FCC 47 CFR PART15 SUBPART E

For

Prepared by

Product Name: YI Horizon VR180 Camera

Brand Name: YI

Model No.: YVR.1117

Series Model.: N/A

FCC ID: 2AFIB-YVR1117

Test Report Number:

C171023R02-RPW1

Issued for

Shanghai Xiaoyi Technology Co., Ltd.

16F，Building 1 , No. 515, Huanke Road, Shanghai, China

Issued by

Compliance Certification Services Inc.

Kun shan Laboratory

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

TEL: 86-512-57355888

FAX: 86-512-57370818

TABLE OF CONTENTS

Revision History

Rev.	Issue Date	Report NO.	Effect Page	Contents
00	April 2, 2018	C171023R02-RPW1	ALL	N/A
01	May 25, 2018	C171023R02-RPW1	P5; P9-P12; P38; P84	Modify Antenna gain; Remove 'DB' for the title of section 7.2; modify the frequency range of 7.7 from 9KHz-25GHz to 9KHz-40GHz; Put the plots of duty cycle.
02	June 1, 2018	C171023R02-RPW1	P5	Delete the ant gain of 5GHz Band IV and 2.4GHz.

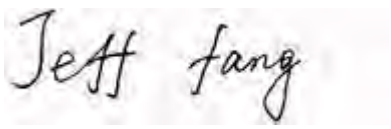
1 TEST RESULT CERTIFICATION

Product Name:	YI Horizon VR180 Camera
Trade Name:	YI
Model Name.:	YVR.1117
Series Model:	N/A
Applicant Discrepancy:	Initial
Device Category:	Mobile unit
Date of Test:	March 1, 2018~March 30, 2018
Applicant:	**Shanghai Xiaoyi Technology Co., Ltd.** 16F，Building 1 , No. 515, Huanke Road, Shanghai, China
Manufacturer:	**Shanghai Xiaoyi Technology Co., Ltd.** 16F，Building 1 , No. 515, Huanke Road, Shanghai, China
Application Type:	Certification

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

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, 15.407and KDB 789033.
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:

Lily.Wang
Test Engineer
Compliance Certification Service Inc.

2 EUT DESCRIPTION

Product Name:	YI Horizon VR180 Camera			
Brand Name:	YI			
Model Name:	YVR.1117			
Series Model:	N/A			
Model Discrepancy:	N/A			
Power Adapter:	DC 5V Battery: Model: U344378P(1ICP4/43/78) 3.85V⎓1800mAh 6.93Wh Charging Limit Voltage: 4.4V			
Frequency Range :	Band	Mode	Frequency Range(MHz)	Number of Channels
	Band I UNII-I	IEEE802.11a mode	5150 MHz~5250 MHz	4
		IEEE802.11an HT20 mode		4
		IEEE802.11an HT40 mode		2
		IEEE802.11ac VHT20 mode		4
		IEEE802.11ac VHT40 mode		2
		IEEE802.11ac VHT80 mode		1
Average Transmit Power :	IEEE802.11a mode: 11.31dBm IEEE802.11an HT20 mode: 11.47dBm IEEE802.11an HT40 mode: 11.25dBm IEEE802.11ac VHT20 mode: 11.30dBm IEEE802.11ac VHT40 mode: 10.37dBm IEEE802.11ac VHT80 mode: 11.06dBm			
Modulation Technique :	IEEE802.11a mode: OFDM (6,9,12,18,24,36,48 and 54 Mbps) IEEE802.11an HT20 mode: OFDM (MCS0~MCS7) IEEE802.11an HT40 mode: OFDM (MCS0~MCS7) IEEE802.11ac VHT20 mode: OFDM (VHTMCS0~VHTMCS9) IEEE802.11ac VHT40 mode: OFDM (VHTMCS0~VHTMCS9) IEEE802.11ac VHT80 mode: OFDM (VHTMCS0~VHTMCS9)			
Antenna Specification:		Gain(dBi)		
		Band I		
	Antenna 1	1.29		
	Antenna 2	1.04		

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: 2AFIB-YVR1117*** filing to comply with FCC Part 15, Subpart E 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 15.407.

3.1 EUT CONFIGURATION

The EUT configuration for testing is installed for RF field strength measurement to meet the Commissions requirement, and is operated in a manner intended to generate the maximum emission in a continuous normal application.

3.2 EUT EXERCISE

The EUT is operated in the engineering mode to fix the Tx frequency for the purposes of measurement.

According to its specifications, the EUT must comply with the requirements of Section 15.407 under the FCC Rules Part 15 Subpart E.

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 6.2 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 6.4 & 6.5 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 6.6 of ANSI C63.10:2013.

3.4 FCC PART 15.205 RESTRICTED BANDS OF OPERATIONS

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

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.50 - 5.15
0.495 - 0.505 (1)	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960.0 - 1240	7.25 - 7.75
4.125 - 4.128	25.50 - 25.67	1300 - 1427	8.025 - 8.500
4.17725 - 4.17775	37.50 - 38.25	1435.0 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73.00 - 74.60	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.80 - 75.20	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108.00 - 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	149.90 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 – 2500.0	17.7 - 21.4
8.37625 - 8.38675	156.70 - 156.90	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.1700	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.20	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358.0	36.43 - 36.5(2)
12.57675 - 12.57725	322.0- 335.4	3600 - 4400	
13.36 - 13.41			

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

[2] Above 38.6

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

3.5 DESCRIPTION OF TEST MODES

Description	Modulation Technology	Modulation Type
26dB Bandwidth and 99% bandwidth	OFDM	BPSK
Maximum conducted output power	OFDM	BPSK
Band edges measurement	OFDM	BPSK
Peak Power Spectral Density	OFDM	BPSK
Radiated undesirable emission	OFDM	BPSK
Powerline conducted emission	OFDM	BPSK

Test Mode	Antenna 1	Antenna 2	Antenna 1+2
802.11a	√	√	x
802.11n HT20	√	√	√
802.11n HT40	√	√	√
802.11ac VHT20	√	√	√
802.11ac VHT40	√	√	√
802.11ac VHT80	√	√	√

IEEE 802.11a mode:

Channel (5180MHz),Channel (5200MHz) and Channel (5240MHz) with 6Mbps data rate were chosen for full testing.

IEEE 802.11an HT20 mode:

Channel (5180MHz),Channel (5200MHz) and Channel (5240MHz) with MCS0 data rate were chosen for full testing.

IEEE 802.11an HT40 mode:

Channel (5190MHz) and Channel (5230MHz) with MCS0 data rate were chosen for full testing.

IEEE 802.11ac VHT20 mode:

Channel (5180MHz),Channel (5200MHz) and Channel (5240MHz) with VHTMCS0 data rate were chosen for full testing.

IEEE 802.11ac VHT40 mode:

Channel (5190MHz) and Channel (5230MHz) with VHTMCS0 data rate were chosen for full testing.

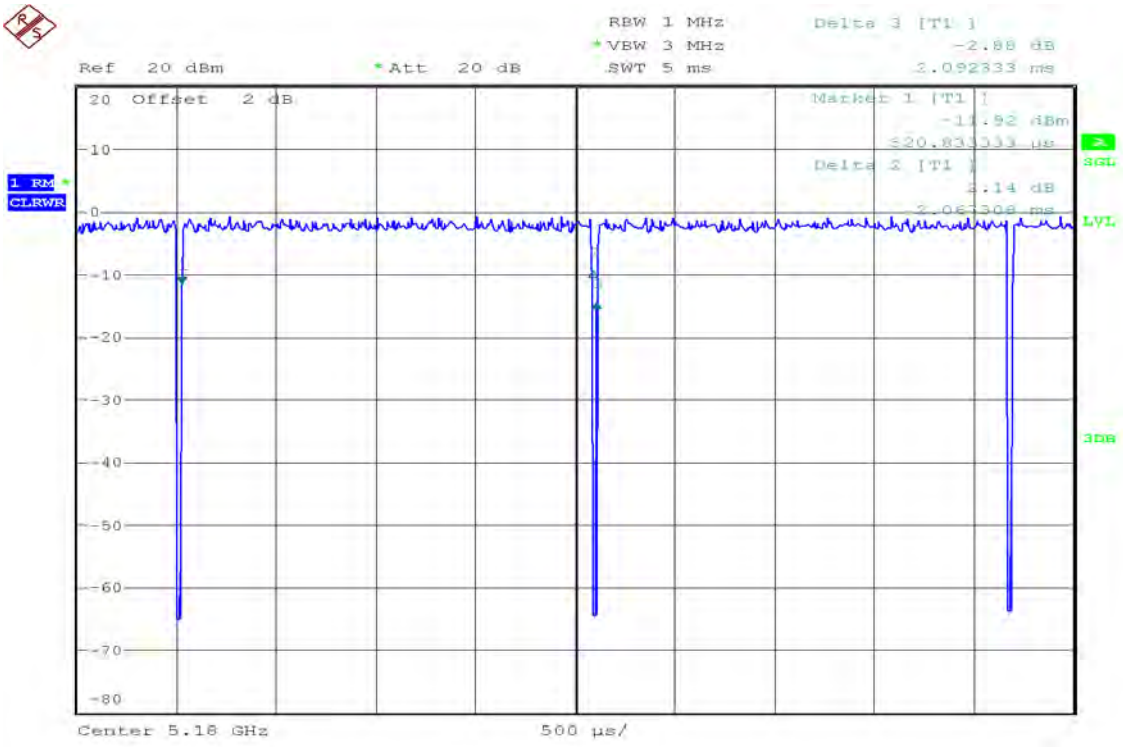
IEEE 802.11ac VHT80 mode:

Channel (5210MHz) with VHTMCS0 data rate were chosen for full testing.

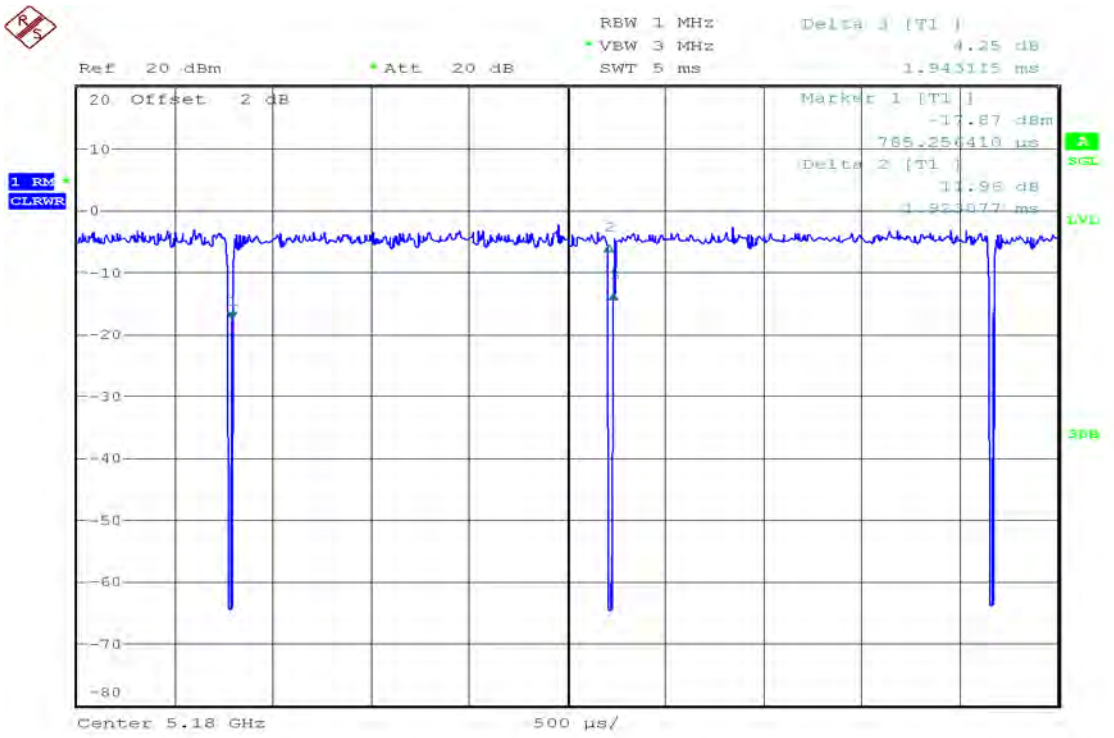
3.6 DUTY CYCLE

Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
IEEE 802.11 a	98.80	-	-	10Hz
IEEE 802.11n HT20	98.97	-	-	10Hz
IEEE 802.11n HT40	96.35	0.925	1.08	3kHz
IEEE 802.11ac VHT20	98.39	-	-	10Hz
IEEE 802.11ac VHT40	94.17	0.485	2.06	3kHz
IEEE 802.11ac VHT80	93.93	0.258	3.88	5kHz

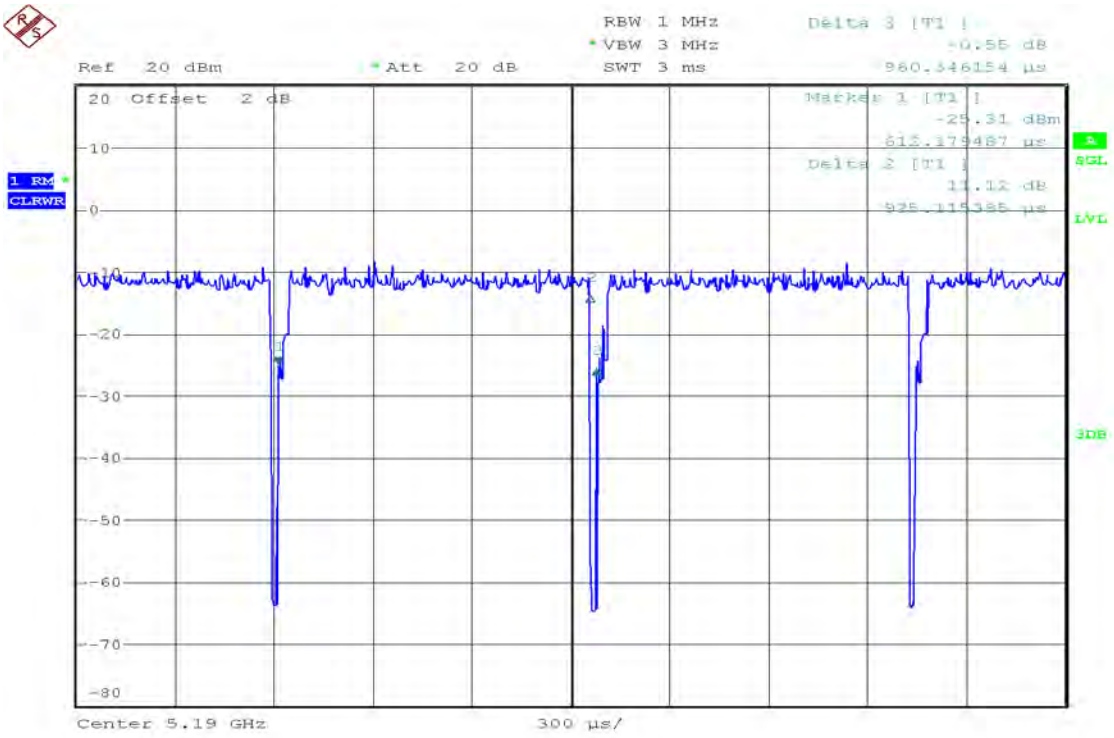
IEEE 802.11 a



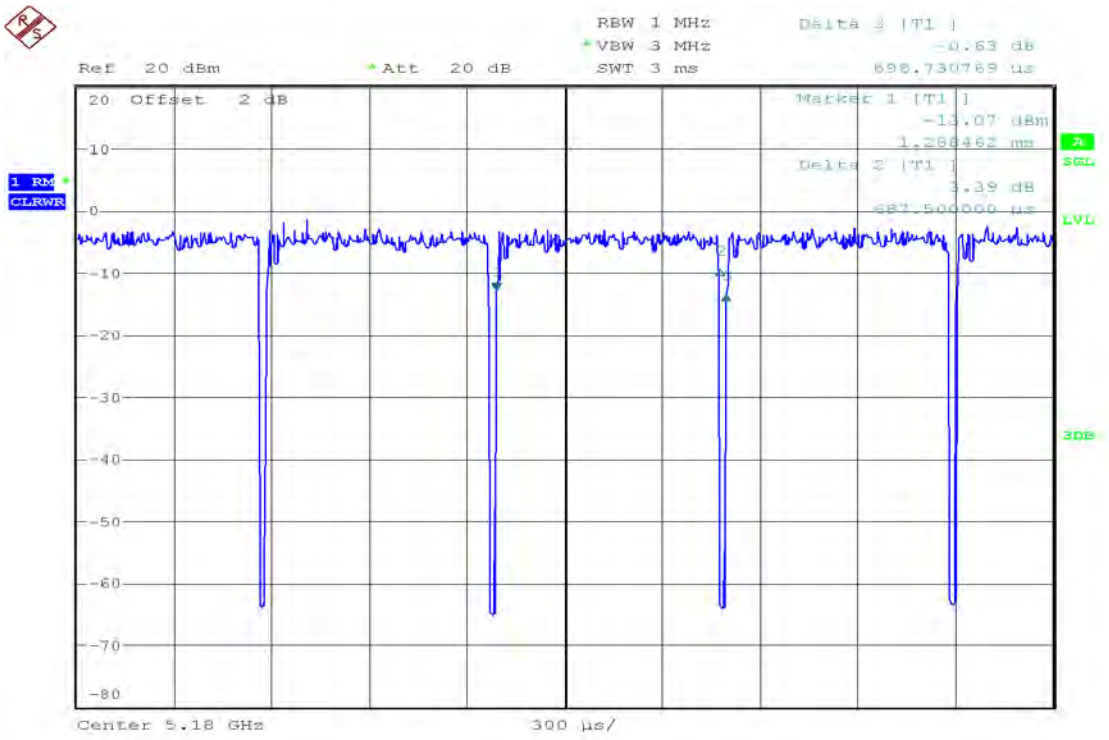
IEEE 802.11n HT20



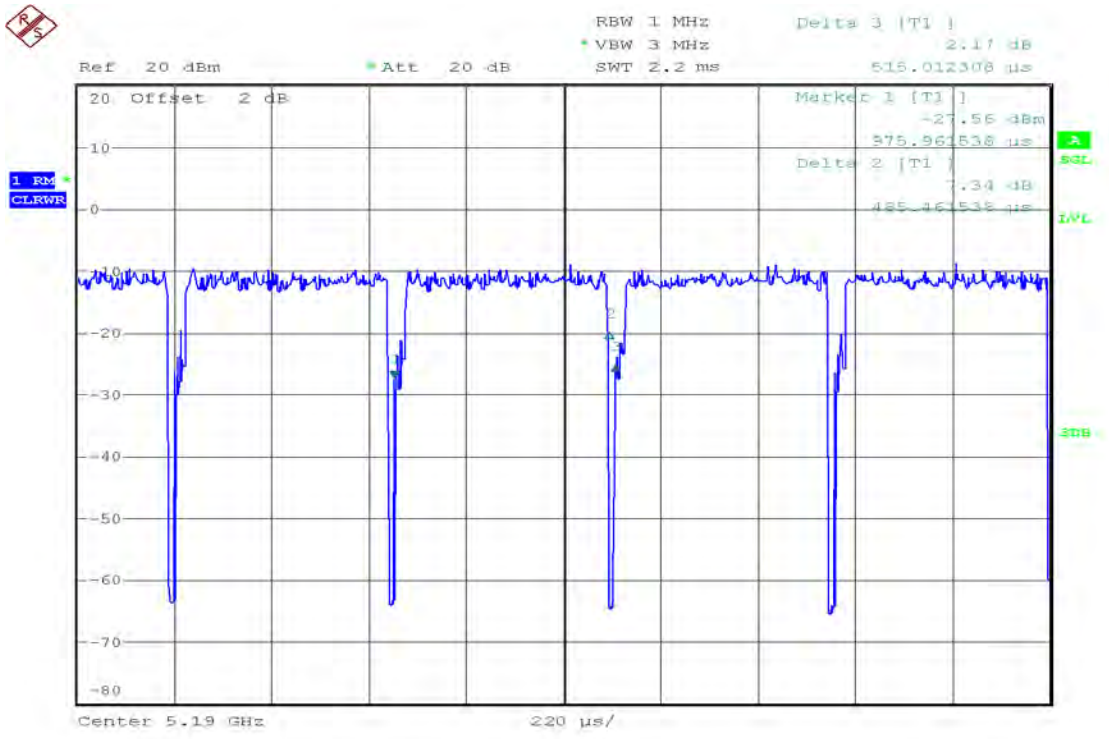
IEEE 802.11n HT40



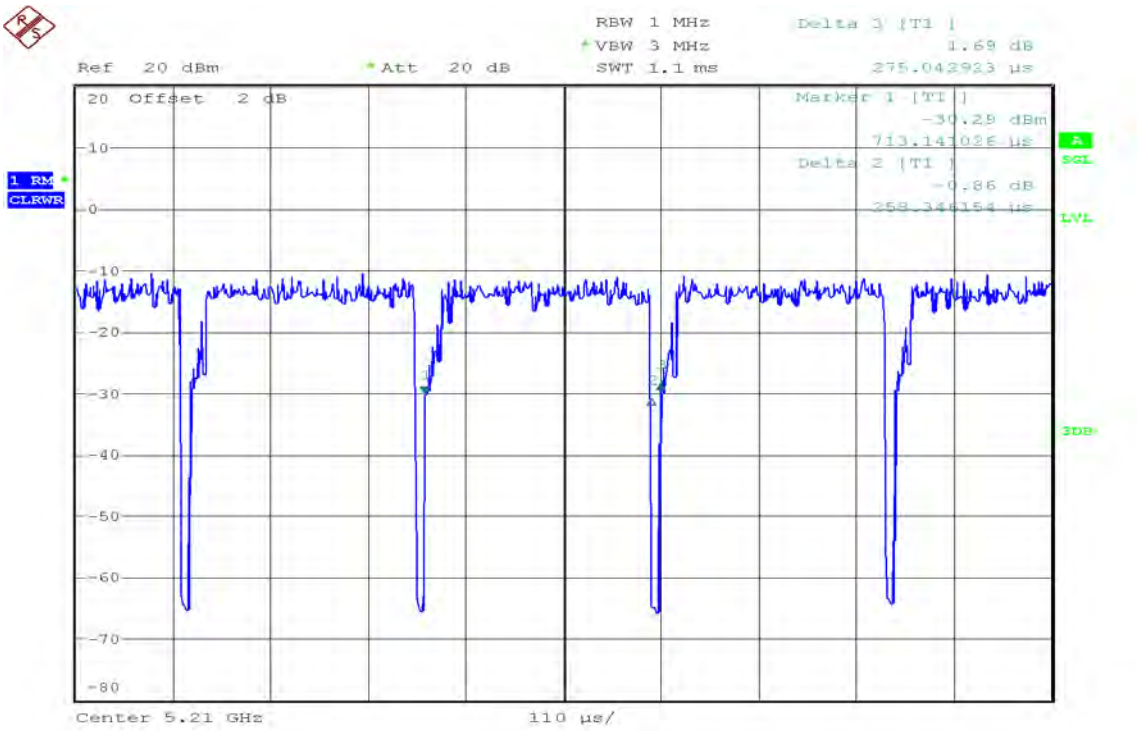
IEEE 802.11ac VHT20



IEEE 802.11ac VHT40

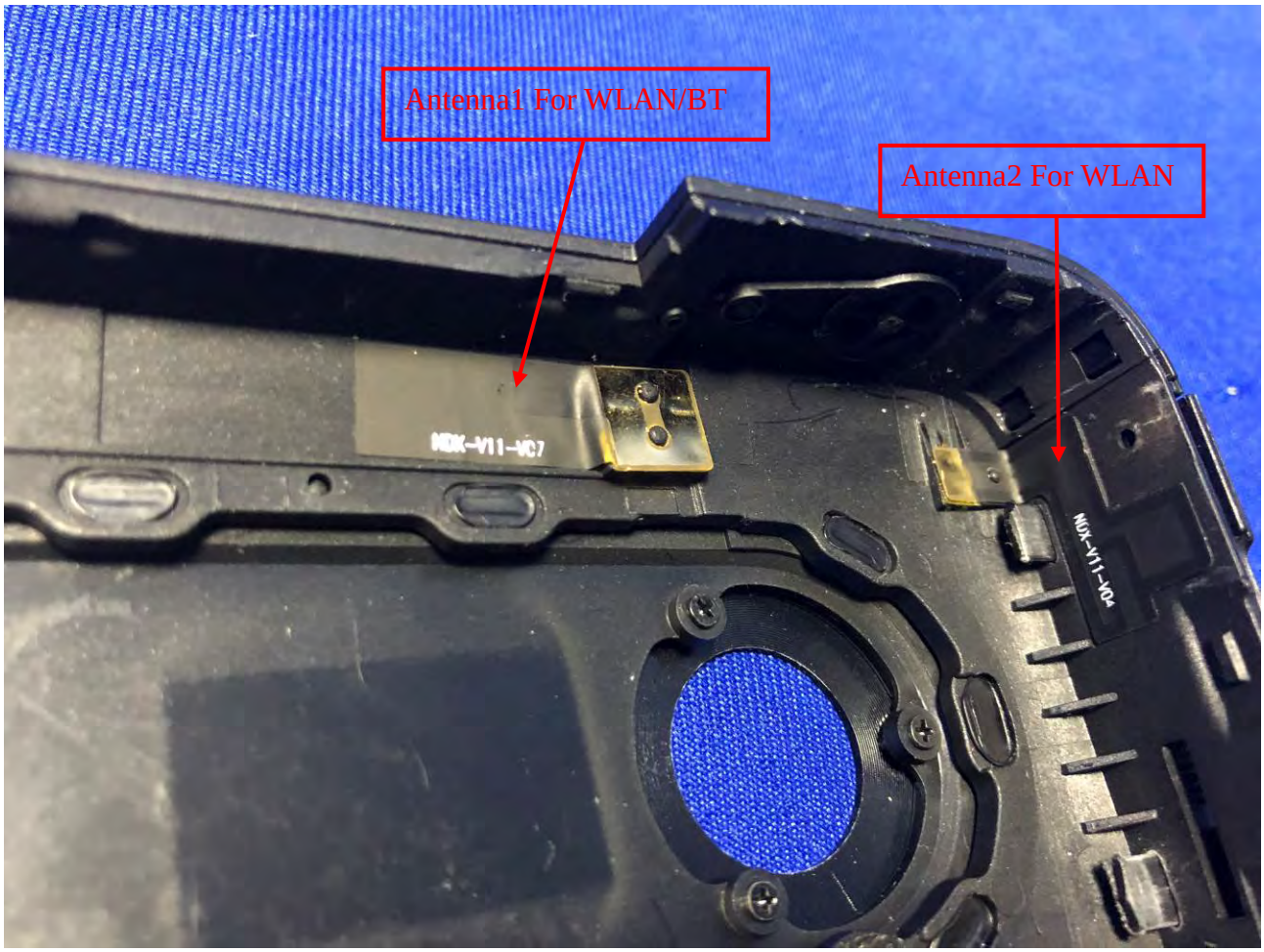


IEEE 802.11ac VHT80



3.7 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 (FPC Antenna for WLAN and BT).
* the EUT complies with the requirement of 15.203.



4 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.

4.1 MEASUREMENT EQUIPMENT USED

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
Cable	N/A	Cable-05	N/A	2017-4-26	2018-4-25
Cable	N/A	Cable-06	N/A	2017-4-26	2018-4-25
6dB Attenuator	N/A	N/A	N/A	2017-4-26	2018-4-25
Temp. / Humidity Gauge	Anymetre	TH603	CCS007	2017-10-24	2018-10-23
Test Software			EZ-EMC		

Conducted Emission					
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Date**	**Calibration Due**
EMI TEST RECEIVER	R&S	ESCI	100781	2018-2-26	2019-2-25
V (V-LISN)	SCHWARZBECK	NNLK 8129	8129-143	2017-10-29	2018-10-28
TWO-LINE V-NETWORK	R&S	ENV216	101604	2017-10-29	2018-10-28
Pulse LIMITER	R&S	ESH3-Z2	100524	2017-12-27	2018-12-26
Cable	Thermax	Cable-02	14	2017-12-27	2018-12-26
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	2017-12-26	2018-12-25
Amplifier	COM-POWER	PAM-840A	461332	2017-11-29	2018-11-28
Amplifier	MITEQ	JS41-00101800-32-10P	1675713	2017-7-20	2018-7-19
Broad-Band Horn Antenna	SCHWARZBECK	BBHA 9170	9170-515	2018-2-26	2019-2-25
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	2018-1-4	2019-1-3
Horn-antenna	SCHWARZBECK	9120D	D:266	2018-2-26	2019-2-25
Horn-antenna	SCHWARZBECK	9120D	D:267	2017-11-5	2018-11-4
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
Cable	REBES MICROWAVE	Cable-93	N/A	2017-10-29	2018-10-28
Cable	REBES MICROWAVE	Cable-94	N/A	2017-10-29	2018-10-28
Cable	REBES MICROWAVE	Cable-95	N/A	2017-10-29	2018-10-28
Cable	N/A	Cable-03	N/A	2017-4-26	2018-4-25
Cable	N/A	Cable-04	N/A	2017-4-26	2018-4-25
2.4G Filter	N/A	N/A	N/A	2017-4-26	2018-4-25
Filter 5150MHz-5350MHz	N/A	N/A	N/A	2017-4-26	2018-4-25
Filter 5725MHz-5850MHz	N/A	N/A	N/A	2017-4-26	2018-4-25
Test Software			EZ-EMC		

Remark: *Each piece of equipment is scheduled for calibration once a year.*

4.2 MEASUREMENT UNCERTAINTY

For the test methods, according to the present document, the measurement uncertainty figures shall be calculated in accordance with TR 100 028-1 [2] and shall correspond to an expansion factor (coverage factor) k = 1,96 or k = 2 (which provide confidence levels of respectively 95 % and 95,45 % in the case where the distributions characterizing the actual measurement uncertainties are normal (Gaussian)).

Table 6 is based on such expansion factors.

Table 6: Maximum measurement uncertainty

Parameter	UNCERTAINTY
Radio frequency	±0.8 × 10-7
RF power, conducted	0.2054
Maximum frequency deviation: -within 300 Hz and 6 kHz of audio frequency	1.3%
-within 6 kHz and 25 kHz of audio frequency	0.65 dB
Adjacent channel power	0.2054
Conducted spurious emission of transmitter, valid up to 6 GHz	0.2892
Conducted emission of receivers	+1.2/-1.1 dB
Radiated emission of transmitter, valid up to 6 GHz	±3.94 dB
Radiated emission of receiver, valid up to 6 GHz	±3.94 dB
RF level uncertainty for a given BER	±0.3 dB
Temperature	0.1979
Humidity	±1 %

5 FACILITIES AND ACCREDITATIONS

5.1 FACILITIES

All measurement facilities used to collect the measurement data are located at
☒ **No.10Weiye Rd., Innovation park, Eco&Tec, Development Zone, Kunshan City, Jiangsu, China.**
The sites are constructed in conformance with the requirements of ANSI C63.10:2013 and CISPR Publication 22. All receiving equipment conforms to CISPR Publication 16-1, “Radio Interference Measuring Apparatus and Measurement Methods.”

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 preselectors 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 TABLE OF ACCREDITATIONS AND LISTINGS

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,Subpart B (using ANSI 63.4 :2009 and ANSI C63.4:2014);ICES-003; 47 CFR FCC, Part 18(using MP-5:1986);ICES-001;VCCI - V3; VCCI-CISPR-32(up to 6GHz);VCCI 32-1;CNS 13438(up to 6GHz); CNS 13439; CNS 13803; CISPR 11; EN 55011; CISPR 13; EN 55013; CISPR 22; EN 55022; AS/NZS CISPR 22;CISPR32;EN55032; AS/NZS CISPR 32;EN55014-1(excluding clicks);CISPR 14-1(excluding clicks);EN55015;CISPR 15; IEC 61000-3-2; EN 61000-3-2; AS/NZS 61000.3.2 IEC 61000-3-3; EN 61000-3-3; AS/NZS 61000.3.3 IEC 61000-4-2; EN 61000-4-2; AS/NZS 61000.4.2 IEC 61000-4-3; EN 61000-4-3; AS/NZS 61000.4.3 IEC 61000-4-4; EN 61000-4-4; AS/NZS 61000.4.4 IEC 61000-4-5; EN 61000-4-5; AS/NZS 61000.4.5 IEC 61000-4-6; EN 61000-4-6; AS/NZS 61000.4.6 IEC 61000-4-8; EN 61000-4-8; AS/NZS 61000.4.8 IEC 61000-4-11; EN 61000-4-11; AS/NZS 61000.4.11 EN 61000-6-1; EN 61000-6-2; EN 61000-6-3 (excluding discontinuous interference); EN 61000-6-4; IEC 61000-6-1; IEC 61000-6-2; IEC 61000-6-3 (excluding discontinuous interference); IEC 61000-6-4; AS/NZS 61000.6.1; AS/NZS 61000.6.2; AS/NZS 61000.6.3 (excluding discontinuous interference); AS/NZS 61000.6.4; EN 55024; CISPR 24; AS/NZS CISPR 24; EN 61547; IEC 61547; EN 60601-1-2; IEC 60601-1-2; EN 50130-4; EN 55014-2; CISPR 14-2; EN 62040-2; IEC 62040-2; EN 61204-3; IEC 61204-3; EN 50121-1; EN 50121-3-2; EN 50121-4; EN 50121-5; EN 50155 (clauses 5.4 and 5.5); EN 61326-1; IEC 61326-1; EN 50083-2; EN 300 386; EN 301 489-1 (excluding Section 9.6); EN 301 489-3; EN 301 489-7; EN 301 489-17; EN 301 489-19; EN 301 489-24; EN 301 489-25; EN 301 489-34 FCC Part 15, Subparts 15C, 15E (KDB 905462 D03 (v01r02))(using ANSI C63.4:2009, ANSI C63.4:2014 and ANSI C63.10:2013) FCC Parts 22E, 24E (using ANSI/TIA-603-D) RSS-132; RSS-133; RSS-210; RSS-247 (excluding DFS testing) EN 300 220-1; EN 300 220-2; EN 300 328; EN 300 330-1; EN 300 330-2; EN 300 440-1; EN 300 440-2; EN 301 893 (excluding DFS testing); EN 301 511(clauses 4.2.12 to 4.2.19, and 5.2.12 to 5.2.19); EN 301 908-1 (clauses 4.2.2, 4.2.3, 5.3.1, and 5.3.2); EN 301 908-2 (clauses 4.2.4, 4.2.10, 5.3.3, and 5.3.9)	

		AS/NZS 4268 IEEE Std 1528:2013; EN 50360; EN 50566; EN 62479; EN 50383; EN 50385; EN 62311; IEC 62209-1; EN 62209-1; IEC 62209-2; EN 62209-2; CNS 14958-1; CNS 14959; RSS-102; ACMA Radio Communications (Electromagnetic Radiation – Human Exposure) Standard 2014	
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	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 Setup photo for the actual connections between EUT and support equipment.

6.2 SUPPORT EQUIPMENT

No.	Equipment	Model No.	Serial No.
1	N/A	N/A	N/A

Remark:

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.

2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

7 FCC PART 15 REQUIREMENTS

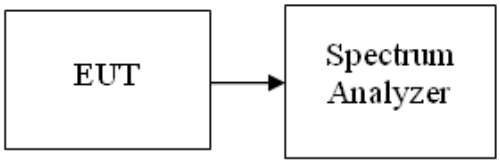
7.1 26 DB EMISSION BANDWIDTH

LIMIT

According to §15.403(i), for purposes of this subpart the emission bandwidth shall be determined by measuring the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, that are 26 dB down relative to the maximum level of the modulated carrier. Compliance with the emissions limits is based on the use of measurement instrumentation employing a peak detector function with an instrument resolutions bandwidth approximately equal to 1.0 percent of the emission bandwidth of the device under measurement.

Test Configuration

TEST PROCEDURE



1. Place the EUT on the table and set it in the transmitting mode.
2. Remove the antenna from the EUT and then connect a low-loss RF cable from the antenna port to the spectrum analyzer.
3. Set the spectrum analyzer as RBW = approximately 1% of the emission bandwidth, VBW > RBW, Detector = Peak ,Span >26dB bandwidth, and Sweep = auto ,Trace mode = max hold.
4. Measure the maximum width of the emission that is 26 dB down from the maximum of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.
5. Repeat until all the rest channels were investigated.

TEST RESULTS

No non-compliance noted

Test Data

Test mode: IEEE 802.11a mode/ Chain 0

Channel	Frequency (MHz)	Bandwidth (B) (MHz)
Low	5180	21.971
Mid	5200	22.147
High	5240	22.035

Test mode: IEEE 802.11a mode/ Chain 1

Channel	Frequency (MHz)	Bandwidth (B) (MHz)
Low	5180	22.067
Mid	5200	22.035
High	5240	22.035

Test mode: IEEE 802.11n HT20MHz mode/ Chain 0

Channel	Frequency (MHz)	Bandwidth (B) (MHz)
Low	5180	22.276
Mid	5200	22.388
High	5240	21.234

Test mode: IEEE 802.11n HT20MHz mode/ Chain 1

Channel	Frequency (MHz)	Bandwidth (B) (MHz)
Low	5180	22.067
Mid	5200	22.196
High	5240	22.035

Test mode: IEEE 802.11n HT40MHz mode/ Chain 0

Channel	Frequency (MHz)	Bandwidth (B) (MHz)
Low	5190	40.673
High	5230	40.657

Test mode: IEEE 802.11n HT40MHz mode/ Chain 1

Channel	Frequency (MHz)	Bandwidth (B) (MHz)
Low	5190	40.337
High	5230	40.369

Test mode: IEEE 802.11ac VHT20MHz mode/ Chain 0

Channel	Frequency (MHz)	Bandwidth (B) (MHz)
Low	5180	22.276
Mid	5200	22.468
High	5240	22.356

Test mode: IEEE 802.11ac VHT20MHz mode/ Chain 1

Channel	Frequency (MHz)	Bandwidth (B) (MHz)
Low	5180	22.035
Mid	5200	22.147
High	5240	22.115

Test mode: IEEE 802.11ac VHT40MHz mode/ Chain 0

Channel	Frequency (MHz)	Bandwidth (B) (MHz)
Low	5190	40.769
High	5230	40.865

Test mode: IEEE 802.11ac VHT40MHz mode/ Chain 1

Channel	Frequency (MHz)	Bandwidth (B) (MHz)
Low	5190	40.385
High	5230	40.192

Test mode: IEEE 802.11ac VHT80MHz mode/ Chain 0

Channel	Frequency (MHz)	Bandwidth (B) (MHz)
Mid	5210	82.788

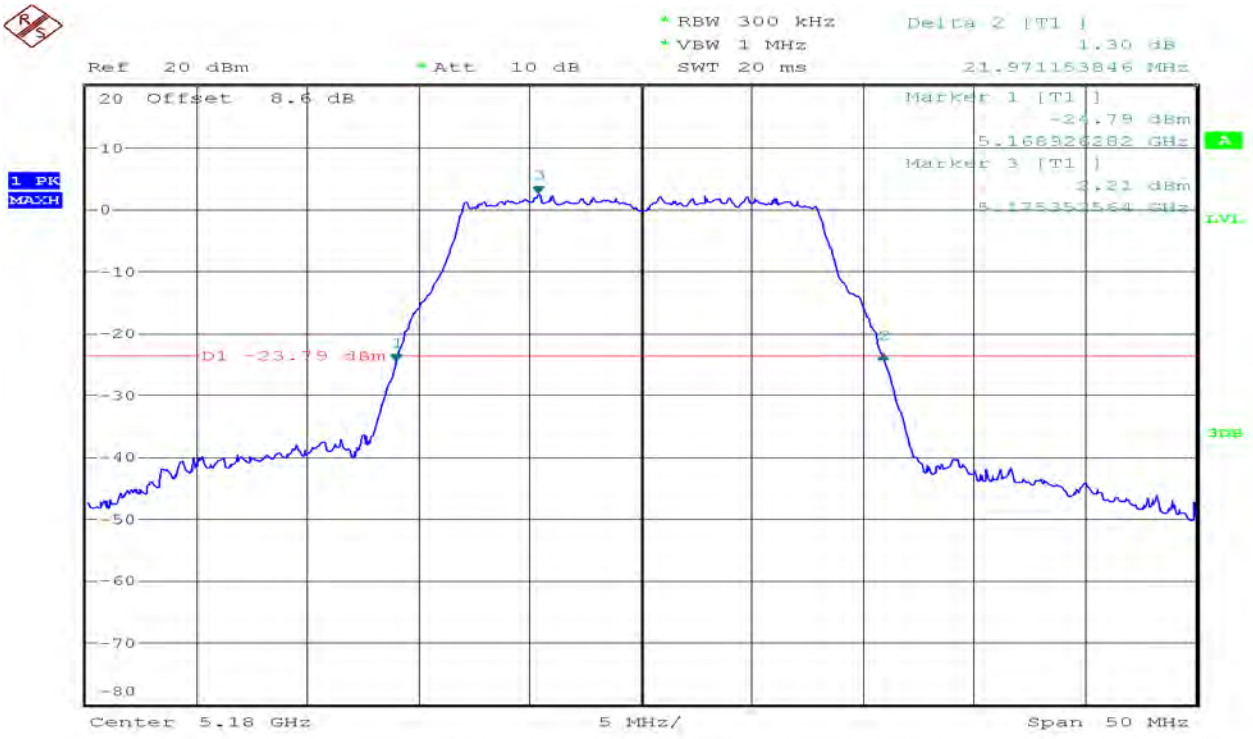
Test mode: IEEE 802.11ac VHT80MHz mode/ Chain 1

Channel	Frequency (MHz)	Bandwidth (B) (MHz)
Mid	5210	82.596

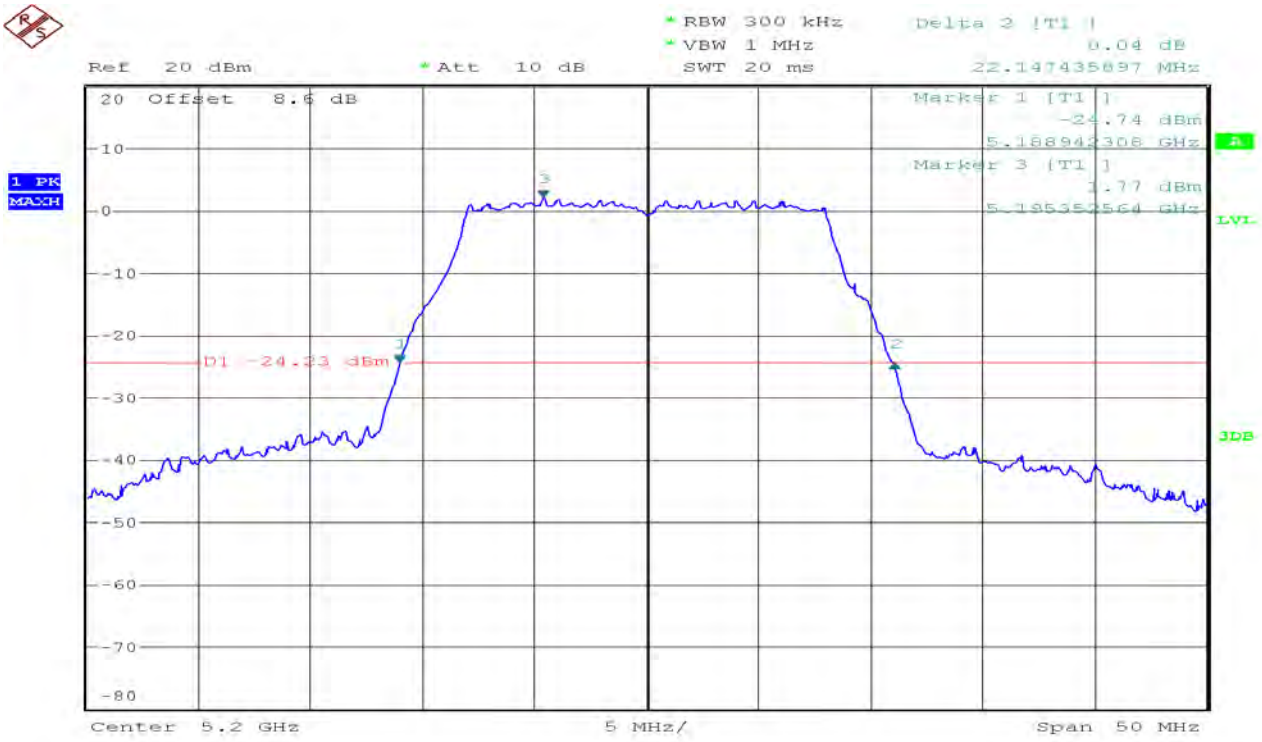
Test Plot

IEEE 802.11a mode/Chain 0:

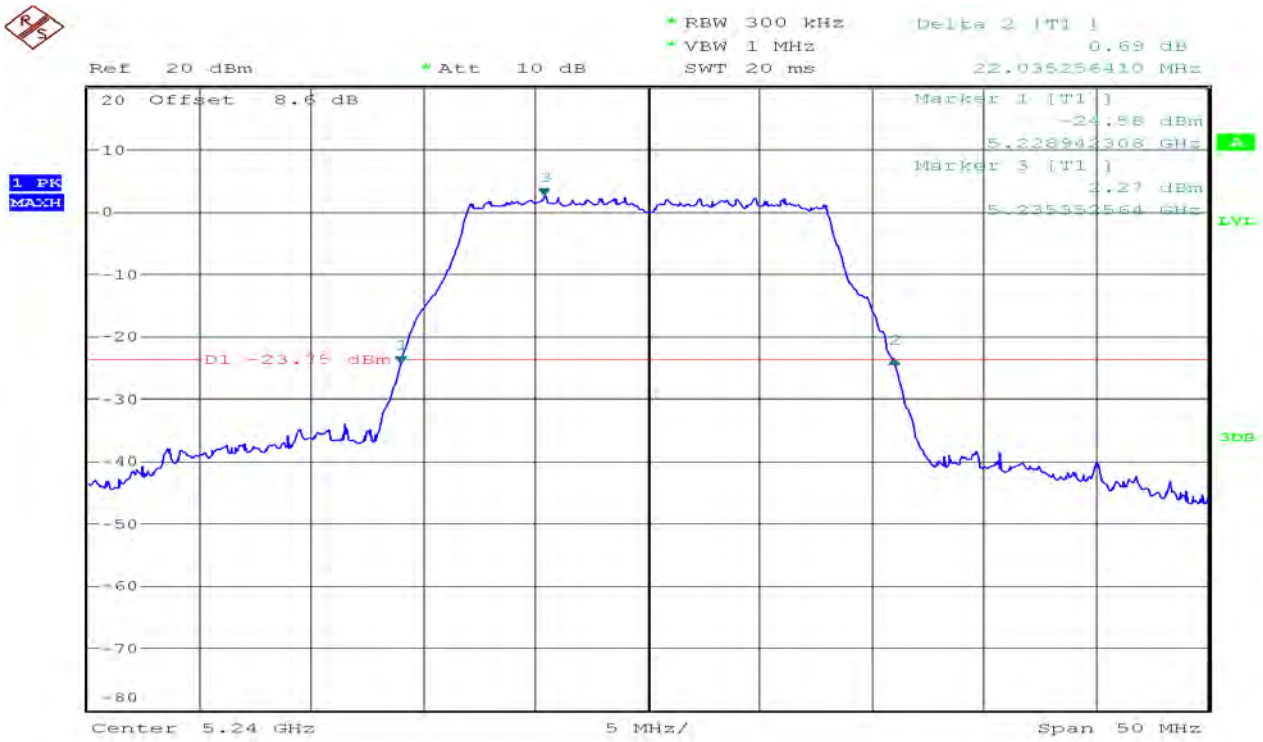
CH Low



CH Mid

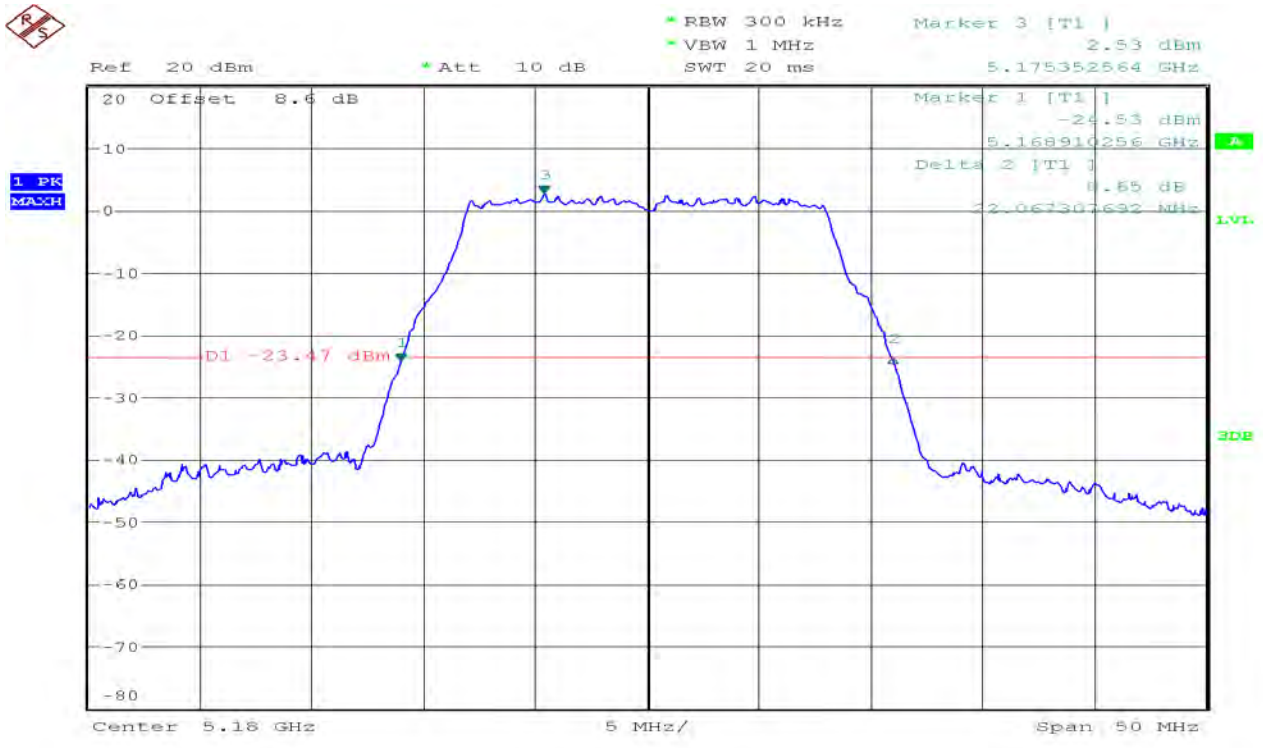


CH High

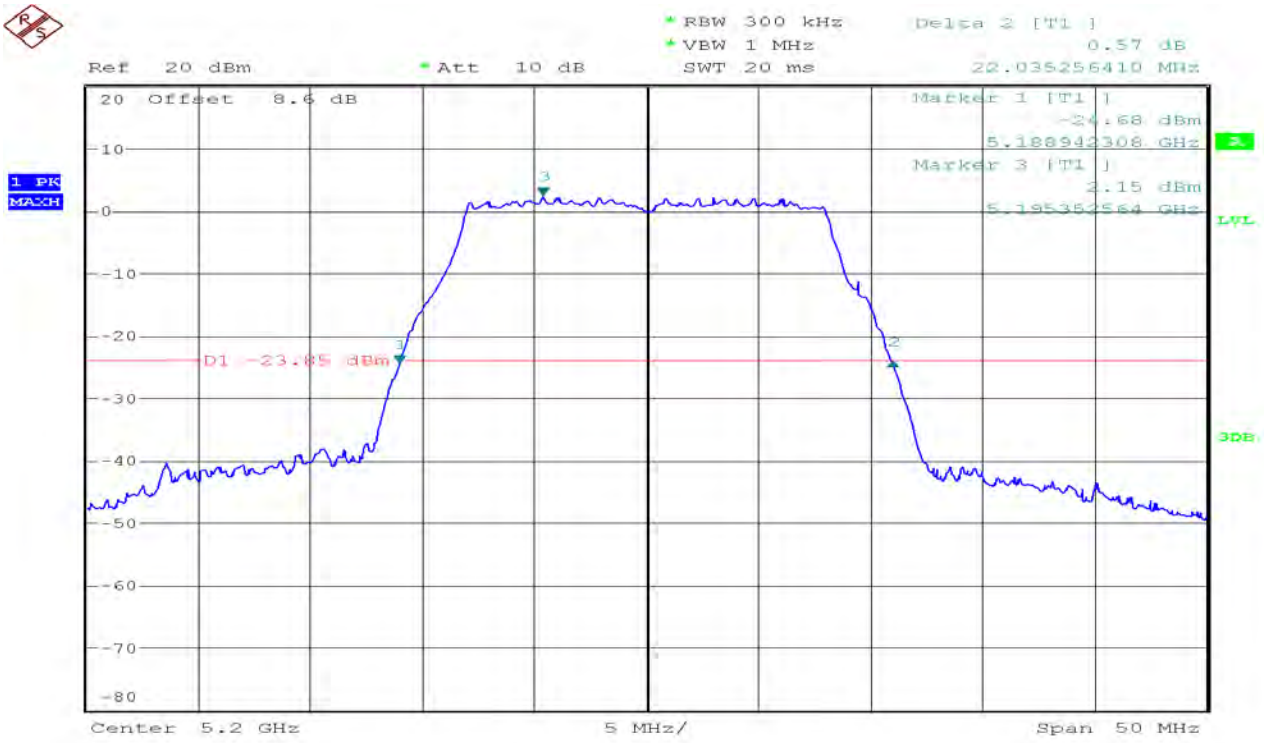


IEEE 802.11a mode/Chain 1:

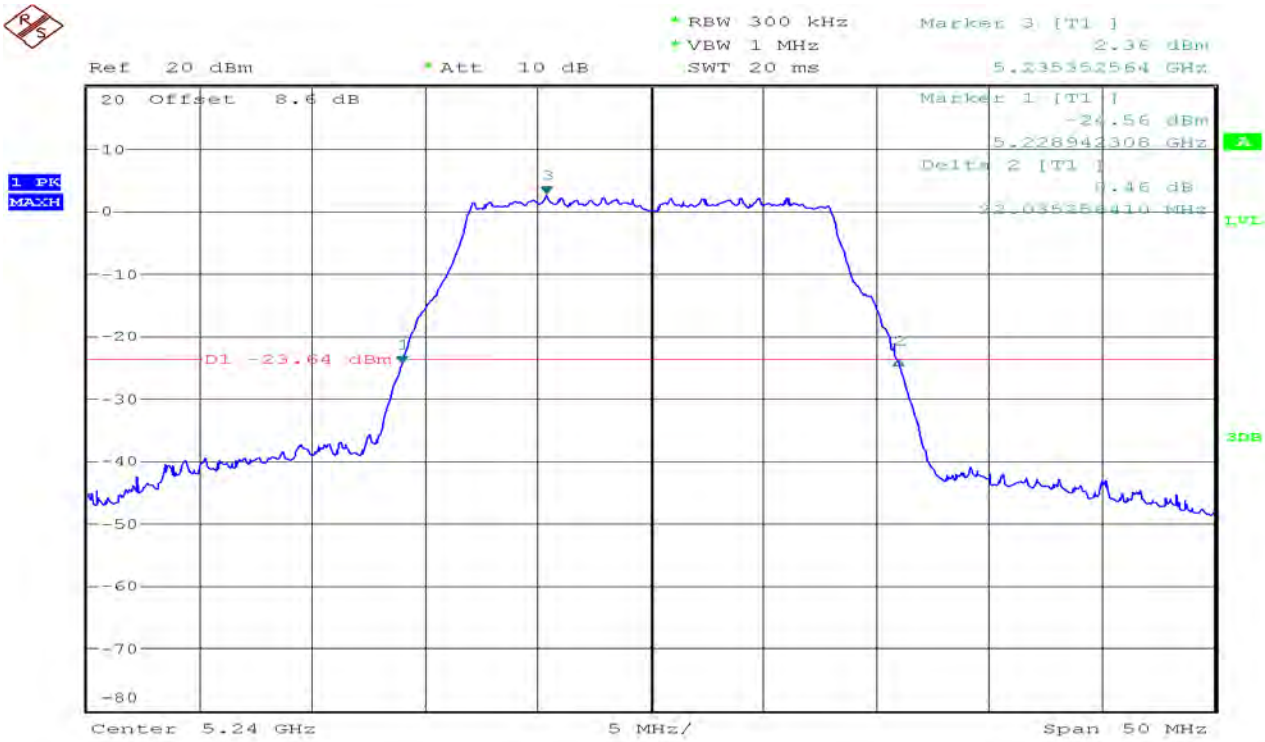
CH Low



CH Mid

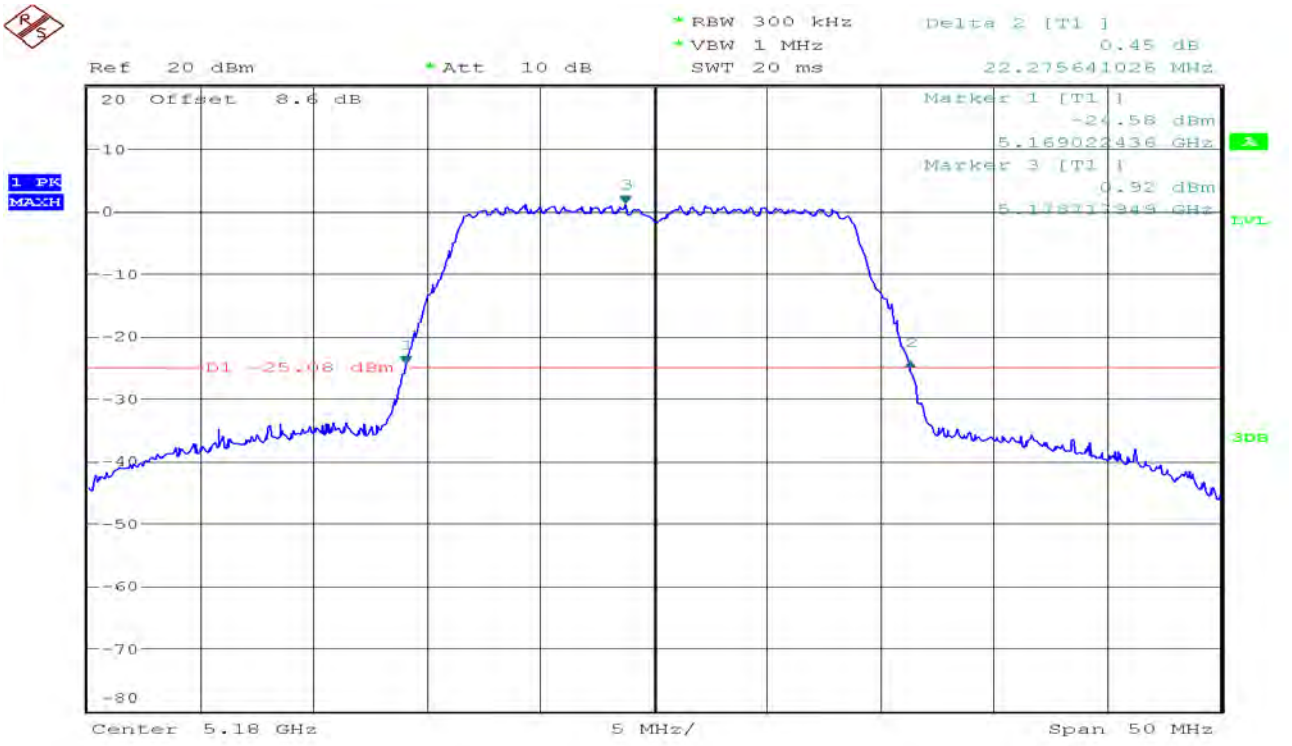


CH High

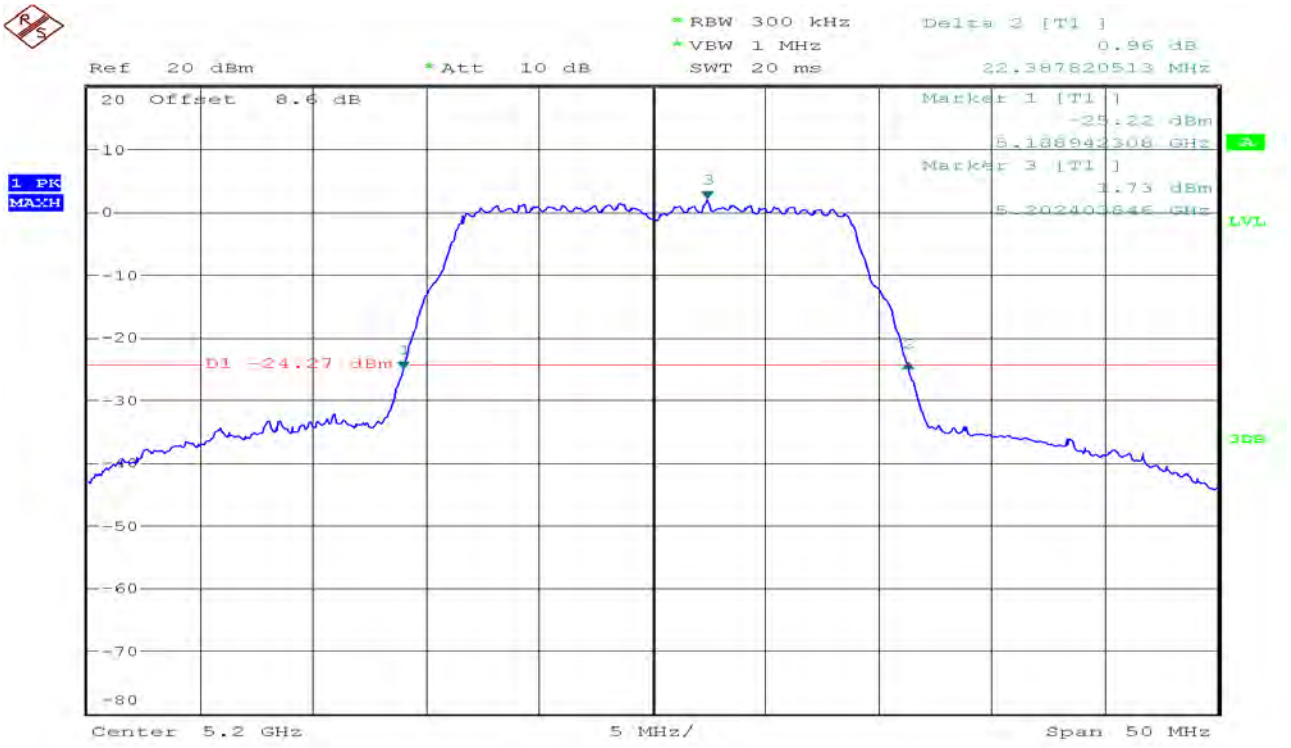


IEEE 802.11n HT20 mode/Chain 0:

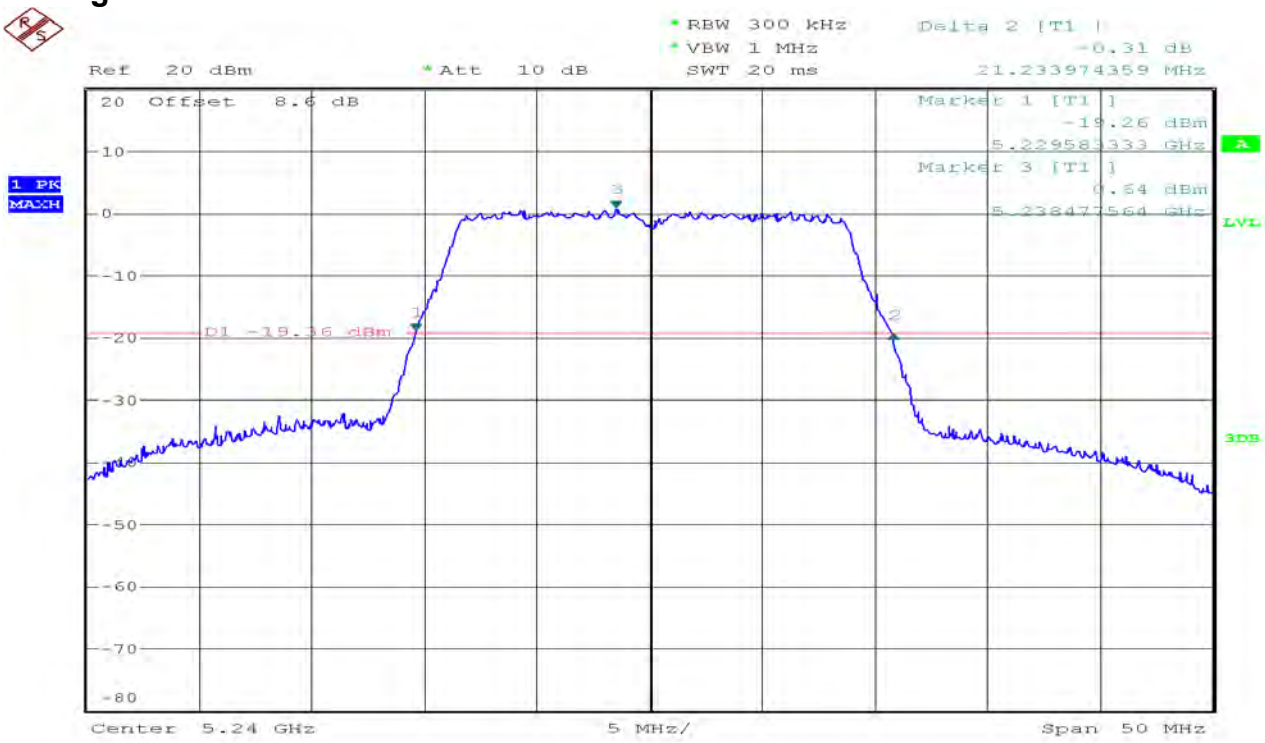
CH Low



CH Mid

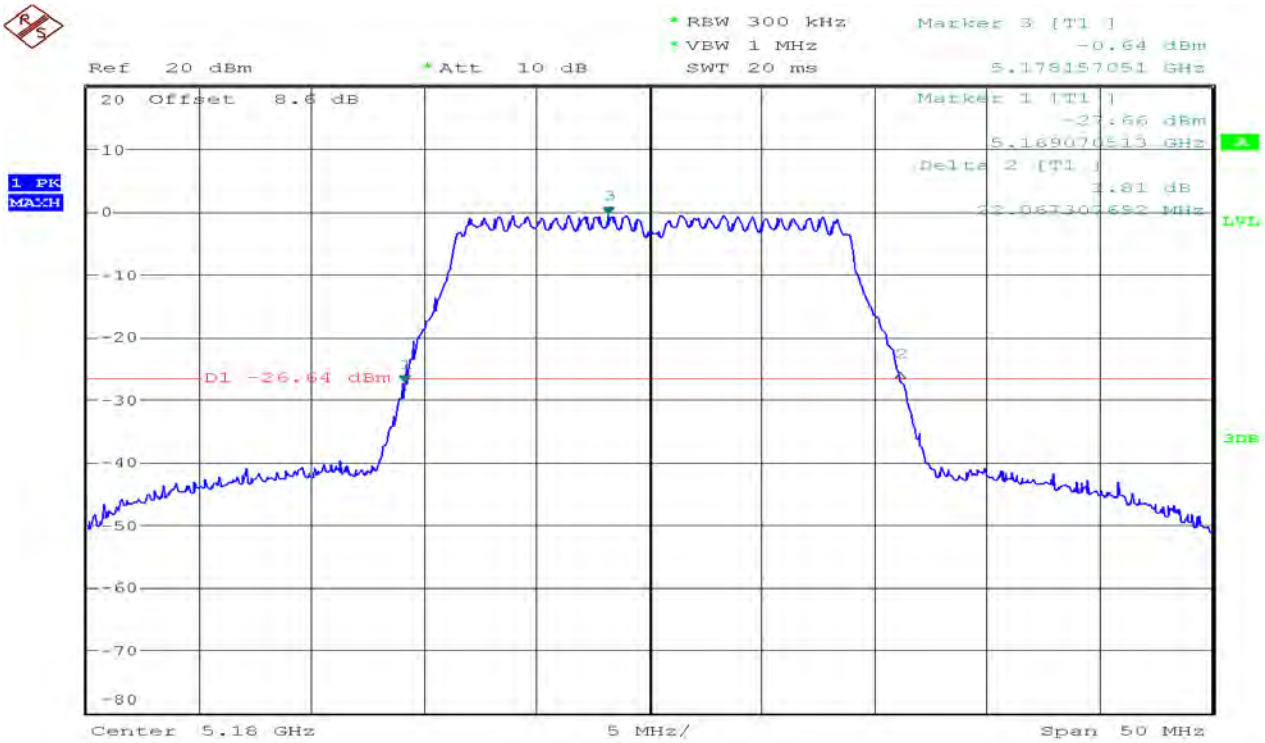


CH High

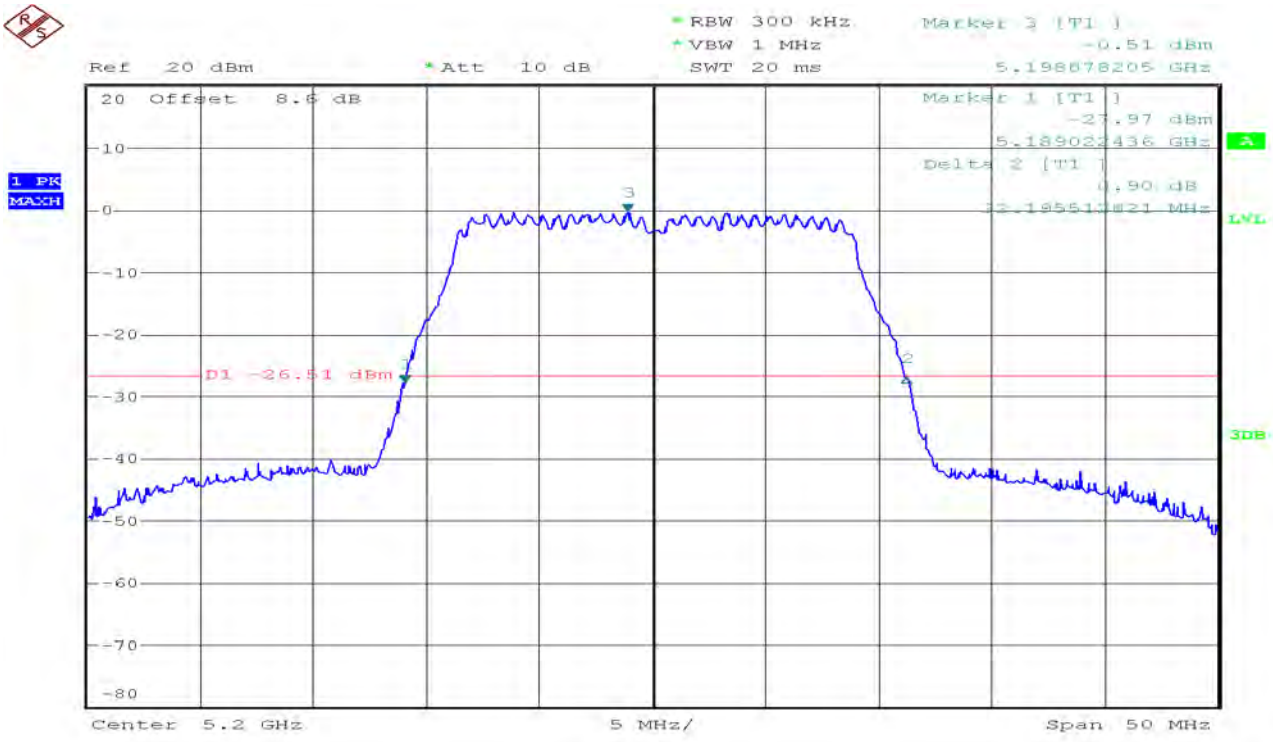


IEEE 802.11n HT20 mode/Chain 1:

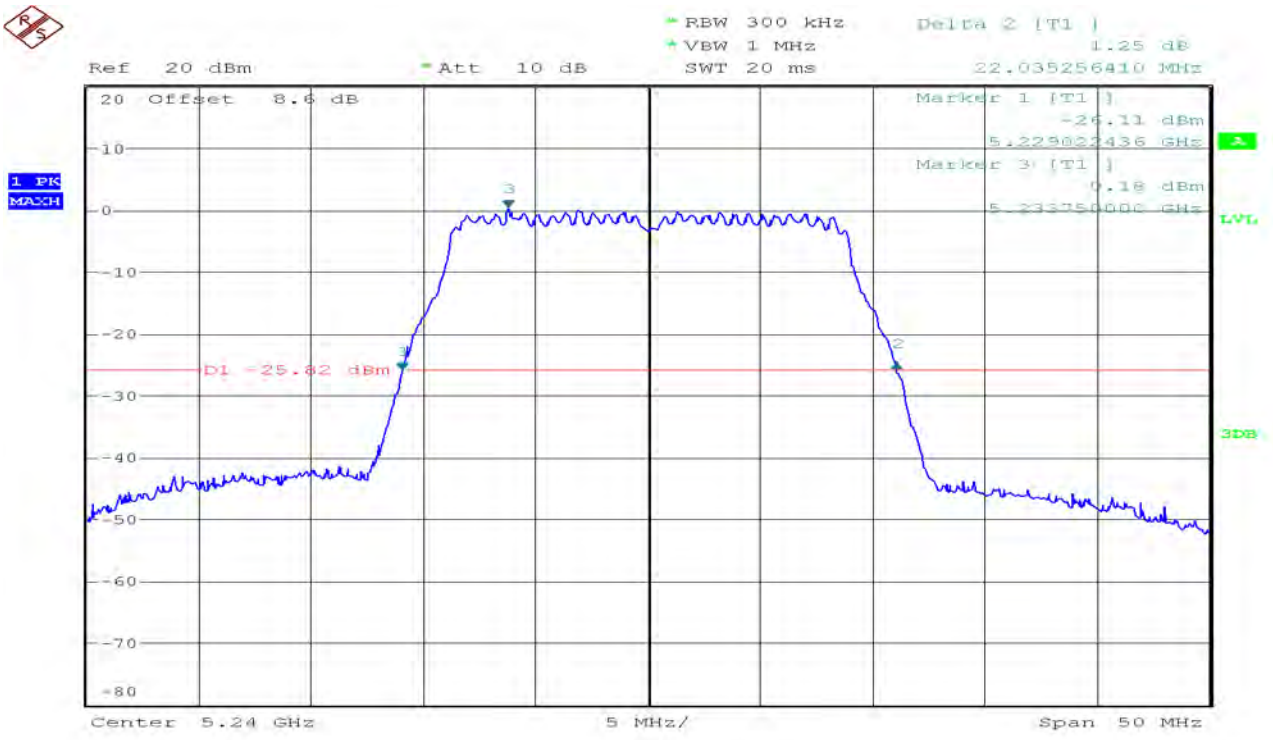
CH Low



CH Mid

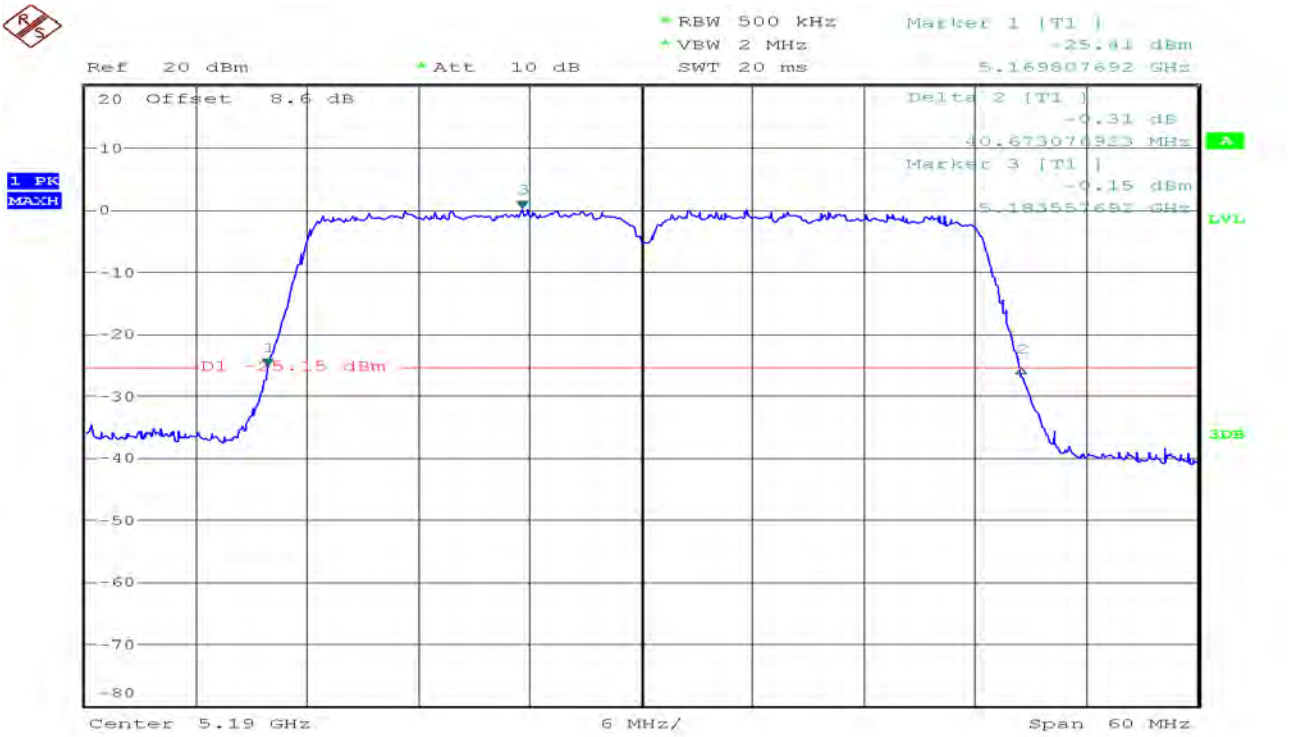


CH High

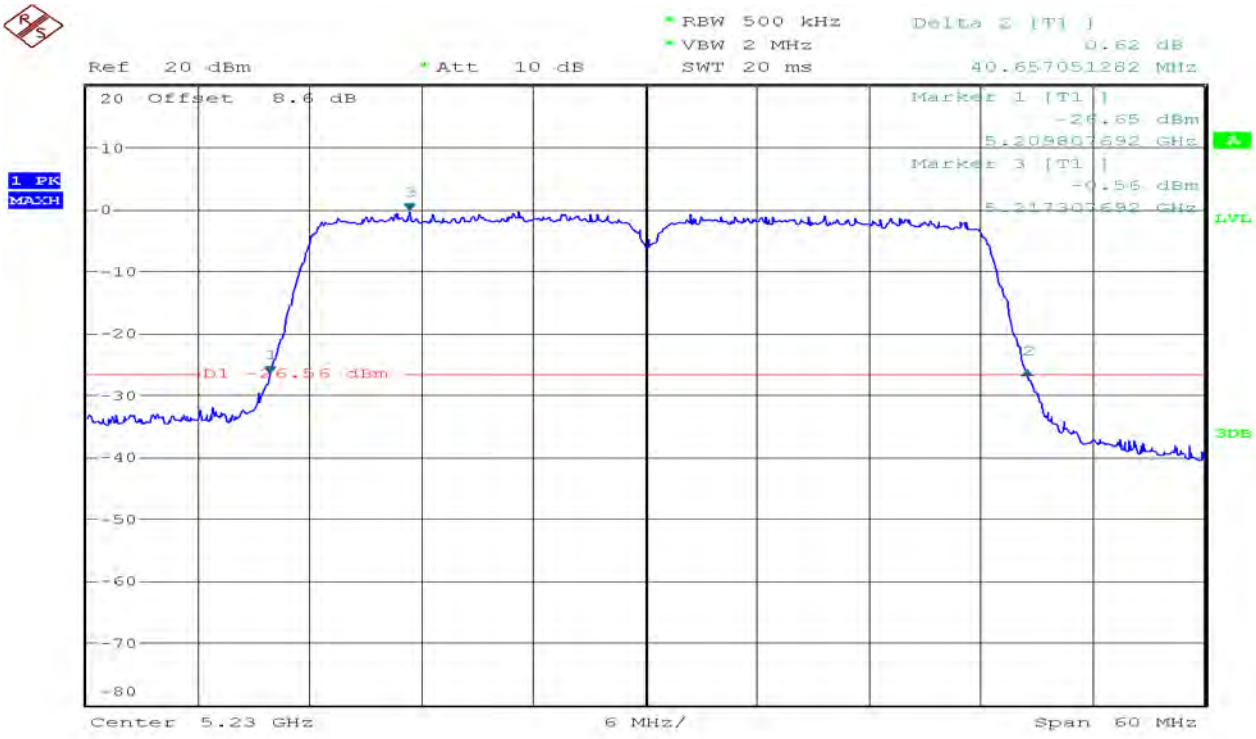


IEEE 802.11n HT40 mode/Chain 0:

CH Low

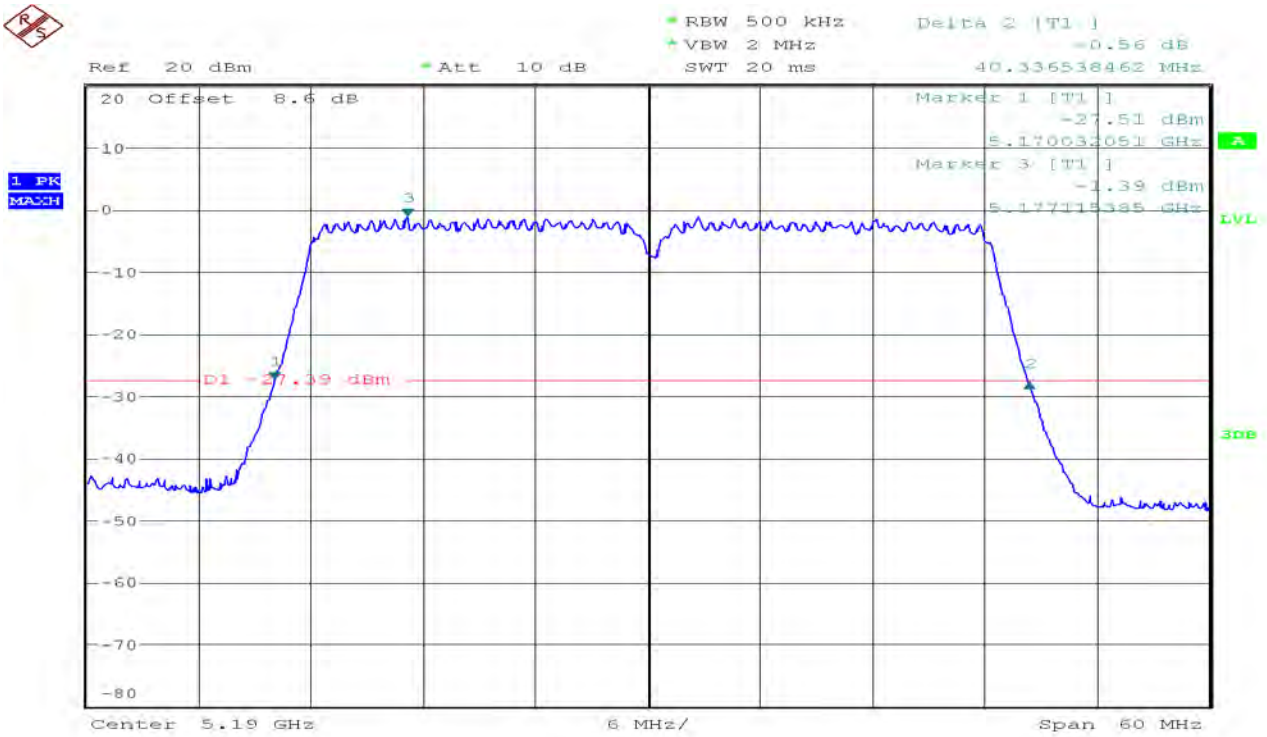


CH High

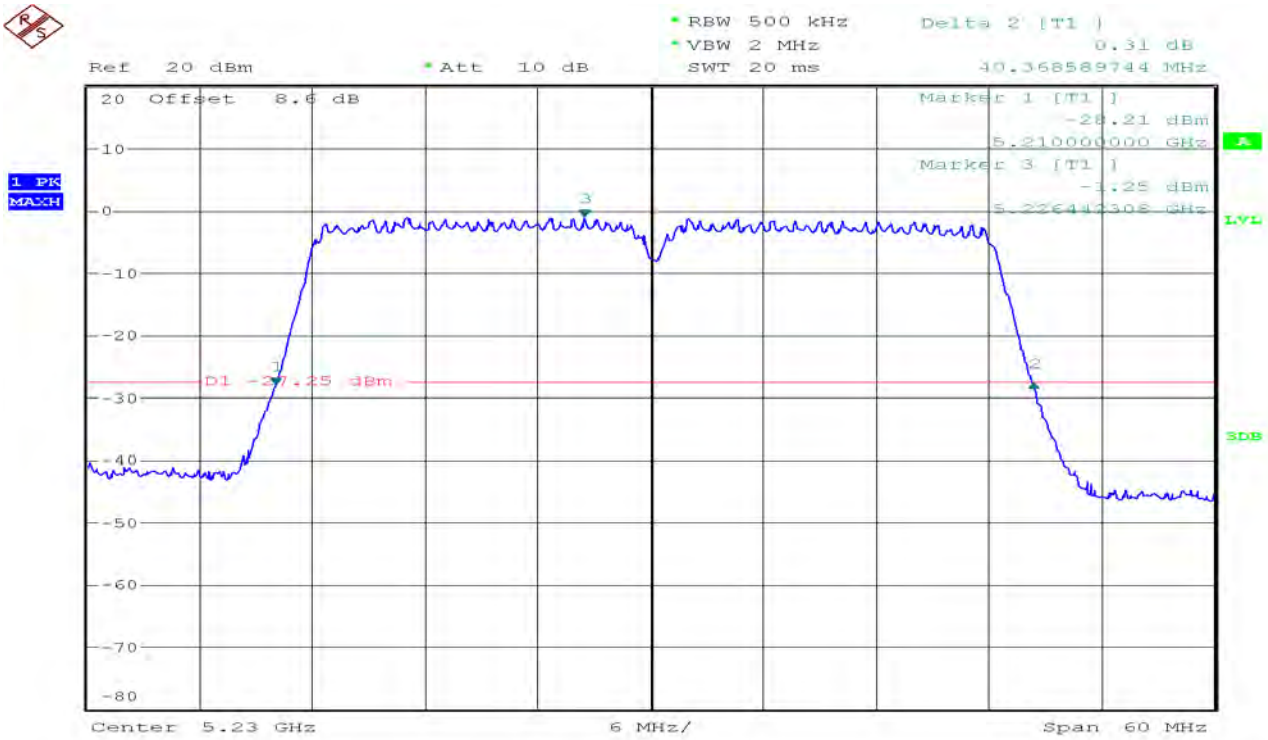


IEEE 802.11n HT40 mode/Chain 1:

CH Low

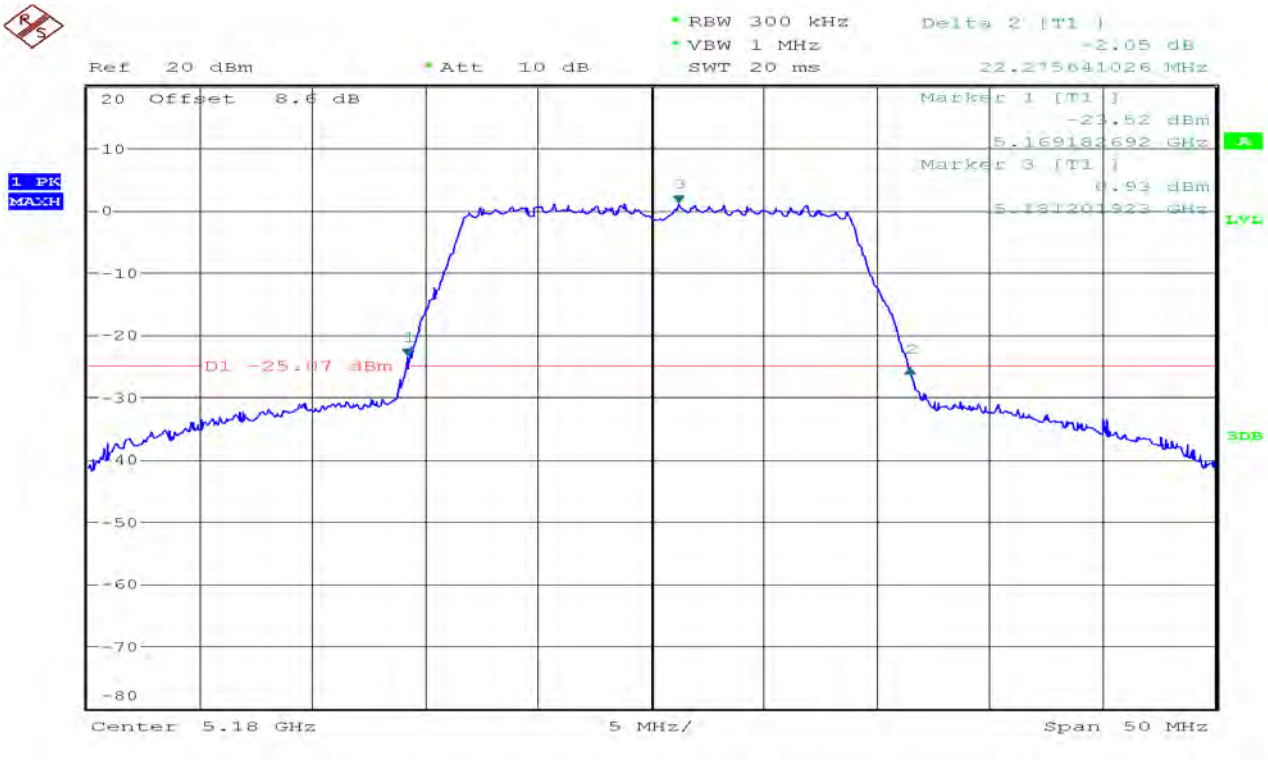


CH High

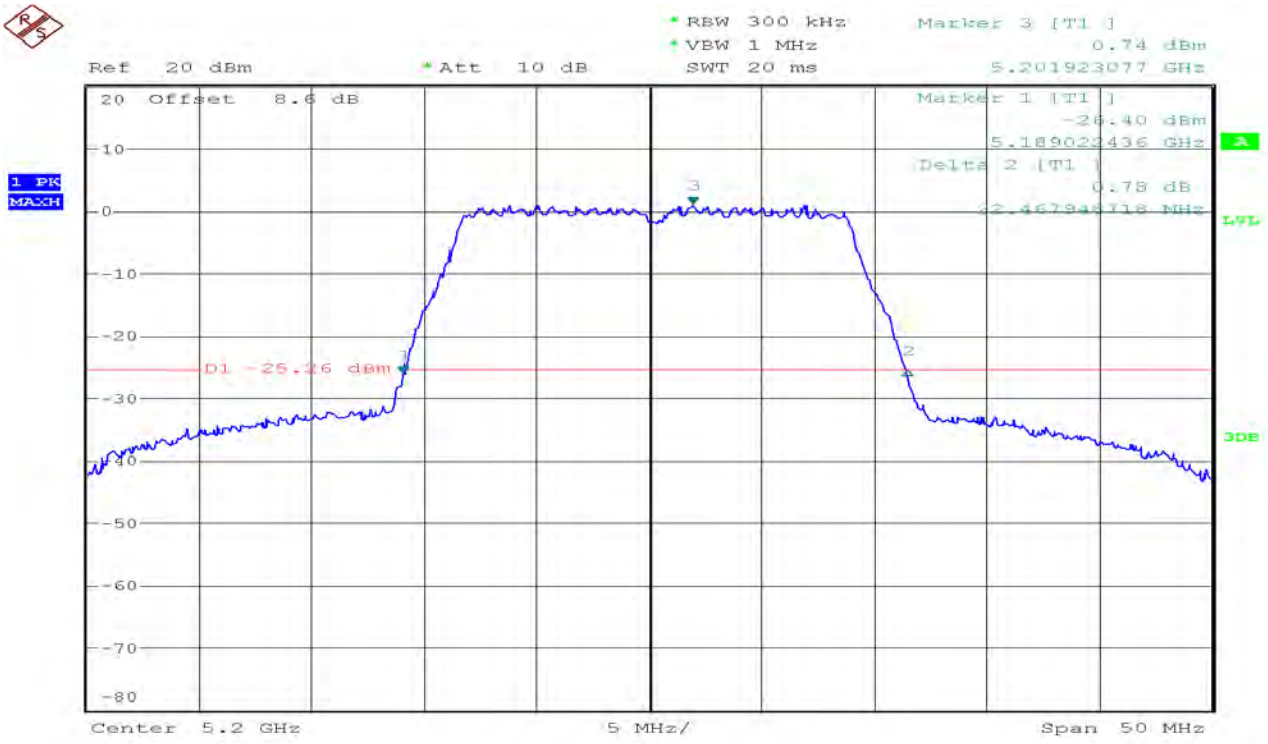


IEEE 802.11ac VHT20 mode/Chain 0:

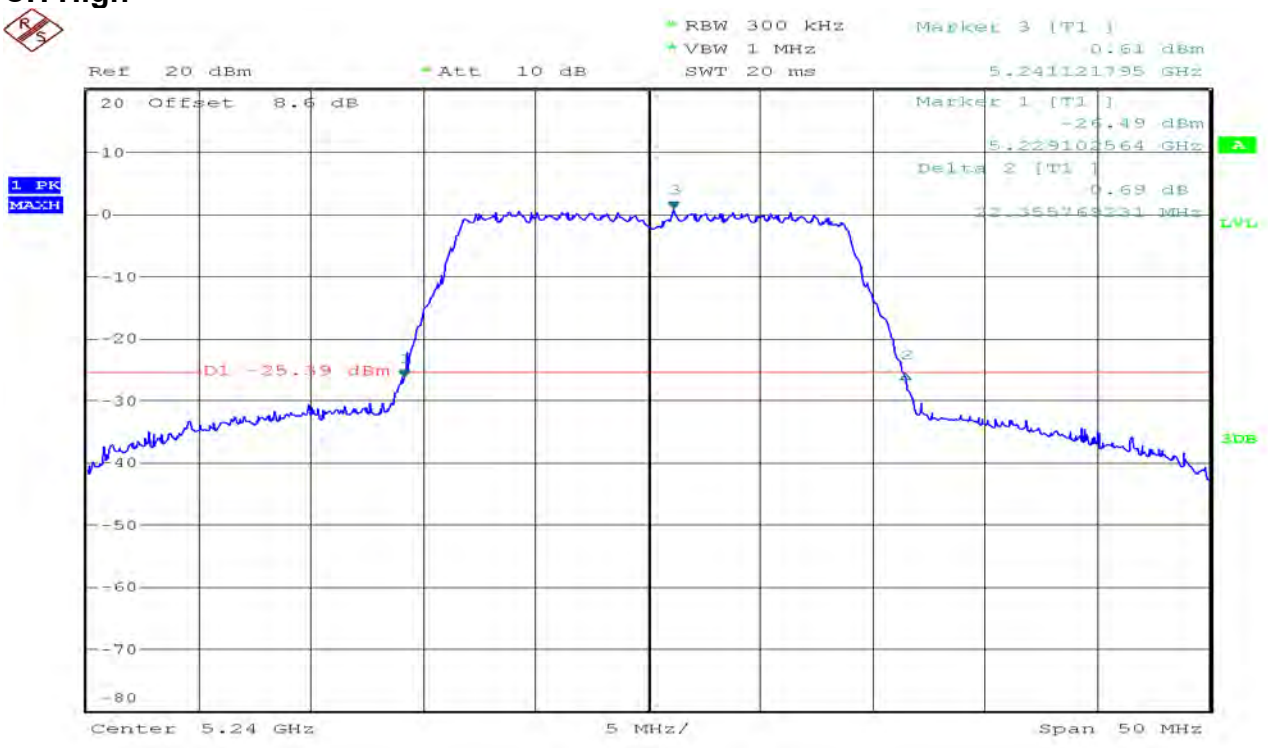
CH Low



CH Mid

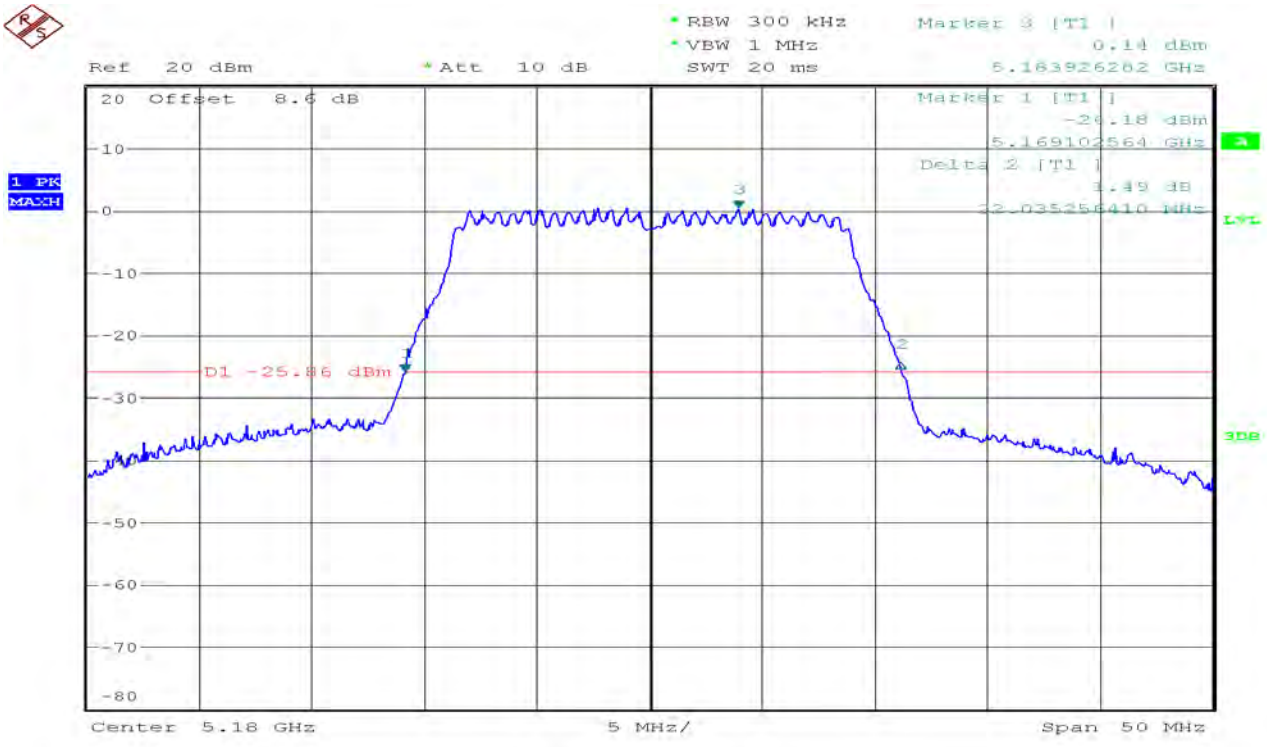


CH High

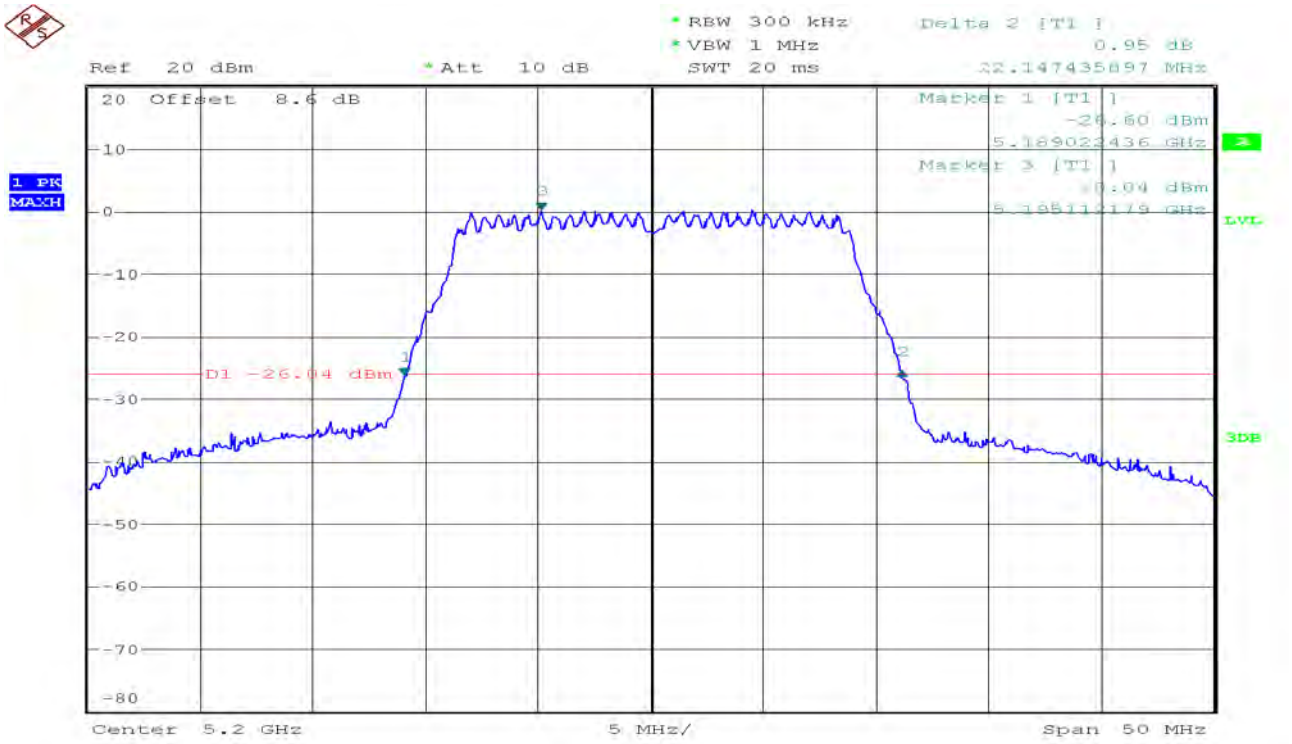


IEEE 802.11ac VHT20 mode/Chain 1:

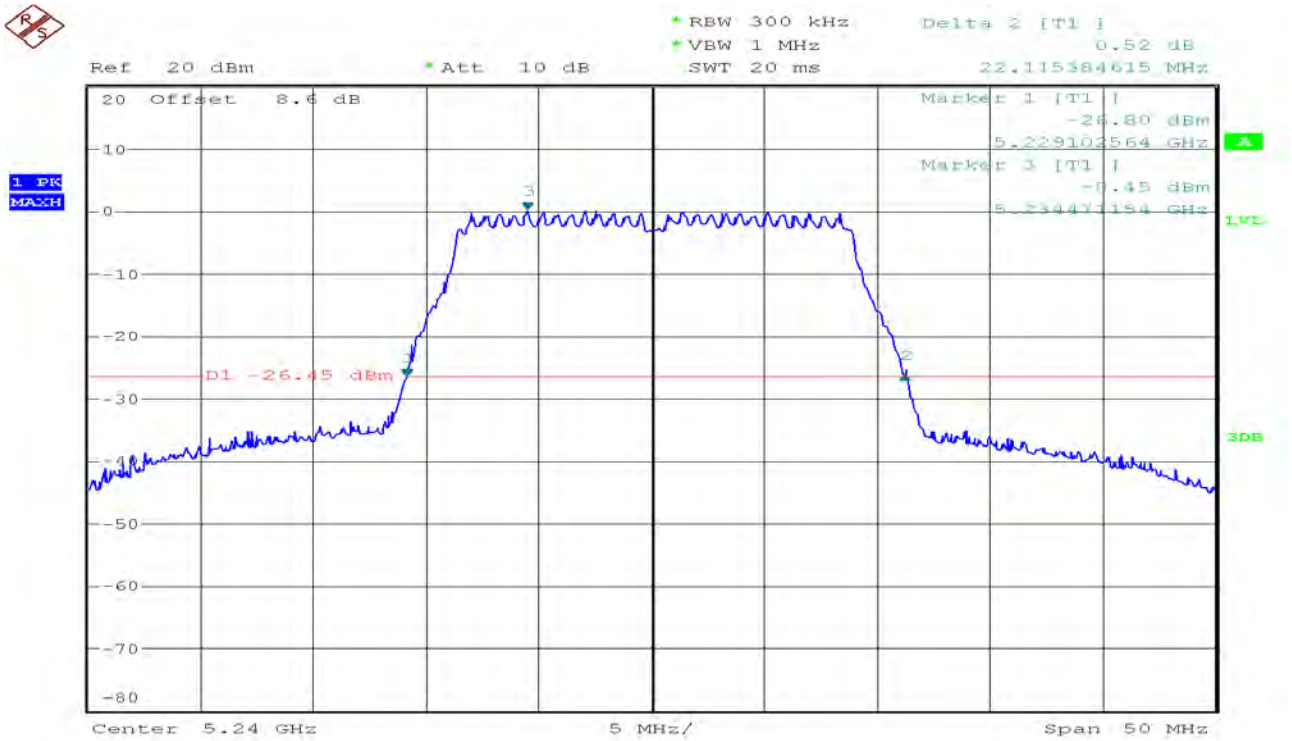
CH Low



CH Mid

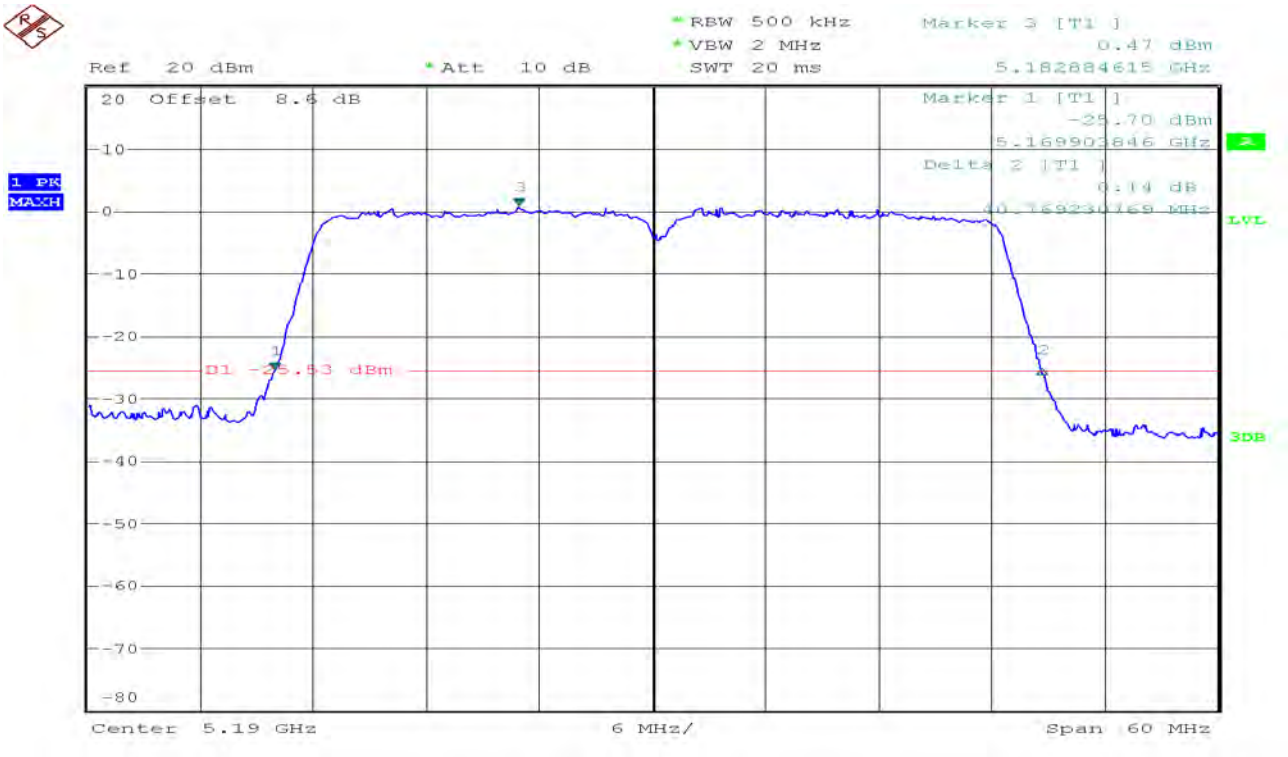


CH High

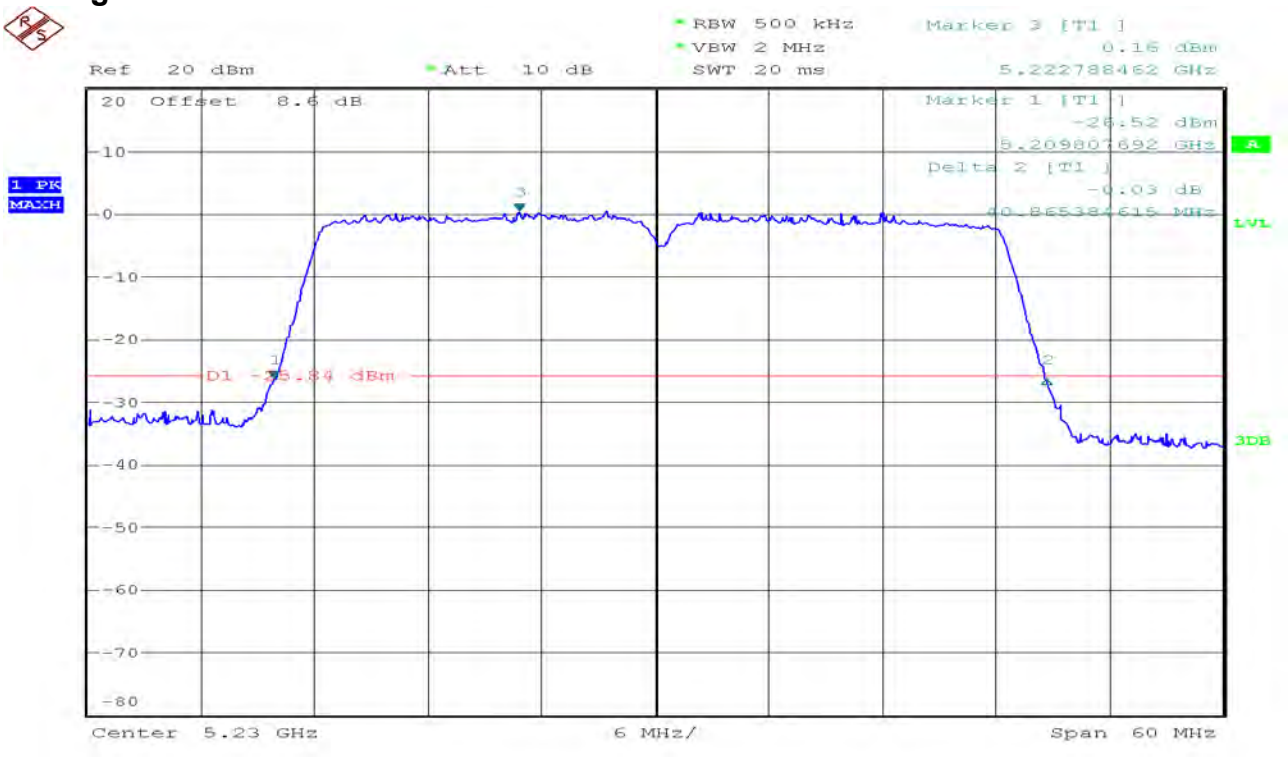


IEEE 802.11ac VHT40 mode/Chain 0:

CH Low

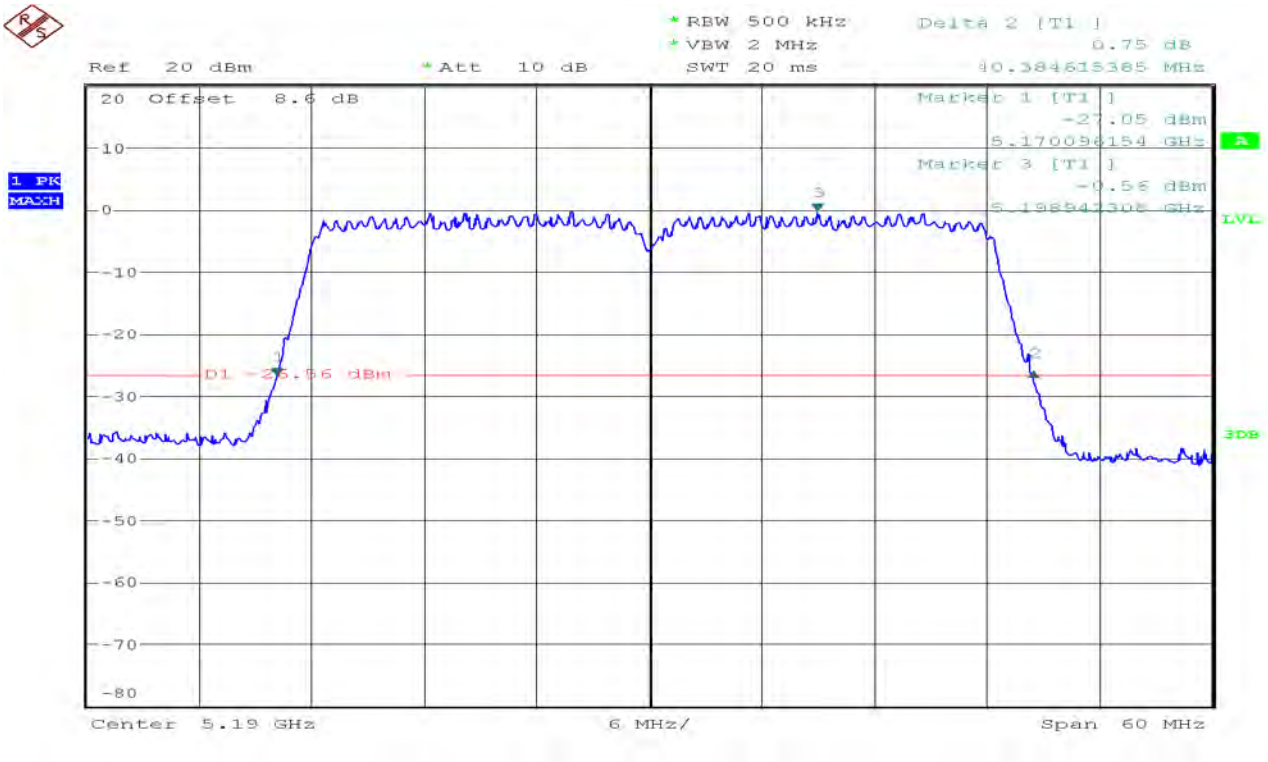


CH High

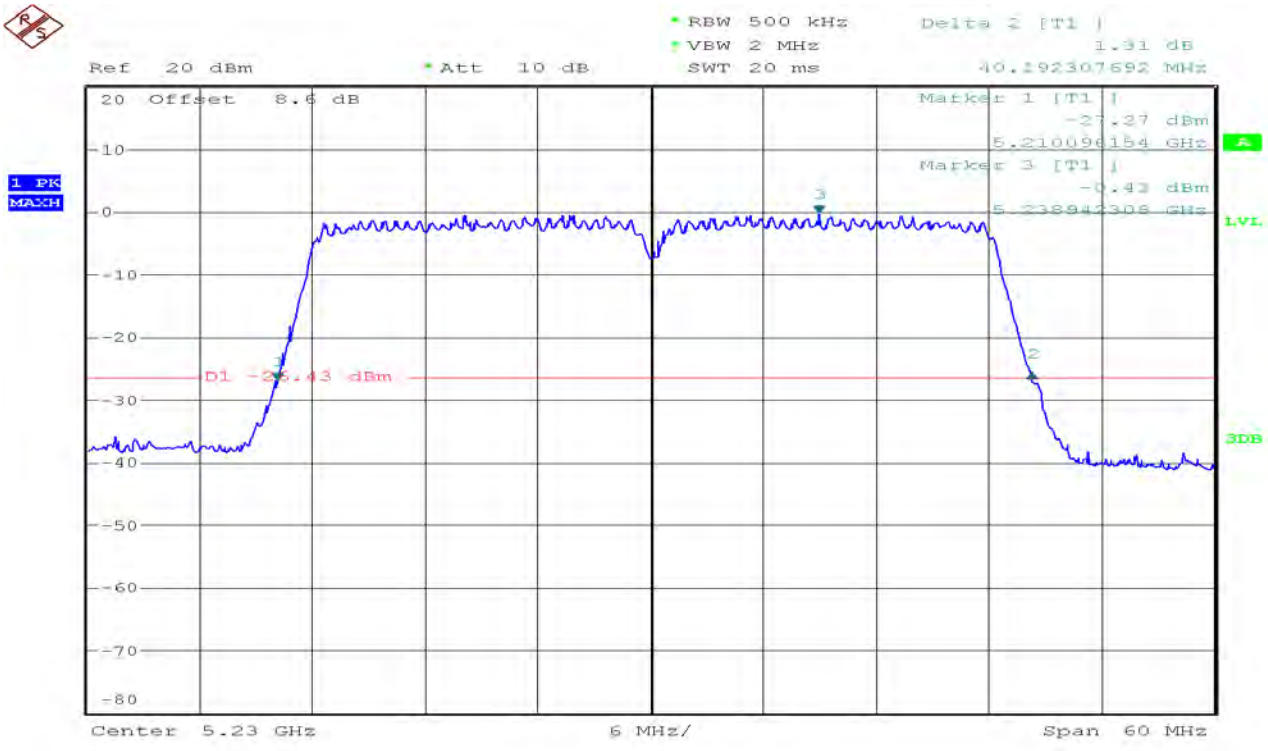


IEEE 802.11ac VHT40 mode/Chain 1:

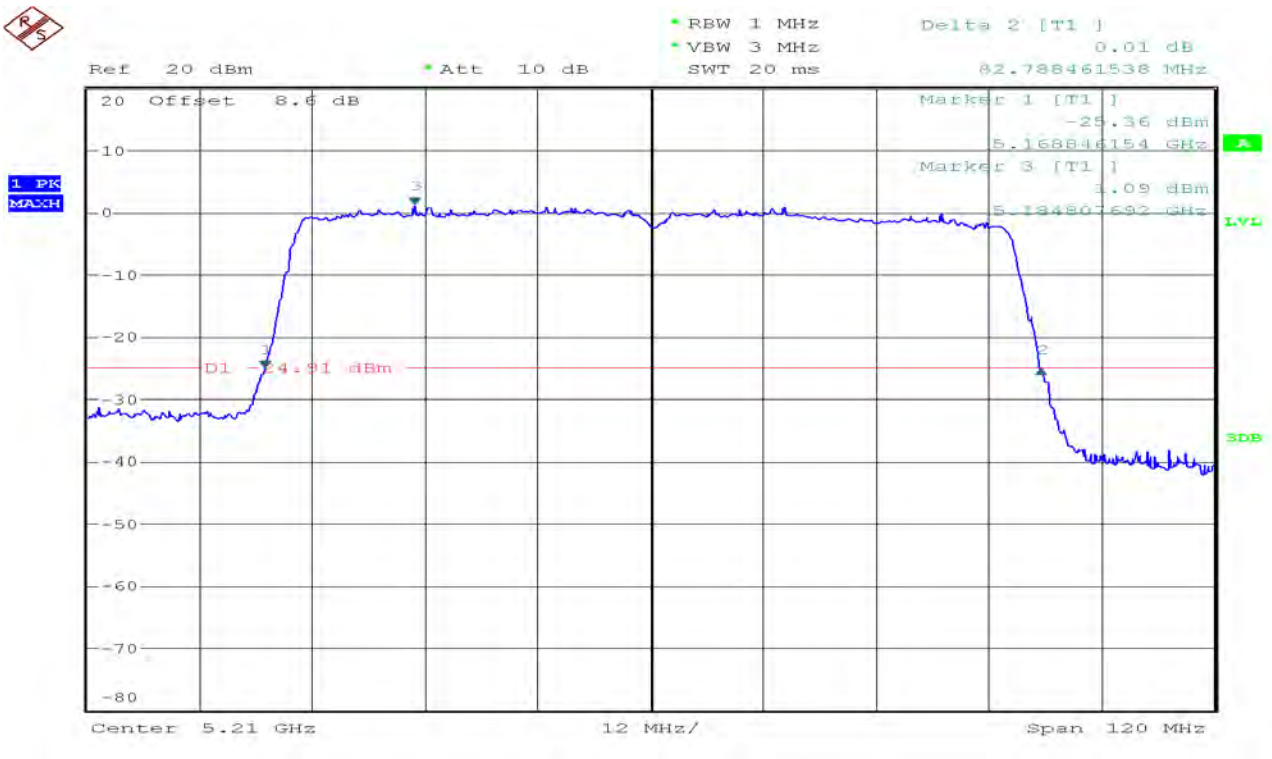
CH Low



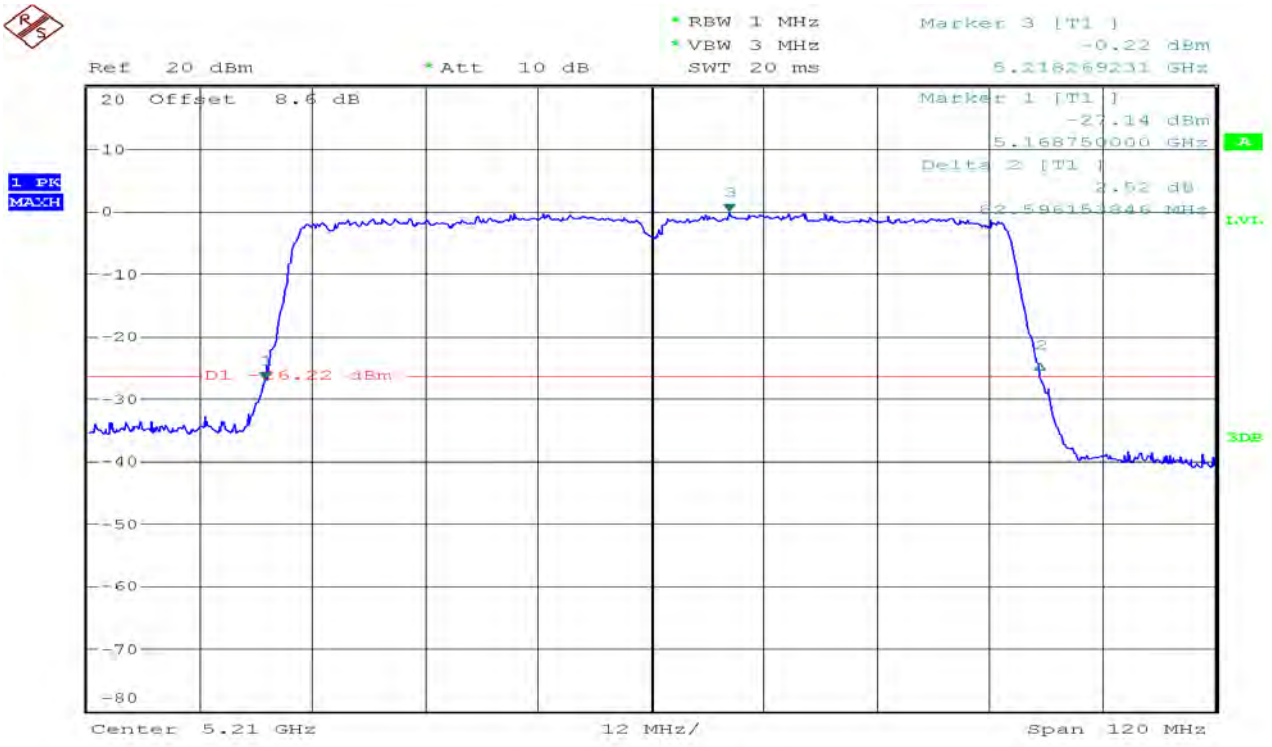
CH High



IEEE 802.11ac VHT80 mode/Chain 0:
CH Mid



IEEE 802.11ac VHT80 mode/Chain 1:
CH Mid

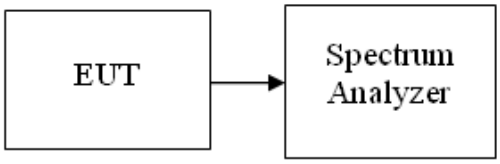


7.2 99% EMISSION BANDWIDTH

LIMIT

None; for reporting purposes only.

Test Configuration



Test Procedure

1. Set center frequency to the nominal EUT channel center frequency.
2. Set span = 1.5 times to 5.0 times the OBW.
3. Set RBW = 1 % to 5 % of the OBW
4. Set VBW $\geqslant$ 3 · RBW
5. Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.
6. Use the 99 % power bandwidth function of the instrument (if available).

TEST RESULTS

No non-compliance noted

Test Data

Test mode: IEEE 802.11a mode/ Chain 0

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5180	17.388
Mid	5200	17.388
High	5240	17.308

Test mode: IEEE 802.11a mode/ Chain 1

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5180	17.388
Mid	5200	17.388
High	5240	17.388

Test mode: IEEE 802.11n HT20MHz mode/ Chain 0

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5180	18.510
Mid	5200	18.429
High	5240	18.349

Test mode: IEEE 802.11n HT20MHz mode/ Chain 1

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5180	18.109
Mid	5200	18.109
High	5240	18.189

Test mode: IEEE 802.11n HT40MHz mode / Chain 0

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5190	36.635
High	5230	36.635

Test mode: IEEE 802.11n HT40MHz mode / Chain 1

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5190	36.442
High	5230	36.346

Test mode: IEEE 802.11ac VHT20MHz mode / Chain 0

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5180	18.429
Mid	5200	18.349
High	5240	18.429

Test mode: IEEE 802.11ac VHT20MHz mode / Chain 1

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5180	18.269
Mid	5200	18.189
High	5240	18.189

Test mode: IEEE 802.11ac VHT40MHz mode/ Chain 0

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5190	36.538
High	5230	36.635

Test mode: IEEE 802.11ac VHT40MHz mode/ Chain 1

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5190	36.442
High	5230	36.442

Test mode: IEEE 802.11ac VHT80MHz mode/ Chain 0

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Mid	5210	76.154

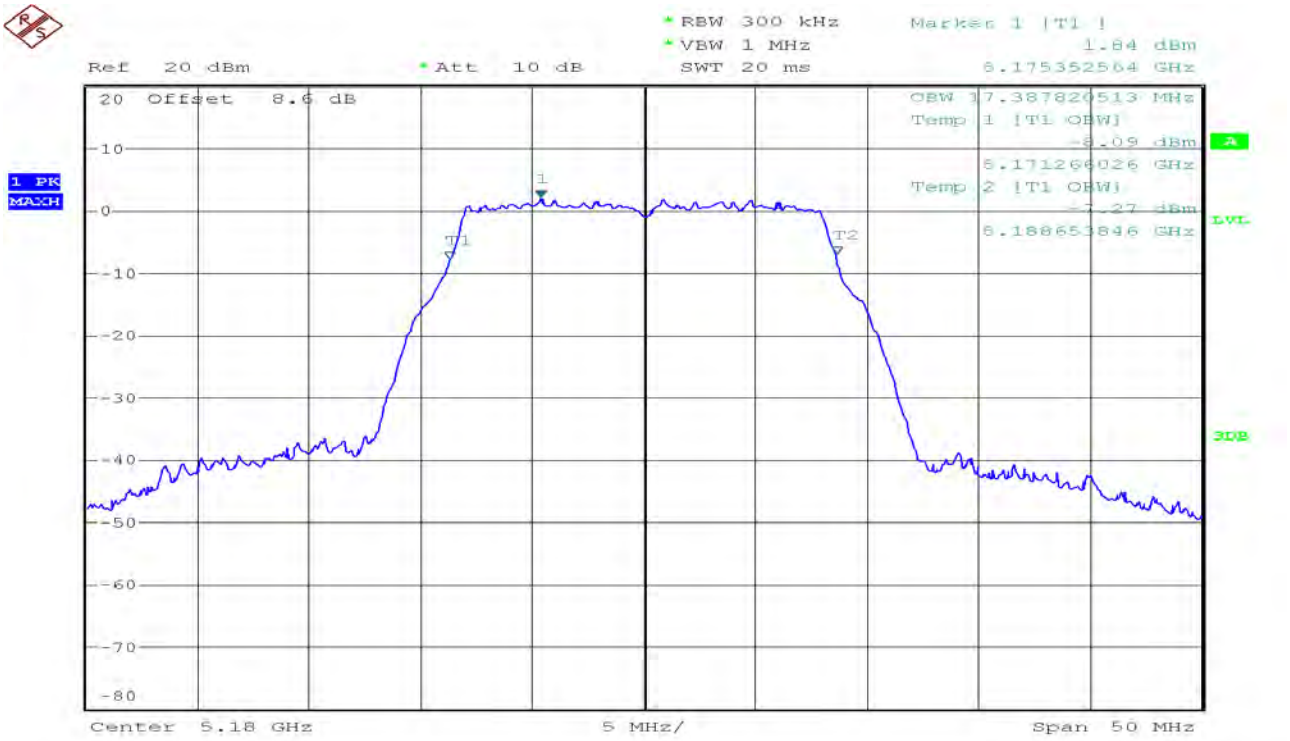
Test mode: IEEE 802.11ac VHT80MHz mode/ Chain 1

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Mid	5210	76.154

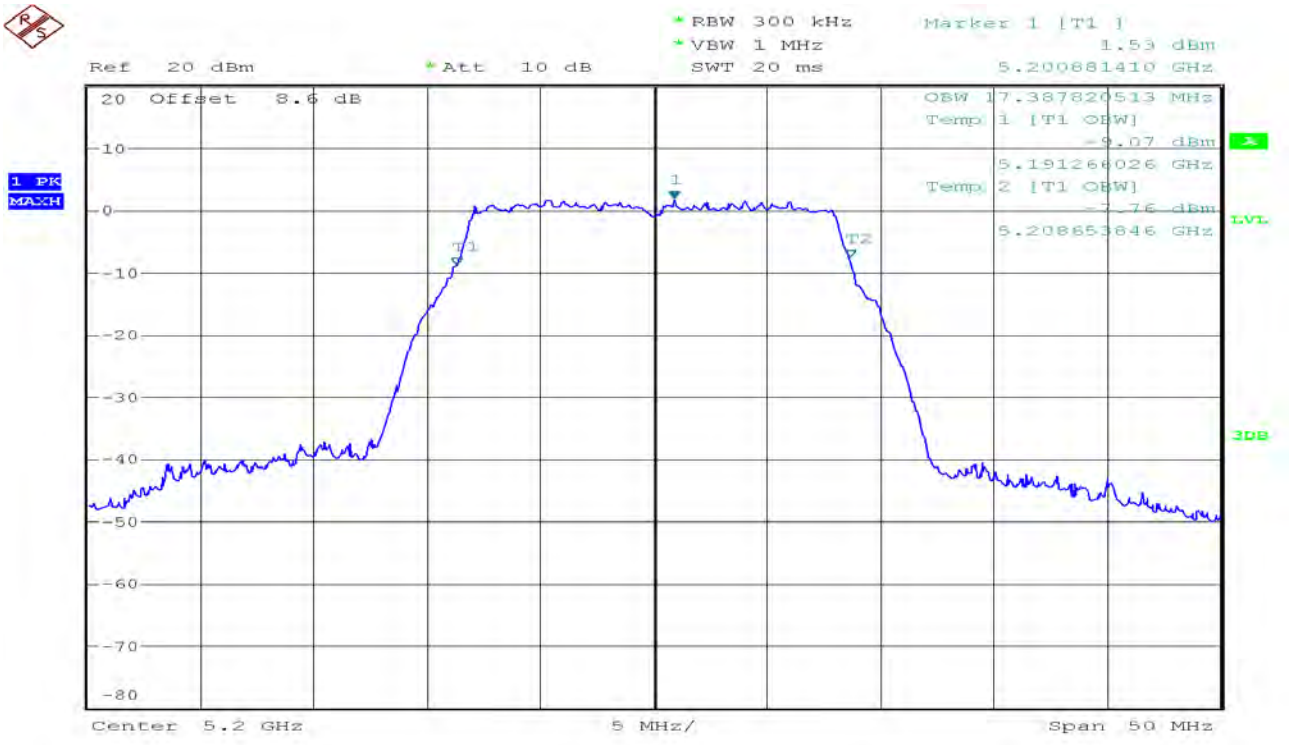
Test Plot

IEEE 802.11a mode/Chain 0:

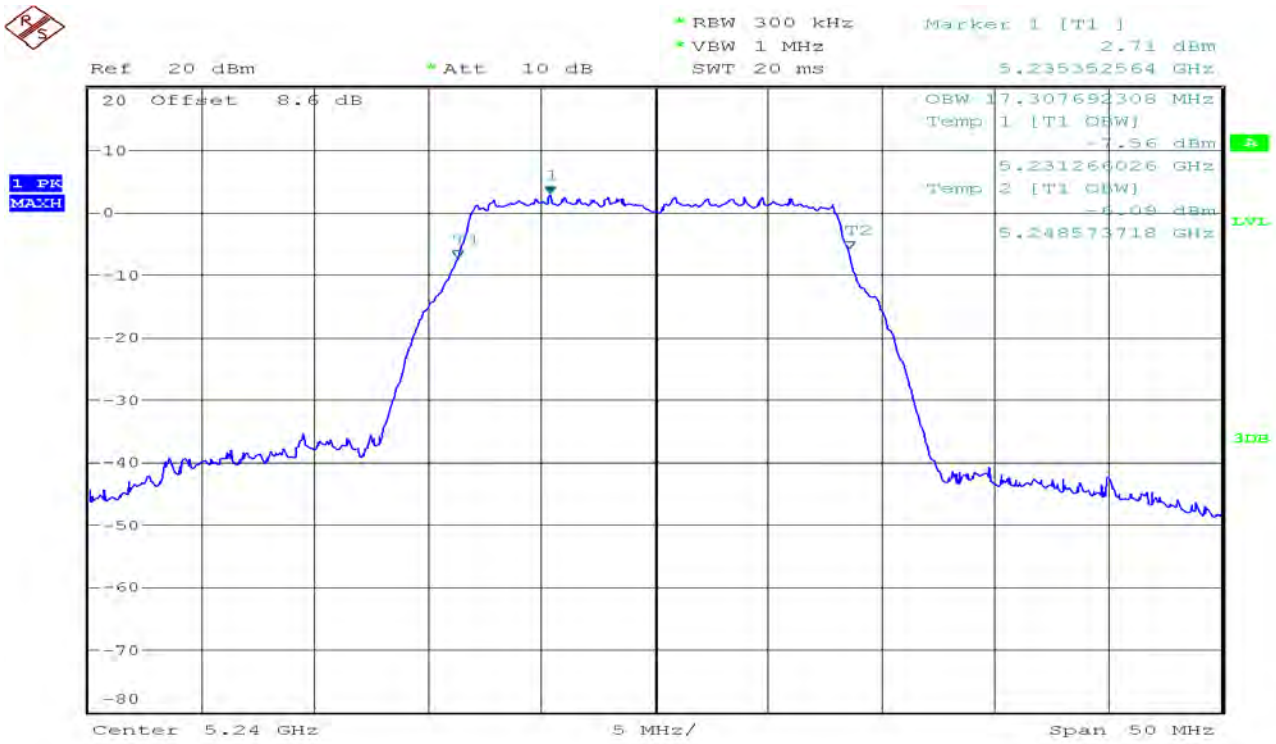
CH Low



CH Mid

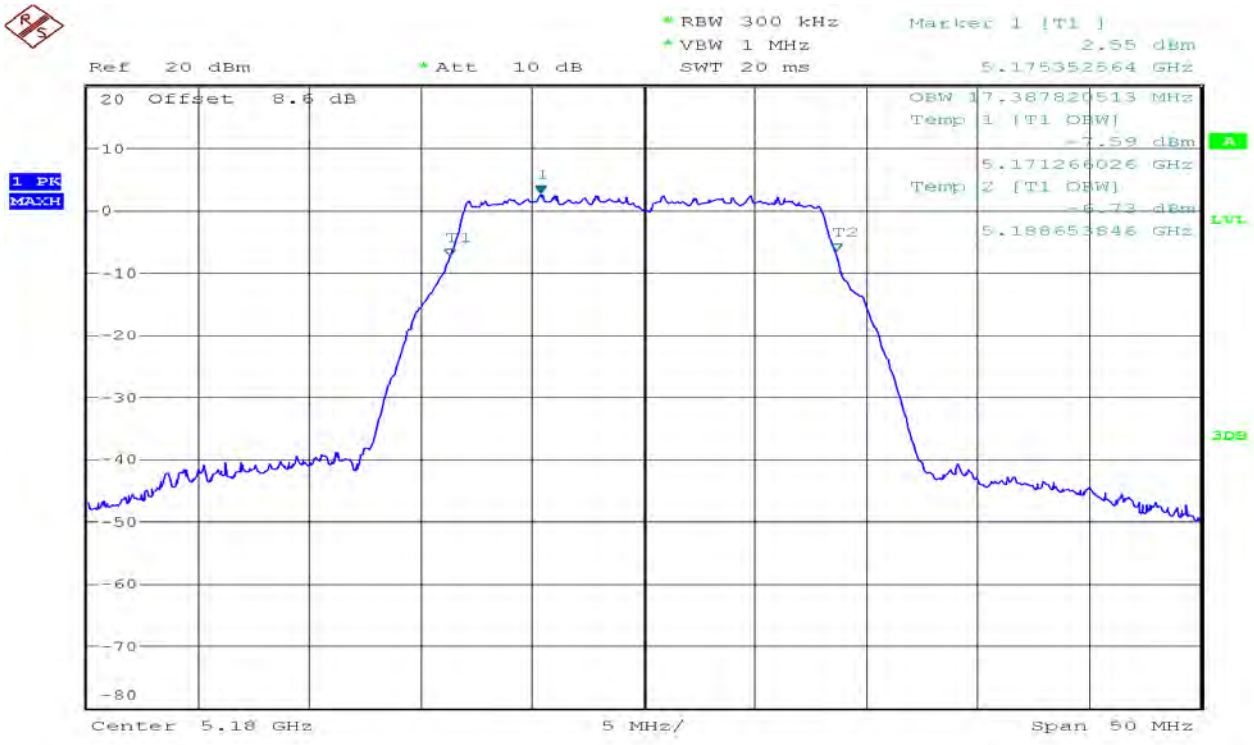


CH High

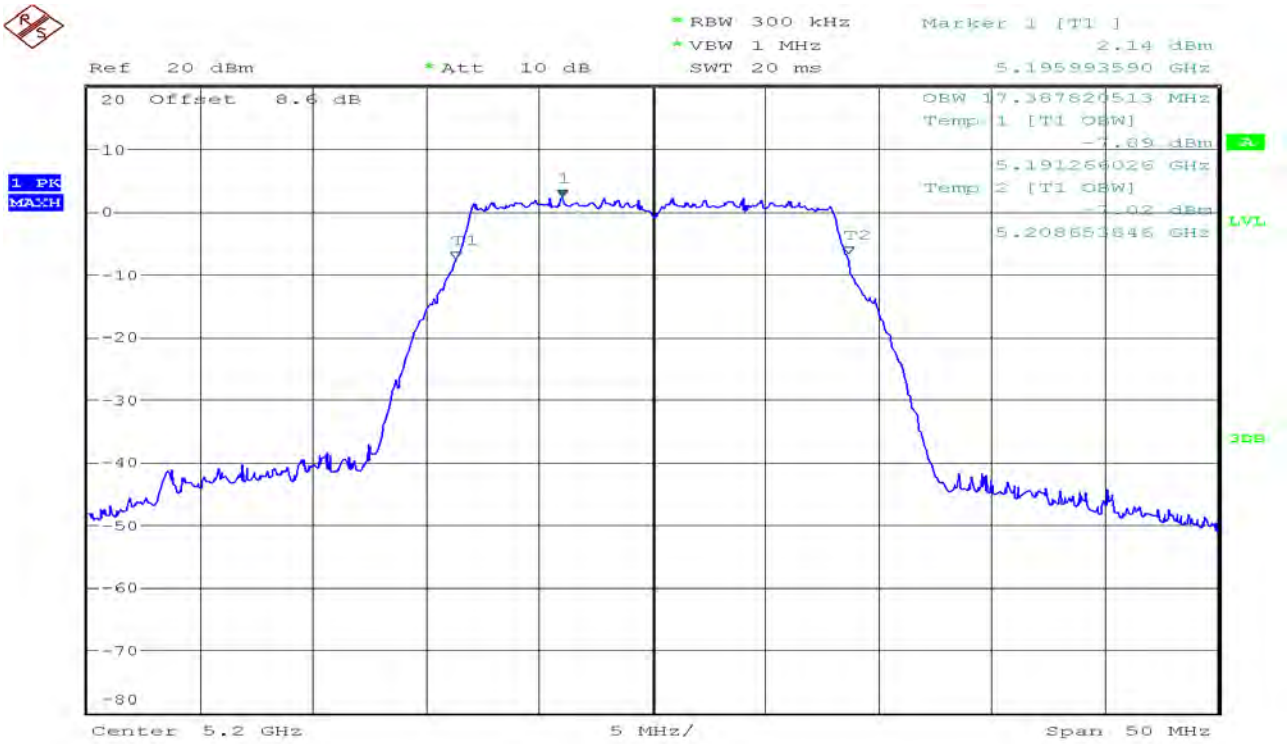


IEEE 802.11a mode/Chain 1:

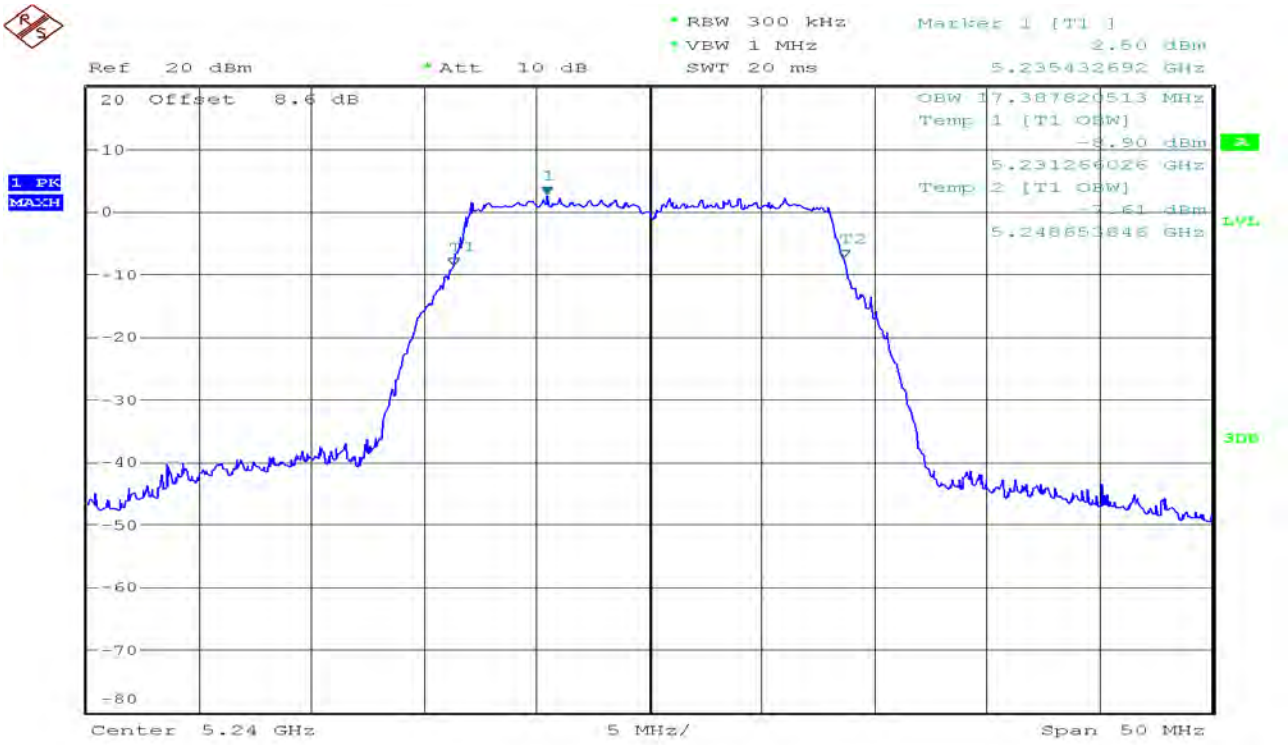
CH Low



CH Mid

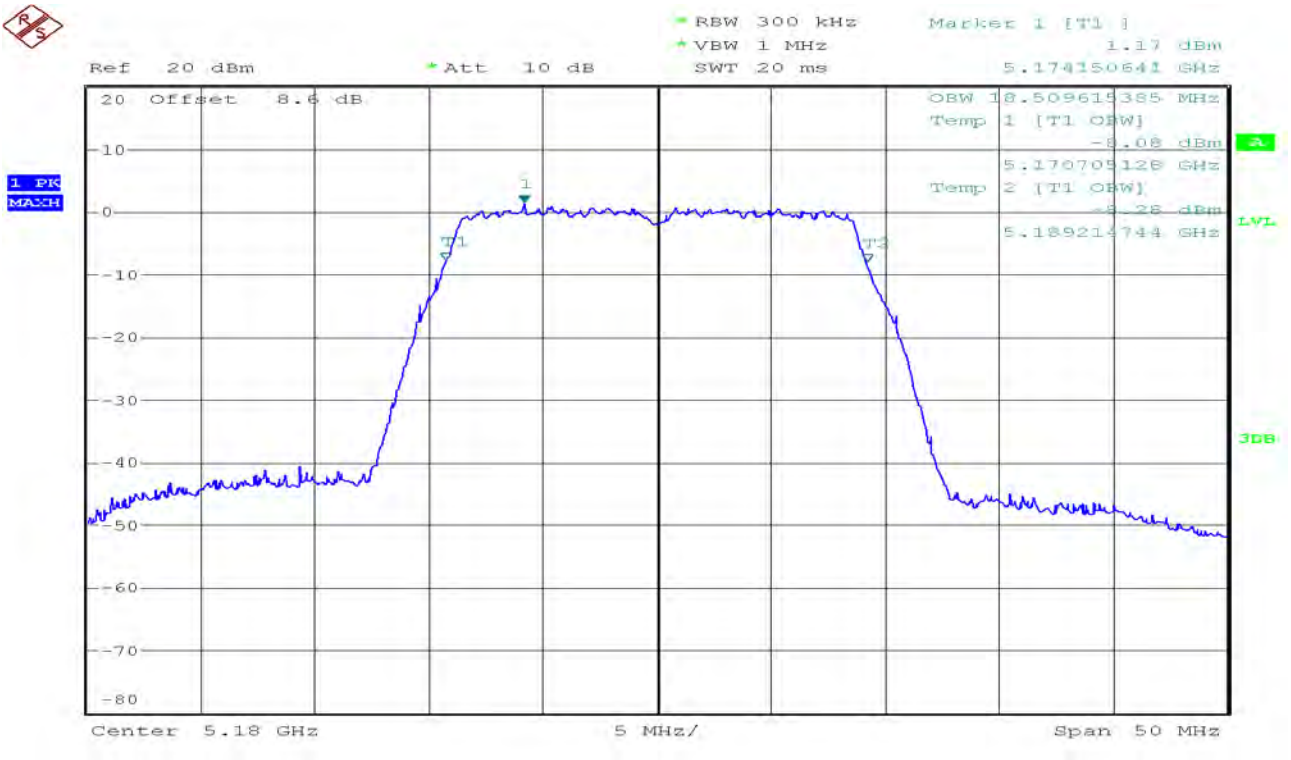


CH High

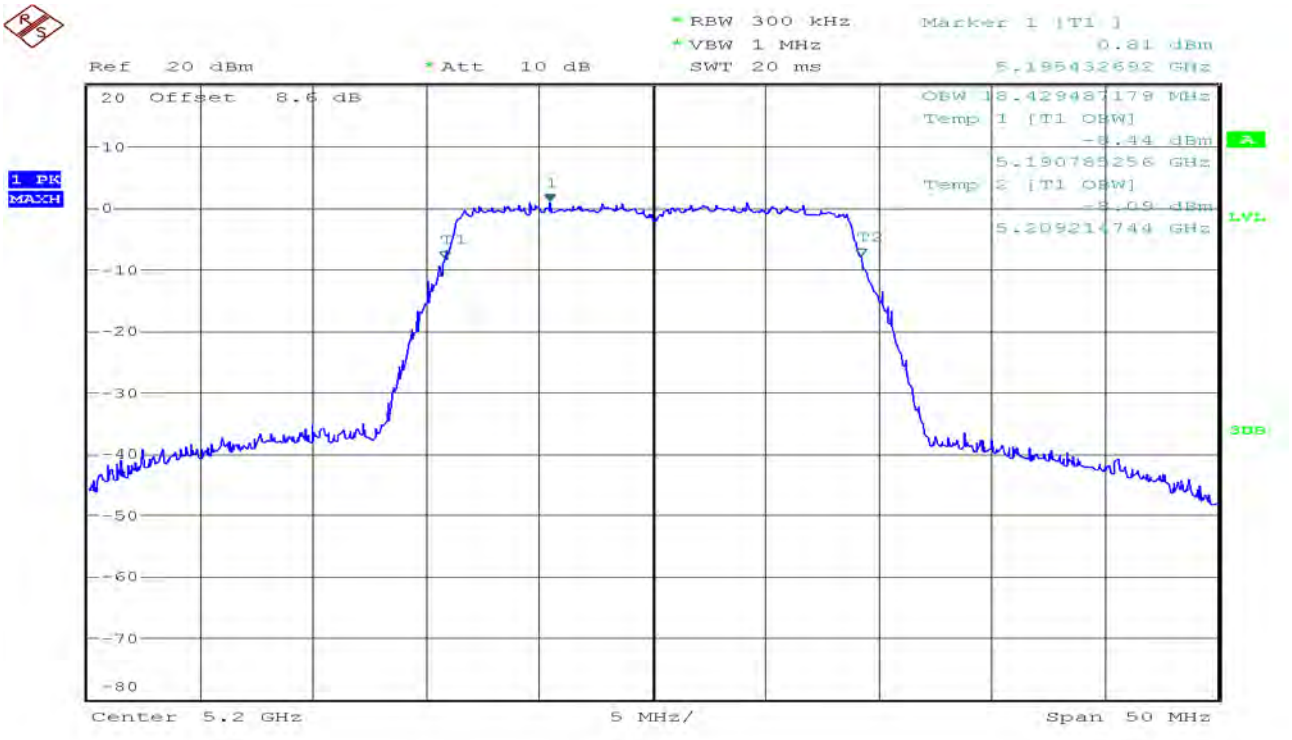


IEEE 802.11n HT20 mode/Chain 0:

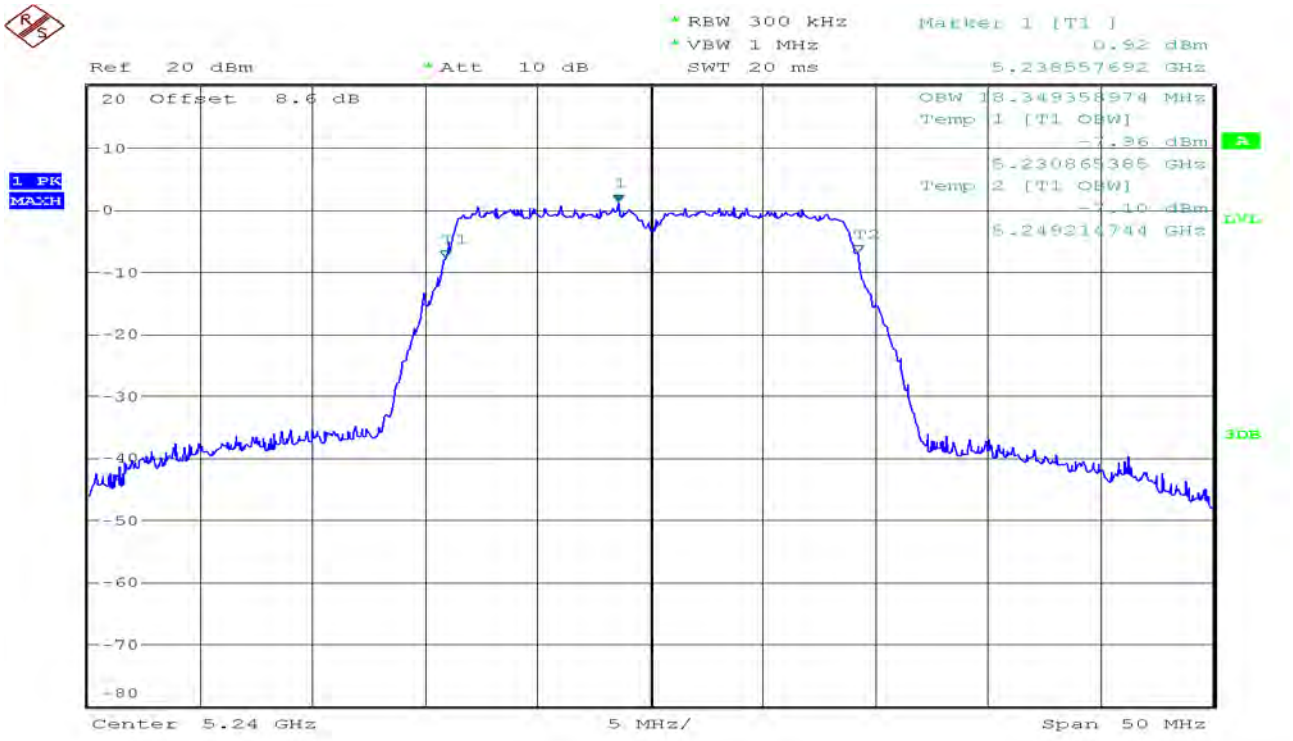
CH Low



CH Mid

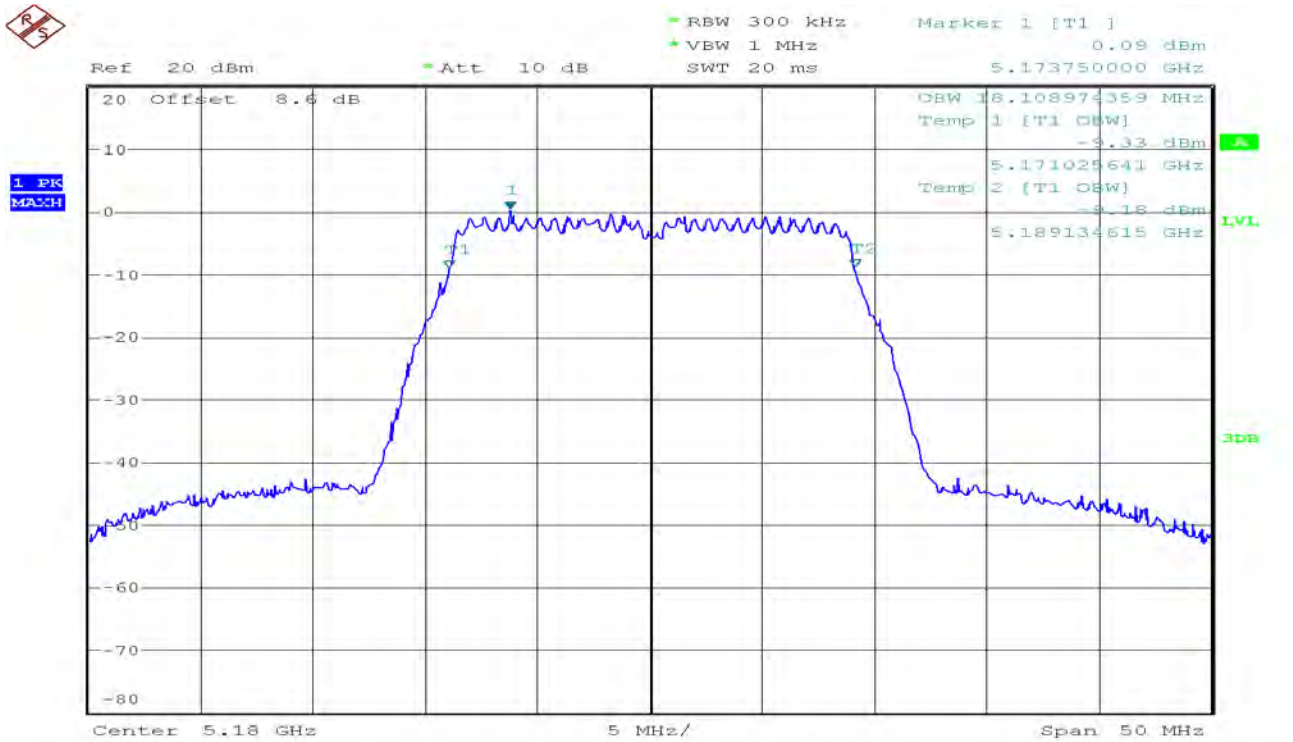


CH High

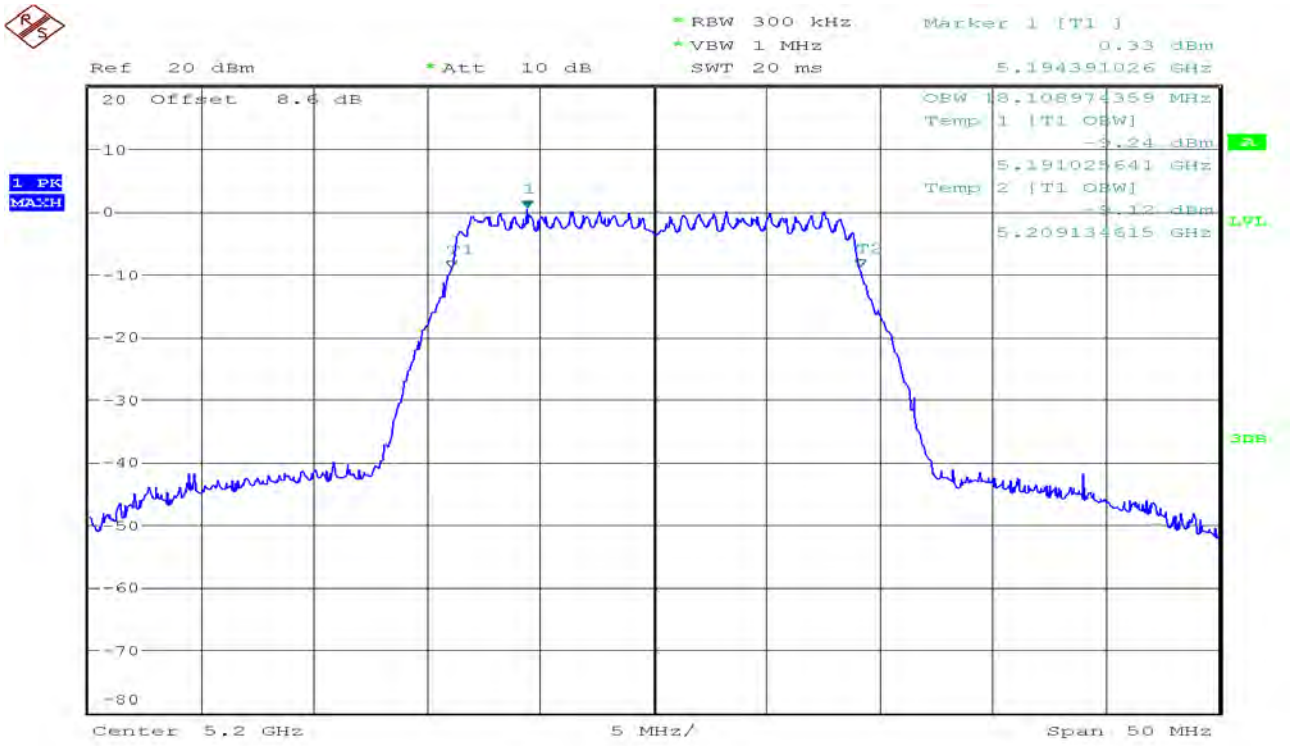


IEEE 802.11n HT20 mode/Chain 1:

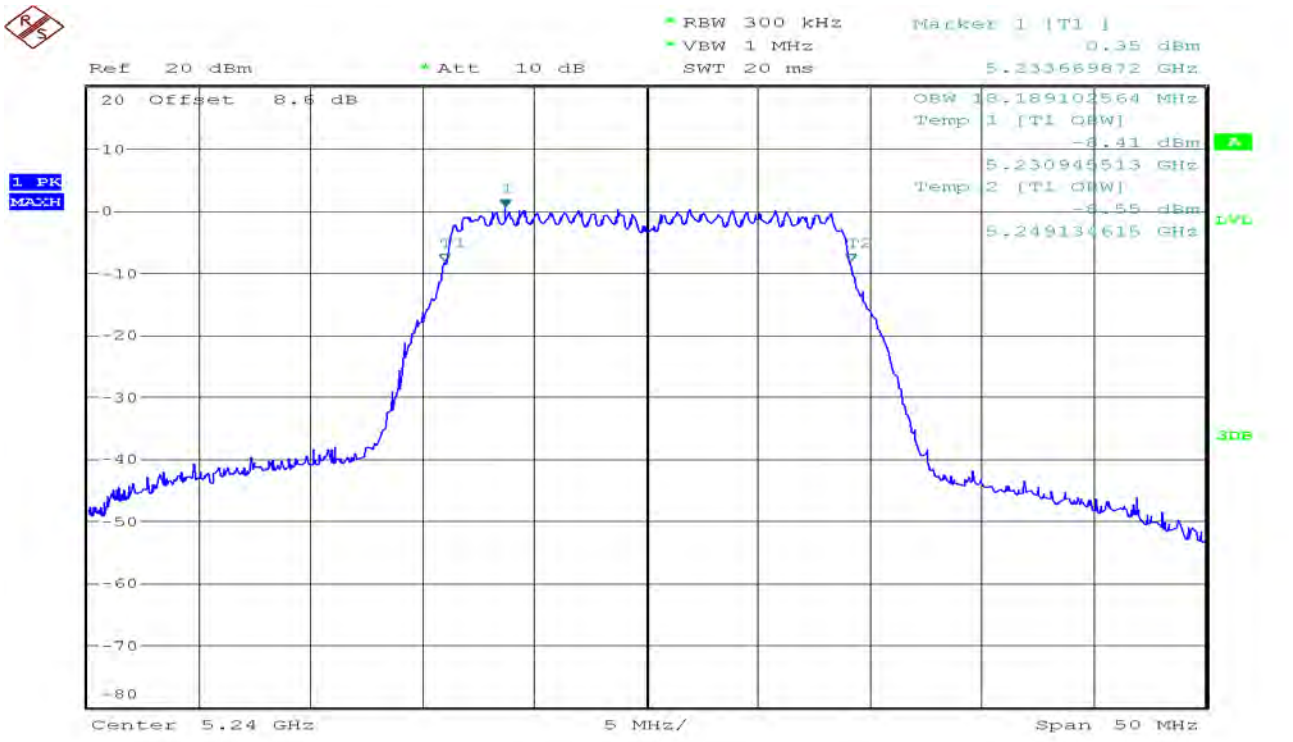
CH Low



CH Mid

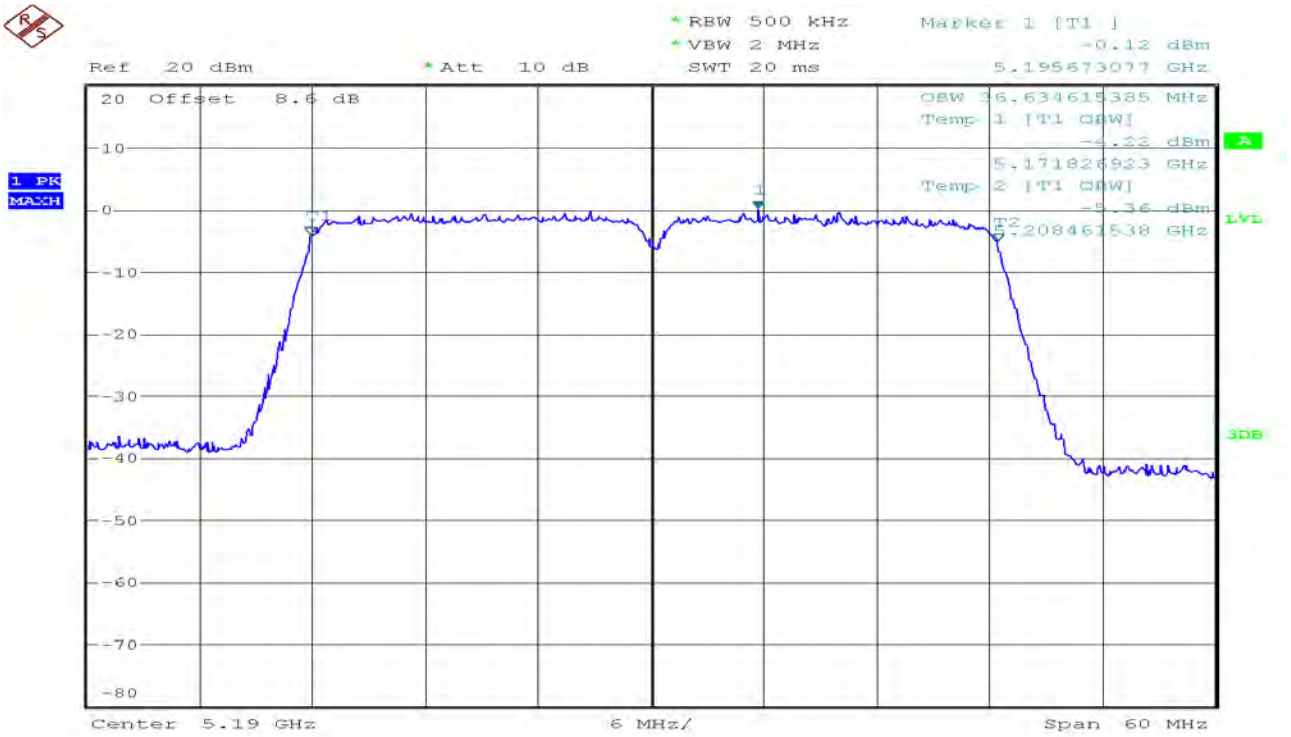


CH High

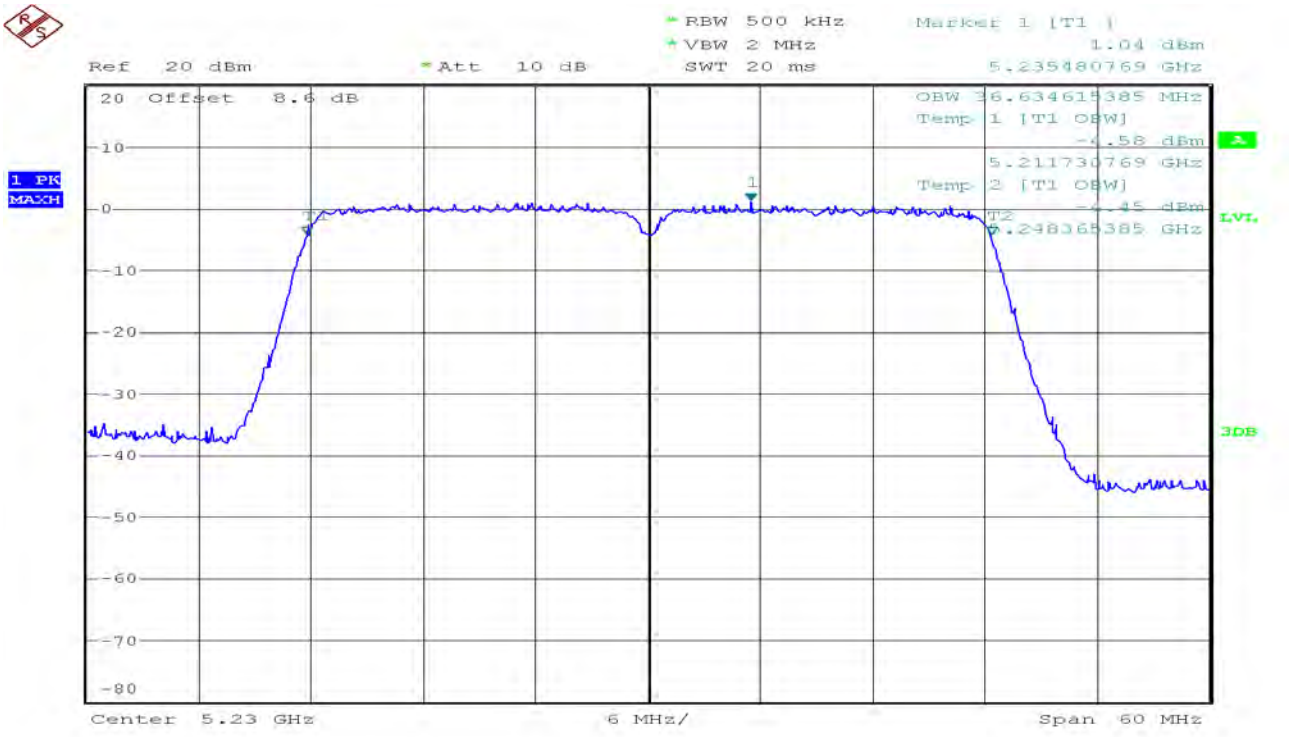


IEEE 802.11n HT40 mode/Chain 0:

CH Low

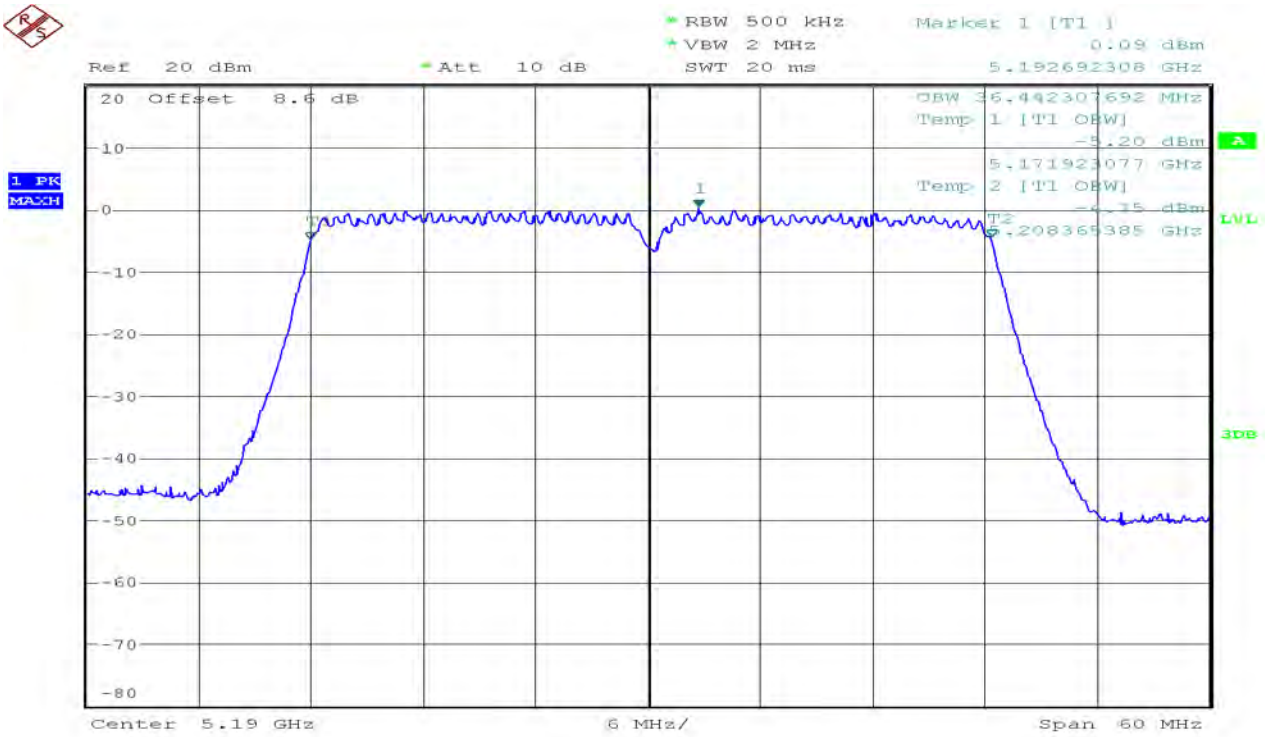


CH High

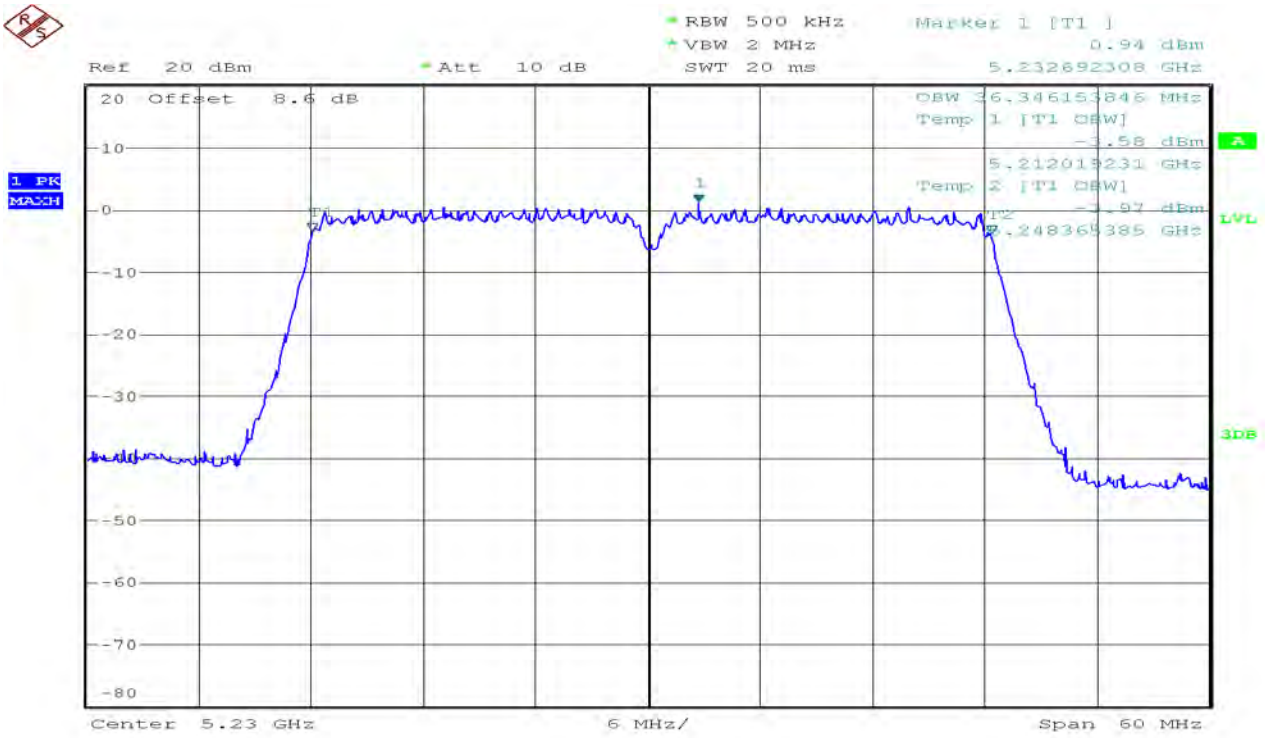


IEEE 802.11n HT40 mode/Chain 1:

CH Low

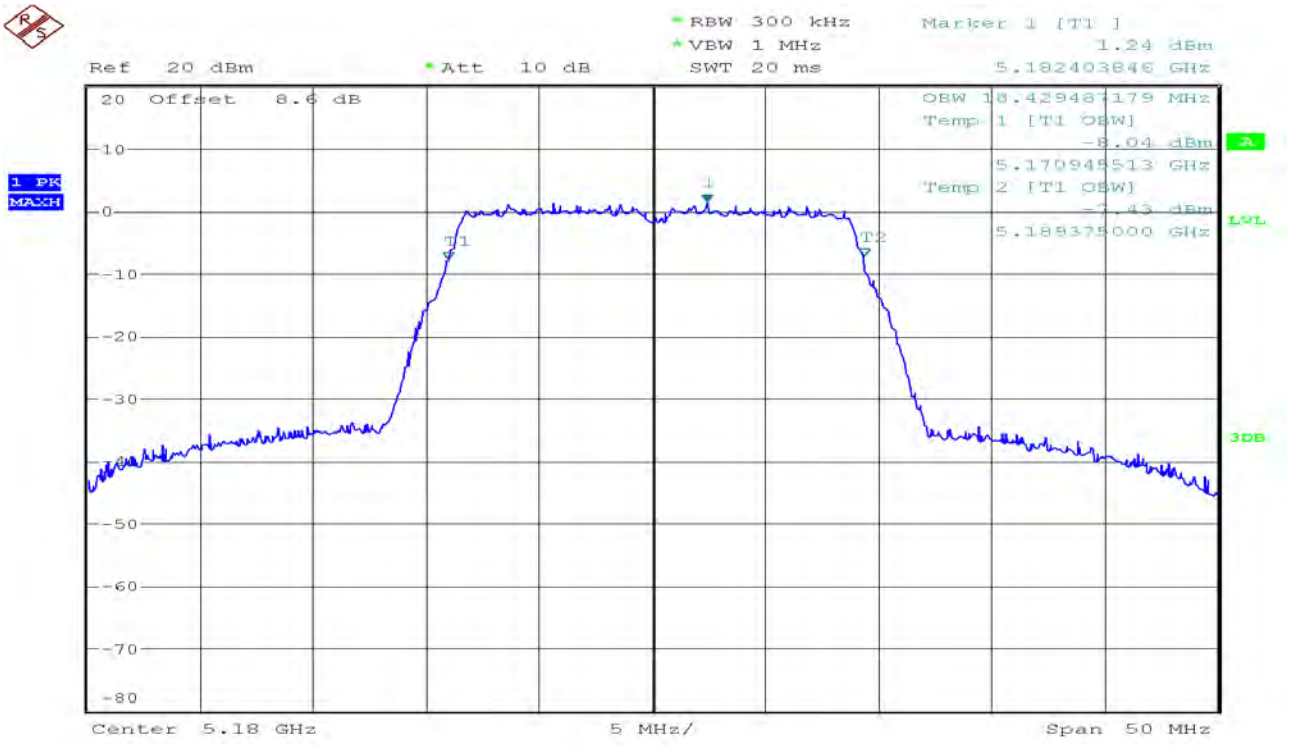


CH High

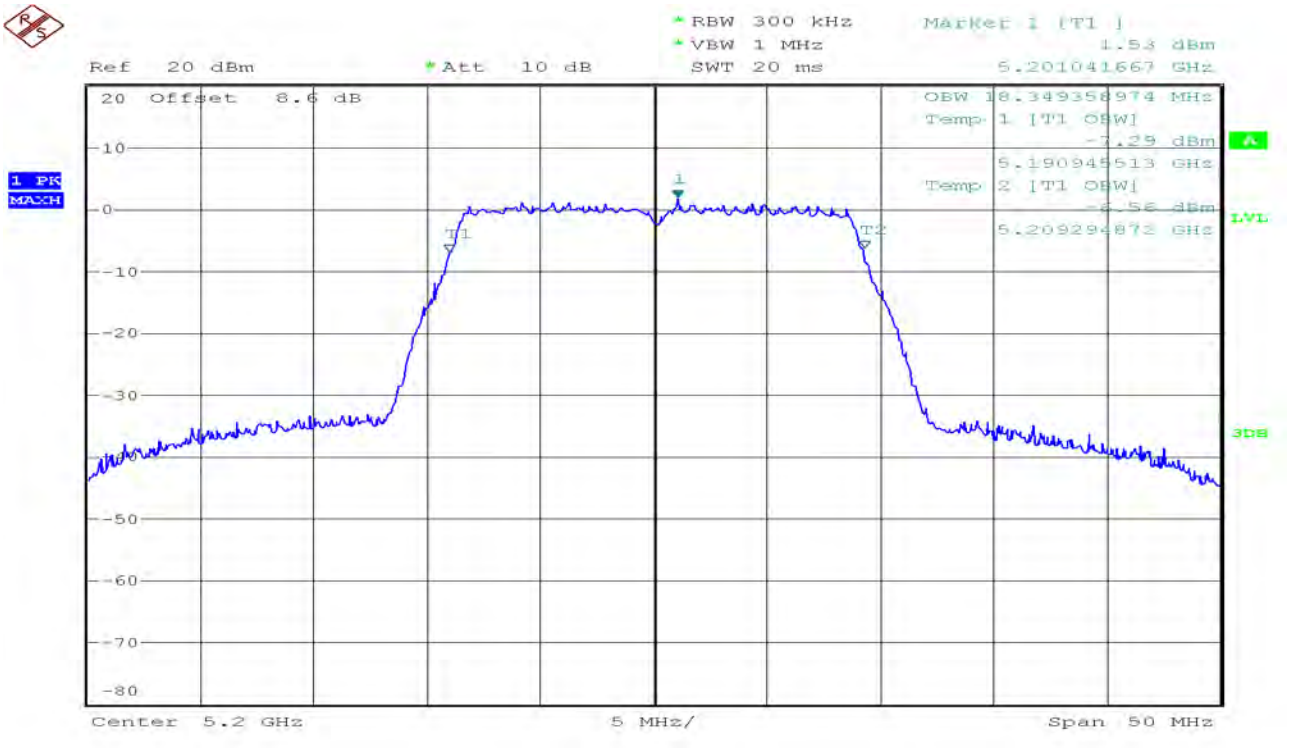


IEEE 802.11ac VHT20 mode/Chain 0:

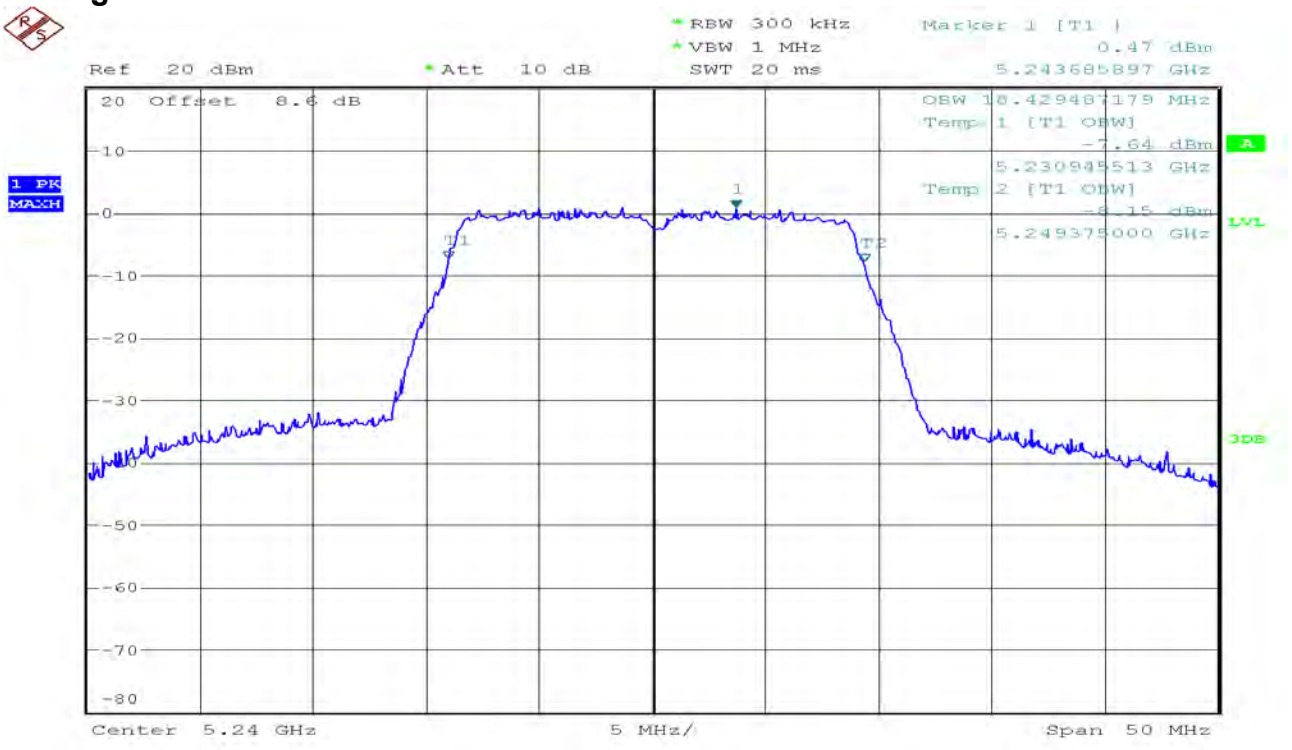
CH Low



CH Mid

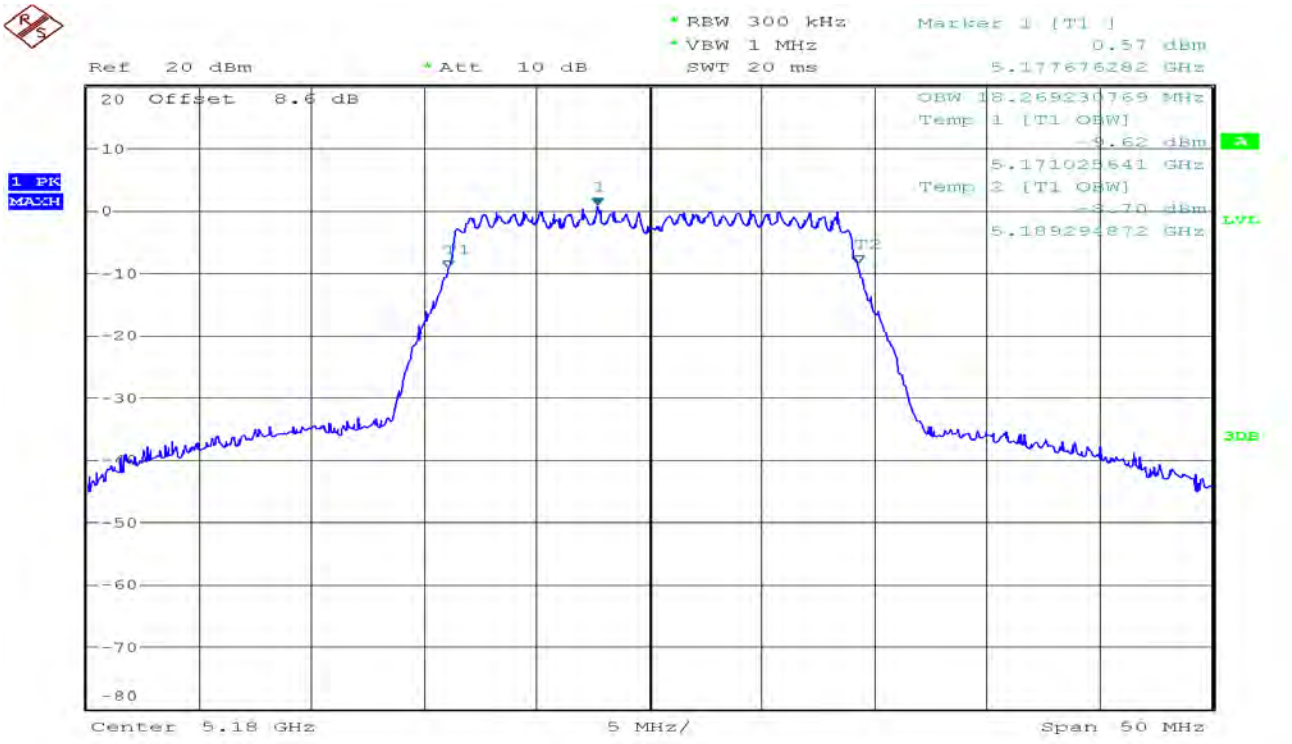


CH High

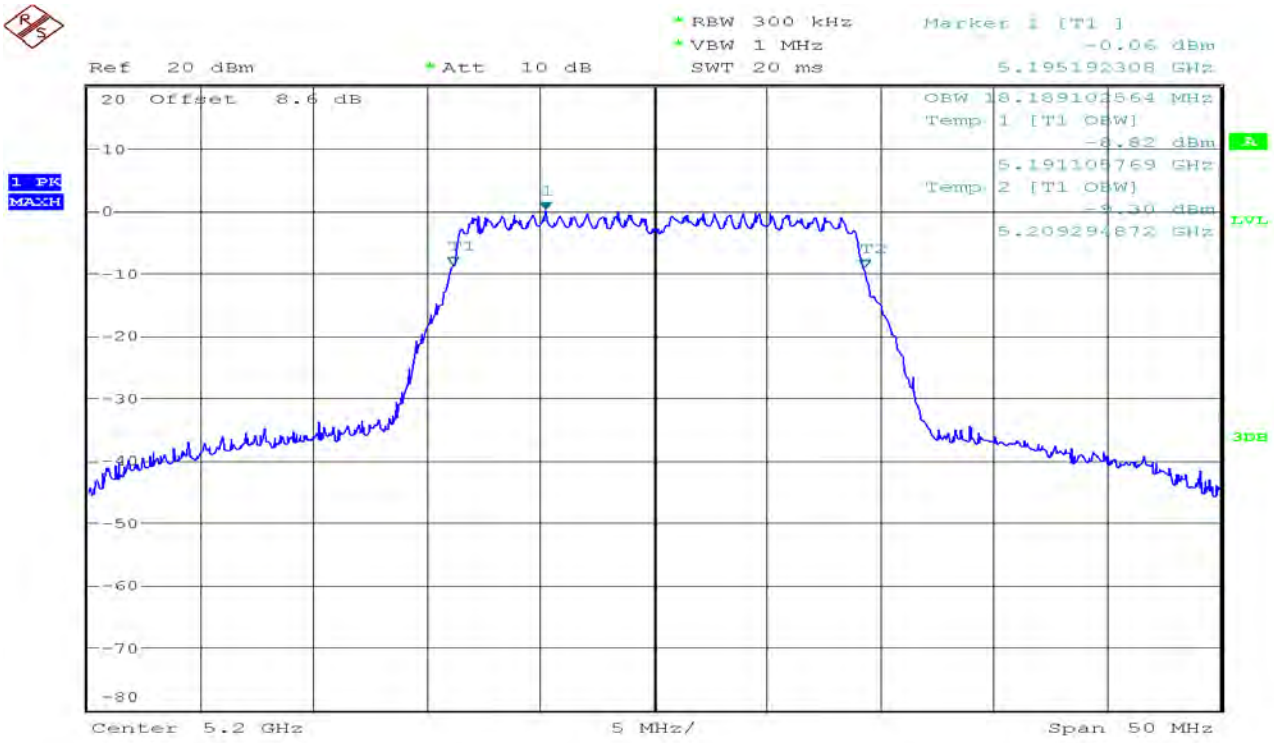


IEEE 802.11ac VHT20 mode/Chain 1:

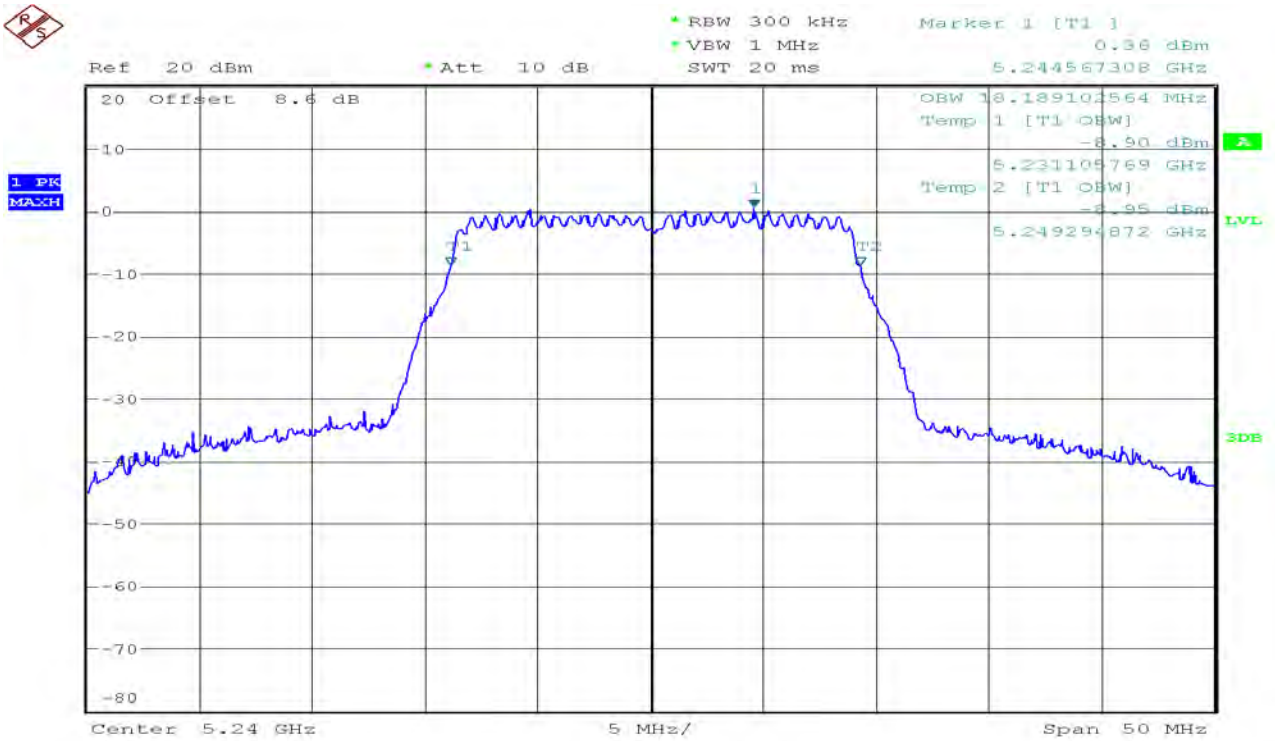
CH Low



CH Mid

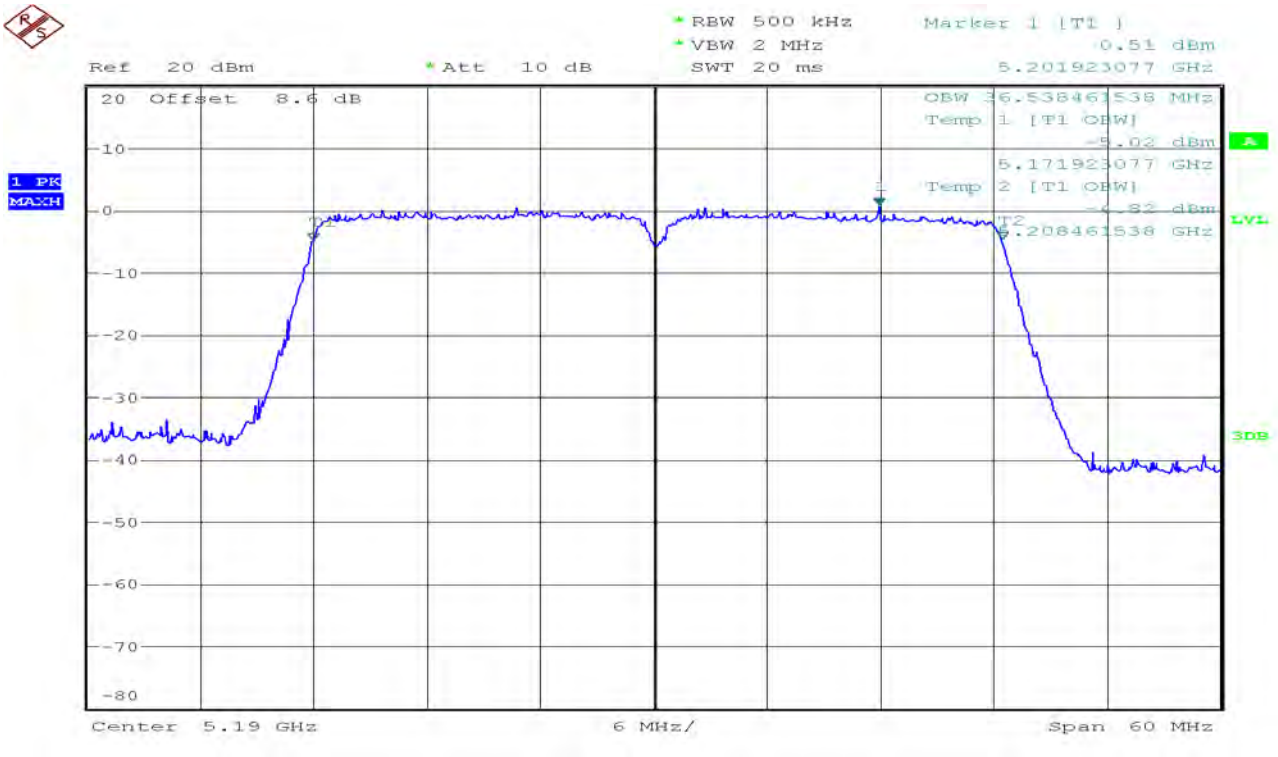


CH High

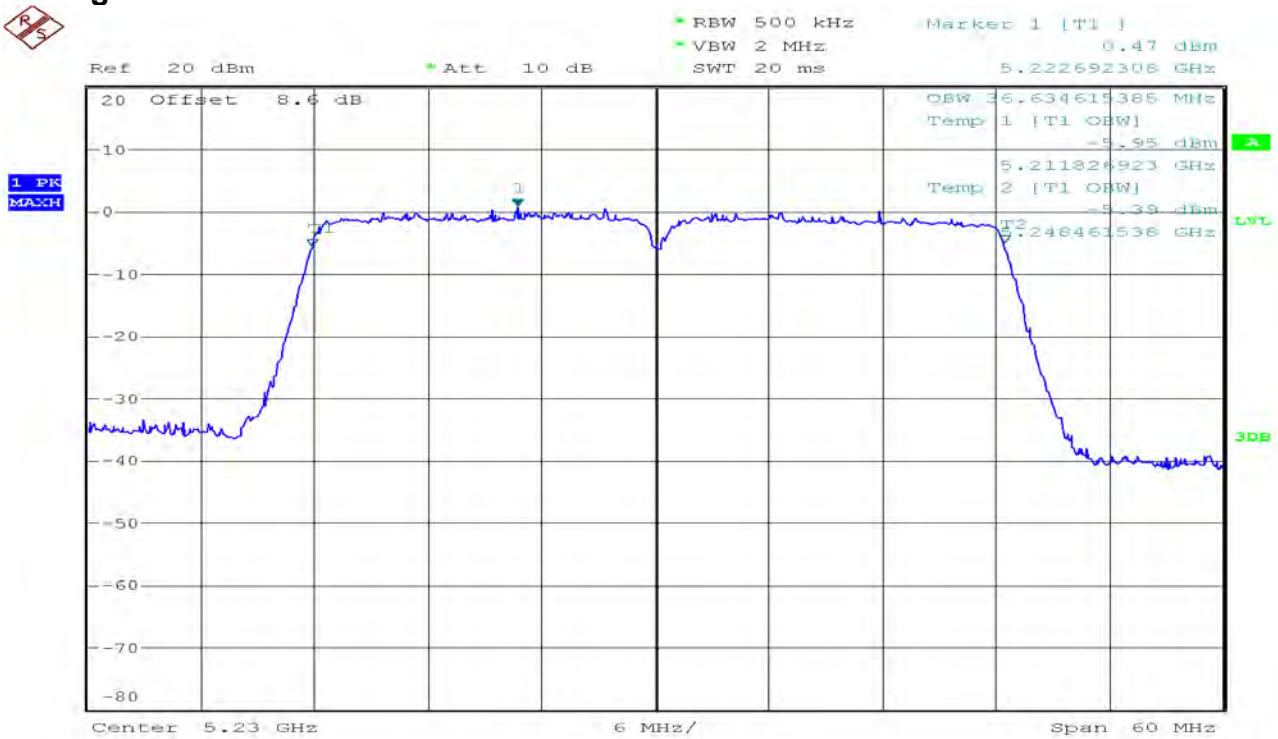


IEEE 802.11ac VHT40 mode/Chain 0:

CH Low

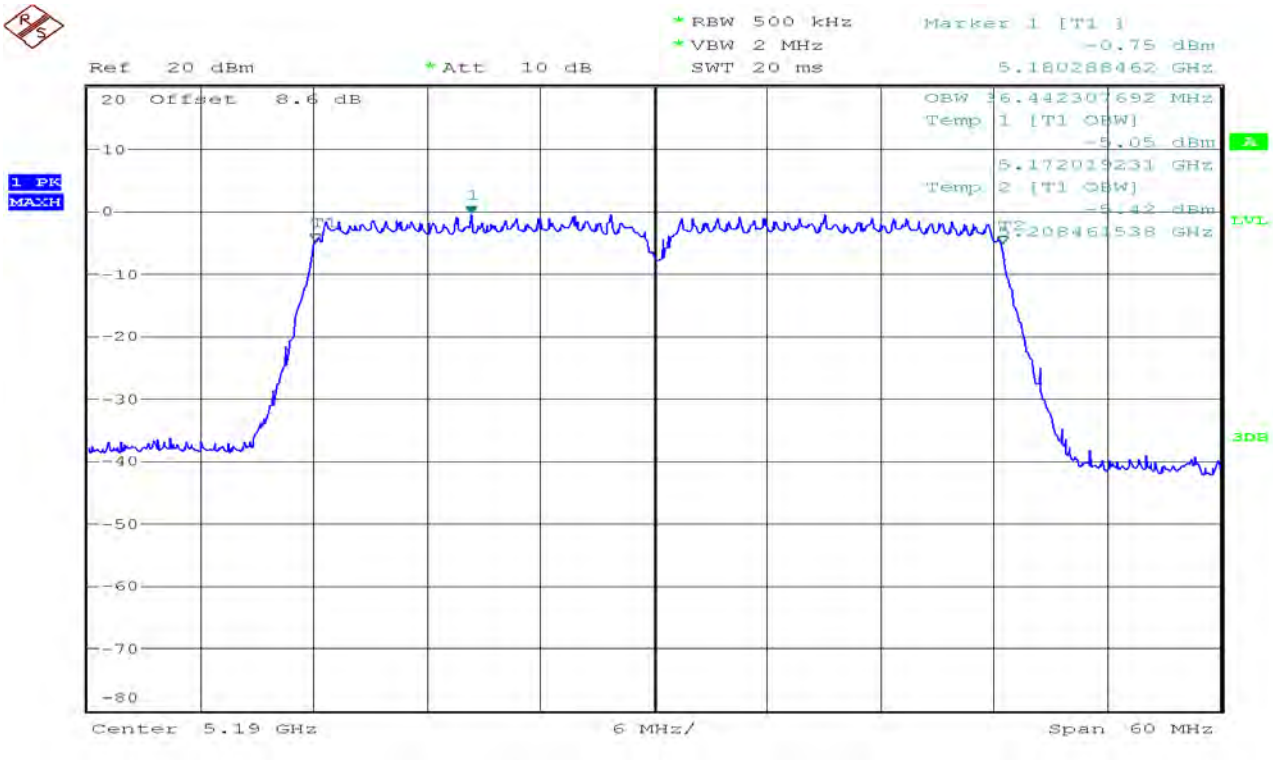


CH High

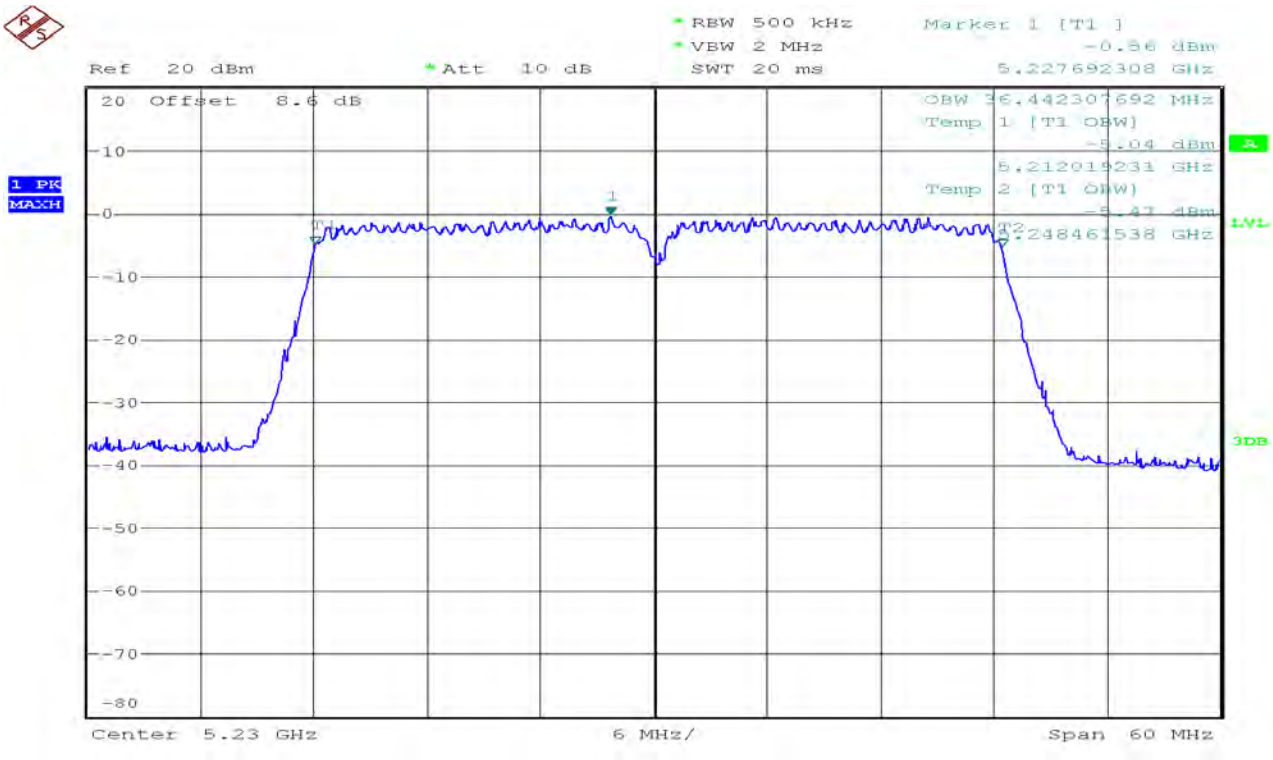


IEEE 802.11ac VHT40 mode/Chain 1:

CH Low

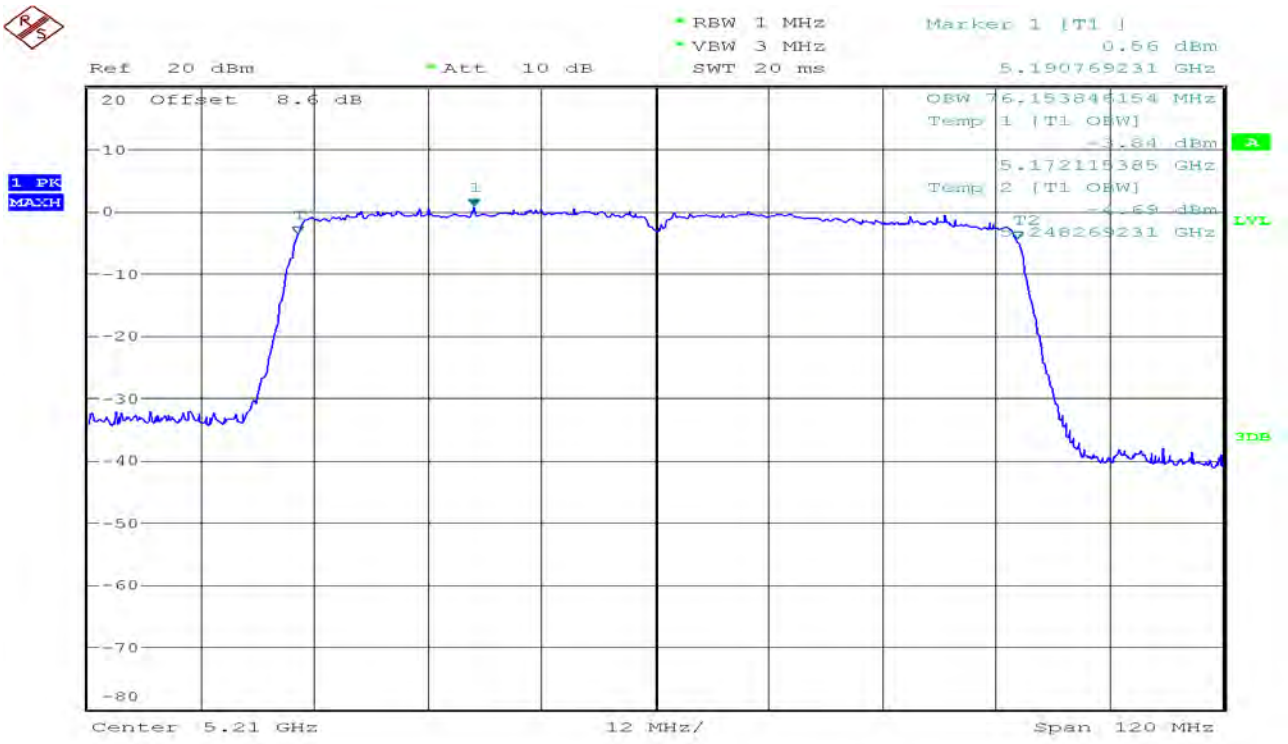


CH High



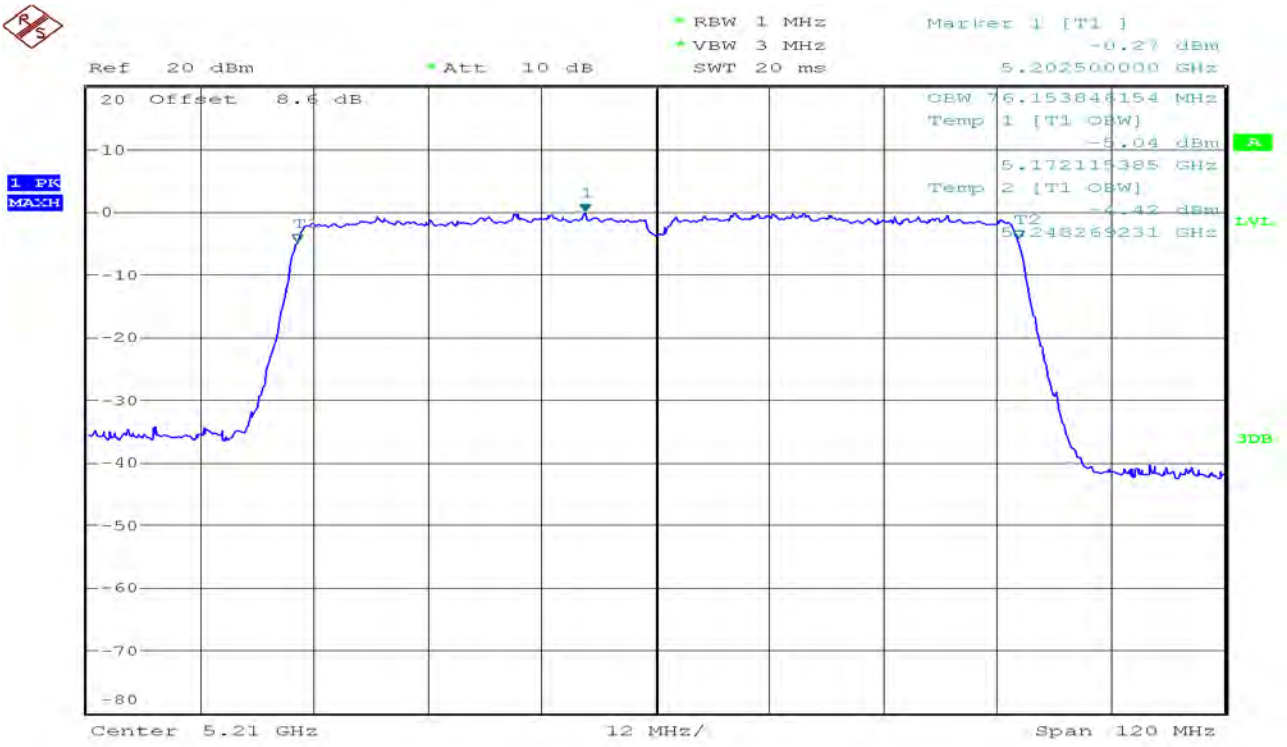
IEEE 802.11ac VHT80 mode/Chain 0:

CH Mid



IEEE 802.11ac VHT80 mode/Chain 1:

CH Mid



7.3 MAXIMUM CONDUCTED OUTPUT POWER

LIMIT

The peak power shall not exceed the limit as follow:

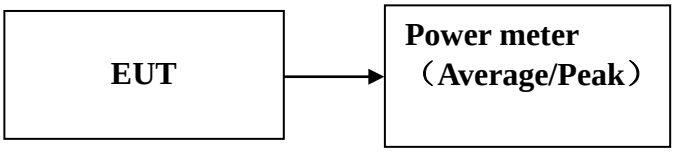
According to §15.407(a),

(iv) For client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi.

If transmitting antennas of directional gain greater than 6dBi are used, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

Directional Gain= G_{ANT} + Array Gain =1.29dBi+0dBi=1.29dBi <6dBi

Test Configuration



The EUT was connected to a spectrum analyzer through a 50Ω RF cable.

TEST PROCEDURE

The testing follows Method PM of FCC KDB 789033 D02 General UNII Test Procedures New Rules v01.

Method PM (Measurement using an RF average power meter):

1. Measurement is performed using a wideband RF power meter.
2. The EUT is configured to transmit continuously with a consistent duty cycle at its maximum power control level.
3. Measure the average power of the transmitter, and the average power is corrected with duty factor, 10 log(1/x), where x is the duty cycle.

TEST RESULTS

No non-compliance noted

TEST RESULTS

No non-compliance noted

Test Data

Test mode: IEEE 802.11a mode

Channel	Frequency (MHz)	Chain 0 Average Output Power (dBm)	Chain 1 Average Output Power (dBm)	Limit (dBm)
Low	5180	11.06	11.31	24.00
Mid	5200	10.80	11.17	24.00
High	5240	11.14	10.95	24.00

Test mode: IEEE 802.11n HT20MHz mode

Channel	Frequency (MHz)	Chain 0 Average Output Power (dBm)	Chain 1 Average Output Power (dBm)	Total Maximum Conducted Average Output Power (dBm)	Limit (dBm)
Low	5180	8.67	6.63	10.78	24.00
Mid	5200	9.25	7.50	11.47	24.00
High	5240	8.62	7.24	10.99	24.00

Test mode: IEEE 802.11n HT40MHz mode

Channel	Frequency (MHz)	Chain 0 Average Output Power (dBm)	Chain 1 Average Output Power (dBm)	Total Maximum Conducted Average Output Power (dBm)	Limit (dBm)
Low	5190	8.40	6.64	10.62	24.00
High	5230	8.70	7.72	11.25	24.00

Test mode: IEEE 802.11ac VHT20MHz mode

Channel	Frequency (MHz)	Chain 0 Average Output Power (dBm)	Chain 1 Average Output Power (dBm)	Total Maximum Conducted Average Output Power (dBm)	Limit (dBm)
Low	5180	8.45	7.25	10.90	24.00
Mid	5200	8.95	7.52	11.30	24.00
High	5240	8.59	7.34	11.02	24.00

Test mode: IEEE 802.11ac VHT40MHz mode

Channel	Frequency (MHz)	Chain 0 Average Output Power (dBm)	Chain 1 Average Output Power (dBm)	Total Maximum Conducted Average Output Power (dBm)	Limit (dBm)
Low	5190	8.22	6.18	10.33	24.00
High	5230	8.20	6.31	10.37	24.00

Test mode: IEEE 802.11ac VHT80MHz mode

Channel	Frequency (MHz)	Chain 0 Average Output Power (dBm)	Chain 1 Average Output Power (dBm)	Total Maximum Conducted Average Output Power (dBm)	Limit (dBm)
Mid	5210	8.72	7.26	11.06	24.00

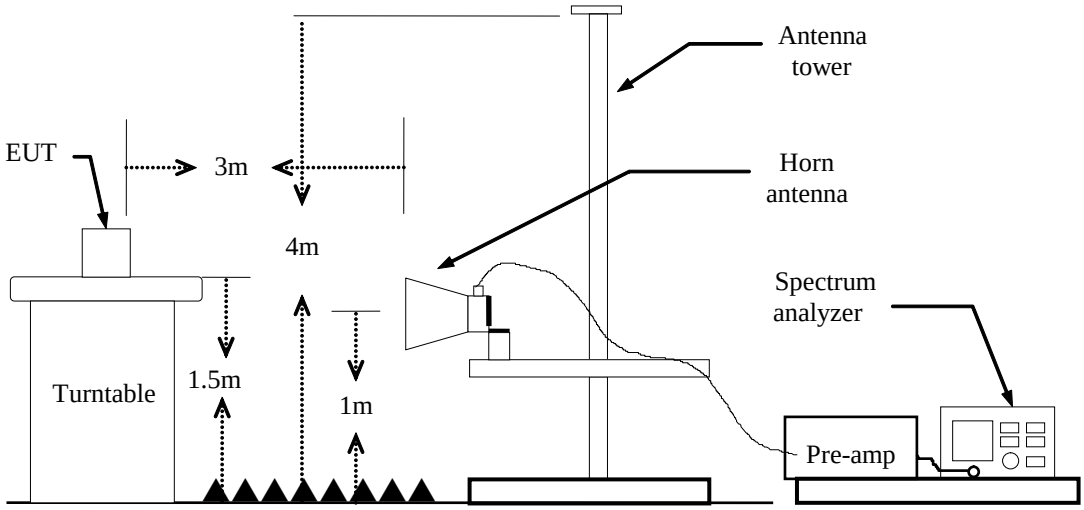
***Remark**:* 1.Total Output Power (dBm) = 10*LOG(10^(Chain 0 Output Power / 10)+10^(Chain 1 *Output Power /10))*
2.Duty factor has been offseted with cableloss

7.4 BAND EDGES MEASUREMENT

LIMIT

According to §15.407(b),
(1) The provisions of Section 15.205 of this part apply to intentional radiators operating under this section.
(2) When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the upper and lower frequency block edges as the design of the equipment permits.

Test Configuration



TEST PROCEDURE

1. The EUT is placed on a turntable, which is 1.5m above the ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission.
4. Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of the emission:
   (a) PEAK: RBW=VBW=1MHz / Sweep=AUTO
   (b) AVERAGE: RBW=1MHz / Sweep=AUTO

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

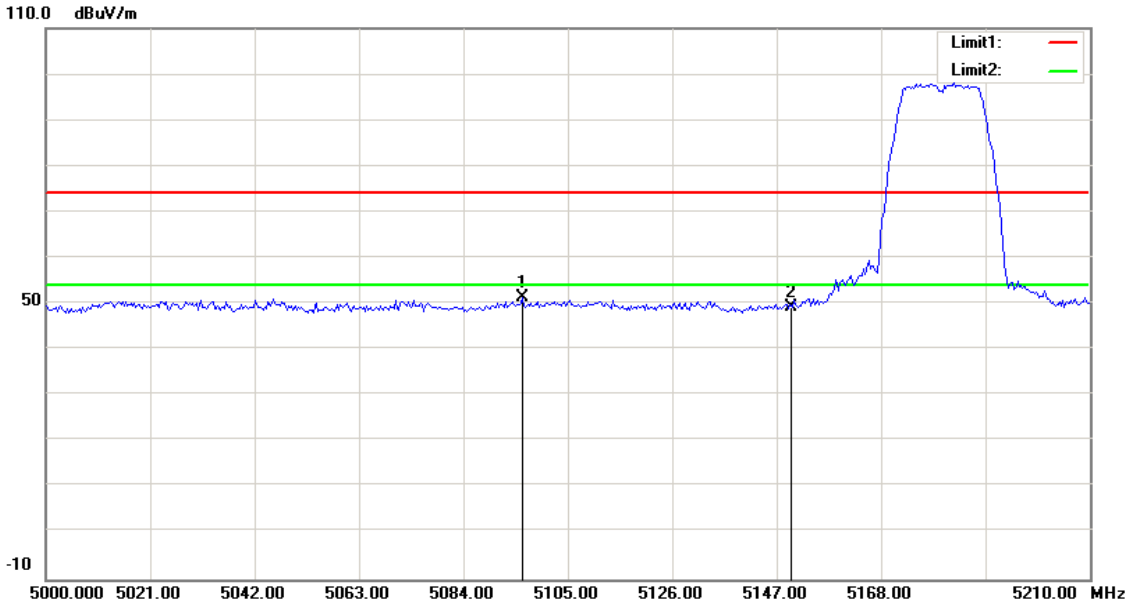
   VBW≧1/T,when duty cycle is less than 98 percent,where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximun power control level for the tested mode of operation.

TEST RESULTS

Refer to attach spectrum analyzer data chart.

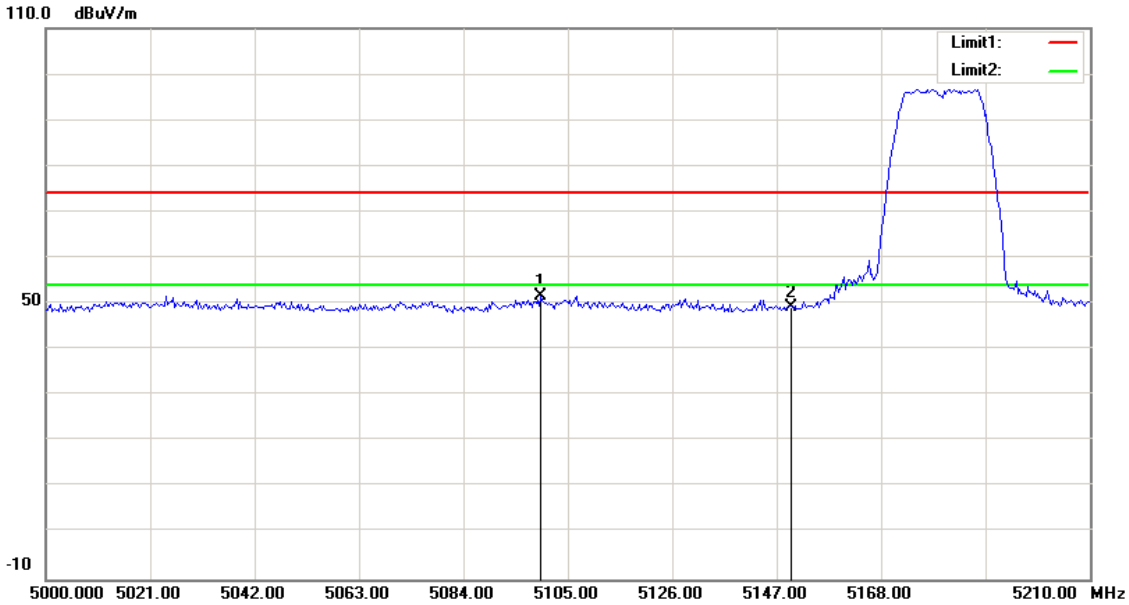
Band Edges (IEEE 802.11a mode)

Polarity: Vertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	5095.913	50.89	0.34	51.23	74.00	-22.77	100	208	peak
2	5150.000	49.03	0.32	49.35	74.00	-24.65	100	268	peak

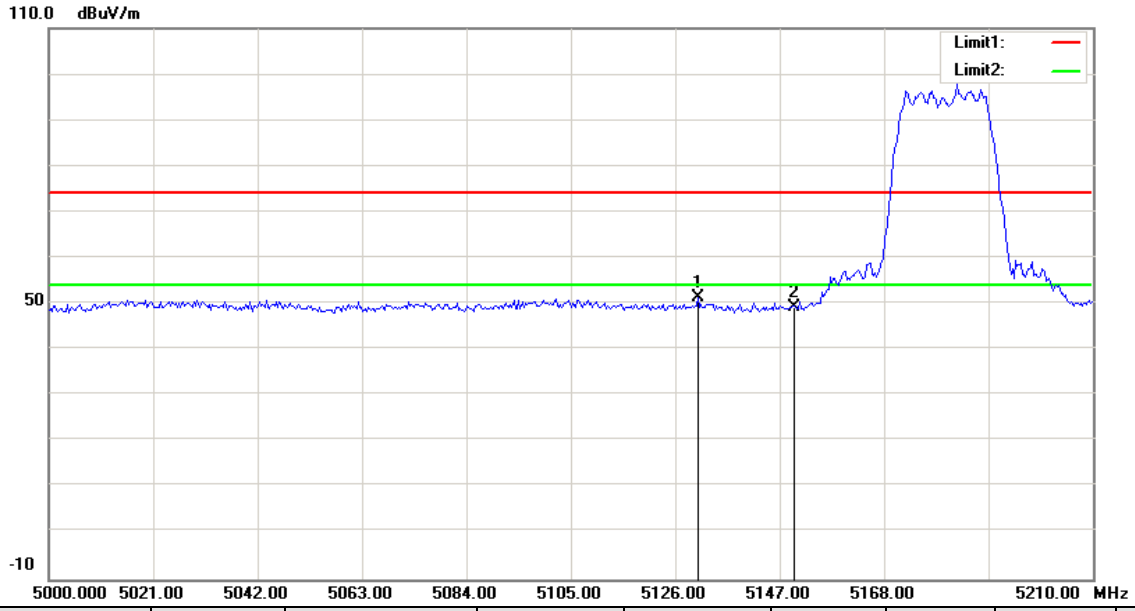
Polarity: Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	5099.615	51.44	0.34	51.78	74.00	-22.22	100	171	peak
2	5150.000	49.03	0.32	49.35	74.00	-24.65	100	252	peak

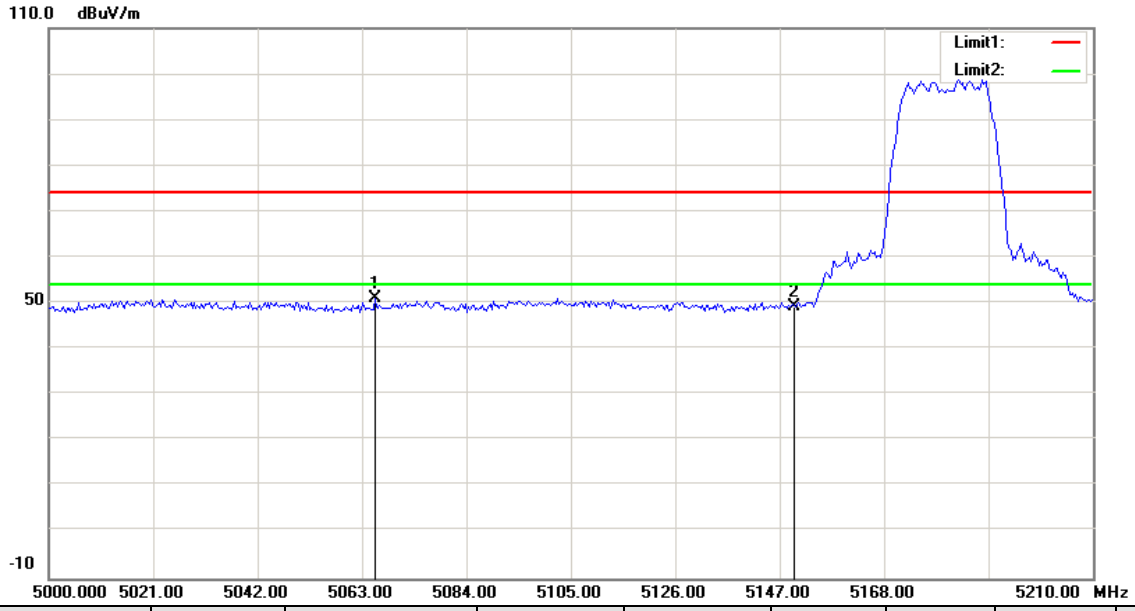
Band Edges (IEEE 802.11n HT20 mode)

Polarity: Vertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	5130.577	51.02	0.33	51.35	74.00	-22.65	100	141	peak
2	5150.000	48.82	0.32	49.14	74.00	-24.86	100	114	peak

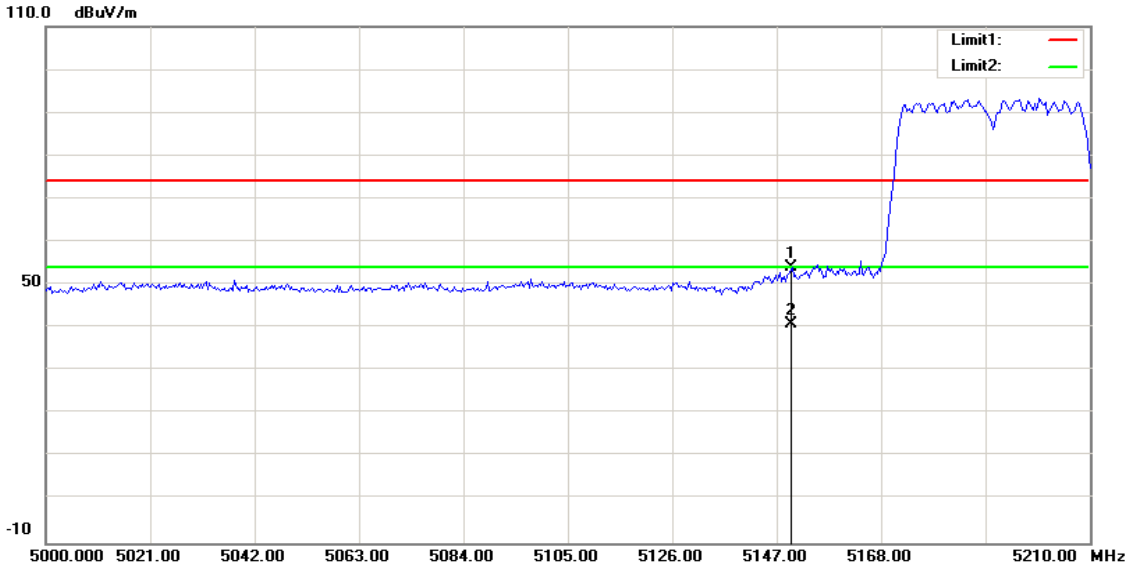
Polarity: Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	5065.625	50.72	0.35	51.07	74.00	-22.93	100	27	peak
2	5150.000	49.00	0.32	49.32	74.00	-24.68	100	105	peak

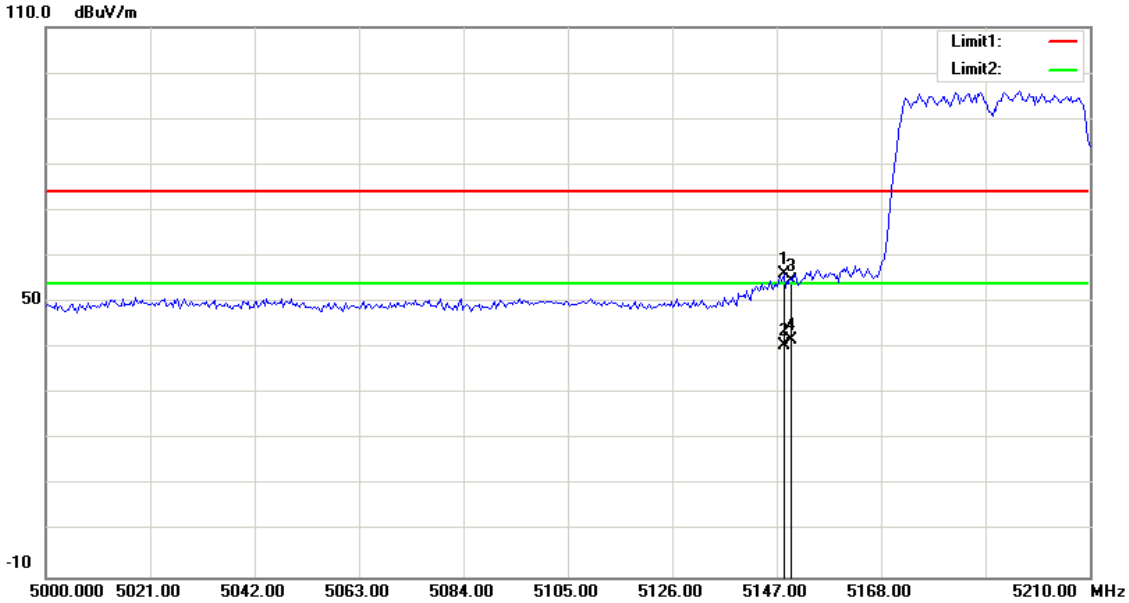
Band Edges (IEEE 802.11n HT40 mode)

Polarity: Vertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	5150.000	53.87	0.32	54.19	74.00	-19.81	100	281	peak
2	5150.000	40.66	0.32	40.98	54.00	-13.02	100	274	AVG

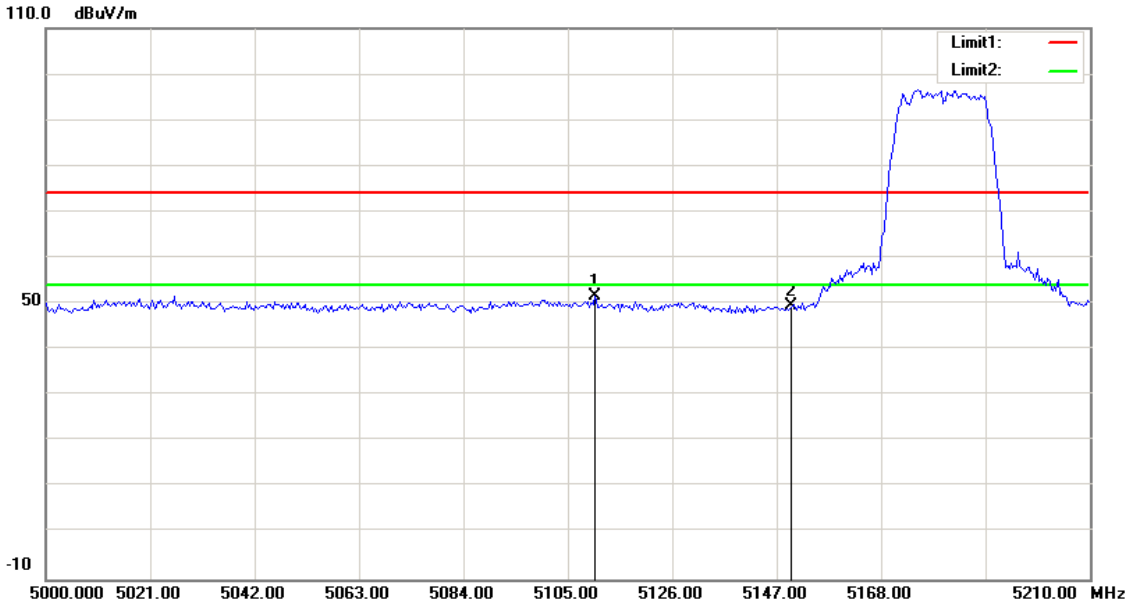
Polarity: Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	5148.413	55.77	0.32	56.09	74.00	-17.91	100	3	peak
2	5148.413	40.18	0.32	40.50	54.00	-13.50	100	27	AVG
3	5150.000	54.21	0.32	54.53	74.00	-19.47	100	151	peak
4	5150.000	41.57	0.32	41.89	54.00	-12.11	100	140	AVG

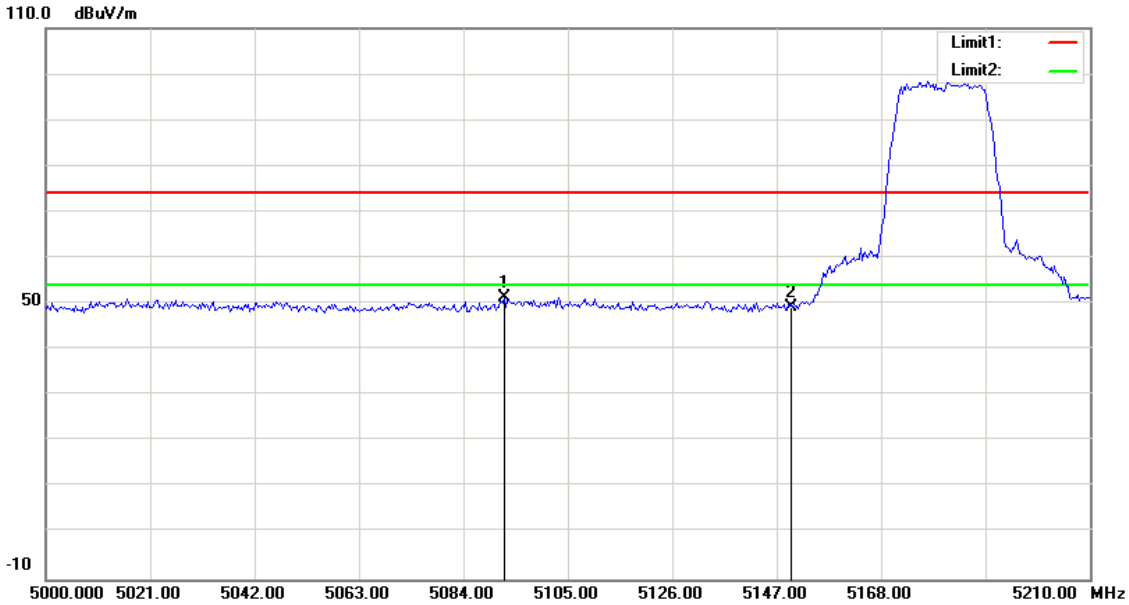
Band Edges (IEEE 802.11ac VHT20 mode)

Polarity: Vertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	5110.385	51.29	0.33	51.62	74.00	-22.38	100	356	peak
2	5150.000	49.09	0.32	49.41	74.00	-24.59	100	220	peak

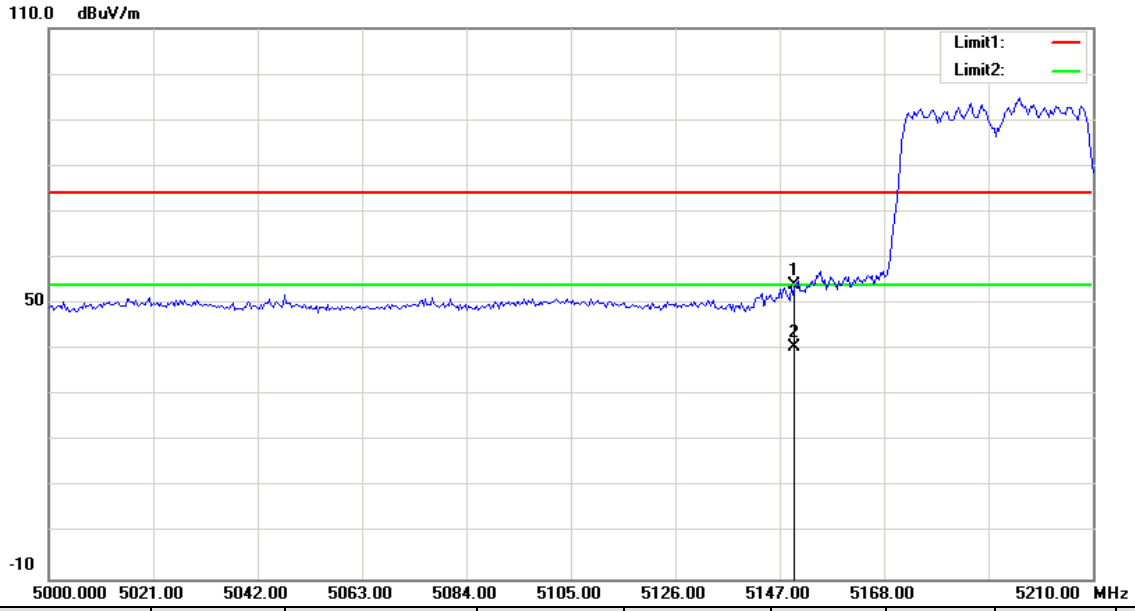
Polarity: Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	5092.212	51.03	0.34	51.37	74.00	-22.63	100	173	peak
2	5150.000	49.05	0.32	49.37	74.00	-24.63	100	156	peak

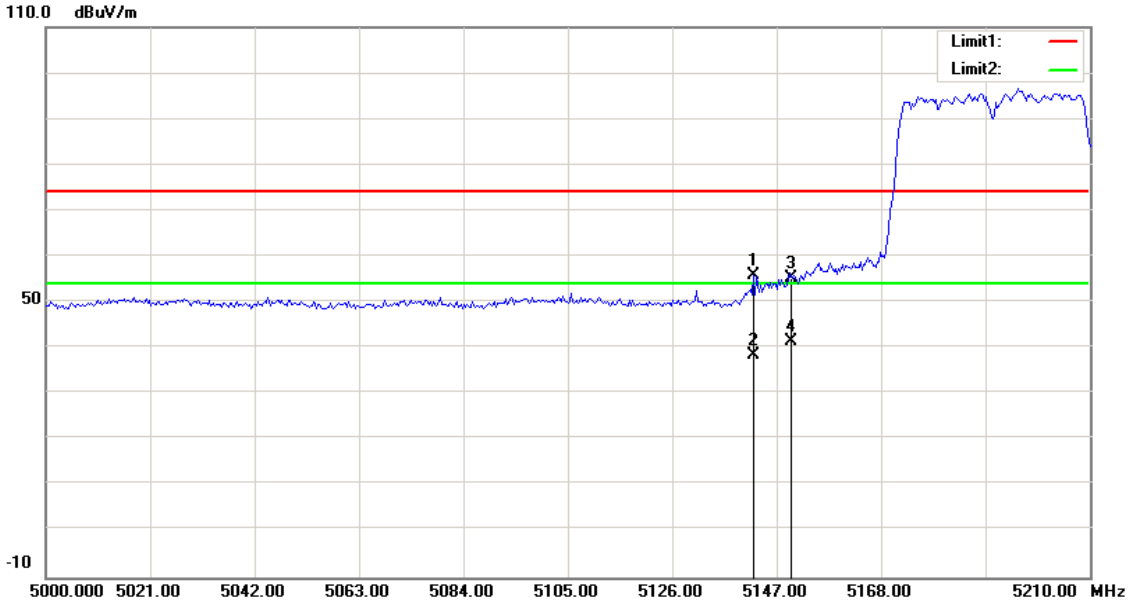
Band Edges (IEEE 802.11ac VHT40 mode)

Polarity: Vertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	5150.000	53.80	0.32	54.12	74.00	-19.88	100	279	peak
2	5150.000	40.31	0.32	40.63	54.00	-13.37	100	248	AVG

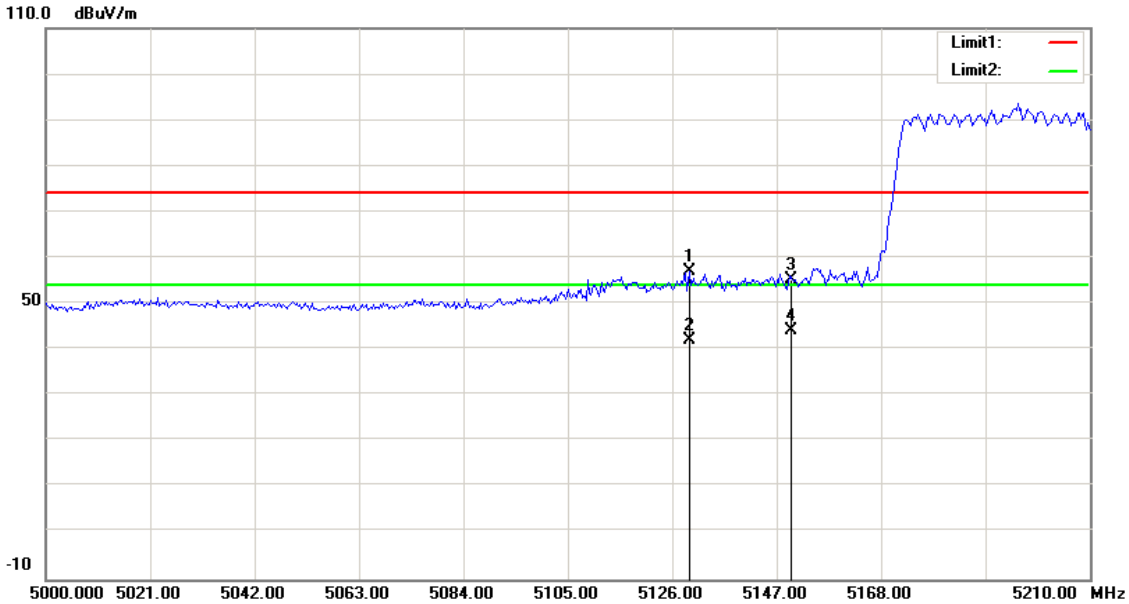
Polarity: Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	5142.356	55.39	0.32	55.71	74.00	-18.29	200	148	peak
2	5142.356	38.06	0.32	38.38	54.00	-15.62	100	155	AVG
3	5150.000	54.88	0.32	55.20	74.00	-18.80	100	150	peak
4	5150.000	41.06	0.32	41.38	54.00	-12.62	100	147	AVG

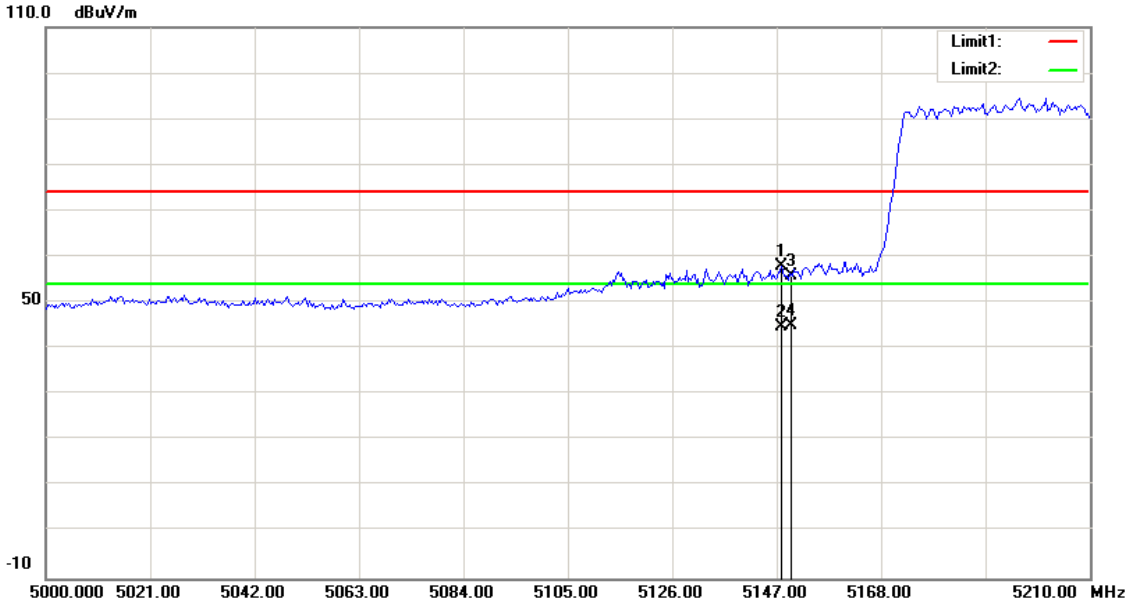
Band Edges (IEEE 802.11ac VHT80 mode)

Polarity: Vertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	5129.567	56.69	0.33	57.02	74.00	-16.98	100	55	peak
2	5129.567	41.69	0.33	42.02	54.00	-11.98	100	55	AVG
3	5150.000	55.01	0.32	55.33	74.00	-18.67	100	280	peak
4	5150.000	43.69	0.32	44.01	54.00	-9.99	100	50	AVG

Polarity: Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	5148.077	57.77	0.32	58.09	74.00	-15.91	100	152	peak
2	5148.077	44.54	0.32	44.86	54.00	-9.14	100	150	AVG
3	5150.000	55.42	0.32	55.74	74.00	-18.26	100	152	peak
4	5150.000	44.75	0.32	45.07	54.00	-8.93	100	183	AVG

7.5 MAXIMUM POWER SPECTRAL DENSITY

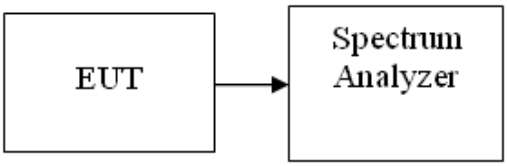
LIMIT

According to §15.407(a),

For client devices in the 5.15-5.25 GHz band, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Directional Gain=G_{ANT} + Array Gain=1.29dBi+10log(2/1) dB=4.30dBi<6 dBi

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 = 1MHz, VBW = 3MHz, Span must be greater than 26dB bandwidth, adjust as necessary, Sweep= auto, Detector RMS
3. Record the max. reading.

TEST RESULTS

No non-compliance noted

Test Data

Test mode: IEEE 802.11a mode

Channel	Frequency (MHz)	Chain 0 PPSD (dBm)	Chain 1 PPSD (dBm)	Limit (dBm)	Result
Low	5180	-0.36	0.75	11.00	PASS
Mid	5200	-0.78	0.55	11.00	PASS
High	5240	0.15	0.85	11.00	PASS

Test mode: IEEE 802.11n HT20MHz mode

Channel	Frequency (MHz)	Chain 0 PPSD (dBm)	Chain 1 PPSD (dBm)	Total PPSD (dBm)	Limit (dBm)	Result
Low	5180	-1.56	-3.34	0.65	11.00	PASS
Mid	5200	-0.90	-2.91	1.22	11.00	PASS
High	5240	-1.74	-2.87	0.74	11.00	PASS

Test mode: IEEE 802.11n HT40MHz mode

Channel	Frequency (MHz)	Chain 0 PPSD (dBm)	Chain 1 PPSD (dBm)	Total PPSD (dBm)	Limit (dBm)	Result
Low	5190	-5.12	-5.58	-2.33	11.00	PASS
High	5230	-4.70	-5.64	-2.13	11.00	PASS

Test mode: IEEE 802.11ac VHT20MHz mode

Channel	Frequency (MHz)	Chain 0 PPSD (dBm)	Chain 1 PPSD (dBm)	Total PPSD (dBm)	Limit (dBm)	Result
Low	5180	-1.31	-2.78	1.03	11.00	PASS
Mid	5200	-1.57	-3.01	0.78	11.00	PASS
High	5240	-2.02	-3.16	0.46	11.00	PASS

Test mode: IEEE 802.11ac VHT40MHz mode

Channel	Frequency (MHz)	Chain 0 PPSD (dBm)	Chain 1 PPSD (dBm)	Total PPSD (dBm)	Limit (dBm)	Result
Low	5190	-5.15	-7.01	-2.97	11.00	PASS
High	5230	-5.30	-7.24	-3.15	11.00	PASS

Test mode: IEEE 802.11ac VHT80MHz mode

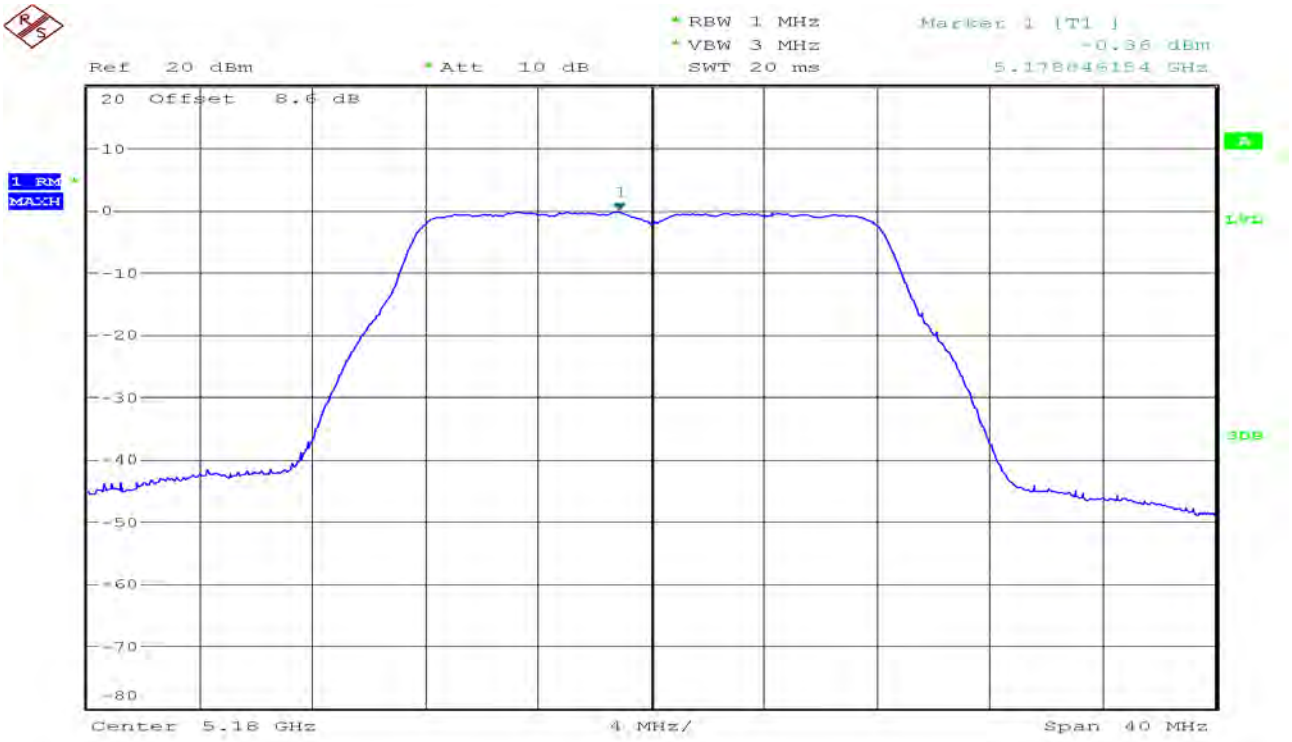
Channel	Frequency (MHz)	Chain 0 PPSD (dBm)	Chain 1 PPSD (dBm)	Total PPSD (dBm)	Limit (dBm)	Result
Mid	5210	-6.65	-8.40	-4.43	11.00	PASS

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

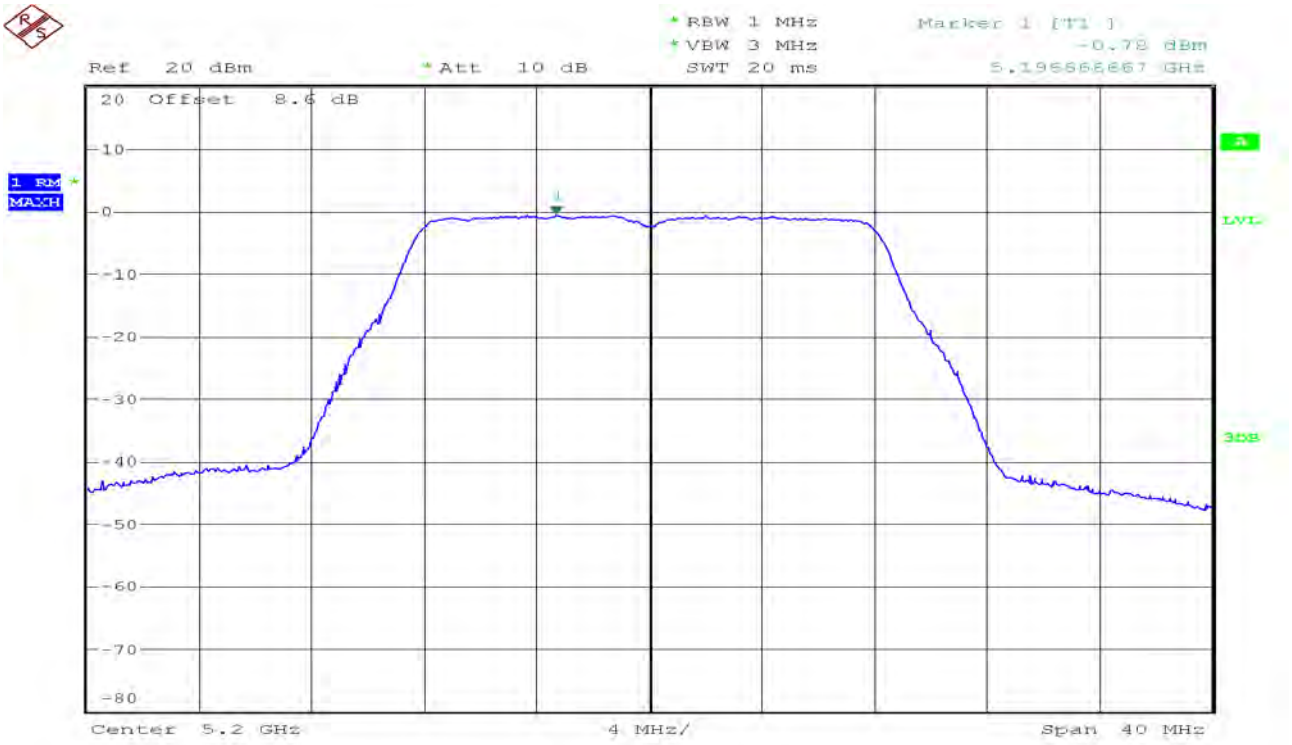
2.Duty factor has been offseted with cableloss

Test Plot
IEEE 802.11a mode/Chain 0:

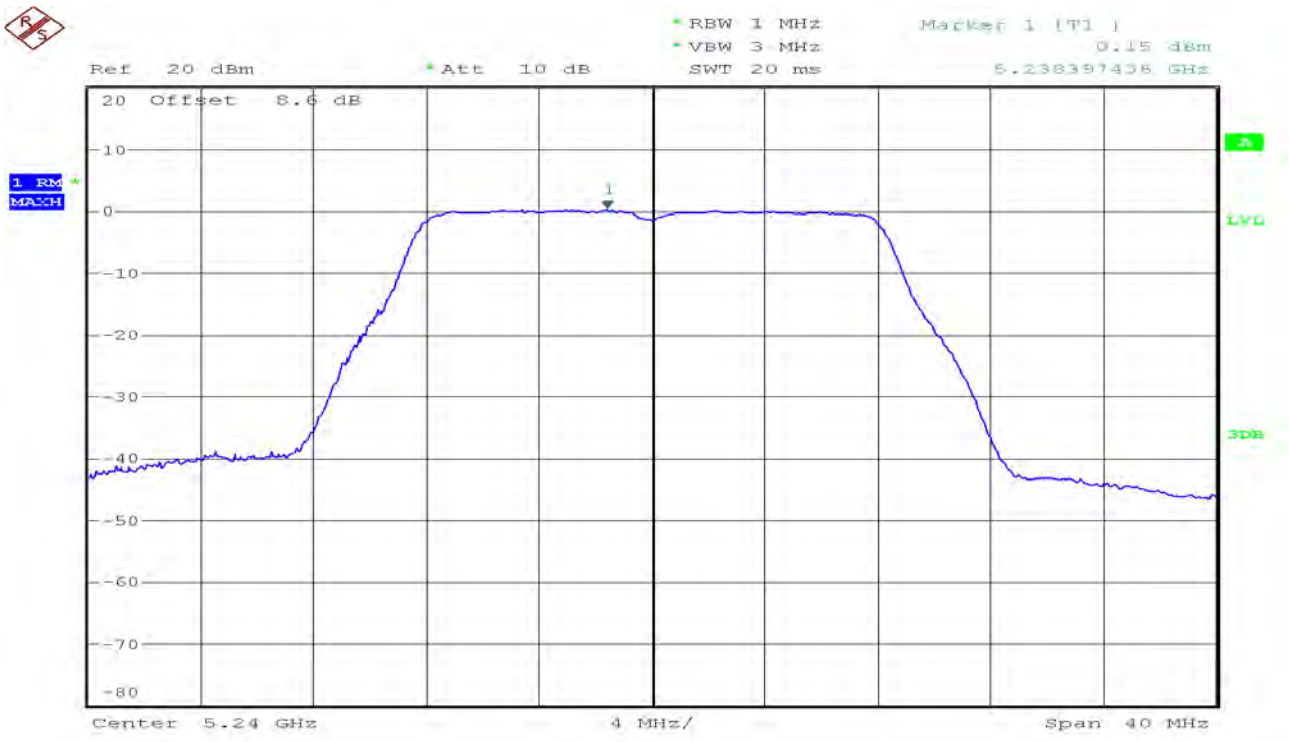
CH Low



CH Mid

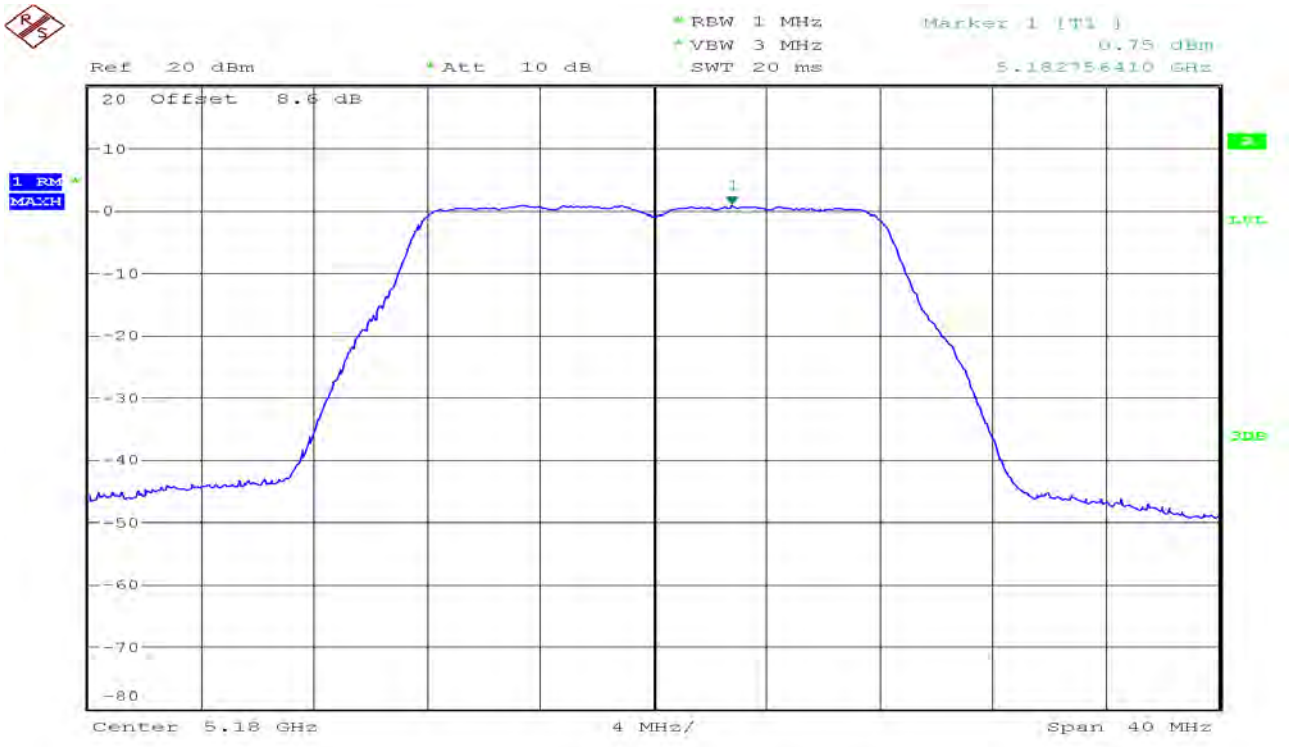


CH High

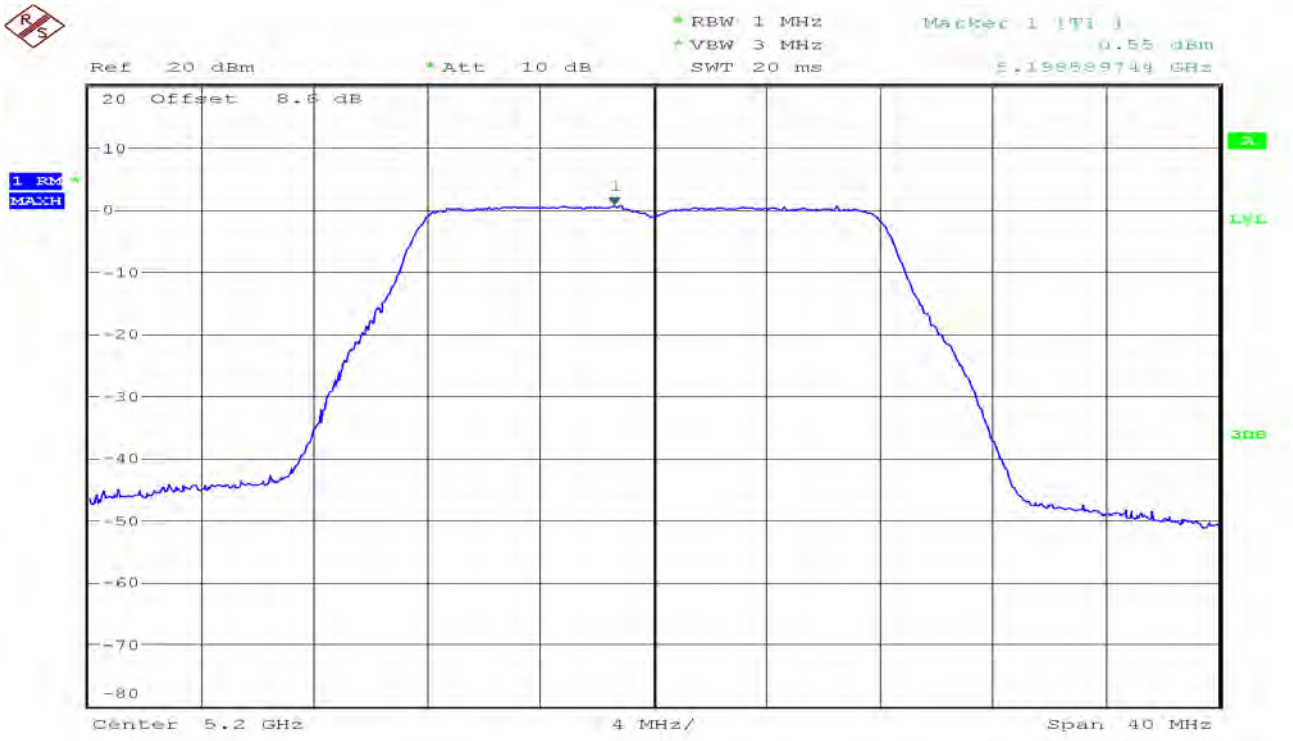


IEEE 802.11a mode/Chain 1:

CH Low



CH Mid



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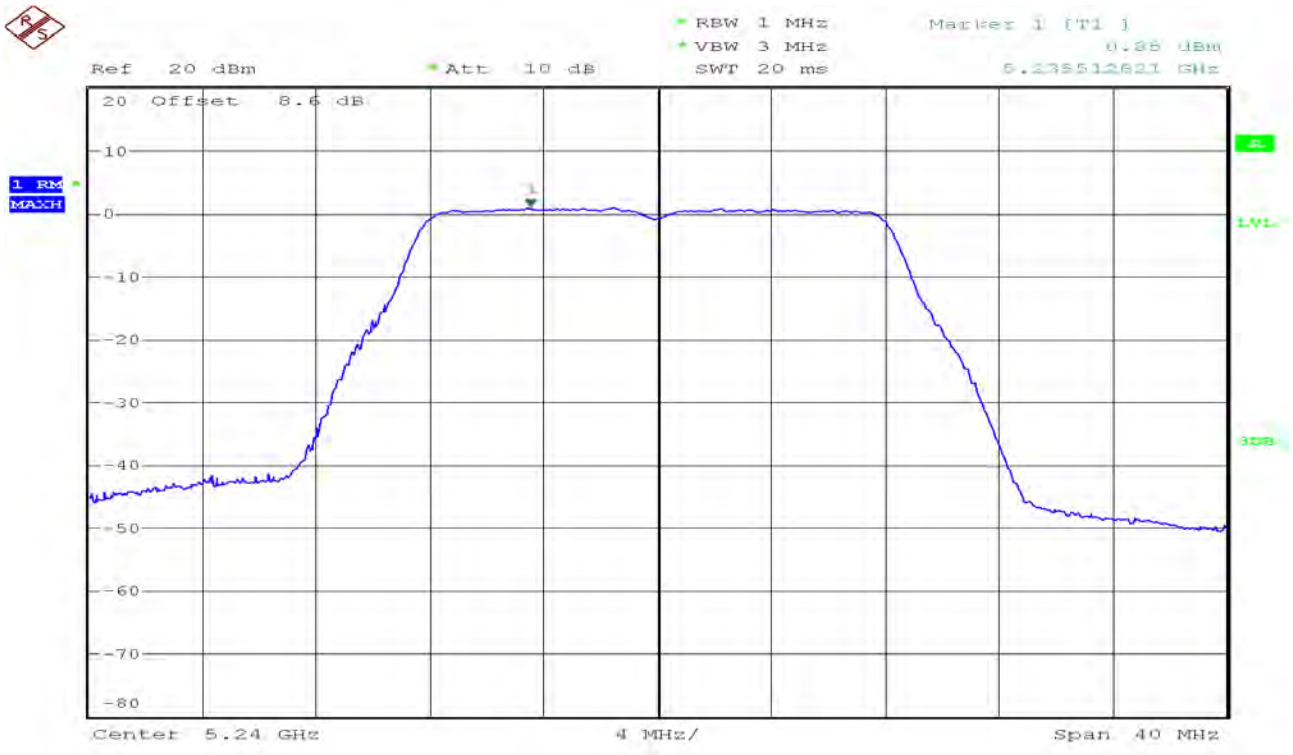
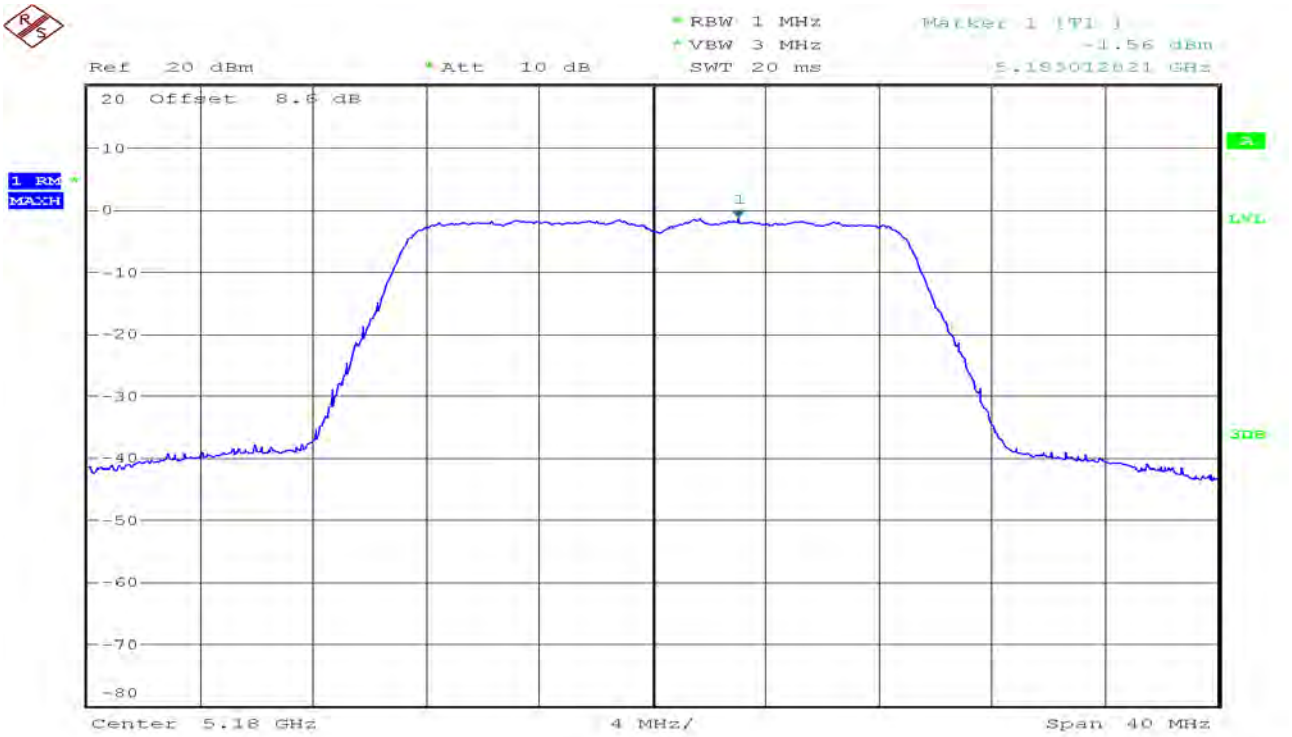
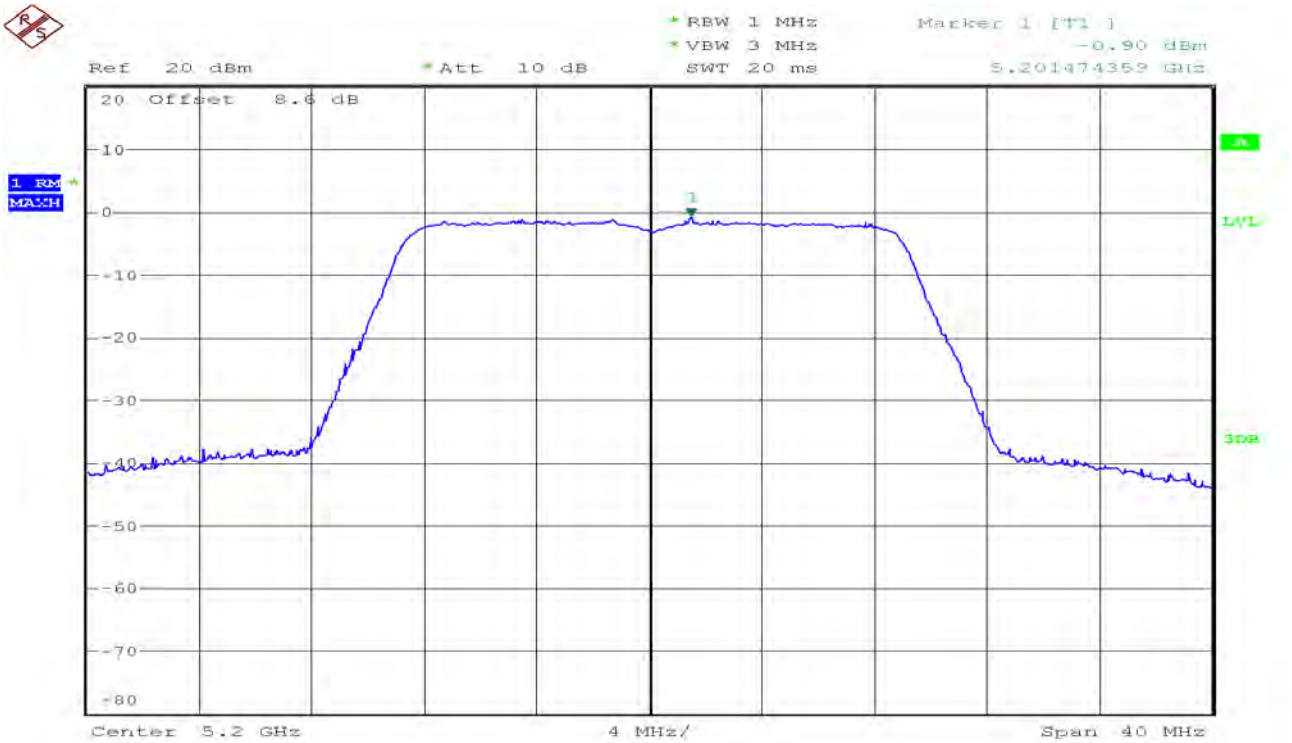


IEEE 802.11n HT20 mode/Chain 0:

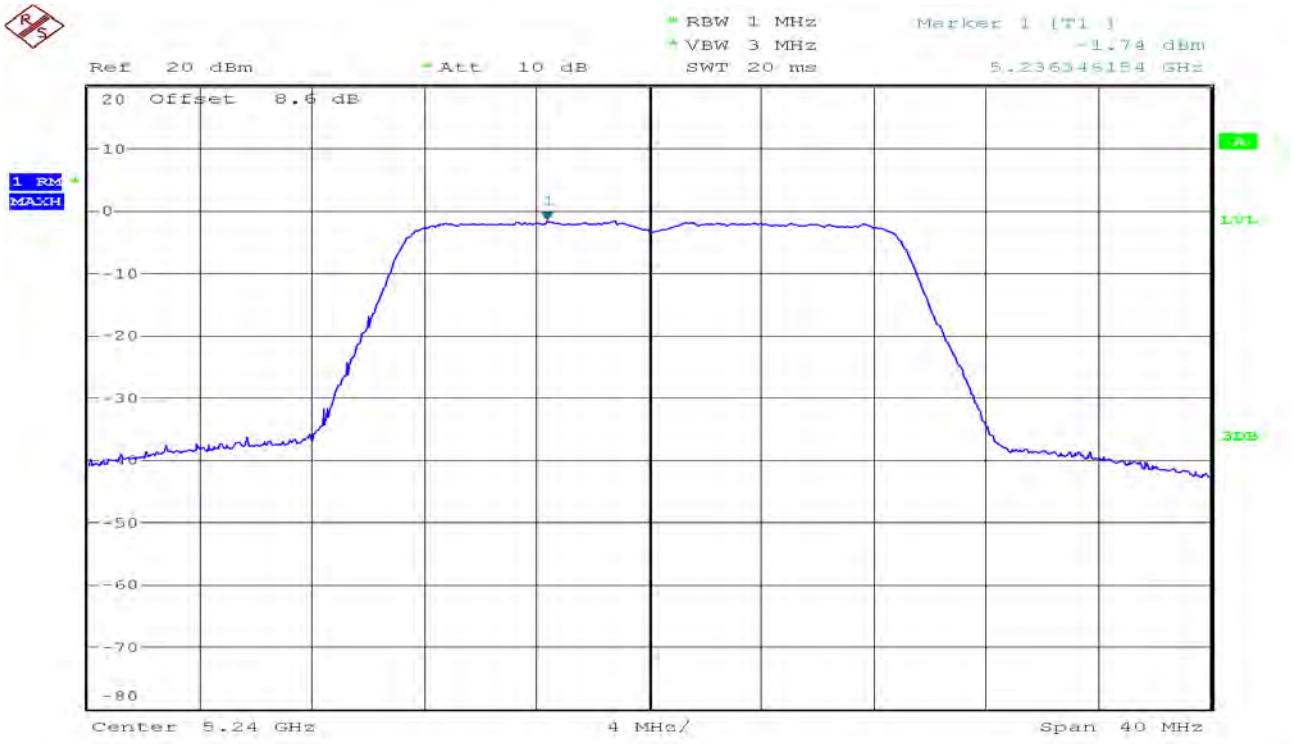
CH Low



CH Mid

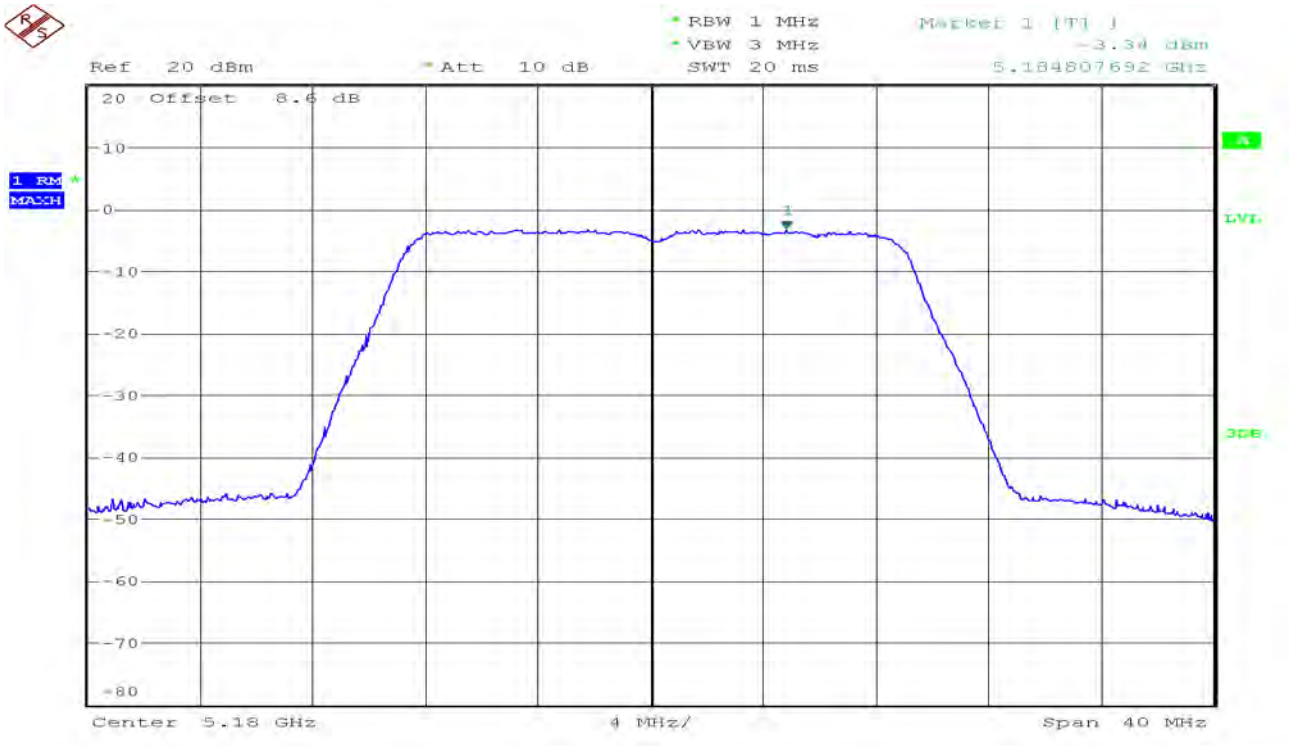


CH High

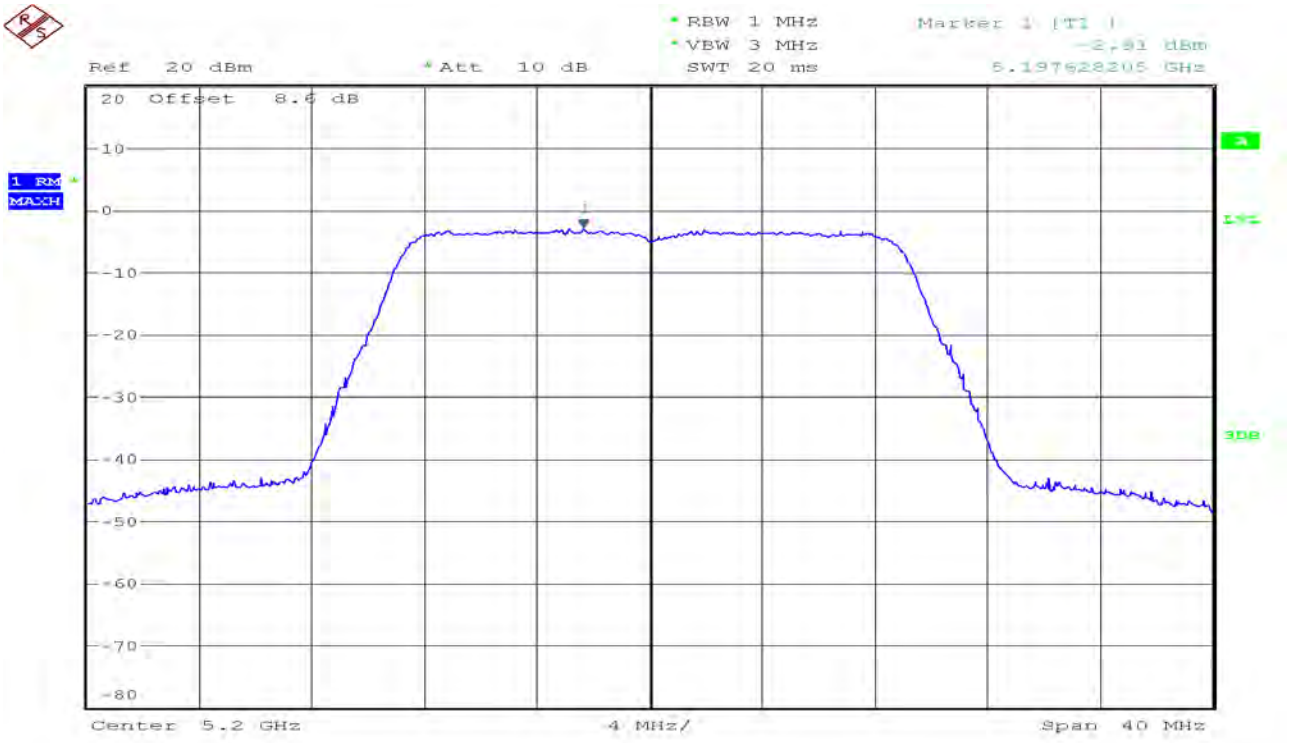


IEEE 802.11n HT20 mode/Chain 1:

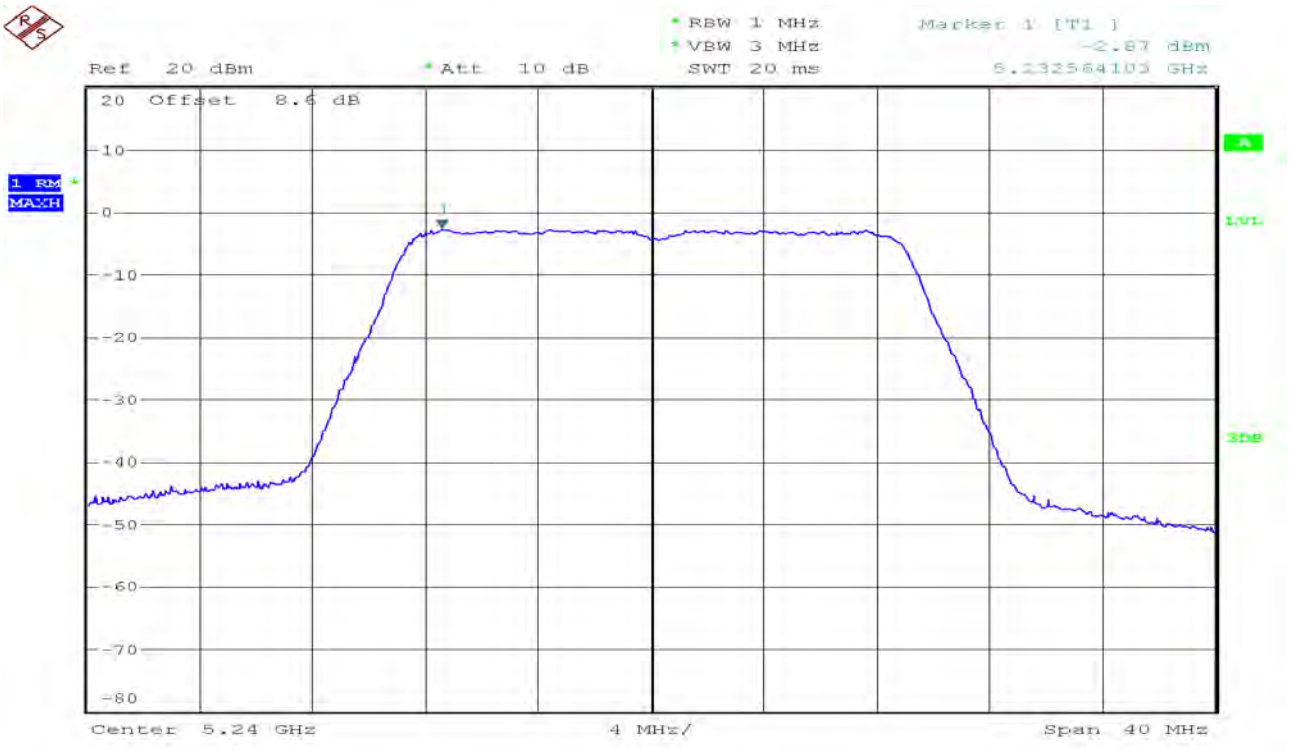
CH Low



CH Mid

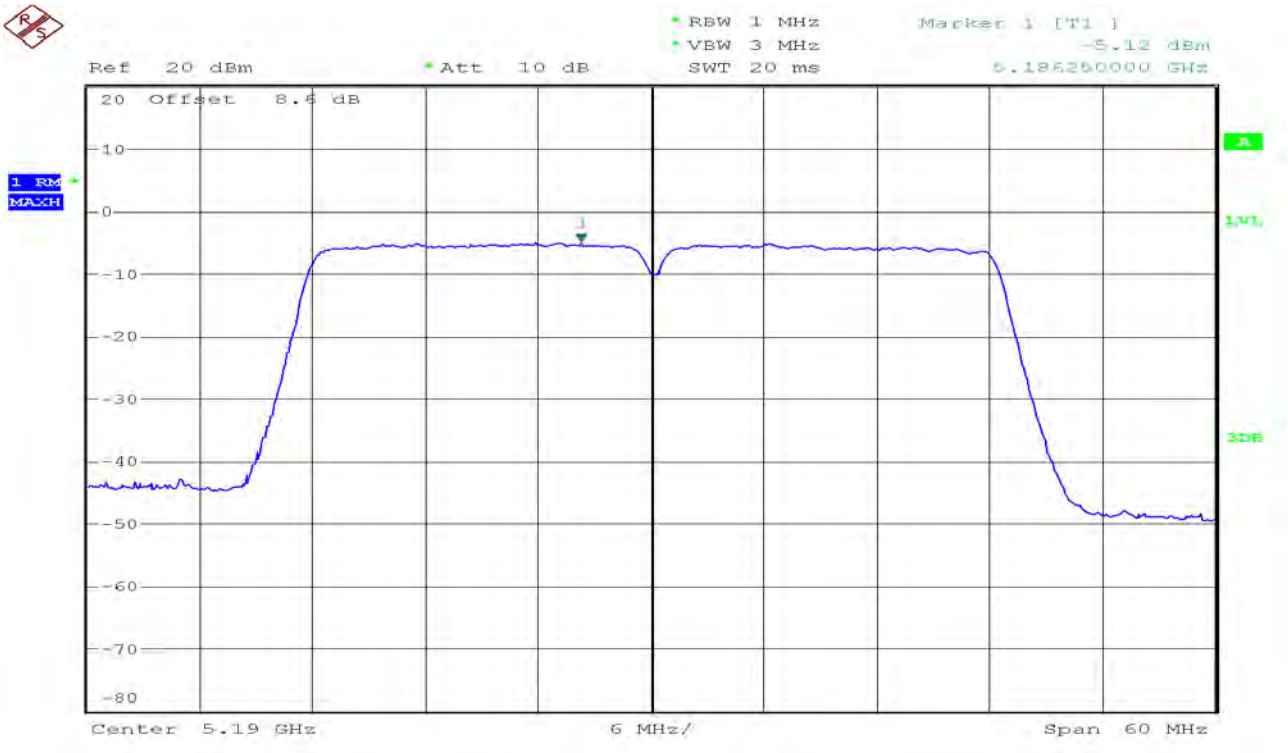


CH High

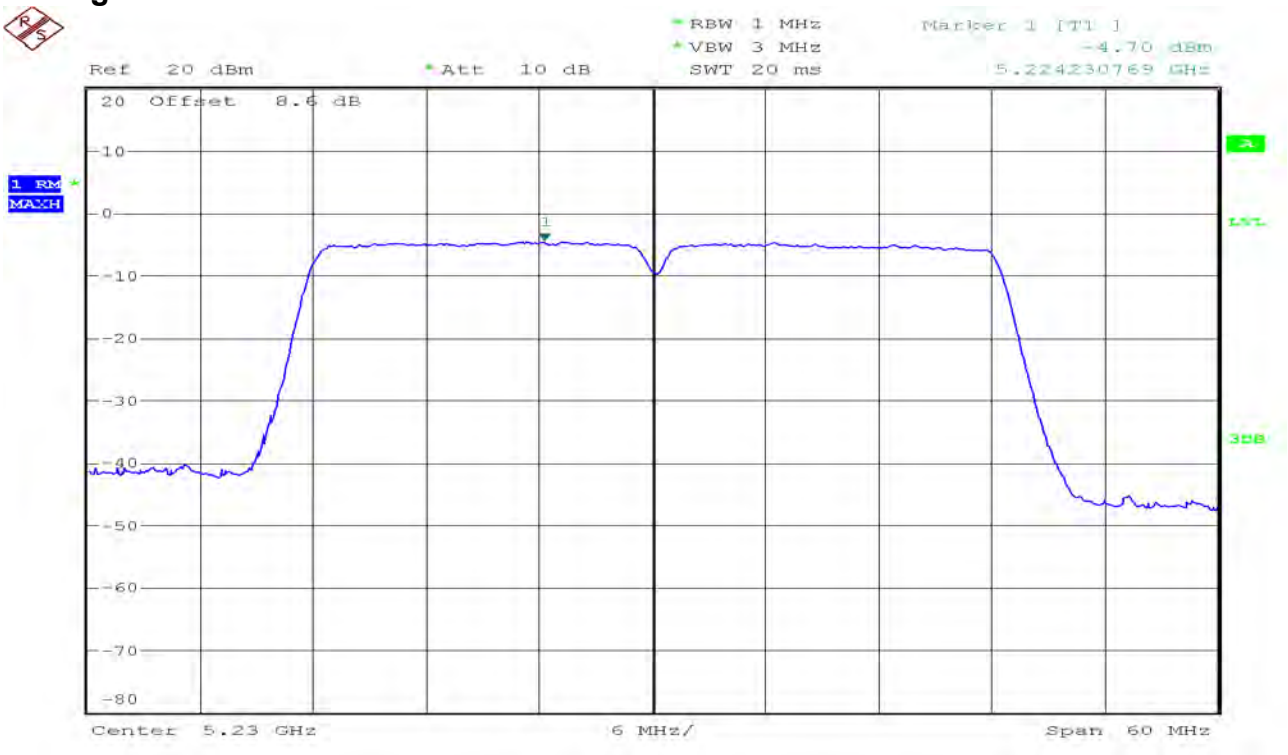


IEEE 802.11n HT40 mode/Chain 0:

CH Low

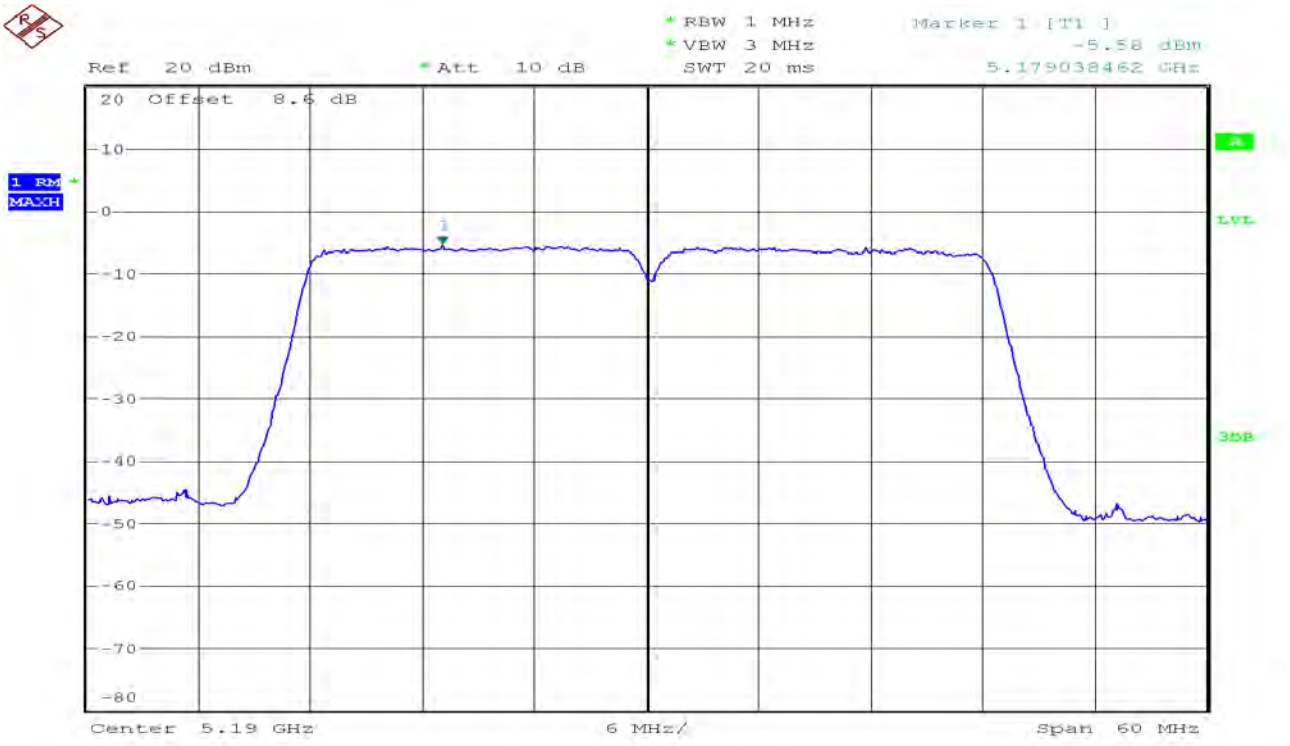


CH High

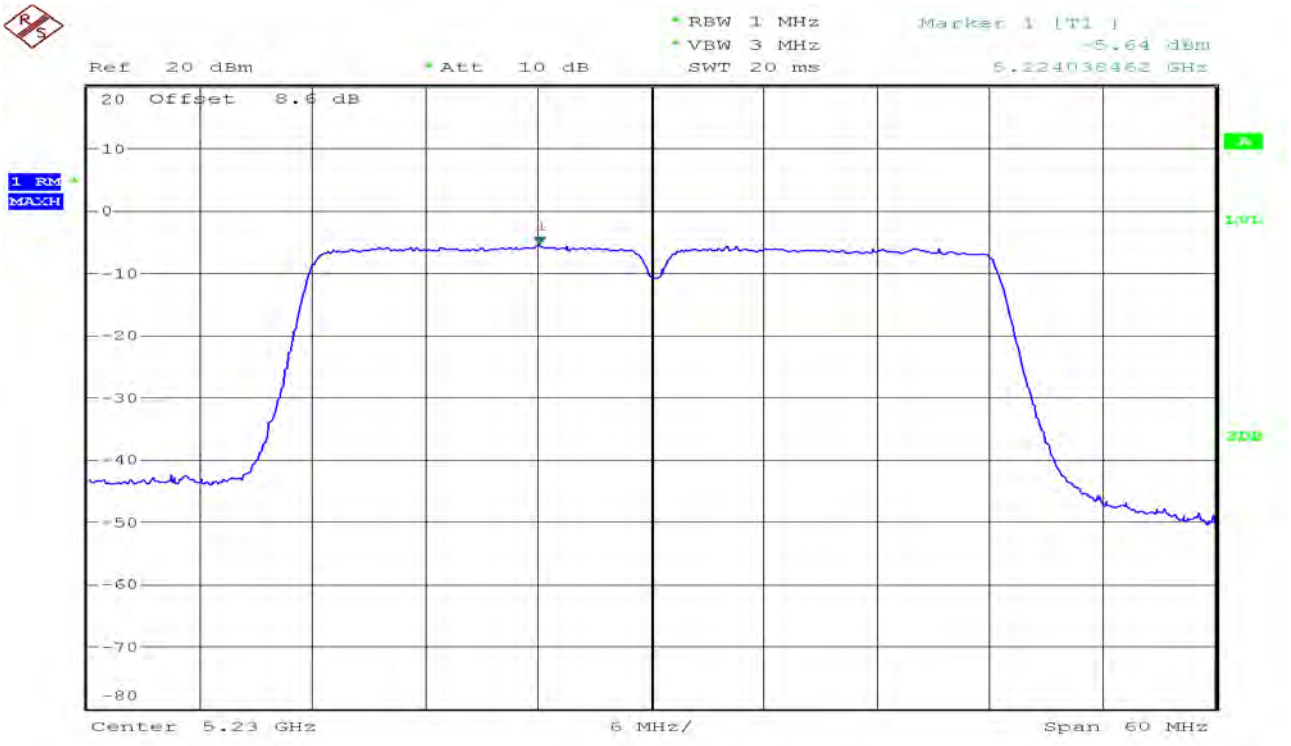


IEEE 802.11n HT40 mode/Chain 1:

CH Low

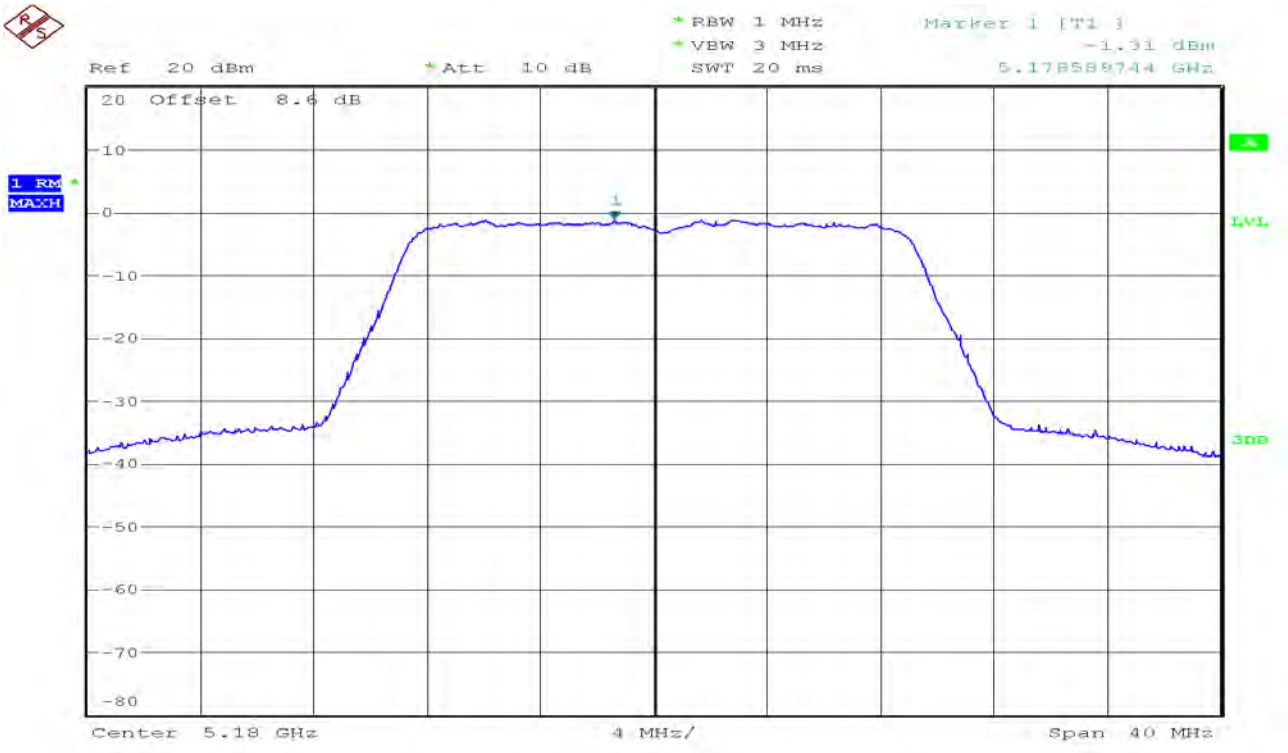


CH High

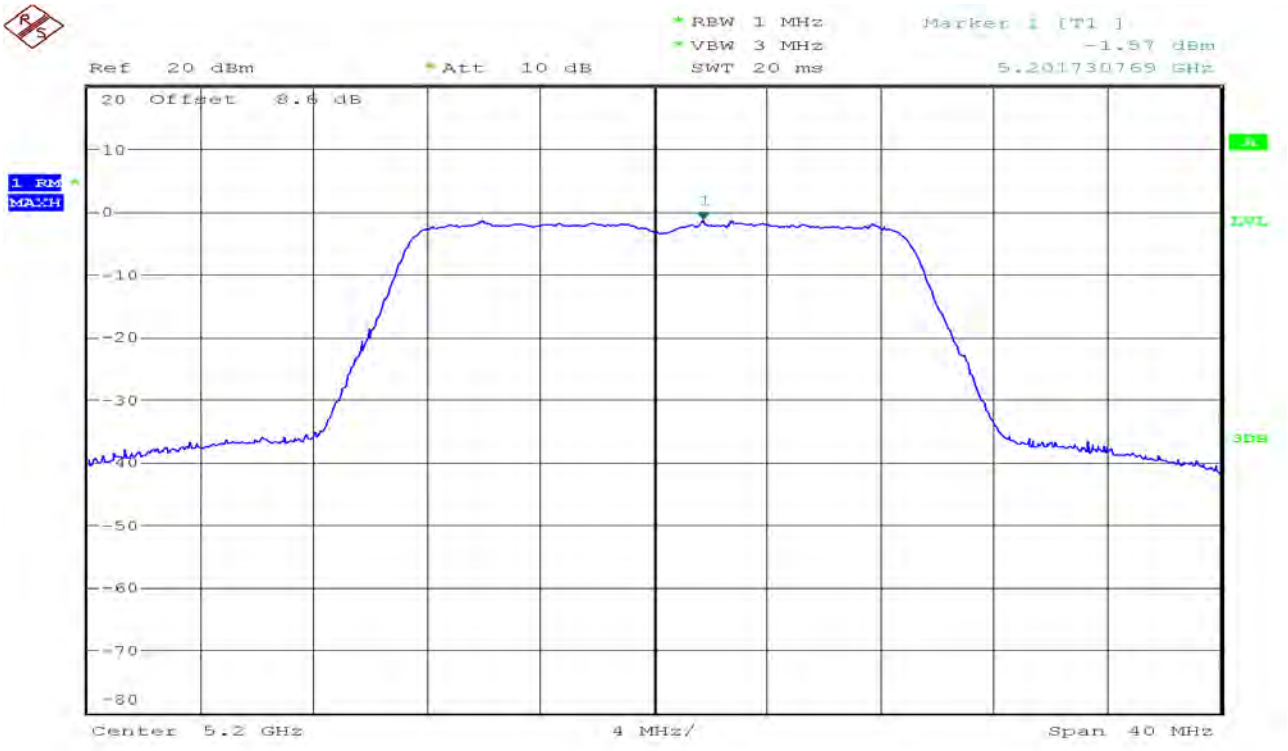


IEEE 802.11ac VHT20 mode/Chain 0:

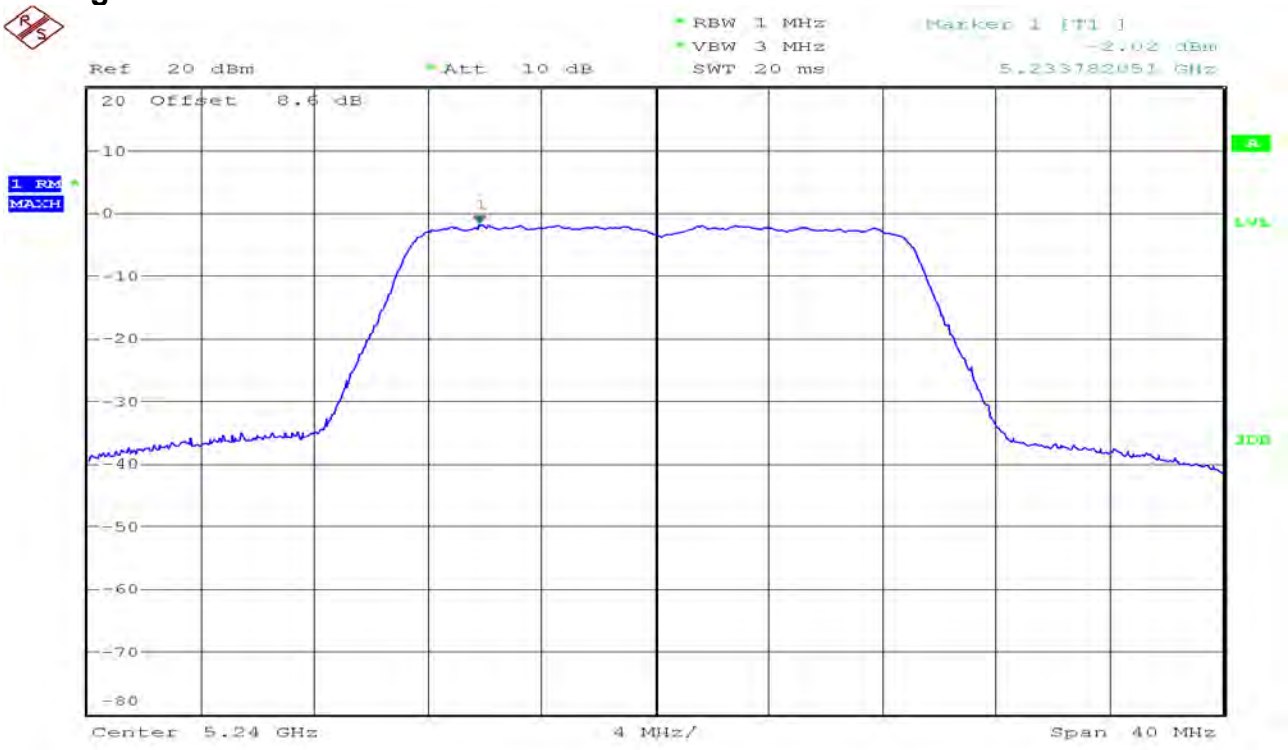
CH Low



CH Mid

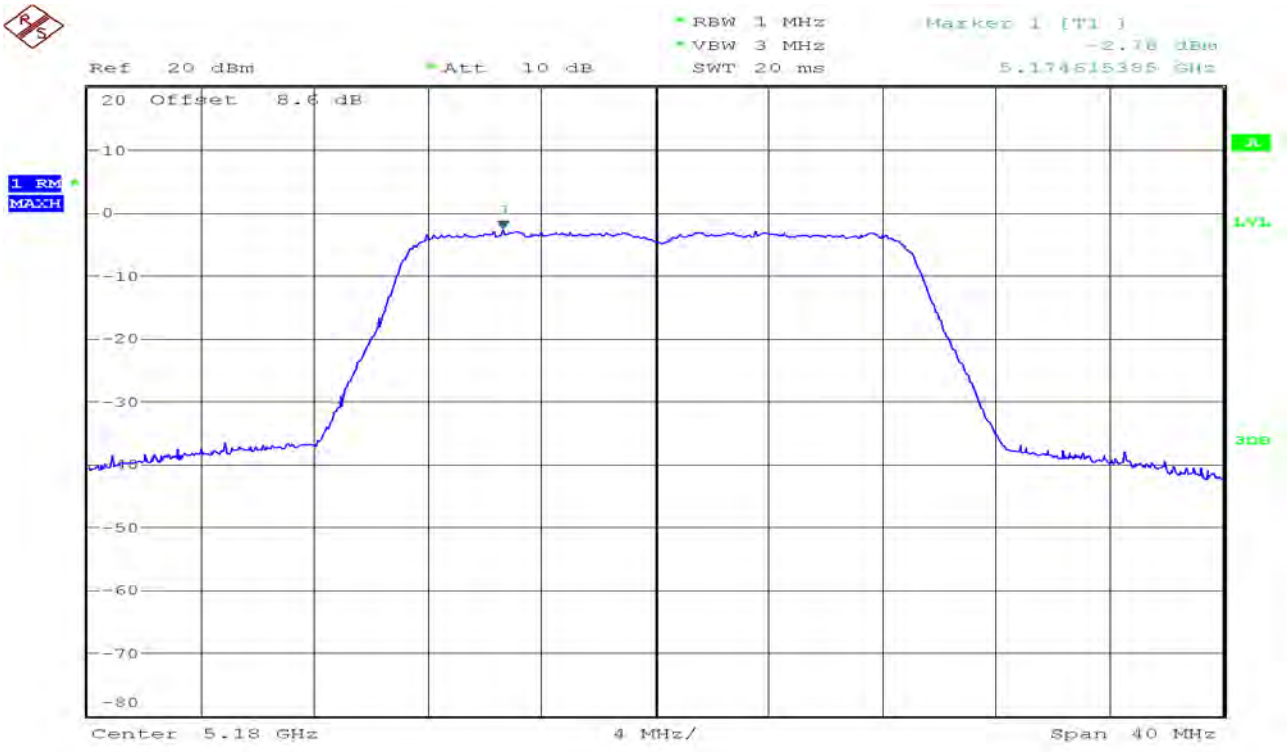


CH High

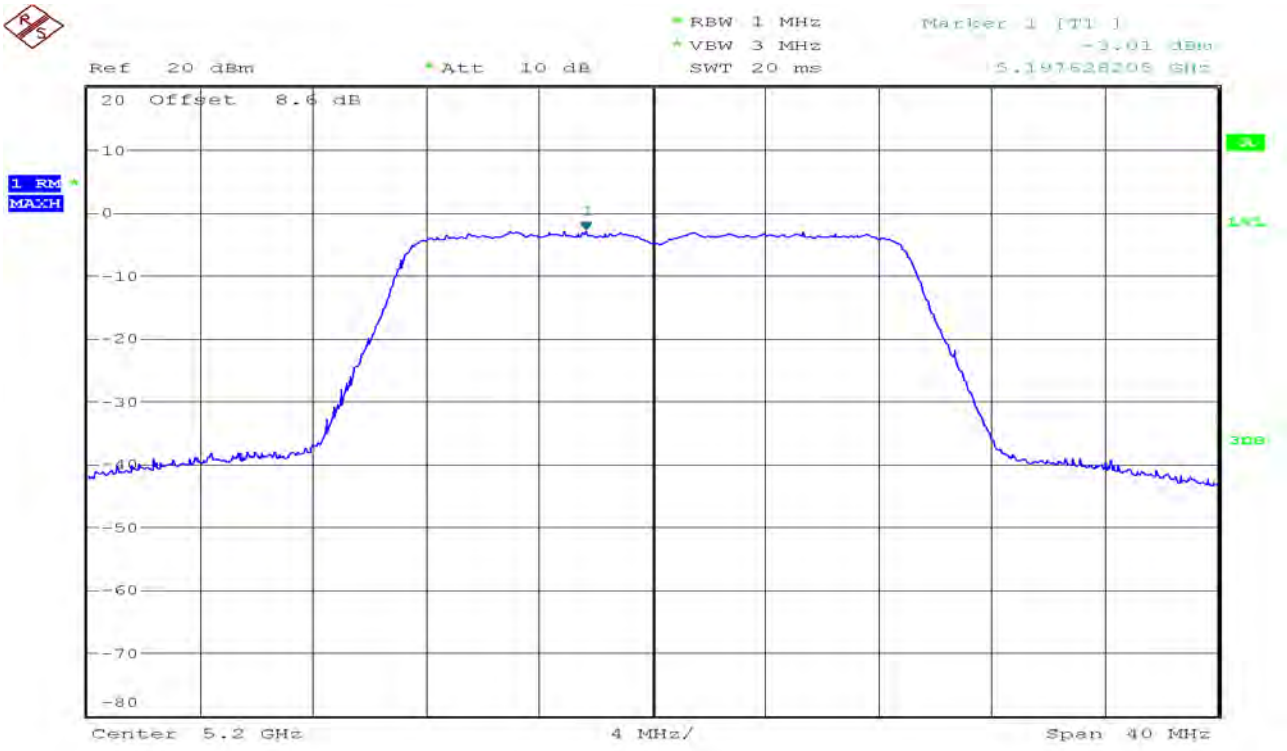


IEEE 802.11ac VHT20 mode/Chain 1:

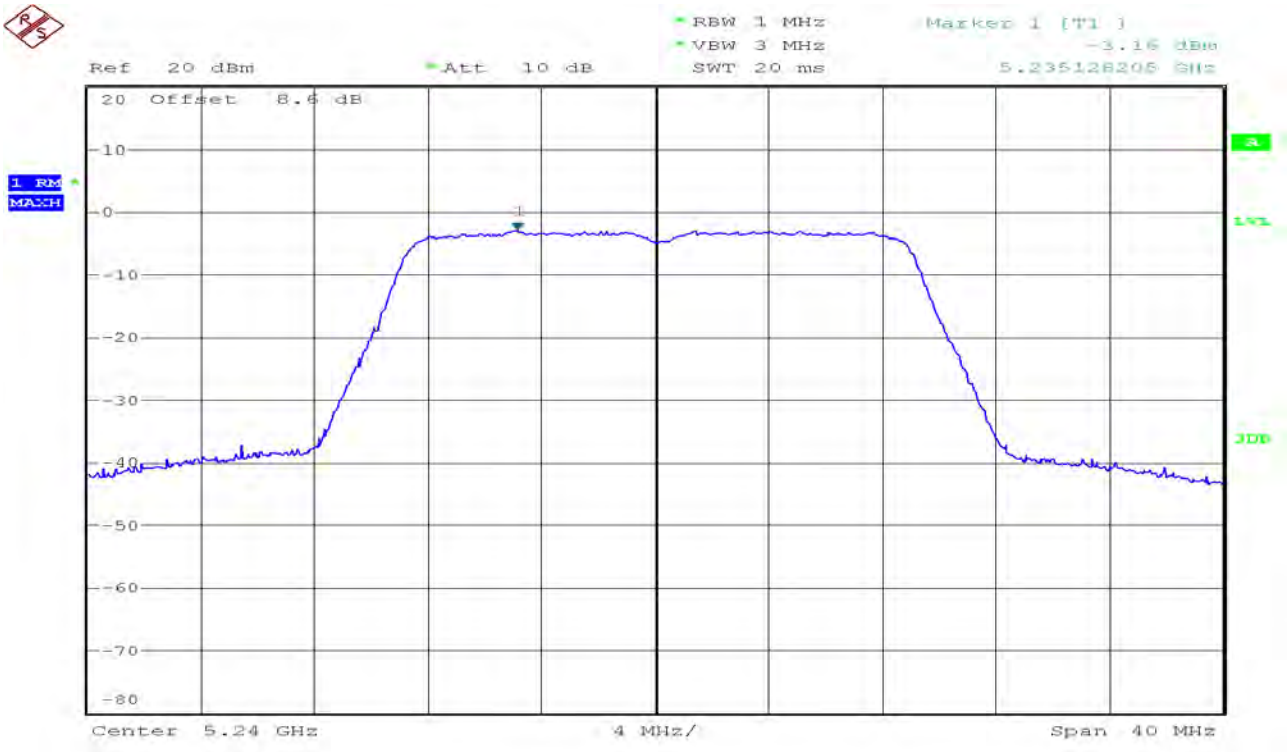
CH Low



CH Mid

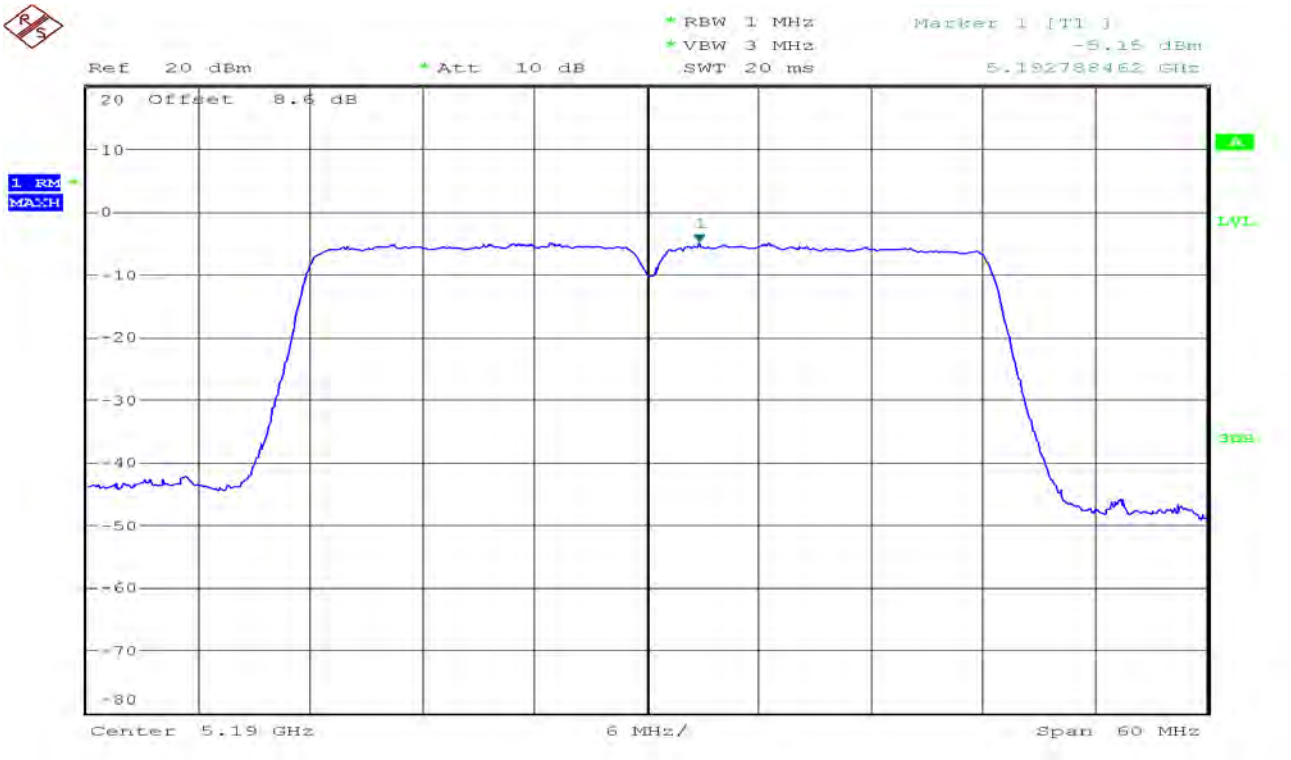


CH High

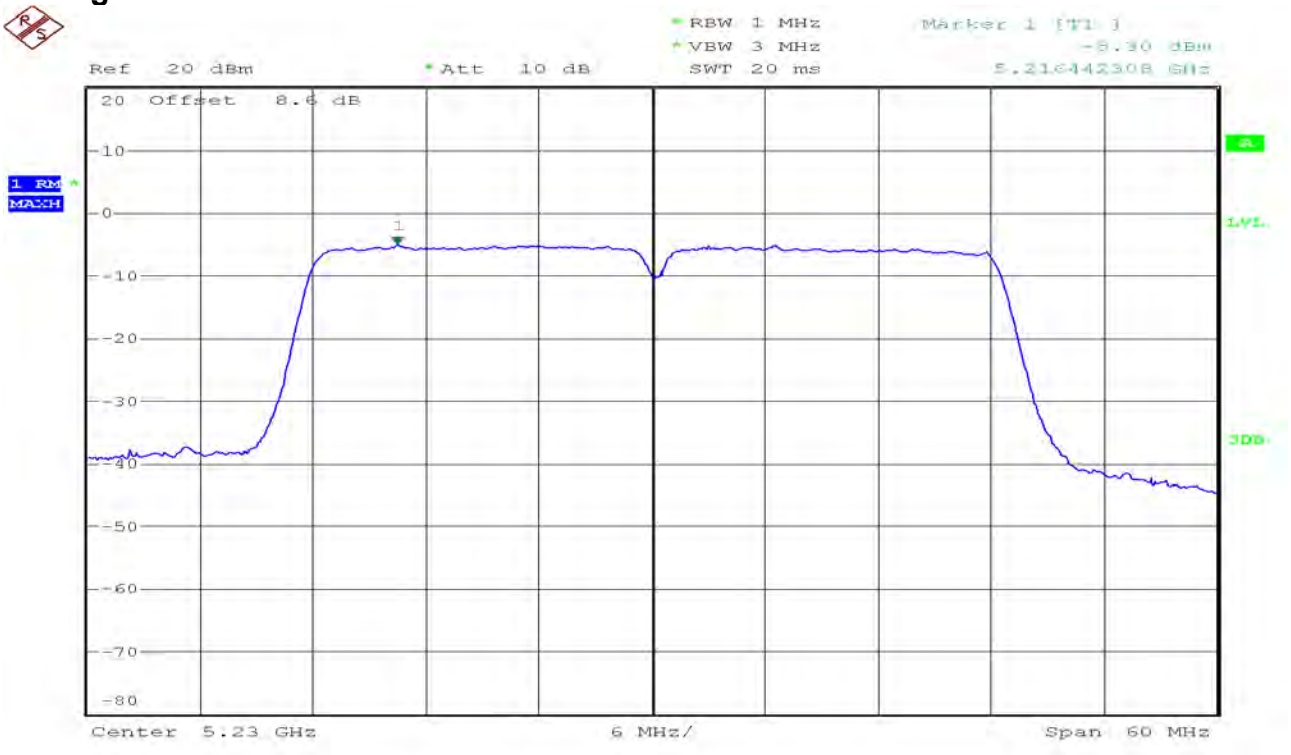


IEEE 802.11ac VHT40 mode/Chain 0:

CH Low

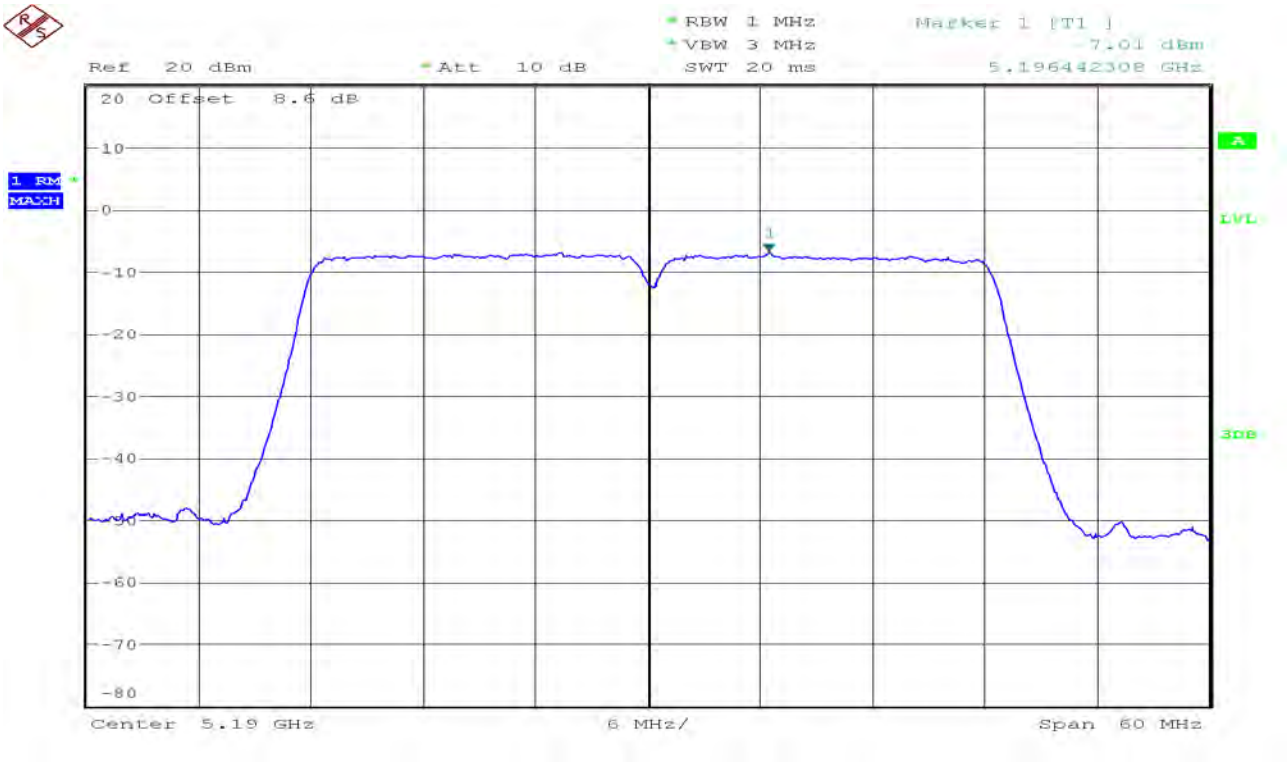


CH High

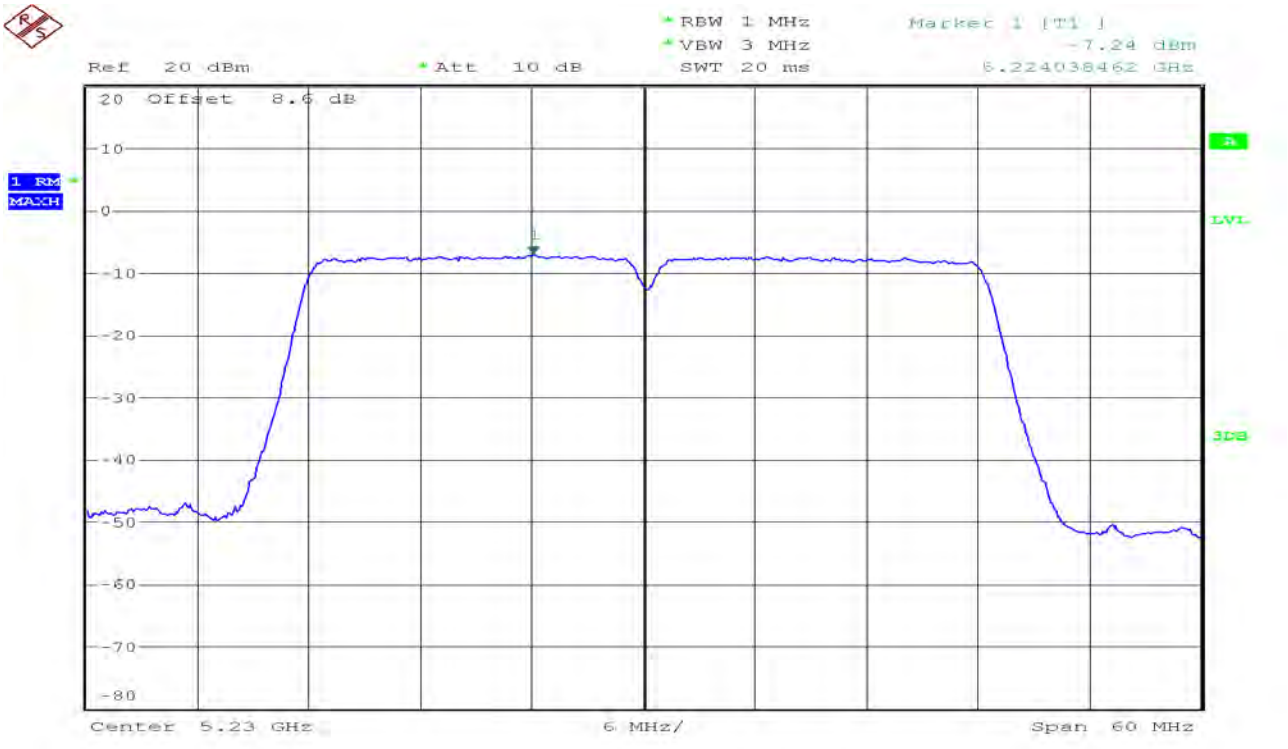


IEEE 802.11ac VHT40 mode/Chain 1:

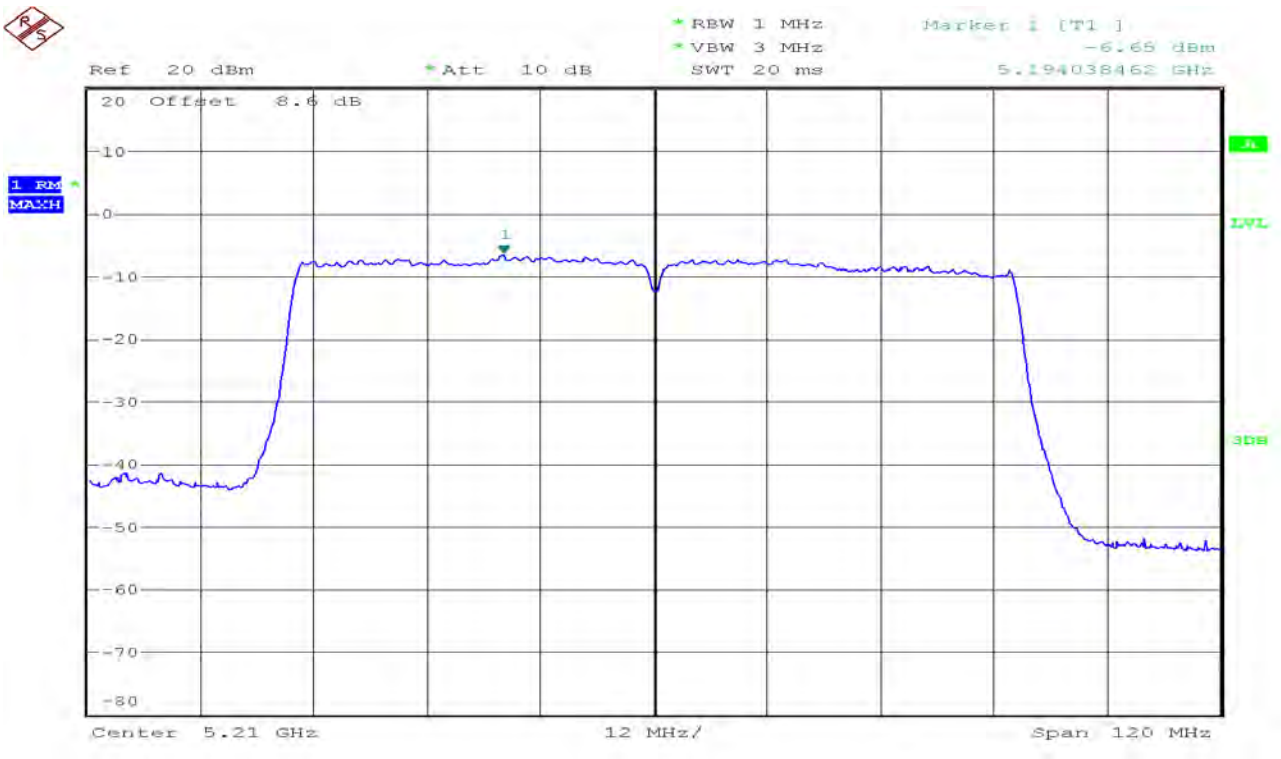
CH Low



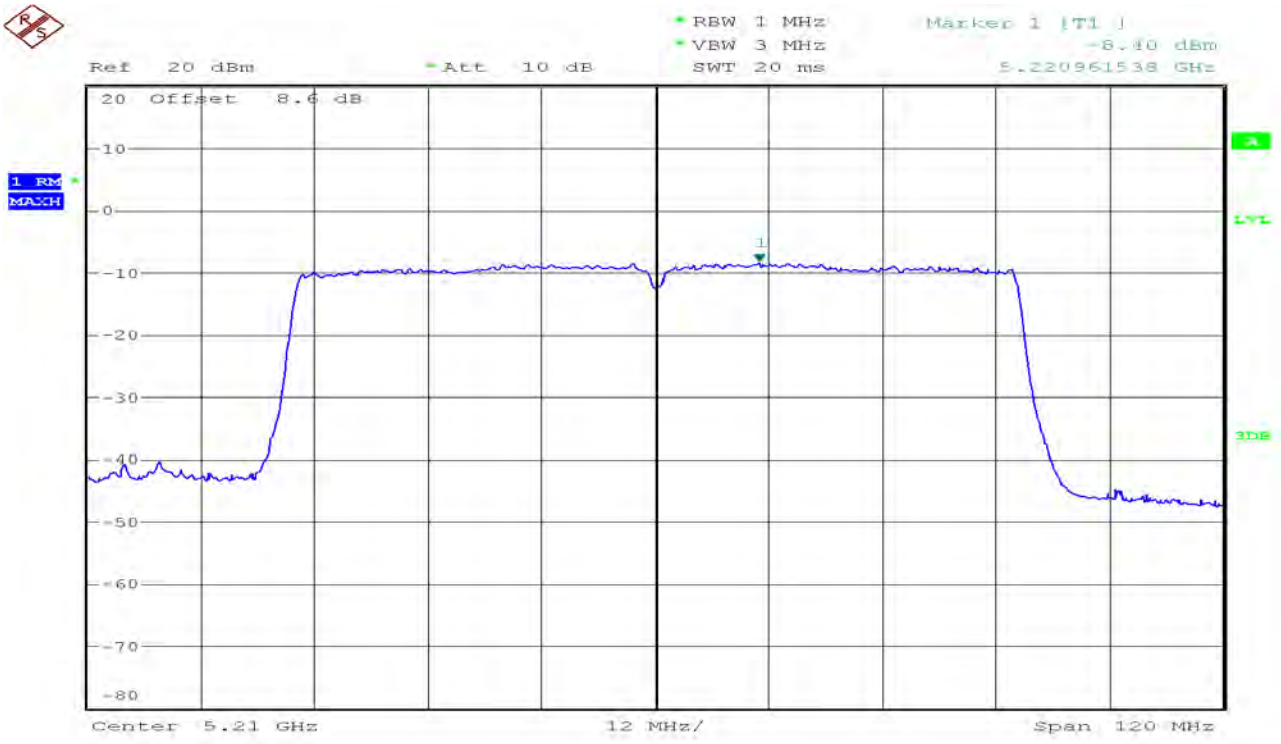
CH High



IEEE 802.11ac VHT80 mode/Chain 0:
CH Mid



IEEE 802.11ac VHT80 mode/Chain 1:
CH Mid

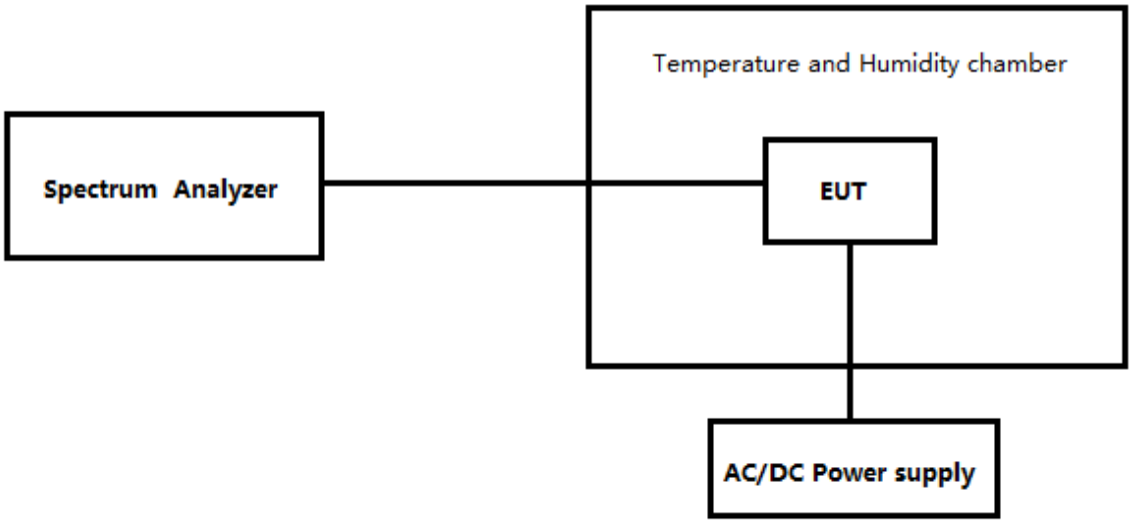


7.6 FREQUENCY STABILITY MEASUREMENT

LIMIT

According to §15.407(g),Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

TEST CONFIGURATION



TEST PROCEDURE

1. To ensure emission at the band edge is maintained within the authorized band, those values shall be measured by radiation emissions at upper and lower frequency points, and finally compensated by frequency deviation as procedures below.
2. The EUT was operated at the maximum output power, and connected to the spectrum analyzer, which is set to maximum hold function and peak detector. The peak value of the power envelope was measured and noted. The upper and lower frequency points were respectively measured relatively 10dB lower than the measured peak value.
3. The frequency deviation was calculated by adding the upper frequency point and the lower frequency point divided by two. Those detailed values of frequency deviation are provided in table below.

TEST RESULTS

U-NII-1-(5150MHz-5250MHz)					
Freq.(MHz)	Center Frequency (MHz)	Frequency Deviation (MHz)	Frequency Stability (ppm)	Temperature (°C)	Voltage (V)
5180	5180.098	0.098	18.9	T_{nor}	V_{min}
5180	5180.054	0.054	10.4	T_{nor}	V_{max}
5180	5180.083	0.083	16.0	T_{nor}	V_{nor}
5180	5180.042	0.042	8.1	T_{min}	V_{nor}
5180	5180.075	0.075	14.5	T_{max}	V_{nor}

7.7 RADIATED UNDESIRABLE EMISSION

LIMIT

Radiated emissions from 9 kHz to 40 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. For transmitters operating in the 5150-5250 MHz band: all emissions outside of the 5150-5350 MHz band shall not exceed an EIRP of –27dBm/MHz.
   For transmitters operating in the 5250-5350 MHz band: all emissions outside of the 5150-5350 MHz band shall not exceed an EIRP of -27 dBm/MHz. Devices operating in the 5250-5350 MHz band that generate emissions in the 5150-5250 MHz band must meet all applicable technical requirements for operation in the 5150-5250 MHz band (including indoor use) or alternatively meet an out-of-band emission EIRP limit of -27 dBm/MHz in the 5150-5250 MHz band.
   For transmitters operating in the 5470-5600 MHz and 5650-5725MHz band: all emissions outside of the 5470-5600 MHz and 5650-5725MHz band shall not exceed an EIRP of -27 dBm/MHz.
2. KDB789033 v01 G)2)c) As specified in 15.407(b), emissions above 1000 MHz that are outside of the restricted bands are subject to a peak emission limit of -27 dBm/MHz (or -17 dBm/MHz as specified in 15.407(b)(4)). However, an out-of-band emission that complies with both the average and peak limits of 15.209 is not required to satisfy the -27 dBm/MHz or -17 dBm/MHz peak emission limit.
3. 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

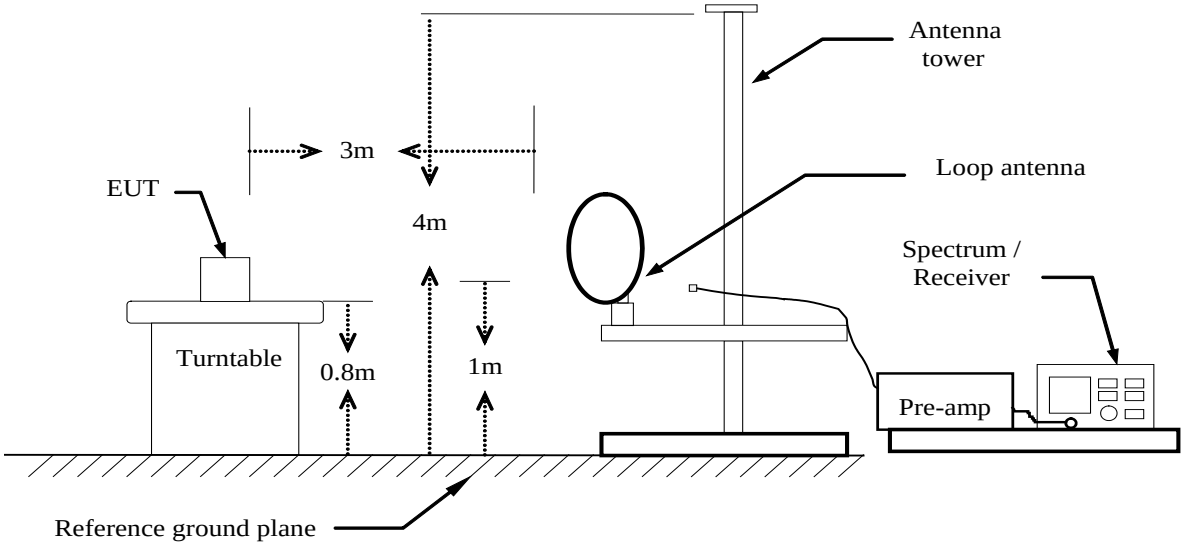
Remark: *Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of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

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

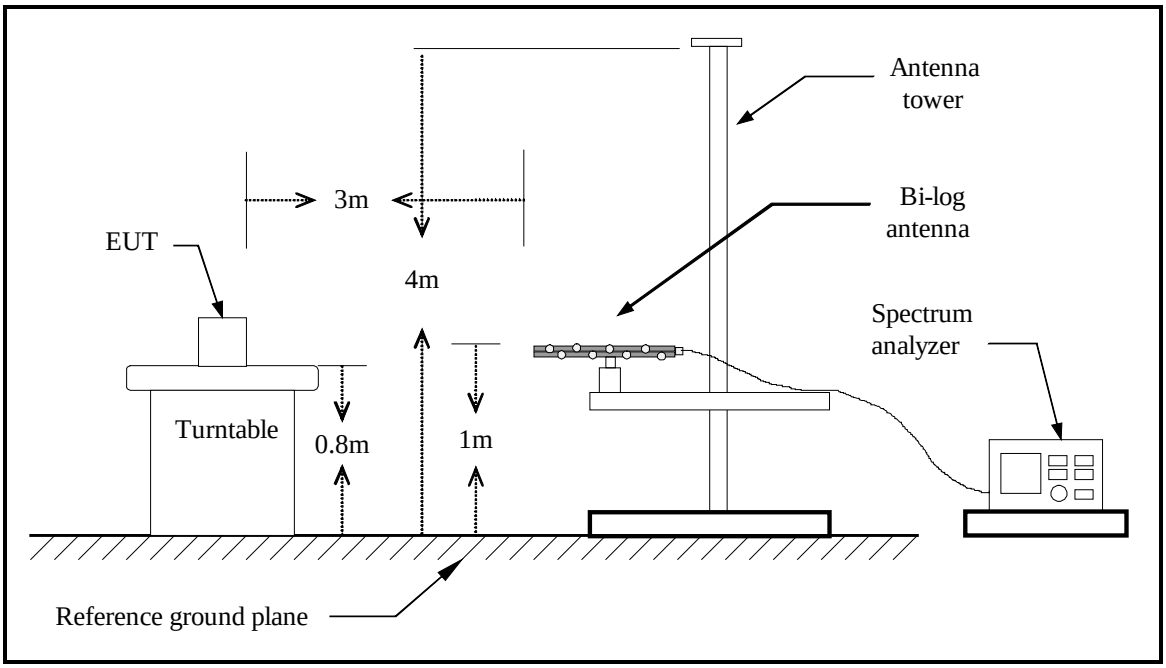
Frequency (MHz)	Field Strength (μV/m at 3-meter)	Field Strength (dBμV/m at 3-meter)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

Test Configuration

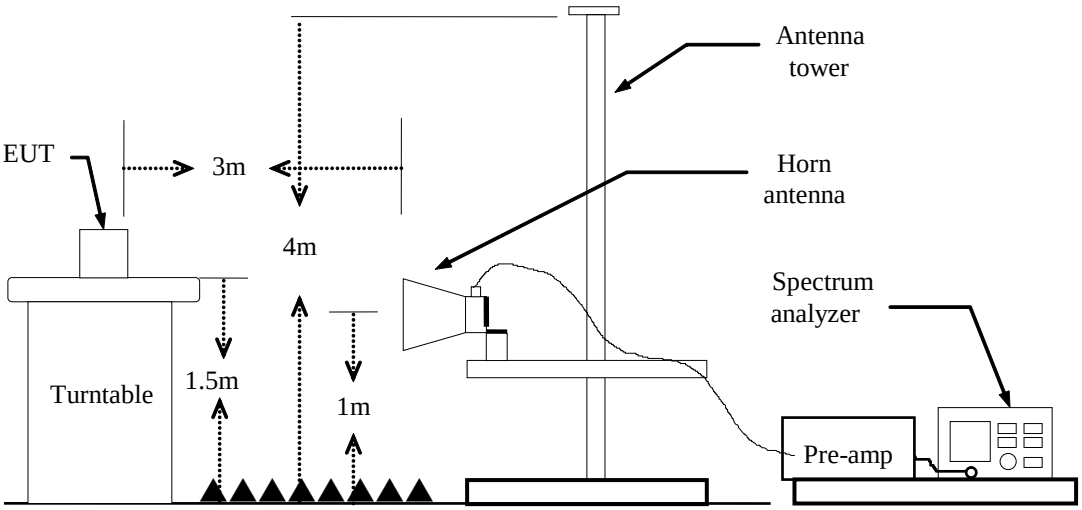
Below 30MHz



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:

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

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

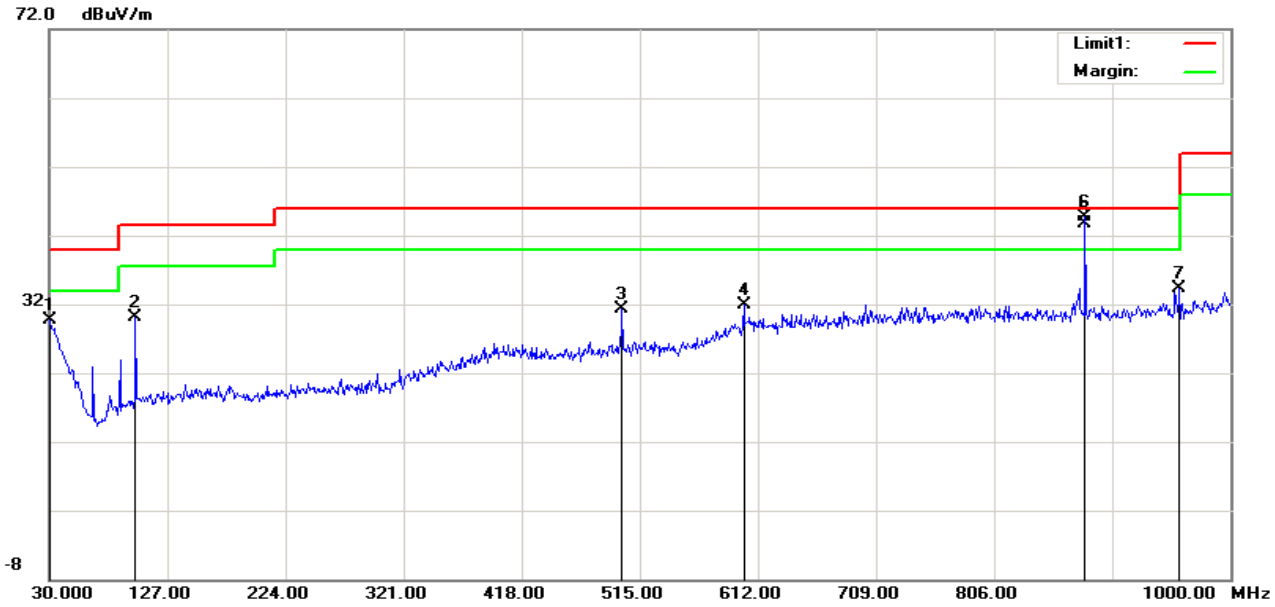
TEST RESULTS

Test Result of Radiated Emission

Below 30MHz and above 18GHz. The measured value have enough margin over 20dB than the limit, therefore they are not reported.

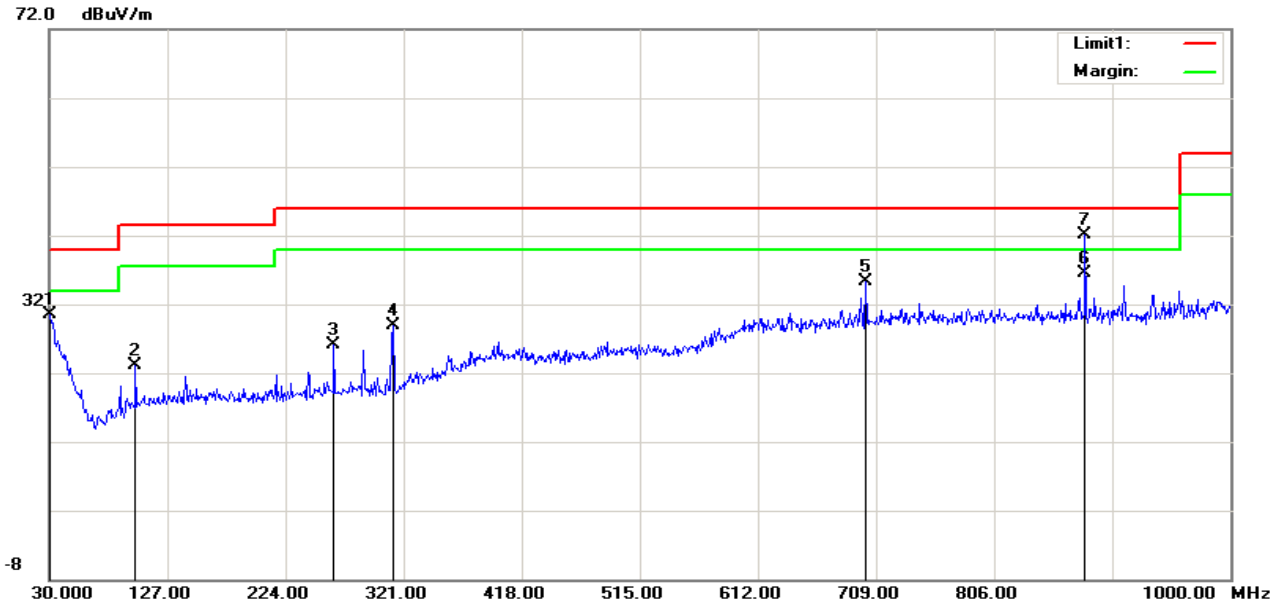
30MHz-1GHz

Operation Mode:	Normal Link	**Test Date:**	2018-3-19
Temperature:	25°C	**Tested by:**	Lily.Wang
Humidity:	48% RH	**Polarity:**	Hor.



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	30.9700	6.25	23.45	29.70	40.00	-10.30	100	340	peak
2	100.8100	16.63	13.54	30.17	43.50	-13.33	100	142	peak
3	500.4500	9.59	21.80	31.39	46.00	-14.61	100	227	peak
4	600.3600	7.28	24.67	31.95	46.00	-14.05	100	111	peak
5	879.8980	17.31	26.35	43.66	46.00	-2.34	100	237	QP
6	880.6900	18.41	26.35	44.76	46.00	-1.24	100	326	peak
7	958.2900	7.36	26.86	34.22	46.00	-11.78	100	325	peak

Operation Mode:	Normal Link	Test Date:	2018-3-19
Temperature:	25°C	Tested by:	Lily.Wang
Humidity:	48% RH	Polarity:	Ver.



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	30.9700	7.00	23.45	30.45	40.00	-9.55	100	87	peak
2	100.8100	9.58	13.54	23.12	43.50	-20.38	200	337	peak
3	263.7700	10.63	15.48	26.11	46.00	-19.89	100	48	peak
4	312.2700	12.36	16.62	28.98	46.00	-17.02	100	95	peak
5	700.2700	9.88	25.52	35.40	46.00	-10.60	100	48	peak
6	879.8630	10.10	26.35	36.45	46.00	-9.55	100	5	QP
7	880.6900	15.67	26.35	42.02	46.00	-3.98	100	56	peak

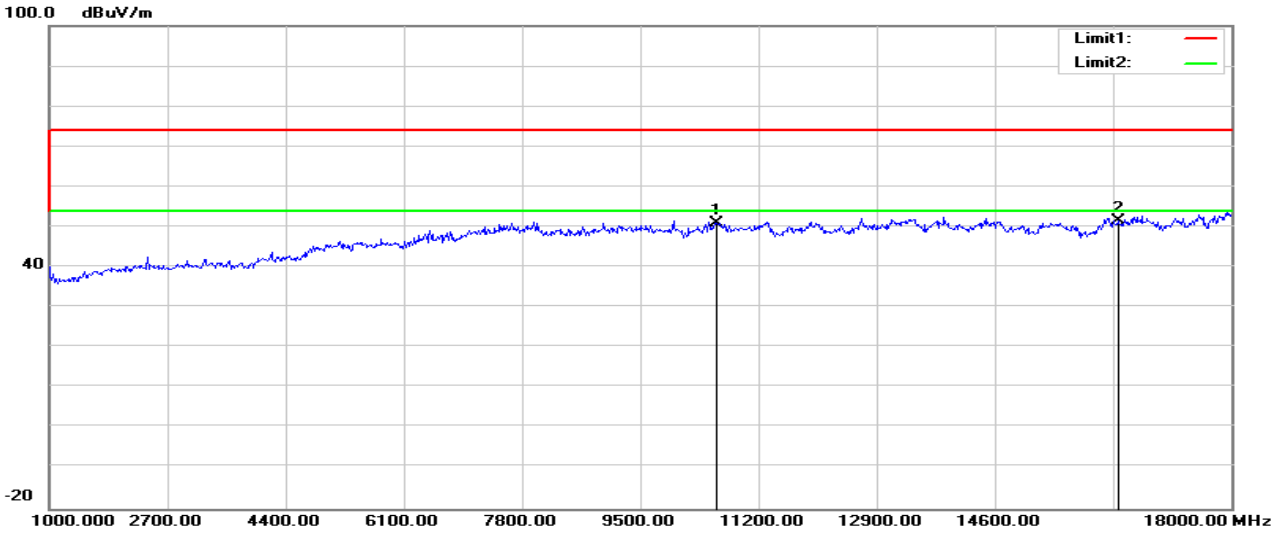
Remark:

1. Measuring frequencies from 30 MHz to the 1GHz.(no emission found from the lowest internal used/generated frequency to 30MHz)
2. Radiated emissions measured were made with an instrument using peak/quasi-peak detector mode.
3. Quasi-peak test would be performed if the peak result were greater than the quasi-peak limit or as required by the applicant.
4. 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.
5. Margin (dB) = Remark result (dBuV/m) – Quasi-peak limit (dBuV/m).

Above 1 GHz

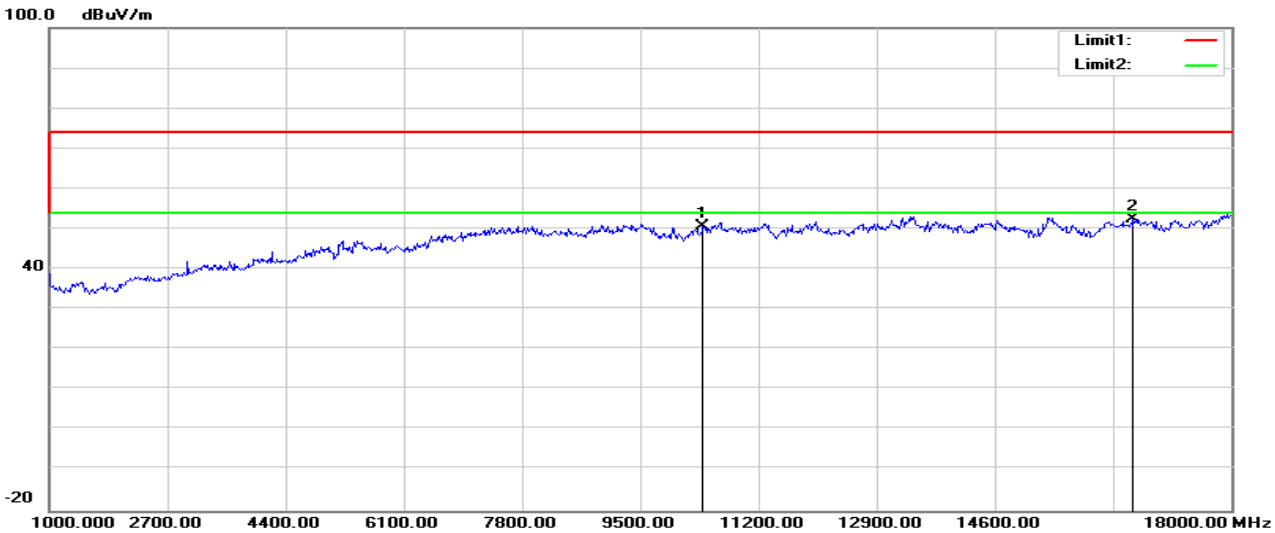
Operation Mode:	Tx / IEEE 802.11a mode CH Low	**Test Date:**	2018-3-19
Temperature:	25°C	**Tested by:**	Lily.Wang
Humidity:	55% RH	**Polarity:**	Ver. / Hor.

Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	10605.000	43.17	7.91	51.08	74.00	-22.92	100	238	peak
2	16368.000	39.58	11.94	51.52	74.00	-22.48	100	5	peak

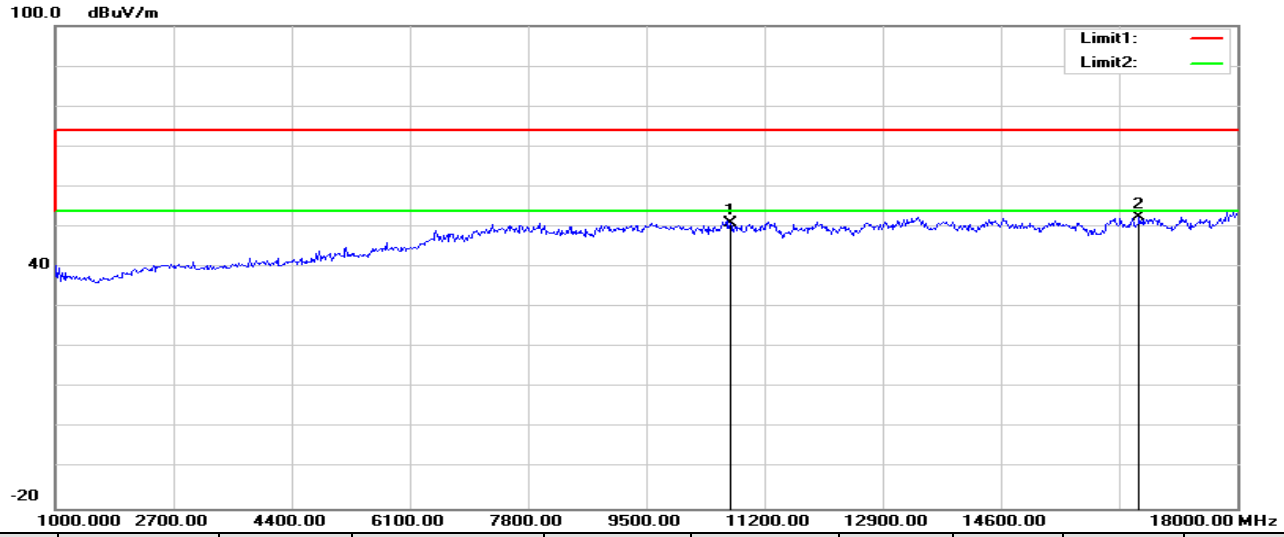
Vertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	10401.000	43.07	7.50	50.57	74.00	-23.43	100	144	peak
2	16589.000	40.14	12.26	52.40	74.00	-21.60	100	209	peak

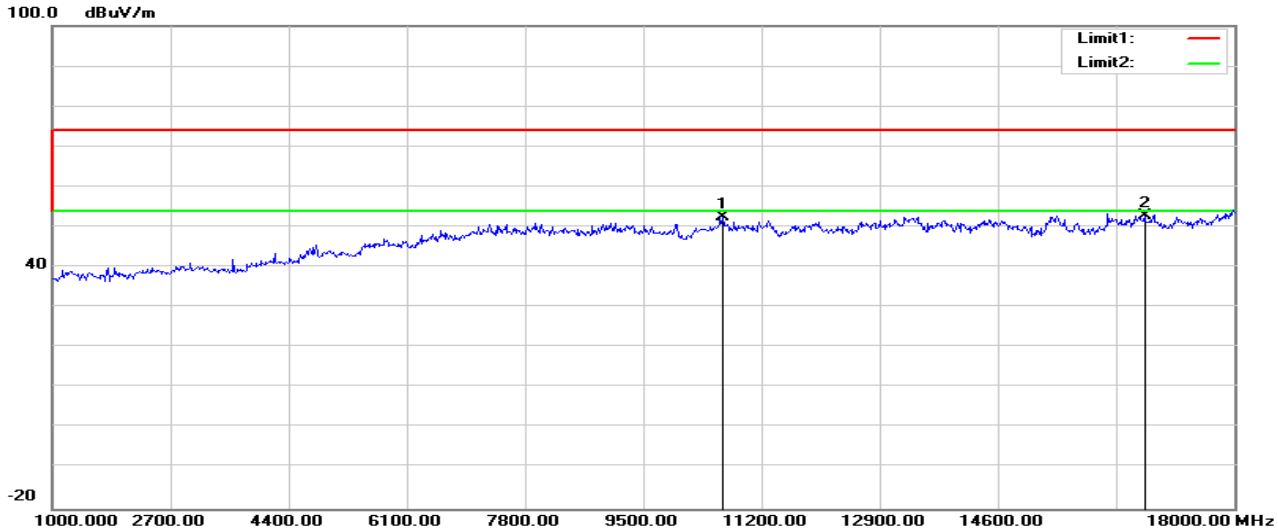
Operation Mode:	Tx / IEEE 802.11a mode CH Mid	Test Date:	2018-3-19
Temperature:	25°C	Tested by:	Lily.Wang
Humidity:	55% RH	Polarity:	Ver. / Hor.

Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	10707.000	42.95	8.00	50.95	74.00	-23.05	100	331	peak
2	16589.000	40.14	12.26	52.40	74.00	-21.60	100	232	peak

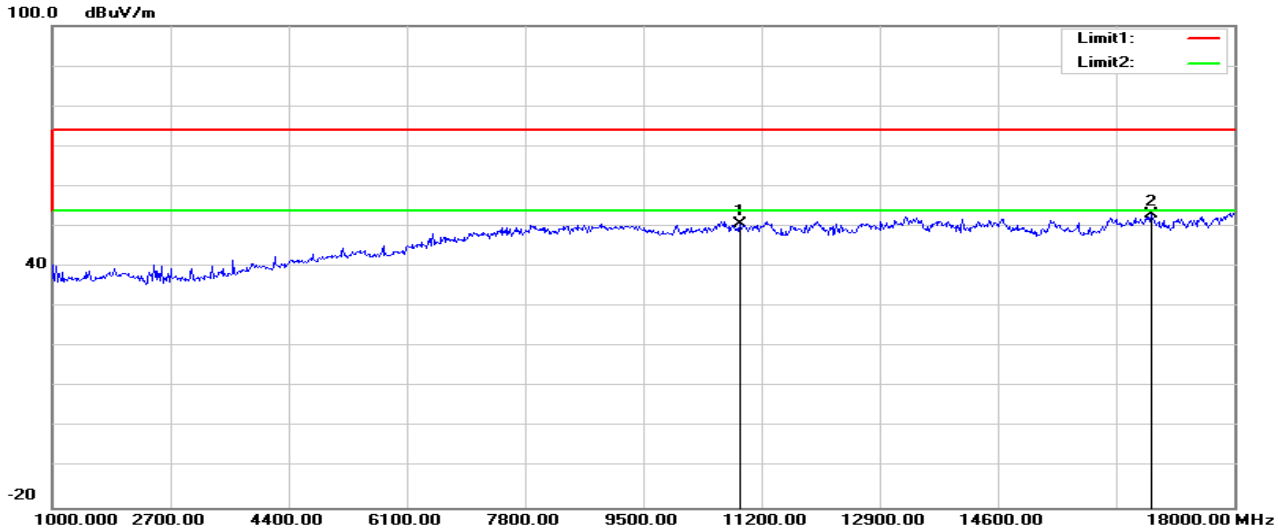
Vertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	10639.000	44.45	7.94	52.39	74.00	-21.61	100	79	peak
2	16708.000	40.67	11.99	52.66	74.00	-21.34	100	57	peak

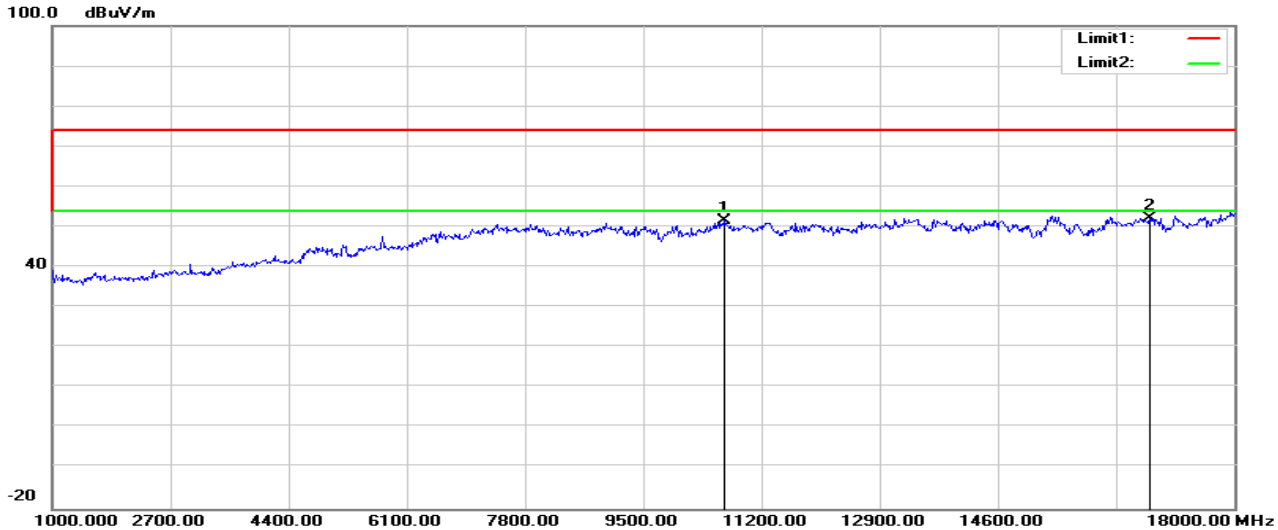
Operation Mode:	Tx / IEEE 802.11a mode CH High	Test Date:	2018-3-19
Temperature:	25°C	Tested by:	Lily.Wang
Humidity:	55% RH	Polarity:	Ver. / Hor.

Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	10894.000	42.42	8.16	50.58	74.00	-23.42	100	273	peak
2	16810.000	41.20	11.75	52.95	74.00	-21.05	100	196	peak

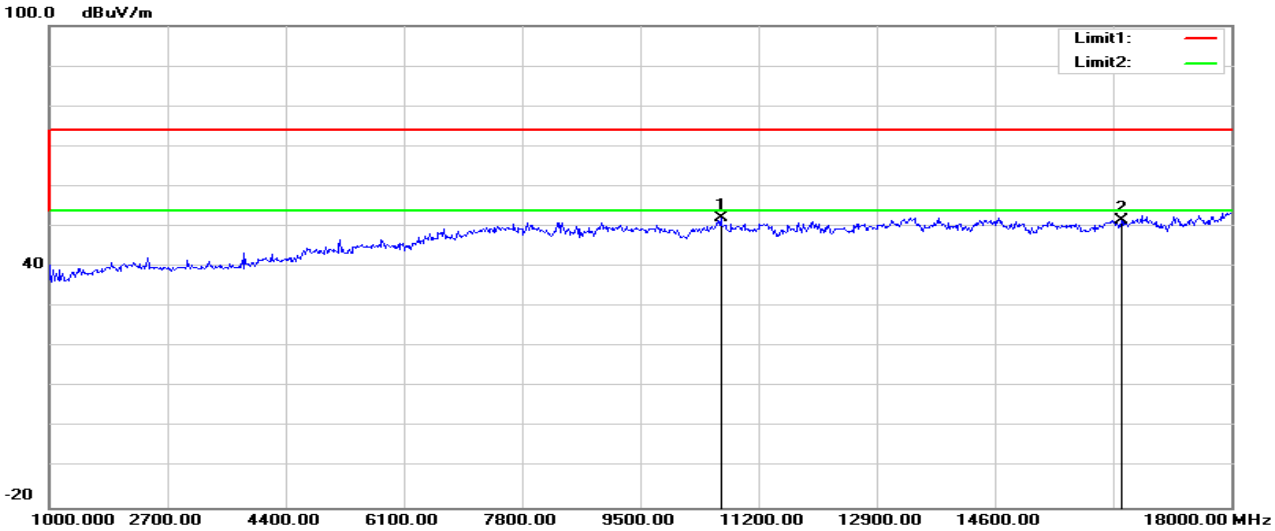
Vertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	10673.000	43.55	7.97	51.52	74.00	-22.48	100	19	peak
2	16776.000	40.44	11.83	52.27	74.00	-21.73	100	173	peak

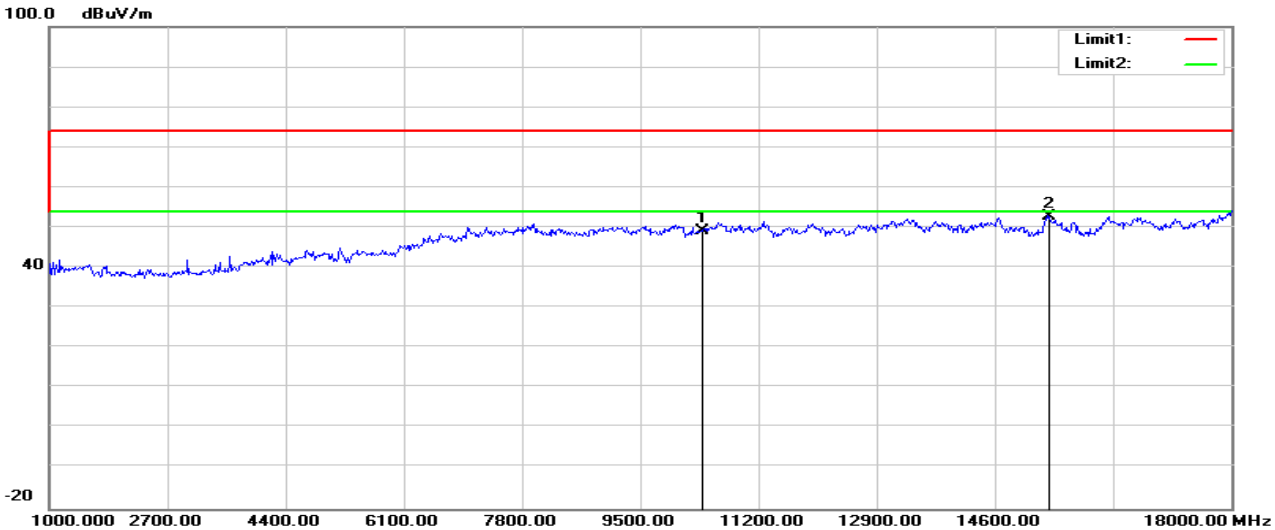
Operation Mode:	TX / IEEE 802.11n HT20 mode /CH Low	Test Date:	2018-3-19
Temperature:	25°C	Tested by:	Lily.Wang
Humidity:	55% RH	Polarity:	Ver. / Hor.

Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	10656.000	44.34	7.95	52.29	74.00	-21.71	100	269	peak
2	16419.000	39.36	12.15	51.51	74.00	-22.49	100	347	peak

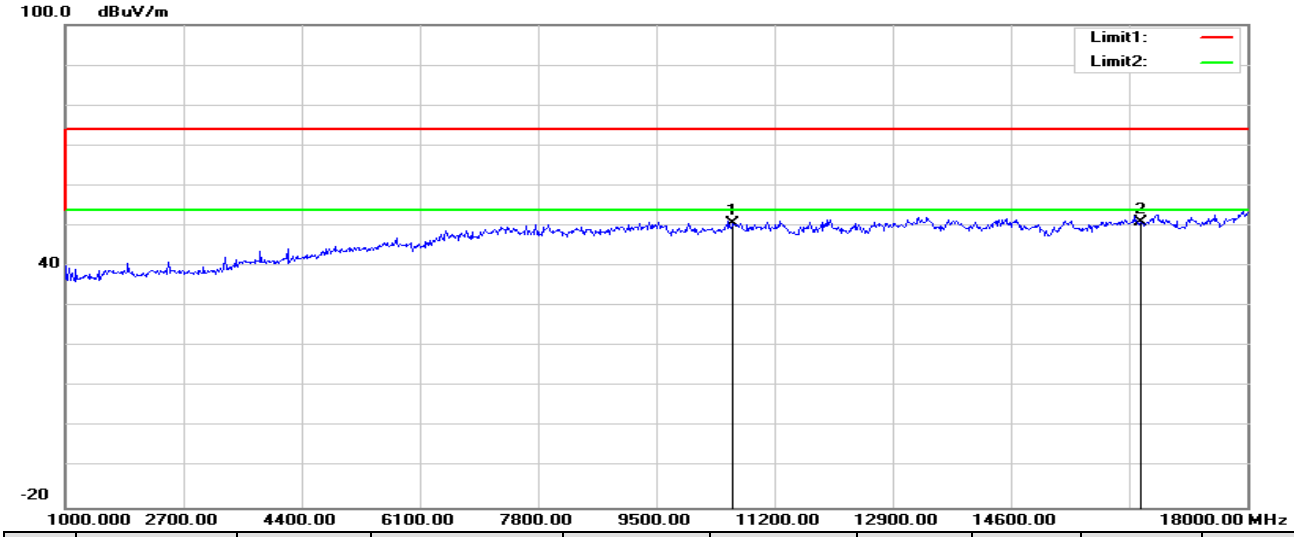
Vertical



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	10384.000	41.73	7.44	49.17	74.00	-24.83	100	139	peak
2	15382.000	41.33	11.29	52.62	74.00	-21.38	100	306	peak

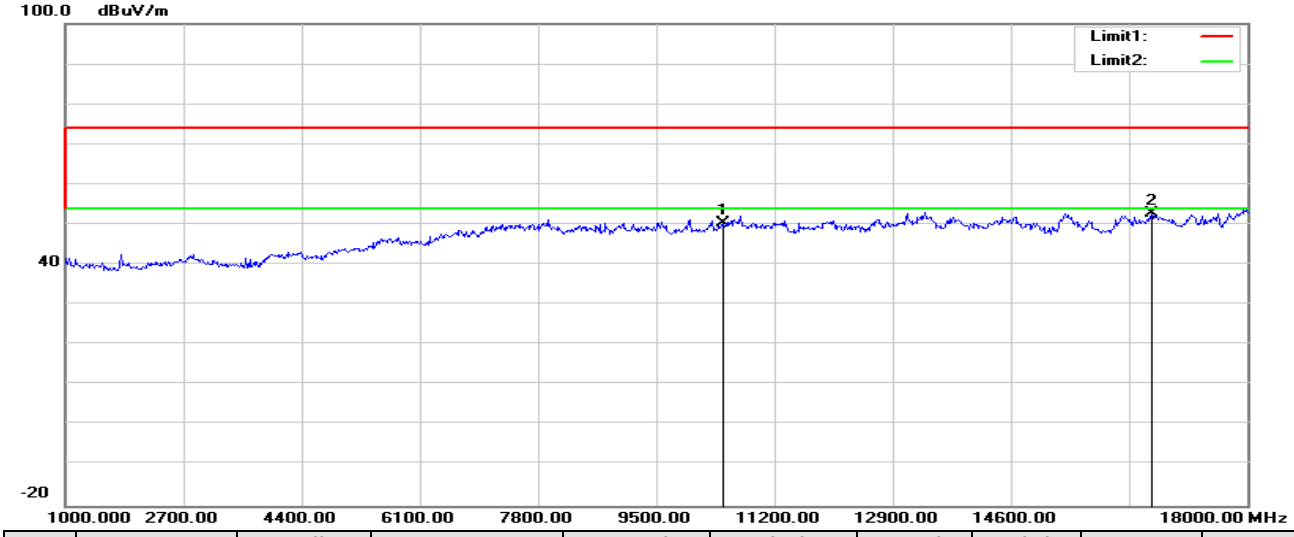
Operation Mode:	TX / IEEE 802.11n HT20 mode /CH Mid	Test Date:	2018-3-19
Temperature:	25°C	Tested by:	Lily.Wang
Humidity:	55% RH	Polarity:	Ver. / Hor.

Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	10605.000	42.86	7.91	50.77	74.00	-23.23	100	261	peak
2	16470.000	38.67	12.35	51.02	74.00	-22.98	100	0	peak

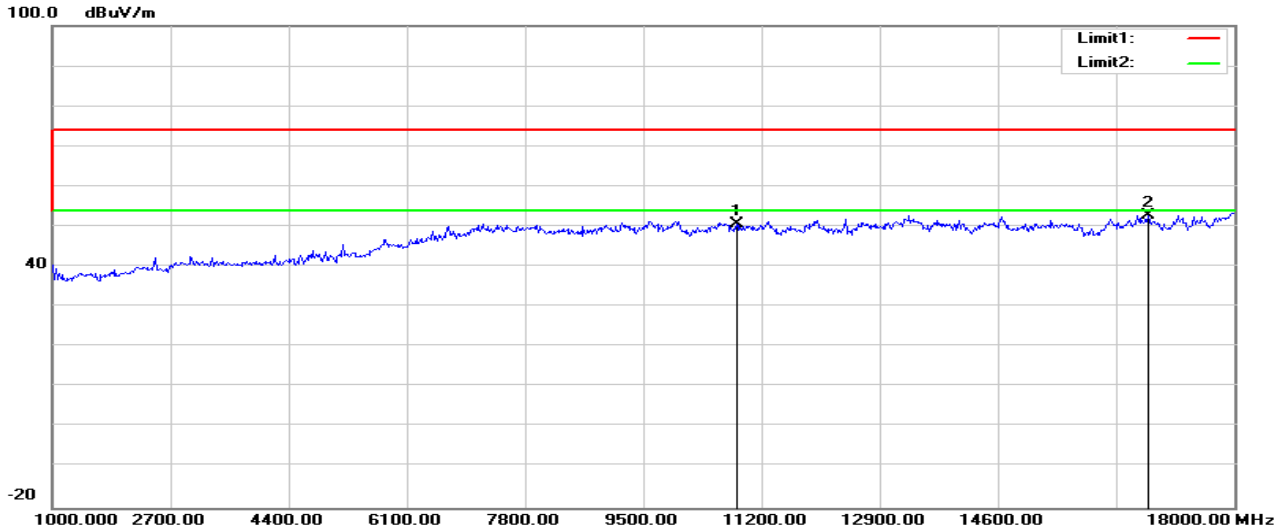
Vertical



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	10452.000	42.64	7.66	50.30	74.00	-23.70	100	199	peak
2	16623.000	40.61	12.18	52.79	74.00	-21.21	100	15	peak

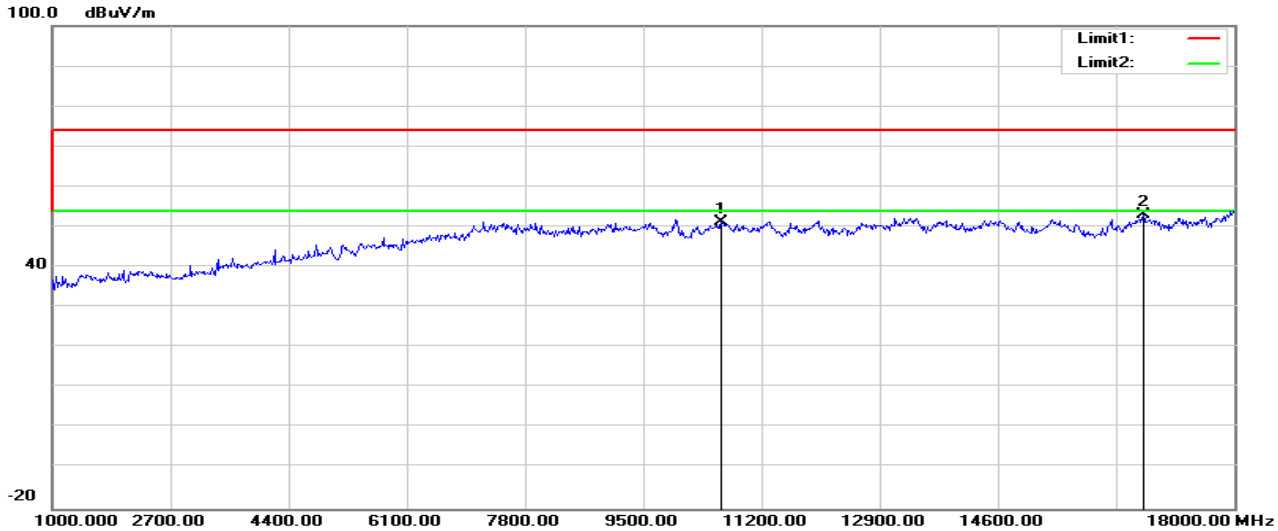
Operation Mode:	TX / IEEE 802.11n HT20 mode /CH High	Test Date:	2018-3-19
Temperature:	25°C	Tested by:	Lily.Wang
Humidity:	55% RH	Polarity:	Ver. / Hor.

Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	10843.000	42.52	8.11	50.63	74.00	-23.37	100	155	peak
2	16759.000	40.73	11.87	52.60	74.00	-21.40	100	181	peak

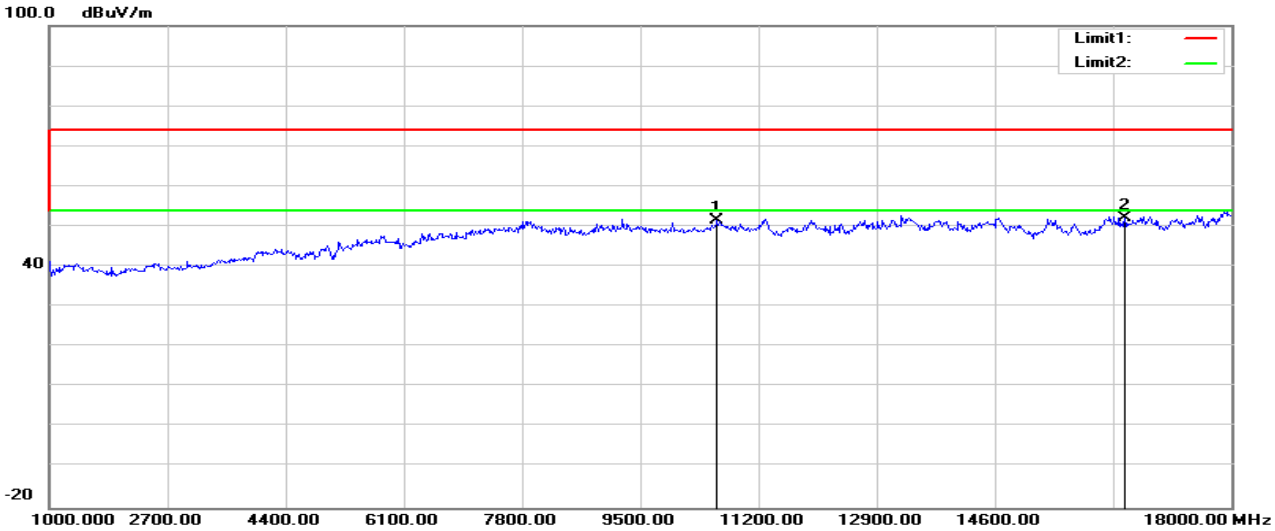
Vertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	10622.000	43.45	7.92	51.37	74.00	-22.63	100	107	peak
2	16691.000	40.95	12.03	52.98	74.00	-21.02	100	245	peak

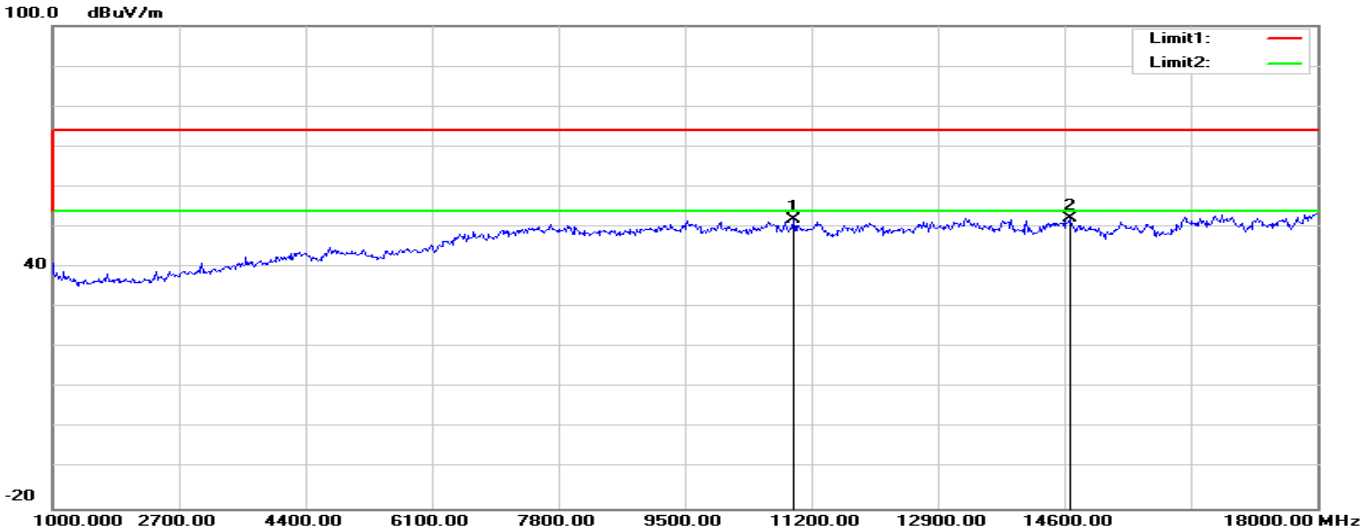
Operation Mode:	TX / IEEE 802.11n HT40 mode /CH Low	Test Date:	2018-3-19
Temperature:	25°C	Tested by:	Lily.Wang
Humidity:	55% RH	Polarity:	Ver. / Hor.

Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	10605.000	43.62	7.91	51.53	74.00	-22.47	100	205	peak
2	16470.000	39.75	12.35	52.10	74.00	-21.90	100	0	peak

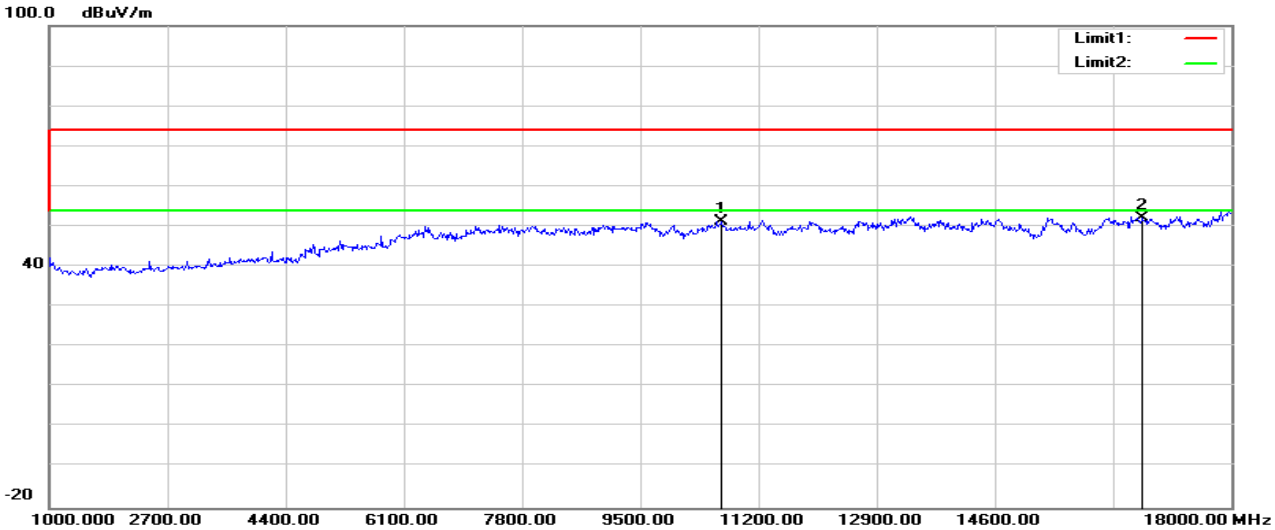
Vertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	10962.000	43.54	8.22	51.76	74.00	-22.24	100	141	peak
2	14668.000	41.79	10.51	52.30	74.00	-21.70	100	125	peak

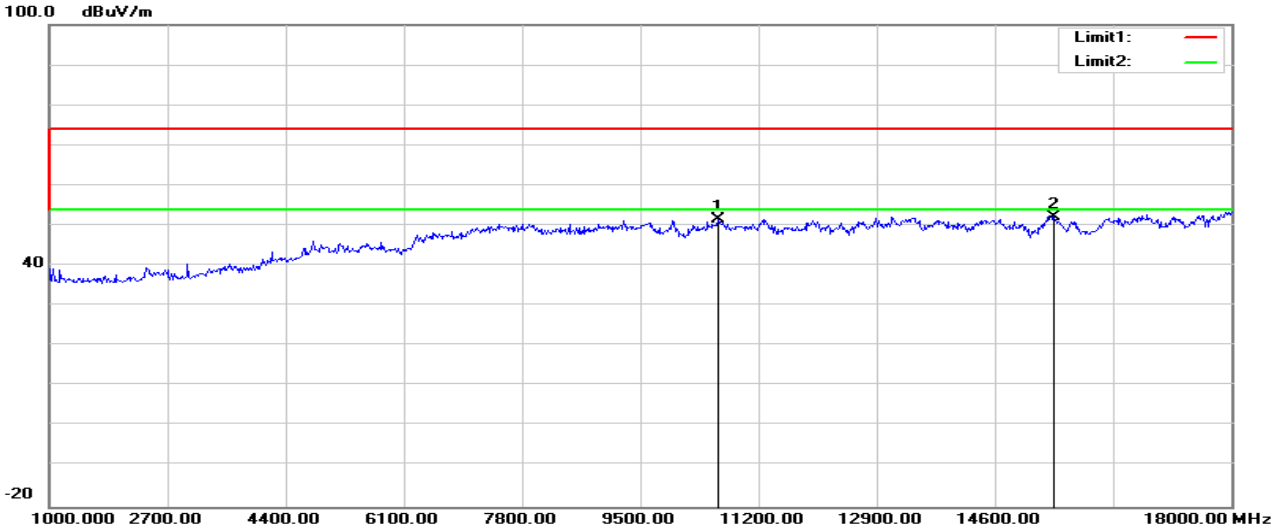
Operation Mode:	TX / IEEE 802.11n HT40 mode /CH High	Test Date:	2018-3-19
Temperature:	25°C	Tested by:	Lily.Wang
Humidity:	55% RH	Polarity:	Ver. / Hor.

Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	10673.000	43.14	7.97	51.11	74.00	-22.89	100	43	peak
2	16725.000	40.08	11.95	52.03	74.00	-21.97	100	93	peak

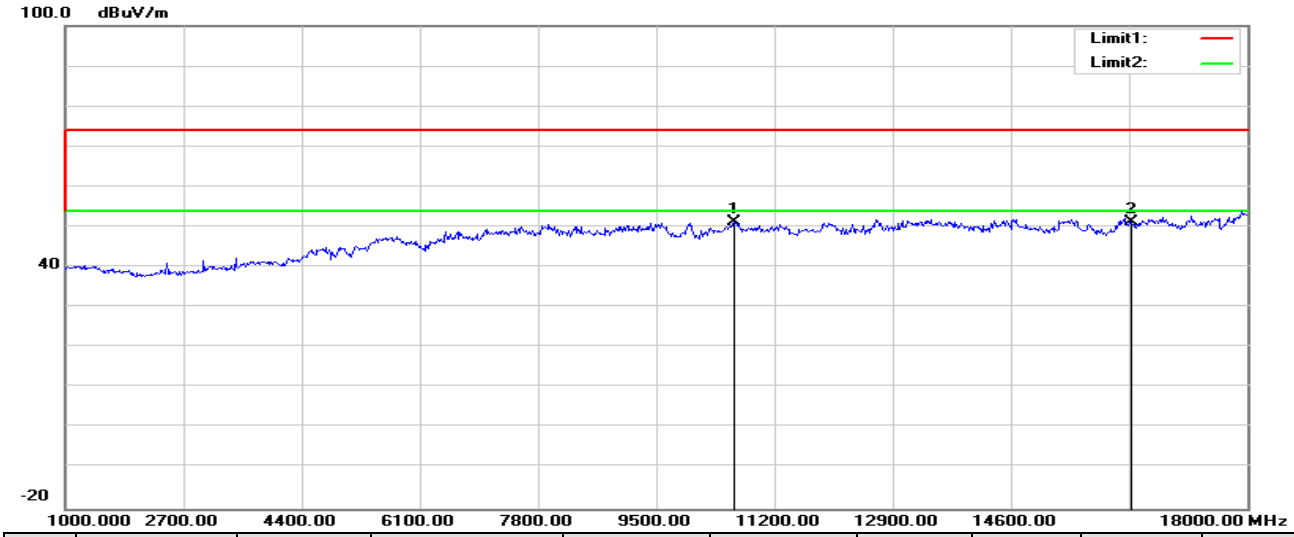
Vertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	10622.000	43.55	7.92	51.47	74.00	-22.53	100	173	peak
2	15450.000	40.62	11.50	52.12	74.00	-21.88	100	257	peak

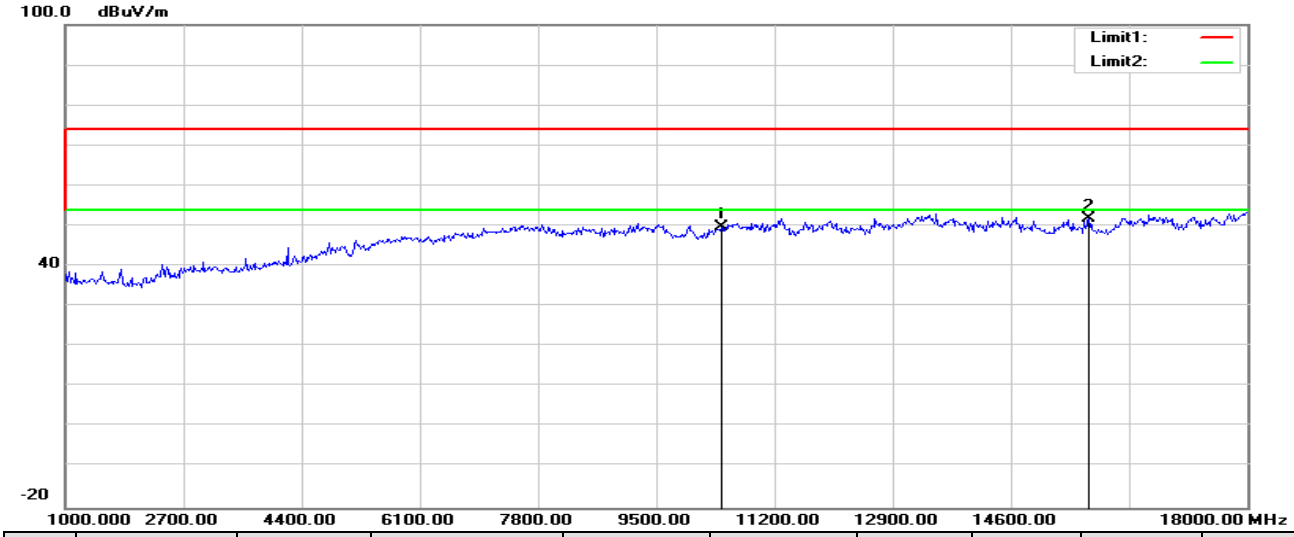
Operation Mode:	TX / IEEE 802.11ac VHT20 mode /CH Low	Test Date:	2018-3-19
Temperature:	25°C	Tested by:	Lily.Wang
Humidity:	55% RH	Polarity:	Ver. / Hor.

Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	10622.000	43.26	7.92	51.18	74.00	-22.82	100	92	peak
2	16334.000	39.57	11.81	51.38	74.00	-22.62	100	219	peak

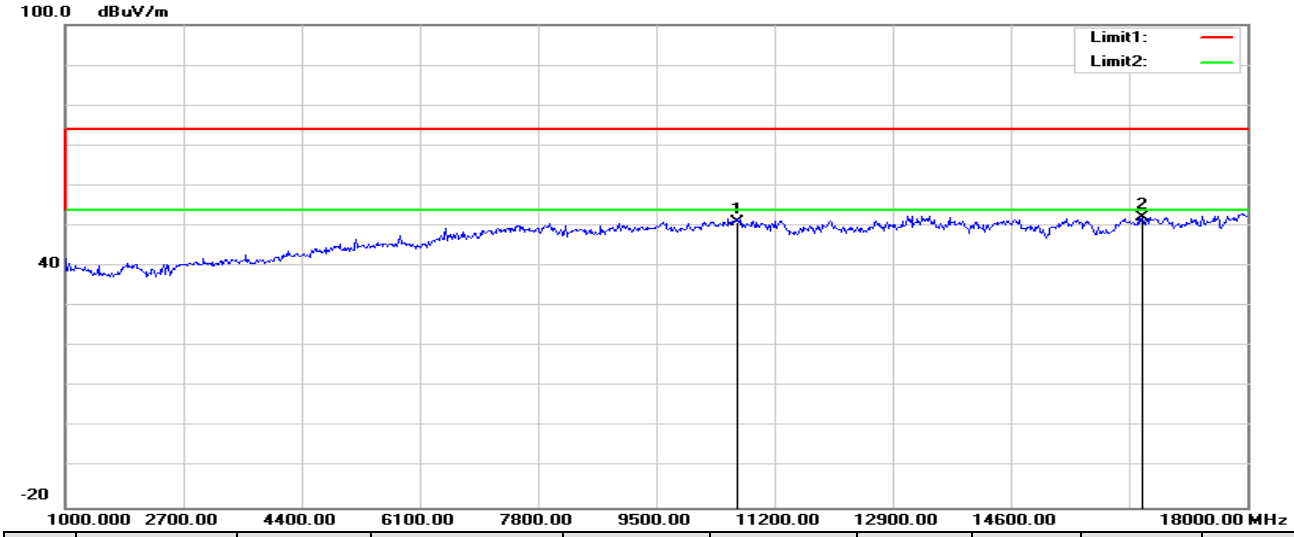
Vertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	10435.000	42.21	7.61	49.82	74.00	-24.18	100	222	peak
2	15722.000	40.84	11.13	51.97	74.00	-22.03	100	237	peak

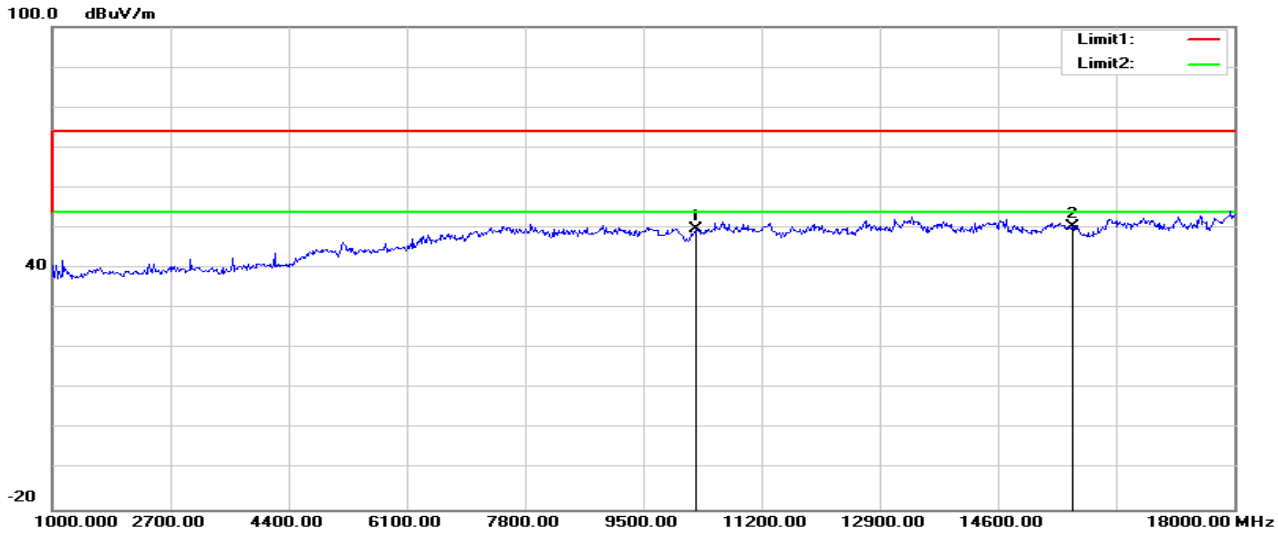
Operation Mode:	TX / IEEE 802.11ac VHT20 mode /CH Mid	Test Date:	2018-3-19
Temperature:	25°C	Tested by:	Lily.Wang
Humidity:	55% RH	Polarity:	Ver. / Hor.

Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	10673.000	42.88	7.97	50.85	74.00	-23.15	100	0	peak
2	16487.000	39.87	12.42	52.29	74.00	-21.71	100	327	peak

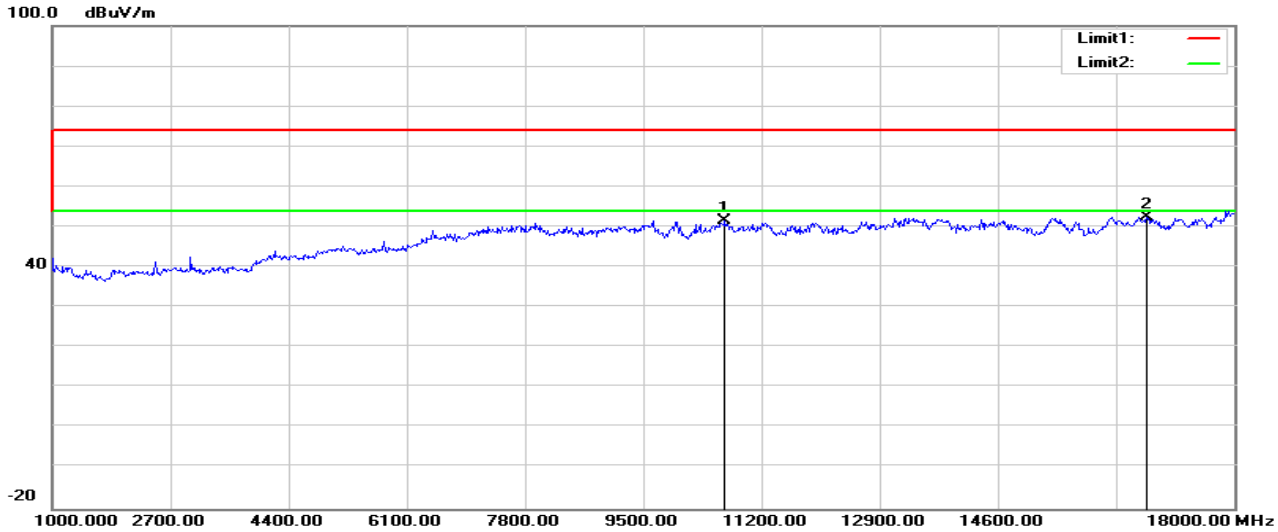
Vertical



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	10248.000	42.67	7.00	49.67	74.00	-24.33	100	39	peak
2	15671.000	39.25	11.25	50.50	74.00	-23.50	100	324	peak

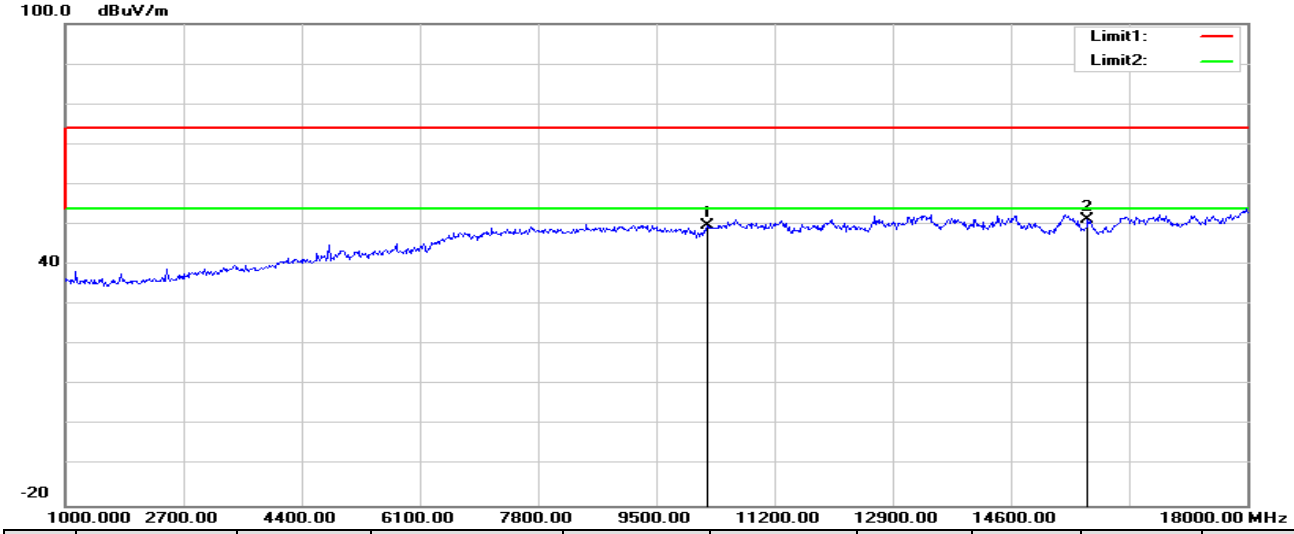
Operation Mode:	TX / IEEE 802.11ac VHT20 mode /CH High	Test Date:	2018-3-19
Temperature:	25°C	Tested by:	Lily.Wang
Humidity:	55% RH	Polarity:	Ver. / Hor.

Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	10673.000	43.47	7.97	51.44	74.00	-22.56	100	30	peak
2	16742.000	40.56	11.91	52.47	74.00	-21.53	100	124	peak

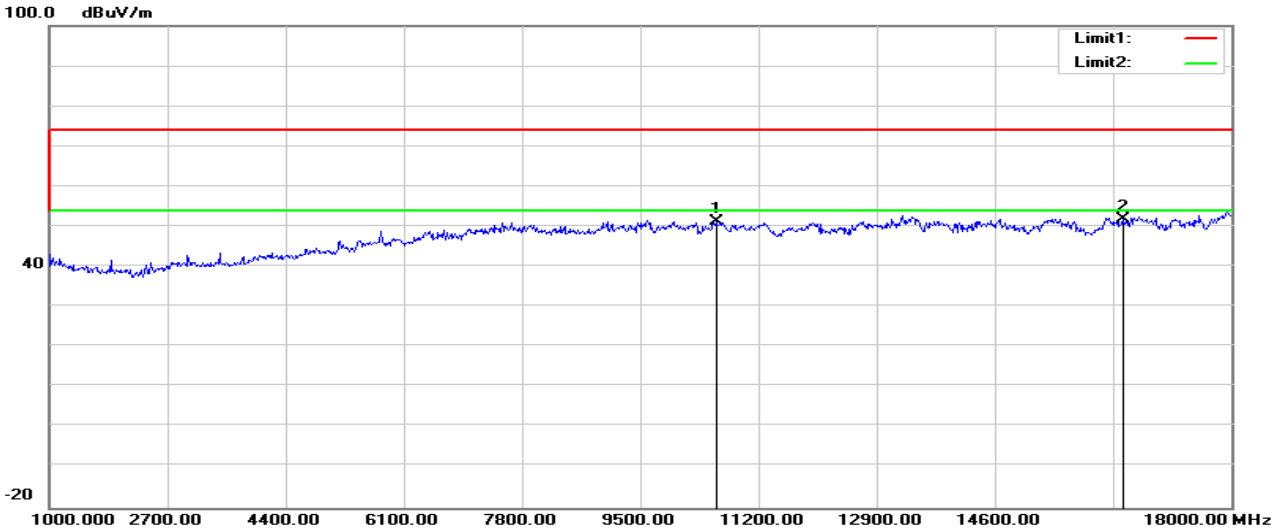
Vertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	10231.000	42.75	6.95	49.70	74.00	-24.30	100	122	peak
2	15705.000	39.94	11.17	51.11	74.00	-22.89	100	218	peak

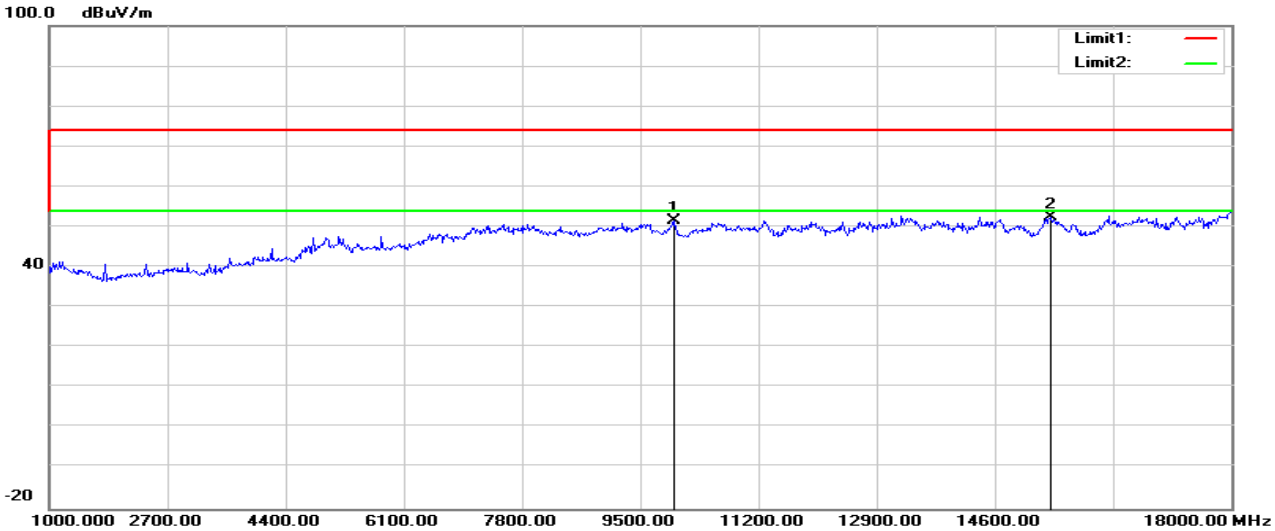
Operation Mode:	TX / IEEE 802.11ac VHT40 mode /CH Low	Test Date:	2018-3-19
Temperature:	25°C	Tested by:	Lily.Wang
Humidity:	55% RH	Polarity:	Ver. / Hor.

Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	10588.000	43.33	7.90	51.23	74.00	-22.77	100	99	peak
2	16436.000	39.65	12.21	51.86	74.00	-22.14	100	22	peak

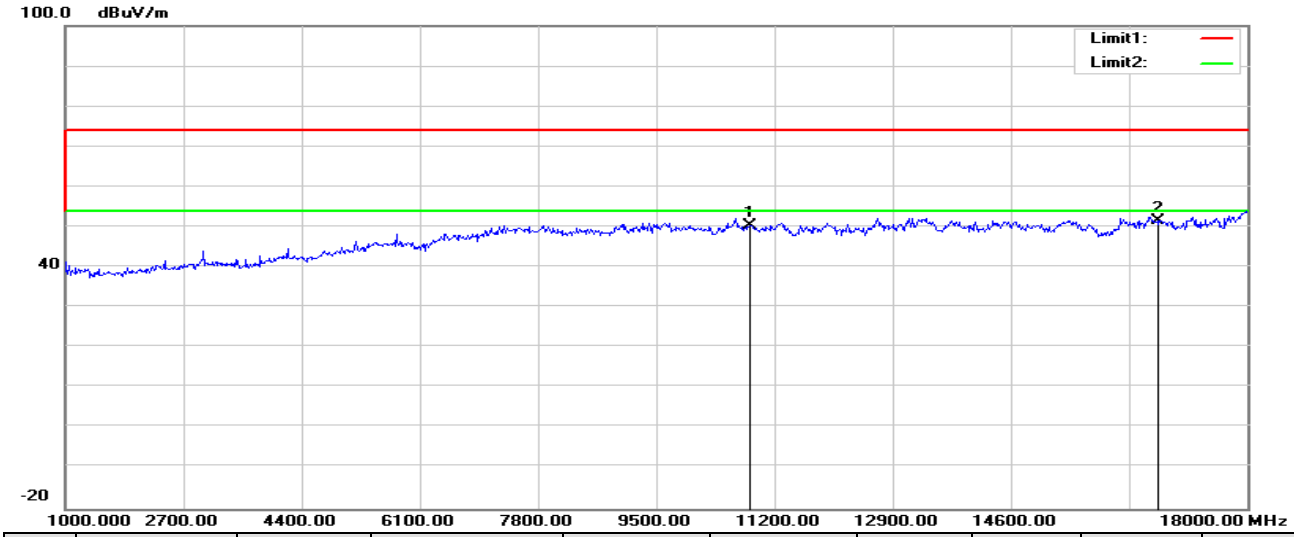
Vertical



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	9976.000	45.41	6.26	51.67	74.00	-22.33	100	125	peak
2	15399.000	41.04	11.34	52.38	74.00	-21.62	100	0	peak

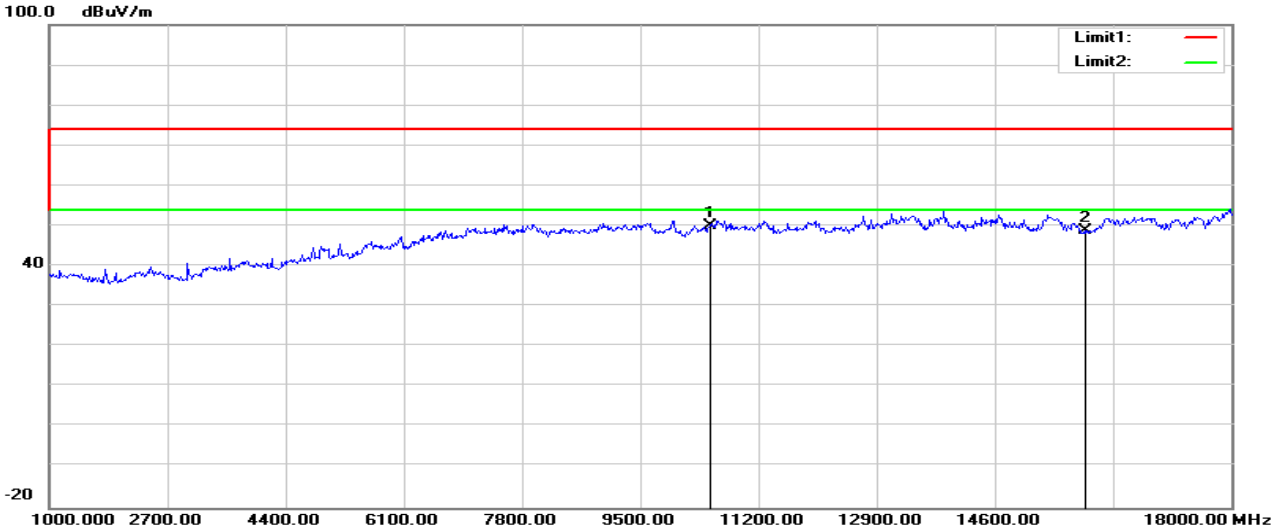
Operation Mode:	TX / IEEE 802.11ac VHT40 mode /CH High	Test Date:	2018-3-19
Temperature:	25°C	Tested by:	Lily.Wang
Humidity:	55% RH	Polarity:	Ver. / Hor.

Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	10843.000	42.14	8.11	50.25	74.00	-23.75	100	193	peak
2	16708.000	39.64	11.99	51.63	74.00	-22.37	100	347	peak

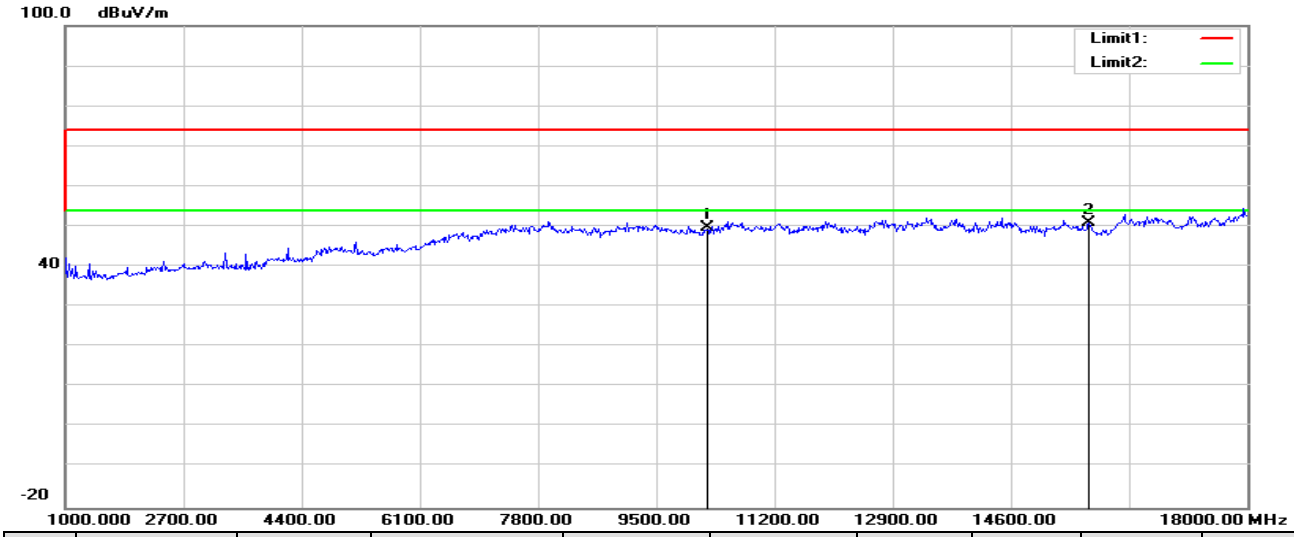
Vertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	10503.000	42.34	7.82	50.16	74.00	-23.84	100	143	peak
2	15892.000	38.27	10.72	48.99	74.00	-25.01	100	121	peak

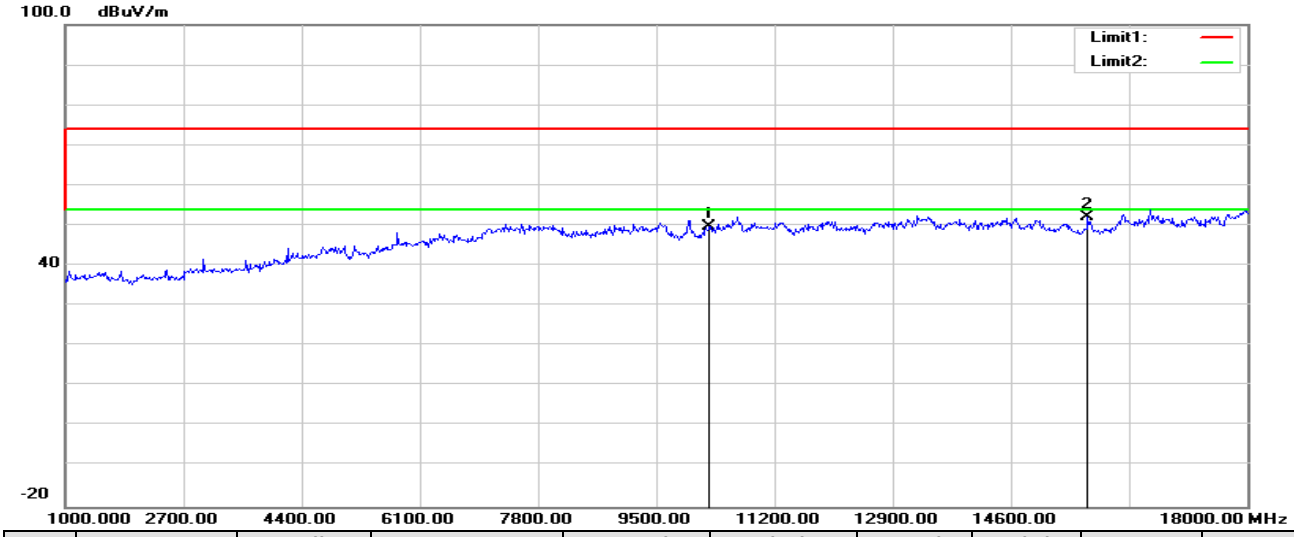
Operation Mode:	TX / IEEE 802.11ac VHT80 mode /CH Mid	Test Date:	2018-3-19
Temperature:	25°C	Tested by:	Lily.Wang
Humidity:	55% RH	Polarity:	Ver. / Hor.

Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	10231.000	42.81	6.95	49.76	74.00	-24.24	100	228	peak
2	15722.000	39.82	11.13	50.95	74.00	-23.05	100	14	peak

Vertical



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	10265.000	42.60	7.06	49.66	74.00	-24.34	100	93	peak
2	15705.000	41.01	11.17	52.18	74.00	-21.82	100	210	peak

7.8 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 Setup photo 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.

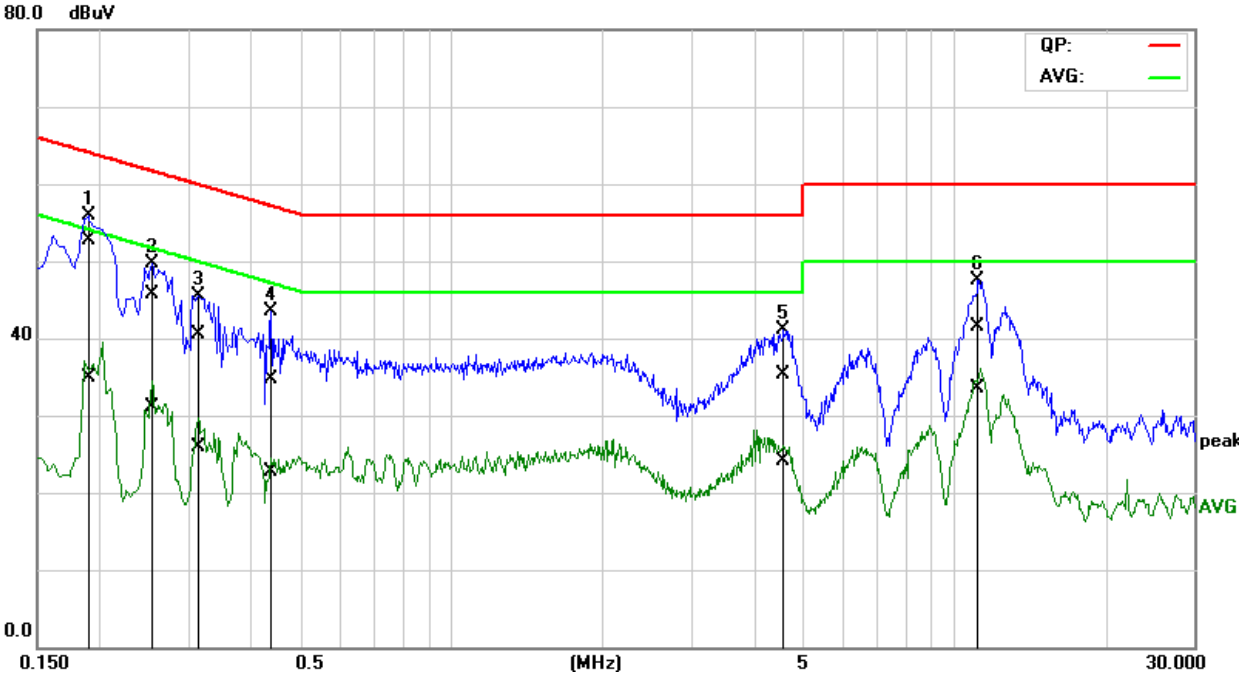
TEST RESULTS

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.:	C171023R02	Date:	2018/3/1
Model No.:	YVR.1117	Time:	9:20:13
Standard:	FCC Class B	Temp.(C)/Hum.(%):	22(C)/48%
Test item:	Conduction test	Test By:	Lily.Wang
Line:	L1	Test Voltage:	AC 120V/60Hz
Model:		Description:	

L1

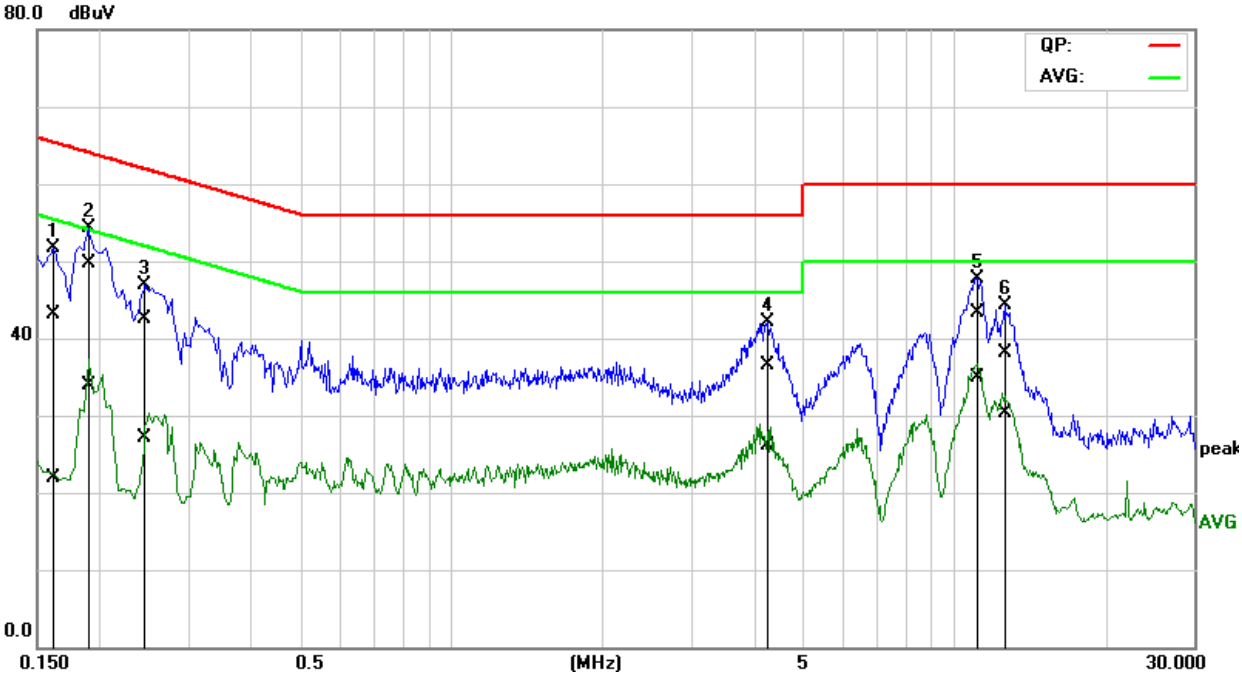


No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1*	0.1868	32.61	14.79	20.09	52.70	34.88	64.18	54.18	-11.48	-19.30	Pass
2	0.2514	25.63	11.04	20.14	45.77	31.18	61.71	51.71	-15.94	-20.53	Pass
3	0.3114	20.29	5.86	20.14	40.43	26.00	59.93	49.93	-19.50	-23.93	Pass
4	0.4340	14.48	2.56	20.15	34.63	22.71	57.18	47.18	-22.55	-24.47	Pass
5	4.5565	14.96	3.81	20.38	35.34	24.19	56.00	46.00	-20.66	-21.81	Pass
6	11.1748	20.62	12.77	20.80	41.42	33.57	60.00	50.00	-18.58	-16.43	Pass

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

Job No.:	C171023R02	Date:	2018/3/1
Model No.:	YVR.1117	Time:	9:26:04
Standard:	FCC Class B	Temp.(C)/Hum.(%):	22(C)/48%
Test item:	Conduction test	Test By:	Lily.Wang
Line:	L2	Test Voltage:	AC 120V/60Hz
Model:		Description:	

L2



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1*	0.1607	22.97	1.88	20.07	43.04	21.95	65.43	55.43	-22.39	-33.48	Pass
2	0.1887	29.57	13.77	20.09	49.66	33.86	64.09	54.09	-14.43	-20.23	Pass
3	0.2460	22.44	6.92	20.13	42.57	27.05	61.89	51.89	-19.32	-24.84	Pass
4	4.2656	16.22	5.75	20.33	36.55	26.08	56.00	46.00	-19.45	-19.92	Pass
5	11.0549	22.54	14.18	20.76	43.30	34.94	60.00	50.00	-16.70	-15.06	Pass
6	12.6476	17.25	9.52	20.77	38.02	30.29	60.00	50.00	-21.98	-19.71	Pass

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

*R*emark:

1.The measuring frequencies range between 0.15 MHz and 30 MHz.

2.The emissions measured in the frequency range between 0.15 MHz and 30MHz were made with an instrument using Quasi-peak detector and Average detector.

3."---" denotes the emission level was or more than 2dB below the Average limit, and no re-check was made.

4.The IF bandwidth of SPA between 0.15MHz and 30MHz was 10KHz. The IF bandwidth of Test Receiver between 0.15MHz and 30MHz was 9kHz.

END OF REPORT