RADIO TEST REPORT
FCC 47 CFR PART 15 SUBPART E
INDUSTRY CANADA RSS-247

Test Standard	**FCC Part 15.407 and RSS-247 Issue 2**
FCC ID	**PPQ-WCBN3507R12**
Reference FCC ID	**PPQ-WCBN3507R**
ISED No.	**4491A-WCBN3507R12**
Reference ISED No.	**4491A-WCBN3507R**
Brand name	**LITE-ON**
Applicant	**LITE-ON Technology Corp.**
Product name	**802.11a/b/g/n/ac 2Tx2R USB WLAN Module**
Model No.	**WCBN3507R(12)**
Test Result	**Pass**

The test Result was tested by Compliance Certification Services Inc. The test data, data evaluation, test procedures, and equipment configurations shown in this report were given in ANSI C63.10: 2013 and compliance standards.

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

The test Report of full or partial shall not copy. Without written approval of Compliance Certification Services Inc.(Wugu Laboratory)

Approved by:

Sam Chuang
Manager

Reviewed by:

Kevin Kuo
Engineer

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Revision History

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	December 18, 2017	Initial Issue	ALL	Allison Chen

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APPENDIX 1 - PHOTOGRAPHS OF EUT

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1. GENERAL INFORMATION

1.1 EUT INFORMATION

Applicant	LITE-ON Technology Corp. Bldg. C, 90, Chien 1 Road, Chung Ho, New Taipei City 23585, Taiwan, R.O.C
Manufacturer	LITE-ON TECHNOLOGY (Changzhou) CO., LTD A9 Building,No.88 Yanghu Road, Wujin Hi-Tech Industrial Development Zone ,Changzhou City,Jiangsu Province 213100 China
Equipment	802.11a/b/g/n/ac 2Tx2R USB WLAN Module
Model Name	WCBN3507R(12)
Model Discrepancy	N/A
Received Date	November 29, 2017
Date of Test	November 30 ~ December 13, 2017
Power Operation	Powered from host device: DC 5V
HW Version	V01
FW Version	JEDI.MT76x2

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	Band	Mode	Frequency Range (MHz)	Output Power (W)	EIRP Output Power (w)
Output Power(W)	U-NII-1	IEEE 802.11a	5180 ~ 5240	0.0380	0.0912
		IEEE 802.11n HT 20 MHz	5180 ~ 5240	0.0822	0.1973
		IEEE 802.11n HT 40 MHz	5190 ~ 5230	0.0739	0.1773
		IEEE 802.11ac VHT 80 MHz	5210	0.0817	0.1959
	U-NII-2a	IEEE 802.11a	5260 ~ 5320	0.0376	0.0902
		IEEE 802.11n HT 20 MHz	5260 ~ 5320	0.0838	0.2009
		IEEE 802.11n HT 40 MHz	5270 ~ 5310	0.0766	0.1838
		IEEE 802.11ac VHT 80 MHz	5290	0.1230	0.2951
	U-NII-2c	IEEE 802.11a	5500 ~ 5700	0.0377	0.0904
		IEEE 802.11a	5720	0.0373	0.0895
		IEEE 802.11n HT 20 MHz	5500 ~ 5700	0.0838	0.2009
		EEE 802.11n HT 20 MHz	5720	0.0771	0.1849
		IEEE 802.11n HT 40 MHz	5510 ~ 5670	0.0774	0.1858
		IEEE 802.11n HT 40 MHz	5710	0.0762	0.1828
		IEEE 802.11ac VHT 80 MHz	5530-5610	0.0785	0.1884
		IEEE 802.11ac VHT 80 MHz	5690	0.0989	0.2371
	U-NII-3	IEEE 802.11a	5720	0.0009	-
		IEEE 802.11a	5745 ~ 5825	0.0380	-
		IEEE 802.11n HT 20 MHz	5720	0.0194	-
		IEEE 802.11n HT 20 MHz	5745 ~ 5825	0.0857	-
		IEEE 802.11n HT 40 MHz	5710	0.0067	-
		IEEE 802.11n HT 40 MHz	5755 ~ 5795	0.0778	-
		IEEE 802.11ac VHT 80 MHz	5690	0.0095	-
		IEEE 802.11ac VHT 80 MHz	5775	0.1476	-

Remark:

1. *For Canada the EUT Frequency Range 5600~5650MHz will be disabled.*
2. *The WLAN hardware of this device are identical to the implementation in PPQ-WCBN3507R .*
3. *The Product Equality Declaration document includes detailed information about the changes between the devices.*
4. *This test report data was reused from FCC ID: PPQ-WCBN3507R, we has been verified through appropriate spot checks to demonstrate compliance for this device as shown in the Section 5.*

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1.2 EUT CHANNEL INFORMATION

<table>
<tr><td>Frequency Range</td><td>
<table>
<tr><td colspan="2">UNII-1</td></tr>
<tr><td>IEEE 802.11a</td><td>5180 ~ 5240 MHz</td></tr>
<tr><td>IEEE 802.11n HT 20 MHz</td><td>5180 ~ 5240 MHz</td></tr>
<tr><td>IEEE 802.11n HT 40 MHz</td><td>5190 ~ 5230 MHz</td></tr>
<tr><td>IEEE 802.11ac VHT 20 MHz</td><td>5180 ~ 5240 MHz</td></tr>
<tr><td>IEEE 802.11ac VHT 40 MHz</td><td>5190 ~ 5230 MHz</td></tr>
<tr><td>IEEE 802.11ac VHT 80 MHz</td><td>5210 MHz</td></tr>
<tr><td colspan="2">UNII-2a</td></tr>
<tr><td>IEEE 802.11a</td><td>5260 ~ 5320 MHz</td></tr>
<tr><td>IEEE 802.11n HT 20 MHz</td><td>5260 ~ 5320 MHz</td></tr>
<tr><td>IEEE 802.11n HT 40 MHz</td><td>5270 ~ 5310 MHz</td></tr>
<tr><td>IEEE 802.11ac VHT 20 MHz</td><td>5260 ~ 5320 MHz</td></tr>
<tr><td>IEEE 802.11ac VHT 40 MHz</td><td>5270 ~ 5310 MHz</td></tr>
<tr><td>IEEE 802.11ac VHT 80 MHz</td><td>5290 MHz</td></tr>
<tr><td colspan="2">UNII-2c</td></tr>
<tr><td>IEEE 802.11a</td><td>5500 ~ 5700 MHz</td></tr>
<tr><td>IEEE 802.11n HT 20 MHz</td><td>5500 ~ 5700 MHz</td></tr>
<tr><td>IEEE 802.11n HT 20 MHz</td><td>5720 MHz</td></tr>
<tr><td>IEEE 802.11n HT 40 MHz</td><td>5510 ~ 5670 MHz</td></tr>
<tr><td>IEEE 802.11n HT 40 MHz</td><td>5710 MHz</td></tr>
<tr><td>IEEE 802.11ac VHT 20 MHz</td><td>5500 ~ 5700 MHz</td></tr>
<tr><td>IEEE 802.11ac VHT 20 MHz</td><td>5720 MHz</td></tr>
<tr><td>IEEE 802.11ac VHT 40 MHz</td><td>5510 ~ 5670 MHz</td></tr>
<tr><td>IEEE 802.11ac VHT 40 MHz</td><td>5710 MHz</td></tr>
<tr><td>IEEE 802.11ac VHT 80 MHz</td><td>5530-5610 MHz</td></tr>
<tr><td>IEEE 802.11ac VHT 80 MHz</td><td>5690 MHz</td></tr>
<tr><td colspan="2">UNII-3</td></tr>
<tr><td>IEEE 802.11a</td><td>5745 ~ 5825 MHz</td></tr>
<tr><td>IEEE 802.11n HT 20 MHz</td><td>5745 ~ 5825 MHz</td></tr>
<tr><td>IEEE 802.11n HT 40 MHz</td><td>5755 ~ 5795 MHz</td></tr>
<tr><td>IEEE 802.11ac VHT 20 MHz</td><td>5745 ~ 5825 MHz</td></tr>
<tr><td>IEEE 802.11ac VHT 40 MHz</td><td>5755 ~ 5795 MHz</td></tr>
<tr><td>IEEE 802.11ac VHT 80 MHz</td><td>5775 MHz</td></tr>
</table>
</td></tr>
<tr><td>Modulation Type</td><td>1. IEEE 802.11a mode: OFDM
2. IEEE 802.11n HT 20 MHz mode: OFDM
3. IEEE 802.11n HT 40 MHz mode: OFDM
4. IEEE 802.11ac VHT 20 MHz mode: OFDM
5. IEEE 802.11ac VHT 40 MHz mode: OFDM
5. IEEE 802.11ac VHT 80 MHz mode: OFDM</td></tr>
</table>

Remark:
Refer as ANSI 63.10:2013 clause 5.6.1 Table 4 for test channels

Number of frequencies to be tested

Frequency range in which device operates	Number of frequencies	Location in frequency range of operation
☐ 1 MHz or less	1	Middle
☐ 1 MHz to 10 MHz	2	1 near top and 1 near bottom
☒ More than 10 MHz	3	1 near top, 1 near middle, and 1 near bottom

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1.3 ANTENNA INFORMATION

<table>
<tr><td>Antenna Type</td><td>☒ PIFA ☐ PCB ☐ Dipole ☐ Coils</td></tr>
<tr><td>Antenna Gain</td><td>
<table>
<tr><th>Brand</th><th>P/N</th><th>Type</th><th>Cable length</th><th>Peak Gain</th><th>Worst case</th></tr>
<tr><td>HongBo</td><td>290-10569</td><td>PIFA</td><td>300mm</td><td>3.80dBi</td><td>V</td></tr>
</table>
1. Power Directional Gain: 3.80
2. Power Density Directional Gain: 3.80

Other antenna information:
<table>
<tr><th>Brand</th><th>P/N</th><th>Type</th><th>Cable length</th><th>Peak Gain</th></tr>
<tr><td>HongBo</td><td>290-10310</td><td>PIFA</td><td>500mm</td><td>2.85dBi</td></tr>
<tr><td>Walsin</td><td>RFMTA401032I MLB702</td><td>PIFA</td><td>320mm</td><td>3.16dBi</td></tr>
<tr><td>Walsin</td><td>RFMTA401080I MLB701</td><td>PIFA</td><td>800mm</td><td>1.85dBi</td></tr>
<tr><td>Walsin</td><td>RFMTA401082I MLB701</td><td>PIFA</td><td>820mm</td><td>1.72dBi</td></tr>
</table>
</td></tr>
</table>

Notes:

1. Power Directional Gain: 10LOG(((10^(Ant1/10)+10^(Ant2/10))/2))

2. Power Density Directional Gain: 10LOG(((10^(Ant1/10)+10^(Ant2/10))/2))+10log(NTX/NSS)

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1.4 MEASUREMENT UNCERTAINTY

PARAMETER	UNCERTAINTY
Semi Anechoic Chamber (966 Chamber_B) / Radiated Emission, 30 to 1000 MHz	+/- 3.97
Semi Anechoic Chamber (966 Chamber_B) / Radiated Emission, 1 to 18GHz	+/- 3.58
Semi Anechoic Chamber (966 Chamber_B) / Radiated Emission, 18 to 26 GHz	+/- 3.59
Semi Anechoic Chamber (966 Chamber_B) / Radiated Emission, 26 to 40 GHz	+/- 3.81
Conducted Emission (Mains Terminals), 9kHz to 30MHz	+/- 2.48

Remark:
1.This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2
2. ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report.

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1.5 FACILITIES AND TEST LOCATION

All measurement facilities used to collect the measurement data are located at

No.11, Wugong 6th Rd., Wugu Dist., New Taipei City 24891, Taiwan. (R.O.C.)

Test site	Test Engineer	Remark
AC Conduction Room	Eric Lee	-
Radiation	Kevin Kuo	-
RF Conducted	Eric Lee	-

Remark: *The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.*

1.6 INSTRUMENT CALIBRATION

RF Conducted Test Site					
Equipment	**Manufacturer**	**Model**	**S/N**	**Cal Date**	**Cal Due**
Power Meter	Anritsu	ML2495A	1033009	04/11/2017	04/10/2018
Power Sensor	Anritsu	MA2411B	917072	07/03/2017	07/02/2018
Spectrum Analyzer	R&S	FSV 40	101073	10/02/2017	10/01/2018
Thermostatic/Hrgrosatic Chamber	GWINSTEK	GTC-288MH-CC	TH160402	05/23/2017	05/22/2018
Directional Coupler	Agilent	87301D	MY44350252	07/25/2017	07/24/2018
SUCOFLEX Cable	HUBER SUHNER	SUCOFLEX 104PEA	25157	07/31/2017	07/30/2018
Divider	Solvang Technology	2-18GHz 4Way	STI08-0015	07/26/2017	07/25/2018

3M 966 Chamber Test Site					
Equipment	**Manufacturer**	**Model**	**S/N**	**Cal Date**	**Cal Due**
Bilog Antenna	Sunol Sciences	JB3	A030105	06/20/2017	06/19/2018
Horn Antenna	EMCO	3117	00055165	02/20/2017	02/19/2018
Pre-Amplifier	EMCI	EMC 012635	980151	08/01/2017	07/31/2018
Pre-Amplifier	EMEC	EM330	060609	06/07/2017	06/06/2018
Spectrum Analyzer	Agilent	E4446A	US42510252	11/26/2017	11/25/2018
Antenna Tower	CCS	CC-A-1F	N/A	N.C.R	N.C.R
Controller	CCS	CC-C-1F	N/A	N.C.R	N.C.R
Turn Table	CCS	CC-T-1F	N/A	N.C.R	N.C.R

AC Conducted Emissions Test Site					
Equipment	**Manufacturer**	**Model**	**S/N**	**Cal Date**	**Cal Due**
LISN	R&S	ENV216	101054	05/18/2017	05/17/2018
LISN	SCHWARZBECK	NSLK 8127	8127-541	02/14/2017	02/13/2018
EMI Test Receiver	R&S	ESCI	100064	05/17/2017	05/16/2018

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

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1.7 SUPPORT AND EUT ACCESSORIES EQUIPMENT

EUT Accessories Equipment					
No.	**Equipment**	**Brand**	**Model**	**Series No.**	**FCC ID**
	N/A				

Support Equipment					
No.	**Equipment**	**Brand**	**Model**	**Series No.**	**FCC ID**
1	NB(H)	Acer	Aspire 4320 series	N/A	QDS-BRCM1018

1.8 TEST METHODOLOGY AND APPLIED STANDARDS

The test methodology, setups and results comply with all requirements in accordance with ANSI C63.10:2013, FCC Part 2, FCC Part 15.407, KDB 662911 D01 v02r01, KDB 789033 D02 v02r01, KDB 905462 D02 v02.

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2. TEST SUMMERY

FCC Standard Sec.	IC Standard Sec.	Chapter	Test Item	Result
15.203	-	1.2	Antenna Requirement	Pass
15.207	RSS-Gen(8.8)	4.1	AC Conducted Emission	Pass
15.403(i)	-	4.2	26dB Bandwidth	Pass
15.407(e)	RSS-247(6.2.4)	4.2	6dB Bandwidth	Pass
15.403(i)	RSS-Gen(6.6)	4.2	Occupied Bandwidth (99%)	Pass
15.407(a)	RSS-247(6.2.1.1) RSS-247(6.2.2.1) RSS-247(6.2.3.1) RSS-247(6.2.4.1)	4.3	Output Power Measurement	Pass
15.407(a)	RSS-247(6.2.1.1) RSS-247(6.2.2.1) RSS-247(6.2.3.1) RSS-247(6.2.4.1)	4.4	Power Spectral Density	Pass
15.407(b)	RSS-247(6.2.1.2) RSS-247(6.2.2.2) RSS-247(6.2.3.2) RSS-247(6.2.4.2)	4.5	Radiation Band Edge	Pass
15.407(b)	RSS-247(6.2.1.2) RSS-247(6.2.2.2) RSS-247(6.2.3.2) RSS-247(6.2.4.2)	4.5	Radiation Spurious Emission	Pass
15.407(g)	RSS-Gen(6.11)	4.6	Frequency Stability	Pass
15.407(h)	RSS-247(6.3)	4.7	Dynamic Frequency Selection	Pass

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3. DESCRIPTION OF TEST MODES

3.1 THE WORST MODE OF OPERATING CONDITION

Operation mode	1. IEEE 802.11a mode: 6Mbps 2. IEEE 802.11n HT 20 MHz mode: MCS0 3. IEEE 802.11n HT 40 MHz mode: MCS0 4. IEEE 802.11ac VHT 20 MHz mode: MCS0 5. IEEE 802.11ac VHT 40 MHz mode: MCS0 5. IEEE 802.11ac VHT 80 MHz mode: MCS0

Operating Frequency Range & Number of Channels

	Mode	Frequency Range (MHz)	Number of Channels
U-NII-1	IEEE 802.11a	5180 ~ 5240	4 Channels
	IEEE 802.11n HT 20 MHz	5180 ~ 5240	4 Channels
	IEEE 802.11n HT 40 MHz	5190 ~ 5230	2 Channels
	IEEE 802.11ac VHT 20 MHz	5180 ~ 5240	4 Channels
	IEEE 802.11ac VHT 40 MHz	5190 ~ 5230	2 Channels
	IEEE 802.11ac VHT 80 MHz	5210	1 Channels
U-NII-2a	IEEE 802.11a	5260 ~ 5320	4 Channels
	IEEE 802.11n HT 20 MHz	5260 ~ 5320	4 Channels
	IEEE 802.11n HT 40 MHz	5270 ~ 5310	2 Channels
	IEEE 802.11ac VHT 20 MHz	5260 ~ 5320	4 Channels
	IEEE 802.11ac VHT 40 MHz	5270 ~ 5310	2 Channels
	IEEE 802.11ac VHT 80 MHz	5290	1 Channels
U-NII-2c	IEEE 802.11a	5500 ~ 5700	11 Channels
	IEEE 802.11a	5720	1 Channels
	IEEE 802.11n HT 20 MHz	5500 ~ 5700	11 Channels
	IEEE 802.11n HT 20 MHz	5720	1 Channels
	IEEE 802.11n HT 40 MHz	5510 ~ 5670	5 Channels
	IEEE 802.11n HT 40 MHz	5710	1 Channels
	IEEE 802.11ac VHT 20 MHz	5500 ~ 5700	11 Channels
	IEEE 802.11ac VHT 20 MHz	5720	1 Channels
	IEEE 802.11ac VHT 40 MHz	5510 ~ 5670	5 Channels
	IEEE 802.11ac VHT 40 MHz	5710	1 Channels
	IEEE 802.11ac VHT 80 MHz	5530~5610	2 Channels
	IEEE 802.11ac VHT 80 MHz	5690	1 Channels
U-NII-3	IEEE 802.11a	5745 ~ 5825	5 Channels
	IEEE 802.11n HT 20 MHz	5745 ~ 5825	5 Channels
	IEEE 802.11n HT 40 MHz	5755 ~ 5795	2 Channels
	IEEE 802.11ac VHT 20 MHz	5745 ~ 5825	5 Channels
	IEEE 802.11ac VHT 40 MHz	5755 ~ 5795	2 Channels
	IEEE 802.11ac VHT 80 MHz	5775	1 Channels

Remark:
1. EUT pre-scanned data rate of output power for each mode, the worst data rate were recorded in this report.
2. Covered modes are test reduction modes. The output powers on the covered modes are equal to or less than the mode referenced and use the same module
3.The mode IEEE 802.11ac VHT20 and VHT40 are only different in control messages with IEEE 802.11n HT20 and HT40, and have same power setting. Therefore, the highest power(IEEE 802.11n HT20 and HT40) were test conducted and radiated measurement and recorded in this report.

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3.2 THE WORST MODE OF MEASUREMENT

AC Power Line Conducted Emission	
Test Condition	AC Power line conducted emission for line and neutral
Voltage/Hz	5V
Test Mode	Mode 1:EUT power by Host System.
Worst Mode	☒ Mode 1 ☐ Mode 2 ☐ Mode 3 ☐ Mode 4

Radiated Emission Measurement Above 1G	
Test Condition	Band edge, Emission for Unwanted and Fundamental
Voltage/Hz	5V
Test Mode	Mode 1:EUT power by Host System.
Worst Mode	☒ Mode 1 ☐ Mode 2 ☐ Mode 3 ☐ Mode 4
Worst Position	☐ Placed in fixed position. ☐ Placed in fixed position at X-Plane (E2-Plane) ☐ Placed in fixed position at Y-Plane (E1-Plane) ☒ Placed in fixed position at Z-Plane (H-Plane)
Worst Polarity	☐ Horizontal ☒ Vertical

Radiated Emission Measurement Below 1G	
Test Condition	Radiated Emission Below 1G
Voltage/Hz	5V
Test Mode	Mode 1:EUT power by Host System.
Worst Mode	☒ Mode 1 ☐ Mode 2 ☐ Mode 3 ☐ Mode 4

Remark:
1. The worst mode was record in this test report.
2. EUT pre-scanned in three axis ,X,Y, Z and two polarity, Horizontal and Vertical for radiated measurement. The worst case(Z-Plane and Vertical) were recorded in this report
3. For below 1G, AC power line conducted emission and radiation emission were performed the EUT transmit at the highest output power channel as worse case.

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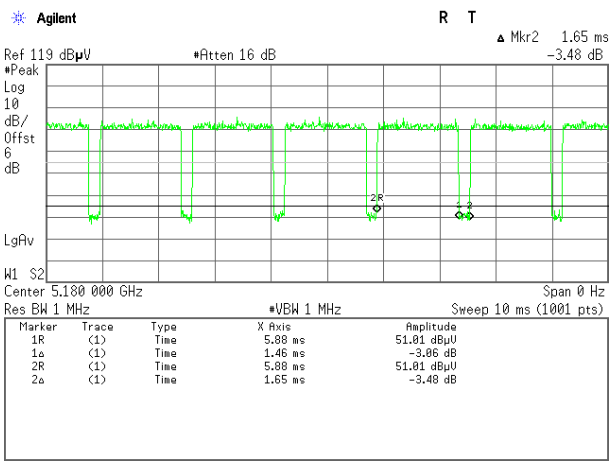
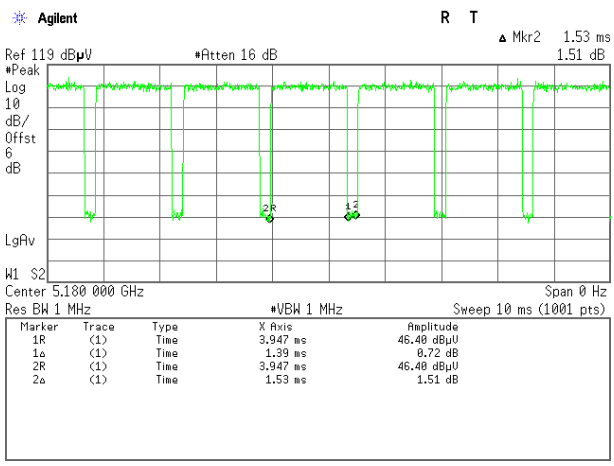
3.3 EUT DUTY CYCLE

Duty Cycle				
Configuration	TX ON (ms)	TX ALL (ms)	Duty Cycle (%)	Duty Factor(dB)
802.11a	1.4600	1.6500	88.48%	0.53
802.11n HT20	1.3900	1.5300	90.85%	0.42
802.11n HT40	0.7100	0.8400	84.52%	0.73
802.11ac VHT80	0.3500	0.5300	66.04%	1.80

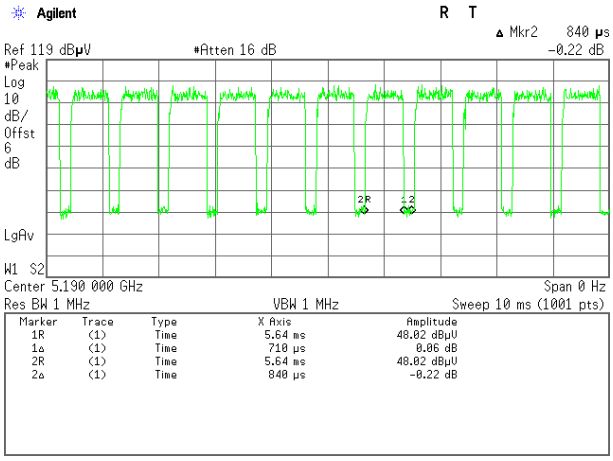
802.11a



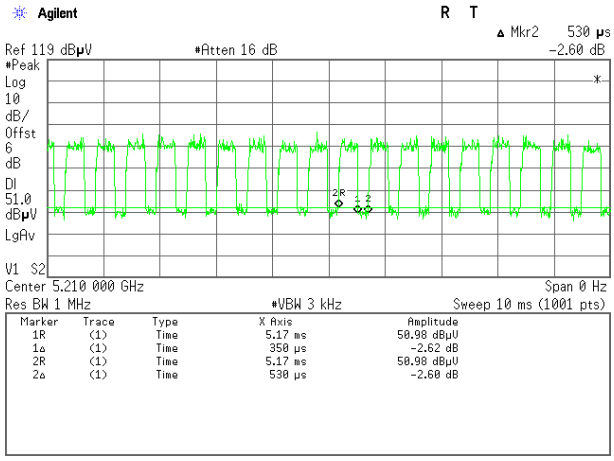
802.11n HT20



802.11n HT40



802.11ac VHT80



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4. TEST RESULT

4.1 AC POWER LINE CONDUCTED EMISSION

4.1.1 Test Limit

According to §15.207(a) and RSS-GEN section 8.8,

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

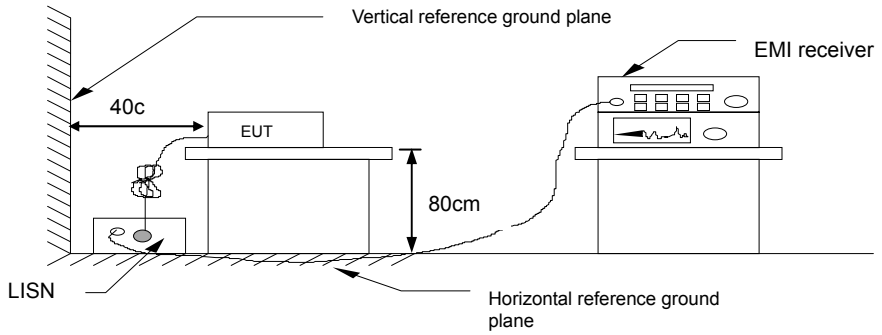
* Decreases with the logarithm of the frequency.

4.1.2 Test Procedure

Test method Refer as ANSI 63.10:2013 clause 6.2,

1. The EUT was placed on a non-conducted table, which is 0.8m above horizontal ground plane and 0.4m above vertical ground plane.
2. EUT connected to the line impedance stabilization network (LISN)
3. Receiver set RBW of 9kHz and Detector Peak, and note as quasi-peak and average.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. Recorded Line for Neutral and Line.

4.1.3 Test Setup



4.1.4 Test Result

Pass.

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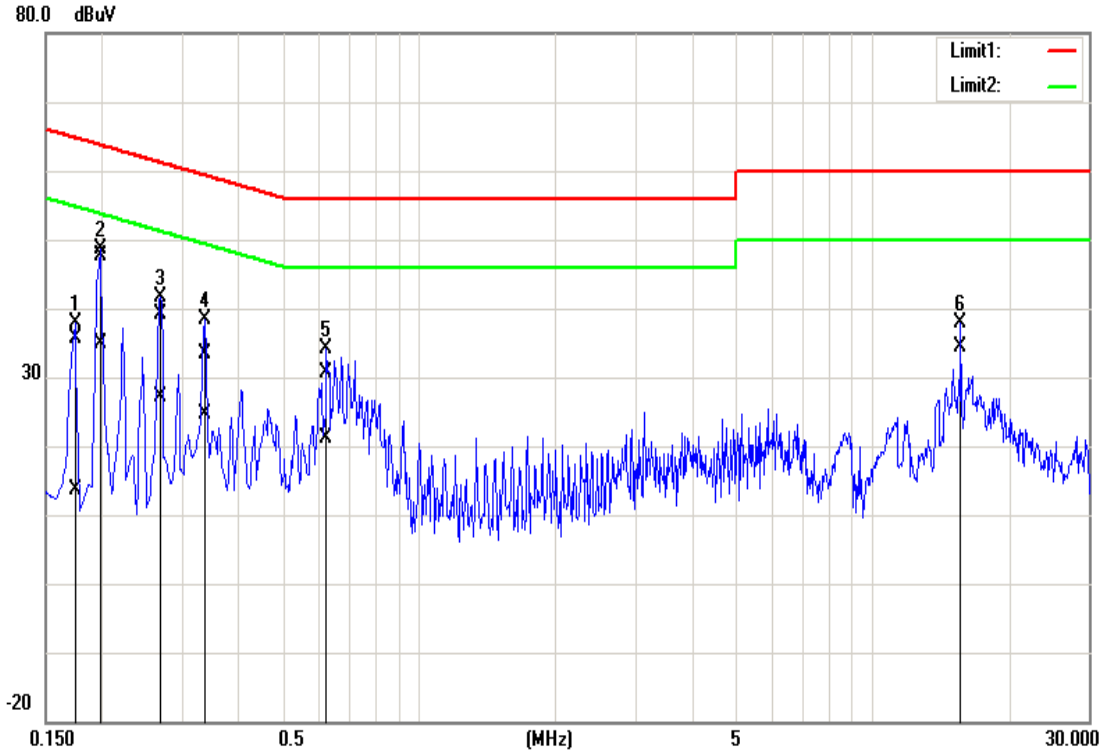
Test Data

Test Mode:	Mode 1	Temp/Hum	24(℃)/ 50%RH
Test Voltage:	120Vac / 60Hz	Test Date	December 1, 2017
Phase:	Line	Test Engineer	Eric Lee



Frequency (MHz)	Quasi Peak reading (dBuV)	Average reading (dBuV)	Correction factor (dB)	Quasi Peak result (dBuV)	Average result (dBuV)	Quasi Peak limit (dBuV)	Average limit (dBuV)	Quasi Peak margin (dB)	Average margin (dB)	Remark
0.1740	35.69	13.64	0.05	35.74	13.69	64.77	54.77	-29.03	-41.08	Pass
0.1980	47.55	34.77	0.05	47.60	34.82	63.69	53.69	-16.09	-18.87	Pass
0.2700	39.17	26.98	0.05	39.22	27.03	61.12	51.12	-21.90	-24.09	Pass
0.3380	33.35	24.53	0.05	33.40	24.58	59.25	49.25	-25.85	-24.67	Pass
0.6260	30.52	21.14	0.06	30.58	21.20	56.00	46.00	-25.42	-24.80	Pass
15.7100	37.66	34.16	0.24	37.90	34.40	60.00	50.00	-22.10	-15.60	Pass

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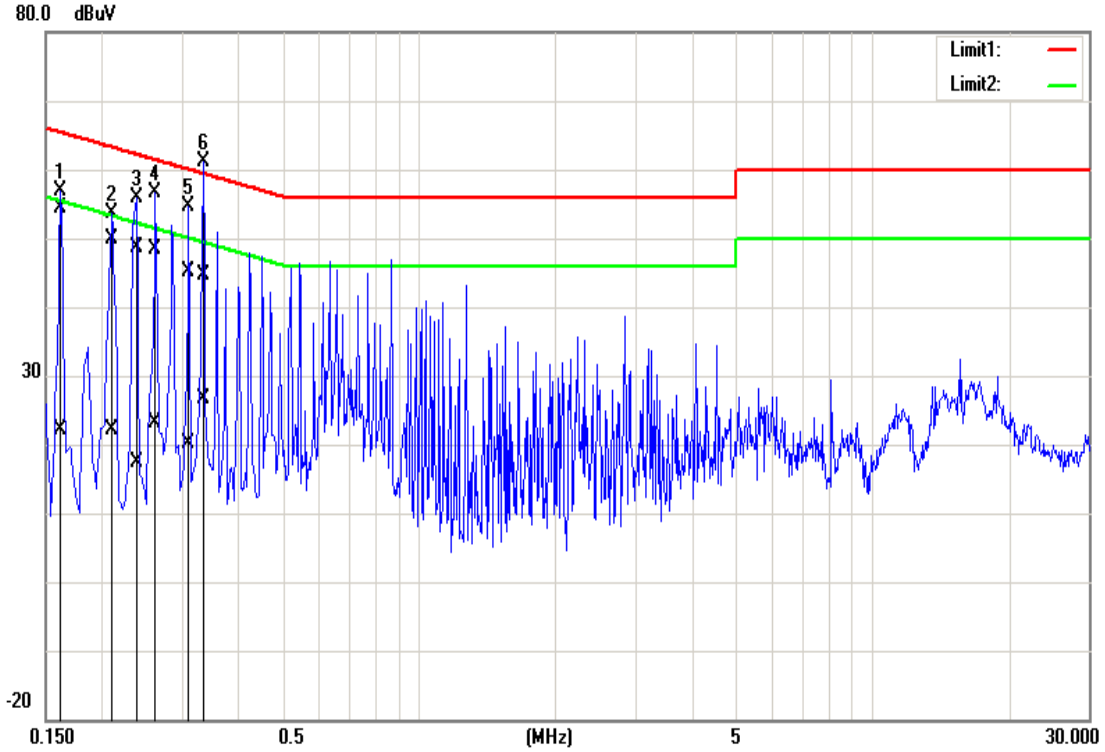
Test Mode:	Mode 1	Temp/Hum	24(℃)/ 50%RH
Test Voltage:	120Vac / 60Hz	Test Date	December 1, 2017
Phase:	Neutral	Test Engineer	Eric Lee



Frequency (MHz)	Quasi Peak reading (dBuV)	Average reading (dBu)	Correction factor (dB)	Quasi Peak result (dBuV)	Average result (dBuV)	Quasi Peak limit (dBuV)	Average limit (dBuV)	Quasi Peak margin (dB)	Average margin (dB)	Remark
0.1620	54.20	21.98	0.12	54.32	22.10	65.36	55.36	-11.04	-33.26	Pass
0.2100	49.73	22.12	0.12	49.85	22.24	63.21	53.21	-13.36	-30.97	Pass
0.2380	48.47	17.15	0.12	48.59	17.27	62.17	52.17	-13.58	-34.90	Pass
0.2620	48.27	23.03	0.12	48.39	23.15	61.37	51.37	-12.98	-28.22	Pass
0.3100	45.10	19.92	0.13	45.23	20.05	59.97	49.97	-14.74	-29.92	Pass
0.3340	44.47	26.57	0.13	44.60	26.70	59.35	49.35	-14.75	-22.65	Pass

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4.2 26DB BANDWIDTH, 6DB BANDWIDTH AND OCCUPIED BANDWIDTH(99%)

4.2.1 Test Limit

26 dB Bandwidth ：For reporting purposes only.

6 dB Bandwidth ：Least 500kHz.

Occupied Bandwidth(99%) ： For reporting purposes only.

4.2.2 Test Procedure

Test method Refer as KDB 789033 D02 v02r01 Section C, D, and ANSI 63.10:2013 clause 6.9.2,

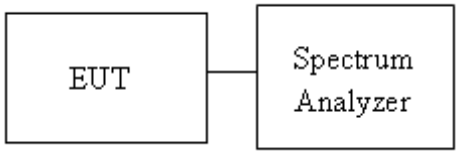
1. The EUT RF output connected to the spectrum analyzer by RF cable.
2. Setting maximum power transmit of EUT
3. UNII-1, UNII-2a and UNII-2c,

   (1) BW=20MHz : SA set RBW = 300kHz, VBW = 1MHz and Detector = Peak, to measurement 26 dB Bandwidth and 99% Bandwidth

   (2) BW=40MHz : SA set RBW = 1MHz, VBW = 3MHz and Detector = Peak, to measurement 26 dB Bandwidth and 99% Bandwidth

   (3) BW=80MHz : SA set RBW = 1MHz, VBW = 3MHz and Detector = Peak, to measurement 26 dB Bandwidth and 99% Bandwidth
4. UNII-3, SA set RBW = 100kHz, VBW = 300kHz and Detector = Peak, to measurement 26 dB Bandwidth and 99% Bandwidth
5. Measure and record the result of 6 dB Bandwidth and 99% Bandwidth. in the test report.

4.2.3 Test Setup



This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

4.2.4 Test Result

UNII-1 5150-5250 MHz					
Test mode: IEEE 802.11a mode					
Channel	**Frequency (MHz)**	**Chain 0 OBW(99%) (MHz)**	**Chain 1 OBW(99%) (MHz)**	**Chain 0 26dB BW (MHz)**	**Chain 1 26dB BW (MHz)**
Low	5180	16.6425	-	21.0145	-
Mid	5220	16.6425	-	20.4348	-
High	5240	16.6425	-	23.4058	-
Test mode: IEEE 802.11n HT20 mode					
Channel	**Frequency (MHz)**	**Chain 0 OBW(99%) (MHz)**	**Chain 1 OBW(99%) (MHz)**	**Chain 0 26dB BW (MHz)**	**Chain 1 26dB BW (MHz)**
Low	5180	17.5832	17.5832	20.5797	20.2174
Mid	5220	17.5832	17.5832	20.5072	20.2174
High	5240	17.5832	17.5832	20.5797	20.2174
Test mode: IEEE 802.11n HT40 mode					
Channel	**Frequency (MHz)**	**Chain 0 OBW(99%) (MHz)**	**Chain 1 OBW(99%) (MHz)**	**Chain 0 26dB BW (MHz)**	**Chain 1 26dB BW (MHz)**
Low	5190	36.1215	36.0057	41.739	41.391
High	5230	36.2373	36.1215	43.362	44.638
Test mode: IEEE 802.11ac VHT80 mode					
Channel	**Frequency (MHz)**	**Chain 0 OBW(99%) (MHz)**	**Chain 1 OBW(99%) (MHz)**	**Chain 0 26dB BW (MHz)**	**Chain 1 26dB BW (MHz)**
Mid	5210	75.0217	75.0217	80.696	80.464

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UNII-2a 5250-5350 MHz					
Test mode: IEEE 802.11a mode					
Channel	**Frequency (MHz)**	**Chain 0 OBW(99%) (MHz)**	**Chain 1 OBW(99%) (MHz)**	**Chain 0 26dB BW (MHz)**	**Chain 1 26dB BW (MHz)**
Low	5260	16.6425	-	20.1449	-
Mid	5280	16.6425	-	20.6522	-
High	5320	16.6425	-	20.5072	-
Test mode: IEEE 802.11n HT20 mode					
Channel	**Frequency (MHz)**	**Chain 0 OBW(99%) (MHz)**	**Chain 1 OBW(99%) (MHz)**	**Chain 0 26dB BW (MHz)**	**Chain 1 26dB BW (MHz)**
Low	5260	17.5832	17.5832	20.3623	20.2174
Mid	5280	17.5832	17.5832	20.5797	20.0725
High	5320	17.6555	17.5832	23.6232	20.942
Test mode: IEEE 802.11n HT40 mode					
Channel	**Frequency (MHz)**	**Chain 0 OBW(99%) (MHz)**	**Chain 1 OBW(99%) (MHz)**	**Chain 0 26dB BW (MHz)**	**Chain 1 26dB BW (MHz)**
Low	5270	36.1215	36.1215	46.841	41.855
High	5310	36.2373	36.0057	41.855	41.623
Test mode: IEEE 802.11ac VHT80 mode					
Channel	**Frequency (MHz)**	**Chain 0 OBW(99%) (MHz)**	**Chain 1 OBW(99%) (MHz)**	**Chain 0 26dB BW (MHz)**	**Chain 1 26dB BW (MHz)**
Mid	5290	75.0217	75.0217	80.928	81.159

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UNII-2c 5475-5725 MHz					
Test mode: IEEE 802.11a mode					
Channel	**Frequency (MHz)**	**Chain 0 OBW(99%) (MHz)**	**Chain 1 OBW(99%) (MHz)**	**Chain 0 26dB BW (MHz)**	**Chain 1 26dB BW (MHz)**
Low	5500	16.6425	-	20.1449	-
Mid	5580	16.6425	-	20.7971	-
High	5700	16.7149	-	22.6087	-
Cross	5720	16.6425	-	20.0000	-
Test mode: IEEE 802.11n HT20 mode					
Channel	**Frequency (MHz)**	**Chain 0 OBW(99%) (MHz)**	**Chain 1 OBW(99%) (MHz)**	**Chain 0 26dB BW (MHz)**	**Chain 1 26dB BW (MHz)**
Low	5500	17.6555	17.7279	23.2609	20.5797
Mid	5580	17.7279	17.7279	26.9565	21.8841
High	5700	17.7279	17.6555	21.9565	20.3623
Cross	5720	17.5832	17.5832	20.5797	20.2174
Test mode: IEEE 802.11n HT40 mode					
Channel	**Frequency (MHz)**	**Chain 0 OBW(99%) (MHz)**	**Chain 1 OBW(99%) (MHz)**	**Chain 0 26dB BW (MHz)**	**Chain 1 26dB BW (MHz)**
Low	5510	36.2373	36.0057	41.9710	41.6230
Mid	5500	36.2373	36.2373	44.4060	52.5220
High	5670	36.3531	36.2373	55.8840	60.2900
Cross	5710	36.1215	36.0057	41.5070	49.0430
Test mode: IEEE 802.11ac VHT80 mode					
Channel	**Frequency (MHz)**	**Chain 0 OBW(99%) (MHz)**	**Chain 1 OBW(99%) (MHz)**	**Chain 0 26dB BW (MHz)**	**Chain 1 26dB BW (MHz)**
Mid	5530	75.0217	75.0217	81.1590	81.1590
Cross	5690	75.0217	75.0217	80.4640	80.2320

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UNII-3 5725-5825MHz					
Test mode: IEEE 802.11a mode					
Channel	**Frequency (MHz)**	**Chain 0 OBW(99%) (MHz)**	**Chain 1 OBW(99%) (MHz)**	**Chain 0 6dB BW (MHz)**	**Chain 1 6dB BW (MHz)**
Low	5745	16.7149	-	16.3043	-
Mid	5785	16.7149	-	16.3043	-
High	5825	16.7149	-	16.3043	-
Cross	5720	16.6425	-	16.4550	-
Test mode: IEEE 802.11n HT20 mode					
Channel	**Frequency (MHz)**	**Chain 0 OBW(99%) (MHz)**	**Chain 1 OBW(99%) (MHz)**	**Chain 0 6dB BW (MHz)**	**Chain 1 6dB BW (MHz)**
Low	5745	17.9450	17.8002	16.9130	17.5652
Mid	5785	18.0173	17.9450	17.0000	17.5652
High	5825	17.8726	17.8002	17.0435	17.3043
Cross	5720	17.5832	17.5832	17.3220	17.6110
Test mode: IEEE 802.11n HT40 mode					
Channel	**Frequency (MHz)**	**Chain 0 OBW(99%) (MHz)**	**Chain 1 OBW(99%) (MHz)**	**Chain 0 6dB BW (MHz)**	**Chain 1 6dB BW (MHz)**
Low	5755	36.4688	36.2373	35.1300	35.1300
High	5795	36.3531	36.3531	35.1300	35.1300
Cross	5710	36.2373	36.0057	35.3000	35.3000
Test mode: IEEE 802.11ac VHT80 mode					
Channel	**Frequency (MHz)**	**Chain 0 OBW(99%) (MHz)**	**Chain 1 OBW(99%) (MHz)**	**Chain 0 6dB BW (MHz)**	**Chain 1 6dB BW (MHz)**
Mid	5775	75.0217	75.0217	75.1300	75.1300
Cross	5690	75.0217	75.0217	75.1300	74.4400

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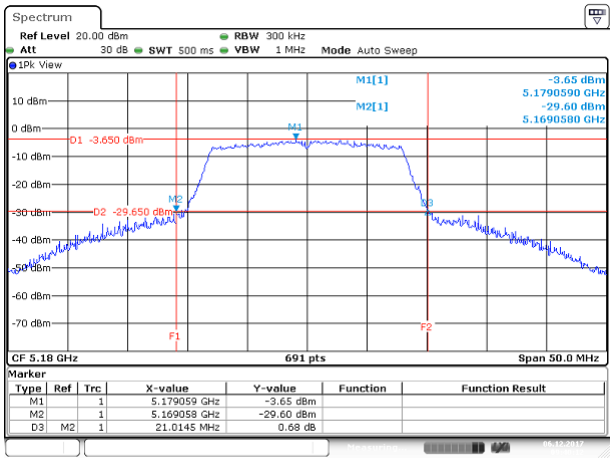
Test Data

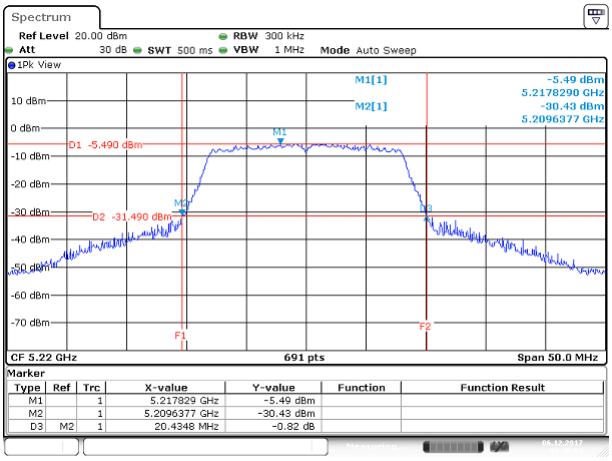
UNII-1 IEEE 802.11a mode- chain 0

Low CH



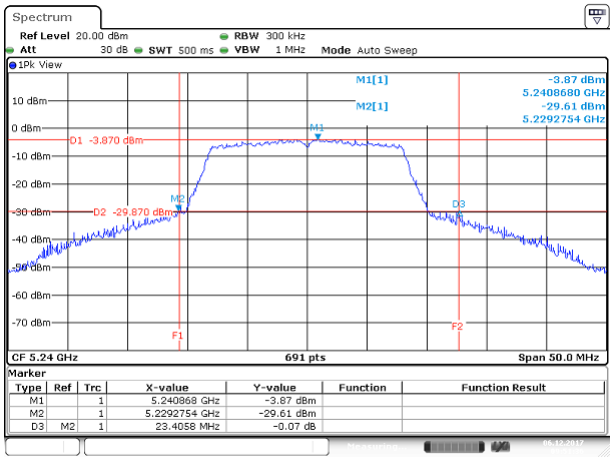
Date: 6.DEC.2017 09:40:13

Mid CH



Date: 6.DEC.2017 09:49:10

High CH



Date: 6.DEC.2017 09:51:37

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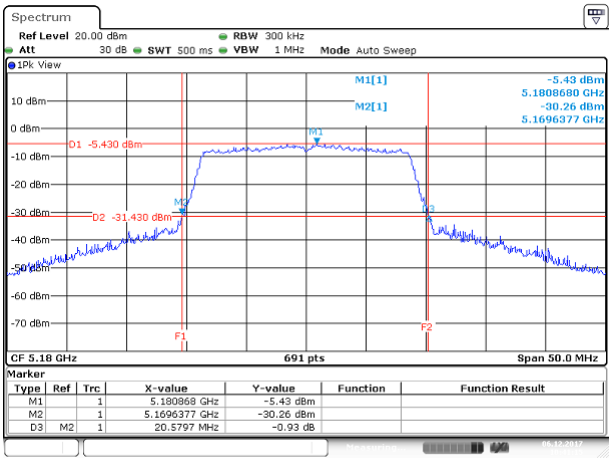
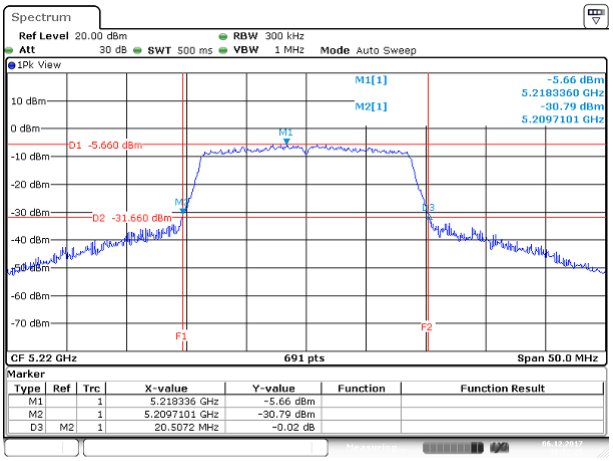
UNII-1 IEEE 802.11n HT20 mode- chain 0

Low CH



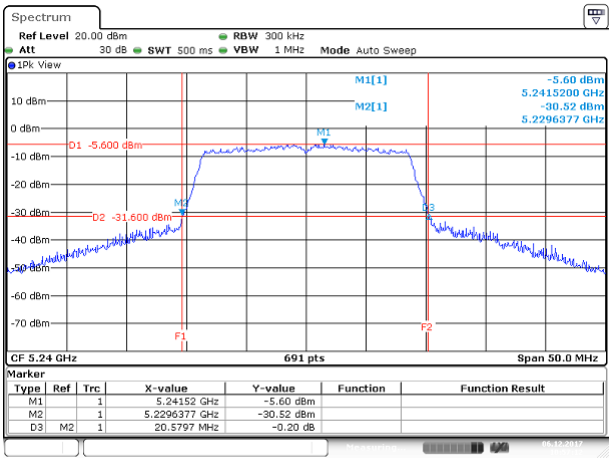
Date: 6.DEC.2017 10:41:16

Mid CH



Date: 6.DEC.2017 10:52:26

High CH



Date: 6.DEC.2017 10:57:13

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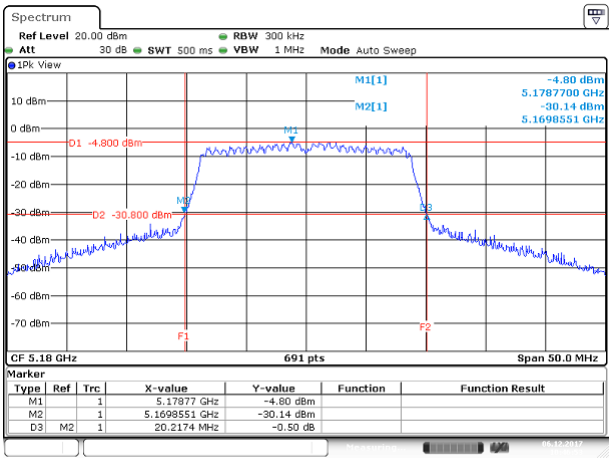
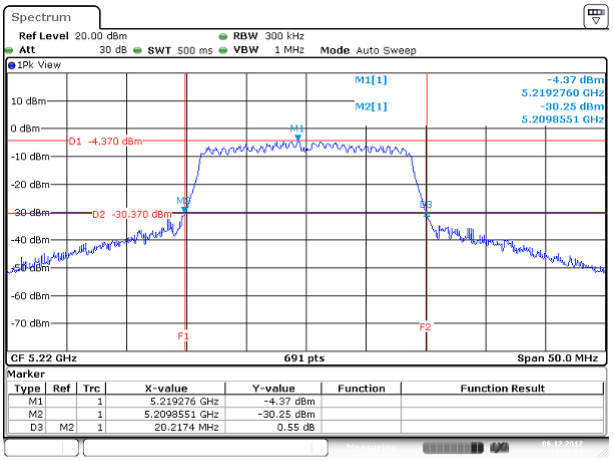
UNII-1 IEEE 802.11n HT20 mode- chain 1

Low CH



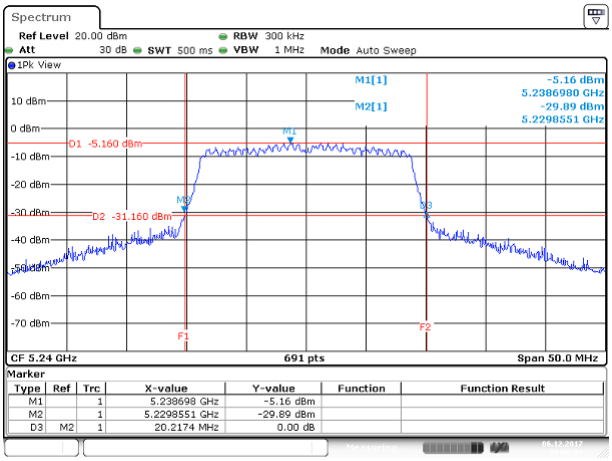
Date: 6.DEC.2017 10:46:54

Mid CH



Date: 6.DEC.2017 10:49:59

High CH



Date: 6.DEC.2017 10:59:36

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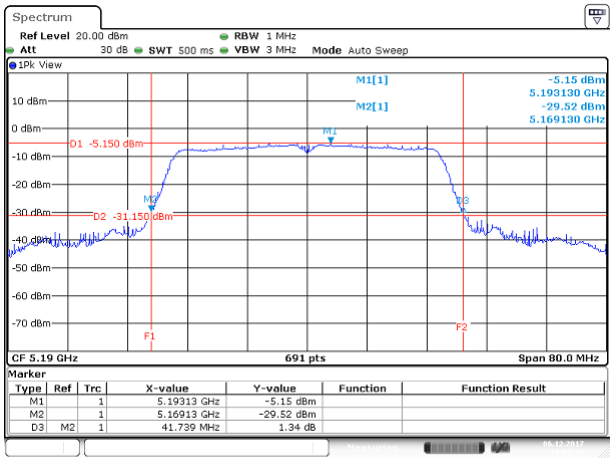
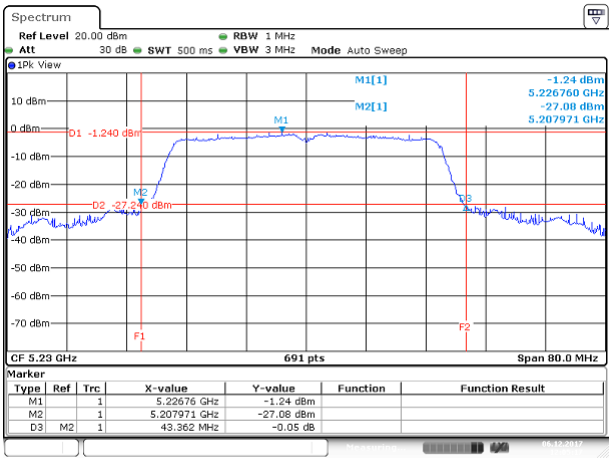
UNII-1 IEEE 802.11n HT40 mode- chain 0

Low CH

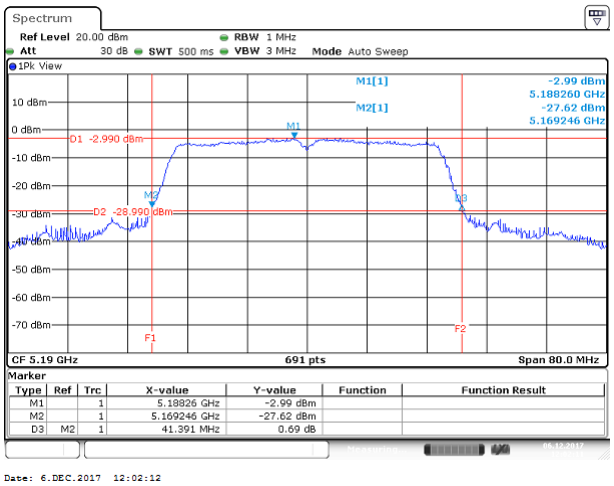


High CH

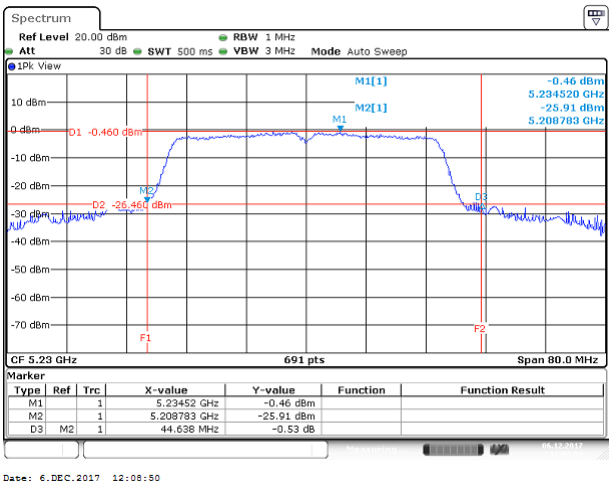


UNII-1 IEEE 802.11n HT40 mode- chain 1

Low CH



High CH



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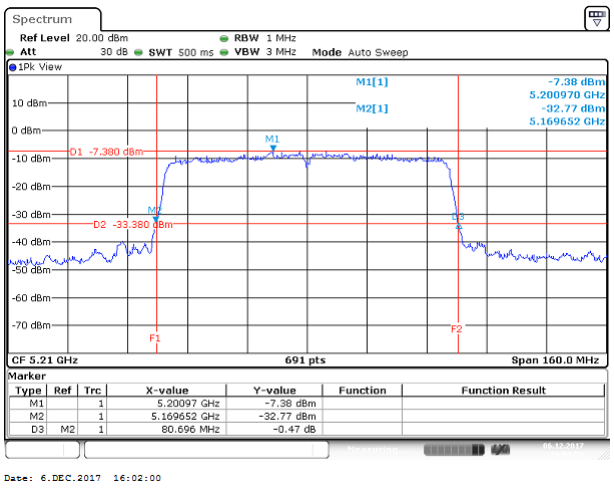
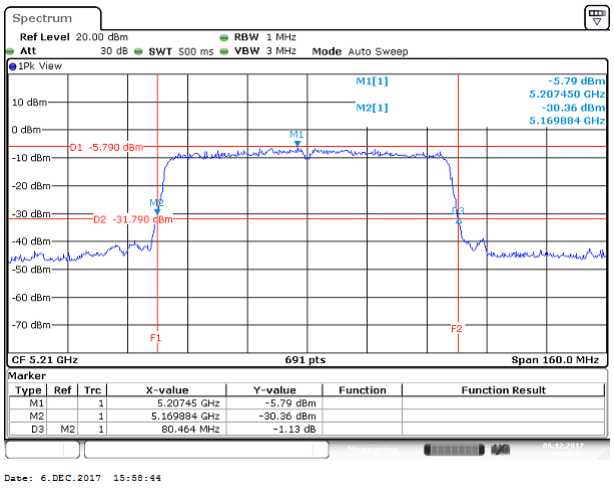
UNII-1 IEEE 802.11ac VHT80 mode- chain 0

Mid CH



UNII-1 IEEE 802.11ac VHT80 mode- chain 1

Mid CH

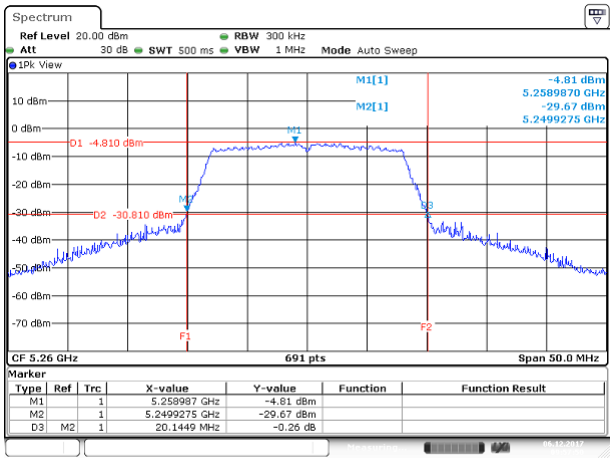


This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

Test Data

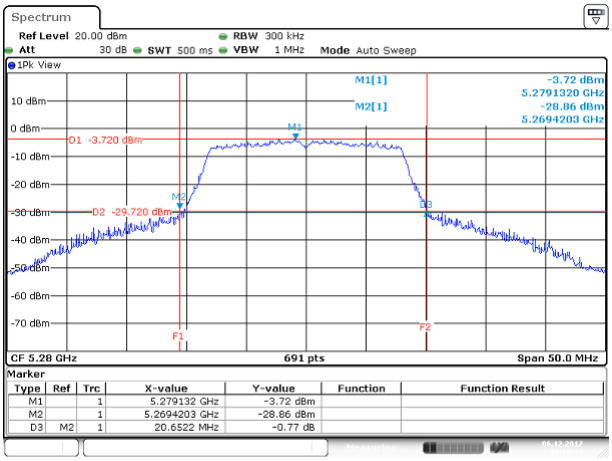
UNII-2a IEEE 802.11a mode- chain 0

Low CH



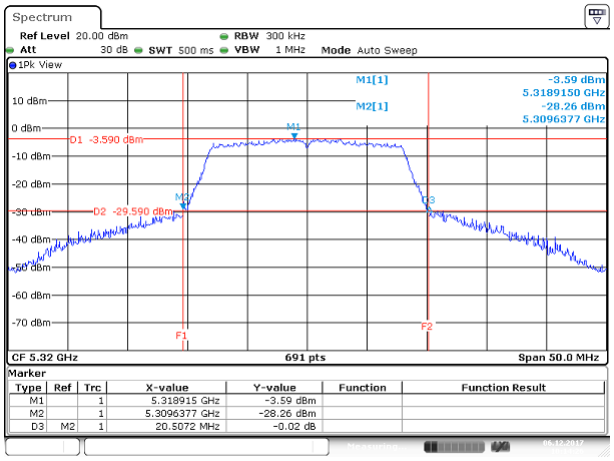
Date: 6.DEC.2017 09:57:50

Mid CH



Date: 6.DEC.2017 10:11:33

High CH



Date: 6.DEC.2017 10:14:27

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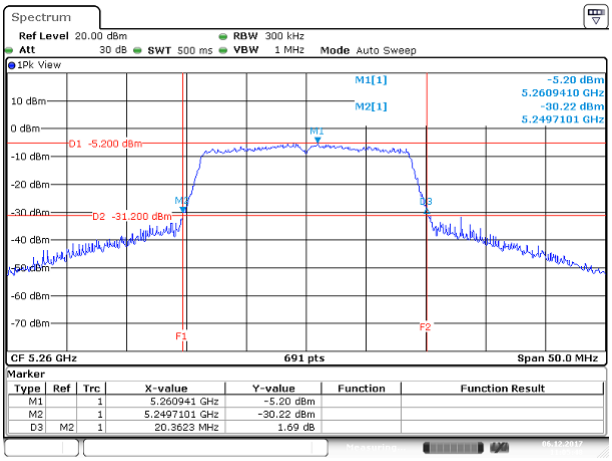
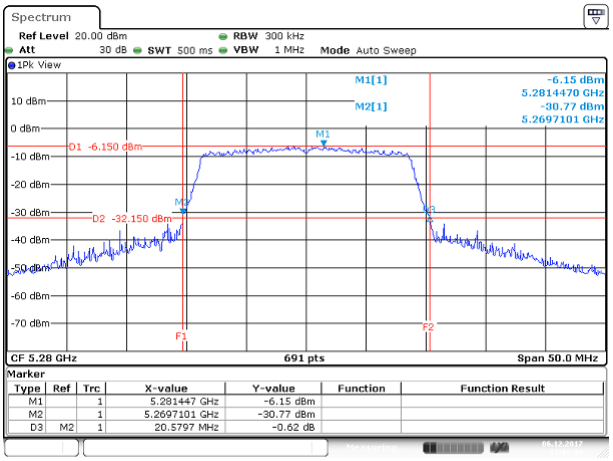
UNII-2a IEEE 802.11n HT20 mode- chain 0

Low CH



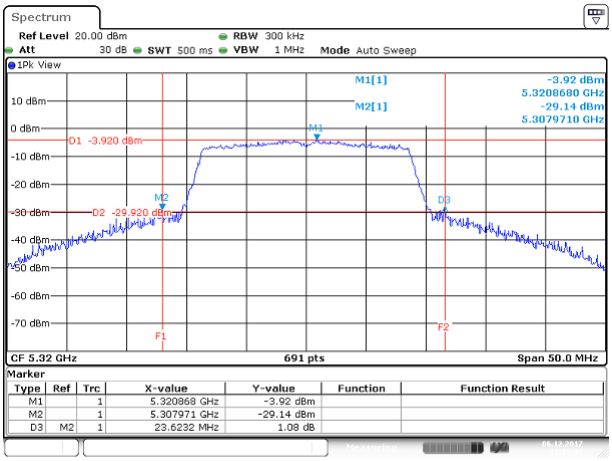
Date: 6.DEC.2017 11:05:49

Mid CH



Date: 6.DEC.2017 11:08:31

High CH



Date: 6.DEC.2017 11:15:41

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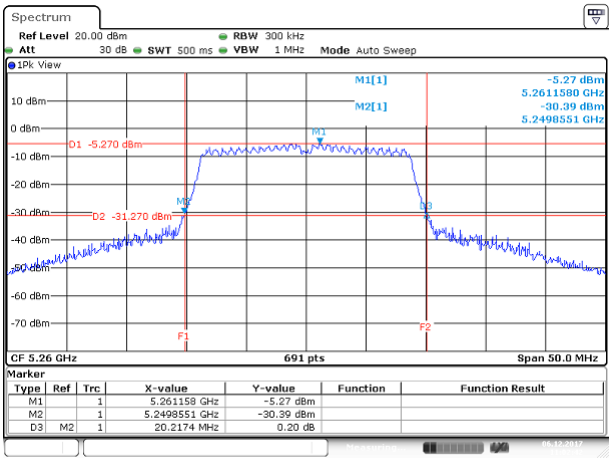
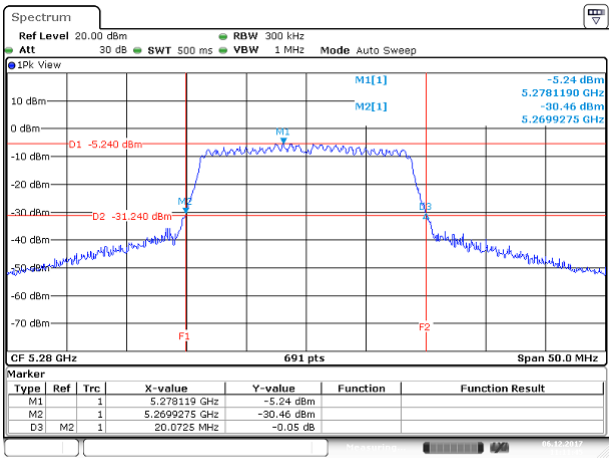
UNII-2a IEEE 802.11n HT20 mode- chain 1

Low CH



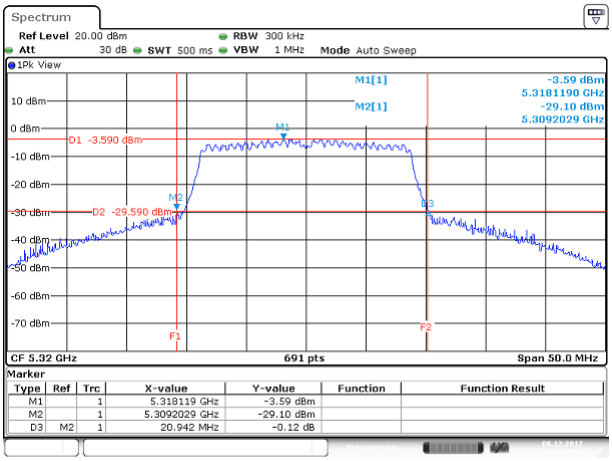
Date: 6.DEC.2017 11:02:43

Mid CH



Date: 6.DEC.2017 11:11:45

High CH



Date: 6.DEC.2017 11:13:55

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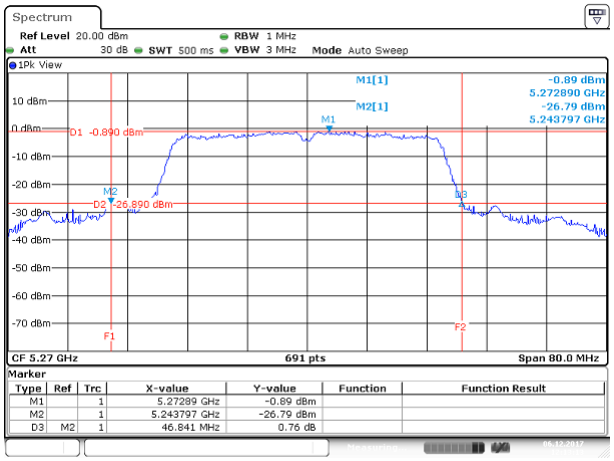
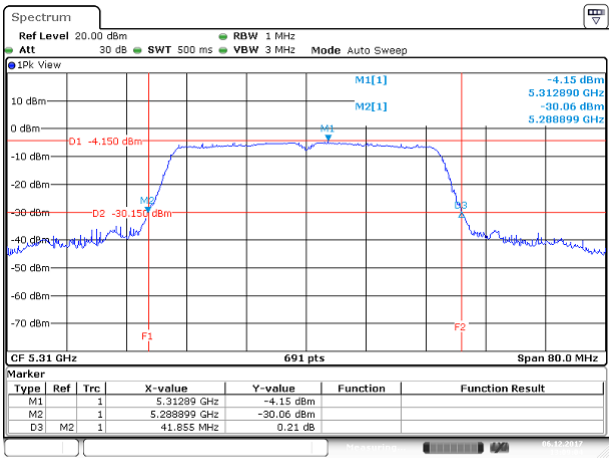
UNII-2a IEEE 802.11n HT40 mode- chain 0

Low CH



Date: 6.DEC.2017 12:13:14

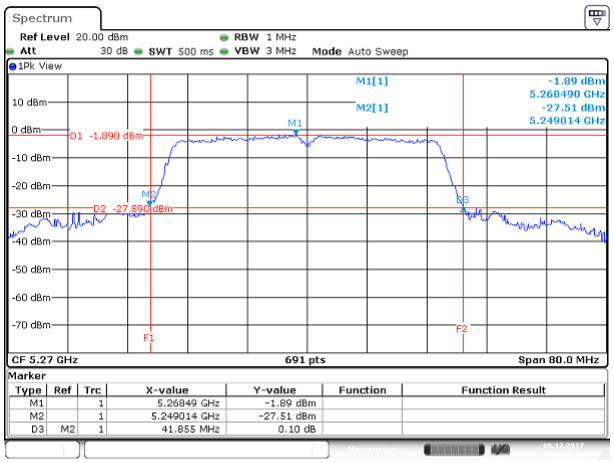
High CH



Date: 6.DEC.2017 13:09:04

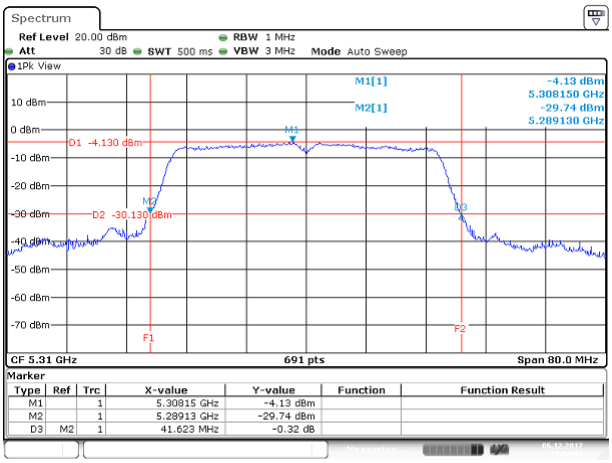
UNII-2a IEEE 802.11n HT40 mode- chain 1

Low CH



Date: 6.DEC.2017 12:16:59

High CH



Date: 6.DEC.2017 13:04:52

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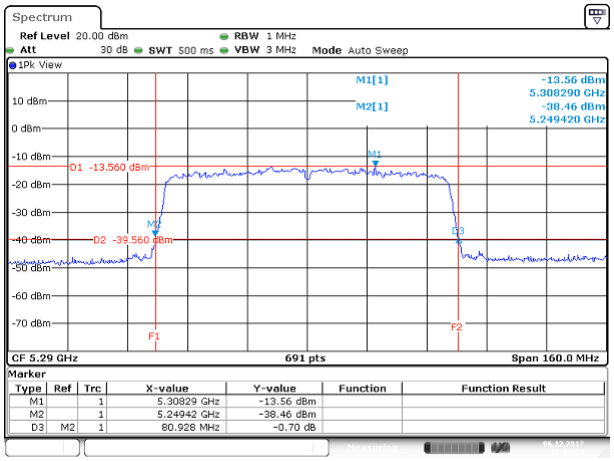
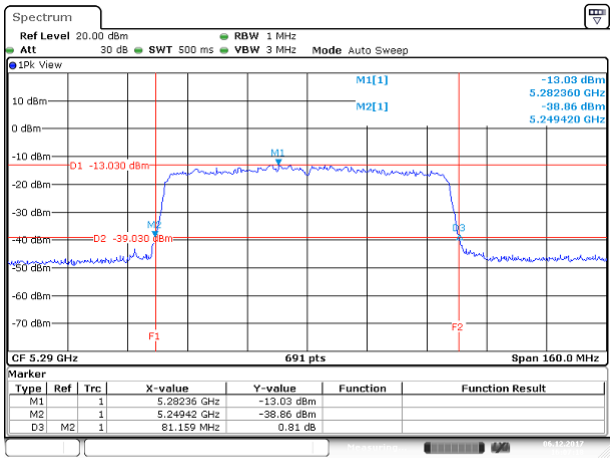
UNII-2a IEEE 802.11ac VHT80 mode- chain 0

Mid CH



UNII-2a IEEE 802.11ac VHT80 mode- chain 0

Mid CH



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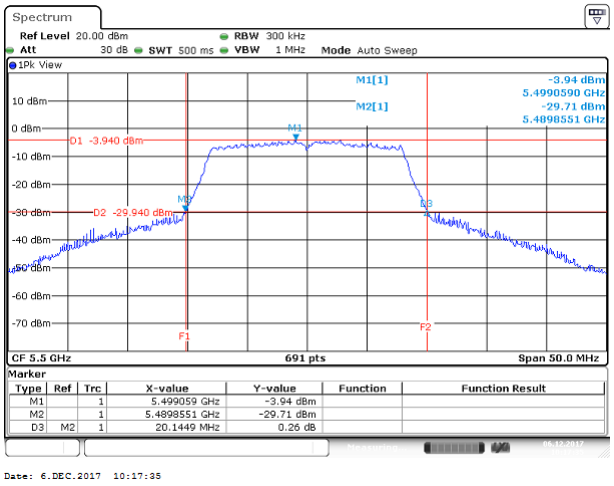
Test Data

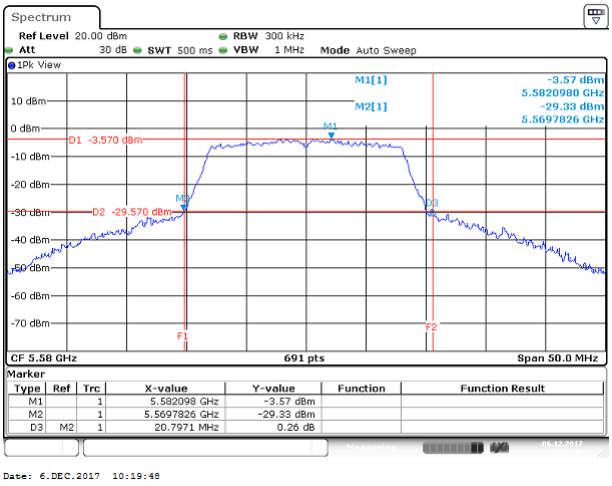
UNII-2c IEEE 802.11a mode- chain 0

Low CH



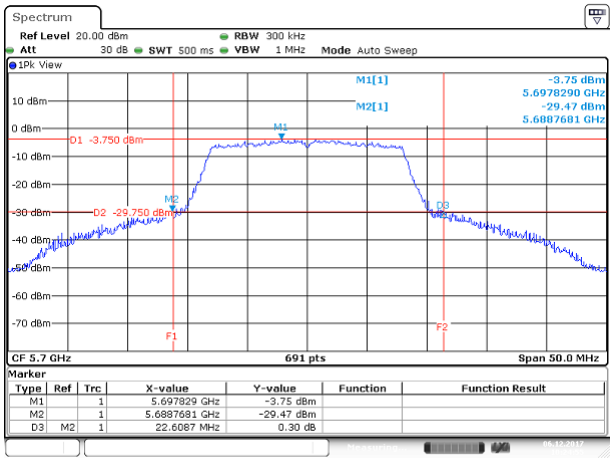
Date: 6.DEC.2017 10:17:35

Mid CH



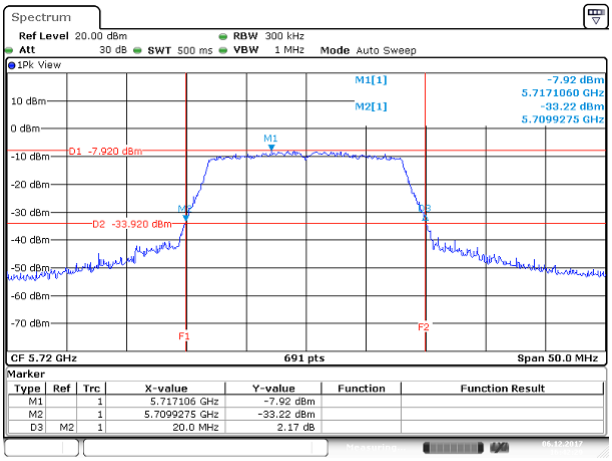
Date: 6.DEC.2017 10:19:48

High CH



Date: 6.DEC.2017 10:24:56

Cross CH



Date: 6.DEC.2017 16:42:30

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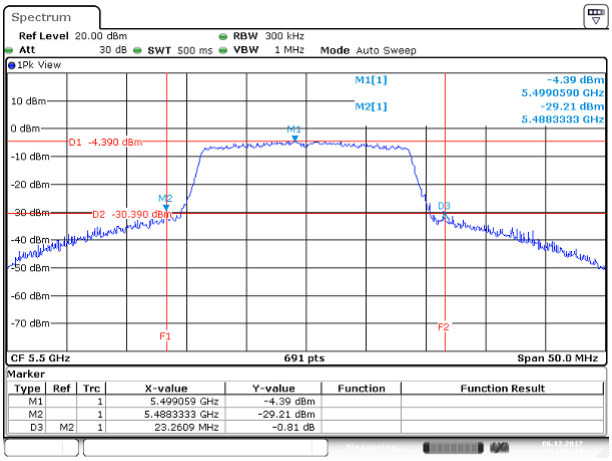
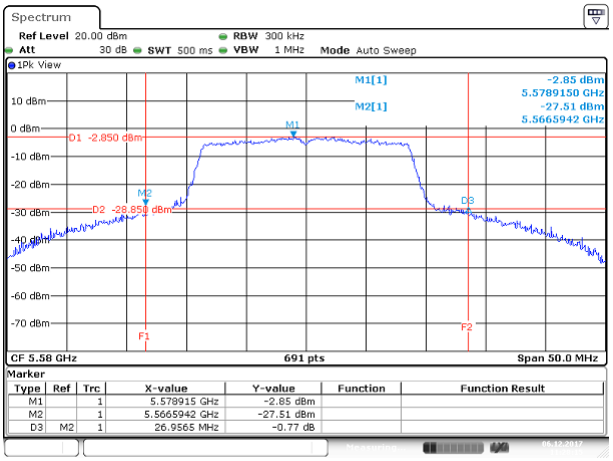
UNII-2c IEEE 802.11n HT20 mode- chain 0

Low CH



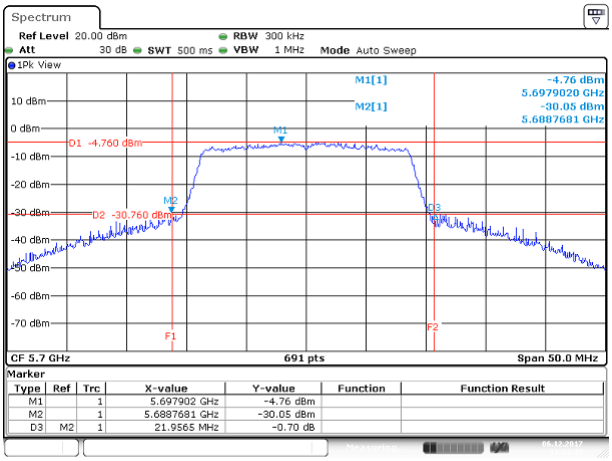
Date: 6.DEC.2017 11:19:19

Mid CH



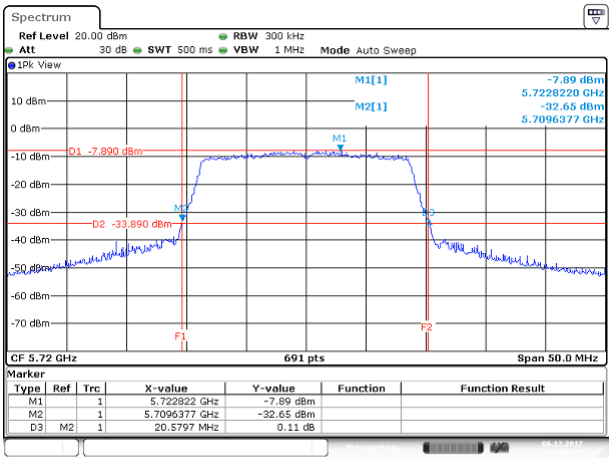
Date: 6.DEC.2017 11:28:16

High CH



Date: 6.DEC.2017 11:31:19

Cross CH



Date: 6.DEC.2017 17:09:25

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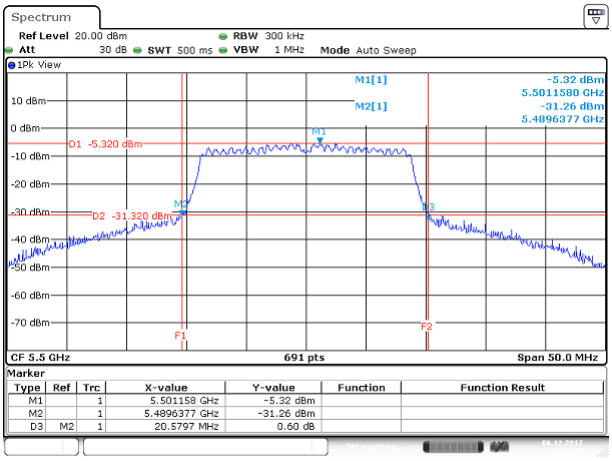
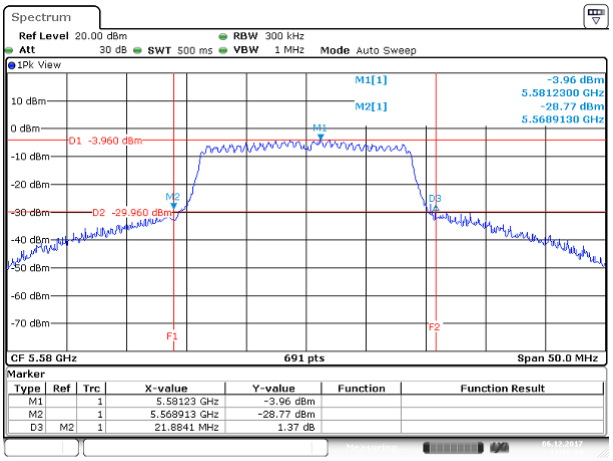
UNII-2c IEEE 802.11n HT20 mode- chain 1

Low CH



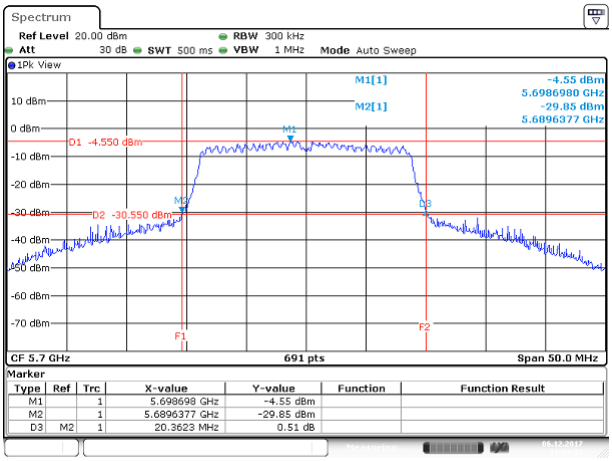
Date: 6.DEC.2017 11:21:29

Mid CH



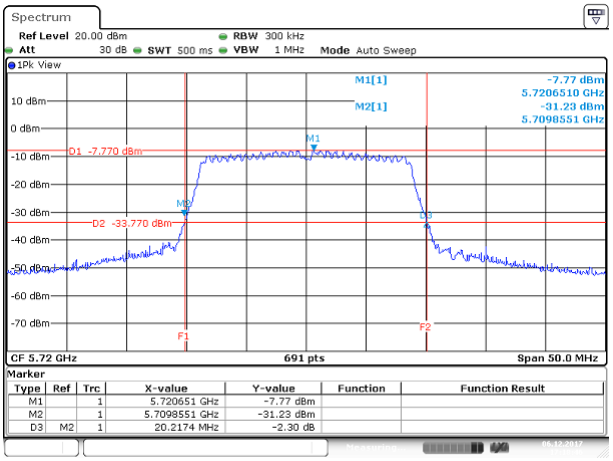
Date: 6.DEC.2017 11:26:11

High CH



Date: 6.DEC.2017 11:34:33

Cross CH



Date: 6.DEC.2017 17:18:47

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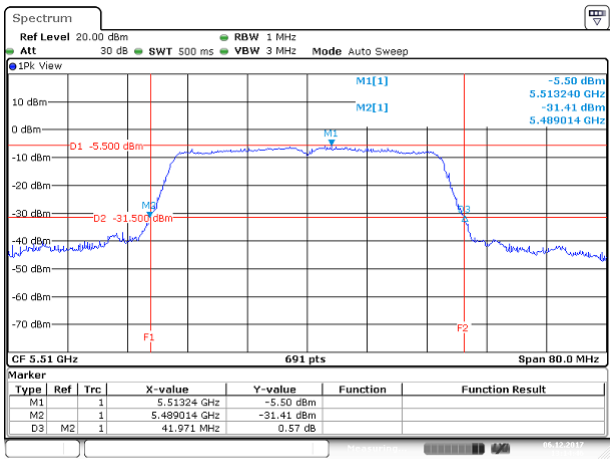
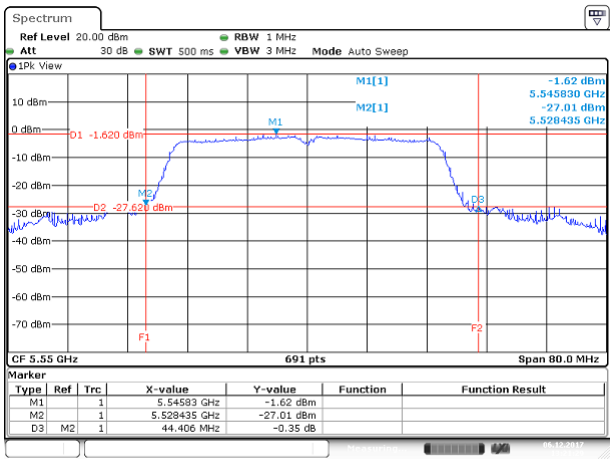
UNII-2c IEEE 802.11n HT40 mode- chain 0

Low CH



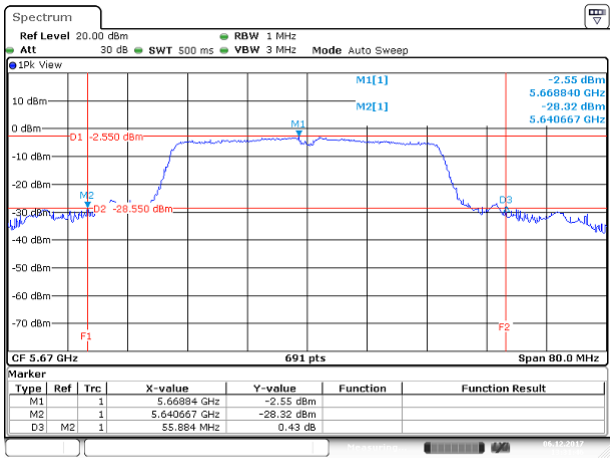
Date: 6.DEC.2017 13:14:47

Mid CH



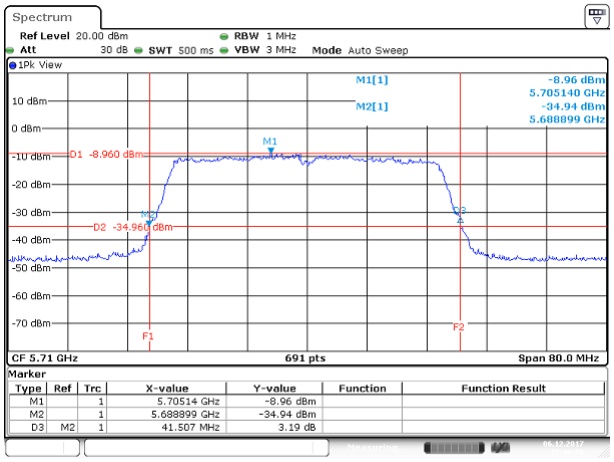
Date: 6.DEC.2017 13:21:29

High CH



Date: 6.DEC.2017 13:31:47

Cross CH



Date: 6.DEC.2017 17:40:36

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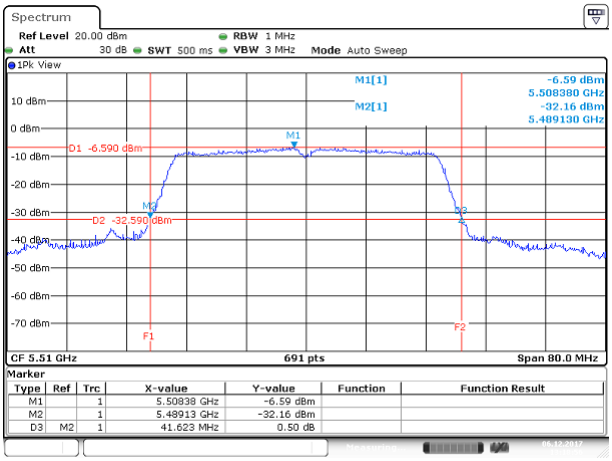
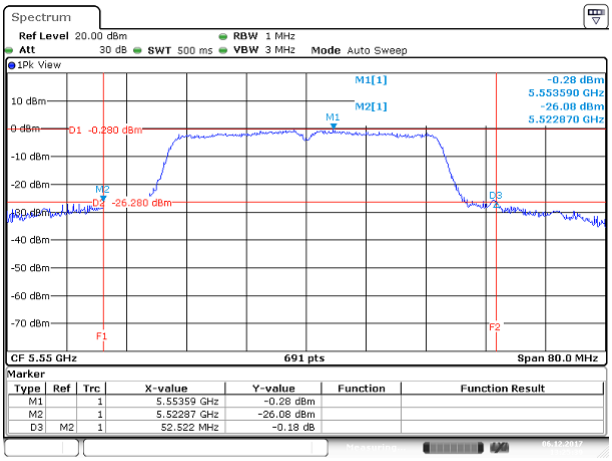
UNII-2c IEEE 802.11n HT40 mode- chain 1

Low CH



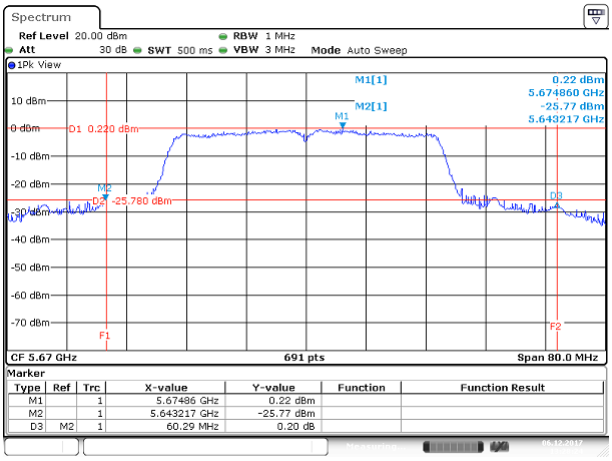
Date: 6.DEC.2017 13:18:57

Mid CH



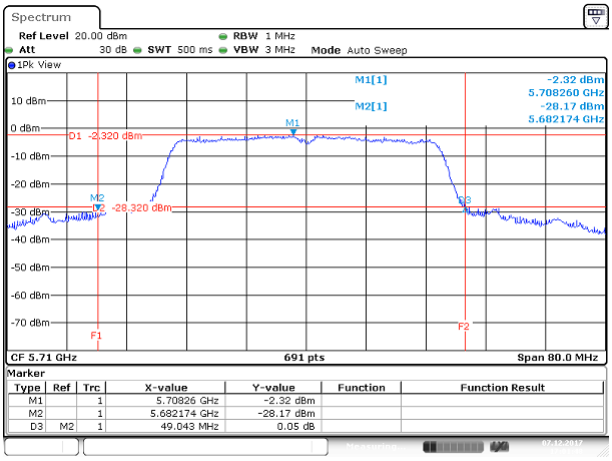
Date: 6.DEC.2017 13:25:40

High CH



Date: 6.DEC.2017 13:28:24

Cross CH



Date: 7.DEC.2017 17:01:48

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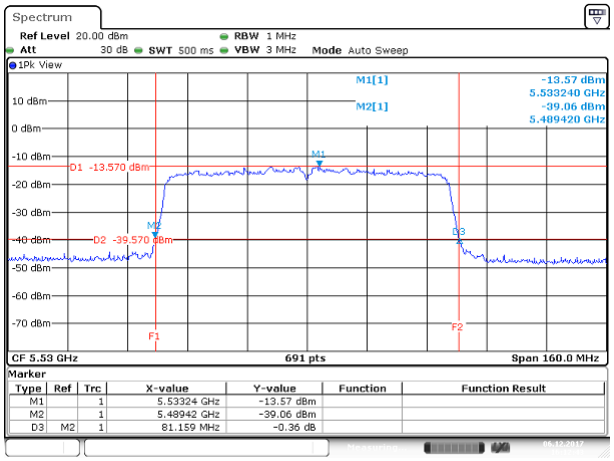
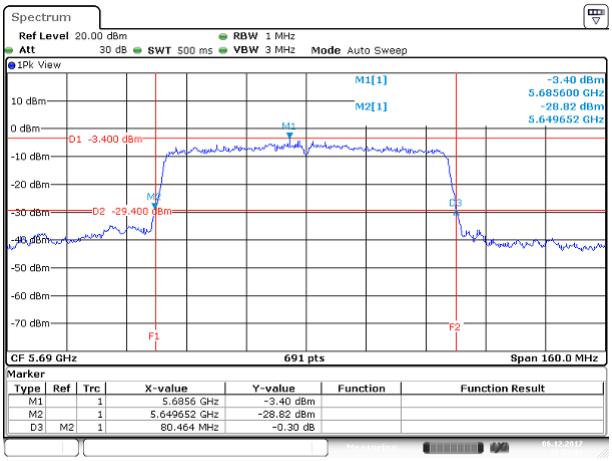
UNII-2c IEEE 802.11ac VHT80 mode- chain 0

Mid CH

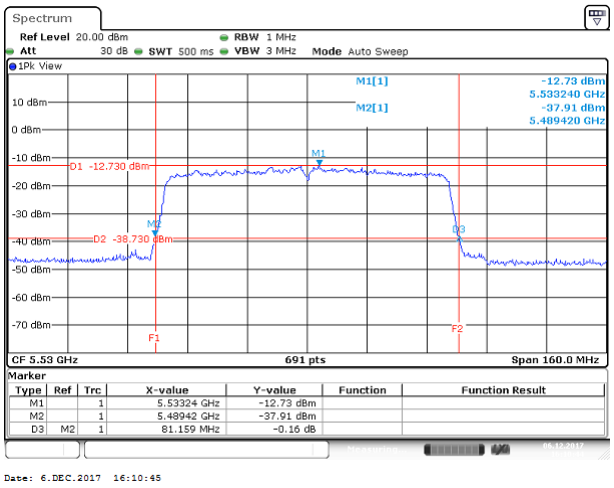


Cross CH

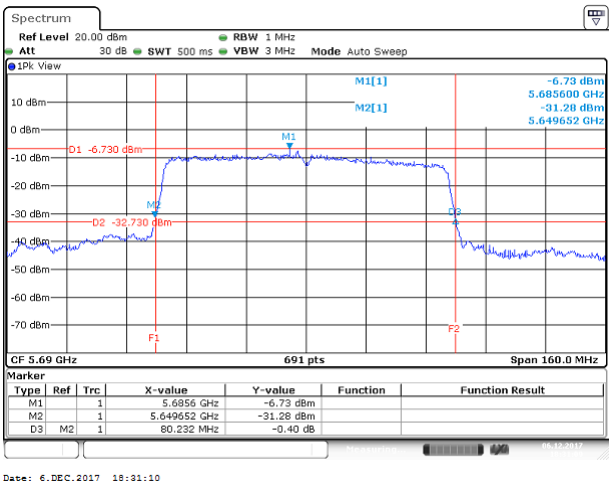


UNII-2c IEEE 802.11ac VHT80 mode- chain 1

Mid CH



Cross CH



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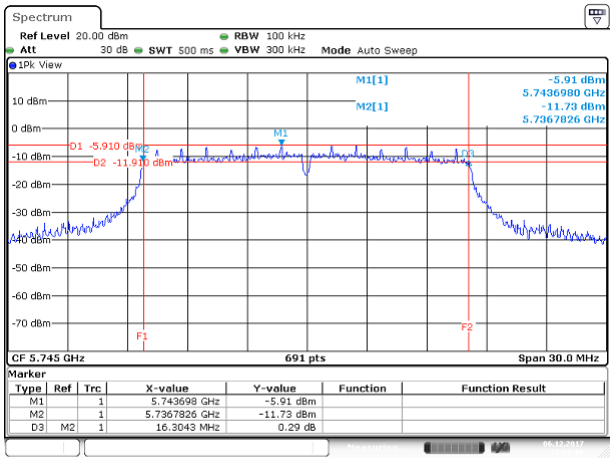
Test Data

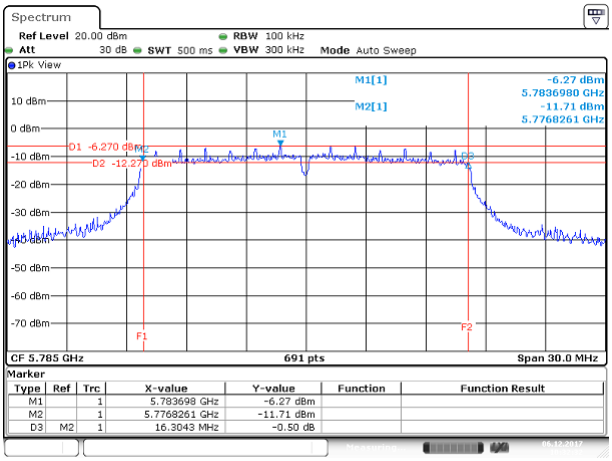
UNII-3 IEEE 802.11a mode- chain 0

Low CH



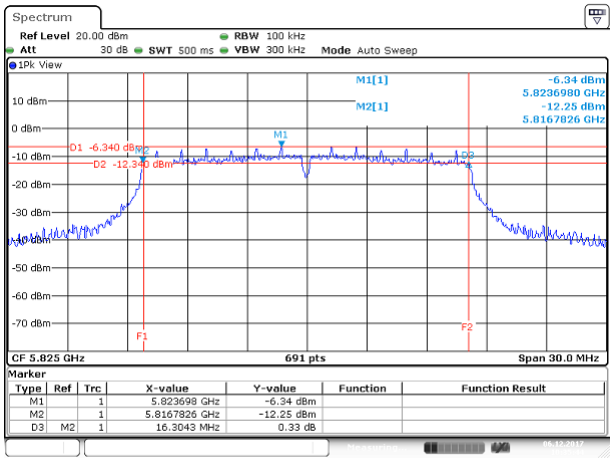
Date: 6.DEC.2017 10:28:06

Mid CH



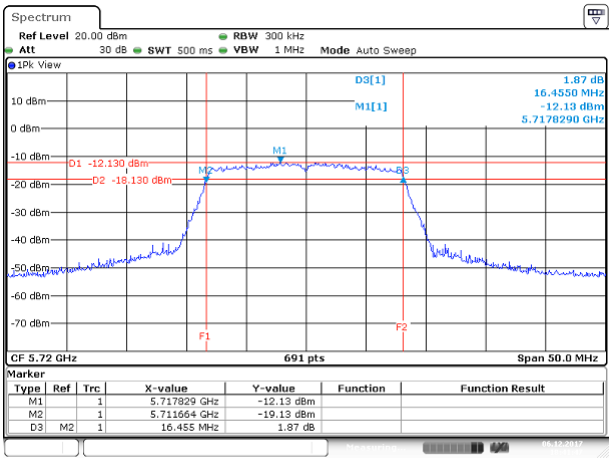
Date: 6.DEC.2017 10:32:33

High CH



Date: 6.DEC.2017 10:35:45

Cross CH



Date: 6.DEC.2017 18:41:47

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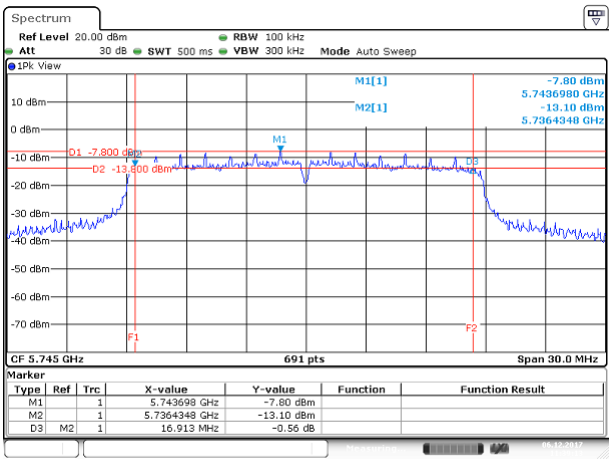
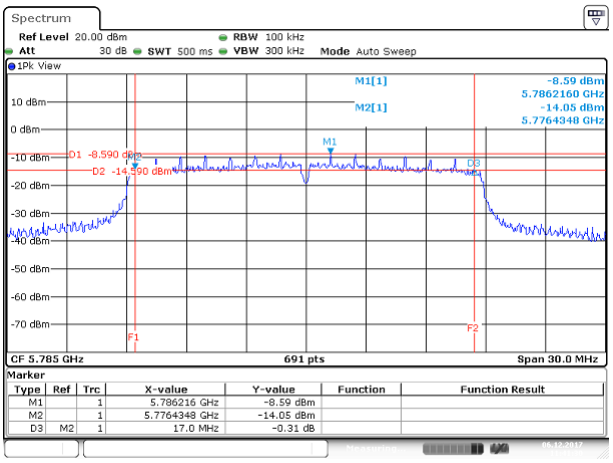
UNII-3 IEEE 802.11n HT20 mode- chain 0

Low CH



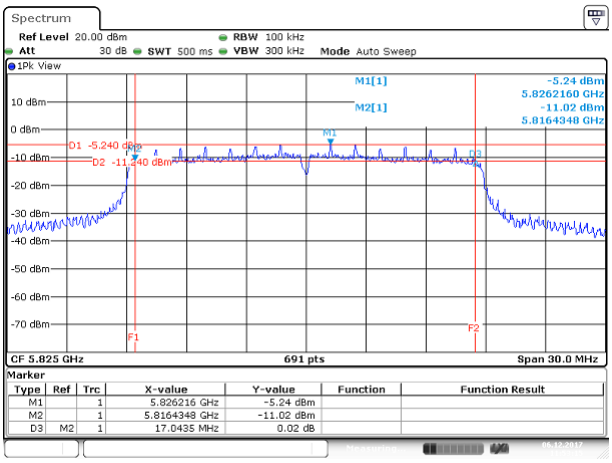
Date: 6.DEC.2017 11:39:14

Mid CH



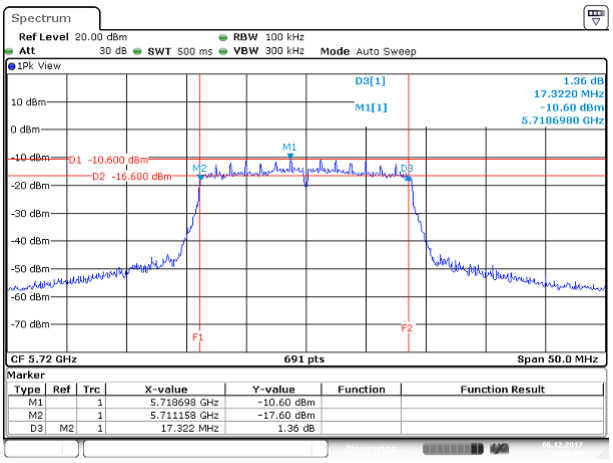
Date: 6.DEC.2017 11:41:31

High CH



Date: 6.DEC.2017 11:53:15

Cross CH



Date: 6.DEC.2017 19:23:10

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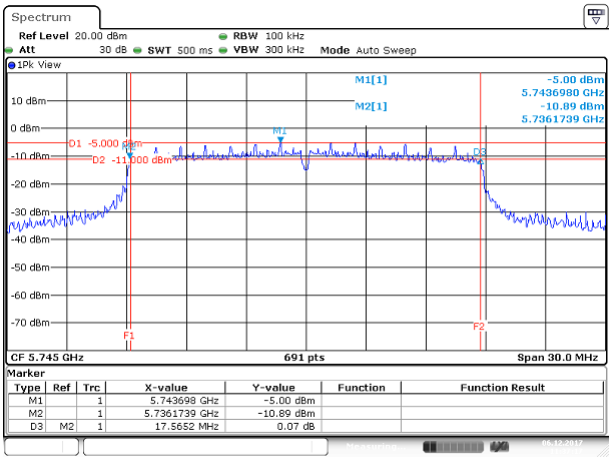
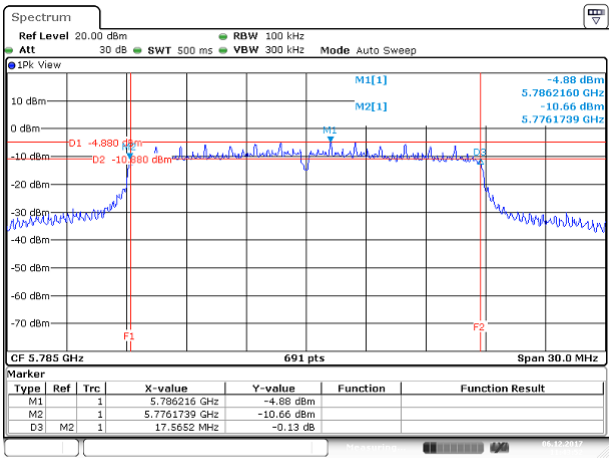
UNII-3 IEEE 802.11n HT20 mode- chain 1

Low CH



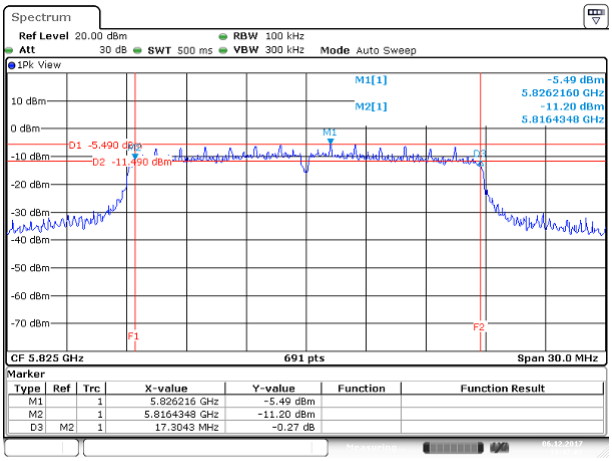
Date: 6.DEC.2017 11:37:18

Mid CH



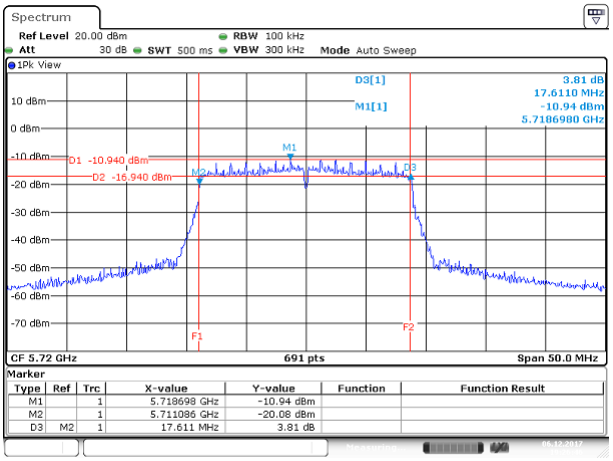
Date: 6.DEC.2017 11:43:52

High CH



Date: 6.DEC.2017 11:47:03

Cross CH



Date: 6.DEC.2017 19:26:46

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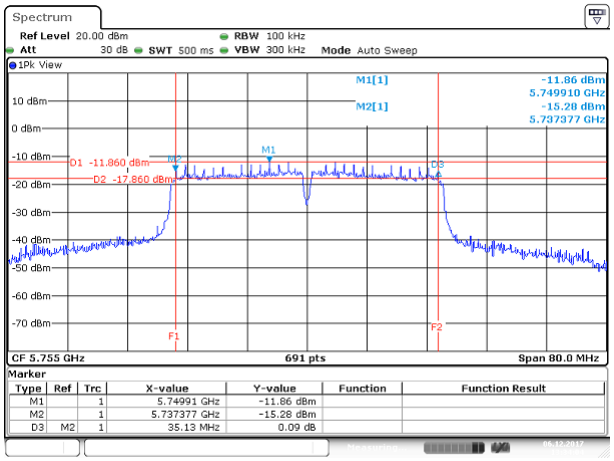
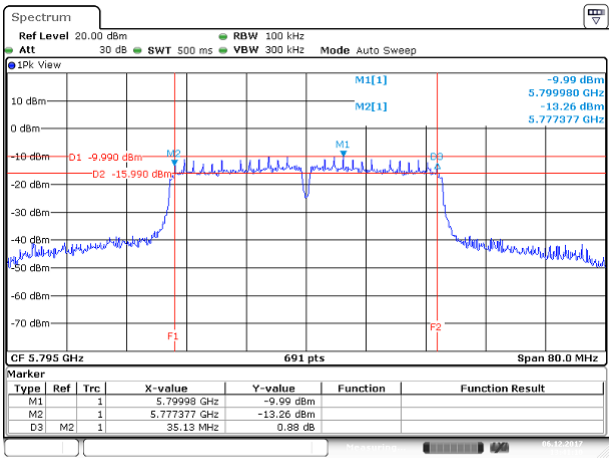
UNII-3 IEEE 802.11n HT40 mode- chain 0

Low CH



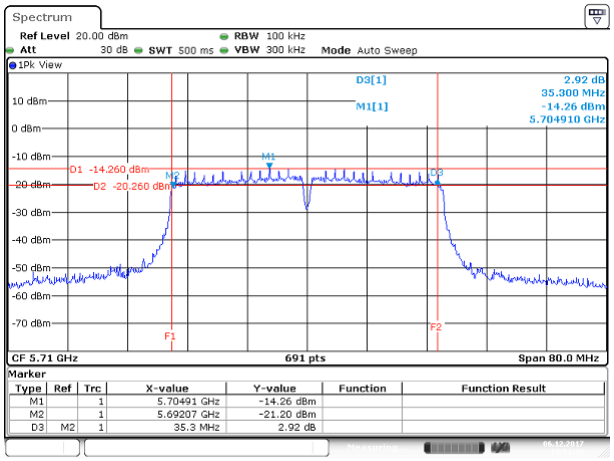
Date: 6.DEC.2017 13:34:05

High CH



Date: 6.DEC.2017 13:41:10

Cross CH



Date: 6.DEC.2017 19:51:39

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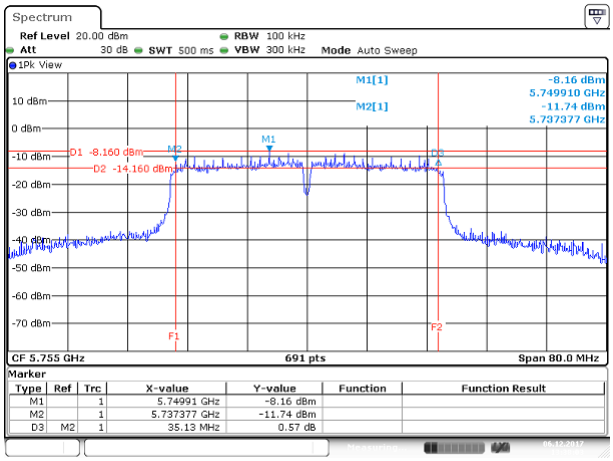
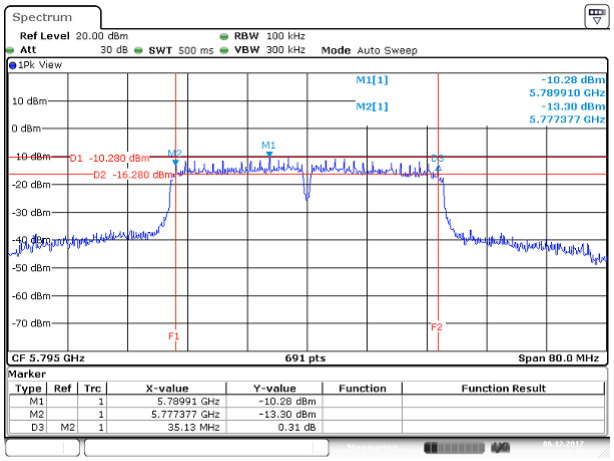
UNII-3 IEEE 802.11n HT40 mode- chain 1

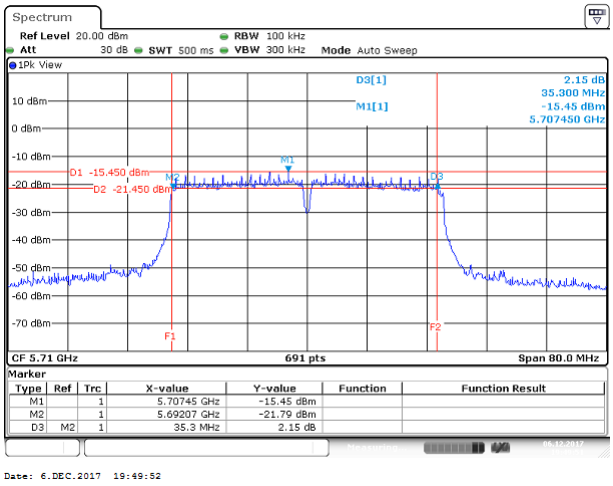
Low CH



High CH



Cross CH



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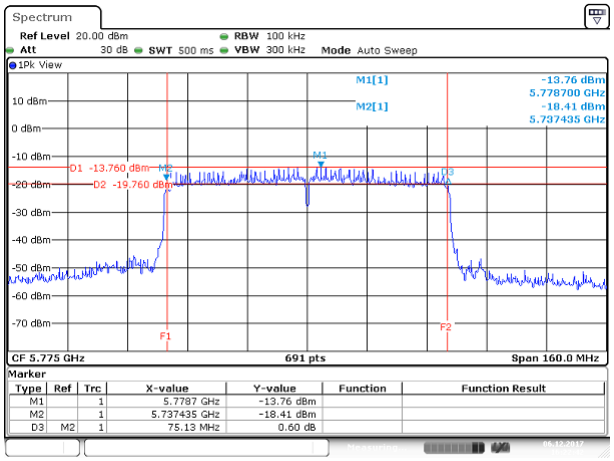
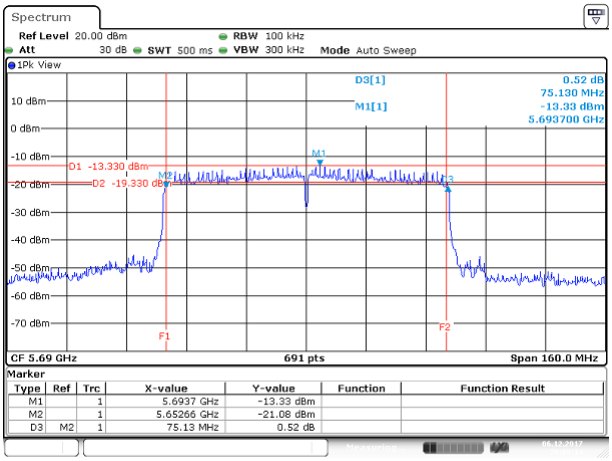
UNII-3 IEEE 802.11ac VHT80 mode- chain 0

Mid CH

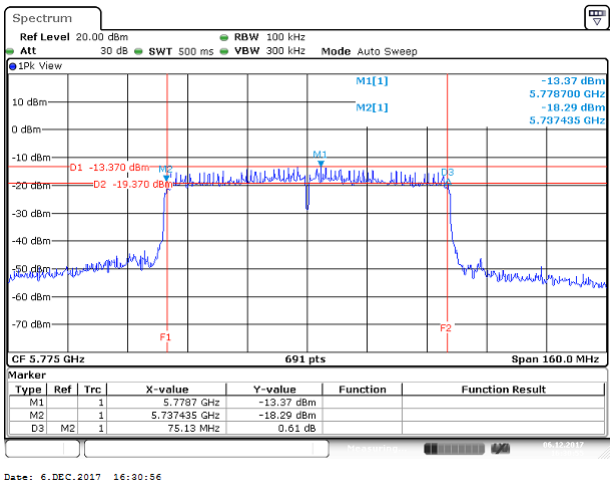


Cross CH

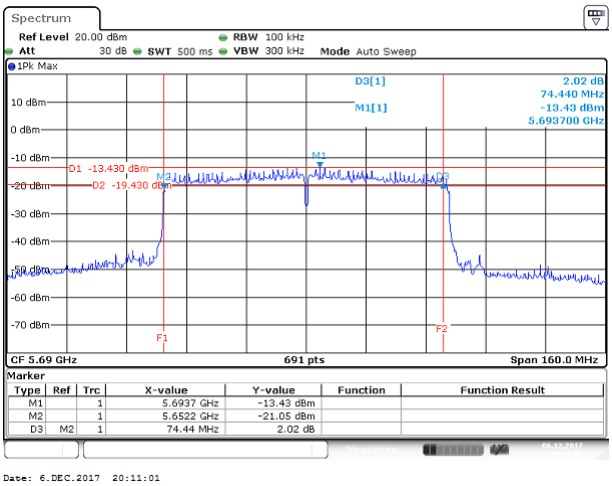


UNII-3 IEEE 802.11ac VHT80 mode- chain 1

Mid CH



Cross CH



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4.3 OUTPUT POWER MEASUREMENT

4.3.1 Test Limit

According to §15.407 (a)(1), 15.407(a)(2) and 15.407(a)(3) and RSS-247 section 6.2.1.1, section 6.2.2.1, section 6.2.3.1 and section 6.2.4.1

UNII-1 :

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(24 dBm) and The maximum e.i.r.p. shall not exceed 200 mW or 10 + 10 log10B, dBm, whichever power is less. B is the 99% emission bandwidth in megahertz ,provided the maximum antenna gain does not exceed 6 dBi. In addition, 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.

UNII-2a and 2c:

the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. and The maximum e.i.r.p. shall not exceed 1.0 W or 17 + 10 Log10 B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz. 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.

UNII-3:

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz 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.

UNII-1 Limit	☒ Antenna not exceed 6 dBi：24dBm (EIRP : 23dBm) ☐ Antenna with DG greater than 6 dBi： [Limit = 24 – (DG – 6)]
UNII-2a/2c Limit	☒ Antenna not exceed 6 dBi：24dBm (EIRP : 30dBm) ☐ Antenna with DG greater than 6 dBi： [Limit = 24 – (DG – 6)]
UNII-3 Limit	☒ Antenna not exceed 6 dBi：30dBm ☐ Antenna with DG greater than 6 dBi： [Limit = 30 – (DG – 6)]

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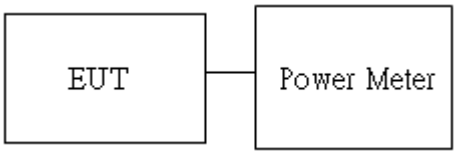
4.3.2 Test Procedure

Test method Refer as KDB 789033 D02 v02r01, Section E.3.b.

1. The EUT RF output connected to the power meter by RF cable.
2. Setting maximum power transmit of EUT.
3. The path loss was compensated to the results for each measurement.
4. Measure and record the result of Average output power. in the test report.

4.3.3 Test Setup



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4.3.4 Test Result

Conducted output power：

UNII-1													
Config	CH	Freq. (MHz)	Power Set		AV Power(dBm)		AV Total Power (dBm)	EIRP AV Total Power (dBm)	AV Total Power (W)	EIRP AV Total Power (W)	DG (dBi)	Limit (dBm)	EIRP Limit (dBm)
			chain0	chain1	chain0	chain1							
IEEE 802.11a Data rate: 6Mbps	36	5180	20	-	15.64	-	15.64	19.44	0.0366	0.0879	3.8	24	23
	44	5220	1E	-	14.57	-	14.57	18.37	0.0286	0.0687			
	48	5240	21	-	15.80	-	15.80	19.60	0.0380	0.0912			
IEEE 802.11n HT20 Data rate: MCS0	36	5180	20	20	16.18	16.09	19.15	22.95	0.0822	0.1973			
	44	5220	20	20	16.09	16.05	19.09	22.89	0.0810	0.1943			
	48	5240	20	20	16.16	16.09	19.14	22.94	0.0820	0.1968			
IEEE 802.11n HT40 Data rate: MCS0	38	5190	1F	1F	14.99	15.03	18.02	21.82	0.0633	0.1520			
	46	5230	20	20	15.71	15.65	18.69	22.49	0.0739	0.1773			
IEEE 802.11ac VHT80 Data rate: MCS0	42	5210	19	19	16.34	15.86	19.12	22.92	0.0817	0.1959			

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UNII-2a													
Config	CH	Freq. (MHz)	Power Set		AV Power(dBm)		AV Total Power (dBm)	EIRP AV Total Power (dBm)	AV Total Power (W)	EIRP AV Total Power (W)	DG (dBi)	Limit (dBm)	EIRP Limit (dBm)
			chain0	chain1	chain0	chain1							
IEEE 802.11a Data rate: 6Mbps	52	5260	1E	-	14.41	-	14.41	18.21	0.0276	0.0662	3.8	24	30
	56	5280	20	-	15.60	-	15.60	19.40	0.0363	0.0871			
	64	5320	20	-	15.75	-	15.75	19.55	0.0376	0.0902			
IEEE 802.11n HT20 Data rate: MCS0	52	5260	20	20	16.10	16.06	19.10	22.90	0.0812	0.1948			
	56	5280	20	20	16.25	16.18	19.23	23.03	0.0838	0.2009			
	64	5320	20	20	16.14	15.98	19.08	22.88	0.0808	0.1939			
IEEE 802.11n HT40 Data rate: MCS0	54	5270	20	20	15.90	15.77	18.84	22.64	0.0766	0.1838			
	62	5310	1E	1E	14.38	14.47	17.43	21.23	0.0554	0.1328			
IEEE 802.11ac VHT80 Data rate: MCS0	58	5290	1B	1B	17.89	17.90	20.90	24.70	0.1230	0.2951			

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UNII-2c													
Config	CH	Freq. (MHz)	Power Set		AV Power(dBm)		AV Total Power (dBm)	EIRP AV Total Power (dBm)	AV Total Power (W)	EIRP AV Total Power (W)	DG (dBi)	Limit (dBm)	EIRP Limit (dBm)
			chain0	chain1	chain0	chain1							
IEEE 802.11a Data rate: 6Mbps	100	5500	20	-	15.61	-	15.61	19.41	0.0364	0.0873	3.8	24	30
	116	5580	20	-	15.76	-	15.76	19.56	0.0377	0.0904			
	140	5700	20	-	15.67	-	15.67	19.47	0.0369	0.0885			
	144	5720	18	-	15.72	-	15.72	19.52	0.0373	0.0895			
IEEE 802.11n HT20 Data rate: MCS0	100	5500	21	21	16.24	16.17	19.22	23.02	0.0836	0.2004			
	116	5580	20	20	16.15	16.12	19.15	22.95	0.0822	0.1972			
	140	5700	20	20	16.26	16.16	19.23	23.03	0.0838	0.2009			
	144	5720	21	21	16.06	15.64	18.87	22.67	0.0771	0.1849			
IEEE 802.11n HT40 Data rate: MCS0	102	5510	1C	1C	12.73	12.69	15.73	19.53	0.0374	0.0897			
	110	5550	21	21	15.82	15.76	18.80	22.60	0.0759	0.1820			
	134	5670	21	21	15.83	15.93	18.89	22.69	0.0774	0.1858			
	142	5710	22	22	15.97	15.65	18.82	22.62	0.0762	0.1828			
IEEE 802.11ac VHT80 Data rate: MCS0	106	5530	18	18	16.21	15.65	18.95	22.75	0.0785	0.1884			
	138	5690	1F	1F	16.92	16.96	19.95	23.75	0.0989	0.2371			

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UNII-3										
Config	CH	Freq. (MHz)	Power Set		AV Power(dBm)		AV Total Power (dBm)	AV Total Power (W)	DG (dBi)	Limit (dBm)
			chain0	chain1	chain0	chain1				
IEEE 802.11a Data rate: 6Mbps	144	5720	18	-	-0.69	-	-0.69	0.0009	3.8	30
	149	5745	21	-	15.75	-	15.75	0.0376		
	157	5785	21	-	15.68	-	15.68	0.0370		
	165	5825	20	-	15.80	-	15.80	0.0380		
IEEE 802.11n HT20 Data rate: MCS0	144	5720	21	21	9.99	9.71	12.87	0.0194		
	149	5745	21	21	16.27	16.35	19.33	0.0857		
	157	5785	21	21	16.26	16.18	19.24	0.0839		
	165	5825	20	20	16.06	16.12	19.11	0.0815		
IEEE 802.11n HT40 Data rate: MCS0	142	5710	22	22	5.65	4.89	8.29	0.0067		
	151	5755	21	21	15.99	15.82	18.91	0.0778		
	159	5795	21	21	15.92	15.65	18.79	0.0757		
IEEE 802.11ac VHT80 Data rate: MCS0	138	5690	1F	1F	7.07	6.40	9.76	0.0095		
	155	5775	1C	1C	18.65	18.72	21.69	0.1476		

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4.4 POWER SPECTRAL DENSITY

4.4.1 Test Limit

According to §15.407 (a)(1), 15.407(a)(2) and 15.407(a)(3) and RSS-247 section 6.2.1(1), section 6.2.2(1), section 6.2.3(1) and section 6.2.4(1)

UNII-1 :

FCC: The maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band.

IC: The e.i.r.p. spectral density shall not exceed 10 dBm in any 1.0 MHz 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.

UNII-2a and 2c:

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.

UNII-3:

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz 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.i.

UNII-1 Limit	☒ Antenna not exceed 6 dBi：11 dBm ☐ Antenna with DG greater than 6 dBi： [Limit = 11 – (DG – 6)]
UNII-2a Limit	☒ Antenna not exceed 6 dBi：11 dBm ☐ Antenna with DG greater than 6 dBi： [Limit = 11 – (DG – 6)]
UNII-2c Limit	☒ Antenna not exceed 6 dBi：11 dBm ☐ Antenna with DG greater than 6 dBi： [Limit = 11 – (DG – 6)]
UNII-3 Limit	☒ Antenna not exceed 6 dBi：30 dBm ☐ Antenna with DG greater than 6 dBi： [Limit = 30 – (DG – 6)]

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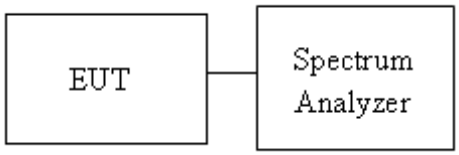
4.4.2 Test Procedure

Test method Refer as KDB 789033 D02 v02r01, Section F

1. The EUT RF output connected to the spectrum analyzer by RF cable.
2. Setting maximum power transmit of EUT
3. UNII-1, UNII-2a and UNII-2c, SA set RBW = 1MHz, VBW = 3MHz and Detector = RMS, to measurement Power Density.
4. UNII-3, SA set RBW = 500kHz, VBW = 2MHz and Detector = RMS, to measurement Power Density
5. The path loss and Duty Factor were compensated to the results for each measurement by SA.
6. Mark the maximum level.
7. Measure and record the result of power spectral density. in the test report.

4.4.3 Test Setup



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4.4.4 Test Result

UNII-1 5150-5250 MHz							
Test mode: IEEE 802.11a mode							
Channel	**Frequency (MHz)**	**Chain 0 PPSD (dBm)**	**Chain 1 PPSD (dBm)**	**Total PPSD (dBm)**	**EIRP PPSD (dBm)**	**Limit (dBm)**	**IC Limit (dBm)**
Low	5180	4.62	-	4.62	8.42	11	10
Mid	5220	3.62	-	3.62	7.42		
High	5240	5.02	-	5.02	8.82		
Test mode: IEEE 802.11n HT20 mode							
Channel	**Frequency (MHz)**	**Chain 0 PPSD (dBm)**	**Chain 1 PPSD (dBm)**	**Total PPSD (dBm)**	**EIRP PPSD (dBm)**	**Limit (dBm)**	**IC Limit (dBm)**
Low	5180	3.04	3.08	6.07	9.87	11	10
Mid	5220	3.18	3.17	6.19	9.99		
High	5240	3.04	3.12	6.09	9.89		
Test mode: IEEE 802.11n HT40 mode							
Channel	**Frequency (MHz)**	**Chain 0 PPSD (dBm)**	**Chain 1 PPSD (dBm)**	**Total PPSD (dBm)**	**EIRP PPSD (dBm)**	**Limit (dBm)**	**IC Limit (dBm)**
Low	5190	-1.78	-1.05	1.61	5.41	11	10
High	5230	-0.35	-0.38	2.65	6.45		
Test mode: IEEE 802.11ac VHT80 mode							
Channel	**Frequency (MHz)**	**Chain 0 PPSD (dBm)**	**Chain 1 PPSD (dBm)**	**Total PPSD (dBm)**	**EIRP PPSD (dBm)**	**Limit (dBm)**	**IC Limit (dBm)**
Mid	5210	-8.14	-8.18	-5.15	-1.35	11	10

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UNII-2a 5250-5350 MHz					
Test mode: IEEE 802.11a mode					
Channel	**Frequency (MHz)**	**Chain 0 PPSD (dBm)**	**Chain 1 PPSD (dBm)**	**Total PPSD (dBm)**	**Limit (dBm)**
Low	5260	3.77	-	3.77	11
Mid	5280	4.73	-	4.73	
High	5320	5.11	-	5.11	
Test mode: IEEE 802.11n HT20 mode					
Channel	**Frequency (MHz)**	**Chain 0 PPSD (dBm)**	**Chain 1 PPSD (dBm)**	**Total PPSD (dBm)**	**Limit (dBm)**
Low	5260	3.73	3.74	6.75	11
Mid	5280	4.21	3.56	6.91	
High	5320	4.01	3.35	6.70	
Test mode: IEEE 802.11n HT40 mode					
Channel	**Frequency (MHz)**	**Chain 0 PPSD (dBm)**	**Chain 1 PPSD (dBm)**	**Total PPSD (dBm)**	**Limit (dBm)**
Low	5270	-0.48	-0.95	2.30	11
High	5310	-0.93	-1.76	1.69	
Test mode: IEEE 802.11ac VHT80 mode					
Channel	**Frequency (MHz)**	**Chain 0 PPSD (dBm)**	**Chain 1 PPSD (dBm)**	**Total PPSD (dBm)**	**Limit (dBm)**
Mid	5290	-6.25	-6.97	-3.58	11

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UNII-2c 5470-5725 MHz					
Test mode: IEEE 802.11a mode					
Channel	**Frequency (MHz)**	**Chain 0 PPSD (dBm)**	**Chain 1 PPSD (dBm)**	**Total PPSD (dBm)**	**Limit (dBm)**
Low	5500	4.50	-	4.50	11
Mid	5580	4.99	-	4.99	
High	5700	5.30	-	5.30	
Cross	5720	0.41	-	0.41	
Test mode: IEEE 802.11n HT20 mode					
Channel	**Frequency (MHz)**	**Chain 0 PPSD (dBm)**	**Chain 1 PPSD (dBm)**	**Total PPSD (dBm)**	**Limit (dBm)**
Low	5500	4.88	3.48	7.25	11
Mid	5580	4.08	3.97	7.04	
High	5700	4.33	4.25	7.30	
Cross	5720	4.99	4.67	7.84	
Test mode: IEEE 802.11n HT40 mode					
Channel	**Frequency (MHz)**	**Chain 0 PPSD (dBm)**	**Chain 1 PPSD (dBm)**	**Total PPSD (dBm)**	**Limit (dBm)**
Low	5510	-2.95	-3.67	-0.28	11
Mid	5500	0.14	-0.29	2.94	
High	5670	0.19	0.27	3.24	
Cross	5710	0.97	0.70	3.85	
Test mode: IEEE 802.11ac VHT80 mode					
Channel	**Frequency (MHz)**	**Chain 0 PPSD (dBm)**	**Chain 1 PPSD (dBm)**	**Total PPSD (dBm)**	**Limit (dBm)**
Mid	5530	-8.98	-8.88	-5.92	11
Cross	5690	-3.23	-4.60	-0.85	

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UNII-3 5725-5825 MHz					
Test mode: IEEE 802.11a mode					
Channel	**Frequency (MHz)**	**Chain 0 PPSD (dBm)**	**Chain 1 PPSD (dBm)**	**Total PPSD (dBm)**	**Limit (dBm)**
Low	5745	11.26	-	11.26	30
Mid	5785	10.74	-	10.74	
High	5825	10.42	-	10.42	
Cross	5720	-8.45	-	-8.45	
Test mode: IEEE 802.11n HT20 mode					
Channel	**Frequency (MHz)**	**Chain 0 PPSD (dBm)**	**Chain 1 PPSD (dBm)**	**Total PPSD (dBm)**	**Limit (dBm)**
Low	5745	9.74	9.82	12.79	30
Mid	5785	11.92	9.42	13.86	
High	5825	8.74	10.43	12.68	
Cross	5720	0.48	2.17	4.42	
Test mode: IEEE 802.11n HT40 mode					
Channel	**Frequency (MHz)**	**Chain 0 PPSD (dBm)**	**Chain 1 PPSD (dBm)**	**Total PPSD (dBm)**	**Limit (dBm)**
Low	5755	5.94	5.27	8.63	30
High	5795	5.80	5.05	8.45	
Cross	5710	-3.55	-3.70	-0.61	
Test mode: IEEE 802.11ac VHT80 mode					
Channel	**Frequency (MHz)**	**Chain 0 PPSD (dBm)**	**Chain 1 PPSD (dBm)**	**Total PPSD (dBm)**	**Limit (dBm)**
Cross	5690	-8.74	-9.48	-6.08	30
Mid	5775	1.30	0.78	4.06	

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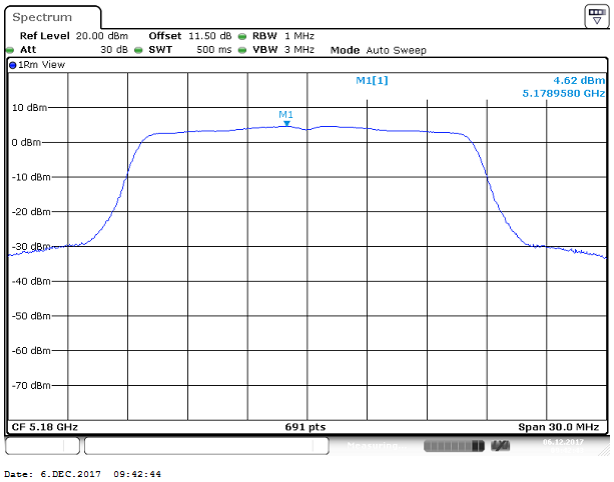
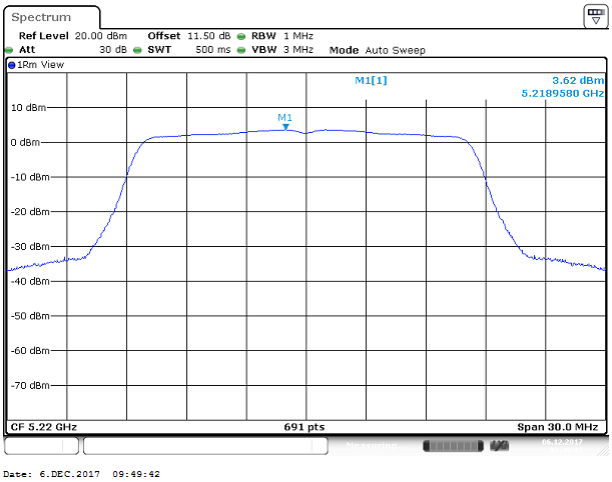
Test Data

UNII-1 IEEE 802.11a mode- chain 0

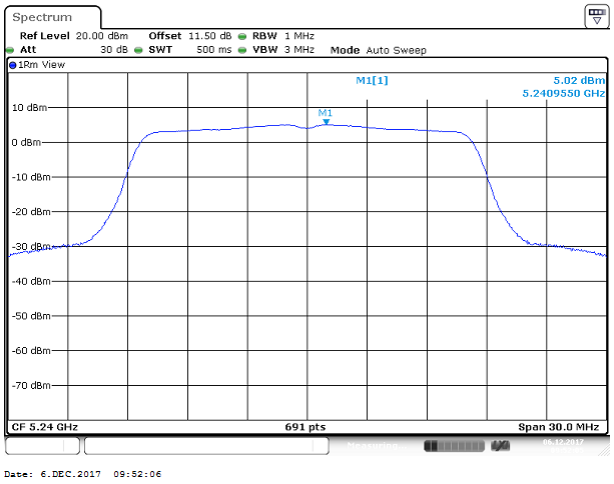
Low CH



Mid CH



High CH



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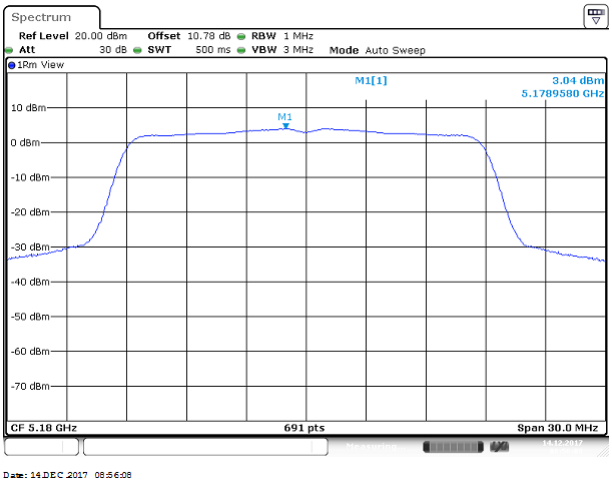
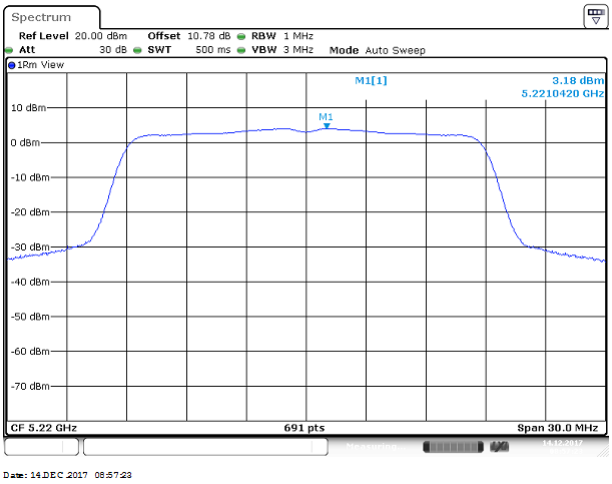
UNII-1 IEEE 802.11n HT20 mode- chain 0

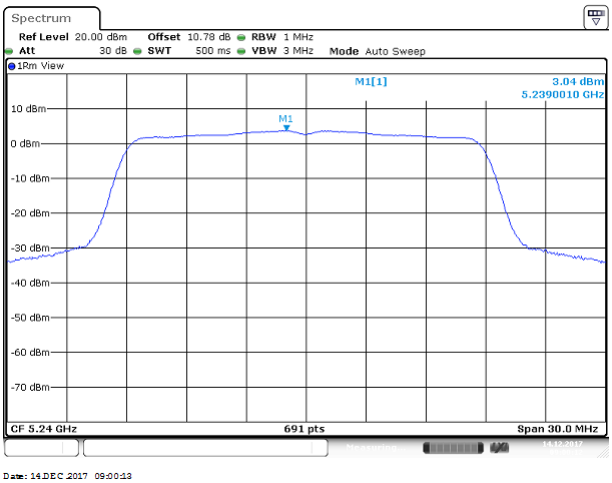
Low CH



Mid CH



High CH



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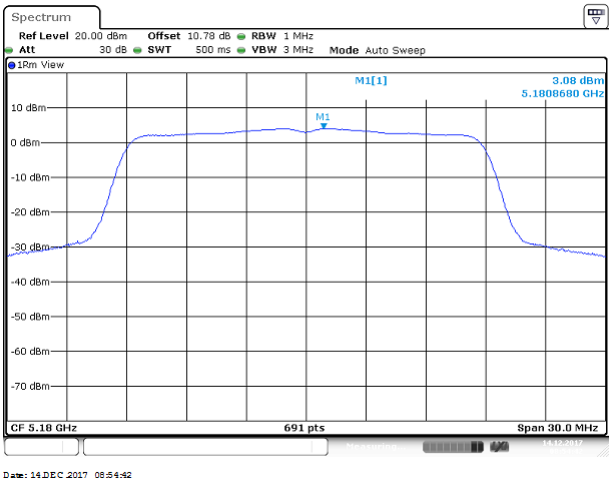
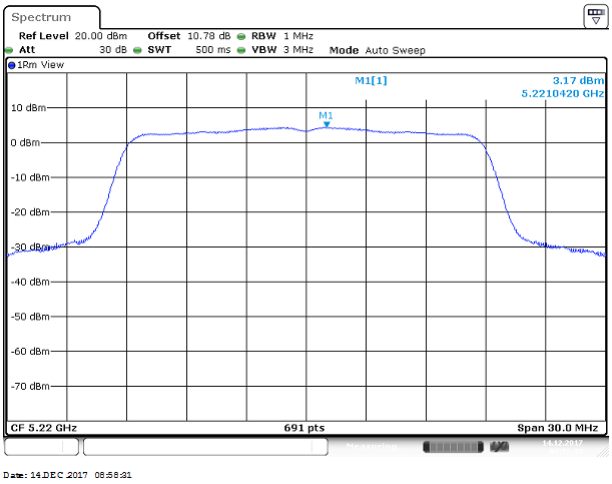
UNII-1 IEEE 802.11n HT20 mode- chain 1

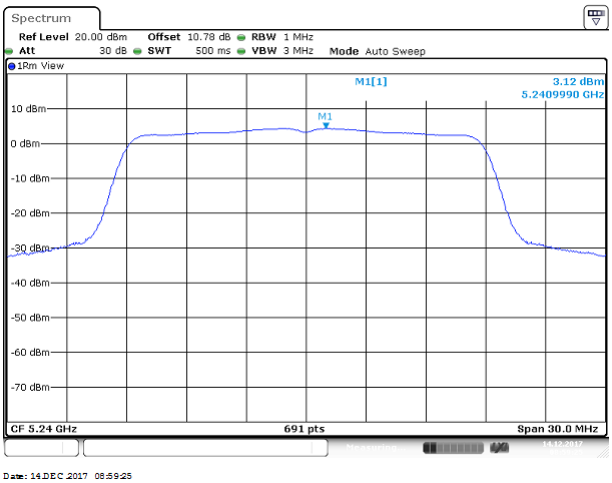
Low CH



Mid CH



High CH



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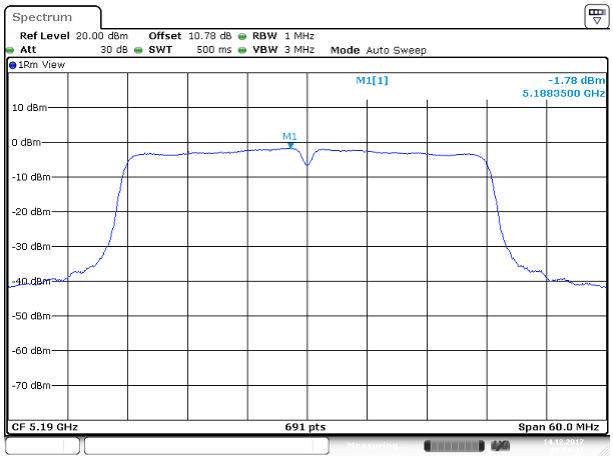
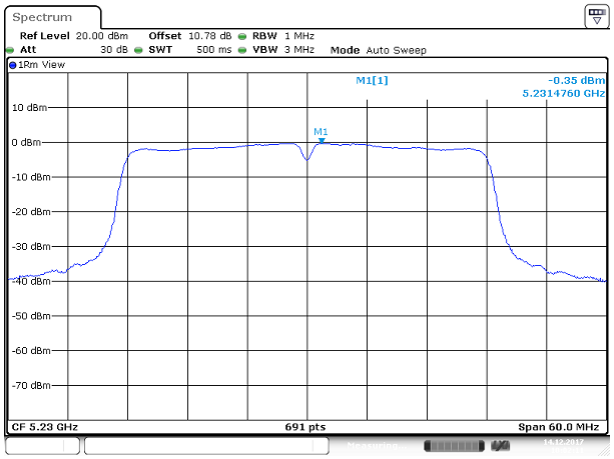
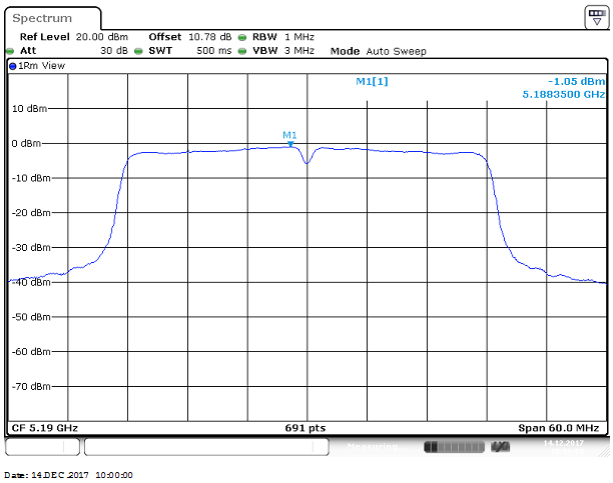
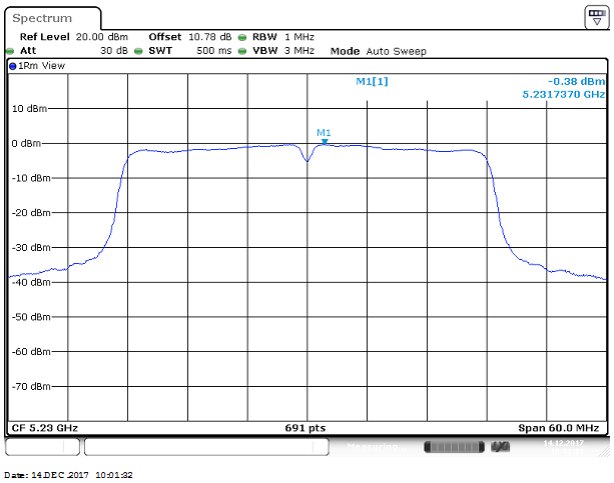
UNII-1 IEEE 802.11n HT40 mode- chain 0	
Low CH	**High CH**
	

UNII-1 IEEE 802.11n HT40 mode- chain 1	
Low CH	**High CH**
	

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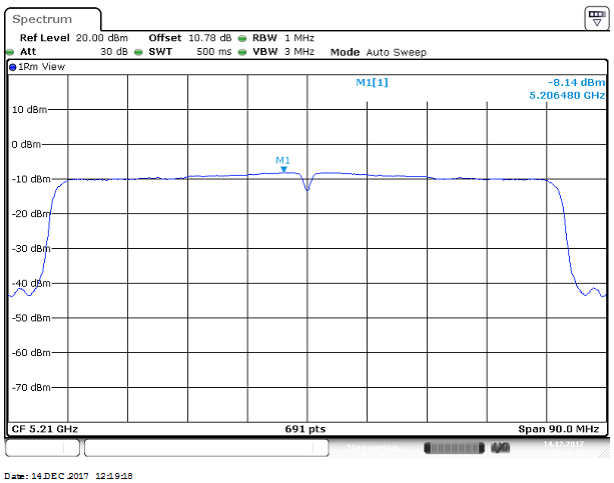
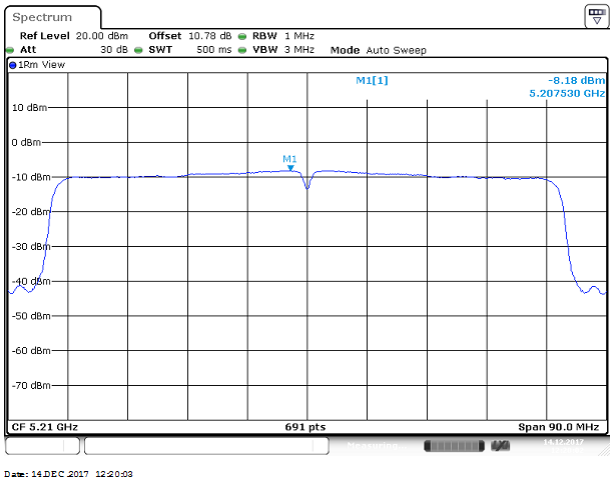
UNII-1 IEEE 802.11ac VHT80 mode- chain 0

Mid CH



UNII-1 IEEE 802.11ac VHT80 mode- chain 1

Mid CH



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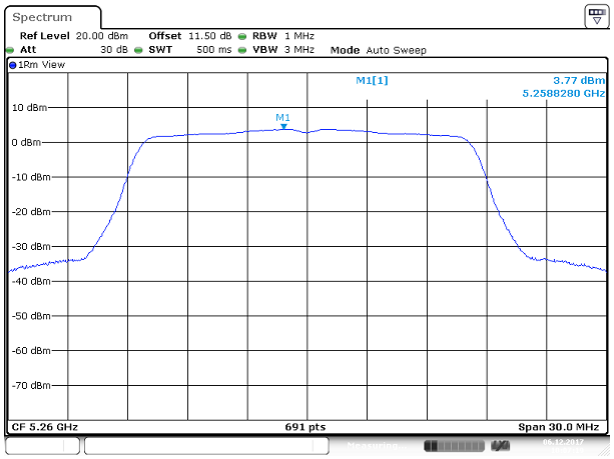
Test Data

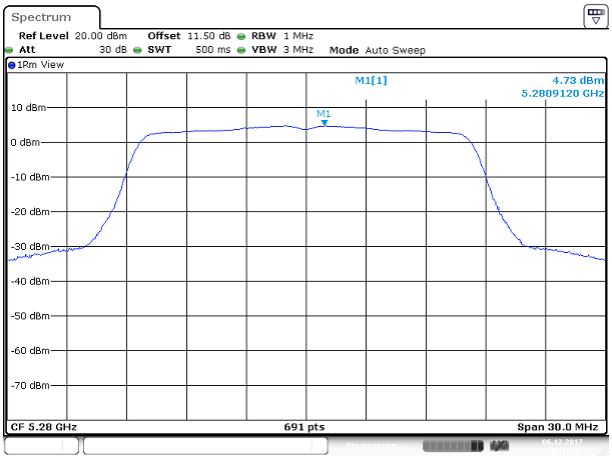
UNII-2a IEEE 802.11a mode- chain 0

Low CH



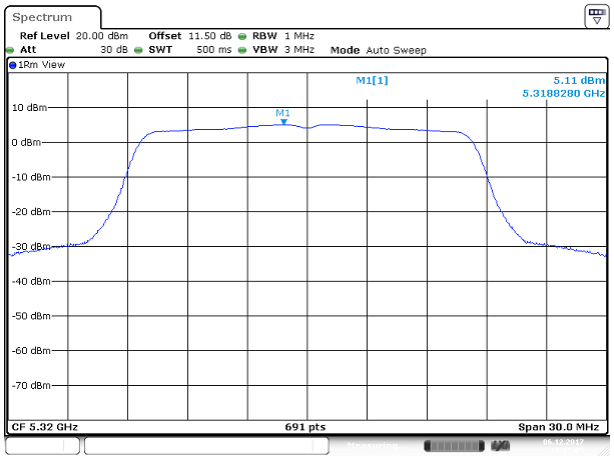
Date: 6.DEC.2017 10:07:20

Mid CH



Date: 6.DEC.2017 10:12:08

High CH



Date: 6.DEC.2017 10:15:06

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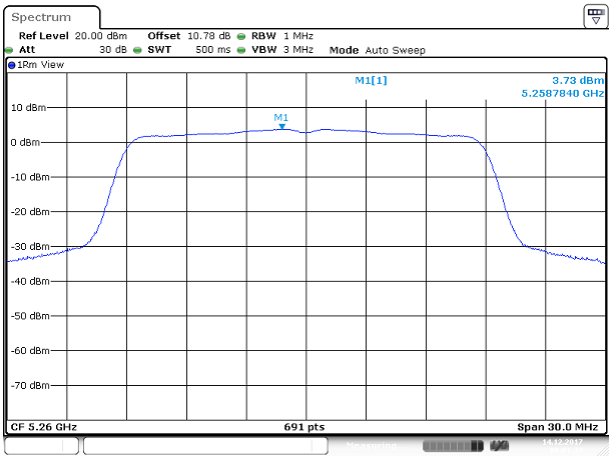
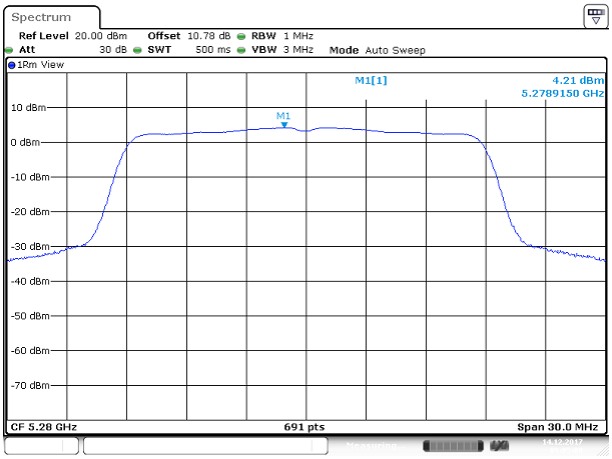
UNII-2a IEEE 802.11n HT20 mode- chain 0

Low CH



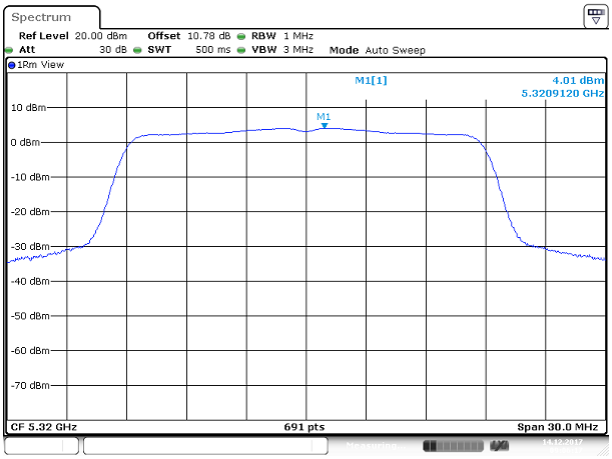
Date: 14.DEC.2017 09:01:34

Mid CH



Date: 14.DEC.2017 09:05:00

High CH



Date: 14.DEC.2017 09:06:18

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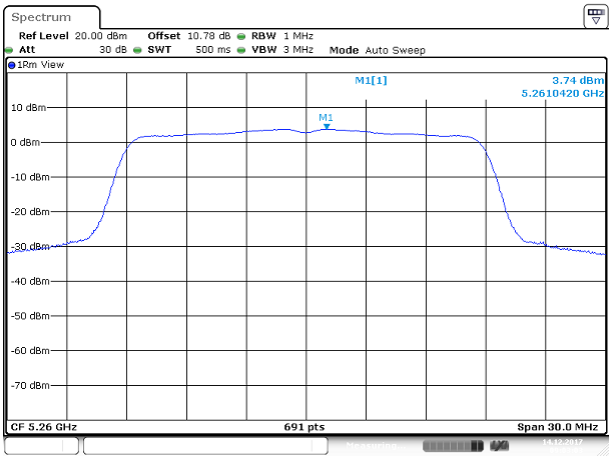
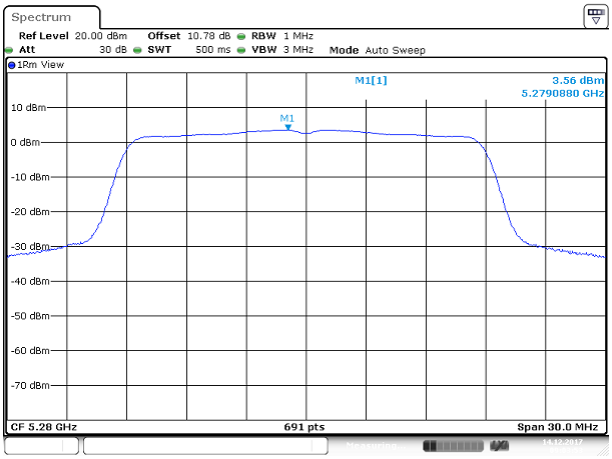
UNII-2a IEEE 802.11n HT20 mode- chain 1

Low CH



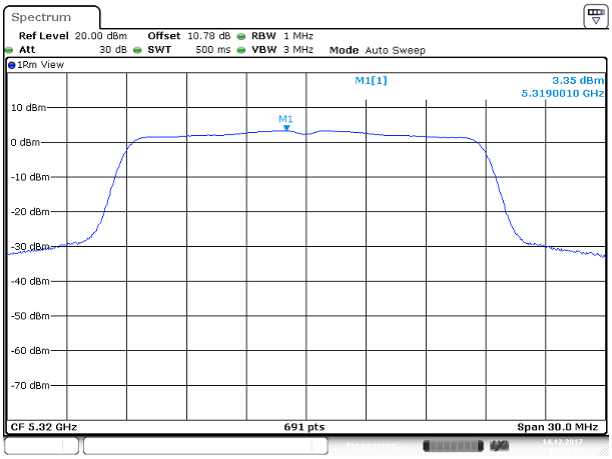
Date: 14.DEC.2017 09:03:03

Mid CH



Date: 14.DEC.2017 09:03:53

High CH



Date: 14.DEC.2017 09:11:54

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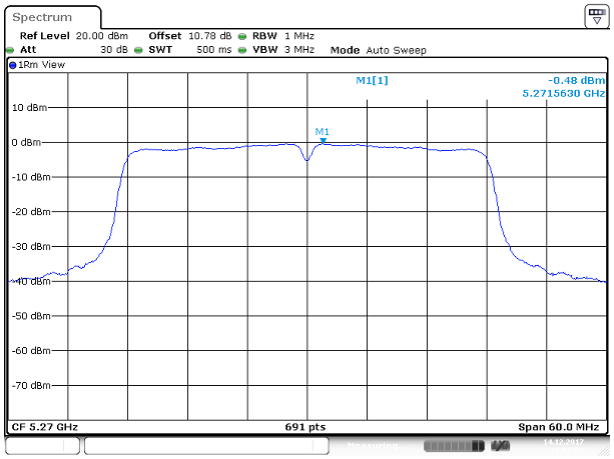
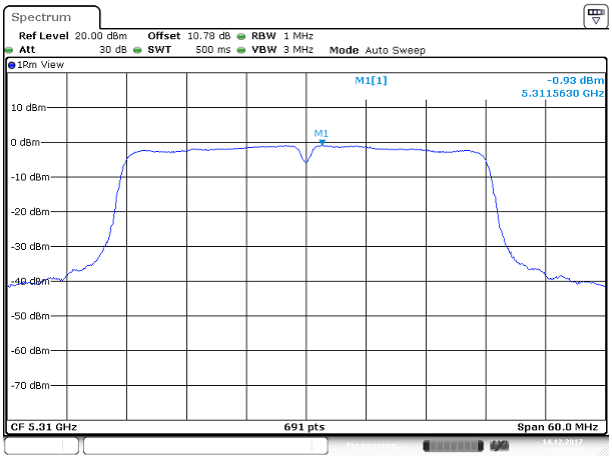
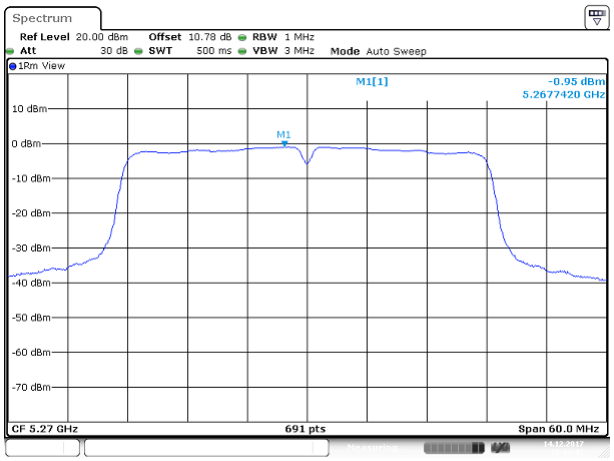
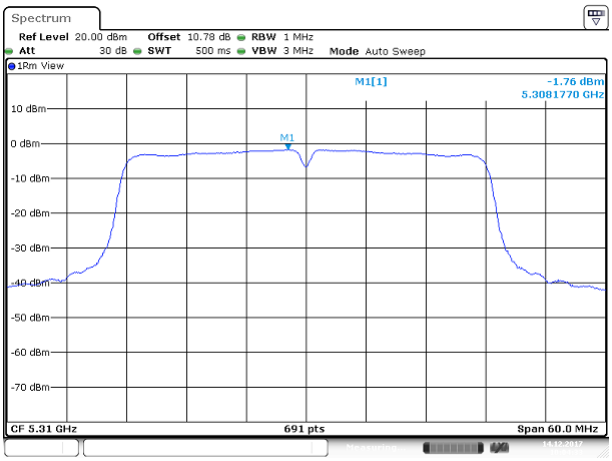
UNII-2a IEEE 802.11n HT40 mode- chain 0	
Low CH	**High CH**
	

UNII-2a IEEE 802.11n HT40 mode- chain 1	
Low CH	**High CH**
	

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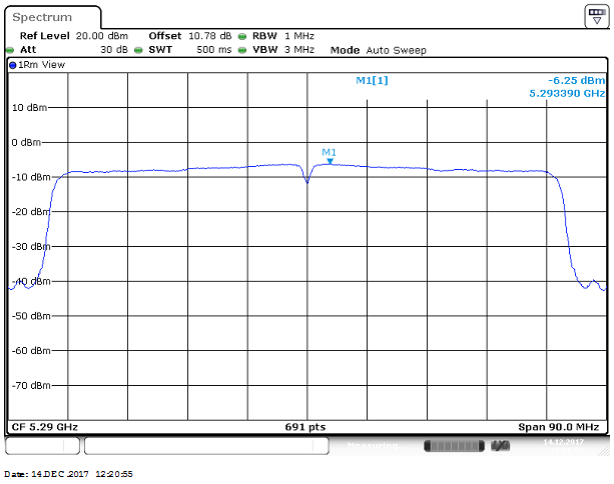
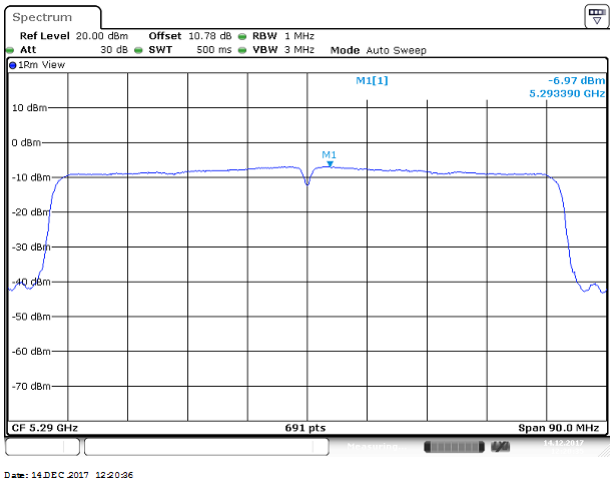
UNII-2a IEEE 802.11ac VHT80 mode- chain 0

Mid CH



UNII-2a IEEE 802.11ac VHT80 mode- chain 1

Mid CH



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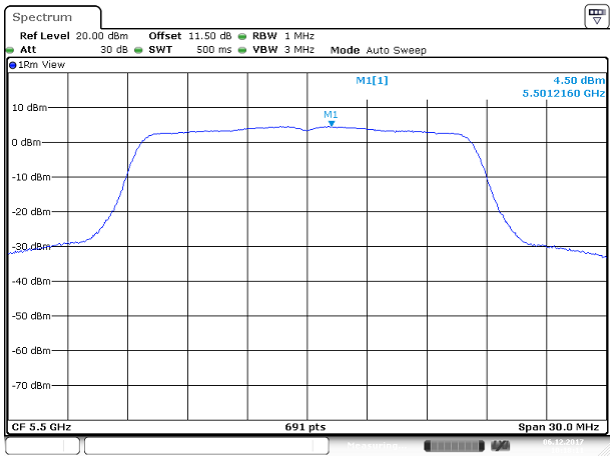
Test Data

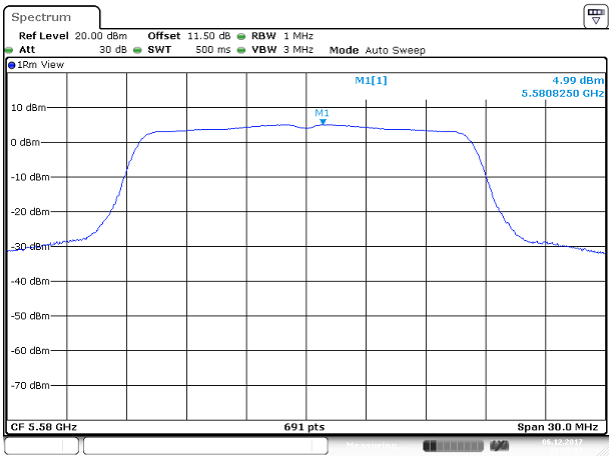
UNII-2c IEEE 802.11a mode- chain 0

Low CH



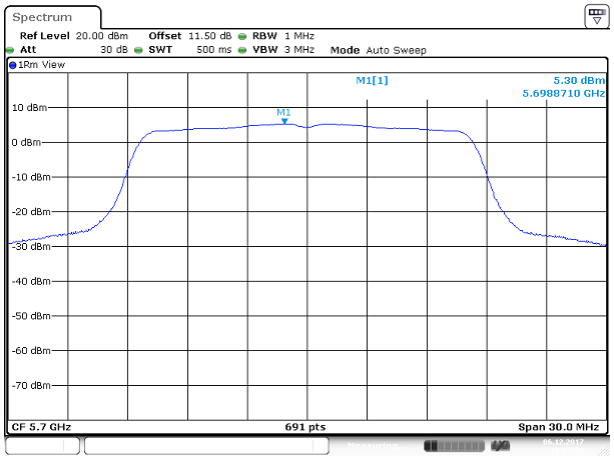
Date: 6.DEC.2017 10:18:12

Mid CH



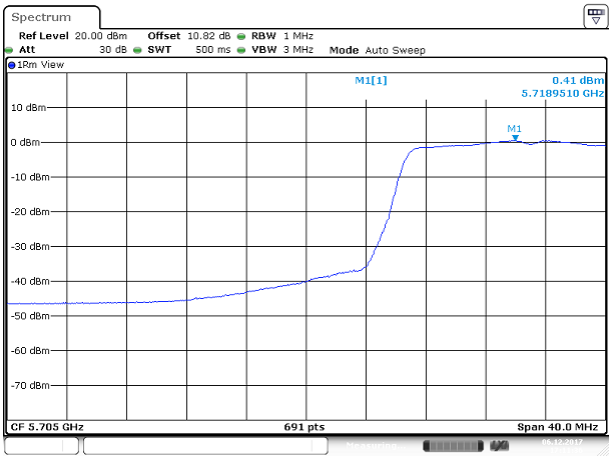
Date: 6.DEC.2017 10:22:14

High CH



Date: 6.DEC.2017 10:25:56

Cross CH



Date: 6.DEC.2017 17:11:36

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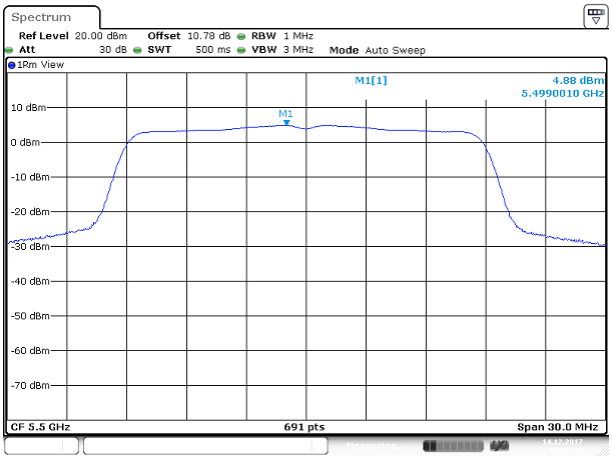
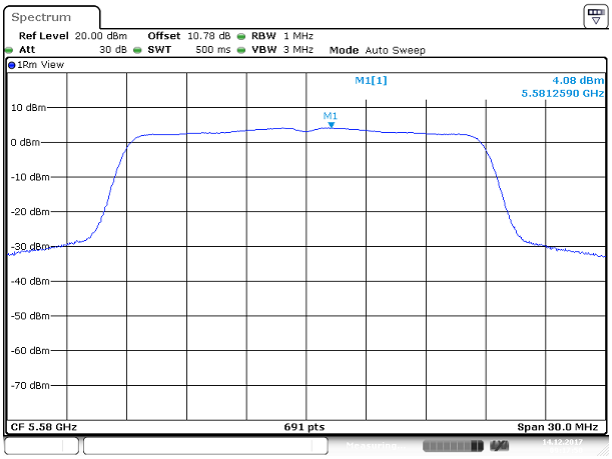
UNII-2c IEEE 802.11n HT20 mode- chain 0

Low CH



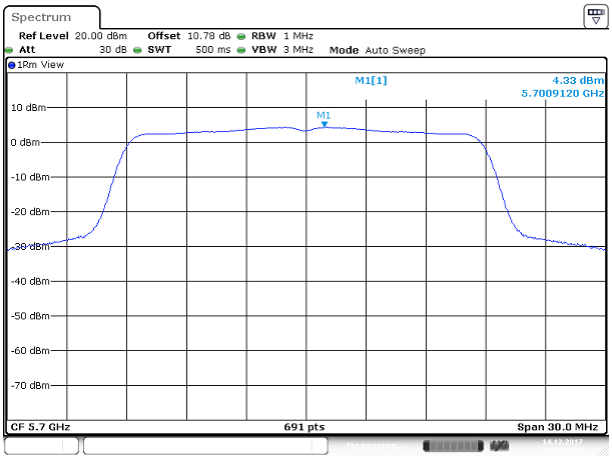
Date: 14.DEC.2017 09:15:26

Mid CH



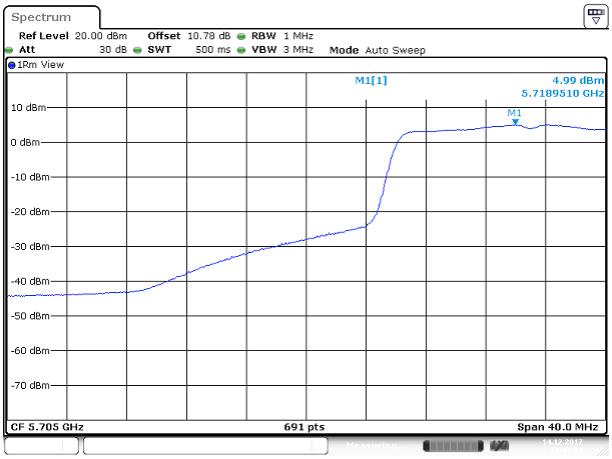
Date: 14.DEC.2017 09:17:50

High CH



Date: 14.DEC.2017 09:20:40

Cross CH



Date: 14.DEC.2017 12:43:34

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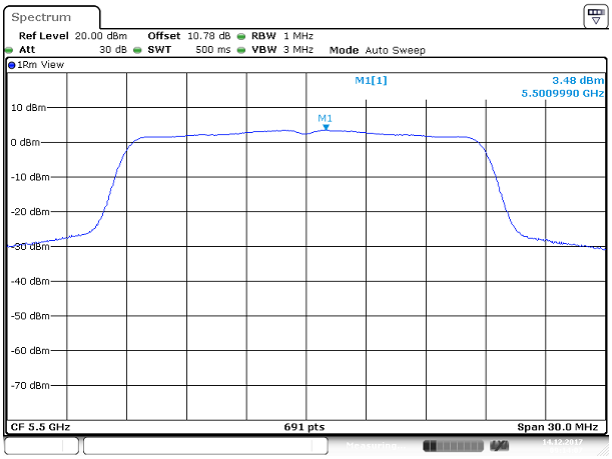
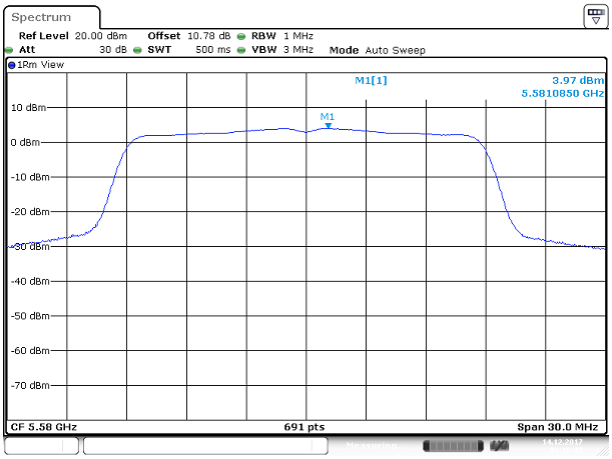
UNII-2c IEEE 802.11n HT20 mode- chain 1

Low CH



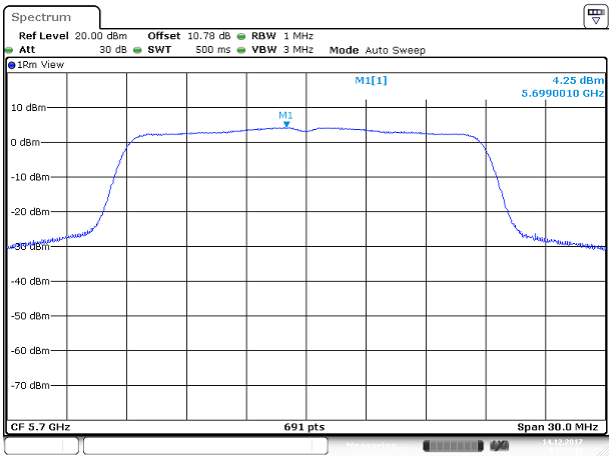
Date: 14.DEC.2017 09:14:07

Mid CH



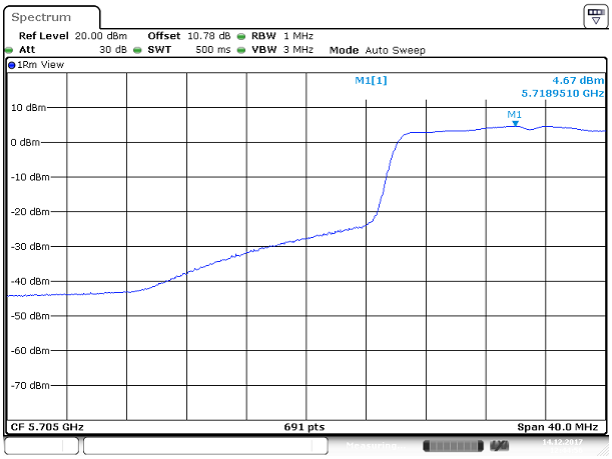
Date: 14.DEC.2017 09:18:48

High CH



Date: 14.DEC.2017 09:19:50

Cross CH



Date: 14.DEC.2017 12:44:57

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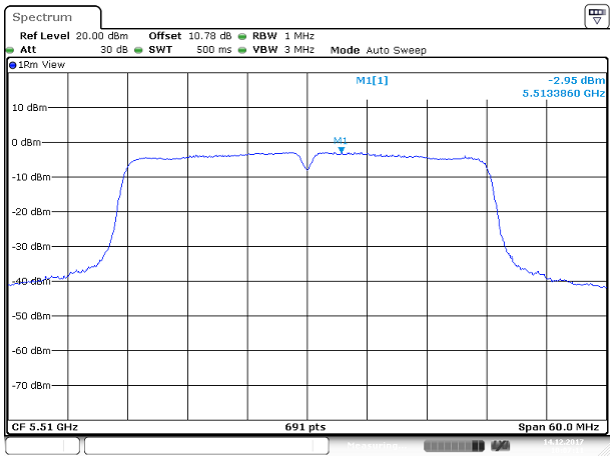
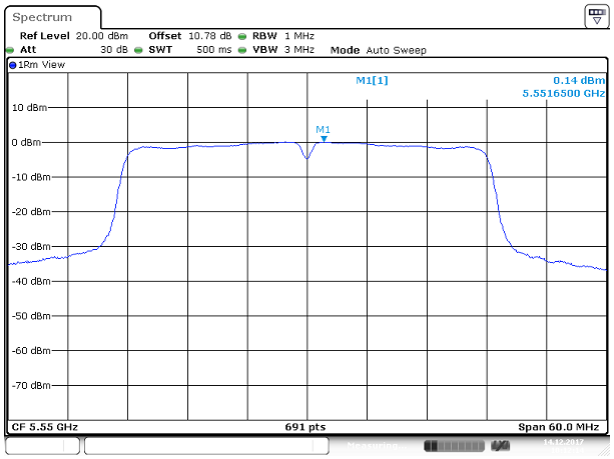
UNII-2c IEEE 802.11n HT40 mode- chain 0

Low CH



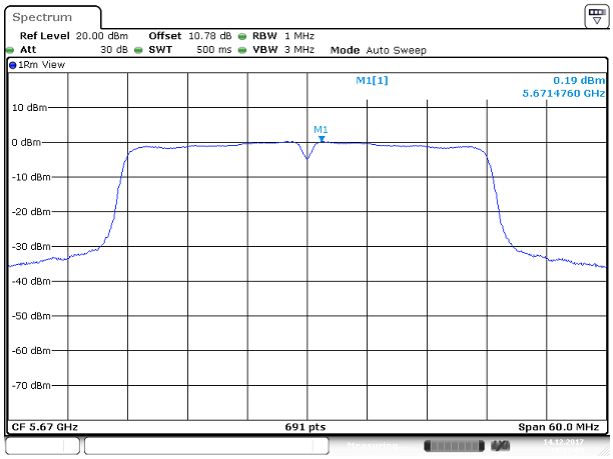
Date: 14.DEC.2017 10:07:11

Mid CH



Date: 14.DEC.2017 10:12:15

High CH



Date: 14.DEC.2017 10:13:00

Cross CH

Date: 14.DEC.2017 12:54:22

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