

FCC 47 CFR PART 15 SUBPART C

TEST REPORT

For

Product Name: ClickShare Button

Brand Name: Barco

Model No.: R9861500D01

Series Model: N/A

FCC ID: 2AAED- R9861500D01

IC: 9393B- R9861500D01

Test Report Number:

C150805R02-RPW

Issued for

Barco NV

President Kennedypark 35, 8500 Kortrijk, Belgium

Issued by

Compliance Certification Services Inc.

Kun shan Laboratory

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TESTING CERT #2541.01

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1. TEST RESULT CERTIFICATION

Product Name:	ClickShare Button
Trade Name:	Barco
Model Name.:	R9861500D01
Series Model:	N/A
Applicant Discrepancy:	Initial
Device Category:	Mobile device
Date of Test:	July 31, 2015 ~ September 13, 2015
Applicant:	Barco NV President Kennedypark 35, 8500 Kortrijk, Belgium
Manufacturer:	Barco NV President Kennedypark 35, 8500 Kortrijk, Belgium
Application Type:	Certification

APPLICABLE STANDARDS

STANDARD	TEST RESULT
FCC 47 CFR Part 15 Subpart C	No non-compliance noted
Canada RSS-247 Issue 1	No non-compliance noted
Canada RSS-Gen Issue 4	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:	ClickShare Button
Brand Name:	Barco
Model Name:	R9861500D01
Series Model:	N/A
Model Discrepancy:	N/A
Power Adapter Power Rating :	DC 5 V
Frequency Range:	2.4G:2412MHz-2462MHz
Transmit Power:	Chain 0: IEEE 802.11b mode: 18.02 dBm IEEE 802.11g mode: 21.85 dBm IEEE 802.11n HT20 mode: 22.06 dBm Chain 1: IEEE 802.11b mode: 18.28 dBm IEEE 802.11g mode: 21.95 dBm IEEE 802.11n HT20 mode: 22.51 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 (MCS0~MCS7)
Number of Channels:	IEEE 802.11b/g/n HT20 mode: 11 Channels
Antenna Specification:	chip antennas for 2.4GHz Gain 1.8 dBi
DDR:	Mode1: SAMSUNG / K4T1G164QG-BCE7
	Mode2: MICRON / MT47H64M16NF-25EM

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: 2AAED- R9861500D01** filing to comply with Section 15.207, 15.209 and 15.247 of the FCC Part 15, Subpart C Rules.

3.This submittal(s) (test report) is intended for **IC: 9393B- R9861500D01** filing to comply with Canada RSS-247 Issue 1 and Canada RSS-Gen Issue 3 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.DESRIPTION OF TEST MODES

The EUT transmitting and receiving with two antennas working at b/g/n mode, Both chain0 and chain1 could be used as transmit/receiving antenna, but only one of them could transmit/receive at the same time. so 2x2 configuration was used for all testing in this report.

The worst-case data rates with DDR mode 1 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 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)

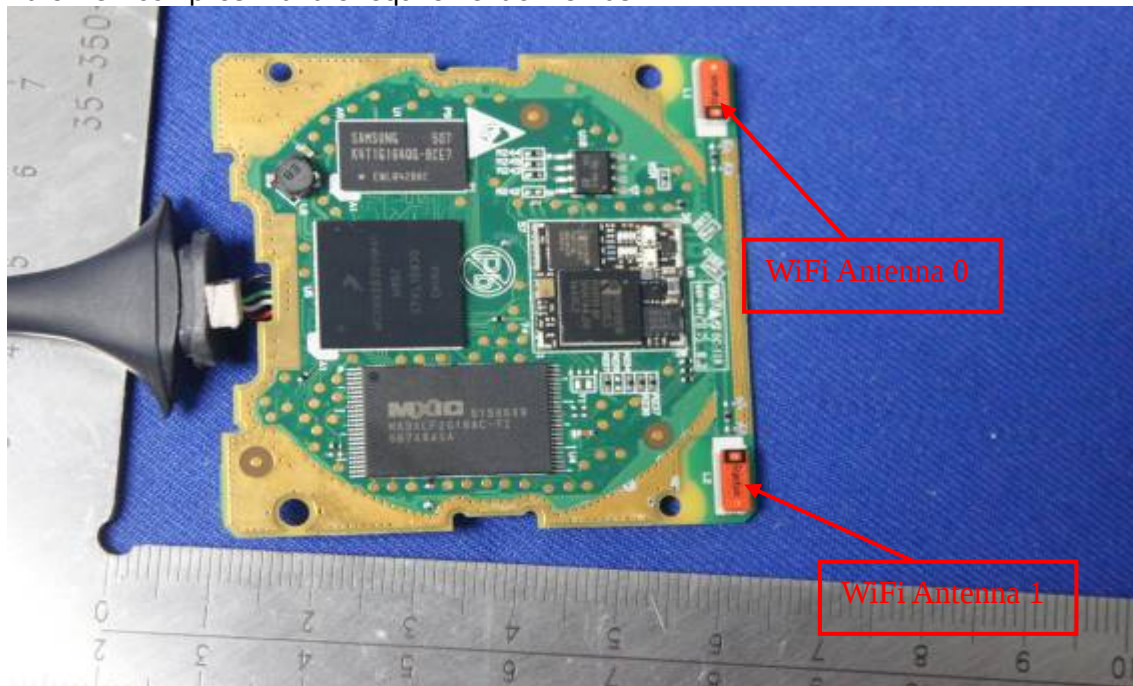
Channel High (2462MHz) with MCS0 data rate was chosen for full testing.

3.6.ANTENNA DESCRIPTION

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"

* the antenna of this EUT is a unique(chip Antenna for 2.4G WiFi).

* 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 Date	Calibration Due
Spectrum Analyzer	Agilent	E4446A	MY44020154	2015-4-9	2016-4-8
DETECTOR NEGATIVE	Agilent	8473B	MY42240176	2015-5-11	2016-5-10
OSCILLOSCOPE	Agilent	DSO6104A	MY44002585	2015-3-16	2016-3-15
Power Sensor	Anritsu	MA2411A	0917072	2015-4-24	2016-4-23
Power Meter	Agilent	U2021XA	MY53120005	2015-4-24	2016-4-23
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 Chamber	TERCHY	MHK-120AK	X30109	2015-1-22	2016-1-21
Spectrum Analyzer	Agilent	E4446A	MY44020154	2015-4-9	2016-4-8
DETECTOR NEGATIVE	Agilent	8473B	MY42240176	2015-5-11	2016-5-10
Test Software			EZ-EMC		

977 Chamber					
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
Spectrum Analyzer	Agilent	E4446A	MY44020154	2015-4-9	2016-4-8
EMI Test Receiver	R&S	ESCI	101378	2015-1-22	2016-1-21
Pre-Amplifier	MINI	ZFL-1000VH2	d041703	2015-1-22	2016-1-21
Pre-Amplifier	Miteq	JS41-00101800-32-10P	1675713	2015-1-22	2016-1-21
Bilog Antenna	Sunol	JB1	A062604	2015-3-6	2016-3-5
Horn-antenna	SCHWARZBECK	BBHA9120D	D:266	2015-3-7	2016-3-6
Turn Table	CT	CT123	4165	N.C.R	N.C.R
Antenna Tower	CT	CTERG23	3256	N.C.R	N.C.R
Controller	CT	CT100	95637	N.C.R	N.C.R
Test Software			EZ-EMC		

Conducted Emission					
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
EMI TEST RECEIVER	R&S	ESCI	100781	2015-3-16	2016-3-15
V (V-LISN)	SCHWARZBECK	NNLK 8129	8129-143	N.C.R	N.C.R
LISN (EUT)	FCC	FCC-LISN-50/250-50-2-02	05012	2015-3-16	2016-3-15
Pulse LIMITER	R&S	ESH3-Z2	100524	2015-9-24	2016-9-23
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

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, 2324E-1 for 10m chamber 10m, 2324E-2 for 10m chamber 3m; the test facilities are listed with USA, Certification and Engineering Bureau, 424105 for 10m chamber 10m, 238958 for 10m chamber 3m.

5.4.TABLE OF ACCREDITATIONS AND LISTINGS

Country	Agency	Scope of Accreditation	Logo
USA	A2LA	47 CFR FCC Part 15/18 (using ANSI C63.10 :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	 TESTING CERT #2541.01
USA	FCC	3/10 meter Sites to perform FCC Part 15/18 measurements	 93105, 90471
Japan	VCCI	3/10 meter Sites and conducted test sites to perform radiated/conducted measurements	VCCI R-1600 C-1707 G-216

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

6. SETUP OF EQUIPMENT UNDER TEST

6.1.SETUP CONFIGURATION OF EUT

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

6.2.SUPPORT EQUIPMENT

No.	Device Type	Brand	Model	Series No.	FCC ID
1.	Notebook	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.

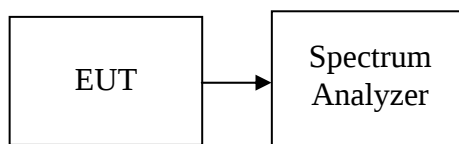
4. FCC PART 15.247 REQUIREMENTS

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	10.066	>500	PASS
Mid	2437	9.998		PASS
High	2462	10.078		PASS

IEEE 802.11b mode /Chain 1

Channel	Frequency (MHz)	Bandwidth (MHz)	Limit (kHz)	Result
Low	2412	10.043	>500	PASS
Mid	2437	10.051		PASS
High	2462	10.091		PASS

IEEE 802.11g mode /Chain 0

Channel	Frequency (MHz)	Bandwidth (MHz)	Limit (kHz)	Result
Low	2412	16.614	>500	PASS
Mid	2437	16.560		PASS
High	2462	16.606		PASS

IEEE 802.11g mode /Chain 1

Channel	Frequency (MHz)	Bandwidth (MHz)	Limit (kHz)	Result
Low	2412	16.595	>500	PASS
Mid	2437	16.596		PASS
High	2462	16.592		PASS



IEEE 802.11n HT20 mode / Chain 0

Channel	Frequency (MHz)	Bandwidth (MHz)	Limit (kHz)	Result
Low	2412	17.793	>500	PASS
Mid	2437	17.754		PASS
High	2462	17.798		PASS

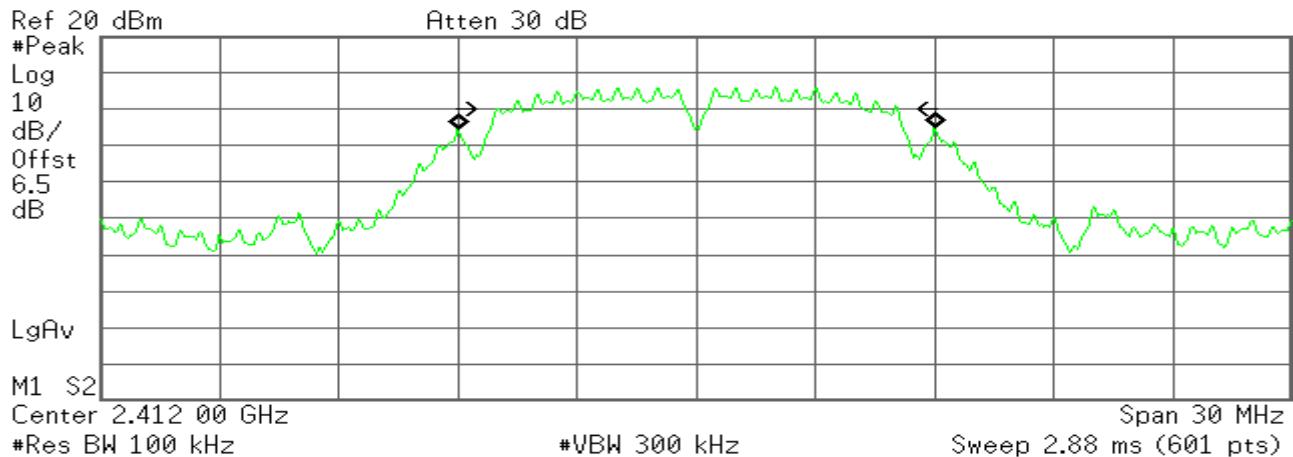
IEEE 802.11n HT20 mode / Chain 1

Channel	Frequency (MHz)	Bandwidth (MHz)	Limit (kHz)	Result
Low	2412	17.783	>500	PASS
Mid	2437	17.790		PASS
High	2462	17.782		PASS

Test Plot**IEEE 802.11b MODE /Chain 0****6dB Bandwidth (CH Low)**

* Agilent

R T



Occupied Bandwidth
12.0010 MHz

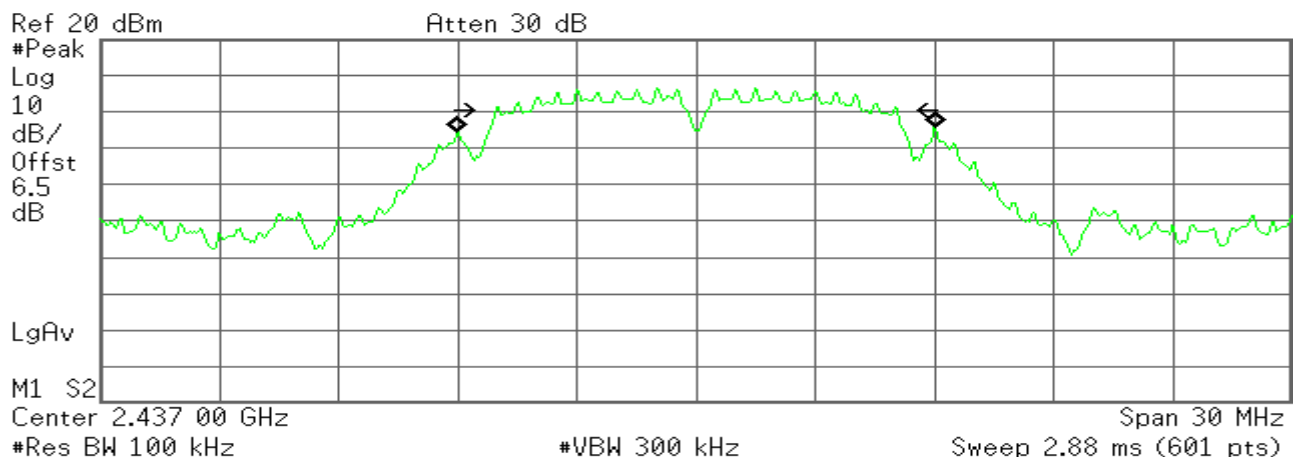
Occ BW % Pwr 99.00 %
x dB -6.00 dB

Transmit Freq Error 33.064 kHz
x dB Bandwidth 10.066 MHz

6dB Bandwidth (CH Mid)

* Agilent

R T



Occupied Bandwidth
12.0602 MHz

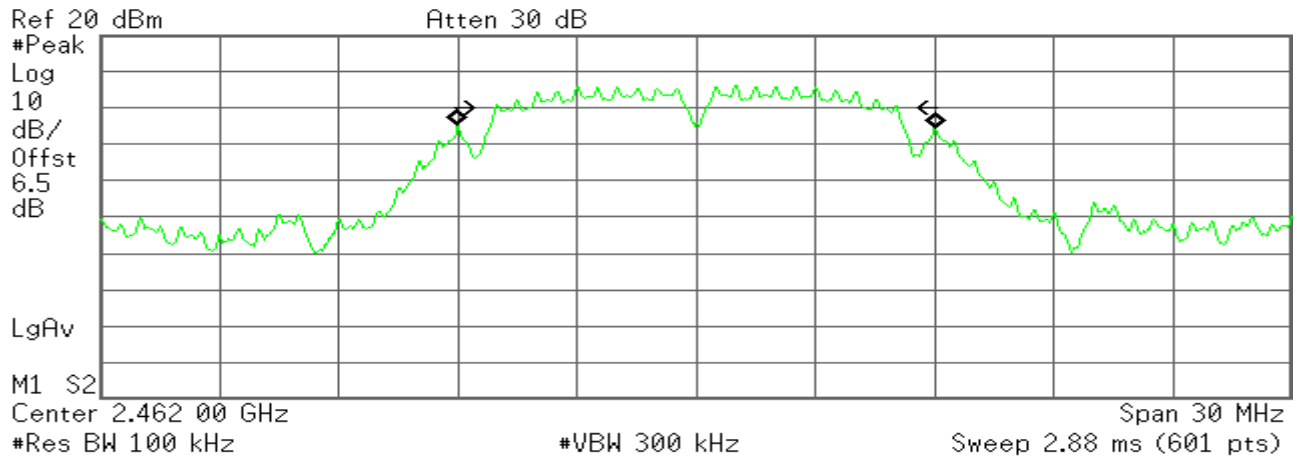
Occ BW % Pwr 99.00 %
x dB -6.00 dB

Transmit Freq Error 24.372 kHz
x dB Bandwidth 9.998 MHz

6dB Bandwidth (CH High)

Agilent

R T



Occupied Bandwidth
12.0289 MHz

Occ BW % Pwr 99.00 %
x dB -6.00 dB

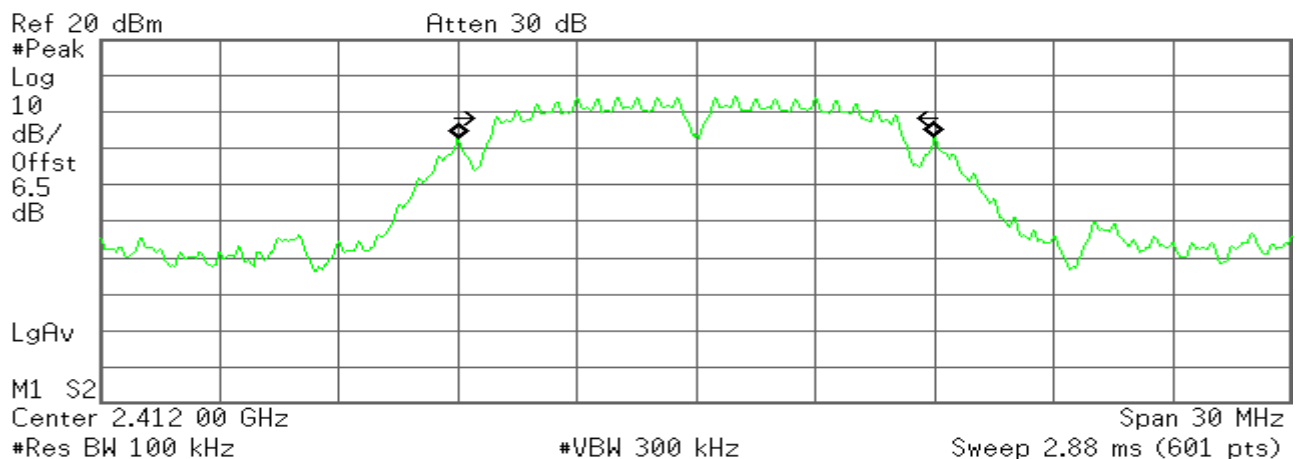
Transmit Freq Error 22.523 kHz
x dB Bandwidth 10.078 MHz

IEEE 802.11b MODE /Chain 1

6dB Bandwidth (CH Low)

Agilent

R T



Occupied Bandwidth
11.9581 MHz

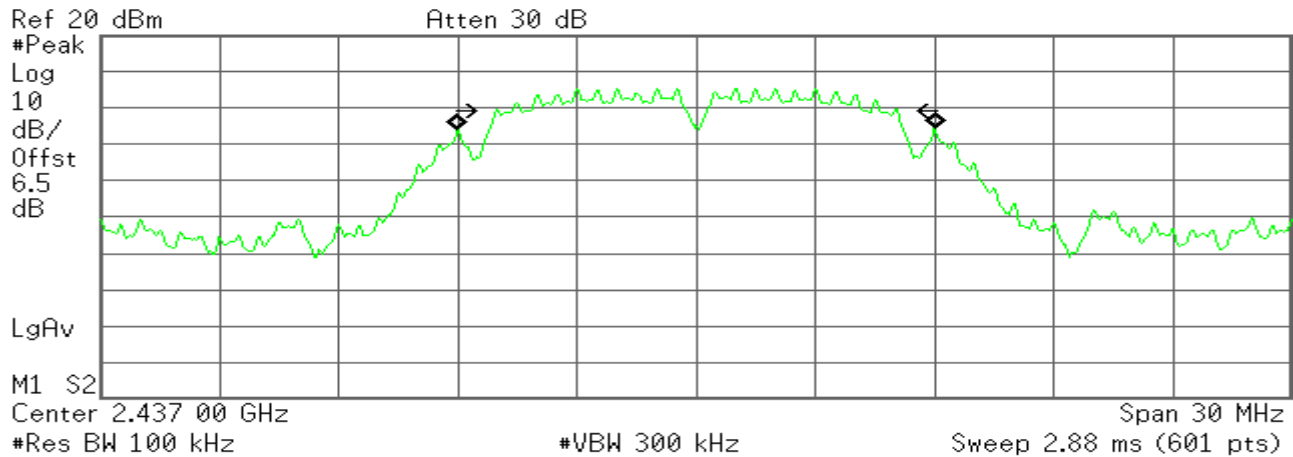
Occ BW % Pwr 99.00 %
x dB -6.00 dB

Transmit Freq Error 28.850 kHz
x dB Bandwidth 10.043 MHz

6dB Bandwidth (CH Mid)

Agilent

R T



Occupied Bandwidth
11.9987 MHz

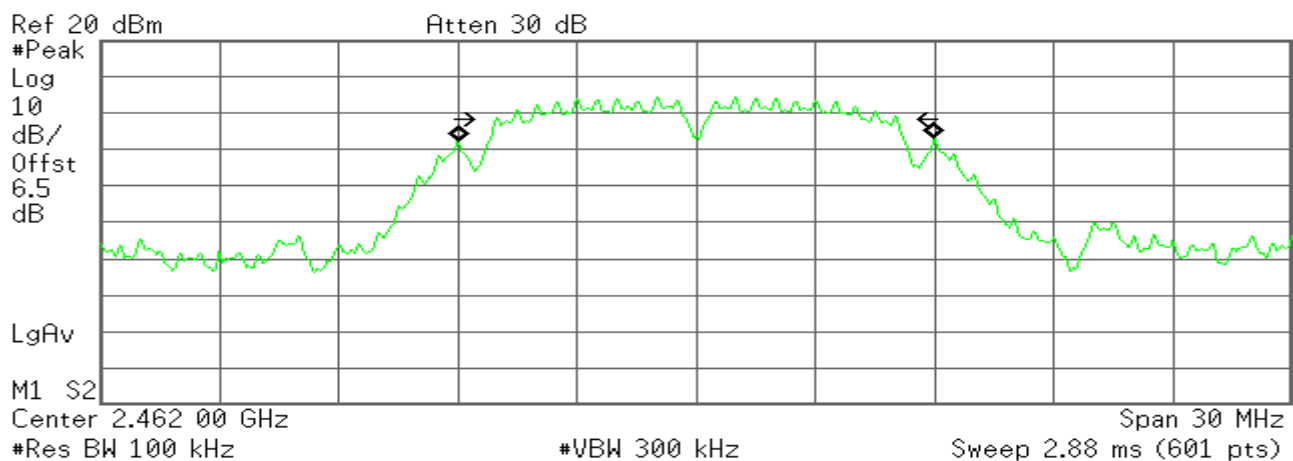
Occ BW % Pwr 99.00 %
x dB -6.00 dB

Transmit Freq Error 25.041 kHz
x dB Bandwidth 10.051 MHz

6dB Bandwidth (CH High)

Agilent

R T



Occupied Bandwidth
11.9584 MHz

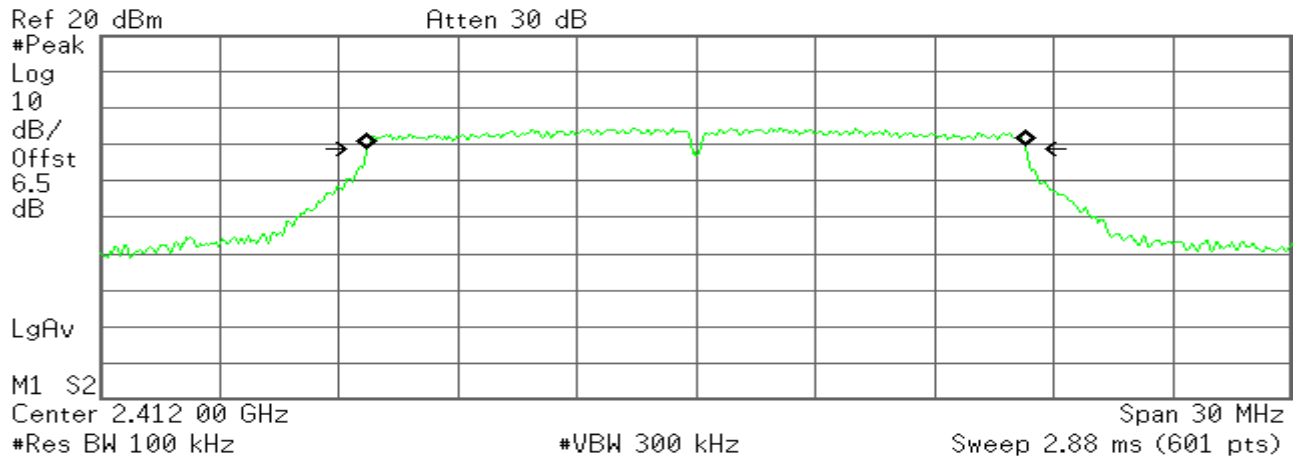
Occ BW % Pwr 99.00 %
x dB -6.00 dB

Transmit Freq Error 26.590 kHz
x dB Bandwidth 10.091 MHz

IEEE 802.11g MODE /Chain 0**6dB Bandwidth (CH Low)**

* Agilent

R T



Occupied Bandwidth
16.5618 MHz

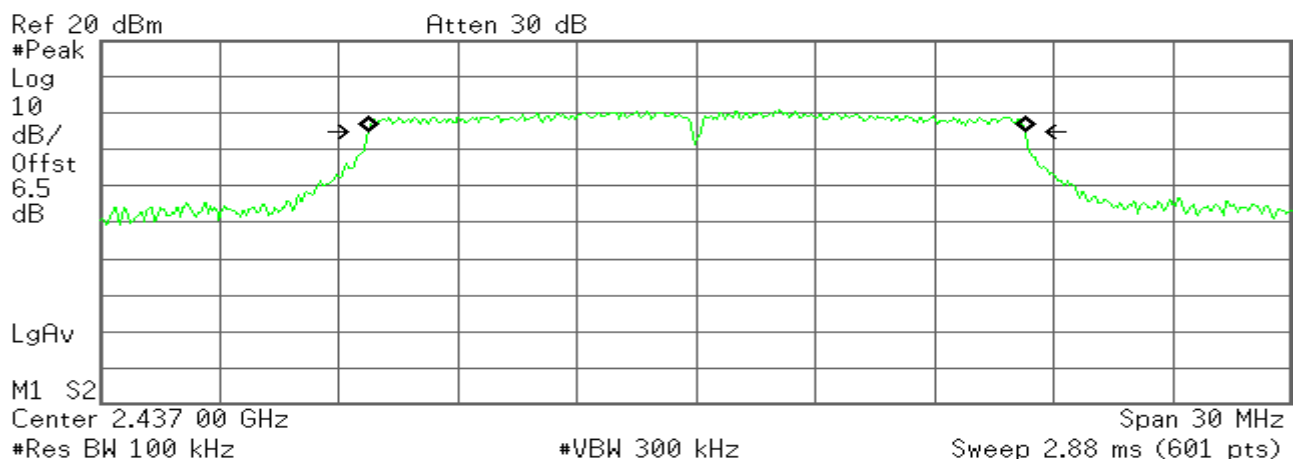
Occ BW % Pwr 99.00 %
x dB -6.00 dB

Transmit Freq Error -1.276 kHz
x dB Bandwidth 16.614 MHz

6dB Bandwidth (CH Mid)

* Agilent

R T



Occupied Bandwidth
16.5530 MHz

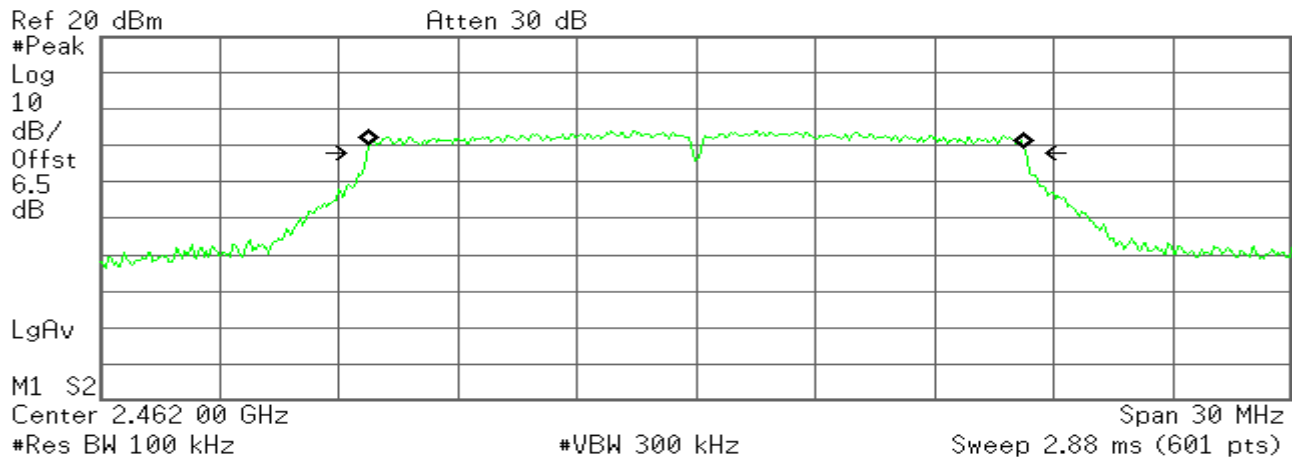
Occ BW % Pwr 99.00 %
x dB -6.00 dB

Transmit Freq Error 12.375 kHz
x dB Bandwidth 16.560 MHz

6dB Bandwidth (CH High)

* Agilent

R T



Occupied Bandwidth
16.5173 MHz

Occ BW % Pwr 99.00 %
x dB -6.00 dB

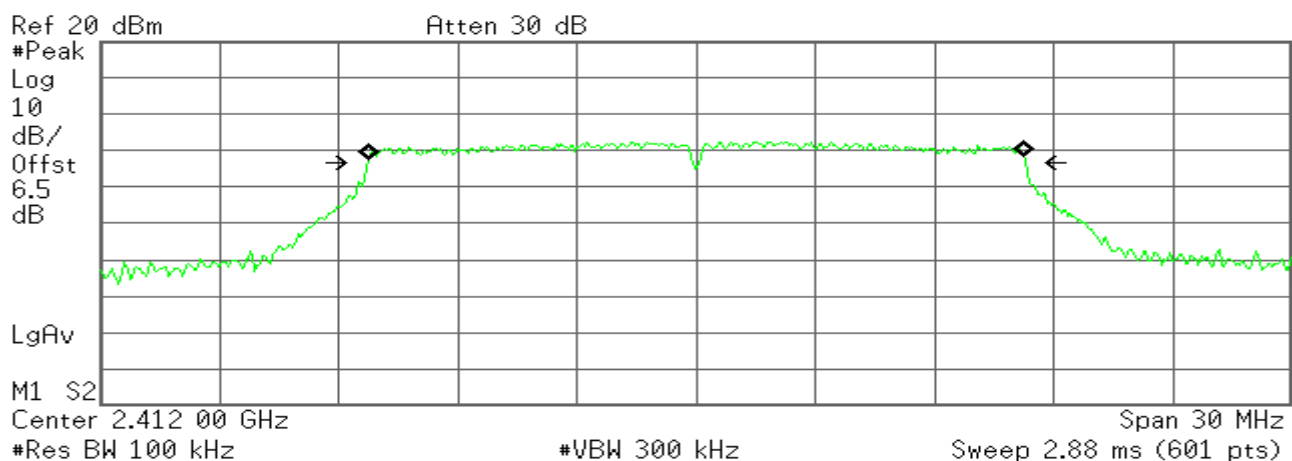
Transmit Freq Error 13.776 kHz
x dB Bandwidth 16.606 MHz

IEEE 802.11g MODE /Chain 1

6dB Bandwidth (CH Low)

* Agilent

R T



Occupied Bandwidth
16.5040 MHz

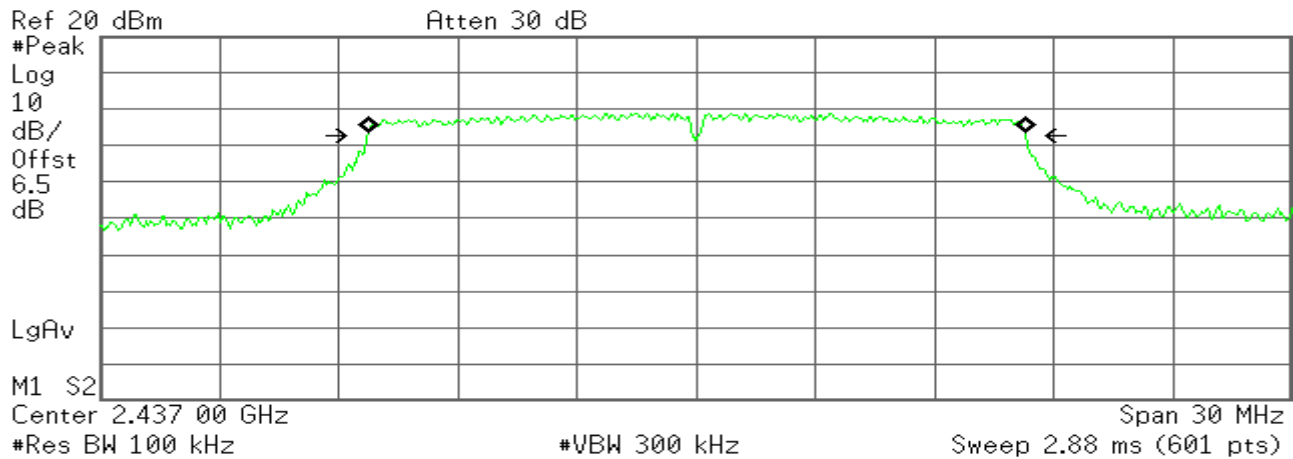
Occ BW % Pwr 99.00 %
x dB -6.00 dB

Transmit Freq Error 19.825 kHz
x dB Bandwidth 16.595 MHz

6dB Bandwidth (CH Mid)

Agilent

R T



Occupied Bandwidth
16.5351 MHz

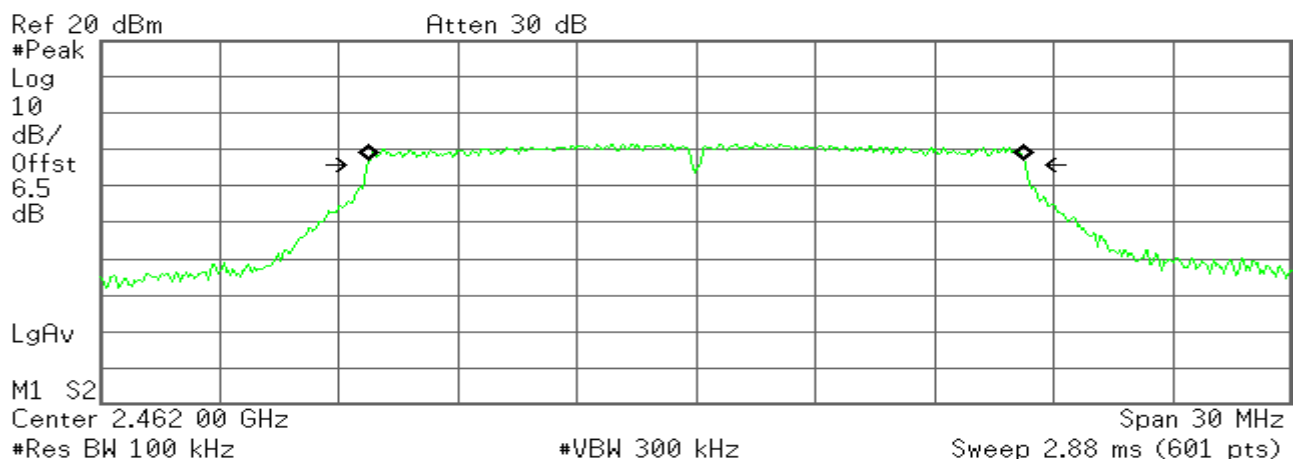
Occ BW % Pwr 99.00 %
x dB -6.00 dB

Transmit Freq Error 12.812 kHz
x dB Bandwidth 16.596 MHz

6dB Bandwidth (CH High)

Agilent

R T



Occupied Bandwidth
16.4856 MHz

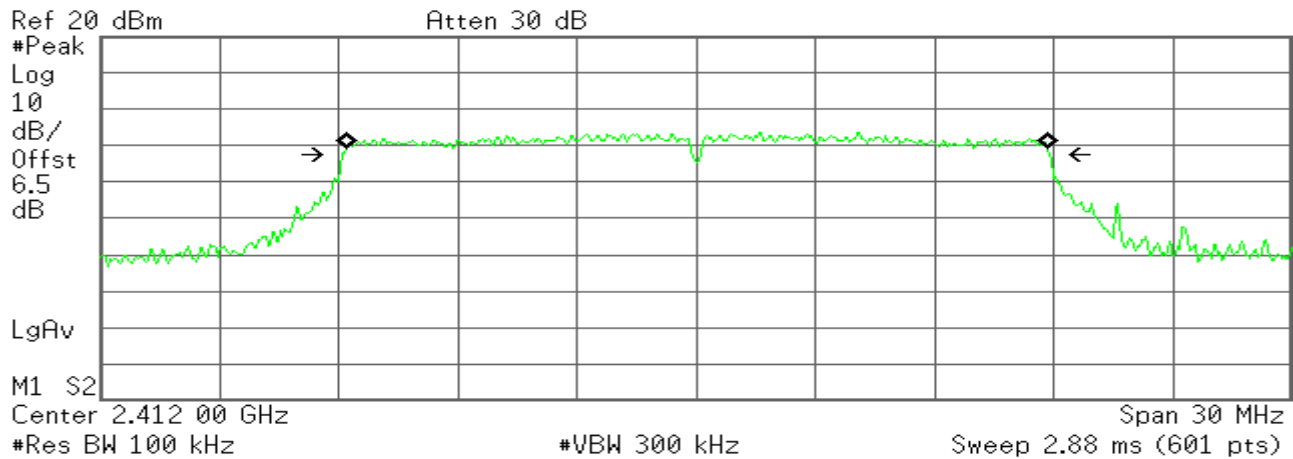
Occ BW % Pwr 99.00 %
x dB -6.00 dB

Transmit Freq Error 14.669 kHz
x dB Bandwidth 16.592 MHz

IEEE 802.11n HT20 mode / Chain 0**6dB Bandwidth (CH Low)**

Agilent

R T



Occupied Bandwidth
17.6528 MHz

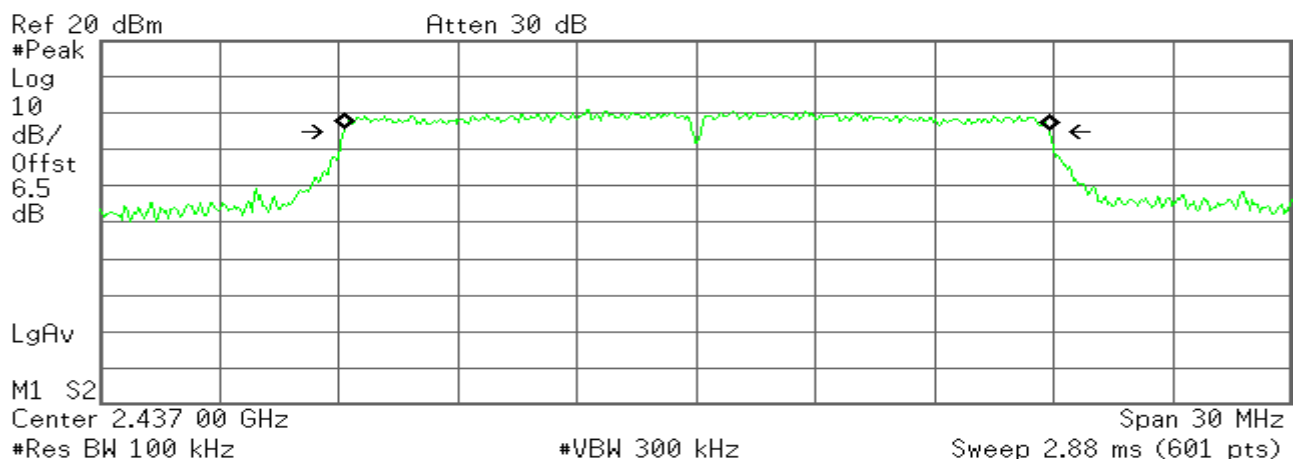
Occ BW % Pwr 99.00 %
x dB -6.00 dB

Transmit Freq Error 15.005 kHz
x dB Bandwidth 17.793 MHz

6dB Bandwidth (CH Mid)

Agilent

R T



Occupied Bandwidth
17.7096 MHz

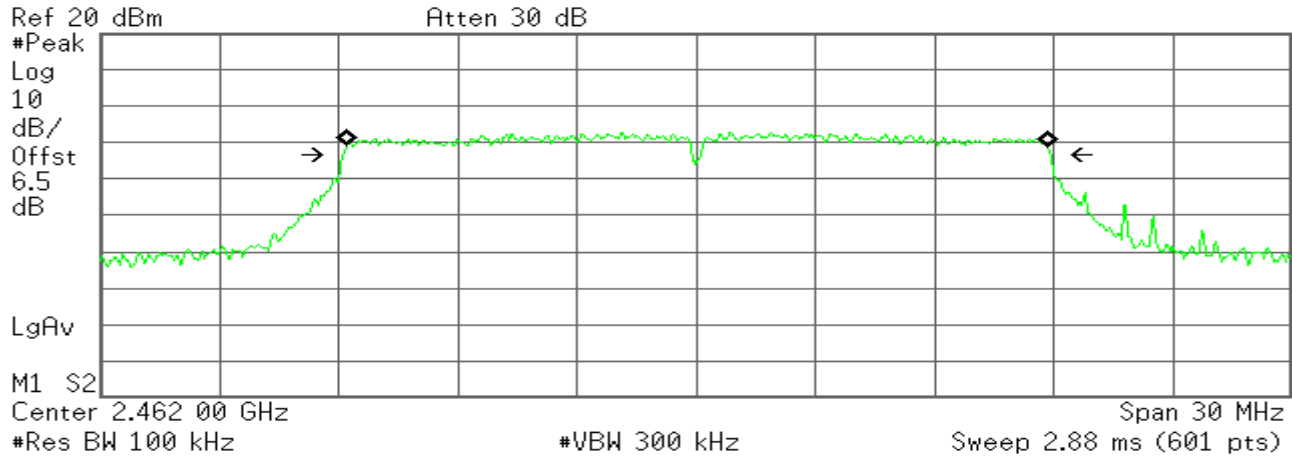
Occ BW % Pwr 99.00 %
x dB -6.00 dB

Transmit Freq Error 25.756 kHz
x dB Bandwidth 17.754 MHz

6dB Bandwidth (CH High)

Agilent

R T



Occupied Bandwidth
17.6460 MHz

Occ BW % Pwr 99.00 %
x dB -6.00 dB

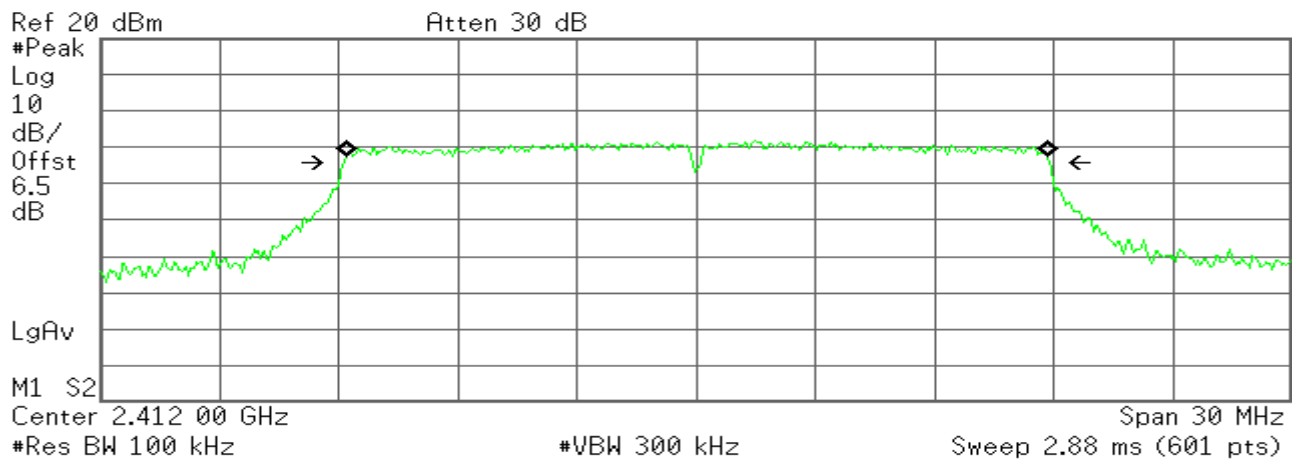
Transmit Freq Error 22.085 kHz
x dB Bandwidth 17.798 MHz

IEEE 802.11n HT20 mode / Chain 1

6dB Bandwidth (CH Low)

Agilent

R T



Occupied Bandwidth
17.6345 MHz

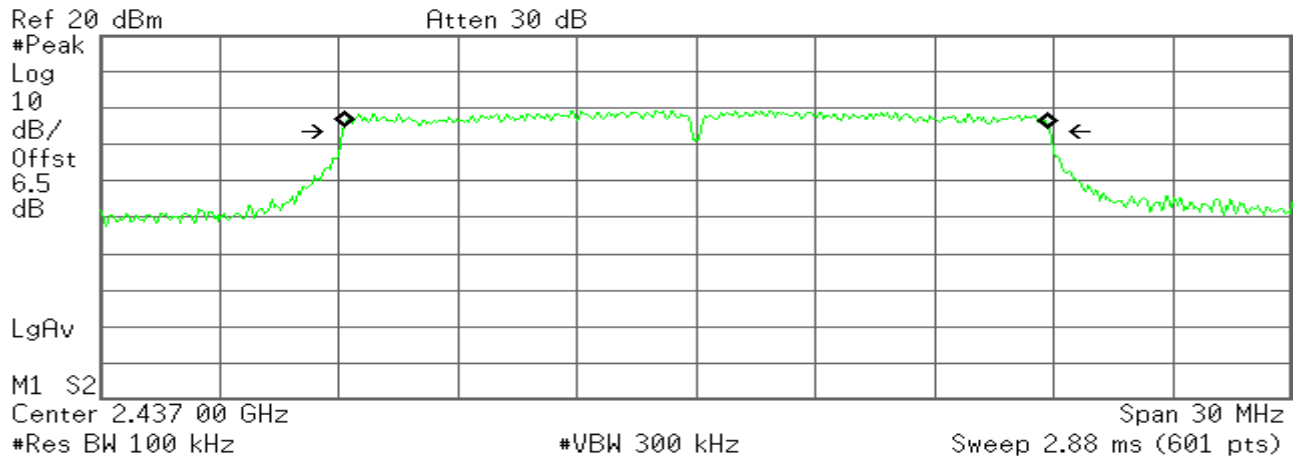
Occ BW % Pwr 99.00 %
x dB -6.00 dB

Transmit Freq Error 13.225 kHz
x dB Bandwidth 17.783 MHz

6dB Bandwidth (CH Mid)

* Agilent

R T



Occupied Bandwidth
17.6861 MHz

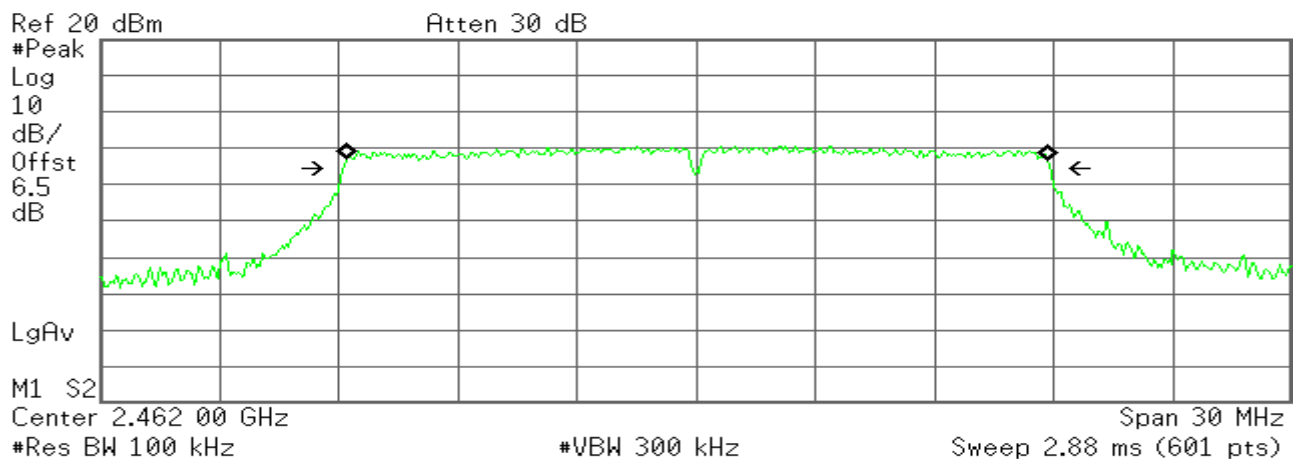
Occ BW % Pwr 99.00 %
x dB -6.00 dB

Transmit Freq Error 15.382 kHz
x dB Bandwidth 17.790 MHz

6dB Bandwidth (CH High)

* Agilent

R T



Occupied Bandwidth
17.6449 MHz

Occ BW % Pwr 99.00 %
x dB -6.00 dB

Transmit Freq Error 21.584 kHz
x dB Bandwidth 17.782 MHz

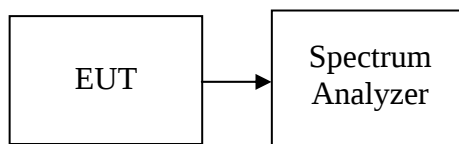
4.2.99% BANDWIDTH MEASUREMENT

LIMIT

None; for reporting purposes only

RSS-Gen 4.6.1

Test Configuration



TEST PROCEDURE

The transmitter output is connected to the spectrum analyzer. The RBW is set to close to 1% of the selected span as is possible without being below 1%. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal 99% bandwidth function is utilized.

TEST RESULTS

No non-compliance noted

Test Data

IEEE 802.11b mode / Chain 0

Channel	Frequency (MHz)	Bandwidth (MHz)	Result
Low	2412	12.0269	PASS
Mid	2437	12.0771	PASS
High	2462	12.0508	PASS

IEEE 802.11b mode / Chain 1

Channel	Frequency (MHz)	Bandwidth (MHz)	Result
Low	2412	11.9705	PASS
Mid	2437	12.0129	PASS
High	2462	11.9681	PASS

IEEE 802.11g mode / Chain 0

Channel	Frequency (MHz)	Bandwidth (MHz)	Result
Low	2412	16.8730	PASS
Mid	2437	16.9842	PASS
High	2462	16.9134	PASS



IEEE 802.11g mode / Chain 1

Channel	Frequency (MHz)	Bandwidth (MHz)	Result
Low	2412	16.7838	PASS
Mid	2437	16.9118	PASS
High	2462	16.8401	PASS

IEEE 802.11n HT20 mode / Chain 0

Channel	Frequency (MHz)	Bandwidth (MHz)	Result
Low	2412	17.8520	PASS
Mid	2437	17.9591	PASS
High	2462	17.8966	PASS

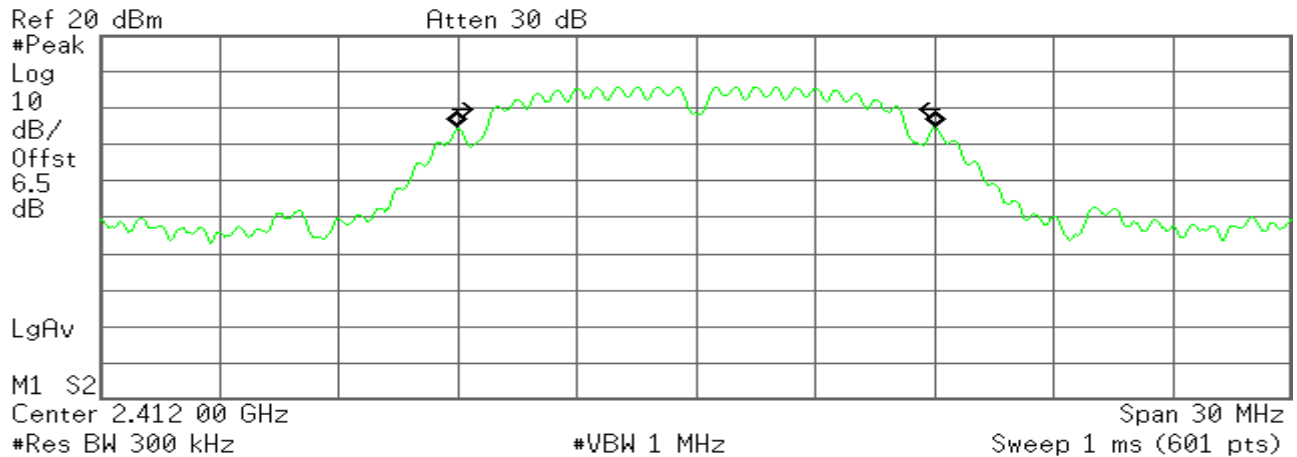
IEEE 802.11 n HT20 / Chain 1

Channel	Frequency (MHz)	Bandwidth (MHz)	Result
Low	2412	17.8442	PASS
Mid	2437	17.9055	PASS
High	2462	17.8389	PASS

Test Plot**IEEE 802.11b MODE/chain 0****99% Bandwidth (CH Low)**

✱ Agilent

R T



Occupied Bandwidth
12.0269 MHz

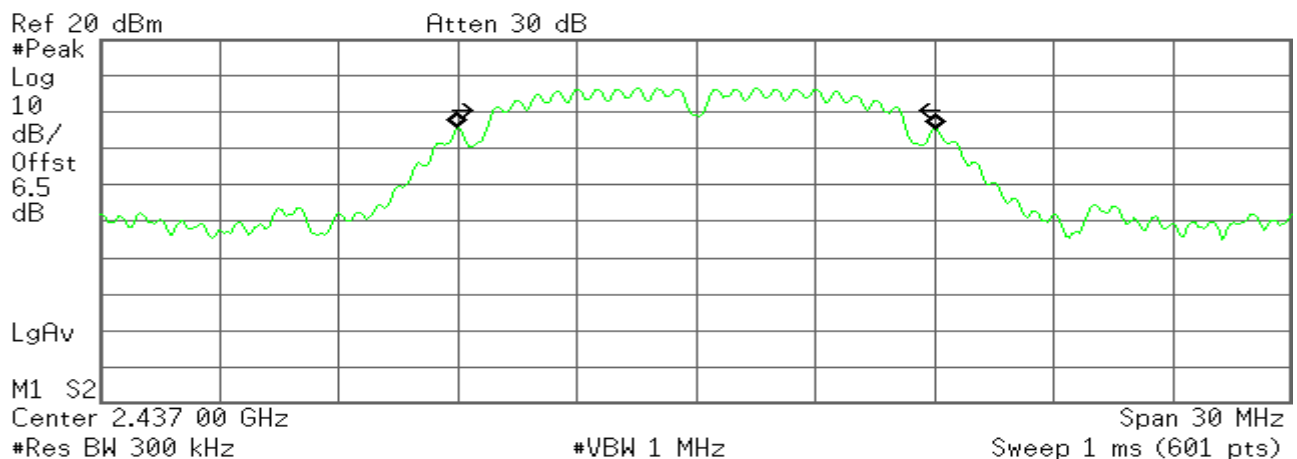
Occ BW % Pwr 99.00 %
x dB -6.00 dB

Transmit Freq Error 26.813 kHz
x dB Bandwidth 10.200 MHz

99% Bandwidth (CH Mid)

✱ Agilent

R T



Occupied Bandwidth
12.0771 MHz

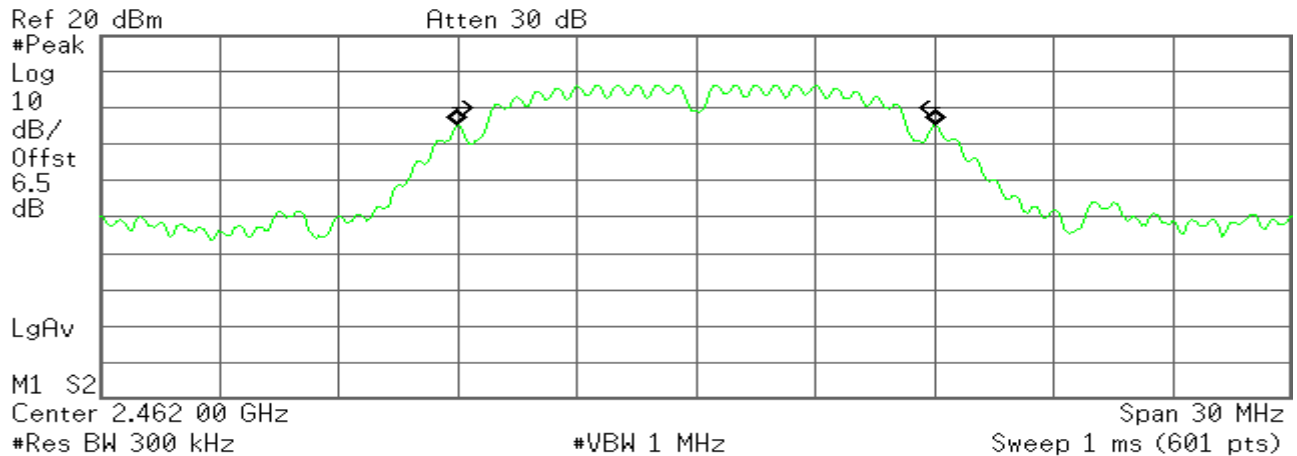
Occ BW % Pwr 99.00 %
x dB -6.00 dB

Transmit Freq Error 23.775 kHz
x dB Bandwidth 10.205 MHz

99% Bandwidth (CH High)

* Agilent

R T



Occupied Bandwidth
12.0508 MHz

Occ BW % Pwr 99.00 %
x dB -6.00 dB

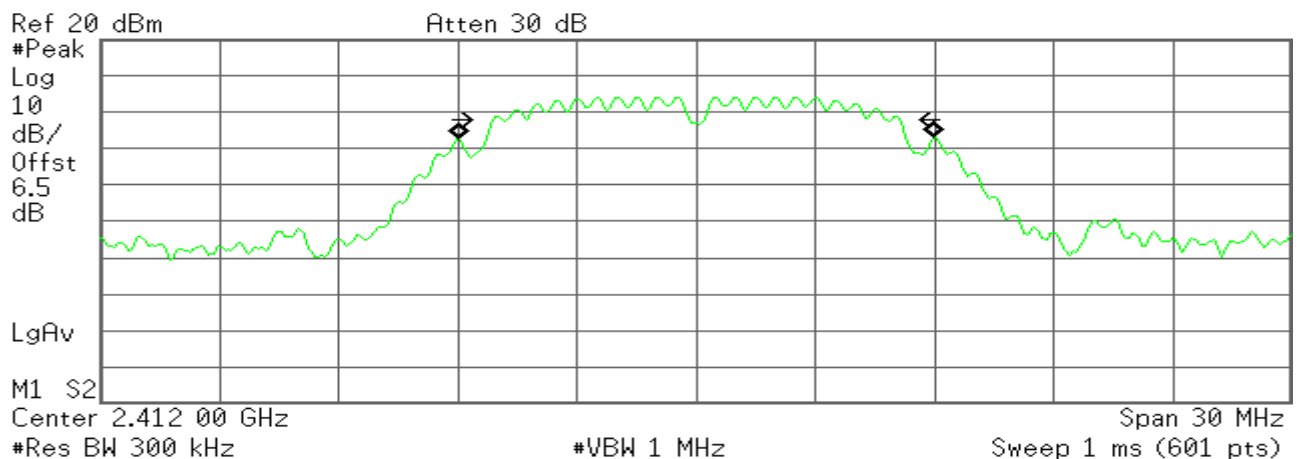
Transmit Freq Error 34.621 kHz
x dB Bandwidth 10.193 MHz

IEEE 802.11b MODE/chain 1

99% Bandwidth (CH Low)

* Agilent

R T



Occupied Bandwidth
11.9705 MHz

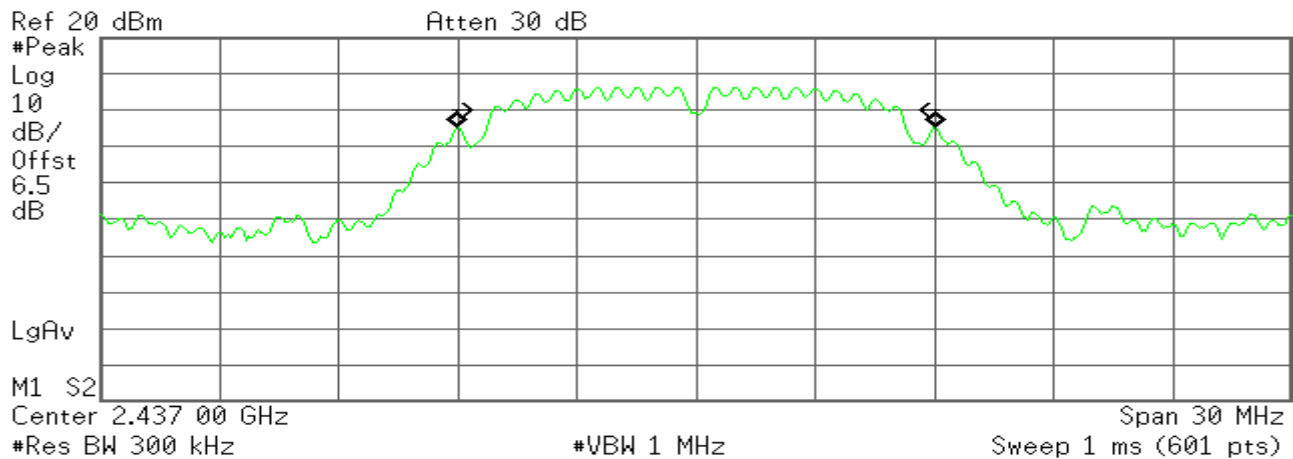
Occ BW % Pwr 99.00 %
x dB -6.00 dB

Transmit Freq Error 31.391 kHz
x dB Bandwidth 10.199 MHz

99% Bandwidth (CH Mid)

Agilent

R T



Occupied Bandwidth
12.0129 MHz

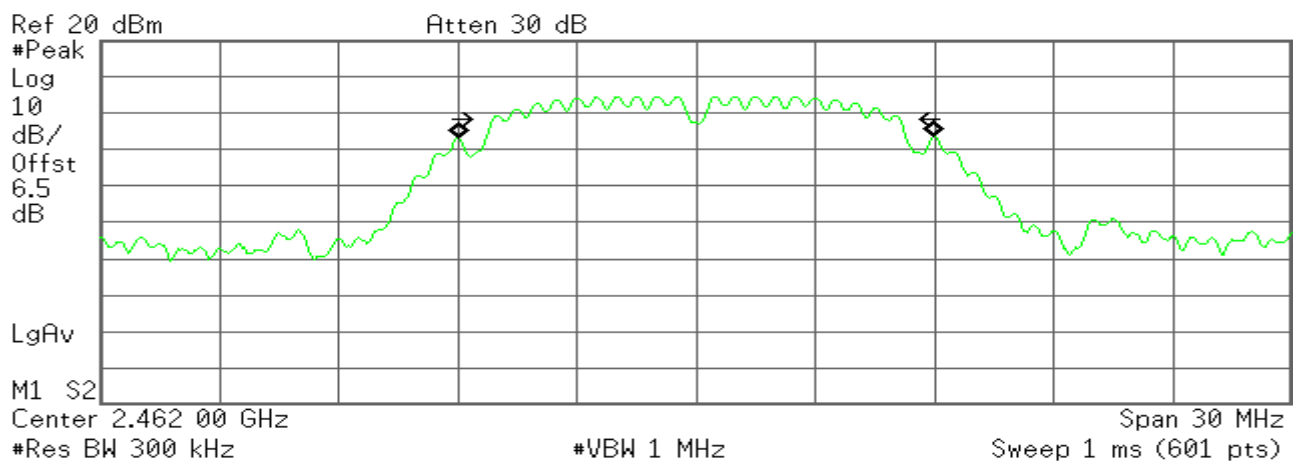
Occ BW % Pwr 99.00 %
x dB -6.00 dB

Transmit Freq Error 25.046 kHz
x dB Bandwidth 10.193 MHz

99% Bandwidth (CH High)

Agilent

R T



Occupied Bandwidth
11.9681 MHz

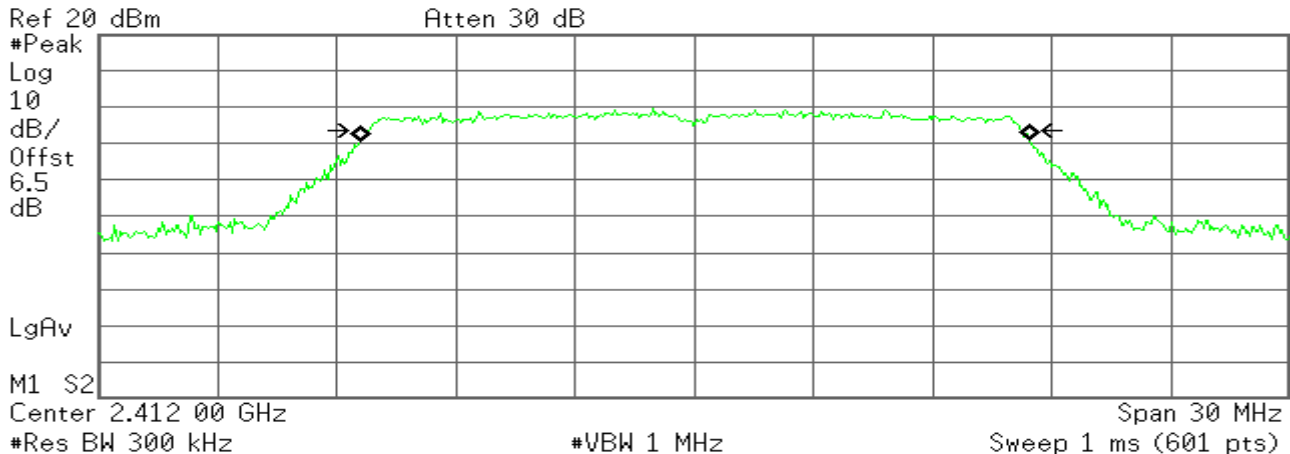
Occ BW % Pwr 99.00 %
x dB -6.00 dB

Transmit Freq Error 31.256 kHz
x dB Bandwidth 10.209 MHz

IEEE 802.11g MODE/chain 0**99% Bandwidth (CH Low)**

* Agilent

R T



Occupied Bandwidth
16.8730 MHz

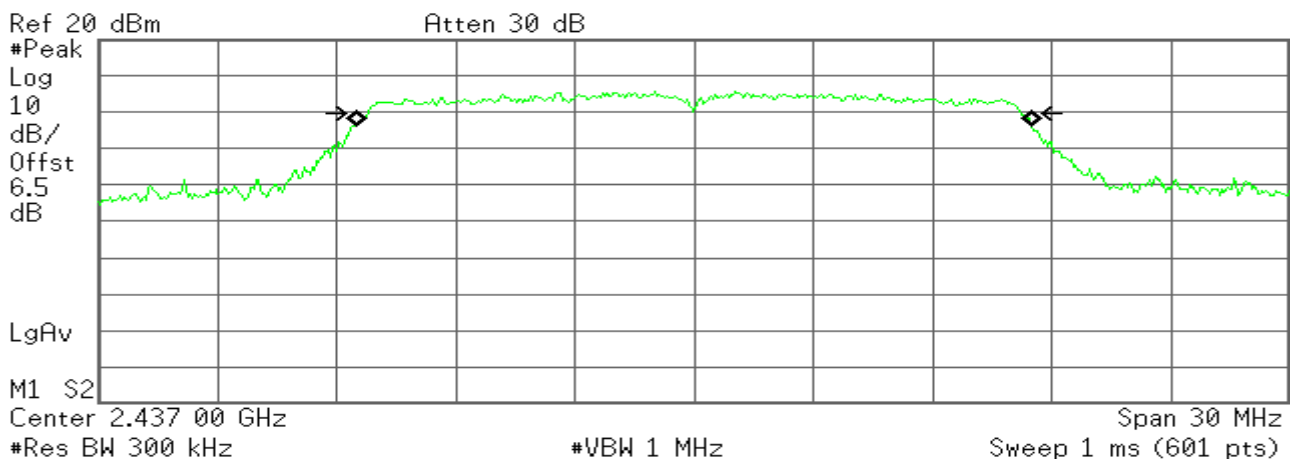
Occ BW % Pwr 99.00 %
x dB -6.00 dB

Transmit Freq Error 18.694 kHz
x dB Bandwidth 16.424 MHz

99% Bandwidth (CH Mid)

* Agilent

R T



Occupied Bandwidth
16.9842 MHz

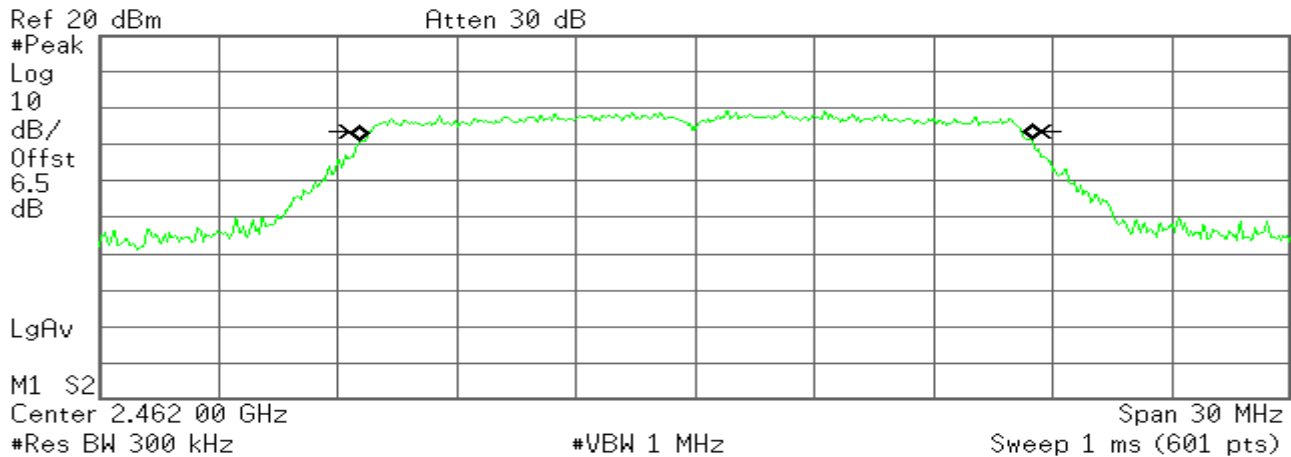
Occ BW % Pwr 99.00 %
x dB -6.00 dB

Transmit Freq Error -6.800 kHz
x dB Bandwidth 16.458 MHz

99% Bandwidth (CH High)

Agilent

R T



Occupied Bandwidth
16.9134 MHz

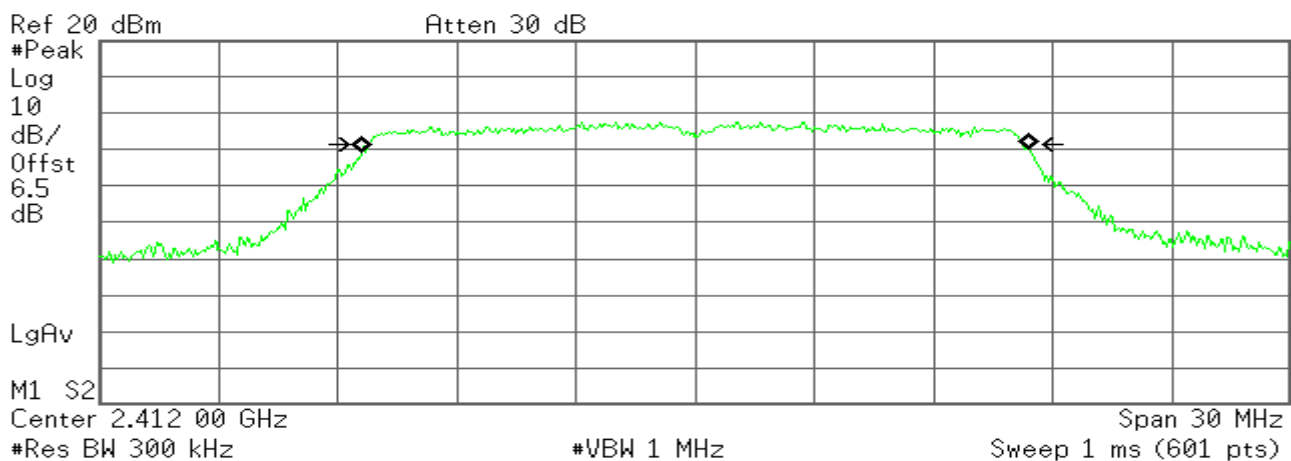
Occ BW % Pwr 99.00 %
x dB -6.00 dB

Transmit Freq Error 20.114 kHz
x dB Bandwidth 16.401 MHz

IEEE 802.11g MODE/chain 1**99% Bandwidth (CH Low)**

Agilent

R T



Occupied Bandwidth
16.7838 MHz

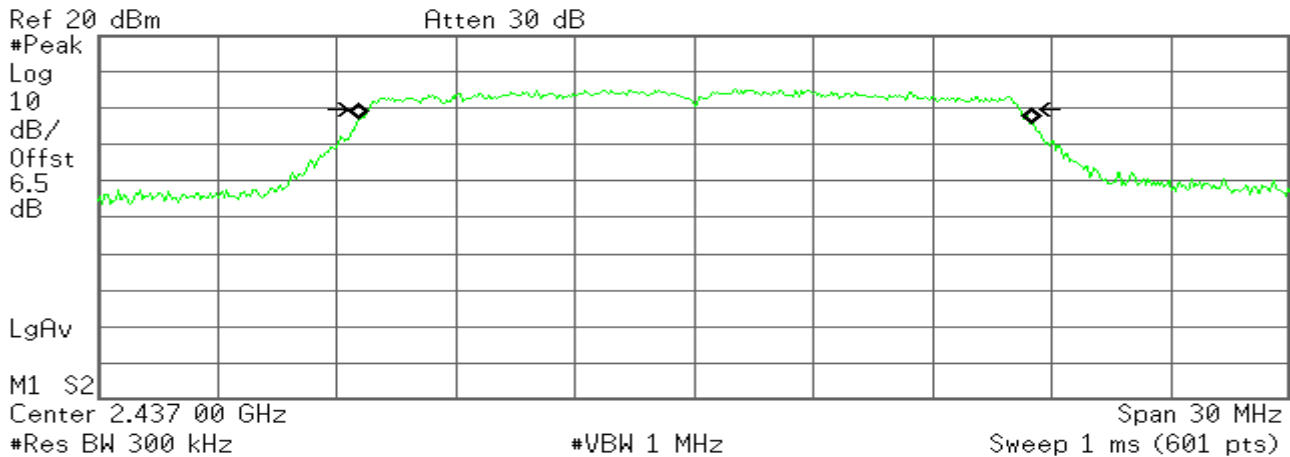
Occ BW % Pwr 99.00 %
x dB -6.00 dB

Transmit Freq Error 11.262 kHz
x dB Bandwidth 16.430 MHz

99% Bandwidth (CH Mid)

Agilent

R T



Occupied Bandwidth
16.9118 MHz

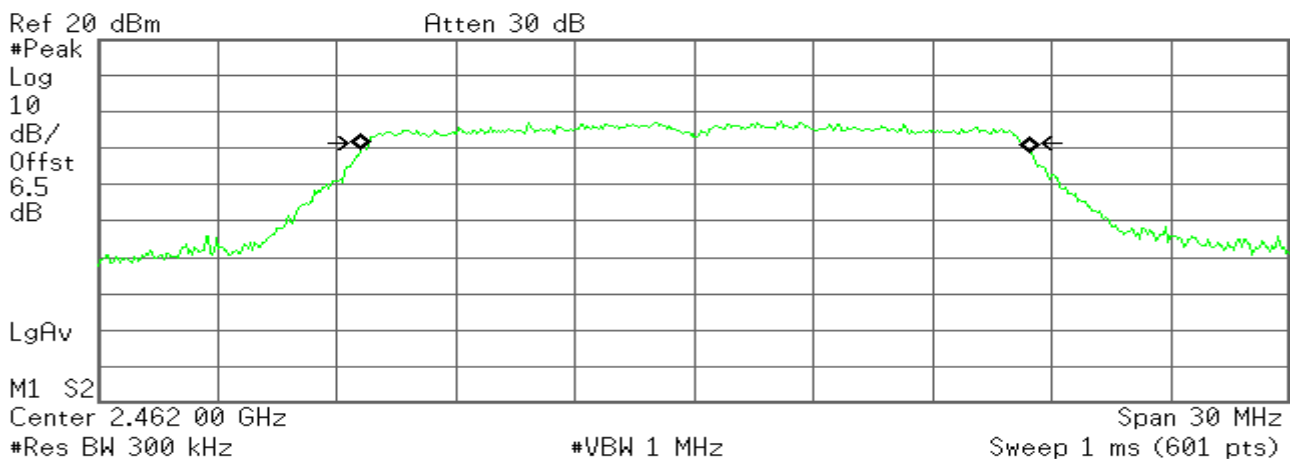
Occ BW % Pwr 99.00 %
x dB -6.00 dB

Transmit Freq Error 35.800 kHz
x dB Bandwidth 16.416 MHz

99% Bandwidth (CH High)

Agilent

R T



Occupied Bandwidth
16.8401 MHz

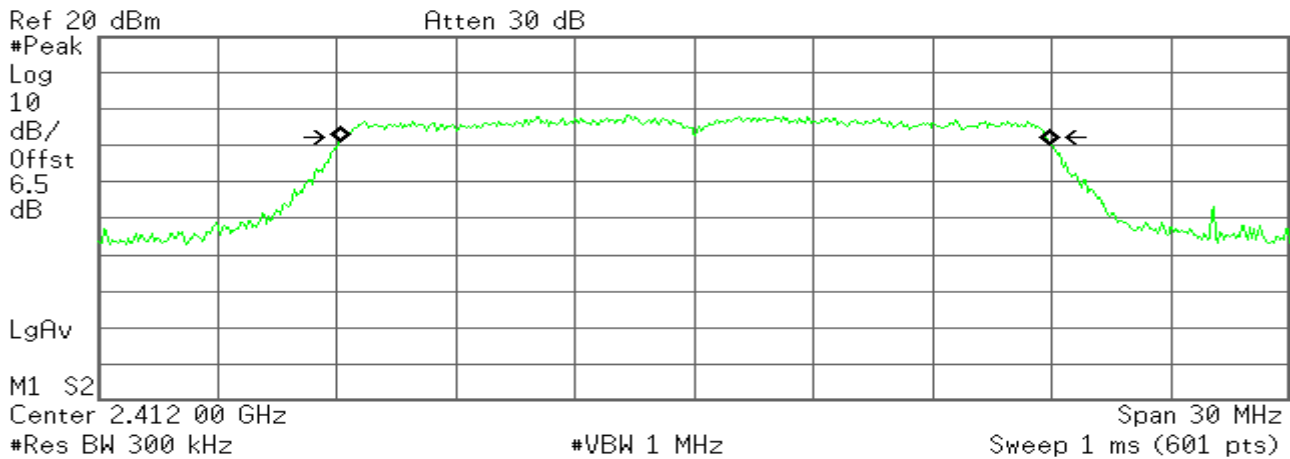
Occ BW % Pwr 99.00 %
x dB -6.00 dB

Transmit Freq Error 27.121 kHz
x dB Bandwidth 16.447 MHz

IEEE 802.11n HT20 mode/chain 0**99% Bandwidth (CH Low)**

Agilent

R T



Occupied Bandwidth
17.8520 MHz

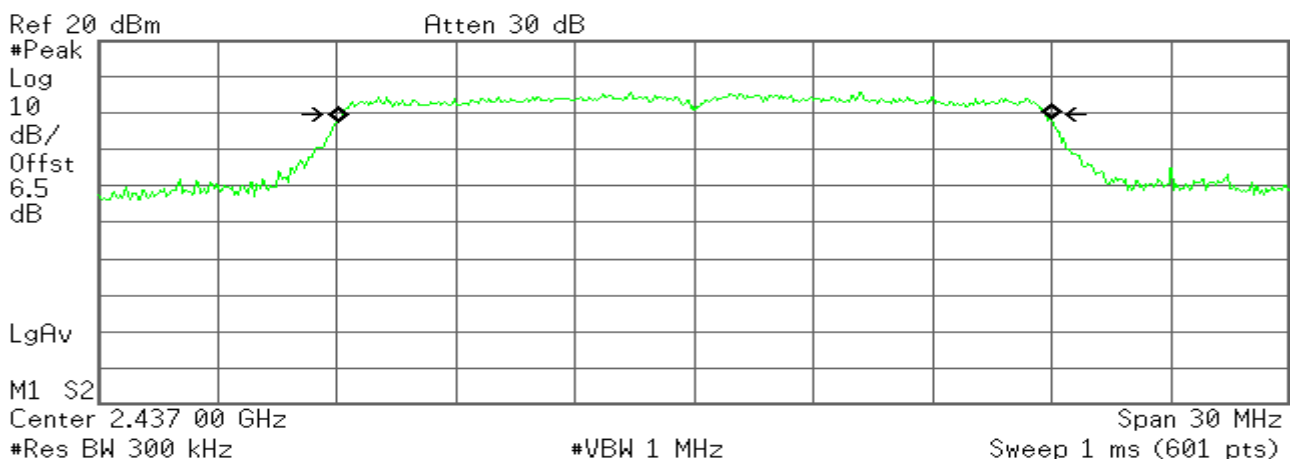
Occ BW % Pwr 99.00 %
x dB -6.00 dB

Transmit Freq Error 10.944 kHz
x dB Bandwidth 17.696 MHz

99% Bandwidth (CH Mid)

Agilent

R T



Occupied Bandwidth
17.9591 MHz

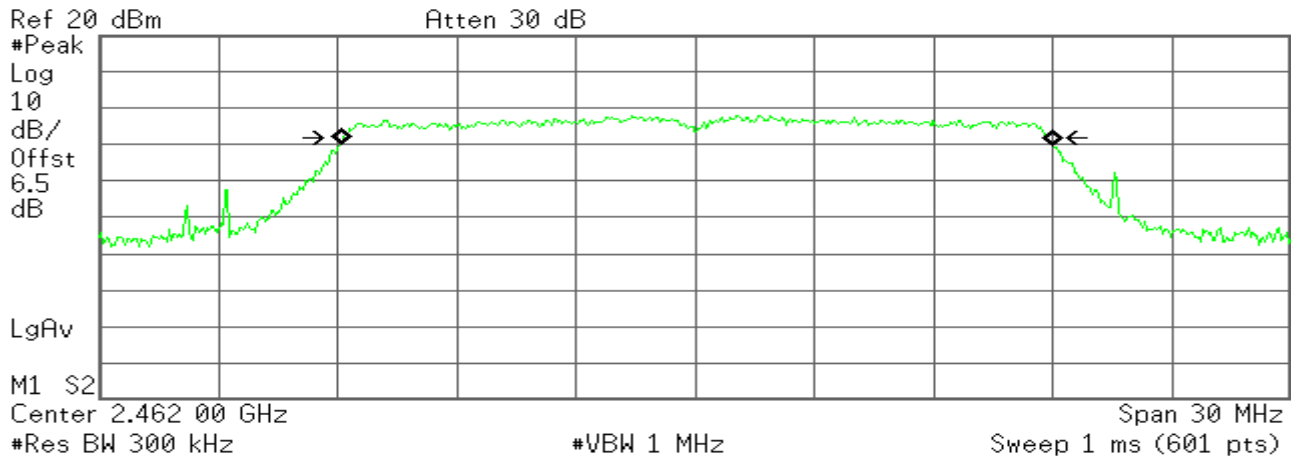
Occ BW % Pwr 99.00 %
x dB -6.00 dB

Transmit Freq Error 10.254 kHz
x dB Bandwidth 17.664 MHz

99% Bandwidth (CH High)

* Agilent

R T



Occupied Bandwidth
17.8966 MHz

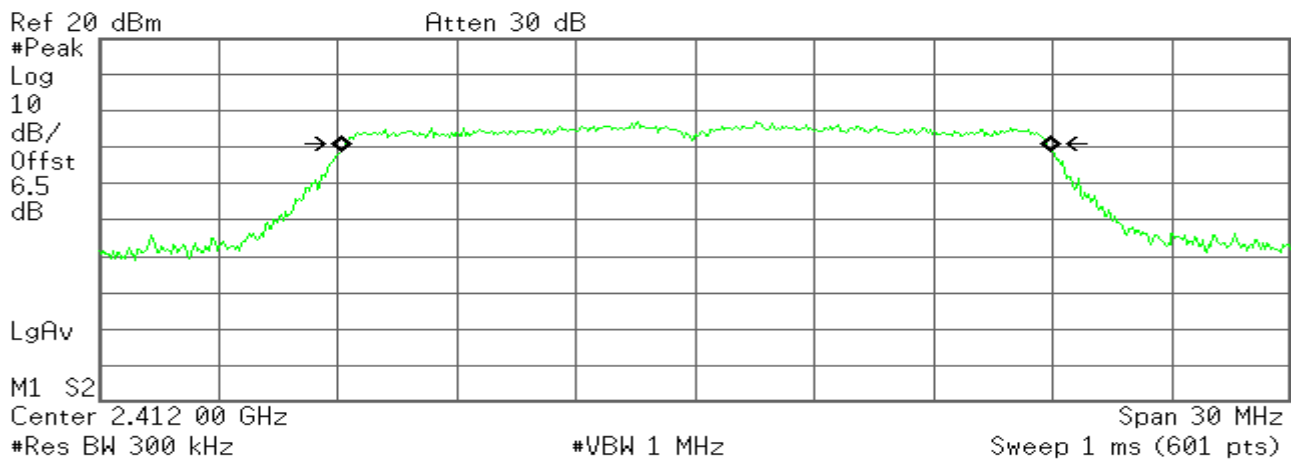
Occ BW % Pwr 99.00 %
x dB -6.00 dB

Transmit Freq Error 32.415 kHz
x dB Bandwidth 17.676 MHz

IEEE 802.11n HT20 mode/chain 1**99% Bandwidth (CH Low)**

* Agilent

R T



Occupied Bandwidth
17.8442 MHz

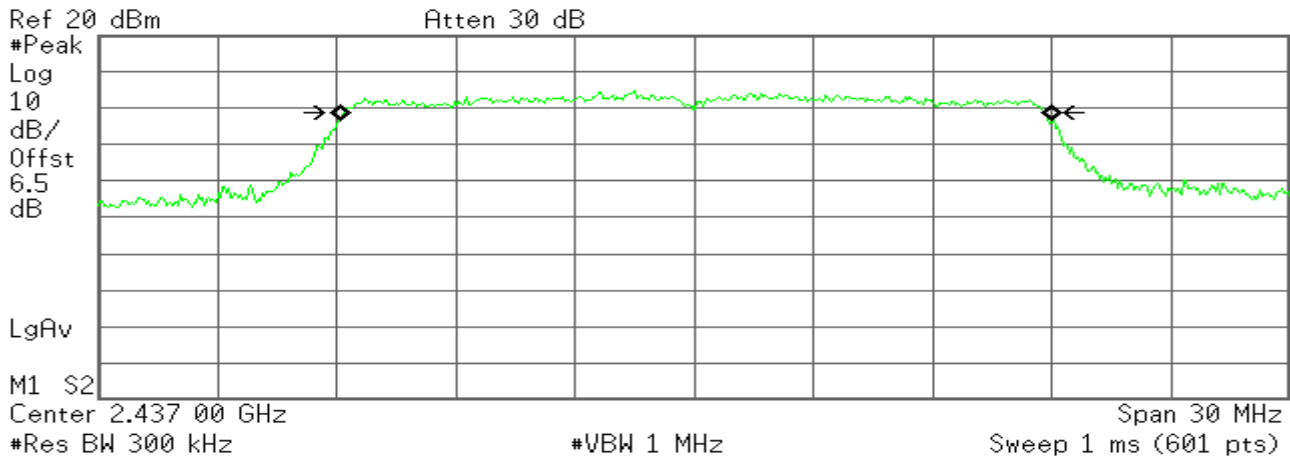
Occ BW % Pwr 99.00 %
x dB -6.00 dB

Transmit Freq Error 22.611 kHz
x dB Bandwidth 17.615 MHz

99% Bandwidth (CH Mid)

Agilent

R T



Occupied Bandwidth
17.9055 MHz

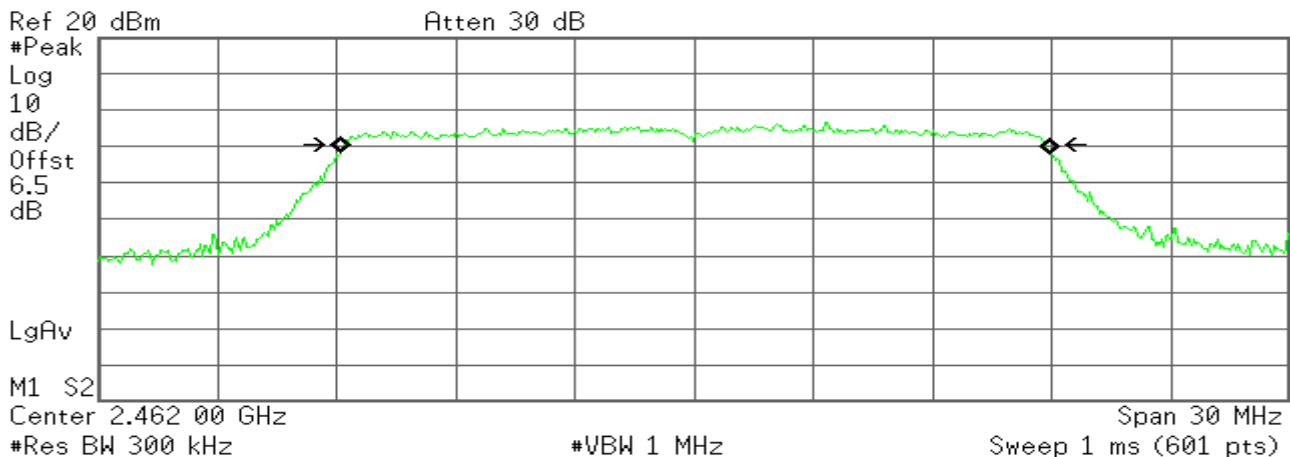
Occ BW % Pwr 99.00 %
x dB -6.00 dB

Transmit Freq Error 37.756 kHz
x dB Bandwidth 17.590 MHz

99% Bandwidth (CH High)

Agilent

R T



Occupied Bandwidth
17.8389 MHz

Occ BW % Pwr 99.00 %
x dB -6.00 dB

Transmit Freq Error 34.000 kHz
x dB Bandwidth 17.623 MHz

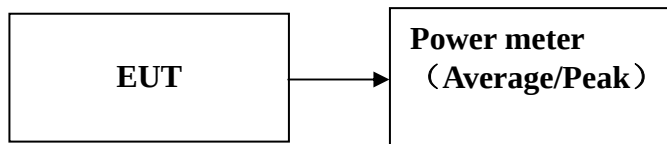
4.3. PEAK POWER

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

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.
3. Guidance v03r03. 9.1.2 PKPM1 Peak power meter method.

TEST RESULTS

No non-compliance noted

Test Data**Test mode: IEEE 802.11b mode**

Channel	Frequency (MHz)	Chain 0 Output Power (dBm)	Chain 1 Output Power (dBm)	Limit (dBm)
Low	2412	17.27	17.32	30.00
Mid	2437	18.02	18.28	30.00
High	2462	17.56	17.39	30.00

Test mode: IEEE 802.11g mode

Channel	Frequency (MHz)	Chain 0 Output Power (dBm)	Chain 1 Output Power (dBm)	Limit (dBm)
Low	2412	16.41	16.82	30.00
Mid	2437	21.85	21.95	30.00
High	2462	15.85	16.02	30.00

Test mode: IEEE 802.11n HT20 mode

Channel	Frequency (MHz)	Chain 0 Output Power (dBm)	Chain 1 Output Power (dBm)	Limit (dBm)
Low	2412	15.18	16.16	30.00
Mid	2437	22.06	22.51	30.00
High	2462	14.09	16.35	30.00

Remark: Total Output Power (dBm) = $10 \cdot \log(10^{(\text{Chain 0 Output Power} / 10)} + 10^{(\text{Chain 1 Output Power} / 10)})$

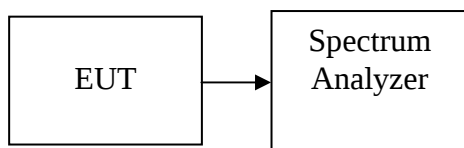
4.4. PEAK POWER SPECTRAL DENSITY

LIMIT

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

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

Test Configuration



TEST PROCEDURE

1. Place the EUT on the table and set it in transmitting mode.

Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.

2. Set the spectrum analyzer as RBW = 3 kHz, VBW = 10 kHz, Span = 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)	Chain 0 PPSD (dBm)	Chain 1 PPSD (dBm)	Limit (dBm)	Result
Low	2412	-8.01	-8.87	8.00	PASS
Mid	2437	-7.30	-8.40	8.00	PASS
High	2462	-8.14	-8.96	8.00	PASS

Test mode: IEEE 802.11g mode

Channel	Frequency (MHz)	Chain 0 PPSD (dBm)	Chain 1 PPSD (dBm)	Limit (dBm)	Result
Low	2412	-17.25	-18.99	8.00	PASS
Mid	2437	-11.09	-11.26	8.00	PASS
High	2462	-18.20	-20.38	8.00	PASS

Test mode: IEEE 802.11n HT20 mode

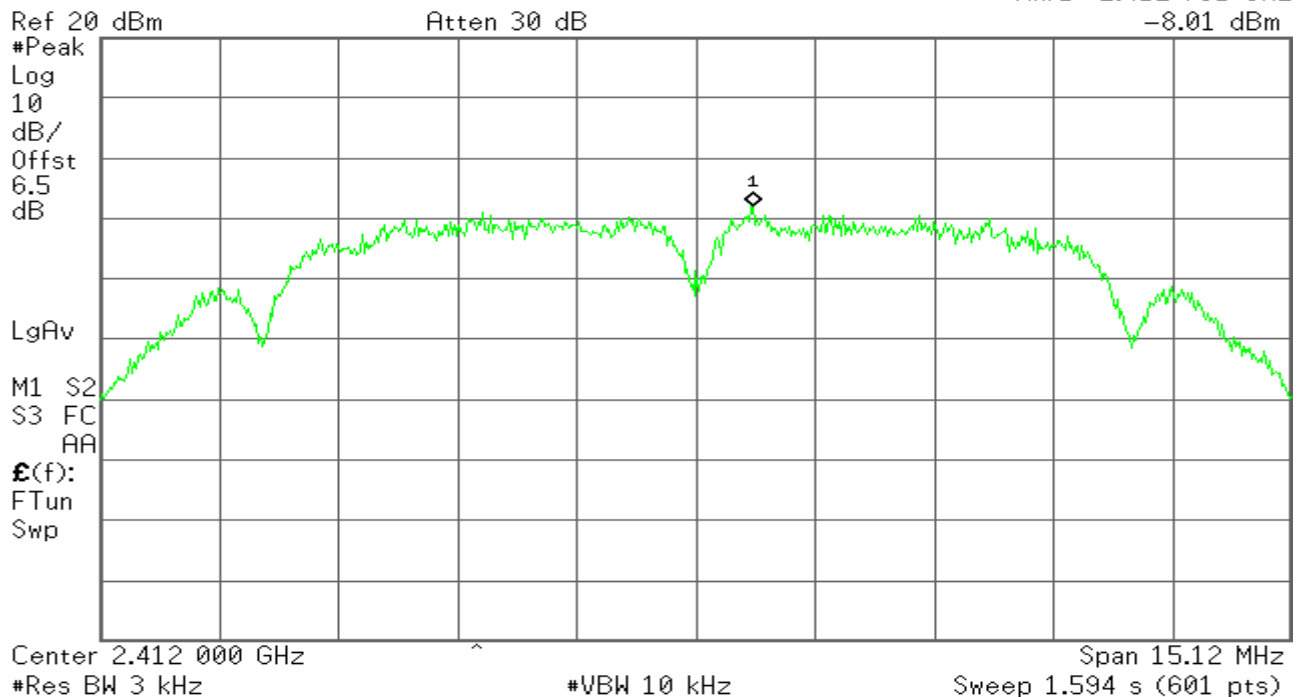
Channel	Frequency (MHz)	Chain 0 PPSD (dBm)	Chain 1 PPSD (dBm)	Limit (dBm)	Result
Low	2412	-17.60	-19.67	8.00	PASS
Mid	2437	-11.02	-11.18	8.00	PASS
High	2462	-19.18	-19.92	8.00	PASS

Remark: Total PPSD (dBm) = $10 * \log(10^{Chain\ 0\ PPSD / 10} + 10^{Chain\ 1\ PPSD / 10})$

Test Plot**IEEE 802.11b mode/Chain 0****PPSD (CH Low)**

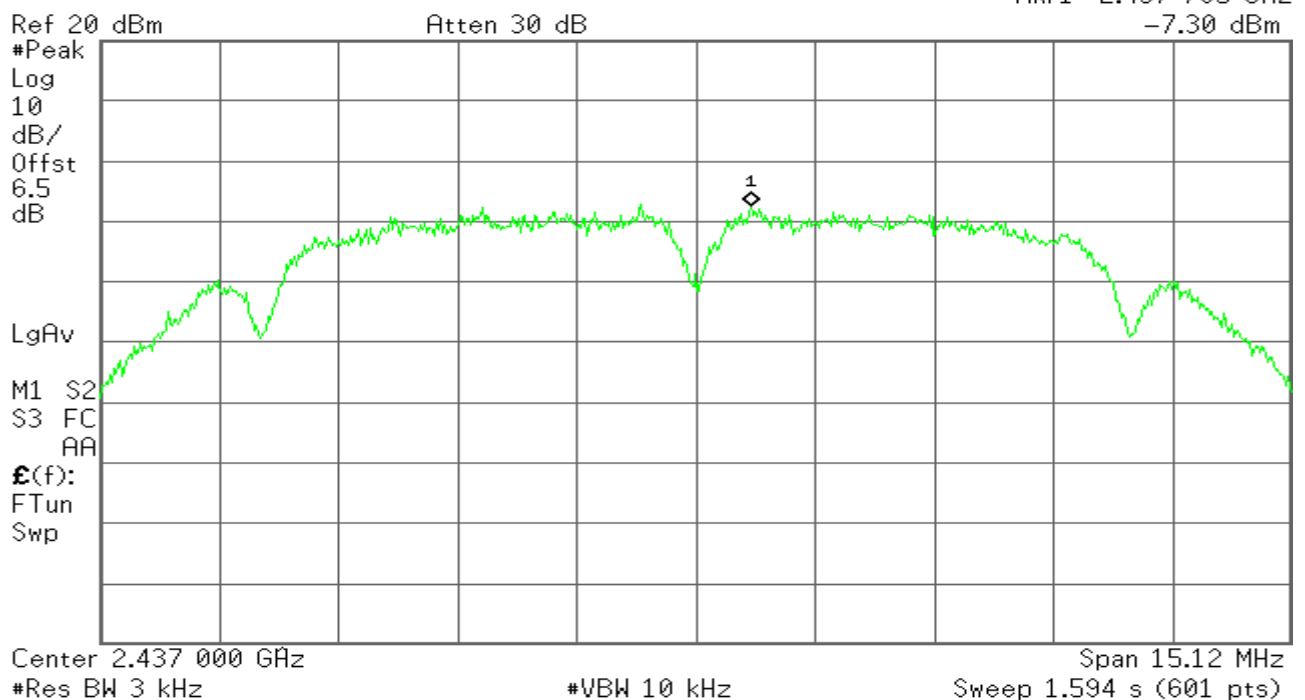
Agilent

R T

**PPSD(CH Mid)**

Agilent

R T



PPSD (CH High)

 **Agilent**

R T

Mkr1 2.462 655 GHz
-8.14 dBm

Ref 20 dBm

Atten 30 dB

#Peak
Log
10
dB/
Offst
6.5
dB

LgAv

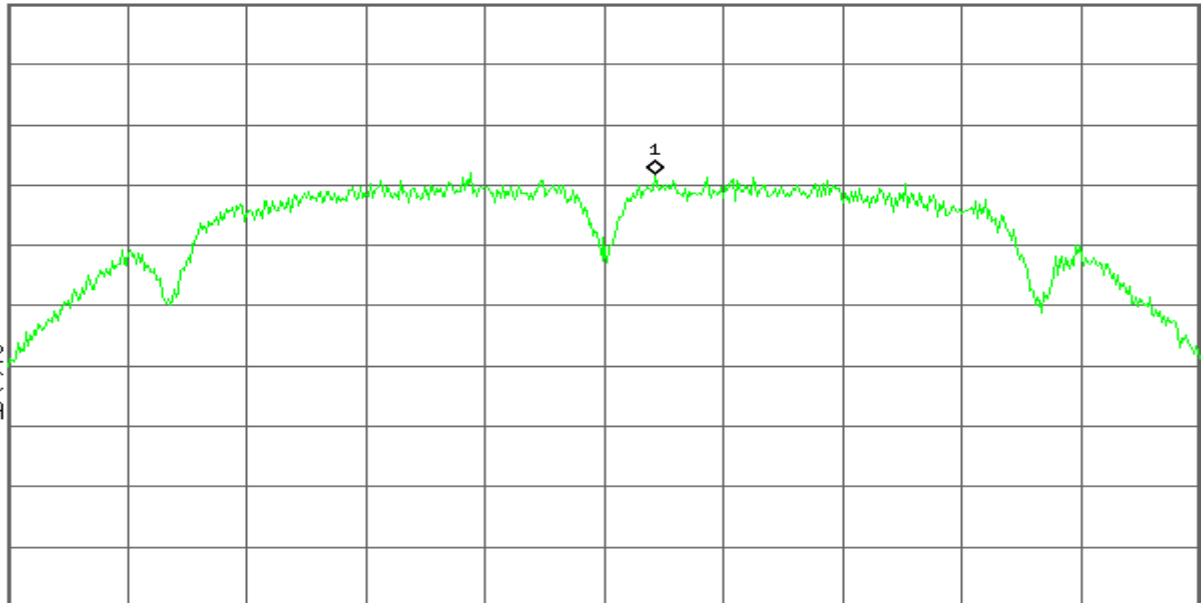
M1 S2
S3 FC
AA

$\mathcal{E}(f)$:
FTun
Swp

Center 2.462 000 GHz
#Res BW 3 kHz

#VBW 10 kHz

Span 15.12 MHz
Sweep 1.594 s (601 pts)



IEEE 802.11b mode/Chain 1

PPSD (CH Low)

 **Agilent**

R T

Mkr1 2.411 470 GHz
-8.87 dBm

Ref 20 dBm

Atten 30 dB

#Peak
Log
10
dB/
Offst
6.5
dB

LgAv

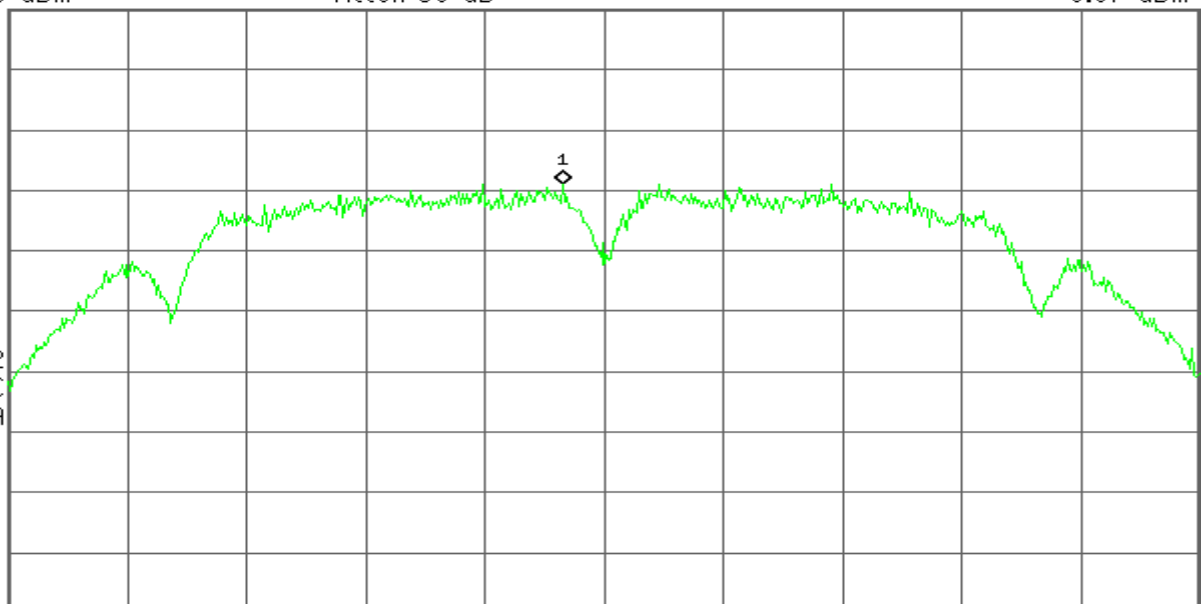
M1 S2
S3 FC
AA

$\mathcal{E}(f)$:
FTun
Swp

Center 2.412 000 GHz
#Res BW 3 kHz

#VBW 10 kHz

Span 15.14 MHz
Sweep 1.596 s (601 pts)



PPSD (CH Mid)

* Agilent

R T

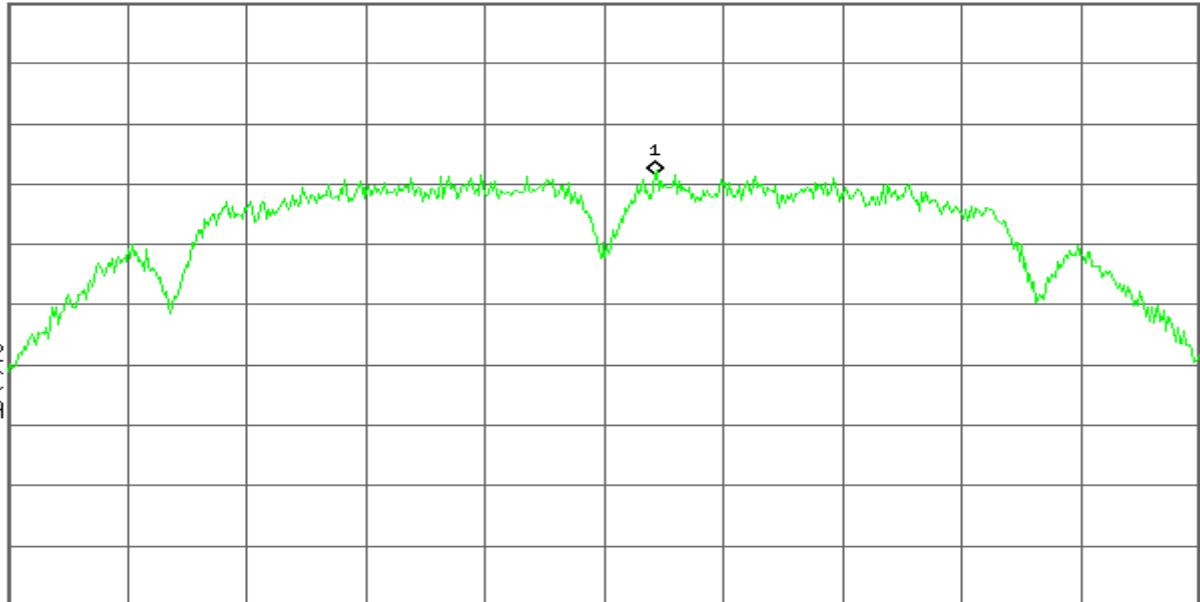
Mkr1 2.437 656 GHz
-8.40 dBm

Ref 20 dBm

Atten 30 dB

#Peak
Log
10
dB/
Offst
6.5
dB

LgAv

M1 S2
S3 FC
AA£(f):
FTun
Swp

Center 2.437 000 GHz

#VBW 10 kHz

Span 15.14 MHz
Sweep 1.596 s (601 pts)

#Res BW 3 kHz

PPSD (CH High)

* Agilent

R T

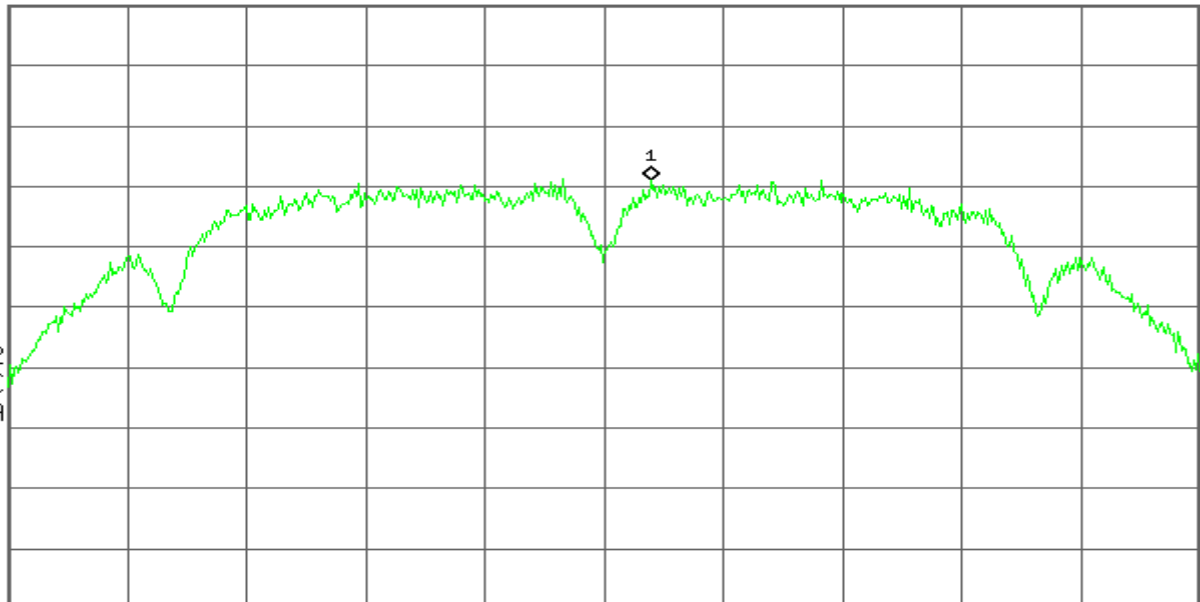
Mkr1 2.462 605 GHz
-8.96 dBm

Ref 20 dBm

Atten 30 dB

#Peak
Log
10
dB/
Offst
6.5
dB

LgAv

M1 S2
S3 FC
AA£(f):
FTun
Swp

Center 2.462 000 GHz

#VBW 10 kHz

Span 15.14 MHz
Sweep 1.596 s (601 pts)

#Res BW 3 kHz

IEEE 802.11g mode/Chain 0

PPSD (CH Low)

 **Agilent**

R T

Mkr1 2.411 13 GHz
-17.25 dBm

Ref 20 dBm

Atten 30 dB

#Peak

Log

10

dB/

Offst

6.5

dB

LgAv

M1 S2

S3 FC

AA

$\mathcal{E}(f)$:

FTun

Swp

Center 2.412 00 GHz

#Res BW 3 kHz

#VBW 10 kHz

Span 24.92 MHz

Sweep 2.628 s (601 pts)

PPSD (CH Mid)

 **Agilent**

R T

Mkr1 2.437 96 GHz
-11.09 dBm

Ref 20 dBm

Atten 30 dB

#Peak

Log

10

dB/

Offst

6.5

dB

LgAv

M1 S2

S3 FC

AA

$\mathcal{E}(f)$:

FTun

Swp

Center 2.437 00 GHz

#Res BW 3 kHz

#VBW 10 kHz

Span 24.92 MHz

Sweep 2.628 s (601 pts)

PPSD (CH High)

 **Agilent**

R T

Mkr1 2.465 12 GHz
-18.20 dBm

Ref 20 dBm

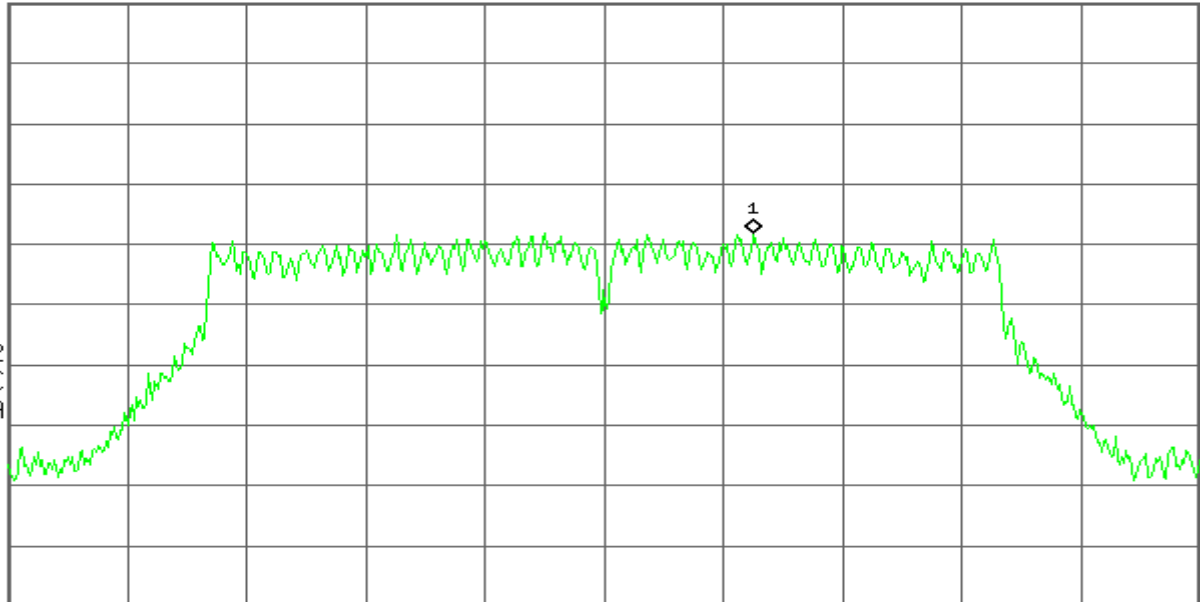
Atten 30 dB

#Peak
Log
10
dB/
Offst
6.5
dB

LgAv

M1 S2
S3 FC
AA

$\mathcal{E}(f)$:
FTun
Swp



Center 2.462 00 GHz

#VBW 10 kHz

Span 24.92 MHz
Sweep 2.628 s (601 pts)

#Res BW 3 kHz

IEEE 802.11g mode/Chain 1

PPSD (CH Low)

 **Agilent**

R T

Mkr1 2.410 13 GHz
-18.99 dBm

Ref 20 dBm

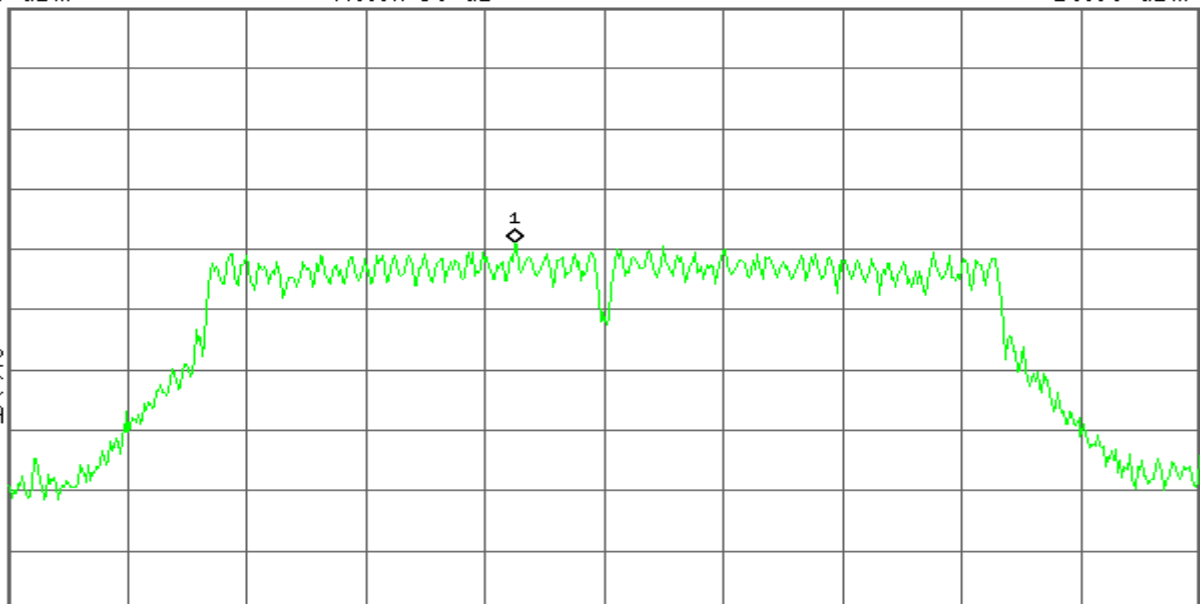
Atten 30 dB

#Peak
Log
10
dB/
Offst
6.5
dB

LgAv

M1 S2
S3 FC
AA

$\mathcal{E}(f)$:
FTun
Swp



Center 2.412 00 GHz

#VBW 10 kHz

Span 24.89 MHz
Sweep 2.625 s (601 pts)

#Res BW 3 kHz

PPSD (CH Mid)

Agilent

R T

Mkr1 2.432 64 GHz

-11.26 dBm

Ref 20 dBm

Atten 30 dB

#Peak

Log

10

dB/

Offst

6.5

dB

LgAv

M1 S2

S3 FC

AA

£(f):

FTun

Swp

Center 2.437 00 GHz

#Res BW 3 kHz

#VBW 10 kHz

Span 24.89 MHz

Sweep 2.625 s (601 pts)

PPSD (CH High)

Agilent

R T

Mkr1 2.462 95 GHz

-20.38 dBm

Ref 20 dBm

Atten 30 dB

#Peak

Log

10

dB/

Offst

6.5

dB

LgAv

M1 S2

S3 FC

AA

£(f):

FTun

Swp

Center 2.462 00 GHz

#Res BW 3 kHz

#VBW 10 kHz

Span 24.89 MHz

Sweep 2.625 s (601 pts)

IEEE 802.11n HT20 mode / Chain 0**PPSD (CH Low)**

Agilent

R T

Mkr1 2.404 52 GHz
-17.60 dBm

Ref 20 dBm

Atten 30 dB

#Peak

Log

10

dB/

Offst

6.5

dB

LgAv

M1 S2

S3 FC

AA

 $\mathcal{E}(f)$:

FTun

Swp

Center 2.412 00 GHz

#Res BW 3 kHz

#VBW 10 kHz

Span 26.7 MHz

Sweep 2.815 s (601 pts)

PPSD (CH Mid)

Agilent

R T

Mkr1 2.437 98 GHz
-11.02 dBm

Ref 20 dBm

Atten 30 dB

#Peak

Log

10

dB/

Offst

6.5

dB

LgAv

M1 S2

S3 FC

AA

 $\mathcal{E}(f)$:

FTun

Swp

Center 2.437 00 GHz

#Res BW 3 kHz

#VBW 10 kHz

Span 26.7 MHz

Sweep 2.815 s (601 pts)

PPSD (CH High)

Agilent

R T

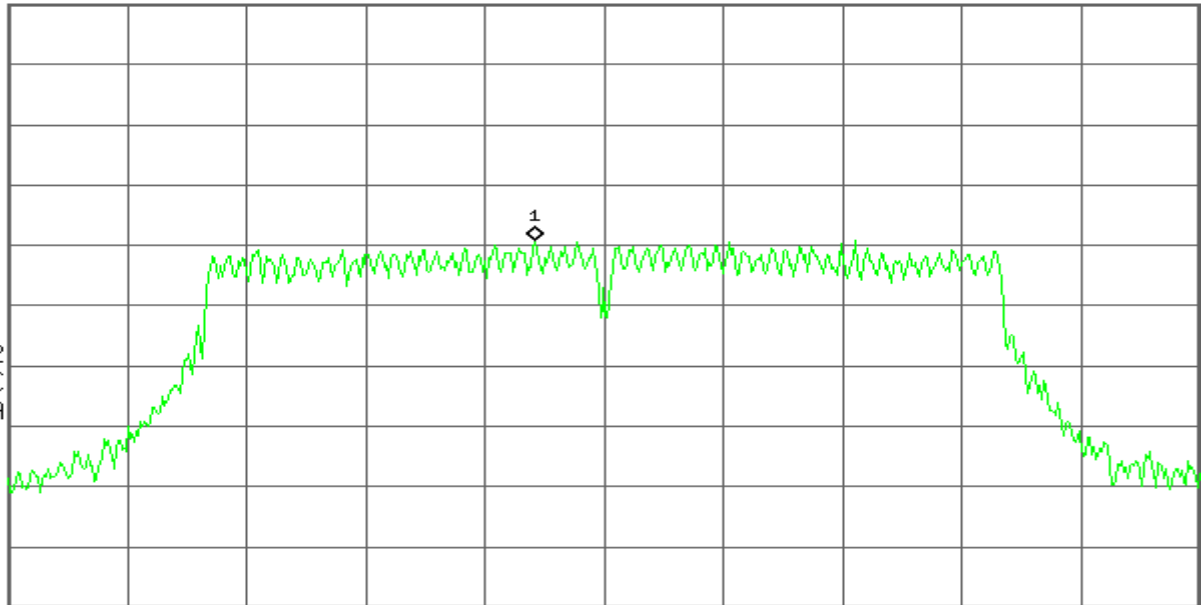
Mkr1 2.460 44 GHz
-19.18 dBm

Ref 20 dBm

Atten 30 dB

#Peak
Log
10
dB/
Offst
6.5
dB

LgAv

M1 S2
S3 FC
AA£(f):
FTun
SwpCenter 2.462 00 GHz[^]

Span 26.7 MHz

#Res BW 3 kHz

#VBW 10 kHz

Sweep 2.815 s (601 pts)

IEEE 802.11n HT20 mode / Chain 1

PPSD (CH Low)

Agilent

R T

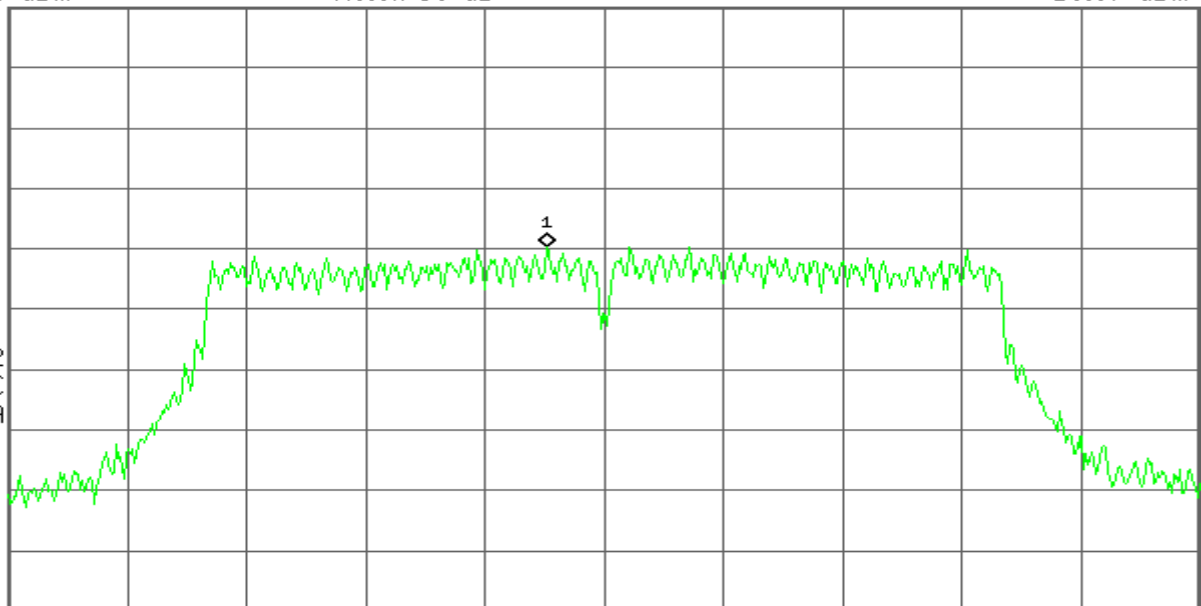
Mkr1 2.410 71 GHz
-19.67 dBm

Ref 20 dBm

Atten 30 dB

#Peak
Log
10
dB/
Offst
6.5
dB

LgAv

M1 S2
S3 FC
AA£(f):
FTun
SwpCenter 2.412 00 GHz[^]

Span 26.68 MHz

#Res BW 3 kHz

#VBW 10 kHz

Sweep 2.814 s (601 pts)

PPSD (CH Mid)

 **Agilent**

R T

Mkr1 2.438 60 GHz
-11.18 dBm

Ref 20 dBm

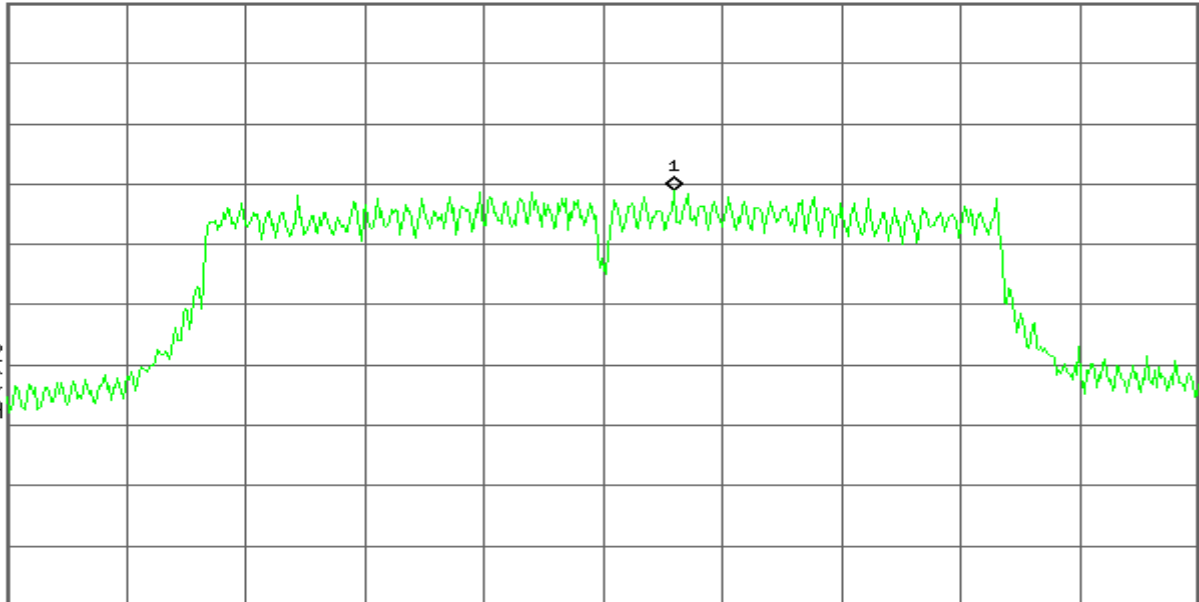
Atten 30 dB

#Peak
Log
10
dB/
Offst
6.5
dB

LgAv

M1 S2
S3 FC
AA

£(f):
FTun
Swp



Center 2.437 00 GHz

#Res BW 3 kHz

#VBW 10 kHz

Span 26.68 MHz
Sweep 2.814 s (601 pts)

PPSD (CH High)

 **Agilent**

R T

Mkr1 2.463 25 GHz
-19.92 dBm

Ref 20 dBm

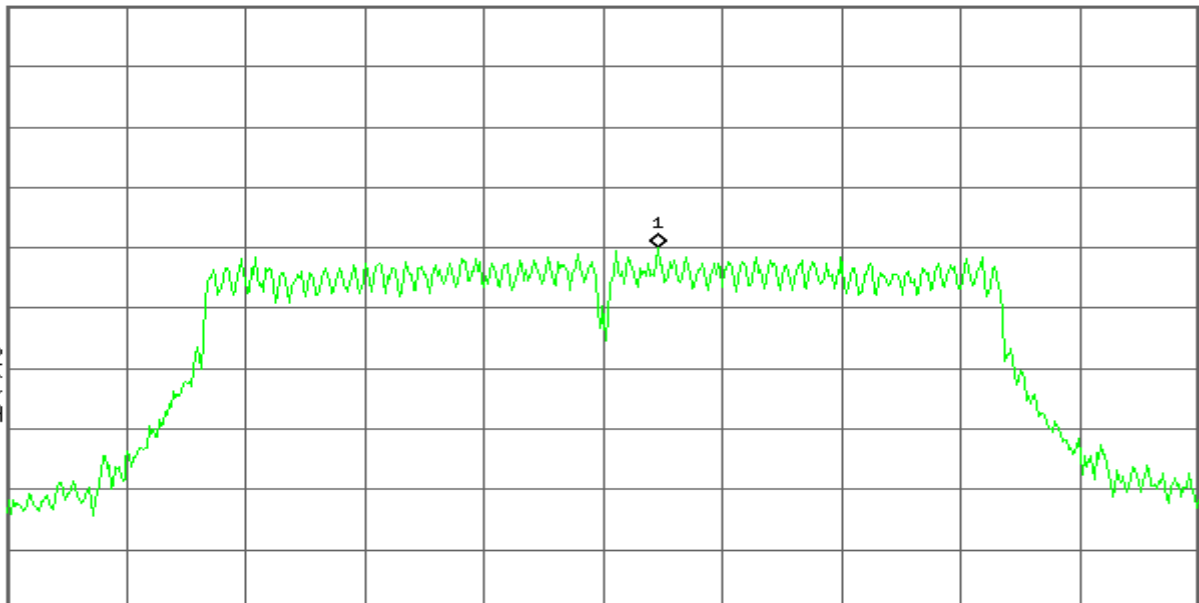
Atten 30 dB

#Peak
Log
10
dB/
Offst
6.5
dB

LgAv

M1 S2
S3 FC
AA

£(f):
FTun
Swp



Center 2.462 00 GHz

#Res BW 3 kHz

#VBW 10 kHz

Span 26.68 MHz
Sweep 2.814 s (601 pts)

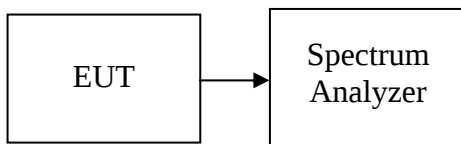
4.5.SPURIOUS EMISSIONS

Conducted Measurement

LIMIT

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

Test Configuration



TEST PROCEDURE

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

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

Measurements are made over the 30MHz to 40GHz range with the transmitter set to the lowest, middle, and highest channels.

TEST RESULTS

No non-compliance noted

Test Plot**OUT-OF-BAND SPURIOUS EMISSIONS-CONDUCTED MEASUREMENT****IEEE 802.11b mode/Chain 0****CH Low**

Agilent

R T

Mkr1 2.413 512 GHz
5.55 dBm

Ref 20 dBm

Atten 30 dB

#Peak

Log

10

dB/

Offst

6.5

dB

DI

-14.4

dBm

LgAv

M1 S2

S3 FC

AA

£(f):

FTun

Swp

Center 2.412 000 0 GHz

#Res BW 100 kHz

#VBW 300 kHz

Span 15.12 MHz
Sweep 1.48 ms (601 pts)

Agilent

R T

Mkr1 2.400 000 GHz
-34.49 dBm

Ref 20 dBm

Atten 30 dB

#Peak

Log

10

dB/

Offst

6.5

dB

DI

-14.4

dBm

LgAv

M1 S2

S3 FC

AA

£(f):

FTun

Swp

Start 2.310 000 GHz

#Res BW 100 kHz

#VBW 300 kHz

Stop 2.445 000 GHz
Sweep 13.11 ms (8192 pts)

Agilent

R T

Mkr1 1.717 5 GHz
-54.12 dBm

Ref 20 dBm

Atten 30 dB

#Peak

Log

10

dB/

Offst

6.5

dB

DI

-14.4

dBm

LgAv

M1 S2

S3 FC

RA

E(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 24.109 9 GHz
-43.01 dBm

Ref 20 dBm

Atten 30 dB

#Peak

Log

10

dB/

Offst

6.5

dB

DI

-14.4

dBm

LgAv

M1 S2

S3 FC

RA

E(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 2.438 990 GHz

6.14 dBm

Ref 20 dBm

Atten 30 dB

#Peak

Log

10

dB/

Offst

6.5

dB

DI

-13.9

dBm

LgAv

M1 S2

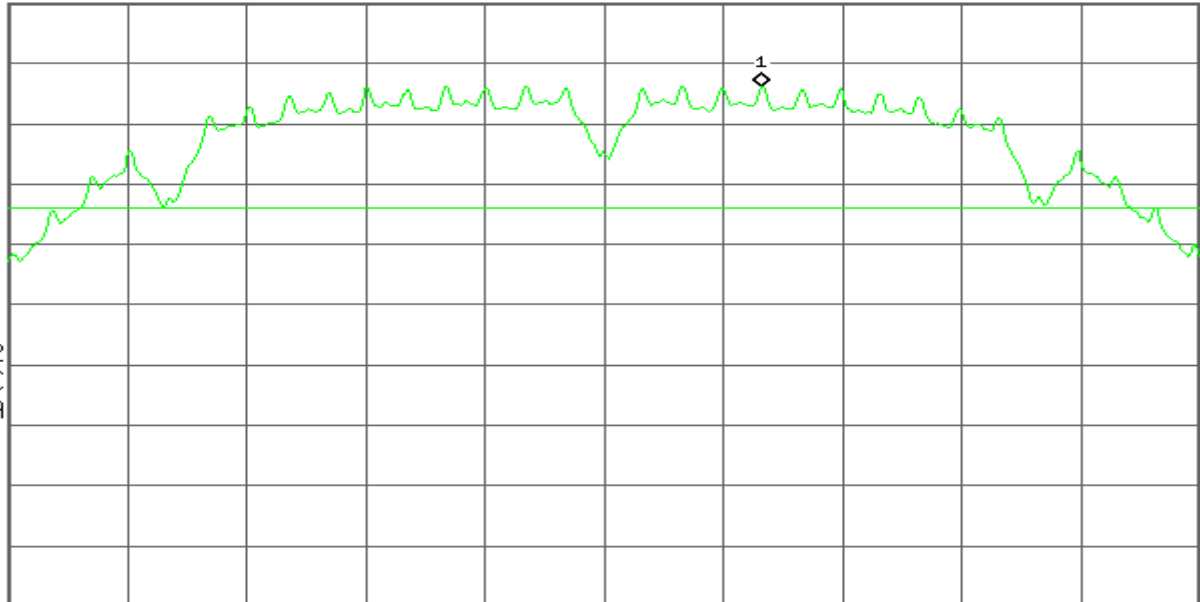
S3 FC

AA

$E(f)$:

FTun

Swp



Center 2.437 000 0 GHz

Span 15.12 MHz

#Res BW 100 kHz

#VBW 300 kHz

Sweep 1.48 ms (601 pts)

 **Agilent**

R T

Mkr1 1.006 5 GHz

-54.42 dBm

Ref 20 dBm

Atten 30 dB

#Peak

Log

10

dB/

Offst

6.5

dB

DI

-13.9

dBm

LgAv

M1 S2

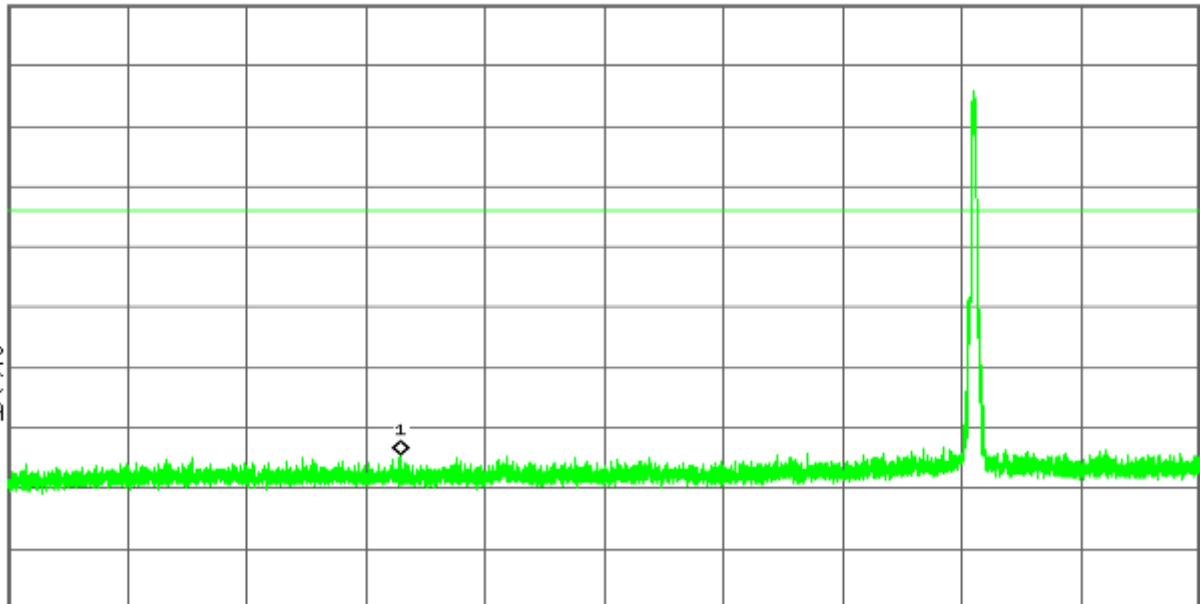
S3 FC

AA

$E(f)$:

FTun

Swp



Start 30.00 MHz

Stop 3.000 00 GHz

#Res BW 100 kHz

#VBW 300 kHz

Sweep 284 ms (8192 pts)

Agilent

R T

Mkr1 24.115 5 GHz
-42.92 dBm

Ref 20 dBm

Atten 30 dB

#Peak

Log

10

dB/

Offst

6.5

dB

DI

-13.9

dBm

LgAv

M1 S2

S3 FC

RA

E(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 High

Agilent

R T

Mkr1 2.463 008 GHz
5.91 dBm

Ref 20 dBm

Atten 30 dB

#Peak

Log

10

dB/

Offst

6.5

dB

DI

-14.1

dBm

LgAv

M1 S2

S3 FC

RA

E(f):

FTun

Swp

Center 2.462 000 0 GHz

#Res BW 100 kHz

#VBW 300 kHz

Span 15.12 MHz

Sweep 1.48 ms (601 pts)

Agilent

R T

Mkr1 2.483 500 GHz
-47.40 dBm

Ref 20 dBm

Atten 30 dB

#Peak

Log

10

dB/

Offst

6.5

dB

DI

-14.1

dBm

LgAv

M1 S2

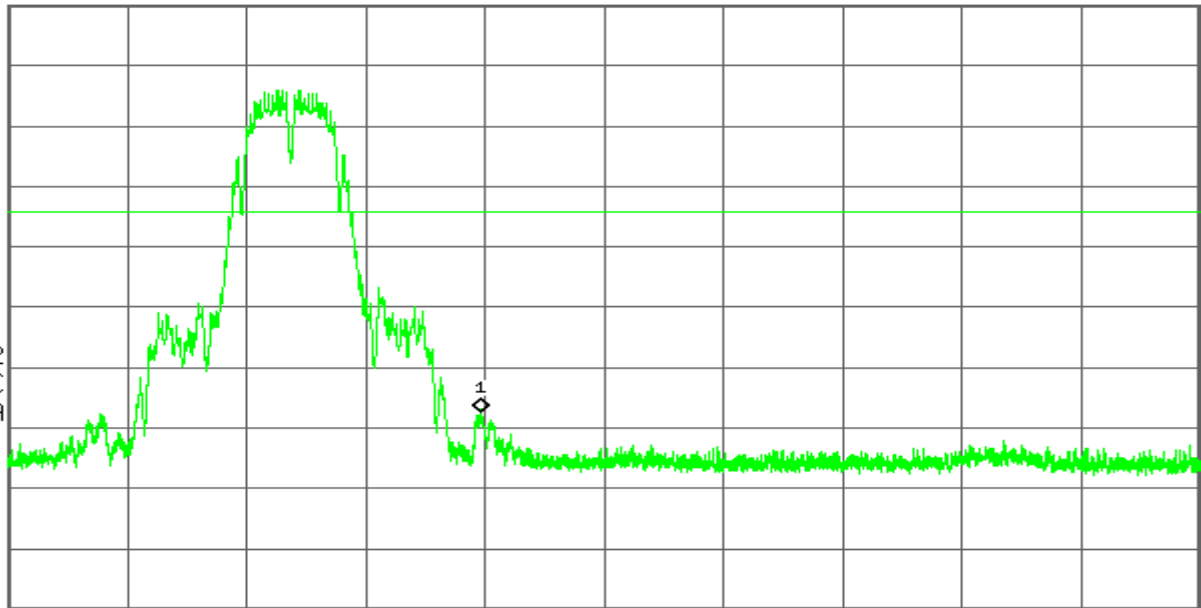
S3 FC

RA

$E(f)$:

FTun

Swp



Start 2.430 000 GHz

Stop 2.565 000 GHz

#Res BW 100 kHz

#VBW 300 kHz

Sweep 13.11 ms (8192 pts)

Agilent

R T

Mkr1 1.641 4 GHz
-53.27 dBm

Ref 20 dBm

Atten 30 dB

#Peak

Log

10

dB/

Offst

6.5

dB

DI

-14.1

dBm

LgAv

M1 S2

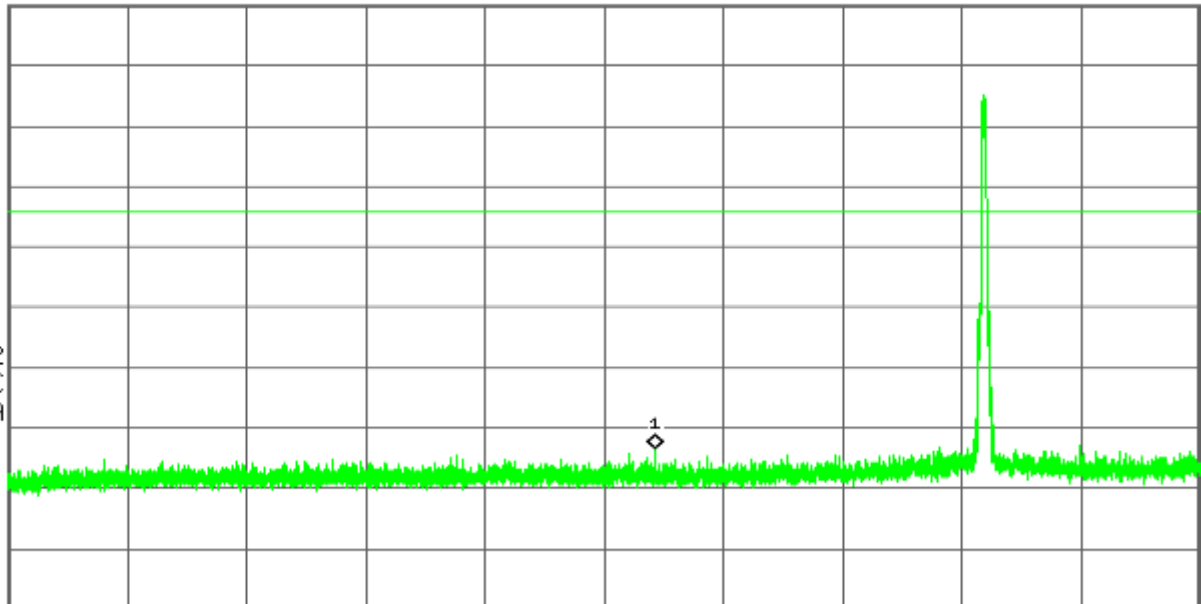
S3 FC

RA

$E(f)$:

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 24.121 1 GHz
-42.86 dBm



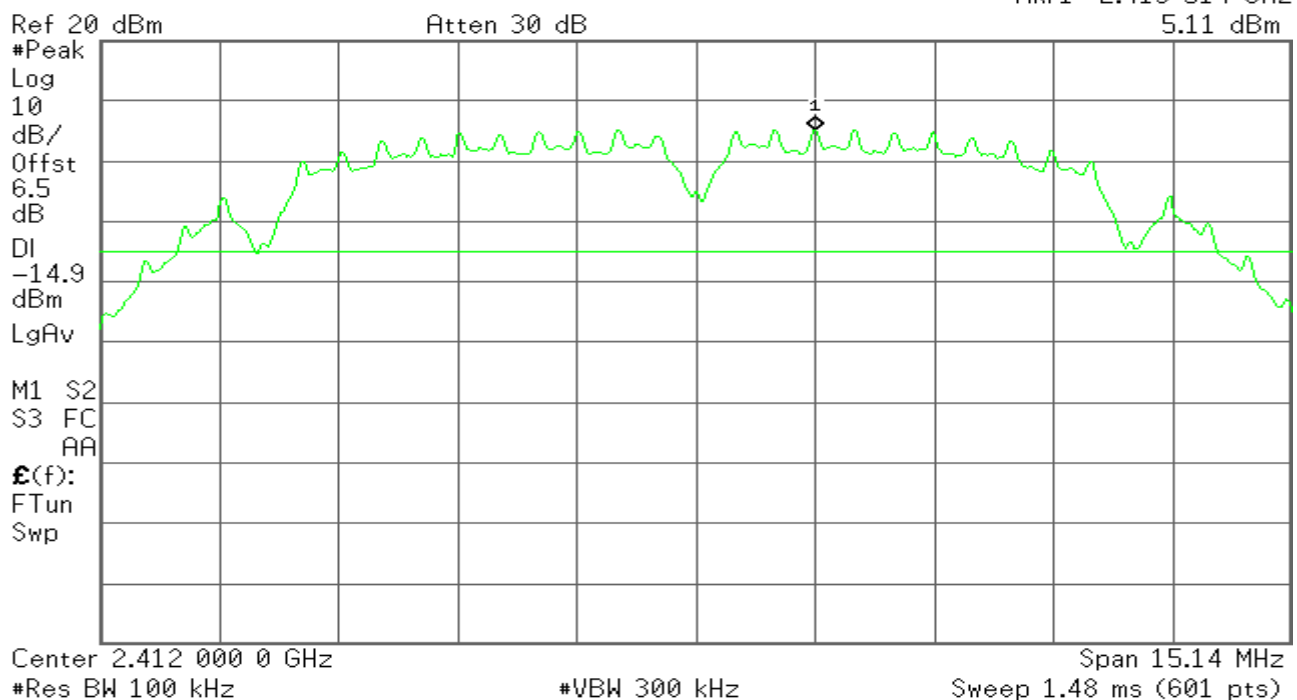
IEEE 802.11b mode/Chain 1

CH Low

Agilent

R T

Mkr1 2.413 514 GHz
5.11 dBm



Agilent

R T

Ref 20 dBm

Atten 30 dB

Mkr1 2.390 000 GHz
-51.10 dBm

#Peak

Log

10

dB/

Offst

6.5

dB

DI

-14.9

dBm

LgAv

M1 S2

S3 FC

RA

E(f):

FTun

Swp

Start 2.310 000 GHz

#Res BW 100 kHz

#VBW 300 kHz

Stop 2.445 000 GHz

Sweep 13.11 ms (8192 pts)

Agilent

R T

Ref 20 dBm

Atten 30 dB

Mkr1 1.608 0 GHz
-52.32 dBm

#Peak

Log

10

dB/

Offst

6.5

dB

DI

-14.9

dBm

LgAv

M1 S2

S3 FC

RA

E(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 24.098 6 GHz
-44.24 dBm

Ref 20 dBm

Atten 30 dB

#Peak

Log

10

dB/

Offst

6.5

dB

DI

-14.9

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 2.438 009 GHz
5.93 dBm

Ref 20 dBm

Atten 30 dB

#Peak

Log

10

dB/

Offst

6.5

dB

DI

-14.1

dBm

LgAv

M1 S2

S3 FC

AA

£(f):

FTun

Swp

Center 2.437 000 0 GHz

#Res BW 100 kHz

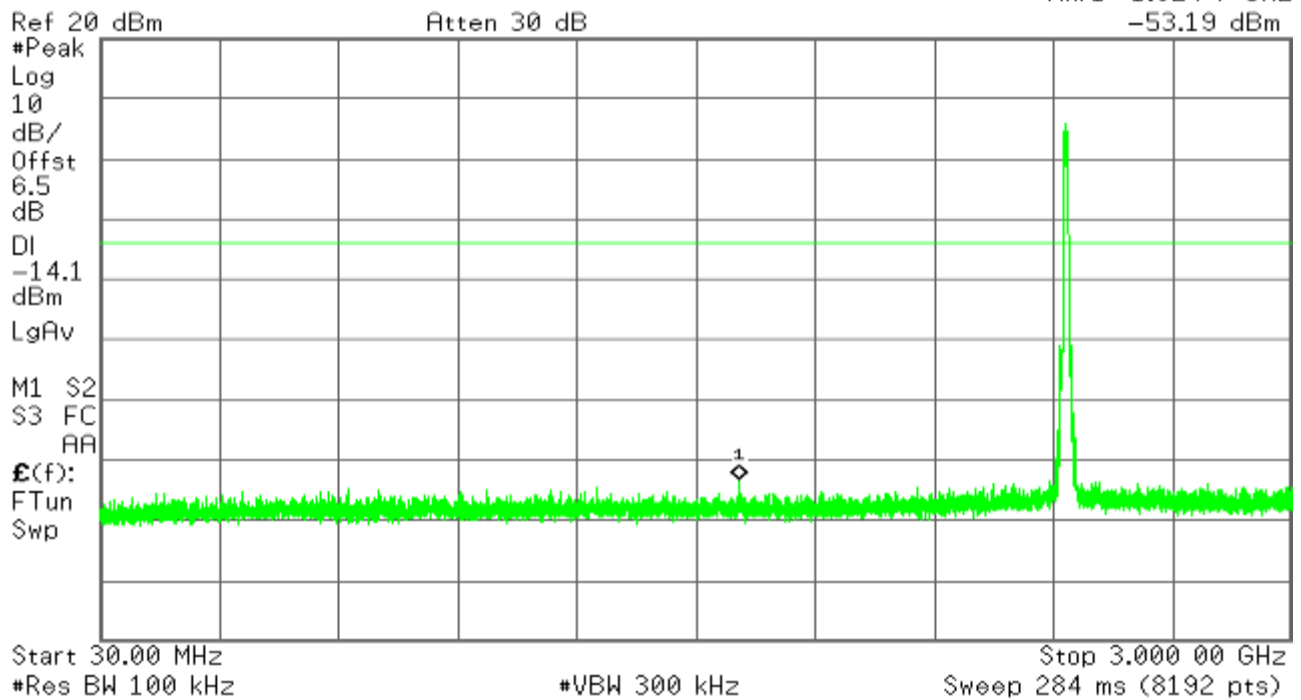
#VBW 300 kHz

Span 15.14 MHz

Sweep 1.48 ms (601 pts)

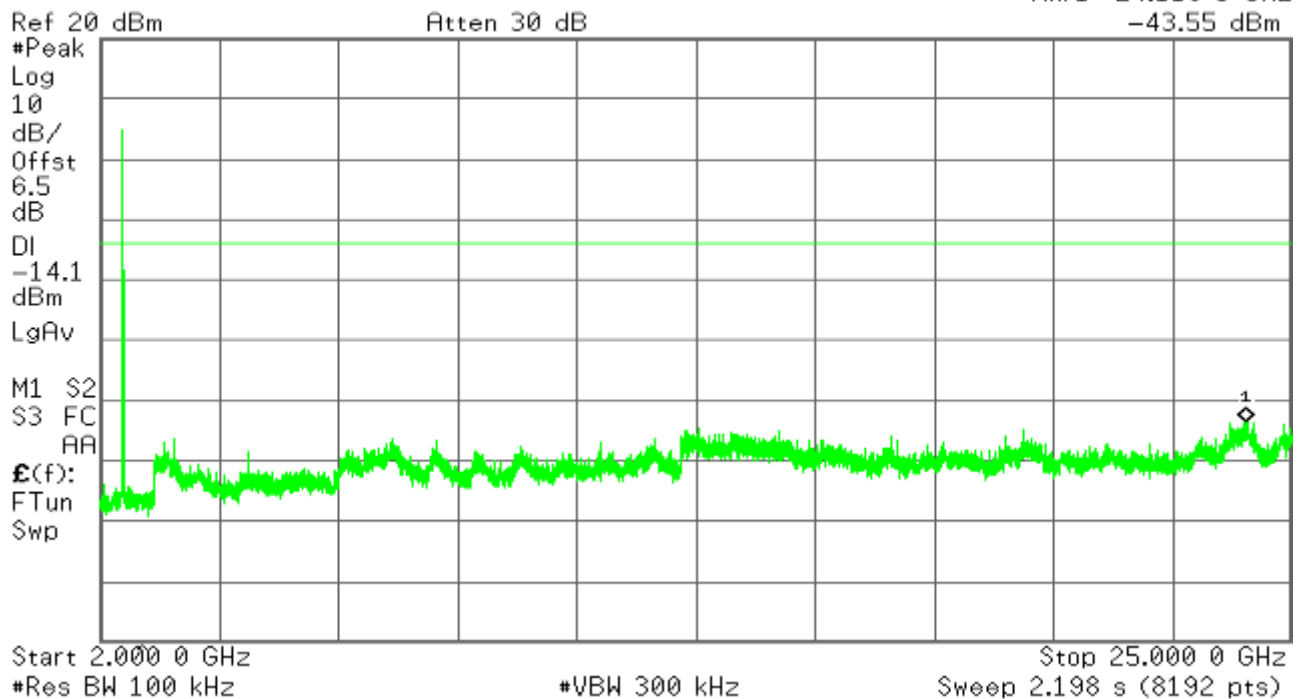
Agilent

R T



Agilent

R T



CH High

 **Agilent**

R T

Mkr1 2.464 018 GHz

5.20 dBm

Ref 20 dBm

Atten 30 dB

#Peak

Log

10

dB/

Offst

6.5

dB

DI

-14.8

dBm

LgAv

M1 S2

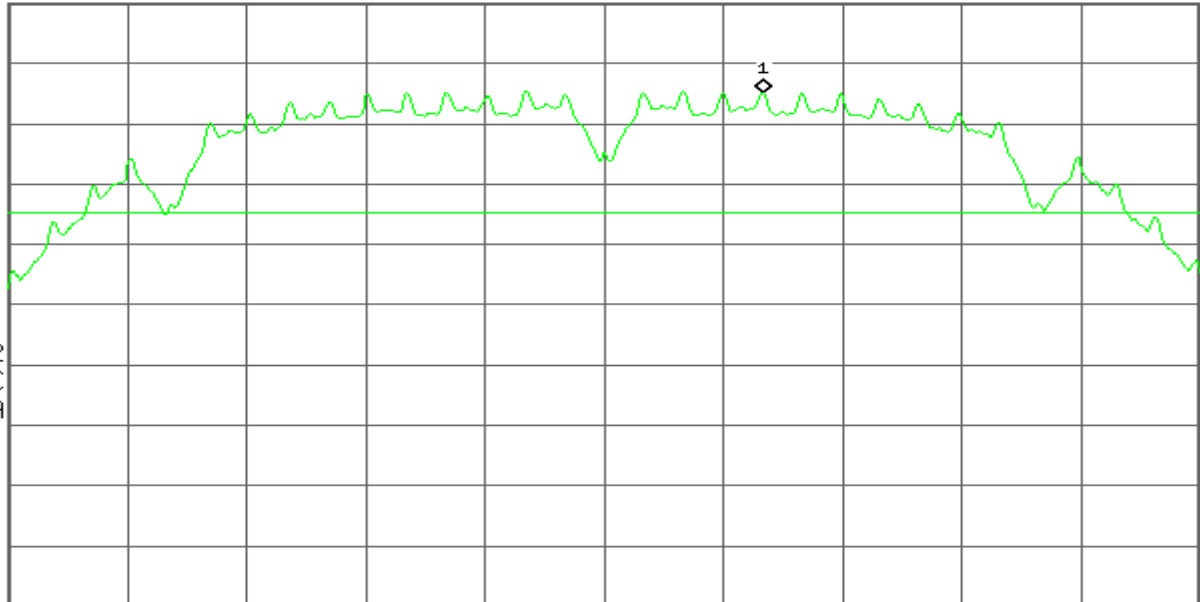
S3 FC

AA

$\mathcal{E}(f)$:

FTun

Swp



Center 2.462 000 0 GHz

Span 15.14 MHz

#Res BW 100 kHz

#VBW 300 kHz

Sweep 1.48 ms (601 pts)

 **Agilent**

R T

Mkr1 2.483 500 GHz

-49.16 dBm

Ref 20 dBm

Atten 30 dB

#Peak

Log

10

dB/

Offst

6.5

dB

DI

-14.8

dBm

LgAv

M1 S2

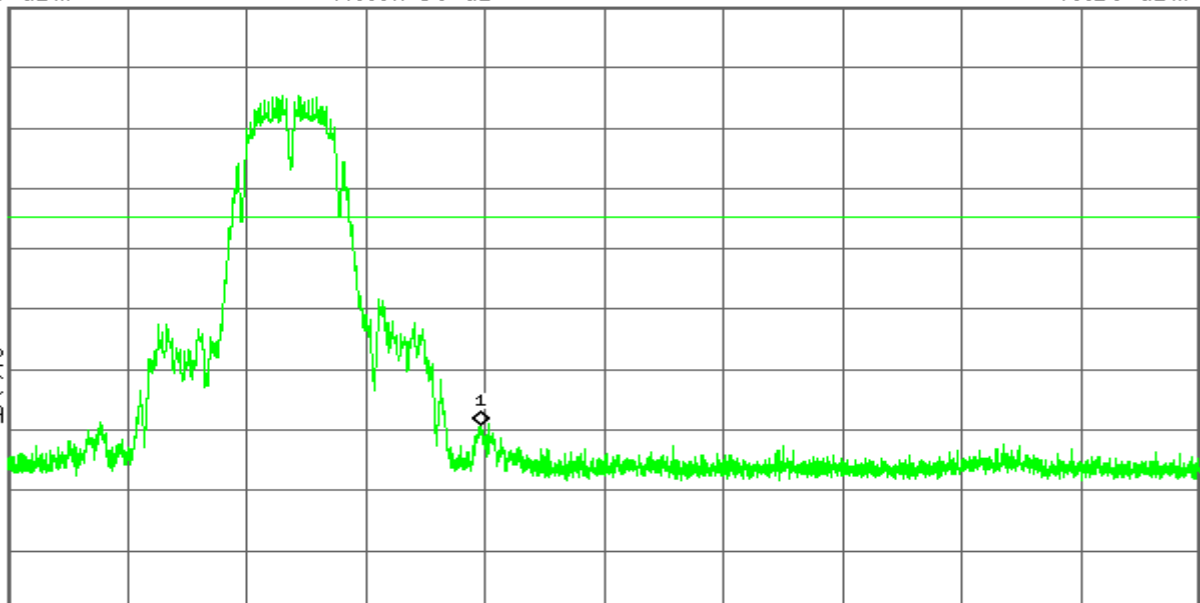
S3 FC

AA

$\mathcal{E}(f)$:

FTun

Swp



Start 2.430 000 GHz

Stop 2.565 000 GHz

#Res BW 100 kHz

#VBW 300 kHz

Sweep 13.11 ms (8192 pts)

Agilent

R T

Mkr1 1.641 4 GHz
-51.99 dBm

Ref 20 dBm

Atten 30 dB

#Peak

Log

10

dB/

Offst

6.5

dB

DI

-14.8

dBm

LgAv

M1 S2

S3 FC

RA

E(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 24.084 6 GHz
-43.25 dBm

Ref 20 dBm

Atten 30 dB

#Peak

Log

10

dB/

Offst

6.5

dB

DI

-14.8

dBm

LgAv

M1 S2

S3 FC

RA

E(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)

IEEE 802.11g mode/Chain 0**CH Low**

Agilent

R T

Mkr1 2.414 49 GHz
-4.13 dBm

Ref 20 dBm

Atten 30 dB

#Peak

Log

10

dB/

Offst

6.5

dB

DI

-24.1

dBm

LgAv

M1 S2

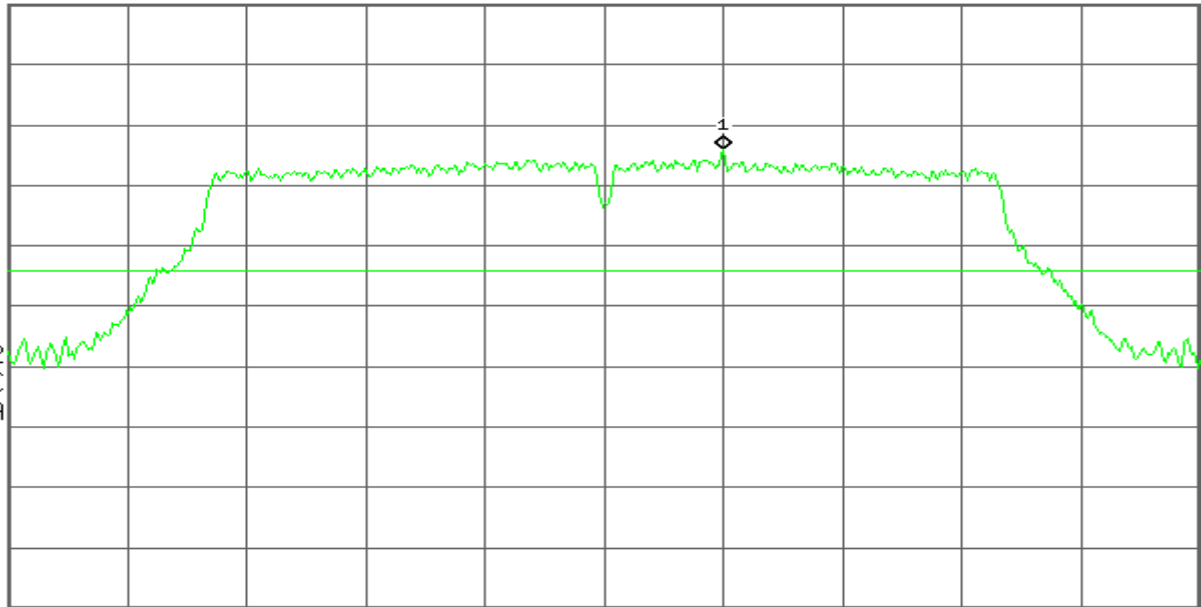
S3 FC

AA

 $\mathcal{E}(f)$:

FTun

Swp



Center 2.412 000 GHz

Span 24.92 MHz

#Res BW 100 kHz

#VBW 300 kHz

Sweep 2.4 ms (601 pts)

Agilent

R T

Mkr1 2.400 000 GHz
-38.45 dBm

Ref 20 dBm

Atten 30 dB

#Peak

Log

10

dB/

Offst

6.5

dB

DI

-24.1

dBm

LgAv

M1 S2

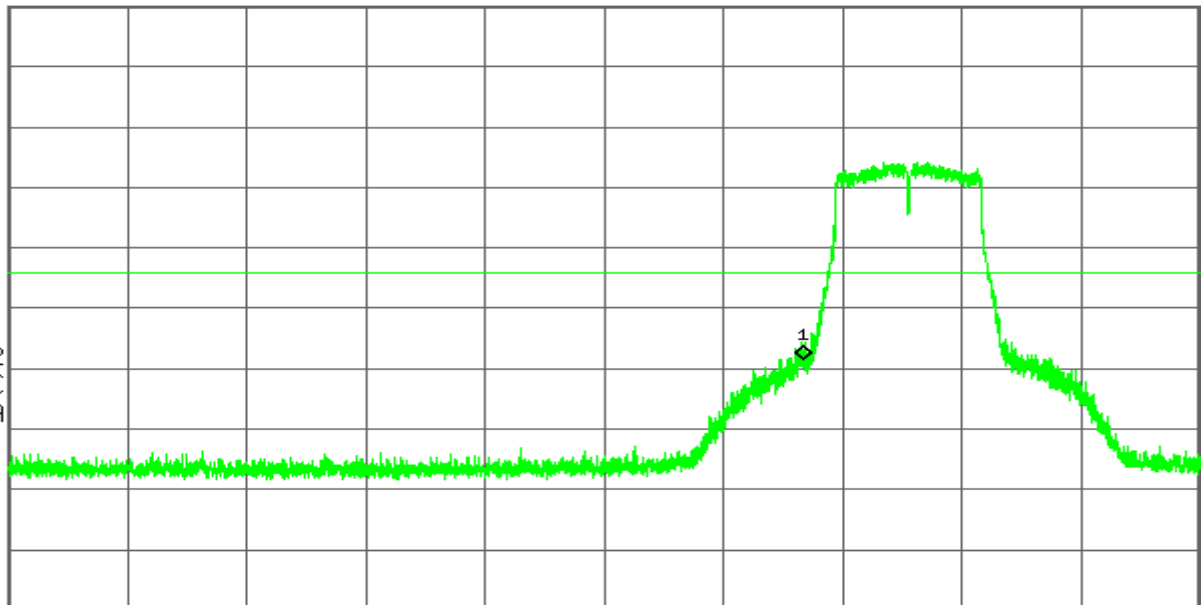
S3 FC

AA

 $\mathcal{E}(f)$:

FTun

Swp



Start 2.310 000 GHz

Stop 2.445 000 GHz

#Res BW 100 kHz

#VBW 300 kHz

#Sweep 13.11 ms (8192 pts)

Agilent

R T

Ref 20 dBm

Atten 30 dB

Mkr1 2.155 2 GHz
-54.44 dBm

#Peak

Log

10

dB/

Offst

6.5

dB

DI

-24.1

dBm

LgAv

M1 S2

S3 FC

RA

E(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

Ref 20 dBm

Atten 30 dB

Mkr1 24.098 6 GHz
-42.07 dBm

#Peak

Log

10

dB/

Offst

6.5

dB

DI

-24.1

dBm

LgAv

M1 S2

S3 FC

RA

E(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 2.439 12 GHz
0.71 dBm

Ref 20 dBm

Atten 30 dB

#Peak

Log

10

dB/

Offst

6.5

dB

DI

-19.3

dBm

LgAv

M1 S2

S3 FC

AA

E(f):

FTun

Swp

Center 2.437 000 GHz

#Res BW 100 kHz

#VBW 300 kHz

Span 24.92 MHz

Sweep 2.4 ms (601 pts)

Agilent

R T

Mkr1 1.690 7 GHz
-54.07 dBm

Ref 20 dBm

Atten 30 dB

#Peak

Log

10

dB/

Offst

6.5

dB

DI

-19.3

dBm

LgAv

M1 S2

S3 FC

AA

E(f):

FTun

Swp

Start 30.00 MHz

#Res BW 100 kHz

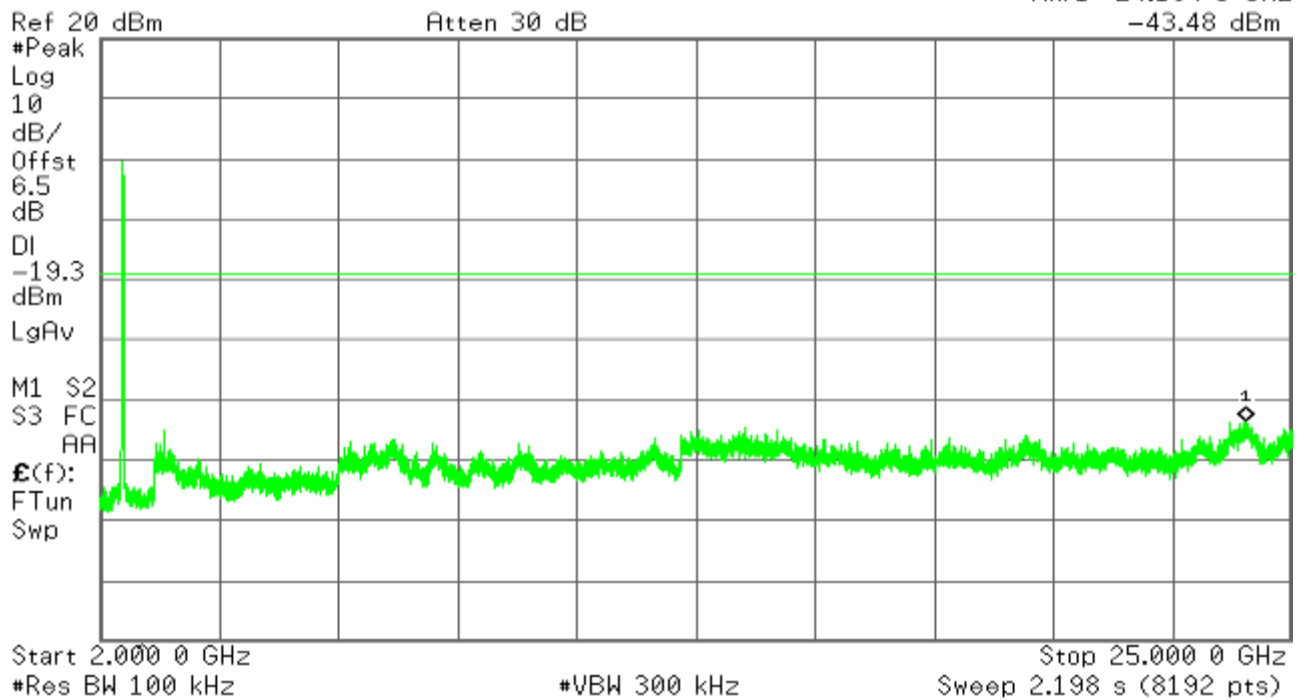
#VBW 300 kHz

Stop 3.000 00 GHz

Sweep 284 ms (8192 pts)

Agilent

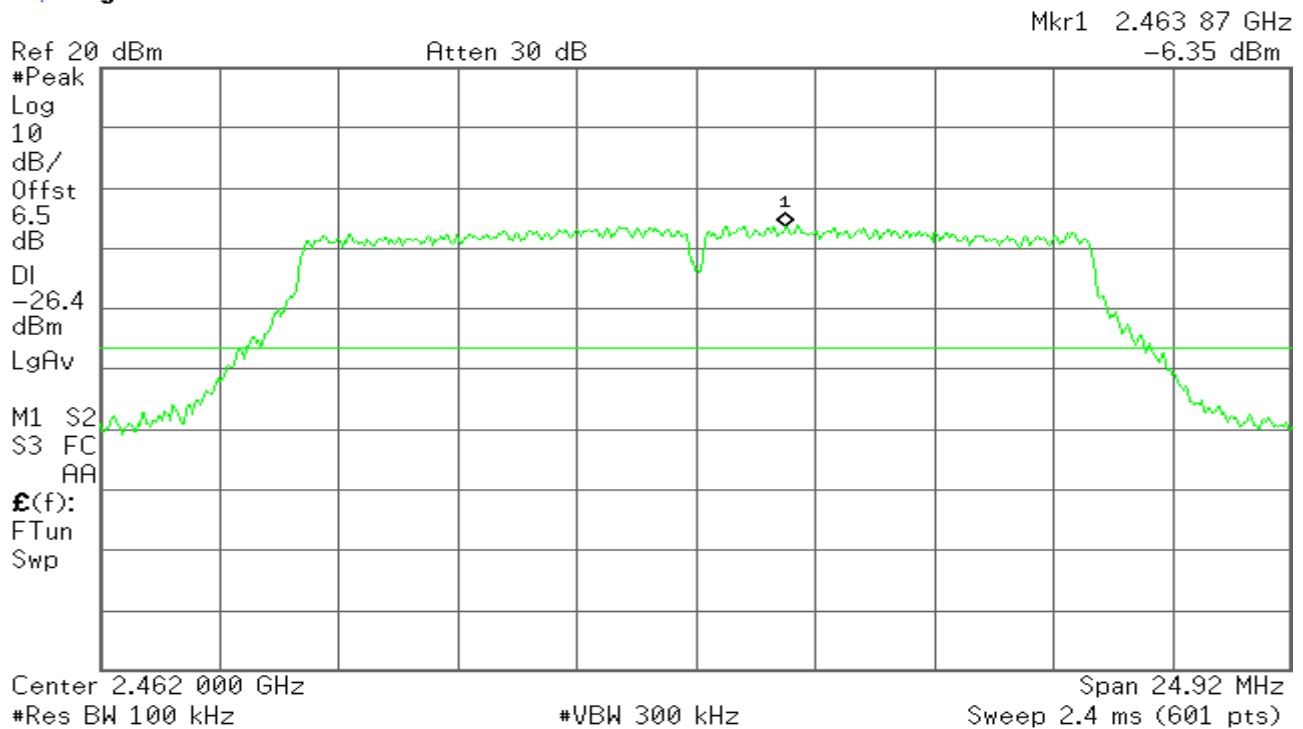
R T



CH High

Agilent

R T



Agilent

R T

Mkr1 2.483 500 GHz
-49.55 dBm

Ref 20 dBm

Atten 30 dB

#Peak

Log

10

dB/

Offst

6.5

dB

DI

-26.4

dBm

LgAv

M1 S2

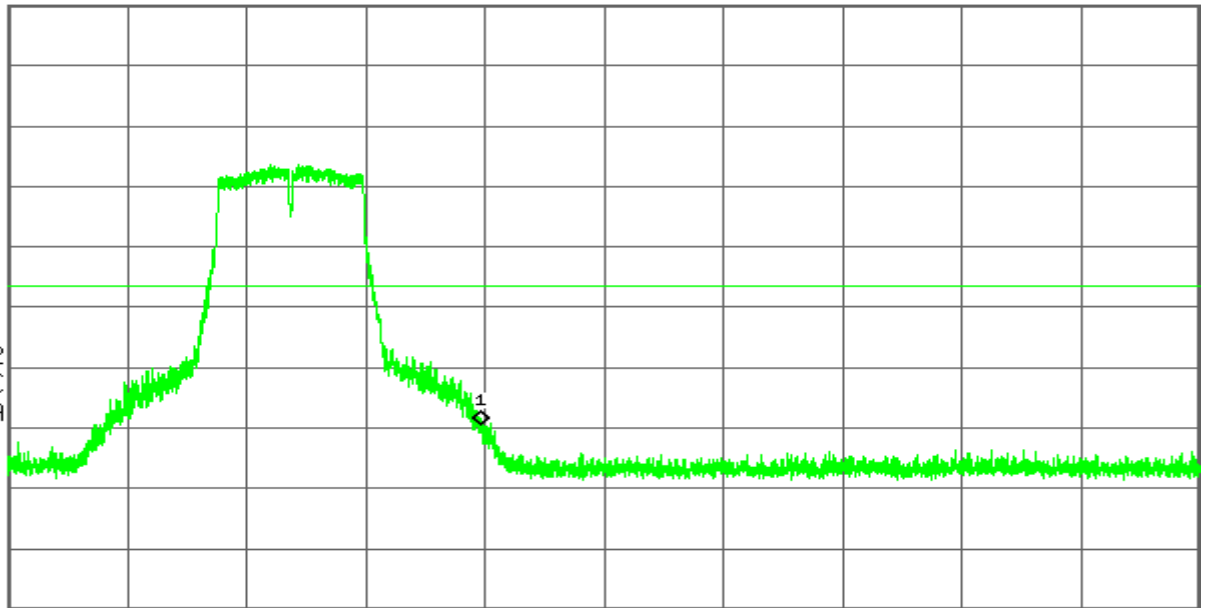
S3 FC

RA

E(f):

FTun

Swp



Start 2.430 000 GHz

Stop 2.565 000 GHz

#Res BW 100 kHz

#VBW 300 kHz

Sweep 13.11 ms (8192 pts)

Agilent

R T

Mkr1 2.404 3 GHz
-54.31 dBm

Ref 20 dBm

Atten 30 dB

#Peak

Log

10

dB/

Offst

6.5

dB

DI

-26.4

dBm

LgAv

M1 S2

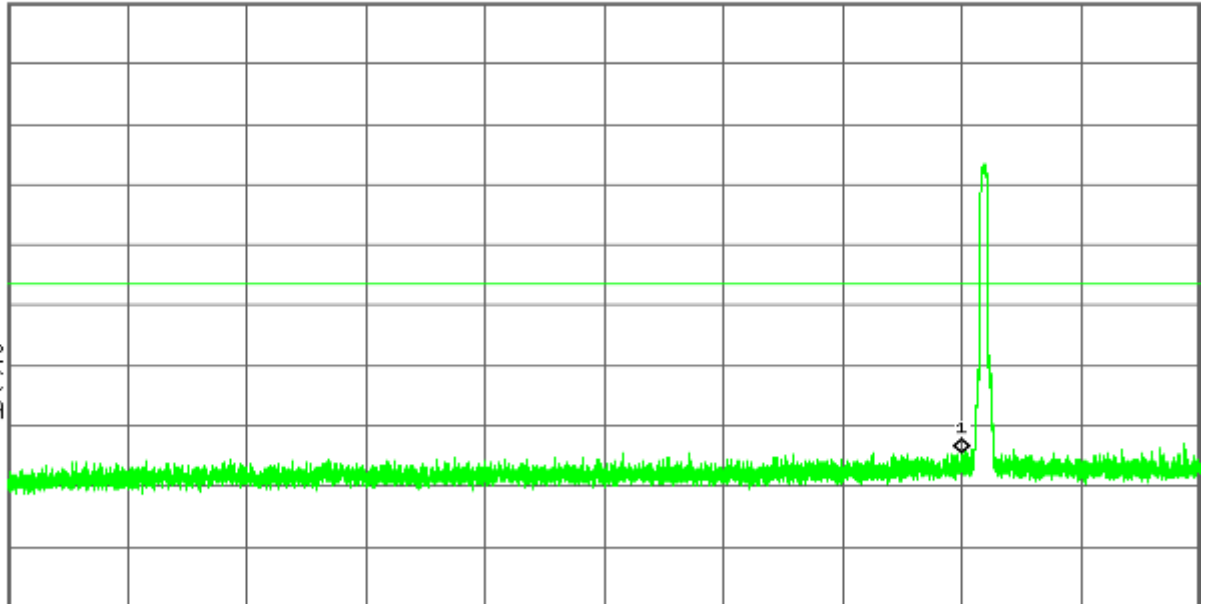
S3 FC

RA

E(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 24.039 7 GHz
-43.40 dBm

Ref 20 dBm

Atten 30 dB

#Peak

Log

10

dB/

Offst

6.5

dB

DI

-26.4

dBm

LgAv

M1 S2

S3 FC

AA

$E(f)$:

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)

IEEE 802.11g mode/Chain 1

CH Low

Agilent

R T

Mkr1 2.410 46 GHz
-7.09 dBm

Ref 20 dBm

Atten 30 dB

#Peak

Log

10

dB/

Offst

6.5

dB

DI

-27.1

dBm

LgAv

M1 S2

S3 FC

AA

$E(f)$:

FTun

Swp

Center 2.412 00 GHz

#Res BW 100 kHz

#VBW 300 kHz

Span 24.89 MHz

Sweep 2.4 ms (601 pts)

Agilent

R T

Mkr1 2.400 000 GHz
-39.44 dBm

Ref 20 dBm

Atten 30 dB

#Peak

Log

10

dB/

Offst

6.5

dB

DI

-27.1

dBm

LgAv

M1 S2

S3 FC

AA

£(f):

FTun

Swp

Start 2.310 000 GHz

#Res BW 100 kHz

#VBW 300 kHz

Stop 2.445 000 GHz

Sweep 13.11 ms (8192 pts)

Agilent

R T

Mkr1 1.130 8 GHz
-54.43 dBm

Ref 20 dBm

Atten 30 dB

#Peak

Log

10

dB/

Offst

6.5

dB

DI

-27.1

dBm

LgAv

M1 S2

S3 FC

AA

£(f):

FTun

Swp

Start 30.0 MHz

#Res BW 100 kHz

#VBW 300 kHz

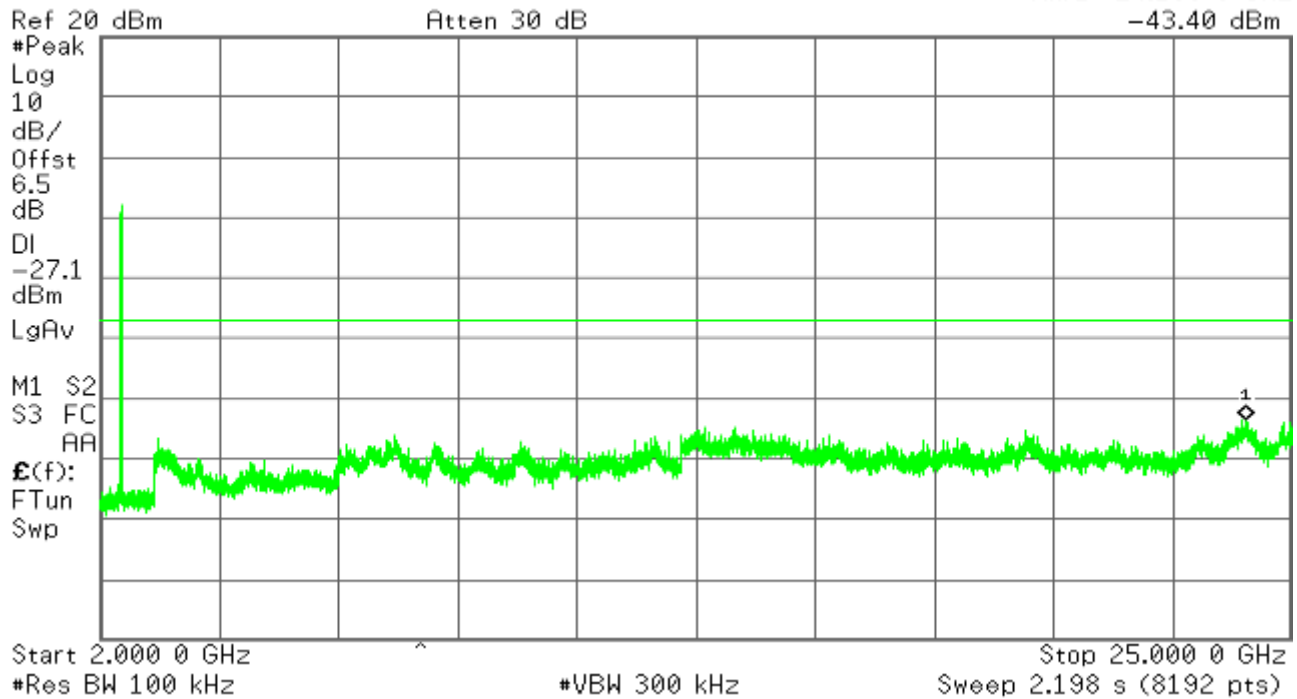
Stop 3.000 0 GHz

Sweep 284 ms (8192 pts)

Agilent

R T

Mkr1 24.109 9 GHz
-43.40 dBm

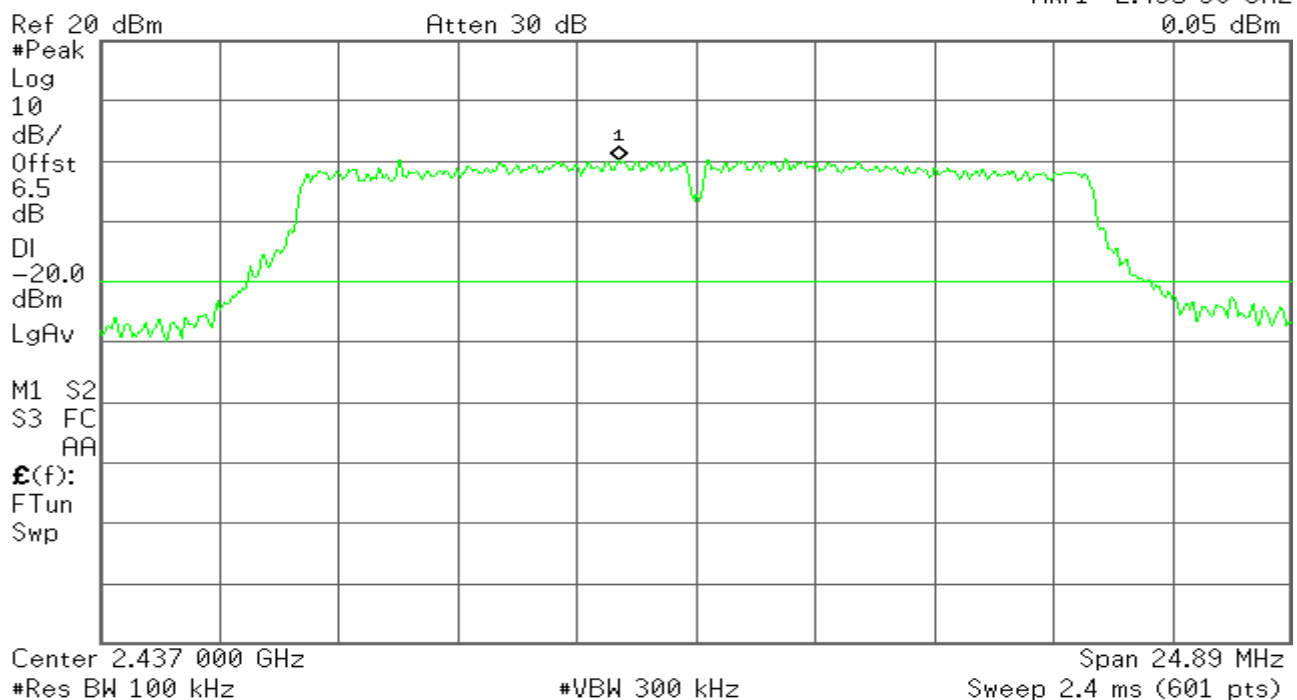


CH Mid

Agilent

R T

Mkr1 2.435 38 GHz
0.05 dBm



Agilent

R T

Ref 20 dBm

Atten 30 dB

Mkr1 1.257 0 GHz
-54.40 dBm

#Peak

Log

10

dB/

Offst

6.5

dB

DI

-20.0

dBm

LgAv

M1 S2

S3 FC

RA

E(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

Ref 20 dBm

Atten 30 dB

Mkr1 24.135 1 GHz
-43.83 dBm

#Peak

Log

10

dB/

Offst

6.5

dB

DI

-20.0

dBm

LgAv

M1 S2

S3 FC

RA

E(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 High

 **Agilent**

R T

Mkr1 2.464 12 GHz
-6.99 dBm

Ref 20 dBm

Atten 30 dB

#Peak

Log

10

dB/

Offst

6.5

dB

DI

-27.0

dBm

LgAv

M1 S2

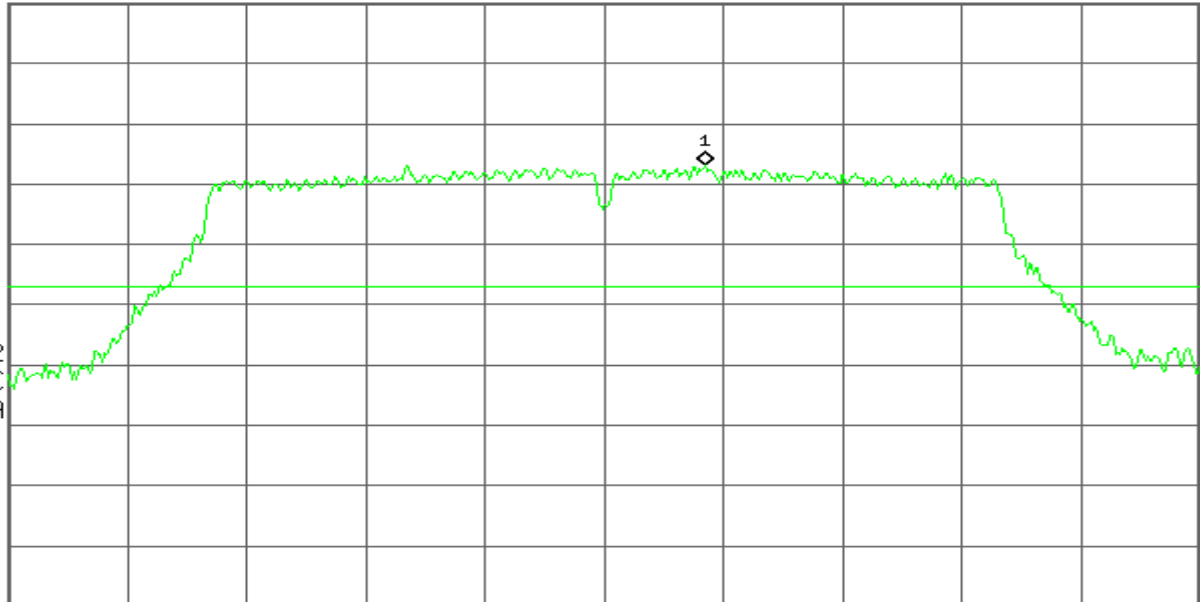
S3 FC

AA

$\mathcal{E}(f)$:

FTun

Swp



Center 2.462 000 GHz

#Res BW 100 kHz

#VBW 300 kHz

Span 24.89 MHz

Sweep 2.4 ms (601 pts)

 **Agilent**

R T

Mkr1 2.483 500 GHz
-52.01 dBm

Ref 20 dBm

Atten 30 dB

#Peak

Log

10

dB/

Offst

6.5

dB

DI

-27.0

dBm

LgAv

M1 S2

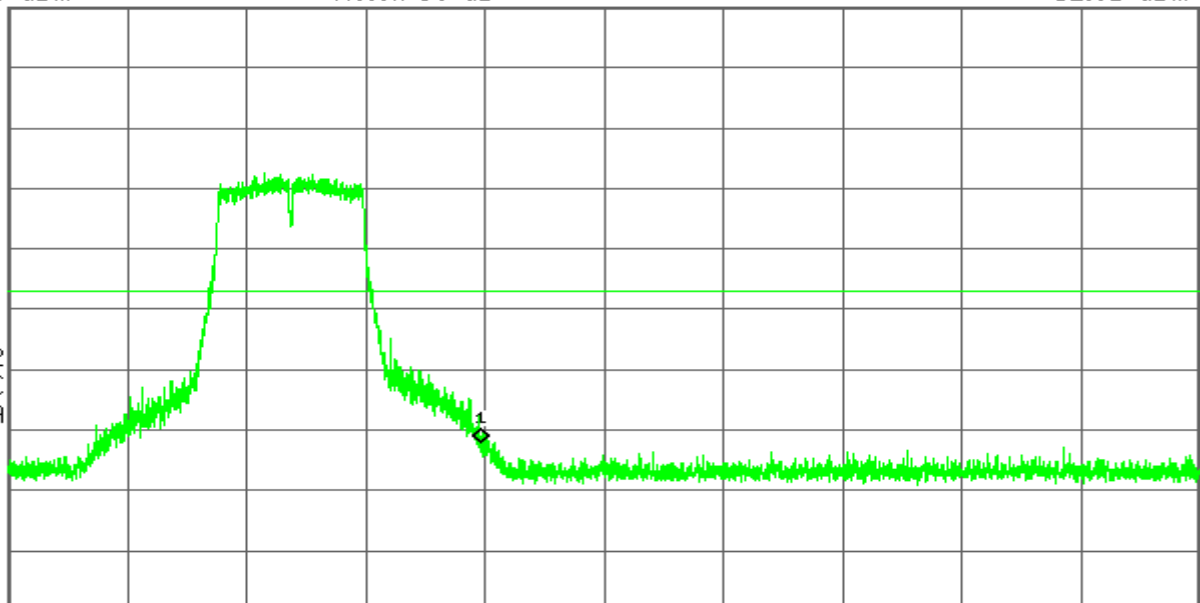
S3 FC

AA

$\mathcal{E}(f)$:

FTun

Swp



Start 2.430 000 GHz

#Res BW 100 kHz

#VBW 300 kHz

Stop 2.565 000 GHz

Sweep 13.11 ms (8192 pts)

Agilent

R T

Mkr1 2.863 7 GHz
-53.12 dBm

Ref 20 dBm

Atten 30 dB

#Peak

Log

10

dB/

Offst

6.5

dB

DI

-27.0

dBm

LgAv

M1 S2

S3 FC

RA

E(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 24.081 8 GHz
-43.30 dBm

Ref 20 dBm

Atten 30 dB

#Peak

Log

10

dB/

Offst

6.5

dB

DI

-27.0

dBm

LgAv

M1 S2

S3 FC

RA

E(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)

IEEE 802.11n HT20 mode / Chain 0

CH Low

 **Agilent**

R T

Mkr1 2.411 02 GHz
-6.81 dBm

Ref 20 dBm

Atten 30 dB

#Peak

Log

10

dB/

Offst

6.5

dB

DI

-26.8

dBm

LgAv

M1 S2

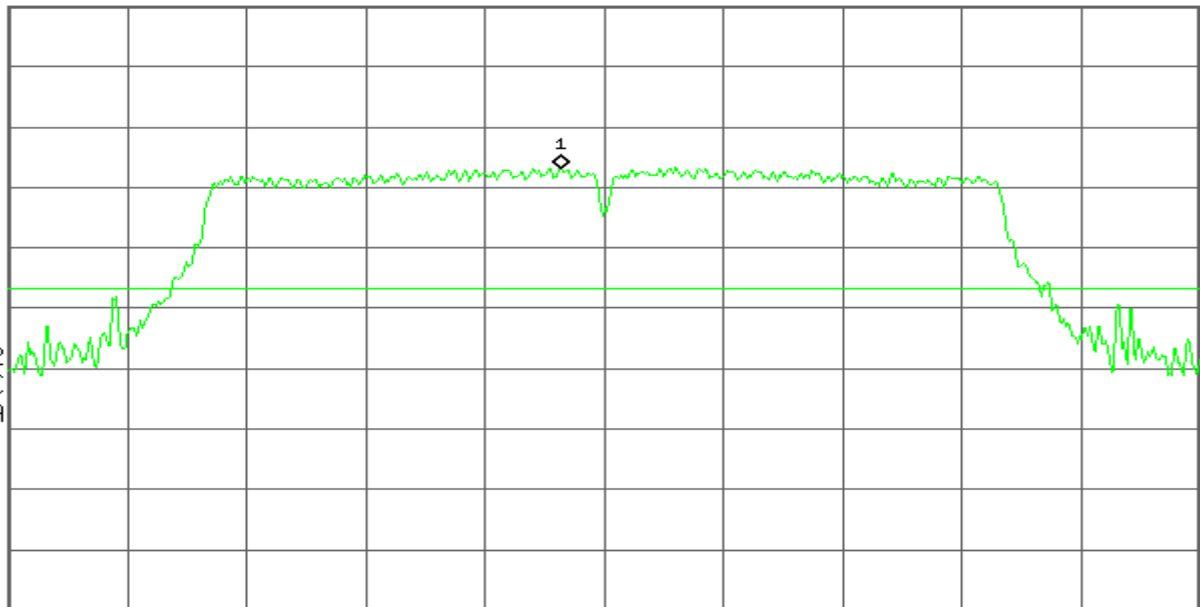
S3 FC

AA

$E(f)$:

FTun

Swp



Center 2.412 00 GHz

Span 26.7 MHz

#Res BW 100 kHz

#VBW 300 kHz

Sweep 2.56 ms (601 pts)

 **Agilent**

R T

Mkr1 2.400 000 GHz
-39.05 dBm

Ref 20 dBm

Atten 30 dB

#Peak

Log

10

dB/

Offst

6.5

dB

DI

-26.8

dBm

LgAv

M1 S2

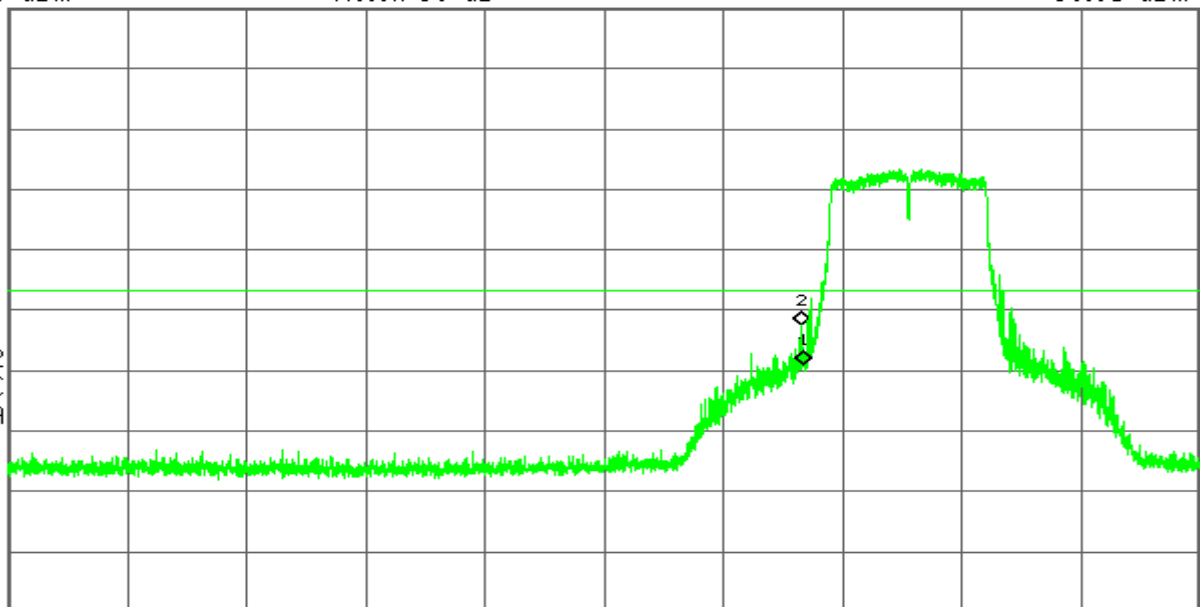
S3 FC

AA

$E(f)$:

FTun

Swp



Start 2.310 000 GHz

Stop 2.445 000 GHz

#Res BW 100 kHz

#VBW 300 kHz

Sweep 13.11 ms (8192 pts)

Agilent

R T

Mkr1 1.402 1 GHz
-54.29 dBm

Ref 20 dBm

Atten 30 dB

#Peak

Log

10

dB/

Offst

6.5

dB

DI

-26.8

dBm

LgAv

M1 S2

S3 FC

RA

E(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 24.098 6 GHz
-43.14 dBm

Ref 20 dBm

Atten 30 dB

#Peak

Log

10

dB/

Offst

6.5

dB

DI

-26.8

dBm

LgAv

M1 S2

S3 FC

RA

E(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 2.434 24 GHz
0.72 dBm

Ref 20 dBm

Atten 30 dB

#Peak

Log

10

dB/

Offst

6.5

dB

DI

-19.3

dBm

LgAv

M1 S2

S3 FC

AA

E(f):

FTun

Swp

Center 2.437 00 GHz

#Res BW 100 kHz

#VBW 300 kHz

Span 26.7 MHz

Sweep 2.56 ms (601 pts)

Agilent

R T

Mkr1 2.400 0 GHz
-52.49 dBm

Ref 20 dBm

Atten 30 dB

#Peak

Log

10

dB/

Offst

6.5

dB

DI

-19.3

dBm

LgAv

M1 S2

S3 FC

AA

E(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 23.772 9 GHz
-42.82 dBm

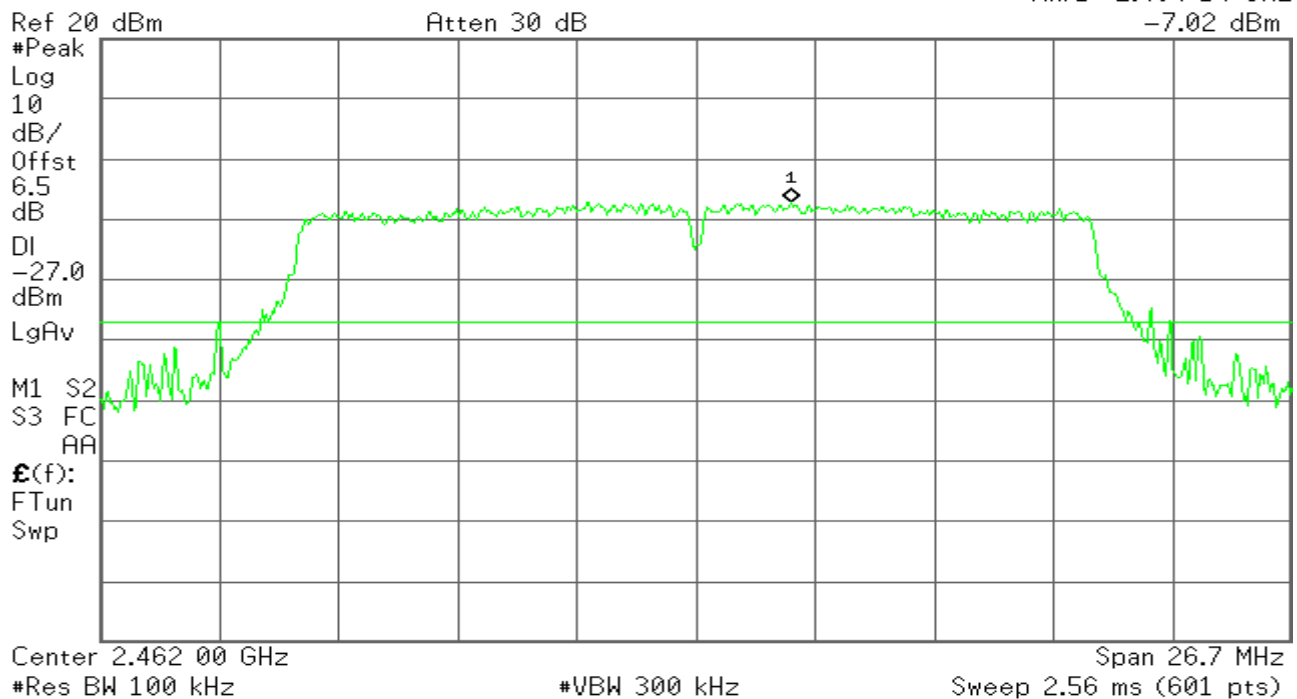


CH High

Agilent

R T

Mkr1 2.464 14 GHz
-7.02 dBm



Agilent

R T

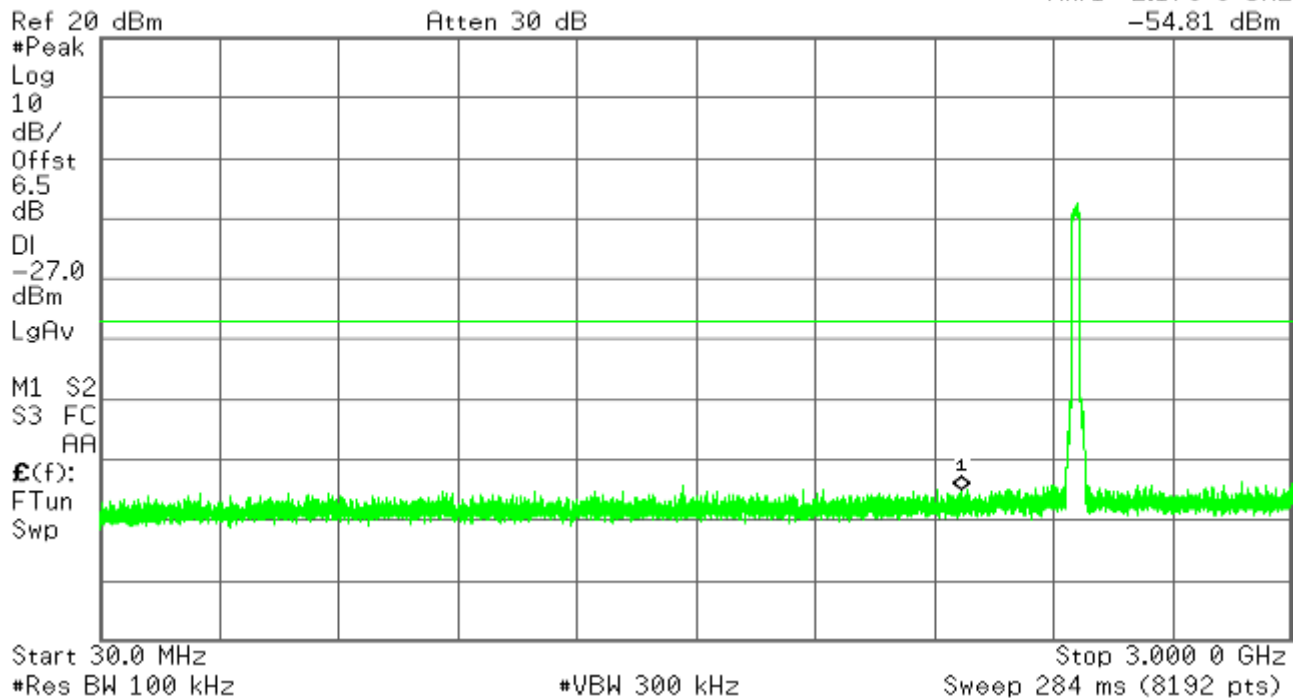
Mkr1 2.483 500 GHz
-46.77 dBm



Agilent

R T

Mkr1 2.176 9 GHz
-54.81 dBm



Agilent

R T

Mkr1 24.093 0 GHz
-43.97 dBm



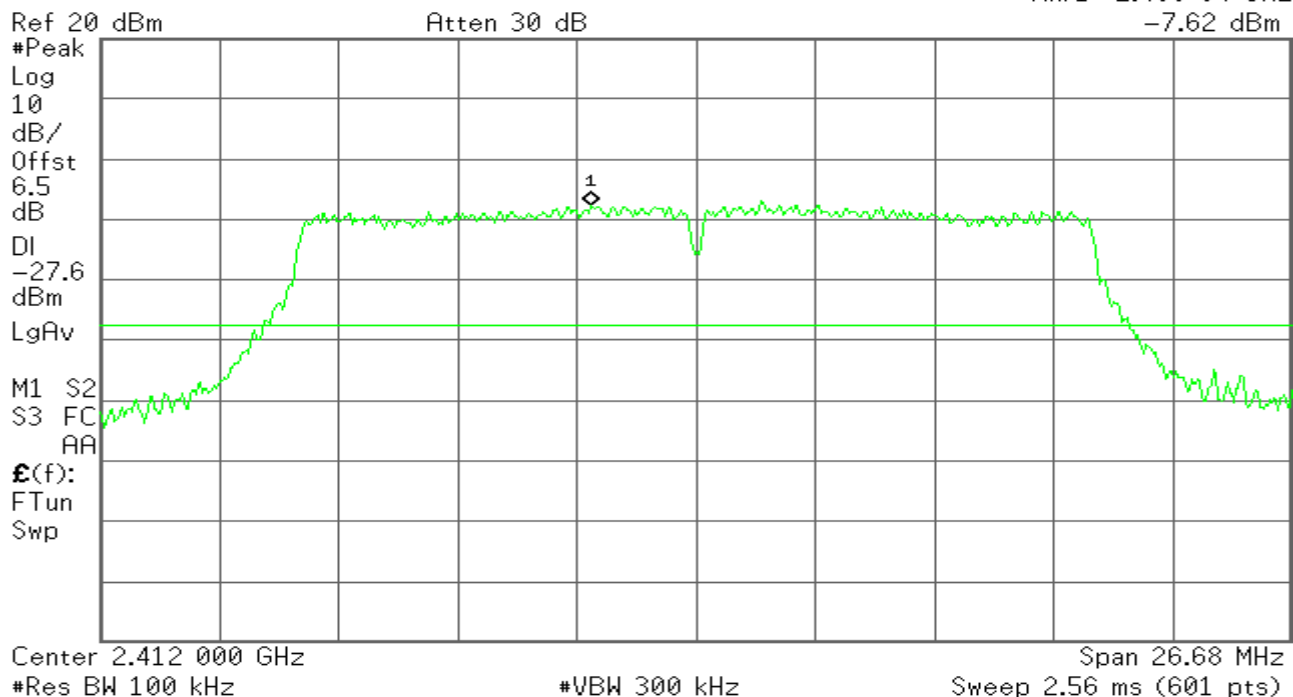
IEEE 802.11n HT20 mode / Chain 1

CH Low

Agilent

R T

Mkr1 2.409 64 GHz
-7.62 dBm



Agilent

R T

Mkr1 2.400 000 GHz
-42.58 dBm

Ref 20 dBm

Atten 30 dB

#Peak

Log

10

dB/

Offst

6.5

dB

DI

-27.6

dBm

LgAv

M1 S2

S3 FC

AA

$E(f)$:

FTun

Swp

Start 2.310 000 GHz

#Res BW 100 kHz

#VBW 300 kHz

Stop 2.445 000 GHz

Sweep 13.11 ms (8192 pts)

Agilent

R T

Mkr1 2.313 6 GHz
-53.66 dBm

Ref 20 dBm

Atten 30 dB

#Peak

Log

10

dB/

Offst

6.5

dB

DI

-27.6

dBm

LgAv

M1 S2

S3 FC

AA

$E(f)$:

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 24.166 0 GHz
-43.32 dBm

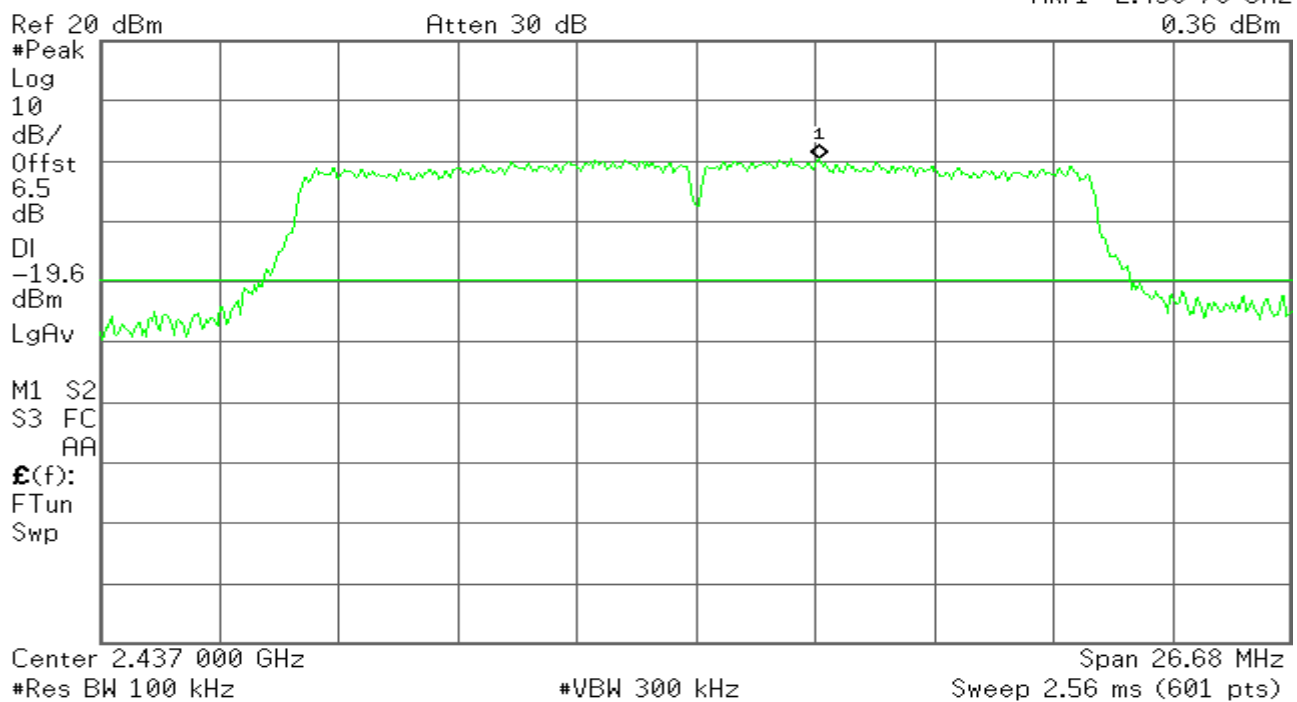


CH Mid

Agilent

R T

Mkr1 2.439 76 GHz
0.36 dBm



Agilent

R T

Ref 20 dBm

Atten 30 dB

Mkr1 1.626 9 GHz
-54.13 dBm

#Peak

Log

10

dB/

Offst

6.5

dB

DI

-19.6

dBm

LgAv

M1 S2

S3 FC

RA

E(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

Ref 20 dBm

Atten 30 dB

Mkr1 24.194 1 GHz
-42.84 dBm

#Peak

Log

10

dB/

Offst

6.5

dB

DI

-19.6

dBm

LgAv

M1 S2

S3 FC

RA

E(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 High

 **Agilent**

R T

Mkr1 2.463 47 GHz
-8.51 dBm

Ref 20 dBm

Atten 30 dB

#Peak

Log

10

dB/

Offst

6.5

dB

DI

-28.5

dBm

LgAv

M1 S2

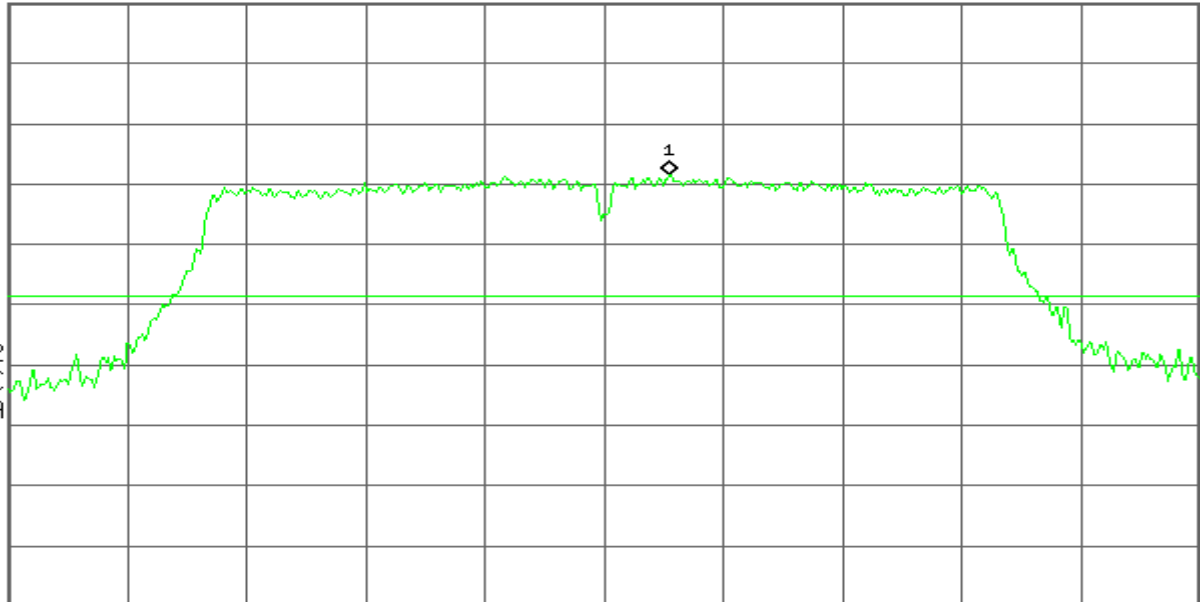
S3 FC

AA

$\mathcal{E}(f)$:

FTun

Swp



Center 2.462 00 GHz

#Res BW 100 kHz

#VBW 300 kHz

Span 26.68 MHz

Sweep 2.56 ms (601 pts)

 **Agilent**

R T

Mkr1 2.483 500 GHz
-50.26 dBm

Ref 20 dBm

Atten 30 dB

#Peak

Log

10

dB/

Offst

6.5

dB

DI

-28.5

dBm

LgAv

M1 S2

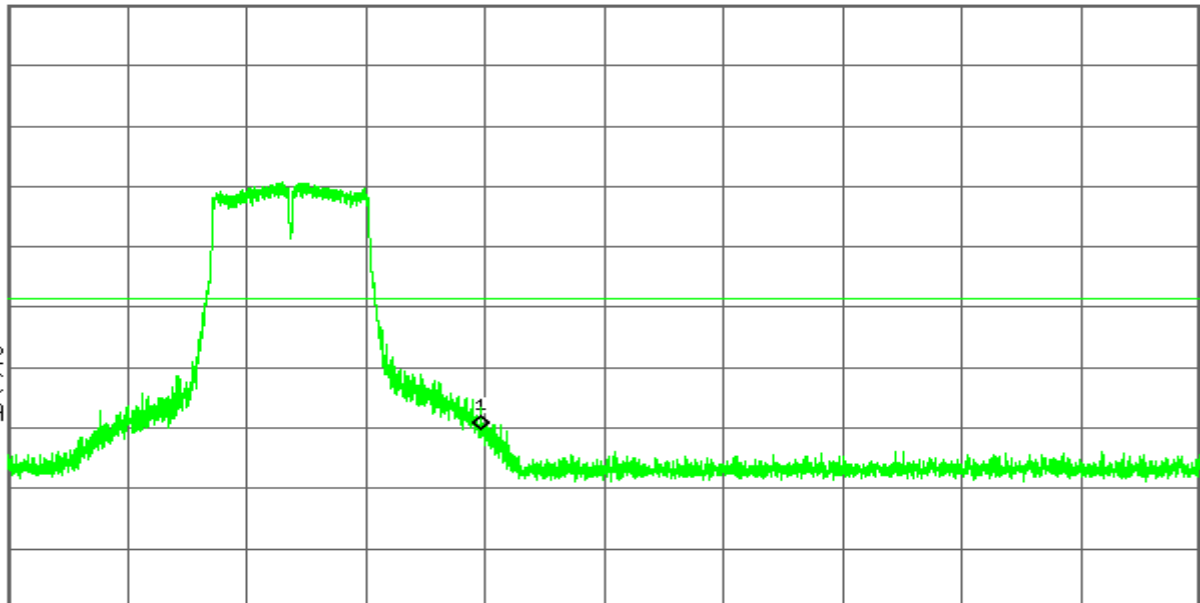
S3 FC

AA

$\mathcal{E}(f)$:

FTun

Swp



Start 2.430 000 GHz

#Res BW 100 kHz

#VBW 300 kHz

Stop 2.565 000 GHz

Sweep 13.11 ms (8192 pts)

Agilent

R T

Mkr1 1.406 4 GHz
-54.66 dBm

Ref 20 dBm

Atten 30 dB

#Peak

Log

10

dB/

Offst

6.5

dB

DI

-28.5

dBm

LgAv

M1 S2

S3 FC

RA

E(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 24.025 6 GHz
-43.92 dBm

Ref 20 dBm

Atten 30 dB

#Peak

Log

10

dB/

Offst

6.5

dB

DI

-28.5

dBm

LgAv

M1 S2

S3 FC

RA

E(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)

4.6.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

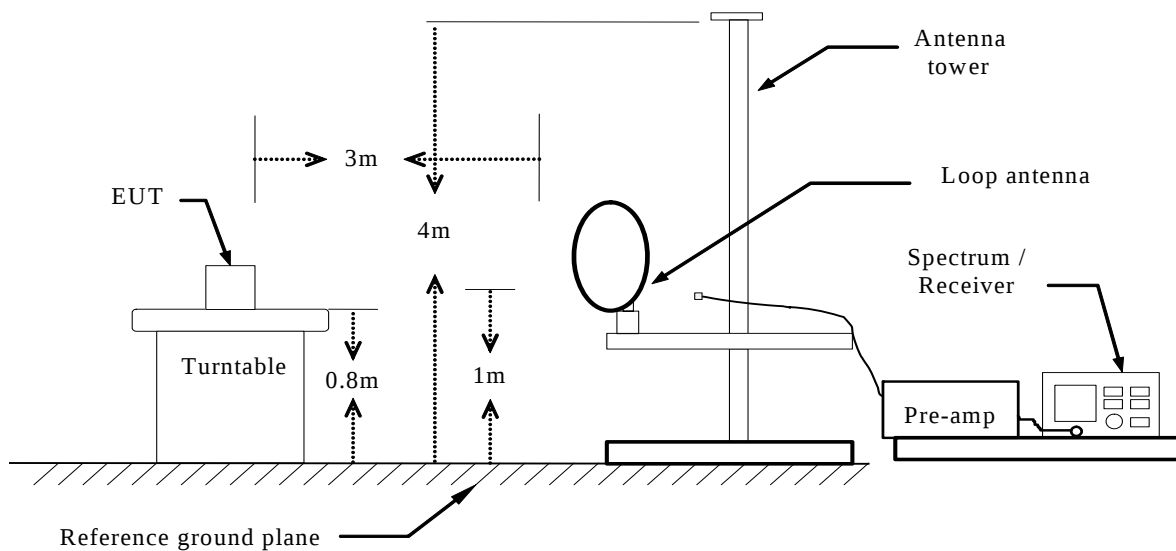
Remark: Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of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

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

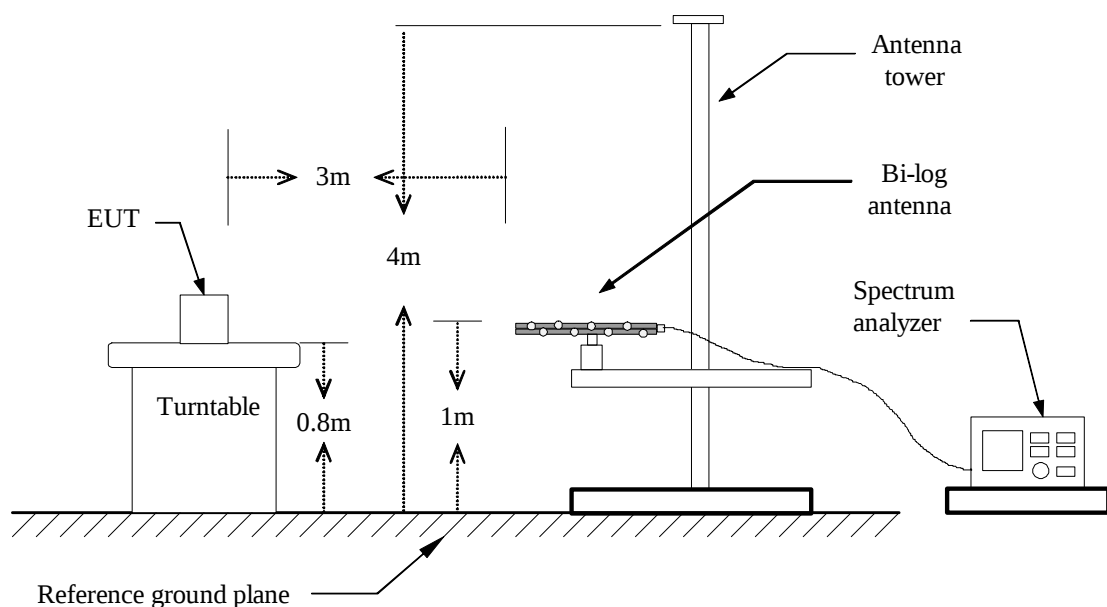
Frequency (MHz)	Field Strength (μ V/m at 3-meter)	Field Strength (dB μ V/m at 3-meter)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

Test Configuration

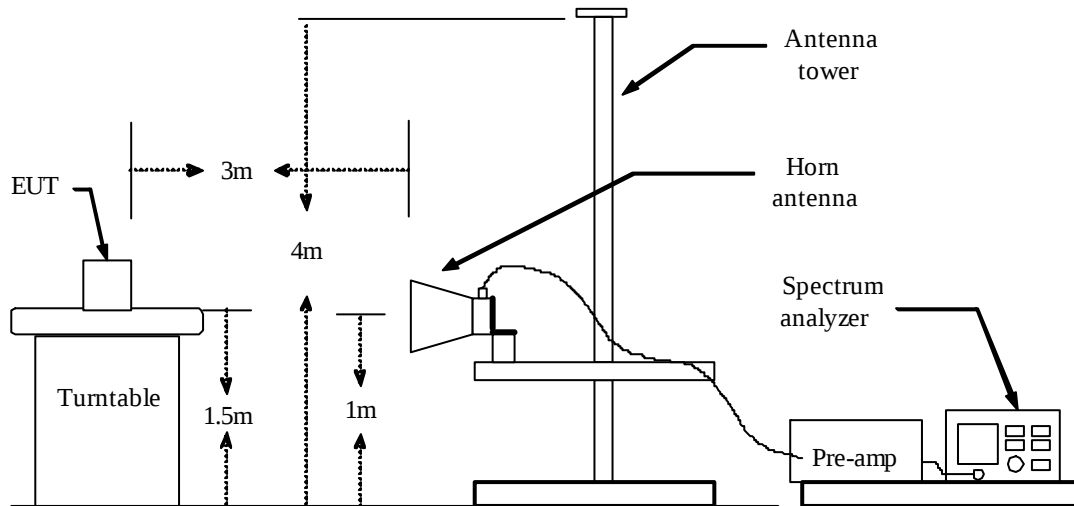
Below 30MHz



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:

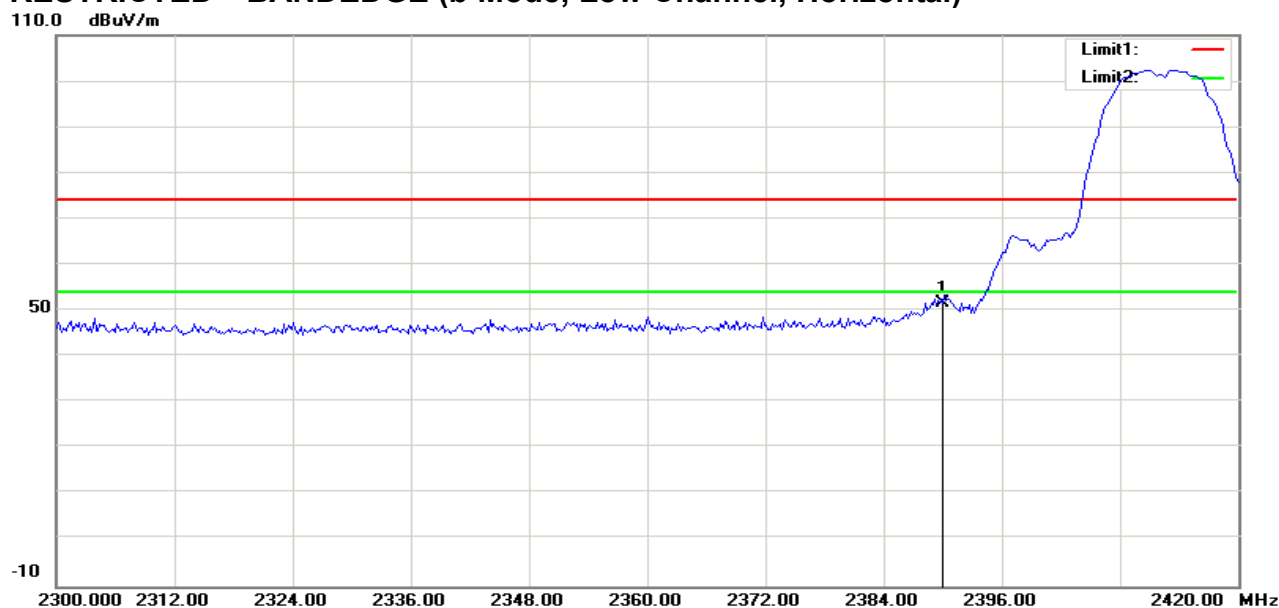
PEAK: RBW=VBW=1MHz / Sweep=AUTO

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

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

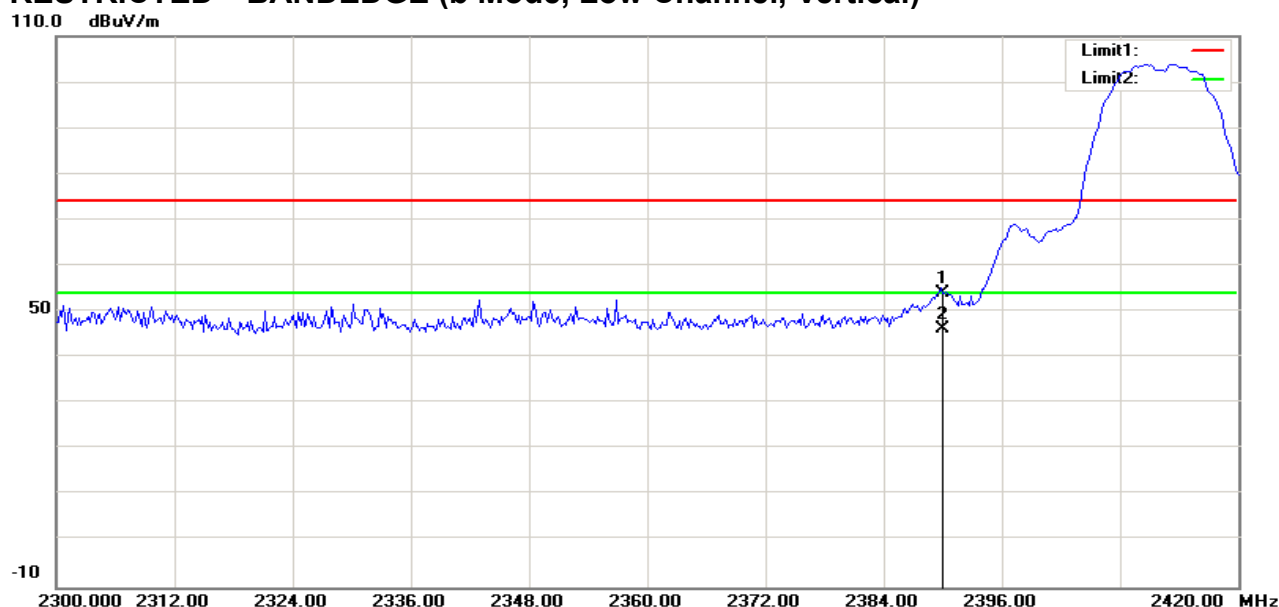
TEST RESULTS

RESTRICTED BANDEDGE (b Mode, Low Channel, Horizontal)



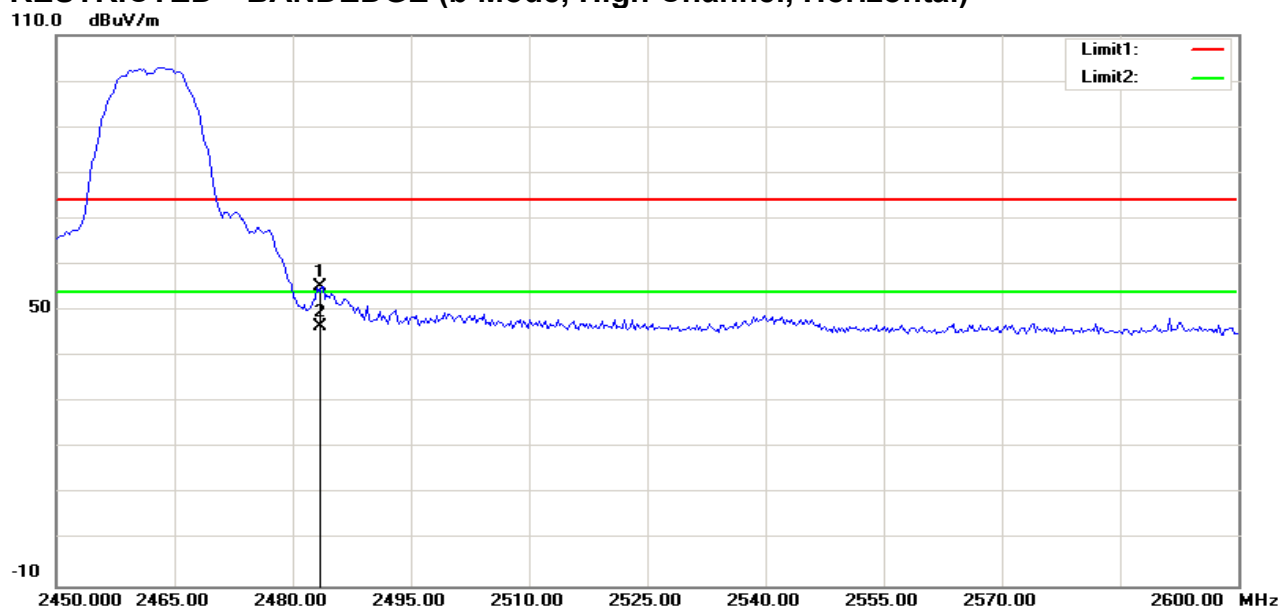
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2390.000	55.41	-3.78	51.63	74.00	-22.37	100	217	peak

RESTRICTED BANDEDGE (b Mode, Low Channel, Vertical)



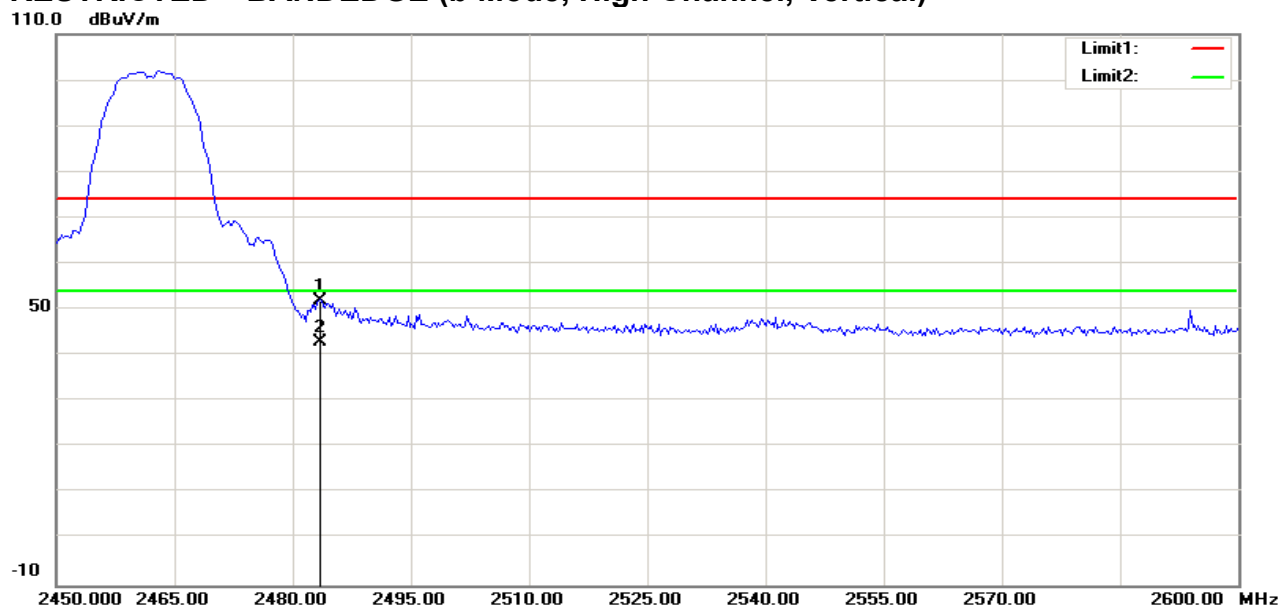
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2390.000	57.82	-3.78	54.04	74.00	-19.96	100	278	peak
2	2390.000	49.95	-3.78	46.17	54.00	-7.83	100	278	AVG

RESTRICTED BANDEDGE (b Mode, High Channel, Horizontal)



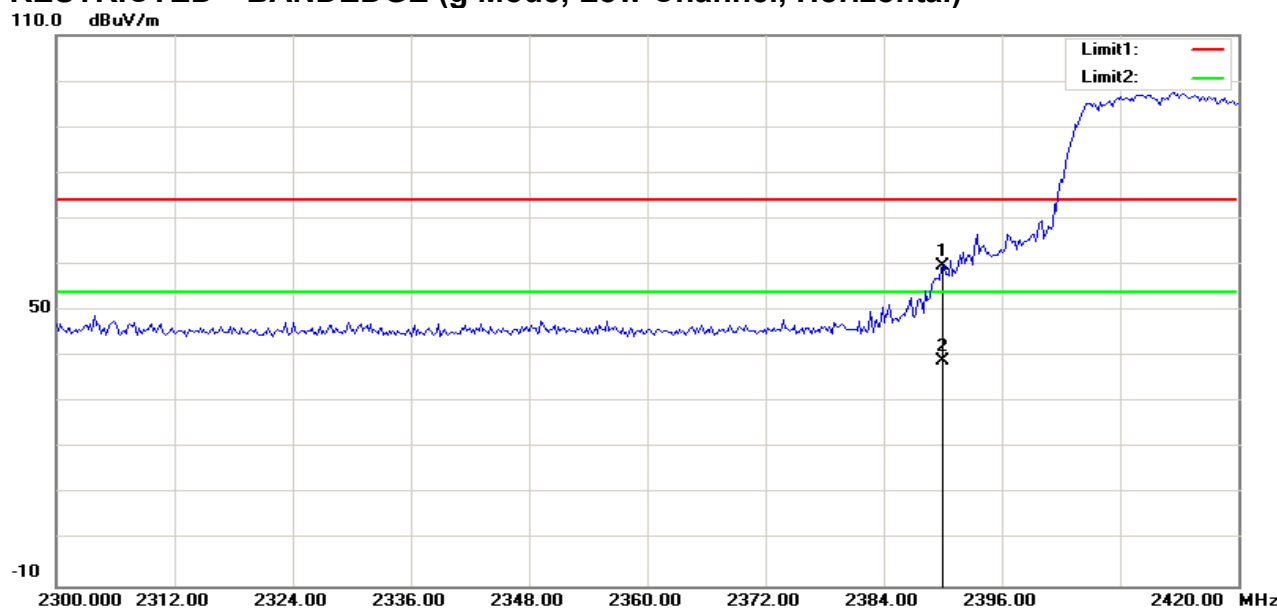
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2483.500	58.73	-3.56	55.17	74.00	-18.83	100	217	peak
2	2483.500	50.11	-3.56	46.55	54.00	-7.45	100	217	AVG

RESTRICTED BANDEDGE (b Mode, High Channel, Vertical)



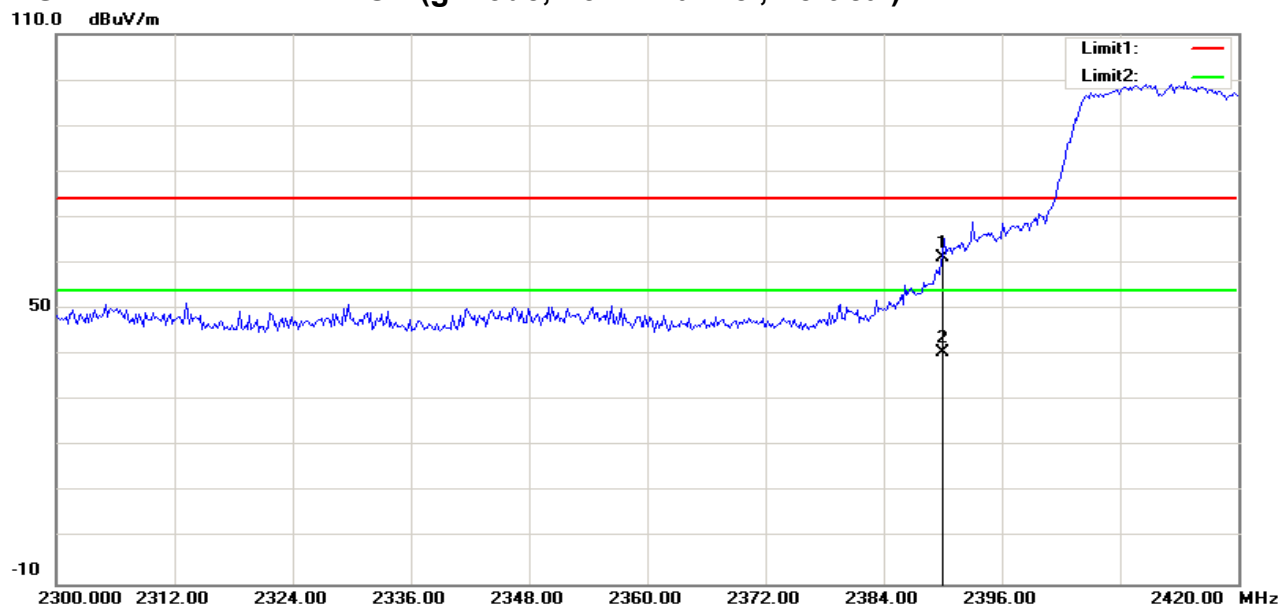
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2483.500	55.40	-3.56	51.84	74.00	-22.16	100	273	peak
2	2483.500	46.50	-3.56	42.94	54.00	-11.06	100	273	AVG

RESTRICTED BANDEDGE (g Mode, Low Channel, Horizontal)



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2390.000	63.50	-3.78	59.72	74.00	-14.28	100	54	peak
2	2390.000	42.90	-3.78	39.12	54.00	-14.88	100	54	AVG

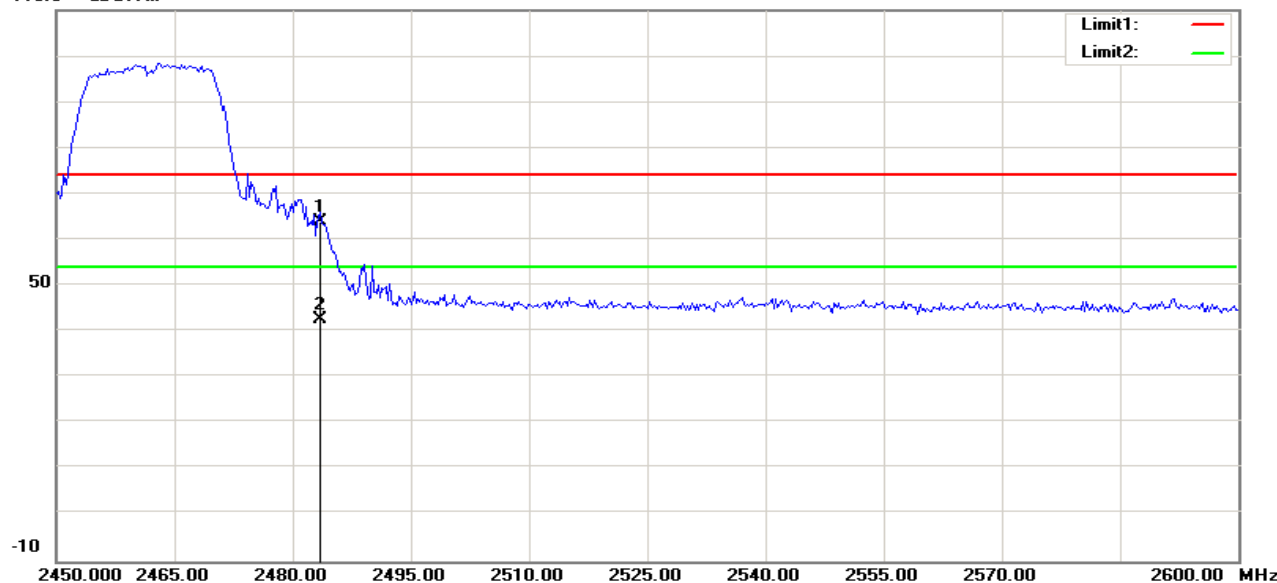
RESTRICTED BANDEDGE (g Mode, Low Channel, Vertical)



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2390.000	65.05	-3.78	61.27	74.00	-12.73	100	360	peak
2	2390.000	44.35	-3.78	40.57	54.00	-13.43	100	360	AVG

RESTRICTED BANDEDGE (g Mode, High Channel, Horizontal)

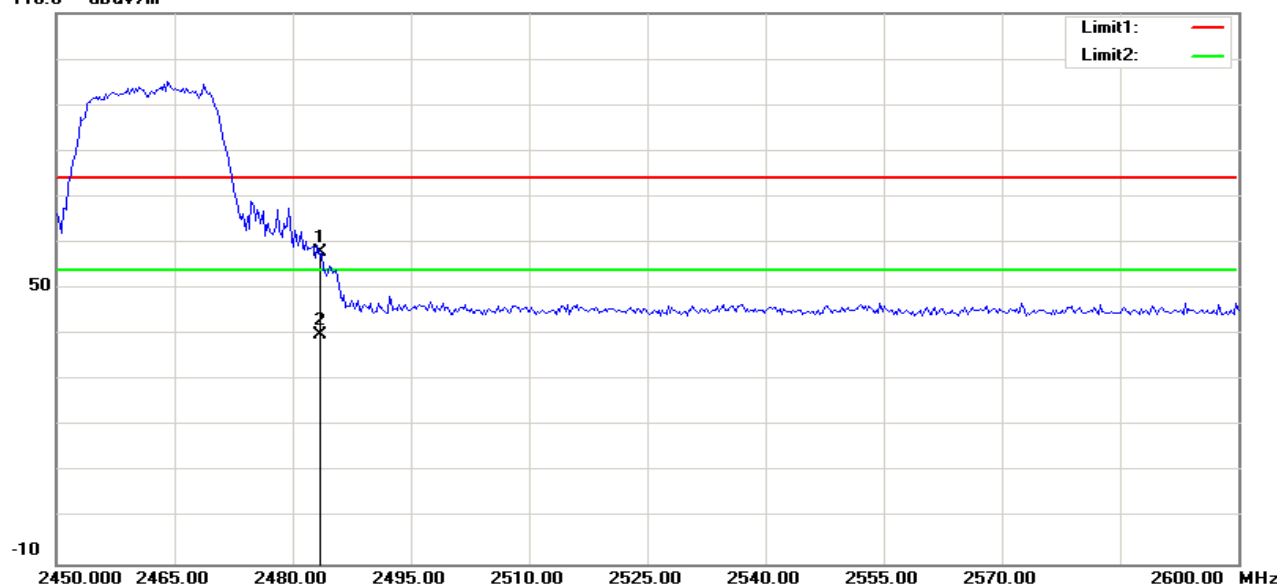
110.0 dBuV/m



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	67.54	-3.56	63.98	74.00	-10.02	100	137	peak
2	2483.500	46.15	-3.56	42.59	54.00	-11.41	100	137	AVG

RESTRICTED BANDEDGE (g Mode, High Channel, Vertical)

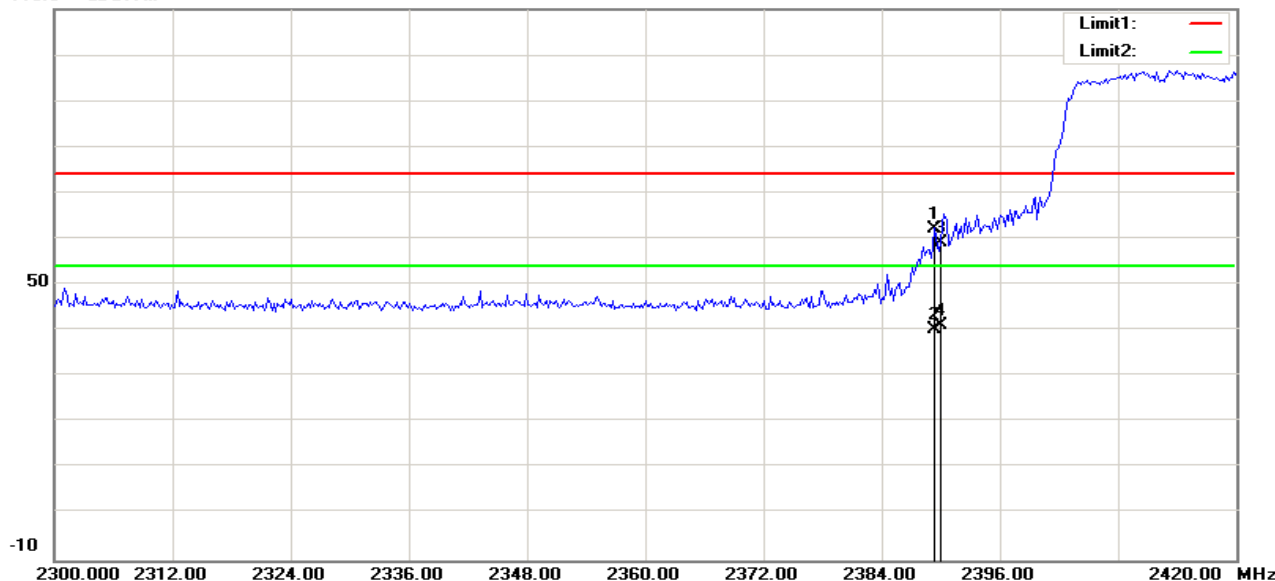
110.0 dBuV/m



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	61.44	-3.56	57.88	74.00	-16.12	100	3	peak
2	2483.500	43.60	-3.56	40.04	54.00	-13.96	100	3	AVG

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

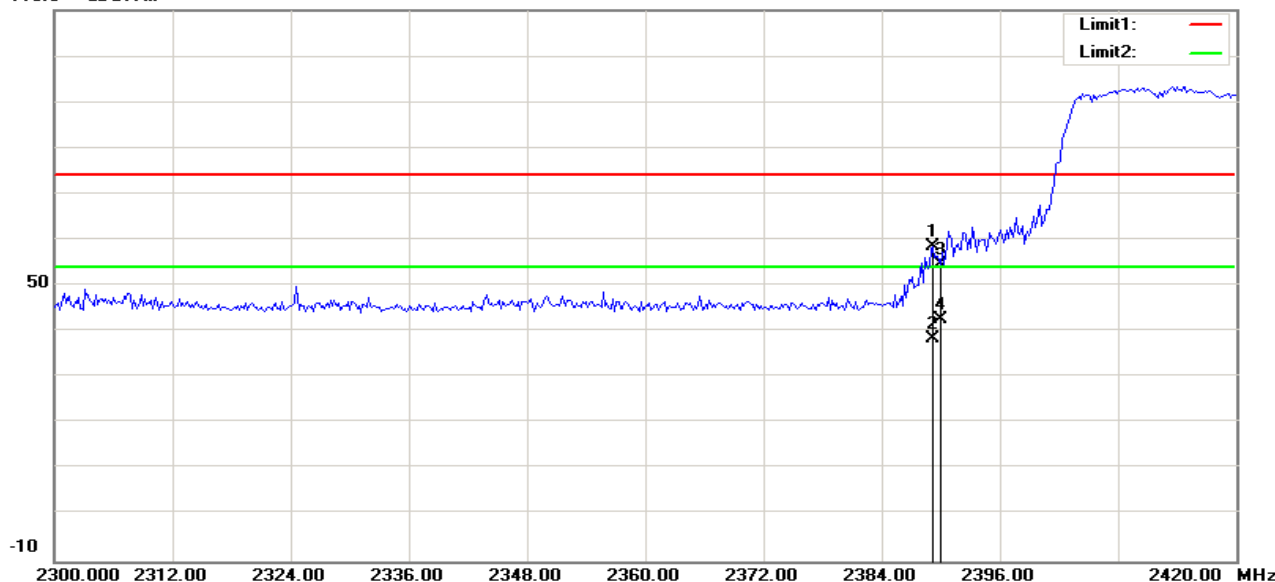
110.0 dBuV/m



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	66.09	-3.79	62.30	74.00	-11.70	100	53	peak
2	2389.423	43.96	-3.79	40.17	54.00	-13.83	100	53	AVG
3	2390.000	62.94	-3.78	59.16	74.00	-14.84	100	345	peak
4	2390.000	44.79	-3.78	41.01	54.00	-12.99	100	345	AVG

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

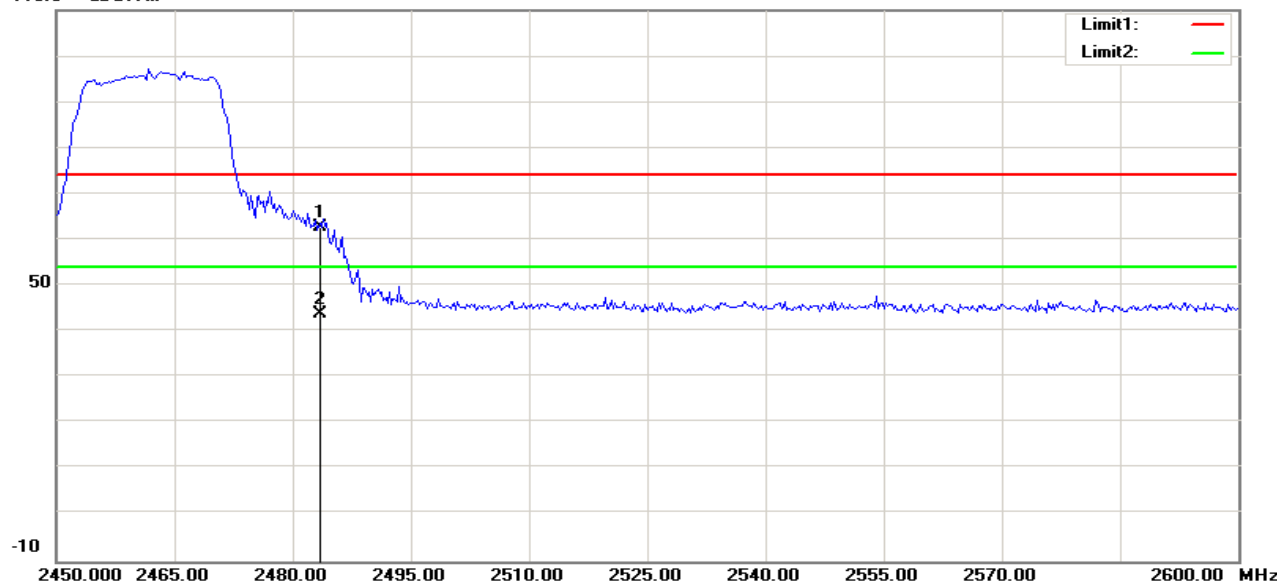
110.0 dBuV/m



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2389.231	62.27	-3.79	58.48	74.00	-15.52	100	279	peak
2	2389.231	42.29	-3.79	38.50	54.00	-15.50	100	279	AVG
3	2390.000	58.33	-3.78	54.55	74.00	-19.45	100	284	peak
4	2390.000	46.39	-3.78	42.61	54.00	-11.39	100	284	AVG

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

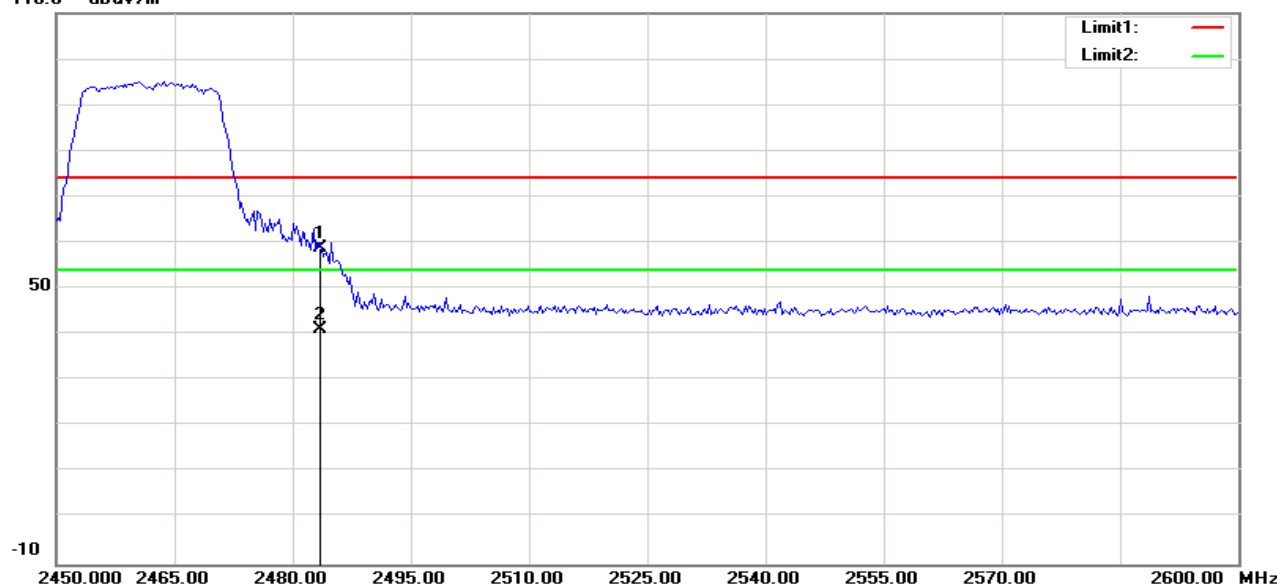
110.0 dBuV/m



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2483.500	66.31	-3.56	62.75	74.00	-11.25	100	100	peak
2	2483.500	47.49	-3.56	43.93	54.00	-10.07	100	100	AVG

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

110.0 dBuV/m



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	62.41	-3.56	58.85	74.00	-15.15	100	326	peak
2	2483.500	44.84	-3.56	41.28	54.00	-12.72	100	326	AVG

Below 1GHz**Operation Mode:** Normal Link**Test Date:** 2015-7-31**Temperature:** 24°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
34.8500	V	14.85	18.40	33.25	40.00	-6.75	QP
239.5200	V	28.39	12.86	41.25	46.00	-4.75	QP
484.9300	V	15.82	19.51	35.33	46.00	-10.67	QP
720.6400	V	17.80	23.22	41.02	46.00	-4.98	QP
832.1900	V	12.85	24.40	37.25	46.00	-8.75	QP
960.2300	V	19.67	26.58	46.25	54.00	-7.75	QP
30.9700	H	11.88	19.37	31.25	40.00	-8.75	QP
239.5200	H	28.46	12.86	41.32	46.00	-4.68	QP
480.0800	H	23.11	19.52	42.63	46.00	-3.37	QP
554.7700	H	15.44	20.49	35.93	46.00	-10.07	QP
797.2700	H	15.83	24.49	40.32	46.00	-5.68	QP
960.2300	H	17.43	26.58	44.01	54.00	-9.99	QP

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. $\text{Margin (dB)} = \text{Result (dBuV/m)} - \text{Limit (dBuV/m)}$.



Compliance Certification Services Inc.

Date of Issue :September 14, 2015

Report No: C150805R02-RPW

FCC ID: 2AAED- R9861500D01

IC: 9393B- R9861500D01

Above 1 GHz

Operation Mode: TX / IEEE 802.11b / CH Low

Test Date: 2015-9-7

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	4814.103	59.22	3.72	62.94	74.00	-11.06	100	25	peak
2	4814.103	34.33	3.72	38.05	54.00	-15.95	100	25	AVG
3	7375.000	43.72	9.62	53.34	74.00	-20.66	100	133	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	4814.103	61.53	3.72	65.25	74.00	-8.75	100	25	peak
2	4814.103	38.44	3.72	42.16	54.00	-11.84	100	25	AVG
3	7238.782	46.19	9.28	55.47	74.00	-18.53	100	73	peak
N/A									

Operation Mode: TX / IEEE 802.11b / CH Mid

Test Date: 2015-9-7

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	4868.590	59.28	3.94	63.22	74.00	-10.78	100	131	peak
2	4868.590	39.84	3.94	43.78	54.00	-10.22	100	131	AVG
3	7266.026	43.99	9.35	53.34	74.00	-20.66	100	300	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	4868.590	62.01	3.94	65.95	74.00	-8.05	100	105	peak
2	4868.590	39.57	3.94	43.51	54.00	-10.49	100	105	AVG
3	7320.513	45.72	9.48	55.20	74.00	-18.80	100	71	peak
4	7320.513	30.41	9.48	39.89	54.00	-14.11	100	71	AVG
N/A									



Compliance Certification Services Inc.

Date of Issue :September 14, 2015

Report No: C150805R02-RPW

FCC ID: 2AAED- R9861500D01

IC: 9393B- R9861500D01

Operation Mode: TX / IEEE 802.11b / CH High

Test Date: 2015-9-7

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	4923.077	58.62	4.16	62.78	74.00	-11.22	100	130	peak
2	4923.077	38.41	4.16	42.57	54.00	-11.43	100	130	AVG
3	7102.564	44.19	8.94	53.13	74.00	-20.87	100	43	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	4923.077	59.64	4.16	63.80	74.00	-10.20	100	102	peak
2	4923.077	40.01	4.16	44.17	54.00	-9.83	100	102	AVG
3	7402.244	43.57	9.69	53.26	74.00	-20.74	100	53	peak
N/A									

Operation Mode: TX / IEEE 802.11g / CH Low

Test Date: 2015-9-7

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	4814.103	49.21	3.72	52.93	74.00	-21.07	100	27	peak
2	7048.077	44.85	8.81	53.66	74.00	-20.34	100	165	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	4814.103	49.53	3.72	53.25	74.00	-20.75	100	10	peak
2	7129.808	43.52	9.01	52.53	74.00	-21.47	100	261	peak
N/A									



Compliance Certification Services Inc.

Date of Issue :September 14, 2015

Report No: C150805R02-RPW

FCC ID: 2AAED- R9861500D01

IC: 9393B- R9861500D01

Operation Mode: TX / IEEE 802.11g / CH Mid

Test Date: 2015-9-7

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	4868.590	58.35	3.94	62.29	74.00	-11.71	100	345	peak
2	4868.590	35.91	3.94	39.85	54.00	-14.15	100	345	AVG
3	6693.910	44.50	8.03	52.53	74.00	-21.47	100	28	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	4868.590	63.74	3.94	67.68	74.00	-6.32	100	105	peak
2	4868.590	45.60	3.94	49.54	54.00	-4.46	100	105	AVG
3	7320.513	48.33	9.48	57.81	74.00	-16.19	100	71	peak
4	7320.513	33.11	9.48	42.59	54.00	-11.41	100	71	AVG
N/A									

Operation Mode: TX / IEEE 802.11g / CH High

Test Date: 2015-9-7

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	4786.859	45.97	3.61	49.58	74.00	-24.42	100	354	peak
2	7402.244	43.48	9.69	53.17	74.00	-20.83	100	126	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	4923.077	45.80	4.16	49.96	74.00	-24.04	100	294	peak
2	7266.026	44.09	9.35	53.44	74.00	-20.56	100	210	peak
N/A									



Compliance Certification Services Inc.

Date of Issue :September 14, 2015

Report No: C150805R02-RPW

FCC ID: 2AAED- R9861500D01

IC: 9393B- R9861500D01

Operation Mode: TX / IEEE 802.11n HT20 mode / CH Low

Test Date: 2015-9-7

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	4814.103	47.01	3.72	50.73	74.00	-23.27	100	15	peak
2	7129.808	43.71	9.01	52.72	74.00	-21.28	100	100	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	4814.103	47.53	3.72	51.25	74.00	-22.75	100	330	peak
2	7538.462	43.75	9.95	53.70	74.00	-20.30	100	156	peak
N/A									

Operation Mode: TX / IEEE 802.11n HT20 mode / CH Mid

Test Date: 2015-9-7

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	4868.590	57.20	3.94	61.14	74.00	-12.86	100	20	peak
2	4868.590	36.22	3.94	40.16	54.00	-13.84	100	20	AVG
3	7701.923	43.54	10.03	53.57	74.00	-20.43	100	344	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	4868.590	61.27	3.94	65.21	74.00	-8.79	100	18	peak
2	4868.590	32.02	3.94	35.96	54.00	-18.04	100	18	AVG
3	7320.513	49.40	9.48	58.88	74.00	-15.12	100	70	peak
4	7320.513	28.01	9.48	37.49	54.00	-16.51	100	70	AVG
N/A									



Compliance Certification Services Inc.

Date of Issue :September 14, 2015

Report No: C150805R02-RPW

FCC ID: 2AAED- R9861500D01

IC: 9393B- R9861500D01

Operation Mode: TX / IEEE 802.11n HT20 mode / CH High **Test Date:** 2015-9-7

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	4705.128	46.16	3.28	49.44	74.00	-24.56	100	57	peak
2	7511.218	43.93	9.94	53.87	74.00	-20.13	100	156	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	4650.641	46.73	3.06	49.79	74.00	-24.21	100	184	peak
2	7048.077	44.87	8.81	53.68	74.00	-20.32	100	63	peak
N/A									

4.7.POWERLINE CONDUCTED EMISSIONS

LIMIT

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

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

* Decreases with the logarithm of the frequency.

Test Configuration

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

TEST PROCEDURE

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

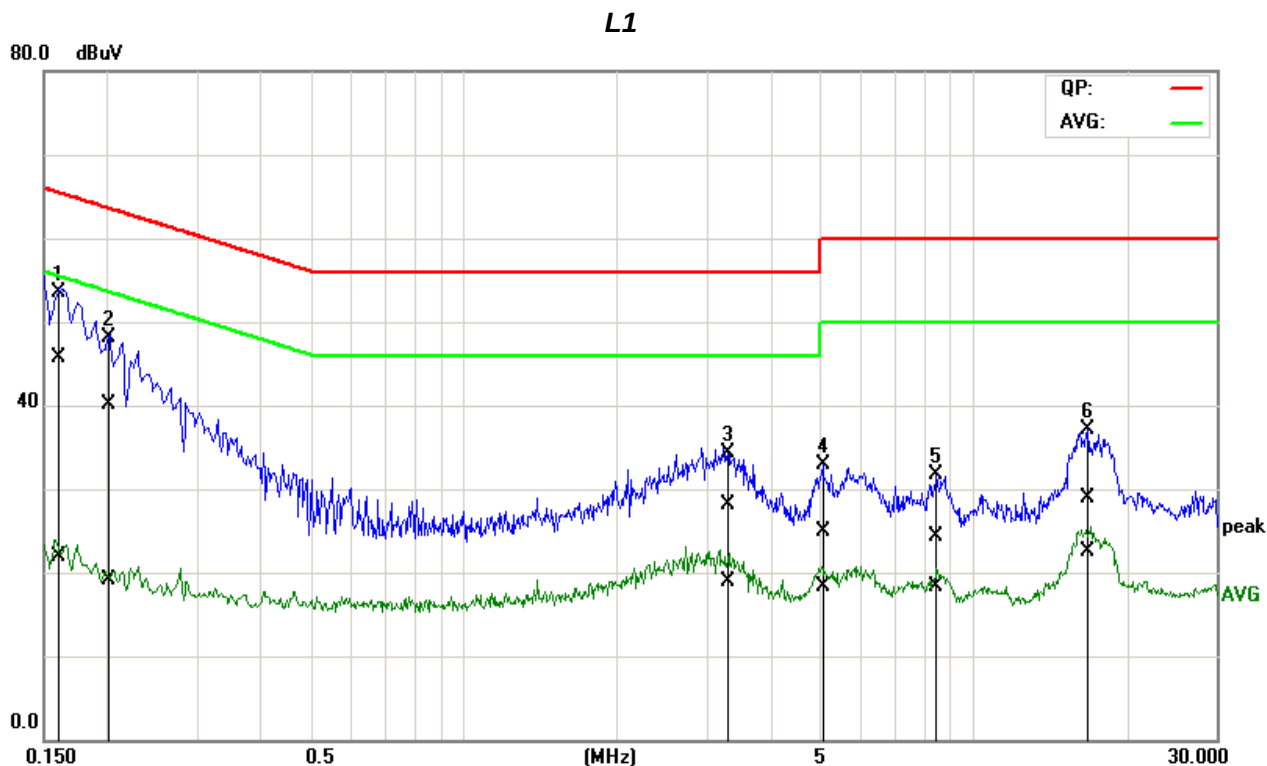
TEST RESULTS

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

TEST DATA

Job No.: C150805R02
 Model: R9861500D01
 Standard: FCC Class B
 Test item: Conduction test
 Line: L1
 Model:

Date: 2015-8-2
 Time: PM 01:56:52
 Temp.(C)/Hum.(%): 22(C)/48%
 Test By: James.Yan
 Test Voltage: AC 120V/60Hz
 Description:

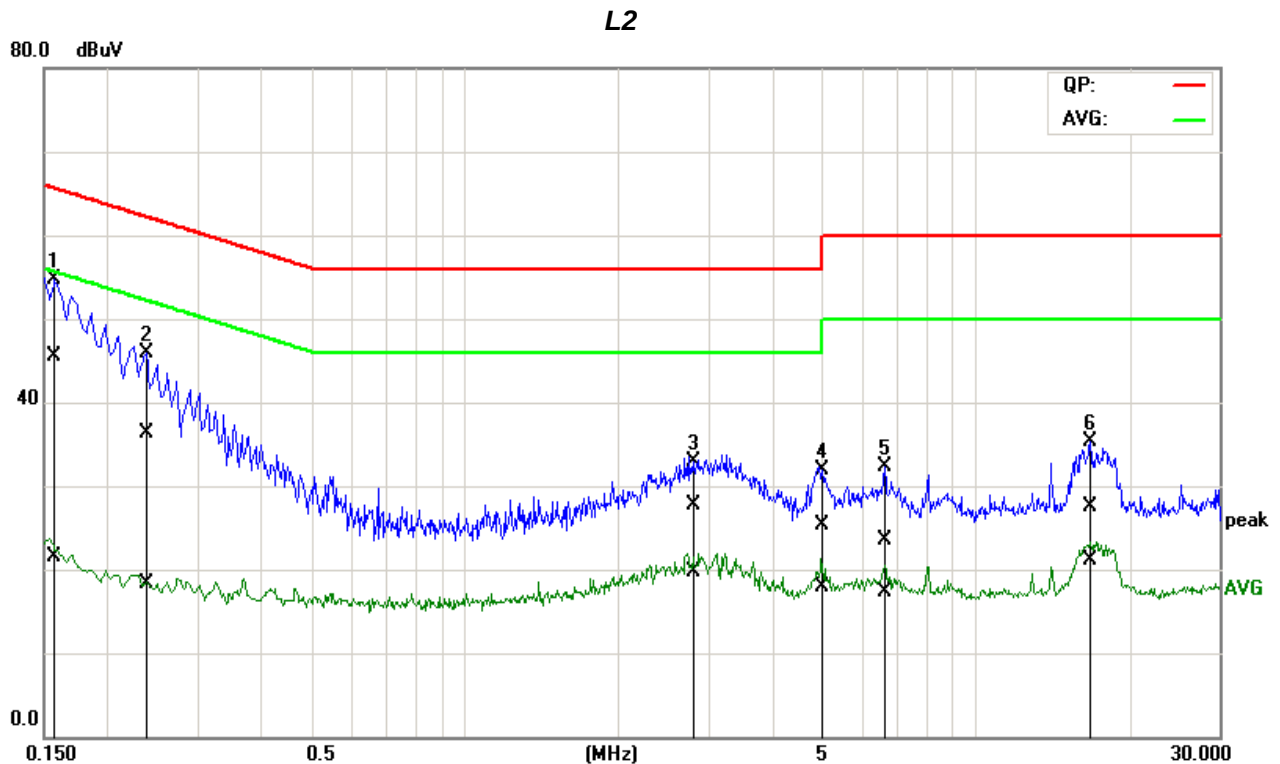


No.	Frequency (MHz)	QuasiPeak reading (dBuV)	Average reading (dBuV)	Correction factor (dB)	QuasiPeak result (dBuV)	Average result (dBuV)	QuasiPeak limit (dBuV)	Average limit (dBuV)	QuasiPeak margin (dB)	Average margin (dB)	Remark
1*	0.1571	26.00	2.12	19.78	45.78	21.90	65.62	55.62	-19.84	-33.72	Pass
2	0.1981	20.55	-0.45	19.61	40.16	19.16	63.69	53.69	-23.53	-34.53	Pass
3	3.2778	7.93	-1.27	20.09	28.02	18.82	56.00	46.00	-27.98	-27.18	Pass
4	5.0147	4.59	-1.94	20.30	24.89	18.36	60.00	50.00	-35.11	-31.64	Pass
5	8.5141	3.74	-2.26	20.63	24.37	18.37	60.00	50.00	-35.63	-31.63	Pass
6	16.7603	7.97	1.56	20.94	28.91	22.50	60.00	50.00	-31.09	-27.50	Pass

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

Job No.: C150805R02
 Model: R9861500D01
 Standard: FCC Class B
 Test item: Conduction test
 Line: L2
 Model:

Date: 2015-8-2
 Time: PM 02:02:52
 Temp.(C)/Hum.(%): 22(C)/48%
 Test By: James.Yan
 Test Voltage: AC 120V/60Hz
 Description:



No.	Frequency (MHz)	QuasiPeak reading (dBuV)	Average reading (dBuV)	Correction factor (dB)	QuasiPeak result (dBuV)	Average result (dBuV)	QuasiPeak limit (dBuV)	Average limit (dBuV)	QuasiPeak margin (dB)	Average margin (dB)	Remark
1*	0.1581	25.73	1.84	19.72	45.45	21.56	65.56	55.56	-20.11	-34.00	Pass
2	0.2346	16.66	-1.38	19.66	36.32	18.28	62.29	52.29	-25.97	-34.01	Pass
3	2.8010	7.73	-0.26	20.06	27.79	19.80	56.00	46.00	-28.21	-26.20	Pass
4	4.9914	5.00	-2.48	20.30	25.30	17.82	56.00	46.00	-30.70	-28.18	Pass
5	6.6950	2.97	-3.16	20.47	23.44	17.31	60.00	50.00	-36.56	-32.69	Pass
6	16.7440	6.59	0.38	20.82	27.41	21.20	60.00	50.00	-32.59	-28.80	Pass

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