

**4.1.5. TEST RESULTS**

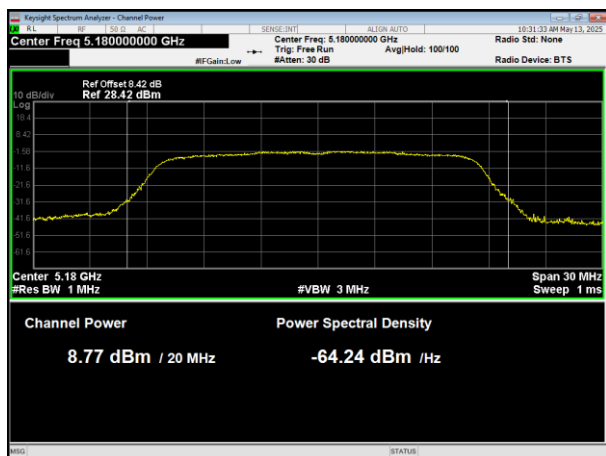
Temperature:	25 °C	Relative Humidity:	60%
Pressure:	1012 hPa	Test Voltage :	AC 120V/60Hz

Band	Mode	Test Channel	Average Output Power (dBm)	Duty factor (dB)	Total Output Power(dBm)	LIMIT (dBm)
Band 1	802.11a	Low	8.77	0.87	9.64	23.98
		Middle	8.43	1.06	9.49	23.98
		High	10.53	0.87	11.4	23.98
	802.11ac HT20	Low	9.69	0.13	9.82	23.98
		Middle	9.18	0.13	9.31	23.98
		High	11.22	0.13	11.35	23.98
	802.11ac HT40	Low	10.32	0.32	10.64	23.98
		High	9.99	0.26	10.25	23.98
	802.11ac HT80	/	10.19	0.5	10.69	23.98
	802.11n HT20	Low	9.58	0.13	9.71	23.98
		Middle	9.02	0.13	9.15	23.98
		High	11.16	0.13	11.29	23.98
	802.11n HT40	Low	10.24	0.26	10.5	23.98
		High	9.95	0.32	10.27	23.98

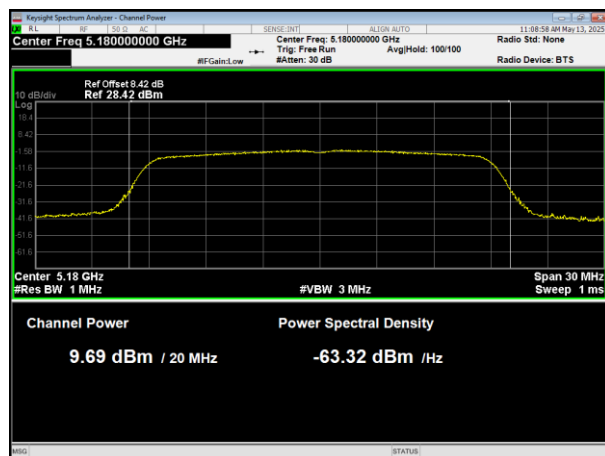
Band	Mode	Test Channel	Average Output Power (dBm)	Duty factor (dB)	Total Output Power(dBm)	LIMIT (dBm)
Band 4	802.11a	Low	8.49	0.87	9.36	30
		Middle	7.83	0.87	8.7	30
		High	8.41	0.87	9.28	30
	802.11ac HT20	Low	8.68	0.13	8.81	30
		Middle	8.11	0.16	8.27	30
		High	9.10	0.13	9.23	30
	802.11ac HT40	Low	9.05	0.26	9.31	30
		High	9.02	0.26	9.28	30
	802.11ac HT80	/	9.22	0.5	9.72	30
	802.11n HT20	Low	8.56	0.13	8.69	30
		Middle	8.12	0.16	8.28	30
		High	9.31	0.13	9.44	30
	802.11n HT40	Low	9.10	0.26	9.36	30
		High	9.12	0.26	9.38	30



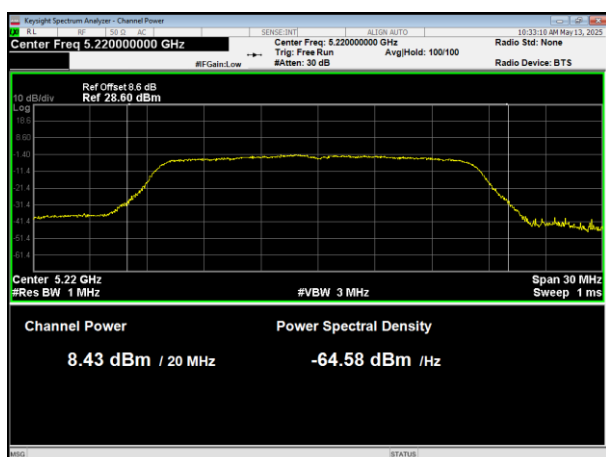
802.11a



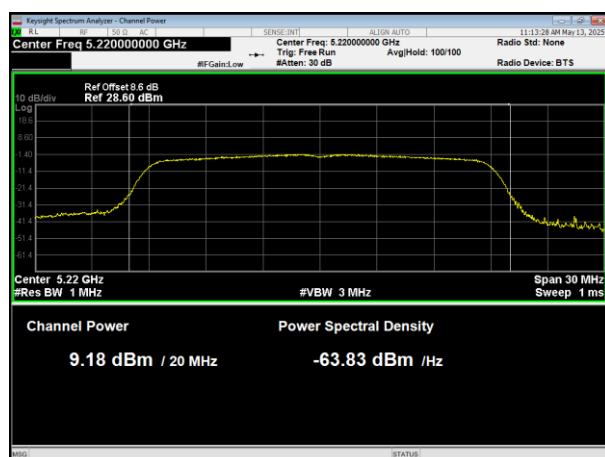
802.11ac HT20



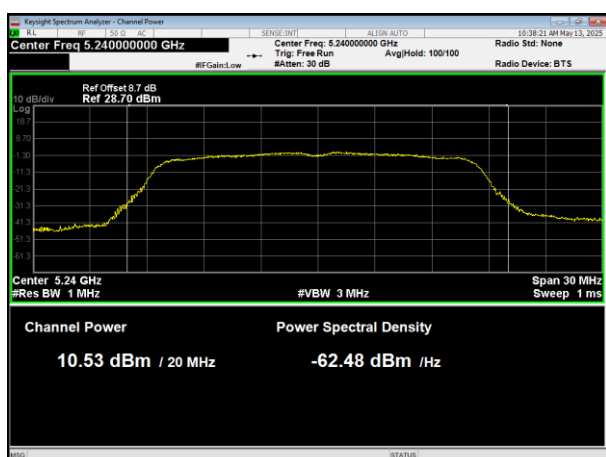
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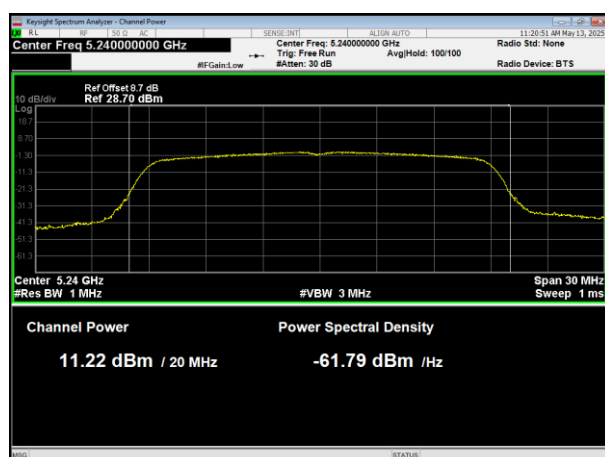
5180MHz



5200MHz



5200MHz

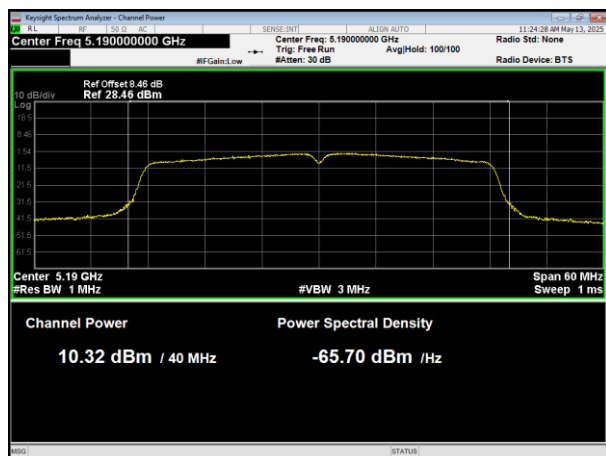


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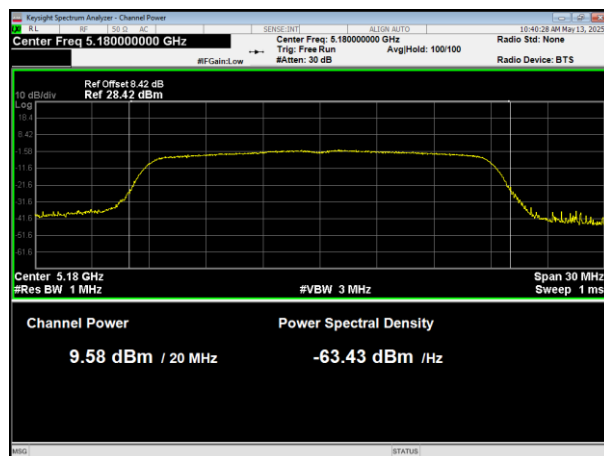
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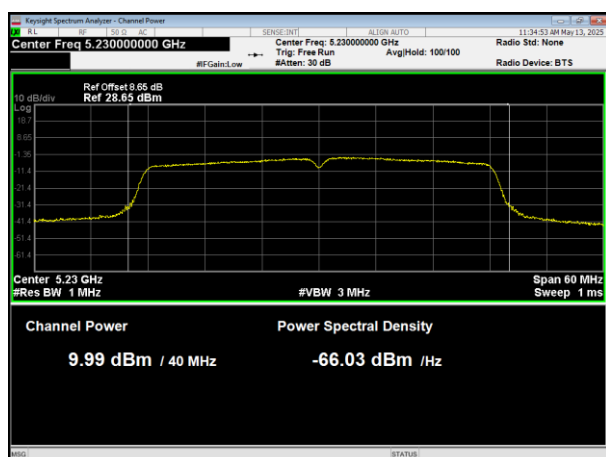
802.11ac HT40



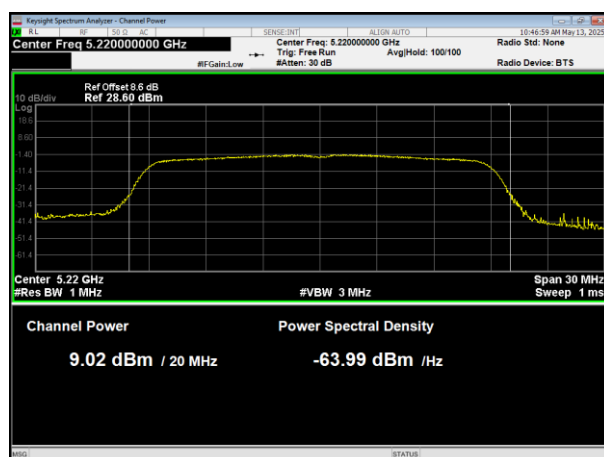
802.11n HT20



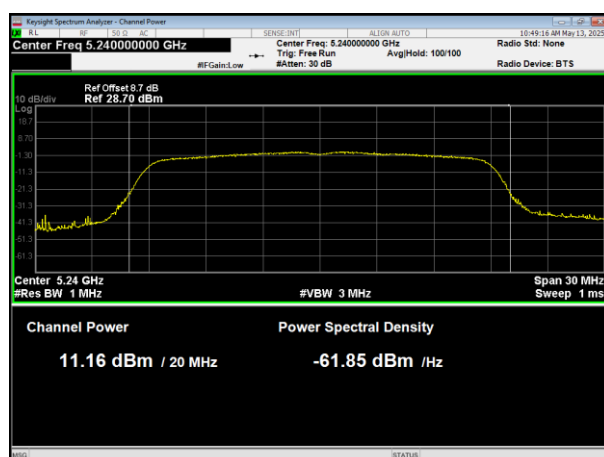
5190MHz



5180MHz



5230MHz

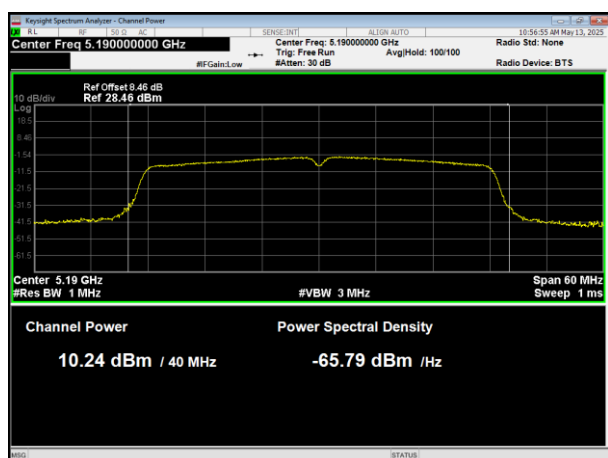


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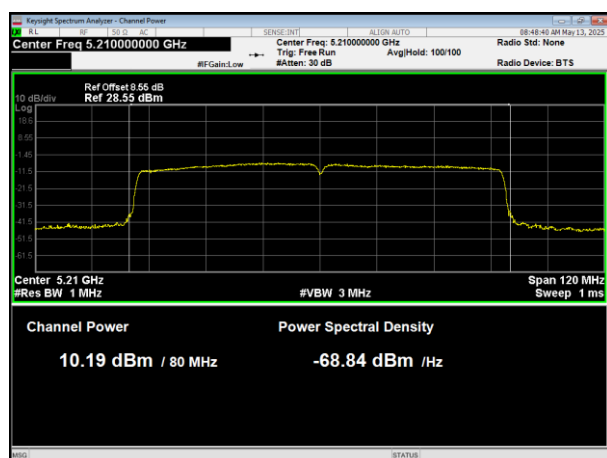
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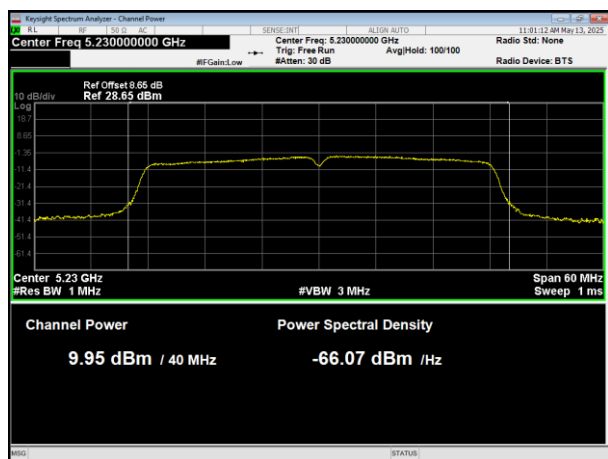
802.11n HT40



802.11ac HT80



5190MHz

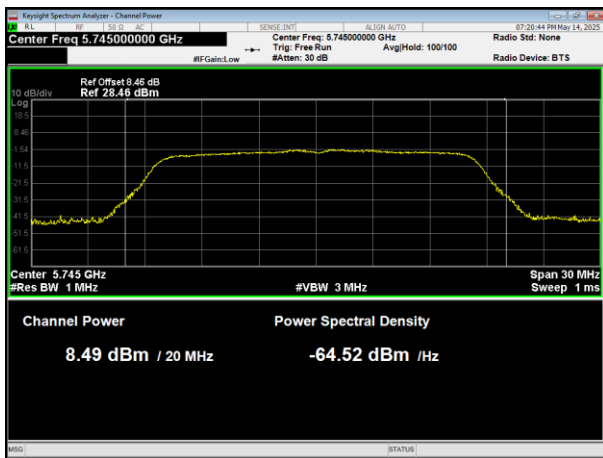


5210MHz

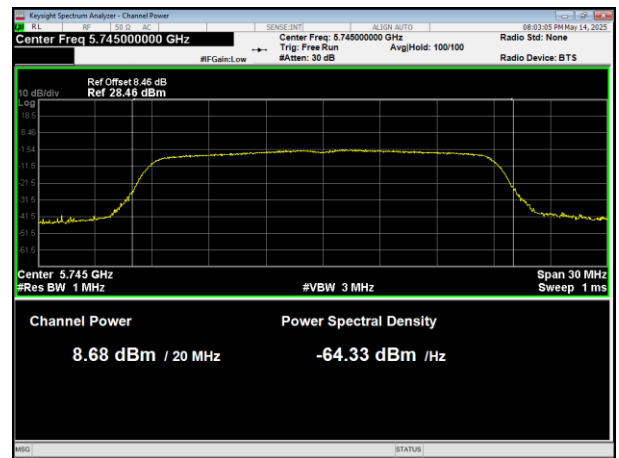
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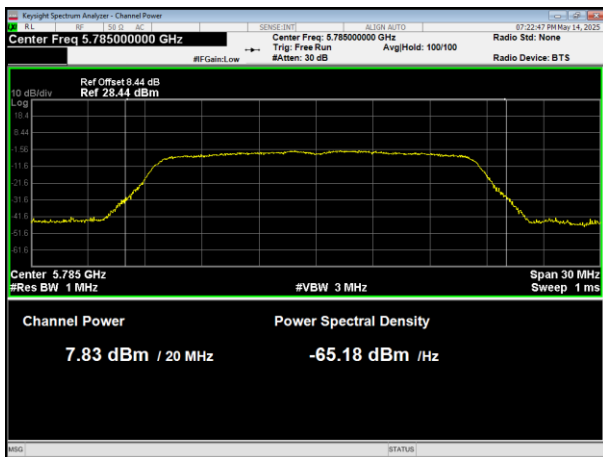
802.11a



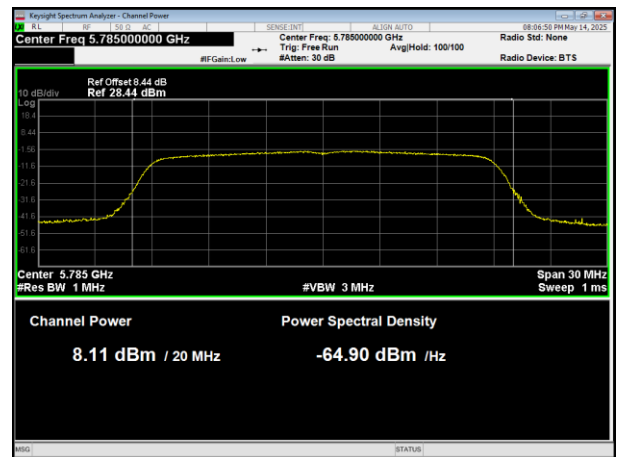
802.11ac HT20



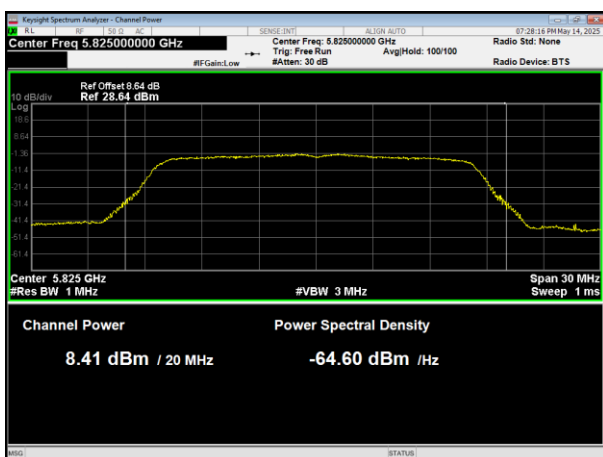
5745MHz



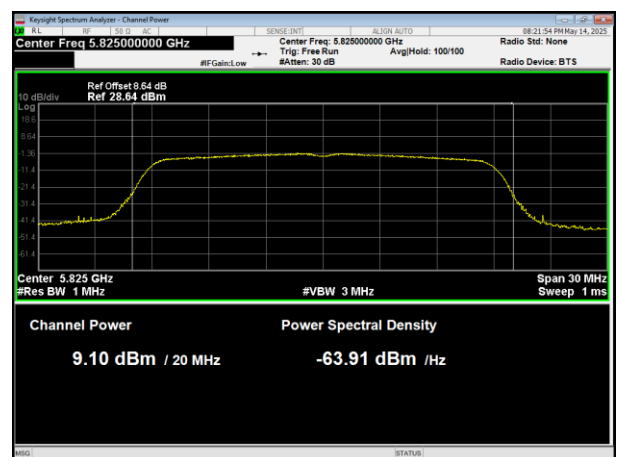
5745MHz



5785MHz



5785MHz



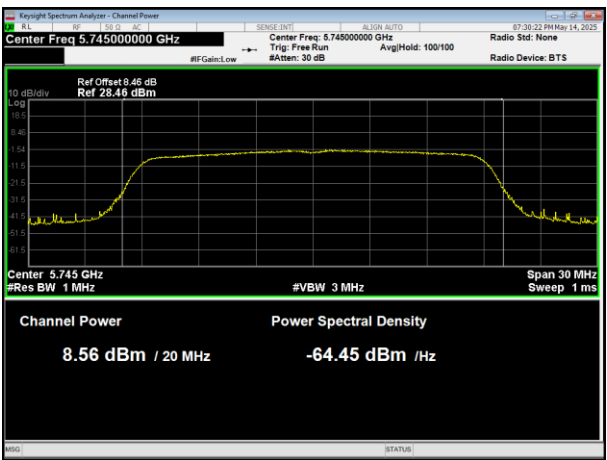
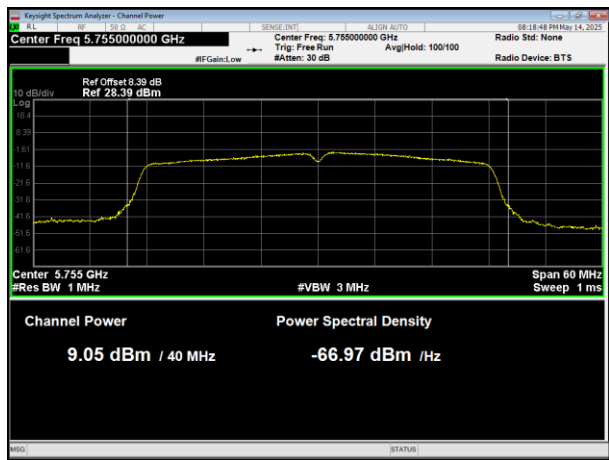
5825MHz

5825MHz



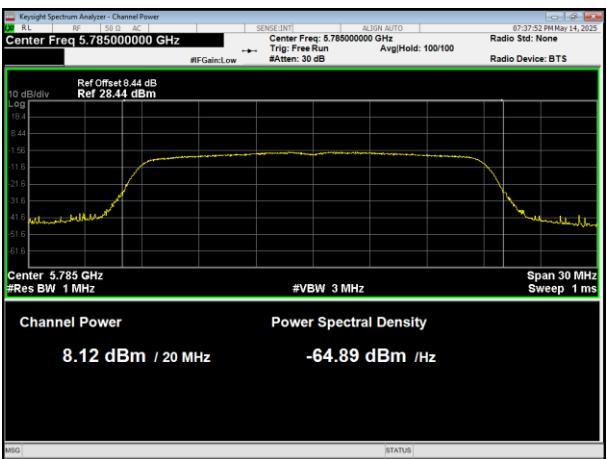
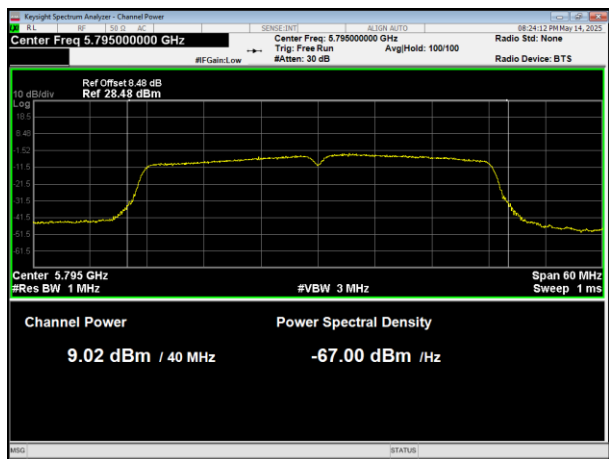
802.11ac HT40

802.11n HT20



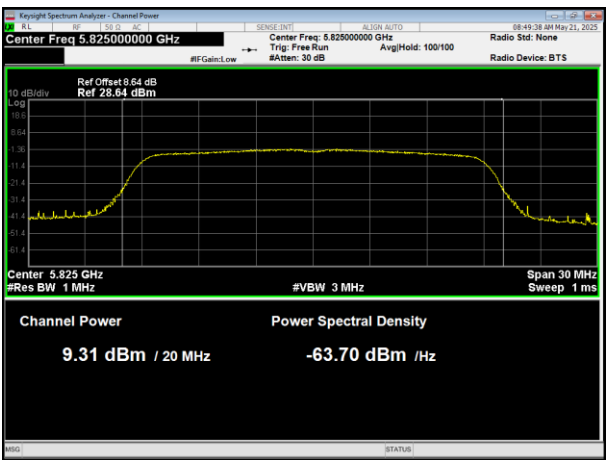
5755MHz

5745MHz



5795MHz

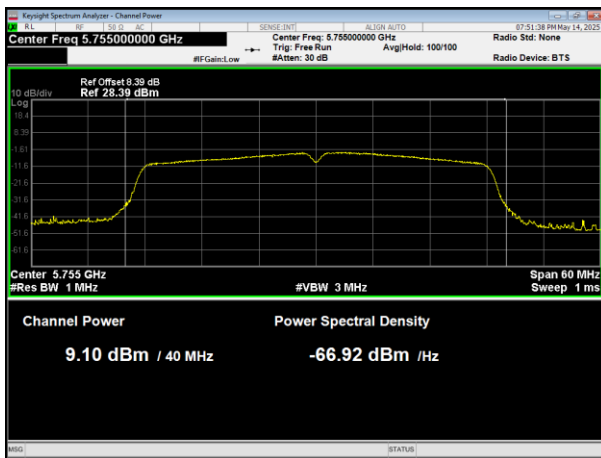
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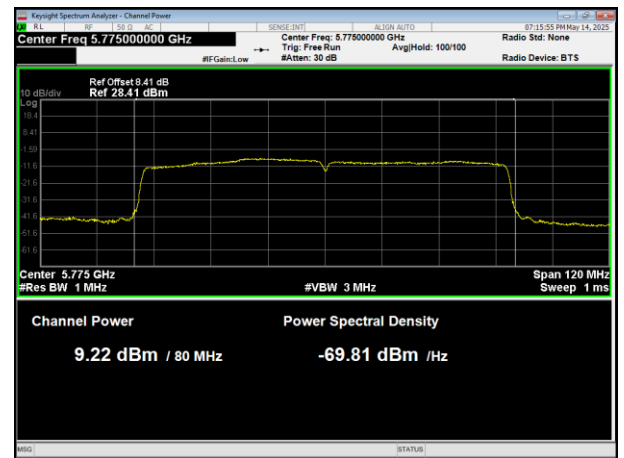
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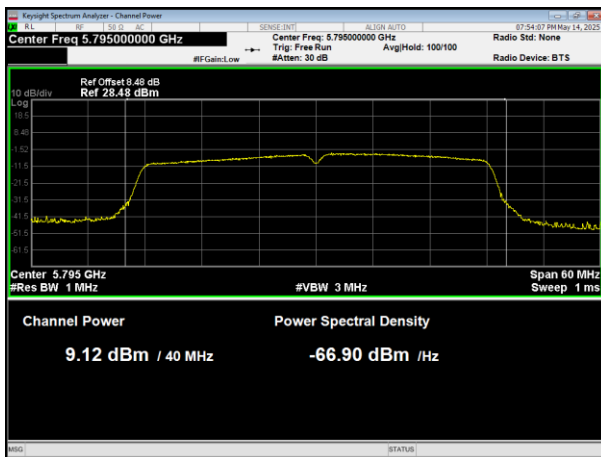
802.11n HT40



802.11ac HT80



5755MHz



5775MHz

5795MHz



5.. POWER SPECTRAL DENSITY TEST

5.1. APPLIED PROCEDURES / LIMIT

In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band.

In addition, the maximum power spectral density shall not exceed 30 dBm in any 500 kHz band.

Spectrum Parameters	Setting
Attenuation	Auto
Span Frequency	= the frequency band of operation
RB	RBW $\geq$ 1MHz for band 1 RBW $\geq$ 510KHz for band 4
VB	VBW $\geq$ 3RBW
Detector	RMS (i.e., power averaging).
Trace	Max Hold
Sweep Time	Auto

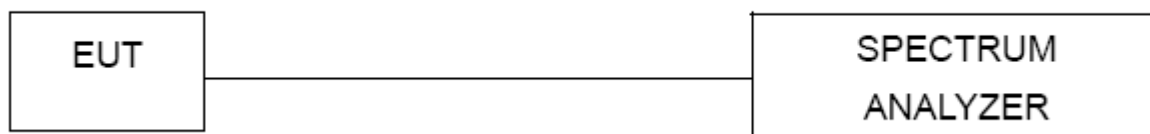
5.1.1. TEST PROCEDURE

1. Place the EUT on the table and set it in transmitting mode.
2. The testing follows FCC KDB 789033 D02.
3. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to Spectrum.
4. For U-NII1, U-NII-2A, U-NII-2C Band:
Set RBW=1MHz, VBW=3MHz, where span is enough to capture the entire bandwidth, Sweep time = Auto (601 pts), detector = sample, traces 100 sweeps of video averaging. (SA-2 with the omission of procedure x, the integration with 26dB EBW bandwidth)
For U-NII-3 Band:
Set RBW=510 kHz, VBW=3*RBW, where span is enough to capture the entire bandwidth, Sweep time = Auto (601 pts), detector = sample, traces 100 sweeps of video averaging. (SA-2 with the omission of procedure x, the integration with 26dB EBW bandwidth)
5. Use the cursor on spectrum to peak search the highest level of trace
6. Record the max. reading and add 10 log(1/duty cycle).
we test all antennas, the antenna 1 was worst mode and the data recording in the report.
7. Duty factor Reference is made to the test results in Section 7.1.5.

5.1.2. DEVIATION FROM STANDARD

No deviation.

5.1.3. TEST SETUP



5.1.4. EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.



5.1.5. TEST RESULTS

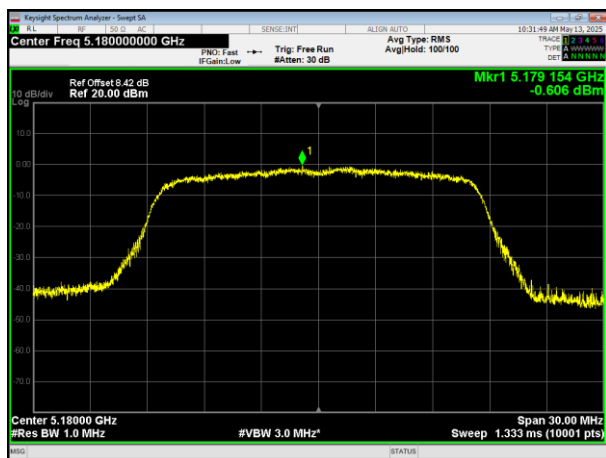
	Mode	Test Channel	Reading Level (dBm/MHz)	Duty factor (dB)	PSD (dBm/MHz)	Limit (dBm)	Result
Band1	802.11a	Low	-0.606	0.87	0.264	11.00	PASS
		Middle	-1.096	1.06	-0.036	11.00	PASS
		High	1.35	0.87	2.22	11.00	PASS
	802.11ac20	Low	-0.021	0.13	0.109	11.00	PASS
		Middle	-0.436	0.13	-0.306	11.00	PASS
		High	1.454	0.13	1.584	11.00	PASS
	802.11ac40	Low	-2.035	0.32	-1.715	11.00	PASS
		High	-2.549	0.26	-2.289	11.00	PASS
	802.11ac80	/	-5.72	0.5	-5.22	11.00	PASS
	802.11n20	Low	-0.384	0.13	-0.254	11.00	PASS
		Middle	-0.836	0.13	-0.706	11.00	PASS
		High	1.408	0.13	1.538	11.00	PASS
	802.11n40	Low	-2.327	0.26	-2.067	11.00	PASS
		High	-2.717	0.32	-2.397	11.00	PASS

	Mode	Test Channel	Reading Level (dBm/510kHz)	Duty factor (dB)	RB factor (dB)	PSD (dBm/500kHz)	Limit (dBm/500kHz)	Result
Band4	802.11a	Low	-3.938	0.87	-0.09	-3.158	30.00	PASS
		Middle	-4.575	0.87	-0.09	-3.795	30.00	PASS
		High	-4.019	0.87	-0.09	-3.239	30.00	PASS
	802.11ac20	Low	-3.95	0.13	-0.09	-3.91	30.00	PASS
		Middle	-4.442	0.16	-0.09	-4.372	30.00	PASS
		High	-3.372	0.13	-0.09	-3.332	30.00	PASS
	802.11ac40	Low	-5.878	0.26	-0.09	-5.708	30.00	PASS
		High	-6.336	0.26	-0.09	-6.166	30.00	PASS
	802.11ac80	/	-9.325	0.5	-0.09	-8.915	30.00	PASS
	802.11n20	Low	-4.528	0.13	-0.09	-4.488	30.00	PASS
		Middle	-4.643	0.16	-0.09	-4.573	30.00	PASS
		High	-4.077	0.13	-0.09	-4.037	30.00	PASS
	802.11n40	Low	-5.419	0.26	-0.09	-5.249	30.00	PASS
		High	-5.958	0.26	-0.09	-5.788	30.00	PASS

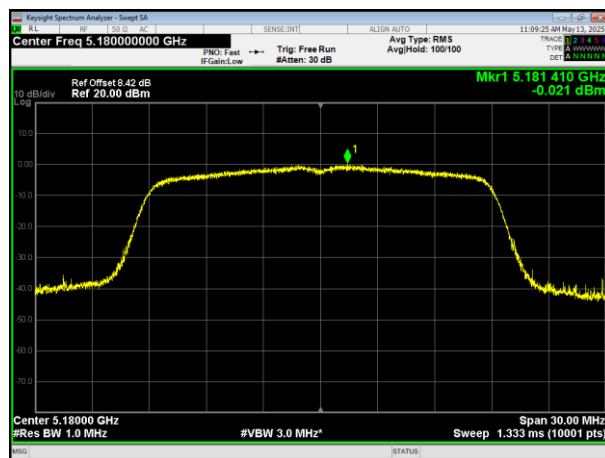
Note: RB factor=10log(510/500k)



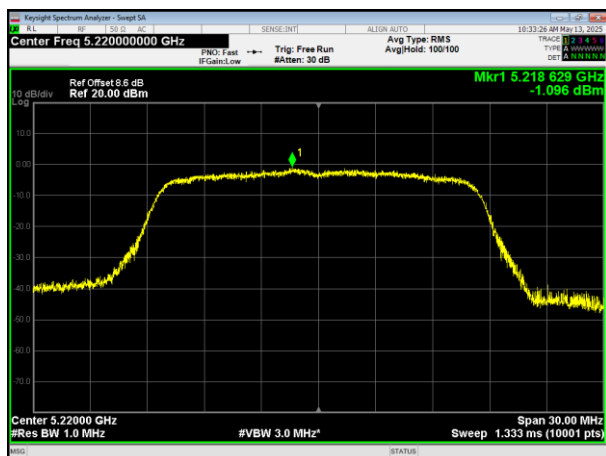
802.11a



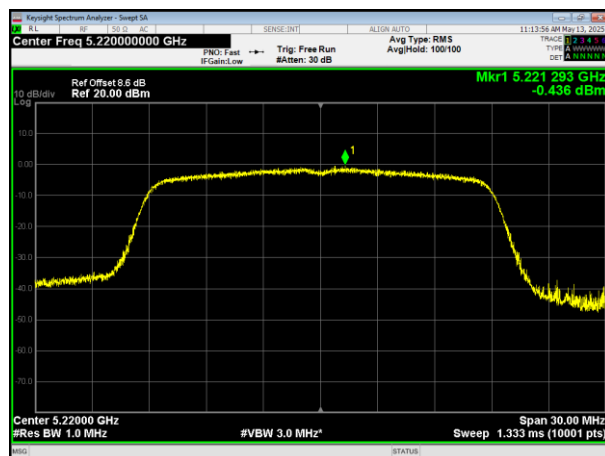
802.11ac HT20



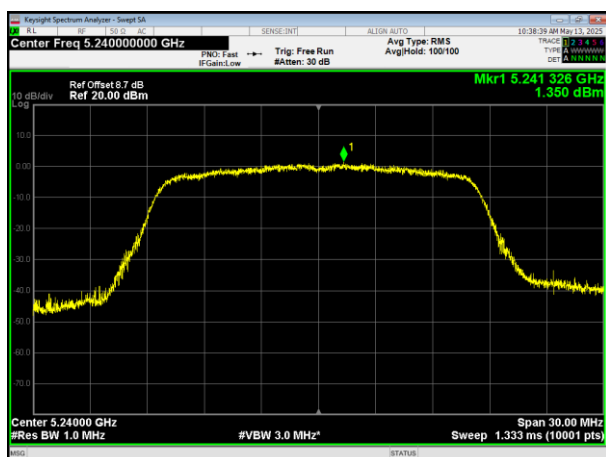
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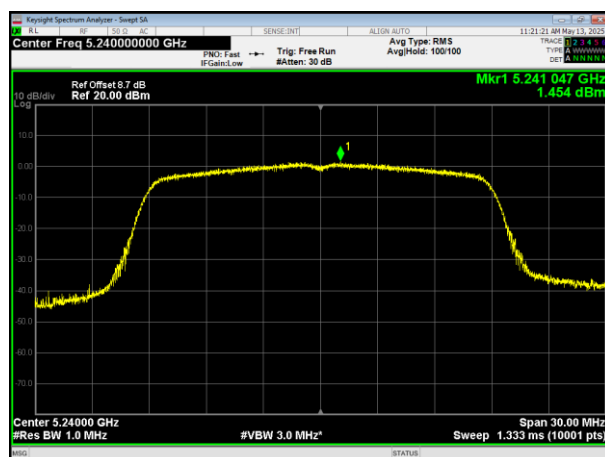
5180MHz



5200MHz



5200MHz

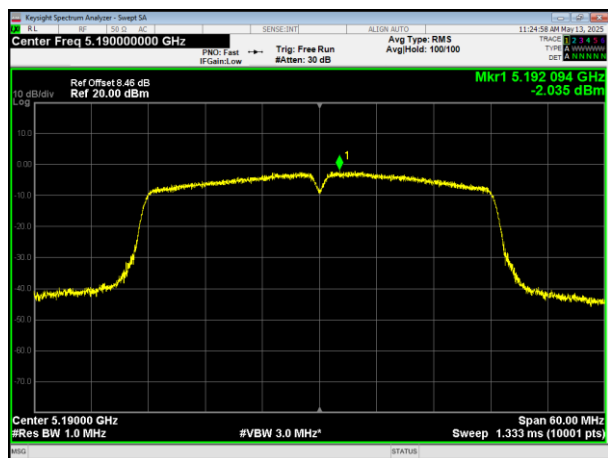


5240MHz

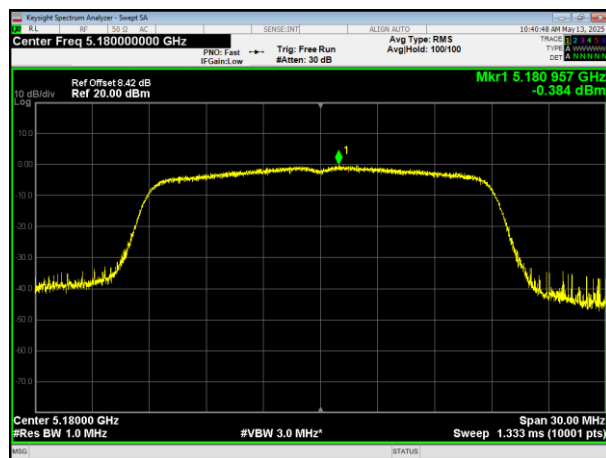
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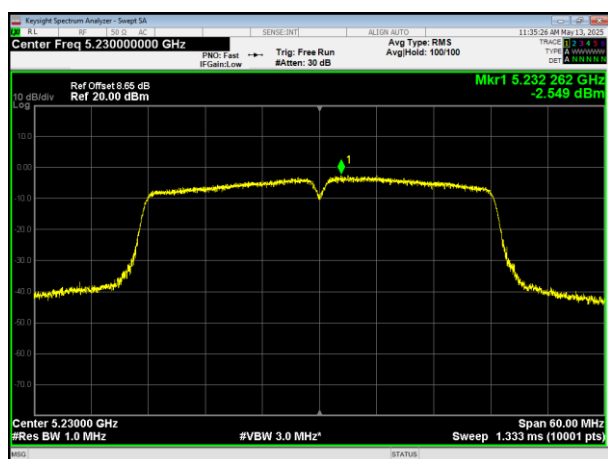
802.11ac HT40



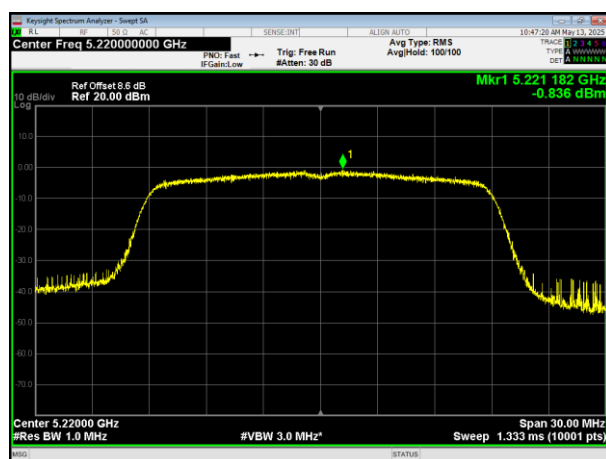
802.11n HT20



5190MHz

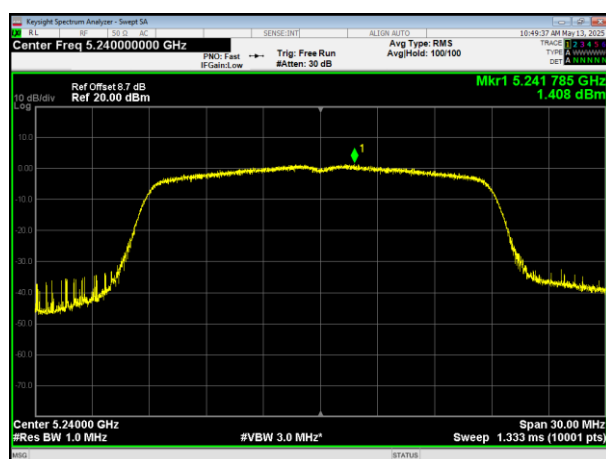


5180MHz



5230MHz

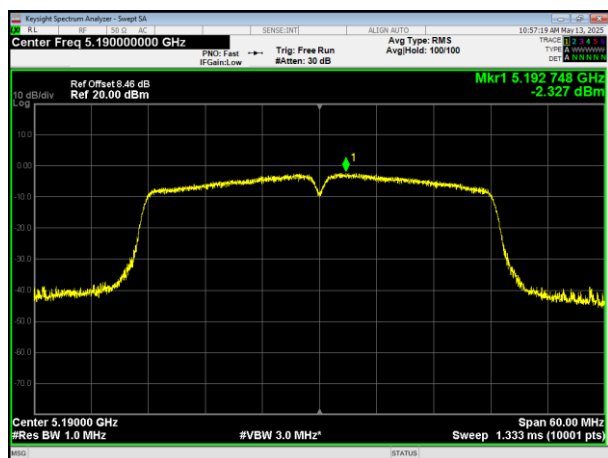
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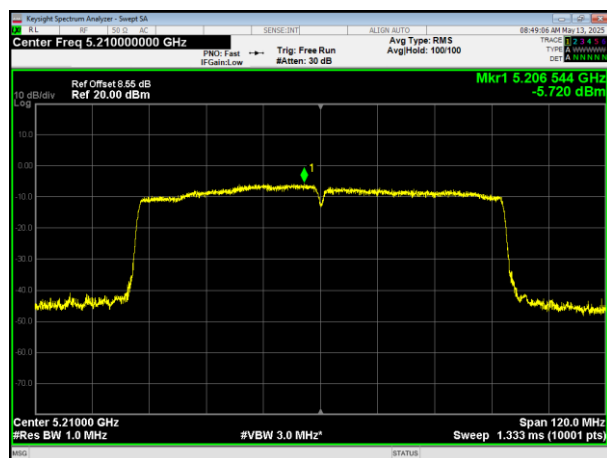
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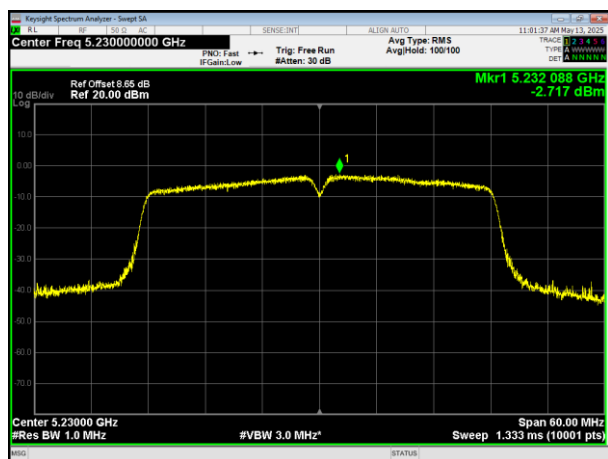
802.11n HT40



802.11ac HT80



5190MHz

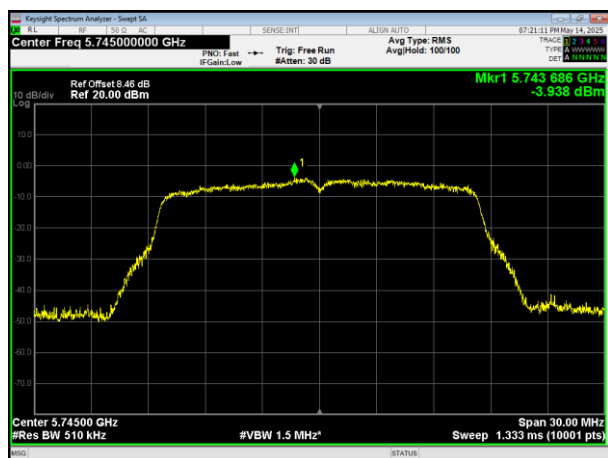


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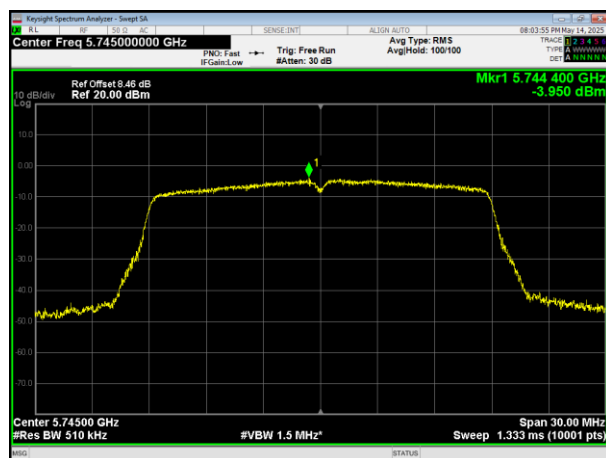
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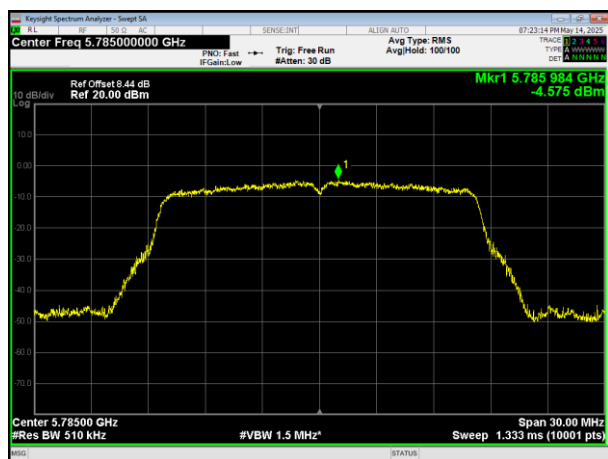
802.11a



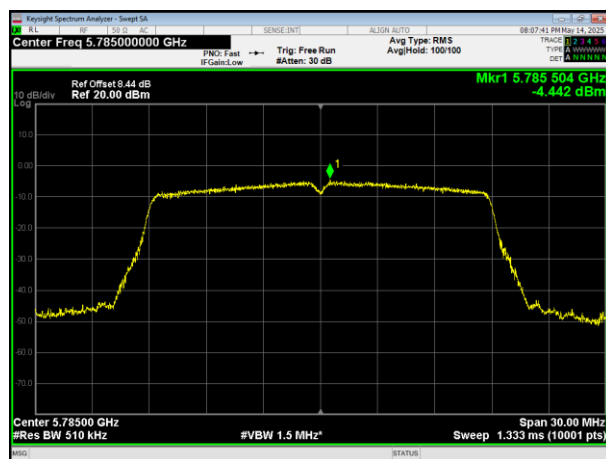
802.11ac HT20



5745MHz



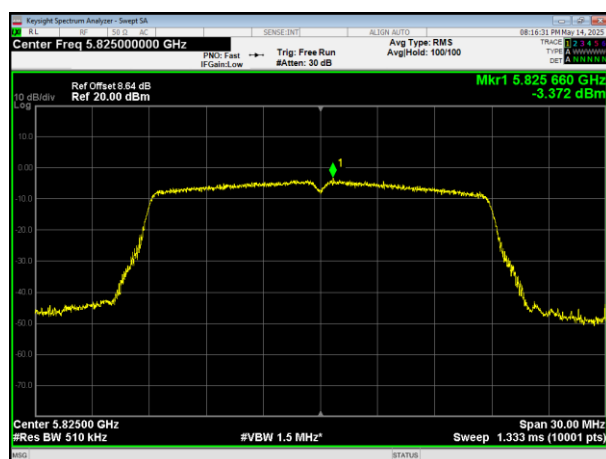
5745MHz



5785MHz



5785MHz

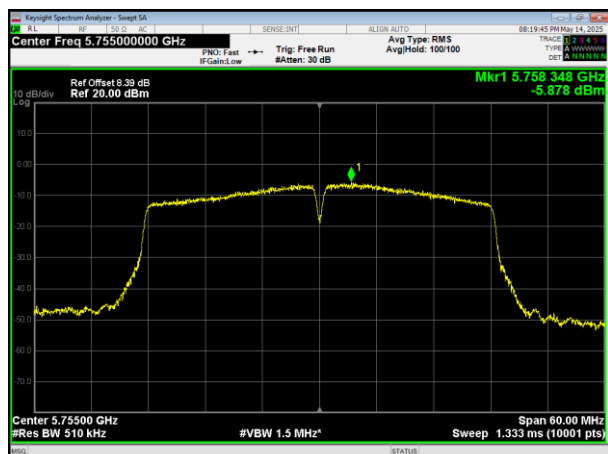


5825MHz

5825MHz



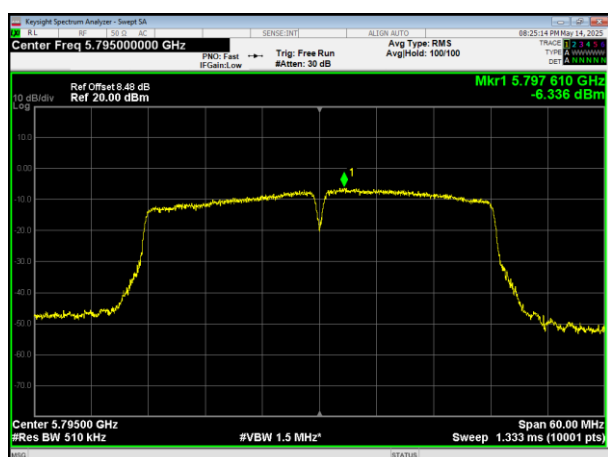
802.11ac HT40



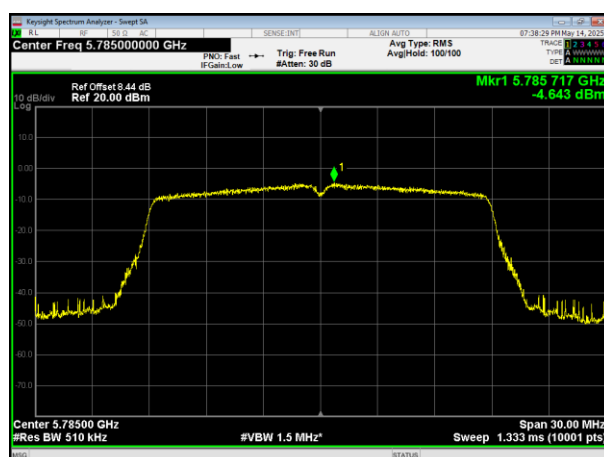
802.11n HT20



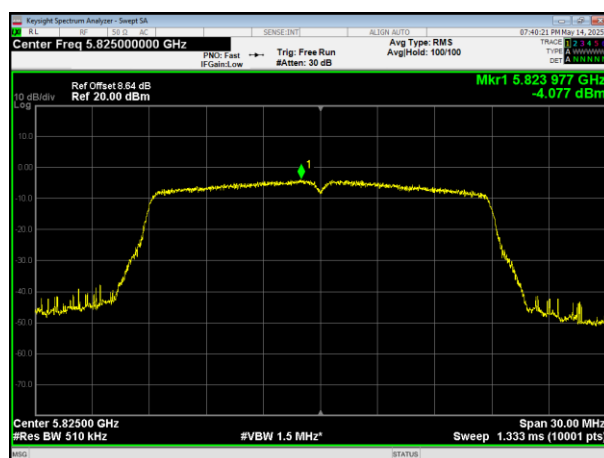
5755MHz



5745MHz



5795MHz



5785MHz

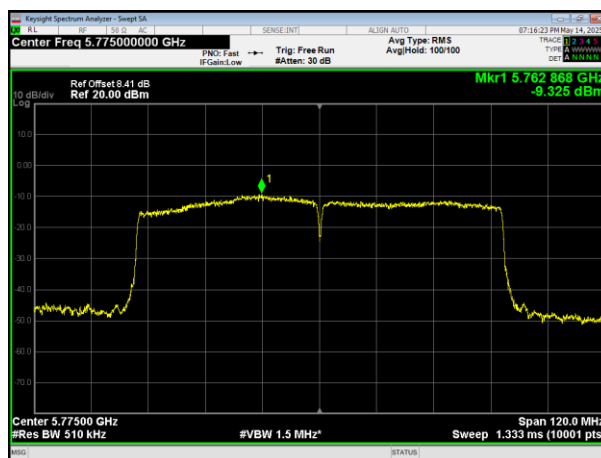
5825MHz



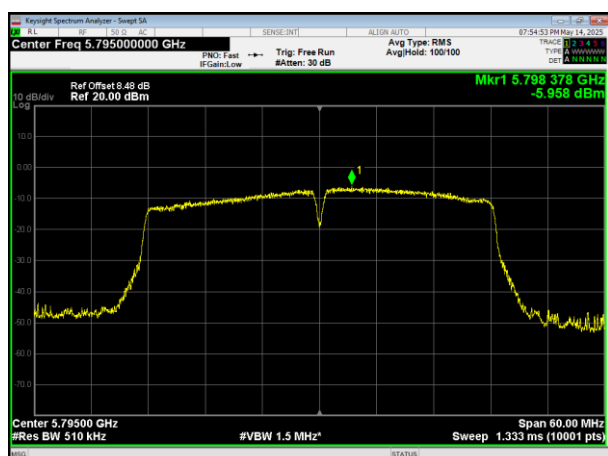
802.11n HT40



802.11ac HT80



5755MHz



5775MHz

5795MHz



6.. 6DB&26DB&99% BANDWIDTH TEST

6.1. APPLIED PROCEDURES / LIMIT

The 26 dB bandwidth is used to determine the conducted power limits.

There is no limit bandwidth for U-NII-1, U-NII-2-A and U-NII-2-C.

The minimum of 6dB Bandwidth measurement is 0.5 MHz for U-NII-3

6.1.1. TEST PROCEDURE

6dB Bandwidth	
Spectrum Parameters	Setting
RBW	100KHz
VBW	300KHz
Span	30MHz(20MHz Bandwidth mode) 60MHz(40MHz Bandwidth mode) 120MHz(80MHz Bandwidth mode)
Sweep Time	Auto
Detector	Peak
Trace Mode	Max Hold

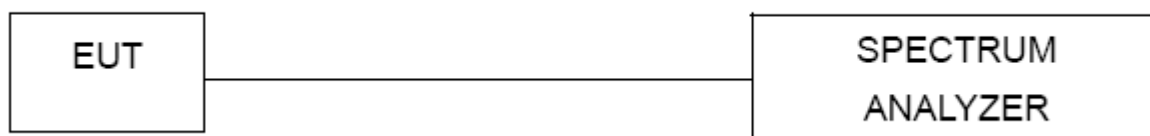
26dB Bandwidth	
Spectrum Parameters	Setting
RBW	approximately 1% of the emission bandwidth
VBW	>RBW
Span	30MHz(20MHz Bandwidth mode) 60MHz(40MHz Bandwidth mode) 120MHz(80MHz Bandwidth mode)
Sweep Time	Auto
Detector	Peak
Trace Mode	Max Hold

99% Occupied Bandwidth	
Spectrum Parameters	Setting
RBW	1% to 5% of the OBW
VBW	Approximately three times the RBW
Span	between 1.5 times and 5.0 times the OBW
Sweep Time	Auto
Detector	Peak
Trace Mode	Max Hold

6.1.2. DEVIATION FROM STANDARD

No deviation.

6.1.3. TEST SETUP





6.1.4. EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.

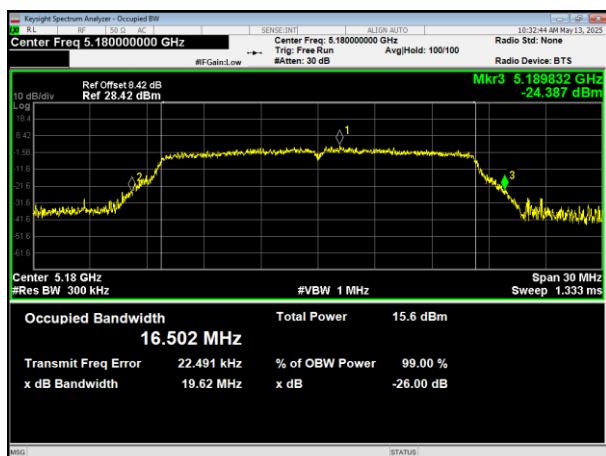
6.1.5. TEST RESULTS

		Test Channel	26dB Bandwidth (MHz)	Result
Band 1	802.11a	Low	19.619	Pass
		Middle	19.808	Pass
		High	19.364	Pass
	802.11ac HT20	Low	20.513	Pass
		Middle	20.382	Pass
		High	20.232	Pass
	802.11ac HT40	Low	39.843	Pass
		High	40.215	Pass
	802.11ac HT80	/	80.488	Pass
	802.11n HT20	Low	20.809	Pass
		Middle	21.307	Pass
		High	20.469	Pass
	802.11n HT40	Low	39.816	Pass
		High	40.359	Pass

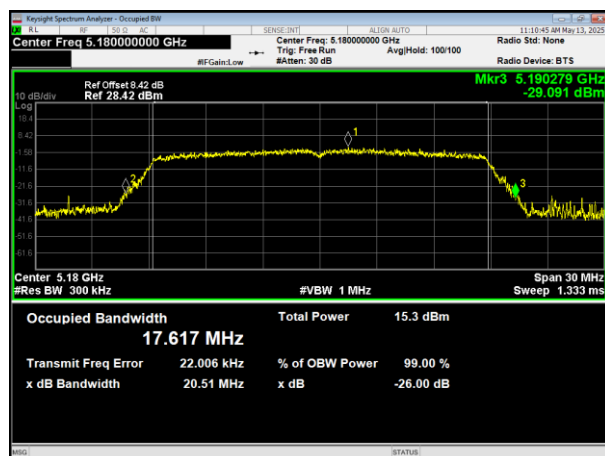
		Test Channel	6dB Bandwidth (MHz)	6dB Bandwidth Limit (MHz)	Result
Band 4	802.11a	Low	15.716	>0.5	Pass
		Middle	15.724	>0.5	Pass
		High	15.977	>0.5	Pass
	802.11ac HT20	Low	16.299	>0.5	Pass
		Middle	14.714	>0.5	Pass
		High	16.083	>0.5	Pass
	802.11ac HT40	Low	30.036	>0.5	Pass
		High	33.756	>0.5	Pass
	802.11ac HT80	/	75.091	>0.5	Pass
	802.11n HT20	Low	15.986	>0.5	Pass
		Middle	15.96	>0.5	Pass
		High	15.396	>0.5	Pass
	802.11n HT40	Low	27.545	>0.5	Pass
		High	32.573	>0.5	Pass



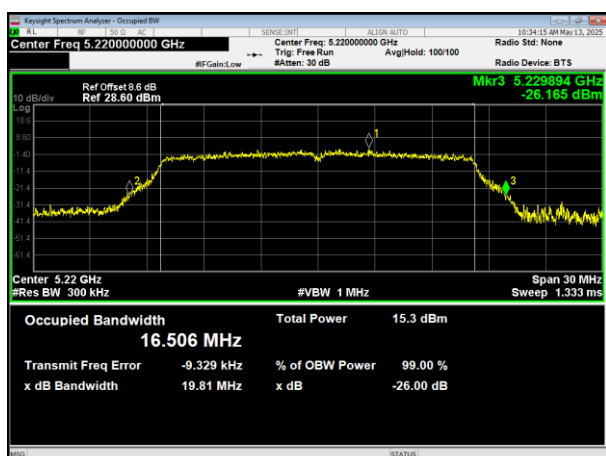
802.11a



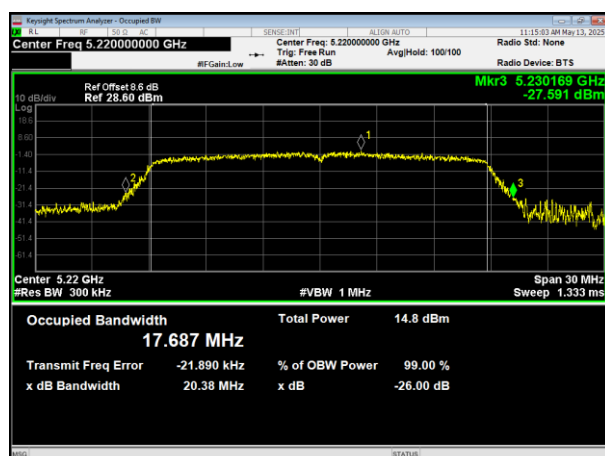
802.11ac HT20



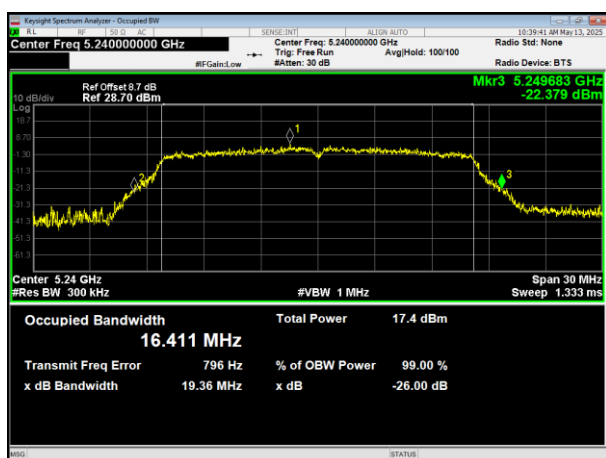
5180MHz



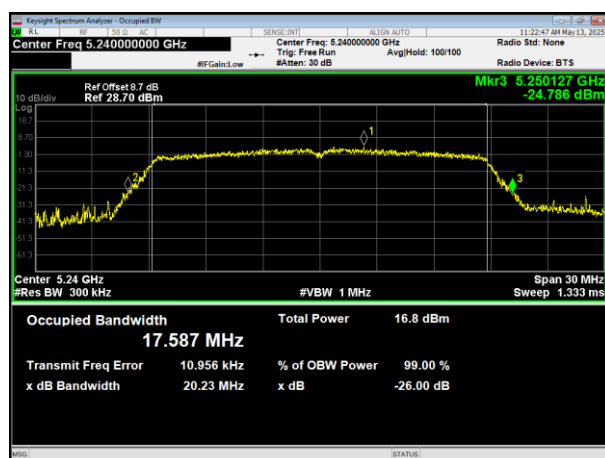
5180MHz



5200MHz



5200MHz

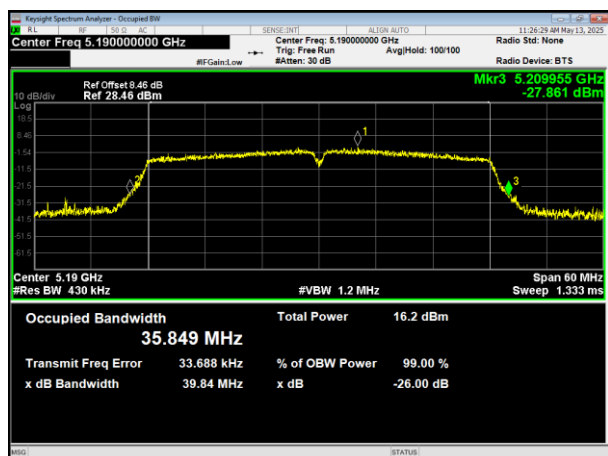


5240MHz

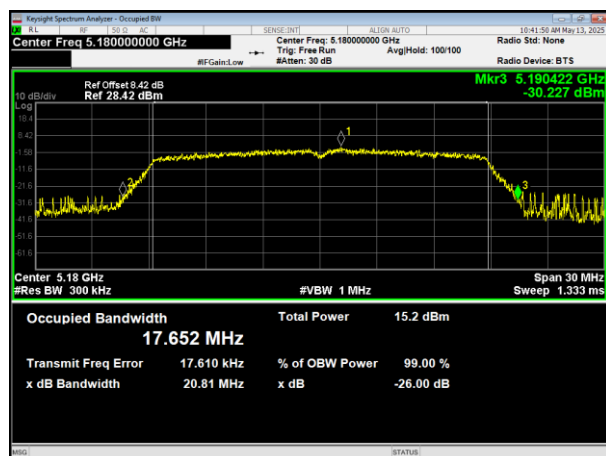
5240MHz



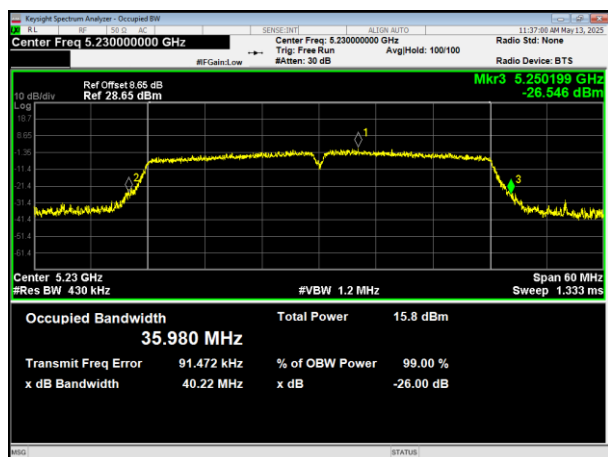
802.11ac HT40



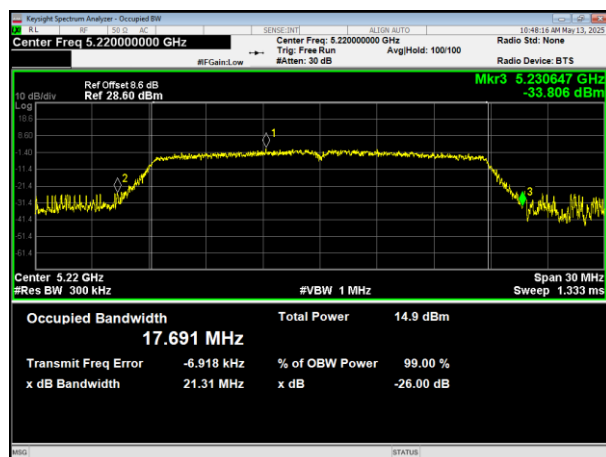
802.11n HT20



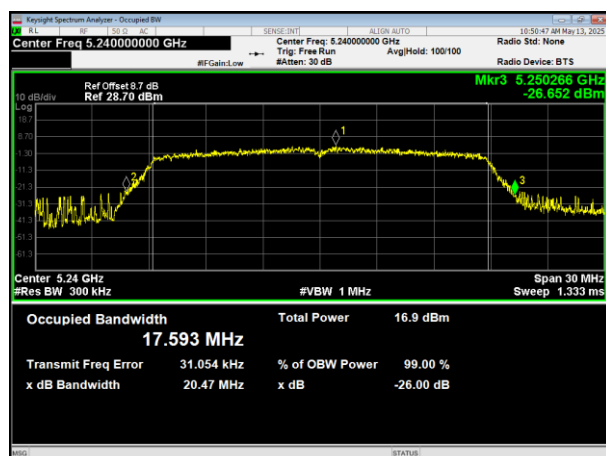
5190MHz



5180MHz



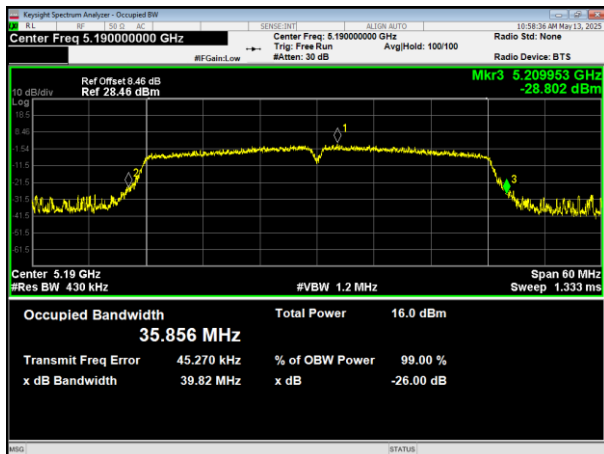
5230MHz



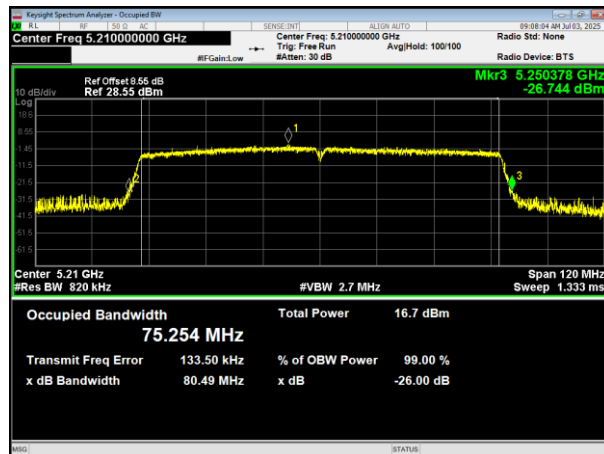
5240MHz



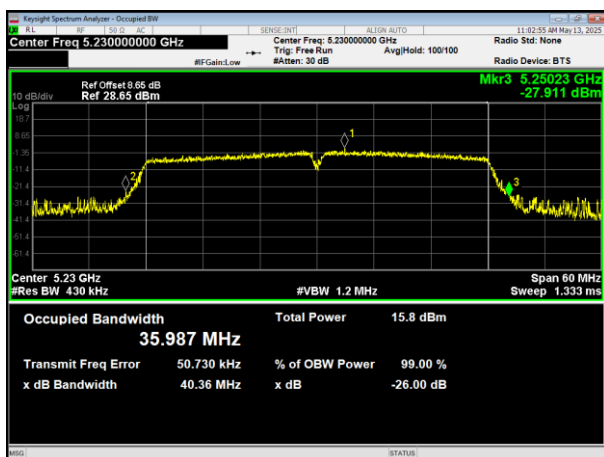
802.11n HT40



802.11ac HT80



5190MHz

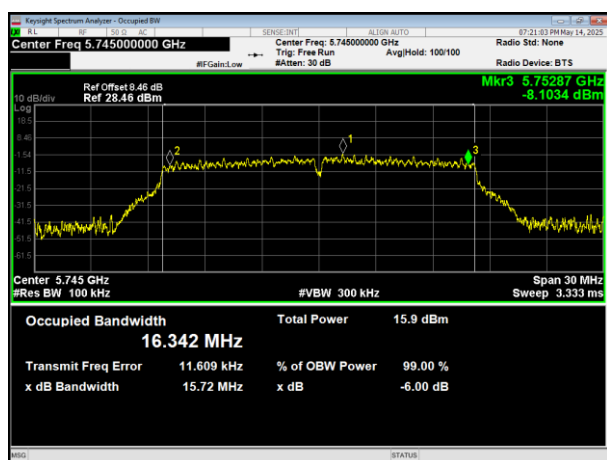


5210MHz

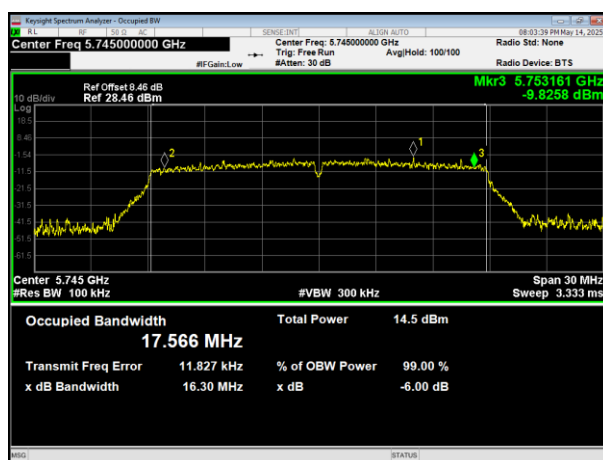
5230MHz



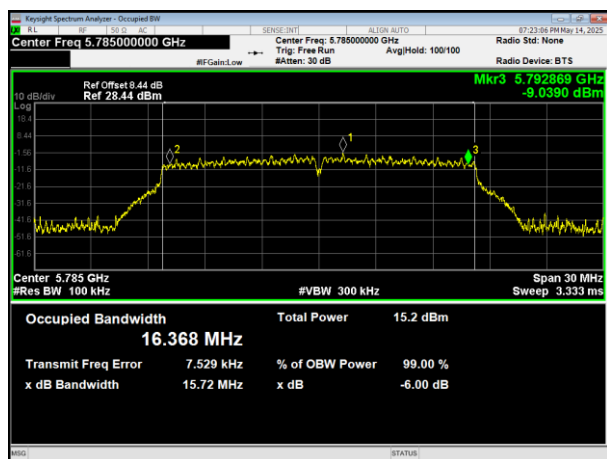
802.11a



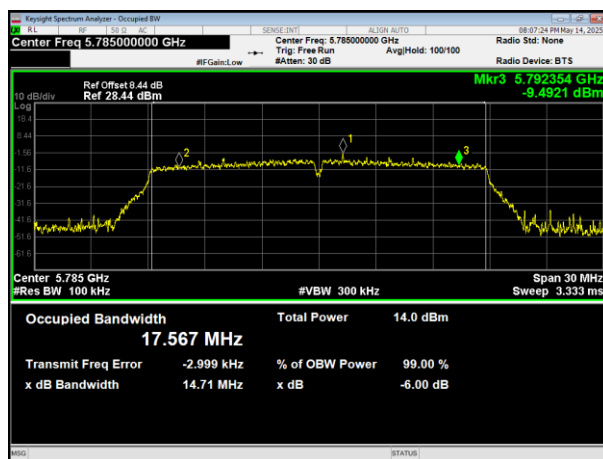
802.11ac HT20



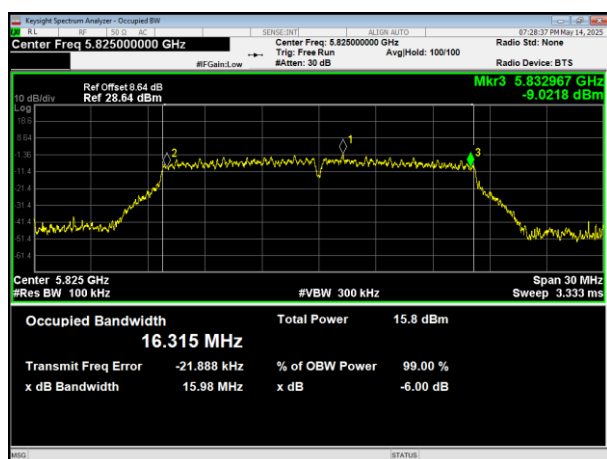
5745MHz



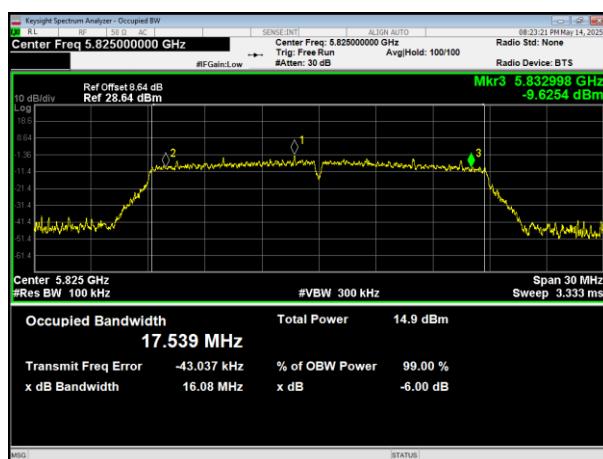
5745MHz



5785MHz



5785MHz

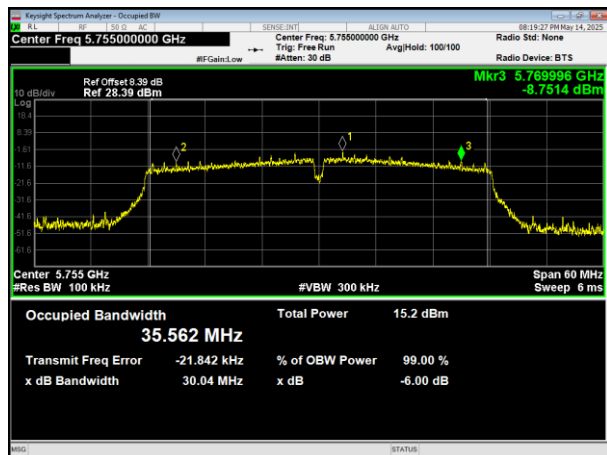


5825MHz

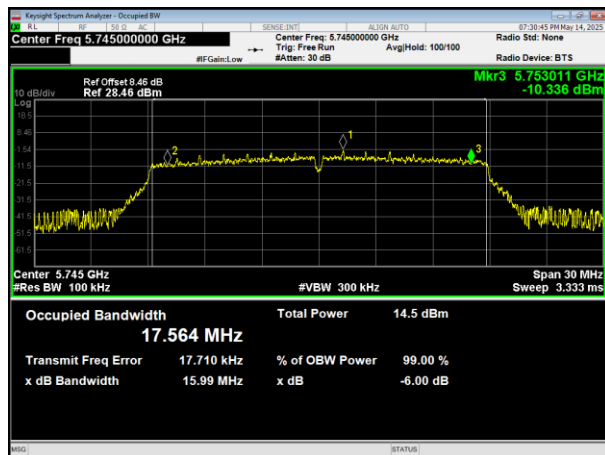
5825MHz



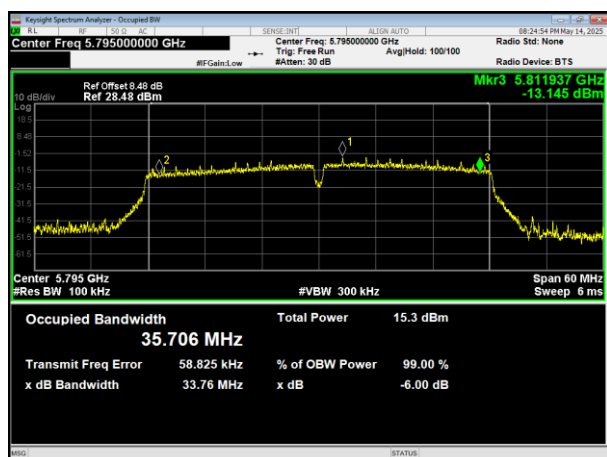
802.11ac HT40



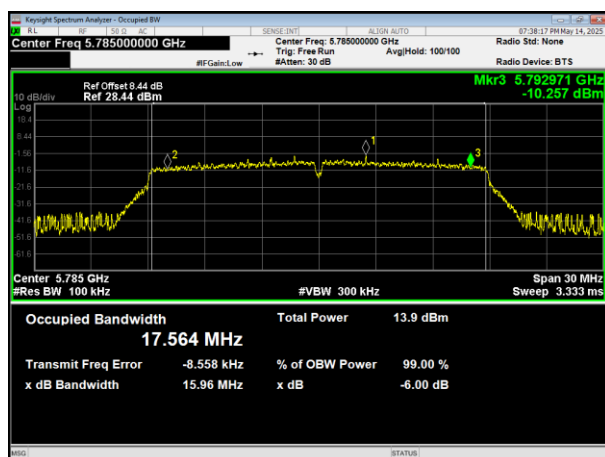
802.11n HT20



5755MHz



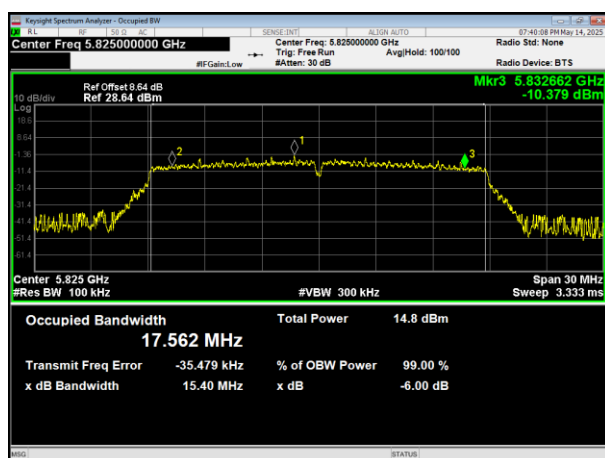
5745MHz



5795MHz



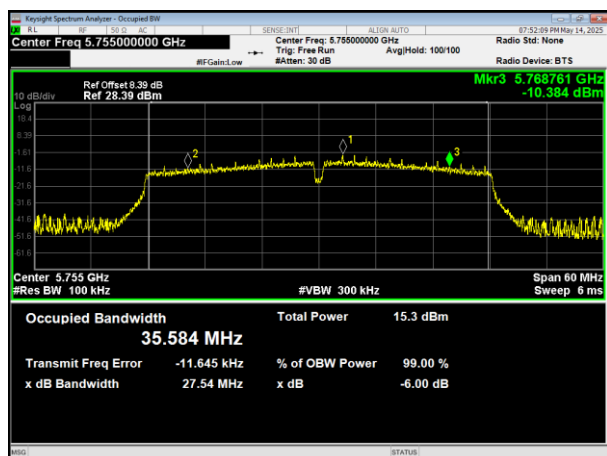
5785MHz



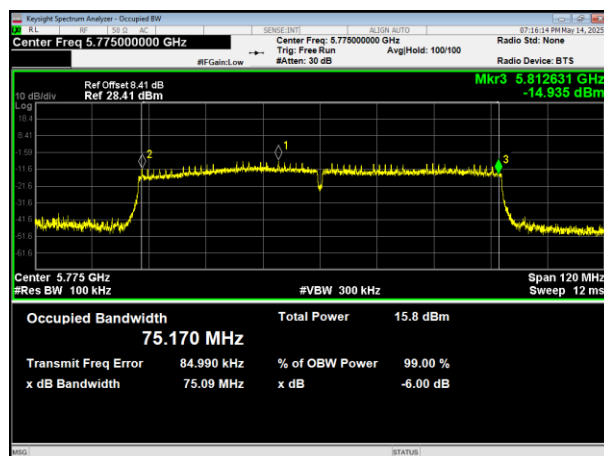
5825MHz



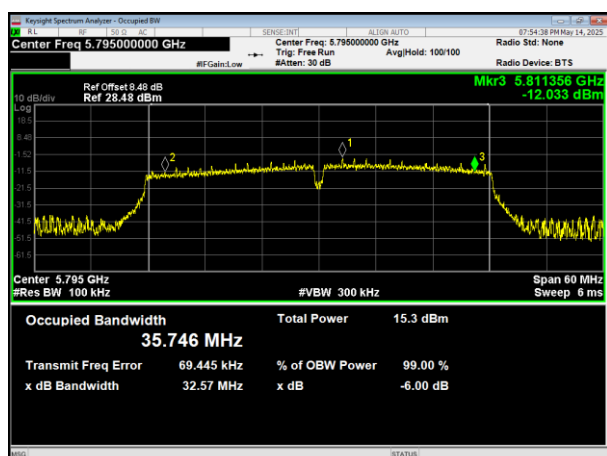
802.11n HT40



802.11ac HT80



5755MHz



5775MHz

5795MHz



7.. DUTY CYCLE TEST SIGNAL

7.1. APPLIED PROCEDURES / LIMIT

Pre-analysis Check: While conducting average power measurement, duty cycle of each mode shall be checked to ensure its duty cycle in order to compensate for the loss due to insufficient ratio of duty cycle. All duty cycle is pre-scanned, and result as obtained below shows only the most representative ones where duty cycle is conducted as the given transmission with given virtual operation that expresses the percentage.

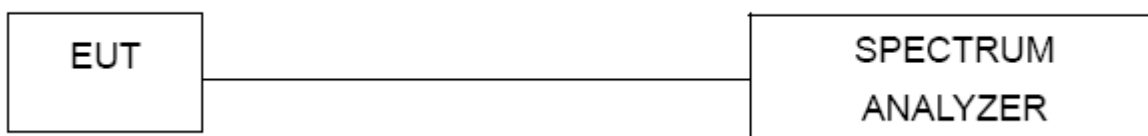
7.1.1. TEST PROCEDURE

1. Set RBW = 1 MHz.
2. Set the video bandwidth (VBW) $\geq$ RBW.
3. Detector = Peak.
4. Sweep = auto couple.
5. Allow the trace to stabilize.
6. Span=0

7.1.2. DEVIATION FROM STANDARD

No deviation.

7.1.3. TEST SETUP



7.1.4. EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.