

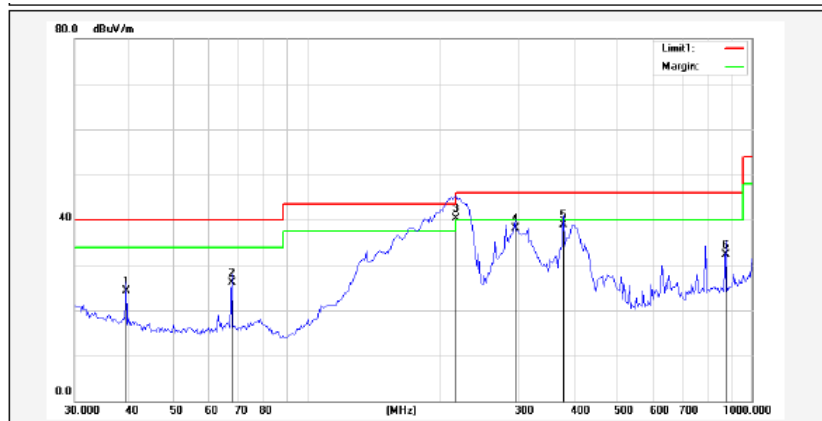
Appendix A: Test Results of U-NII Device

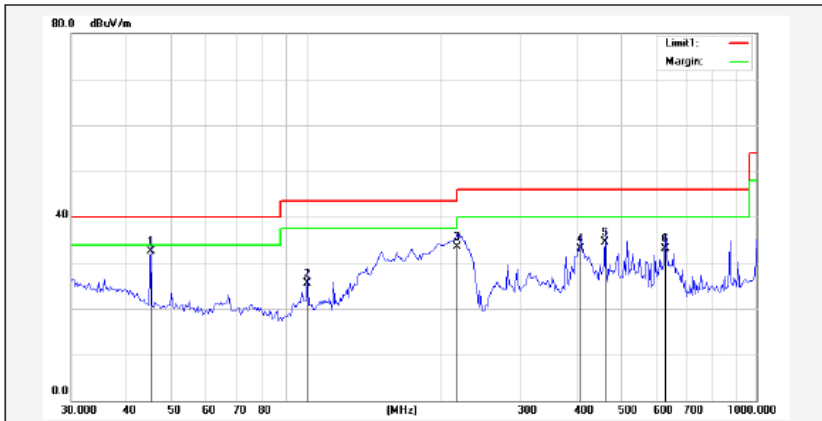
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Appendix A.1 Test Results of Radiated Spurious Emission

Note: Testing was carried out within frequency range 9kHz to the tenth harmonics. The measurement results below 30MHz and 18GHz 40 GHz were greater than 20dB below the limit, so only the radiated spurious emissions from 30MHz to 18G Hz were reported. All modes have been tested, and the report only reflects the worst mode.

Below 1G:

Test Mode :	Mode 1	Test Voltage :	DC 14.4V						
Horizontal									
									
No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (deg.)	Height (cm)	Remark
1	39.1824	37.27	-13.06	24.21	40.00	-15.79			QP
2	67.7856	39.98	-13.81	26.17	40.00	-13.83			QP
3*	216.0000	54.68	-14.31	40.37	43.50	-3.13			QP
4	294.4260	50.07	-12.02	38.05	46.00	-7.95			QP
5	376.5227	48.51	-9.52	38.99	46.00	-7.01			QP
6	875.0131	32.86	-0.61	32.25	46.00	-13.75			QP

Vertical									
									
No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (deg.)	Height (cm)	Remark
1*	45.0951	44.89	-12.42	32.47	40.00	-7.53			QP
2	100.4711	42.40	-16.97	25.43	43.50	-18.07			QP
3	216.1194	47.76	-14.31	33.45	46.00	-12.55			QP
4	406.7820	41.71	-8.66	33.05	46.00	-12.95			QP
5	461.6313	41.79	-7.35	34.44	46.00	-11.56			QP
6	628.8935	37.07	-4.01	33.06	46.00	-12.94			QP

Correction Factor = antenna factor + cable loss – amplifier gain;

Reading = Reading Amplitude in the instrument;

Result = Correction Factor + Reading;

Margin = Result – Limit

Above 1GHz:

Band IV:

Note: All modes and antenna have been tested, and the report only reflects the worst mode(MIMO).

Testing was carried out within frequency range 9kHz to the tenth harmonics. The measurement results below 30MHz and 18GHz - 26.5GHz were greater than 20dB below the limit, so only the radiated spurious emissions from 30MHz to 18GHz were reported.

802.11ax(HE20) 5745MHz -High Horizontal

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	3946.313	37.98	6.92	44.9	68.2	-23.3	peak
2	3946.313	18.95	6.92	25.87	54	-28.13	AVG
3	5004.148	39.44	9.6	49.04	68.2	-19.16	peak
4	5004.148	19.86	9.6	29.46	54	-24.54	AVG
5	6802.299	37.41	13.43	50.84	68.2	-17.36	peak
6	6802.299	16.72	13.43	31.15	54	-22.85	AVG
7	8776.898	34.18	16.67	50.85	68.2	-17.35	peak
8	8776.898	14.08	16.67	32.75	54	-21.25	AVG
9	9912.157	33.39	18.77	52.16	68.2	-16.04	peak
10	9912.157	13.77	18.77	32.54	54	-21.46	AVG
11	11194.26	34.94	18.47	53.41	68.2	-14.79	peak
12	11194.26	15.38	18.47	33.85	54	-20.15	AVG

802.11ax(HE20) 5745MHz -High Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	3681.329	39.22	6.71	45.93	68.2	-22.27	peak
2	3681.329	19.44	6.71	26.15	54	-27.85	AVG
3	4205.938	38.01	6.96	44.97	68.2	-23.23	peak
4	4205.938	17.93	6.96	25.89	54	-28.11	AVG
5	4975.246	40.23	9.5	49.73	68.2	-18.47	peak
6	4975.246	19.8	9.5	30.3	54	-23.7	AVG
7	7419.751	35.11	14.89	50	68.2	-18.2	peak
8	7419.751	15.28	14.89	30.17	54	-23.83	AVG
9	9518.294	33.71	17.96	51.67	68.2	-16.53	peak
10	9518.294	13.62	17.96	32.58	54	-21.42	AVG
11	10503.26	33.53	19.07	52.6	68.2	-15.6	peak
12	10503.26	13.42	19.07	32.99	54	-21.01	AVG

Node:

1. Radiated emissions measured in frequency above 1GHz were made with an instrument using peak/average detector mode.
2. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
3. Margin (dB), result in dBuV/m – limit in dBuV/m.

Restricted band Requirements

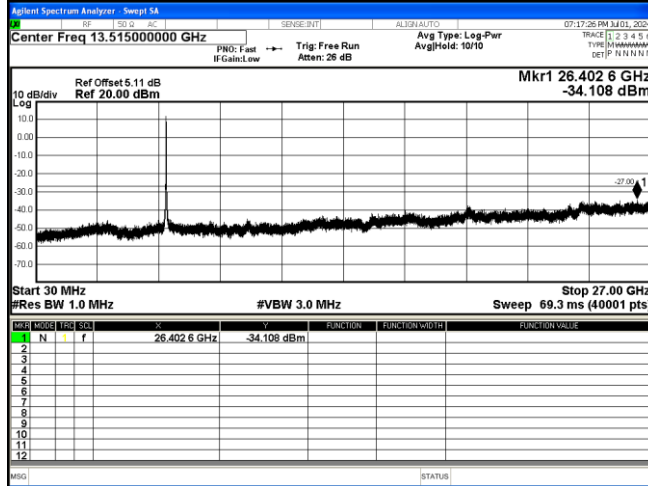
Band IV

Note: Since the distance of band IV exceeds 200 MHz and the distance limit is greater than 20 dB, therefore, this part of the data is reflected in the report.

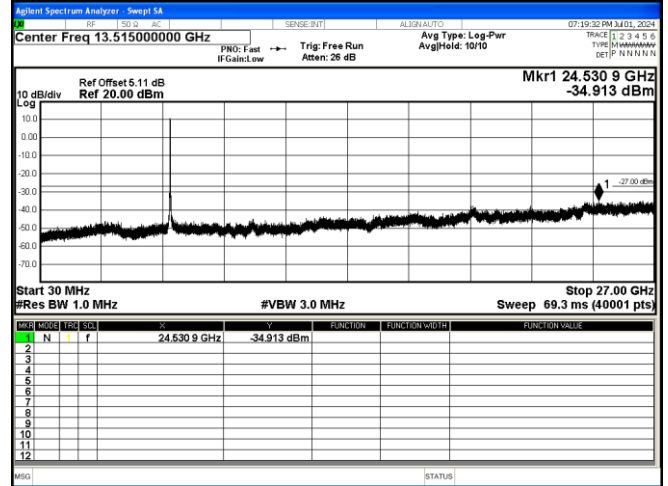
Appendix A.2 Test Results of Conducted Spurious Emissions and Band Edge

All the data rate and antenna configurations have been tested and only the worst-case mode (SISO ANT1) reported.

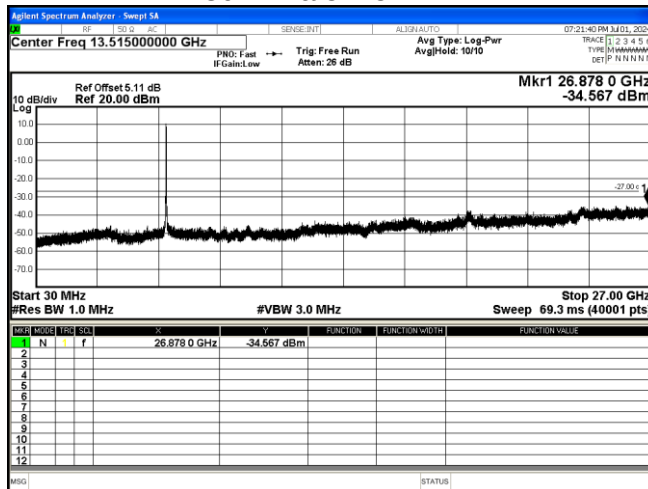
Conducted Spurious Emissions



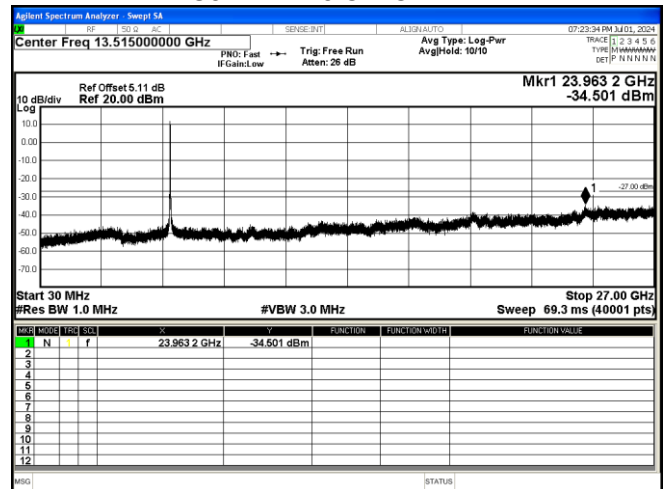
802.11 a 5745MHz



802.11 n20 5745MHz

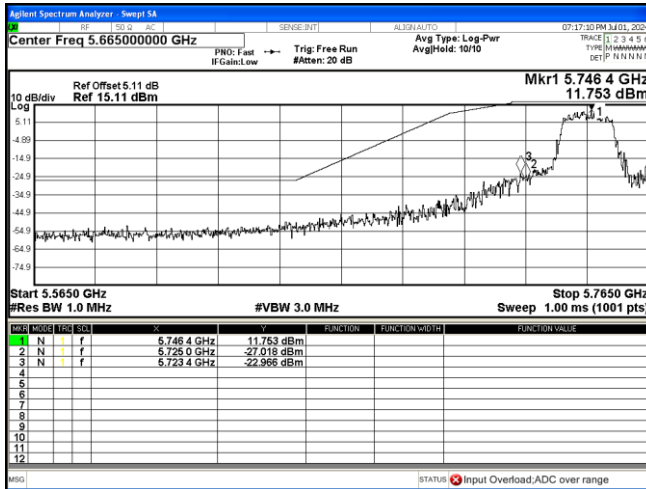


802.11 ac20 5745MHz

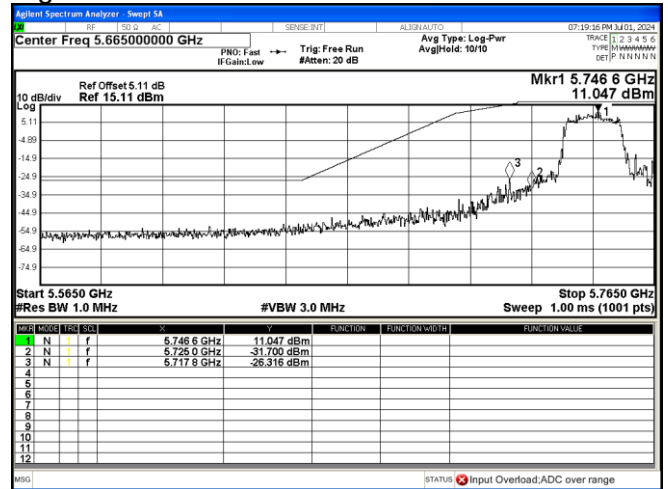


802.11 ax20 5745MHz

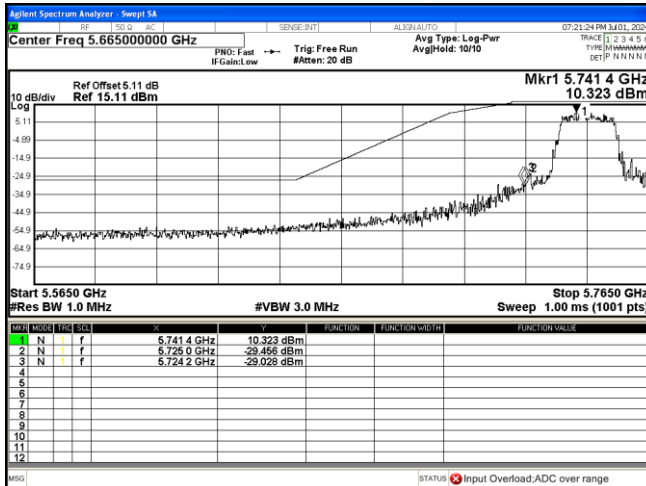
Band Edge



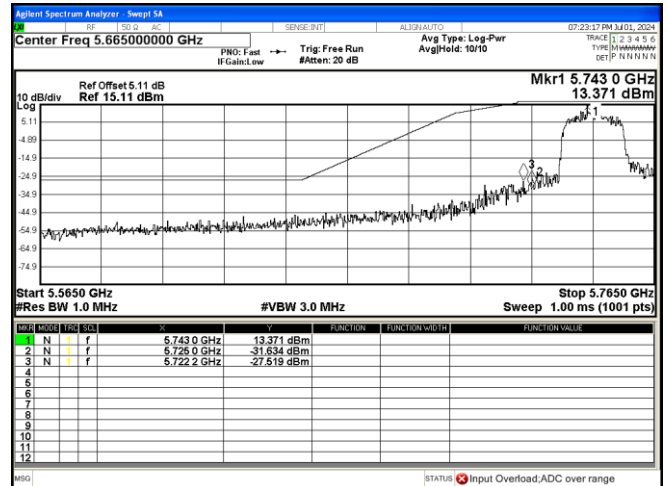
802.11 a 5745MHz



802.11 n20 5745MHz



802.11 ac20 5745MHz

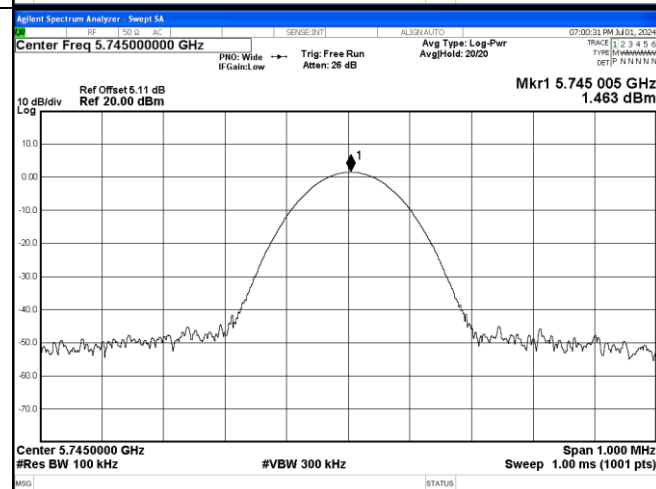
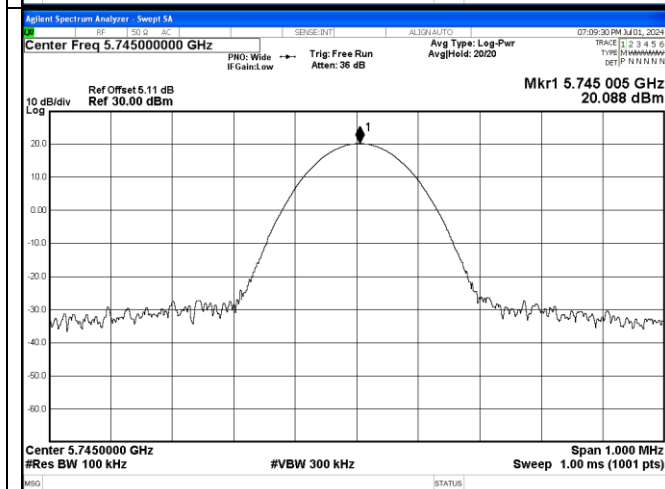
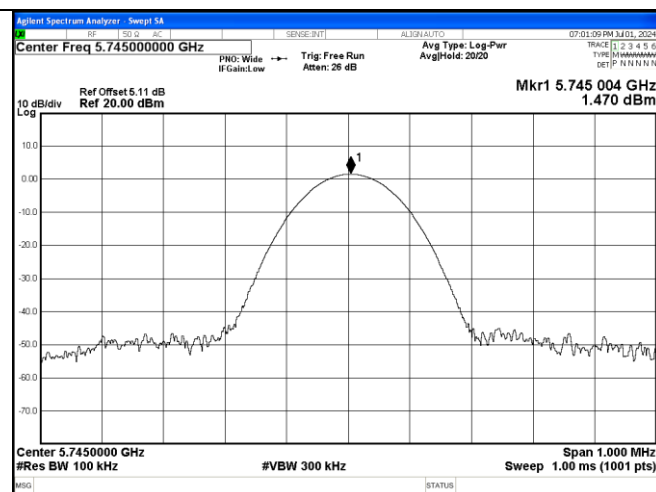
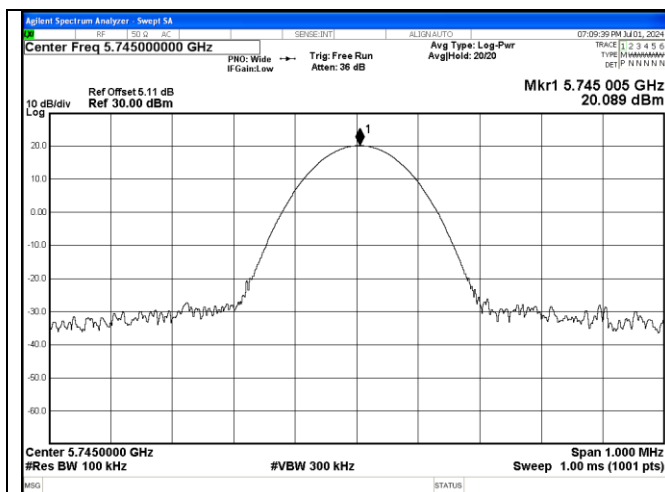


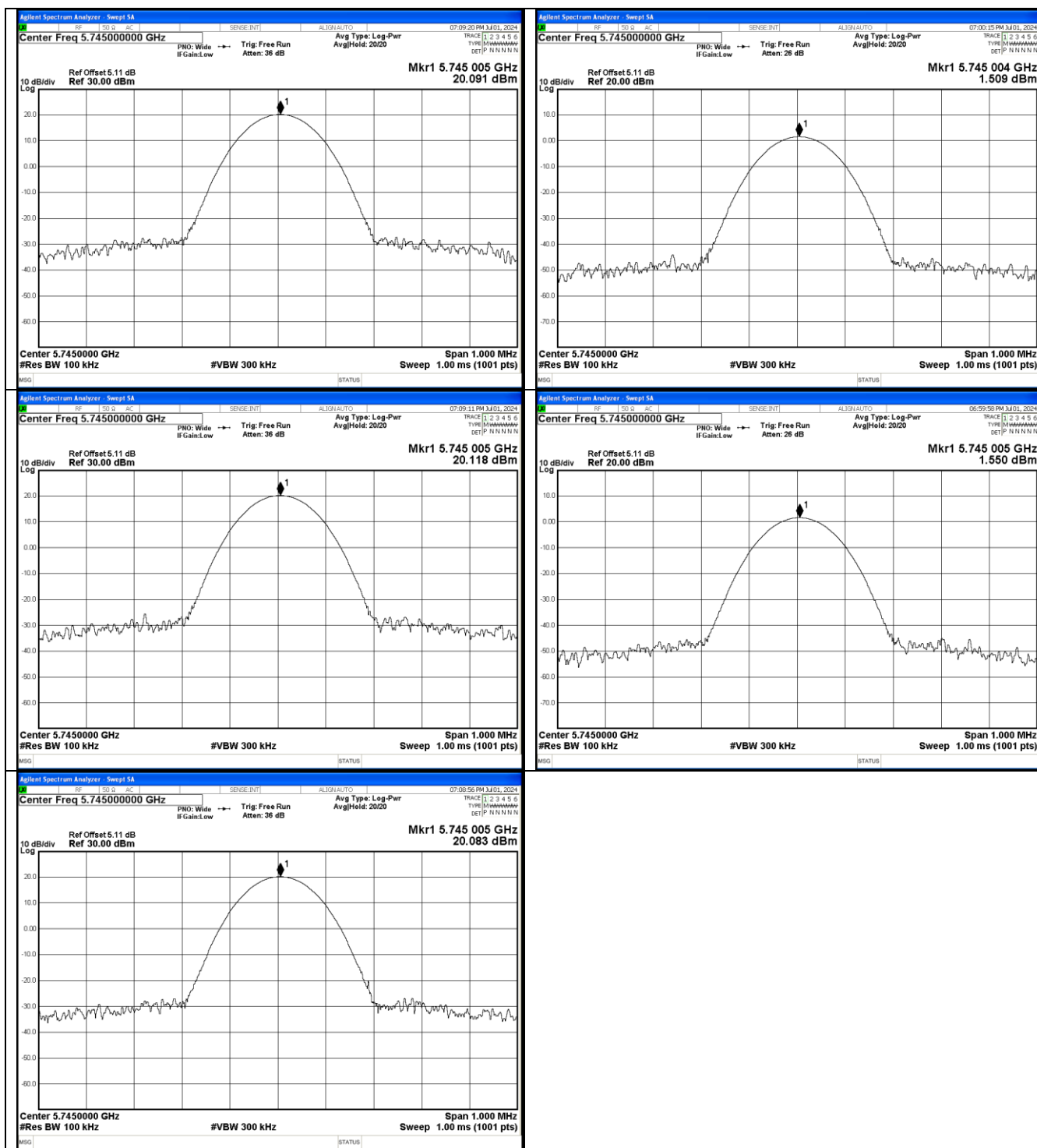
802.11 ax20 5745MHz

Appendix A.3 Test Results of Frequency Stability

802.11 a mode:

Frequency (MHz)	Voltage (Vdc)	Temperature (°C)	Measured Frequency (MHz)	Deviation (ppm)	Limit (ppm)	Result
5745	14.4Vdc	-20	5745.005	0.87	25	Pass
		0	5745.004	0.7	25	Pass
		10	5745.005	0.87	25	Pass
		20	5745.0045	0.78	25	Pass
		30	5745.005	0.87	25	Pass
		40	5745.004	0.7	25	Pass
		50	5745.005	0.87	25	Pass
	12Vdc	25	5745.005	0.87	25	Pass
	17Vdc	25	5745.005	0.87	25	Pass





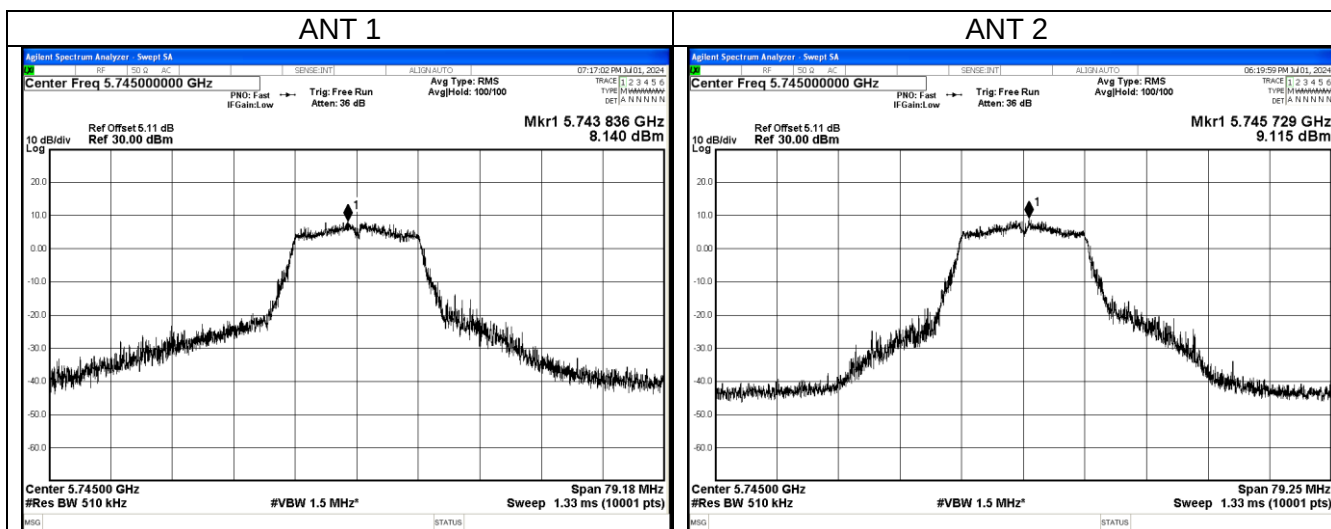
Appendix A.4 Test Results of Conducted Power Spectral Density

802.11a mode:

CH	Freq.	ANT1_Power Spectral Density (dBm/MHz)	ANT2_Power Spectral Density (dBm/MHz)	Total_Power Spectral Density (dBm/MHz)	FCC Limit (dBm/MHz)	Result
149	5745	8.14	9.115	/	30	Pass

Note:

1) Antenna gain(G) of 802.11 a/n/ac/ax: Ant1: 3.96dBi; Ant2: 3.54dBi;.

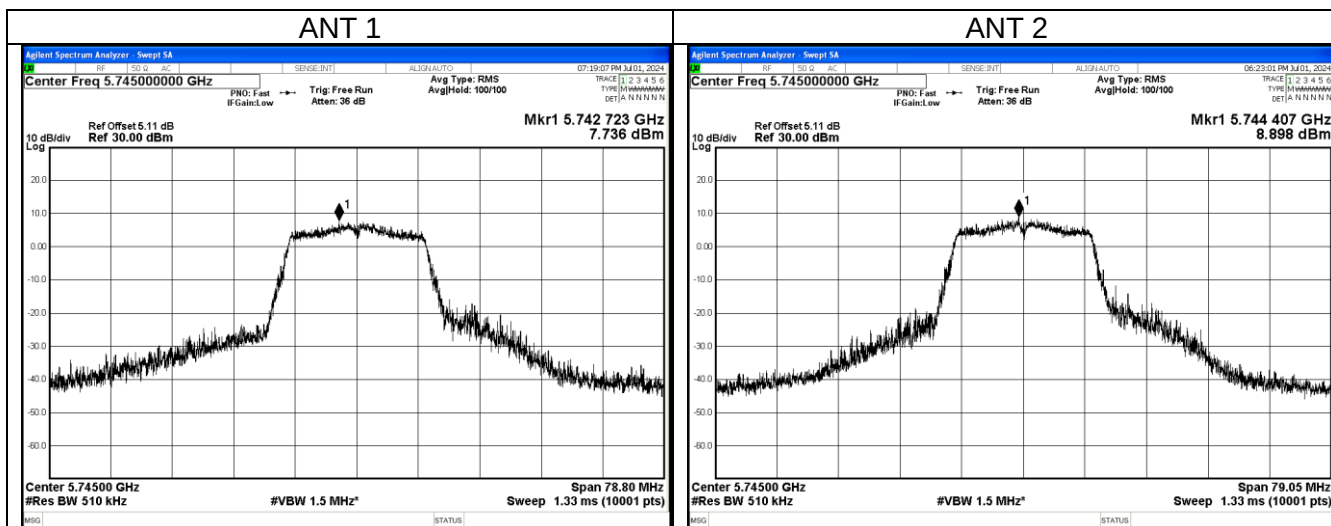


802.11n(HT20) mode:

CH	Freq.	ANT1_Power Spectral Density (dBm/MHz)	ANT2_Power Spectral Density (dBm/MHz)	Total_Power Spectral Density (dBm/MHz)	FCC Limit (dBm/MHz)	Result
149	5745	7.736	8.898	11.366	30	Pass

Note:

1) Antenna gain(G) of 802.11 a/n/ac/ax: Ant1: 3.96dBi; Ant2: 3.54dBi;.

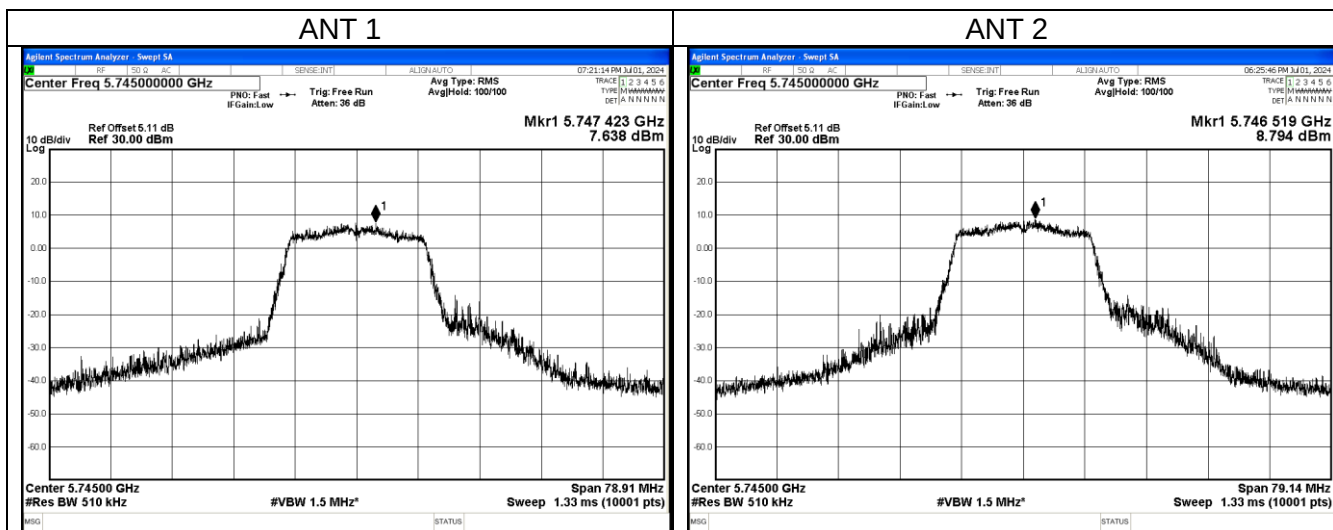


802.11ac(VHT20) mode:

CH	Freq.	ANT1_Power Spectral Density (dBm/MHz)	ANT2_Power Spectral Density (dBm/MHz)	Total_Power Spectral Density (dBm/MHz)	FCC Limit (dBm/MHz)	Result
149	5745	7.638	8.794	11.265	30	Pass

Note:

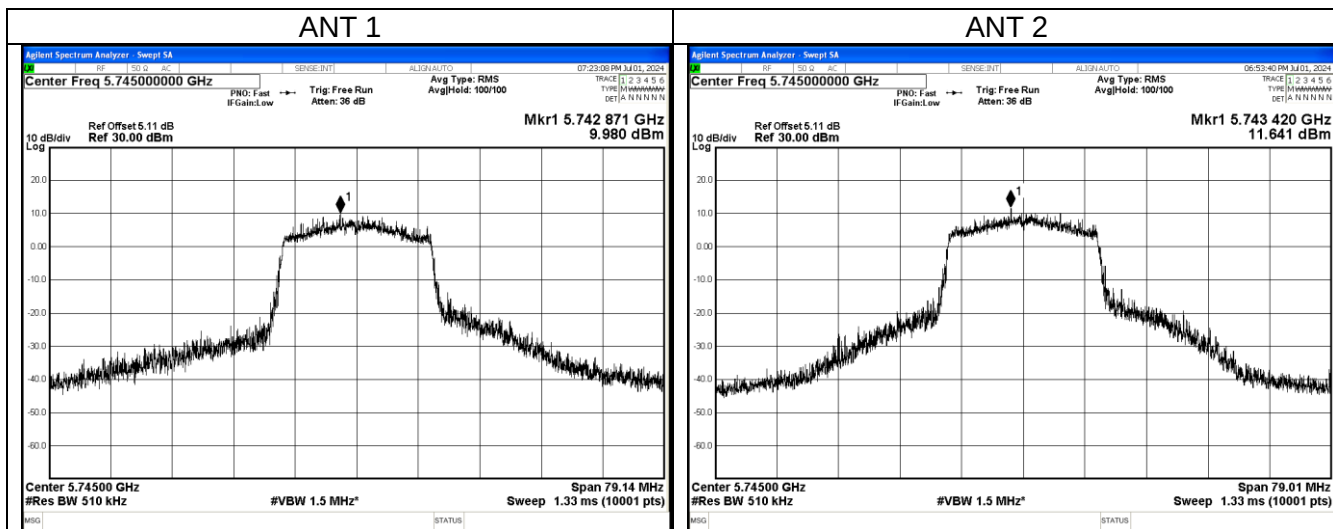
1) Antenna gain(G) of 802.11 a/n/ac/ax: Ant1: 3.96dBi; Ant2: 3.54dBi;.


802.11ax(HE20) mode:

CH	Freq.	ANT1_Power Spectral Density (dBm/MHz)	ANT2_Power Spectral Density (dBm/MHz)	Total_Power Spectral Density (dBm/MHz)	FCC Limit (dBm/MHz)	Result
149	5745	9.98	11.64	13.90	30	Pass

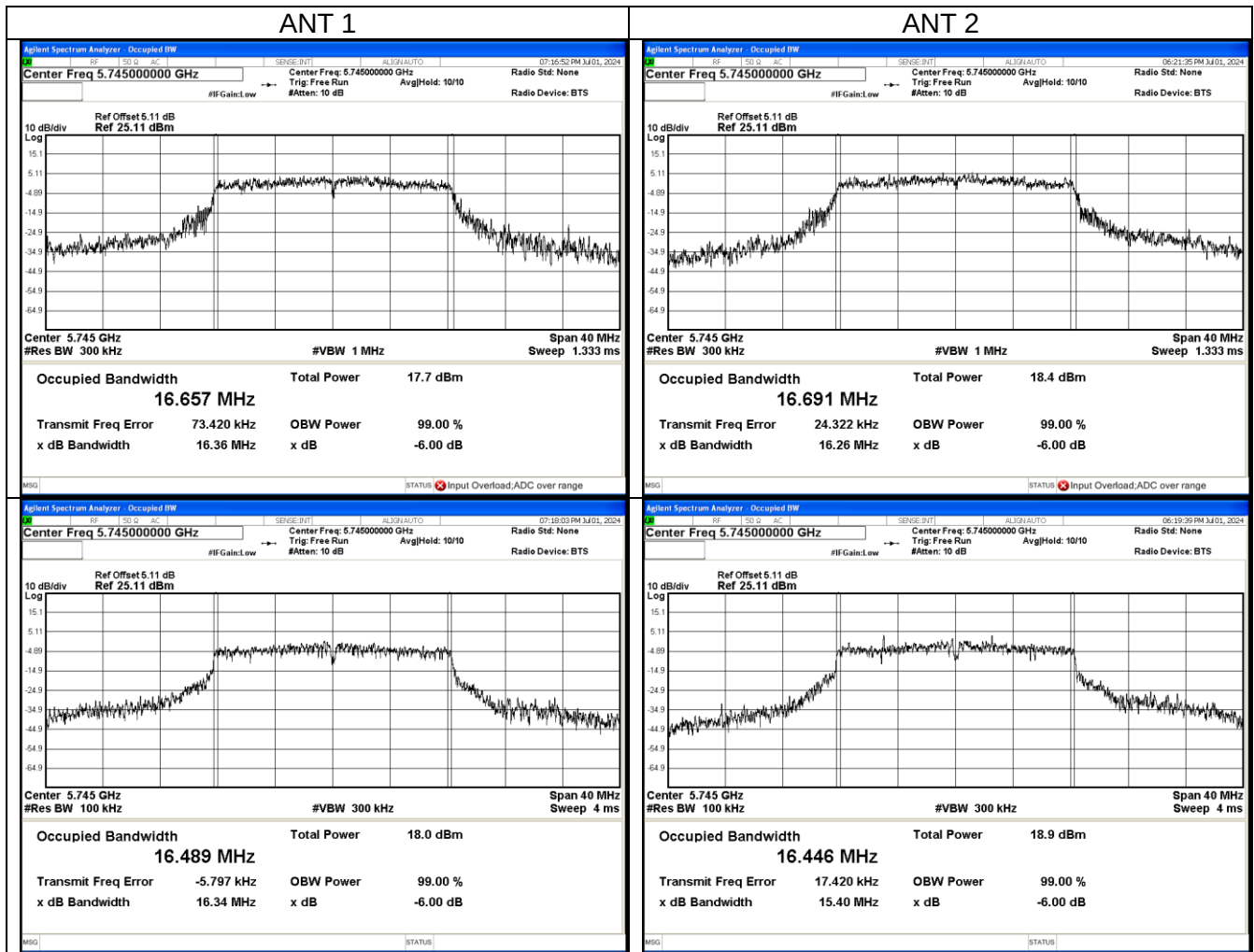
Note:

1) Antenna gain(G) of 802.11 a/n/ac/ax: Ant1: 3.96dBi; Ant2: 3.54dBi;.

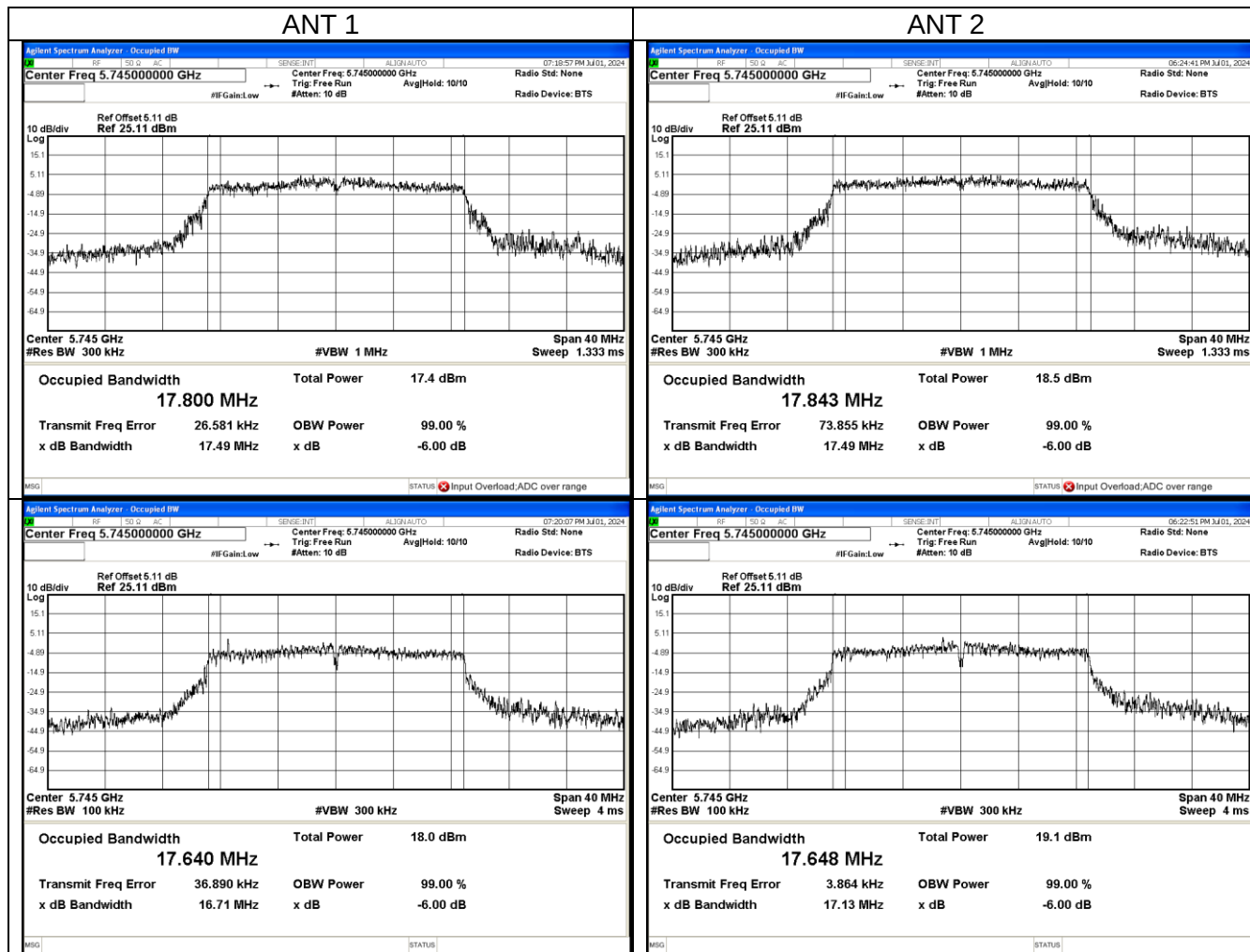


Appendix A.5 Test Results of 6dB & 26dB & 99% BANDWIDTH

802.11a mode:					
Channel	Frequency (MHz)	ANT1 Emission Bandwidth		ANT2 Emission Bandwidth	
		99% Bandwidth (MHz)	6dB Bandwidth (MHz)	99% Bandwidth (MHz)	6dB Bandwidth (MHz)
149	5745	16.657	16.34	16.691	15.40



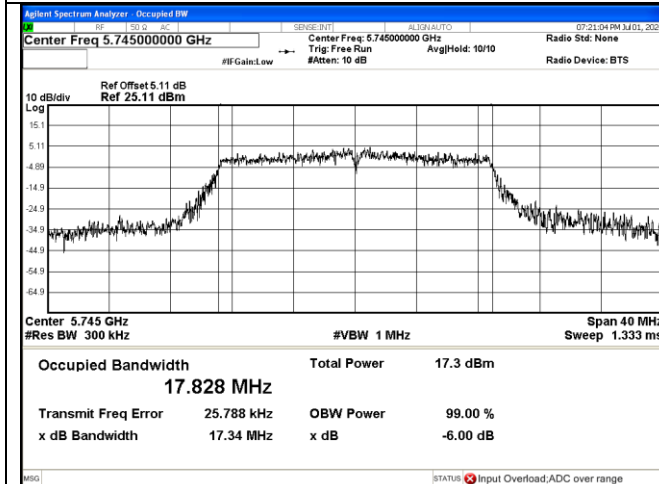
802.11n(HT20) mode:					
Channel	Frequency (MHz)	ANT1 Emission Bandwidth		ANT2 Emission Bandwidth	
		99% Bandwidth (MHz)	6dB Bandwidth (MHz)	99% Bandwidth (MHz)	6dB Bandwidth (MHz)
149	5745	17.800	16.71	17.843	17.13



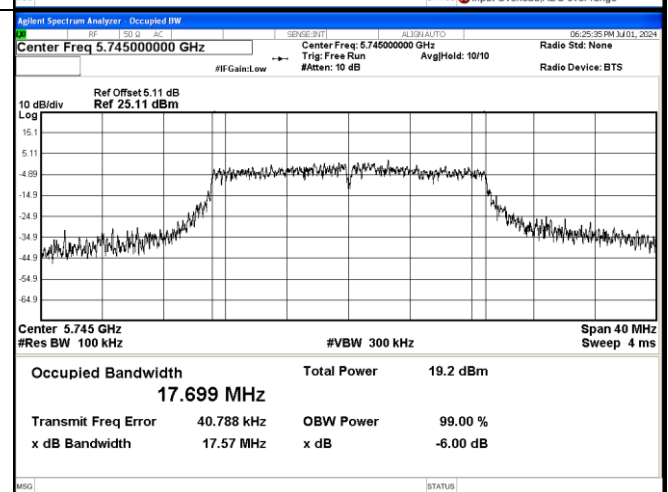
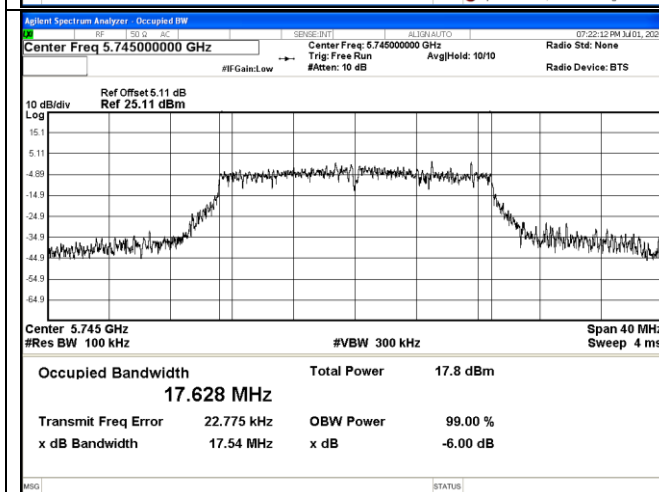
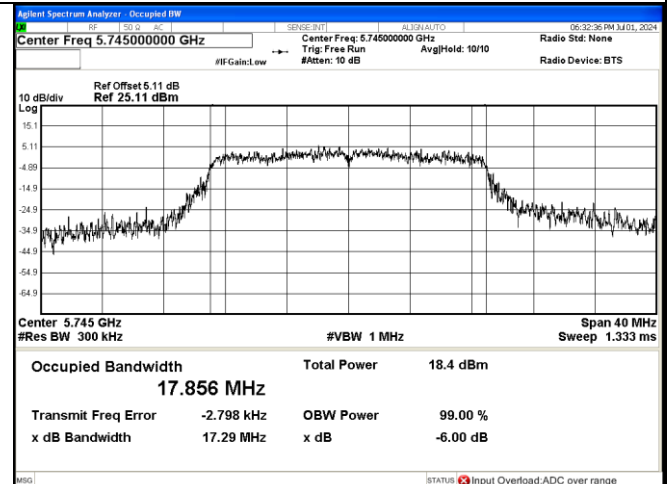
**802.11ac(VHT20) mode:**

Channel	Frequency (MHz)	ANT1 Emission Bandwidth		ANT2 Emission Bandwidth	
		99% Bandwidth (MHz)	6dB Bandwidth (MHz)	99% Bandwidth (MHz)	6dB Bandwidth (MHz)
149	5745	17.828	17.54	17.856	17.57

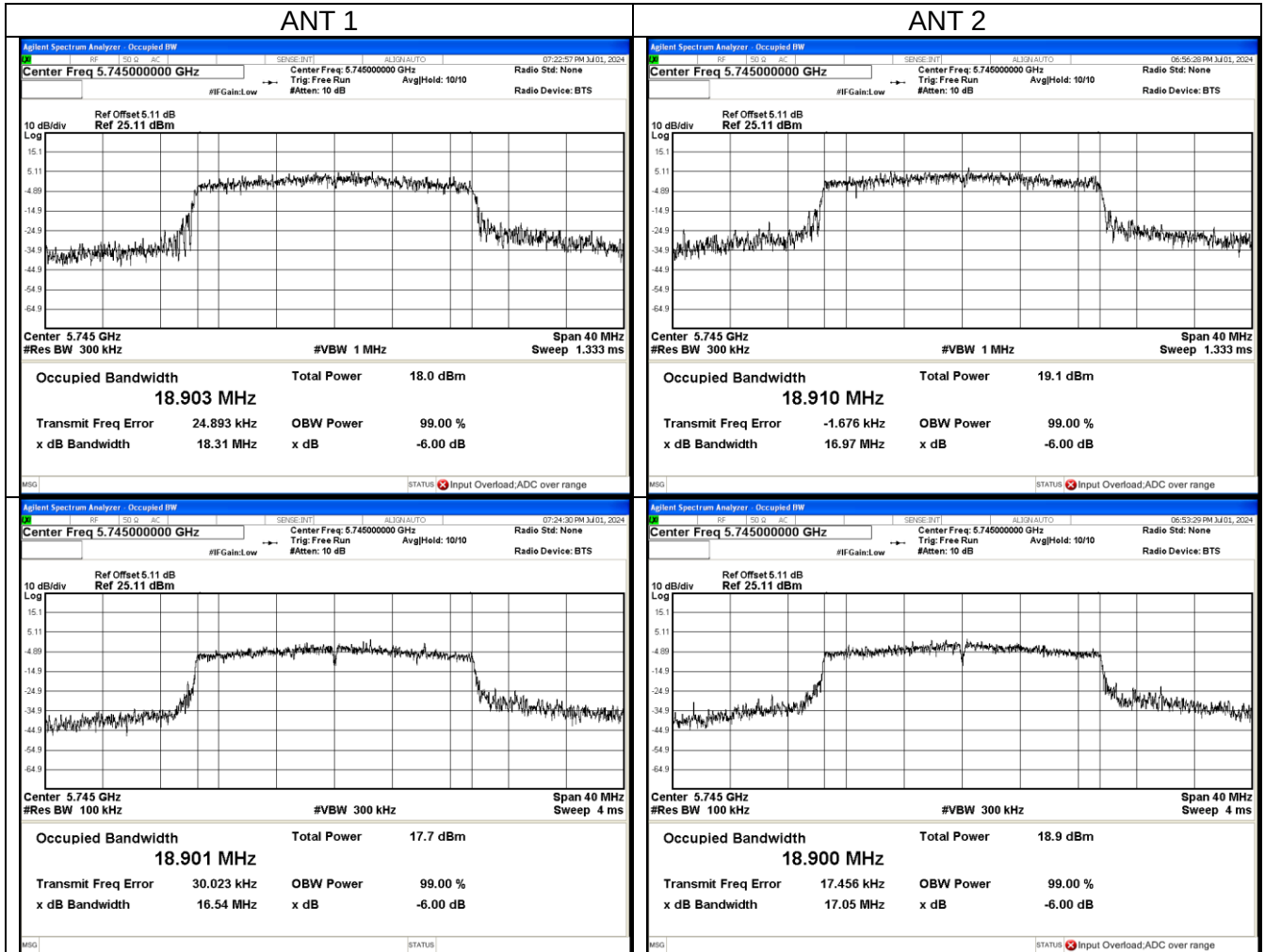
ANT 1



ANT 2



802.11ax(HE20) mode:					
Channel	Frequency (MHz)	ANT1 Emission Bandwidth		ANT2 Emission Bandwidth	
		99% Bandwidth (MHz)	6dB Bandwidth (MHz)	99% Bandwidth (MHz)	6dB Bandwidth (MHz)
149	5745	18.903	16.54	18.910	17.05



Appendix A.6 Test Results of Maximum Conducted Output Power

802.11a mode						
CH	Freq.	ANT1_Conducted Power (dBm)	ANT2_Conducted Power (dBm)	Total (dBm) Conducted	FCC Limit (dBm)	Result
149	5745	12.11	11.68	/	30	Pass

Note:

- 1) The cable loss is taken into account in results.
- 2) Antenna gain(G) of 802.11 a/n/ac/ax: Ant1: 3.96dBi; Ant2: 3.54dBi;.

802.11n(HT20) mode						
CH	Freq.	ANT1_Conducted Power (dBm)	ANT2_Conducted Power (dBm)	Total (dBm) Conducted	FCC Limit (dBm)	Result
149	5745	12.31	10.93	14.68	30	Pass

Note:

- 1) The cable loss is taken into account in results.
- 2) Antenna gain(G) of 802.11 a/n/ac/ax: Ant1: 3.96dBi; Ant2: 3.54dBi;.

802.11ac(VHT20) mode						
CH	Freq.	ANT1_Conducted Power (dBm)	ANT2_Conducted Power (dBm)	Total (dBm) Conducted	FCC Limit (dBm)	Result
149	5745	12.37	10.32	14.48	30	Pass

Note:

- 1) The cable loss is taken into account in results.
- 2) Antenna gain(G) of 802.11 a/n/ac/ax: Ant1: 3.96dBi; Ant2: 3.54dBi;.

802.11ax(HE20) mode						
CH	Freq.	ANT1_Conducted Power (dBm)	ANT2_Conducted Power (dBm)	Total (dBm) Conducted	FCC Limit (dBm)	Result
149	5745	12.46	10.23	14.50	30	Pass

Note:

- 1) The cable loss is taken into account in results.
- 2) Antenna gain(G) of 802.11 a/n/ac/ax: Ant1: 3.96dBi; Ant2: 3.54dBi;.