

Report No.: T210429C13-RP4

UNII-1 IEEE 802.11n HT20 mode- chain 0

Low CH



Mid CH



High CH



Report No.: T210429C13-RP4

UNII-1 IEEE 802.11n HT20 mode- chain 1

Low CH



Mid CH



High CH



Report No.: T210429C13-RP4

UNII-1 IEEE 802.11n HT40 mode- chain 0

Low CH



High CH



UNII-1 IEEE 802.11n HT40 mode- chain 1

Low CH



High CH



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UNII-1 IEEE 802.11ac VHT80 mode- chain 0

Low CH



UNII-1 IEEE 802.11ac VHT80 mode- chain 1

Low CH



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Test Data

UNII-2a IEEE 802.11a mode- chain 0

Low CH



Mid CH



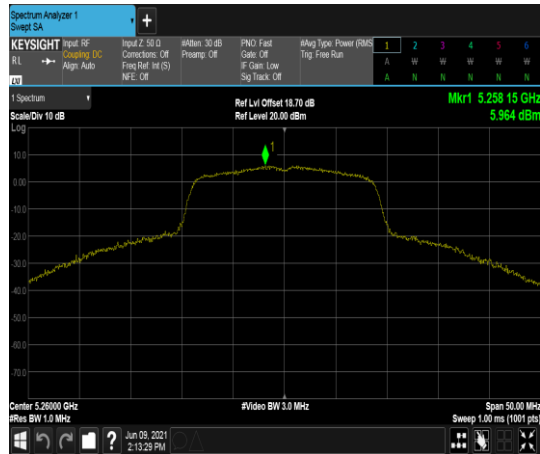
High CH



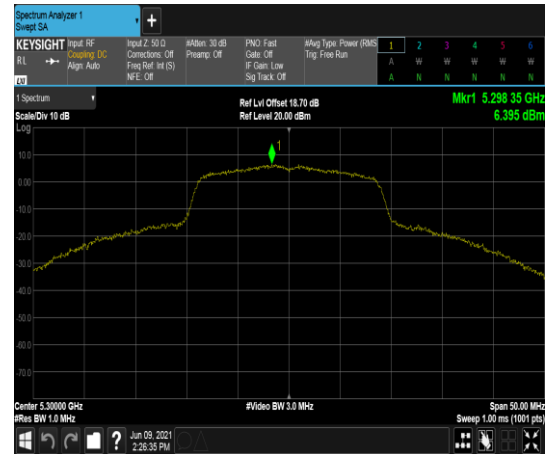
Report No.: T210429C13-RP4

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

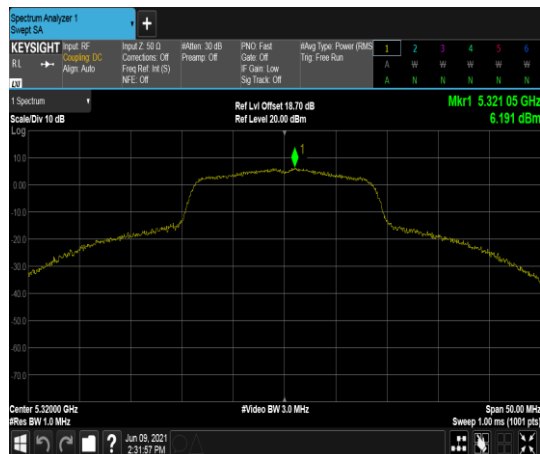
Low CH



Mid CH



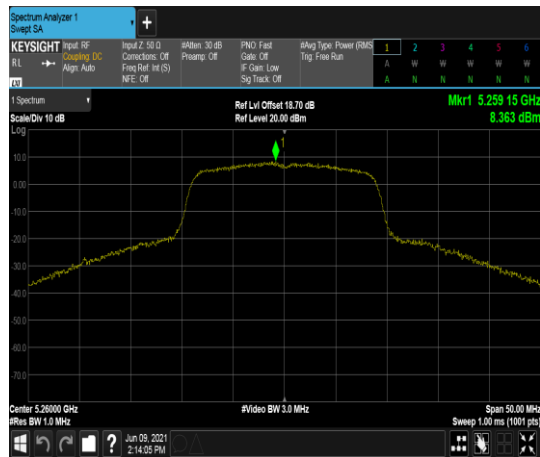
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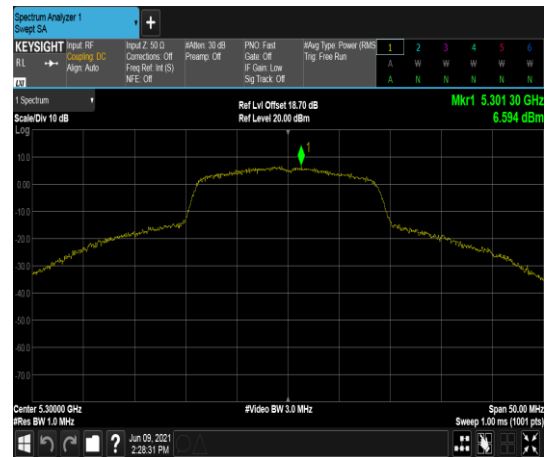
Report No.: T210429C13-RP4

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

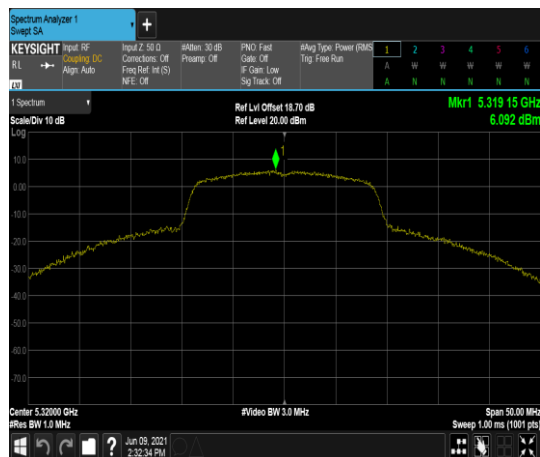
Low CH



Mid CH



High CH



Report No.: T210429C13-RP4

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

Low CH



High CH



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

Low CH



High CH



Report No.: T210429C13-RP4

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

Low CH



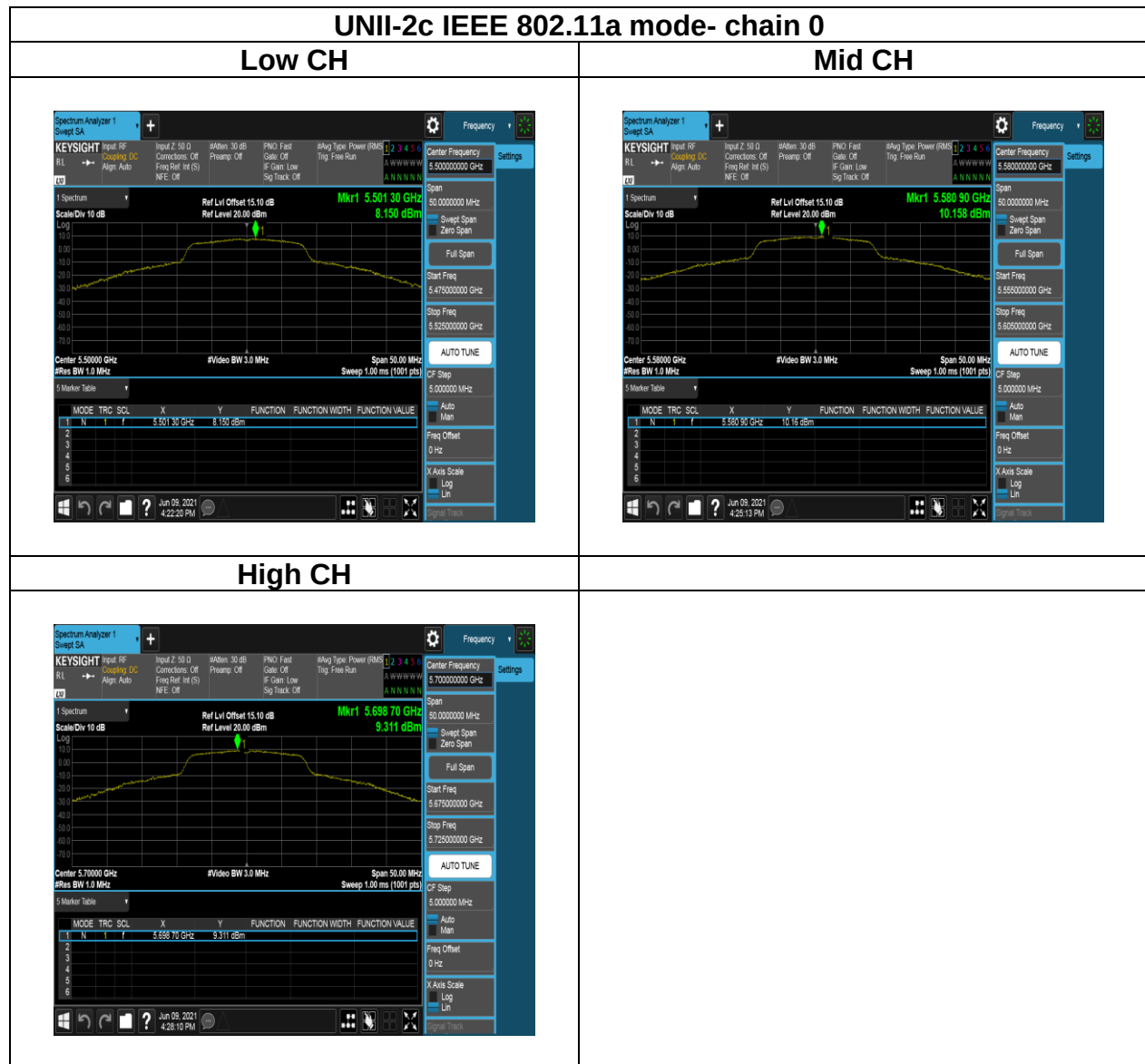
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Low CH



Report No.: T210429C13-RP4

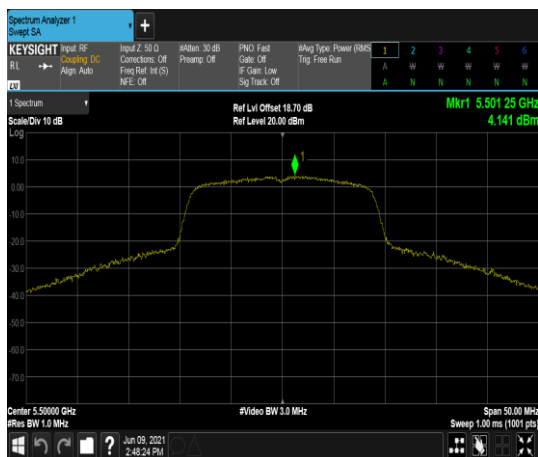
Test Data



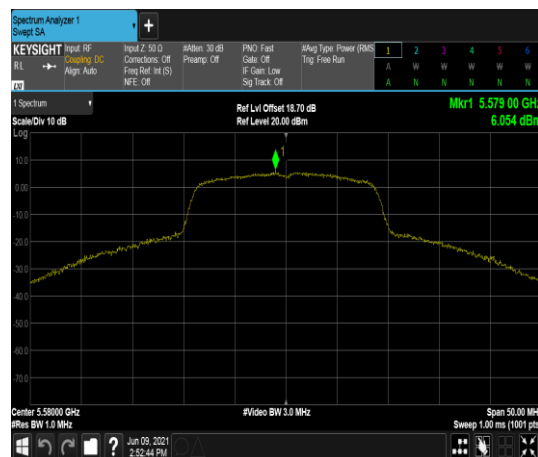
Report No.: T210429C13-RP4

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

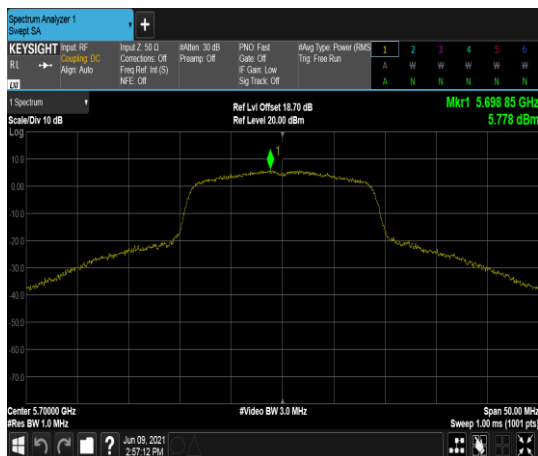
Low CH



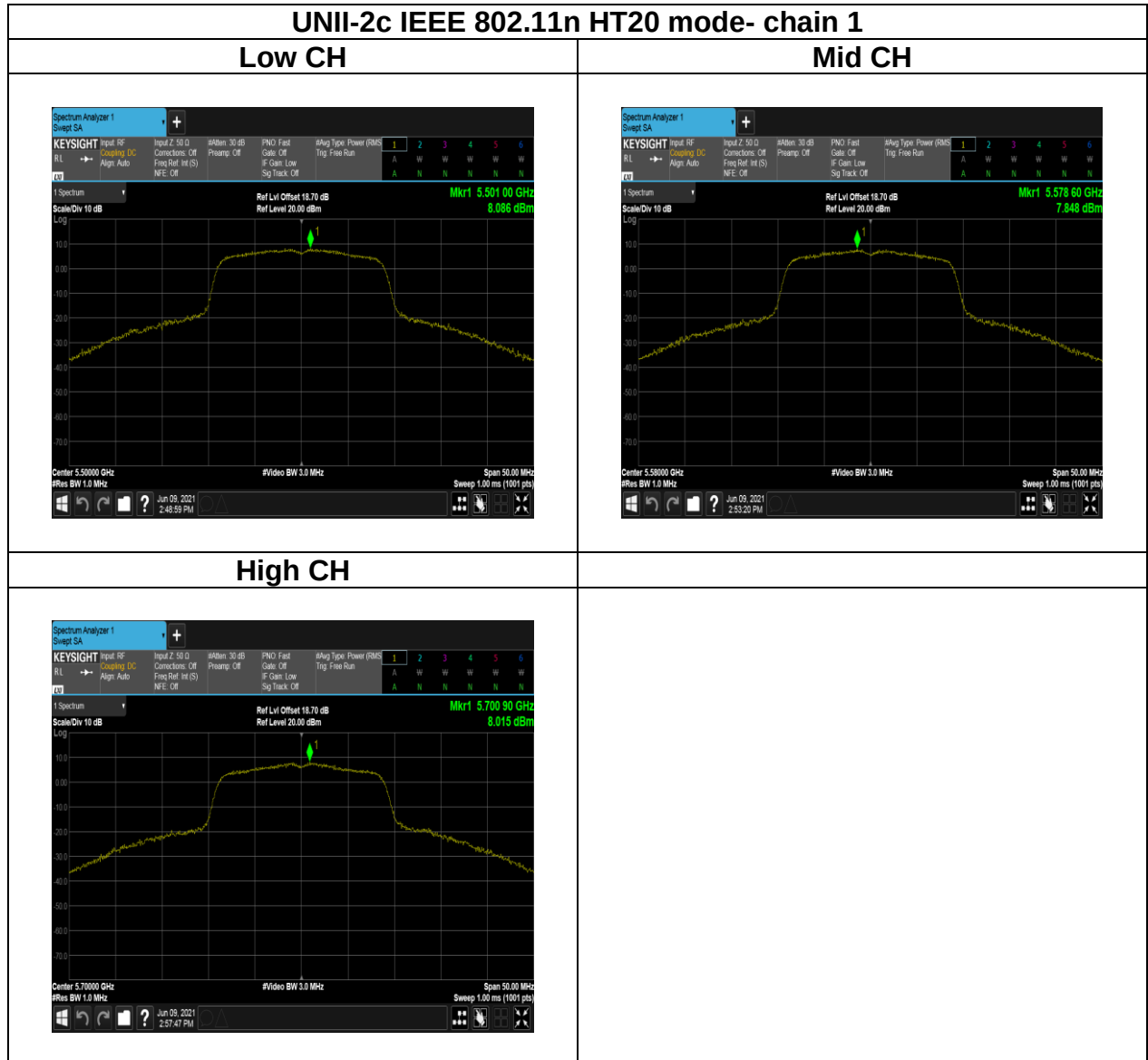
Mid CH



High CH



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Report No.: T210429C13-RP4

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

Low CH



Mid CH



High CH



Report No.: T210429C13-RP4

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

Low CH



Mid CH



High CH



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

Low CH



High CH



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

Low CH



High CH



Report No.: T210429C13-RP4

Test Data

UNII-3 IEEE 802.11a mode- chain 0

Low CH



Mid CH



High CH



Report No.: T210429C13-RP4

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



Report No.: T210429C13-RP4

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



Report No.: T210429C13-RP4

UNII-3 IEEE 802.11ac VHT80 mode- chain 0

Low CH



UNII-3 IEEE 802.11ac VHT80 mode- chain 1

Low CH



4.4 RADIATION Bandedge and Spurious Emission

4.4.1 Test Limit

According to §15.407, §15.209 and §15.205,

According to RSS-247 section 6.2.1.2, section 6.2.4.2, section 6.2.2.2 and section 6.2.3.2

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)

RSS-Gen Table 3 and Table 5 – General Field Strength Limits for Transmitters and Receivers at Frequencies Above 30 MHz ^(Note)

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)

Note: Measurements for compliance with the limits in table 3 may be performed at distances other than 3 metres, in accordance with Section 6.6.

RSS-Gen Table 6: General Field Strength Limits for Transmitters at Frequencies Below 30 MHz (Transmit)

Frequency	Magnetic field strength (H-Field) ($\mu\text{A/m}$)	Measurement Distance (m)
9-490 kHz ^{Note}	6.37/F (F in kHz)	300
490-1,705 kHz	63.7/F (F in kHz)	30
1.705-30 MHz	0.08	30

Note: The emission limits for the ranges 9-90 kHz and 110-490 kHz are based on measurements employing a linear average detector..

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:

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

4.4.2 Test Procedure

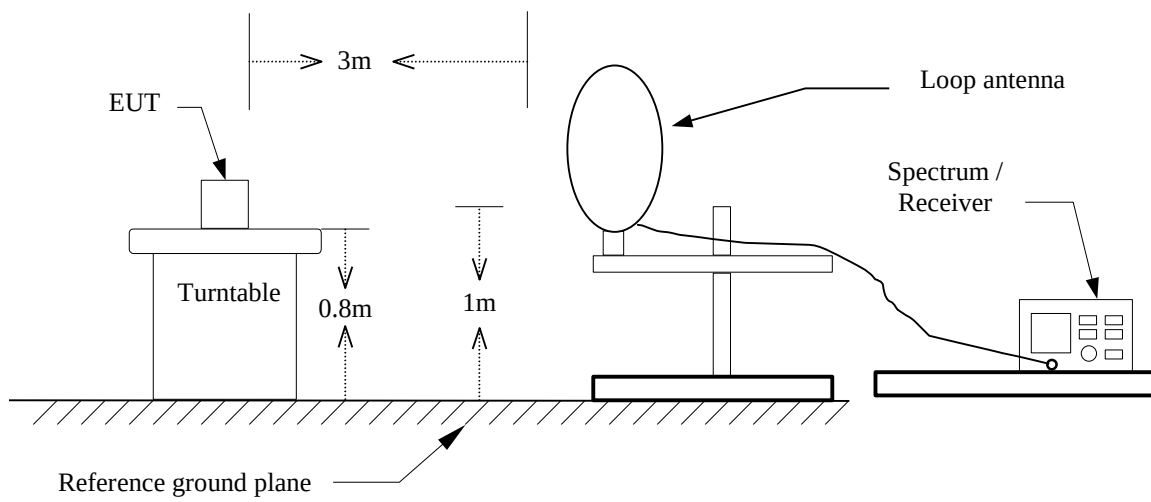
Test method Refer as KDB 789033 D02.

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 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 $\geq 3 \times$ RBW, Sweep = Auto, Detector = Peak, Trace = Max hold.
 - (2) Above 1G :
 - (2.1) For Peak measurement : RBW = 1MHz, VBW $\geq 3 \times$ RBW, Sweep = Auto, Detector = Peak, Trace = Max hold.
 - (2.2) For Average measurement : RBW = 1MHz, VBW
 - 'If Duty Cycle $\geq 98\%$, VBW=10Hz.
 - 'If Duty Cycle $< 98\%$, VBW=1/T.

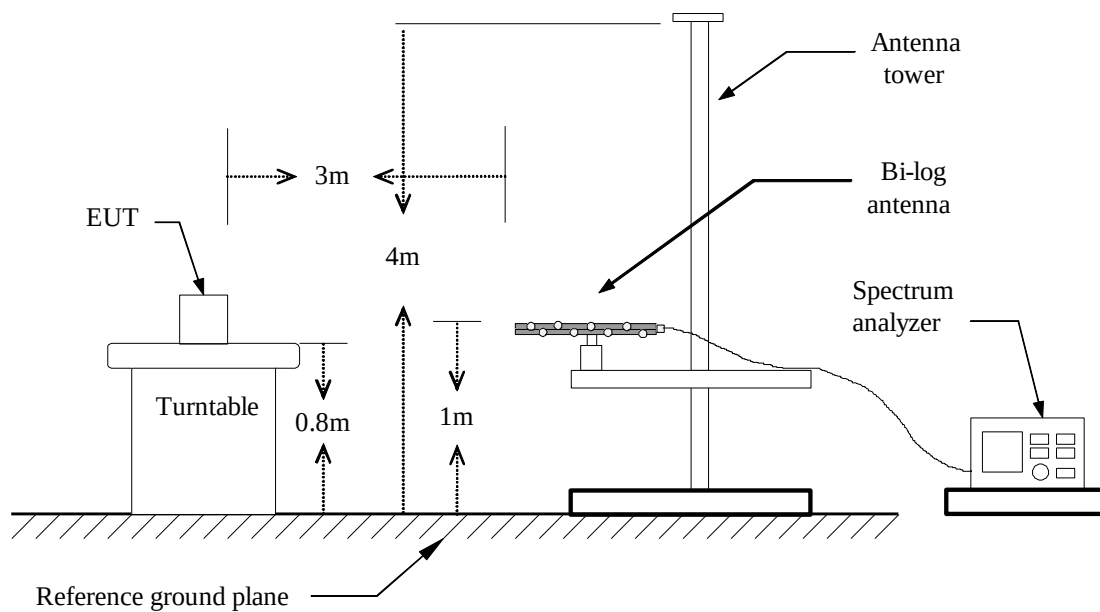
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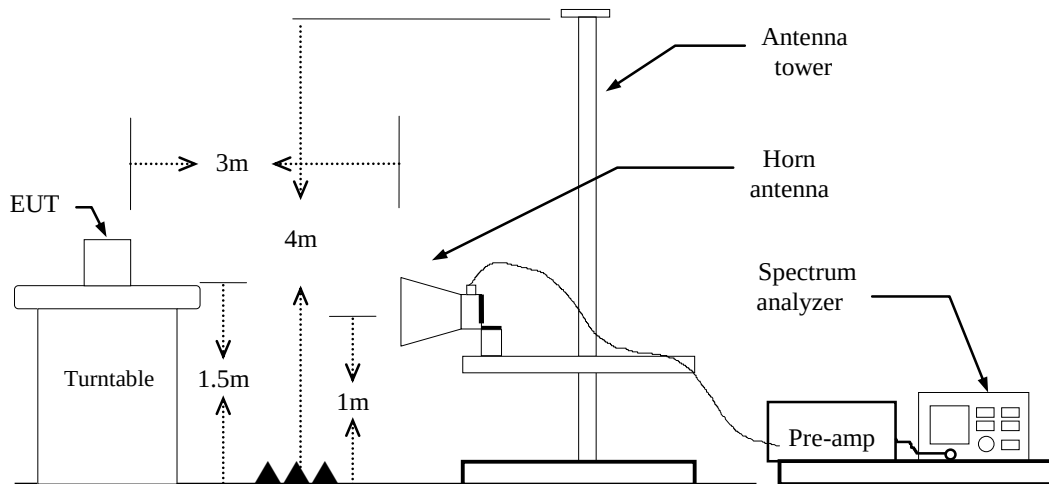
4.4.3 Test Setup

9kHz ~ 30MHz



30MHz ~ 1GHz



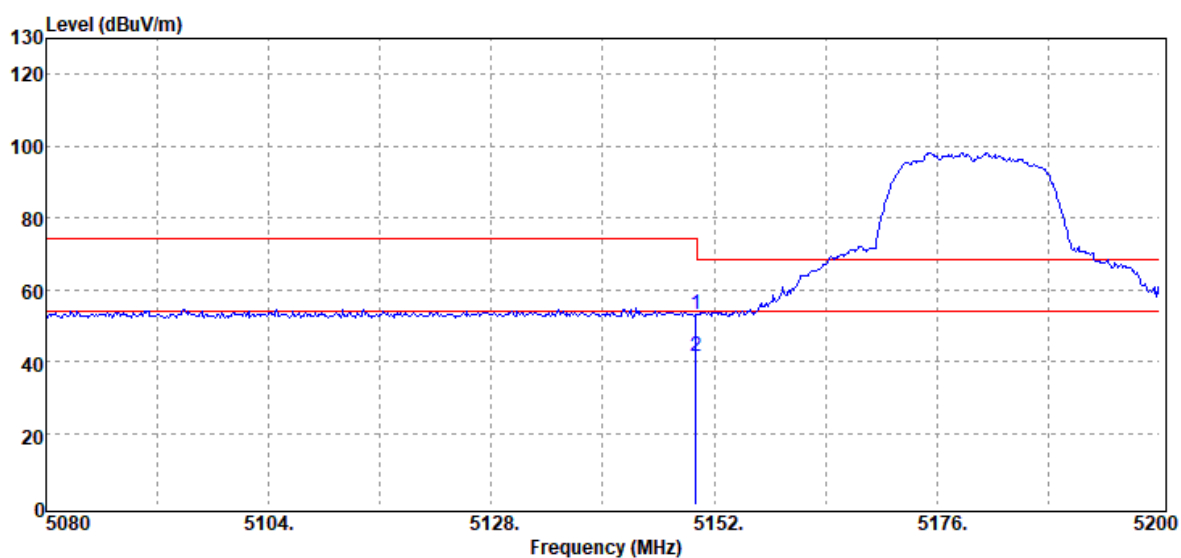
Above 1 GHz

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4.4.4 Test Result

Band Edge Test Data**Test Data for UNII-1**

Test Mode	IEEE 802.11a / 5180MHZ	Temp/Hum	22.6(°C)/ 50%RH
Test Item	Band Edge	Test Date	June 11, 2021
Polarize	Vertical	Test Engineer	Ray Li
Detector	Peak / Average		



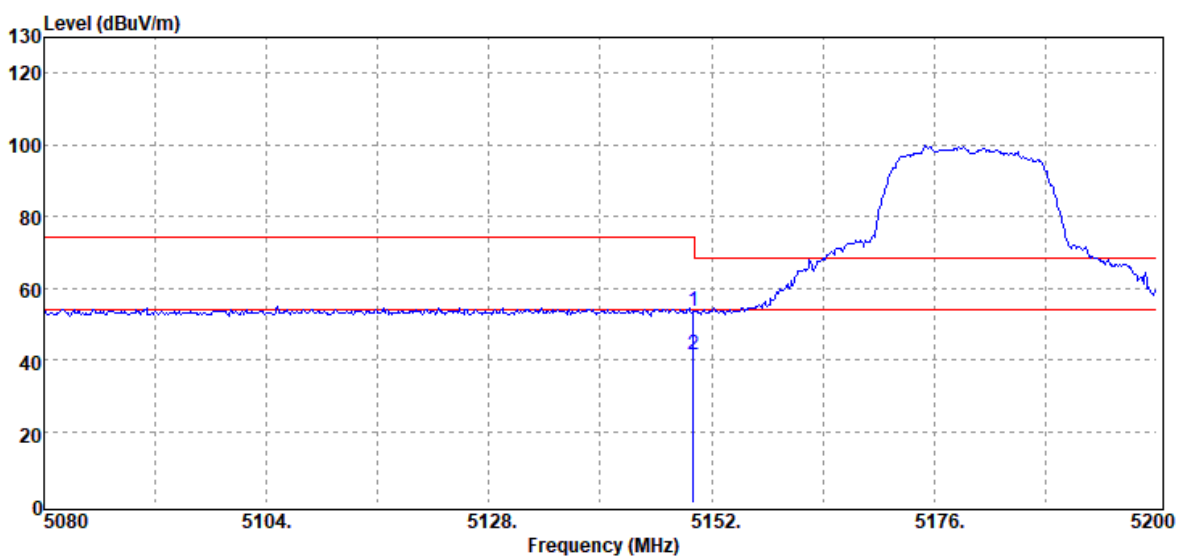
Frequency (MHz)	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
5150.00	Peak	45.59	7.62	53.21	74.00	-20.79
5150.00	Average	33.67	7.62	41.29	54.00	-12.71

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Test Mode	IEEE 802.11a / 5180MHZ	Temp/Hum	22.6(°C) / 50%RH
Test Item	Band Edge	Test Date	June 11, 2021
Polarize	Horizontal	Test Engineer	Ray Li
Detector	Peak / Average		



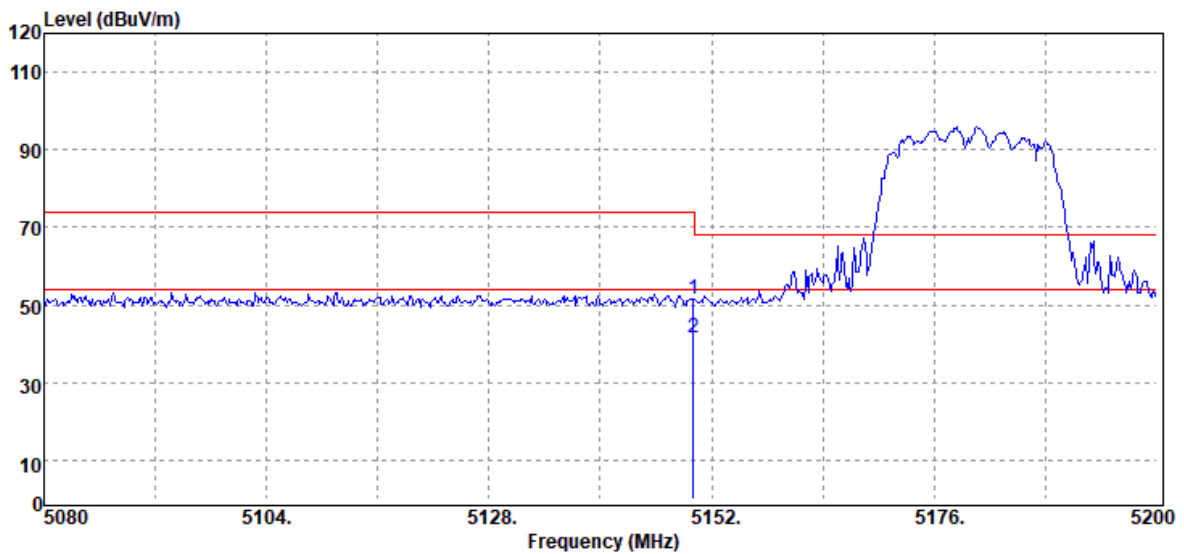
Frequency (MHz)	Detector Mode PK/QP/AV	Spectrum Reading Level dB μ V	Factor dB	Actual FS dB μ V/m	Limit @3m dB μ V/m	Margin dB
5150.00	Peak	45.73	7.62	53.35	74.00	-20.65
5150.00	Average	33.64	7.62	41.26	54.00	-12.74

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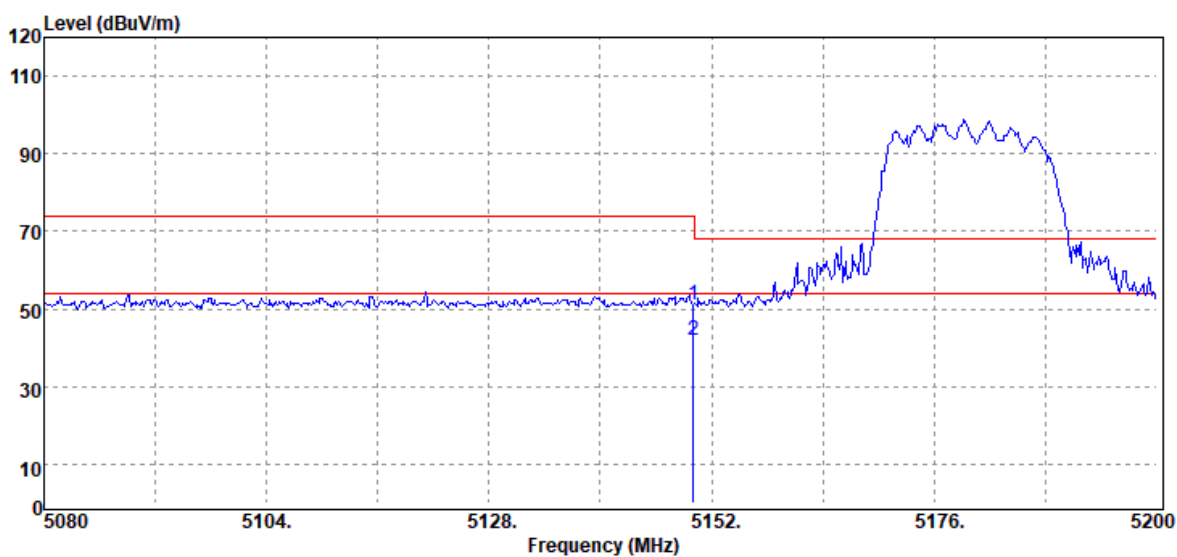
Test Mode	IEEE 802.11n 20 MHz / 5180MHz	Temp/Hum	22.6(°C)/ 50%RH
Test Item	Band Edge	Test Date	June 11, 2021
Polarize	Vertical	Test Engineer	Ray Li
Detector	Peak / Average		



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	Peak	43.80	7.62	51.42	74.00	-22.58
5150.00	Average	34.08	7.62	41.70	54.00	-12.30

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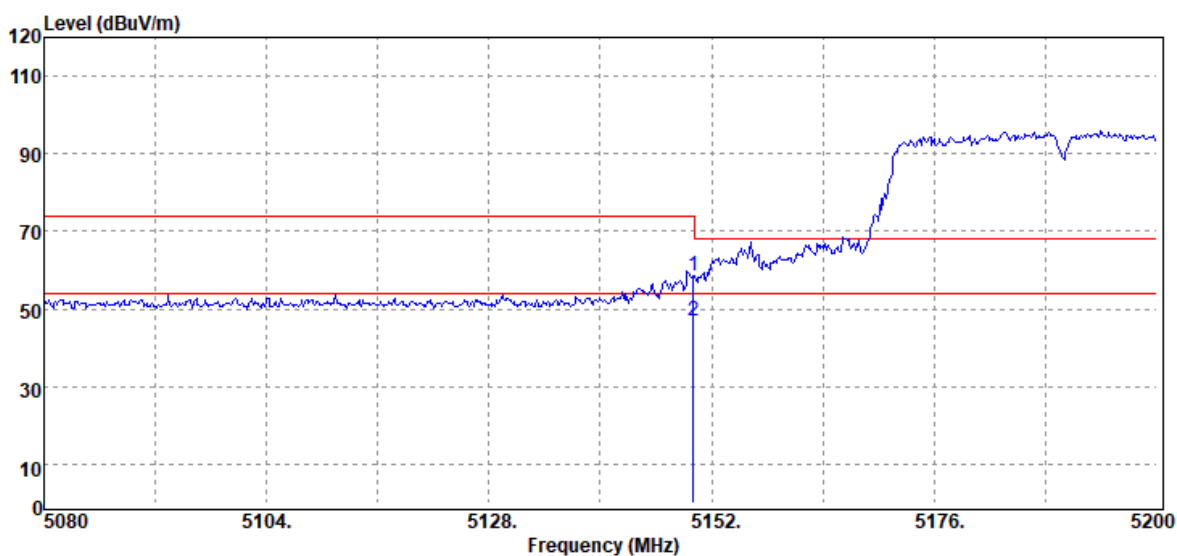
Test Mode	IEEE 802.11n 20 MHz / 5180MHz	Temp/Hum	22.6(°C)/ 50%RH
Test Item	Band Edge	Test Date	June 11, 2021
Polarize	Horizontal	Test Engineer	Ray Li
Detector	Peak / Average		



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	Peak	43.44	7.62	51.06	74.00	-22.94
5150.00	Average	34.34	7.62	41.96	54.00	-12.04

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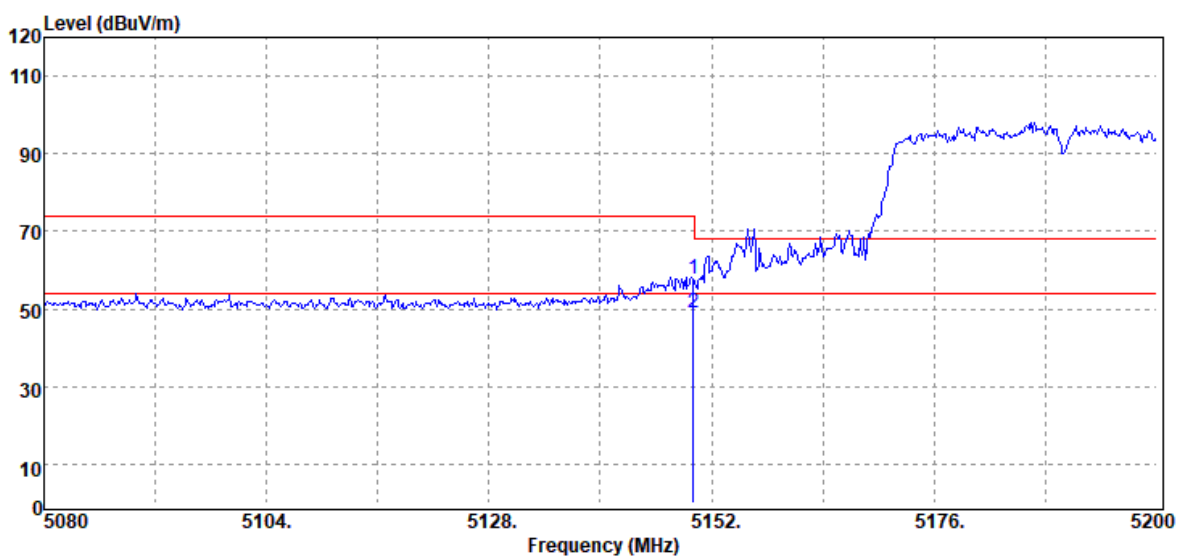
Test Mode	IEEE 802.11n 40 MHz / 5190MHz	Temp/Hum	22.6(°C) / 50%RH
Test Item	Band Edge	Test Date	June 11, 2021
Polarize	Vertical	Test Engineer	Ray Li
Detector	Peak / Average		



Frequency (MHz)	Detector Mode PK/QP/AV	Spectrum Reading Level dB μ V	Factor dB	Actual FS dB μ V/m	Limit @3m dB μ V/m	Margin dB
5150.00	Peak	51.05	7.62	58.67	74.00	-15.33
5150.00	Average	39.21	7.62	46.83	54.00	-7.17

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Test Mode	IEEE 802.11n 40 MHz / 5190MHZ	Temp/Hum	22.6(°C)/ 50%RH
Test Item	Band Edge	Test Date	June 11, 2021
Polarize	Horizontal	Test Engineer	Ray Li
Detector	Peak / Average		



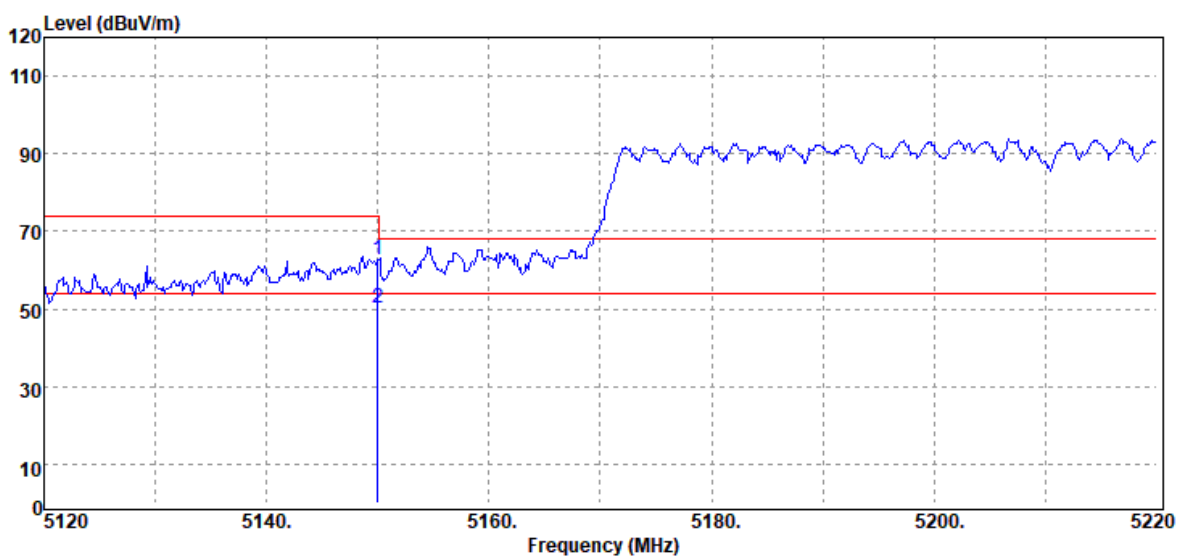
Frequency (MHz)	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
5150.00	Peak	50.28	7.62	57.90	74.00	-16.10
5150.00	Average	41.35	7.62	48.97	54.00	-5.03

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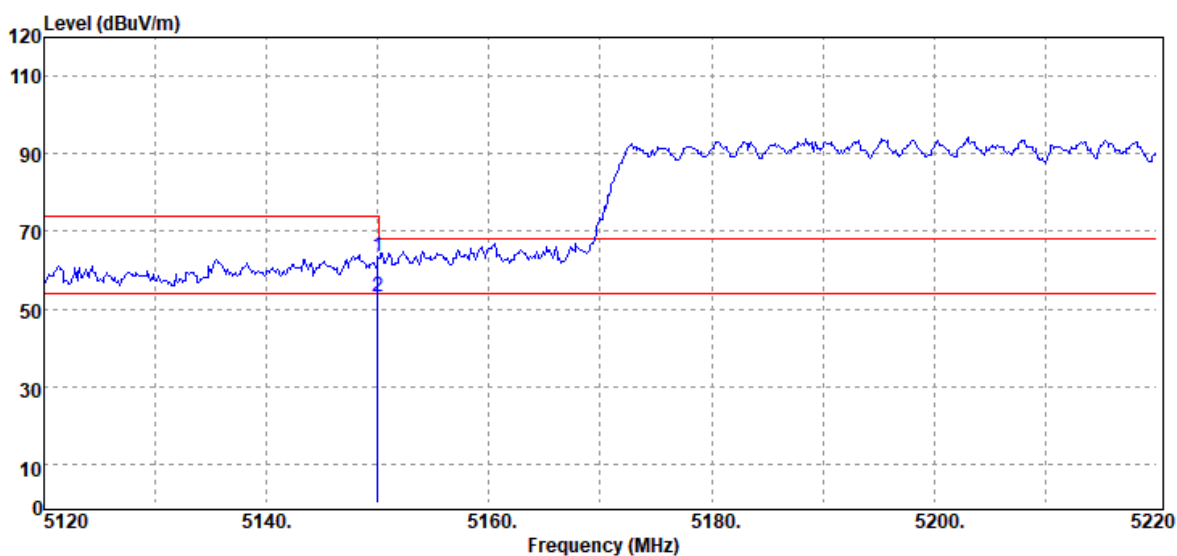
Test Mode	I EEE 802.11ac VHT80 / 5210MHZ	Temp/Hum	22.6(°C)/ 50%RH
Test Item	Band Edge	Test Date	June 15, 2021
Polarize	Vertical	Test Engineer	Ray Li
Detector	Peak / Average		



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	Peak	54.99	7.62	62.61	74.00	-11.39
5150.00	Average	42.58	7.62	50.20	54.00	-3.80

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Test Mode	I EEE 802.11ac VHT80 / 5210MHZ	Temp/Hum	22.6(°C)/ 50%RH
Test Item	Band Edge	Test Date	June 15, 2021
Polarize	Horizontal	Test Engineer	Ray Li
Detector	Peak / Average		

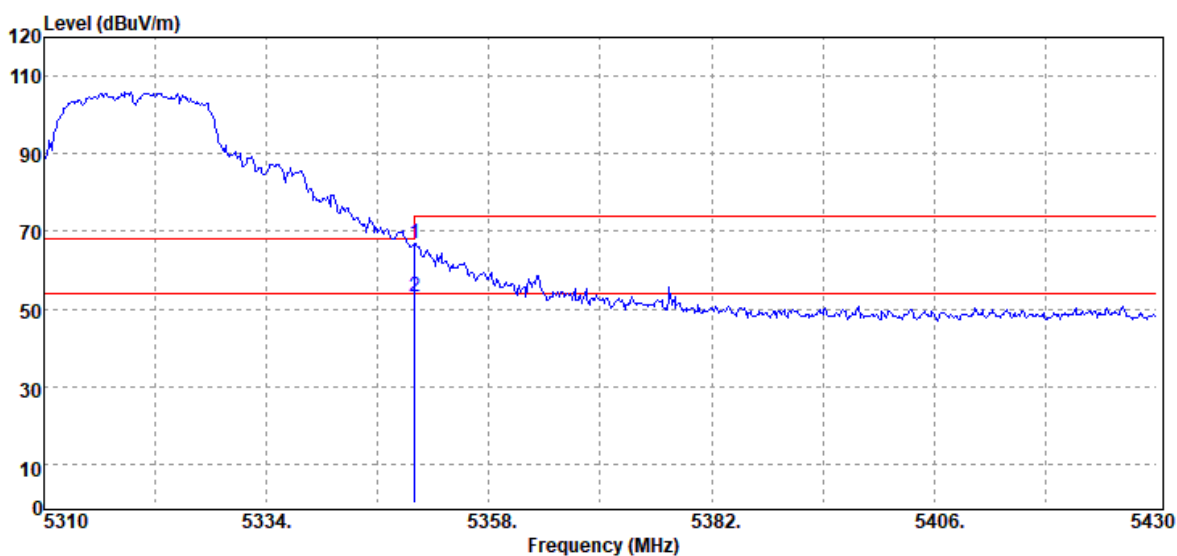


Frequency (MHz)	Detector Mode PK/QP/AV	Spectrum Reading Level dB μ V	Factor dB	Actual FS dB μ V/m	Limit @3m dB μ V/m	Margin dB
5150.00	Peak	55.81	7.62	63.43	74.00	-10.57
5150.00	Average	45.63	7.62	53.25	54.00	-0.75

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Test Data for UNII-2a

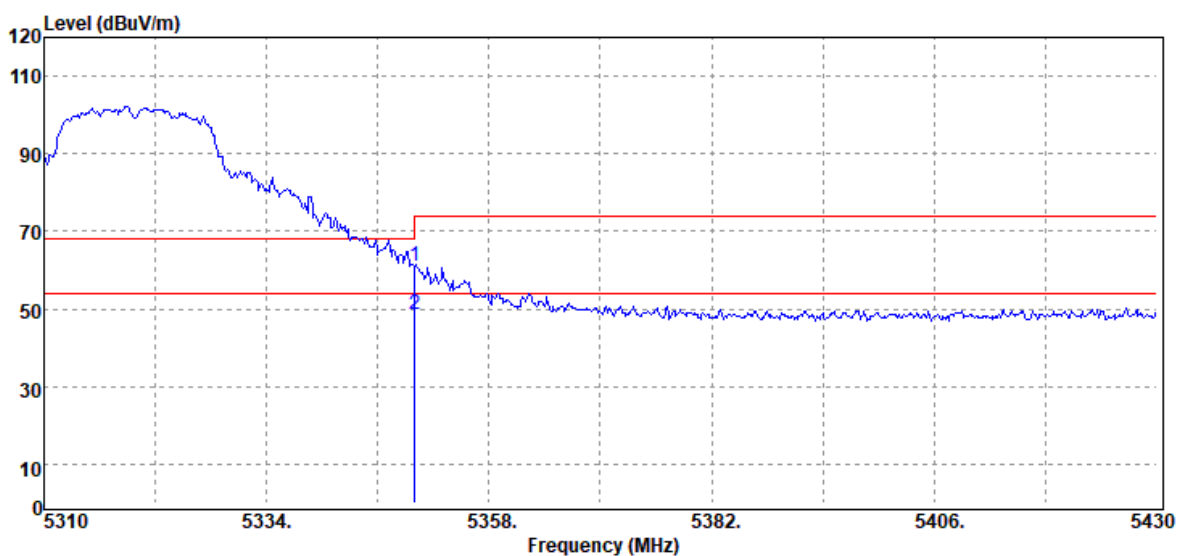
Test Mode	IEEE 802.11a / 5320 MHz	Temp/Hum	22.6(°C) / 50%RH
Test Item	Band Edge	Test Date	June 11, 2021
Polarize	Vertical	Test Engineer	Ray Li
Detector	Peak / Average		



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	Peak	59.16	7.85	67.01	74.00	-6.99
5350.00	Average	45.16	7.85	53.01	54.00	-0.99

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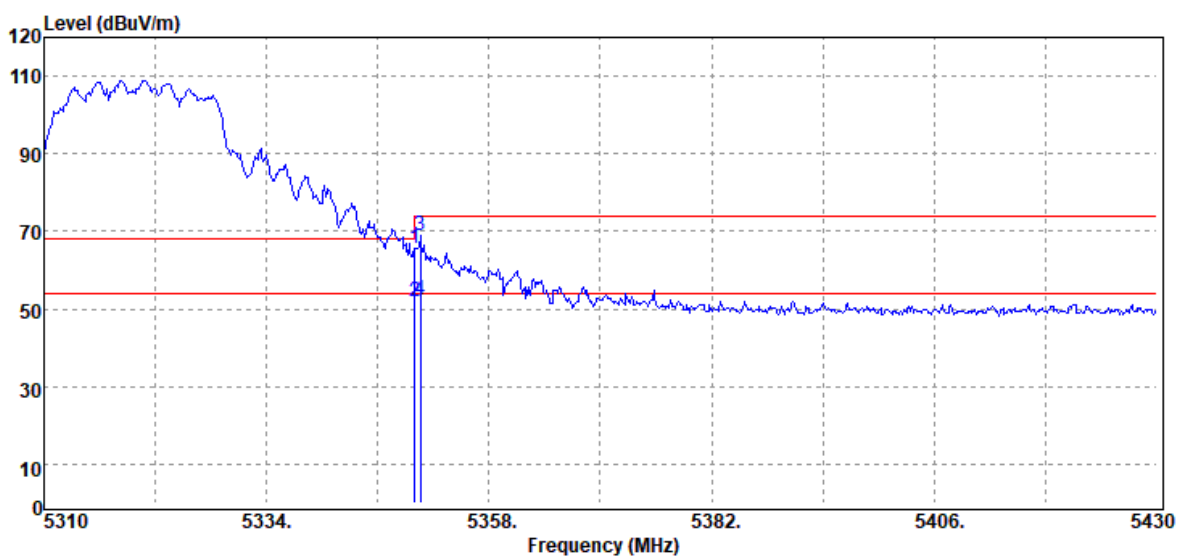
Test Mode	IEEE 802.11a / 5320 MHz	Temp/Hum	22.6(°C) / 50%RH
Test Item	Band Edge	Test Date	June 11, 2021
Polarize	Horizontal	Test Engineer	Ray Li
Detector	Peak / Average		



Frequency (MHz)	Detector Mode PK/QP/AV	Spectrum Reading Level dB μ V	Factor dB	Actual FS dB μ V/m	Limit @3m dB μ V/m	Margin dB
5350.00	Peak	53.30	7.85	61.15	74.00	-12.85
5350.00	Average	40.58	7.85	48.43	54.00	-5.57

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Test Mode	IEEE 802.11n 20 MHz / 5320MHz	Temp/Hum	22.6(°C)/ 50%RH
Test Item	Band Edge	Test Date	June 11, 2021
Polarize	Vertical	Test Engineer	Ray Li
Detector	Peak / Average		



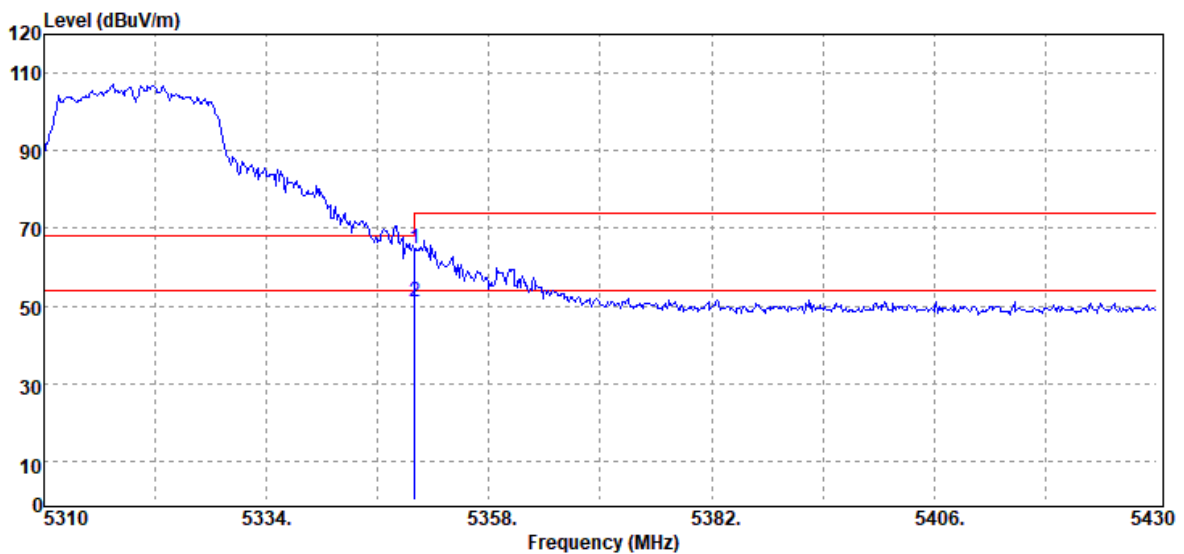
Frequency (MHz)	Detector Mode PK/QP/AV	Spectrum Reading Level dB μ V	Factor dB	Actual FS dB μ V/m	Limit @3m dB μ V/m	Margin dB
5350.00	Peak	57.80	7.85	65.65	74.00	-8.35
5350.00	Average	43.86	7.85	51.71	54.00	-2.29
5350.56	Peak	61.14	7.85	68.99	74.00	-5.01
5350.56	Average	44.62	7.85	52.47	54.00	-1.53

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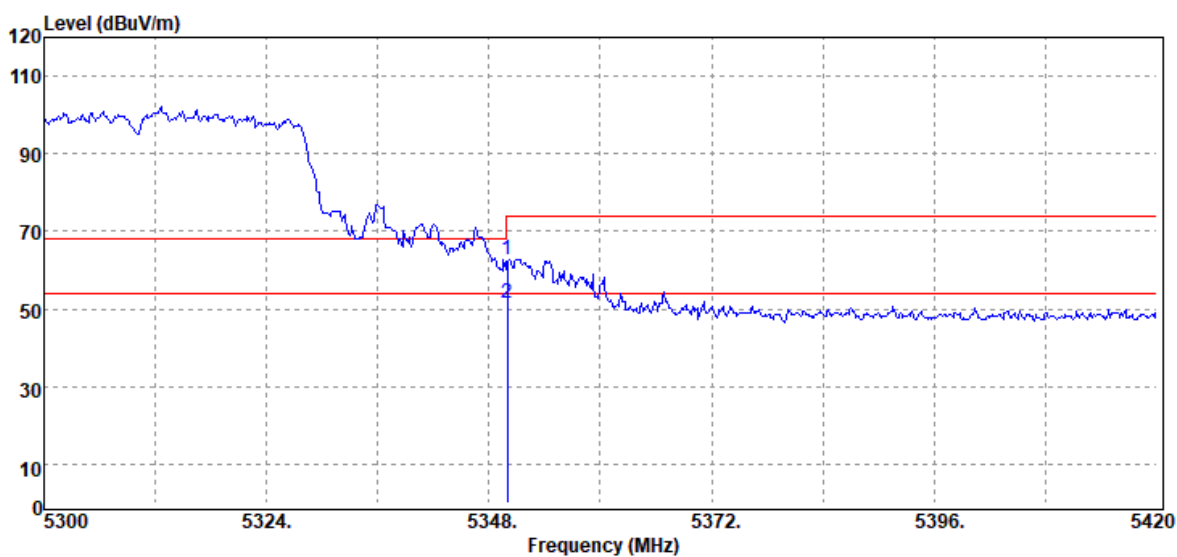
Test Mode	IEEE 802.11n 20 MHz / 5320MHz	Temp/Hum	22.6(°C) / 50%RH
Test Item	Band Edge	Test Date	June 11, 2021
Polarize	Horizontal	Test Engineer	Ray Li
Detector	Peak / Average		



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	Peak	57.00	7.85	64.85	74.00	-9.15
5350.00	Average	43.08	7.85	50.93	54.00	-3.07

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Test Mode	IEEE 802.11n 40 MHz / 5310MHz	Temp/Hum	22.6(°C)/ 50%RH
Test Item	Band Edge	Test Date	June 11, 2021
Polarize	Vertical	Test Engineer	Ray Li
Detector	Peak / Average		



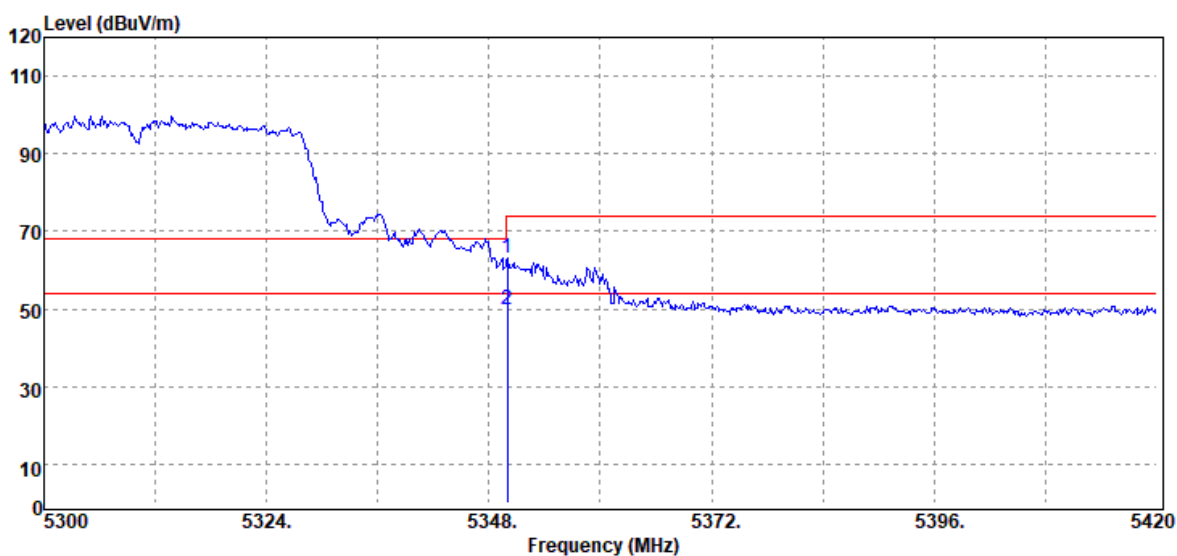
Frequency (MHz)	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
5350.00	Peak	54.90	7.85	62.75	74.00	-11.25
5350.00	Average	43.44	7.85	51.29	54.00	-2.71

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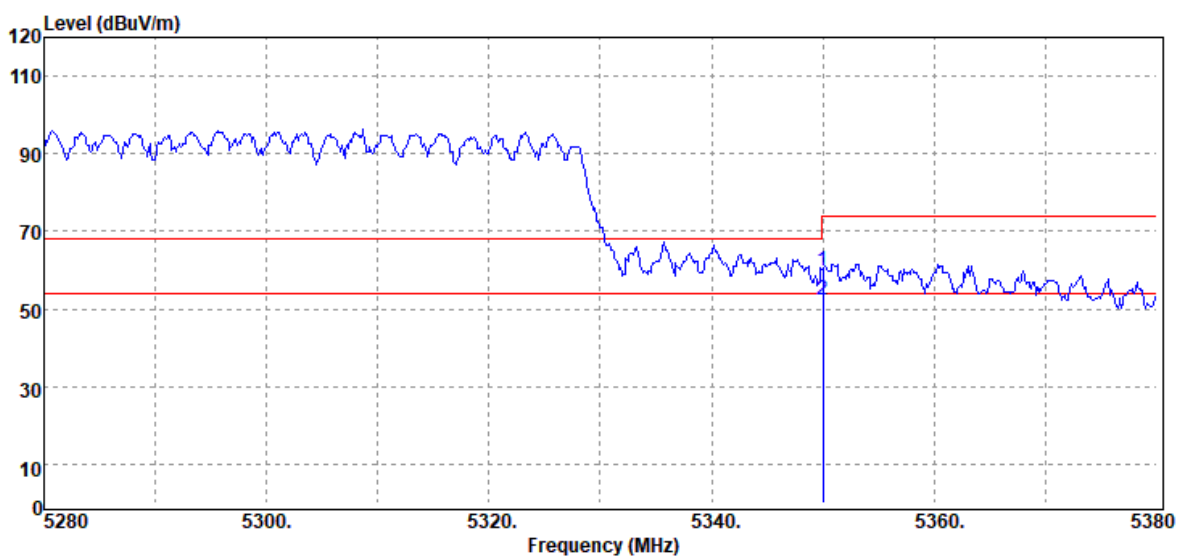
Test Mode	IEEE 802.11n 40 MHz / 5310MHz	Temp/Hum	22.6(°C) / 50%RH
Test Item	Band Edge	Test Date	June 11, 2021
Polarize	Horizontal	Test Engineer	Ray Li
Detector	Peak / Average		



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	Peak	55.44	7.85	63.29	74.00	-10.71
5350.00	Average	41.93	7.85	49.78	54.00	-4.22

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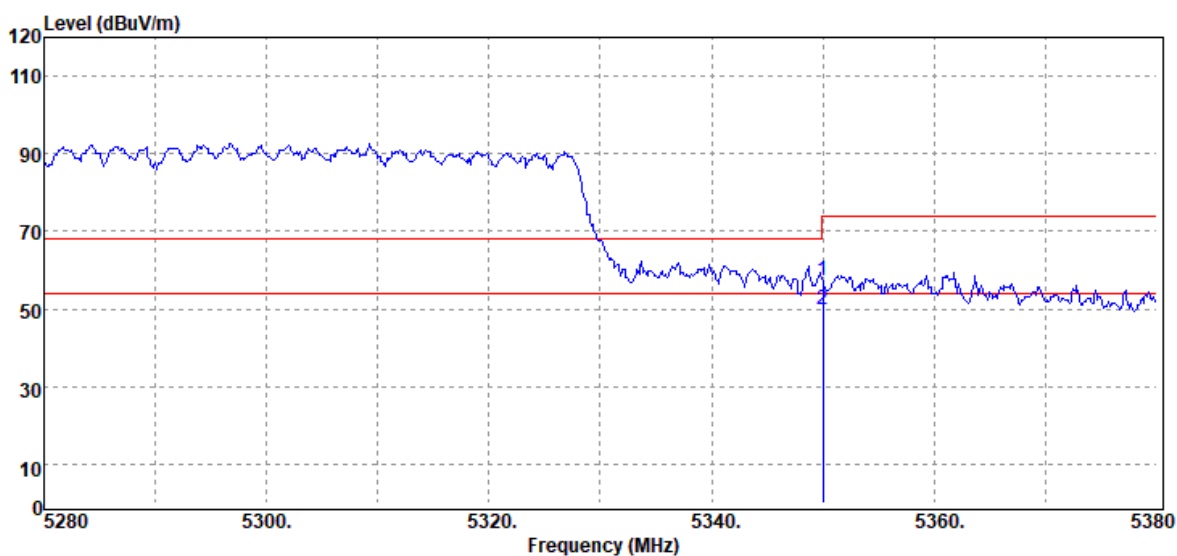
Test Mode	IEEE 802.11ac VHT80 / 5290MHz	Temp/Hum	22.6(°C) / 50%RH
Test Item	Band Edge	Test Date	June 15, 2021
Polarize	Vertical	Test Engineer	Ray Li
Detector	Peak / Average		



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	Peak	51.77	7.85	59.62	74.00	-14.38
5350.00	Average	44.33	7.85	52.18	54.00	-1.82

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Test Mode	IEEE 802.11ac VHT80 / 5290MHz	Temp/Hum	22.6(°C) / 50%RH
Test Item	Band Edge	Test Date	June 15, 2021
Polarize	Horizontal	Test Engineer	Ray Li
Detector	Peak / Average		

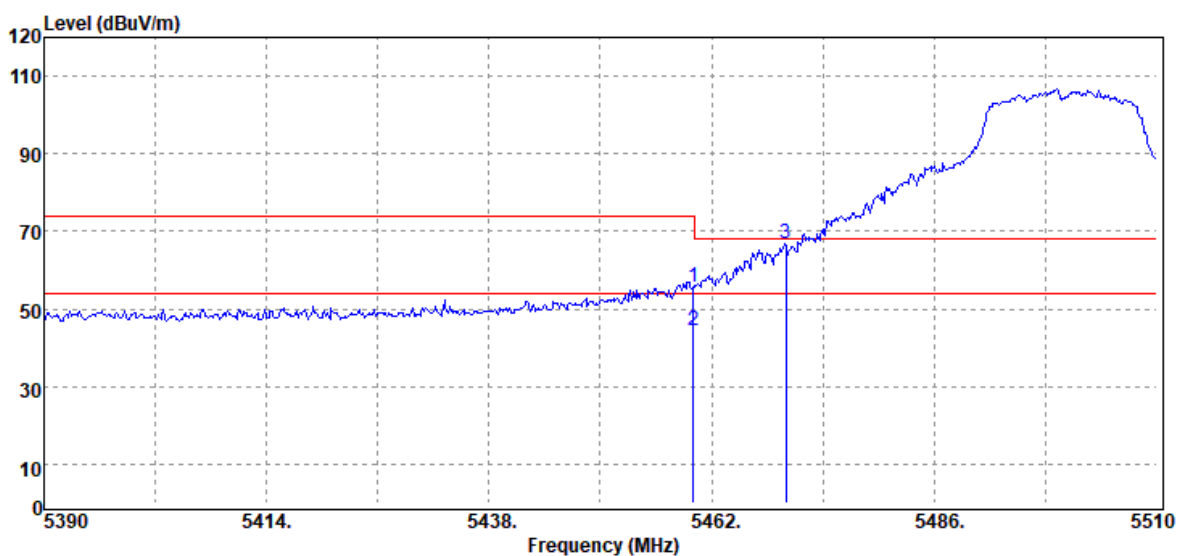


Frequency (MHz)	Detector Mode PK/QP/AV	Spectrum Reading Level dB μ V	Factor dB	Actual FS dB μ V/m	Limit @3m dB μ V/m	Margin dB
5350.00	Peak	49.62	7.85	57.47	74.00	-16.53
5350.00	Average	42.15	7.85	50.00	54.00	-4.00

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Test Data for UNII-2c

Test Mode	IEEE 802.11a / 5500MHz	Temp/Hum	22.6(°C) / 50%RH
Test Item	Band Edge	Test Date	June 11, 2021
Polarize	Vertical	Test Engineer	Ray Li
Detector	Peak / Average		



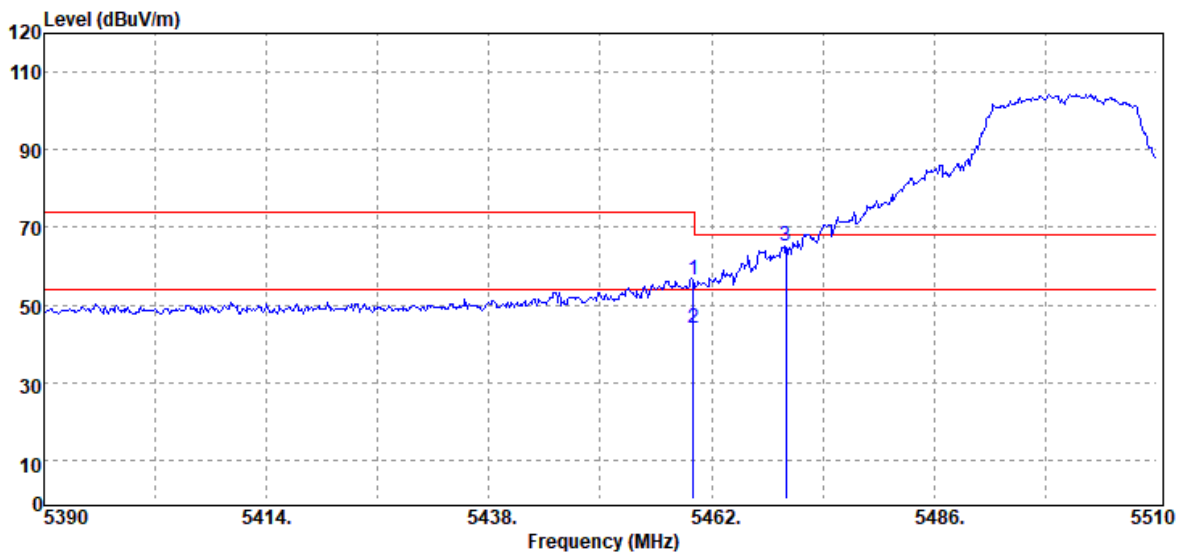
Frequency (MHz)	Detector Mode PK/QP/AV	Spectrum Reading Level dB μ V	Factor dB	Actual FS dB μ V/m	Limit @3m dB μ V/m	Margin dB
5460.00	Peak	47.63	8.08	55.71	74.00	-18.29
5460.00	Average	36.33	8.08	44.41	54.00	-9.59
5470.00	Peak	58.59	8.12	66.71	68.20	-1.49

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Test Mode	IEEE 802.11a / 5500MHz	Temp/Hum	22.6(°C) / 50%RH
Test Item	Band Edge	Test Date	June 11, 2021
Polarize	Horizontal	Test Engineer	Ray Li
Detector	Peak / Average		



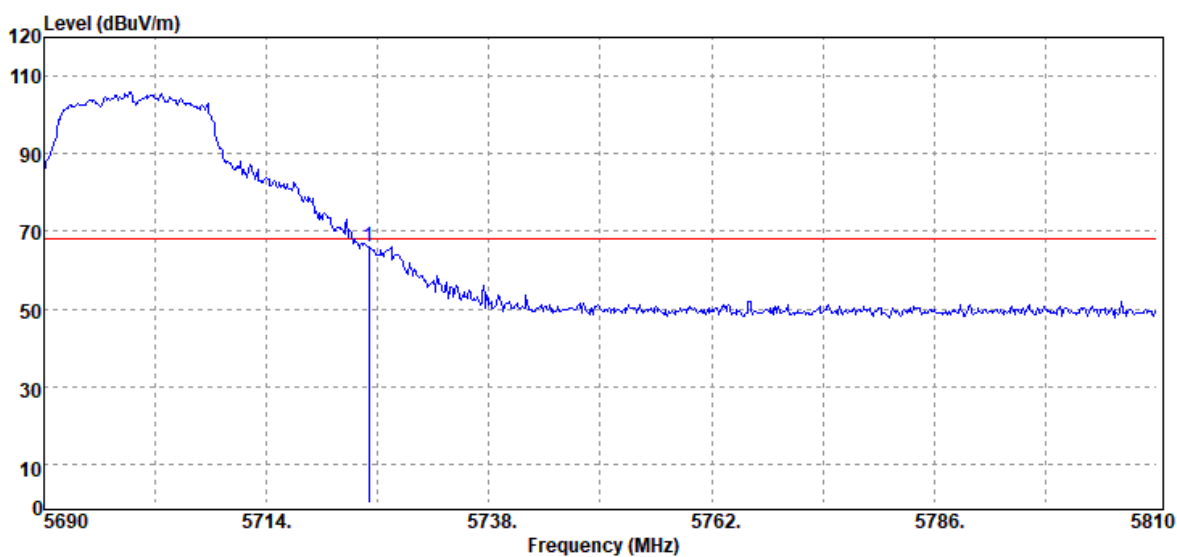
Frequency (MHz)	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
5460.00	Peak	48.50	8.08	56.58	74.00	-17.42
5460.00	Average	36.12	8.08	44.20	54.00	-9.80
5470.00	Peak	56.93	8.12	65.05	68.20	-3.15

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Test Mode	IEEE 802.11a / 5700 MHz	Temp/Hum	22.6(°C)/ 50%RH
Test Item	Band Edge	Test Date	June 11, 2021
Polarize	Vertical	Test Engineer	Ray Li
Detector	Peak		



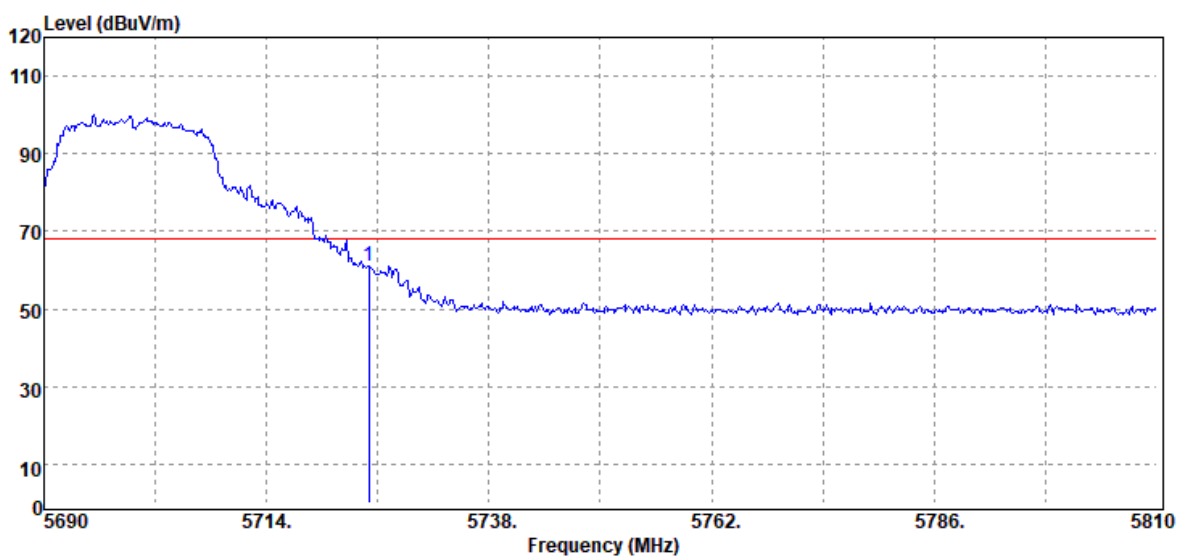
Frequency (MHz)	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
5725.00	Peak	56.86	9.29	66.15	68.20	-2.05

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Test Mode	IEEE 802.11a / 5700 MHz	Temp/Hum	22.6(°C) / 50%RH
Test Item	Band Edge	Test Date	June 11, 2021
Polarize	Horizontal	Test Engineer	Ray Li
Detector	Peak		



Frequency (MHz)	Detector Mode PK/QP/AV	Spectrum Reading Level dB μ V	Factor dB	Actual FS dB μ V/m	Limit @3m dB μ V/m	Margin dB
5725.00	Peak	51.81	9.29	61.10	68.20	-7.10