RADIO TEST REPORT
FCC 47 CFR PART 15 SUBPART E

Test Standard	**FCC Part 15.407**
FCC ID	**PPQ-WCBN4508M**
Product name	**802.11a/b/g/n/ac 2Tx2R + BT V4.2 LE USB Combo Module**
Brand name	**LITE-ON**
Model No.	**WCBN4508M**
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:

Jerry Chuang
Engineer

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Revision History

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	June 8, 2018	Initial Issue	ALL	Doris Chu
01	June 26, 2018	1. Revise section 1.6 SMU 200A calibration date.	P.8	Doris Chu

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1. GENERAL INFORMATION

1.1 EUT INFORMATION

<table>
<tr><td>Applicant</td><td>LITE-ON Technology Corp.
Bldg. C, 90, Chien 1 Road,
Chung Ho, New Taipei City 23585,
Taiwan</td></tr>
<tr><td>Manufacturer</td><td>LITE-ON TECHNOLOGY (Changzhou) CO., LTD
A9 Building,No.88 Yanghu Road, Wujin Hi-Tech Industrial Development Zone ,Changzhou City,Jiangsu Province 213100 China</td></tr>
<tr><td>Equipment</td><td>802.11a/b/g/n/ac 2Tx2R + BT V4.2 LE USB Combo Module</td></tr>
<tr><td>Model Name</td><td>WCBN4508M</td></tr>
<tr><td>Model Discrepancy</td><td>N/A</td></tr>
<tr><td>Brand name</td><td>LITE-ON</td></tr>
<tr><td>Received Date</td><td>February 1, 2018</td></tr>
<tr><td>Date of Test</td><td>February 23 ~ June 7, 2018</td></tr>
<tr><td>Power Operation</td><td>Power form host device.</td></tr>
<tr><td>Output Power(W)</td><td>
<table>
<tr><th>Band</th><th>Mode</th><th>Frequency Range (MHz)</th><th>Output Power (W)</th></tr>
<tr><td rowspan="4">U-NII-1</td><td>IEEE 802.11a</td><td>5180 ~ 5240</td><td>0.0631</td></tr>
<tr><td>IEEE 802.11n 20 MHz</td><td>5180 ~ 5240</td><td>0.1308</td></tr>
<tr><td>IEEE 802.11n 40 MHz</td><td>5190 ~ 5230</td><td>0.1256</td></tr>
<tr><td>IEEE 802.11ac VHT 80 MHz</td><td>5210</td><td>0.0852</td></tr>
<tr><td rowspan="4">U-NII-2a</td><td>IEEE 802.11a</td><td>5260 ~ 5320</td><td>0.0330</td></tr>
<tr><td>IEEE 802.11n 20 MHz</td><td>5260 ~ 5320</td><td>0.0784</td></tr>
<tr><td>IEEE 802.11n 40 MHz</td><td>5270 ~ 5310</td><td>0.1241</td></tr>
<tr><td>IEEE 802.11ac VHT 80 MHz</td><td>5290</td><td>0.0480</td></tr>
<tr><td rowspan="4">U-NII-2c</td><td>IEEE 802.11a</td><td>5500 ~ 5700</td><td>0.0627</td></tr>
<tr><td>IEEE 802.11n 20 MHz</td><td>5500 ~ 5700</td><td>0.1173</td></tr>
<tr><td>IEEE 802.11n 40 MHz</td><td>5510 ~ 5670</td><td>0.1148</td></tr>
<tr><td>IEEE 802.11ac VHT 80 MHz</td><td>5530</td><td>0.0492</td></tr>
<tr><td rowspan="4">U-NII-3</td><td>IEEE 802.11a</td><td>5745 ~ 5825</td><td>0.0887</td></tr>
<tr><td>IEEE 802.11n 20 MHz</td><td>5745 ~ 5825</td><td>0.1585</td></tr>
<tr><td>IEEE 802.11n 40 MHz</td><td>5755 ~ 5795</td><td>0.1788</td></tr>
<tr><td>IEEE 802.11ac VHT 80 MHz</td><td>5775</td><td>0.1766</td></tr>
</table>
</td></tr>
</table>

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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 20 MHz</td><td>5180 ~ 5240 MHz</td></tr>
<tr><td>IEEE 802.11n 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 20 MHz</td><td>5260 ~ 5320 MHz</td></tr>
<tr><td>IEEE 802.11n 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 20 MHz</td><td>5500 ~ 5700 MHz</td></tr>
<tr><td>IEEE 802.11n 40 MHz</td><td>5510 ~ 5670 MHz</td></tr>
<tr><td>IEEE 802.11ac VHT 80 MHz</td><td>5530 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 20 MHz</td><td>5745 ~ 5825 MHz</td></tr>
<tr><td>IEEE 802.11n 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 20 MHz mode: OFDM
3. IEEE 802.11n 40 MHz mode: OFDM
4. 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

Antenna Type	☐ PIFA ☒ PCB ☐ Dipole ☐ Coils
Antenna Gain	Ant 0: Gain: 1.7 dBi Ant 1 Gain: 2.3 dBi
Antenna connector	N/A
Directional gain	2.01

Notes:
1. Power Directional Gain: 10LOG(((10^(Ant1/10)+10^(Ant2/10))/2))= 10LOG(((10^(1.7/10)+10^(2.3/10))/2))=2.01

1.4 MEASUREMENT UNCERTAINTY

PARAMETER	UNCERTAINTY
AC Powerline Conducted Emission	+/- 1.2575
Emission bandwidth, 20dB bandwidth	+/- 1.4003
RF output power, conducted	+/- 1.1372
Power density, conducted	+/- 1.4003
3M Semi Anechoic Chamber / 30M~200M	+/- 4.0138
3M Semi Anechoic Chamber / 200M~1000M	+/- 3.9483
3M Semi Anechoic Chamber / 1G~8G	+/- 2.5975
3M Semi Anechoic Chamber / 8G~18G	+/- 2.6112
3M Semi Anechoic Chamber / 18G~26G	+/- 2.7389
3M Semi Anechoic Chamber / 26G~40G	+/- 2.9683
3M Semi Anechoic Chamber / 40G~60G	+/- 1.8509
3M Semi Anechoic Chamber / 60G~75G	+/- 1.9869
3M Semi Anechoic Chamber / 75G~110G	+/- 2.9651
3M Semi Anechoic Chamber / 110G~170G	+/- 2.7807
3M Semi Anechoic Chamber / 170G~220G	+/- 3.6437
3M Semi Anechoic Chamber / 220G~325G	+/- 4.2982

***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	Dally Hong	-
Radiation	Jerry Chuang	-
RF Conducted	Jerry Chuang	-

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	1012009	09/18/2017	09/17/2018
Power Sensor	Anritsu	MA2411B	917072	09/18/2017	09/17/2018
Spectrum Analyzer	R&S	FSV 40	101073	10/02/2017	10/01/2018
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	ETC	MCTD 1209	DRH13M02003	08/25/2017	08/24/2018
Pre-Amplifier	EMEC	EM330	60609	06/06/2018	06/05/2019
Spectrum Analyzer	Agilent	E4446A	US42510252	11/27/2017	11/26/2018
Loop Ant	COM-POWER	AL-130	121051	03/21/2018	03/20/2019
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
Wideband Radio Communication Tester	R&S	CMW 500	116875	04/20/2018	04/19/2019
Pre-Amplifier	HP	8449B	3008A00965	06/27/2017	06/26/2018
Filter	Micro Tronics	BRM 50702	120	05/14/2018	05/13/2019
Filter	Micro Tronics	HPM13195	3	05/14/2018	05/13/2019
Cable	HUBER SUHNER	SUCOFLEX 104PEA	25157	07/31/2017	07/30/2018
Cable	HUBER SUHNER	SUCOFLEX 104PEA	20995	07/31/2017	07/30/2018

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AC Conducted Emissions Test Site					
Equipment	**Manufacturer**	**Model**	**S/N**	**Cal Date**	**Cal Due**
LISN	R&S	ENV216	101054	02/06/2018	02/05/2019
LISN	SCHWARZBECK	NSLK 8127	8127-541	02/09/2018	02/08/2019
EMI Test Receiver	R&S	ESCI	101203	11/02/2017	11/01/2018

Adaptivity / DFS Test Site					
Equipment	**Manufacturer**	**Model**	**S/N**	**Cal Date**	**Cal Due**
Vector Signal Generator-DFS	R&S	SMU 200A	102239	05/04/2018	05/03/2019
SMA Power Divider	CCS	STI08-0015	008	07/27/2017	07/26/2018
Spectrum Analyzer	R&S	FSU 20Hz….26.5GHz	100258	06/27/2017	06/26/2018
Vector Signal Generator	R&S	SMU 200A	102239	03/12/2018	03/11/2019
Attenuator	E-INSTPVMENT	EPA-600H	EC1400050	N.C.R	N.C.R

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

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	DC Power Source	Agilent	E3640A	N/A	N/A
2	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.	Chapter	Test Item	Result
15.203	1.3	Antenna Requirement	Pass
15.207	4.1	AC Conducted Emission	Pass
15.403(i)	4.2	26dB Bandwidth	Pass
15.407(e)	4.2	6dB Bandwidth	Pass
15.403(i)	4.2	Occupied Bandwidth (99%)	Pass
15.407(a)	4.3	Output Power Measurement	Pass
15.407(a)	4.4	Power Spectral Density	Pass
15.407(b)	4.5	Radiation Band Edge	Pass
15.407(b)	4.5	Radiation Spurious Emission	Pass
15.407(g)	4.6	Frequency Stability	Pass
15.407(h)	4.7	Dynamic Frequency Selection	Pass

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3. DESCRIPTION OF TEST MODES

3.1 THE WORST MODE OF OPERATING CONDITION

<table>
<tr><td>Operation mode</td><td>1. IEEE 802.11a mode: 6Mbps
2. IEEE 802.11n 20 MHz mode: MCS0
3. IEEE 802.11n 40 MHz mode: MCS0
4. IEEE 802.11ac VHT 80 MHz mode: MCS0</td></tr>
<tr><td>Operating Frequency Range &
Number of Channels</td><td>
<table>
<tr><th></th><th>Mode</th><th>Frequency Range (MHz)</th><th>Number of Channels</th></tr>
<tr><td rowspan="4">U-NII-1</td><td>IEEE 802.11a</td><td>5180 ~ 5240</td><td>4 Channels</td></tr>
<tr><td>IEEE 802.11n 20 MHz</td><td>5180 ~ 5240</td><td>4 Channels</td></tr>
<tr><td>IEEE 802.11n 40 MHz</td><td>5190 ~ 5230</td><td>2 Channels</td></tr>
<tr><td>IEEE 802.11ac VHT 80 MHz</td><td>5210</td><td>1 Channels</td></tr>
<tr><td rowspan="4">U-NII-2a</td><td>IEEE 802.11a</td><td>5260 ~ 5320</td><td>4 Channels</td></tr>
<tr><td>IEEE 802.11n 20 MHz</td><td>5260 ~ 5320</td><td>4 Channels</td></tr>
<tr><td>IEEE 802.11n 40 MHz</td><td>5270 ~ 5310</td><td>2 Channels</td></tr>
<tr><td>IEEE 802.11ac VHT 80 MHz</td><td>5290</td><td>1 Channels</td></tr>
<tr><td rowspan="4">U-NII-2c</td><td>IEEE 802.11a</td><td>5500 ~ 5700</td><td>11 Channels</td></tr>
<tr><td>IEEE 802.11n 20 MHz</td><td>5500 ~ 5700</td><td>11 Channels</td></tr>
<tr><td>IEEE 802.11n 40 MHz</td><td>5510 ~ 5670</td><td>5 Channels</td></tr>
<tr><td>IEEE 802.11ac VHT 80 MHz</td><td>5530~5610</td><td>2 Channels</td></tr>
<tr><td rowspan="4">U-NII-3</td><td>IEEE 802.11a</td><td>5745 ~ 5825</td><td>5 Channels</td></tr>
<tr><td>IEEE 802.11n 20 MHz</td><td>5745 ~ 5825</td><td>5 Channels</td></tr>
<tr><td>IEEE 802.11n 40 MHz</td><td>5755 ~ 5795</td><td>2 Channels</td></tr>
<tr><td>IEEE 802.11ac VHT 80 MHz</td><td>5775</td><td>1 Channels</td></tr>
</table>
</td></tr>
</table>

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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	120V / 60Hz
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	120V / 60Hz
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	120V / 60Hz
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(X-Plane and Horizontal) 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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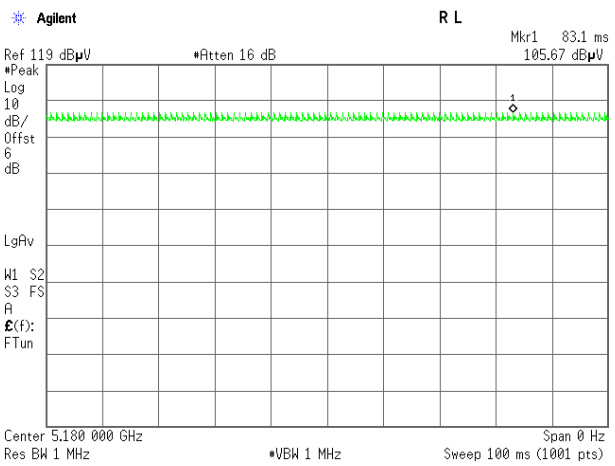
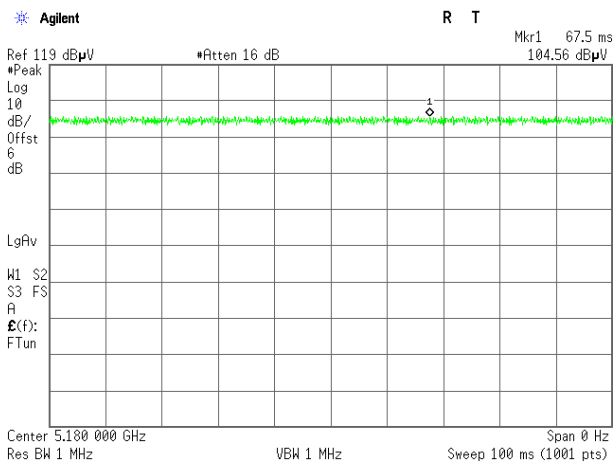
3.3 EUT DUTY CYCLE

Duty Cycle				
Configuration	TX ON (ms)	TX ALL (ms)	Duty Cycle (%)	Duty Factor(dB)
802.11a	1.0000	1.0000	100.00%	0.00
802.11n 20	1.0000	1.0000	100.00%	0.00
802.11n 40	1.0000	1.0000	100.00%	0.00
802.11ac VHT80	1.0000	1.0000	100.00%	0.00

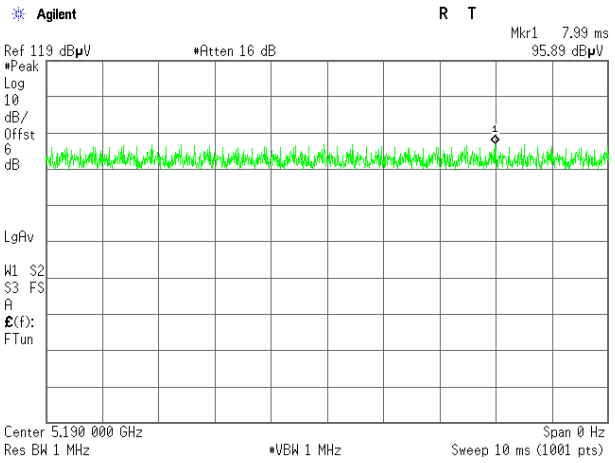
802.11a



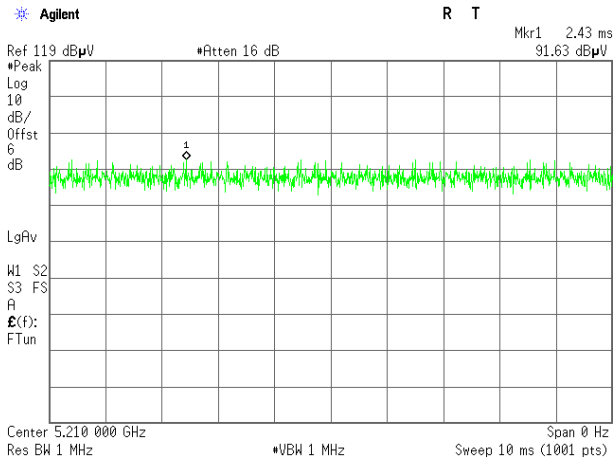
802.11n 20



802.11n 40



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),

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

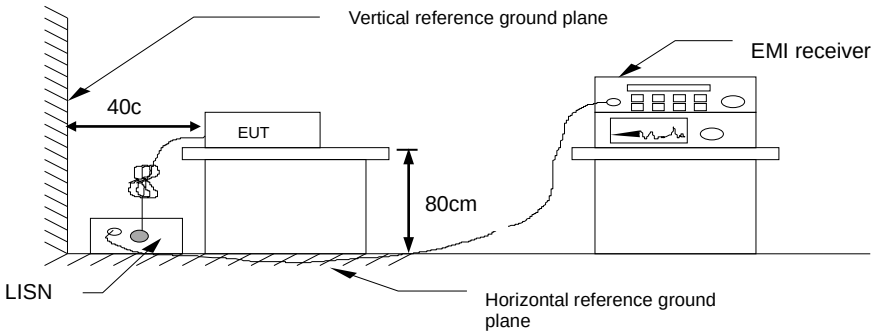
* Decreases with the logarithm of the frequency.

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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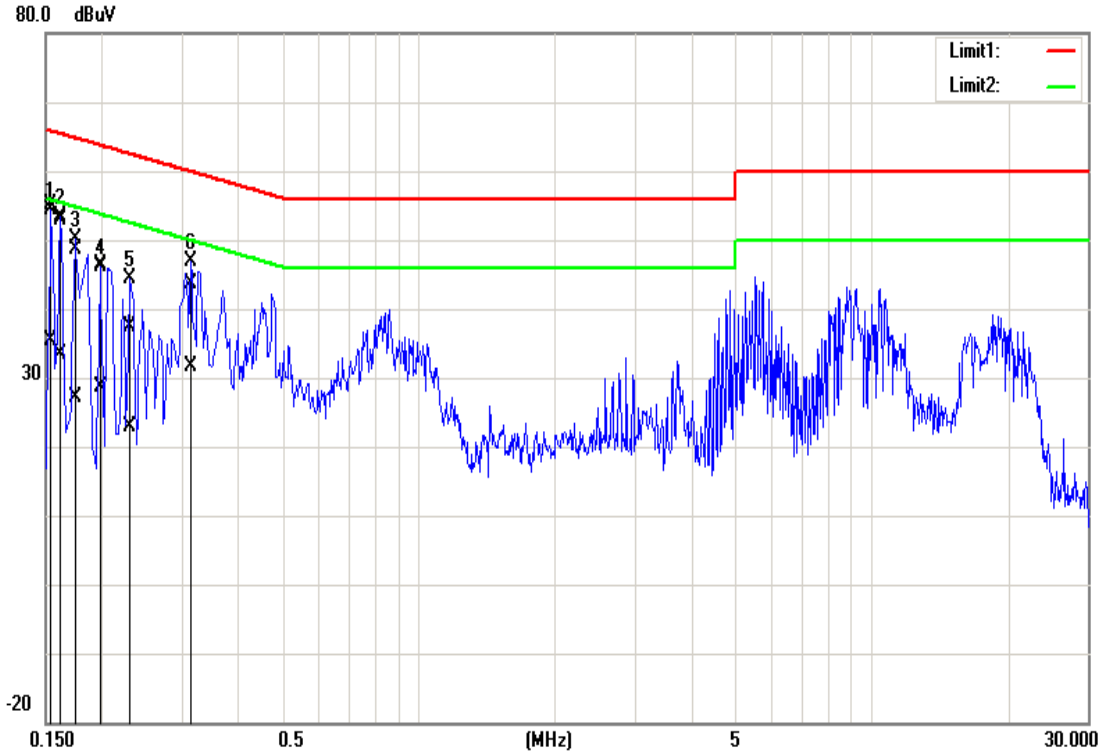
Test Data

Test Mode:	Mode 1	Temp/Hum	24(℃)/ 50%RH
Test Voltage	120Vac / 60Hz	Test Date	June 7, 2018
Phase:	Line	Test Engineer	Dally Hong



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
0.1540	55.02	35.15	0.11	55.13	35.26	65.78	55.78	-10.65	-20.52	Pass
0.1620	52.65	33.30	0.11	52.76	33.41	65.36	55.36	-12.60	-21.95	Pass
0.1740	48.45	26.90	0.11	48.56	27.01	64.77	54.77	-16.21	-27.76	Pass
0.1980	46.24	28.45	0.11	46.35	28.56	63.69	53.69	-17.34	-25.13	Pass
0.2300	37.37	22.81	0.11	37.48	22.92	62.45	52.45	-24.97	-29.53	Pass
0.3140	43.63	31.58	0.12	43.75	31.70	59.86	49.86	-16.11	-18.16	Pass

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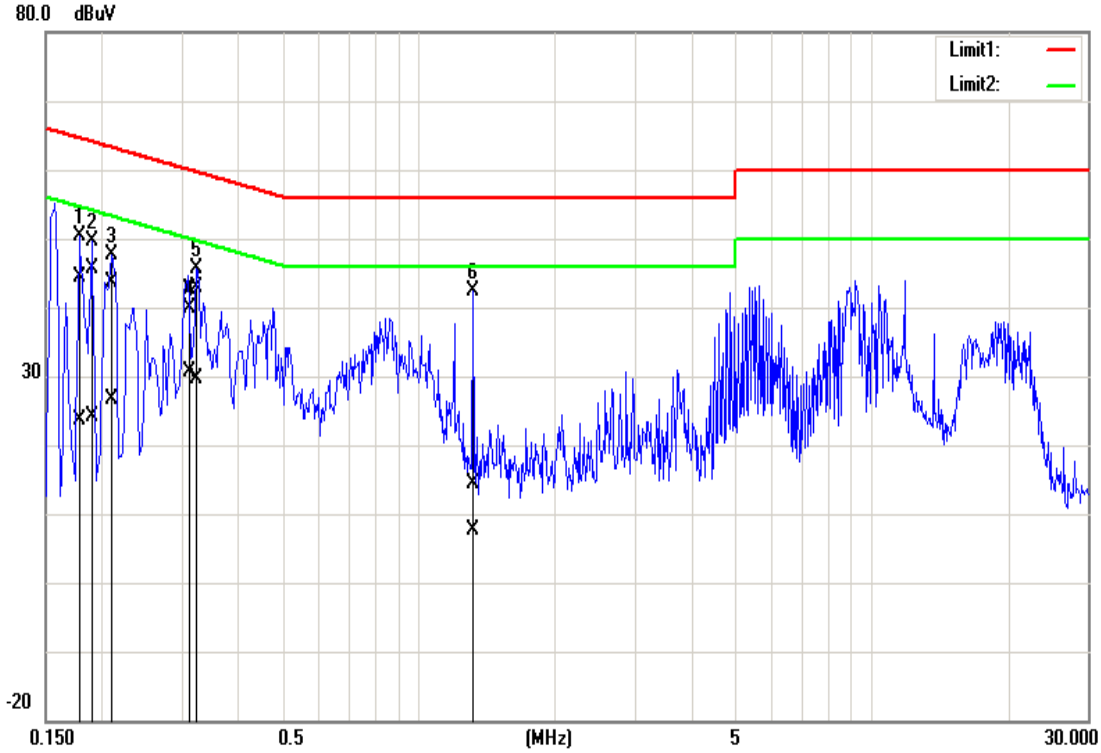
Test Mode:	Mode 1	Temp/Hum	24(℃)/ 50%RH
Test Voltage	120Vac / 60Hz	Test Date	June 7, 2018
Phase:	Neutral	Test Engineer	Dally Hong



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
0.1780	44.36	23.38	0.13	44.49	23.51	64.58	54.58	-20.09	-31.07	Pass
0.1900	45.44	23.91	0.13	45.57	24.04	64.04	54.04	-18.47	-30.00	Pass
0.2100	43.51	26.47	0.13	43.64	26.60	63.21	53.21	-19.57	-26.61	Pass
0.3140	42.55	30.45	0.13	42.68	30.58	59.86	49.86	-17.18	-19.28	Pass
0.3220	42.80	29.43	0.13	42.93	29.56	59.66	49.66	-16.73	-20.10	Pass
1.3180	14.20	7.41	0.15	14.35	7.56	56.00	46.00	-41.65	-38.44	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,

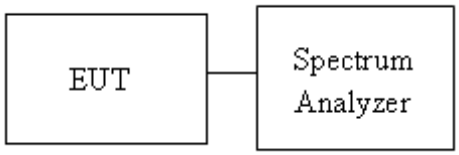
1. The EUT RF output connected to the spectrum analyzer by RF cable.
2. Setting maximum power transmit of EUT
3. UNII-1, UNII-2a and UNII-2c,

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

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

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

4.2.3 Test Setup



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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	-	16.7872	-	20.0000
Mid	5220	-	16.8596	-	19.9275
High	5240	-	16.8596	-	19.9275
Test mode: IEEE 802.11n 20 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	17.6555	17.8002	20.2899	20.5072
Mid	5220	17.6555	17.6555	20.3623	20.3623
High	5240	17.6555	17.7279	20.2899	20.5072
Test mode: IEEE 802.11n 40 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	36.3531	36.2373	41.9710	41.8550
High	5230	36.3531	36.2373	41.7390	42.4350
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	76.8740	76.4109	81.8550	81.6230

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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	-	16.7149	-	20.0725
Mid	5280	-	16.6425	-	20.0000
High	5320	-	16.7872	-	20.1449
Test mode: IEEE 802.11n 20 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	17.6555	17.6555	20.2174	20.2899
Mid	5280	17.6555	17.6555	20.2899	20.3623
High	5320	17.6555	17.6555	20.2899	20.6522
Test mode: IEEE 802.11n 40 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	36.3531	36.1215	41.8550	41.6230
High	5310	36.3531	36.1215	41.8550	41.6230
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	76.1794	76.4109	81.3910	81.6230

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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	-	16.7872	-	20.0725
Mid	5580	-	17.2214	-	20.1449
High	5700	-	16.7149	-	20.0725
Test mode: IEEE 802.11n 20 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	17.6555	20.2899	20.1449
Mid	5580	17.7279	17.6555	20.9420	20.2174
High	5700	17.6555	17.6555	20.3623	20.0725
Test mode: IEEE 802.11n 40 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	36.3531	36.1215	41.8550	41.3910
Mid	5500	36.2373	36.2373	41.7390	42.0870
High	5670	36.3531	36.2373	41.9710	41.8550
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	76.4109	76.1794	81.8550	81.6230

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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	-	17.1490	-	16.5652
Mid	5785	-	17.1490	-	16.6087
High	5825	-	17.0767	-	16.5652
Test mode: IEEE 802.11n 20 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	17.8002	17.7279	17.6957	17.6957
Mid	5785	18.0173	17.7279	17.7391	17.6957
High	5825	18.0173	17.8002	17.6957	17.6957
Test mode: IEEE 802.11n 40 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	36.8162	36.8162	36.4060	36.4060
High	5795	36.8162	36.8162	36.4060	36.4060
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	77.5687	76.8740	76.5220	76.5220

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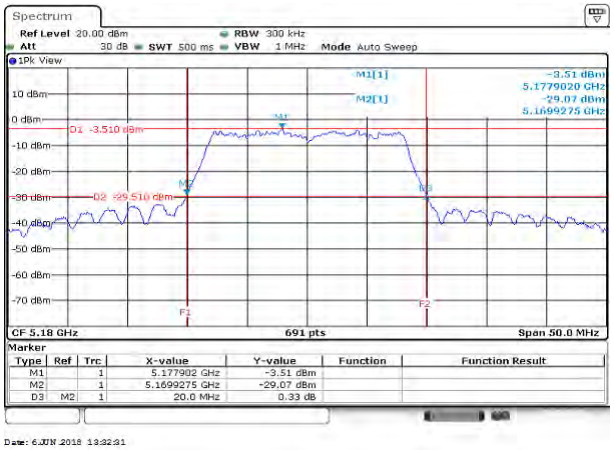
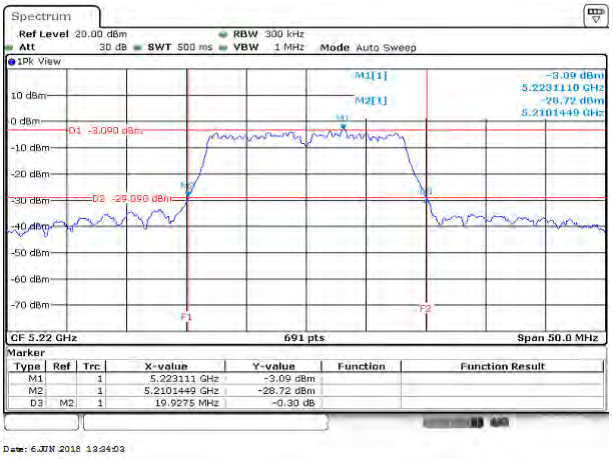
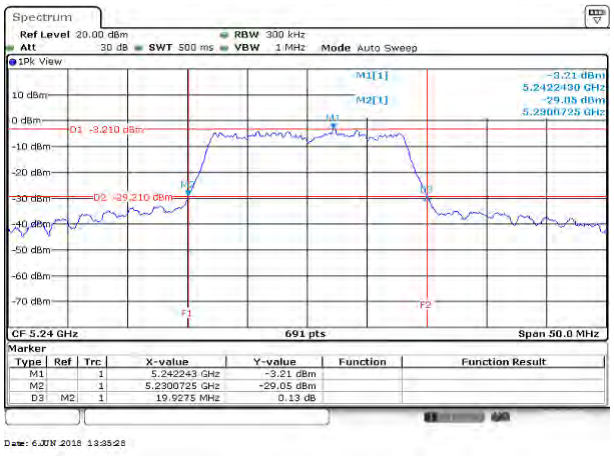
Test Data

26 dB Bandwidth

UNII-1 IEEE 802.11a mode- chain 1	
Low CH	**Mid CH**
	
High CH	
	

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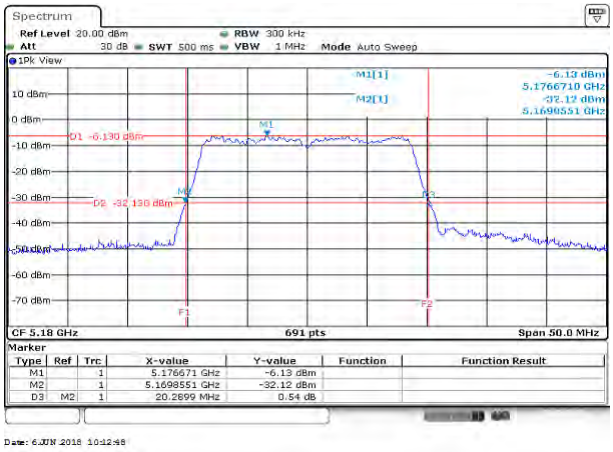
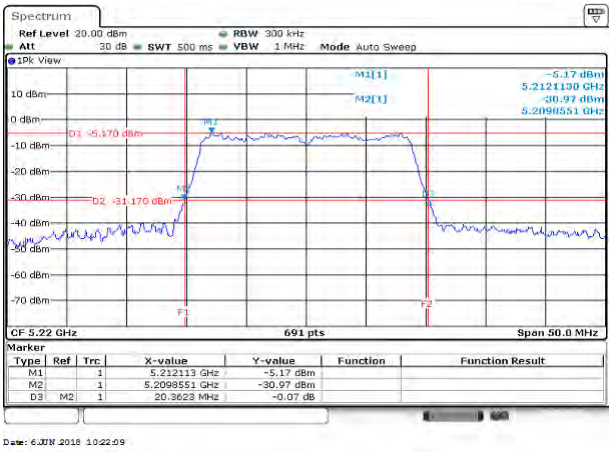
UNII-1 IEEE 802.11n 20 mode- chain 0

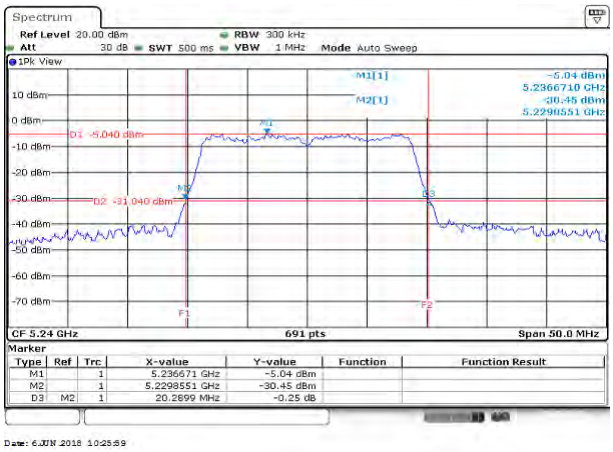
Low CH



Mid CH



High CH



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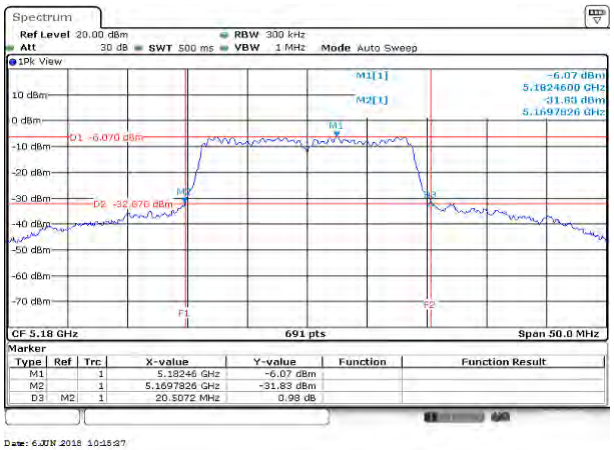
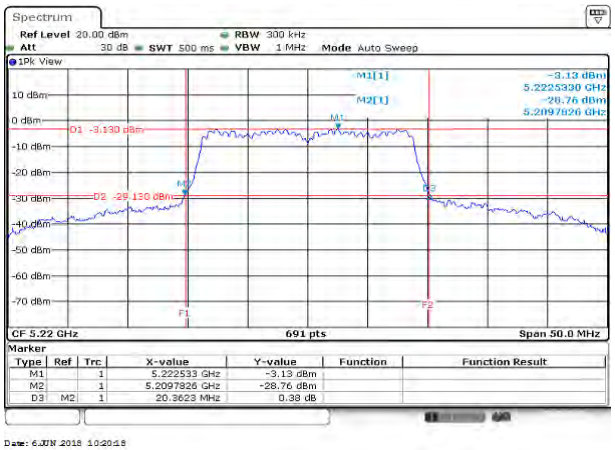
UNII-1 IEEE 802.11n 20 mode- chain 1

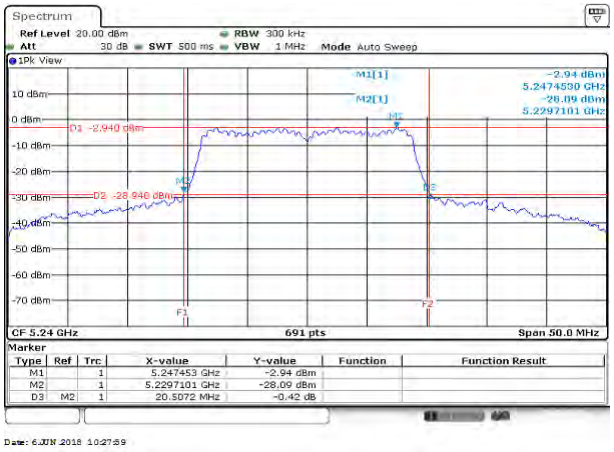
Low CH



Mid CH



High CH



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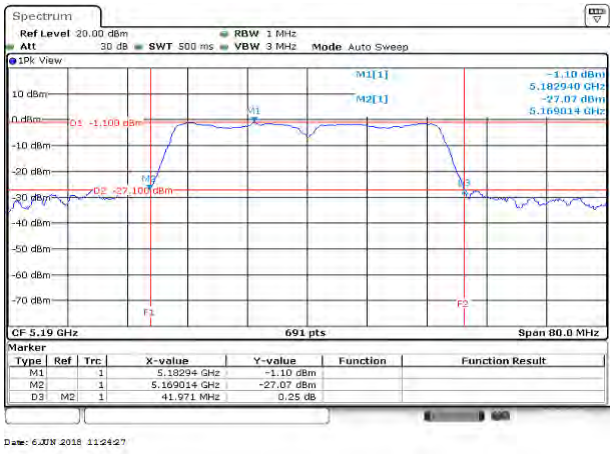
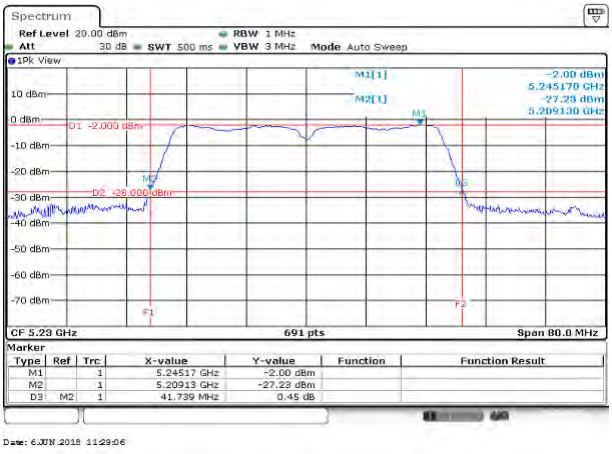
UNII-1 IEEE 802.11n 40 mode- chain 0

Low CH

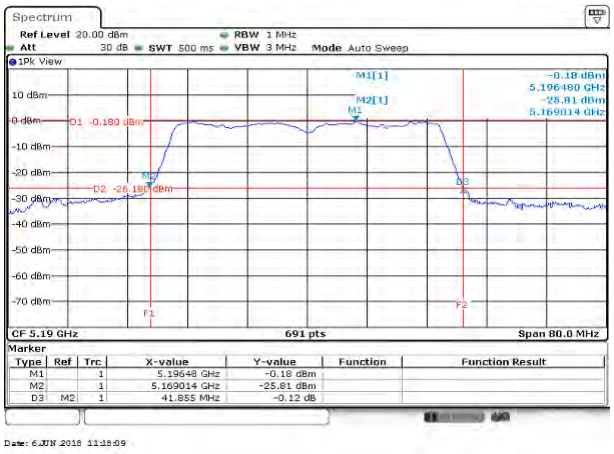


High CH

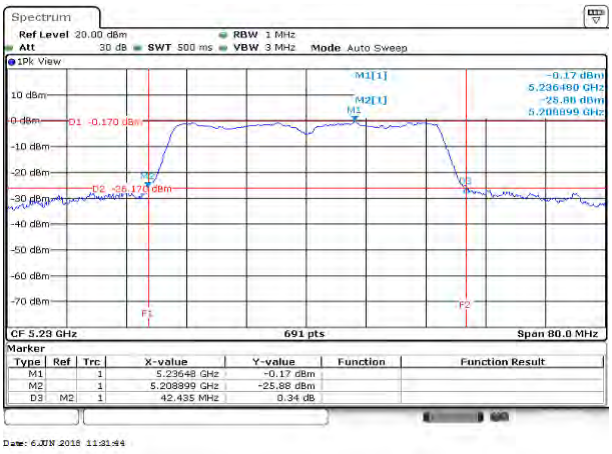


UNII-1 IEEE 802.11n 40 mode- chain 1

Low CH



High CH



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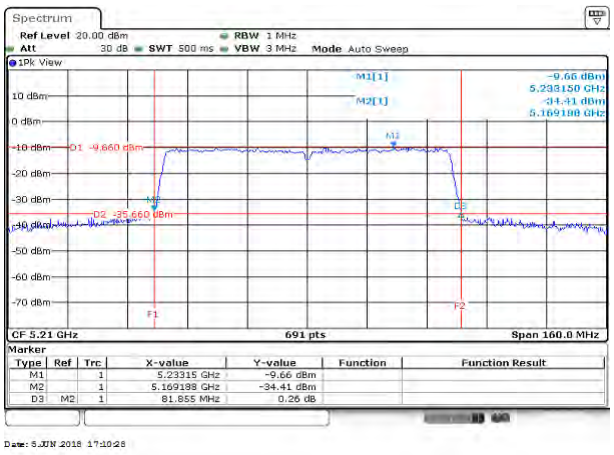
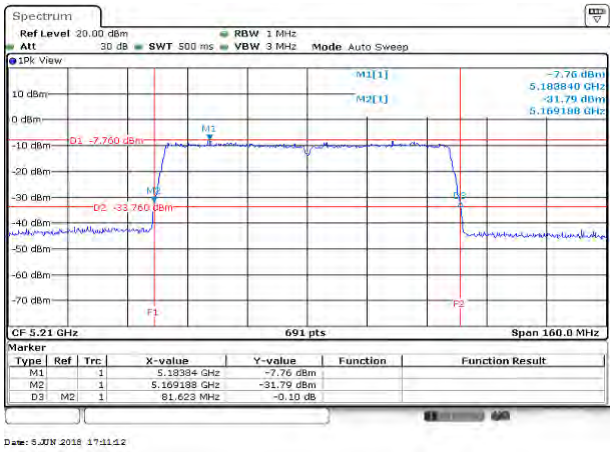
UNII-1 IEEE 802.11ac VHT80 mode- chain 0

Mid CH



UNII-1 IEEE 802.11ac VHT80 mode- chain 1

Mid CH



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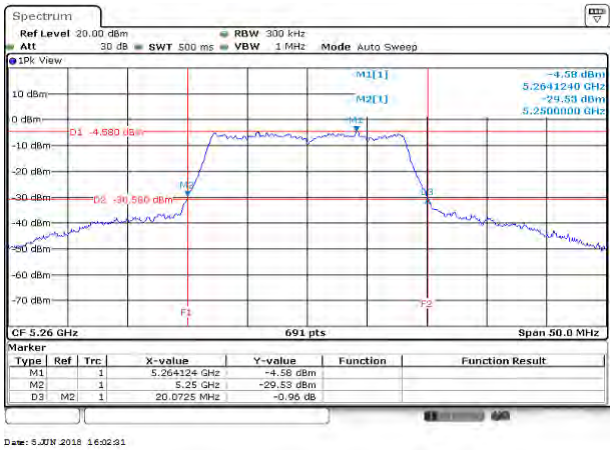
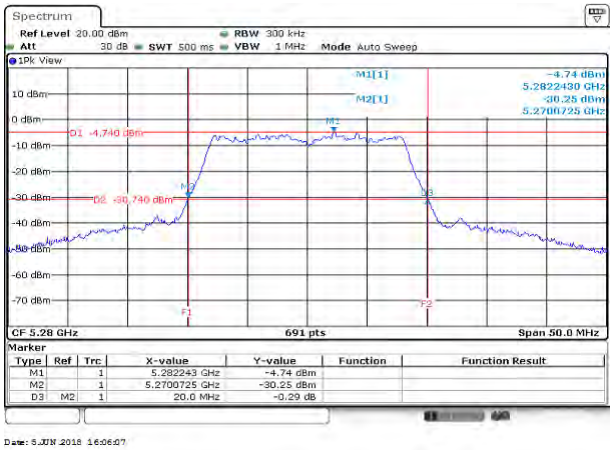
Test Data

UNII-2a IEEE 802.11a mode- chain 1

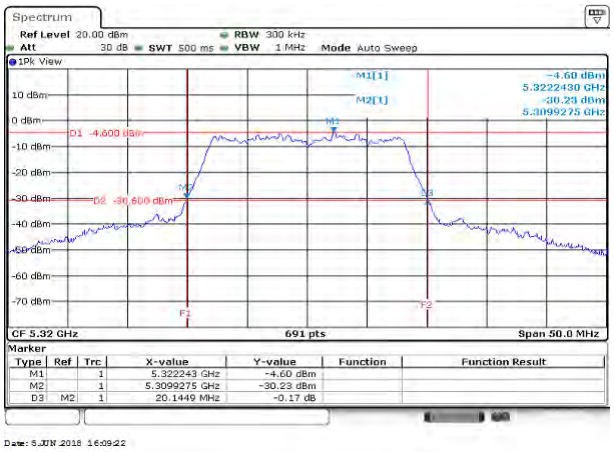
Low CH



Mid CH



High CH



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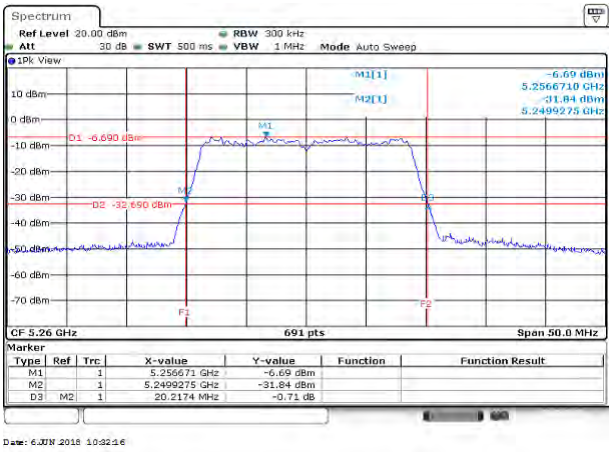
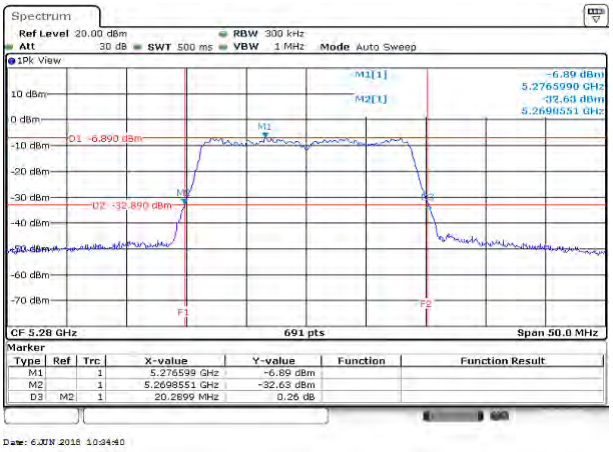
UNII-2a IEEE 802.11n 20 mode- chain 0

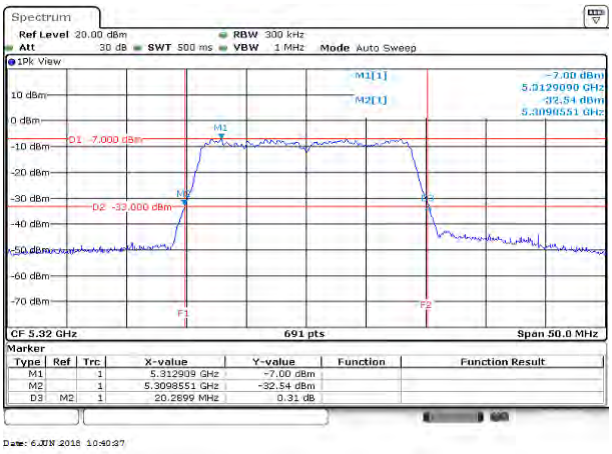
Low CH



Mid CH



High CH



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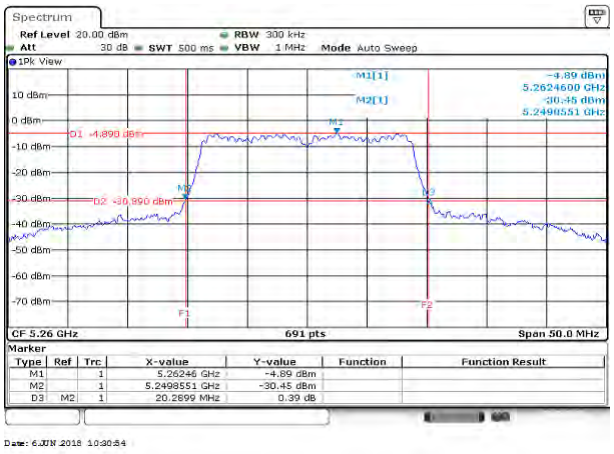
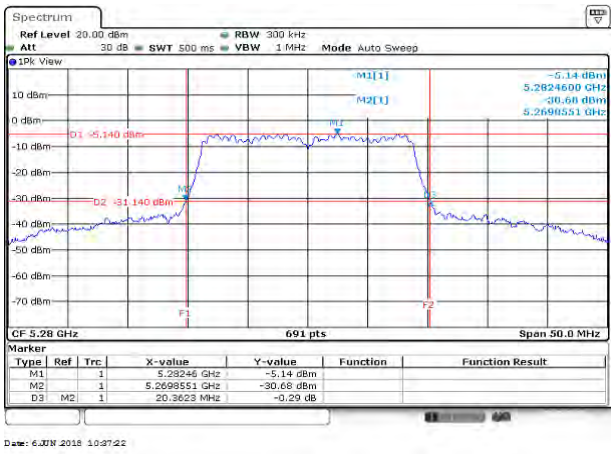
UNII-2a IEEE 802.11n 20 mode- chain 1

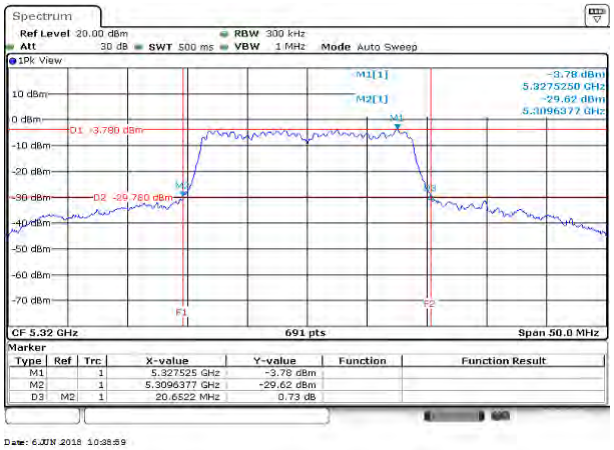
Low CH



Mid CH



High CH



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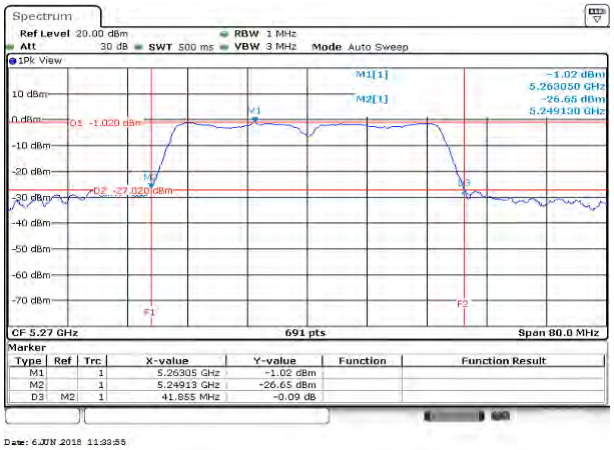
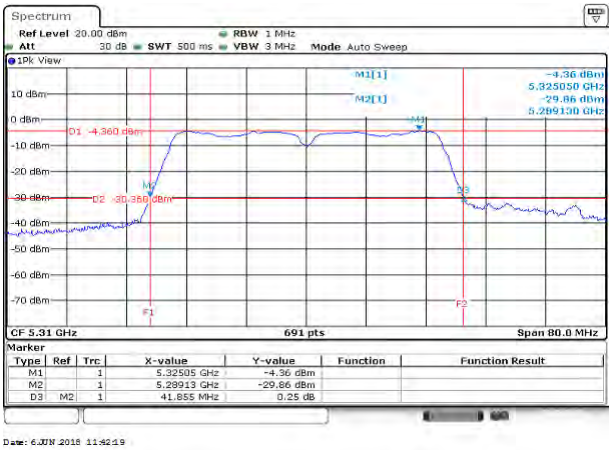
UNII-2a IEEE 802.11n 40 mode- chain 0

Low CH

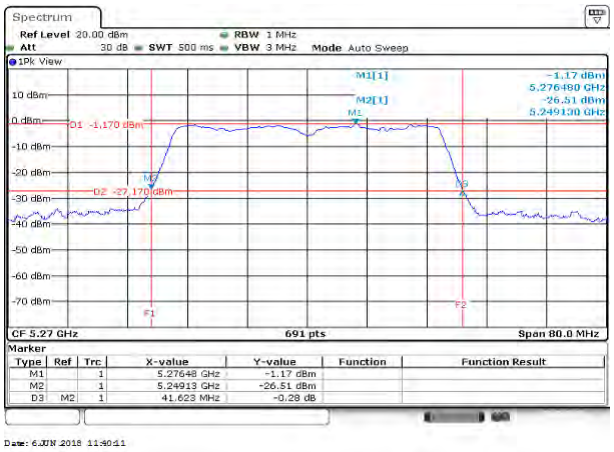


High CH

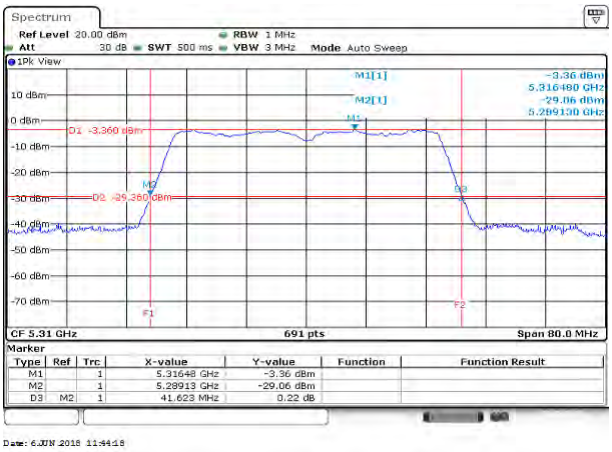


UNII-2a IEEE 802.11n 40 mode- chain 1

Low CH



High CH



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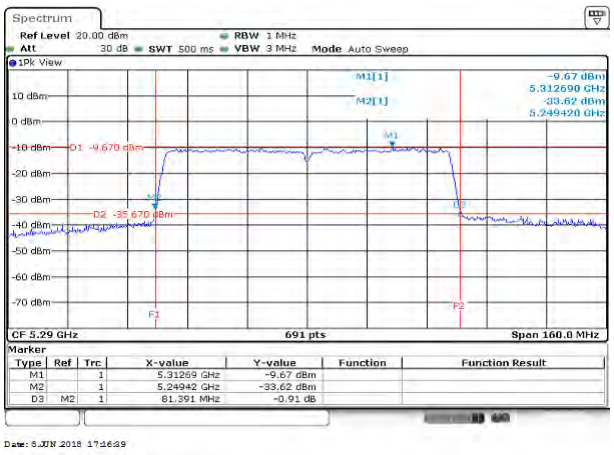
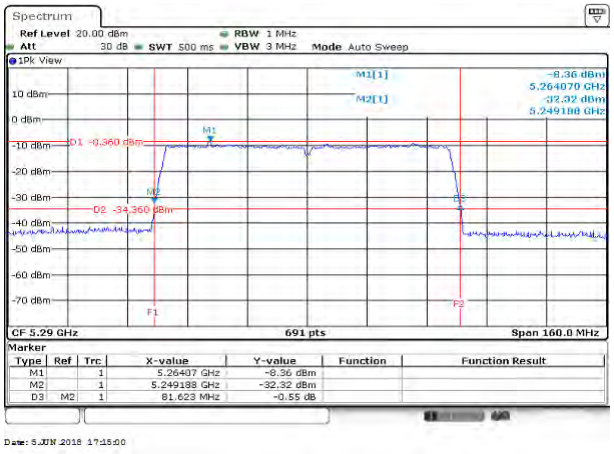
UNII-2a IEEE 802.11ac VHT80 mode- chain 0

Mid CH



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

Mid CH



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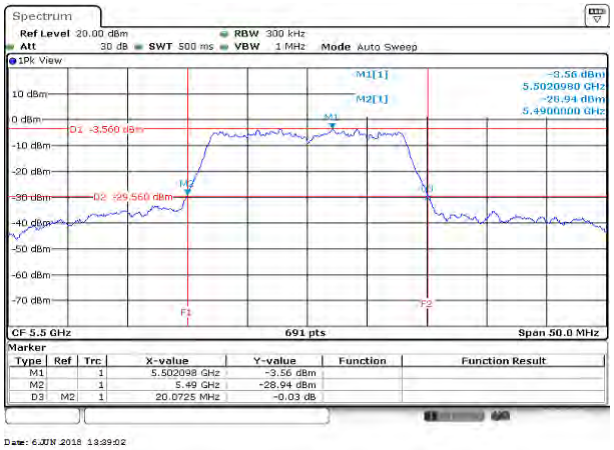
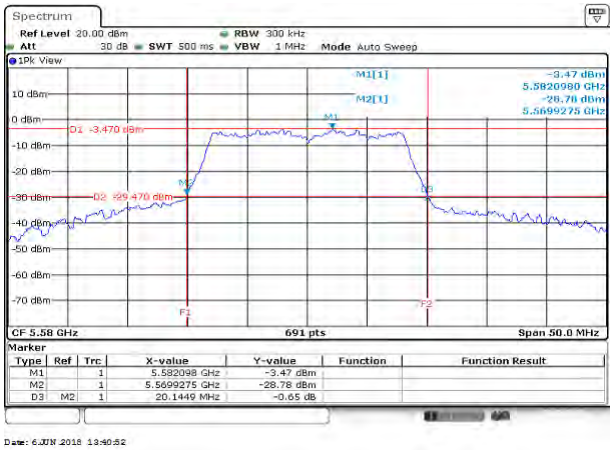
Test Data

UNII-2c IEEE 802.11a mode- chain 1

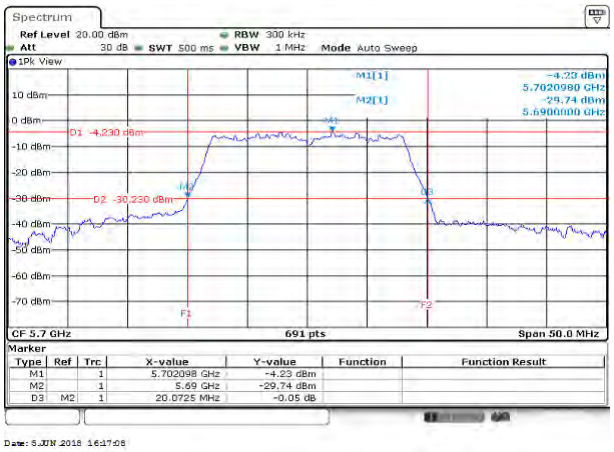
Low CH



Mid CH



High CH



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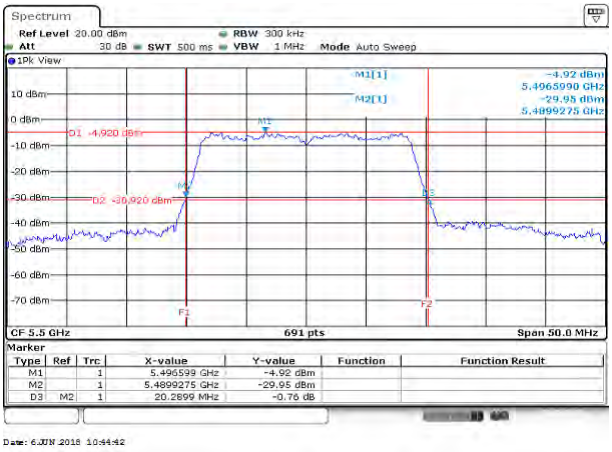
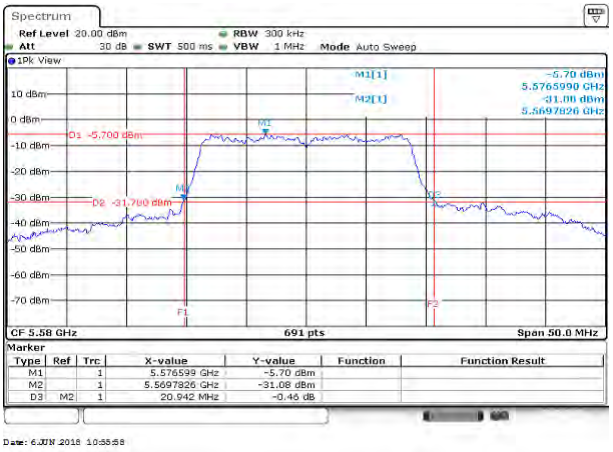
UNII-2c IEEE 802.11n 20 mode- chain 0

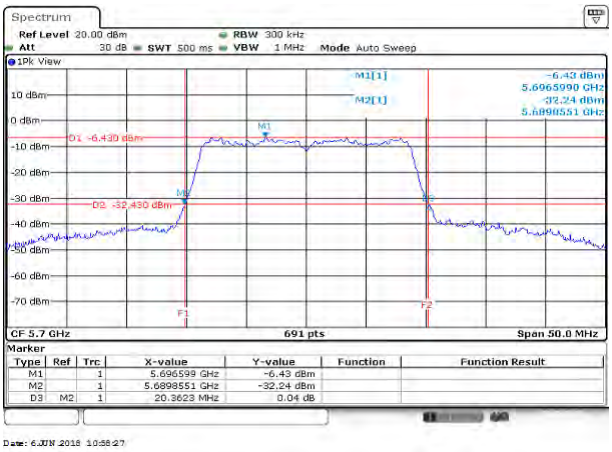
Low CH



Mid CH



High CH



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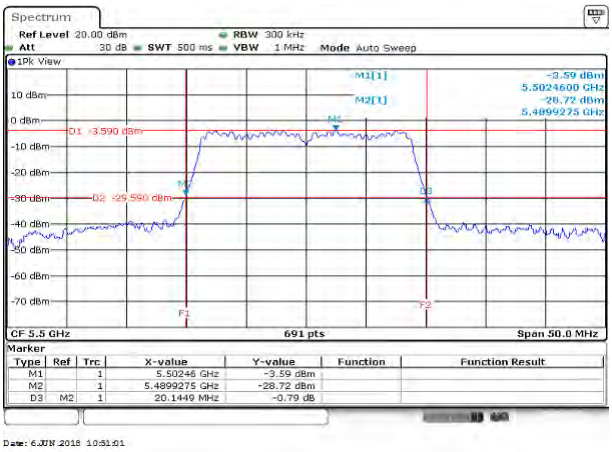
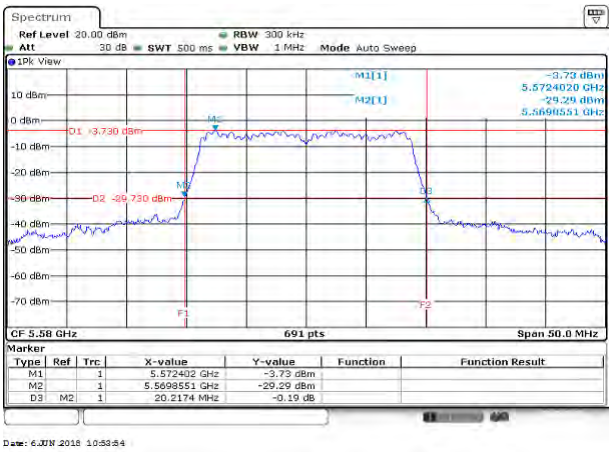
UNII-2c IEEE 802.11n 20 mode- chain 1

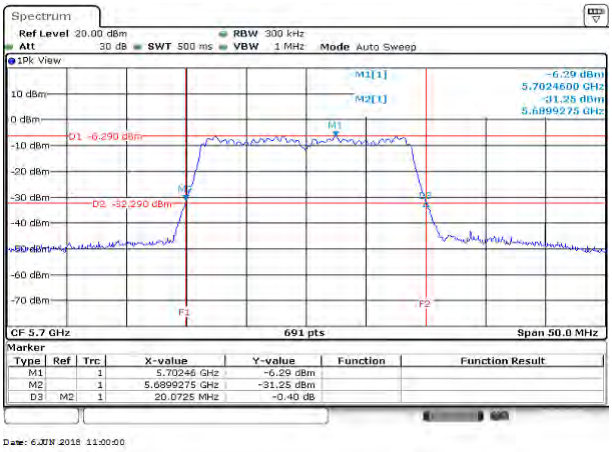
Low CH



Mid CH



High CH



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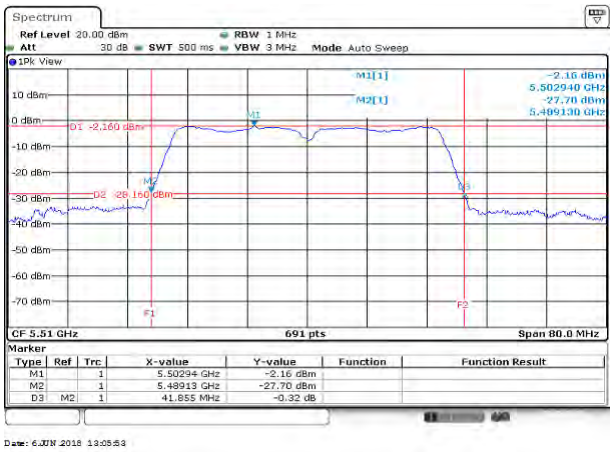
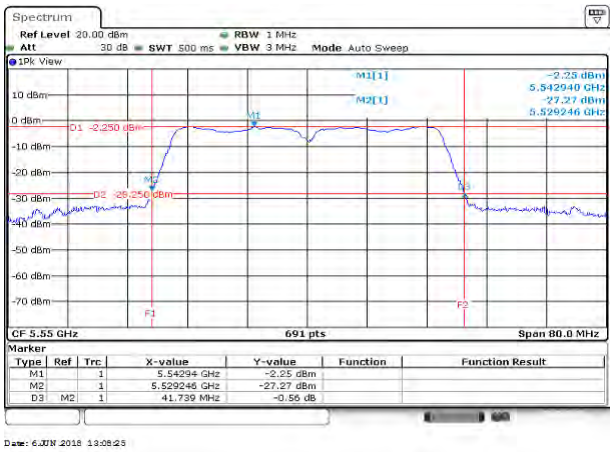
UNII-2c IEEE 802.11n 40 mode- chain 0

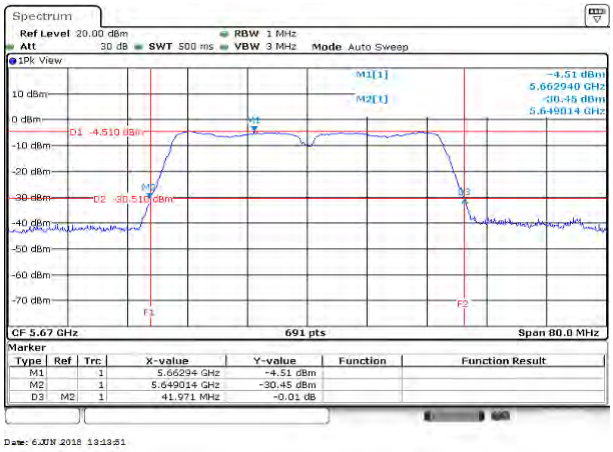
Low CH



Mid CH



High CH



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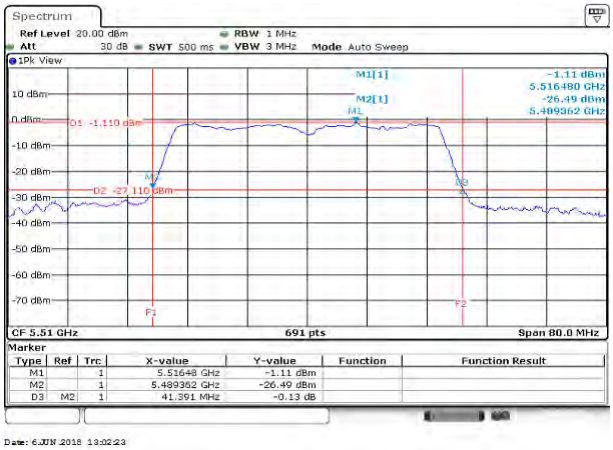
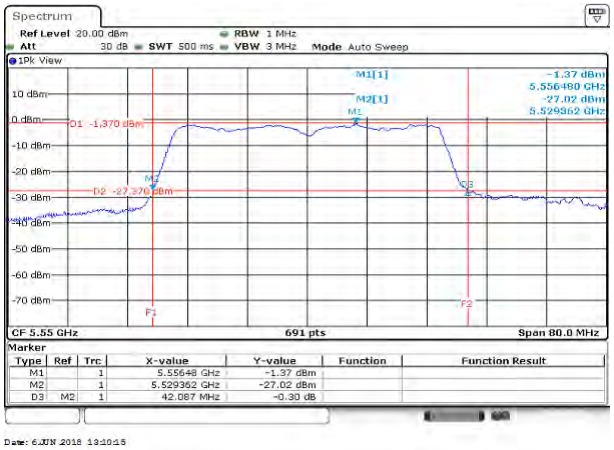
UNII-2c IEEE 802.11n 40 mode- chain 1

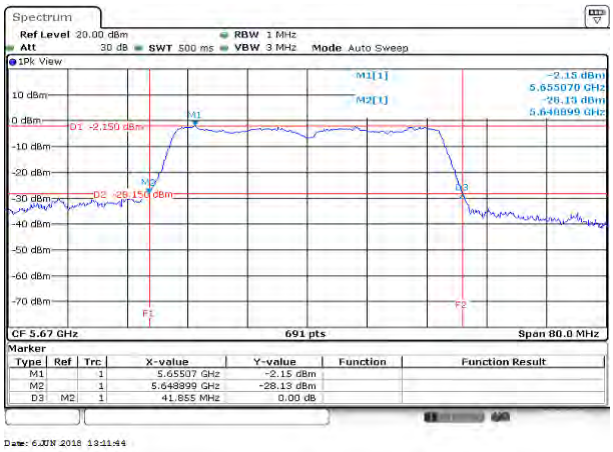
Low CH



Mid CH



High CH



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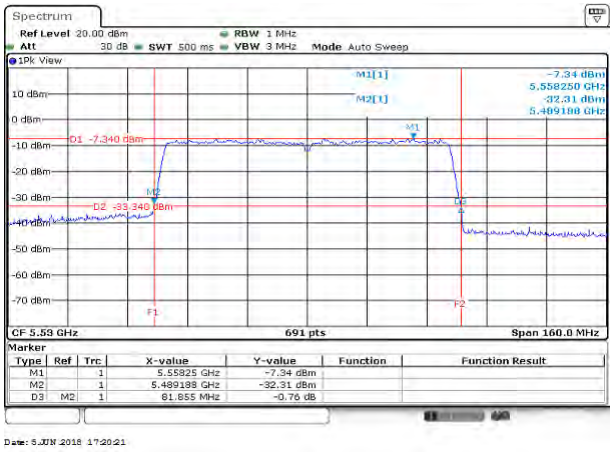
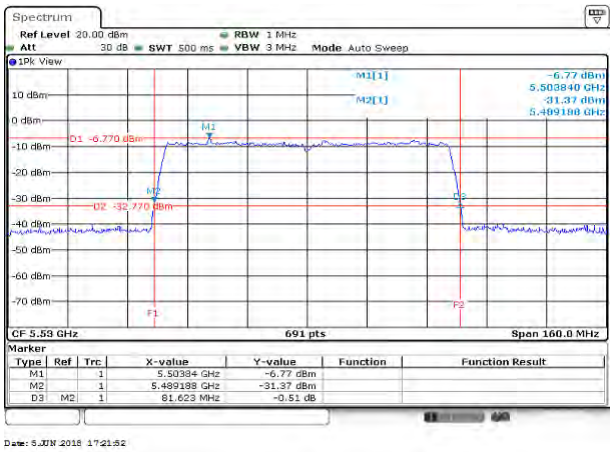
UNII-2c IEEE 802.11ac VHT80 mode- chain 0	
Mid CH	
	

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

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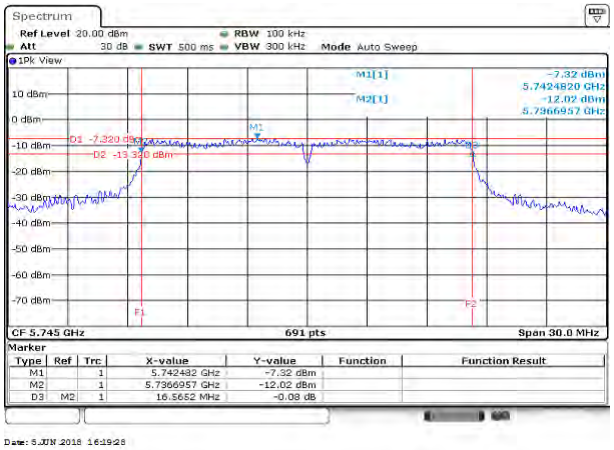
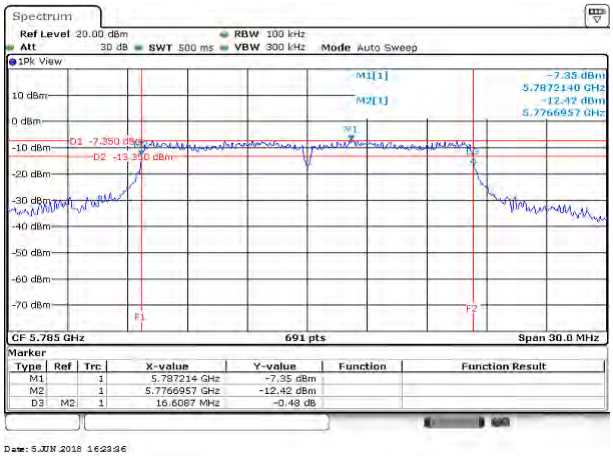
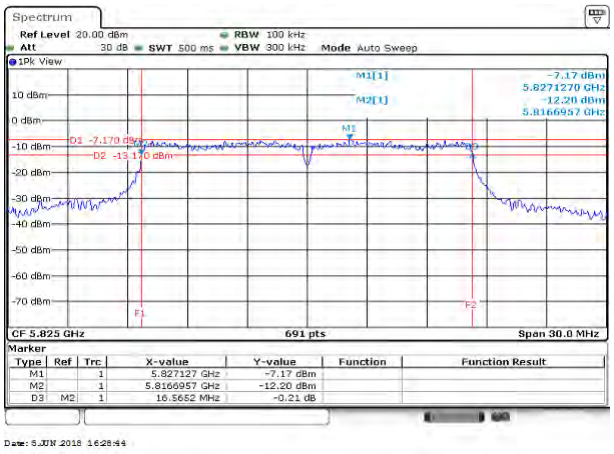
Test Data

6 dB Bandwidth

UNII-3 IEEE 802.11a mode- chain 1	
Low CH	**Mid CH**
	
High CH	
	

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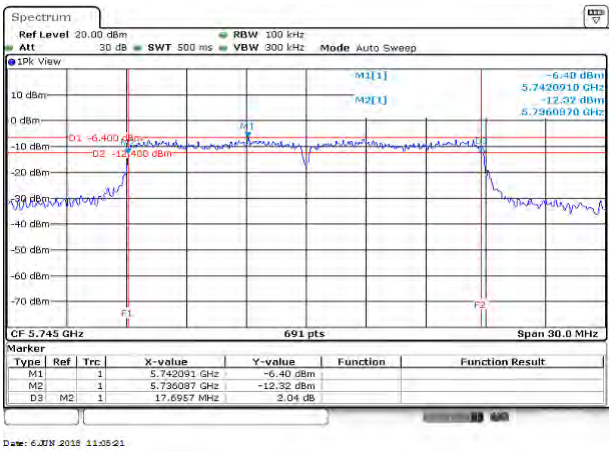
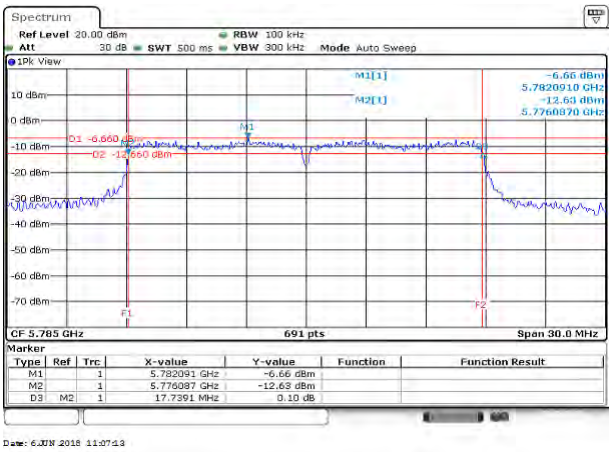
UNII-3 IEEE 802.11n 20 mode- chain 0

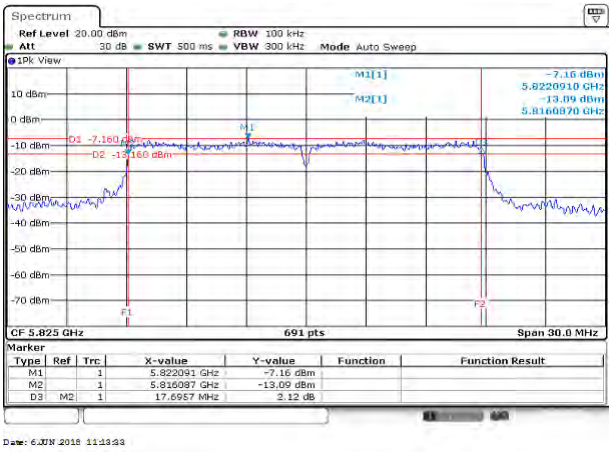
Low CH



Mid CH



High CH



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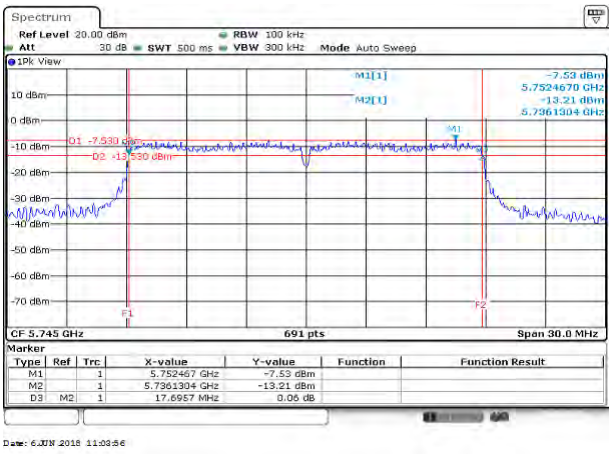
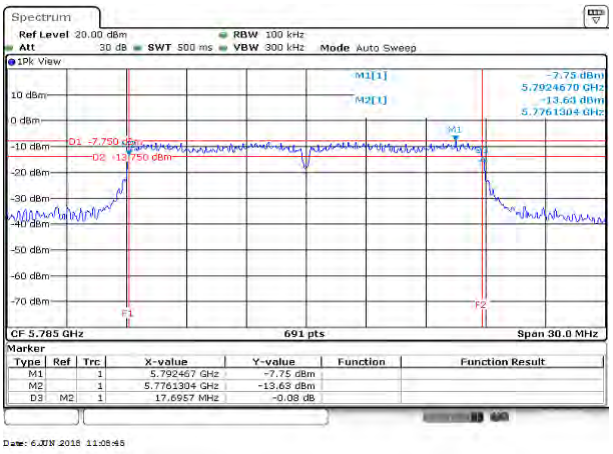
UNII-3 IEEE 802.11n 20 mode- chain 1

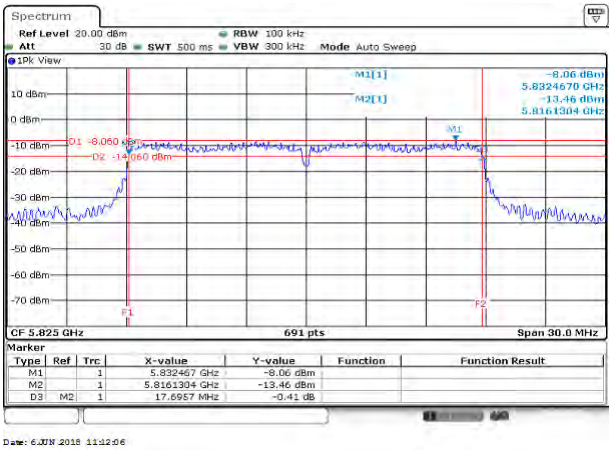
Low CH



Mid CH



High CH



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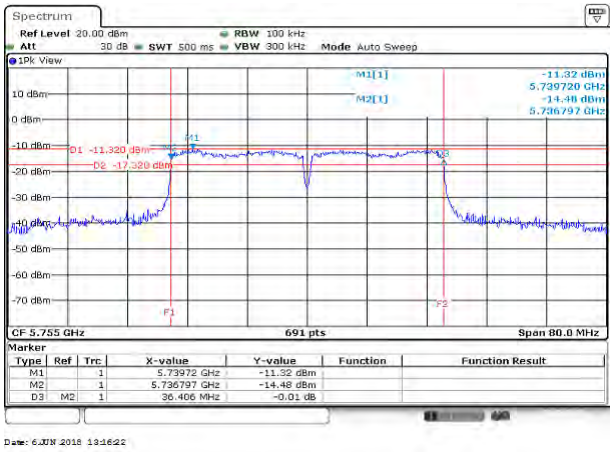
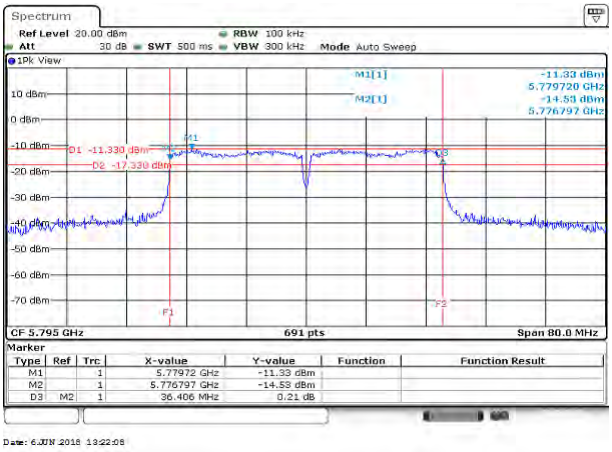
UNII-3 IEEE 802.11n 40 mode- chain 0

Low CH

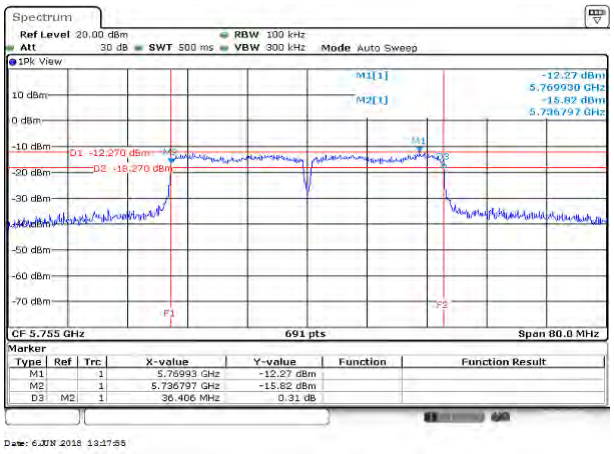


High CH

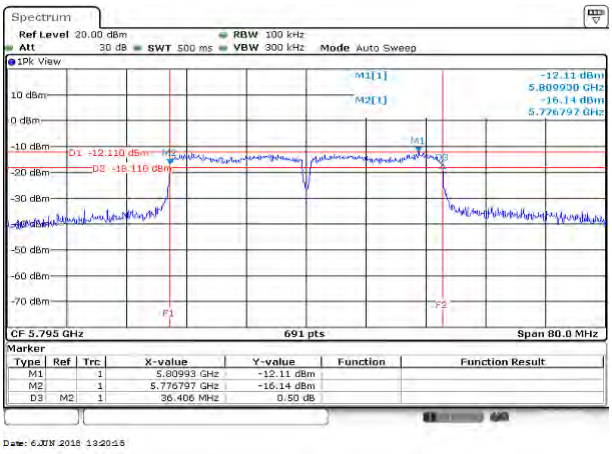


UNII-3 IEEE 802.11n 40 mode- chain 1

Low CH



High CH



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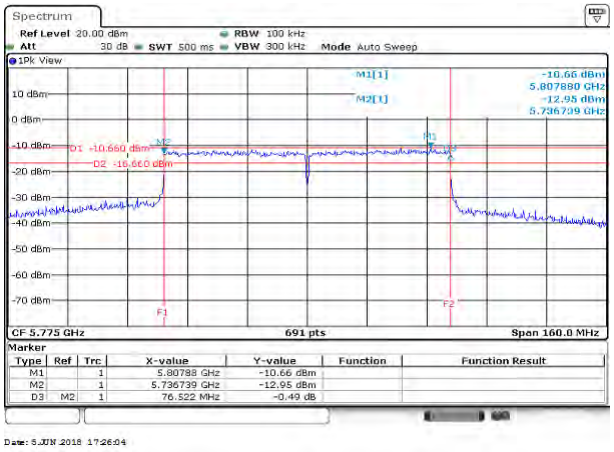
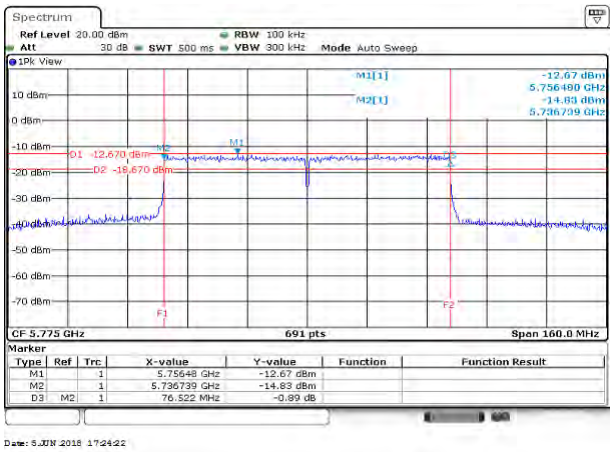
UNII-3 IEEE 802.11ac VHT80 mode- chain 0	
Mid CH	
	

UNII-3 IEEE 802.11ac VHT80 mode- chain 1	
Mid CH	
	

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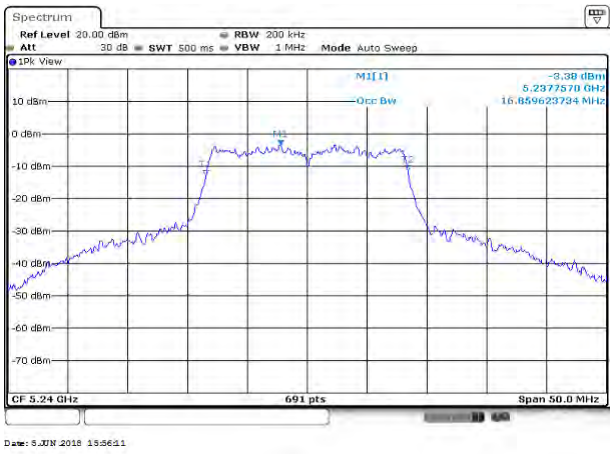
99% Bandwidth

UNII-1 IEEE 802.11a mode- chain 1	
Low CH	**Mid CH**
High CH	
	

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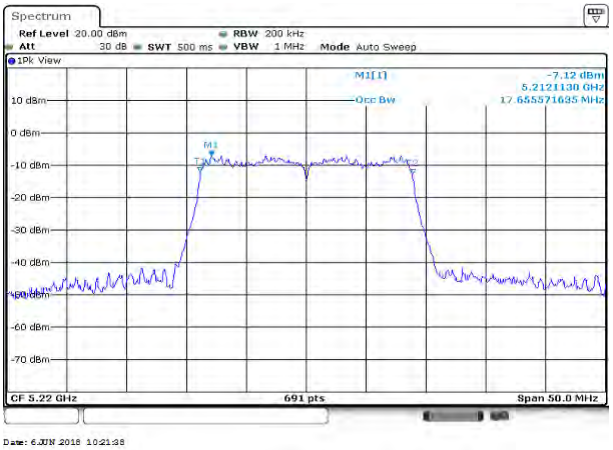
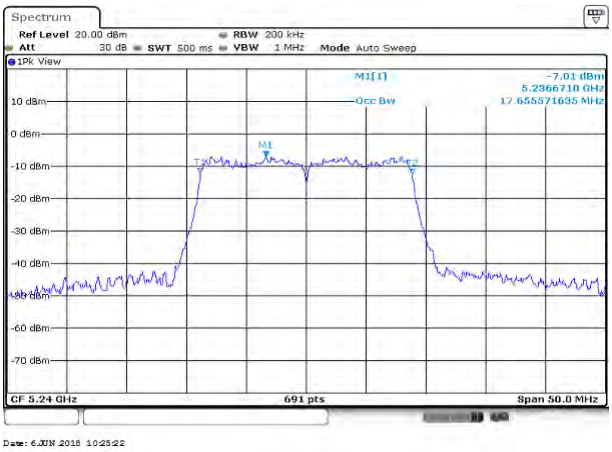
UNII-1 IEEE 802.11n 20 mode- chain 0	
Low CH	**Mid CH**
	
High CH	
	

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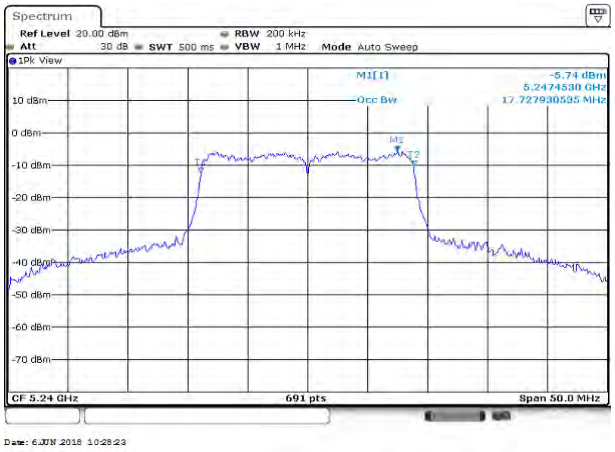
UNII-1 IEEE 802.11n 20 mode- chain 1	
Low CH	**Mid CH**
High CH	
	

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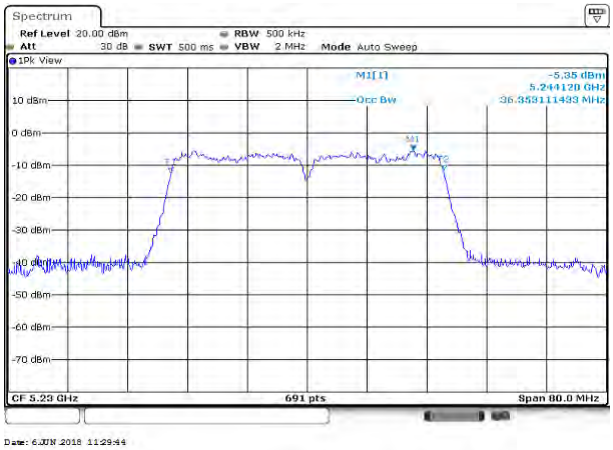
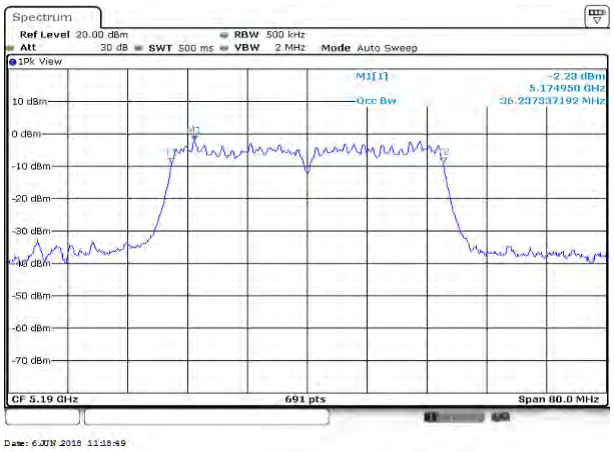
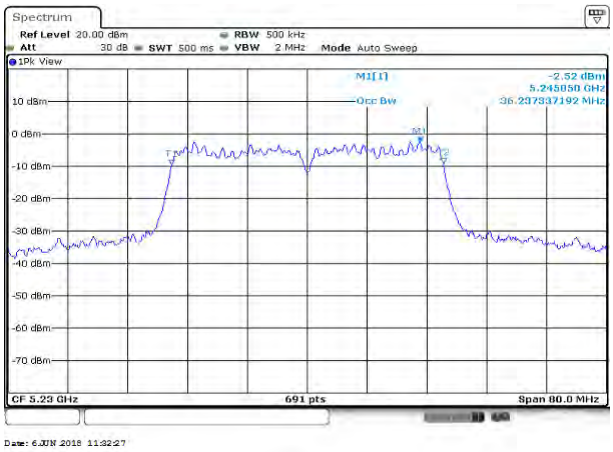
UNII-1 IEEE 802.11n 40 mode- chain 0	
Low CH	**High CH**
	

UNII-1 IEEE 802.11n 40 mode- chain 1	
Low CH	**High CH**
	

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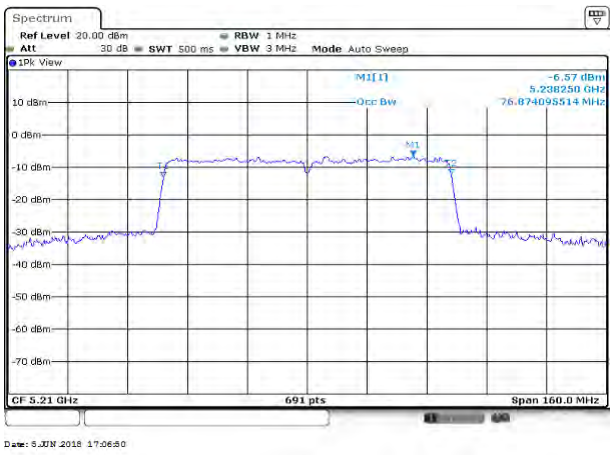
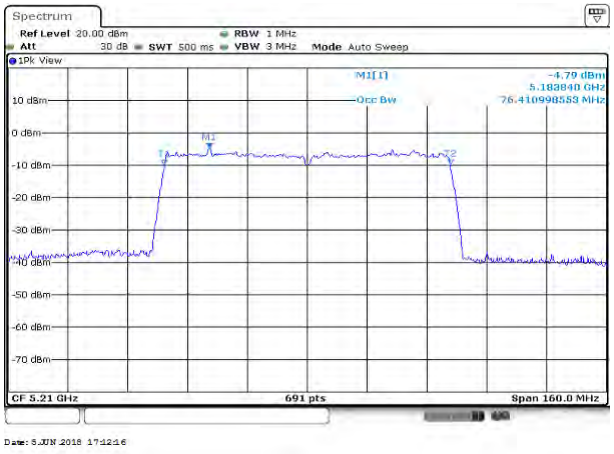
UNII-1 IEEE 802.11ac VHT80 mode- chain 0	
Mid CH	
	

UNII-1 IEEE 802.11ac VHT80 mode- chain 1	
Mid CH	
	

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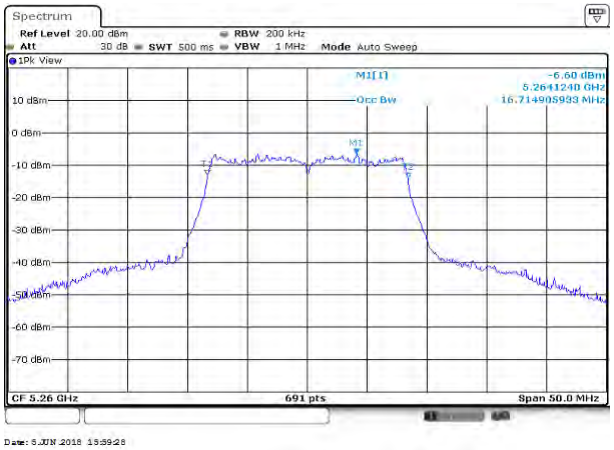
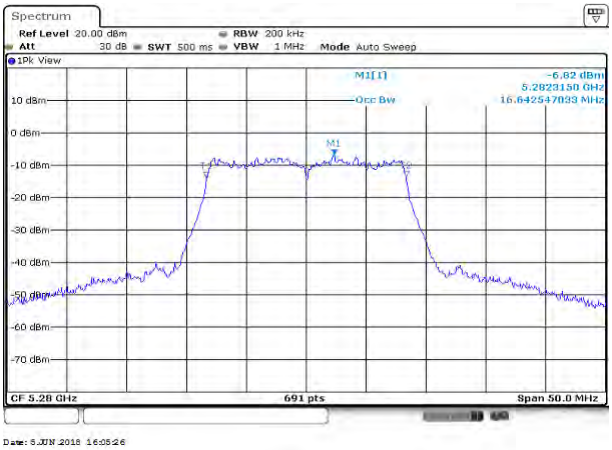
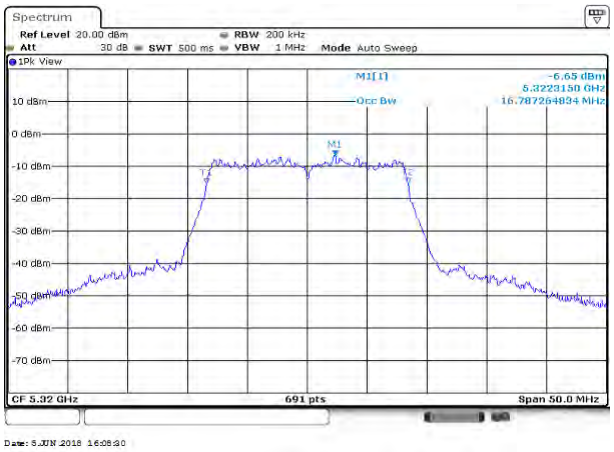
Test Data

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

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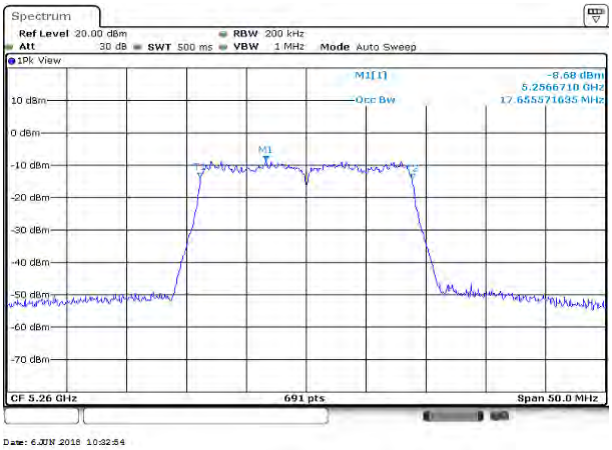
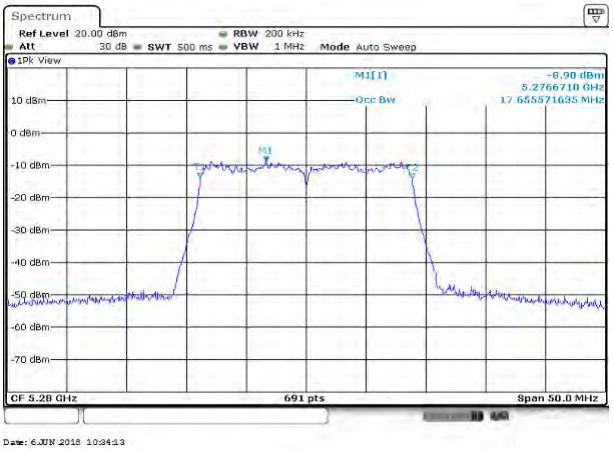
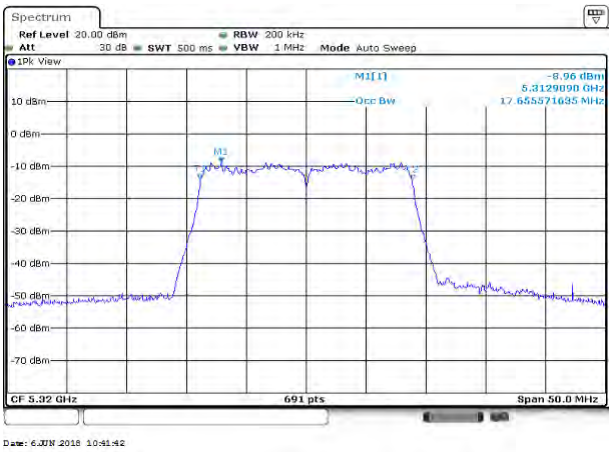
UNII-2a IEEE 802.11n 20 mode- chain 0	
Low CH	**Mid CH**
	
High CH	
	

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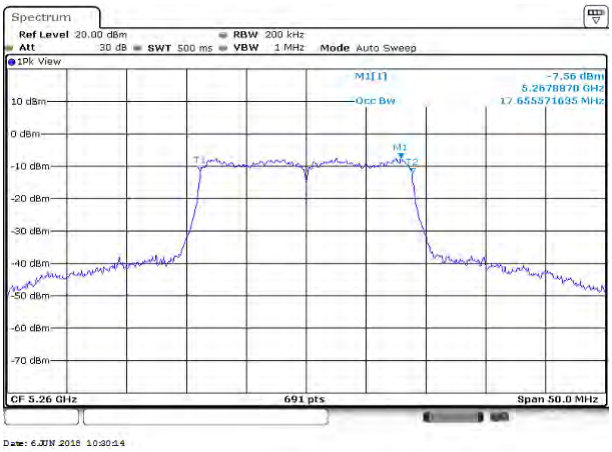
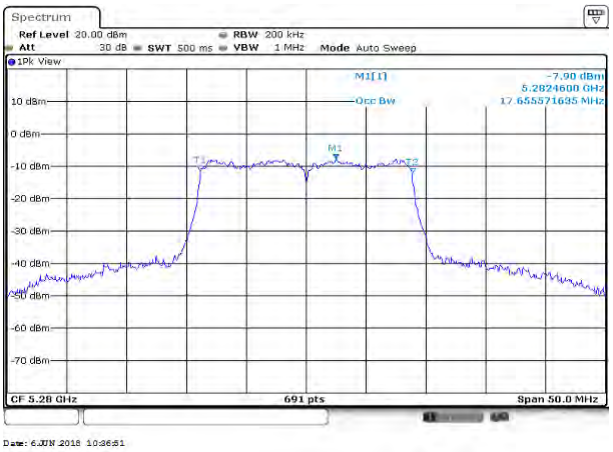
UNII-2a IEEE 802.11n 20 mode- chain 1	
Low CH	**Mid CH**
	
High CH	

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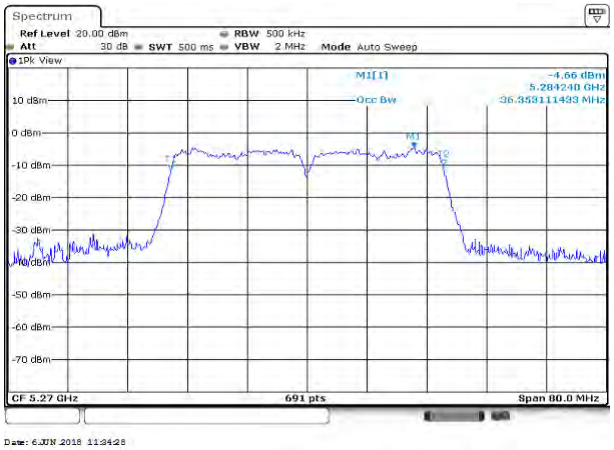
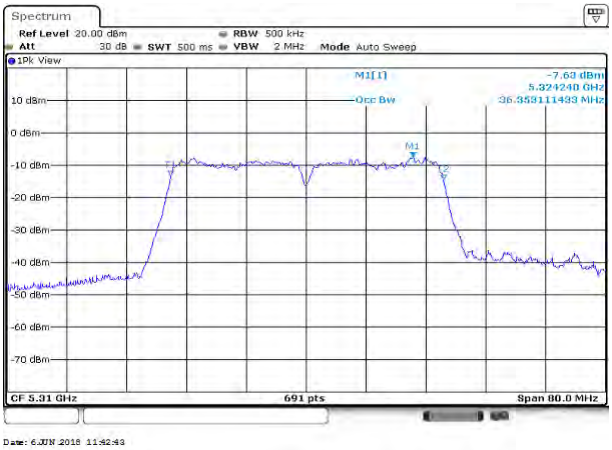
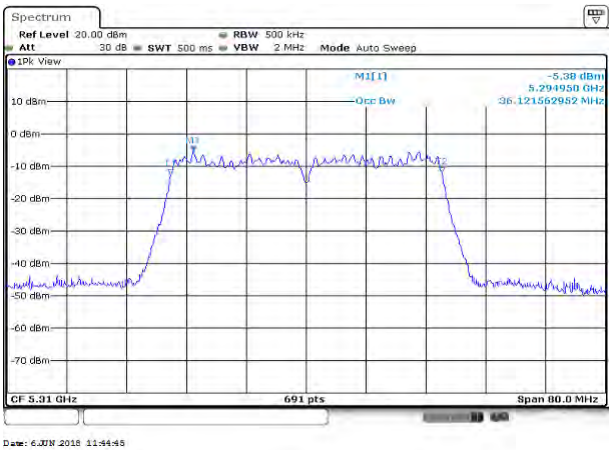
UNII-2a IEEE 802.11n 40 mode- chain 0	
Low CH	**High CH**
	

UNII-2a IEEE 802.11n 40 mode- chain 1	
Low CH	**High CH**
	

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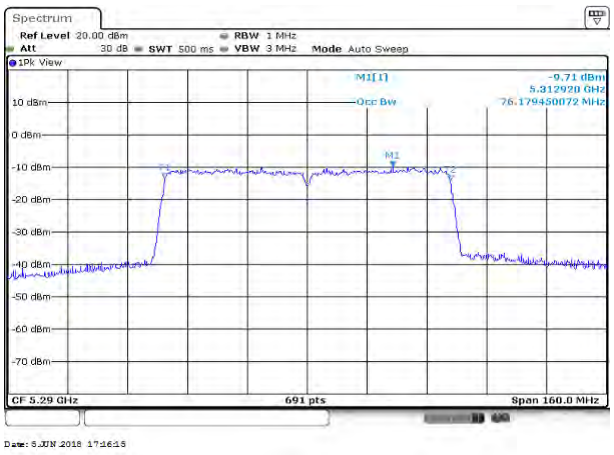
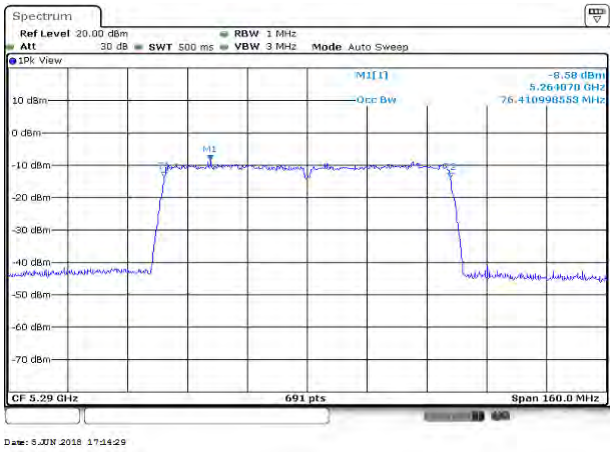
UNII-2a IEEE 802.11ac VHT80 mode- chain 0	
Mid CH	
	

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

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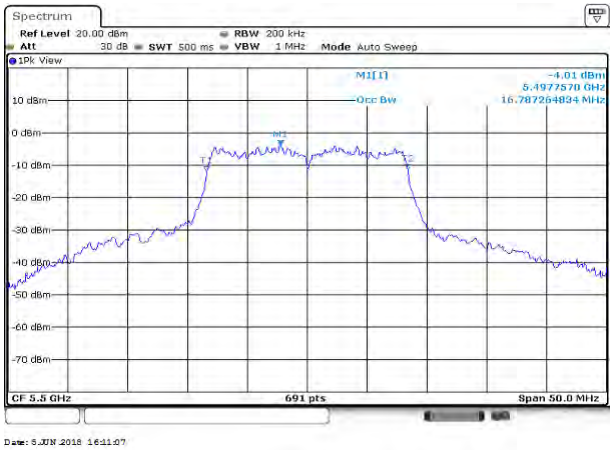
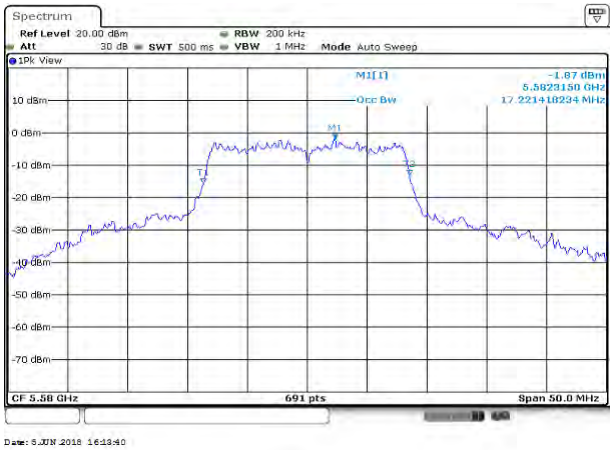
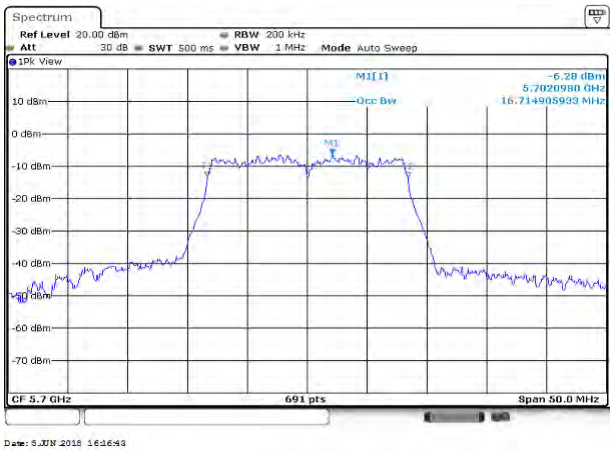
Test Data

UNII-2c IEEE 802.11a mode- chain 1	
Low CH	**Mid CH**
	
High CH	
	

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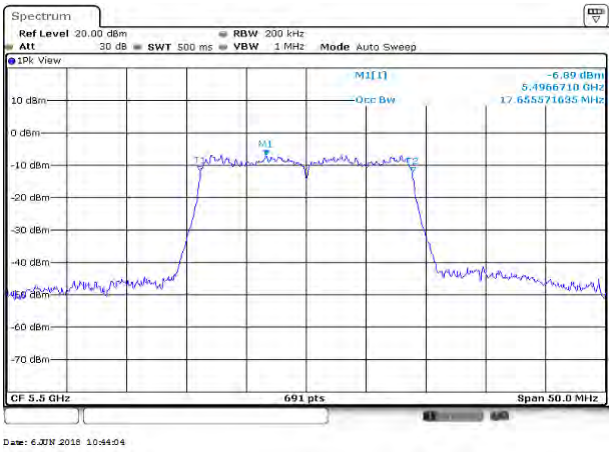
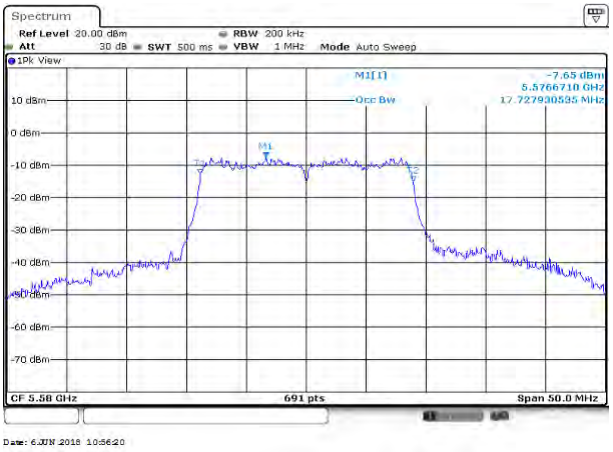
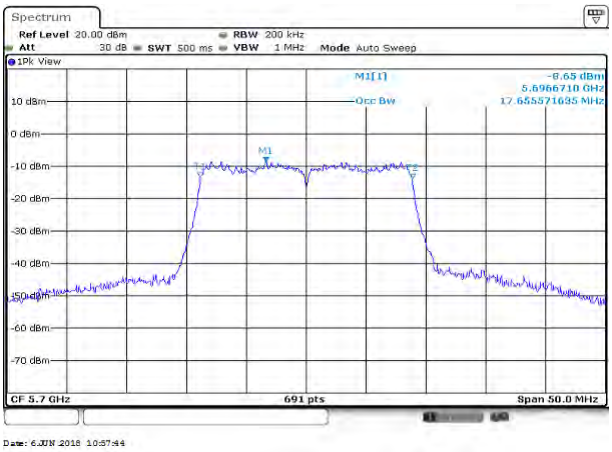
UNII-2c IEEE 802.11n 20 mode- chain 0	
Low CH	**Mid CH**
	
High CH	
	

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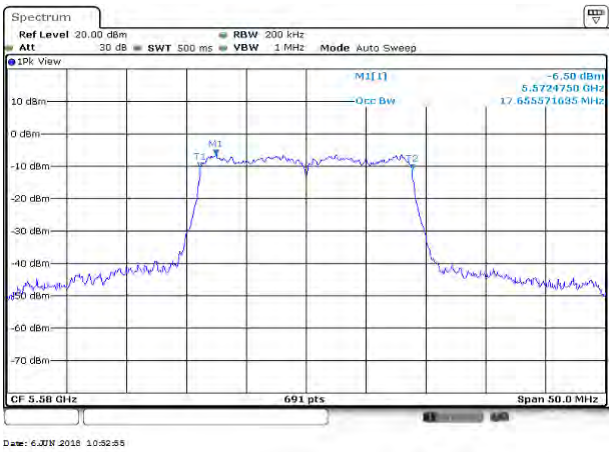
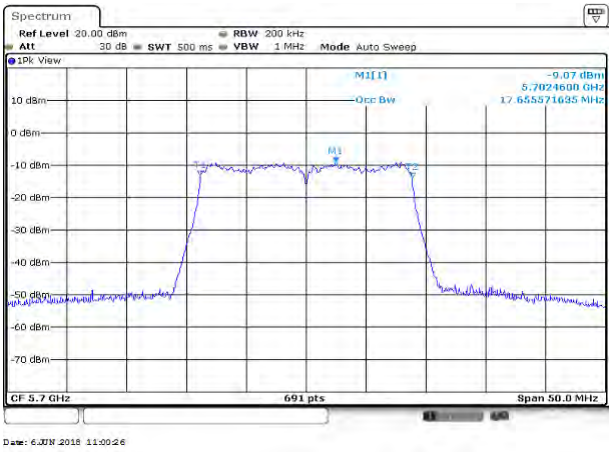
UNII-2c IEEE 802.11n 20 mode- chain 1	
Low CH	**Mid CH**
	
High CH	
	

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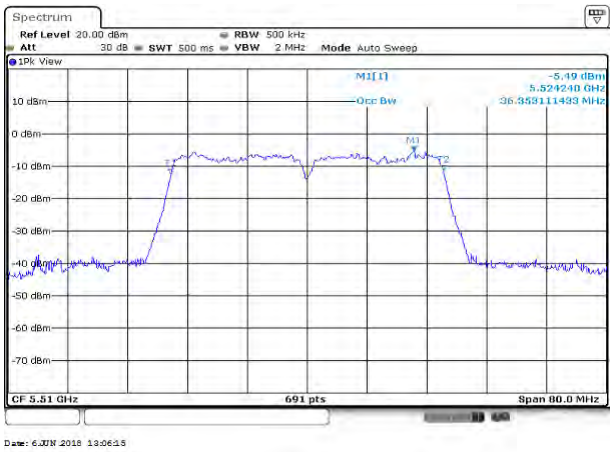
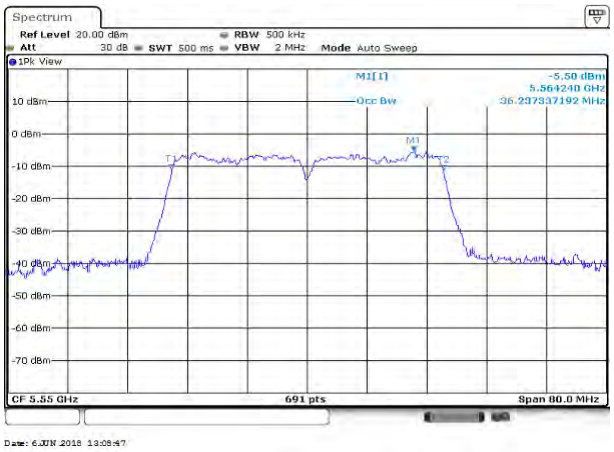
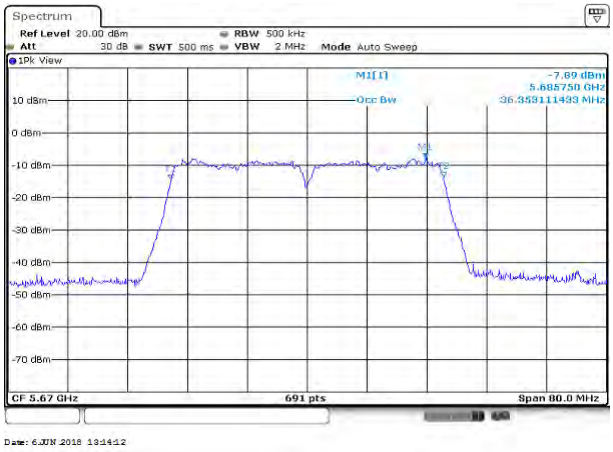
UNII-2c IEEE 802.11n 40 mode- chain 0	
Low CH	**Mid CH**
	
High CH	
	

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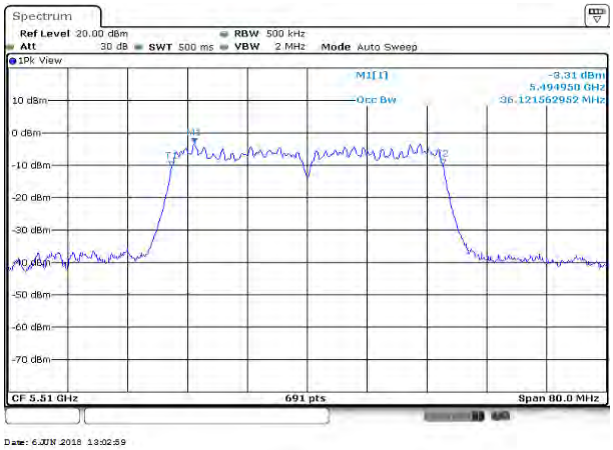
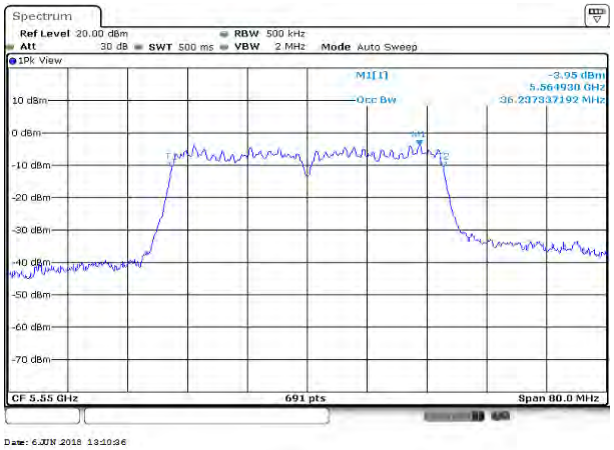
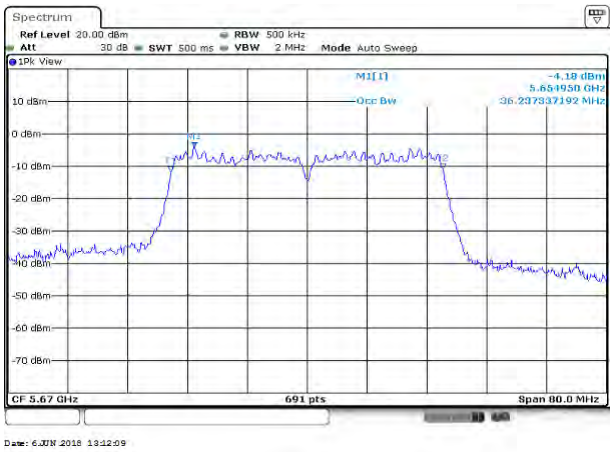
UNII-2c IEEE 802.11n 40 mode- chain 1	
Low CH	**Mid CH**
	
High CH	
	

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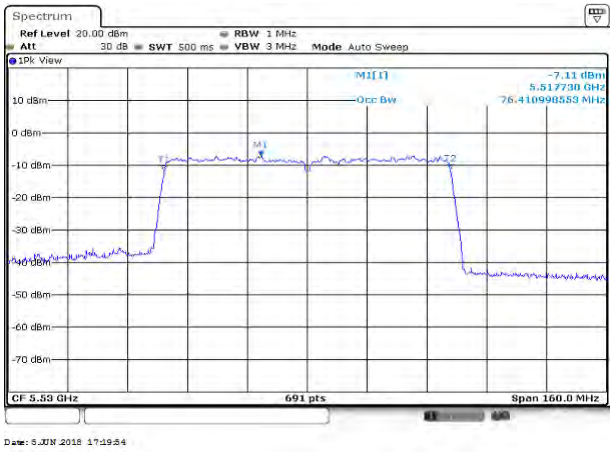
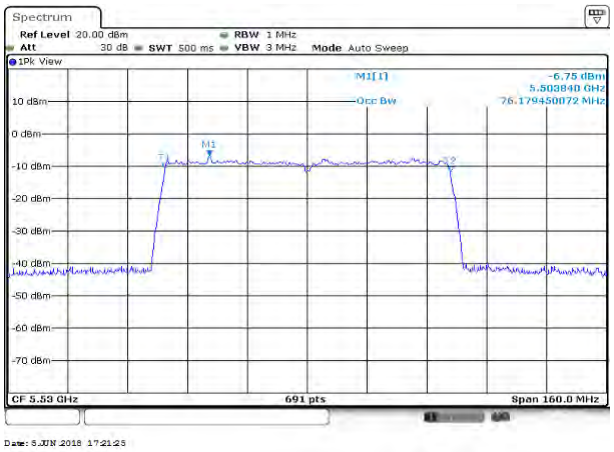
UNII-2c IEEE 802.11ac VHT80 mode- chain 0	
Low CH	
	

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

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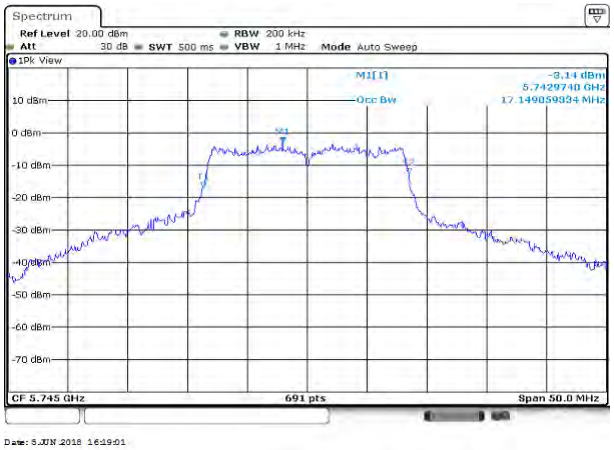
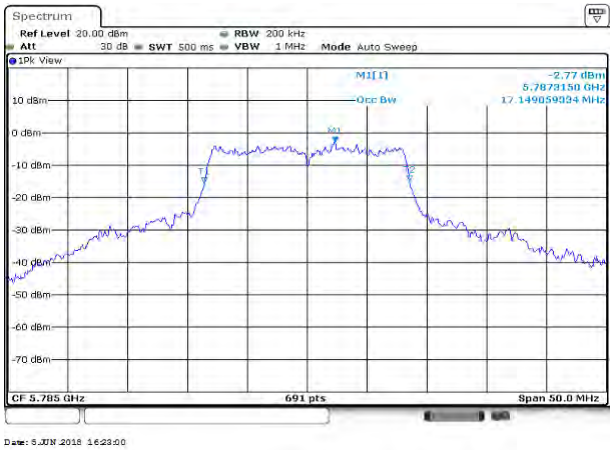
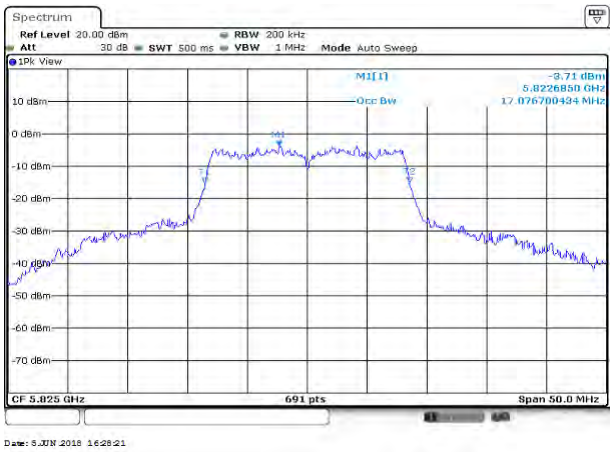
Test Data

UNII-3 IEEE 802.11a mode- chain 1	
Low CH	**Mid CH**
	
High CH	
	

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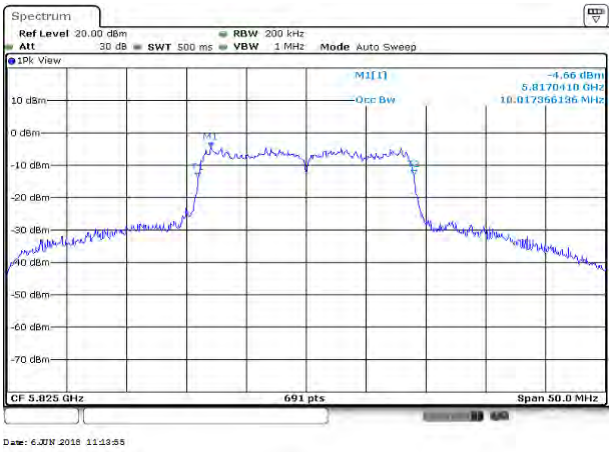
UNII-3 IEEE 802.11n 20 mode- chain 0	
Low CH	**Mid CH**
High CH	
	

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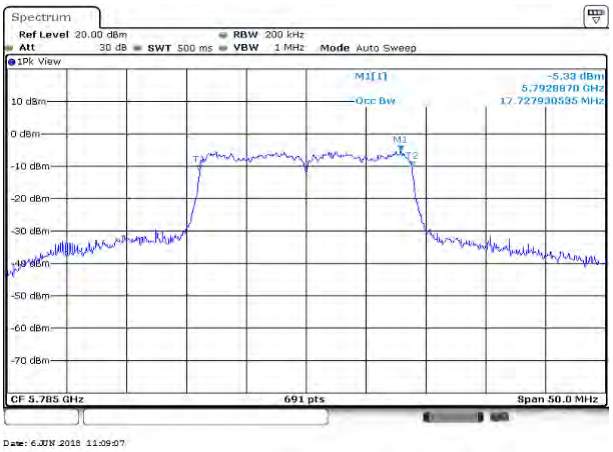
UNII-3 IEEE 802.11n 20 mode- chain 1	
Low CH	**Mid CH**
	
High CH	

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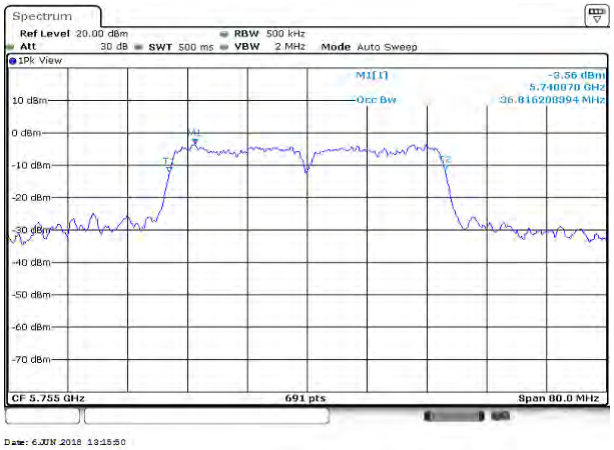
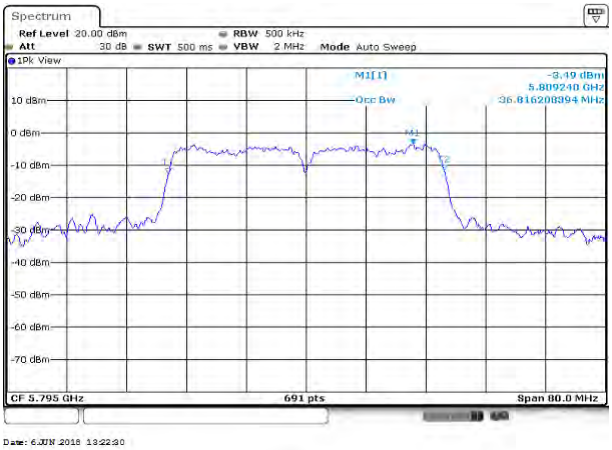
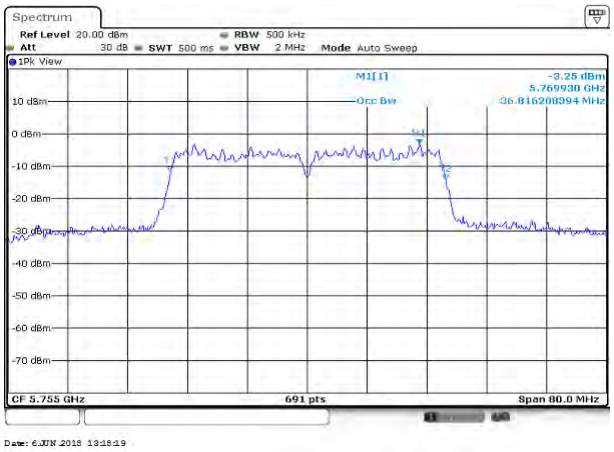
UNII-3 IEEE 802.11n 40 mode- chain 0	
Low CH	**High CH**
	

UNII-3 IEEE 802.11n 40 mode- chain 1	
Low CH	**High CH**
	

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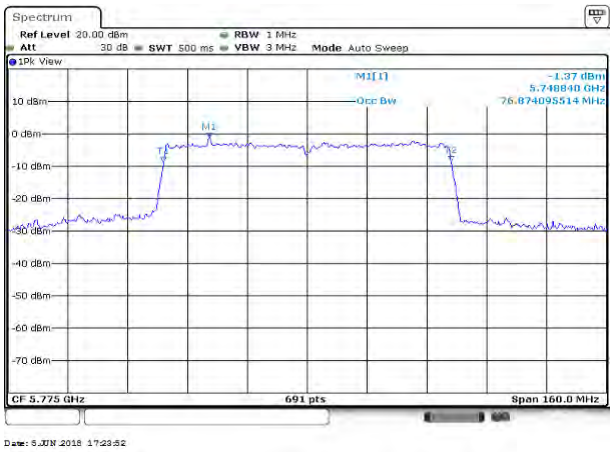
UNII-3 IEEE 802.11ac VHT80 mode- chain 0	
Mid CH	

UNII-3 IEEE 802.11ac VHT80 mode- chain 1	
Mid 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)

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 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:

For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, 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. 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 ☐ Antenna with DG greater than 6 dBi： [Limit = 24 – (DG – 6)]
UNII-2a/2c Limit	☒ Antenna not exceed 6 dBi：24dBm ☐ 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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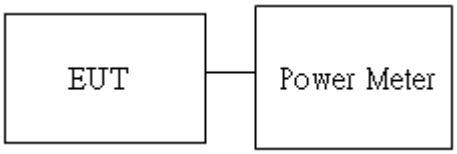
4.3.2 Test Procedure

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)	AV Total Power (W)	Limit (dBm)
			chain0	chain1	chain0	chain1			
IEEE 802.11a Data rate: 6Mbps	36	5180	-	17	-	18.00	18.00	0.0631	24
	44	5220	-	17	-	17.89	17.89	0.0615	
	48	5240	-	17	-	17.95	17.95	0.0624	
IEEE 802.11n 20 MHz Data rate: MCS0	36	5180	17	17	17.41	18.79	21.16	0.1308	
	44	5220	17	17	16.65	18.63	20.76	0.1192	
	48	5240	17	17	16.85	18.64	20.85	0.1215	
IEEE 802.11n 40 MHz Data rate: MCS0	38	5190	17	17	16.59	18.45	20.63	0.1156	
	46	5230	17	17	17.14	18.68	20.99	0.1256	
IEEE 802.11ac VHT80 Data rate: MCS0	42	5210	16	16	15.21	17.16	19.30	0.0852	

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UNII-2a									
Config	CH	Freq. (MHz)	Power Set		AV Power(dBm)		AV Total Power (dBm)	AV Total Power (W)	Limit (dBm)
			chain0	chain1	chain0	chain1			
IEEE 802.11a Data rate: 6Mbps	52	5260	-	15	-	15.18	15.18	0.0330	24
	56	5280	-	14	-	14.04	14.04	0.0254	
	64	5320	-	14	-	14.10	14.10	0.0257	
IEEE 802.11n 20 MHz Data rate: MCS0	52	5260	15	15	14.92	16.64	18.87	0.0772	
	56	5280	15	15	14.71	16.56	18.74	0.0749	
	64	5320	15	15	15.08	16.65	18.95	0.0784	
IEEE 802.11n 40 MHz Data rate: MCS0	54	5270	17	17	17.12	18.61	20.94	0.1241	
	62	5310	15	15	14.98	16.59	18.87	0.0771	
IEEE 802.11ac VHT80 Data rate: MCS0	58	5290	13	13	12.69	14.69	16.81	0.0480	

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UNII-2c									
Config	CH	Freq. (MHz)	Power Set		AV Power(dBm)		AV Total Power (dBm)	AV Total Power (W)	Limit (dBm)
			chain0	chain1	chain0	chain1			
IEEE 802.11a Data rate: 6Mbps	100	5500	-	17	-	17.97	17.97	0.0627	24
	116	5580	-	17	-	17.95	17.95	0.0624	
	140	5700	-	16	-	17.58	17.58	0.0573	
IEEE 802.11n 20 MHz Data rate: MCS0	100	5500	17	17	17.39	17.66	20.54	0.1132	
	116	5580	17	17	17.57	17.79	20.69	0.1173	
	140	5700	15	15	15.16	15.59	18.39	0.0690	
IEEE 802.11n 40 MHz Data rate: MCS0	102	5510	17	17	17.37	17.80	20.60	0.1148	
	110	5550	17	17	15.69	17.65	19.79	0.0953	
	134	5670	15	15	15.28	15.41	18.36	0.0685	
IEEE 802.11ac VHT80 Data rate: MCS0	106	5530	13	13	13.86	13.95	16.92	0.0492	

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UNII-3									
Config	CH	Freq. (MHz)	Power Set		AV Power(dBm)		AV Total Power (dBm)	AV Total Power (W)	Limit (dBm)
			chain0	chain1	chain0	chain1			
IEEE 802.11a Data rate: 6Mbps	149	5745	-	20	-	19.48	19.48	0.0887	30
	157	5785	-	20	-	19.38	19.38	0.0867	
	165	5825	-	20	-	19.45	19.45	0.0881	
IEEE 802.11n 20 MHz Data rate: MCS0	149	5745	20	20	19.65	18.21	22.00	0.1585	
	157	5785	20	20	19.38	18.18	21.83	0.1525	
	165	5825	20	20	19.22	17.65	21.52	0.1418	
IEEE 802.11n 40 MHz Data rate: MCS0	151	5755	20	20	19.85	19.15	22.52	0.1788	
	159	5795	20	20	19.52	19.17	22.36	0.1721	
IEEE 802.11ac VHT80 Data rate: MCS0	155	5775	20	20	19.75	19.15	22.47	0.1766	

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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)

UNII-1 :

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

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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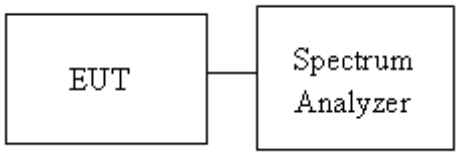
4.4.2 Test Procedure

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 802.11 a mode					
Channel	**Frequency (MHz)**	**Chain 0 PPSD (dBm)**	**Chain 1 PPSD (dBm)**	**Total PPSD (dBm)**	**Limit (dBm)**
Low	5180	-	5.50	5.50	11
Mid	5220	-	5.26	5.26	
High	5240	-	5.39	5.39	
Test mode: IEEE 802.11n 20 mode					
Channel	**Frequency (MHz)**	**Chain 0 PPSD (dBm)**	**Chain 1 PPSD (dBm)**	**Total PPSD (dBm)**	**Limit (dBm)**
Low	5180	3.65	3.03	6.36	11
Mid	5220	4.62	6.16	8.47	
High	5240	4.79	6.12	8.52	
Test mode: IEEE 802.11n 40 mode					
Channel	**Frequency (MHz)**	**Chain 0 PPSD (dBm)**	**Chain 1 PPSD (dBm)**	**Total PPSD (dBm)**	**Limit (dBm)**
Low	5190	0.81	3.40	5.31	11
High	5230	2.07	3.24	5.70	
Test mode: IEEE 802.11ac VHT80 mode					
Channel	**Frequency (MHz)**	**Chain 0 PPSD (dBm)**	**Chain 1 PPSD (dBm)**	**Total PPSD (dBm)**	**Limit (dBm)**
Mid	5210	-4.18	-3.08	-0.58	11

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UNII-2a 5250-5350 MHz					
Test mode: IEEE 802.11 a mode					
Channel	**Frequency (MHz)**	**Chain 0 PPSD (dBm)**	**Chain 1 PPSD (dBm)**	**Total PPSD (dBm)**	**Limit (dBm)**
Low	5260	-	4.88	4.88	11
Mid	5280	-	3.87	3.87	
High	5320	-	4.02	4.02	
Test mode: IEEE 802.11n 20 mode					
Channel	**Frequency (MHz)**	**Chain 0 PPSD (dBm)**	**Chain 1 PPSD (dBm)**	**Total PPSD (dBm)**	**Limit (dBm)**
Low	5260	2.84	4.27	6.62	11
Mid	5280	2.82	4.10	6.52	
High	5320	2.76	5.25	7.19	
Test mode: IEEE 802.11n 40 mode					
Channel	**Frequency (MHz)**	**Chain 0 PPSD (dBm)**	**Chain 1 PPSD (dBm)**	**Total PPSD (dBm)**	**Limit (dBm)**
Low	5270	0.23	3.92	5.47	11
High	5310	-0.33	0.20	2.95	
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	-7.54	-6.59	-4.03	11

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UNII-2c 5470-5725 MHz					
Test mode: IEEE 802.11 a mode					
Channel	**Frequency (MHz)**	**Chain 0 PPSD (dBm)**	**Chain 1 PPSD (dBm)**	**Total PPSD (dBm)**	**Limit (dBm)**
Low	5500	-	5.44	5.44	11
Mid	5580	-	5.51	5.51	
High	5700	-	4.80	4.80	
Test mode: IEEE 802.11n 20 mode					
Channel	**Frequency (MHz)**	**Chain 0 PPSD (dBm)**	**Chain 1 PPSD (dBm)**	**Total PPSD (dBm)**	**Limit (dBm)**
Low	5500	4.73	3.99	7.40	11
Mid	5580	4.01	5.40	7.77	
High	5700	3.13	2.80	5.98	
Test mode: IEEE 802.11n 40 mode					
Channel	**Frequency (MHz)**	**Chain 0 PPSD (dBm)**	**Chain 1 PPSD (dBm)**	**Total PPSD (dBm)**	**Limit (dBm)**
Low	5510	0.67	2.26	4.55	11
Mid	5500	1.78	1.86	4.83	
High	5670	-0.57	1.42	3.55	
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	-4.88	-5.13	-1.99	11

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UNII-3 5725-5825 MHz					
Test mode: IEEE 802.11 a mode					
Channel	**Frequency (MHz)**	**Chain 0 PPSD (dBm)**	**Chain 1 PPSD (dBm)**	**Total PPSD (dBm)**	**Limit (dBm)**
Low	5745	-	13.10	13.10	30
Mid	5785	-	13.57	13.57	
High	5825	-	12.64	12.64	
Test mode: IEEE 802.11n 20 mode					
Channel	**Frequency (MHz)**	**Chain 0 PPSD (dBm)**	**Chain 1 PPSD (dBm)**	**Total PPSD (dBm)**	**Limit (dBm)**
Low	5745	12.49	12.86	15.69	30
Mid	5785	12.26	12.57	15.43	
High	5825	11.89	12.18	15.05	
Test mode: IEEE 802.11n 40 mode					
Channel	**Frequency (MHz)**	**Chain 0 PPSD (dBm)**	**Chain 1 PPSD (dBm)**	**Total PPSD (dBm)**	**Limit (dBm)**
Low	5755	8.62	8.97	11.81	30
High	5795	8.62	8.95	11.80	
Test mode: IEEE 802.11ac VHT80 mode					
Channel	**Frequency (MHz)**	**Chain 0 PPSD (dBm)**	**Chain 1 PPSD (dBm)**	**Total PPSD (dBm)**	**Limit (dBm)**
Mid	5775	8.76	7.45	11.16	30

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Test Data

UNII-1 IEEE 802.11 a mode- chain 1	
Low CH	**Mid CH**
High CH	

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UNII-1 IEEE 802.11n 20 mode- chain 0	
Low CH	**Mid CH**
High CH	

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UNII-1 IEEE 802.11n 20 mode- chain 1	
Low CH	**Mid CH**
High CH	

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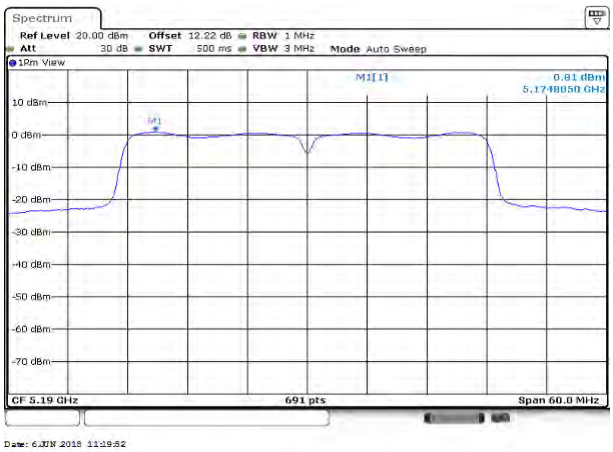
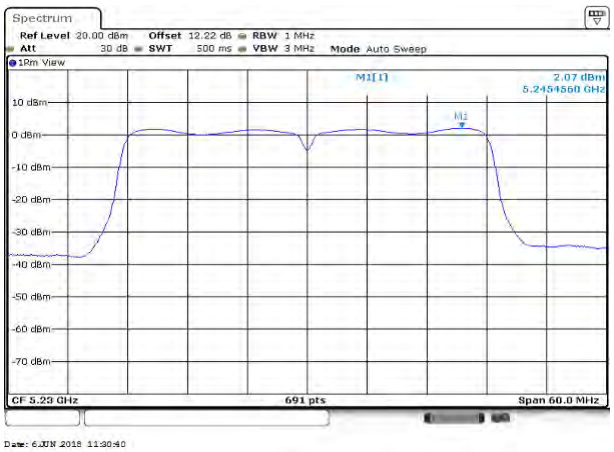
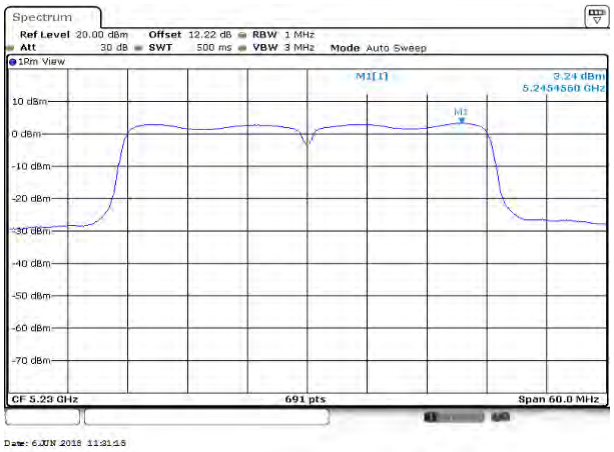
UNII-1 IEEE 802.11n 40 mode- chain 0	
Low CH	**High CH**
	

UNII-1 IEEE 802.11n 40 mode- chain 1	
Low CH	**High CH**
	

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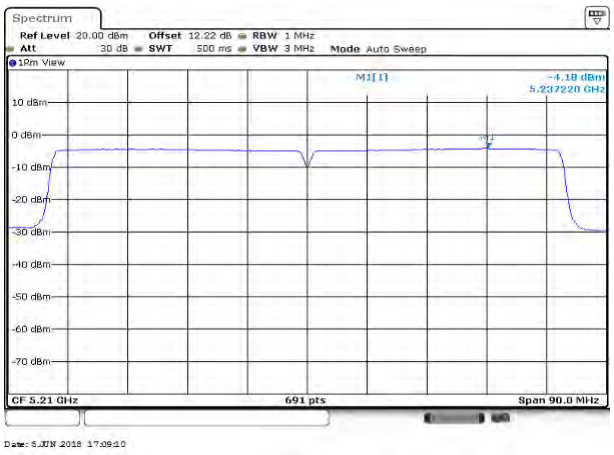
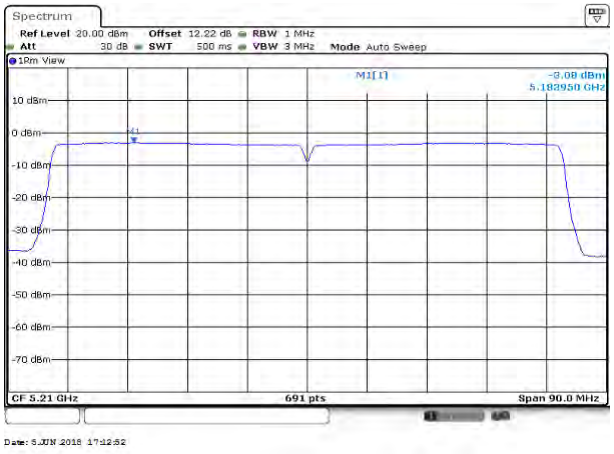
UNII-1 IEEE 802.11ac VHT80 mode- chain 0	
Mid CH	
	

UNII-1 IEEE 802.11ac VHT80 mode- chain 1	
Mid CH	
	

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Test Data

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

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UNII-2a IEEE 802.11n 20 mode- chain 0	
Low CH	**Mid CH**
High CH	

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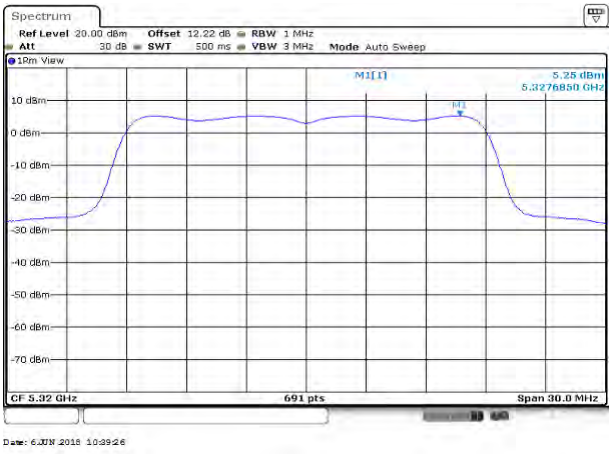
UNII-2a IEEE 802.11n 20 mode- chain 1	
Low CH	**Mid CH**
High CH	
	

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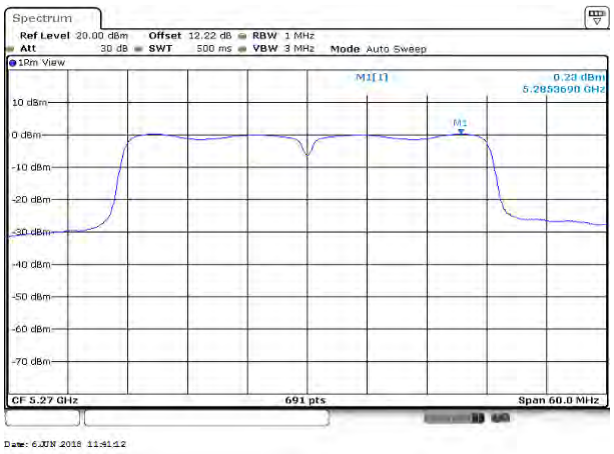
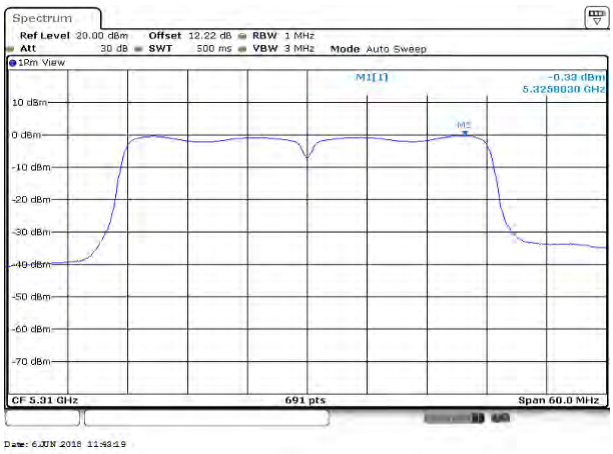
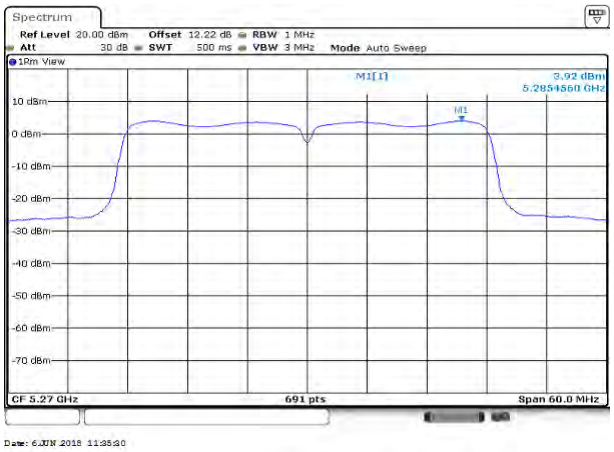
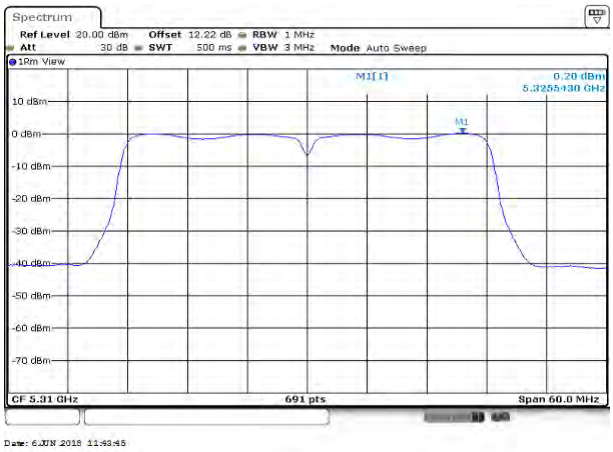
UNII-2a IEEE 802.11n 40 mode- chain 0	
Low CH	**High CH**
	

UNII-2a IEEE 802.11n 40 mode- chain 1	
Low CH	**High CH**
	

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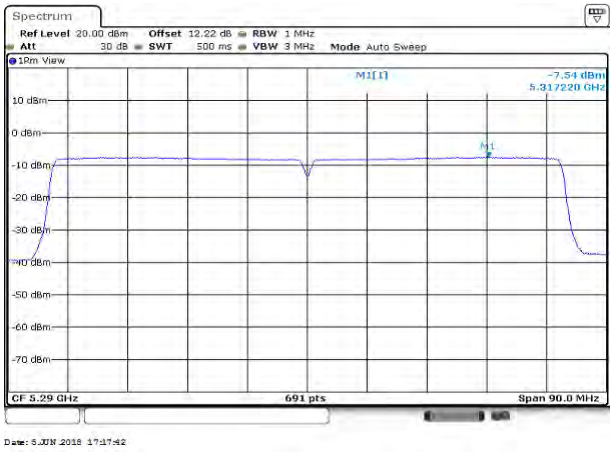
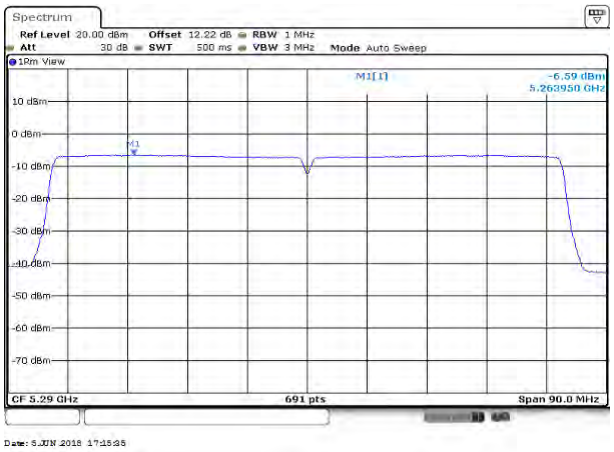
UNII-2a IEEE 802.11ac VHT80 mode- chain 0	
Mid CH	
	

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

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Test Data

UNII-2c IEEE 802.11 a mode- chain 1	
Low CH	**Mid CH**
High CH	

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UNII-2c IEEE 802.11n 20 mode- chain 0	
Low CH	**Mid CH**
High CH	

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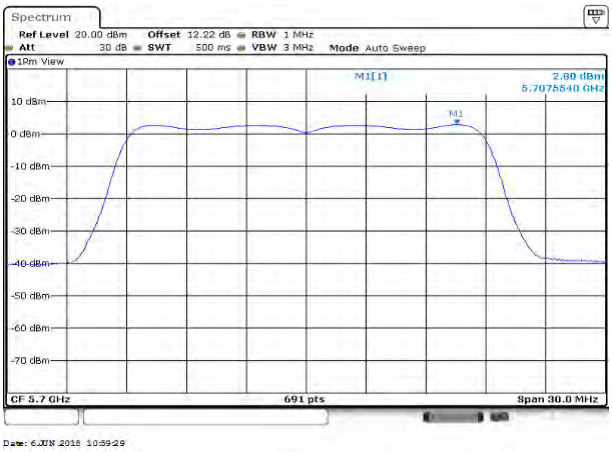
UNII-2c IEEE 802.11n 20 mode- chain 1	
Low CH	**Mid CH**
High CH	
	

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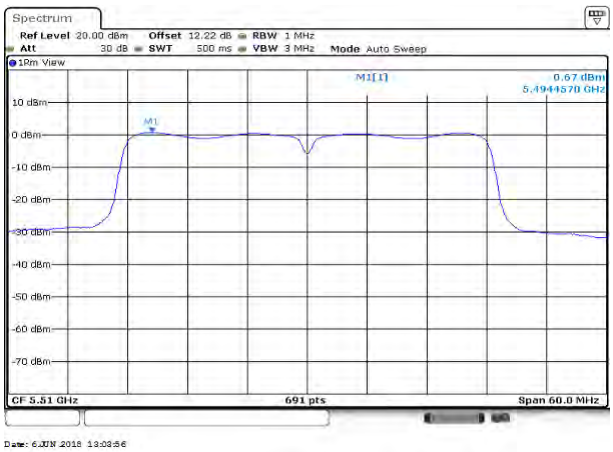
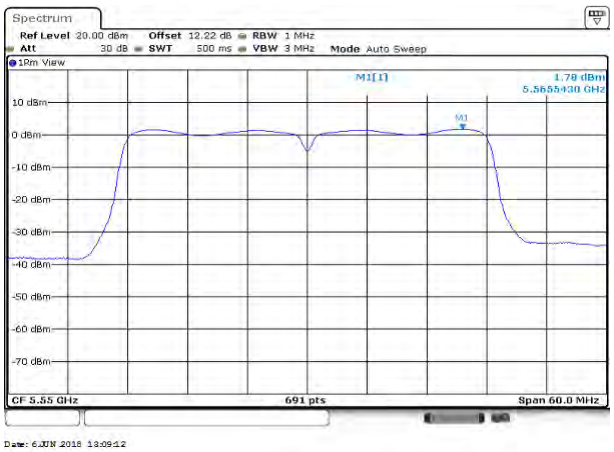
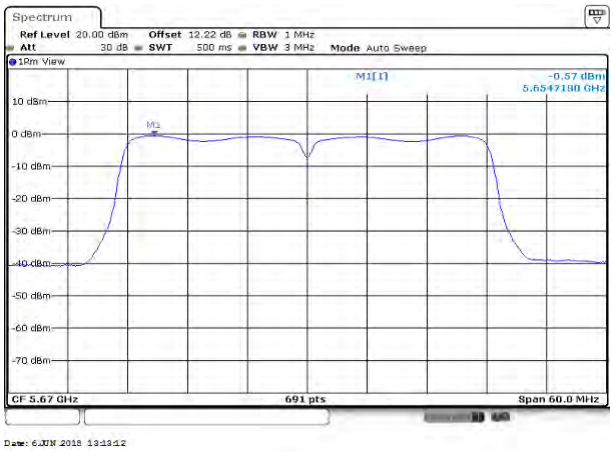
UNII-2c IEEE 802.11n 40 mode- chain 0	
Low CH	**Mid CH**
	
High CH	
	

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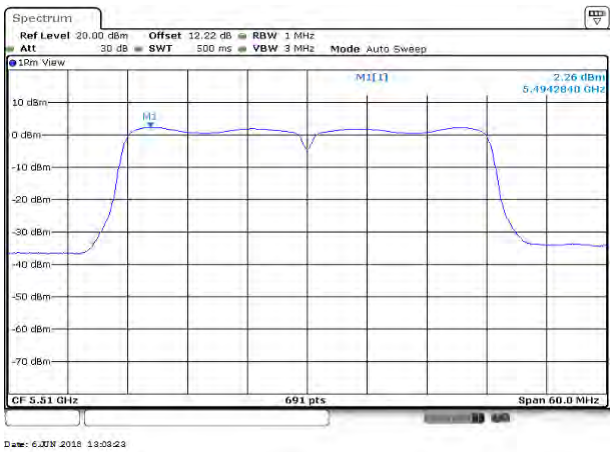
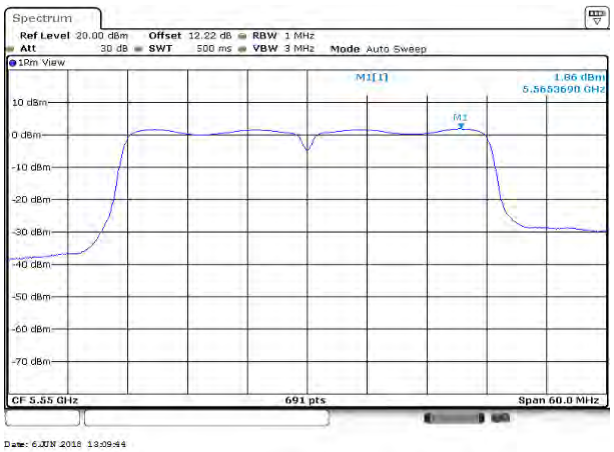
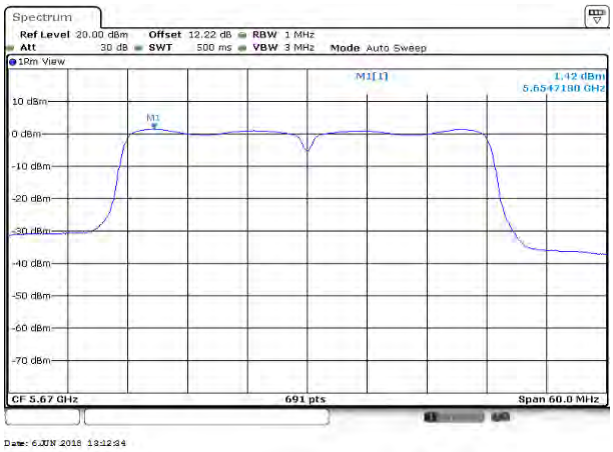
UNII-2c IEEE 802.11n 40 mode- chain 1	
Low CH	**Mid CH**
	
High CH	
	

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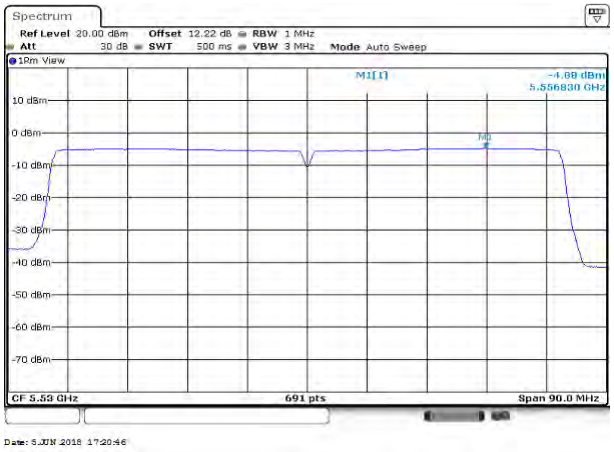
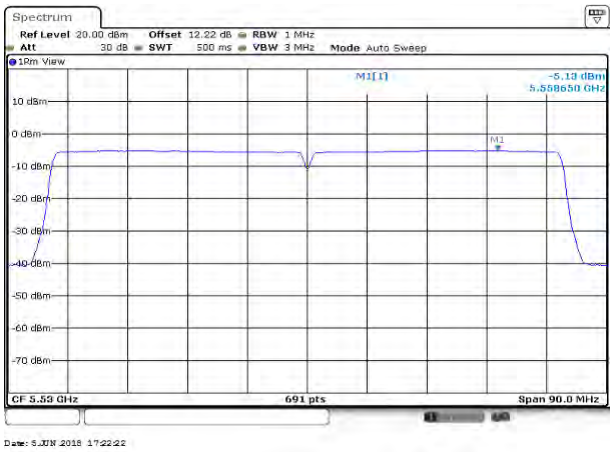
UNII-2c IEEE 802.11ac VHT80 mode- chain 0	
Mid CH	
	

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

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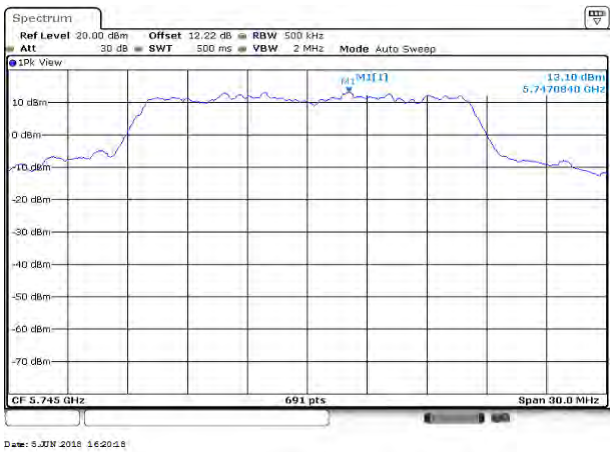
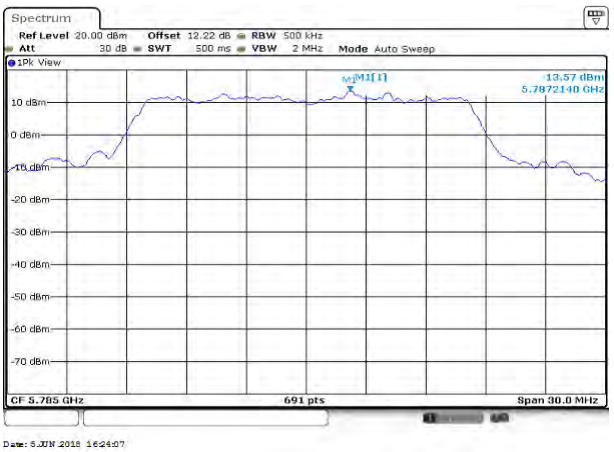
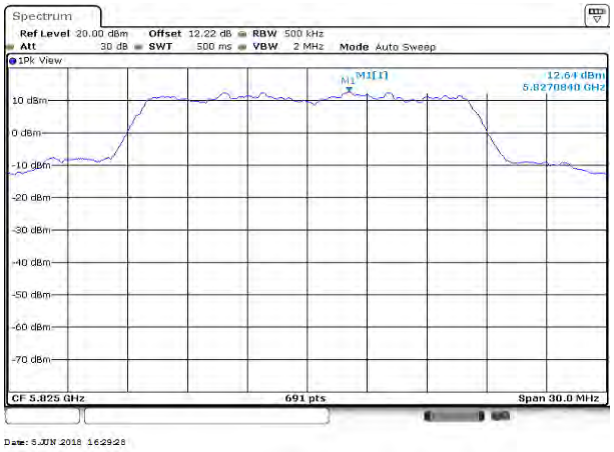
Test Data

UNII-3 IEEE 802.11 a mode- chain 1	
Low CH	**Mid CH**
	
High CH	
	

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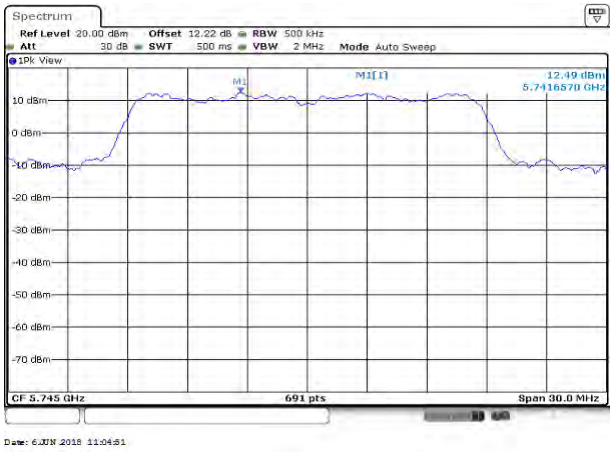
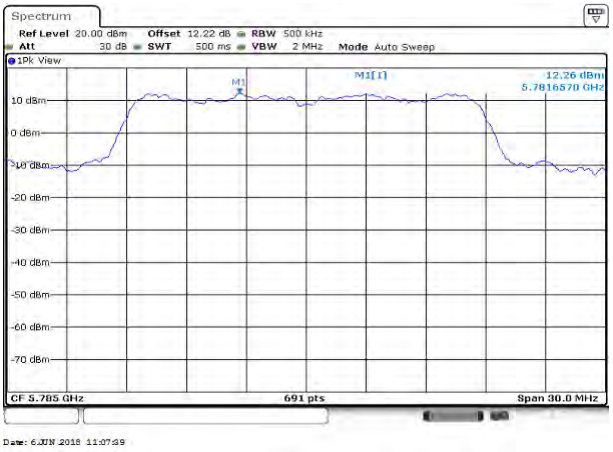
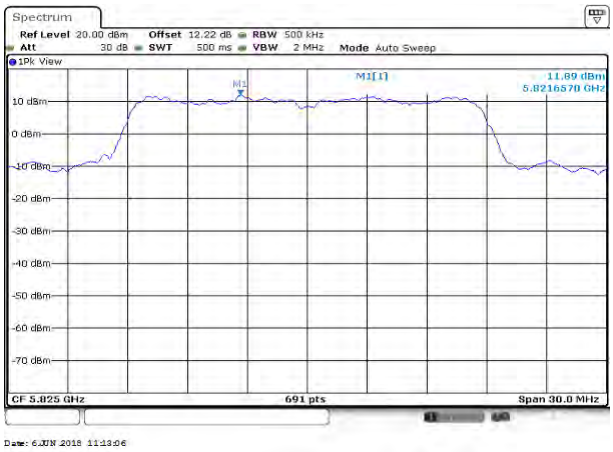
UNII-3 IEEE 802.11n 20 mode- chain 0	
Low CH	**Mid CH**
	
High CH	
	

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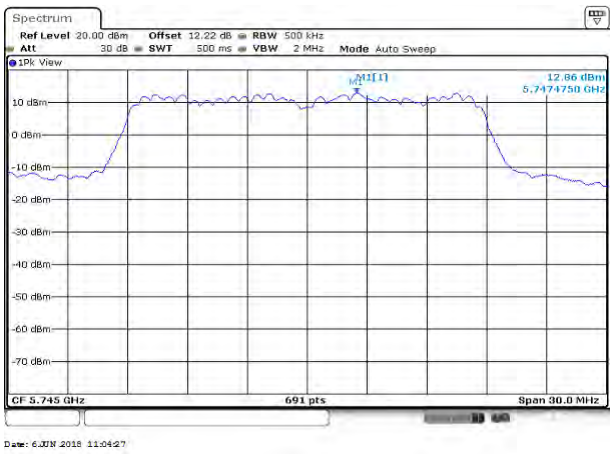
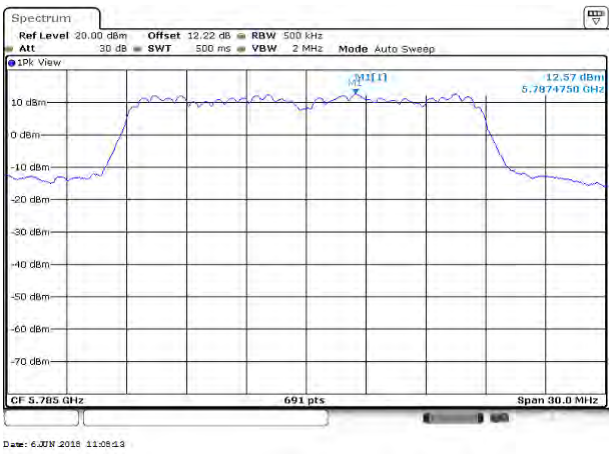
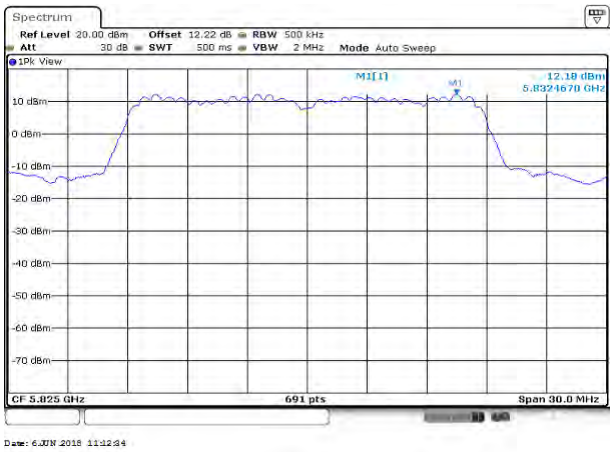
UNII-3 IEEE 802.11n 20 mode- chain 1	
Low CH	**Mid CH**
	
High CH	
	

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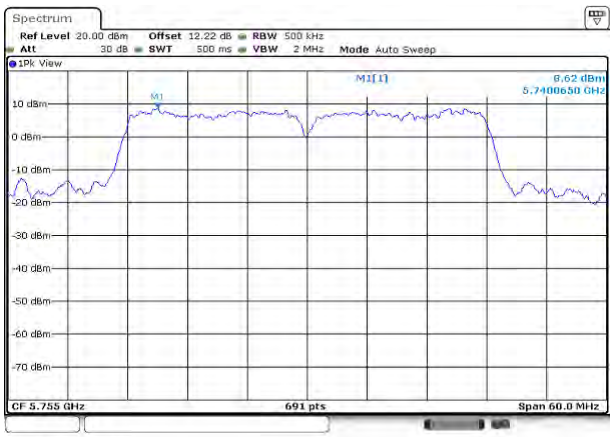
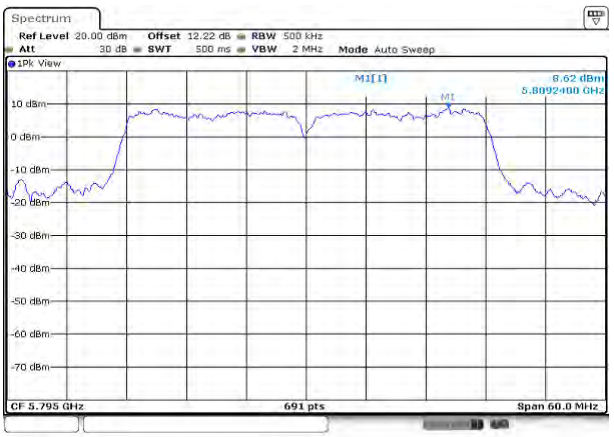
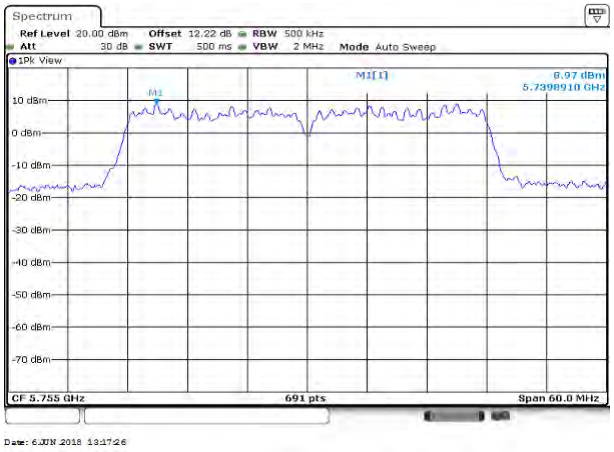
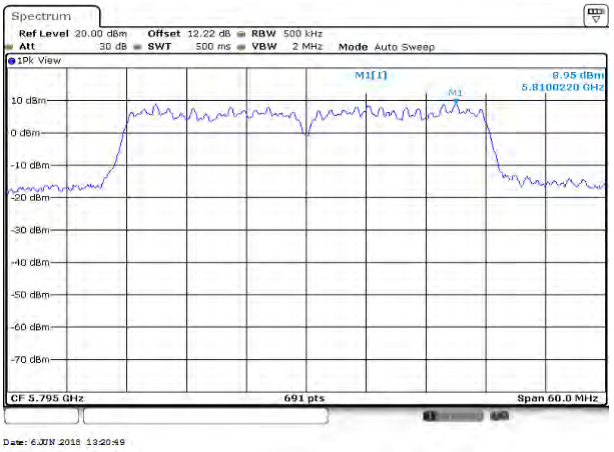
UNII-3 IEEE 802.11n 40 mode- chain 0	
Low CH	**High CH**
	

UNII-3 IEEE 802.11n 40 mode- chain 1	
Low CH	**High CH**
	

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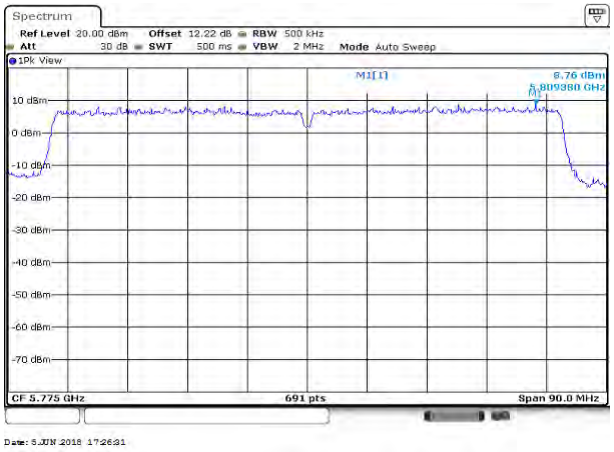
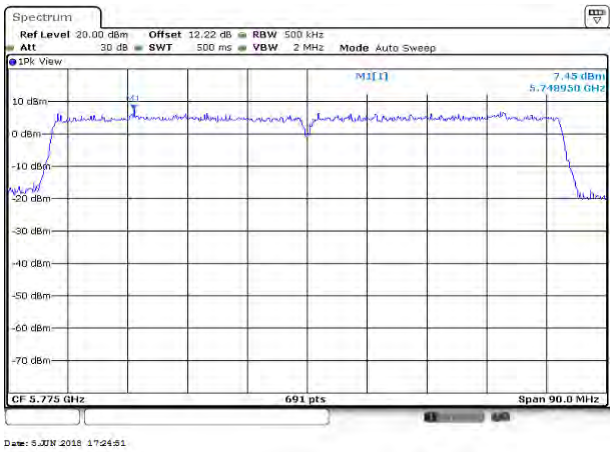
UNII-3 IEEE 802.11ac VHT80 mode- chain 0	
Mid CH	
	

UNII-3 IEEE 802.11ac VHT80 mode- chain 1	
Mid CH	
	

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4.5 RADIATION BANDEDGE AND SPURIOUS EMISSION

4.5.1 Test Limit

FCC according to §15.407, §15.209 and §15.205,

Below 30 MHz

Frequency	Field Strength (microvolts/m)	Magnetic H-Field (microamperes/m)	Measurement Distance (metres)
9-490 kHz	2,400/F (F in kHz)	2,400/F (F in kHz)	300
490-1,705 kHz	24,000/F (F in kHz)	24,000/F (F in kHz)	30
1.705-30 MHz	30	N/A	30

Above 30 MHz

Frequency (MHz)	Field Strength microvolts/m at 3 metres (watts, e.i.r.p.)	
	Transmitters	Receivers
30-88	100 (3 nW)	100 (3 nW)
88-216	150 (6.8 nW)	150 (6.8 nW)
216-960	200 (12 nW)	200 (12 nW)
Above 960	500 (75 nW)	500 (75 nW)

UNII-1 :

For transmitters operating in the band 5150-5250 MHz, all emissions outside the band 5150-5350 MHz shall not exceed -27 dBm/MHz e.i.r.p. However, any unwanted emissions that fall into the band 5250-5350 MHz must be 26 dBc, when measured using a resolution bandwidth between 1 and 5% of the occupied bandwidth, above 5.25 GHz. Otherwise, the transmission is considered as intentional and the devices shall implement dynamic frequency selection (DFS) and transmitter power control (TPC) as per the requirements for the band 5250-5350 MHz

UNII-2a and 2c :

For devices with operating frequencies in the band 5250-5350 MHz but having a channel bandwidth that overlaps the band 5150-5250 MHz, the devices' unwanted emission shall not exceed -27 dBm/MHz e.i.r.p. outside the band 5150-5350 MHz and its power shall comply with the spectral power density for operation within the band 5150-5250 MHz. The device shall be labelled "for indoor use only." Emissions outside the band 5470-5725 MHz shall not exceed -27 dBm/MHz e.i.r.p.

UNII-3:

All emissions shall be limited to a level of −27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

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4.5.2 Test Procedure

Test method Refer as KDB 789033 D02 v02r01, Section G.3, G.4, G.5, and G.6,.

1. The EUT is placed on a turntable, Above 1 GHz is 1.5m and below 1 GHz is 0.8m above ground plane. The EUT Configured un accordance with ANSI C63.10, and the EUT set in a continuous mode.

2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level. And EUT is set 3m away from the receiving antenna, which is scanned from 1m to 4m above the ground plane to find out the highest emissions. Measurement are made polarized in both the vertical and the horizontal positions with antenna.

3. Span shall wide enough to full capture the emission measured. The SA from 9kHz to 26.5GHz set to the low, Mid and High channels with the EUT transmit.

4. The SA setting following：

(1) Below 1G：RBW = 100kHz, VBW ≥ 3*RBW, Sweep = Auto, Detector = Peak, Trace = Max hold.

(2) Above 1G：

(2.1) For Peak measurement：RBW = 1MHz, VBW ≥ 3 RBW, Sweep = Auto, Detector = Peak, Trace = Max hold.

(2.2) For Average measurement：RBW = 1MHz, VBW

˙If Duty Cycle ≥ 98%, VBW=10Hz.

˙If Duty Cycle < 98%, VBW=1/T.

Configuration	Duty Cycle (%)	T(ms)	1/T (Hz)	VBW Setting
802.11a	100%	1.0000	-	10Hz
802.11n 20	100%	1.0000	-	10Hz
802.11n 40	100%	1.0000	-	10Hz
802.11ac VHT80	100%	1.0000	-	10Hz

Remark:

1. *Although these tests were performed other than open area test site, adequate comparison measurements were confirmed against 30 m open are test site. Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the ones of tests made in an open field based on KDB 937606.*
2. *No emission found between lowest internal used/generated frequency to 30MHz (9kHz~30MHz).*

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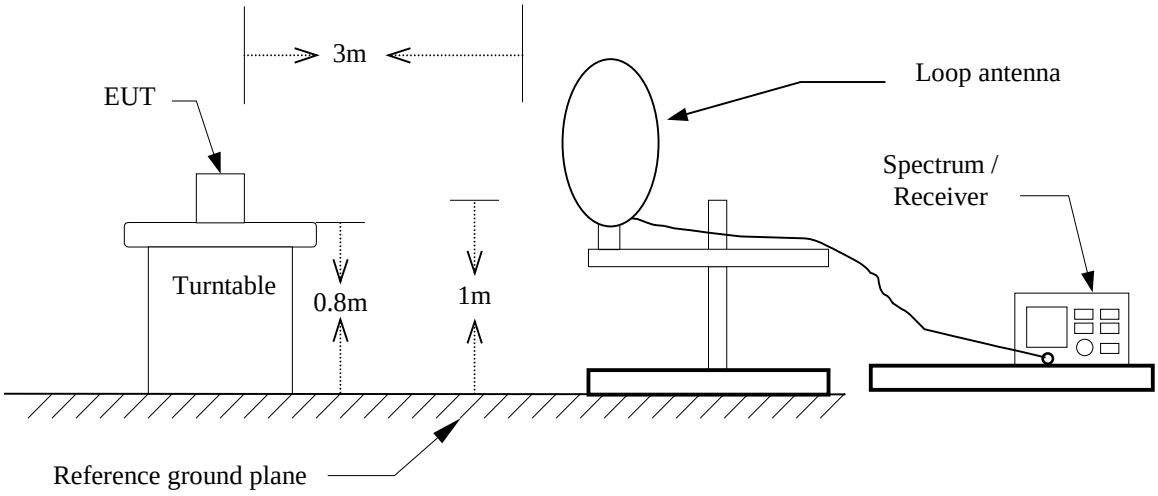
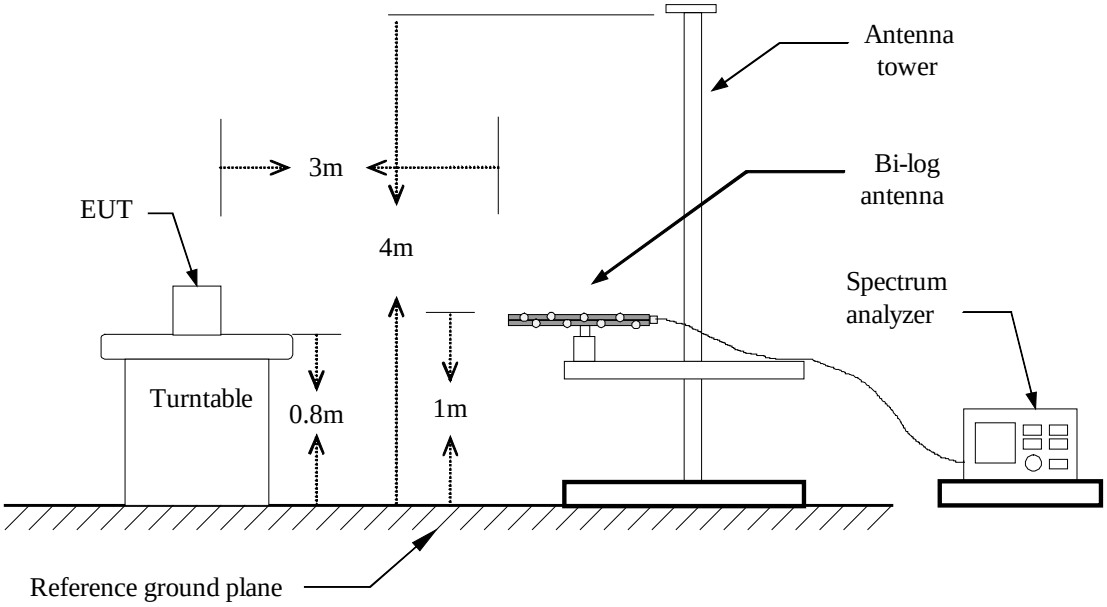
4.5.3 Test Setup

9kHz ~ 30MHz



30MHz ~ 1GHz



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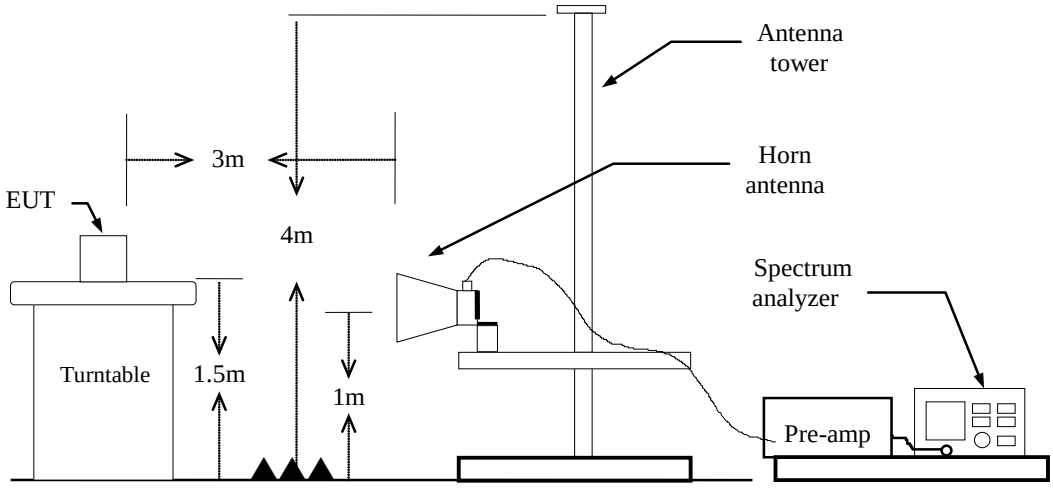
Above 1 GHz



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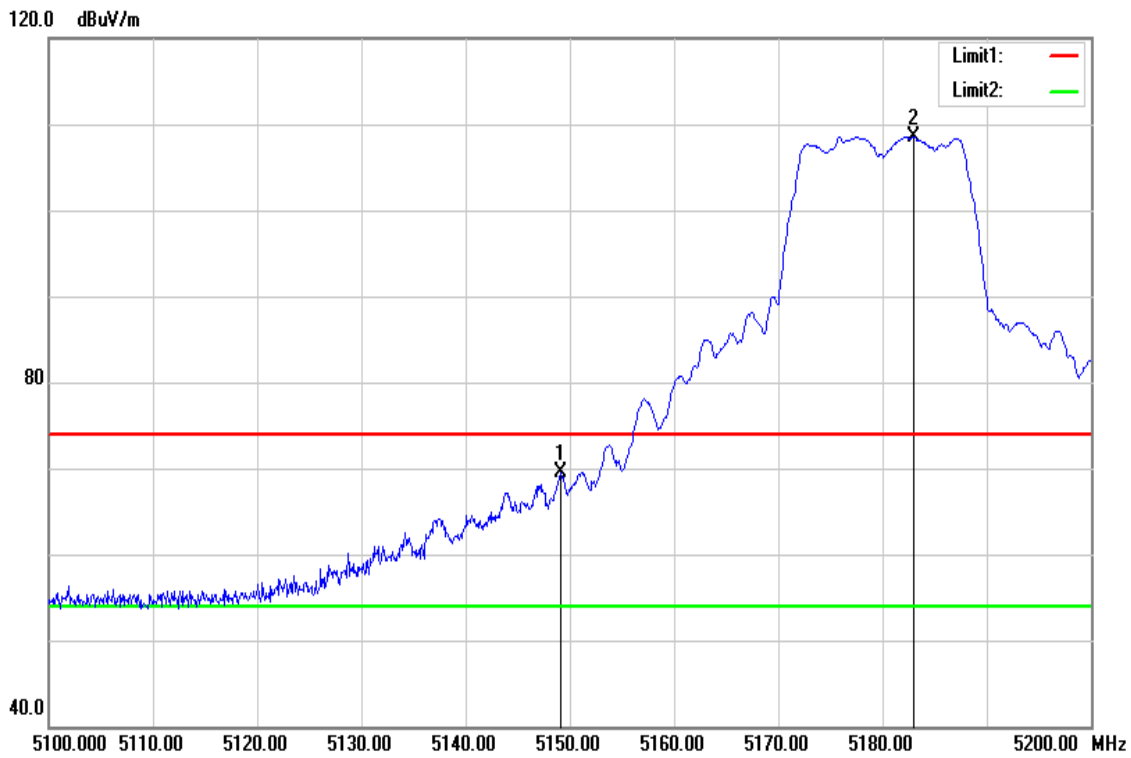
4.5.4 Test Result

Test Data

Band Edge Test Data for UNII-1

Test Mode	IEEE 802.11a / 5180MHZ	Temp/Hum	22(℃)/ 34%RH
Test Item	Band Edge	Test Date	May 31, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5149.100	64.50	5.06	69.56	74.00	-4.44	peak
5183.000	103.43	5.14	108.57	-	-	peak

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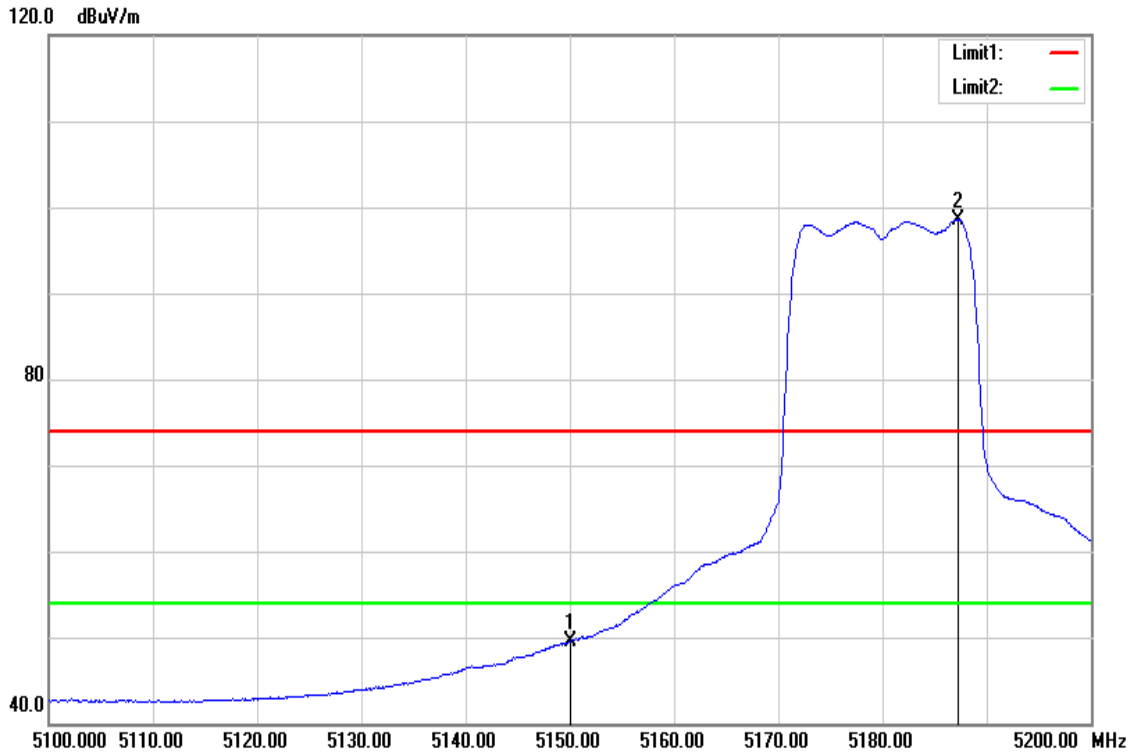
Test Mode	IEEE 802.11a / 5180MHZ	Temperature	22(℃)/ 34%RH
Test Item	Band Edge	Test Date	May 31, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5150.000	44.48	5.06	49.54	54.00	-4.46	AVG
5187.200	93.45	5.15	98.60	-	-	AVG

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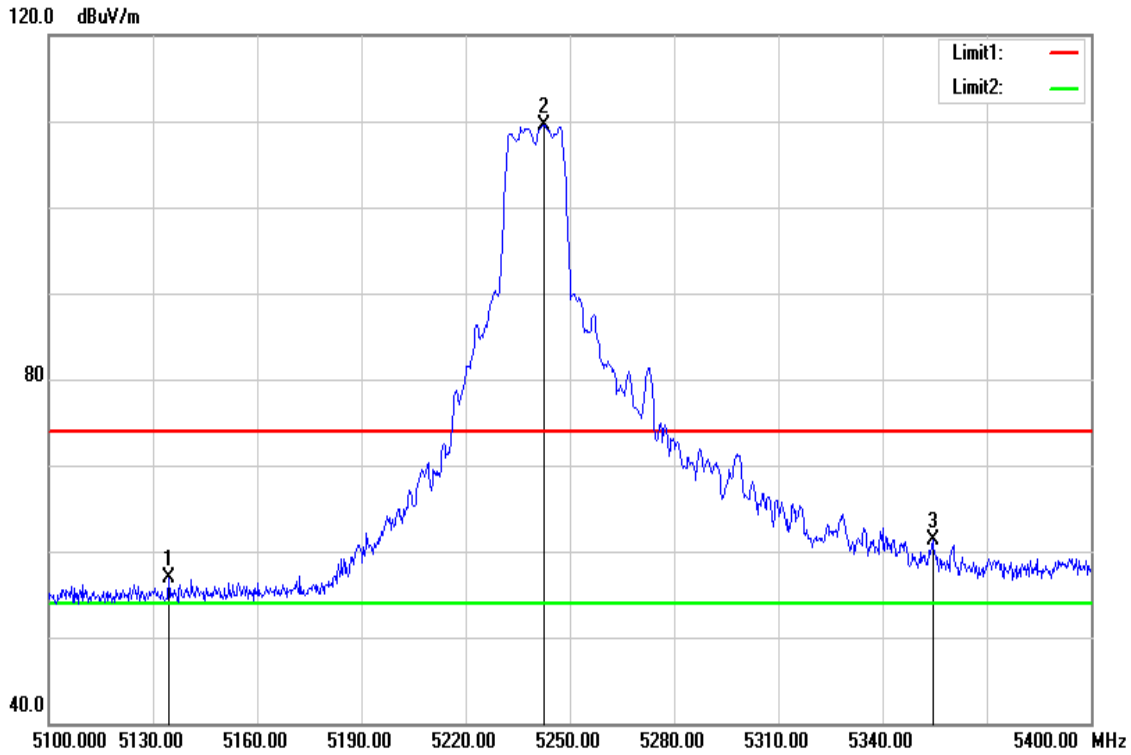
Test Mode	IEEE 802.11a / 5240MHZ	Temp/Hum	22(℃)/ 34%RH
Test Item	Band Edge	Test Date	May 31, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5134.500	51.96	5.02	56.98	74.00	-17.02	peak
5242.500	104.18	5.29	109.47	-	-	peak
5354.400	55.78	5.56	61.34	74.00	-12.66	peak

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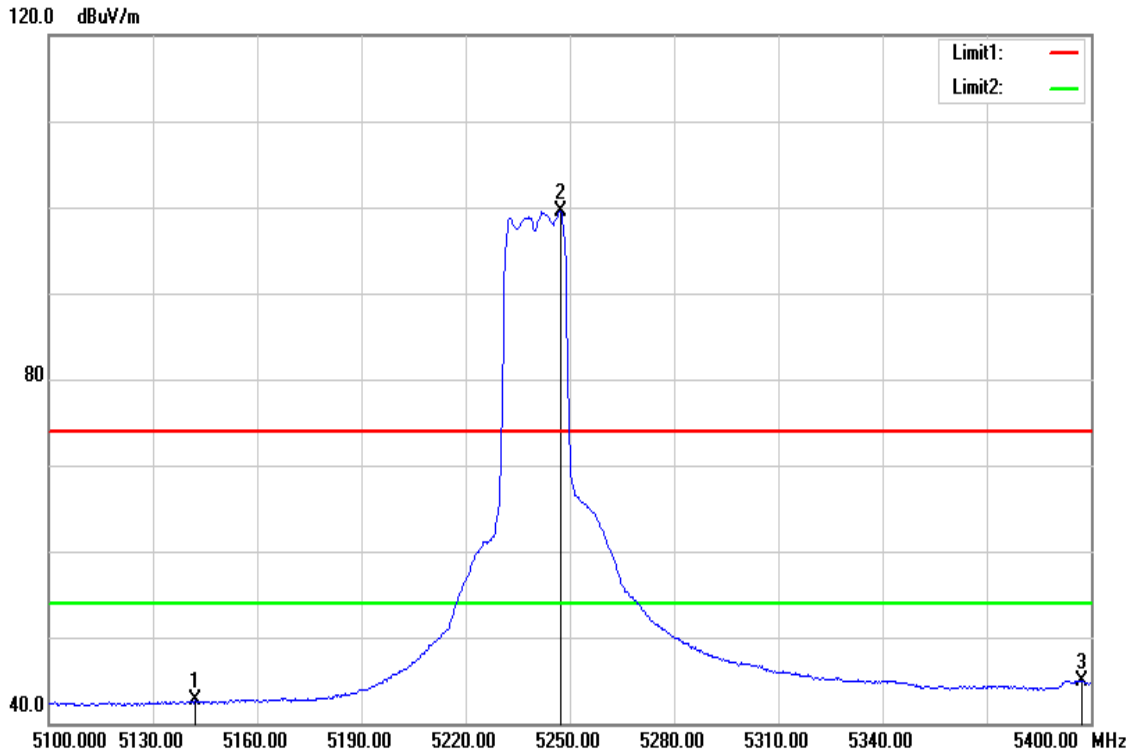
Test Mode	IEEE 802.11a / 5240MHZ	Temp/Hum	22(℃)/ 34%RH
Test Item	Band Edge	Test Date	May 31, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5142.300	37.57	5.05	42.62	54.00	-11.38	AVG
5247.300	94.20	5.31	99.51	-	-	AVG
5397.300	39.28	5.68	44.96	54.00	-9.04	AVG

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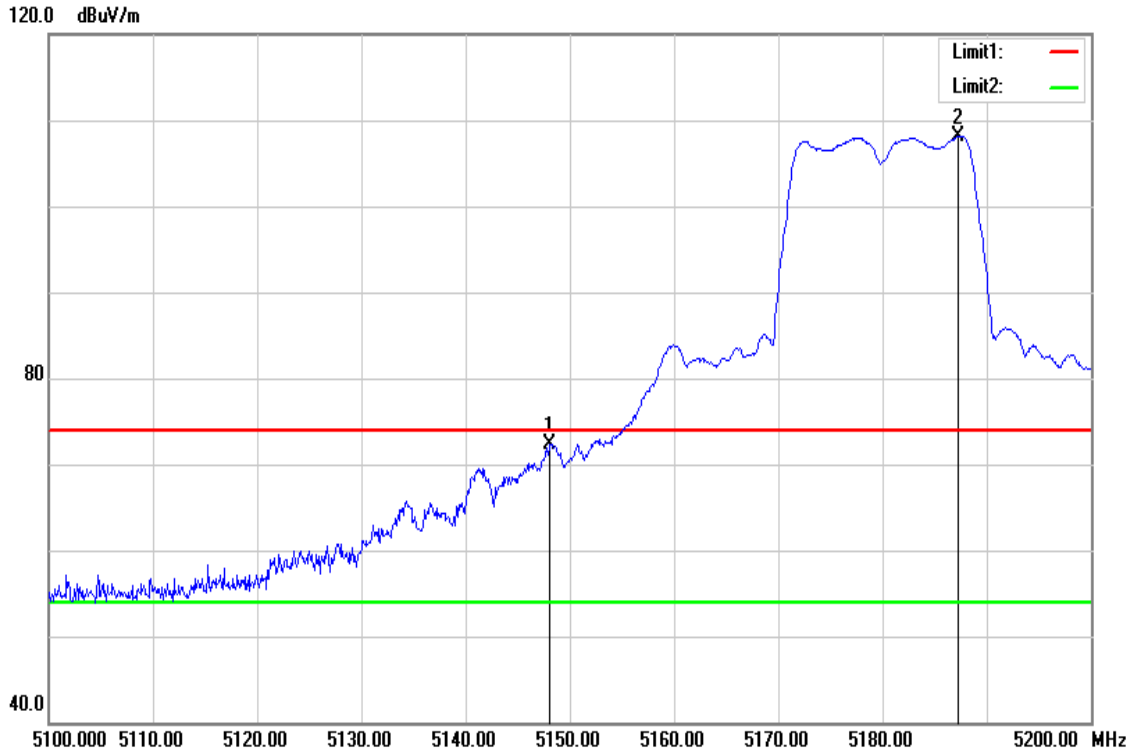
Test Mode	IEEE 802.11n 20 / 5180MHZ	Temp/Hum	22(℃)/ 34%RH
Test Item	Band Edge	Test Date	May 31, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5148.100	67.21	5.06	72.27	74.00	-1.73	peak
5187.300	103.00	5.15	108.15	-	-	peak

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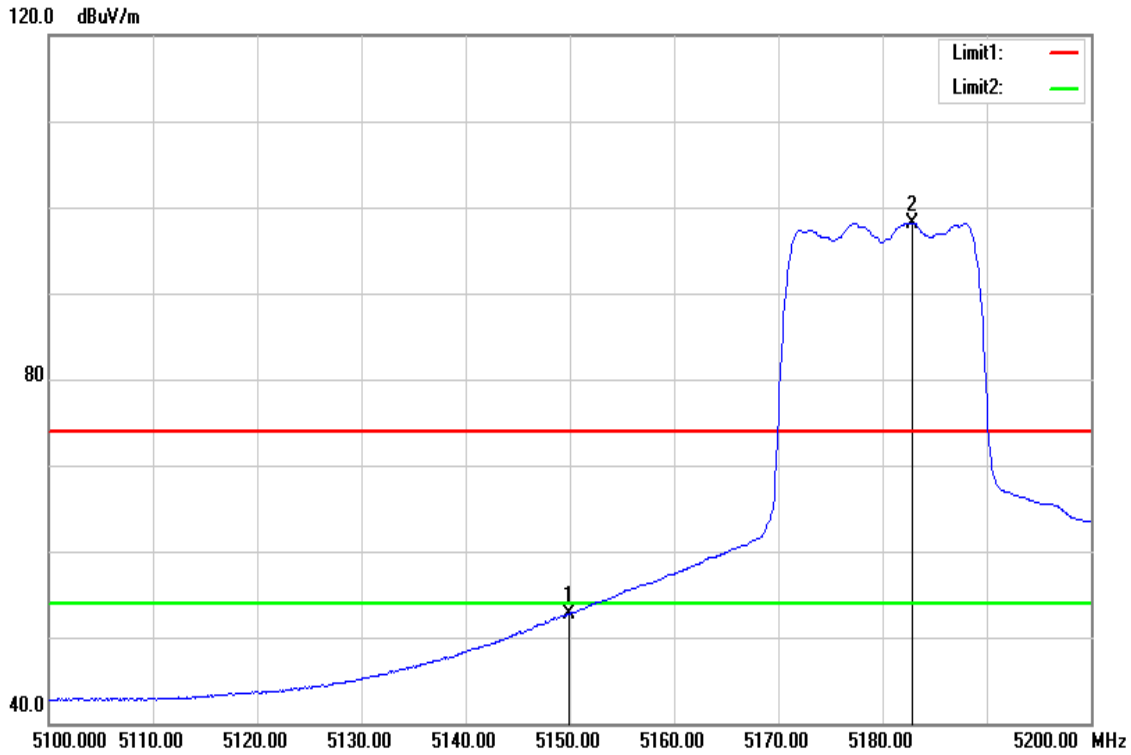
Test Mode	IEEE 802.11n 20 / 5180MHZ	Temp/Hum	22(℃)/ 34%RH
Test Item	Band Edge	Test Date	May 31, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5149.900	47.66	5.06	52.72	54.00	-1.28	AVG
5182.900	93.05	5.14	98.19	-	-	AVG

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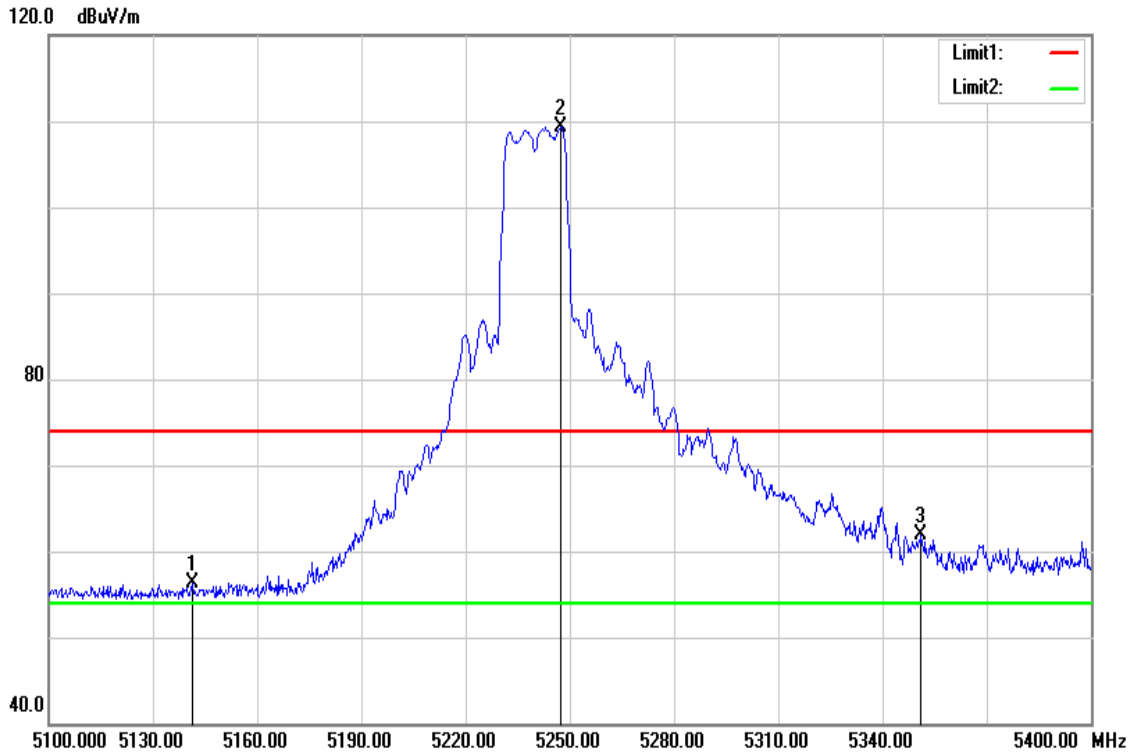
Test Mode	IEEE 802.11n 20 / 5240MHZ	Temp/Hum	22(℃)/ 34%RH
Test Item	Band Edge	Test Date	May 31, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5141.400	51.29	5.03	56.32	74.00	-17.68	peak
5247.300	104.01	5.31	109.32	-	-	peak
5351.100	56.38	5.56	61.94	74.00	-12.06	peak

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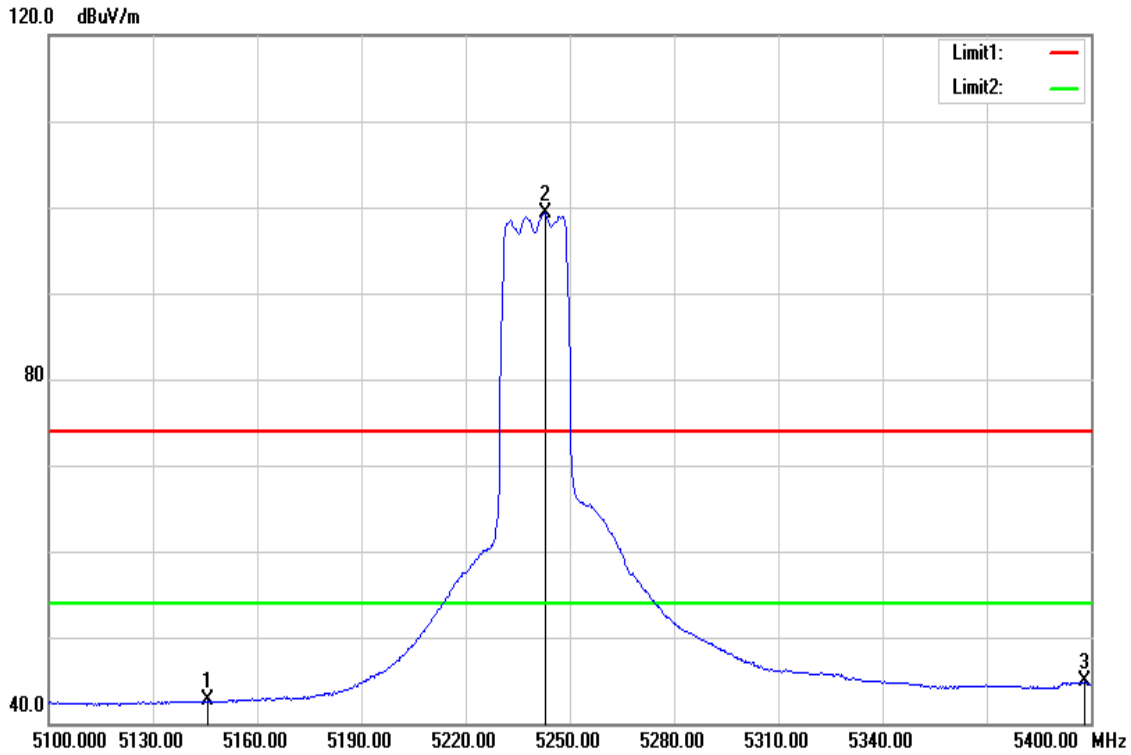
Test Mode	IEEE 802.11n 20 / 5240MHZ	Temperature	22(℃)/ 34%RH
Test Item	Band Edge	Test Date	May 31, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5145.600	37.57	5.06	42.63	54.00	-11.37	AVG
5242.800	94.02	5.29	99.31	-	-	AVG
5398.200	39.13	5.68	44.81	54.00	-9.19	AVG

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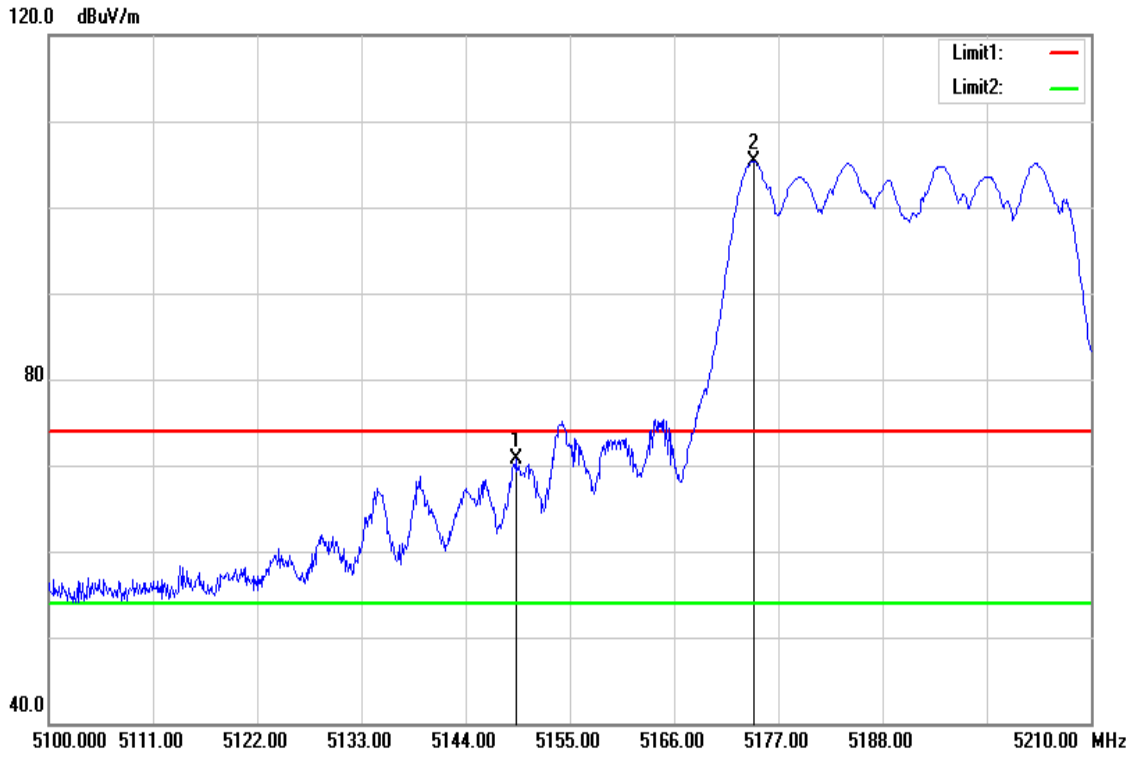
Test Mode	IEEE 802.11n 40 / 5190MHZ	Temp/Hum	22(℃)/ 34%RH
Test Item	Band Edge	Test Date	May 31, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5149.280	65.55	5.06	70.61	74.00	-3.39	peak
5174.360	100.19	5.11	105.30	-	-	peak

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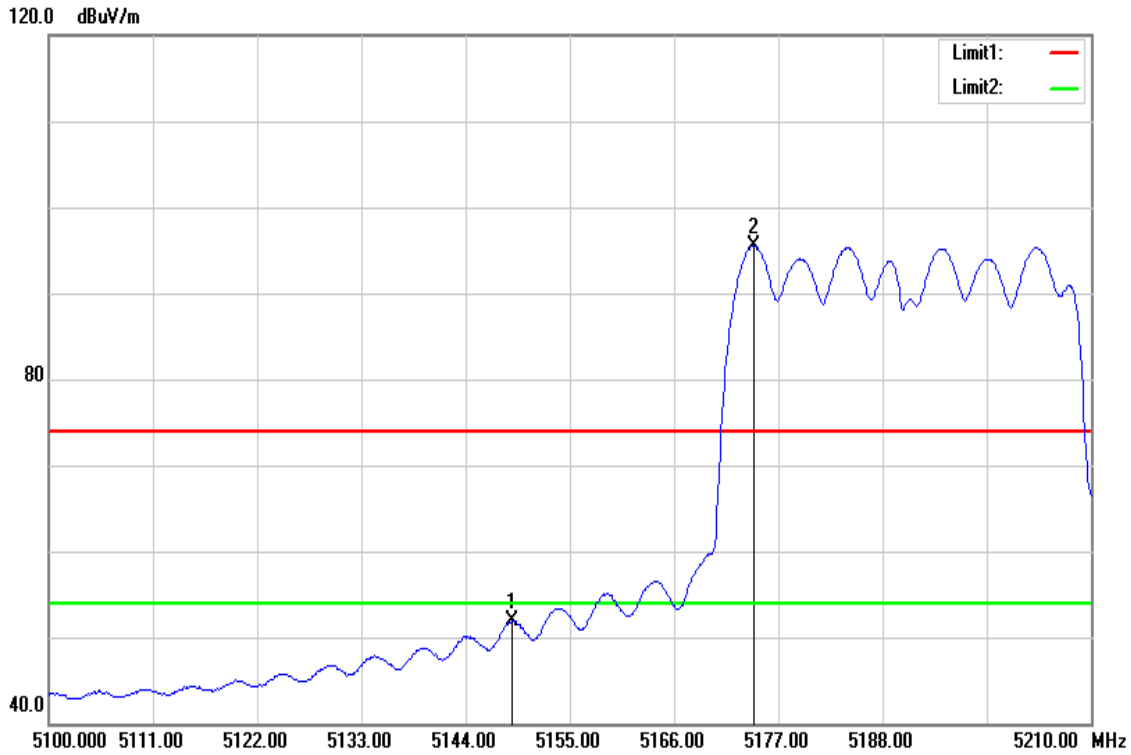
Test Mode	IEEE 802.11n 40 / 5190MHZ	Temperature	22(℃)/ 34%RH
Test Item	Band Edge	Test Date	May 31, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5148.950	46.83	5.06	51.89	54.00	-2.11	AVG
5174.470	90.40	5.11	95.51	-	-	AVG

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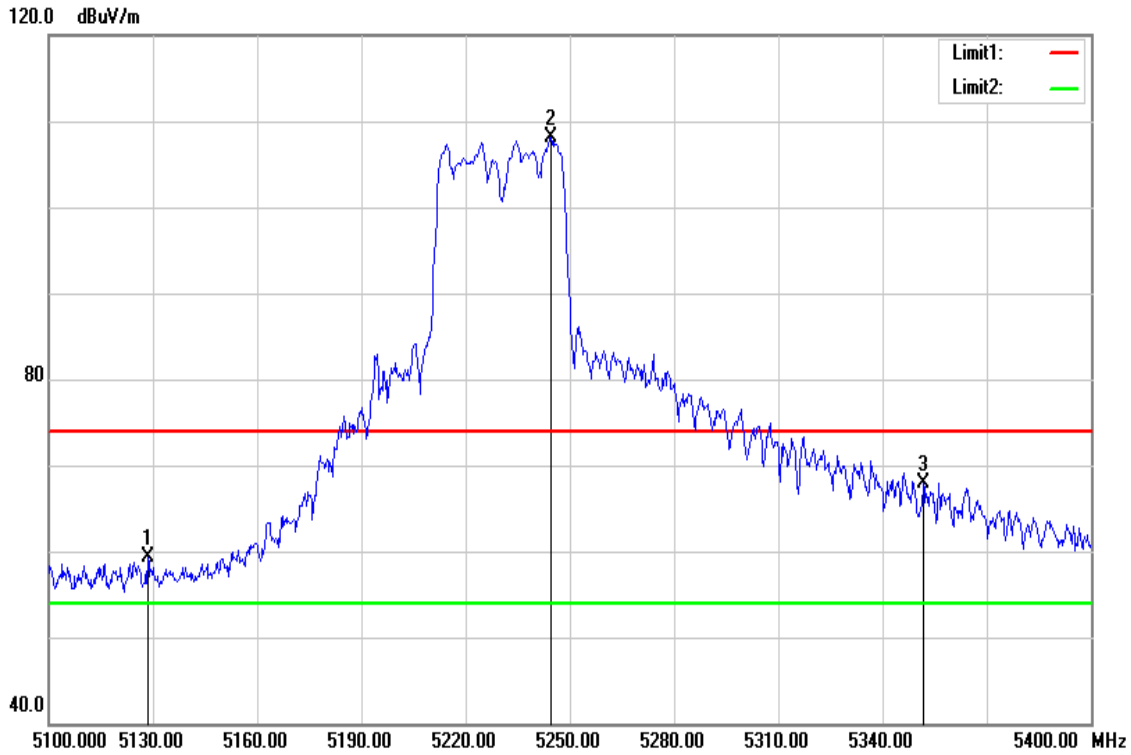
Test Mode	IEEE 802.11n 40 / 5230MHZ	Temp/Hum	22(℃)/ 34%RH
Test Item	Band Edge	Test Date	May 31, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5128.500	54.30	5.01	59.31	74.00	-14.69	peak
5244.600	102.82	5.30	108.12	-	-	peak
5351.700	62.36	5.56	67.92	74.00	-6.08	peak

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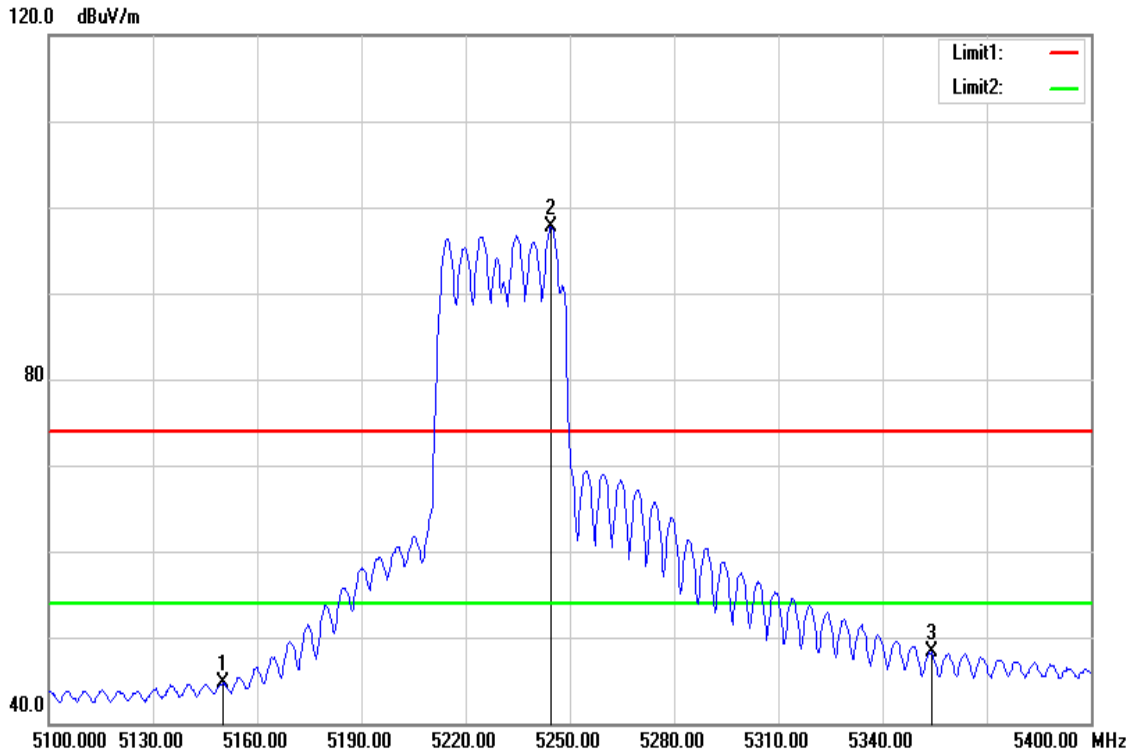
Test Mode	IEEE 802.11n 40 / 5230MHZ	Temp/Hum	22(℃)/ 34%RH
Test Item	Band Edge	Test Date	May 31, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5150.100	39.67	5.06	44.73	54.00	-9.27	AVG
5244.600	92.37	5.30	97.67	-	-	AVG
5354.100	42.71	5.56	48.27	54.00	-5.73	AVG

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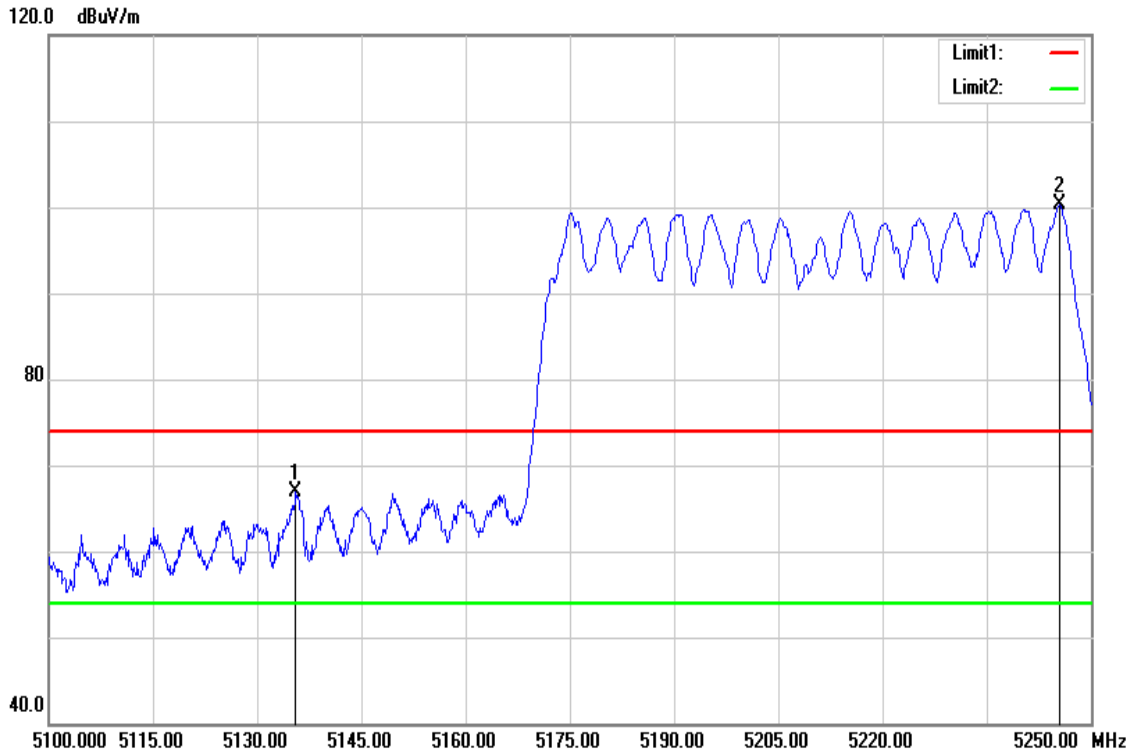
Test Mode	I EEE 802.11ac VHT80 / 5210MHZ	Temp/Hum	22(℃)/ 34%RH
Test Item	Band Edge	Test Date	May 31, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5135.550	61.88	5.03	66.91	74.00	-7.09	peak
5245.500	95.02	5.31	100.33	-	-	peak

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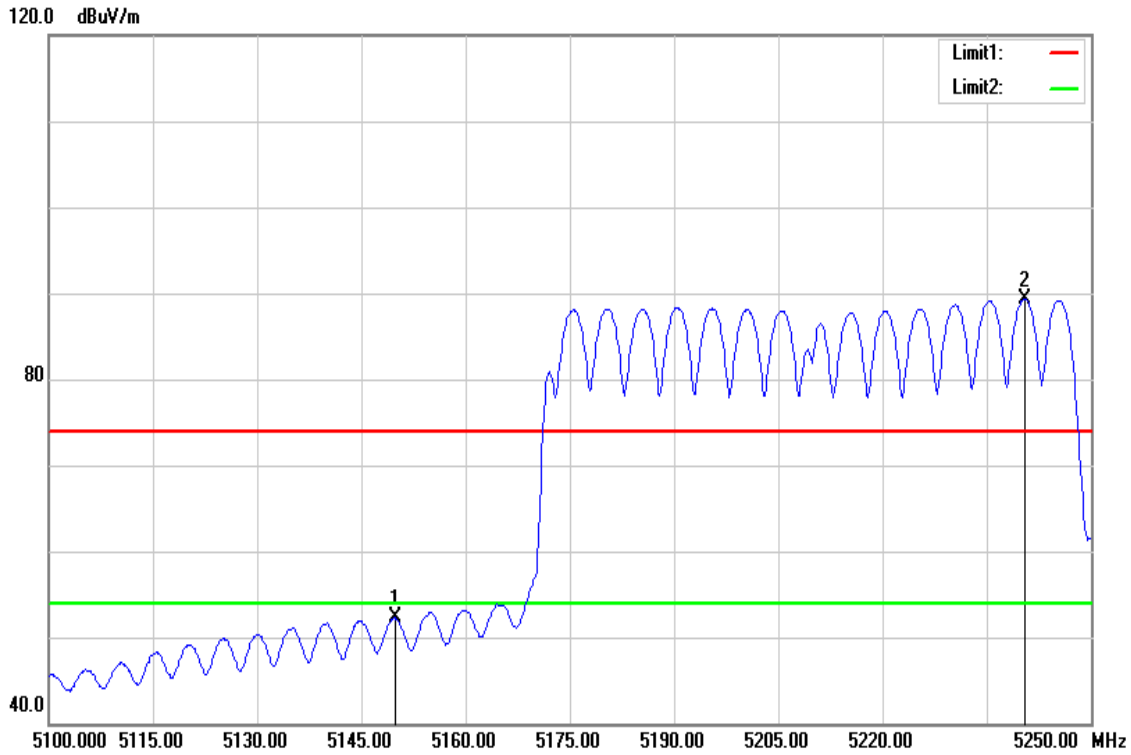
Test Mode	I EEE 802.11ac VHT80 / 5210MHZ	Temp/Hum	22(℃)/ 34%RH
Test Item	Band Edge	Test Date	May 31, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5149.800	47.18	5.06	52.24	54.00	-1.76	AVG
5240.400	84.06	5.28	89.34	-	-	AVG

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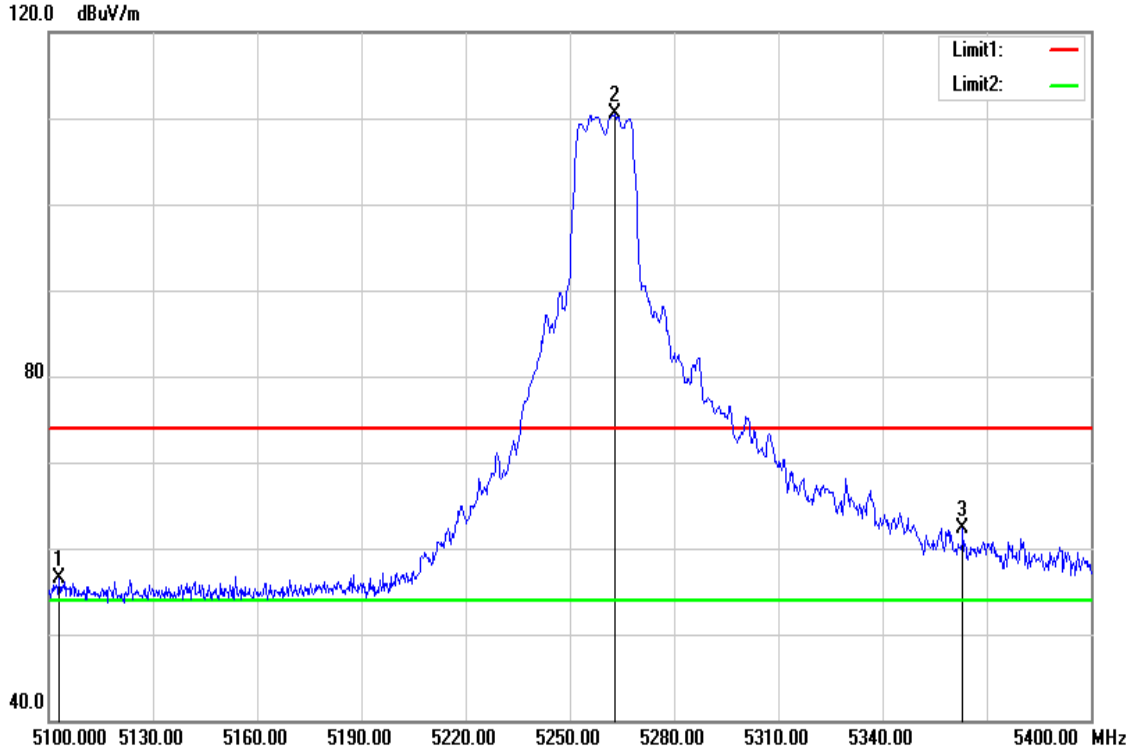
Band Edge Test Data for UNII-2a

Test Mode	IEEE 802.11a / 5260 MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Band Edge	Test Date	May 31, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5103.000	51.62	4.94	56.56	74.00	-17.44	peak
5262.900	105.07	5.34	110.41	-	-	peak
5363.100	56.66	5.59	62.25	74.00	-11.75	peak

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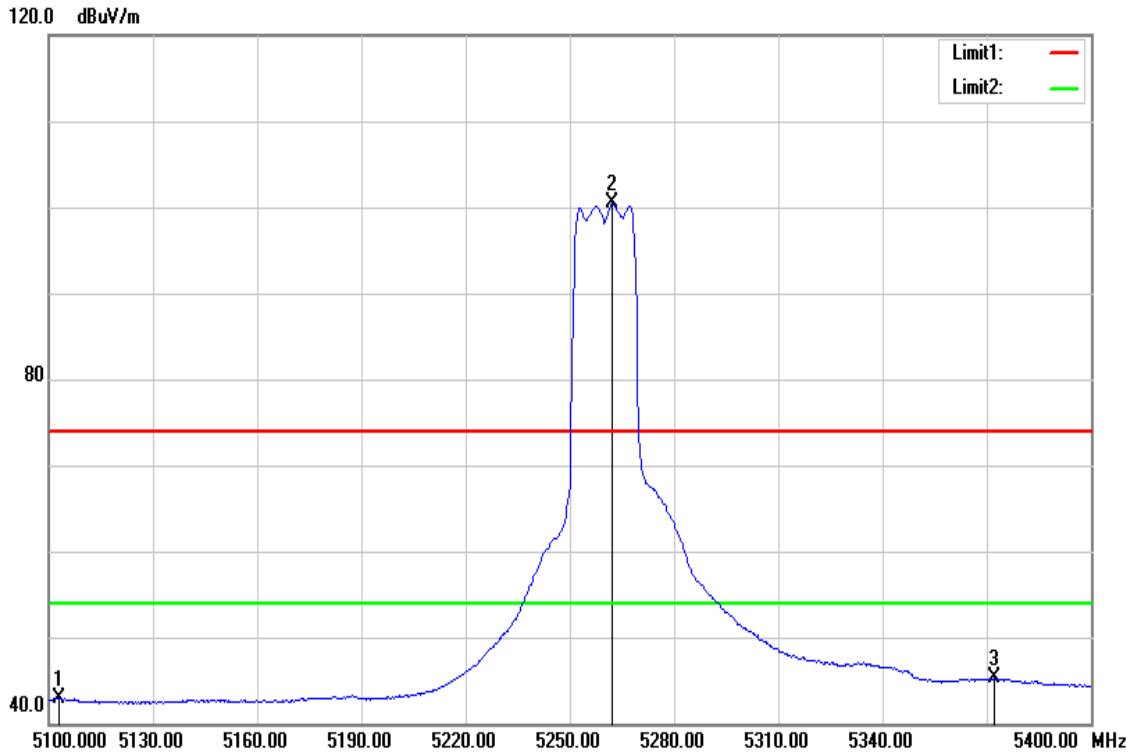
Test Mode	IEEE 802.11a / 5260MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Band Edge	Test Date	May 31, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5103.000	37.99	4.94	42.93	54.00	-11.07	AVG
5262.300	95.08	5.34	100.42	-	-	AVG
5372.100	39.70	5.61	45.31	54.00	-8.69	AVG

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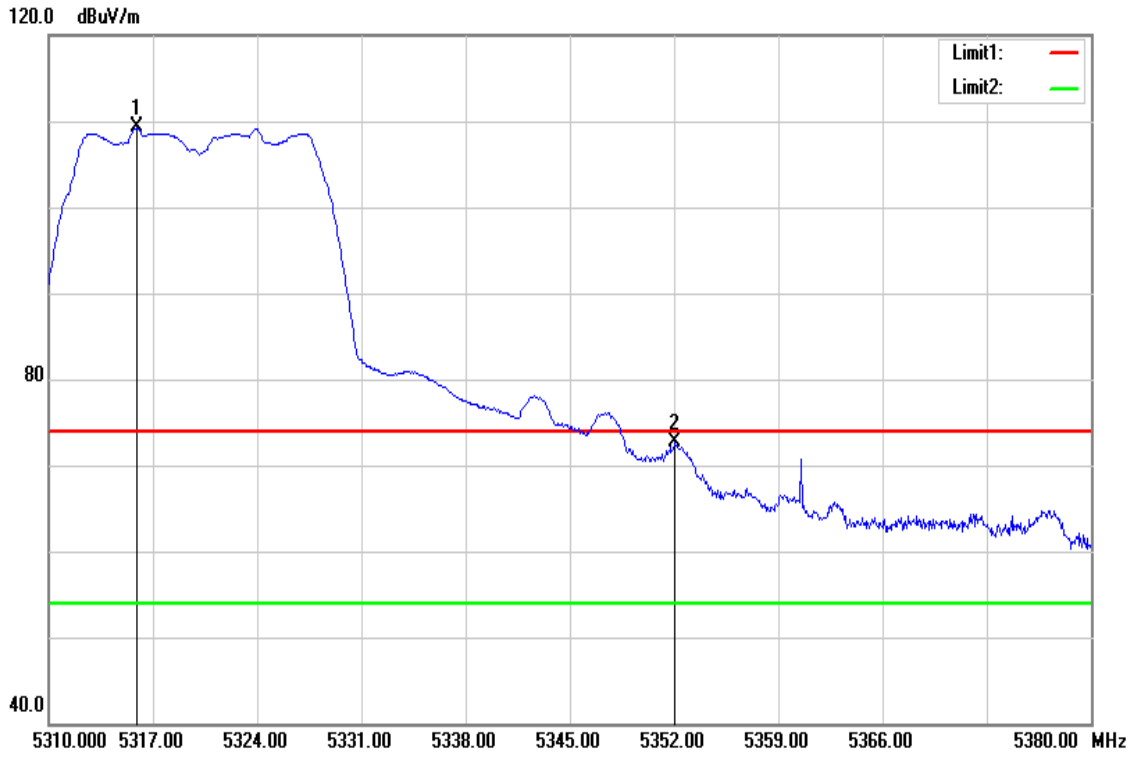
Test Mode	IEEE 802.11a / 5320MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Band Edge	Test Date	May 31, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5315.880	103.73	5.48	109.21	-	-	peak
5352.070	67.08	5.56	72.64	74.00	-1.36	peak

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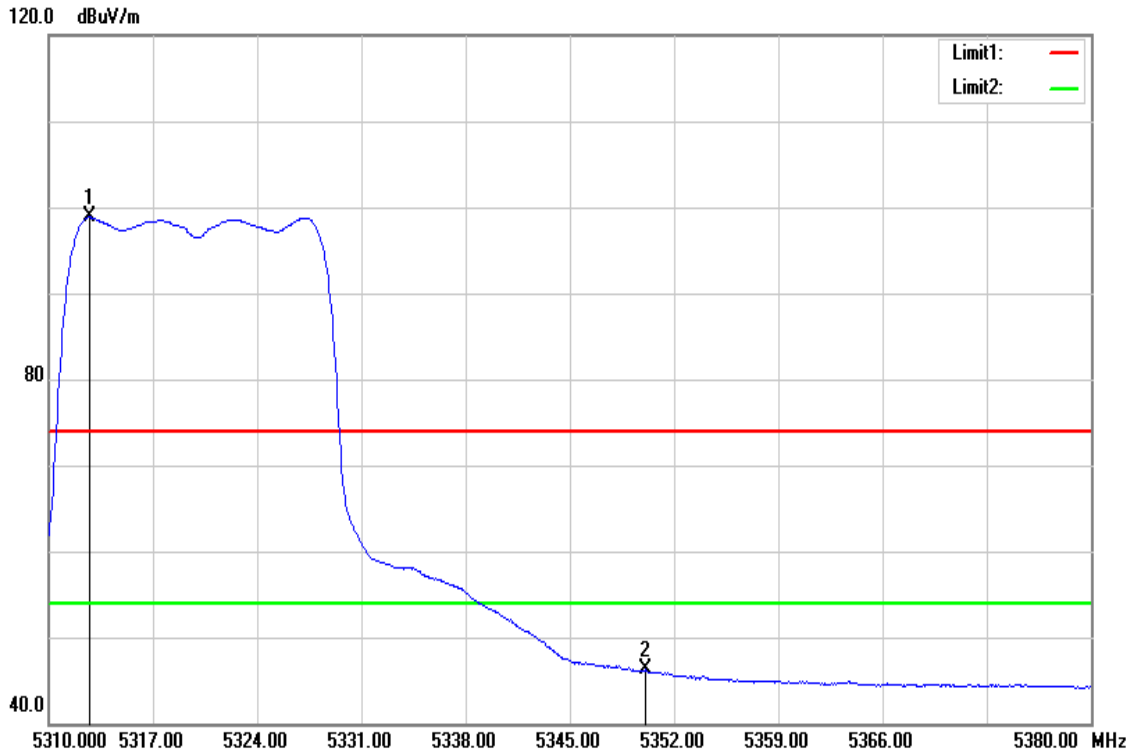
Test Mode	IEEE 802.11a / 5320MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Band Edge	Test Date	May 31, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5312.730	93.37	5.47	98.84	-	-	AVG
5350.110	40.66	5.56	46.22	54.00	-7.78	AVG

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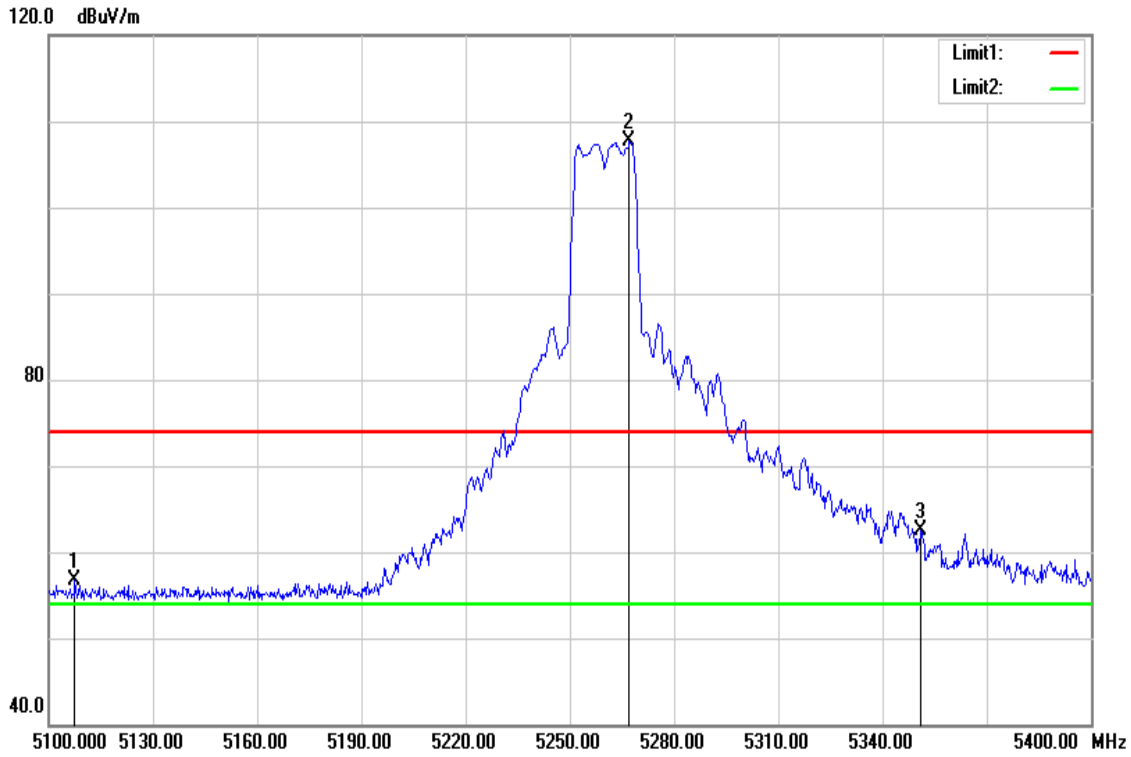
Test Mode	IEEE 802.11n 20 / 5260MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Band Edge	Test Date	May 31, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5107.500	51.76	4.95	56.71	74.00	-17.29	peak
5267.100	102.28	5.36	107.64	-	-	peak
5351.100	56.89	5.56	62.45	74.00	-11.55	peak

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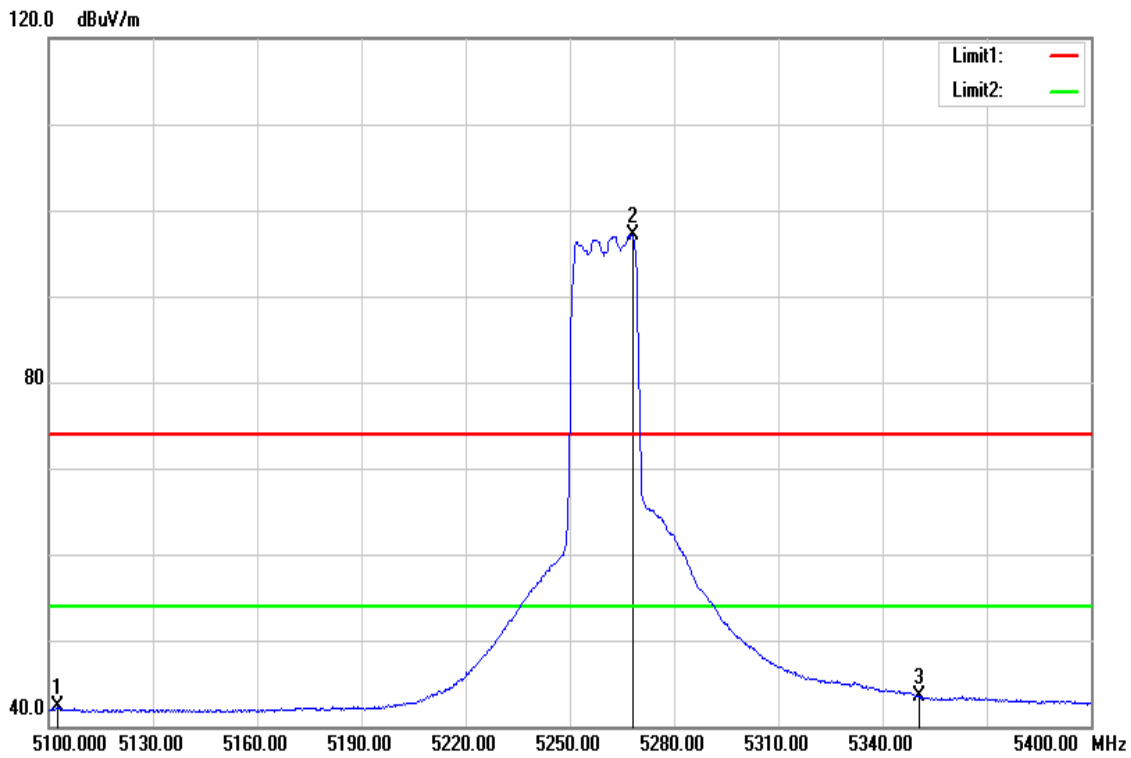
Test Mode	IEEE 802.11n 20 / 5260MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Band Edge	Test Date	May 31, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5102.400	37.29	4.94	42.23	54.00	-11.77	AVG
5268.000	91.71	5.36	97.07	-	-	AVG
5350.500	37.96	5.56	43.52	54.00	-10.48	AVG

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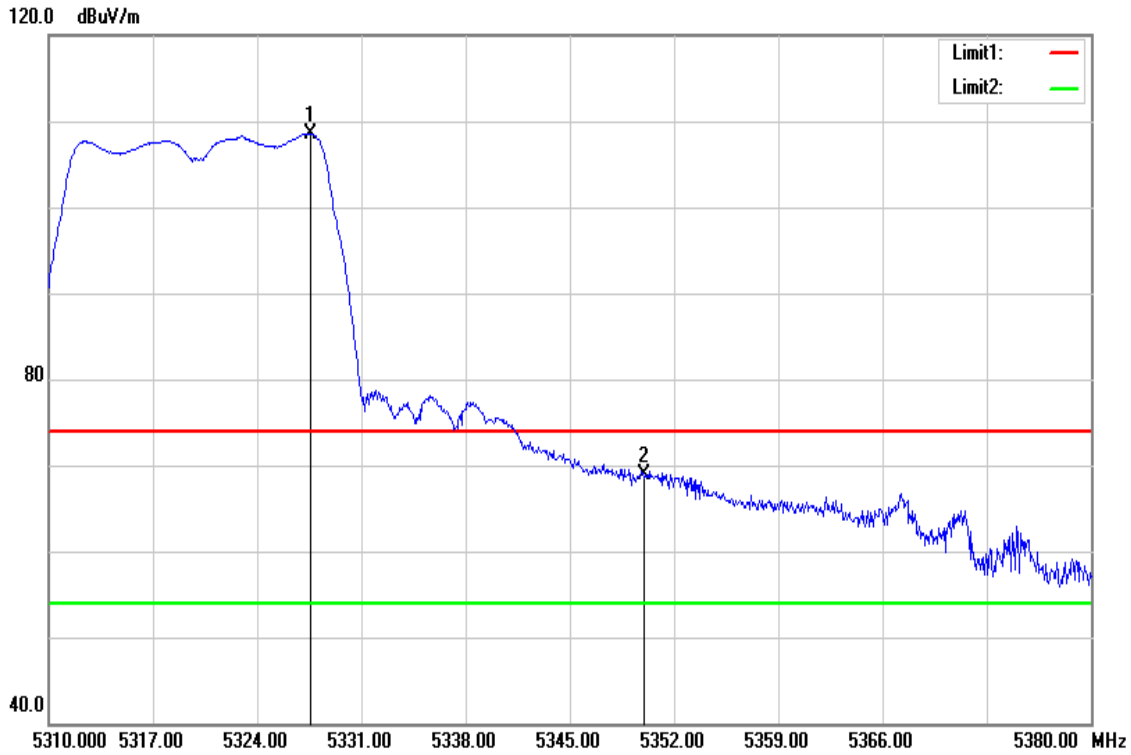
Test Mode	IEEE 802.11n 20 / 5320MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Band Edge	Test Date	May 31, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5327.570	103.00	5.51	108.51	-	-	peak
5350.000	63.42	5.56	68.98	74.00	-5.02	peak

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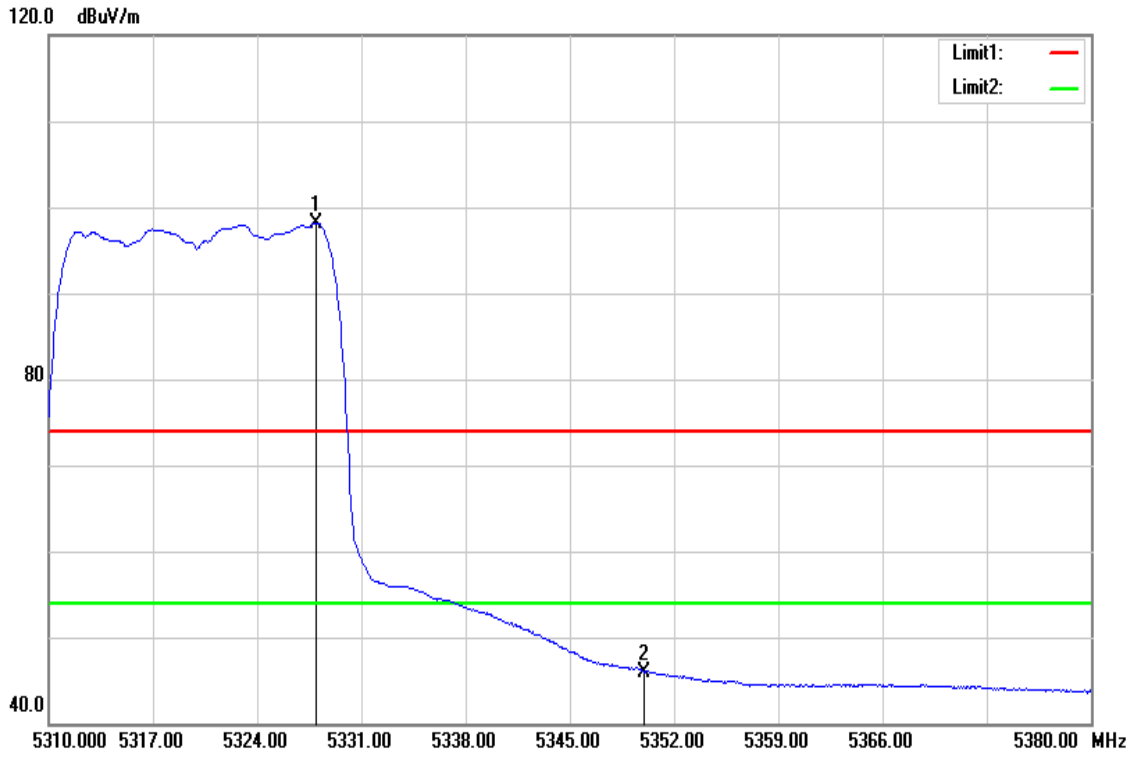
Test Mode	IEEE 802.11n 20 / 5320MHz	Temperature	22(℃)/ 34%RH
Test Item	Band Edge	Test Date	May 31, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5327.920	92.66	5.51	98.17	-	-	AVG
5350.000	40.42	5.56	45.98	54.00	-8.02	AVG

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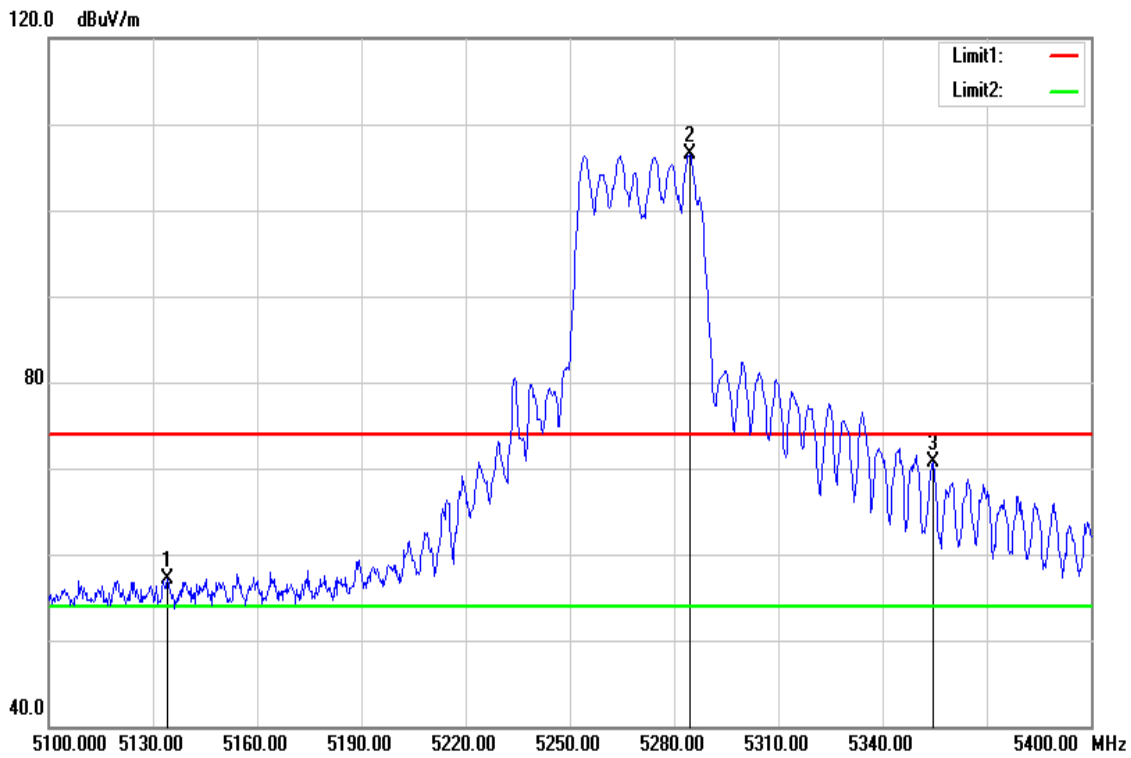
Test Mode	IEEE 802.11n 40 / 5270MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Band Edge	Test Date	May 31, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5134.200	52.09	5.02	57.11	74.00	-16.89	peak
5284.500	101.06	5.39	106.45	-	-	peak
5354.400	65.08	5.56	70.64	74.00	-3.36	peak

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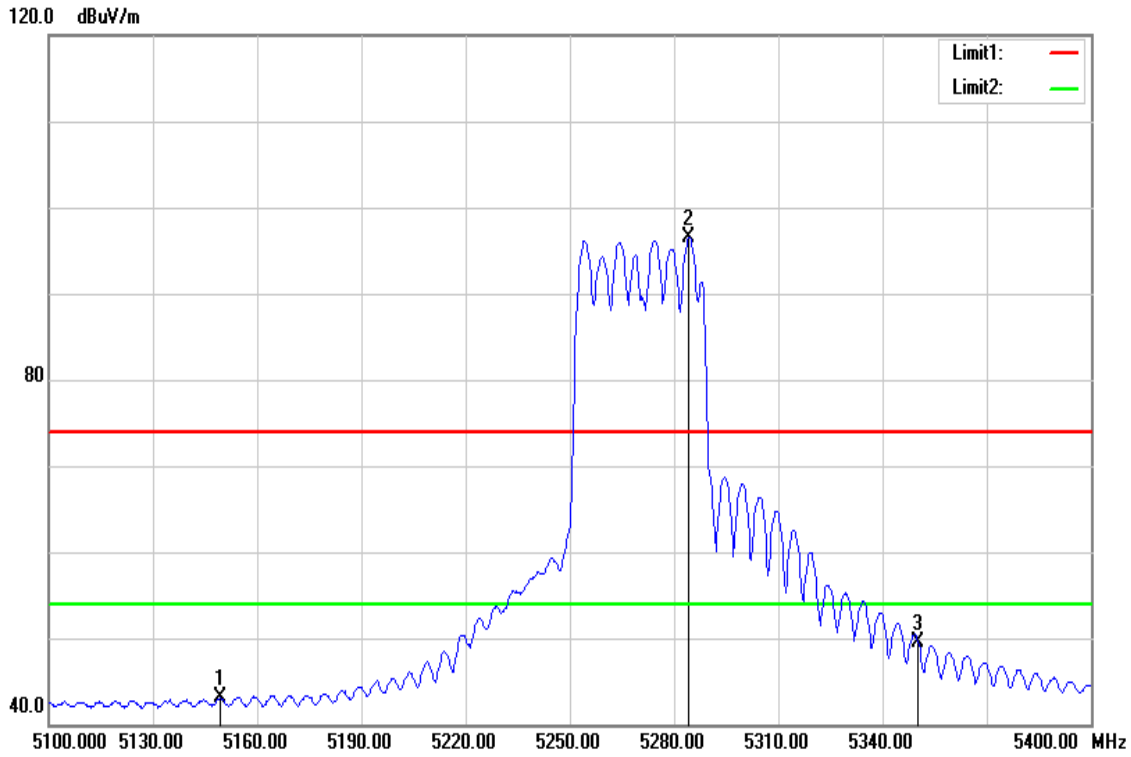
Test Mode	IEEE 802.11n 40 / 5270MHz	Temperature	22(℃)/ 34%RH
Test Item	Band Edge	Test Date	May 31, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5149.500	38.01	5.06	43.07	54.00	-10.93	AVG
5284.200	91.09	5.39	96.48	-	-	AVG
5350.000	44.02	5.56	49.58	54.00	-4.42	AVG

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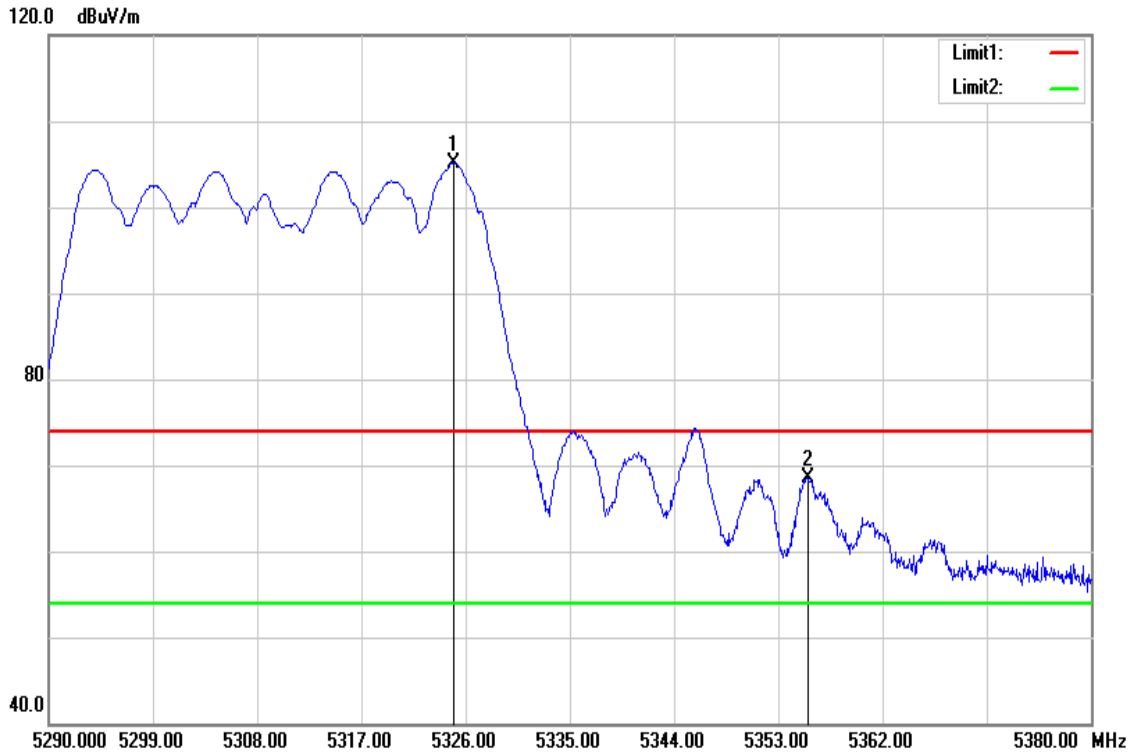
Test Mode	IEEE 802.11n 40 / 5310MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Band Edge	Test Date	May 31, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5325.010	99.62	5.51	105.13	-	-	peak
5355.520	62.98	5.57	68.55	74.00	-5.45	peak

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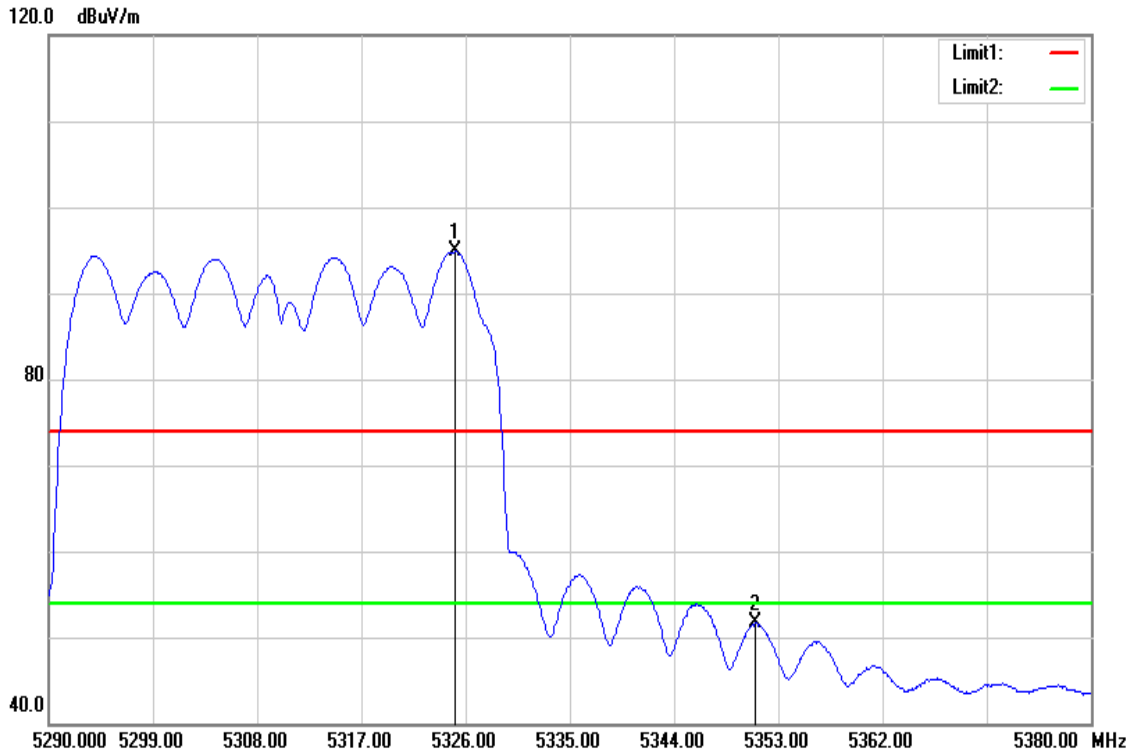
Test Mode	IEEE 802.11n 40 / 5310MHz	Temperature	22(℃)/ 34%RH
Test Item	Band Edge	Test Date	May 31, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5325.100	89.32	5.51	94.83	-	-	AVG
5351.020	46.12	5.56	51.68	54.00	-2.32	AVG

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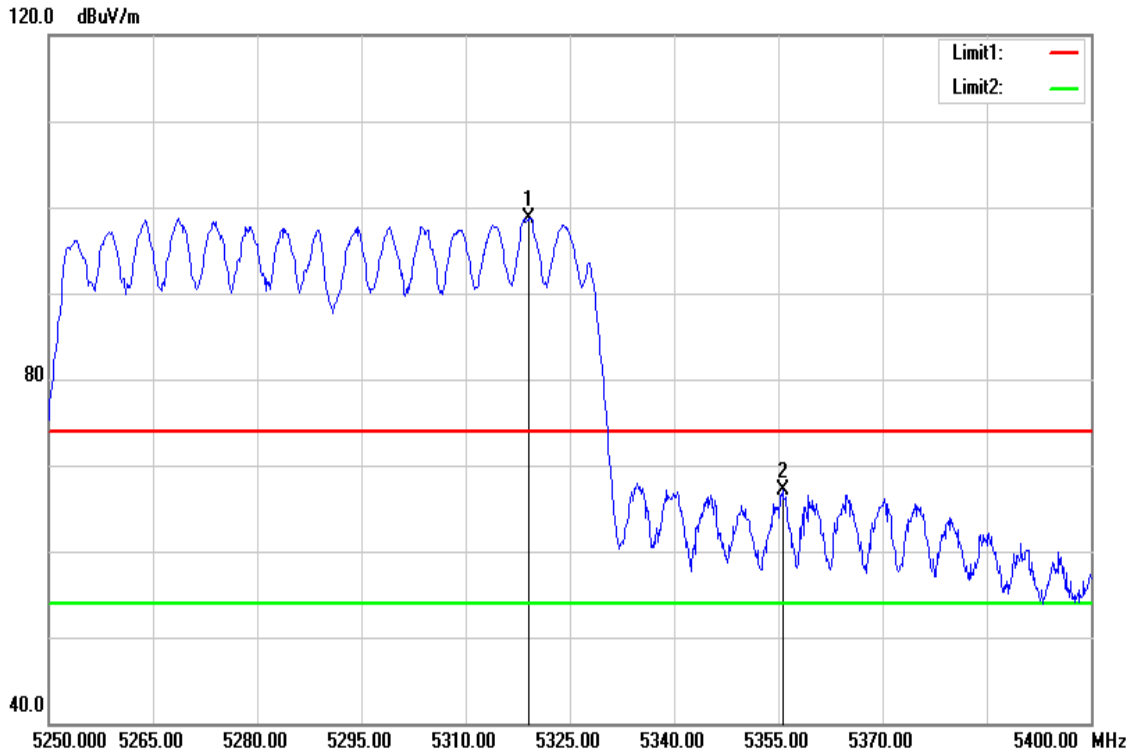
Test Mode	IEEE 802.11ac VHT80 / 5290MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Band Edge	Test Date	May 31, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5319.150	93.20	5.48	98.68	-	-	peak
5355.600	61.61	5.57	67.18	74.00	-6.82	peak

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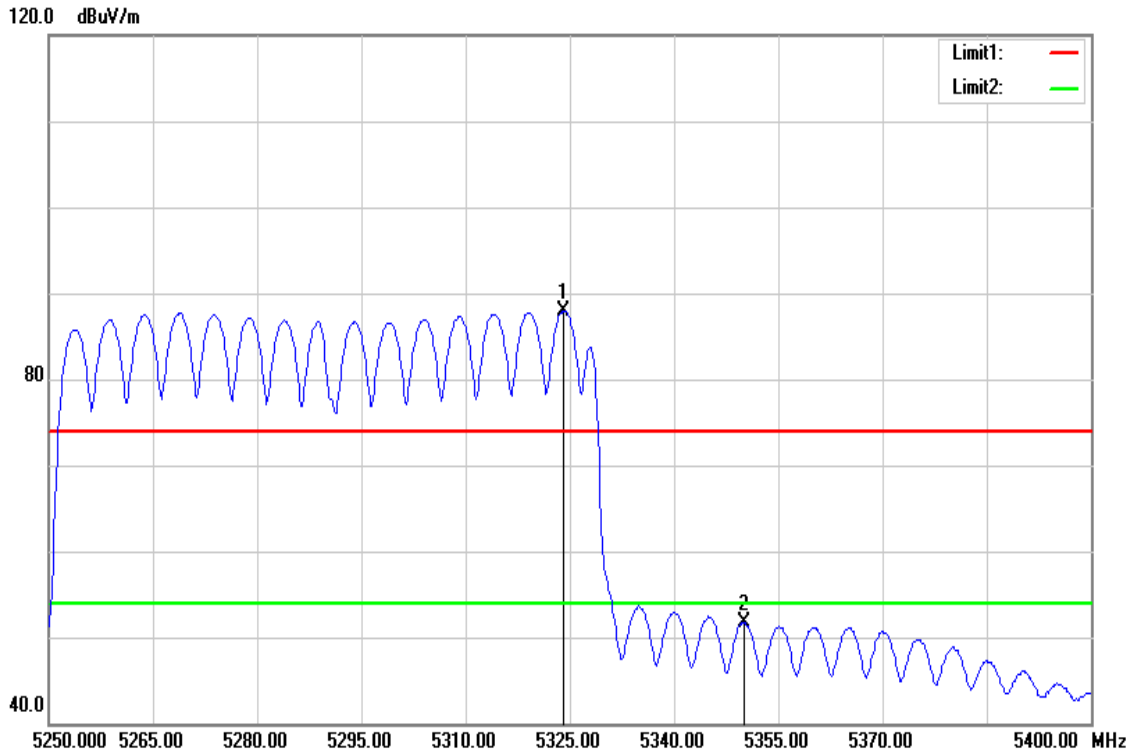
Test Mode	IEEE 802.11ac VHT80 / 5290MHz	Temperature	22(℃)/ 34%RH
Test Item	Band Edge	Test Date	May 31, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5324.100	82.45	5.49	87.94	-	-	AVG
5350.000	46.16	5.56	51.72	54.00	-2.28	AVG

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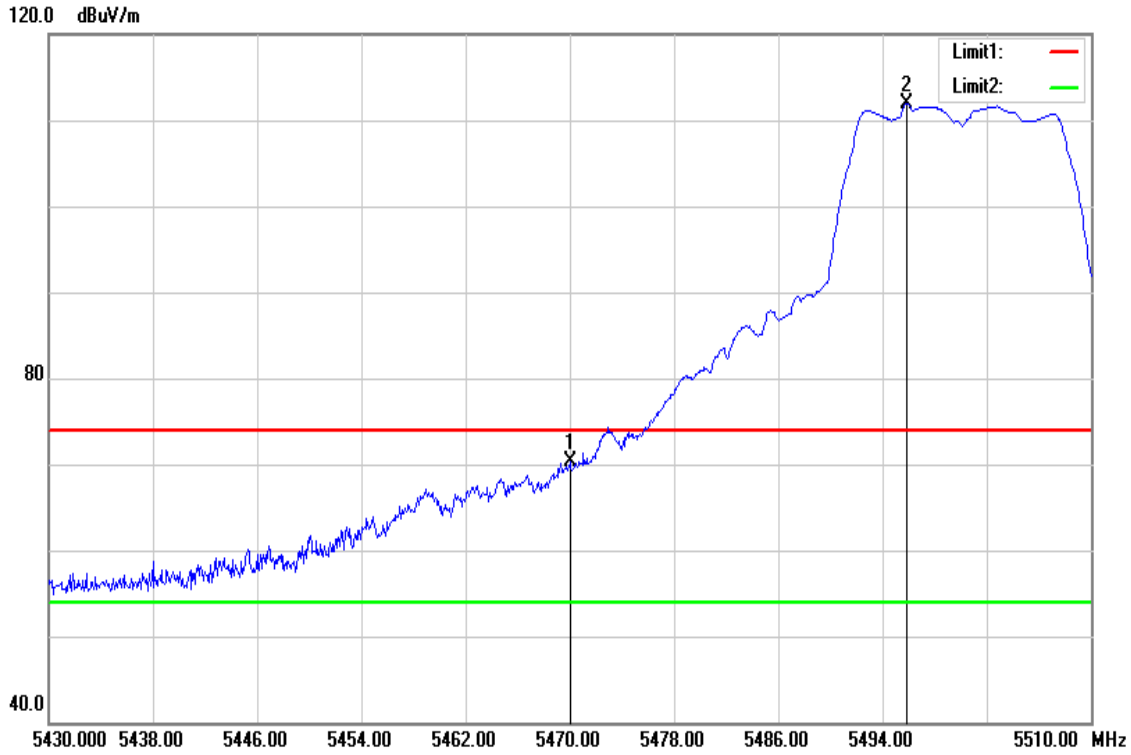
Band Edge Test Data for UNII-2c

Test Mode	IEEE 802.11a / 5500MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Band Edge	Test Date	May 31, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5470.000	64.40	5.85	70.25	74.00	-3.75	peak
5495.840	106.00	5.93	111.93	-	-	peak

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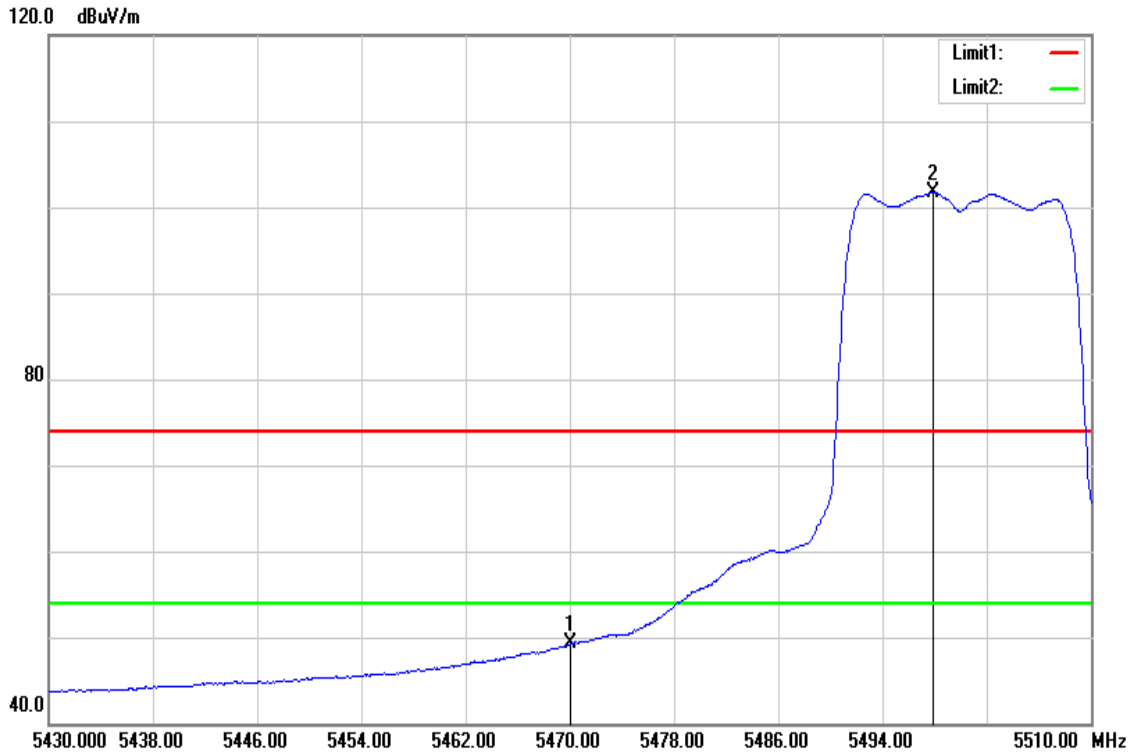
Test Mode	IEEE 802.11a / 5500MHz	Temperature	22(℃)/ 34%RH
Test Item	Band Edge	Test Date	May 31, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5470.000	43.40	5.85	49.25	54.00	-4.75	AVG
5497.920	95.79	5.93	101.72	-	-	AVG

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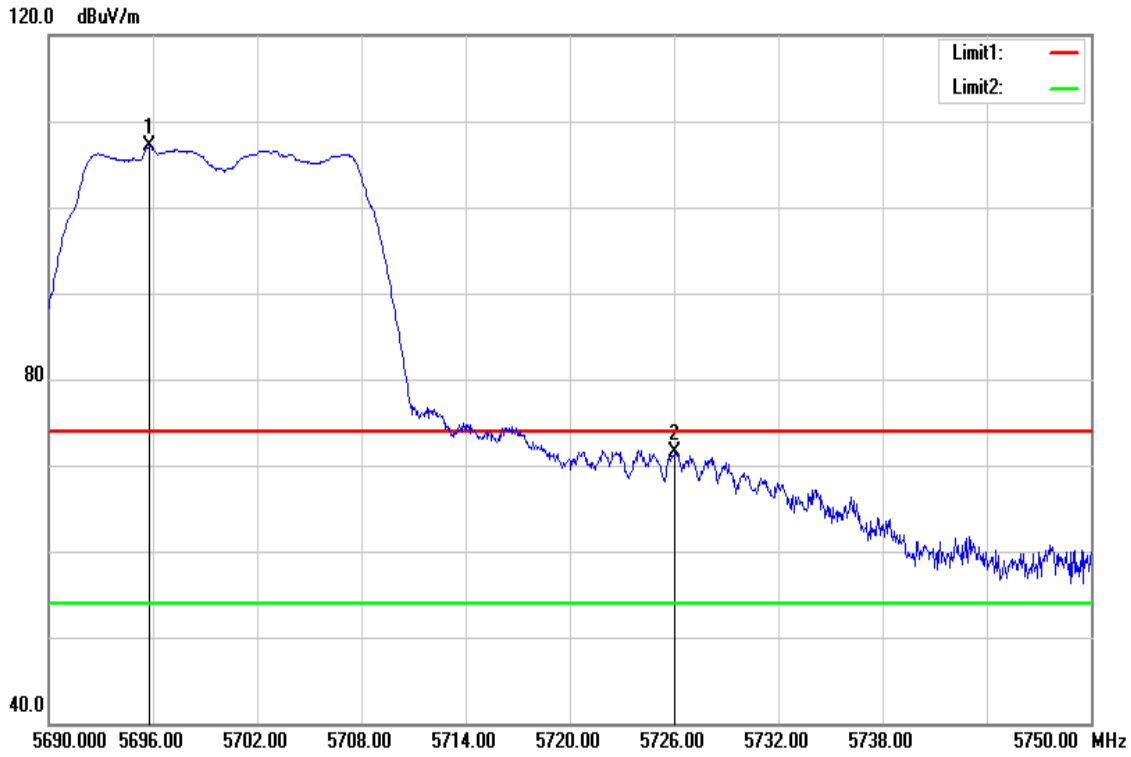
Test Mode	IEEE 802.11a / 5700 MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Band Edge	Test Date	May 31, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5695.820	100.61	6.44	107.05	-	-	peak
5726.060	64.97	6.52	71.49	74.00	-2.51	peak

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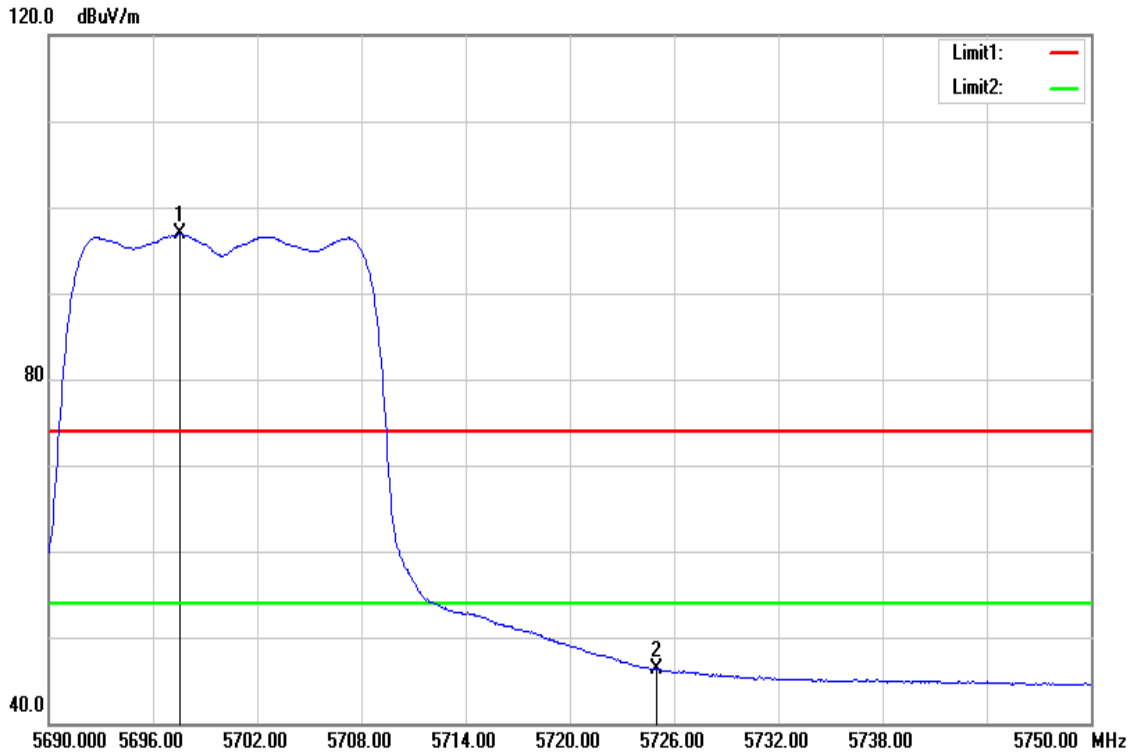
Test Mode	IEEE 802.11a / 5700 MHz	Temperature	22(℃)/ 34%RH
Test Item	Band Edge	Test Date	May 31, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5697.560	90.41	6.46	96.87	-	-	AVG
5725.000	39.72	6.52	46.24	54.00	-7.76	AVG

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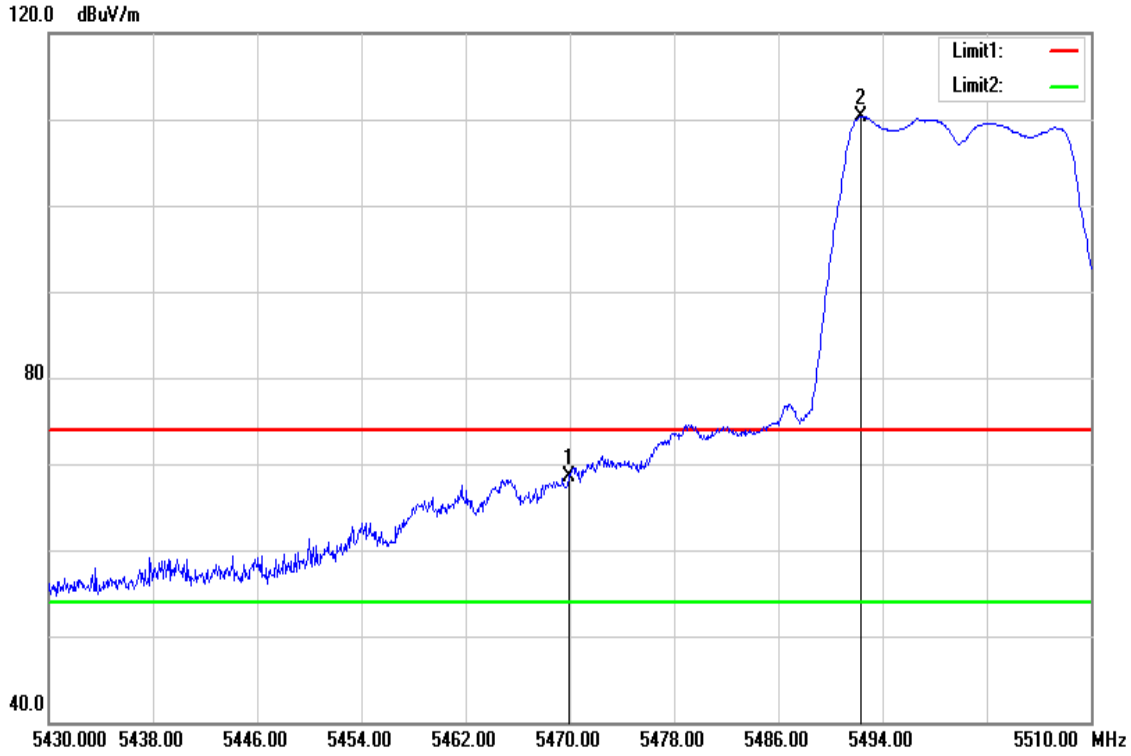
Test Mode	IEEE 802.11n 20 / 5500MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Band Edge	Test Date	May 31, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5469.920	62.72	5.85	68.57	74.00	-5.43	peak
5492.320	104.37	5.91	110.28	-	-	peak

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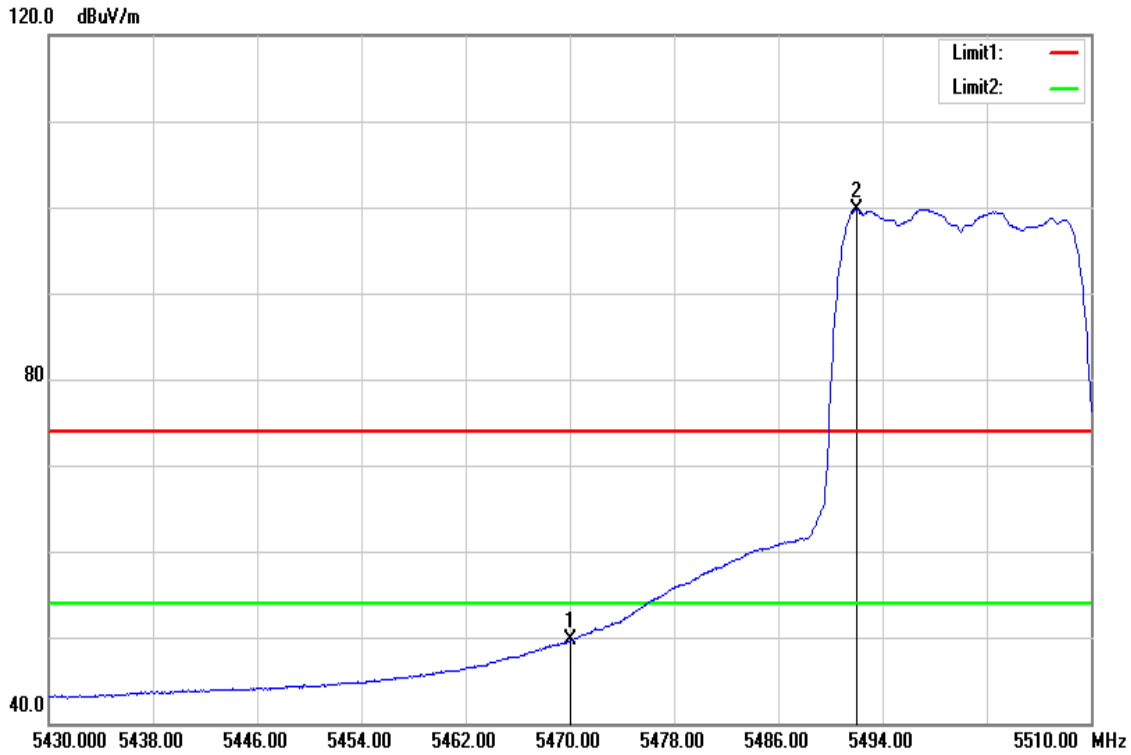
Test Mode	IEEE 802.11n 20 / 5500MHz	Temperature	22(℃)/ 34%RH
Test Item	Band Edge	Test Date	May 31, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5470.000	43.77	5.85	49.62	54.00	-4.38	AVG
5492.000	93.83	5.91	99.74	-	-	AVG

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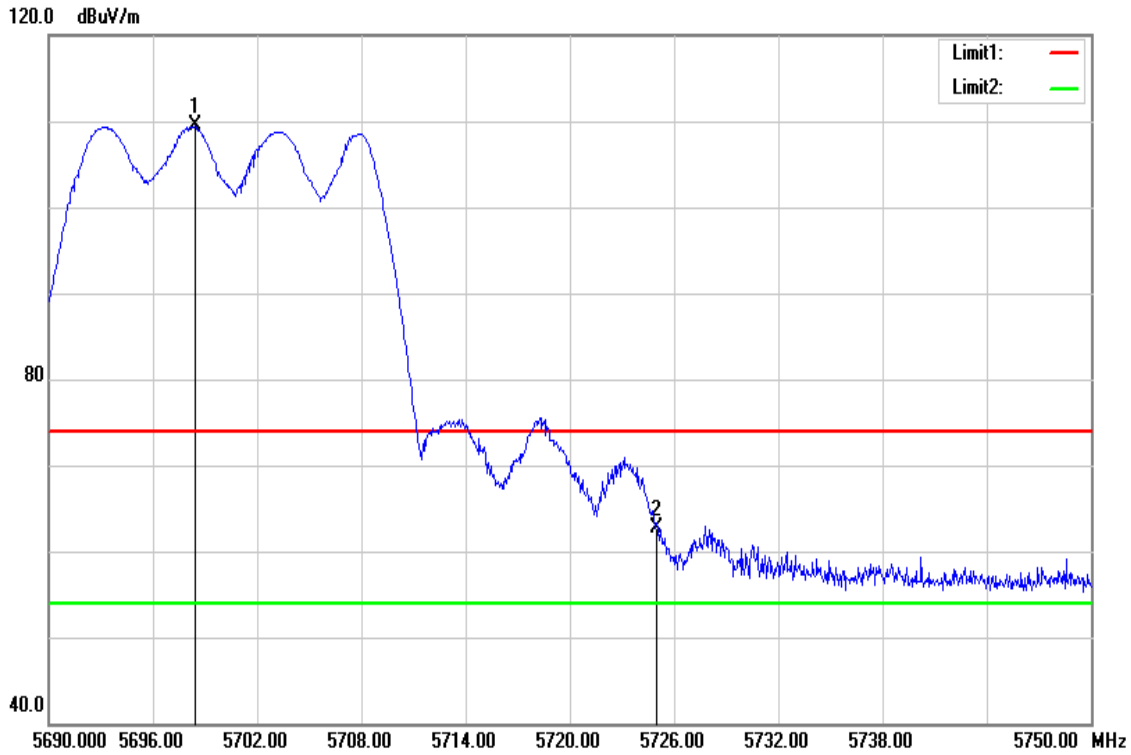
Test Mode	IEEE 802.11n 20 / 5700 MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Band Edge	Test Date	May 31, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5698.400	102.97	6.45	109.42	-	-	peak
5725.000	56.27	6.52	62.79	74.00	-11.21	peak

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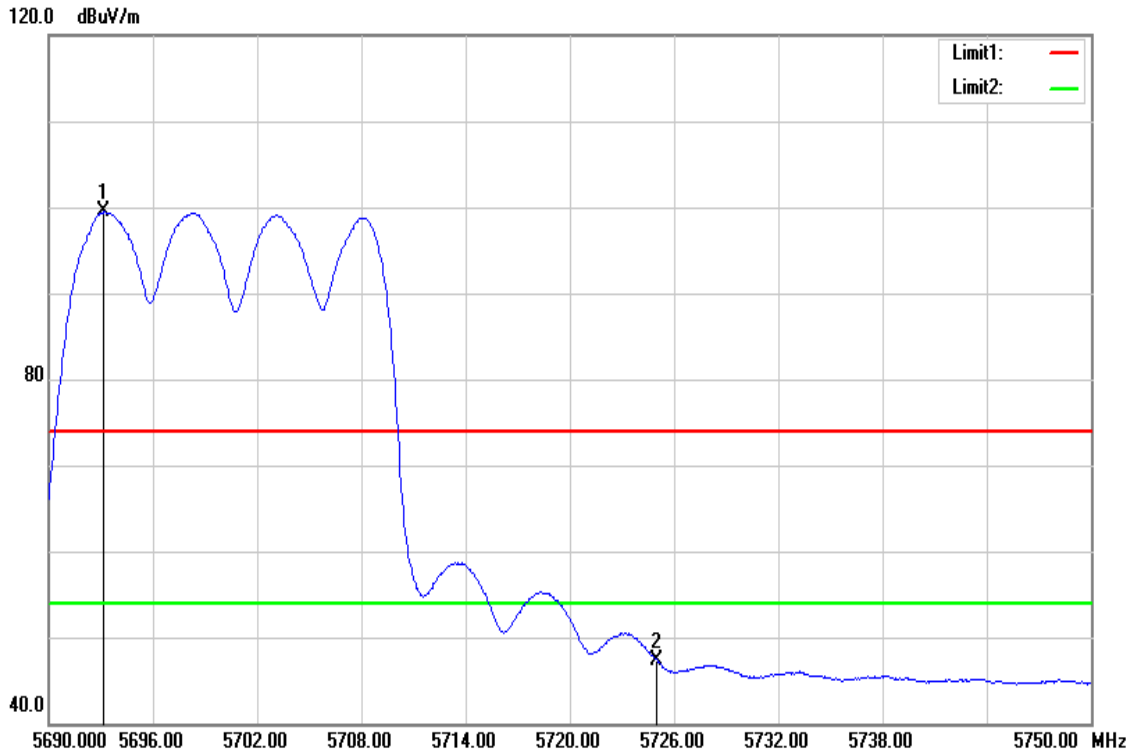
Test Mode	IEEE 802.11n 20 / 5700 MHz	Temperature	22(℃)/ 34%RH
Test Item	Band Edge	Test Date	May 31, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5693.180	92.97	6.44	99.41	-	-	AVG
5725.000	40.80	6.52	47.32	54.00	-6.68	AVG

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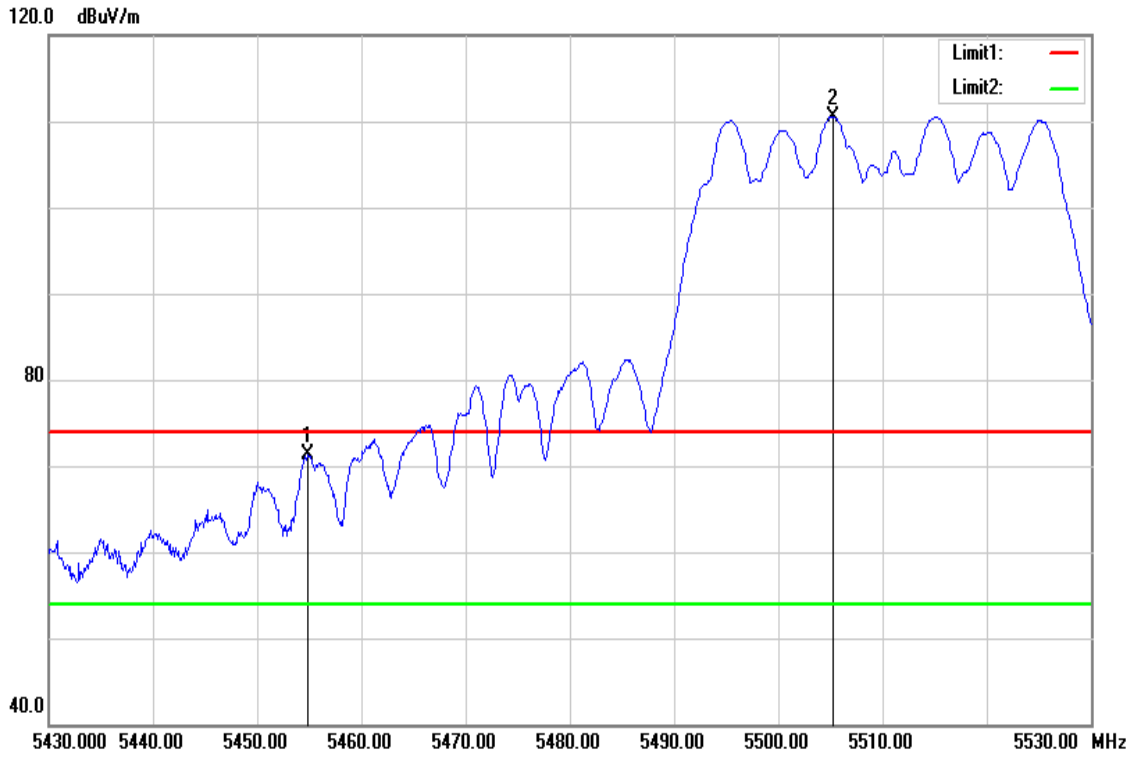
Test Mode	IEEE 802.11n 40 / 5510 MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Band Edge	Test Date	May 31, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5454.900	65.42	5.81	71.23	74.00	-2.77	peak
5505.200	104.59	5.95	110.54	-	-	peak

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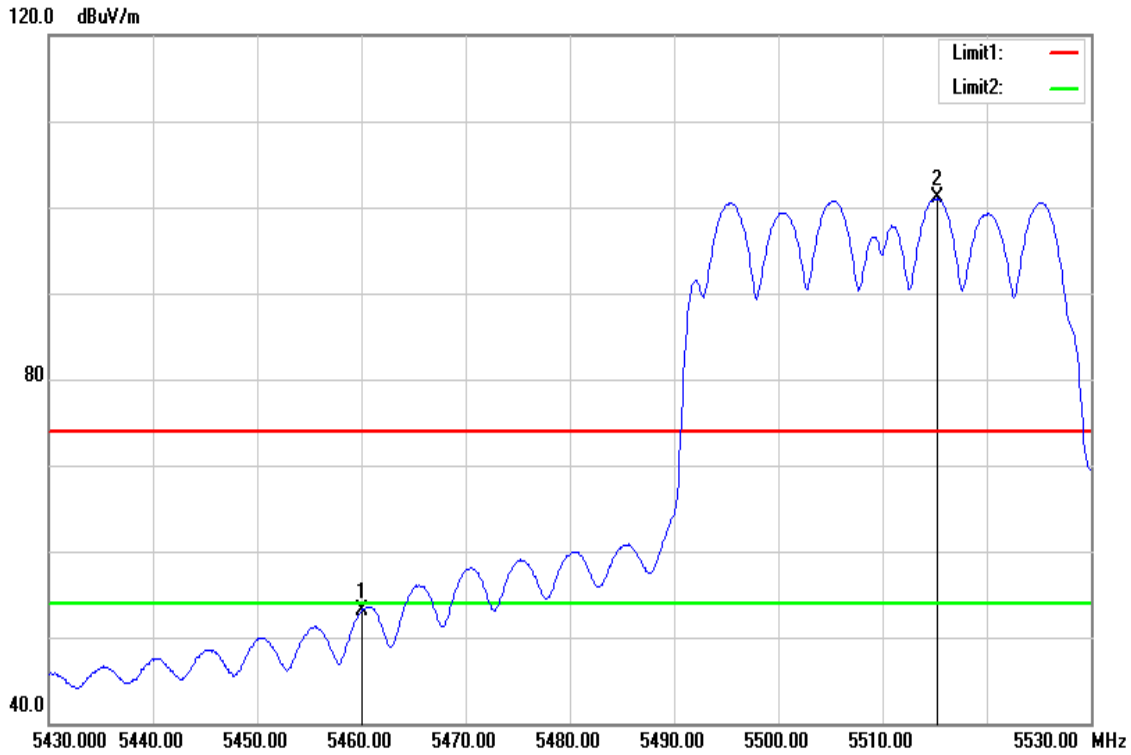
Test Mode	IEEE 802.11n 40 / 5510 MHz	Temperature	22(℃)/ 34%RH
Test Item	Band Edge	Test Date	May 31, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5460.000	47.26	5.83	53.09	54.00	-0.91	AVG
5515.200	95.04	5.97	101.01	-	-	AVG

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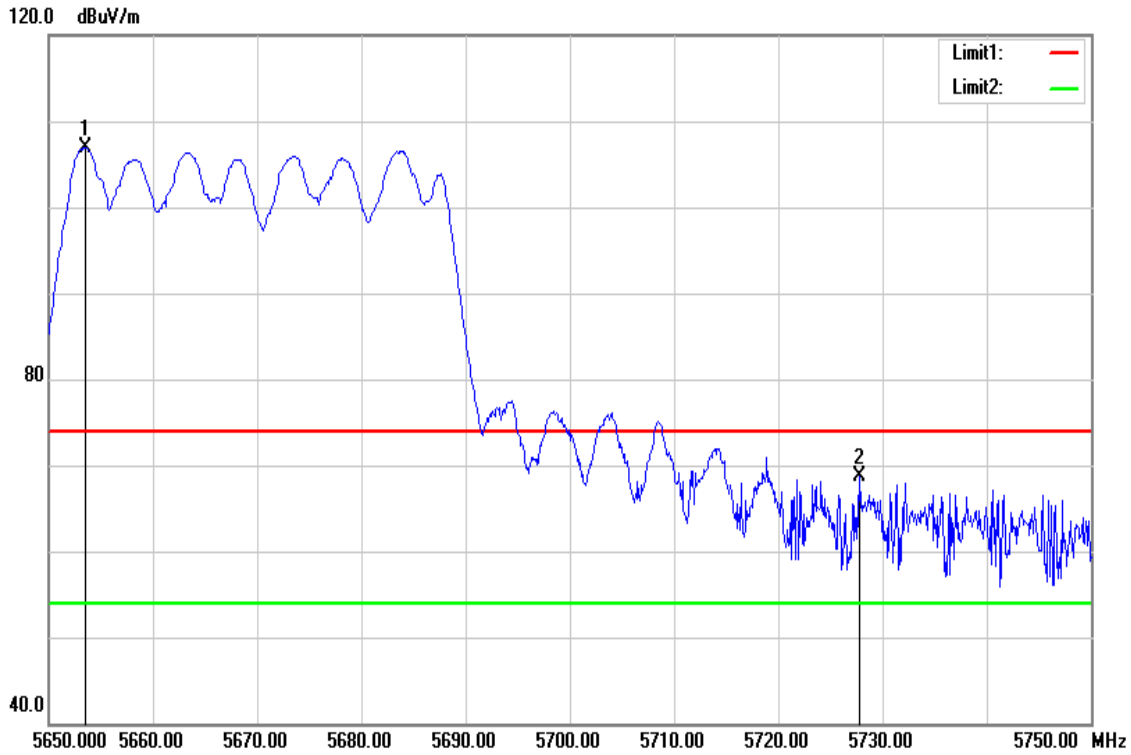
Test Mode	IEEE 802.11n 40 / 5670 MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Band Edge	Test Date	May 31, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5653.500	100.67	6.33	107.00	-	-	peak
5727.800	62.26	6.53	68.79	74.00	-5.21	peak

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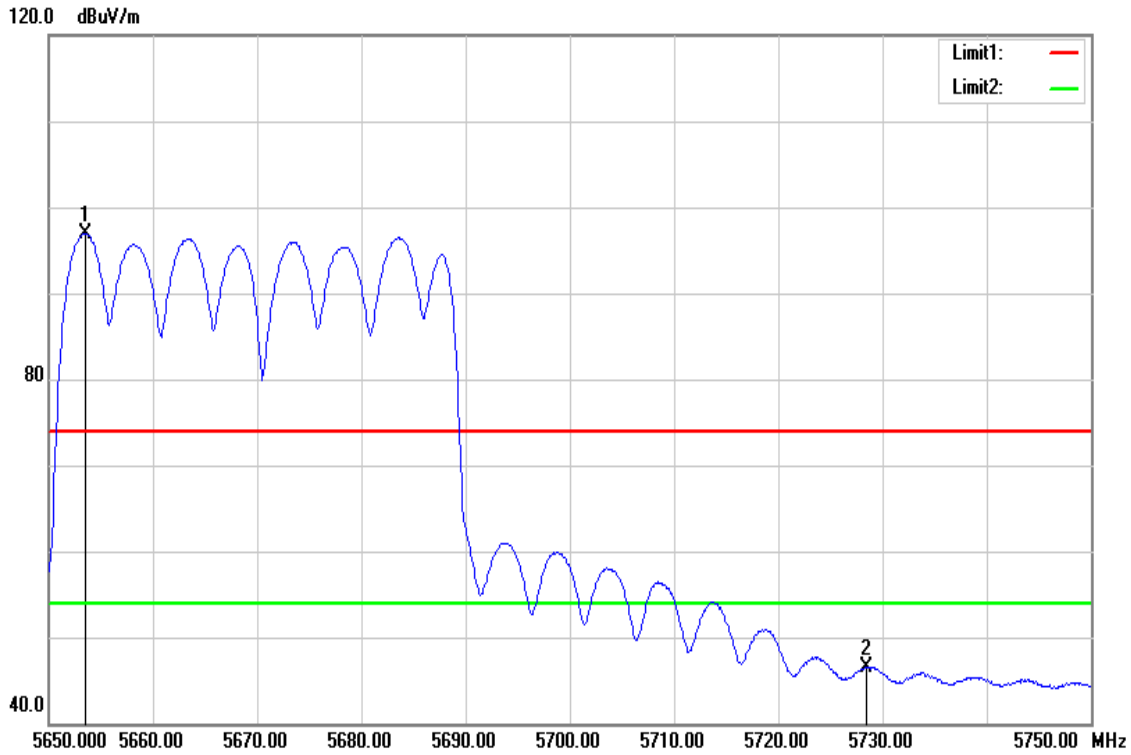
Test Mode	IEEE 802.11n 40 / 5670 MHz	Temperature	22(℃)/ 34%RH
Test Item	Band Edge	Test Date	May 31, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5653.500	90.63	6.33	96.96	-	-	AVG
5728.400	40.06	6.53	46.59	54.00	-7.41	AVG

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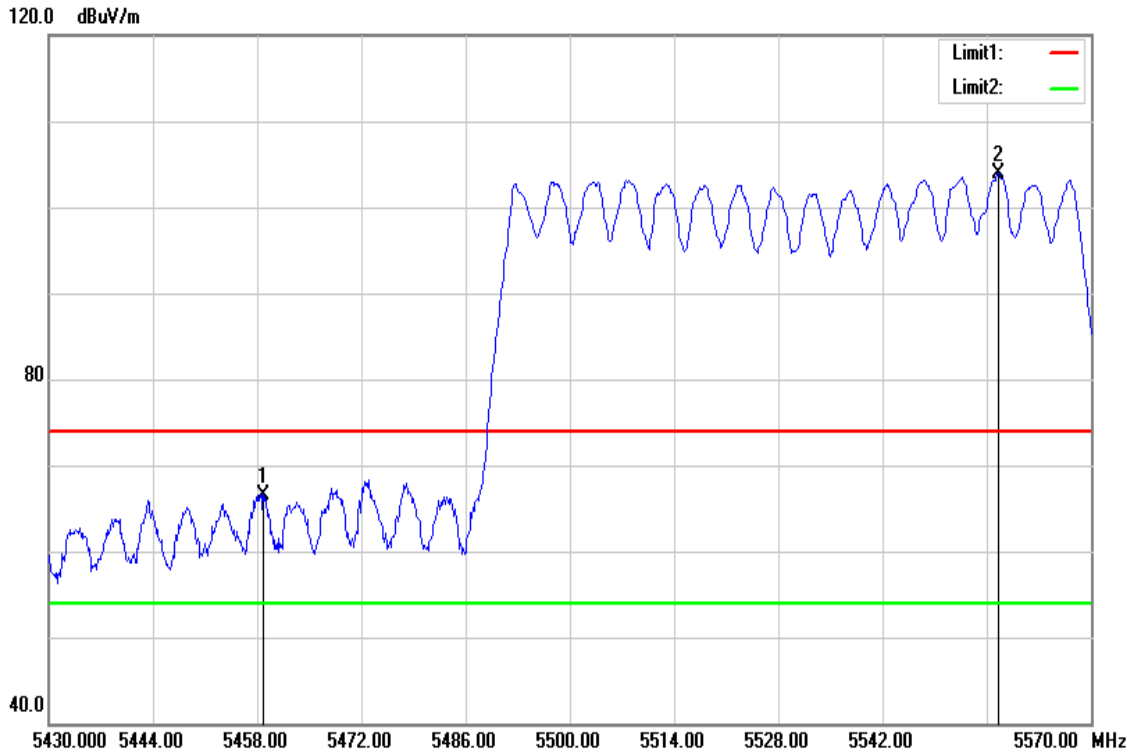
Test Mode	IEEE 802.11ac VHT80 / 5530 MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Band Edge	Test Date	May 31, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5458.840	60.77	5.83	66.60	74.00	-7.40	peak
5557.540	97.88	6.09	103.97	-	-	peak

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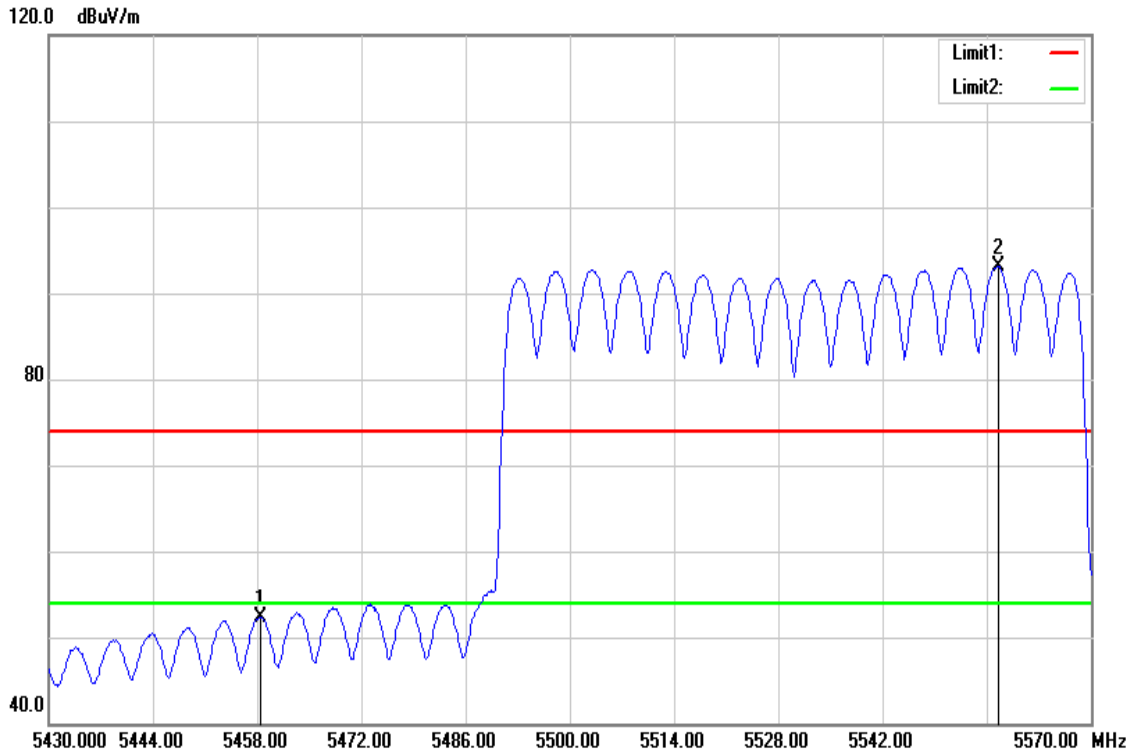
Test Mode	IEEE 802.11ac VHT80 / 5530 MHz	Temperature	22(℃)/ 34%RH
Test Item	Band Edge	Test Date	May 31, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5458.420	46.57	5.83	52.40	54.00	-1.60	AVG
5557.540	87.01	6.09	93.10	-	-	AVG

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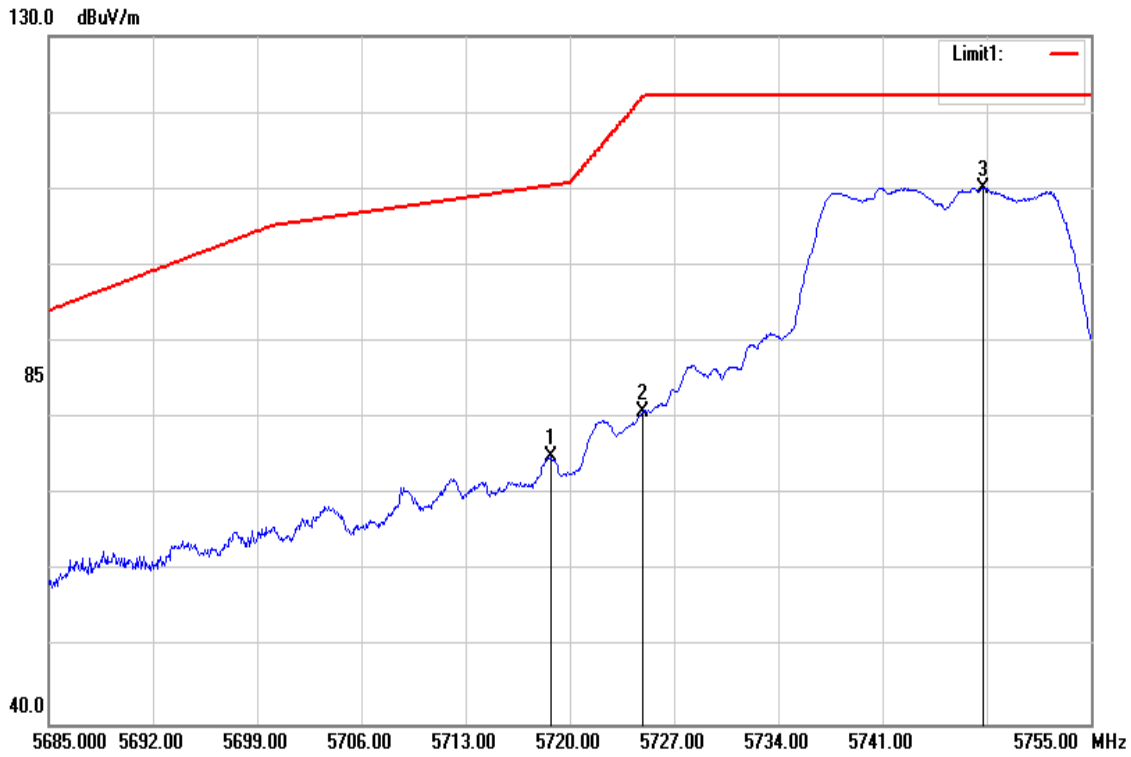
Band Edge Test Data for UNII-3

Test Mode	IEEE 802.11a / 5745 MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Band Edge	Test Date	May 31, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5718.740	68.44	6.50	74.94	110.45	-35.51	peak
5724.900	74.42	6.52	80.94	121.97	-41.03	peak
5747.790	103.57	6.59	110.16	-	-	peak

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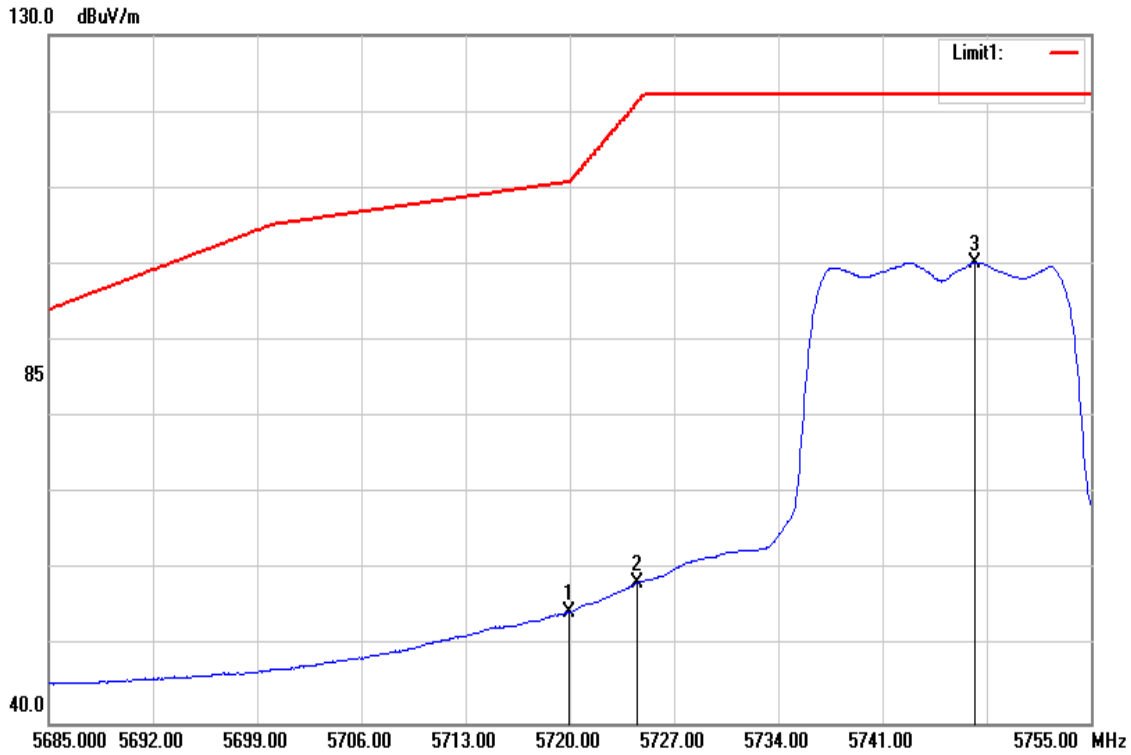
Test Mode	IEEE 802.11a / 5745 MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Band Edge	Test Date	May 31, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5719.930	47.99	6.50	54.49	110.78	-56.29	AVG
5724.550	51.92	6.52	58.44	121.17	-62.73	AVG
5747.230	93.72	6.58	100.30	-	-	AVG

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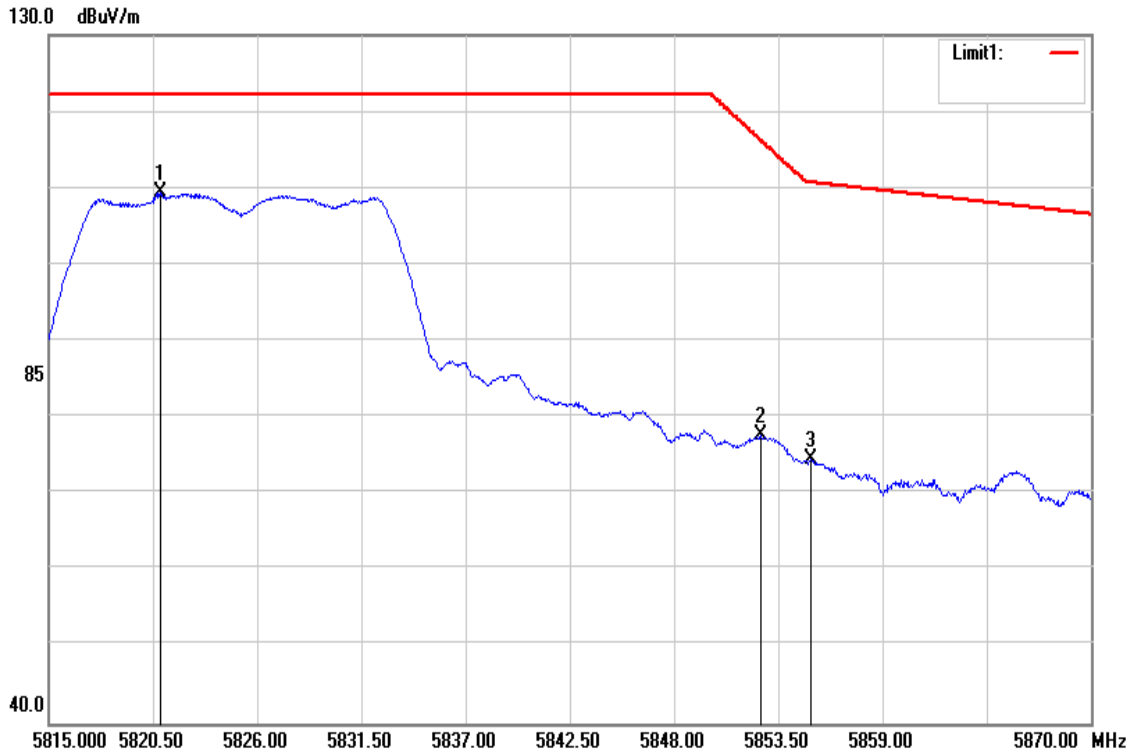
Test Mode	IEEE 802.11a / 5825 MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Band Edge	Test Date	May 31, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5820.885	102.67	6.77	109.44	-	-	peak
5852.565	70.84	6.86	77.70	116.35	-38.65	peak
5855.205	67.58	6.86	74.44	110.74	-36.30	peak

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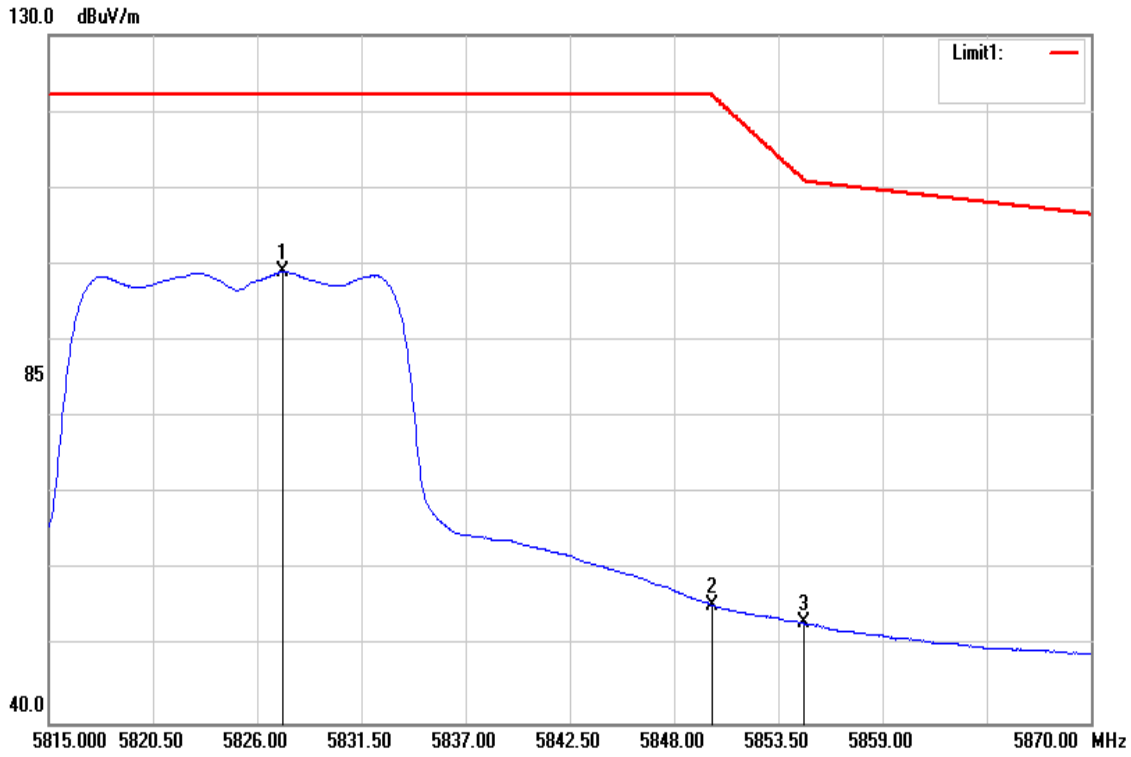
Test Mode	IEEE 802.11a / 5825 MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Band Edge	Test Date	May 31, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5827.375	92.30	6.78	99.08	-	-	AVG
5849.980	48.67	6.85	55.52	122.20	-66.68	AVG
5854.820	46.20	6.86	53.06	111.21	-58.15	AVG

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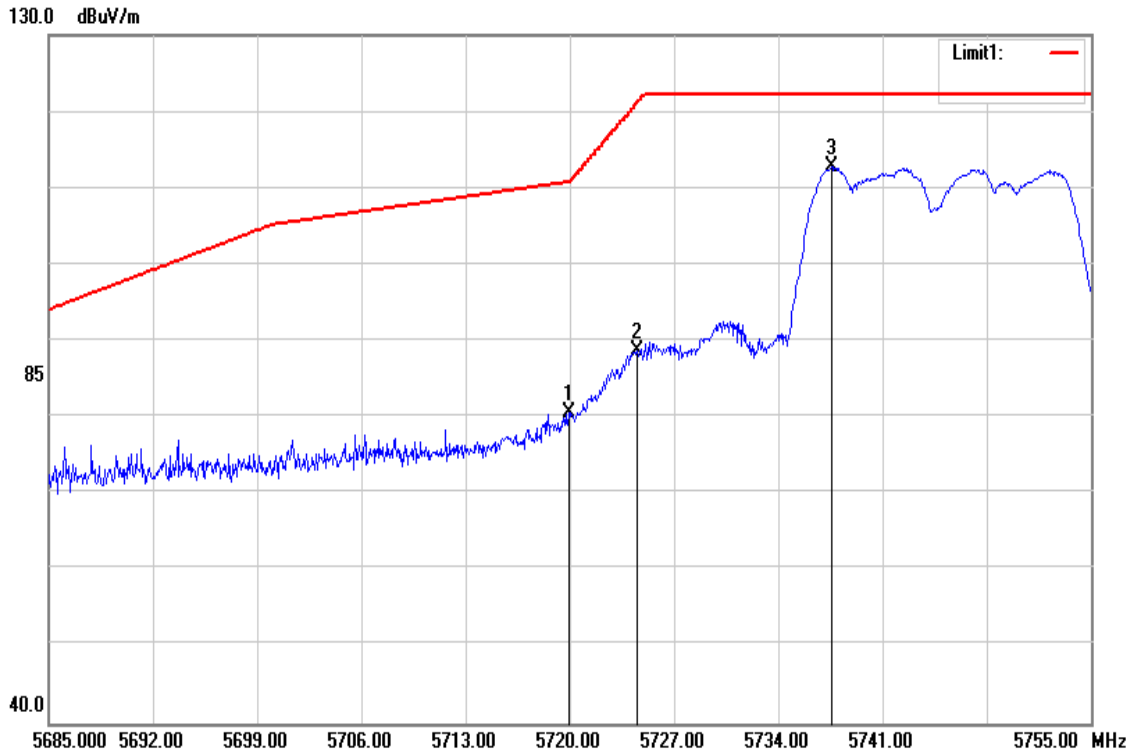
Test Mode	IEEE 802.11n 20 / 5745 MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Band Edge	Test Date	May 31, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5719.930	74.05	6.50	80.55	110.78	-30.23	peak
5724.480	82.12	6.52	88.64	121.01	-32.37	peak
5737.570	106.18	6.56	112.74	-	-	peak

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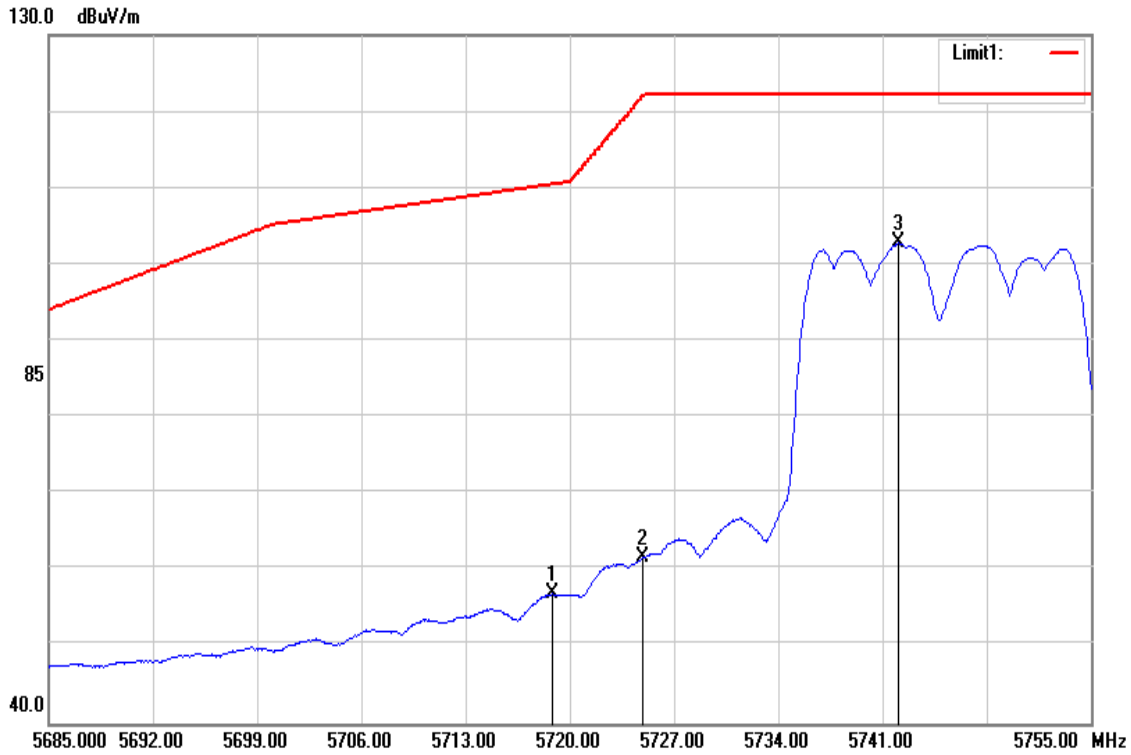
Test Mode	IEEE 802.11n 20 / 5745 MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Band Edge	Test Date	May 31, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5718.810	50.41	6.50	56.91	110.47	-53.56	AVG
5724.900	55.11	6.52	61.63	121.97	-60.34	AVG
5742.050	96.25	6.56	102.81	-	-	AVG

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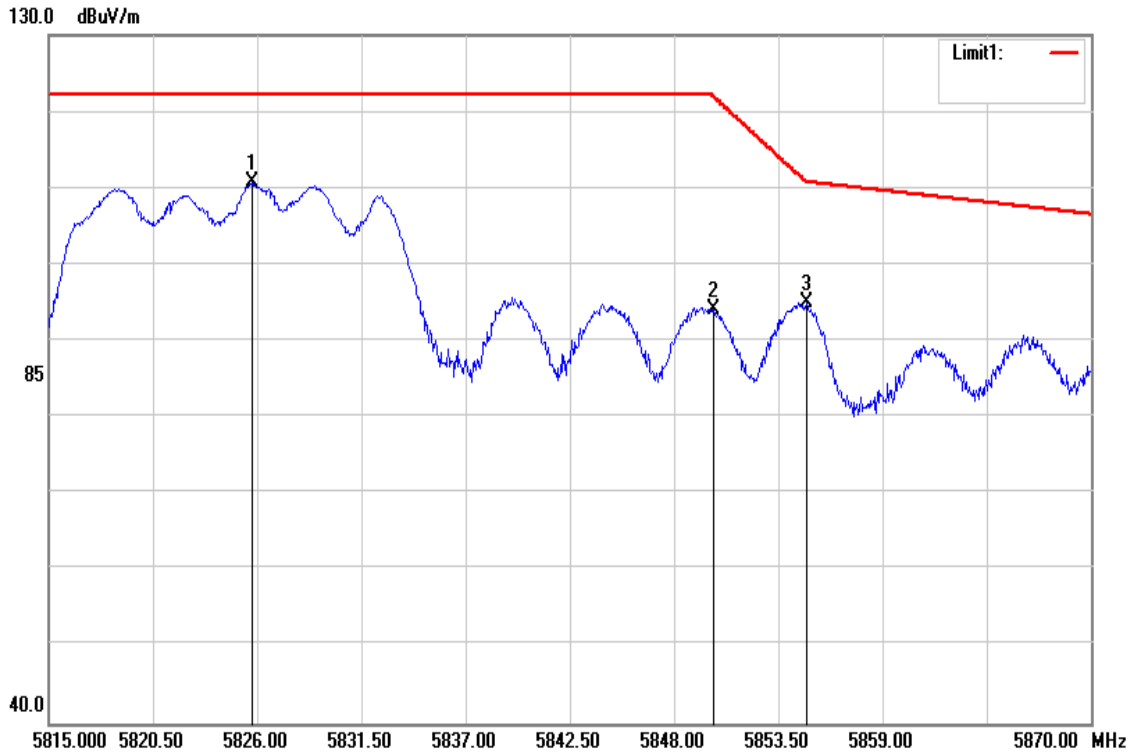
Test Mode	IEEE 802.11n 20 / 5825 MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Band Edge	Test Date	May 31, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5825.725	103.91	6.78	110.69	-	-	peak
5850.090	87.30	6.85	94.15	121.99	-27.84	peak
5854.985	88.06	6.86	94.92	110.83	-15.91	peak

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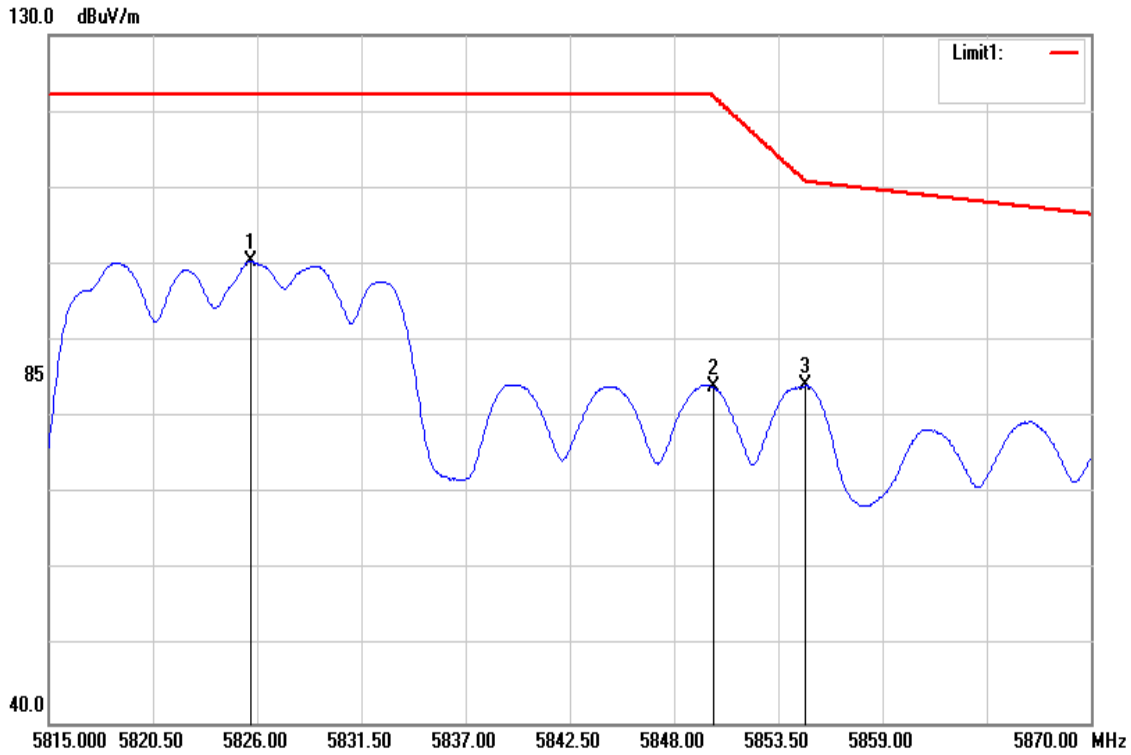
Test Mode	IEEE 802.11n 20 / 5825 MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Band Edge	Test Date	May 31, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5825.670	93.65	6.78	100.43	-	-	AVG
5850.090	77.07	6.85	83.92	121.99	-38.07	AVG
5854.930	77.26	6.86	84.12	110.96	-26.84	AVG

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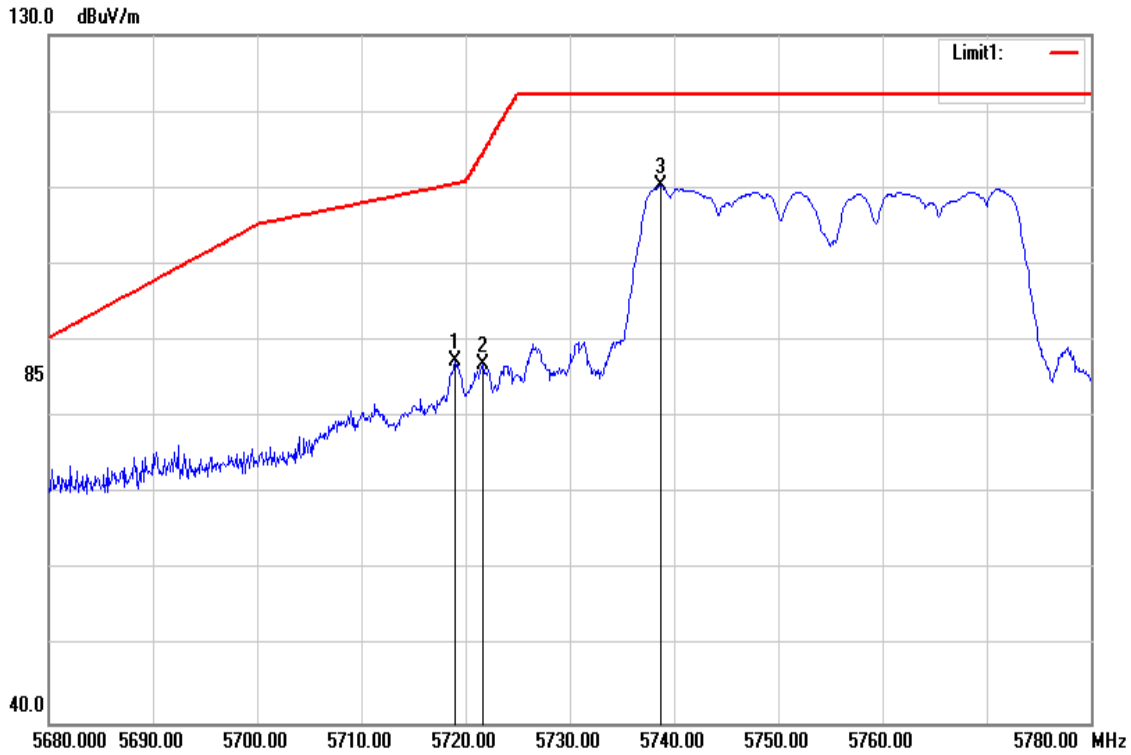
Test Mode	IEEE 802.11n 40/ 5755 MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Band Edge	Test Date	May 31, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5719.000	80.85	6.50	87.35	110.52	-23.17	peak
5721.700	80.36	6.51	86.87	114.68	-27.81	peak
5738.700	103.74	6.56	110.30	-	-	peak

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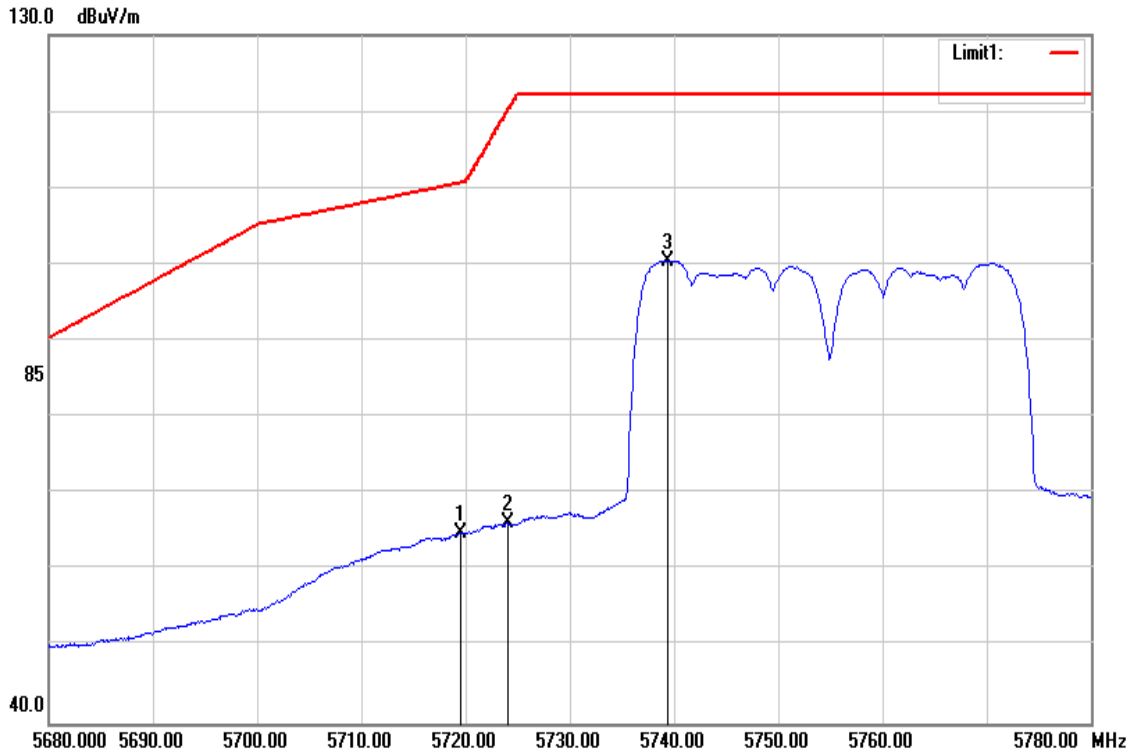
Test Mode	IEEE 802.11n 40/ 5755 MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Band Edge	Test Date	May 31, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5719.500	58.34	6.50	64.84	110.66	-45.82	AVG
5724.000	59.67	6.52	66.19	119.92	-53.73	AVG
5739.400	93.94	6.56	100.50	-	-	AVG

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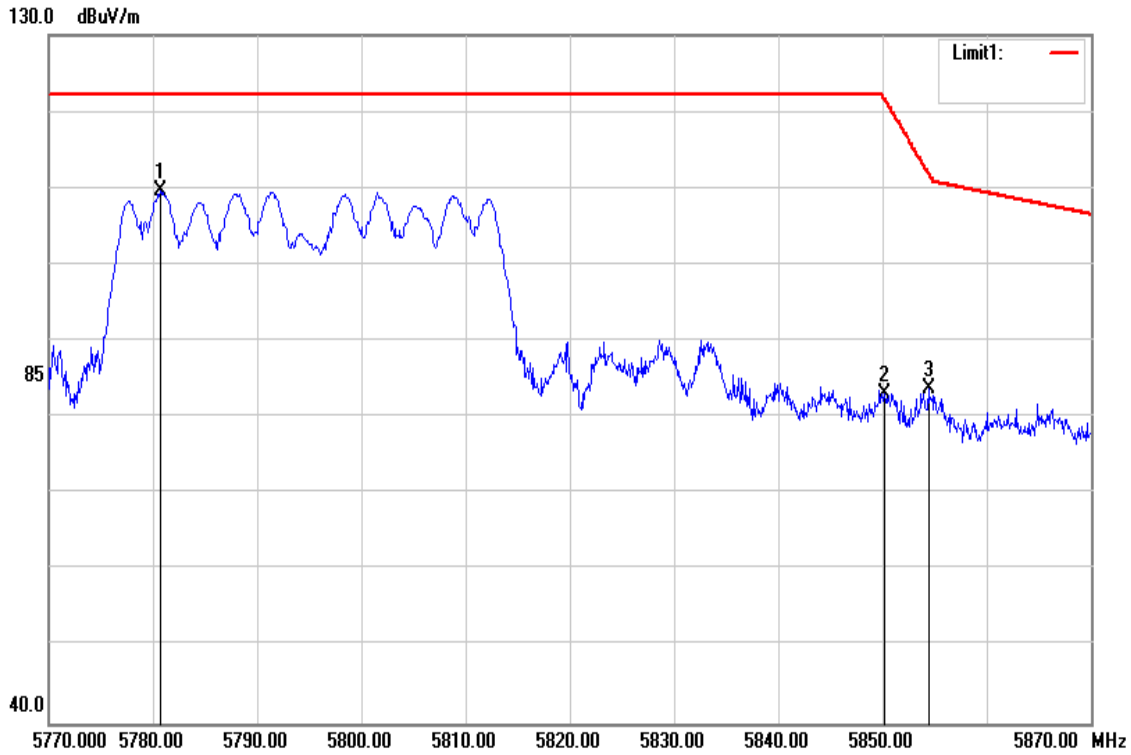
Test Mode	IEEE 802.11n 40/ 5795 MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Band Edge	Test Date	May 31, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5780.700	102.90	6.67	109.57	-	-	peak
5850.200	76.24	6.85	83.09	121.74	-38.65	peak
5854.400	76.81	6.86	83.67	112.17	-28.50	peak

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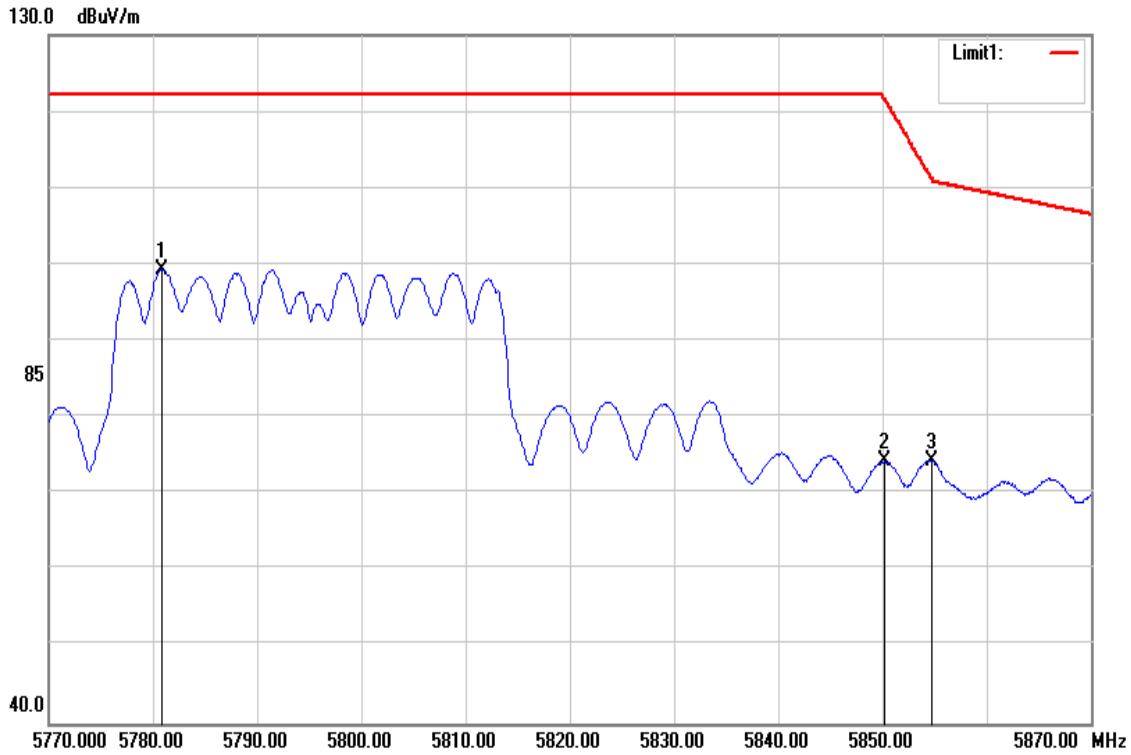
Test Mode	IEEE 802.11n 40/ 5795 MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Band Edge	Test Date	May 31, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5780.900	92.69	6.67	99.36	-	-	AVG
5850.200	67.38	6.85	74.23	121.74	-47.51	AVG
5854.700	67.52	6.86	74.38	111.48	-37.10	AVG

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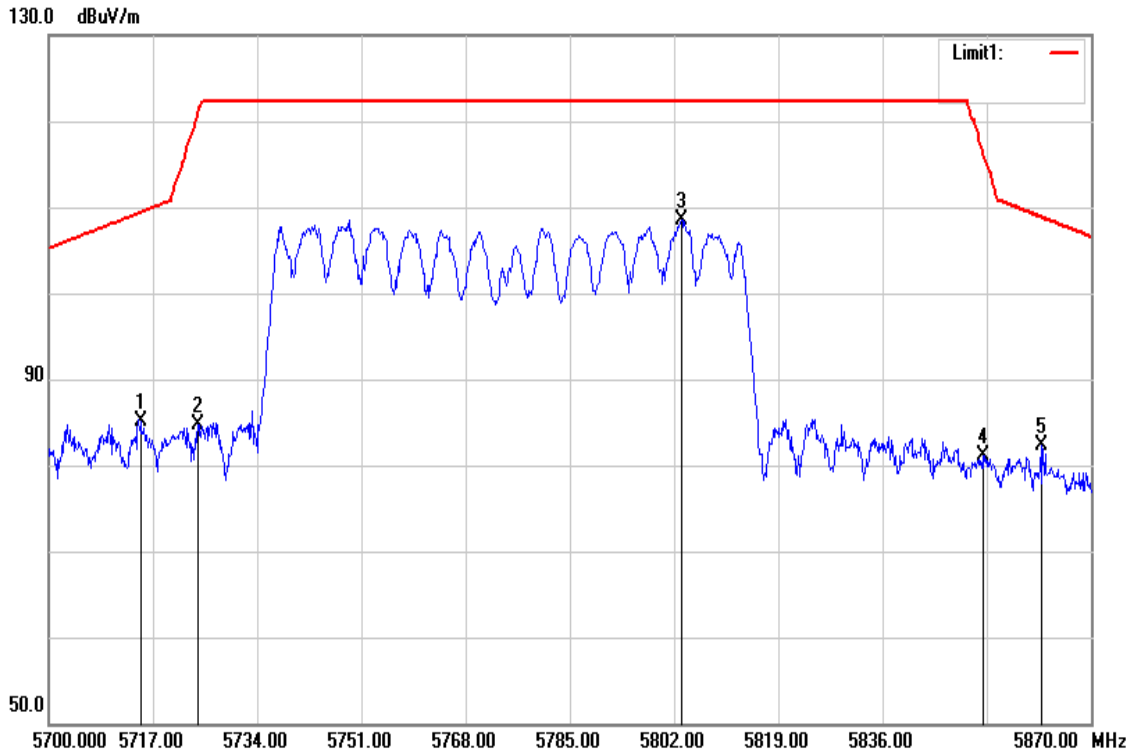
Test Mode	IEEE 802.11ac VHT80 / 5775 MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Band Edge	Test Date	May 31, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5714.960	78.52	6.50	85.02	109.39	-24.37	peak
5724.310	78.25	6.52	84.77	120.63	-35.86	peak
5803.190	101.83	6.72	108.55	-	-	peak
5852.320	74.32	6.85	81.17	116.91	-35.74	peak
5861.840	75.38	6.87	82.25	108.88	-26.63	peak

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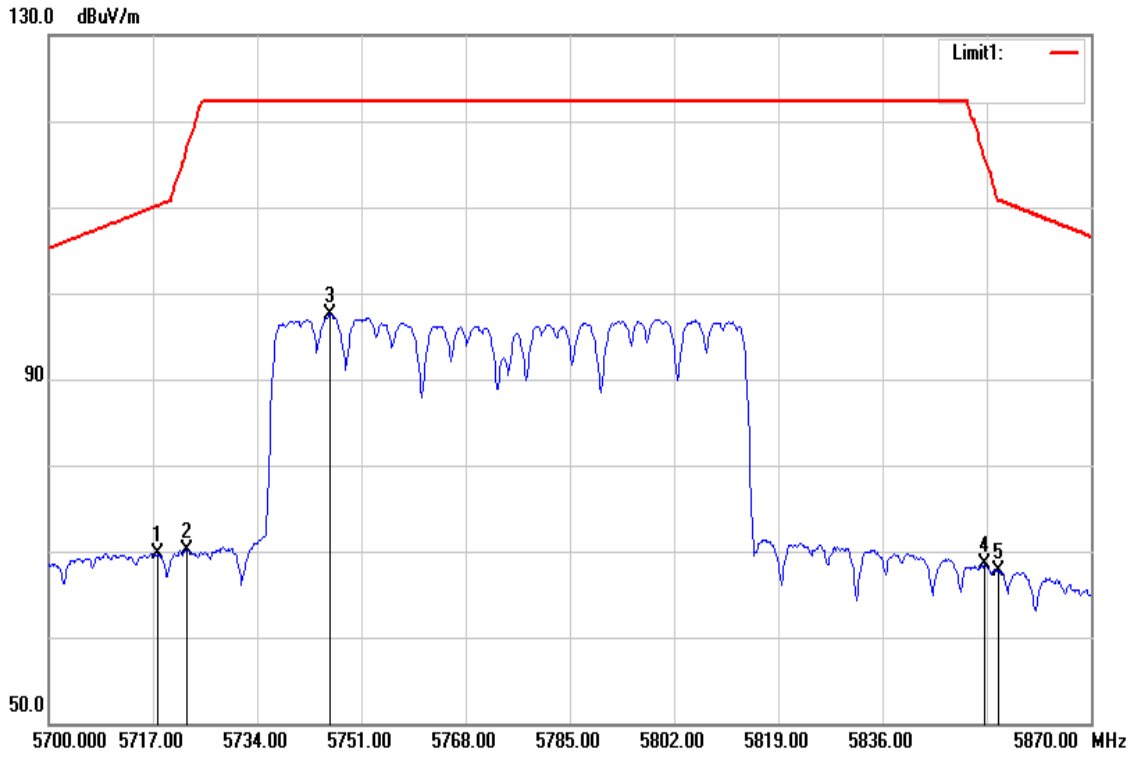
Test Mode	IEEE 802.11ac VHT80 / 5775 MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Band Edge	Test Date	May 31, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5717.680	63.16	6.50	69.66	110.15	-40.49	AVG
5722.610	63.67	6.52	70.19	116.75	-46.56	AVG
5745.900	90.87	6.58	97.45	-	-	AVG
5852.660	61.58	6.86	68.44	116.14	-47.70	AVG
5854.870	60.80	6.86	67.66	111.10	-43.44	AVG

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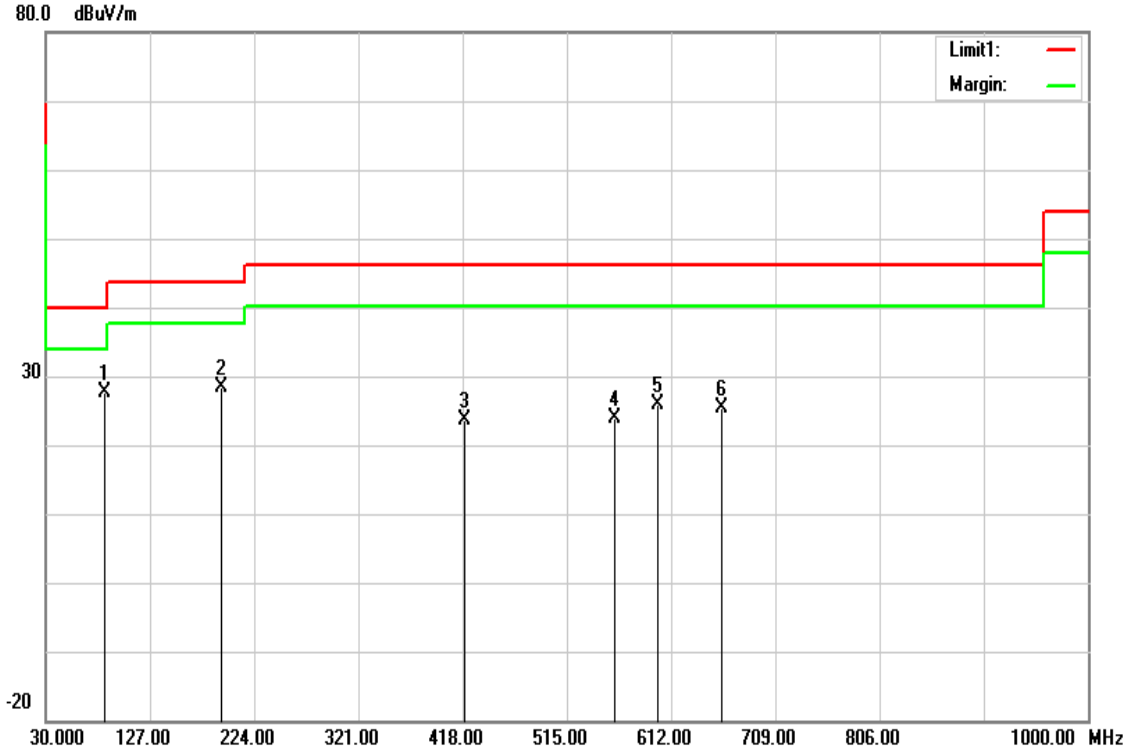
Below 1G Test Data

Test Mode	IEEE 802.11ac VHT80 / 5210MHZ	Temp/Hum	22(℃)/ 34%RH
Test Item	30MHz-1GHz	Test Date	February 26, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak and Quasi-peak	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
85.2900	49.01	-21.37	27.64	40.00	-12.36	peak
193.4450	44.35	-15.91	28.44	43.52	-15.08	peak
419.9400	34.18	-10.67	23.51	46.02	-22.51	peak
559.6200	31.24	-7.43	23.81	46.02	-22.21	peak
599.8750	32.92	-6.93	25.99	46.02	-20.03	peak
660.0150	30.83	-5.42	25.41	46.02	-20.61	peak

***Note**: No emission found between lowest internal used/generated frequency to 30MHz(9KHz~30MHz)*

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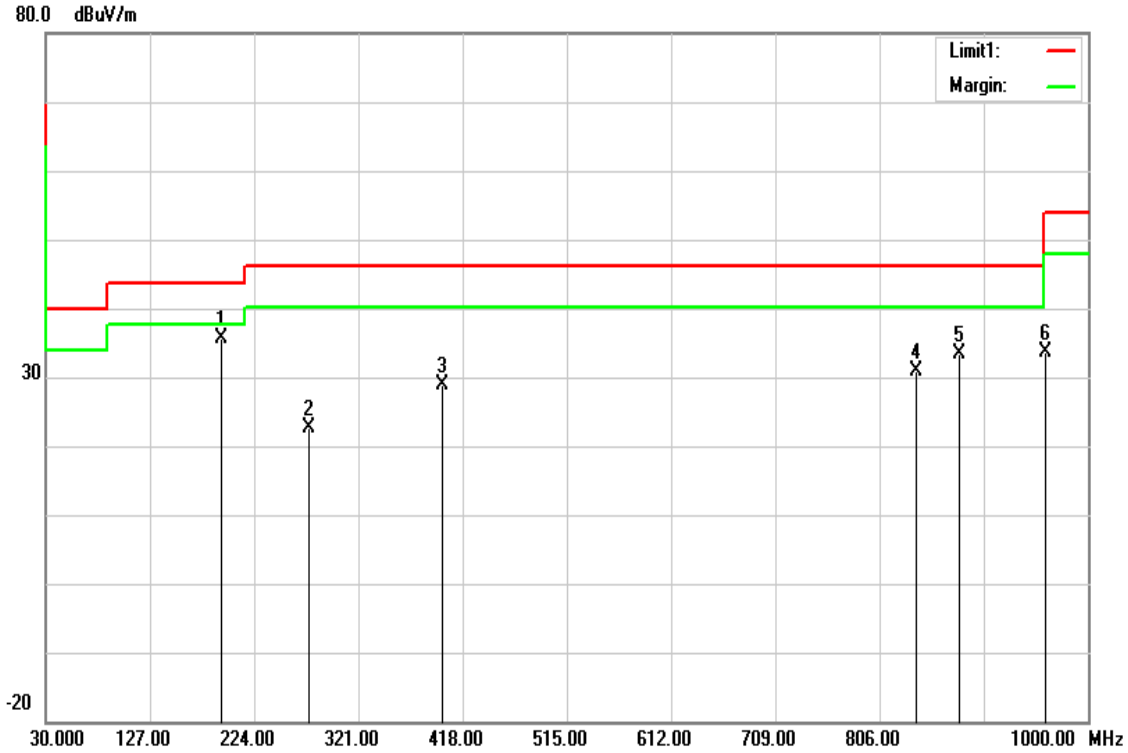
Test Mode	IEEE 802.11ac VHT80 / 5210MHZ	Temp/Hum	22(℃)/ 34%RH
Test Item	30MHz-1GHz	Test Date	February 26, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak and Quasi-peak	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
193.4450	51.49	-15.91	35.58	43.52	-7.94	QP
275.8950	37.24	-14.53	22.71	46.02	-23.31	peak
398.6000	40.30	-11.44	28.86	46.02	-17.16	peak
839.9500	33.90	-2.96	30.94	46.02	-15.08	peak
880.2050	35.73	-2.35	33.38	46.02	-12.64	peak
960.2300	34.73	-1.08	33.65	54.00	-20.35	peak

***Note**: No emission found between lowest internal used/generated frequency to 30MHz(9KHz~30MHz)*

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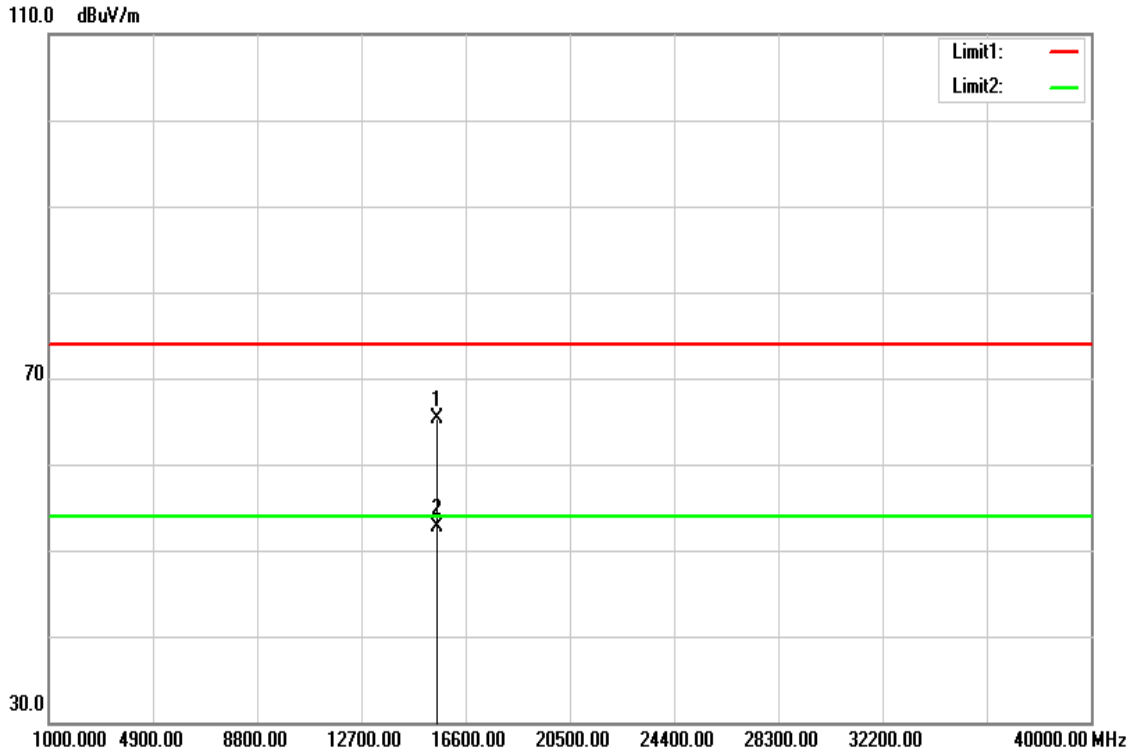
Above 1G Test Data for UNII-1

Test Mode	IEEE 802.11a / 5180MHZ	Temp/Hum	22(℃)/ 34%RH
Test Item	Harmonic	Test Date	June 4, 2018
Polarize	Vertical	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
15550.000	46.55	18.71	65.26	74.00	-8.74	peak
15550.000	33.92	18.71	52.63	54.00	-1.37	AVG
N/A						

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

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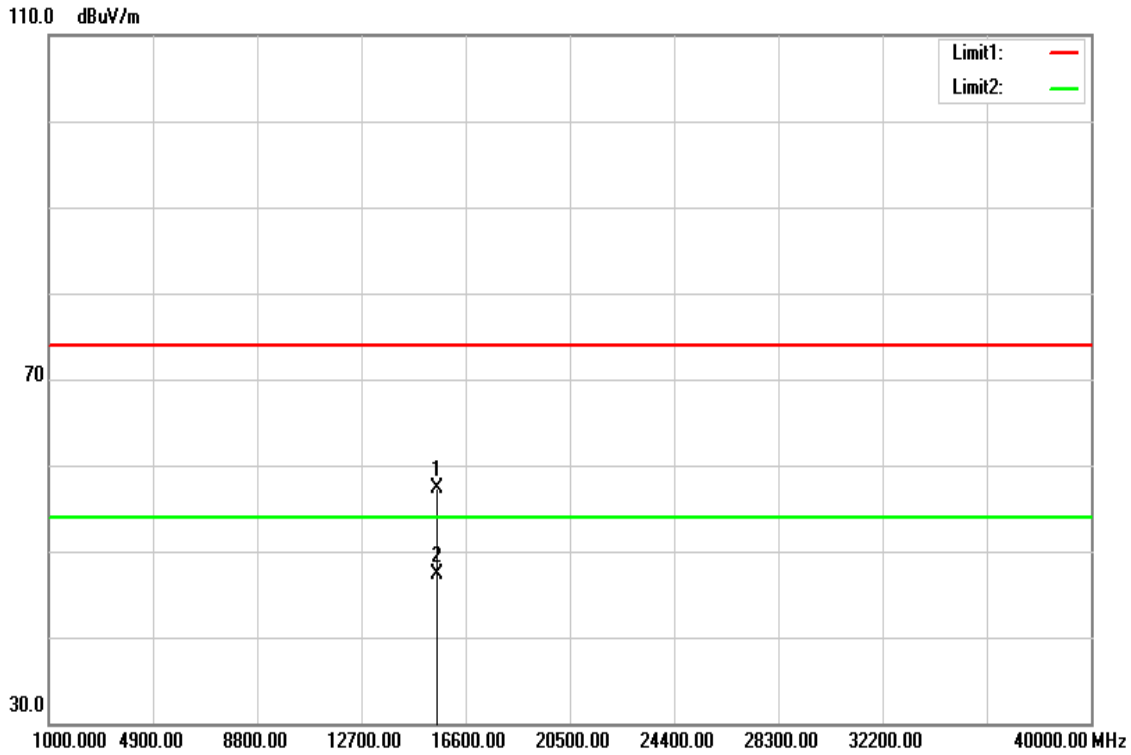
Test Mode	IEEE 802.11a/ 5180MHZ	Temp/Hum	22(℃)/ 34%RH
Test Item	Harmonic	Test Date	June 4, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
15550.000	38.60	18.71	57.31	74.00	-16.69	peak
15550.000	28.54	18.71	47.25	54.00	-6.75	AVG
N/A						

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

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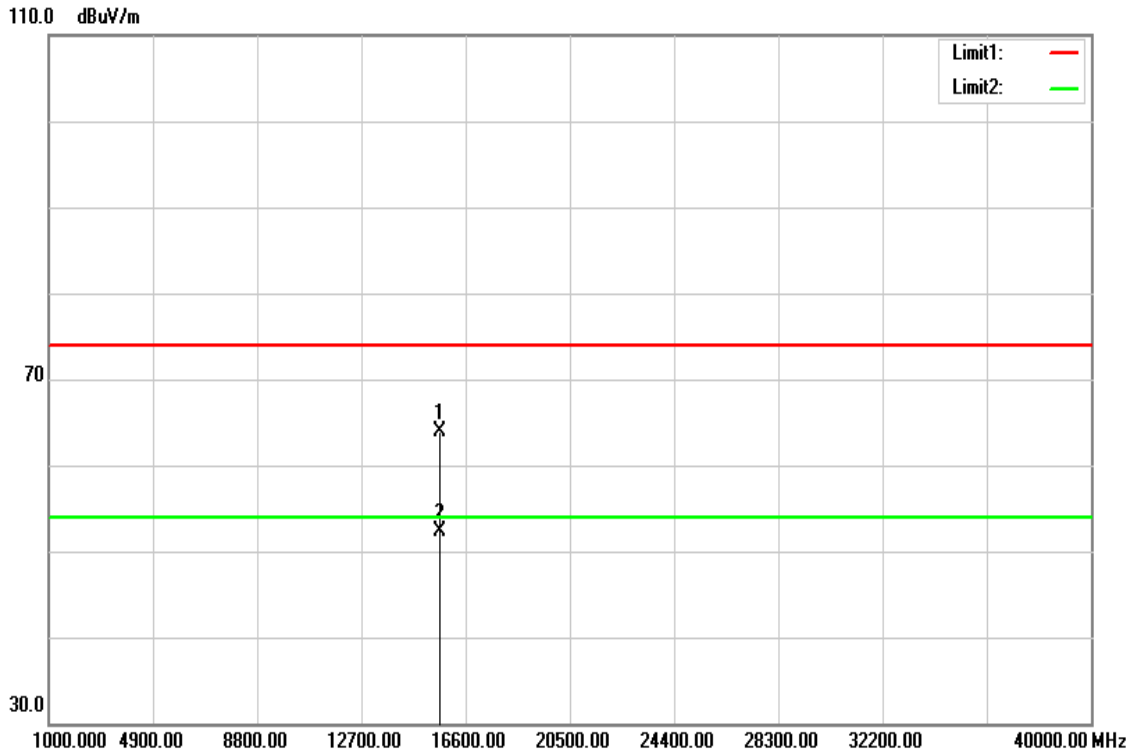
Test Mode	IEEE 802.11a / 5220MHZ	Temp/Hum	22(℃)/ 34%RH
Test Item	Harmonic	Test Date	June 4, 2018
Polarize	Vertical	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
15660.000	44.96	19.03	63.99	74.00	-10.01	peak
15660.000	33.27	19.03	52.30	54.00	-1.70	AVG
N/A						

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

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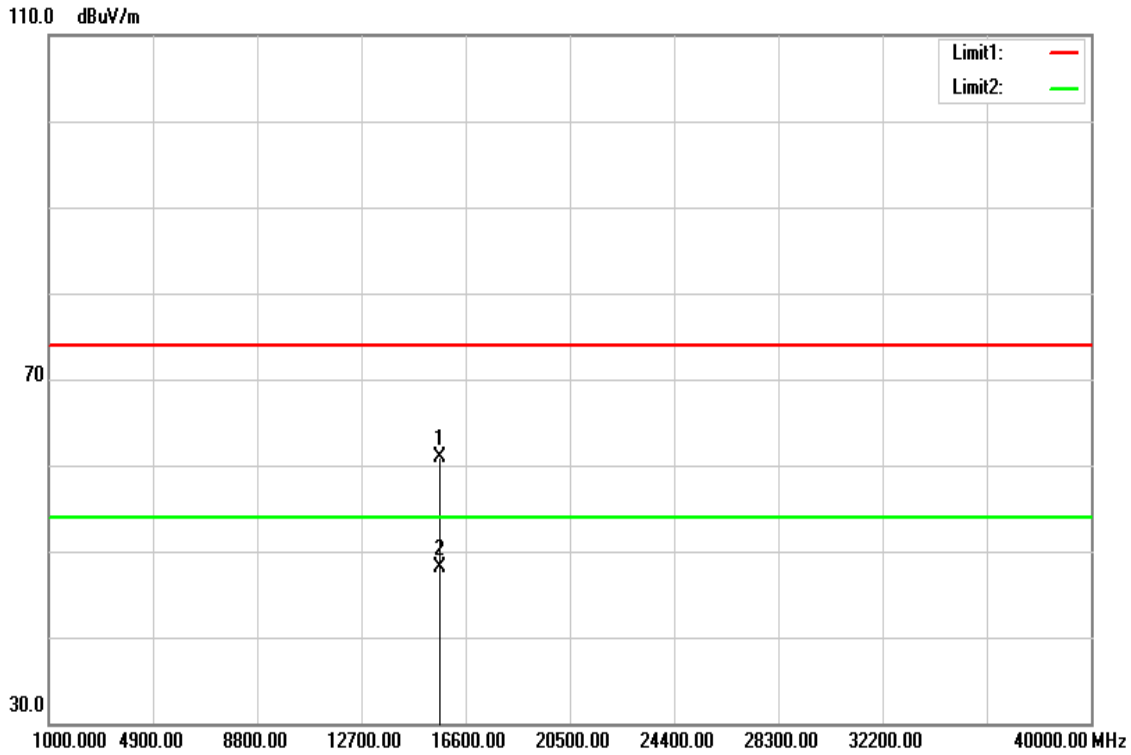
Test Mode	IEEE 802.11a / 5220MHZ	Temp/Hum	22(℃)/ 34%RH
Test Item	Harmonic	Test Date	June 4, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



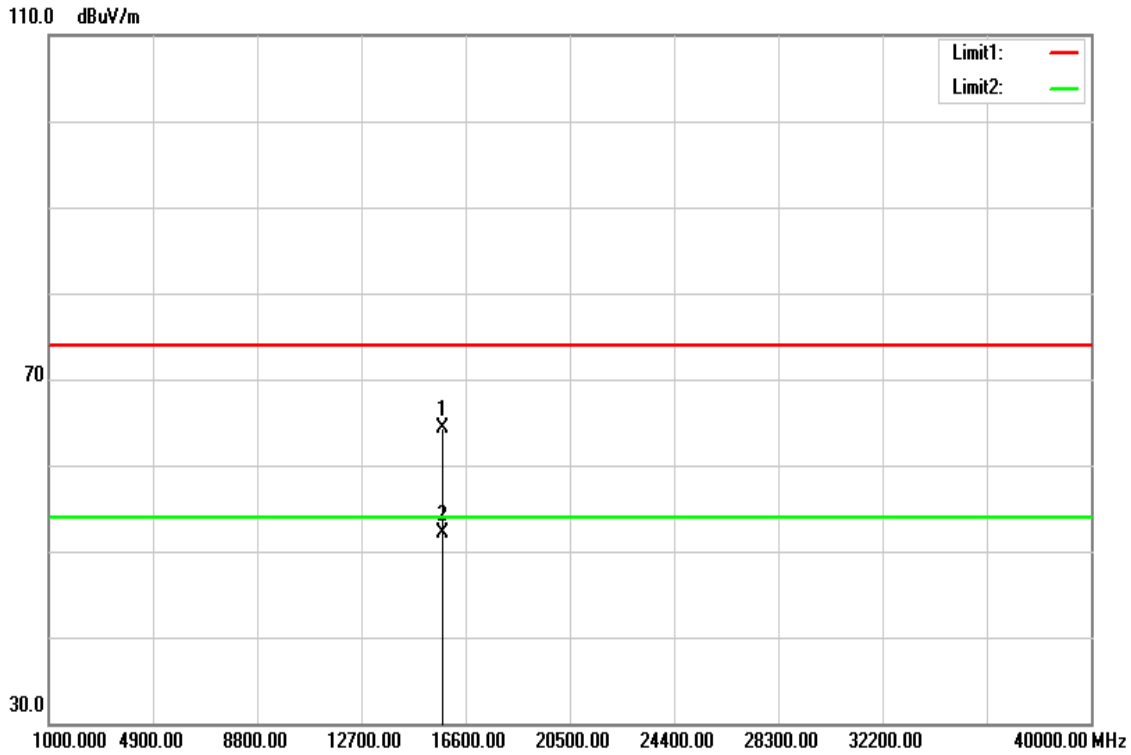
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
15660.000	41.96	19.03	60.99	74.00	-13.01	peak
15660.000	29.12	19.03	48.15	54.00	-5.85	AVG
N/A						

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

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

Test Mode	IEEE 802.11a / 5240MHZ	Temp/Hum	22(℃)/ 34%RH
Test Item	Harmonic	Test Date	June 4, 2018
Polarize	Vertical	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



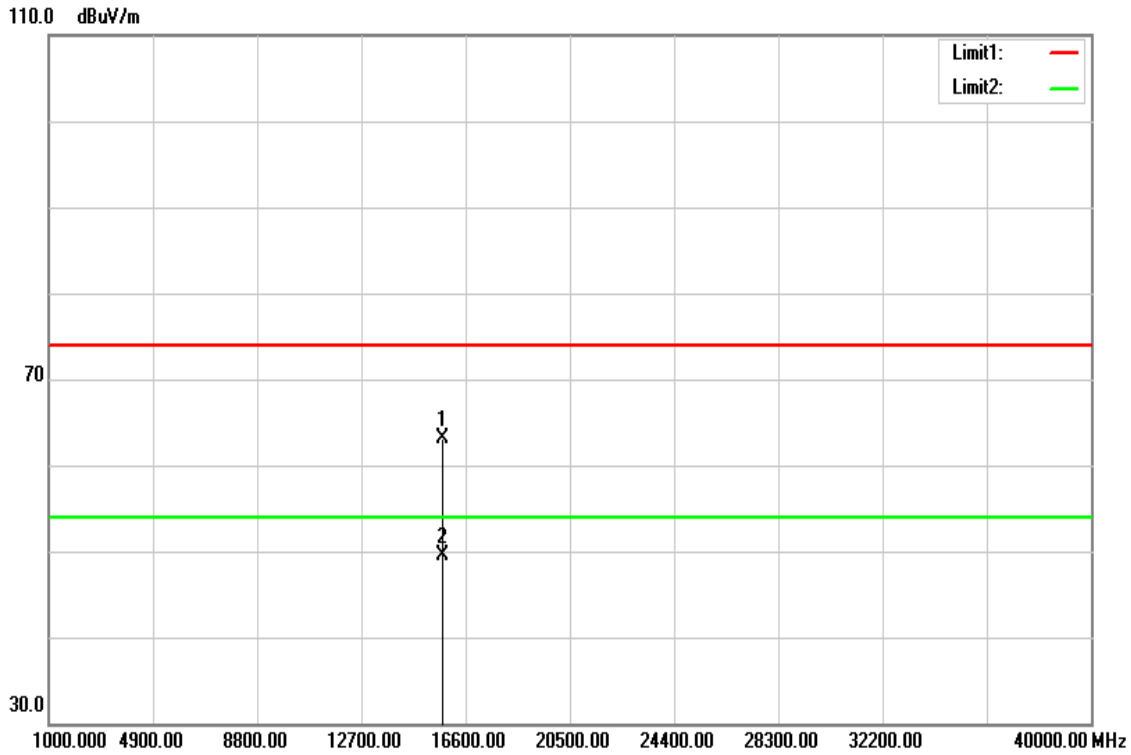
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
15720.000	45.13	19.20	64.33	74.00	-9.67	peak
15720.000	32.86	19.20	52.06	54.00	-1.94	AVG
N/A						

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

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

Test Mode	IEEE 802.11a / 5240MHZ	Temp/Hum	22(℃)/ 34%RH
Test Item	Harmonic	Test Date	June 4, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



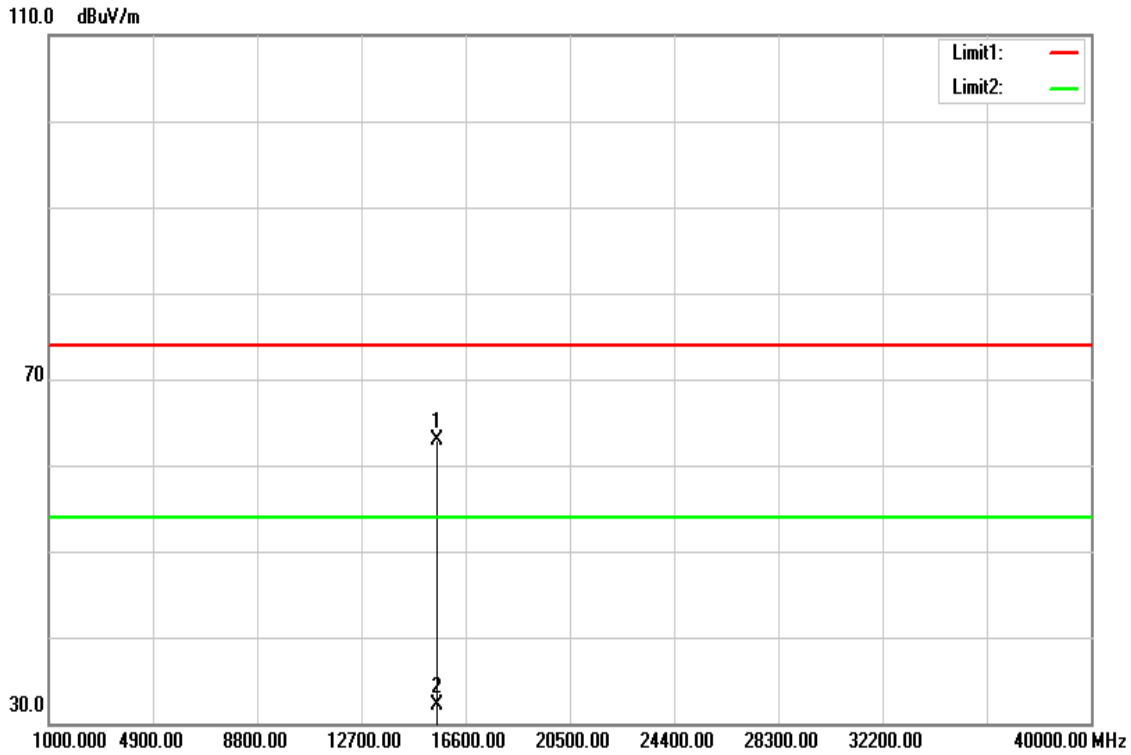
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
15730.000	43.91	19.23	63.14	74.00	-10.86	peak
15730.000	30.35	19.23	49.58	54.00	-4.42	AVG
N/A						

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

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

Test Mode	IEEE 802.11n 20 / 5180MHZ	Temp/Hum	22(℃)/ 34%RH
Test Item	Harmonic	Test Date	June 4, 2018
Polarize	Vertical	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



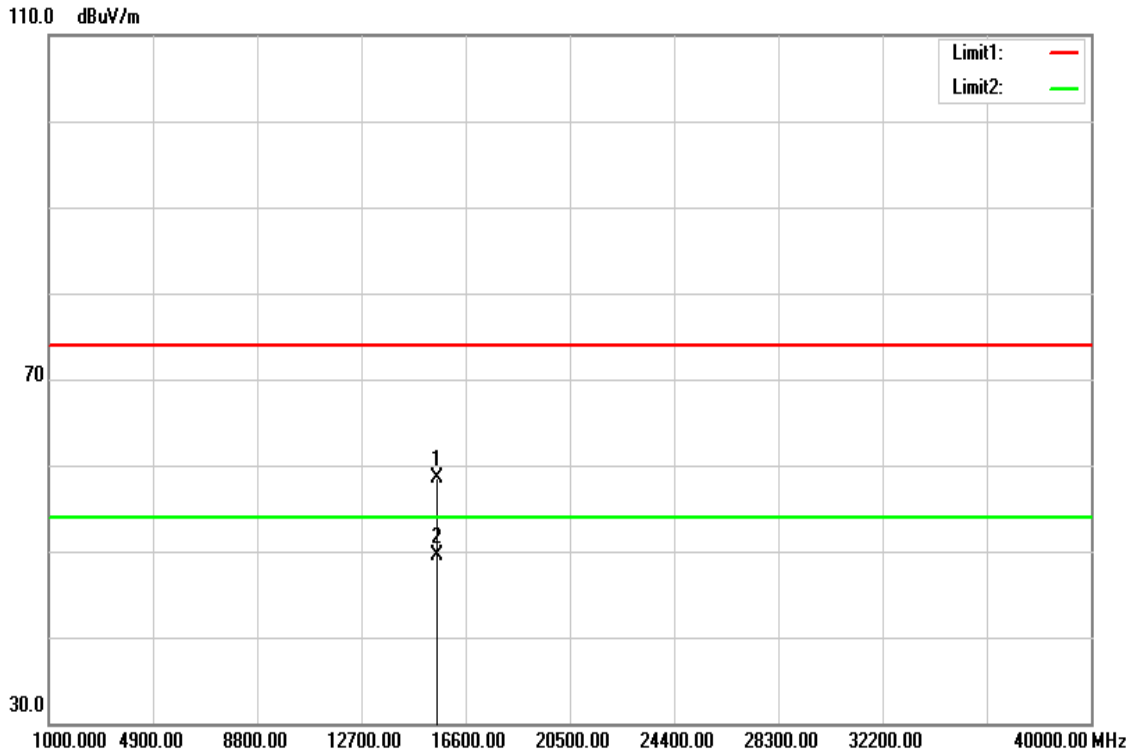
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
15550.000	44.17	18.71	62.88	74.00	-11.12	peak
15550.000	13.41	18.71	32.12	54.00	-21.88	AVG
N/A						

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

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

Test Mode	IEEE 802.11n 20/ 5180MHZ	Temp/Hum	22(℃)/ 34%RH
Test Item	Harmonic	Test Date	June 4, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



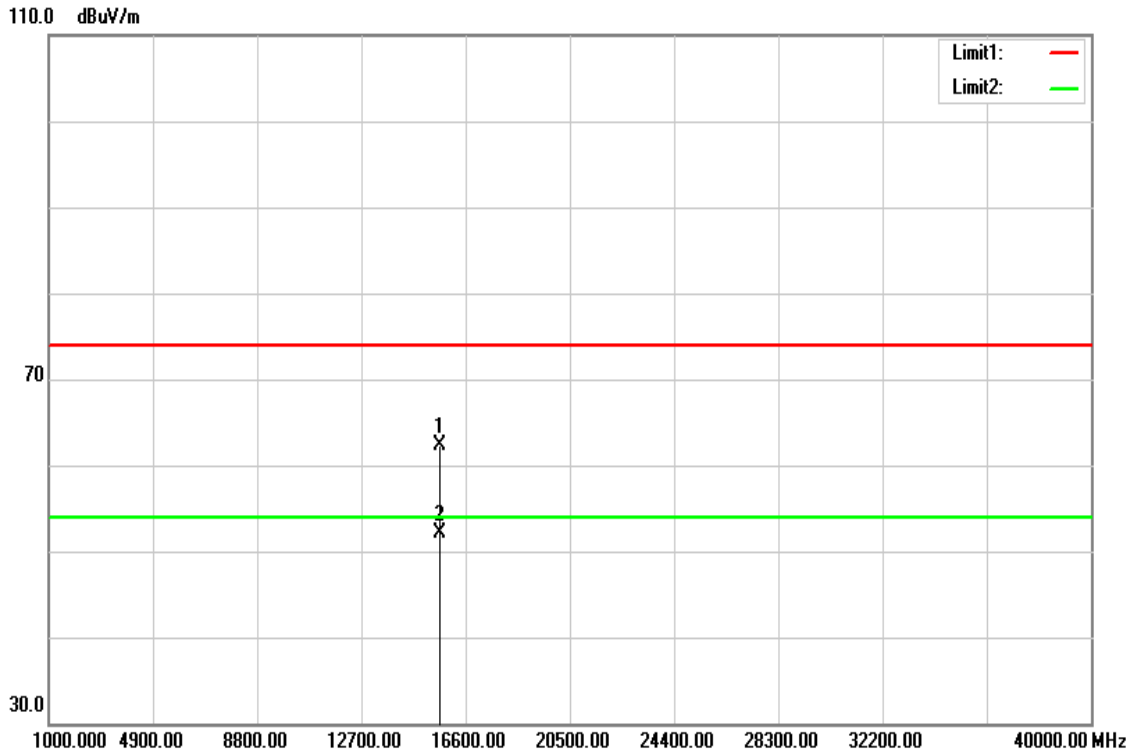
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
15550.000	39.87	18.71	58.58	74.00	-15.42	peak
15550.000	30.81	18.71	49.52	54.00	-4.48	AVG
N/A						

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

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

Test Mode	IEEE 802.11n 20 / 5220MHZ	Temp/Hum	22(℃)/ 34%RH
Test Item	Harmonic	Test Date	June 4, 2018
Polarize	Vertical	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



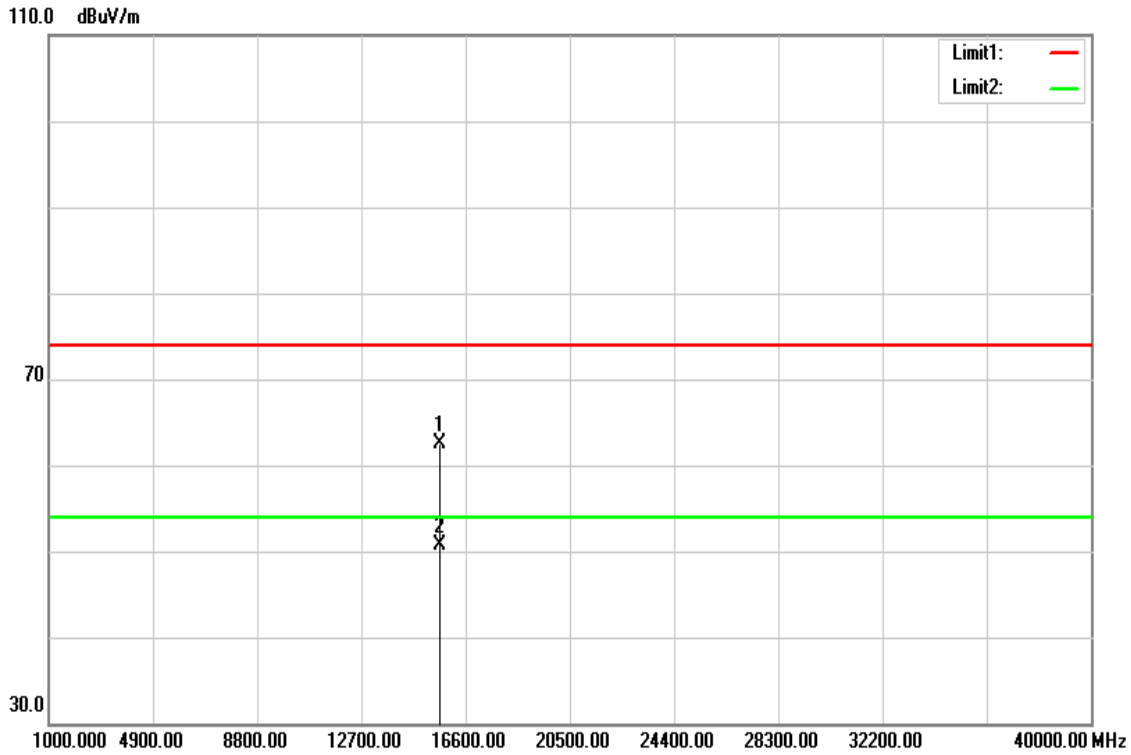
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
15650.000	43.21	19.00	62.21	74.00	-11.79	peak
15650.000	33.11	19.00	52.11	54.00	-1.89	AVG
N/A						

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

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

Test Mode	IEEE 802.11 n 20 / 5220MHZ	Temp/Hum	22(℃)/ 34%RH
Test Item	Harmonic	Test Date	June 4, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



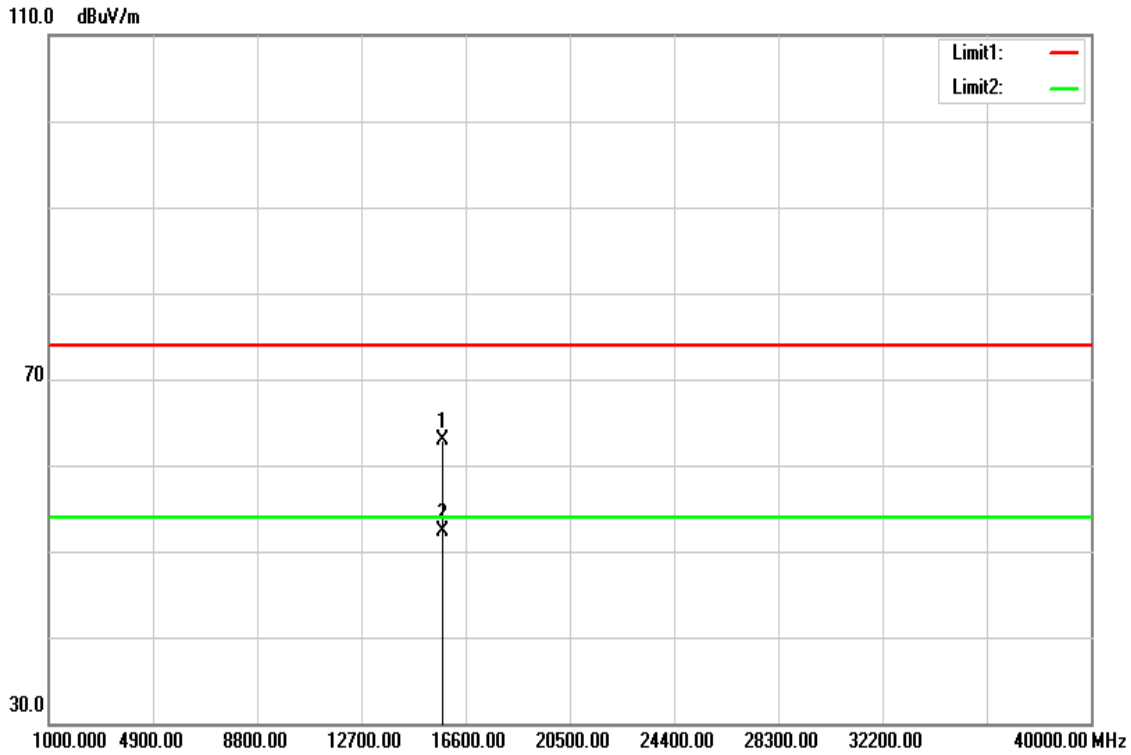
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
15650.000	43.51	19.00	62.51	74.00	-11.49	peak
15650.000	31.68	19.00	50.68	54.00	-3.32	AVG
N/A						

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

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

Test Mode	IEEE 802.11 n 20 / 5240MHZ	Temp/Hum	22(℃)/ 34%RH
Test Item	Harmonic	Test Date	June 4, 2018
Polarize	Vertical	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



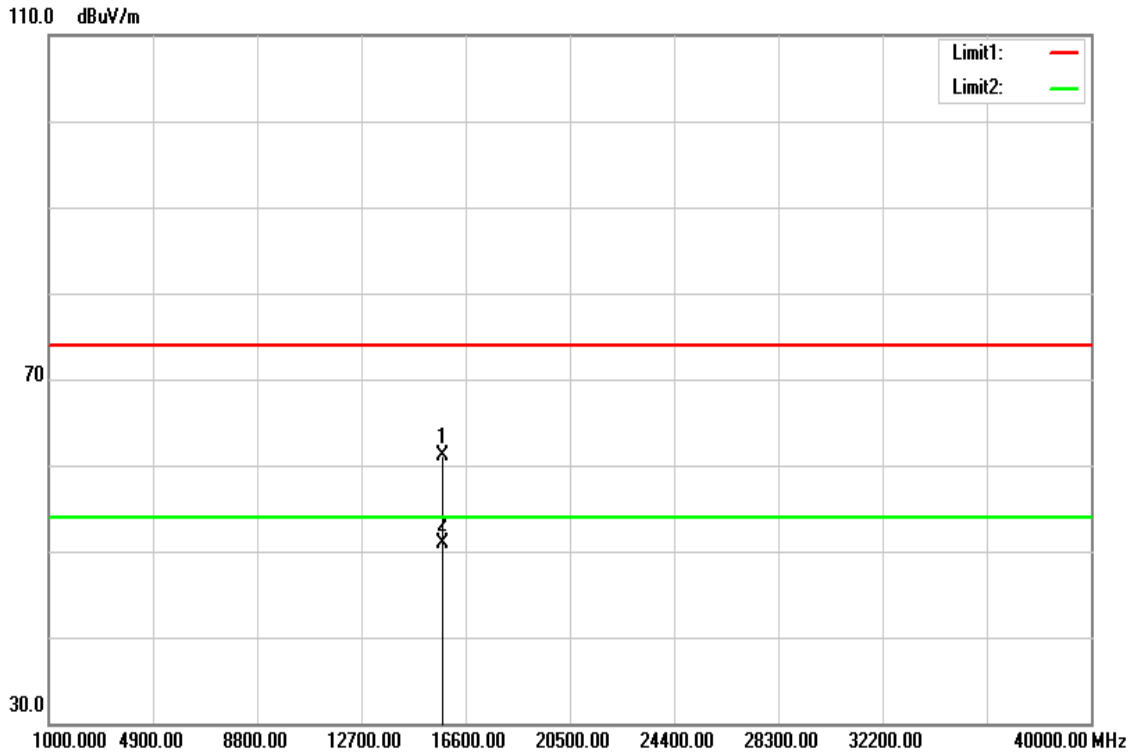
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
15720.000	43.62	19.20	62.82	74.00	-11.18	peak
15720.000	33.13	19.20	52.33	54.00	-1.67	AVG
N/A						

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

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

Test Mode	IEEE 802.11n 20 / 5240MHZ	Temp/Hum	22(℃)/ 34%RH
Test Item	Harmonic	Test Date	June 4, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



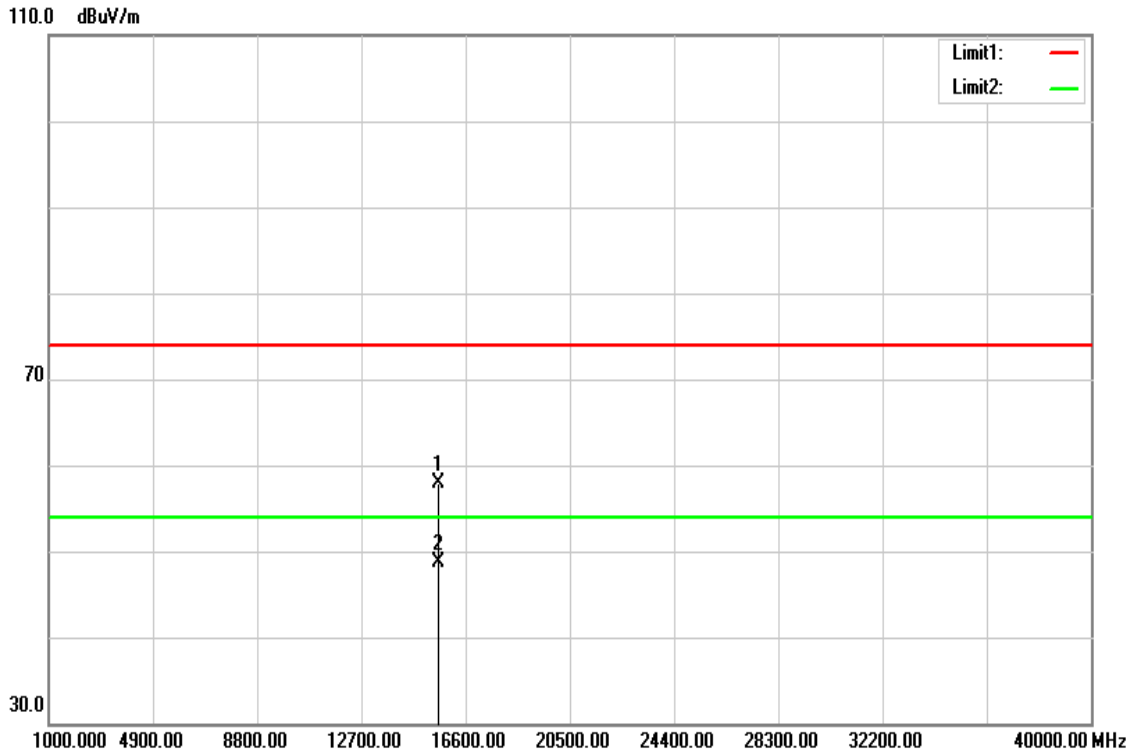
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
15720.000	41.83	19.20	61.03	74.00	-12.97	peak
15720.000	31.69	19.20	50.89	54.00	-3.11	AVG
N/A						

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

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

Test Mode	IEEE 802.11n 40 / 5190MHZ	Temp/Hum	22(℃)/ 34%RH
Test Item	Harmonic	Test Date	June 4, 2018
Polarize	Vertical	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



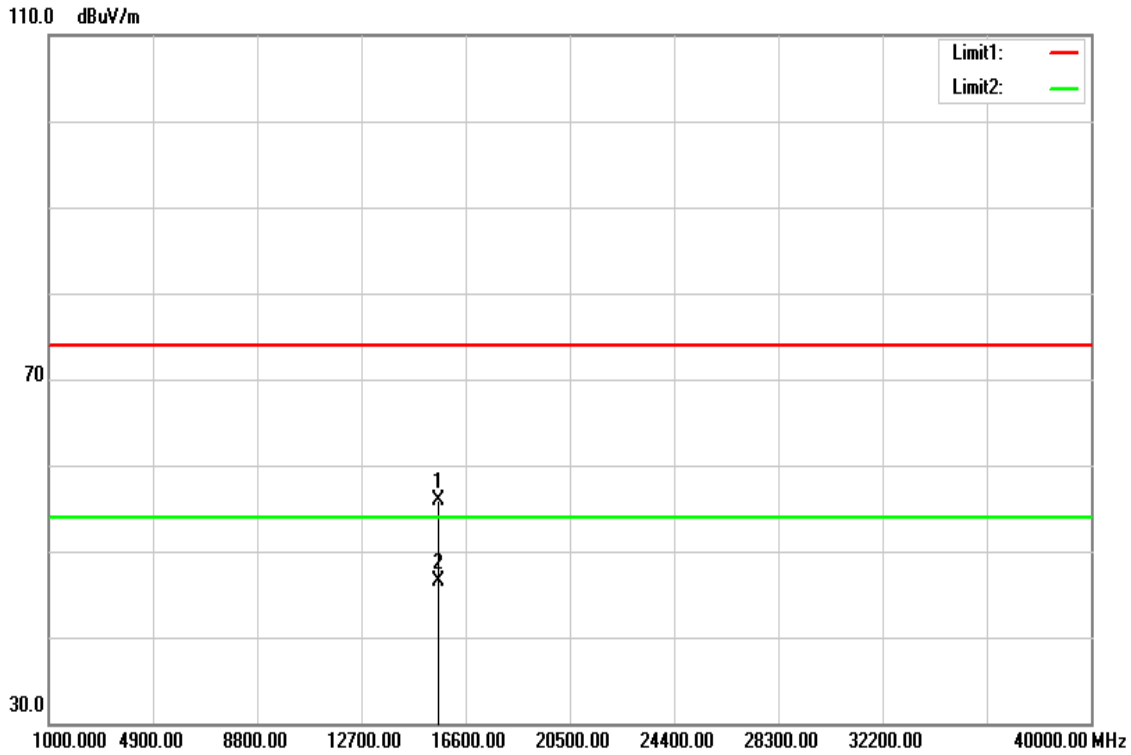
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
15580.000	39.10	18.79	57.89	74.00	-16.11	peak
15580.000	29.83	18.79	48.62	54.00	-5.38	AVG
N/A						

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

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

Test Mode	IEEE 802.11n 40 / 5190MHZ	Temp/Hum	22(℃)/ 34%RH
Test Item	Harmonic	Test Date	June 4, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



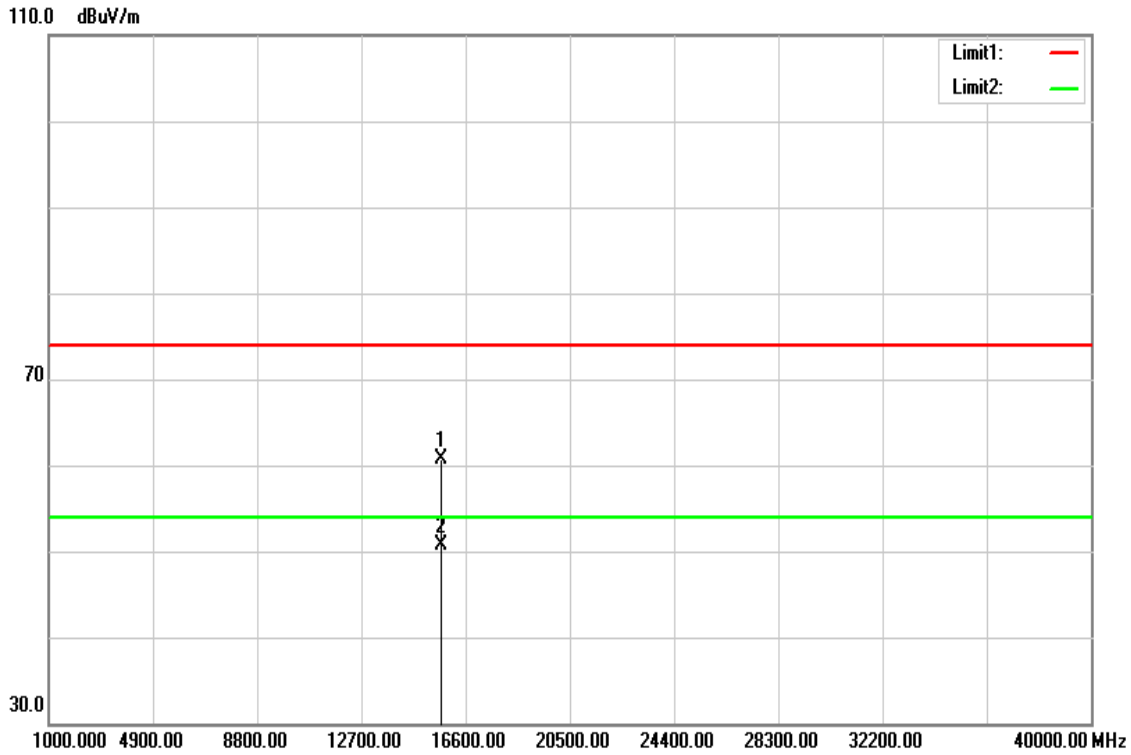
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
15580.000	37.10	18.79	55.89	74.00	-18.11	peak
15580.000	27.65	18.79	46.44	54.00	-7.56	AVG
N/A						

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

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

Test Mode	IEEE 802.11n 40 / 5230MHZ	Temp/Hum	22(℃)/ 34%RH
Test Item	Harmonic	Test Date	June 4, 2018
Polarize	Vertical	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



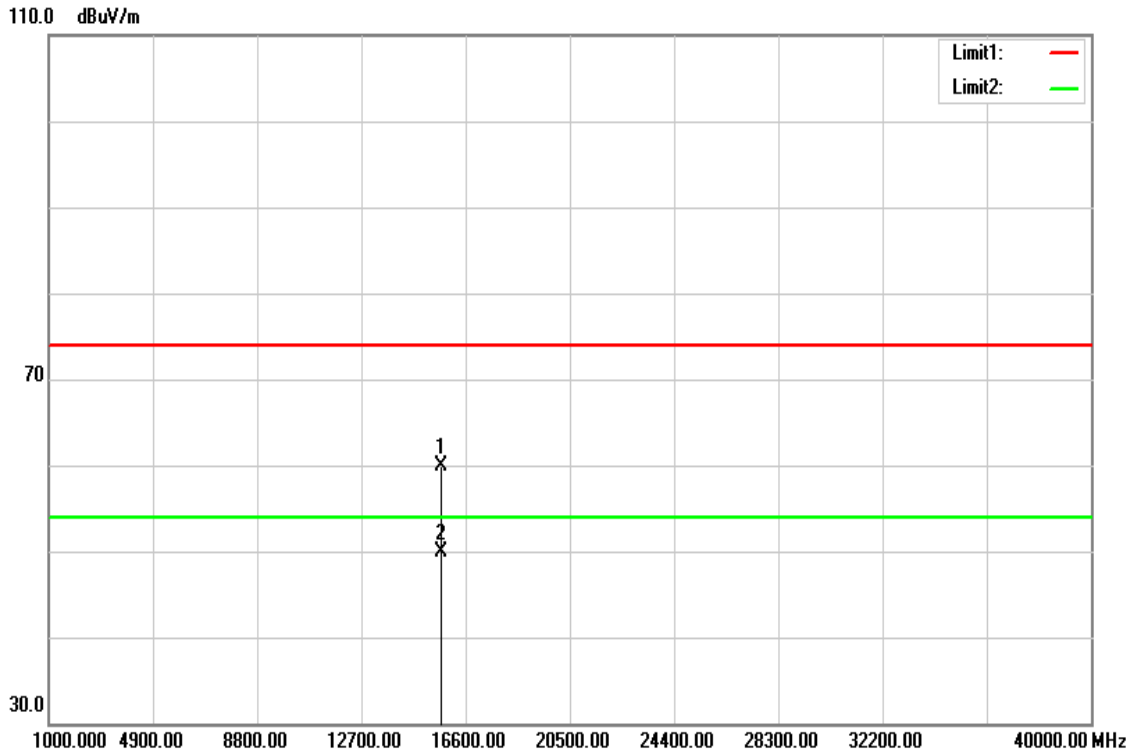
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
15700.000	41.52	19.14	60.66	74.00	-13.34	peak
15700.000	31.66	19.14	50.80	54.00	-3.20	AVG
N/A						

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

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

Test Mode	IEEE 802.11n 40 / 5230MHZ	Temp/Hum	22(℃)/ 34%RH
Test Item	Harmonic	Test Date	June 4, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



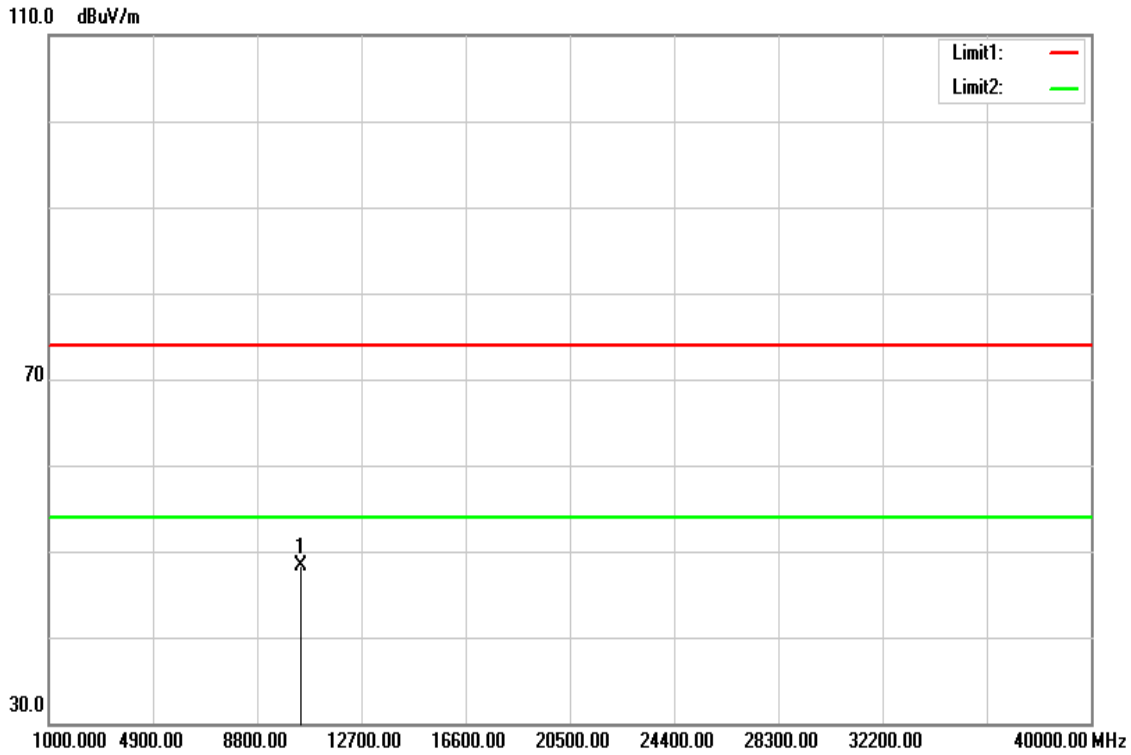
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
15710.000	40.81	19.17	59.98	74.00	-14.02	peak
15710.000	30.75	19.17	49.92	54.00	-4.08	AVG
N/A						

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

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

Test Mode	IEEE 802.11ac VHT80 / 5210MHZ	Temp/Hum	22(℃)/ 34%RH
Test Item	Harmonic	Test Date	June 4, 2018
Polarize	Vertical	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



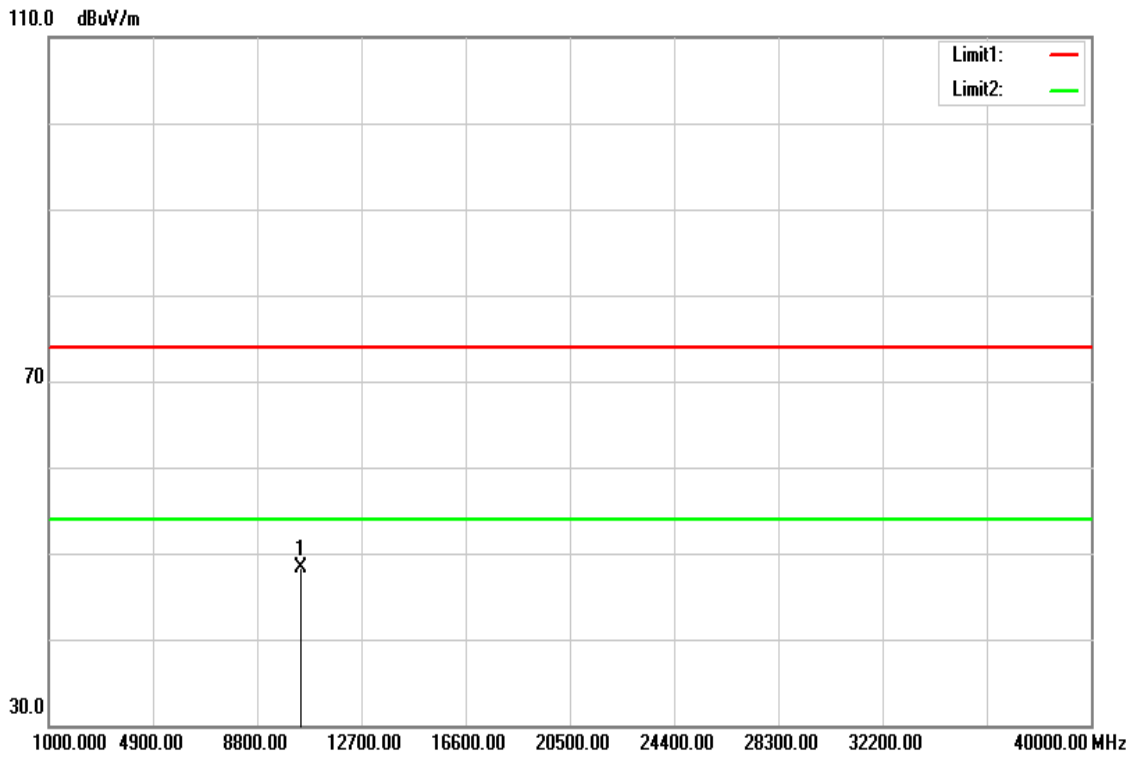
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
10420.000	33.72	14.66	48.38	74.00	-25.62	peak
N/A						

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit*

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

Test Mode	IEEE 802.11ac VHT80 / 5210MHZ	Temp/Hum	22(℃)/ 34%RH
Test Item	Harmonic	Test Date	June 4, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
10420.000	33.66	14.66	48.32	74.00	-25.68	peak
N/A						

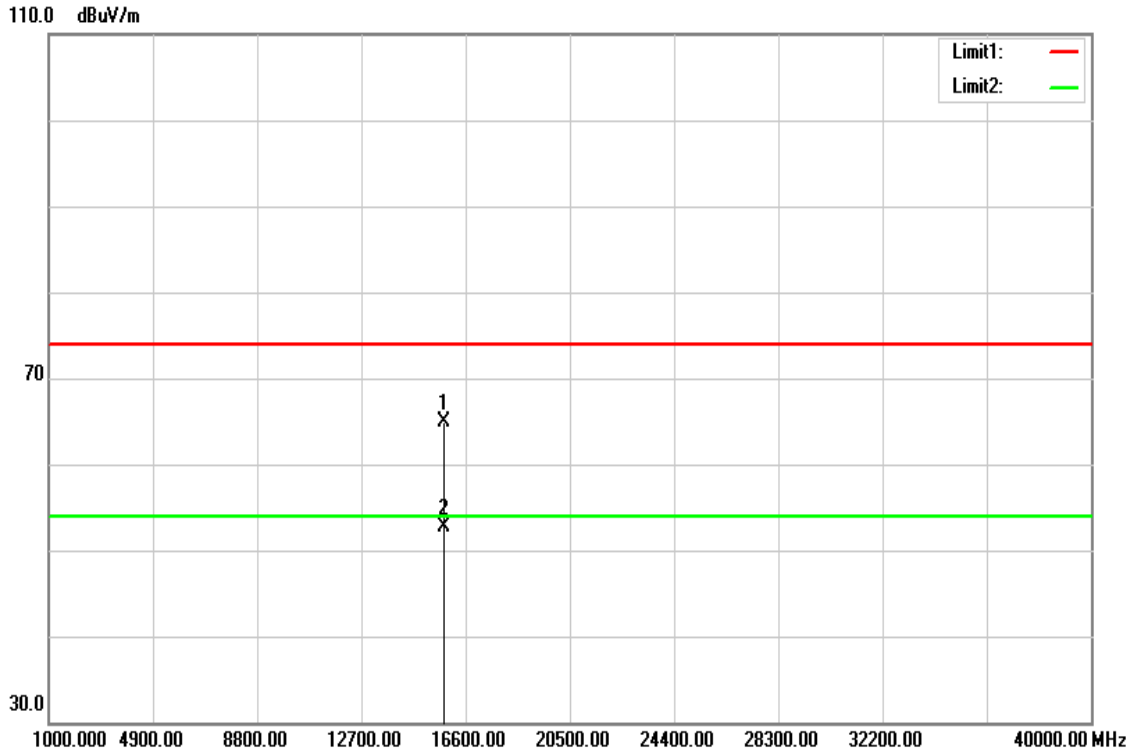
Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit*

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

Above 1G Test Data for UNII-2a

Test Mode	IEEE 802.11a / 5260 MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Harmonic	Test Date	June 4, 2018
Polarize	Vertical	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



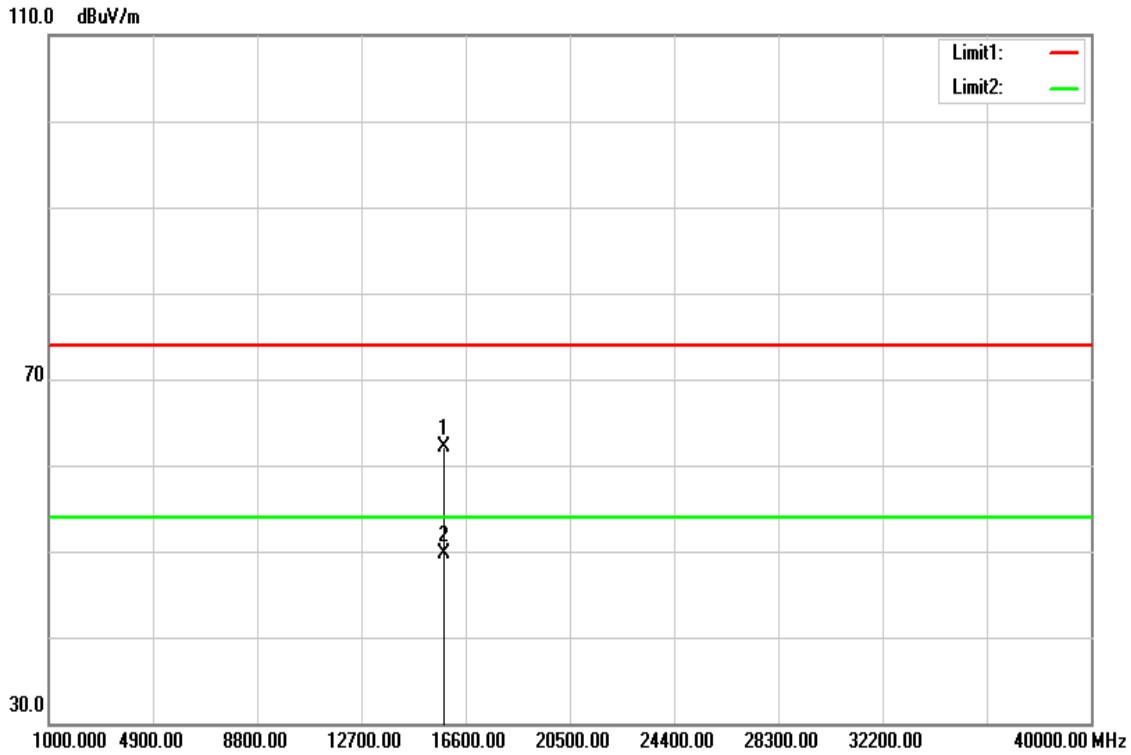
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
15790.000	45.59	19.41	65.00	74.00	-9.00	peak
15790.000	33.22	19.41	52.63	54.00	-1.37	AVG
N/A						

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

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

Test Mode	IEEE 802.11a / 5260 MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Harmonic	Test Date	June 4, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



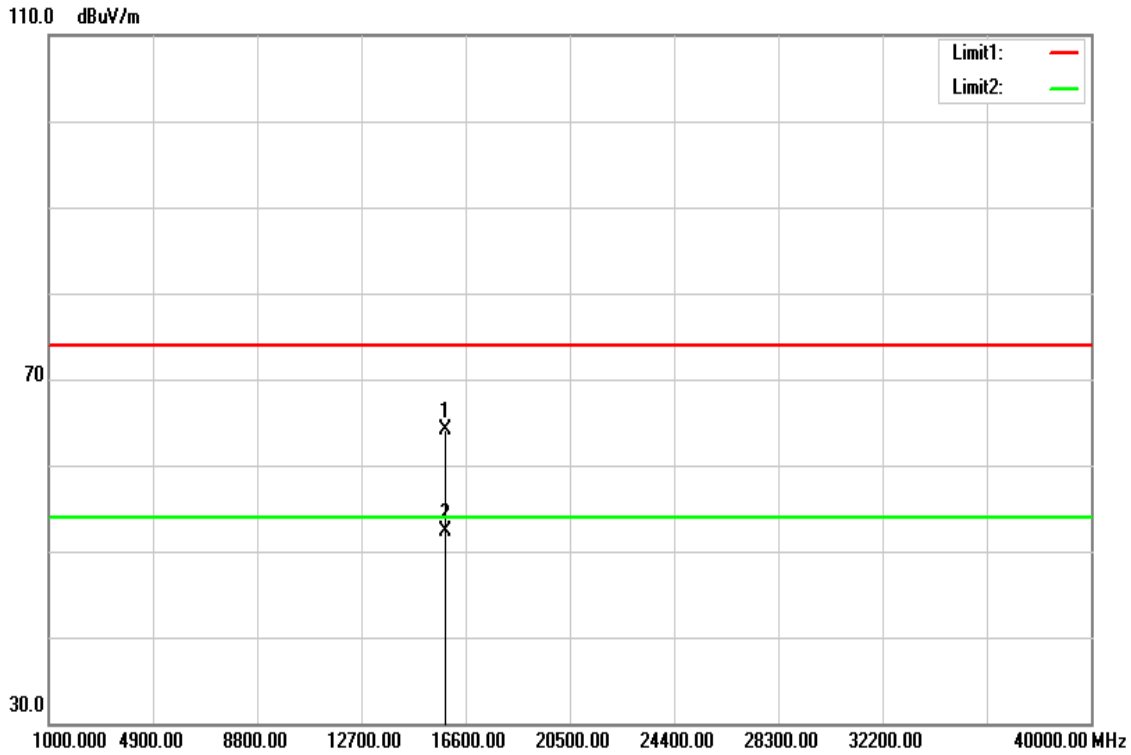
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
15780.000	42.72	19.38	62.10	74.00	-11.90	peak
15780.000	30.36	19.38	49.74	54.00	-4.26	AVG
N/A						

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

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

Test Mode	IEEE 802.11a / 5280 MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Harmonic	Test Date	June 4, 2018
Polarize	Vertical	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



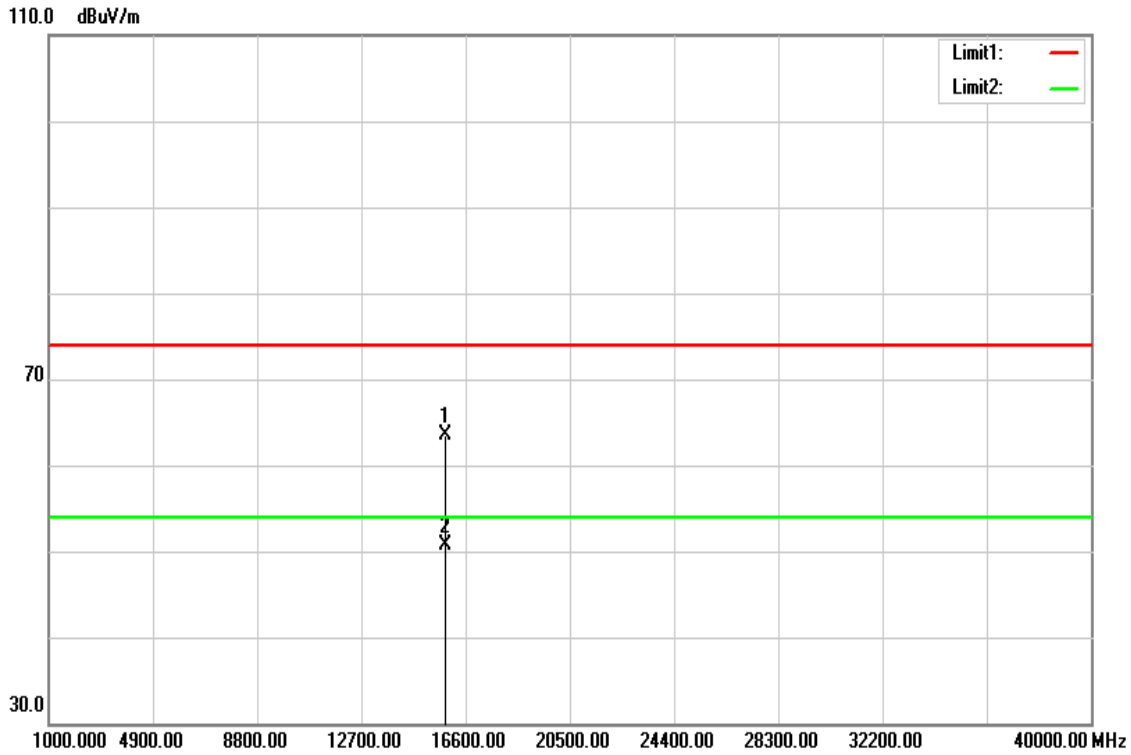
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
15830.000	44.55	19.52	64.07	74.00	-9.93	peak
15830.000	32.88	19.52	52.40	54.00	-1.60	AVG
N/A						

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

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

Test Mode	IEEE 802.11a / 5280 MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Harmonic	Test Date	June 4, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



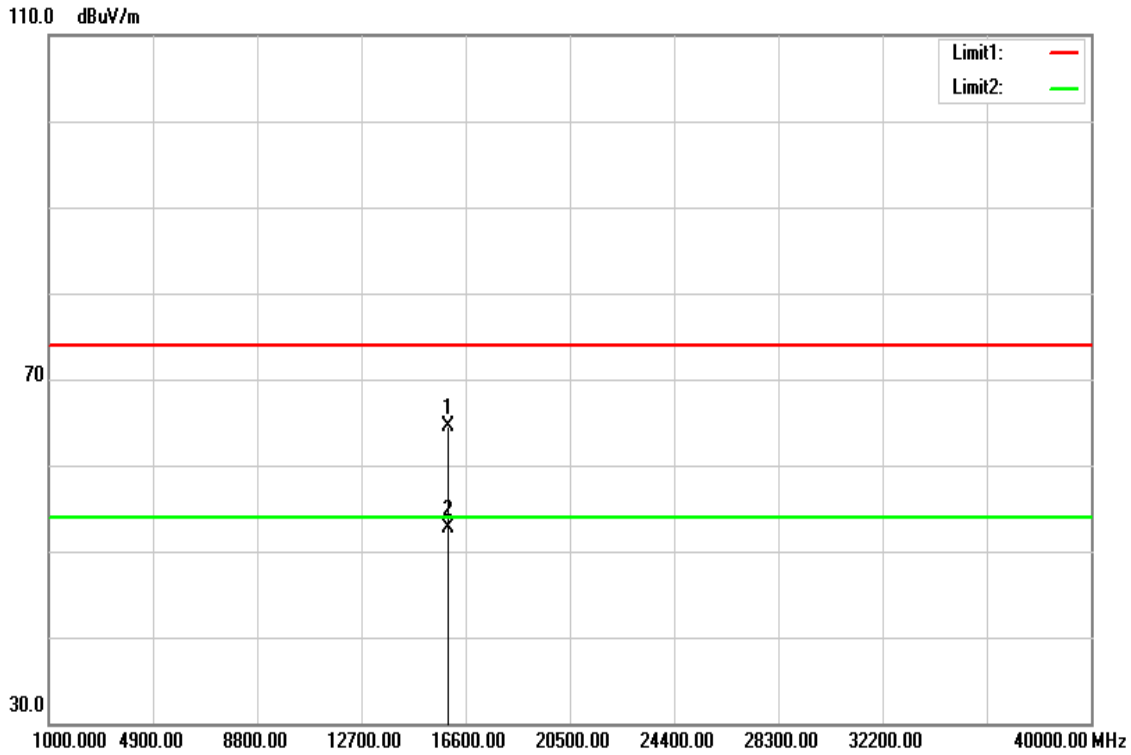
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
15830.000	43.94	19.52	63.46	74.00	-10.54	peak
15830.000	31.23	19.52	50.75	54.00	-3.25	AVG
N/A						

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

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

Test Mode	IEEE 802.11a / 5320 MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Harmonic	Test Date	June 4, 2018
Polarize	Vertical	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



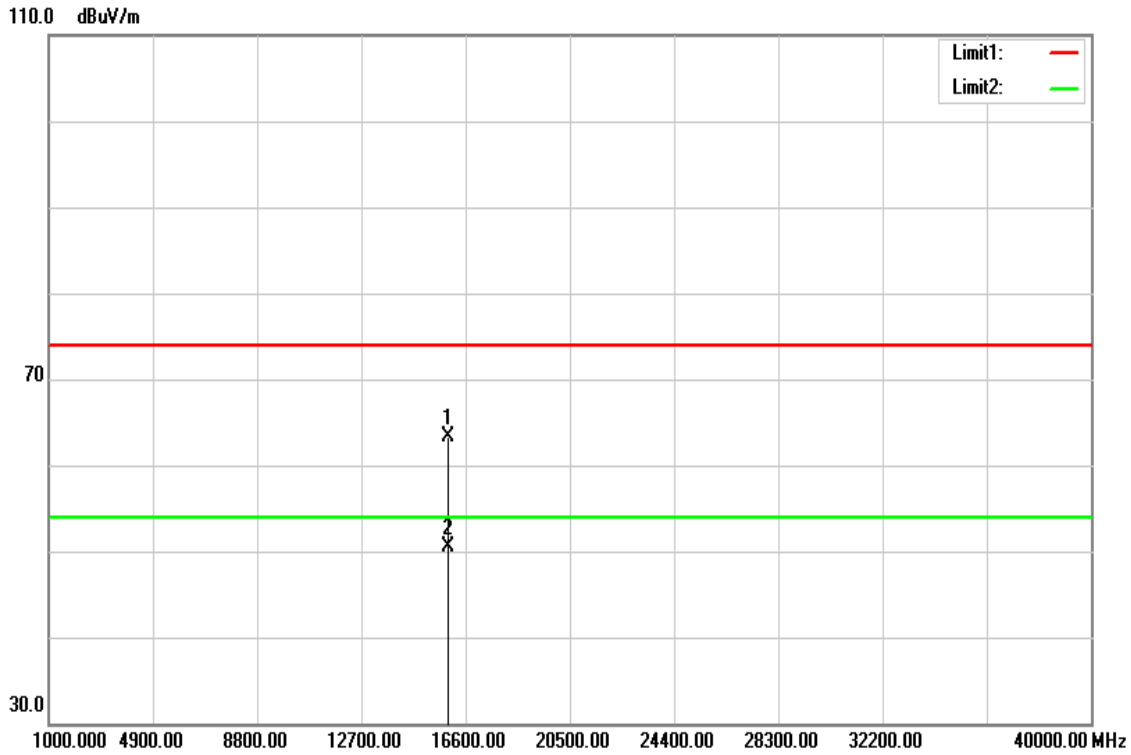
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
15960.000	44.50	19.90	64.40	74.00	-9.60	peak
15960.000	32.77	19.90	52.67	54.00	-1.33	AVG
N/A						

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

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

Test Mode	IEEE 802.11a / 5320 MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Harmonic	Test Date	June 4, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



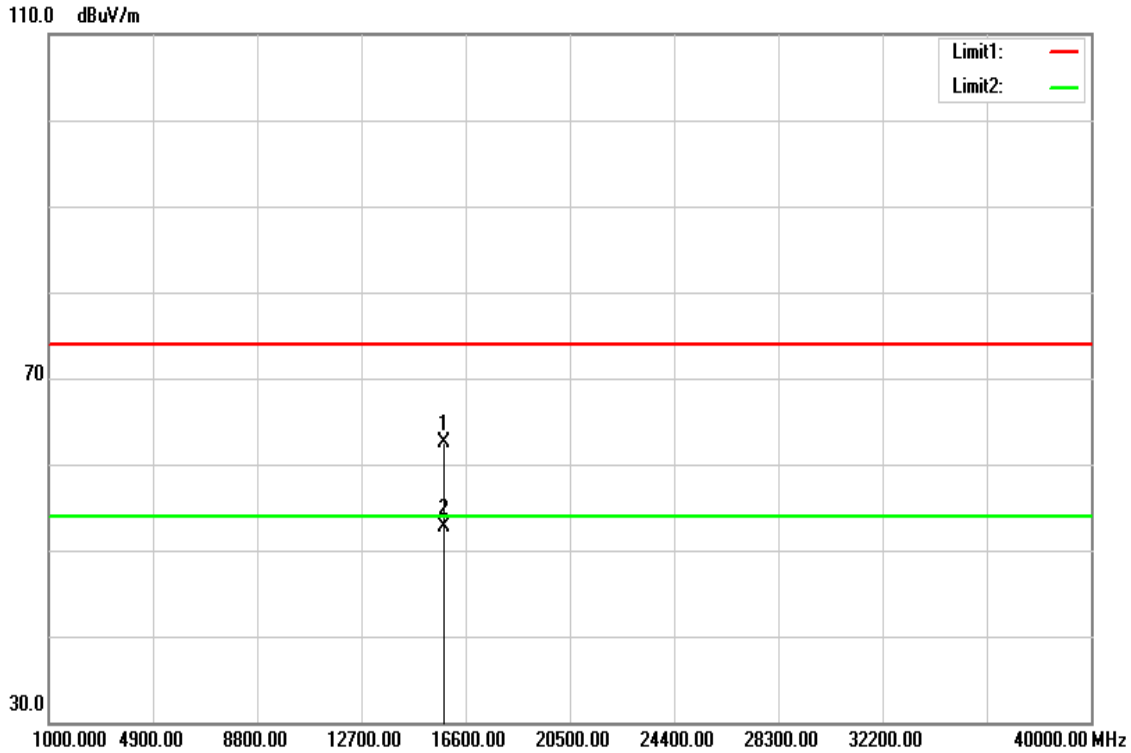
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
15960.000	43.43	19.90	63.33	74.00	-10.67	peak
15960.000	30.68	19.90	50.58	54.00	-3.42	AVG
N/A						

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

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

Test Mode	IEEE 802.11n 20 / 5260 MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Harmonic	Test Date	June 4, 2018
Polarize	Vertical	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



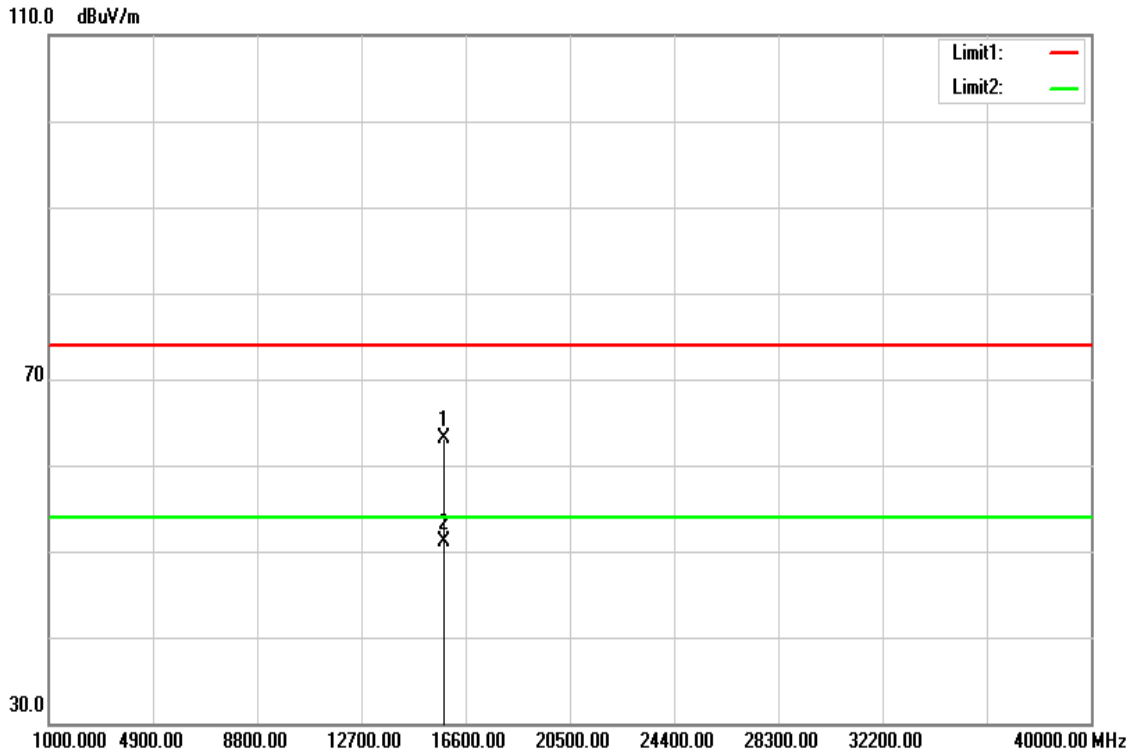
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
15790.000	43.18	19.41	62.59	74.00	-11.41	peak
15790.000	33.34	19.41	52.75	54.00	-1.25	AVG
N/A						

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

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

Test Mode	IEEE 802.11a / 5260 MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Harmonic	Test Date	June 4, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



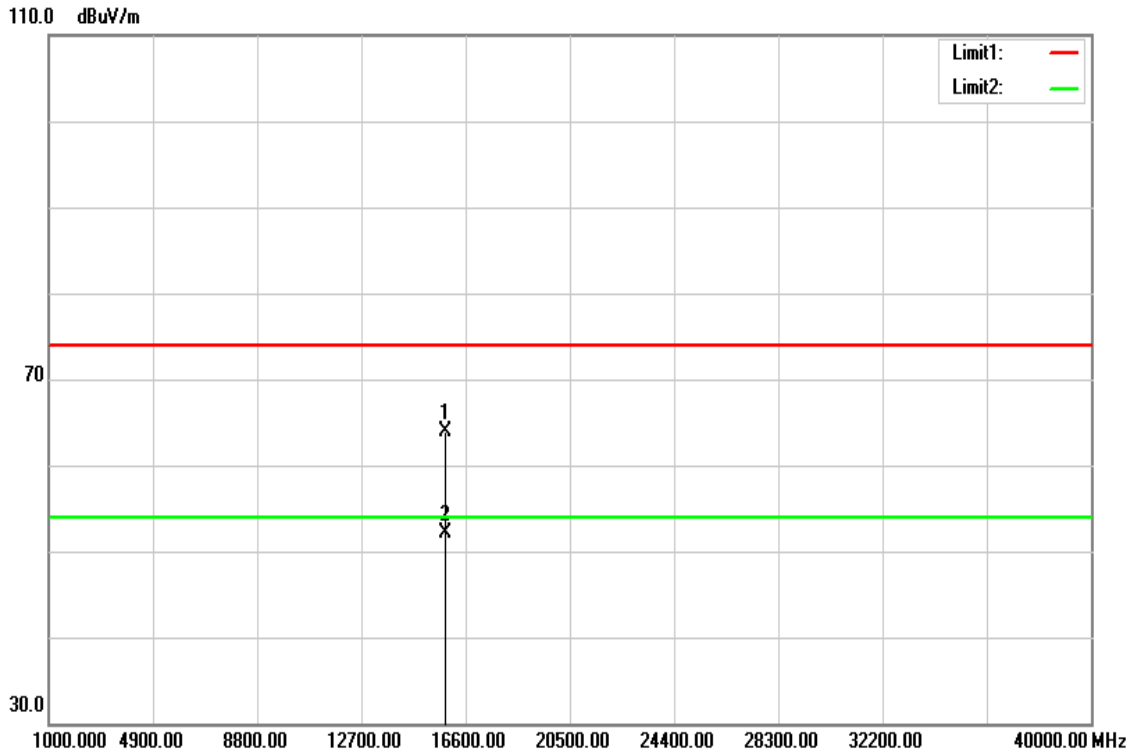
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
15780.000	43.71	19.38	63.09	74.00	-10.91	peak
15780.000	31.67	19.38	51.05	54.00	-2.95	AVG
N/A						

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

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

Test Mode	IEEE 802.11n 20 / 5280 MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Harmonic	Test Date	June 4, 2018
Polarize	Vertical	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



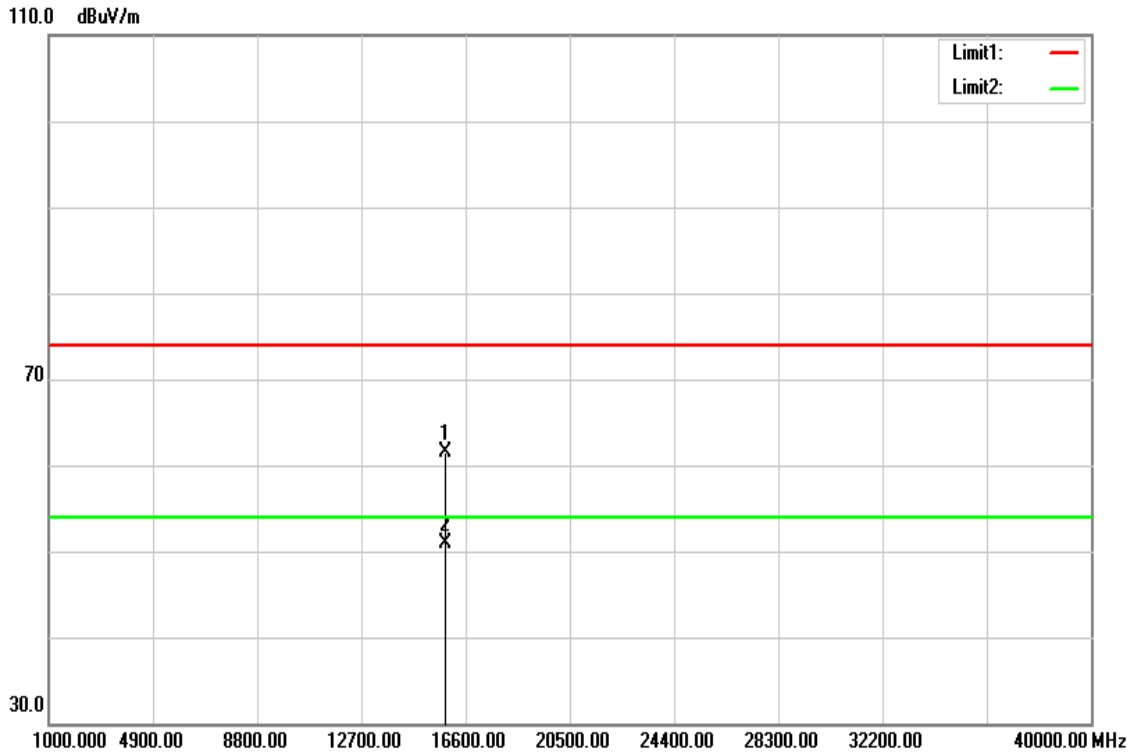
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
15840.000	44.36	19.55	63.91	74.00	-10.09	peak
15840.000	32.60	19.55	52.15	54.00	-1.85	AVG
N/A						

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

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

Test Mode	IEEE 802.11n 20 / 5280 MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Harmonic	Test Date	June 4, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



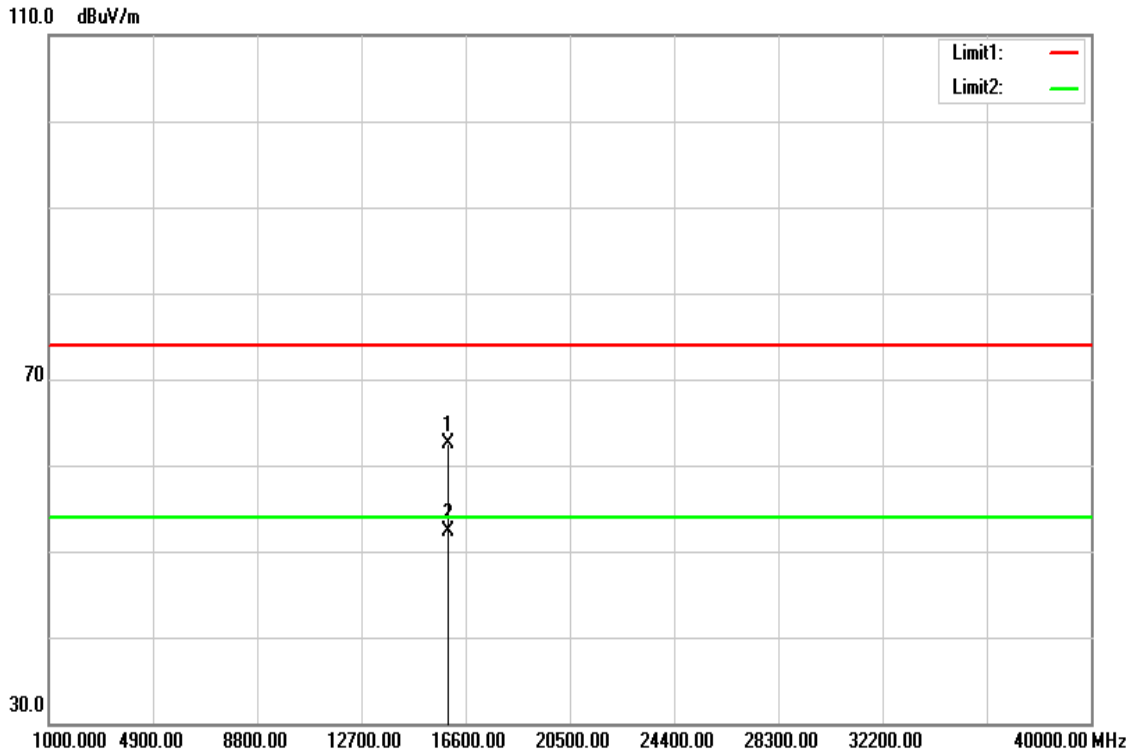
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
15840.000	41.91	19.55	61.46	74.00	-12.54	peak
15840.000	31.29	19.55	50.84	54.00	-3.16	AVG
N/A						

***Remark*:**

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

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

Test Mode	IEEE 802.11n 20 / 5320 MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Harmonic	Test Date	June 4, 2018
Polarize	Vertical	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



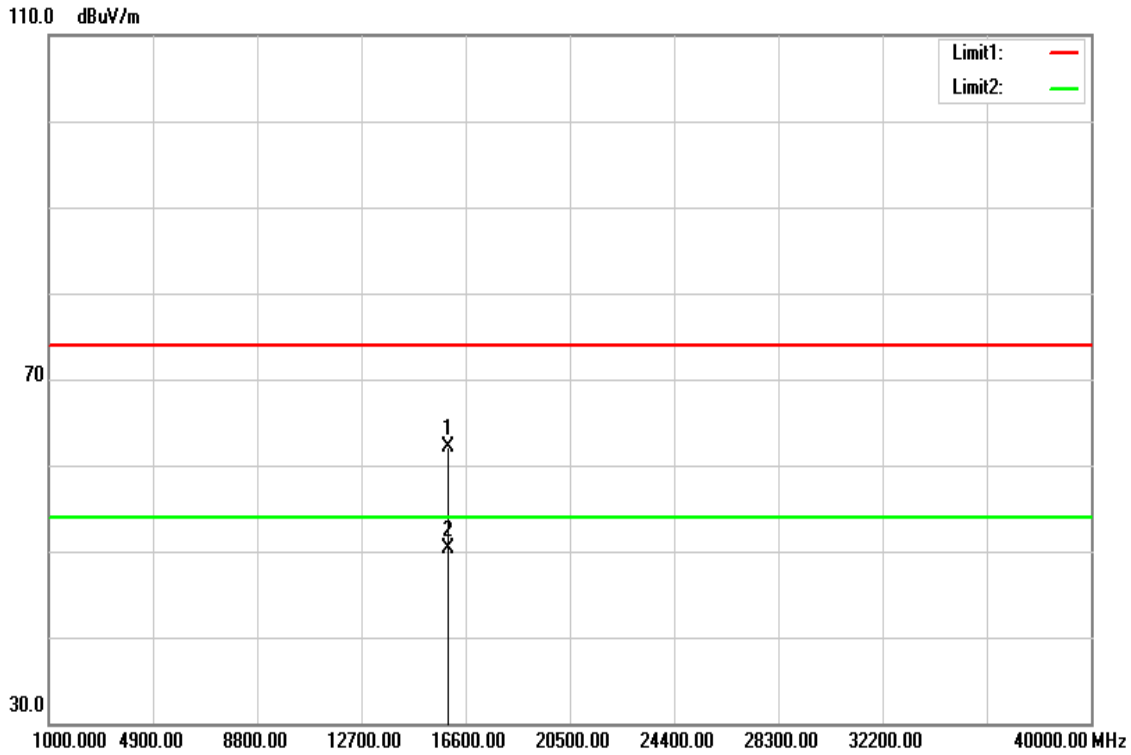
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
15960.000	42.64	19.90	62.54	74.00	-11.46	peak
15960.000	32.35	19.90	52.25	54.00	-1.75	AVG
N/A						

***Remark*:**

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

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

Test Mode	IEEE 802.11n 20 / 5320 MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Harmonic	Test Date	June 4, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



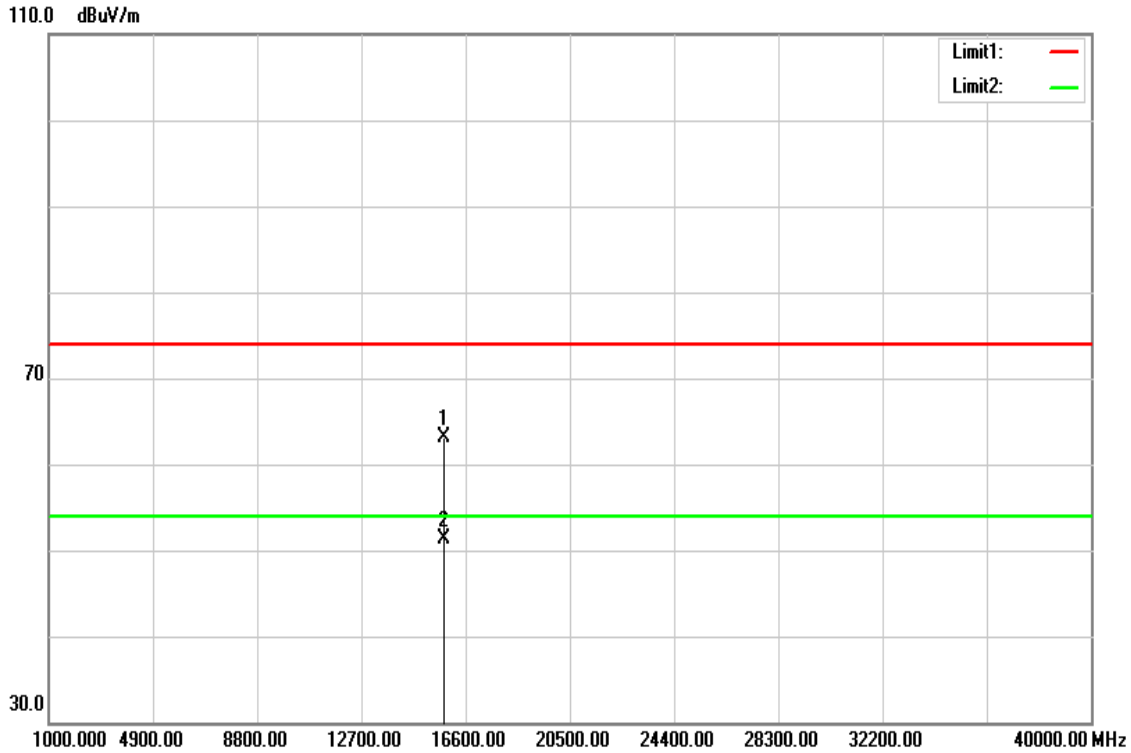
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
15950.000	42.18	19.88	62.06	74.00	-11.94	peak
15950.000	30.33	19.88	50.21	54.00	-3.79	AVG
N/A						

***Remark*:**

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

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

Test Mode	IEEE 802.11n 40 / 5270 MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Harmonic	Test Date	June 4, 2018
Polarize	Vertical	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



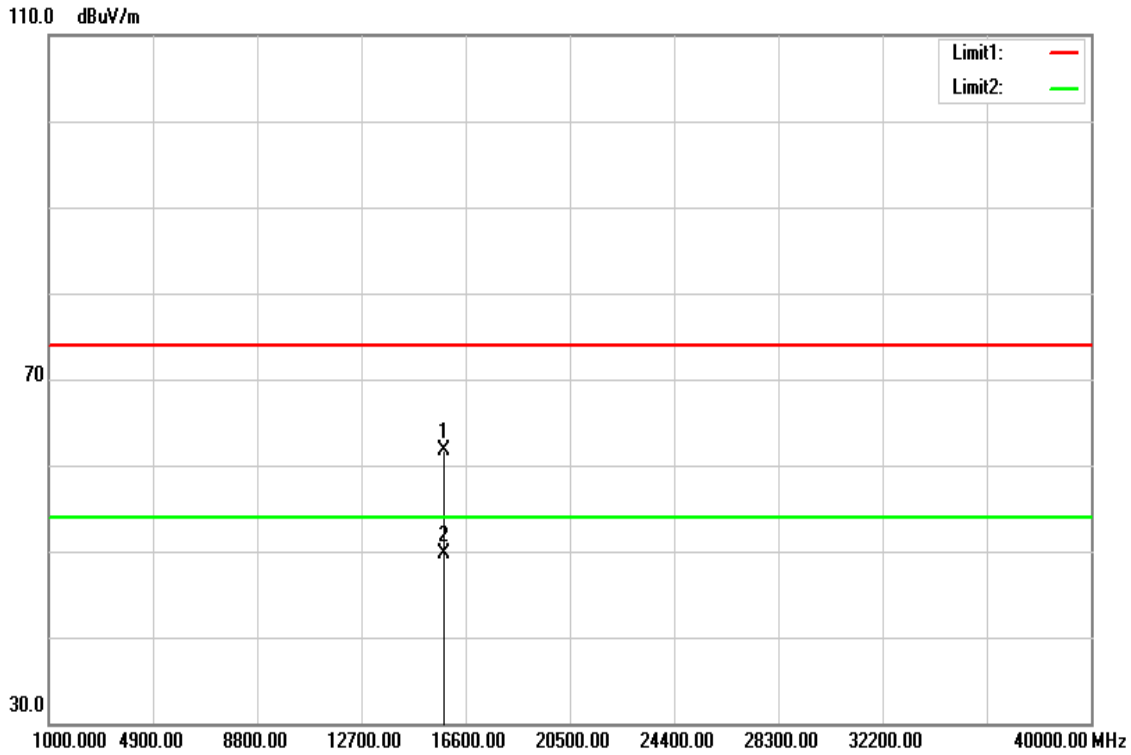
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
15810.000	43.63	19.46	63.09	74.00	-10.91	peak
15810.000	31.91	19.46	51.37	54.00	-2.63	AVG
N/A						

***Remark*:**

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

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

Test Mode	IEEE 802.11n 40 / 5270 MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Harmonic	Test Date	June 4, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



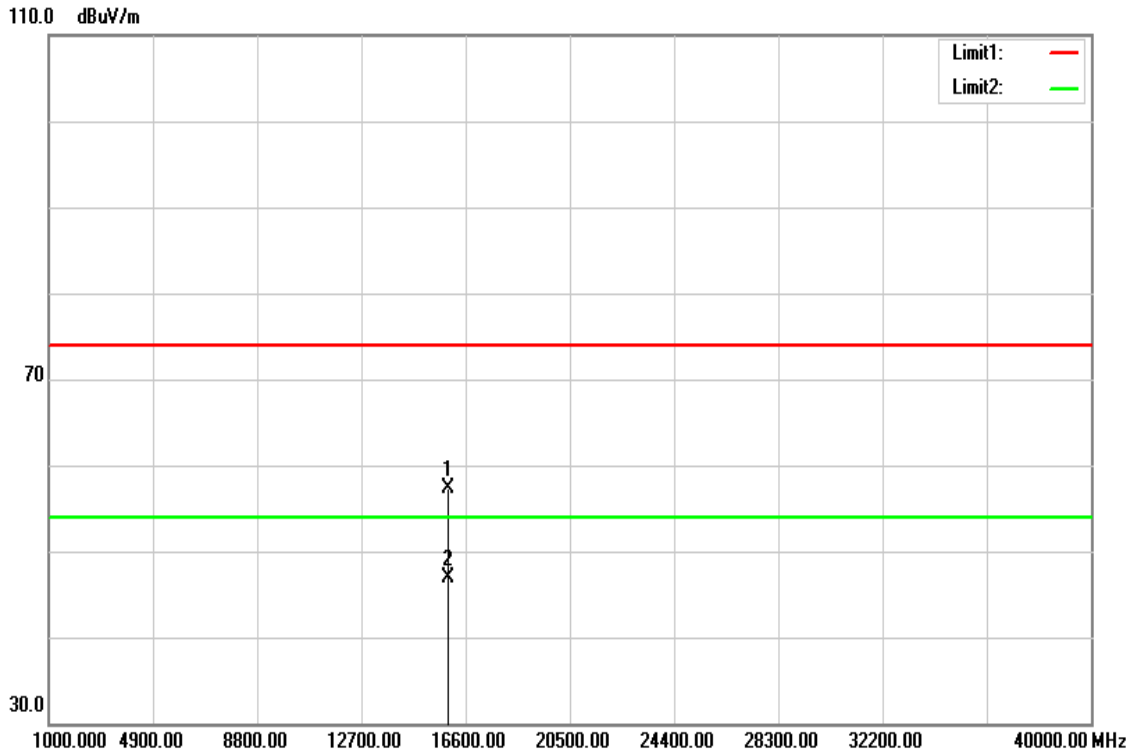
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
15800.000	42.18	19.44	61.62	74.00	-12.38	peak
15800.000	30.22	19.44	49.66	54.00	-4.34	AVG
N/A						

***Remark*:**

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

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

Test Mode	IEEE 802.11n 40 / 5310 MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Harmonic	Test Date	June 4, 2018
Polarize	Vertical	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



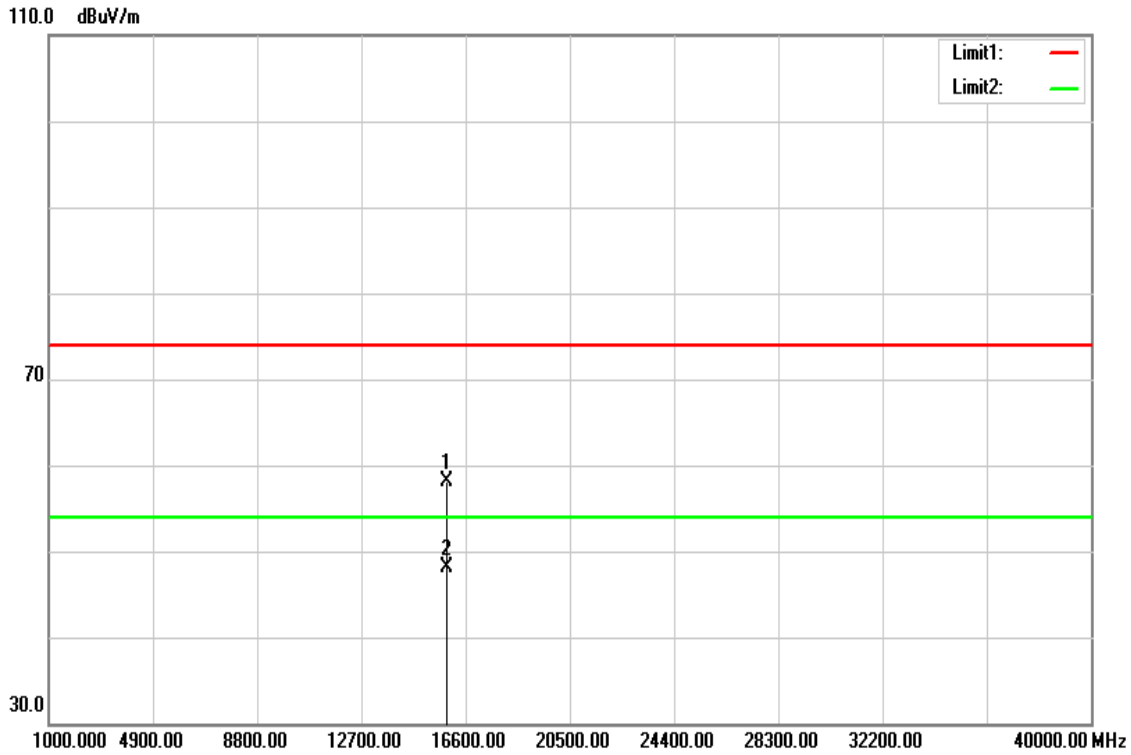
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
15940.000	37.51	19.84	57.35	74.00	-16.65	peak
15940.000	26.99	19.84	46.83	54.00	-7.17	AVG
N/A						

***Remark*:**

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

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

Test Mode	IEEE 802.11n 40 / 5310 MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Harmonic	Test Date	June 4, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



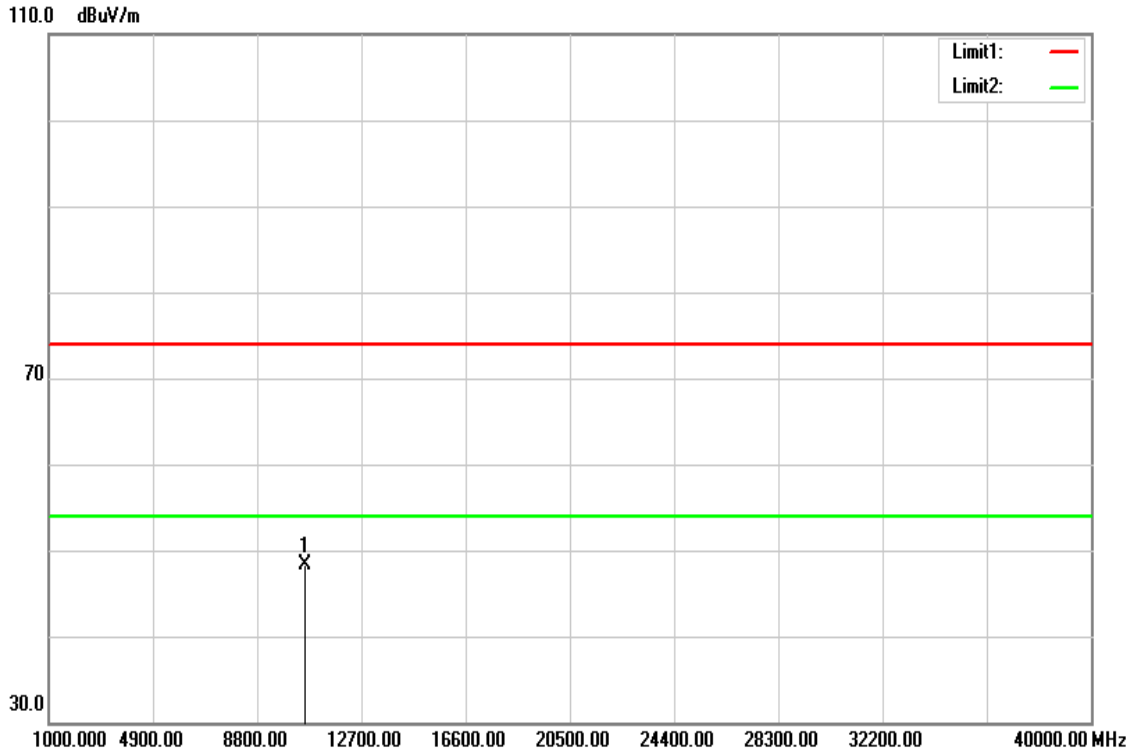
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
15920.000	38.25	19.79	58.04	74.00	-15.96	peak
15920.000	28.23	19.79	48.02	54.00	-5.98	AVG
N/A						

***Remark*:**

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

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

Test Mode	IEEE 802.11ac VHT80 / 5290 MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Harmonic	Test Date	June 4, 2018
Polarize	Vertical	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



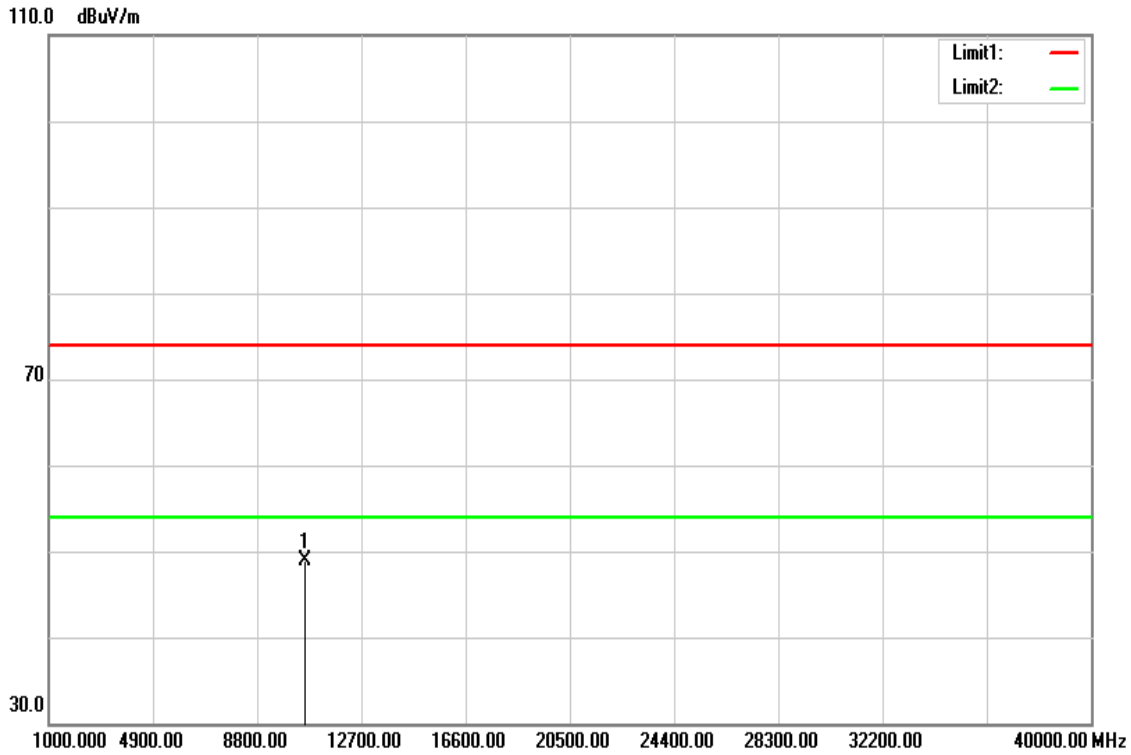
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
10580.000	33.18	15.10	48.28	74.00	-25.72	peak
N/A						

***Remark*:**

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit*

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

Test Mode	IEEE 802.11ac VHT80 / 5290 MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Harmonic	Test Date	June 4, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
10580.000	33.83	15.10	48.93	74.00	-25.07	peak
N/A						

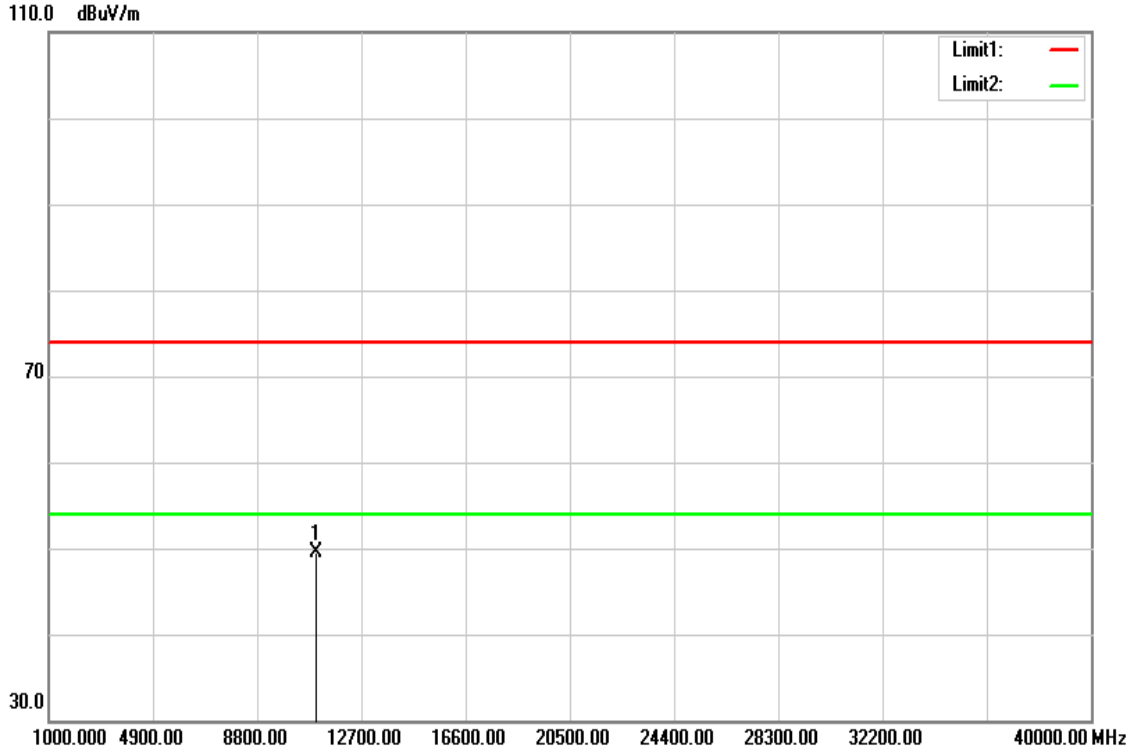
***Remark*:**

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit*

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

Above 1G Test Data for UNII-2c

Test Mode	IEEE 802.11a / 5500 MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Harmonic	Test Date	June 4, 2018
Polarize	Vertical	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



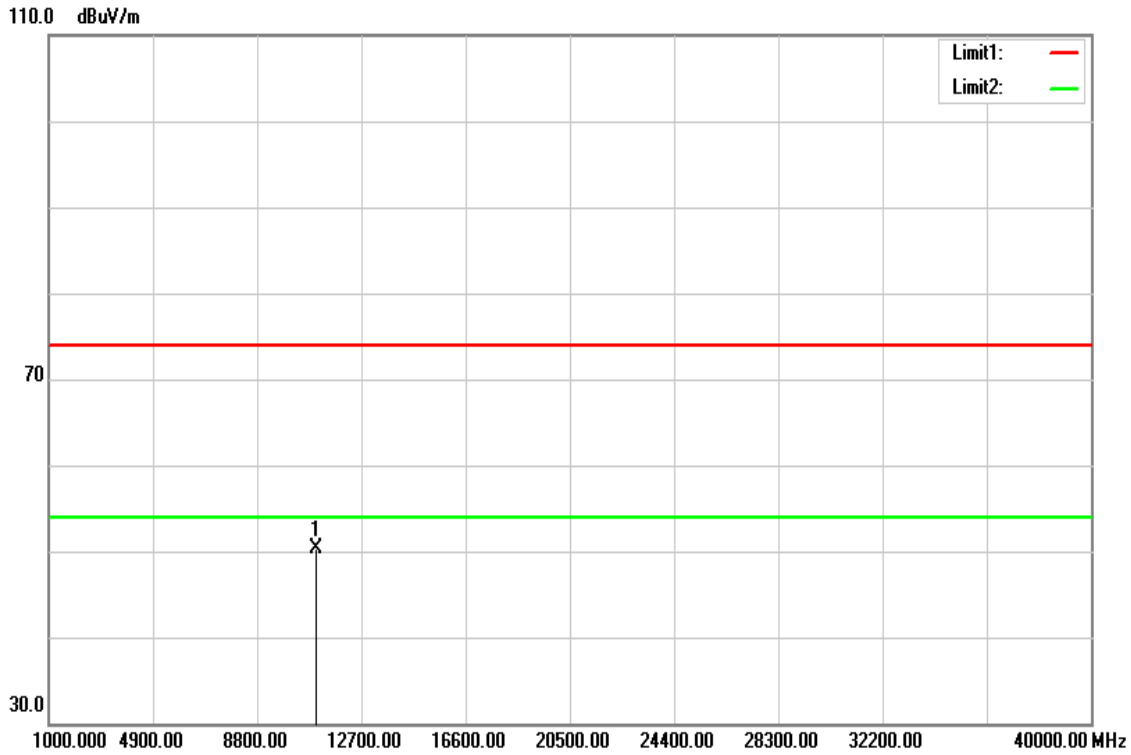
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11000.000	33.48	16.06	49.54	74.00	-24.46	peak
N/A						

***Remark*:**

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit*

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

Test Mode	IEEE 802.11a / 5500 MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Harmonic	Test Date	June 4, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



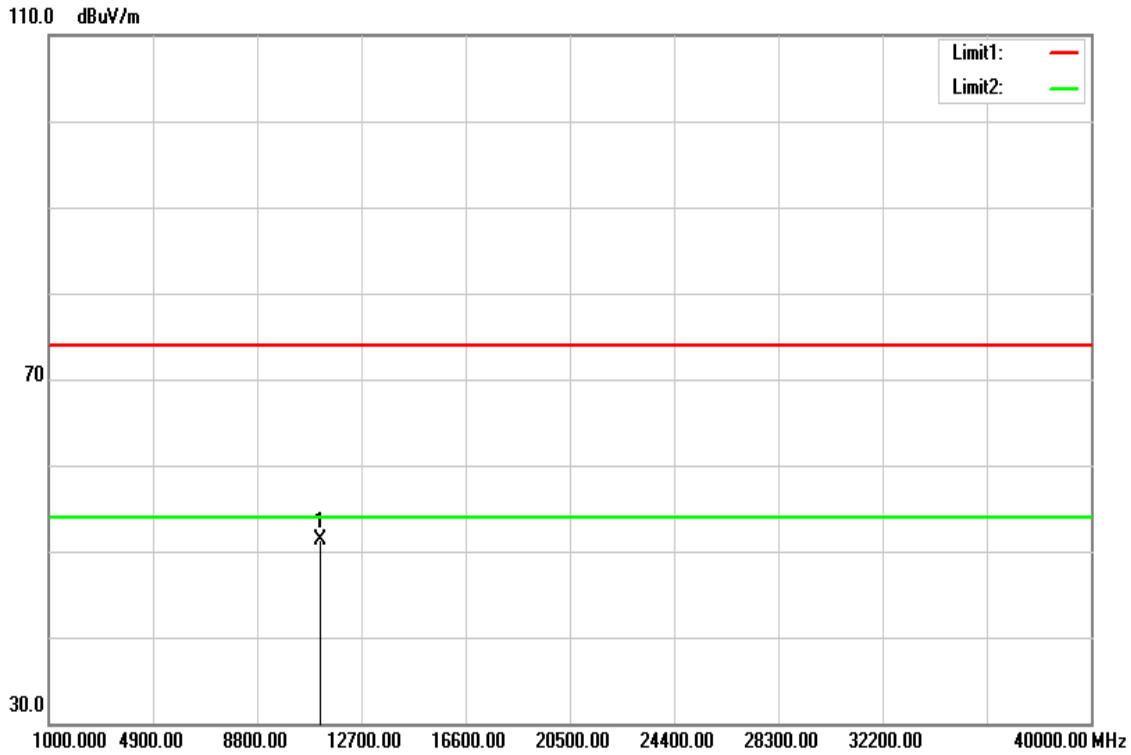
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11000.000	34.17	16.06	50.23	74.00	-23.77	peak
N/A						

***Remark*:**

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit*

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

Test Mode	IEEE 802.11a / 5580 MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Harmonic	Test Date	June 4, 2018
Polarize	Vertical	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



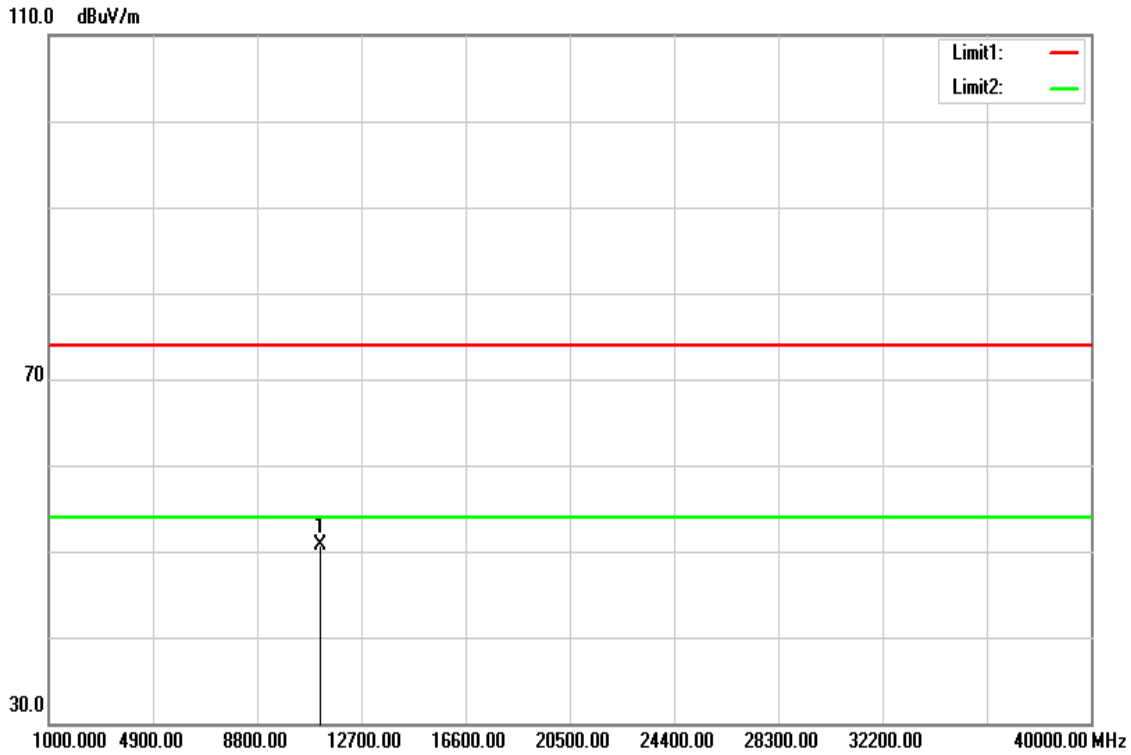
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11160.000	35.18	16.07	51.25	74.00	-22.75	peak
N/A						

***Remark*:**

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit*

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

Test Mode	IEEE 802.11a / 5580 MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Harmonic	Test Date	June 4, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



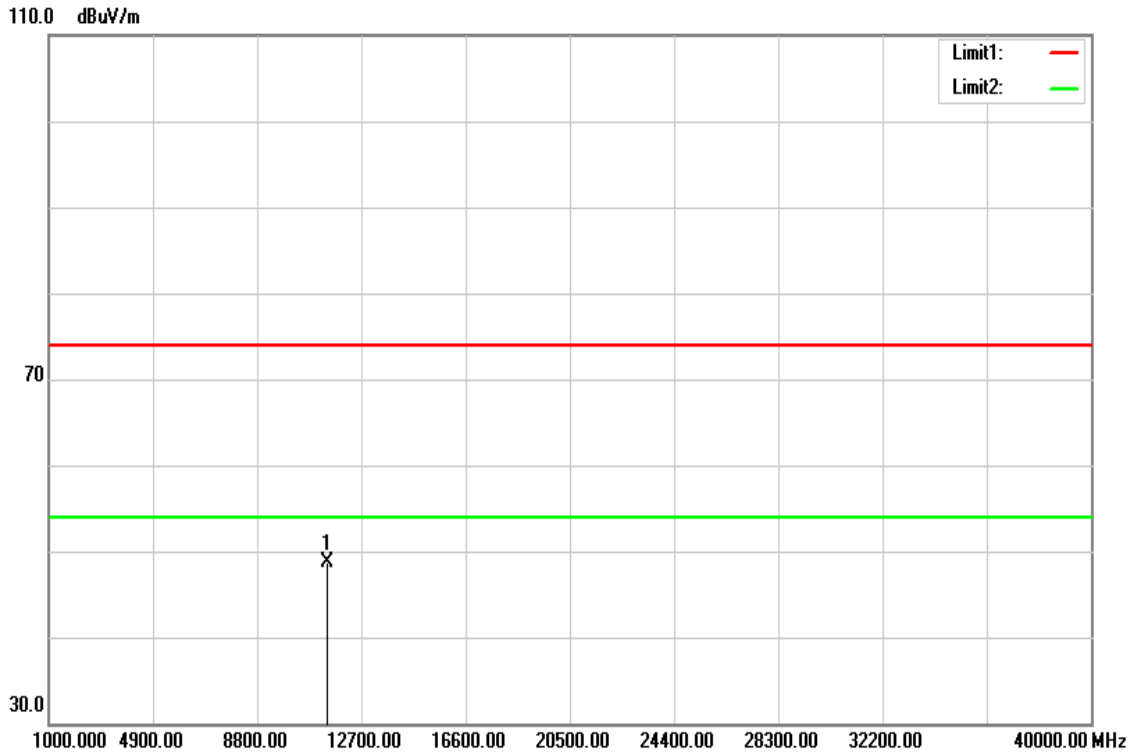
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11160.000	34.63	16.07	50.70	74.00	-23.30	peak
N/A						

***Remark*:**

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit*

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

Test Mode	IEEE 802.11a / 5700 MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Harmonic	Test Date	June 4, 2018
Polarize	Vertical	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



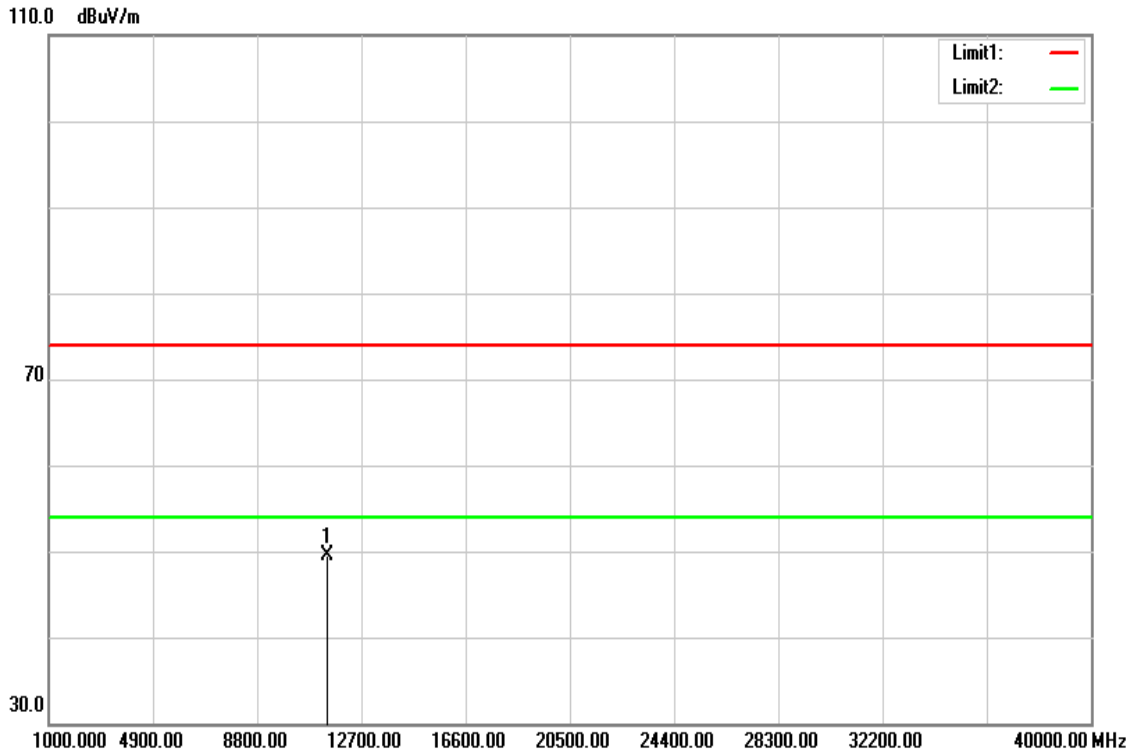
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11400.000	32.61	16.08	48.69	74.00	-25.31	peak
N/A						

***Remark*:**

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit*

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

Test Mode	IEEE 802.11a / 5700 MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Harmonic	Test Date	June 4, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



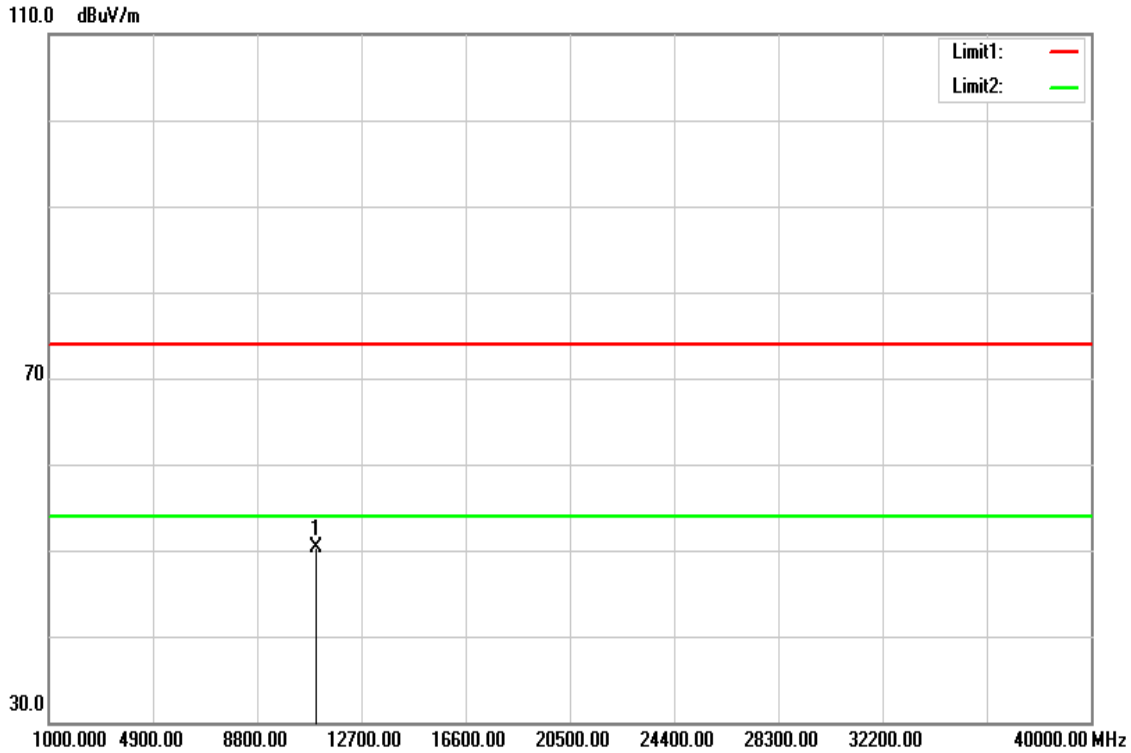
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11400.000	33.35	16.08	49.43	74.00	-24.57	peak
N/A						

***Remark*:**

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit*

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

Test Mode	IEEE 802.11n 20 / 5500 MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Harmonic	Test Date	June 4, 2018
Polarize	Vertical	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



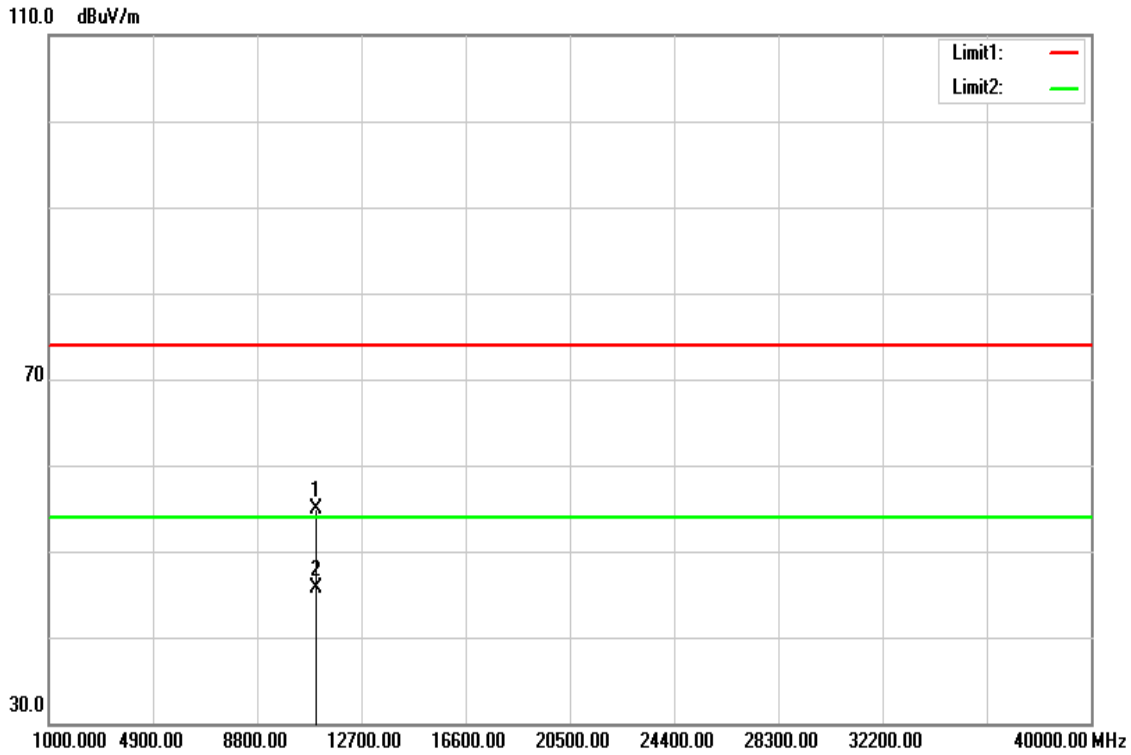
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11000.000	34.19	16.06	50.25	74.00	-23.75	peak
N/A						

***Remark*:**

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit*

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

Test Mode	IEEE 802.11n 20 / 5500 MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Harmonic	Test Date	June 4, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



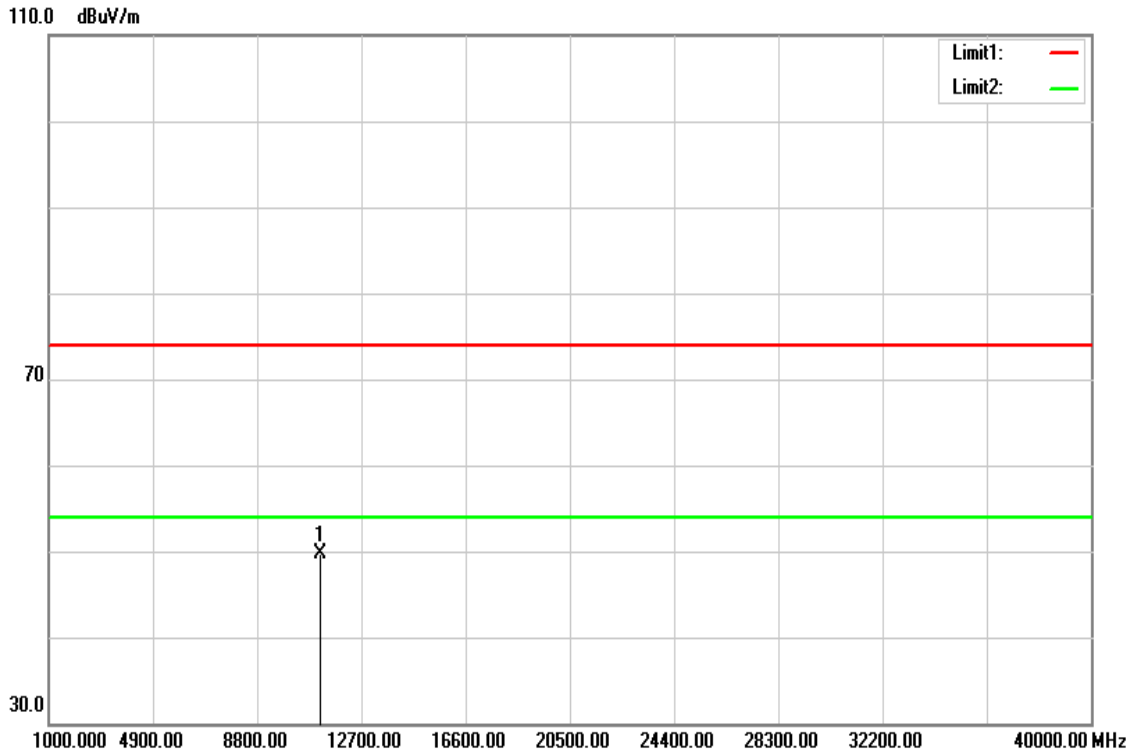
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
10990.000	38.77	16.04	54.81	74.00	-19.19	peak
10990.000	29.70	16.04	45.74	54.00	-8.26	AVG
N/A						

***Remark*:**

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

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

Test Mode	IEEE 802.11n 20 / 5580 MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Harmonic	Test Date	June 4, 2018
Polarize	Vertical	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



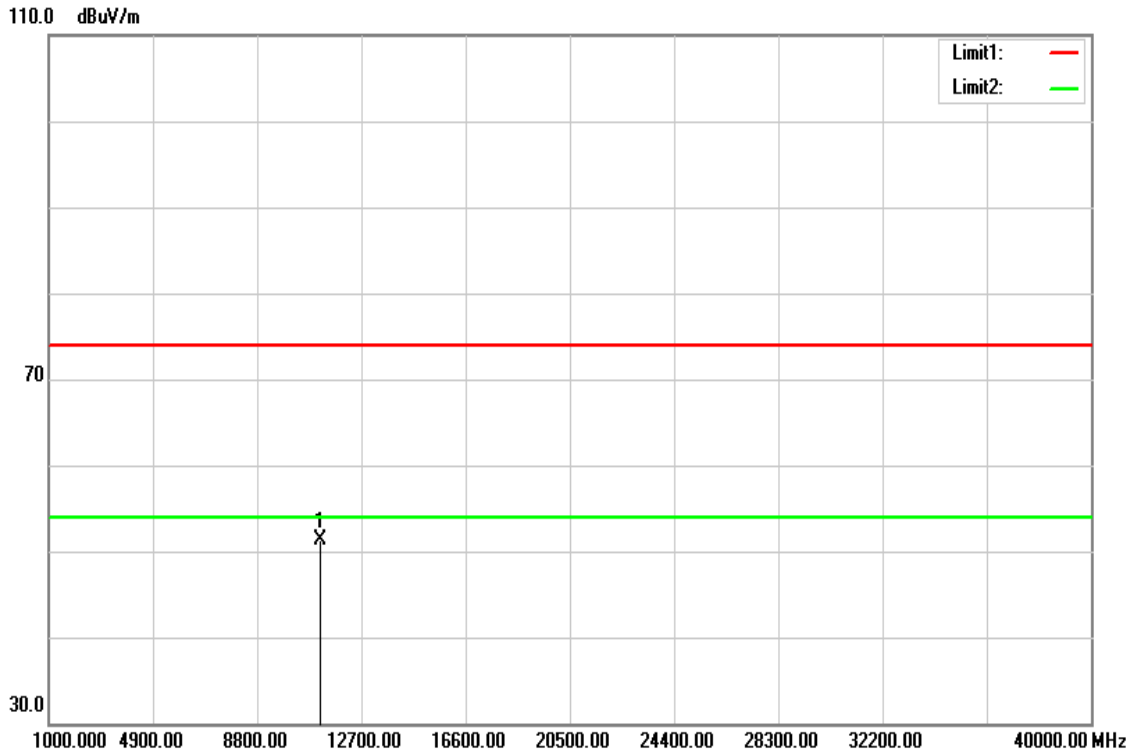
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11160.000	33.64	16.07	49.71	74.00	-24.29	peak
N/A						

***Remark*:**

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit*

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

Test Mode	IEEE 802.11n 20 / 5580 MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Harmonic	Test Date	June 4, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



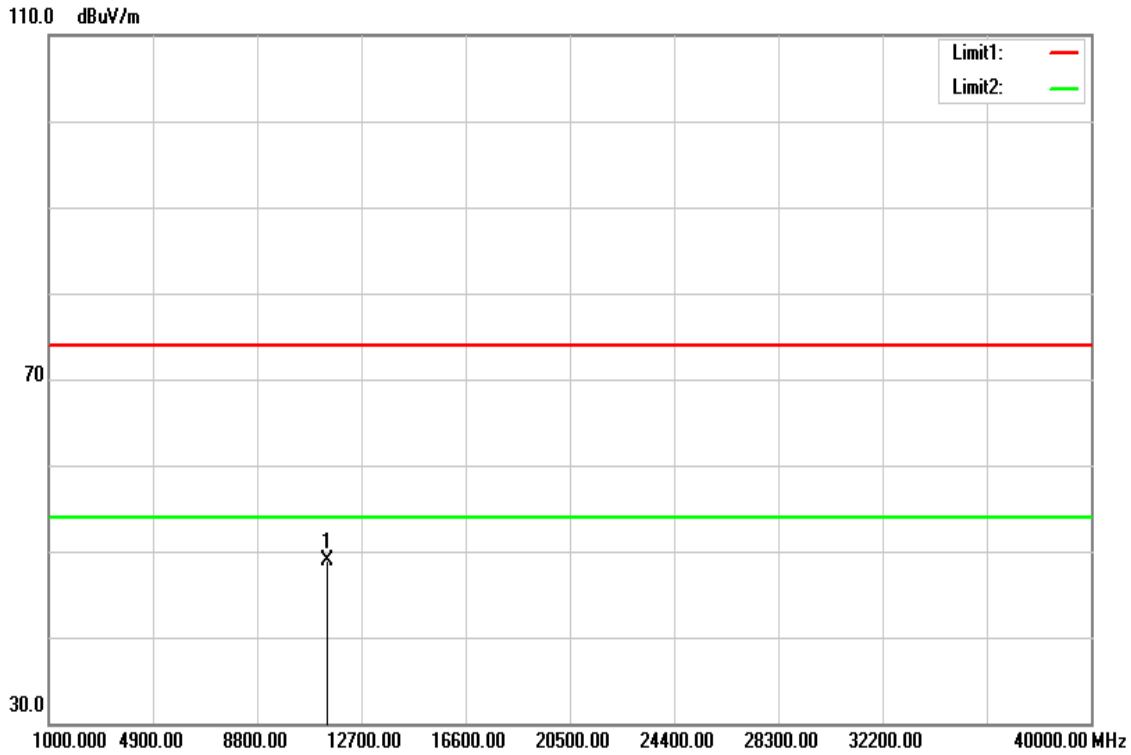
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11160.000	35.24	16.07	51.31	74.00	-22.69	peak
N/A						

***Remark*:**

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit*

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

Test Mode	IEEE 802.11n 20 / 5700 MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Harmonic	Test Date	June 4, 2018
Polarize	Vertical	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



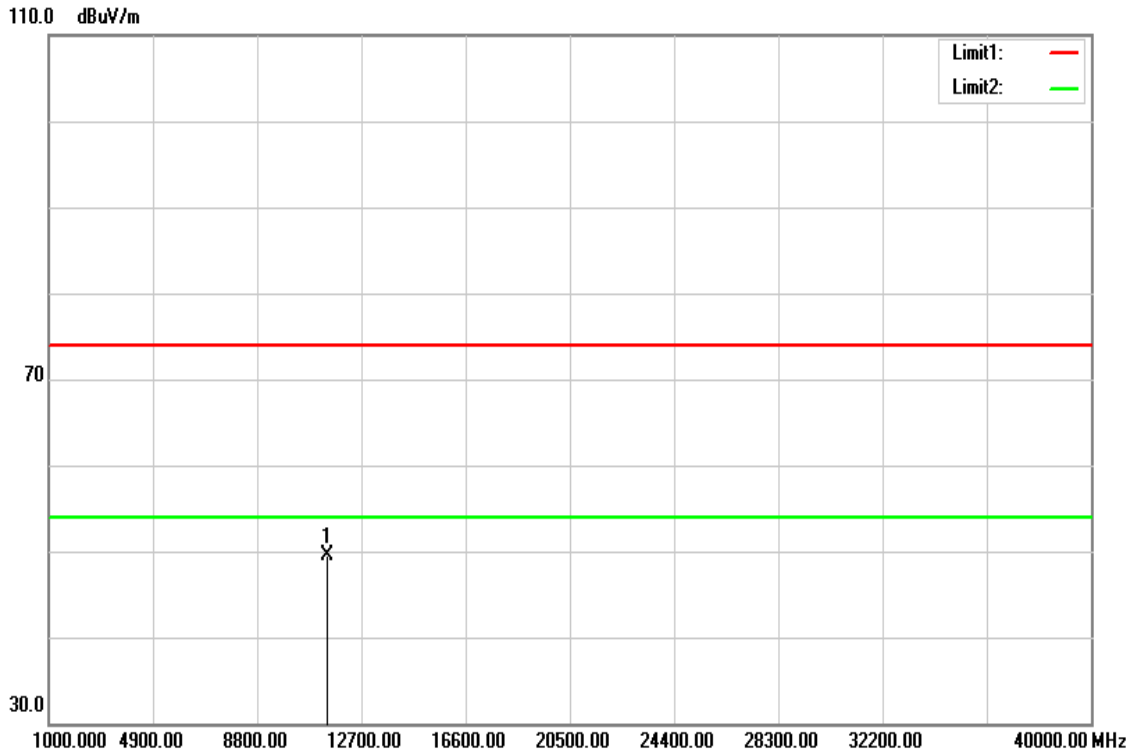
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11400.000	32.73	16.08	48.81	74.00	-25.19	peak
N/A						

***Remark*:**

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit*

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

Test Mode	IEEE 802.11n 20 / 5700 MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Harmonic	Test Date	June 4, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



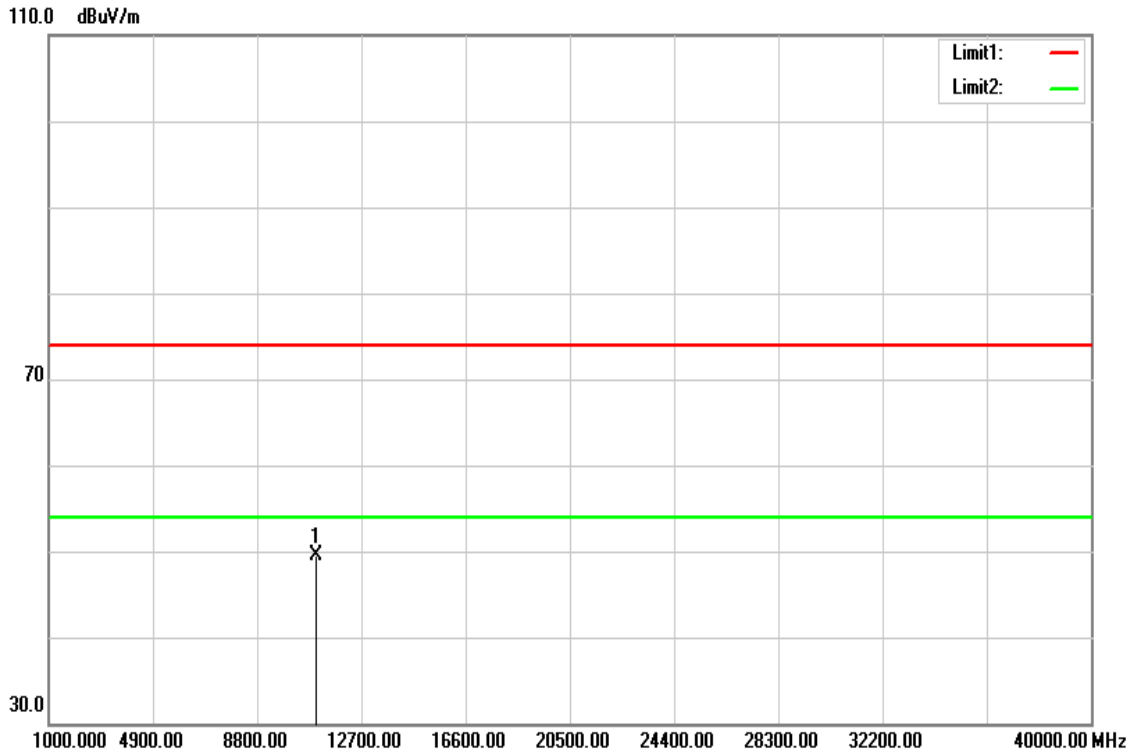
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11400.000	33.39	16.08	49.47	74.00	-24.53	peak
N/A						

***Remark*:**

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit*

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

Test Mode	IEEE 802.11n 40 / 5510 MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Harmonic	Test Date	June 4, 2018
Polarize	Vertical	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



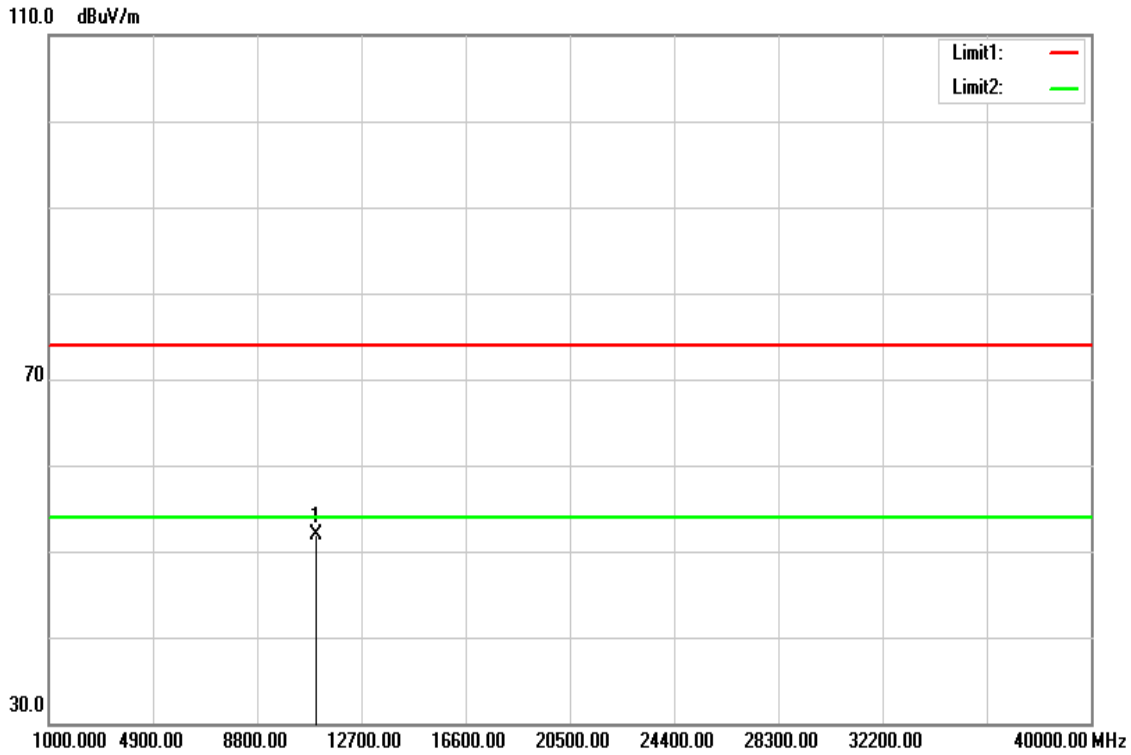
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11020.000	33.43	16.05	49.48	74.00	-24.52	peak
N/A						

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit*

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

Test Mode	IEEE 802.11n 40 / 5510 MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Harmonic	Test Date	June 4, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



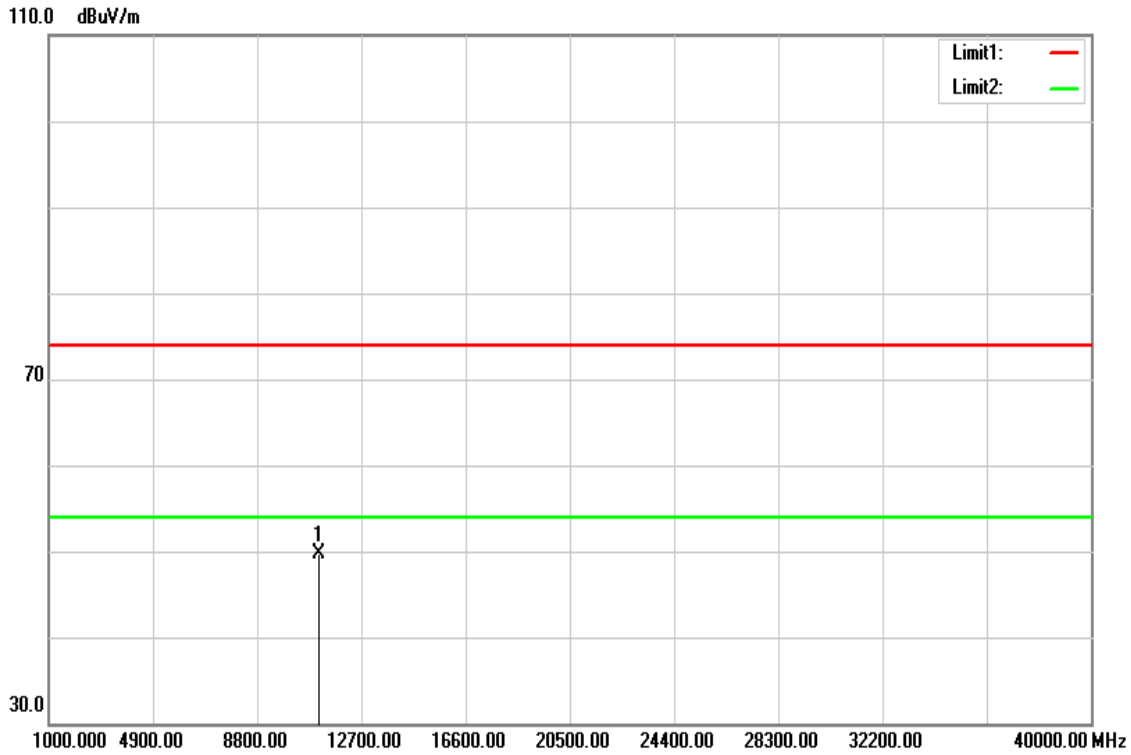
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11020.000	35.89	16.05	51.94	74.00	-22.06	peak
N/A						

***Remark*:**

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit*

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

Test Mode	IEEE 802.11n 40 / 5550 MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Harmonic	Test Date	June 4, 2018
Polarize	Vertical	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



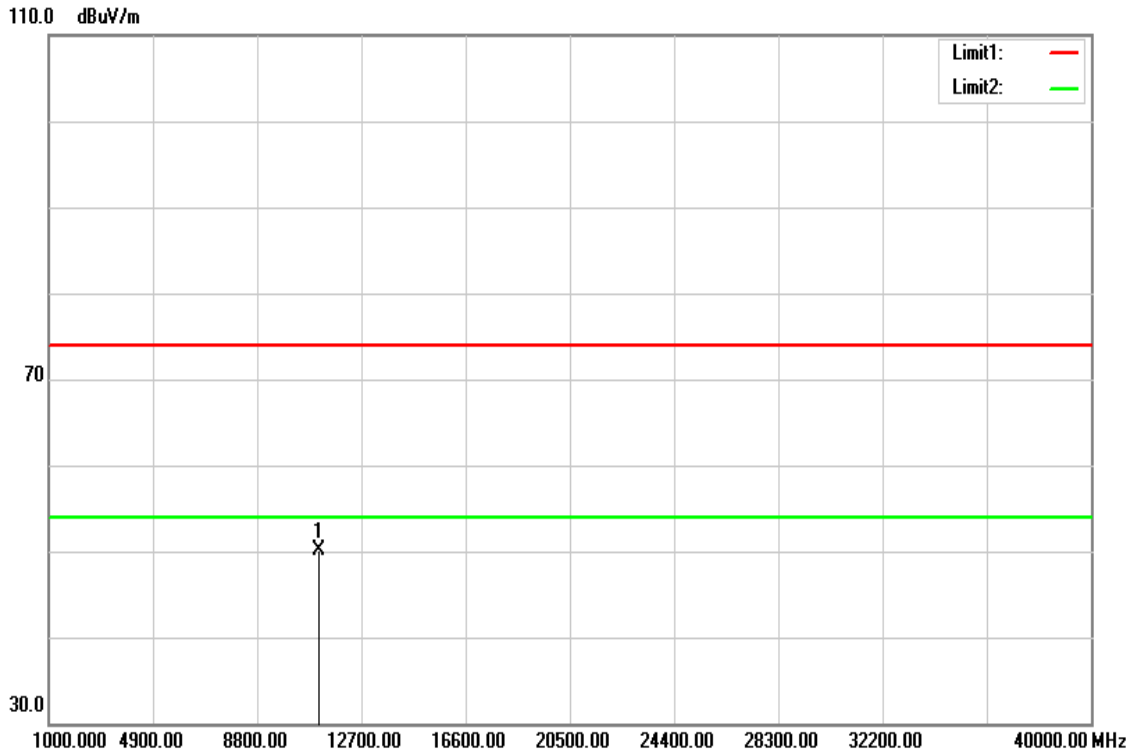
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11100.000	33.61	16.07	49.68	74.00	-24.32	peak
N/A						

***Remark*:**

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit*

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

Test Mode	IEEE 802.11n 40 / 5550 MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Harmonic	Test Date	June 4, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



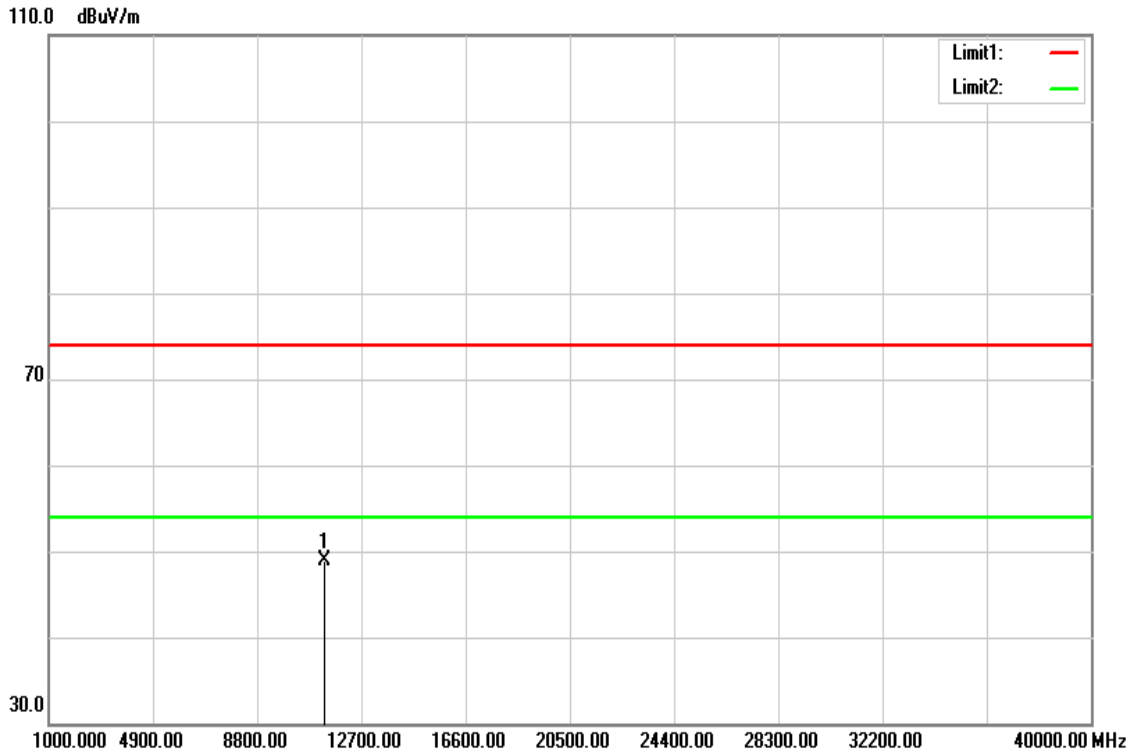
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11100.000	34.09	16.07	50.16	74.00	-23.84	peak
N/A						

***Remark*:**

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit*

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

Test Mode	IEEE 802.11n 40 / 5670 MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Harmonic	Test Date	June 4, 2018
Polarize	Vertical	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



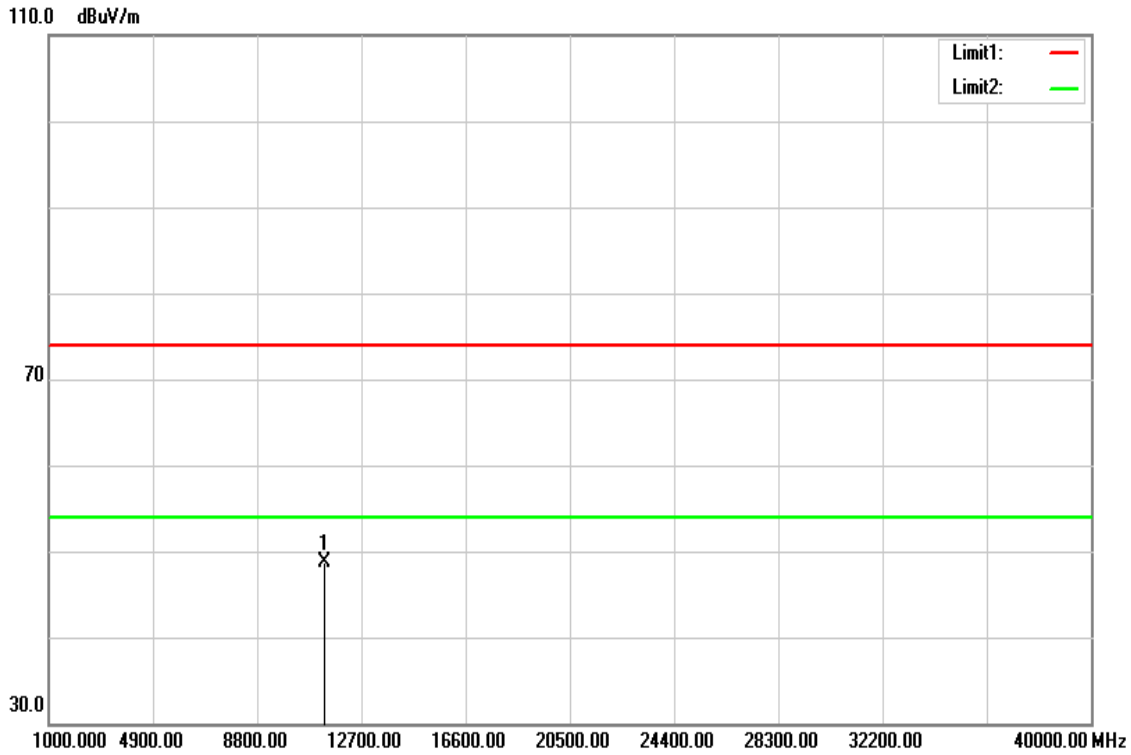
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11340.000	32.87	16.08	48.95	74.00	-25.05	peak
N/A						

***Remark*:**

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit*

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

Test Mode	IEEE 802.11n 40 / 5670 MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Harmonic	Test Date	June 4, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



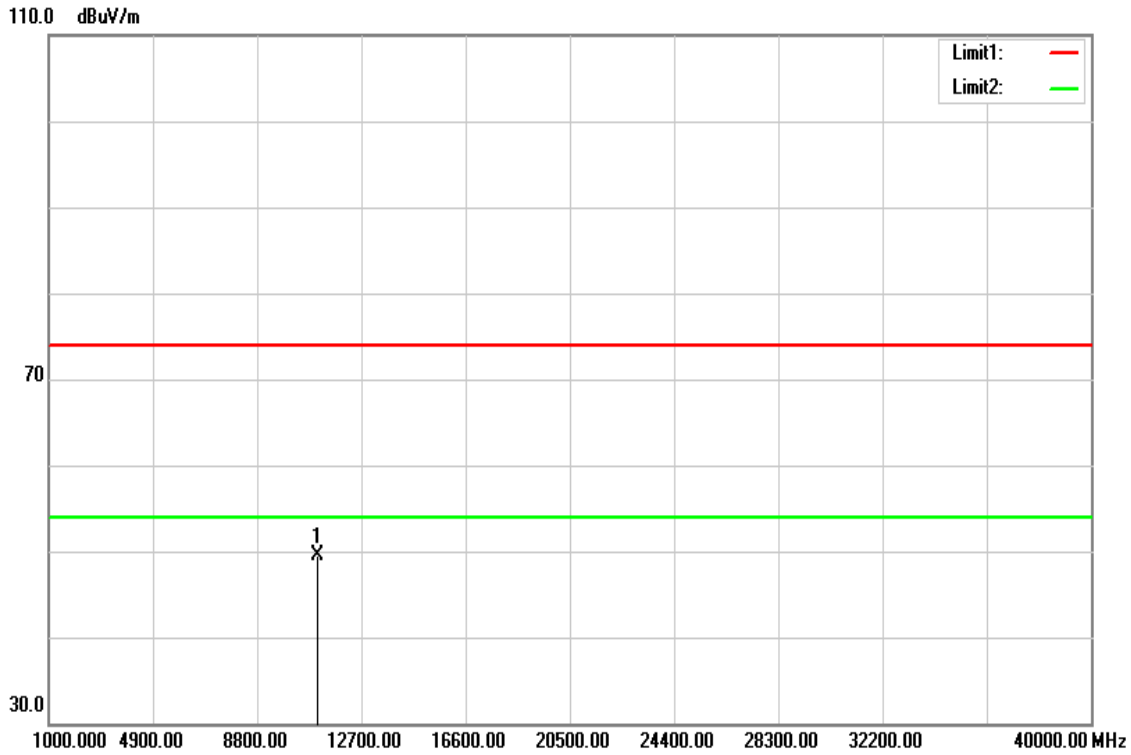
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11340.000	32.71	16.08	48.79	74.00	-25.21	peak
N/A						

***Remark*:**

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit*

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

Test Mode	IEEE 802.11ac VHT80 / 5530 MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Harmonic	Test Date	June 4, 2018
Polarize	Vertical	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



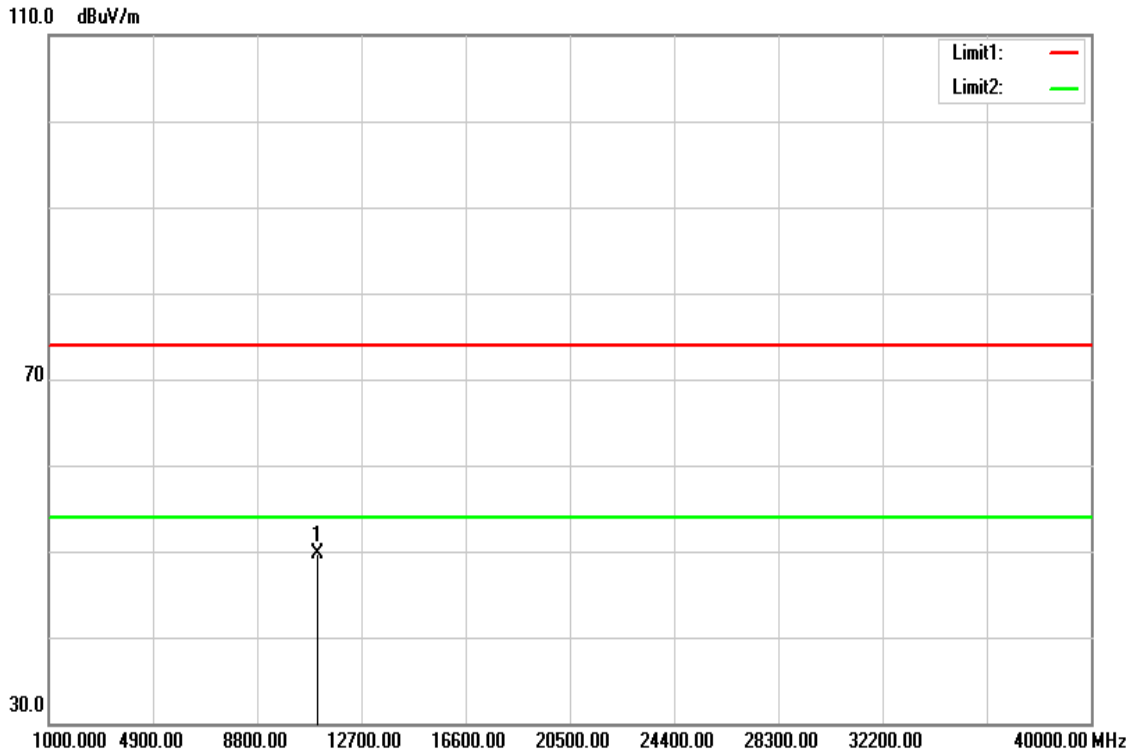
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11060.000	33.46	16.06	49.52	74.00	-24.48	peak
N/A						

***Remark*:**

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit*

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

Test Mode	IEEE 802.11ac VHT80 / 5530 MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Harmonic	Test Date	June 4, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11060.000	33.70	16.06	49.76	74.00	-24.24	peak
N/A						

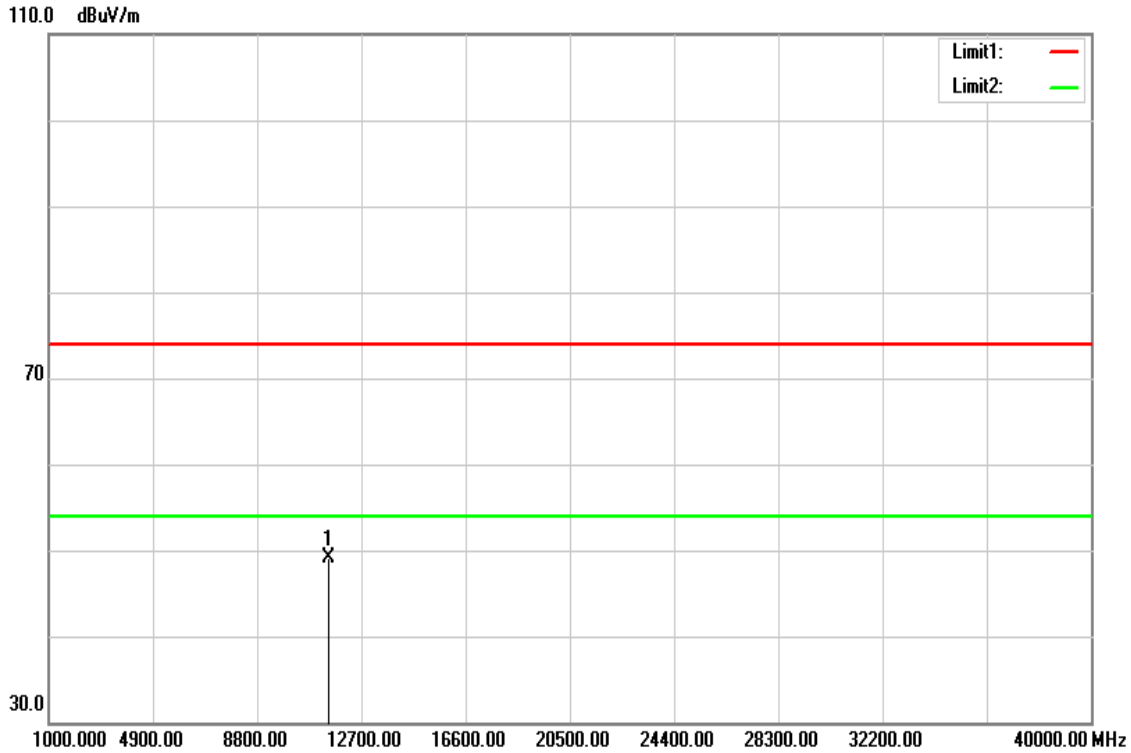
***Remark*:**

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit*

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

Above 1G Test Data for UNII-3

Test Mode	IEEE 802.11a / 5745 MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Harmonic	Test Date	June 4, 2018
Polarize	Vertical	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



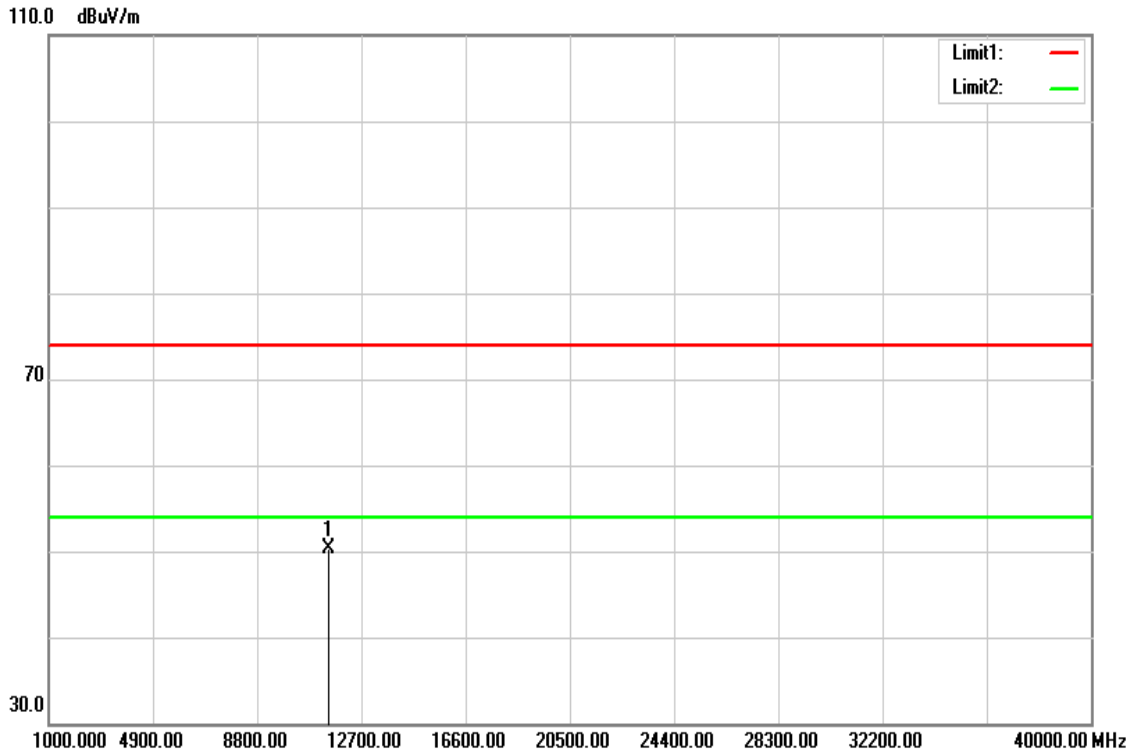
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11490.000	32.92	16.09	49.01	74.00	-24.99	peak
N/A						

***Remark*:**

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit*

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

Test Mode	IEEE 802.11a / 5745 MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Harmonic	Test Date	June 4, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



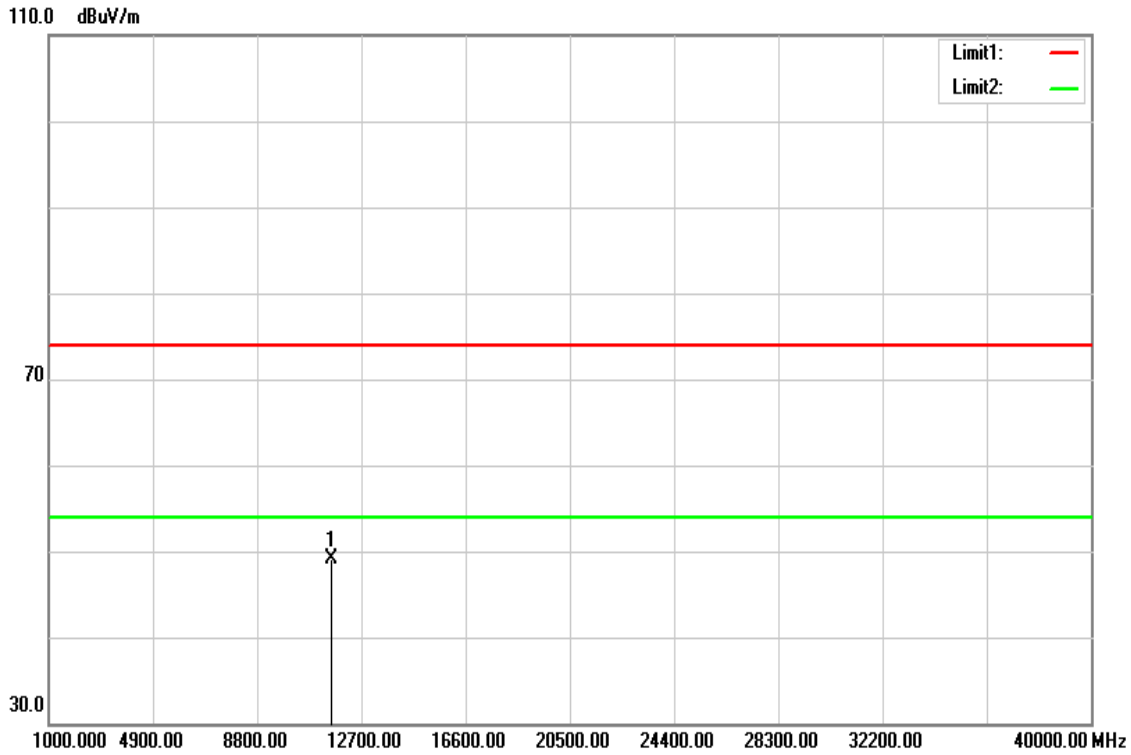
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11490.000	34.20	16.09	50.29	74.00	-23.71	peak
N/A						

***Remark*:**

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit*

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

Test Mode	IEEE 802.11n 20/ 5785 MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Harmonic	Test Date	June 4, 2018
Polarize	Vertical	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



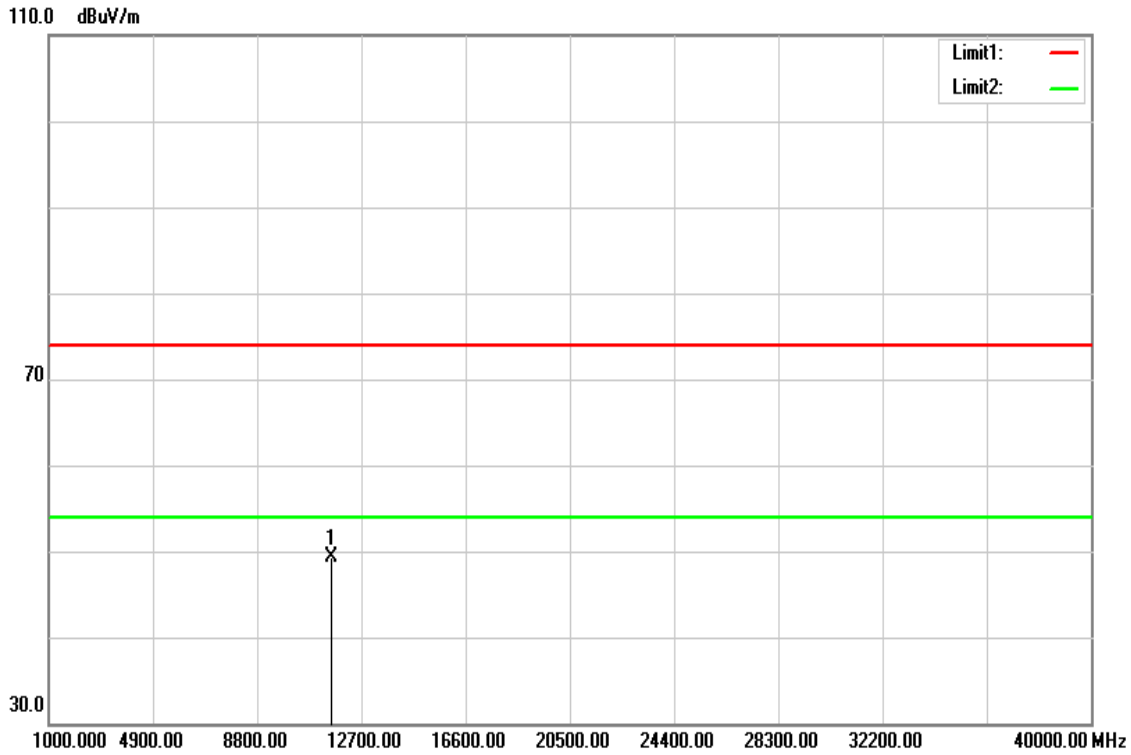
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11570.000	33.17	16.01	49.18	74.00	-24.82	peak
N/A						

***Remark*:**

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit*

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

Test Mode	IEEE 802.11a/ 5785 MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Harmonic	Test Date	June 4, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



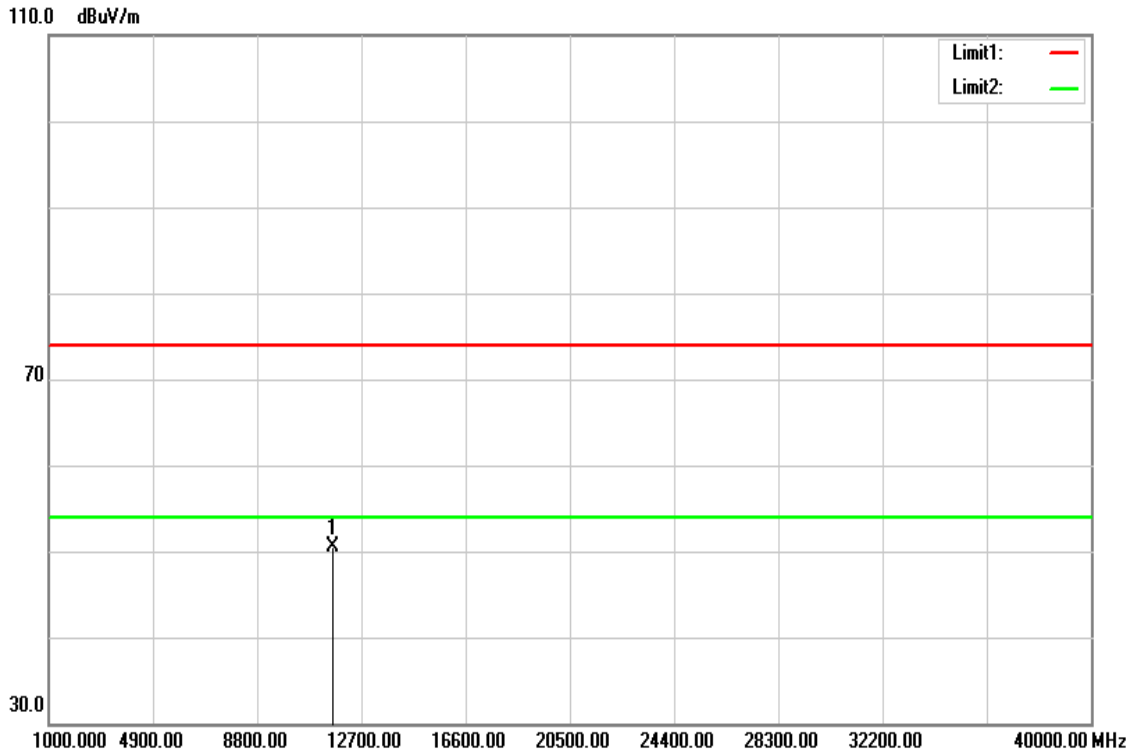
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11570.000	33.20	16.01	49.21	74.00	-24.79	peak
N/A						

***Remark*:**

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit*

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

Test Mode	IEEE 802.11a/ 5825 MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Harmonic	Test Date	June 4, 2018
Polarize	Vertical	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



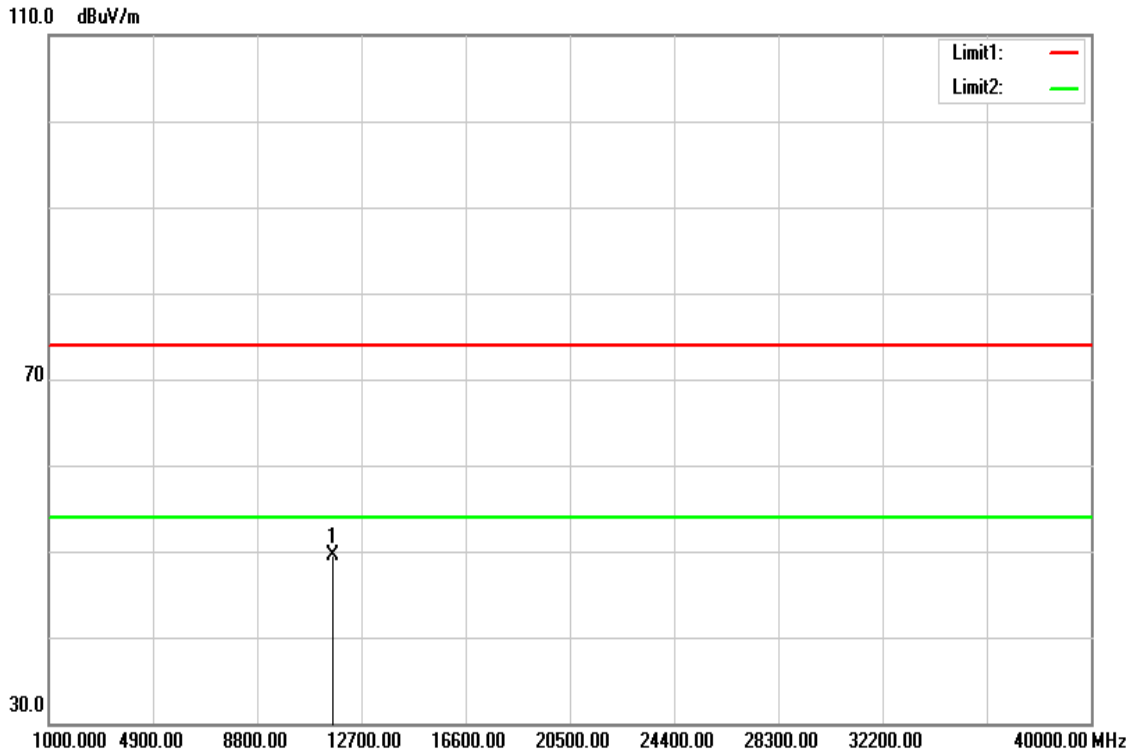
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11650.000	34.51	15.93	50.44	74.00	-23.56	peak
N/A						

***Remark*:**

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit*

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

Test Mode	IEEE 802.11a/ 5825 MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Harmonic	Test Date	June 4, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



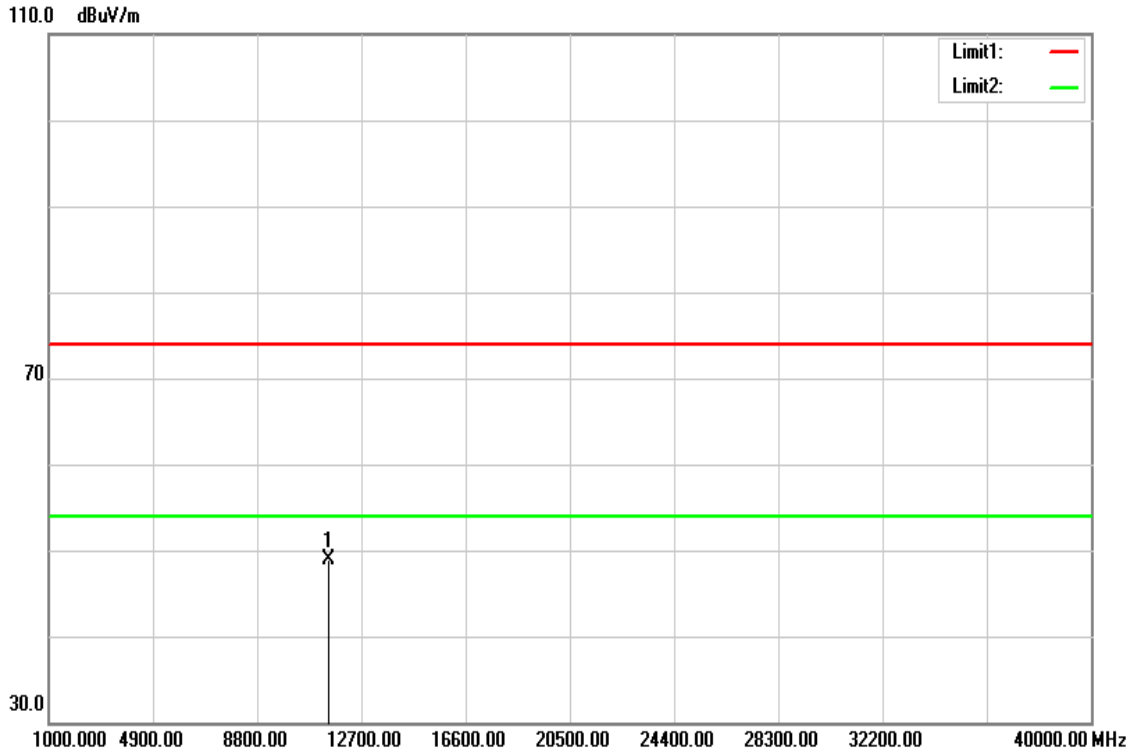
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11650.000	33.51	15.93	49.44	74.00	-24.56	peak
N/A						

***Remark*:**

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit*

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

Test Mode	IEEE 802.11n 20 / 5745 MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Harmonic	Test Date	June 4, 2018
Polarize	Vertical	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



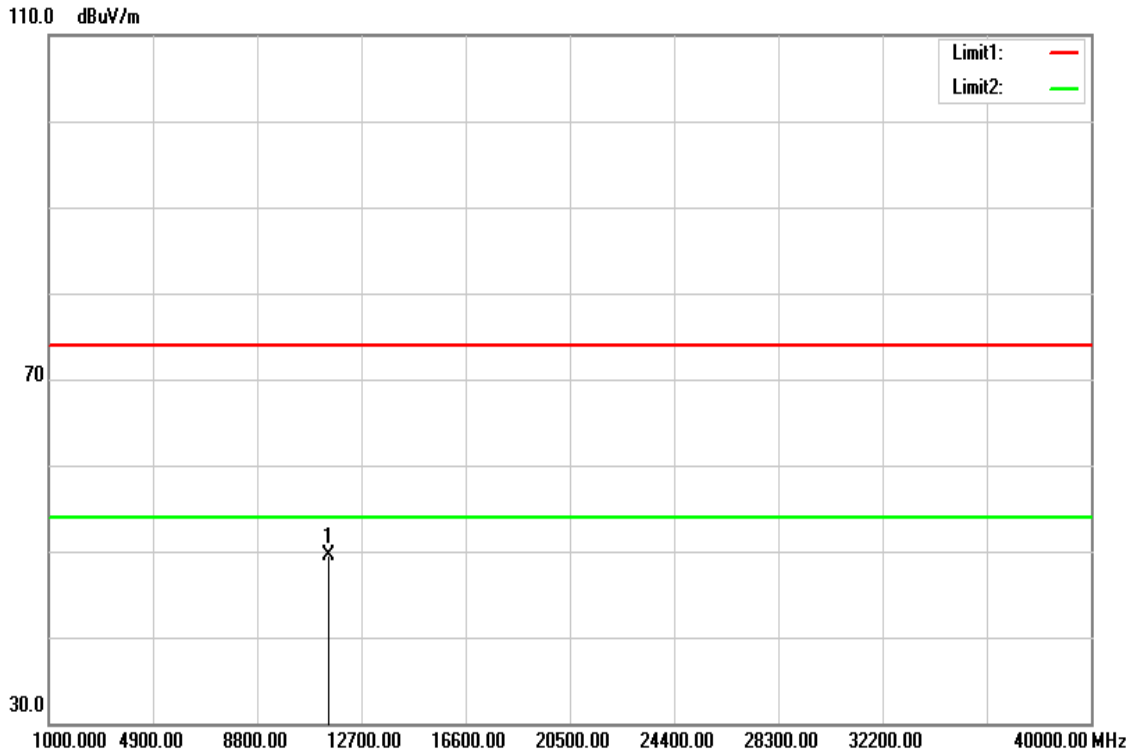
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11490.000	32.84	16.09	48.93	74.00	-25.07	peak
N/A						

***Remark*:**

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit*

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

Test Mode	IEEE 802.11n 20 / 5745 MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Harmonic	Test Date	June 4, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



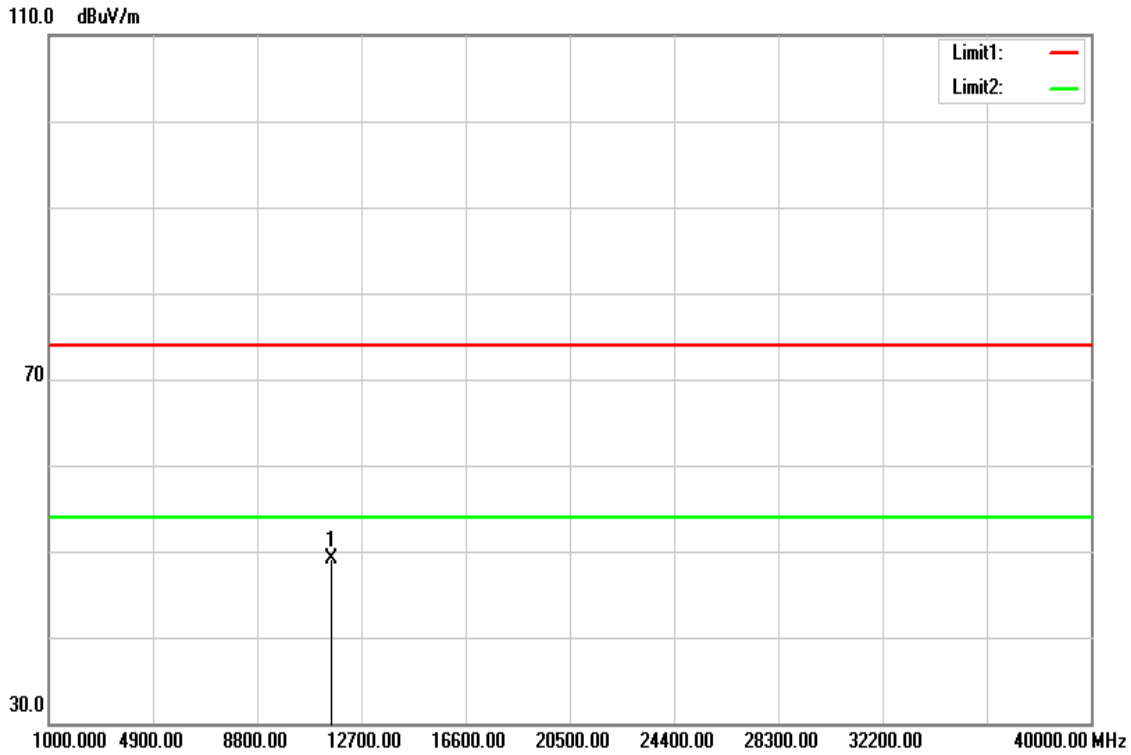
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11490.000	33.38	16.09	49.47	74.00	-24.53	peak
N/A						

***Remark*:**

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit*

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

Test Mode	IEEE 802.11n 20/ 5785 MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Harmonic	Test Date	June 4, 2018
Polarize	Vertical	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



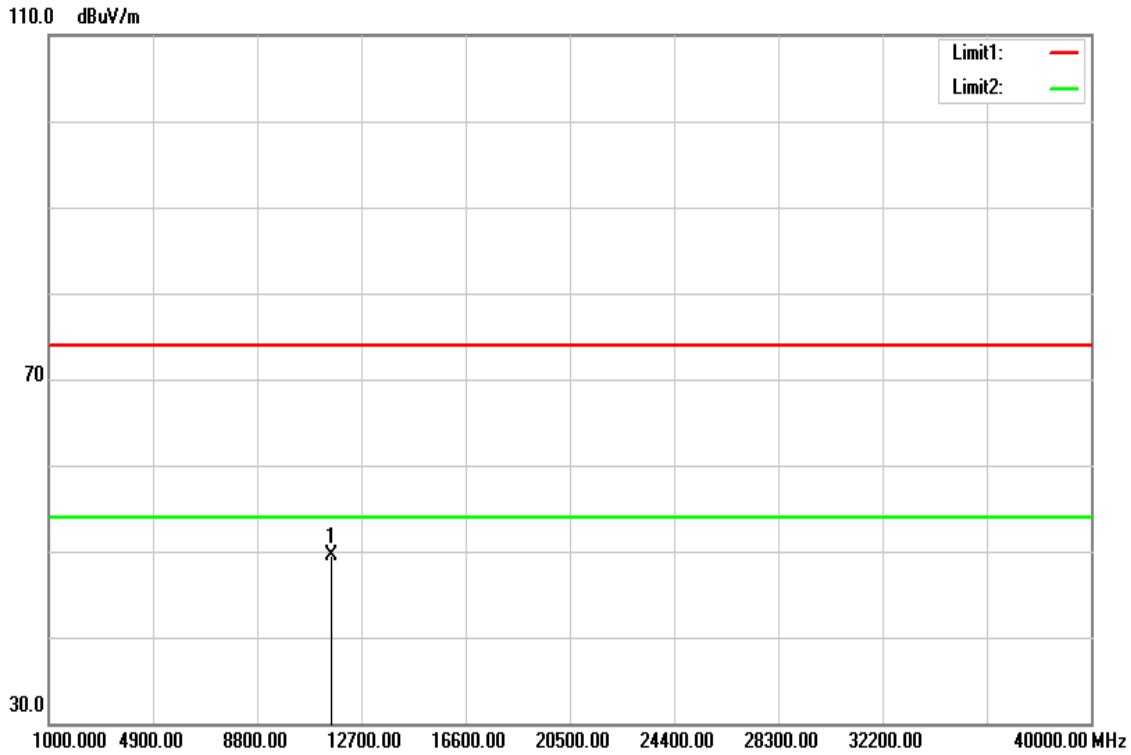
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11570.000	33.04	16.01	49.05	74.00	-24.95	peak
N/A						

***Remark*:**

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit*

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

Test Mode	IEEE 802.11n 20/ 5785 MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Harmonic	Test Date	June 4, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



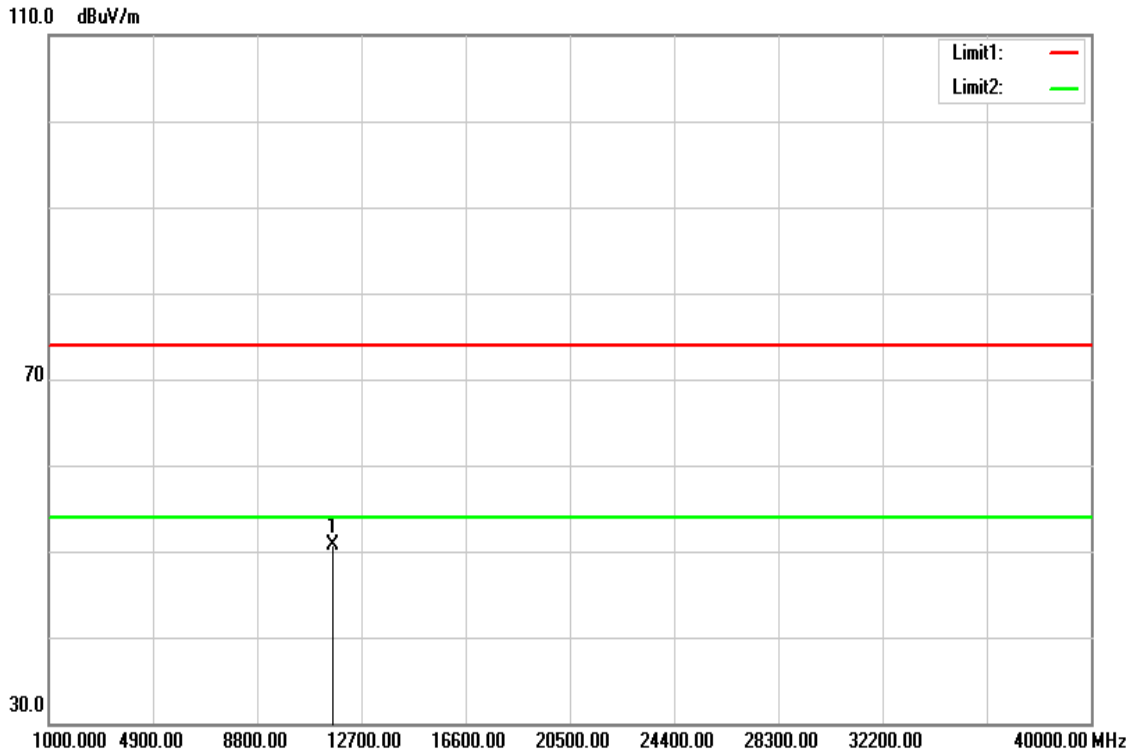
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11570.000	33.43	16.01	49.44	74.00	-24.56	peak
N/A						

***Remark*:**

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit*

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

Test Mode	IEEE 802.11n 20/ 5825 MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Harmonic	Test Date	June 4, 2018
Polarize	Vertical	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11650.000	34.70	15.93	50.63	74.00	-23.37	peak
N/A						

***Remark*:**

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit*

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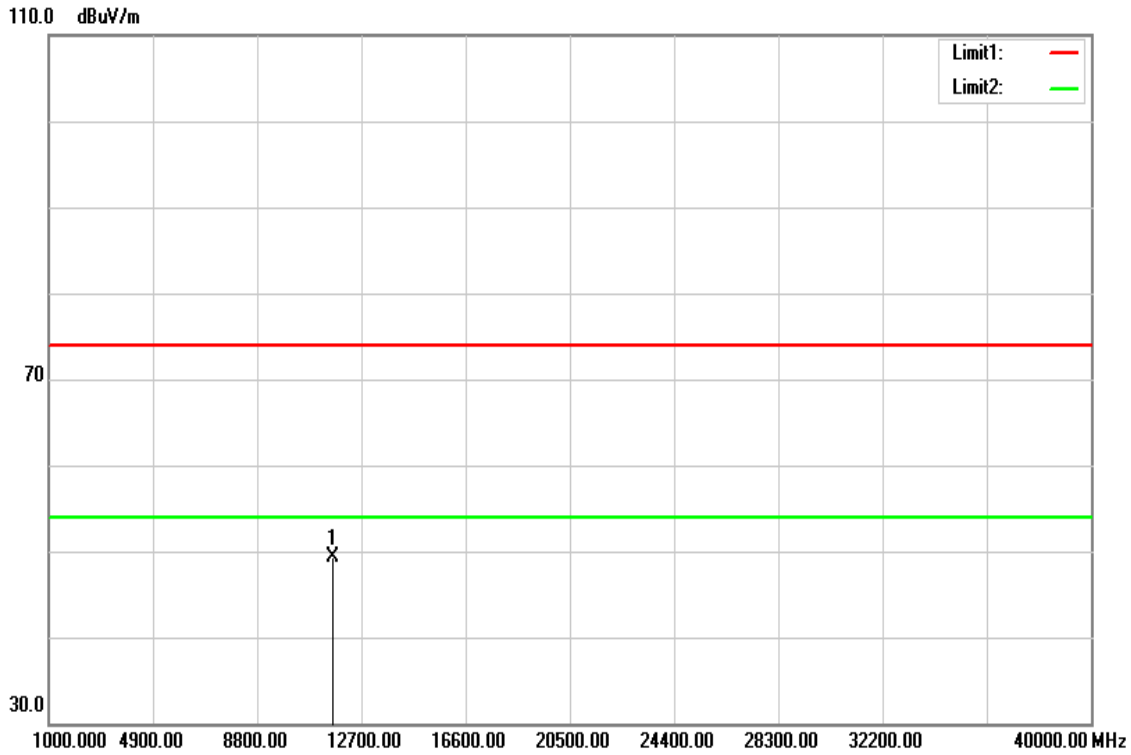
Test Mode	IEEE 802.11n 20/ 5825 MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Harmonic	Test Date	June 4, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11650.000	33.40	15.93	49.33	74.00	-24.67	peak
N/A						

***Remark*:**

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit*

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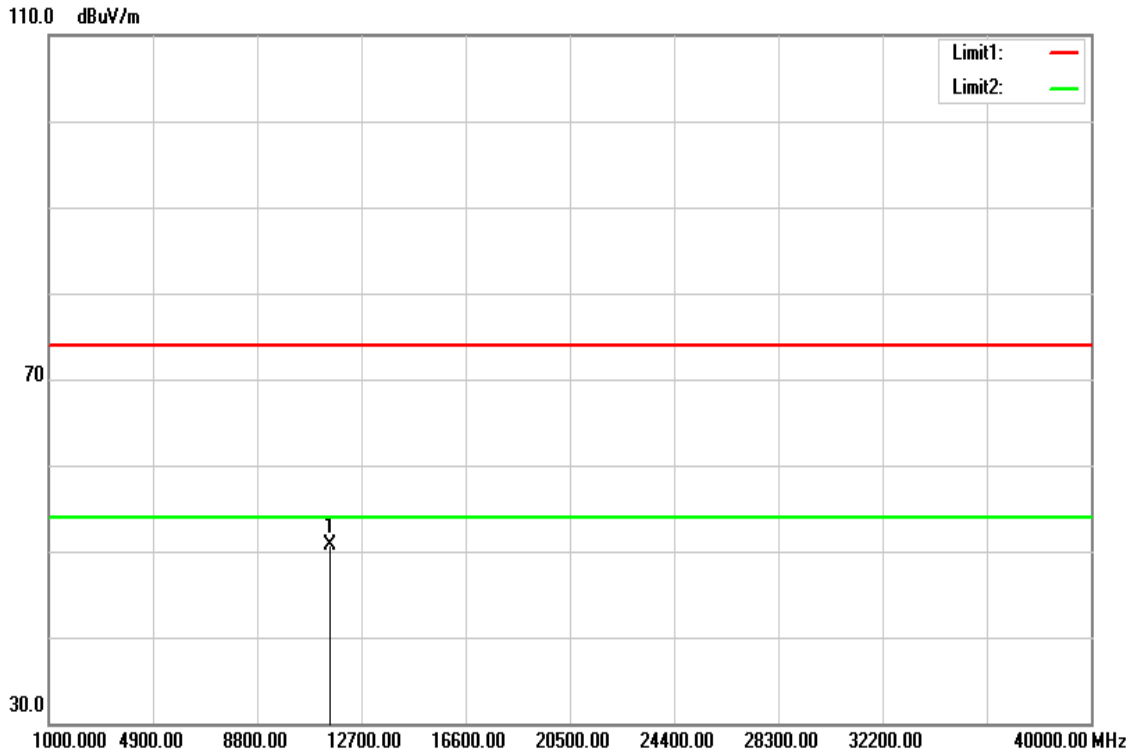
Test Mode	IEEE 802.11n 40/ 5755 MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Harmonic	Test Date	June 4, 2018
Polarize	Vertical	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



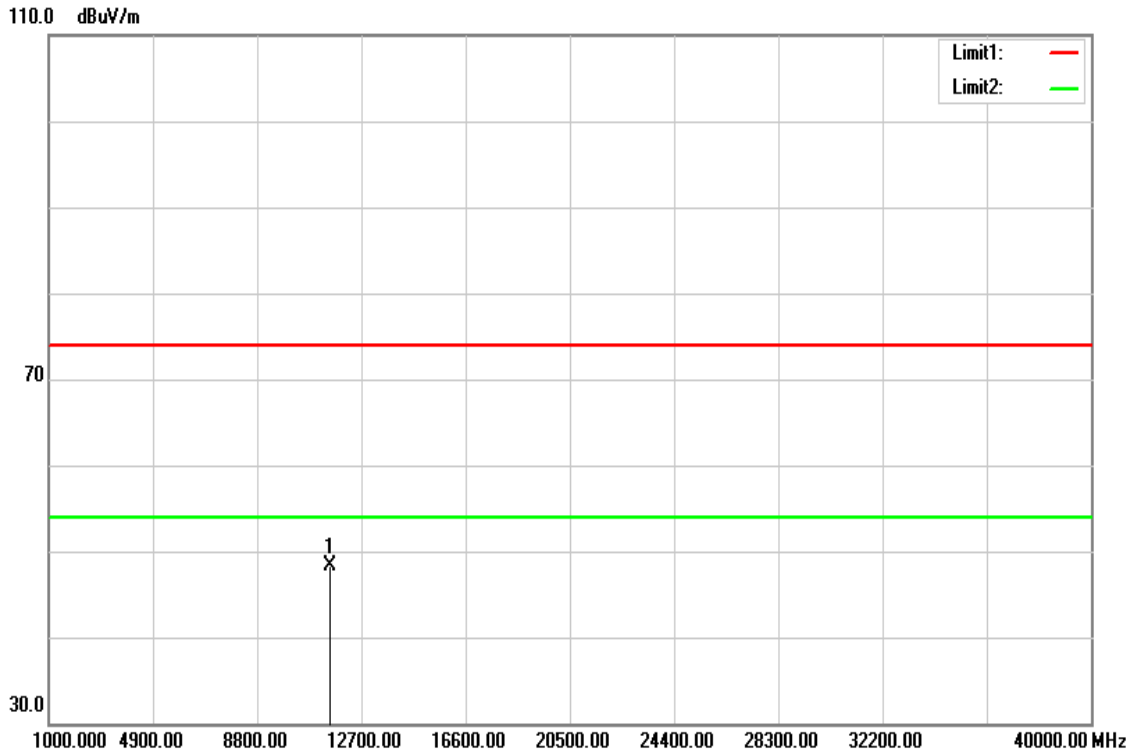
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11510.000	34.58	16.08	50.66	74.00	-23.34	peak
N/A						

***Remark*:**

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit*

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

Test Mode	IEEE 802.11n 40/ 5755 MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Harmonic	Test Date	June 4, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11510.000	32.21	16.08	48.29	74.00	-25.71	peak
N/A						

***Remark*:**

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit*

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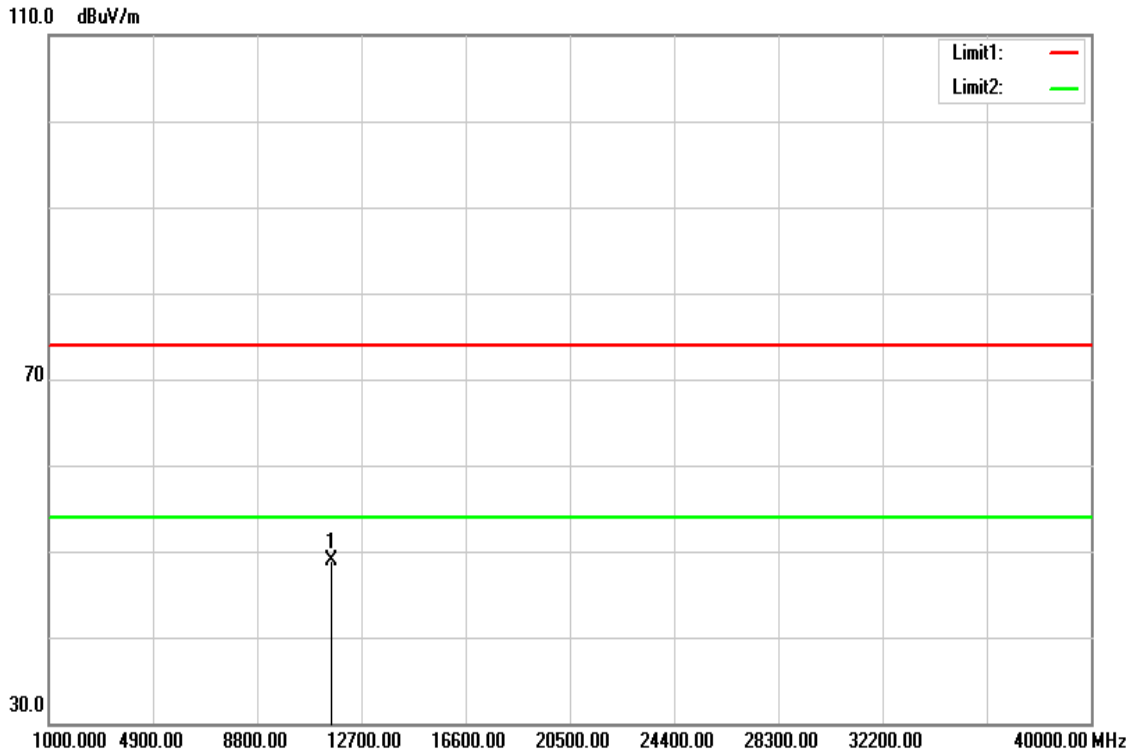
Test Mode	IEEE 802.11n 40/ 5795 MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Harmonic	Test Date	June 4, 2018
Polarize	Vertical	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



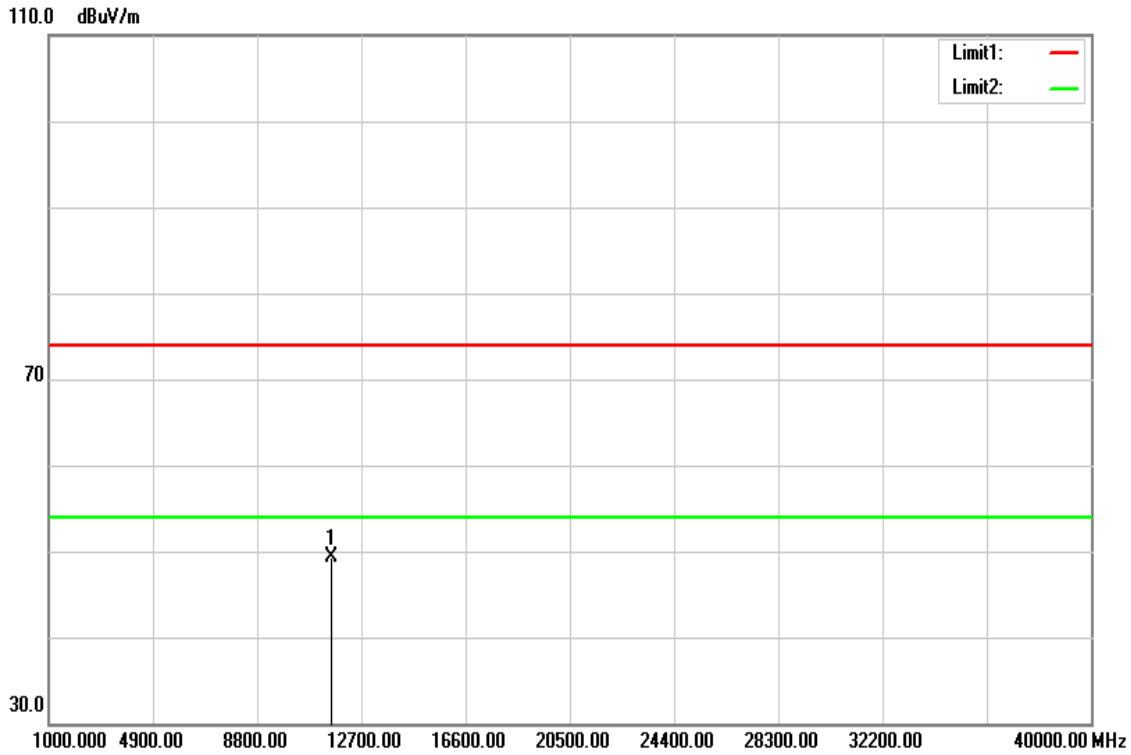
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11590.000	32.91	16.00	48.91	74.00	-25.09	peak
N/A						

***Remark*:**

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit*

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

Test Mode	IEEE 802.11n 40/ 5795 MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Harmonic	Test Date	June 4, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11590.000	33.20	16.00	49.20	74.00	-24.80	peak
N/A						

***Remark*:**

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit*

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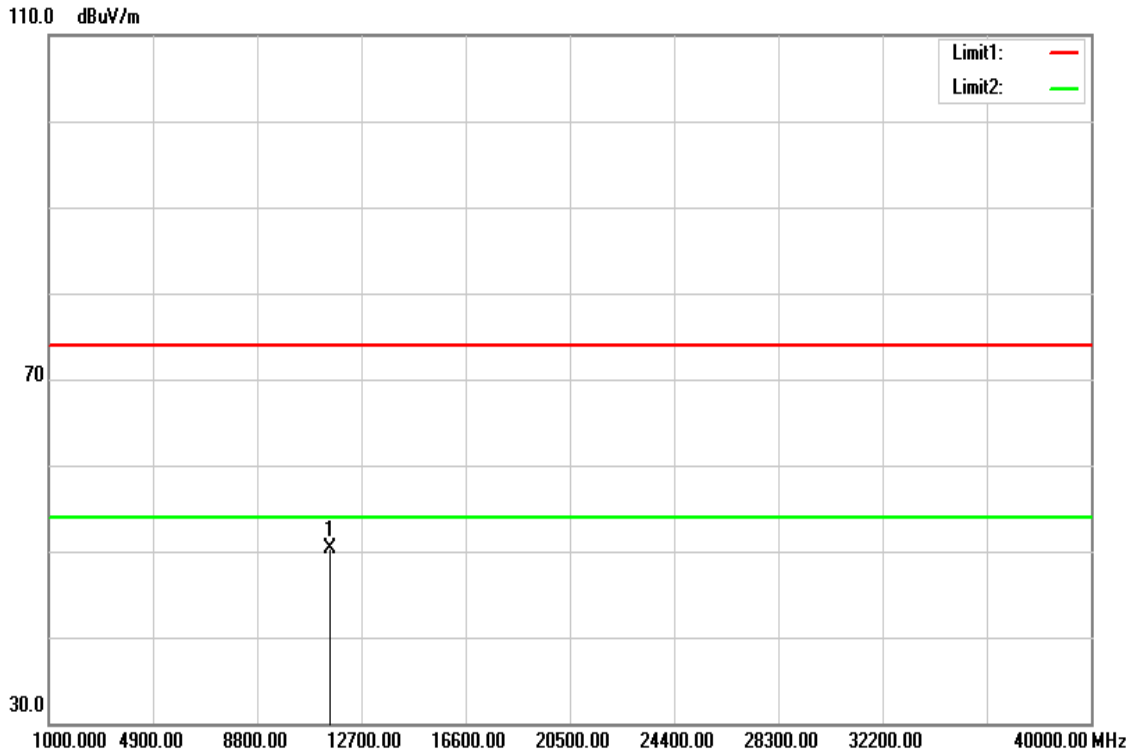
Test Mode	IEEE 802.11ac VHT80/ 5775 MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Harmonic	Test Date	June 4, 2018
Polarize	Vertical	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



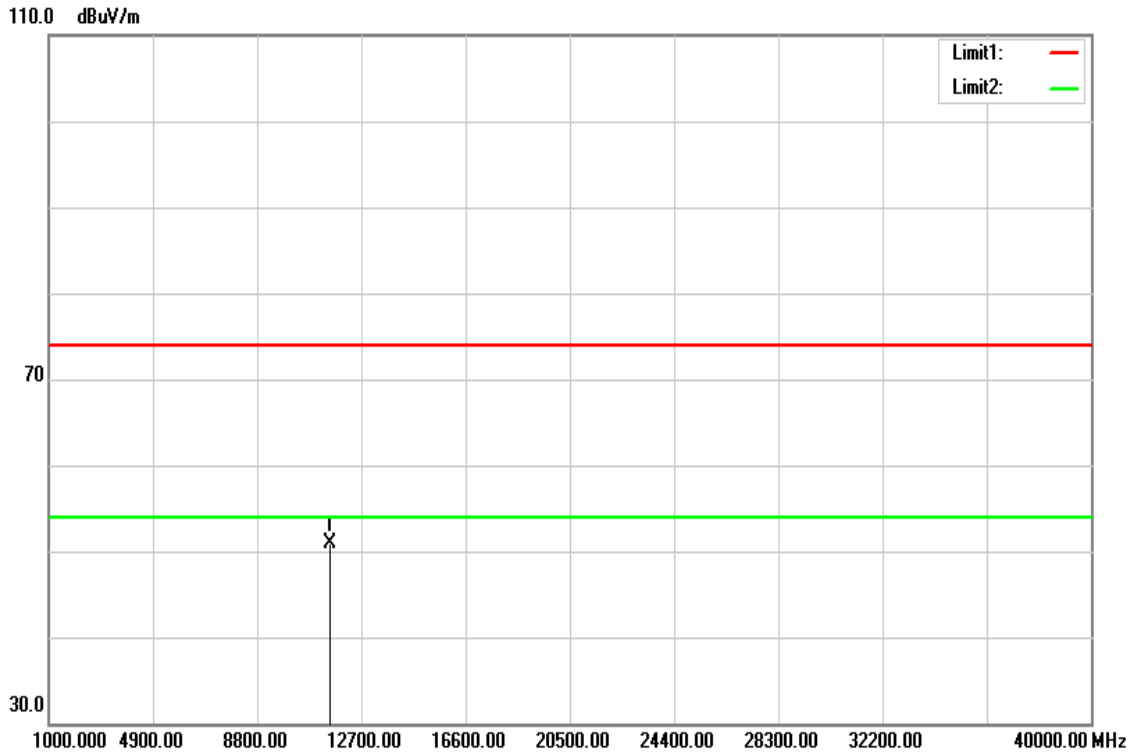
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11550.000	34.16	16.04	50.20	74.00	-23.80	peak
N/A						

***Remark*:**

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit*

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

Test Mode	IEEE 802.11ac VHT80/ 5775 MHz	Temp/Hum	22(℃)/ 34%RH
Test Item	Harmonic	Test Date	June 4, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11550.000	34.79	16.04	50.83	74.00	-23.17	peak
N/A						

***Remark*:**

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit*

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4.6 FREQUENCY STABILITY

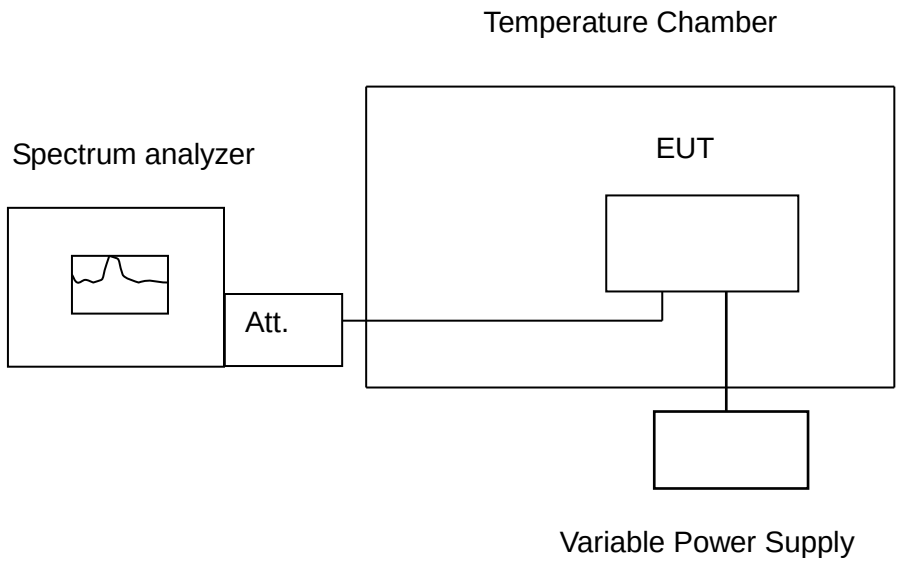
4.6.1 Test Limit

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 operational description.

4.6.2 Test Procedure

The equipment under test was connected to an external AC or DC power supply and input rated voltage. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. The EUT was placed inside the temperature chamber. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 20°C operating frequency as reference frequency. Turn EUT off and set the chamber temperature to –20°C. After the temperature stabilized for approximately 30 minutes recorded the frequency. Repeat step measure with 10°C increased per stage until the highest temperature of +50°C reached.

4.6.3 Test Setup



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4.6.4 Test Result

Temp. (ºC)	Voltage (V)	Measured Frequency	5180		(MHz)	Limit				Result
		Time (min)				20ppm				
Operating Frequency:		0 min	2 min	5 min	10 min	0 min	2 min	5 min	10 min	
70	5	5179.97742	5179.97786	5179.97829	5179.97873	-4.3591	-4.2741	-4.1911	-4.1062	Pass
60	5	5179.967	5179.967	5179.96697	5179.96689	-6.3707	-6.3707	-6.3764	-6.3919	Pass
50	5	5179.96831	5179.96787	5179.96787	5179.96764	-6.1178	-6.2027	-6.2027	-6.2471	Pass
40	5	5179.97829	5179.97786	5179.97829	5179.97829	-4.1911	-4.2741	-4.1911	-4.1911	Pass
30	5	5179.99479	5179.99436	5179.99436	5179.99392	-1.0058	-1.0888	-1.0888	-1.1737	Pass
20	5	5180.01302	5180.01172	5180.01346	5180.01302	2.5135	2.2625	2.5985	2.5135	Pass
10	5	5180.03082	5180.03039	5180.03039	5180.03039	5.9498	5.8668	5.8668	5.8668	Pass
0	5	5180.03864	5180.03864	5180.03864	5180.03821	7.4595	7.4595	7.4595	7.3764	Pass
Temp. (ºC)	Voltage (V)	Measured Frequency	5180		(MHz)	Limit				Result
		Time (min)				20ppm				
Operating Frequency:		0 min	2 min	5 min	10 min	0 min	2 min	5 min	10 min	
20	4.5	5180.012820	5180.01165	5180.01359	5180.01326	2.4749	2.2490	2.6236	2.5598	Pass
20	5	5180.01302	5180.01172	5180.01346	5180.01302	2.5135	2.2625	2.5985	2.5135	Pass
20	5.5	5180.013260	5180.01367	5180.01386	5180.01402	2.5598	2.6390	2.6757	2.7066	Pass

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Temp. (ºC)	Voltage (V)	Measured Frequency	5260		(MHz)	Limit				Result
		Time (min)				20ppm				
Operating Frequency:		0 min	2 min	5 min	10 min	0 min	2 min	5 min	10 min	
70	5	5259.97656	5259.97742	5259.97786	5259.97786	-4.4563	-4.2928	-4.2091	-4.2091	Pass
60	5	5259.96614	5259.96657	5259.96657	5259.96645	-6.4373	-6.3555	-6.3555	-6.3783	Pass
50	5	5259.96787	5259.96744	5259.96744	5259.96731	-6.1084	-6.1901	-6.1901	-6.2148	Pass
40	5	5259.97959	5259.97829	5259.97786	5259.97742	-3.8802	-4.1274	-4.2091	-4.2928	Pass
30	5	5259.99522	5259.99479	5259.99436	5259.99392	-0.9087	-0.9905	-1.0722	-1.1559	Pass
20	5	5260.01433	5260.01346	5260.01302	5260.01302	2.7243	2.5589	2.4753	2.4753	Pass
10	5	5260.03213	5260.03126	5260.03082	5260.03082	6.1084	5.9430	5.8593	5.8593	Pass
0	5	5260.04298	5260.04428	5260.04428	5260.04428	8.1711	8.4183	8.4183	8.4183	Pass
Temp. (ºC)	Voltage (V)	Measured Frequency	5260		(MHz)	Limit				Result
		Time (min)				20ppm				
Operating Frequency:		0 min	2 min	5 min	10 min	0 min	2 min	5 min	10 min	
20	4.5	5260.01409	5260.01353	5260.01338	5260.01322	2.6787	2.5722	2.5437	2.5133	Pass
20	5	5260.01433	5260.01346	5260.01302	5260.01302	2.7243	2.5589	2.4753	2.4753	Pass
20	5.5	5260.01468	5260.01468	5260.01451	5260.01448	2.7909	2.7909	2.7586	2.7529	Pass

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Temp. (ºC)	Voltage (V)	Measured Frequency	5500		(MHz)	Limit				Result
		Time (min)				20ppm				
Operating Frequency:		0 min	2 min	5 min	10 min	0 min	2 min	5 min	10 min	
70	5	5499.97786	5499.97916	5499.97873	5499.97829	-4.0255	-3.7891	-3.8673	-3.9473	Pass
60	5	5499.96483	5499.96527	5499.96527	5499.96527	-6.3945	-6.3145	-6.3145	-6.3145	Pass
50	5	5499.96614	5499.96570	5499.96570	5499.96570	-6.1564	-6.2364	-6.2364	-6.2364	Pass
40	5	5499.97873	5499.97728	5499.97656	5499.97612	-3.8673	-4.1309	-4.2618	-4.3418	Pass
30	5	5499.99349	5499.99305	5499.99305	5499.99305	-1.1836	-1.2636	-1.2636	-1.2636	Pass
20	5	5500.01476	5500.01346	5500.01302	5500.01302	2.6836	2.4473	2.3673	2.3673	Pass
10	5	5500.03300	5500.03169	5500.03126	5500.03169	6.0000	5.7618	5.6836	5.7618	Pass
0	5	5500.04863	5500.04602	5500.04602	5500.04602	8.8418	8.3673	8.3673	8.3673	Pass
Temp. (ºC)	Voltage (V)	Measured Frequency	5500		(MHz)	Limit				Result
		Time (min)				20ppm				
Operating Frequency:		0 min	2 min	5 min	10 min	0 min	2 min	5 min	10 min	
20	4.5	5500.01467	5500.01334	5500.01289	5500.01278	2.6673	2.4255	2.3436	2.3236	Pass
20	5	5500.01476	5500.01346	5500.01302	5500.01302	2.6836	2.4473	2.3673	2.3673	Pass
20	5.5	5500.01478	5500.01416	5500.01319	5500.01332	2.6873	2.5745	2.3982	2.4218	Pass

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Temp. (ºC)	Voltage (V)	Measured Frequency	5745		(MHz)	Limit				Result
		Time (min)				20ppm				
Operating Frequency:		0 min	2 min	5 min	10 min	0 min	2 min	5 min	10 min	
70	5	5744.98567	5744.9848	5744.98394	5744.9835	-2.4943	-2.6458	-2.7955	-2.8721	Pass
60	5	5744.96266	5744.96353	5744.96397	5744.96403	-6.4996	-6.3481	-6.2715	-6.2611	Pass
50	5	5744.96412	5744.96402	5744.96397	5744.96397	-6.2454	-6.2628	-6.2715	-6.2715	Pass
40	5	5744.97482	5744.97438	5744.97438	5744.97395	-4.3829	-4.4595	-4.4595	-4.5344	Pass
30	5	5744.99132	5744.99175	5744.99262	5744.99219	-1.5109	-1.4360	-1.2846	-1.3594	Pass
20	5	5745.01563	5745.01346	5745.01259	5745.01259	2.7206	2.3429	2.1915	2.1915	Pass
10	5	5745.03386	5745.03300	5745.03169	5745.03213	5.8938	5.7441	5.5161	5.5927	Pass
0	5	5745.05036	5745.04819	5745.04776	5745.04776	8.7659	8.3882	8.3133	8.3133	Pass
Temp. (ºC)	Voltage (V)	Measured Frequency	5745		(MHz)	Limit				Result
		Time (min)				20ppm				
Operating Frequency:		0 min	2 min	5 min	10 min	0 min	2 min	5 min	10 min	
20	4.5	5745.01502	5745.01479	5745.01232	5745.01195	2.6144	2.5744	2.1445	2.0801	Pass
20	5	5745.01563	5745.01346	5745.01259	5745.01259	2.7206	2.3429	2.1915	2.1915	Pass
20	5.5	5745.01576	5745.01394	5745.01402	5745.01413	2.7433	2.4265	2.4404	2.4595	Pass

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4.7 DYNAMIC FREQUENCY SELECTION

4.7.1 Test Limit

FCC according to §15.407 (h), KDB 905462 D02 "compliance measurement procedures for unlicensed-national information infrastructure devices operating in the 5250-5350 MHz and 5470-5725 MHz bands incorporating dynamic frequency selection”. and KDB 905462 D03 " U-NII client devices without radar detection capability.

Table 1: Applicability of DFS requirements prior to use of a channel

Requirement	Operational Mode		
	Master	Client (without radar detection)	Client(with radar detection)
Non-Occupancy Period	Yes	Not required	Yes
DFS Detection Threshold	Yes	Not required	Yes
Channel Availability Check Time	Yes	Not required	Not required
U-NII Detection Bandwidth	Yes	Not required	Yes

Table 2: Applicability of DFS requirements during normal operation

Requirement	Operational Mode	
	Master Device or Client with Radar Detection	Client Without Radar Detection
DFS Detection Threshold	Yes	Not required
Channel Closing Transmission Time	Yes	Yes
Channel Move Time	Yes	Yes
U-NII Detection Bandwidth	Yes	Not required

Additional requirements for devices with multiple bandwidth mods	Master Device or Client with Radar Detection	Client Without Radar Detection
U-NII Detection Bandwidth and Statistical Performance Check	All BW modes must be tested	Not required
Channel Move Time and Channel Closing Transmission Time	Test using widest BW mode available	Test using the widest BW mode available for the link
All other tests	Any single BW mode	Not required
Note: Frequencies selected for statistical performance check (Section 7.8.4) should include several frequencies within the radar detection bandwidth and frequencies near the edge of the radar detection bandwidth. For 802.11 devices it is suggested to select frequencies in each of the bonded 20 MHz channels and the channel center frequency.		

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Table 3: Interference Threshold values, Master or Client incorporating In-Service

Maximum Transmit Power	Value (See Notes 1, 2, and 3)
EIRP ≥ 200 milliwatt	-64 dBm
EIRP < 200 milliwatt and power spectral density < 10 dBm/MHz	-62 dBm
EIRP < 200 milliwatt that do not meet the power spectral density requirement	-64 dBm

Note 1: This is the level at the input of the receiver assuming a 0 dBi receive antenna.
Note 2: Throughout these test procedures an additional 1 dB has been added to the amplitude of the test transmission waveforms to account for variations in measurement equipment. This will ensure that the test signal is at or above the detection threshold level to trigger a DFS response.
Note3: EIRP is based on the highest antenna gain. For MIMO devices refer to KDB Publication 662911 D01.

Table 4: DFS Response requirement values

Parameter	Value
Non-occupancy period	Minimum 30 minutes
Channel Availability Check Time	60 seconds
Channel Move Time	10 seconds See Note 1.
Channel Closing Transmission Time	200 milliseconds + an aggregate of 60 milliseconds over remaining 10 second period. See Notes 1 and 2.
U-NII Detection Bandwidth	Minimum 100% of the U-NII 99% transmission power bandwidth. See Note 3.

Note 1: Channel Move Time and the Channel Closing Transmission Time should be performed with Radar Type 0. The measurement timing begins at the end of the Radar Type 0 burst.
Note 2: The Channel Closing Transmission Time is comprised of 200 milliseconds starting at the beginning of the Channel Move Time plus any additional intermittent control signals required to facilitate a Channel move (an aggregate of 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions.
Note 3: During the U-NII Detection Bandwidth detection test, radar type 0 should be used. For each frequency step the minimum percentage of detection is 90 percent. Measurements are performed with no data traffic.

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Table 5 – Short Pulse Radar Test Waveforms

Radar Type	Pulse Width (μsec)	PRI (μsec)	Number of Pulses	Minimum Percentage of Successful Detection	Minimum Number of Trials
0	1	1428	18	See Note 1	
1	1	Test A: 15 unique PRI values randomly selected from the list of 23 PRI values in Table 5a	$\text{Roundup}\left\{\left(\frac{1}{360}\right)\cdot\left(\frac{19\cdot 10^6}{\text{PRI}_{\mu\text{sec}}}\right)\right\}$	60%	30
		Test B: 15 unique PRI values randomly selected within the range of 518-3066 μsec, with a minimum increment of 1 μsec, excluding PRI values selected in Test A			
2	1-5	150-230	23-29	60%	30
3	6-10	200-500	16-18	60%	30
4	11-20	200-500	12-16	60%	30
Aggregate (Radar Types 1-4)				80%	120
Note 1: Short Pulse Radar Type 0 should be used for the detection bandwidth test, channel move time, and channel closing time tests.					

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Table 6 – Long Pulse Radar Test Signal

Radar Type	Pulse Width (µsec)	Chirp Width (MHz)	PRI (µsec)	Number of Pulses per Burst	Number of Bursts	Minimum Percentage of Successful Detection	Minimum Number of Trials
5	50-100	5-20	1000-2000	1-3	8-20	80%	30

Table 7 – Frequency Hopping Radar Test Signal

Radar Type	Pulse Width (µsec)	PRI (µsec)	Pulses per Hop	Hopping Rate (kHz)	Hopping Sequence Length (msec)	Minimum Percentage of Successful Detection	Minimum Number of Trials
6	1	333	9	0.333	300	70%	30

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4.7.2 Test Procedure

Overview Of EUT With Respect To §15.407 (H) Requirements

The firmware installed in the EUT during testing was:

Firmware Rev: 3.4.0-030400
The EUT operates over the 5250-5350 MHz range as a Client Device that does not have radar detection capability.

The EUT uses one transmitter connected to two 50-ohm coaxial antenna ports via a diversity switch. Only one antenna port is connected to the test system since the EUT has one antenna only.

The Slave device associated with the EUT during these tests does not have radar detection capability.

WLAN traffic is generated by streaming the video file TestFile.mp2 “6 ½ Magic Hours” from the Master to the Slave in full motion video mode using the media player with the V2.61 Codec package.

The EUT utilizes the 802.11a architecture, with a nominal channel bandwidth of 20 MHz.

The rated output power of the Master unit is < 23dBm (EIRP). Therefore the required interference threshold level is -62 dBm. After correction for antenna gain and procedural adjustments, the required conducted threshold at the antenna port is –62 + 5 = -57dBm.

The calibrated conducted DFS Detection Threshold level is set to -57 dBm. The tested level is lower than the required level hence it provides margin to the limit.

Manufacturer’s Statement Regarding Uniform Channel Spreading

The end product implements an automatic channel selection feature at startup such that operation commences on channels distributed across the entire set of allowed 5GHz channels. This feature will ensure uniform spreading is achieved while avoiding non-allowed channels due to prior radar events.

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TEST AND MEASUREMENT SYSTEM

System Overview

The measurement system is based on a conducted test method.

The short pulse and long pulse signal generating system utilizes the NTIA software. The Vector Signal Generator has been validated by the NTIA. The hopping signal generating system utilizes the CCS simulated hopping method and system, which has been validated by the DoD, FCC and NTIA. The software selects waveform parameters from within the bounds of the signal type on a random basis using uniform distribution.

The short pulse types 2, 3 and 4, and the long pulse type 5 parameters are randomized at run-time.

The hopping type 6 pulse parameters are fixed while the hopping sequence is based on the August 2005 NTIA Hopping Frequency List. The initial starting point randomized at run-time and each subsequent starting point is incremented by 475. Each frequency in the 100-length segment is compared to the boundaries of the EUT Detection Bandwidth and the software creates a hopping burst pattern in accordance with Section 7.4.1.3 Method #2 Simulated Frequency Hopping Radar Waveform Generating Subsystem of FCC 06-96 APPENDIX. The frequency of the signal generator is incremented in 1 MHz steps from FL to FH for each successive trial. This incremental sequence is repeated as required to generate a minimum of 30 total trials and to maintain a uniform frequency distribution over the entire Detection Bandwidth.

The signal monitoring equipment consists of a spectrum analyzer set to display 8001 bins on the horizontal axis. The time-domain resolution is 2 msec / bin with a 16 second sweep time, meeting the 10 second short pulse reporting criteria. The aggregate ON time is calculated by multiplying the number of bins above a threshold during a particular observation period by the dwell time per bin, with the analyzer set to peak detection and max hold. The time-domain resolution is 3 msec / bin with a 24 second sweep time, meeting the 22 second long pulse reporting criteria and allowing a minimum of 10 seconds after the end of the long pulse waveform.

Should multiple RF ports be utilized for the Master and/or Slave devices (for example, for diversity or MIMO implementations), 50 ohm termination would be removed from the splitter so that connection can be established between splitter and the Master and/or Slave devices.

Conducted Method System Block Diagram

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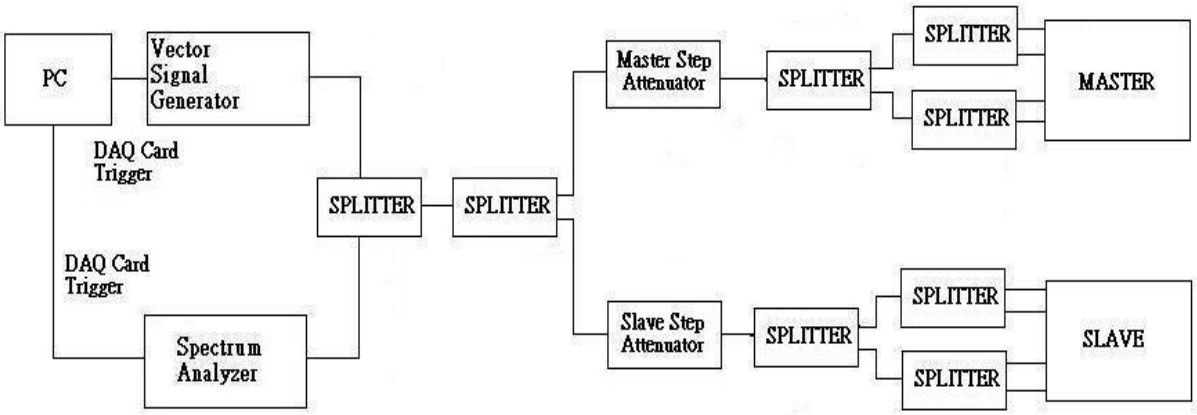

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System Calibration

Connect the spectrum analyzer to the test system in place of the master device. Set the signal generator to CW mode. Adjust the amplitude of the signal generator to yield a measured level of –62 dBm on the spectrum analyzer.

Without changing any of the instrument settings, reconnect the spectrum analyzer to the Common port of the Spectrum Analyzer Combiner/Divider and connect a 50 ohm load to the Master Device port of the test system.

Measure the amplitude and calculate the difference from –62 dBm. Adjust the Reference Level Offset of the spectrum analyzer to this difference. Confirm that the signal is displayed at –62 dBm. Readjust the RBW and VBW to 3 MHz, set the span to 10 MHz, and confirm that the signal is still displayed at –62 dBm.

The spectrum analyzer displays the level of the signal generator as received at the antenna ports of the Master Device. The interference detection threshold may be varied from the calibrated value of –62 dBm and the spectrum analyzer will still indicate the level as received by the Master Device.

Set the signal generator to produce a radar waveform, trigger a burst manually and measure the level on the spectrum analyzer. Readjust the amplitude of the signal generator as required so that the peak level of the waveform is at a displayed level equal to the required or desired interference detection threshold. Separate signal generator amplitude settings are determined as required for each radar type.

Adjustment Of Displayed Traffic Level

Establish a link between the Master and Slave, adjusting the Link Step Attenuator as needed to provide a suitable received level at the Master and Slave devices. Stream the video test file to generate WLAN traffic. Confirm that the WLAN traffic level, as displayed on the spectrum analyzer, is at lower amplitude than the radar detection threshold. Confirm that the displayed traffic is from the Master Device. For Master Device testing confirm that the displayed traffic does not include Slave Device traffic. For Slave Device testing confirm that the displayed traffic does not include Master Device traffic.

If a different setting of the Master Step Attenuator is required to meet the above conditions, perform a new System Calibration for the new Master Step Attenuator setting.

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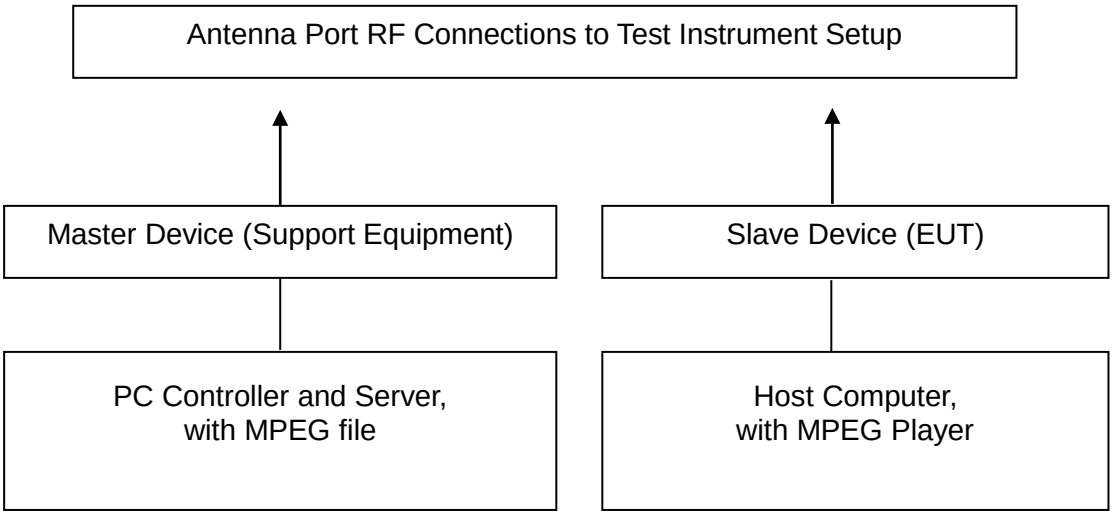
4.7.3 Test Setup



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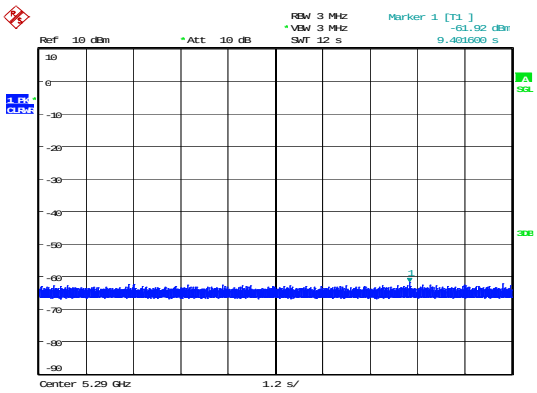
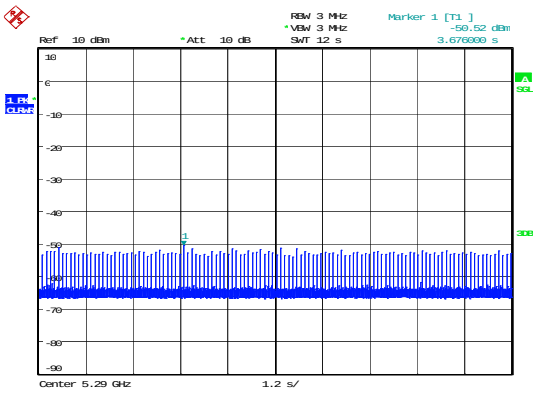
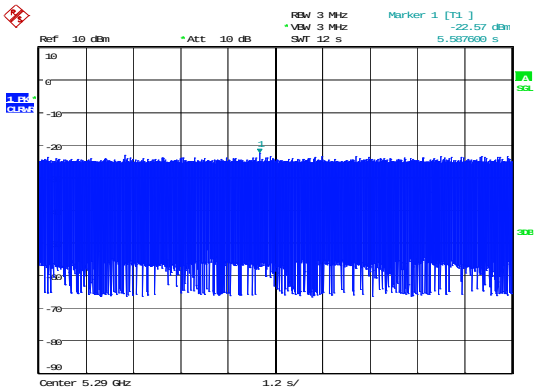
4.7.4 Test Result

IEEE 802.11ac VHT80 MHz at 5290MHz	
Noise Floor	**Master Level**
 Date: 23.FEB.2018 13:15:59	 Date: 23.FEB.2018 13:16:27
Slave Level	
 Date: 23.FEB.2018 13:16:47	

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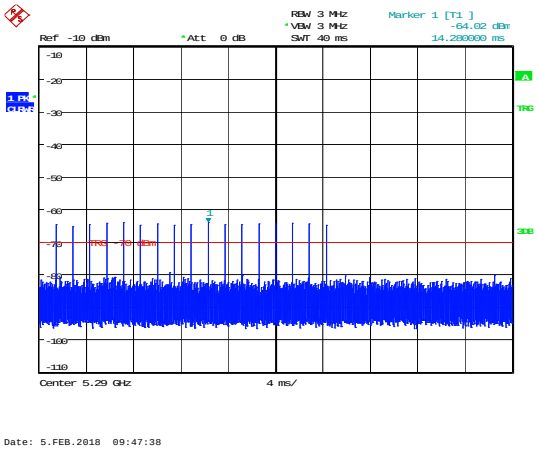
Radar Waveforms

Sample of short Pluse Radar Type 0



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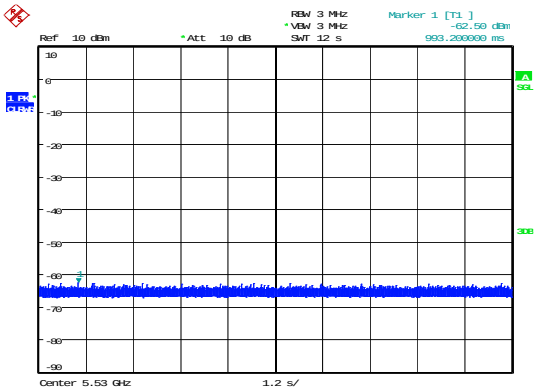
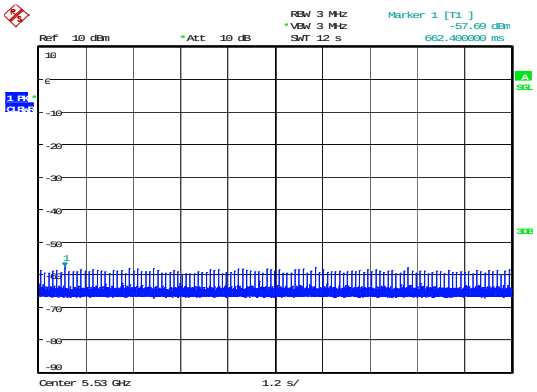
IEEE 802.11ac VHT80 MHz at 5530MHz

Noise Floor



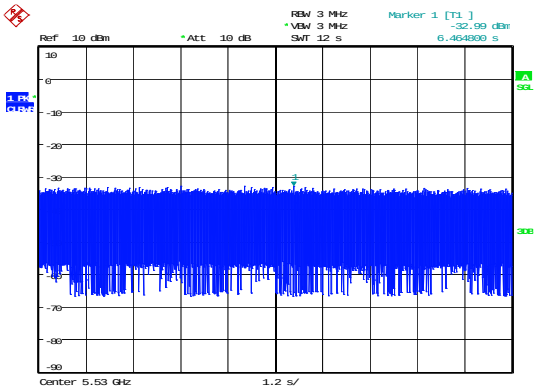
Date: 23.FEB.2018 10:56:47

Master Level



Date: 23.FEB.2018 10:57:39

Slave Level



Date: 23.FEB.2018 10:58:00

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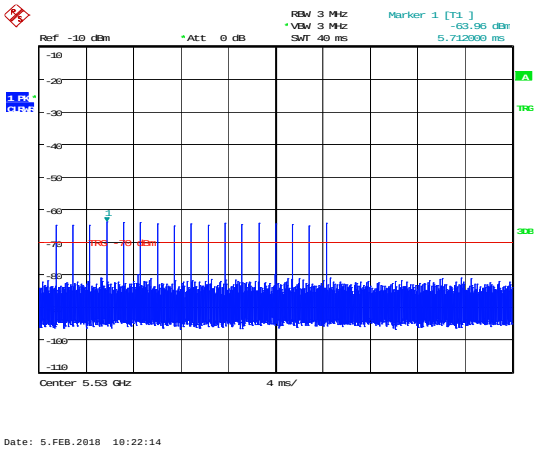
Radar Waveforms

Sample of short Pluse Radar Type 0



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TEST CHANNEL AND METHOD

All tests were performed at a channel center frequency of 5290 MHz and5530 MHz utilizing a conducted test method.

CHANNEL MOVE TIME AND CHANNEL CLOSING TRANSMISSION TIME

GENERAL REPORTING NOTES

The reference marker is set at the end of last radar pulse.

The delta marker is set at the end of the last WLAN transmission following the radar pulse. This delta is the channel move time.

The aggregate channel closing transmission time is calculated as follows:

Aggregate Transmission Time =

(Number of analyzer bins showing transmission) * (dwell time per bin)

The observation period over which the aggregate time is calculated

Begins at (Reference Marker + 200 msec) and

Ends no earlier than (Reference Marker + 10 sec).

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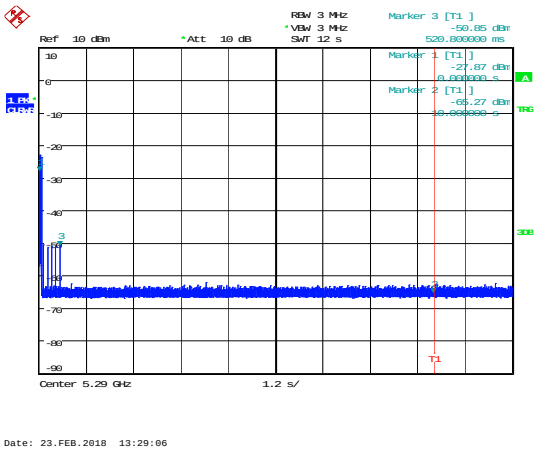
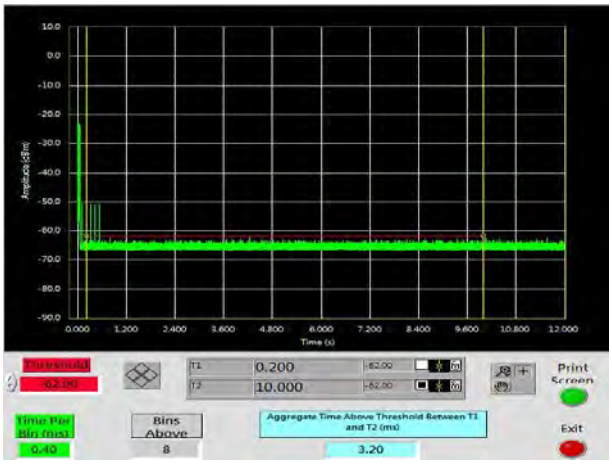
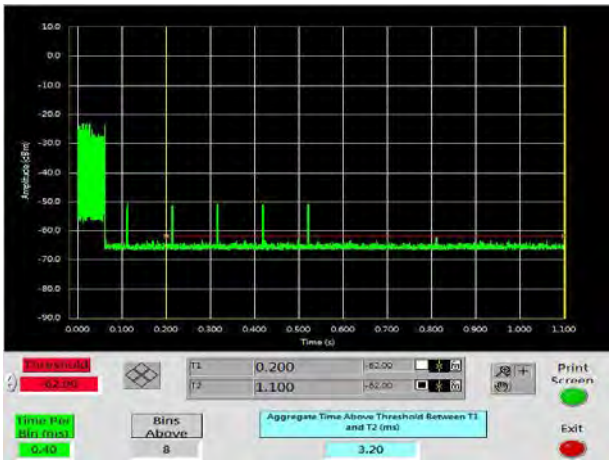
IEEE 802.11ac VHT 80 MHz at 5290	
Type 0_Channel Move Time	



Channel Move Time (s)	Limit (s)
0.5208	10

IEEE 802.11ac VHT 80 MHz at 5290	
Type 0_Channel closing transmisssion time	Type 0_Channel closing transmisssion time-caculate





Aggregate Transmission Time (ms)	Limit (ms)	Margin (ms)
3.2	60	-56.8

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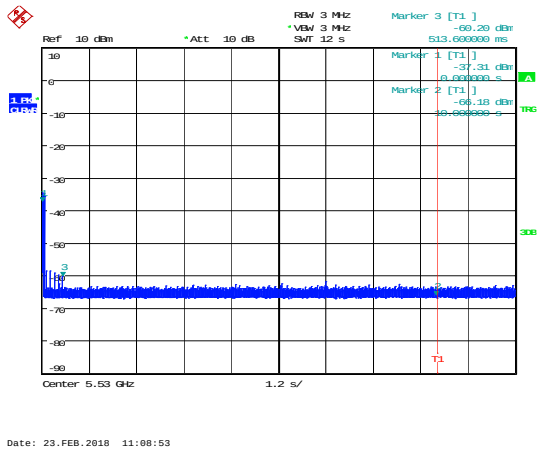
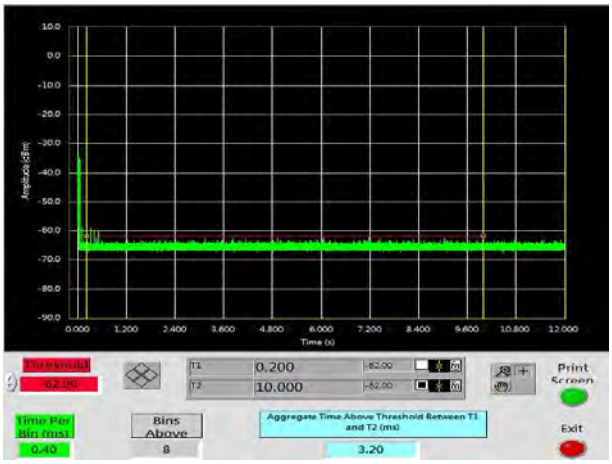
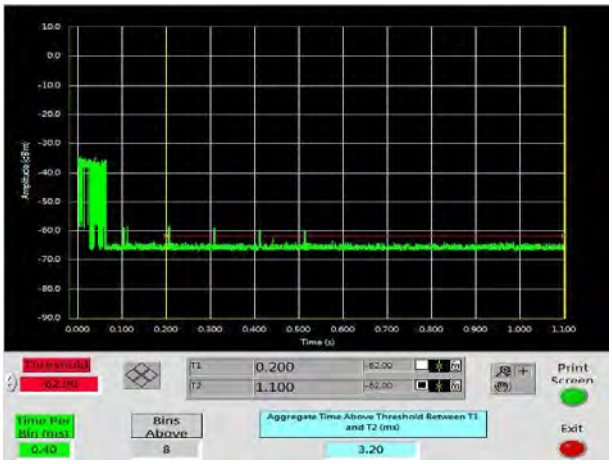
IEEE 802.11ac VHT 80 MHz at 5530	
Type 0_Channel Move Time	



Channel Move Time (s)	Limit (s)
0.5136	10

IEEE 802.11ac VHT 80 MHz at 5530	
Type 0_Channel closing transmisssion time	Type 0_Channel closing transmisssion time-caculate





Aggregate Transmission Time (ms)	Limit (ms)	Margin (ms)
3.2	60	-56.8

--End of Test Report--

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