4.3 OUTPUT POWER MEASUREMENT

4.3.1 Test Limit

According to §15.407 (a)(1)

UNII-1 :

For client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

UNII-3:

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

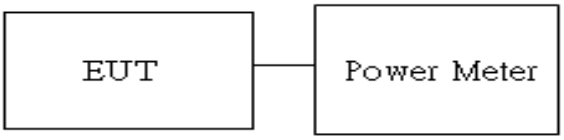
UNII-1 Limit	☒ Antenna not exceed 6 dBi：24dBm ☐ Antenna with DG greater than 6 dBi： [Limit = 24 – (DG – 6)]
UNII-3 Limit	☒ Antenna not exceed 6 dBi：30dBm ☐ Antenna with DG greater than 6 dBi： [Limit = 24 – (DG – 6)]

4.3.2 Test Procedure

Test method Refer as KDB 789033 D02.

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

4.3.3 Test Setup



4.3.4 Test Result

Conducted output power：

UNII-1									
Config	CH	Freq. (MHz)	Power Set		AV Power(dBm)		AV Total Power (dBm)	AV Total Power (W)	Limit (dBm)
			chain0	chain1	chain0	chain1			
IEEE 802.11a Data rate: 6Mbps	36	5180	0	-	16.87	-	16.87	0.0486	24
	44	5220	0	-	17.71	-	17.71	0.0590	
	48	5240	0	-	17.99	-	17.99	0.0630	
IEEE 802.11n HT20 Data rate: MCS 0	36	5180	0	0	14.36	17.34	19.11	0.0815	
	44	5220	0	0	15.23	17.34	19.42	0.0875	
	48	5240	0	0	15.44	17.24	19.44	0.0880	
IEEE 802.11n HT40 Data rate: MCS 0	38	5190	0	0	15.32	17.39	19.49	0.0889	
	46	5230	0	0	14.93	17.98	19.73	0.0939	
IEEE 802.11ac VHT80 Data rate: MCS8	42	5210	0	0	16.76	17.06	19.92	0.0982	

UNII-3									
Config	CH	Freq. (MHz)	Power Set		AV Power(dBm)		AV Total Power (dBm)	AV Total Power (W)	Limit (dBm)
			chain0	chain1	chain0	chain1			
IEEE 802.11a Data rate: 6Mbps	149	5745	20	-	22.74	-	22.74	0.1879	30
	157	5785	20	-	22.68	-	22.68	0.1854	
	165	5825	20	-	22.61	-	22.61	0.1824	
IEEE 802.11n HT20 Data rate: MCS0	149	5745	20	20	21.99	23.63	25.89	0.3882	
	157	5785	20	20	22.93	24.89	27.03	0.5047	
	165	5825	20	20	22.94	24.86	27.01	0.5023	
IEEE 802.11n HT40 Data rate: MCS0	151	5755	20	20	23.19	24.87	27.13	0.5164	
	159	5795	20	20	23.25	24.97	27.21	0.5260	
IEEE 802.11ac VHT80 Data rate: MCS8	155	5775	20	20	21.06	20.96	24.02	0.2524	

G

4.4 POWER SPECTRAL DENSITY

4.4.1 Test Limit

According to §15.407 (a)(1)

UNII-1 :

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

UNII-3:

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.i.

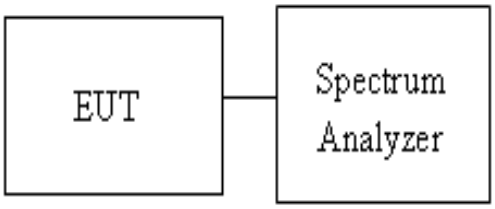
UNII-1 Limit	☒ Antenna not exceed 6 dBi：11 dBm ☐ Antenna with DG greater than 6 dBi： [Limit = 11 – (DG – 6)]
UNII-3 Limit	☒ Antenna not exceed 6 dBi：30 dBm ☐ Antenna with DG greater than 6 dBi： [Limit = 30 – (DG – 6)]

4.4.2 Test Procedure

Test method Refer as KDB 789033 D02

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

4.4.3 Test Setup

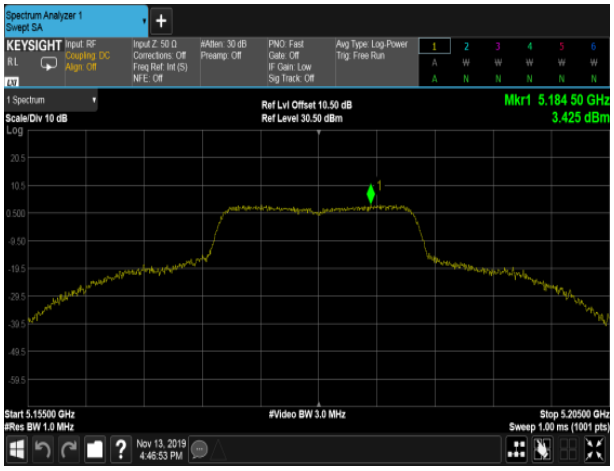
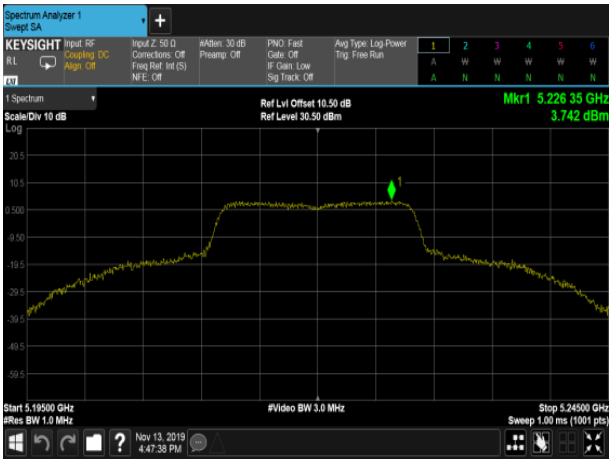
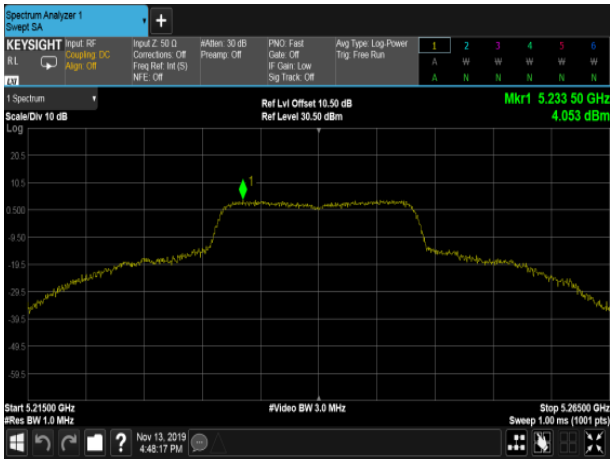


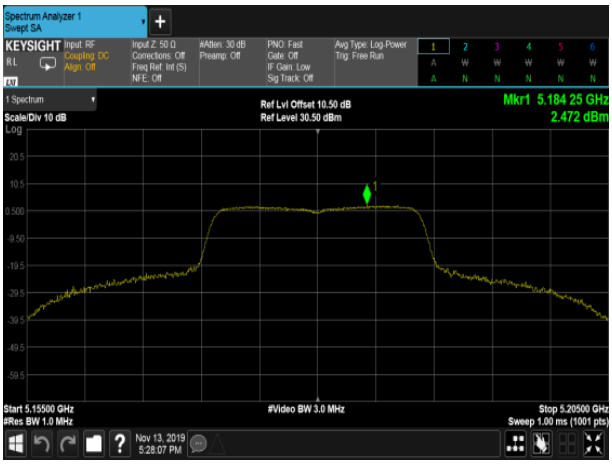
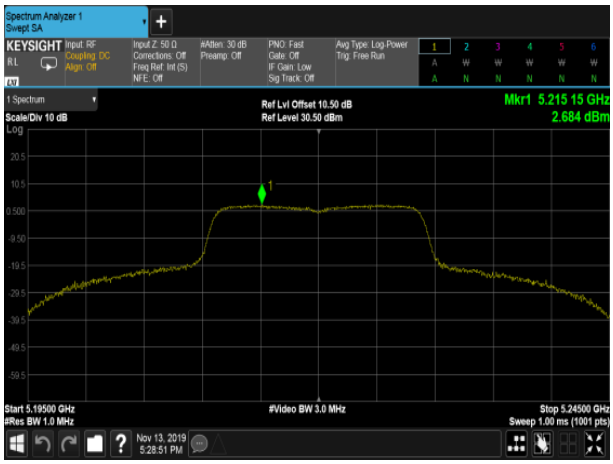
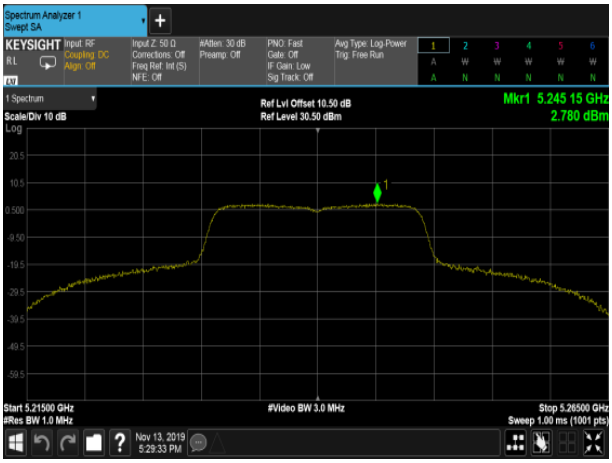
4.4.4 Test Result

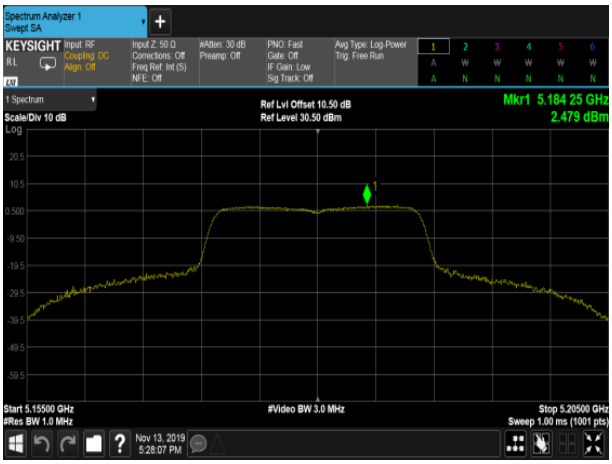
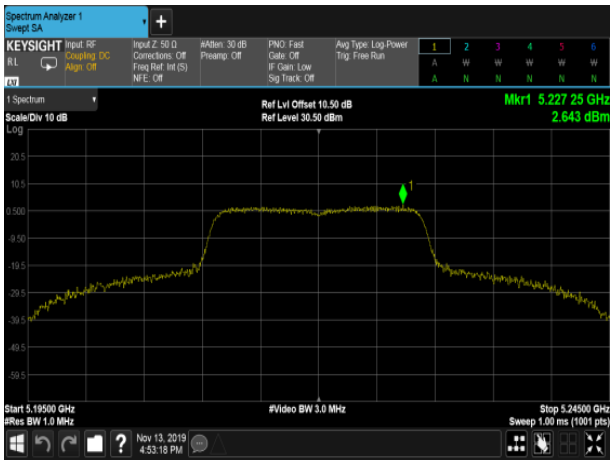
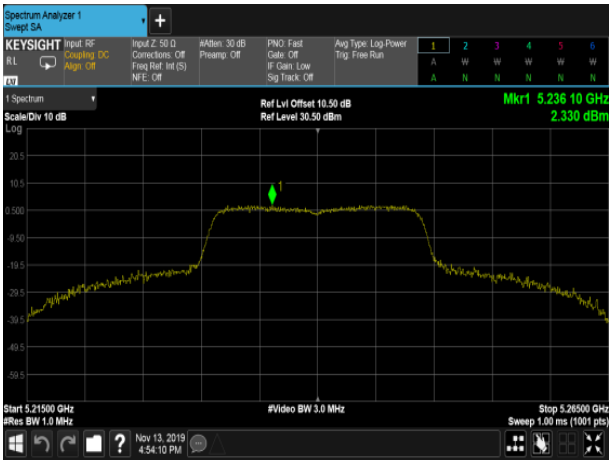
UNII-1					
Test mode: IEEE 802.11a mode					
Channel	**Frequency (MHz)**	**chain 0 PPSD (dBm)**	**chain 1 PPSD (dBm)**	**Total PPSD (dBm)**	**Limit (dBm)**
Low	5180	3.425	-	3.425	11
Mid	5220	3.742	-	3.742	
High	5240	4.053	-	4.053	
Test mode: IEEE 802.11n HT20 mode					
Channel	**Frequency (MHz)**	**chain 0 PPSD (dBm)**	**chain 1 PPSD (dBm)**	**Total PPSD (dBm)**	**Limit (dBm)**
Low	5180	2.472	2.479	5.49	11
Mid	5220	2.684	2.643	5.67	
High	5240	2.780	2.330	5.57	
Test mode: IEEE 802.11n HT40 mode					
Channel	**Frequency (MHz)**	**chain 0 PPSD (dBm)**	**chain 1 PPSD (dBm)**	**Total PPSD (dBm)**	**Limit (dBm)**
Low	5190	-0.975	-0.209	2.44	11
High	5230	-0.775	-0.369	2.44	
Test mode: IEEE 802.11ac VHT80 mode					
Channel	**Frequency (MHz)**	**chain 0 PPSD (dBm)**	**chain 1 PPSD (dBm)**	**Total PPSD (dBm)**	**Limit (dBm)**
Mid	5210	-5.814	-2.101	-0.56	11

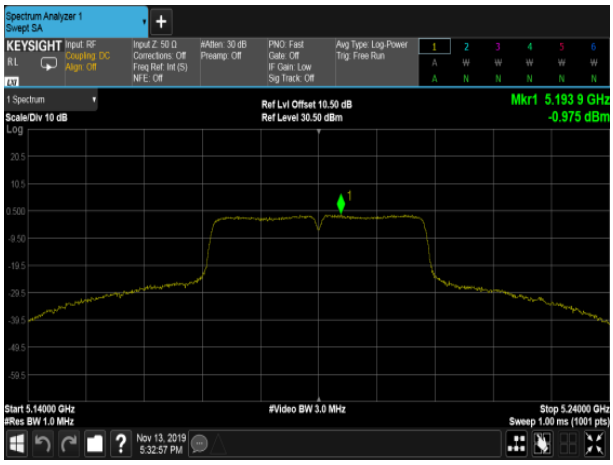
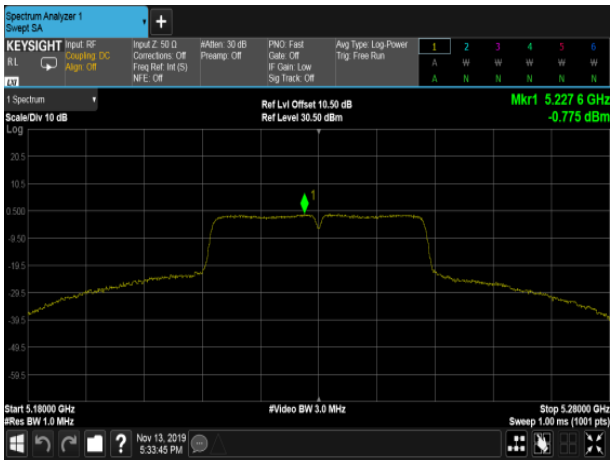
UNII-3					
Test mode: IEEE 802.11a mode					
Channel	**Frequency (MHz)**	**chain 0 PPSD (dBm)**	**chain 1 PPSD (dBm)**	**Total PPSD (dBm)**	**Limit (dBm)**
Low	5745	2.754	-	2.754	30
Mid	5785	3.142	-	3.142	
High	5825	3.029	-	3.029	
Test mode: IEEE 802.11n HT20 mode					
Channel	**Frequency (MHz)**	**chain 0 PPSD (dBm)**	**chain 1 PPSD (dBm)**	**Total PPSD (dBm)**	**Limit (dBm)**
Low	5745	0.775	1.676	4.26	30
Mid	5785	1.230	1.463	4.36	
High	5825	1.351	1.887	4.64	
Test mode: IEEE 802.11n HT40 mode					
Channel	**Frequency (MHz)**	**chain 0 PPSD (dBm)**	**chain 1 PPSD (dBm)**	**Total PPSD (dBm)**	**Limit (dBm)**
Low	5755	-2.626	-1.130	1.20	30
High	5795	-2.371	-0.845	1.47	
Test mode: IEEE 802.11ac VHT80 mode					
Channel	**Frequency (MHz)**	**chain 0 PPSD (dBm)**	**chain 1 PPSD (dBm)**	**Total PPSD (dBm)**	**Limit (dBm)**
Mid	5775	-1.441	1.102	3.02	30

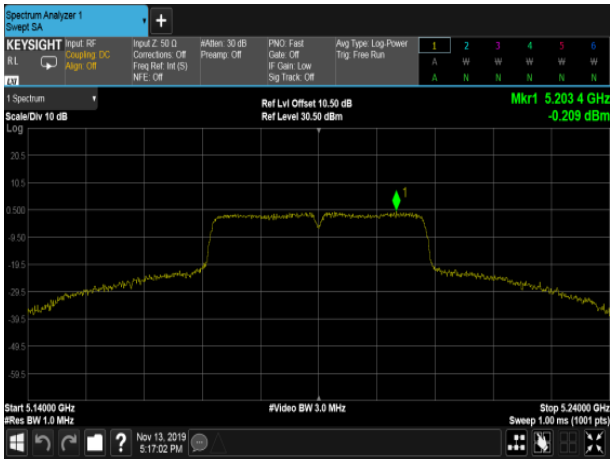
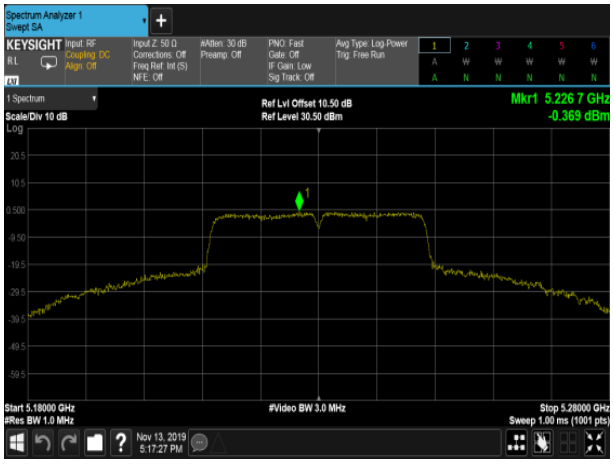
Test Data

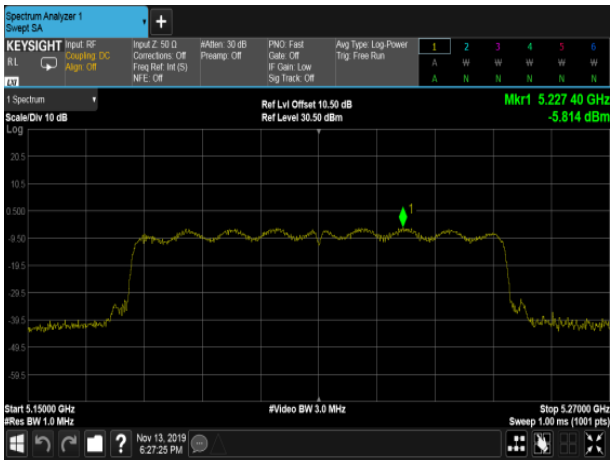
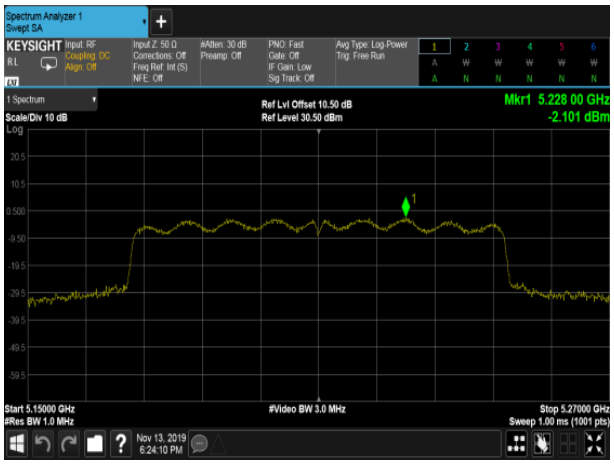
UNII-1 IEEE 802.11a mode- chain 0	
Low CH	**Mid CH**
	
High CH	
	

UNII-1 IEEE 802.11n HT20 mode- chain 0	
Low CH	**Mid CH**
	
High CH	
	

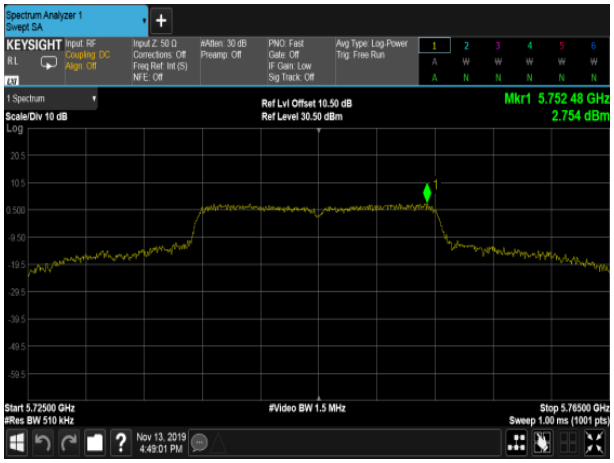
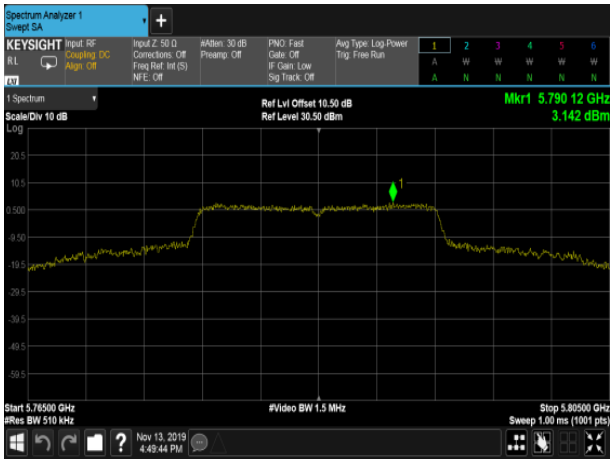
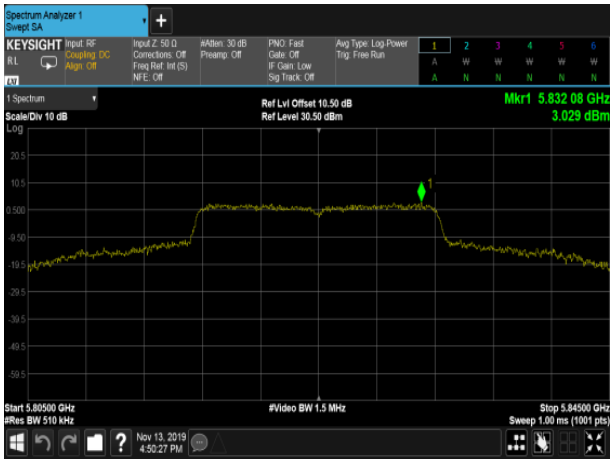
UNII-1 IEEE 802.11n HT20 mode- chain 1	
Low CH	**Mid CH**
	
High CH	
	

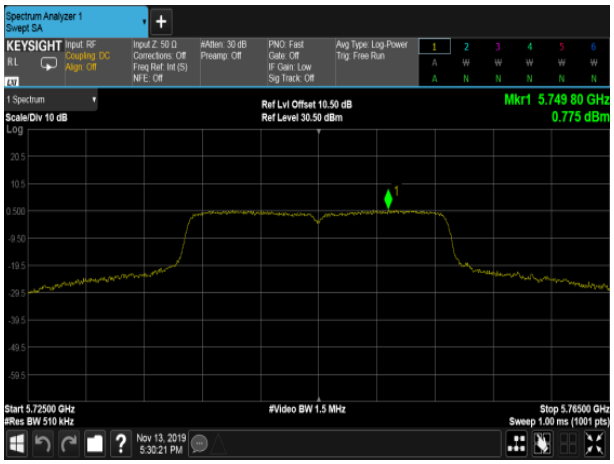
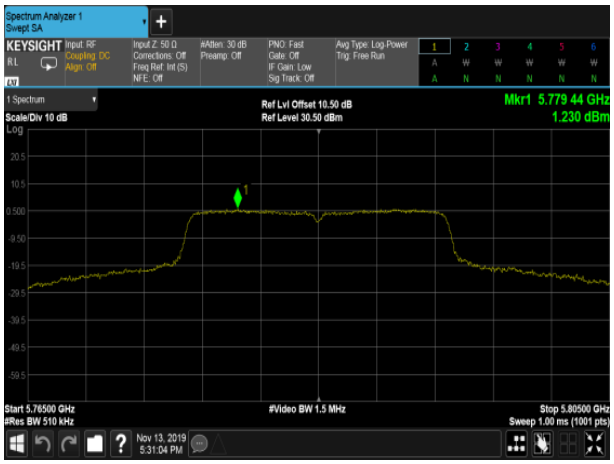
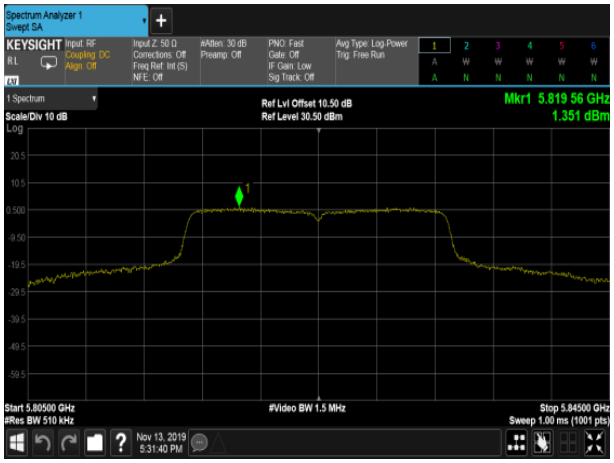
UNII-1 IEEE 802.11n HT40 mode- chain 0	
Low CH	**High CH**
	

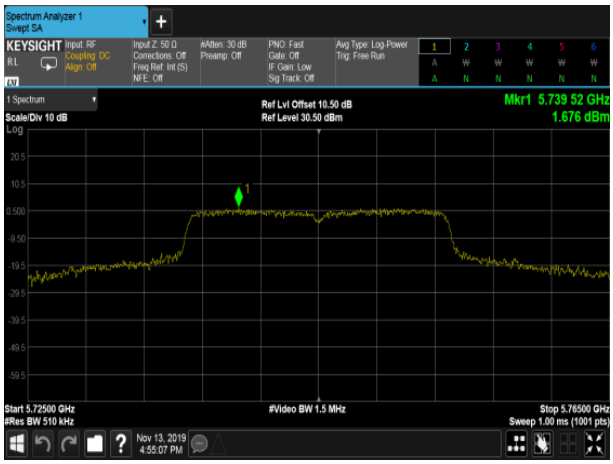
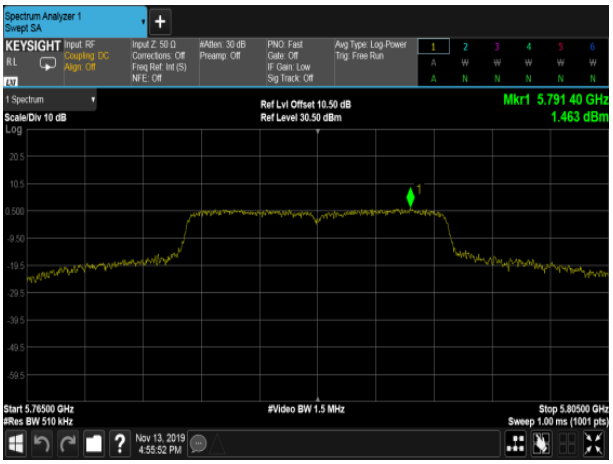
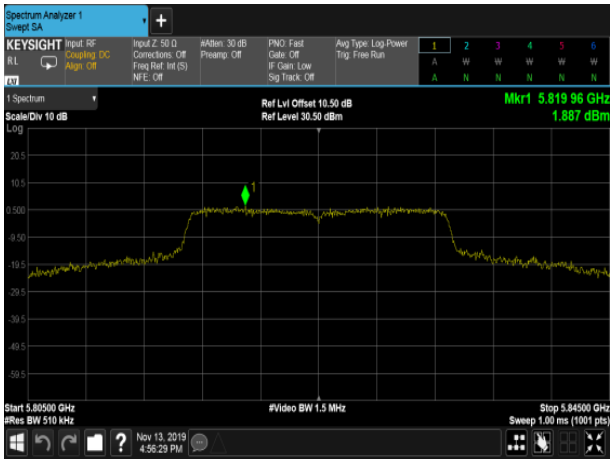
UNII-1 IEEE 802.11n HT40 mode- chain 1	
Low CH	**High CH**
	

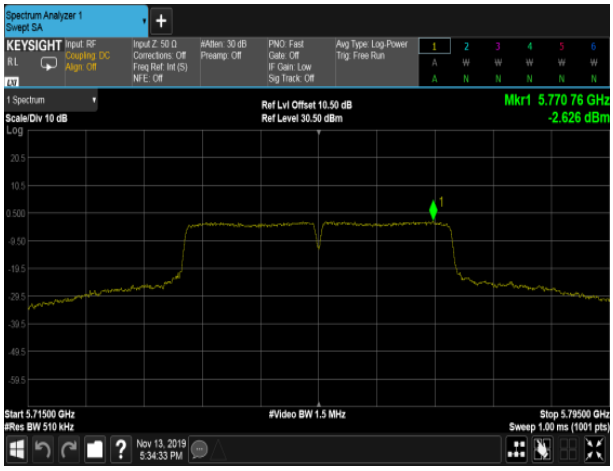
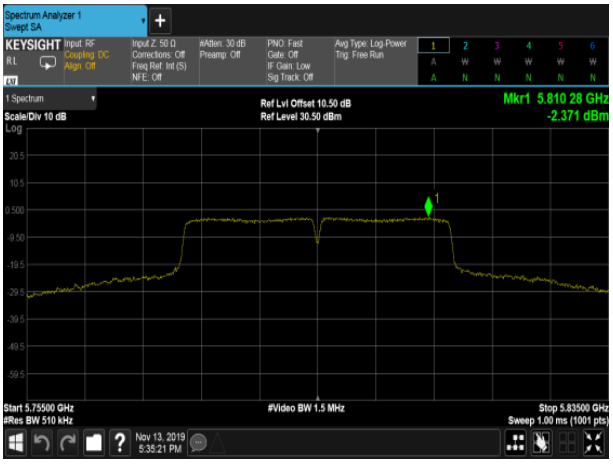
UNII-1 IEEE 802.11ac VHT80 mode	
Mid CH-chain 0	**Mid CH-chain 1**
	

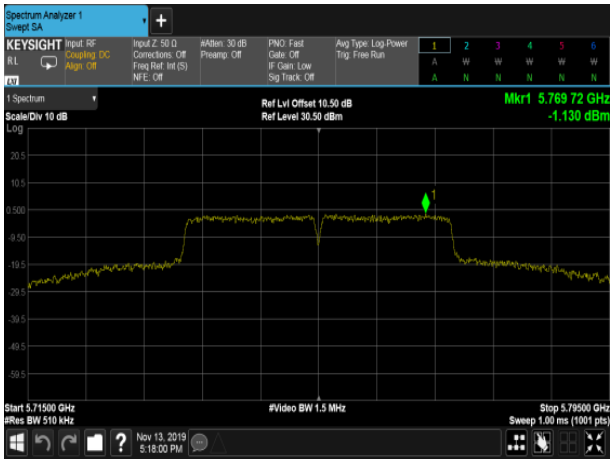
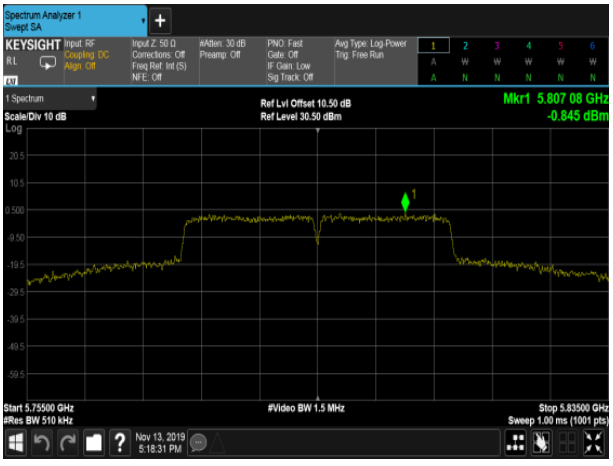
Test Data

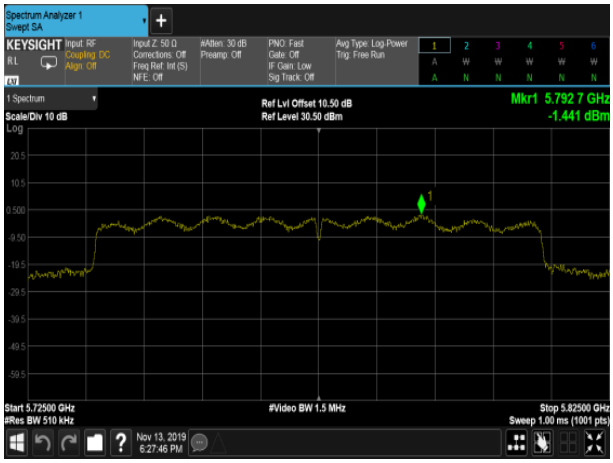
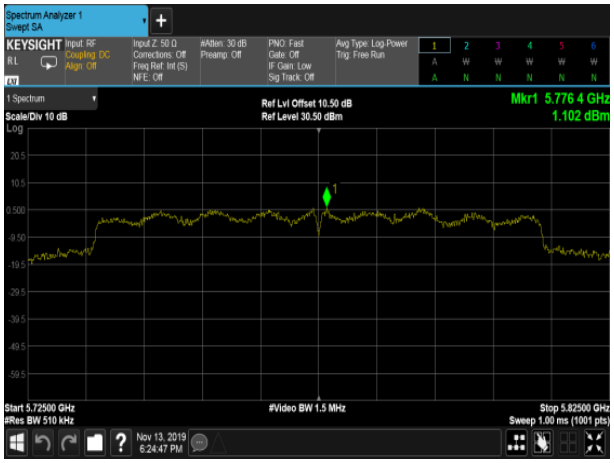
UNII-3 IEEE 802.11a mode- chain 0	
Low CH	**Mid CH**
	
High CH	
	

UNII-3 IEEE 802.11n HT20 mode- chain 0	
Low CH	**Mid CH**
	
High CH	
	

UNII-3 IEEE 802.11n HT20 mode- chain 1	
Low CH	**Mid CH**
	
High CH	
	

UNII-3 IEEE 802.11n HT40 mode- chain 0	
Low CH	**High CH**
	

UNII-3 IEEE 802.11n HT40 mode- chain 1	
Low CH	**High CH**
	

UNII-3 IEEE 802.11ac VHT80 mode	
Mid CH-chain 0	**Mid CH-chain 1**
	

4.5 RADIATION BANDEDGE AND SPURIOUS EMISSION

4.5.1 Test Limit

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

Below 30 MHz

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

Above 30 MHz

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

UNII-1 :

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

UNII-3:

For the band 5725-5850 MHz, emissions at frequencies from the band edges to 10 MHz above or below the band edges shall not exceed -17 dBm/MHz e.i.r.p.
For emissions at frequencies more than 10 MHz above or below the band edges, the emissions power shall not exceed -27 dBm/MHz

4.5.2 Test Procedure

Test method Refer as KDB 789033 D02

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: 2013, 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 30MHz 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)

Remark:

Although these tests were performed other than open area test site, adequate comparison measurements were confirmed against 30 m open are test site. Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the ones of tests made in an open field based on KDB 414788.

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.

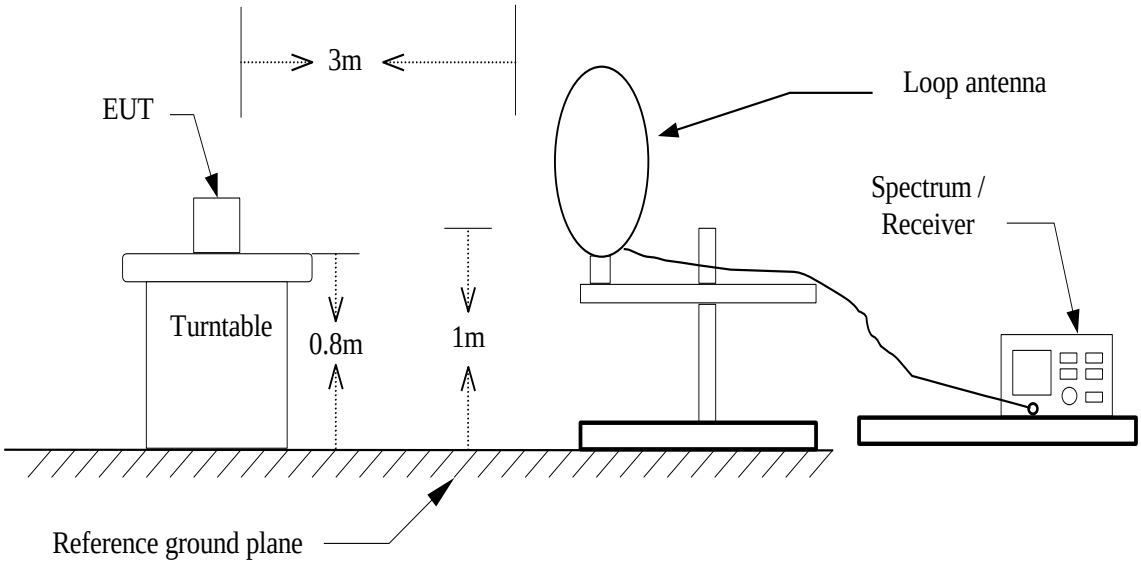
(2.2) For Average measurement：RBW = 1MHz, VBW

˙If Duty Cycle ≥ 98%, VBW=10Hz.

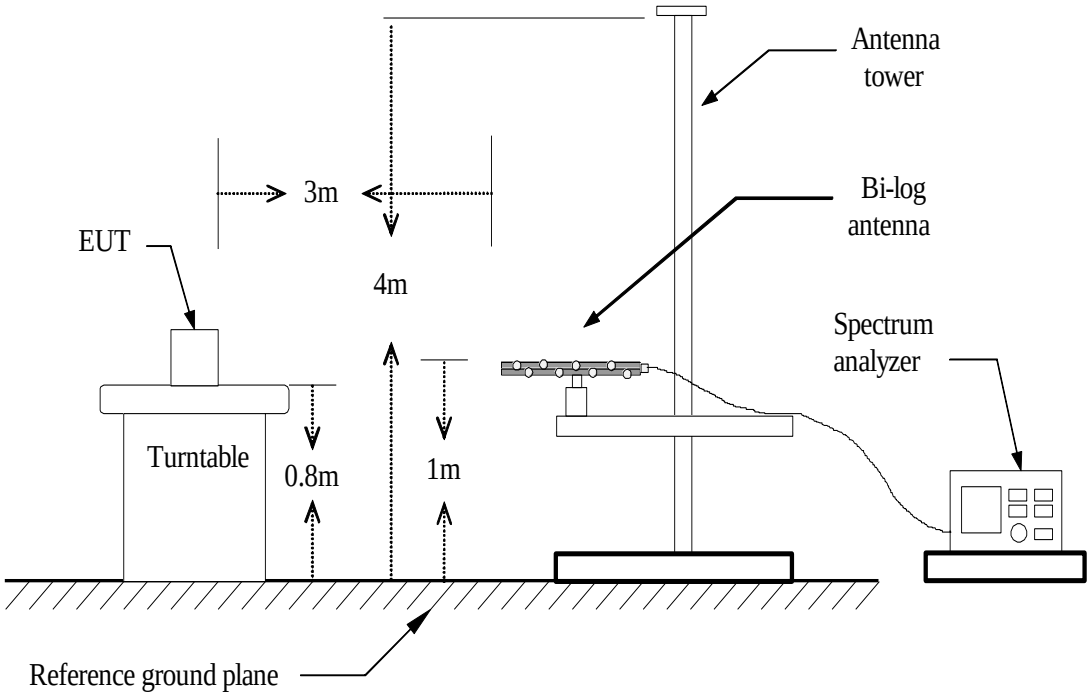
˙If Duty Cycle < 98%, VBW=1/T.

4.5.3 Test Setup

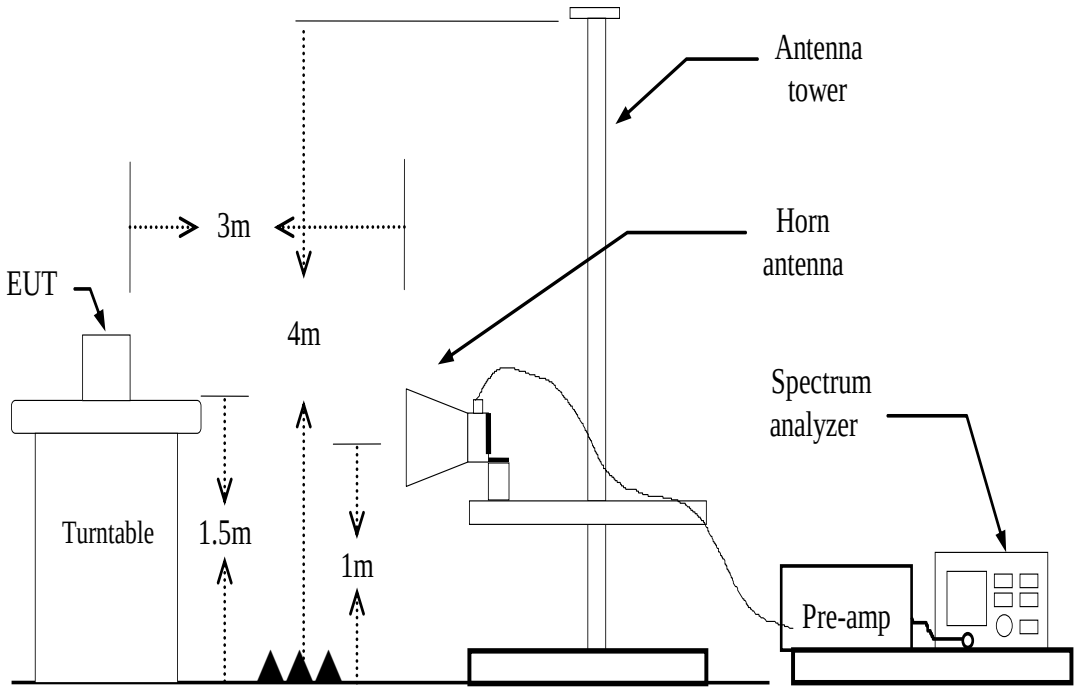
9kHz ~ 30MHz



30MHz ~ 1GHz



Above 1 GHz

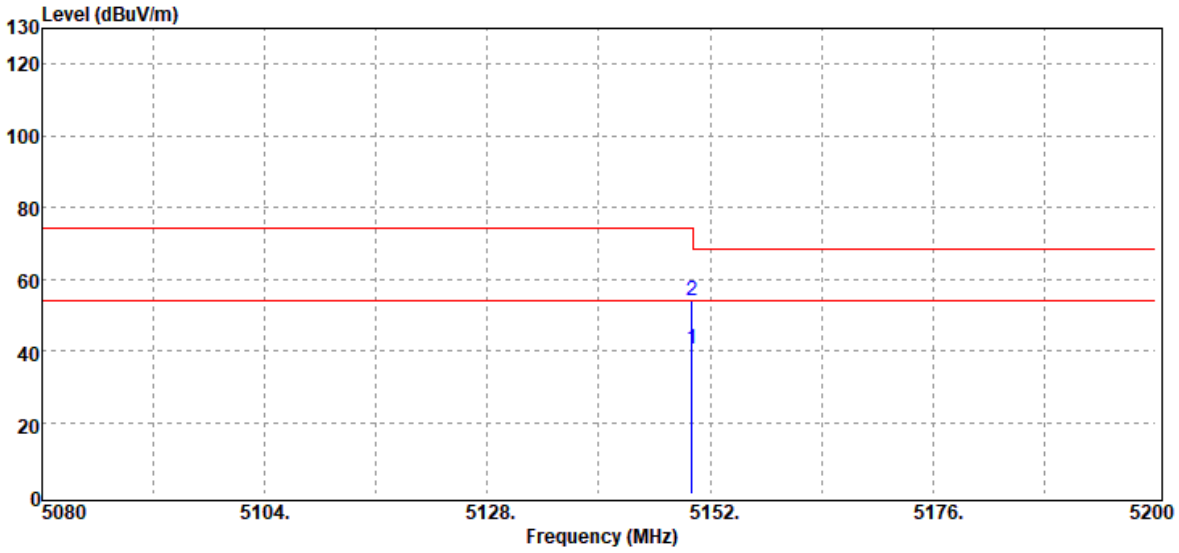


4.5.4 Test Result

Test Data

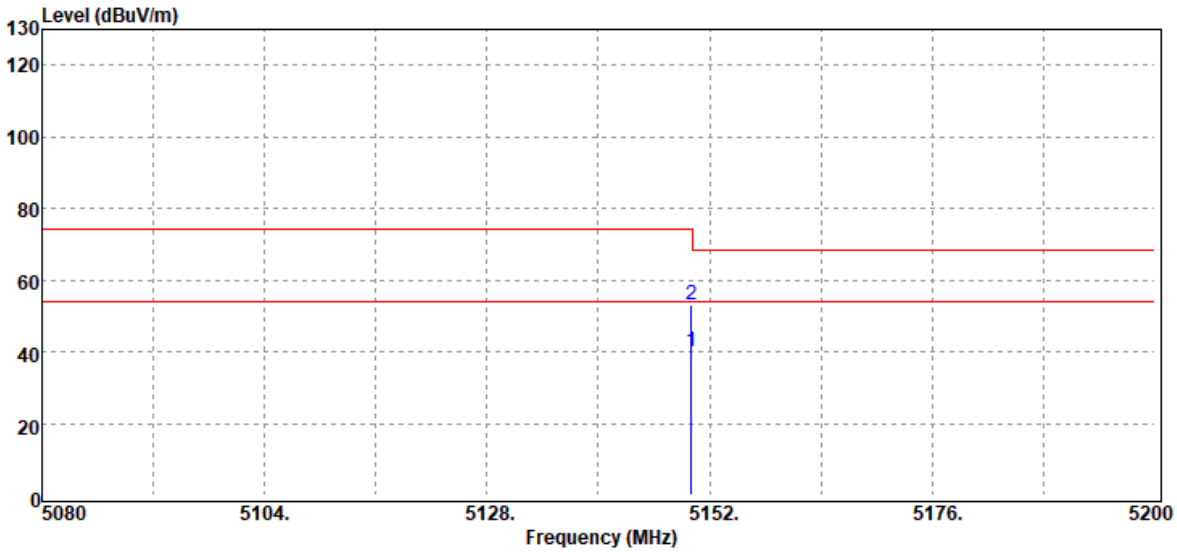
Band Edge Test Data for UNII-1

Test Mode	IEEE 802.11a Low CH	Temp/Hum	21(℃)/ 52%RH
Test Item	Band Edge	Test Date	November 14, 2019
Polarize	Vertical	Test Engineer	Dally Hong
Detector	Peak / Average		



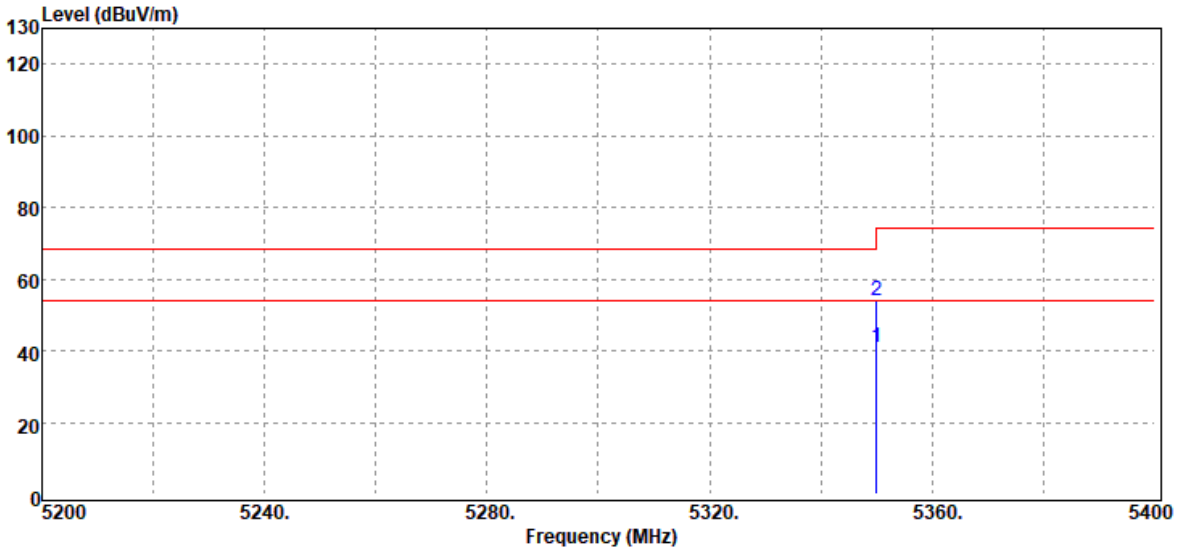
Frequency (MHz)	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
5150.00	Average	35.69	4.92	40.61	54.00	-13.39
5150.00	Peak	49.06	4.92	53.98	74.00	-20.02

Test Mode	IEEE 802.11a Low CH	Temp/Hum	21(℃)/ 52%RH
Test Item	Band Edge	Test Date	November 14, 2019
Polarize	Horizontal	Test Engineer	Dally Hong
Detector	Peak / Average		



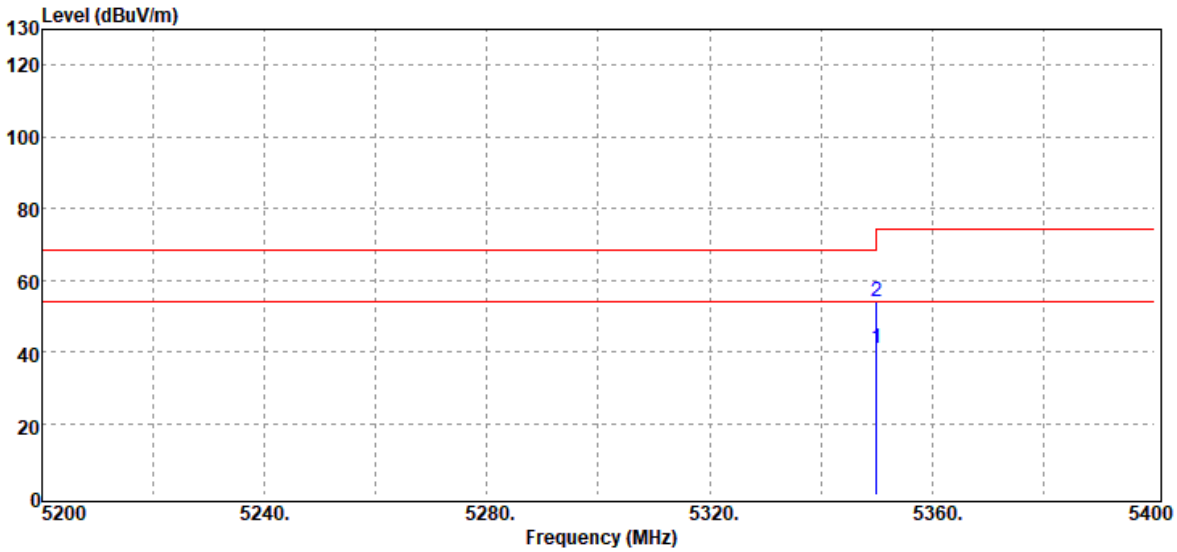
Frequency (MHz)	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
5150.00	Average	35.32	4.92	40.24	54.00	-13.76
5150.00	Peak	48.00	4.92	52.92	74.00	-21.08

Test Mode	IEEE 802.11a High CH	Temp/Hum	21(℃)/ 52%RH
Test Item	Band Edge	Test Date	November 14, 2019
Polarize	Vertical	Test Engineer	Dally Hong
Detector	Peak / Average		



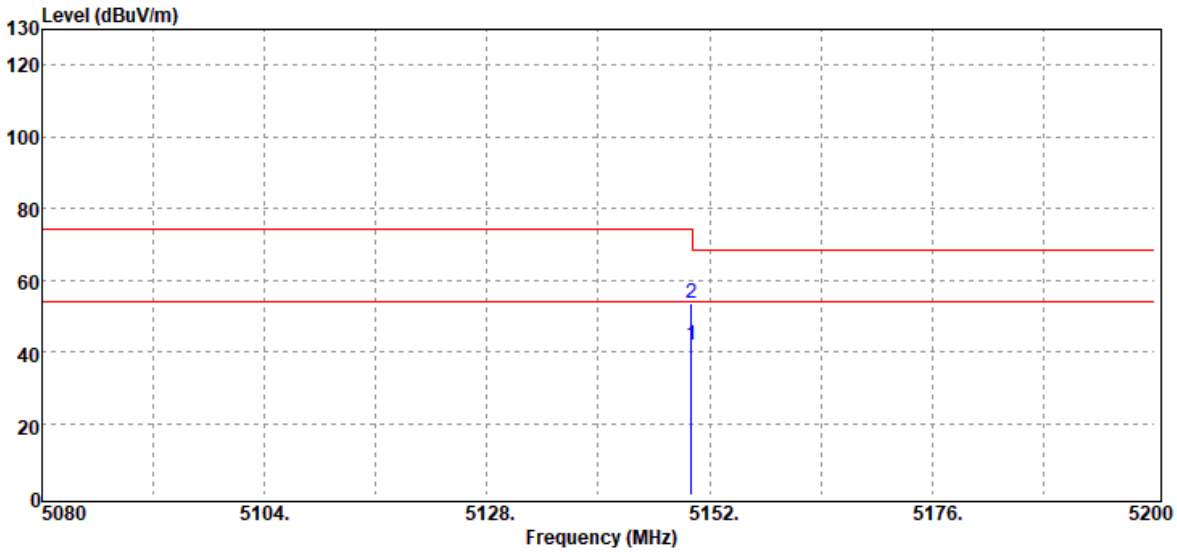
Frequency (MHz)	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
5350.00	Average	35.91	5.21	41.12	54.00	-12.88
5350.00	Peak	48.63	5.21	53.84	74.00	-20.16

Test Mode	IEEE 802.11a High CH	Temp/Hum	21(℃)/ 52%RH
Test Item	Band Edge	Test Date	November 14, 2019
Polarize	Horizontal	Test Engineer	Dally Hong
Detector	Peak / Average		



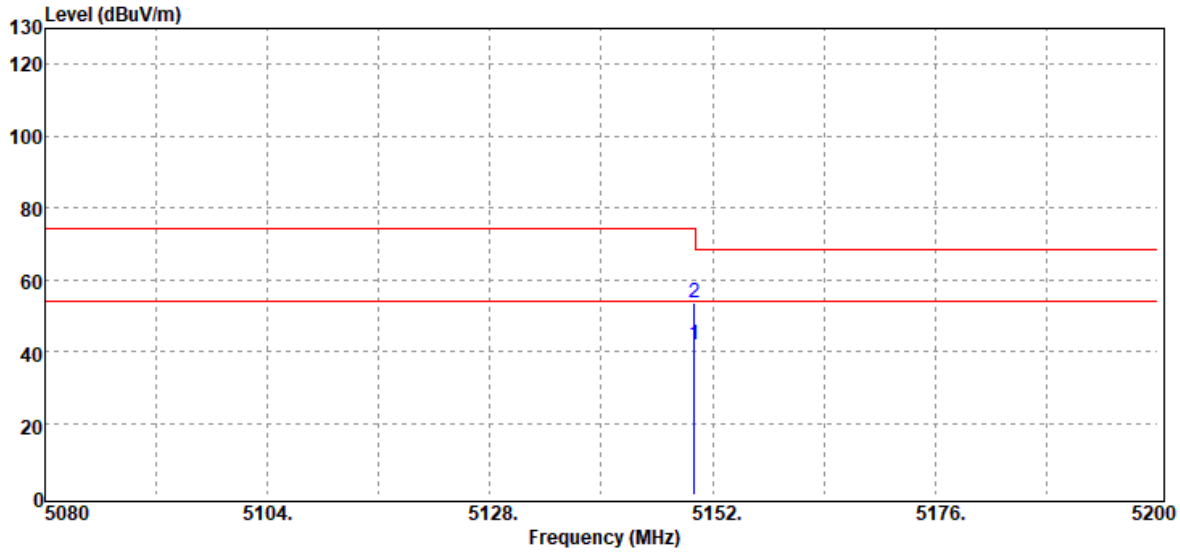
Frequency (MHz)	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
5350.00	Average	35.54	5.21	40.75	54.00	-13.25
5350.00	Peak	48.94	5.21	54.15	74.00	-19.85

Test Mode	IEEE 802.11n HT20 Low CH	Temp/Hum	21(℃)/ 52%RH
Test Item	Band Edge	Test Date	November 14, 2019
Polarize	Vertical	Test Engineer	Dally Hong
Detector	Peak / Average		



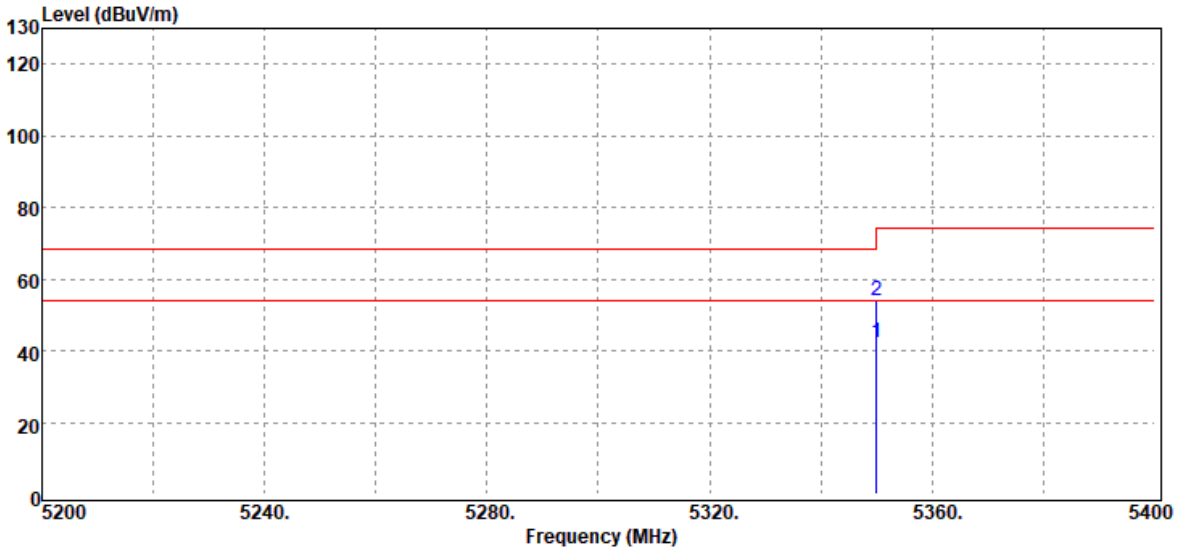
Frequency (MHz)	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
5150.00	Average	36.72	4.92	41.64	54.00	-12.36
5150.00	Peak	48.39	4.92	53.31	74.00	-20.69

Test Mode	IEEE 802.11n HT20 Low CH	Temp/Hum	21(℃)/ 52%RH
Test Item	Band Edge	Test Date	November 14, 2019
Polarize	Horizontal	Test Engineer	Dally Hong
Detector	Peak / Average		



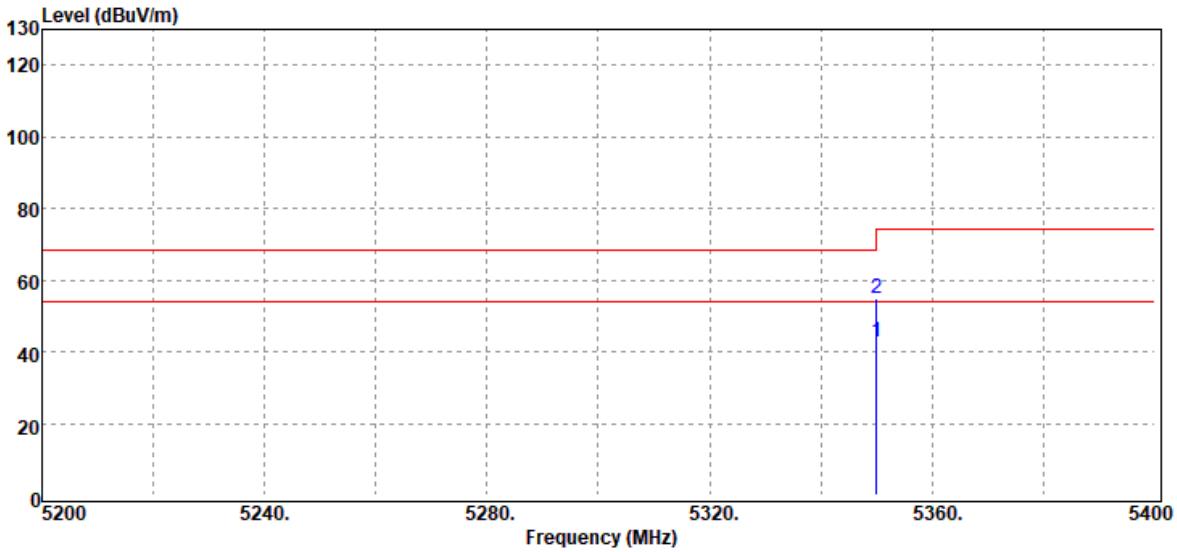
Frequency (MHz)	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
5150.00	Average	36.71	4.92	41.63	54.00	-12.37
5150.00	Peak	48.52	4.92	53.44	74.00	-20.56

Test Mode	IEEE 802.11n HT20 High CH	Temp/Hum	21(℃)/ 52%RH
Test Item	Band Edge	Test Date	November 14, 2019
Polarize	Vertical	Test Engineer	Dally Hong
Detector	Peak / Average		



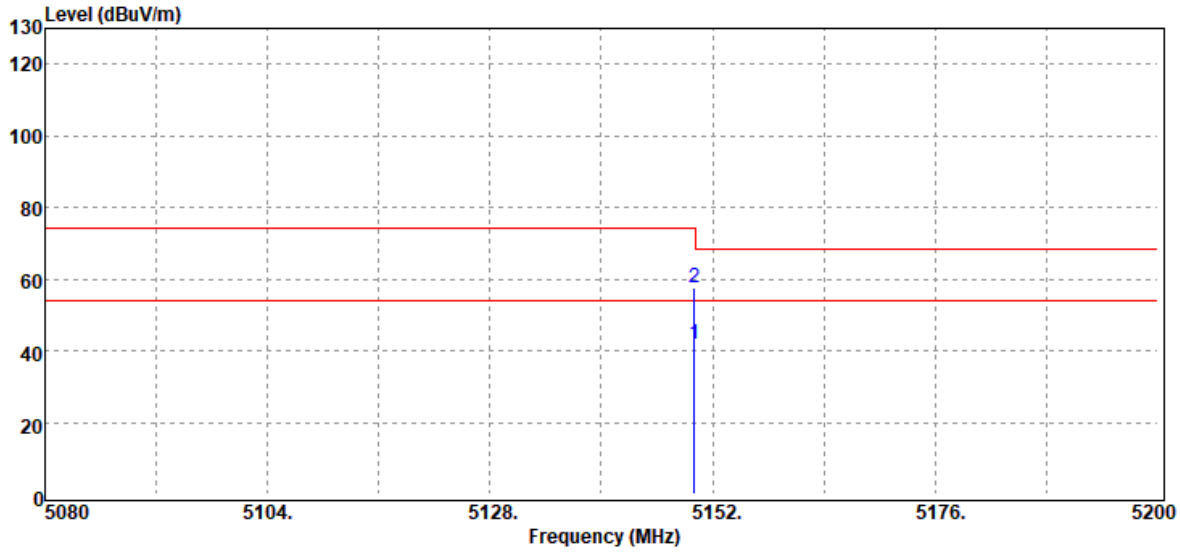
Frequency (MHz)	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
5350.00	Average	36.89	5.21	42.10	54.00	-11.90
5350.00	Peak	48.87	5.21	54.08	74.00	-19.92

Test Mode	IEEE 802.11n HT20 High CH	Temp/Hum	21(℃)/ 52%RH
Test Item	Band Edge	Test Date	November 14, 2019
Polarize	Horizontal	Test Engineer	Dally Hong
Detector	Peak / Average		



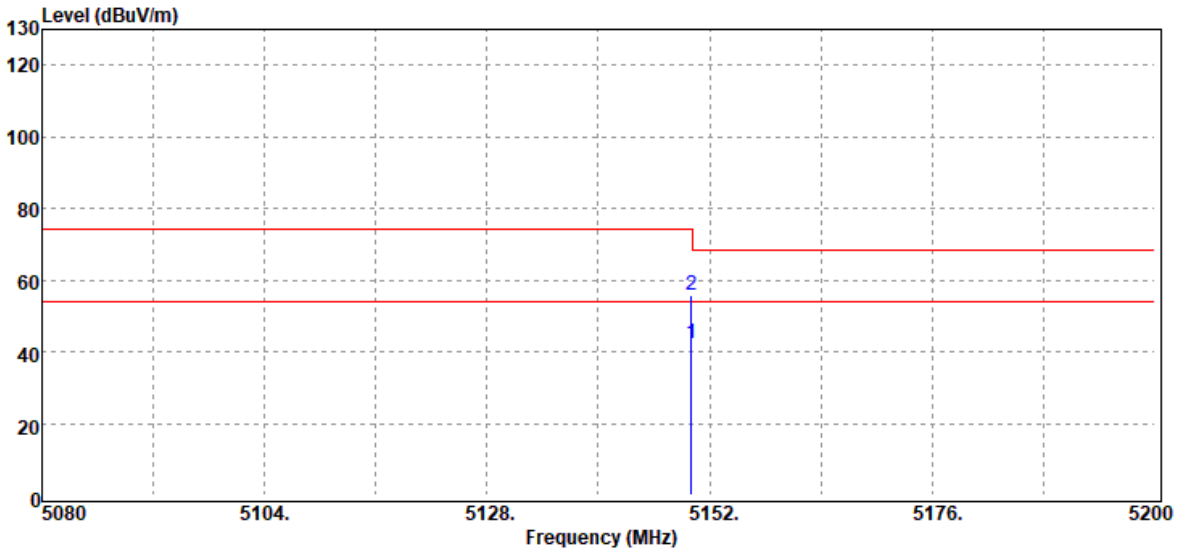
Frequency (MHz)	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
5350.00	Average	37.34	5.21	42.55	54.00	-11.45
5350.00	Peak	49.45	5.21	54.66	74.00	-19.34

Test Mode	IEEE 802.11n HT40 Low CH	Temp/Hum	21(℃)/ 52%RH
Test Item	Band Edge	Test Date	November 14, 2019
Polarize	Vertical	Test Engineer	Dally Hong
Detector	Peak / Average		



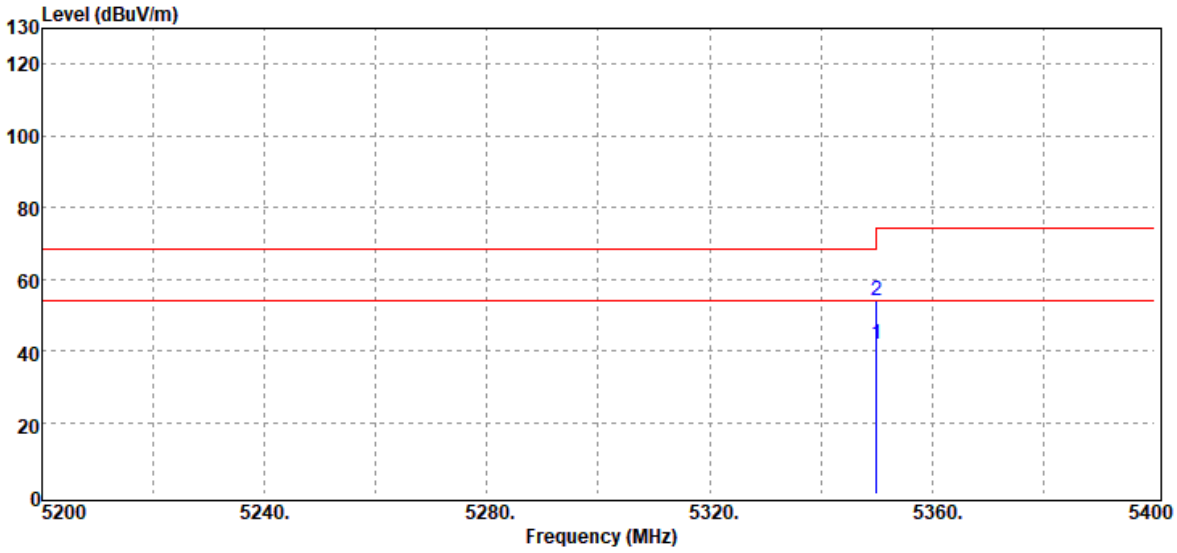
Frequency (MHz)	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
5150.00	Average	36.98	4.92	41.90	54.00	-12.10
5150.00	Peak	52.76	4.92	57.68	74.00	-16.32

Test Mode	IEEE 802.11n HT40 Low CH	Temp/Hum	21(℃)/ 52%RH
Test Item	Band Edge	Test Date	November 14, 2019
Polarize	Horizontal	Test Engineer	Dally Hong
Detector	Peak / Average		



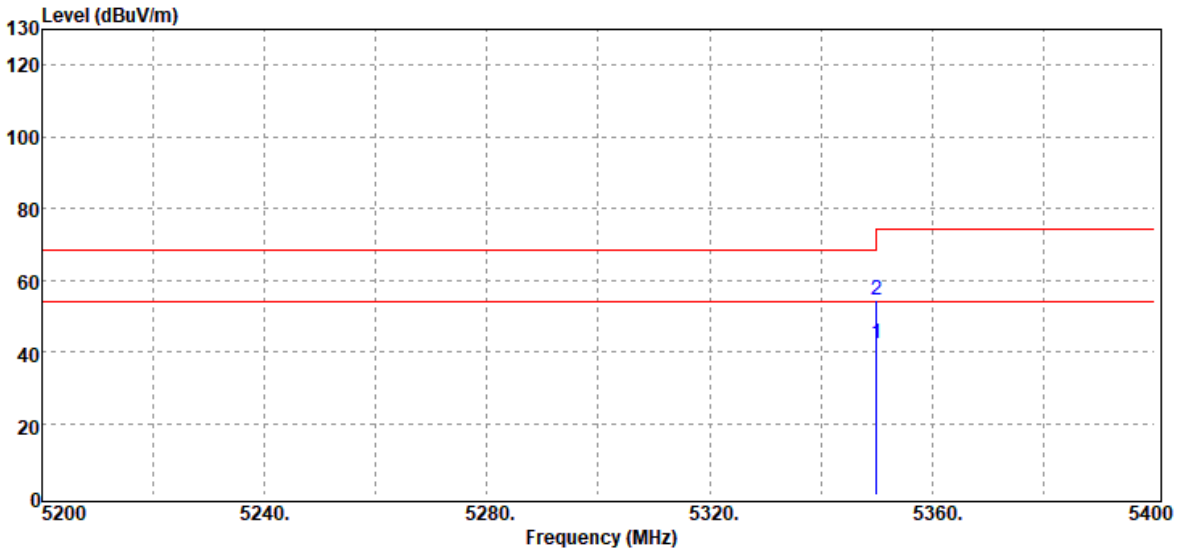
Frequency (MHz)	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
5150.00	Average	37.36	4.92	42.28	54.00	-11.72
5150.00	Peak	50.80	4.92	55.72	74.00	-18.28

Test Mode	IEEE 802.11n HT40 High CH	Temp/Hum	21(℃)/ 52%RH
Test Item	Band Edge	Test Date	November 14, 2019
Polarize	Vertical	Test Engineer	Dally Hong
Detector	Peak / Average		



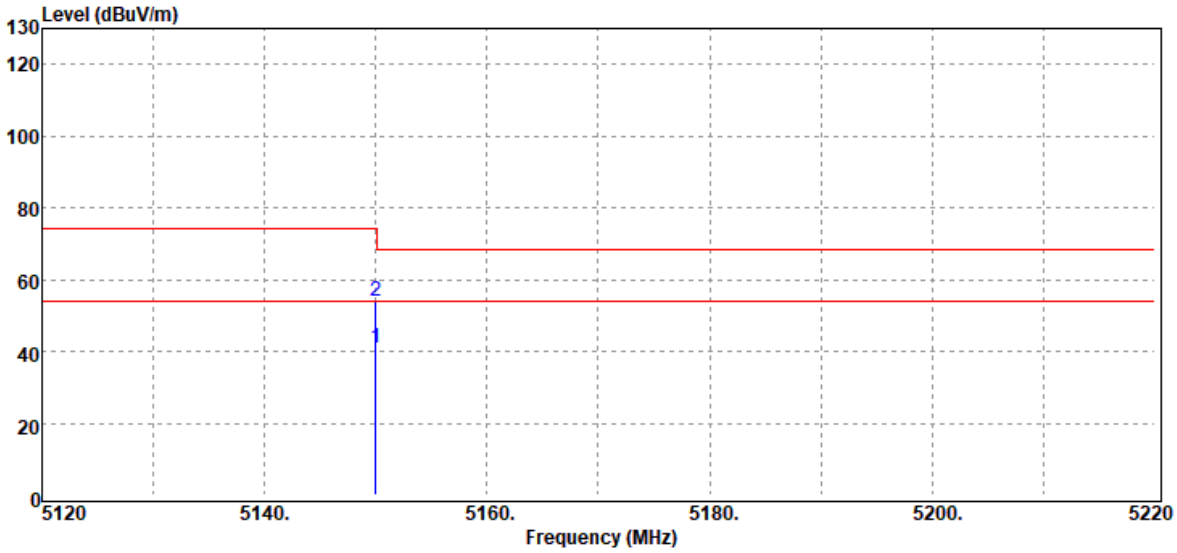
Frequency (MHz)	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
5350.00	Average	36.60	5.21	41.81	54.00	-12.19
5350.00	Peak	48.69	5.21	53.90	74.00	-20.10

Test Mode	IEEE 802.11n HT40 High CH	Temp/Hum	21(℃)/ 52%RH
Test Item	Band Edge	Test Date	November 14, 2019
Polarize	Horizontal	Test Engineer	Dally Hong
Detector	Peak / Average		



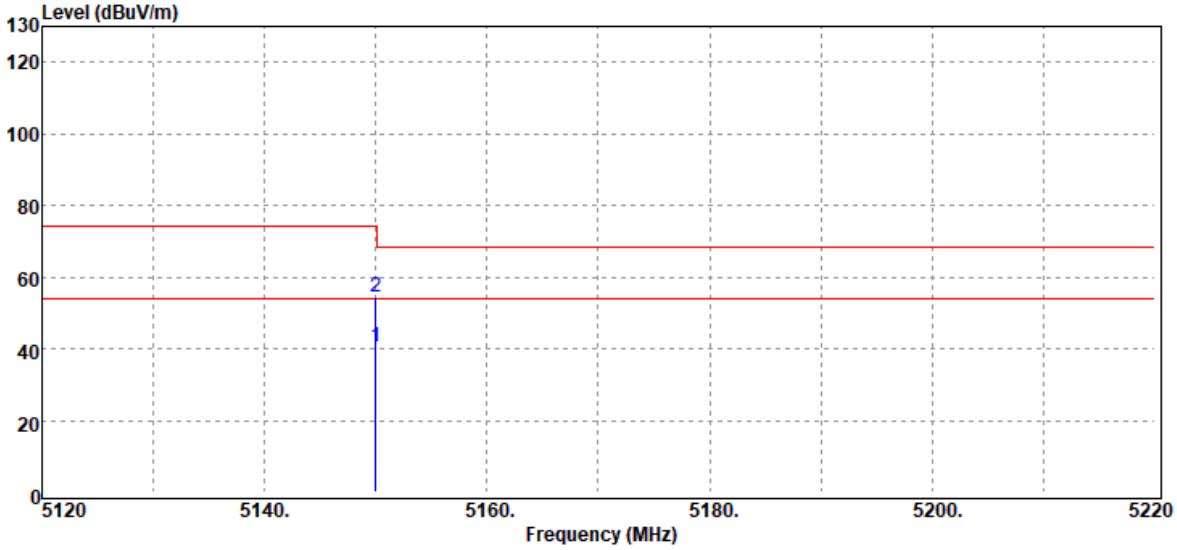
Frequency (MHz)	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
5350.00	Average	37.27	5.21	42.48	54.00	-11.52
5350.00	Peak	49.06	5.21	54.27	74.00	-19.73

Test Mode	IEEE 802.11ac VHT80 Mid CH	Temp/Hum	21(℃)/ 52%RH
Test Item	Band Edge	Test Date	November 14, 2019
Polarize	Vertical	Test Engineer	Dally Hong
Detector	Peak / Average		



Frequency (MHz)	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
5150.00	Average	35.80	4.92	40.72	54.00	-13.28
5150.00	Peak	48.97	4.92	53.89	74.00	-20.11

Test Mode	IEEE 802.11ac VHT80 Mid CH	Temp/Hum	21(℃)/ 52%RH
Test Item	Band Edge	Test Date	November 14, 2019
Polarize	Horizontal	Test Engineer	Dally Hong
Detector	Peak / Average		

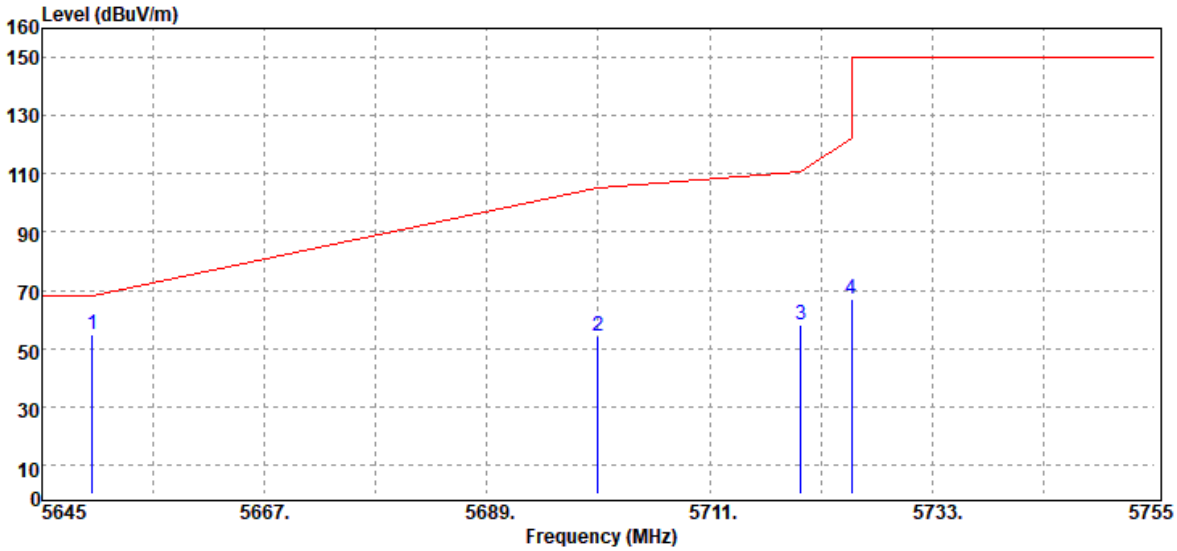


Frequency (MHz)	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
5150.00	Average	35.69	4.92	40.61	54.00	-13.39
5150.00	Peak	49.65	4.92	54.57	74.00	-19.43

Test Data

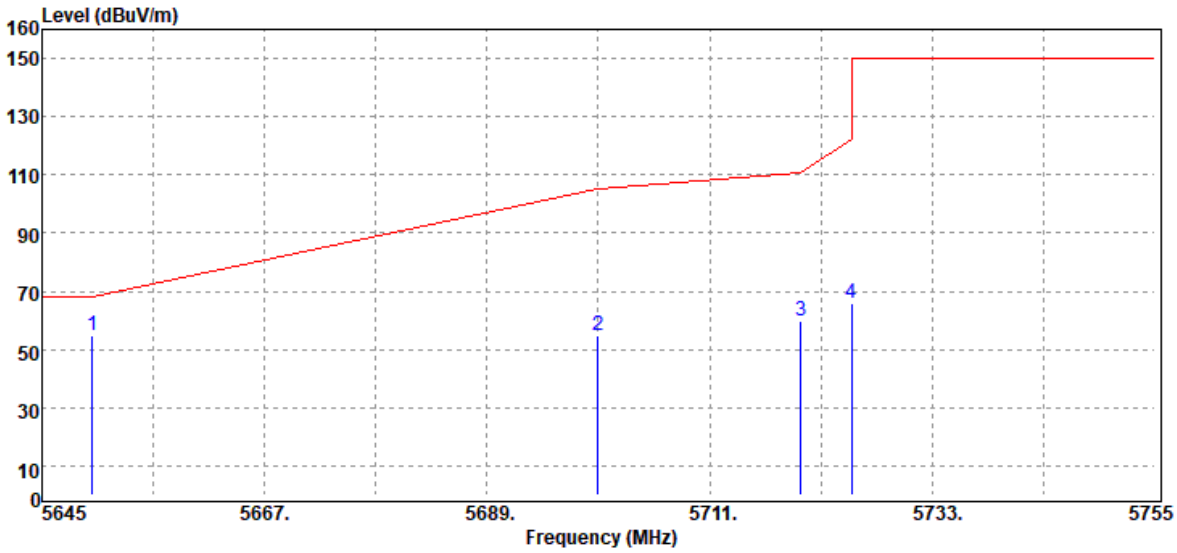
Band Edge Test Data for UNII-3

Test Mode	IEEE 802.11a Low CH	Temp/Hum	21(℃)/ 52%RH
Test Item	Band Edge	Test Date	November 14, 2019
Polarize	Vertical	Test Engineer	Dally Hong
Detector	Peak		



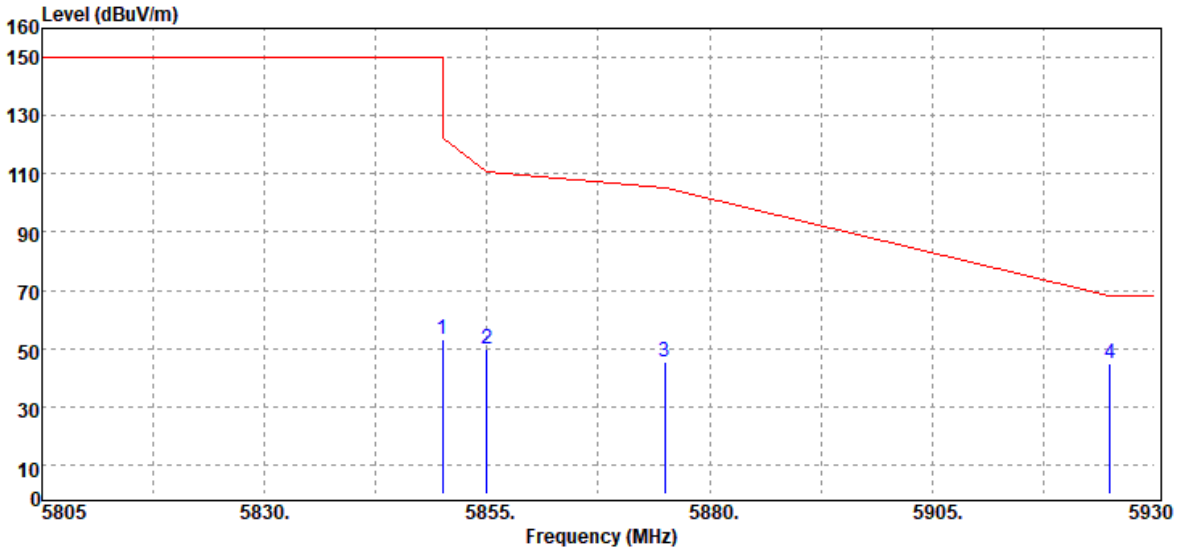
Frequency (MHz)	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
5650.00	Peak	48.74	6.04	54.78	68.20	-13.42
5700.00	Peak	47.91	6.32	54.23	105.20	-50.97
5720.00	Peak	51.85	6.33	58.18	110.80	-52.62
5725.00	Peak	60.58	6.34	66.92	122.20	-55.28

Test Mode	IEEE 802.11a Low CH	Temp/Hum	21(℃)/ 52%RH
Test Item	Band Edge	Test Date	November 14, 2019
Polarize	Horizontal	Test Engineer	Dally Hong
Detector	Peak		



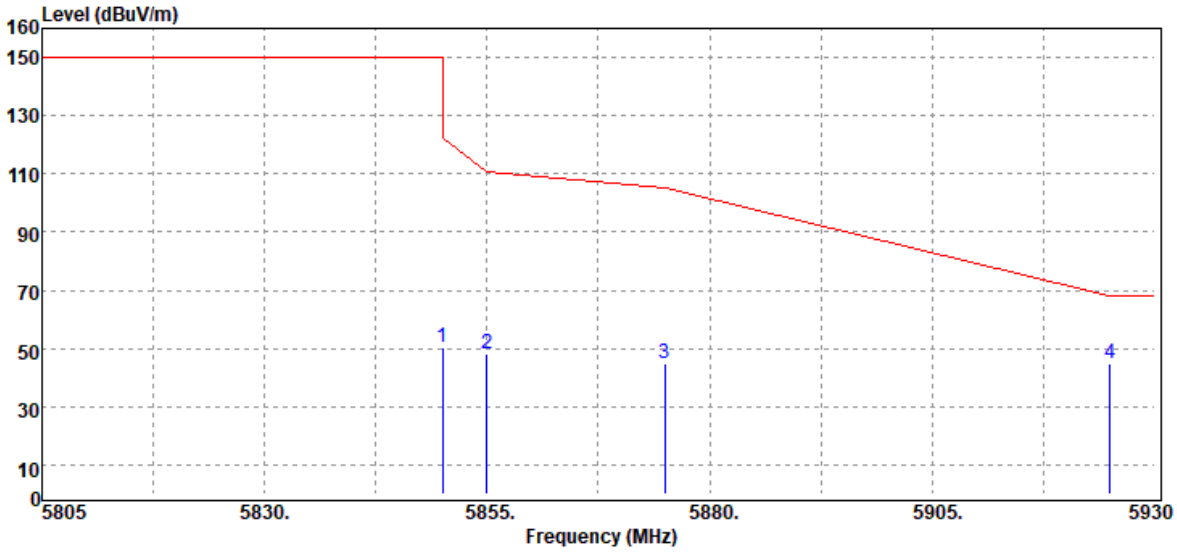
Frequency (MHz)	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
5650.00	Peak	48.61	6.04	54.65	68.20	-13.55
5700.00	Peak	48.62	6.32	54.94	105.20	-50.26
5720.00	Peak	53.33	6.33	59.66	110.80	-51.14
5725.00	Peak	59.62	6.34	65.96	122.20	-56.24

Test Mode	IEEE 802.11a High CH	Temp/Hum	21(℃)/ 52%RH
Test Item	Band Edge	Test Date	November 14, 2019
Polarize	Vertical	Test Engineer	Dally Hong
Detector	Peak		



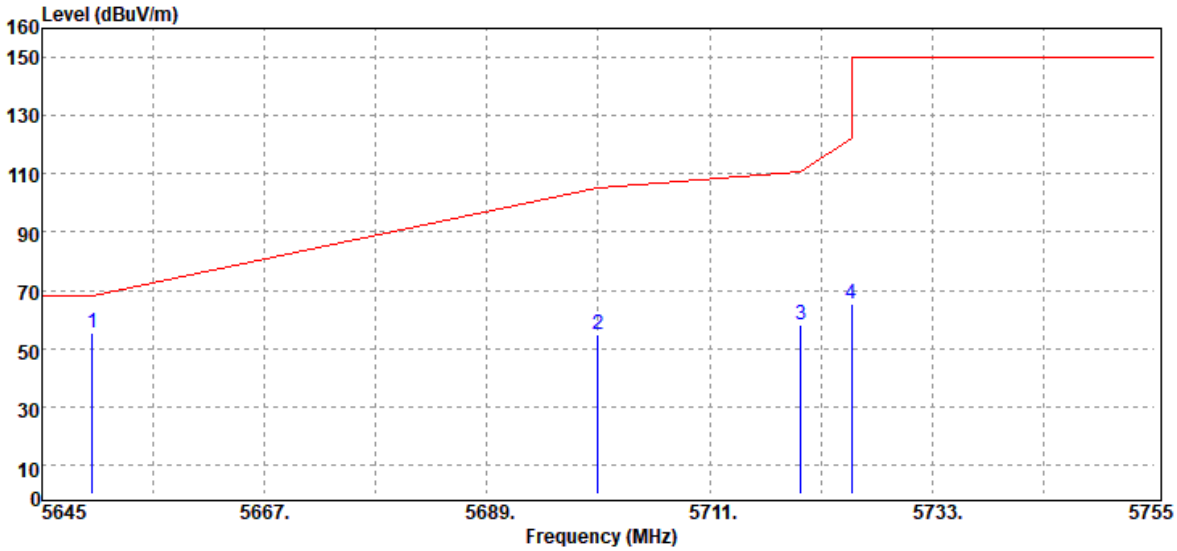
Frequency (MHz)	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
5850.00	Peak	56.99	-3.59	53.40	122.20	-68.80
5855.00	Peak	53.66	-3.60	50.06	110.80	-60.74
5875.00	Peak	48.99	-3.63	45.36	105.20	-59.84
5925.00	Peak	48.75	-3.64	45.11	68.20	-23.09

Test Mode	IEEE 802.11a High CH	Temp/Hum	21(℃)/ 52%RH
Test Item	Band Edge	Test Date	November 14, 2019
Polarize	Horizontal	Test Engineer	Dally Hong
Detector	Peak		



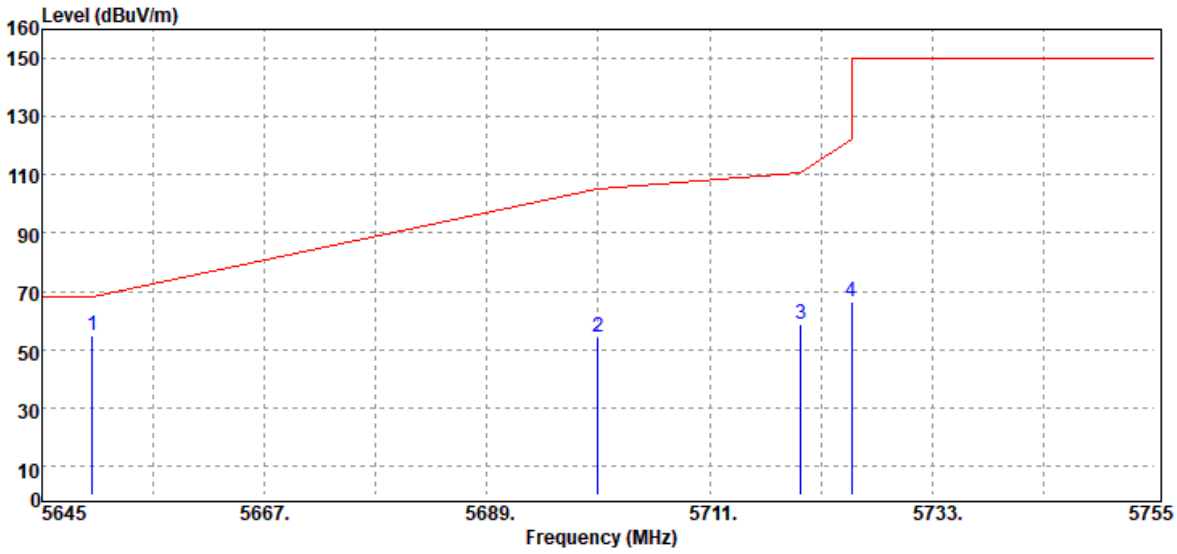
Frequency (MHz)	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
5850.00	Peak	53.95	-3.59	50.36	122.20	-71.84
5855.00	Peak	52.02	-3.60	48.42	110.80	-62.38
5875.00	Peak	48.47	-3.63	44.84	105.20	-60.36
5925.00	Peak	48.46	-3.64	44.82	68.20	-23.38

Test Mode	IEEE 802.11n HT20 Low CH	Temp/Hum	21(℃)/ 52%RH
Test Item	Band Edge	Test Date	November 14, 2019
Polarize	Vertical	Test Engineer	Dally Hong
Detector	Peak		



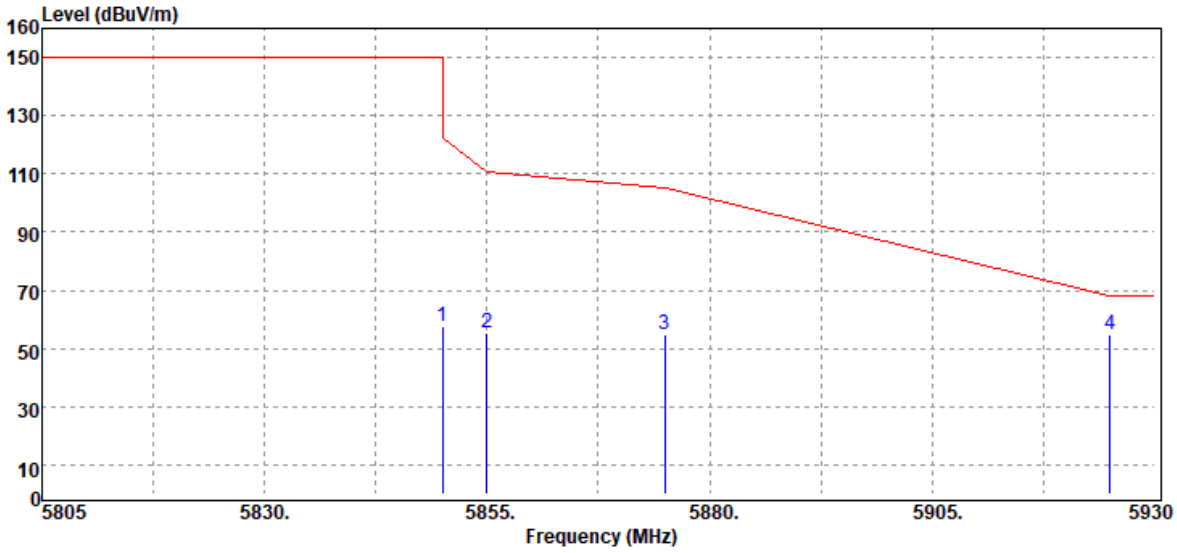
Frequency (MHz)	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
5650.00	Peak	49.09	6.04	55.13	68.20	-13.07
5700.00	Peak	48.49	6.32	54.81	105.20	-50.39
5720.00	Peak	51.84	6.33	58.17	110.80	-52.63
5725.00	Peak	58.79	6.34	65.13	122.20	-57.07

Test Mode	IEEE 802.11n HT20 Low CH	Temp/Hum	21(℃)/ 52%RH
Test Item	Band Edge	Test Date	November 14, 2019
Polarize	Horizontal	Test Engineer	Dally Hong
Detector	Peak		



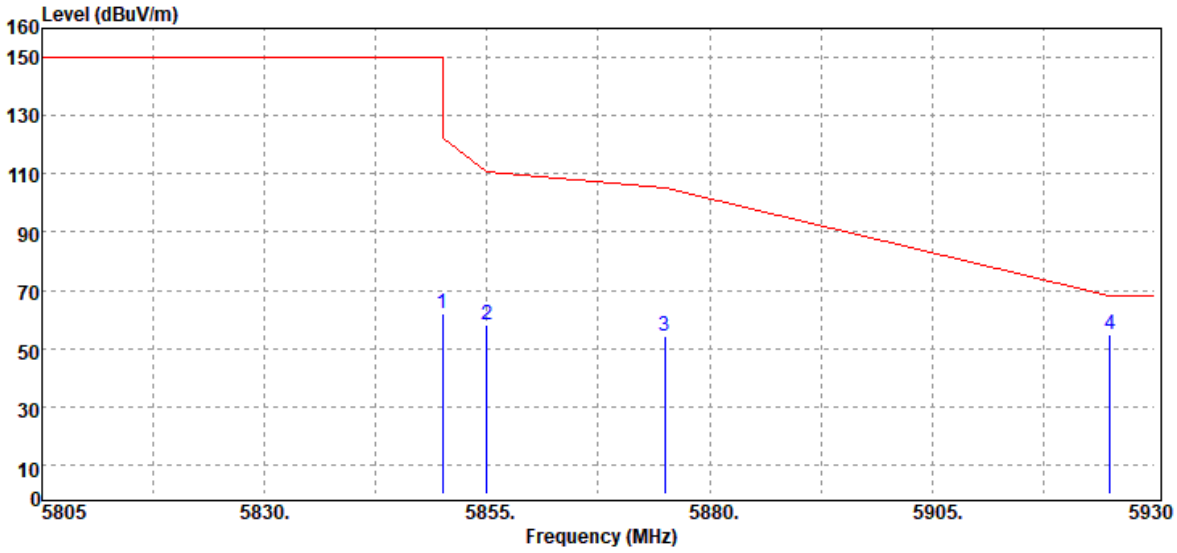
Frequency (MHz)	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
5650.00	Peak	48.86	6.04	54.90	68.20	-13.30
5700.00	Peak	48.07	6.32	54.39	105.20	-50.81
5720.00	Peak	52.33	6.33	58.66	110.80	-52.14
5725.00	Peak	60.28	6.34	66.62	122.20	-55.58

Test Mode	IEEE 802.11n HT20 High CH	Temp/Hum	21(℃)/ 52%RH
Test Item	Band Edge	Test Date	November 14, 2019
Polarize	Vertical	Test Engineer	Dally Hong
Detector	Peak		



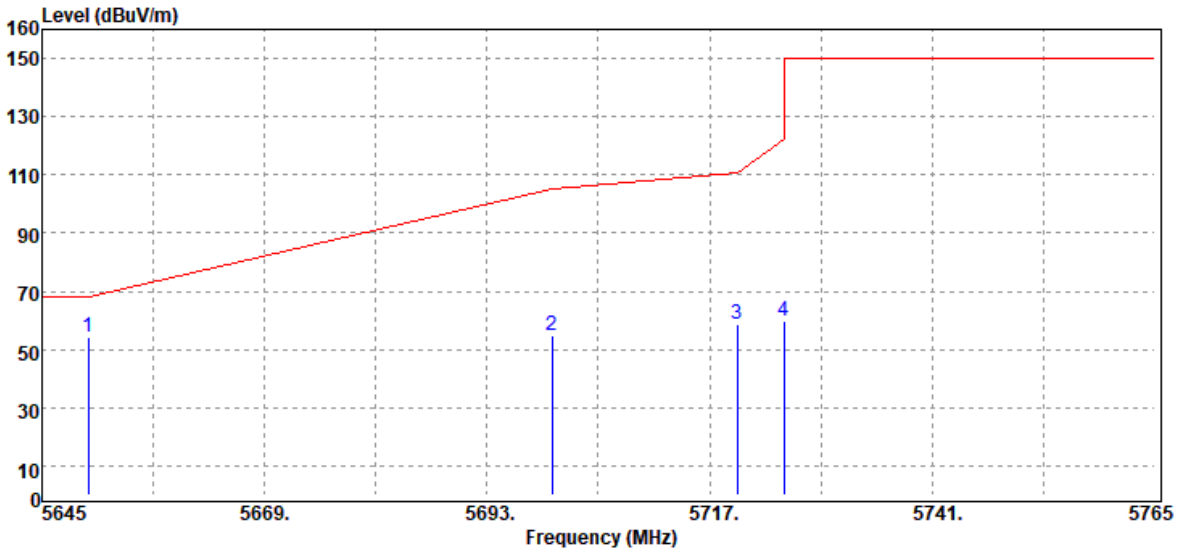
Frequency (MHz)	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
5850.00	Peak	51.33	6.39	57.72	122.20	-64.48
5855.00	Peak	49.04	6.38	55.42	110.80	-55.38
5875.00	Peak	48.30	6.37	54.67	105.20	-50.53
5925.00	Peak	48.56	6.42	54.98	68.20	-13.22

Test Mode	IEEE 802.11n HT20 High CH	Temp/Hum	21(℃)/ 52%RH
Test Item	Band Edge	Test Date	November 14, 2019
Polarize	Horizontal	Test Engineer	Dally Hong
Detector	Peak		



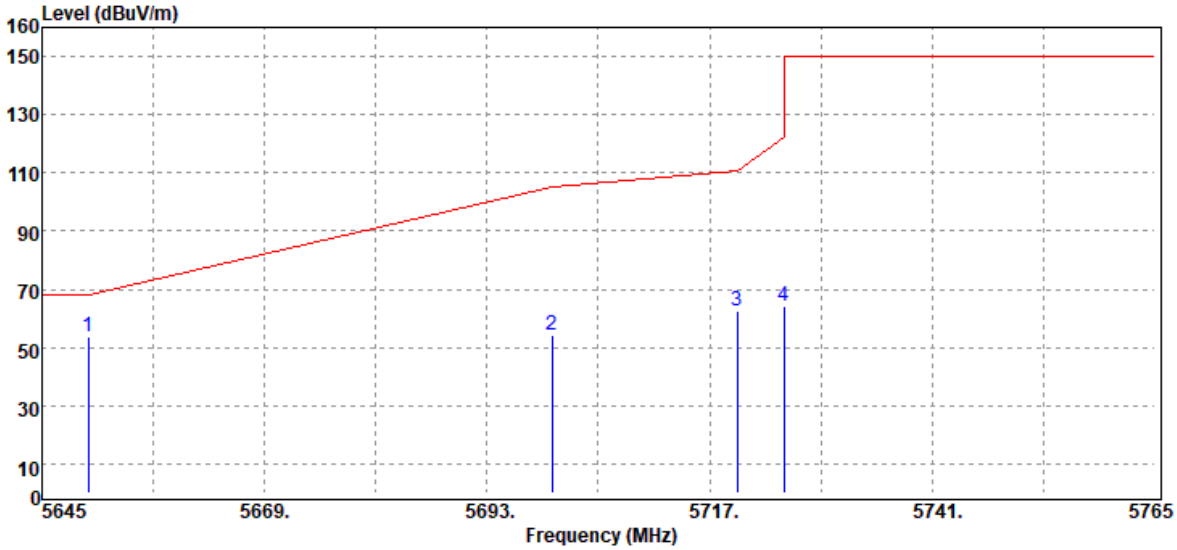
Frequency (MHz)	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
5850.00	Peak	55.58	6.39	61.97	122.20	-60.23
5855.00	Peak	51.66	6.38	58.04	110.80	-52.76
5875.00	Peak	47.99	6.37	54.36	105.20	-50.84
5925.00	Peak	48.29	6.42	54.71	68.20	-13.49

Test Mode	IEEE 802.11n HT40 Low CH	Temp/Hum	21(℃)/ 52%RH
Test Item	Band Edge	Test Date	November 14, 2019
Polarize	Vertical	Test Engineer	Dally Hong
Detector	Peak		



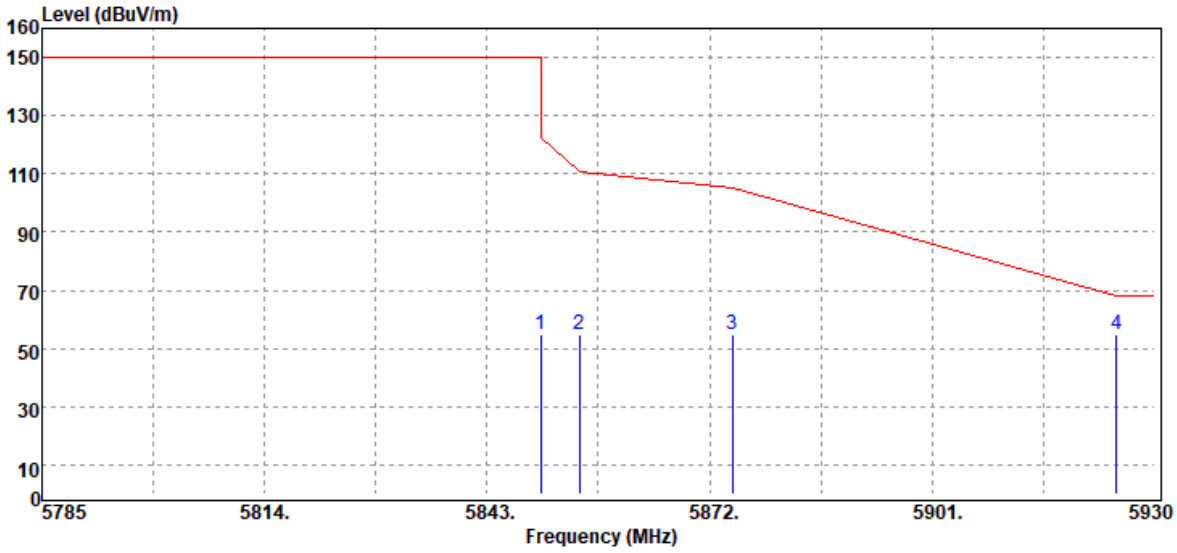
Frequency (MHz)	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
5650.00	Peak	48.13	6.04	54.17	68.20	-14.03
5700.00	Peak	48.23	6.32	54.55	105.20	-50.65
5720.00	Peak	52.35	6.33	58.68	110.80	-52.12
5725.00	Peak	53.58	6.34	59.92	122.20	-62.28

Test Mode	IEEE 802.11n HT40 Low CH	Temp/Hum	21(℃)/ 52%RH
Test Item	Band Edge	Test Date	November 14, 2019
Polarize	Horizontal	Test Engineer	Dally Hong
Detector	Peak		



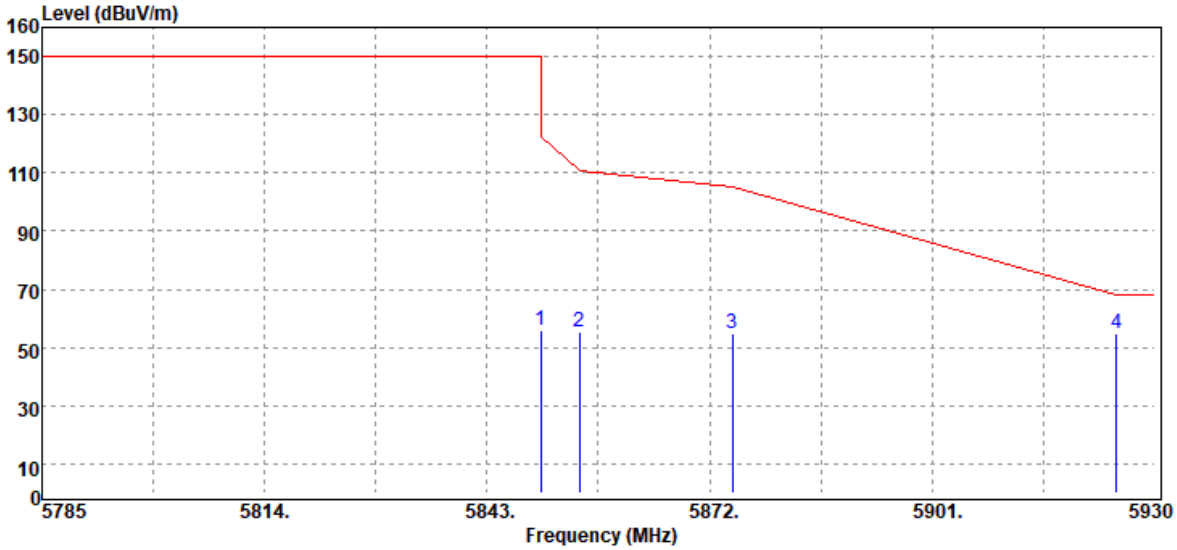
Frequency (MHz)	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
5650.00	Peak	47.79	6.04	53.83	68.20	-14.37
5700.00	Peak	48.05	6.32	54.37	105.20	-50.83
5720.00	Peak	56.03	6.33	62.36	110.80	-48.44
5725.00	Peak	57.90	6.34	64.24	122.20	-57.96

Test Mode	IEEE 802.11n HT40 High CH	Temp/Hum	21(℃)/ 52%RH
Test Item	Band Edge	Test Date	November 14, 2019
Polarize	Vertical	Test Engineer	Dally Hong
Detector	Peak		



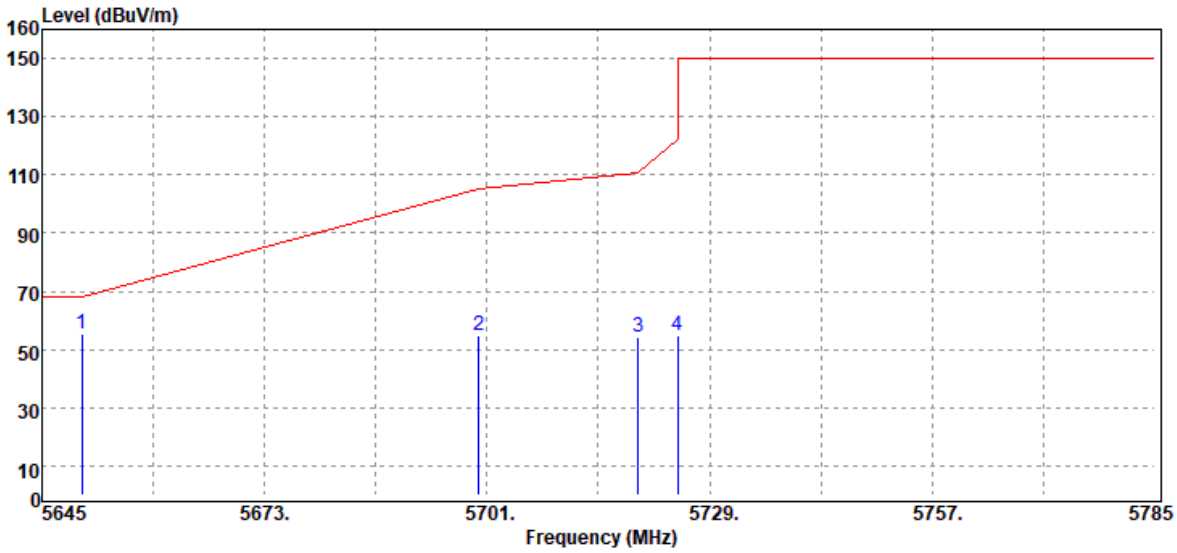
Frequency (MHz)	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
5850.00	Peak	48.47	6.39	54.86	122.20	-67.34
5855.00	Peak	48.21	6.38	54.59	110.80	-56.21
5875.00	Peak	48.34	6.37	54.71	105.20	-50.49
5925.00	Peak	48.38	6.42	54.80	68.20	-13.40

Test Mode	IEEE 802.11n HT40 High CH	Temp/Hum	21(℃)/ 52%RH
Test Item	Band Edge	Test Date	November 14, 2019
Polarize	Horizontal	Test Engineer	Dally Hong
Detector	Peak		



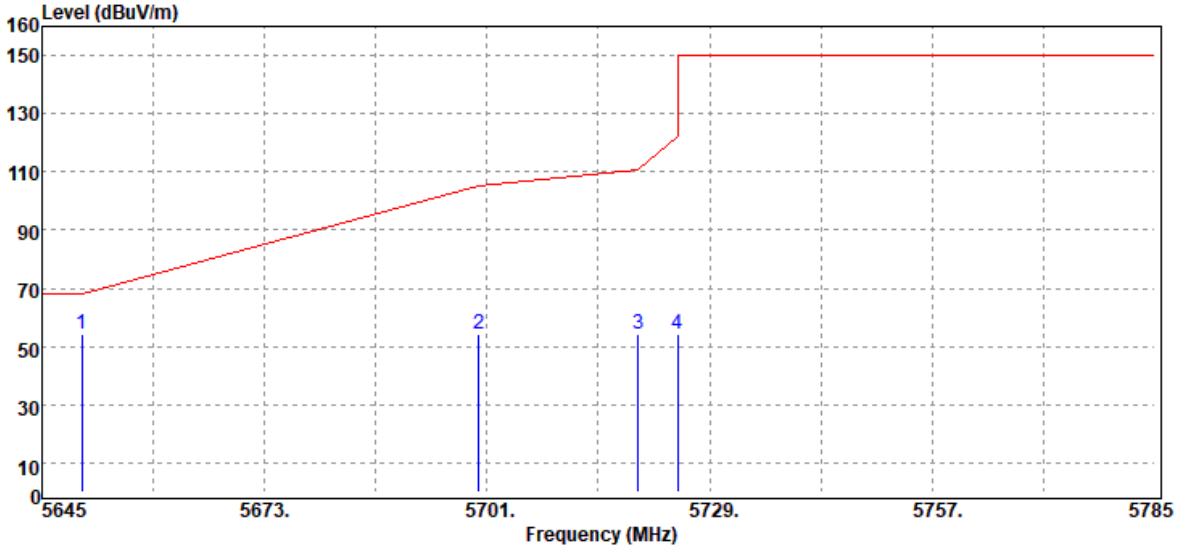
Frequency (MHz)	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
5850.00	Peak	49.60	6.39	55.99	122.20	-66.21
5855.00	Peak	49.06	6.38	55.44	110.80	-55.36
5875.00	Peak	48.23	6.37	54.60	105.20	-50.60
5925.00	Peak	48.22	6.42	54.64	68.20	-13.56

Test Mode	IEEE 802.11ac VHT80 Mid CH	Temp/Hum	21(℃)/ 52%RH
Test Item	Band Edge	Test Date	November 14, 2019
Polarize	Vertical	Test Engineer	Dally Hong
Detector	Peak		



Frequency (MHz)	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
5650.00	Peak	49.06	6.04	55.10	68.20	-13.10
5700.00	Peak	48.36	6.32	54.68	105.20	-50.52
5720.00	Peak	48.08	6.33	54.41	110.80	-56.39
5725.00	Peak	48.59	6.34	54.93	122.20	-67.27

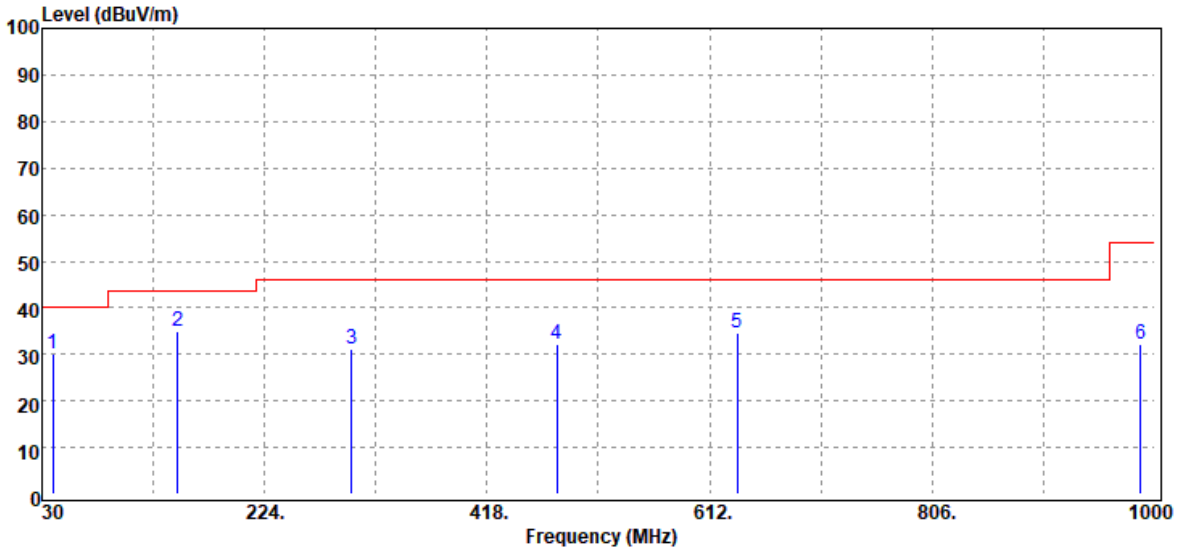
Test Mode	IEEE 802.11ac VHT80 Mid CH	Temp/Hum	21(℃)/ 52%RH
Test Item	Band Edge	Test Date	November 14, 2019
Polarize	Horizontal	Test Engineer	Dally Hong
Detector	Peak		



Frequency (MHz)	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
5650.00	Peak	48.39	6.04	54.43	68.20	-13.77
5700.00	Peak	47.73	6.32	54.05	105.20	-51.15
5720.00	Peak	47.87	6.33	54.20	110.80	-56.60
5725.00	Peak	48.10	6.34	54.44	122.20	-67.76

Below 1G Test Data

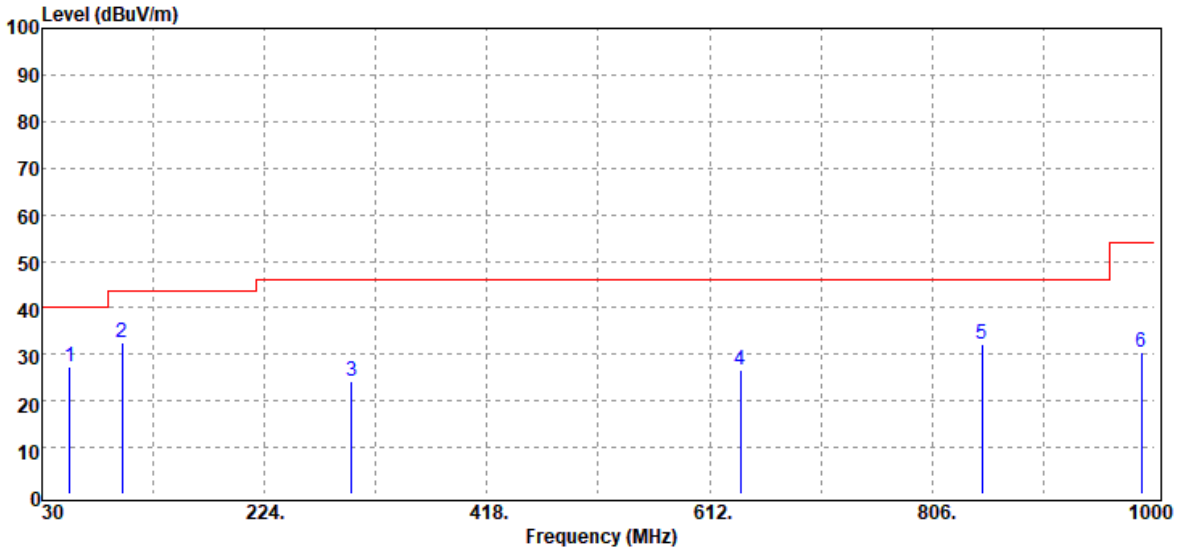
Test Mode	Mode 1	Temp/Hum	21(℃)/ 52%RH
Test Item	30MHz-1GHz	Test Date	November 6, 2019
Polarize	Vertical	Test Engineer	Dally Hong
Detector	Peak		



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
39.70	Peak	39.53	-9.31	30.22	40.00	-9.78
148.34	Peak	44.97	-10.10	34.87	43.50	-8.63
299.66	Peak	39.46	-8.25	31.21	46.00	-14.79
479.11	Peak	35.15	-2.98	32.17	46.00	-13.83
636.25	Peak	34.98	-0.30	34.68	46.00	-11.32
987.39	Peak	26.79	5.46	32.25	54.00	-21.75

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

Test Mode	Mode 1	Temp/Hum	21(℃)/ 52%RH
Test Item	30MHz-1GHz	Test Date	November 6, 2019
Polarize	Horizontal	Test Engineer	Dally Hong
Detector	Peak		

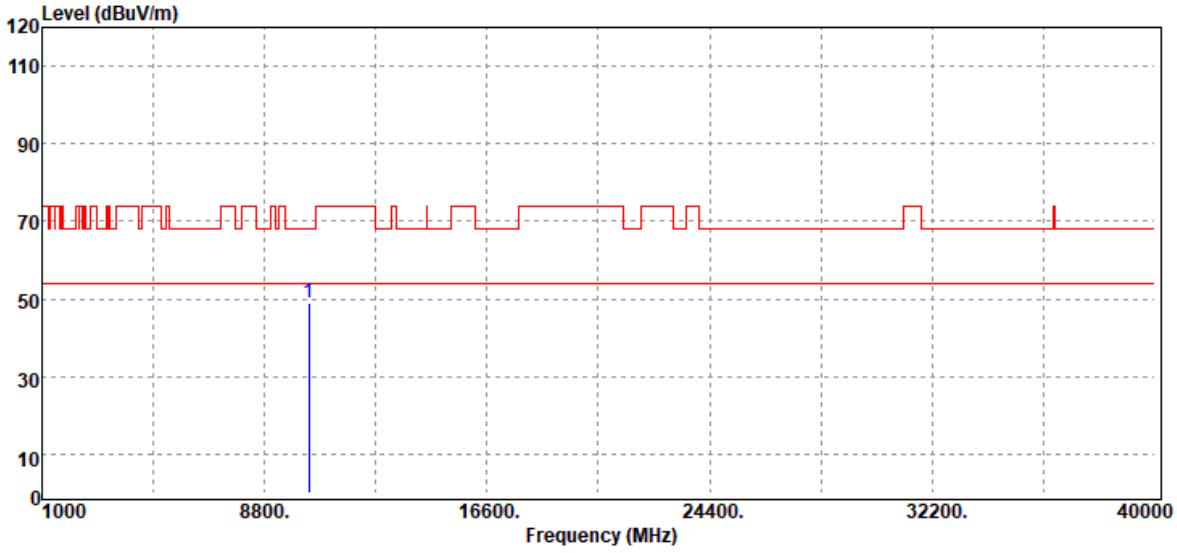


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
54.25	Peak	43.40	-15.95	27.45	40.00	-12.55
99.84	Peak	45.32	-12.75	32.57	43.50	-10.93
299.66	Peak	32.58	-8.25	24.33	46.00	-21.67
639.16	Peak	26.90	-0.28	26.62	46.00	-19.38
849.65	Peak	29.31	3.01	32.32	46.00	-13.68
988.36	Peak	25.13	5.46	30.59	54.00	-23.41

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

Above 1G Test Data for UNII-1

Test Mode	IEEE 802.11a Low CH	Temp/Hum	21(℃)/ 52%RH
Test Item	Harmonic	Test Date	November 14, 2019
Polarize	Vertical	Test Engineer	Dally Hong
Detector	Peak		

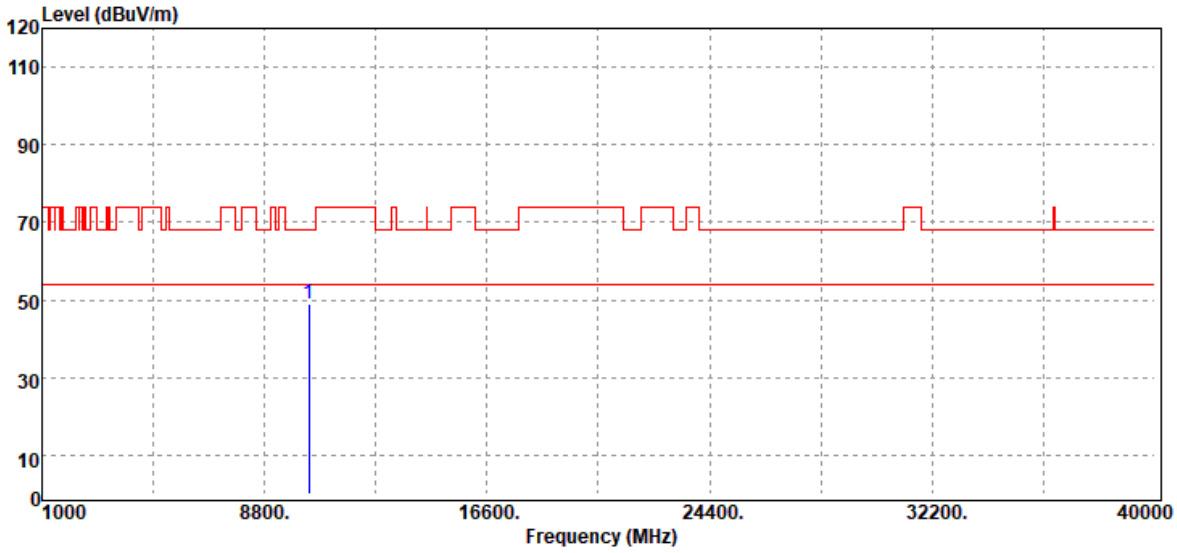


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
10360.00	Peak	34.75	14.12	48.87	68.20	-19.33
N/A						

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*

Test Mode	IEEE 802.11a Low CH	Temp/Hum	21(℃)/ 52%RH
Test Item	Harmonic	Test Date	November 14, 2019
Polarize	Horizontal	Test Engineer	Dally Hong
Detector	Peak		

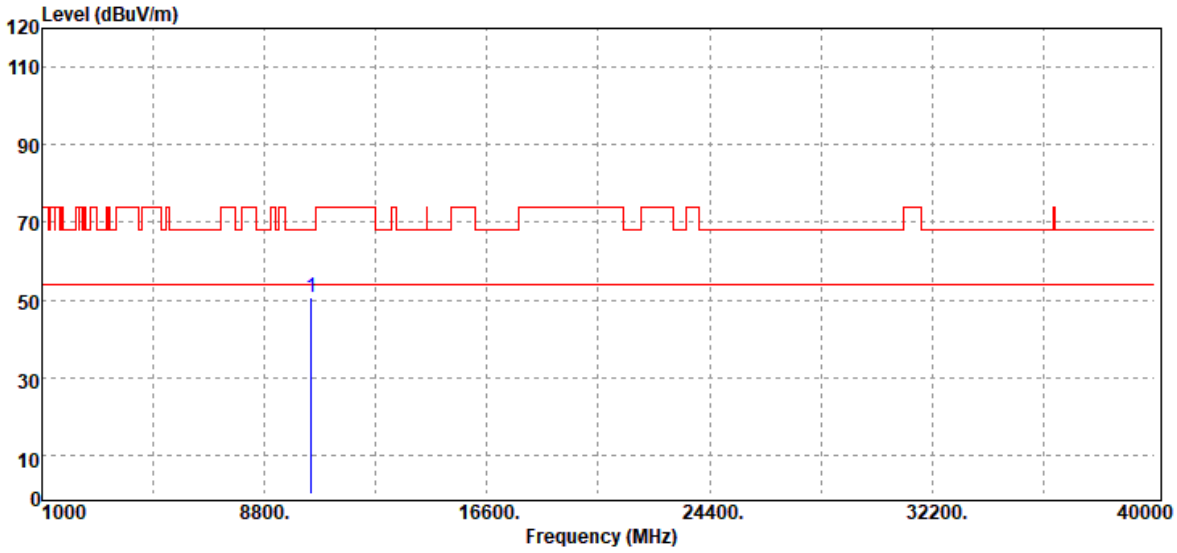


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
10360.00	Peak	34.85	14.12	48.97	68.20	-19.23
N/A						

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*

Test Mode	IEEE 802.11a Mid CH	Temp/Hum	21(℃)/ 52%RH
Test Item	Harmonic	Test Date	November 14, 2019
Polarize	Vertical	Test Engineer	Dally Hong
Detector	Peak		

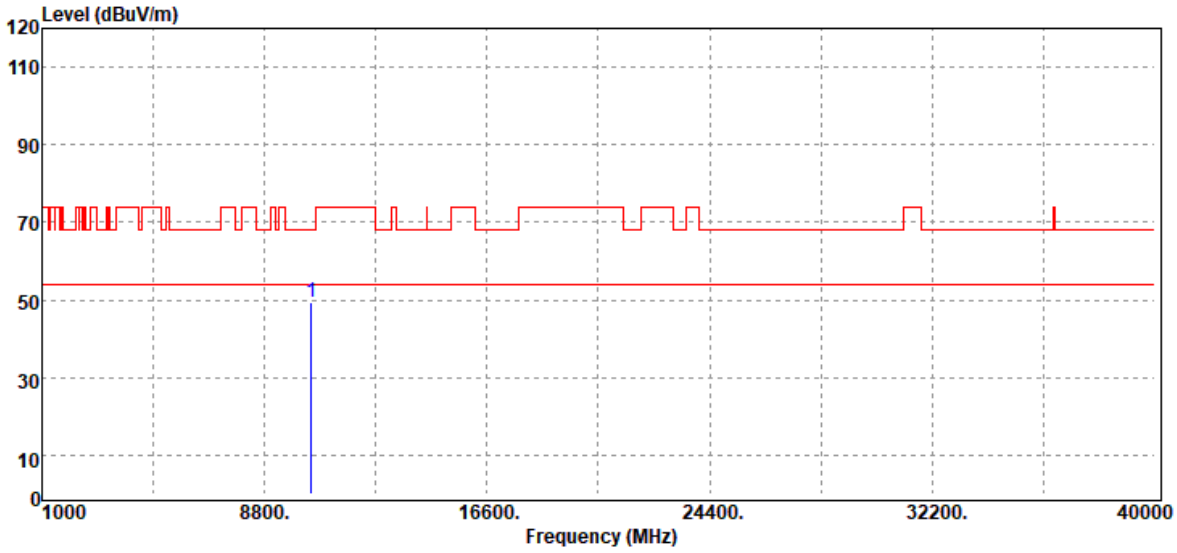


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
10440.00	Peak	35.28	15.21	50.49	68.20	-17.71
N/A						

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*

Test Mode	IEEE 802.11a Mid CH	Temp/Hum	21(℃)/ 52%RH
Test Item	Harmonic	Test Date	November 14, 2019
Polarize	Horizontal	Test Engineer	Dally Hong
Detector	Peak		

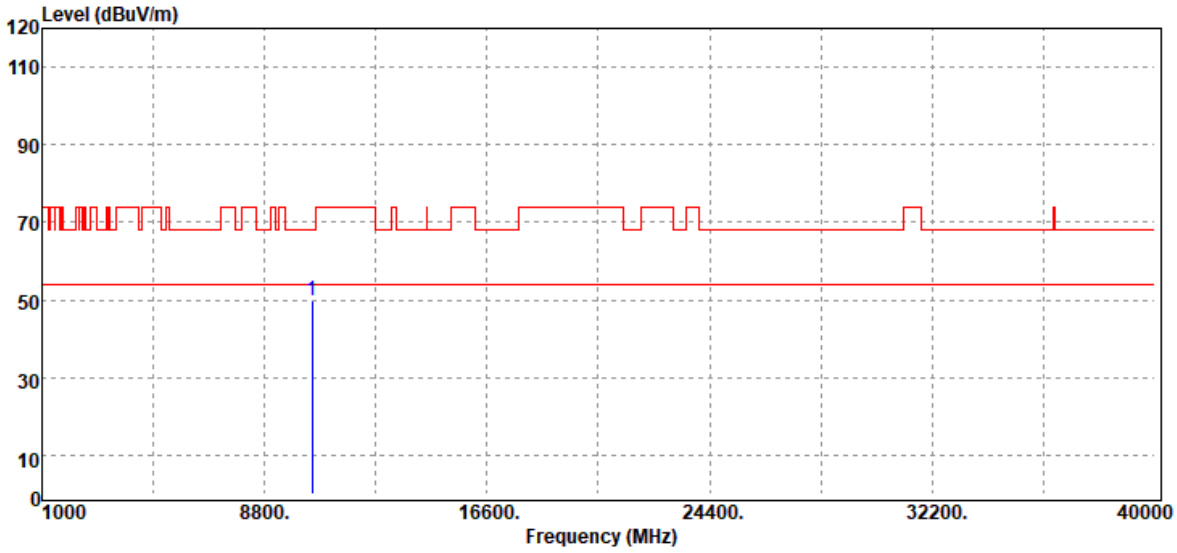


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
10440.00	Peak	34.11	15.21	49.32	68.20	-18.88
N/A						

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*

Test Mode	IEEE 802.11a High CH	Temp/Hum	21(℃)/ 52%RH
Test Item	Harmonic	Test Date	November 14, 2019
Polarize	Vertical	Test Engineer	Dally Hong
Detector	Peak		

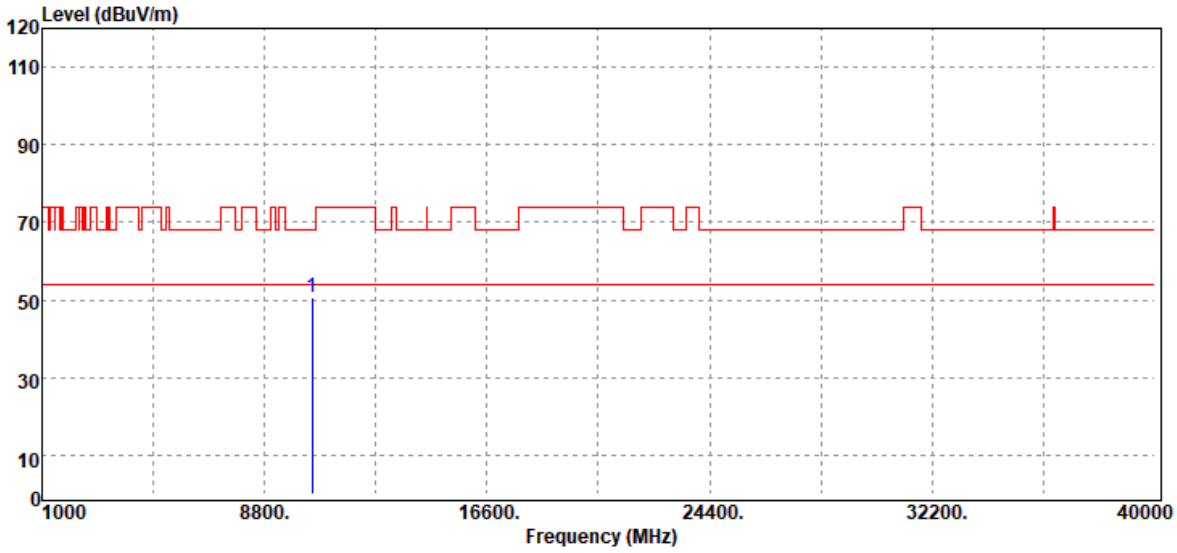


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
10480.00	Peak	33.93	16.09	50.02	68.20	-18.18
N/A						

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*

Test Mode	IEEE 802.11a High CH	Temp/Hum	21(℃)/ 52%RH
Test Item	Harmonic	Test Date	November 14, 2019
Polarize	Horizontal	Test Engineer	Dally Hong
Detector	Peak		

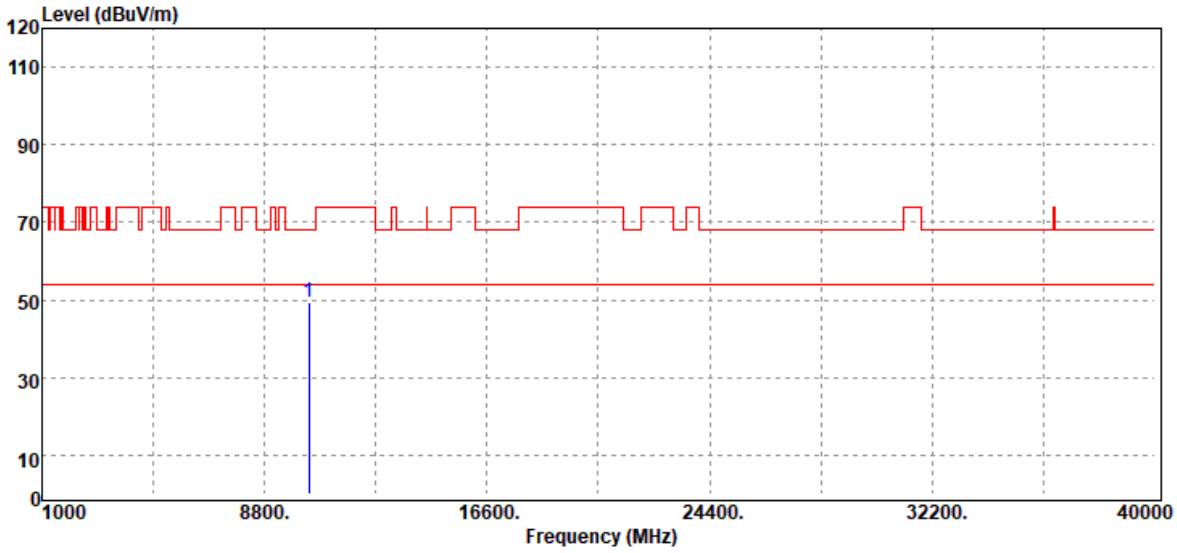


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
10480.00	Peak	34.40	16.09	50.49	68.20	-17.71
N/A						

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*

Test Mode	IEEE 802.11n HT20 Low CH	Temp/Hum	21(℃)/ 52%RH
Test Item	Harmonic	Test Date	November 14, 2019
Polarize	Vertical	Test Engineer	Dally Hong
Detector	Peak		

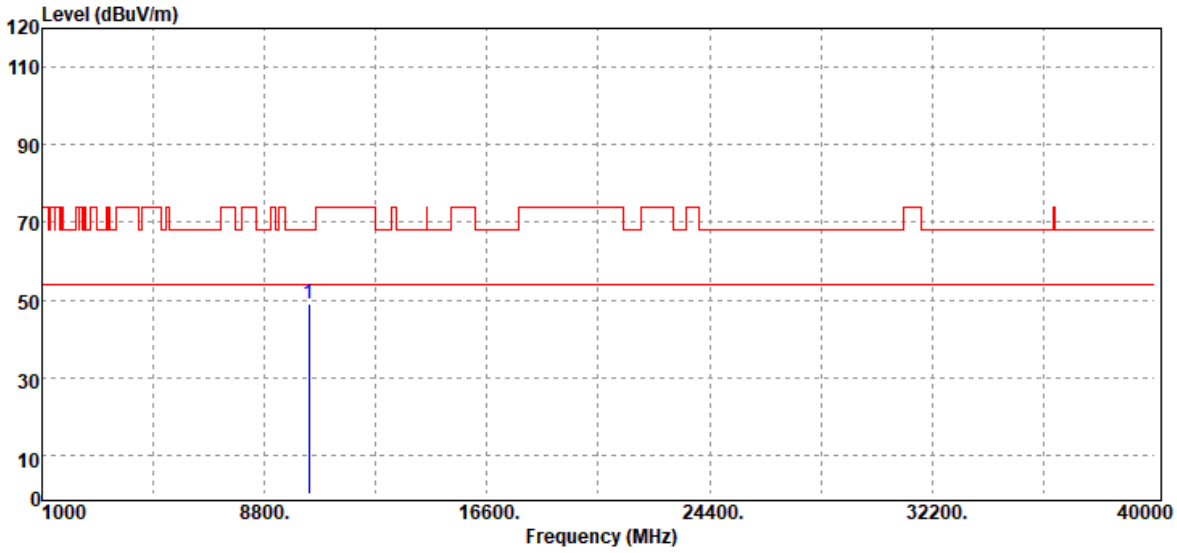


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
10360.00	Peak	35.37	14.12	49.49	68.20	-18.71
N/A						

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*

Test Mode	IEEE 802.11n HT20 Low CH	Temp/Hum	21(℃)/ 52%RH
Test Item	Harmonic	Test Date	November 14, 2019
Polarize	Horizontal	Test Engineer	Dally Hong
Detector	Peak		

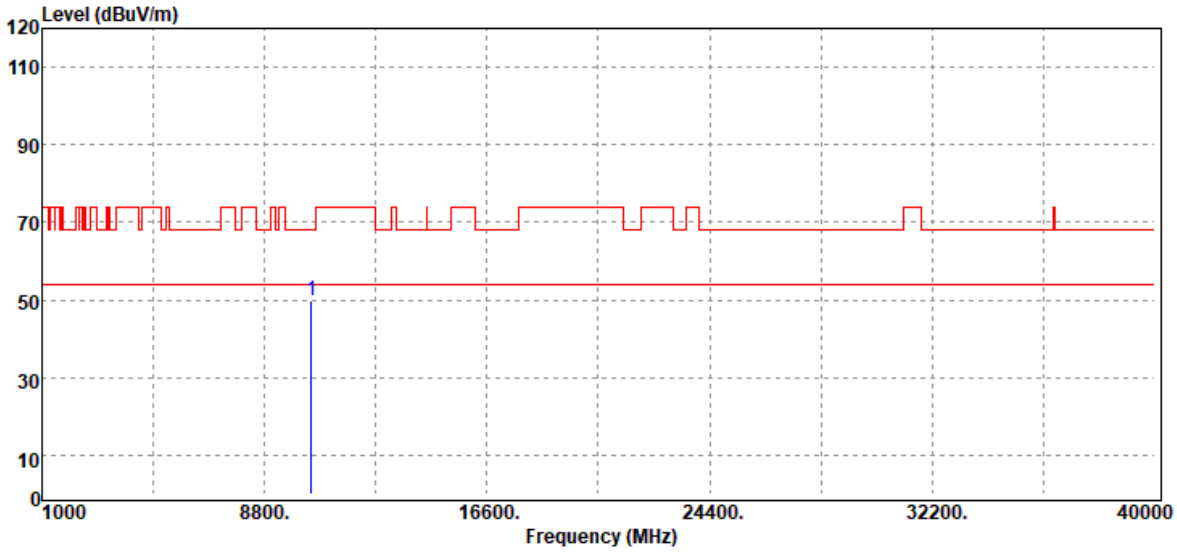


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
10360.00	Peak	35.06	14.12	49.18	68.20	-19.02
N/A						

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*

Test Mode	IEEE 802.11n HT20 Mid CH	Temp/Hum	21(℃)/ 52%RH
Test Item	Harmonic	Test Date	November 14, 2019
Polarize	Vertical	Test Engineer	Dally Hong
Detector	Peak		

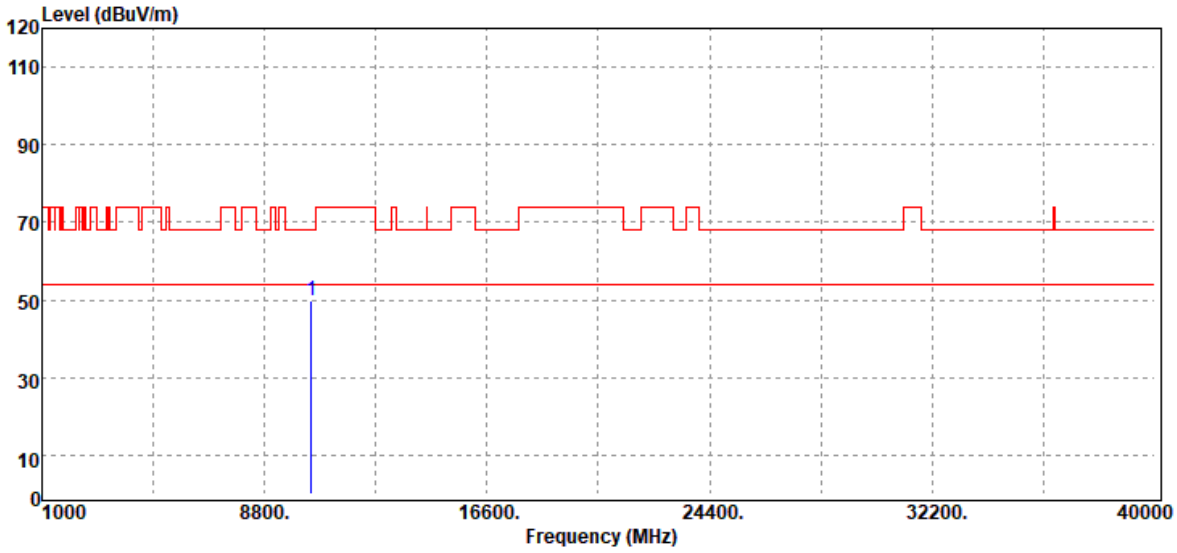


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
10440.00	Peak	34.67	15.21	49.88	68.20	-18.32
N/A						

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*

Test Mode	IEEE 802.11n HT20 Mid CH	Temp/Hum	21(℃)/ 52%RH
Test Item	Harmonic	Test Date	November 14, 2019
Polarize	Horizontal	Test Engineer	Dally Hong
Detector	Peak		

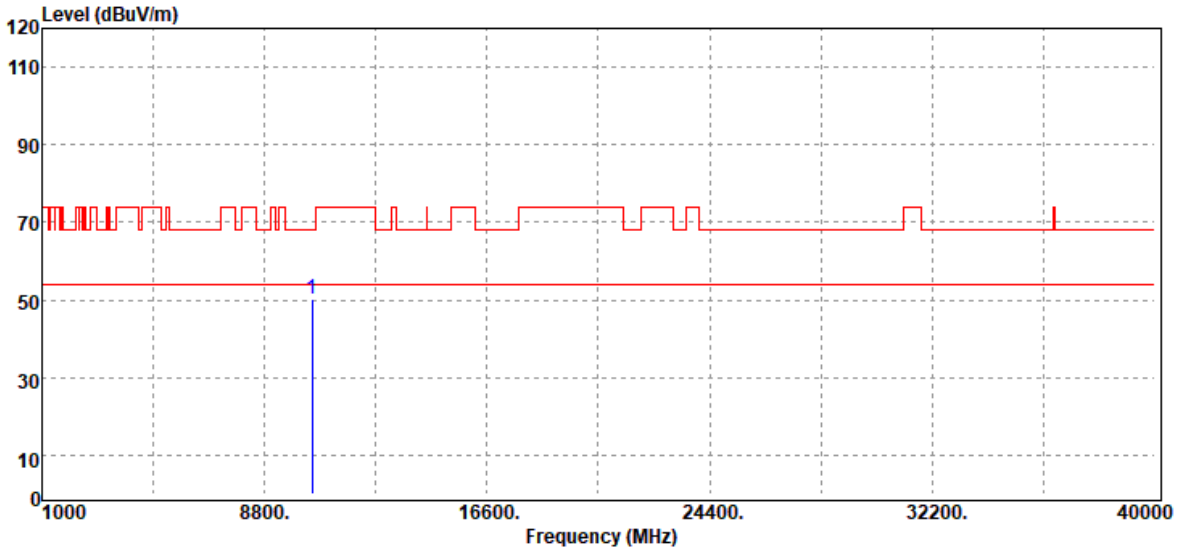


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
10440.00	Peak	34.51	15.21	49.72	68.20	-18.48
N/A						

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*

Test Mode	IEEE 802.11n HT20 High CH	Temp/Hum	21(℃)/ 52%RH
Test Item	Harmonic	Test Date	November 14, 2019
Polarize	Vertical	Test Engineer	Dally Hong
Detector	Peak		

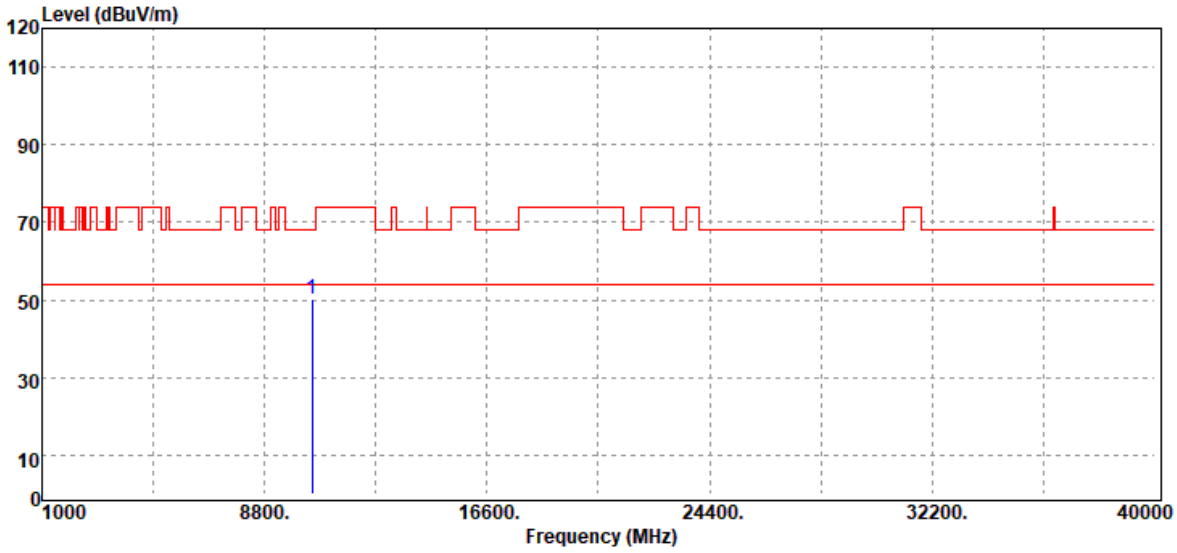


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
10480.00	Peak	34.11	16.09	50.20	68.20	-18.00
N/A						

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*

Test Mode	IEEE 802.11n HT20 High CH	Temp/Hum	21(℃)/ 52%RH
Test Item	Harmonic	Test Date	November 14, 2019
Polarize	Horizontal	Test Engineer	Dally Hong
Detector	Peak		

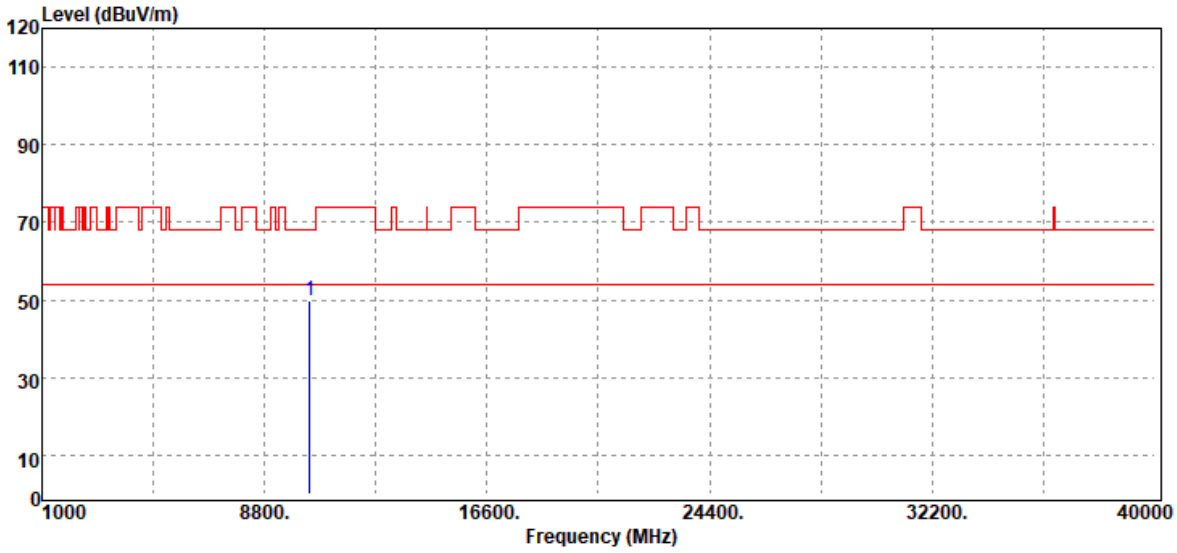


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
10480.00	Peak	34.28	16.09	50.37	68.20	-17.83
N/A						

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*

Test Mode	IEEE 802.11n HT40 Low CH	Temp/Hum	21(℃)/ 52%RH
Test Item	Harmonic	Test Date	November 14, 2019
Polarize	Vertical	Test Engineer	Dally Hong
Detector	Peak		

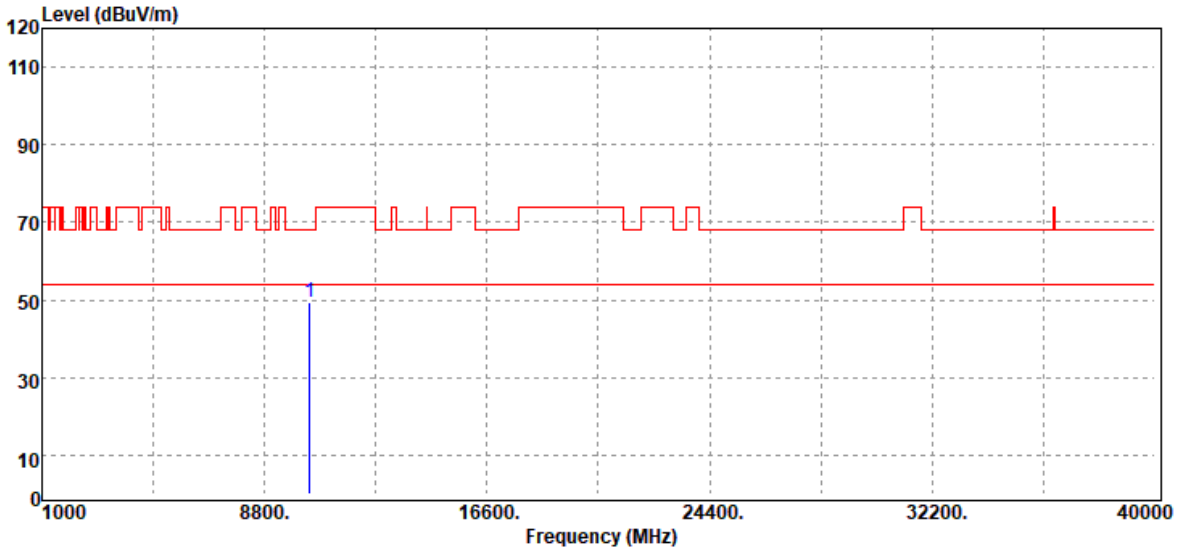


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
10380.00	Peak	35.69	14.23	49.92	68.20	-18.28
N/A						

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*

Test Mode	IEEE 802.11n HT40 Low CH	Temp/Hum	21(℃)/ 52%RH
Test Item	Harmonic	Test Date	November 14, 2019
Polarize	Horizontal	Test Engineer	Dally Hong
Detector	Peak		

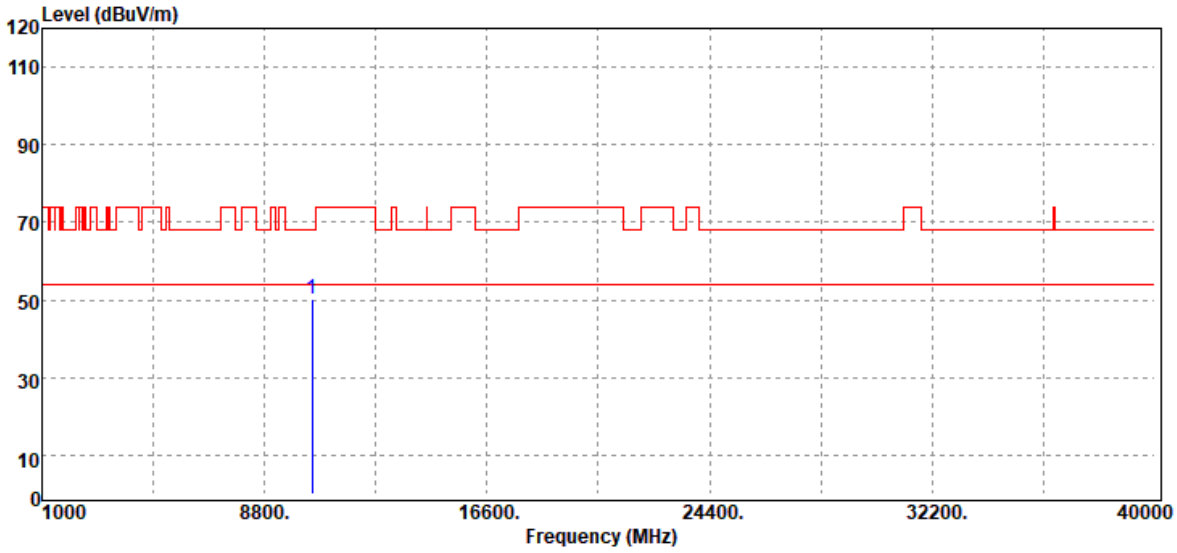


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
10380.00	Peak	35.05	14.23	49.28	68.20	-18.92
N/A						

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*

Test Mode	IEEE 802.11n HT40 High CH	Temp/Hum	21(℃)/ 52%RH
Test Item	Harmonic	Test Date	November 14, 2019
Polarize	Vertical	Test Engineer	Dally Hong
Detector	Peak		

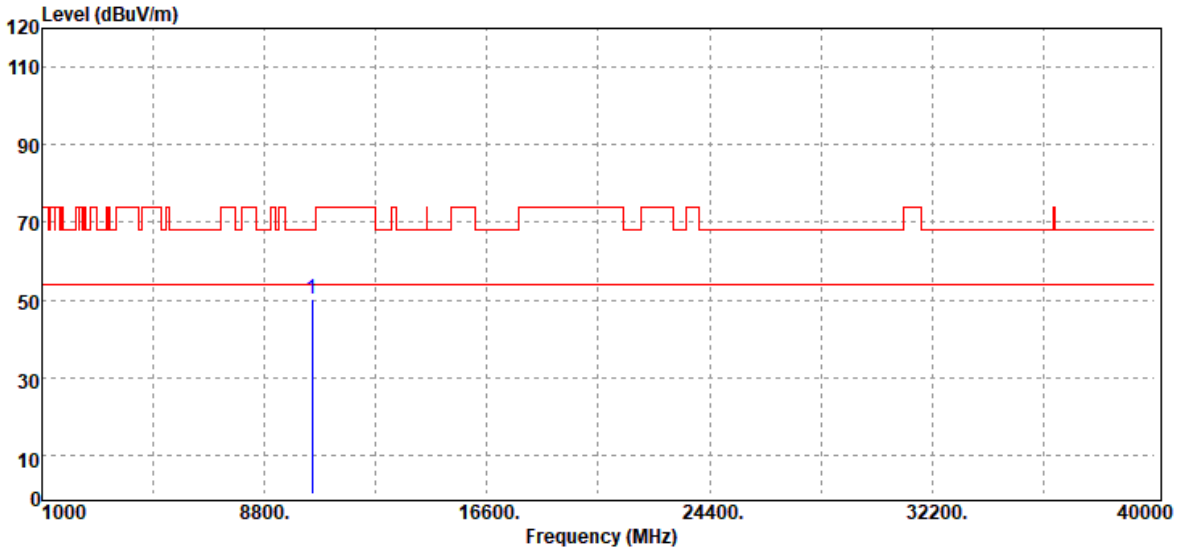


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
10460.00	Peak	34.73	15.65	50.38	68.20	-17.82
N/A						

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*

Test Mode	IEEE 802.11n HT40 High CH	Temp/Hum	21(℃)/ 52%RH
Test Item	Harmonic	Test Date	November 14, 2019
Polarize	Horizontal	Test Engineer	Dally Hong
Detector	Peak		

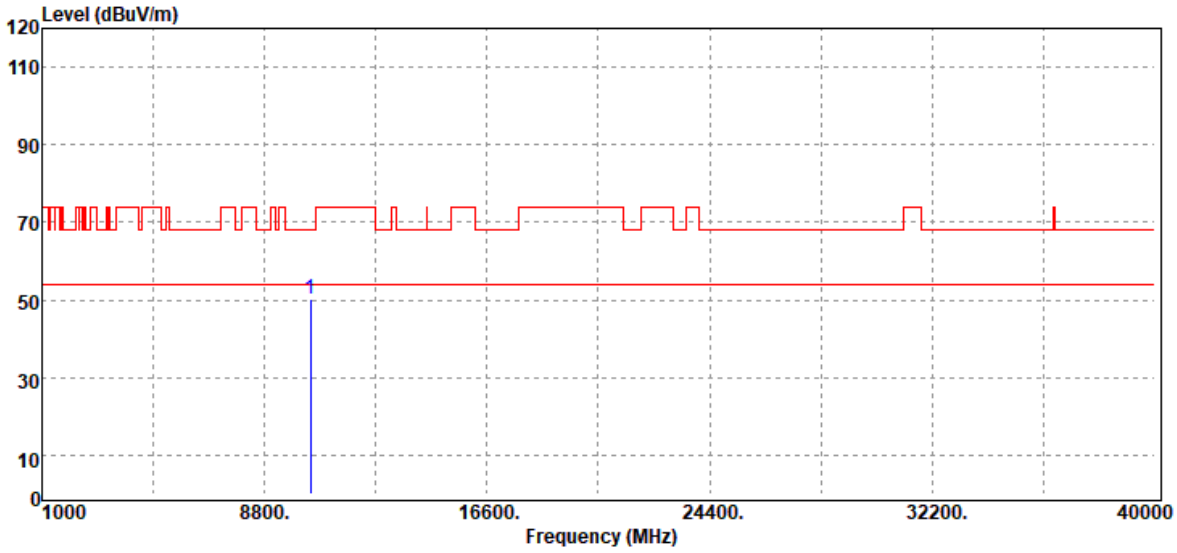


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
10460.00	Peak	34.43	15.65	50.08	68.20	-18.12
N/A						

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*

Test Mode	IEEE 802.11ac VHT80 Mid CH	Temp/Hum	21(℃)/ 52%RH
Test Item	Harmonic	Test Date	November 14, 2019
Polarize	Vertical	Test Engineer	Dally Hong
Detector	Peak		

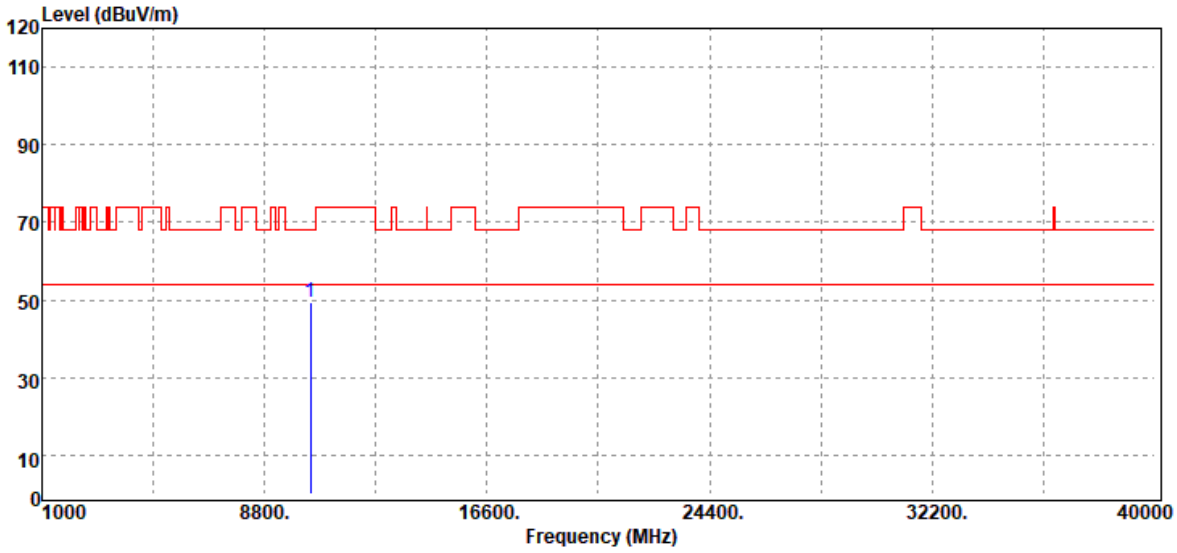


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
10420.00	Peak	35.58	14.78	50.36	68.20	-17.84
N/A						

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*

Test Mode	IEEE 802.11ac VHT80 Mid CH	Temp/Hum	21(℃)/ 52%RH
Test Item	Harmonic	Test Date	November 14, 2019
Polarize	Horizontal	Test Engineer	Dally Hong
Detector	Peak		



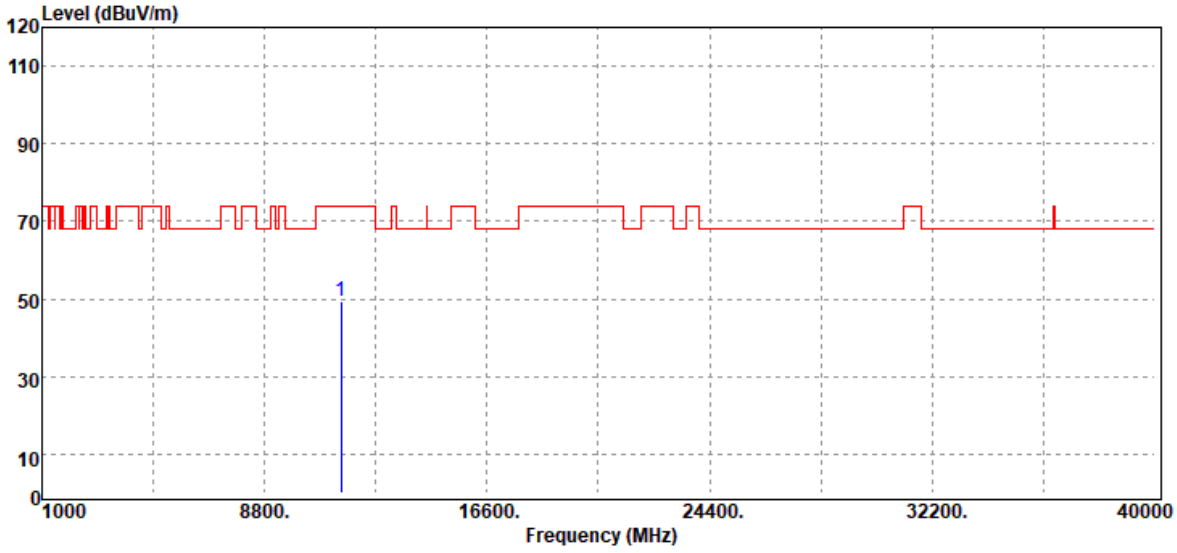
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
10420.00	Peak	34.49	14.78	49.27	68.20	-18.93
N/A						

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*

Above 1G Test Data for UNII-3

Test Mode	IEEE 802.11a Low CH	Temp/Hum	21(℃)/ 52%RH
Test Item	Harmonic	Test Date	November 14, 2019
Polarize	Vertical	Test Engineer	Dally Hong
Detector	Peak		

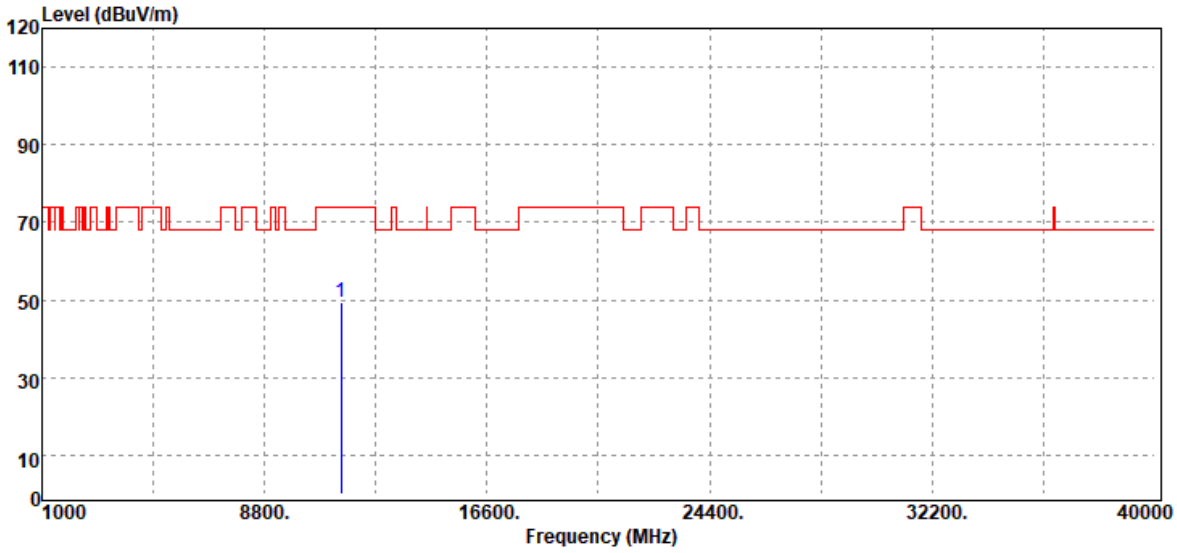


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
11490.00	Peak	33.79	15.57	49.36	74.00	-24.64
N/A						

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*

Test Mode	IEEE 802.11a Low CH	Temp/Hum	21(℃)/ 52%RH
Test Item	Harmonic	Test Date	November 14, 2019
Polarize	Horizontal	Test Engineer	Dally Hong
Detector	Peak		

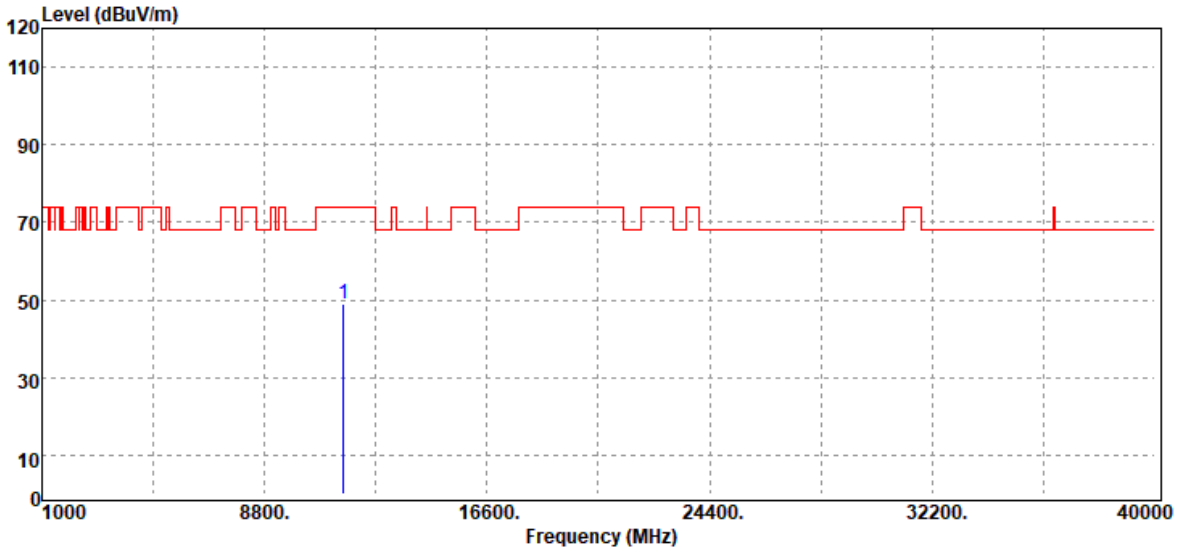


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
11490.00	Peak	34.02	15.57	49.59	74.00	-24.41
N/A						

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*

Test Mode	IEEE 802.11a Mid CH	Temp/Hum	21(℃)/ 52%RH
Test Item	Harmonic	Test Date	November 14, 2019
Polarize	Vertical	Test Engineer	Dally Hong
Detector	Peak		

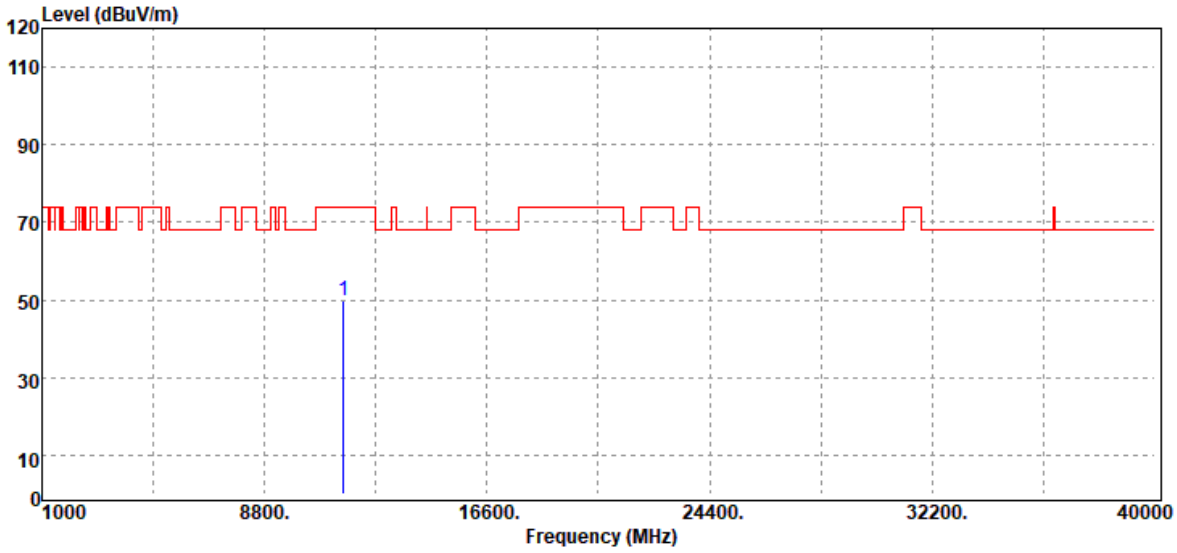


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
11570.00	Peak	33.48	15.50	48.98	74.00	-25.02
N/A						

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*

Test Mode	IEEE 802.11a Mid CH	Temp/Hum	21(℃)/ 52%RH
Test Item	Harmonic	Test Date	November 14, 2019
Polarize	Horizontal	Test Engineer	Dally Hong
Detector	Peak		

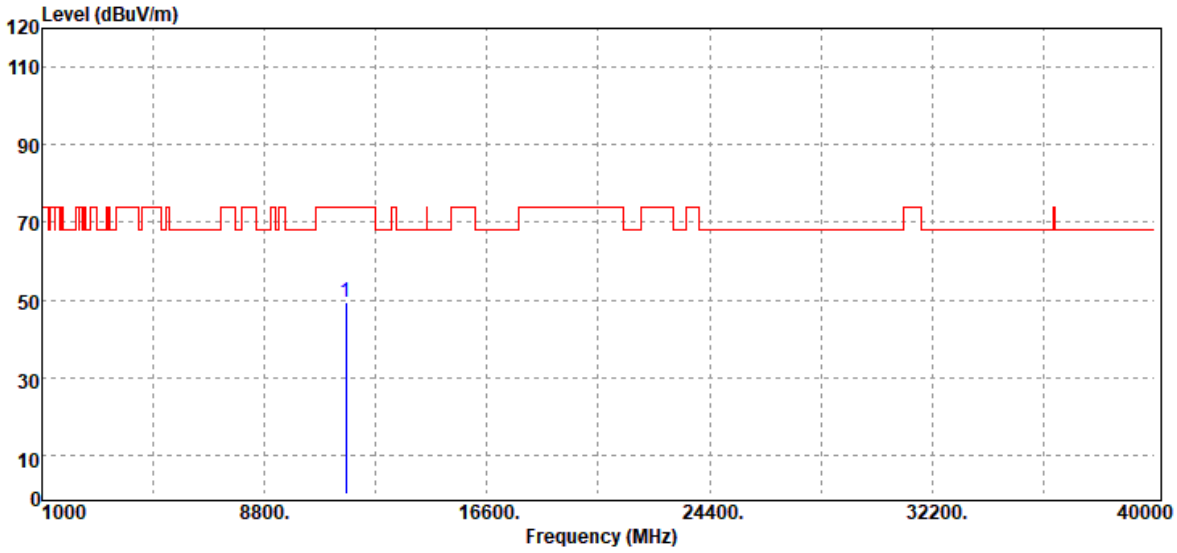


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
11570.00	Peak	34.23	15.50	49.73	74.00	-24.27
N/A						

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*

Test Mode	IEEE 802.11a High CH	Temp/Hum	21(℃)/ 52%RH
Test Item	Harmonic	Test Date	November 14, 2019
Polarize	Vertical	Test Engineer	Dally Hong
Detector	Peak		

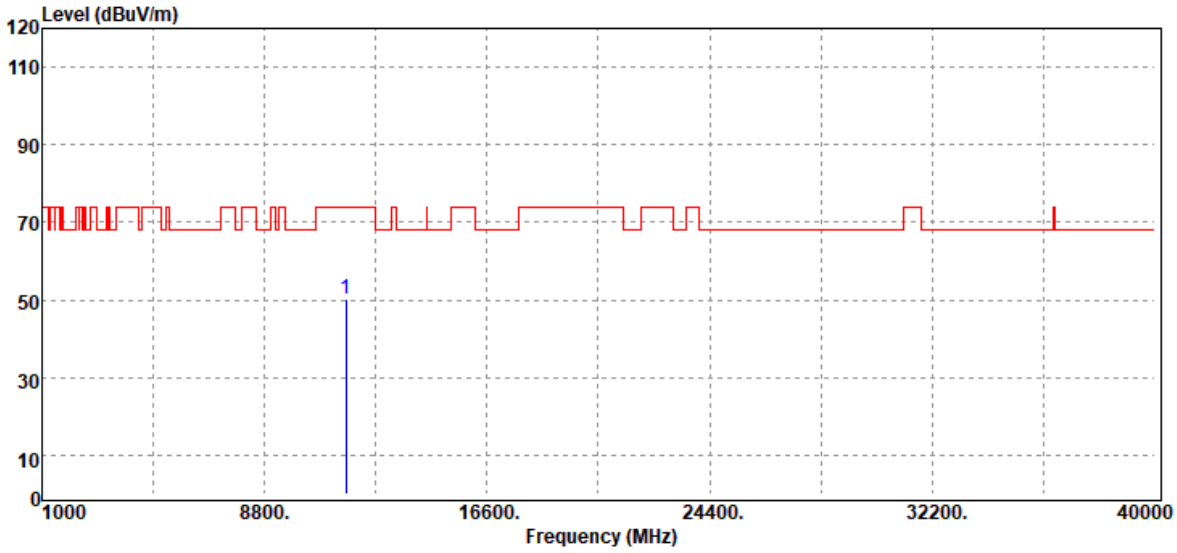


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
11650.00	Peak	33.81	15.53	49.34	74.00	-24.66
N/A						

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*

Test Mode	IEEE 802.11a High CH	Temp/Hum	21(℃)/ 52%RH
Test Item	Harmonic	Test Date	November 14, 2019
Polarize	Horizontal	Test Engineer	Dally Hong
Detector	Peak		

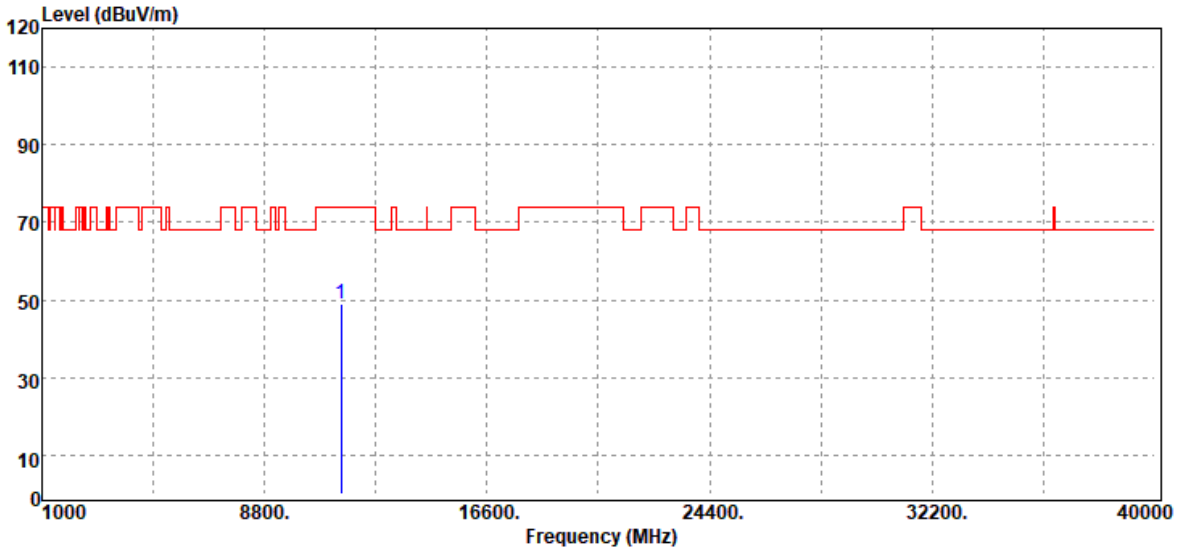


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
11650.00	Peak	34.55	15.53	50.08	74.00	-23.92
N/A						

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*

Test Mode	IEEE 802.11n HT20 Low CH	Temp/Hum	21(℃)/ 52%RH
Test Item	Harmonic	Test Date	November 14, 2019
Polarize	Vertical	Test Engineer	Dally Hong
Detector	Peak		

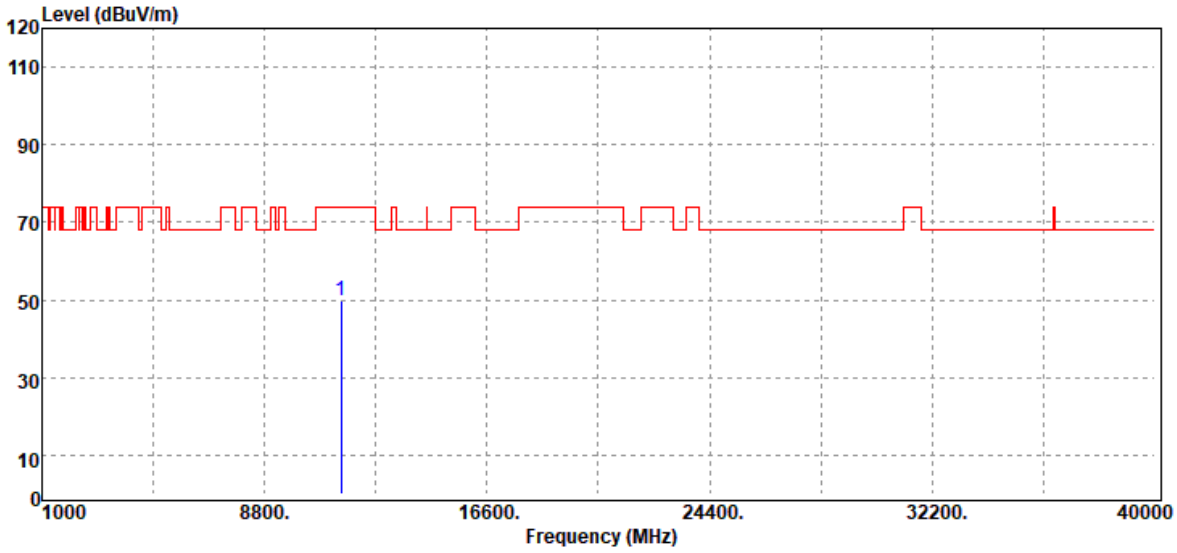


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
11490.00	Peak	33.45	15.57	49.02	74.00	-24.98
N/A						

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*

Test Mode	IEEE 802.11n HT20 Low CH	Temp/Hum	21(℃)/ 52%RH
Test Item	Harmonic	Test Date	November 14, 2019
Polarize	Horizontal	Test Engineer	Dally Hong
Detector	Peak		

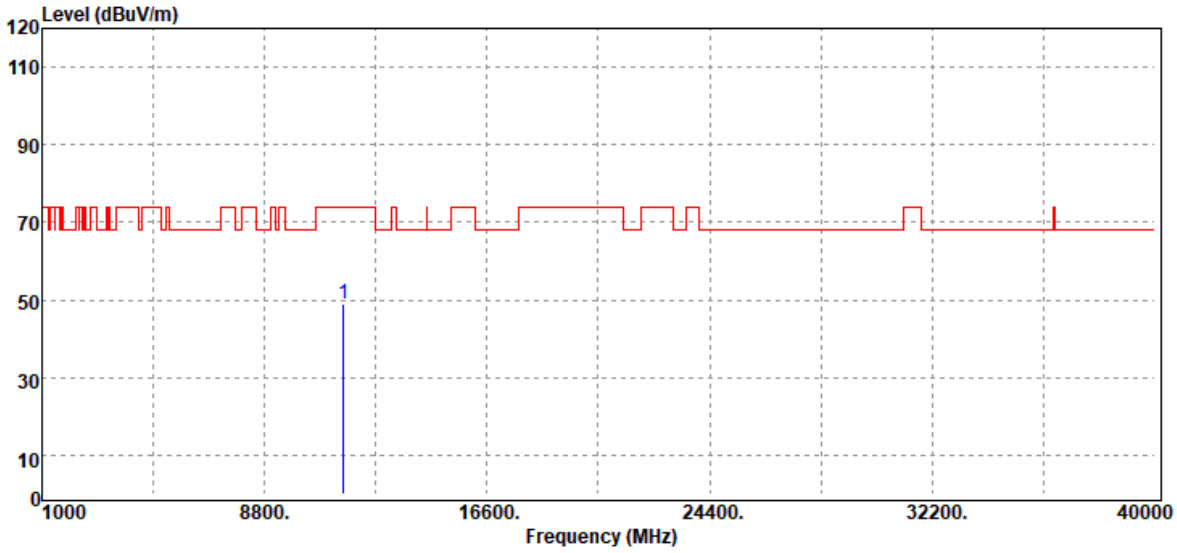


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
11490.00	Peak	34.13	15.57	49.70	74.00	-24.30
N/A						

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*

Test Mode	IEEE 802.11n HT20 Mid CH	Temp/Hum	21(℃)/ 52%RH
Test Item	Harmonic	Test Date	November 14, 2019
Polarize	Vertical	Test Engineer	Dally Hong
Detector	Peak		

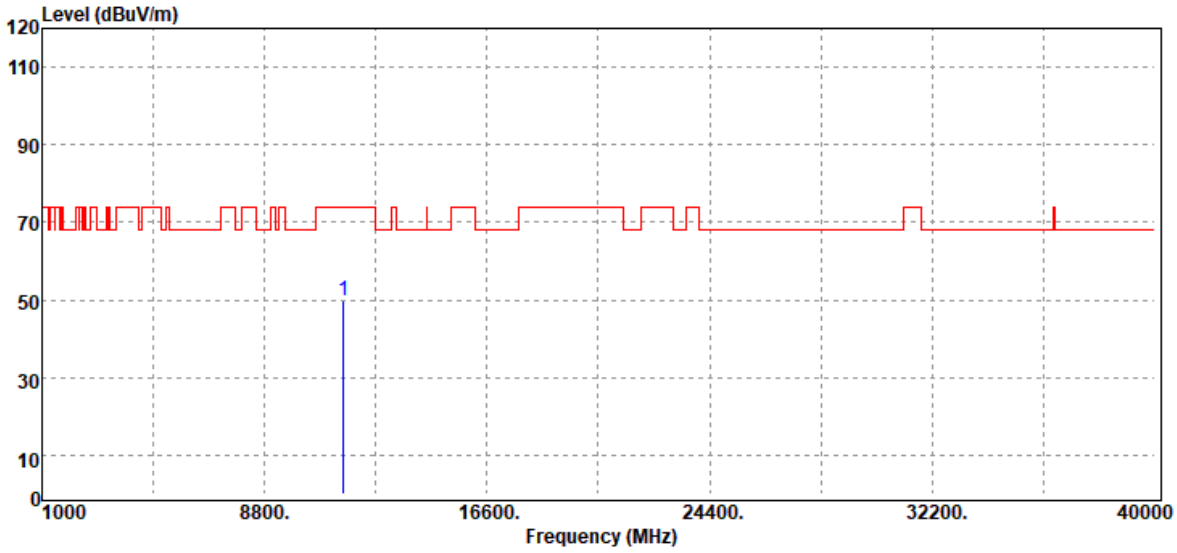


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
11570.00	Peak	33.67	15.50	49.17	74.00	-24.83
N/A						

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*

Test Mode	IEEE 802.11n HT20 Mid CH	Temp/Hum	21(℃)/ 52%RH
Test Item	Harmonic	Test Date	November 14, 2019
Polarize	Horizontal	Test Engineer	Dally Hong
Detector	Peak		

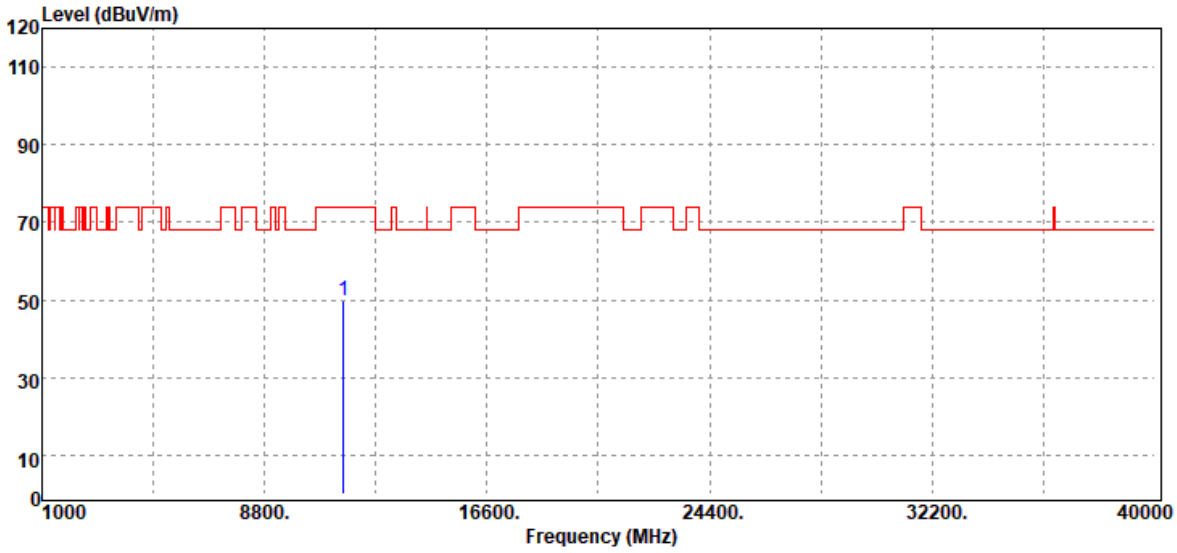


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
11570.00	Peak	34.31	15.50	49.81	74.00	-24.19
N/A						

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*

Test Mode	IEEE 802.11n HT20 High CH	Temp/Hum	21(℃)/ 52%RH
Test Item	Harmonic	Test Date	November 14, 2019
Polarize	Vertical	Test Engineer	Dally Hong
Detector	Peak		

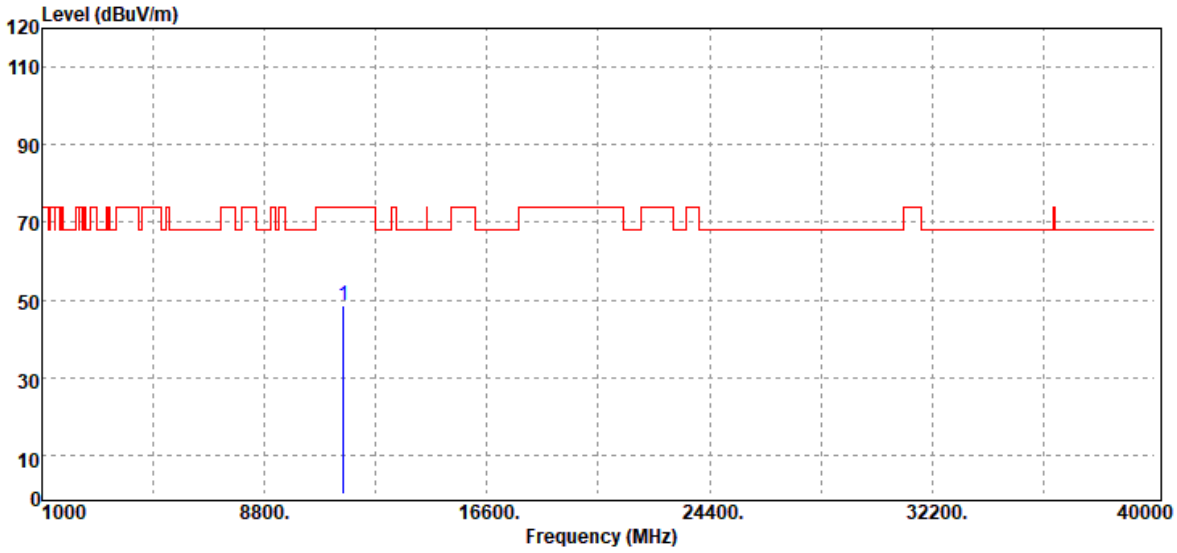


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
11570.00	Peak	34.28	15.50	49.78	74.00	-24.22
N/A						

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*

Test Mode	IEEE 802.11n HT20 High CH	Temp/Hum	21(℃)/ 52%RH
Test Item	Harmonic	Test Date	November 14, 2019
Polarize	Horizontal	Test Engineer	Dally Hong
Detector	Peak		

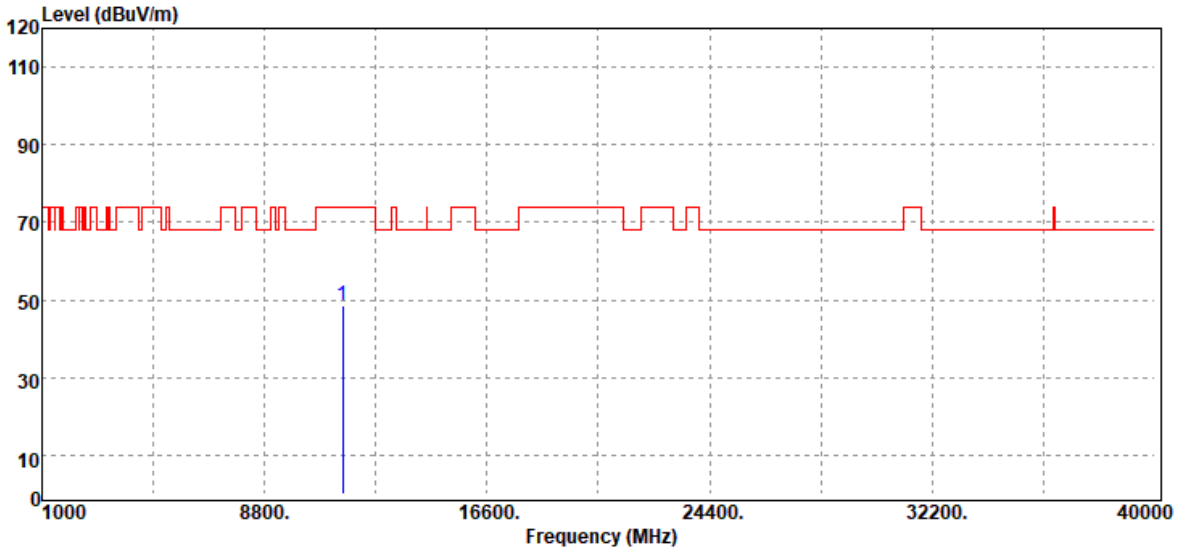


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
11570.00	Peak	33.24	15.50	48.74	74.00	-25.26
N/A						

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*

Test Mode	IEEE 802.11n HT40 Low CH	Temp/Hum	21(℃)/ 52%RH
Test Item	Harmonic	Test Date	November 14, 2019
Polarize	Vertical	Test Engineer	Dally Hong
Detector	Peak		

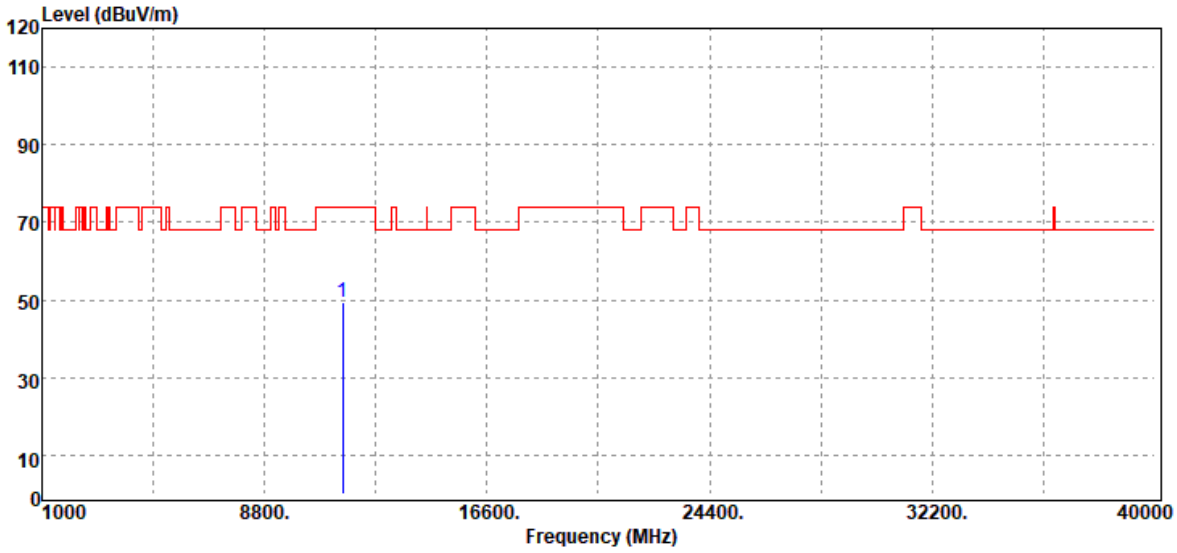


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
11550.00	Peak	33.39	15.39	48.78	74.00	-25.22
N/A						

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*

Test Mode	IEEE 802.11n HT40 Low CH	Temp/Hum	21(℃)/ 52%RH
Test Item	Harmonic	Test Date	November 14, 2019
Polarize	Horizontal	Test Engineer	Dally Hong
Detector	Peak		

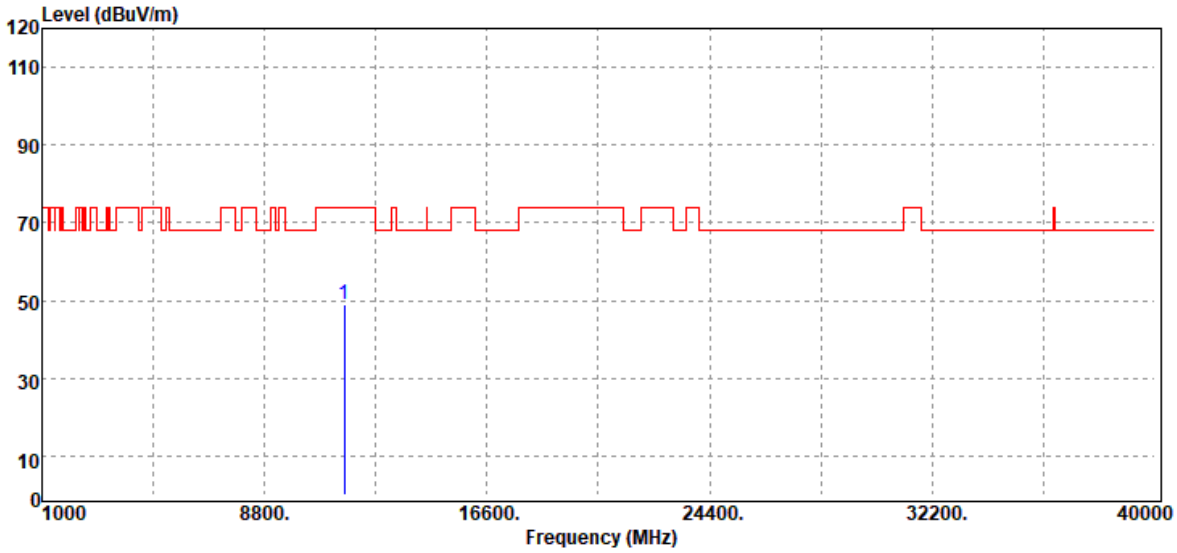


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
11550.00	Peak	33.95	15.39	49.34	74.00	-24.66
N/A						

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*

Test Mode	IEEE 802.11n HT40 High CH	Temp/Hum	21(℃)/ 52%RH
Test Item	Harmonic	Test Date	November 14, 2019
Polarize	Vertical	Test Engineer	Dally Hong
Detector	Peak		

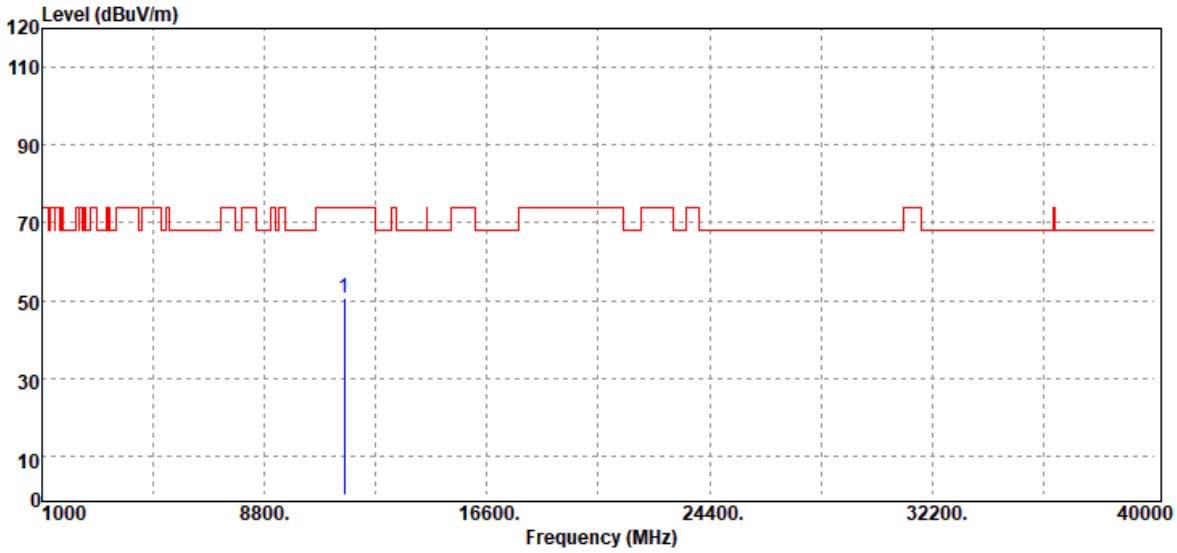


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
11590.00	Peak	33.36	15.62	48.98	74.00	-25.02
N/A						

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*

Test Mode	IEEE 802.11n HT40 High CH	Temp/Hum	21(℃)/ 52%RH
Test Item	Harmonic	Test Date	November 14, 2019
Polarize	Horizontal	Test Engineer	Dally Hong
Detector	Peak		

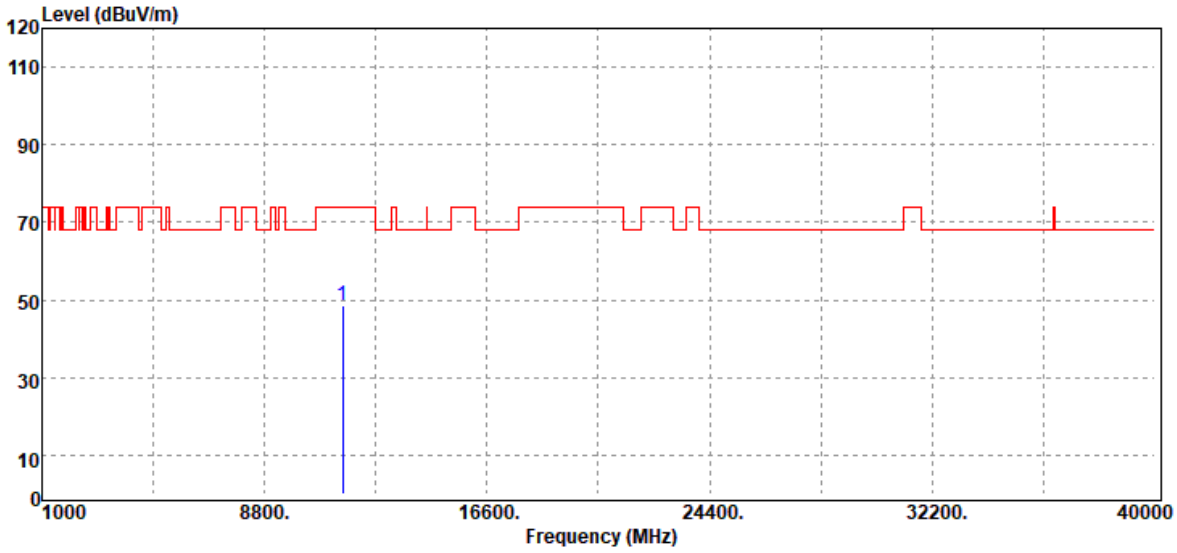


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
11590.00	Peak	34.94	15.62	50.56	74.00	-23.44
N/A						

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*

Test Mode	IEEE 802.11ac VHT80 Mid CH	Temp/Hum	21(℃)/ 52%RH
Test Item	Harmonic	Test Date	November 14, 2019
Polarize	Vertical	Test Engineer	Dally Hong
Detector	Peak		

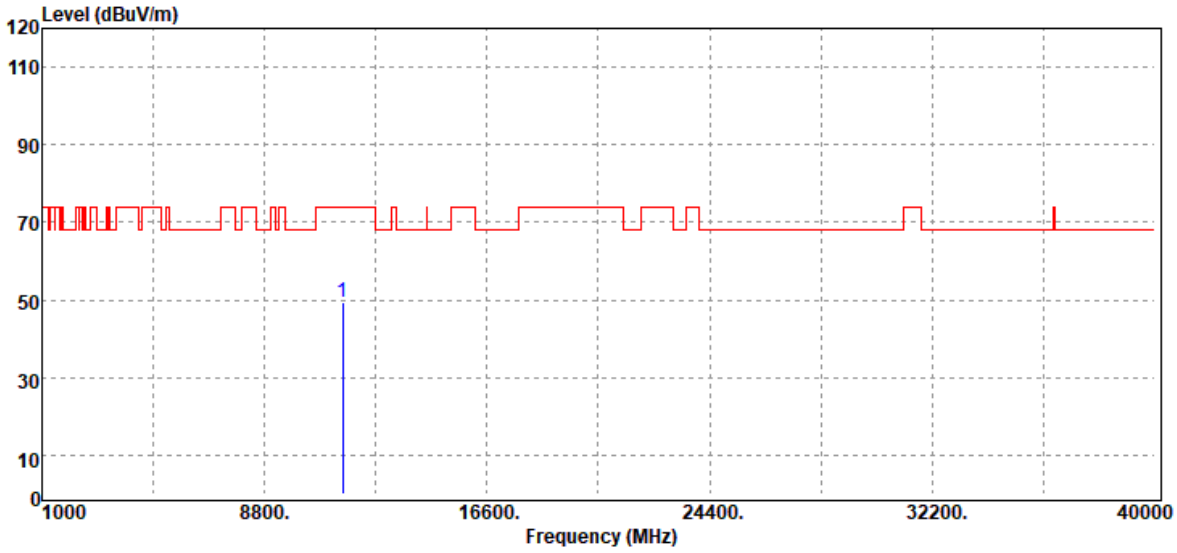


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
11550.00	Peak	33.39	15.39	48.78	74.00	-25.22
N/A						

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*

Test Mode	IEEE 802.11ac VHT80 Mid CH	Temp/Hum	21(℃)/ 52%RH
Test Item	Harmonic	Test Date	November 14, 2019
Polarize	Horizontal	Test Engineer	Dally Hong
Detector	Peak		



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
11550.00	Peak	33.92	15.39	49.31	74.00	-24.69
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*

4.6 FREQUENCY STABILITY

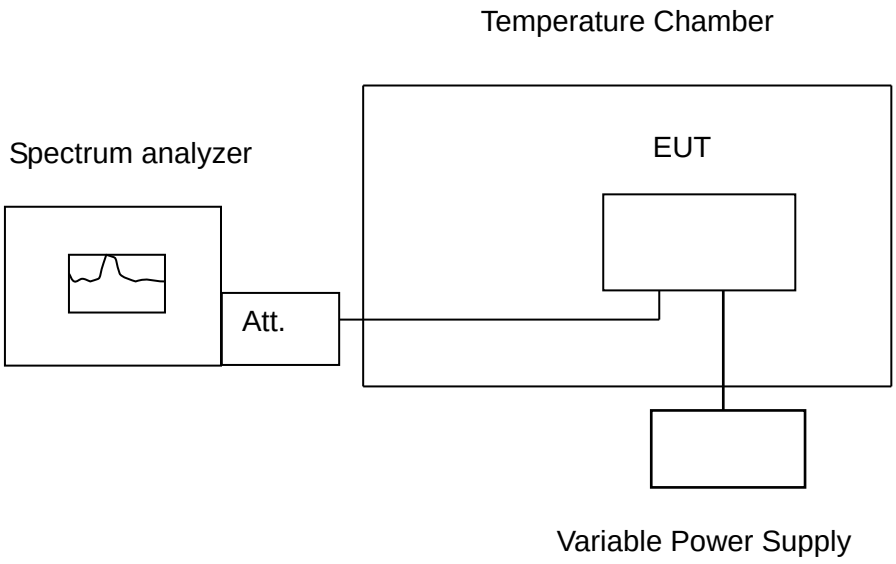
4.6.1 Test Limit

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

1. The EUT was placed inside temperature chamber and powered and powered by nominal DC voltage.
2. Set EUT as normal operation.
3. Turn the EUT on and couple its output to spectrum.
4. Turn the EUT off and set the chamber to the highest temperature specified.
5. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT and measure the operating frequency.
6. Repeat step with the temperature chamber set to the lowest temperature.

4.6.3 Test Setup



4.6.4 Test Result

Startup:

Operation Mode	802.11 a	Test Date	October 29, 2019
Temperature	25 ℃	Humidity	53%

Test Temp.(℃)	Test Voltage(V)	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
-40	132	36	5180	5179.97347	0.00000512
	108	36	5180	5179.97346	0.00000512
25	120	36	5180	5179.94369	0.00001087
50	132	36	5180	5179.94391	0.00001083
	108	36	5180	5179.94398	0.00001082

2 Minutes:

Operation Mode	802.11 a	Test Date	October 29, 2019
Temperature	25 ℃	Humidity	53%

Test Temp.(℃)	Test Voltage(V)	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
-40	132	36	5180	5179.97341	0.00000513
	108	36	5180	5179.97350	0.00000512
25	120	36	5180	5179.94372	0.00001087
50	132	36	5180	5179.94400	0.00001081
	108	36	5180	5179.94397	0.00001082

Note: 1. 802.11 a mode, Channel 36 is the worst channel.

5 Minutes:

Operation Mode	802.11 a	Test Date	October 29, 2019
Temperature	25 ℃	Humidity	53%

Test Temp.(℃)	Test Voltage(V)	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
-40	132	36	5180	5179.97533	0.00000476
	108	36	5180	5179.97347	0.00000512
25	120	36	5180	5179.94363	0.00001088
50	132	36	5180	5179.97411	0.00000500
	108	36	5180	5179.94401	0.00001081

10 Minutes:

Operation Mode	802.11 a	Test Date	October 29, 2019
Temperature	25 ℃	Humidity	53%

Test Temp.(℃)	Test Voltage(V)	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
-40	132	36	5180	5179.97346	0.00000512
	108	36	5180	5179.97349	0.00000512
25	120	36	5180	5179.94375	0.00001086
50	132	36	5180	5179.94405	0.00001080
	108	36	5180	5179.97410	0.00000500

Note: 1. 802.11 a mode, Channel 36 is the worst channel.

--End Report--