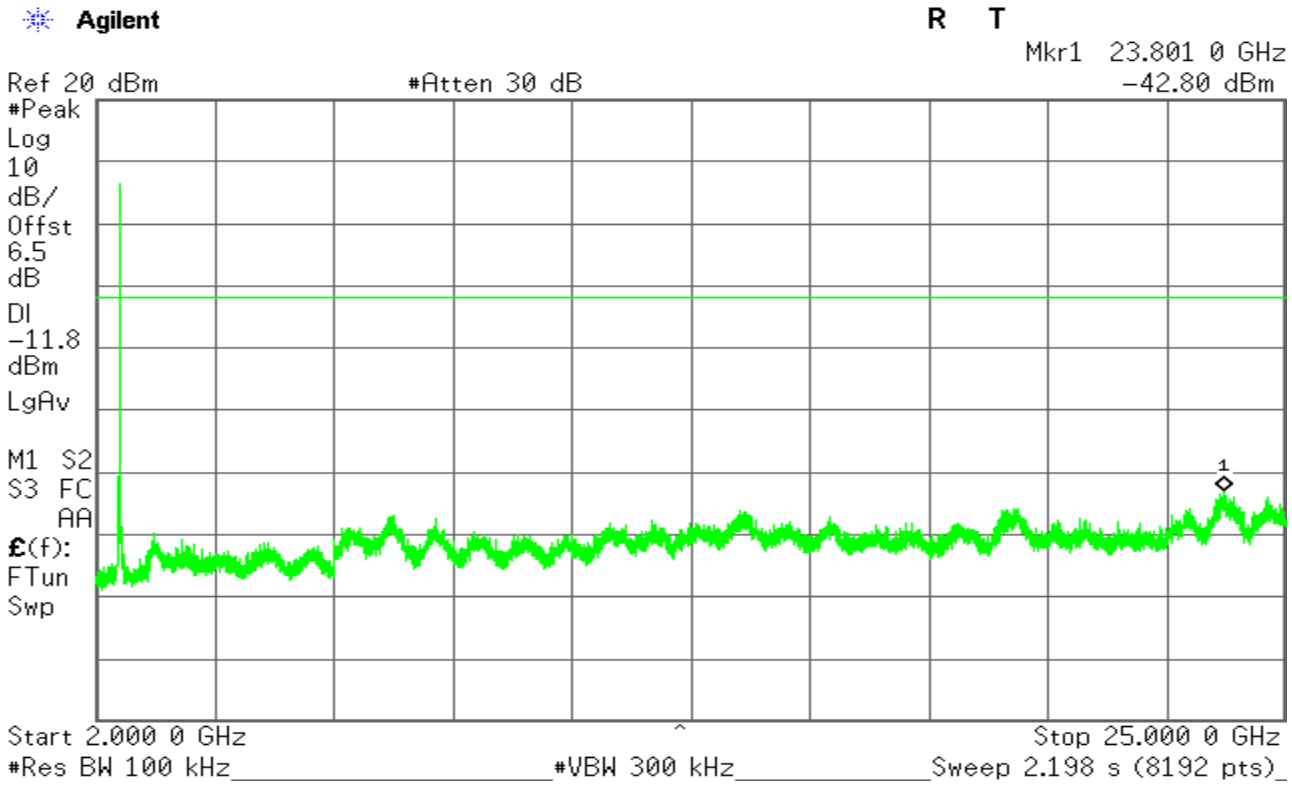

Agilent
R T
Mkr1 23.806 6 GHz
-43.42 dBm
Ref 20 dBm
#Atten 30 dB
#Peak
Log
10
dB/
Offst
6.5
dB
Dl
-11.8
dBm
LgAv
M1 S2
S3 FC
AA
£(f):
FTun
Swp
1
Start 2.000 0 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 25.000 0 GHz
Sweep 2.198 s (8192 pts)

CH High


Agilent
R T
Mkr1 2.462 501 9 GHz
8.16 dBm
Ref 20 dBm
#Atten 30 dB
#Peak
Log
10
dB/
Offst
6.5
dB
Dl
-11.8
dBm
LgAv
M1 S2
S3 FC
AA
£(f):
FTun
Swp
1
Center 2.462 000 0 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 14.34 MHz
Sweep 1.4 ms (601 pts)

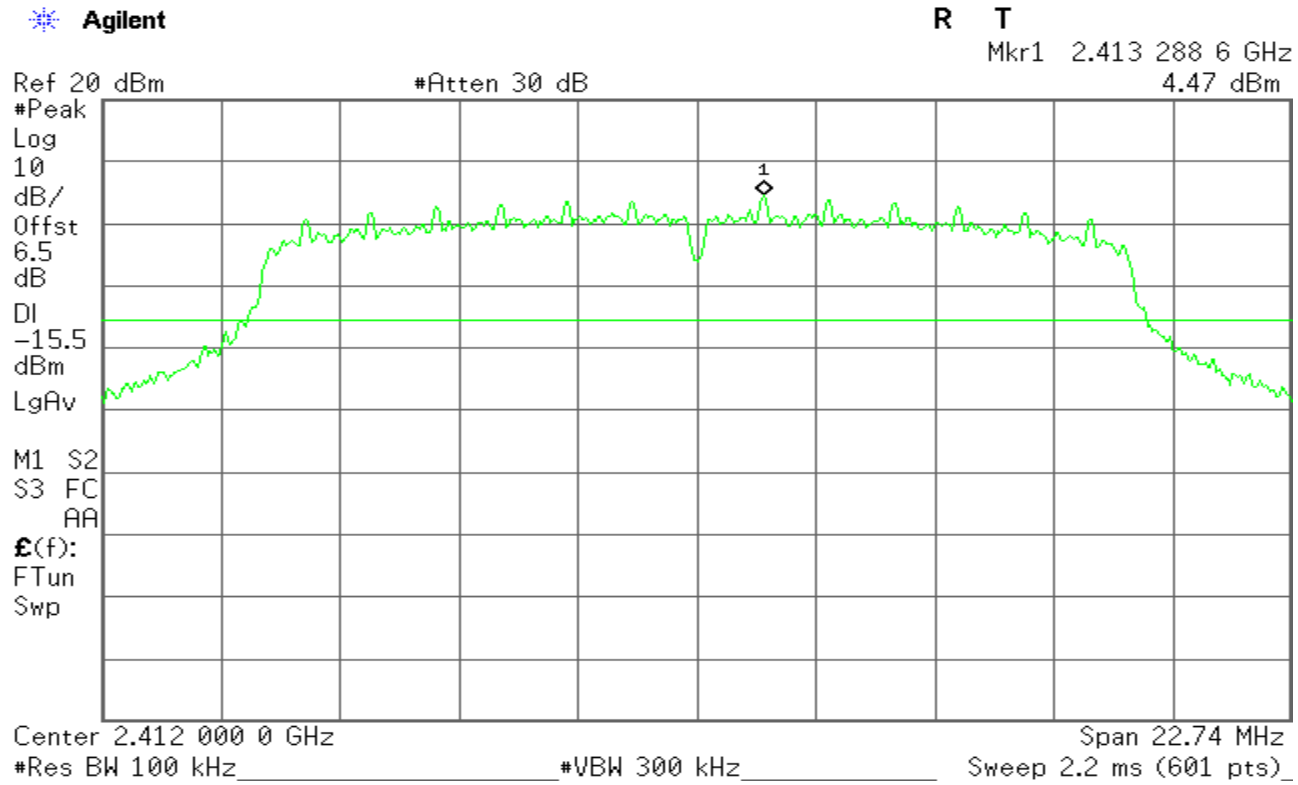

Agilent
R T
Mkr3 2.490 026 GHz
-47.42 dBm
Ref 20 dBm
#Atten 30 dB
#Peak
Log
10
dB/
Offst
6.5
dB
Dl
-11.8
dBm
LgAv
M1 S2
Start 2.430 000 GHz
Stop 2.565 000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 13.11 ms (8192 pts)
Marker Trace Type X Axis Amplitude
1 (1) Freq 2.483 500 GHz -52.16 dBm
2 (1) Freq 2.485 015 GHz -47.38 dBm
3 (1) Freq 2.490 026 GHz -47.42 dBm

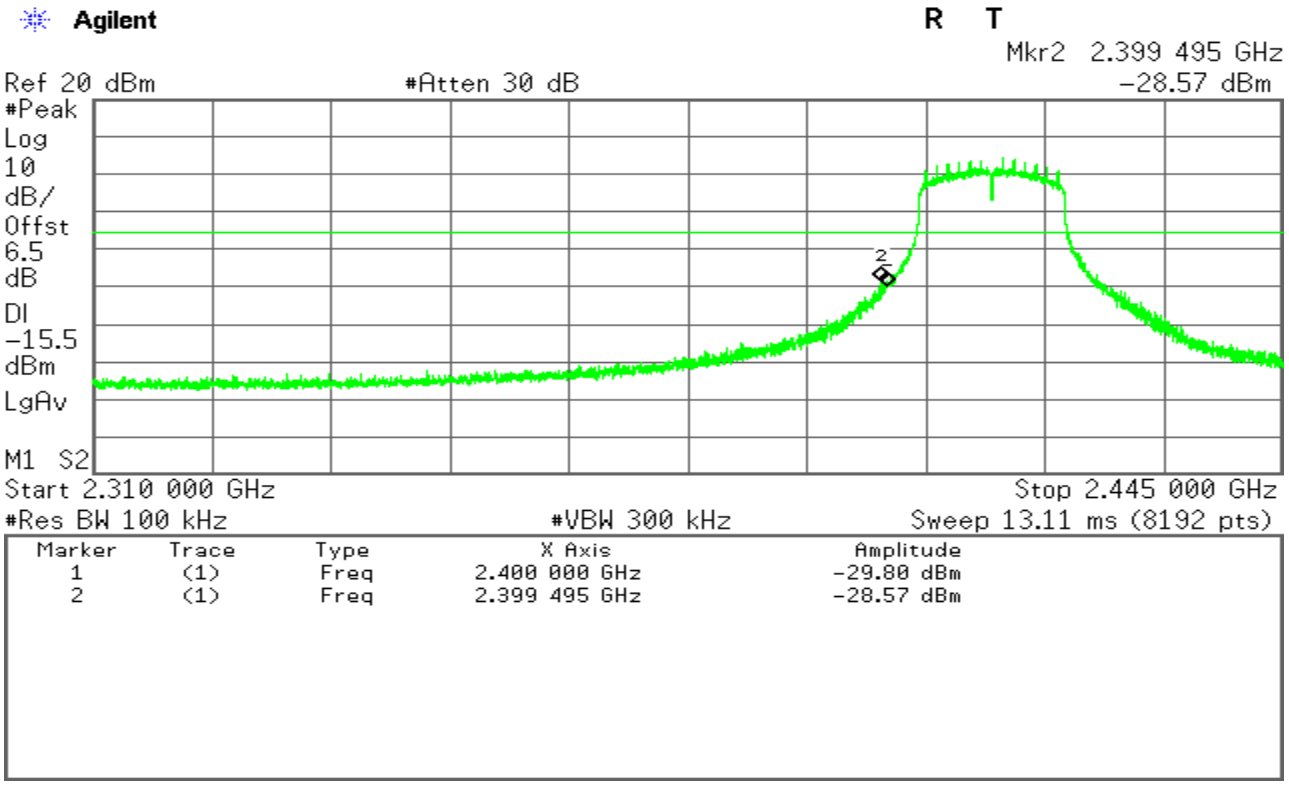

Agilent
R T
Mkr1 2.651 2 GHz
-53.39 dBm
Ref 20 dBm
#Atten 30 dB
#Peak
Log
10
dB/
Offst
6.5
dB
Dl
-11.8
dBm
LgAv
M1 S2
S3 FC
AA
£(f):
FTun
Swp
Start 30.0 MHz
Stop 3.000 0 GHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 284 ms (8192 pts)

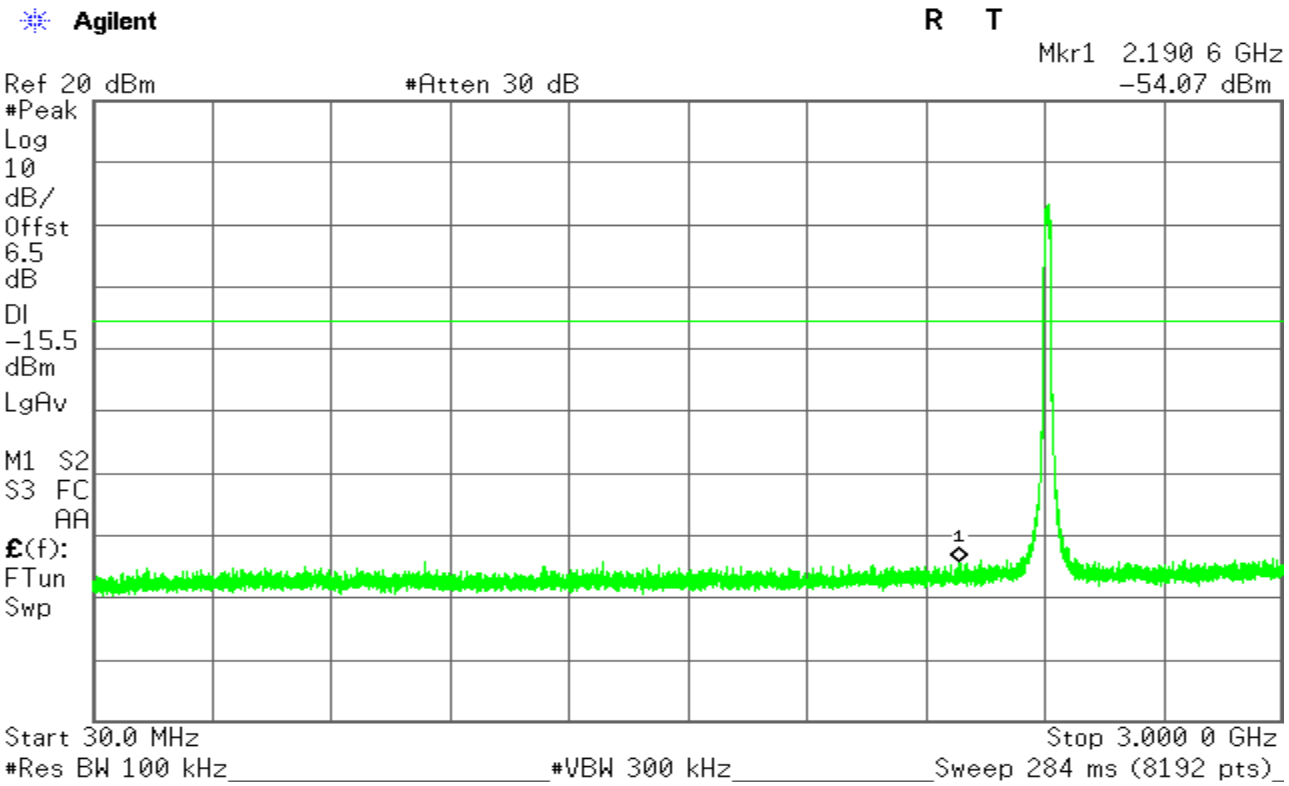


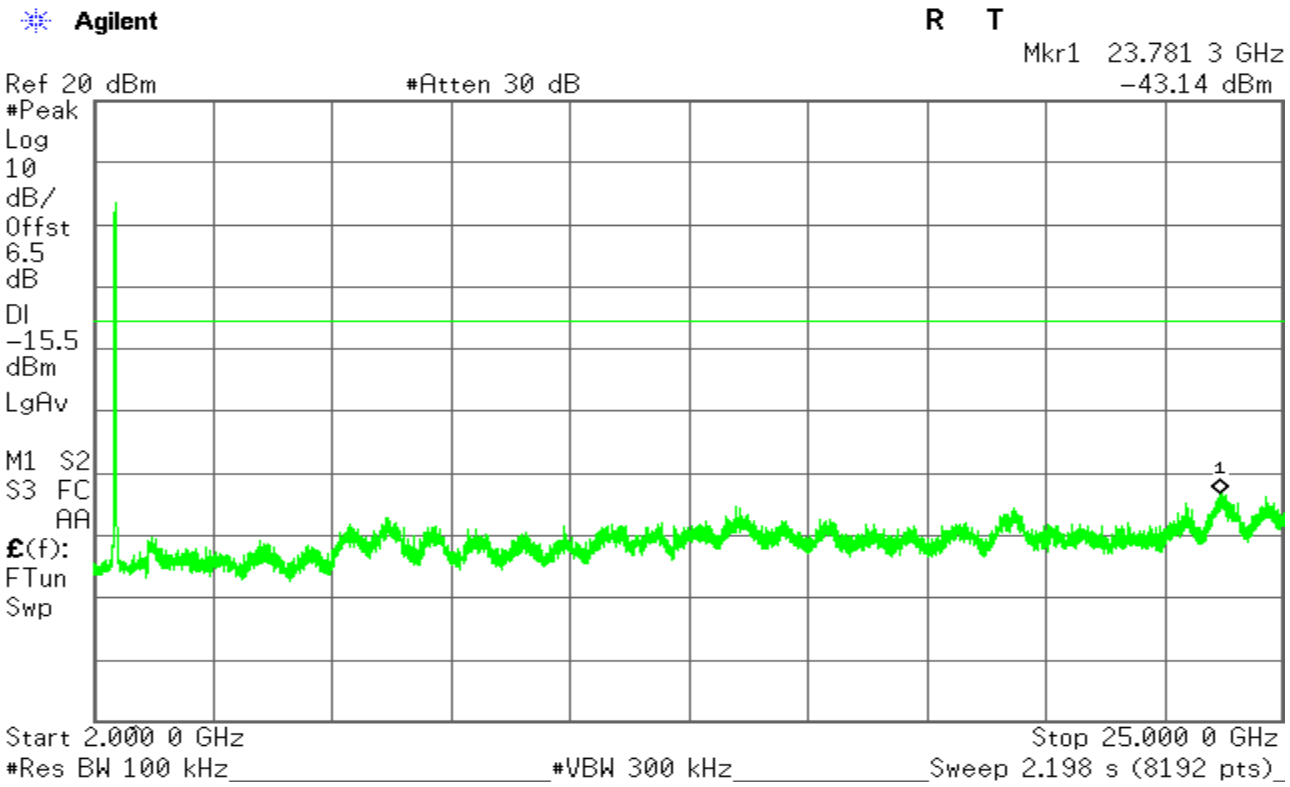
IEEE 802.11g mode

CH Low

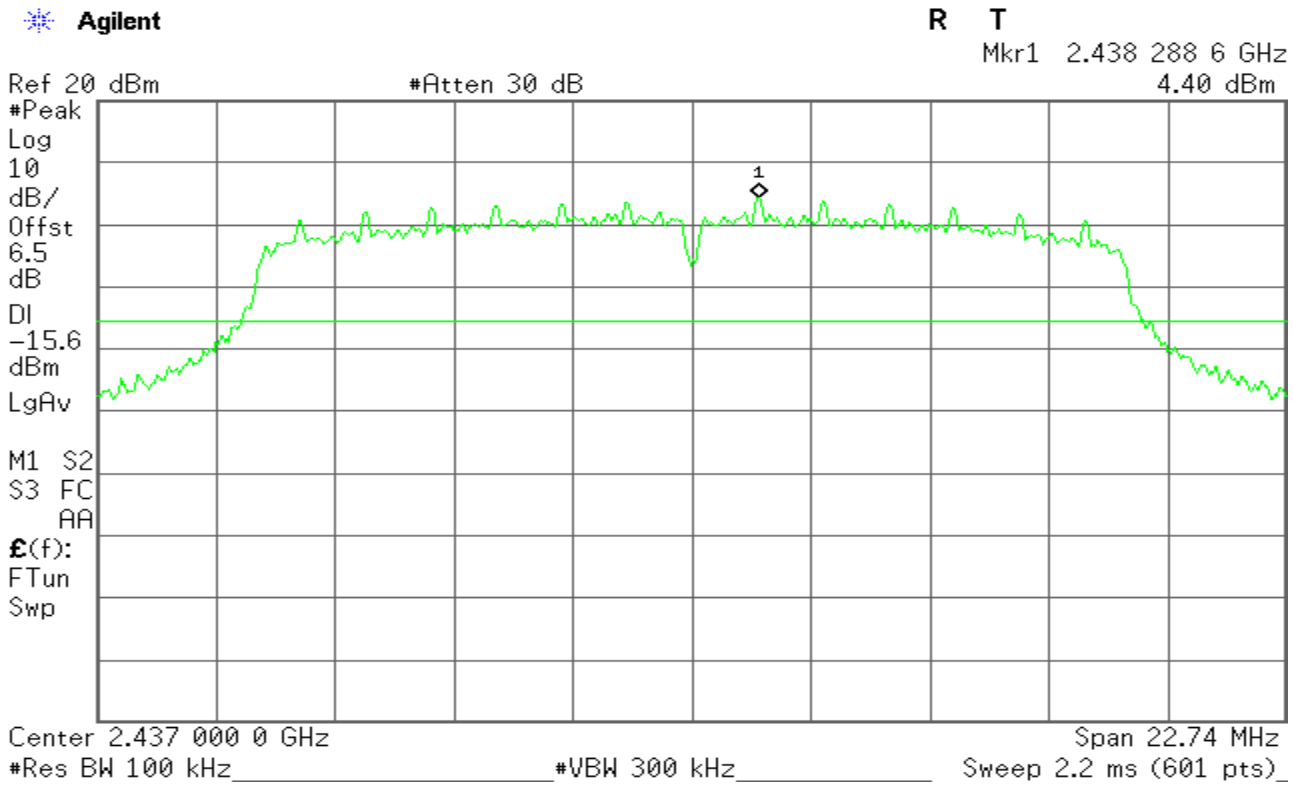


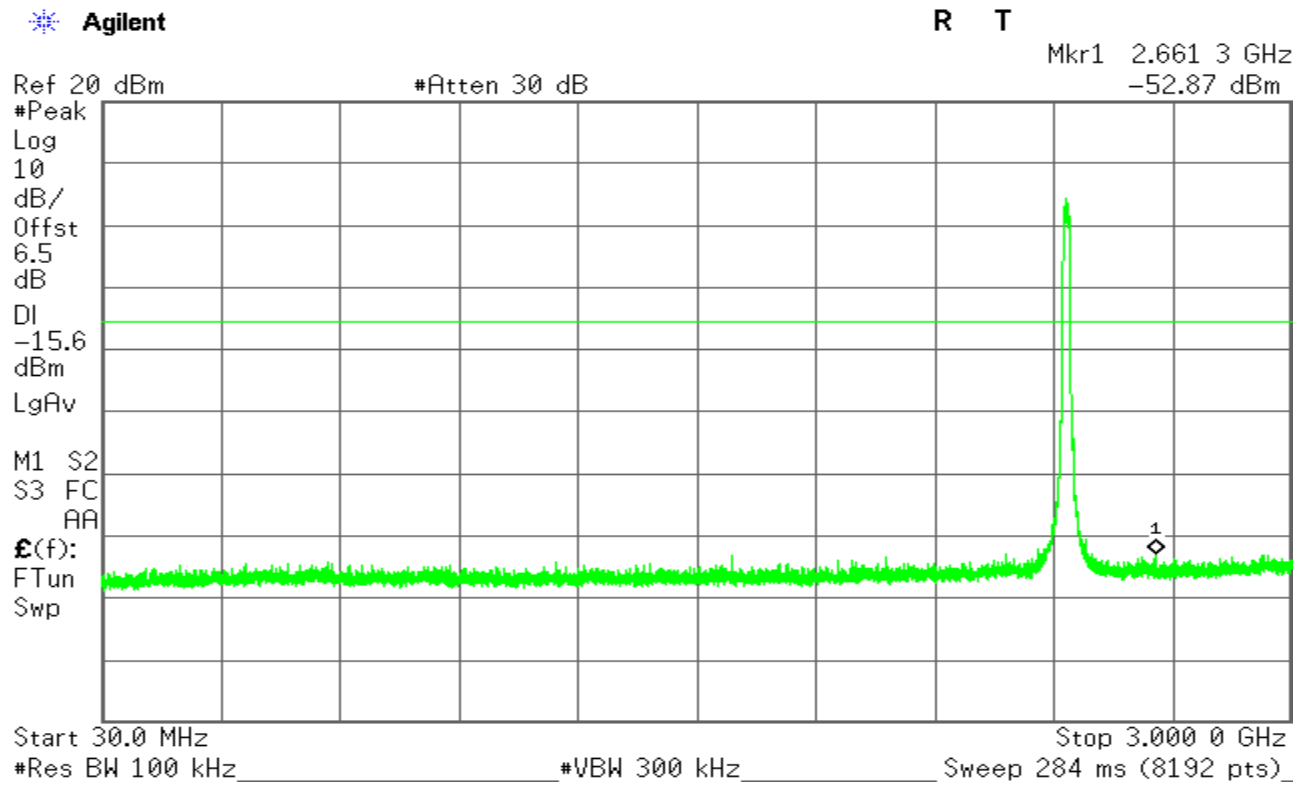

Agilent
R T
Mkr2 2.399 495 GHz
-28.57 dBm
Ref 20 dBm
#Atten 30 dB
#Peak
Log
10
dB/
Offst
6.5
dB
Dl
-15.5
dBm
LgAv
M1 S2
Start 2.310 000 GHz
Stop 2.445 000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 13.11 ms (8192 pts)
Marker Trace Type X Axis Amplitude
1 (1) Freq 2.400 000 GHz -29.80 dBm
2 (1) Freq 2.399 495 GHz -28.57 dBm

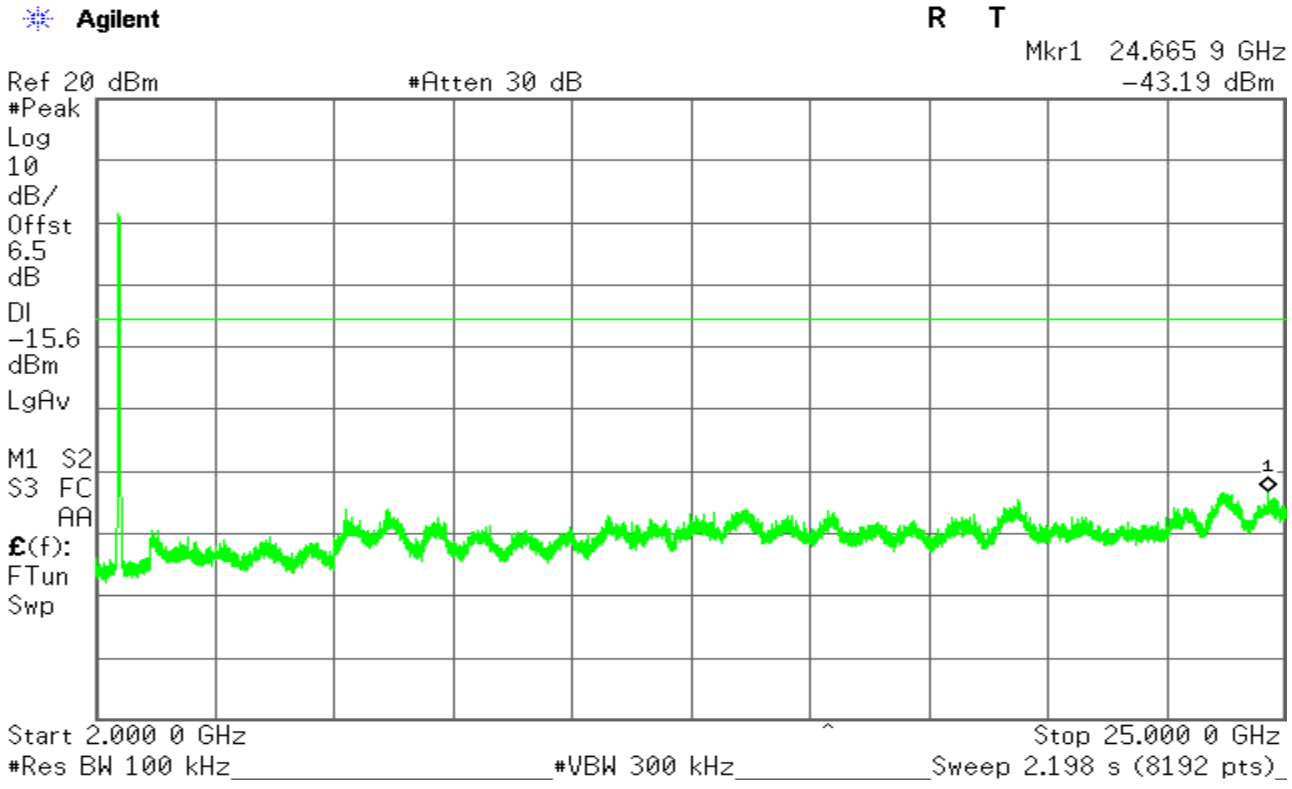

Agilent
R T
Mkr1 2.190 6 GHz
-54.07 dBm
Ref 20 dBm
#Atten 30 dB
#Peak
Log
10
dB/
Offst
6.5
dB
Dl
-15.5
dBm
LgAv
M1 S2
S3 FC
AA
£(f):
FTun
Swp
Start 30.0 MHz
Stop 3.000 0 GHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 284 ms (8192 pts)


Agilent
R T
Mkr1 23.781 3 GHz
-43.14 dBm
Ref 20 dBm
#Atten 30 dB
#Peak
Log
10
dB/
Offst
6.5
dB
Dl
-15.5
dBm
LgAv
M1 S2
S3 FC
AA
£(f):
FTun
Swp
Start 2.000 0 GHz
Stop 25.000 0 GHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 2.198 s (8192 pts)

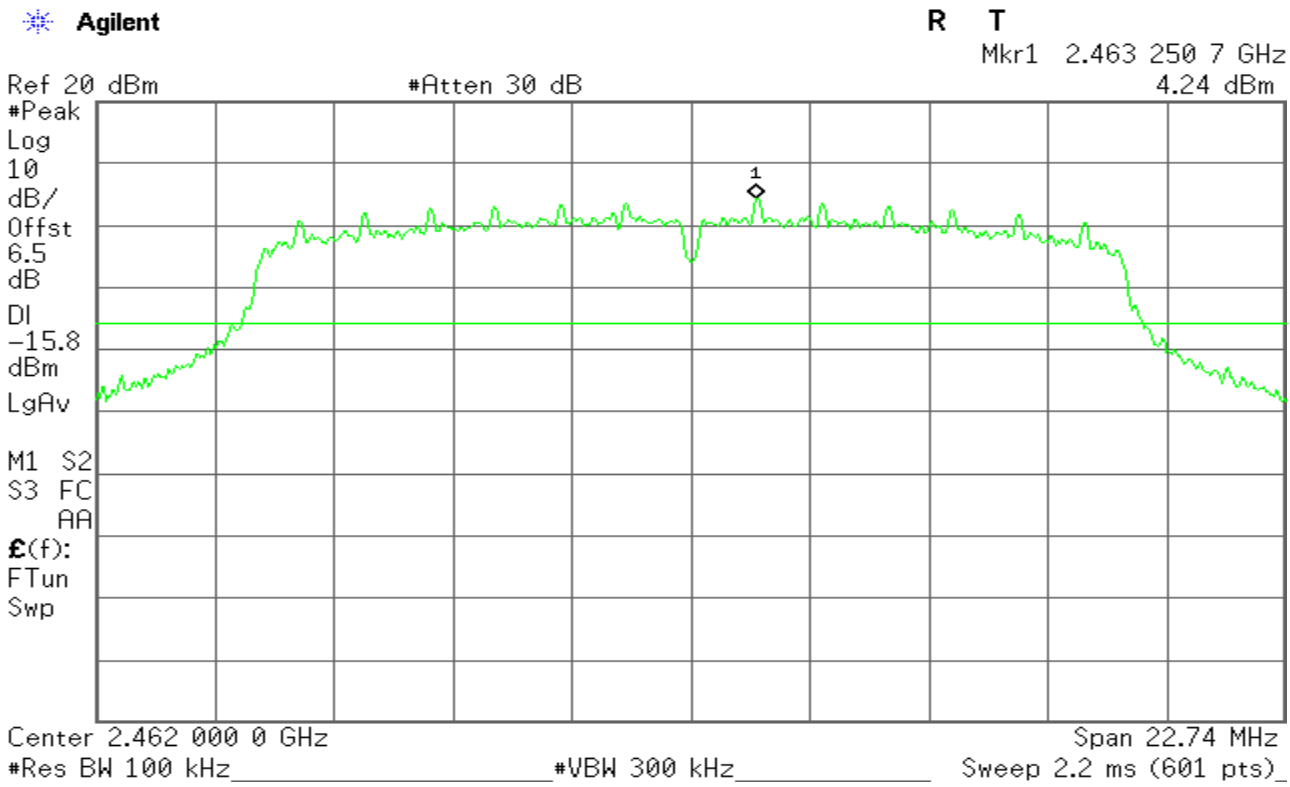
CH Mid

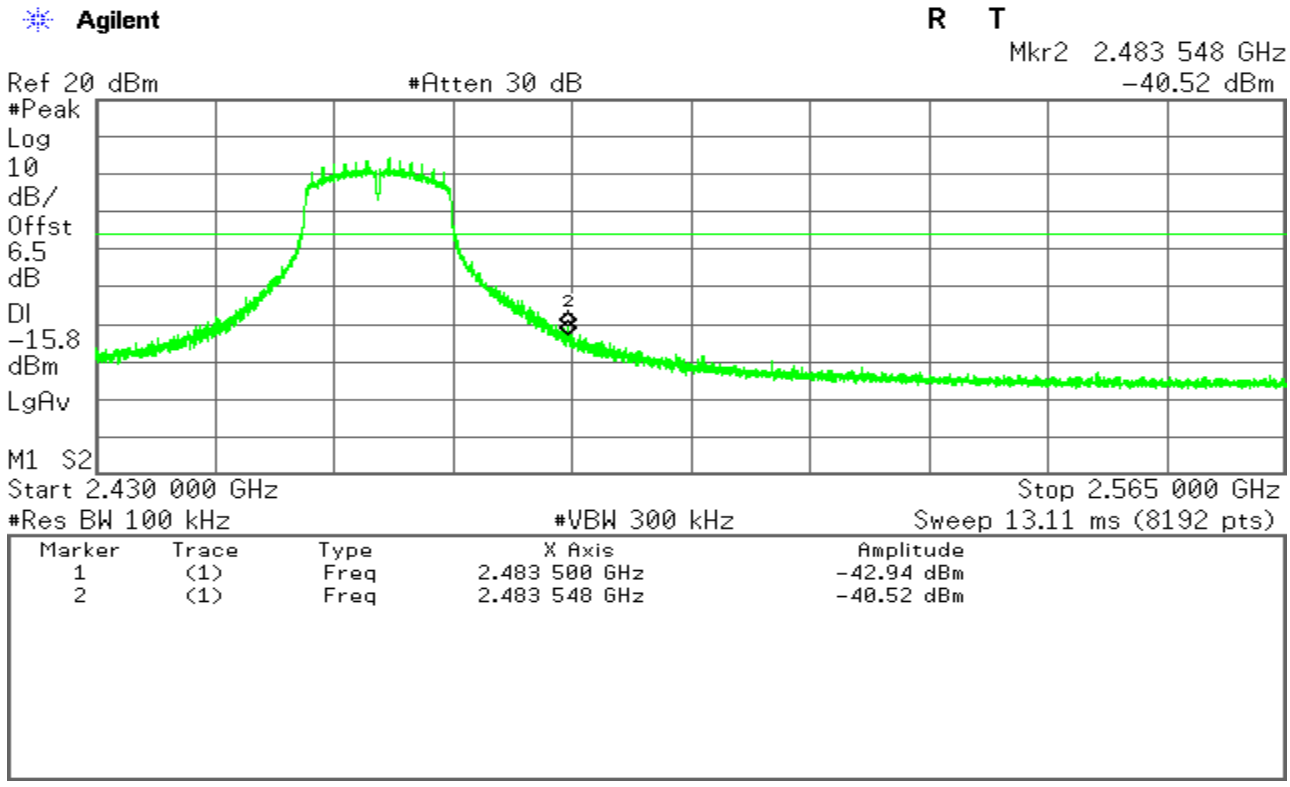

Agilent
R T
Mkr1 2.438 288 6 GHz
4.40 dBm
Ref 20 dBm
#Atten 30 dB
#Peak
Log
10
dB/
Offst
6.5
dB
Dl
-15.6
dBm
LgAv
M1 S2
S3 FC
AA
£(f):
FTun
Swp
Center 2.437 000 0 GHz
Span 22.74 MHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 2.2 ms (601 pts)

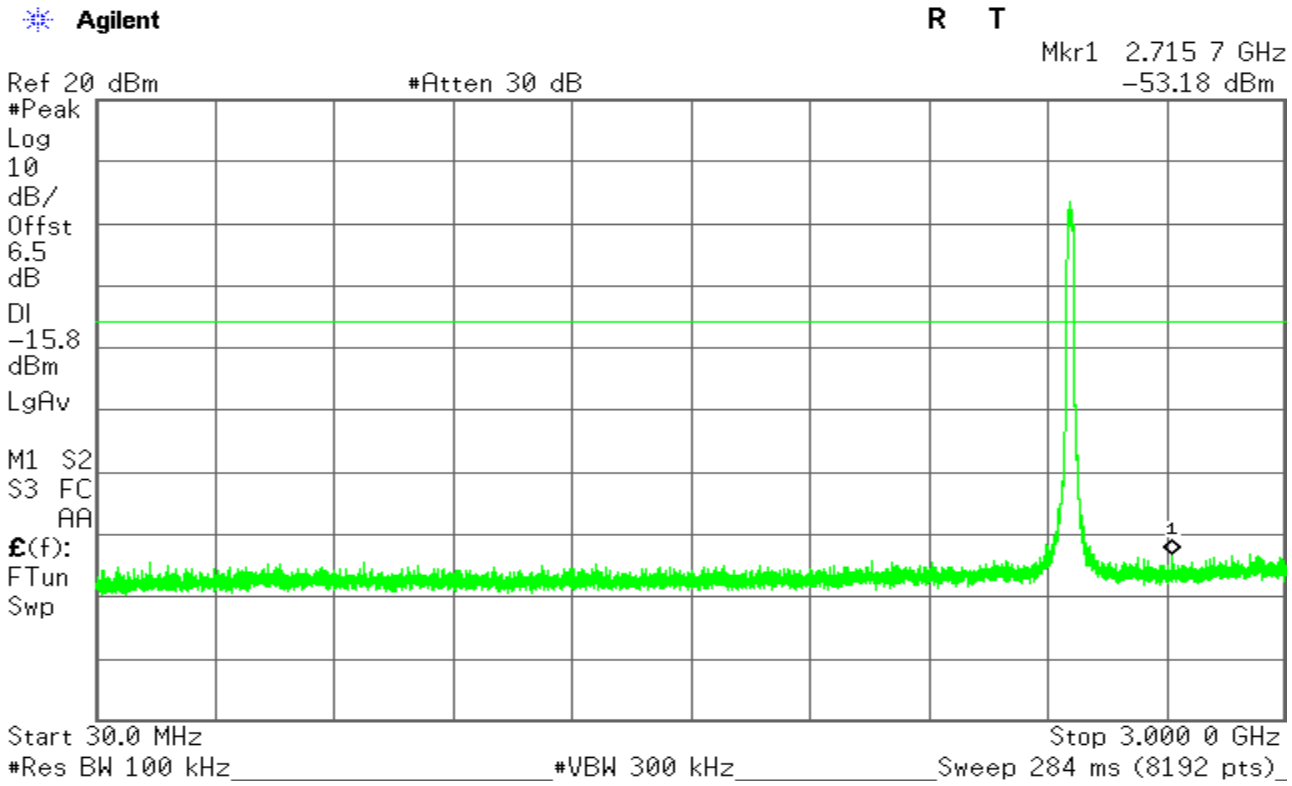

Agilent
R T
Mkr1 2.661 3 GHz
Ref 20 dBm
#Atten 30 dB
-52.87 dBm
#Peak
Log
10
dB/
Offst
6.5
dB
Dl
-15.6
dBm
LgAv
M1 S2
S3 FC
AA
£(f):
FTun
Swp
Start 30.0 MHz
Stop 3.000 0 GHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 284 ms (8192 pts)

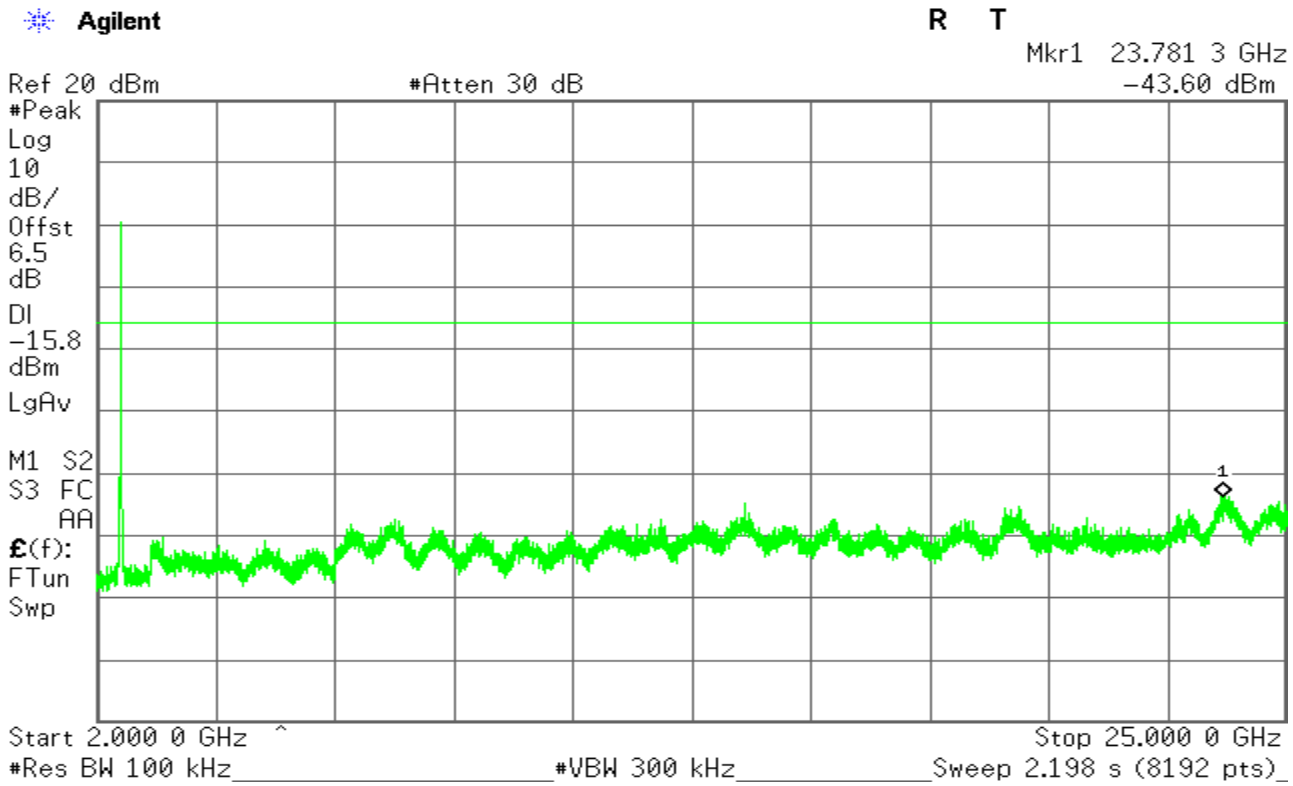

Agilent
R T
Mkr1 24.665 9 GHz
Ref 20 dBm
#Atten 30 dB
-43.19 dBm
#Peak
Log
10
dB/
Offst
6.5
dB
Dl
-15.6
dBm
LgAv
M1 S2
S3 FC
AA
£(f):
FTun
Swp
Start 2.000 0 GHz
Stop 25.000 0 GHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 2.198 s (8192 pts)

CH High


Agilent
R T
Mkr1 2.463 250 7 GHz
4.24 dBm
Ref 20 dBm
#Atten 30 dB
#Peak
Log
10
dB/
Offst
6.5
dB
Dl
-15.8
dBm
LgAv
M1 S2
S3 FC
AA
£(f):
FTun
Swp
Center 2.462 000 0 GHz
Span 22.74 MHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 2.2 ms (601 pts)

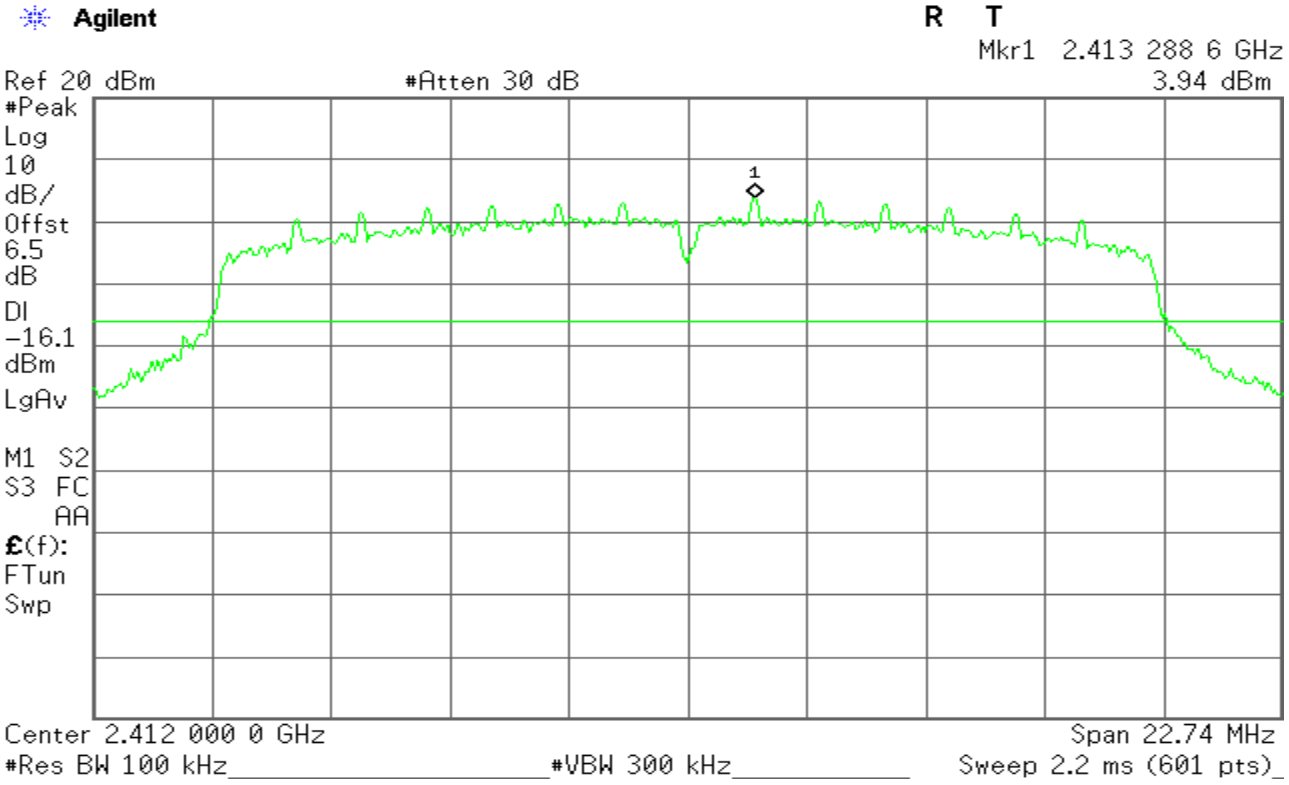

Agilent
R T
Mkr2 2.483 548 GHz
-40.52 dBm
Ref 20 dBm
#Atten 30 dB
#Peak
Log
10
dB/
Offst
6.5
dB
Dl
-15.8
dBm
LgAv
M1 S2
Start 2.430 000 GHz
Stop 2.565 000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 13.11 ms (8192 pts)
Marker Trace Type X Axis Amplitude
1 (1) Freq 2.483 500 GHz -42.94 dBm
2 (1) Freq 2.483 548 GHz -40.52 dBm

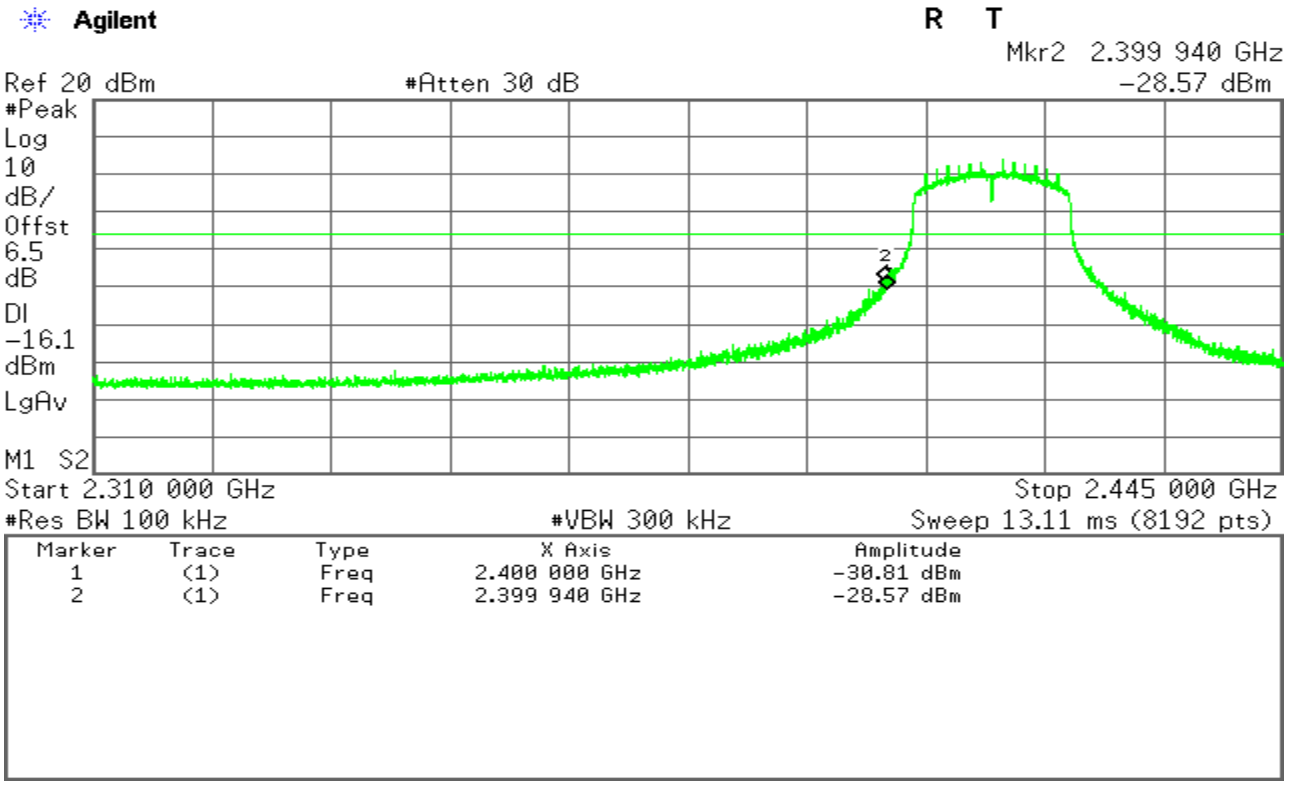

Agilent
R T
Mkr1 2.715 7 GHz
-53.18 dBm
Ref 20 dBm
#Atten 30 dB
#Peak
Log
10
dB/
Offst
6.5
dB
Dl
-15.8
dBm
LgAv
M1 S2
S3 FC
AA
£(f):
FTun
Swp
Start 30.0 MHz
Stop 3.000 0 GHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 284 ms (8192 pts)

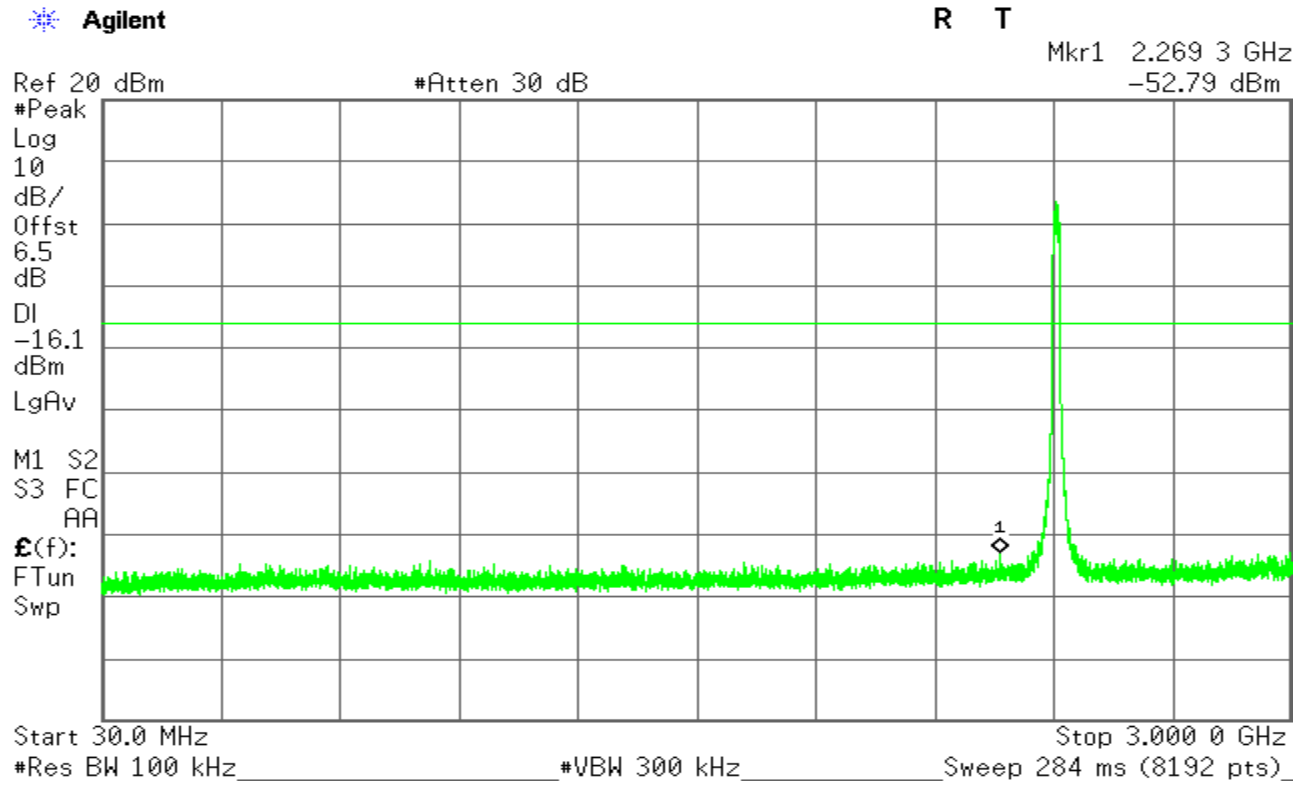

Agilent
R T
Mkr1 23.781 3 GHz
-43.60 dBm
Ref 20 dBm
#Atten 30 dB
#Peak
Log
10
dB/
Offst
6.5
dB
Dl
-15.8
dBm
LgAv
M1 S2
S3 FC
AA
£(f):
FTun
Swp
Start 2.000 0 GHz
Stop 25.000 0 GHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 2.198 s (8192 pts)

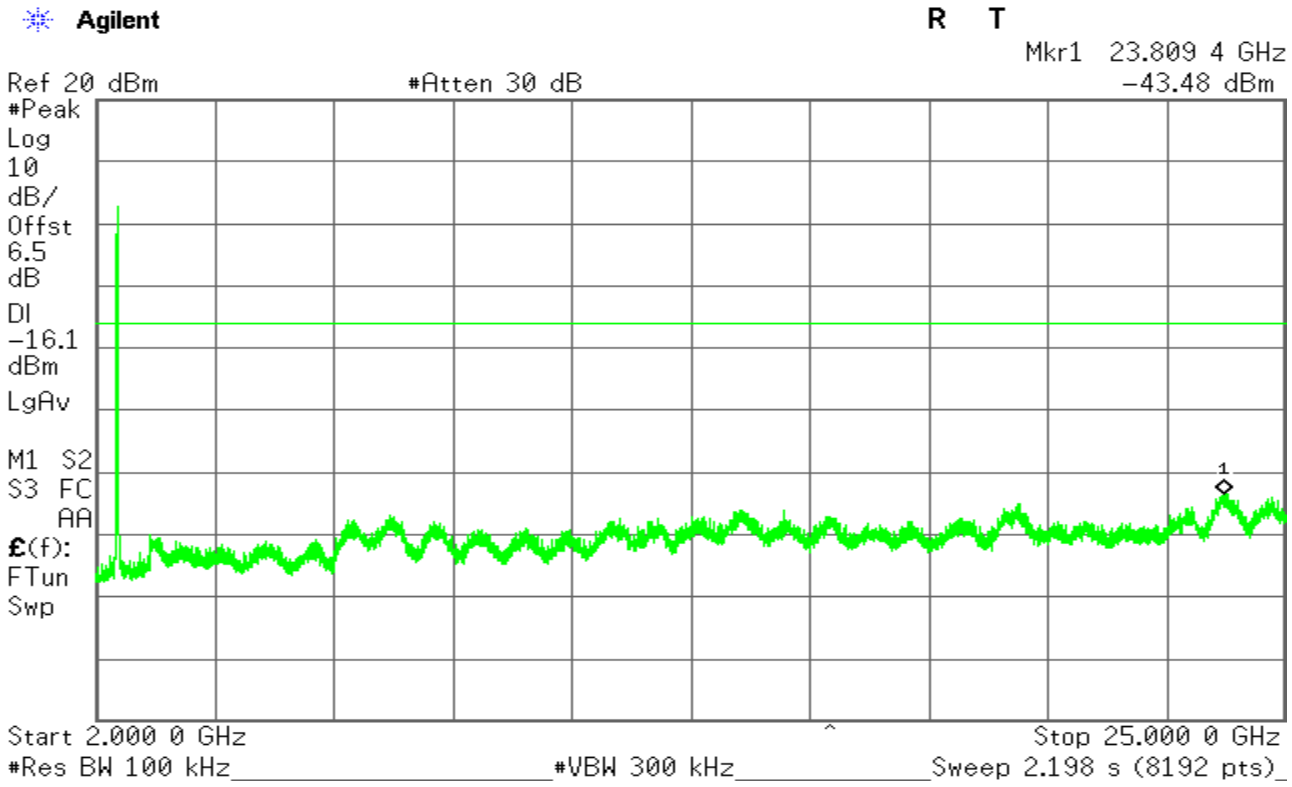
IEEE 802.11n HT20 mode

CH Low

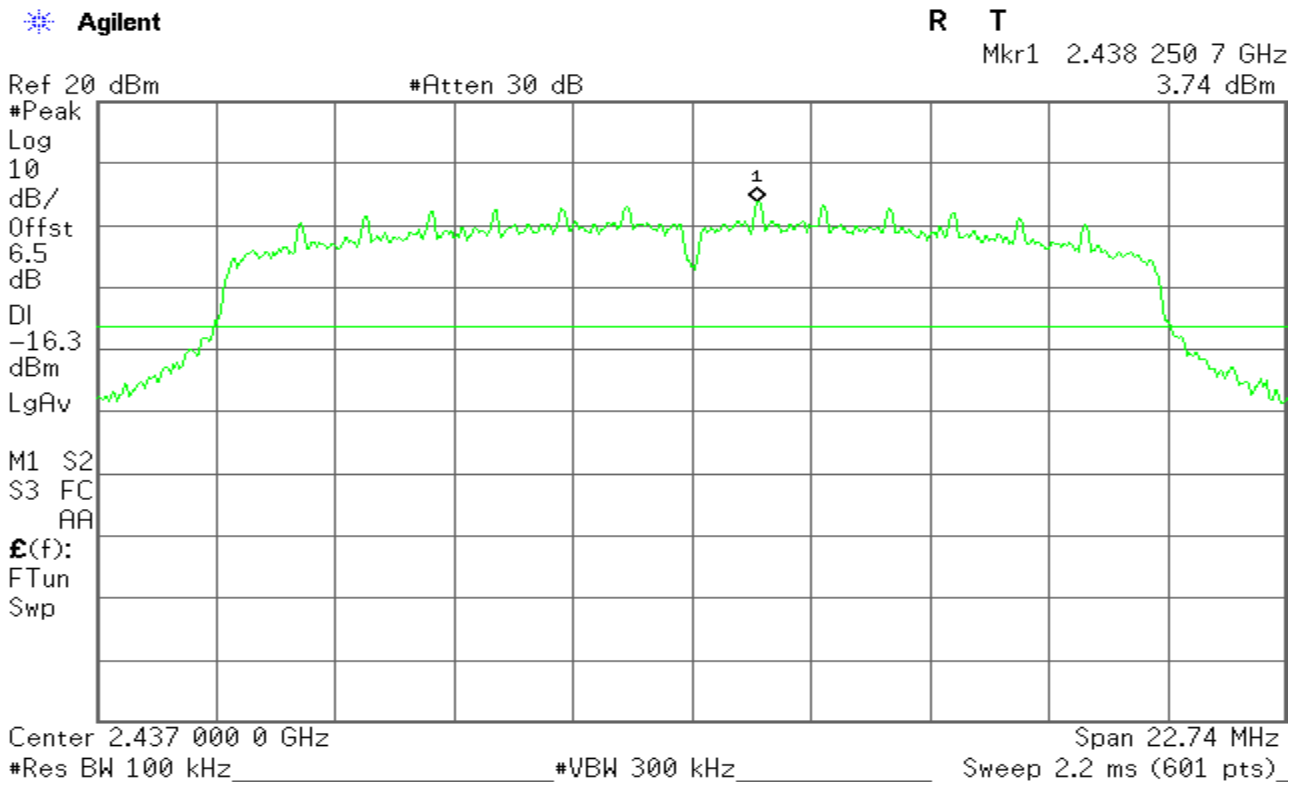


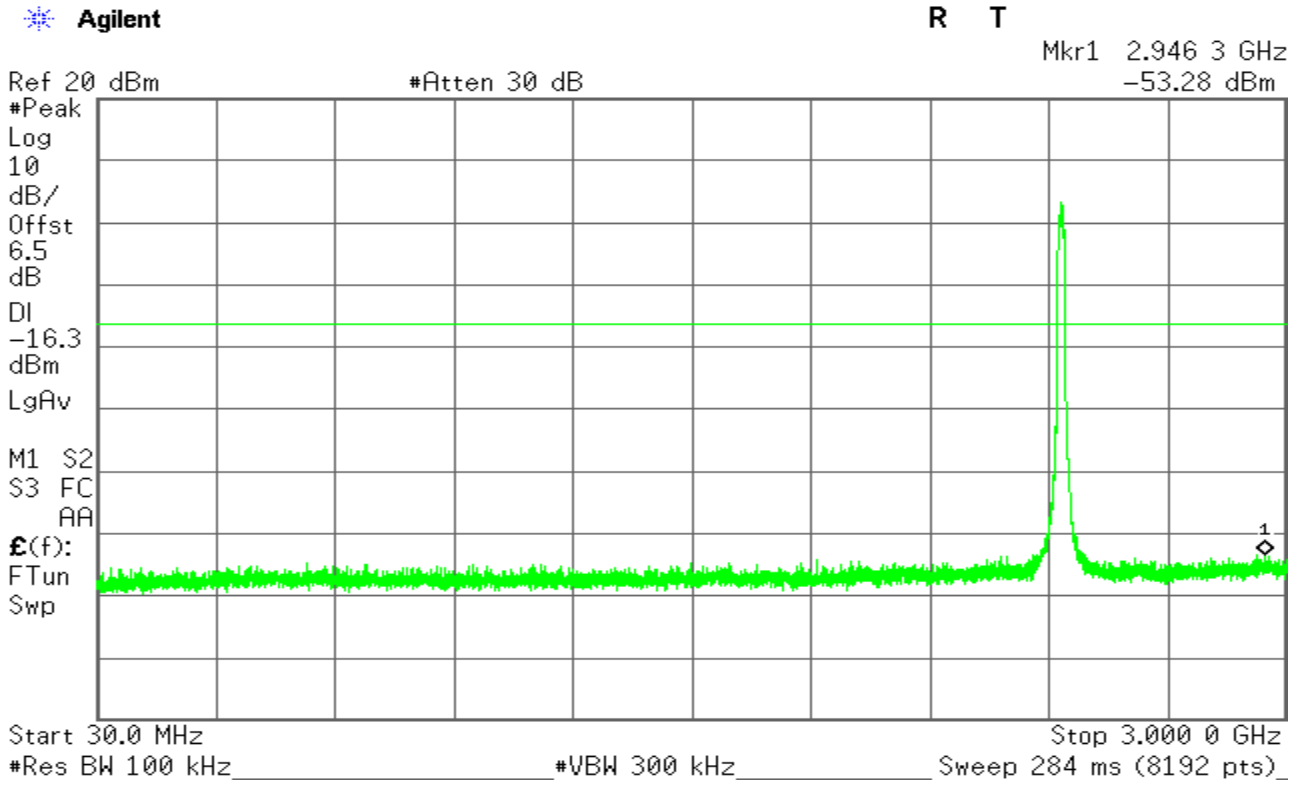


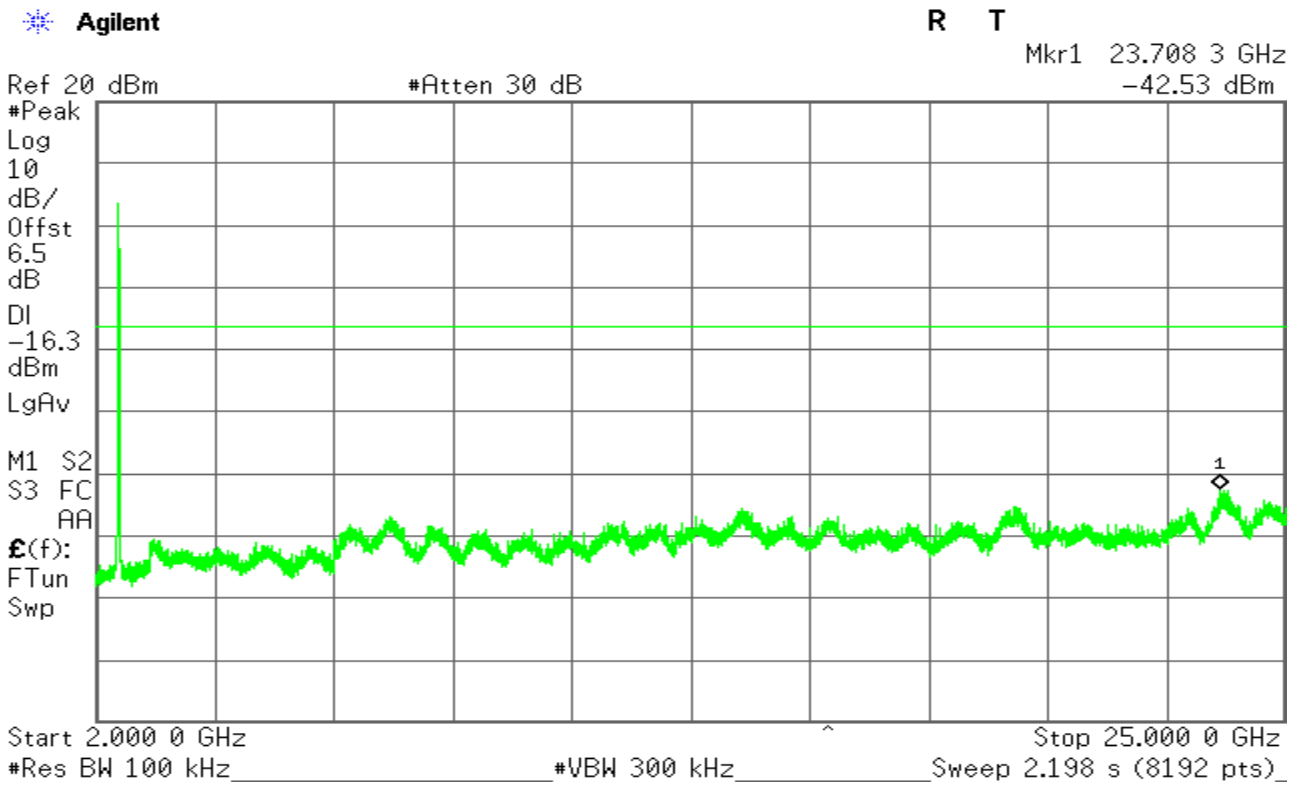

Agilent
R T
Mkr1 2.269 3 GHz
-52.79 dBm
Ref 20 dBm
#Atten 30 dB
#Peak
Log
10
dB/
Offst
6.5
dB
Dl
-16.1
dBm
LgAv
M1 S2
S3 FC
AA
£(f):
FTun
Swp
Start 30.0 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 3.000 0 GHz
Sweep 284 ms (8192 pts)


Agilent
R T
Mkr1 23.809 4 GHz
-43.48 dBm
Ref 20 dBm
#Atten 30 dB
#Peak
Log
10
dB/
Offst
6.5
dB
Dl
-16.1
dBm
LgAv
M1 S2
S3 FC
AA
£(f):
FTun
Swp
Start 2.000 0 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 25.000 0 GHz
Sweep 2.198 s (8192 pts)

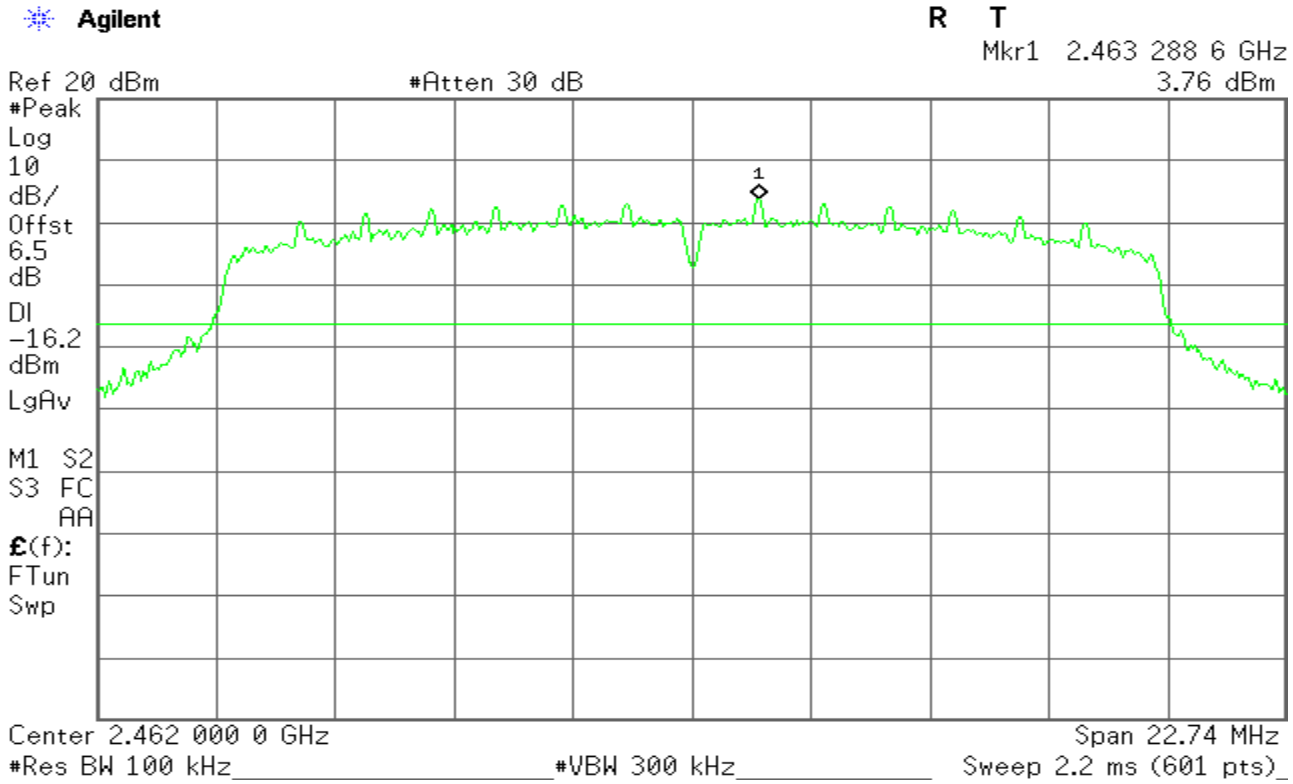
CH Mid

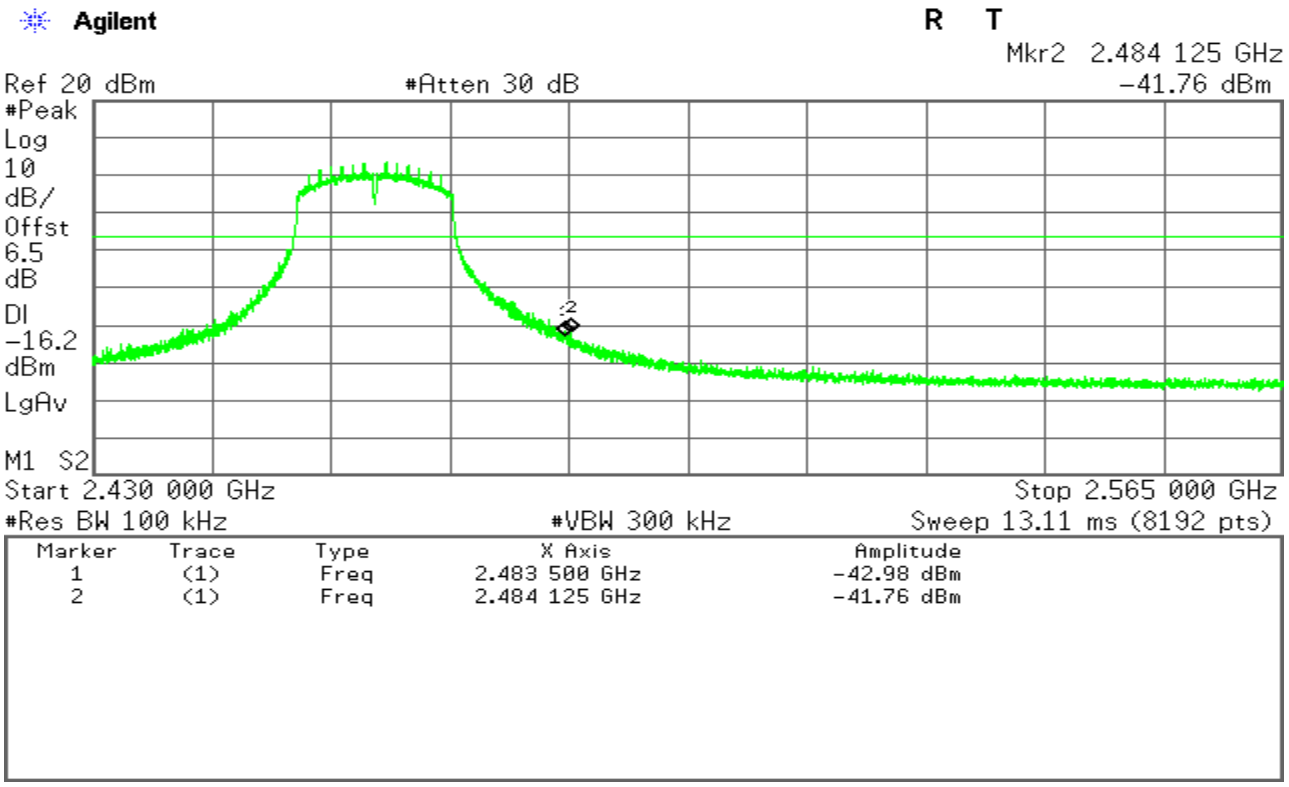

Agilent
R T
Mkr1 2.438 250 7 GHz
3.74 dBm
Ref 20 dBm
#Atten 30 dB
#Peak
Log
10
dB/
Offst
6.5
dB
Dl
-16.3
dBm
LgAv
M1 S2
S3 FC
AA
£(f):
FTun
Swp
Center 2.437 000 0 GHz
Span 22.74 MHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 2.2 ms (601 pts)

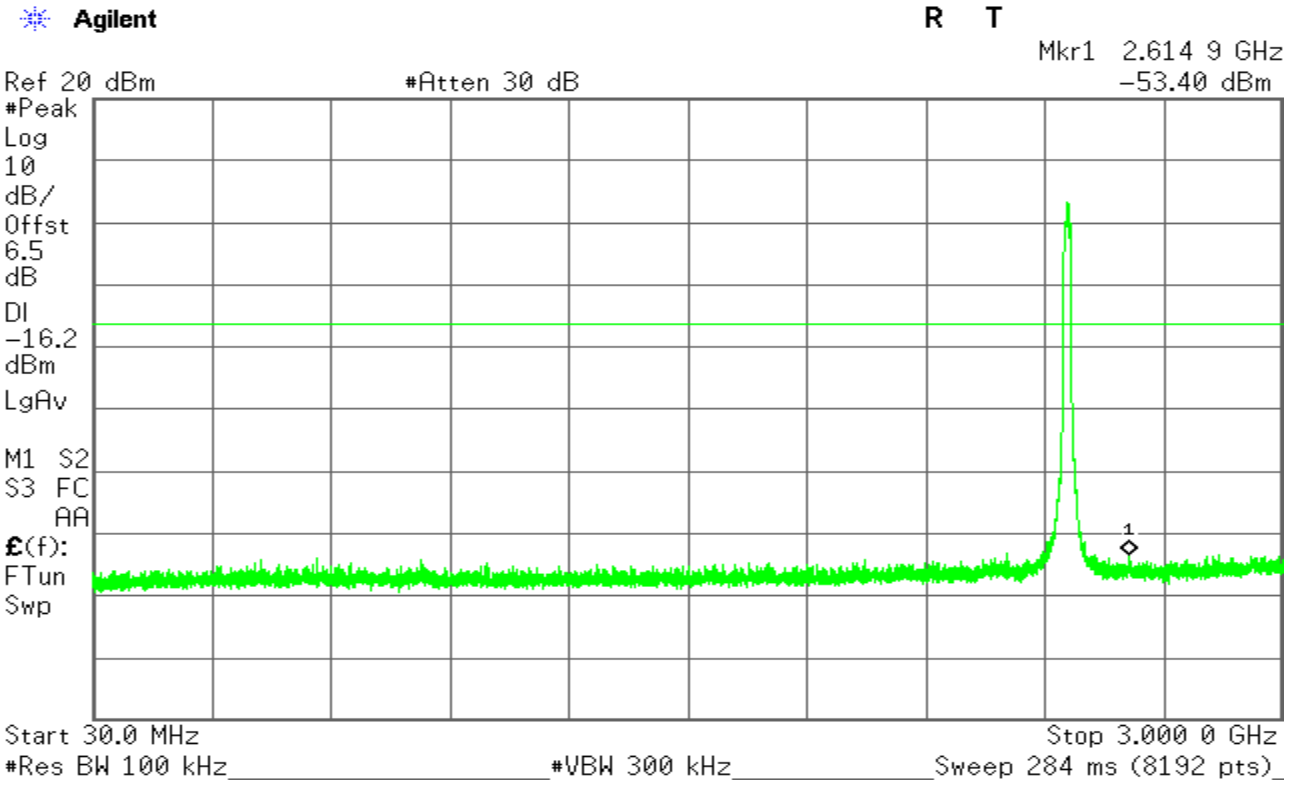

Agilent
R T
Mkr1 2.946 3 GHz
-53.28 dBm
Ref 20 dBm
#Atten 30 dB
#Peak
Log
10
dB/
Offst
6.5
dB
Dl
-16.3
dBm
LgAv
M1 S2
S3 FC
AA
£(f):
FTun
Swp
Start 30.0 MHz
Stop 3.000 0 GHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 284 ms (8192 pts)

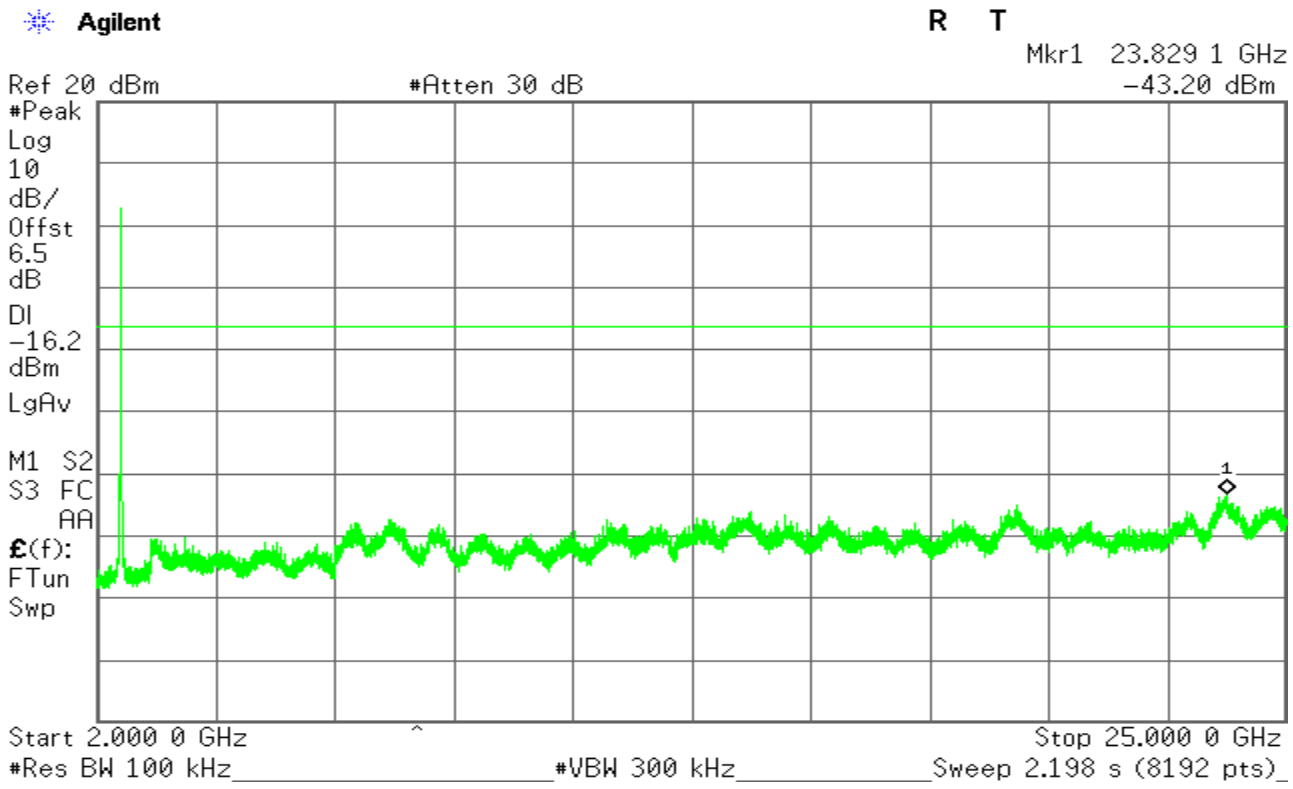

Agilent
R T
Mkr1 23.708 3 GHz
-42.53 dBm
Ref 20 dBm
#Atten 30 dB
#Peak
Log
10
dB/
Offst
6.5
dB
Dl
-16.3
dBm
LgAv
M1 S2
S3 FC
AA
£(f):
FTun
Swp
1
Start 2.000 0 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 25.000 0 GHz
Sweep 2.198 s (8192 pts)

CH High


Agilent
R T
Mkr1 2.463 288 6 GHz
3.76 dBm
Ref 20 dBm
#Atten 30 dB
#Peak
Log
10
dB/
Offst
6.5
dB
Dl
-16.2
dBm
LgAv
M1 S2
S3 FC
AA
£(f):
FTun
Swp
1
Center 2.462 000 0 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 22.74 MHz
Sweep 2.2 ms (601 pts)


Agilent
R T
Mkr2 2.484 125 GHz
-41.76 dBm
Ref 20 dBm
#Atten 30 dB
#Peak
Log
10
dB/
Offst
6.5
dB
Dl
-16.2
dBm
LgAv
M1 S2
Start 2.430 000 GHz
Stop 2.565 000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 13.11 ms (8192 pts)
Marker Trace Type X Axis Amplitude
1 (1) Freq 2.483 500 GHz -42.98 dBm
2 (1) Freq 2.484 125 GHz -41.76 dBm


Agilent
R T
Mkr1 2.614 9 GHz
-53.40 dBm
Ref 20 dBm
#Atten 30 dB
#Peak
Log
10
dB/
Offst
6.5
dB
Dl
-16.2
dBm
LgAv
M1 S2
S3 FC
AA
£(f):
FTun
Swp
Start 30.0 MHz
Stop 3.000 0 GHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 284 ms (8192 pts)


Agilent
R T
Mkr1 23.829 1 GHz
-43.20 dBm
Ref 20 dBm
#Atten 30 dB
#Peak
Log
10
dB/
Offst
6.5
dB
Dl
-16.2
dBm
LgAv
M1 S2
S3 FC
AA
£(f):
FTun
Swp
1
Start 2.000 0 GHz
Stop 25.000 0 GHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 2.198 s (8192 pts)

7.5. RADIATED EMISSIONS

LIMIT

Radiated emissions from 9 kHz to 25 GHz were measured according to the methods defines in ANSI C63.10-2013. The EUT was placed above the ground plane, 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz. 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

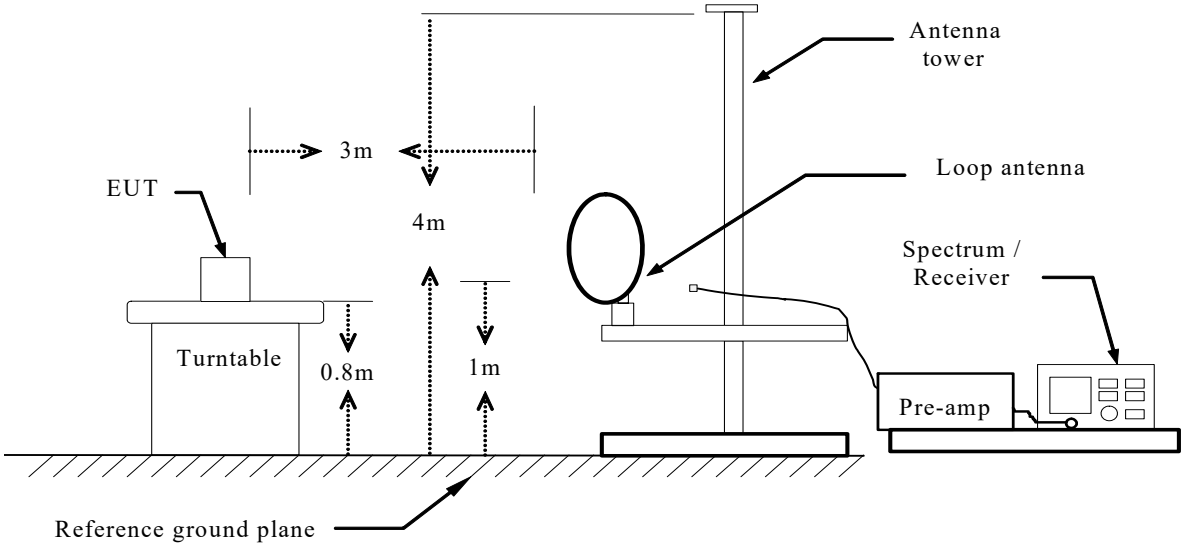
Remark: *Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of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

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

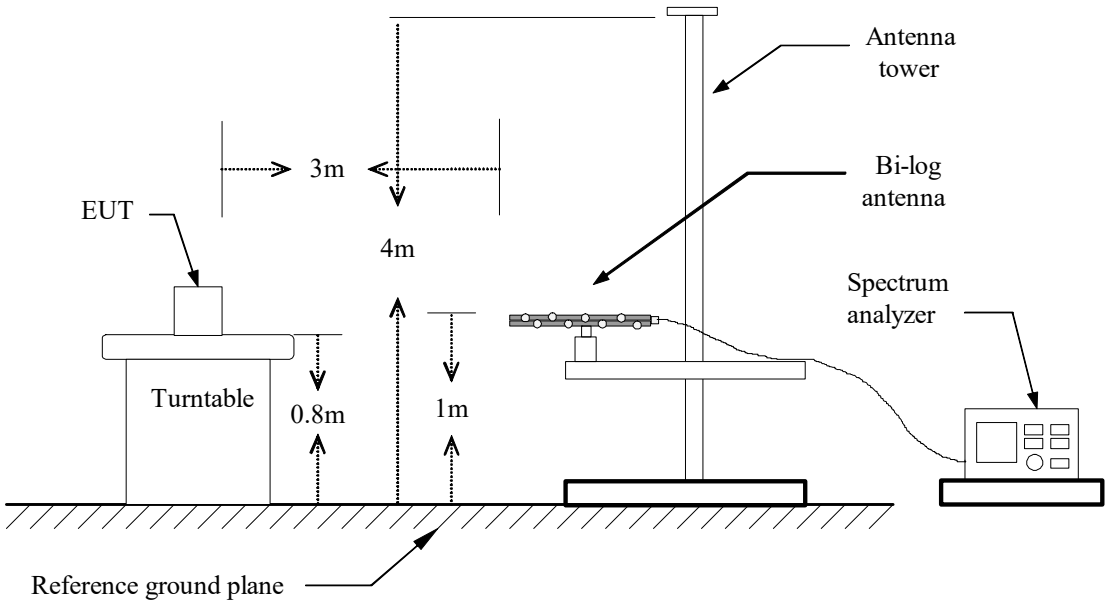
Frequency (MHz)	Field Strength (μV/m at 3-meter)	Field Strength (dBμV/m at 3-meter)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

Test Configuration

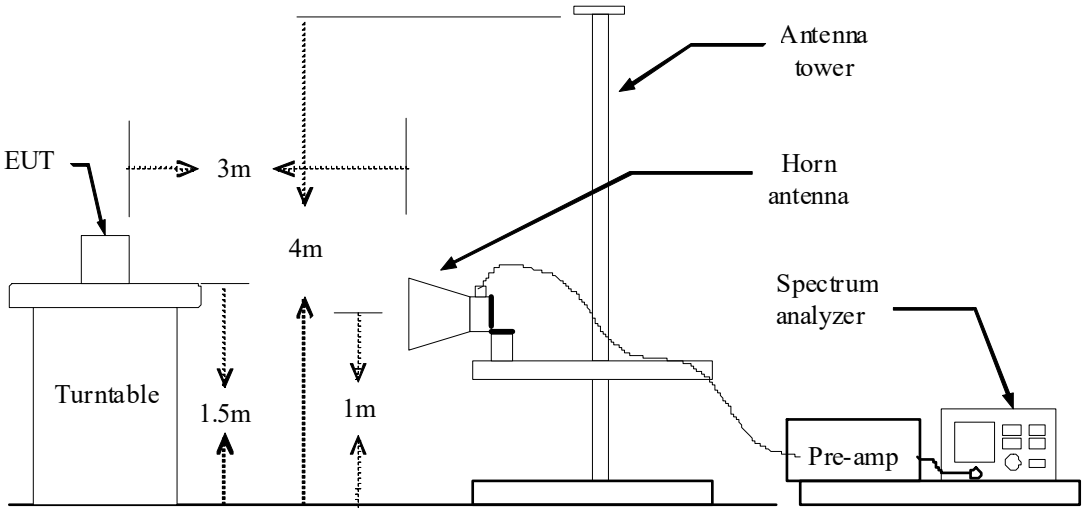
Below 30MHz



Below 1 GHz



Above 1 GHz



TEST PROCEDURE

1. The EUT is placed on a turntable above ground plane, which is 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz.
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:

   PEAK: RBW=VBW=1MHz / Sweep=AUTO

   AVERAGE: RBW=1MHz / Sweep=AUTO

   VBW=10Hz,when duty cycle is no less than 98 percent.

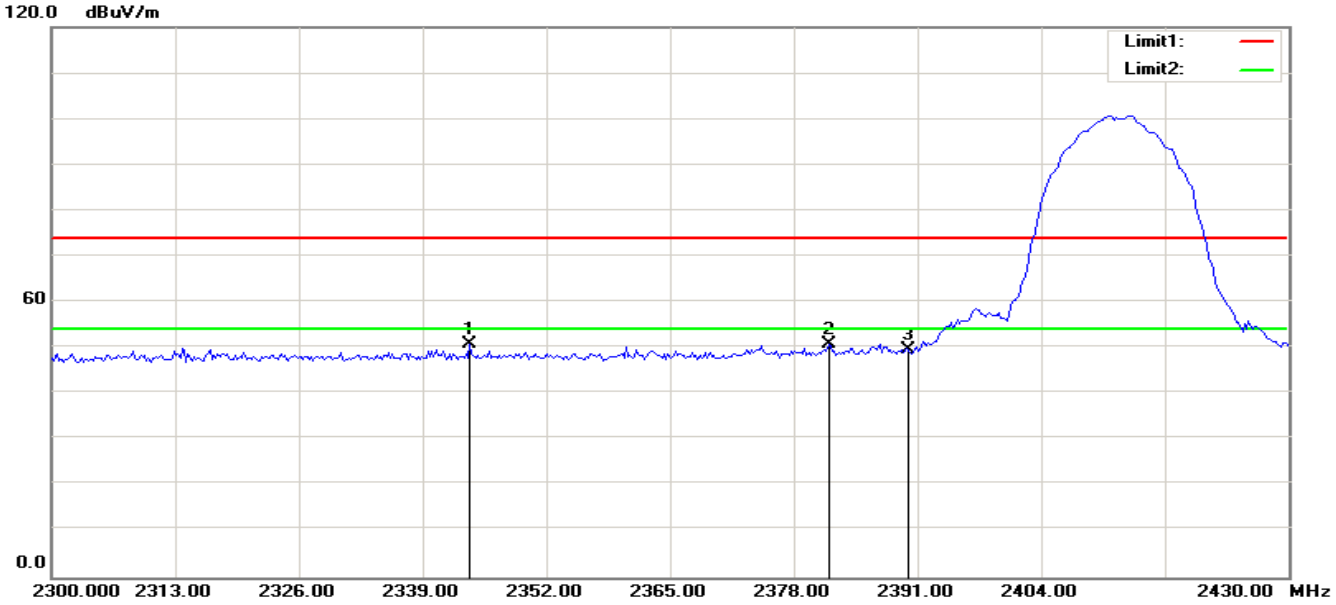
   VBW≧1/T,when duty cycle is less than 98 percent,where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximun power control level for the tested mode of operation.

Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
IEEE 802.11 b	99.6	--	--	10Hz
IEEE 802.11 g	98.3	--	--	10Hz
IEEE 802.11n HT20	97.8	1.32	0.76	1KHz

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

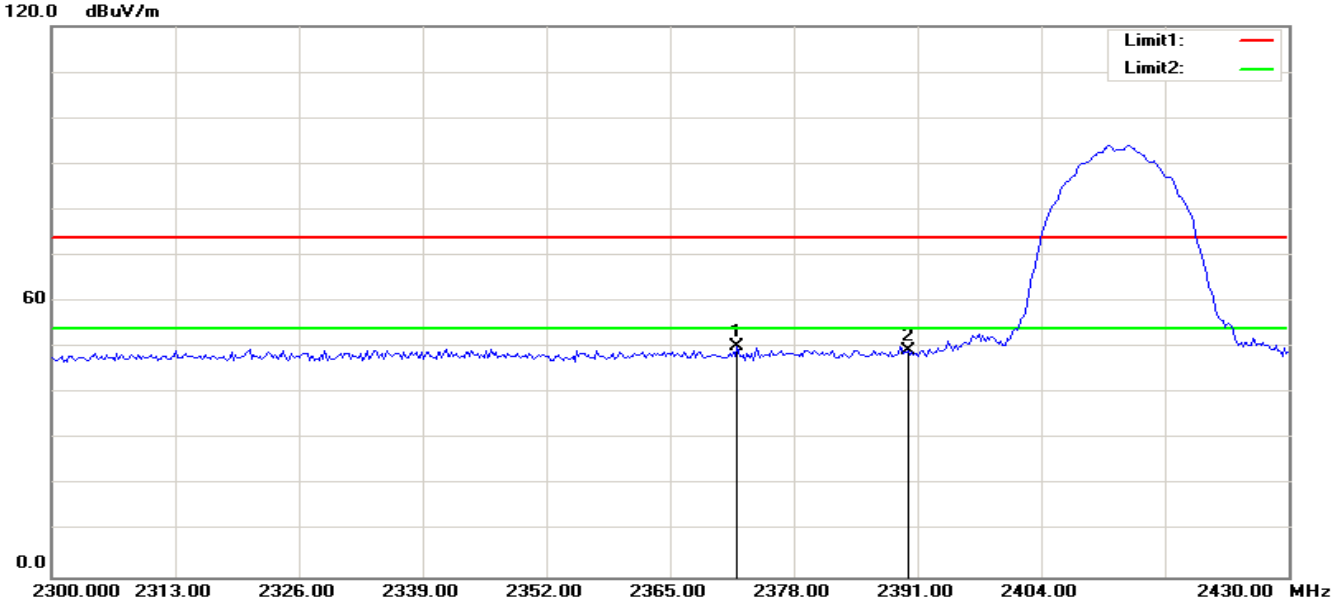
TEST RESULTS

RESTRICTED BANDEDGE (b Mode, Low Channel, Horizontal)



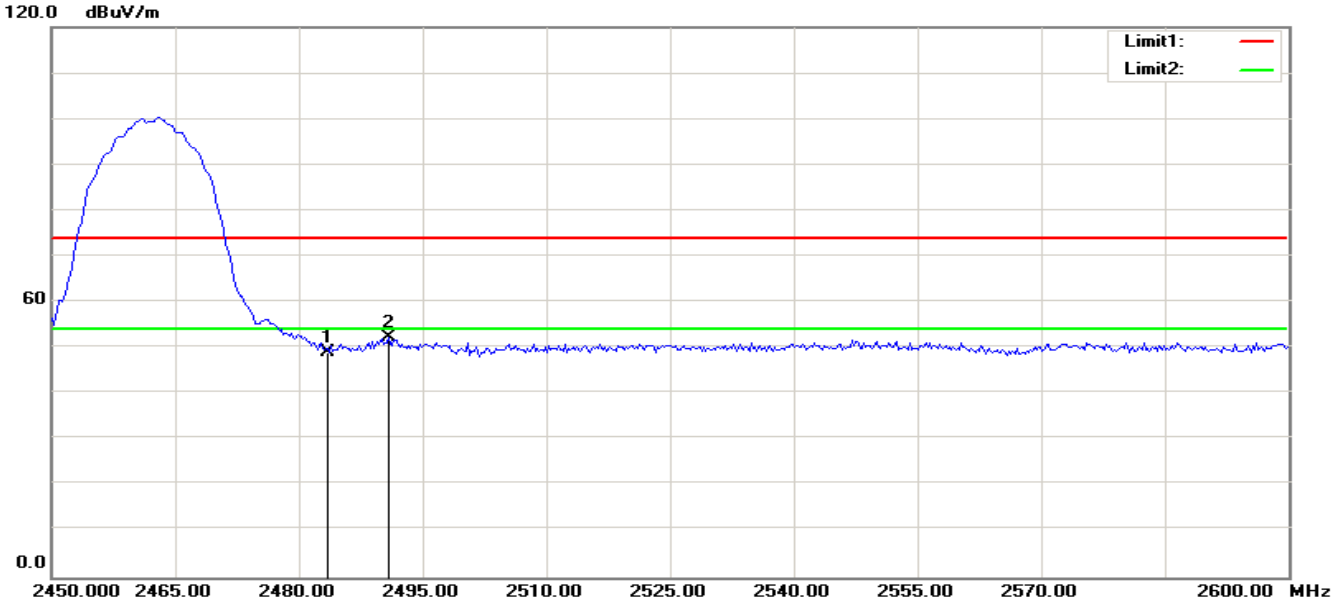
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2343.958	58.51	-7.74	50.77	74.00	-23.23	100	88	peak
2	2381.667	58.10	-7.39	50.71	74.00	-23.29	100	351	peak
3	2390.000	56.87	-7.31	49.56	74.00	-24.44	100	338	peak

RESTRICTED BANDEDGE (b Mode, Low Channel, Vertical)



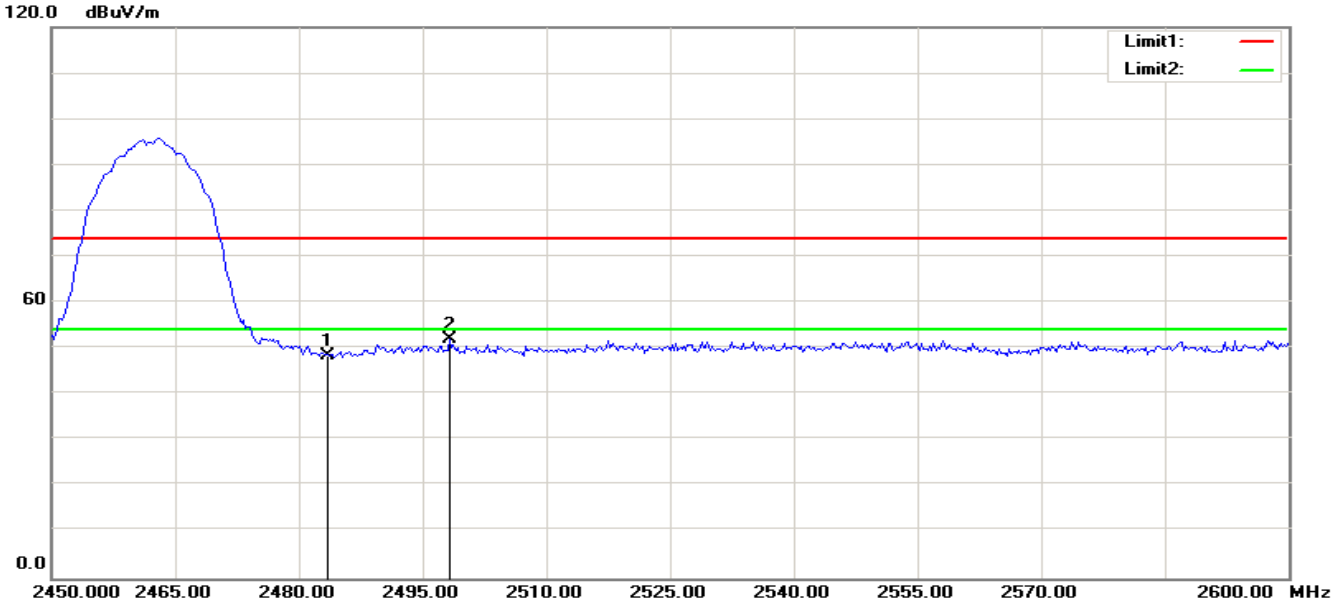
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2372.083	57.73	-7.48	50.25	74.00	-23.75	100	214	peak
2	2390.000	56.77	-7.31	49.46	74.00	-24.54	100	207	peak

RESTRICTED BANDEDGE (b Mode, High Channel, Horizontal)



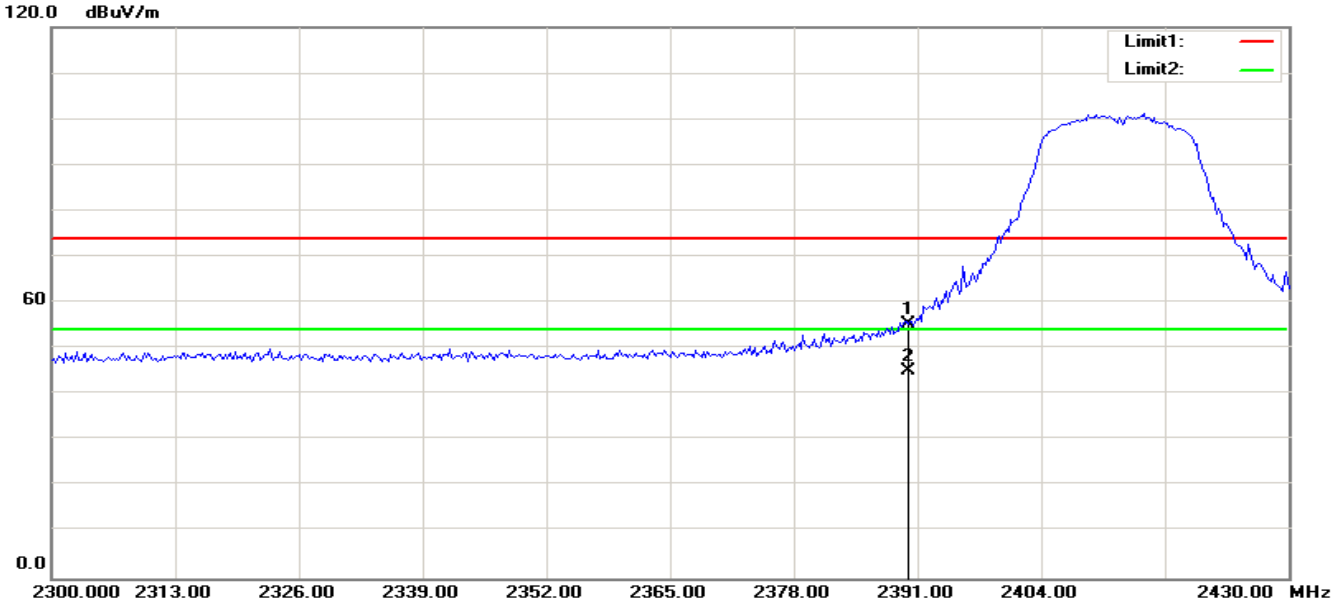
No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	2483.500	55.59	-6.44	49.15	74.00	-24.85	100	320	peak
2	2490.865	58.66	-6.37	52.29	74.00	-21.71	100	295	peak

RESTRICTED BANDEDGE (b Mode, High Channel, Vertical)



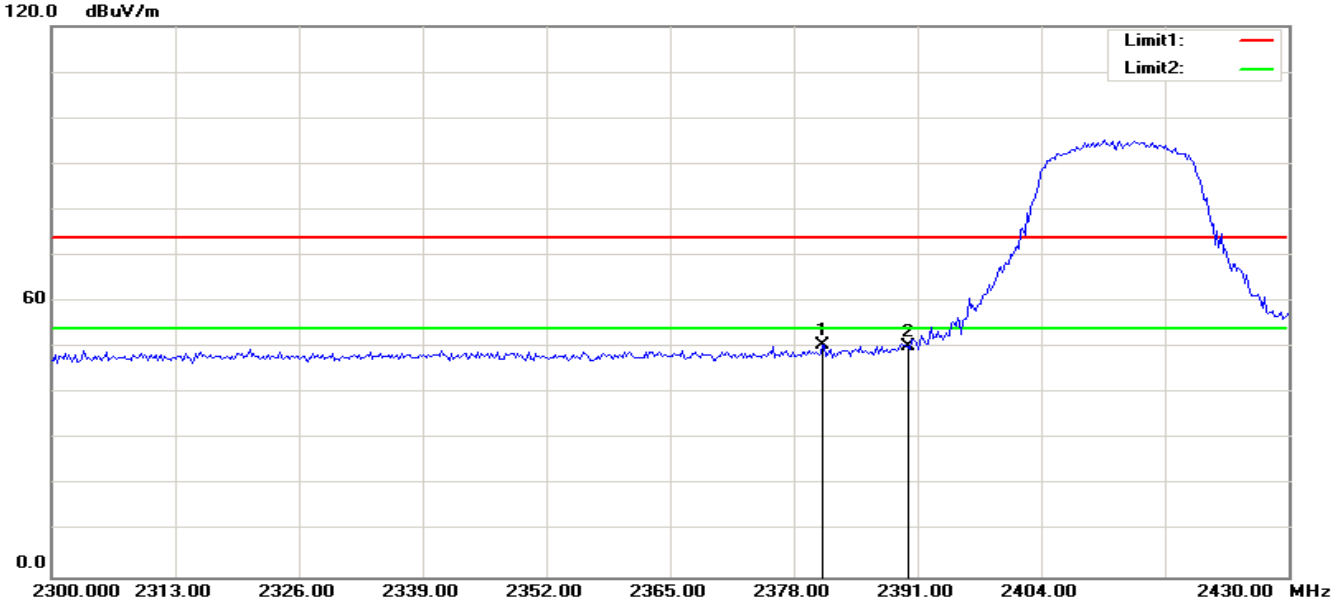
No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	2483.500	54.88	-6.44	48.44	74.00	-25.56	100	137	peak
2	2498.317	58.32	-6.31	52.01	74.00	-21.99	100	202	peak

RESTRICTED BANDEDGE (g Mode, Low Channel, Horizontal)



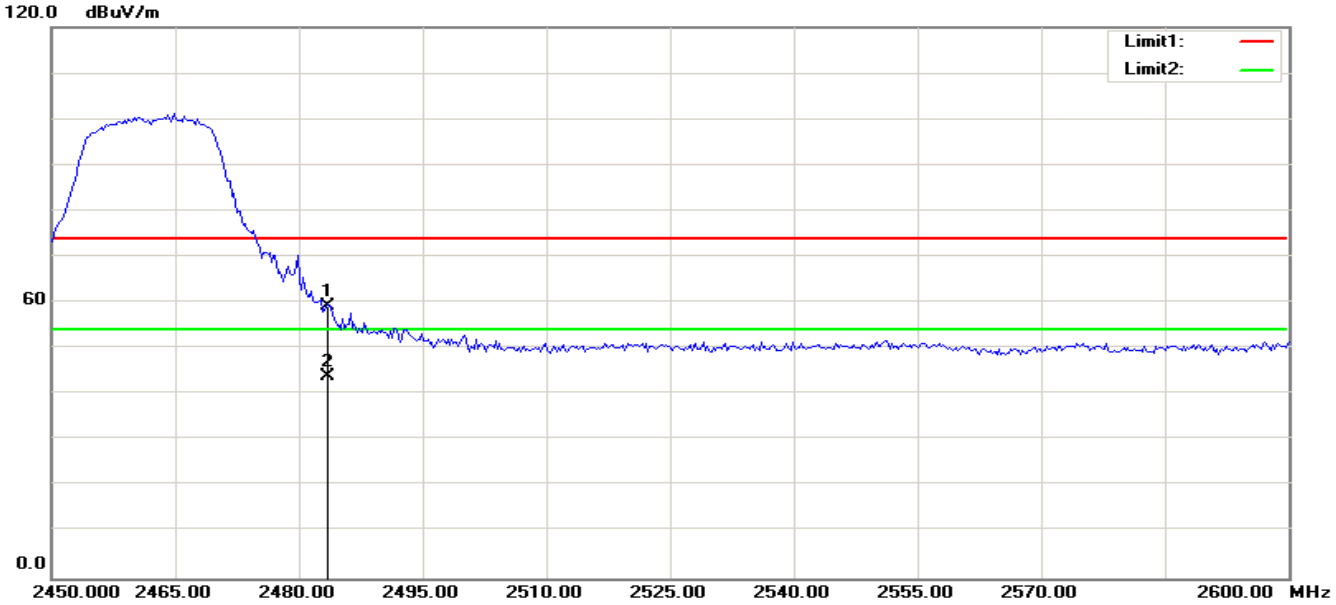
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2390.000	62.51	-7.31	55.20	74.00	-18.80	177	330	peak
2	2390.000	52.40	-7.31	45.09	54.00	-8.91	177	330	AVG

RESTRICTED BANDEDGE (g Mode, Low Channel, Vertical)



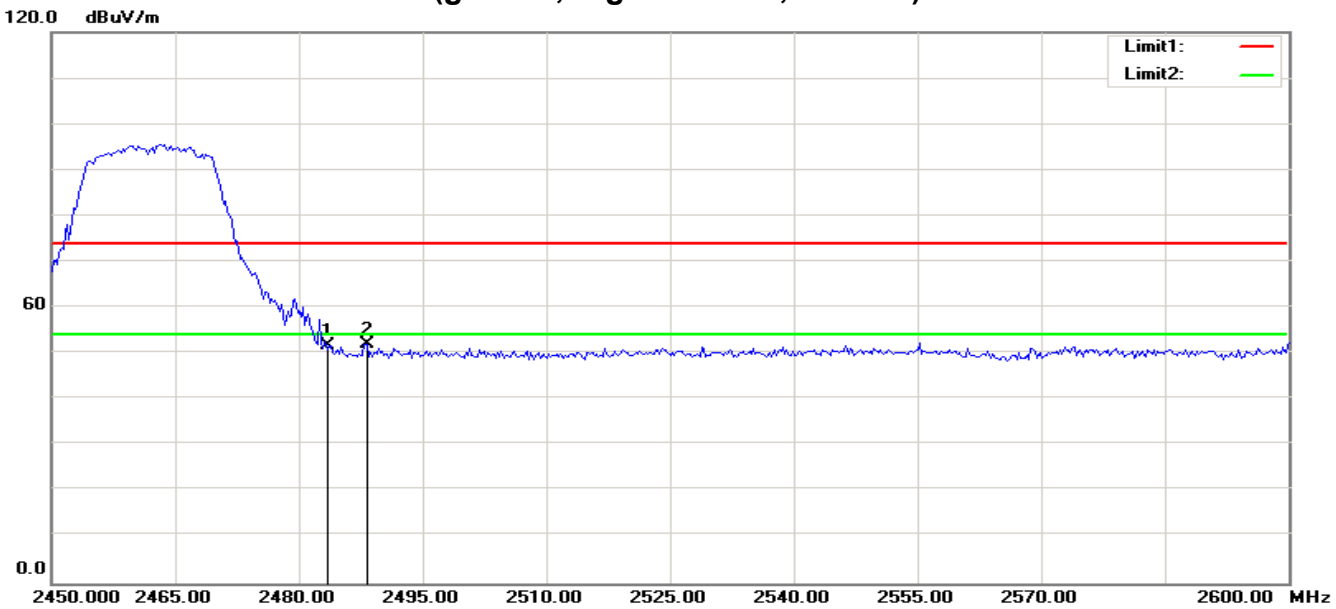
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2381.042	57.91	-7.39	50.52	74.00	-23.48	100	42	peak
2	2390.000	57.43	-7.31	50.12	74.00	-23.88	100	135	peak

RESTRICTED BANDEDGE (g Mode, High Channel, Horizontal)



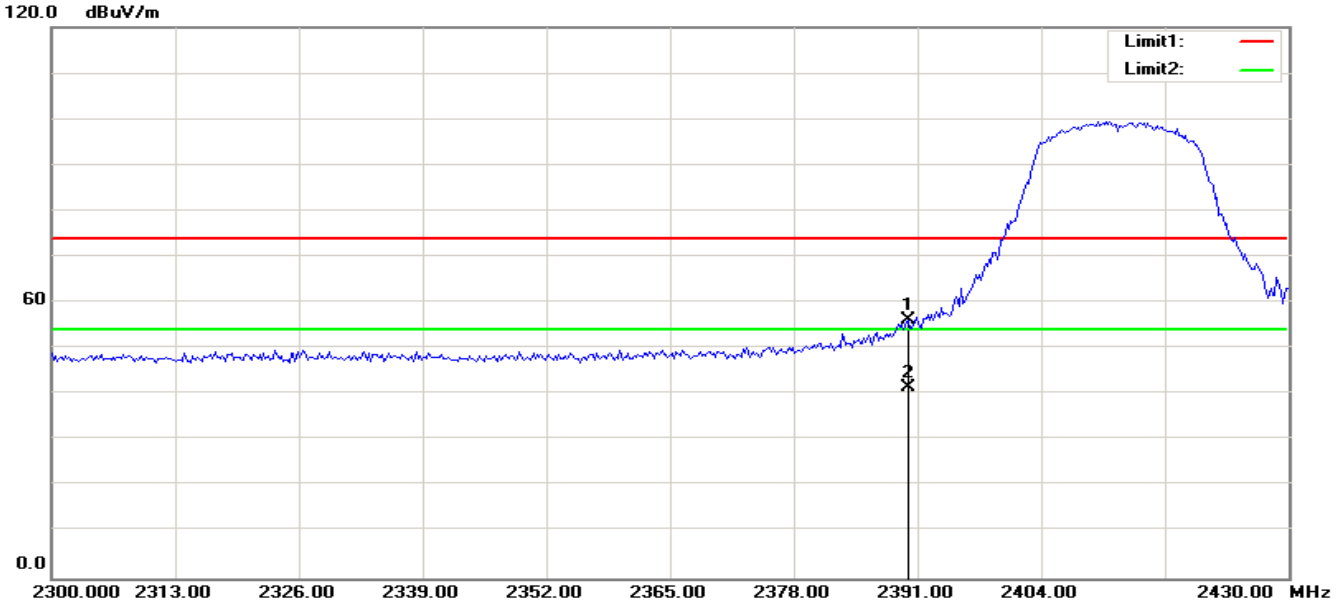
No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	2483.500	65.55	-6.44	59.11	74.00	-14.89	176	9	peak
2	2483.500	50.38	-6.44	43.94	54.00	-10.06	176	9	AVG

RESTRICTED BANDEDGE (g Mode, High Channel, Vertical)



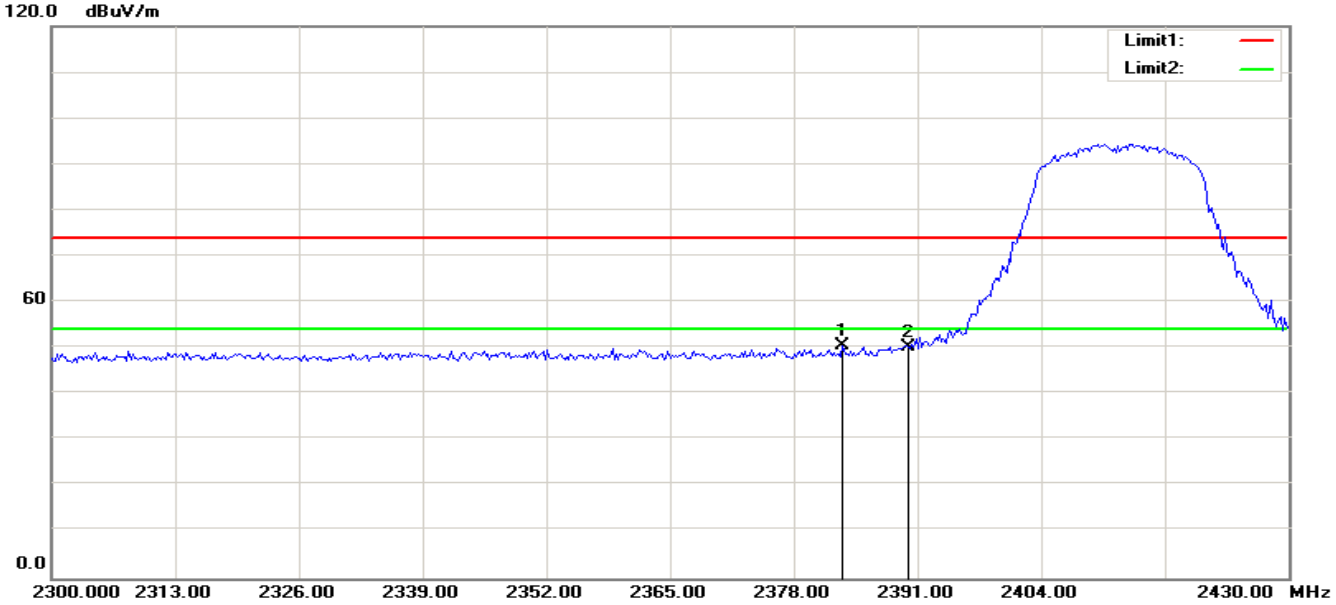
No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	2483.500	58.07	-6.44	51.63	74.00	-22.37	100	201	peak
2	2488.221	58.48	-6.40	52.08	74.00	-21.92	100	1	peak

RESTRICTED BANDEDGE (IEEE 802.11n HT20 mode, Low Channel, Horizontal)



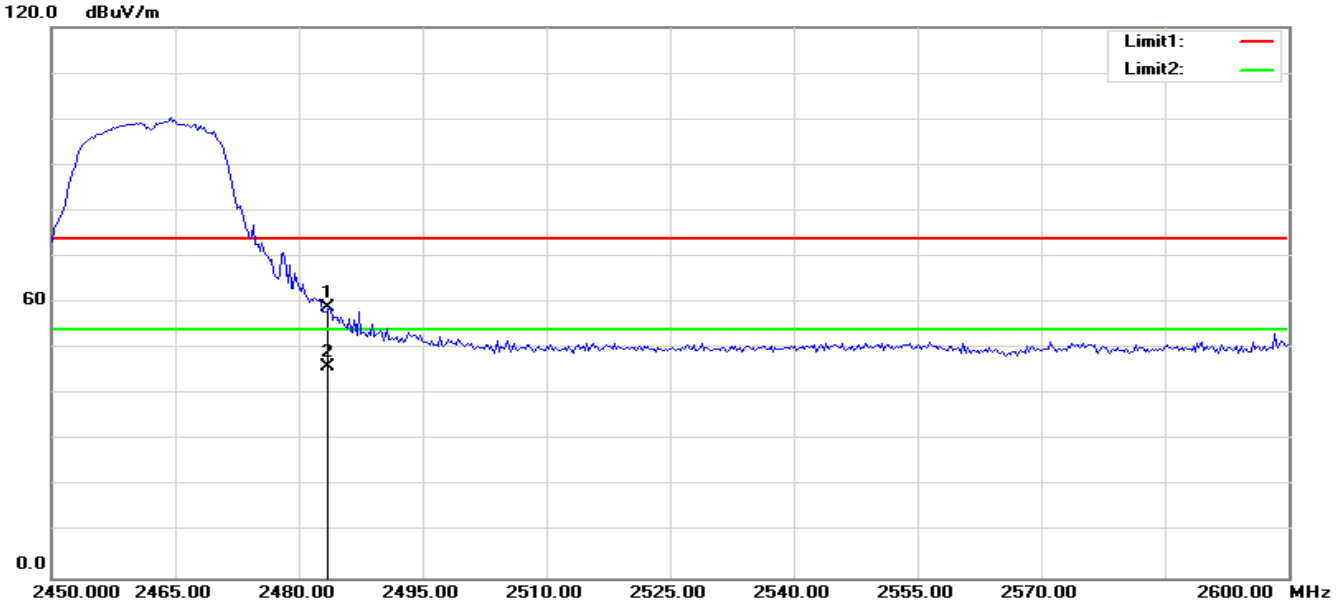
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2390.000	63.50	-7.31	56.19	74.00	-17.81	100	95	peak
2	2390.000	48.96	-7.31	41.65	54.00	-12.35	100	95	AVG

RESTRICTED BANDEDGE (IEEE 802.11n HT20 mode, Low Channel, Vertical)



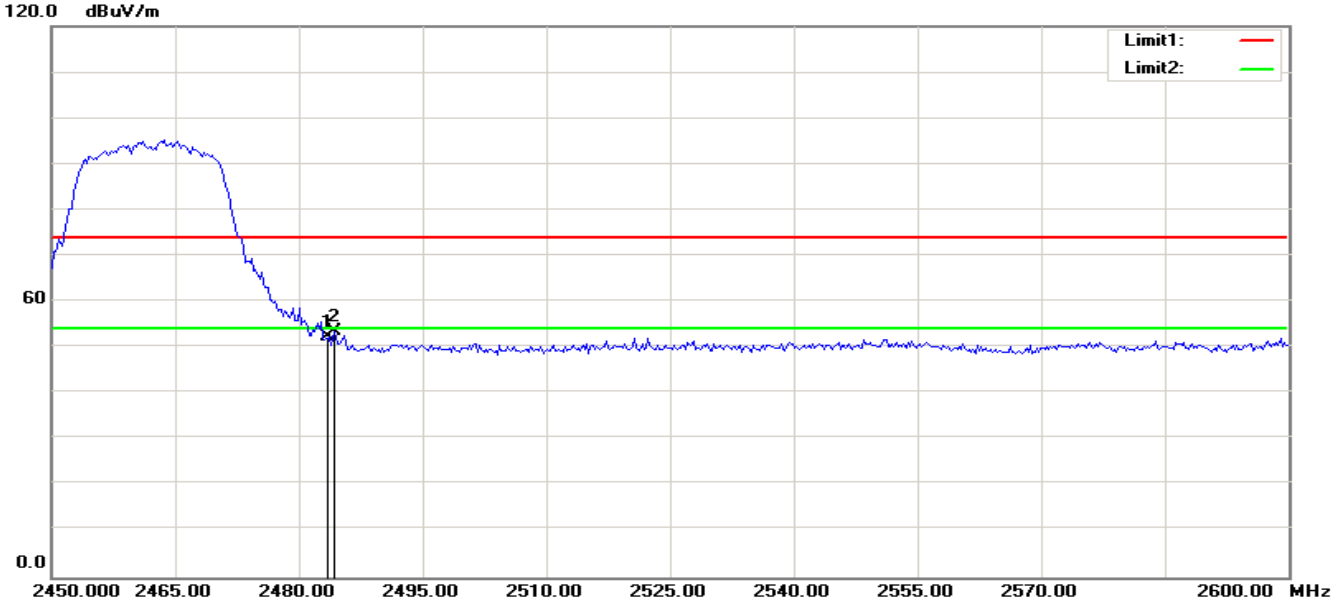
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2383.125	57.96	-7.37	50.59	74.00	-23.41	100	234	peak
2	2390.000	57.48	-7.31	50.17	74.00	-23.83	100	247	peak

RESTRICTED BANDEDGE (IEEE 802.11n HT20 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	65.34	-6.44	58.90	74.00	-15.10	100	308	peak
2	2483.500	52.48	-6.44	46.04	54.00	-7.96	100	308	AVG

RESTRICTED BANDEDGE (IEEE 802.11n HT20 mode, High Channel, Vertical)



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2483.500	58.70	-6.44	52.26	74.00	-21.74	100	202	peak
2	2484.375	59.97	-6.43	53.54	74.00	-20.46	100	202	peak

Test Result of Radiated Emission

Below 30MHz

The interference of the frequency value is lower than the limit below 20 db, measured as the background noise values and will not be recorded.

30MHz-1GHz

Operation Mode:	Normal Link	**Test Date:**	2017-9-7
Temperature:	25°C	**Tested by:**	James.Yan
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
40.1800	V	18.06	16.34	34.40	40.00	-5.60	QP
375.3200	V	16.78	18.57	35.35	46.00	-10.65	peak
500.4500	V	12.21	21.60	33.81	46.00	-12.19	peak
625.5800	V	15.69	23.39	39.08	46.00	-6.92	peak
679.9000	V	11.48	24.68	36.16	46.00	-9.84	peak
875.8400	V	12.49	26.04	38.53	46.00	-7.47	peak
143.4900	H	15.20	14.13	29.33	43.50	-14.17	peak
205.5700	H	16.32	15.69	32.01	43.50	-11.49	peak
375.3200	H	13.98	18.57	32.55	46.00	-13.45	peak
625.5800	H	13.21	23.39	36.60	46.00	-9.40	peak
750.7100	H	7.95	26.43	34.38	46.00	-11.62	peak
875.0000	H	15.49	26.04	41.53	46.00	-4.47	QP

Remark:

1. *Measuring frequencies from 30 MHz to the 1GHz (No emission found between lowest internal used/generated frequency to 30 MHz).*
2. *Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using peak/quasi-peak detector mode.*
3. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*
4. *Margin (dB) = Result (dBuV/m) – Limit (dBuV/m).*

Above 1 GHz

Operation Mode: TX / IEEE 802.11b / CH Low **Test Date:** 2017-9-7

Temperature: 24°C **Tested by:** James.Yan

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	5573.000	50.76	-2.38	48.38	74.00	-25.62	100	201	peak
2	7154.000	40.91	6.25	47.16	74.00	-26.84	100	246	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	5573.000	49.85	-2.38	47.47	74.00	-26.53	100	193	peak
2	7273.000	40.67	6.36	47.03	74.00	-26.97	100	101	peak
N/A									

Operation Mode: TX / IEEE 802.11b / CH Mid **Test Date:** 2017-9-7

Temperature: 24°C **Tested by:** James.Yan

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	5590.000	50.47	-2.30	48.17	74.00	-25.83	100	205	peak
2	7256.000	40.70	6.34	47.04	74.00	-26.96	100	251	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	5590.000	49.81	-2.30	47.51	74.00	-26.49	100	172	peak
2	7171.000	40.70	6.26	46.96	74.00	-27.04	100	248	peak
N/A									

Operation Mode: TX / IEEE 802.11b / CH High **Test Date:** 2017-9-7

Temperature: 24°C **Tested by:** James.Yan

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	5590.000	50.57	-2.30	48.27	74.00	-25.73	100	205	peak
2	7596.000	39.61	6.65	46.26	74.00	-27.74	100	52	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	5590.000	49.18	-2.30	46.88	74.00	-27.12	100	162	peak
2	7086.000	41.39	6.19	47.58	74.00	-26.42	100	162	peak
N/A									

Operation Mode: TX / IEEE 802.11g / CH Low **Test Date:** 2017-9-7

Temperature: 24°C **Tested by:** James.Yan

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	5590.000	49.80	-2.30	47.50	74.00	-26.50	100	197	peak
2	7188.000	40.16	6.28	46.44	74.00	-27.56	100	281	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	5590.000	49.28	-2.30	46.98	74.00	-27.02	100	178	peak
2	7494.000	39.95	6.55	46.50	74.00	-27.50	100	201	peak
N/A									

Operation Mode: TX / IEEE 802.11g / CH Mid **Test Date:** 2017-9-7

Temperature: 24°C **Tested by:** James.Yan

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

Horizontal

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	5624.000	48.88	-2.14	46.74	74.00	-27.26	100	212	peak
2	7698.000	40.49	6.74	47.23	74.00	-26.77	100	360	peak
N/A									

Vertical

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	5624.000	48.97	-2.14	46.83	74.00	-27.17	100	200	peak
2	7035.000	40.79	6.14	46.93	74.00	-27.07	100	223	peak
N/A									

Operation Mode: TX / IEEE 802.11g / CH High **Test Date:** 2017-9-7

Temperature: 24°C **Tested by:** James.Yan

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

Horizontal

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	5624.000	48.71	-2.14	46.57	74.00	-27.43	100	205	peak
2	7647.000	39.54	6.69	46.23	74.00	-27.77	100	212	peak
N/A									

Vertical

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	5624.000	49.81	-2.14	47.67	74.00	-26.33	100	193	peak
2	7613.000	41.37	6.66	48.03	74.00	-25.97	100	147	peak
N/A									

Operation Mode: TX / IEEE 802.11n HT20 mode / CH Low **Test Date:** 2017-9-7

Temperature: 24°C **Tested by:** James.Yan

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	5624.000	48.32	-2.14	46.18	74.00	-27.82	100	205	peak
2	7154.000	40.80	6.25	47.05	74.00	-26.95	100	304	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	5624.000	50.26	-2.14	48.12	74.00	-25.88	100	201	peak
2	7226.000	39.84	6.31	46.15	74.00	-27.85	100	305	peak
N/A									

Operation Mode: TX / IEEE 802.11n HT20 mode / CH Mid **Test Date:** 2017-9-7

Temperature: 24°C **Tested by:** James.Yan

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	5624.000	49.22	-2.14	47.08	74.00	-26.92	100	212	peak
2	7154.000	40.21	6.25	46.46	74.00	-27.54	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	5624.000	49.21	-2.14	47.07	74.00	-26.93	100	155	peak
2	7766.000	42.31	6.80	49.11	74.00	-24.89	100	324	peak
N/A									

Operation Mode: TX / IEEE 802.11n HT20 mode / CH High **Test Date:** 2017-9-7

Temperature: 24°C **Tested by:** James.Yan

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	5624.000	49.36	-2.14	47.22	74.00	-26.78	100	213	peak
2	7732.000	41.49	6.77	48.26	74.00	-25.74	100	45	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	5624.000	49.30	-2.14	47.16	74.00	-26.84	100	193	peak
2	7239.000	41.01	6.33	47.34	74.00	-26.66	100	109	peak
N/A									

7.6.POWERLINE CONDUCTED EMISSIONS

LIMIT

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

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

** Decreases with the logarithm of the frequency.*

Test Configuration

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

TEST PROCEDURE

1.The EUT was placed on a table, which is 0.8m above ground plane.

2.Maximum procedure was performed on the six highest emissions to ensure EUT compliance.

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

TEST RESULTS

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

TEST DATA

Note: The EUT is powered by DC source, so the test item needn't performance.

END OF REPORT