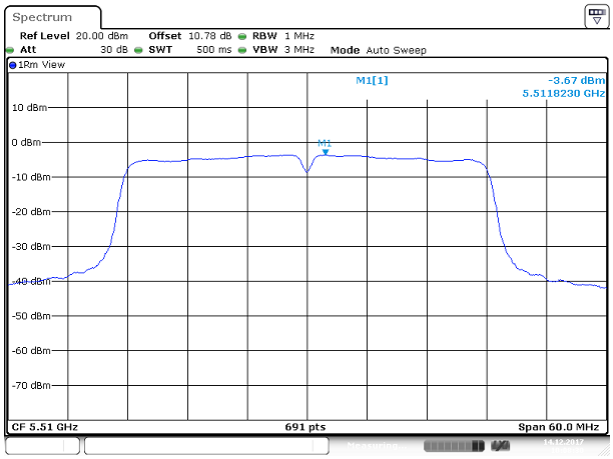
UNII-2c IEEE 802.11n HT40 mode- chain 1

Low CH



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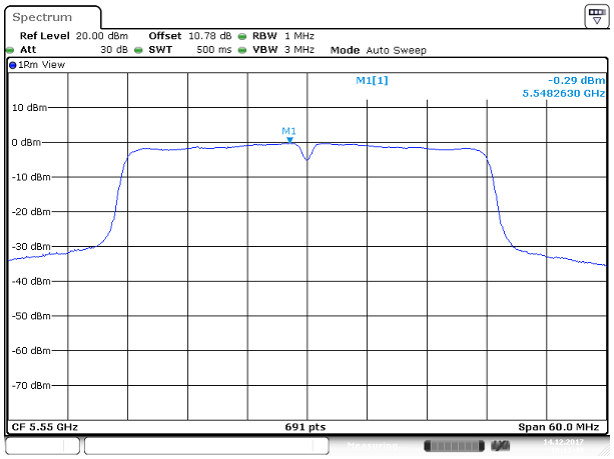

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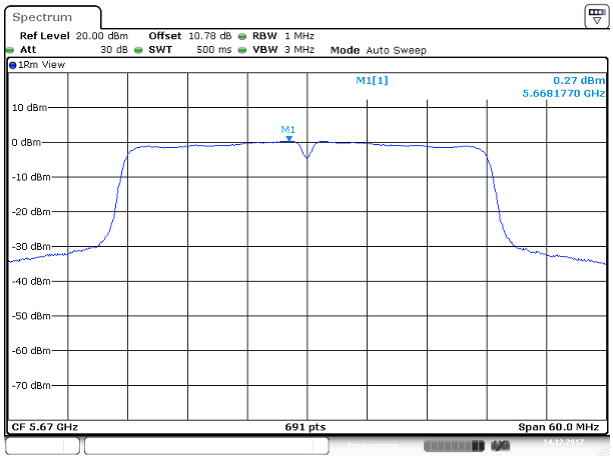

Date: 14.DEC.2017 10:13:58

Cross CH

Date: 14.DEC.2017 12:54:04

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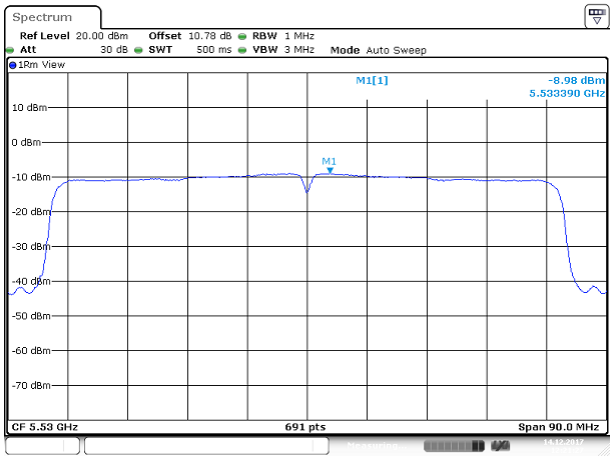
UNII-2c IEEE 802.11ac VHT80 mode- chain 0

Mid CH



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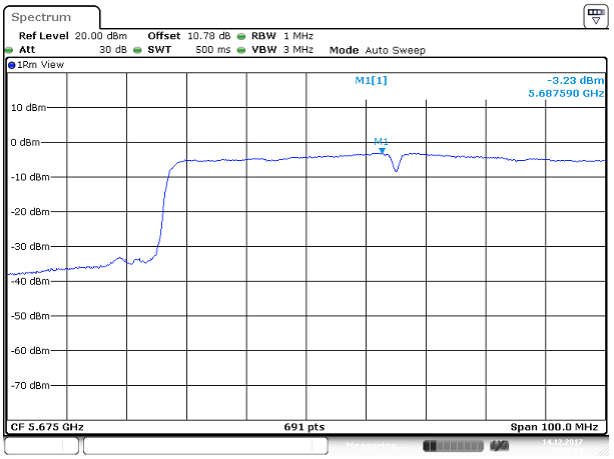
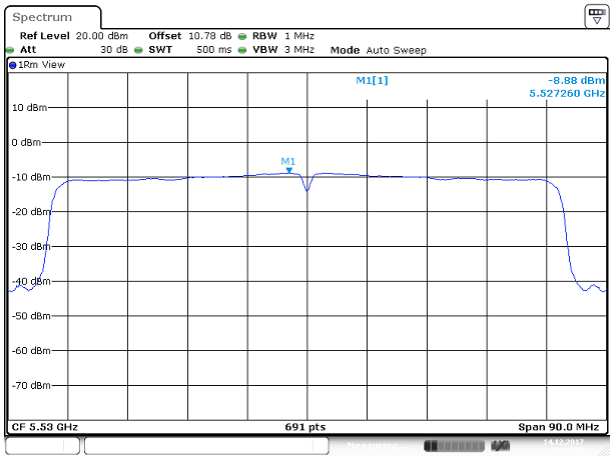
Cross CH



Date: 14.DEC.2017 12:59:01

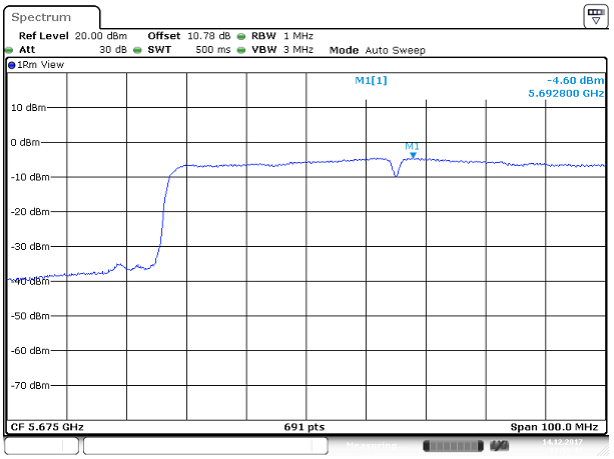
UNII-2c IEEE 802.11ac VHT80 mode- chain 1

Mid CH



Date: 14.DEC.2017 12:22:42

Cross CH



Date: 14.DEC.2017 12:58:46

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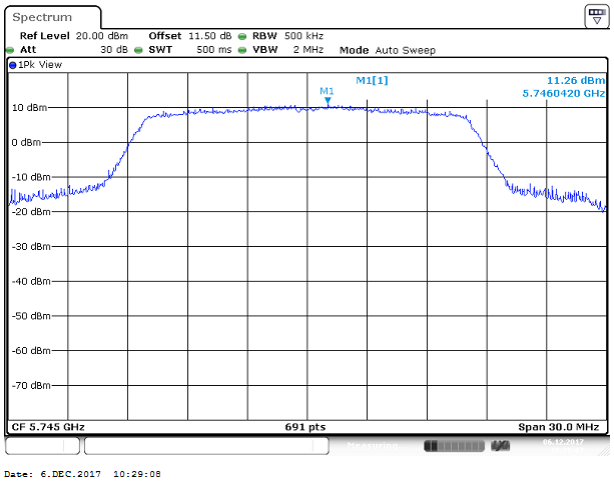
Test Data

UNII-3 IEEE 802.11a mode- chain 0

Low CH



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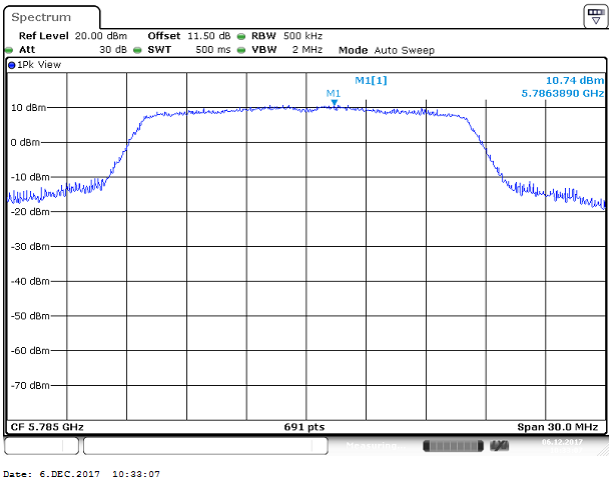
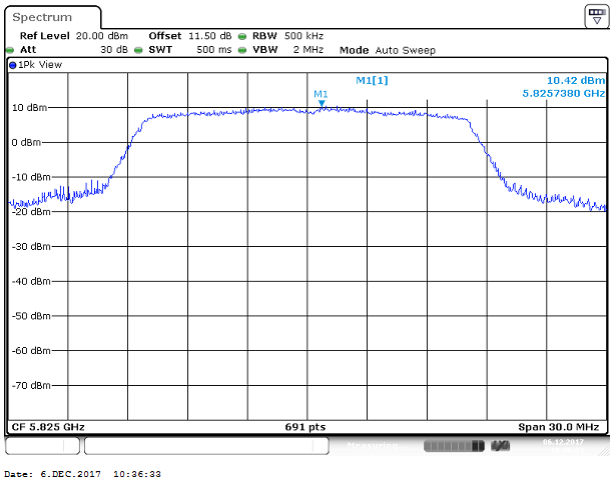


High CH



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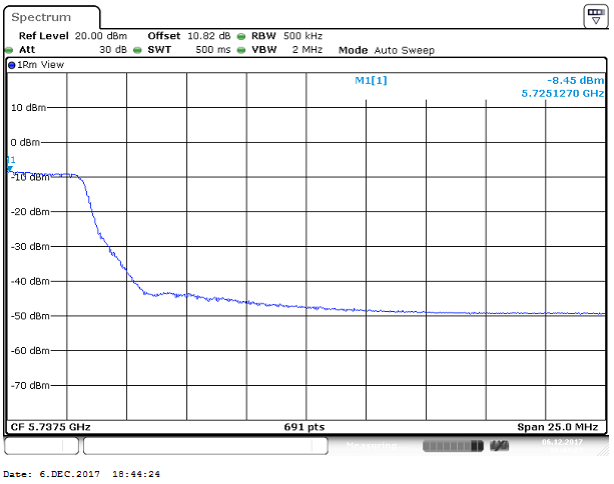

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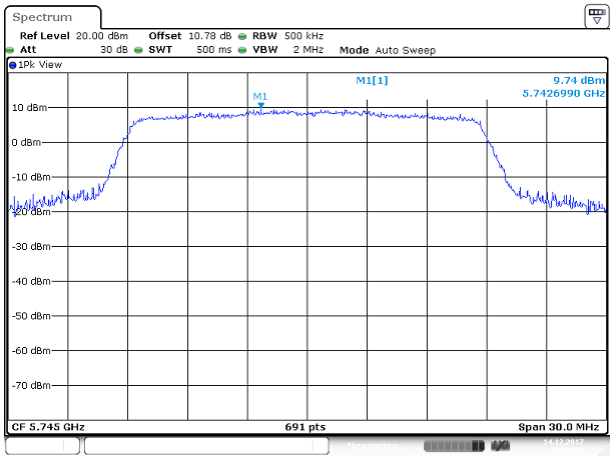
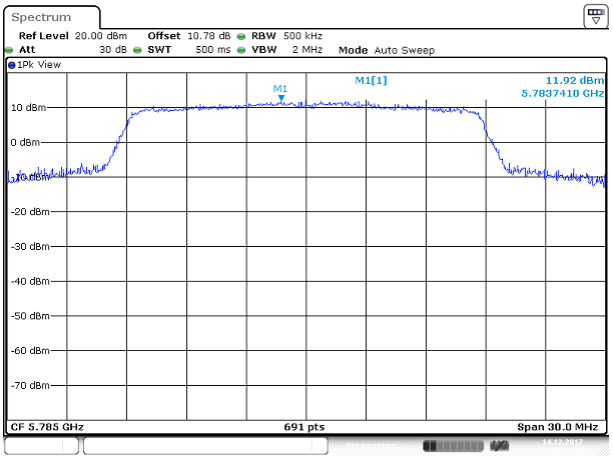
UNII-3 IEEE 802.11n HT20 mode- chain 0

Low CH



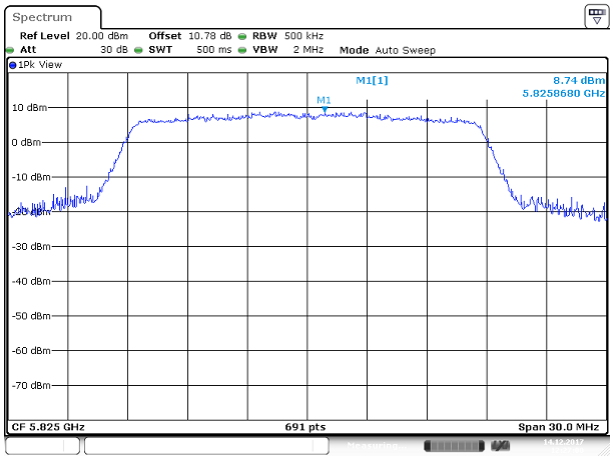
Date: 14.DEC.2017 12:25:38

Mid CH



Date: 14.DEC.2017 12:26:36

High CH



Date: 14.DEC.2017 12:27:00

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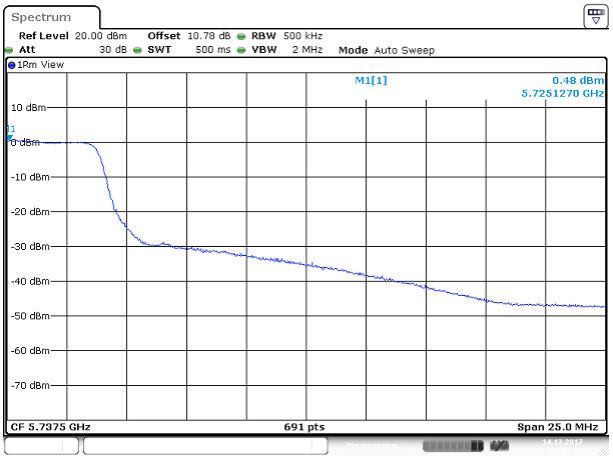

Date: 14.DEC.2017 12:51:40

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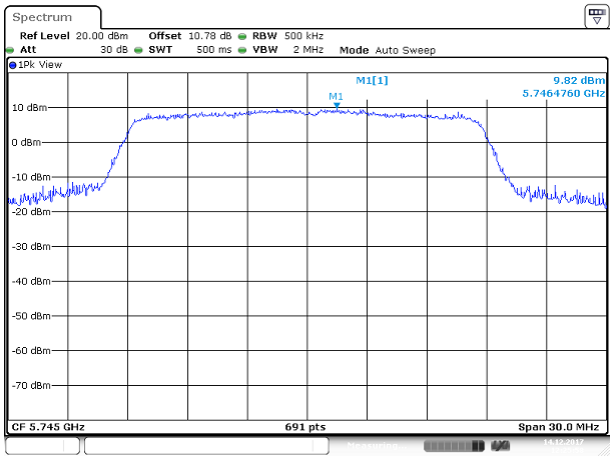
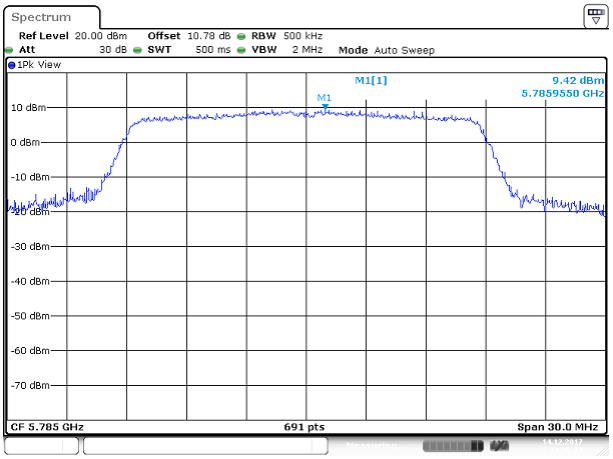
UNII-3 IEEE 802.11n HT20 mode- chain 1

Low CH



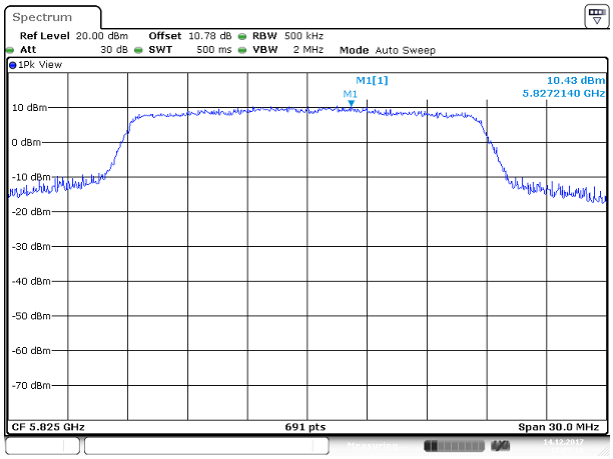
Date: 14.DEC.2017 12:25:58

Mid CH



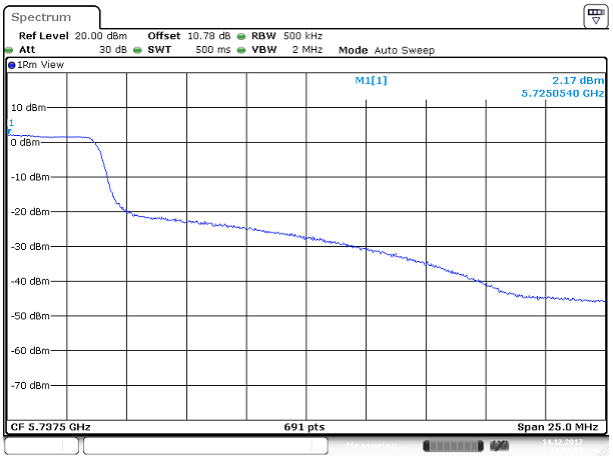
Date: 14.DEC.2017 12:26:21

High CH



Date: 14.DEC.2017 12:27:16

Cross CH



Date: 14.DEC.2017 12:51:52

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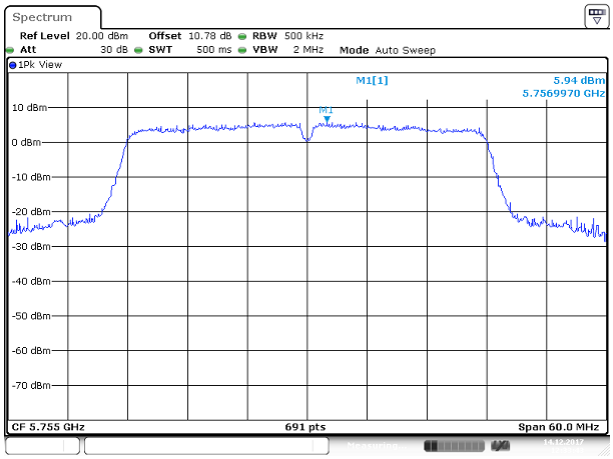
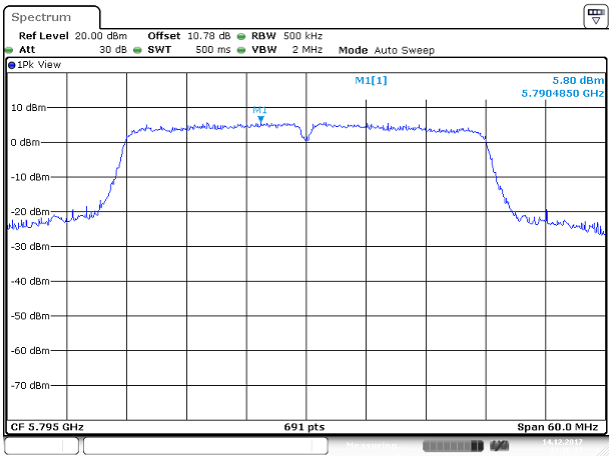
UNII-3 IEEE 802.11n HT40 mode- chain 0

Low CH



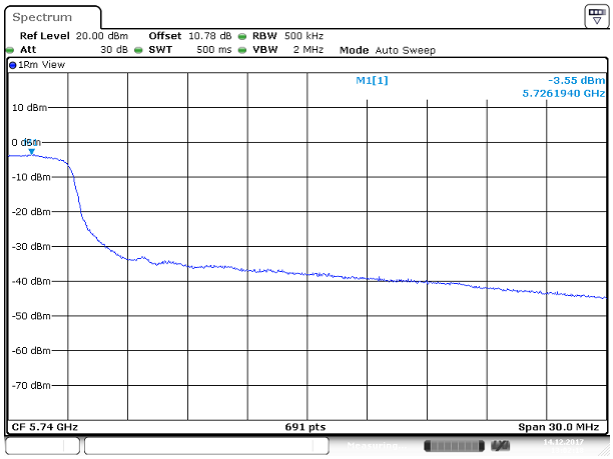
Date: 14.DEC.2017 12:33:44

High CH



Date: 14.DEC.2017 12:36:37

Cross CH



Date: 14.DEC.2017 13:02:19

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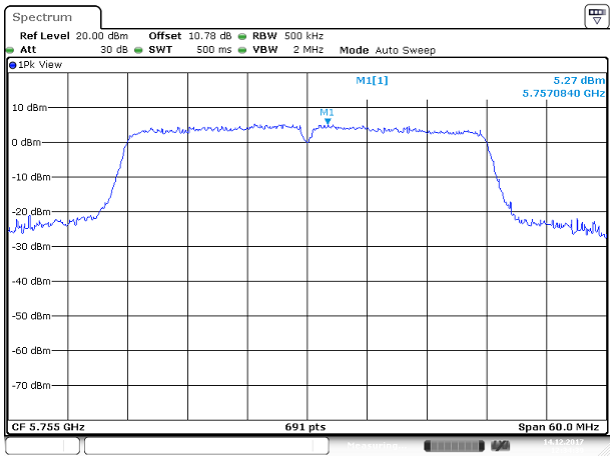
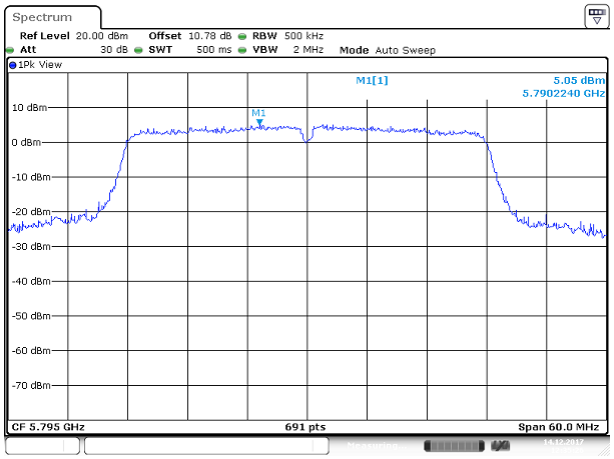
UNII-3 IEEE 802.11n HT40 mode- chain 1

Low CH



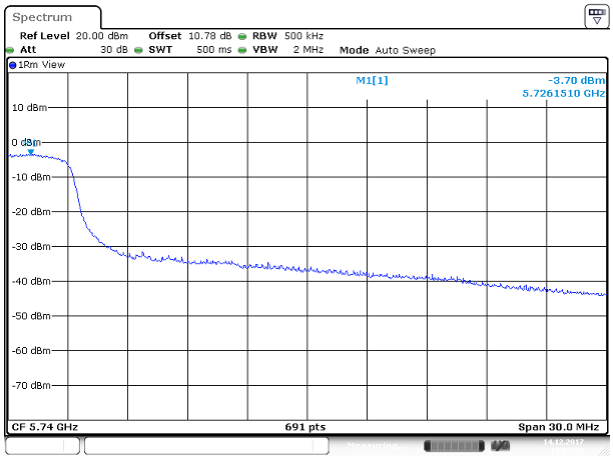
Date: 14.DEC.2017 12:34:39

High CH



Date: 14.DEC.2017 12:35:26

Cross CH



Date: 14.DEC.2017 13:02:40

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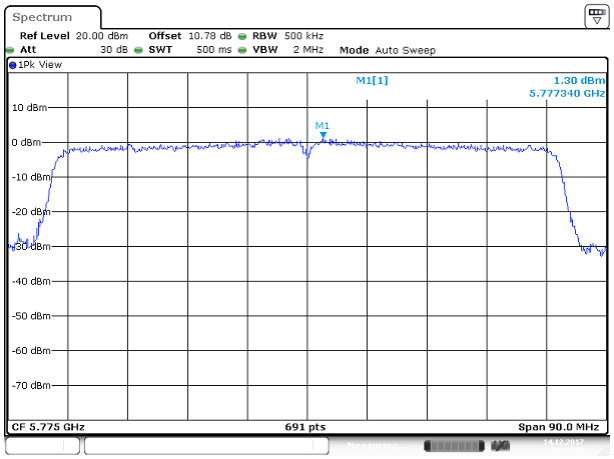
UNII-3 IEEE 802.11ac VHT80 mode- chain 0

Mid CH



Date: 14.DEC.2017 12:23:44

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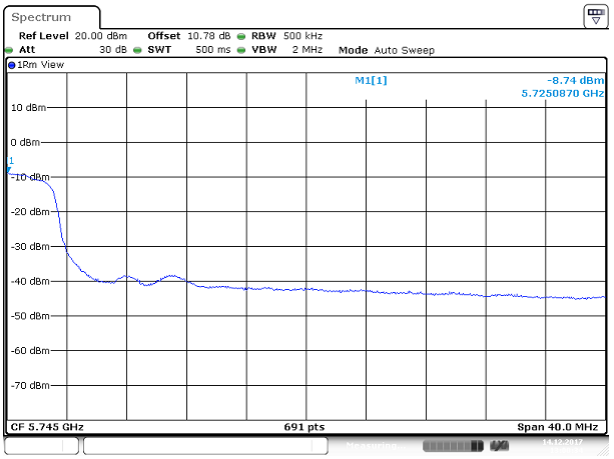
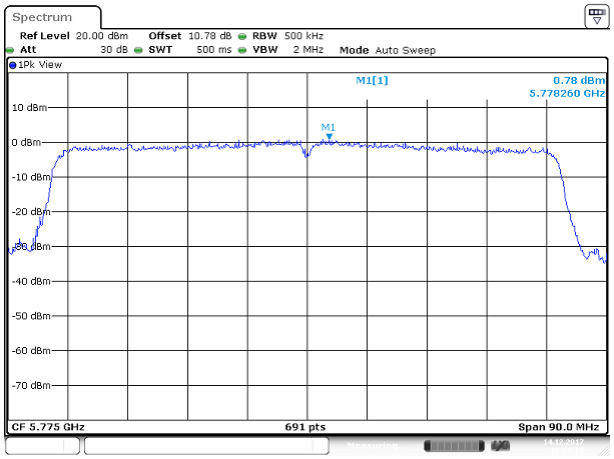


Date: 14.DEC.2017 13:00:35

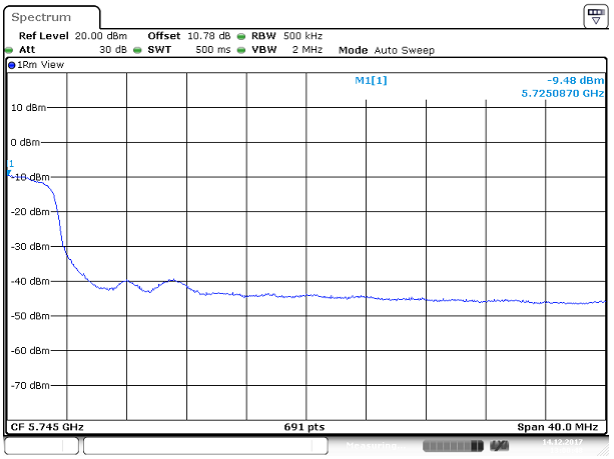
UNII-3 IEEE 802.11ac VHT80 mode- chain 1

Mid CH



Date: 14.DEC.2017 12:23:19

Cross CH



Date: 14.DEC.2017 13:00:48

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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)

IC according to RSS-247 section 6.2.1(2), section 6.2.2(2), section 6.2.3(2) and section 6.2.4(2)

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

5. 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	88%	1.4600	684.932	750Hz
802.11n HT20	91%	1.3900	719.424	750Hz
802.11n HT40	85%	0.7100	1408.451	1.5KHz
802.11ac VHT80	66%	0.3500	2857.143	3KHz

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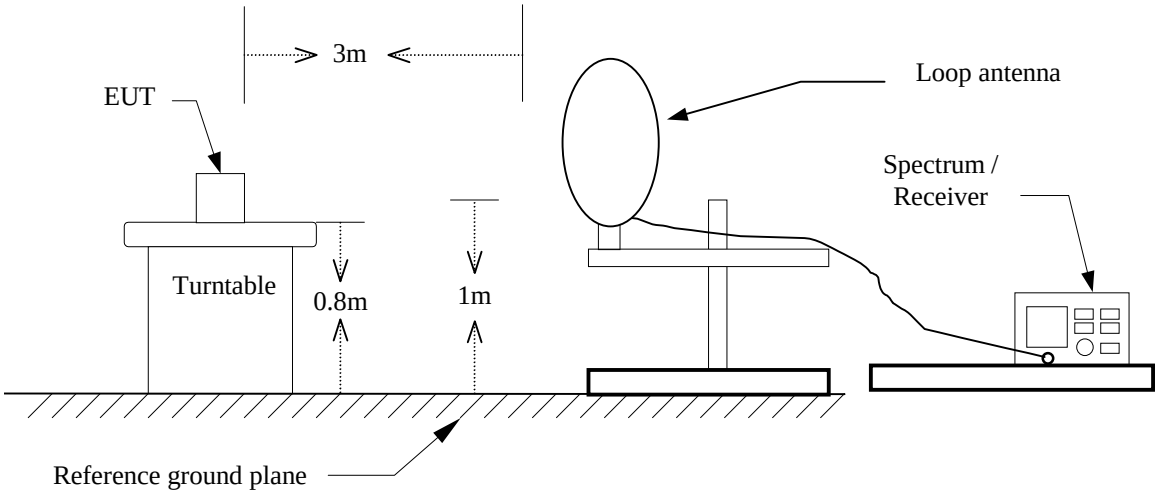
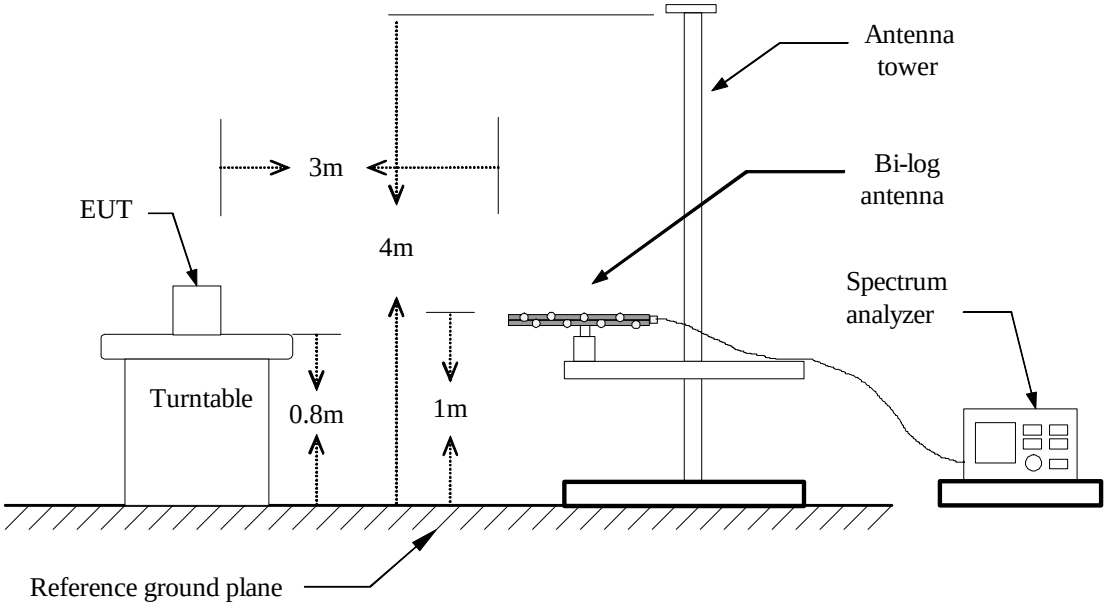
4.5.3 Test Setup

9kHz ~ 30MHz



30MHz ~ 1GHz



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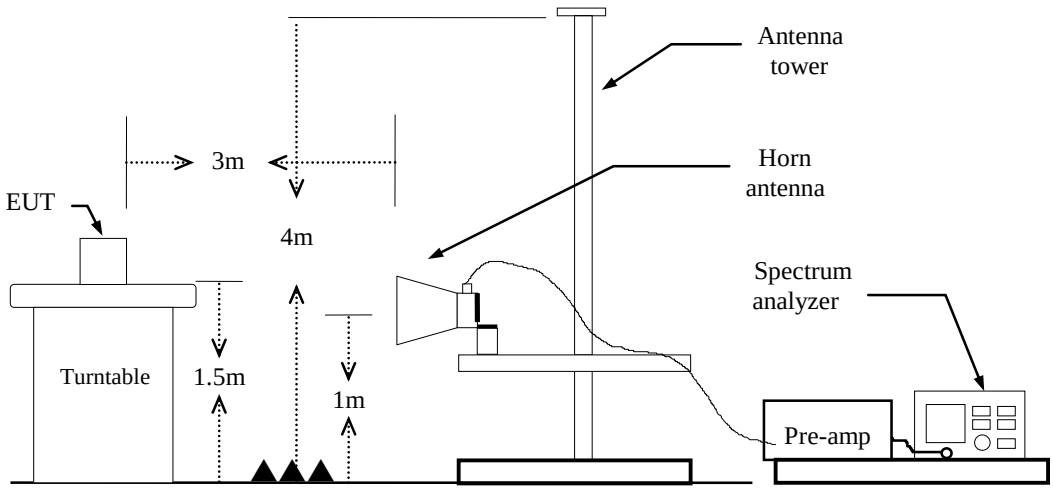
Above 1 GHz



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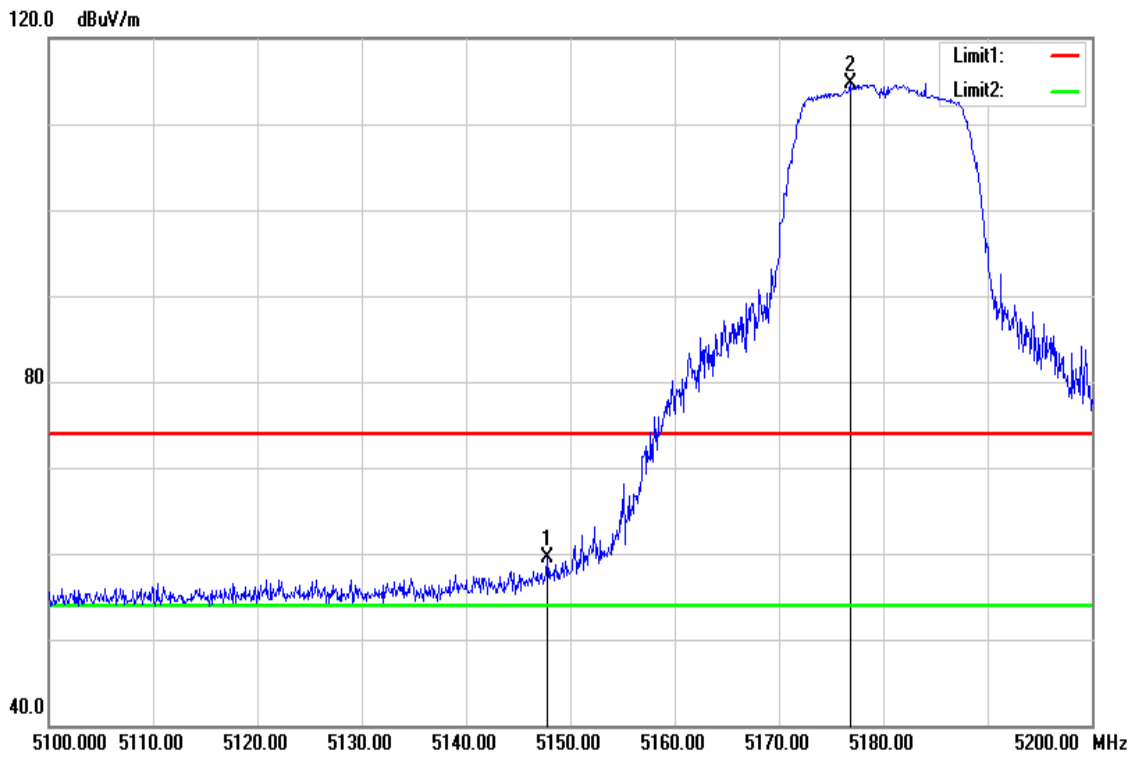
4.5.4 Test Result

Test Data

Band Edge Test Data for UNII-1

Test Mode	IEEE 802.11a / 5180MHZ	Temp/Hum	24(℃)/ 33%RH
Test Item	Band Edge	Test Date	December 5, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Peak	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5147.800	54.48	5.06	59.54	74.00	-14.46	peak
5176.800	109.51	5.14	114.65	-	-	peak

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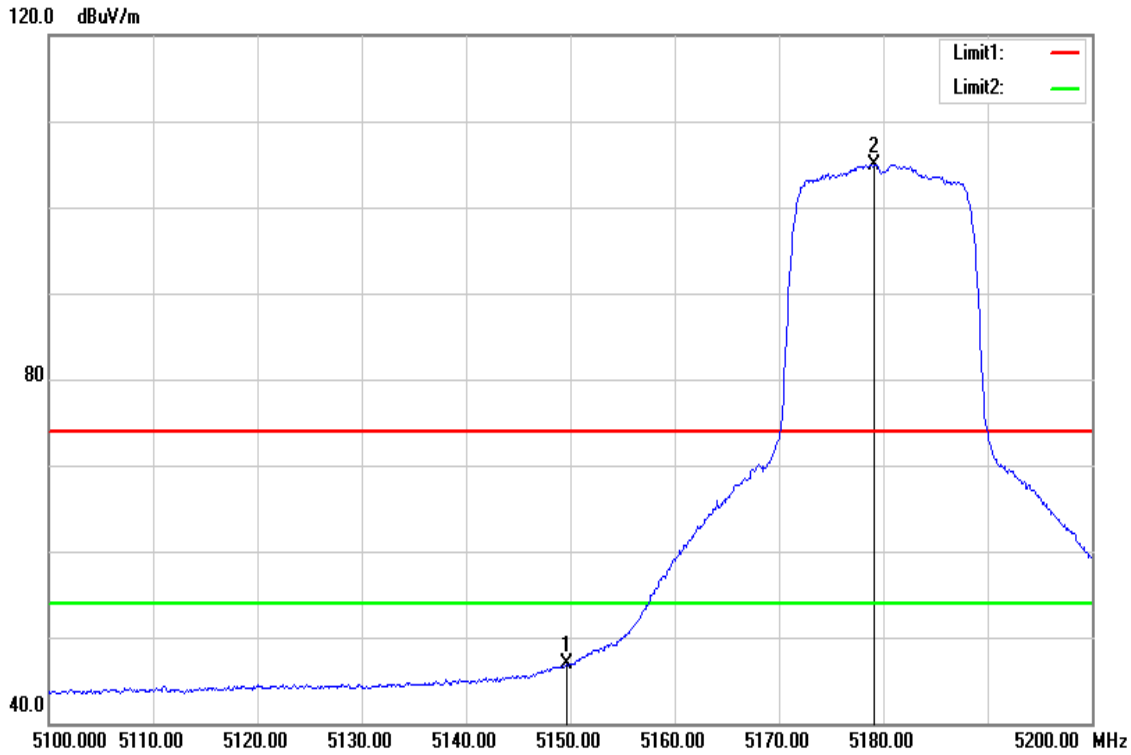
Test Mode	IEEE 802.11a / 5180MHZ	Temperature	24(℃)/ 33%RH
Test Item	Band Edge	Test Date	December 5, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5149.600	41.89	5.06	46.95	54.00	-7.05	AVG
5179.100	99.78	5.14	104.92	-	-	AVG

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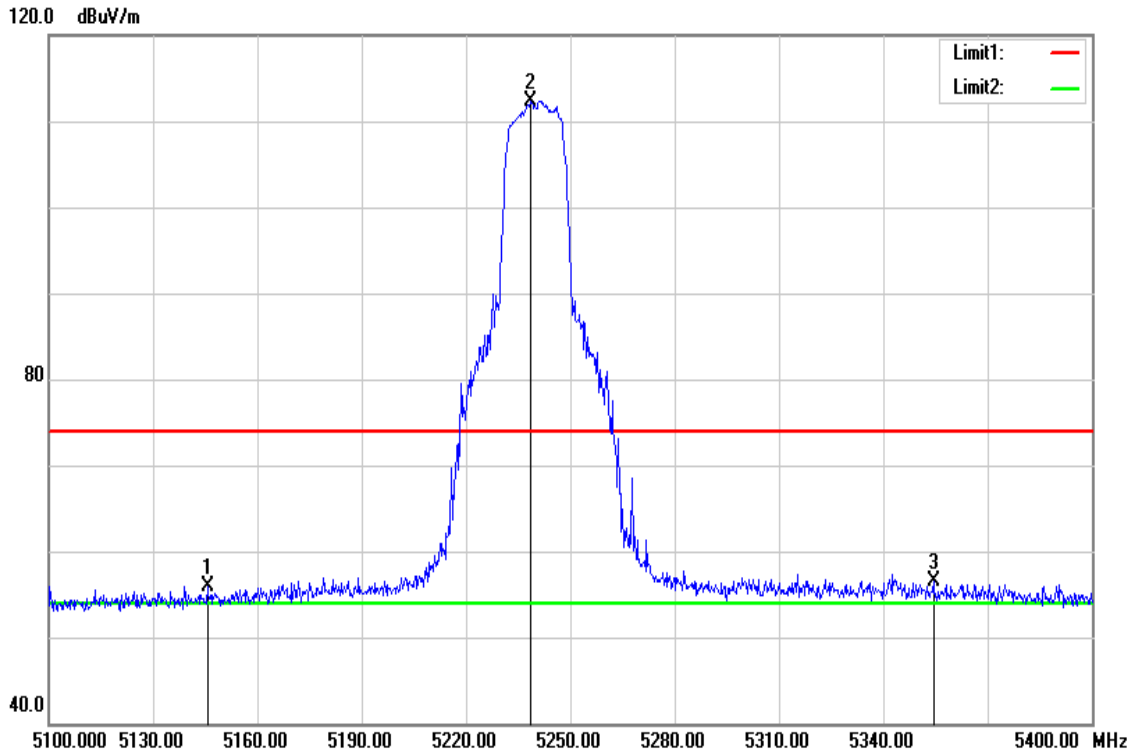
Test Mode	IEEE 802.11a / 5240MHZ	Temp/Hum	24(℃)/ 33%RH
Test Item	Band Edge	Test Date	December 5, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Peak	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5145.600	50.77	5.06	55.83	74.00	-18.17	peak
5238.600	107.10	5.28	112.38	-	-	peak
5354.400	50.85	5.56	56.41	74.00	-17.59	peak

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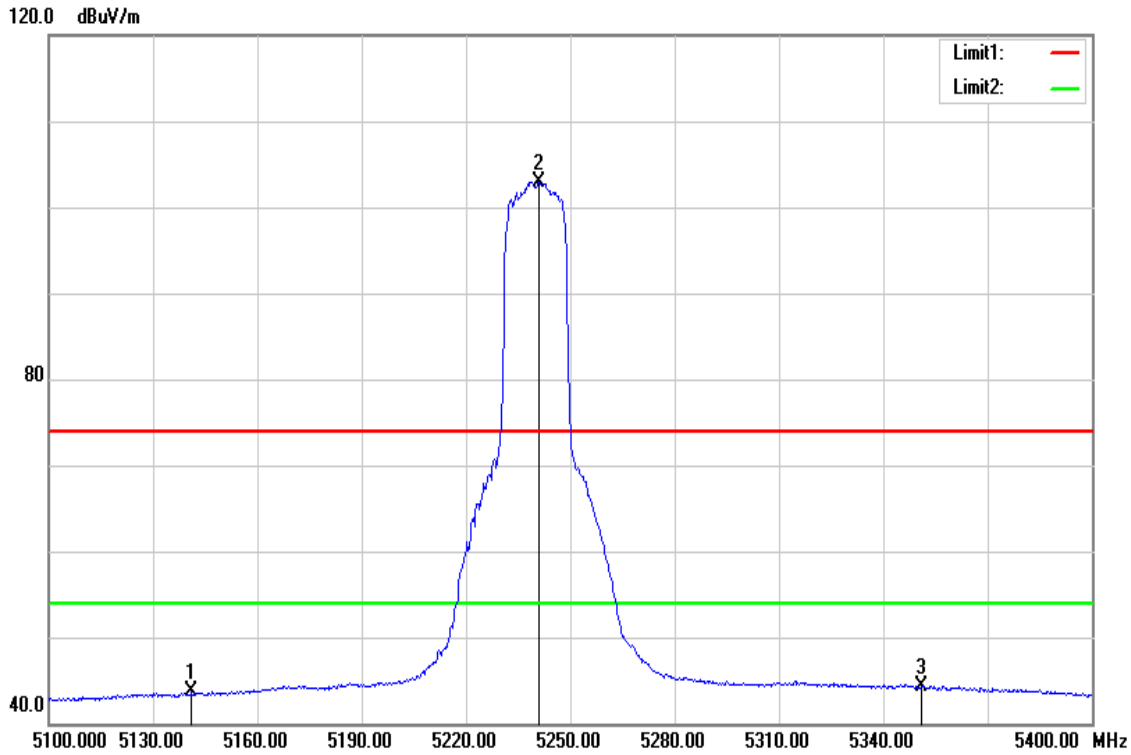
Test Mode	IEEE 802.11a / 5240MHZ	Temp/Hum	24(℃)/ 33%RH
Test Item	Band Edge	Test Date	December 5, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5141.100	38.67	5.03	43.70	54.00	-10.30	AVG
5241.000	97.69	5.28	102.97	-	-	AVG
5351.100	38.78	5.56	44.34	54.00	-9.66	AVG

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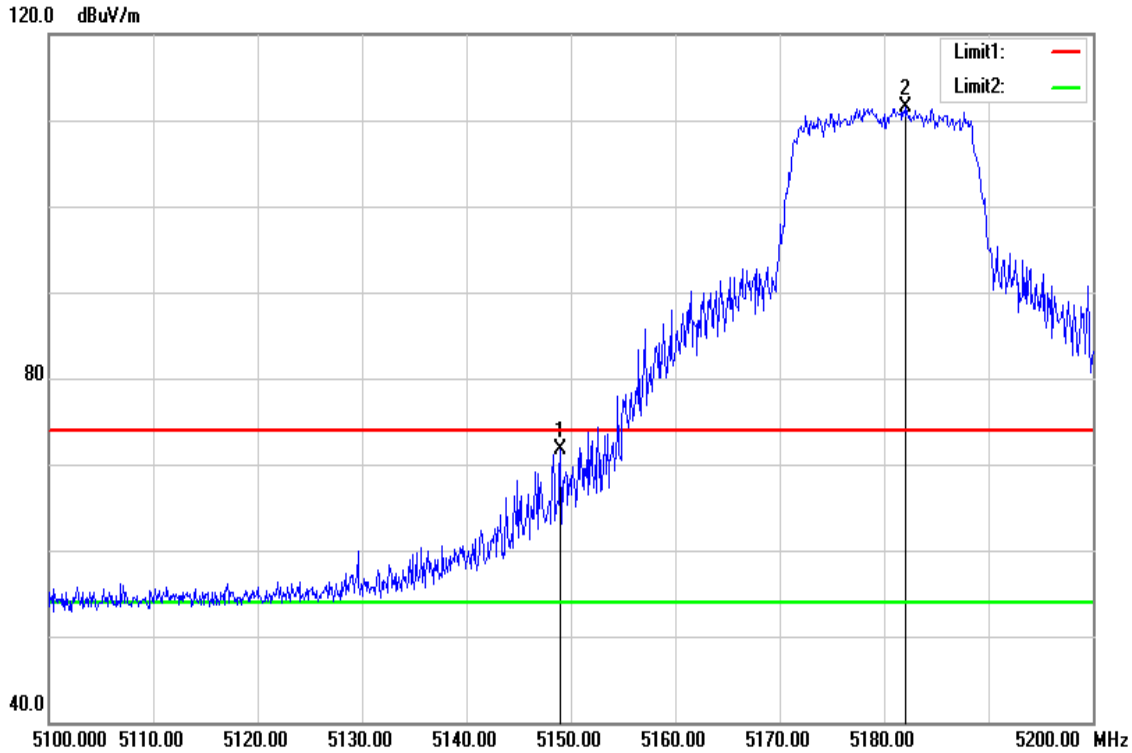
Test Mode	IEEE 802.11n HT20 / 5180MHZ	Temp/Hum	24(℃)/ 33%RH
Test Item	Band Edge	Test Date	December 12, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Peak	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5149.000	66.66	5.06	71.72	74.00	-2.28	peak
5182.100	106.39	5.14	111.53	-	-	peak

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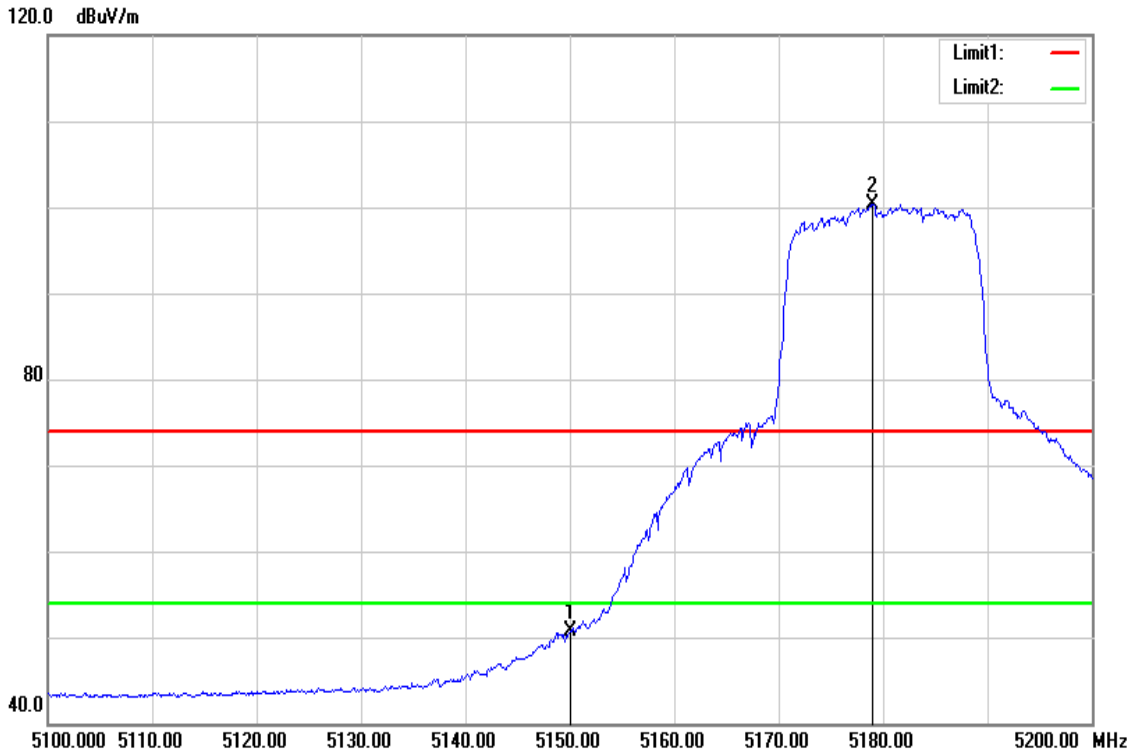
Test Mode	IEEE 802.11n HT20 / 5180MHZ	Temp/Hum	24(℃)/ 33%RH
Test Item	Band Edge	Test Date	December 12, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5150.000	45.64	5.06	50.70	54.00	-3.30	AVG
5179.000	95.21	5.14	100.35	-	-	AVG

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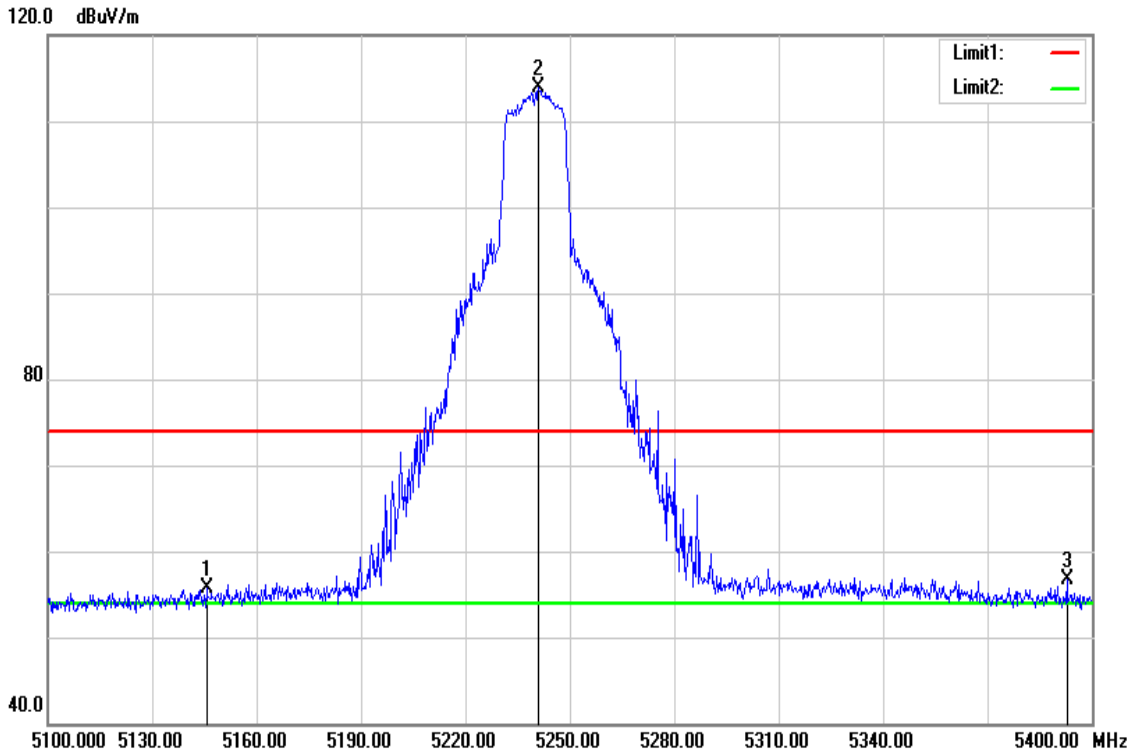
Test Mode	IEEE 802.11n HT20 / 5240MHZ	Temp/Hum	24(℃)/ 33%RH
Test Item	Band Edge	Test Date	December 12, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Peak	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5145.600	50.68	5.06	55.74	74.00	-18.26	peak
5241.000	108.62	5.28	113.90	-	-	peak
5392.800	51.12	5.67	56.79	74.00	-17.21	peak

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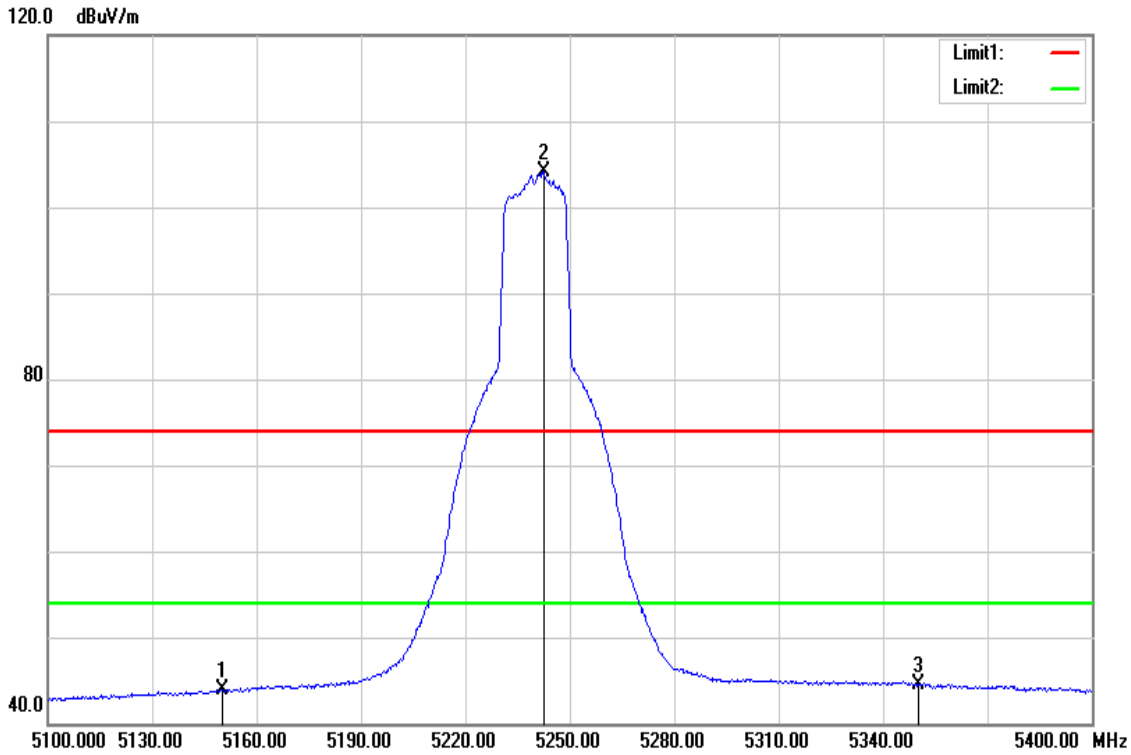
Test Mode	IEEE 802.11n HT20 / 5240MHZ	Temperature	24(℃)/ 33%RH
Test Item	Band Edge	Test Date	December 12, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5150.000	38.83	5.06	43.89	54.00	-10.11	AVG
5242.500	98.83	5.29	104.12	-	-	AVG
5350.000	38.93	5.56	44.49	54.00	-9.51	AVG

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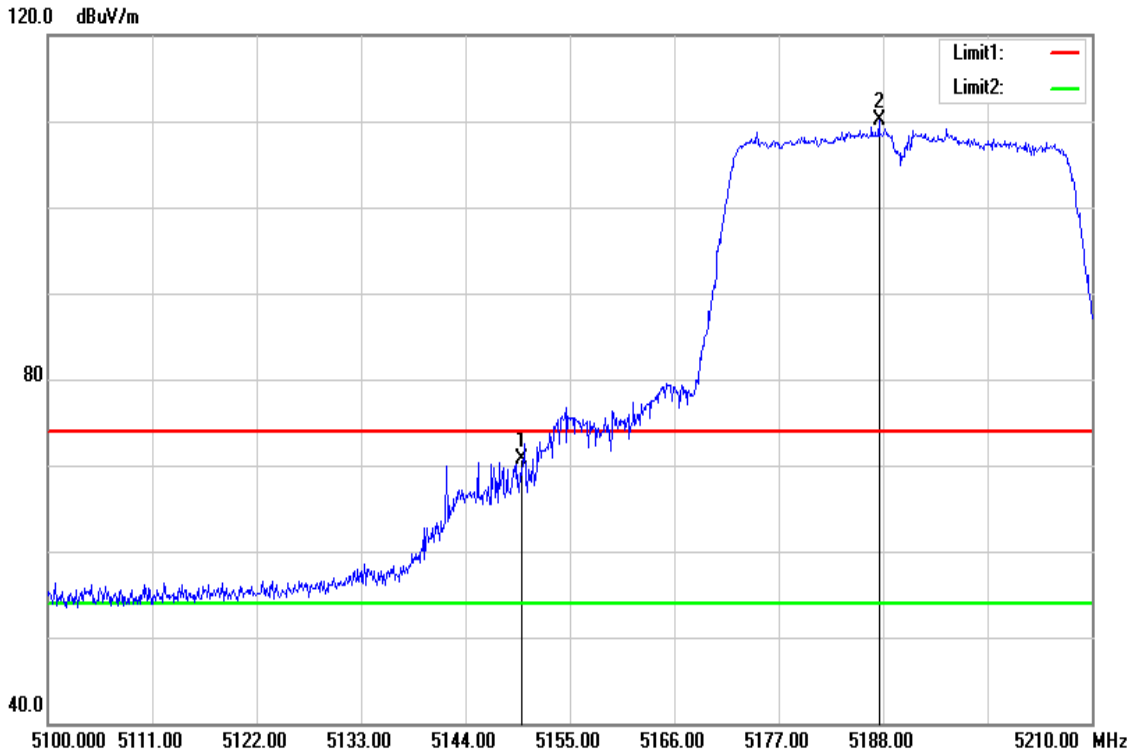
Test Mode	IEEE 802.11n HT40 / 5190MHZ	Temp/Hum	24(℃)/ 33%RH
Test Item	Band Edge	Test Date	December 12, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Peak	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5150.000	65.61	5.06	70.67	74.00	-3.33	peak
5187.560	105.01	5.16	110.17	-	-	peak

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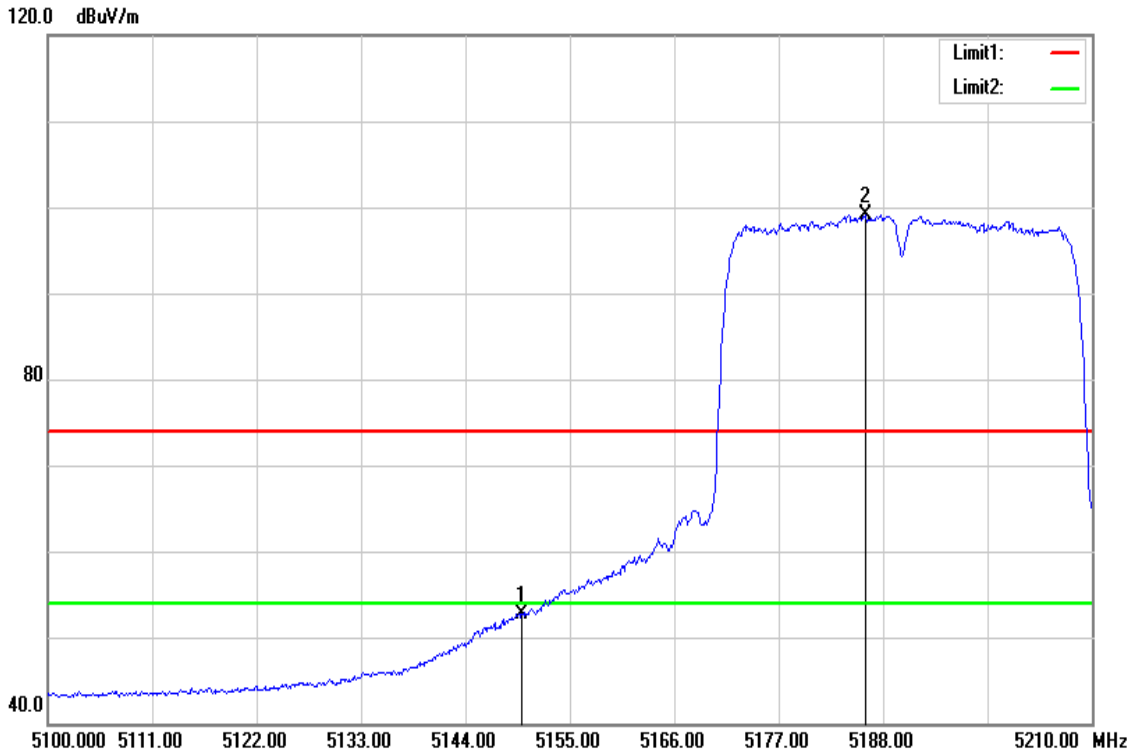
Test Mode	IEEE 802.11n HT40 / 5190MHZ	Temperature	24(℃)/ 33%RH
Test Item	Band Edge	Test Date	December 12, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5150.000	47.67	5.06	52.73	54.00	-1.27	AVG
5186.130	93.91	5.15	99.06	-	-	AVG

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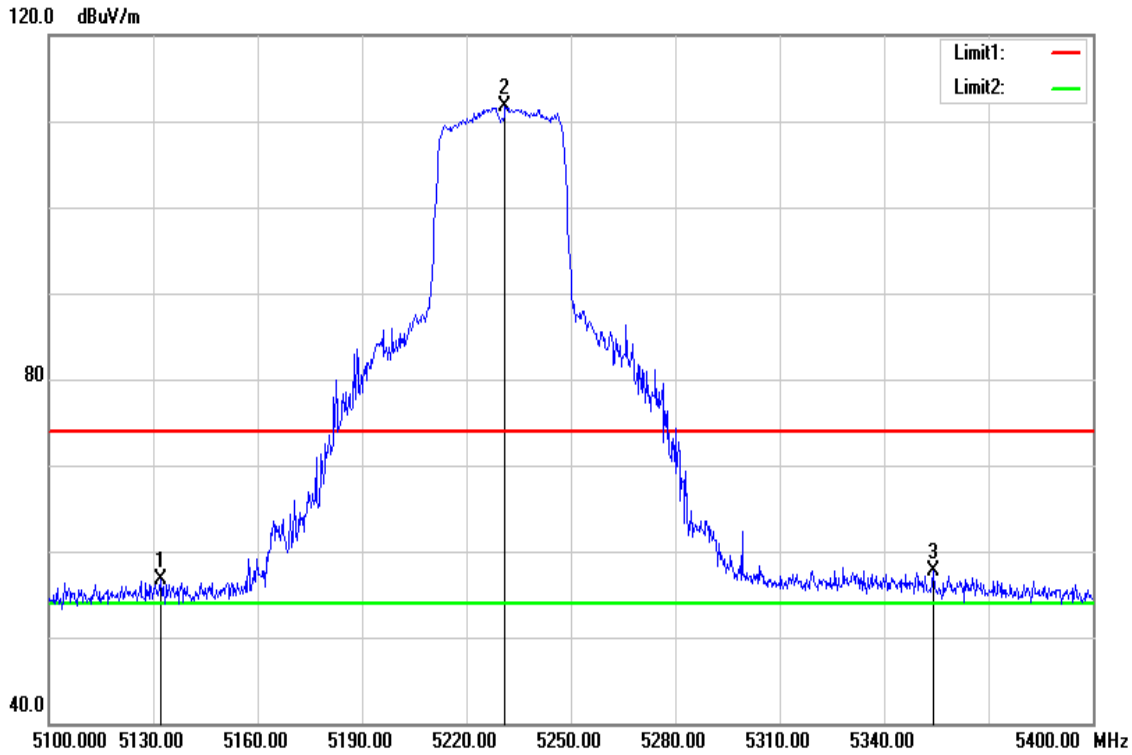
Test Mode	IEEE 802.11n HT40 / 5230MHZ	Temp/Hum	24(℃)/ 33%RH
Test Item	Band Edge	Test Date	December 12, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Peak	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5132.100	51.62	5.02	56.64	74.00	-17.36	peak
5231.100	106.49	5.26	111.75	-	-	peak
5354.100	52.20	5.56	57.76	74.00	-16.24	peak

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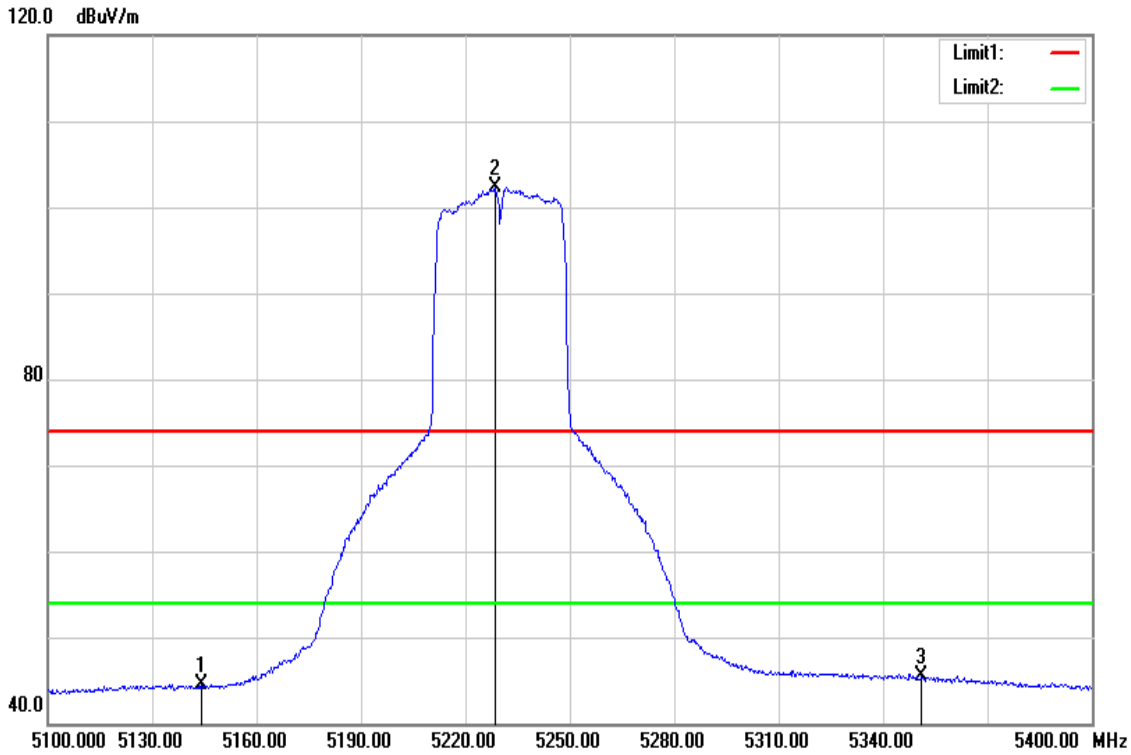
Test Mode	IEEE 802.11n HT40 / 5230MHZ	Temp/Hum	24(℃)/ 33%RH
Test Item	Band Edge	Test Date	December 12, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5144.100	39.46	5.05	44.51	54.00	-9.49	AVG
5228.400	97.08	5.26	102.34	-	-	AVG
5351.100	39.99	5.56	45.55	54.00	-8.45	AVG

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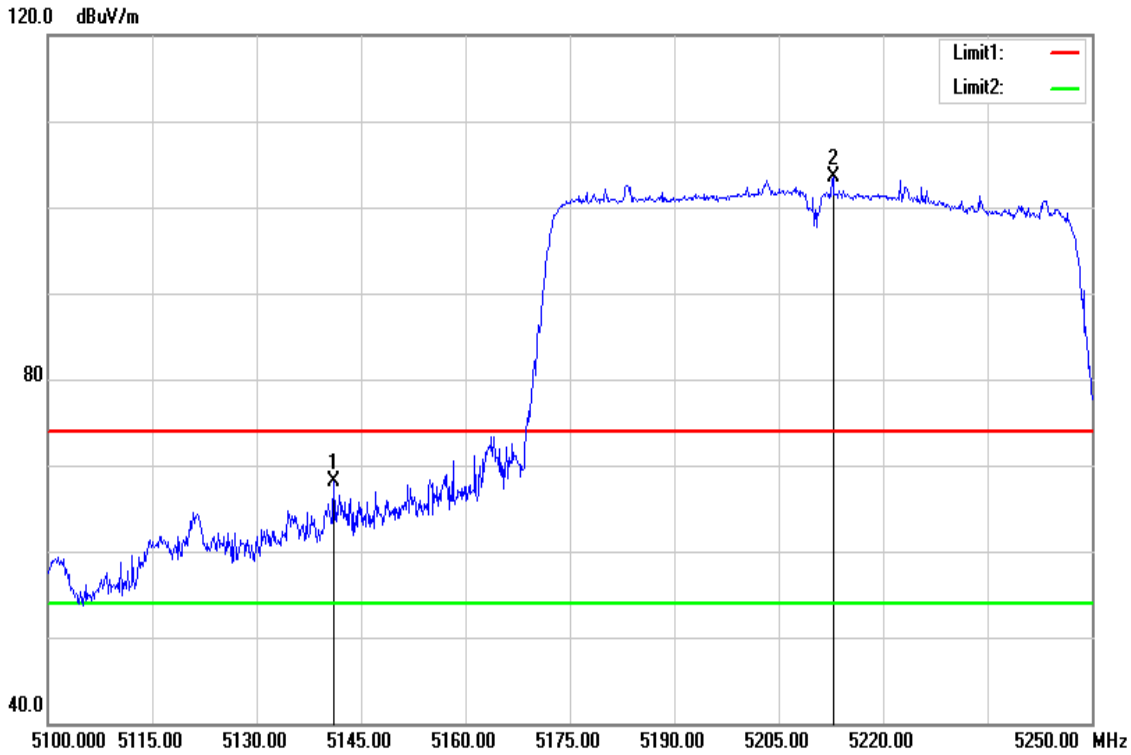
Test Mode	I EEE 802.11ac VHT80 / 5210MHZ	Temp/Hum	24(℃)/ 33%RH
Test Item	Band Edge	Test Date	December 12, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Peak	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5141.100	63.11	5.03	68.14	74.00	-5.86	peak
5212.800	98.21	5.22	103.43	-	-	peak

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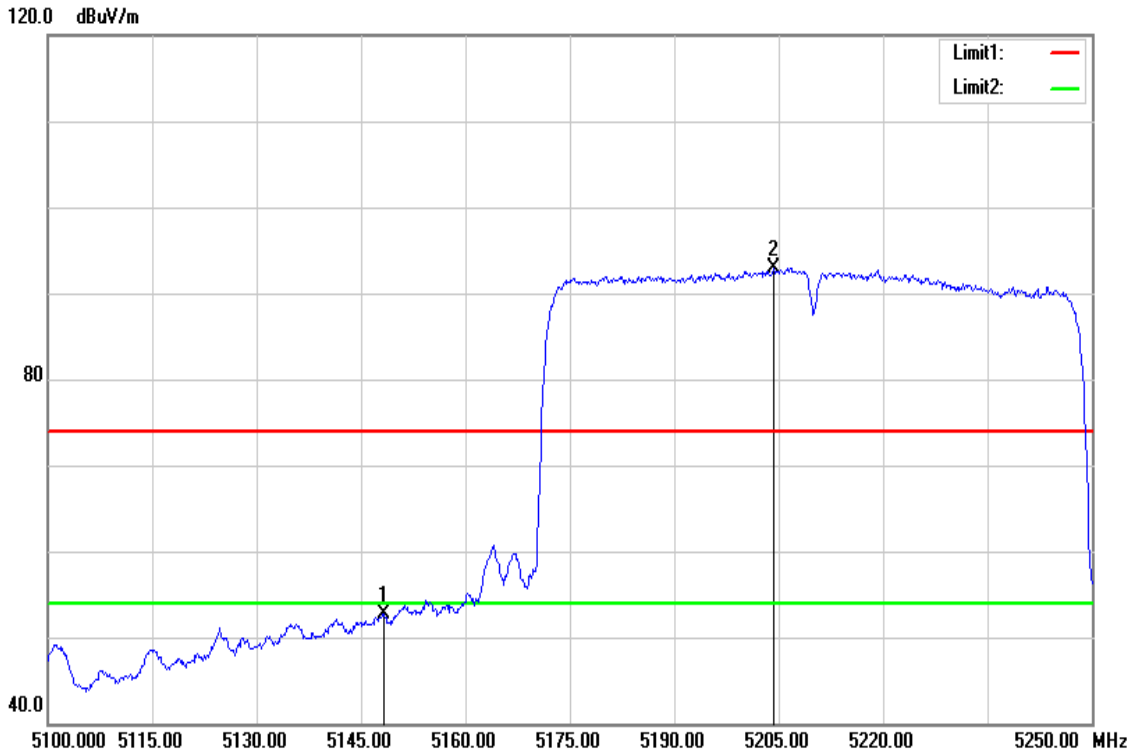
Test Mode	I EEE 802.11ac VHT80 / 5210MHZ	Temp/Hum	24(℃)/ 33%RH
Test Item	Band Edge	Test Date	December 12, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5148.300	47.66	5.06	52.72	54.00	-1.28	AVG
5204.250	87.71	5.19	92.90	-	-	AVG

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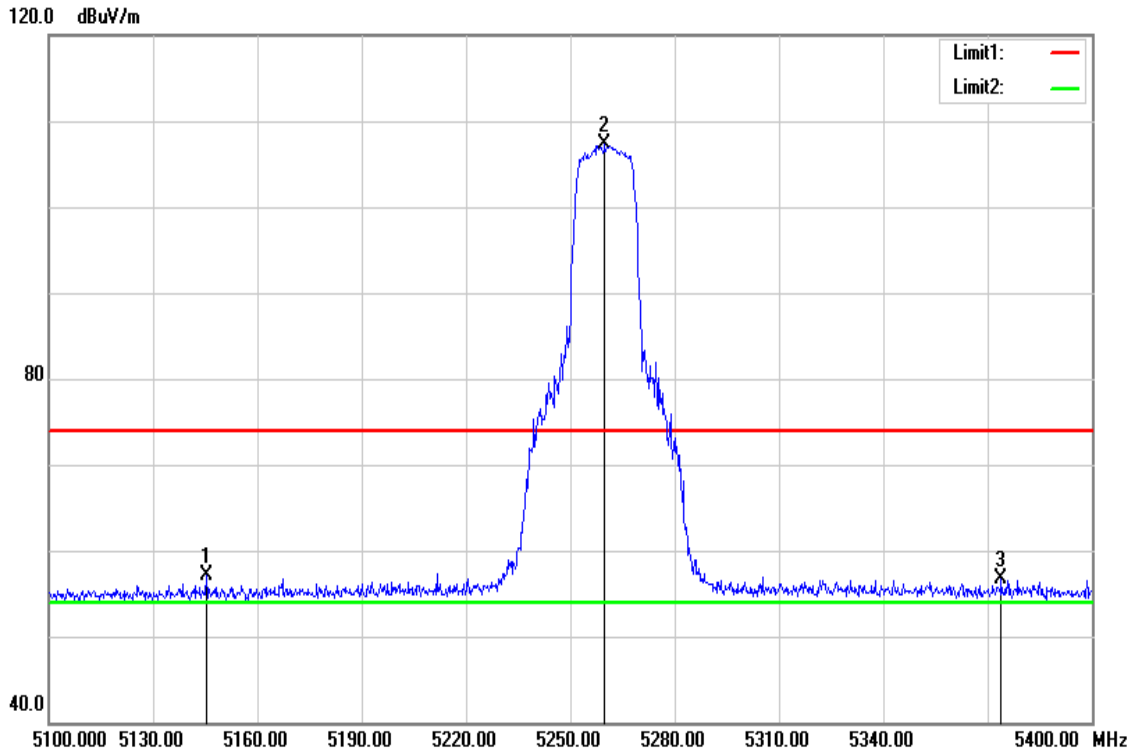
Band Edge Test Data for UNII-2a

Test Mode	IEEE 802.11a / 5260 MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Band Edge	Test Date	December 2, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Peak	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5145.300	52.01	5.06	57.07	74.00	-16.93	peak
5259.900	102.03	5.34	107.37	-	-	peak
5373.900	51.02	5.61	56.63	74.00	-17.37	peak

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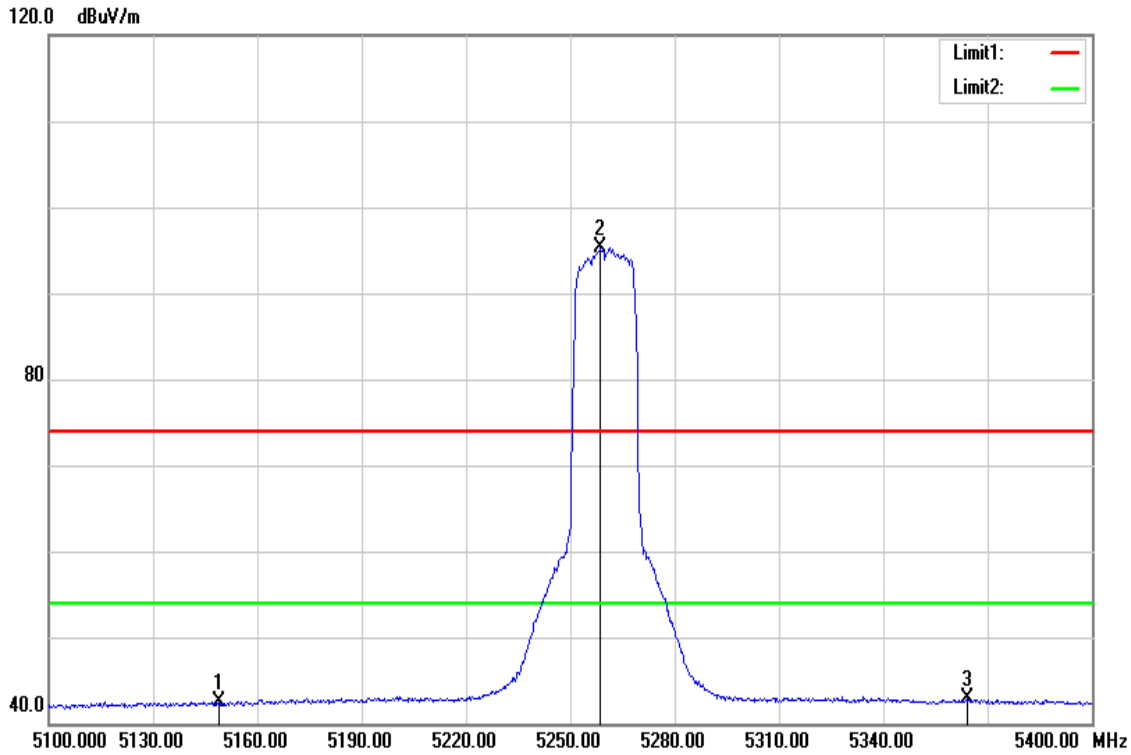
Test Mode	IEEE 802.11a / 5260MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Band Edge	Test Date	December 2, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5148.900	37.48	5.06	42.54	54.00	-11.46	AVG
5258.700	90.00	5.34	95.34	-	-	AVG
5364.300	37.26	5.59	42.85	54.00	-11.15	AVG

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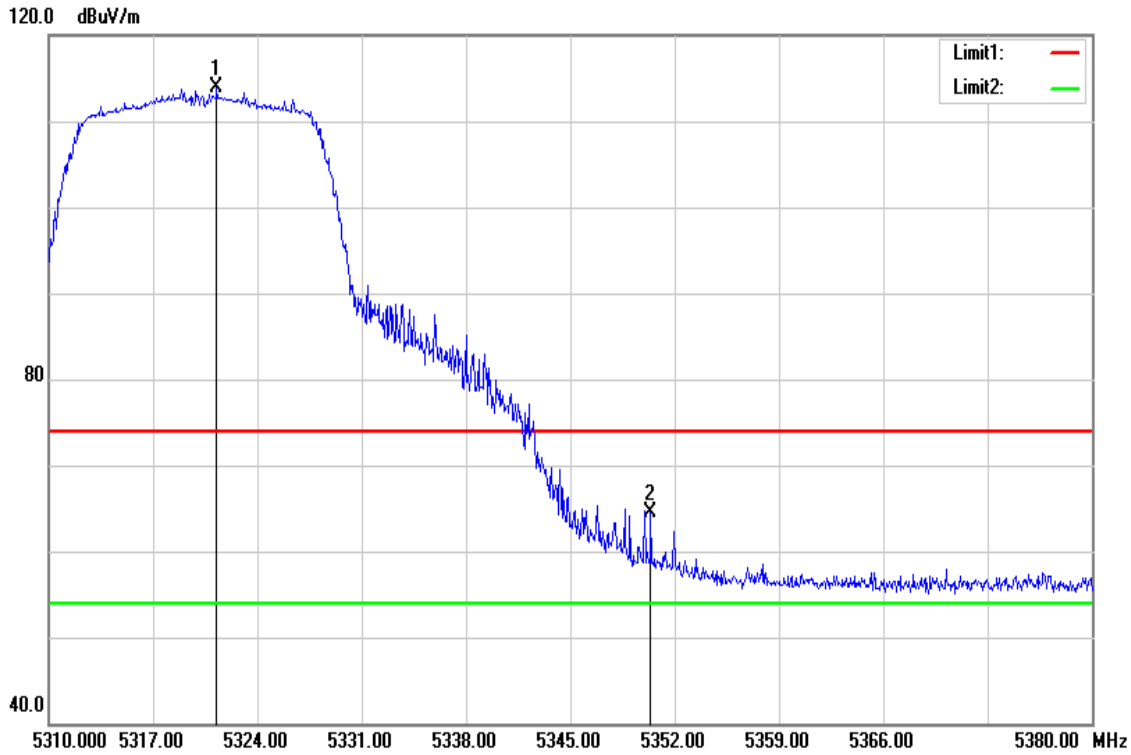
Test Mode	IEEE 802.11a / 5320MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Band Edge	Test Date	December 2, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Peak	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5321.270	108.37	5.48	113.85	-	-	peak
5350.390	58.90	5.56	64.46	74.00	-9.54	peak

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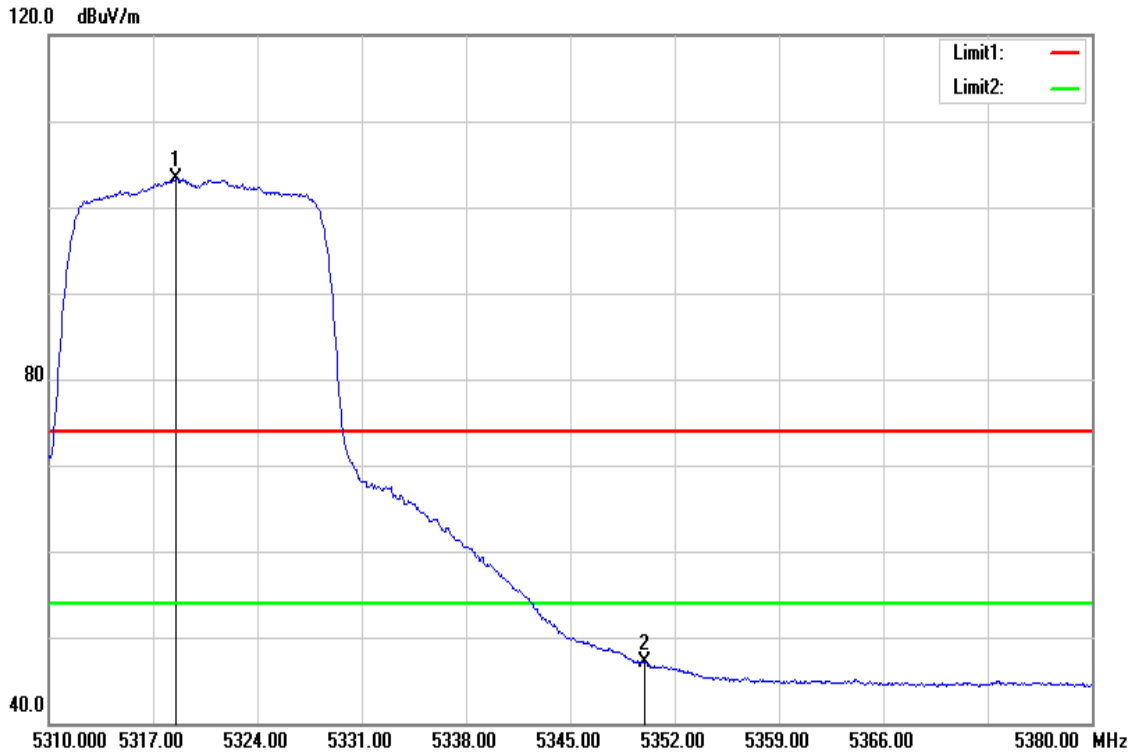
Test Mode	IEEE 802.11a / 5320MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Band Edge	Test Date	December 2, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5318.540	97.88	5.48	103.36	-	-	AVG
5350.000	41.51	5.56	47.07	54.00	-6.93	AVG

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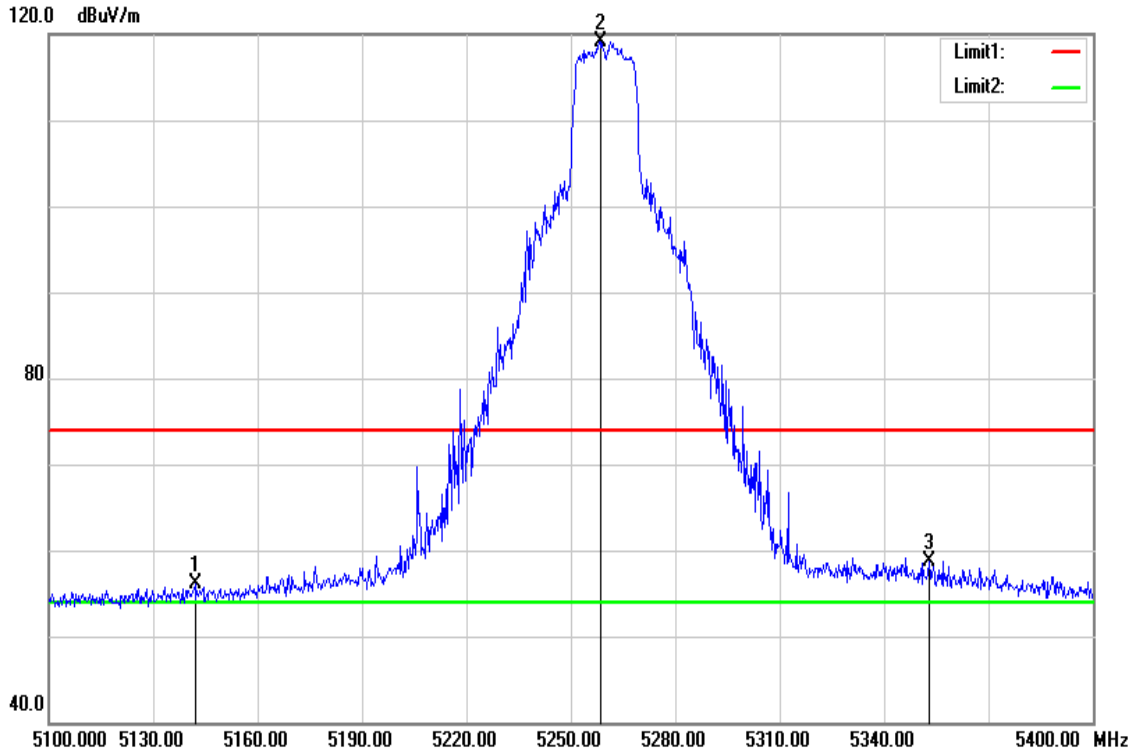
Test Mode	IEEE 802.11n HT20 / 5260MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Band Edge	Test Date	December 12, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Peak	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5142.000	51.06	5.04	56.10	74.00	-17.90	peak
5258.700	113.86	5.34	119.20	-	-	peak
5352.900	53.07	5.56	58.63	74.00	-15.37	peak

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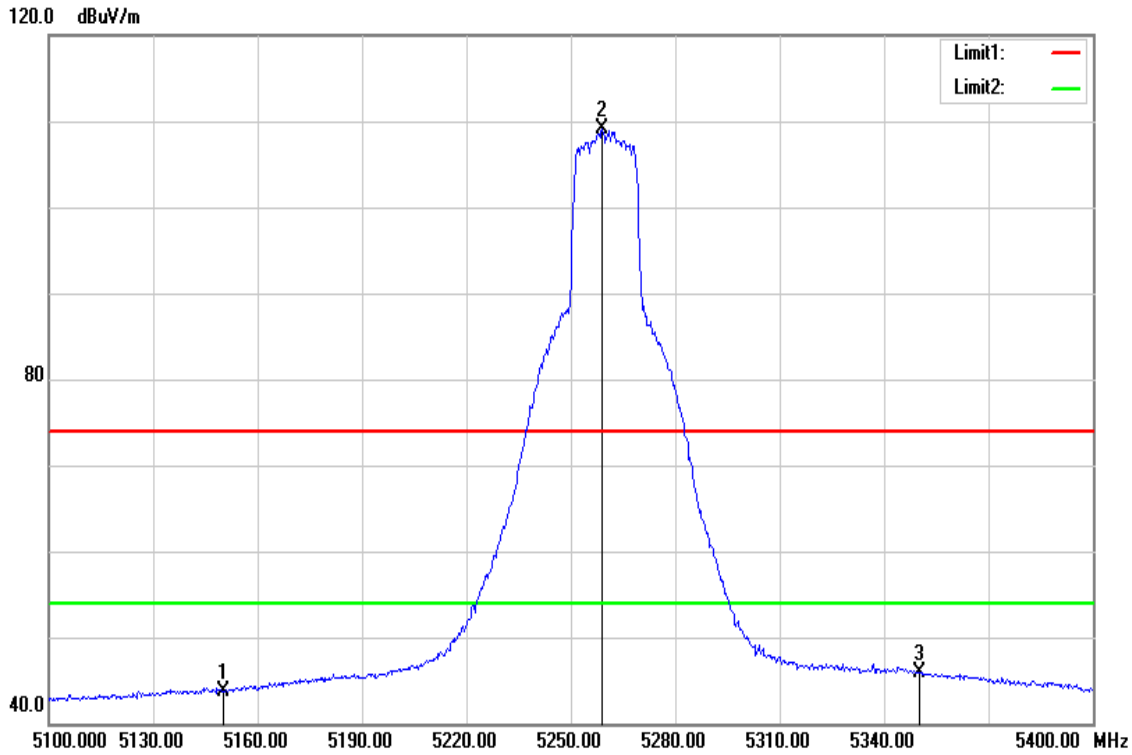
Test Mode	IEEE 802.11n HT20 / 5260MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Band Edge	Test Date	December 12, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5150.000	38.66	5.06	43.72	54.00	-10.28	AVG
5259.000	103.71	5.34	109.05	-	-	AVG
5350.000	40.35	5.56	45.91	54.00	-8.09	AVG

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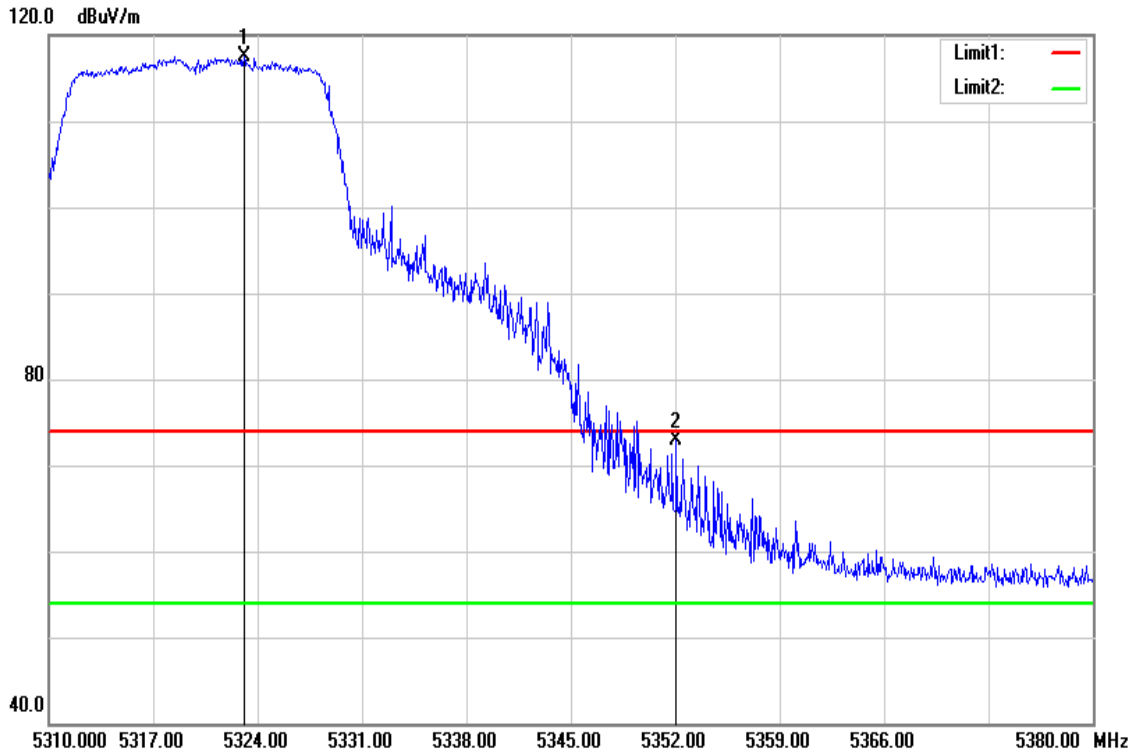
Test Mode	IEEE 802.11n HT20 / 5320MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Band Edge	Test Date	December 12, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Peak	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5323.090	112.00	5.48	117.48	-	-	peak
5352.070	67.26	5.56	72.82	74.00	-1.18	peak

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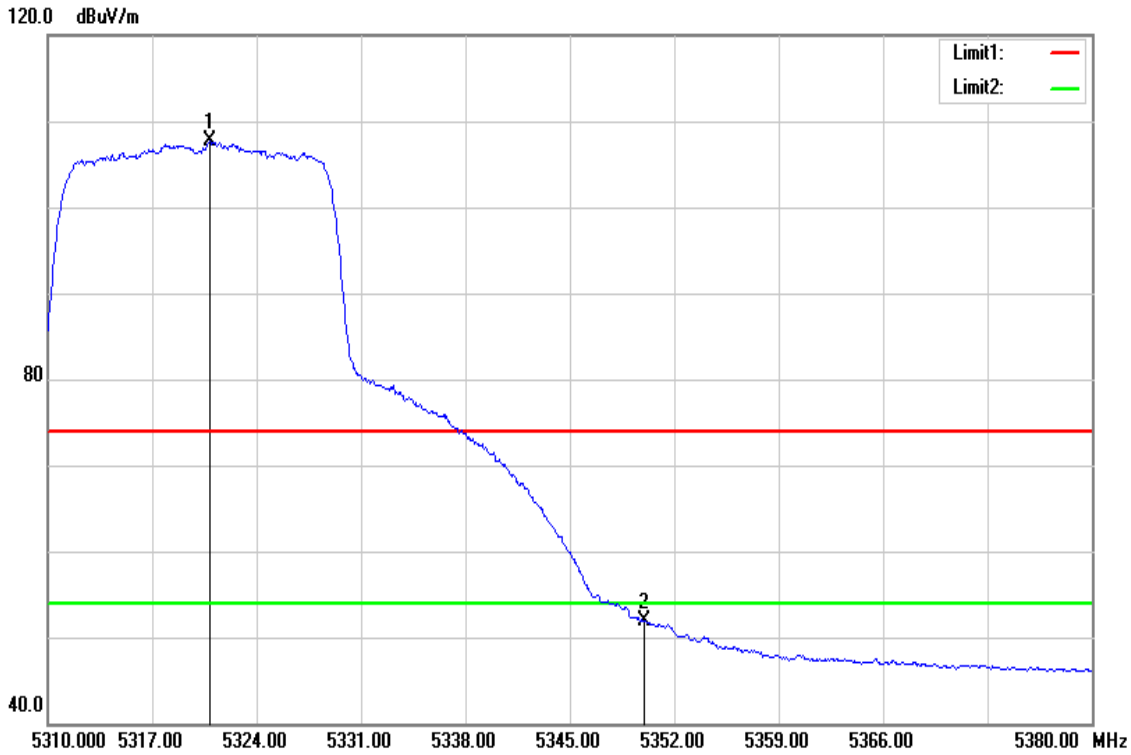
Test Mode	IEEE 802.11n HT20 / 5320MHz	Temperature	24(℃)/ 33%RH
Test Item	Band Edge	Test Date	December 12, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5320.850	102.19	5.48	107.67	-	-	AVG
5350.000	46.44	5.56	52.00	54.00	-2.00	AVG

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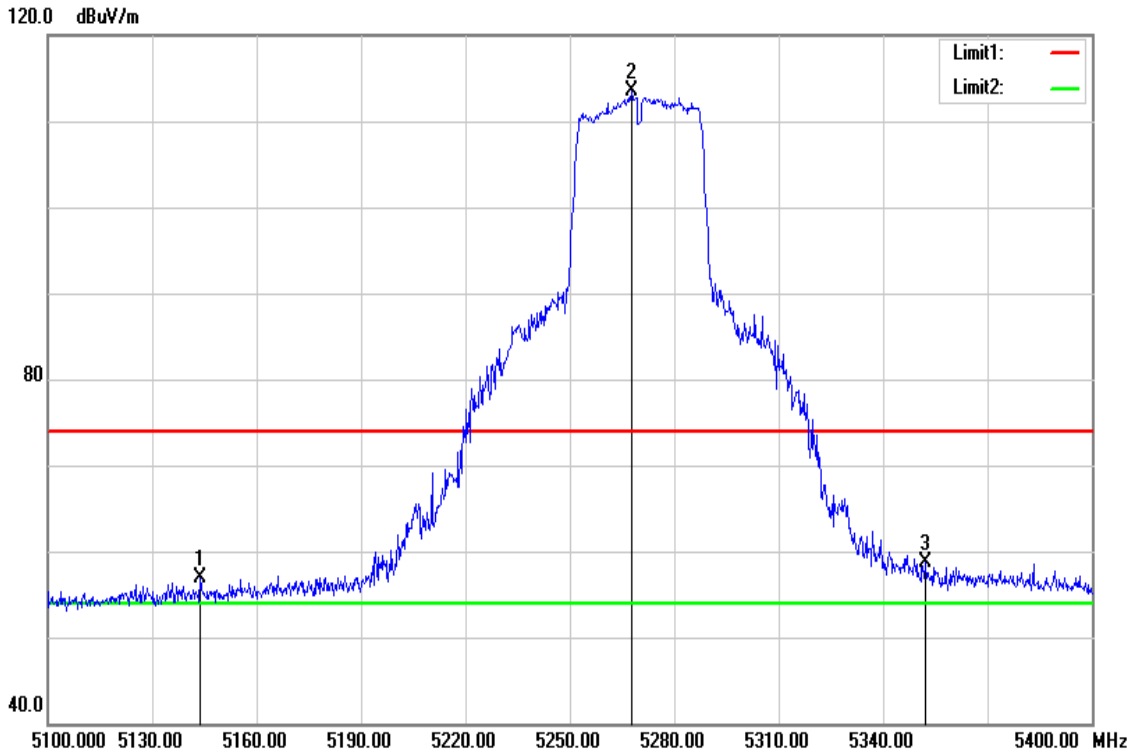
Test Mode	IEEE 802.11n HT40 / 5270MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Band Edge	Test Date	December 12, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Peak	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5143.800	51.93	5.05	56.98	74.00	-17.02	peak
5267.700	108.19	5.36	113.55	-	-	peak
5352.000	53.07	5.56	58.63	74.00	-15.37	peak

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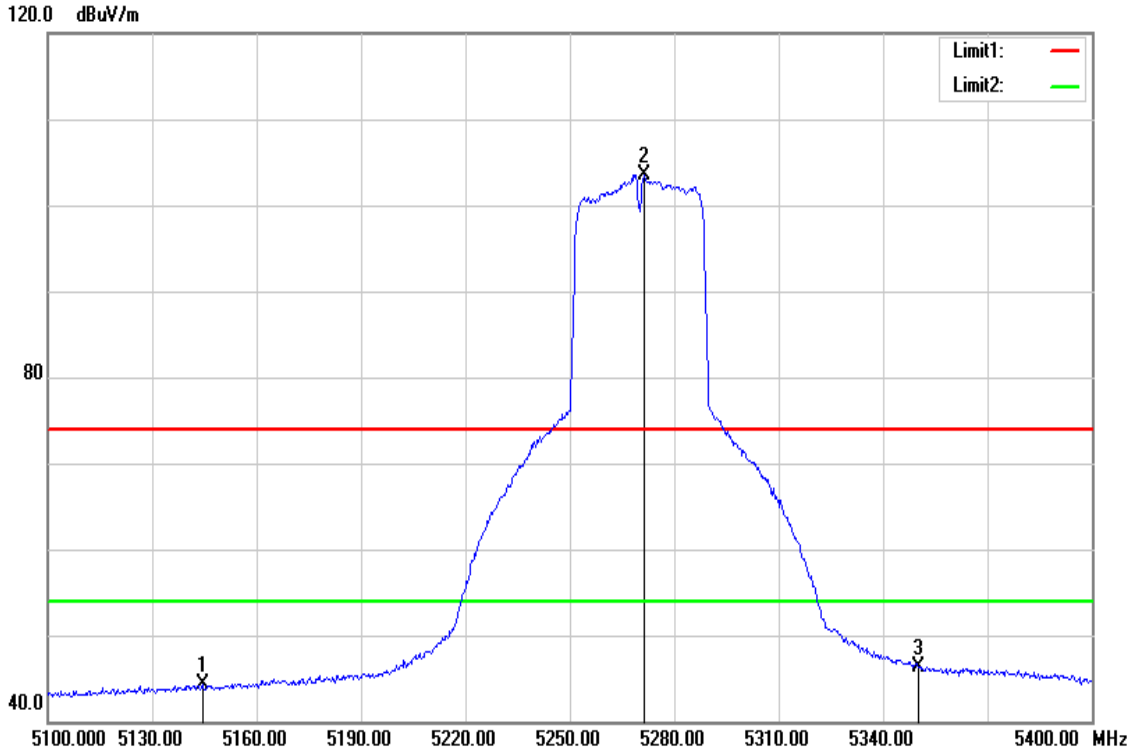
Test Mode	IEEE 802.11n HT40 / 5270MHz	Temperature	24(℃)/ 33%RH
Test Item	Band Edge	Test Date	December 12, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5144.400	39.18	5.05	44.23	54.00	-9.77	AVG
5271.300	98.17	5.36	103.53	-	-	AVG
5350.200	40.79	5.56	46.35	54.00	-7.65	AVG

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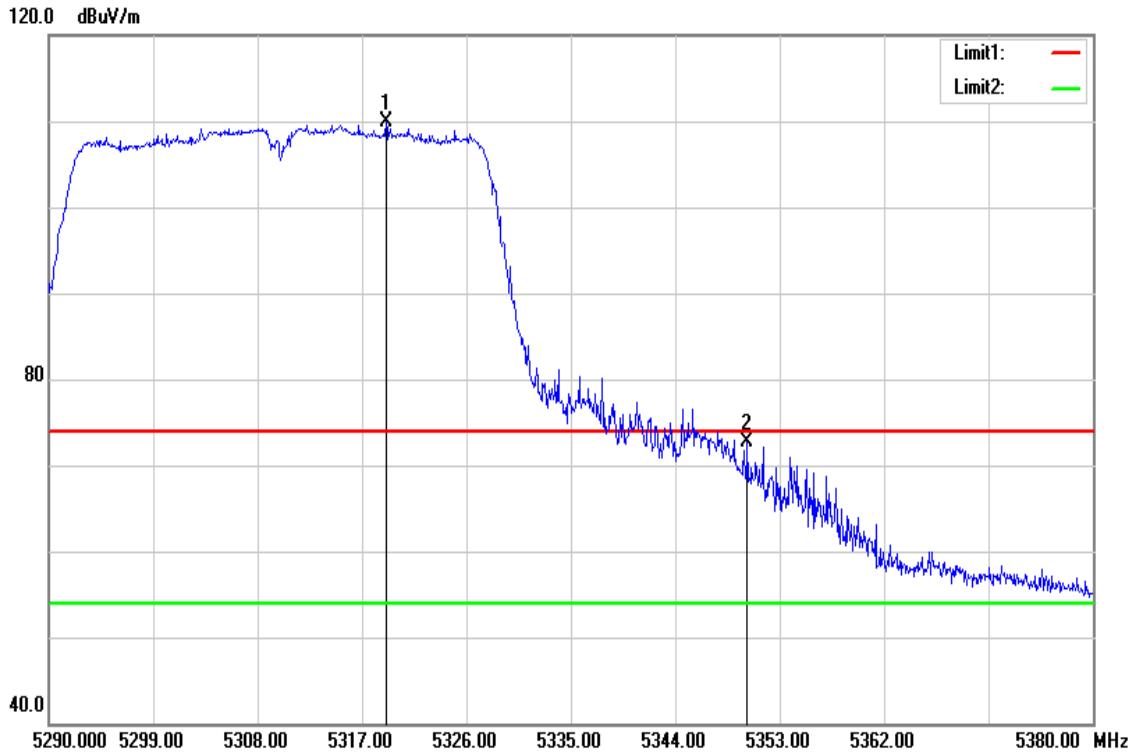
Test Mode	IEEE 802.11n HT40 / 5310MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Band Edge	Test Date	December 12, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Peak	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5319.070	104.46	5.48	109.94	-	-	peak
5350.210	67.14	5.56	72.70	74.00	-1.30	peak

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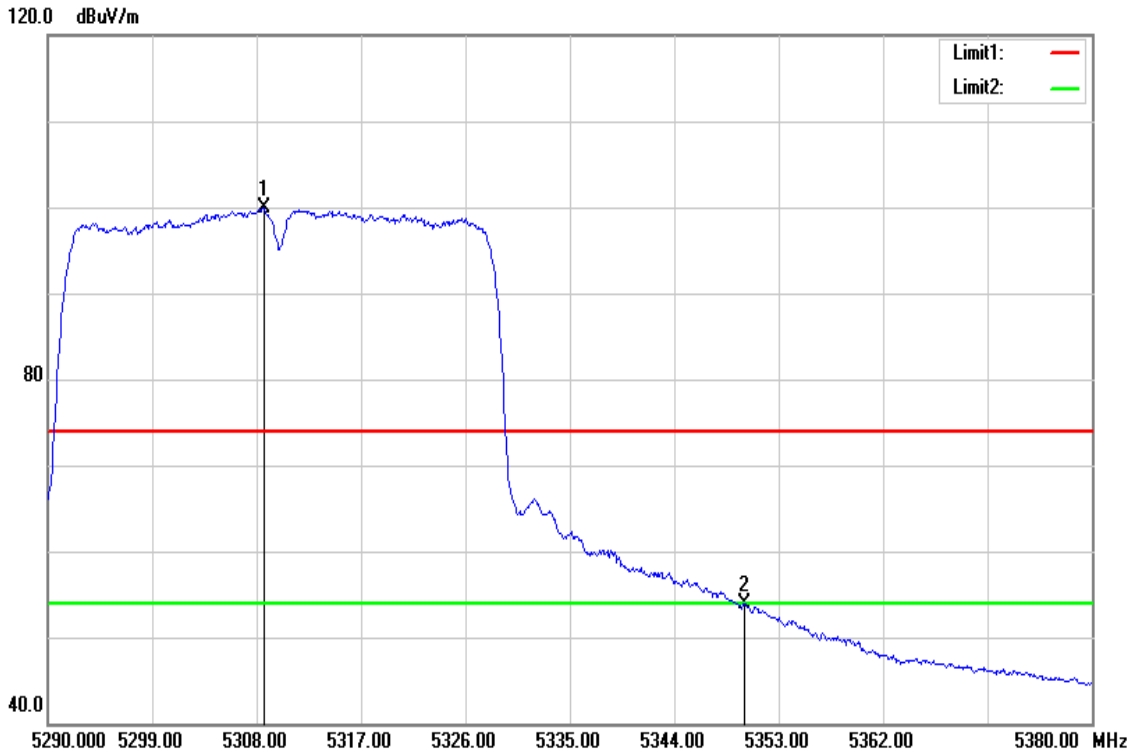
Test Mode	IEEE 802.11n HT40 / 5310MHz	Temperature	24(℃)/ 33%RH
Test Item	Band Edge	Test Date	December 12, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5308.630	94.43	5.46	99.89	-	-	AVG
5350.000	48.39	5.56	53.95	54.00	-0.05	AVG

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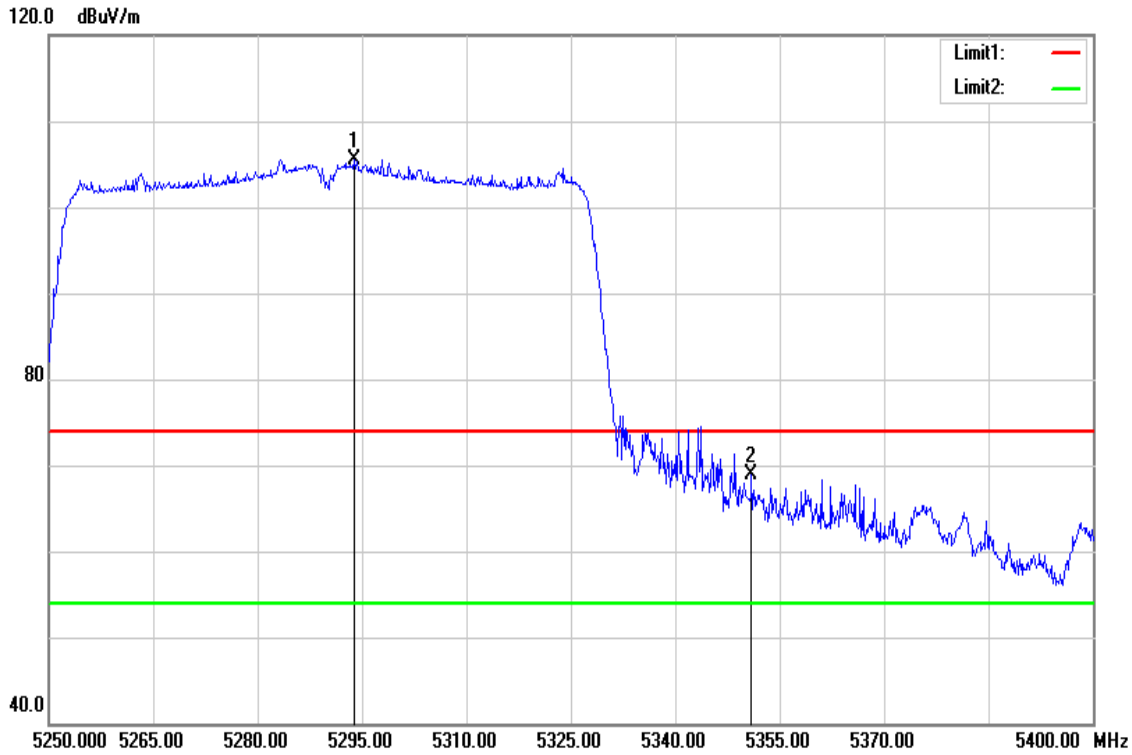
Test Mode	IEEE 802.11ac VHT80 / 5290MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Band Edge	Test Date	December 12, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Peak	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5293.800	100.07	5.42	105.49	-	-	peak
5350.950	63.29	5.56	68.85	74.00	-5.15	peak

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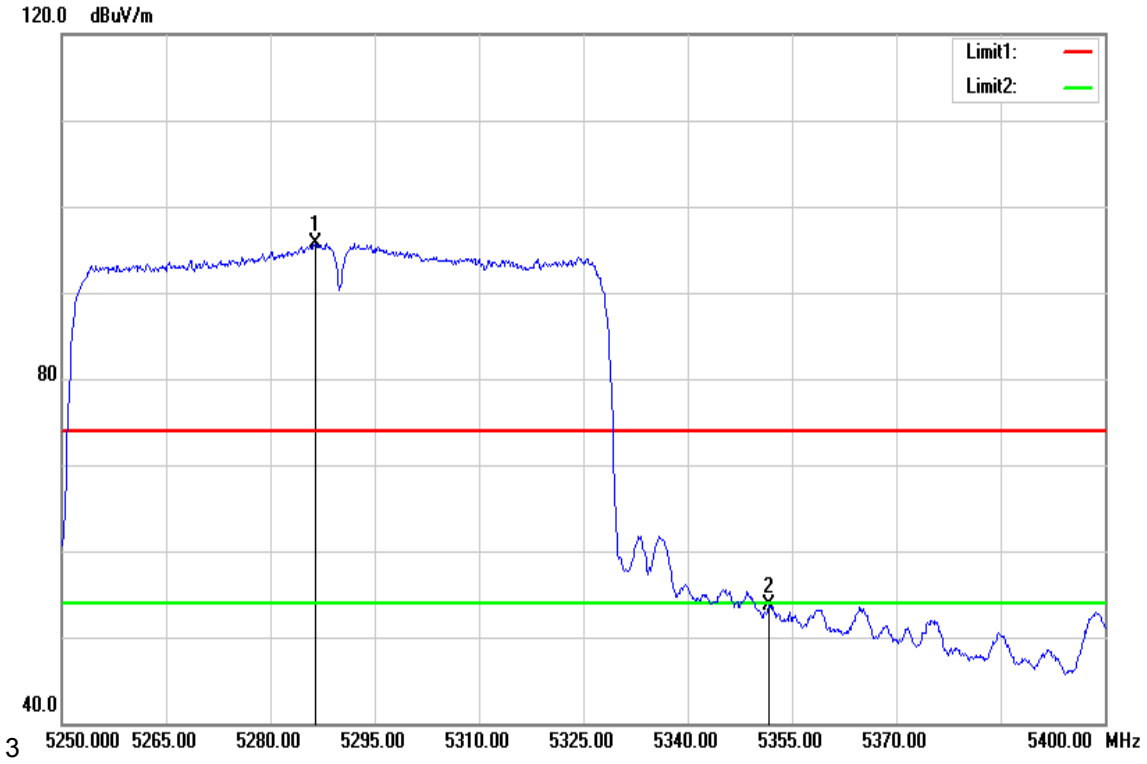
Test Mode	IEEE 802.11ac VHT80 / 5290MHz	Temperature	24(℃)/ 33%RH
Test Item	Band Edge	Test Date	December 12, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5286.450	90.38	5.40	95.78	-	-	AVG
5351.700	48.10	5.56	53.66	54.00	-0.34	AVG

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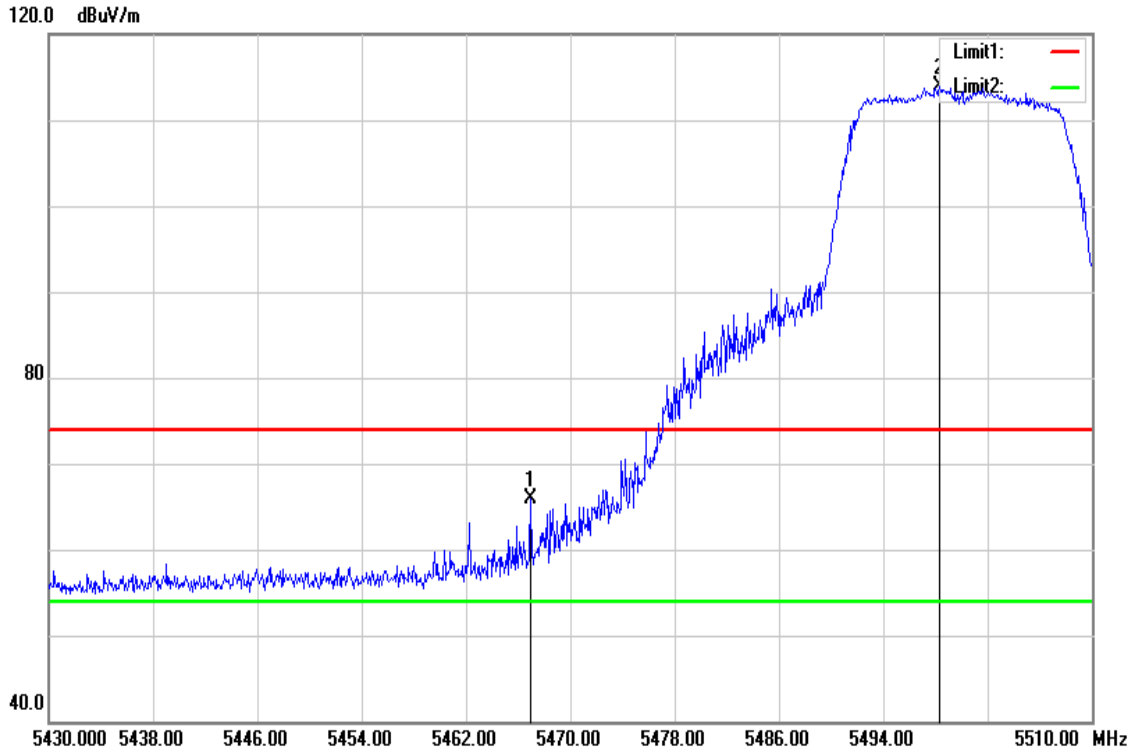
Band Edge Test Data for UNII-2c

Test Mode	IEEE 802.11a / 5500MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Band Edge	Test Date	December 5, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Peak	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5466.960	60.11	5.85	65.96	74.00	-8.04	peak
5498.320	107.88	5.93	113.81	-	-	peak

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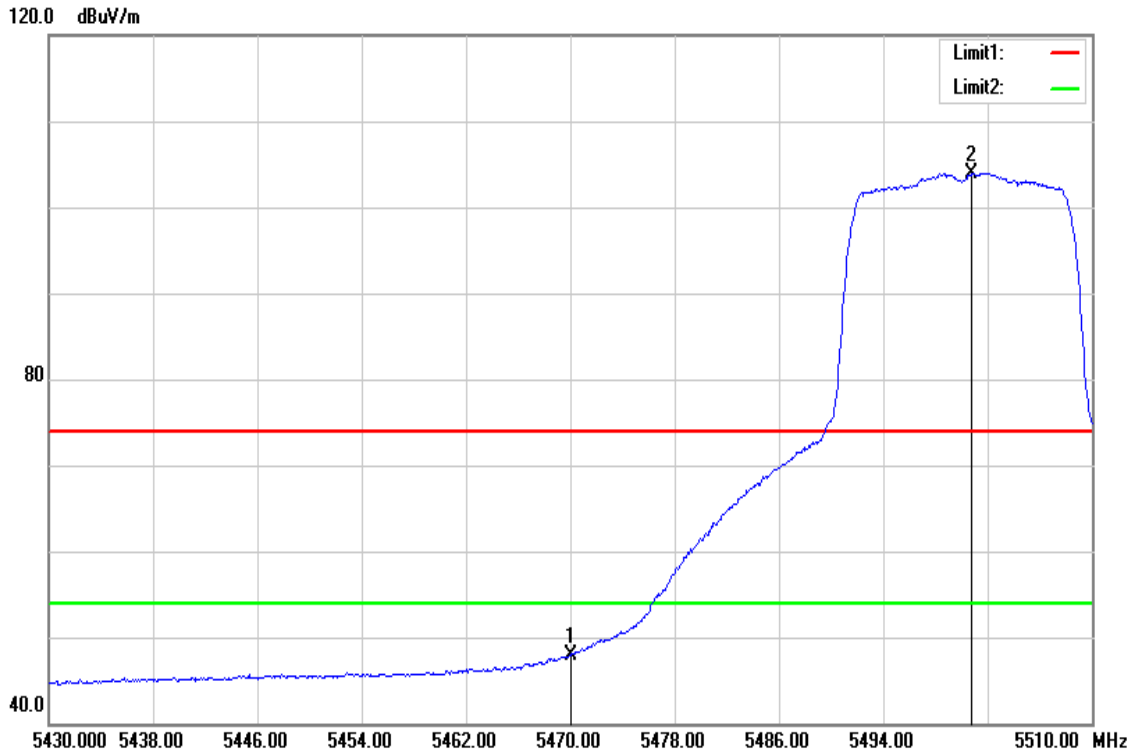
Test Mode	IEEE 802.11a / 5500MHz	Temperature	24(℃)/ 33%RH
Test Item	Band Edge	Test Date	December 5, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5470.000	42.10	5.85	47.95	54.00	-6.05	AVG
5500.800	98.02	5.93	103.95	-	-	AVG

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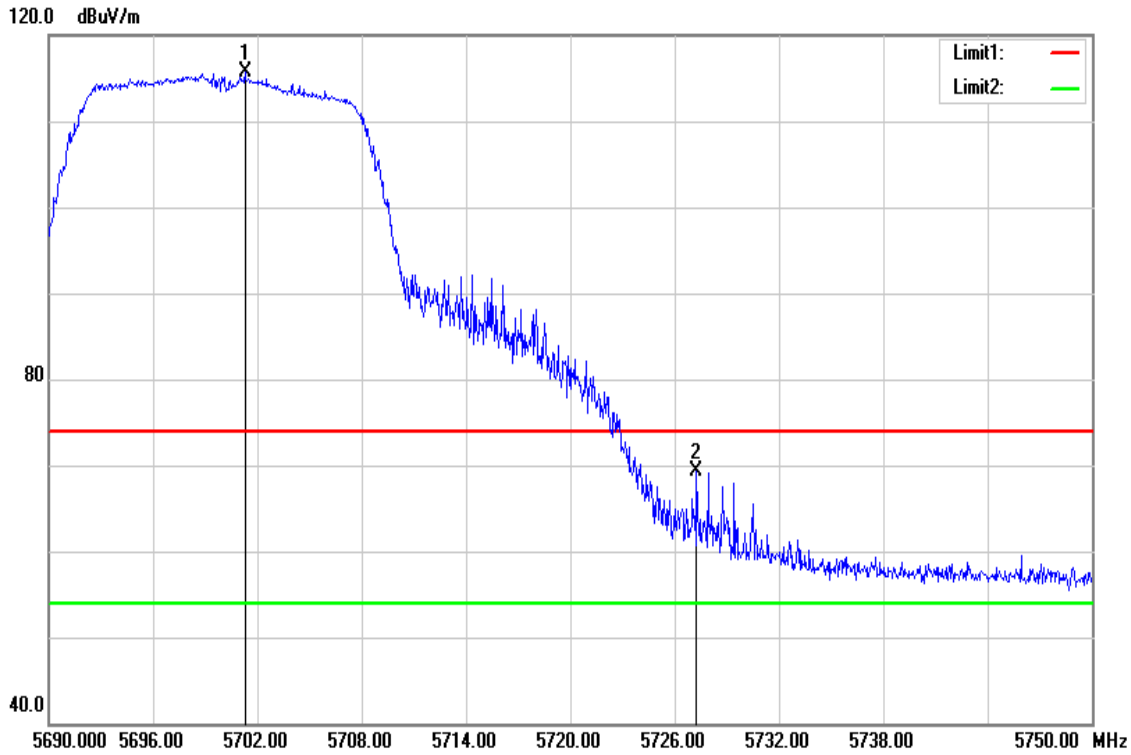
Test Mode	IEEE 802.11a / 5700 MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Band Edge	Test Date	December 5, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Peak	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5701.280	109.16	6.45	115.61	-	-	peak
5727.260	62.75	6.52	69.27	74.00	-4.73	peak

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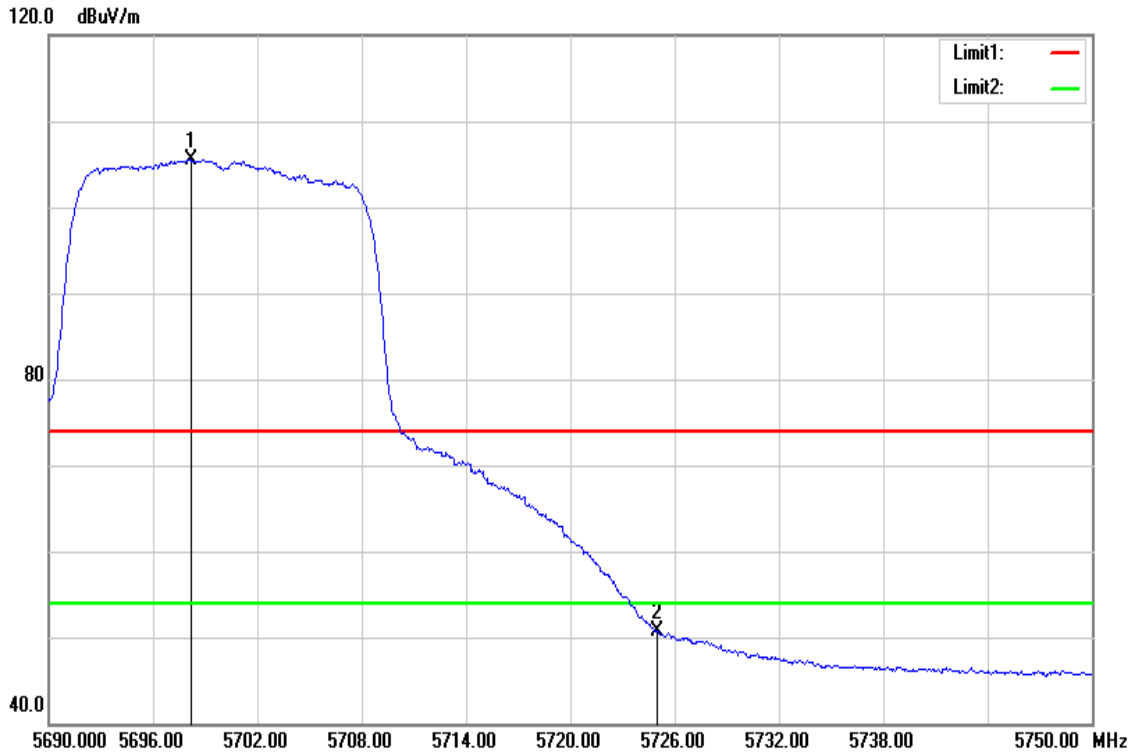
Test Mode	IEEE 802.11a / 5700 MHz	Temperature	24(℃)/ 33%RH
Test Item	Band Edge	Test Date	December 5, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5698.160	99.10	6.46	105.56	-	-	AVG
5725.000	44.19	6.52	50.71	54.00	-3.29	AVG

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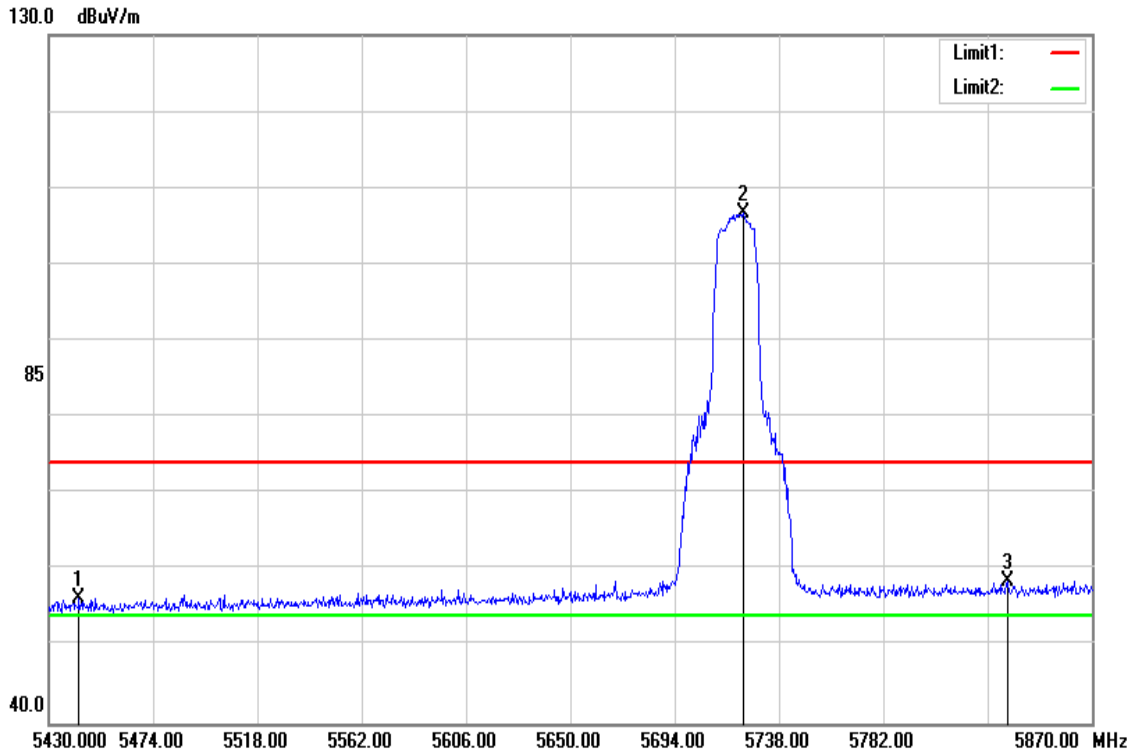
Test Mode	IEEE 802.11a / 5720 MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Band Edge	Test Date	December 2, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Peak	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5442.760	50.58	5.79	56.37	74.00	-17.63	peak
5723.040	100.14	6.52	106.66	-	-	peak
5834.360	51.80	6.81	58.61	74.00	-15.39	peak

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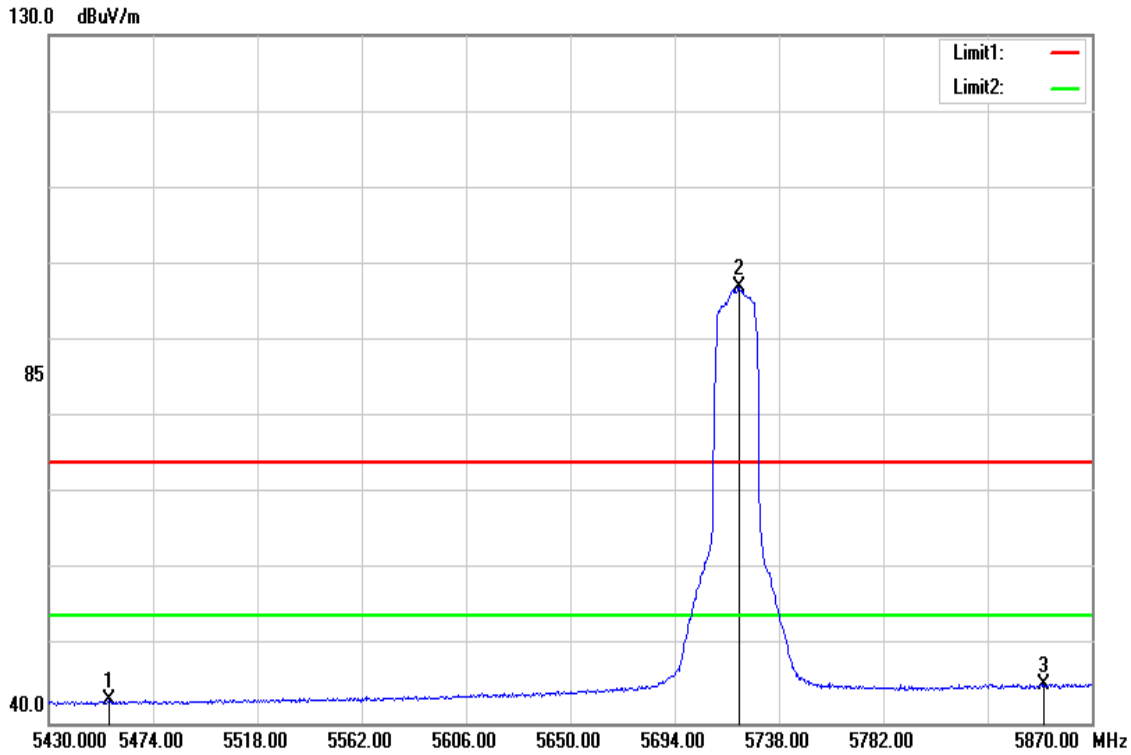
Test Mode	IEEE 802.11a / 5720 MHz	Temperature	24(℃)/ 33%RH
Test Item	Band Edge	Test Date	December 2, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5455.520	37.11	5.82	42.93	54.00	-11.07	AVG
5721.280	90.54	6.51	97.05	-	-	AVG
5849.760	38.27	6.85	45.12	54.00	-8.88	AVG

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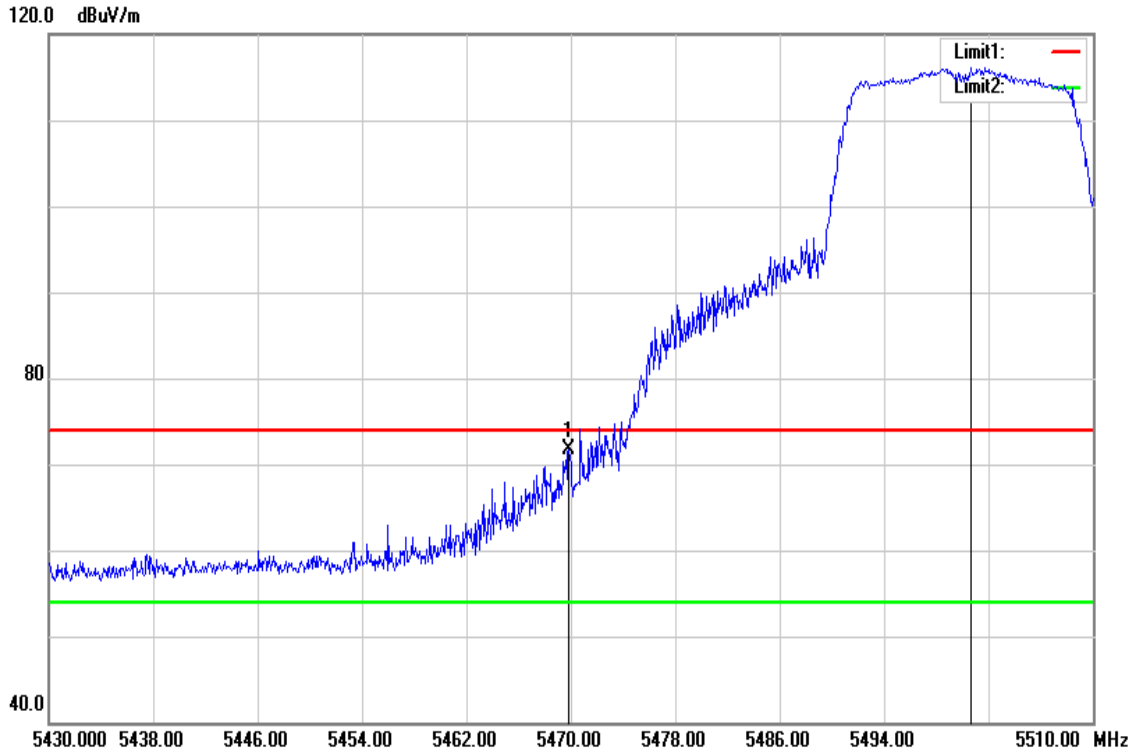
Test Mode	IEEE 802.11n HT20 / 5500MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Band Edge	Test Date	December 12, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Peak	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5469.840	65.91	5.85	71.76	74.00	-2.24	peak
5500.640	110.14	5.93	116.07	-	-	peak

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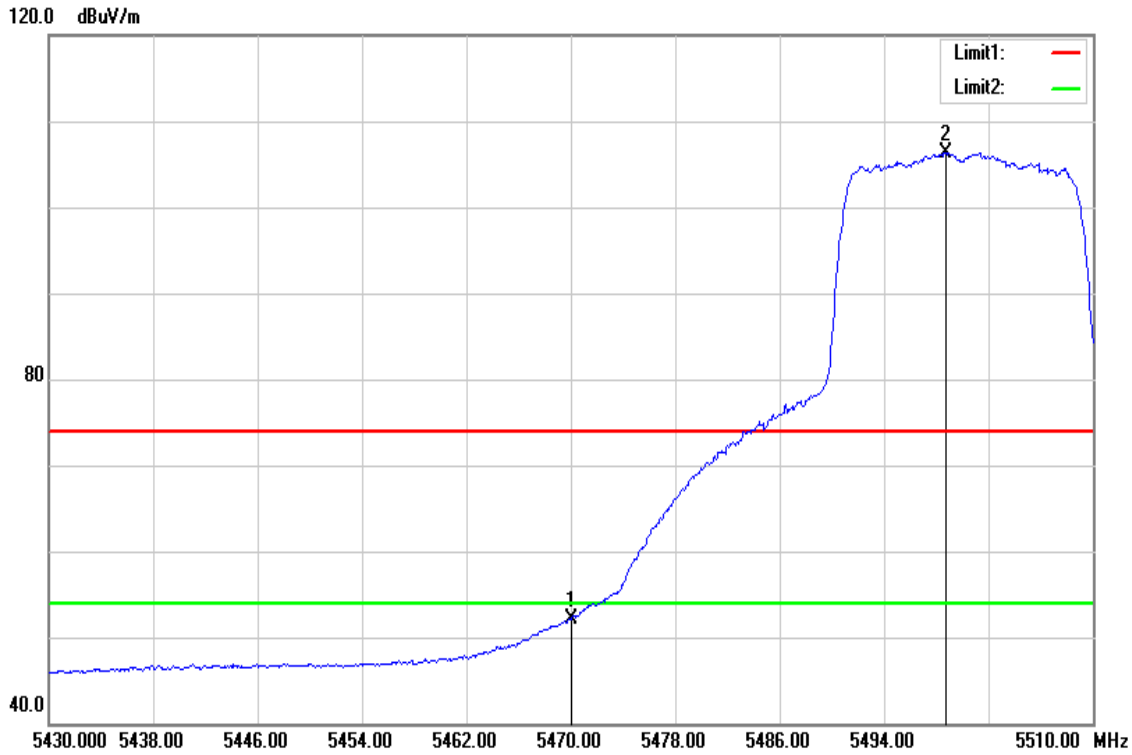
Test Mode	IEEE 802.11n HT20 / 5500MHz	Temperature	24(℃)/ 33%RH
Test Item	Band Edge	Test Date	December 12, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5470.000	46.24	5.85	52.09	54.00	-1.91	AVG
5498.720	100.40	5.93	106.33	-	-	AVG

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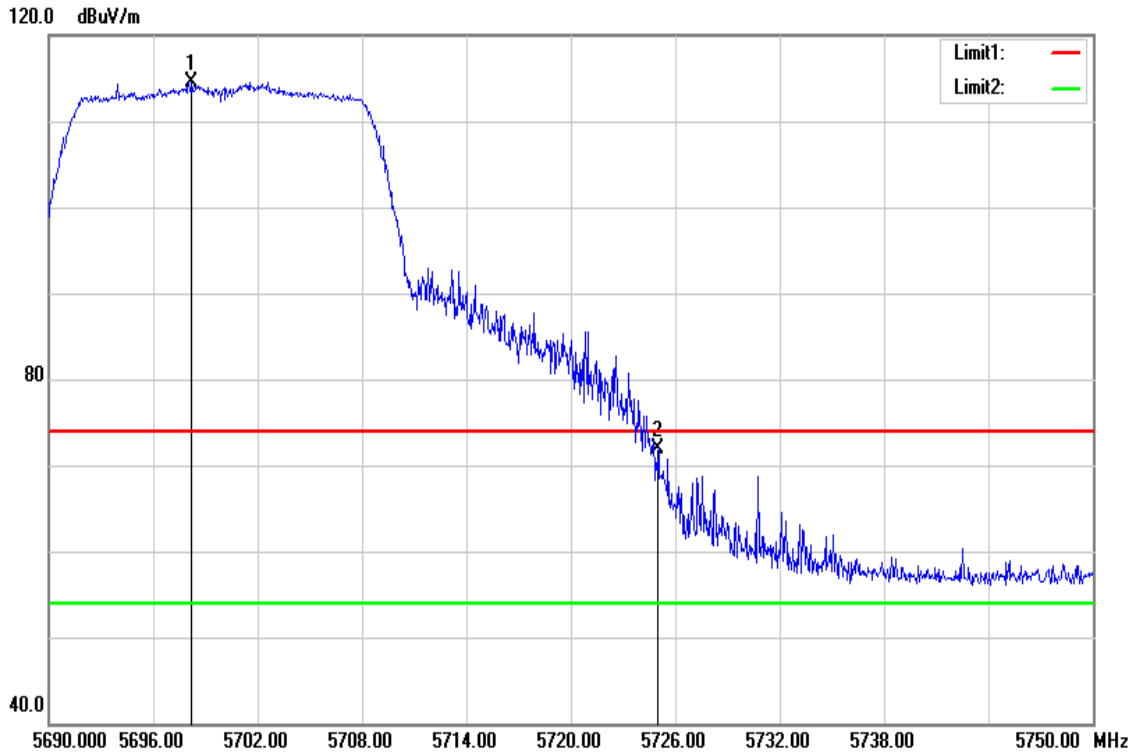
Test Mode	IEEE 802.11n HT20 / 5700 MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Band Edge	Test Date	December 12, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Peak	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5698.220	108.07	6.46	114.53	-	-	peak
5725.000	65.48	6.52	72.00	74.00	-2.00	peak

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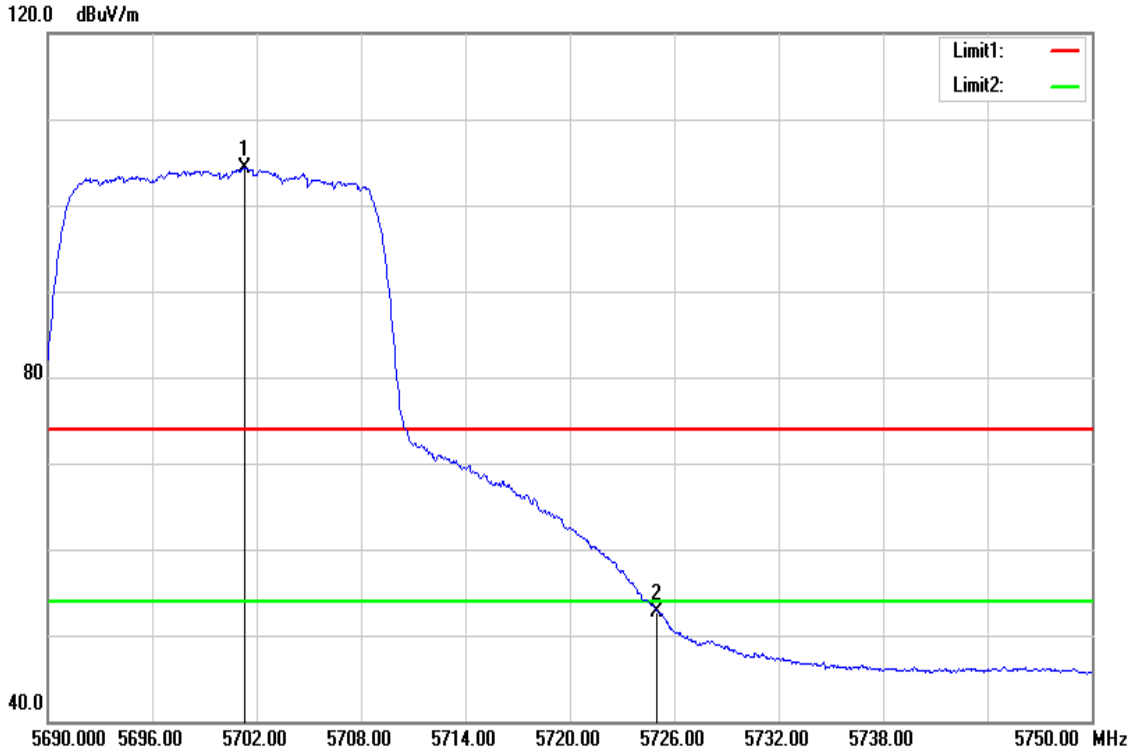
Test Mode	IEEE 802.11n HT20 / 5700 MHz	Temperature	24(℃)/ 33%RH
Test Item	Band Edge	Test Date	December 12, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5701.280	97.77	6.45	104.22	-	-	AVG
5725.000	46.24	6.52	52.76	54.00	-1.24	AVG

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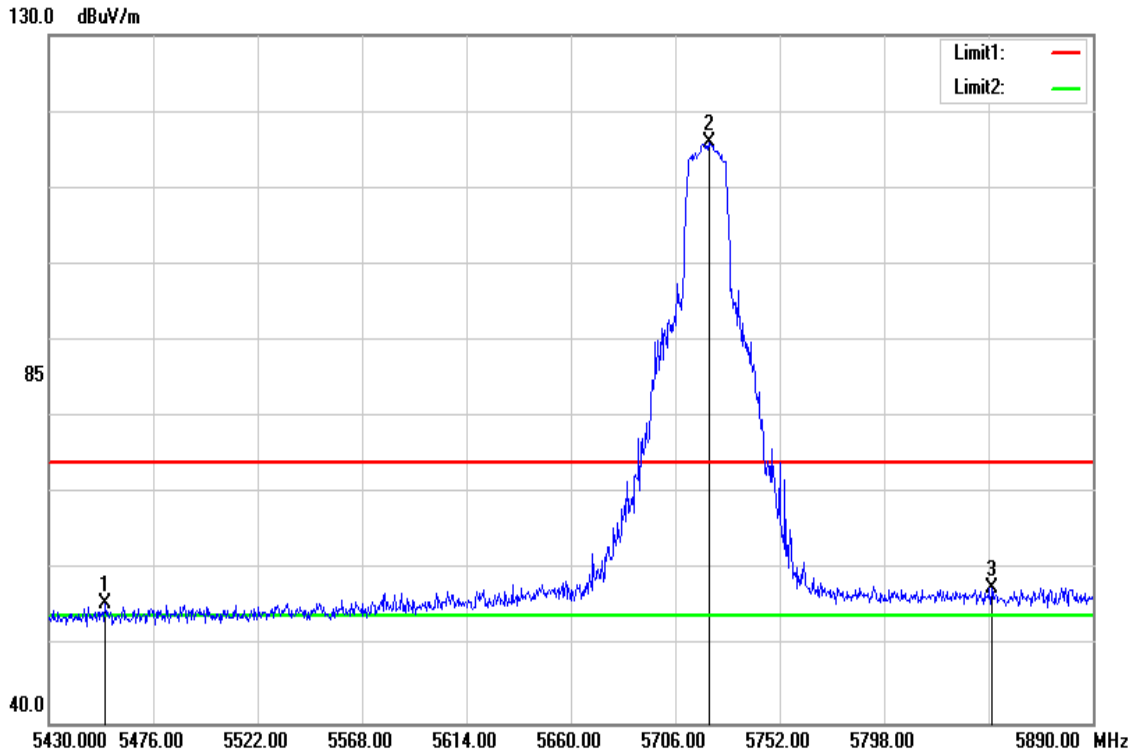
Test Mode	IEEE 802.11n HT20 / 5720 MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Band Edge	Test Date	December 12, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Peak	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5454.840	49.82	5.81	55.63	74.00	-18.37	peak
5720.720	109.39	6.50	115.89	-	-	peak
5845.380	50.88	6.83	57.71	74.00	-16.29	peak

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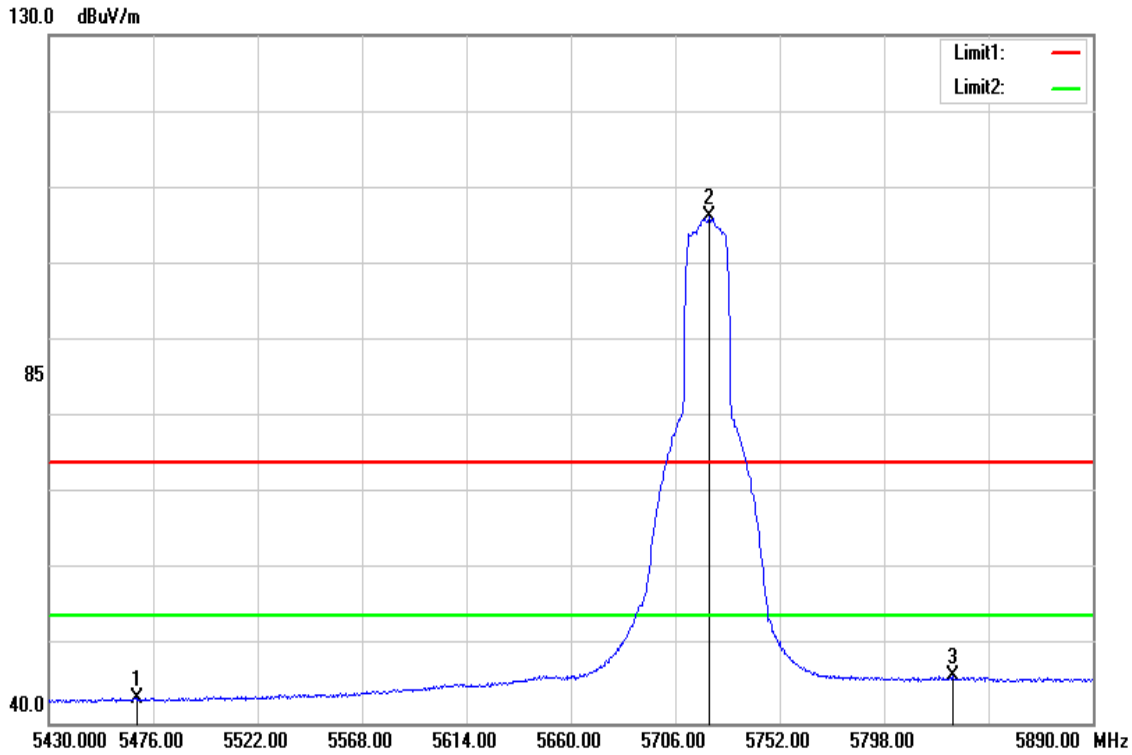
Test Mode	IEEE 802.11n HT20 / 5720 MHz	Temperature	24(℃)/ 33%RH
Test Item	Band Edge	Test Date	December 12, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5468.640	37.43	5.85	43.28	54.00	-10.72	AVG
5721.180	99.68	6.51	106.19	-	-	AVG
5828.360	39.29	6.79	46.08	54.00	-7.92	AVG

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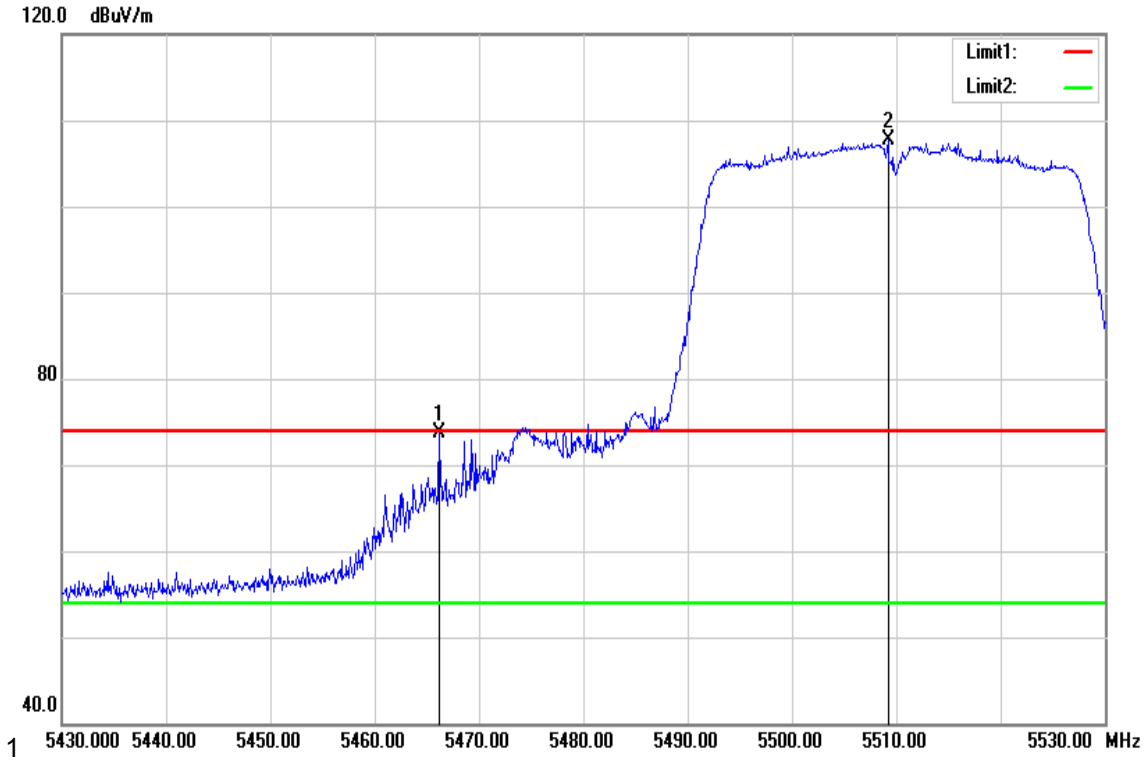
Test Mode	IEEE 802.11n HT40 / 5510 MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Band Edge	Test Date	December 12, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Peak	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5466.200	67.85	5.85	73.70	74.00	-0.30	peak
5509.200	101.76	5.95	107.71	-	-	peak

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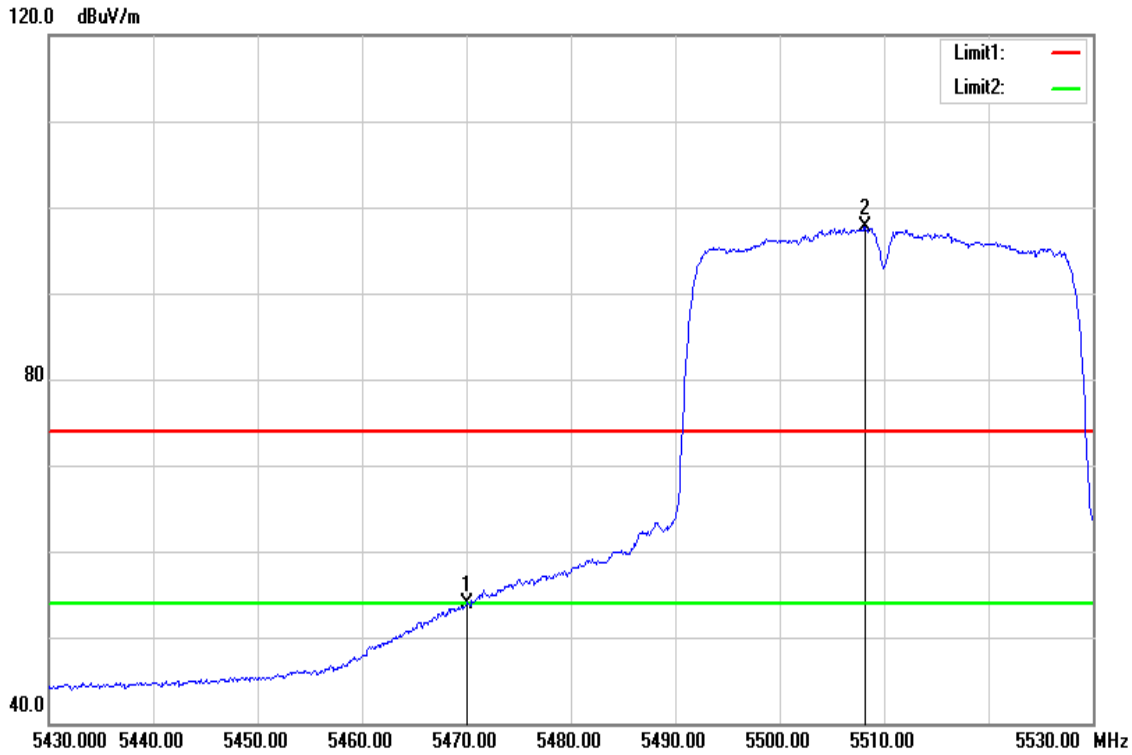
Test Mode	IEEE 802.11n HT40 / 5510 MHz	Temperature	24(℃)/ 33%RH
Test Item	Band Edge	Test Date	December 12, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5470.000	48.02	5.85	53.87	54.00	-0.13	AVG
5508.200	91.73	5.96	97.69	-	-	AVG

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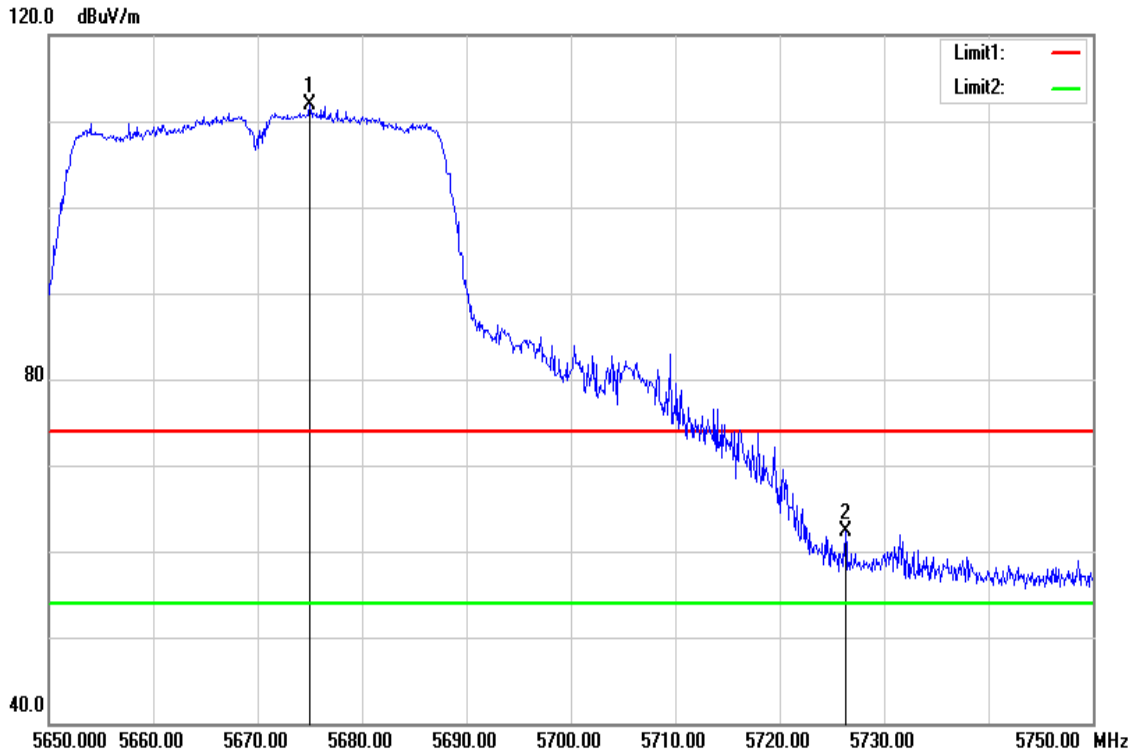
Test Mode	IEEE 802.11n HT40 / 5670 MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Band Edge	Test Date	December 12, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Peak	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5675.000	105.42	6.39	111.81	-	-	peak
5726.300	55.69	6.52	62.21	74.00	-11.79	peak

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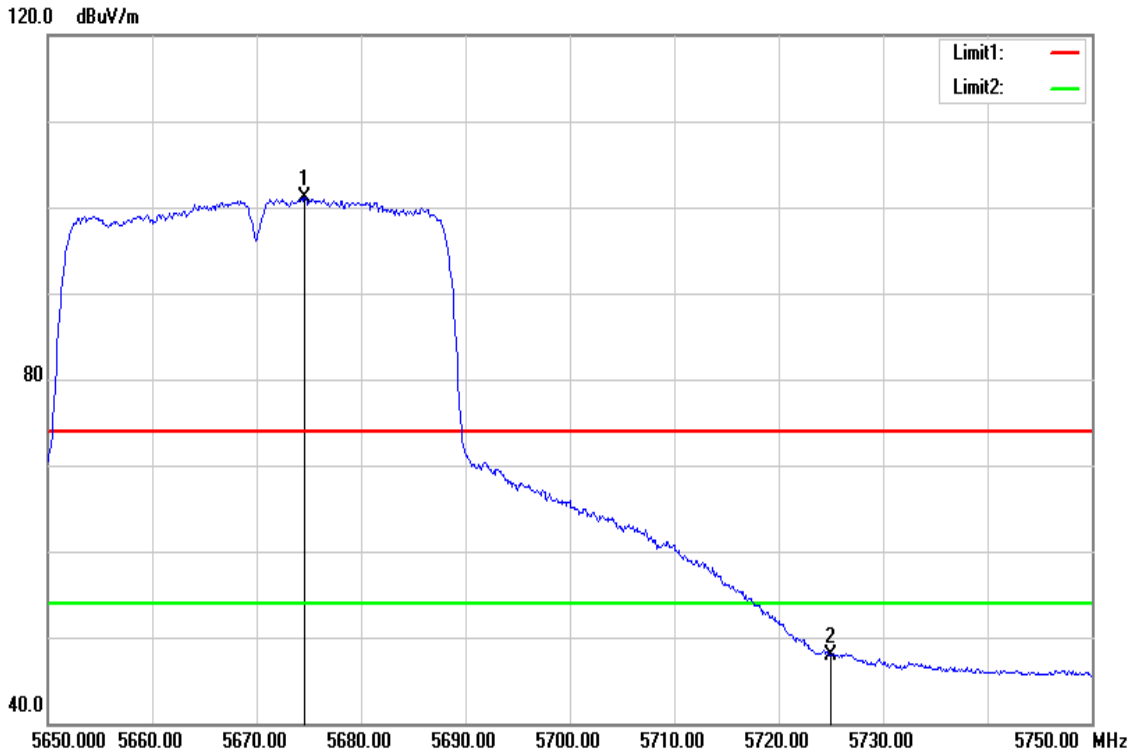
Test Mode	IEEE 802.11n HT40 / 5670 MHz	Temperature	24(℃)/ 33%RH
Test Item	Band Edge	Test Date	December 12, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5674.600	94.70	6.39	101.09	-	-	AVG
5725.000	41.31	6.52	47.83	54.00	-6.17	AVG

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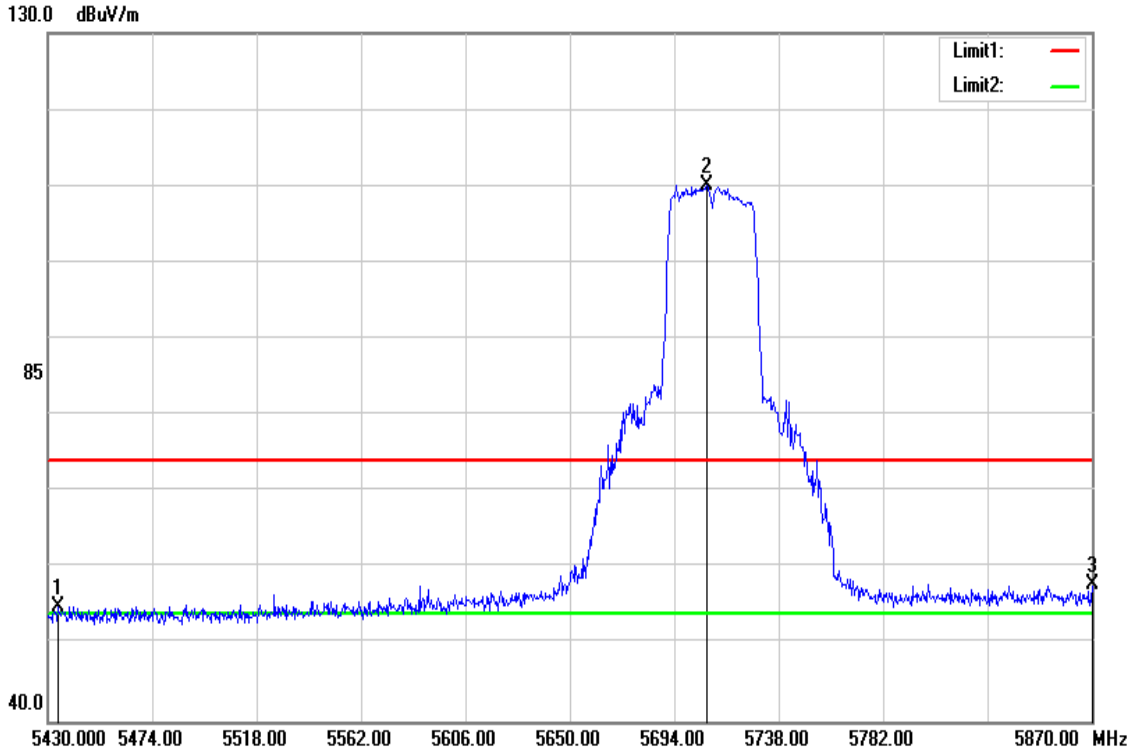
Test Mode	IEEE 802.11n HT40 / 5710 MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Band Edge	Test Date	December 12, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Peak	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5434.400	49.48	5.56	55.04	74.00	-18.96	peak
5707.640	104.03	6.13	110.16	-	-	peak
5870.000	51.02	6.83	57.85	74.00	-16.15	peak

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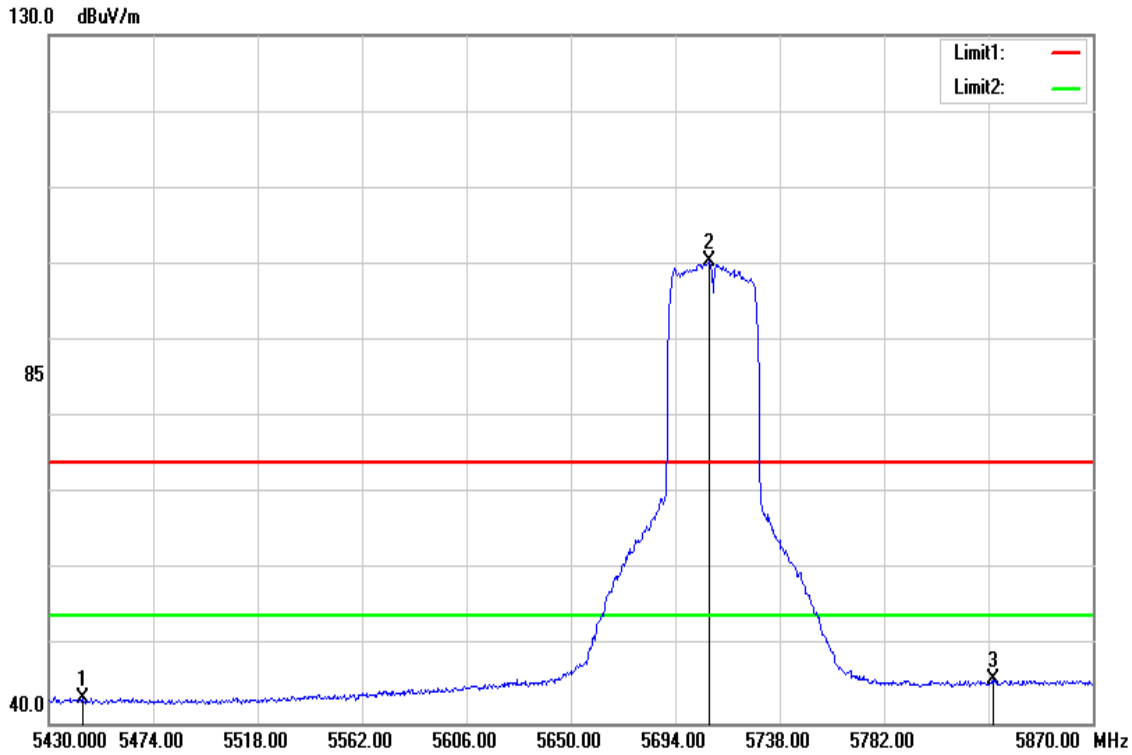
Test Mode	IEEE 802.11n HT40 / 5710 MHz	Temperature	24(℃)/ 33%RH
Test Item	Band Edge	Test Date	December 12, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5444.080	37.70	5.51	43.21	54.00	-10.79	AVG
5708.520	94.24	6.14	100.38	-	-	AVG
5827.760	39.11	6.65	45.76	54.00	-8.24	AVG

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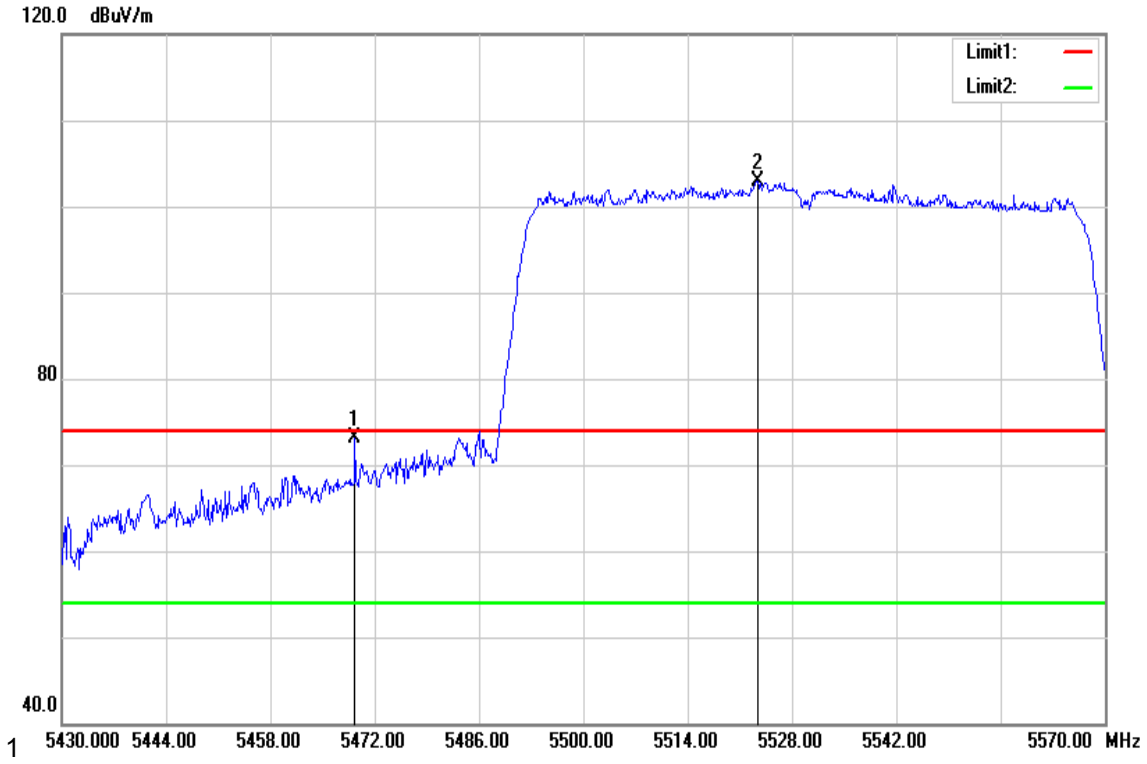
Test Mode	IEEE 802.11ac VHT80 / 5530 MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Band Edge	Test Date	December 12, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Peak	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5469.340	67.17	5.85	73.02	74.00	-0.98	peak
5523.380	96.91	6.00	102.91	-	-	peak

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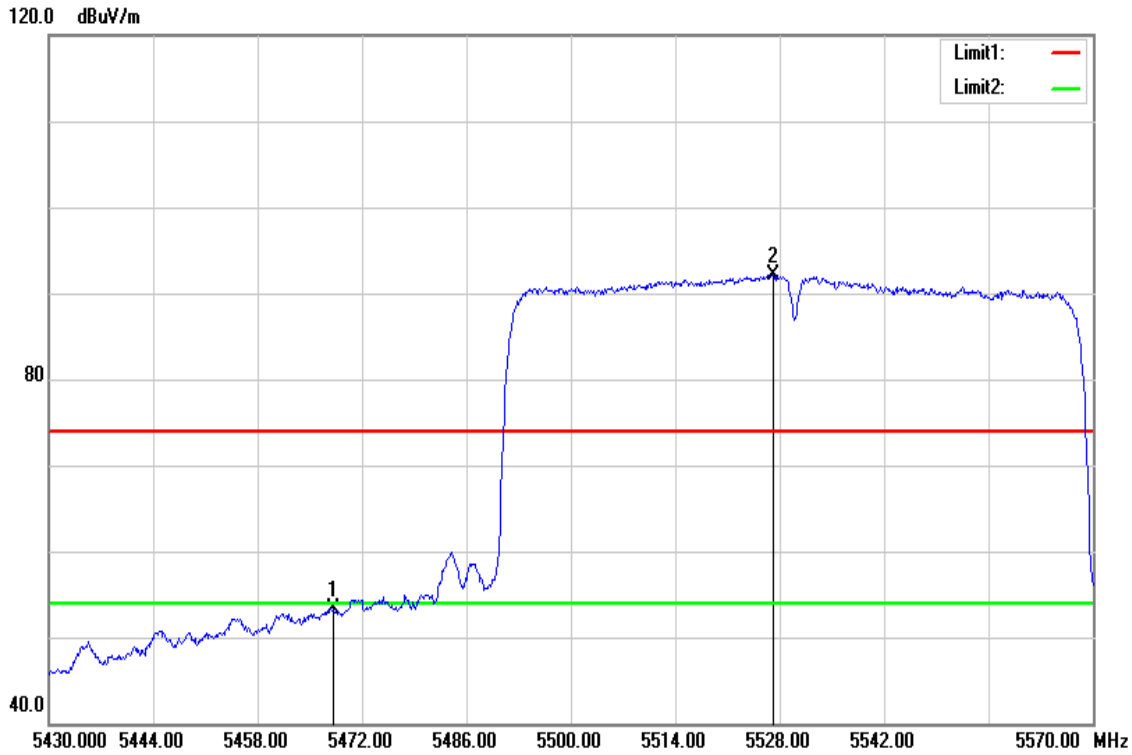
Test Mode	IEEE 802.11ac VHT80 / 5530 MHz	Temperature	24(℃)/ 33%RH
Test Item	Band Edge	Test Date	December 12, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5468.080	47.47	5.85	53.32	54.00	-0.68	AVG
5527.160	86.20	5.99	92.19	-	-	AVG

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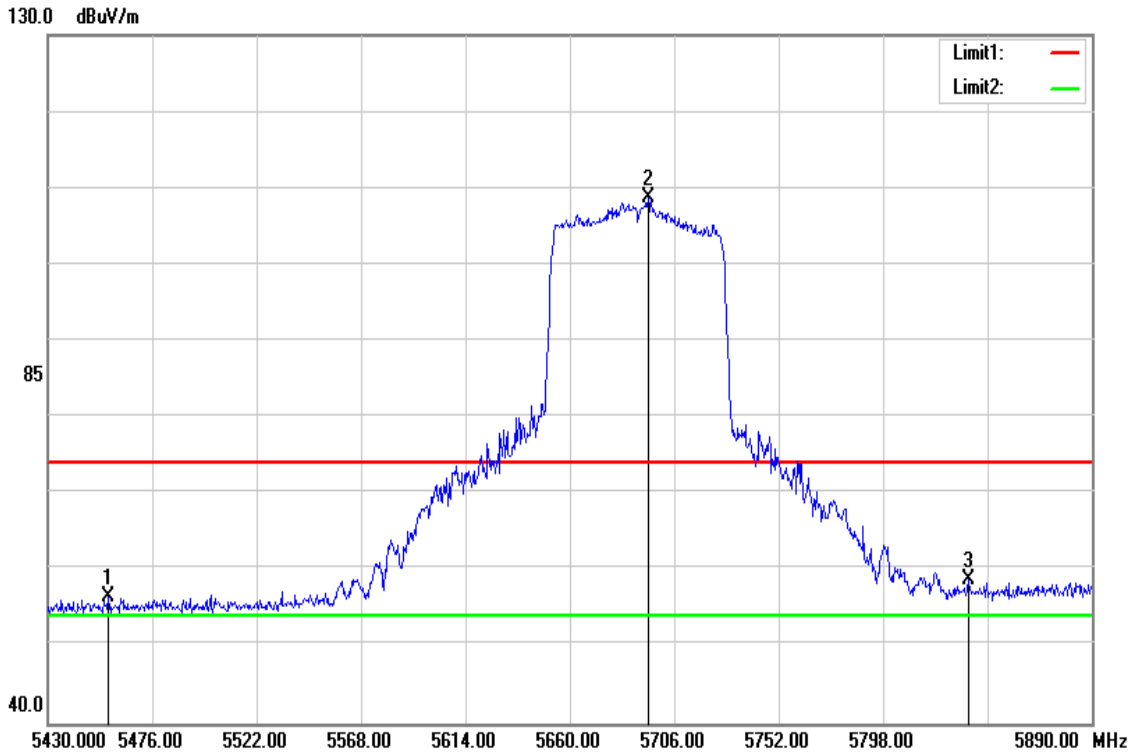
Test Mode	IEEE 802.11ac VHT80 / 5690 MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Band Edge	Test Date	December 12, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Peak	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5456.680	50.71	5.82	56.53	74.00	-17.47	peak
5694.500	102.23	6.44	108.67	-	-	peak
5835.720	51.88	6.81	58.69	74.00	-15.31	peak

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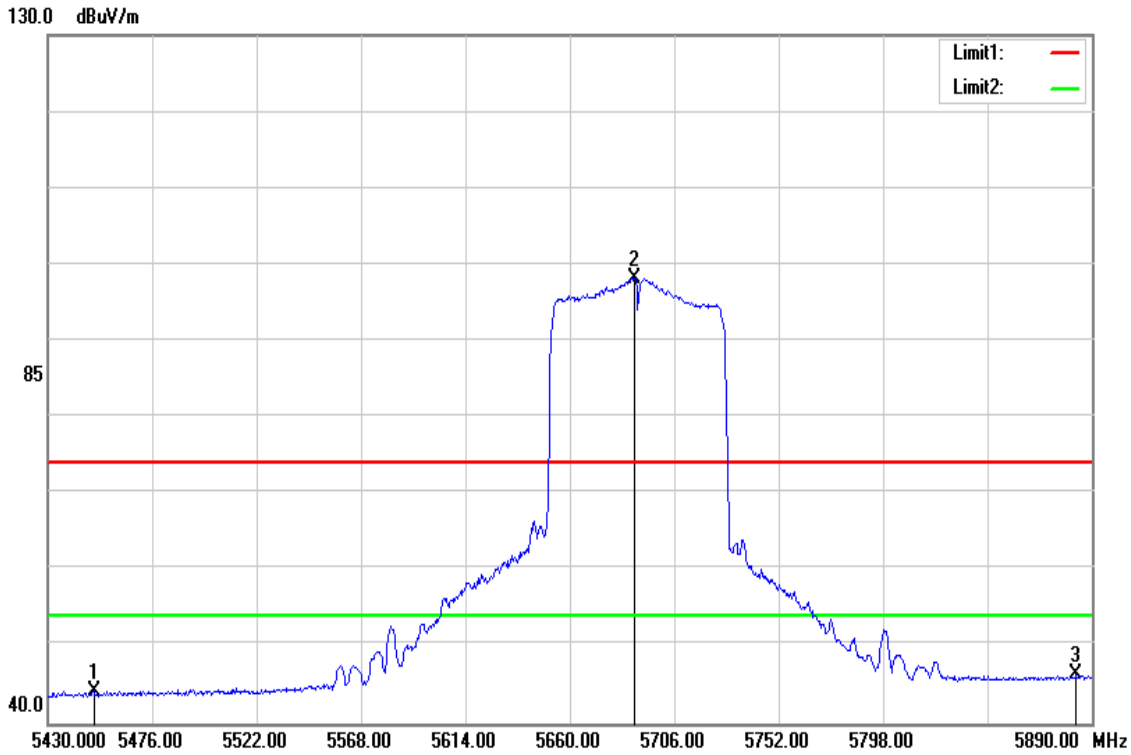
Test Mode	IEEE 802.11ac VHT80 / 5690 MHz	Temperature	24(℃)/ 33%RH
Test Item	Band Edge	Test Date	December 12, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5450.240	38.44	5.81	44.25	54.00	-9.75	AVG
5688.520	91.79	6.43	98.22	-	-	AVG
5883.100	39.37	6.94	46.31	54.00	-7.69	AVG

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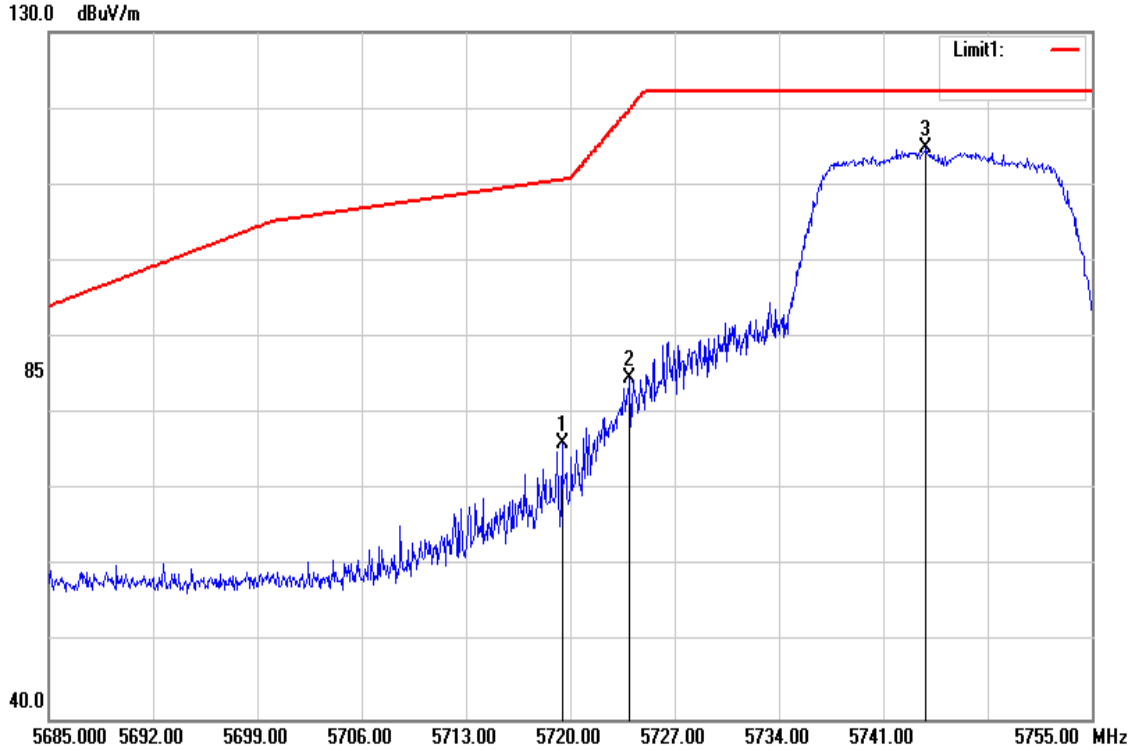
Band Edge Test Data for UNII-3

Test Mode	IEEE 802.11a / 5745 MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Band Edge	Test Date	December 5, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Peak	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5719.440	69.63	6.50	76.13	110.64	-34.51	peak
5723.990	78.15	6.52	84.67	119.90	-35.23	peak
5743.870	108.15	6.57	114.72	-	-	peak

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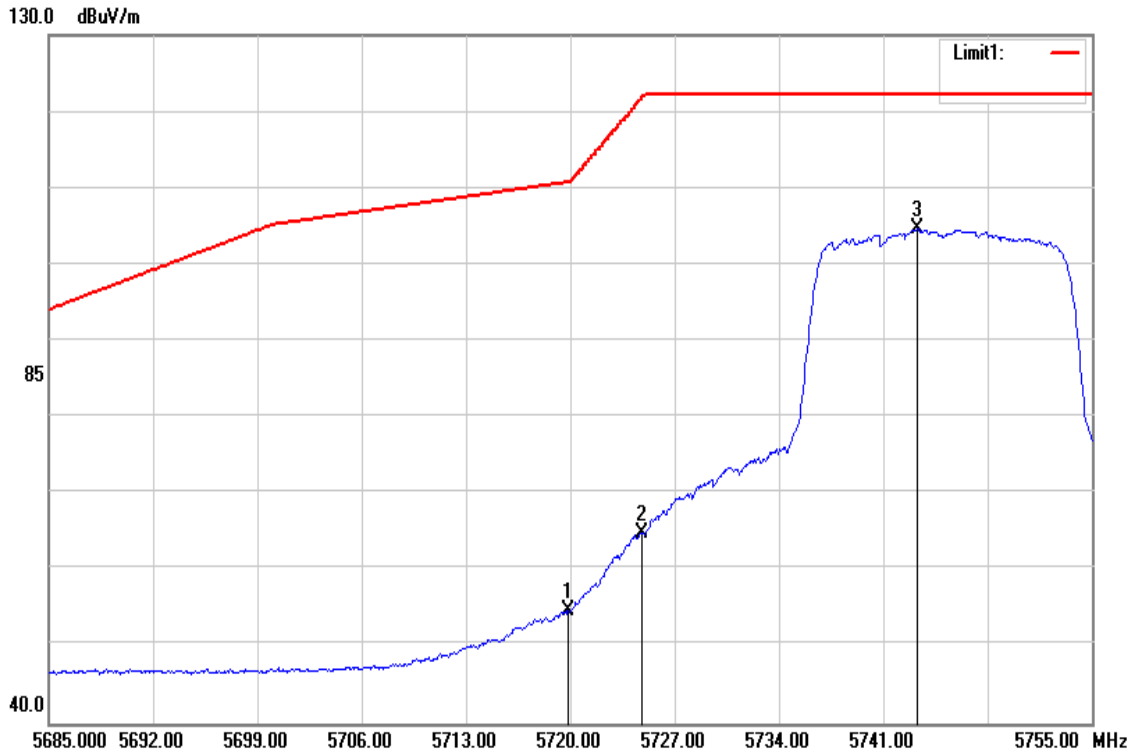
Test Mode	IEEE 802.11a / 5745 MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Band Edge	Test Date	December 5, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5719.860	48.21	6.50	54.71	110.76	-56.05	AVG
5724.760	58.42	6.52	64.94	121.65	-56.71	AVG
5743.310	98.04	6.57	104.61	-	-	AVG

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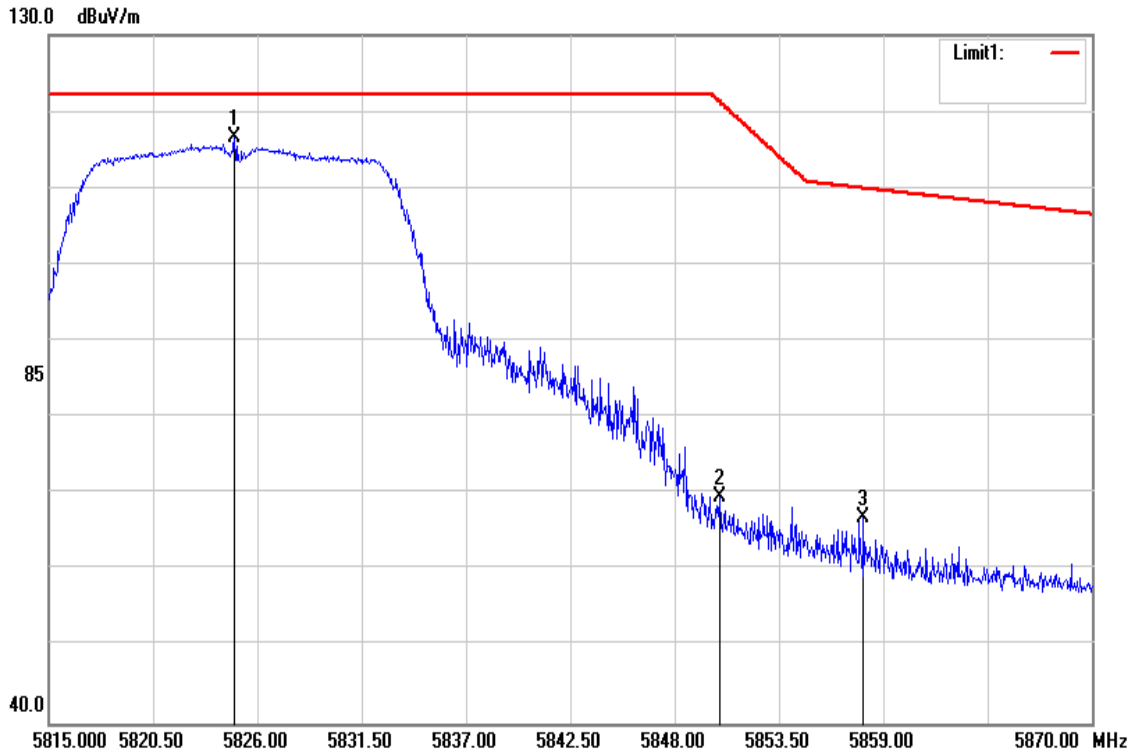
Test Mode	IEEE 802.11a / 5825 MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Band Edge	Test Date	December 5, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Peak	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5824.790	109.88	6.78	116.66	-	-	peak
5850.365	62.79	6.85	69.64	121.37	-51.73	peak
5857.955	59.92	6.87	66.79	109.97	-43.18	peak

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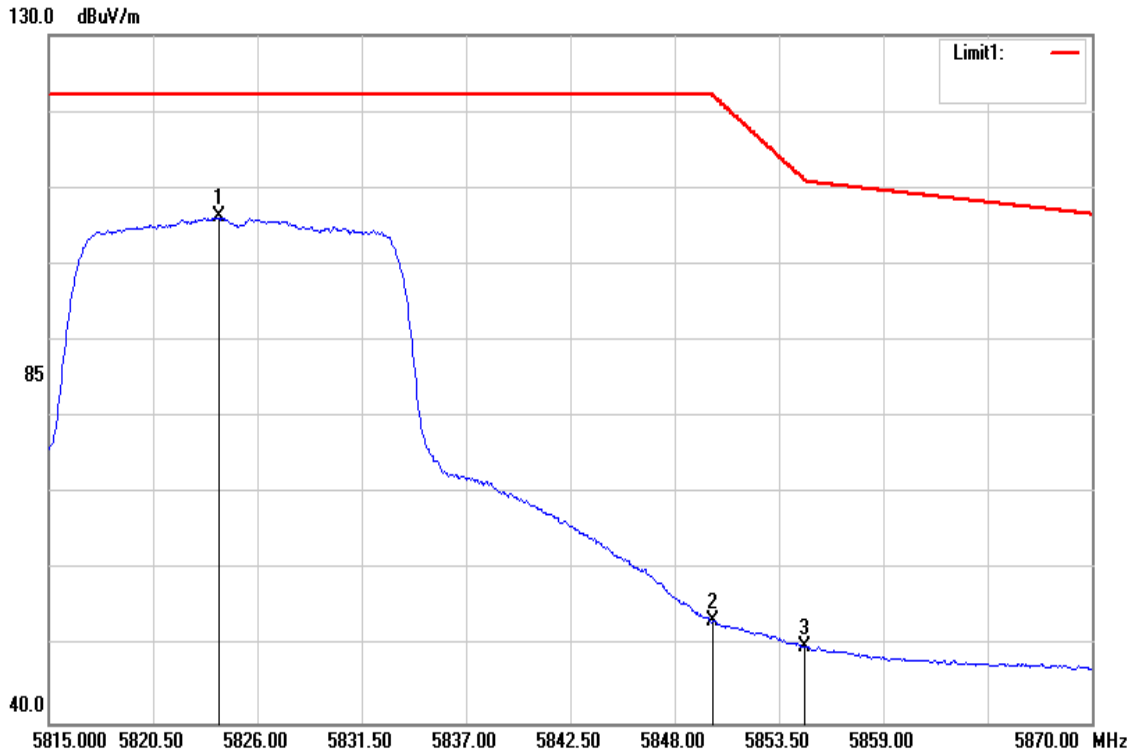
Test Mode	IEEE 802.11a / 5825 MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Band Edge	Test Date	December 5, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5823.965	99.37	6.78	106.15	-	-	AVG
5850.035	46.63	6.85	53.48	122.12	-68.64	AVG
5854.875	43.25	6.86	50.11	111.08	-60.97	AVG

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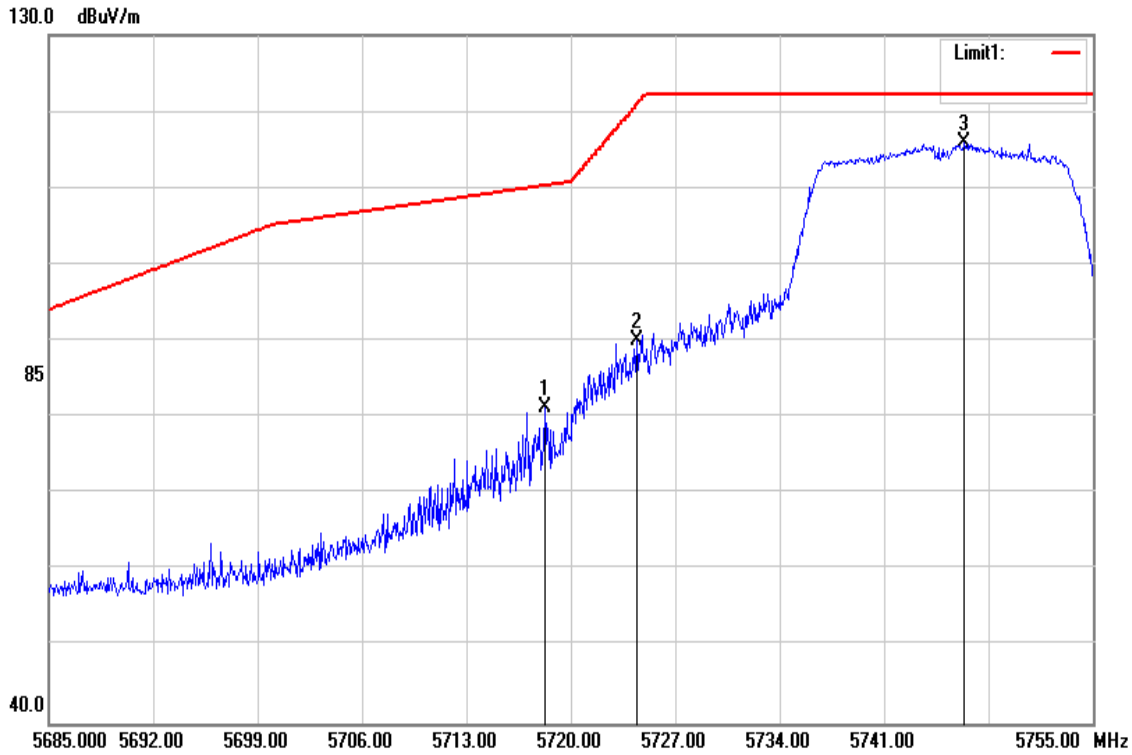
Test Mode	IEEE 802.11n HT20 / 5745 MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Band Edge	Test Date	December 12, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Peak	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5718.250	74.86	6.50	81.36	110.31	-28.95	peak
5724.410	83.65	6.52	90.17	120.85	-30.68	peak
5746.390	109.32	6.58	115.90	-	-	peak

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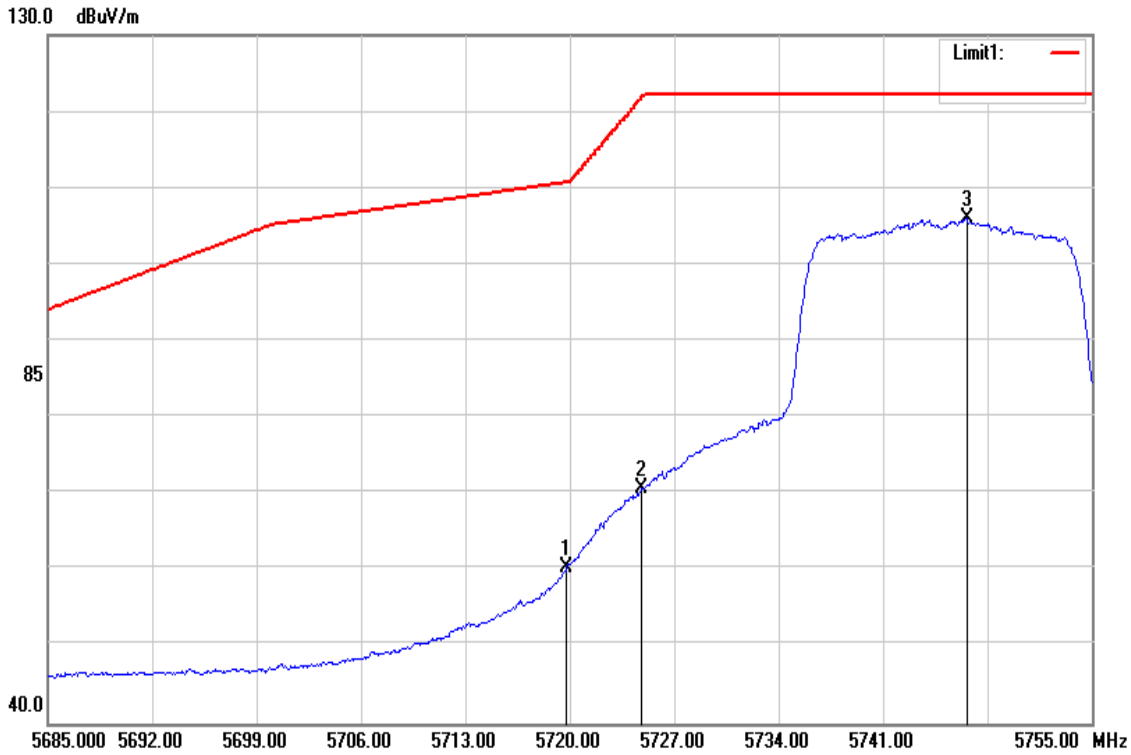
Test Mode	IEEE 802.11n HT20 / 5745 MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Band Edge	Test Date	December 12, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5719.790	53.78	6.50	60.28	110.74	-50.46	AVG
5724.830	64.09	6.52	70.61	121.81	-51.20	AVG
5746.600	99.37	6.58	105.95	-	-	AVG

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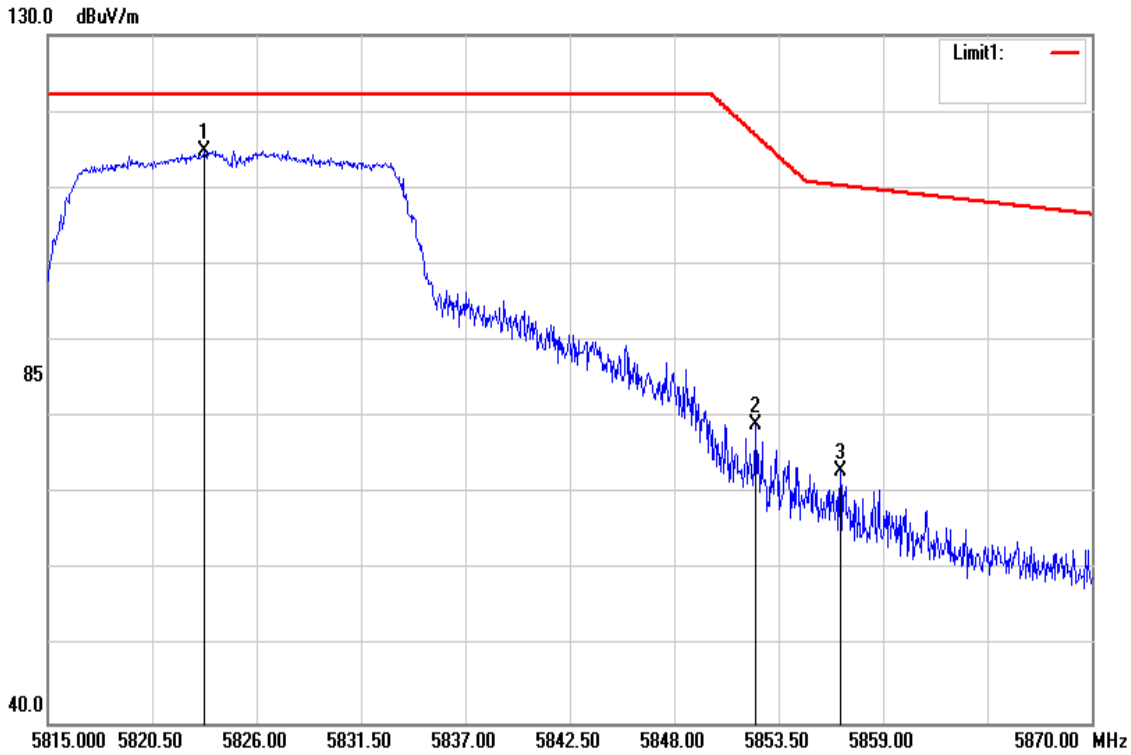
Test Mode	IEEE 802.11n HT20 / 5825 MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Band Edge	Test Date	December 12, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Peak	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5823.250	108.12	6.78	114.90	-	-	peak
5852.290	72.12	6.85	78.97	116.98	-38.01	peak
5856.745	66.11	6.86	72.97	110.31	-37.34	peak

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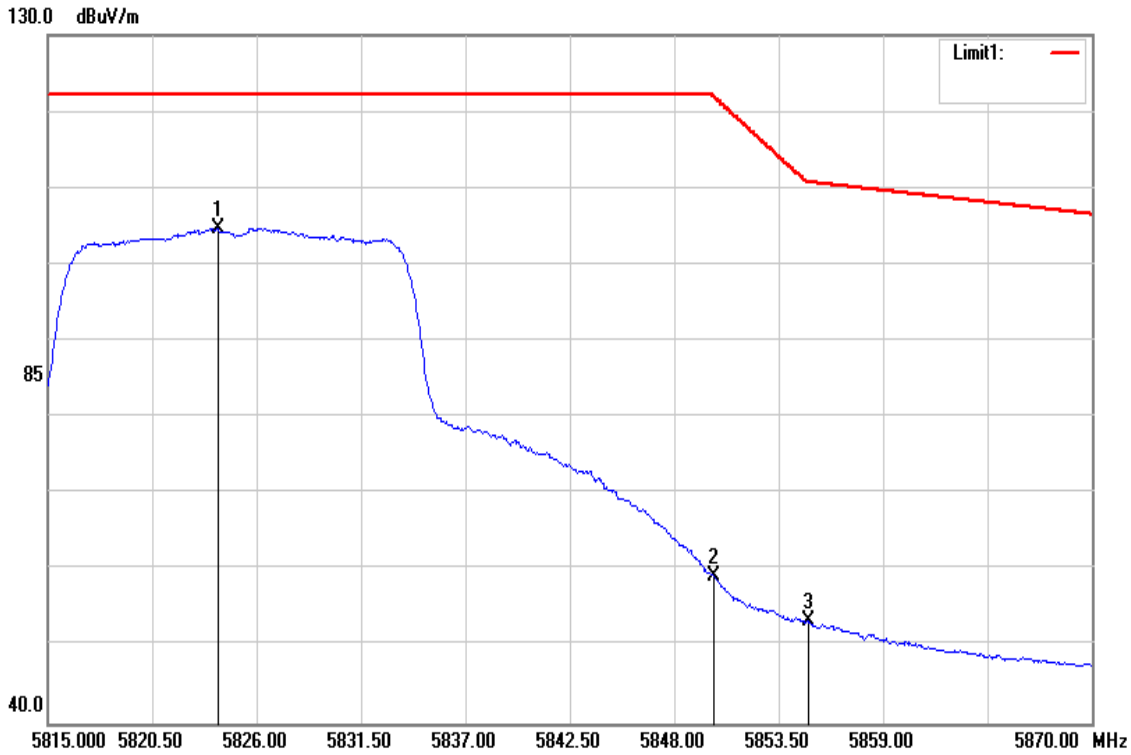
Test Mode	IEEE 802.11n HT20 / 5825 MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Band Edge	Test Date	December 12, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5823.965	97.94	6.78	104.72	-	-	AVG
5850.090	52.37	6.85	59.22	121.99	-62.77	AVG
5855.040	46.45	6.86	53.31	110.79	-57.48	AVG

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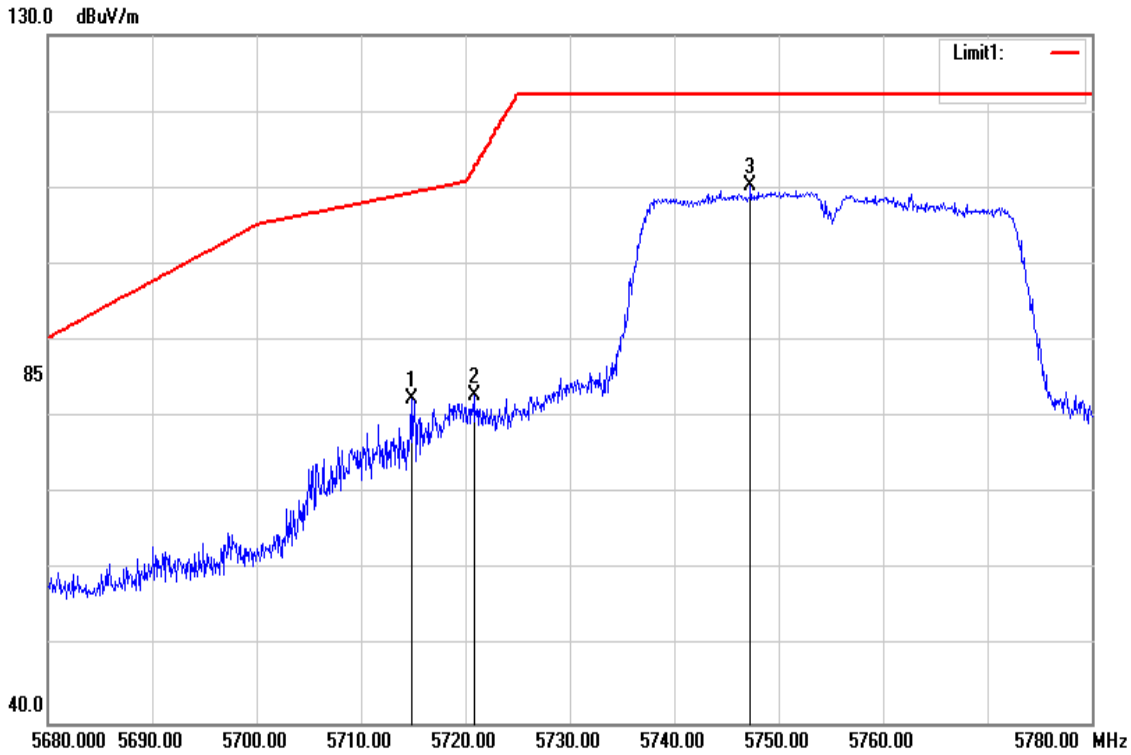
Test Mode	IEEE 802.11n HT40/ 5755 MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Band Edge	Test Date	December 12, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Peak	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5714.800	75.94	6.50	82.44	109.34	-26.90	peak
5720.800	76.47	6.50	82.97	112.62	-29.65	peak
5747.300	103.71	6.58	110.29	-	-	peak

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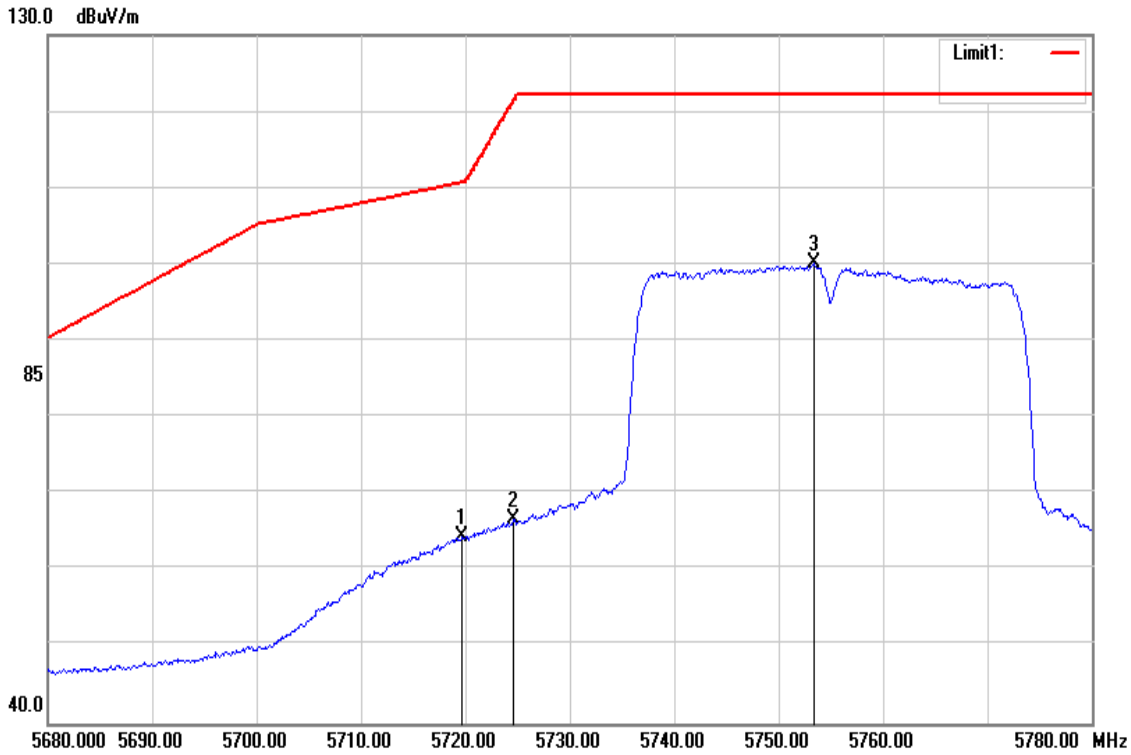
Test Mode	IEEE 802.11n HT40/ 5755 MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Band Edge	Test Date	December 12, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5719.700	57.82	6.50	64.32	110.72	-46.40	AVG
5724.600	60.05	6.52	66.57	121.29	-54.72	AVG
5753.400	93.57	6.59	100.16	-	-	AVG

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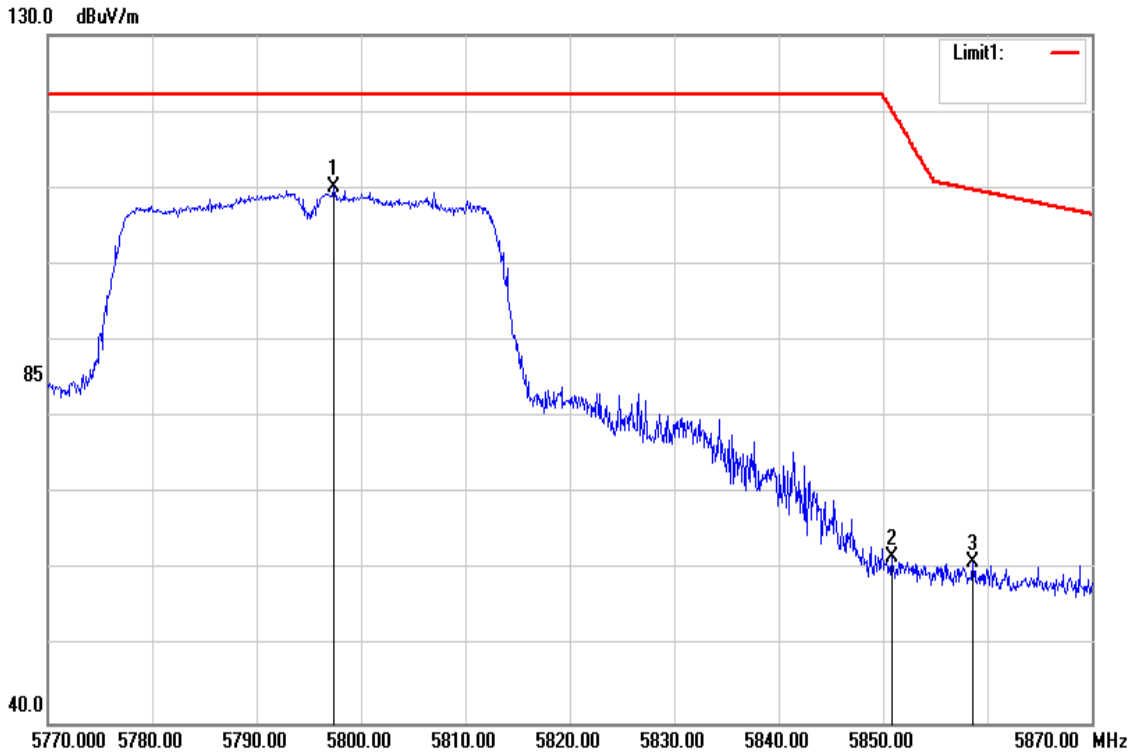
Test Mode	IEEE 802.11n HT40/ 5795 MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Band Edge	Test Date	December 12, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Peak	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5797.400	103.27	6.71	109.98	-	-	peak
5850.800	54.80	6.85	61.65	120.38	-58.73	peak
5858.600	54.22	6.87	61.09	109.79	-48.70	peak

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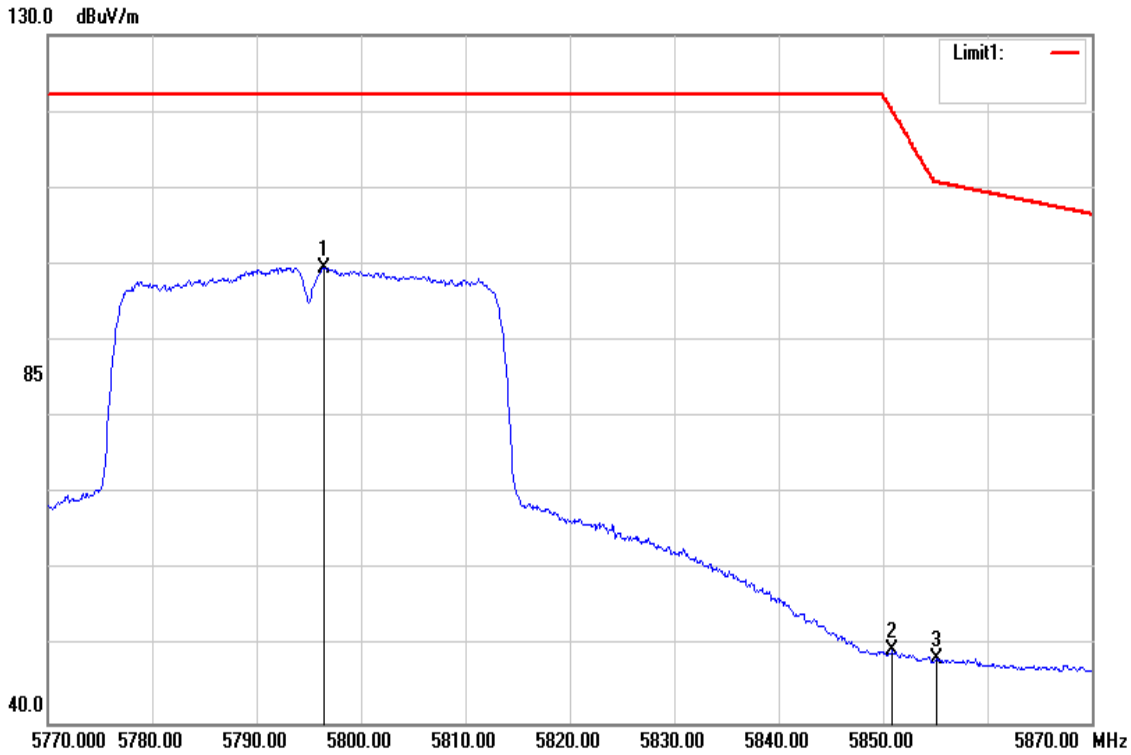
Test Mode	IEEE 802.11n HT40/ 5795 MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Band Edge	Test Date	December 12, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5796.400	92.86	6.71	99.57	-	-	AVG
5850.900	42.61	6.85	49.46	120.15	-70.69	AVG
5855.100	41.52	6.86	48.38	110.77	-62.39	AVG

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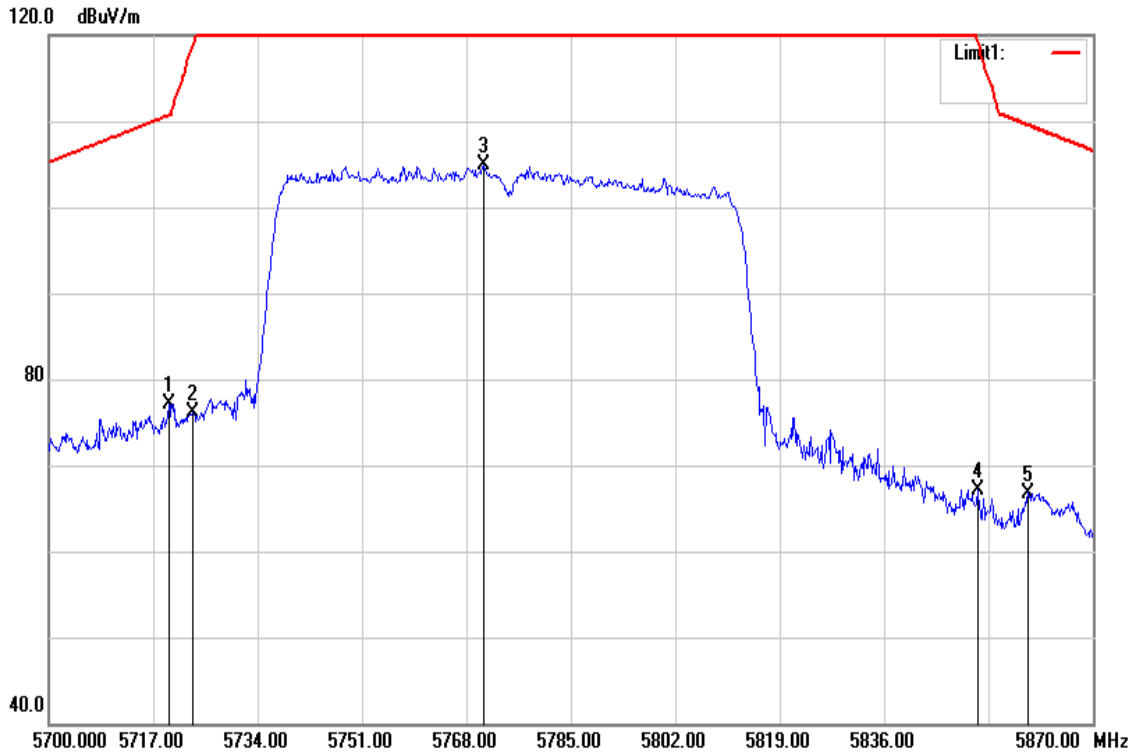
Test Mode	IEEE 802.11ac VHT80 / 5775 MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Band Edge	Test Date	December 12 ,2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Peak	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5719.550	70.57	6.50	77.07	110.67	-33.60	peak
5723.460	69.67	6.52	76.19	118.69	-42.50	peak
5770.890	98.29	6.64	104.93	-	-	peak
5851.300	60.21	6.85	67.06	119.24	-52.18	peak
5859.460	59.93	6.87	66.80	109.55	-42.75	peak

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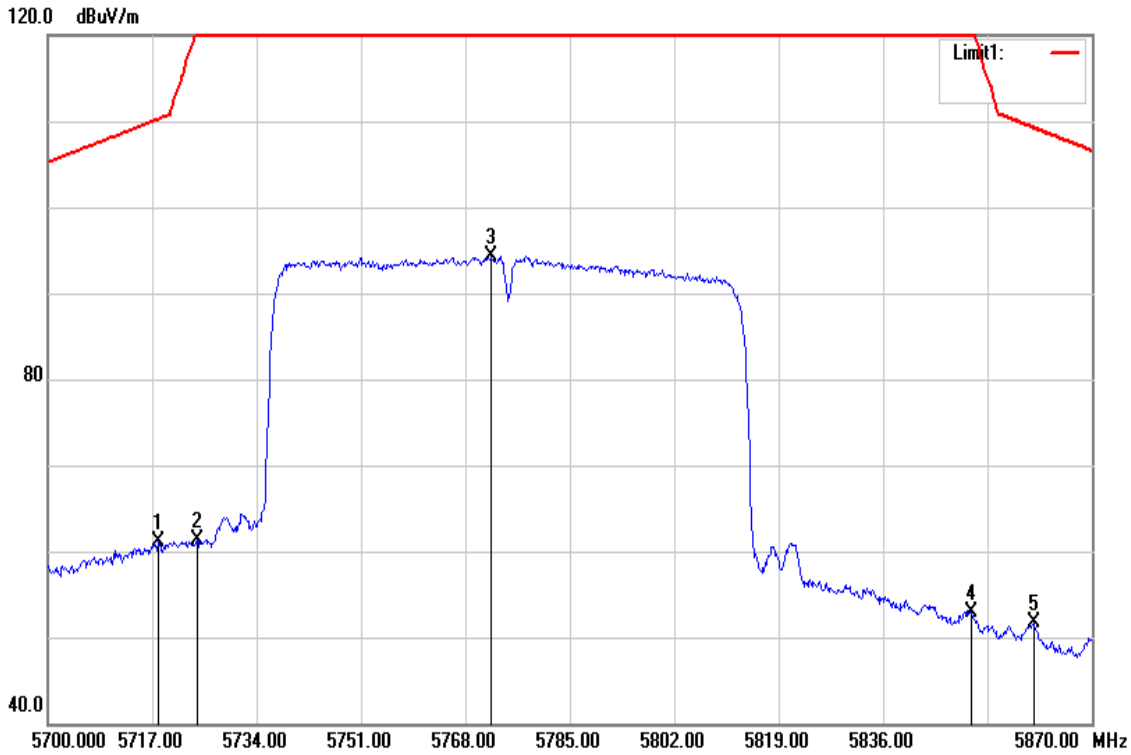
Test Mode	IEEE 802.11ac VHT80 / 5775 MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Band Edge	Test Date	December 12, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
5718.020	54.55	6.50	61.05	110.25	-49.20	AVG
5724.310	54.70	6.52	61.22	120.63	-59.41	AVG
5772.250	87.60	6.64	94.24	-	-	AVG
5850.280	46.14	6.85	52.99	121.56	-68.57	AVG
5860.480	44.92	6.87	51.79	109.27	-57.48	AVG

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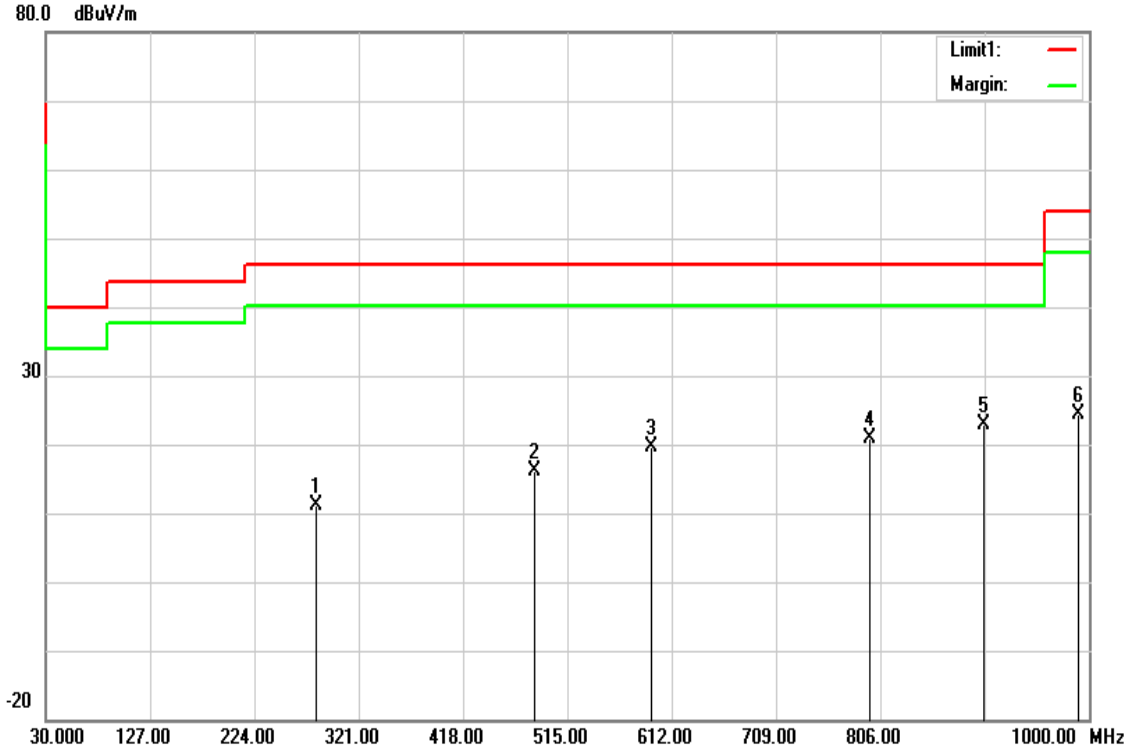
Below 1G Test Data

Test Mode	IEEE 802.11ac VHT80 / 5210MHZ	Temp/Hum	24(℃)/ 33%RH
Test Item	30MHz-1GHz	Test Date	December 2, 2017
Polarize	Horizontal	Test Engineer	Kevin Kuo
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
281.2300	25.29	-14.25	11.04	46.02	-34.98	peak
483.9600	24.89	-8.85	16.04	46.02	-29.98	peak
593.5700	26.56	-7.01	19.55	46.02	-26.47	peak
796.3000	24.40	-3.44	20.96	46.02	-25.06	peak
902.0300	24.87	-1.98	22.89	46.02	-23.13	peak
990.3000	25.08	-0.76	24.32	54.00	-29.68	peak

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

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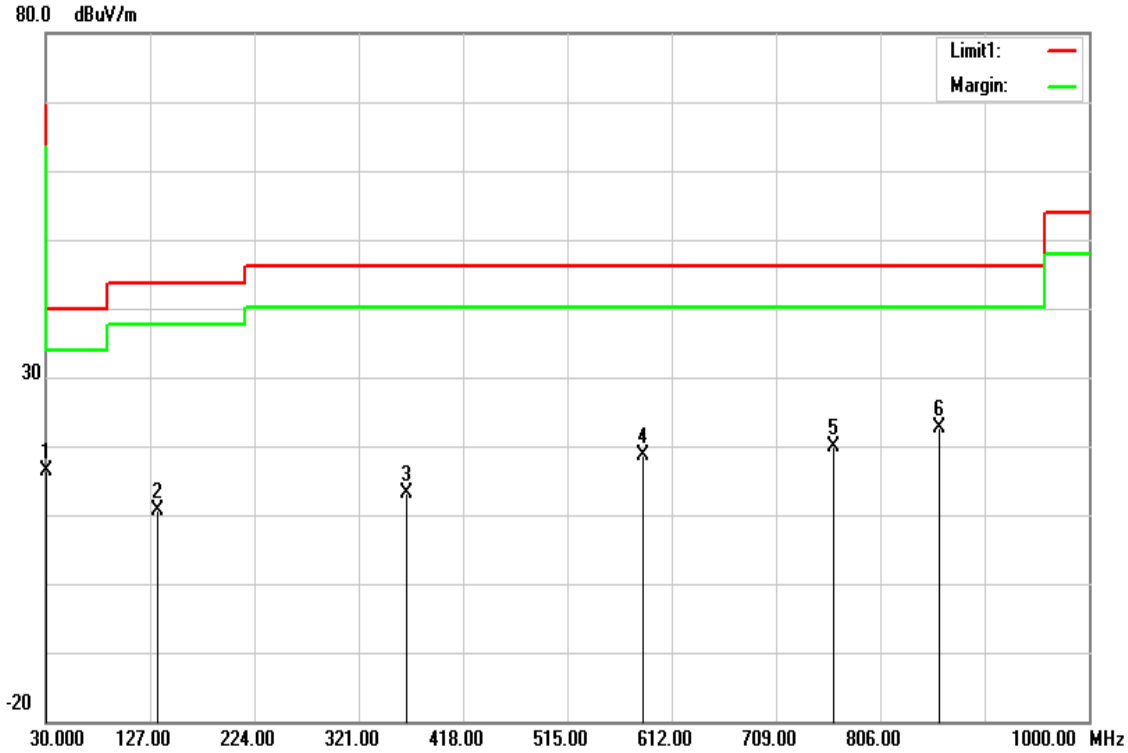
Test Mode	IEEE 802.11ac VHT80 / 5210MHZ	Temp/Hum	24(℃)/ 33%RH
Test Item	30MHz-1GHz	Test Date	December 2, 2017
Polarize	Horizontal	Test Engineer	Kevin Kuo
Detector	Peak and Quasi-peak	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
30.0000	24.45	-8.14	16.31	40.00	-23.69	peak
133.7900	26.08	-15.37	10.71	43.52	-32.81	peak
365.6200	25.52	-12.48	13.04	46.02	-32.98	peak
585.8100	25.70	-7.10	18.60	46.02	-27.42	peak
762.3500	23.86	-4.06	19.80	46.02	-26.22	peak
861.2900	25.36	-2.67	22.69	46.02	-23.33	peak

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

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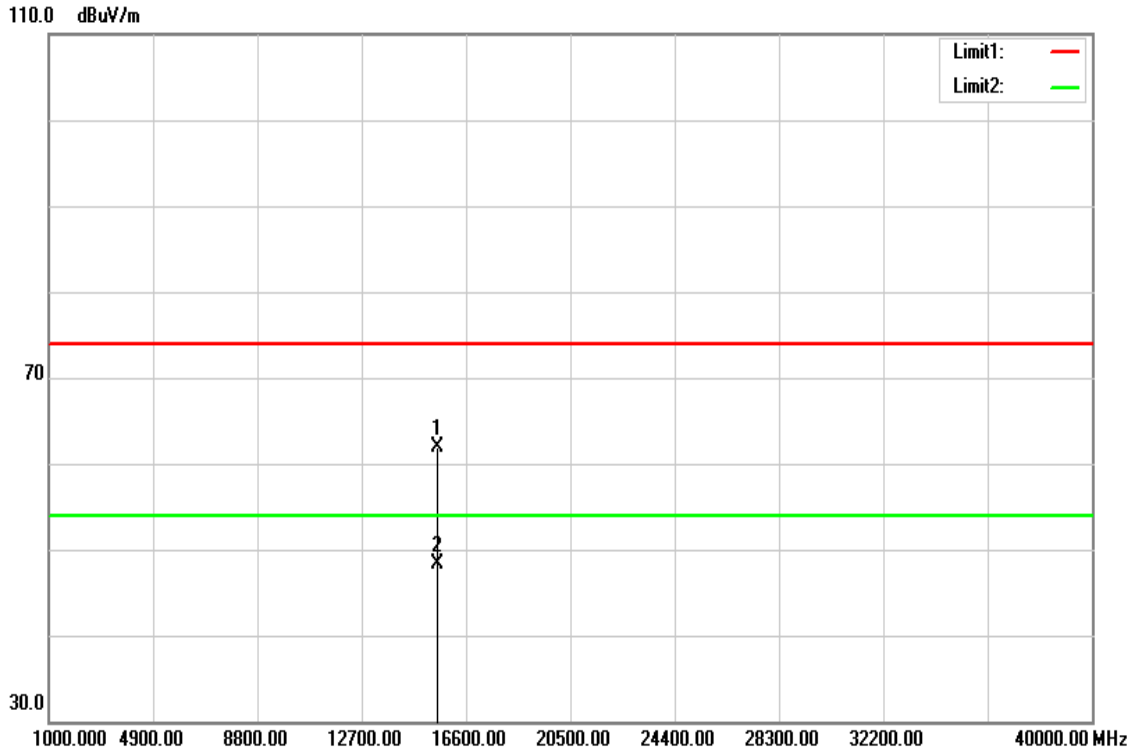
Above 1G Test Data for UNII-1

Test Mode	IEEE 802.11a / 5180MHZ	Temp/Hum	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 5, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
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	43.27	18.71	61.98	74.00	-12.02	peak
15550.000	29.57	18.71	48.28	54.00	-5.72	AVG
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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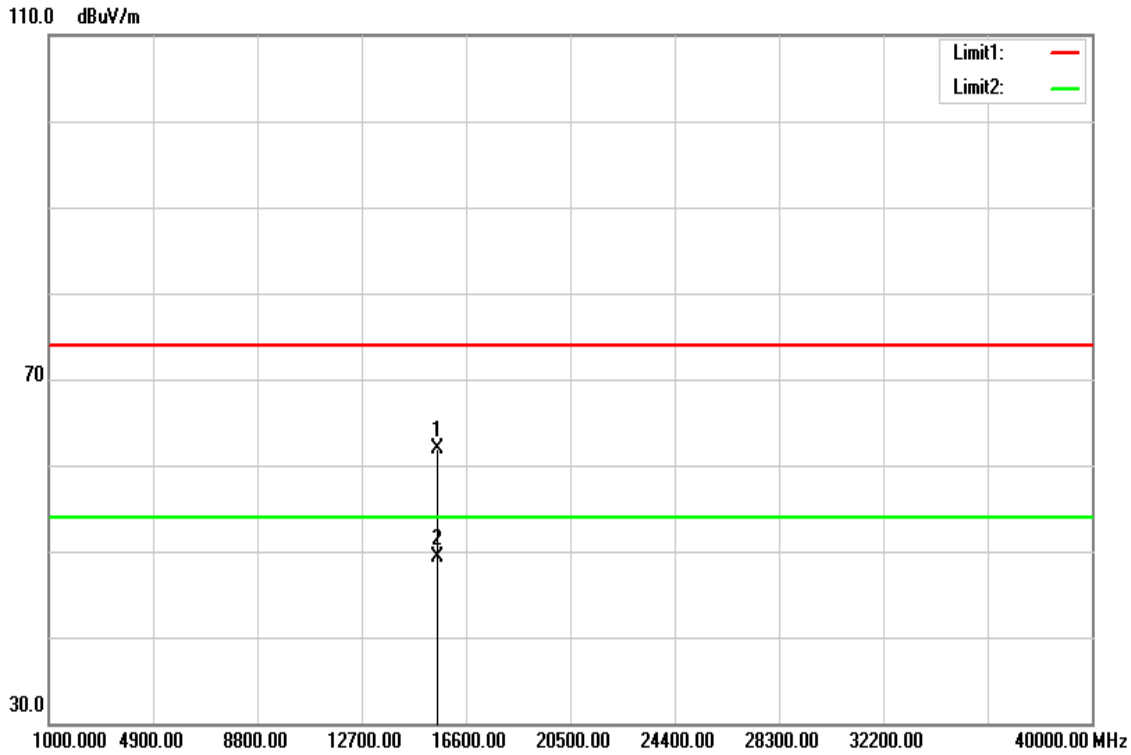
Test Mode	IEEE 802.11a / 5180MHZ	Temp/Hum	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 5, 2017
Polarize	Horizontal	Test Engineer	Kevin Kuo
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
15540.000	43.24	18.68	61.92	74.00	-12.08	peak
15540.000	30.64	18.68	49.32	54.00	-4.68	AVG
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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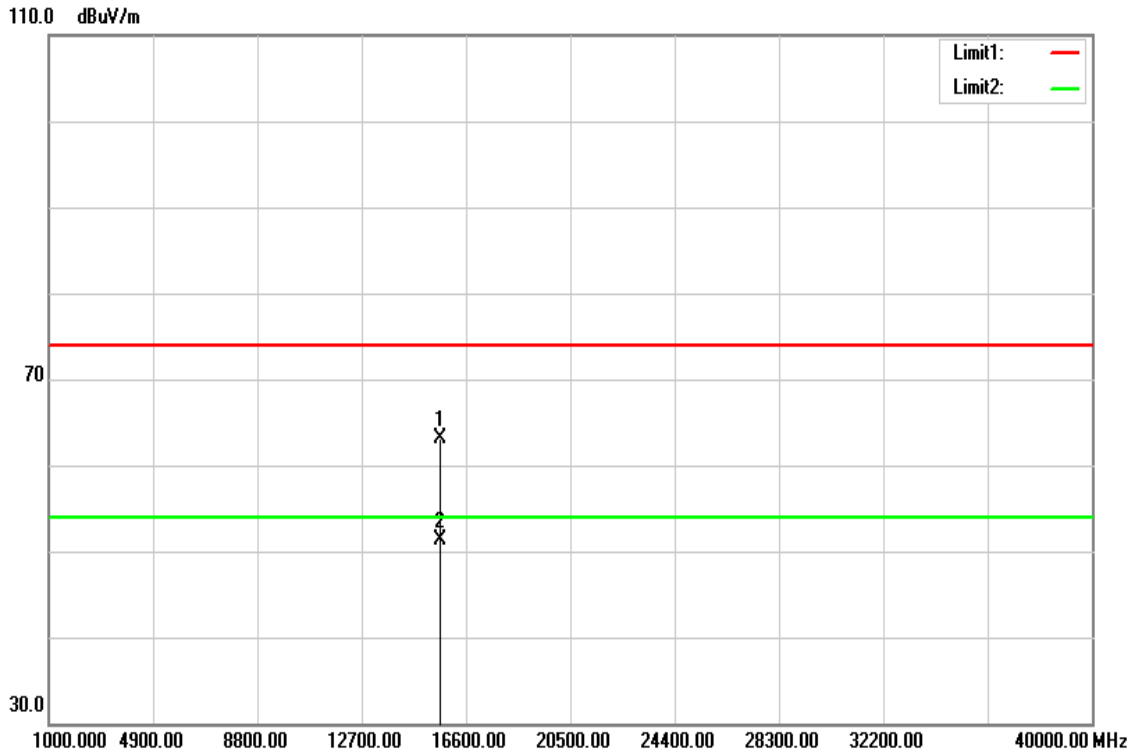
Test Mode	IEEE 802.11a / 5220 MHZ	Temp/Hum	24(℃)/ 33%RH
Test Item	Horizontal	Test Date	December 4, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
15660.000	44.12	19.03	63.15	74.00	-10.85	peak
15660.000	32.18	19.03	51.21	54.00	-2.79	AVG
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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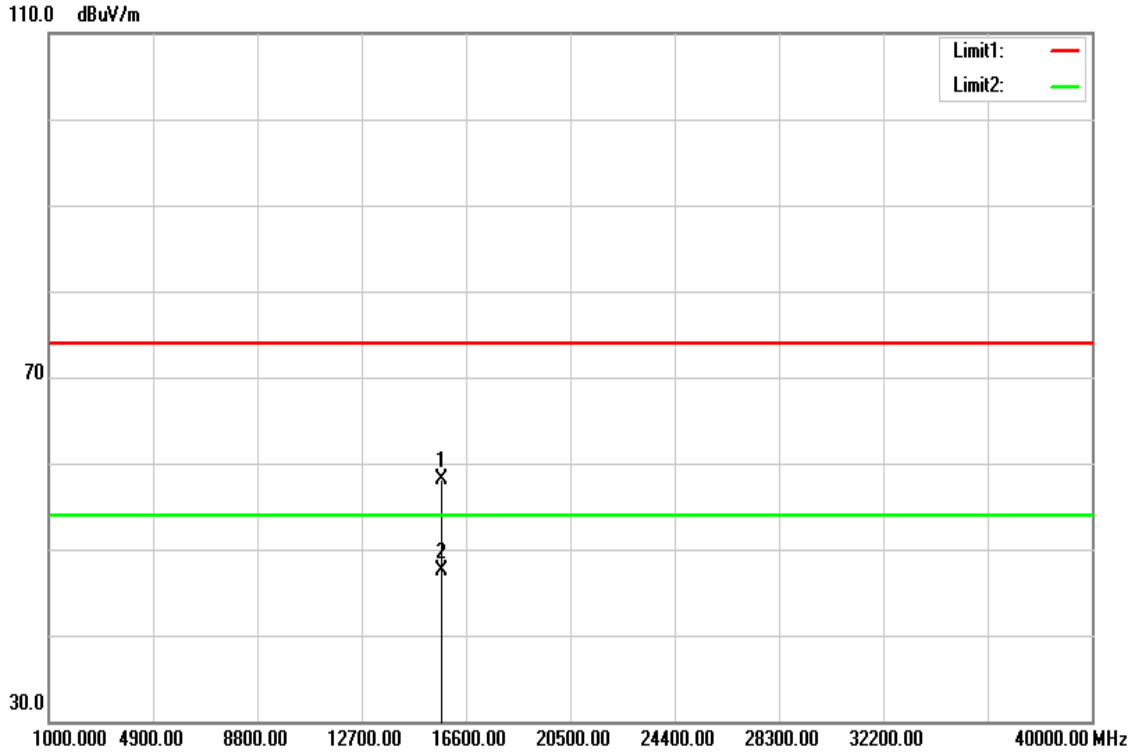
Test Mode	IEEE 802.11a / 5220 MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 4, 2017
Polarize	Horizontal	Test Engineer	Kevin Kuo
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



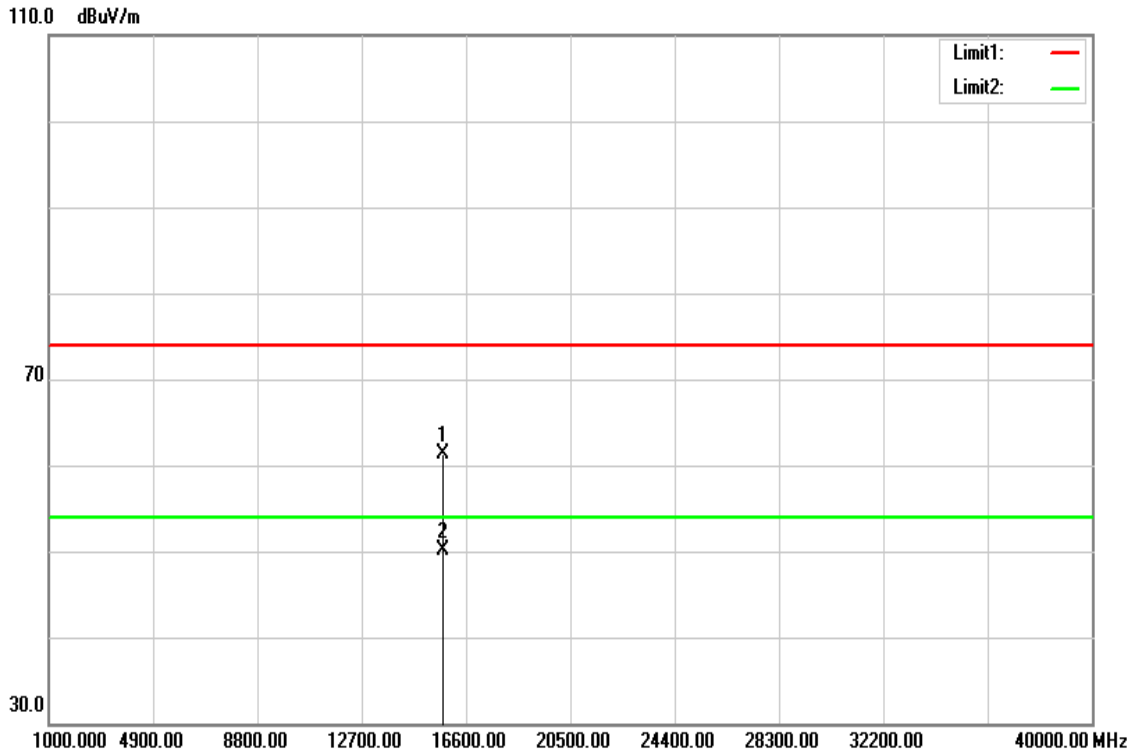
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
15670.000	39.05	19.06	58.11	74.00	-15.89	peak
15670.000	28.46	19.06	47.52	54.00	-6.48	AVG
N/A						

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 / 5240MHZ	Temp/Hum	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 5, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



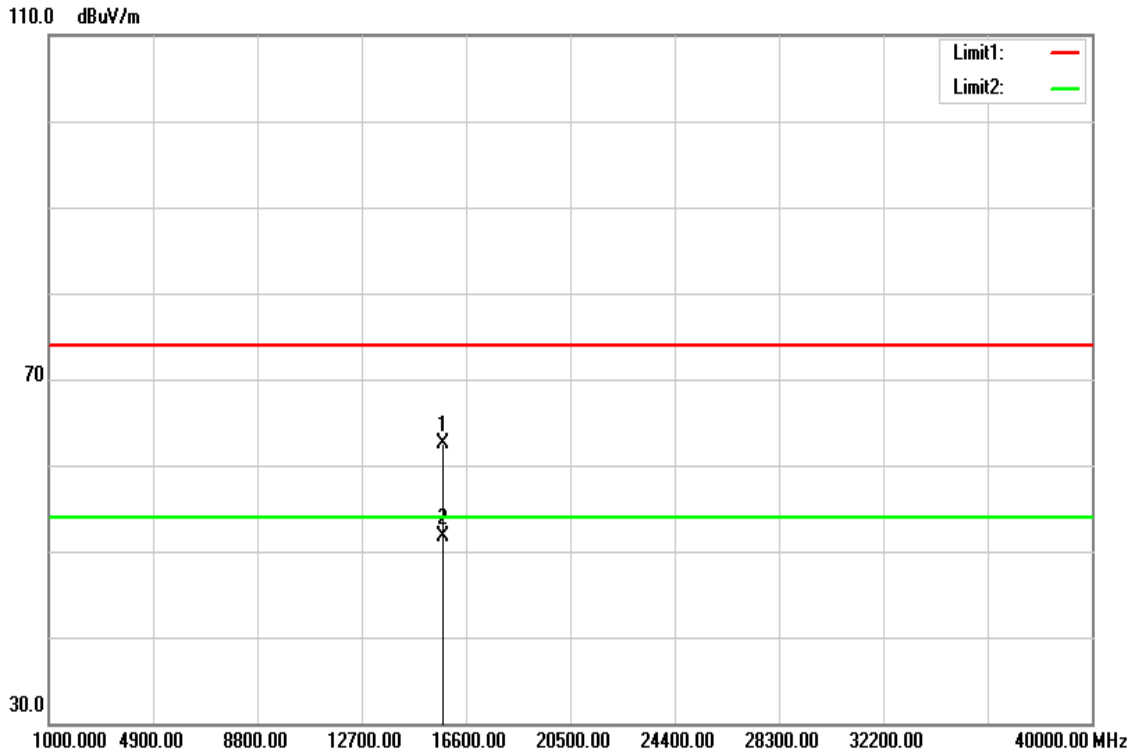
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
15720.000	42.18	19.20	61.38	74.00	-12.62	peak
15720.000	30.82	19.20	50.02	54.00	-3.98	AVG
N/A						

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 / 5240MHZ	Temp/Hum	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 5, 2017
Polarize	Horizontal	Test Engineer	Kevin Kuo
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



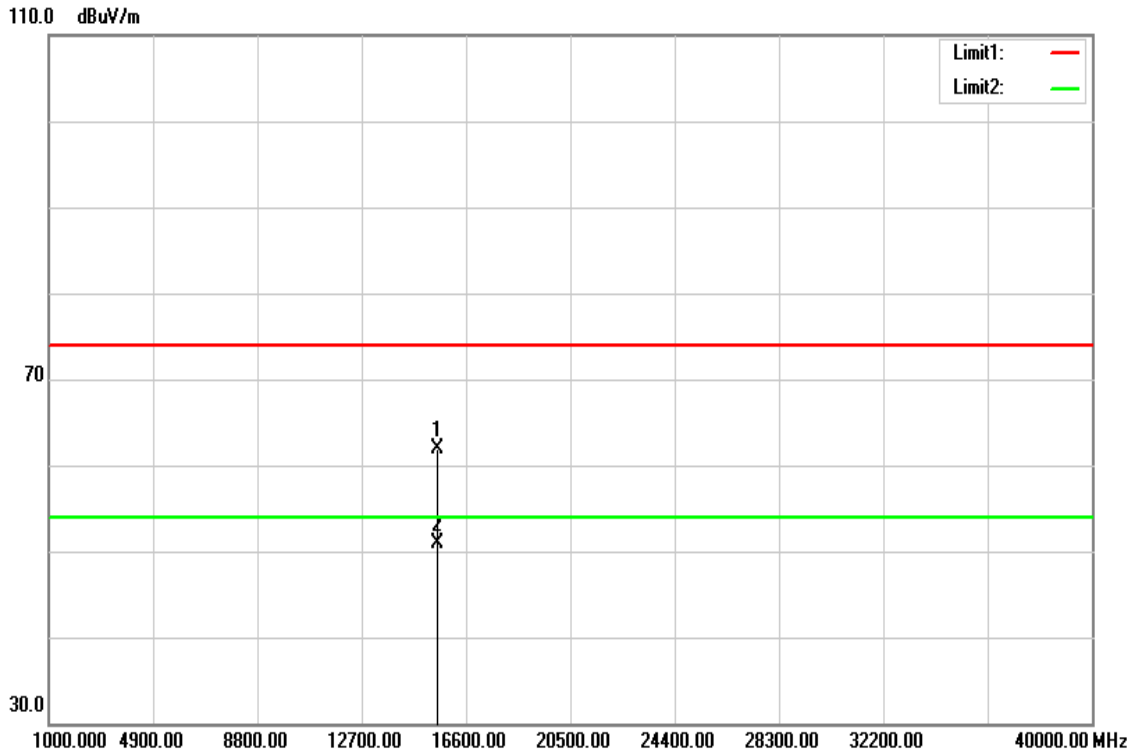
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
15720.000	43.32	19.20	62.52	74.00	-11.48	peak
15720.000	32.52	19.20	51.72	54.00	-2.28	AVG
N/A						

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 HT20 / 5180MHZ	Temp/Hum	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 4, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



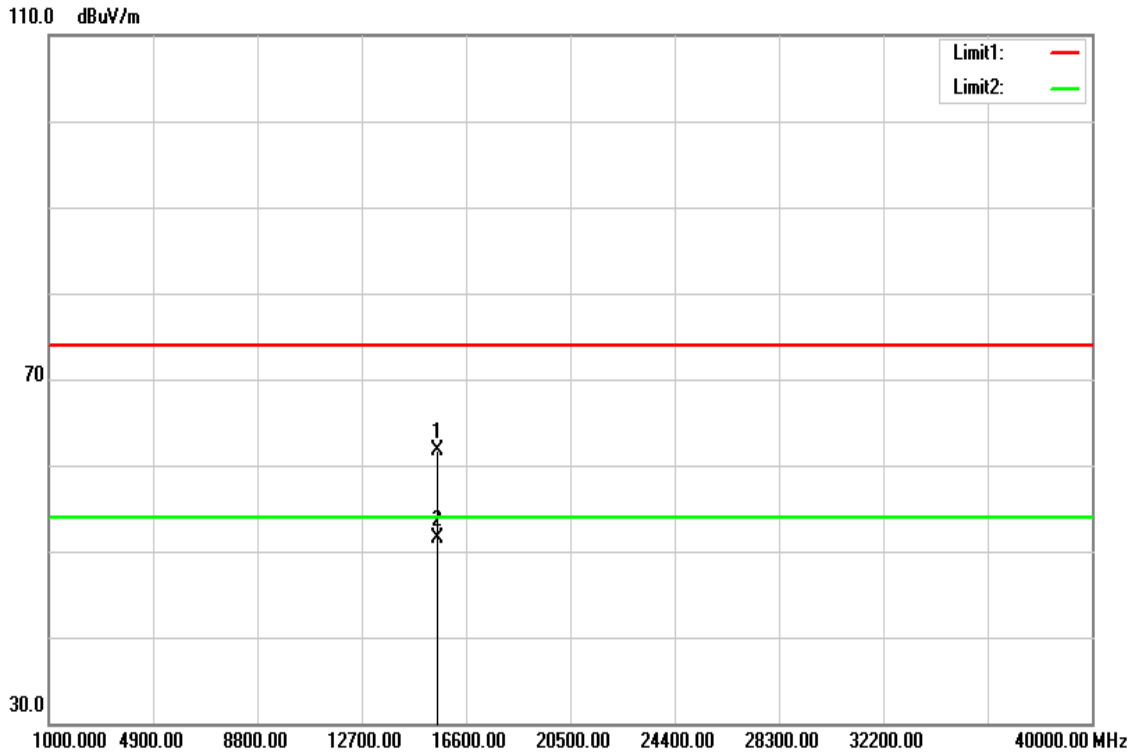
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
15550.000	43.25	18.71	61.96	74.00	-12.04	peak
15550.000	32.10	18.71	50.81	54.00	-3.19	AVG
N/A						

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 HT20/ 5180MHZ	Temp/Hum	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 4, 2017
Polarize	Horizontal	Test Engineer	Kevin Kuo
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



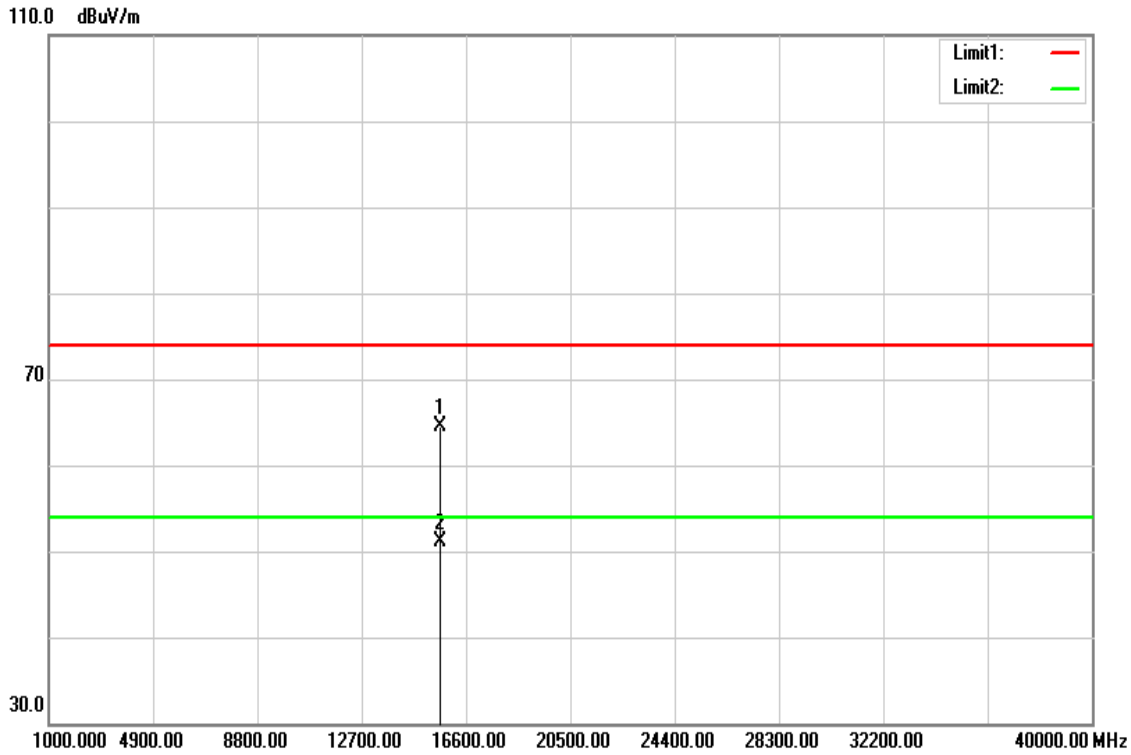
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
15540.000	43.11	18.68	61.79	74.00	-12.21	peak
15540.000	32.91	18.68	51.59	54.00	-2.41	AVG
N/A						

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 HT20 / 5220MHZ	Temp/Hum	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 4, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



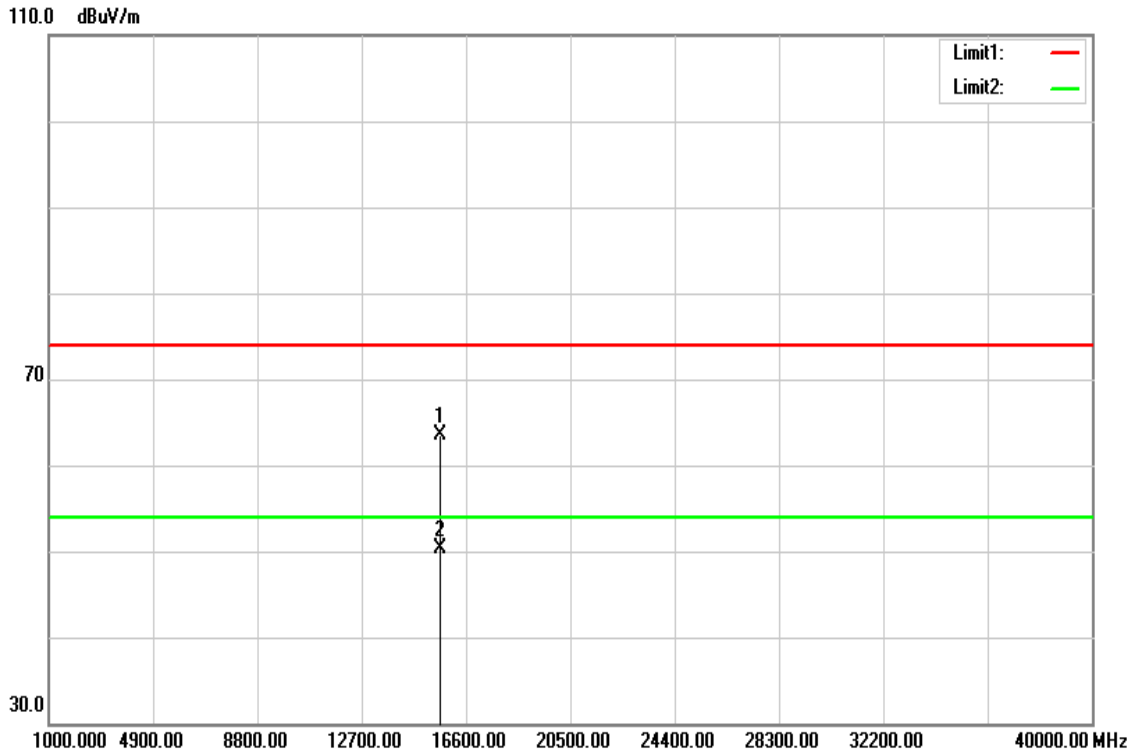
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
15660.000	45.47	19.03	64.50	74.00	-9.50	peak
15660.000	32.01	19.03	51.04	54.00	-2.96	AVG
N/A						

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 HT20 / 5220MHZ	Temp/Hum	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 4, 2017
Polarize	Horizontal	Test Engineer	Kevin Kuo
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



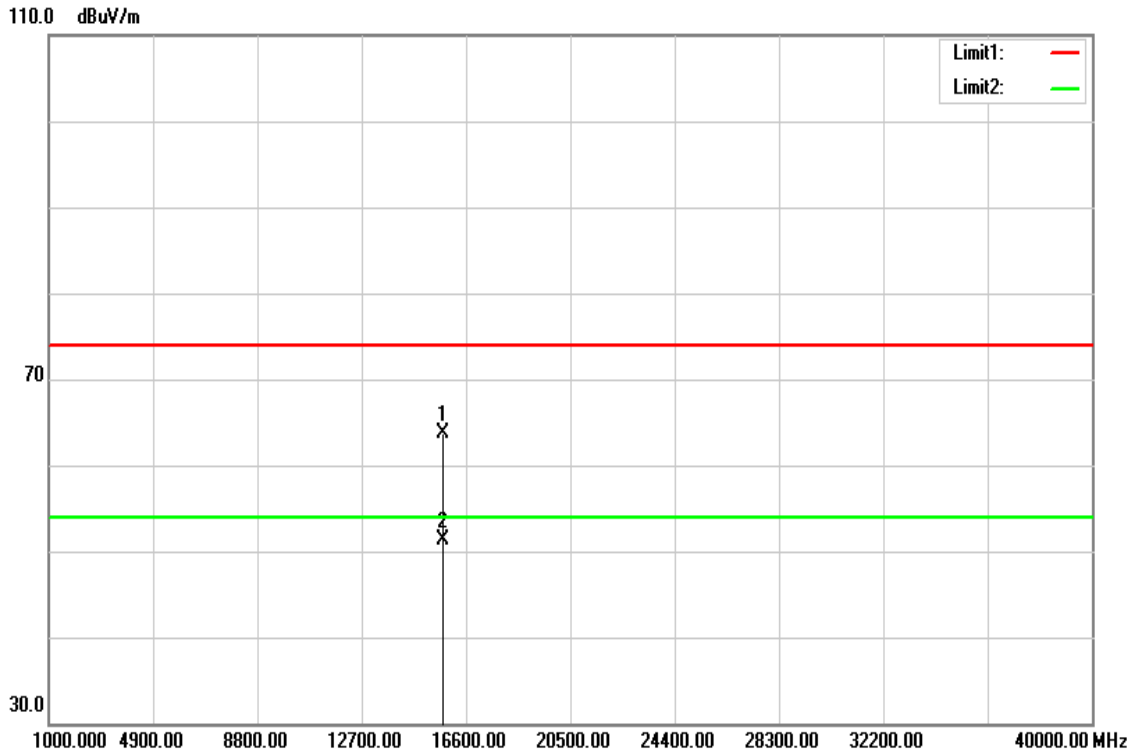
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
15660.000	44.47	19.03	63.50	74.00	-10.50	peak
15660.000	31.19	19.03	50.22	54.00	-3.78	AVG
N/A						

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 HT20 / 5240MHZ	Temp/Hum	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 4, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



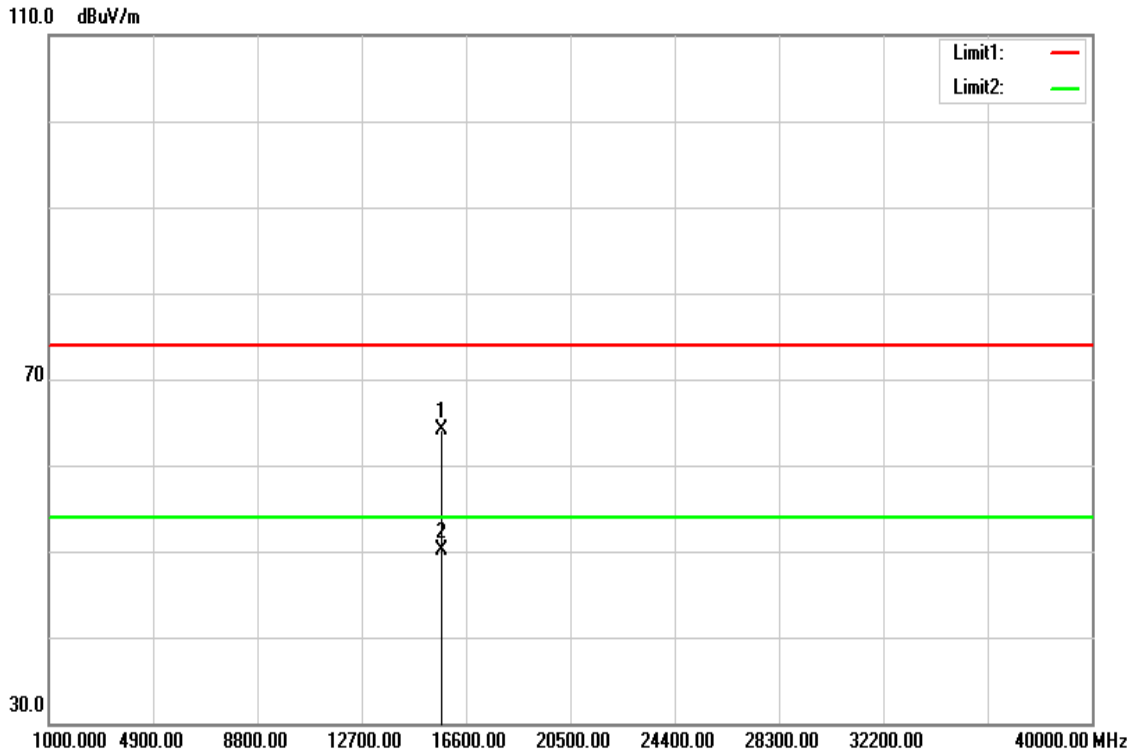
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
15720.000	44.43	19.20	63.63	74.00	-10.37	peak
15720.000	32.01	19.20	51.21	54.00	-2.79	AVG
N/A						

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 HT20 / 5240MHZ	Temp/Hum	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 4, 2017
Polarize	Horizontal	Test Engineer	Kevin Kuo
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



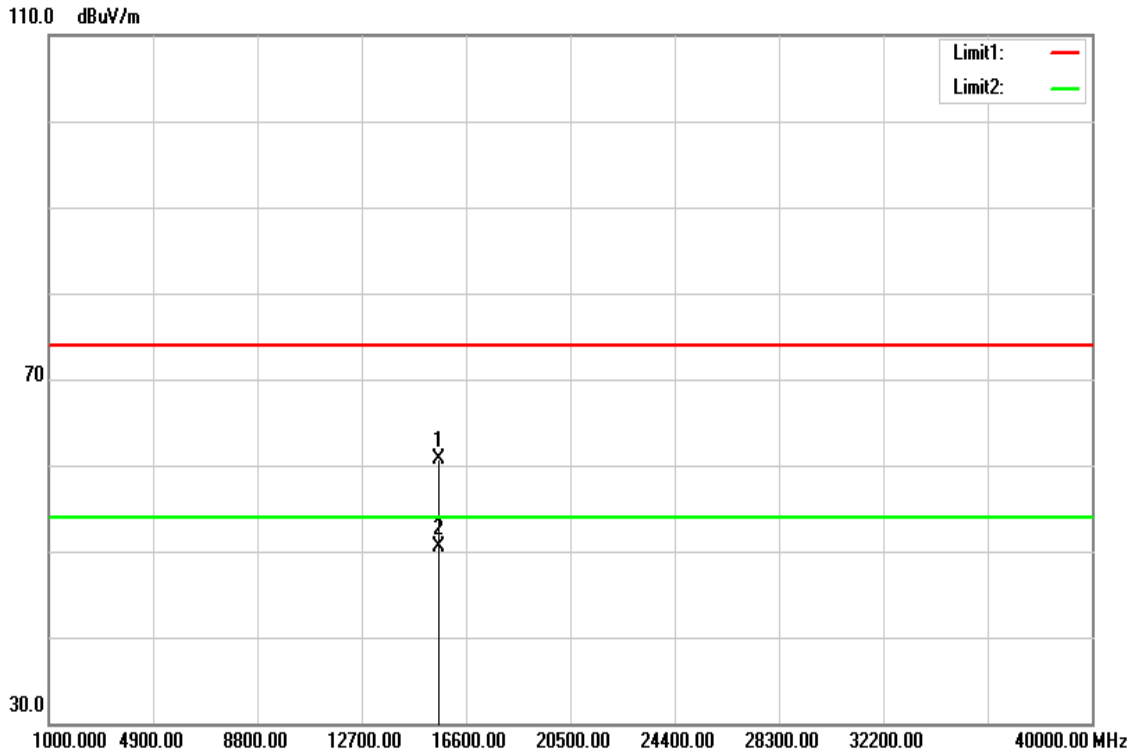
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
15710.000	45.00	19.17	64.17	74.00	-9.83	peak
15710.000	30.93	19.17	50.10	54.00	-3.90	AVG
N/A						

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 HT40 / 5190MHZ	Temp/Hum	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 4, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



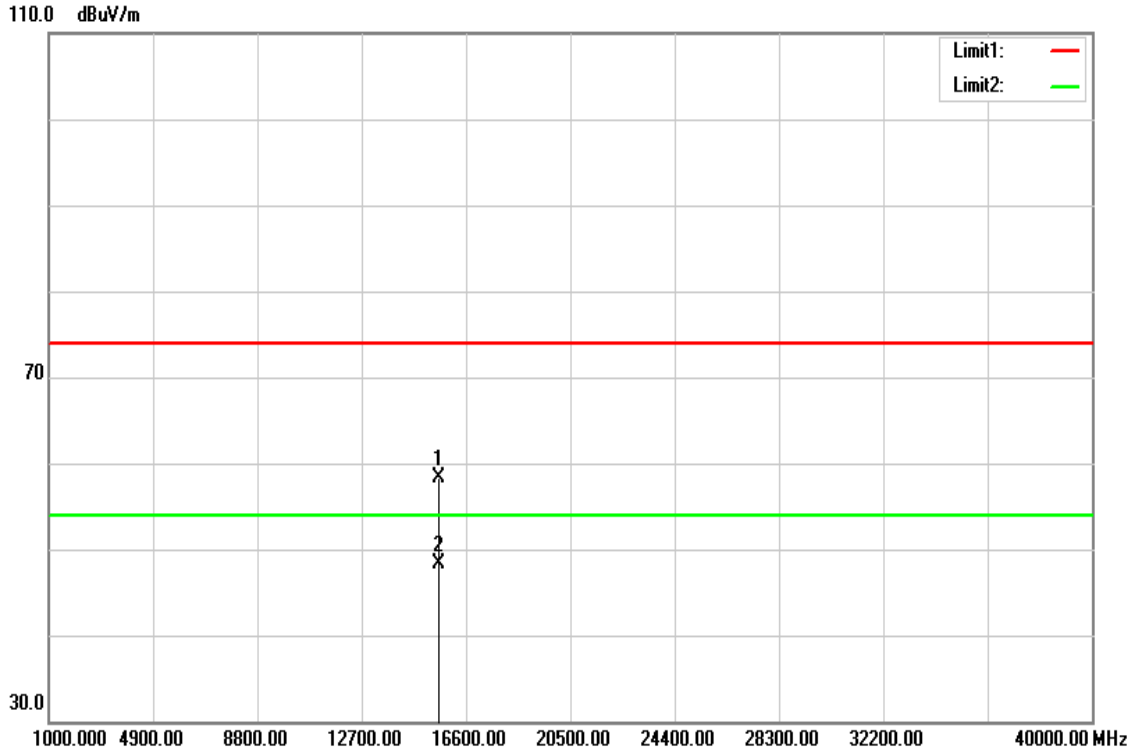
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
15580.000	41.99	18.79	60.78	74.00	-13.22	peak
15580.000	31.78	18.79	50.57	54.00	-3.43	AVG
N/A						

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 HT40 / 5190MHZ	Temp/Hum	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 4, 2017
Polarize	Horizontal	Test Engineer	Kevin Kuo
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



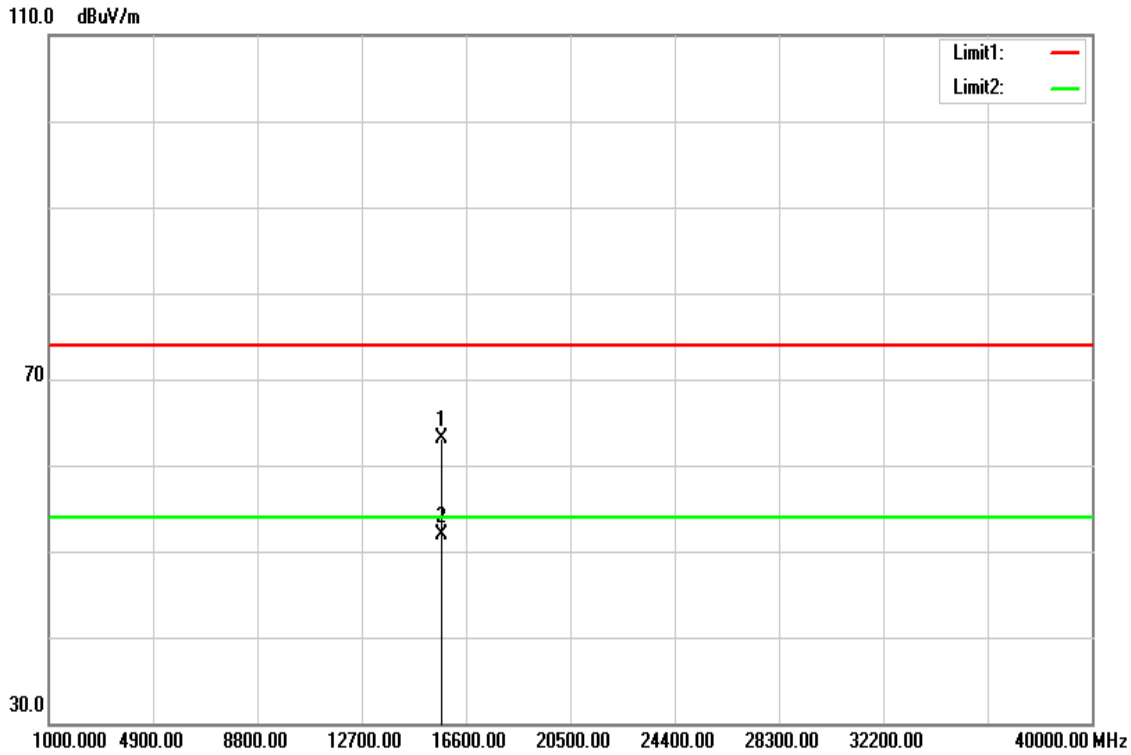
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
15580.000	39.59	18.79	58.38	74.00	-15.62	peak
15580.000	29.58	18.79	48.37	54.00	-5.63	AVG
N/A						

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 HT40 / 5230MHZ	Temp/Hum	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 5, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



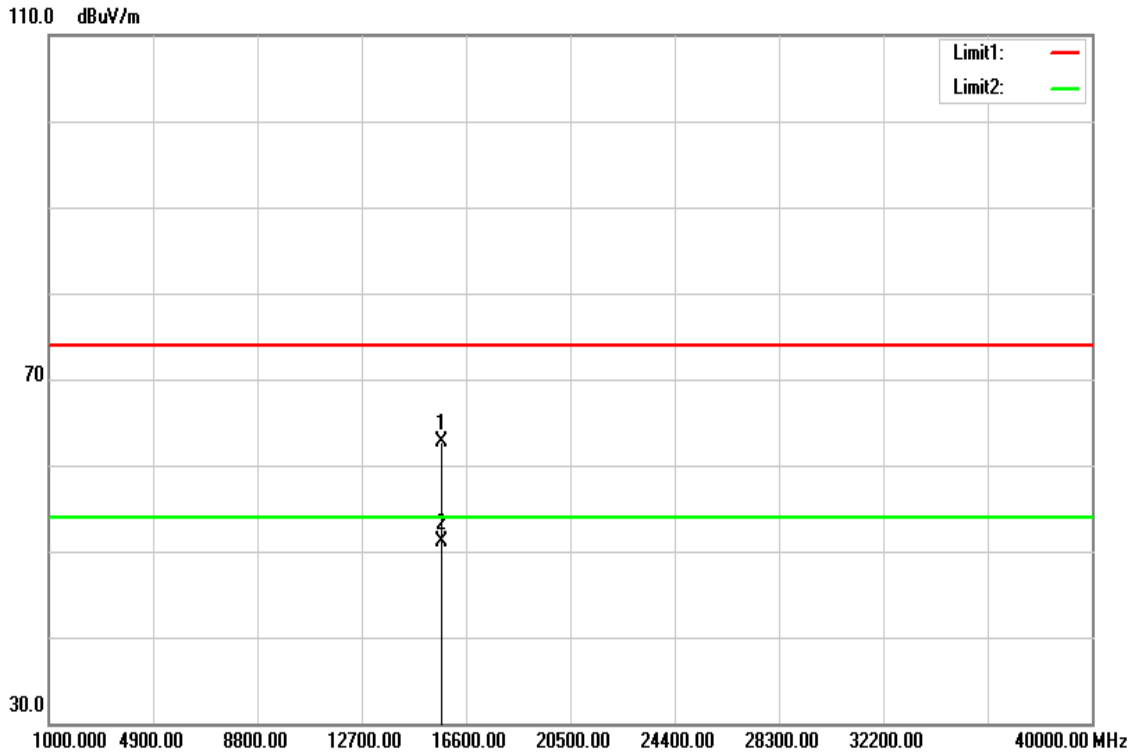
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
15670.000	44.03	19.06	63.09	74.00	-10.91	peak
15670.000	32.92	19.06	51.98	54.00	-2.02	AVG
N/A						

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 HT40 / 5230MHZ	Temp/Hum	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 5, 2017
Polarize	Horizontal	Test Engineer	Kevin Kuo
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



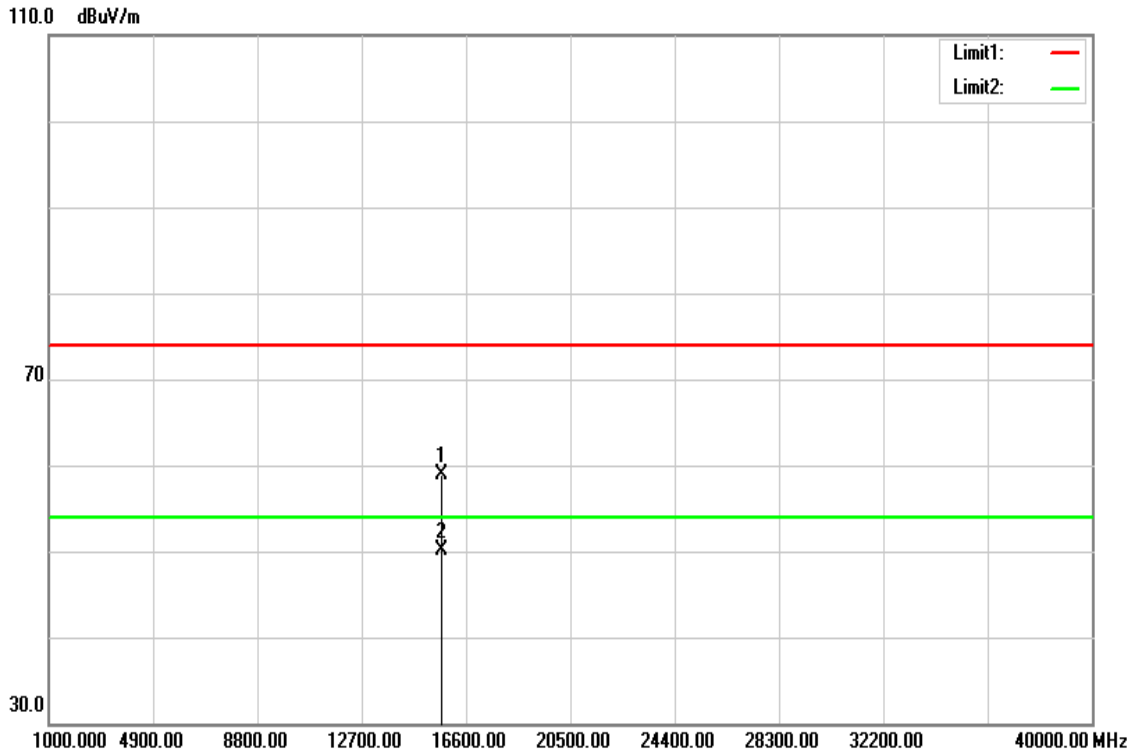
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
15680.000	43.61	19.09	62.70	74.00	-11.30	peak
15680.000	32.03	19.09	51.12	54.00	-2.88	AVG
N/A						

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	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 4, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



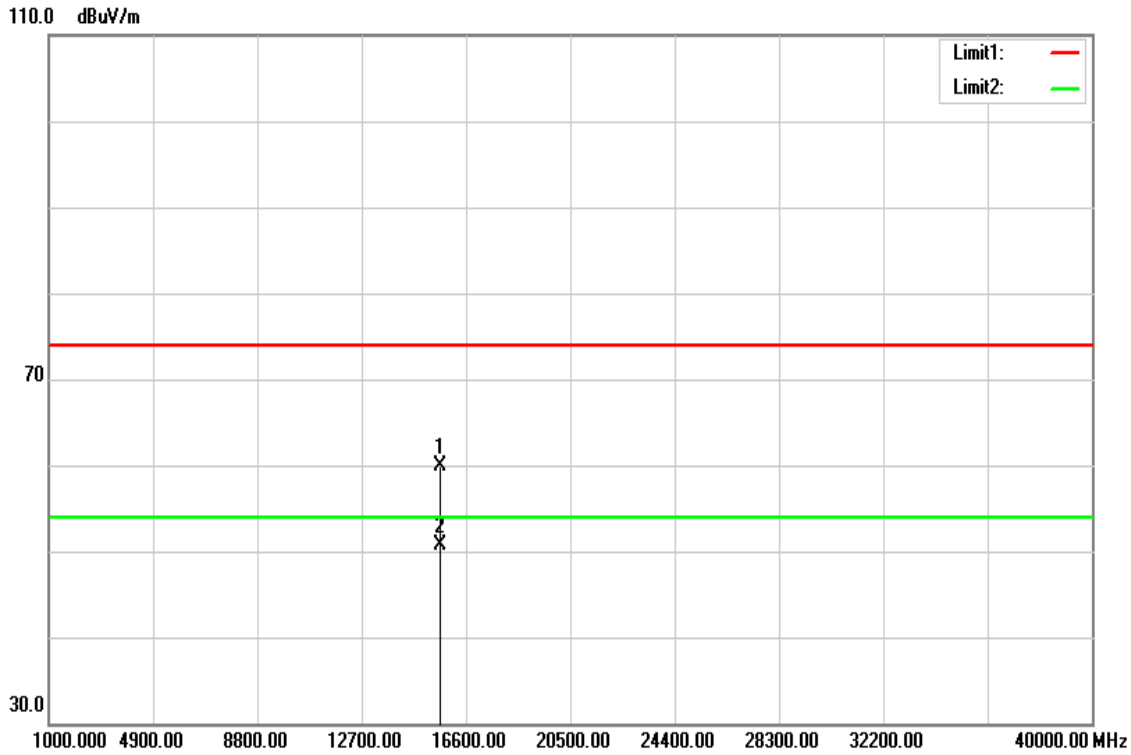
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
15670.000	39.85	19.06	58.91	74.00	-15.09	peak
15670.000	31.05	19.06	50.11	54.00	-3.89	AVG
N/A						

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	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 4, 2017
Polarize	Horizontal	Test Engineer	Kevin Kuo
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
15620.000	41.04	18.91	59.95	74.00	-14.05	peak
15620.000	31.72	18.91	50.63	54.00	-3.37	AVG
N/A						

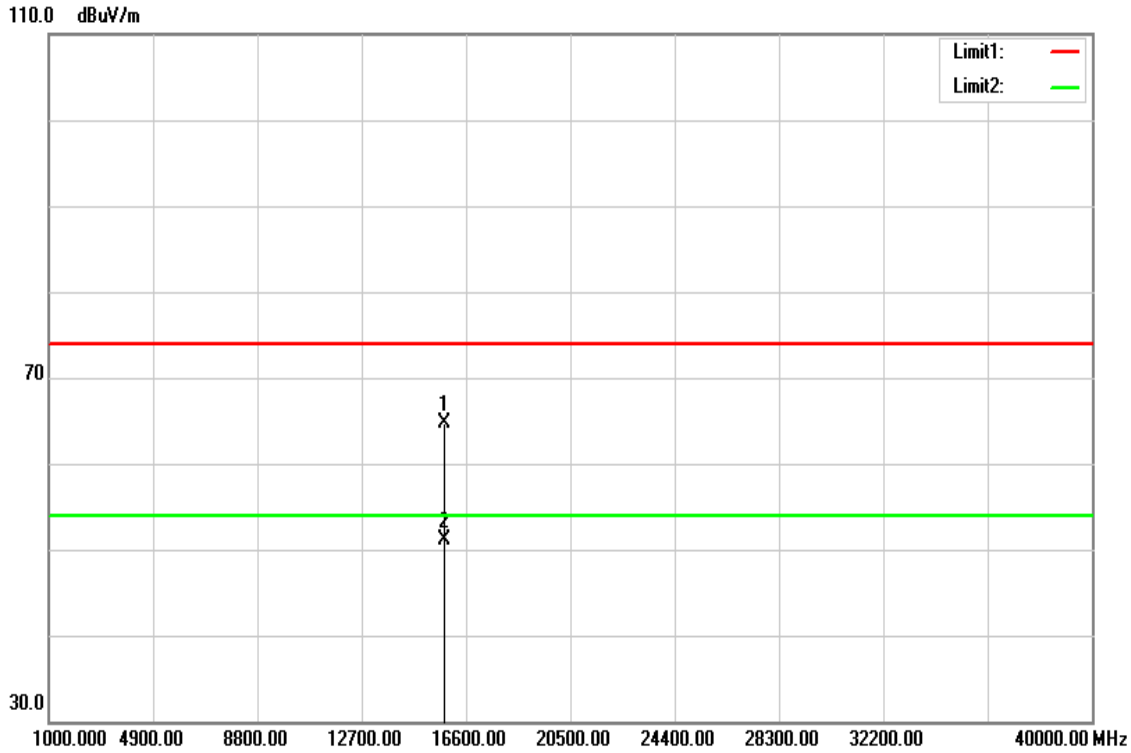
Remark:

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	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 4, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



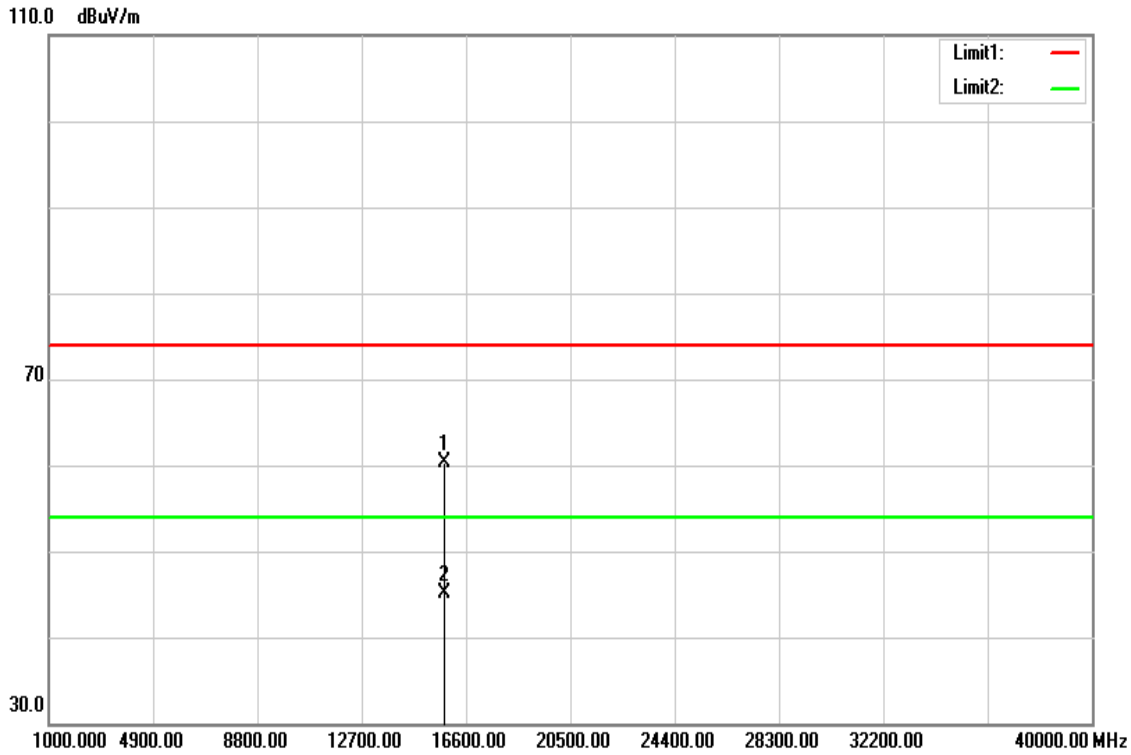
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
15780.000	45.30	19.38	64.68	74.00	-9.32	peak
15780.000	31.71	19.38	51.09	54.00	-2.91	AVG
N/A						

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 / 5260 MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 4, 2017
Polarize	Horizontal	Test Engineer	Kevin Kuo
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



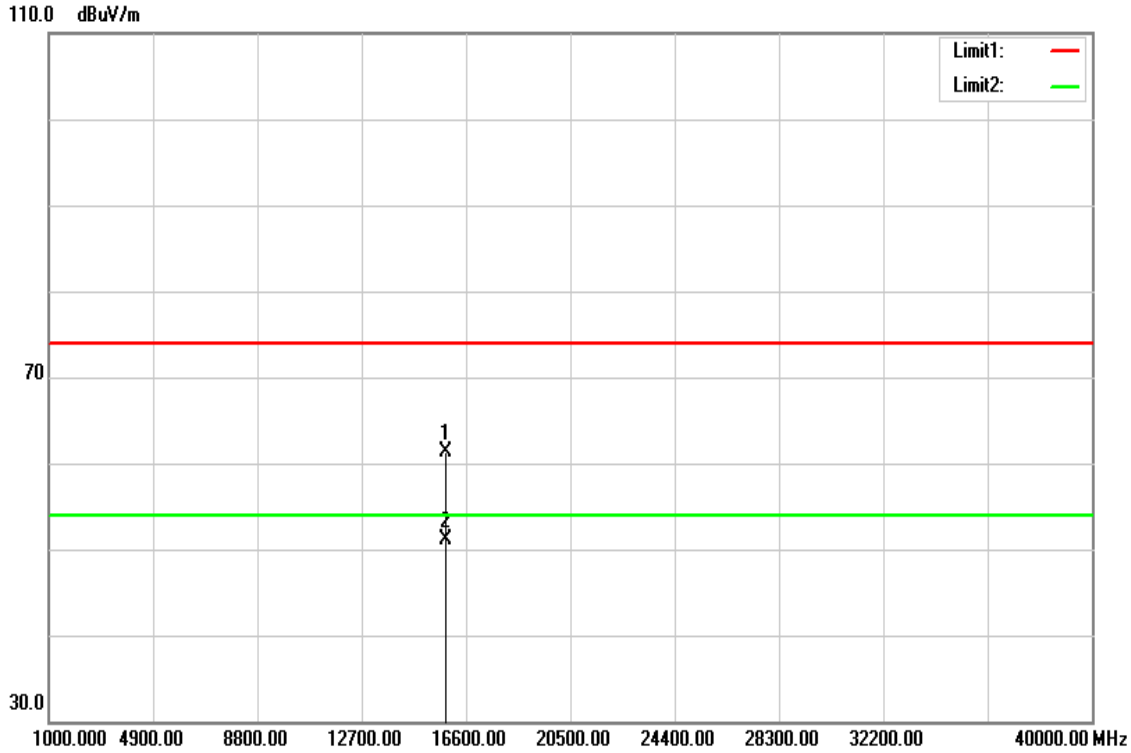
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
15770.000	40.92	19.35	60.27	74.00	-13.73	peak
15770.000	25.76	19.35	45.11	54.00	-8.89	AVG
N/A						

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 / 5280 MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 5, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



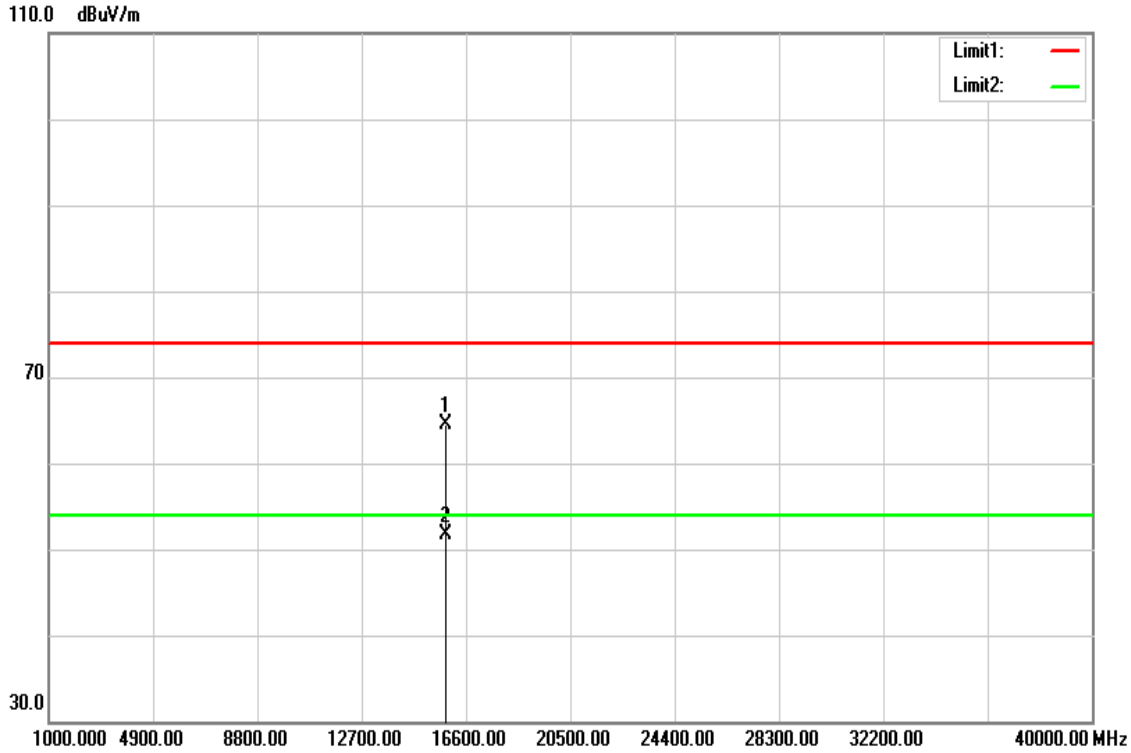
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
15840.000	41.82	19.55	61.37	74.00	-12.63	peak
15840.000	31.60	19.55	51.15	54.00	-2.85	AVG
N/A						

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 / 5280 MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 5, 2017
Polarize	Horizontal	Test Engineer	Kevin Kuo
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



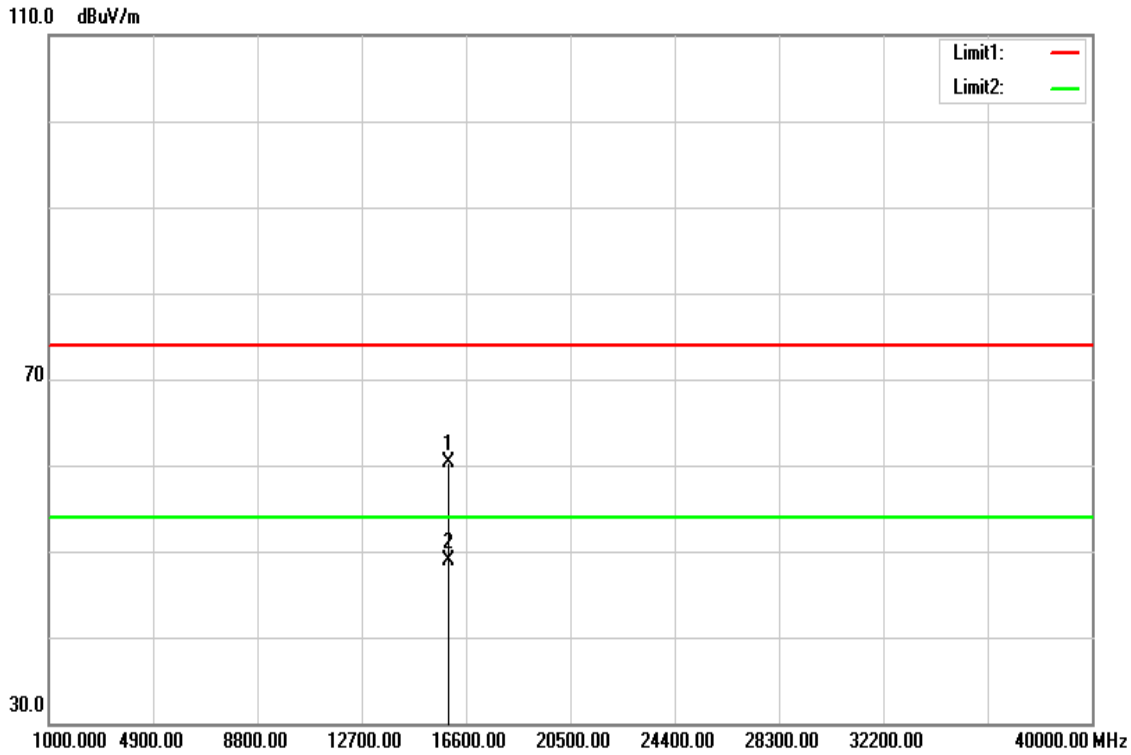
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
15840.000	45.05	19.55	64.60	74.00	-9.40	peak
15840.000	32.09	19.55	51.64	54.00	-2.36	AVG
N/A						

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 / 5320 MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 5, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



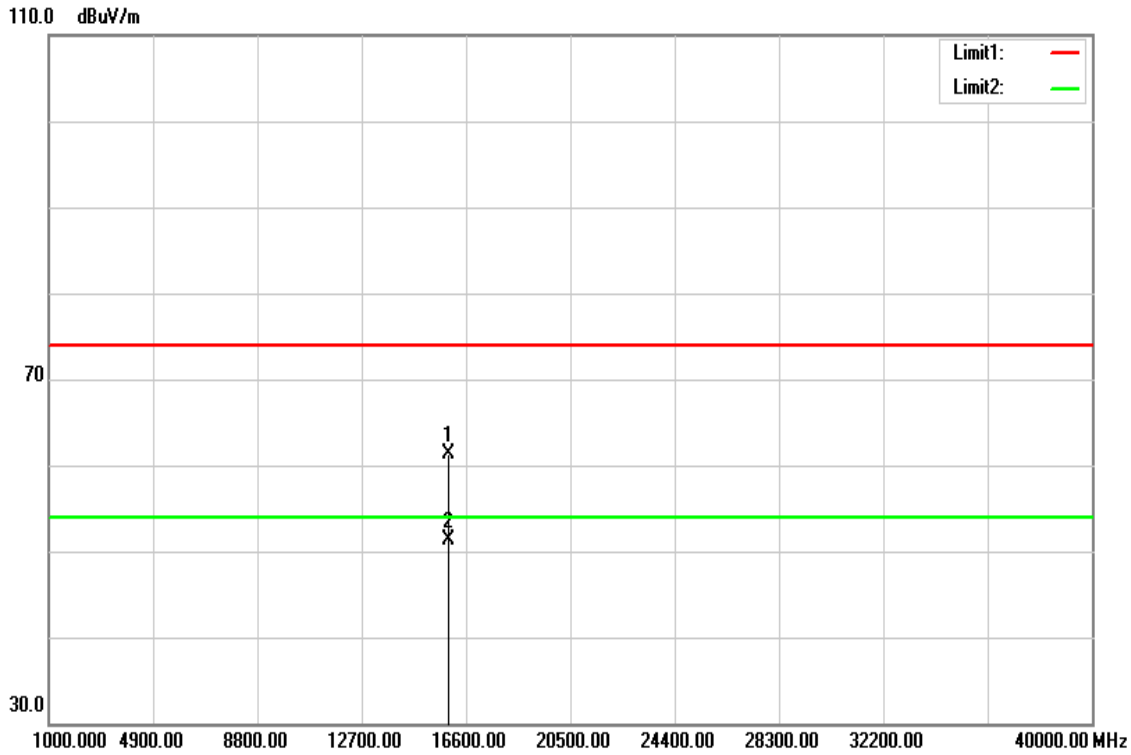
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
15950.000	40.46	19.88	60.34	74.00	-13.66	peak
15950.000	28.93	19.88	48.81	54.00	-5.19	AVG
N/A						

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 / 5320 MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 5, 2017
Polarize	Horizontal	Test Engineer	Kevin Kuo
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



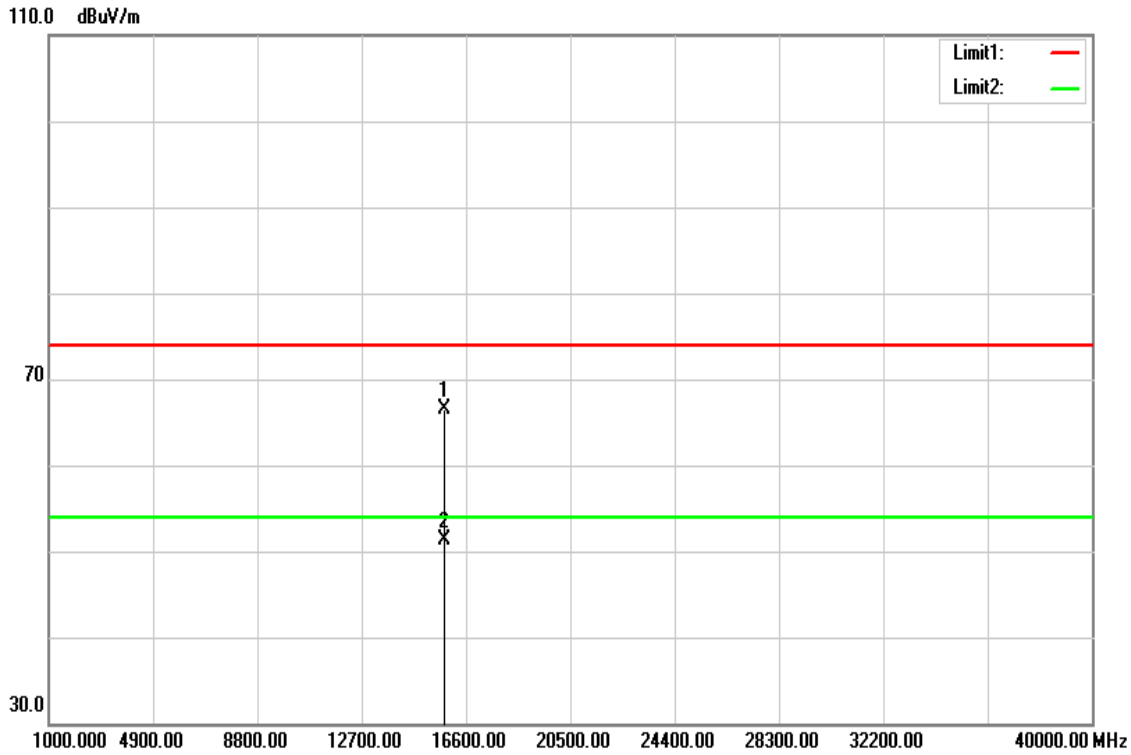
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
15970.000	41.43	19.94	61.37	74.00	-12.63	peak
15970.000	31.28	19.94	51.22	54.00	-2.78	AVG
N/A						

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 HT20 / 5260 MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 4, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



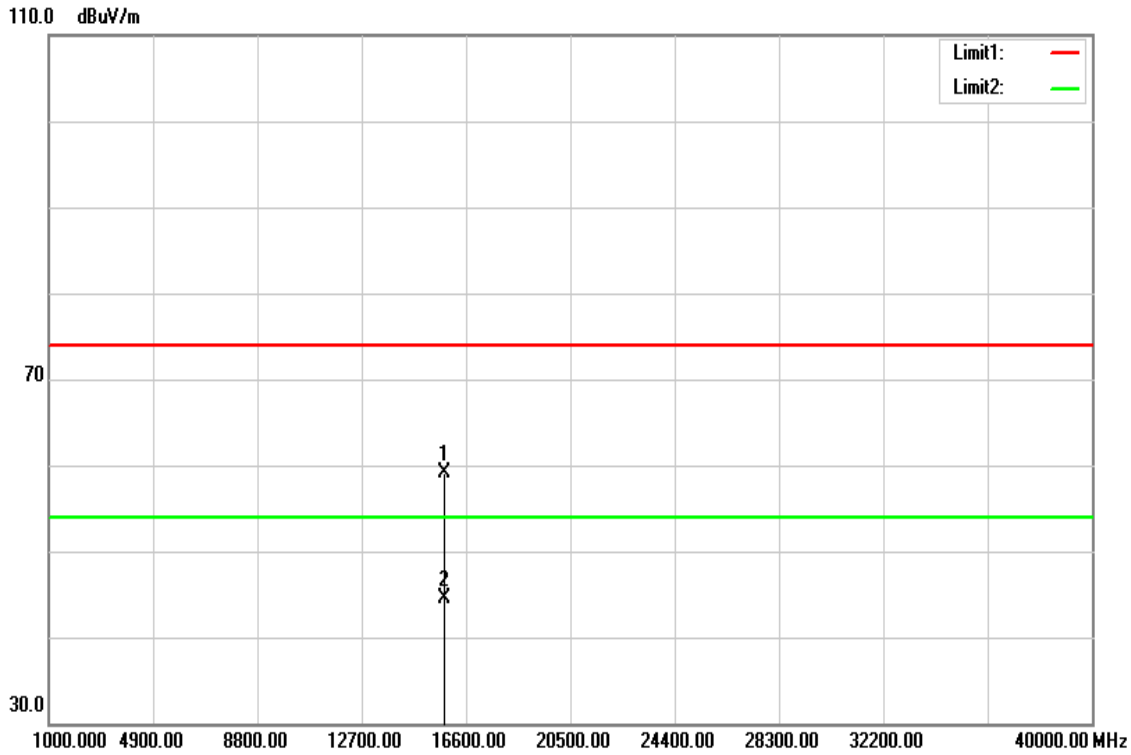
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
15780.000	47.16	19.38	66.54	74.00	-7.46	peak
15780.000	31.85	19.38	51.23	54.00	-2.77	AVG
N/A						

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 HT20 / 5260 MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 4, 2017
Polarize	Horizontal	Test Engineer	Kevin Kuo
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



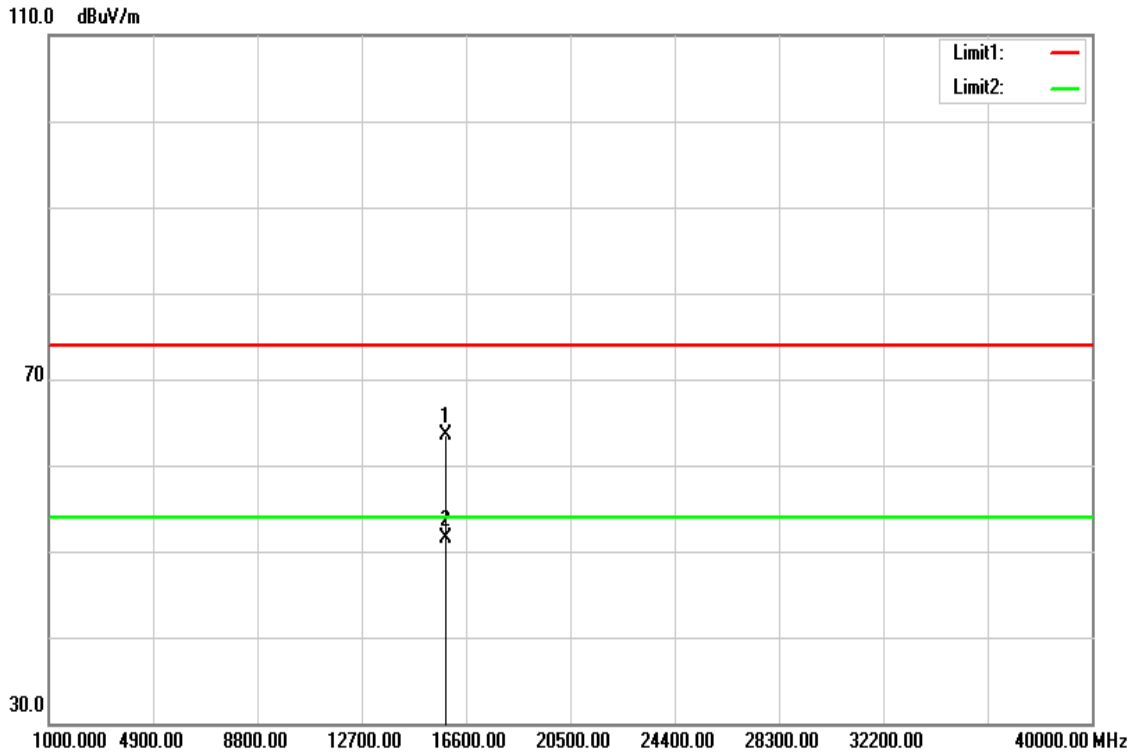
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
15790.000	39.61	19.41	59.02	74.00	-14.98	peak
15790.000	25.19	19.41	44.60	54.00	-9.40	AVG
N/A						

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 HT20 / 5280 MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 5, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



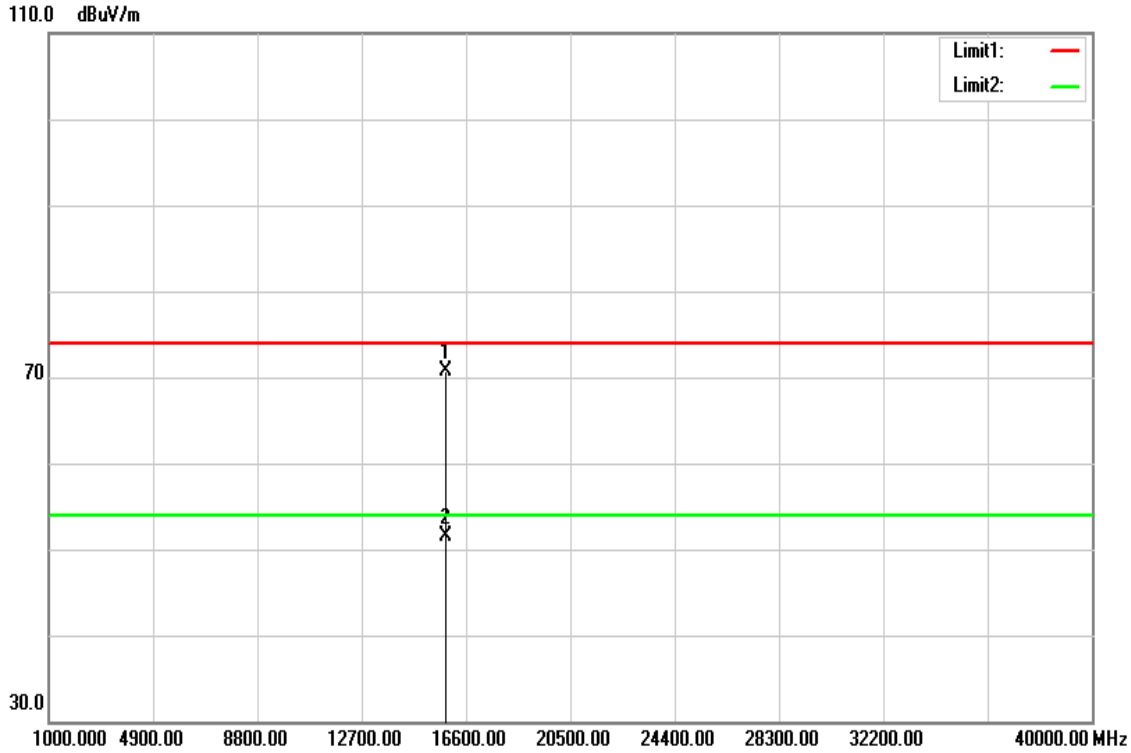
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
15830.000	44.07	19.52	63.59	74.00	-10.41	peak
15830.000	31.93	19.52	51.45	54.00	-2.55	AVG
N/A						

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 HT20 / 5280 MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 5, 2017
Polarize	Horizontal	Test Engineer	Kevin Kuo
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



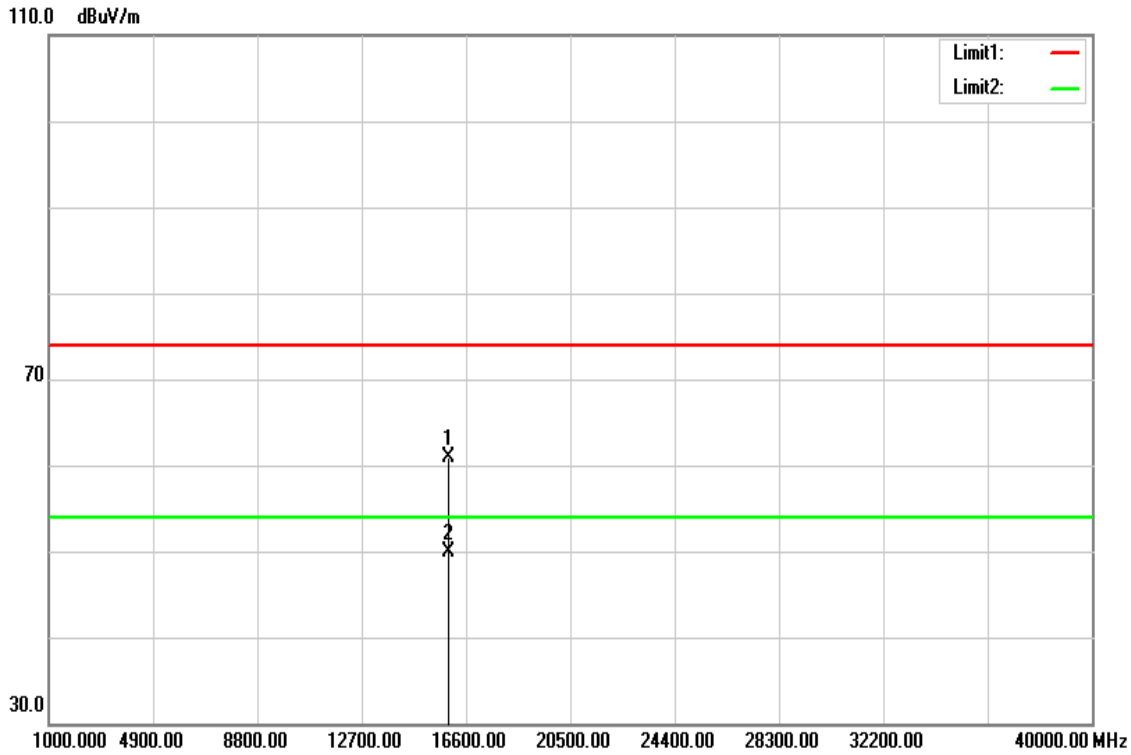
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
15840.000	51.08	19.55	70.63	74.00	-3.37	peak
15840.000	32.03	19.55	51.58	54.00	-2.42	AVG
N/A						

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 HT20 / 5320 MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 5, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



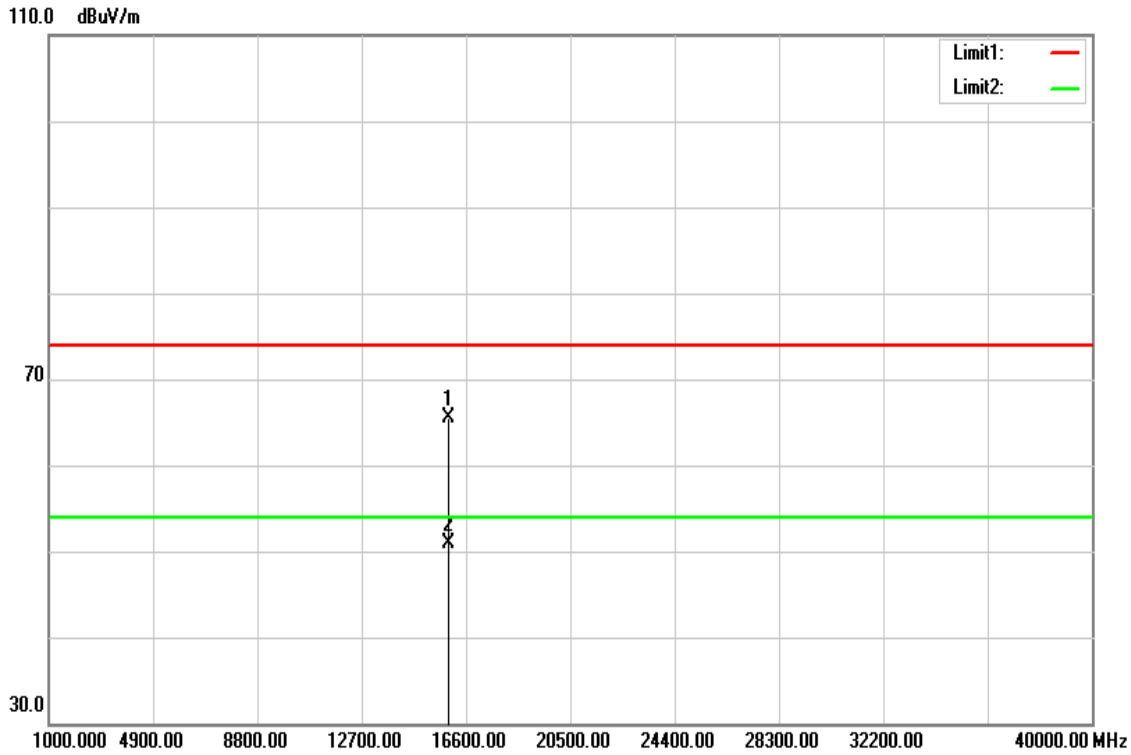
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
15960.000	41.00	19.90	60.90	74.00	-13.10	peak
15960.000	30.07	19.90	49.97	54.00	-4.03	AVG
N/A						

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 HT20 / 5320 MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 5, 2017
Polarize	Horizontal	Test Engineer	Kevin Kuo
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



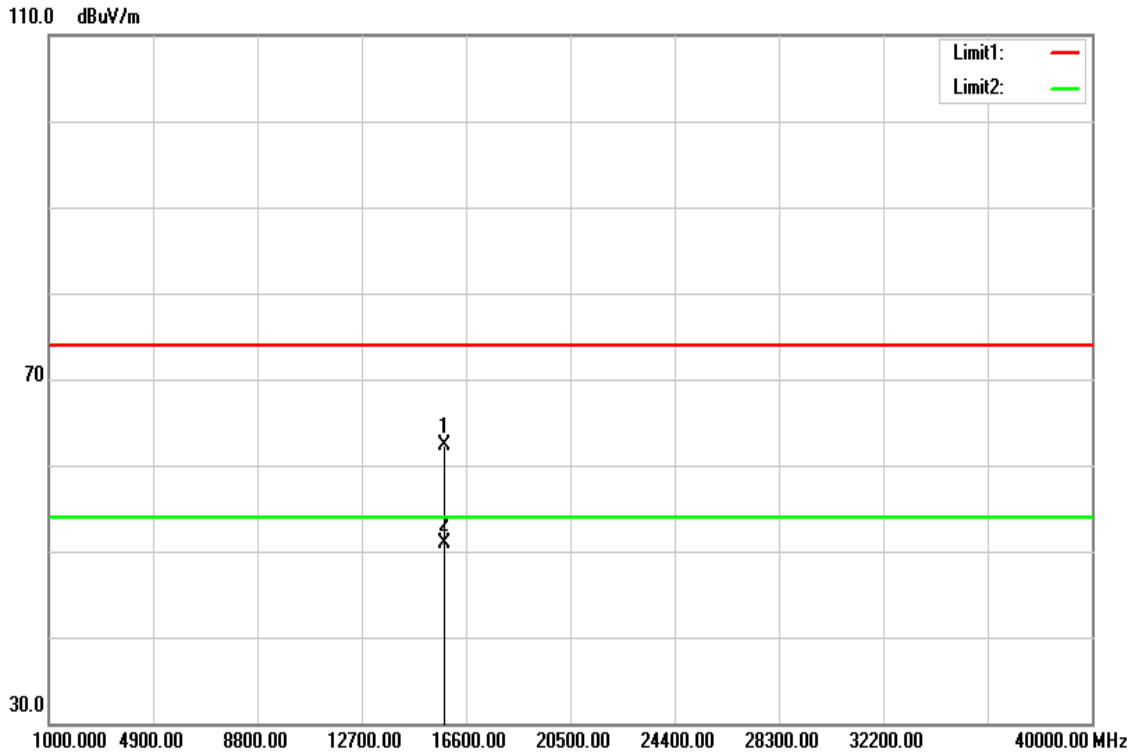
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
15960.000	45.56	19.90	65.46	74.00	-8.54	peak
15960.000	30.92	19.90	50.82	54.00	-3.18	AVG
N/A						

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 HT40 / 5270 MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 5, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



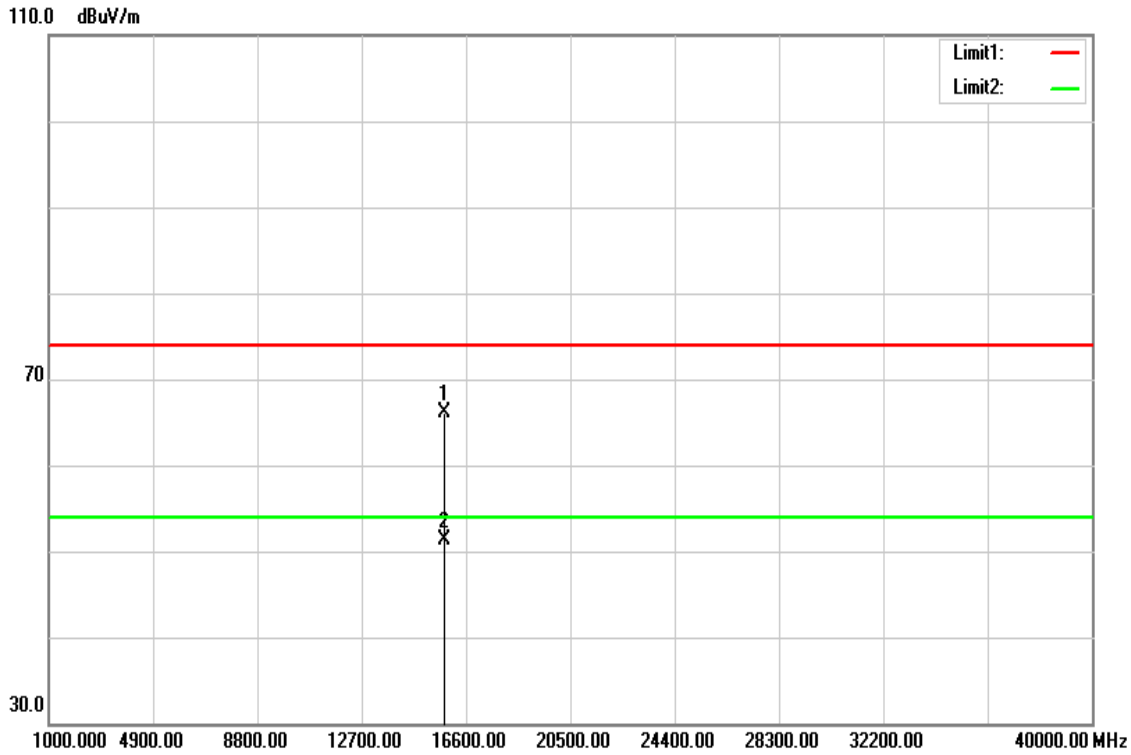
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
15810.000	42.84	19.46	62.30	74.00	-11.70	peak
15810.000	31.45	19.46	50.91	54.00	-3.09	AVG
N/A						

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 HT40 / 5270 MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 5, 2017
Polarize	Horizontal	Test Engineer	Kevin Kuo
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



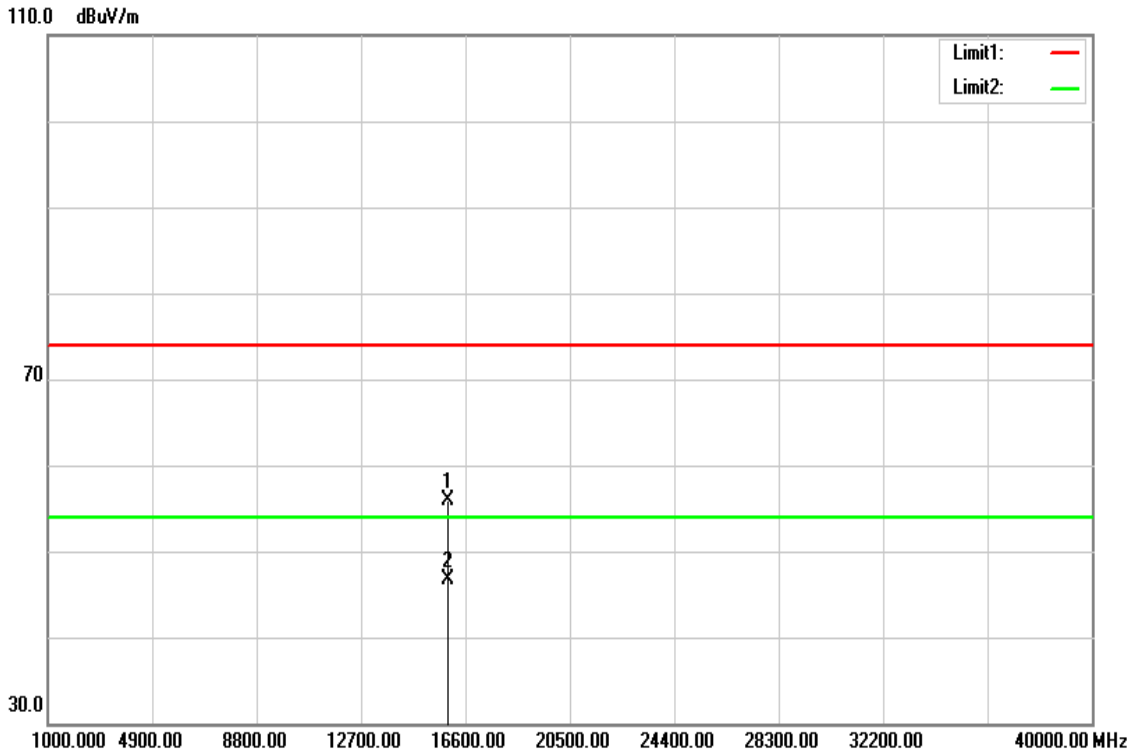
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
15790.000	46.64	19.41	66.05	74.00	-7.95	peak
15790.000	31.81	19.41	51.22	54.00	-2.78	AVG
N/A						

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 HT40 / 5310 MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 13, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



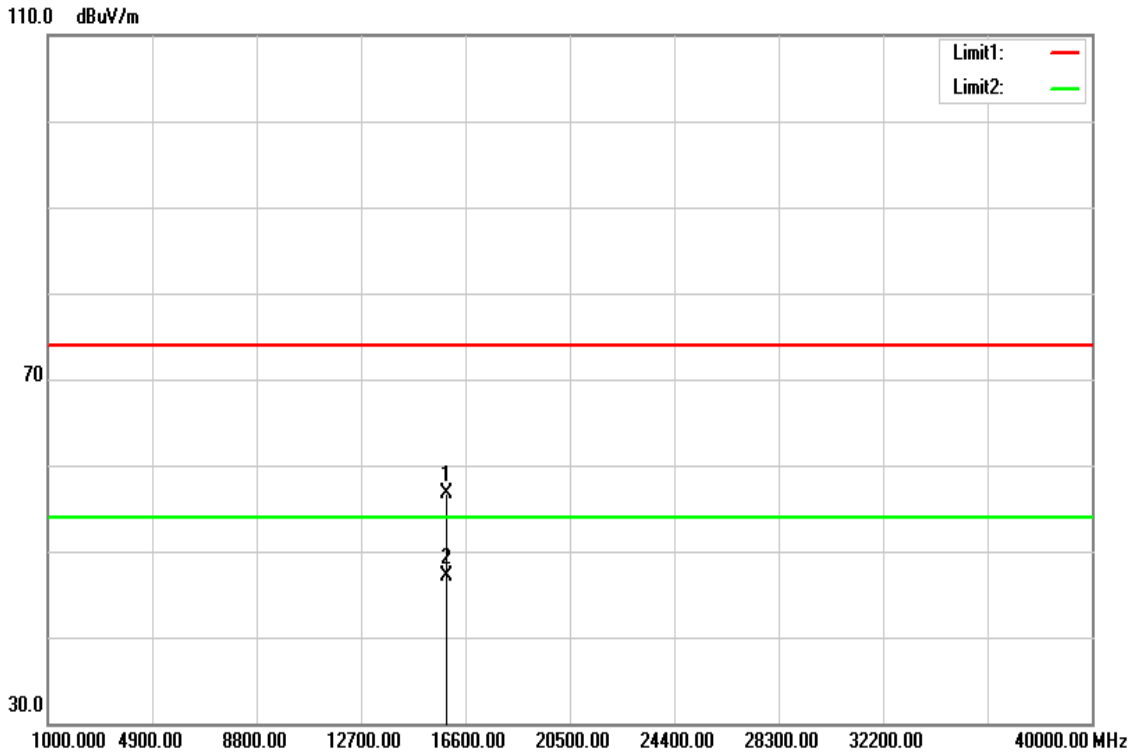
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
15930.000	36.17	19.81	55.98	74.00	-18.02	peak
15930.000	26.84	19.81	46.65	54.00	-7.35	AVG
N/A						

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 HT40 / 5310 MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 13, 2017
Polarize	Horizontal	Test Engineer	Kevin Kuo
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



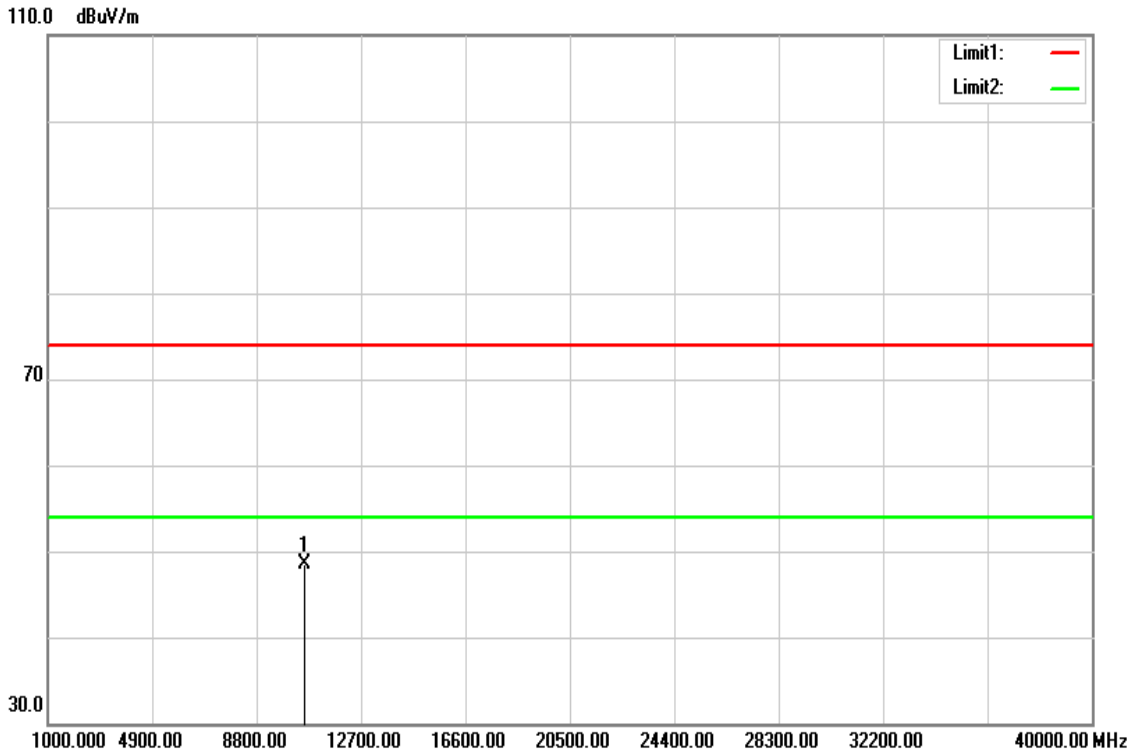
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
15920.000	36.84	19.79	56.63	74.00	-17.37	peak
15920.000	27.24	19.79	47.03	54.00	-6.97	AVG
N/A						

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	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 13, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



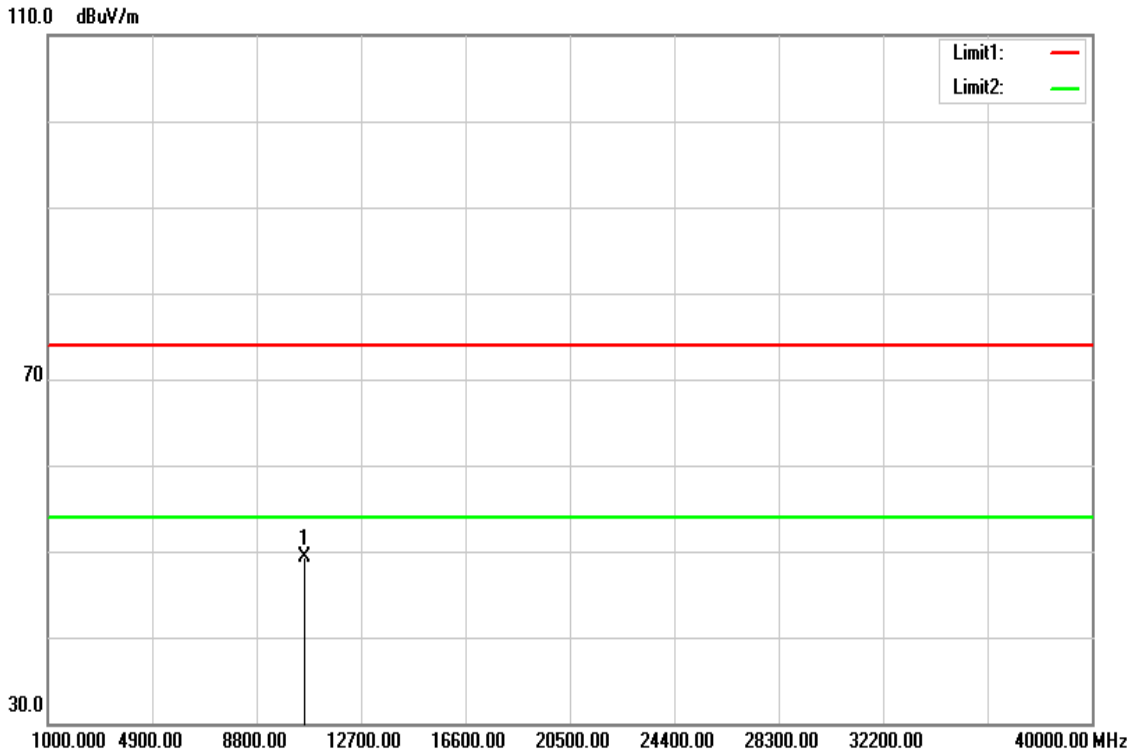
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
10580.000	33.34	15.10	48.44	74.00	-25.56	peak
N/A						

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 802.11ac VHT80 / 5290 MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 13, 2017
Polarize	Horizontal	Test Engineer	Kevin Kuo
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	34.11	15.10	49.21	74.00	-24.79	peak
N/A						

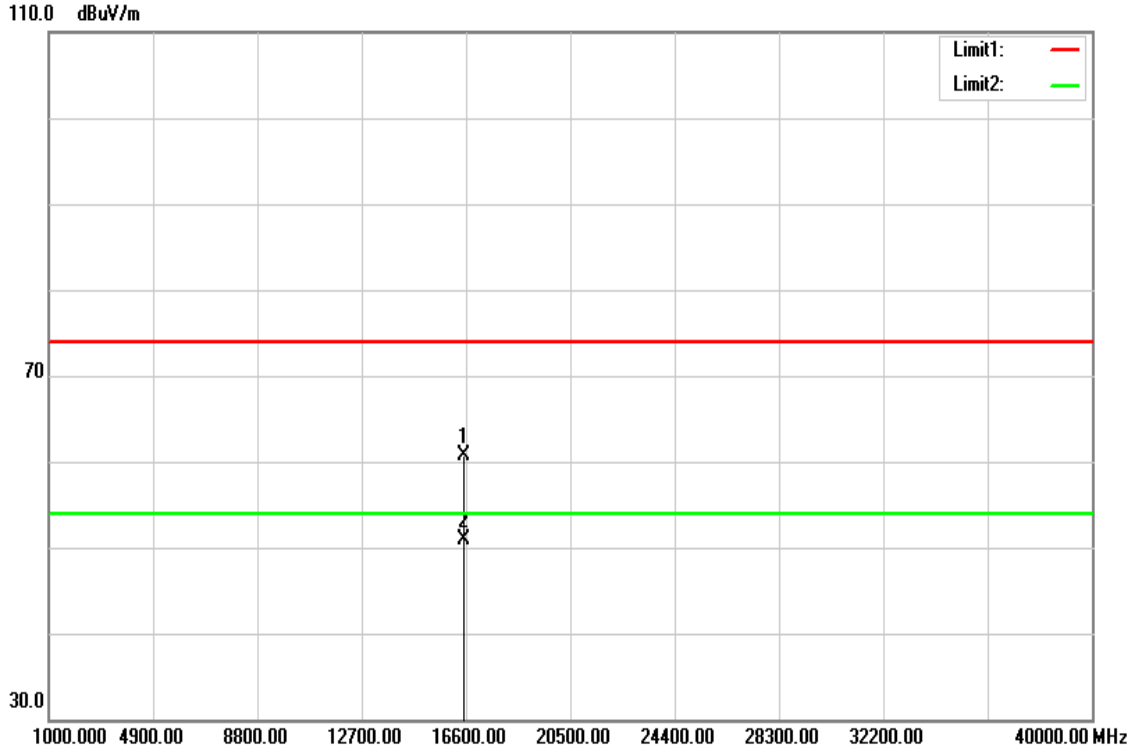
Remark:

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.

Above 1G Test Data for UNII-2c

Test Mode	IEEE 802.11a / 5500 MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 5, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



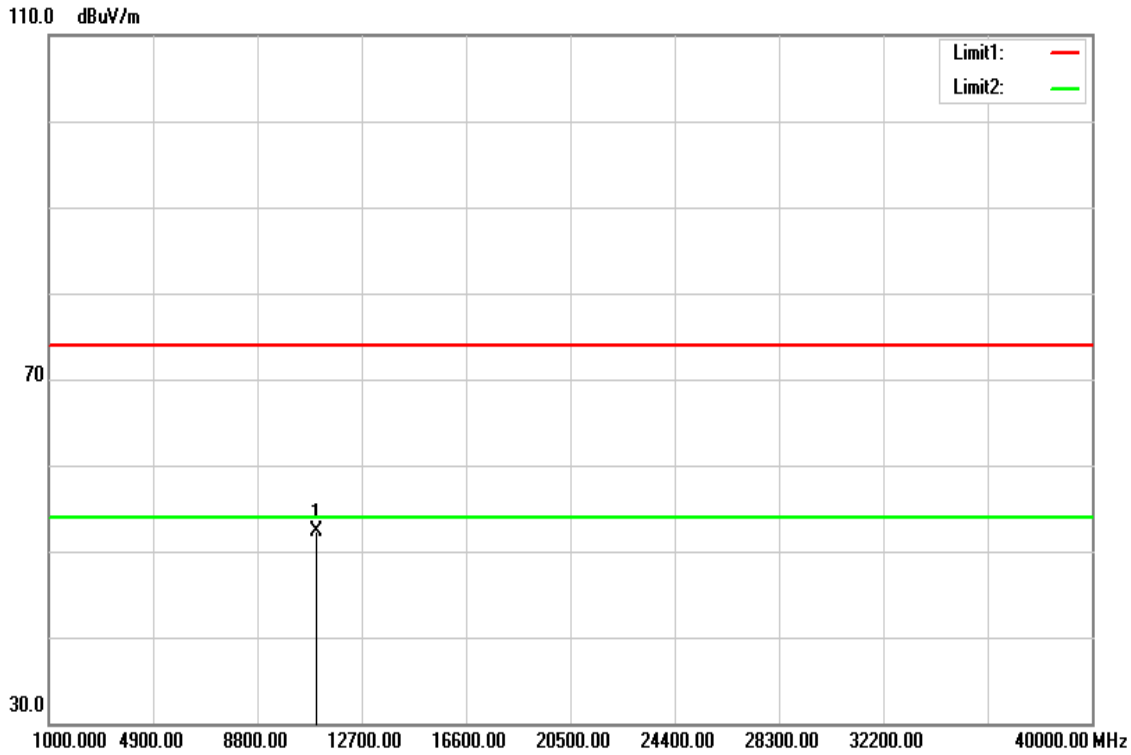
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
16500.000	37.68	23.01	60.69	74.00	-13.31	peak
16500.000	27.86	23.01	50.87	54.00	-3.13	AVG
N/A						

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	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 5, 2017
Polarize	Horizontal	Test Engineer	Kevin Kuo
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



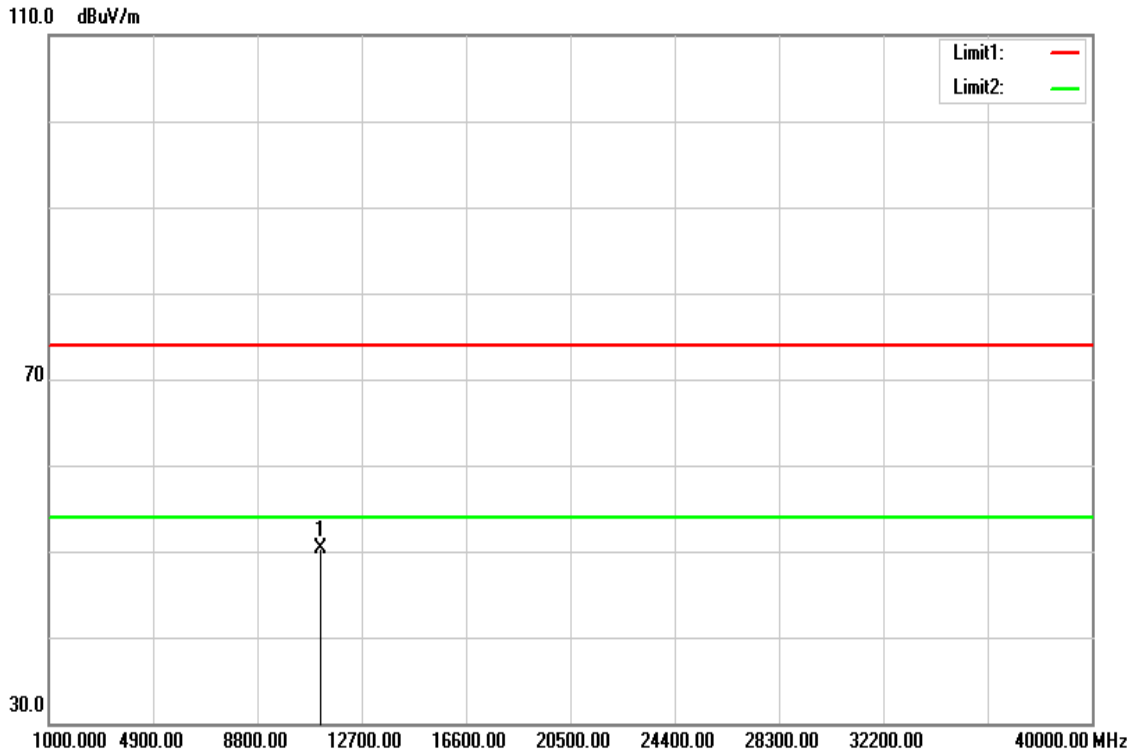
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11000.000	36.22	16.06	52.28	74.00	-21.72	peak
N/A						

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 802.11a / 5580 MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 4, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



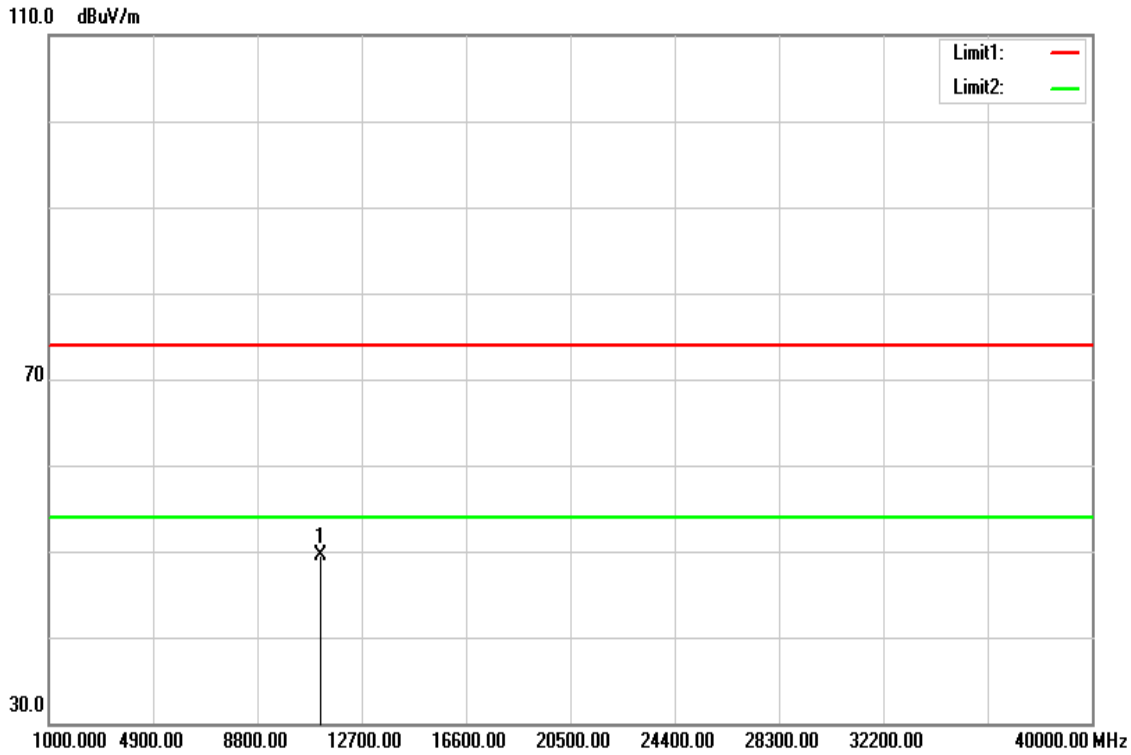
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11160.000	34.20	16.07	50.27	74.00	-23.73	peak
N/A						

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	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 4, 2017
Polarize	Horizontal	Test Engineer	Kevin Kuo
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



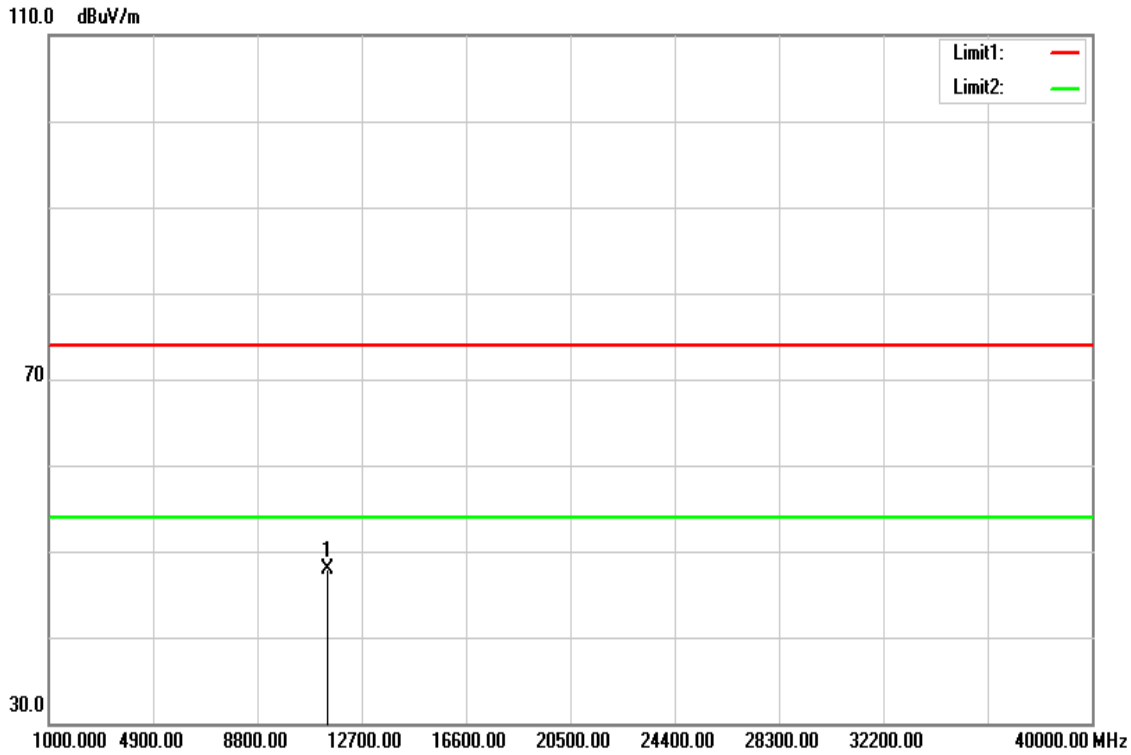
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11160.000	33.50	16.07	49.57	74.00	-24.43	peak
N/A						

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	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 4, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



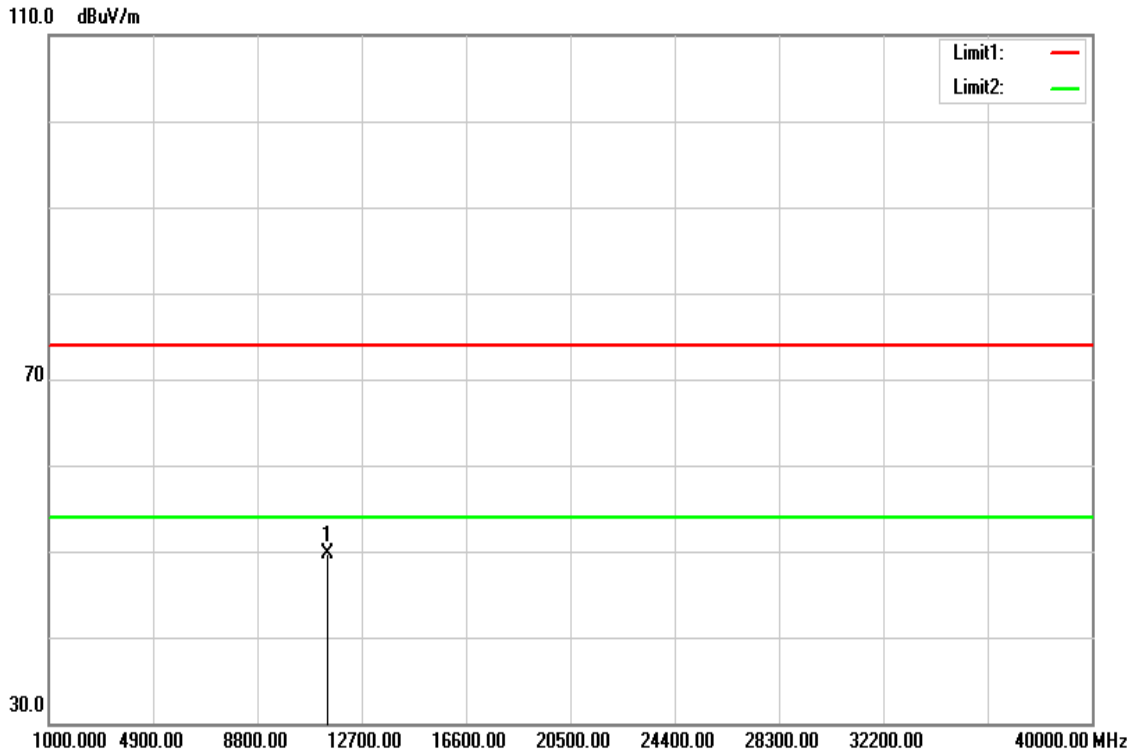
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11400.000	31.83	16.08	47.91	74.00	-26.09	peak
N/A						

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 802.11a / 5700 MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 4, 2017
Polarize	Horizontal	Test Engineer	Kevin Kuo
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



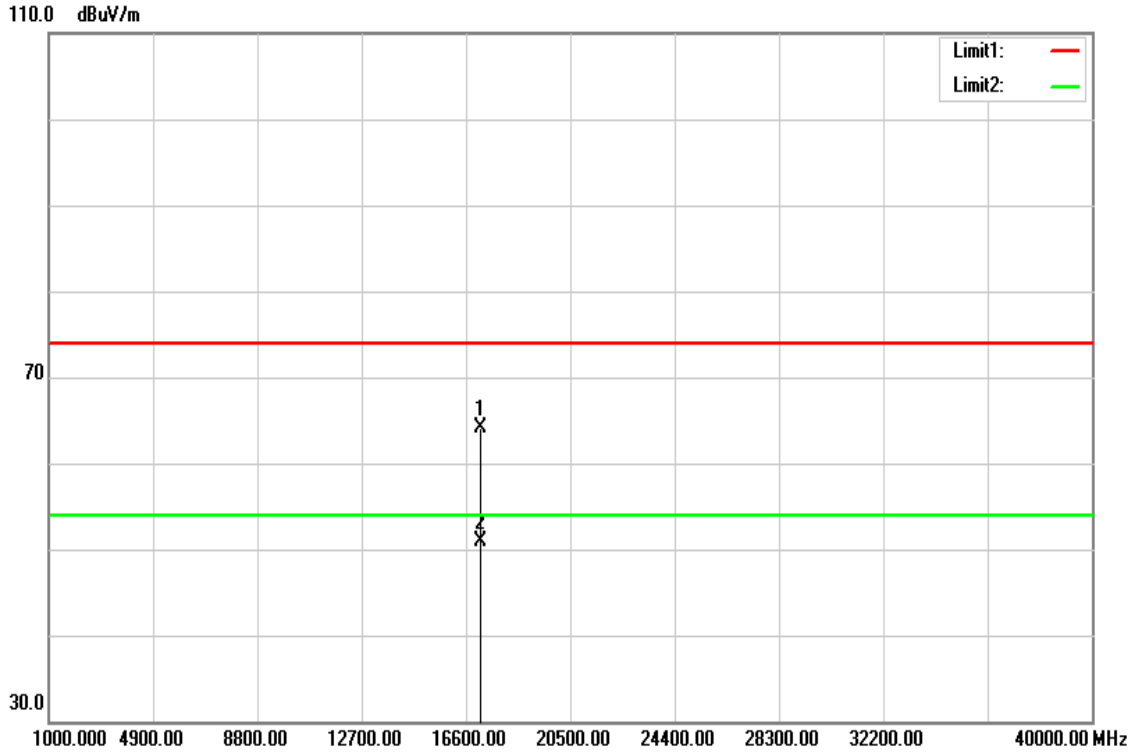
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11400.000	33.54	16.08	49.62	74.00	-24.38	peak
N/A						

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 / 5720 MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 4, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



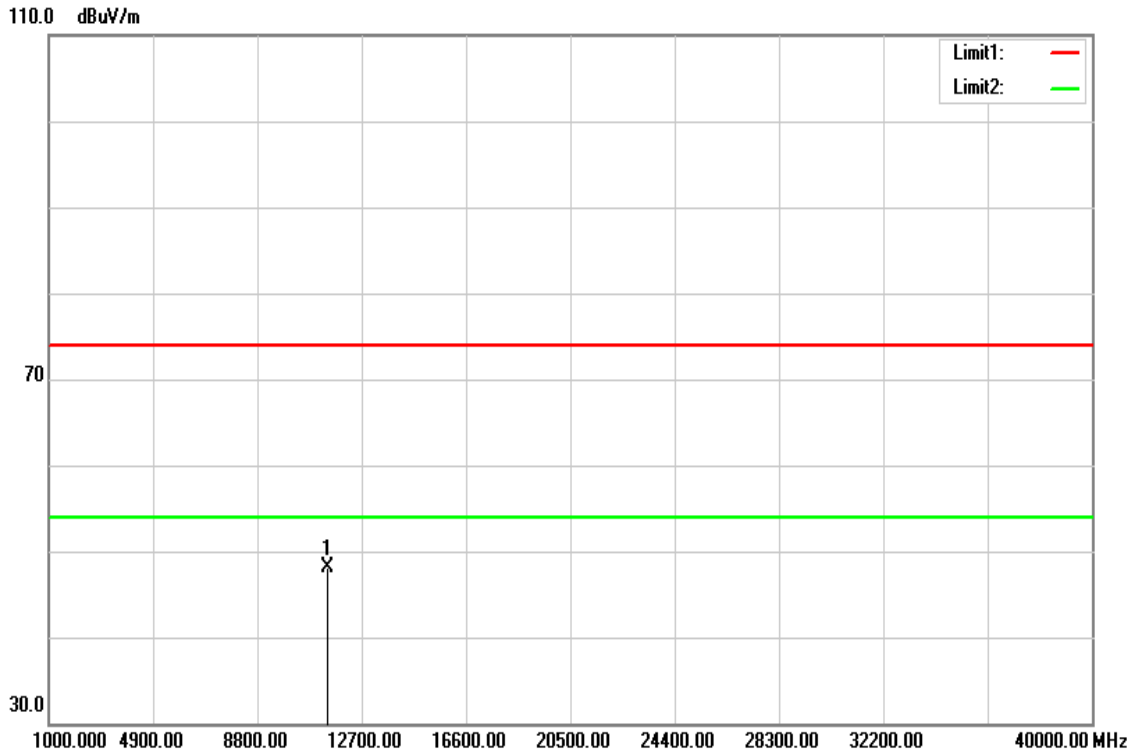
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
17160.000	35.68	28.35	64.03	74.00	-9.97	peak
17160.000	22.56	28.35	50.91	54.00	-3.09	AVG
N/A						

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 / 5720 MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 4, 2017
Polarize	Horizontal	Test Engineer	Kevin Kuo
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



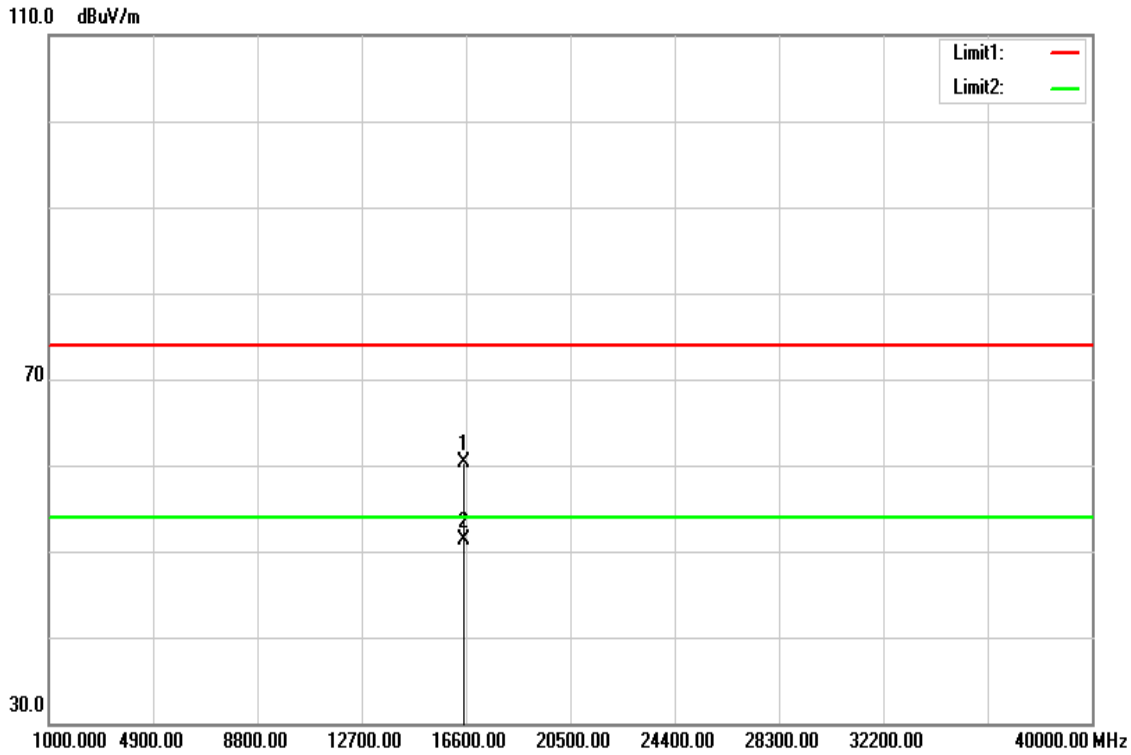
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11440.000	32.08	16.09	48.17	74.00	-25.83	peak
N/A						

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 HT20 / 5500 MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 4, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



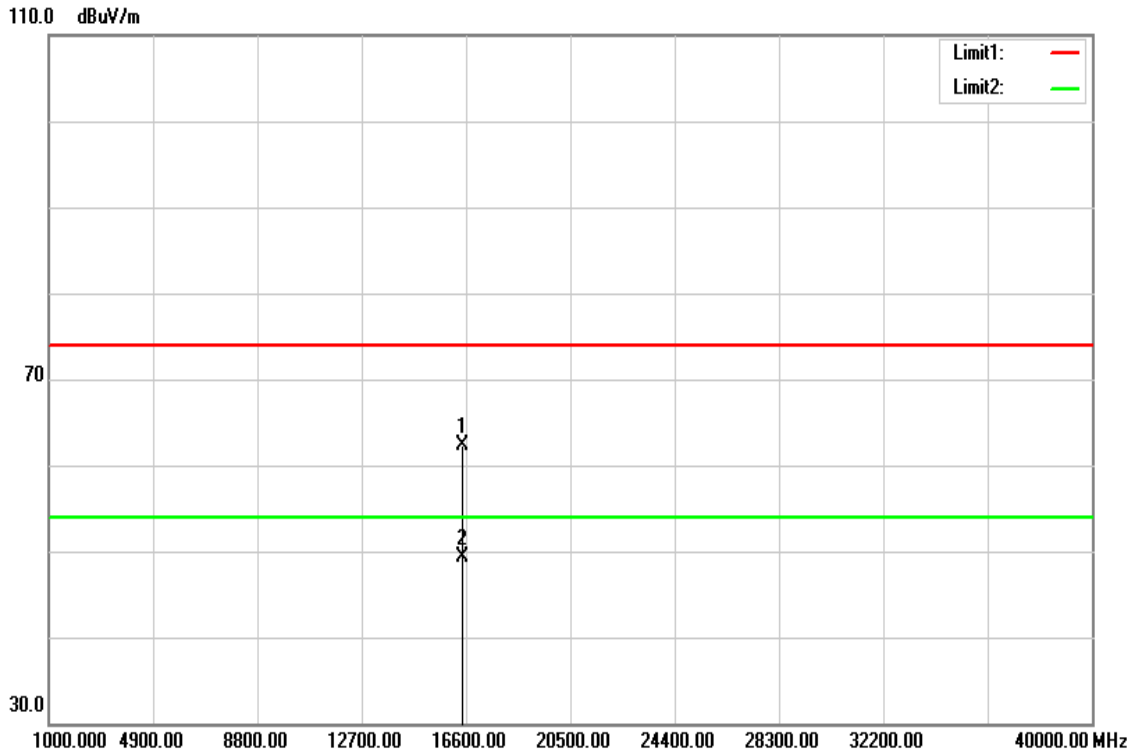
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
16500.000	37.30	23.01	60.31	74.00	-13.69	peak
16500.000	28.33	23.01	51.34	54.00	-2.66	AVG
N/A						

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 HT20 / 5500 MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 4, 2017
Polarize	Horizontal	Test Engineer	Kevin Kuo
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



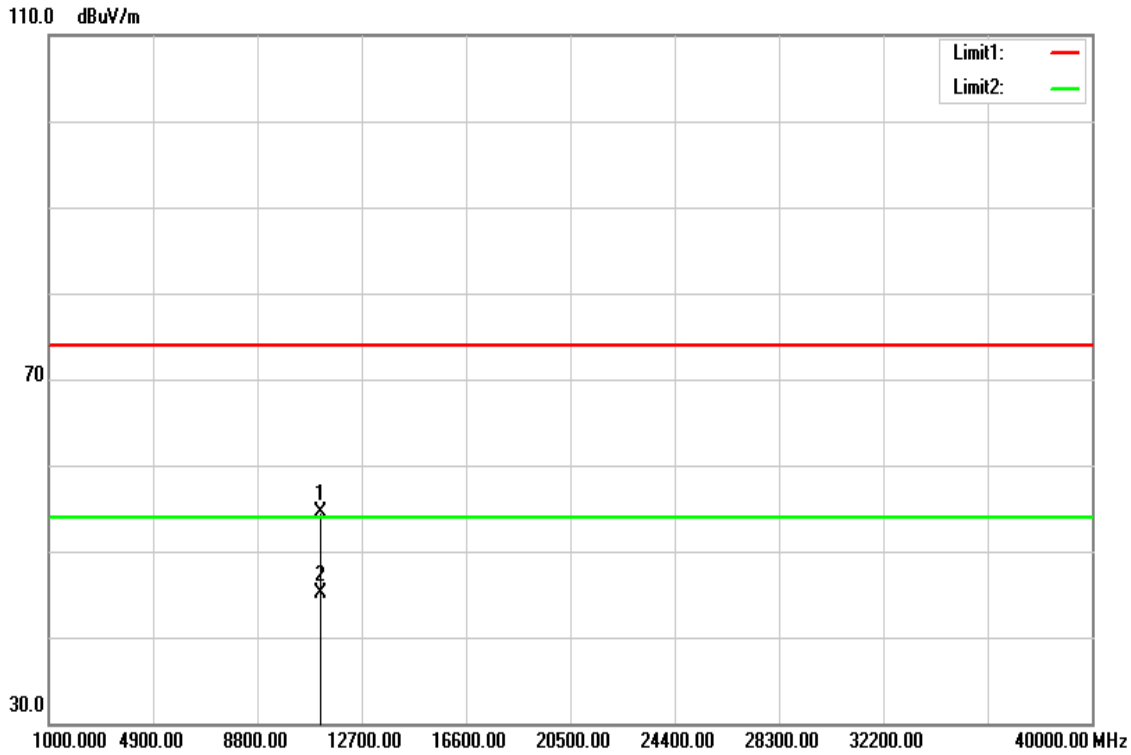
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
16490.000	39.30	22.95	62.25	74.00	-11.75	peak
16490.000	26.37	22.95	49.32	54.00	-4.68	AVG
N/A						

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 HT20 / 5580 MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 5, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



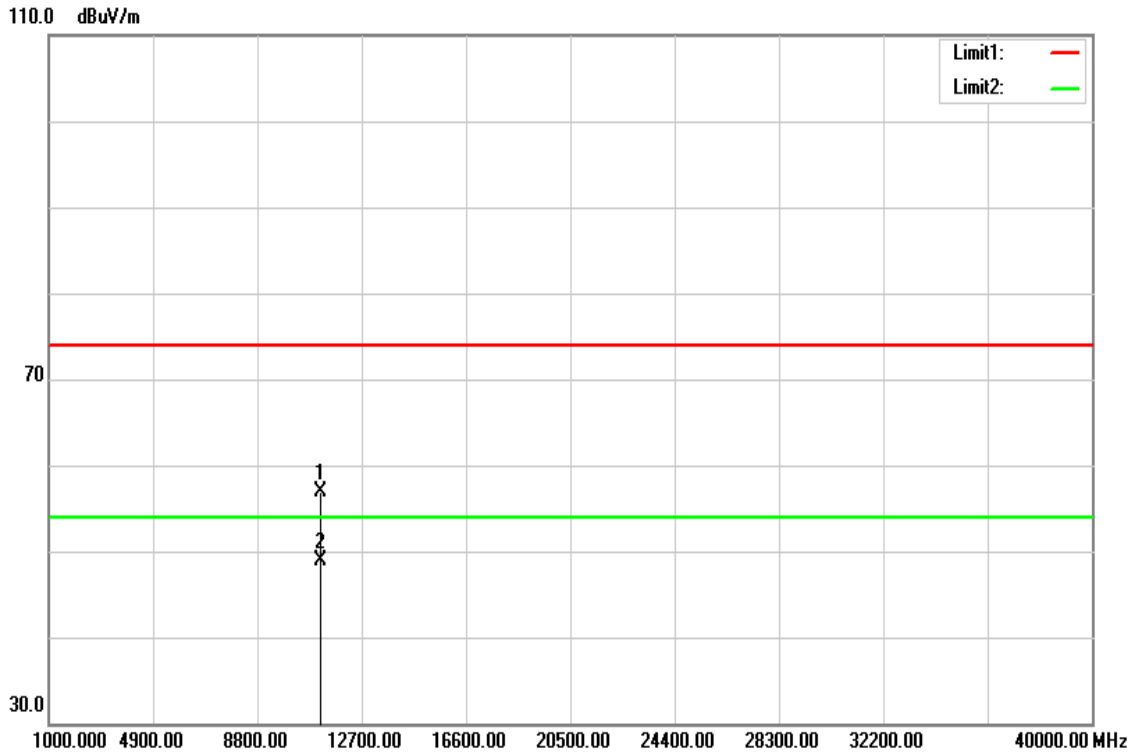
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11160.000	38.53	16.07	54.60	74.00	-19.40	peak
11160.000	29.03	16.07	45.10	54.00	-8.90	AVG
N/A						

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 HT20 / 5580 MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 5, 2017
Polarize	Horizontal	Test Engineer	Kevin Kuo
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



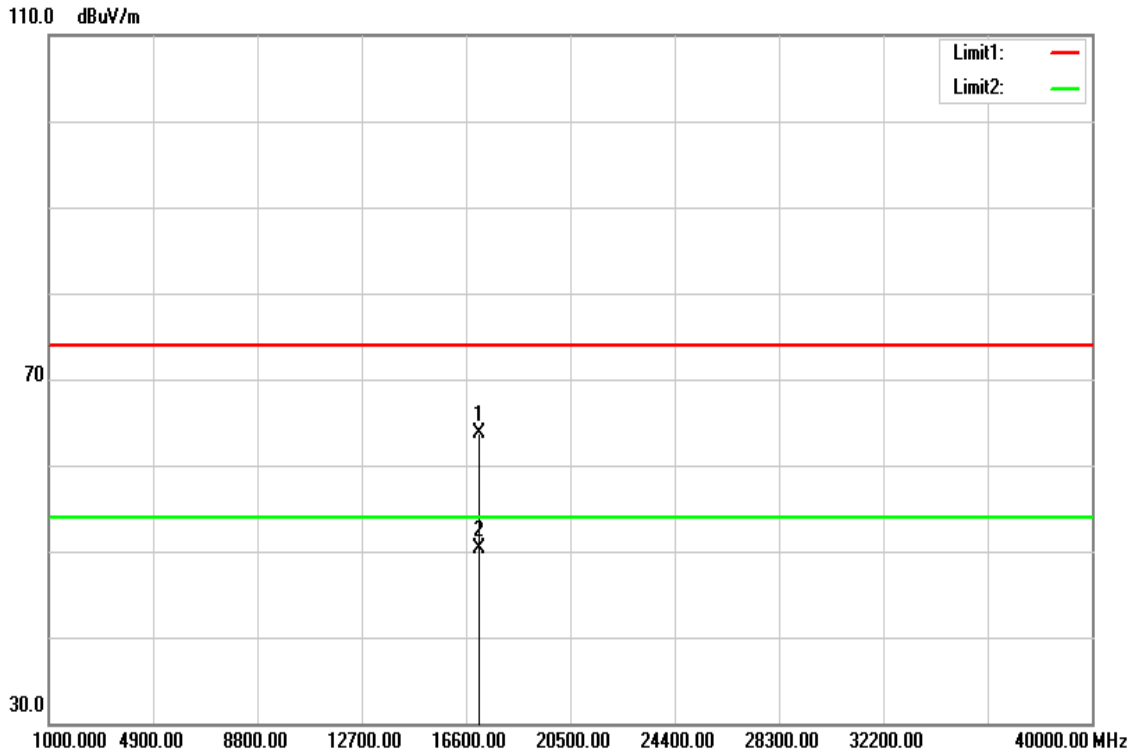
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11160.000	40.80	16.07	56.87	74.00	-17.13	peak
11160.000	32.87	16.07	48.94	54.00	-5.06	AVG
N/A						

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 HT20 / 5700 MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 4, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



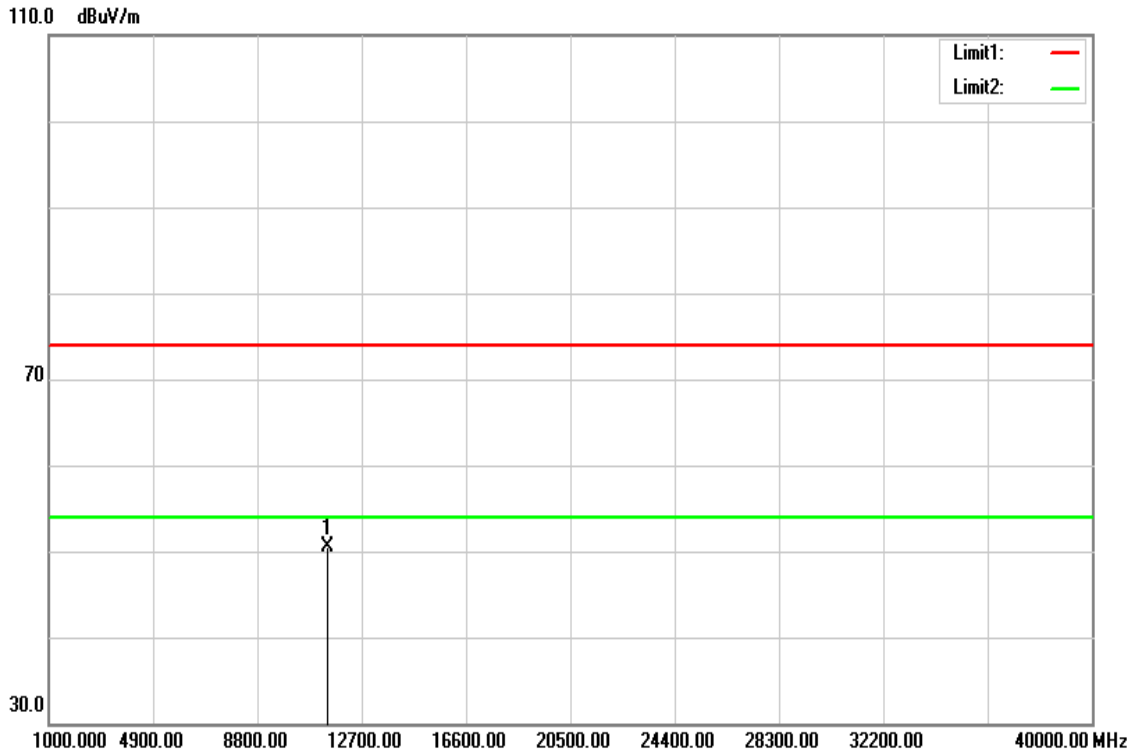
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
17110.000	35.52	28.19	63.71	74.00	-10.29	peak
17110.000	22.20	28.19	50.39	54.00	-3.61	AVG
N/A						

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 HT20 / 5700 MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 4, 2017
Polarize	Horizontal	Test Engineer	Kevin Kuo
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



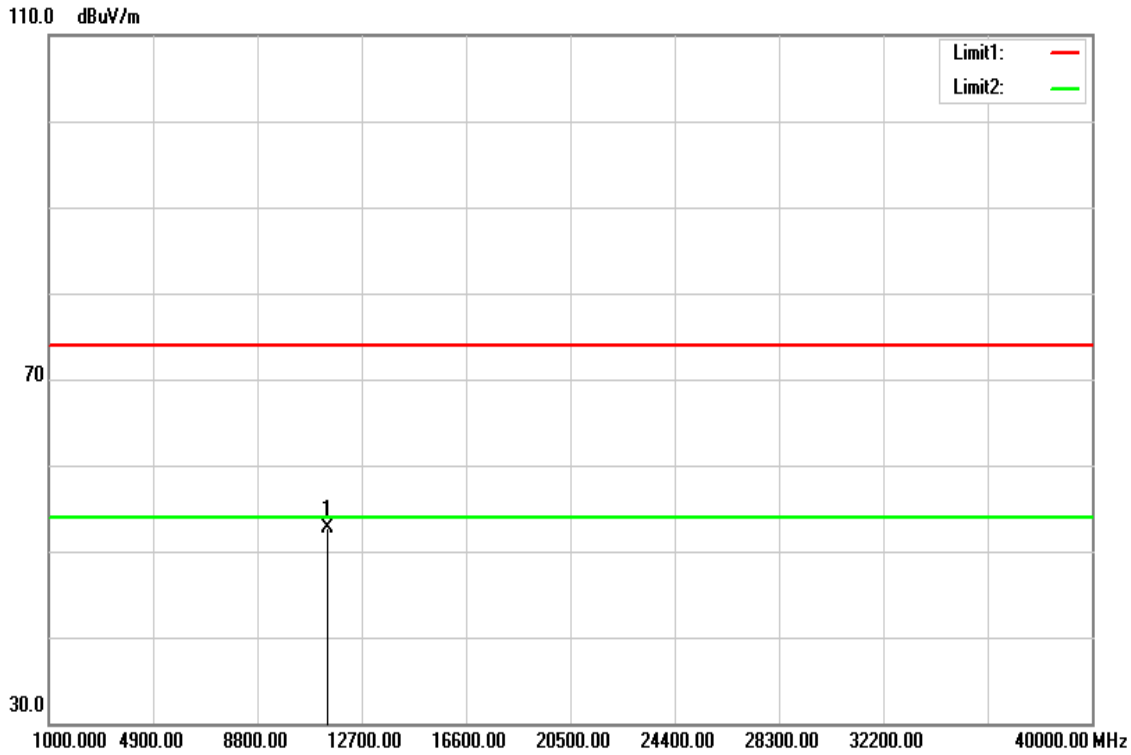
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11400.000	34.38	16.08	50.46	74.00	-23.54	peak
N/A						

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 HT20 / 5720 MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 4, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



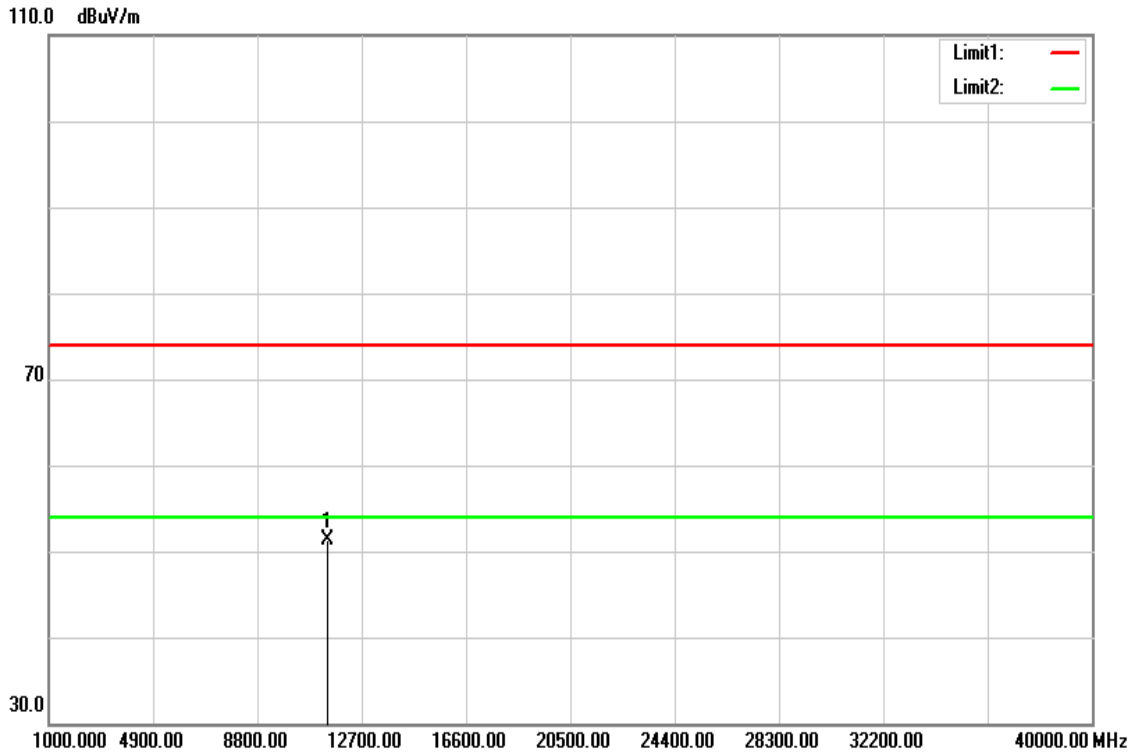
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11450.000	36.52	16.09	52.61	54.00	-1.39	AVG
N/A						

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 HT20 / 5720 MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 4, 2017
Polarize	Horizontal	Test Engineer	Kevin Kuo
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



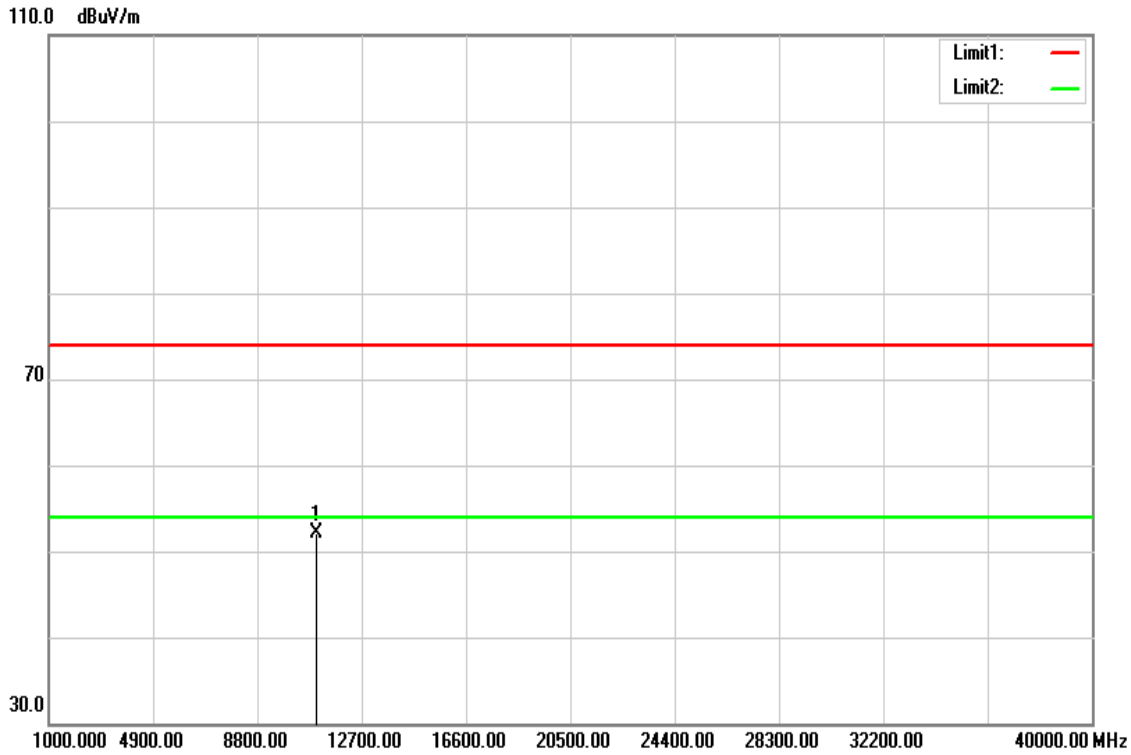
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11440.000	35.20	16.09	51.29	54.00	-2.71	AVG
N/A						

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 HT40 / 5510 MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 4, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



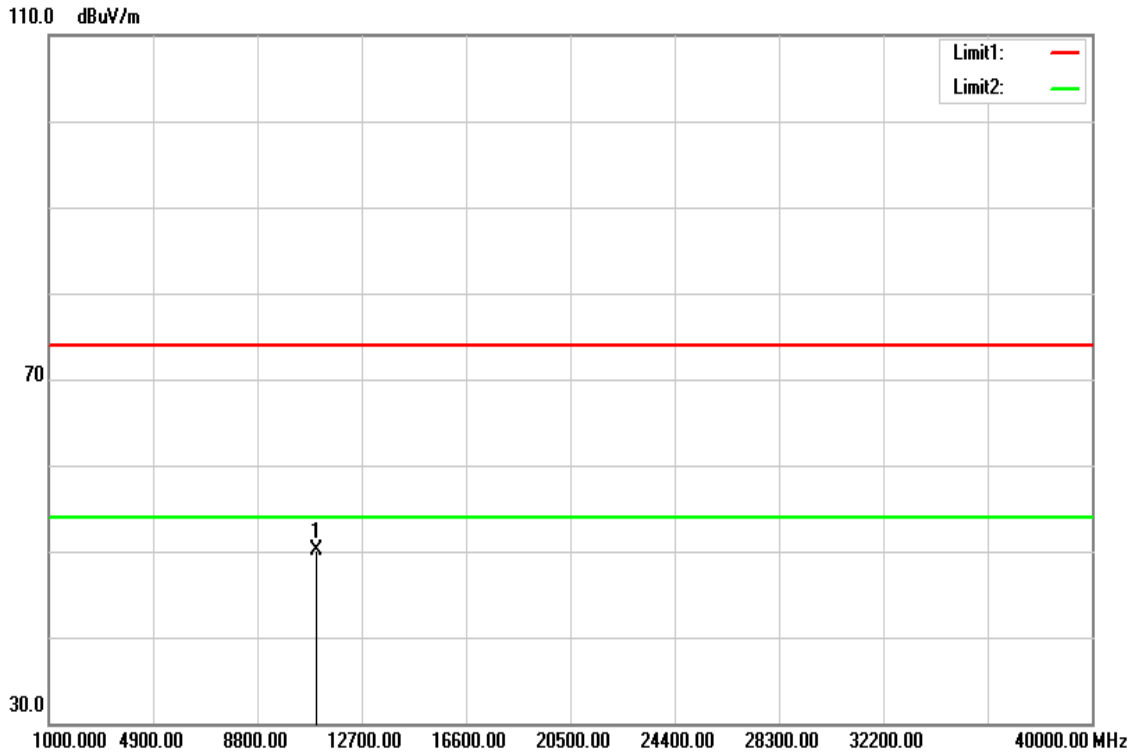
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11020.000	36.10	16.05	52.15	74.00	-21.85	peak
N/A						

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 HT40 / 5510 MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 4, 2017
Polarize	Horizontal	Test Engineer	Kevin Kuo
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



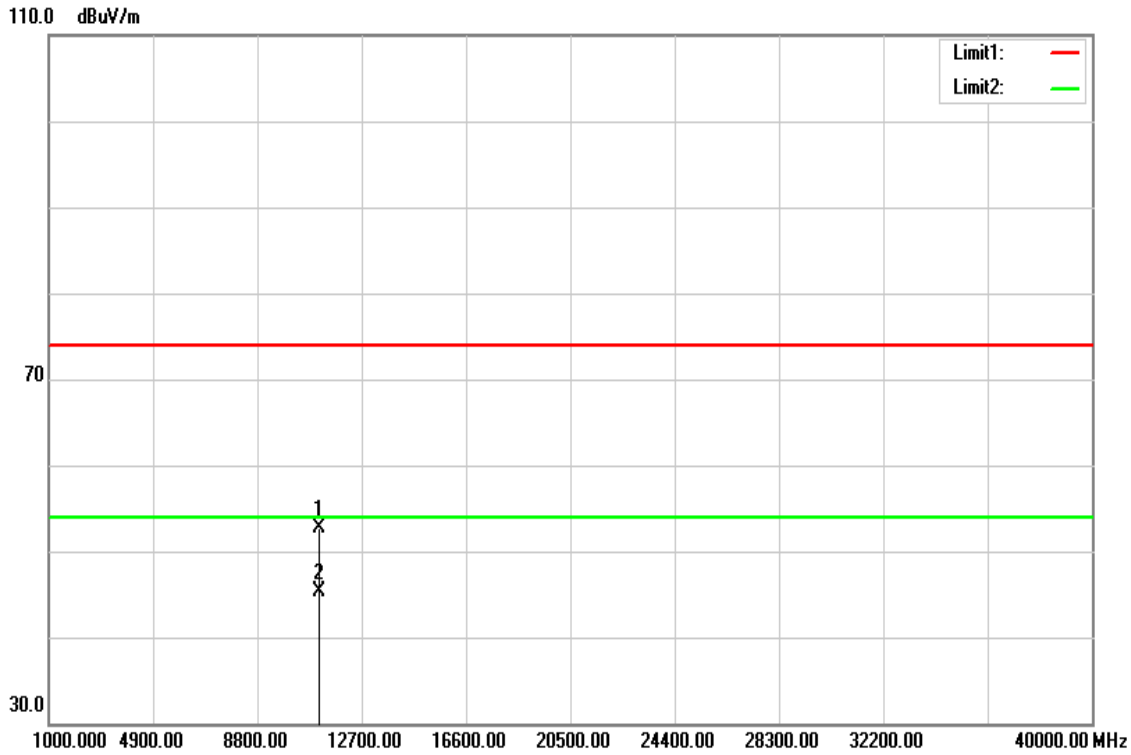
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11020.000	34.00	16.05	50.05	74.00	-23.95	peak
N/A						

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 HT40 / 5550 MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 5, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



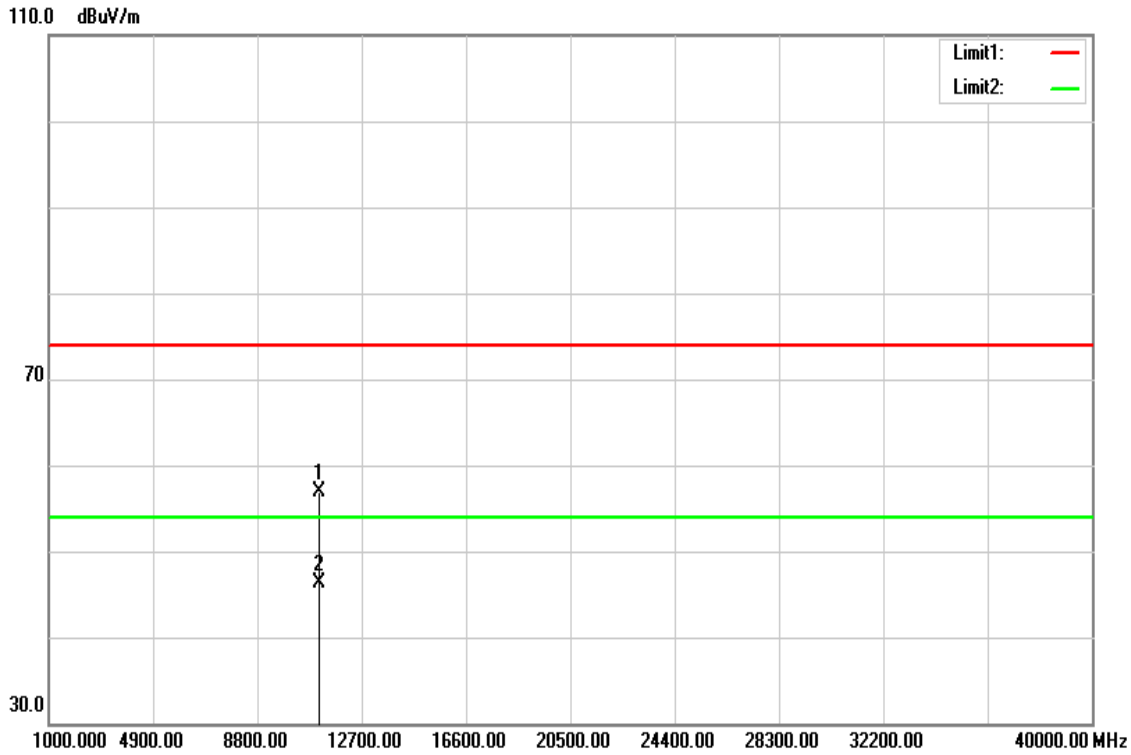
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11100.000	36.60	16.07	52.67	74.00	-21.33	peak
11100.000	29.30	16.07	45.37	54.00	-8.63	AVG
N/A						

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 HT40 / 5550 MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 5, 2017
Polarize	Horizontal	Test Engineer	Kevin Kuo
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



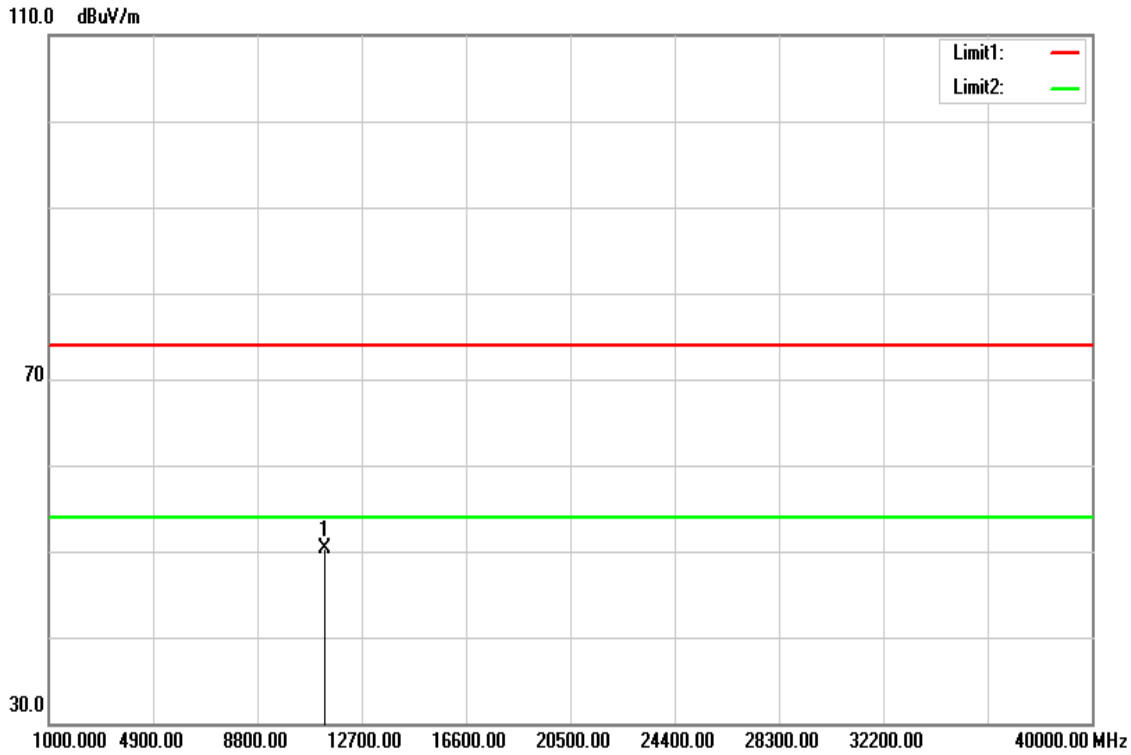
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11090.000	40.91	16.07	56.98	74.00	-17.02	peak
11090.000	30.30	16.07	46.37	54.00	-7.63	AVG
N/A						

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 HT40 / 5670 MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 4, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



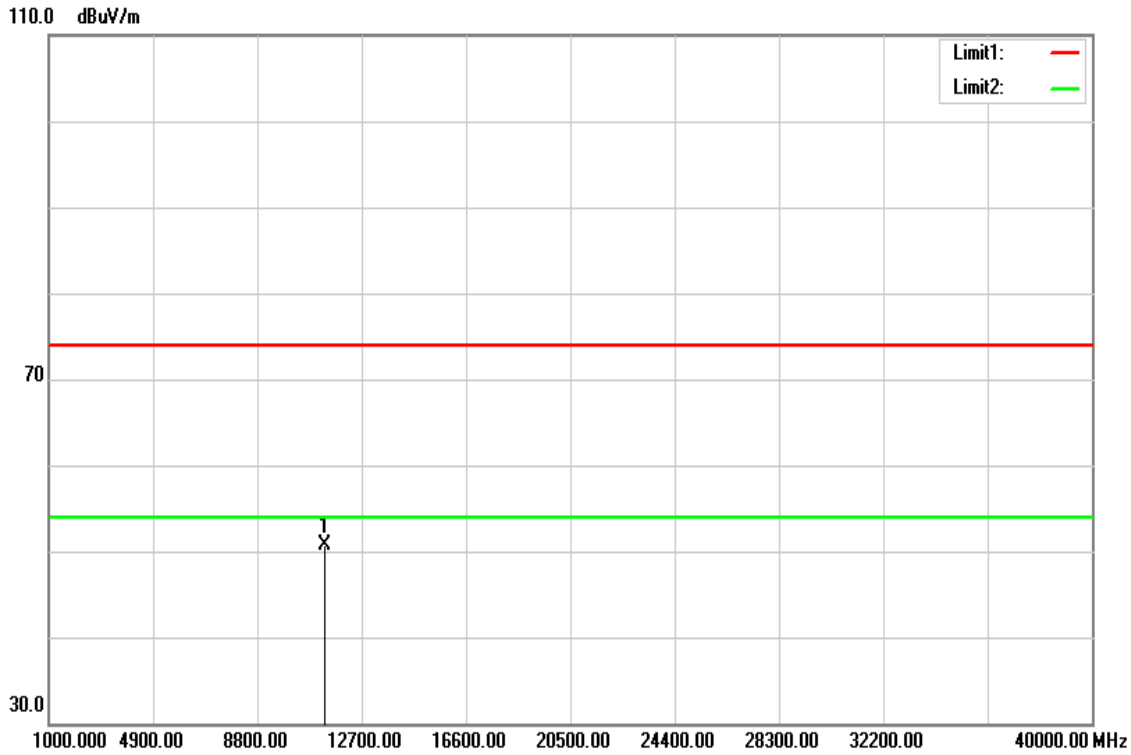
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11340.000	34.24	16.08	50.32	74.00	-23.68	peak
N/A						

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.

Test Mode	IEEE 802.11n HT40 / 5670 MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 4, 2017
Polarize	Horizontal	Test Engineer	Kevin Kuo
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



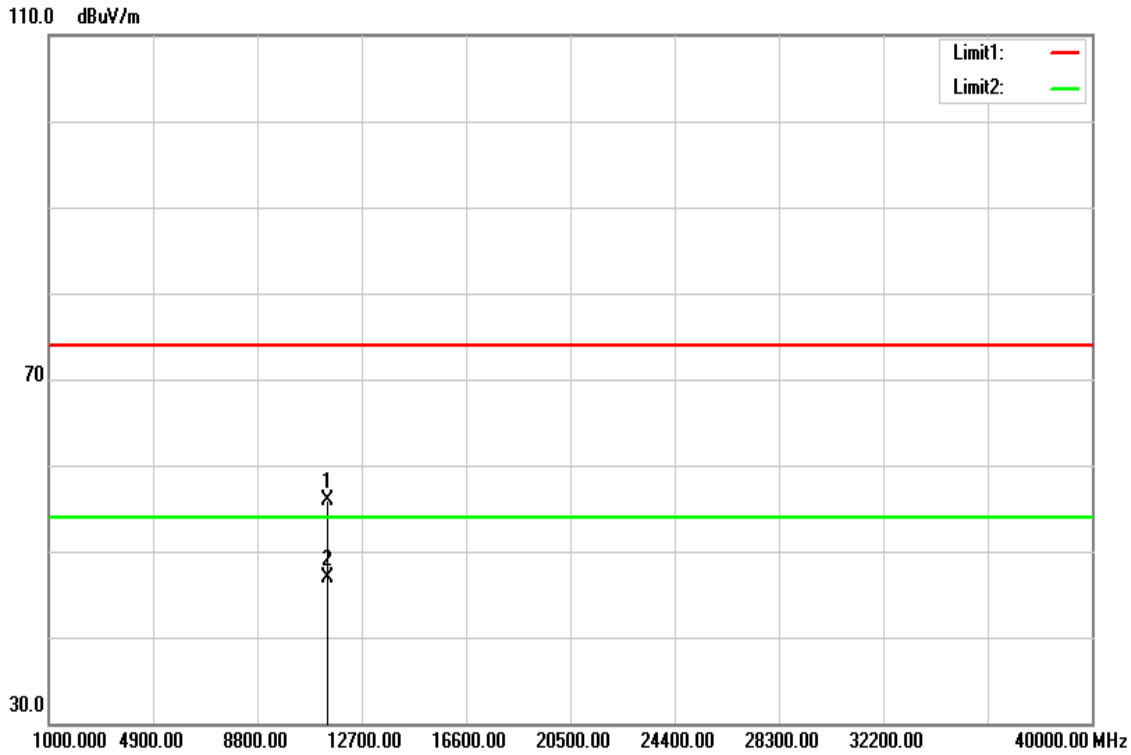
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11340.000	34.64	16.08	50.72	74.00	-23.28	peak
N/A						

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 HT40 / 5710 MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 4, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



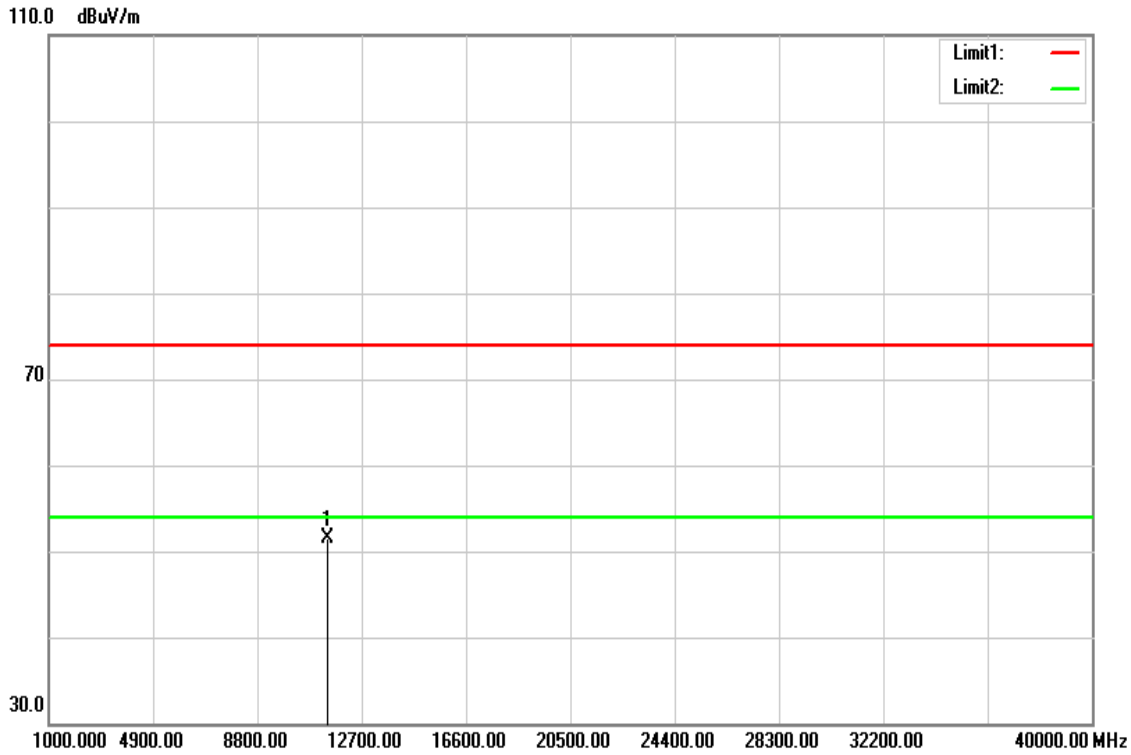
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11420.000	39.90	16.08	55.98	74.00	-18.02	peak
11420.000	30.85	16.08	46.93	54.00	-7.07	AVG
N/A						

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 HT40 / 5710 MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 4, 2017
Polarize	Horizontal	Test Engineer	Kevin Kuo
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



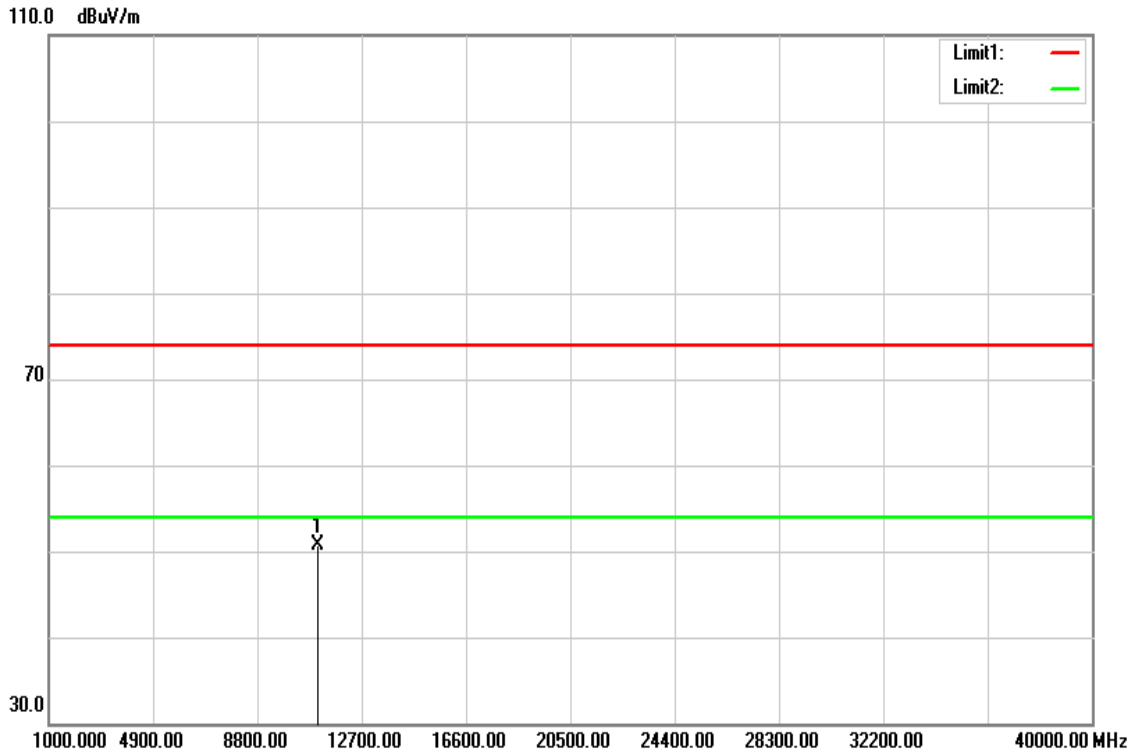
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11410.000	35.34	16.08	51.42	74.00	-22.58	peak
N/A						

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	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 4, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



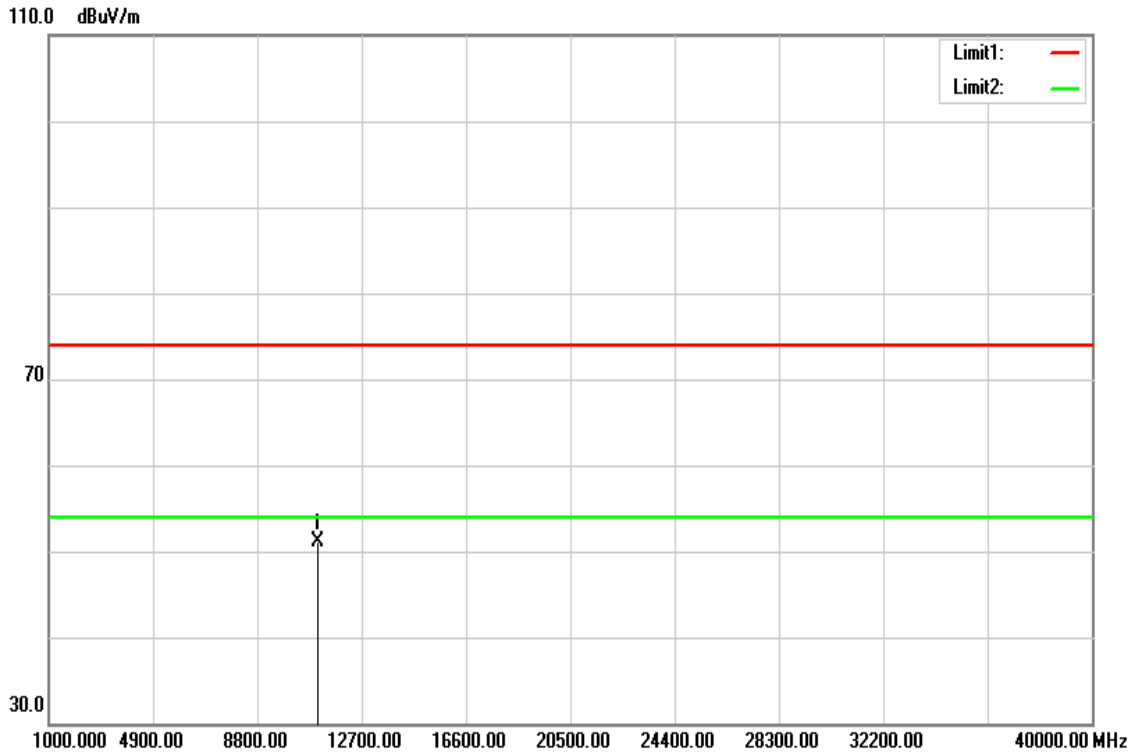
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11060.000	34.61	16.06	50.67	74.00	-23.33	peak
N/A						

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	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 4, 2017
Polarize	Horizontal	Test Engineer	Kevin Kuo
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



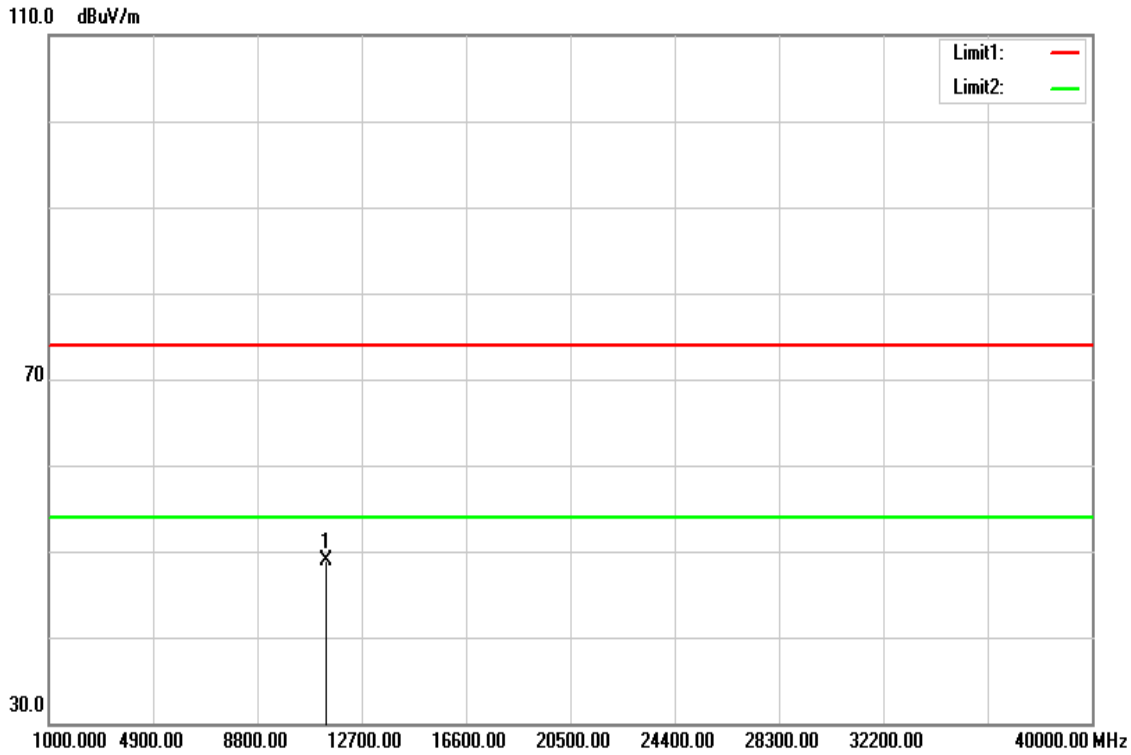
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11060.000	34.95	16.06	51.01	74.00	-22.99	peak
N/A						

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 802.11ac VHT80 / 5690 MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 4, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



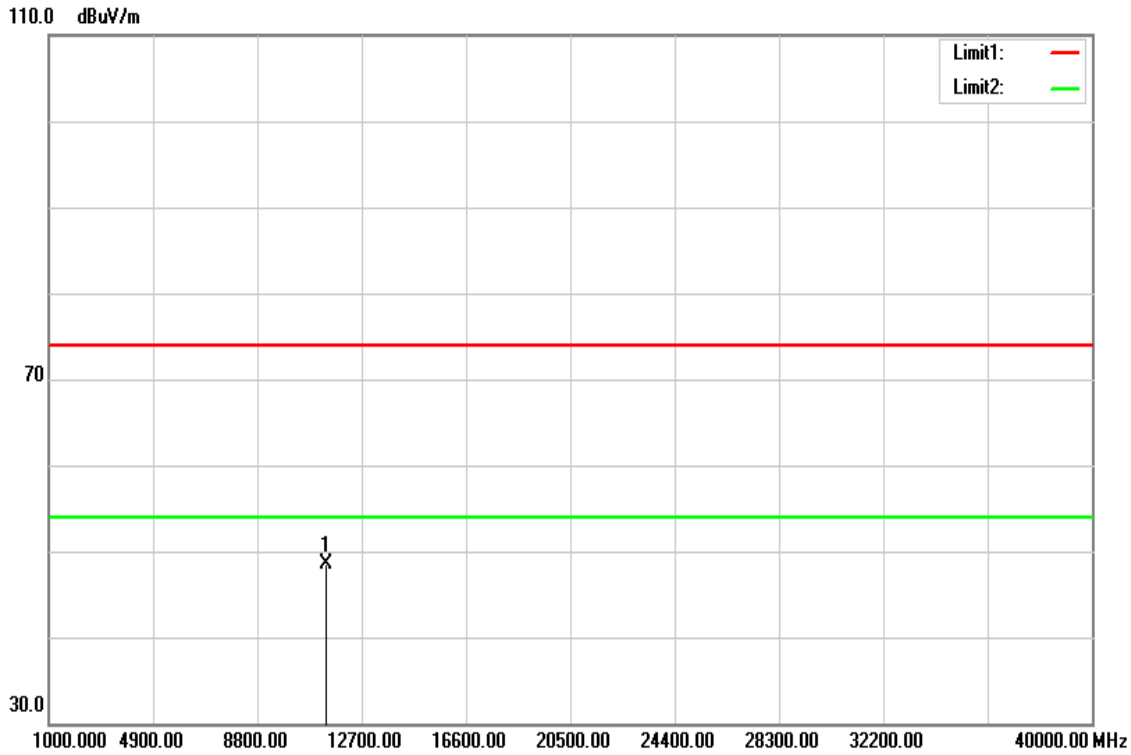
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11380.000	32.77	16.09	48.86	74.00	-25.14	peak
N/A						

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 / 5690 MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 4, 2017
Polarize	Horizontal	Test Engineer	Kevin Kuo
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
11380.000	32.51	16.09	48.60	74.00	-25.40	peak
N/A						

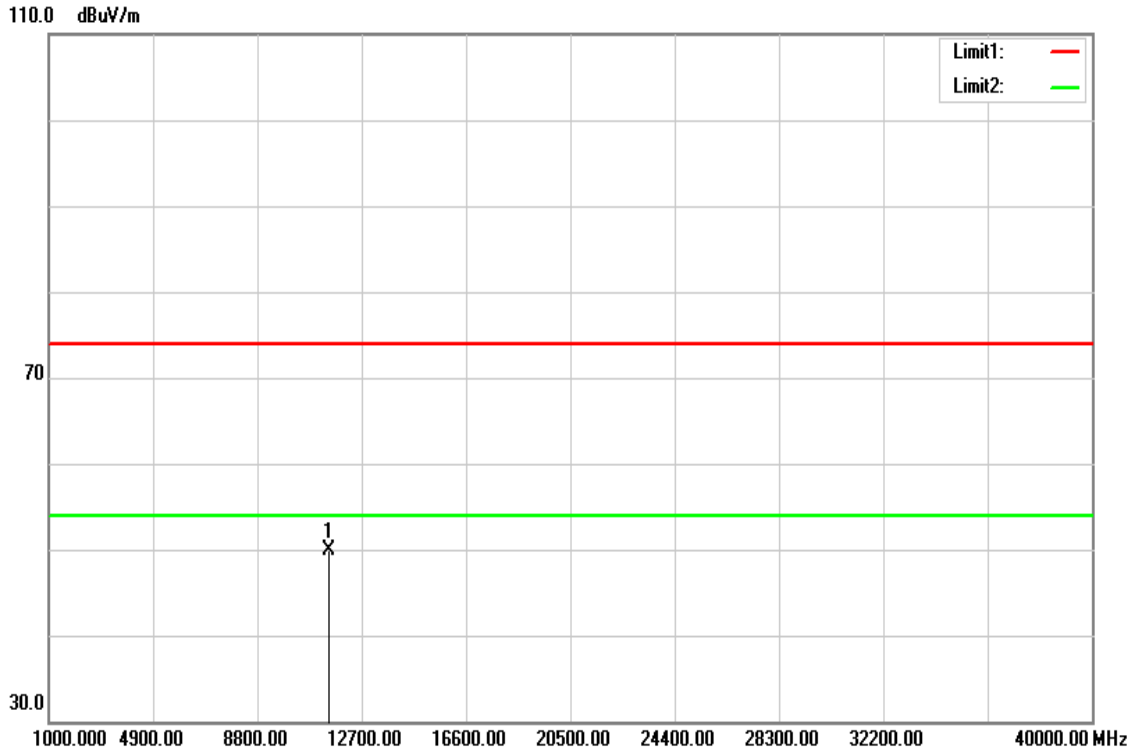
Remark:

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	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 4, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



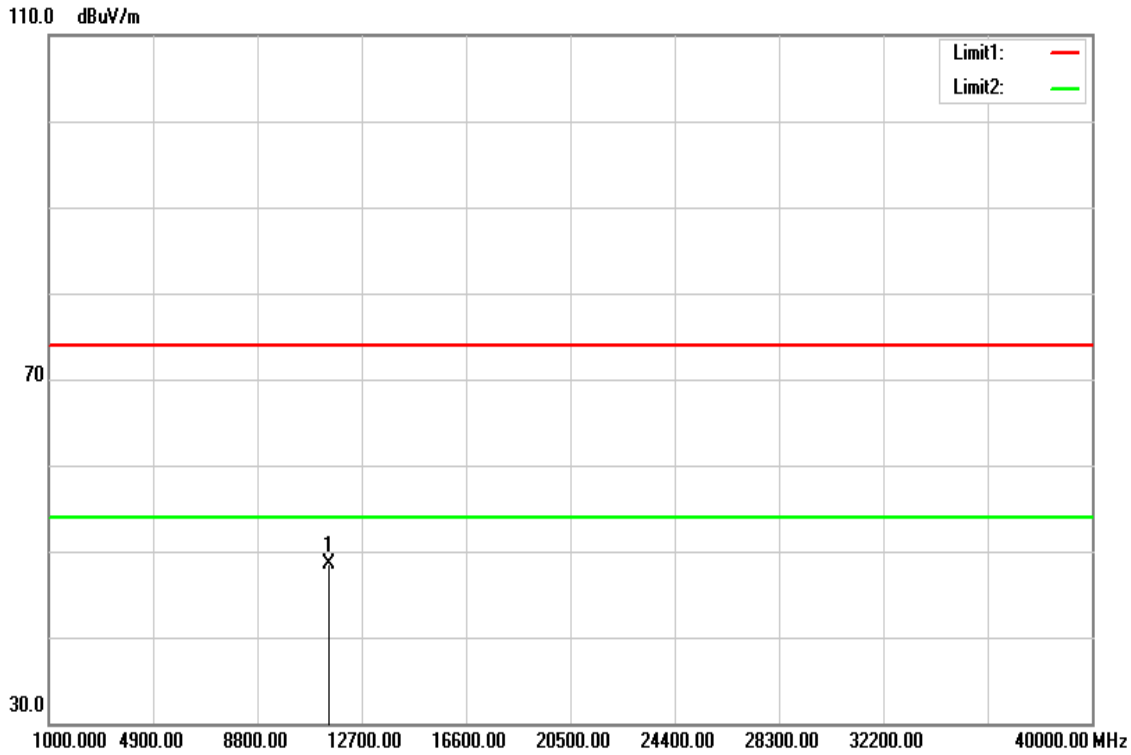
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11490.000	33.78	16.09	49.87	74.00	-24.13	peak
N/A						

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	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 4, 2017
Polarize	Horizontal	Test Engineer	Kevin Kuo
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



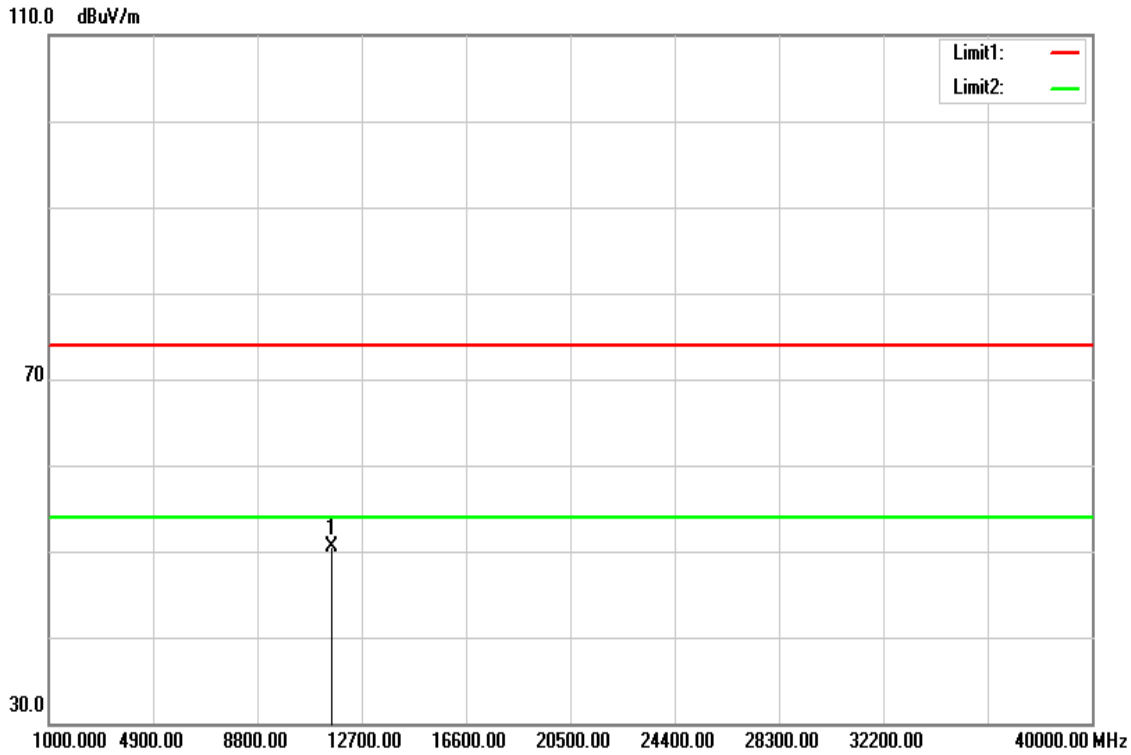
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11490.000	32.50	16.09	48.59	74.00	-25.41	peak
N/A						

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	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 4, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



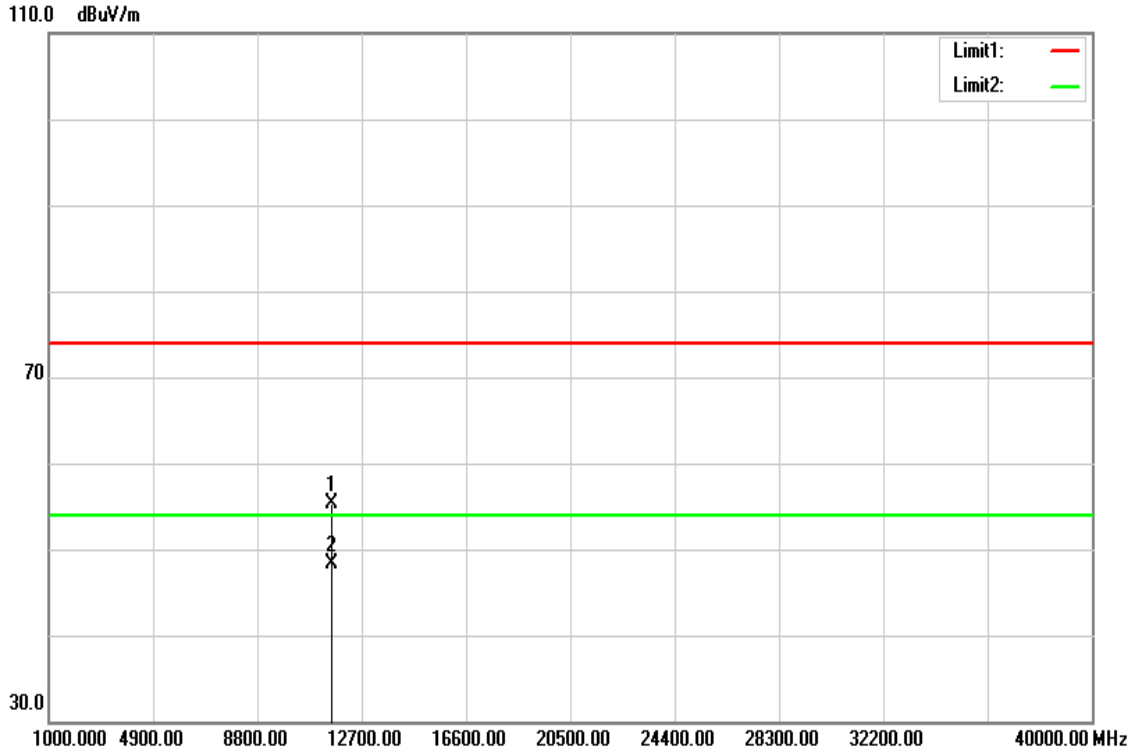
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11570.000	34.47	16.01	50.48	74.00	-23.52	peak
N/A						

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 802.11a / 5745 MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 4, 2017
Polarize	Horizontal	Test Engineer	Kevin Kuo
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



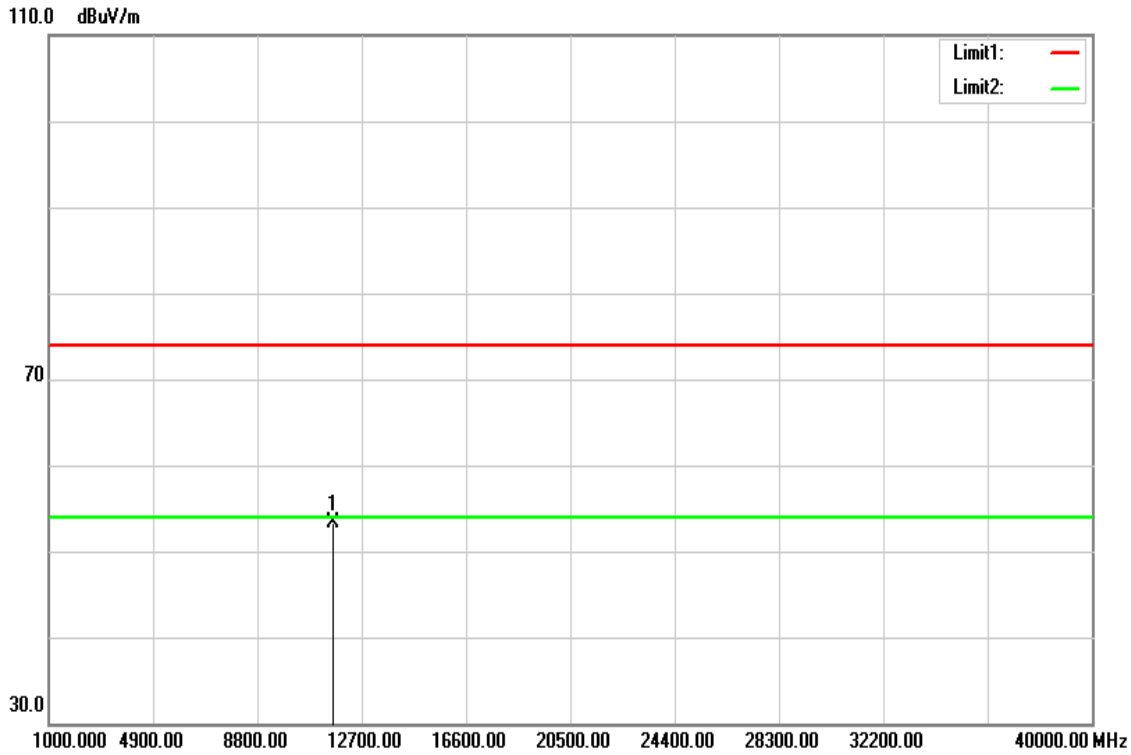
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11570.000	39.26	16.01	55.27	74.00	-18.73	peak
11570.000	32.27	16.01	48.28	54.00	-5.72	AVG
N/A						

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	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 4, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



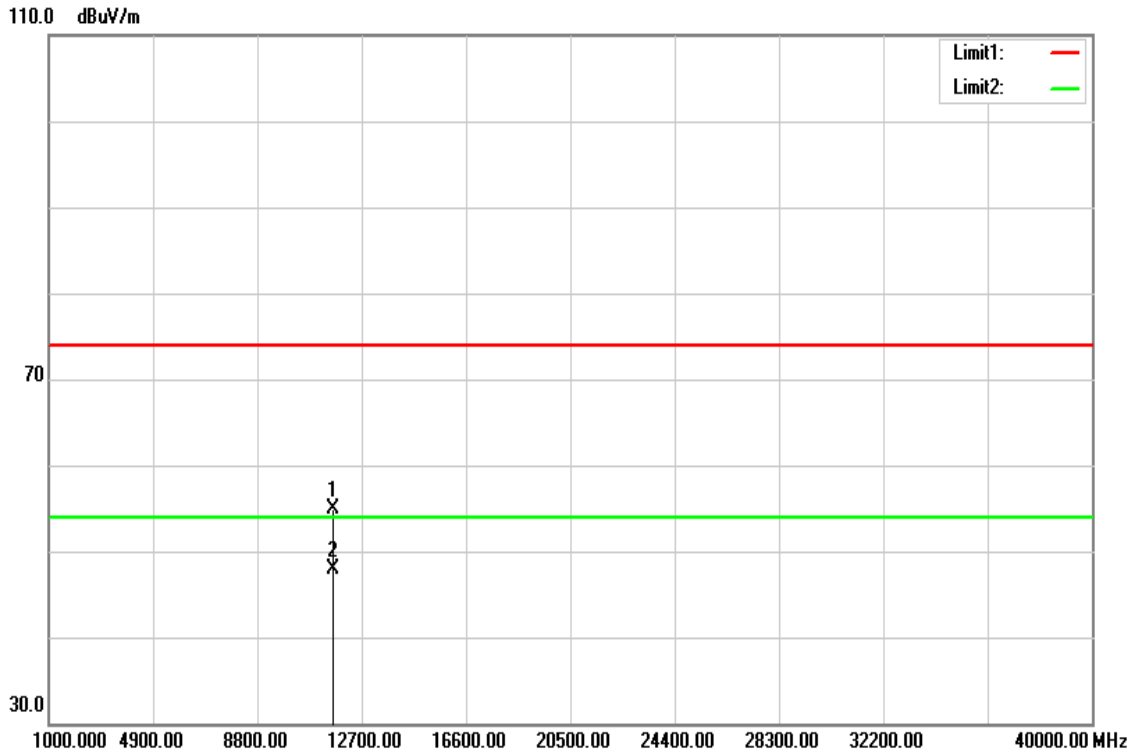
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11650.000	37.28	15.93	53.21	74.00	-20.79	peak
N/A						

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	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 5, 2017
Polarize	Horizontal	Test Engineer	Kevin Kuo
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



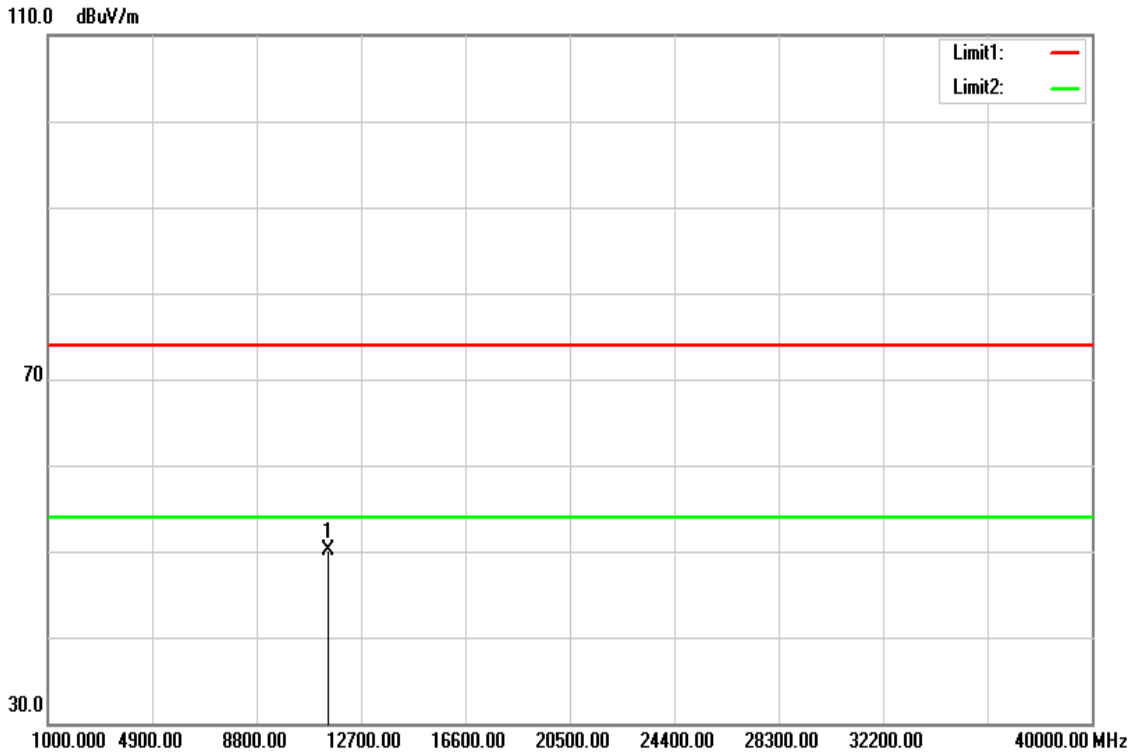
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11650.000	39.01	15.93	54.94	74.00	-19.06	peak
11650.000	32.05	15.93	47.98	54.00	-6.02	AVG
N/A						

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 HT20 / 5745 MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 13, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



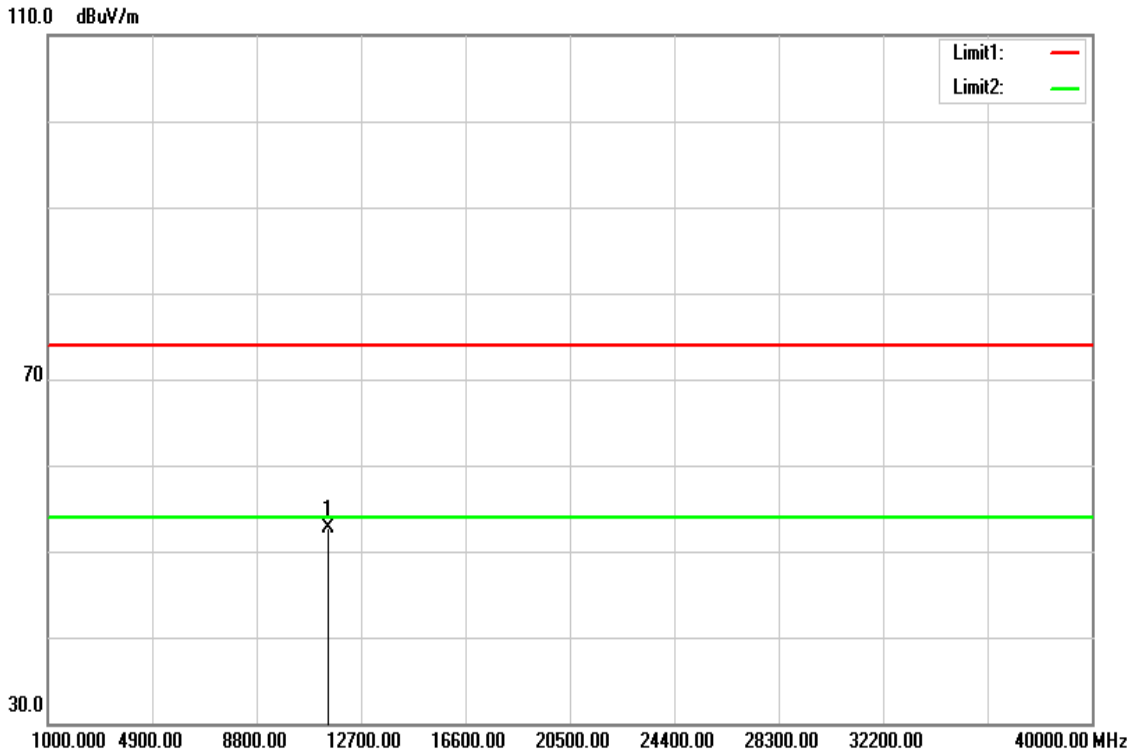
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11490.000	34.10	16.09	50.19	74.00	-23.81	peak
N/A						

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 HT20 / 5745 MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 13, 2017
Polarize	Horizontal	Test Engineer	Kevin Kuo
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



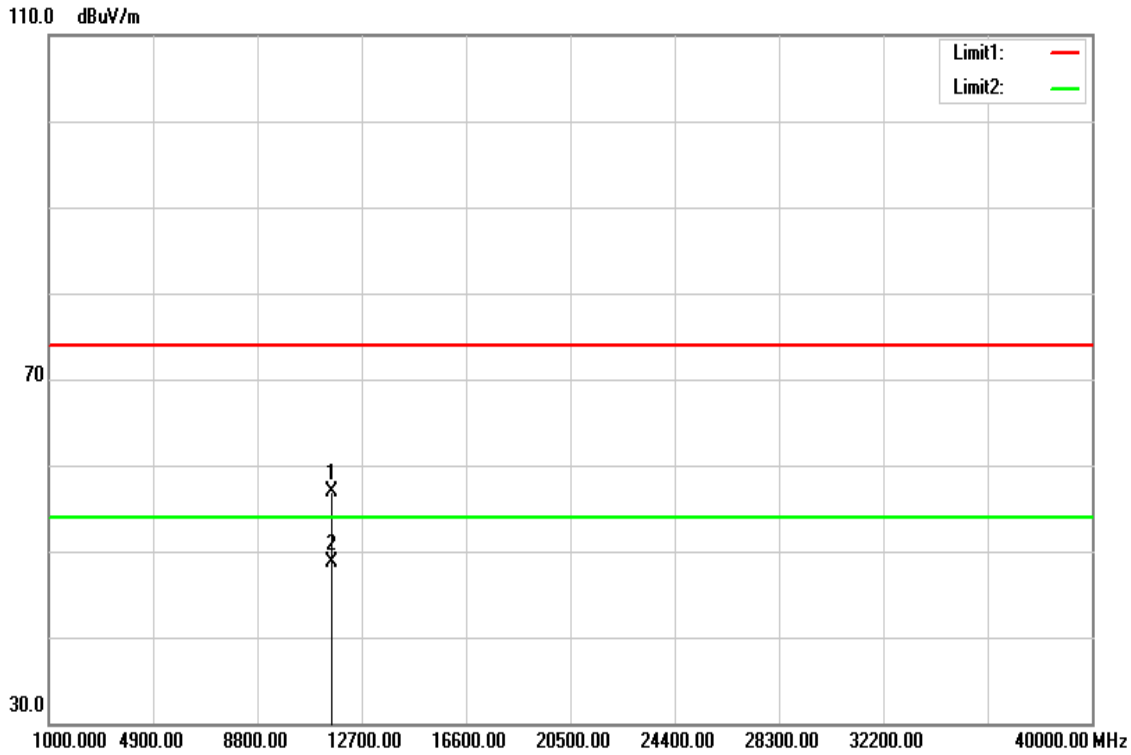
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11490.000	36.63	16.09	52.72	74.00	-21.28	peak
N/A						

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 HT20/ 5785 MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 5, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



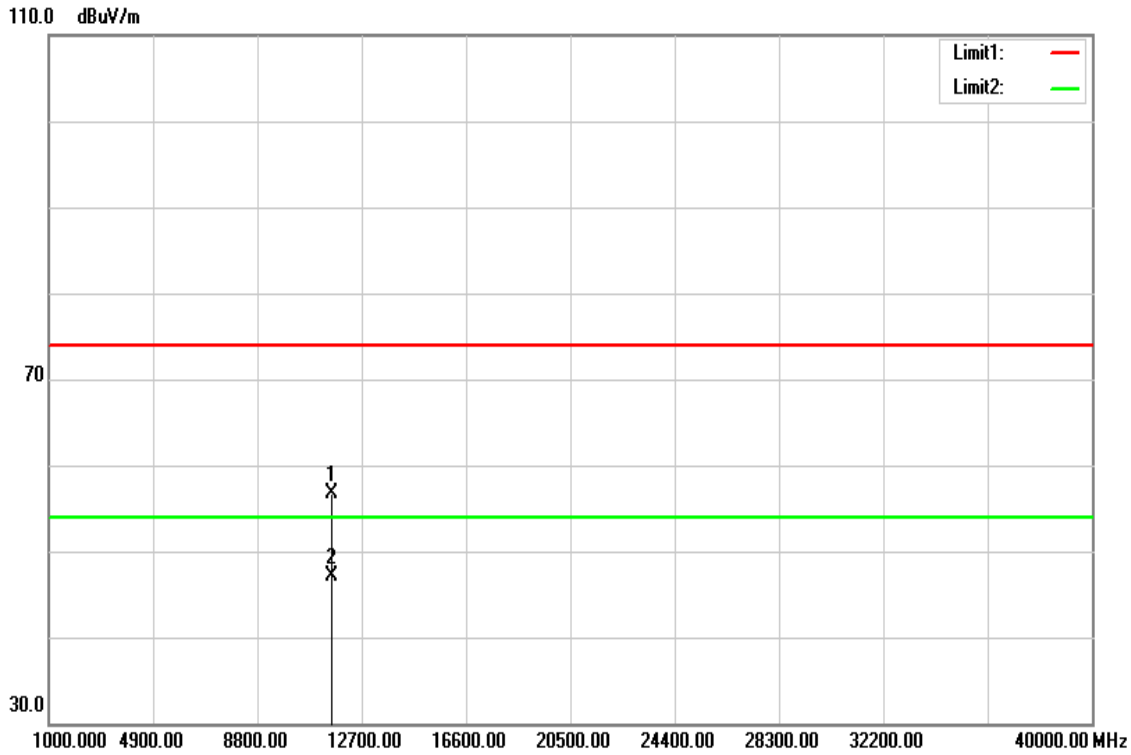
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11560.000	40.82	16.02	56.84	74.00	-17.16	peak
11560.000	32.65	16.02	48.67	54.00	-5.33	AVG
N/A						

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 HT20/ 5785 MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 5, 2017
Polarize	Horizontal	Test Engineer	Kevin Kuo
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



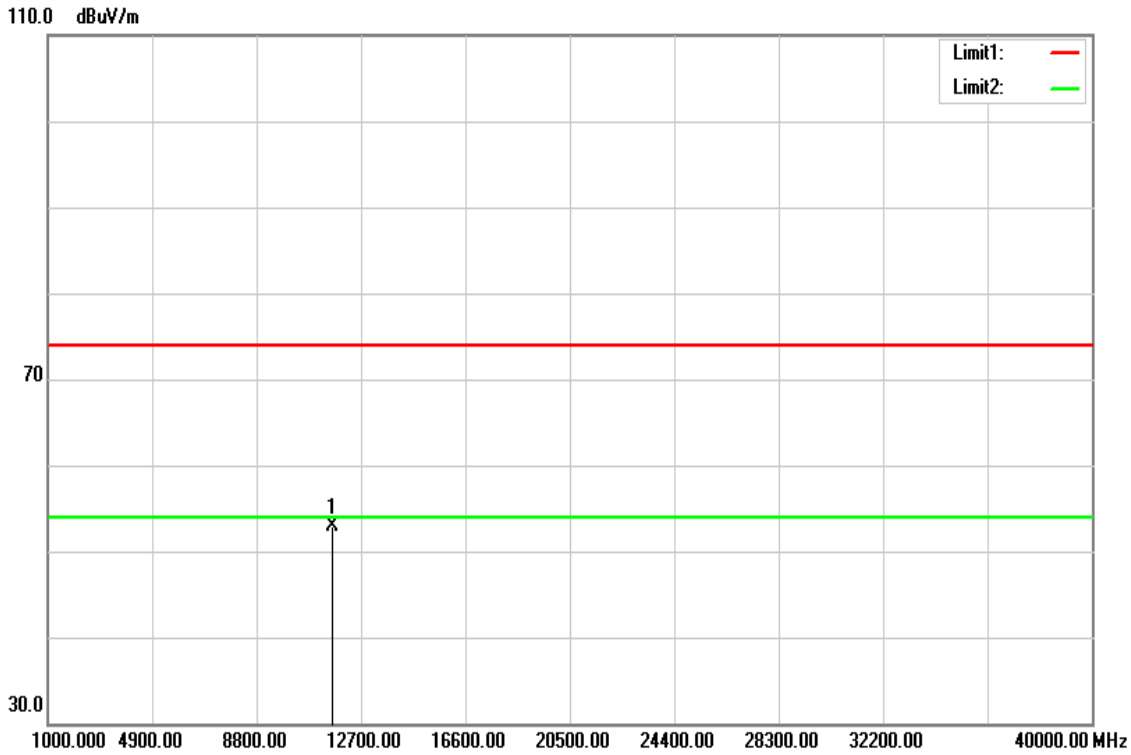
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11570.000	40.72	16.01	56.73	74.00	-17.27	peak
11570.000	31.05	16.01	47.06	54.00	-6.94	AVG
N/A						

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 HT20/ 5825 MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 13, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



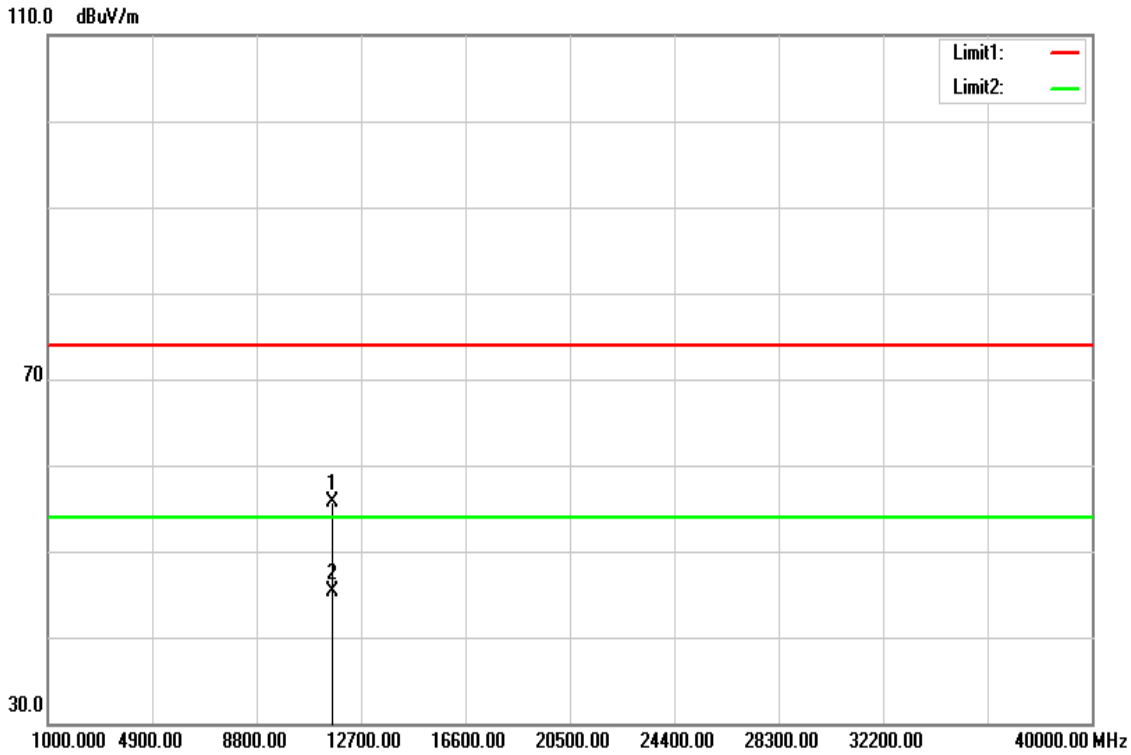
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11650.000	36.99	15.93	52.92	74.00	-21.08	peak
N/A						

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 HT20/ 5825 MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 13, 2017
Polarize	Horizontal	Test Engineer	Kevin Kuo
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



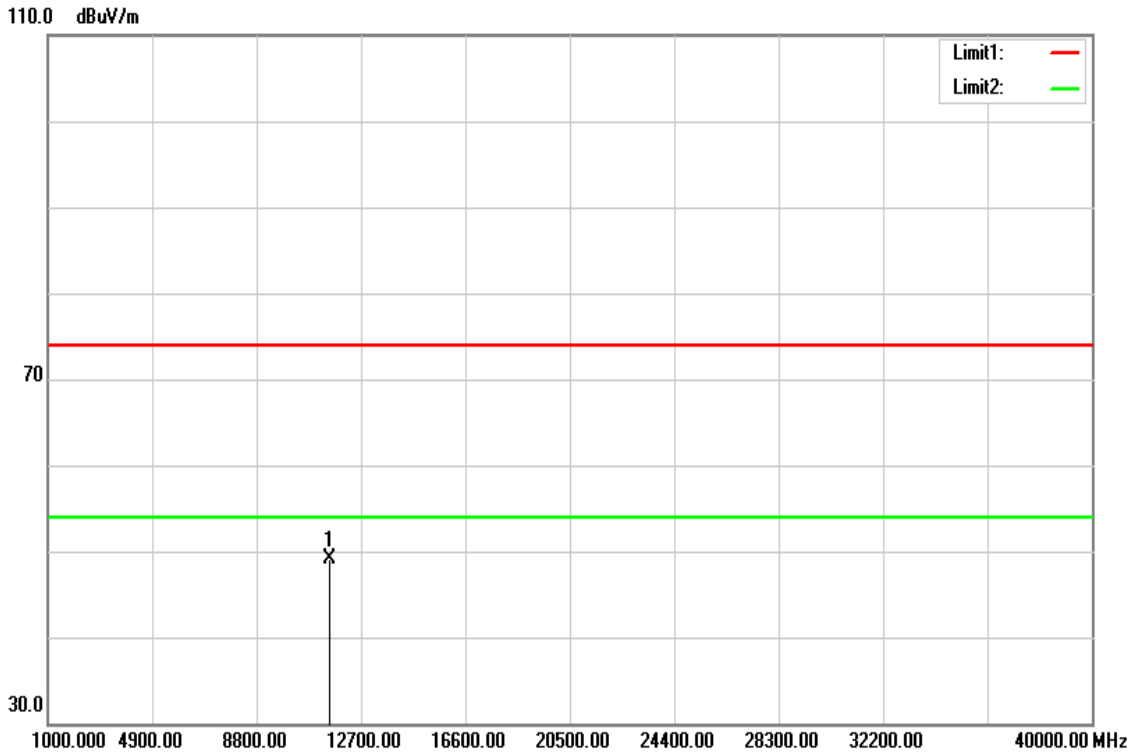
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11650.000	39.81	15.93	55.74	74.00	-18.26	peak
11650.000	29.46	15.93	45.39	54.00	-8.61	AVG
N/A						

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 HT40/ 5755 MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 13, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



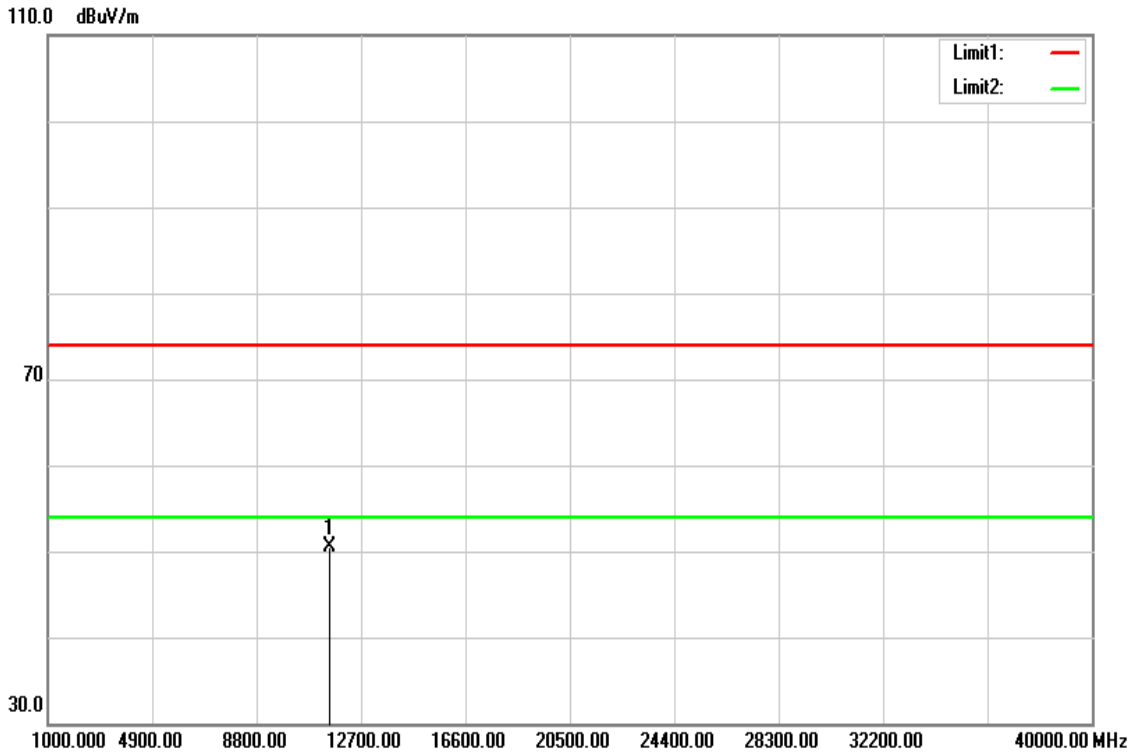
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11510.000	33.09	16.08	49.17	74.00	-24.83	peak
N/A						

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 HT40/ 5755 MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 13, 2017
Polarize	Horizontal	Test Engineer	Kevin Kuo
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



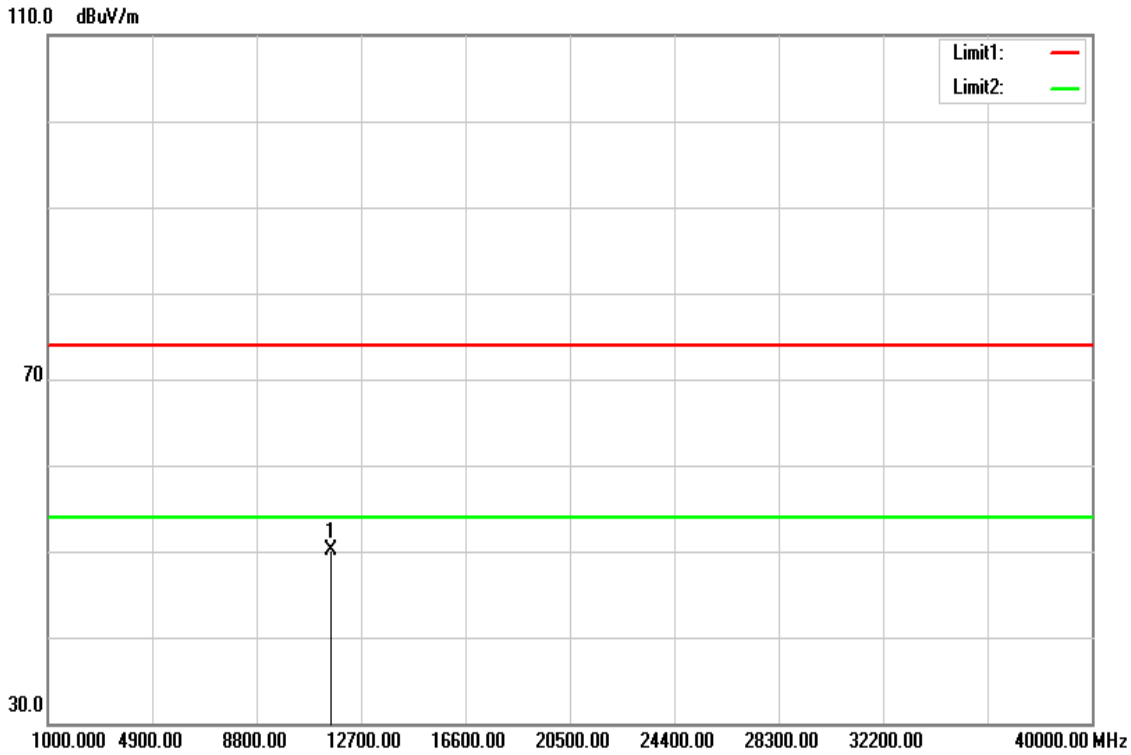
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11510.000	34.51	16.08	50.59	74.00	-23.41	peak
N/A						

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 HT40/ 5795 MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 13, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



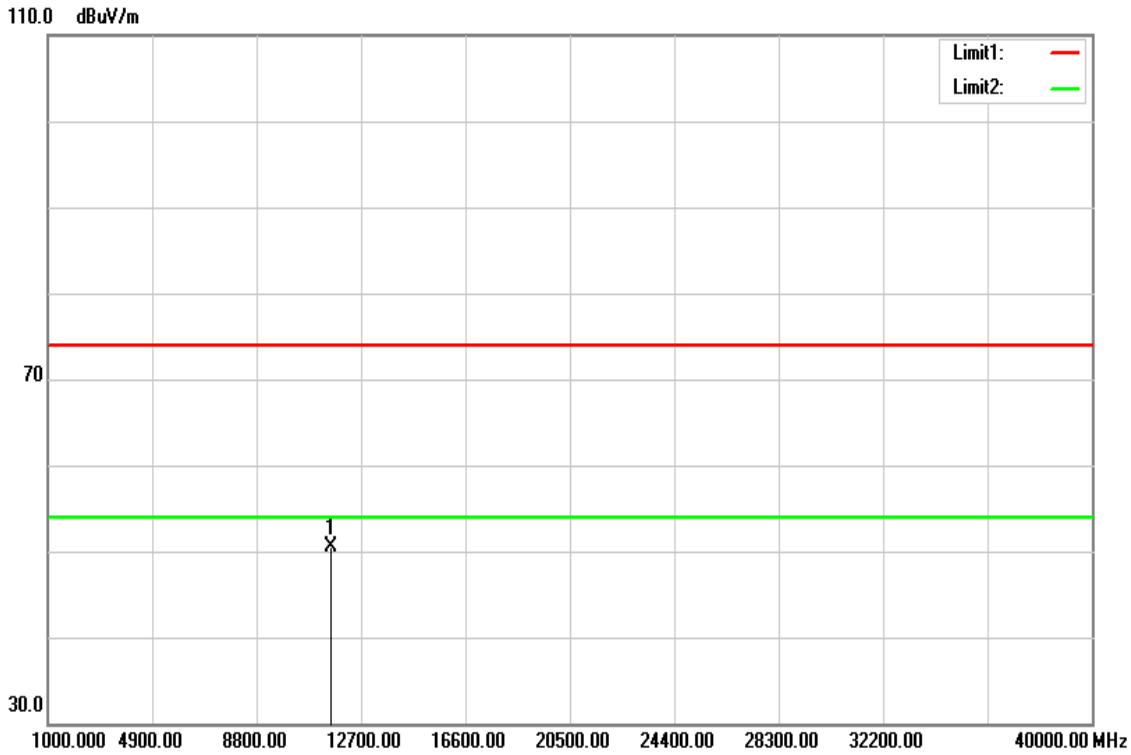
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11590.000	34.08	16.00	50.08	74.00	-23.92	peak
N/A						

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 HT40/ 5795 MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 13, 2017
Polarize	Horizontal	Test Engineer	Kevin Kuo
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



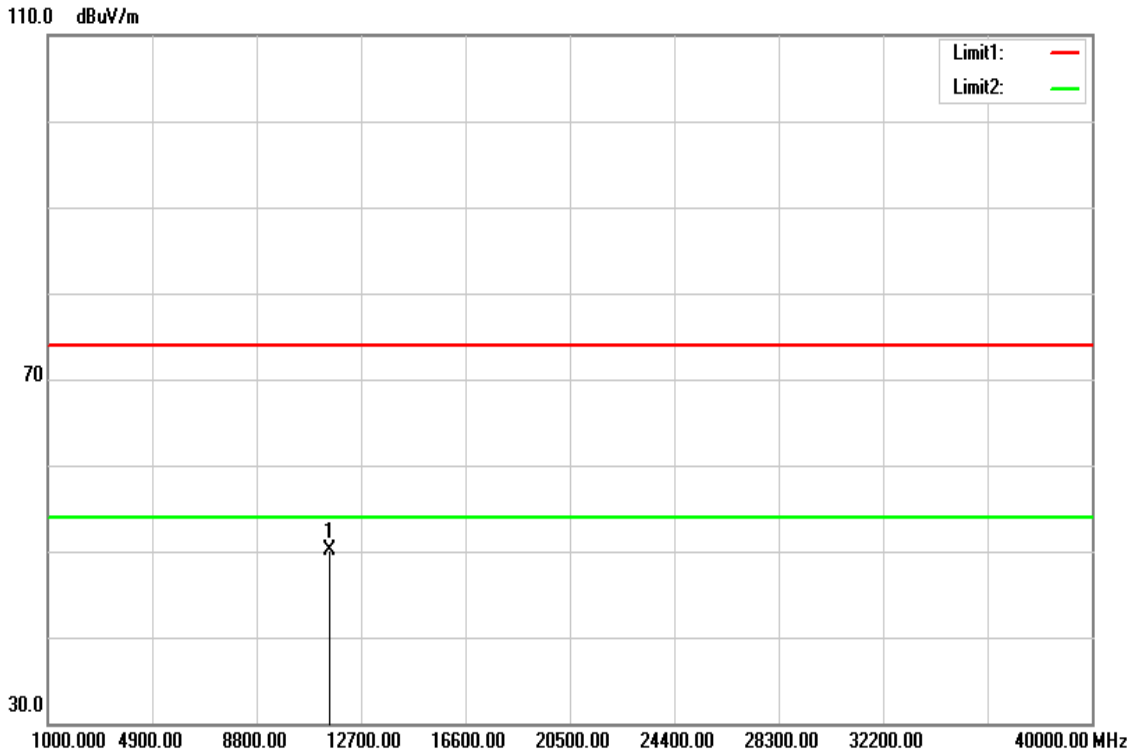
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11590.000	34.54	16.00	50.54	74.00	-23.46	peak
N/A						

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 802.11ac VHT80/ 5775 MHz	Temp/Hum	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 13, 2017
Polarize	Vertical	Test Engineer	Kevin Kuo
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



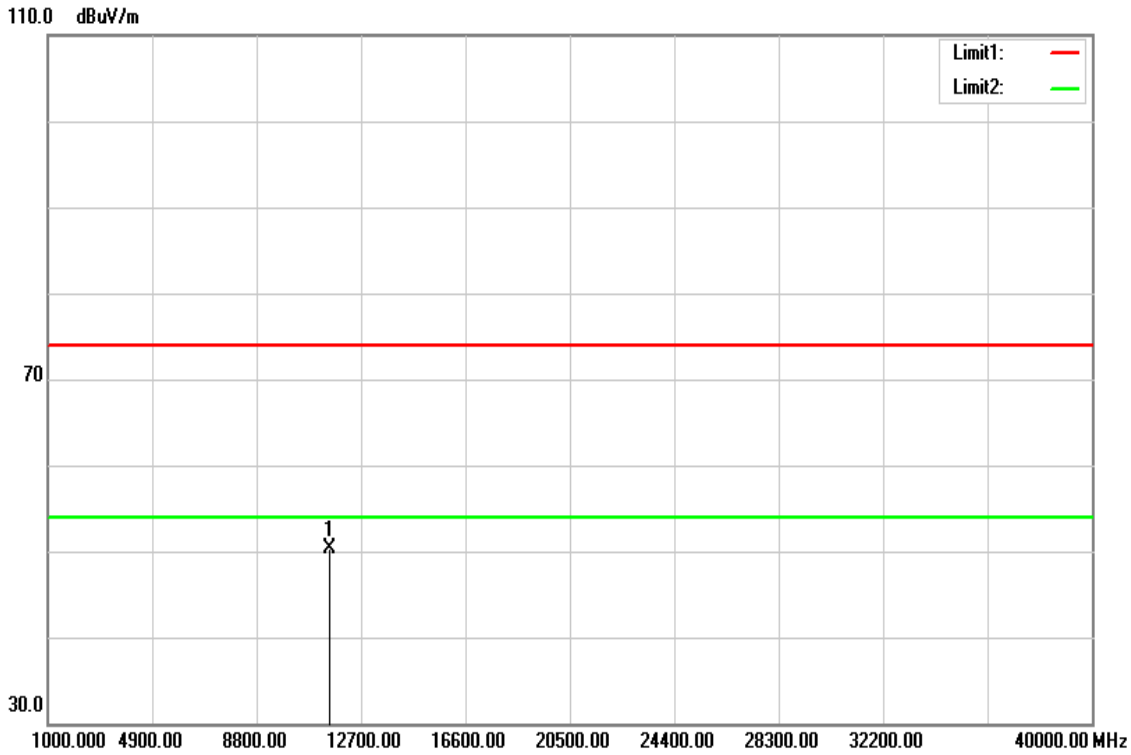
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
11550.000	34.11	16.04	50.15	74.00	-23.85	peak
N/A						

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	24(℃)/ 33%RH
Test Item	Harmonic	Test Date	December 13, 2017
Polarize	Horizontal	Test Engineer	Kevin Kuo
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	34.36	16.04	50.40	74.00	-23.60	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.

4.6 FREQUENCY STABILITY

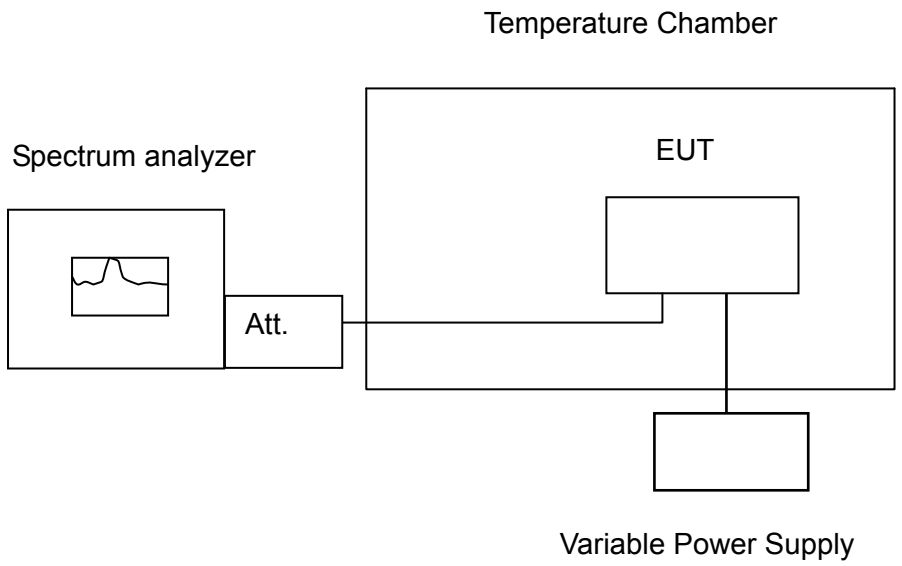
4.6.1 Test Limit

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. (°C)	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	
50	5	5180.01576	5180.02562	5180.02041	5180.03778	3.0425	4.9459	3.9402	7.2929	Pass
40	5	5180.02984	5180.03147	5180.03264	5180.03547	5.7606	6.0753	6.3012	6.8475	Pass
30	5	5180.02574	5180.02657	5180.02787	5180.03417	4.9691	5.1293	5.3803	6.5965	Pass
20	5	5179.99514	5179.99623	5180.01540	5180.02368	-0.9382	-0.7278	2.9730	4.5714	Pass
10	5	5179.98210	5179.98365	5179.98569	5179.98984	-3.4556	-3.1564	-2.7631	-1.9614	Pass
0	5	5179.97300	5179.97135	5179.97091	5179.97221	-5.2124	-5.5309	-5.6158	-5.3649	Pass
Temp. (°C)	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	5179.99514	5179.99721	5180.01536	5180.02541	-0.9382	-0.5386	2.9653	4.9054	Pass
20	5	5179.99514	5179.99623	5180.01540	5180.02368	-0.9382	-0.7278	2.9730	4.5714	Pass
20	5.5	5179.99621	5179.99636	5180.01684	5180.02387	-0.7317	-0.7027	3.2510	4.6081	Pass

Temp. (°C)	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	
50	5	5260.03540	5260.03687	5260.03751	5260.03812	6.7300	7.0095	7.1312	7.2471	Pass
40	5	5260.02955	5260.03110	5260.03113	5260.03456	5.6179	5.9125	5.9183	6.5703	Pass
30	5	5260.02547	5260.02687	5260.02895	5260.02951	4.8422	5.1084	5.5038	5.6103	Pass
20	5	5260.01236	5260.02179	5260.02317	5260.02574	2.3498	4.1426	4.4049	4.8935	Pass
10	5	5259.99541	5259.99541	5260.01240	5260.01550	-0.8726	-0.8726	2.3574	2.9468	Pass
0	5	5259.99479	5259.98915	5259.98654	5259.98394	-0.9905	-2.0627	-2.5589	-3.0532	Pass
Temp. (°C)	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	5260.01236	5260.02176	5260.01557	5260.02668	2.3498	4.1369	2.9601	5.0722	Pass
20	5	5260.01236	5260.02179	5260.02317	5260.02574	2.3498	4.1426	4.4049	4.8935	Pass
20	5.5	5260.01365	5260.02630	5260.02314	5260.02574	2.5951	5.0000	4.3992	4.8935	Pass

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Temp. (°C)	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	
50	5	5500.04136	5500.04236	5500.04321	5500.04321	7.5200	7.7018	7.8564	7.8564	Pass
40	5	5500.03925	5500.03998	5500.04021	5500.04221	7.1364	7.2691	7.3109	7.6745	Pass
30	5	5500.02245	5500.02368	5500.03510	5500.03878	4.0818	4.3055	6.3818	7.0509	Pass
20	5	5500.01268	5500.01687	5500.02157	5500.02236	2.3055	3.0673	3.9218	4.0655	Pass
10	5	5499.99514	5499.99746	5500.00147	5500.01270	-0.8836	-0.4618	0.2673	2.3091	Pass
0	5	5499.98334	5499.98698	5499.98611	5499.98480	-3.0291	-2.3673	-2.5255	-2.7636	Pass
Temp. (°C)	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	5500.01236	5500.01457	5500.02168	5500.02351	2.2473	2.6491	3.9418	4.2745	Pass
20	5	5500.01268	5500.01687	5500.02157	5500.02236	2.3055	3.0673	3.9218	4.0655	Pass
20	5.5	5500.01351	5500.02164	5500.02136	5500.22840	2.4564	3.9345	3.8836	4.1527	Pass

Temp. (°C)	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	
50	5	5745.03847	5745.03974	5745.04581	5745.05102	6.6963	6.9173	7.9739	8.8808	Pass
40	5	5745.02365	5745.02547	5745.02687	5745.03874	4.1166	4.4334	4.6771	6.7433	Pass
30	5	5745.01568	5745.01365	5745.01687	5745.02160	2.7293	2.3760	2.9365	3.7598	Pass
20	5	5744.99514	5744.99362	5744.99874	5745.01450	-0.8460	-1.1105	-0.2193	2.5239	Pass
10	5	5744.98561	5744.98961	5744.99157	5744.99263	-2.5048	-1.8085	-1.4674	-1.2829	Pass
0	5	5745.00135	5744.98510	5744.97950	5744.98513	0.2350	-2.5936	-3.5683	-2.5883	Pass
Temp. (°C)	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	5744.99354	5744.99657	5744.99874	5745.01555	-1.1245	-0.5970	-0.2193	2.7067	Pass
20	5	5744.99514	5744.99362	5744.99874	5745.01450	-0.8460	-1.1105	-0.2193	2.5239	Pass
20	5.5	5744.99514	5744.99658	5744.99987	5745.01254	-0.8460	-0.5953	-0.0226	2.1828	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.

IC according RSS-247 section 6.3, and it harmonized with FCC Part 15 DFS rules.

The EIRP refer section 4.3 output power measurement in this report.

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: JEDI.MT76x2
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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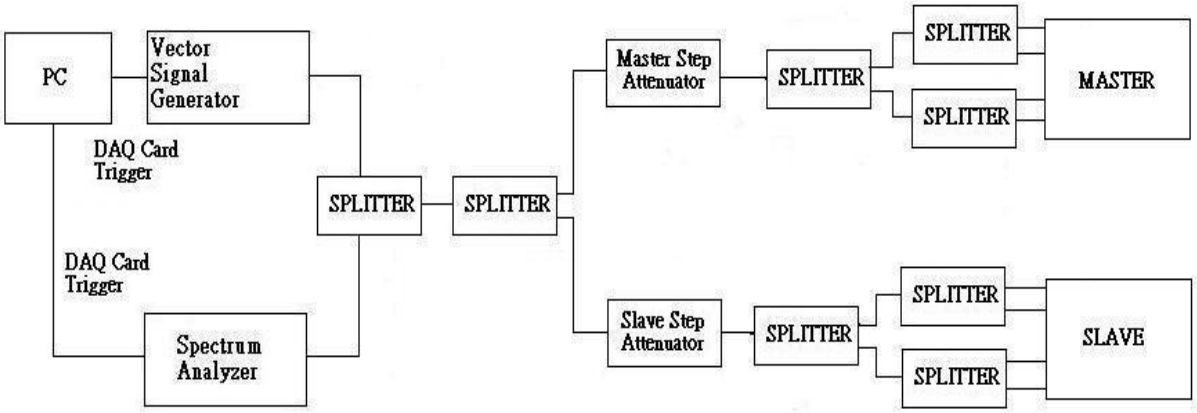

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System Calibration

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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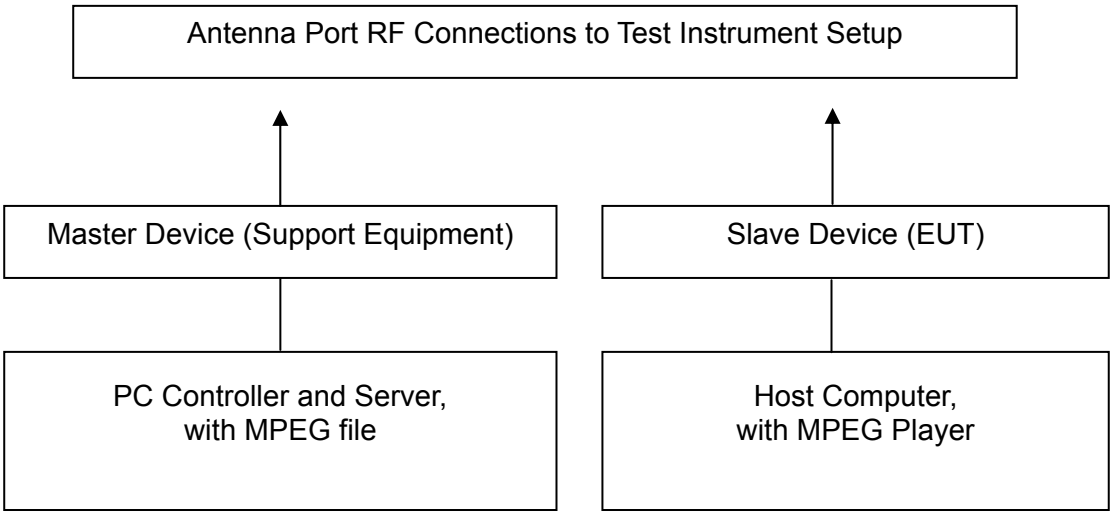
4.7.3 Test Setup



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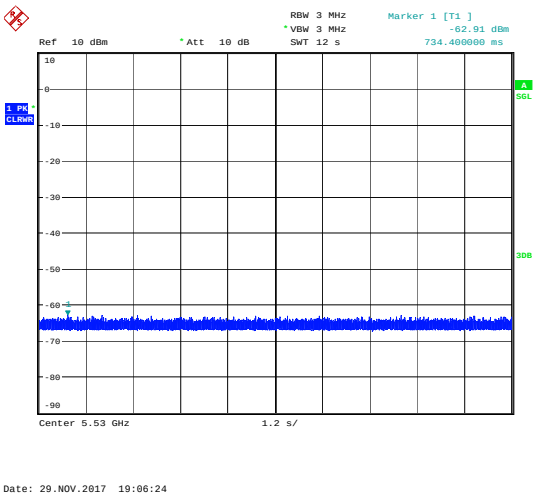
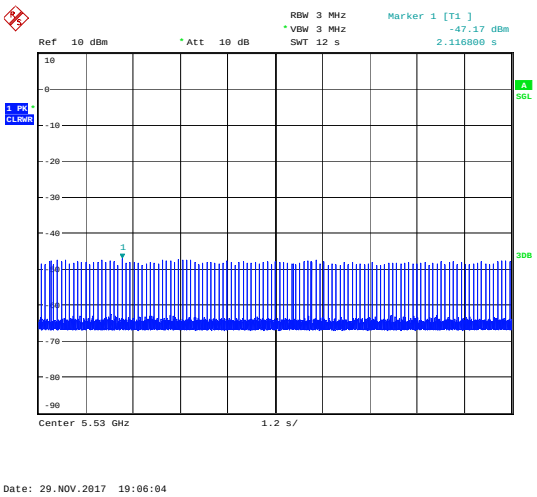
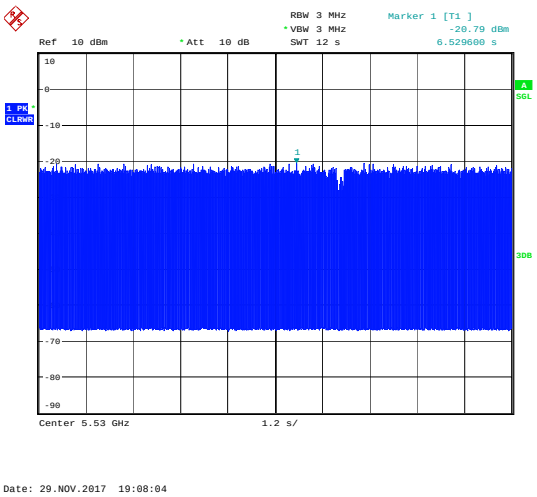
4.7.4 Test Result

IEEE 802.11ac VHT80 MHz at 5530MHz	
Noise Floor	**Master Level**
	
Slave Level	
	

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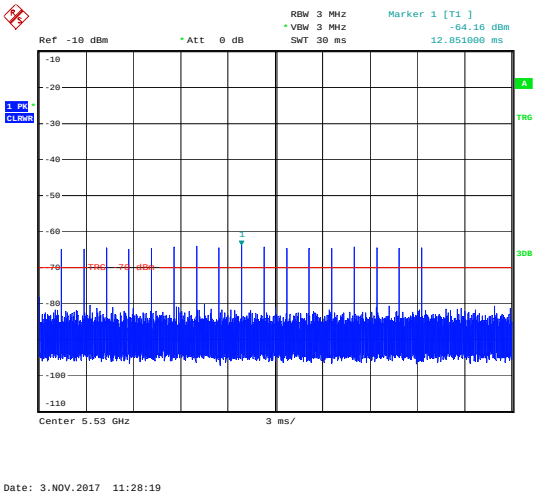
Radar Waveforms

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 5530 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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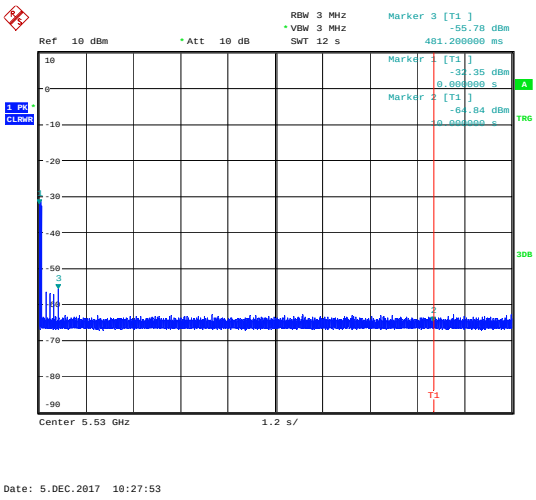
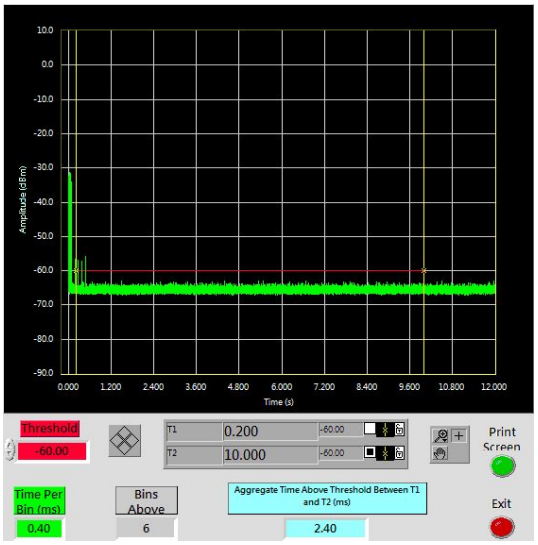
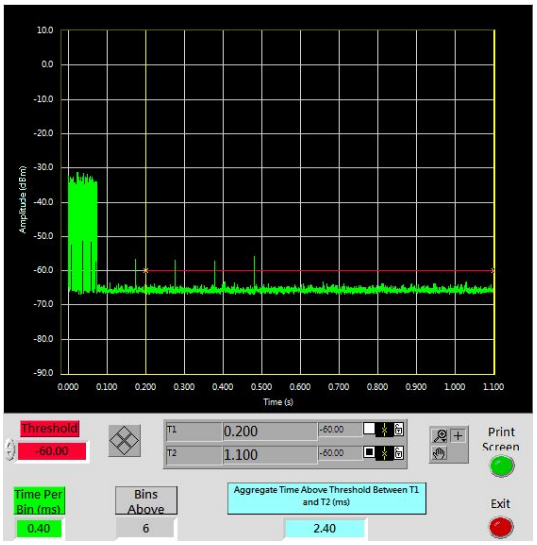
IEEE 802.11ac VHT 80 MHz at 5530	
Type 1_Channel Move Time	



Channel Move Time (s)	Limit (s)
0.4812	10

IEEE 802.11ac VHT 80 MHz at 5530	
Type 1_Channel closing transmisssion time	Type 1_Channel closing transmisssion time-caculate





Aggregate Transmission Time (ms)	Limit (ms)	Margin (ms)
2.4	60	-57.6

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