FCC 47 CFR PART15 SUBPART E

Test Report

For

Product Name: Wireless Presentation & Collaboration System

Brand Name: DELTA , VIVITEK

Model No.: NP2000

Series Model.: DS200

FCC ID:H79-0120C8

Test Report Number:

C151118R01-RPW2

Issued for

Delta Electronic Incorporated.

3 Tungyung rd., Chungli Industrial Zone, Taoyuan County 32063 Taiwan

Issued by

Compliance Certification Services Inc.

Kun shan Laboratory

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

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FAX: 86-512-57370818

TESTING CERT #2541.01

Revision History

Revision	REPORT NO.	Date	Page Revised	Contents
Original	C151118R01-RPW2	May 10, 2016	N/A	N/A
01	C151118R01-RPW2	June 1, 2016	P11,P32,P42, P59,P60,P64	Add section 7.5,On page 32&42 add antennas description, Calculate the antenna gain is 3dBi,on page 64 add 9kHz to 30MHz don't test specification

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1 TEST RESULT CERTIFICATION

Product Name:	Wireless Presentation & Collaboration System
Trade Name:	DELTA , VIVITEK
Model Name.:	NP2000
Series Model:	DS200
Applicant Discrepancy:	Initial
Device Category:	Production unit
Date of Test:	April 6, 2016 ~ May 7, 2016 and May 31, 2016
Applicant:	**Delta Electronic Incorporated.** 3 Tungyung rd., Chungli Industrial Zone, Taoyuan County 32063 Taiwan
Manufacturer:	**Delta Electronic Incorporated.** 3 Tungyung rd., Chungli Industrial Zone, Taoyuan County 32063 Taiwan
Application Type:	Certification

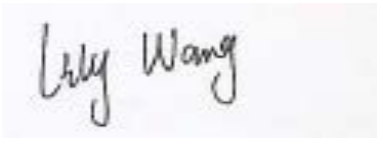
APPLICABLE STANDARDS	
STANDARD	**TEST RESULT**
FCC 47 CFR Part 15 Subpart E	No non-compliance noted

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:	Wireless Presentation & Collaboration System
Brand Name:	DELTA , VIVITEK
Model Name:	NP2000
Series Model:	DS200
Model Discrepancy:	Only for market segment
Power Adapter:	Power supply and ADP（rating）: Model: W12-010N3A Input: 100-240V-50/60Hz 0.3A Output: 5V 2A
Frequency Range :	5725MHz-5850MHz
Transmit Power :	IEEE 802.11a: 13.20 dBm IEEE 802.11n HT20 MHz Channel Mode: 16.02 dBm IEEE 802.11n HT40 MHz Channel Mode: 16.65 dBm IEEE 802.11ac VHT20 MHz Channel Mode: 13.21 dBm IEEE 802.11ac VHT40 MHz Channel Mode: 13.77 dBm IEEE 802.11ac VHT 80 MHz Channel Mode: 12.92 dBm
Modulation Technique :	IEEE 802.11a mode: OFDM IEEE 802.11n HT20 MHz Mode: OFDM IEEE 802.11n HT40 MHz Mode: OFDM IEEE 802.11ac VHT20 MHz Mode: OFDM IEEE 802.11ac VHT40 MHz Mode: OFDM IEEE 802.11ac VHT80 MHz Mode: OFDM
Number of Channels :	IEEE 802.11a/n HT20/ac VHT20 mode: 5 Channels IEEE 802.11n HT40/ac VHT40 Mode:2 Channels IEEE 802.11ac VHT80 MHz Mode:1 Channel
Antenna Specification:	PCB antenna 0 for 5GHz Gain 3.0dBi PCB antenna 1 for 5GHz Gain 3.0dBi

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:H79-0120C8*** 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 0.490-0.510 MHz.

[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
6dB 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
Conducted undesirable emission	OFDM	BPSK
Powerline conducted emission	OFDM	BPSK

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

IEEE 802.11a mode:

Channel Low (5745MHz), Channel Mid (5785MHz) and Channel High (5825MHz) with 24Mbps data rate were chosen for full testing.

IEEE 802.11n HT20 mode:

Channel Low (5745MHz), Channel Mid (5785MHz) and Channel High (5825MHz) with MCS0 data rate were chosen for full testing.

IEEE 802.11n HT40 mode:

Channel Low (5755MHz) and Channel High (5795MHz) with 24Mbps data rate were chosen for full testing.

IEEE 802.11ac VHT20 mode:

Channel Low (5745MHz), Channel Mid (5785MHz) and Channel High (5825MHz) with MCS0 data rate were chosen for full testing.

IEEE 802.11ac VHT40 mode:

Channel Low (5755MHz) and Channel High (5795MHz) with MCS0 data rate were chosen for full testing.

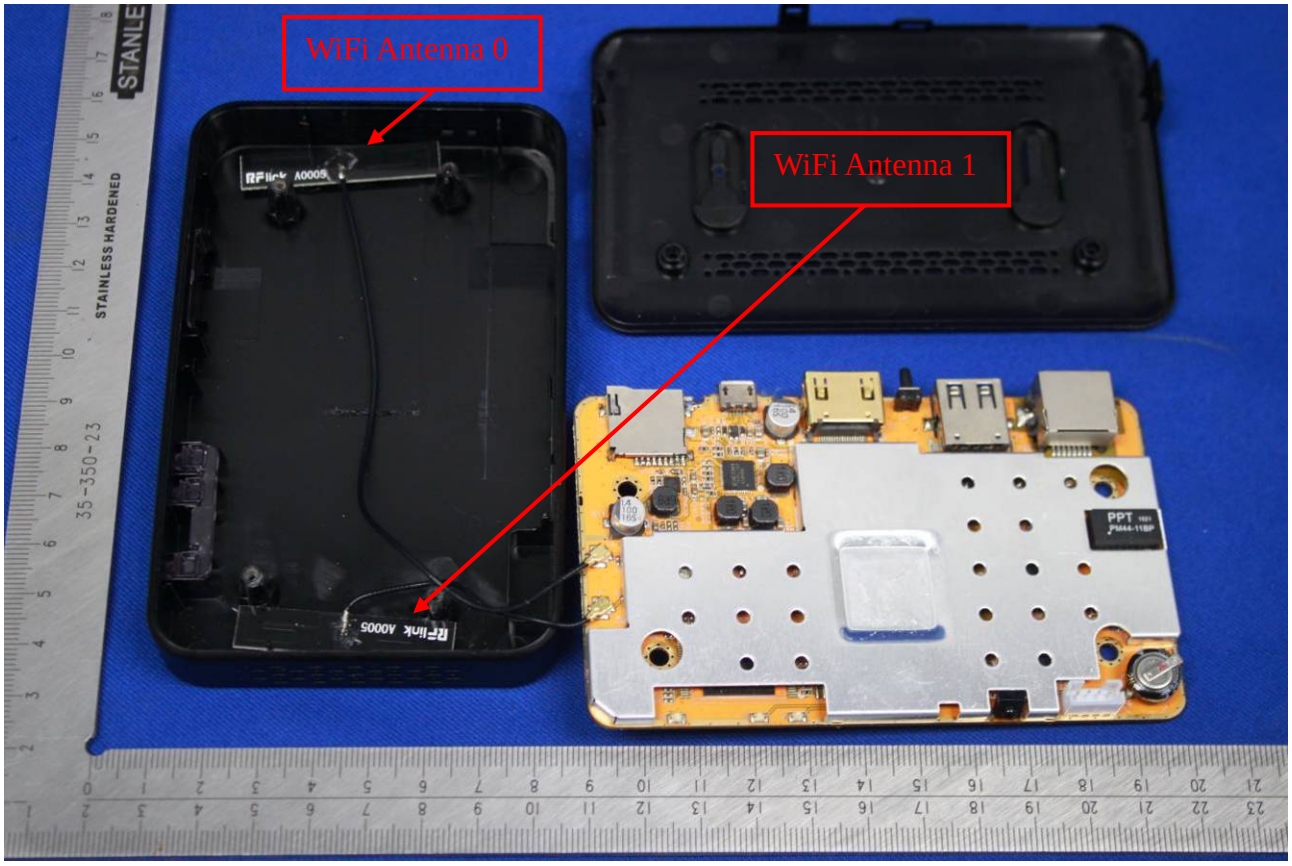
IEEE 802.11ac VHT80 mode:

Channel Mid (5775MHz) with MCS0 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(PCB Antenna for 5G WiFi)
* 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 Date**	**Calibration Due**
Spectrum Analyzer	Agilent	E4446A	MY44020154	2015-9-11	2016-9-10
Spectrum Analyzer	RS	FSU26	200789	2015-8-10	2016-8-9
OSCILLOSCOPE	Agilent	DSO6104A	MY44002585	2016-3-2	2017-3-1
Power meter	Anritsu	ML2495A	1445010	2016-04-23	2017-04-22
Power sensor	Anritsu	MA2411B	1339220	2016-04-23	2017-04-22
Power SPLITTER	Mini-Circuits	ZN2PD-9G	SF078500430	N.C.R	N.C.R
DC Power Supply	AGILENT	E3632A	MY50340053	N.C.R	N.C.R
Temp. / Humidity Chamber	TERCHY	MHK-120AK	X30109	2016-1-11	2017-1-10

977 Chamber					
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Date**	**Calibration Due**
Spectrum Analyzer	Agilent	E4446A	MY44020154	2015-9-11	2016-9-10
EMI Test Receiver	R&S	ESCI	101378	2016-1-6	2017-1-5
Pre-Amplfier	MINI	ZFL-1000VH2	d041703	2016-1-13	2017-1-12
Pre-Amplfier	Miteq	JS41-00101800-32-10P	1675713	2015-8-10	2016-8-9
Bilog Antenna	Sunol	JB1	A062604	2016-3-6	2017-3-5
Loop Antenna	SCHWARZBECK	HXYZ9170	9170-108	2016-4-7	2017-4-6
Horn-antenna	SCHWARZBECK	BBHA9120D	D:266	2015-3-7	2016-3-6
Loop Antenna	SCHWARZBECK	HXYZ9170	9170-108	2016-4-7	2017-4-6
Turn Table	CT	CT123	4165	N.C.R	N.C.R
Antenna Tower	CT	CTERG23	3256	N.C.R	N.C.R
Controller	CT	CT1OO	95637	N.C.R	N.C.R
Test Software			EZ-EMC		

Conducted Emission					
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Date**	**Calibration Due**
EMI TEST RECEIVER	R&S	ESCI	100781	2016-3-2	2017-3-1
V (V-LISN)	SCHWARZBECK	NNLK 8129	8129-143	2015-11-2	2016-11-1
LISN (EUT)	FCC	FCC-LISN-50/250-50-2-02	05012	2015-9-16	2016-9-15
Pulse LIMITER	R&S	ESH3-Z2	100524	2016-1-6	2017-1-5
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

The test facilities used to perform radiated and conducted emissions tests are accredited by American Association for Laboratory Accreditation Program for the specific scope accreditation under Lab Code: 200581-0 to perform Electromagnetic Interference tests according to FCC Part 15 and CISPR 22 requirements. In addition, the test facilities are listed with Industry Canada, Certification and Engineering Bureau, 2324E-1 for 10m chamber 10m, 2324E-2 for 10m chamber 3m; the test facilities are listed with USA, Certification and Engineering Bureau, 424105 for 10m chamber 10m, 238958 for 10m chamber 3m.

5.4 TABLE OF ACCREDITATIONS AND LISTINGS

Country	Agency	Scope of Accreditation	Logo
USA	A2LA	47 CFR FCC Part 15/18 (using ANSI C63.10 :2013); VCCI V3; CNS 13438; CNS 13439; CNS 13803; CISPR 11; EN 55011; CISPR 13; EN 55013; CISPR 22:2005; CISPR 22:1997 +A1 :2000+A2 :2002；EN 55022:2006; EN55022 :1998 +A1 :2001+A2 :2003；EN 61000-6-3 (excluding discontinuous interference); EN 61000-6-4; AS/NZS CISPR 22; CAN/CSA-CEI/IEC CISPR 22；EN 61000-3-2；EN 61000-3-3；EN550024； EN 61000-4-2; EN 61000-4-3；EN61000-4-4；EN 61000-4-5； EN 61000-4-6；IEC 61000-4-8；EN 61000-4-11； IEC61000-3-2；IEC61000-3-3；IEC 61000-4-2； IEC 61000-4-3；IEC 61000-4-4； IEC 61000-4-5；IEC 61000-4-6；IEC 61000-4-8；IEC 61000-4-11； EN 300 220-3; EN 300 328; EN 300 330-2; EN 300 440-1; EN 300-440-2; EN 300 893; EN 301 489-01; EN 301 489-3; EN 301 489-07; EN 301 489-17；47 CFR FCC Part 15, 22, 24	ACCREDITED TESTING CERT #2541.01
USA	FCC	3/10 meter Sites to perform FCC Part 15/18 measurements	93105, 90471
Japan	VCCI	3/10 meter Sites and conducted test sites to perform radiated/conducted measurements	VCCI R-1600 C-1707 G-216

** 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.

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.

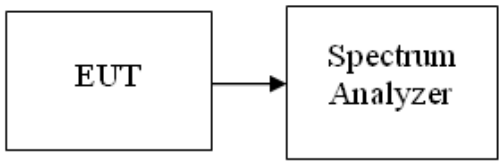
7 FCC PART 15 REQUIREMENTS

7.1 6 DB BANDWIDTH MEASUREMENT

LIMIT

Section 15.407(e) specifies the minimum 6 dB emission bandwidth of at least 500 KHz for the band 5.715-5.85 GHz.

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 =100KHz, VBW≥ 3RBW, Detector = Peak. Trace mode = max hold.
4. Measure the maximum width of the emission that is 6 dB down from the peak of the emission..
5. Measure and record the results in the test report

TEST RESULTS

No non-compliance noted

Test Data

Test mode: IEEE 802.11a mode/chain 0

5725~5850MHz

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	FCC 6 dB Bandwidth Min. Limit (MHz)
Low	5745	16.442	0.5
Mid	5785	16.442	0.5
High	5825	16.490	0.5

Test mode: IEEE 802.11a mode/chain 1

5725~5850MHz

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	FCC 6 dB Bandwidth Min. Limit (MHz)
Low	5745	16.490	0.5
Mid	5785	16.440	0.5
High	5825	16.442	0.5

Test mode: IEEE 802.11n HT20 mode/chain 0

5725~5850MHz

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	FCC 6 dB Bandwidth Min. Limit (MHz)
Low	5745	17.692	0.5
Mid	5785	17.692	0.5
High	5825	17.692	0.5

Test mode: IEEE 802.11n HT20 mode/chain 1

5725~5850MHz

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	FCC 6 dB Bandwidth Min. Limit (MHz)
Low	5745	17.644	0.5
Mid	5785	17.644	0.5
High	5825	17.644	0.5

Test mode: IEEE 802.11n HT40 mode/chain 0

5725~5850MHz

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	FCC 6 dB Bandwidth Min. Limit (MHz)
Low	5755	36.442	0.5
High	5795	36.442	0.5

Test mode: IEEE 802.11n HT40 mode/chain 1

5725~5850MHz

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	FCC 6 dB Bandwidth Min. Limit (MHz)
Low	5755	36.442	0.5
High	5795	36.442	0.5

Test mode: IEEE 802.11ac VHT20 mode/chain 0

5725~5850MHz

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	FCC 6 dB Bandwidth Min. Limit (MHz)
Low	5745	17.644	0.5
Mid	5785	17.644	0.5
High	5825	17.644	0.5

Test mode: IEEE 802.11ac VHT20 mode/chain 1

5725~5850MHz

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	FCC 6 dB Bandwidth Min. Limit (MHz)
Low	5745	17.644	0.5
Mid	5785	17.644	0.5
High	5825	17.692	0.5

Test mode: IEEE 802.11ac VHT40 mode/chain 0

5725~5850MHz

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	FCC 6 dB Bandwidth Min. Limit (MHz)
Low	5755	36.442	0.5
High	5795	36.442	0.5

Test mode: IEEE 802.11ac VHT40 mode/chain 1

5725~5850MHz

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	FCC 6 dB Bandwidth Min. Limit (MHz)
Low	5755	36.346	0.5
High	5795	36.442	0.5

Test mode: IEEE 802.11ac VHT80 mode/chain 0

5725~5850MHz

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	FCC 6 dB Bandwidth Min. Limit (MHz)
Mid	5775	76.250	0.5

Test mode: IEEE 802.11ac VHT80 mode/chain 1

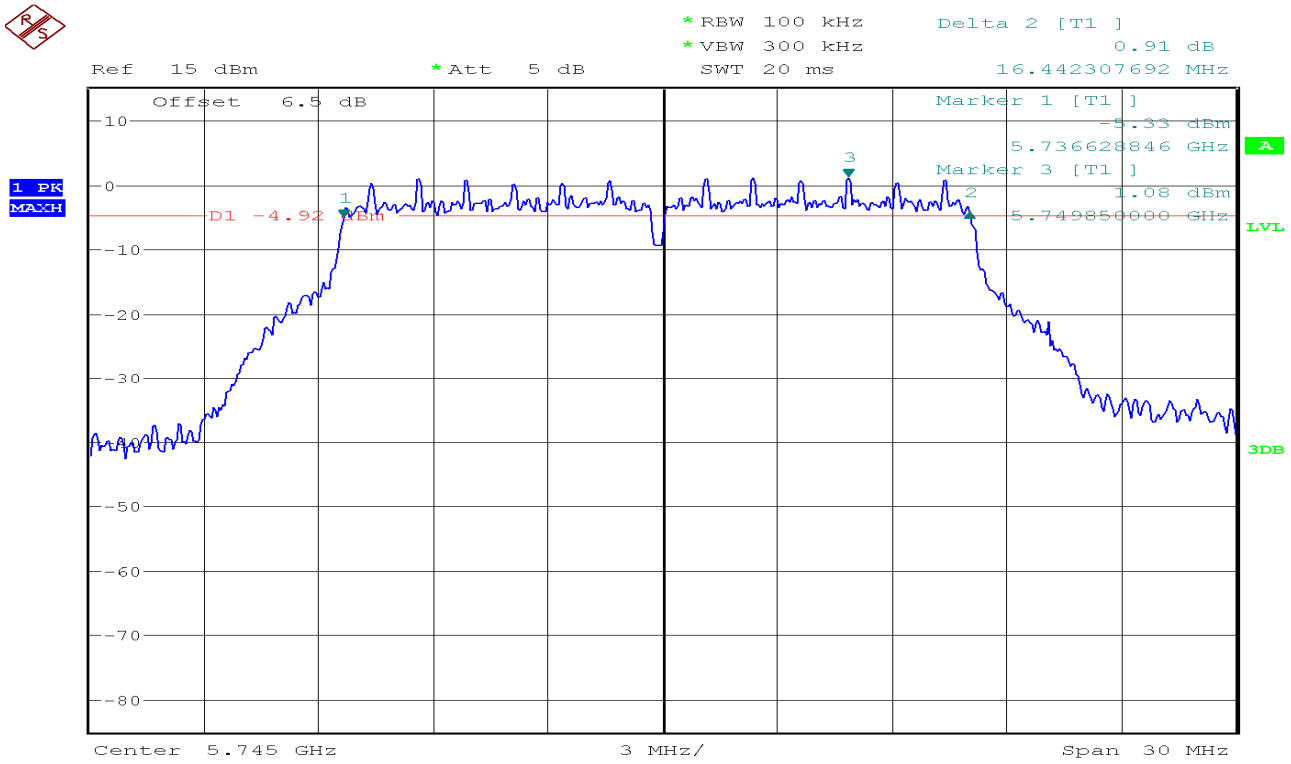
5725~5850MHz

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	FCC 6 dB Bandwidth Min. Limit (MHz)
Mid	5775	76.282	0.5

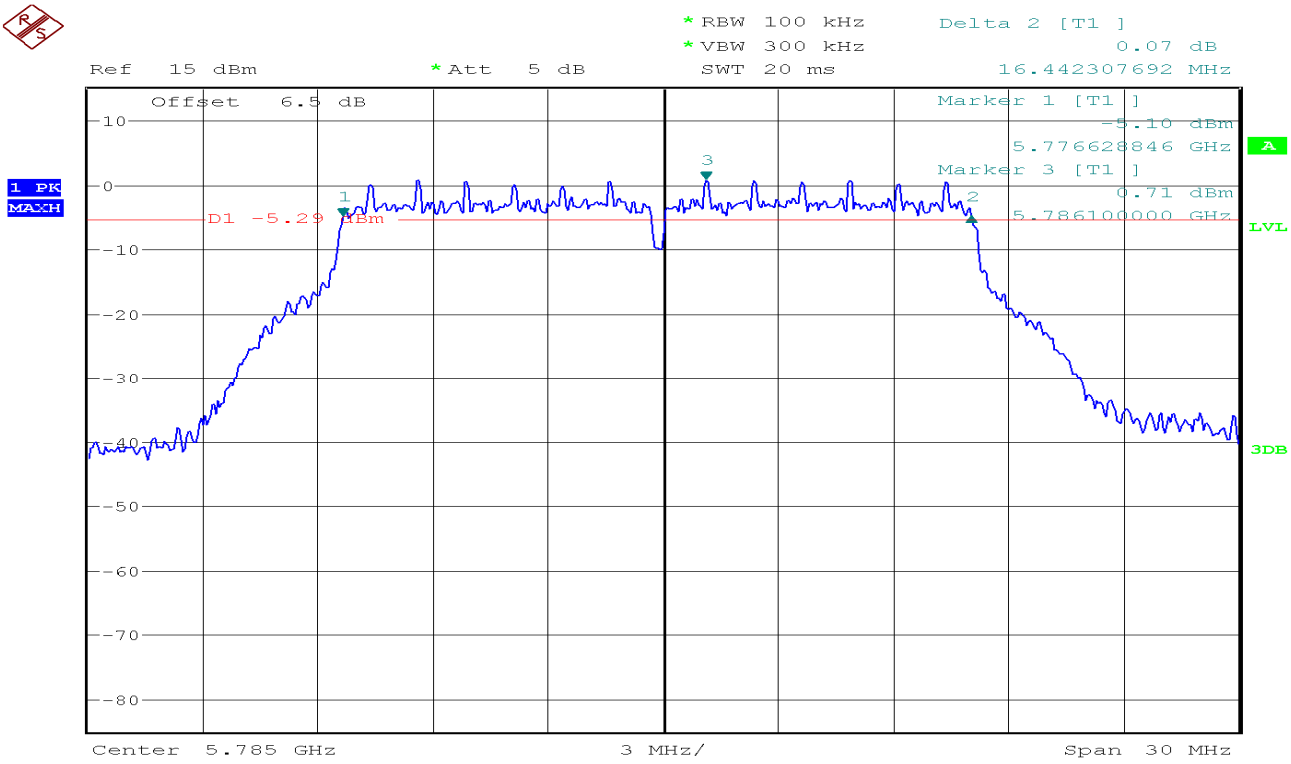
Test Plot

IEEE 802.11a mode/chain 0

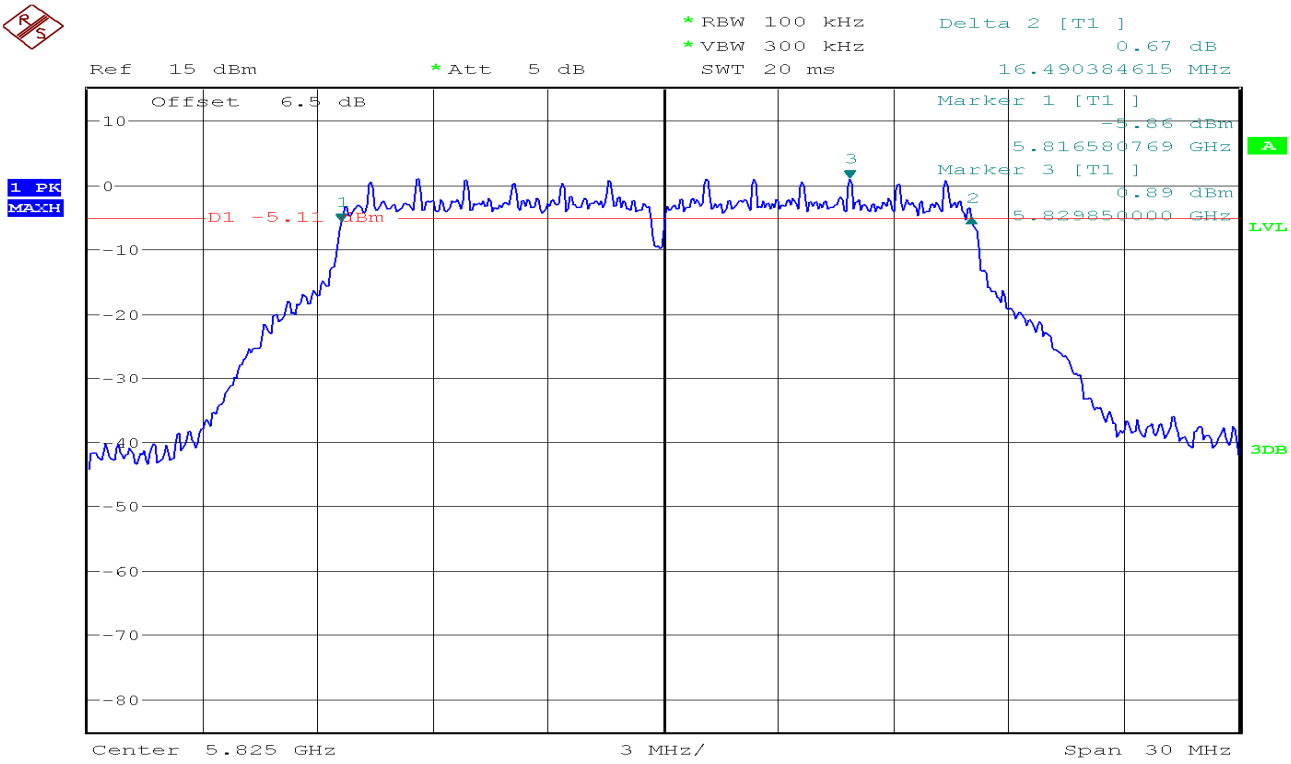
6dB Bandwidth (CH Low)



6dB Bandwidth (CH Mid)

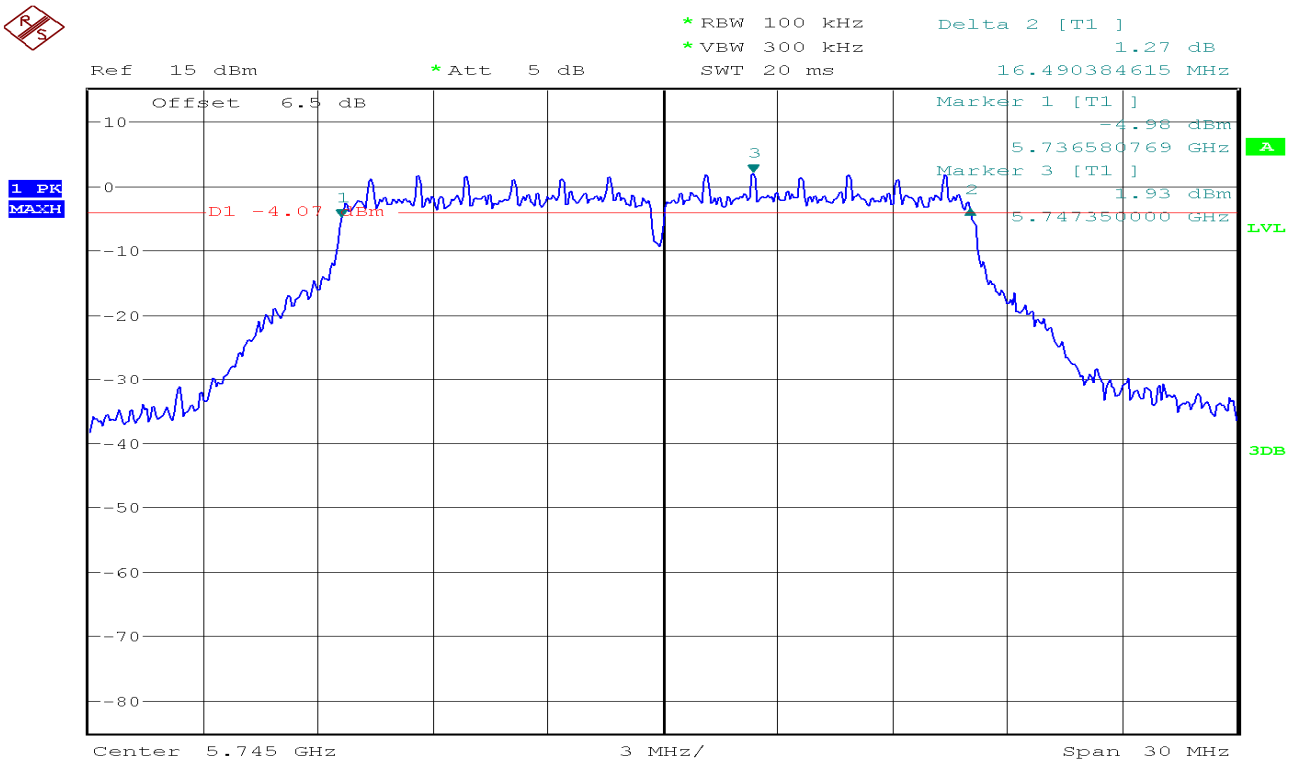


6dB Bandwidth (CH High)

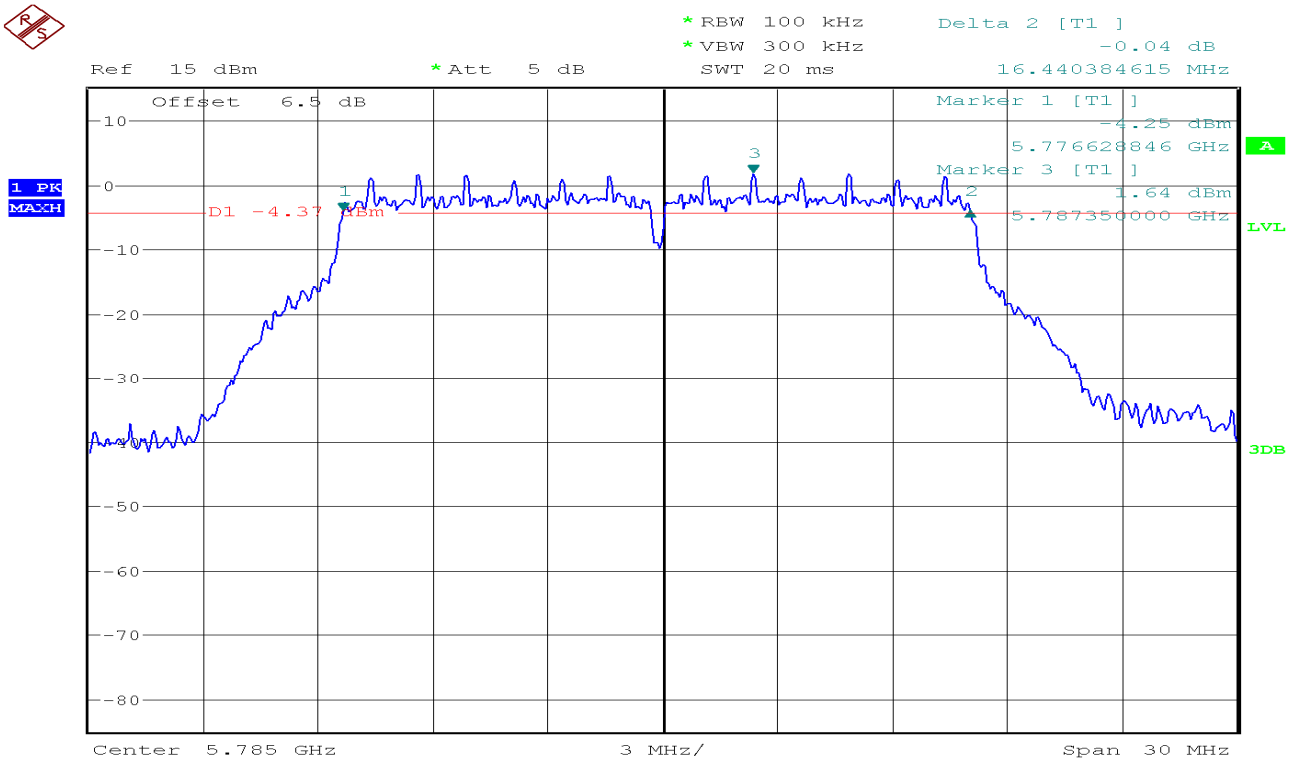


IEEE 802.11a mode/chain 1

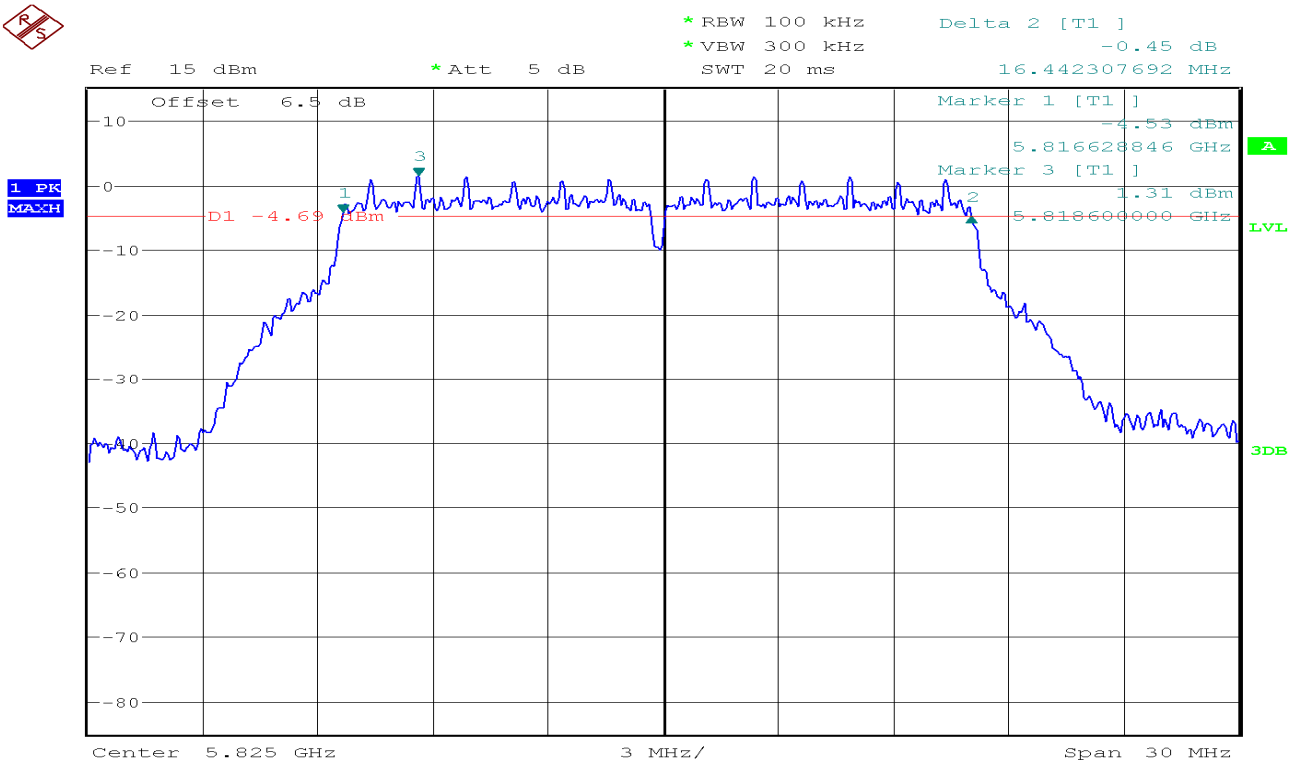
6dB Bandwidth (CH Low)



6dB Bandwidth (CH Mid)

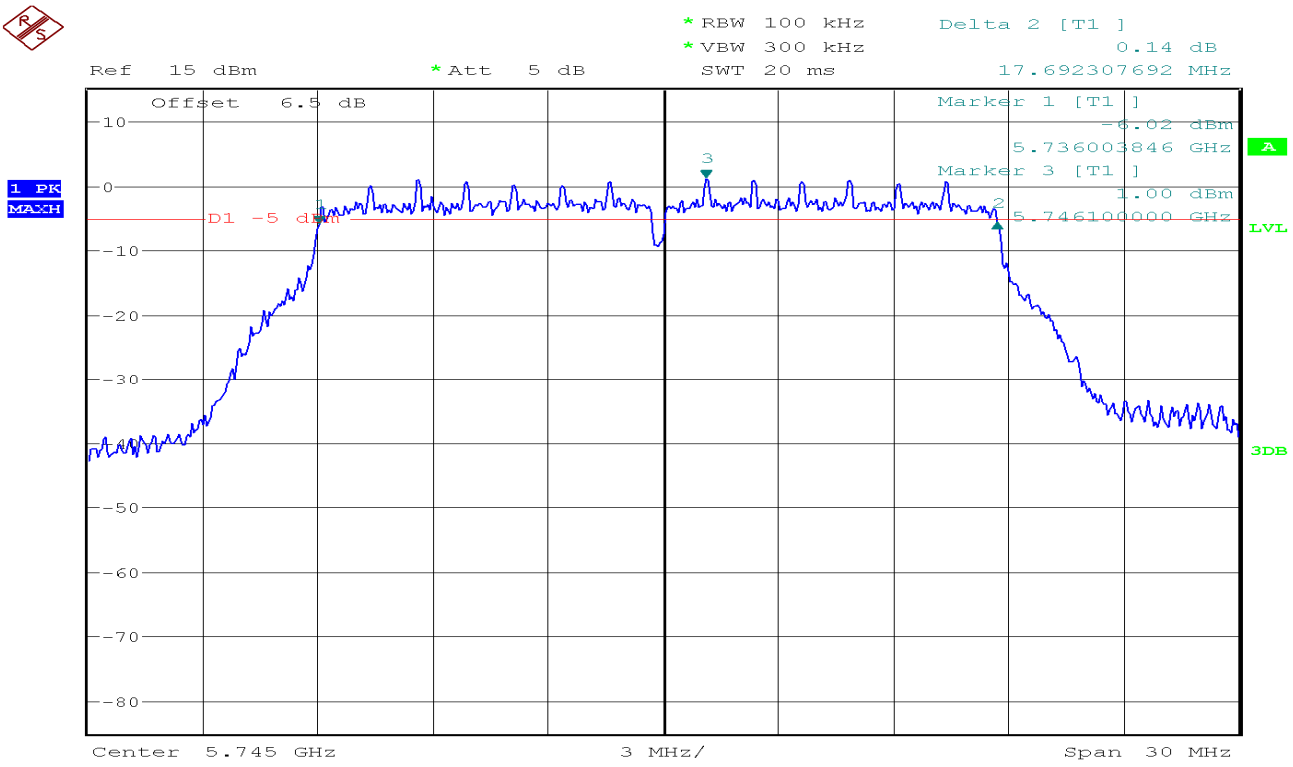


6dB Bandwidth (CH High)

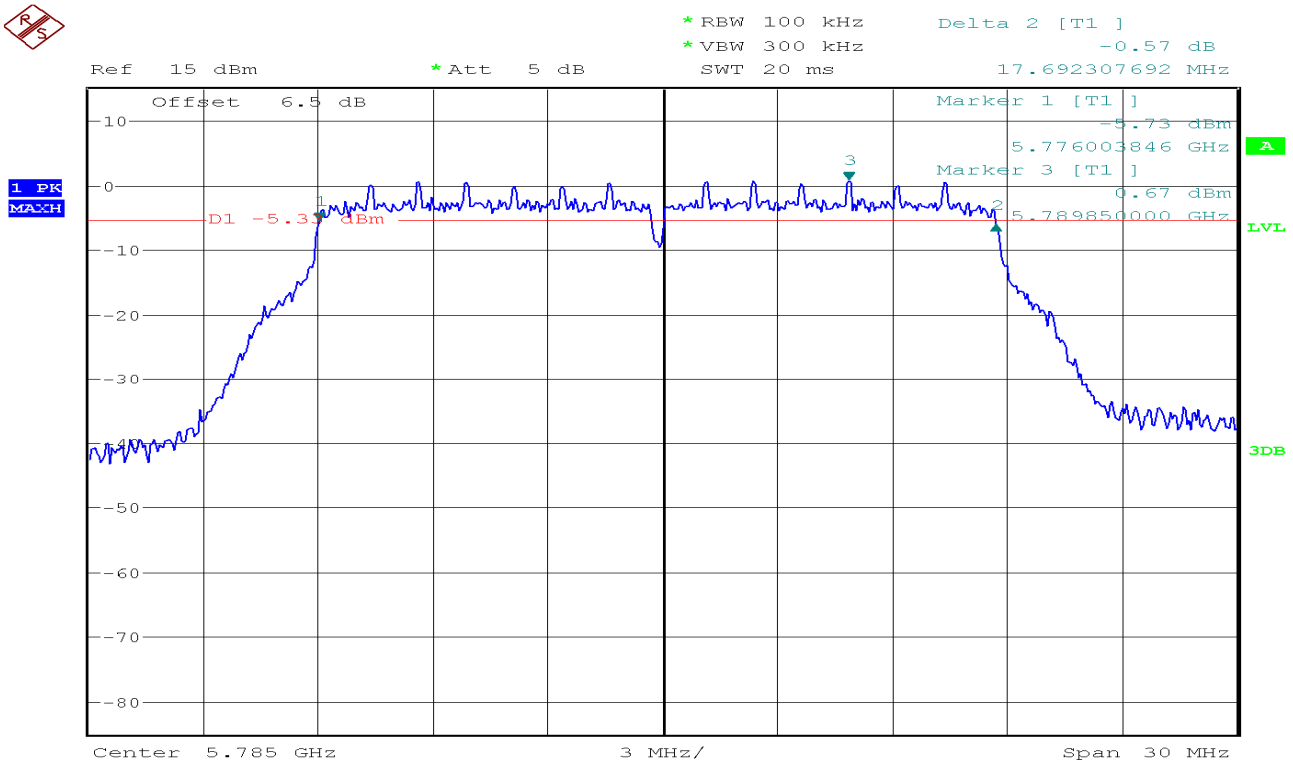


IEEE 802.11n HT20 mode/chain 0

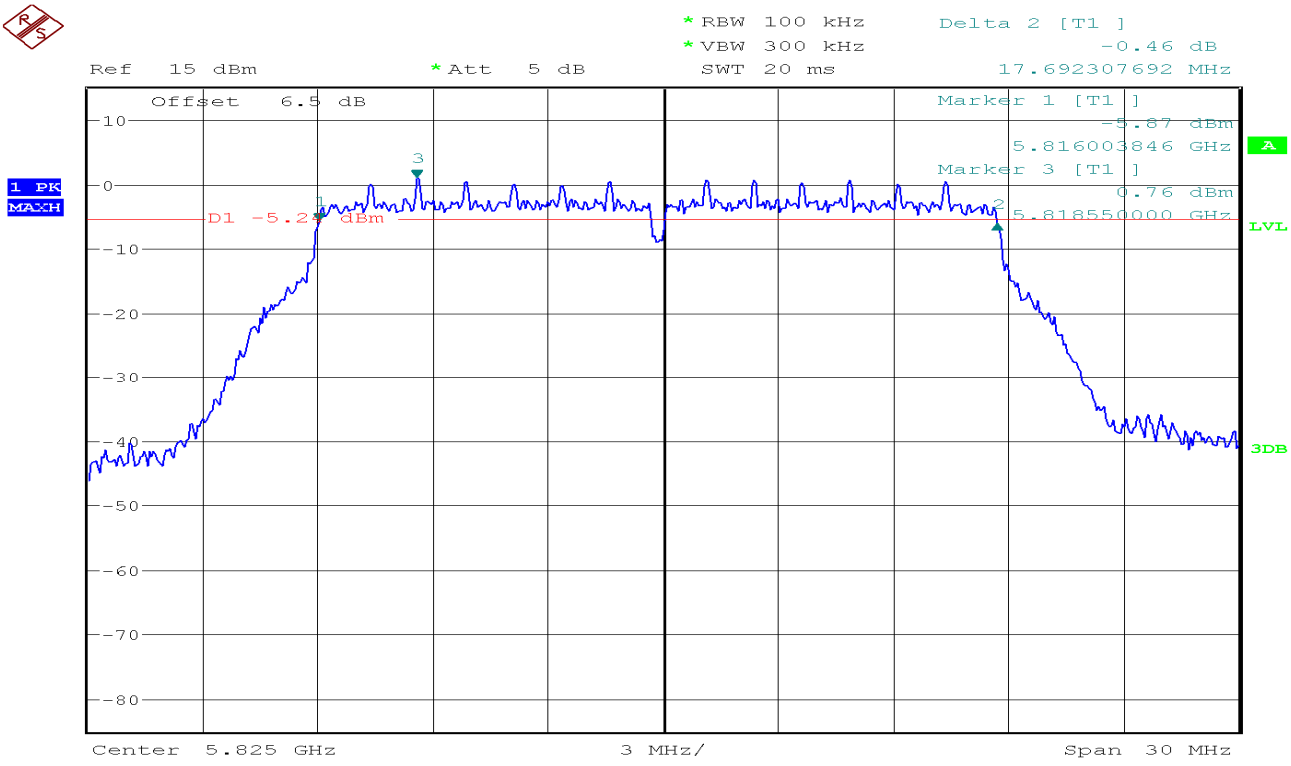
6dB Bandwidth (CH Low)



6dB Bandwidth (CH Mid)

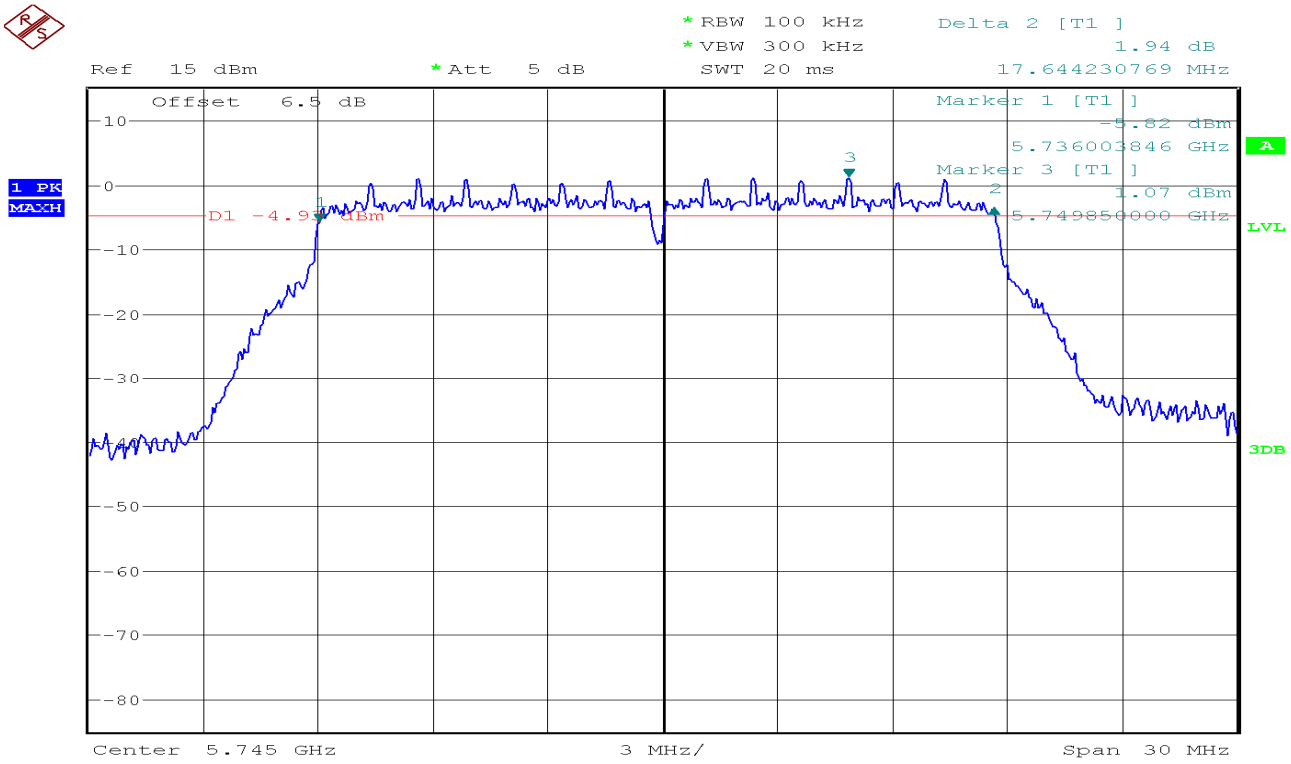


6dB Bandwidth (CH High)

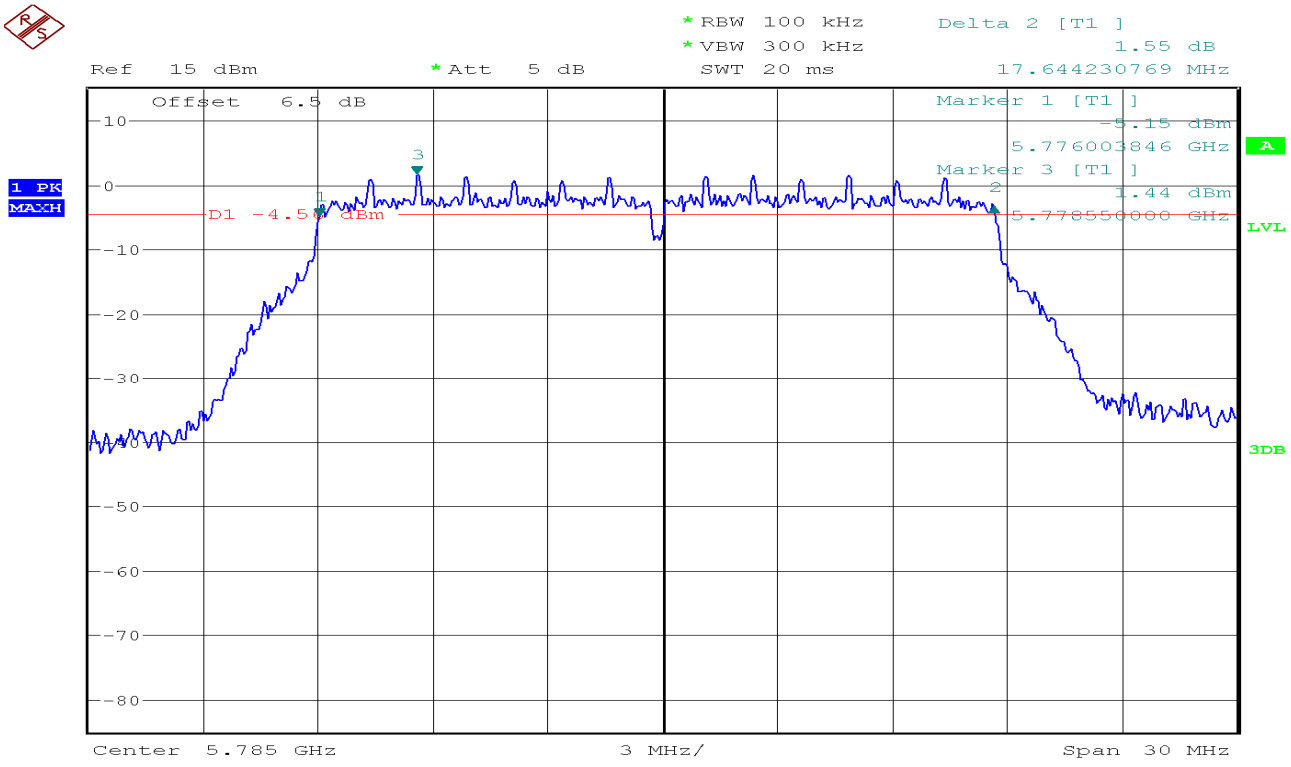


IEEE 802.11n HT20 mode/chain 1

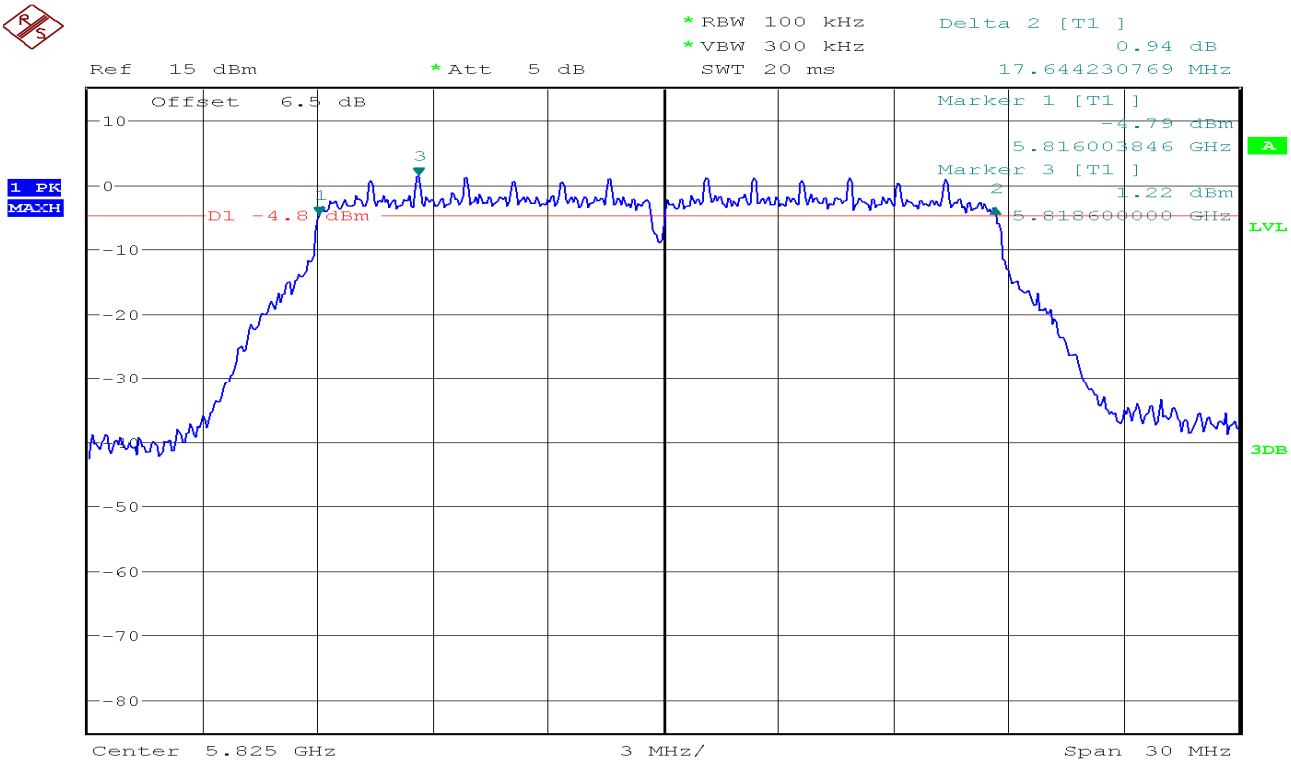
6dB Bandwidth (CH Low)



6dB Bandwidth (CH Mid)

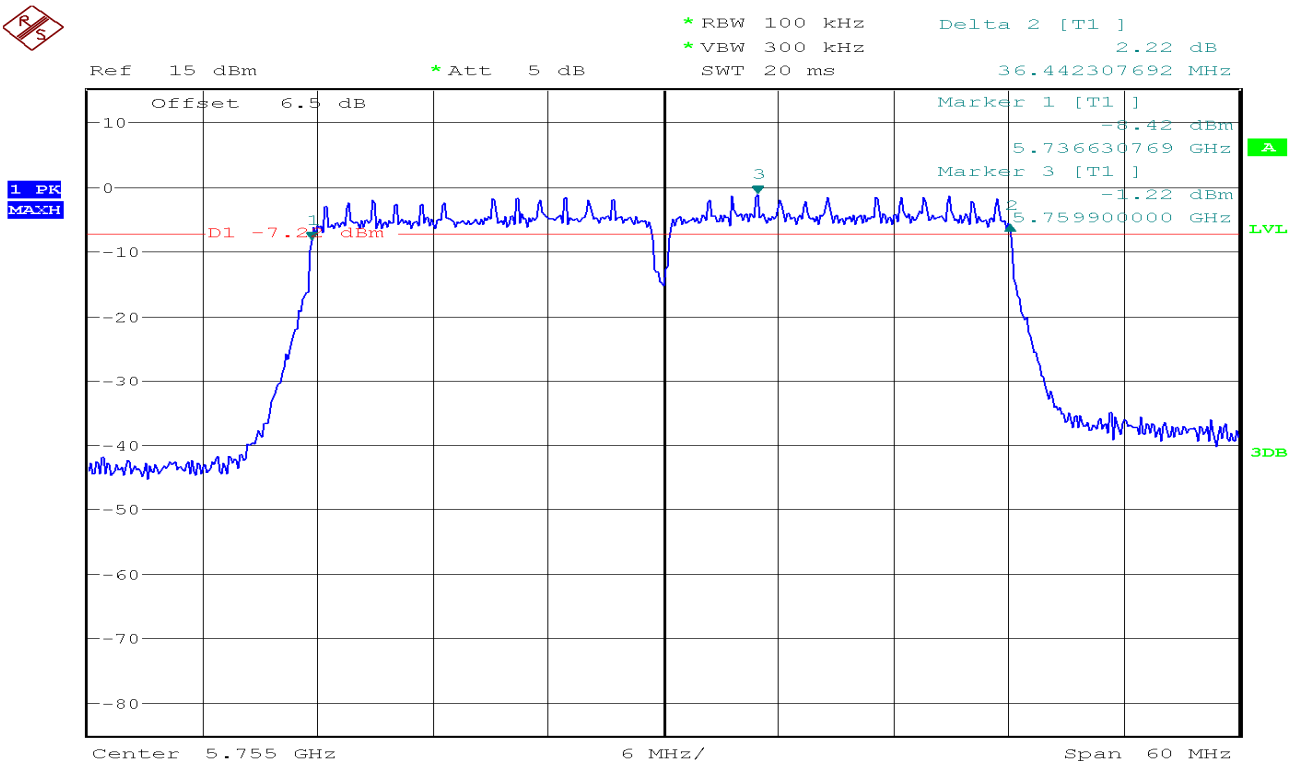


6dB Bandwidth (CH High)

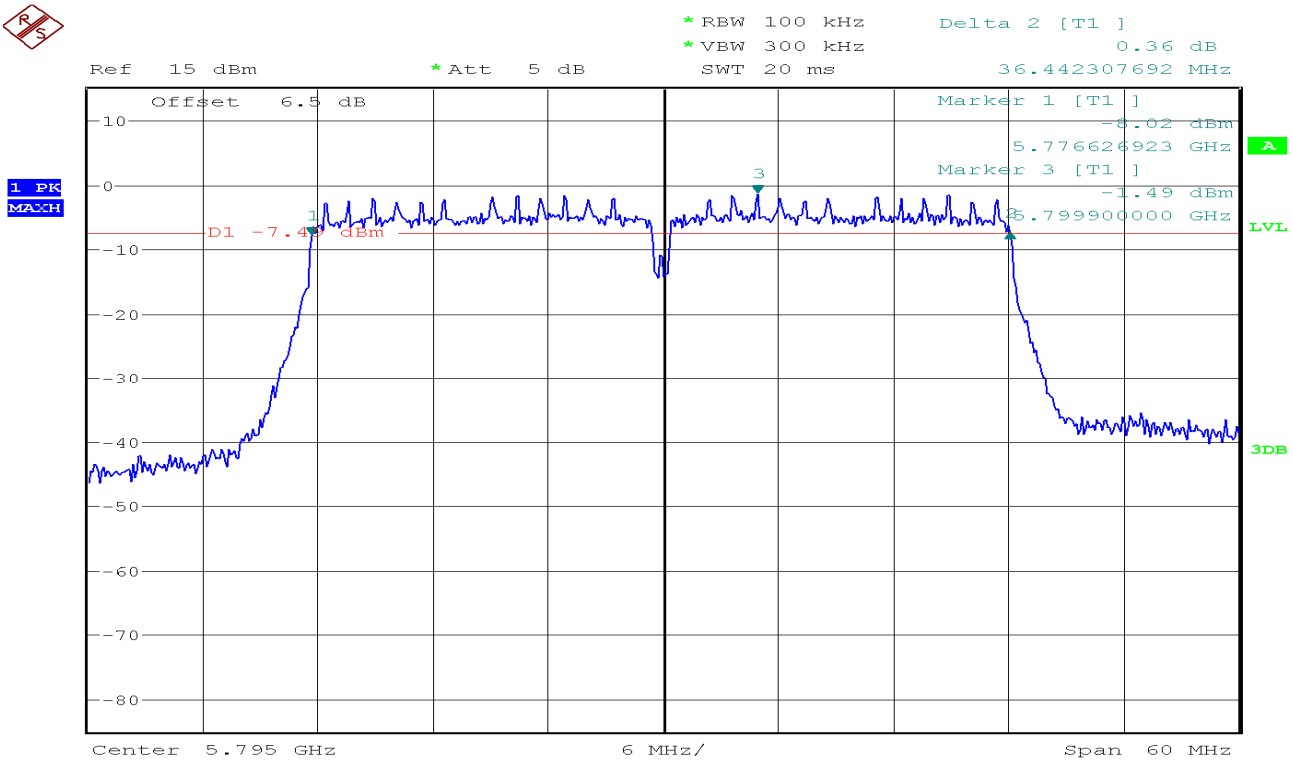


IEEE 802.11n HT40 mode/chain 0

6dB Bandwidth (CH Low)

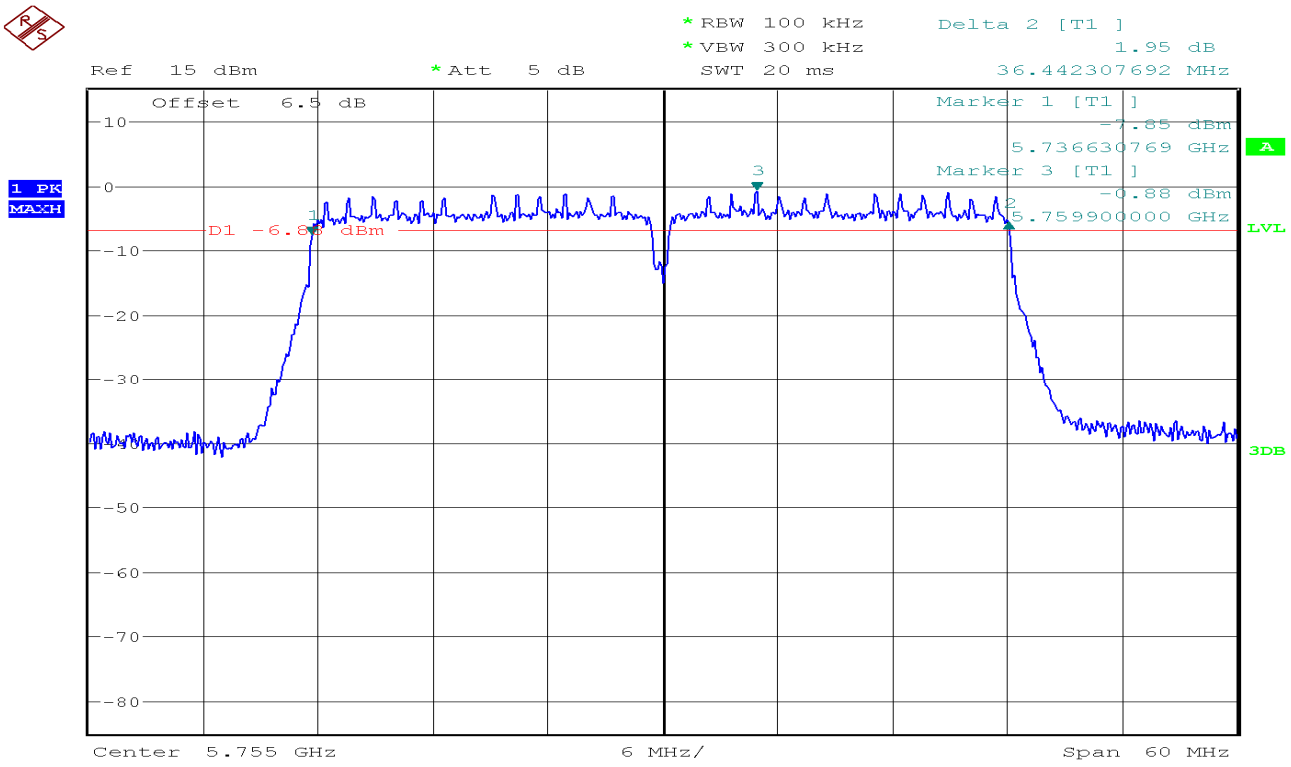


6dB Bandwidth (CH High)

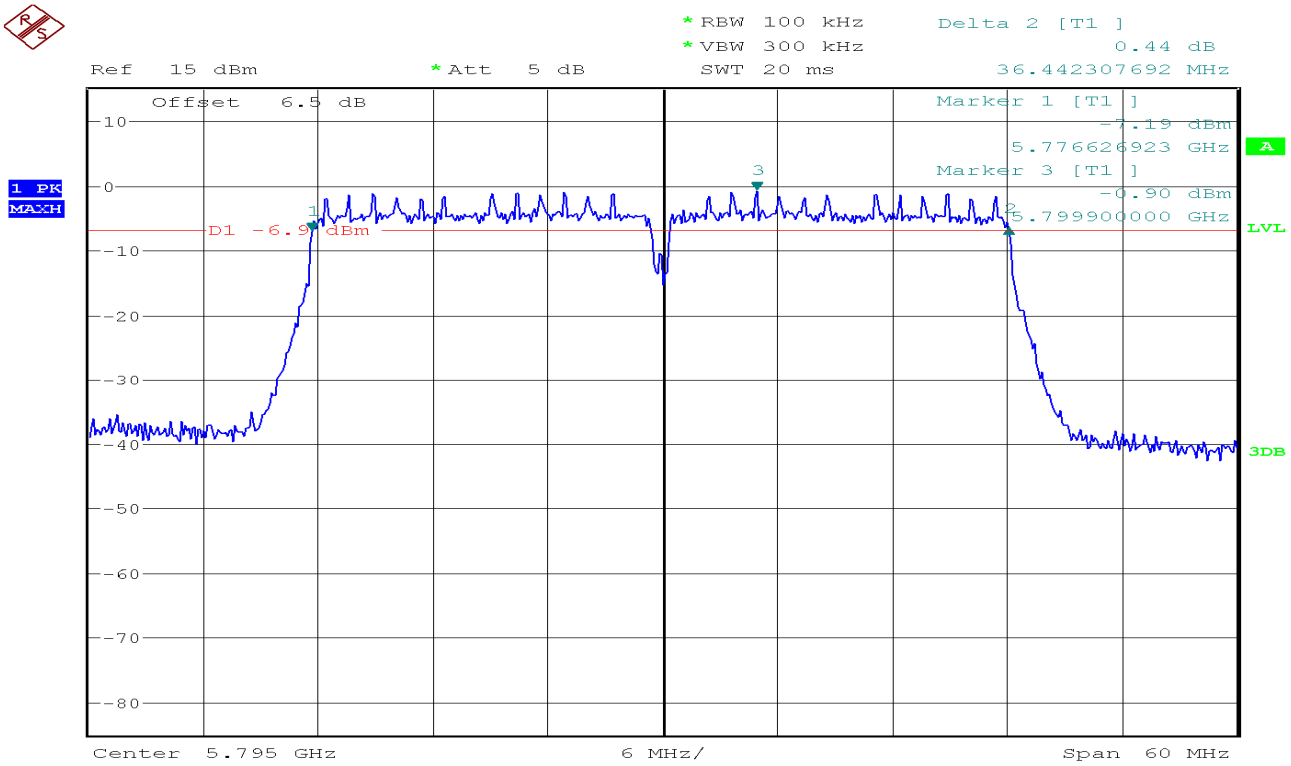


IEEE 802.11n HT40 mode/chain 1

6dB Bandwidth (CH Low)

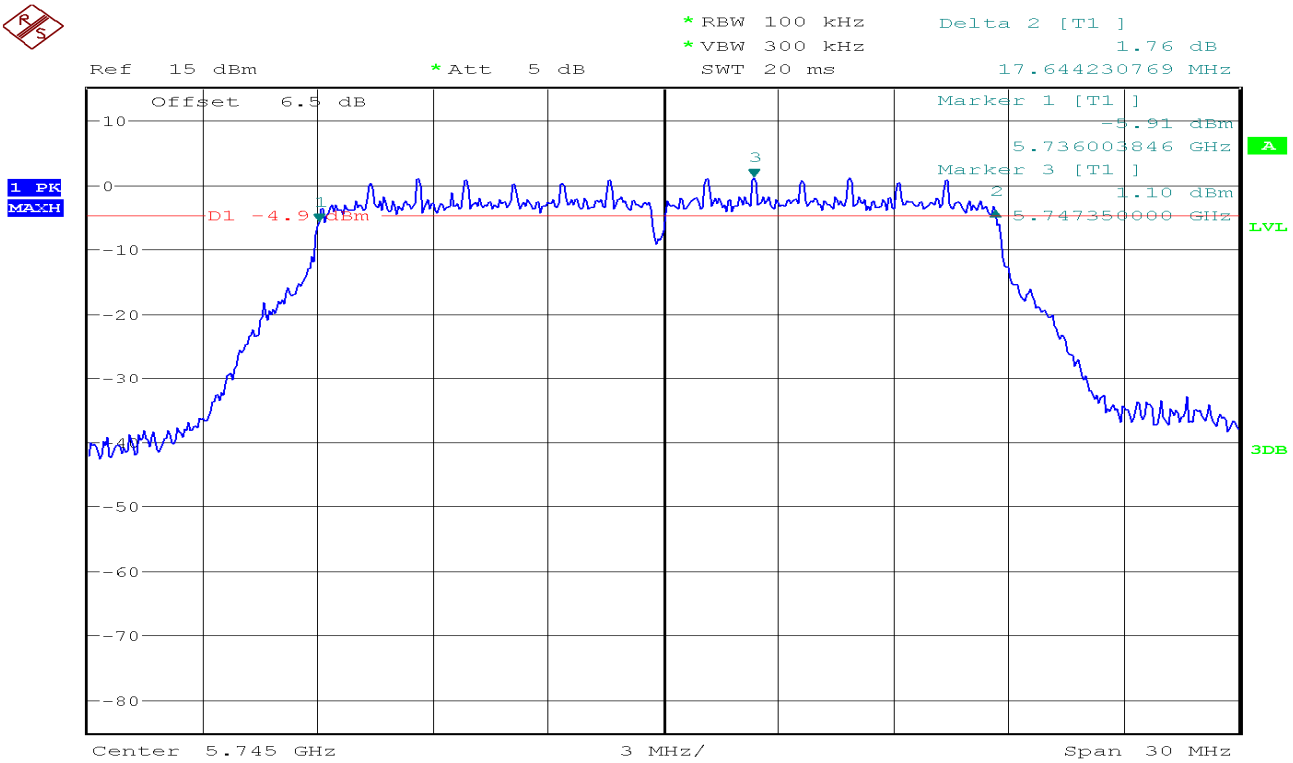


6dB Bandwidth (CH High)

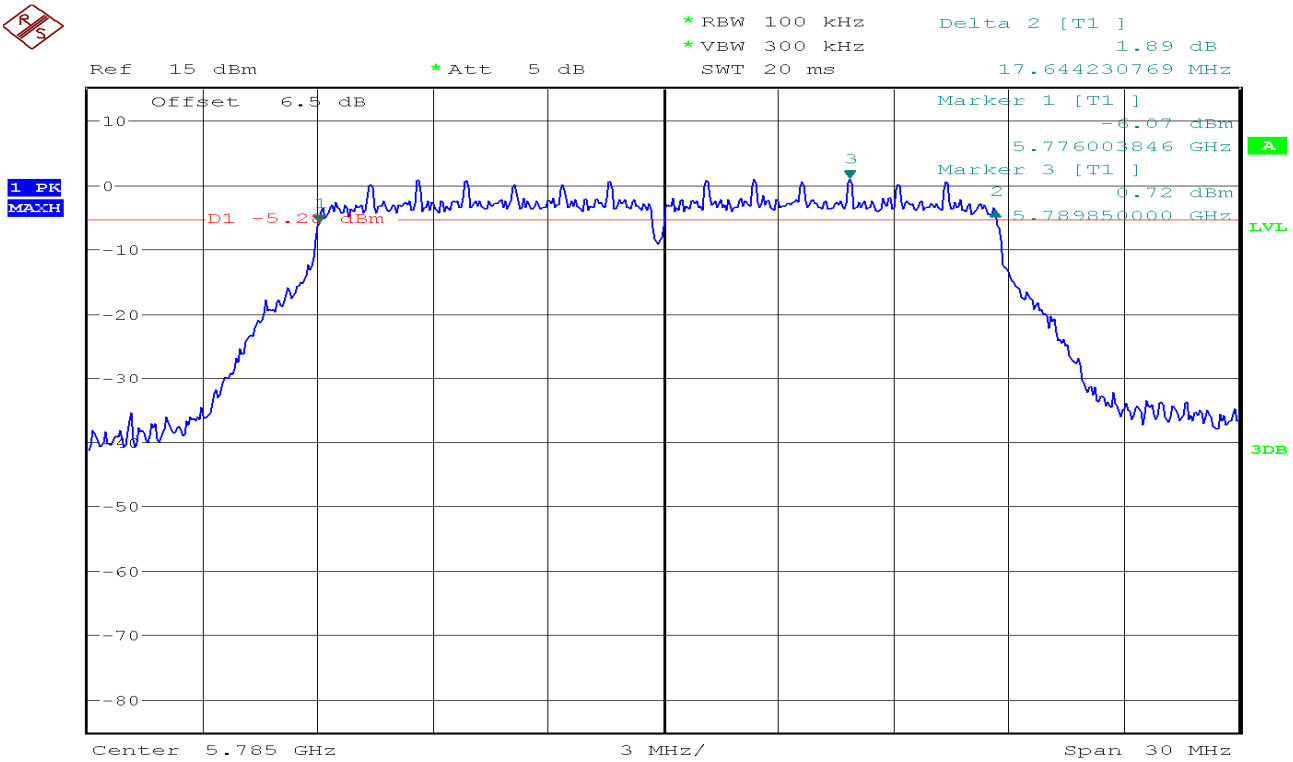


IEEE 802.11ac VHT20 mode/chain 0

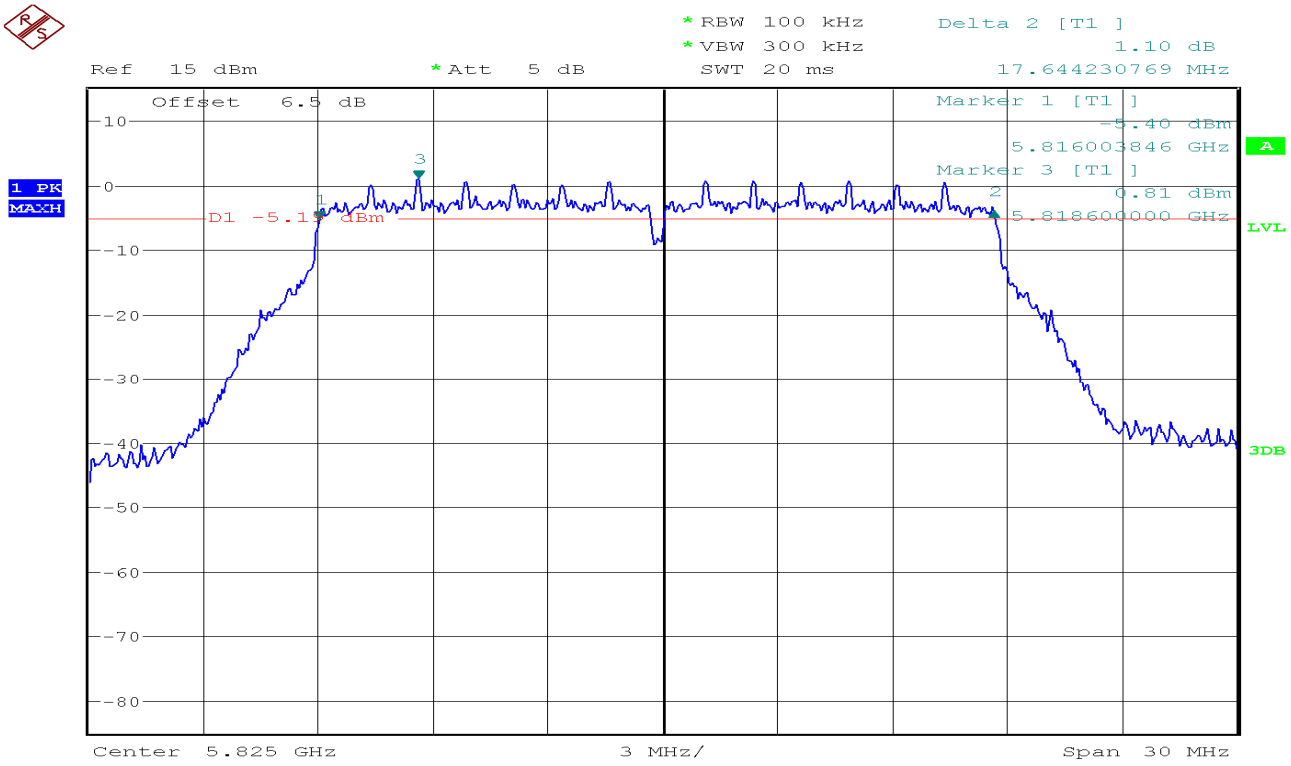
6dB Bandwidth (CH Low)



6dB Bandwidth (CH Mid)

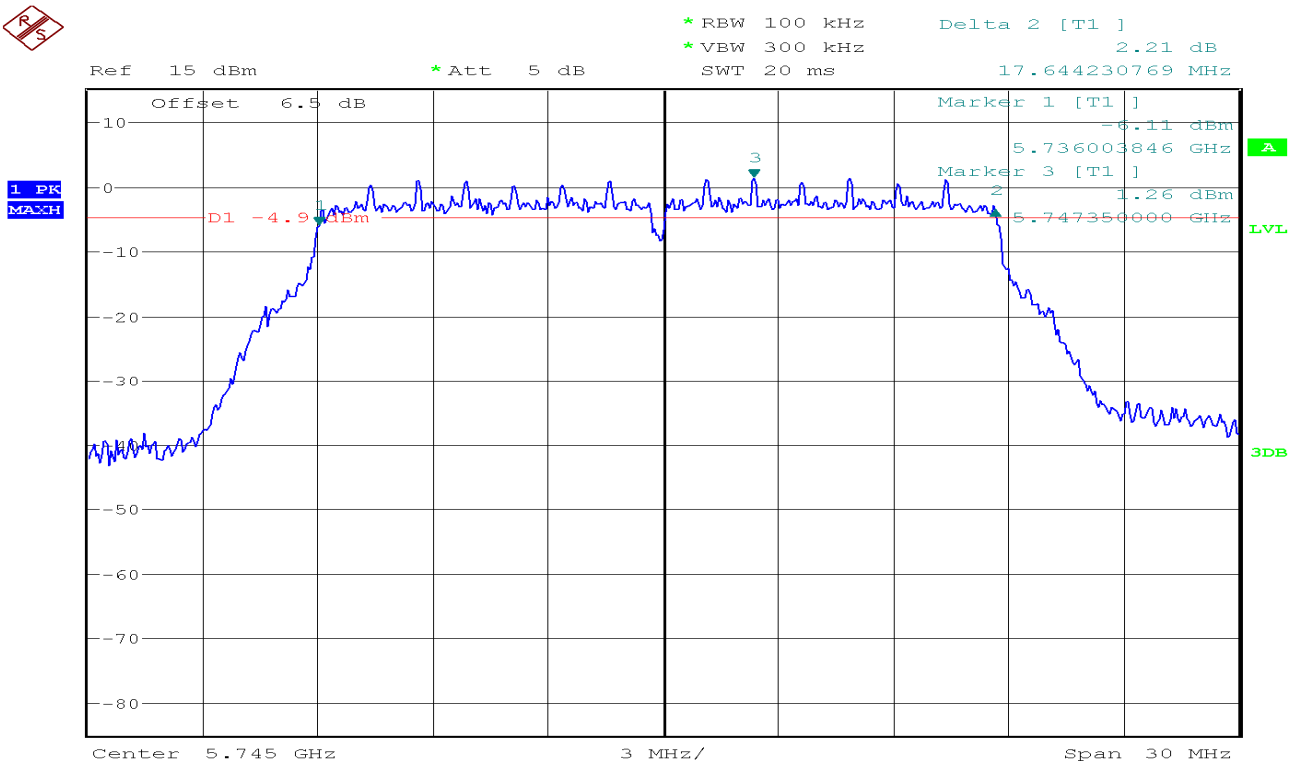


6dB Bandwidth (CH High)

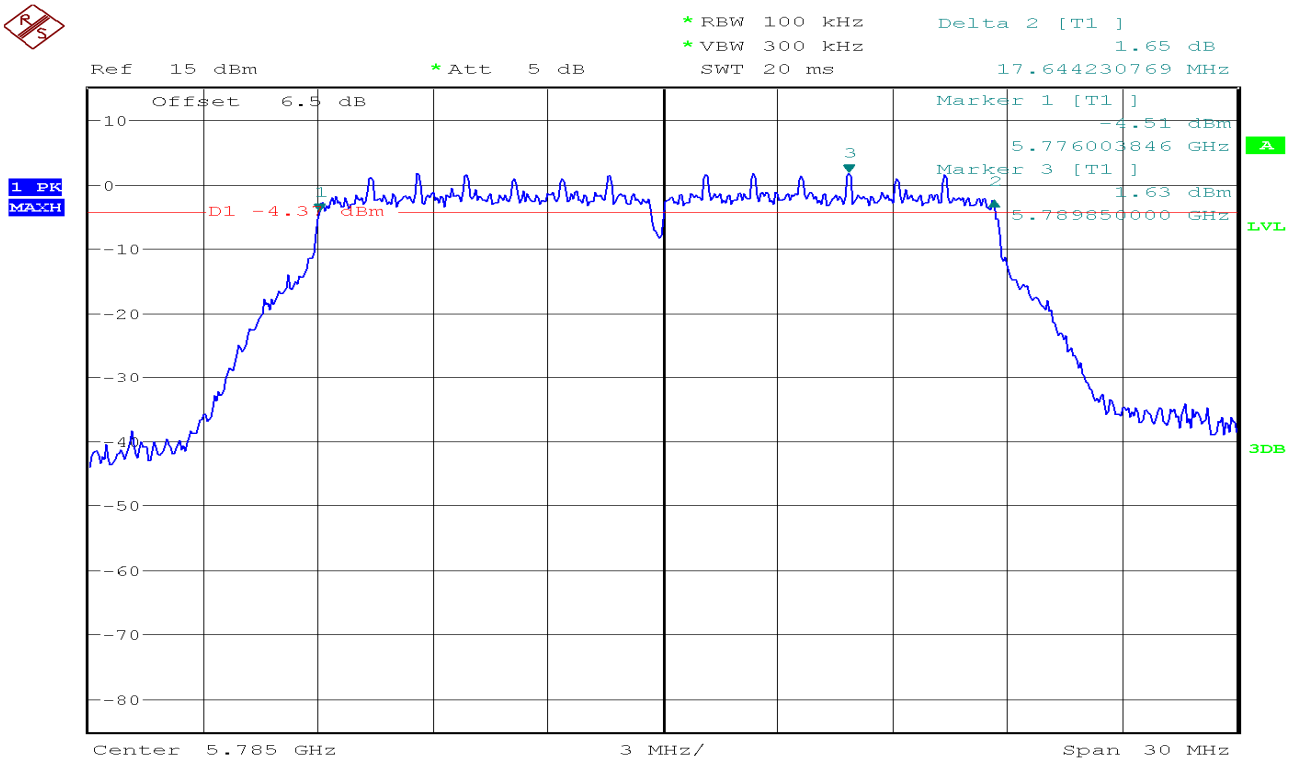


IEEE 802.11ac VHT20 mode/chain 1

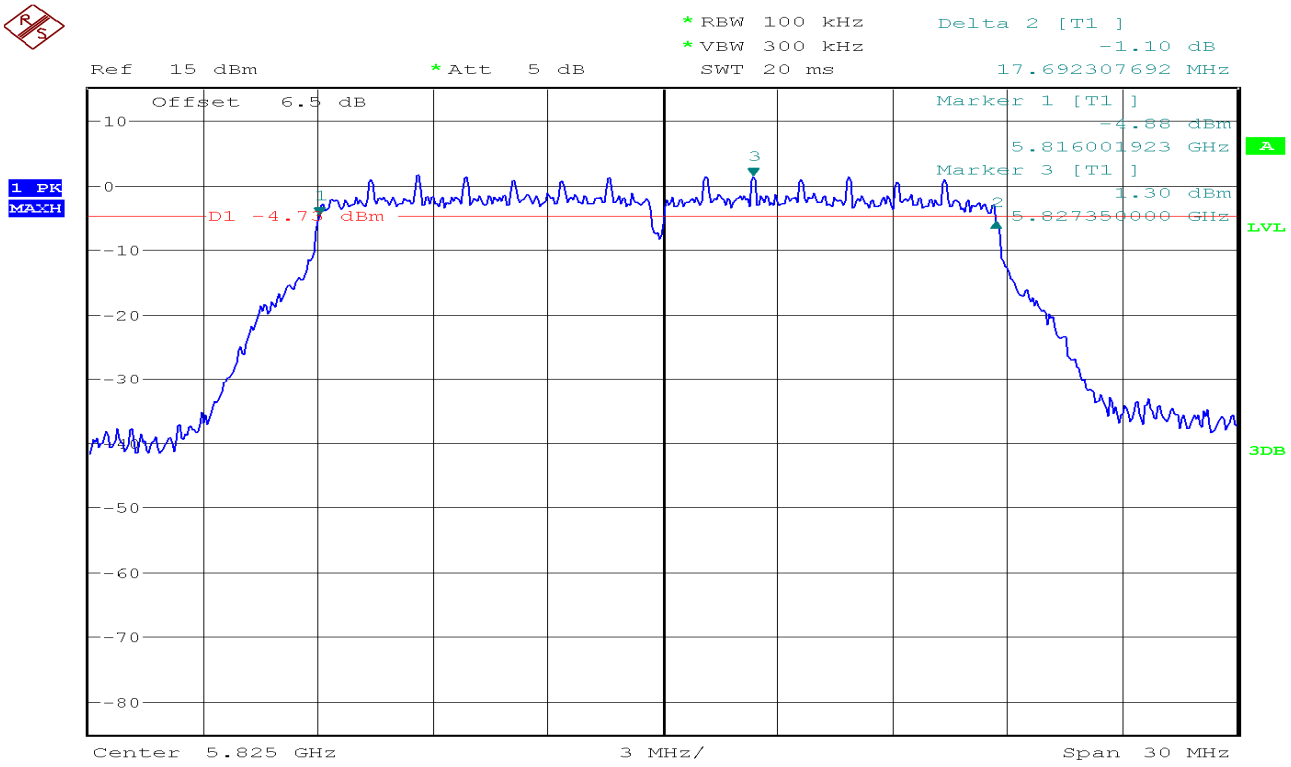
6dB Bandwidth (CH Low)



6dB Bandwidth (CH Mid)

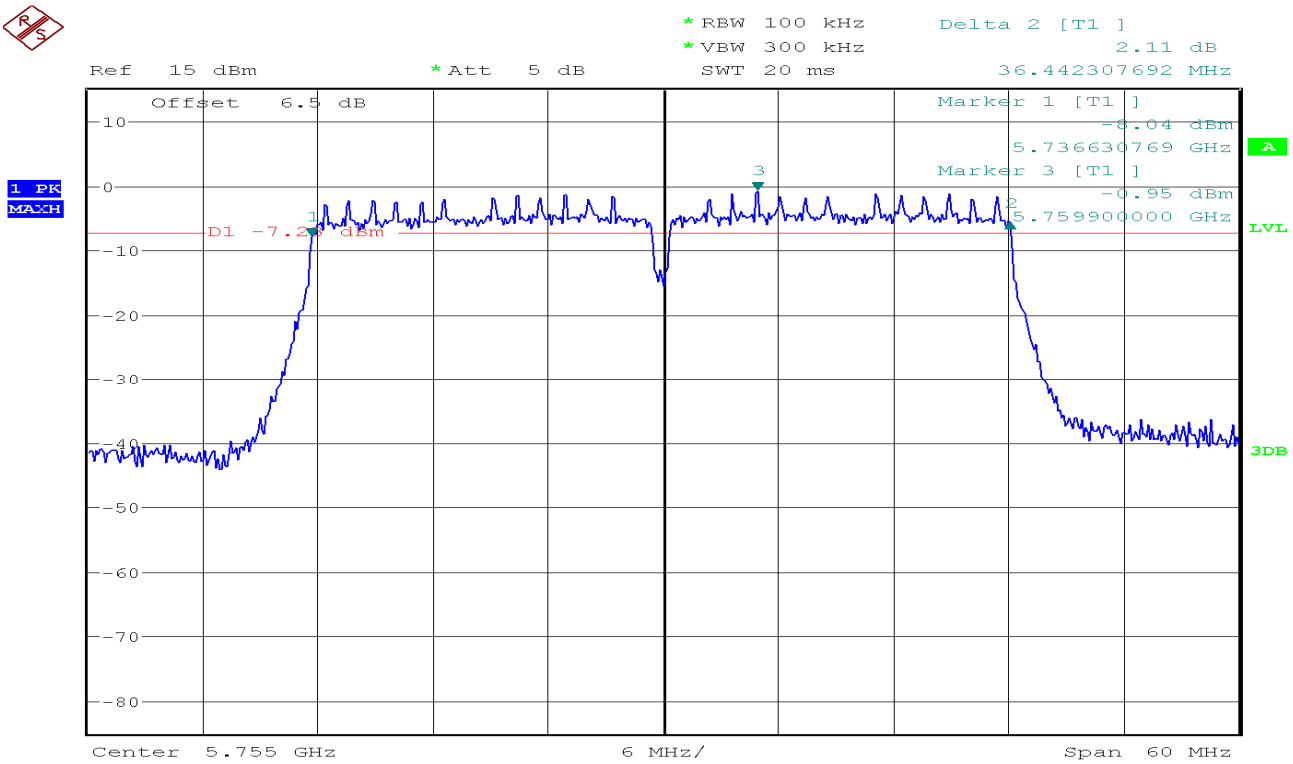


6dB Bandwidth (CH High)

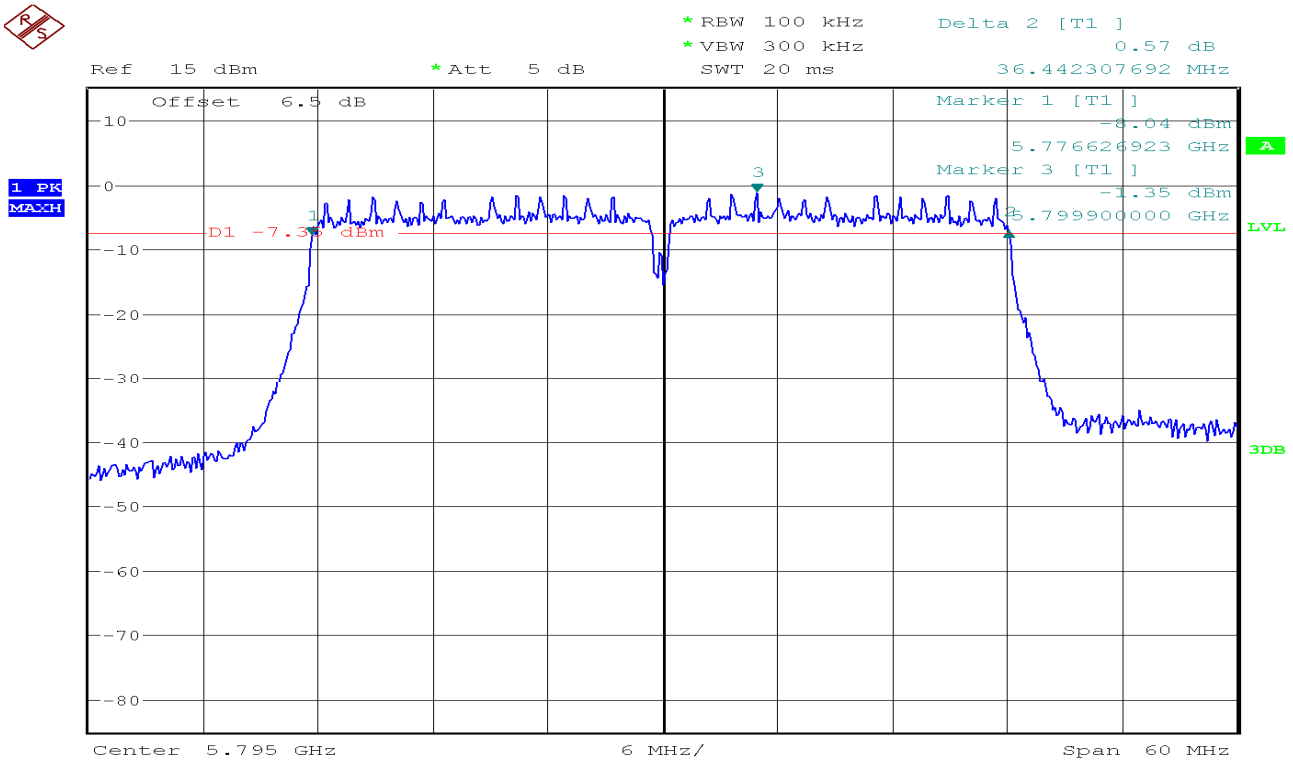


IEEE 802.11ac VHT40 mode/chain 0

6dB Bandwidth (CH Low)

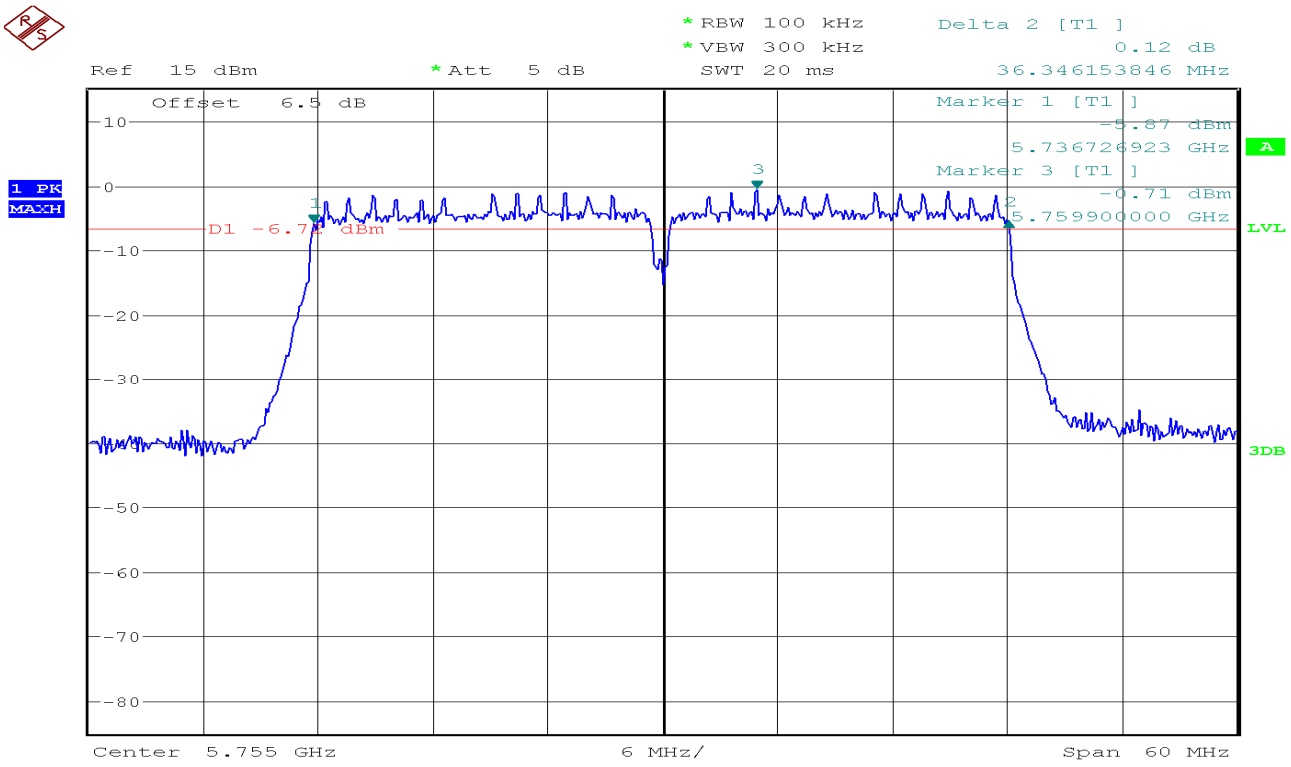


6dB Bandwidth (CH High)

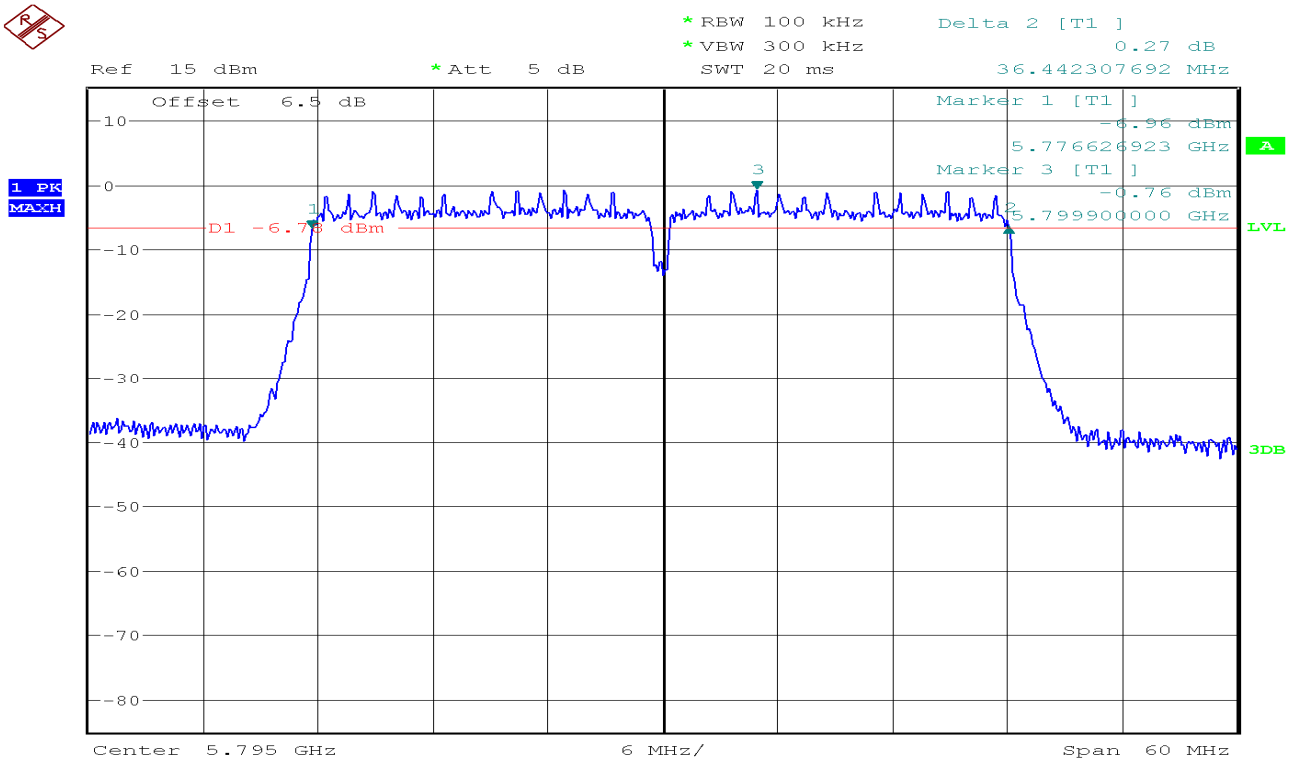


IEEE 802.11ac VHT40 mode/chain 1

6dB Bandwidth (CH Low)

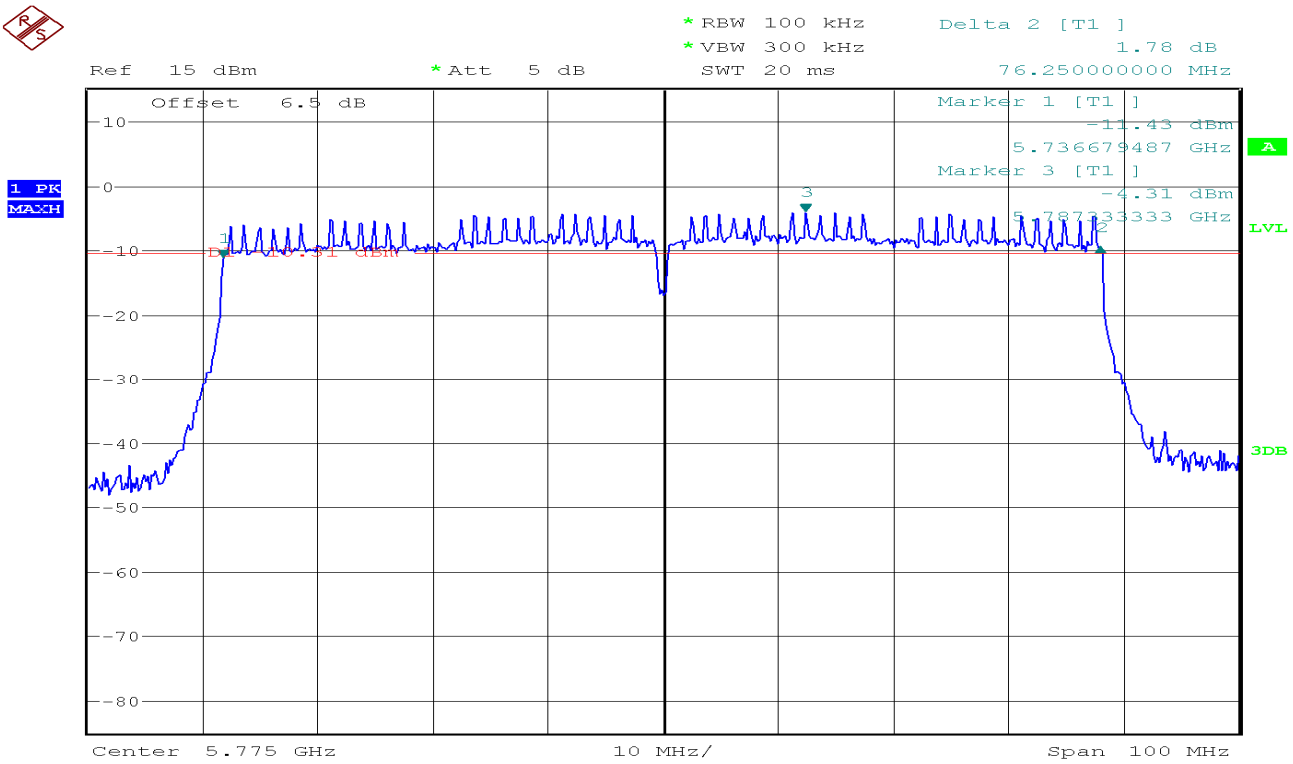


6dB Bandwidth (CH High)



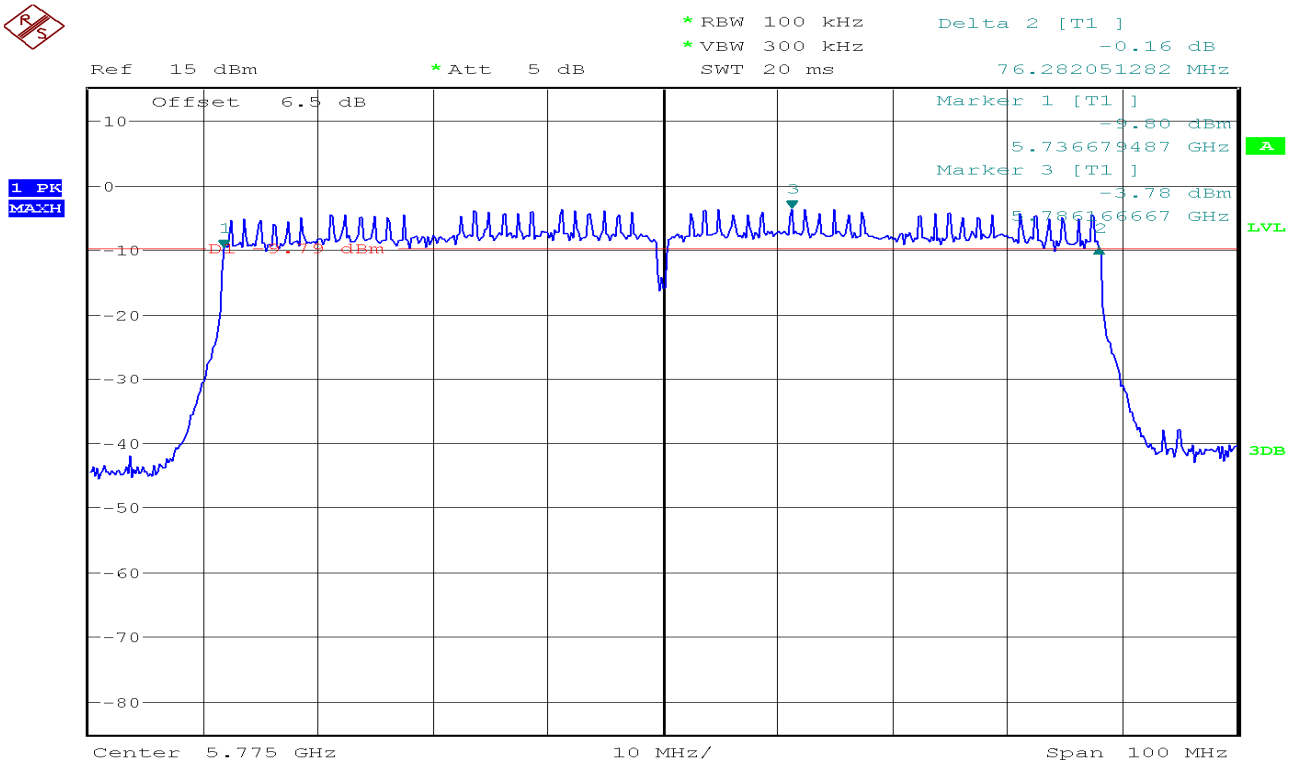
IEEE 802.11ac VHT80 mode/chain 0

6dB Bandwidth (CH Mid)



IEEE 802.11ac VHT80 mode/chain 1

6dB Bandwidth (CH Mid)



7.2 MAXIMUM CONDUCTED OUTPUT POWER

LIMIT

According to §15.407(a),

For the band 5.725–5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W.

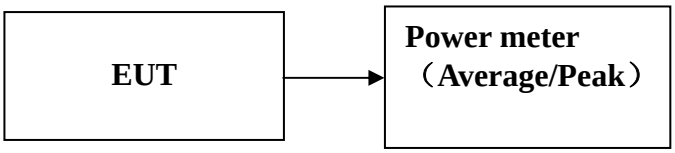
If transmitting antennas of directional gain greater than 6dBi are used, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

EUT with two transmit antennas, each with the same directional gain 3dBi, being driven by two transmitter outputs of equal power. Directional gain is to be computed as follows:

All transmit signals are completely uncorrelated with each other, So directional gain=3dBi＜6dBi.

The peak power shall not exceed the limit as follow:

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 Data

Test mode: IEEE 802.11a mode

5725~5850MHz

Channel	Frequency (MHz)	Average Conducted Power(dBm)		Limit (dBm)
		Chain 0	Chain 1	
Low	5745	12.89	13.11	30
Mid	5785	13.05	13.20	30
High	5825	13.07	13.00	30

Test mode: IEEE 802.11n HT20 mode
5725~5850MHz

Channel	Frequency (MHz)	Average Conducted Power(dBm)			Limit (dBm)
		Chain 0	Chain 1	Total Maximum Conducted Output Power	
Low	5745	12.84	13.17	16.02	30
Mid	5785	12.80	13.16	15.99	30
High	5825	12.88	12.92	15.91	30

Test mode: IEEE 802.11n HT40 mode
5725~5850MHz

Channel	Frequency (MHz)	Average Conducted Power(dBm)			Limit (dBm)
		Chain 0	Chain 1	Total Maximum Conducted Output Power	
Low	5755	13.50	13.78	16.65	30
High	5795	13.45	13.73	16.60	30

Test mode: IEEE 802.11ac VHT20 mode

5725~5850MHz

Channel	Frequency (MHz)	Average Conducted Power(dBm)		Limit (dBm)
		Chain 0	Chain 1	
Low	5745	12.70	13.21	30
Mid	5785	12.70	13.12	30
High	5825	12.72	12.62	30

Test mode: IEEE 802.11ac VHT40 mode

5725~5850MHz

Channel	Frequency (MHz)	Average Conducted Power(dBm)		Limit (dBm)
		Chain 0	Chain 1	
Low	5755	13.51	13.77	30
High	5795	13.50	13.72	30

Test mode: IEEE 802.11ac VHT80 mode

5725~5850MHz

Channel	Frequency (MHz)	Average Conducted Power(dBm)		Limit (dBm)
		Chain 0	Chain 1	
Mid	5775	12.37	12.92	30

Note:Duty factor has been offseted with cableloss

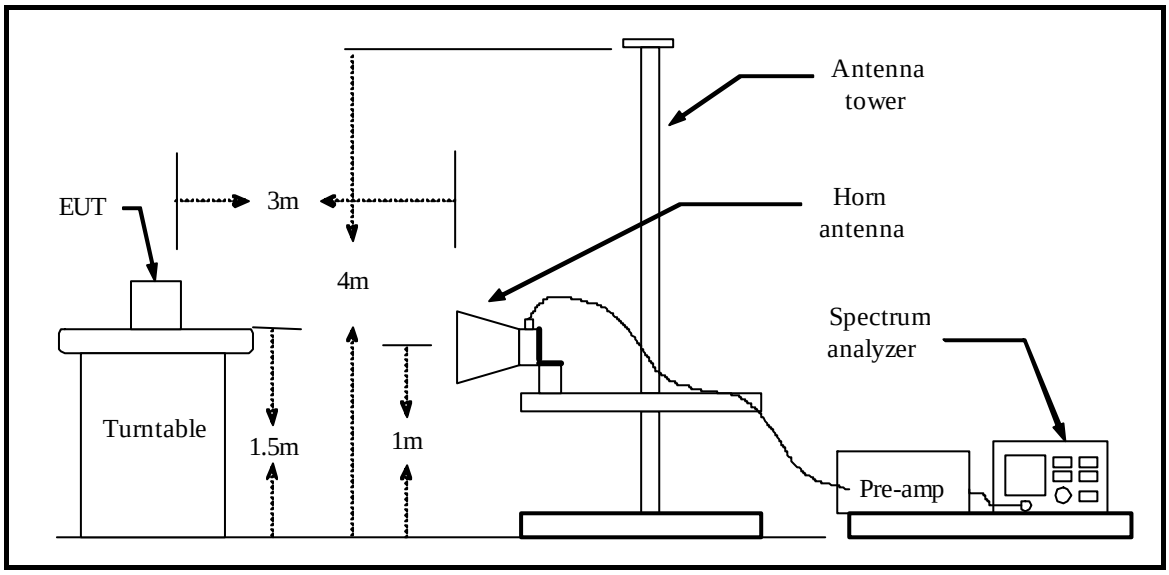
Remark: Total Output Power (dBm) = 10*LOG(10^(Chain 0 Output Power / 10)+10^(Chain 1 Output Power /10))

7.3 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 / VBW=10Hz / Sweep=AUTO
5. Repeat the procedures until all the PEAK and AVERAGE versus POLARIZATION are measured.

TEST RESULTS

Refer to attach spectrum analyzer data chart.

Operation Mode:	Tx / IEEE 802.11a mode CH/ Low	**Test Date:**	2016-5-7
Temperature:	25°C	**Tested by:**	Lily.Wang
Humidity:	55% RH	**Polarity:**	Ver. / Hor.

Vertical

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	5703.173	53.14	-2.04	51.10	106.09	-54.99	100	116	peak
2	5722.212	62.79	-2.02	60.77	115.84	-55.07	100	26	peak
3	N/A								

Horizontal

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	5661.635	47.99	-2.10	45.89	76.81	-30.92	100	59	peak
2	5672.885	48.06	-2.08	45.98	85.13	-39.15	100	59	peak
3	5724.808	67.15	-2.01	65.14	121.76	-56.62	100	59	peak
4	N/A								

Operation Mode:	Tx / IEEE 802.11a mode/ CH High	**Test Date:**	2016-5-7
Temperature:	25°C	**Tested by:**	Lily.Wang
Humidity:	55% RH	**Polarity:**	Ver. / Hor.

Vertical

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	5856.346	53.94	-1.85	52.09	110.42	-58.33	100	129	peak
2	5864.135	48.25	-1.84	46.41	108.24	-61.83	100	60	peak
3	N/A								

Horizontal

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	5852.019	52.36	-1.85	50.51	117.60	-67.09	100	61	peak
2	5855.481	51.75	-1.85	49.90	110.67	-60.77	100	59	peak
3	N/A								

Operation Mode:	Tx / IEEE 802.11n HT20 mode/ CH Low	**Test Date:**	2016-5-7
Temperature:	25°C	**Tested by:**	Lily.Wang
Humidity:	55% RH	**Polarity:**	Ver. / Hor.

Vertical

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	5699.712	53.83	-2.05	51.78	104.99	-53.21	100	60	peak
2	5723.077	72.13	-2.02	70.11	117.82	-47.71	100	128	peak
3	N/A								

Horizontal

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	5696.250	54.45	-2.05	52.40	102.42	-50.02	100	127	peak
2	5721.346	68.55	-2.02	66.53	113.87	-47.34	100	296	peak
3	N/A								

Operation Mode:	Tx / IEEE 802.11n HT20 mode/ CH High	**Test Date:**	2016-5-7
Temperature:	25°C	**Tested by:**	Lily.Wang
Humidity:	55% RH	**Polarity:**	Ver. / Hor.

Vertical

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	5851.154	56.20	-1.85	54.35	119.57	-65.22	100	143	peak
2	5857.212	52.36	-1.84	50.52	110.18	-59.66	100	128	peak
3	N/A								

Horizontal

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	5859.808	55.87	-1.84	54.03	109.45	-55.42	100	127	peak
2	5866.731	54.50	-1.83	52.67	107.52	-54.85	100	127	peak
3	N/A								

Operation Mode:	Tx / IEEE 802.11n HT40 mode/ CH Low	**Test Date:**	2016-5-7
Temperature:	25°C	**Tested by:**	Lily.Wang
Humidity:	55% RH	**Polarity:**	Ver. / Hor.

Vertical

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	5714.423	72.44	-2.03	70.41	109.24	-38.83	100	127	peak
2	N/A								
3									

Horizontal

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	5691.923	64.39	-2.06	62.33	99.22	-36.89	100	124	peak
2	5718.750	75.21	-2.02	73.19	110.45	-37.26	100	127	peak
3	N/A								
4									

Operation Mode:	Tx / IEEE 802.11n HT40 mode/ CH High	**Test Date:**	2016-5-7
Temperature:	25°C	**Tested by:**	Lily.Wang
Humidity:	55% RH	**Polarity:**	Ver. / Hor.

Vertical

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	5852.885	59.62	-1.85	57.77	115.62	-57.85	100	126	peak
2	5869.327	55.65	-1.83	53.82	106.79	-52.97	100	126	peak
3	N/A								

Horizontal

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	5855.481	59.67	-1.85	57.82	110.67	-52.85	100	127	peak
2	5863.269	55.31	-1.84	53.47	108.48	-55.01	100	129	peak
3	N/A								

Operation Mode:	Tx / IEEE 802.11ac VHT20 mode/ CH Low	**Test Date:**	2016-5-7
Temperature:	25°C	**Tested by:**	Lily.Wang
Humidity:	55% RH	**Polarity:**	Ver. / Hor.

Vertical

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	5701.442	53.86	-2.05	51.81	105.60	-53.79	100	58	peak
2	5722.212	66.93	-2.02	64.91	115.84	-50.93	100	3	peak
3	N/A								

Horizontal

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	5693.654	54.21	-2.06	52.15	100.50	-48.35	100	58	peak
2	5723.077	72.65	-2.02	70.63	117.82	-47.19	100	59	peak
3	N/A								

Operation Mode:	Tx / IEEE 802.11ac VHT20 mode/ CH High	**Test Date:**	2016-5-7
Temperature:	25°C	**Tested by:**	Lily.Wang
Humidity:	55% RH	**Polarity:**	Ver. / Hor.

Vertical

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	5848.558	54.92	-1.86	53.06	135.00	-81.94	100	128	peak
2	5857.212	50.44	-1.84	48.60	110.18	-61.58	100	127	peak
3	N/A								

Horizontal

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	5857.212	52.59	-1.84	50.75	110.18	-59.43	100	128	peak
2	5889.231	48.29	-1.80	46.49	94.67	-48.18	100	59	peak
3	N/A								

Operation Mode:	Tx / IEEE 802.11ac VHT40 mode/ CH Low	**Test Date:**	2016-5-7
Temperature:	25°C	**Tested by:**	Lily.Wang
Humidity:	55% RH	**Polarity:**	Ver. / Hor.

Vertical

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	5713.558	69.48	-2.03	67.45	109.00	-41.55	100	59	peak
2	5718.750	71.59	-2.02	69.57	110.45	-40.88	100	285	peak
3	N/A								

Horizontal

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	5710.962	69.83	-2.03	67.80	108.27	-40.47	100	32	peak
2	5717.019	71.17	-2.02	69.15	109.97	-40.82	100	58	peak
3	5722.212	73.56	-2.02	71.54	115.84	-44.30	100	119	peak
4	N/A								

Operation Mode:	Tx / IEEE 802.11ac VHT40 mode/ CH High	**Test Date:**	2016-5-7
Temperature:	25°C	**Tested by:**	Lily.Wang
Humidity:	55% RH	**Polarity:**	Ver. / Hor.

Vertical

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	5858.942	54.77	-1.84	52.93	109.70	-56.77	100	95	peak
2	5868.462	55.10	-1.83	53.27	107.03	-53.76	100	340	peak
3	N/A								

Horizontal

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	5866.731	54.24	-1.83	52.41	107.52	-55.11	100	238	peak
2	5882.308	50.82	-1.81	49.01	99.79	-50.78	100	87	peak
3	N/A								

Operation Mode:	Tx / IEEE 802.11ac VHT80 mode/ CH Mid	**Test Date:**	2016-5-7
Temperature:	25°C	**Tested by:**	Lily.Wang
Humidity:	55% RH	**Polarity:**	Ver. / Hor.

Vertical

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	5680.673	66.12	-2.07	64.05	90.90	-26.85	100	58	peak
2	5717.885	67.86	-2.02	65.84	110.21	-44.37	100	58	peak
3	5851.154	64.60	-1.85	62.75	119.57	-56.82	100	142	peak
4	N/A								

Horizontal

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	5704.904	67.66	-2.04	65.62	106.57	-40.95	100	327	peak
2	5713.558	68.92	-2.03	66.89	109.00	-42.11	100	60	peak
3	N/A								

7.4 POWER SPECTRAL DENSITY

LIMIT

According to §15.407(a),

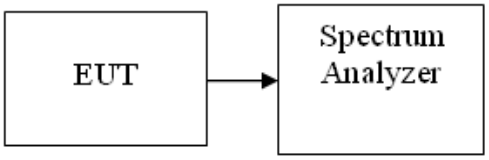
For the band 5.725–5.85 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band.

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

EUT with two transmit antennas, each with the same directional gain 3dBi, being driven by two transmitter outputs of equal power. Directional gain is to be computed as follows:

All transmit signals are completely uncorrelated with each other, So directional gain=3dBi＜6dBi.

Test Configuration



TEST PROCEDURE

1. The testing follows Method SA-2 of FCC KDB 789033 D01 General UNII Test Procedures v01r04.
2. Measure the duty cycle, Set span to encompass the entire emission bandwidth (EBW) of the signal. Set RBW = 300 kHz. Set VBW ≥ 1 MHz. Number of points in sweep ≥ 2 Span / RBW. Sweep time = auto. Detector = RMS, Trace average at least 100 traces in power averaging mode. Add 10 log(500kHz/RBW) to the test result. Add 10 log(1/x), where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times. For example, add 10 log(1/0.25) = 6 dB if the duty cycle is 25 percent.
3. The RF output of EUT was connected to the spectrum analyzer by a low loss cable.
4. Each plot has already offset with cable loss, and attenuator loss. Measure the PPSD and record it.
5. For MIMO mode, calculation method follows FCC KDB 662911 D01 Multiple Transmitter Output v02r01.

Method (1): Measure and sum the spectra across the outputs. The total final Power Spectral Density is from a device with 2 transmitter outputs. The spectrum measurements of the individual outputs are all performed with the same span and number of points, the spectrum value in the first spectral bin of output 1 is summed with that in the first spectral bin of output 2 to obtain the value for the first frequency bin of the summed spectrum.

TEST RESULTS

No non-compliance noted

Test Data

Test mode: IEEE 802.11a mode

5725~5850MHz

Channel	Frequency (MHz)	Average PSD (dBm/300kHz)		10log (500kHz/RBW) Factor(dB)	Average PSD (dBm/500kHz)		Average PSD Limit (dBm/500kHz)	Result
		Chain 0	Chain 1		Chain 0	Chain 1		
Low	5745	-1.85	-1.43	2.22	0.37	0.79	30.00	PASS
Mid	5785	-2.40	-1.36	2.22	-0.18	0.86	30.00	PASS
High	5825	-2.30	-1.67	2.22	-0.08	0.55	30.00	PASS

Test mode: IEEE 802.11n HT20 mode

5725~5850MHz

Channel	Frequency (MHz)	Average PSD (dBm/300kHz)		10log (500kHz/ RBW) Factor (dB)	Average PSD (dBm/500kHz)		Total Average PSD (dBm/500kHz)	Average PSD Limit (dBm/ 500kHz)	Result
		Chain 0	Chain 1		Chain 0	Chain 1			
Low	5745	-1.02	-0.55	2.22	1.2	1.67	4.45	30.00	PASS
Mid	5785	-1.29	-0.42	2.22	0.93	1.8	4.40	30.00	PASS
High	5825	-1.50	-0.80	2.22	0.72	1.42	4.09	30.00	PASS

Test mode: IEEE 802.11n HT40 mode

5725~5850MHz

Channel	Frequency (MHz)	Average PSD (dBm/300kHz)		10log (500kHz/ RBW) Factor (dB)	Average PSD (dBm/500kHz)		Total Average PSD (dBm/500kHz)	Average PSD Limit (dBm/ 500kHz)	Result
		Chain 0	Chain 1		Chain 0	Chain 1			
Low	5755	-3.58	-2.88	2.22	-1.36	-0.66	2.01	30.00	PASS
High	5795	-3.96	-3.41	2.22	-1.74	-1.19	1.55	30.00	PASS

Test mode: IEEE 802.11ac VHT20 mode

5725~5850MHz

Channel	Frequency (MHz)	Average PSD (dBm/300kHz)		10log (500kHz/RBW) Factor(dB)	Average PSD (dBm/500kHz)		Average PSD Limit (dBm/500kHz)	Result
		Chain 0	Chain 1		Chain 0	Chain 1		
Low	5745	-1.74	-0.75	2.22	0.48	1.47	30.00	PASS
Mid	5785	-1.77	-0.76	2.22	0.45	1.46	30.00	PASS
High	5825	-1.93	-0.67	2.22	0.29	1.55	30.00	PASS

Test mode: IEEE 802.11ac VHT40 mode

5725~5850MHz

Channel	Frequency (MHz)	Average PSD (dBm/300kHz)		10log (500kHz/RBW) Factor(dB)	Average PSD (dBm/500kHz)		Average PSD Limit (dBm/500kHz)	Result
		Chain 0	Chain 1		Chain 0	Chain 1		
Low	5755	-3.79	-2.97	2.22	-1.57	-0.75	30.00	PASS
High	5795	-4.10	-3.08	2.22	-1.88	-0.86	30.00	PASS

Test mode: IEEE 802.11ac VHT80 mode

5725~5850MHz

Channel	Frequency (MHz)	Average PSD (dBm/300kHz)		10log (500kHz/RBW) Factor(dB)	Average PSD (dBm/500kHz)		Average PSD Limit (dBm/500kHz)	Result
		Chain 0	Chain 1		Chain 0	Chain 1		
Mid	5775	-6.95	-6.40	2.22	-4.73	-4.18	30.00	PASS

Note:Duty factor has been offseted with cableloss

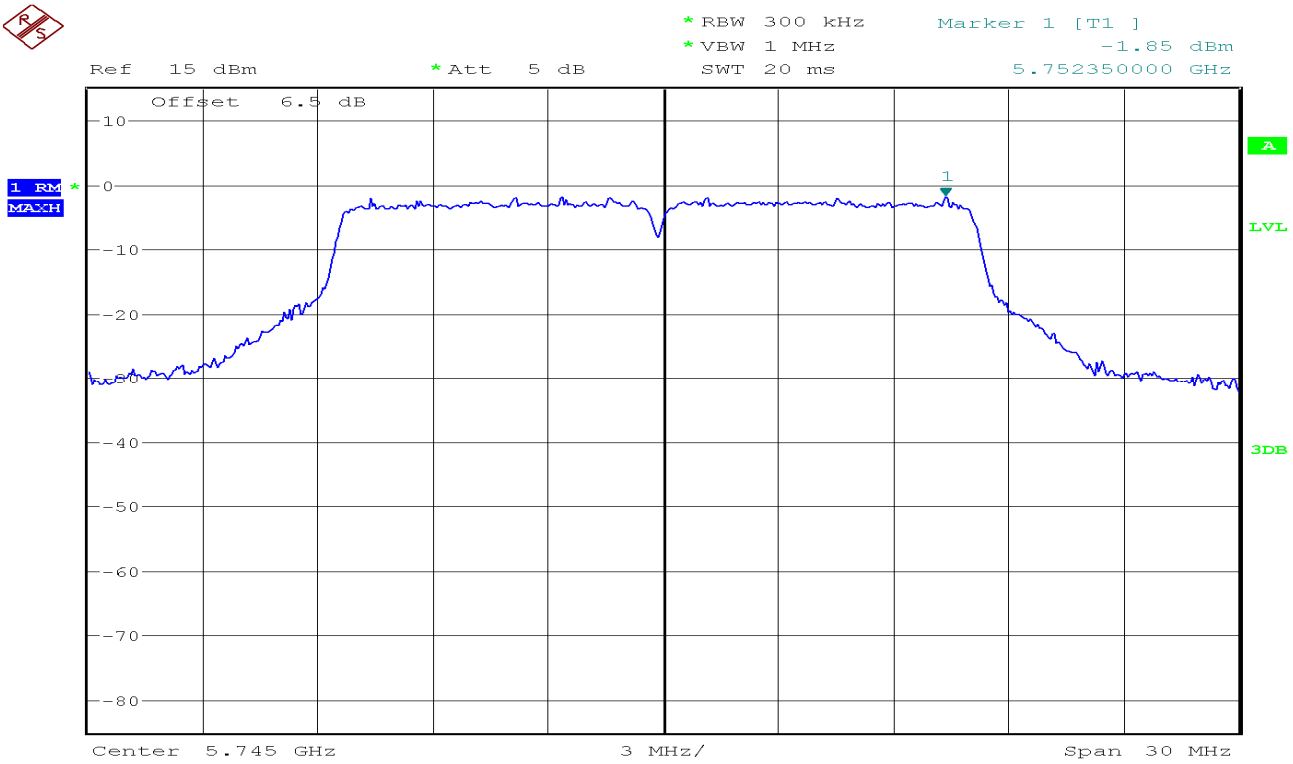
Remark: *Total PPSD (dBm) = 10*LOG(10^(Chain 0 PPSD / 10)+10^(Chain 1 PPSD /10)))*

Test Plot

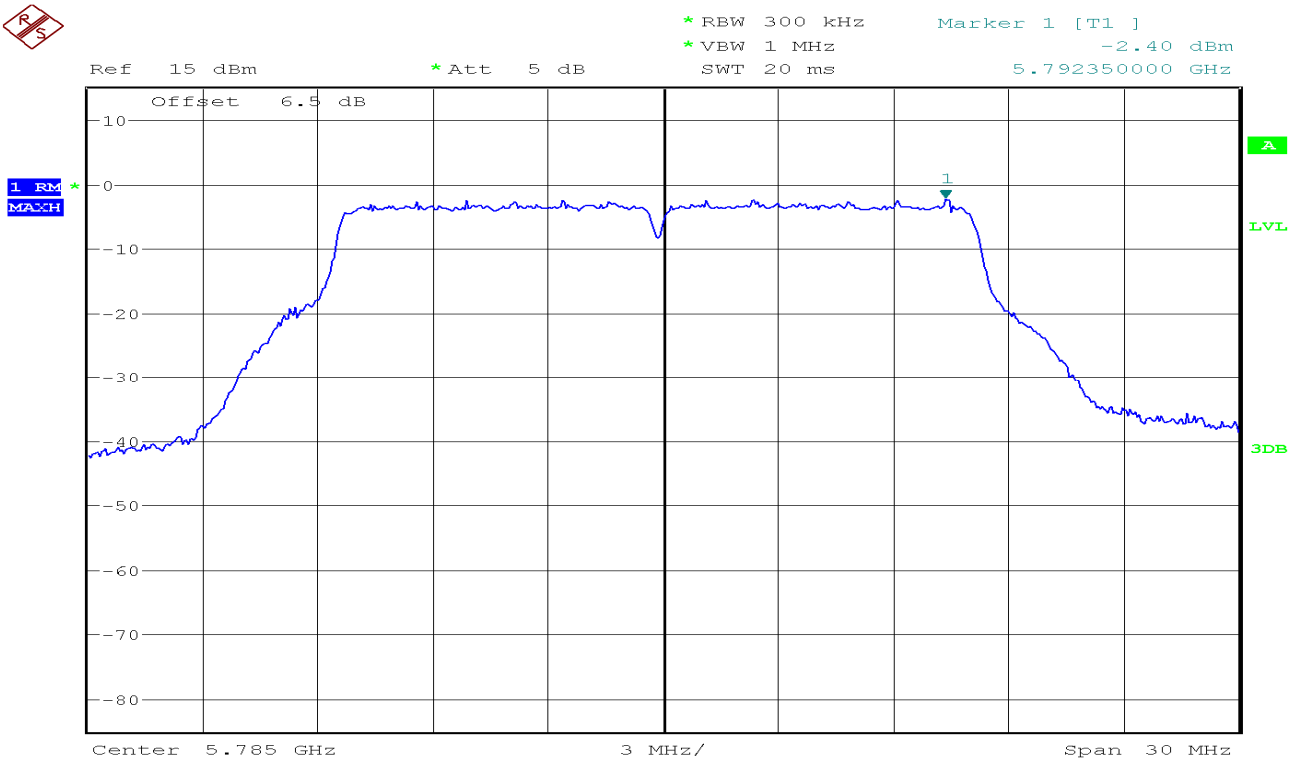
IEEE 802.11a mode/chain 0

5725~5850MHz

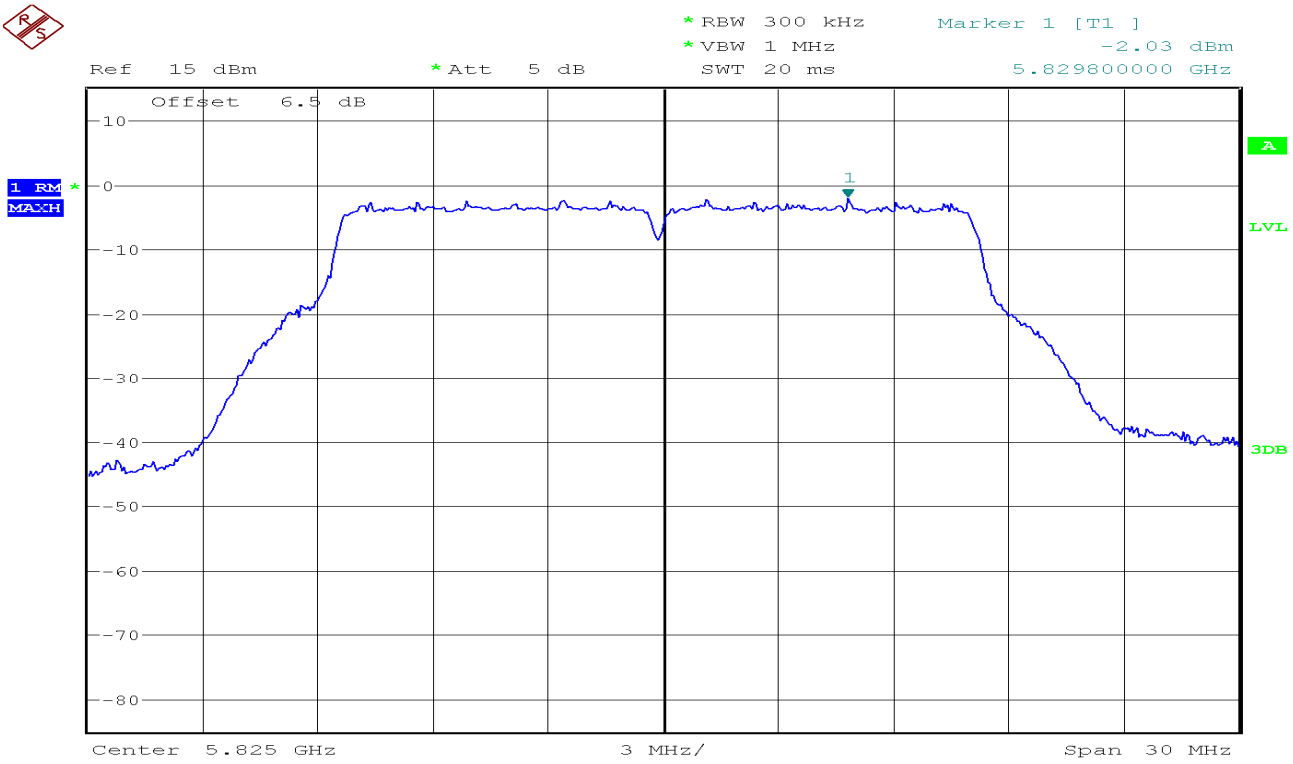
CH Low



CH Mid

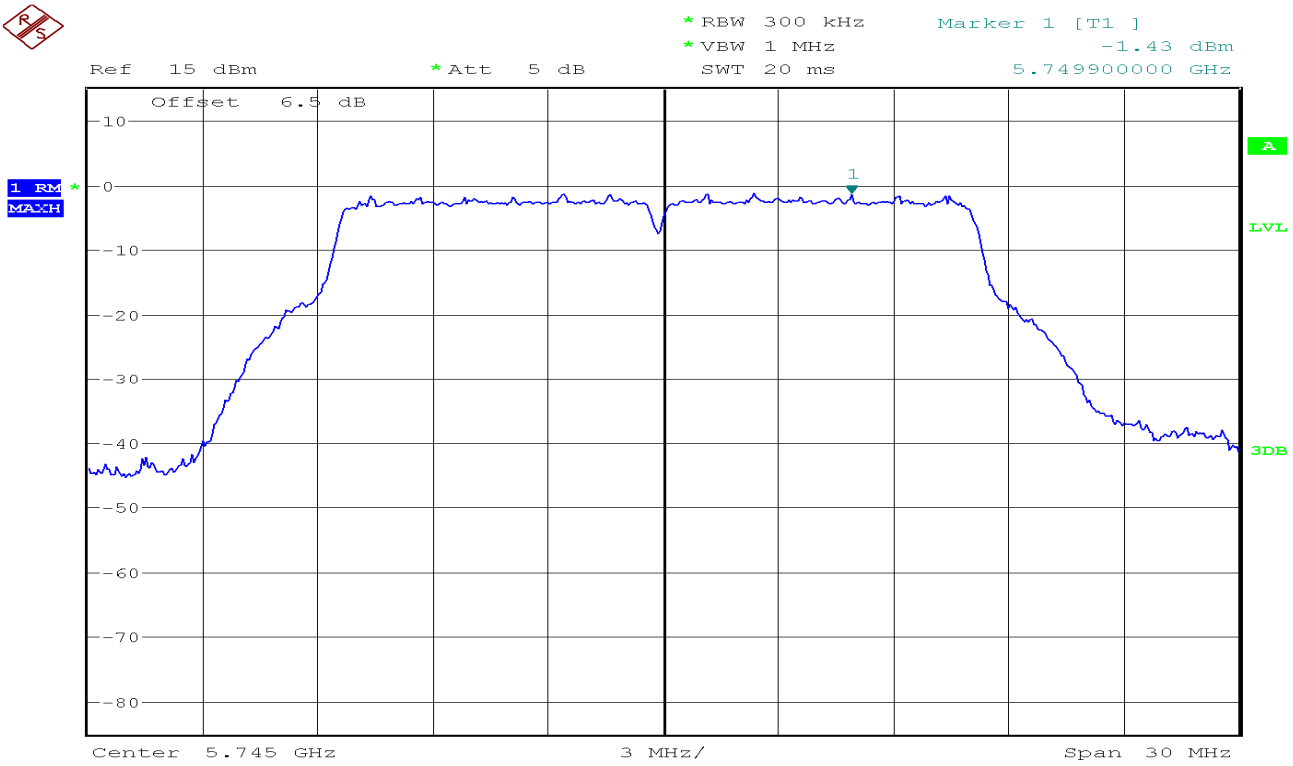


CH High

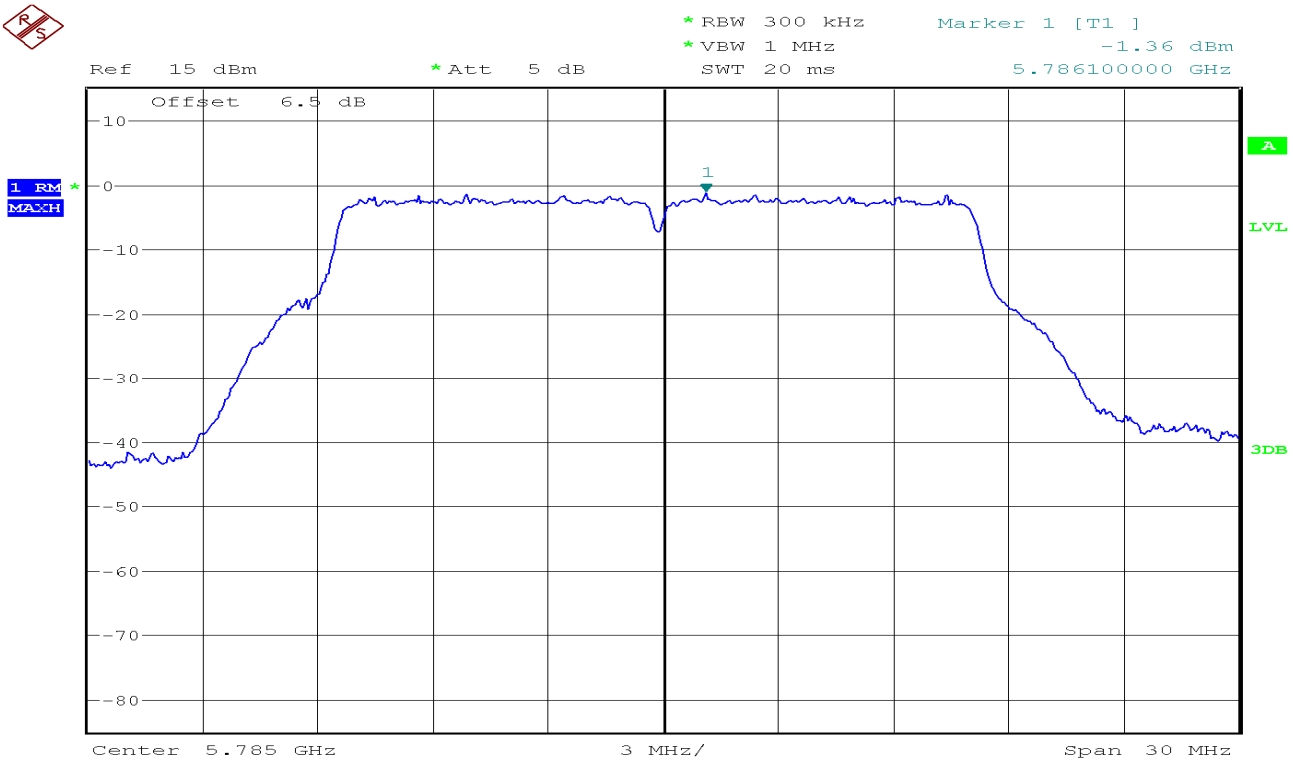


IEEE 802.11a mode/chain 1
5725~5850MHz

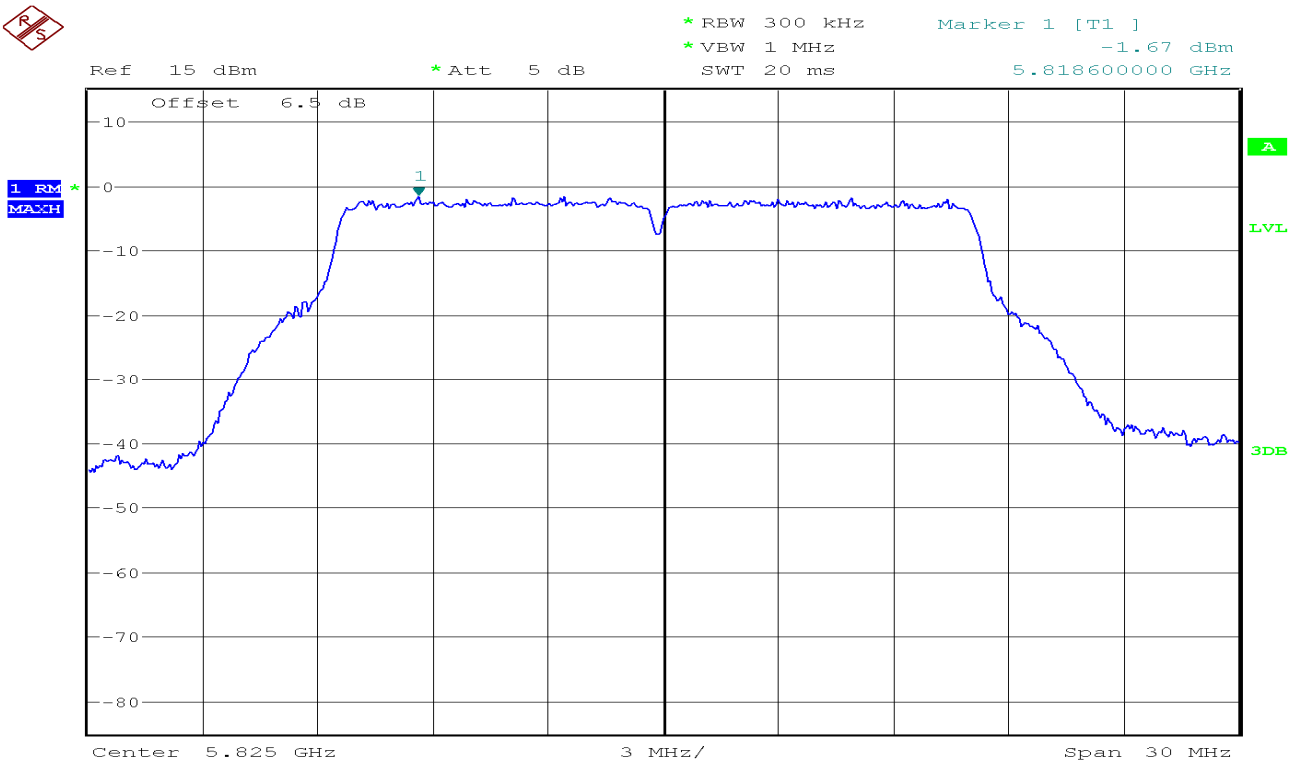
CH Low



CH Mid

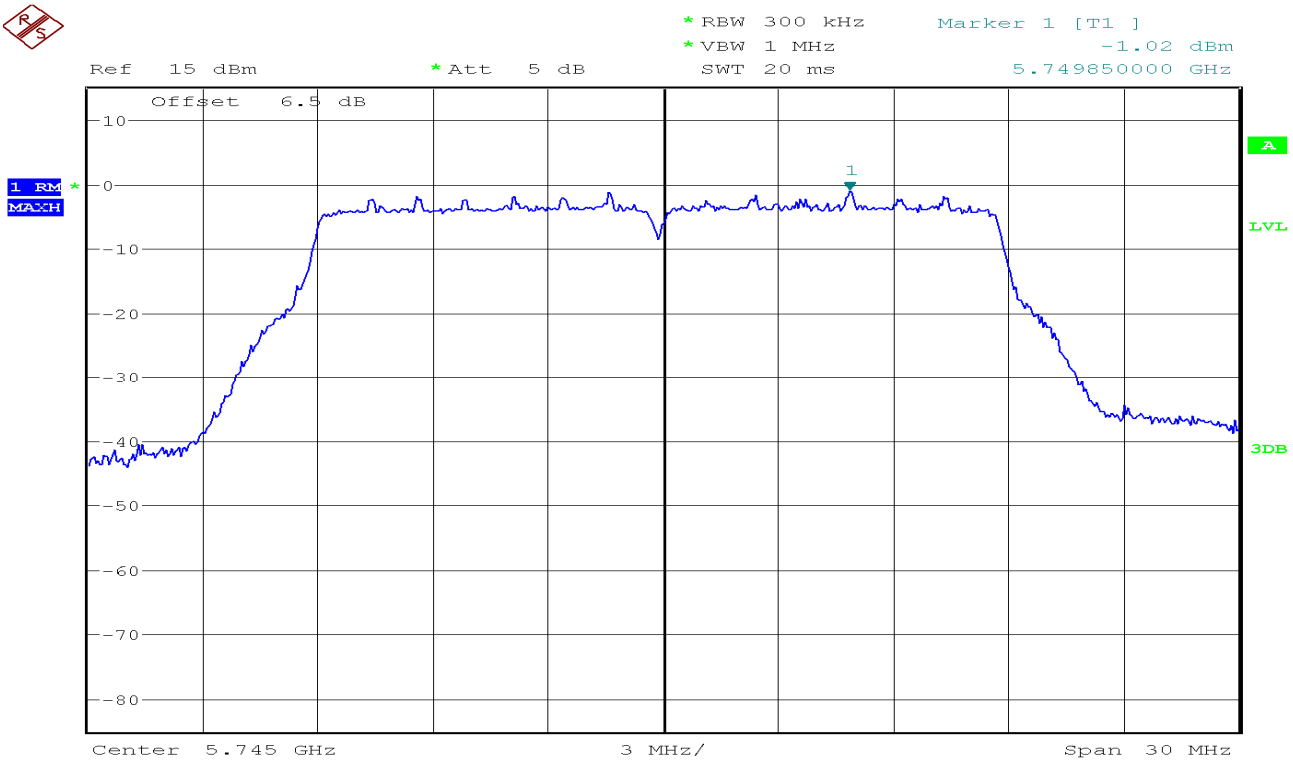


CH High

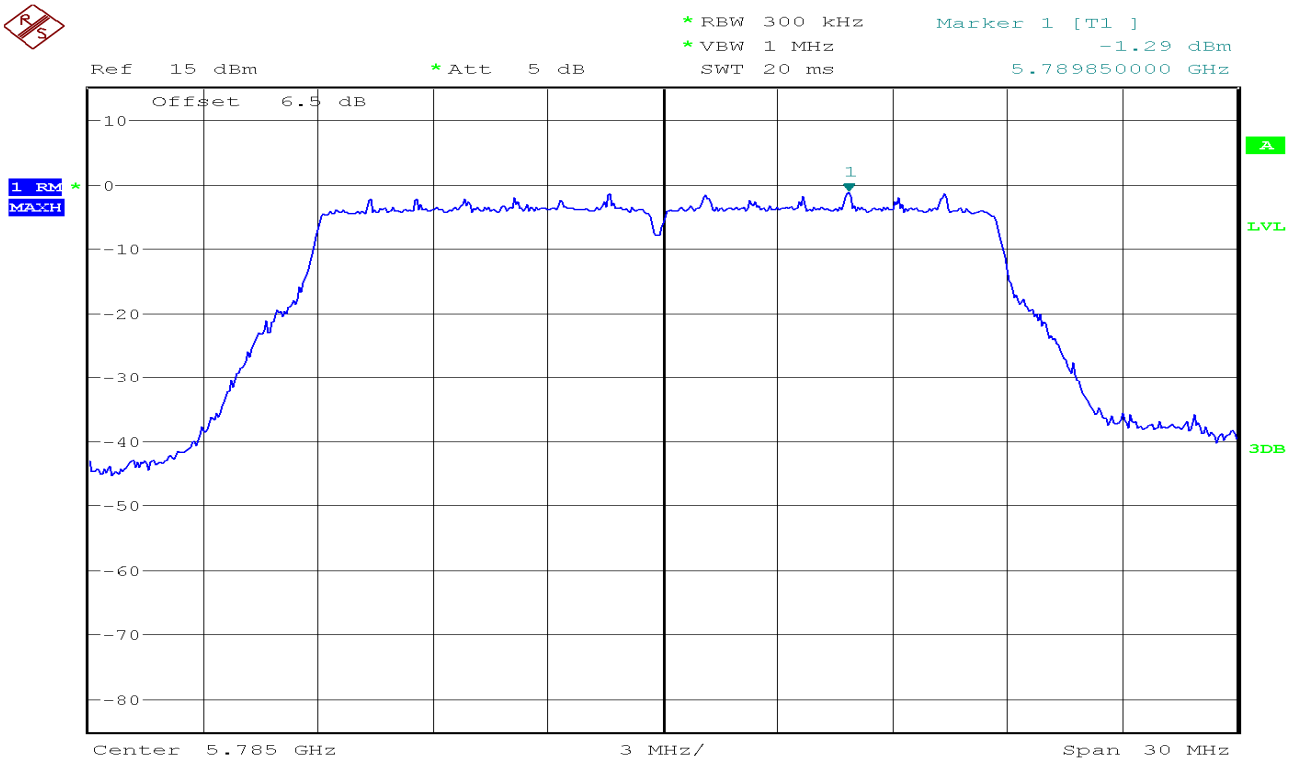


IEEE 802.11n HT20 mode/chain 0
5725~5850MHz

CH Low



CH Mid



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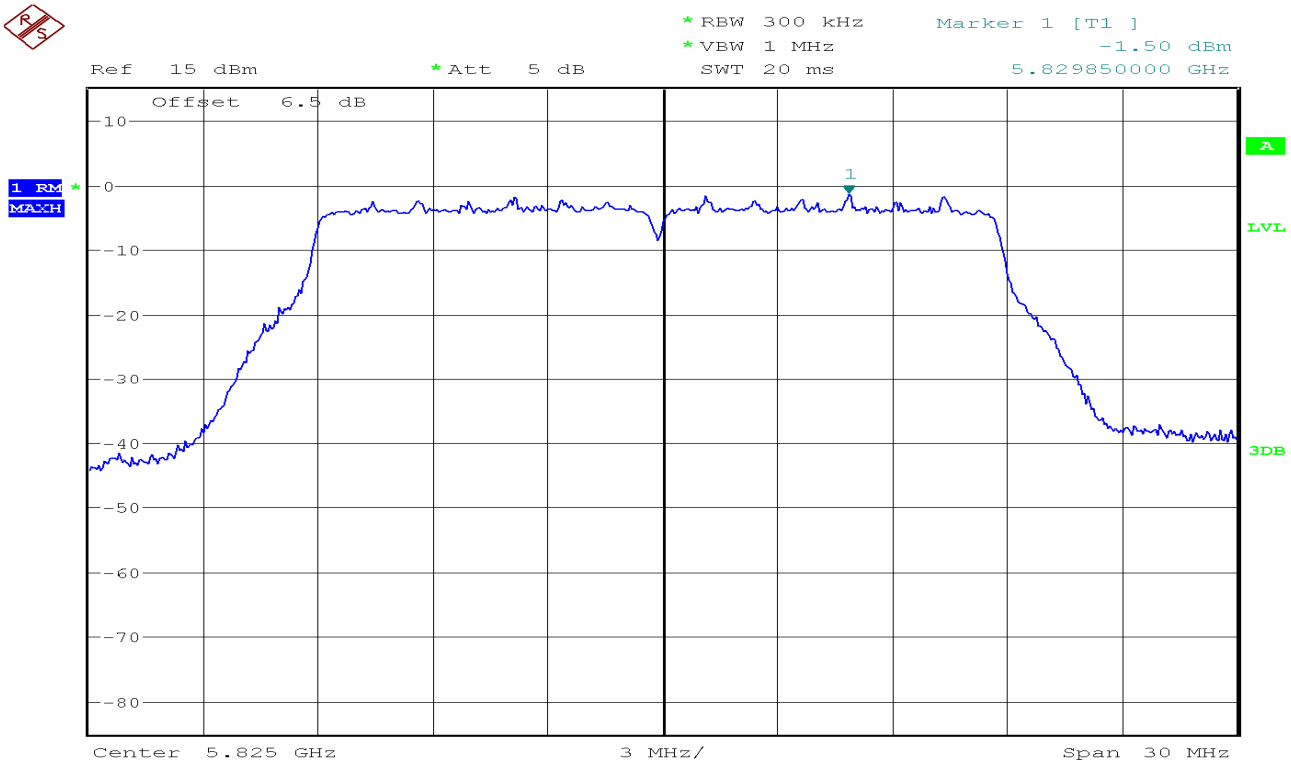
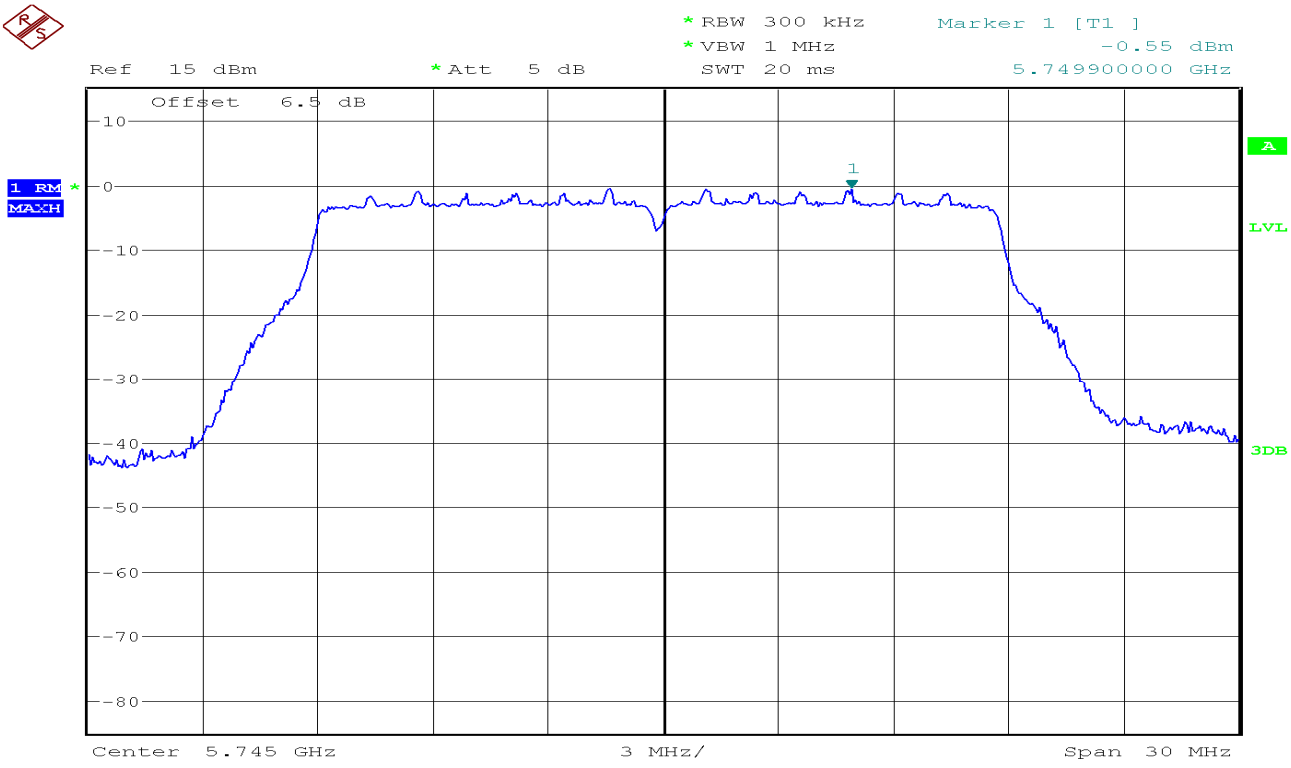


IEEE 802.11n HT20 mode/chain 1
5725~5850MHz

CH Low



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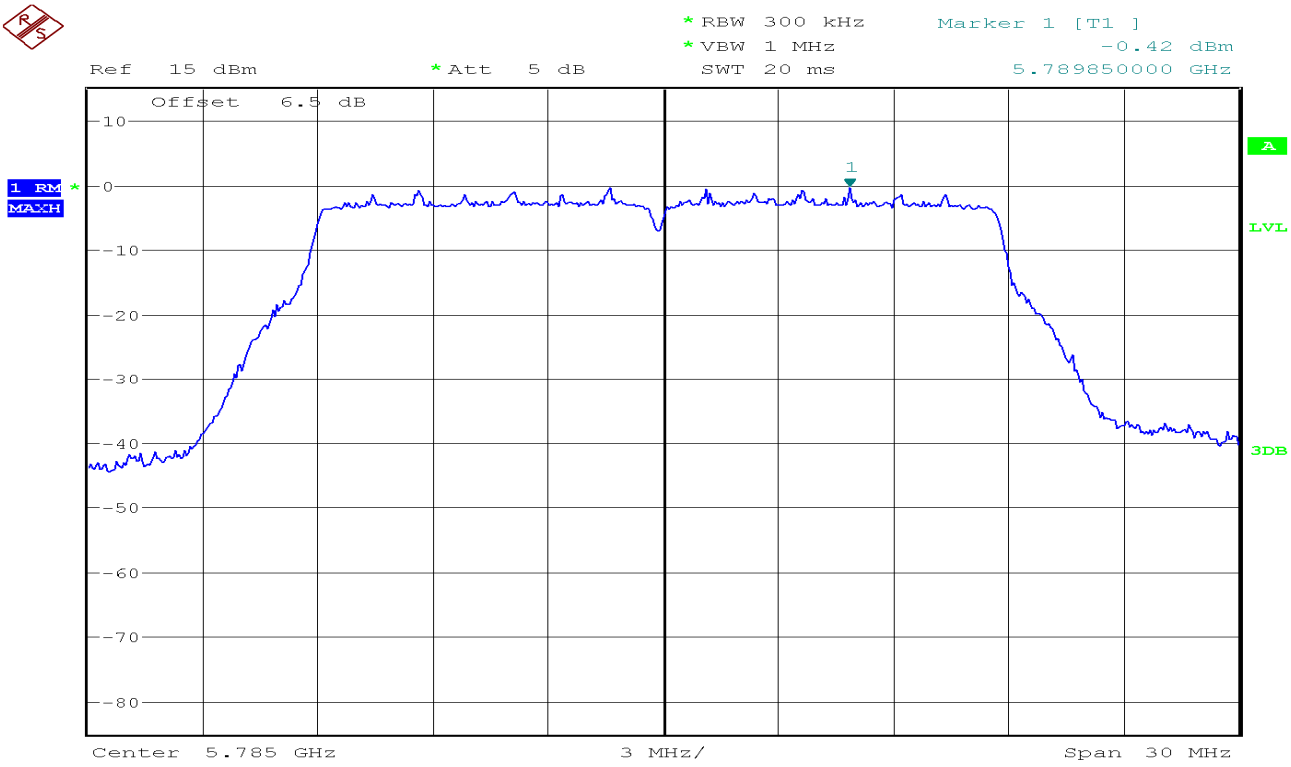

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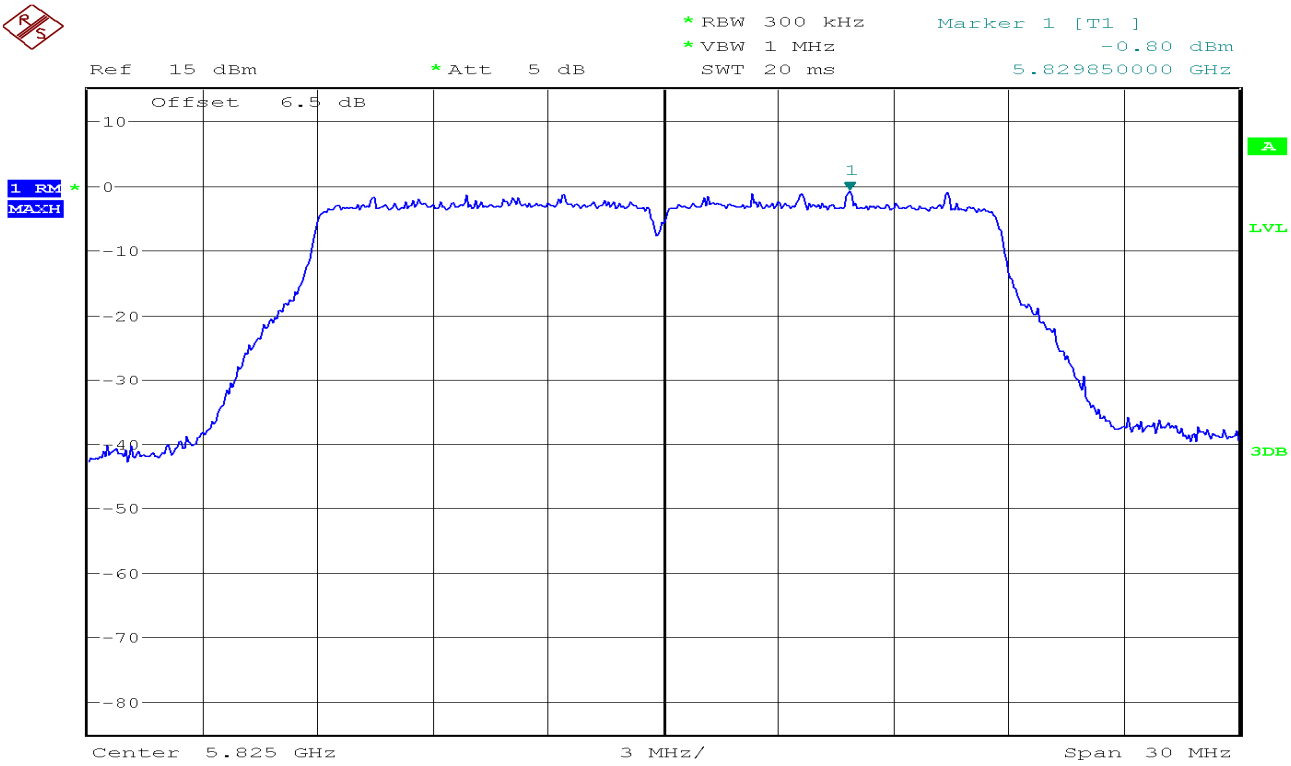
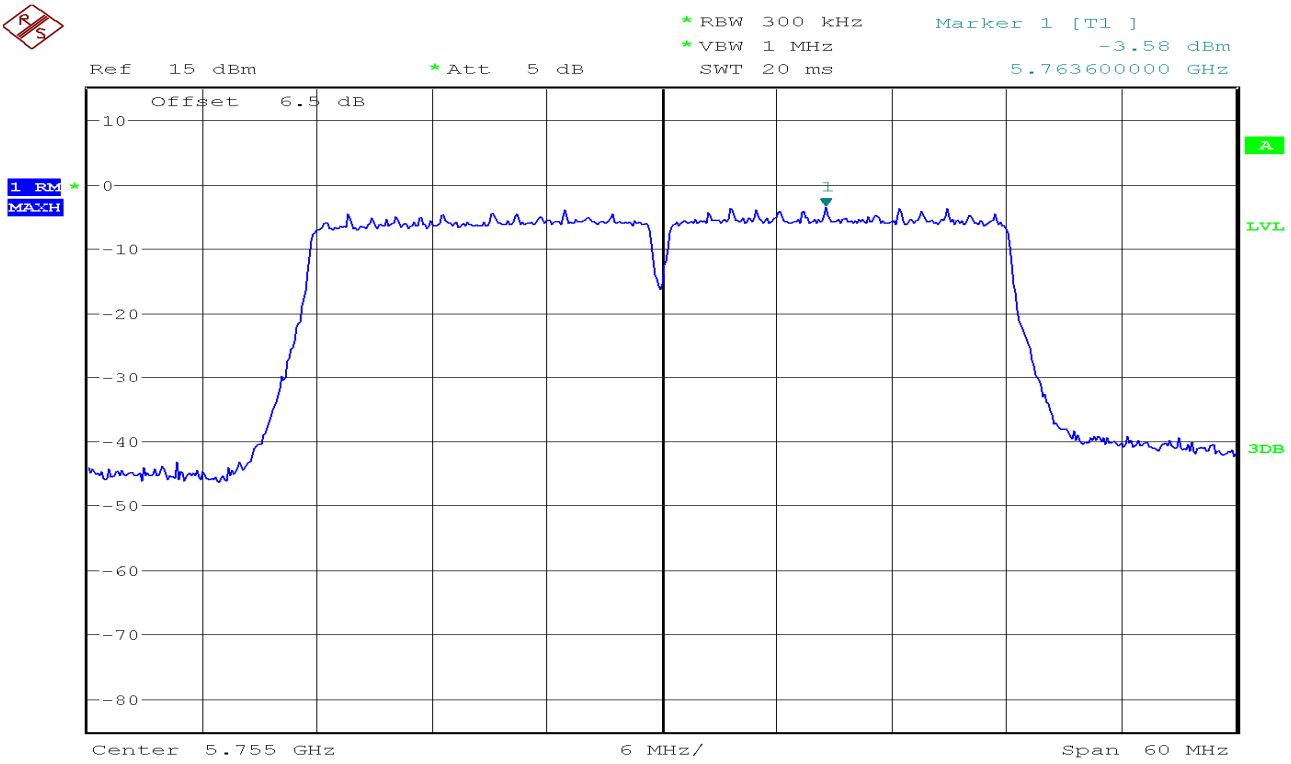
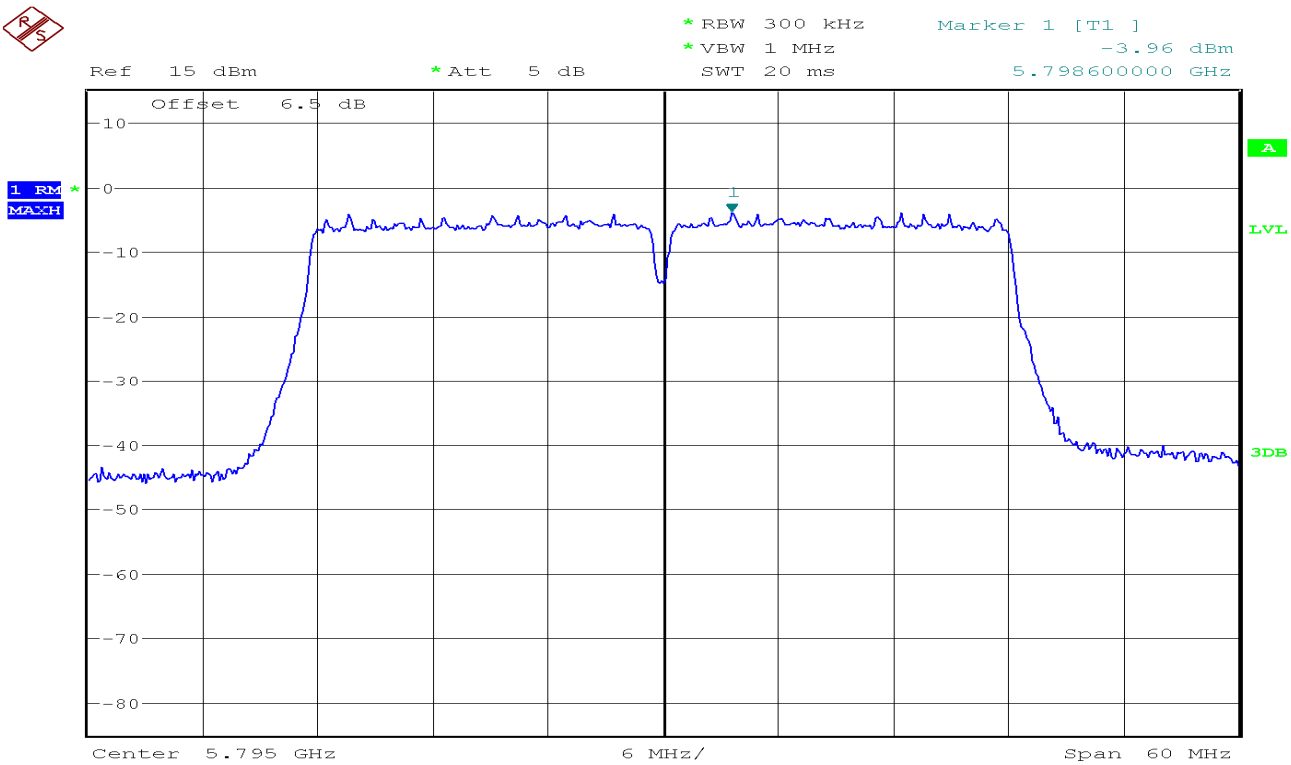


IEEE 802.11n HT40 mode/chain 0
5725~5850MHz

CH Low

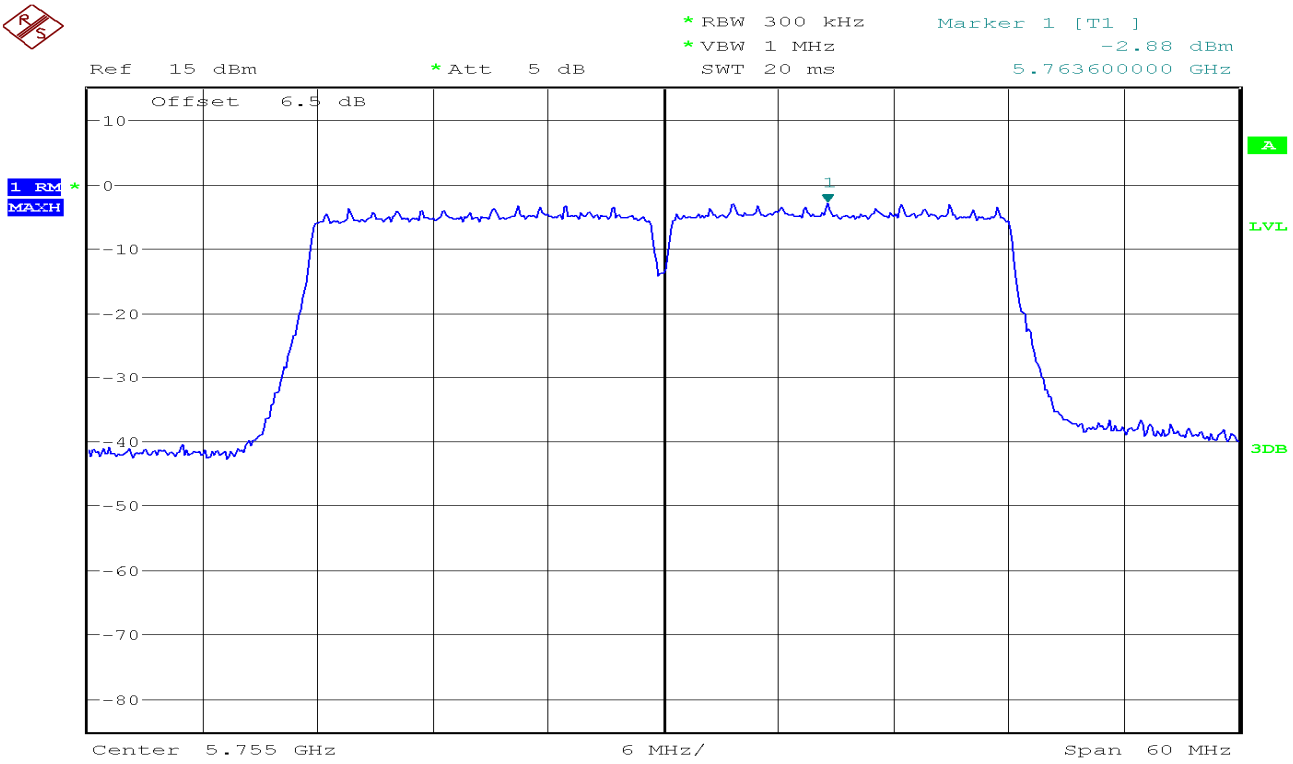


CH High

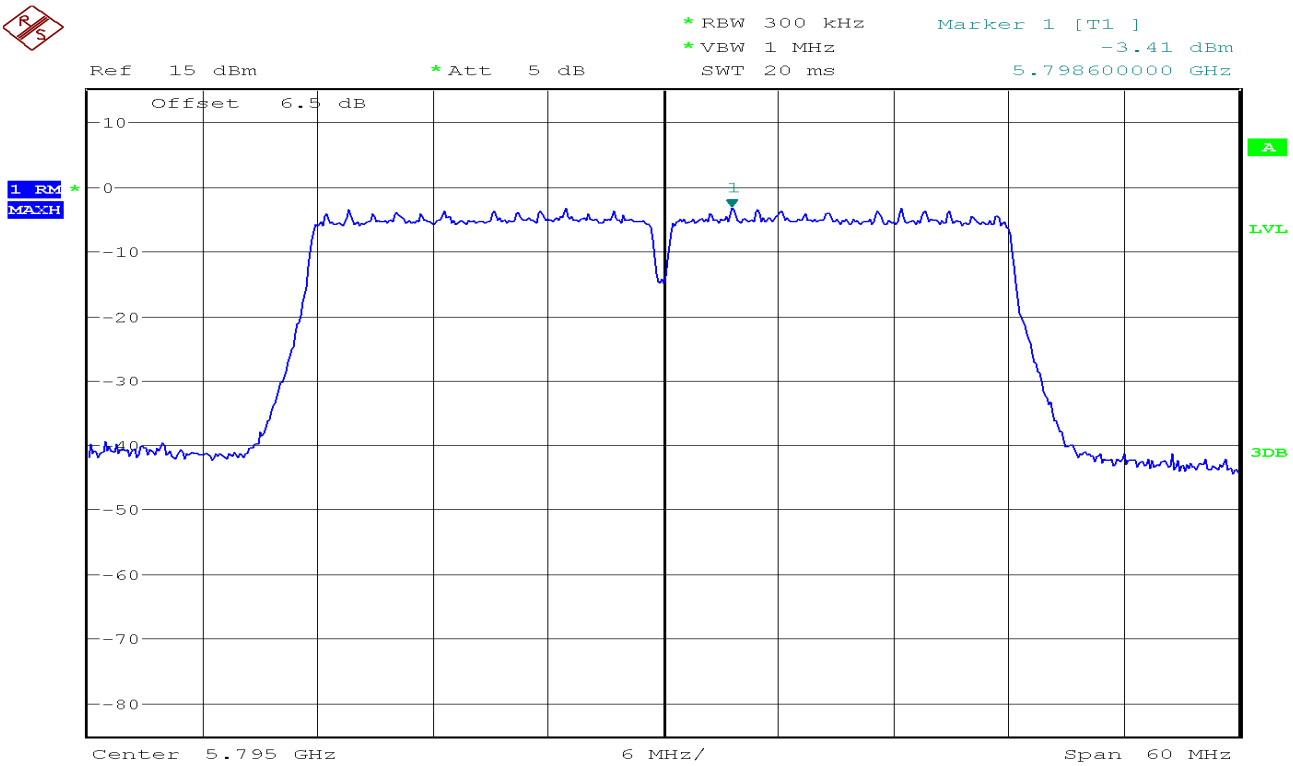


IEEE 802.11n HT40 mode/chain 1
5725~5850MHz

CH Low

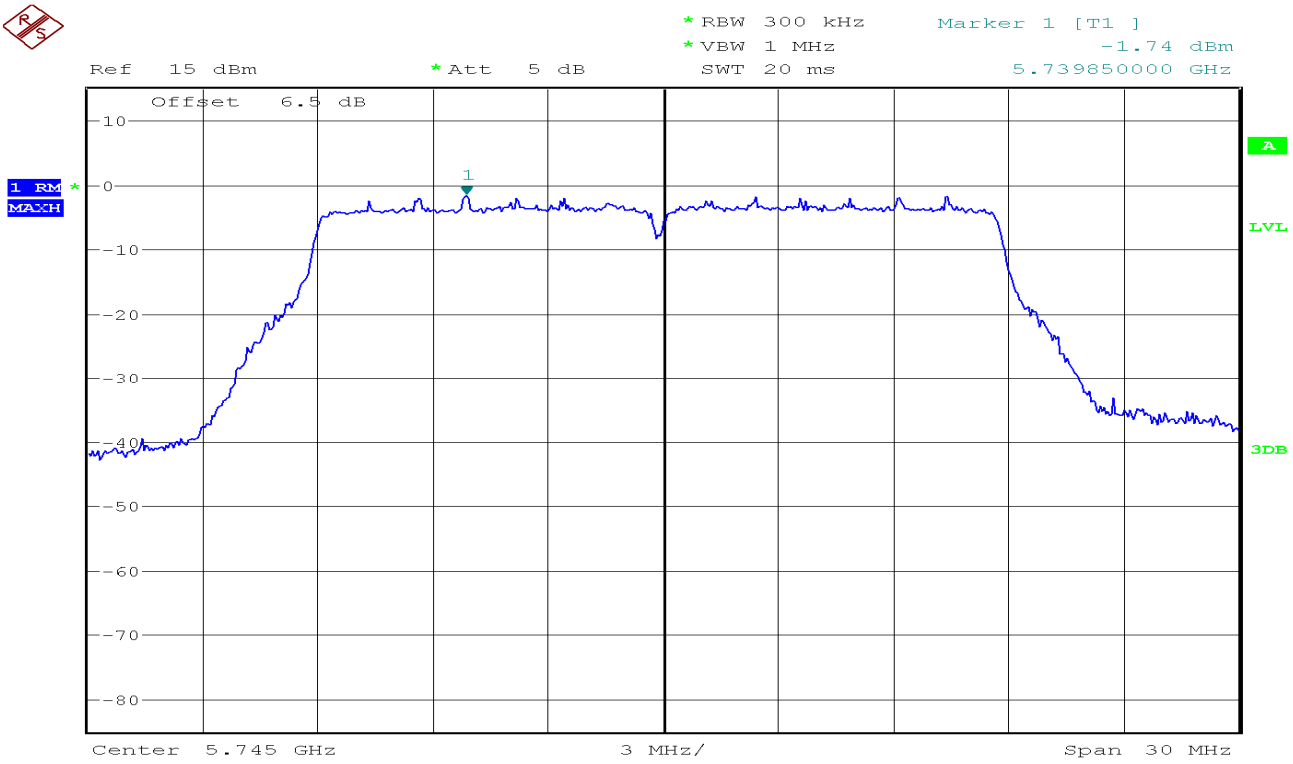


CH High

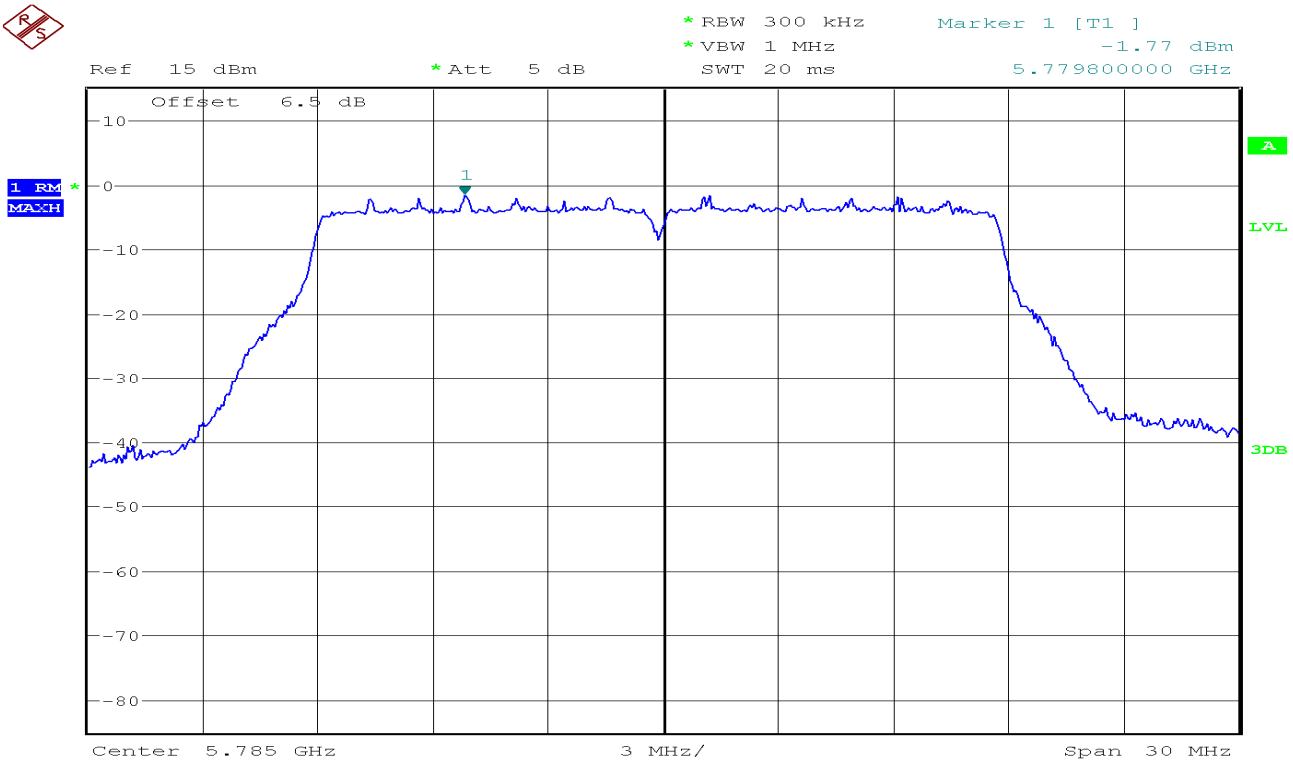


IEEE 802.11ac VHT20 mode/chain 0
5725~5850MHz

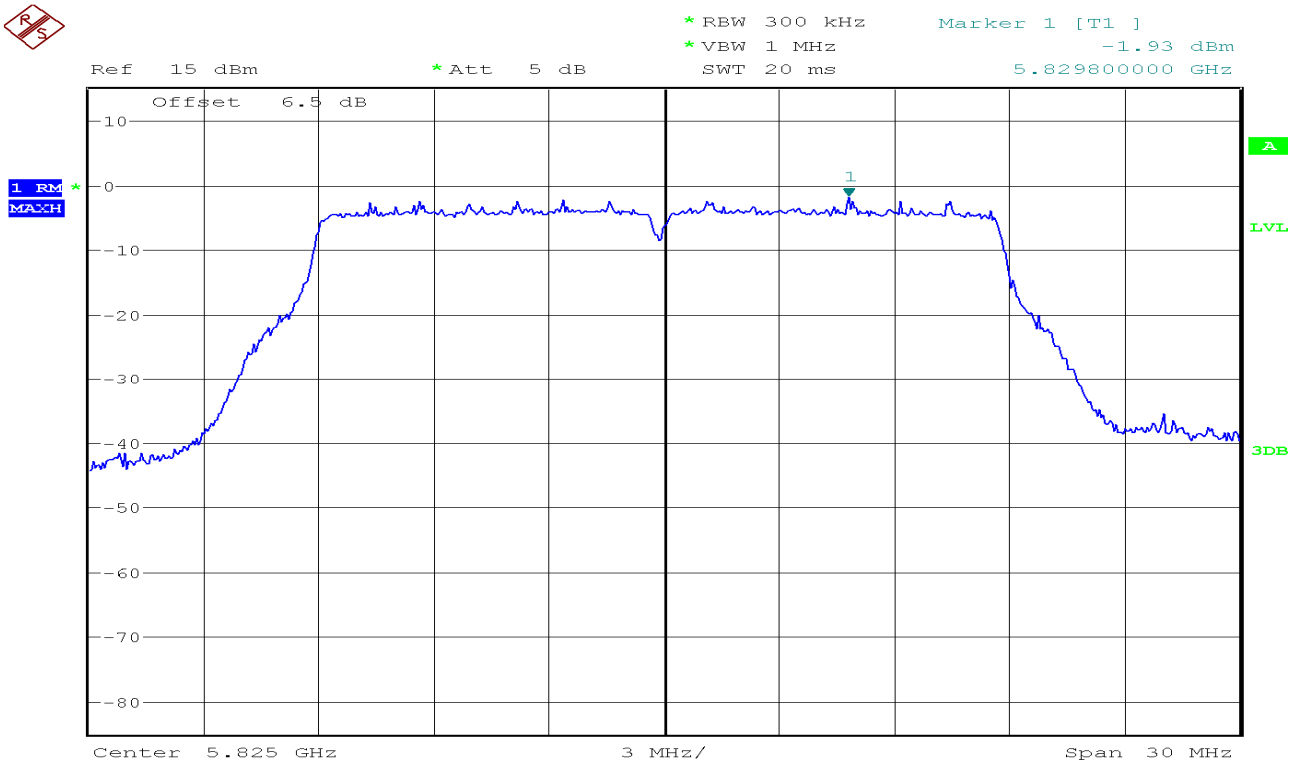
CH Low



CH Mid

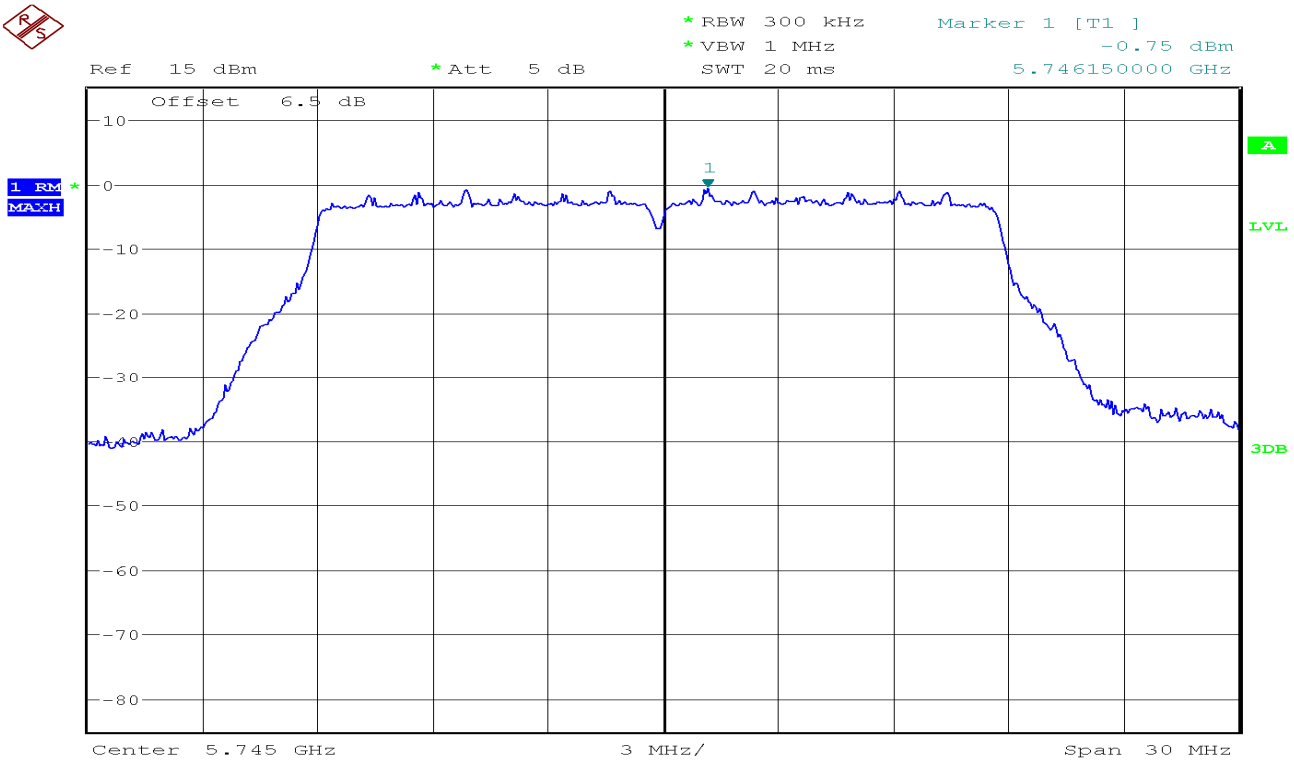


CH High

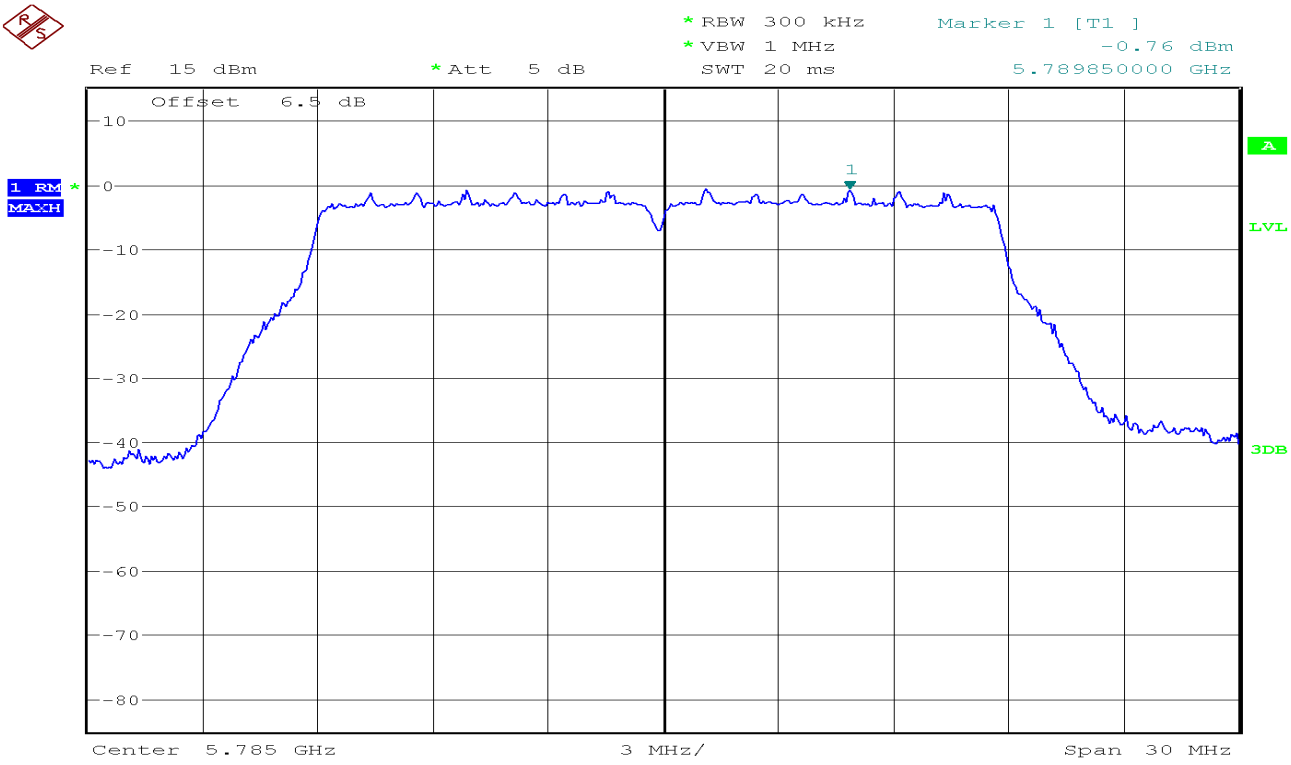


IEEE 802.11ac VHT20 mode/chain 1
5725~5850MHz

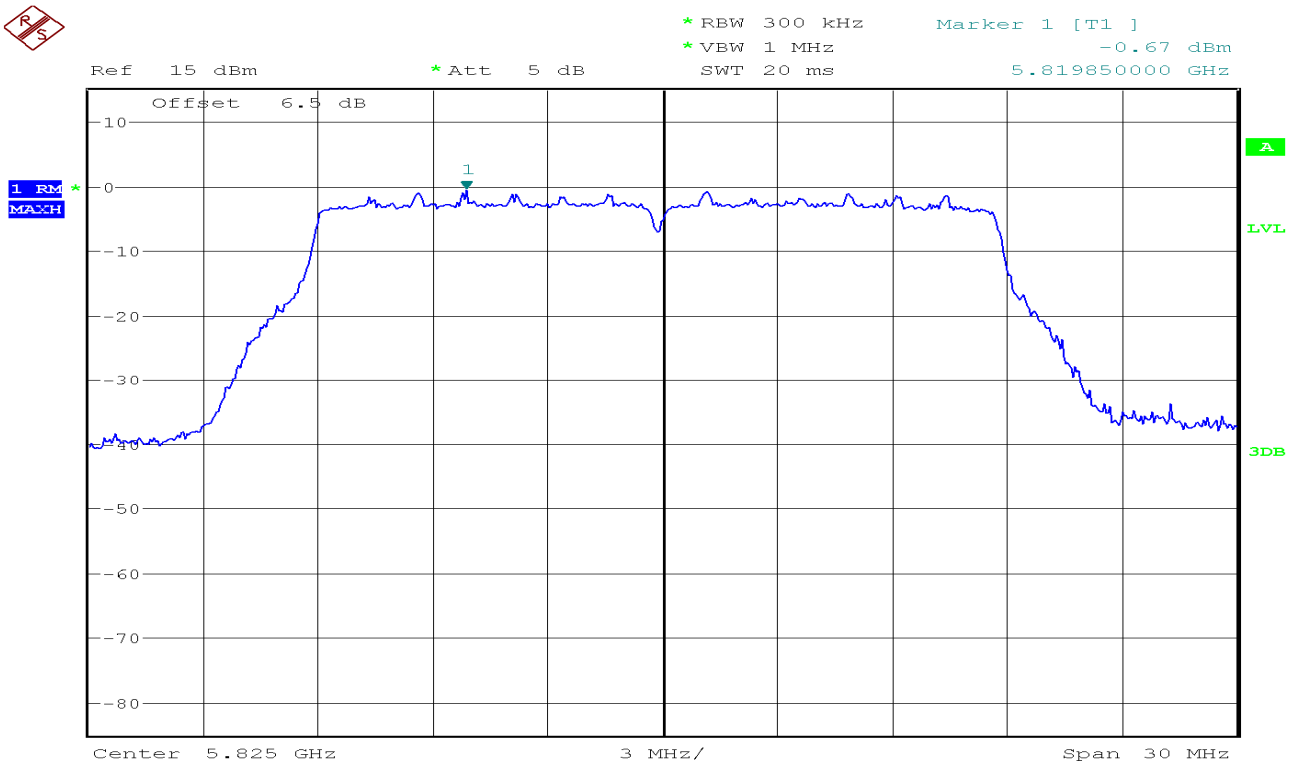
CH Low



CH Mid

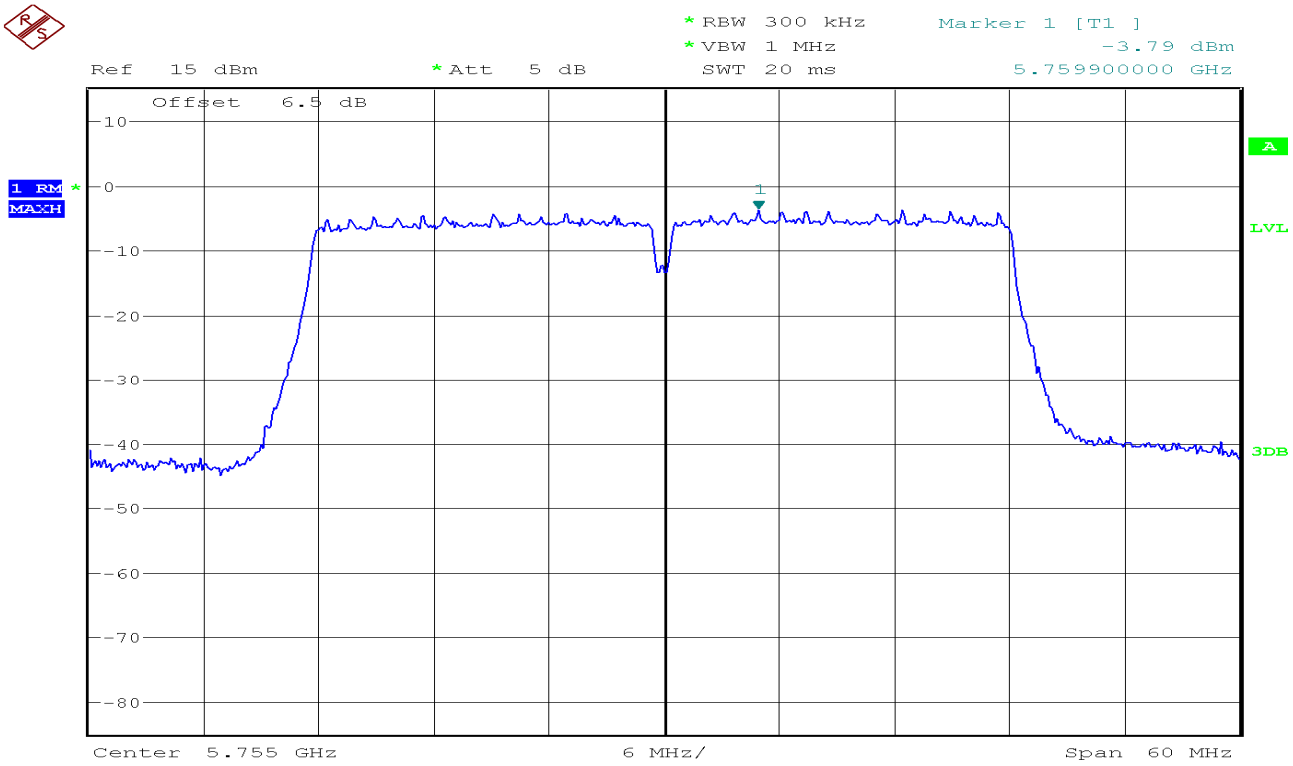


CH High

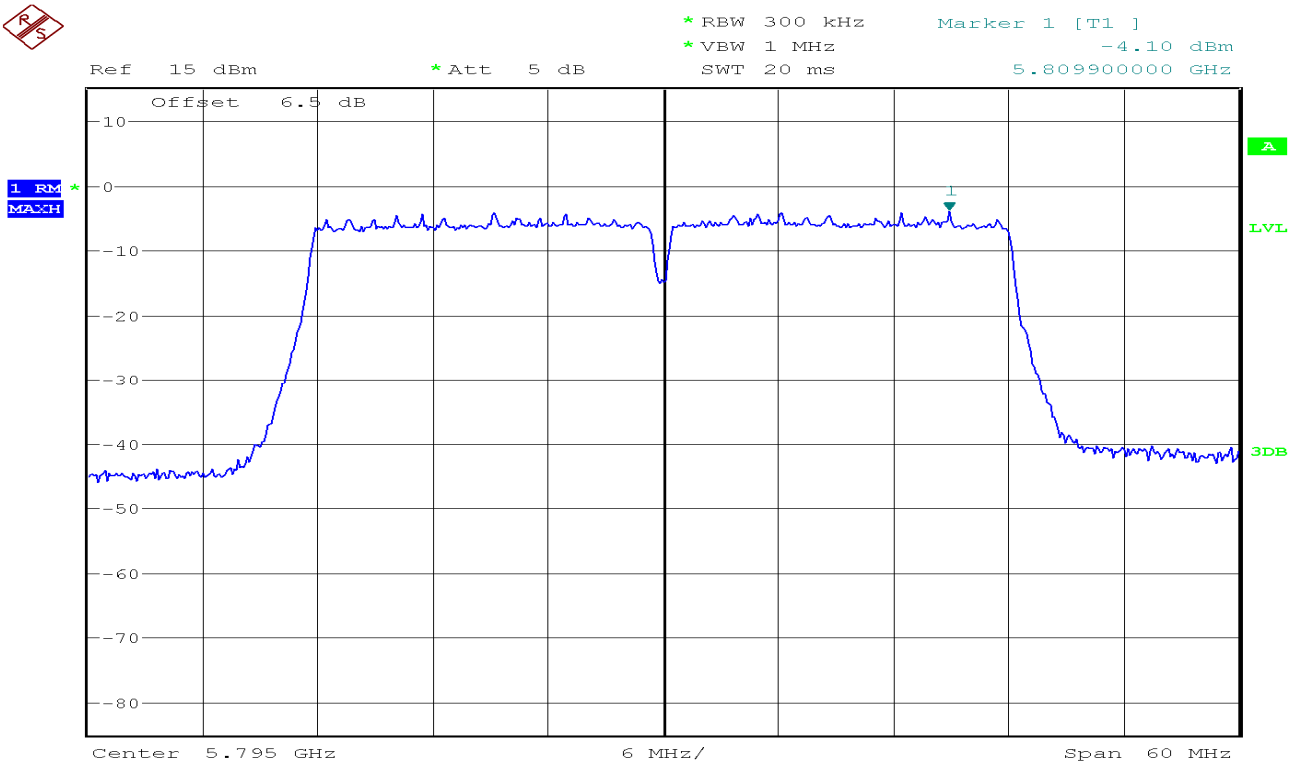


IEEE 802.11ac VHT40 mode/chain 0
5725~5850MHz

CH Low

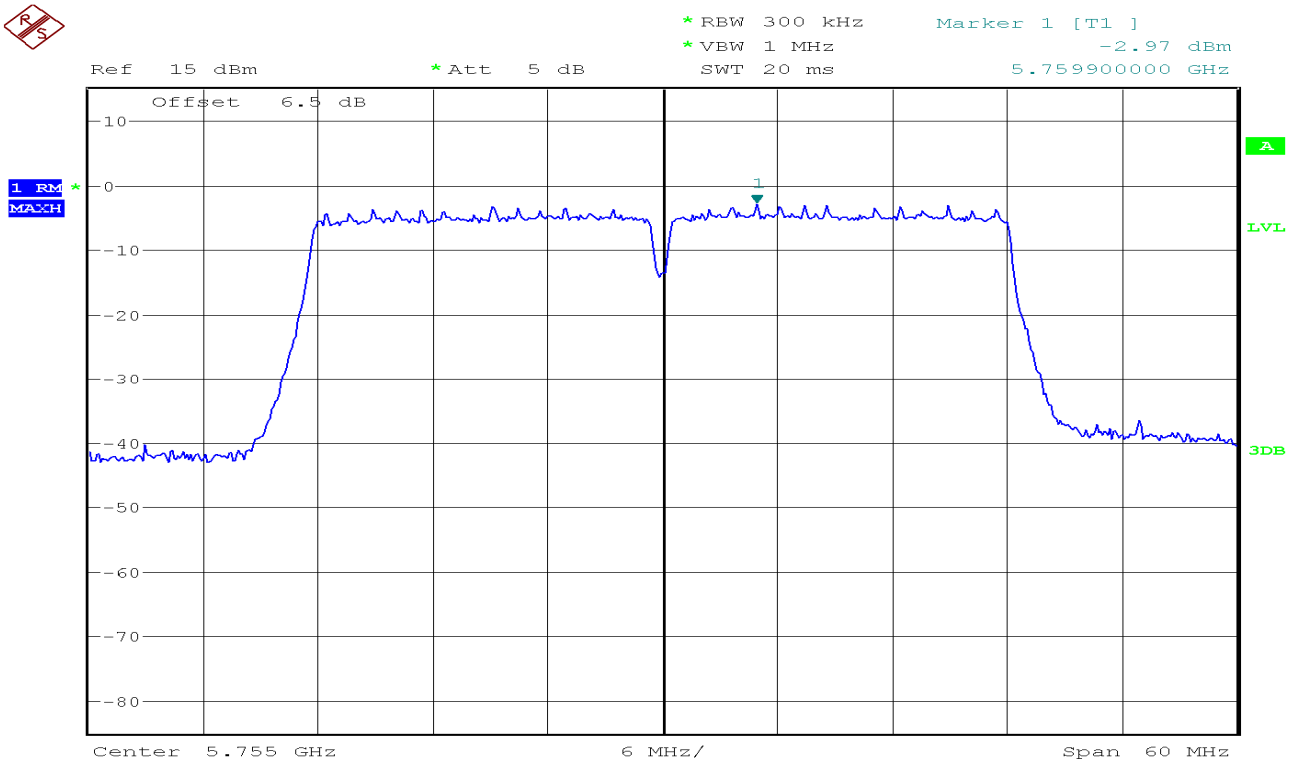


CH High

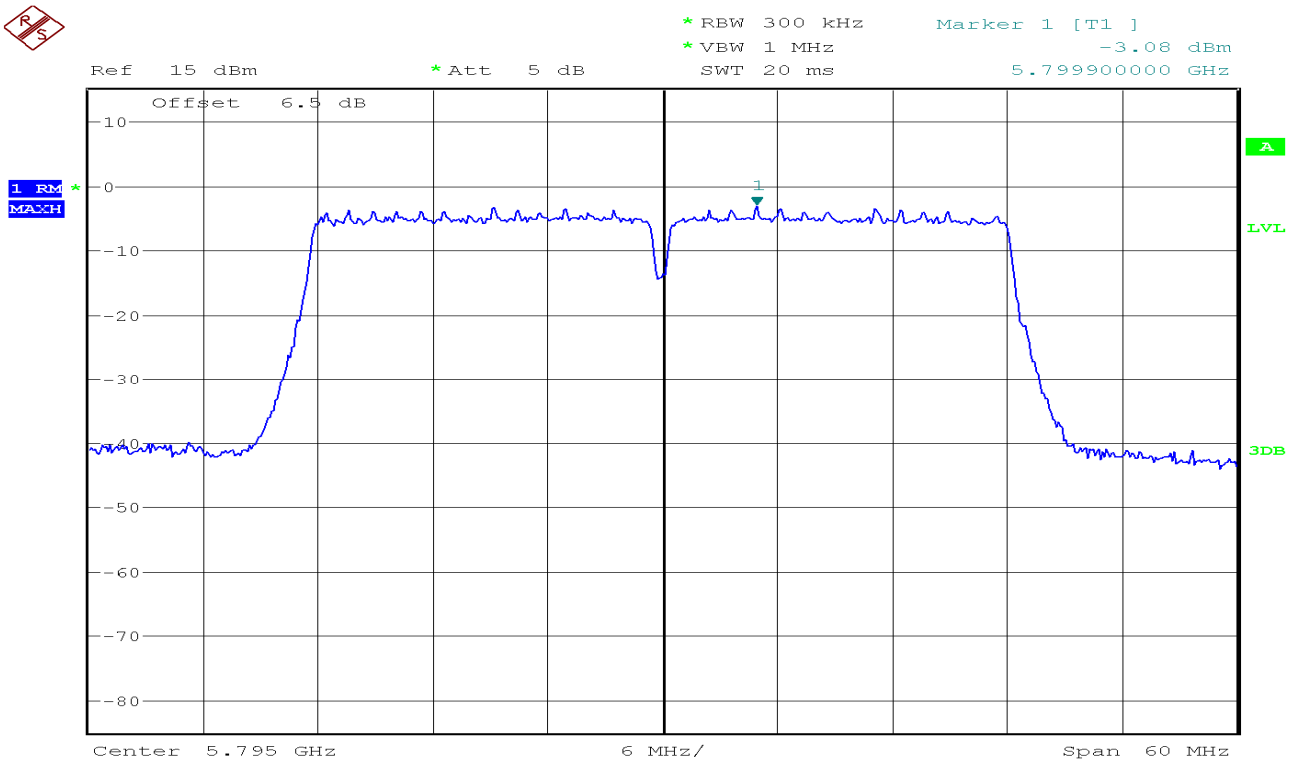


IEEE 802.11ac VHT40 mode/chain 1
5725~5850MHz

CH Low

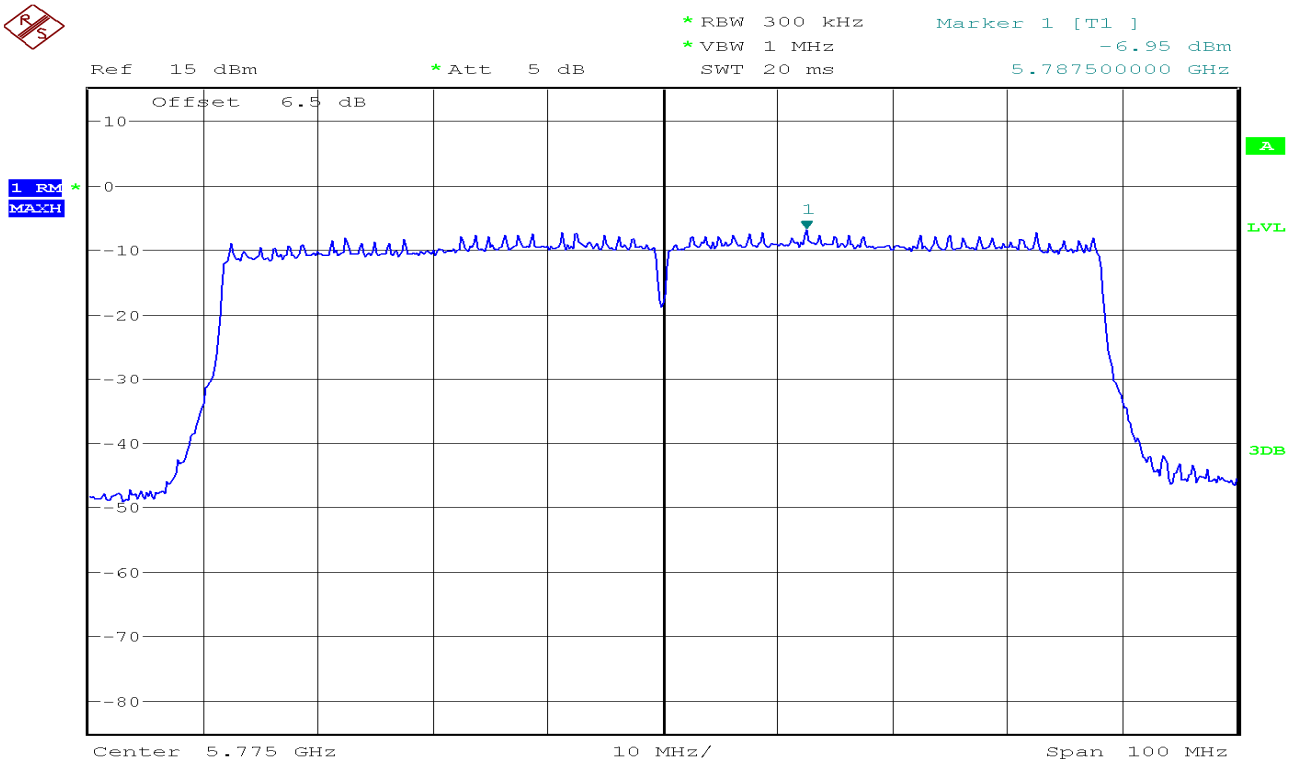


CH High



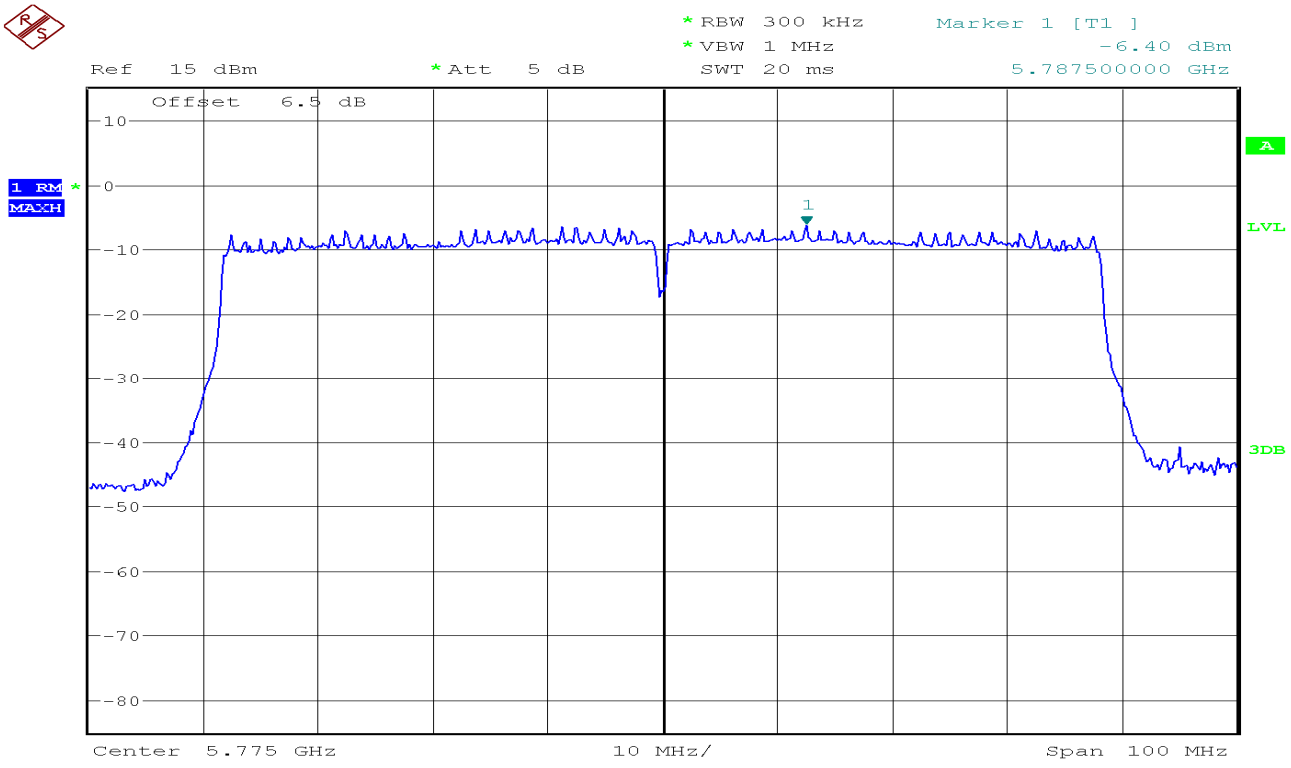
IEEE 802.11ac VHT80 mode/chain 0
5725~5850MHz

CH Mid



IEEE 802.11ac VHT80 mode/chain 1
5725~5850MHz

CH Mid

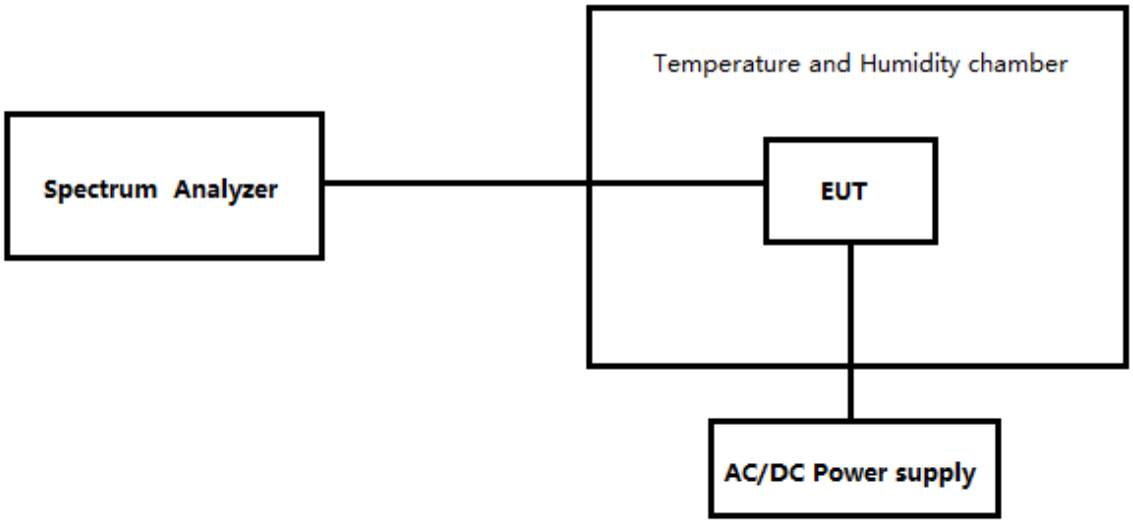


7.5 FREQUENCY STABILITY MEASUREMENT

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-3-(5725MHz-5850MHz)					
Freq.(MHz)	Center Frequency (MHz)	Frequency Deviation (MHz)	Frequency Stability (ppm)	Temperature (°C)	Voltage (V)
5745	5745.000	0.000	0.00	25	V_{min}
5745	5745.000	0.000	0.00	25	V_{max}
5745	5745.000	0.000	0.00	25	V_{nor}
5745	5744.975	-0.025	-4.35	-10	V_{nor}
5745	5745.000	0.000	0.00	40	V_{nor}

7.6 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. According to §15.209(a), except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

FREQUENCIES(MHz)	FIELD STRENGTH (microvolts/meter)	MEASUREMENT DISTANCE(meters)
0.009~0.490	2400/F(kHz)	300
0.490~1.705	24000/F(kHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

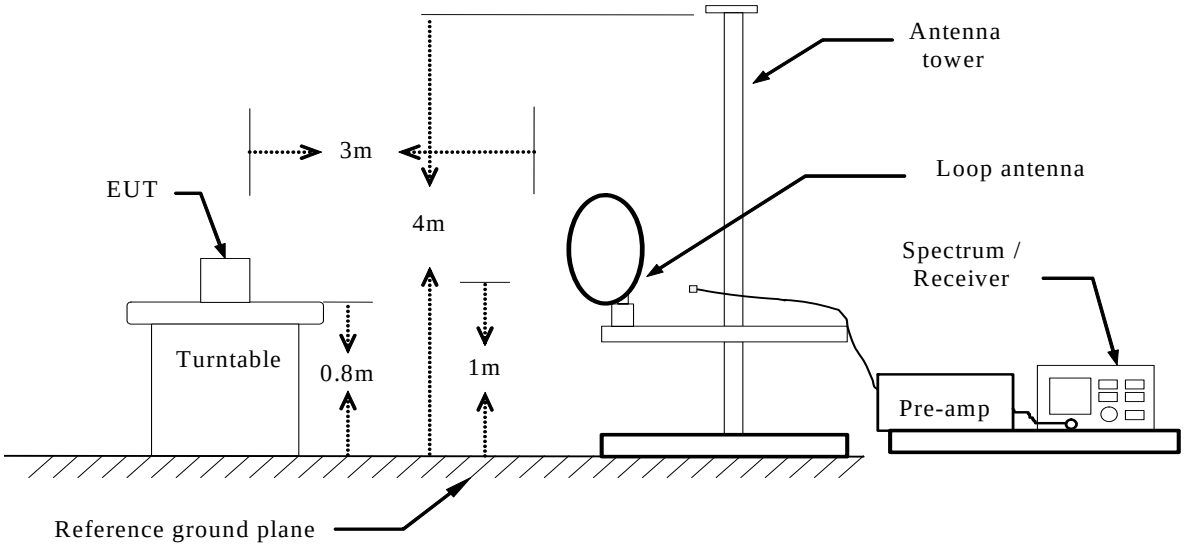
Remark: *Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of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

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

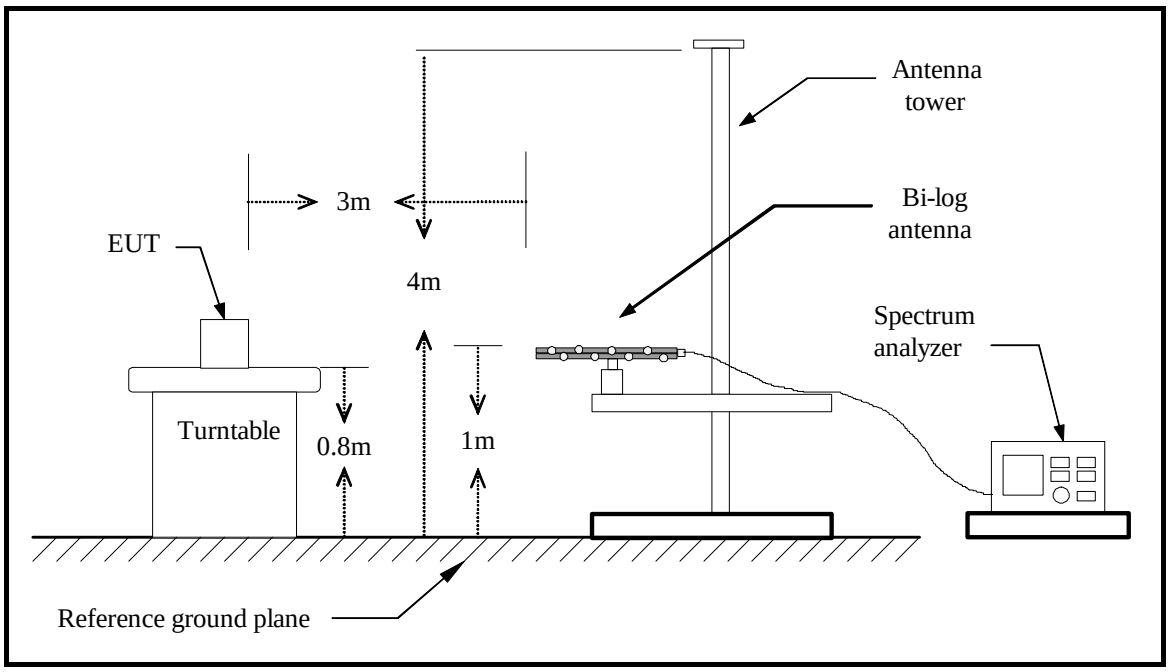
Frequency (MHz)	Field Strength (μV/m at 3-meter)	Field Strength (dBμV/m at 3-meter)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

Test Configuration

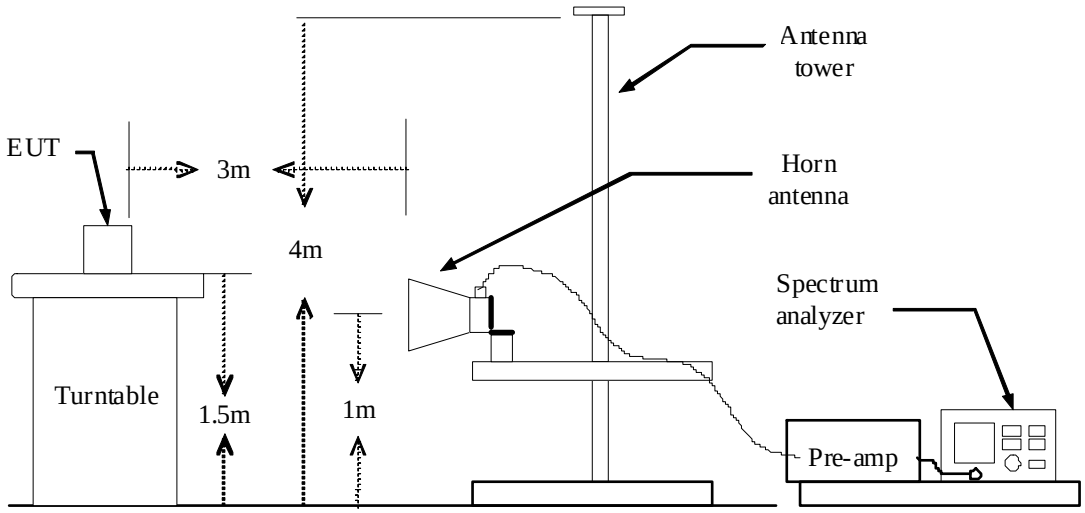
Below 30MHz



Below 1 GHz



Above 1 GHz



TEST PROCEDURE

1. The EUT is placed on a turntable above ground plane, which is 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Set the spectrum analyzer in the following setting as:

   Below 1GHz:

   RBW=100kHz / VBW=300kHz / Sweep=AUTO

   Above 1GHz:

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

   (b) AVERAGE: RBW=1MHz / VBW=10Hz / Sweep=AUTO
7. Repeat above procedures until the measurements for all frequencies are complete.

TEST RESULTS

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.

Below 1 GHz

Operation Mode:	Normal Link	**Test Date:**	2016-4-12
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
32.9100	V	16.32	19.19	35.51	40.00	-4.49	peak
95.9600	V	24.35	9.55	33.90	40.00	-6.10	peak
114.3900	V	22.61	10.30	32.91	40.00	-7.09	peak
197.8100	V	23.48	12.24	35.72	40.00	-4.28	peak
701.2400	V	21.72	21.54	43.26	47.00	-3.74	QP
793.3900	V	23.96	22.78	46.74	47.00	-0.26	QP
31.9400	H	14.55	19.70	34.25	40.00	-5.75	peak
70.7400	H	25.48	8.66	34.14	40.00	-5.86	peak
116.3300	H	23.49	10.35	33.84	40.00	-6.16	peak
149.3100	H	18.57	11.11	29.68	40.00	-10.32	peak
701.2400	H	23.32	21.54	44.86	47.00	-2.14	peak
792.4200	H	20.05	22.77	42.82	47.00	-4.18	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:**	2016-4-9
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	11625.000	41.33	3.61	44.94	74.00	-29.06	100	54	peak
2	15302.885	38.87	3.79	42.66	74.00	-31.34	100	310	peak
3	N/A								
4									
5									
6									

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	11761.218	41.91	3.43	45.34	74.00	-28.66	100	299	peak
2	15520.833	40.51	2.75	43.26	74.00	-30.74	100	55	peak
3	N/A								
4									
5									
6									

Operation Mode:	Tx / IEEE 802.11a mode CH Mid	**Test Date:**	2016-4-9
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	12060.897	42.42	3.55	45.97	74.00	-28.03	100	78	peak
2	14921.474	39.97	5.32	45.29	74.00	-28.71	100	231	peak
3	N/A								
4									
5									
6									

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	11924.680	41.97	3.22	45.19	74.00	-28.81	100	137	peak
2	15139.423	38.58	4.57	43.15	74.00	-30.85	100	118	peak
3	N/A								
4									
5									

6									

Operation Mode:	Tx / IEEE 802.11a mode CH High	**Test Date:**	2016-4-9
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	11951.923	42.35	3.18	45.53	74.00	-28.47	100	207	peak
2	15248.397	39.71	4.05	43.76	74.00	-30.24	100	126	peak
3	N/A								
4									
5									
6									

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	12306.090	40.83	5.27	46.10	74.00	-27.90	100	326	peak
2	15466.346	39.90	3.01	42.91	74.00	-31.09	100	96	peak
3	N/A								
4									
5									
6									

Operation Mode:	TX / IEEE 802.11n HT20 mode /CH Low	**Test Date:**	2016-4-9
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	11761.218	40.67	3.43	44.10	74.00	-29.90	100	237	peak
2	15330.128	39.11	3.66	42.77	74.00	-31.23	100	69	peak
3	N/A								
4									
5									
6									

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	11761.218	41.46	3.43	44.89	74.00	-29.11	100	191	peak
2	15330.128	39.96	3.66	43.62	74.00	-30.38	100	78	peak
3	N/A								
4									
5									
6									

Operation Mode:	TX / IEEE 802.11n HT20 mode /CH Mid	Test Date:	2016-4-9
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	11924.680	41.04	3.22	44.26	74.00	-29.74	100	162	peak
2	14894.231	40.61	5.34	45.95	74.00	-28.05	100	330	peak
3	N/A								
4									
5									
6									

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	11516.026	41.62	3.75	45.37	74.00	-28.63	100	76	peak
2	14812.500	41.00	5.42	46.42	74.00	-27.58	100	23	peak
3	N/A								
4									
5									
6									

Operation Mode:	TX / IEEE 802.11n HT20 mode /CH High	Test Date:	2016-4-9
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	11951.923	41.51	3.18	44.69	74.00	-29.31	100	31	peak
2	15548.077	40.38	2.61	42.99	74.00	-31.01	100	228	peak
3	N/A								
4									
5									
6									

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	11924.680	42.12	3.22	45.34	74.00	-28.66	100	180	peak
2	15520.833	39.44	2.75	42.19	74.00	-31.81	100	334	peak
3	N/A								
4									
5									
6									

Operation Mode:	TX / IEEE 802.11n HT40 mode /CH Low	Test Date:	2016-4-9
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	11407.051	41.85	3.90	45.75	74.00	-28.25	100	202	peak
2	15193.910	39.46	4.31	43.77	74.00	-30.23	100	172	peak
3	N/A								
4									
5									
6									

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	11733.974	40.98	3.47	44.45	74.00	-29.55	100	360	peak
2	15248.397	38.90	4.05	42.95	74.00	-31.05	100	358	peak
3	N/A								
4									
5									
6									

Operation Mode:	TX / IEEE 802.11n HT40 mode /CH High	Test Date:	2016-4-9
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	11951.923	41.92	3.18	45.10	74.00	-28.90	100	296	peak
2	15548.077	40.51	2.61	43.12	74.00	-30.88	100	122	peak
3	N/A								
4									
5									
6									

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	11951.923	42.31	3.18	45.49	74.00	-28.51	100	145	peak
2	15493.590	39.99	2.88	42.87	74.00	-31.13	100	278	peak
3	N/A								
4									
5									
6									

Operation Mode:	TX / IEEE 802.11ac VHT20 mode /CH Low	Test Date:	2016-4-9
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	11325.320	41.89	4.00	45.89	74.00	-28.11	100	72	peak
2	14812.500	41.81	5.42	47.23	74.00	-26.77	100	234	peak
3	N/A								
4									
5									
6									

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	11516.026	40.80	3.75	44.55	74.00	-29.45	100	140	peak
2	14921.474	40.41	5.32	45.73	74.00	-28.27	100	62	peak
3	N/A								
4									
5									
6									

Operation Mode:	TX / IEEE 802.11ac VHT20 mode /CH Mid	Test Date:	2016-4-9
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	12142.628	41.29	4.12	45.41	74.00	-28.59	100	264	peak
2	15248.397	39.41	4.05	43.46	74.00	-30.54	100	21	peak
3	N/A								
4									
5									
6									

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	11543.269	40.82	3.72	44.54	74.00	-29.46	100	192	peak
2	14866.987	40.21	5.37	45.58	74.00	-28.42	100	193	peak
3	N/A								
4									
5									
6									

Operation Mode:	TX / IEEE 802.11ac VHT20 mode /CH High	Test Date:	2016-4-9
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	11897.436	41.43	3.25	44.68	74.00	-29.32	100	221	peak
2	15248.397	39.86	4.05	43.91	74.00	-30.09	100	336	peak
3	N/A								
4									
5									
6									

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	11924.680	42.22	3.22	45.44	74.00	-28.56	100	349	peak
2	14866.987	40.22	5.37	45.59	74.00	-28.41	100	41	peak
3	N/A								
4									
5									
6									

Operation Mode:	TX / IEEE 802.11ac VHT40 mode /CH Low	Test Date:	2016-4-9
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	11516.026	41.40	3.75	45.15	74.00	-28.85	100	169	peak
2	14921.474	40.56	5.32	45.88	74.00	-28.12	100	248	peak
3	N/A								
4									
5									
6									

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	11298.077	42.32	4.04	46.36	74.00	-27.64	100	324	peak
2	14812.500	40.66	5.42	46.08	74.00	-27.92	100	250	peak
3	N/A								
4									
5									
6									

Operation Mode:	TX / IEEE 802.11ac VHT40 mode /CH High	Test Date:	2016-4-9
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	12060.897	41.25	3.55	44.80	74.00	-29.20	100	125	peak
2	14894.231	40.30	5.34	45.64	74.00	-28.36	100	339	peak
3	N/A								
4									
5									
6									

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	11897.436	41.55	3.25	44.80	74.00	-29.20	100	174	peak
2	15221.154	40.12	4.18	44.30	74.00	-29.70	100	177	peak
3	N/A								
4									
5									
6									

Operation Mode:	TX / IEEE 802.11ac VHT80 mode /CH Mid	Test Date:	2016-4-9
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	12006.410	42.36	3.16	45.52	74.00	-28.48	100	255	peak
2	14921.474	39.96	5.32	45.28	74.00	-28.72	100	197	peak
3	N/A								
4									
5									
6									

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	11788.461	41.62	3.40	45.02	74.00	-28.98	100	253	peak
2	14866.987	40.39	5.37	45.76	74.00	-28.24	100	249	peak
3	N/A								
4									
5									
6									

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average limit.*
4. *Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.*
5. *Measurements above show only up to 3 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.*
6. *Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).*

7.7 POWERLINE CONDUCTED EMISSIONS

LIMIT

For equipment 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.

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.

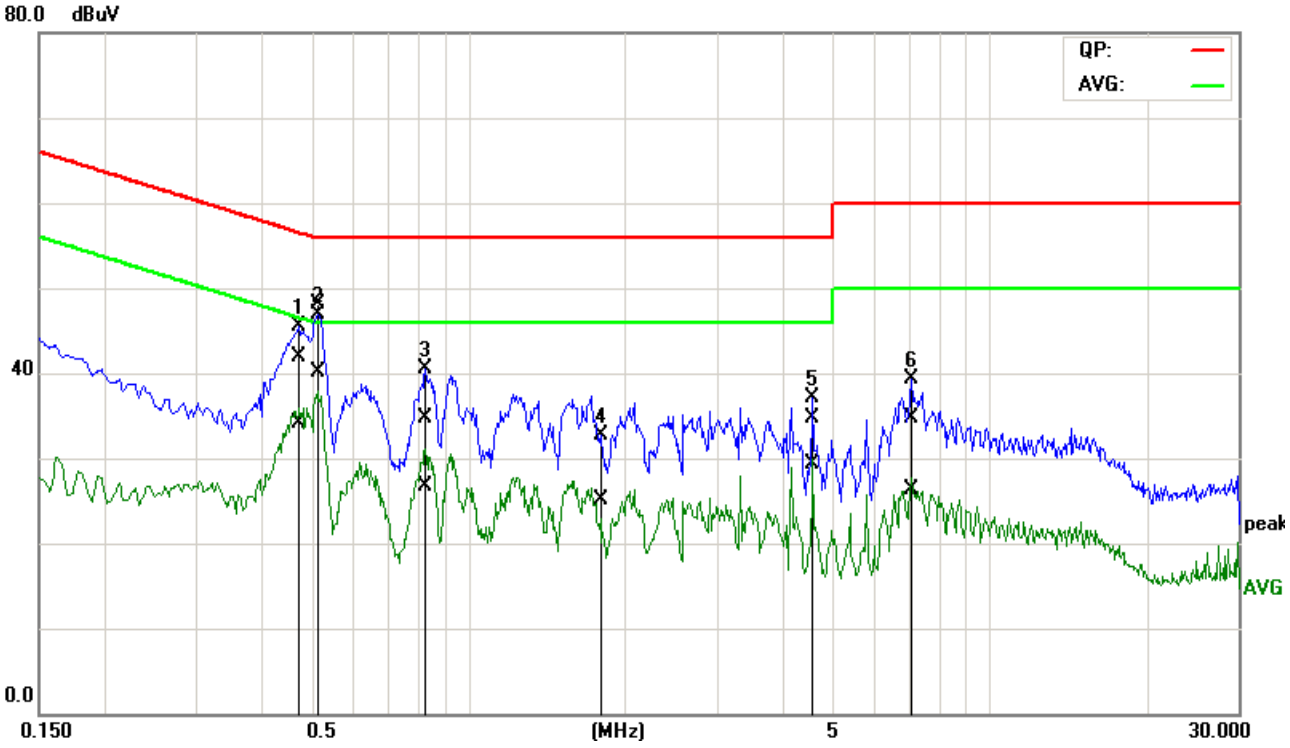
TEST RESULTS

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.:	C151118R01	Date:	2016-4-29
Model No.:	NP2000	Time:	AM 09:17:53
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

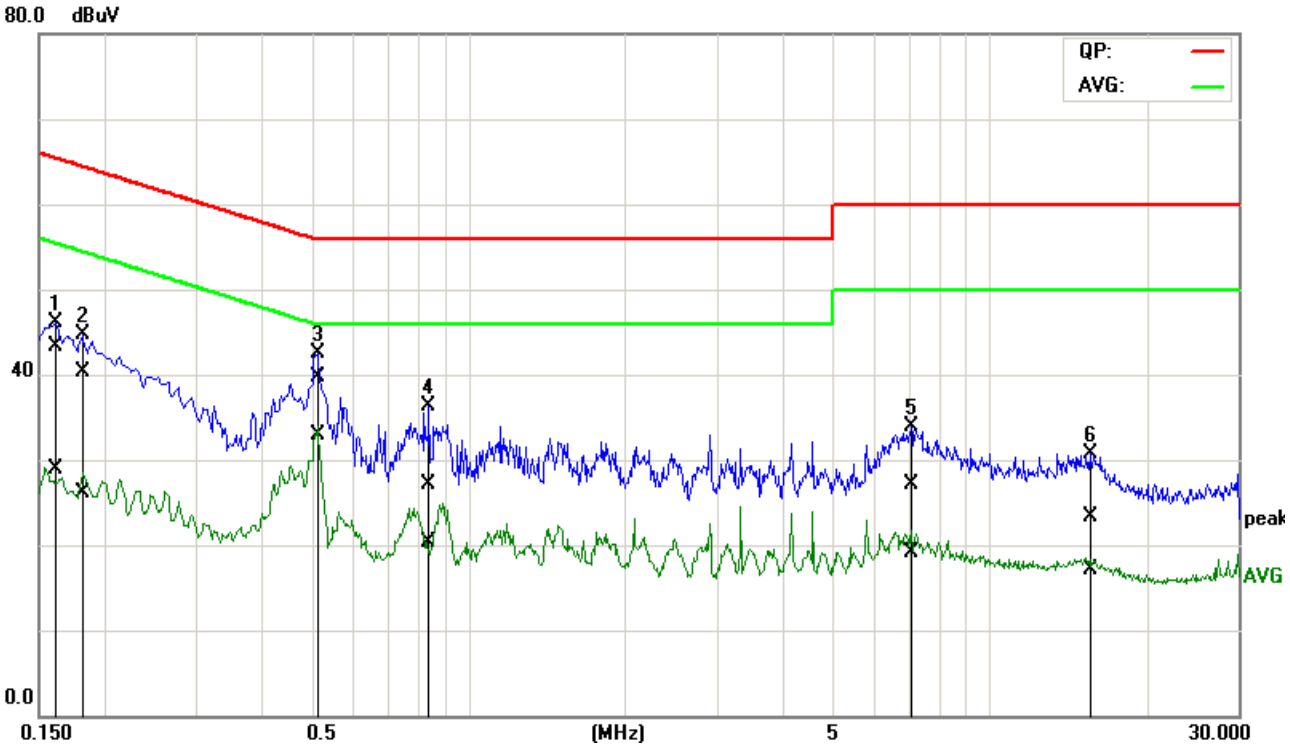


No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1	0.4716	22.03	14.24	19.81	41.84	34.05	56.49	46.49	-14.65	-12.44	Pass
2*	0.5112	28.33	20.33	19.81	48.14	40.14	56.00	46.00	-7.86	-5.86	Pass
3	0.8183	14.85	6.84	19.80	34.65	26.64	56.00	46.00	-21.35	-19.36	Pass
4	1.7989	12.84	5.25	19.83	32.67	25.08	56.00	46.00	-23.33	-20.92	Pass
5	4.5777	14.79	9.46	19.92	34.71	29.38	56.00	46.00	-21.29	-16.62	Pass
6	7.0742	14.81	6.34	19.92	34.73	26.26	60.00	50.00	-25.27	-23.74	Pass

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

Job No.:	C151118R01	Date:	2016-4-29
Model No.:	NP2000	Time:	AM 09:22:45
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

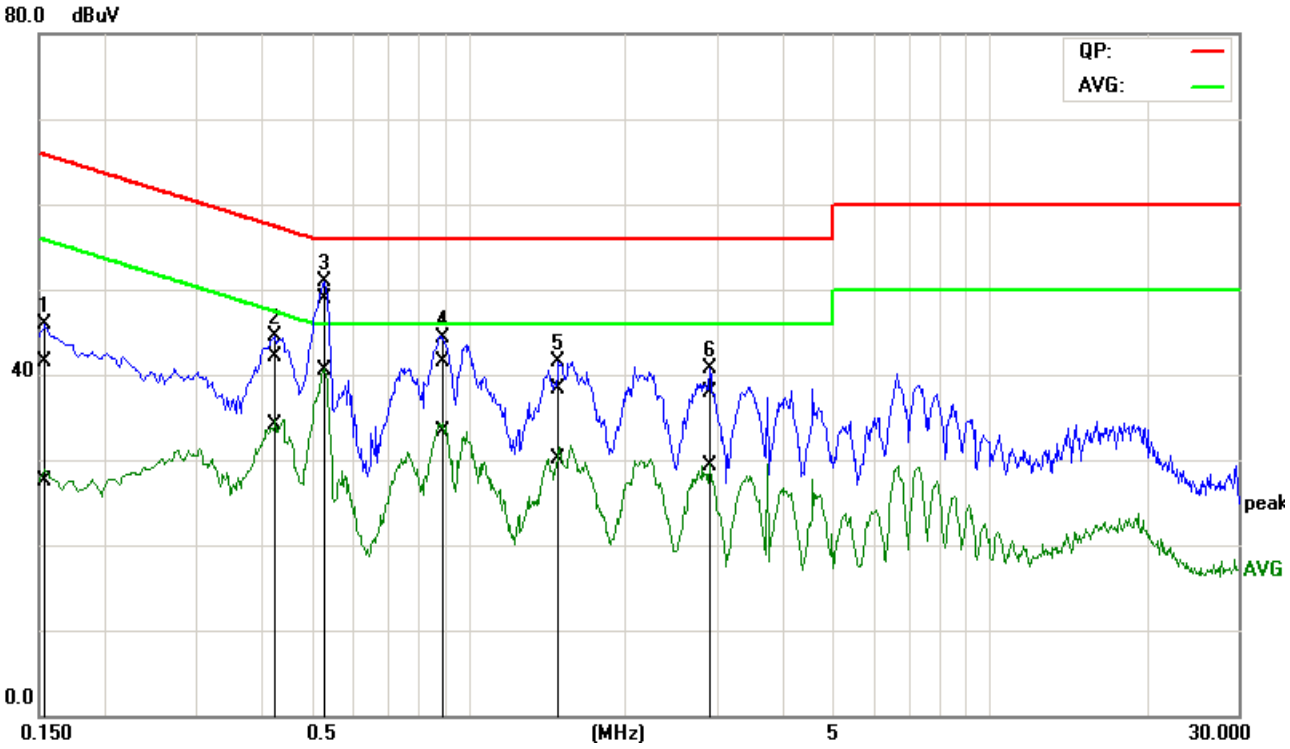


No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1	0.1598	23.55	9.13	19.74	43.29	28.87	65.47	55.47	-22.18	-26.60	Pass
2	0.1810	20.60	6.28	19.74	40.34	26.02	64.43	54.44	-24.09	-28.42	Pass
3*	0.5148	19.98	13.16	19.75	39.73	32.91	56.00	46.00	-16.27	-13.09	Pass
4	0.8329	7.41	0.52	19.74	27.15	20.26	56.00	46.00	-28.85	-25.74	Pass
5	7.0894	7.15	-0.82	19.89	27.04	19.07	60.00	50.00	-32.96	-30.93	Pass
6	15.5751	2.89	-3.20	20.33	23.22	17.13	60.00	50.00	-36.78	-32.87	Pass

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

Job No.:	C151118R01	Date:	2016-4-29
Model No.:	NP2000	Time:	AM 09:28:21
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

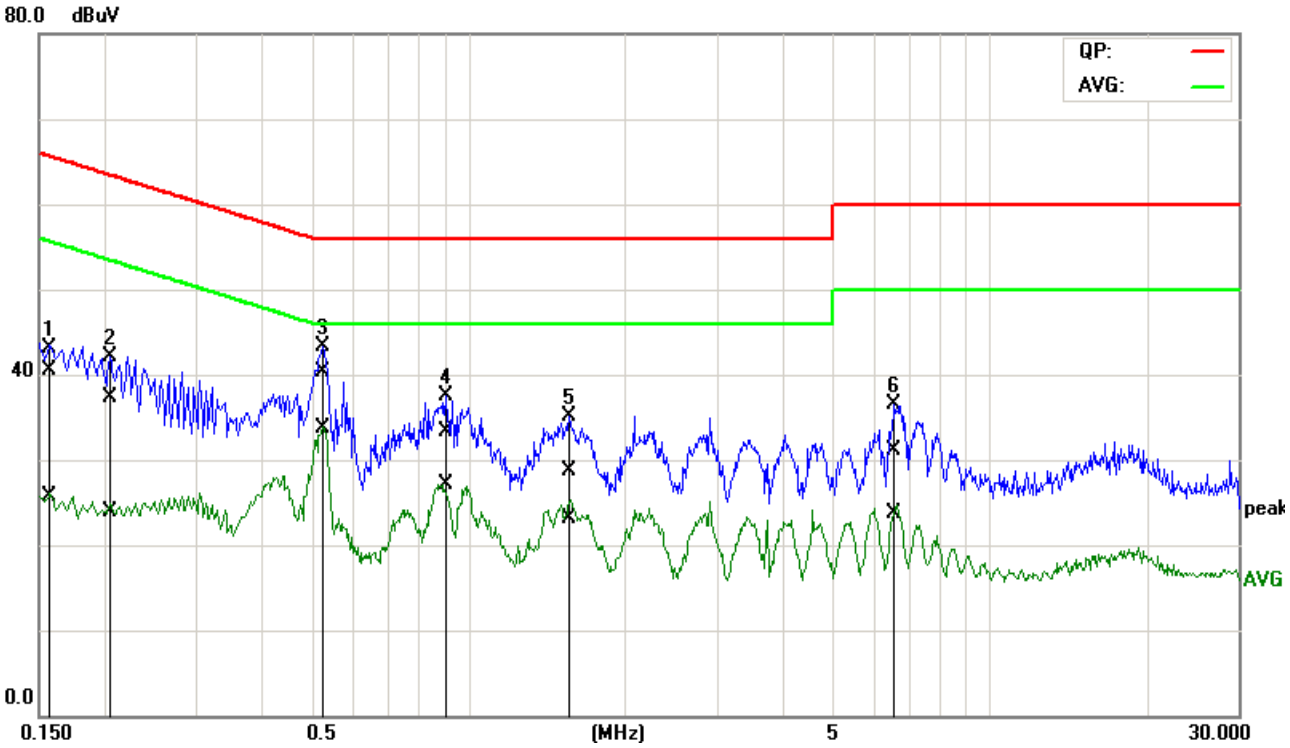


No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1	0.1522	21.77	7.65	19.79	41.56	27.44	65.87	55.88	-24.31	-28.44	Pass
2	0.4271	22.26	14.37	19.81	42.07	34.18	57.31	47.31	-15.24	-13.13	Pass
3*	0.5276	29.15	20.64	19.81	48.96	40.45	56.00	46.00	-7.04	-5.55	Pass
4	0.8989	21.78	13.49	19.79	41.57	33.28	56.00	46.00	-14.43	-12.72	Pass
5	1.4976	18.43	10.29	19.81	38.24	30.10	56.00	46.00	-17.76	-15.90	Pass
6	2.9113	18.09	9.32	19.89	37.98	29.21	56.00	46.00	-18.02	-16.79	Pass

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

Job No.:	C151118R01	Date:	2016-4-29
Model No.:	NP2000	Time:	AM 09:33:33
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	0.1544	20.77	6.00	19.74	40.51	25.74	65.75	55.76	-25.24	-30.02	Pass
2	0.2034	17.47	4.10	19.74	37.21	23.84	63.47	53.47	-26.26	-29.63	Pass
3*	0.5226	20.60	13.97	19.75	40.35	33.72	56.00	46.00	-15.65	-12.28	Pass
4	0.8916	13.54	7.34	19.74	33.28	27.08	56.00	46.00	-22.72	-18.92	Pass
5	1.5386	8.93	3.42	19.75	28.68	23.17	56.00	46.00	-27.32	-22.83	Pass
6	6.5813	11.28	3.82	19.87	31.15	23.69	60.00	50.00	-28.85	-26.31	Pass

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

END OF REPORT