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Appendix for 5G WIFI

**Applicant: HONGKONG UCLOUDLINK NETWORK TECHNOLOGY
LIMITED**

**Address: Suite 603, 6/F, Laws Commercial Plaza, 788 Cheung Sha
Wan Road, Kowloon, Hong Kong**

Product Name: 4G Wireless Data Terminal

Model: GLMU21A03

FCC ID: 2AC88-GLMG21A01

IC: 24230-GLMG21A01

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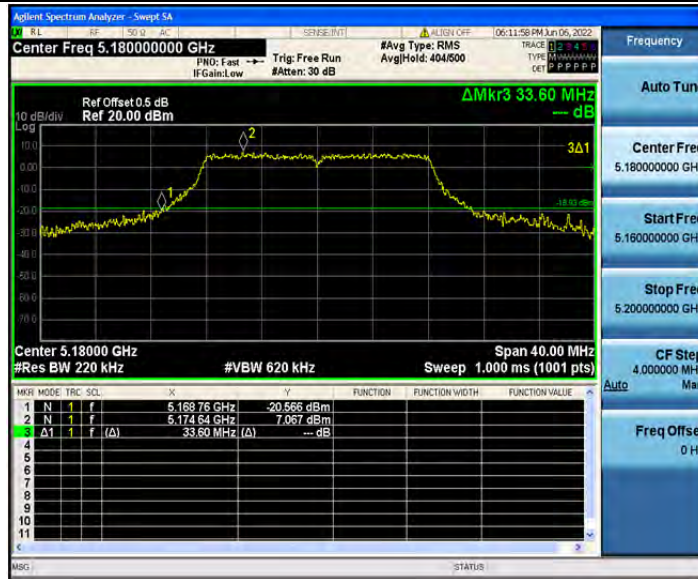
Appendix A1: Emission Bandwidth

Test Result

Test Mode	Channel	26db EBW [MHz]	FL[MHz]	FH[MHz]	Verdict
802.11a	5180	22.360	5168.760	5191.120	PASS
	5200	22.880	5188.920	5211.800	PASS
	5240	22.520	5228.800	5251.320	PASS
	5745	21.920	5733.960	5755.880	PASS
	5785	22.240	5773.920	5796.160	PASS
	5825	22.080	5813.960	5836.040	PASS
802.11n(HT20)	5180	23.200	5168.920	5192.120	PASS
	5200	22.160	5188.880	5211.040	PASS
	5240	23.280	5228.680	5251.960	PASS
	5745	23.720	5732.600	5756.320	PASS
	5785	22.240	5773.640	5795.880	PASS
	5825	22.320	5813.880	5836.200	PASS
802.11n(HT40)	5190	46.000	5167.600	5213.600	PASS
	5230	44.720	5208.240	5252.960	PASS
	5755	42.880	5733.320	5776.200	PASS
	5795	43.200	5773.400	5816.600	PASS
802.11ac(VHT20)	5180	22.760	5168.360	5191.120	PASS
	5200	23.040	5188.280	5211.320	PASS
	5240	22.080	5229.000	5251.080	PASS
	5745	21.960	5734.040	5756.000	PASS
	5785	21.960	5774.040	5796.000	PASS
	5825	22.680	5813.480	5836.160	PASS
802.11ac(VHT40)	5190	43.280	5167.840	5211.120	PASS
	5230	44.640	5207.600	5252.240	PASS
	5755	43.120	5732.760	5775.880	PASS
	5795	42.640	5773.080	5815.720	PASS
802.11ac(VHT80)	5210	82.720	5169.360	5252.080	PASS
	5775	83.680	5733.080	5816.760	PASS

Test Graphs

802.11a_5180



802.11a_5200



802.11a_5240



802.11a_5745



802.11a_5785



802.11a_5825



802.11n(HT20)_5180



802.11n(HT20)_5200



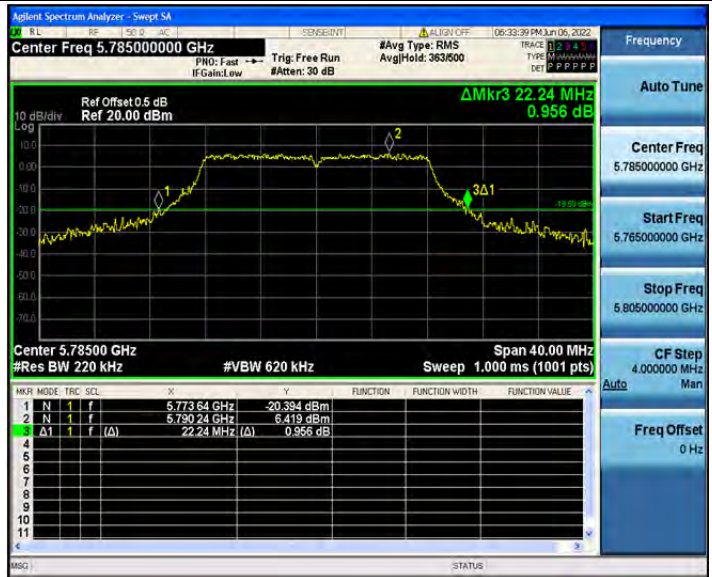
802.11n(HT20)_5240



802.11n(HT20)_5745



802.11n(HT20)_5785



802.11n(HT20)_5825



802.11n(HT40)_5190



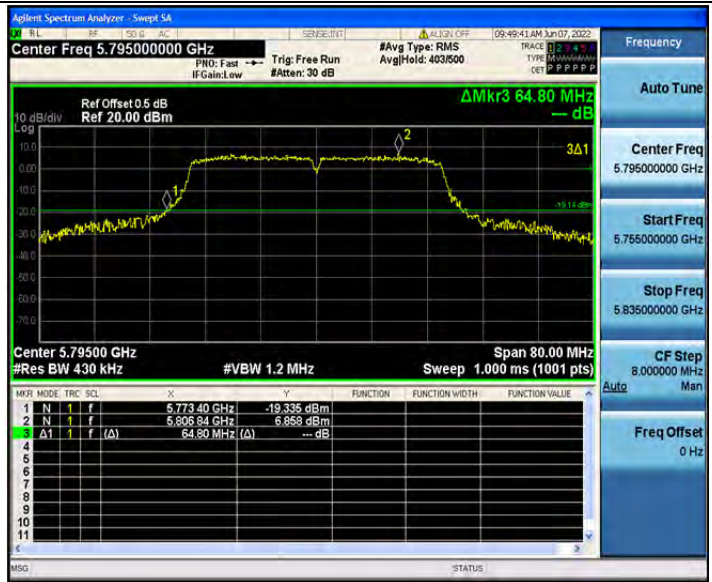
802.11n(HT40)_5230



802.11n(HT40)_5755



802.11n(HT40)_5795



802.11ac(VHT20)_5180



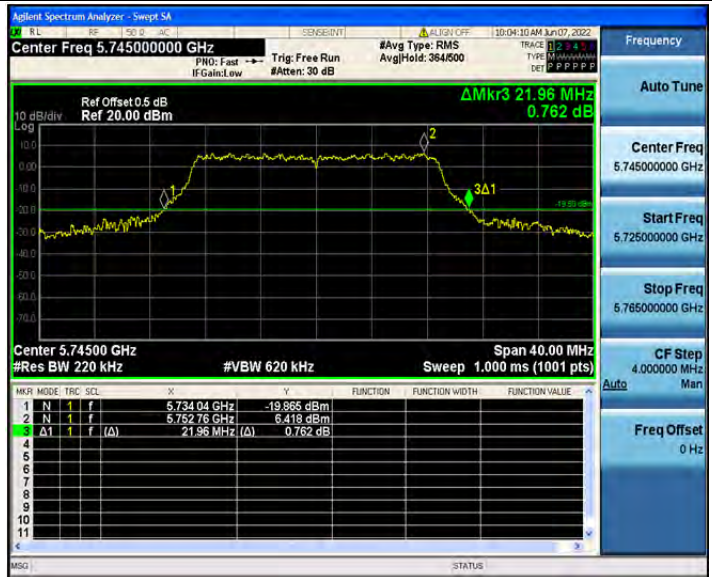
802.11ac(VHT20)_5200



802.11ac(VHT20)_5240



802.11ac(VHT20)_5745



802.11ac(VHT20)_5785



802.11ac(VHT20)_5825



802.11ac(VHT40)_5190



802.11ac(VHT40)_5230



802.11ac(VHT40)_5755



802.11ac(VHT40)_5795



802.11ac(VHT80)_5210



802.11ac(VHT80)_5775



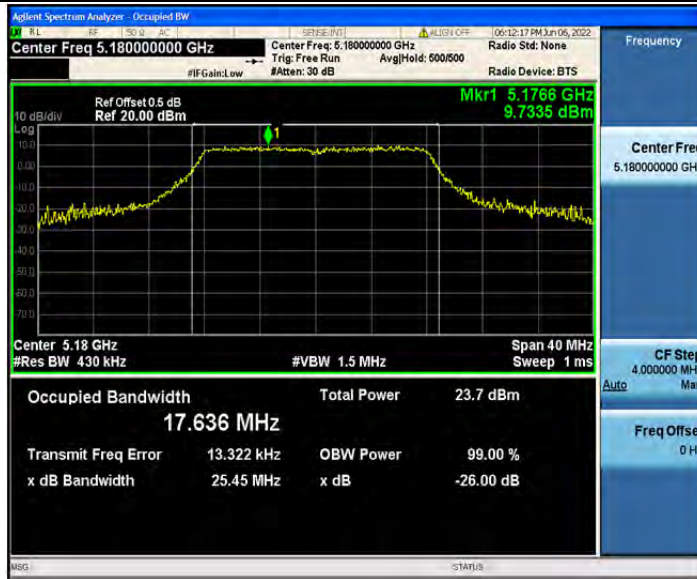
Appendix A2: Occupied channel bandwidth

Test Result

Test Mode	Channel	OCB [MHz]	FL[MHz]	FH[MHz]	Verdict
802.11a	5180	17.636	5171.195	5188.831	PASS
	5200	17.732	5191.122	5208.854	PASS
	5240	17.657	5231.167	5248.824	PASS
	5745	17.577	5736.181	5753.758	PASS
	5785	17.579	5776.161	5793.740	PASS
	5825	17.569	5816.199	5833.768	PASS
802.11n(HT20)	5180	18.479	5170.781	5189.260	PASS
	5200	18.599	5190.709	5209.308	PASS
	5240	18.567	5230.751	5249.318	PASS
	5745	18.461	5735.782	5754.243	PASS
	5785	17.588	5776.206	5793.794	PASS
	5825	18.474	5815.756	5834.230	PASS
802.11n(HT40)	5190	36.918	5171.594	5208.512	PASS
	5230	36.793	5211.624	5248.417	PASS
	5755	36.794	5736.606	5773.400	PASS
	5795	36.671	5776.642	5813.313	PASS
802.11ac(VHT20)	5180	18.481	5170.760	5189.241	PASS
	5200	18.533	5190.742	5209.275	PASS
	5240	18.518	5230.739	5249.257	PASS
	5745	18.445	5735.764	5754.209	PASS
	5785	18.435	5775.760	5794.195	PASS
	5825	18.494	5815.711	5834.205	PASS
802.11ac(VHT40)	5190	36.894	5171.486	5208.380	PASS
	5230	36.936	5211.486	5248.422	PASS
	5755	36.815	5736.487	5773.302	PASS
	5795	36.770	5776.477	5813.247	PASS
802.11ac(VHT80)	5210	75.053	5172.639	5247.692	PASS
	5775	74.976	5737.503	5812.479	PASS

Test Graphs

802.11a_5180



802.11a_5200



802.11a_5240



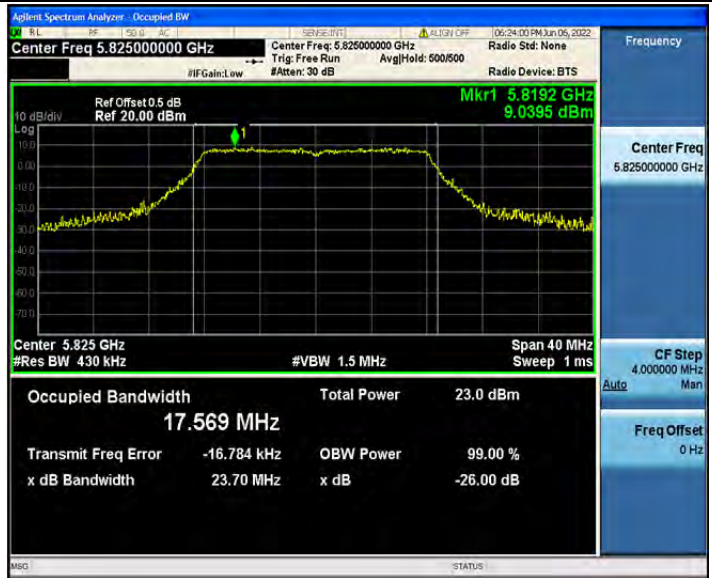
802.11a_5745



802.11a_5785



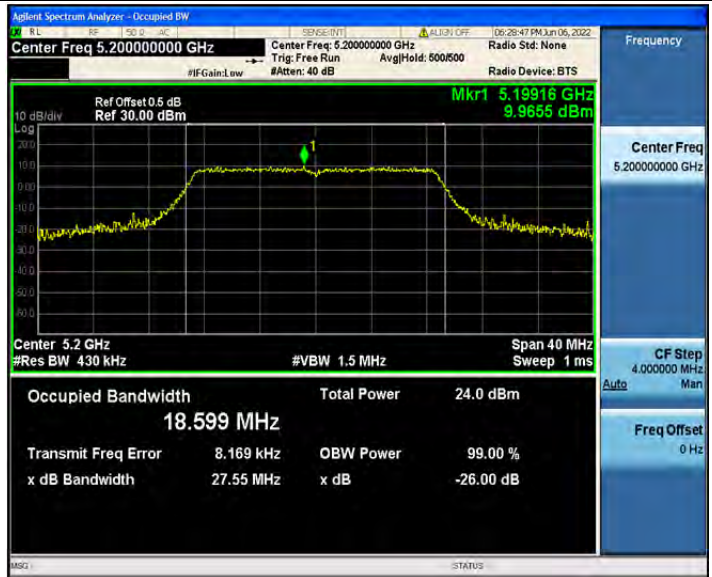
802.11a_5825



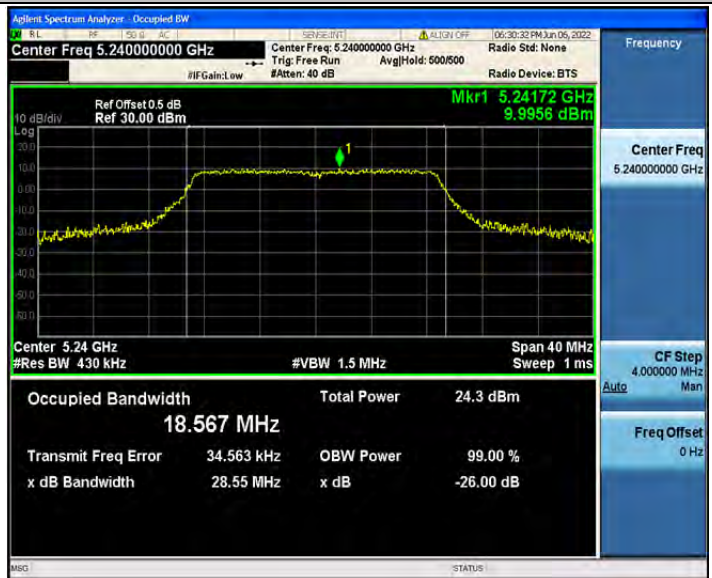
802.11n(HT20)_5180



802.11n(HT20)_5200



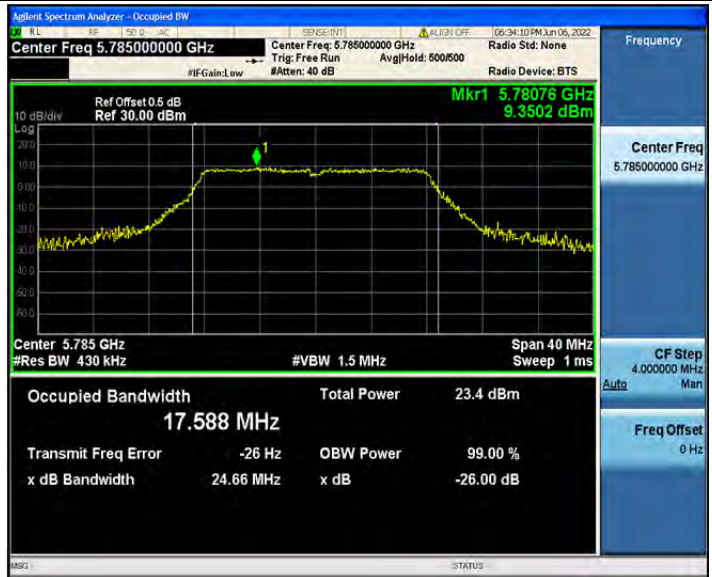
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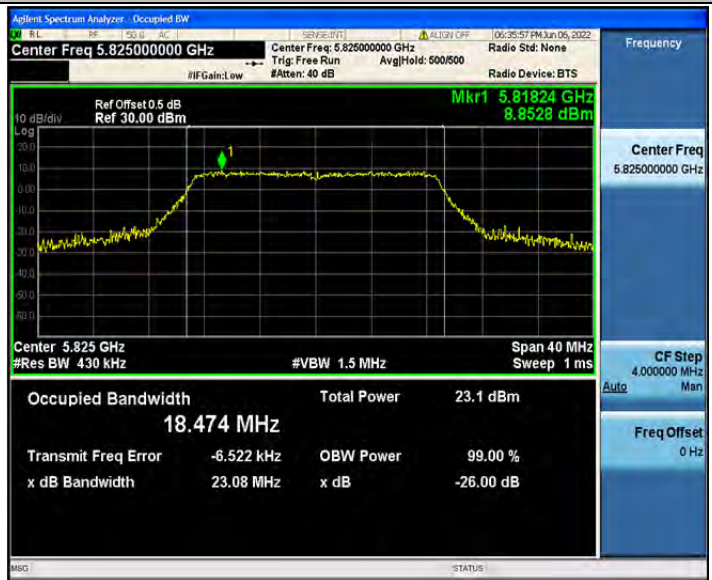
802.11n(HT20)_5745



802.11n(HT20)_5785



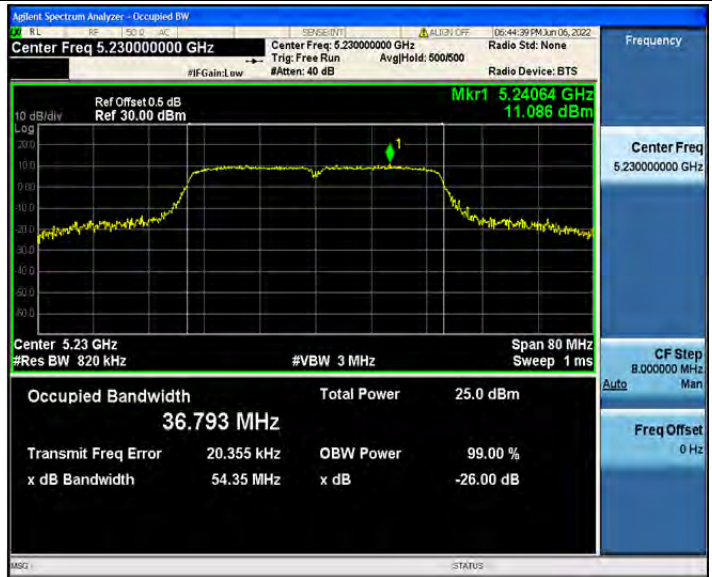
802.11n(HT20)_5825



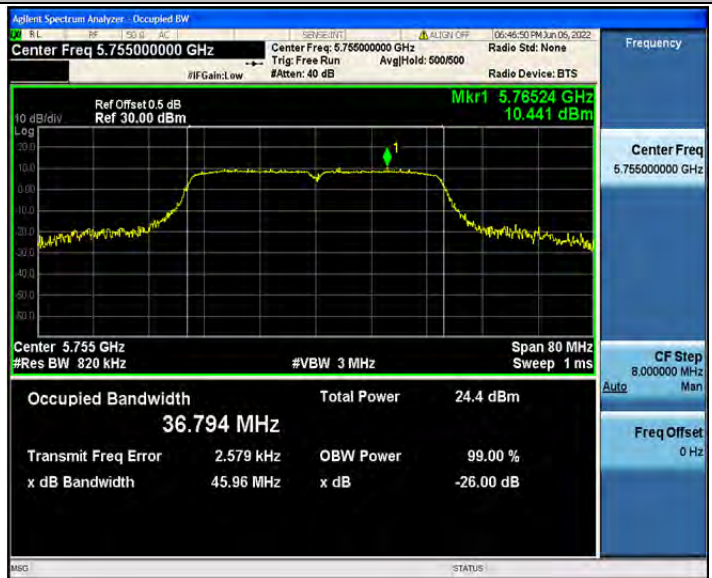
802.11n(HT40)_5190



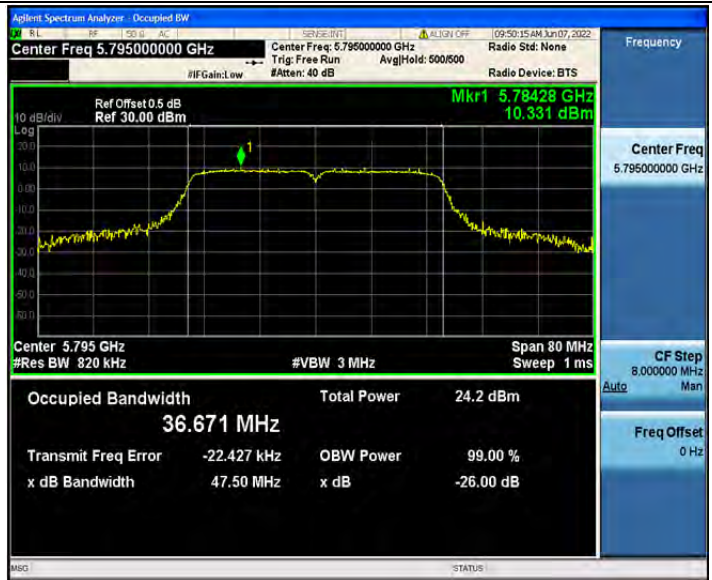
802.11n(HT40)_5230



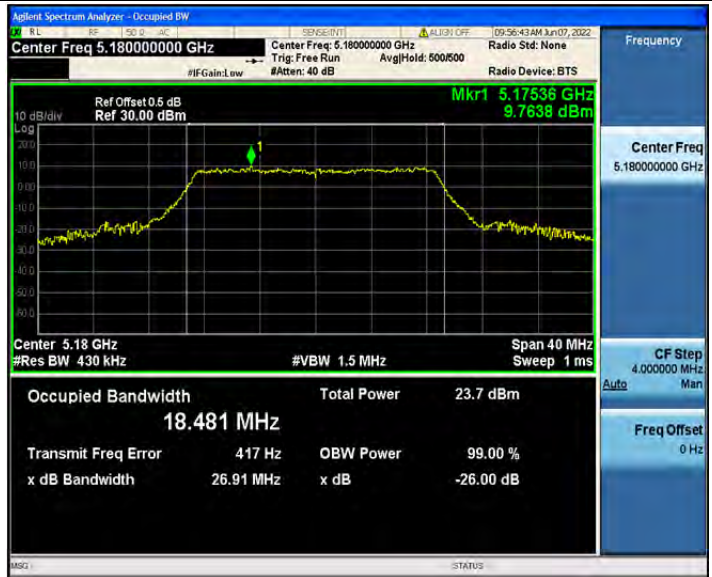
802.11n(HT40)_5755



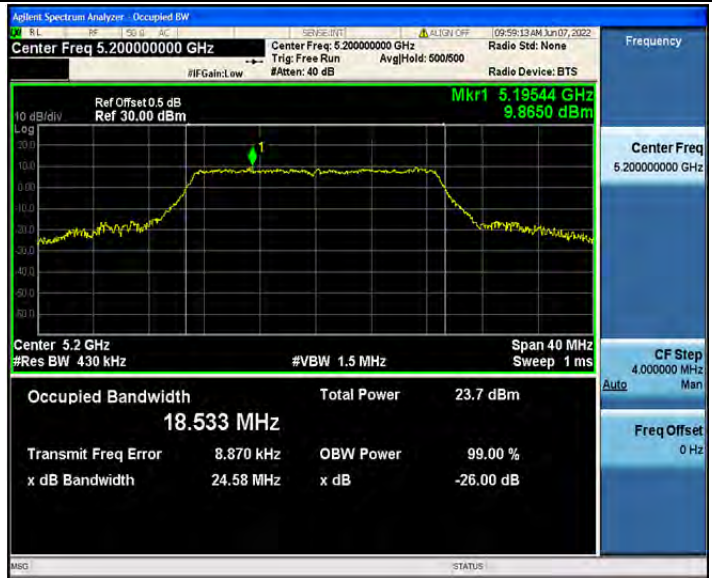
802.11n(HT40)_5795



802.11ac(VHT20)_5180



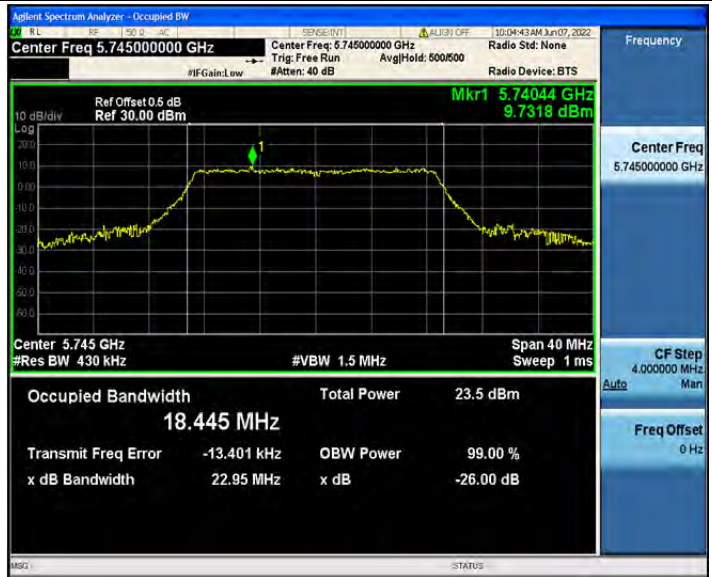
802.11ac(VHT20)_5200



802.11ac(VHT20)_5240



802.11ac(VHT20)_5745



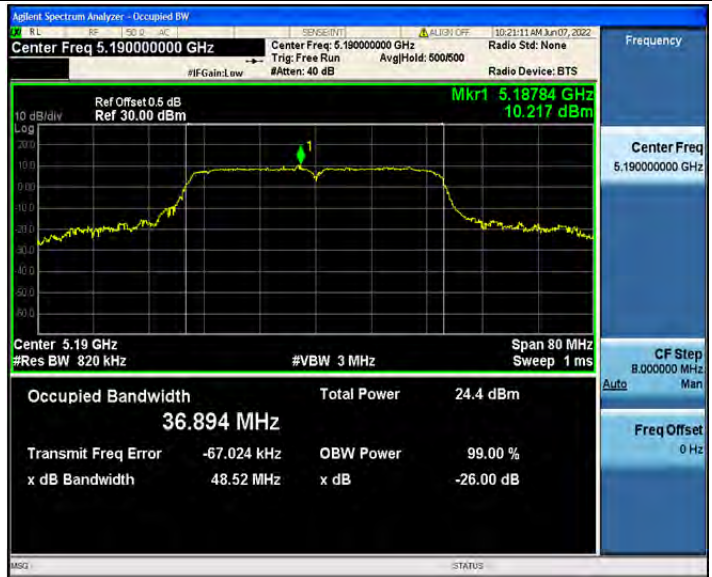
802.11ac(VHT20)_5785



802.11ac(VHT20)_5825



802.11ac(VHT40)_5190



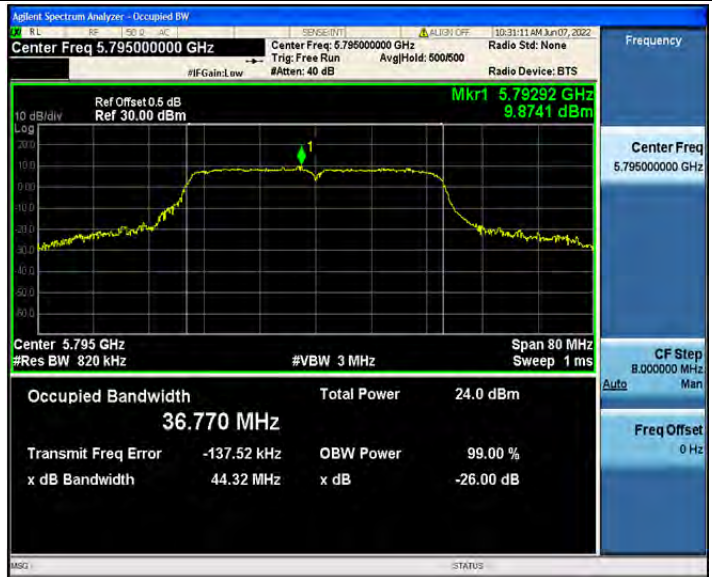
802.11ac(VHT40)_5230



802.11ac(VHT40)_5755



802.11ac(VHT40)_5795



802.11ac(VHT80)_5210



802.11ac(VHT80)_5775



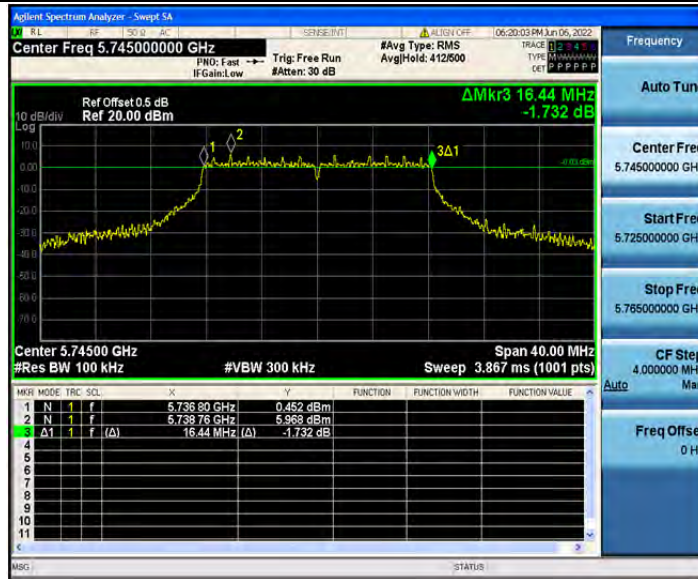
Appendix A3: Min emission bandwidth

Test Result

Test Mode	Channel	6db EBW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
802.11a	5745	16.440	5736.800	5753.240	>0.5	PASS
	5785	16.480	5776.760	5793.240	>0.5	PASS
	5825	16.400	5816.800	5833.200	>0.5	PASS
802.11n(HT20)	5745	17.680	5736.160	5753.840	>0.5	PASS
	5785	16.480	5776.760	5793.240	>0.5	PASS
	5825	17.680	5816.160	5833.840	>0.5	PASS
802.11n(HT40)	5755	35.360	5737.320	5772.680	>0.5	PASS
	5795	35.280	5777.400	5812.680	>0.5	PASS
802.11ac(VHT20)	5745	17.680	5736.160	5753.840	>0.5	PASS
	5785	17.680	5776.160	5793.840	>0.5	PASS
	5825	17.680	5816.160	5833.840	>0.5	PASS
802.11ac(VHT40)	5755	35.360	5737.320	5772.680	>0.5	PASS
	5795	35.360	5777.320	5812.680	>0.5	PASS
802.11ac(VHT80)	5775	75.520	5737.240	5812.760	>0.5	PASS

Test Graphs

802.11a_5745



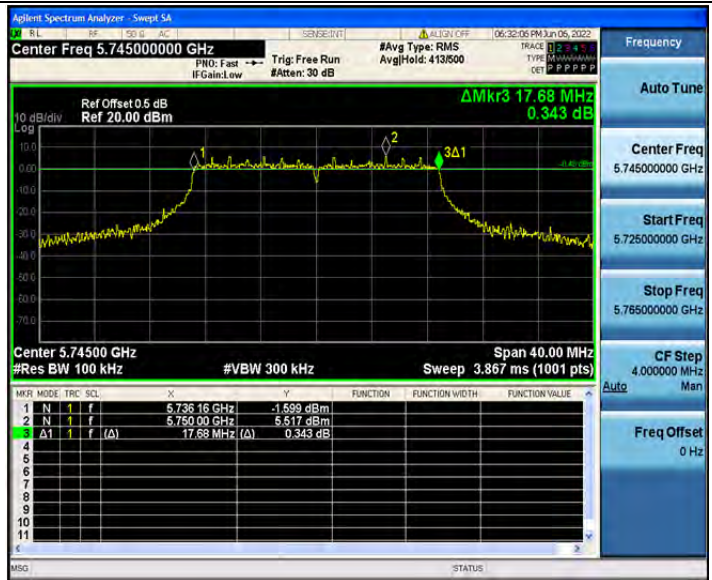
802.11a_5785



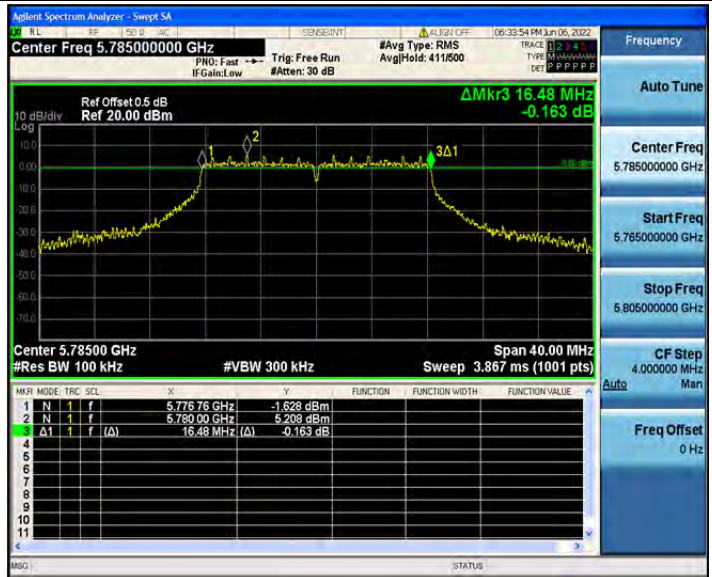
802.11a_5825



802.11n(HT20)_5745



802.11n(HT20)_5785



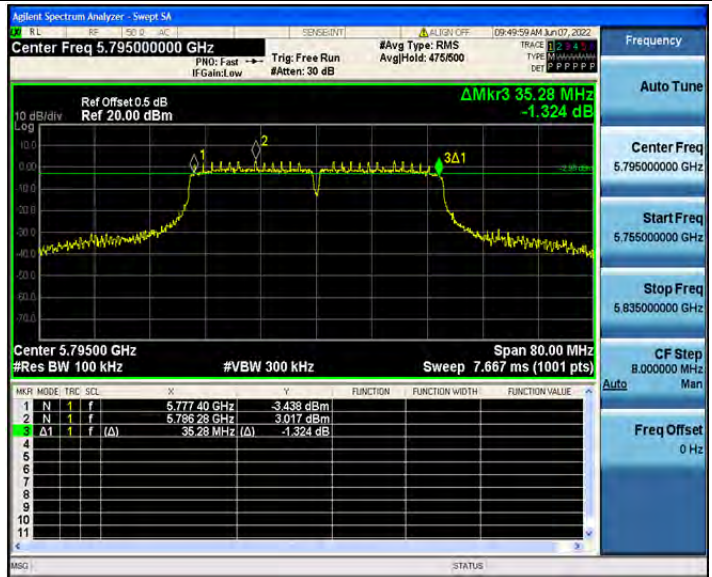
802.11n(HT20)_5825



802.11n(HT40)_5755



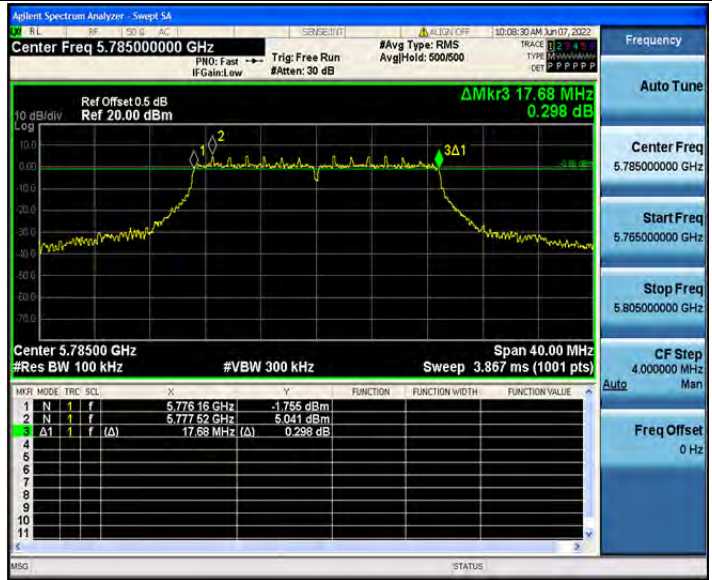
802.11n(HT40)_5795



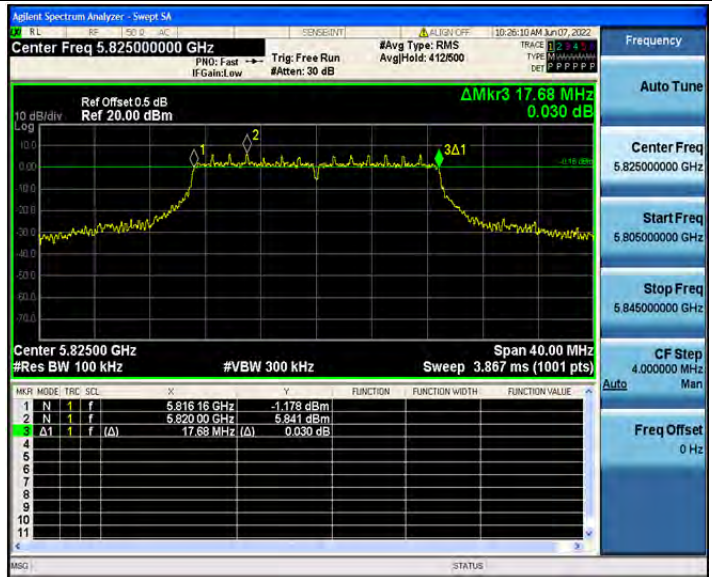
802.11ac(VHT20)_5745



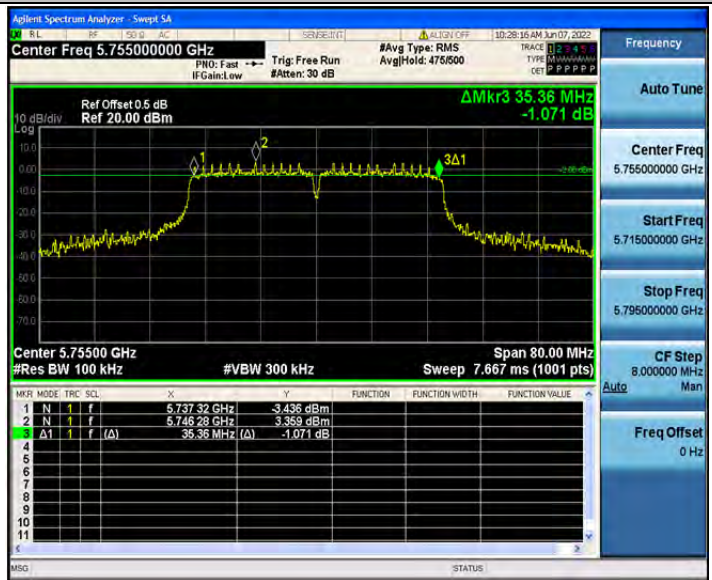
802.11ac(VHT20)_5785



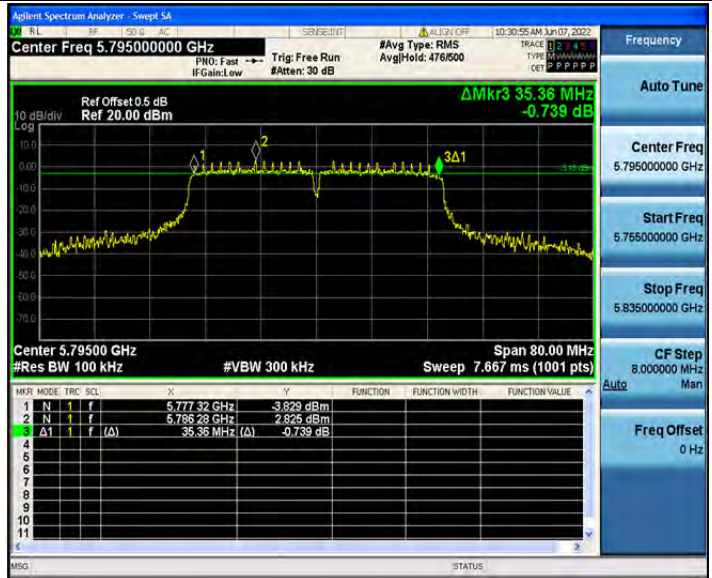
802.11ac(VHT20)_5825



802.11ac(VHT40)_5755



802.11ac(VHT40)_5795



802.11ac(VHT80)_5775



Appendix B: Maximum conducted output power

Test Result

Test Mode	Channel	Result[dBm]	Limit[dBm]	Verdict
802.11a	5180	17.06	<=24	PASS
	5200	17.02	<=24	PASS
	5240	17.21	<=24	PASS
	5745	16.91	<=30	PASS
	5785	16.62	<=30	PASS
	5825	16.16	<=30	PASS
802.11n(HT20)	5180	17.01	<=24	PASS
	5200	17.29	<=24	PASS
	5240	17.53	<=24	PASS
	5745	16.85	<=30	PASS
	5785	16.53	<=30	PASS
	5825	16.38	<=30	PASS
802.11n(HT40)	5190	17.46	<=24	PASS
	5230	17.77	<=24	PASS
	5755	16.96	<=30	PASS
	5795	16.94	<=30	PASS
802.11ac(VHT20)	5180	16.88	<=24	PASS
	5200	16.88	<=24	PASS
	5240	17.18	<=24	PASS
	5745	16.71	<=30	PASS
	5785	16.47	<=30	PASS
	5825	17.19	<=30	PASS
802.11ac(VHT40)	5190	17.09	<=24	PASS
	5230	17.48	<=24	PASS
	5755	17.17	<=30	PASS
	5795	16.76	<=30	PASS
802.11ac(VHT80)	5210	16.49	<=24	PASS
	5775	16.14	<=30	PASS

Note: Test results increased RF cable loss by 0.5dB.

Appendix C: Maximum power spectral density

Test Result

Test Mode	Channel	Result [dBm/MHz]	Limit[dBm/MHz]	Verdict
802.11a	5180	5.42	<=11	PASS
	5200	5.72	<=11	PASS
	5240	6.15	<=11	PASS
	5745	2.84	<=30	PASS
	5785	2.68	<=30	PASS
	5825	2.4	<=30	PASS
802.11n(HT20)	5180	5.47	<=11	PASS
	5200	5.73	<=11	PASS
	5240	6.03	<=11	PASS
	5745	2.40	<=30	PASS
	5785	2.44	<=30	PASS
	5825	1.87	<=30	PASS
802.11n(HT40)	5190	3.14	<=11	PASS
	5230	3.49	<=11	PASS
	5755	-0.11	<=30	PASS
	5795	0.02	<=30	PASS
802.11ac(VHT20)	5180	5.60	<=11	PASS
	5200	5.57	<=11	PASS
	5240	5.90	<=11	PASS
	5745	2.62	<=30	PASS
	5785	2.03	<=30	PASS
	5825	3.05	<=30	PASS
802.11ac(VHT40)	5190	2.99	<=11	PASS
	5230	3.55	<=11	PASS
	5755	0.85	<=30	PASS
	5795	-0.38	<=30	PASS
802.11ac(VHT80)	5210	-0.52	<=11	PASS
	5775	-3.76	<=30	PASS

Note: 1. The Result and Limit Unit is dBm/500 kHz in the band 5.725–5.85 GHz.

2. The Duty Cycle Factor and RBW Factor is compensated in the graph.

Test Graphs

802.11a_5180



802.11a_5200



802.11a_5240



802.11a_5745



802.11a_5785



802.11a_5825



802.11n(HT20)_5180



802.11n(HT20)_5200



802.11n(HT20)_5240



802.11n(HT20)_5745



802.11n(HT20)_5785



802.11n(HT20)_5825



802.11n(HT40)_5190



802.11n(HT40)_5230



802.11n(HT40)_5755



802.11n(HT40)_5795



802.11ac(VHT20)_5180



802.11ac(VHT20)_5200



802.11ac(VHT20)_5240



802.11ac(VHT20)_5745



802.11ac(VHT20)_5785



802.11ac(VHT20)_5825



802.11ac(VHT40)_5190



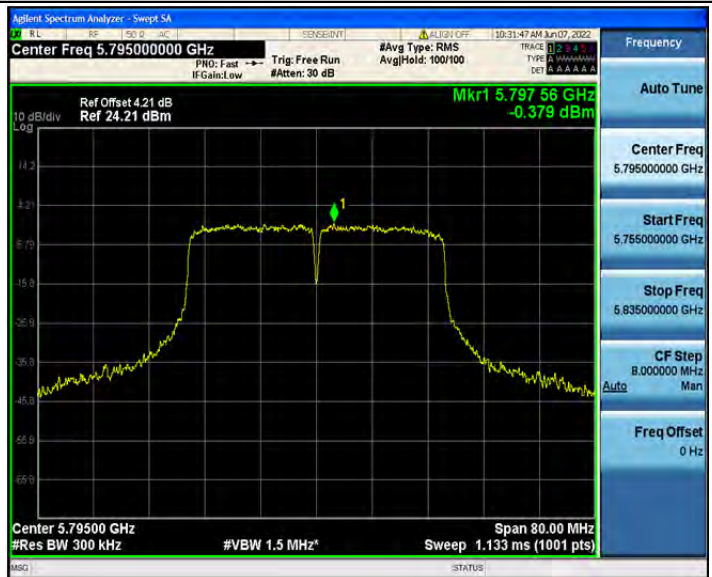
802.11ac(VHT40)_5230



802.11ac(VHT40)_5755



802.11ac(VHT40)_5795



802.11ac(VHT80)_5210



802.11ac(VHT80)_5775



Appendix D: Frequency Stability

Test Result

Voltage							
Test Mode	Channel	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
20MHz	5180	NV	NT	1000	0.19305	20	PASS
		LV	NT	1000	0.19305	20	PASS
		HV	NT	0	0	20	PASS
	5200	NV	NT	2000	0.384615	20	PASS
		LV	NT	1000	0.192308	20	PASS
		HV	NT	1000	0.192308	20	PASS
	5240	NV	NT	2000	0.381679	20	PASS
		LV	NT	1000	0.190840	20	PASS
		HV	NT	1000	0.190840	20	PASS
	5745	NV	NT	3000	0.522193	20	PASS
		LV	NT	1000	0.174064	20	PASS
		HV	NT	0	0	20	PASS
	5785	NV	NT	2000	0.345722	20	PASS
		LV	NT	1000	0.172861	20	PASS
		HV	NT	0	0	20	PASS
5825	NV	NT	2000	0.343348	20	PASS	
	LV	NT	0	0	20	PASS	
	HV	NT	0	0	20	PASS	
40MHz	5190	NV	NT	3000	0.578035	20	PASS
		LV	NT	1000	0.192678	20	PASS
		HV	NT	1000	0.192678	20	PASS
	5230	NV	NT	2000	0.382409	20	PASS
		LV	NT	1000	0.191205	20	PASS
		HV	NT	1000	0.191205	20	PASS
	5755	NV	NT	2000	0.347524	20	PASS
		LV	NT	1000	0.173762	20	PASS
		HV	NT	0	0	20	PASS
5795	NV	NT	1000	0.172563	20	PASS	
	LV	NT	0	0	20	PASS	
	HV	NT	0	0	20	PASS	
80MHz	5210	NV	NT	4000	0.767754	20	PASS
		LV	NT	2000	0.383877	20	PASS
		HV	NT	1000	0.191939	20	PASS
	5775	NV	NT	2000	0.346320	20	PASS
		LV	NT	1000	0.173160	20	PASS
		HV	NT	0	0	20	PASS

Temperature							
Test Mode	Channel	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
20MHz	5180	NV	0	0	0	20	PASS
		NV	10	0	0	20	PASS
		NV	20	0	0	20	PASS
		NV	30	0	0	20	PASS
		NV	40	0	0	20	PASS
		NV	45	0	0	20	PASS
	5200	NV	0	1000	0.192308	20	PASS
		NV	10	0	0	20	PASS
		NV	20	0	0	20	PASS
		NV	30	1000	0.192308	20	PASS
		NV	40	0	0	20	PASS
		NV	45	1000	0.192308	20	PASS
	5240	NV	0	0	0	20	PASS
		NV	10	0	0	20	PASS
		NV	20	0	0	20	PASS
		NV	30	0	0	20	PASS
		NV	40	0	0	20	PASS
		NV	45	0	0	20	PASS
	5745	NV	0	0	0	20	PASS
		NV	10	0	0	20	PASS
		NV	20	0	0	20	PASS
		NV	30	0	0	20	PASS
		NV	40	0	0	20	PASS
		NV	45	0	0	20	PASS
	5785	NV	0	0	0	20	PASS
		NV	10	0	0	20	PASS
		NV	20	0	0	20	PASS
		NV	30	0	0	20	PASS
		NV	40	0	0	20	PASS
		NV	45	0	0	20	PASS
5825	NV	0	0	0	20	PASS	
	NV	10	0	0	20	PASS	
	NV	20	0	0	20	PASS	
	NV	30	0	0	20	PASS	
	NV	40	0	0	20	PASS	
	NV	45	0	0	20	PASS	
40MHz	5190	NV	0	1000	0.192678	20	PASS
		NV	10	0	0	20	PASS
		NV	20	0	0	20	PASS
		NV	30	0	0	20	PASS
		NV	40	0	0	20	PASS
		NV	45	0	0	20	PASS
	5230	NV	0	0	0	20	PASS

		NV	10	0	0	20	PASS	
		NV	20	0	0	20	PASS	
		NV	30	0	0	20	PASS	
		NV	40	0	0	20	PASS	
		NV	45	0	0	20	PASS	
	5755	NV	0	0	0	20	PASS	
		NV	10	0	0	20	PASS	
		NV	20	0	0	20	PASS	
		NV	30	0	0	20	PASS	
		NV	40	0	0	20	PASS	
	5795	NV	45	0	0	20	PASS	
		NV	0	0	0	20	PASS	
		NV	10	0	0	20	PASS	
		NV	20	0	0	20	PASS	
		NV	30	0	0	20	PASS	
	80MHz	5210	NV	40	0	0	20	PASS
			NV	45	0	0	20	PASS
			NV	0	1000	0.191939	20	PASS
NV			10	0	0	20	PASS	
NV			20	0	0	20	PASS	
NV			30	0	0	20	PASS	
5775		NV	40	0	0	20	PASS	
		NV	45	0	0	20	PASS	
		NV	0	0	0	20	PASS	
		NV	10	0	0	20	PASS	
		NV	20	0	0	20	PASS	
		NV	30	0	0	20	PASS	

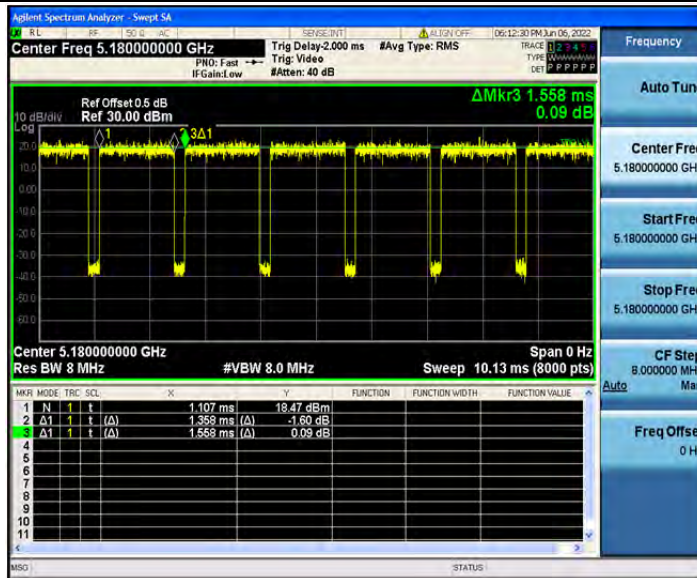
Appendix E: Duty Cycle

Test Result

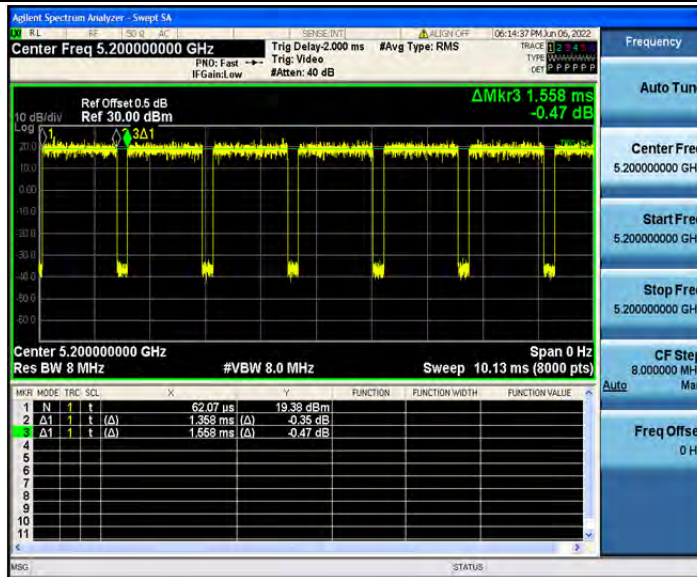
Test Mode	Channel	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]	1/T Minimum VBW (kHz)	Final setting For VBW (kHz)
802.11a	5180	1.36	1.56	87.18	0.735	1
	5200	1.36	1.56	87.18	0.735	1
	5240	1.36	1.56	87.18	0.735	1
	5745	1.36	1.56	87.18	0.735	1
	5785	1.36	1.56	87.18	0.735	1
	5825	1.36	1.56	87.18	0.735	1
802.11n(HT20)	5180	1.27	1.47	86.39	0.787	1
	5200	1.27	1.47	86.39	0.787	1
	5240	1.27	1.47	86.39	0.787	1
	5745	1.27	1.47	86.39	0.787	1
	5785	1.36	1.56	87.18	0.735	1
	5825	1.27	1.47	86.39	0.787	1
802.11n(HT40)	5190	0.63	0.83	75.90	1.587	2
	5230	0.63	0.83	75.90	1.587	2
	5755	0.63	0.83	75.90	1.587	2
	5795	0.63	0.83	75.90	1.587	2
802.11ac(VHT20)	5180	0.97	1.17	82.91	1.031	2
	5200	0.97	1.17	82.91	1.031	2
	5240	0.97	1.17	82.91	1.031	2
	5745	0.97	1.17	82.91	1.031	2
	5785	0.97	1.17	82.91	1.031	2
	5825	0.97	1.17	82.91	1.031	2
802.11ac(VHT40)	5190	0.49	0.69	71.01	2.041	3
	5230	0.49	0.69	71.01	2.041	3
	5755	0.49	0.69	71.01	2.041	3
	5795	0.49	0.69	71.01	2.041	3
802.11ac(VHT80)	5210	0.25	0.45	55.56	4.000	5
	5775	0.25	0.45	55.56	4.000	5

Test Graphs

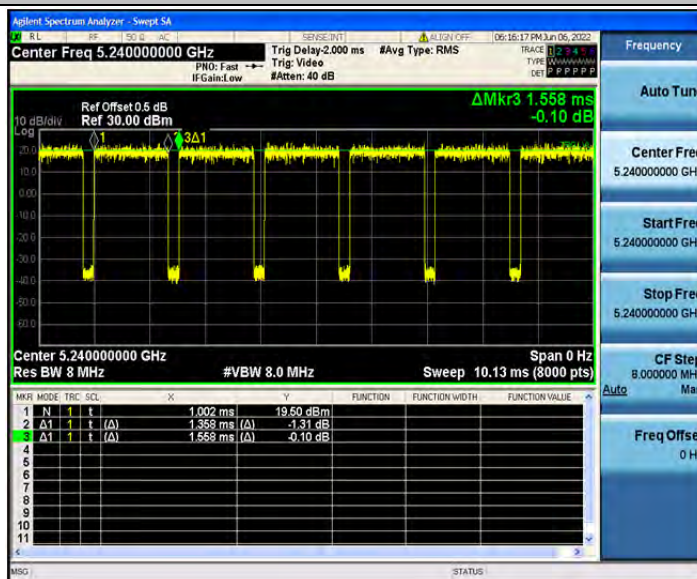
802.11a_5180



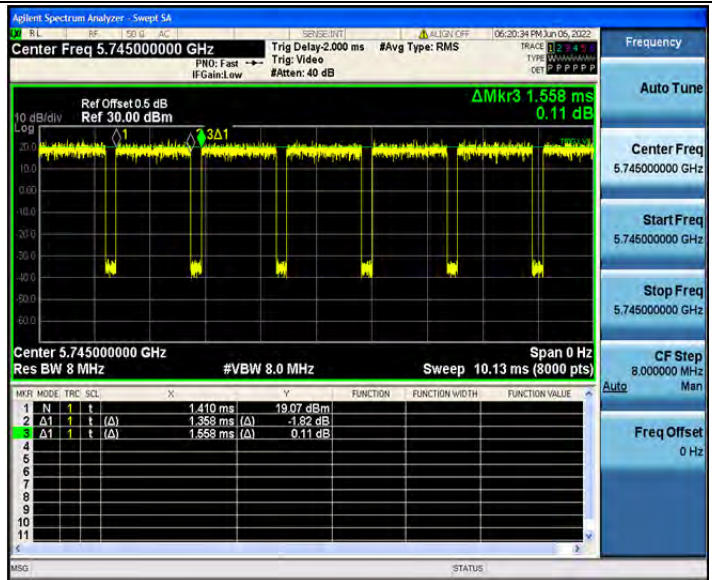
802.11a_5200



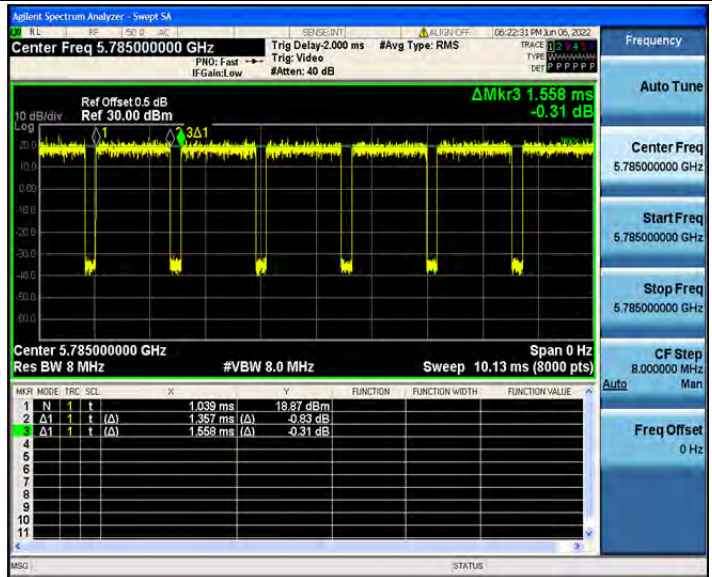
802.11a_5240



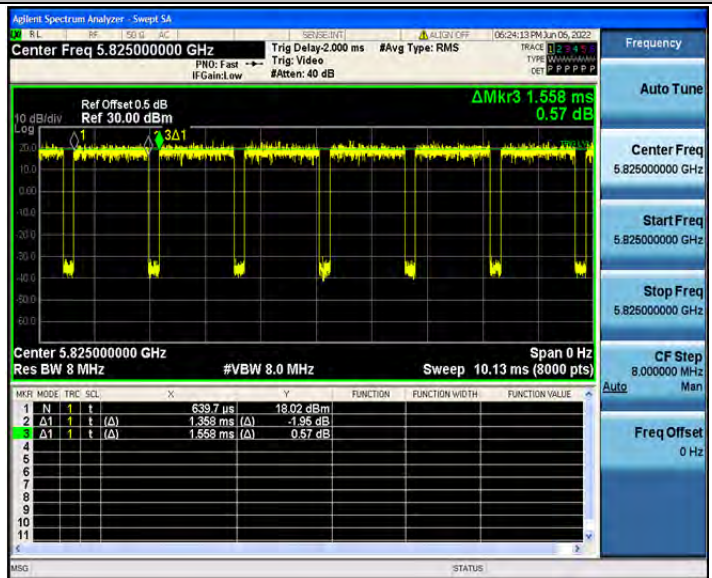
802.11a_5745



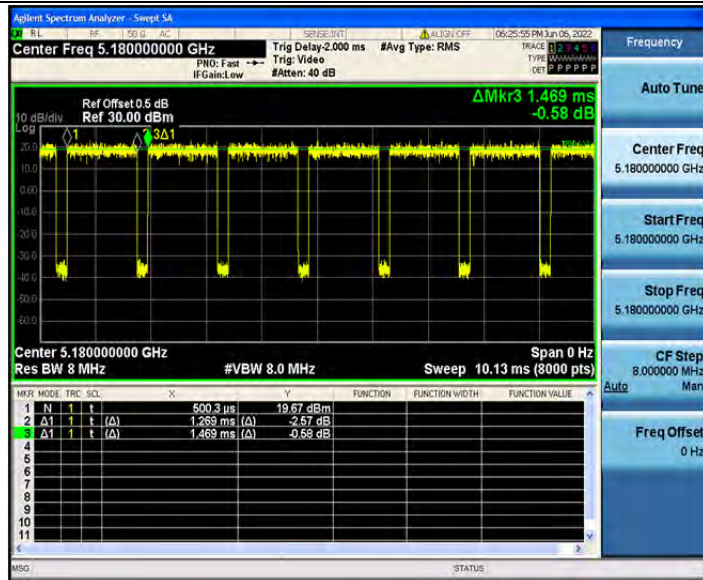
802.11a_5785



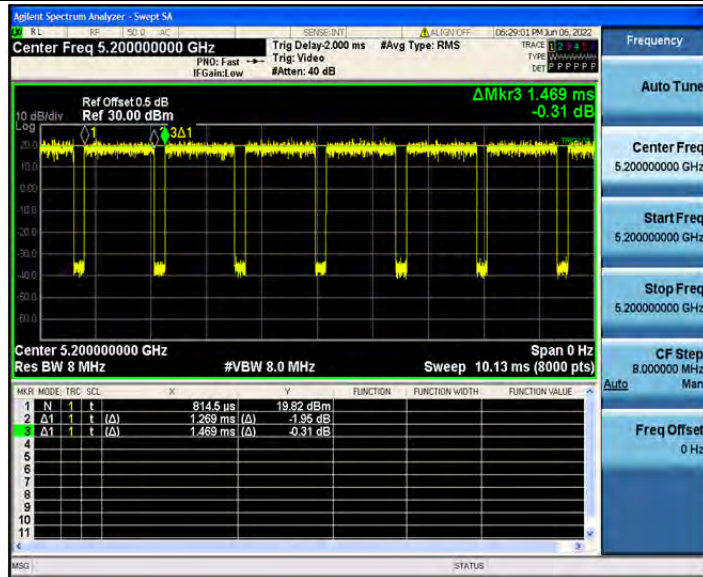
802.11a_5825



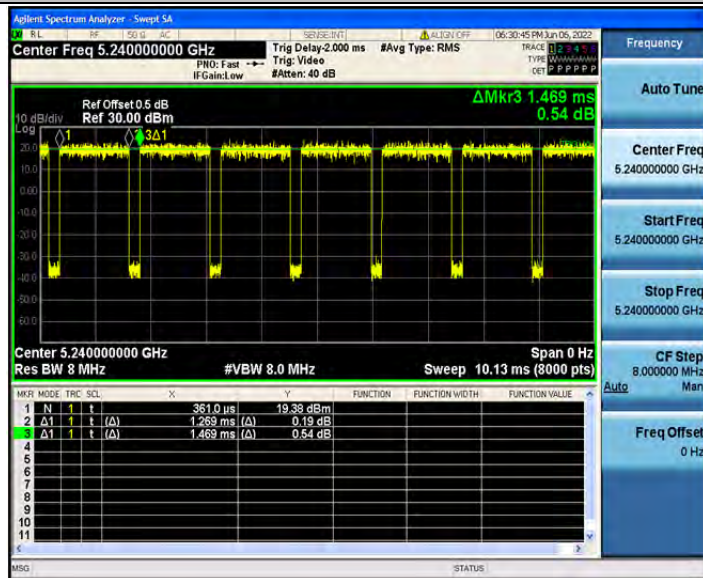
802.11n(HT20)_5180



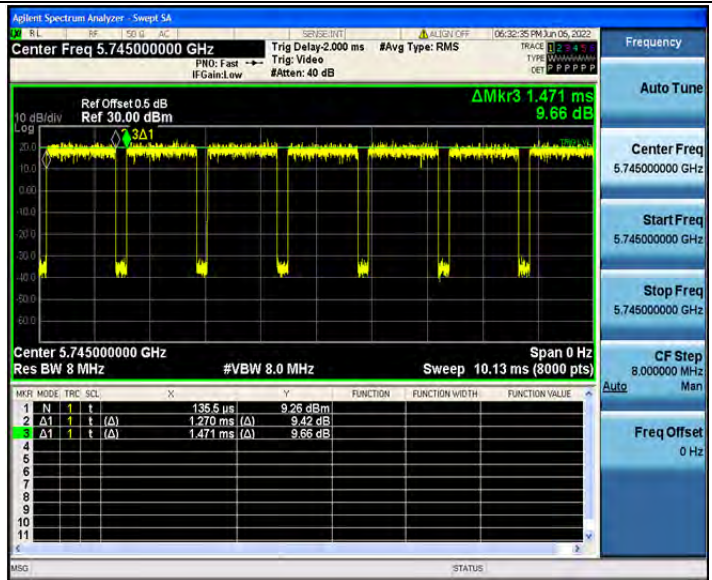
802.11n(HT20)_5200



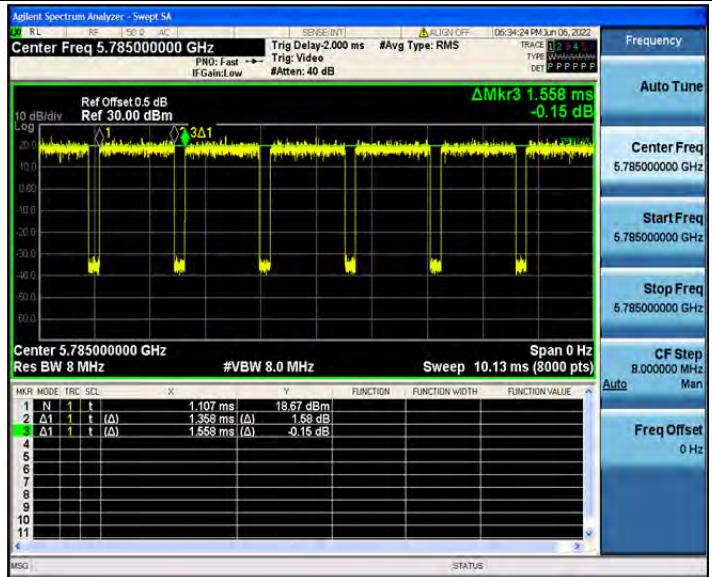
802.11n(HT20)_5240



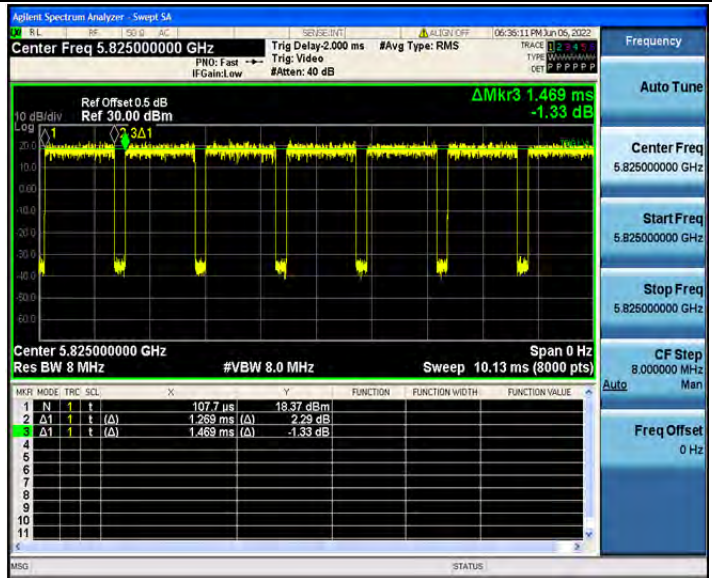
802.11n(HT20)_5745



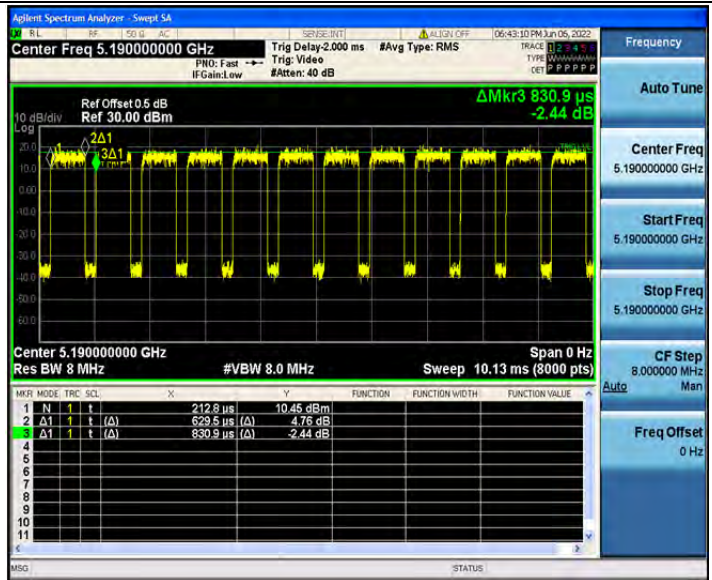
802.11n(HT20)_5785



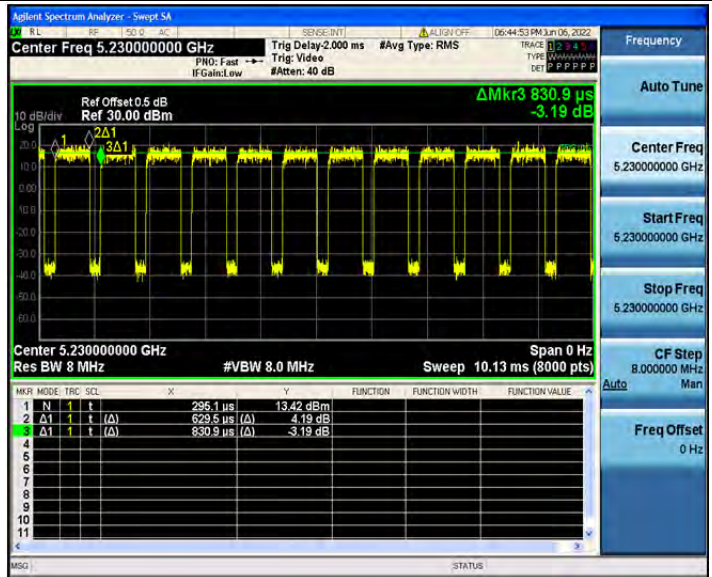
802.11n(HT20)_5825



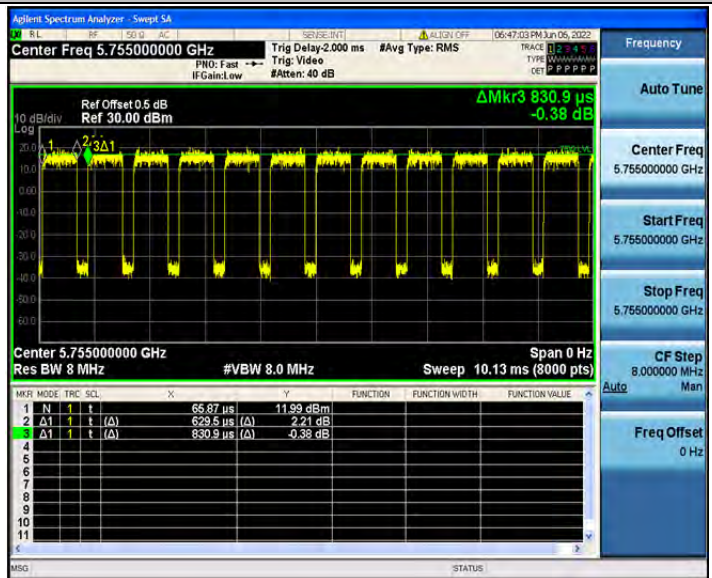
802.11n(HT40)_5190



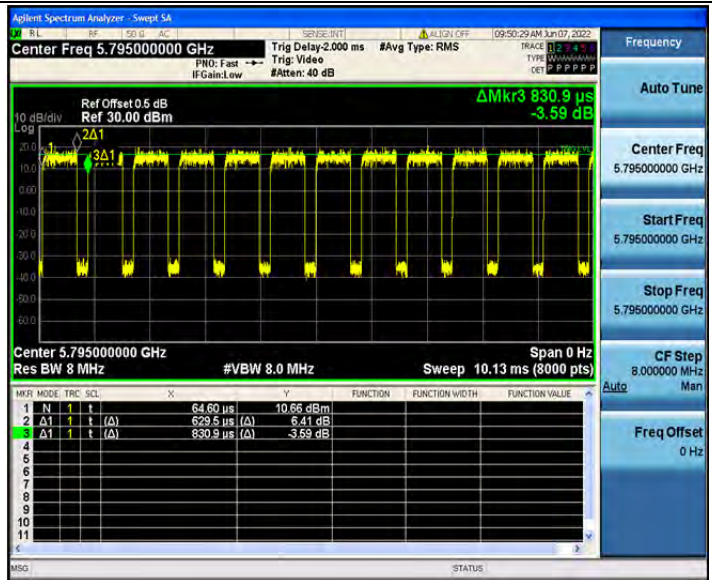
802.11n(HT40)_5230



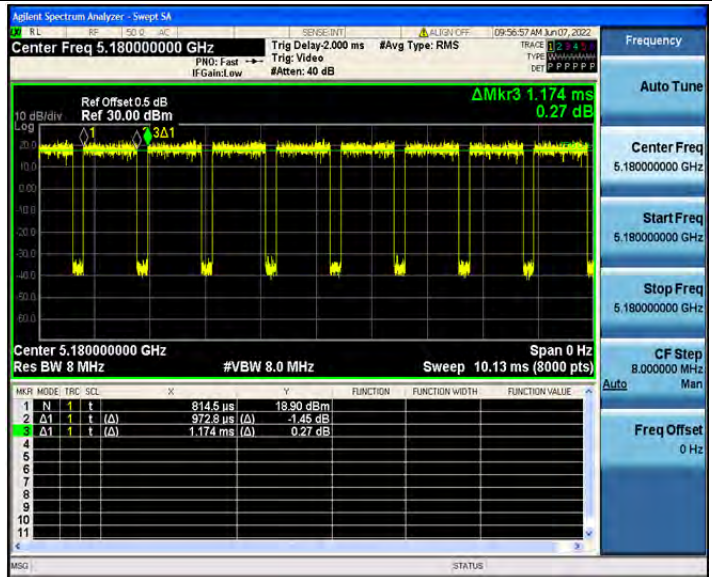
802.11n(HT40)_5755



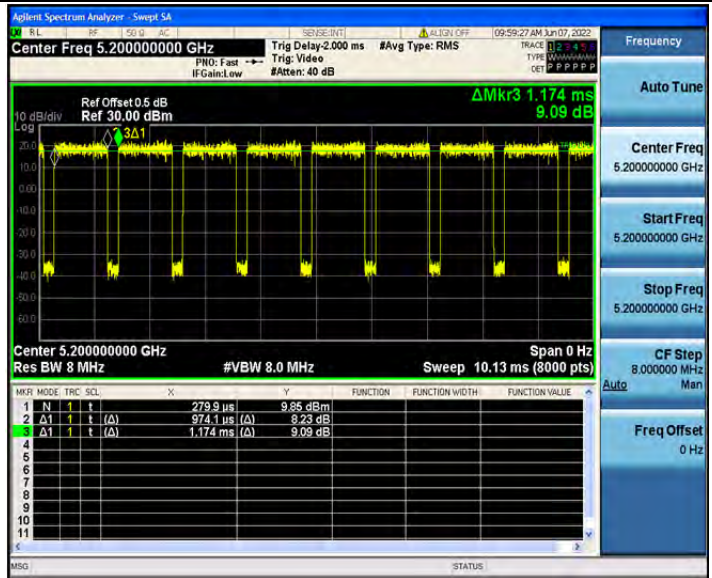
802.11n(HT40)_5795



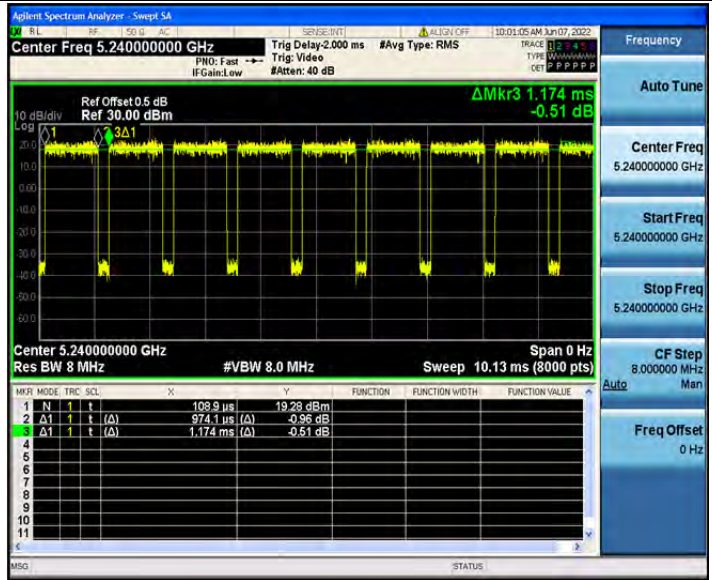
802.11ac(VHT20)_5180



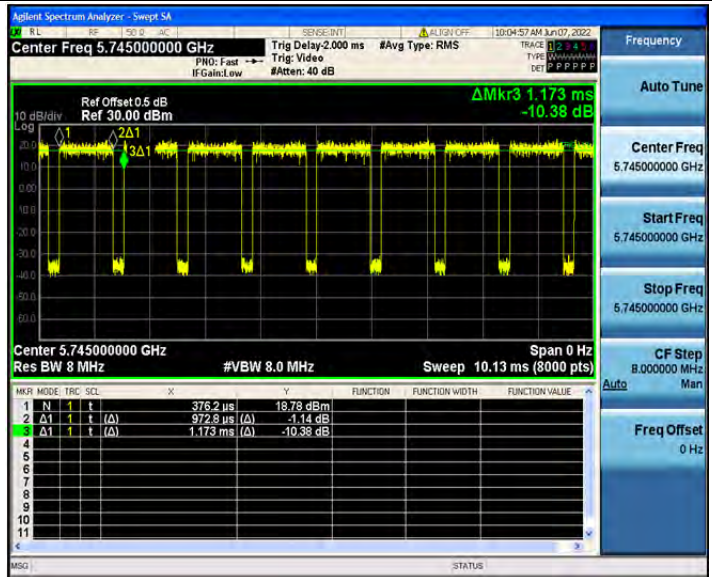
802.11ac(VHT20)_5200



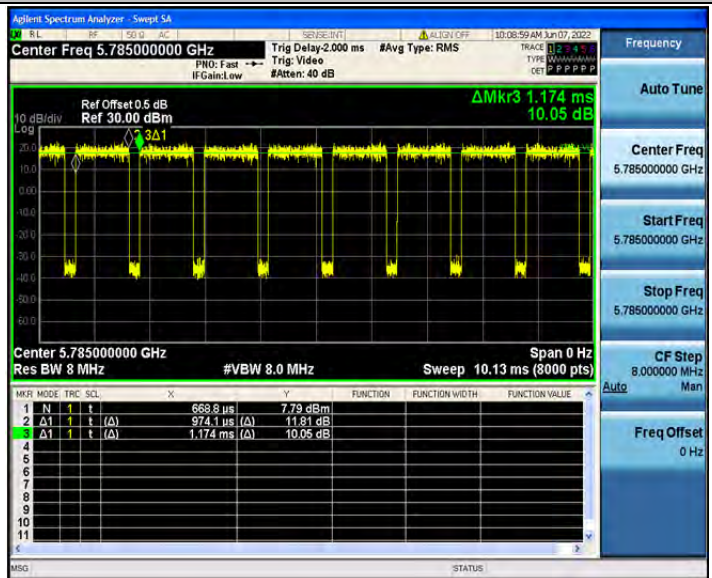
802.11ac(VHT20)_5240



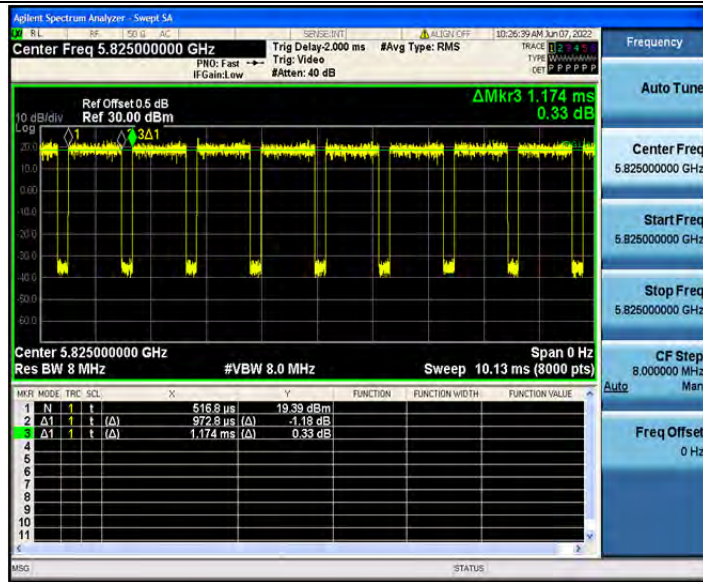
802.11ac(VHT20)_5745



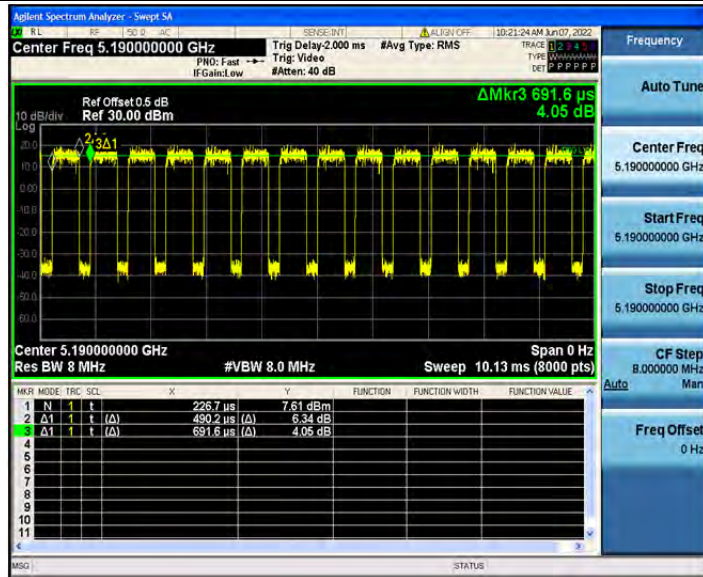
802.11ac(VHT20)_5785



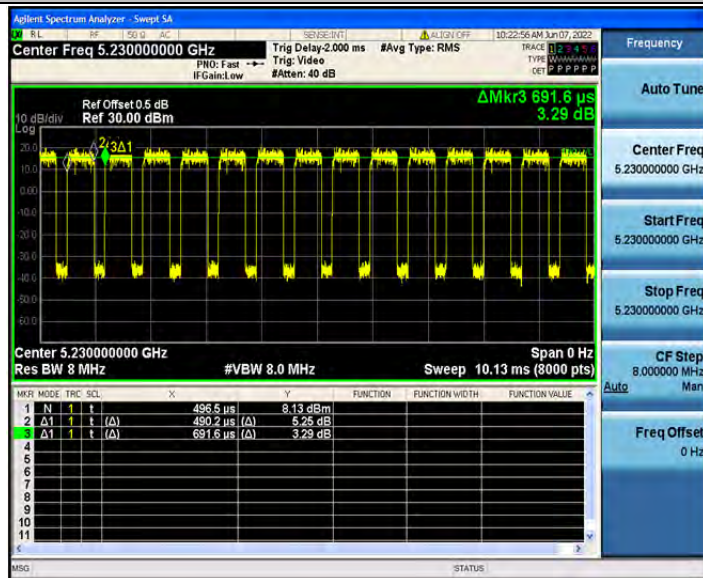
802.11ac(VHT20)_5825



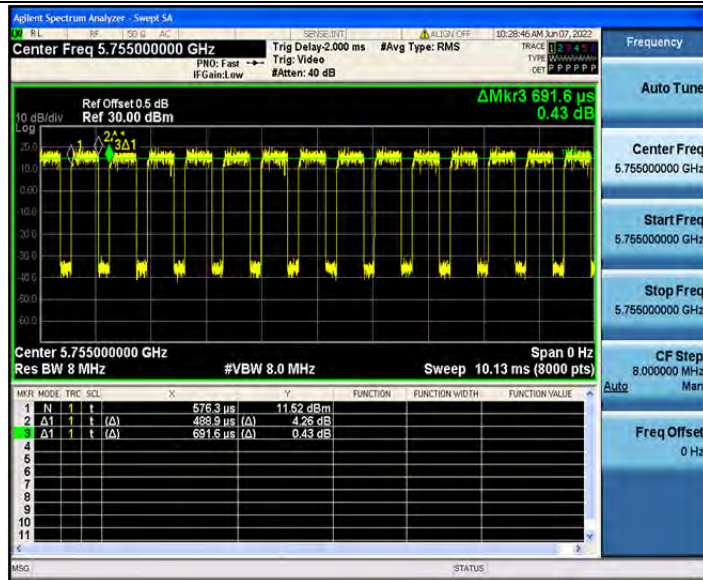
802.11ac(VHT40)_5190



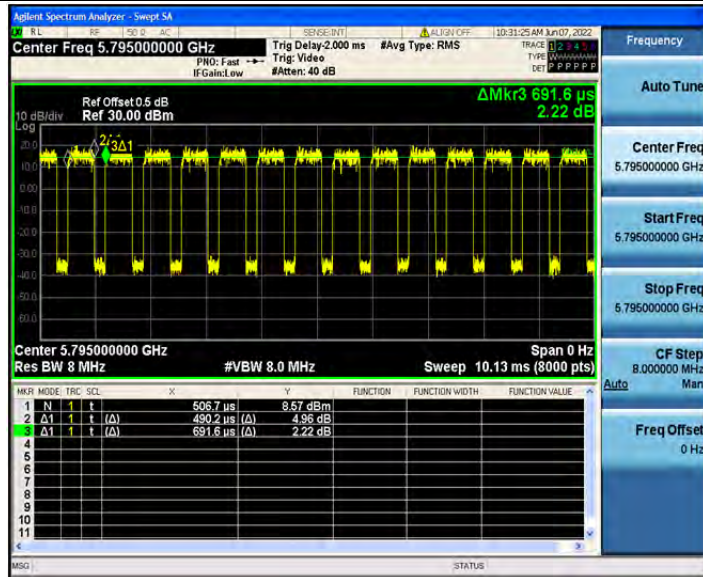
802.11ac(VHT40)_5230



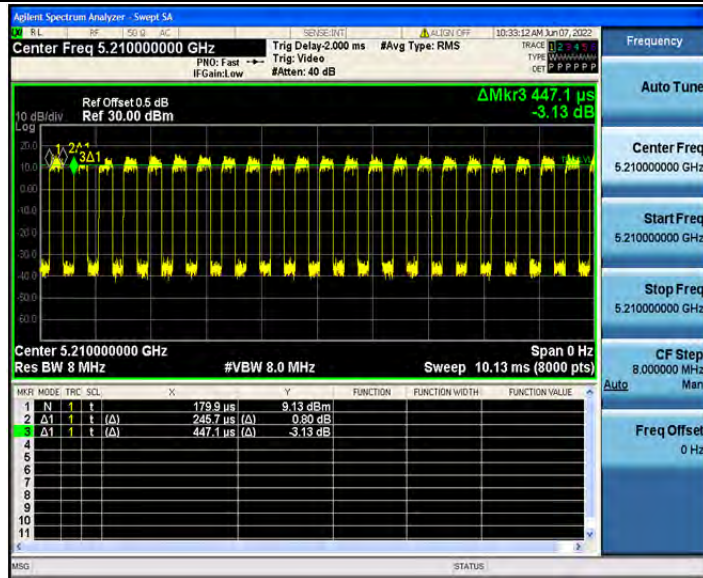
802.11ac(VHT40)_5755



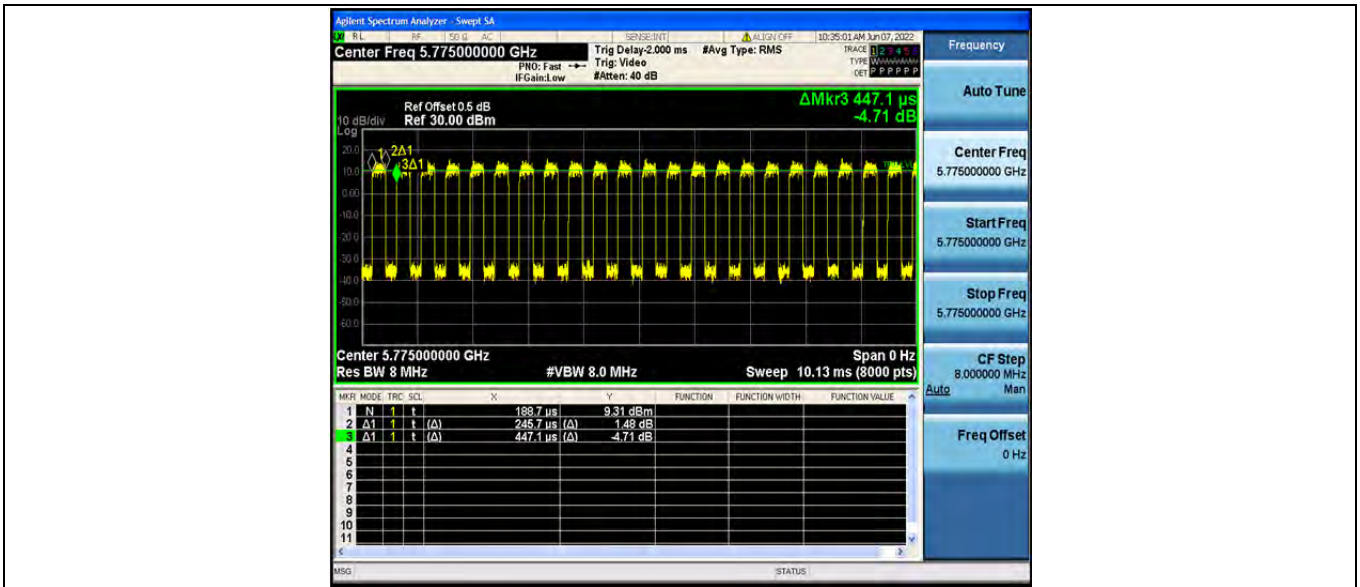
802.11ac(VHT40)_5795



802.11ac(VHT80)_5210



802.11ac(VHT80)_5775



-----End-----