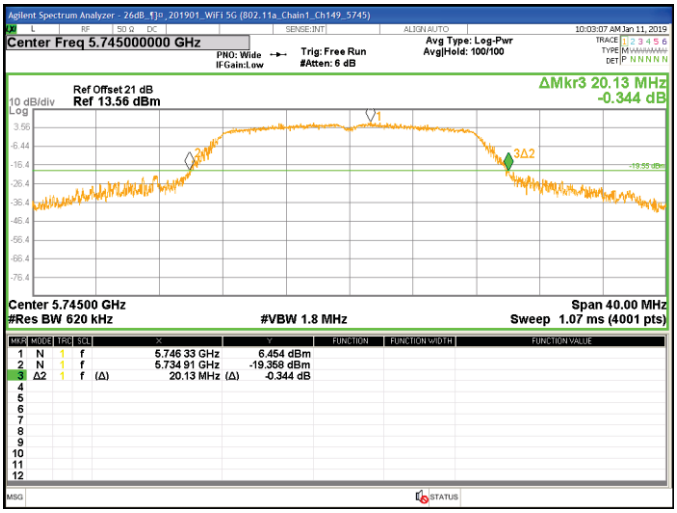
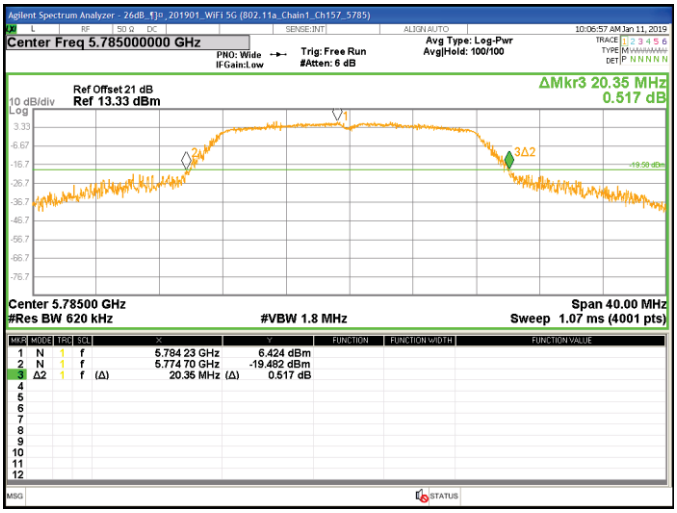
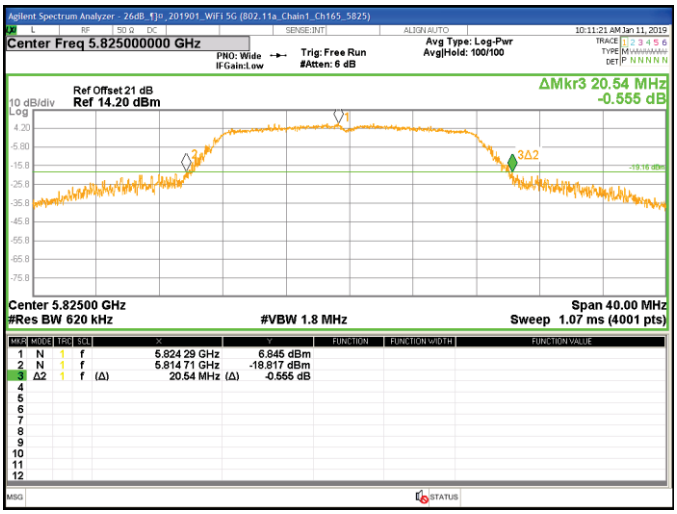
Chain1 : 26dB Bandwidth @ 802.11a Mode Ch149



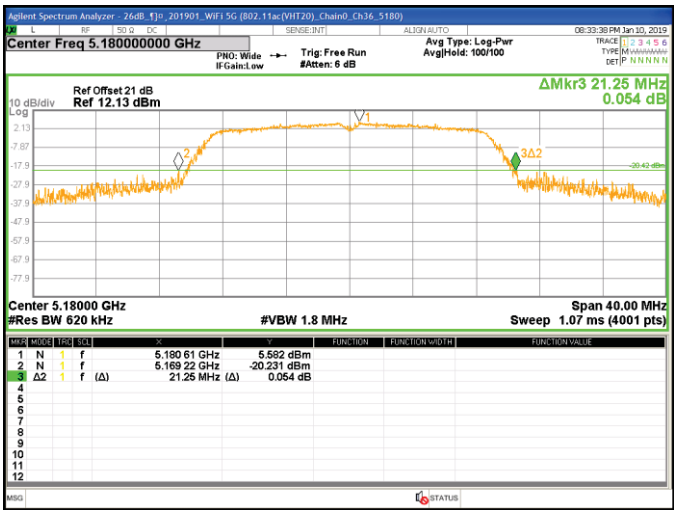
Chain1 : 26dB Bandwidth @ 802.11a Mode Ch157



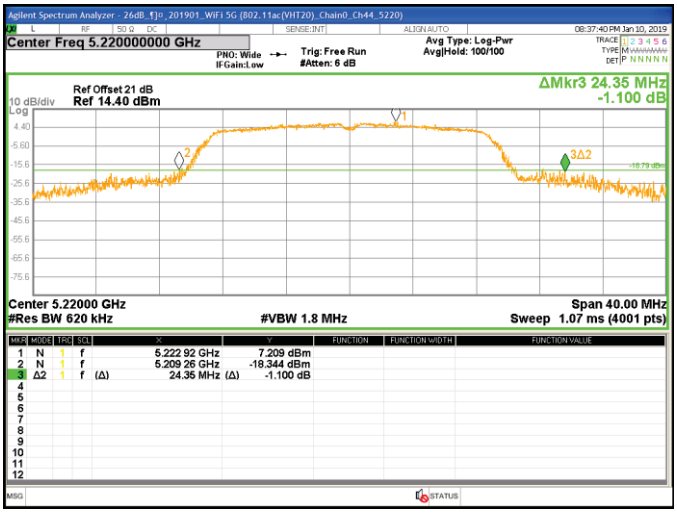
Chain1 : 26dB Bandwidth @ 802.11a Mode Ch165



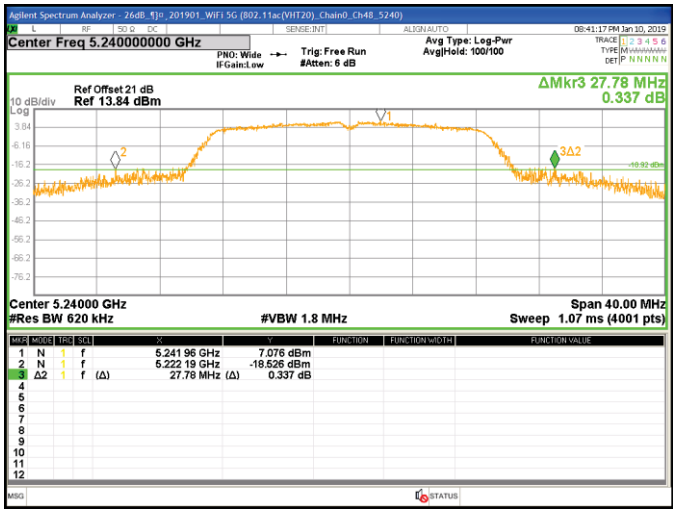
Chain0 : 26dB Bandwidth @ 802.11ac(VHT20) Mode Ch36



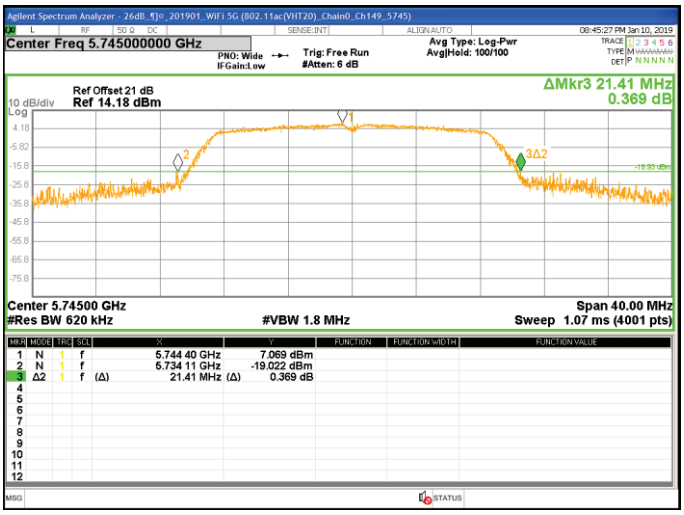
Chain0 : 26dB Bandwidth @ 802.11ac(VHT20) Mode Ch44



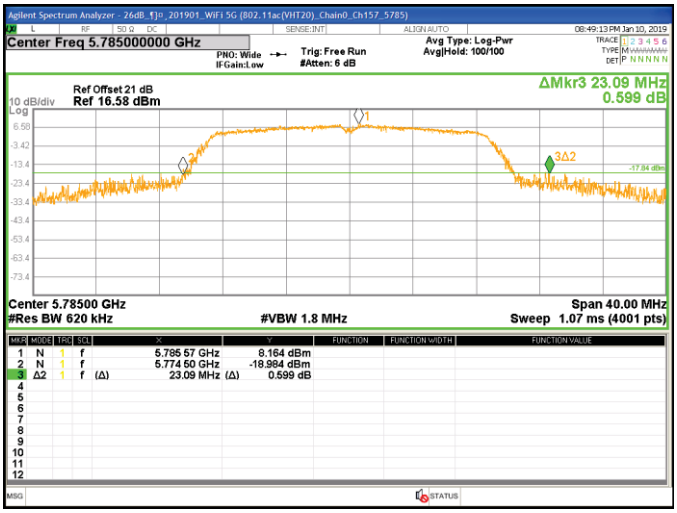
Chain0 : 26dB Bandwidth @ 802.11ac(VHT20) Mode Ch48



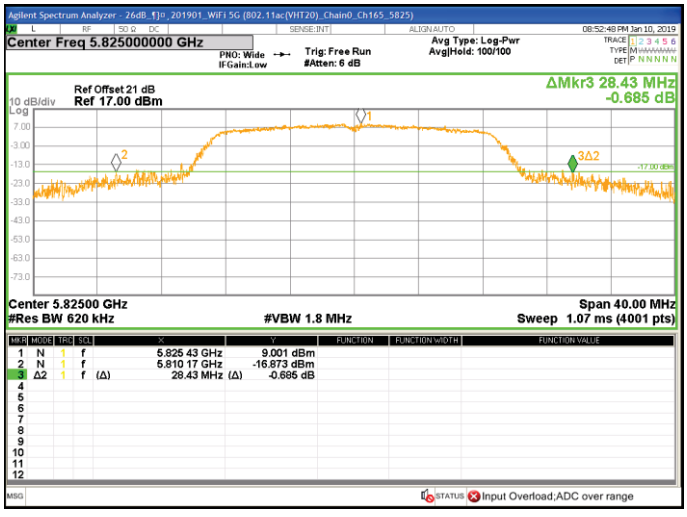
Chain0 : 26dB Bandwidth @ 802.11ac(VHT20) Mode Ch149



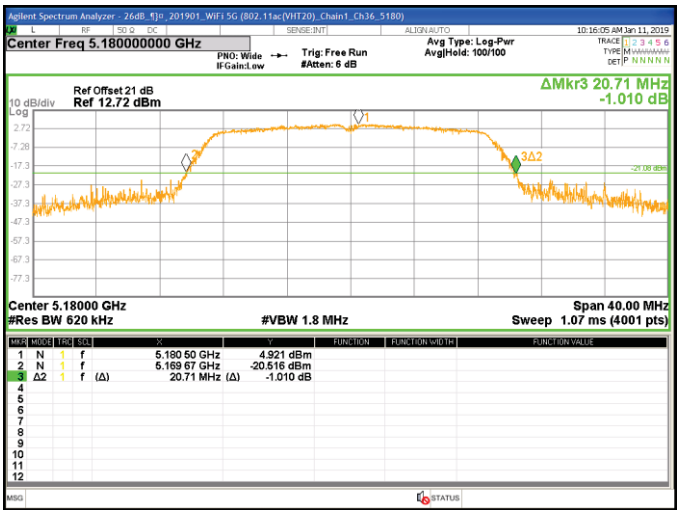
Chain0 : 26dB Bandwidth @ 802.11ac(VHT20) Mode Ch157



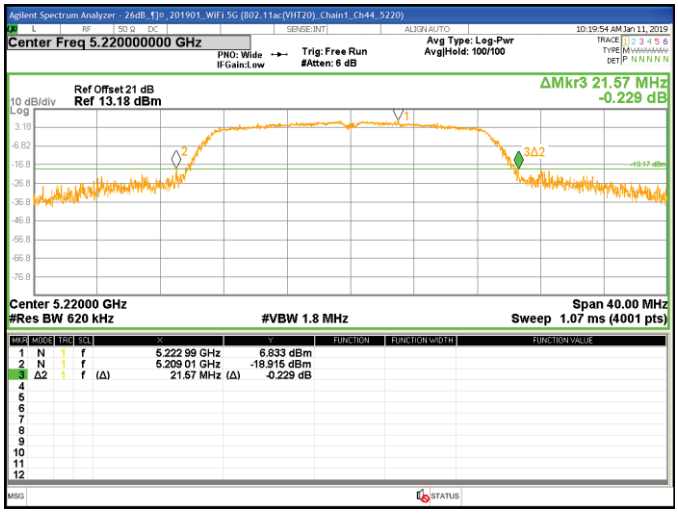
Chain0 : 26dB Bandwidth @ 802.11ac(VHT20) Mode Ch165



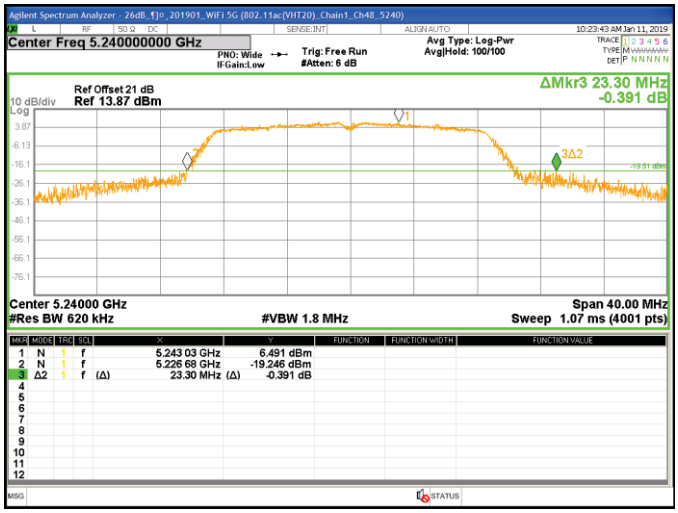
Chain1 : 26dB Bandwidth @ 802.11ac(VHT20) Mode Ch36



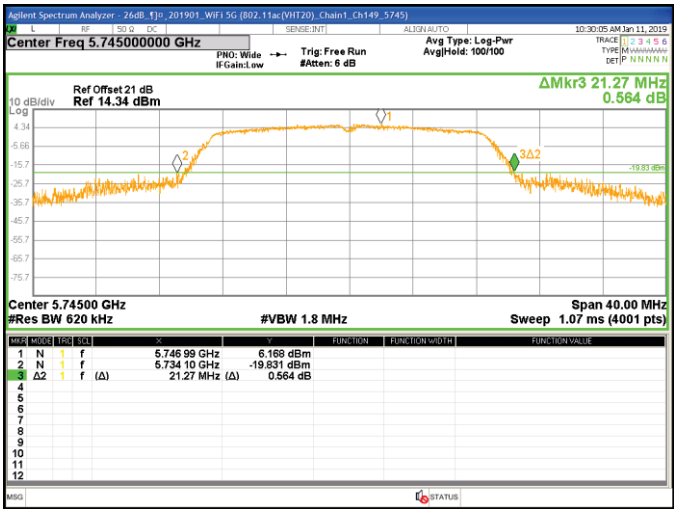
Chain1 : 26dB Bandwidth @ 802.11ac(VHT20) Mode Ch44



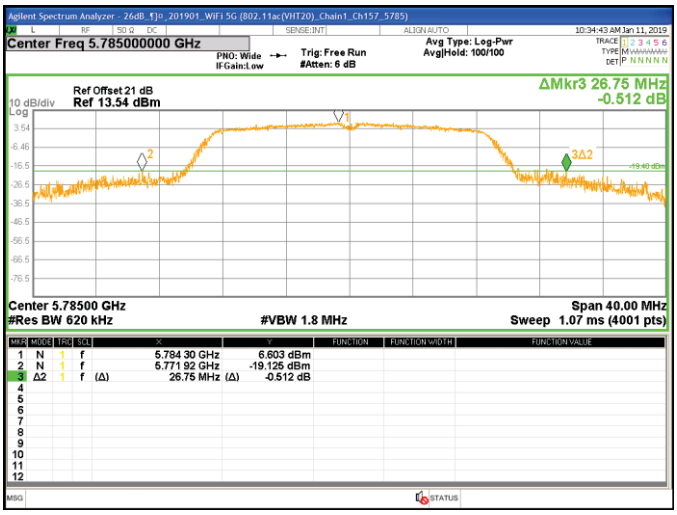
Chain1 : 26dB Bandwidth @ 802.11ac(VHT20) Mode Ch48



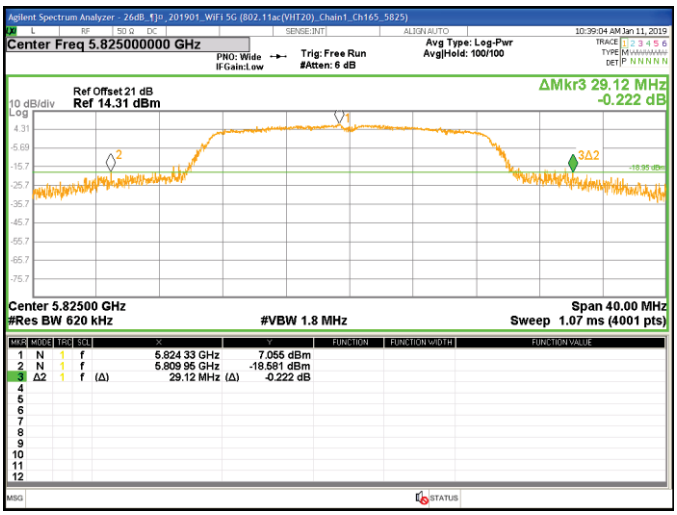
Chain1 : 26dB Bandwidth @ 802.11ac(VHT20) Mode Ch149



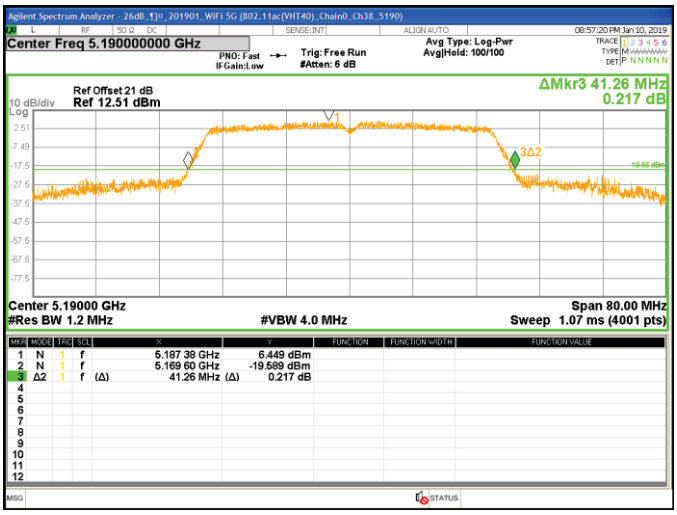
Chain1 : 26dB Bandwidth @ 802.11ac(VHT20) Mode Ch157



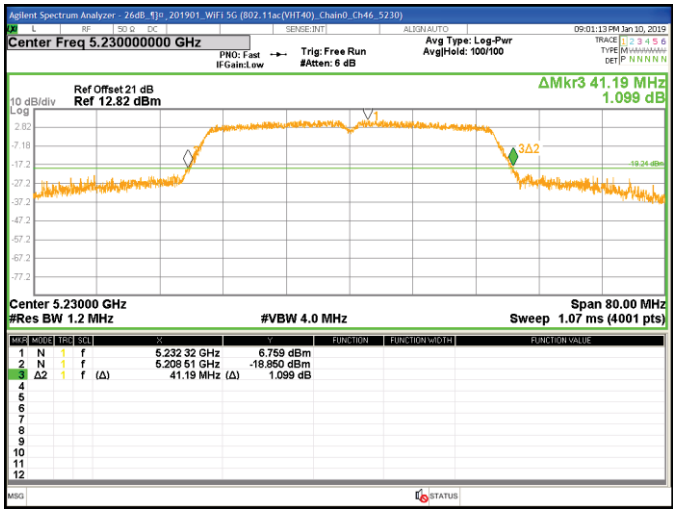
Chain1 : 26dB Bandwidth @ 802.11ac(VHT20) Mode Ch165



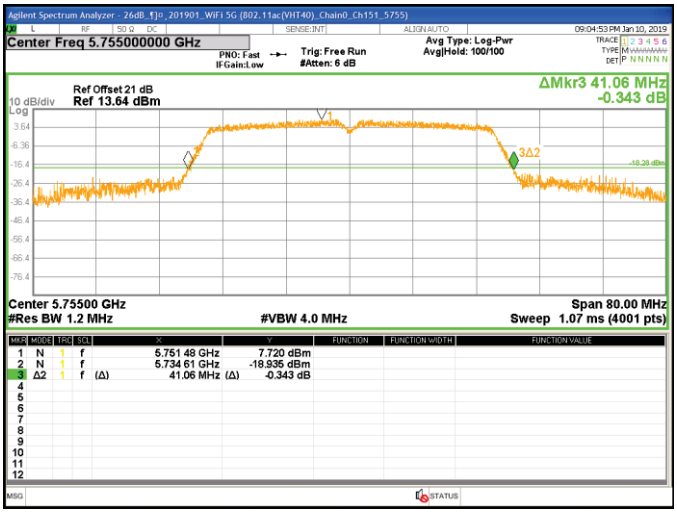
Chain0 : 26dB Bandwidth @ 802.11ac(VHT40) Mode Ch38



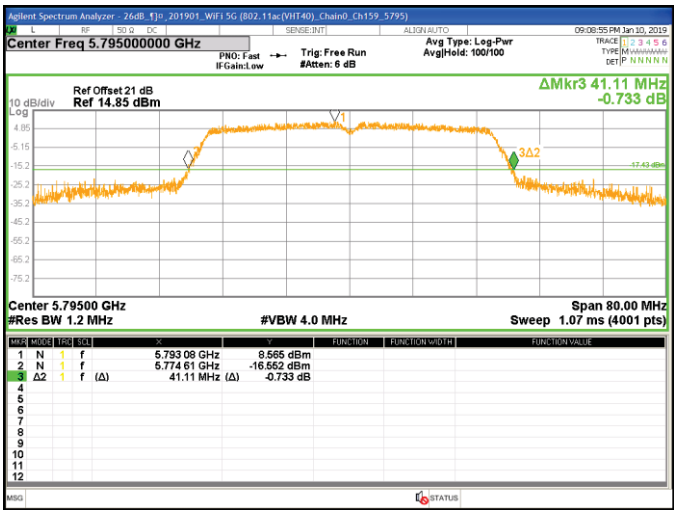
Chain0 : 26dB Bandwidth @ 802.11ac(VHT40) Mode Ch46



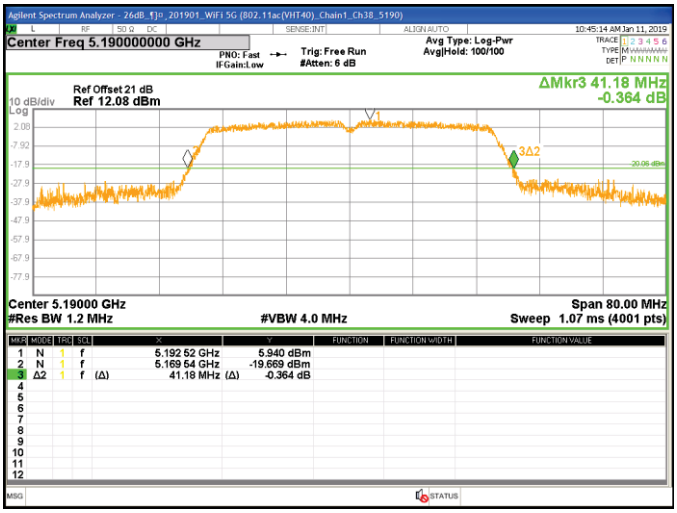
Chain0 : 26dB Bandwidth @ 802.11ac(VHT40) Mode Ch151



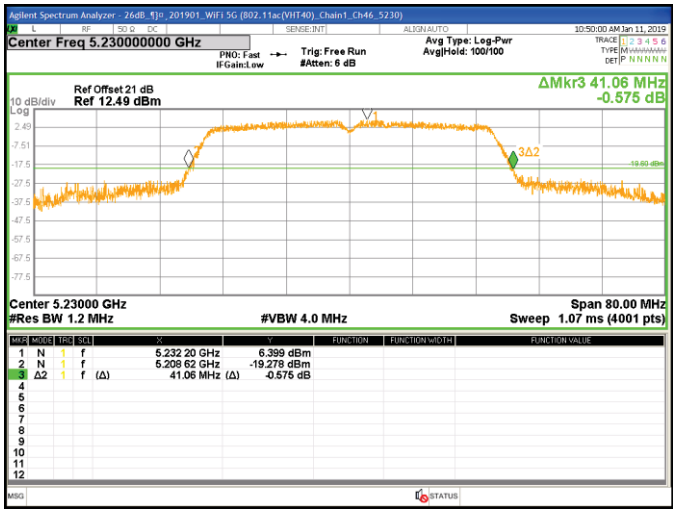
Chain0 : 26dB Bandwidth @ 802.11ac(VHT40) Mode Ch159



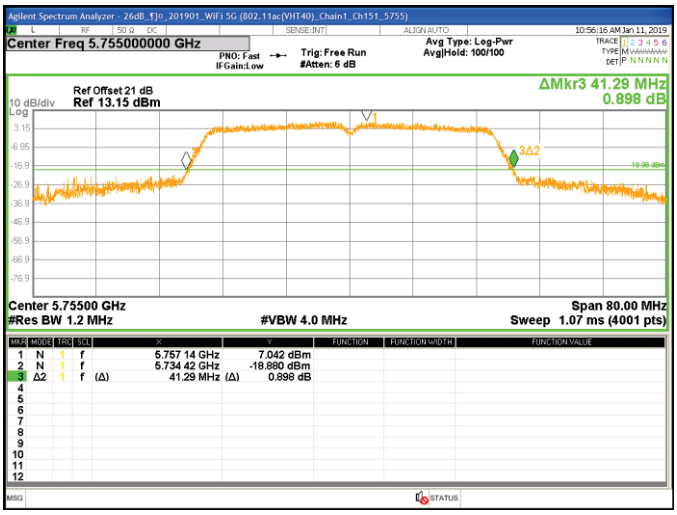
Chain1 : 26dB Bandwidth @ 802.11ac(VHT40) Mode Ch38



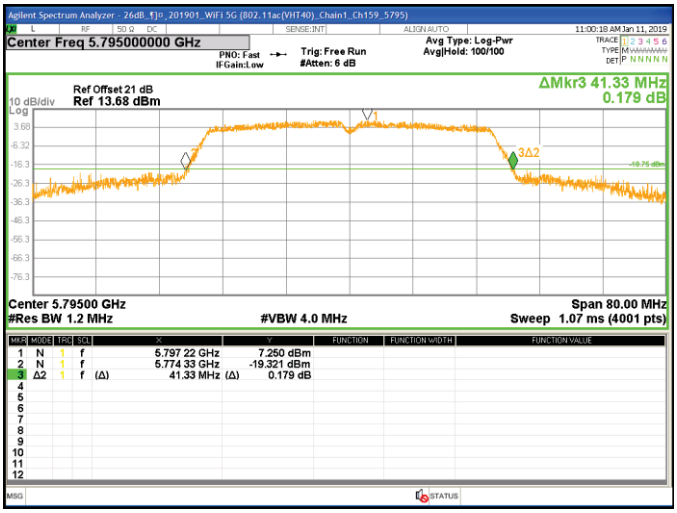
Chain1 : 26dB Bandwidth @ 802.11ac(VHT40) Mode Ch46



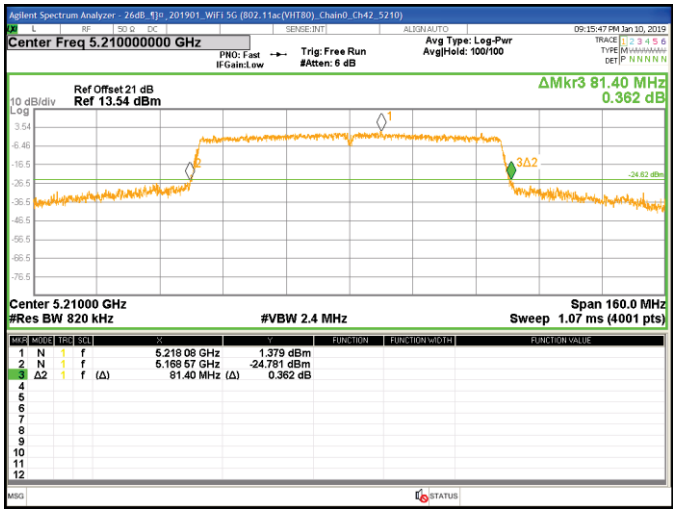
Chain1 : 26dB Bandwidth @ 802.11ac(VHT40) Mode Ch151



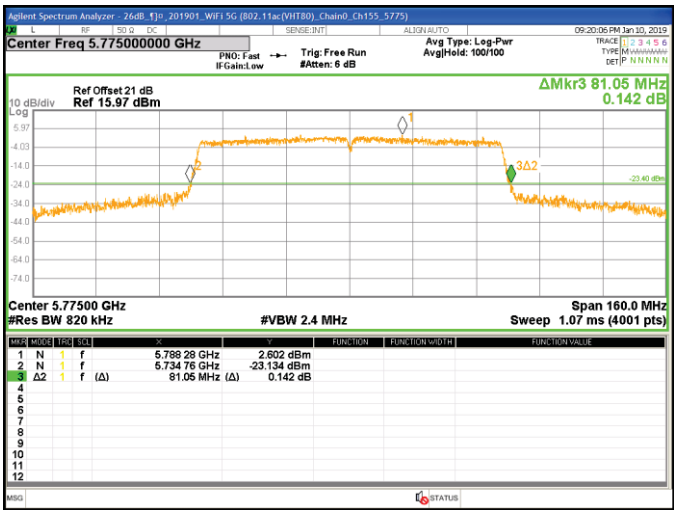
Chain1 : 26dB Bandwidth @ 802.11ac(VHT40) Mode Ch159



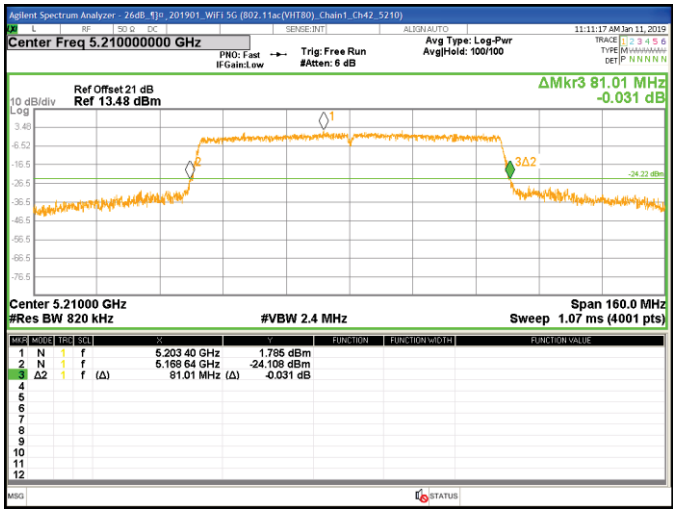
Chain0 : 26dB Bandwidth @ 802.11ac(VHT80) Mode Ch42



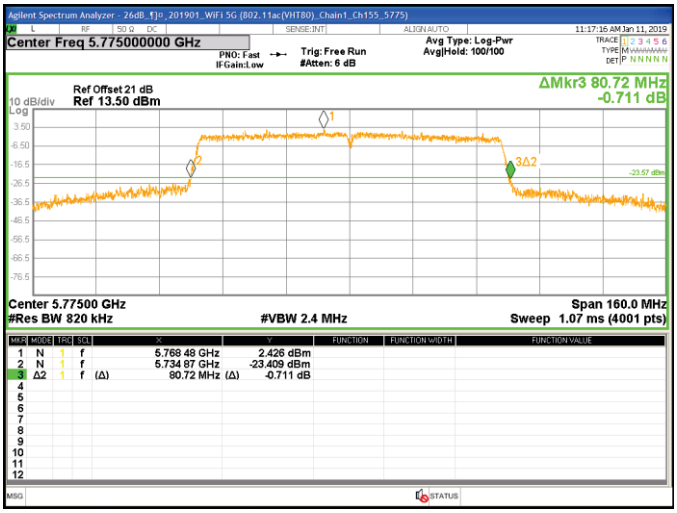
Chain0 : 26dB Bandwidth @ 802.11ac(VHT80) Mode Ch155



Chain1 : 26dB Bandwidth @ 802.11ac(VHT80) Mode Ch42



Chain1 : 26dB Bandwidth @ 802.11ac(VHT80) Mode Ch155



5. Emissions in Restricted Frequency Bands (Radiated emission measurements)

5.1 Operating environment

Temperature:	25	℃
Relative Humidity:	55	%
Atmospheric Pressure	1008	hPa
Channel number	36,44,48,149,157,161 for 20MHz 38,46,151,159 for 40MHz	

5.2 Limit for emission in restricted frequency bands (Radiated emission measurement)

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement distance (meters)
0.009~0.490	2400/F(kHz)	300
0.490~1.705	2400/F(kHz)	30
1.705~30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Remark:

1. In the above table, the tighter limit applies at the band edges.
2. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system

As specified in 15.407(b), For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

(2) For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

(3) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

(4) For transmitters operating in the 5.725-5.85 GHz band:
All emissions shall be limited to a level of −27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

However, an out-of-band emission that complies with both the average and peak limits of 15.209 is not required to satisfy the -27 dBm/MHz or -17 dBm/MHz peak emission limit.

5.3 Measuring instrument setting

Below 1GHz measurement

Receiver settings	
Receiver function	**Setting**
Detector	QP
RBW	9-150 kHz ; 200-300 Hz 0.15-30 MHz; 9-10 kHz 30-1000 MHz; 100-120 kHz
VBW	≧ 3 x RBW
Sweep	Auto couple
Attenuation	Auto

Above 1GHz measurement

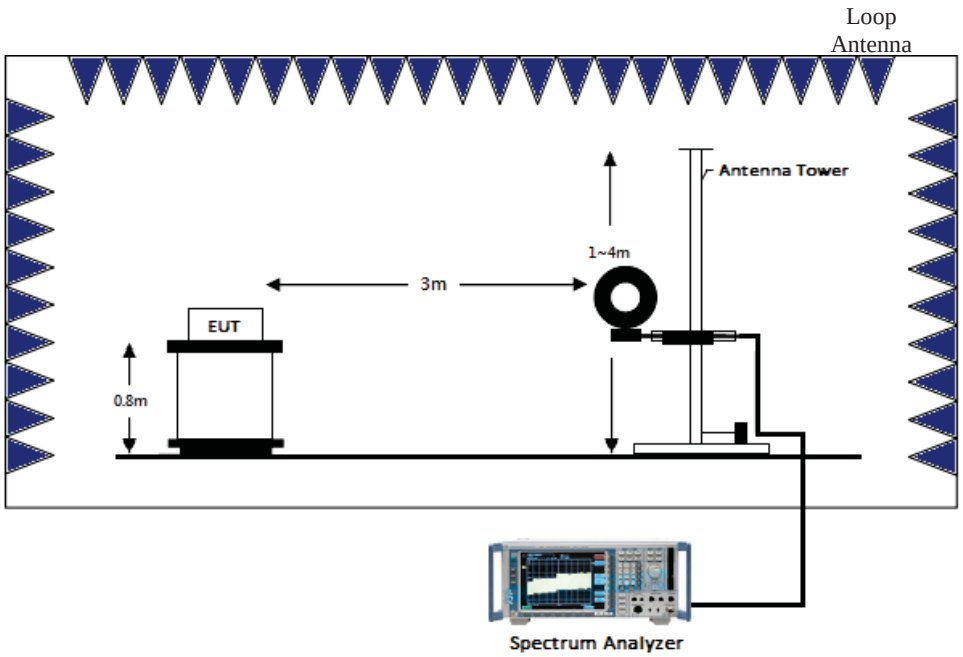
Spectrum analyzer settings	
Spectrum Analyzer function	**Setting**
Detector	Peak
RBW	1MHz
VBW	3MHz for Peak; 10Hz for Average
Sweep	Auto couple
Start Frequency	1GHz
Stop Frequency	Tenth harmonic
Attenuation	Auto

5.4 Test procedure

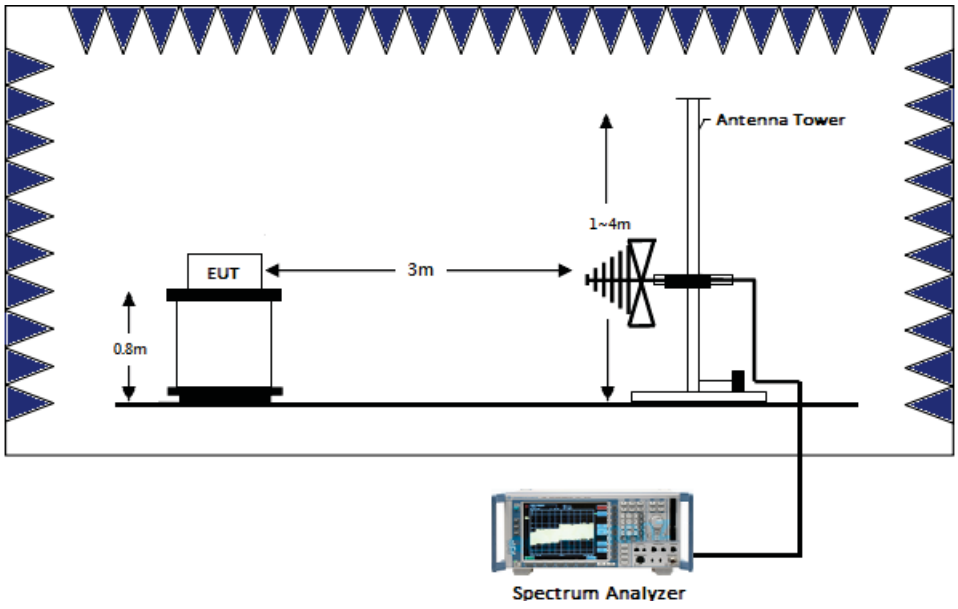
1. Configure the EUT according to ANSI C63.10: 2013 The EUT was placed on the top of the turntable 1.5 meter above ground for above 1GHz and placed on the top of the turntable 0.8 meter above ground for below 1GHz. The center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the companion devices. The turntable was rotated by 360 degree to find the position of the maximum emission level.
3. The height of the receiving antenna was varied between one meter and four meters above ground to find the maximum emission field strength of the both horizontal and vertical polarization
4. If find the frequencies above the limit or below within 3dB, the antenna tower was scan (from 1m to 4m) and then the turntable was rotated to find the maximum reading.
5. Set the test-receiver system to peak or CISPR quasi-peak detector with specified bandwidth under maximum hold mode.
6. For emissions above 1GHz, use 1MHz VBW and 3MHz RBW for peak reading. Then 1MHz RBW and 10Hz VBW for average reading in spectrum analyzer.
   Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response.
7. If the emissions level of the EUT in peak mode was 3dB lower than the average limit specified then testing will be stopped and peak values of the EUT will be reported. Otherwise, the emissions which do not have 3dB margin will be measured using the quasi-peak method for below 1GHz.
8. For testing above 1GHz, The emissions level of the EUT in peak mode was lower than average limit, then testing will be stopped and peak values of the EUT will be reported, otherwise, the emission will be measured in average mode again and reported.
9. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be quasi-peak measured by receiver.

5.5 Test configuration

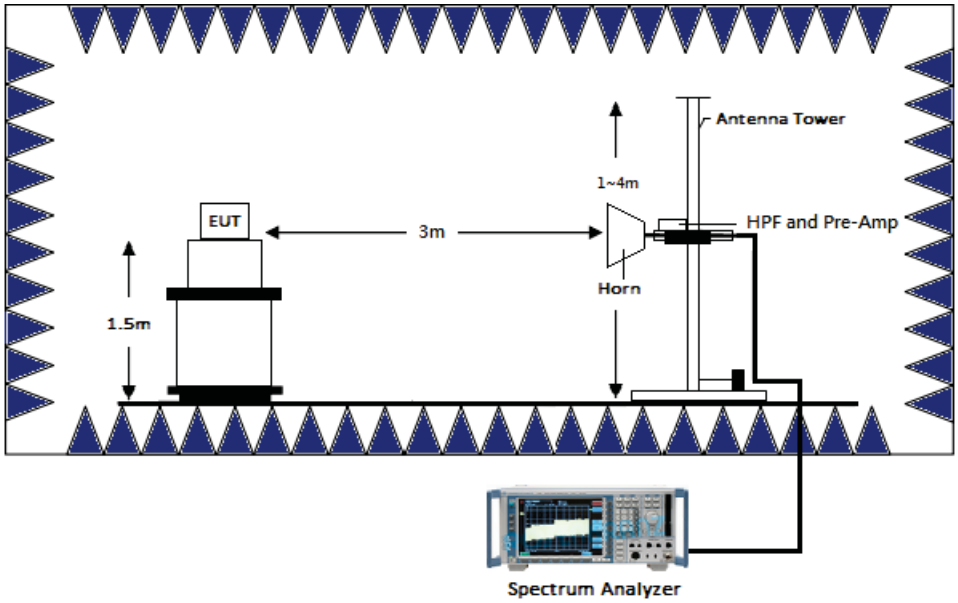
5.5.1 Radiated emission from 9 kHz to 30MHz using Loop Antenna



5.5.2 Radiated emission below 1GHz using Bilog Antenna



5.5.3 Radiated emission above 1GHz using Horn Antenna

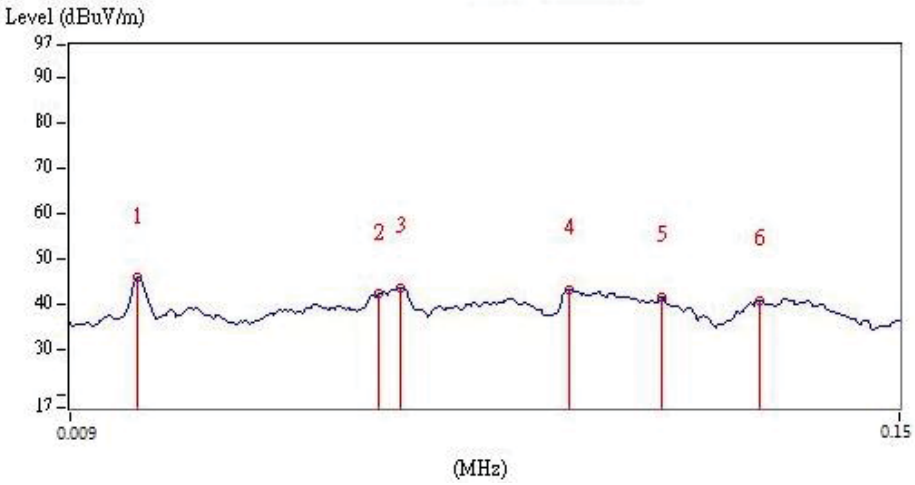


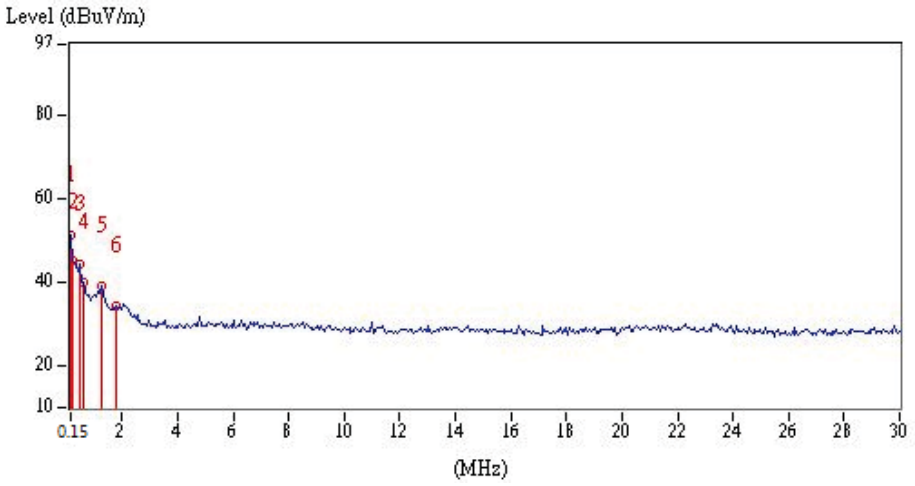
5.6 Test results

5.6.1 Measurement results: frequencies from 9 kHz to 30MHz

Frequency (MHz)	Detection value	Factor (dB/m)	Reading (dBµV)	Value (dBµV/m)	Limit @ 3m (dBµV/m)	Tolerance (dB)
0.02	PK	19.27	26.48	45.75	121.58	-75.83
0.06	PK	18.99	23.09	42.08	112.04	-69.96
0.07	PK	18.97	24.59	43.56	110.70	-67.14
0.09	PK	18.80	24.29	43.09	108.52	-65.43
0.11	PK	18.76	22.73	41.49	106.78	-65.29
0.13	PK	18.77	21.98	40.75	105.33	-64.58
0.15	PK	18.77	32.55	51.32	104.08	-52.76
0.21	PK	18.79	26.33	45.12	101.16	-56.04
0.51	QP	18.69	25.76	44.45	73.45	-29.00
0.63	QP	18.69	21.33	40.02	71.62	-31.60
1.28	QP	18.68	20.50	39.18	65.46	-26.28
1.76	QP	18.67	15.70	34.37	69.54	-35.17

Remark: Corr. Factor = Antenna Factor + Cable Loss - PreAmplifier Gain


Level (dBuV/m)
97
90
80
70
60
50
40
30
17
1
2
3
4
5
6
0.009
0.15
(MHz)


Level (dBuV/m)
97
80
60
40
20
10
1
2
3
4
5
6
0.15
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
(MHz)

5.6.2 Measurement results: frequencies from 30 MHz to 1GHz

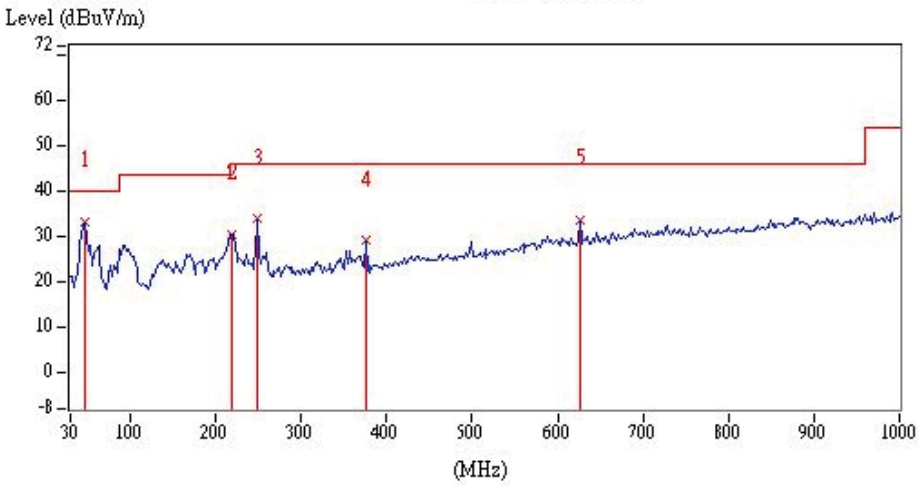
The test was performed on EUT under 802.11a/an continuously transmitting mode. The worst case occurred at 802.11ac(VHT20) Chain0+1 Channel 149

Antenna Polariz. (V/H)	Freq. (MHz)	Receiver Detector	Corr. Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
Vertical	47.46	QP	20.37	12.86	33.23	40.00	-6.77
Vertical	218.18	QP	18.84	11.73	30.57	46.00	-15.43
Vertical	249.22	QP	20.36	13.53	33.89	46.00	-12.11
Vertical	375.32	QP	23.32	5.80	29.12	46.00	-16.88
Vertical	625.58	QP	28.66	5.07	33.73	46.00	-12.27
Vertical	47.46	QP	20.37	12.86	33.23	40.00	-6.77
Horizontal	92.08	QP	14.49	11.19	25.68	43.50	-17.82
Horizontal	249.22	QP	20.36	11.62	31.98	46.00	-14.02
Horizontal	375.32	QP	23.32	5.62	28.94	46.00	-17.06
Horizontal	416.06	QP	24.44	4.90	29.34	46.00	-16.66
Horizontal	625.58	QP	28.66	3.35	32.01	46.00	-13.99
Horizontal	92.08	QP	14.49	11.19	25.68	43.50	-17.82

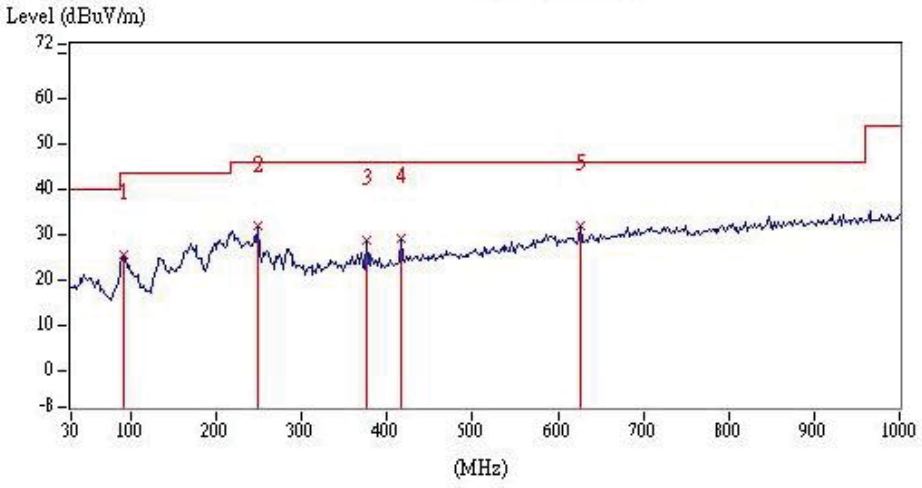
Remark:

1. Corr. Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Corr. Factor

Vertical



Horizontal



5.6.3 Measurement results: frequency above 1GHz to 40GHz

Mode	Frequency	Spectrum Analyzer	Ant. Pol.	Preamp. Gain	Correction Factor	Reading	Corrected Reading	Limit @ 3 m	Margin
	(MHz)	Detector	(H/V)	(dB)	(dB/m)	(dBµV)	(dBµV/m)	(dBµV/m)	(dB)
802.11a_Ch36	1055	PK	H	37.66	-8.90	45.48	36.58	74.00	-37.42
	1407	PK	H	37.70	-7.88	47.48	39.60	74.00	-34.40
	2122	PK	H	37.59	-3.18	42.10	38.92	74.00	-35.08
	10360	PK	H	35.24	19.82	23.84	43.66	74.00	-30.34
	1055	PK	V	37.66	-8.9	47.55	38.65	74.00	-35.35
	1396	PK	V	37.7	-7.91	49.3	41.39	74.00	-32.61
	2375	PK	V	37.54	-3.17	42.74	39.57	74.00	-34.43
	10360	PK	V	35.24	19.82	27.74	47.56	74.00	-26.44
	15540	PK	V	35.47	24.56	24.28	48.84	74.00	-25.16
802.11a_Ch44	1055	PK	H	37.66	-8.9	44.61	35.71	74.00	-38.29
	1407	PK	H	37.7	-7.88	46.87	38.99	74.00	-35.01
	2133	PK	H	37.59	-3.18	41.13	37.95	74.00	-36.05
	10440	PK	H	35.23	19.95	24.69	44.64	74.00	-29.36
	1044	PK	V	37.66	-8.93	44.04	35.11	74.00	-38.89
	1396	PK	V	37.7	-7.91	46.02	38.11	74.00	-35.89
	2155	PK	V	37.59	-3.18	42.35	39.17	74.00	-34.83
	10440	PK	V	35.23	19.95	30.82	50.77	74.00	-23.23
	15660	PK	V	35.45	24.3	22.03	46.33	74.00	-27.67
802.11a_Ch48	10480	PK	H	35.22	20.02	25.06	45.08	74.00	-28.92
	10480	PK	V	35.22	20.02	33.04	53.06	74.00	-20.94
	15720	PK	V	35.45	24.17	22.87	47.04	74.00	-26.96
802.11a_Ch149	3827	PK	H	37.16	1.68	43.13	44.81	74.00	-29.19
	11490	PK	H	35.35	22.29	24.99	47.28	74.00	-26.72
	3827	PK	V	37.16	1.68	41.37	43.05	74.00	-30.95
	11490	PK	V	35.35	22.29	32.35	54.64	74.00	-19.36
	11490	AV	V	35.35	22.29	24.3	46.59	54.00	-7.41
	17235	PK	V	35.32	29.57	20.85	50.42	74.00	-23.58
802.11a_Ch157	3860	PK	H	37.14	1.8	42.74	44.54	74.00	-29.46
	11570	PK	H	35.34	22.22	24.4	46.62	74.00	-27.38
	3860	PK	V	37.14	1.8	40.89	42.69	74.00	-31.31
	11570	PK	V	35.34	22.22	32.67	54.89	74.00	-19.11
	11570	AV	V	35.34	22.22	21.82	44.04	54.00	-9.96
	17355	PK	V	35.27	29.96	23.43	53.39	74.00	-20.61
802.11a_Ch165	3882	PK	H	37.13	1.87	40.12	41.99	74.00	-32.01
	11650	PK	H	35.33	22.13	24.02	46.15	74.00	-27.85
	3882	PK	V	37.13	1.87	39.18	41.05	74.00	-32.95
	11650	PK	V	35.33	22.13	30.62	52.75	74.00	-21.25
	17475	PK	V	35.22	30.34	20.88	51.22	74.00	-22.78

Remark: Correction Factor = Antenna Factor + Cable Loss + High Pass Filter Loss - Pre_Amplifier Gain

Chain0

Mode	Frequency (MHz)	Spectrum Analyzer Detector	Ant. Pol. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBµV)	Corrected Reading (dBµV/m)	Limit @ 3 m (dBµV/m)	Margin (dB)
802.11a_Ch52	1144	PK	H	37.28	-7.93	53.76	45.82	74.00	-28.18
	10520	PK	H	35.70	21.01	25.95	46.97	74.00	-27.03
	1144	PK	V	37.28	-7.93	63.25	55.31	74.00	-18.69
	1144	AV	V	37.28	-7.93	53.98	46.05	54.00	-7.95
	1209	PK	V	37.29	-7.83	48.35	40.52	74.00	-33.48
	1572	PK	V	37.37	-6.52	50.13	43.6	74.00	-30.40
	1924	PK	V	37.37	-2.33	42.53	40.2	74.00	-33.80
	2716	PK	V	37.40	-1.03	41.27	40.24	74.00	-33.76
	6324	PK	V	36.78	8.54	40.45	48.99	74.00	-25.01
	10520	PK	V	35.70	21.01	23.76	44.78	74.00	-29.22
802.11a_Ch60	1144	PK	H	37.28	-7.93	50.47	42.53	74.00	-31.47
	10600	PK	H	35.71	21.36	23.47	44.83	74.00	-29.17
	1144	PK	V	37.28	-7.93	63.75	55.81	74.00	-18.19
	1144	AV	V	37.28	-7.93	53.85	45.92	54.00	-8.08
	1572	PK	V	37.37	-6.52	51.88	45.36	74.00	-28.64
	1781	PK	V	37.37	-4.04	48.02	43.98	74.00	-30.02
	2144	PK	V	37.37	-1.64	48.87	47.23	74.00	-26.77
	2716	PK	V	37.40	-1.03	42.90	41.87	74.00	-32.13
	6401	PK	V	36.76	8.80	42.28	51.08	74.00	-22.92
	10600	PK	V	35.71	21.36	24.31	45.68	74.00	-28.32
802.11a_Ch64	1144	PK	H	37.28	-7.93	55.77	47.84	74.00	-26.16
	10640	PK	H	35.71	21.54	24.83	46.37	74.00	-27.63
	1144	PK	V	37.28	-7.93	61.30	53.37	74.00	-20.63
	1209	PK	V	37.29	-7.83	47.39	39.56	74.00	-34.44
	1572	PK	V	37.37	-6.52	50.02	43.5	74.00	-30.50
	1715	PK	V	37.37	-4.82	45.54	40.72	74.00	-33.28
	2144	PK	V	37.37	-1.64	43.65	42	74.00	-32.00
	6445	PK	V	36.74	8.94	44.32	53.26	74.00	-20.74
	10640	PK	V	35.71	21.54	23.37	44.91	74.00	-29.09

Remark: Correction Factor = Antenna Factor + Cable Loss + High Pass Filter Loss - Pre_Amplifier Gain

Chain1

Mode	Frequency (MHz)	Spectrum Analyzer Detector	Ant. Pol. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBµV)	Corrected Reading (dBµV/m)	Limit @ 3 m (dBµV/m)	Margin (dB)
802.11a_Ch36	10360	PK	H	35.24	19.82	24.23	44.05	74.00	-29.95
	10360	PK	V	35.24	19.82	25.68	45.50	74.00	-28.50
	15540	PK	V	35.47	24.56	21.7	46.26	74.00	-27.74
802.11a_Ch44	10440	PK	H	35.23	19.95	24.88	44.83	74.00	-29.17
	6247	PK	V	36.16	8.65	38.55	47.20	74.00	-26.80
	10440	PK	V	35.23	19.95	26.61	46.56	74.00	-27.44
	15660	PK	V	35.45	24.3	20.96	45.26	74.00	-28.74
802.11a_Ch48	10480	PK	H	35.22	20.02	25.53	45.55	74.00	-28.45
	10480	PK	V	35.22	20.02	28.03	48.05	74.00	-25.95
	15720	PK	V	35.45	24.17	20.1	44.27	74.00	-29.73
802.11a_Ch149	11490	PK	H	35.35	22.29	23.68	45.97	74.00	-28.03
	11490	PK	V	35.35	22.29	24.96	47.25	74.00	-26.75
	17235	PK	V	35.32	29.57	19.99	49.56	74.00	-24.44
802.11a_Ch157	11570	PK	H	35.34	22.22	22.83	45.05	74.00	-28.95
	11570	PK	V	35.34	22.22	23.69	45.91	74.00	-28.09
	17355	PK	V	35.27	29.96	20.25	50.21	74.00	-23.79
802.11a_Ch165	11650	PK	H	35.33	22.13	24	46.13	74.00	-27.87
	11650	PK	V	35.33	22.13	23.12	45.25	74.00	-28.75
	17475	PK	V	35.22	30.34	20.88	51.22	74.00	-22.78

Remark: Correction Factor = Antenna Factor + Cable Loss + High Pass Filter Loss - Pre_Amplifier Gain

Chain0+1

Mode	Frequency (MHz)	Spectrum Analyzer Detector	Ant. Pol. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBµV)	Corrected Reading (dBµV/m)	Limit @ 3 m (dBµV/m)	Margin (dB)
802.11ac(VHT20) Ch36	1418	PK	H	37.7	-7.85	49	41.15	74.00	-32.85
	2144	PK	H	37.59	-3.18	41.64	38.46	74.00	-35.54
	10360	PK	H	35.24	19.82	24.19	44.01	74.00	-29.99
	1396	PK	V	37.7	-7.91	50.54	42.63	74.00	-31.37
	2375	PK	V	37.54	-3.17	42.83	39.66	74.00	-34.34
	3563	PK	V	37.32	0.77	41.49	42.26	74.00	-31.74
	6159	PK	V	36.2	8.14	42.87	51.01	74.00	-22.99
	10360	PK	V	35.24	19.82	29.75	49.57	74.00	-24.43
	15540	PK	V	35.47	24.56	31.16	55.72	74.00	-18.28
	15540	AV	V	35.47	24.56	21.65	46.21	54.00	-7.79
802.11ac(VHT20) Ch44	1396	PK	H	37.7	-7.91	48.56	40.65	74.00	-33.35
	3629	PK	H	37.28	1	39.68	40.68	74.00	-33.32
	6236	PK	H	36.17	8.59	45.31	53.90	74.00	-20.10
	6236	AV	H	36.17	8.59	29.04	37.63	54.00	-16.37
	10440	PK	H	35.23	19.95	26.6	46.55	74.00	-27.45
	1341	PK	V	37.69	-8.07	50.94	42.87	74.00	-31.13
	3629	PK	V	37.28	1	45.14	46.14	74.00	-27.86
	6236	PK	V	36.17	8.59	47.38	55.97	74.00	-18.03
	6236	AV	V	36.17	8.59	32.05	40.64	54.00	-13.36
	10440	PK	V	35.23	19.95	33.5	53.45	74.00	-20.55
	15660	PK	V	35.45	24.3	29.55	53.85	74.00	-20.15
	15660	AV	V	35.45	24.3	22.9	47.20	54.00	-6.80
802.11ac(VHT20) Ch48	1396	PK	H	37.7	-7.91	48.13	40.22	74.00	-33.78
	6280	PK	H	36.15	8.84	42.68	51.52	74.00	-22.48
	10480	PK	H	35.22	20.02	28.42	48.44	74.00	-25.56
	1396	PK	V	37.7	-7.91	50.01	42.10	74.00	-31.90
	3651	PK	V	37.27	1.07	42.22	43.29	74.00	-30.71
	6280	PK	V	36.15	8.84	44.34	53.18	74.00	-20.82
	6280	AV	V	36.15	8.84	30.65	39.49	54.00	-14.51
	10480	PK	V	35.22	20.02	33.67	53.69	74.00	-20.31
	10480	AV	V	35.22	20.02	23.28	43.30	54.00	-10.70
	15720	PK	V	35.45	24.17	31.62	55.79	74.00	-18.21
	15720	AV	V	35.45	24.17	21.33	45.50	54.00	-8.50

Remark: Correction Factor = Antenna Factor + Cable Loss + High Pass Filter Loss - Pre_Amplifier Gain

Mode	Frequency (MHz)	Spectrum Analyzer Detector	Ant. Pol. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBµV)	Corrected Reading (dBµV/m)	Limit @ 3 m (dBµV/m)	Margin (dB)
802.11ac(VHT20) Ch149	3827	PK	H	37.16	1.68	42.04	43.72	74.00	-30.28
	4410	PK	H	36.92	3.56	43.15	46.71	74.00	-27.29
	6170	PK	H	36.2	8.2	39.13	47.33	74.00	-26.67
	11490	PK	H	35.35	22.29	27.91	50.20	74.00	-23.80
	3827	PK	V	37.16	1.68	40.59	42.27	74.00	-31.73
	4410	PK	V	36.92	3.56	41.01	44.57	74.00	-29.43
	11490	PK	V	35.35	22.29	33.8	56.09	74.00	-17.91
	11490	AV	V	35.35	22.29	22.42	44.71	54.00	-9.29
	17241	PK	V	35.32	29.59	25.06	54.65	74.00	-19.35
	17241	AV	V	35.32	29.59	15.77	45.36	54.00	-8.64
802.11ac(VHT20) Ch157	3860	PK	H	37.14	1.8	40.95	42.75	74.00	-31.25
	4476	PK	H	36.9	3.77	40.42	44.19	74.00	-29.81
	11570	PK	H	35.34	22.22	26.42	48.64	74.00	-25.36
	2133	PK	V	37.59	-3.18	43.64	40.46	74.00	-33.54
	4476	PK	V	36.9	3.77	41.49	45.26	74.00	-28.74
	11570	PK	V	35.34	22.22	32.55	54.77	74.00	-19.23
	11570	AV	V	35.34	22.22	22.19	44.41	54.00	-9.59
	17356	PK	V	35.27	29.96	24.96	54.92	74.00	-19.08
	17356	AV	V	35.27	29.96	17.03	46.99	54.00	-7.01
802.11ac(VHT20) Ch165	3882	PK	H	37.13	1.87	40.04	41.91	74.00	-32.09
	4531	PK	H	36.88	3.97	39.13	43.10	74.00	-30.90
	11650	PK	H	35.33	22.13	25.44	47.57	74.00	-26.43
	11650	PK	V	35.33	22.13	31.42	53.55	74.00	-20.45
	11650	AV	V	35.33	22.13	22.37	44.50	54.00	-9.50
	17475	PK	V	35.22	30.34	23.8	54.14	74.00	-19.86
	17475	AV	V	35.22	30.34	15.61	45.95	54.00	-8.05
802.11ac(VHT40) Ch38	10380	PK	H	35.23	19.85	23.58	43.43	74.00	-30.57
	3596	PK	V	37.3	0.88	41.06	41.94	74.00	-32.06
	6181	PK	V	36.19	8.27	42.51	50.78	74.00	-23.22
	10380	PK	V	35.23	19.85	29.87	49.72	74.00	-24.28
	15570	PK	V	35.46	24.49	28.84	53.33	74.00	-20.67

Remark: Correction Factor = Antenna Factor + Cable Loss + High Pass Filter Loss - Pre_Amplifier Gain

Mode	Frequency (MHz)	Spectrum Analyzer Detector	Ant. Pol. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBμV)	Corrected Reading (dBμV/m)	Limit @ 3 m (dBμV/m)	Margin (dB)
802.11ac(VHT40 Ch46	6258	PK	H	36.16	8.71	41.34	50.05	74.00	-23.95
	10460	PK	H	35.22	19.98	26.08	46.06	74.00	-27.94
	6258	PK	V	36.16	8.71	44.56	53.27	74.00	-20.73
	10460	PK	V	35.22	19.98	31.63	51.61	74.00	-22.39
	15690	PK	V	35.45	24.24	26.2	50.44	74.00	-23.56
802.11ac(VHT40) Ch151	1418	PK	H	37.7	-7.85	48.53	40.68	74.00	-33.32
	3838	PK	H	37.16	1.72	42.07	43.79	74.00	-30.21
	4421	PK	H	36.92	3.6	40.2	43.80	74.00	-30.20
	11510	PK	H	35.35	22.28	24.18	46.46	74.00	-27.54
	3838	PK	V	37.16	1.72	40.64	42.36	74.00	-31.64
	4432	PK	V	36.91	3.63	39.42	43.05	74.00	-30.95
	6203	PK	V	36.18	8.39	41.57	49.96	74.00	-24.04
	11510	PK	V	35.35	22.28	29.75	52.03	74.00	-21.97
	17265	PK	V	35.31	29.67	22.29	51.96	74.00	-22.04
802.11ac(VHT40) Ch159	1418	PK	H	37.7	-7.85	47.24	39.39	74.00	-34.61
	3860	PK	H	37.14	1.8	42.04	43.84	74.00	-30.16
	11510	PK	H	35.35	22.28	21.93	44.21	74.00	-29.79
	1407	PK	V	37.7	-7.88	50.51	42.63	74.00	-31.37
	2375	PK	V	37.54	-3.17	42.16	38.99	74.00	-35.01
	4476	PK	V	36.9	3.77	39.4	43.17	74.00	-30.83
	11590	PK	V	35.34	22.2	27.23	49.43	74.00	-24.57
	17379	PK	V	35.26	30.03	23.65	53.68	74.00	-20.32
	17379	AV	V	35.26	30.03	14.84	44.87	54.00	-9.13

Remark: Correction Factor = Antenna Factor + Cable Loss + High Pass Filter Loss - Pre_Amplifier Gain

Mode	Frequency (MHz)	Spectrum Analyzer Detector	Ant. Pol. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBµV)	Corrected Reading (dBµV/m)	Limit @ 3 m (dBµV/m)	Margin (dB)
802.11ac(VHT80) Ch42	1418	PK	H	37.7	-7.85	48.39	40.54	74.00	-33.46
	6247	PK	H	36.16	8.65	39.96	48.61	74.00	-25.39
	10420	PK	H	35.23	19.92	23.74	43.66	74.00	-30.34
	1385	PK	V	37.7	-7.94	50.86	42.92	74.00	-31.08
	2375	PK	V	37.54	-3.17	42.97	39.80	74.00	-34.20
	3607	PK	V	37.3	0.92	40.83	41.75	74.00	-32.25
	6236	PK	V	36.17	8.59	42.65	51.24	74.00	-22.76
	10420	PK	V	35.23	19.92	29.29	49.21	74.00	-24.79
	15630	PK	V	35.46	24.36	25.31	49.67	74.00	-24.33
802.11ac(VHT80) Ch155	1418	PK	H	37.7	-7.85	48.49	40.64	74.00	-33.36
	3849	PK	H	37.15	1.76	41.66	43.42	74.00	-30.58
	11550	PK	H	35.34	22.24	24.47	46.71	74.00	-27.29
	17325	AV	V	35.28	29.86	12.25	42.11	54.00	-11.89
	1396	PK	V	37.7	-7.91	48.39	40.48	74.00	-33.52
	5224	PK	V	36.6	6.13	38.3	44.43	74.00	-29.57
	11550	PK	V	35.34	22.24	28.82	51.06	74.00	-22.94
	17325	PK	V	35.28	29.86	23.67	53.53	74.00	-20.47

Remark: Correction Factor = Antenna Factor + Cable Loss + High Pass Filter Loss - Pre_Amplifier Gain

6. Emission on The Band Edge

6.1 Operating environment

Temperature:	25	℃
Relative Humidity:	50	%
Atmospheric Pressure	1008	hPa
Requirement	15.407(b), 15.209	

6.2 Measuring instrument setting

Spectrum analyzer settings	
Spectrum Analyzer function	**Setting**
Detector	Peak
RBW	1MHz
VBW	3MHz for Peak; 10Hz for Average
Sweep	Auto couple
Restrict bands	4500~5150MHz
	5350 ~5460MHz
Attenuation	Auto

Applicable to	**Limit**	
	EIRP Limit (dBm)	**Equivalent Field Strength at 3m (dBμV/m)**
5715-5725MHz	PK	PK
5850-5860MHz	-17	78.2

6.3 Test procedure

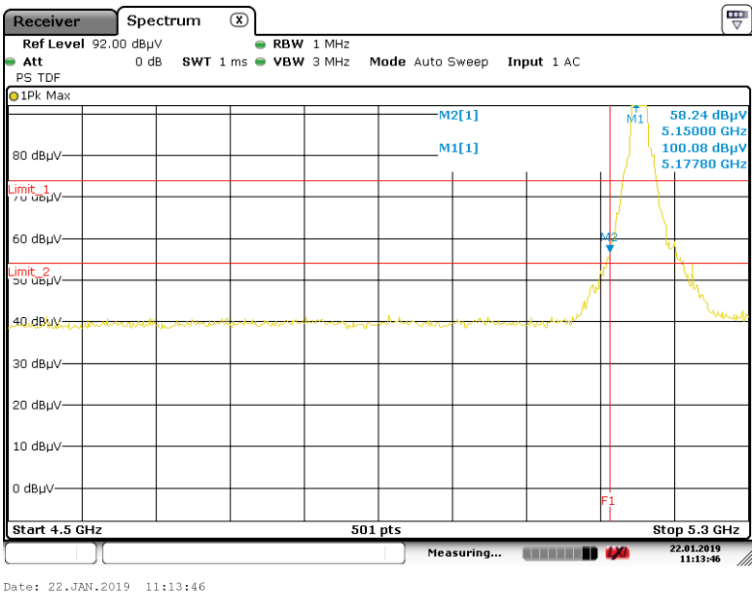
The test procedure is the same as clause 5.4

6.4 Test Result

Mode	Frequency (MHz)	Spectrum Analyzer Detector	Ant. Pol. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBµV)	Corrected Reading (dBµV/m)	Limit @ 3 m (dBµV/m)	Margin (dB)	Restricted band (MHz)
802.11a Chain0	5150.00	PK	V	36.66	3.23	55.01	58.24	74	-15.76	4500~5150
	5150.00	AV	V	36.66	3.23	38.37	41.60	54	-12.40	
	5359.34	PK	V	36.51	4.03	35.68	39.71	74	-34.29	5350~5460
	5350.00	AV	V	36.52	3.99	22.93	26.92	54	-27.08	
802.11a Chain1	5150.00	PK	V	36.66	3.23	62.47	65.70	74	-8.30	4500~5150
	5150.00	AV	V	36.66	3.23	42.88	46.11	54	-7.89	
	5350.72	PK	V	36.51	3.99	37.31	41.30	74	-32.70	5350~5460
	5352.16	AV	V	36.51	4.00	24.61	28.61	54	-25.39	
802.11ac (VHT20) Chain0+1	5150.00	PK	V	36.66	3.23	65.14	68.37	74	-5.63	4500~5150
	5150.00	AV	V	36.66	3.23	45.49	48.72	54	-5.28	
	5352.87	PK	V	36.51	4.00	37.32	41.32	74	-32.68	5350~5460
	5350.00	AV	V	36.52	3.99	24.22	28.21	54	-25.79	
802.11ac (VHT40) Chain0+1	5150.00	PK	V	36.66	3.23	69.26	72.49	74	-1.51	4500~5150
	5206.60	AV	V	36.62	3.45	49.02	52.47	54	-1.53	
	5351.44	PK	V	36.51	4.00	47.24	51.24	74	-22.76	5350~5460
	5350.72	AV	V	36.51	3.99	29.70	33.69	54	-20.31	
802.11ac (VHT80) Chain0+1	5150.00	PK	V	36.66	3.23	65.13	68.36	74	-5.64	4500~5150
	5150.00	AV	V	36.66	3.23	49.01	52.24	54	-1.76	
	5351.44	PK	V	36.51	4.00	58.46	62.46	74	-11.54	5350~5460
	5350.00	AV	V	36.52	3.99	37.56	41.55	54	-12.45	

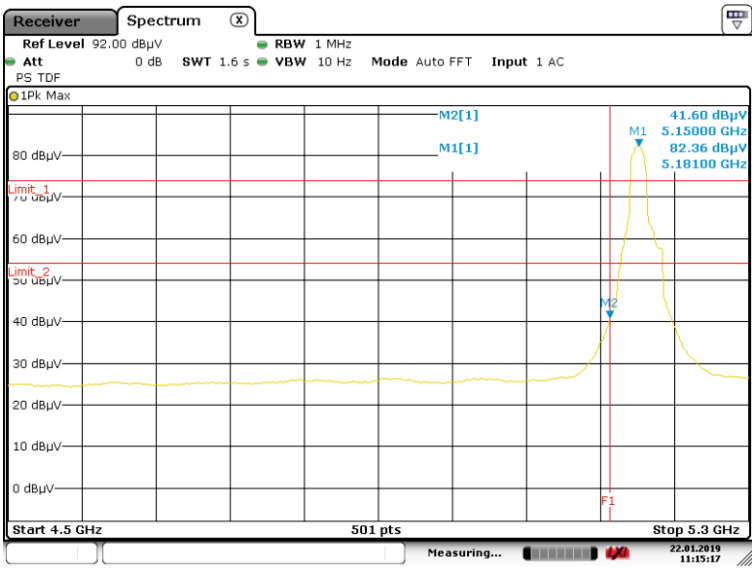
Remark: Correction Factor = Antenna Factor + Cable Loss

Chain0 : Restricted Band Bandedge @ 802.11a Mode Ch36 PK



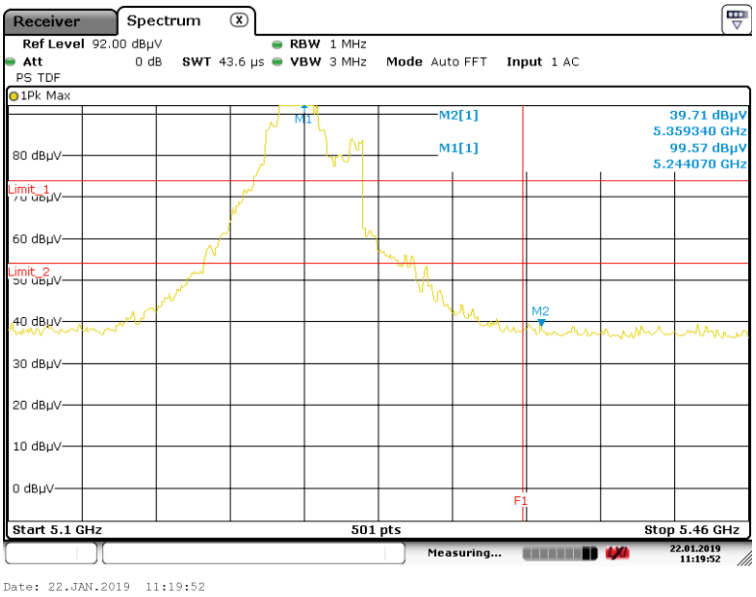
Date: 22.JAN.2019 11:13:46

Chain0 : Restricted Band Bandedge @ 802.11a Mode Ch36 AV



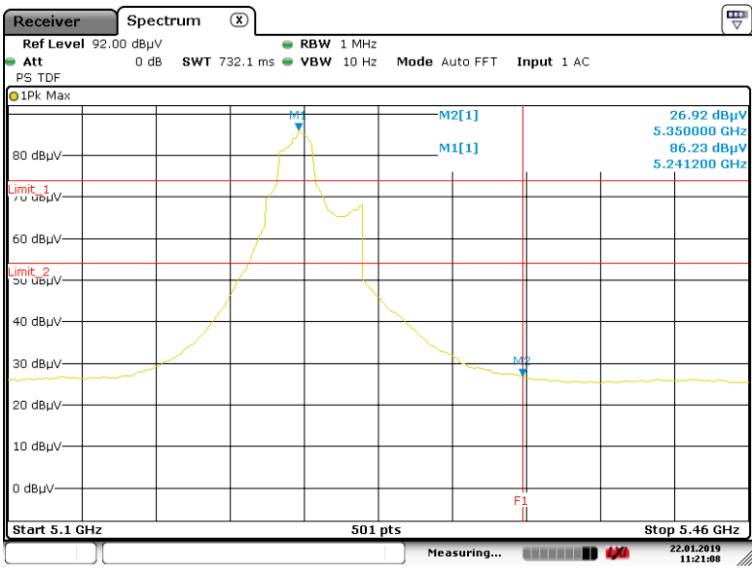
Date: 22.JAN.2019 11:15:17

Chain0 : Restricted Band Bandedge @ 802.11a Mode Ch48 PK



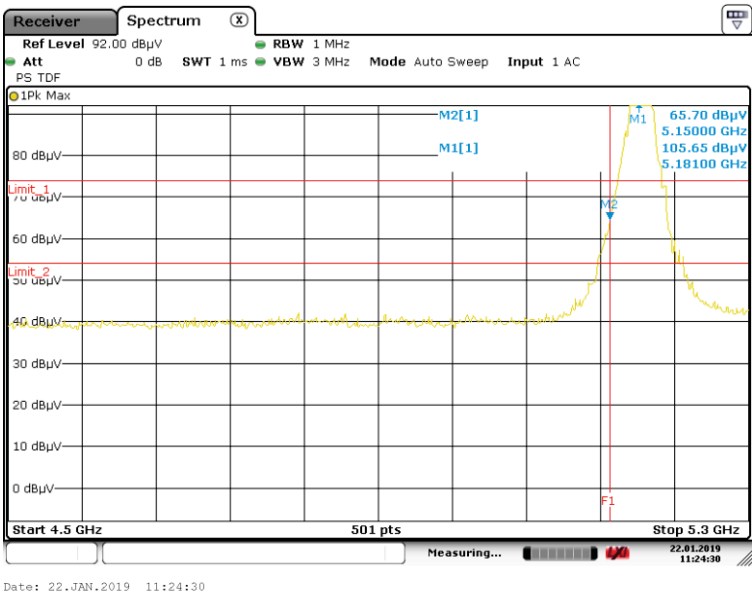
Date: 22.JAN.2019 11:19:52

Chain0 : Restricted Band Bandedge @ 802.11a Mode Ch48 AV



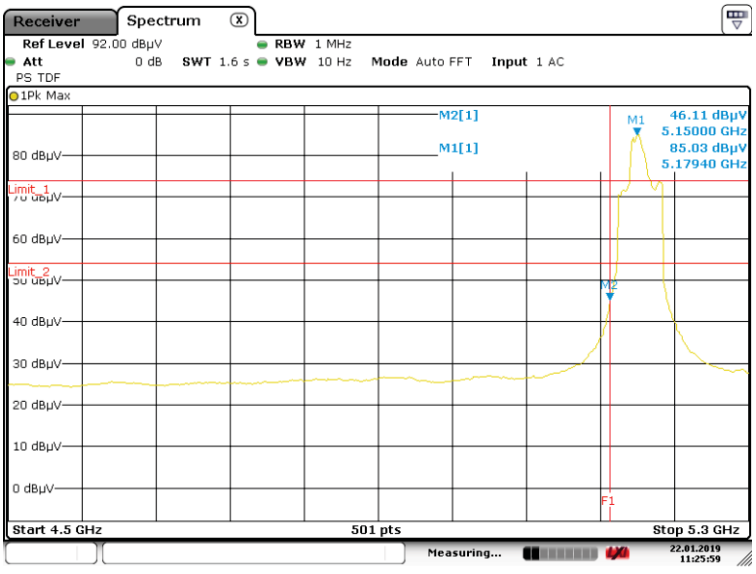
Date: 22.JAN.2019 11:21:08

Chain1 : Restricted Band Bandedge @ 802.11a Mode Ch36 PK



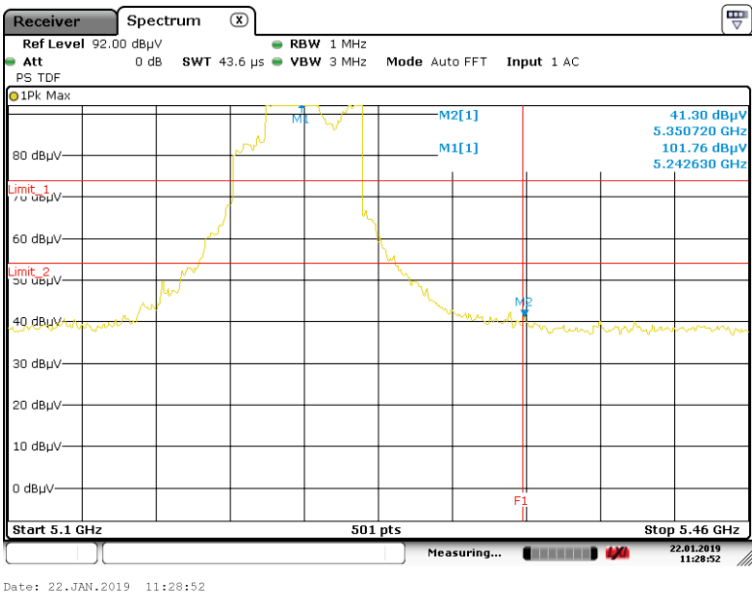
Date: 22.JAN.2019 11:24:30

Chain1 : Restricted Band Bandedge @ 802.11a Mode Ch36 AV



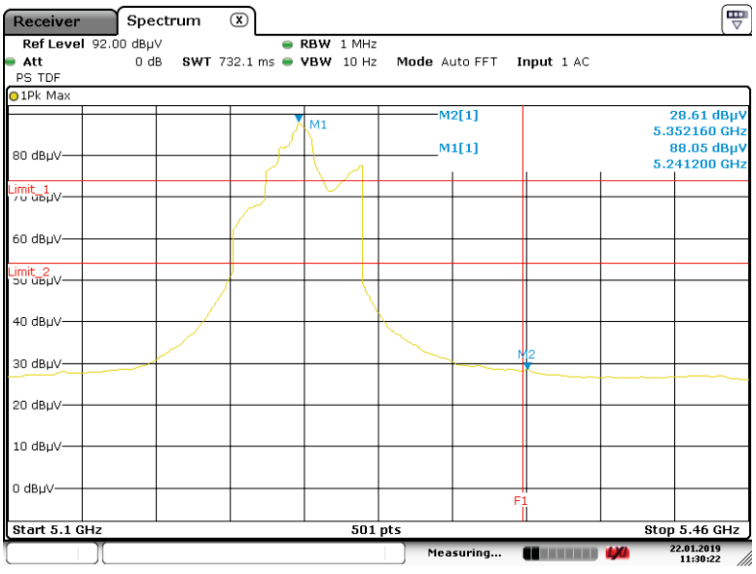
Date: 22.JAN.2019 11:25:59

Chain1 : Restricted Band Bandedge @ 802.11a Mode Ch48 PK



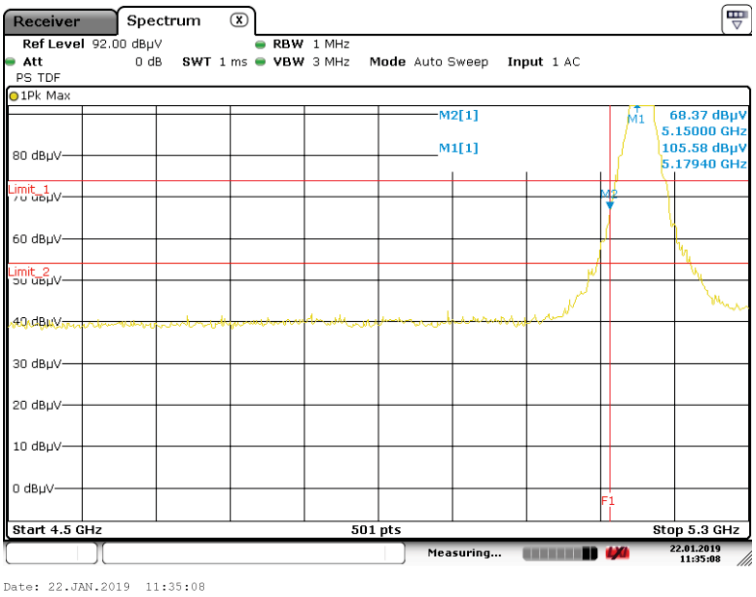
Date: 22.JAN.2019 11:28:52

Chain1 : Restricted Band Bandedge @ 802.11a Mode Ch48 AV



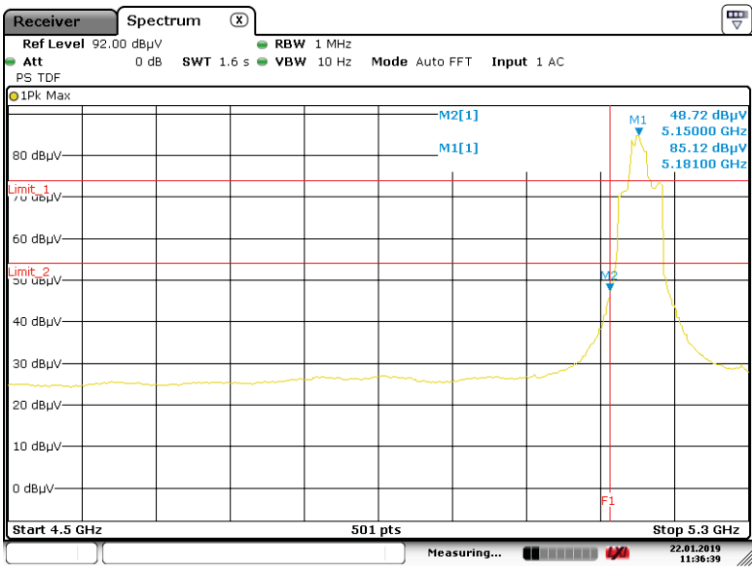
Date: 22.JAN.2019 11:30:23

Chain0+1 : Restricted Band Bandedge @ 802.11ac(VHT20) Mode Ch36 PK



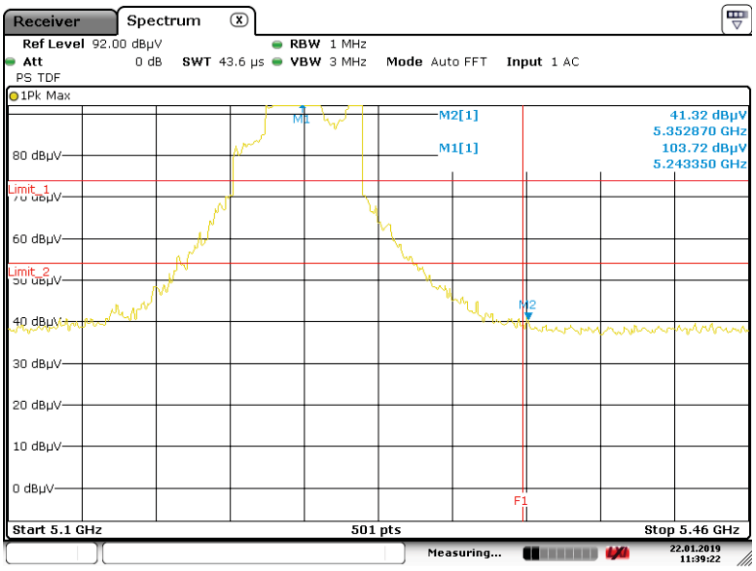
Date: 22.JAN.2019 11:35:08

Chain0+1 : Restricted Band Bandedge @ 802.11ac(VHT20) Mode Ch36 AV



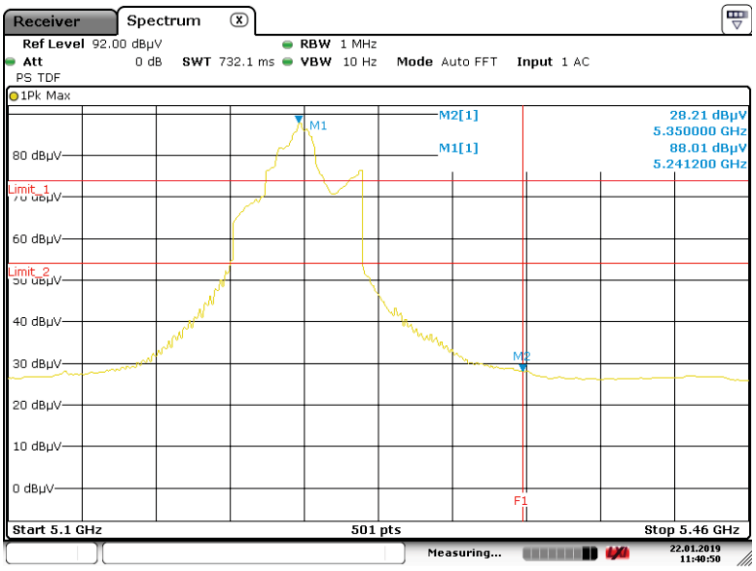
Date: 22.JAN.2019 11:36:39

Chain0+1 : Restricted Band Bandedge @ 802.11ac(VHT20) Mode Ch48 PK



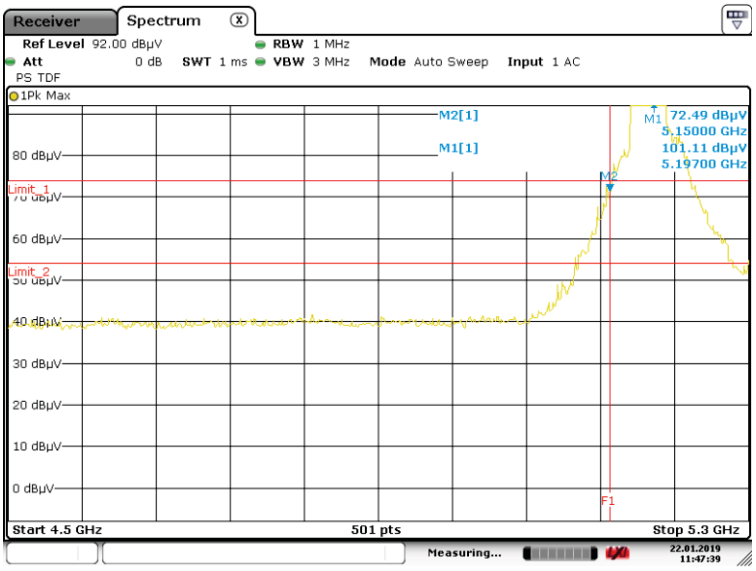
Date: 22.JAN.2019 11:39:23

Chain0+1 : Restricted Band Bandedge @ 802.11ac(VHT20) Mode Ch48 AV



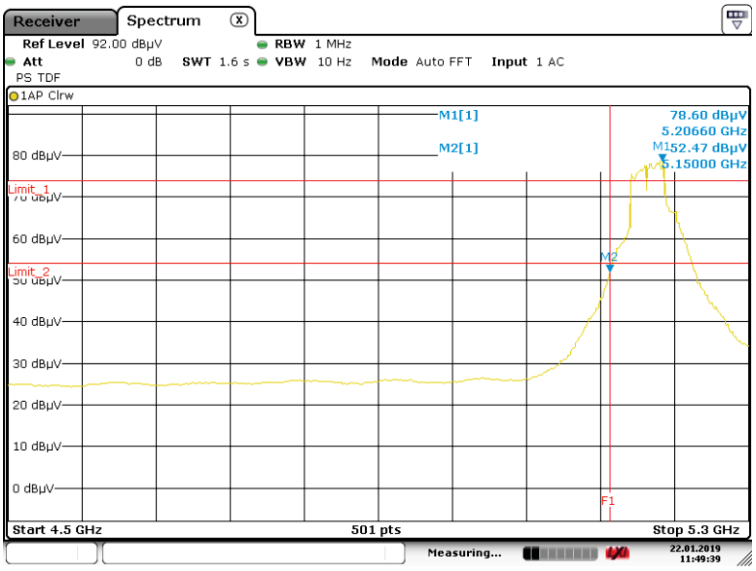
Date: 22.JAN.2019 11:40:50

Chain0+1 : Restricted Band Bandedge @ 802.11ac(VHT40) Mode Ch38 PK



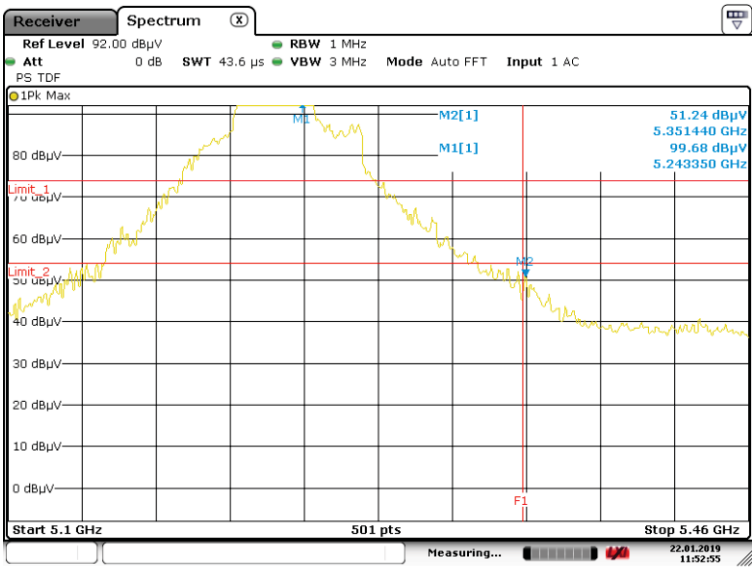
Date: 22.JAN.2019 11:47:39

Chain0+1 : Restricted Band Bandedge @ 802.11ac(VHT40) Mode Ch38 AV



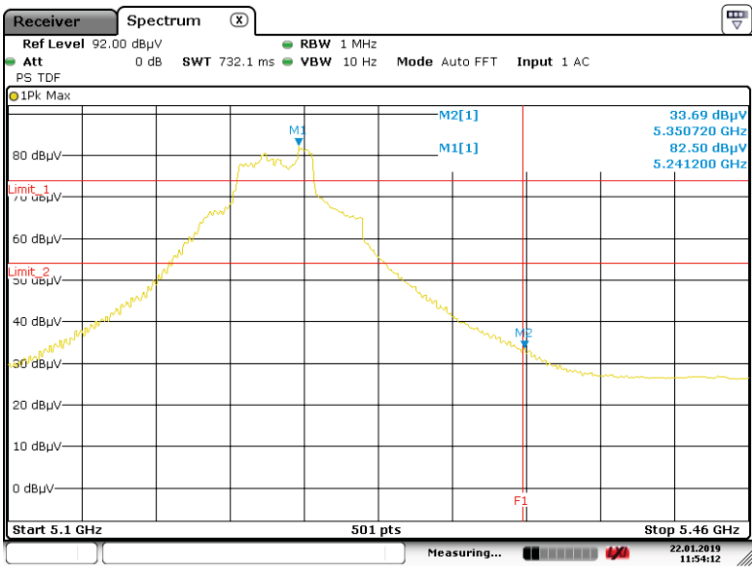
Date: 22.JAN.2019 11:49:40

Chain0+1 : Restricted Band Bandedge @ 802.11ac(VHT40) Mode Ch46 PK



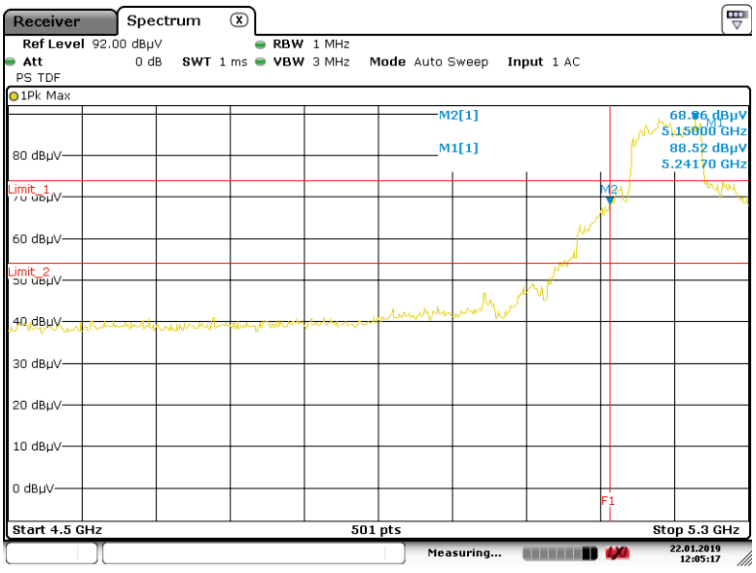
Date: 22.JAN.2019 11:52:55

Chain0+1 : Restricted Band Bandedge @ 802.11ac(VHT40) Mode Ch46 AV



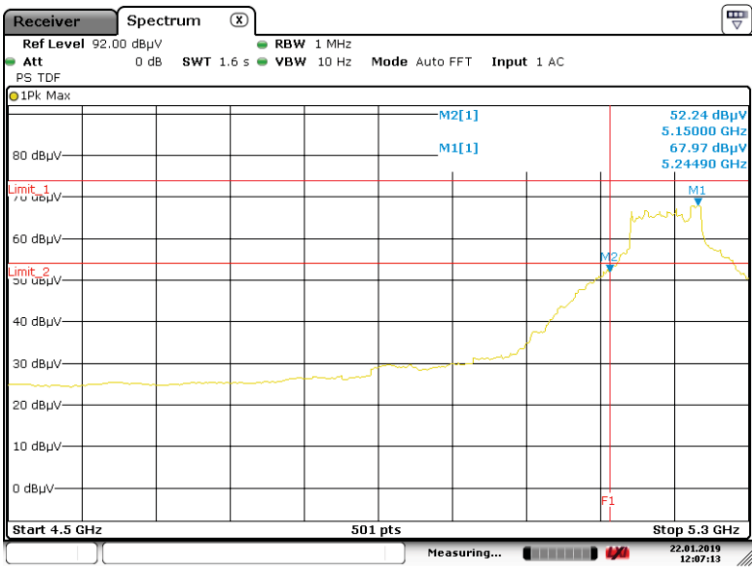
Date: 22.JAN.2019 11:54:12

Chain0+1 : Restricted Band Bandedge @ 802.11ac(VHT80) Mode Ch42 Lower PK



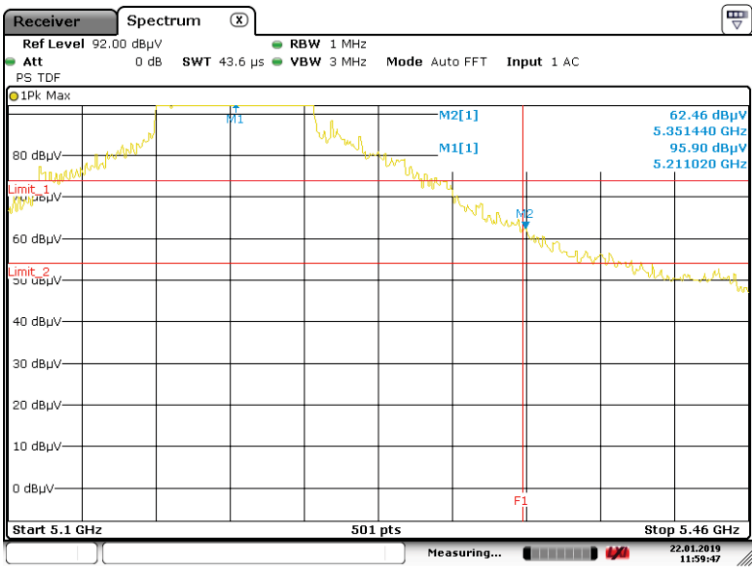
Date: 22.JAN.2019 12:05:17

Chain0+1 : Restricted Band Bandedge @ 802.11ac(VHT80) Mode Ch42 Lower AV



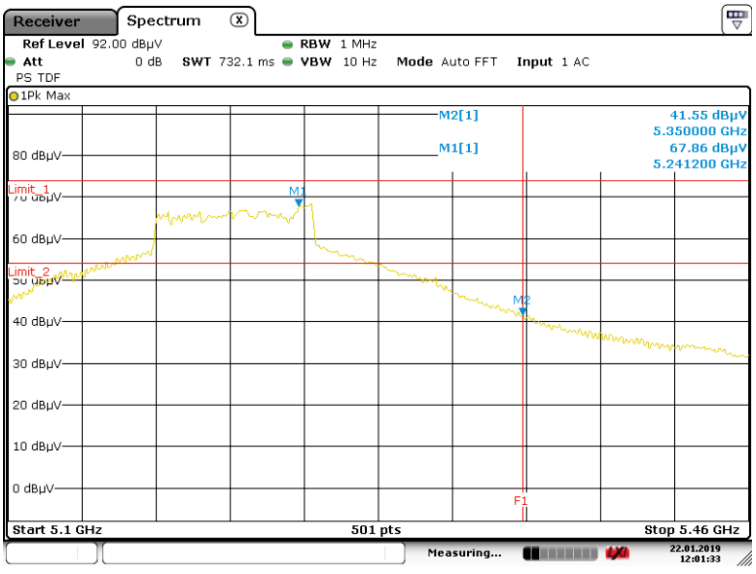
Date: 22.JAN.2019 12:07:13

Chain0+1 : Restricted Band Bandedge @ 802.11ac(VHT80) Mode Ch42 Upper PK



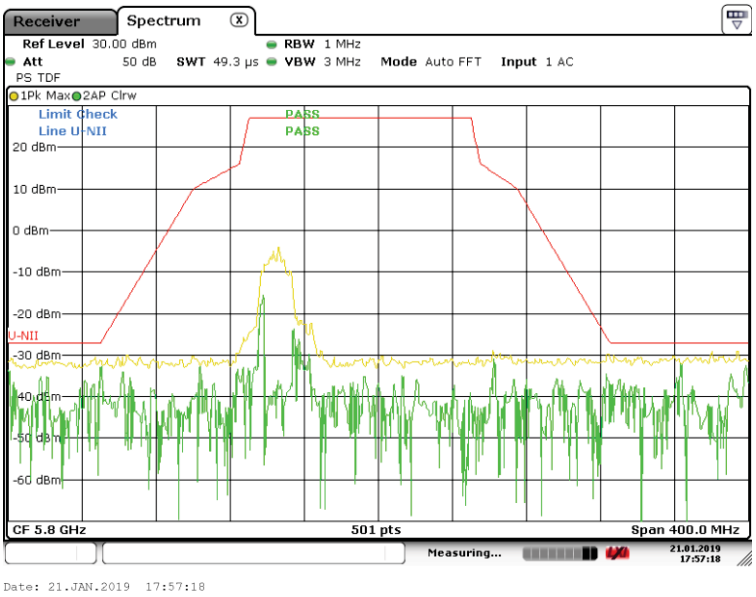
Date: 22.JAN.2019 11:59:47

Chain0+1 : Restricted Band Bandedge @ 802.11ac(VHT80) Mode Ch42 Upper AV



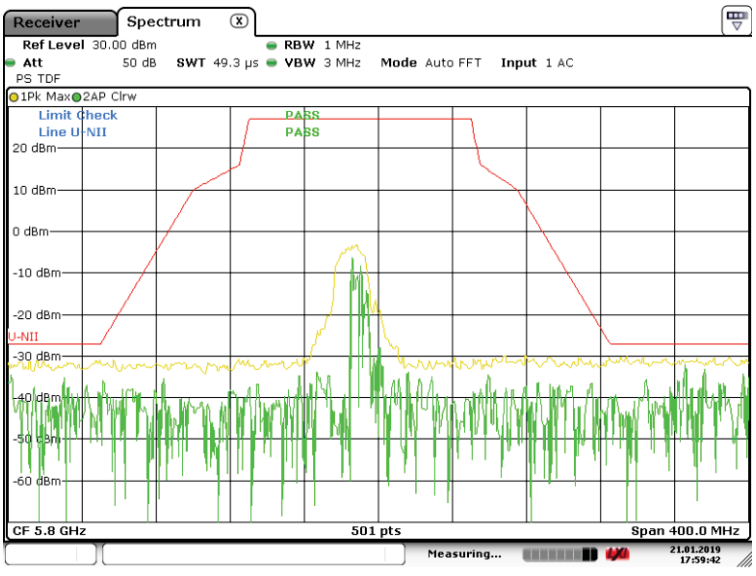
Date: 22.JAN.2019 12:01:33

Chain0 : Out-of-band emission limits for U-NII-3 @ mode 802.11a Ch149



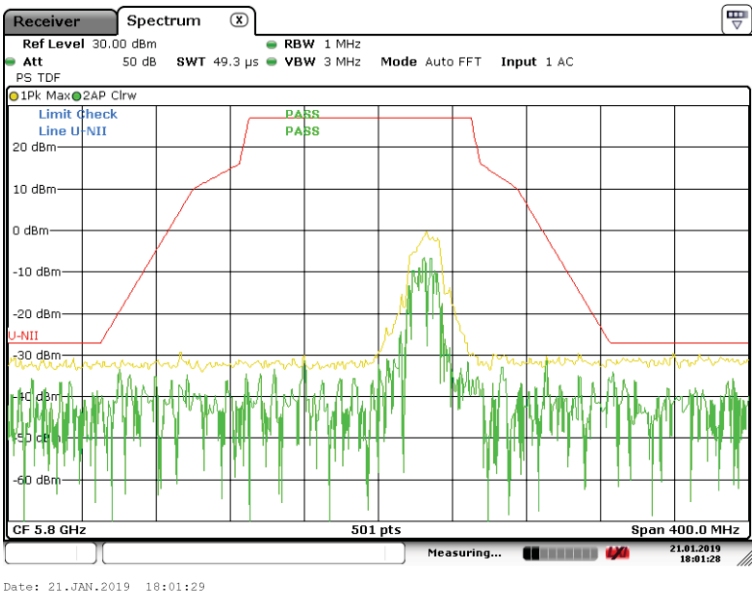
Date: 21.JAN.2019 17:57:18

Chain0 : Out-of-band emission limits for U-NII-3 @ mode 802.11a Ch157



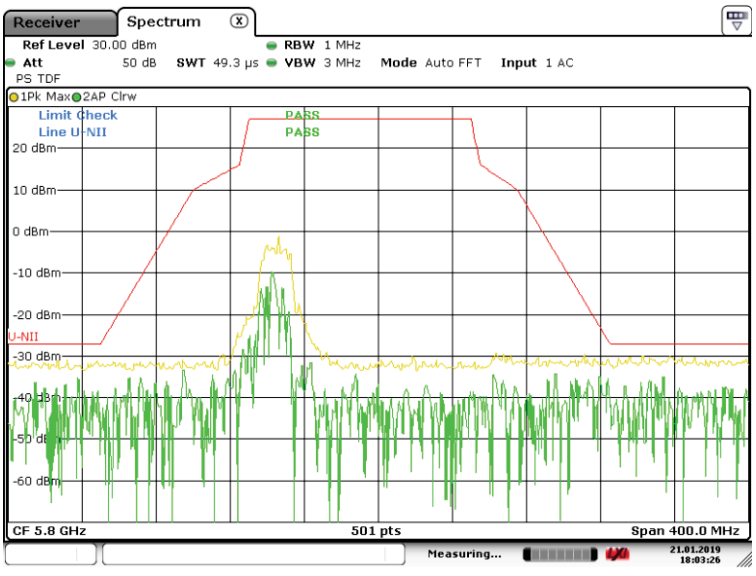
Date: 21.JAN.2019 17:59:42

Chain0 : Out-of-band emission limits for U-NII-3 @ mode 802.11a Ch165



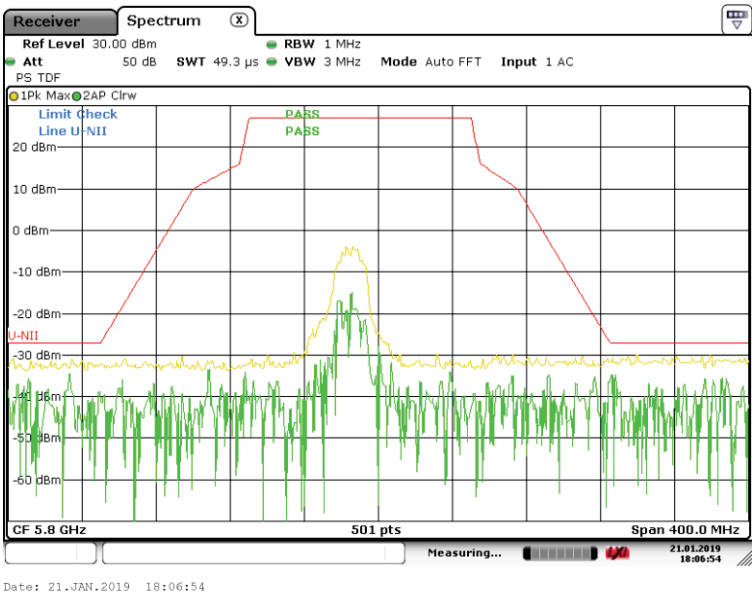
Date: 21.JAN.2019 18:01:29

Chain1 : Out-of-band emission limits for U-NII-3 @ mode 802.11a Ch149



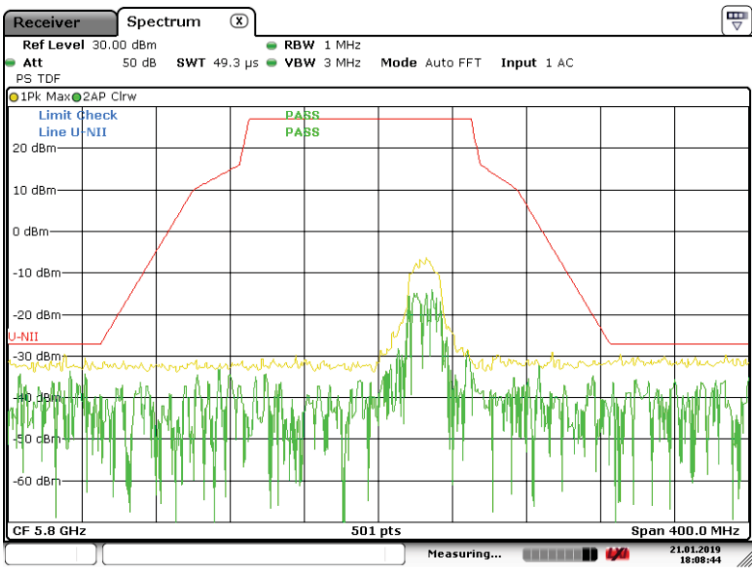
Date: 21.JAN.2019 18:03:27

Chain1 : Out-of-band emission limits for U-NII-3 @ mode 802.11a Ch157



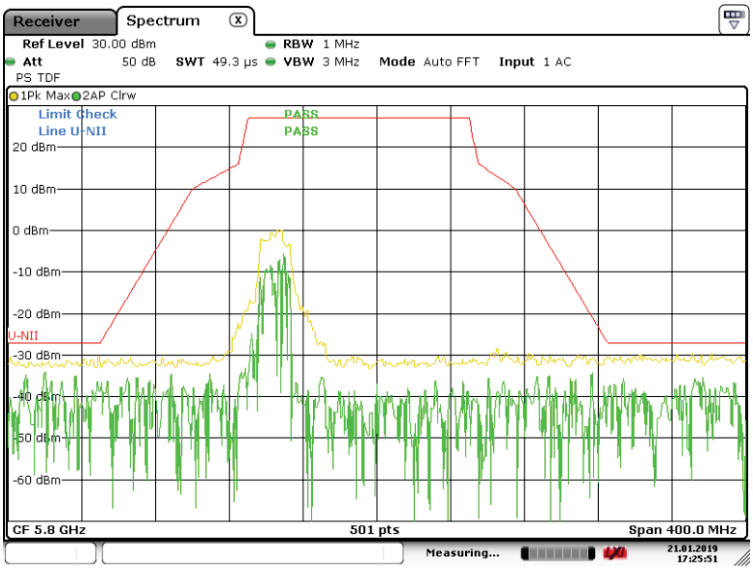
Date: 21.JAN.2019 18:06:54

Chain1 : Out-of-band emission limits for U-NII-3 @ mode 802.11a Ch165



Date: 21.JAN.2019 18:08:44

Chain0+1 : Out-of-band emission limits for U-NII-3 @ mode 802.11ac(VHT20) Ch149

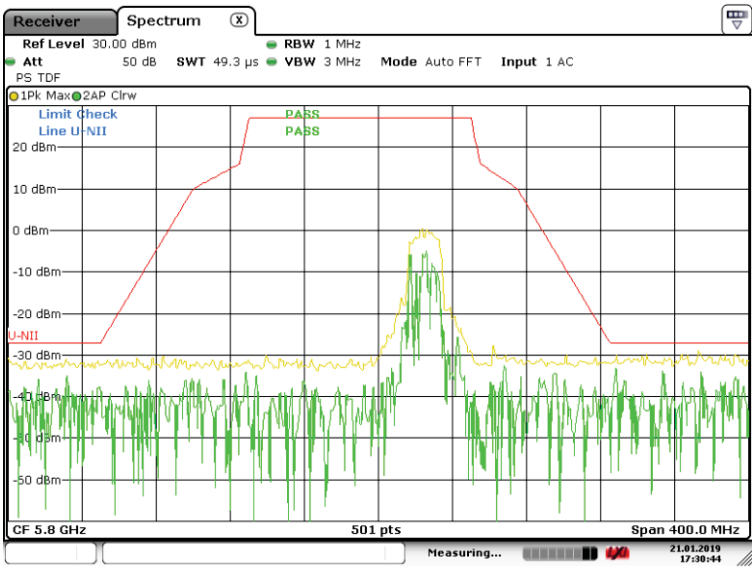


Date: 21.JAN.2019 17:25:51

Chain0+1 : Out-of-band emission limits for U-NII-3 @ mode 802.11ac(VHT20) Ch157

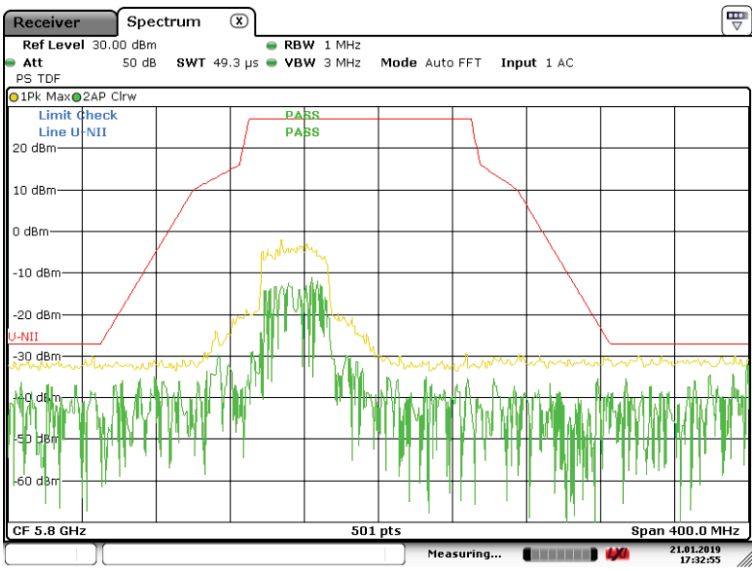
Date: 21.JAN.2019 17:28:48

Chain0+1 : Out-of-band emission limits for U-NII-3 @ mode 802.11ac(VHT20) Ch165



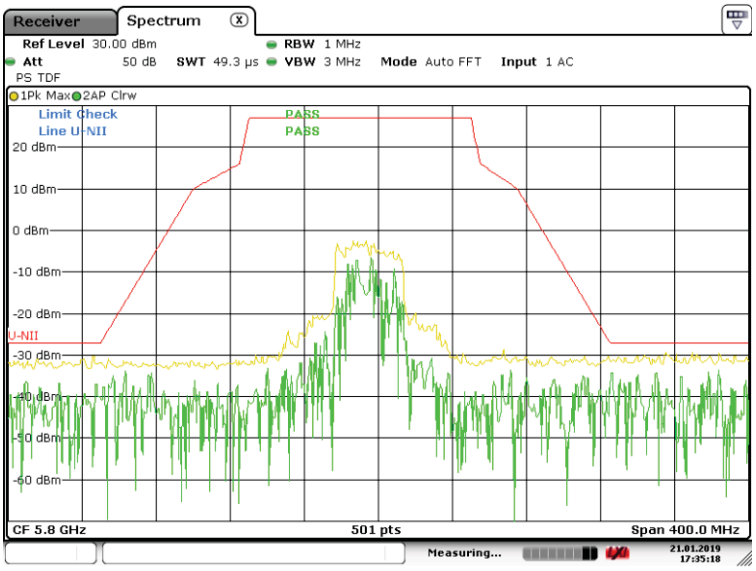
Date: 21.JAN.2019 17:30:44

Chain0+1 : Out-of-band emission limits for U-NII-3 @ mode 802.11ac(VHT40) Ch151



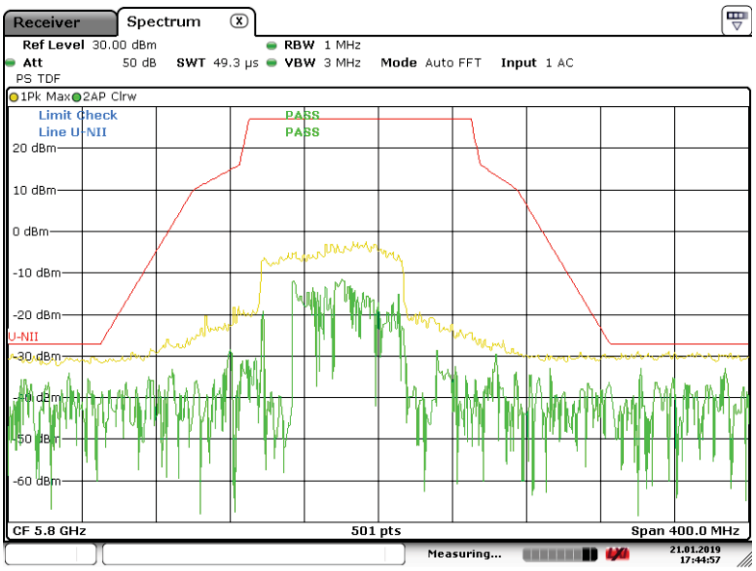
Date: 21.JAN.2019 17:32:56

Chain0+1 : Out-of-band emission limits for U-NII-3 @ mode 802.11ac(VHT40) Ch159



Date: 21.JAN.2019 17:35:19

Chain0+1 : Out-of-band emission limits for U-NII-3 @ mode 802.11ac(VHT80) Ch155



Date: 21.JAN.2019 17:44:57

7.AC Power Line Conducted Emission

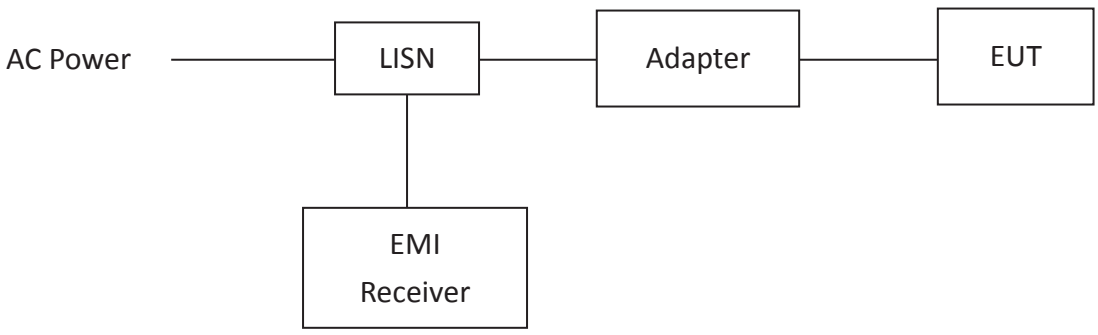
7.1 Measuring instrument setting

Receiver Function	Setting
Detector	QP
Start frequency	0.15MHz
Stop frequency	30MHz
IF bandwidth	9 kHz
Attenuation	10dB

7.2 Test Procedure

Step 1	Configure the EUT according to ANSI C63.10:2013. The EUT or host of EHT has to be placed 0.4 meter far from the conducting wall of the shielding room and at least 80 centimeters from any other grounded conducting surface.
Step 2	Connect EUT or host of EUT to the power mains through a line impedance stabilization network.
Step 3	All the companion devices are connected to the other LISN. The LISN should provide 50Uh/50ohms coupling impedance.
Step 4	The frequency range from 150 kHz to 30MHz was searched.
Step 5	Set the test-receiver system to peak detector and specified bandwidth with maximum hold mode.
Step 6	The measurement has to be done between each power line and ground at the power terminal.

7.3 Test Diagram



7.4 Limit

Frequency (MHz)	Conducted Limit (dBuV)	
	Q.P.	Ave.
0.15~0.50	66 – 56	56 – 46
0.50~5.00	56	46
5.00~30.0	60	50

7.5 Operating Environment Condition

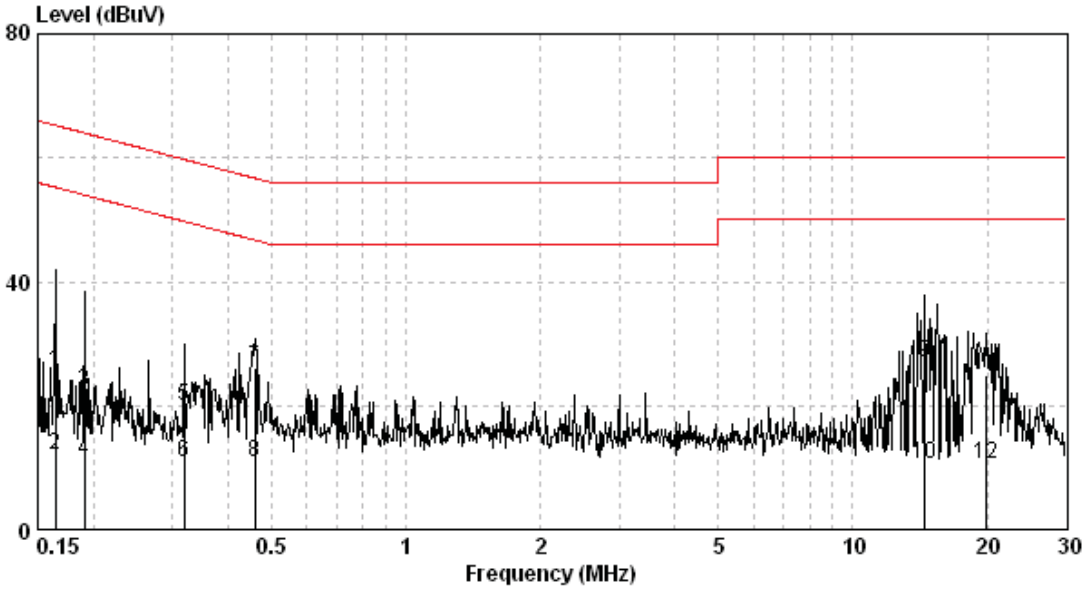
Temperature (℃) :	26
Relative Humidity (%) :	68
Atmospheric Pressure (hPa) :	1010

7.6 Test Results

Phase: Live Line
Model No.: Foenix_AN
Test Condition: Tx mode

Frequency (MHz)	Corr. Factor (dB)	Reading QP (dBuV)	Level QP (dBuV)	Limit QP (dBuV)	Reading AV (dBuV)	Level AV (dBuV)	Limit AV (dBuV)	Margin (dB) QP	Margin (dB) AV
0.164	9.73	15.84	25.57	65.25	2.26	11.99	55.25	-39.68	-43.26
0.190	9.73	12.51	22.24	64.02	1.42	11.15	54.02	-41.78	-42.87
0.318	9.73	10.11	19.85	59.75	1.09	10.82	49.75	-39.90	-38.93
0.459	9.74	16.20	25.94	56.71	1.06	10.80	46.71	-30.77	-35.91
14.517	9.90	16.91	26.82	60.00	0.51	10.42	50.00	-33.18	-39.58
19.845	9.90	14.91	24.81	60.00	0.51	10.41	50.00	-35.19	-39.59

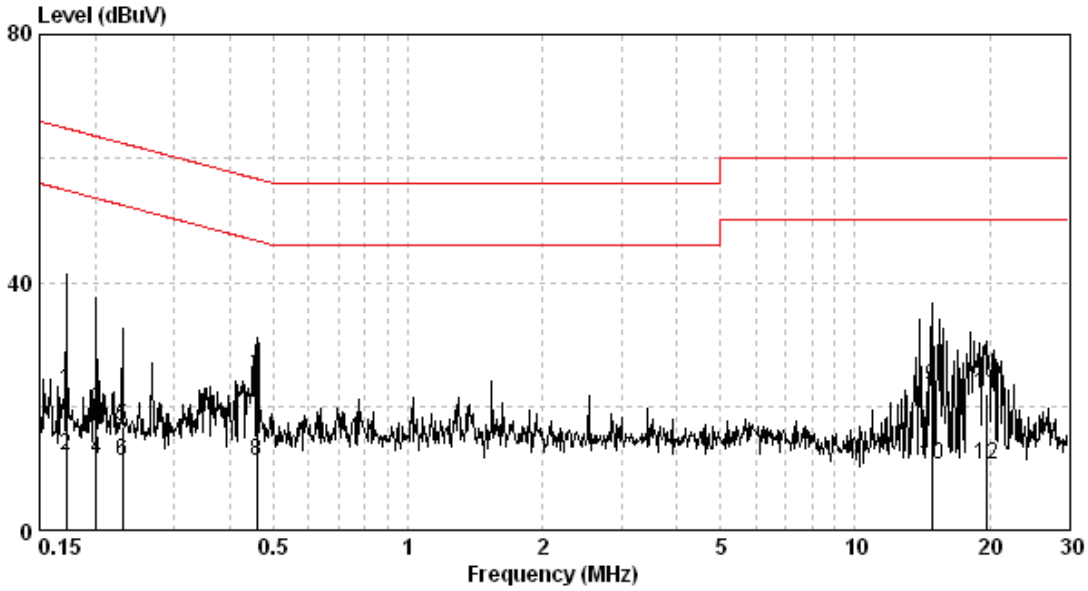
Remark:
1. Corr. Factor (dB) = LISN Factor (dB) + Cable Loss (dB)
2. Level (dBuV) = Corr. Factor (dB) + Reading (dBuV)
3. Margin (dB) = Level (dBuV) – Limit (dBuV)



Phase: Neutral Line
Model No.: Foenix_AN
Test Condition: Tx mode

Frequency (MHz)	Corr. Factor (dB)	Reading QP (dBuV)	Level QP (dBuV)	Limit QP (dBuV)	Reading AV (dBuV)	Level AV (dBuV)	Limit AV (dBuV)	Margin (dB) QP	Margin (dB) AV
0.172	9.74	12.68	22.42	64.86	2.25	11.99	54.86	-42.43	-42.87
0.201	9.74	9.66	19.40	63.58	1.55	11.29	53.58	-44.18	-42.29
0.230	9.74	6.82	16.56	62.44	1.48	11.22	52.44	-45.88	-41.22
0.459	9.75	14.79	24.54	56.71	1.32	11.07	46.71	-32.18	-35.64
14.828	9.95	13.11	23.06	60.00	0.61	10.56	50.00	-36.94	-39.44
19.635	9.97	11.88	21.85	60.00	0.65	10.62	50.00	-38.15	-39.38

Remark:
1. Corr. Factor (dB) = LISN Factor (dB) + Cable Loss (dB)
2. Level (dBuV) = Corr. Factor (dB) + Reading (dBuV)
3. Margin (dB) = Level (dBuV) – Limit (dBuV)



Appendix A: Test equipment list

Test Equipment/ Test site	Brand	Model No.	Serial No.	Calibration Date	Next Calibration Date
ESCI EMI Test Receiver	Rohde & Schwarz	ESCI	100018	2018/11/14	2019/11/13
Spectrum Analyzer	Rohde & Schwarz	FSP30	100245	2018/02/23	2019/02/22
Horn Antenna (1-18G)	SHWARZBECK	BBHA 9120 D	9120D-456	2018/01/23	2019/01/22
Horn Antenna (14-42G)	SHWARZBECK	BBHA 9170	BBHA9170159	2017/09/04	2020/09/02
Broadband Antenna	SHWARZBECK	VULB 9168	9168-172	2018/04/23	2019/04/22
Pre-Amplifier	EMC Co.	EMC12635SE	980205	2018/12/10	2019/12/09
Pre-Amplifier	MITEQ	JS4-26004000--27-8A	828825	2018/08/28	2019/08/27
Signal Analyzer	Agilent	N9030A	MY51380492	2018/08/24	2019/08/23
966-2(A) Cable 9kHz~26.5GHz	SUHNER	SMA / EX 100	N/A	2018/08/07	2019/08/06
966-2(B) Cable 9kHz~26.5GHz	SUHNER	SUCOFLEX 104P	CB0005	2018/08/07	2019/08/06
RF Cable 9kHz~26.5GHz	SUHNER	SUCOFLEX 102	CB0006	2018/05/03	2019/05/02
966-2_3m Semi-Anechoic Chamber	966_2	CEM-966_2	N/A	2018/03/05	2019/03/04
High Pass Filter	Wainwright	WHKX3.0/ 18G-12SS	N/A	2018/06/01	2019/05/31
Active Loop Antenna	SCHWARZBECK MESS-ELEKTRONIC	FMZB1519	1519-067	2018/04/17	2019/04/16
Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	124781	2018/09/21	2019/09/20

Note: No Calibration Required (NCR)

Test Equipment/ Test site	Brand	Model No.	Serial No.	Calibration Date	Next Calibration Date
EMI Receiver	R&S	ESCI	100059	2018/11/07	2019/11/06
Two-Line V-Network	R&S	ENV216	101159	2018/06/01	2019/05/31
Two-Line -V-Network	R&S	ESH3-Z5	825562/003	2018/09/03	2019/09/02
CON-1 Shielded Room	N/A	N/A	N/A	NCR	NCR
CON-1 Cable	SUHNER	SUCOFLEX-104	26438414	2018/05/03	2019/05/02
Test software	Audix	e3	4.20040112L	NCR	NCR

Note: No Calibration Required (NCR).

Appendix B: Measurement Uncertainty

This uncertainty represents an expanded uncertainty expressed at approximately the 95 % confidence level using a coverage factor of *k*=2.

Item	Uncertainty
Vertically polarized radiated disturbances from 30MHz~1GHz in a semi-anechoic chamber at a distance of 3m	5.14 dB
Horizontally polarized radiated disturbances from 30MHz~1GHz in a semi-anechoic chamber at a distance of 3m	5.22 dB
Vertically polarized Radiated disturbances from 1GHz~18GHz in a semi-anechoic chamber at a distance of 3m	3.64 dB
Horizontally polarized Radiated disturbances from 1GHz~18GHz in a semi-anechoic chamber at a distance of 3m	3.64 dB
Vertically polarized Radiated disturbances from 18GHz~40GHz in a semi-anechoic chamber at a distance of 3m	2.68 dB
Horizontally polarized Radiated disturbances from 18GHz~40GHz in a semi-anechoic chamber at a distance of 3m	2.68 dB
Radiated disturbances from 9kHz~30MHz in a semi-anechoic chamber at a distance of 3m	3.54 dB
Emission on the Band Edge Test	3.64 dB
Minimum 6dB Bandwidth	0.85 dB
Maximum Conducted Output Power	0.42 dB
Power Spectral Density	0.85 dB
Emissions In Non-Restricted Frequency Bands	0.85 dB
AC Power Line Conducted Emission	2.48 dB