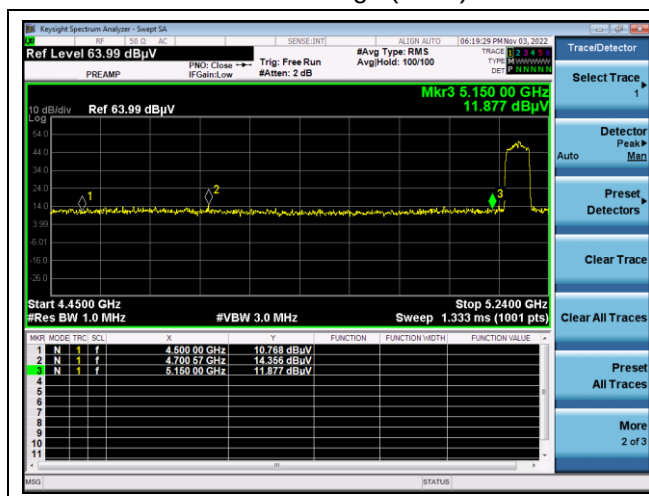
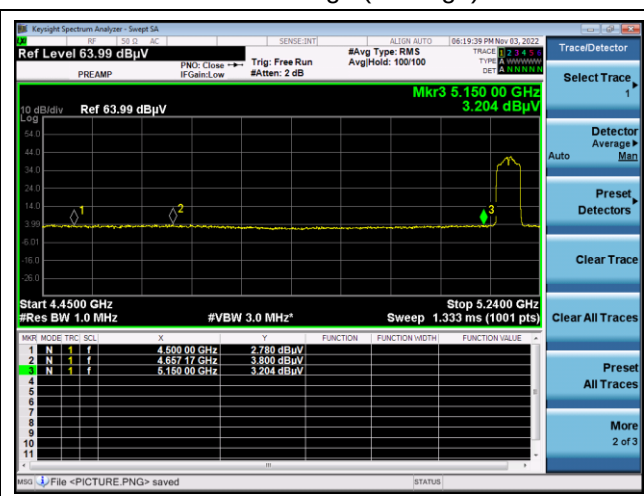


802.11ac_VHT40

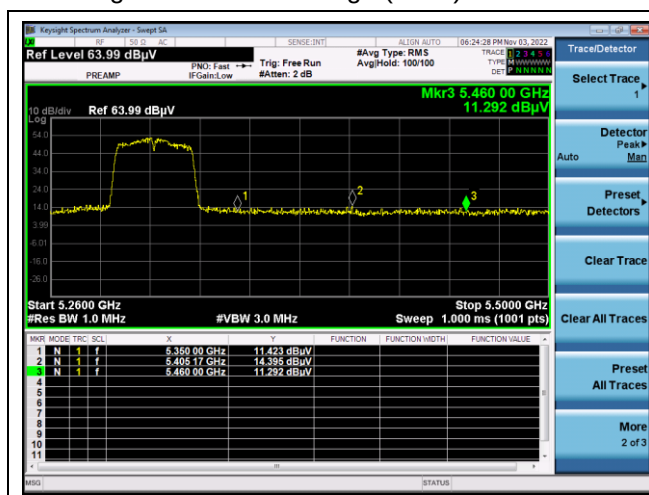
Low channel Band edge (Peak) - Band 1



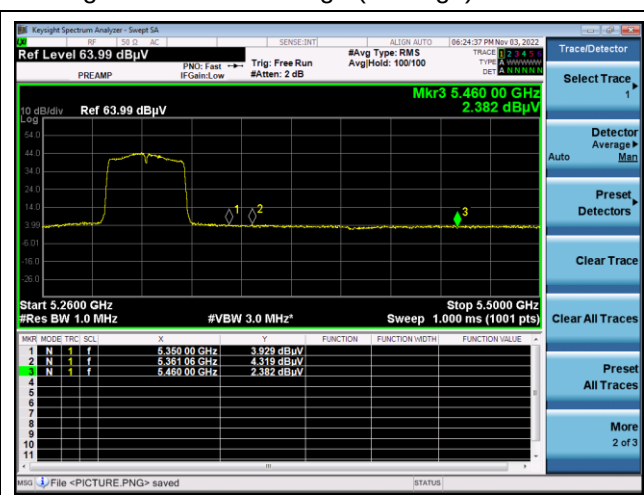
Low channel Band edge (Average) - Band 1



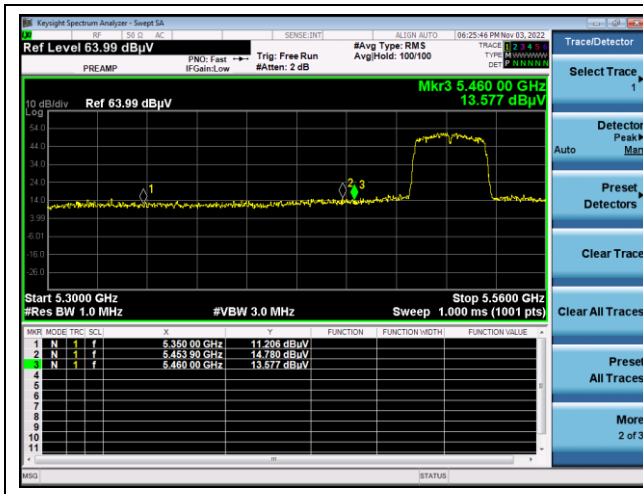
High channel Band edge (Peak) - Band 2A



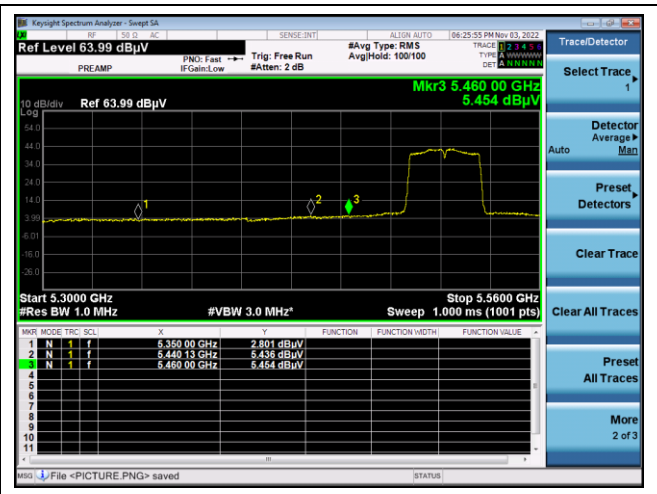
High channel Band edge (Average) - Band 2A



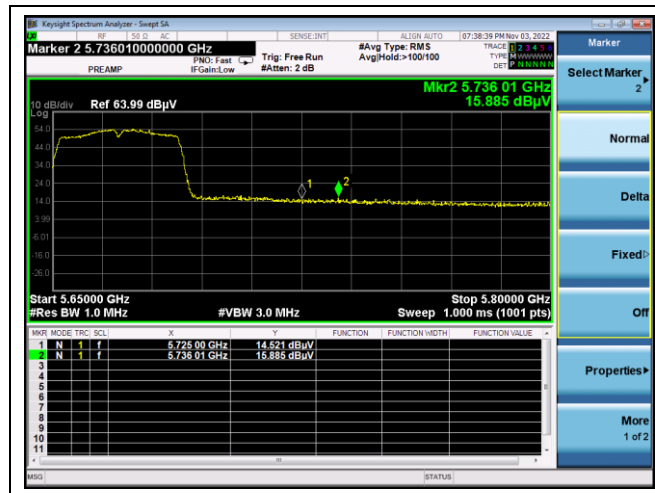
Low channel Band edge (Peak) - Band 2C



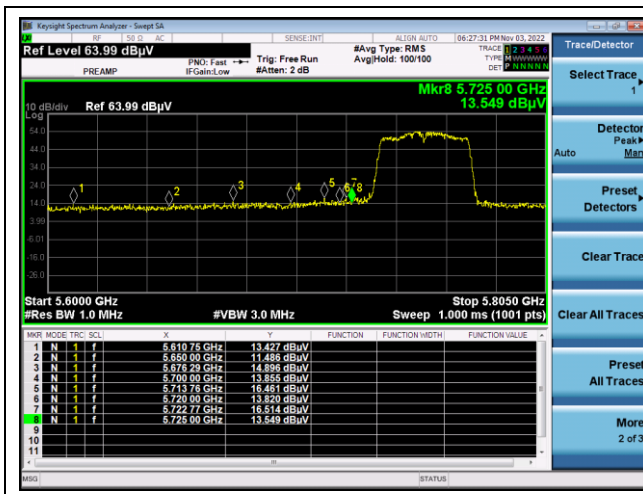
Low channel Band edge (Average) - Band 2C



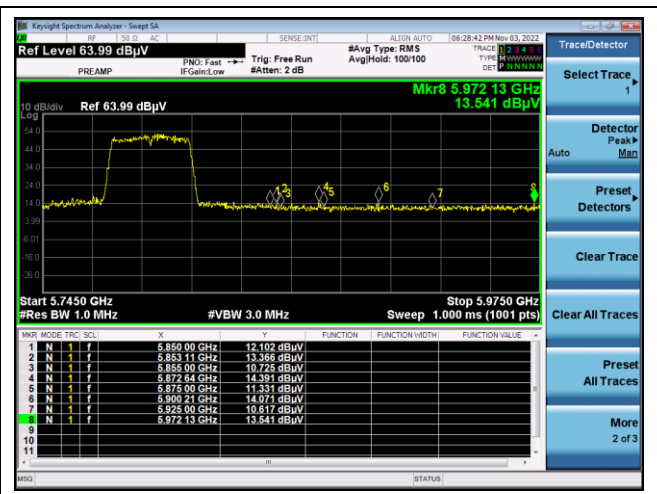
High channel Band edge (Peak) - Band 2C



Low channel Band edge (Peak) - Band 3

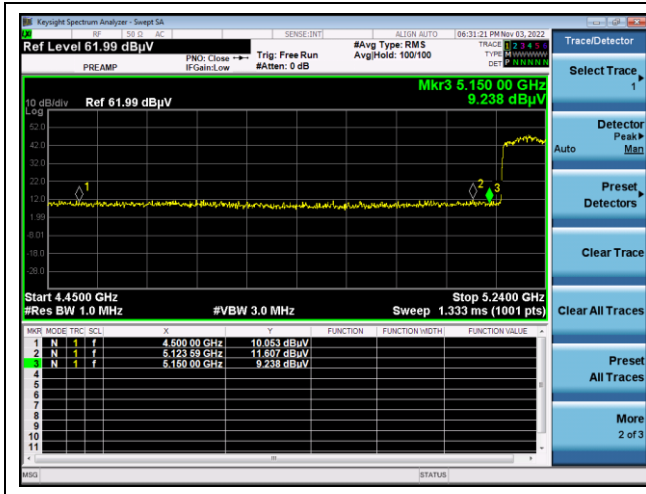


High channel Band edge (Peak) - Band 3



802.11ac_VHT80

Middle channel Band edge (Peak) - Band 1



Middle channel Band edge (Average) - Band 1



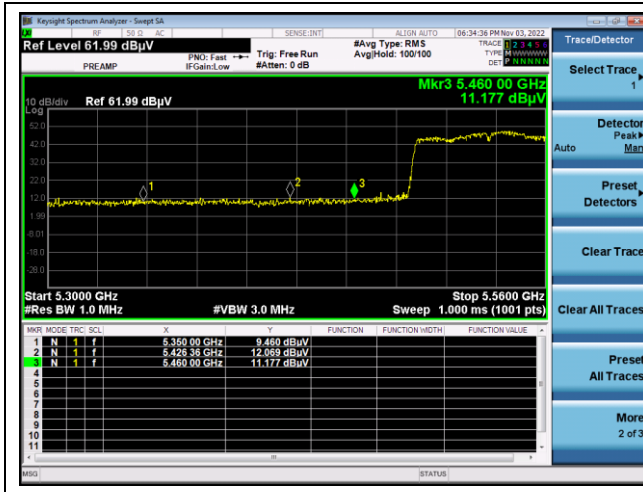
Middle channel Band edge (Peak) - Band 2A



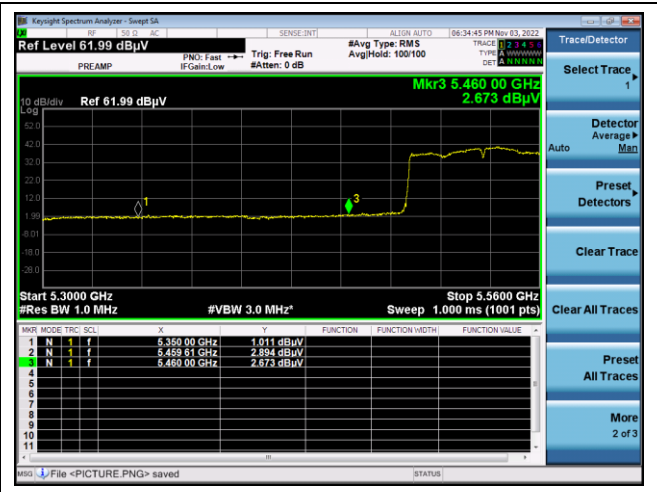
Middle channel Band edge (Average) - Band 2A



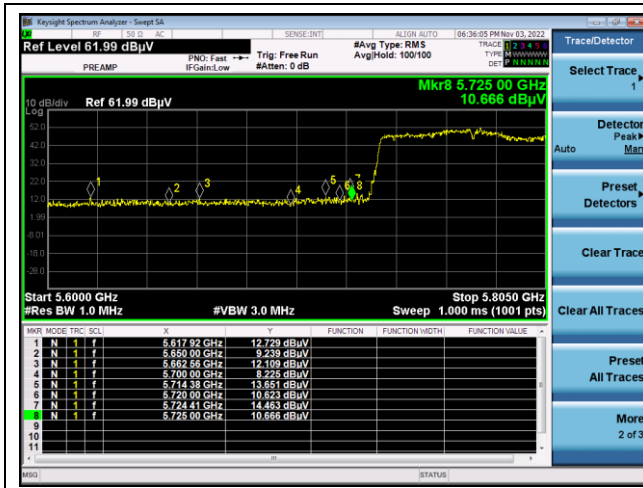
Low channel Band edge (Peak) - Band 2C



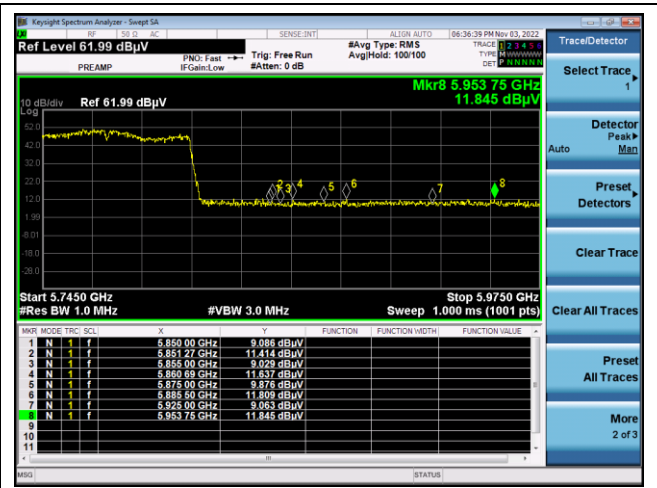
Low channel Band edge (Average) - Band 2C



Middle channel Band edge (Peak) - Band 3



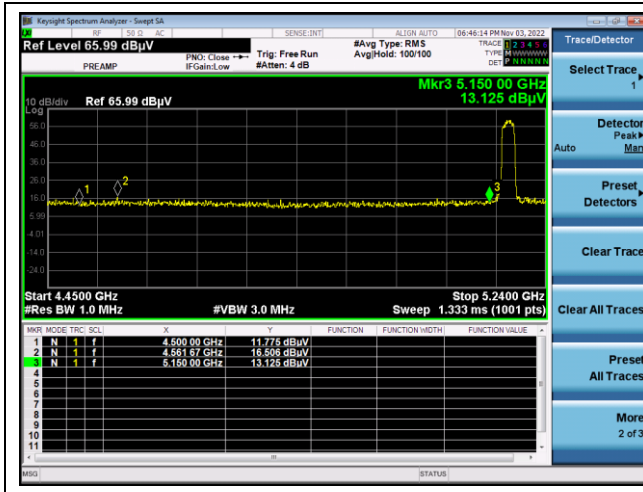
Middle channel Band edge (Peak) - Band 3



- Ant.1+Ant.2

802.11ac_VHT20

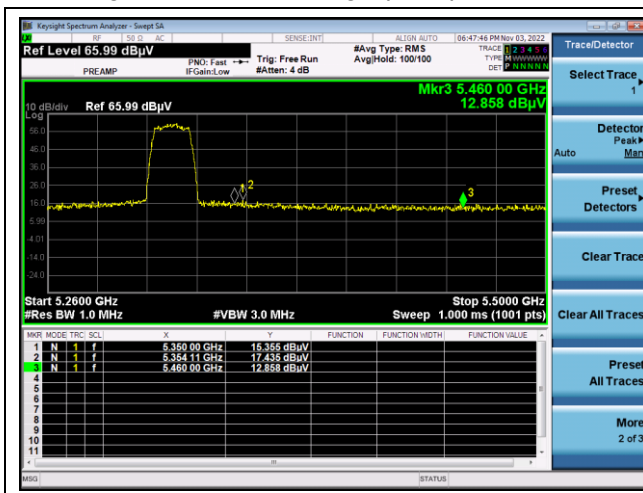
Low channel Band edge (Peak) - Band 1



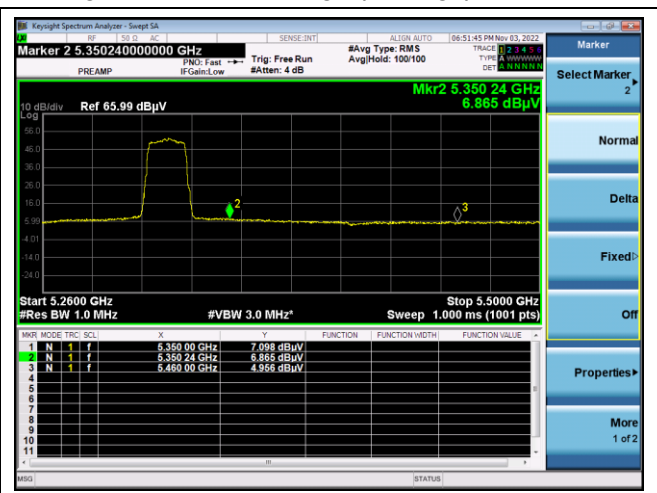
Low channel Band edge (Average) - Band 1



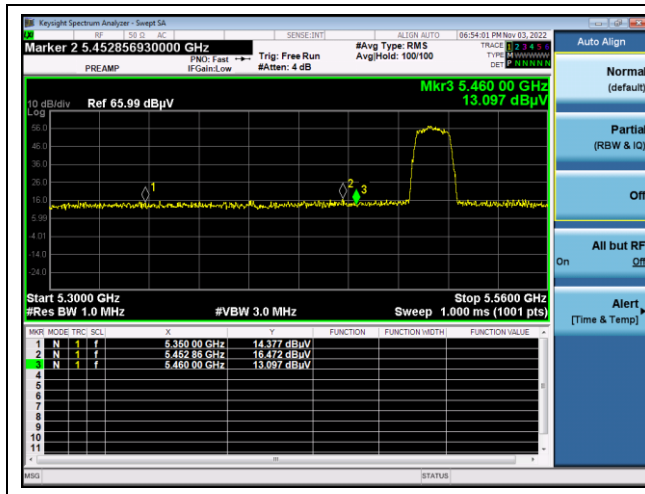
High channel Band edge (Peak) - Band 2A



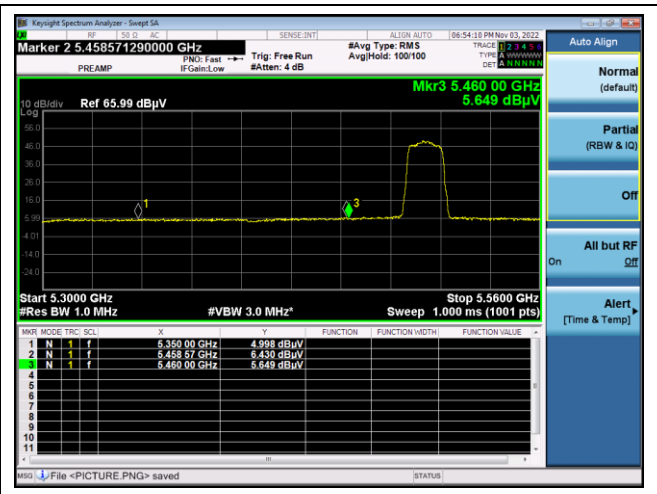
High channel Band edge (Average) - Band 2A



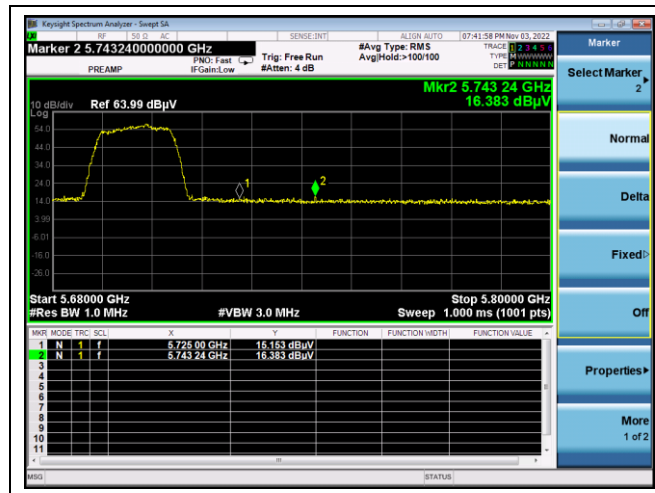
Low channel Band edge (Peak) - Band 2C



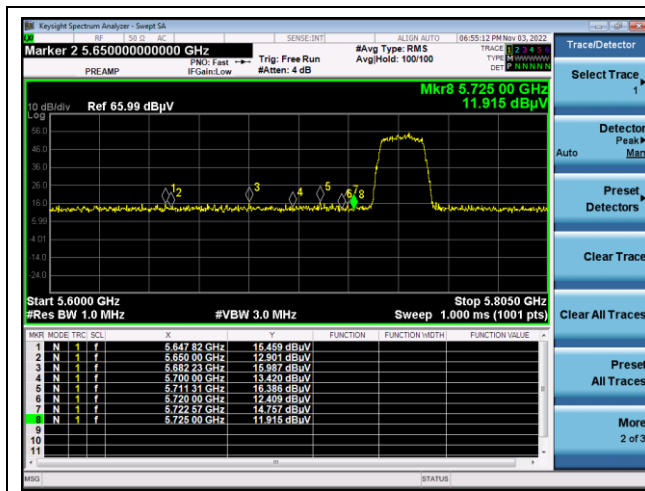
Low channel Band edge (Average) - Band 2C



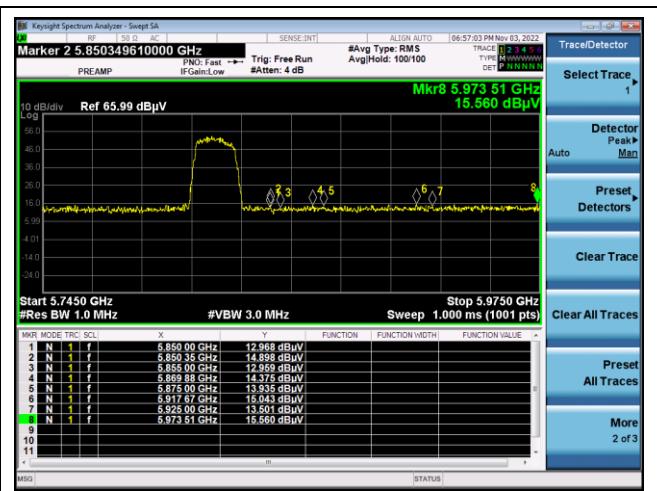
High channel Band edge (Peak) - Band 2C



Low channel Band edge (Peak) - Band 3

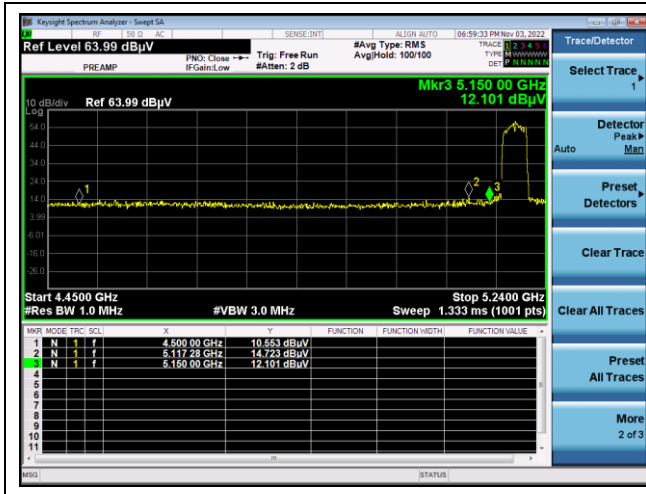


High channel Band edge (Peak) - Band 3



802.11ac_VHT40

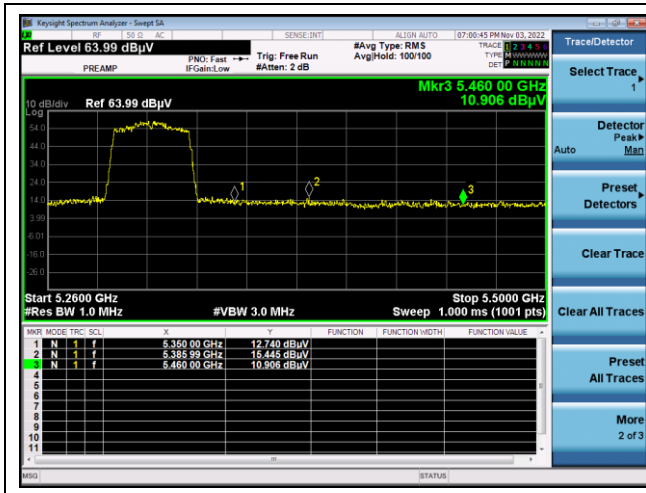
Low channel Band edge (Peak) - Band 1



Low channel Band edge (Average) - Band 1



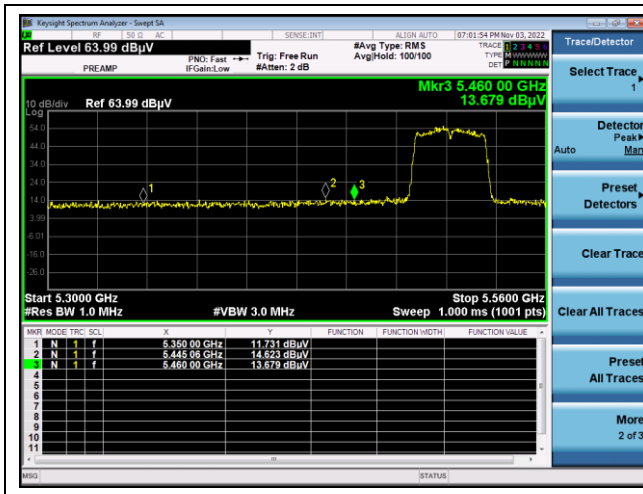
High channel Band edge (Peak) - Band 2A



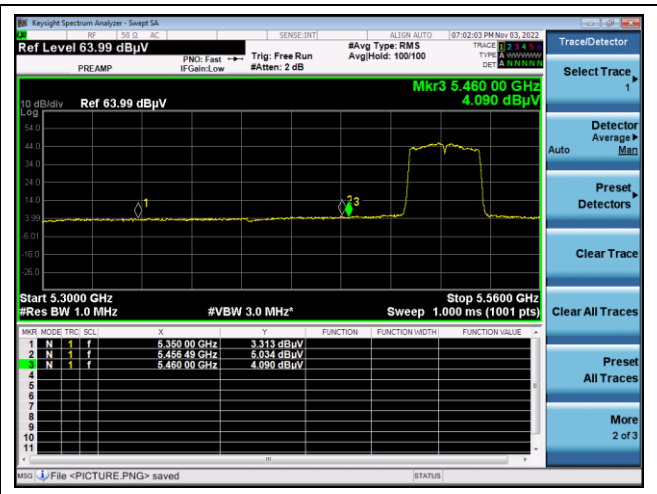
High channel Band edge (Average) - Band 2A



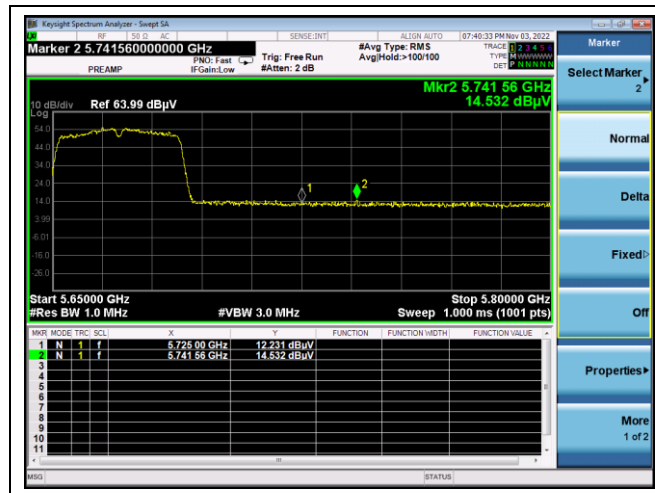
Low channel Band edge (Peak) - Band 2C



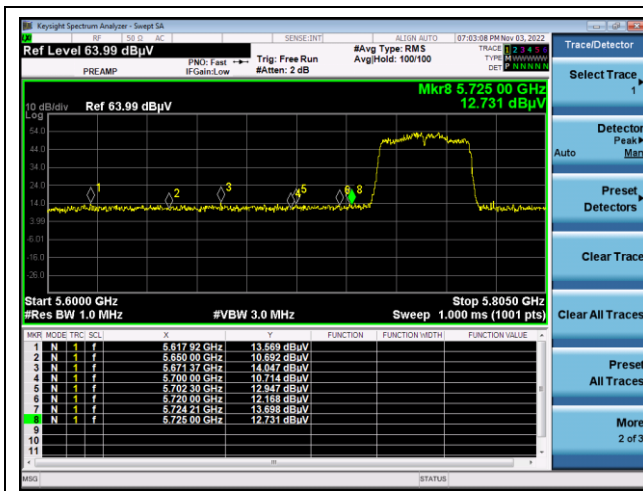
Low channel Band edge (Average) - Band 2C



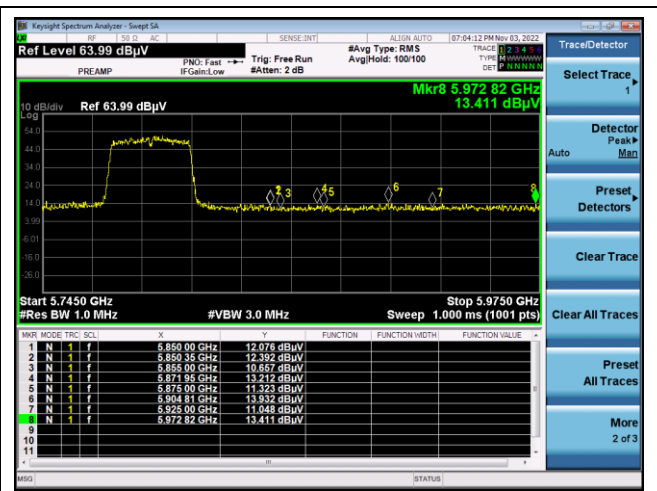
High channel Band edge (Peak) - Band 2C



Low channel Band edge (Peak) - Band 3

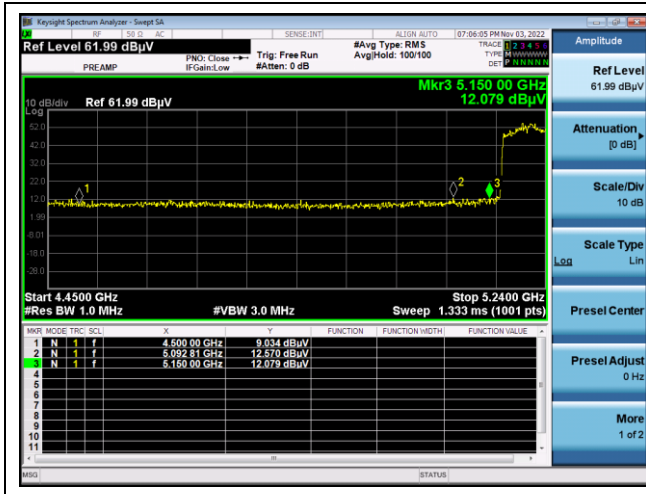


High channel Band edge (Peak) - Band 3



802.11ac_VHT80

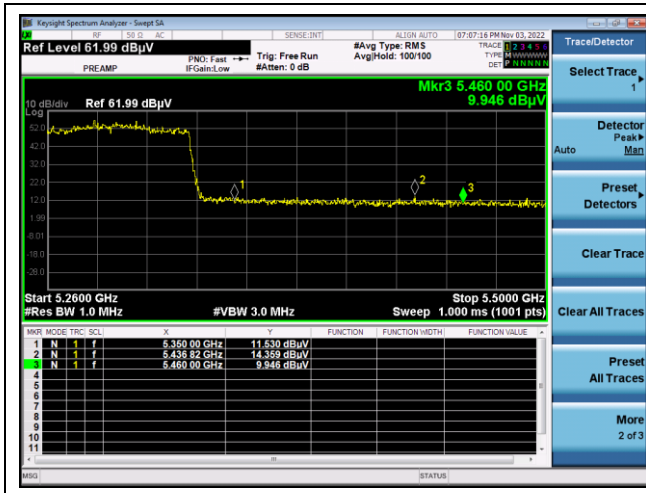
Middle channel Band edge (Peak) - Band 1



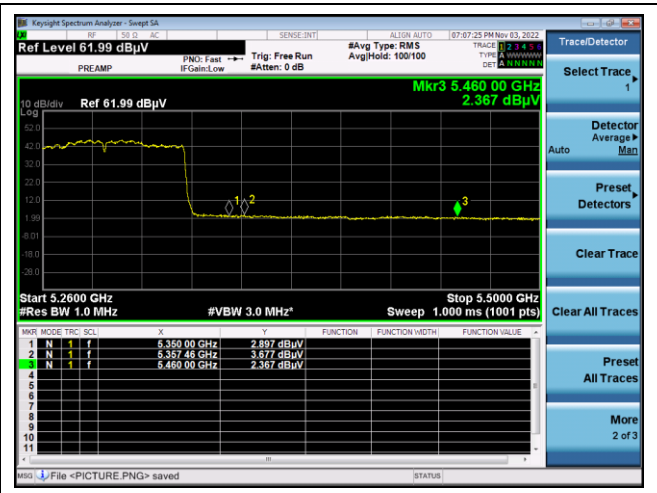
Middle channel Band edge (Average) - Band 1



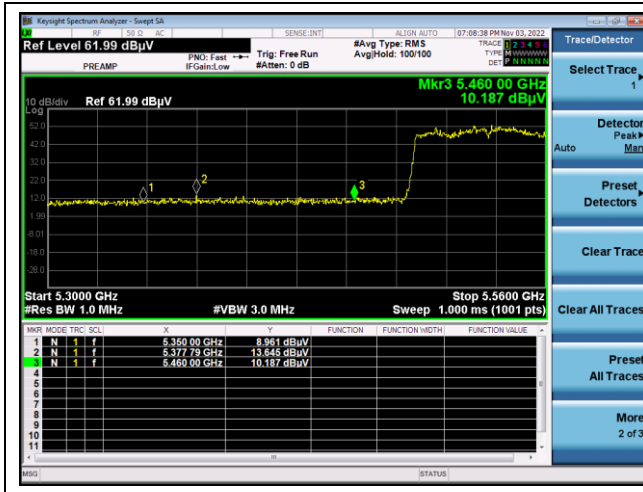
Middle channel Band edge (Peak) - Band 2A



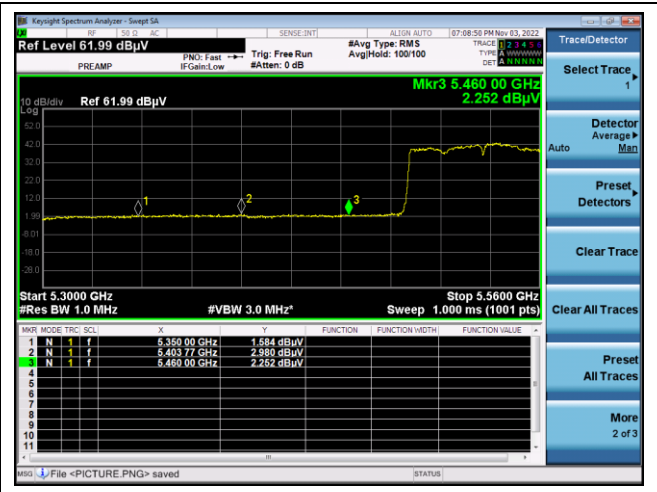
Middle channel Band edge (Average) - Band 2A



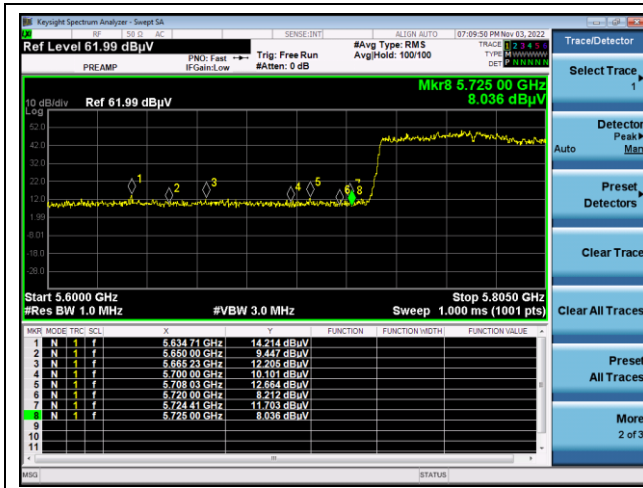
Low channel Band edge (Peak) - Band 2C



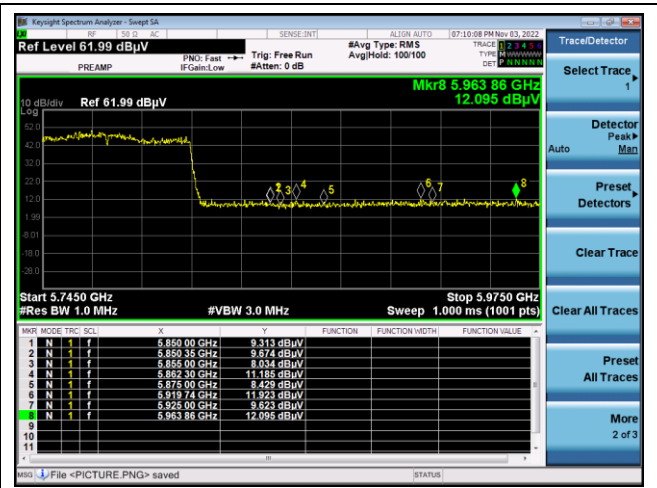
Low channel Band edge (Average) - Band 2C



Middle channel Band edge (Peak) - Band 3

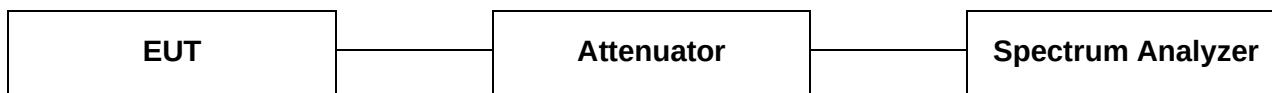


Middle channel Band edge (Peak) - Band 3



3. 26 dB Bandwidth & 99 % Bandwidth

3.1. Test Setup



3.2. Limit

None; for reporting purpose only.

3.3. Test Procedure

3.3.1. 26 dB Bandwidth

1. This measurement settings are specified in section II.C.1 of KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
2. Set RBW = approximately 1 % of the emission bandwidth.
3. Set the VBW > RBW.
4. Detector = Peak.
5. Trace mode = max hold.
6. Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1 %.

Remark;

In case of band crossing channels 138, 142 and 144, the measurement is complied with section III.A of KDB 789033 D02 General UNII Test Procedures New Rules v02r01.

3.3.2. 99 % Bandwidth

3.3.2.1 FCC

1. This measurement settings are specified in section II.D of KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
2. Set center frequency to the nominal EUT channel center frequency.
3. Set span = 1.5 times to 5.0 times the OBW.
4. Set RBW = 1 % to 5 % of the OBW.
5. Set VBW $\geq 3 \times$ RBW.
6. Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.
7. Use the 99 % power bandwidth function of the instrument (if available).
8. If the instrument does not have a 99 % power bandwidth function, the trace data points are recovered and directly summed in power units. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5 % of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5 % of the total is reached; that frequency is recorded as the upper frequency. The 99 % occupied bandwidth is the difference between these two frequencies.

In the result,

- DFS requirements are not applicable in the 5 150 MHz ~ 5 250 MHz.

3.3.2.2 IC

- The span of the spectrum analyzer shall be set large enough to capture all products of the modulation process, including the emission skirts, around the carrier frequency, but small enough to avoid having other emissions (e.g. on adjacent channels) within the span.
- The detector of the spectrum analyzer shall be set to "Sample". However, a peak, or peak hold, may be used in place of the sampling detector since this usually produces a wider bandwidth than the actual bandwidth (worst-case measurement). Use of a peak hold (or "Max Hold") may be necessary to determine the occupied / x dB bandwidth if the device is not transmitting continuously.
- The resolution bandwidth (RBW) shall be in the range of 1 % to 5 % of the actual occupied / x dB bandwidth and the video bandwidth (VBW) shall not be smaller than three times the RBW value. Video averaging is not permitted.

Note: It may be necessary to repeat the measurement a few times until the RBW and VBW are in compliance with the above requirement.

For the 99 % emission bandwidth, the trace data points are recovered and directly summed in linear power level terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5 % of the total is reached, and that frequency recorded. The process is repeated for the highest frequency data points (starting at the highest frequency, at the right side of the span, and going down in frequency). This frequency is then recorded. The difference between the two recorded frequencies is the occupied bandwidth (or the 99 % emission bandwidth).

3.4. Test Result

Ambient temperature : (23 ± 1) °C
Relative humidity : 47 % R.H.

- SISO_Ant.1

Test mode: 11a

Band	Frequency (MHz)	Ch.	Data Rate (Mbps)	26 dB Bandwidth (MHz)	99 % Bandwidth (MHz)
U-NII 1	5 180	36	6	20.955	17.019
	5 220	44		21.071	17.077
	5 240	48		20.955	17.077
U-NII 2A	5 260	52		21.071	17.019
	5 300	60		20.897	17.019
	5 320	64		21.071	17.019
U-NII 2C	5 500	100		21.071	17.077
	5 580	116		21.071	17.019
	5 700	140		21.129	17.019
U-NII 3	5 745	149		21.071	17.019
	5 785	157		21.071	17.077
	5 825	165		21.071	17.019

Test mode: 11ac_VHT20

Band	Frequency (MHz)	Ch.	Data Rate (Mbps)	26 dB Bandwidth (MHz)	99 % Bandwidth (MHz)
U-NII 1	5 180	36	MCS0	21.303	18.061
	5 220	44		21.418	18.119
	5 240	48		21.418	18.119
U-NII 2A	5 260	52		21.650	18.119
	5 300	60		21.418	18.119
	5 320	64		21.303	18.119
U-NII 2C	5 500	100		21.360	18.119
	5 580	116		21.534	18.061
	5 700	140		21.476	18.119
U-NII 3	5 745	149		21.360	18.119
	5 785	157		21.360	18.119
	5 825	165		21.534	18.177

Test mode: 11ac_VHT40

Band	Frequency (MHz)	Ch.	Data Rate (Mbps)	26 dB Bandwidth (MHz)	99 % Bandwidth (MHz)
U-NII 1	5 190	38	MCS0	40.120	36.237
	5 230	46		39.960	36.237
U-NII 2A	5 270	54		40.040	36.237
	5 310	62		39.960	36.237
U-NII 2C	5 510	102		40.040	36.237
	5 550	110		40.120	36.237
	5 670	134		40.280	36.237
U-NII 3	5 755	151		40.000	36.237
	5 795	159		40.280	36.353

Test mode: 11ac_VHT80

Band	Frequency (MHz)	Ch.	Data Rate (Mbps)	26 dB Bandwidth (MHz)	99 % Bandwidth (MHz)
U-NII 1	5 210	42	MCS0	81.519	75.716
U-NII 2A	5 290	58		81.598	75.716
U-NII 2C	5 530	106		82.158	75.716
U-NII 3	5 775	155		82.158	75.716

Band-crossing channel

Band	Frequency (MHz)	Ch.	Data Rate (Mbps)	26 dB Bandwidth (MHz)
11a	5 720	144	6	15.478
11ac_VHT20	5 720	144	MCS0	15.651
11ac_VHT40	5 710	142	MCS0	35.029
11ac_VHT80	5 690	138	MCS0	75.919

- SISO_Ant.2

Test mode: 11a

Band	Frequency (MHz)	Ch.	Data Rate (Mbps)	26 dB Bandwidth (MHz)	99 % Bandwidth (MHz)
U-NII 1	5 180	36	6	21.059	17.019
	5 220	44		21.059	16.961
	5 240	48		21.199	17.019
U-NII 2A	5 260	52		21.059	17.019
	5 300	60		20.919	17.019
	5 320	64		20.959	17.019
U-NII 2C	5 500	100		21.019	17.019
	5 580	116		20.979	17.077
	5 700	140		21.119	17.077
U-NII 3	5 745	149		21.059	17.019
	5 785	157		21.159	17.077
	5 825	165		21.159	17.019

Test mode: 11ac_VHT20

Band	Frequency (MHz)	Ch.	Data Rate (Mbps)	26 dB Bandwidth (MHz)	99 % Bandwidth (MHz)
U-NII 1	5 180	36	MCS0	21.439	18.119
	5 220	44		21.479	18.061
	5 240	48		21.459	18.119
U-NII 2A	5 260	52		21.419	18.119
	5 300	60		21.439	18.119
	5 320	64		21.279	18.119
U-NII 2C	5 500	100		21.359	18.119
	5 580	116		21.499	18.119
	5 700	140		21.419	18.061
U-NII 3	5 745	149		21.519	18.119
	5 785	157		21.339	18.177
	5 825	165		21.439	18.119

Test mode: 11ac_VHT40

Band	Frequency (MHz)	Ch.	Data Rate (Mbps)	26 dB Bandwidth (MHz)	99 % Bandwidth (MHz)
U-NII 1	5 190	38	MCS0	40.240	36.237
	5 230	46		39.920	36.237
U-NII 2A	5 270	54		40.040	36.237
	5 310	62		39.920	36.237
U-NII 2C	5 510	102		40.040	36.122
	5 550	110		40.000	36.237
	5 670	134		40.360	36.237
U-NII 3	5 755	151		39.960	36.237
	5 795	159		40.080	36.353

Test mode: 11ac_VHT80

Band	Frequency (MHz)	Ch.	Data Rate (Mbps)	26 dB Bandwidth (MHz)	99 % Bandwidth (MHz)
U-NII 1	5 210	42	MCS0	81.439	75.485
U-NII 2A	5 290	58		81.678	75.716
U-NII 2C	5 530	106		81.519	75.716
U-NII 3	5 775	155		82.158	75.948

Band-crossing channel

Band	Frequency (MHz)	Ch.	Data Rate (Mbps)	26 dB Bandwidth (MHz)
11a	5 720	144	6	15.629
11ac_VHT20	5 720	144	MCS0	15.709
11ac_VHT40	5 710	142	MCS0	34.980
11ac_VHT80	5 690	138	MCS0	75.919

- MIMO

Test mode: 11ac_VHT20

Band	Frequency (MHz)	Ch.	Data Rate (Mbps)	26 dB Bandwidth (MHz)		99 % Bandwidth (MHz)	
				ANT 1	ANT 2	ANT 1	ANT 2
U-NII 1	5 180	36	MCS0	21.239	21.139	18.061	17.829
	5 220	44		21.319	21.199	18.119	17.771
	5 240	48		21.319	21.219	18.061	17.771
U-NII 2A	5 260	52		21.379	21.379	18.119	17.887
	5 300	60		21.539	21.299	18.119	17.887
	5 320	64		21.479	21.359	18.061	17.887
U-NII 2C	5 500	100		21.399	21.239	18.119	17.829
	5 580	116		21.479	21.239	18.119	17.829
	5 700	140		21.459	21.259	18.061	17.829
U-NII 3	5 745	149		21.439	21.459	18.119	17.829
	5 785	157		21.279	21.299	18.119	17.829
	5 825	165		21.558	21.339	18.061	17.829

Test mode: 11ac_VHT40

Band	Frequency (MHz)	Ch.	Data Rate (Mbps)	26 dB Bandwidth (MHz)		99 % Bandwidth (MHz)	
				ANT 1	ANT 2	ANT 1	ANT 2
U-NII 1	5 190	38	MCS0	39.960	39.441	36.237	36.122
	5 230	46		40.000	39.401	36.237	36.122
U-NII 2A	5 270	54		40.160	39.401	36.237	36.122
	5 310	62		40.160	39.241	36.237	36.006
U-NII 2C	5 510	102		39.880	39.481	36.237	36.122
	5 550	110		39.960	39.481	36.237	36.122
	5 670	134		40.040	39.521	36.237	36.122
U-NII 3	5 755	151		40.120	39.481	36.237	36.122
	5 795	159		40.599	39.401	36.353	36.122

Test mode: 11ac_VHT80

Band	Frequency (MHz)	Ch.	Data Rate (Mbps)	26 dB Bandwidth (MHz)		99 % Bandwidth (MHz)	
				ANT 1	ANT 2	ANT 1	ANT 2
U-NII 1	5 210	42	MCS0	81.998	81.119	75.716	75.485
U-NII 2A	5 290	58		81.598	81.119	75.716	75.485
U-NII 2C	5 530	106		82.398	81.359	75.948	75.485
U-NII 3	5 775	155		81.598	81.678	75.485	75.485

Band-crossing channel

Band	Frequency (MHz)	Ch.	Data Rate (Mbps)	26 dB Bandwidth (MHz)	
				ANT 1	ANT 2
11ac_VHT20	5 720	144	MCS0	15.629	15.709
11ac_VHT40	5 710	142	MCS0	34.980	34.740
11ac_VHT80	5 690	138	MCS0	75.919	76.079