FCC 47 CFR PART15 SUBPART E

For

Prepared by

Product Name: Intelligent Biometric Identification Terminal

Brand Name: opzoon

Model No.: OFR-D1

Series Model.:N/A

FCC ID: 2AN4A-OPD1AA001

Test Report Number:

C170929R01-RPW1

Issued for

Opzoon Technology Co., Ltd.

11th floor, Tower B, Yintai Center 2 Jianguomenwai St., Beijing, China 100022

Issued by

Compliance Certification Services Inc.

Kun shan Laboratory

**No.10 Weiye Rd., Innovation park, Eco&Tec,
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TESTING CERT #2541.01

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Revision History

Rev.	Issue Date	Report NO.	Effect Page	Contents
00	November 21, 2017	C170929R01-RPW1	ALL	N/A

1 TEST RESULT CERTIFICATION

Product Name:	Intelligent Biometric Identification Terminal
Trade Name:	opzoon
Model Name.:	OFR-D1
Series Model:	N/A
Applicant Discrepancy:	Initial
Device Category:	mobile unit
Date of Test:	October 10, 2017~November 19, 2017
Applicant:	**Opzoon Technology Co., Ltd.** 11th floor, Tower B, Yintai Center 2 Jianguomenwai St., Beijing, China 100022
Manufacturer:	**Opzoon Technology Co., Ltd.** 11th floor, Tower B, Yintai Center 2 Jianguomenwai St., Beijing, China 100022
Application Type:	Certification

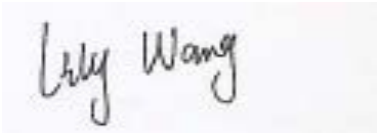
APPLICABLE STANDARDS	
STANDARD	**TEST RESULT**
FCC 47 CFR Part 15 Subpart E	No non-compliance noted

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:	Intelligent Biometric Identification Terminal			
Brand Name:	opzoon			
Model Name:	OFR-D1			
Series Model:	N/A			
Model Discrepancy:	N/A			
Power Adapter:	Power Adapter： Model :FSP050-DIBAN2 Input: 100-240V~,1.5A ,50-60Hz Output: 12.0V⎓4.16A MAX(50W MAX)			
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: 14.69dBm IEEE802.11an HT20 mode: 14.83dBm IEEE802.11an HT40 mode: 14.08dBm IEEE802.11ac VHT20 mode: 15.00dBm IEEE802.11ac VHT40 mode: 14.10dBm IEEE802.11ac VHT80 mode: 13.28dBm			
Modulation Technique :	IEEE802.11a mode: OFDM (6,9,12,18,24,36,48 and 54 Mbps) IEEE802.11an HT20 mode: OFDM (MCS0~MCS15) IEEE802.11an HT40 mode: OFDM (MCS0~MCS15) 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)		
		2.4G	BandI	BandIV
	Antenna 1	2.04	3.96	3.40
	Antenna 2	2.04	3.96	3.40
Beamforming Function:	☐ With beamforming		☒ Without beamforming	

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: 2AN4A-OPD1AA001***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 positioned at 0.8 m above the ground plane. According to the requirements in Section 13.3 of ANSI C63.10:2013, the conducted emission from the EUT is measured in the frequency range between 0.15 MHz and 30MHz, using the CISPR Quasi-Peak detector mode.

Radiated Emissions

Under 1GHz

The EUT is placed on a turn table, which is 0.8 m above ground plane. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the maximum emissions, exploratory radiated emission measurements were made according to the requirements in Section 13.1.4.1 of ANSI C63.10:2013.

Above 1GHz

The EUT is placed on a turn table, which is 1.5 m above ground plane. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the maximum emissions, exploratory radiated emission measurements were made according to the requirements in Section 13.1.4.1 of ANSI C63.10:2013.

3.4 FCC PART 15.205 RESTRICTED BANDS OF OPERATIONS

(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

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.

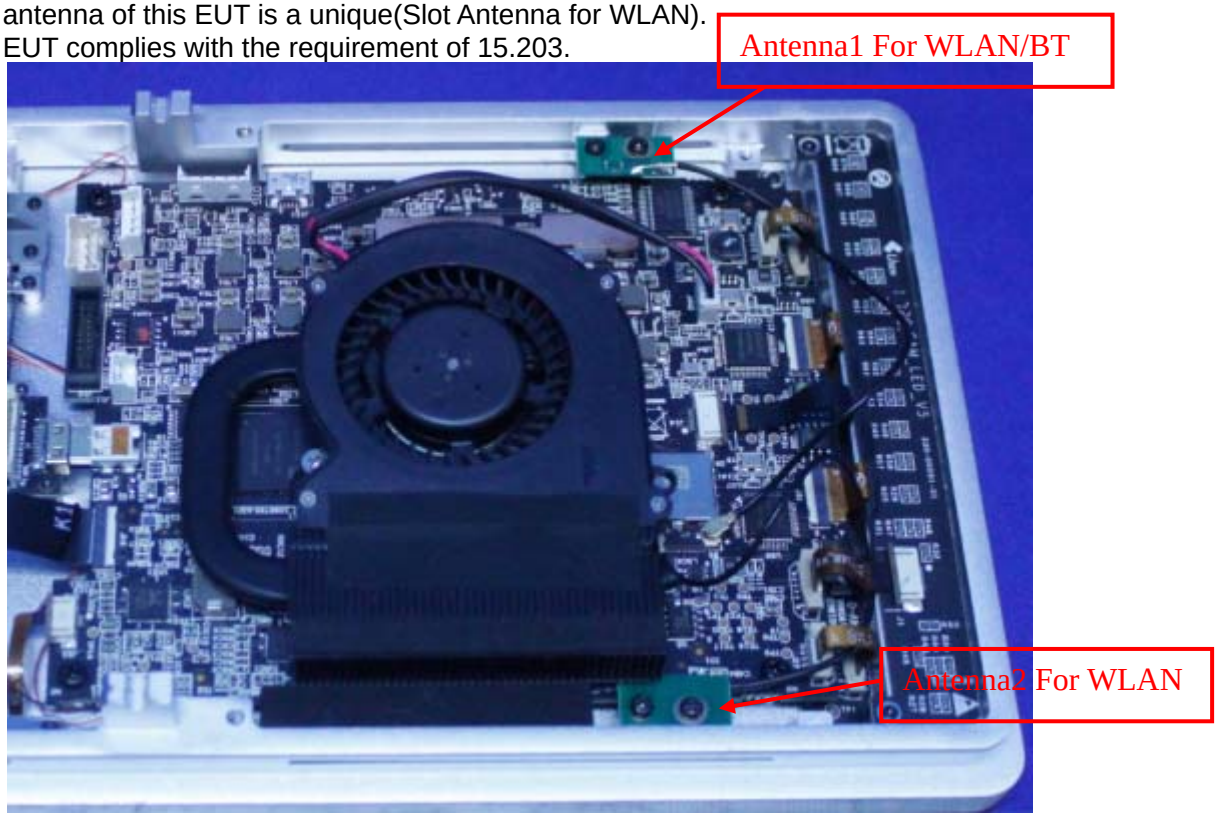
IEEE 802.11ac VHT80 mode:

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

3.6 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(Slot Antenna for WLAN).
* 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
Temp. / Humidity Gauge	Anymetre	TH603	CCS007	2017-10-24	2018-10-23
Test Software			EZ-EMC		

977 Chamber					
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Data**	**Calibration Due**
Spectrum Analyzer	Agilent	E4446A	MY44020154	2017-9-4	2018-9-3
Spectrum Analyzer	RS	FSU26	200789	2017-7-20	2018-7-19
EMI Test Receiver	R&S	ESCI	101378	2017-1-5	2018-1-4
Amplifier	COM-POWER	PAM-840A	461332	2017-8-30	2018-8-29
Amplifier	MITEQ	JS41-00101800-32-10P	1675713	2017-7-20	2018-7-19
Broad-Band Horn Antenna	SCHWARZBECK	BBHA 9170	9170-515	2017-3-6	2018-3-5
Bilog Antenna	Sunol	JB1	A062604	2017-5-27	2018-5-26
Bilog Antenna	Sunol	JB1	A110204-1	2017-5-27	2018-5-26
Loop Antenna	Hengweiyi	39501C	2014012	2017-1-5	2018-1-4
Horn-antenna	SCHWARZBECK	9120D	D:266	2017-2-28	2018-2-27
Horn-antenna	SCHWARZBECK	9120D	D:267	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
Test Software			EZ-EMC		

Conducted Emission					
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Data**	**Calibration Due**
EMI TEST RECEIVER	R&S	ESCI	100781	2017-2-28	2018-2-27
V (V-LISN)	SCHWARZBECK	NNLK 8129	8129-143	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	2017-1-5	2018-1-4
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 -within 6 kHz and 25 kHz of audio frequency	 1.3% 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 15/18 (using ANSI C63.10 :2013)；VCCI V3; CNS 13438; CNS 13439; CNS 13803; CISPR 11; EN 55011; CISPR 13; EN 55013; CISPR 22:2005; CISPR 22:1997 +A1 :2000+A2 :2002；EN 55022:2006; EN55022 :1998 +A1 :2001+A2 :2003；EN 61000-6-3 (excluding discontinuous interference); EN 61000-6-4; AS/NZS CISPR 22； CAN/CSA-CEI/IEC CISPR 22；EN 61000-3-2；EN 61000-3-3；EN550024； EN 61000-4-2； EN 61000-4-3；EN61000-4-4；EN 61000-4-5； EN 61000-4-6；IEC 61000-4-8；EN 61000-4-11； IEC61000-3-2；IEC61000-3-3；IEC 61000-4-2； IEC 61000-4-3；IEC 61000-4-4； IEC 61000-4-5；IEC 61000-4-6；IEC 61000-4-8；IEC 61000-4-11； EN 300 220-3; EN 300 328; EN 300 330-2; EN 300 440-1; EN 300-440-2; EN 300 893; EN 301 489-01; EN 301 489-3; EN 301 489-07; EN 301 489-17；47 CFR FCC Part 15, 22, 24	A2LA ACCREDITED TESTING CERT #2541.01
USA	FCC	3/10 meter Sites to perform FCC Part 15/18 measurements	FC CN1172
Japan	VCCI	3/10 meter Sites and conducted test sites to perform radiated/conducted measurements	VCCI R-1600 C-1707 G-216

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

6 SETUP OF EQUIPMENT UNDER TEST

6.1 SETUP CONFIGURATION OF EUT

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

6.2 SUPPORT EQUIPMENT

No.	Equipment	Model No.	Serial No.
1	Notebook	E5430	CN8YYW1

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

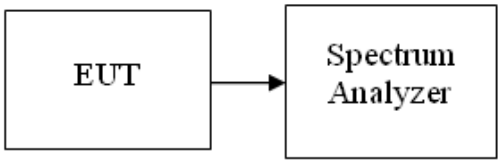
7.1 26 DB EMISSION BANDWIDTH

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	19.952
Mid	5200	19.952
High	5240	19.952

Test mode: IEEE 802.11a mode/ Chain 1

Channel	Frequency (MHz)	Bandwidth (B) (MHz)
Low	5180	20.192
Mid	5200	20.272
High	5240	20.272

Test mode: IEEE 802.11n HT20MHz mode/ Chain 0

Channel	Frequency (MHz)	Bandwidth (B) (MHz)
Low	5180	20.433
Mid	5200	20.433
High	5240	20.433

Test mode: IEEE 802.11n HT20MHz mode/ Chain 1

Channel	Frequency (MHz)	Bandwidth (B) (MHz)
Low	5180	20.625
Mid	5200	20.593
High	5240	20.673

Test mode: IEEE 802.11n HT40MHz mode/ Chain 0

Channel	Frequency (MHz)	Bandwidth (B) (MHz)
Low	5190	40.769
High	5230	40.673

Test mode: IEEE 802.11n HT40MHz mode/ Chain 1

Channel	Frequency (MHz)	Bandwidth (B) (MHz)
Low	5190	41.538
High	5230	41.346

Test mode: IEEE 802.11ac VHT20MHz mode/ Chain 0

Channel	Frequency (MHz)	Bandwidth (B) (MHz)
Low	5180	20.353
Mid	5200	20.353
High	5240	20.353

Test mode: IEEE 802.11ac VHT20MHz mode/ Chain 1

Channel	Frequency (MHz)	Bandwidth (B) (MHz)
Low	5180	20.433
Mid	5200	20.946
High	5240	20.673

Test mode: IEEE 802.11ac VHT40MHz mode/ Chain 0

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

Test mode: IEEE 802.11ac VHT40MHz mode/ Chain 1

Channel	Frequency (MHz)	Bandwidth (B) (MHz)
Low	5190	41.538
High	5230	41.154

Test mode: IEEE 802.11ac VHT80MHz mode/ Chain 0

Channel	Frequency (MHz)	Bandwidth (B) (MHz)
Mid	5210	82.436

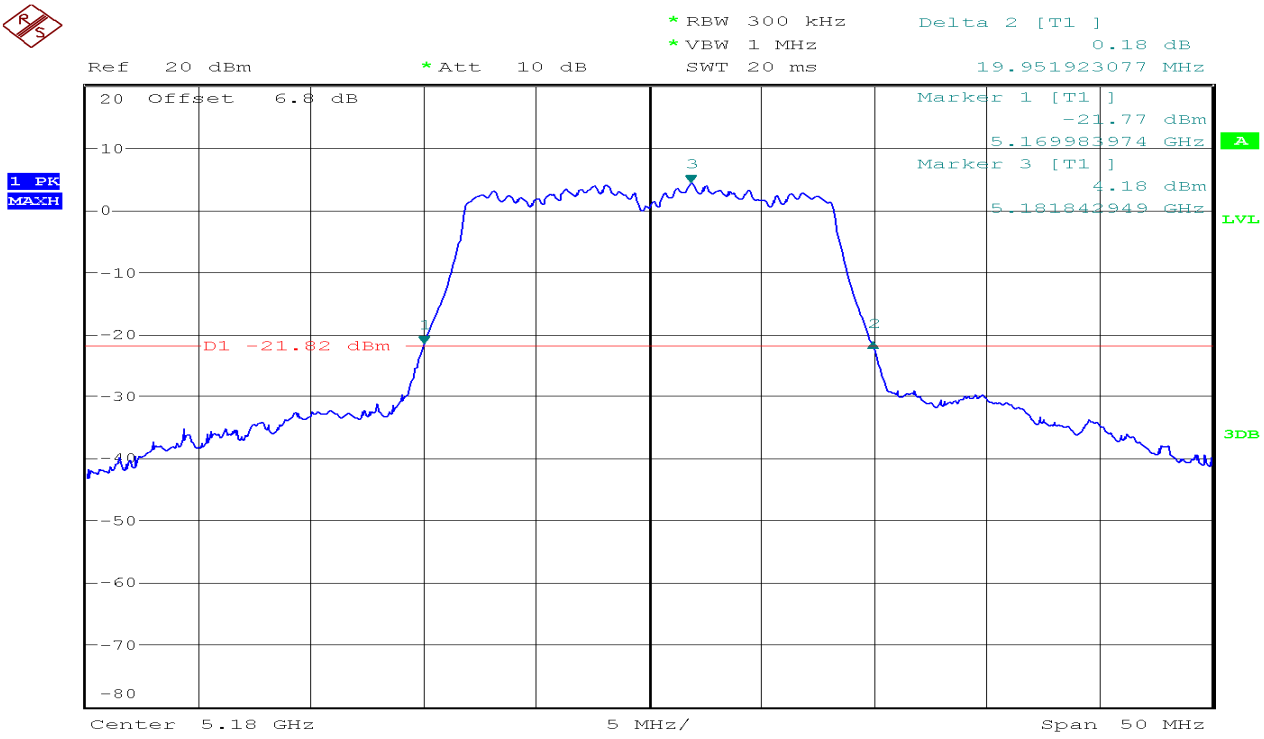
Test mode: IEEE 802.11ac VHT80MHz mode/ Chain 1

Channel	Frequency (MHz)	Bandwidth (B) (MHz)
Mid	5210	82.436

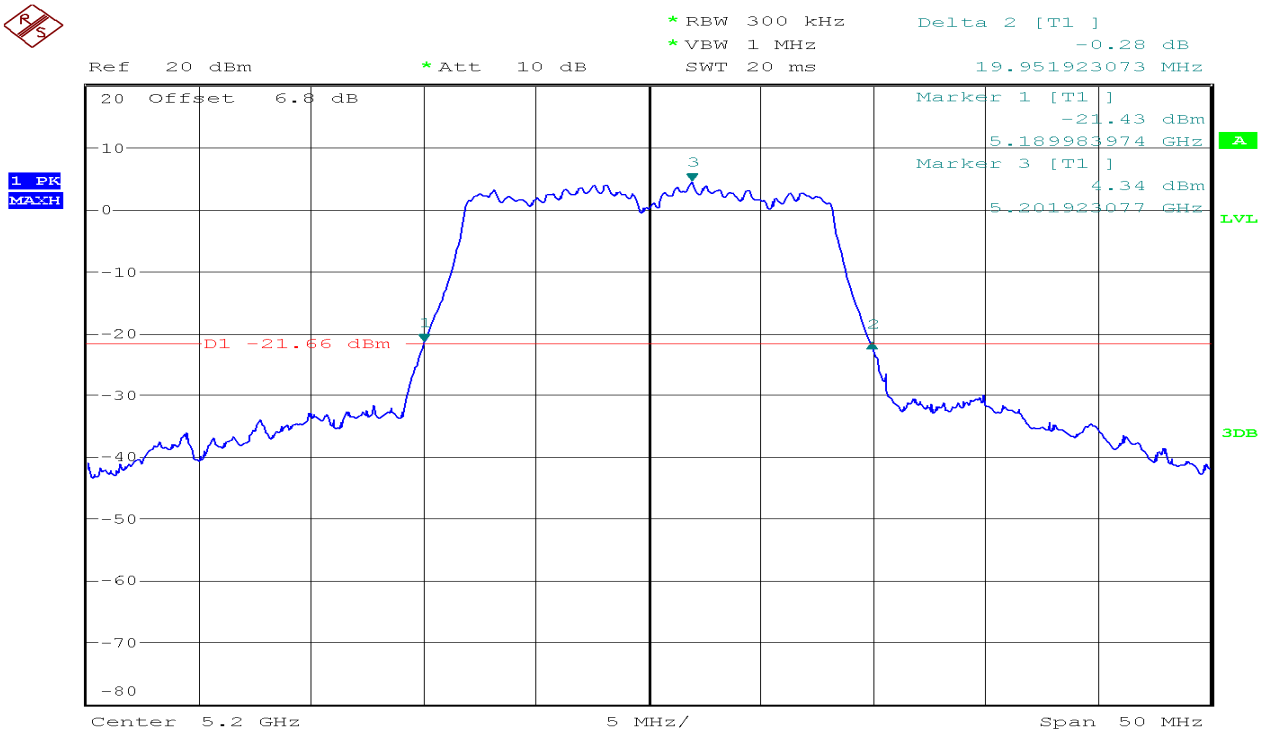
Test Plot

IEEE 802.11a mode/Chain 0:

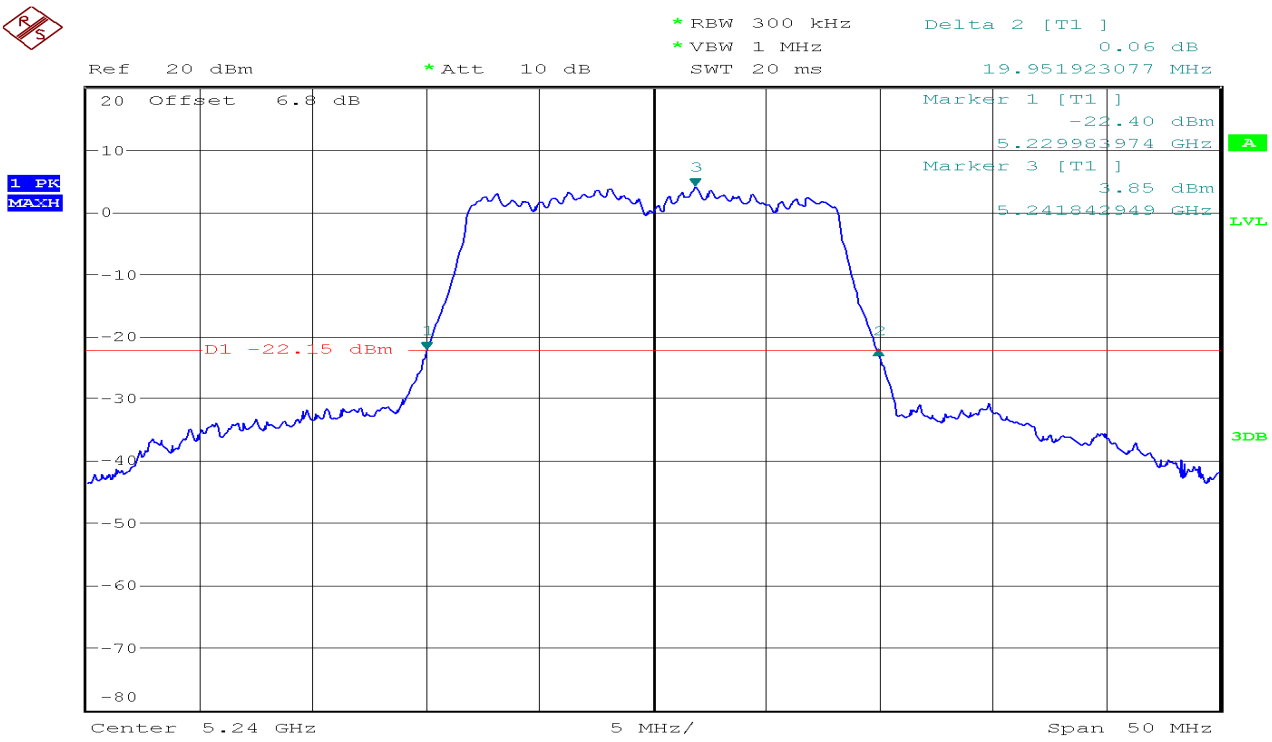
CH Low



CH Mid

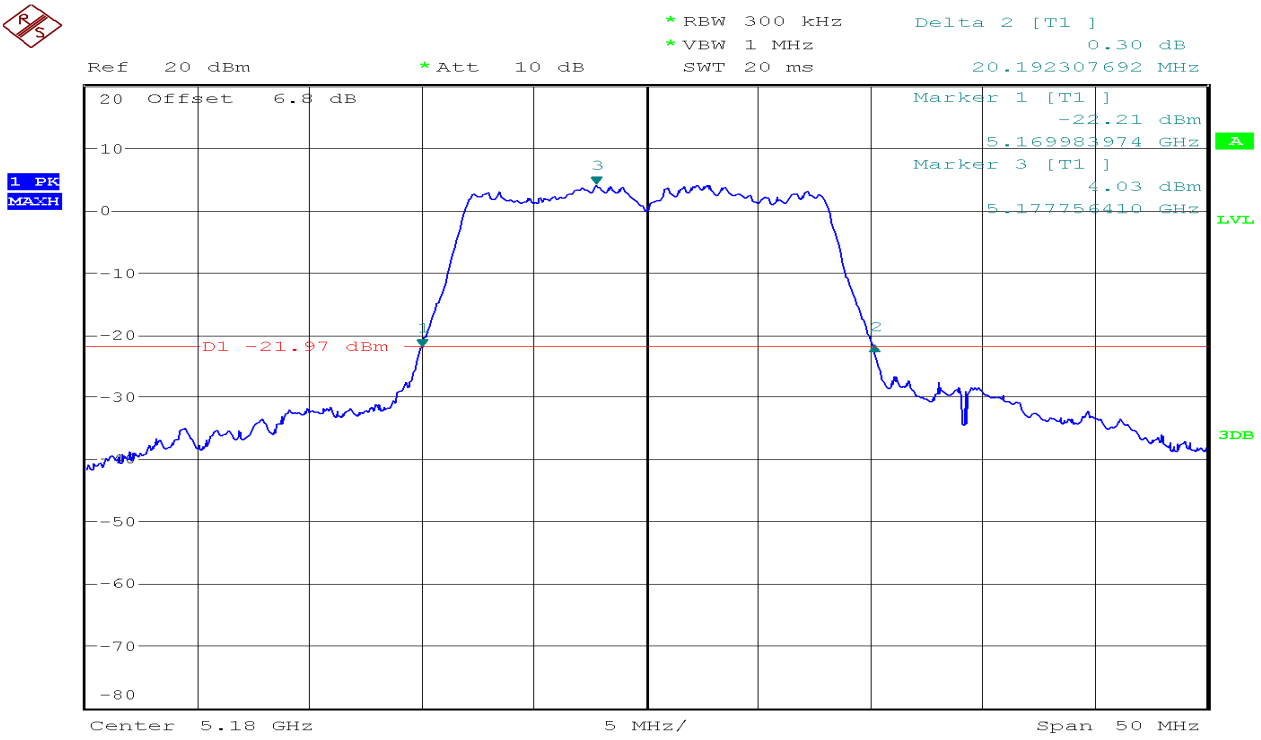


CH High

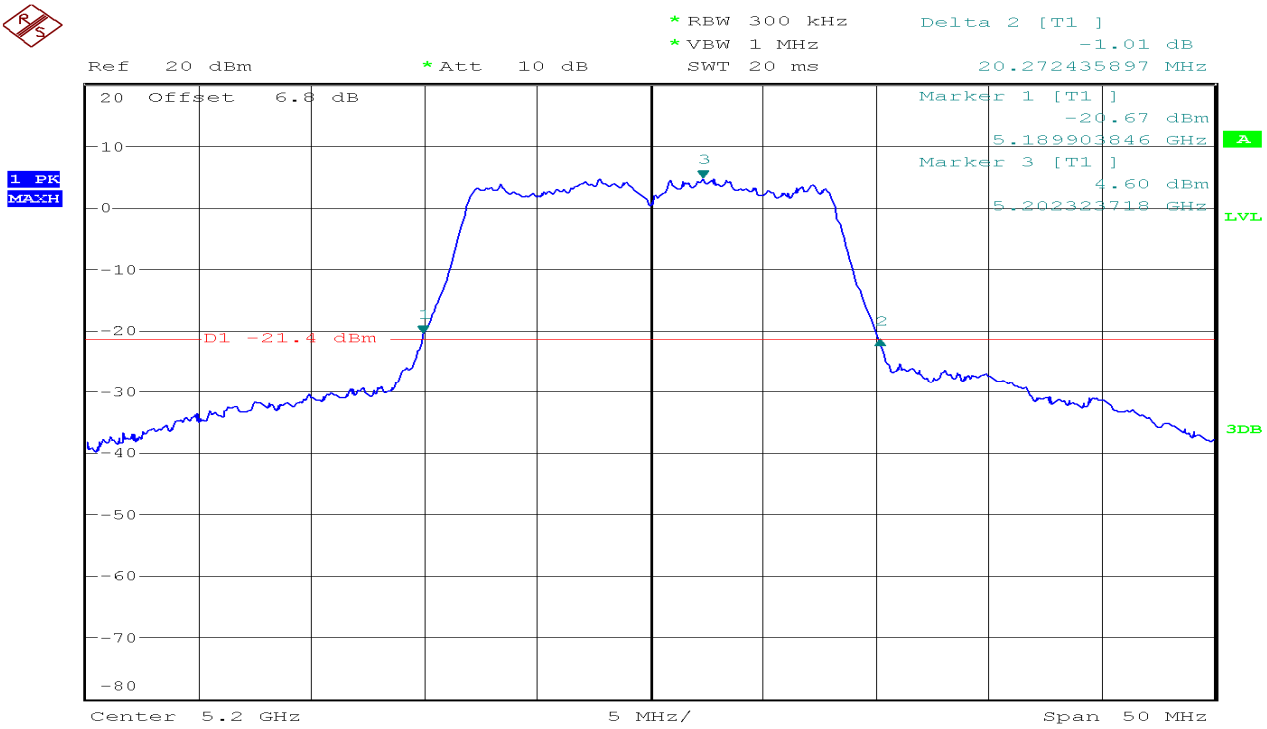


IEEE 802.11a mode/Chain 1:

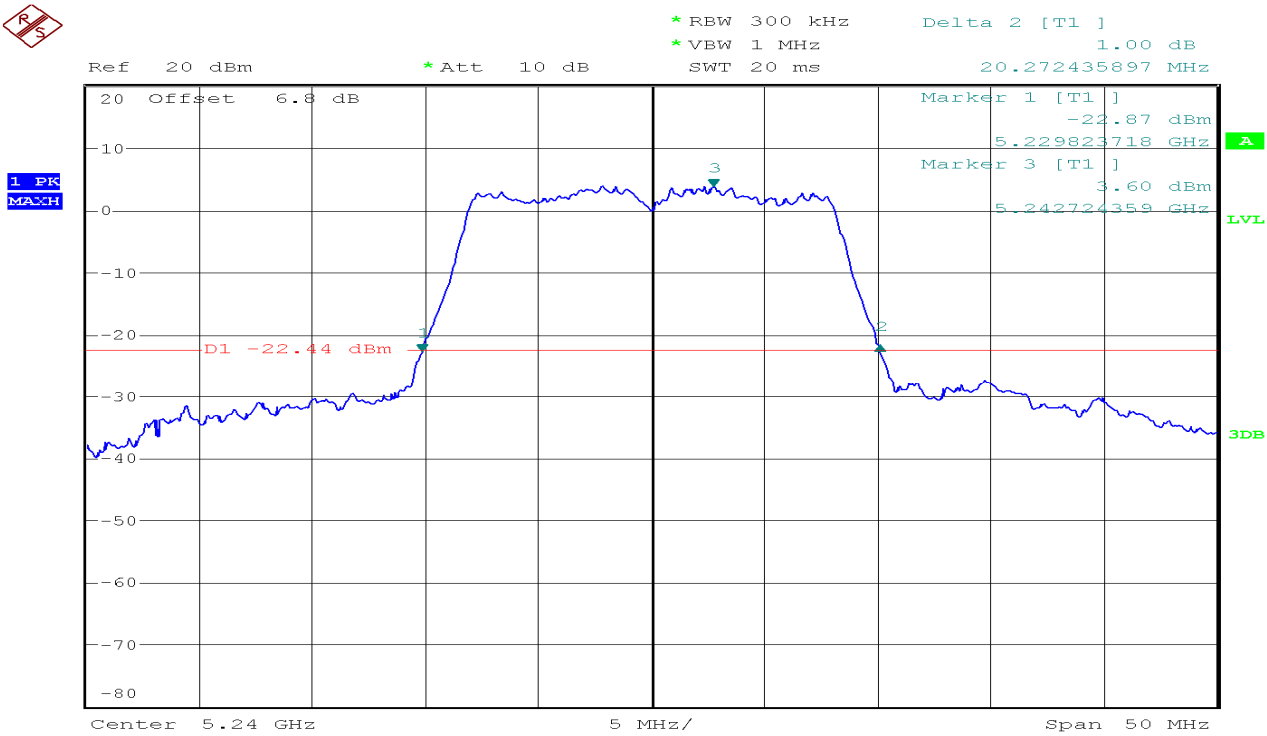
CH Low



CH Mid

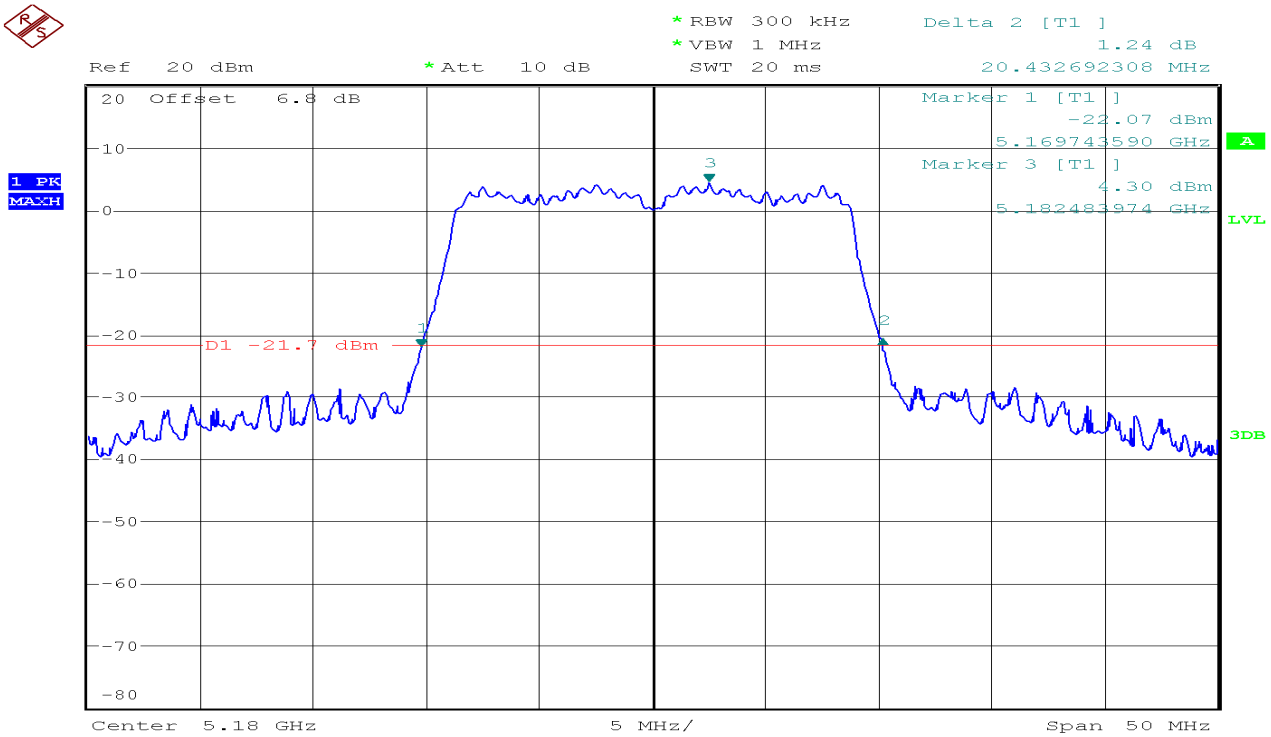


CH High

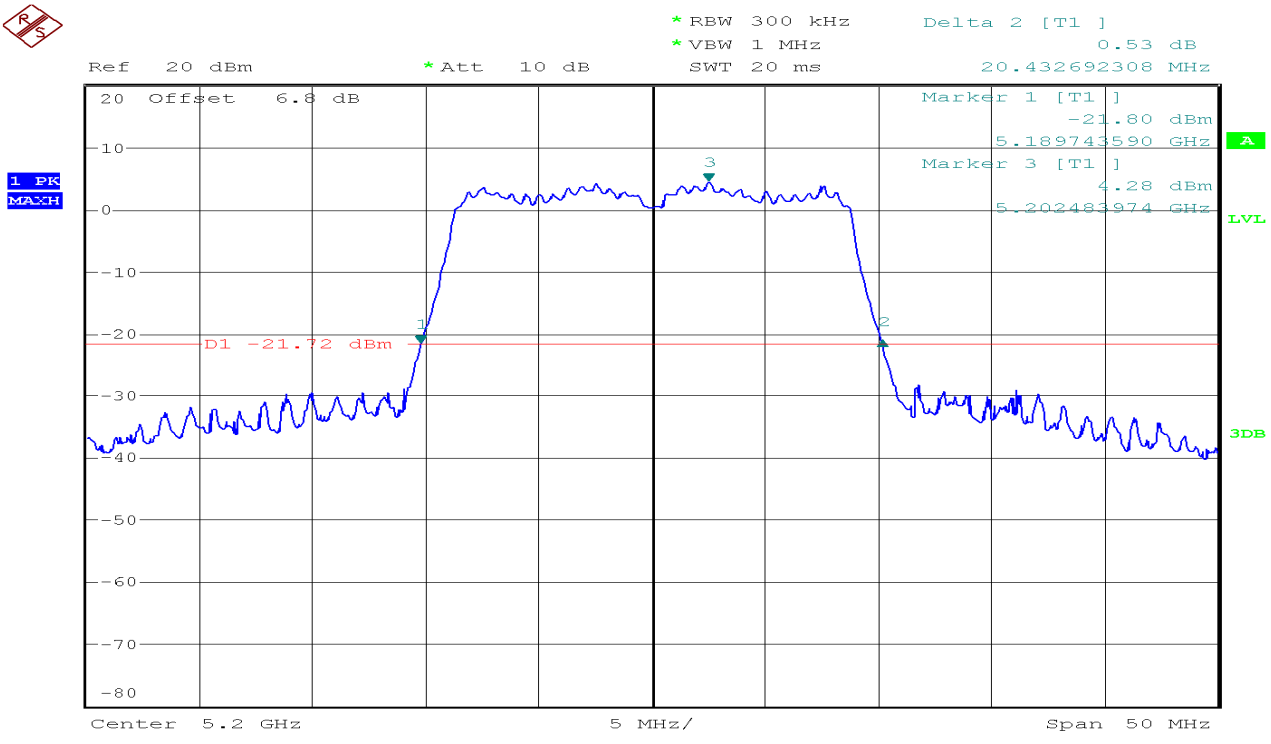


IEEE 802.11n HT20 mode/Chain 0:

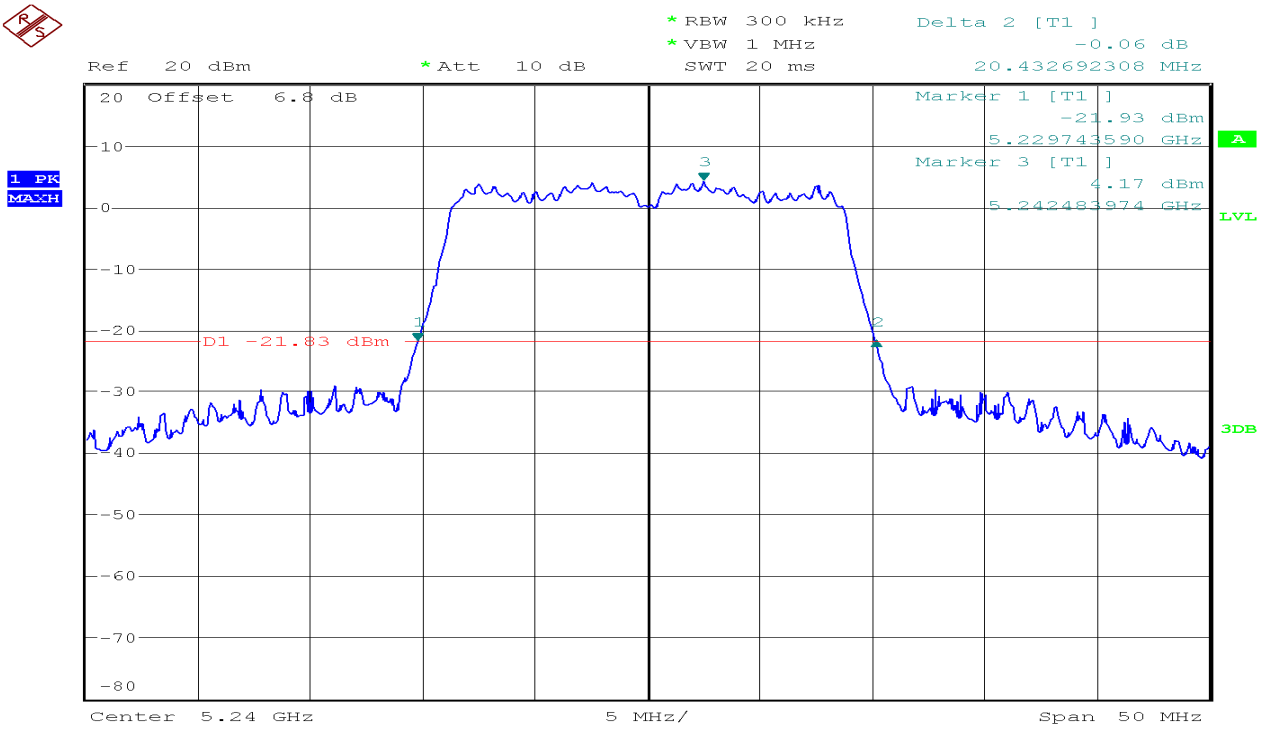
CH Low



CH Mid

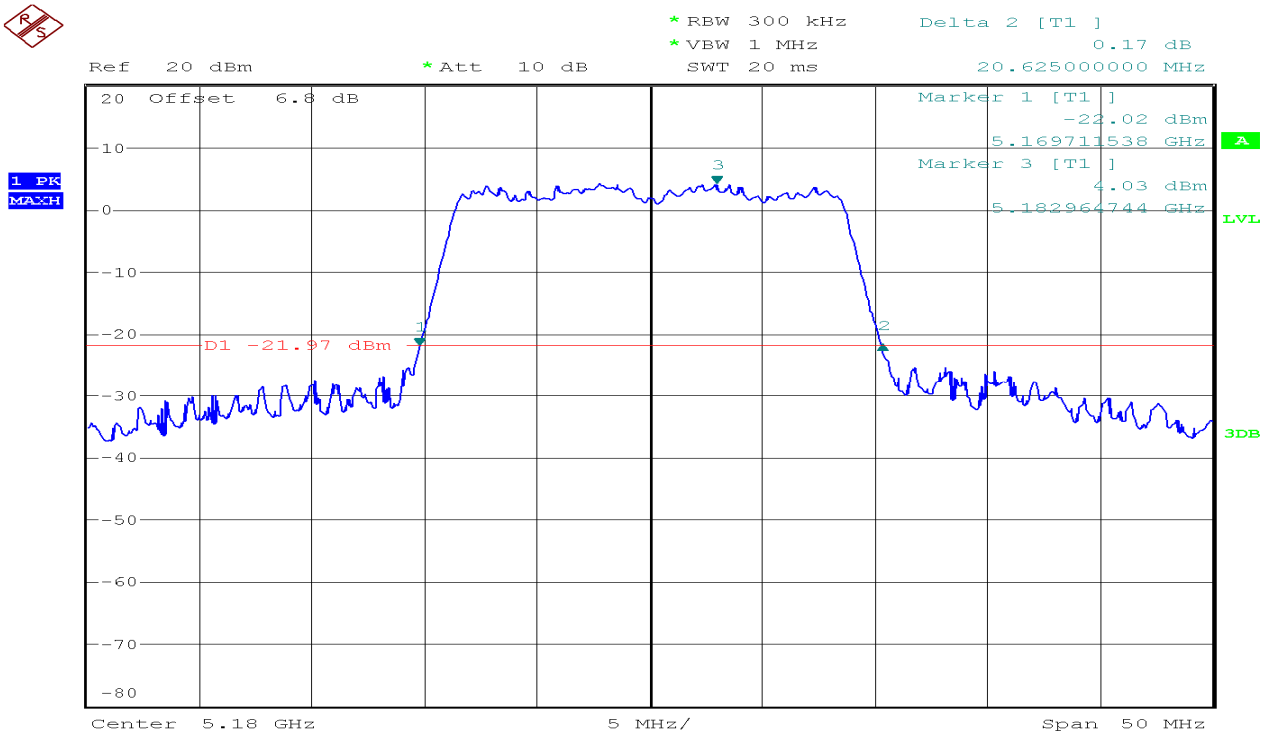


CH High

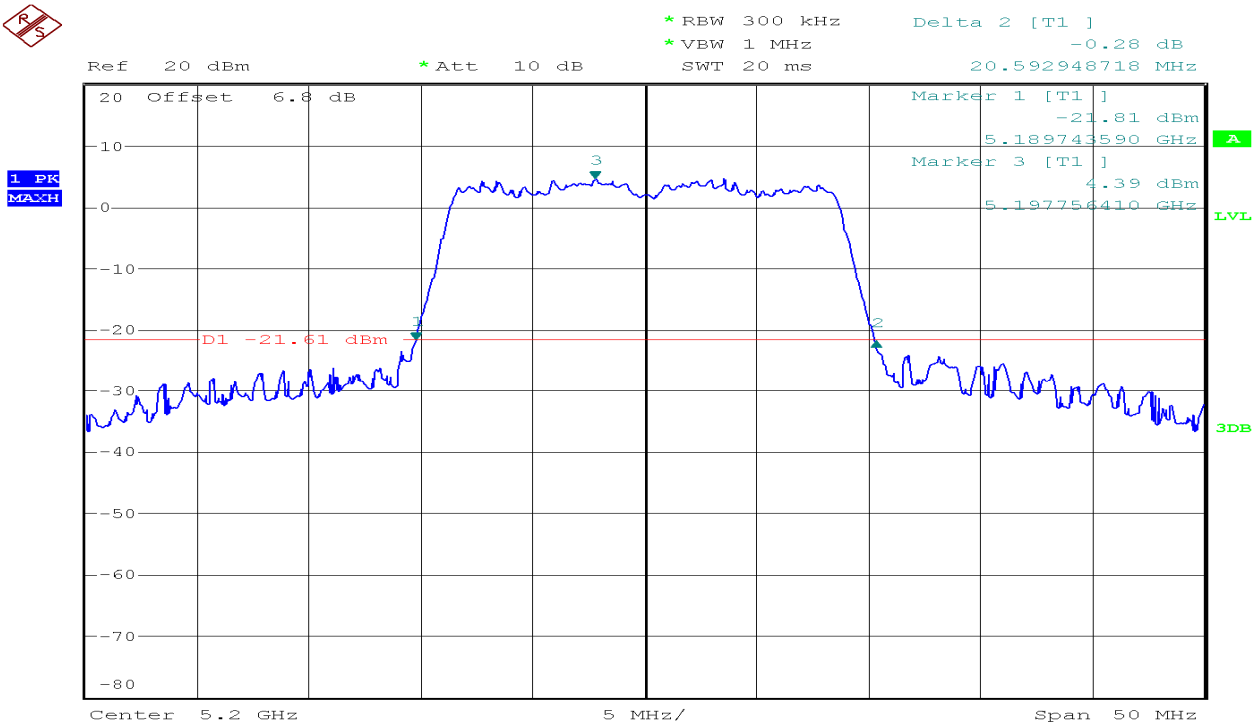


IEEE 802.11n HT20 mode/Chain 1:

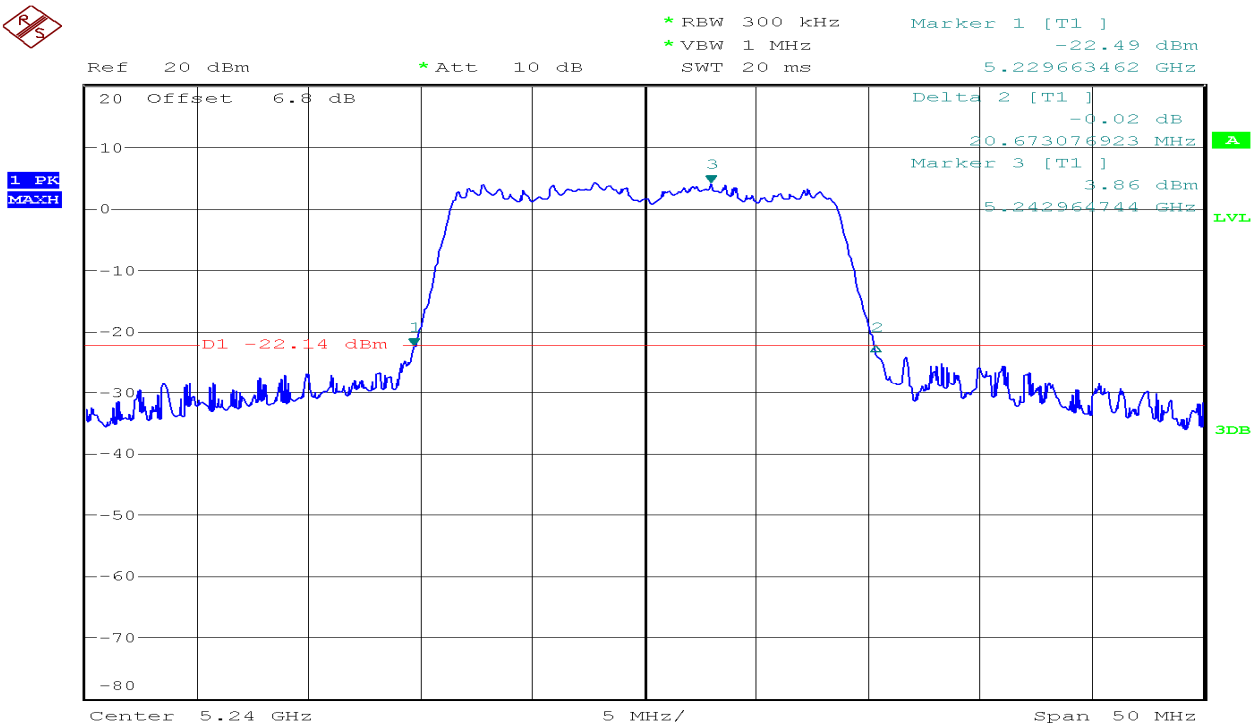
CH Low



CH Mid

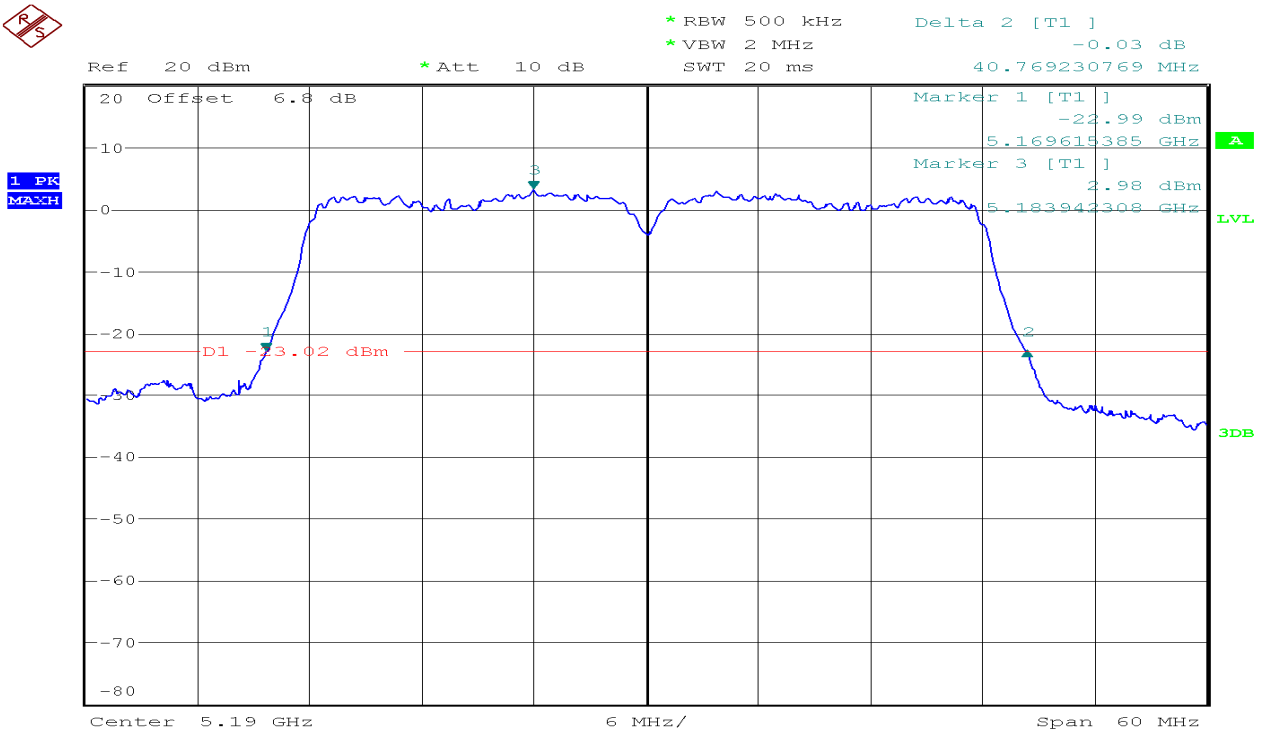


CH High

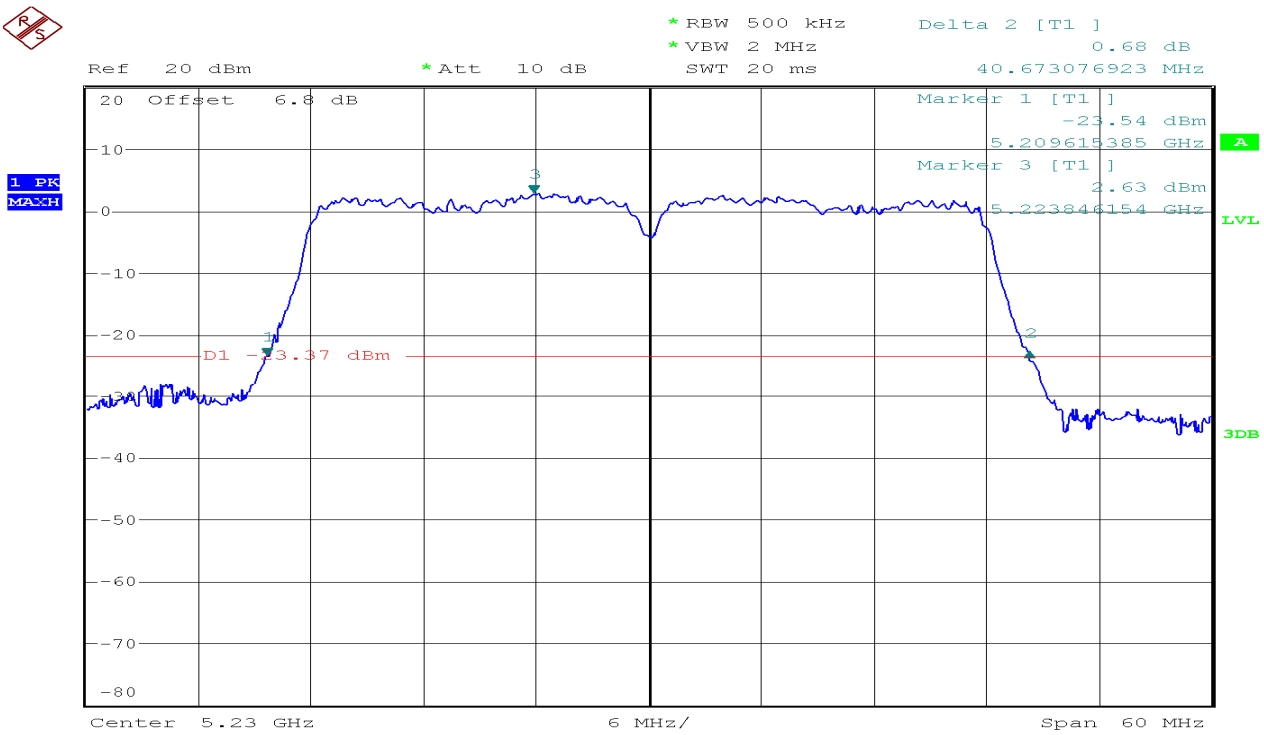


IEEE 802.11n HT40 mode/Chain 0:

CH Low

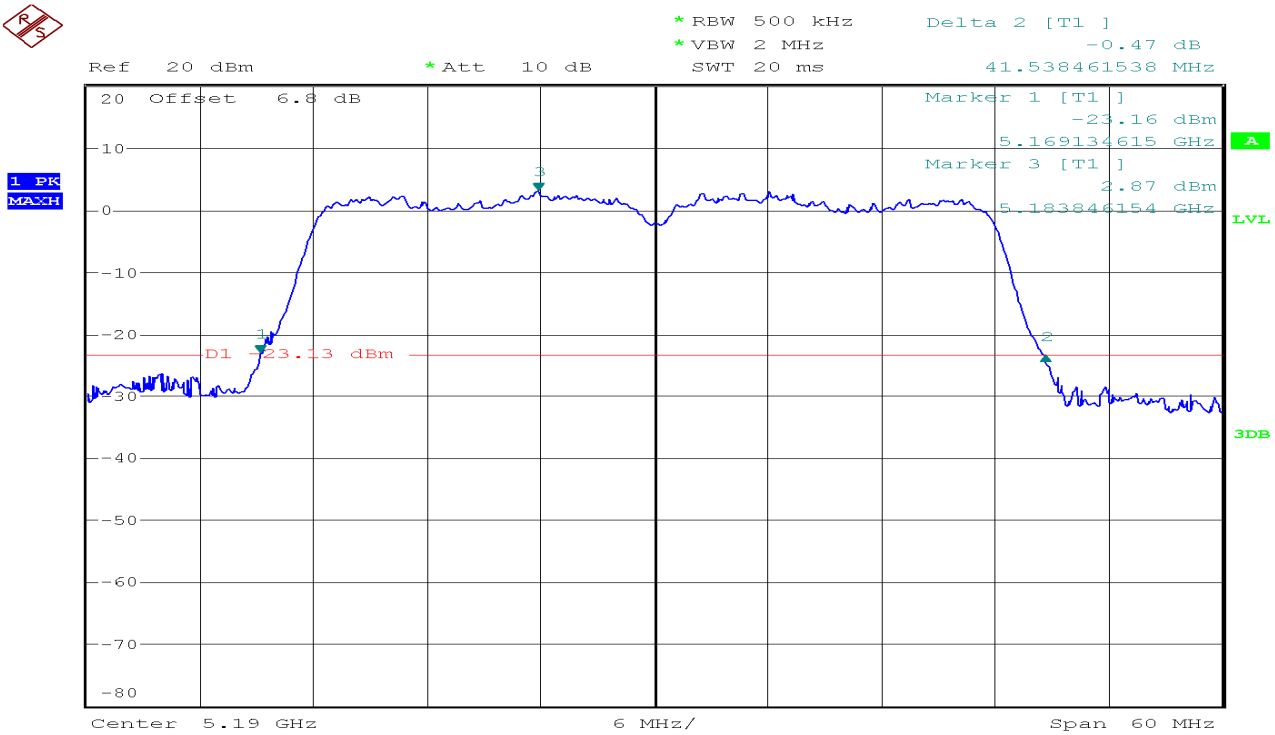


CH High

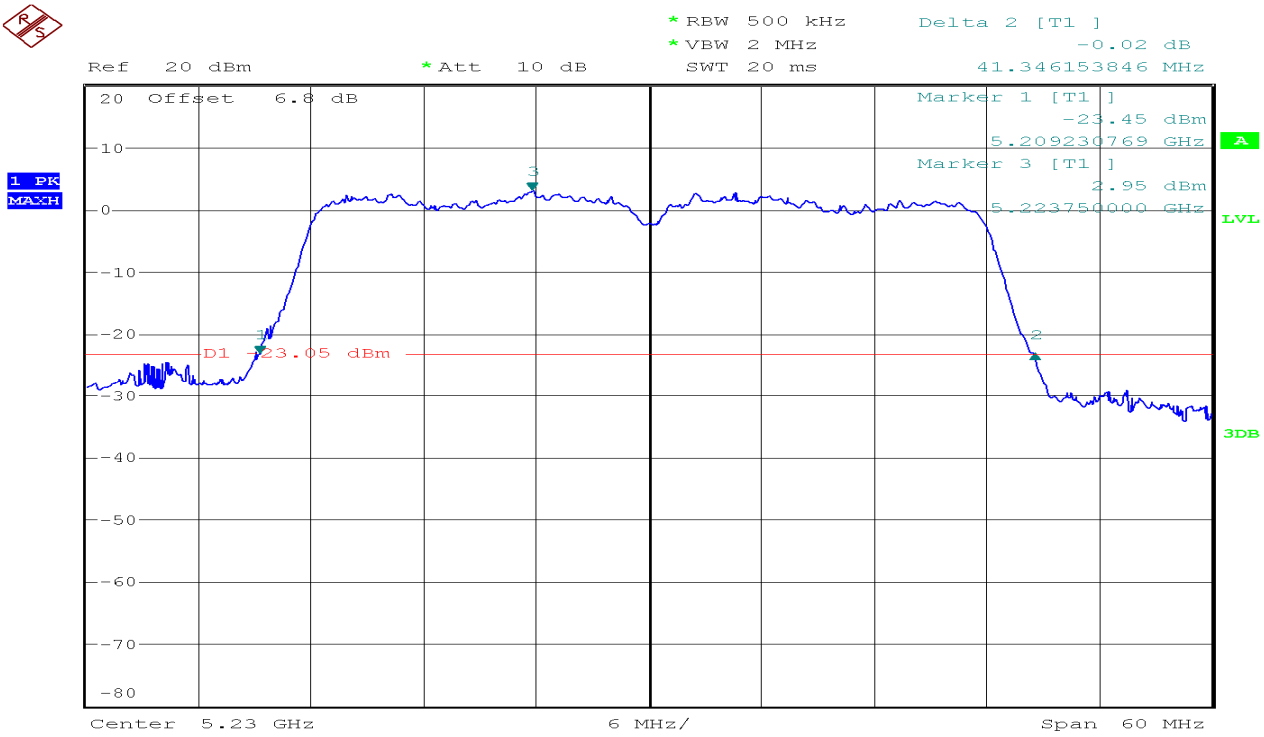


IEEE 802.11n HT40 mode/Chain 1:

CH Low

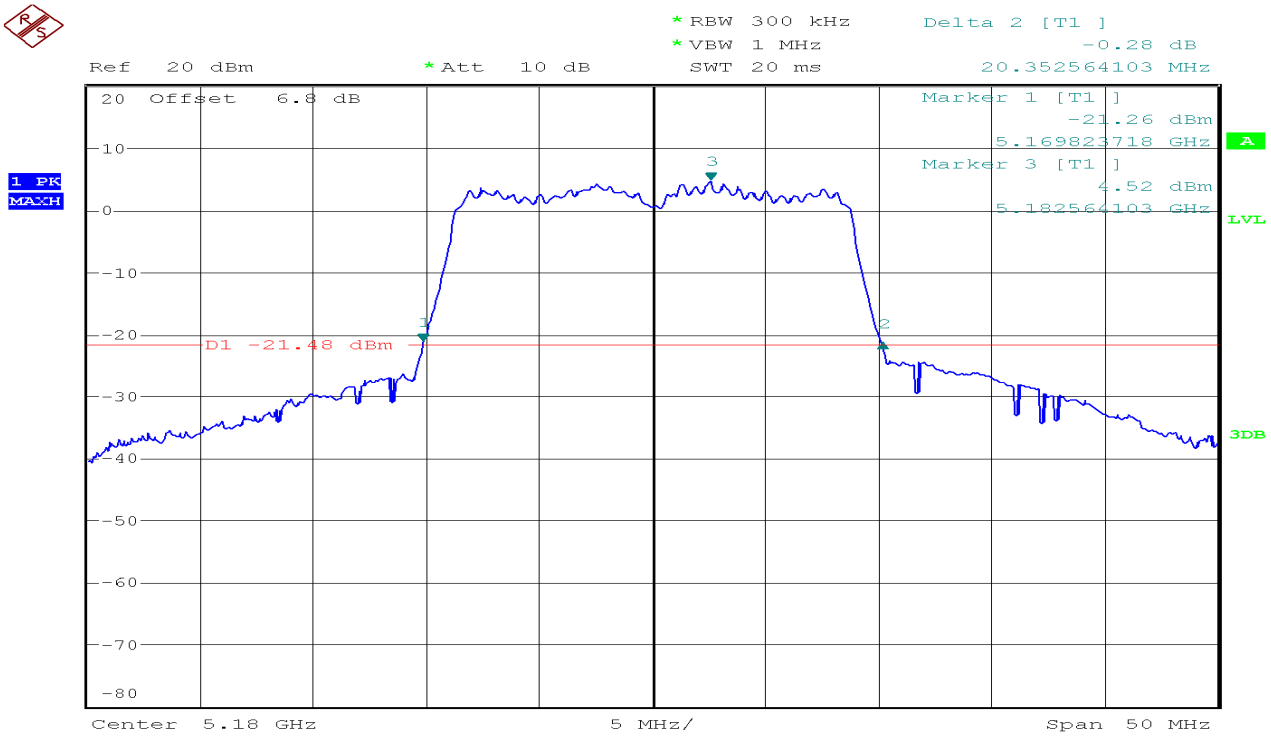


CH High

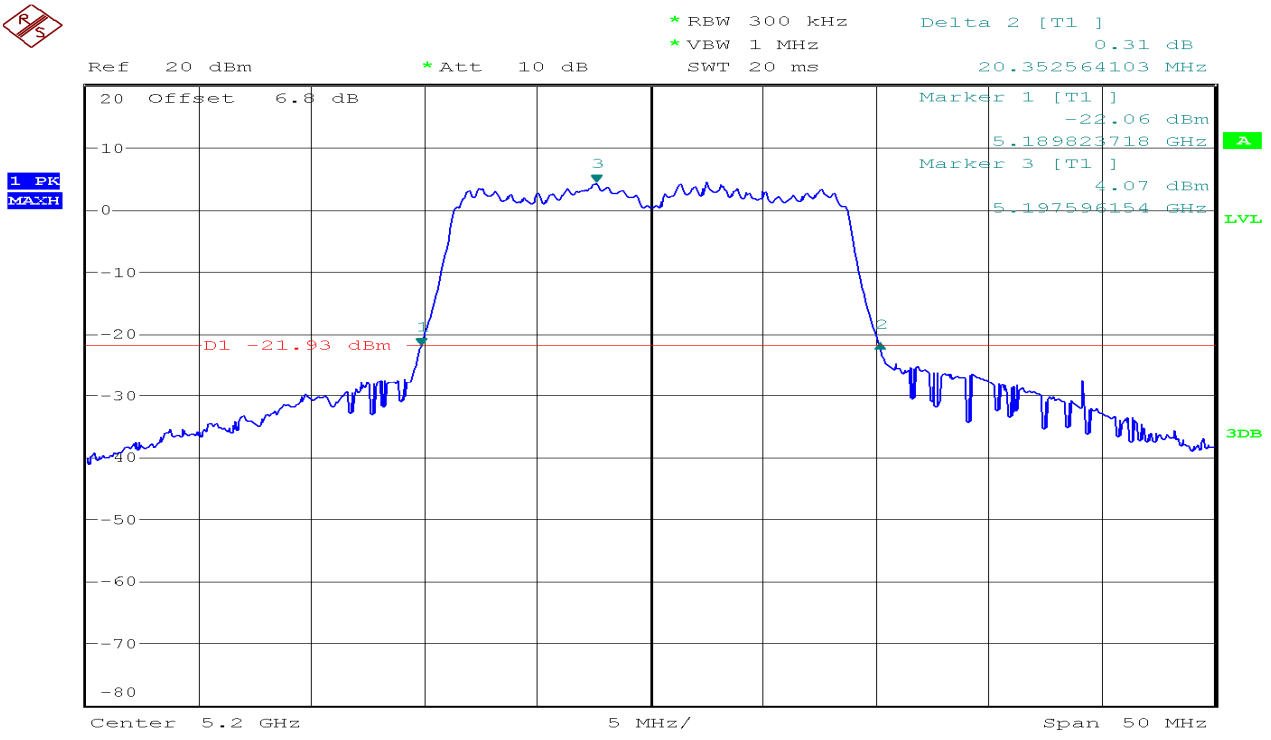


IEEE 802.11ac VHT20 mode/Chain 0:

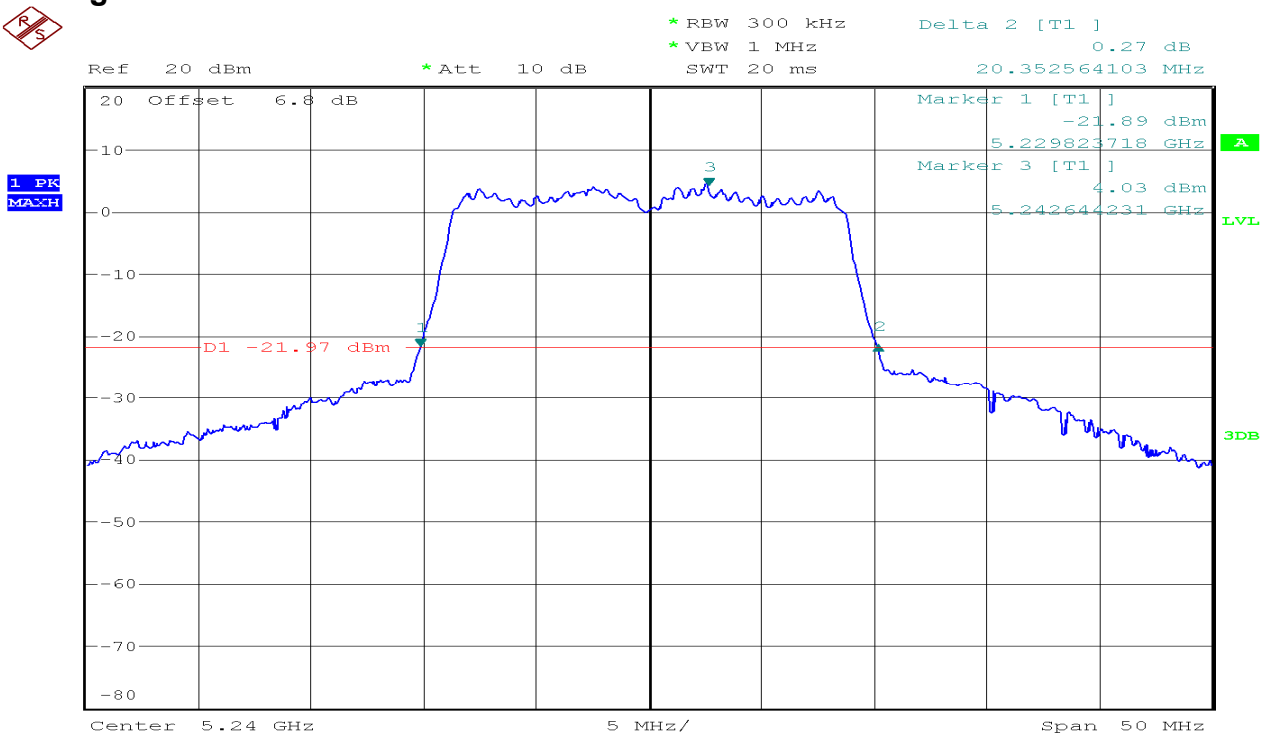
CH Low



CH Mid

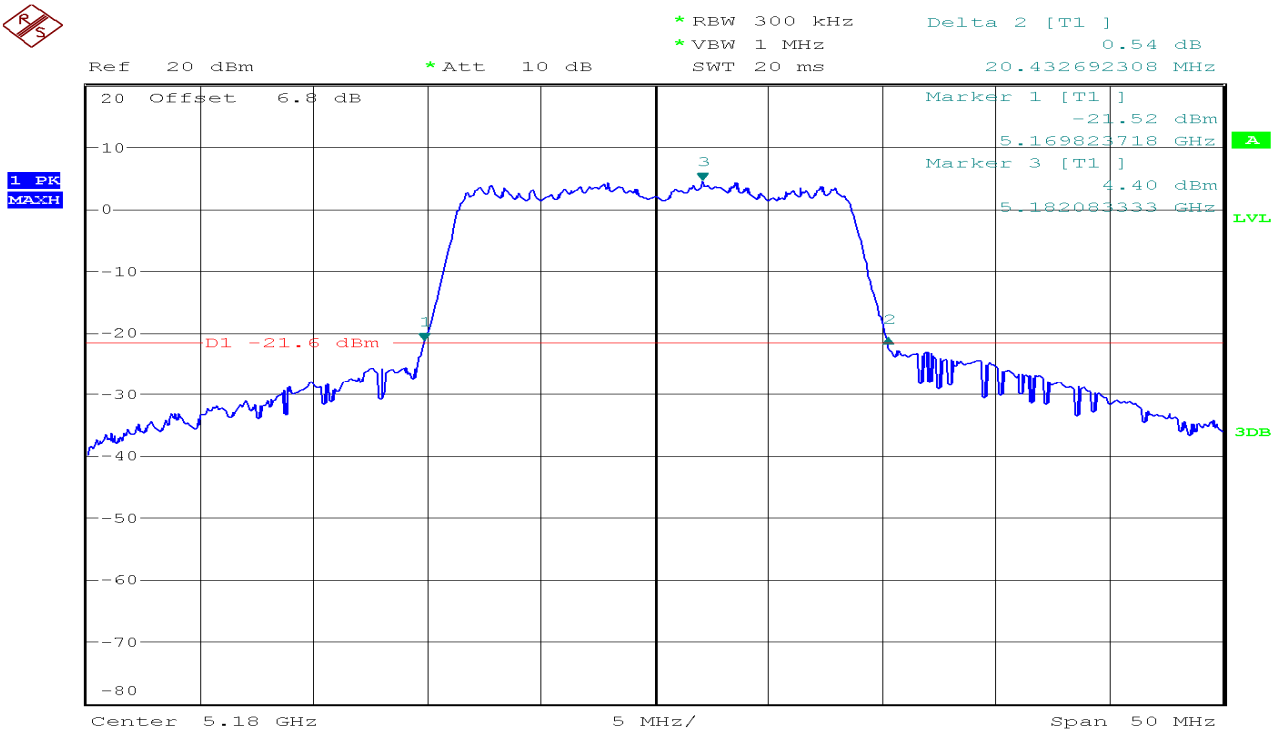


CH High

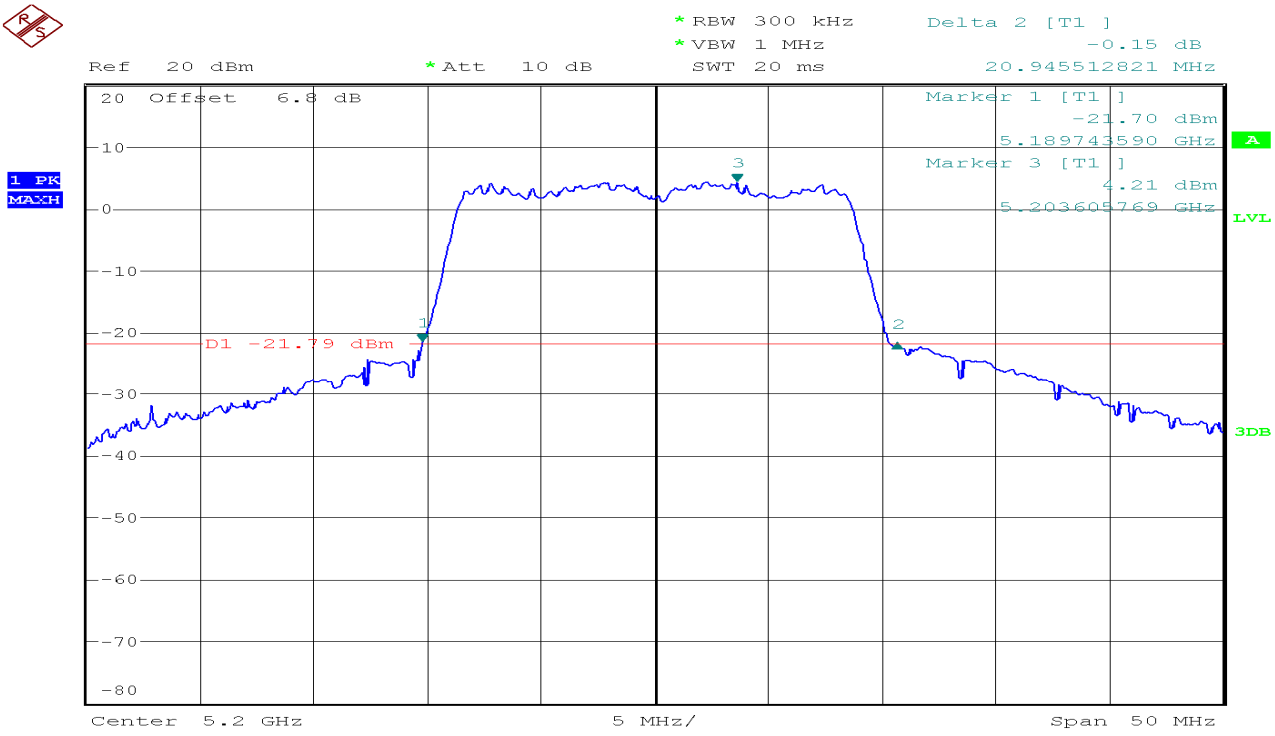


IEEE 802.11ac VHT20 mode/Chain 1:

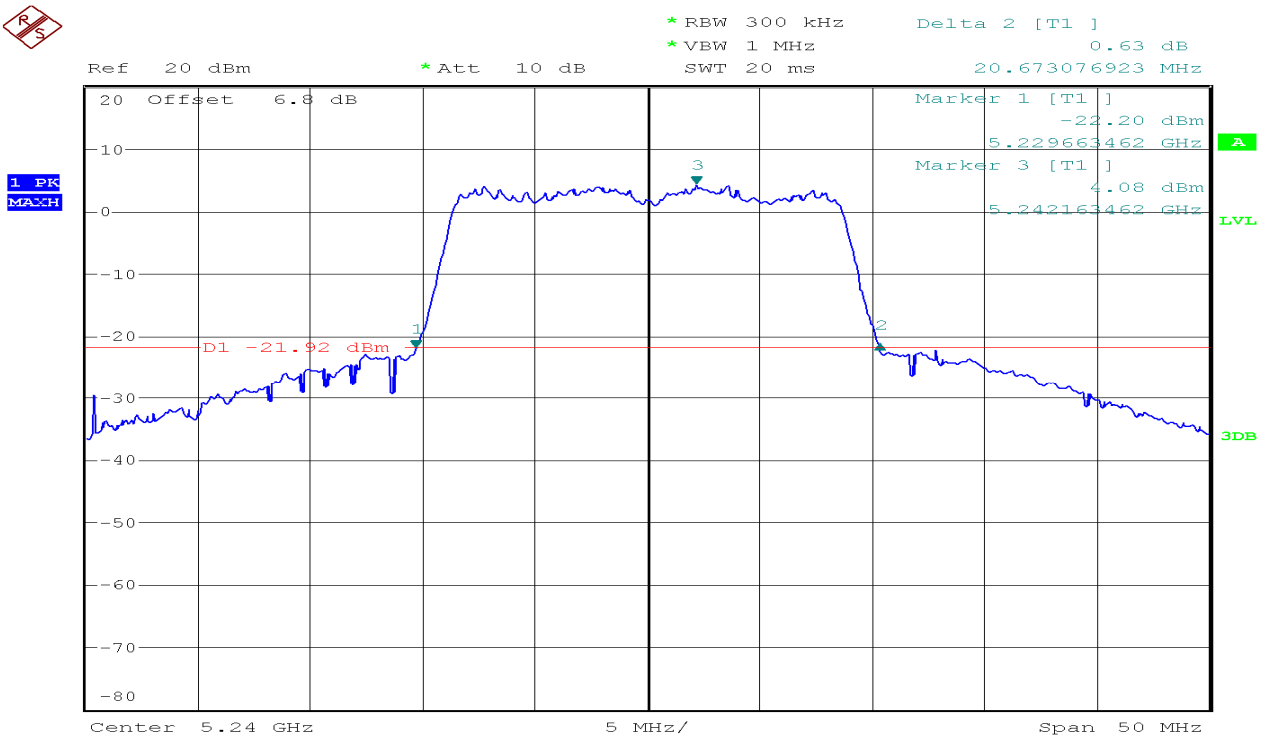
CH Low



CH Mid

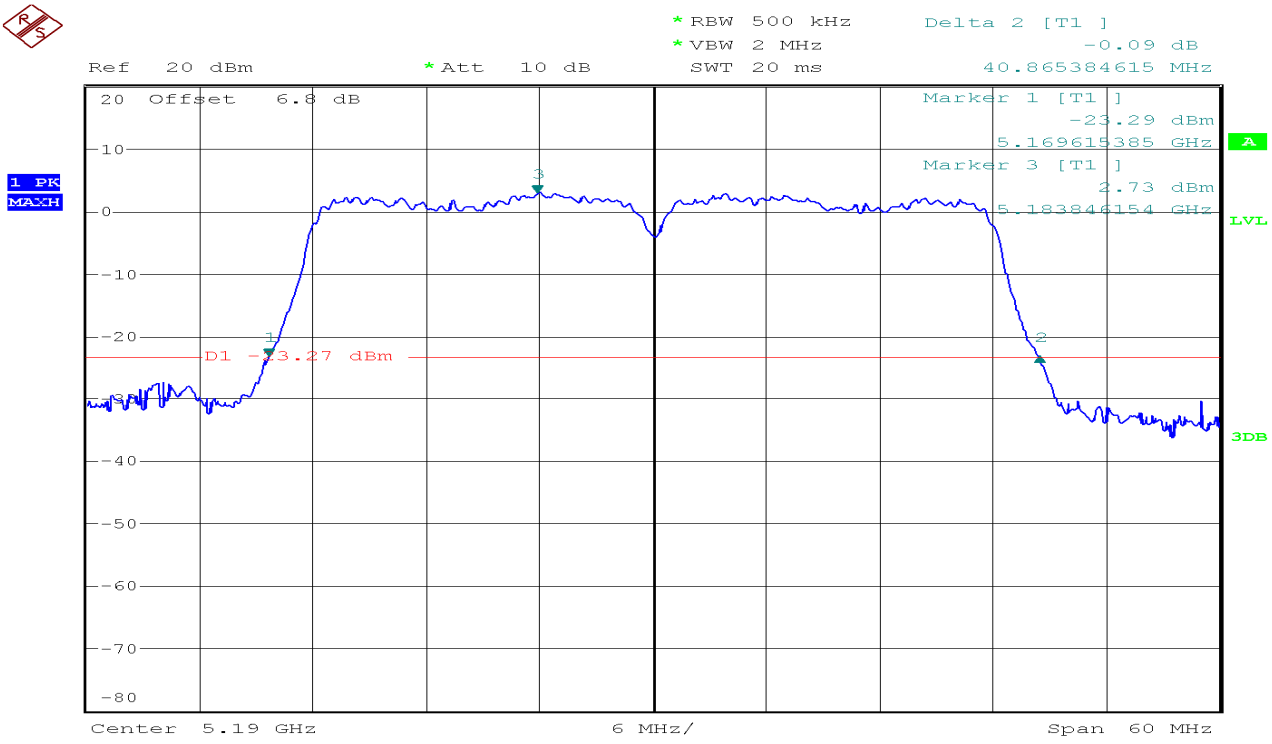


CH High

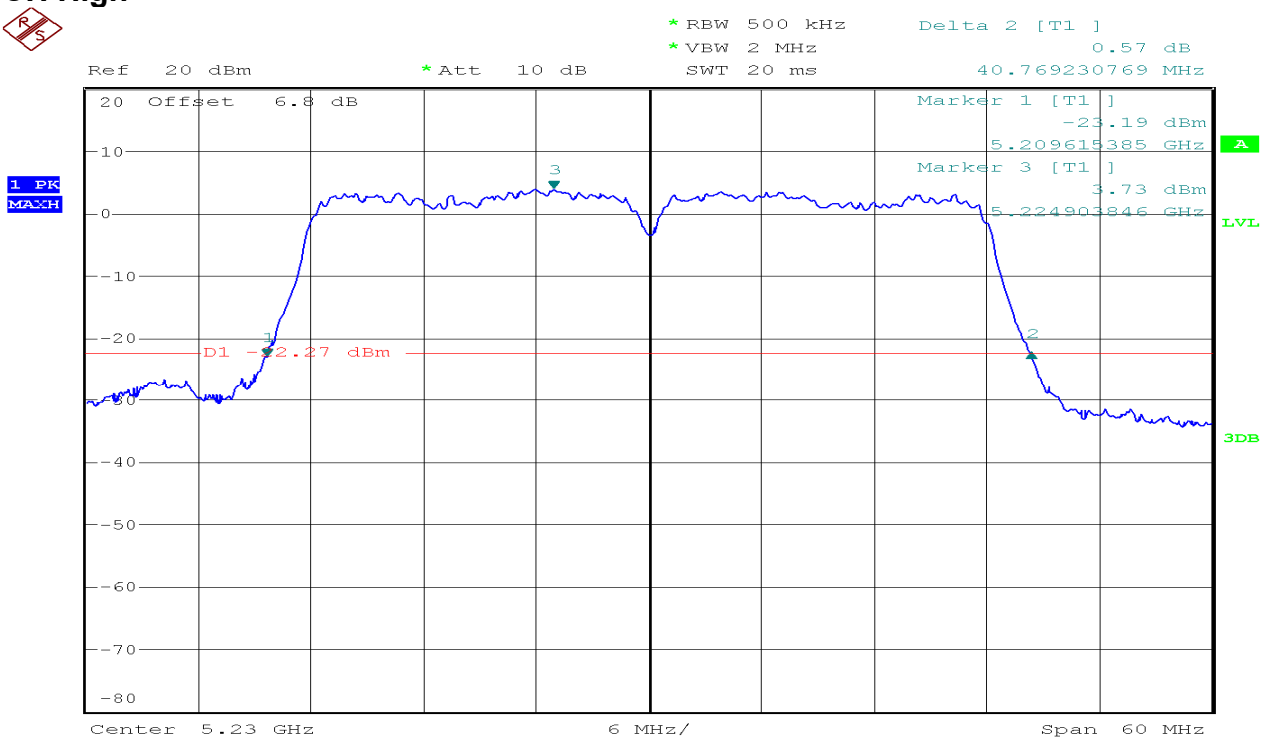


IEEE 802.11ac VHT40 mode/Chain 0:

CH Low

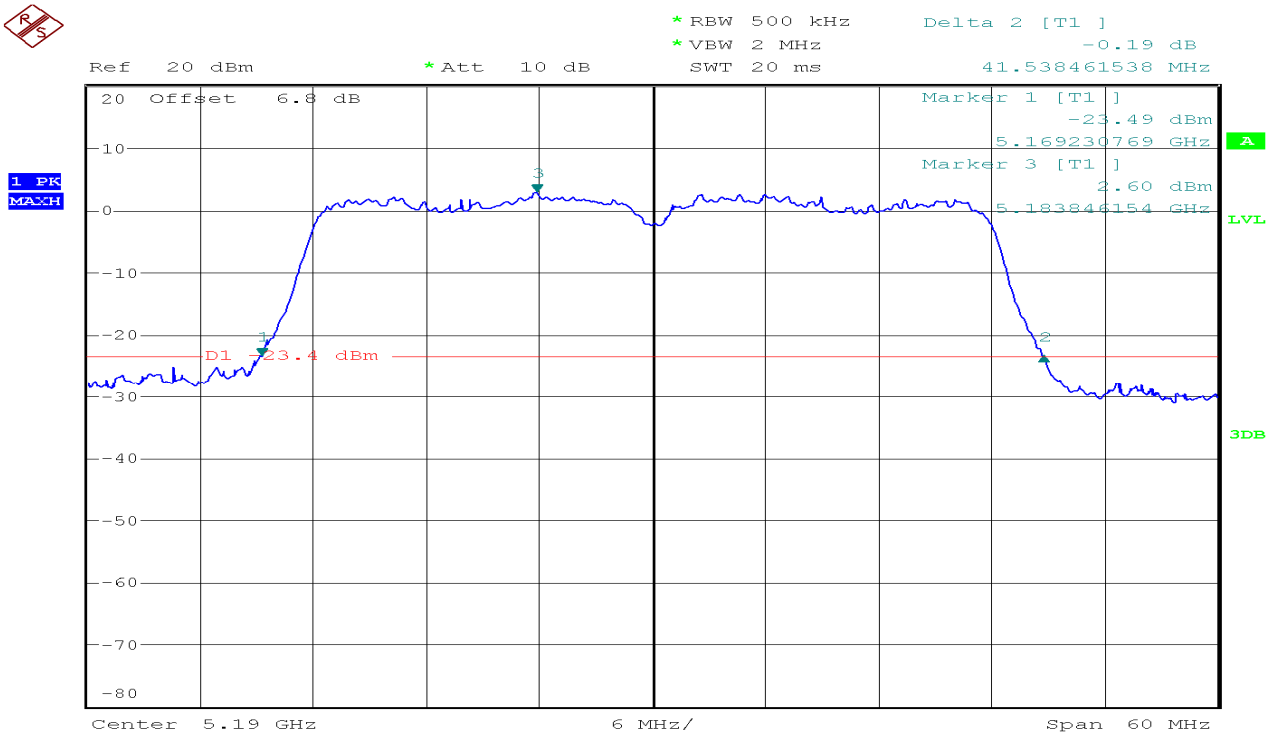


CH High

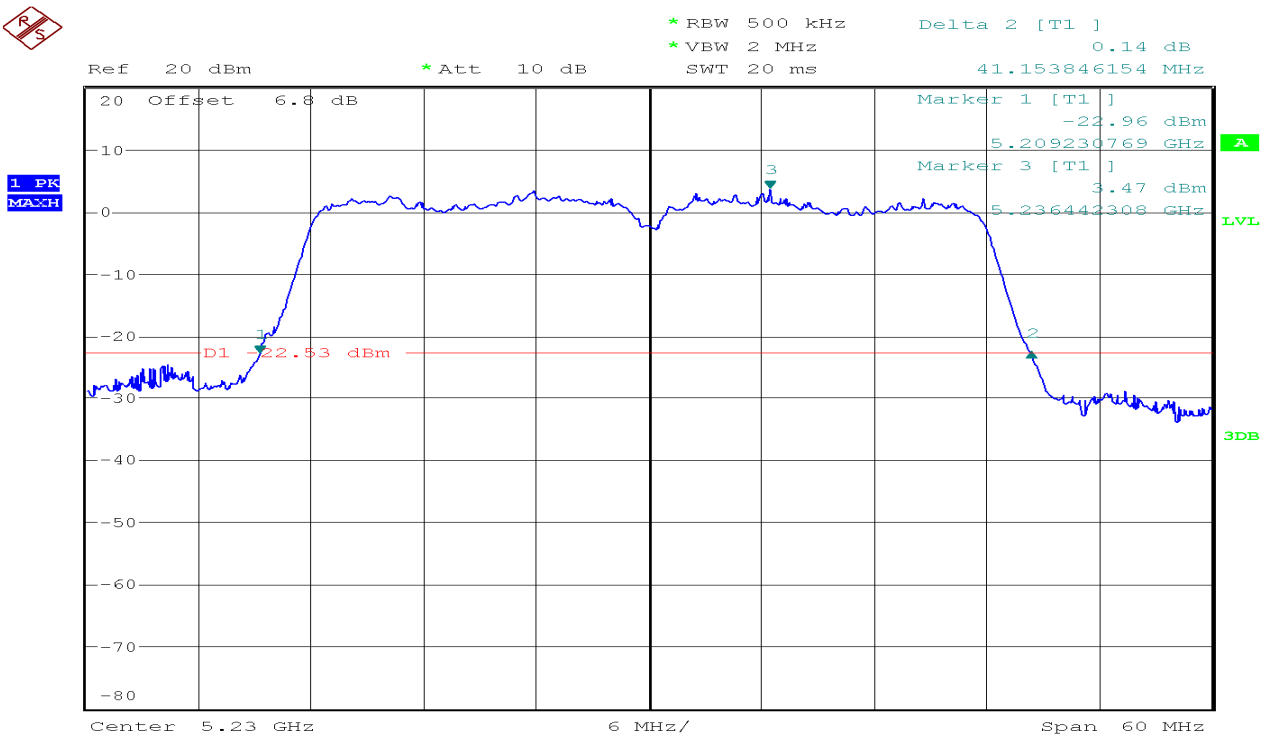


IEEE 802.11ac VHT40 mode/Chain 1:

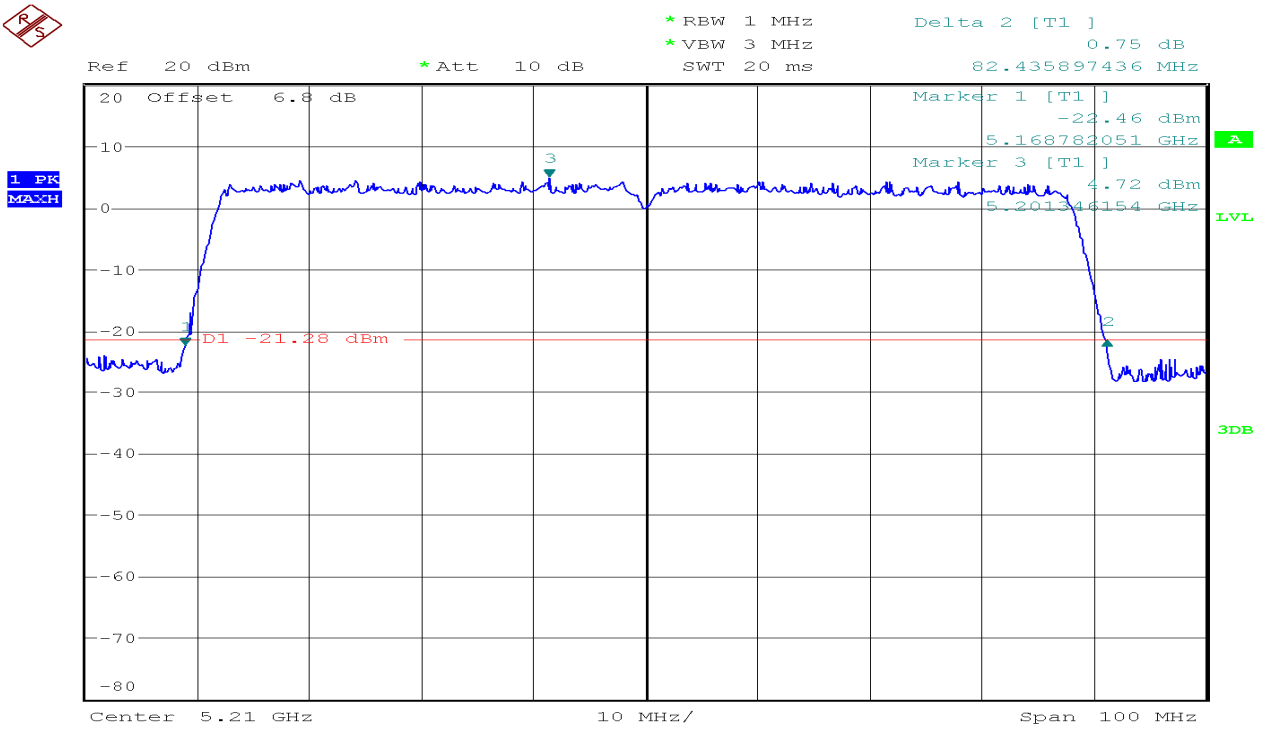
CH Low



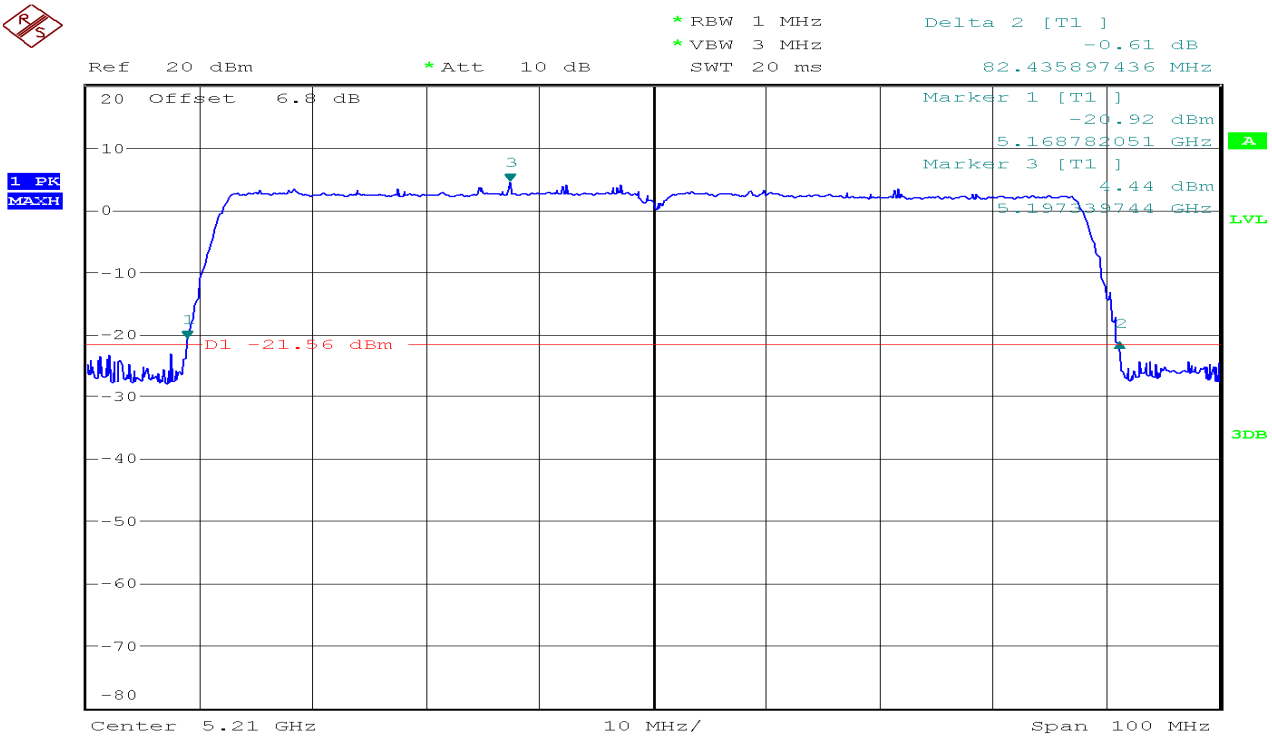
CH High



IEEE 802.11ac VHT80 mode/Chain 0:
CH Mid



IEEE 802.11ac VHT80 mode/Chain 1:
CH Mid

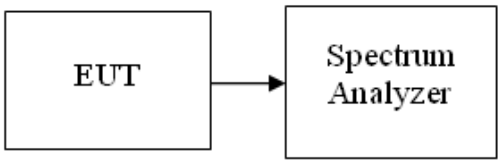


7.2 99% DB EMISSION BANDWIDTH

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	16.747
Mid	5200	16.827
High	5240	16.827

Test mode: IEEE 802.11a mode/ Chain 1

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5180	16.907
Mid	5200	16.907
High	5240	16.907

Test mode: IEEE 802.11n HT20MHz mode/ Chain 0

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5180	17.788
Mid	5200	17.788
High	5240	17.788

Test mode: IEEE 802.11n HT20MHz mode/ Chain 1

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5180	17.869
Mid	5200	17.788
High	5240	17.788

Test mode: IEEE 802.11n HT40MHz mode / Chain 0

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

Test mode: IEEE 802.11n HT40MHz mode / Chain 1

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5190	36.731
High	5230	36.635

Test mode: IEEE 802.11ac VHT20MHz mode / Chain 0

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5180	17.788
Mid	5200	17.708
High	5240	17.788

Test mode: IEEE 802.11ac VHT20MHz mode / Chain 1

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5180	17.869
Mid	5200	17.869
High	5240	17.869

Test mode: IEEE 802.11ac VHT40MHz mode/ Chain 0

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5190	36.538
High	5230	36.442

Test mode: IEEE 802.11ac VHT40MHz mode/ Chain 1

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5190	36.731
High	5230	36.731

Test mode: IEEE 802.11ac VHT80MHz mode/ Chain 0

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Mid	5210	76.346

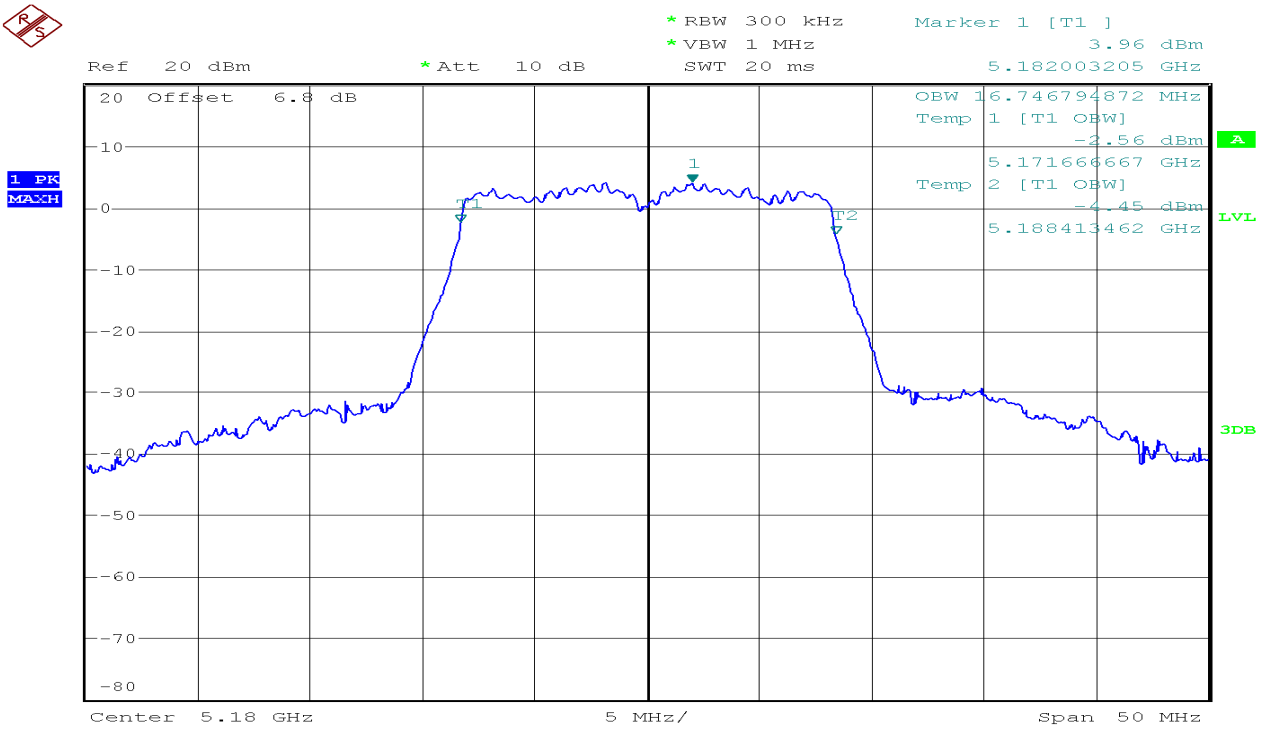
Test mode: IEEE 802.11ac VHT80MHz mode/ Chain 1

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Mid	5210	76.538

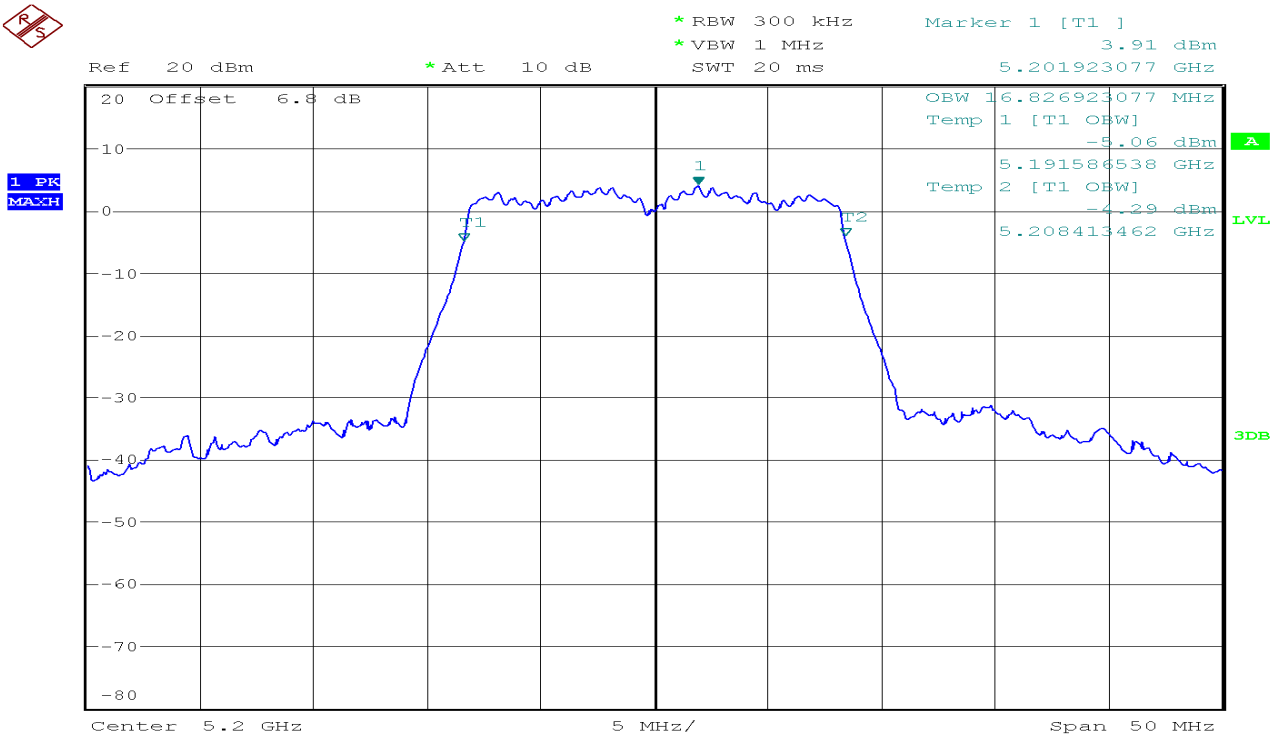
Test Plot

IEEE 802.11a mode/Chain 0:

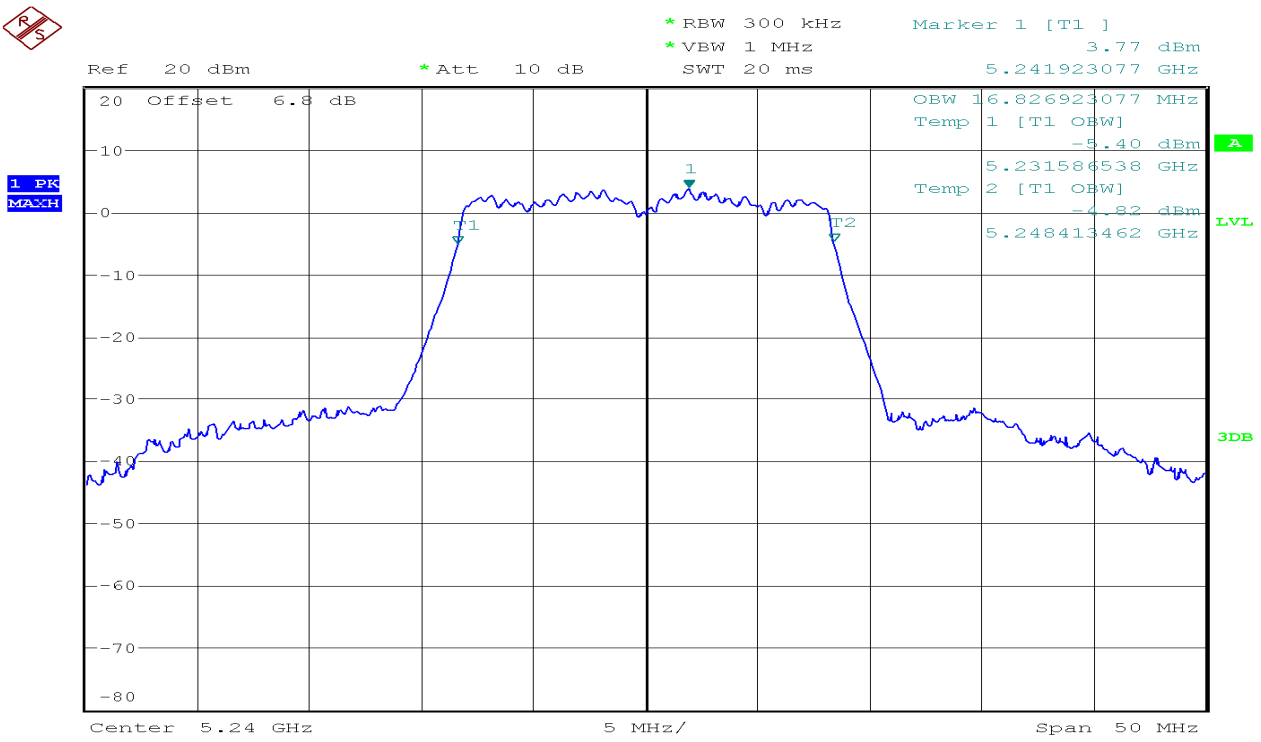
CH Low



CH Mid

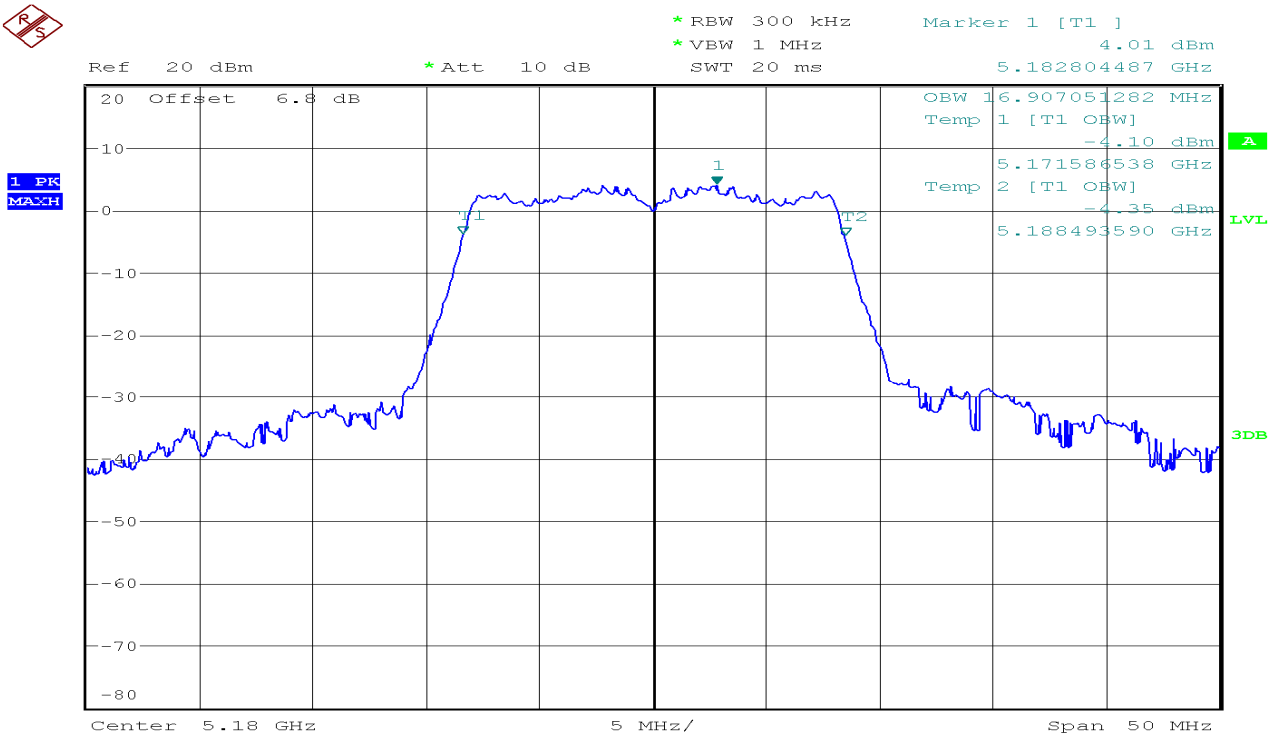


CH High

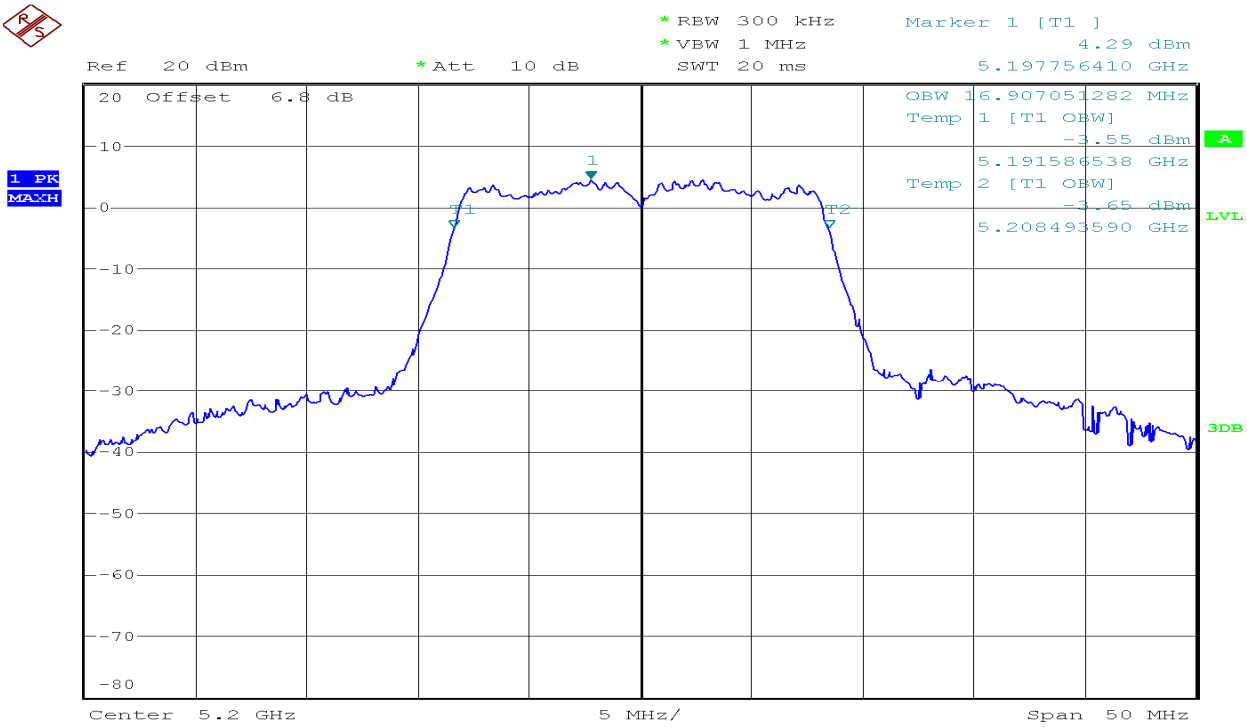


IEEE 802.11a mode/Chain 1:

CH Low



CH Mid



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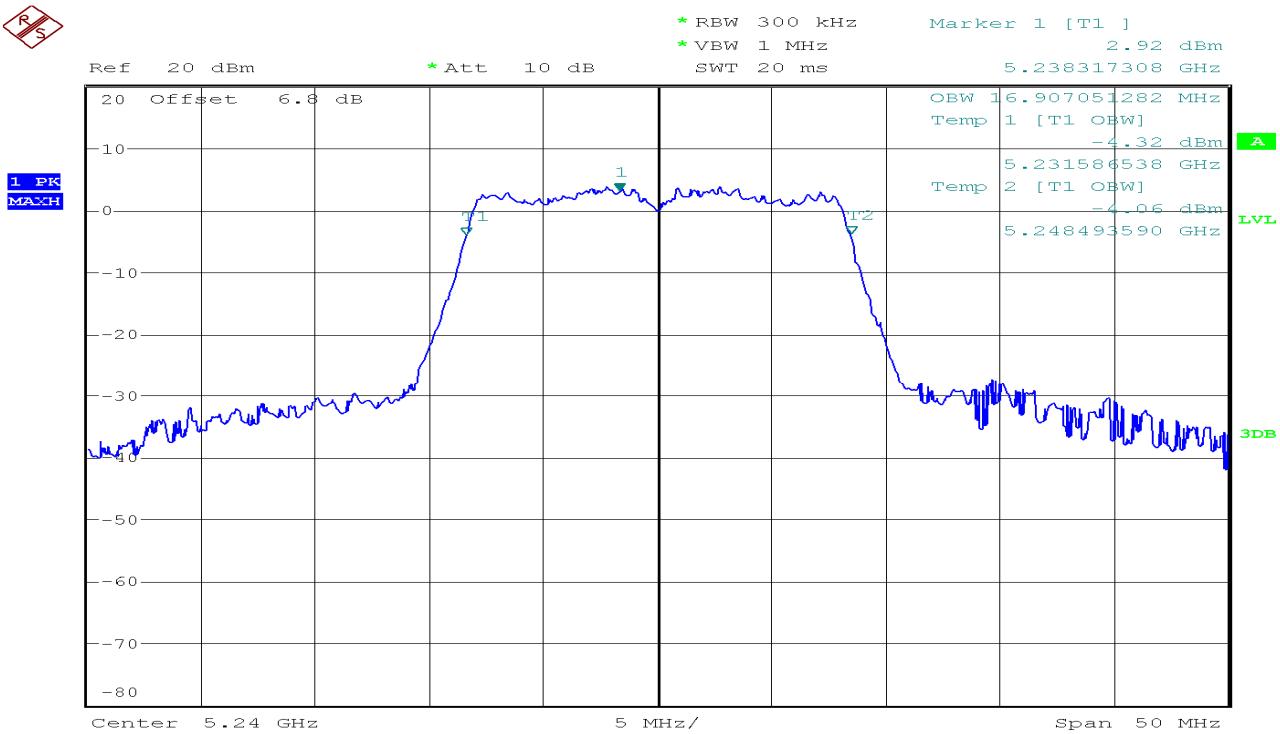
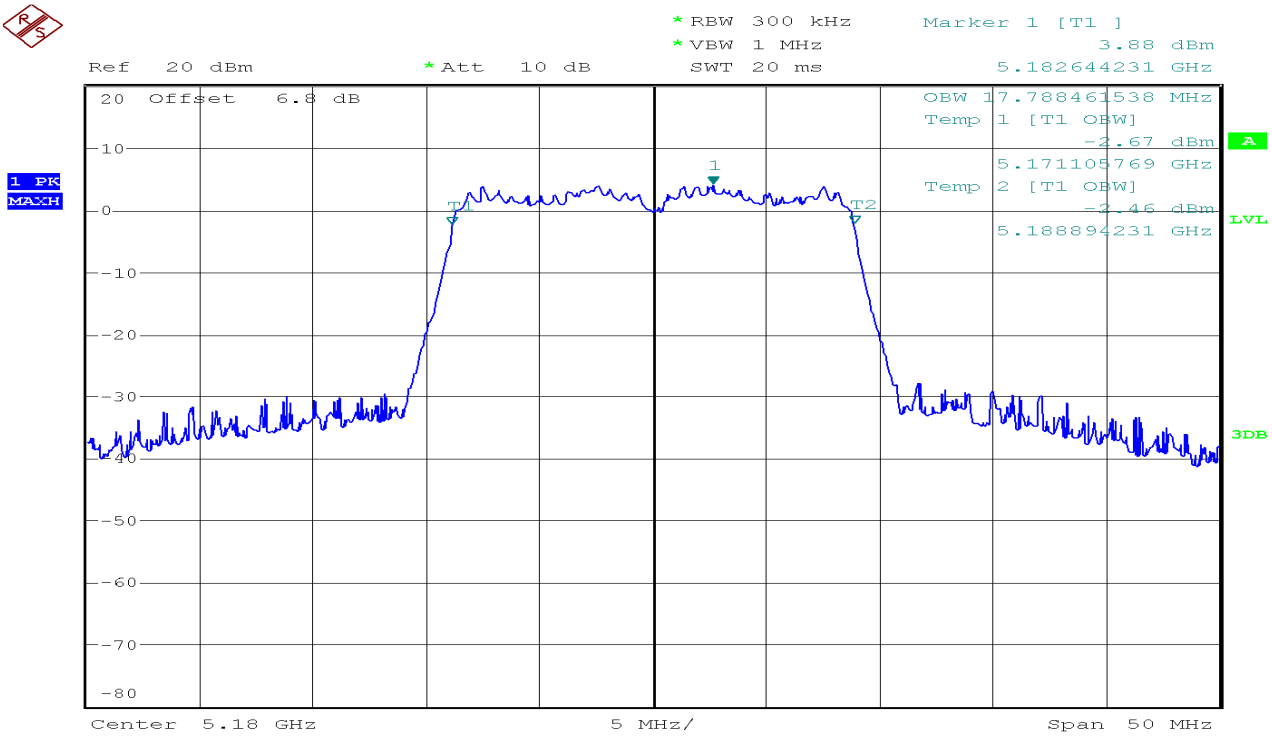
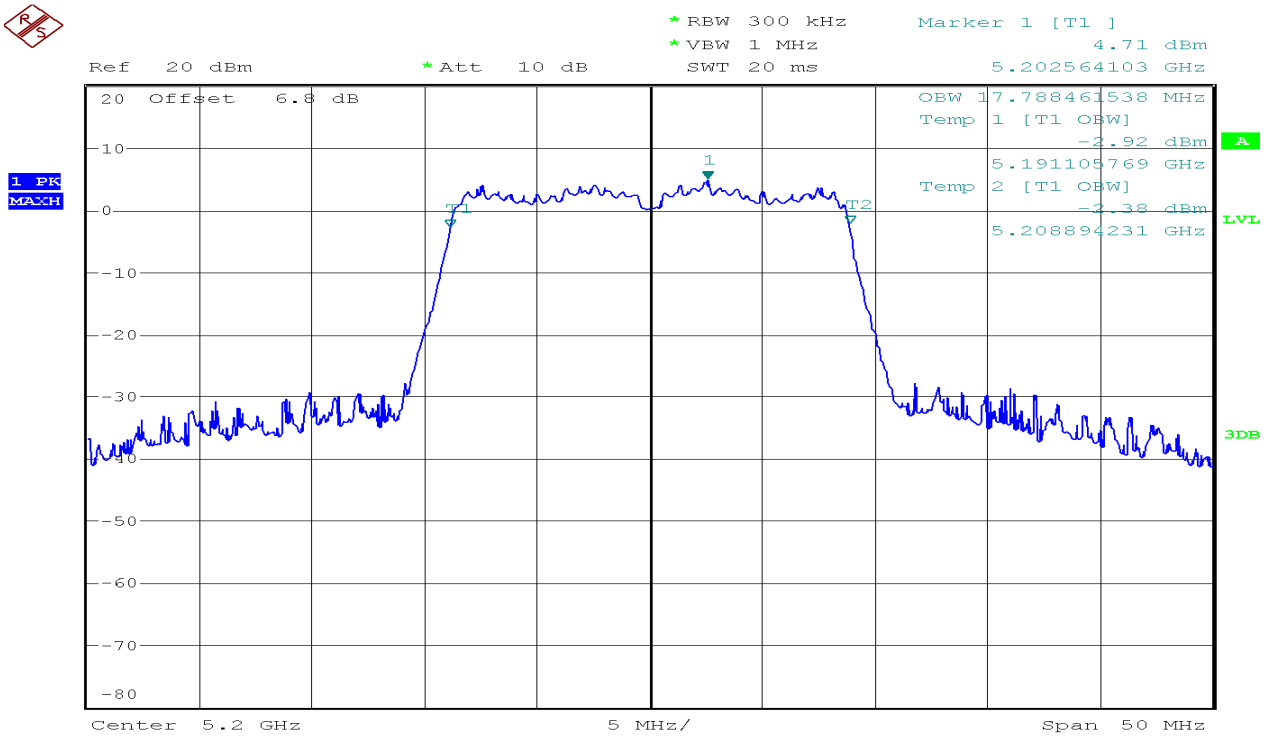


IEEE 802.11n HT20 mode/Chain 0:

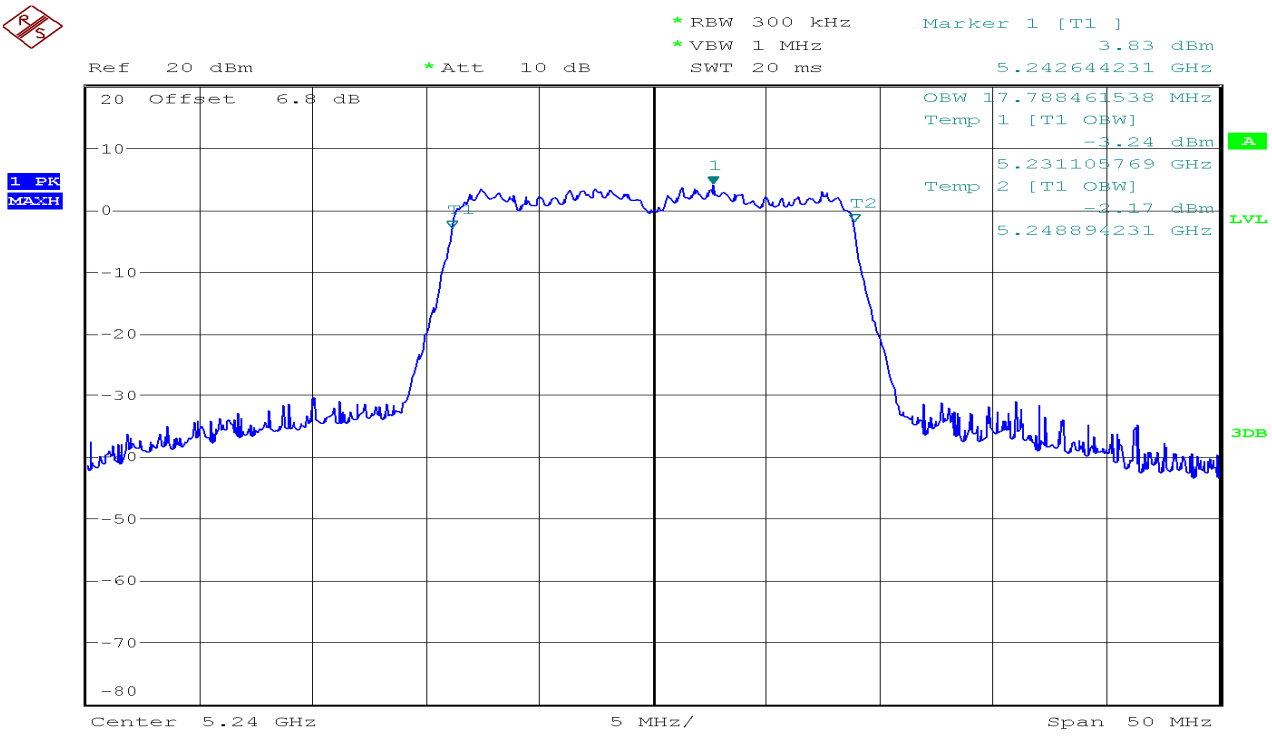
CH Low



CH Mid

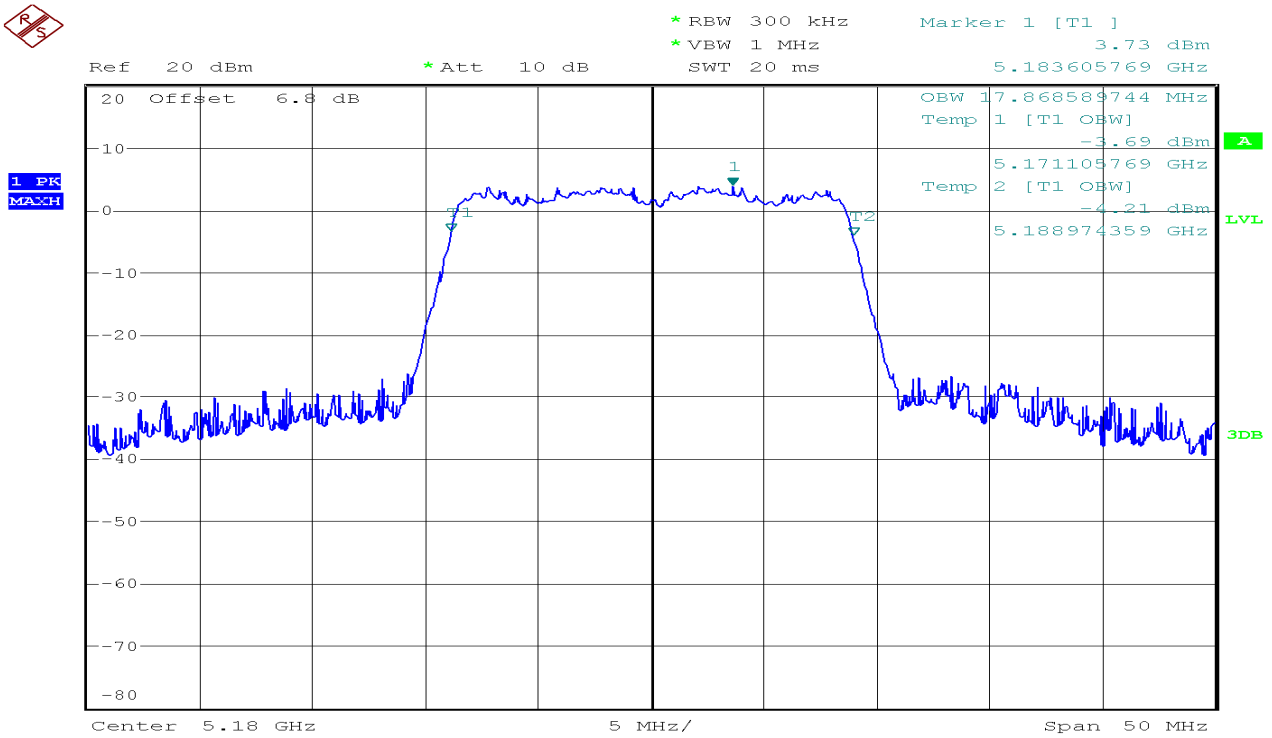


CH High

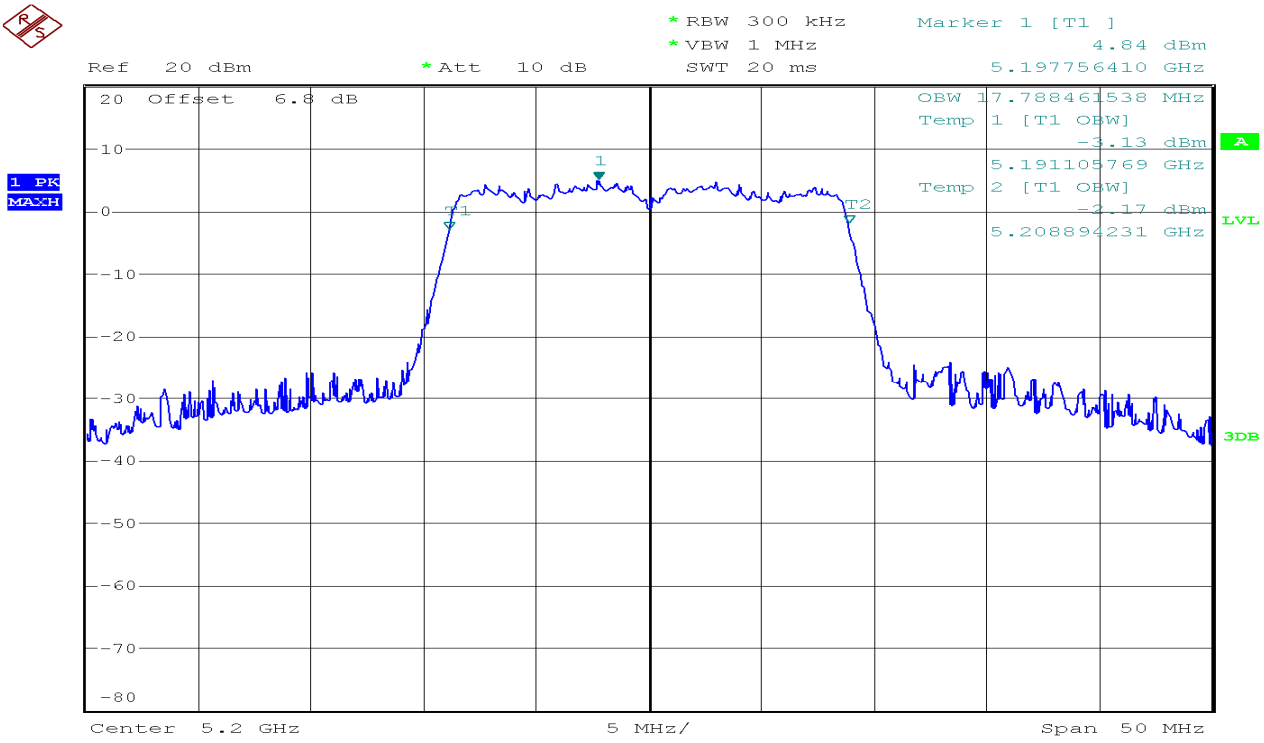


IEEE 802.11n HT20 mode/Chain 1:

CH Low



CH Mid



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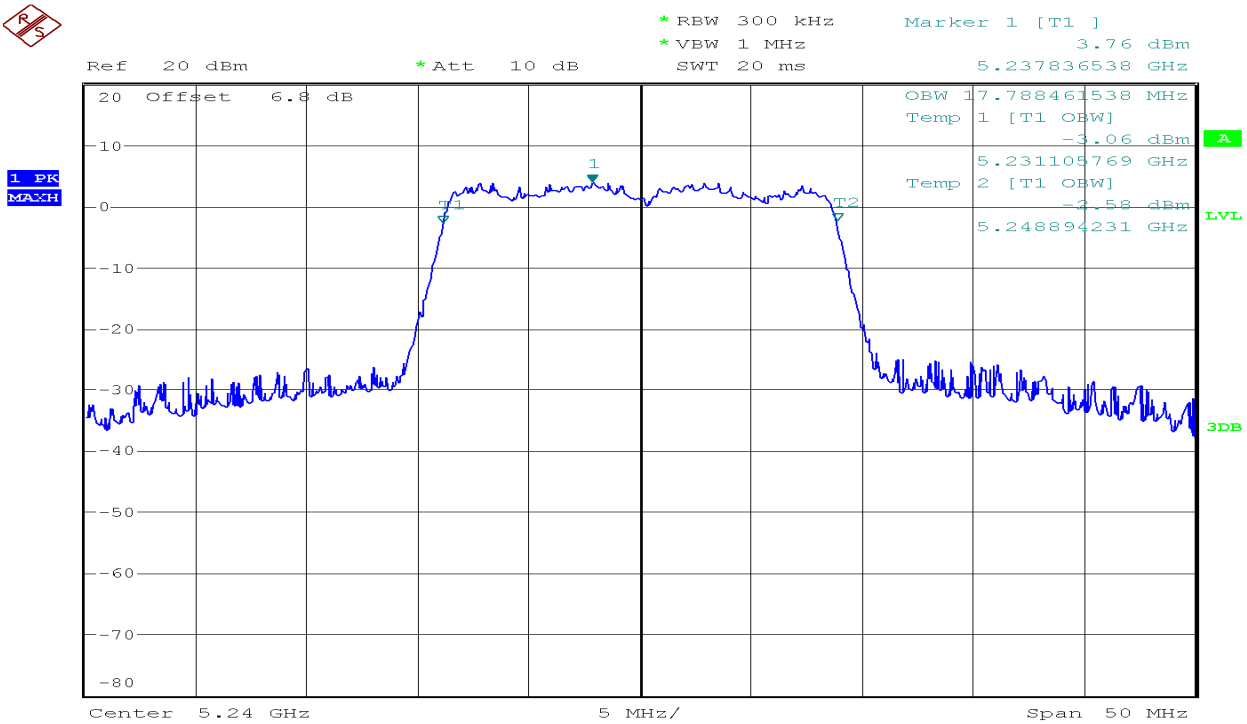
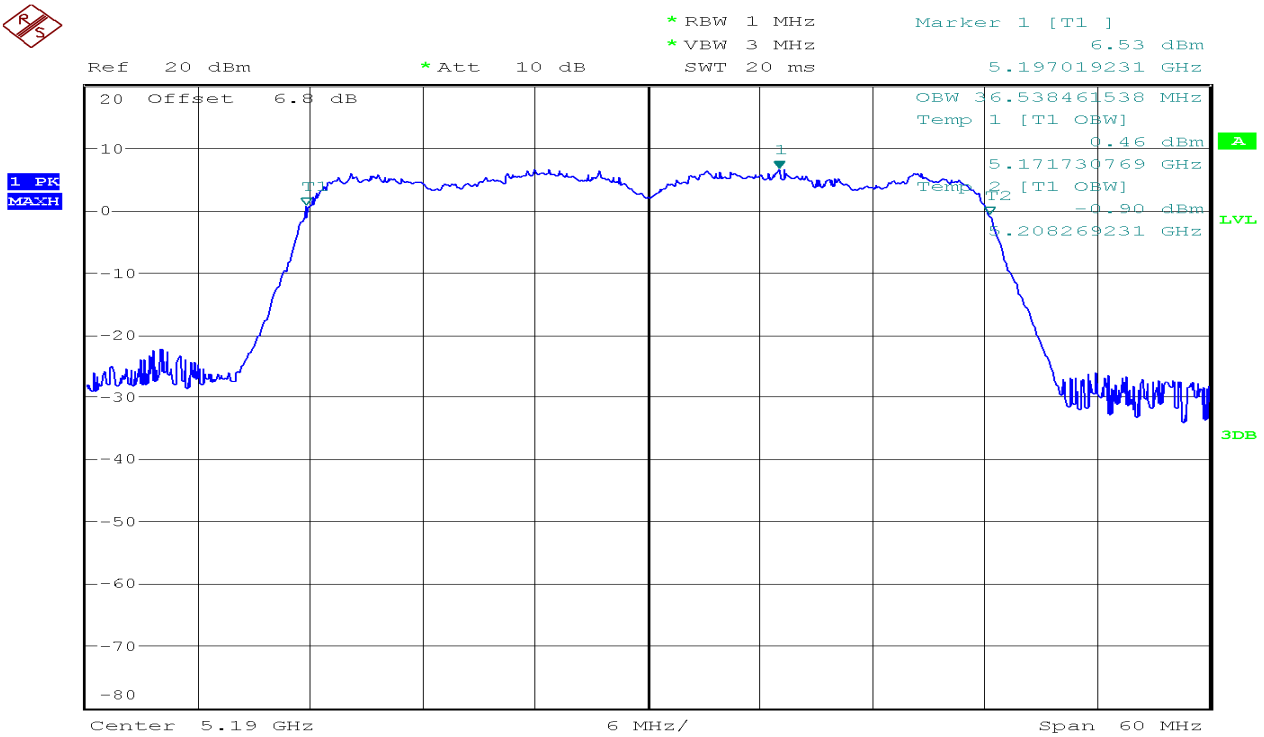
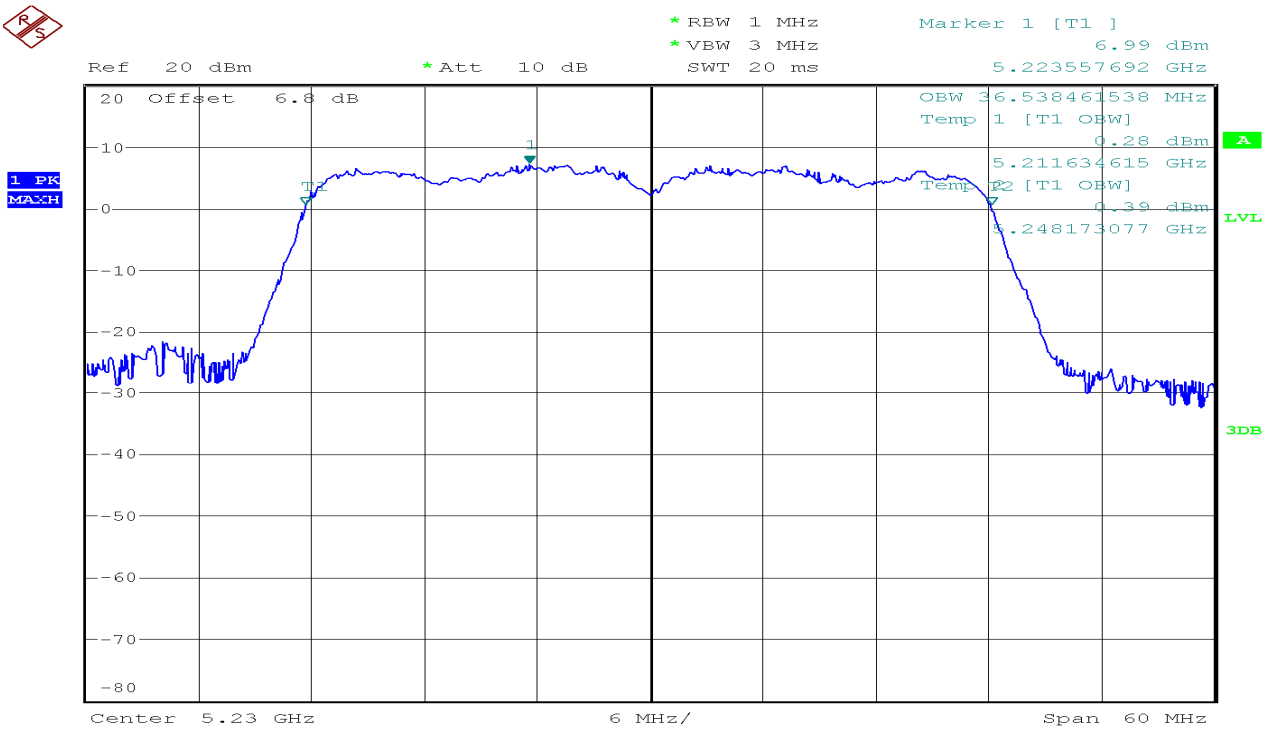


IEEE 802.11n HT40 mode/Chain 0:

CH Low

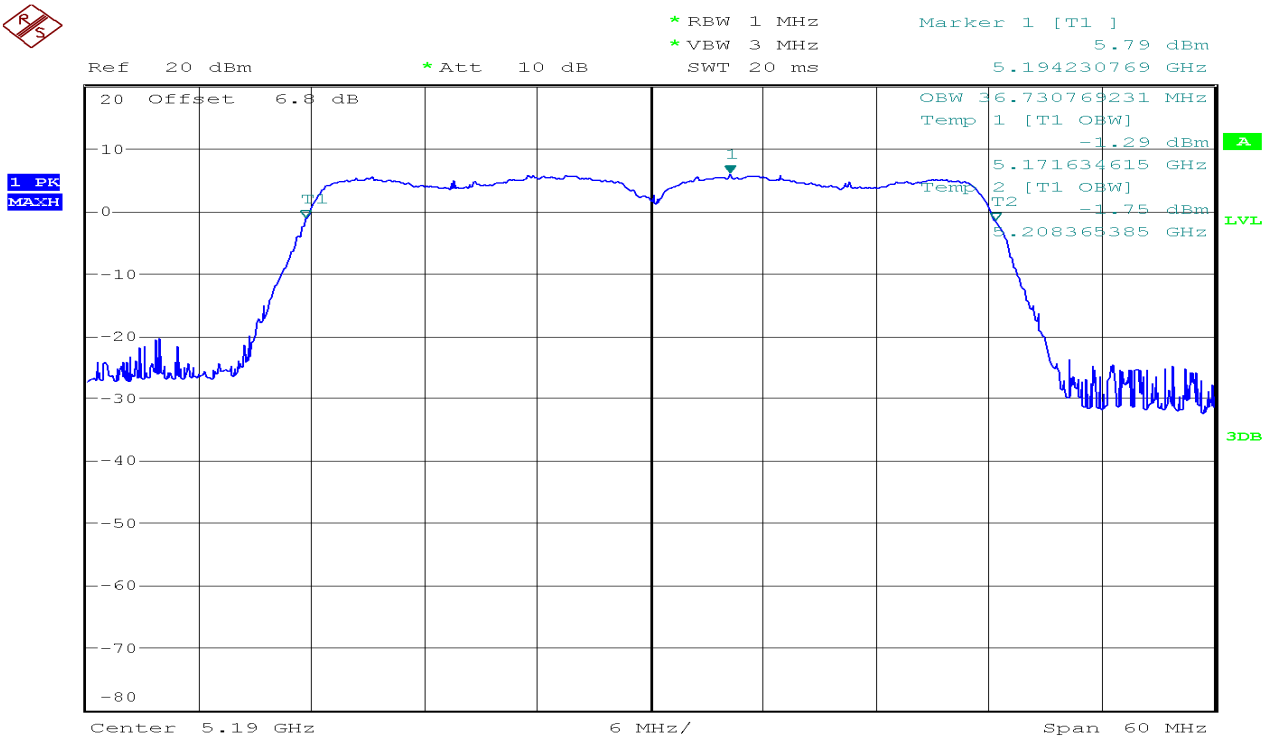


CH High

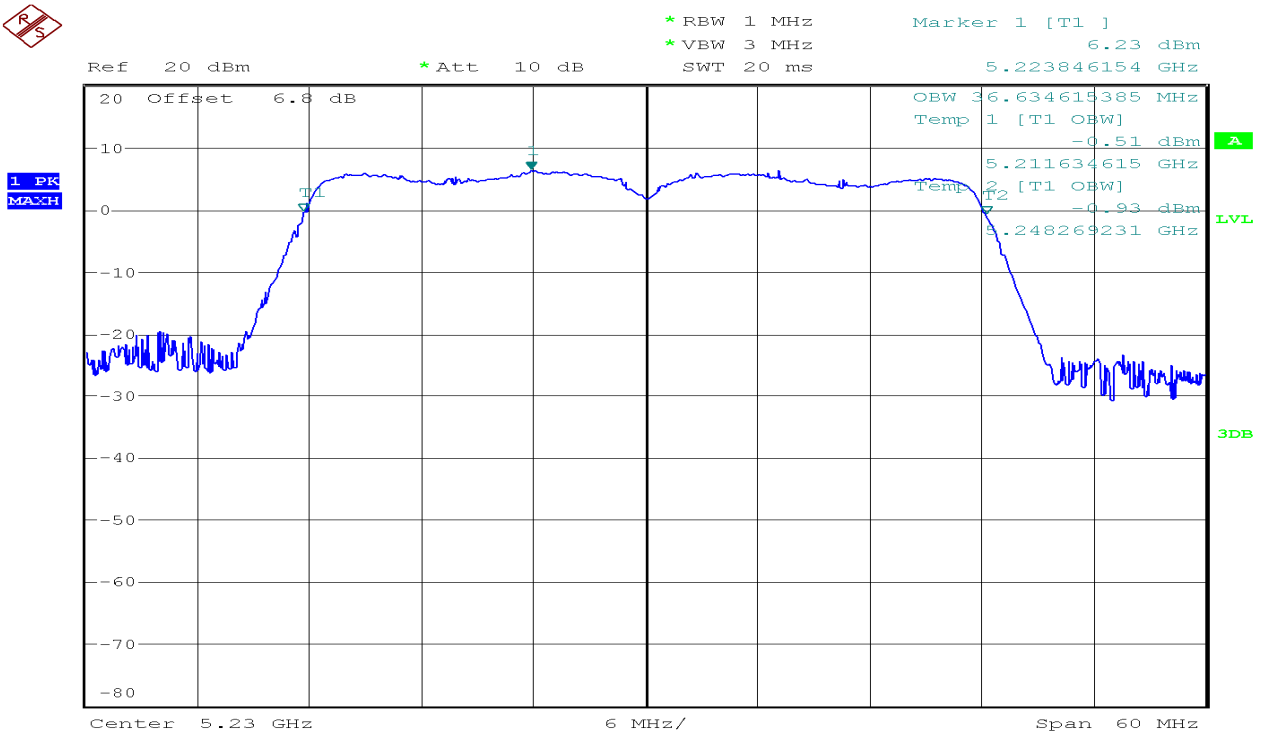


IEEE 802.11n HT40 mode/Chain 1:

CH Low

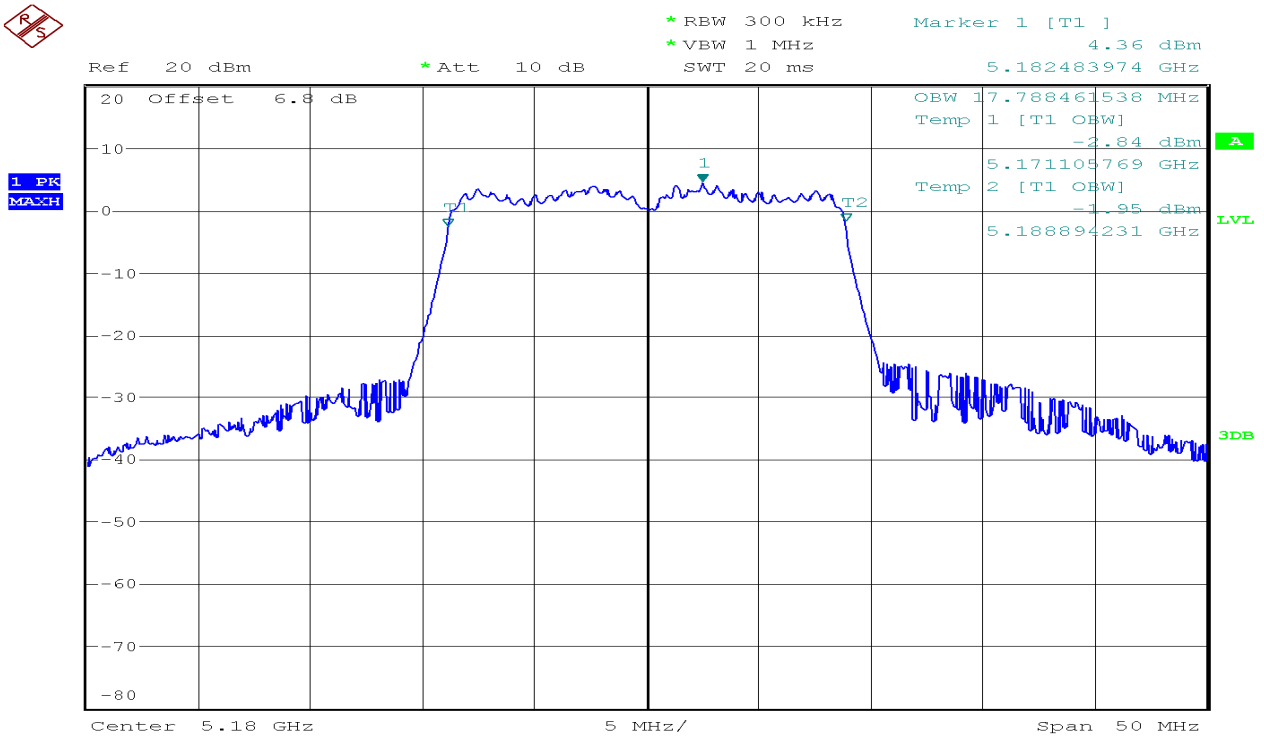


CH High

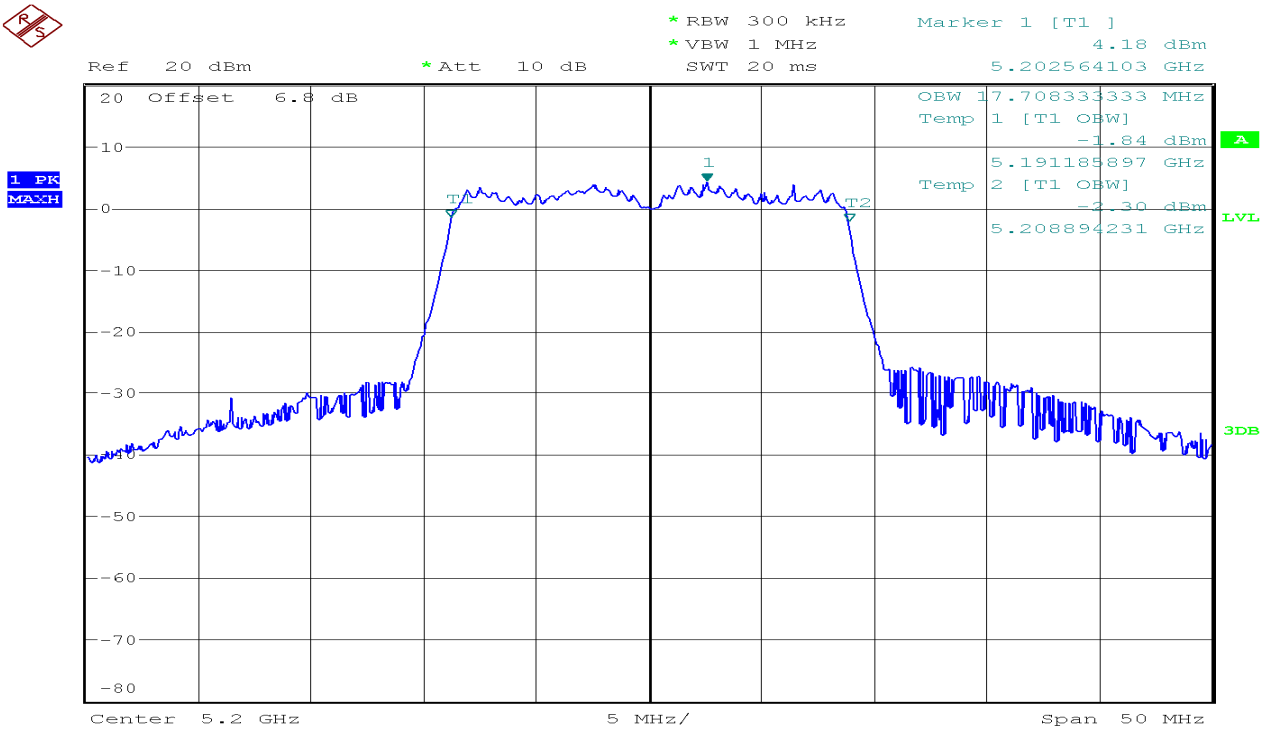


IEEE 802.11ac VHT20 mode/Chain 0:

CH Low



CH Mid



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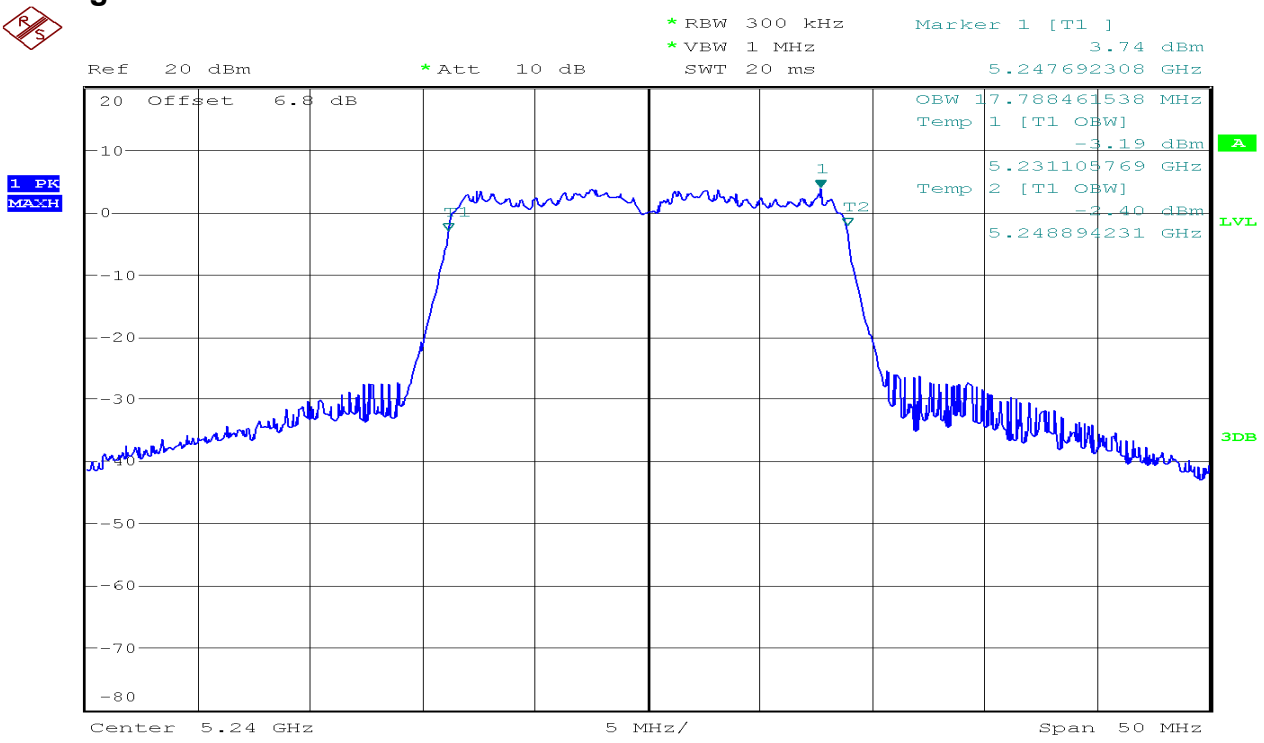
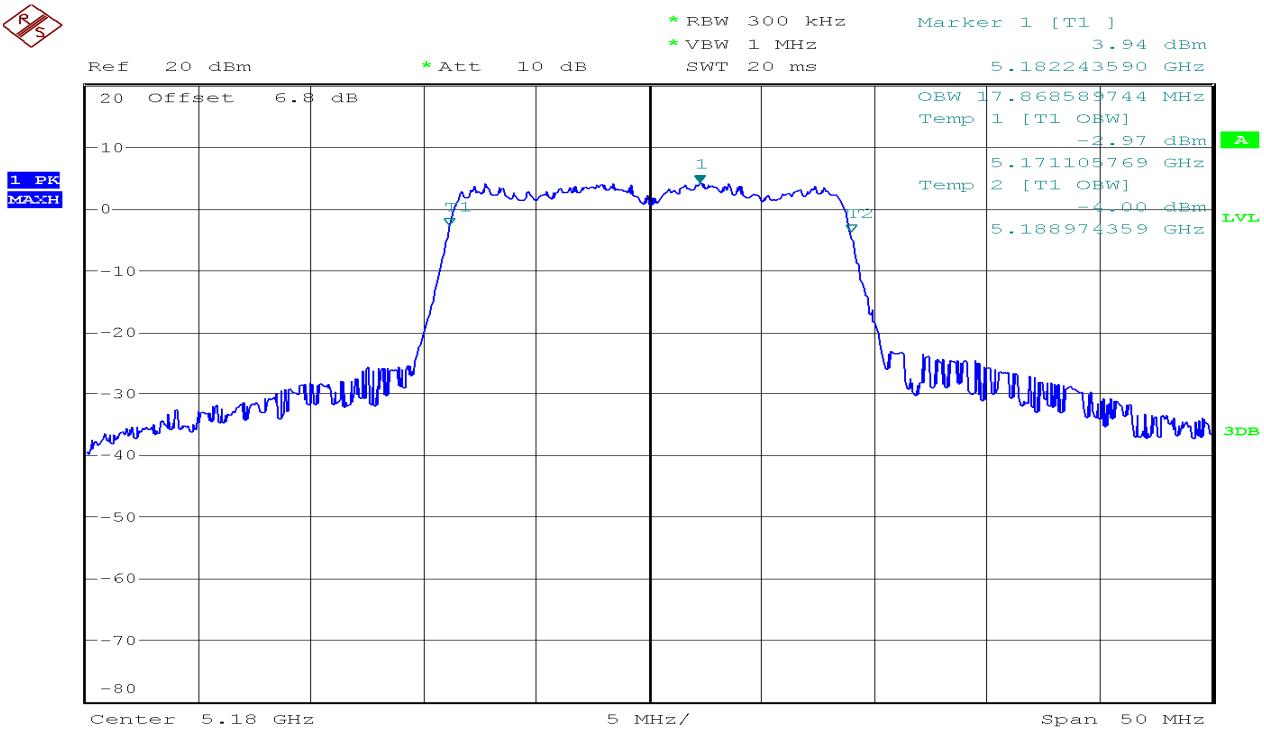
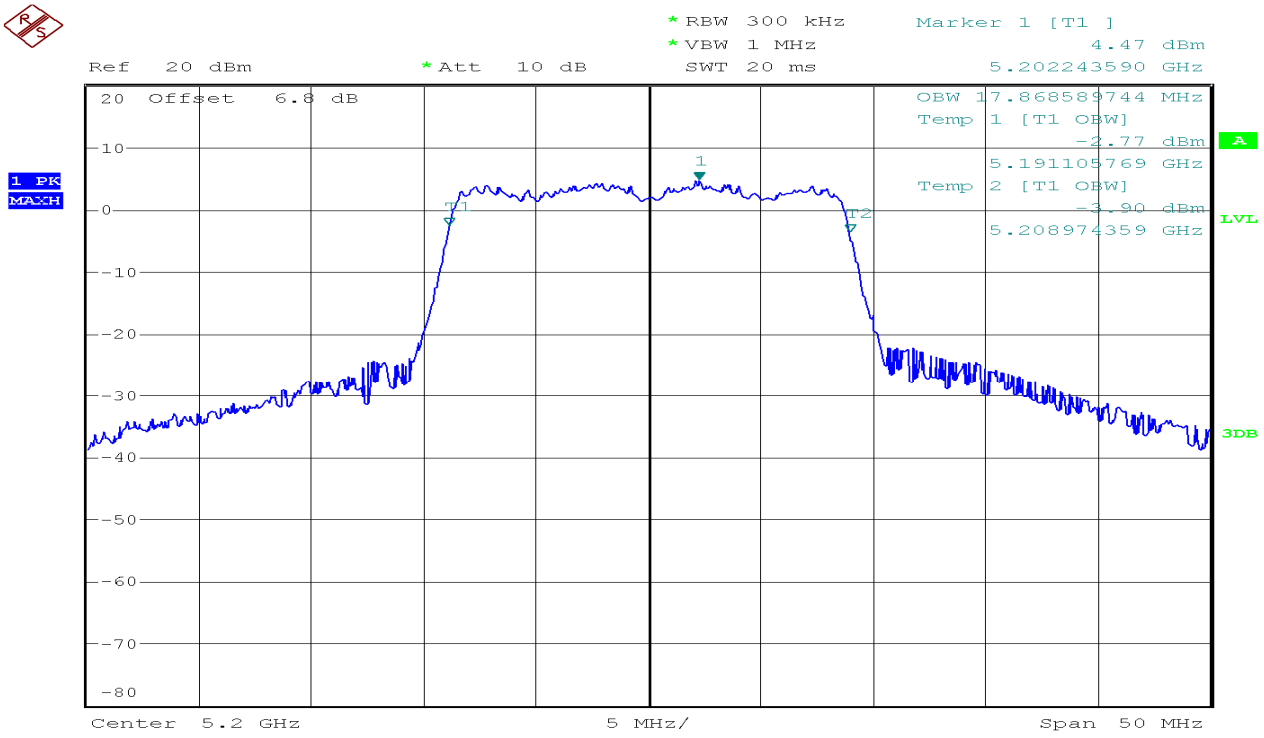


IEEE 802.11ac VHT20 mode/Chain 1:

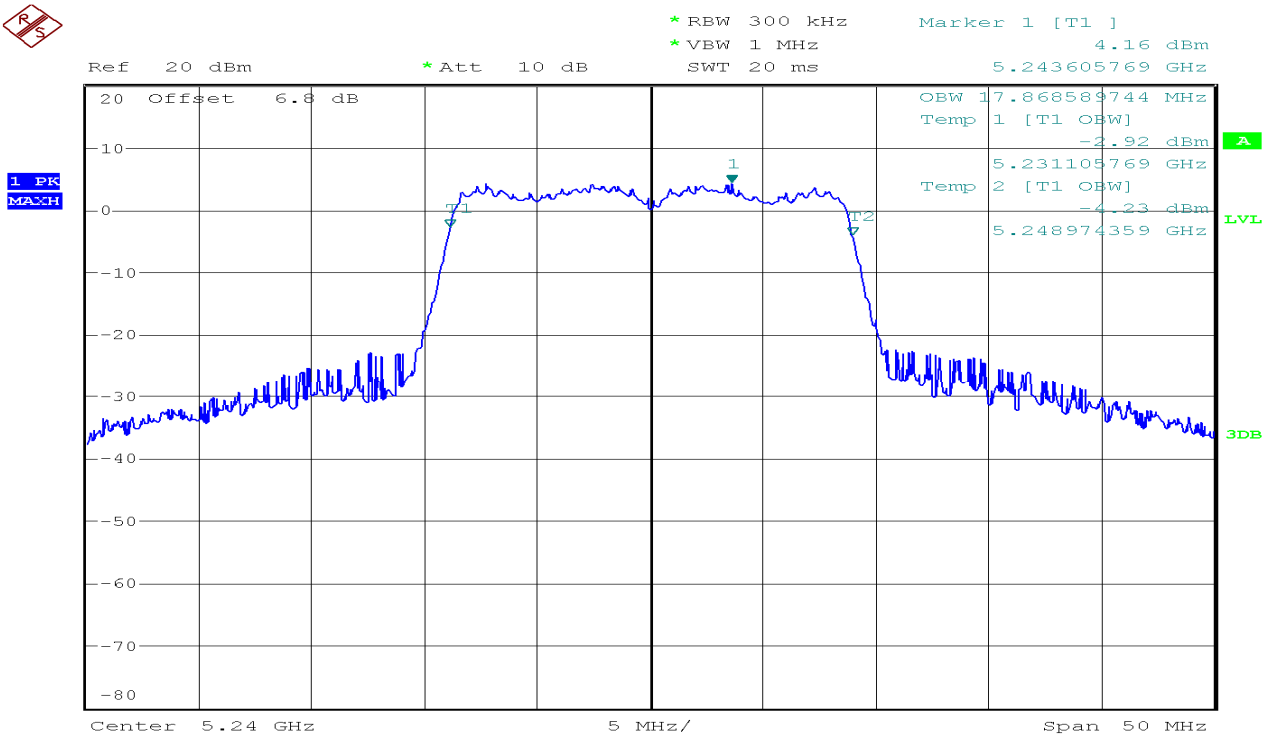
CH Low



CH Mid

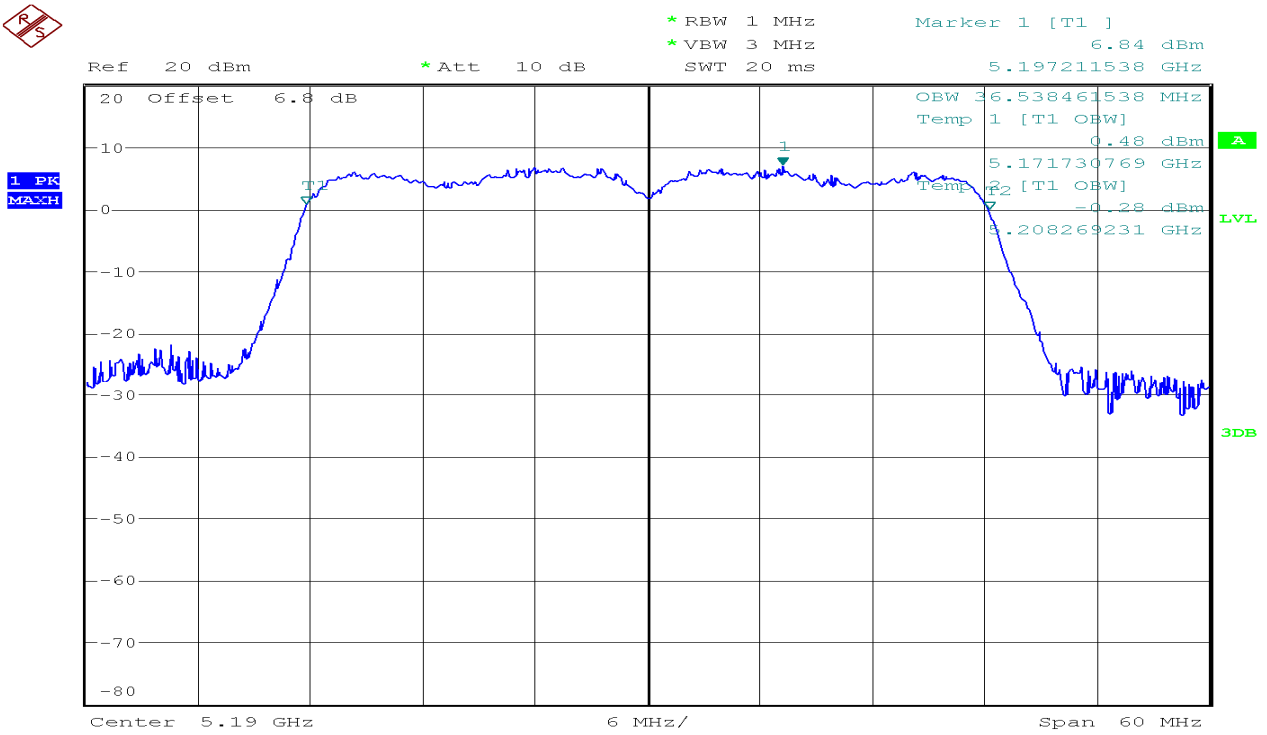


CH High

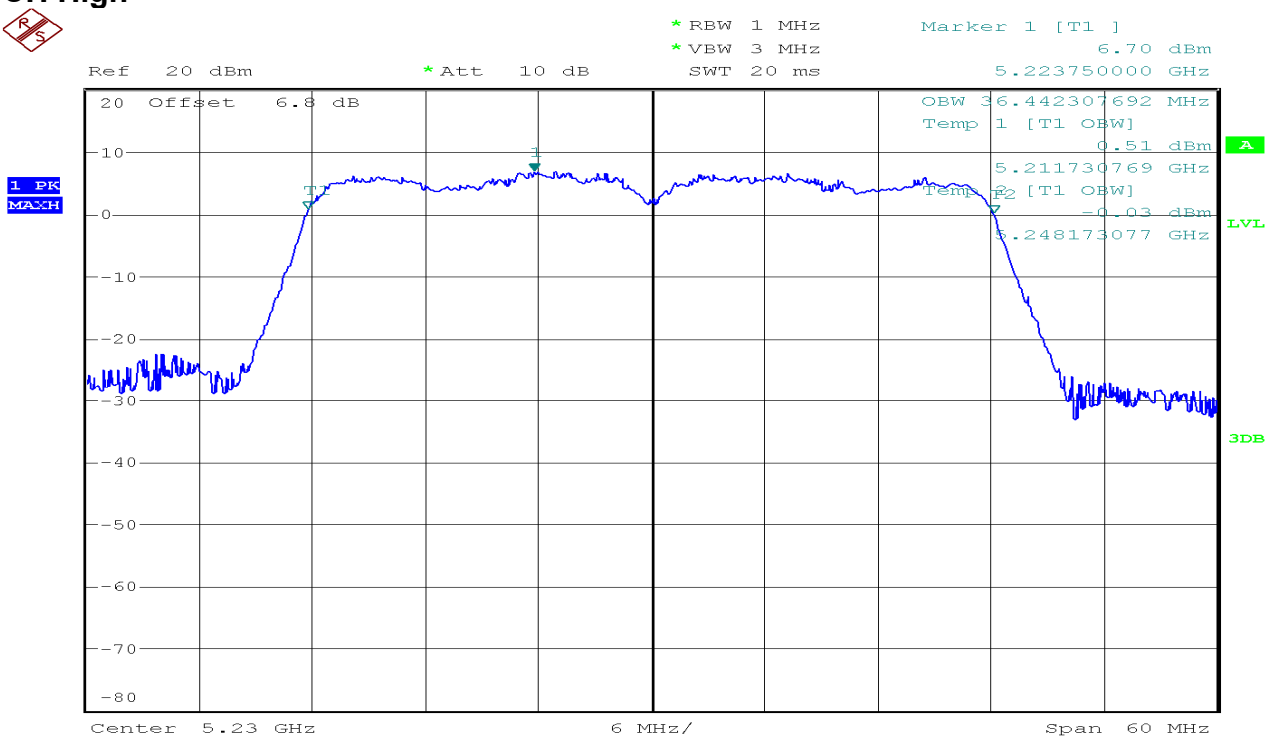


IEEE 802.11ac VHT40 mode/Chain 0:

CH Low

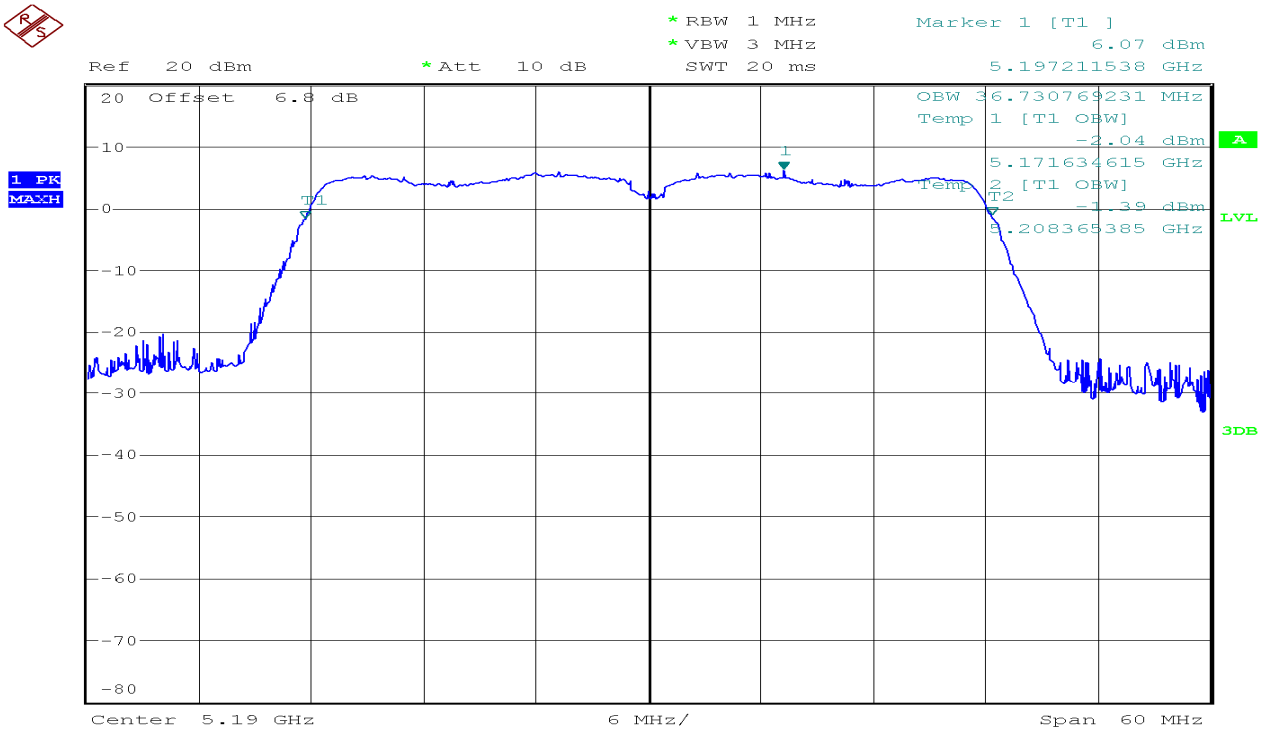


CH High

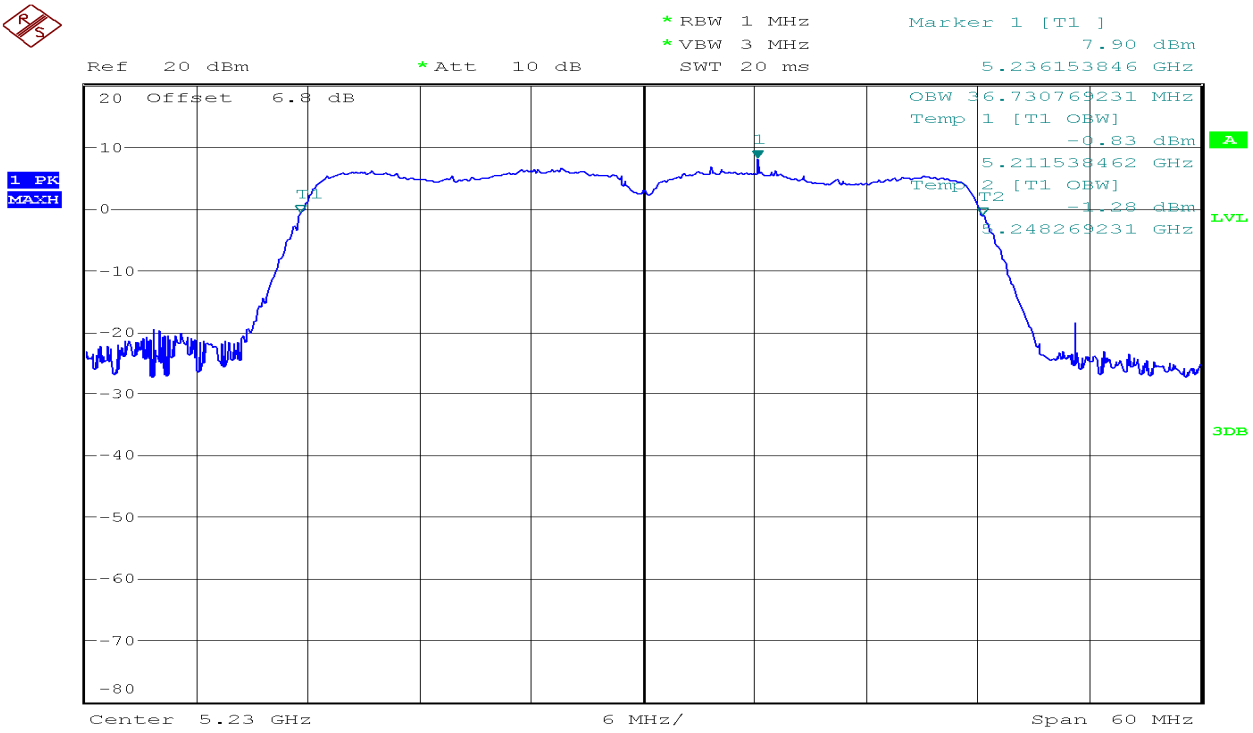


IEEE 802.11ac VHT40 mode/Chain 1:

CH Low

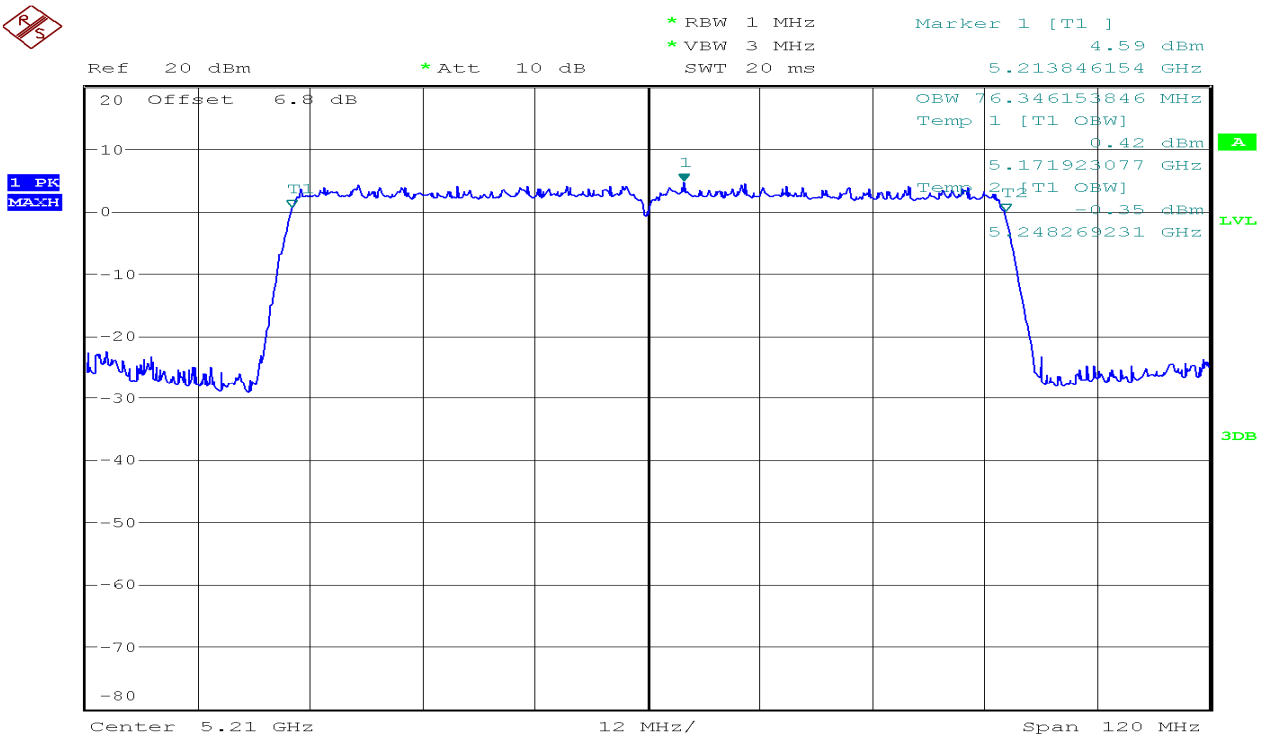


CH High



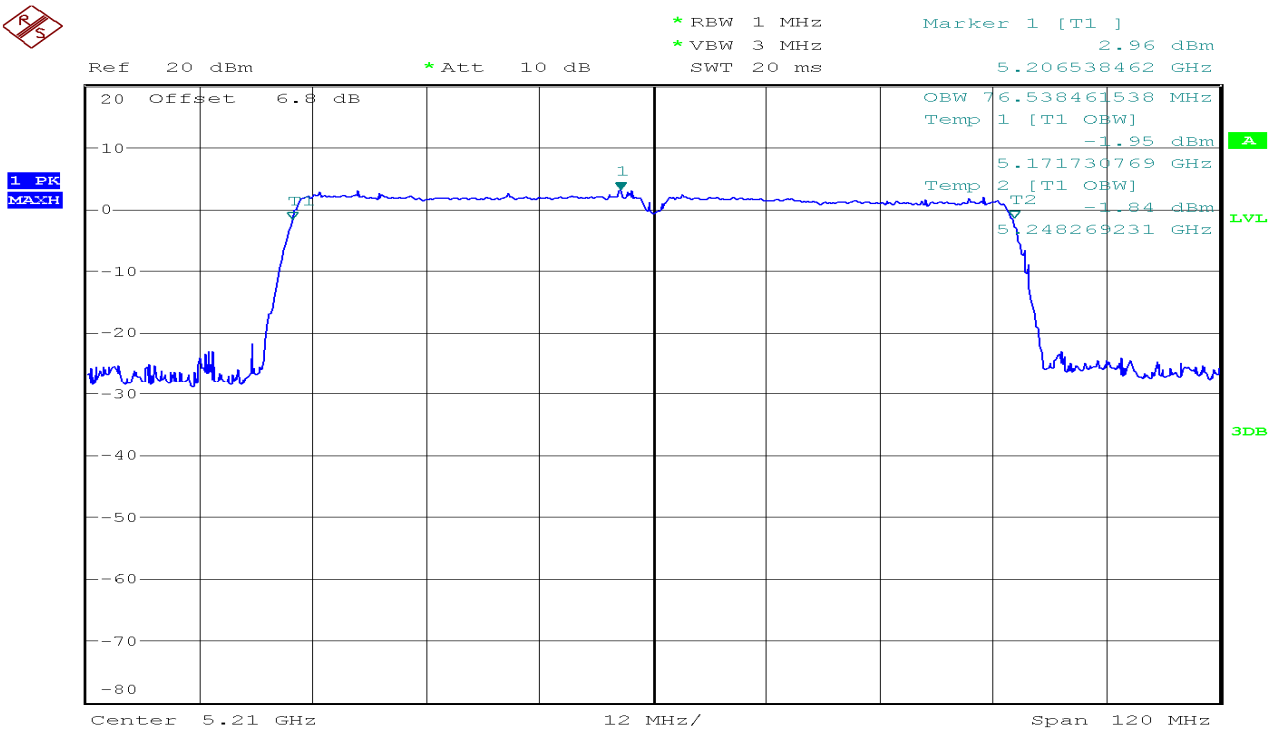
IEEE 802.11ac VHT80 mode/Chain 0:

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:

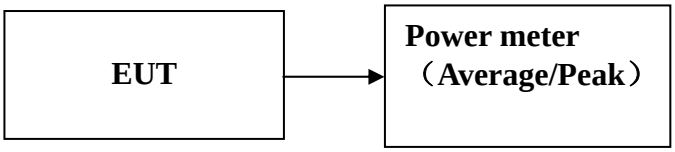
According to §15.407(a),

(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}=3.96dBi<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 AV Output Power (dBm)	Chain 1 AV Output Power (dBm)	Total Maximum Conducted AV Output Power (dBm)	Limit (dBm)
Low	5180	11.36	11.74	14.56	24.00
Mid	5200	10.95	12.31	14.69	24.00
High	5240	10.92	11.95	14.48	24.00

Test mode: IEEE 802.11n HT20MHz mode

Channel	Frequency (MHz)	Chain 0 AV Output Power (dBm)	Chain 1 AV Output Power (dBm)	Total Maximum Conducted AV Output Power (dBm)	Limit (dBm)
Low	5180	11.53	11.93	14.74	24.00
Mid	5200	11.06	12.47	14.83	24.00
High	5240	11.13	12.14	14.67	24.00

Test mode: IEEE 802.11n HT40MHz mode

Channel	Frequency (MHz)	Chain 0 AV Output Power (dBm)	Chain 1 AV Output Power (dBm)	Total Maximum Conducted AV Output Power (dBm)	Limit (dBm)
Low	5190	10.27	11.09	13.71	24.00
High	5230	10.27	11.74	14.08	24.00

Test mode: IEEE 802.11ac VHT20MHz mode

Channel	Frequency (MHz)	Chain 0 AV Output Power (dBm)	Chain 1 AV Output Power (dBm)	Total Maximum Conducted AV Output Power (dBm)	Limit (dBm)
Low	5180	11.78	11.98	14.89	24.00
Mid	5200	11.20	12.66	15.00	24.00
High	5240	11.08	11.86	14.50	24.00

Test mode: IEEE 802.11ac VHT40MHz mode

Channel	Frequency (MHz)	Chain 0 AV Output Power (dBm)	Chain 1 AV Output Power (dBm)	Total Maximum Conducted AV Output Power (dBm)	Limit (dBm)
Low	5190	10.24	11.04	13.67	24.00
High	5230	10.73	11.42	14.10	24.00

Test mode: IEEE 802.11ac VHT80MHz mode

Channel	Frequency (MHz)	Chain 0 AV Output Power (dBm)	Chain 1 AV Output Power (dBm)	Total Maximum Conducted AV Output Power (dBm)	Limit (dBm)
Mid	5210	11.65	11.36	14.52	24.00

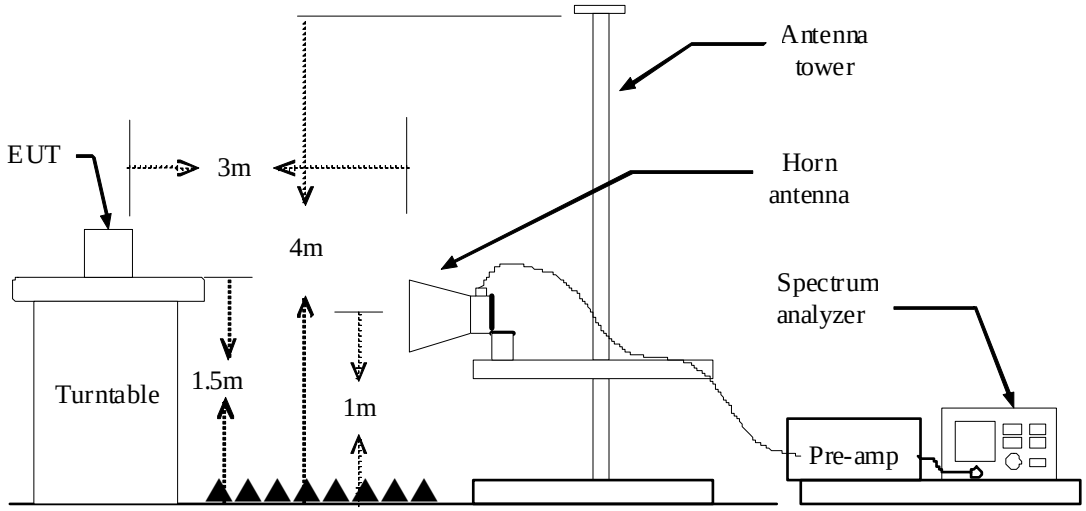
***Remark**:* 1.Total Output Power (dBm) = 10*LOG(10^(Chain 0 Output Power / 10)+10^(Chain 1 *Output Power /10))*
2.Duty factor has been offseted with cableloss

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.

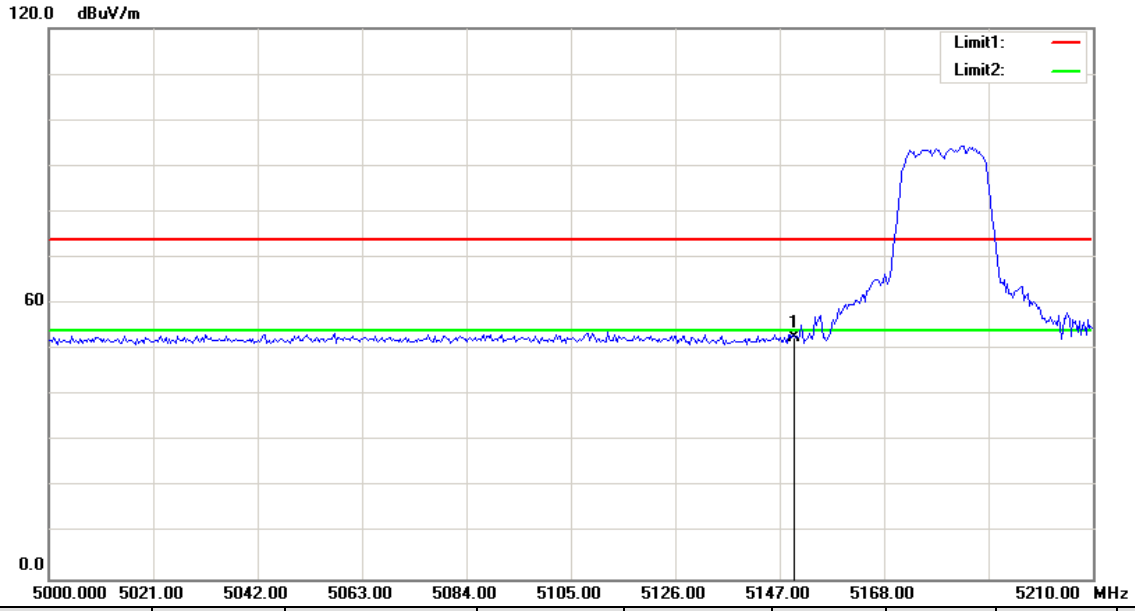
Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
IEEE 802.11 a	96.4	993.3	0.001	10Hz
IEEE 802.11n HT20	96.4	993.3	0.001	10Hz
IEEE 802.11n HT40	96.4	993.3	0.001	10Hz
IEEE 802.11ac VHT20	96.4	993.3	0.001	10Hz
IEEE 802.11ac VHT40	96.4	993.3	0.001	10Hz
IEEE 802.11ac VHT80	95.8	996.7	0.001	10Hz

TEST RESULTS

Refer to attach spectrum analyzer data chart.

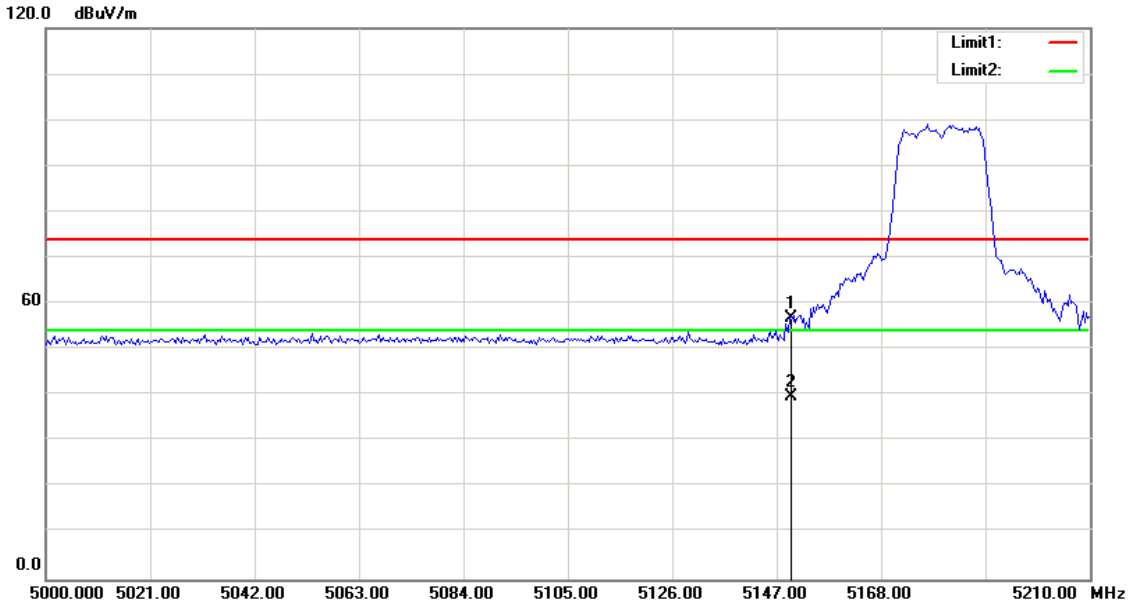
Band Edges (IEEE 802.11a mode)

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	5150.000	57.08	-4.40	52.68	74.00	-21.32	100	209	peak

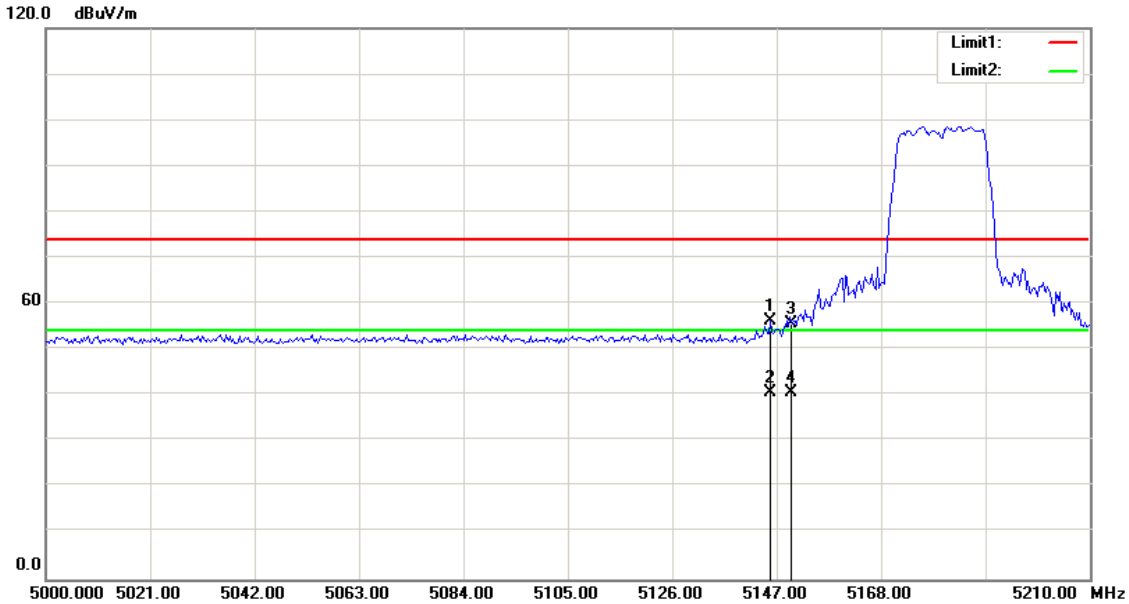
Polarity: Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	5150.000	61.10	-4.40	56.70	74.00	-17.30	200	230	peak
2	5150.000	44.18	-4.40	39.78	54.00	-14.22	100	69	AVG

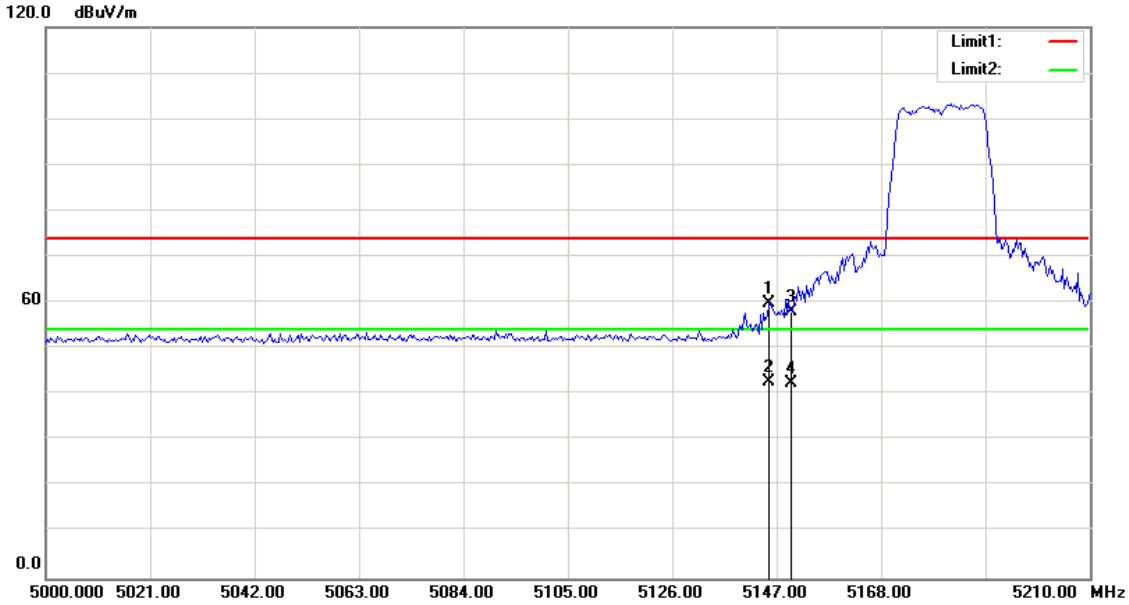
Band Edges (IEEE 802.11n HT20 mode)

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	5145.721	60.72	-4.42	56.30	74.00	-17.70	100	22	peak
2	5145.721	45.05	-4.42	40.63	54.00	-13.37	200	20	AVG
3	5150.000	60.14	-4.40	55.74	74.00	-18.26	200	358	peak
4	5150.000	45.06	-4.40	40.66	54.00	-13.34	100	358	AVG

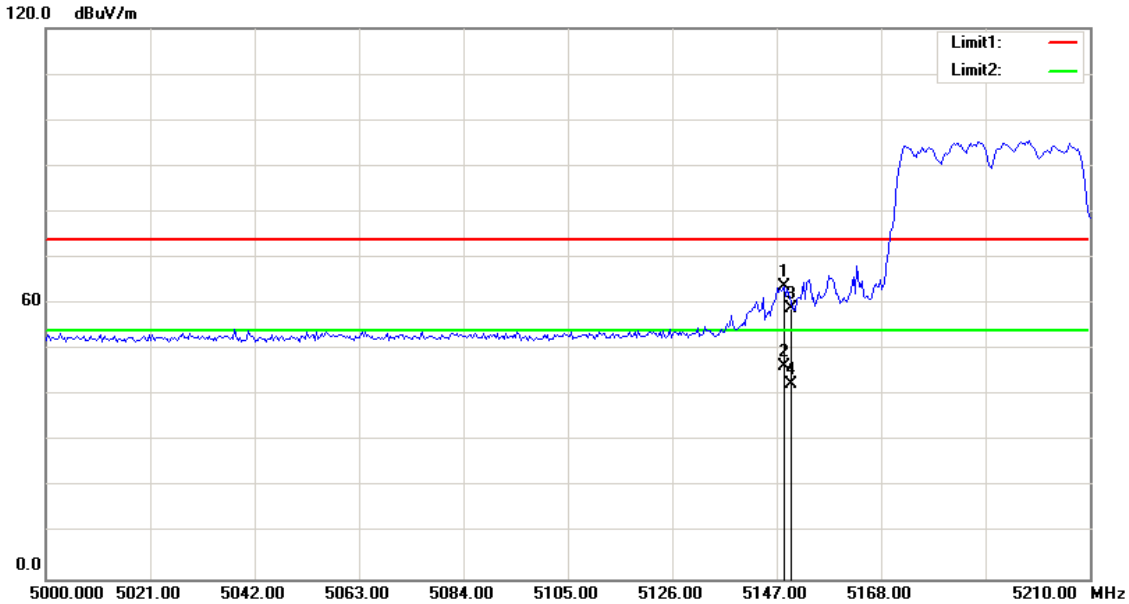
Polarity: Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	5145.385	64.41	-4.42	59.99	74.00	-14.01	100	360	peak
2	5145.385	47.22	-4.42	42.80	54.00	-11.20	200	360	AVG
3	5150.000	62.44	-4.40	58.04	74.00	-15.96	200	107	peak
4	5150.000	46.78	-4.40	42.38	54.00	-11.62	100	105	AVG

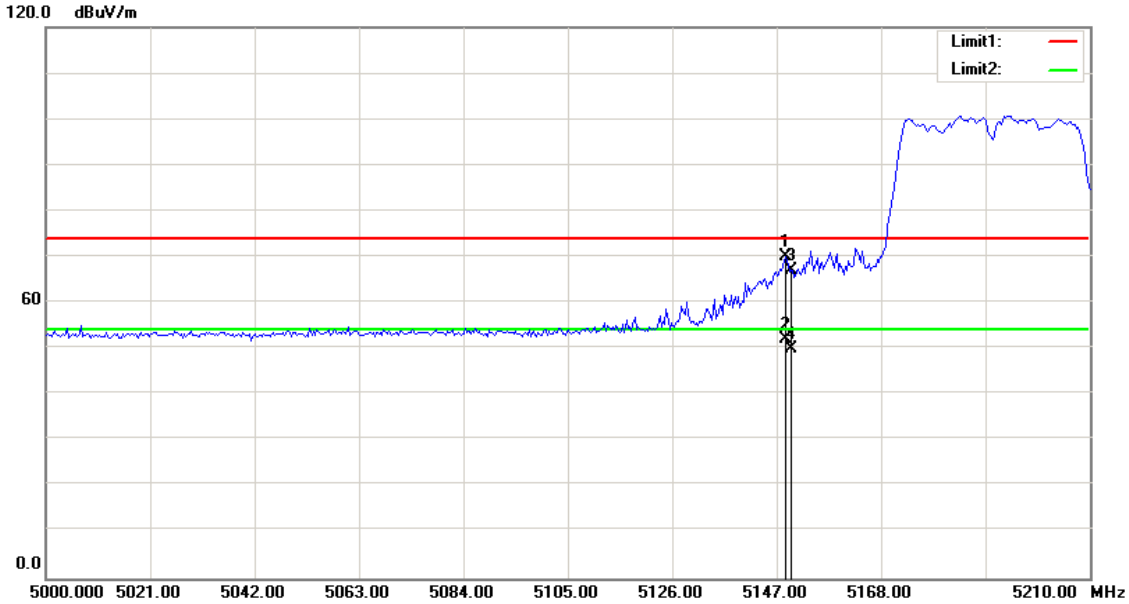
Band Edges (IEEE 802.11n HT40 mode)

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	5148.413	68.17	-4.40	63.77	74.00	-10.23	200	360	peak
2	5148.413	50.61	-4.40	46.21	54.00	-7.79	100	360	AVG
3	5150.000	63.38	-4.40	58.98	74.00	-15.02	200	123	peak
4	5150.000	46.94	-4.40	42.54	54.00	-11.46	100	122	AVG

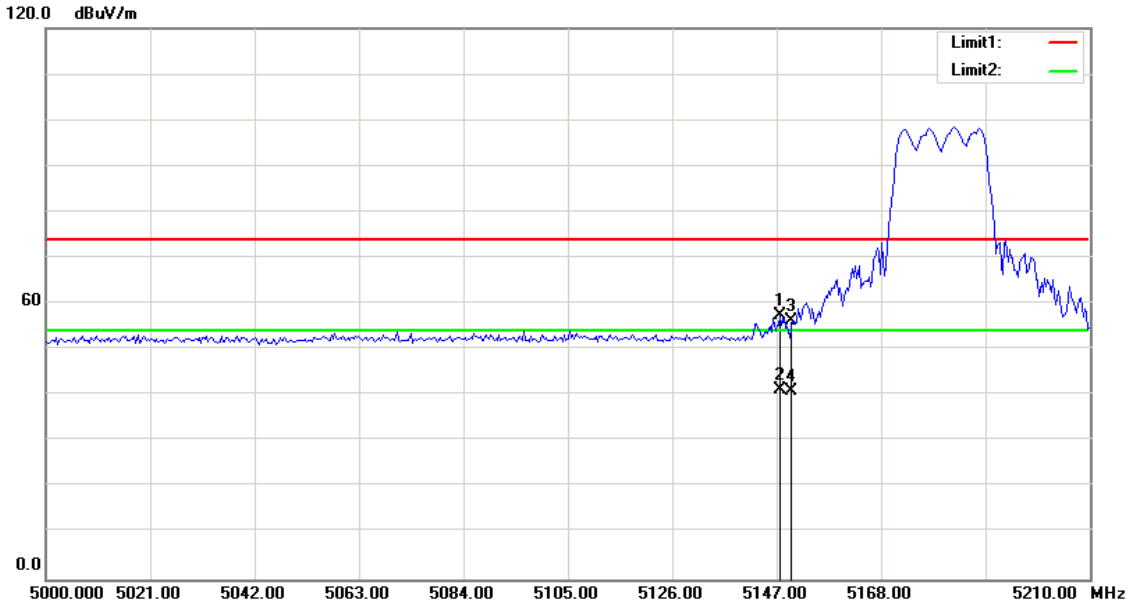
Polarity: Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	5148.750	74.59	-4.40	70.19	74.00	-3.81	100	1	peak
2	5148.750	56.42	-4.40	52.02	54.00	-1.98	200	0	AVG
3	5150.000	71.38	-4.40	66.98	74.00	-7.02	200	324	peak
4	5150.000	54.32	-4.40	49.92	54.00	-4.08	100	325	AVG

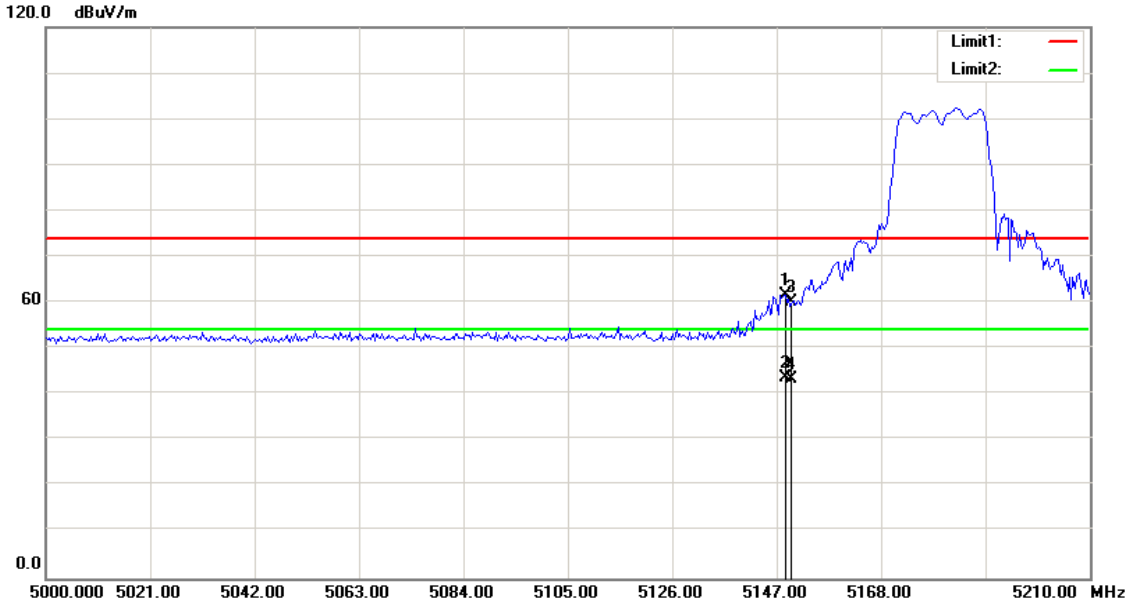
Band Edges (IEEE 802.11ac VHT20 mode)

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	5147.740	61.89	-4.41	57.48	74.00	-16.52	100	0	peak
2	5147.740	45.64	-4.41	41.23	54.00	-12.77	100	142	AVG
3	5150.000	60.54	-4.40	56.14	74.00	-17.86	100	0	peak
4	5150.000	45.27	-4.40	40.87	54.00	-13.13	100	195	AVG

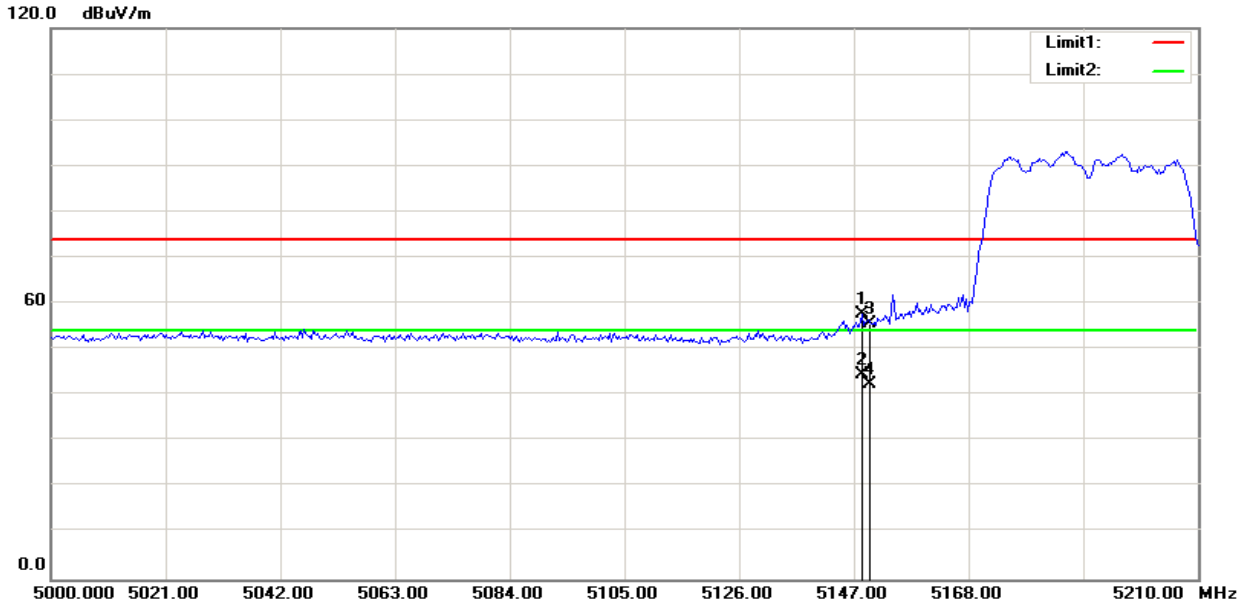
Polarity: Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	5148.750	66.13	-4.40	61.73	74.00	-12.27	200	360	peak
2	5148.750	48.05	-4.40	43.65	54.00	-10.35	100	231	AVG
3	5150.000	64.58	-4.40	60.18	74.00	-13.82	100	124	peak
4	5150.000	47.68	-4.40	43.28	54.00	-10.72	200	0	AVG

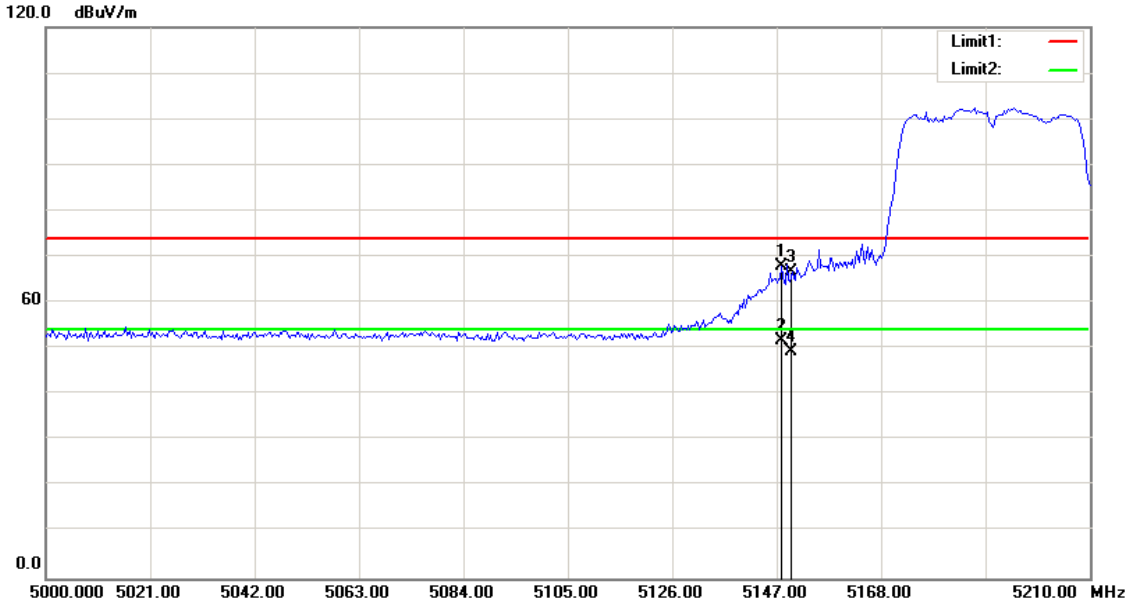
Band Edges (IEEE 802.11ac VHT40 mode)

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	5148.413	62.24	-4.40	57.84	74.00	-16.16	200	360	peak
2	5148.413	48.96	-4.40	44.56	54.00	-9.44	100	347	AVG
3	5150.000	59.91	-4.40	55.51	74.00	-18.49	200	162	peak
4	5150.000	46.71	-4.40	42.31	54.00	-11.69	100	136	AVG

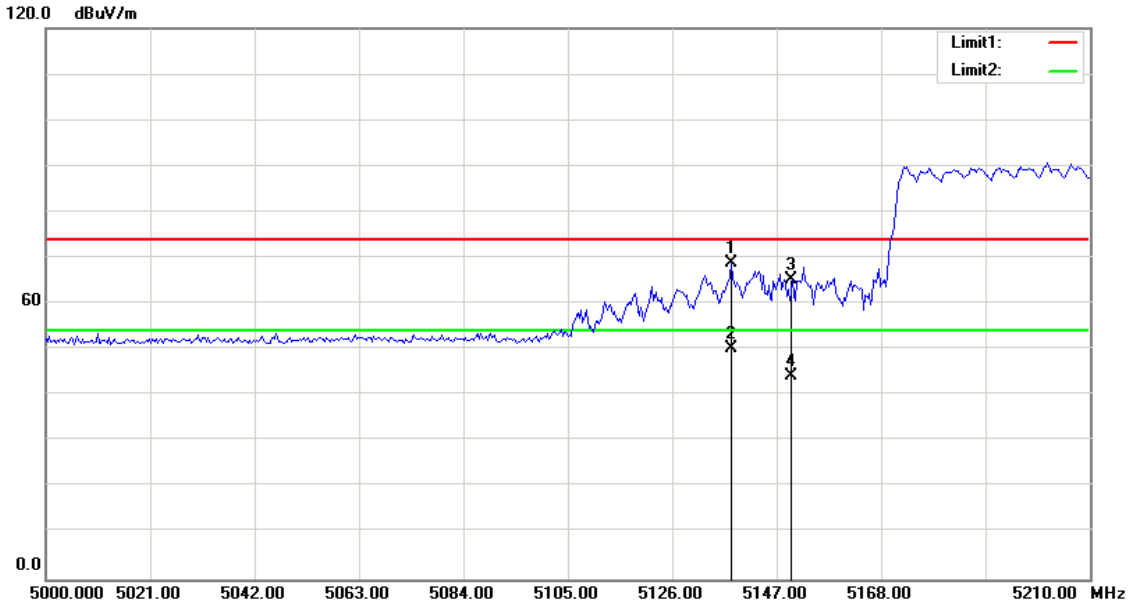
Polarity: Horizontal



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	72.45	-4.41	68.04	74.00	-5.96	100	325	peak
2	5148.077	56.04	-4.41	51.63	54.00	-2.37	100	277	AVG
3	5150.000	71.18	-4.40	66.78	74.00	-7.22	100	0	peak
4	5150.000	53.63	-4.40	49.23	54.00	-4.77	200	347	AVG

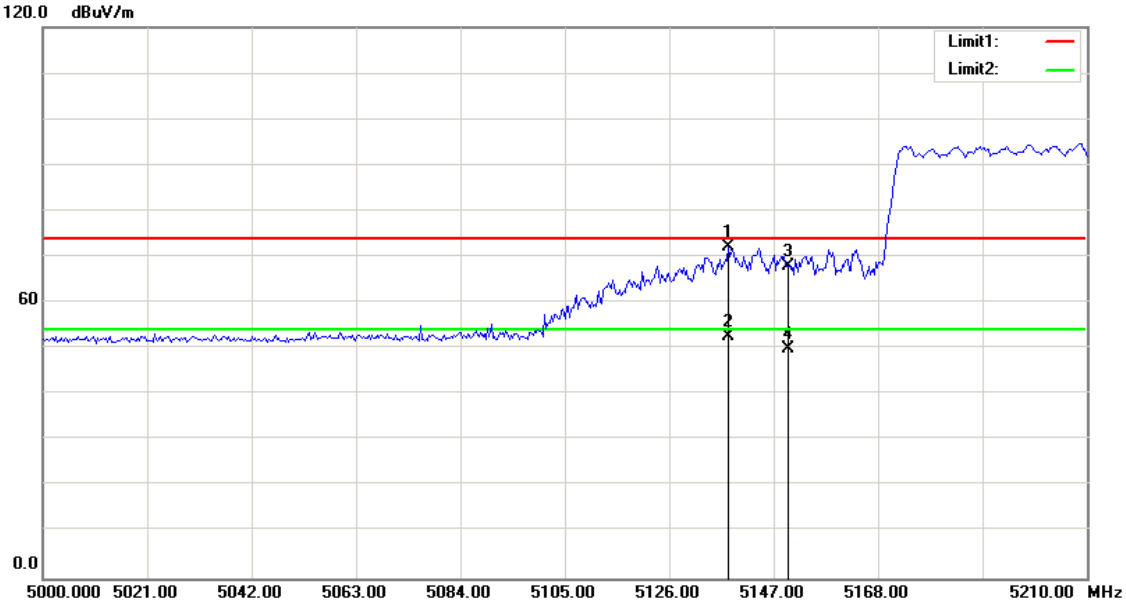
Band Edges (IEEE 802.11ac VHT80 mode)

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	5137.981	73.33	-4.45	68.88	74.00	-5.12	100	0	peak
2	5137.981	54.82	-4.45	50.37	54.00	-3.63	100	360	AVG
3	5150.000	69.55	-4.40	65.15	74.00	-8.85	200	231	peak
4	5150.000	48.57	-4.40	44.17	54.00	-9.83	100	29	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	5137.981	76.52	-4.45	72.07	74.00	-1.93	200	360	peak
2	5137.981	57.20	-4.45	52.75	54.00	-1.25	100	252	AVG
3	5150.000	72.41	-4.40	68.01	74.00	-5.99	200	118	peak
4	5150.000	54.30	-4.40	49.90	54.00	-4.10	100	47	AVG

7.5 MAXIMUM POWER SPECTRAL DENSITY

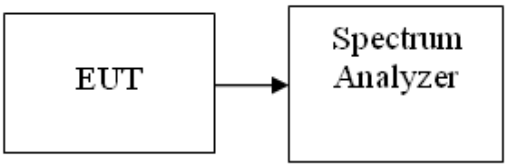
LIMIT

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}=3.96dBi<6dBi

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)	Total PPSD (dBm)	Limit (dBm)	Result
Low	5180	1.32	1.43	4.39	11.00	PASS
Mid	5200	1.07	2.06	4.60	11.00	PASS
High	5240	0.89	1.94	4.46	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	1.17	1.90	4.56	11.00	PASS
Mid	5200	0.95	2.05	4.55	11.00	PASS
High	5240	1.31	1.86	4.60	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	-2.79	-2.45	0.39	11.00	PASS
High	5230	-2.45	-1.86	0.87	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	1.22	1.94	4.61	11.00	PASS
Mid	5200	1.35	2.34	4.88	11.00	PASS
High	5240	1.31	1.68	4.51	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	-2.75	-2.04	0.63	11.00	PASS
High	5230	-2.34	-1.51	1.11	11.00	PASS

Test mode: IEEE 802.11ac VHT80MHz mode

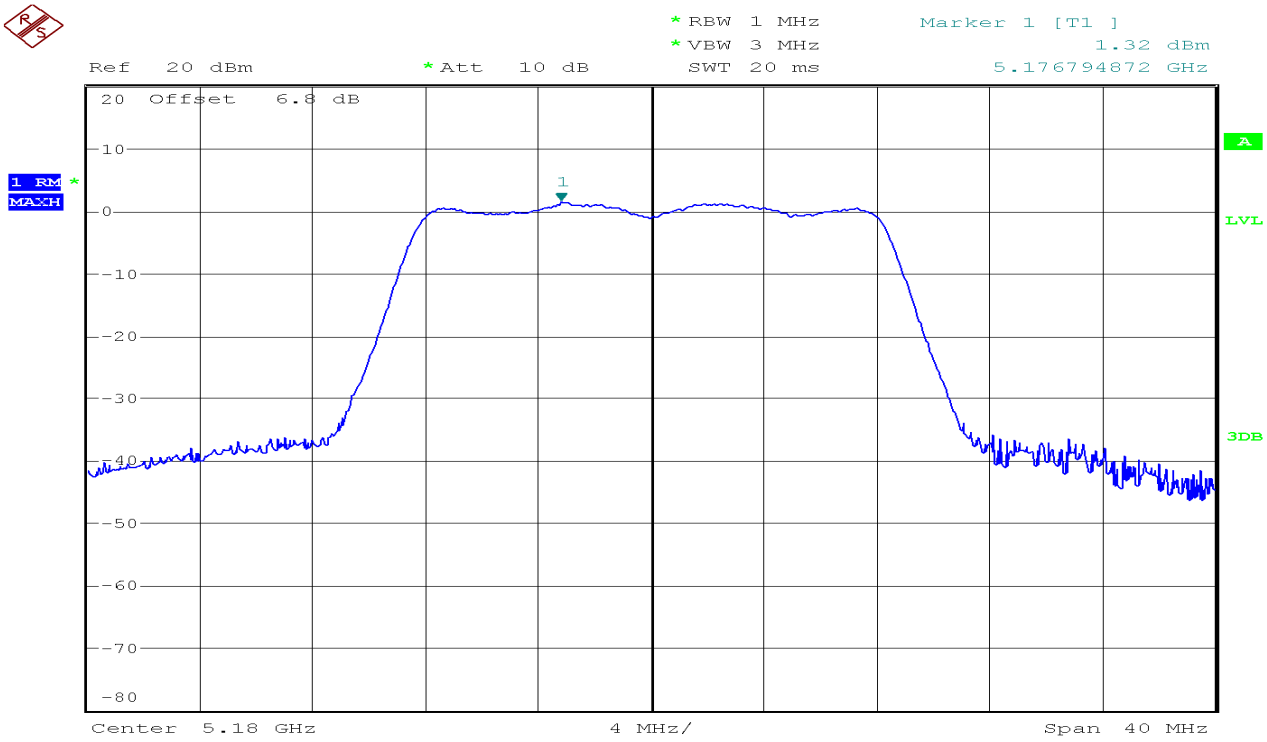
Channel	Frequency (MHz)	Chain 0 PPSD (dBm)	Chain 1 PPSD (dBm)	Total PPSD (dBm)	Limit (dBm)	Result
Mid	5210	-6.00	-5.63	-2.80	11.00	PASS

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

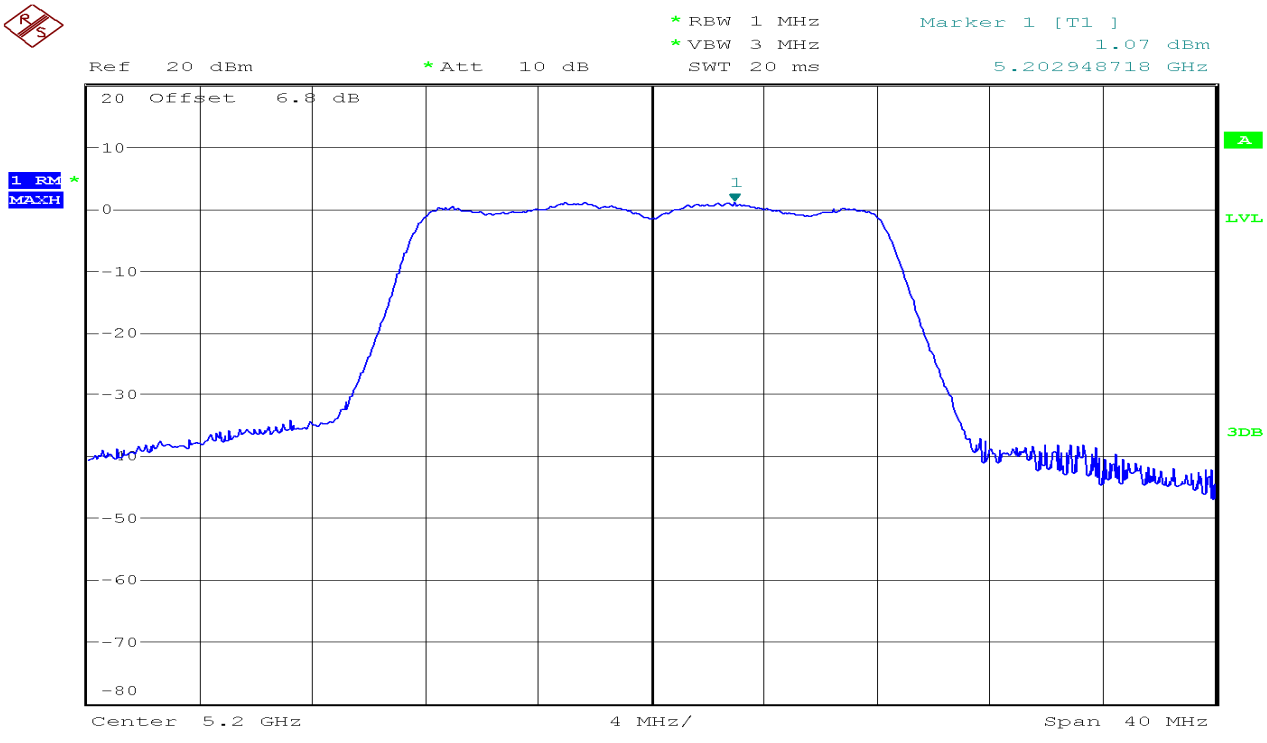
2.Duty factor has been offseted with cableloss

Test Plot
IEEE 802.11a mode/Chain 0:

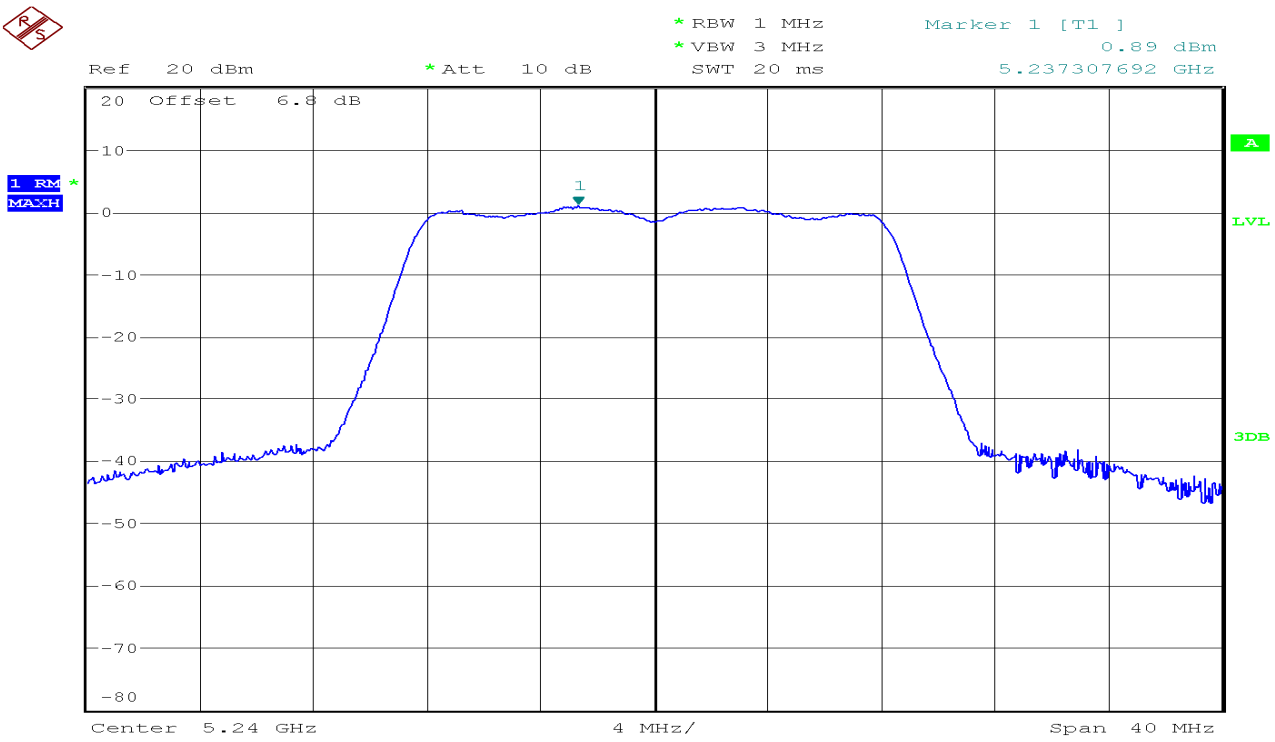
CH Low



CH Mid

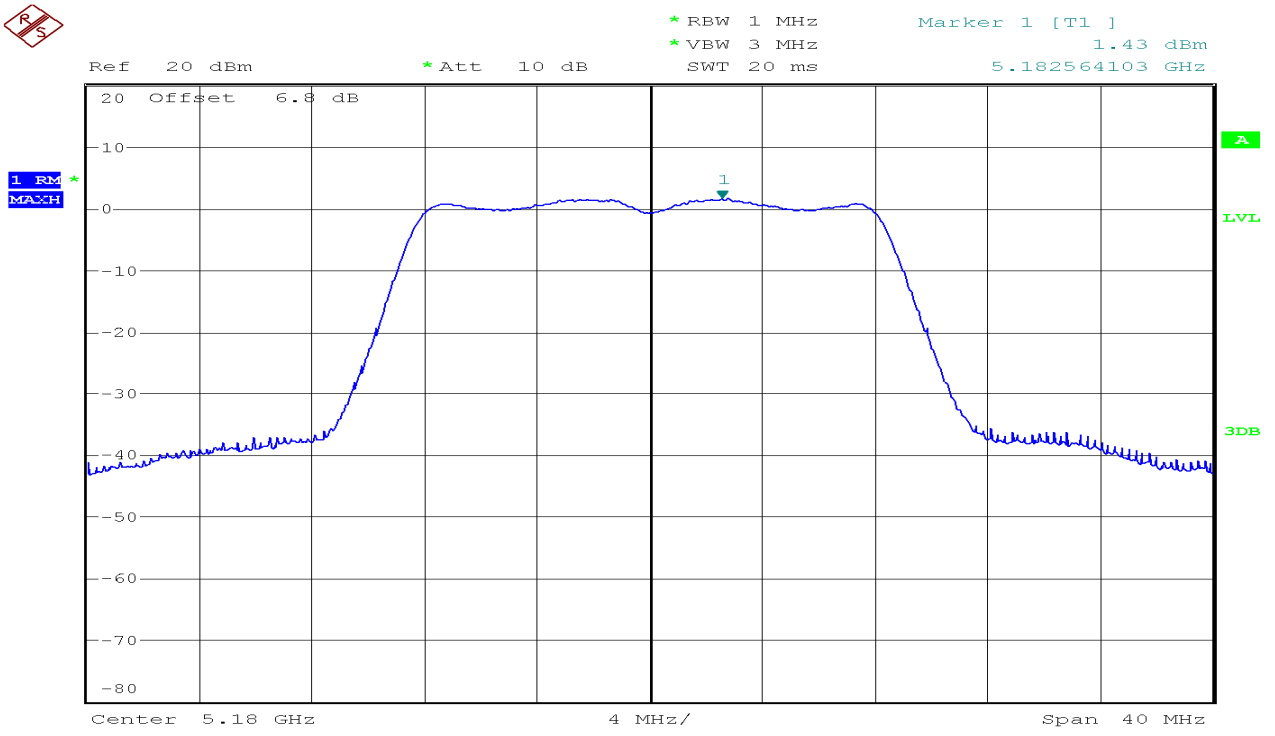


CH High

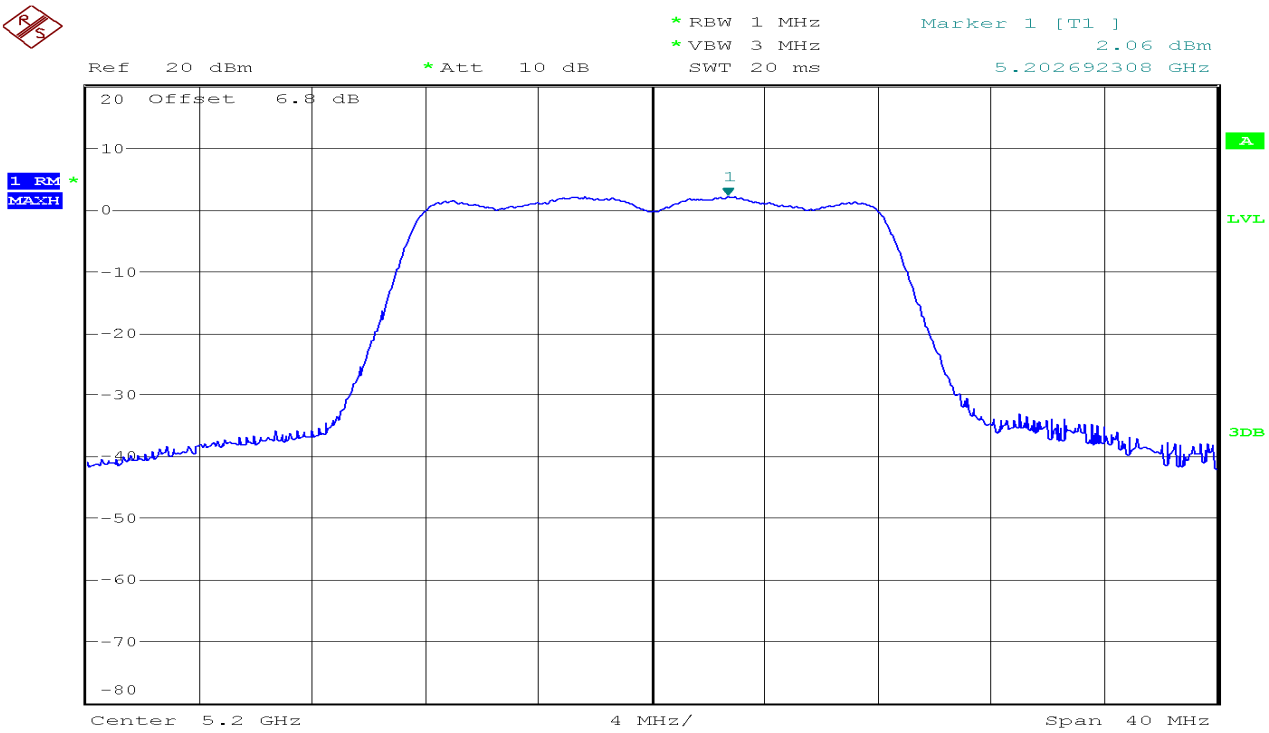


IEEE 802.11a mode/Chain 1:

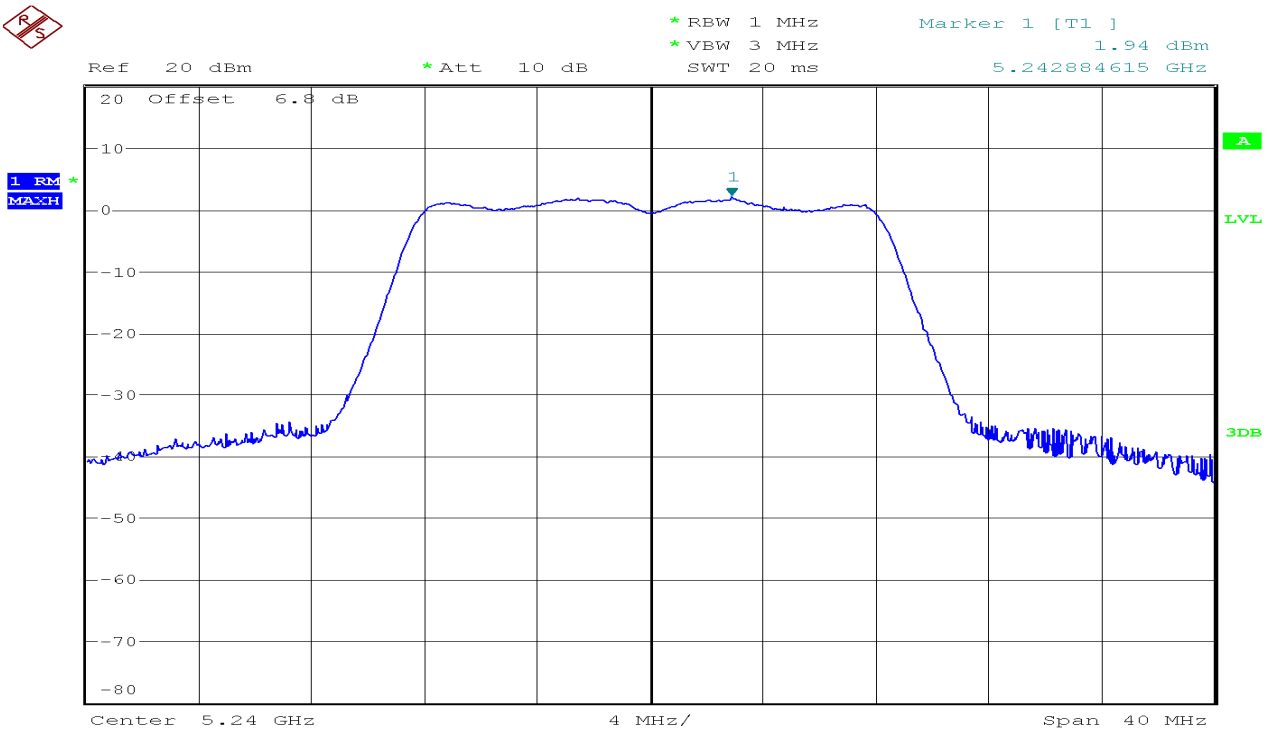
CH Low



CH Mid

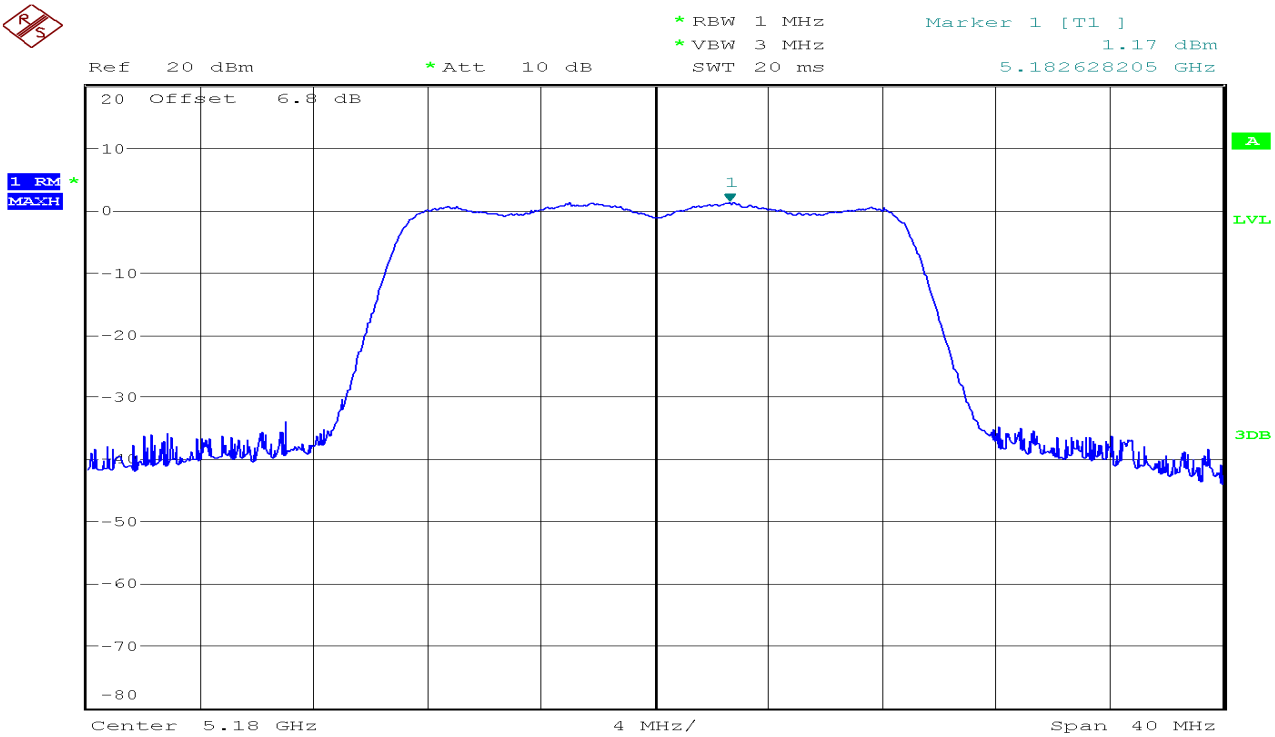


CH High

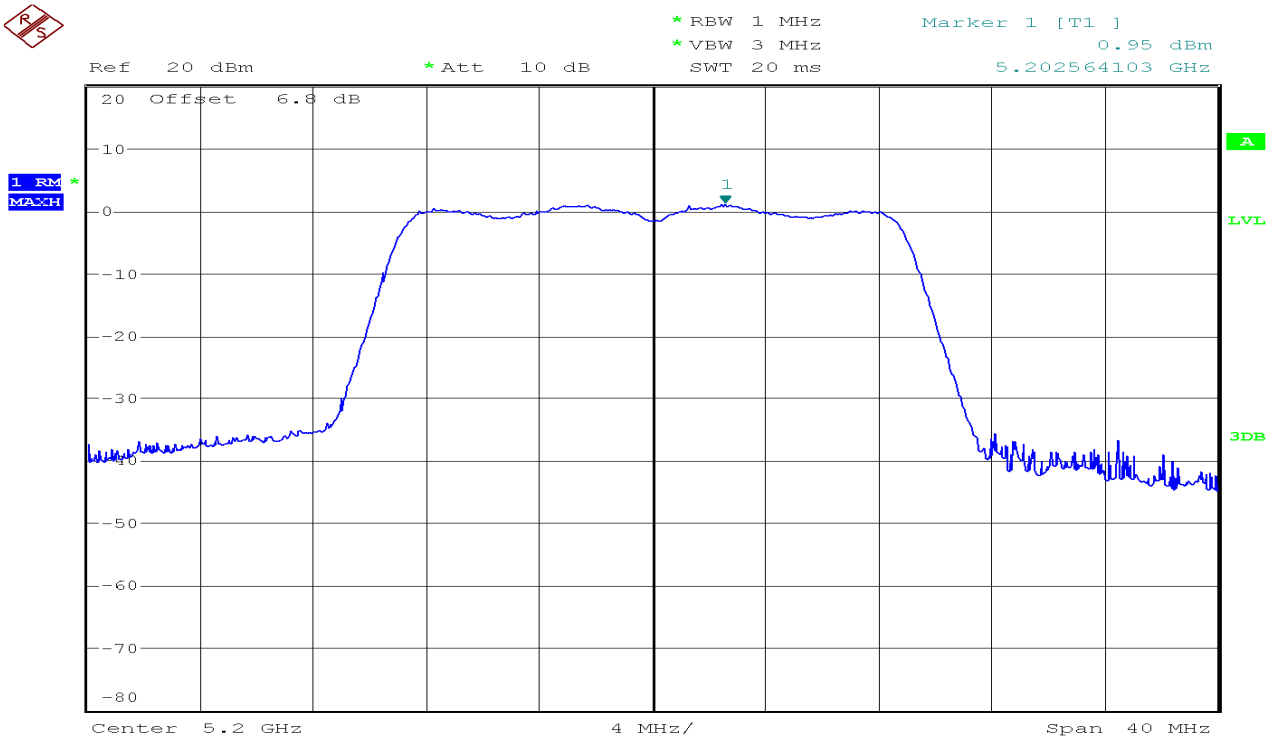


IEEE 802.11n HT20 mode/Chain 0:

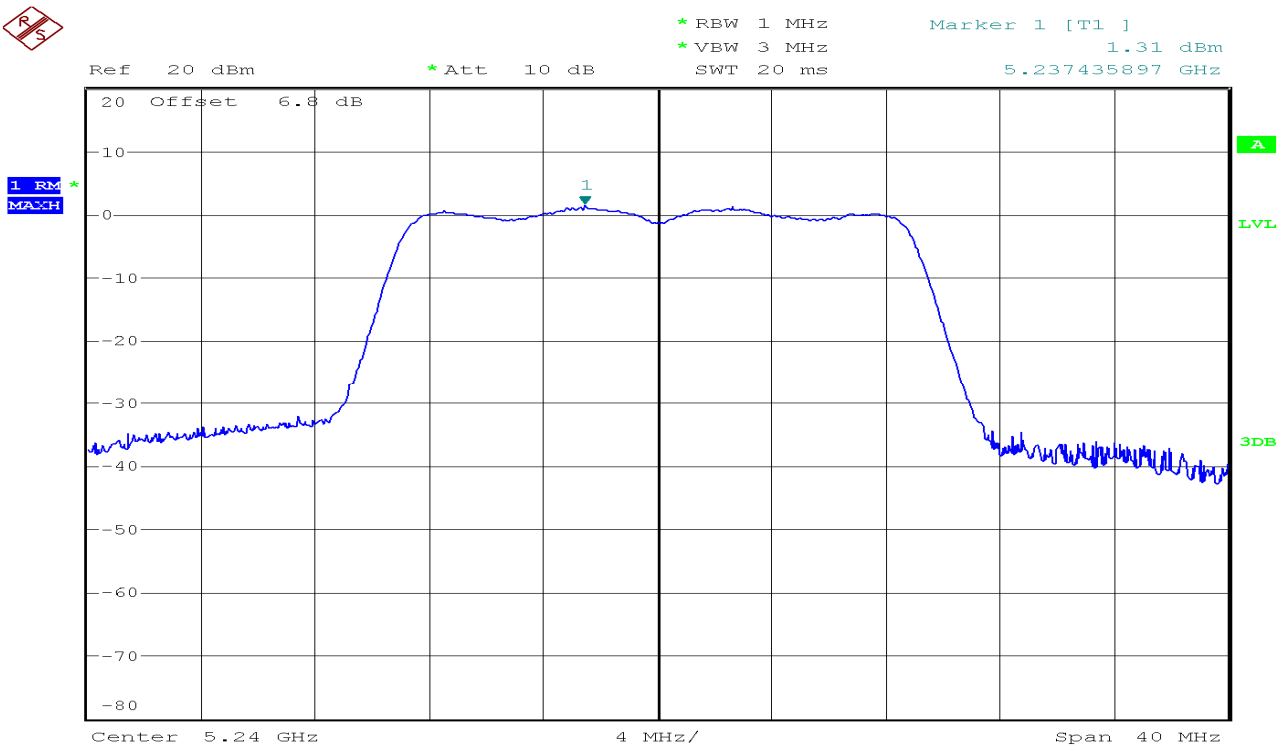
CH Low



CH Mid

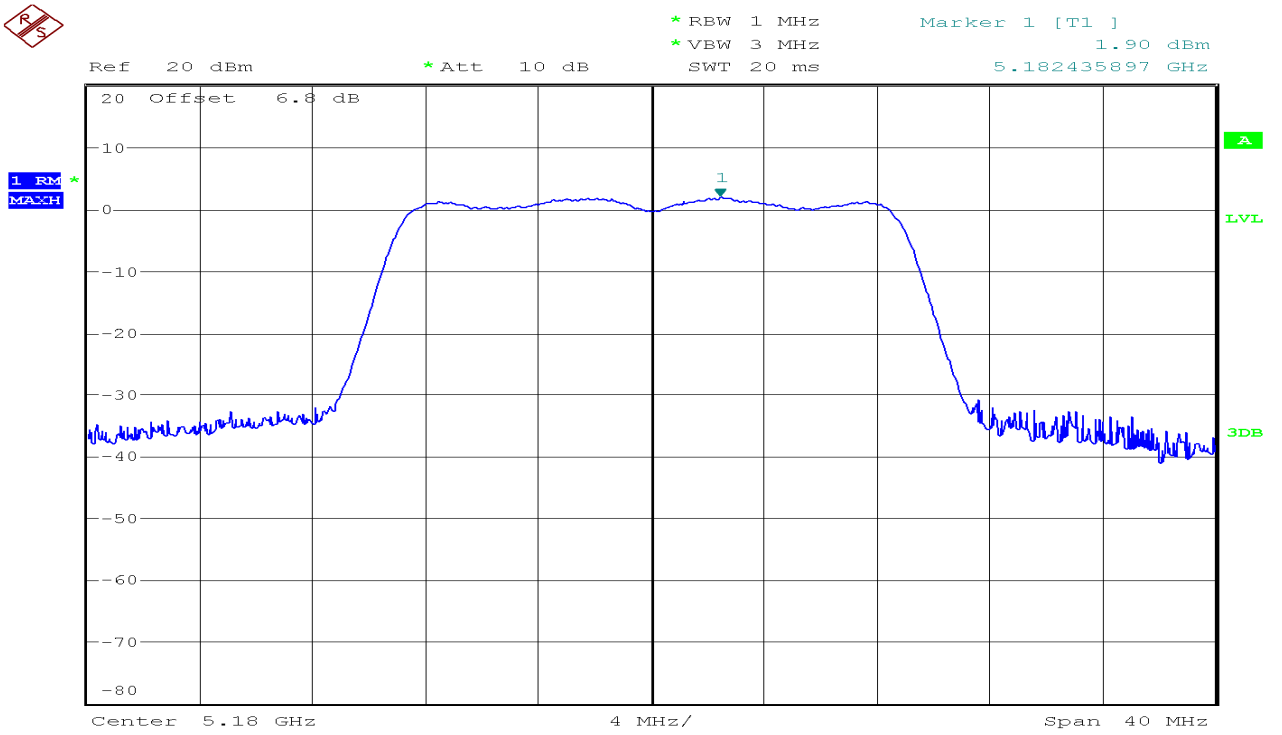


CH High

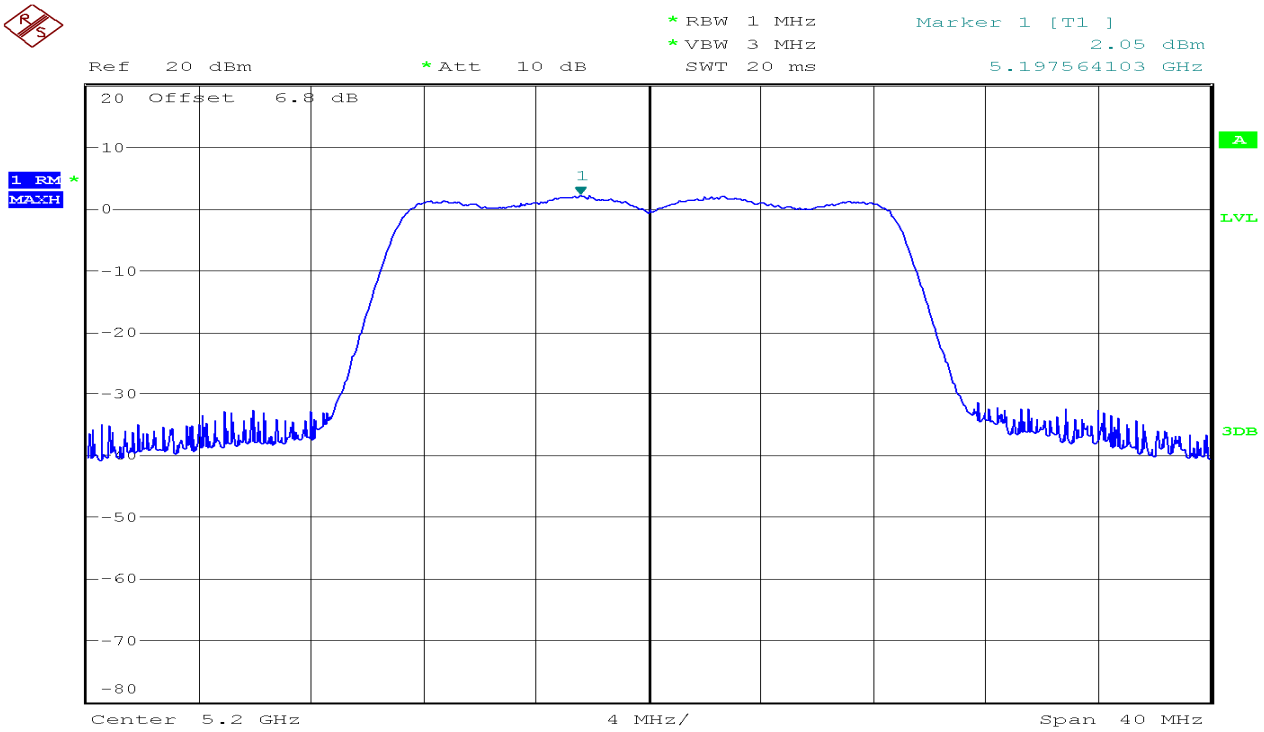


IEEE 802.11n HT20 mode/Chain 1:

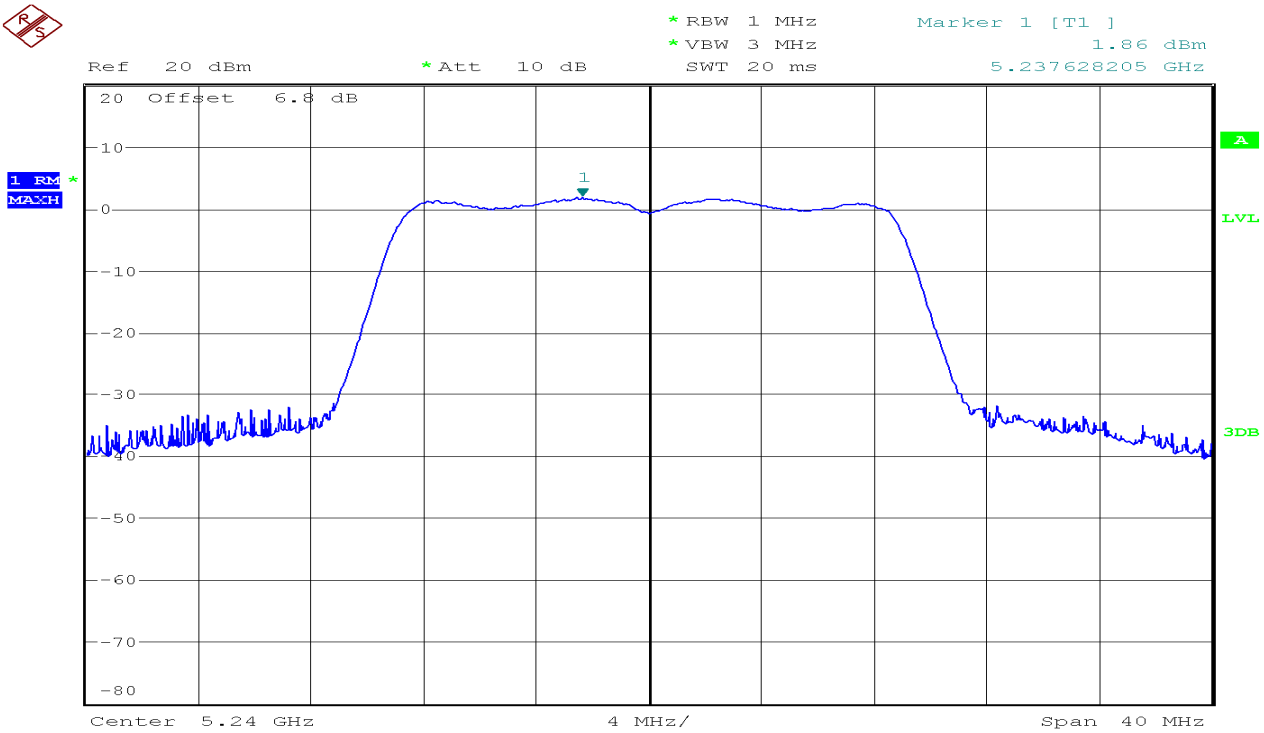
CH Low



CH Mid

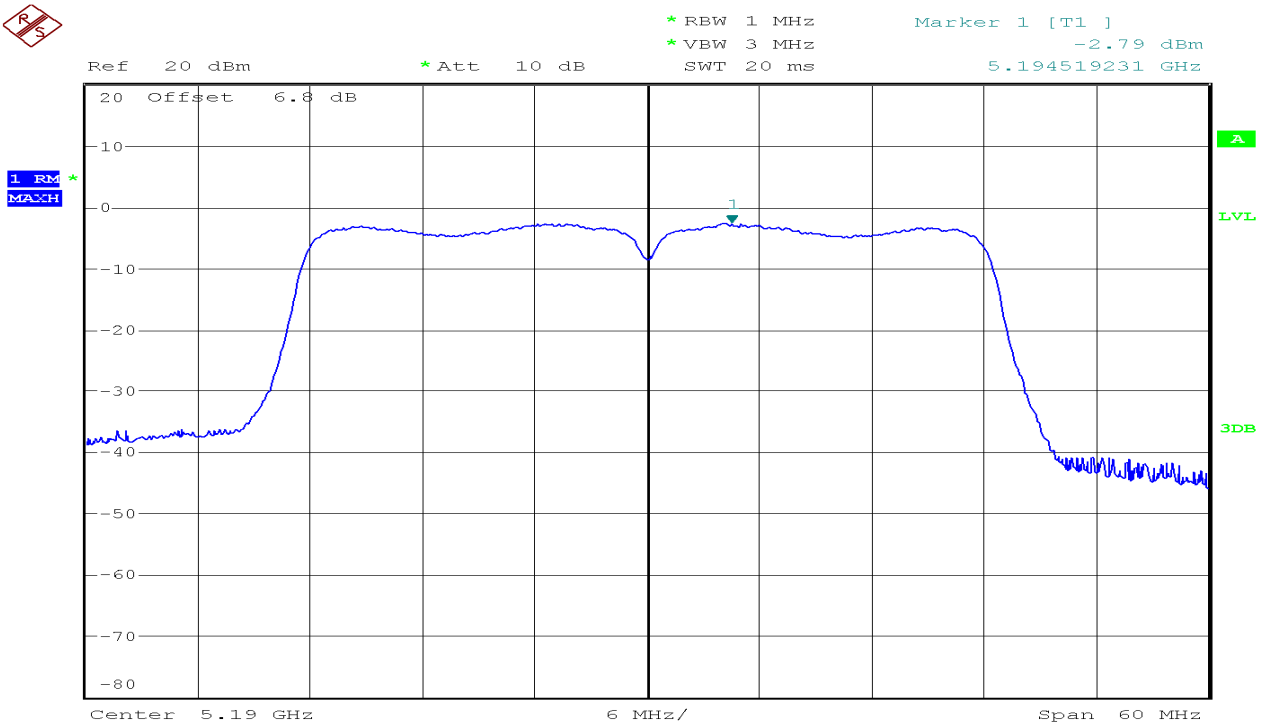


CH High

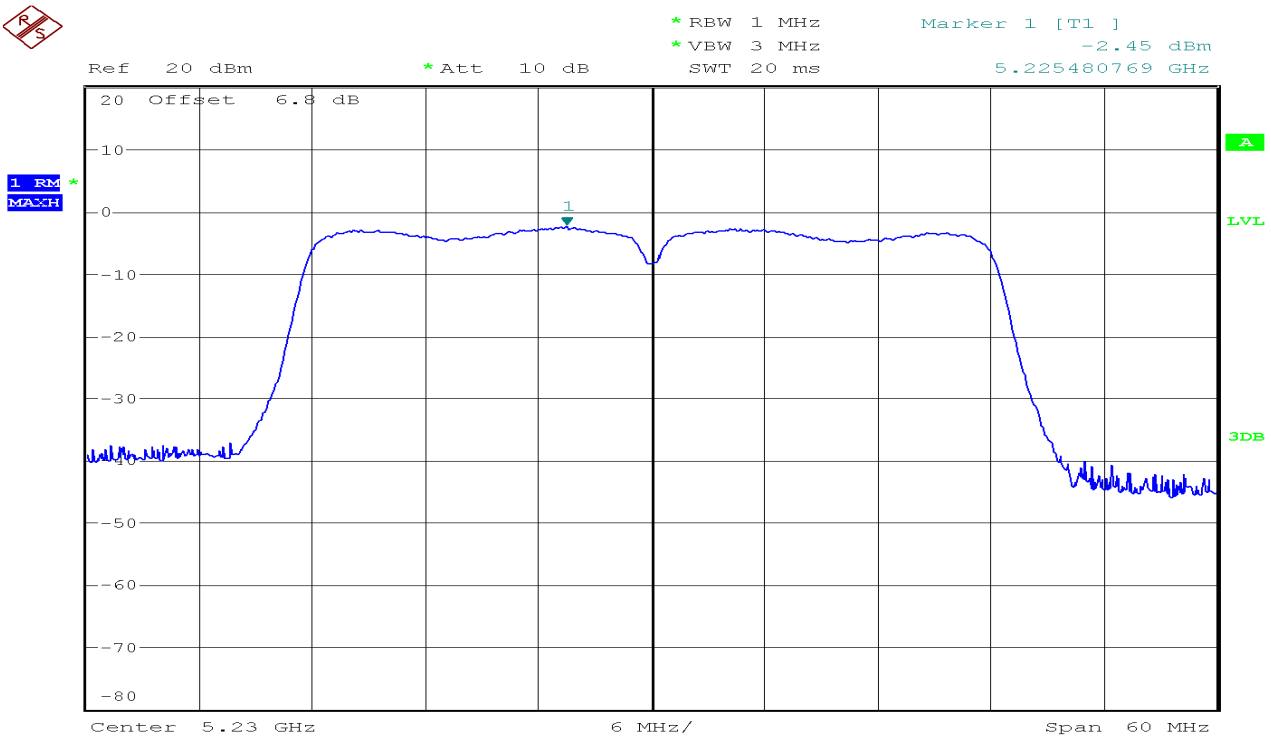


IEEE 802.11n HT40 mode/Chain 0:

CH Low

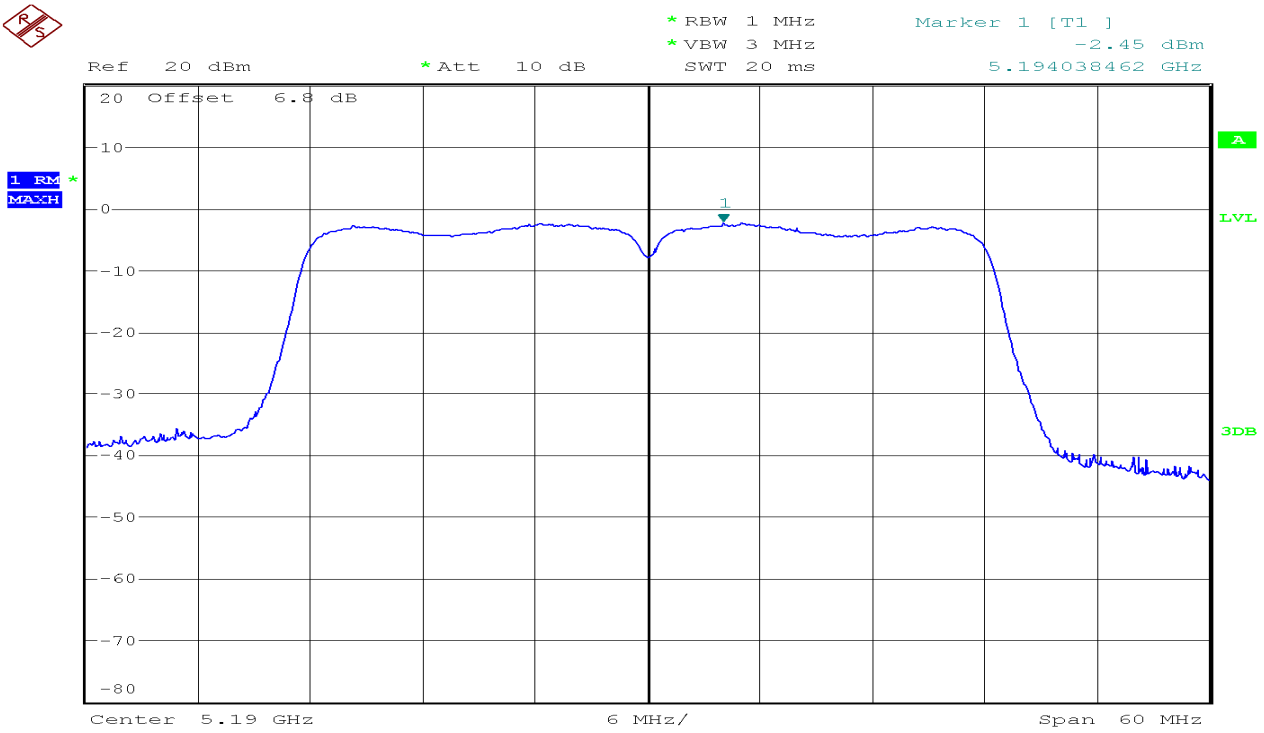


CH High

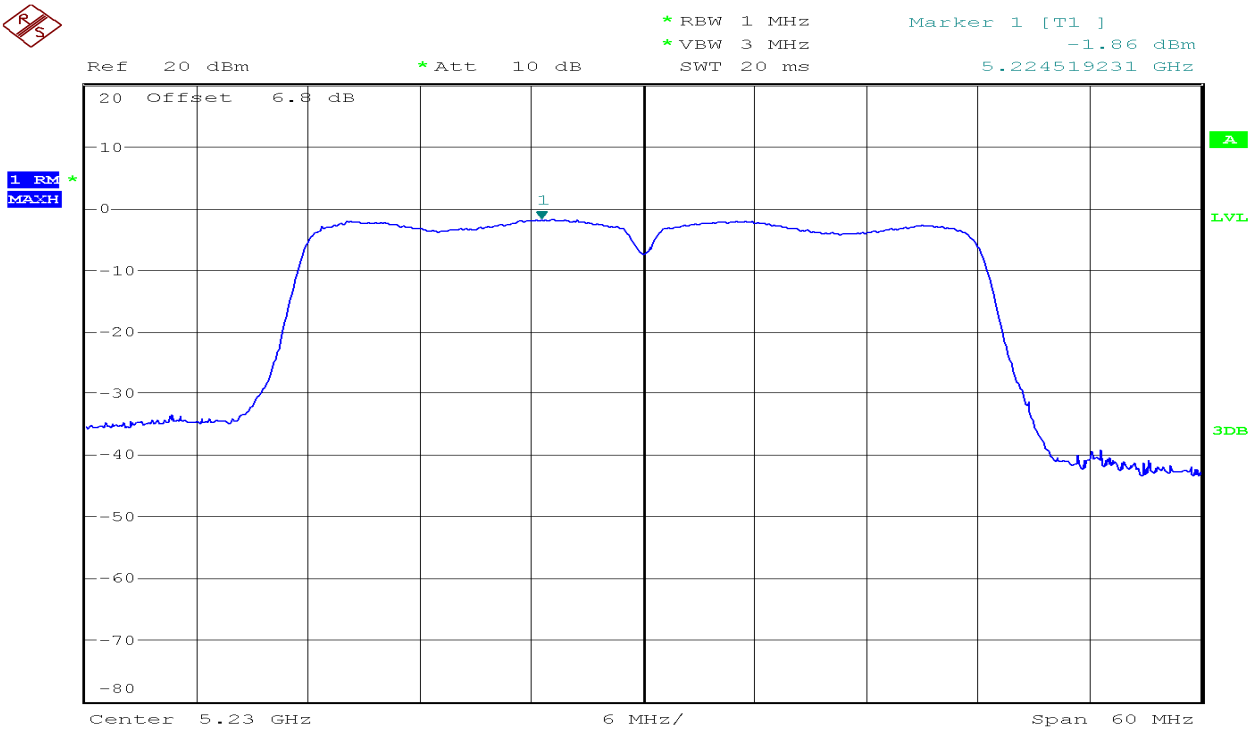


IEEE 802.11n HT40 mode/Chain 1:

CH Low

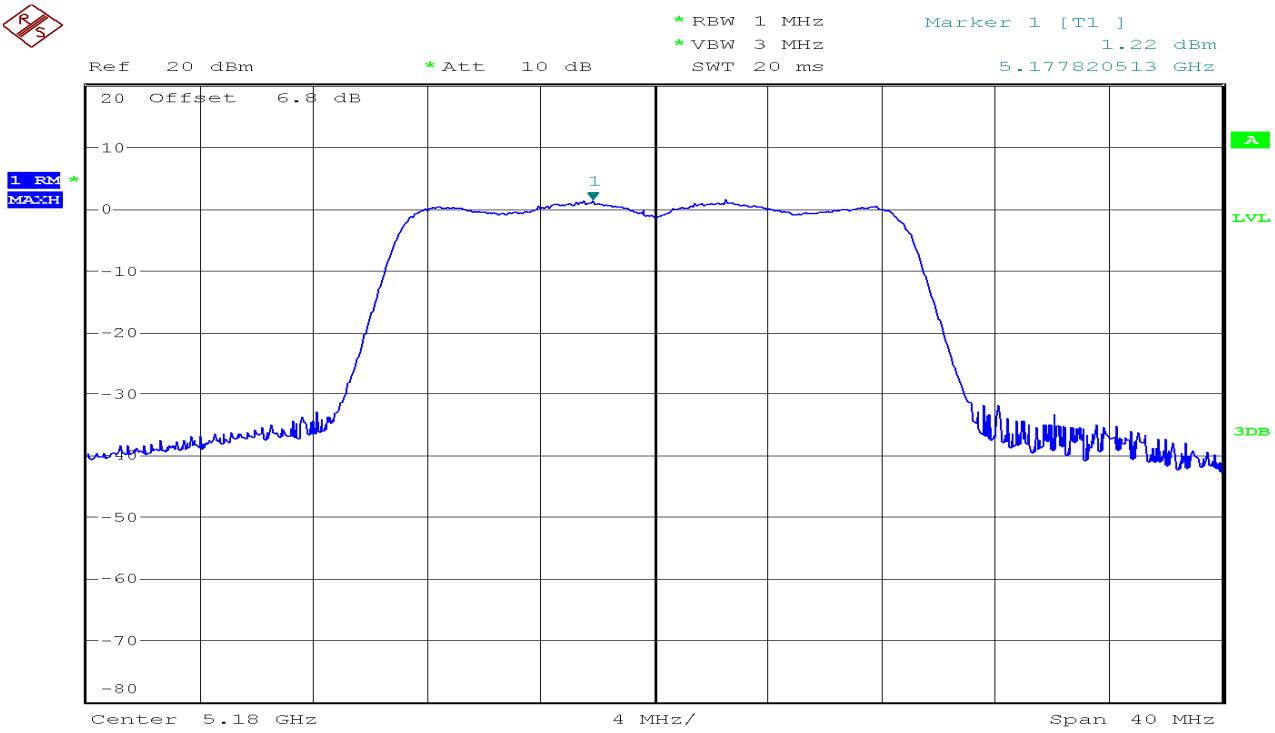


CH High

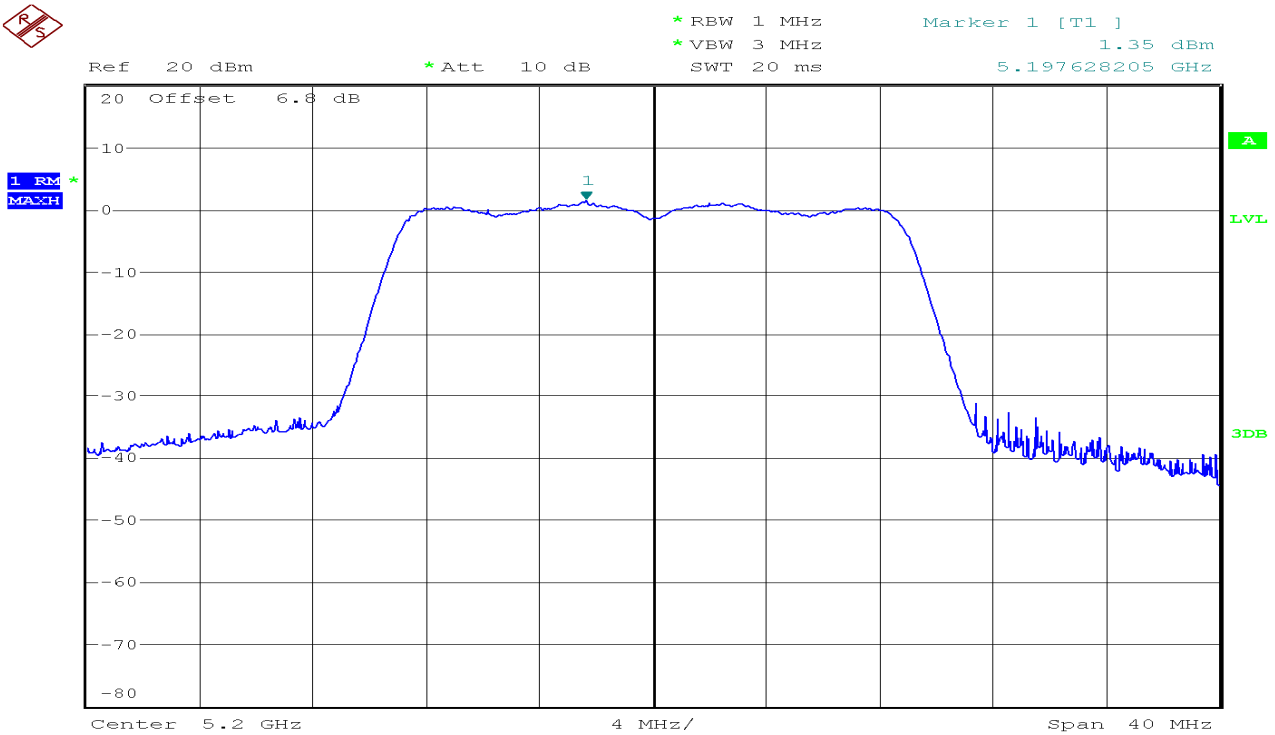


IEEE 802.11ac VHT20 mode/Chain 0:

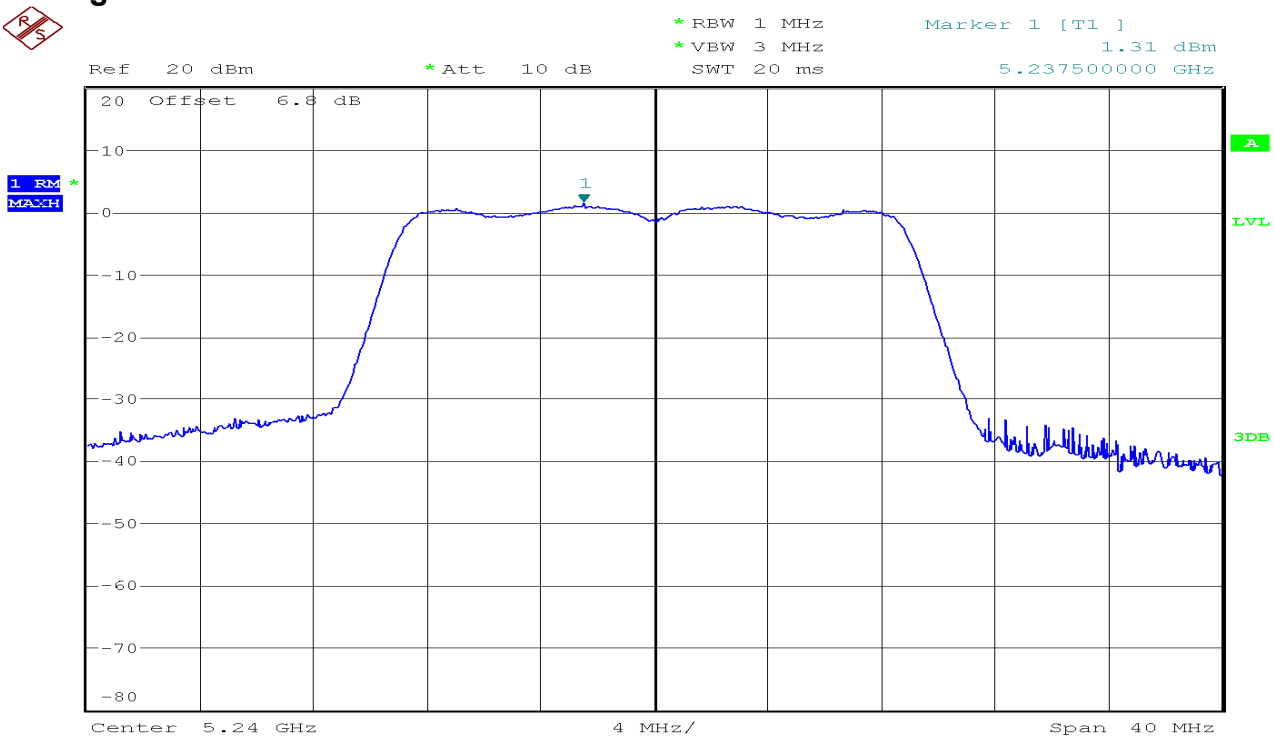
CH Low



CH Mid

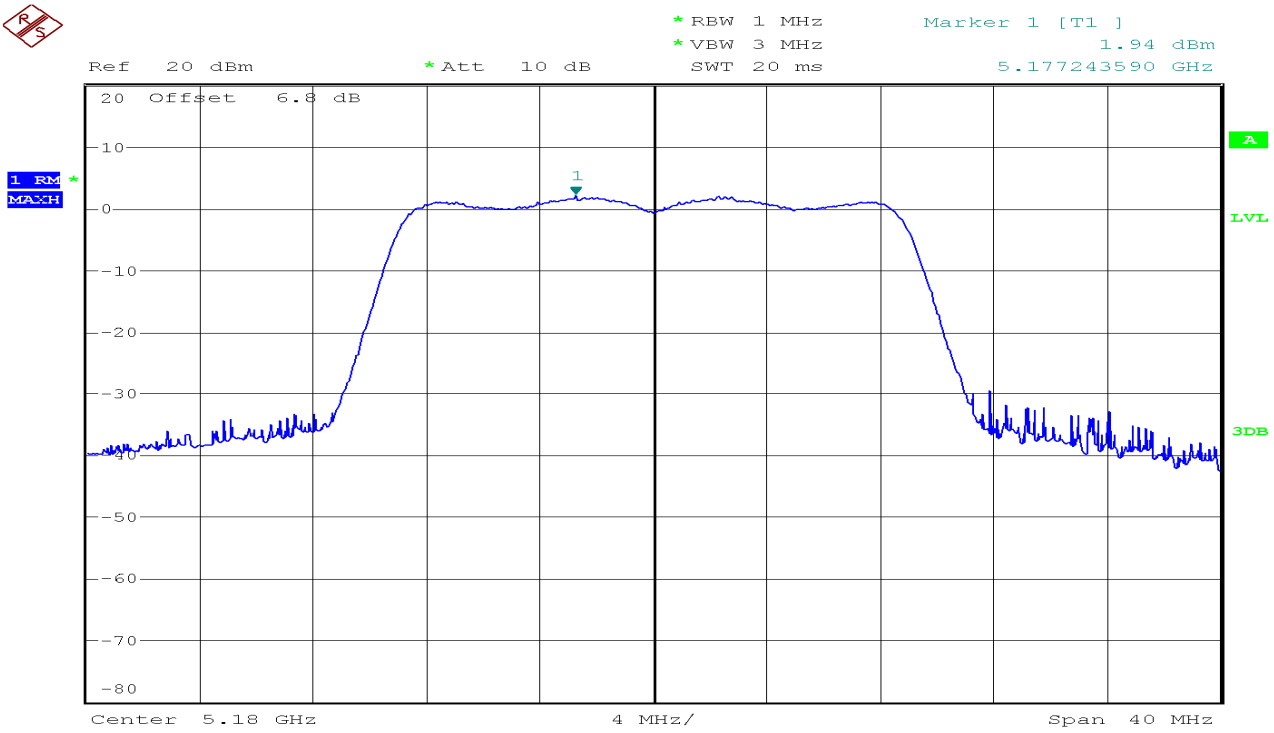


CH High

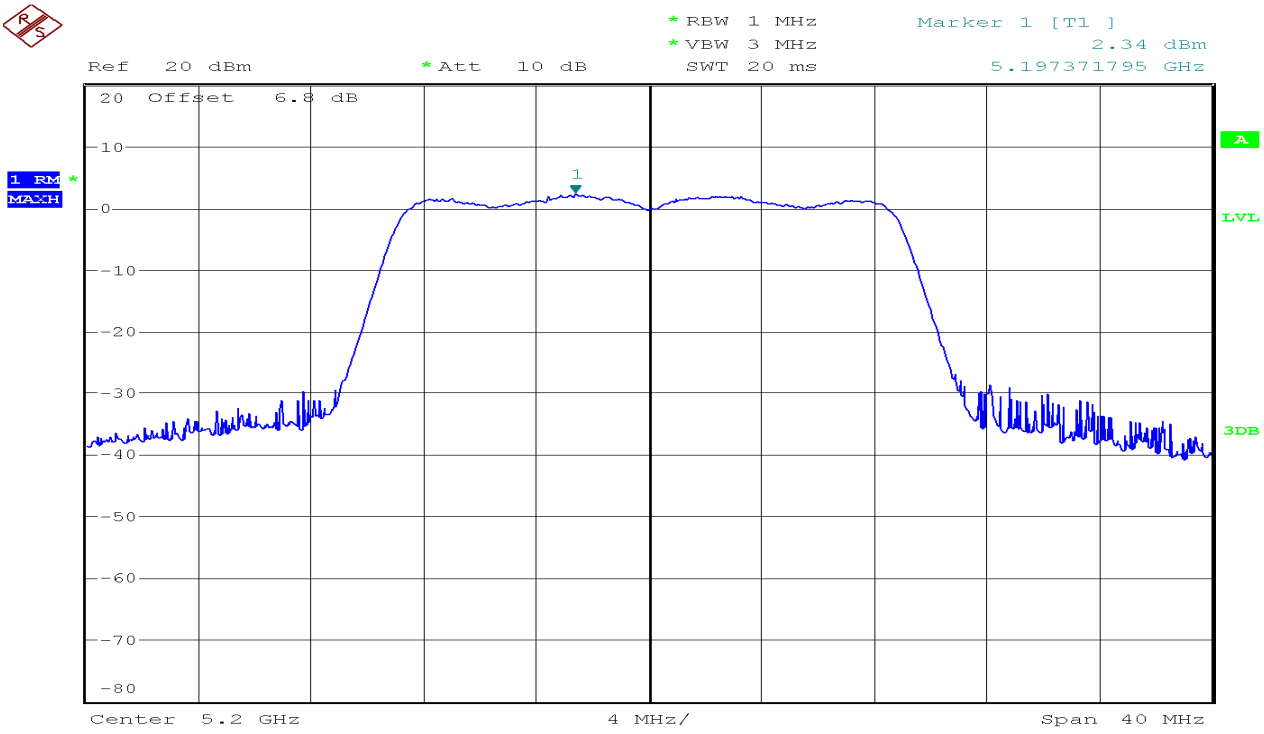


IEEE 802.11ac VHT20 mode/Chain 1:

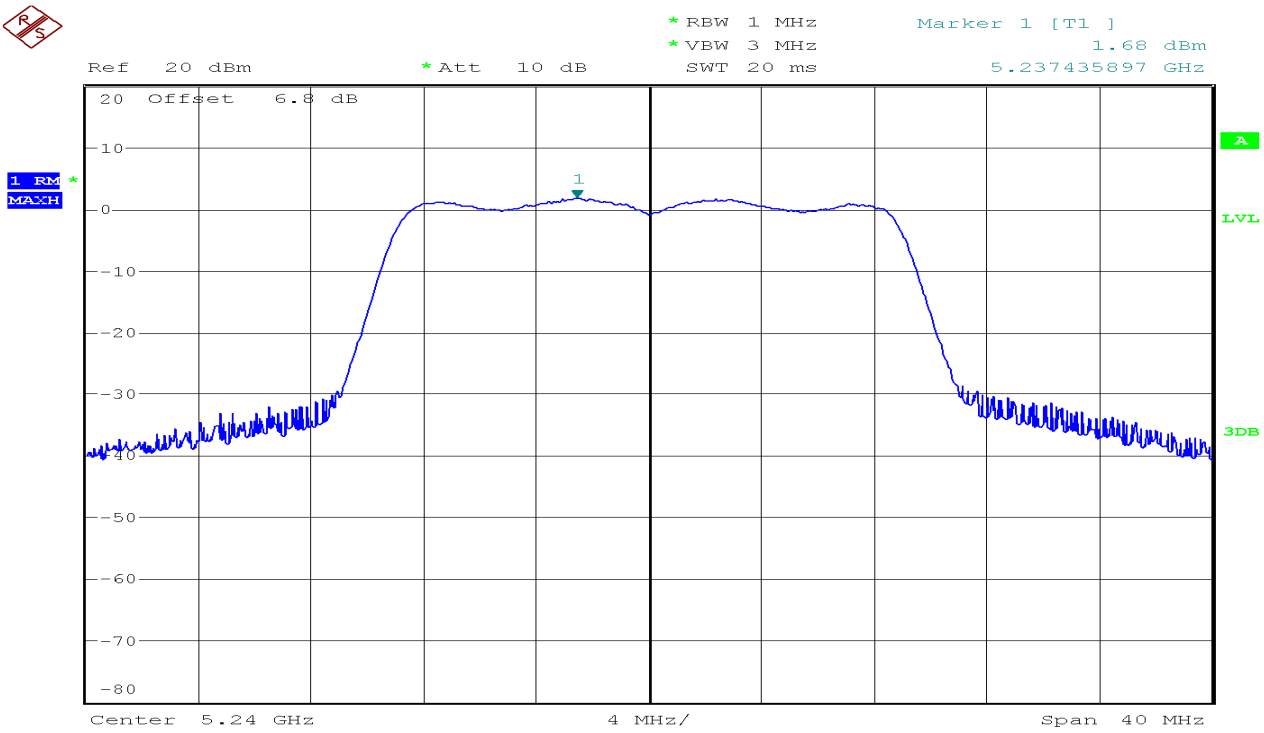
CH Low



CH Mid

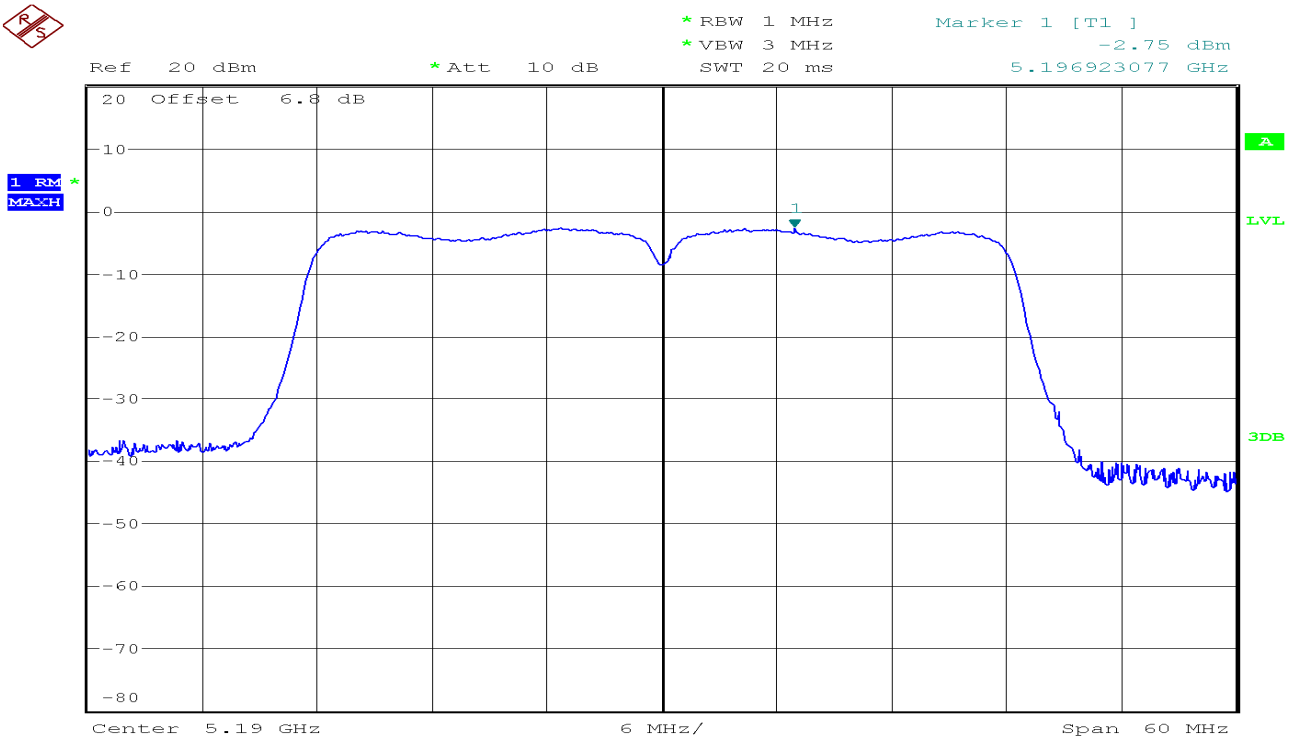


CH High

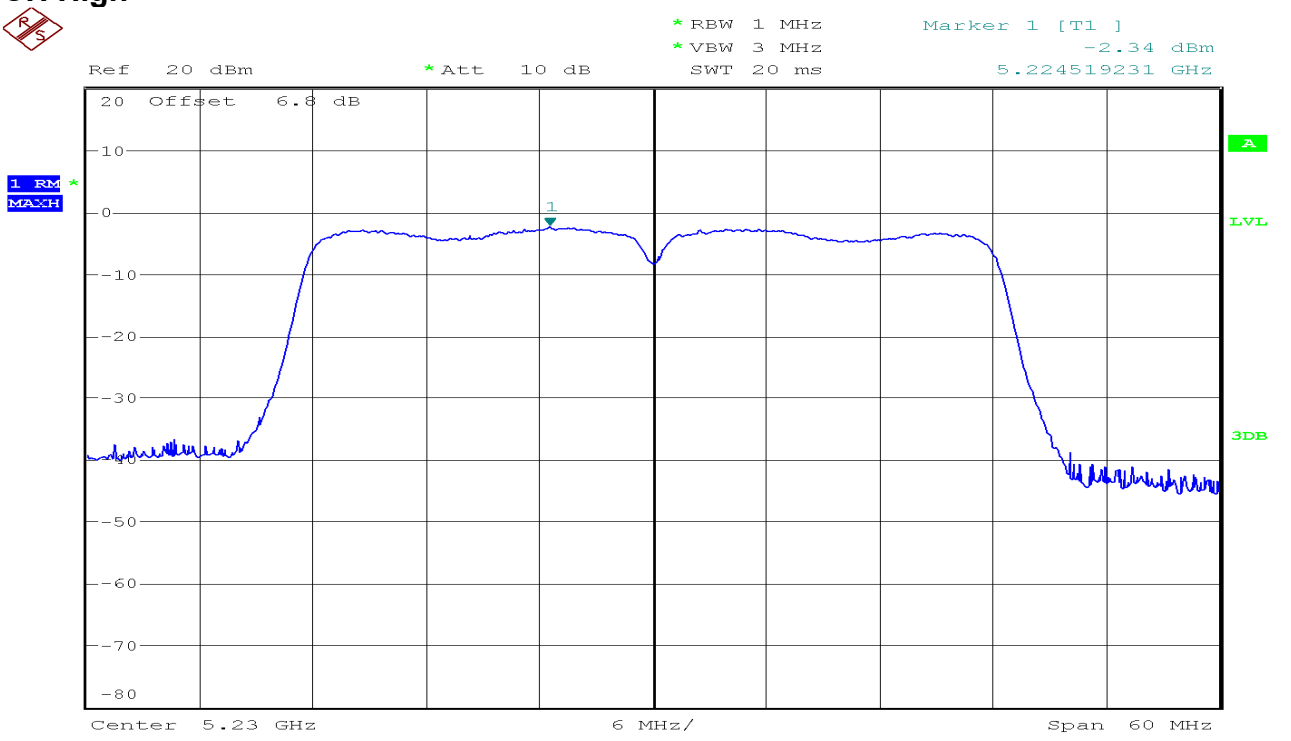


IEEE 802.11ac VHT40 mode/Chain 0:

CH Low

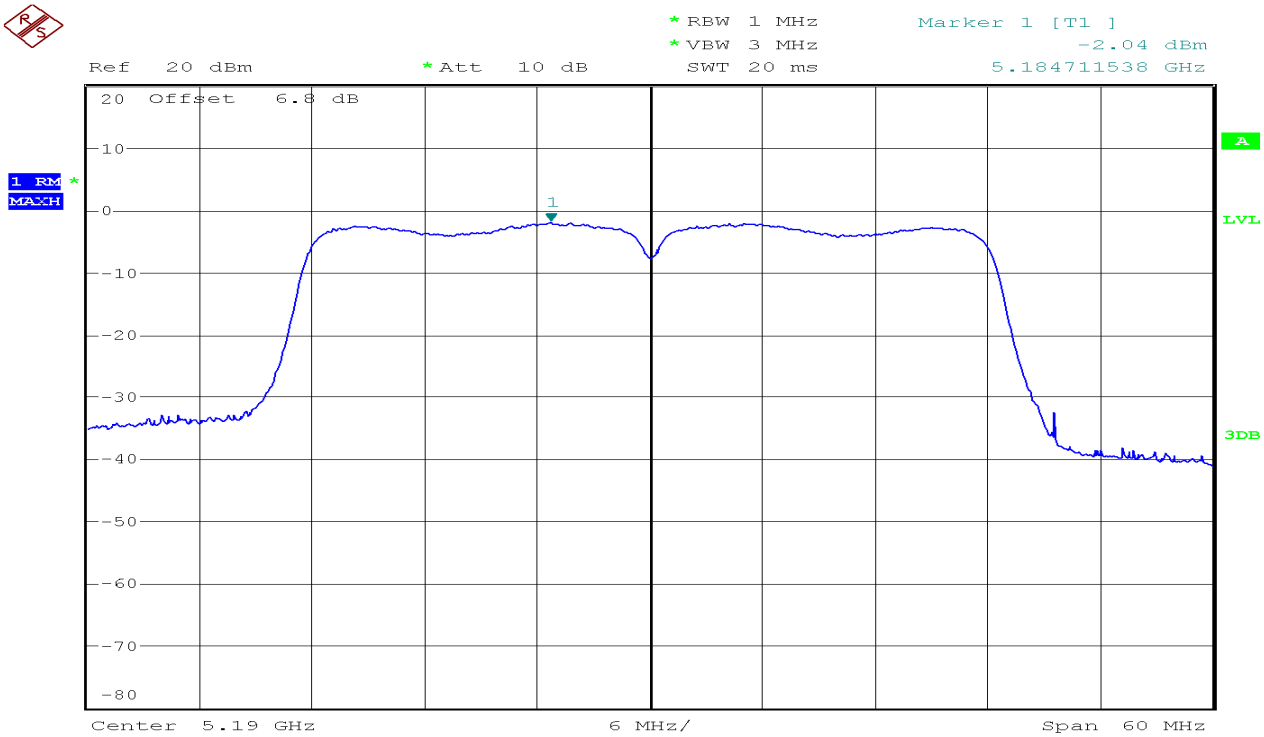


CH High

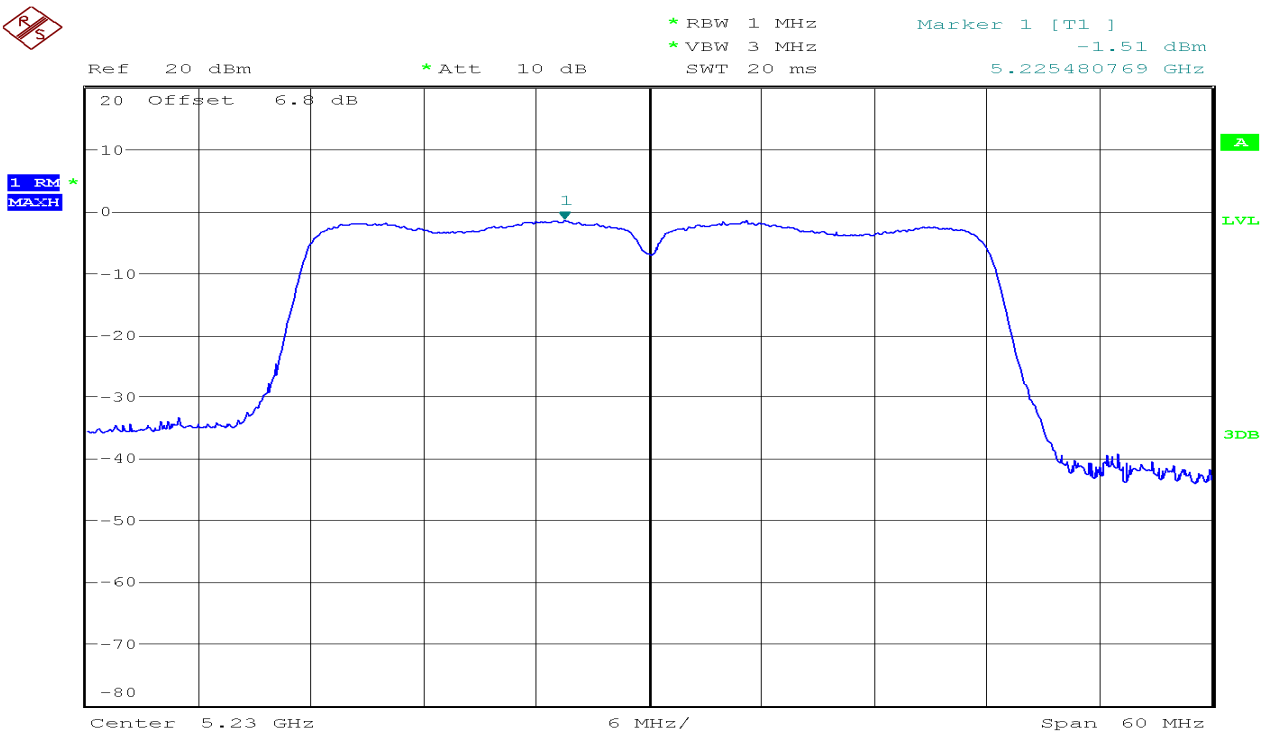


IEEE 802.11ac VHT40 mode/Chain 1:

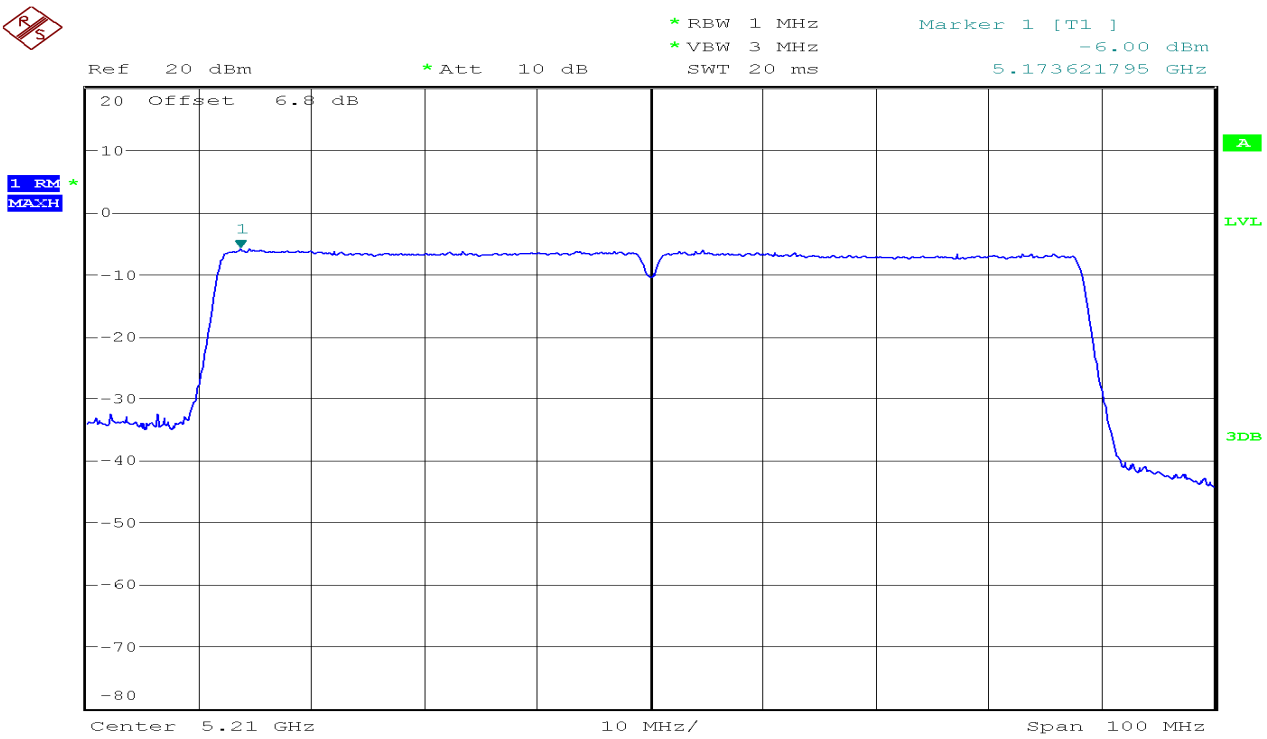
CH Low



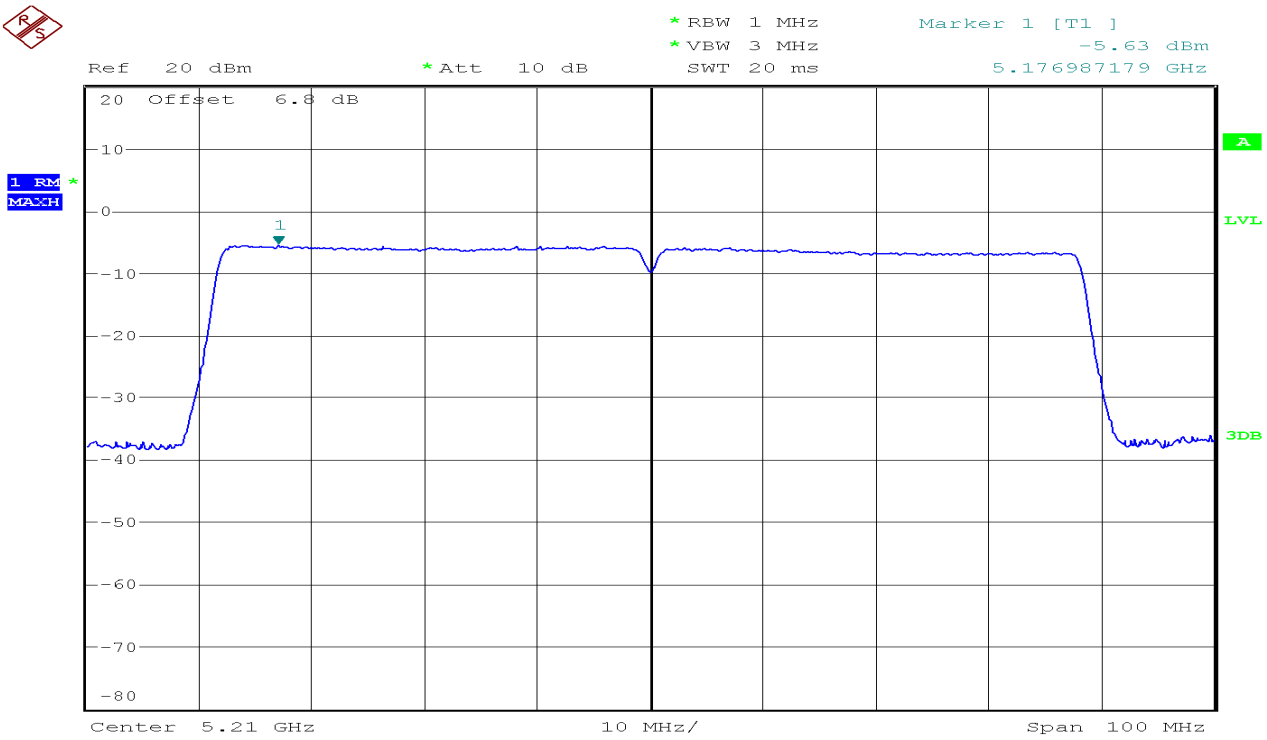
CH High



IEEE 802.11ac VHT80 mode/Chain 0:
CH Mid



IEEE 802.11ac VHT80 mode/Chain 1:
CH Mid

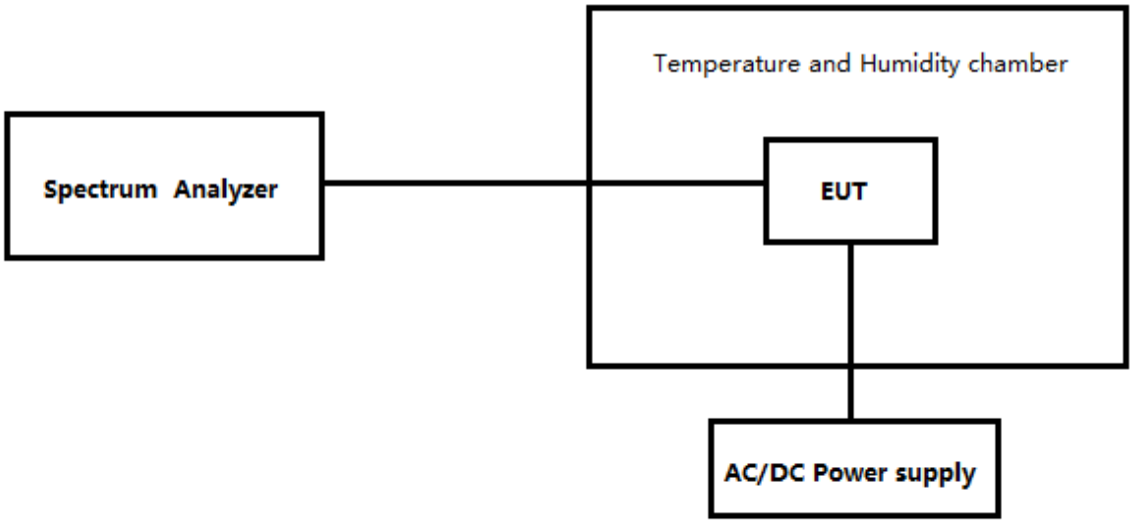


7.6 FREQUENCY STABILITY MEASUREMENT

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	5180.018	0.018	3.47	25	V_{min}
5180	5180.021	0.021	4.05	25	V_{max}
5180	5180.023	0.023	4.44	25	V_{nor}
5180	5180.010	0.010	1.93	-10	V_{nor}
5180	5180.006	0.006	1.16	50	V_{nor}

7.7 RADIATED UNDESIRABLE EMISSION

LIMIT

Radiated emissions from 9 kHz to 25 GHz were measured according to the methods defines in ANSI C63.10-2013. The EUT was placed above the ground plane, 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz. The interface cables and equipment positions were varied within limits of reasonable applications to determine the positions producing maximum radiated emissions.

1. 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

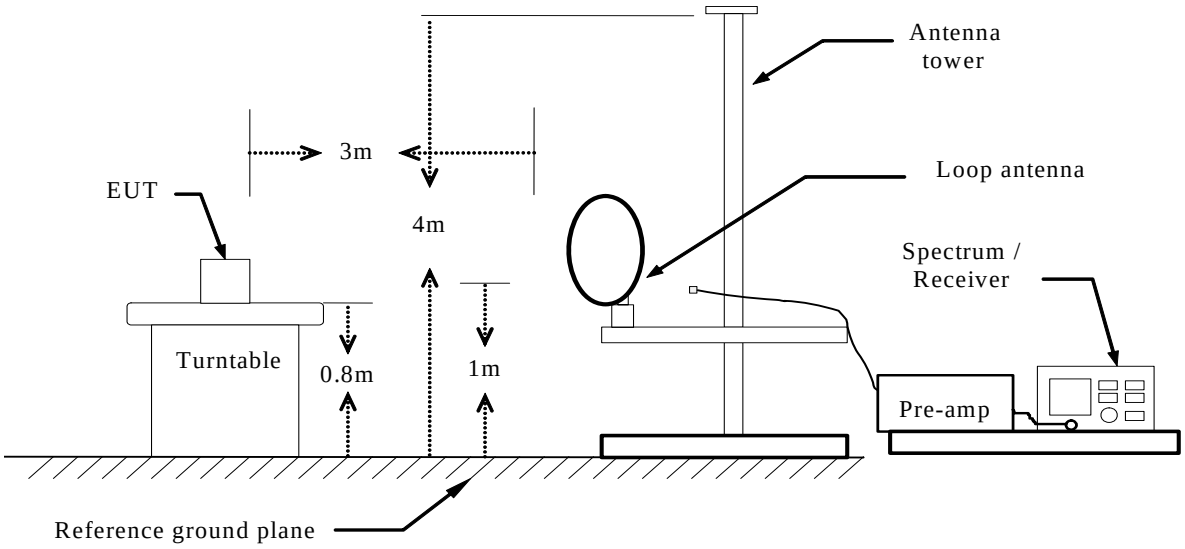
Remark: *Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of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

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

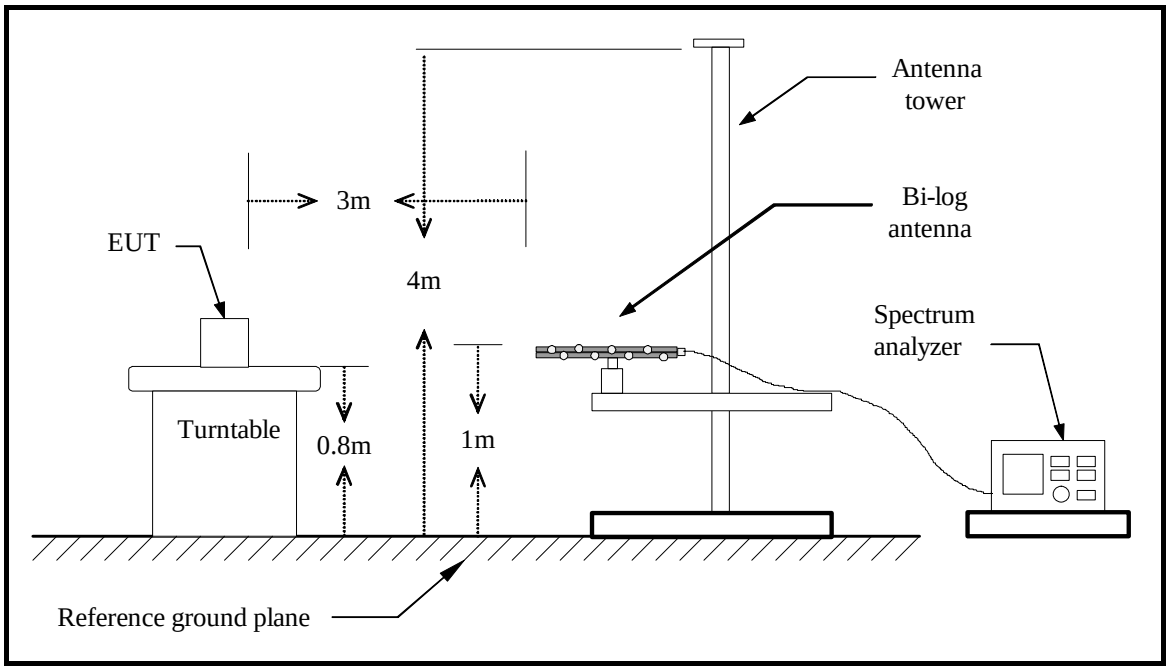
Frequency (MHz)	Field Strength (μV/m at 3-meter)	Field Strength (dBμV/m at 3-meter)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

Test Configuration

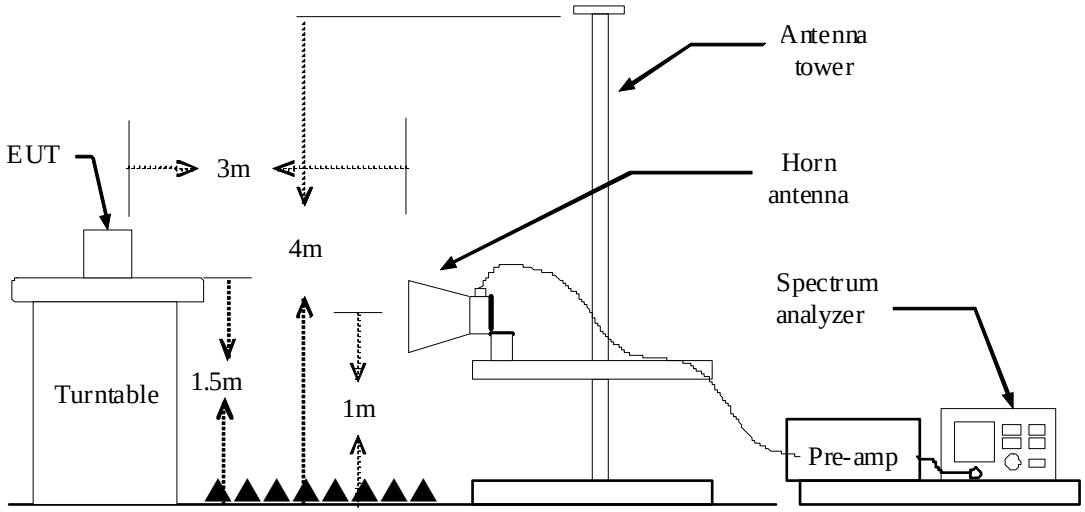
Below 30MHz



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.

Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
IEEE 802.11 a	96.4	993.3	0.001	10Hz
IEEE 802.11n HT20	96.4	993.3	0.001	10Hz
IEEE 802.11n HT40	96.4	993.3	0.001	10Hz
IEEE 802.11ac VHT20	96.4	993.3	0.001	10Hz
IEEE 802.11ac VHT40	96.4	993.3	0.001	10Hz
IEEE 802.11ac VHT80	95.8	996.7	0.001	10Hz

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

TEST RESULTS

Test Result of Radiated Emission

Below 30MHz

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

30MHz-1GHz

Operation Mode:	Normal Link	**Test Date:**	2017-10-27
Temperature:	25°C	**Tested by:**	Lily.Wang
Humidity:	48% RH	**Polarity:**	Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
242.4300	V	17.51	15.99	33.50	46.00	-12.50	peak
291.0260	V	20.25	17.30	37.55	46.00	-8.45	QP
319.0600	V	20.21	17.97	38.18	46.00	-7.82	peak
792.0030	V	16.13	27.21	43.34	46.00	-2.66	QP
960.2300	V	12.08	29.27	41.35	54.00	-12.65	peak
1000.0000	V	12.74	30.24	42.98	54.00	-11.02	QP
30.9700	H	6.48	23.51	29.99	40.00	-10.01	peak
242.4300	H	16.48	15.99	32.47	46.00	-13.53	peak
290.9300	H	19.36	17.30	36.66	46.00	-9.34	peak
436.4300	H	12.63	22.36	34.99	46.00	-11.01	peak
792.4200	H	10.54	27.21	37.75	46.00	-8.25	peak
800.1800	H	10.63	27.21	37.84	46.00	-8.16	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:**	2017-11-12
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	10129.000	37.02	8.92	45.94	74.00	-28.06	100	250	peak
2	15331.000	35.24	13.06	48.30	74.00	-25.70	100	155	peak
N/A									

Vertical

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	10435.000	37.53	10.61	48.14	74.00	-25.86	100	1	peak
2	15356.500	35.78	12.88	48.66	74.00	-25.34	100	1	peak
N/A									

Operation Mode:	Tx / IEEE 802.11a mode CH Mid	**Test Date:**	2017-11-12
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	10970.500	36.90	12.80	49.70	74.00	-24.30	100	37	peak
2	15790.000	35.48	12.76	48.24	74.00	-25.76	100	70	peak
N/A									

Vertical

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	10690.000	37.95	11.71	49.66	74.00	-24.34	100	193	peak
2	15356.500	35.00	12.88	47.88	74.00	-26.12	100	240	peak
N/A									

Operation Mode:	Tx / IEEE 802.11a mode CH High	**Test Date:**	2017-11-12
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	10537.000	39.14	11.11	50.25	74.00	-23.75	100	1	peak
2	16096.000	35.21	13.88	49.09	74.00	-24.91	100	109	peak
N/A									

Vertical

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	10639.000	37.80	11.51	49.31	74.00	-24.69	100	2	peak
2	16351.000	33.93	15.14	49.07	74.00	-24.93	100	158	peak
N/A									

Operation Mode:	TX / IEEE 802.11n HT20 mode /CH Low	**Test Date:**	2017-11-12
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	10435.000	37.07	10.61	47.68	74.00	-26.32	100	228	peak
2	15356.500	36.17	12.88	49.05	74.00	-24.95	100	233	peak
N/A									

Vertical

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	10435.000	37.25	10.61	47.86	74.00	-26.14	100	149	peak
2	16121.500	34.39	14.01	48.40	74.00	-25.60	100	361	peak
N/A									

Operation Mode:	TX / IEEE 802.11n HT20 mode /CH Mid	Test Date:	2017-11-12
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	37.82	11.31	49.13	74.00	-24.87	100	240	peak
2	15356.500	35.71	12.88	48.59	74.00	-25.41	100	356	peak
N/A									

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	10639.000	38.51	11.51	50.02	74.00	-23.98	100	205	peak
2	15433.000	36.19	12.34	48.53	74.00	-25.47	100	349	peak
N/A									

Operation Mode:	TX / IEEE 802.11n HT20 mode /CH High	Test Date:	2017-11-12
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	10868.500	36.99	12.41	49.40	74.00	-24.60	100	1	peak
2	16147.000	34.50	14.14	48.64	74.00	-25.36	100	76	peak
N/A									

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	10435.000	37.57	10.61	48.18	74.00	-25.82	100	280	peak
2	16045.000	34.74	13.63	48.37	74.00	-25.63	100	38	peak
N/A									

Operation Mode:	TX / IEEE 802.11n HT40 mode /CH Low	Test Date:	2017-11-12
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	10613.500	37.43	11.41	48.84	74.00	-25.16	100	312	peak
2	15331.000	35.67	13.06	48.73	74.00	-25.27	100	2	peak
N/A									

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	10231.000	37.92	9.49	47.41	74.00	-26.59	100	331	peak
2	15356.500	35.38	12.88	48.26	74.00	-25.74	100	162	peak
N/A									

Operation Mode:	TX / IEEE 802.11n HT40 mode /CH High	Test Date:	2017-11-12
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	10843.000	37.11	12.31	49.42	74.00	-24.58	100	355	peak
2	15382.000	35.14	12.70	47.84	74.00	-26.16	100	192	peak
N/A									

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	10792.000	37.13	12.11	49.24	74.00	-24.76	100	1	peak
2	15331.000	35.74	13.06	48.80	74.00	-25.20	100	1	peak
N/A									

Operation Mode:	TX / IEEE 802.11ac VHT20 mode /CH Low	Test Date:	2017-11-12
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	10562.500	38.91	11.21	50.12	74.00	-23.88	200	94	peak
2	15331.000	36.55	13.06	49.61	74.00	-24.39	300	342	peak
N/A									

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	10282.000	37.34	9.77	47.11	74.00	-26.89	100	13	peak
2	15331.000	35.80	13.06	48.86	74.00	-25.14	100	44	peak
N/A									

Operation Mode:	TX / IEEE 802.11ac VHT20 mode /CH Mid	Test Date:	2017-11-12
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	10664.500	38.33	11.61	49.94	74.00	-24.06	100	1	peak
2	16121.500	36.09	14.01	50.10	74.00	-23.90	100	65	peak
N/A									

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	10639.000	38.10	11.51	49.61	74.00	-24.39	100	302	peak
2	15331.000	35.29	13.06	48.35	74.00	-25.65	100	175	peak
N/A									

Operation Mode:	TX / IEEE 802.11ac VHT20 mode /CH High	Test Date:	2017-11-12
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	10868.500	36.75	12.41	49.16	74.00	-24.84	100	196	peak
2	15331.000	35.96	13.06	49.02	74.00	-24.98	100	282	peak
N/A									

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	10639.000	38.17	11.51	49.68	74.00	-24.32	100	12	peak
2	16121.500	33.99	14.01	48.00	74.00	-26.00	100	254	peak
N/A									

Operation Mode:	TX / IEEE 802.11ac VHT40 mode /CH Low	Test Date:	2017-11-12
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	10664.500	37.06	11.61	48.67	74.00	-25.33	100	49	peak
2	16121.500	34.23	14.01	48.24	74.00	-25.76	100	323	peak
N/A									

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	10435.000	36.71	10.61	47.32	74.00	-26.68	100	49	peak
2	15331.000	35.64	13.06	48.70	74.00	-25.30	100	60	peak
N/A									

Operation Mode:	TX / IEEE 802.11ac VHT40 mode /CH High	Test Date:	2017-11-12
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	10613.500	37.78	11.41	49.19	74.00	-24.81	100	111	peak
2	16070.500	35.84	13.76	49.60	74.00	-24.40	100	264	peak
N/A									

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	10690.000	37.14	11.71	48.85	74.00	-25.15	100	164	peak
2	16172.500	34.74	14.26	49.00	74.00	-25.00	100	169	peak
N/A									

Operation Mode:	TX / IEEE 802.11ac VHT80 mode /CH Mid	Test Date:	2017-11-12
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	37.73	11.31	49.04	74.00	-24.96	100	355	peak
2	15331.000	34.77	13.06	47.83	74.00	-26.17	100	292	peak
N/A									

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	10537.000	37.18	11.11	48.29	74.00	-25.71	100	1	peak
2	15127.000	34.62	14.51	49.13	74.00	-24.87	100	1	peak
N/A									

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 Appendix 1 for the actual connections between EUT and support equipment.

TEST PROCEDURE

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

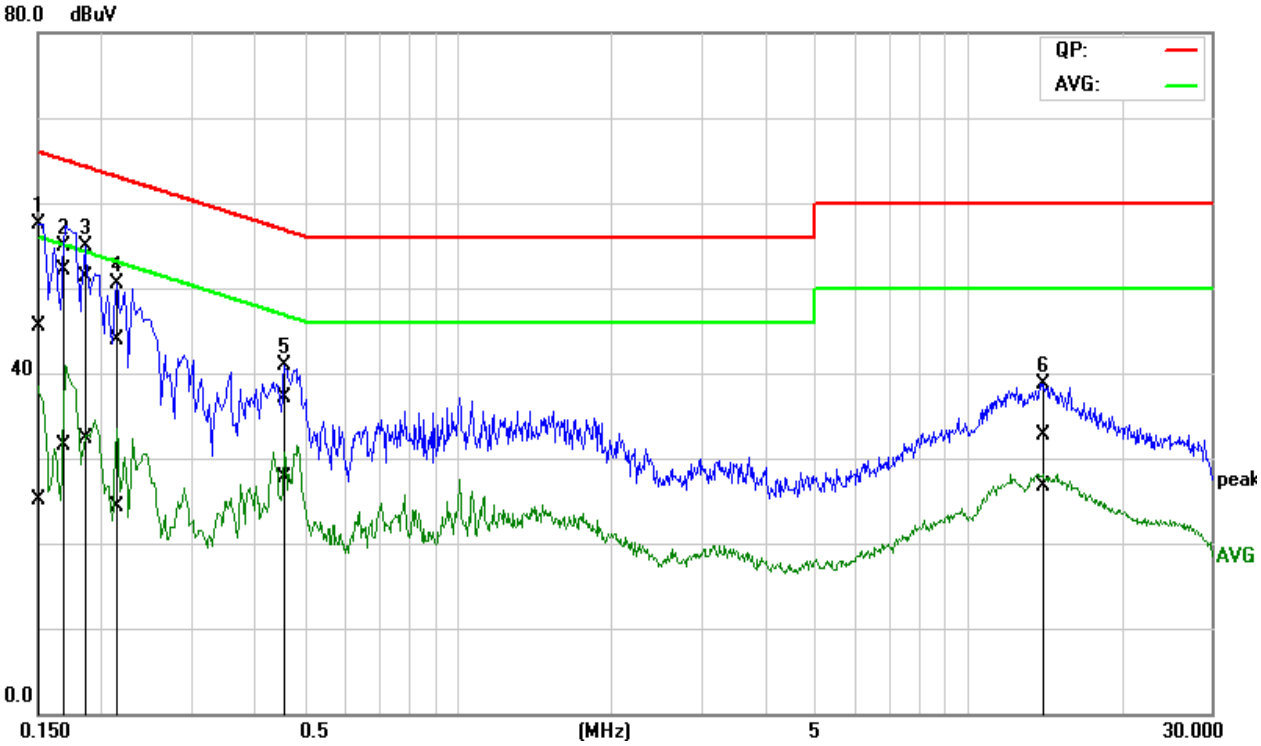
TEST RESULTS

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

Test Data

Job No.:	C170929R01	Date:	2017/10/25
Model No.:	OFR-D1	Time:	17:00:07
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

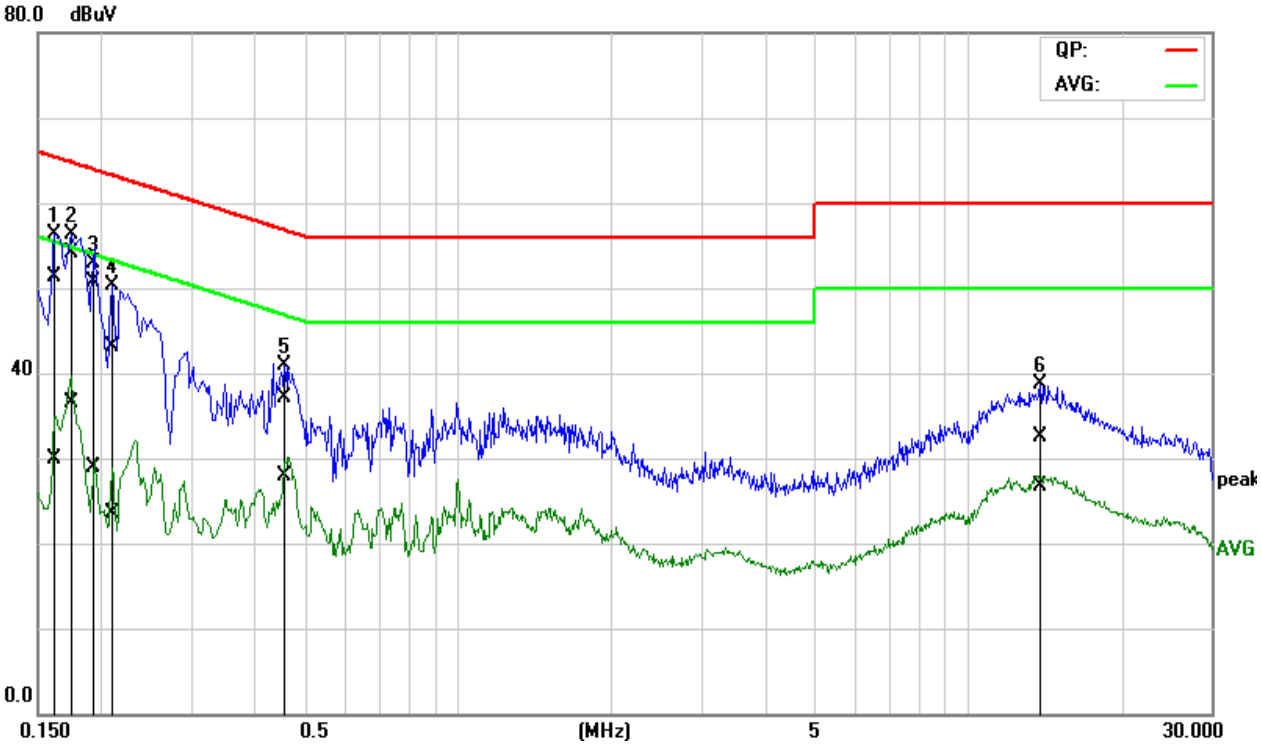


No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1*	0.1515	24.85	4.47	20.59	45.44	25.06	65.92	55.92	-20.48	-30.86	Pass
2	0.1663	31.61	10.87	20.57	52.18	31.44	65.14	55.14	-12.96	-23.70	Pass
3	0.1832	30.86	11.77	20.54	51.40	32.31	64.34	54.34	-12.94	-22.03	Pass
4	0.2147	23.44	3.79	20.49	43.93	24.28	63.02	53.02	-19.09	-28.74	Pass
5	0.4595	16.53	7.28	20.49	37.02	27.77	56.70	46.70	-19.68	-18.93	Pass
6	14.0647	11.94	5.86	20.79	32.73	26.65	60.00	50.00	-27.27	-23.35	Pass

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

Job No.:	C170929R01	Date:	2017/10/25
Model No.:	OFR-D1	Time:	16:53:27
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

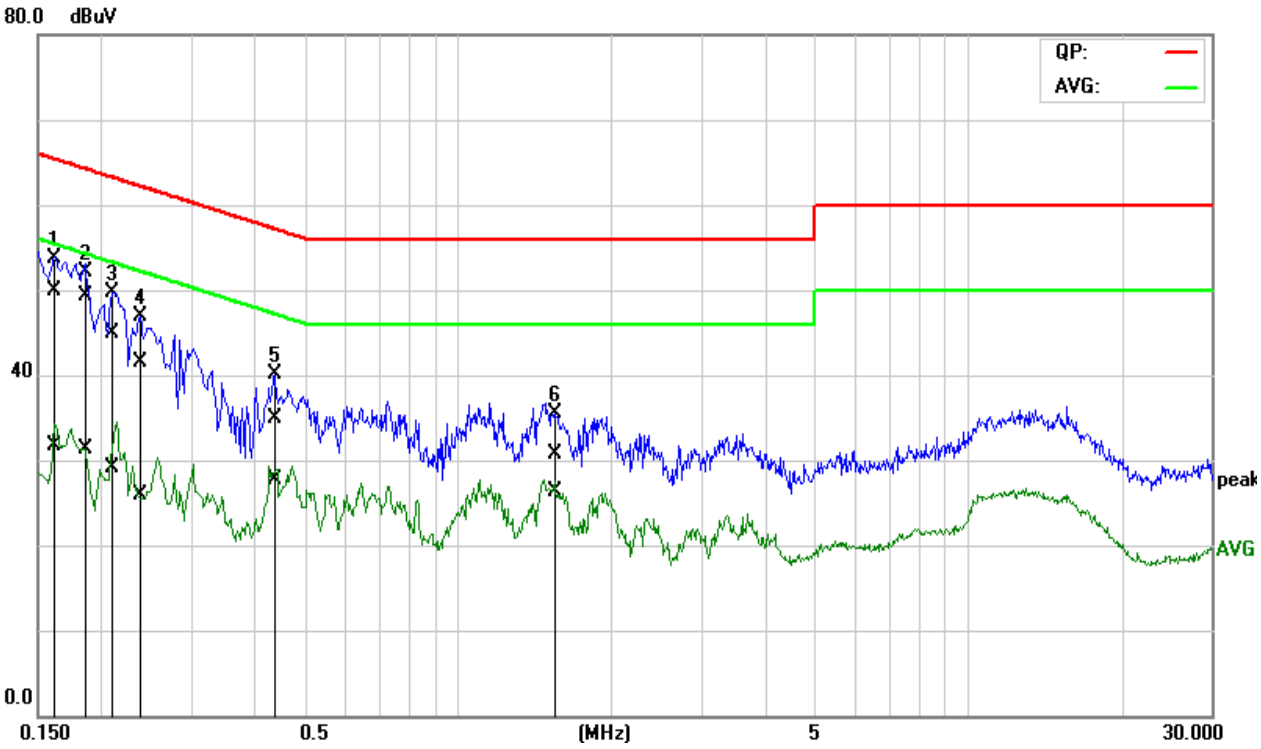


No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1*	0.1633	30.96	9.57	20.37	51.33	29.94	65.29	55.29	-13.96	-25.35	Pass
2	0.1727	33.71	16.07	20.38	54.09	36.45	64.83	54.83	-10.74	-18.38	Pass
3	0.1893	30.26	8.57	20.39	50.65	28.96	64.07	54.07	-13.42	-25.11	Pass
4	0.2080	22.60	3.07	20.41	43.01	23.48	63.28	53.28	-20.27	-29.80	Pass
5	0.4600	16.64	7.47	20.45	37.09	27.92	56.69	46.69	-19.60	-18.77	Pass
6	13.9377	11.74	5.91	20.83	32.57	26.74	60.00	50.00	-27.43	-23.26	Pass

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

Job No.:	C170929R01	Date:	2017/10/25
Model No.:	OFR-D1	Time:	16:46:30
Standard:	FCC Class B	Temp.(C)/Hum.(%):	22(C)/48%
Test item:	Conduction test	Test By:	Lily.Wang
Line:	L1	Test Voltage:	AC 240V/60Hz
Model:		Description:	

L1

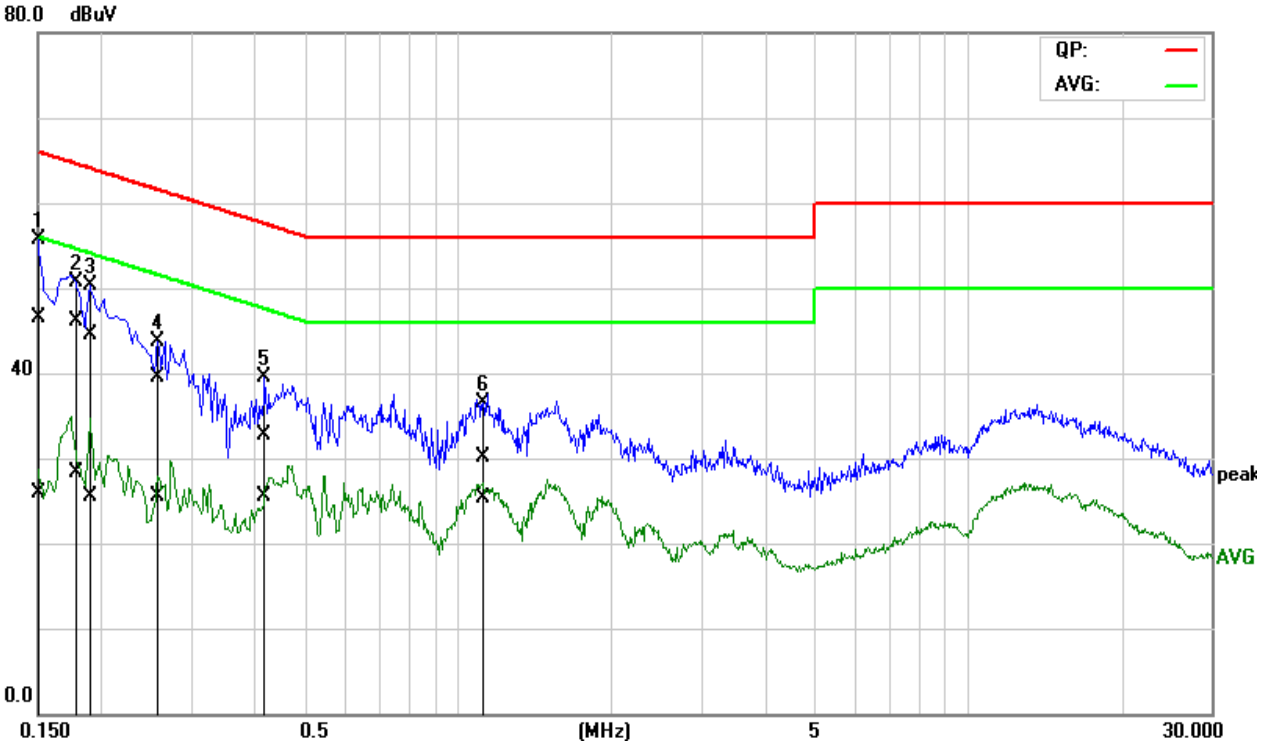


No.	Frequency (MHz)	QuasiPeak reading (dBuV)	Average reading (dBuV)	Correction factor (dB)	QuasiPeak result (dBuV)	Average result (dBuV)	QuasiPeak limit (dBuV)	Average limit (dBuV)	QuasiPeak margin (dB)	Average margin (dB)	Remark
1	0.1636	29.32	11.11	20.57	49.89	31.68	65.28	55.28	-15.39	-23.60	Pass
2	0.1872	28.70	10.77	20.53	49.23	31.30	64.16	54.16	-14.93	-22.86	Pass
3	0.2079	24.38	8.66	20.50	44.88	29.16	63.29	53.29	-18.41	-24.13	Pass
4	0.2343	21.01	5.54	20.46	41.47	26.00	62.30	52.30	-20.83	-26.30	Pass
5	0.4403	14.41	7.15	20.50	34.91	27.65	57.06	47.06	-22.15	-19.41	Pass
6*	1.5245	10.26	5.76	20.45	30.71	26.21	56.00	46.00	-25.29	-19.79	Pass

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

Job No.:	C170929R01	Date:	2017/10/25
Model No.:	OFR-D1	Time:	16:39:38
Standard:	FCC Class B	Temp.(C)/Hum.(%):	22(C)/48%
Test item:	Conduction test	Test By:	Lily.Wang
Line:	L2	Test Voltage:	AC 240V/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	0.1508	26.05	5.45	20.36	46.41	25.81	65.96	55.96	-19.55	-30.15	Pass
2	0.1794	25.63	8.02	20.38	46.01	28.40	64.51	54.51	-18.50	-26.11	Pass
3	0.1883	24.10	5.21	20.39	44.49	25.60	64.11	54.11	-19.62	-28.51	Pass
4	0.2544	19.04	5.05	20.44	39.48	25.49	61.61	51.61	-22.13	-26.12	Pass
5	0.4202	12.15	4.95	20.46	32.61	25.41	57.44	47.44	-24.83	-22.03	Pass
6*	1.1022	9.62	4.82	20.46	30.08	25.28	56.00	46.00	-25.92	-20.72	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