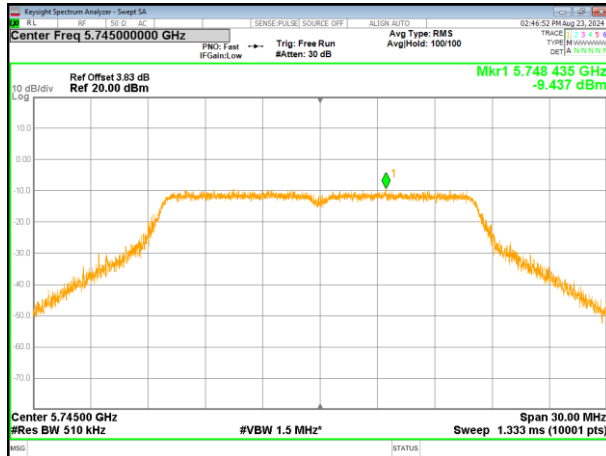
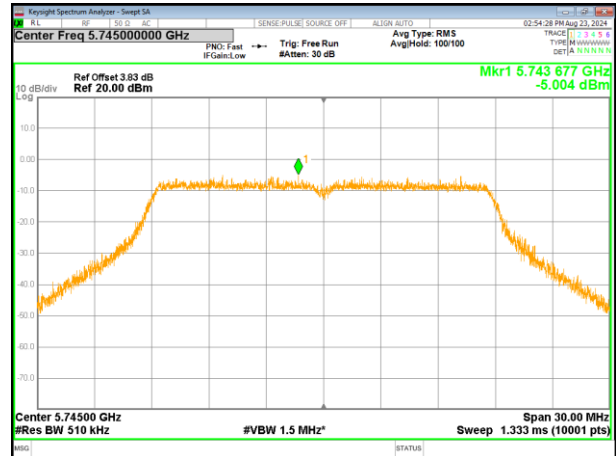


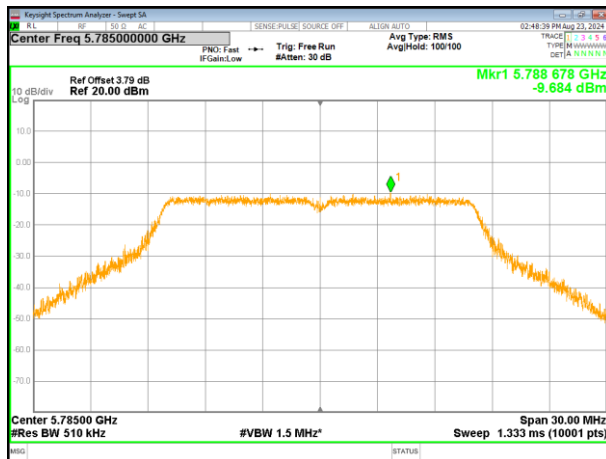
(802.11a) PSD plot on channel 149



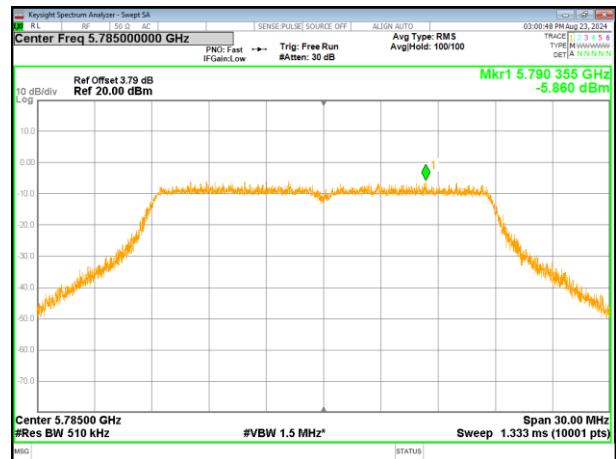
(802.11n20) PSD plot on channel 149



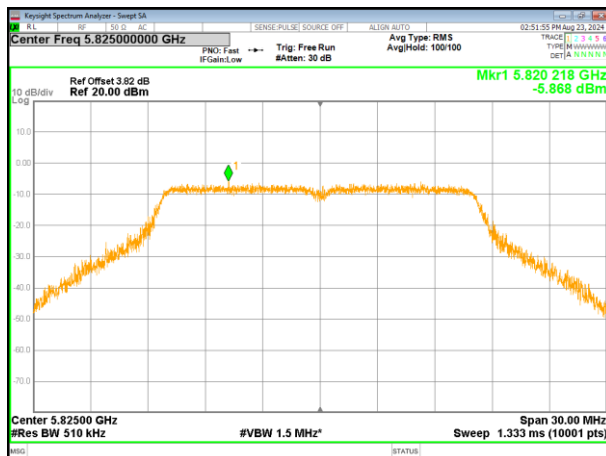
(802.11a) PSD plot on channel 157



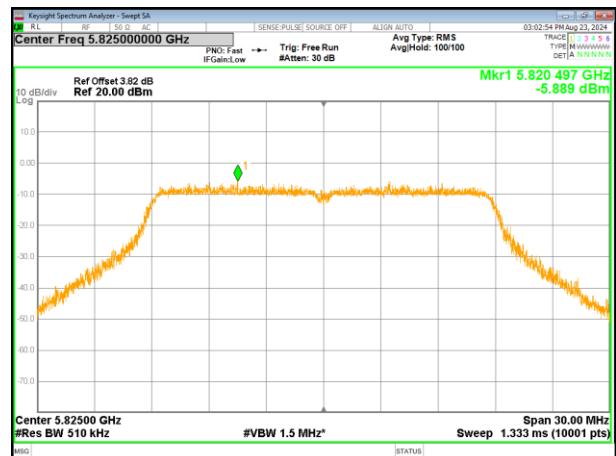
(802.11n20) PSD plot on channel 157



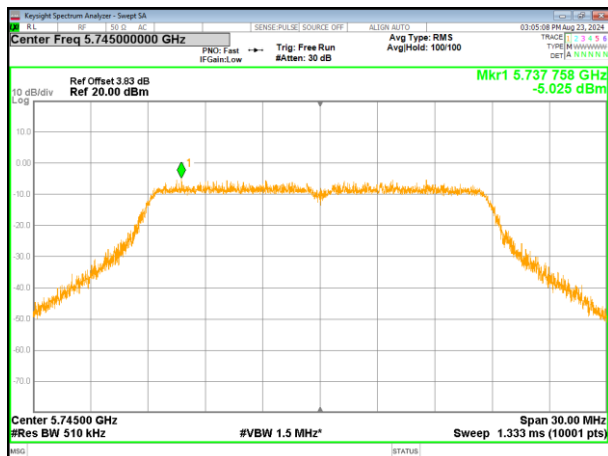
(802.11a) PSD plot on channel 165



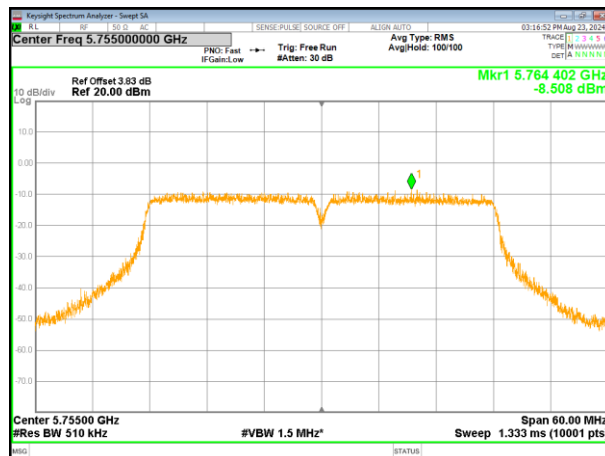
(802.11n20) PSD plot on channel 165



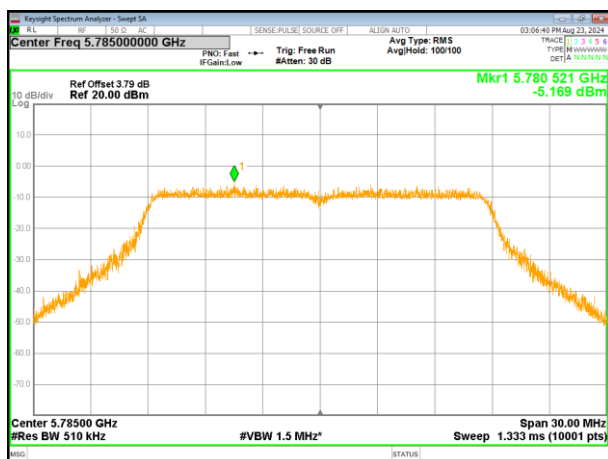
(802.11ac20) PSD plot on channel 149



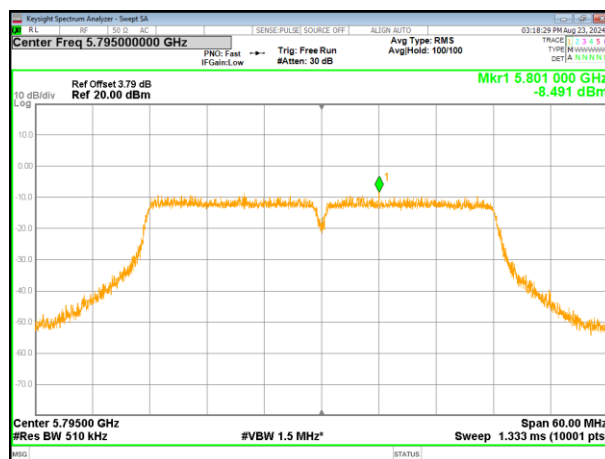
(802.11n40) PSD plot on channel 151



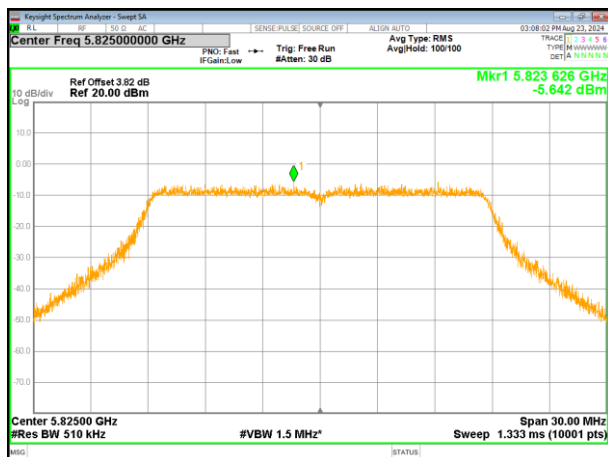
(802.11ac20) PSD plot on channel 157



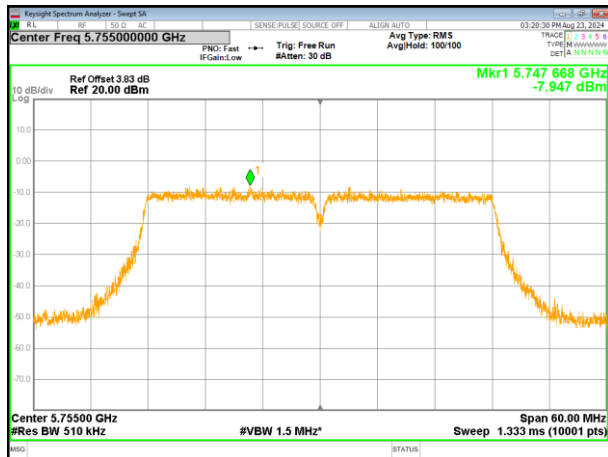
(802.11n40) PSD plot on channel 159



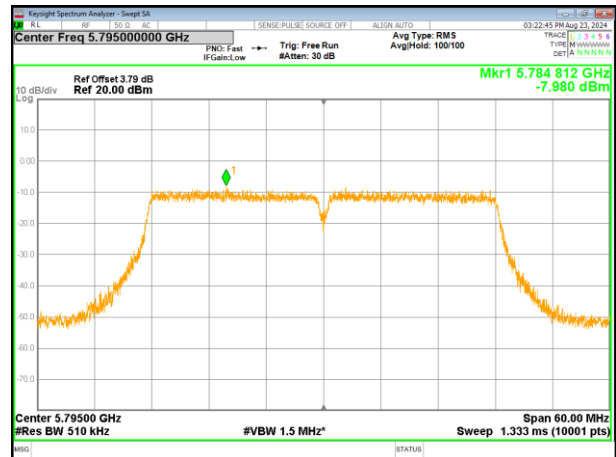
(802.11ac20) PSD plot on channel 165



(802.11ac40) PSD plot on channel 151

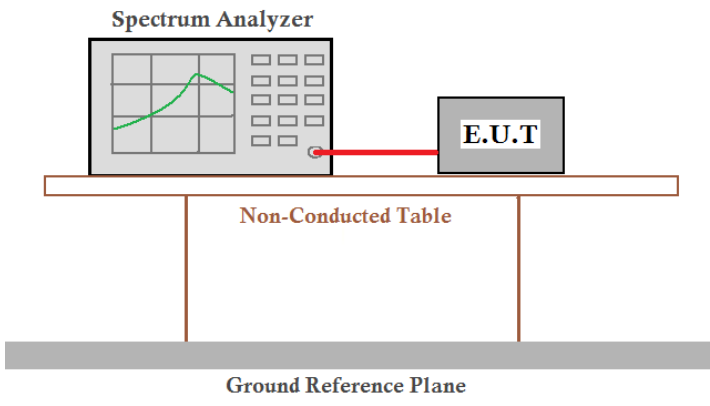


(802.11ac40) PSD plot on channel 159



4.7 Band edge

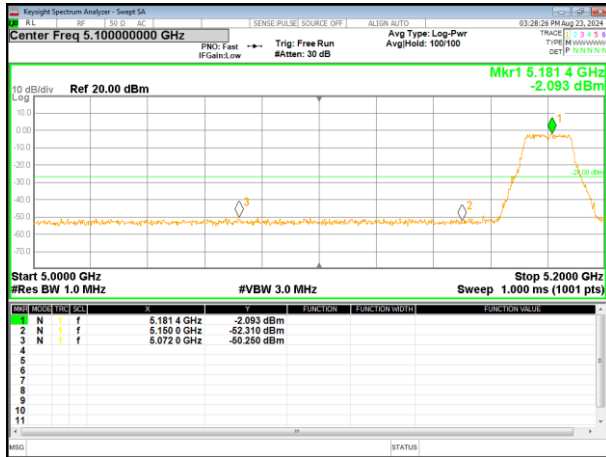
4.7.1 Conducted test Method

Test Requirement:	FCC Part15 C Section 15.209 and 15.205	
Test Method:	ANSI C63.10: 2013	
Limit:	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.	
Test setup:	 The diagram illustrates the test setup. A Spectrum Analyzer is connected to an E.U.T. (Equipment Under Test) via a red cable. Both are placed on a Non-Conducted Table. The table is supported by two vertical legs and sits on a Ground Reference Plane, which is represented by a thick grey bar at the bottom.	
Test Procedure:	1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator. 2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range. 3. Set RBW of spectrum analyzer to 1 MHz with a convenient frequency span. 4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency. 5. Repeat above procedures until all measured frequencies were complete..	
Test Instruments:	Refer to section 3.0 for details	
Test mode:	Refer to section 2.2 for details	
Test environment:	Temp.: 22.2°C	Humid.: 52%RH
Test voltage:	DC 5V	
Test results:	Pass	

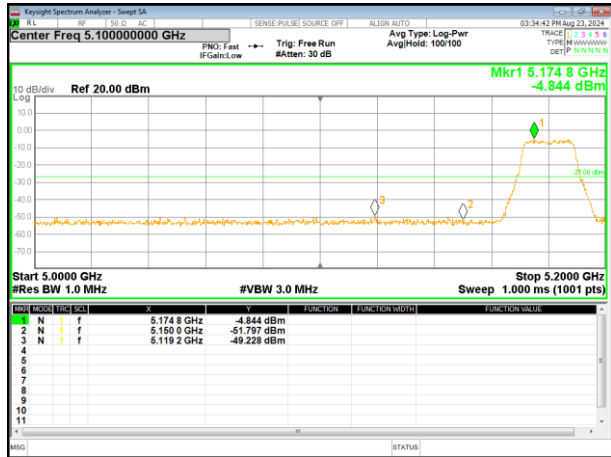
Remark: Due to the margin value of the sideband test being greater than the antenna gain value, the test meets the requirements

5.180~5.240 GHz

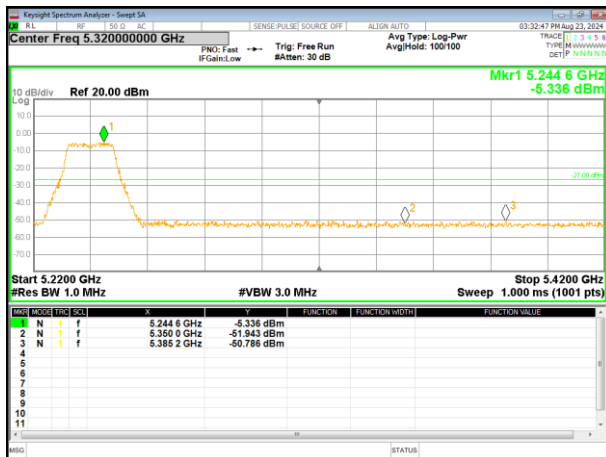
(802.11a) Band Edge, Left Side



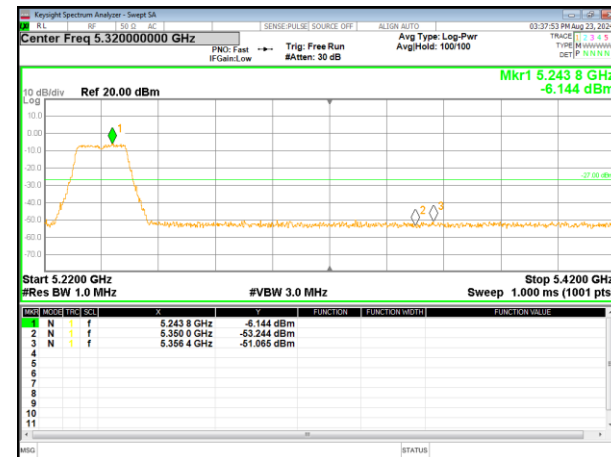
(802.11n20) Band Edge, Left Side



(802.11a) Band Edge, Right Side

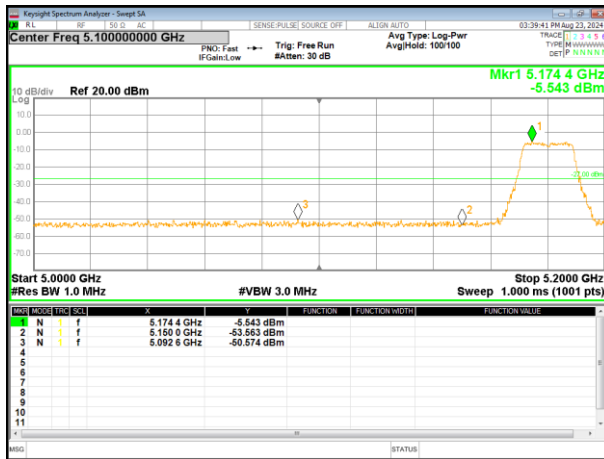


(802.11n20) Band Edge, Right Side

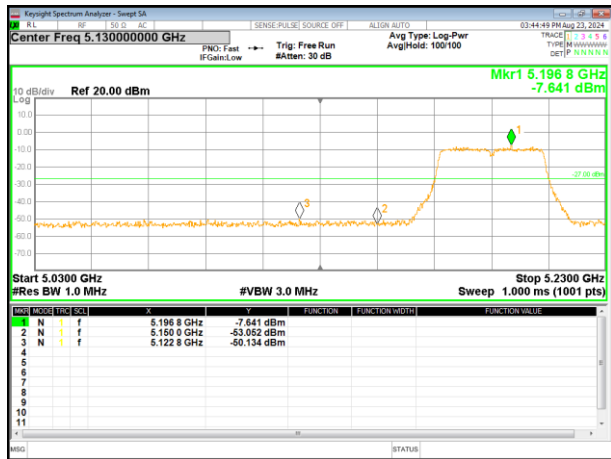


5.180~5.240 GHz

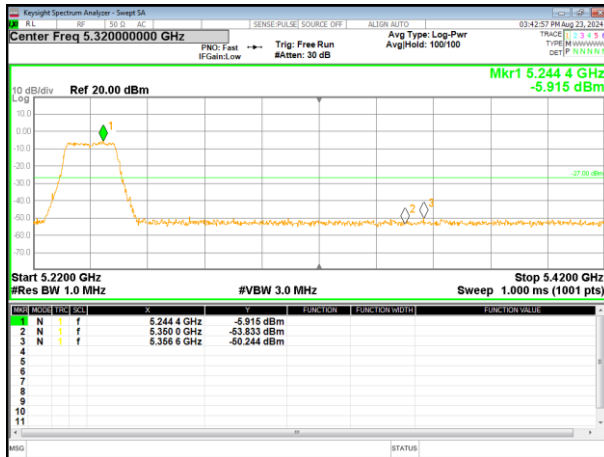
(802.11ac20) Band Edge, Left Side



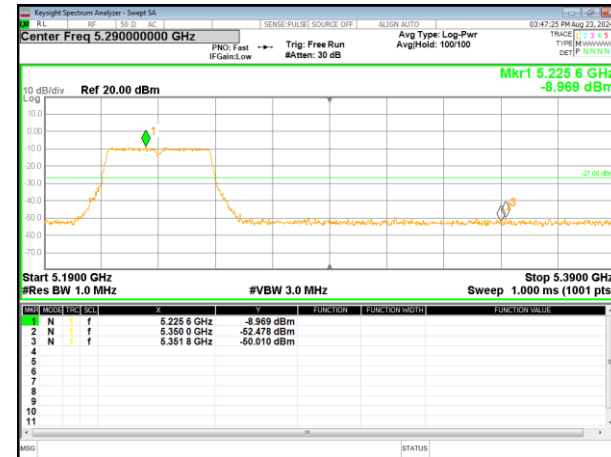
(802.11n40) Band Edge, Left Side



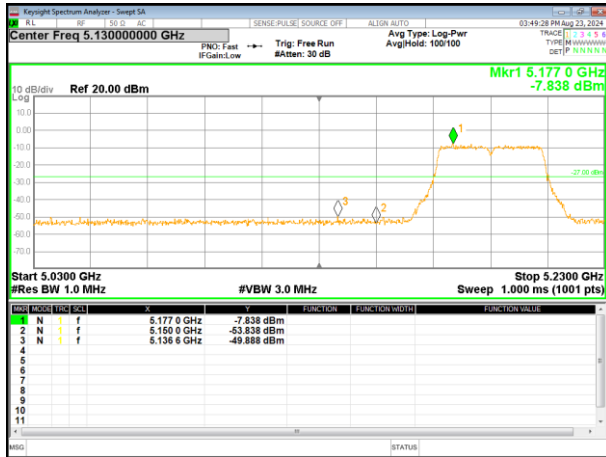
(802.11ac20) Band Edge, Right Side



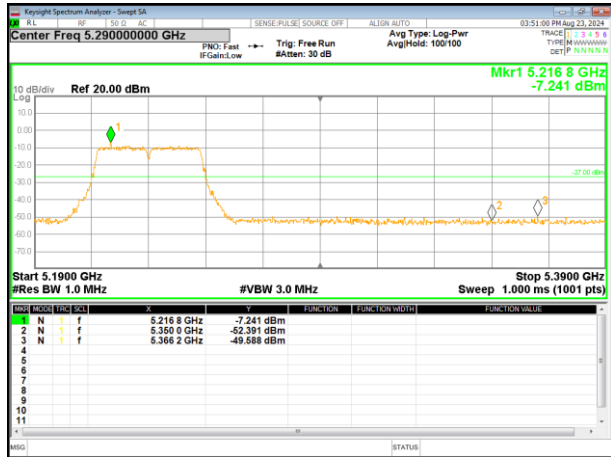
(802.11n40) Band Edge, Right Side



(802.11ac40) Band Edge, Left Side

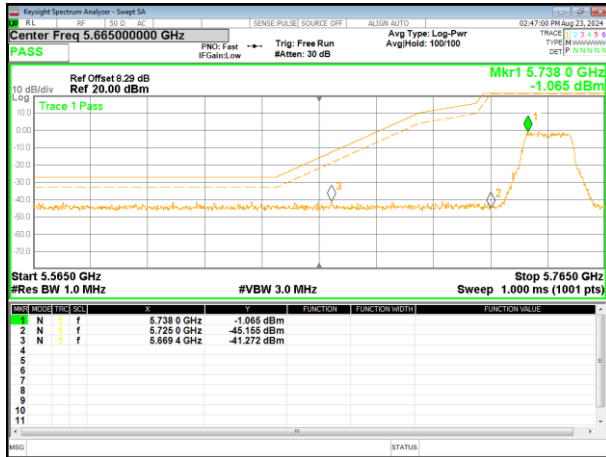


(802.11ac40) Band Edge, Right Side

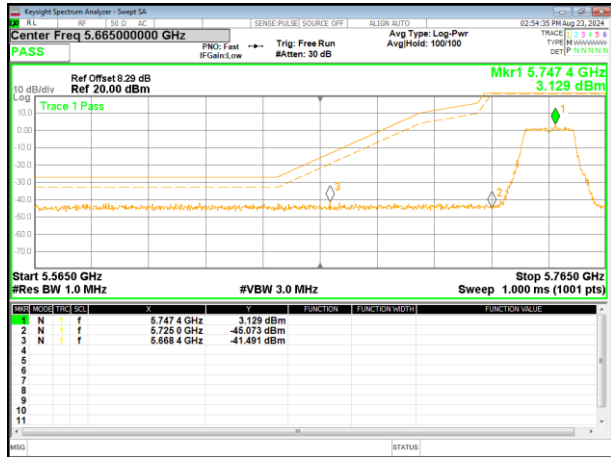


5.745~5.825 GHz

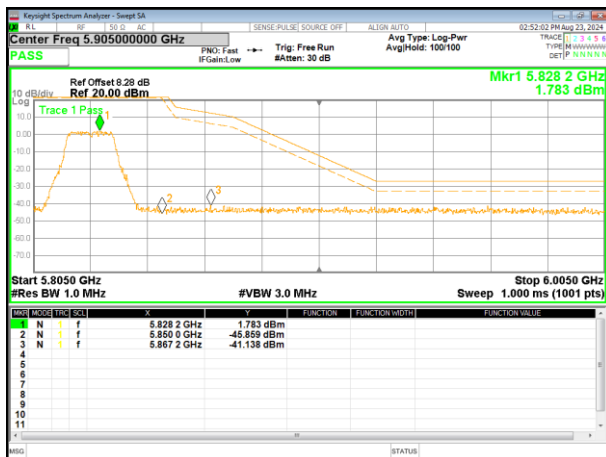
(802.11a) Band Edge, Left Side



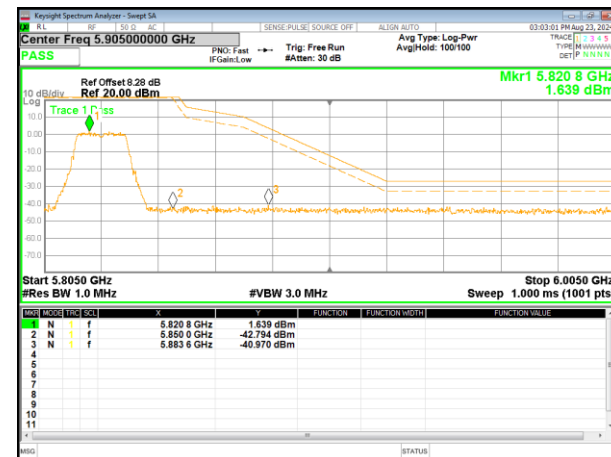
(802.11n20) Band Edge, Left Side



(802.11a) Band Edge, Right Side

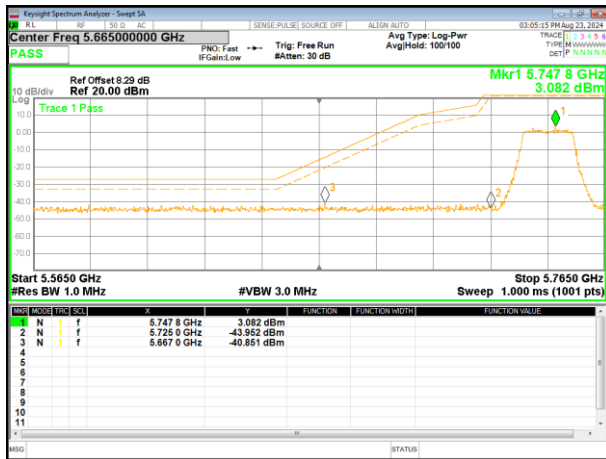


(802.11n20) Band Edge, Right Side

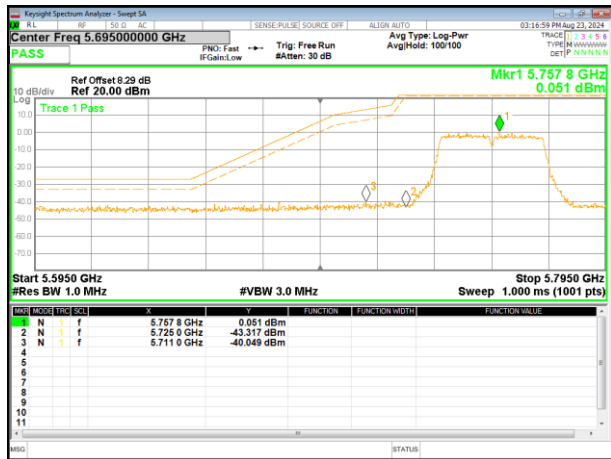


5.745~5.825 GHz

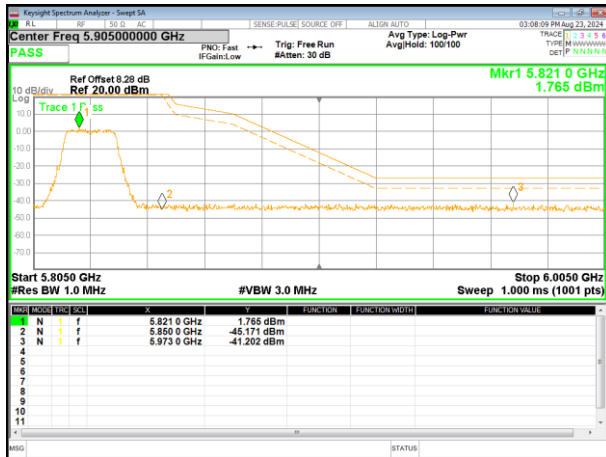
(802.11ac20) Band Edge, Left Side



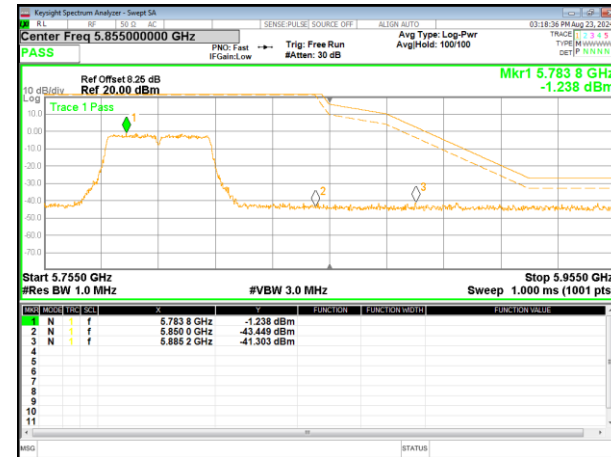
(802.11n40) Band Edge, Left Side



(802.11ac20) Band Edge, Right Side

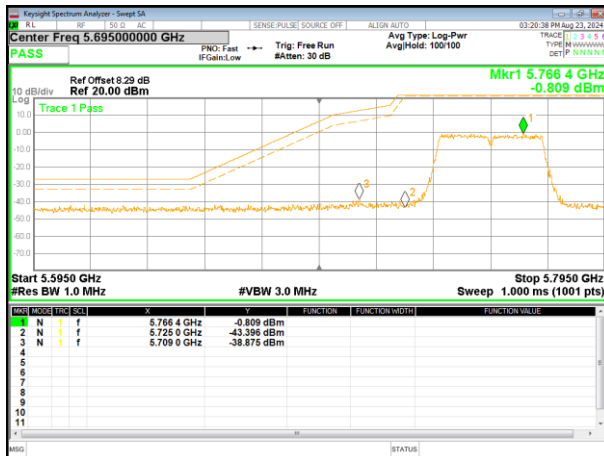


(802.11n40) Band Edge, Right Side

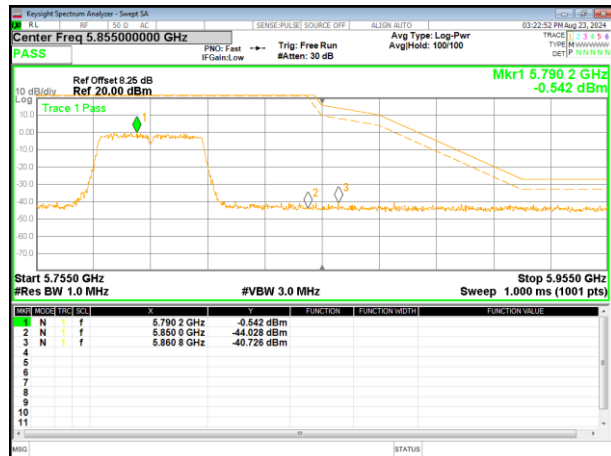


5.745~5.825 GHz

(802.11ac40) Band Edge, Left Side

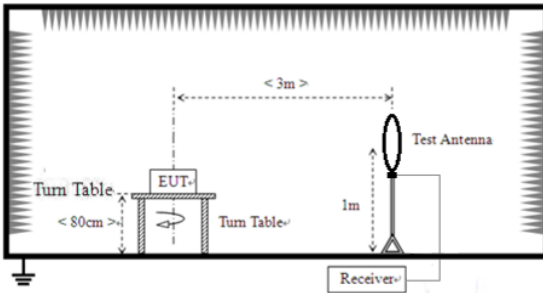
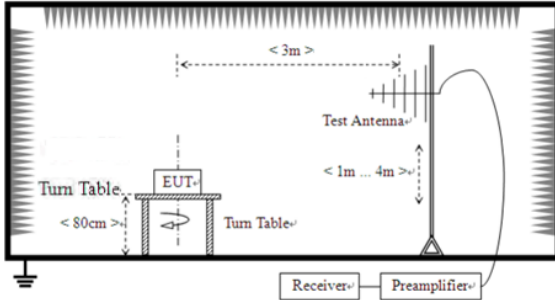


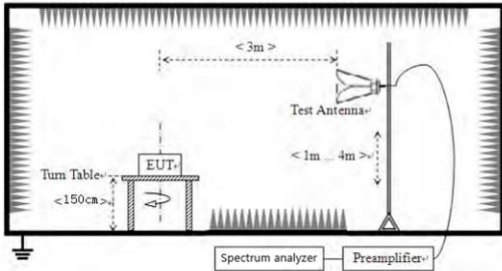
(802.11ac40) Band Edge, Right Side



4.8 Spurious Emission

4.8.1 Radiated Emission Method

Test Requirement:	FCC Part15 C Section 15.209, Part 15E Section 15.407(b)(4)				
Test Method:	ANSI C63.10:2013				
Test Frequency Range:	9kHz to 40GHz				
Test site:	Measurement Distance: 3m				
Receiver setup:	Frequency	Detector	RBW	VBW	Value
	9kHz-150KHz	Quasi-peak	200Hz	1kHz	Quasi-peak Value
	150kHz-30MHz	Quasi-peak	9kHz	30kHz	Quasi-peak Value
	30MHz-1GHz	Quasi-peak	120KHz	300KHz	Quasi-peak Value
	Above 1GHz	Peak	1MHz	3MHz	Peak Value
		AV	1MHz	3MHz	Average Value
Limit:	Frequency		Limit (uV/m)	Value	Measurement Distance
	0.009MHz-0.490MHz		2400/F(KHz)	QP	300m
	0.490MHz-1.705MHz		24000/F(KHz)	QP	300m
	1.705MHz-30MHz		30	QP	30m
	30MHz-88MHz		100	QP	3m
	88MHz-216MHz		150	QP	
	216MHz-960MHz		200	QP	
	960MHz-1GHz		500	QP	
	Frequency		Limit (dBm/MHz)	Remark	
	Above 1GHz		-27.0	Peak Value	
Test setup:	For radiated emissions from 9kHz to 30MHz				
					
Test setup:	For radiated emissions from 30MHz to1GHz				
					

	For radiated emissions above 1GHz 
Test Procedure:	1. The EUT was placed on the top of a rotating table (0.8m for below 1GHz and 1.5 meters for above 1GHz) above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation. 2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. 3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. 4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading. 5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. 6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet. The radiation measurements are performed in X, Y, Z axis positioning. And found the X axis positioning which it is worse case, only the test worst case mode is recorded in the report.
Test Instruments:	Refer to section 3.0 for details
Test mode:	Refer to section 2.2 for details
Test results:	Pass

Remarks:

1. The report only shows the worst mode.
2. Pre-scan all kind of the place mode (X-axis, Y-axis, Z-axis), and found the Y-axis which it is worse case.

Measurement Data:

9 kHz ~ 30 MHz

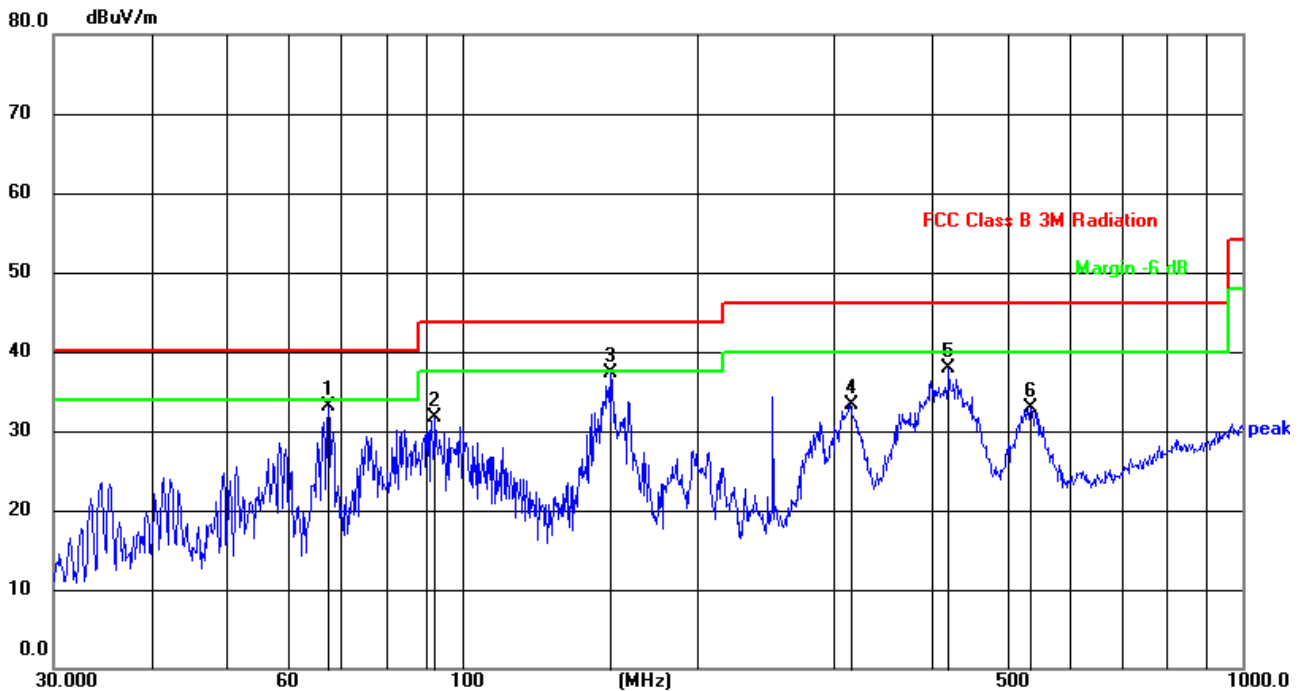
The emission from 9 kHz to 30MHz was pre-tested and found the result was 20dB lower than the limit, and according to 15.31(o) & RSS-Gen 6.13, the test result no need to reported.

Below 1GHz

Remark: The test data shows only the worst case 802.11ac mode.

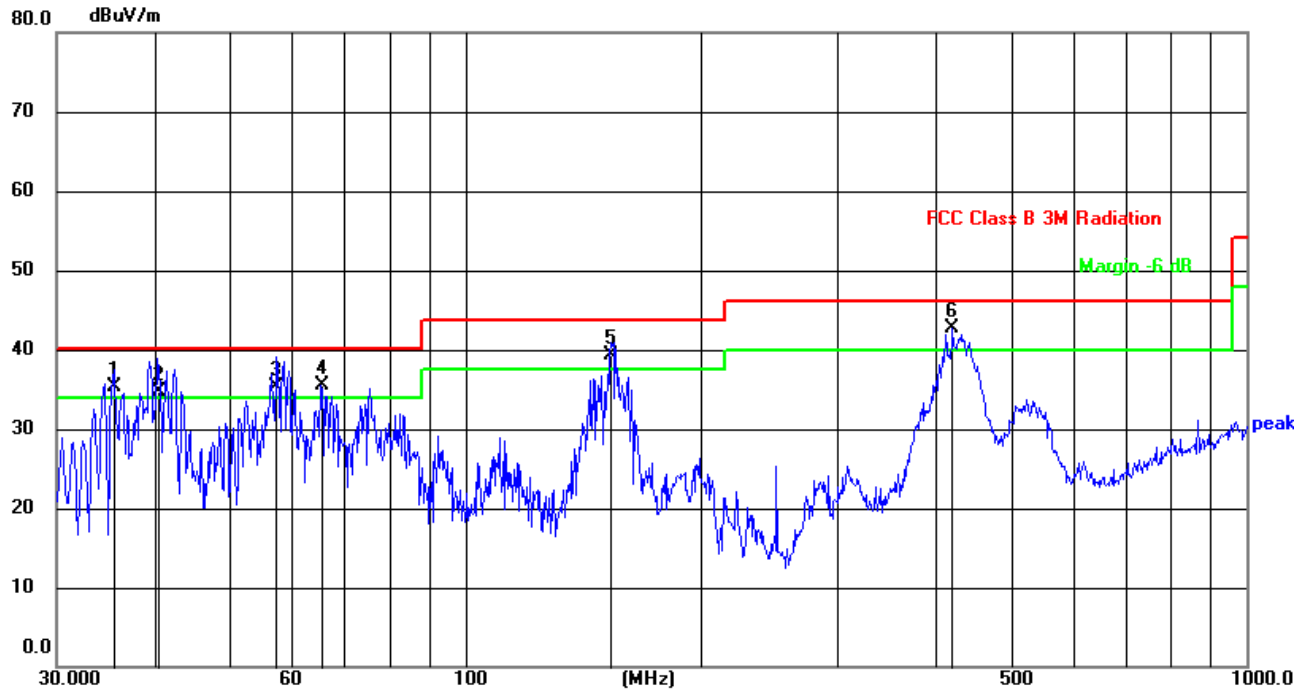
Temperature:	22.2°C	Relative Humidity:	52%
Pressure:	101.2kPa	Test Voltage :	DC 5V
Test Mode :	5.2G TX- 802.11ac (5180MHz)		

Horizontal:



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	67.4382	56.91	-23.74	33.17	40.00	-6.83	QP
2	92.4624	56.98	-25.36	31.62	43.50	-11.88	QP
3	154.8204	57.91	-20.54	37.37	43.50	-6.13	QP
4	314.3765	53.06	-19.70	33.36	46.00	-12.64	QP
5	420.5803	54.32	-16.45	37.87	46.00	-8.13	QP
6	535.7073	46.09	-13.22	32.87	46.00	-13.13	QP

Vertical:



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	35.4993	57.03	-21.63	35.40	40.00	-4.60	QP
2	40.4172	55.68	-20.98	34.70	40.00	-5.30	QP
3	57.3923	57.75	-22.35	35.40	40.00	-4.60	QP
4	65.3432	58.84	-23.41	35.43	40.00	-4.57	QP
5	153.7385	59.92	-20.52	39.40	43.50	-4.10	QP
6	420.5803	59.15	-16.45	42.70	46.00	-3.30	QP

Remarks:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. The emission levels of other frequencies are very lower than the limit and not show in test report.
3. The test data shows only the worst case 802.11ac mode

Above 1GHz:

Remark: The test data shows only the worst case 802.11ac mode.

Temperature:	22.2°C	Relative Humidity:	52%
Pressure:	101.2kPa	Test Voltage :	DC 5V
Test Mode :	5.2G TX- 802.11ac		

Polar (H/V)	Frequency	Meter Reading	Pre- amplifier	Cable Loss	Antenna Factor	Emission Level	Limits	Margin	Detect or Type
	MHz	dBuV	dB	dB	dB	dBuV/m	dBuV/m	dB	
Low Channel:5180MHz									
V	10360.00	45.37	46.20	8.27	38.50	45.94	68.20	-22.26	PK
V	10360.00	36.35	46.20	8.27	38.50	36.92	54.00	-17.08	AV
V	15540.00	42.75	46.30	10.35	38.70	45.50	74.00	-28.50	PK
V	15540.00	33.69	46.30	10.35	38.70	36.44	54.00	-17.56	AV
V	20720.00	50.97	57.40	11.93	37.80	43.30	68.20	-24.90	PK
V	20720.00	41.92	57.40	11.93	37.80	34.25	54.00	-19.75	AV
V	25900.00	48.84	56.50	13.45	39.70	45.49	68.20	-22.71	PK
V	25900.00	39.44	56.50	13.45	39.70	36.09	54.00	-17.91	AV
H	10360.00	45.30	46.20	8.27	38.50	45.87	68.20	-22.33	PK
H	10360.00	35.12	46.20	8.27	38.50	35.69	54.00	-18.31	AV
H	15540.00	41.87	46.30	10.35	38.70	44.62	74.00	-29.38	PK
H	15540.00	31.51	46.30	10.35	38.70	34.26	54.00	-19.74	AV
H	20720.00	52.97	57.40	11.93	37.80	45.30	68.20	-22.90	PK
H	20720.00	42.72	57.40	11.93	37.80	35.05	54.00	-18.95	AV
H	25900.00	49.76	56.50	13.45	39.70	46.41	68.20	-21.79	PK
H	25900.00	39.47	56.50	13.45	39.70	36.12	54.00	-17.88	AV

Polar (H/V)	Frequency	Meter Reading	Pre- amplifier	Cable Loss	Antenna Factor	Emission Level	Limits	Margin	Detect or Type
	(MHz)	(dBuV)	(dB)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Middle Channel:5200MHz									
V	10400.00	44.51	46.20	8.27	38.50	45.08	68.20	-23.12	PK
V	10400.00	36.14	46.20	8.27	38.50	36.71	54.00	-17.29	AV
V	15600.00	43.04	46.30	10.35	38.40	45.49	74.00	-28.51	PK
V	15600.00	35.08	46.30	10.35	38.40	37.53	54.00	-16.47	AV
V	20800.00	52.06	57.40	11.93	37.80	44.39	68.20	-23.81	PK
V	20800.00	43.29	57.40	11.93	37.80	35.62	54.00	-18.38	AV
V	26000.00	47.64	56.50	13.45	39.80	44.39	68.20	-23.81	PK
V	26000.00	40.56	56.50	13.45	39.80	37.31	54.00	-16.69	AV
H	10400.00	45.05	46.20	8.27	38.50	45.62	68.20	-22.58	PK
H	10400.00	36.37	46.20	8.27	38.50	36.94	54.00	-17.06	AV
H	15600.00	43.03	46.30	10.35	38.40	45.48	74.00	-28.52	PK
H	15600.00	35.08	46.30	10.35	38.40	37.53	54.00	-16.47	AV
H	20800.00	51.11	57.40	11.93	37.80	43.44	68.20	-24.76	PK
H	20800.00	41.39	57.40	11.93	37.80	33.72	54.00	-20.28	AV
H	26000.00	47.41	56.50	13.45	39.80	44.16	68.20	-24.04	PK
H	26000.00	39.84	56.50	13.45	39.80	36.59	54.00	-17.41	AV

<i>Polar (H/V)</i>	<i>Frequency</i>	<i>Meter Reading</i>	<i>Pre- amplifier</i>	<i>Cable Loss</i>	<i>Antenna Factor</i>	<i>Emission Level</i>	<i>Limits</i>	<i>Margin</i>	<i>Detect or Type</i>
	(MHz)	(dBuV)	(dB)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
High Channel:5240MHz									
V	10480.00	41.63	46.20	8.27	38.60	42.30	68.20	-25.90	PK
V	10480.00	32.58	46.20	8.27	38.60	33.25	54.00	-20.75	AV
V	15720.00	39.44	46.30	10.35	38.40	41.89	74.00	-32.11	PK
V	15720.00	30.54	46.30	10.35	38.40	32.99	54.00	-21.01	AV
V	20960.00	48.56	57.40	11.93	37.50	40.59	68.20	-27.61	PK
V	20960.00	40.83	57.40	11.93	37.50	32.86	54.00	-21.14	AV
V	26200.00	44.93	56.50	13.45	40.10	41.98	68.20	-26.22	PK
V	26200.00	36.42	56.50	13.45	40.10	33.47	54.00	-20.53	AV
H	10480.00	41.84	46.20	8.27	38.60	42.51	68.20	-25.69	PK
H	10480.00	32.58	46.20	8.27	38.60	33.25	54.00	-20.75	AV
H	15720.00	39.72	46.30	10.35	38.40	42.17	74.00	-31.83	PK
H	15720.00	30.62	46.30	10.35	38.40	33.07	54.00	-20.93	AV
H	20960.00	48.74	57.40	11.93	37.50	40.77	68.20	-27.43	PK
H	20960.00	40.72	57.40	11.93	37.50	32.75	54.00	-21.25	AV
H	26200.00	44.67	56.50	13.45	40.10	41.72	68.20	-26.48	PK
H	26200.00	35.85	56.50	13.45	40.10	32.90	54.00	-21.10	AV

Remark:

1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier,
Margin= Emission Level - Limit
2. If peak below the average limit, the average emission was no test.
3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.



Temperature:	22.2°C	Relative Humidity:	52%
Pressure:	101.2kPa	Test Voltage :	DC 5V
Test Mode :	5.8G TX- 802.11ac20		

Polar (H/V)	Frequency	Meter Reading	Pre- amplifier	Cable Loss	Antenn Factor	Emission Level	Limits	Margin	Detect or Typ
	(MHz)	(dBuV)	(dB)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel:5745MHz									
V	11490.00	41.02	46.10	8.77	39.10	42.79	74.00	-31.21	PK
V	11490.00	33.90	46.10	8.77	39.10	35.67	54.00	-18.33	AV
V	17235.00	38.92	47.60	11.10	38.70	41.12	68.20	-27.08	PK
V	17235.00	32.54	47.60	11.10	38.70	34.74	54.00	-19.26	AV
V	22980.00	46.55	56.90	12.73	37.70	40.08	74.00	-33.92	PK
V	22980.00	39.53	56.90	12.73	37.70	33.06	54.00	-20.94	AV
V	28725.00	43.76	55.60	14.25	40.30	42.71	68.20	-25.49	PK
V	28725.00	36.32	55.60	14.25	40.30	35.27	54.00	-18.73	AV
H	11490.00	41.45	46.10	8.77	39.10	43.22	74.00	-30.78	PK
H	11490.00	33.74	46.10	8.77	39.10	35.51	54.00	-18.49	AV
H	17235.00	39.81	47.60	11.10	38.70	42.01	68.20	-26.19	PK
H	17235.00	32.88	47.60	11.10	38.70	35.08	54.00	-18.92	AV
H	22980.00	48.49	56.90	12.73	37.70	42.02	74.00	-31.98	PK
H	22980.00	39.34	56.90	12.73	37.70	32.87	54.00	-21.13	AV
H	28725.00	45.48	55.60	14.25	40.30	44.43	68.20	-23.77	PK
H	28725.00	36.87	55.60	14.25	40.30	35.82	54.00	-18.18	AV

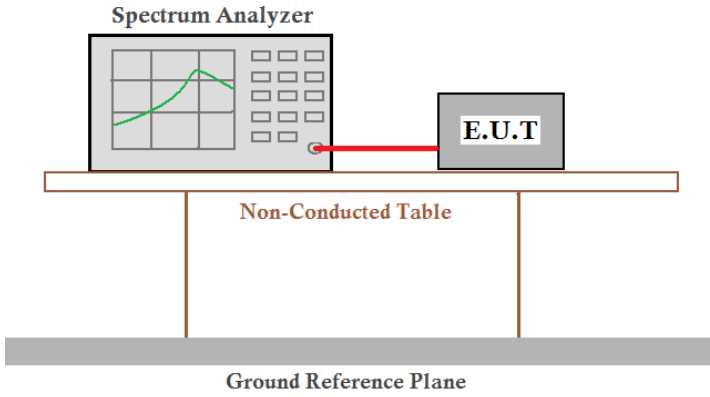
Polar (H/V)	Frequency	Meter Reading	Pre- amplifier	Cable Loss	Antenna Factor	Emission Level	Limits	Margin	Detect or Type
	(MHz)	(dBuV)	(dB)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Middle Channel:5785MHz									
V	11570.00	40.85	46.10	8.77	39.10	42.62	74.00	-31.38	PK
V	11570.00	33.73	46.10	8.77	39.10	35.50	54.00	-18.50	AV
V	17355.00	38.76	47.60	11.10	38.70	40.96	68.20	-27.24	PK
V	17355.00	32.35	47.60	11.10	38.70	34.55	54.00	-19.45	AV
V	23140.00	46.39	56.90	12.73	37.70	39.92	74.00	-34.08	PK
V	23140.00	39.38	56.90	12.73	37.70	32.91	54.00	-21.09	AV
V	28925.00	43.58	55.60	14.25	40.30	42.53	68.20	-25.67	PK
V	28925.00	36.14	55.60	14.25	40.30	35.09	54.00	-18.91	AV
H	11570.00	41.27	46.10	8.77	39.10	43.04	74.00	-30.96	PK
H	11570.00	33.56	46.10	8.77	39.10	35.33	54.00	-18.67	AV
H	17355.00	39.65	47.60	11.10	38.70	41.85	68.20	-26.35	PK
H	17355.00	32.73	47.60	11.10	38.70	34.93	54.00	-19.07	AV
H	23140.00	48.30	56.90	12.73	37.70	41.83	74.00	-32.17	PK
H	23140.00	39.19	56.90	12.73	37.70	32.72	54.00	-21.28	AV
H	28925.00	45.32	55.60	14.25	40.30	44.27	68.20	-23.93	PK
H	28925.00	36.70	55.60	14.25	40.30	35.65	54.00	-18.35	AV

<i>Polar (H/V)</i>	<i>Frequency</i>	<i>Meter Reading</i>	<i>Pre- amplifier</i>	<i>Cable Loss</i>	<i>Antenna Factor</i>	<i>Emission Level</i>	<i>Limits</i>	<i>Margin</i>	<i>Detect or Type</i>
	(MHz)	(dBuV)	(dB)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
High Channel:5825MHz									
V	11650.00	41.81	46.10	8.77	39.10	43.58	74.00	-30.42	PK
V	11650.00	33.90	46.10	8.77	39.10	35.67	54.00	-18.33	AV
V	17475.00	39.94	47.90	11.23	38.90	42.17	68.20	-26.03	PK
V	17475.00	33.26	47.90	11.23	38.90	35.49	54.00	-18.51	AV
V	23300.00	48.42	57.10	12.73	37.80	41.85	68.20	-26.35	PK
V	23300.00	40.19	57.10	12.73	37.80	33.62	54.00	-20.38	AV
V	29125.00	45.55	55.80	14.25	40.50	44.50	68.20	-23.70	PK
V	29125.00	37.80	55.80	14.25	40.50	36.75	54.00	-17.25	AV
H	11650.00	43.56	46.10	8.77	39.10	45.33	74.00	-28.67	PK
H	11650.00	35.98	46.10	8.77	39.10	37.75	54.00	-16.25	AV
H	17475.00	41.01	47.90	11.23	38.90	43.24	68.20	-24.96	PK
H	17475.00	34.37	47.90	11.23	38.90	36.60	54.00	-17.40	AV
H	23300.00	49.63	57.10	12.73	37.80	43.06	68.20	-25.14	PK
H	23300.00	41.47	57.10	12.73	37.80	34.90	54.00	-19.10	AV
H	29125.00	46.48	55.80	14.25	40.50	45.43	68.20	-22.77	PK
H	29125.00	38.44	55.80	14.25	40.50	37.39	54.00	-16.61	AV

Remark:

1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier,
Margin= Emission Level - Limit
2. If peak below the average limit, the average emission was no test.
3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

4.8.2 Conducted Emission Method

Test Requirement:	FCC Part15 C Section 15.209, Part 15E Section 15.407(b)(4)	
Test Method:	ANSI C63.10:2013	
Limit:	-27dBm/MHz	
Test setup:	 The diagram illustrates the test setup for conducted emissions. A Spectrum Analyzer is connected to an Equipment Under Test (E.U.T.) via a red cable. Both the Spectrum Analyzer and the E.U.T. are placed on a Non-Conducted Table. The table is supported by two vertical legs and sits on a Ground Reference Plane.	
Test Instruments:	Refer to section 3.0 for details	
Test mode:	Refer to section 2.2 for details	
Test environment:	Temp.: 22.2°C	Humid.:52%RH
Test voltage:	DC 5V	
Test results:	Pass	

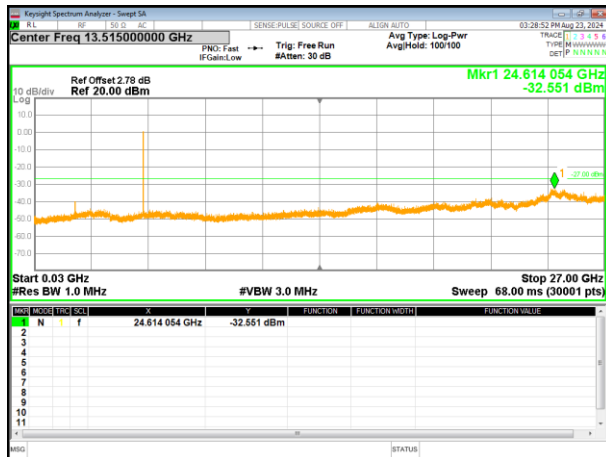
Remark:1. Antenna gain and cable loss data included in Offset.



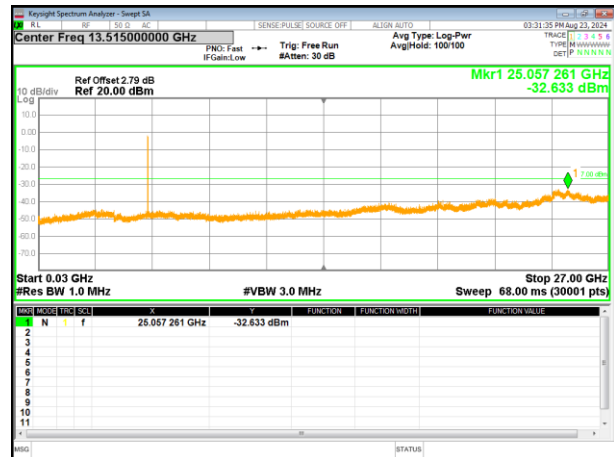
5180-5240MHz

Test Plot

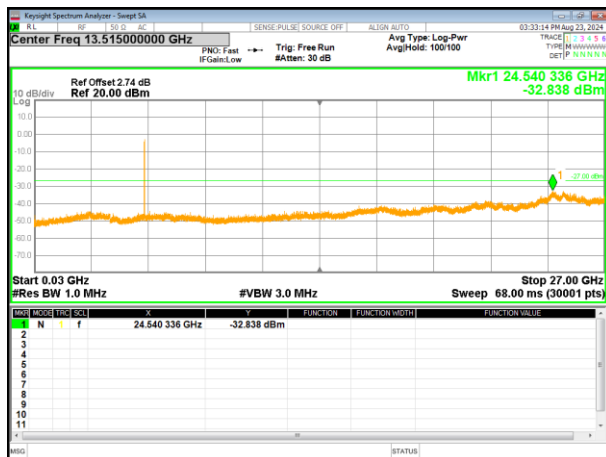
802.11a on channel 36



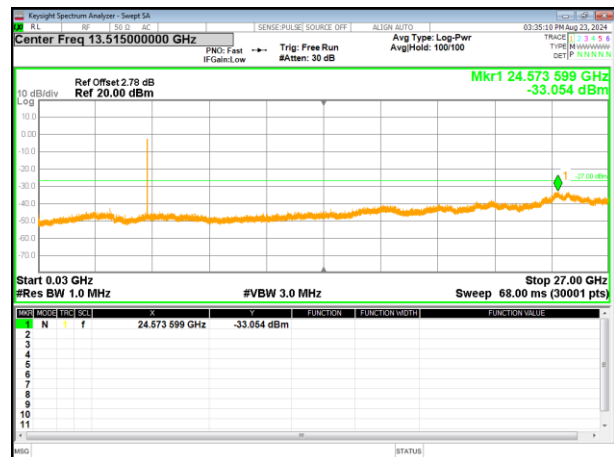
802.11a on channel 40



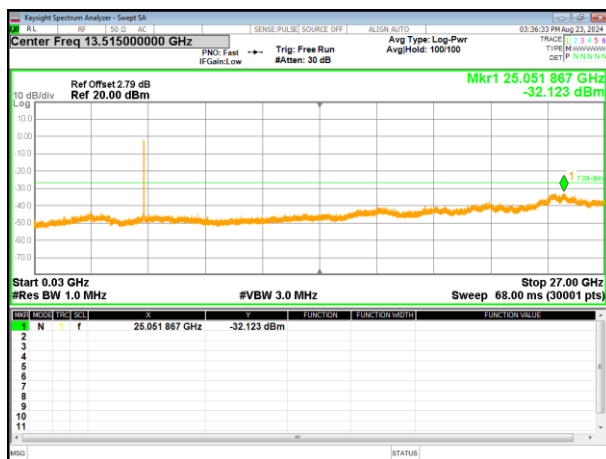
802.11a on channel 48



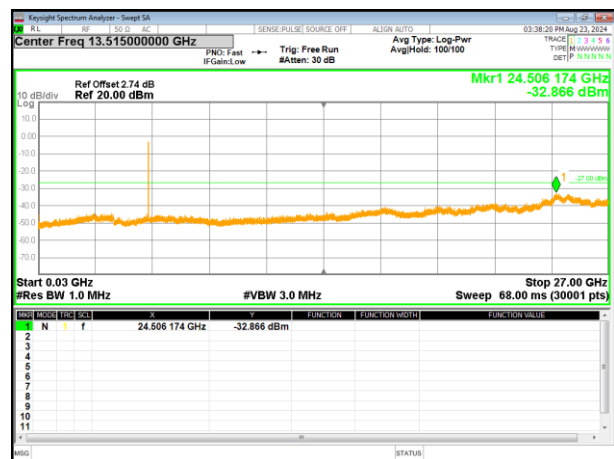
802.11n20 on channel 36



802.11n20 on channel 40

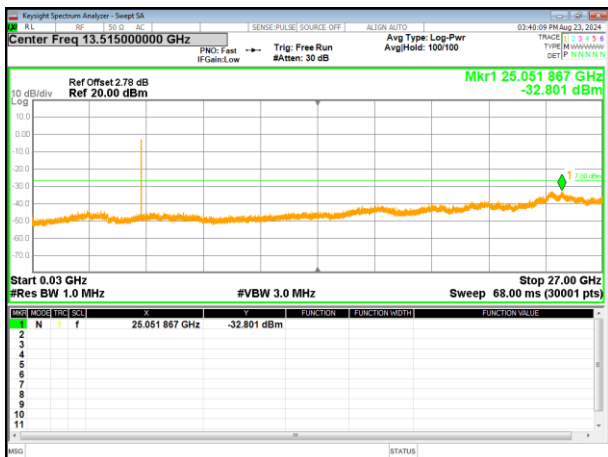


802.11n20 on channel 48

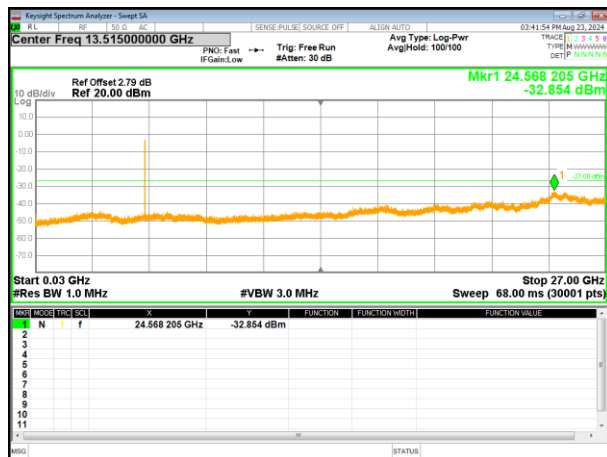


Test Plot

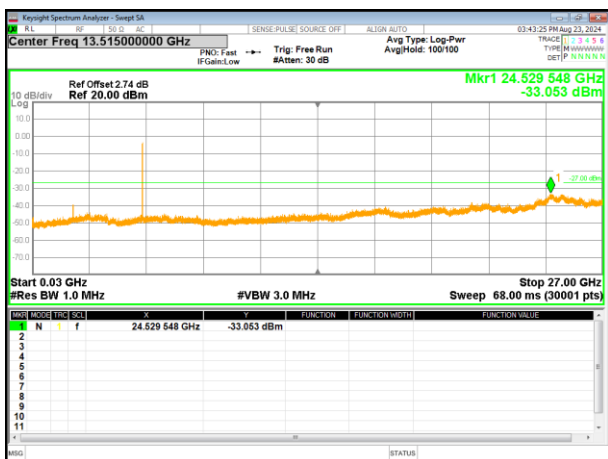
802.11ac20 on channel 36



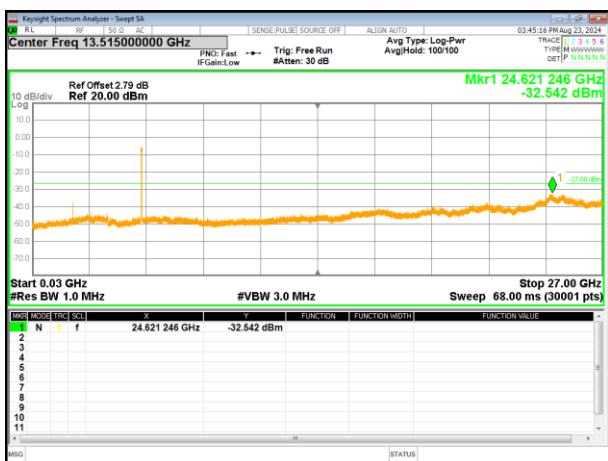
802.11ac20 on channel 40



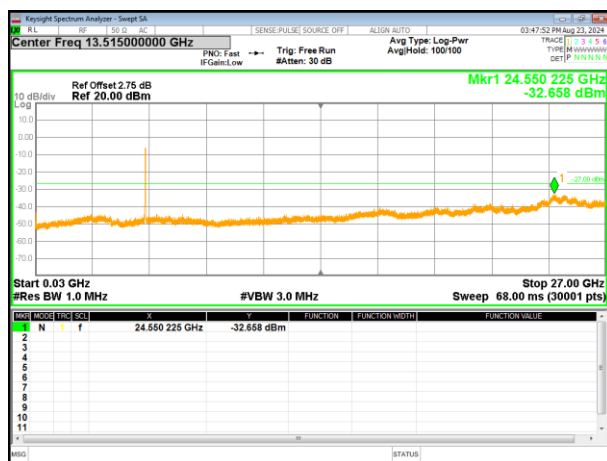
802.11ac20 on channel 48



802.11n40 on channel 38

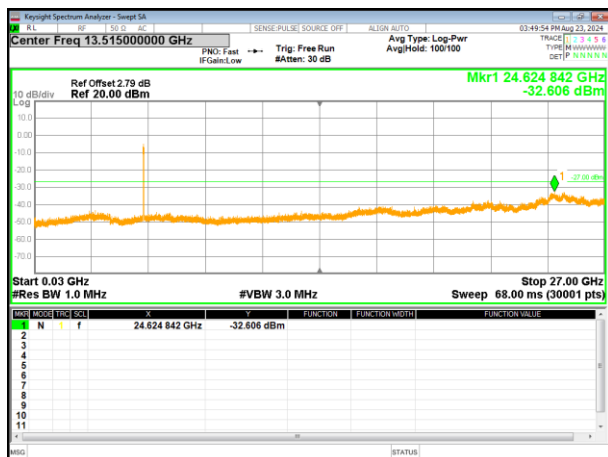


802.11n40 on channel 46

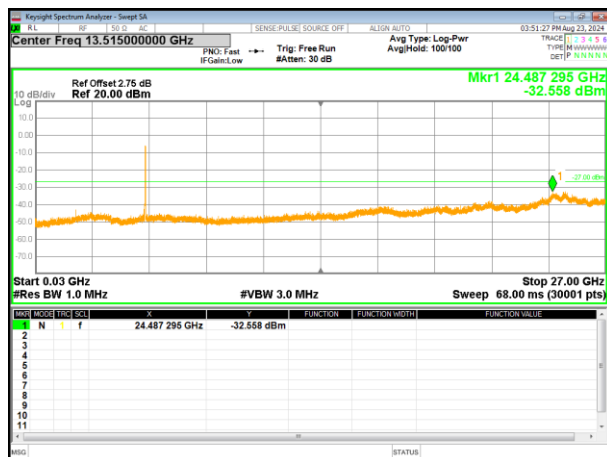


Test Plot

802.11ac40 on channel 38



802.11ac40 on channel 46

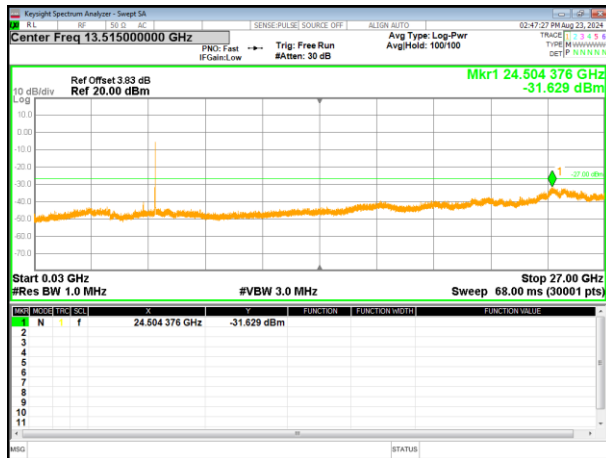




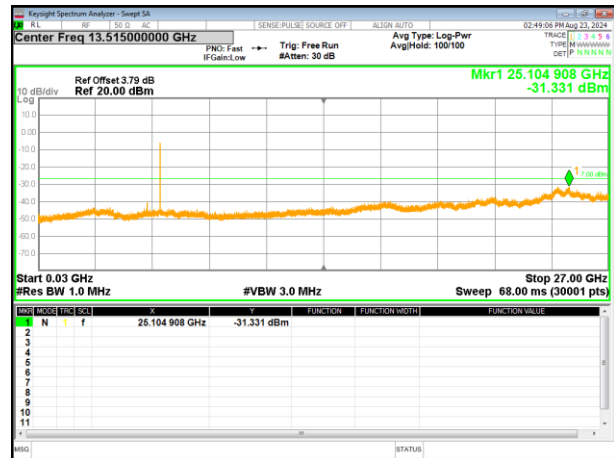
5745-5825MHz

Test Plot

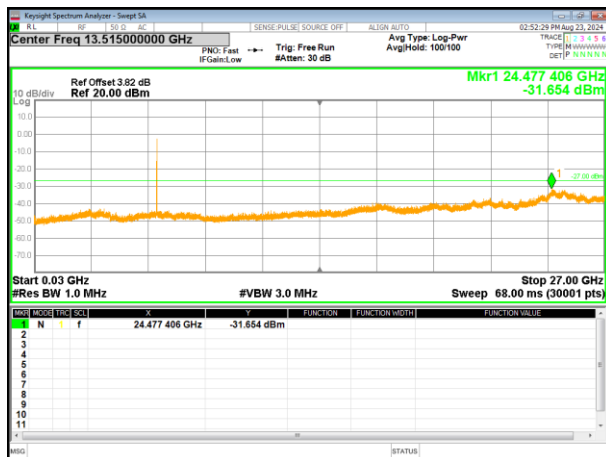
802.11a on channel 149



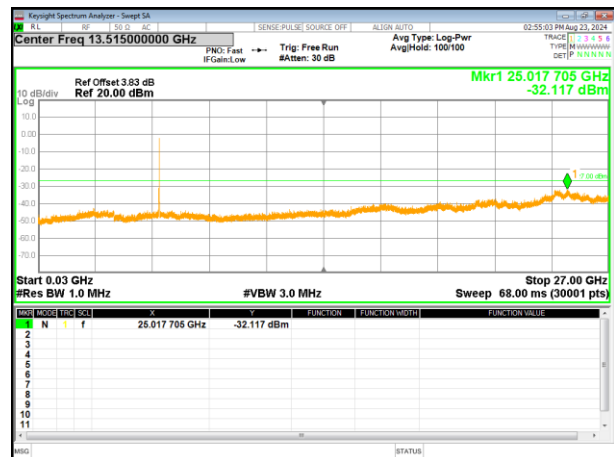
802.11a on channel 157



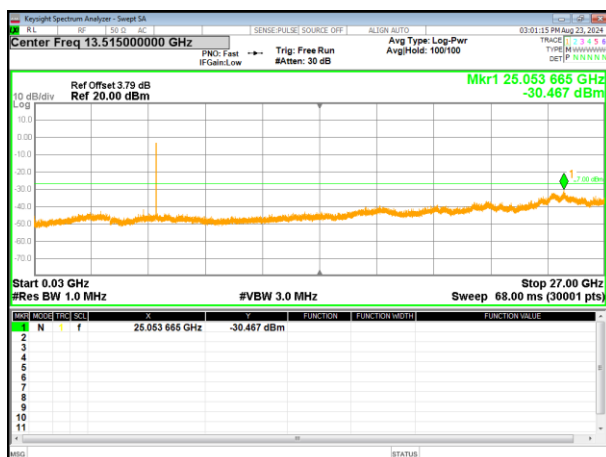
802.11a on channel 165



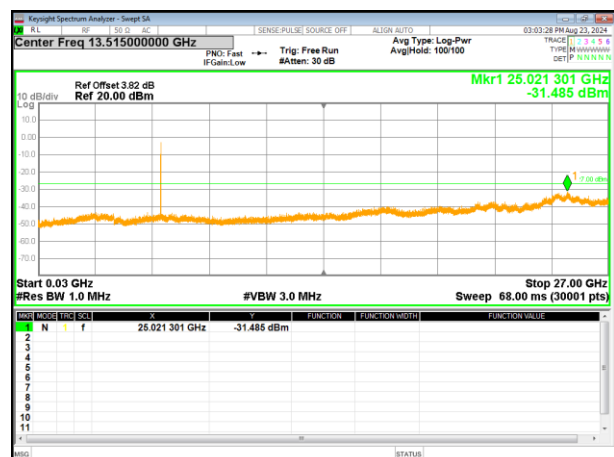
802.11n20 on channel 149



802.11n20 on channel 157

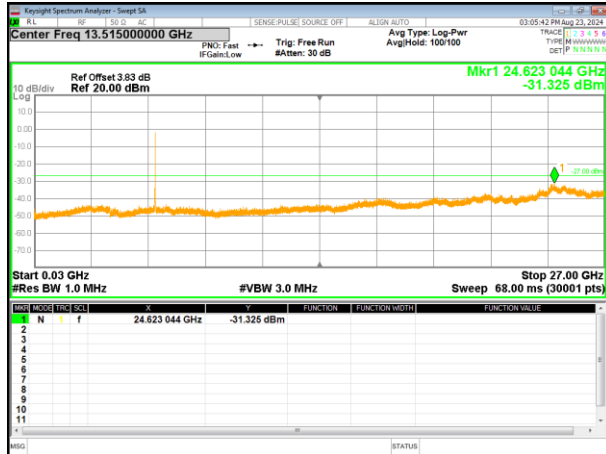


802.11n20 on channel 165

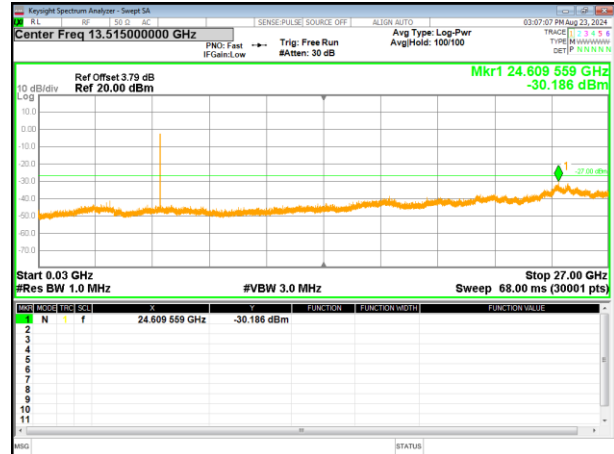


Test Plot

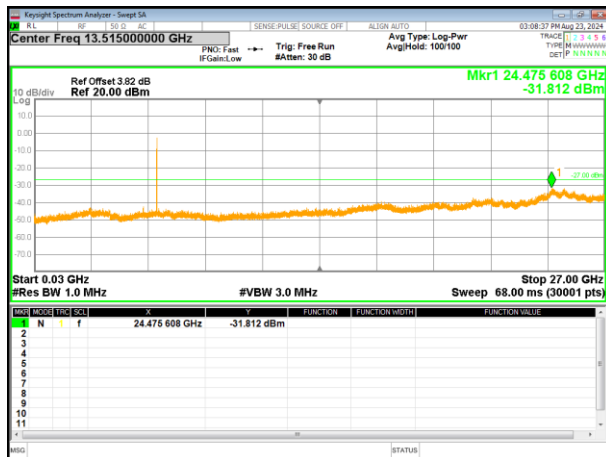
802.11ac20 on channel 149



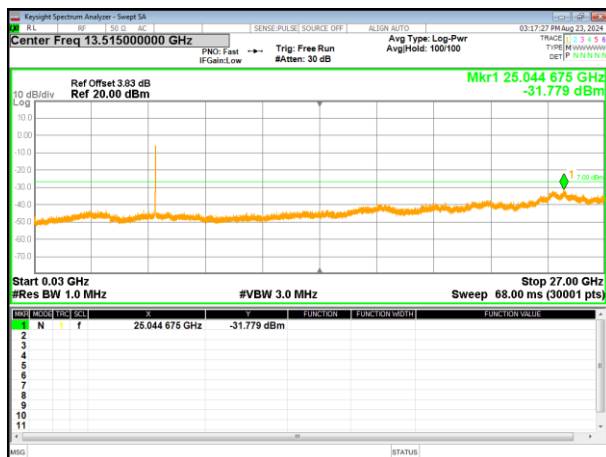
802.11ac20 on channel 157



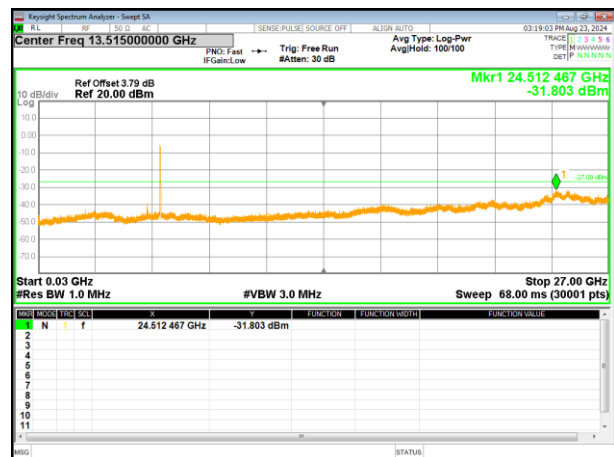
802.11ac20 on channel 165



802.11n40 on channel 151



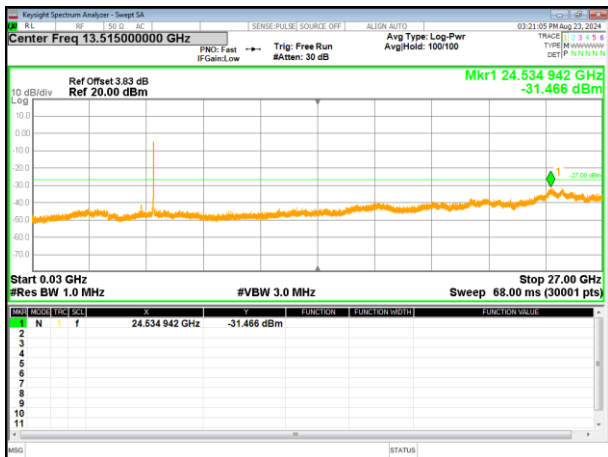
802.11n40 on channel 159



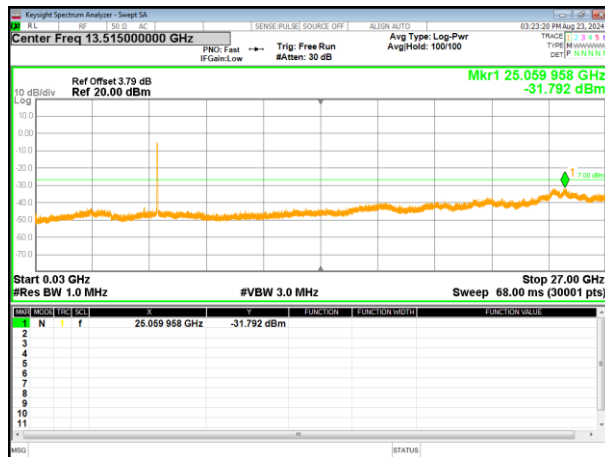


Test Plot

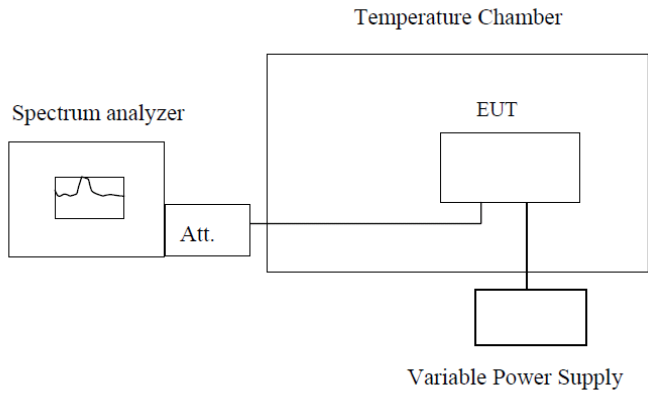
802.11ac40 on channel 151



802.11ac40 on channel 159



4.9 Frequency stability

Test Requirement:	FCC Part15 C Section 15.407(g)
Test Method:	ANSI C63.10:2013, FCC Part 2.1055
Limit:	Manufactures of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified
Test Procedure:	a. The EUT was placed inside the environmental test chamber and powered by nominal DC voltage. b. Turn the EUT on and couple its output to a spectrum analyzer. c. Turn the EUT off and set the chamber to the highest temperature specified. d. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 Minutes. e. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature. f. The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 Minute s. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.
Test setup:	 Note : Measurement setup for testing on Antenna connector
Test Instruments:	Refer to section 3.0 for details
Test mode:	Refer to section 2.2 for details
Test results:	Pass

Remark: Set the EUT transmits at un-modulation mode to test frequency stability.

Measurement data:

Frequency stability versus Temp.					
Power Supply: DC 5V					
Temp. (°C)	Operating Frequency (MHz)	0 minute Measured Frequency (MHz)	2 minute Measured Frequency (MHz)	5 minute Measured Frequency (MHz)	10 minute Measured Frequency (MHz)
-30	5180	5180.112	5179.797	5180.390	5180.203
	5190	5190.101	5199.812	5200.266	5190.214
	5200	5200.104	5199.797	5200.291	5200.205
	5210	5210.109	5209.775	5210.269	5210.207
	5220	5220.103	5219.790	5220.285	5220.212
	5230	5230.102	5229.783	5230.277	5230.230
	5240	5240.074	5239.792	5240.286	5240.216
-20	5180	5180.105	5179.773	5180.275	5180.224
	5190	5190.095	5189.764	5190.275	5190.220
	5200	5200.103	5199.772	5200.269	5200.215
	5210	5210.094	5209.764	5210.259	5210.222
	5220	5220.114	5219.785	5220.270	5220.215
	5230	5230.093	5229.763	5300.269	5230.213
	5240	5240.110	5239.782	5240.272	5240.187
-10	5180	5180.114	5179.782	5180.254	5180.203
	5190	5190.109	5189.778	5190.266	5190.214
	5200	5200.104	5199.773	5200.257	5200.205
	5210	5210.109	5209.779	5210.258	5210.207
	5220	5220.103	5219.774	5220.266	5220.212
	5230	5230.102	5229.772	5230.283	5230.230
	5240	5240.074	5239.746	5240.256	5240.203
0	5180	5179.891	5179.761	5180.266	5180.214
	5190	5200.062	5189.772	5190.258	5190.215
	5200	5200.060	5199.763	5200.266	5200.206
	5210	5210.114	5209.764	5210.258	5300.214
	5220	5220.102	5219.771	5220.280	5220.205
	5230	5230.090	5229.789	5230.257	5230.226
	5240	5240.106	5239.762	5240.276	5240.205
10	5180	5180.093	5179.773	5180.275	5180.215
	5190	5190.103	5189.764	5190.272	5190.206
	5200	5200.094	5199.772	5200.267	5200.214
	5210	5210.094	5209.764	5210.273	5210.207
	5220	5220.100	5219.785	5220.269	5220.226
	5230	5230.119	5229.763	5230.266	5230.204
	5240	5240.103	5239.782	5240.240	5240.223
20	5180	5180.171	5179.026	5180.524	5179.977



	5190	5190.113	5189.815	5190.569	5190.242
	5200	5200.108	5199.806	5200.578	5200.267
	5210	5210.113	5299.816	5210.571	5210.252
	5220	5220.107	5219.806	5220.593	5220.242
	5230	5230.106	5229.827	5230.571	5230.270
	5240	5240.078	5239.806	5240.590	5240.259
30	5180	5180.097	5179.814	5180.577	5180.260
	5190	5190.107	5189.806	5190.569	5180.260
	5200	5200.098	5199.814	5200.578	5190.256
	5210	5210.098	5209.806	5210.571	5200.251
	5220	5220.104	5219.827	5220.593	5210.258
	5230	5230.123	5229.805	5230.571	5220.252
	5240	5240.094	5239.824	5240.590	5230.250
40	5180	5180.109	5179.813	5180.363	5180.239
	5190	5190.099	5189.815	5200.537	5190.250
	5200	5200.107	5199.806	5200.535	5200.241
	5210	5210.098	5299.816	5210.591	5210.243
	5220	5220.118	5219.806	5220.581	5220.249
	5230	5230.097	5229.827	5230.568	5230.267
	5240	5240.114	5239.806	5240.586	5240.240
50	5180	5180.109	5179.814	5180.577	5180.212
	5190	5190.099	5189.806	5190.569	5190.242
	5200	5200.107	5199.814	5200.578	5200.267
	5210	5210.098	5209.806	5210.571	5210.252
	5220	5220.118	5219.827	5220.593	5220.242
	5230	5230.097	5229.805	5230.571	5230.270
	5240	5240.114	5239.824	5240.590	5240.259

Frequency stability versus Voltage					
Temperature: 25°C					
Power Supply (VDC)	Operating Frequency (MHz)	0 minute	2 minute	5 minute	10 minute
		Measured Frequency (MHz)	Measured Frequency (MHz)	Measured Frequency (MHz)	Measured Frequency (MHz)
4.25	5180	5180.014	5179.817	5180.597	5180.380
	5190	5190.009	5199.811	5190.589	5200.255
	5200	5200.004	5199.839	5200.598	5200.280
	5210	5210.009	5209.817	5210.591	5210.259
	5220	5220.003	5219.832	5220.613	5220.273
	5230	5230.001	5229.825	5230.591	5230.266
	5240	5239.973	5239.834	5240.606	5240.275
5.00	5180	5180.000	5179.832	5180.596	5180.265
	5190	5189.995	5179.938	5190.598	5190.264
	5200	5200.003	5199.814	5200.590	5200.258
	5210	5209.995	5209.839	5300.606	5210.249
	5220	5220.014	5219.817	5220.592	5220.258
	5230	5229.992	5229.832	5230.612	5300.257
	5240	5240.009	5239.826	5240.592	5240.261
5.75	5180	5180.014	5179.823	5180.585	5180.244
	5190	5190.009	5189.820	5190.597	5190.255
	5200	5200.004	5199.815	5200.589	5200.245
	5210	5210.009	5209.821	5210.591	5210.248
	5220	5220.003	5219.816	5220.599	5220.254
	5230	5230.001	5229.814	5230.617	5230.277
	5240	5239.973	5239.788	5240.590	5240.245

Frequency stability versus Temp.					
Power Supply: DC 5V					
Temp. (°C)	Operating Frequency (MHz)	0 minute Measured Frequency (MHz)	2 minute Measured Frequency (MHz)	5 minute Measured Frequency (MHz)	10 minute Measured Frequency (MHz)
-30	5745	5744.956	5744.824	5745.634	5745.254
	5755	5754.965	5754.830	5755.642	5755.242
	5775	5774.985	5774.823	5775.661	5775.254
	5785	5784.960	5784.816	5785.637	5785.260
	5795	5794.956	5794.823	5795.634	5795.279
	5825	5824.952	5824.753	5825.640	5825.271
-20	5745	5744.953	5744.835	5745.628	5745.265
	5755	5754.967	5754.836	5755.654	5755.278
	5775	5774.965	5774.840	5775.637	5775.264
	5785	5784.967	5784.833	5785.646	5785.250
	5795	5794.977	5794.824	5795.645	5795.245
	5825	5824.957	5824.834	5825.658	5825.279
-10	5745	5744.963	5744.825	5745.644	5744.884
	5755	5754.988	5754.831	5755.647	5755.267
	5775	5774.983	5774.849	5775.652	5775.269
	5785	5784.966	5784.826	5785.644	5785.271
	5795	5794.955	5794.822	5795.636	5795.255
	5825	5824.888	5824.825	5825.648	5825.251
0	5745	5744.957	5744.814	5745.644	5745.255
	5755	5754.981	5754.829	5755.647	5755.280
	5775	5774.961	5774.829	5775.652	5775.277
	5785	5784.969	5784.833	5785.644	5785.260
	5795	5794.967	5794.846	5795.636	5795.250
	5825	5824.975	5824.826	5825.648	5825.185
10	5745	5744.957	5744.824	5745.633	5745.250
	5755	5754.981	5754.840	5755.641	5755.261
	5775	5774.961	5774.842	5775.635	5775.279
	5785	5784.969	5784.825	5785.627	5785.254
	5795	5794.967	5794.842	5795.635	5795.251
	5825	5824.975	5824.841	5825.567	5825.254
20	5745	5744.973	5744.849	5745.642	5745.254
	5755	5754.986	5754.820	5755.659	5755.272
	5775	5774.970	5774.844	5775.646	5775.253
	5785	5784.956	5784.845	5785.633	5785.279
	5795	5794.950	5794.836	5795.628	5795.272
	5825	5824.982	5824.852	5825.665	5825.281
30	5745	5744.963	5744.835	5745.627	5745.279
	5755	5754.969	5754.836	5755.651	5755.250
	5775	5774.985	5774.840	5775.654	5775.274
	5785	5784.960	5784.833	5785.636	5785.273
	5795	5794.956	5794.824	5795.654	5795.265
	5825	5824.957	5824.834	5825.655	5825.280
40	5745	5744.973	5744.819	5745.644	5745.248



	5755	5754.986	5754.843	5755.647	5755.280
	5775	5774.970	5774.825	5775.652	5775.277
	5785	5784.956	5784.835	5785.644	5785.260
	5795	5794.950	5794.833	5795.636	5795.250
	5825	5824.982	5824.844	5825.648	5825.185
50	5745	5744.973	5744.849	5745.644	5745.254
	5755	5754.966	5754.820	5755.658	5755.272
	5775	5774.970	5774.844	5775.646	5775.253
	5785	5784.956	5784.845	5785.633	5785.280
	5795	5794.950	5794.835	5795.628	5795.272
	5825	5824.982	5824.856	5825.665	5825.281

Frequency stability versus Voltage					
Temperature: 25°C					
Power Supply (VAC)	Operating Frequency (MHz)	0 minute Measured Frequency (MHz)	2 minute Measured Frequency (MHz)	5 minute Measured Frequency (MHz)	10 minute Measured Frequency (MHz)
4.25	5745	5745.067	5744.824	5745.613	5745.243
	5755	5755.082	5754.830	5755.631	5755.267
	5775	5775.081	5774.823	5775.634	5775.249
	5785	5785.083	5784.816	5785.616	5785.257
	5795	5795.094	5794.823	5795.635	5795.256
	5825	5825.074	5824.753	5825.635	5825.266
5.00	5745	5745.067	5744.835	5745.608	5745.259
	5755	5755.082	5754.836	5755.634	5755.272
	5775	5775.081	5774.840	5775.617	5775.258
	5785	5785.083	5784.833	5785.626	5785.244
	5795	5795.090	5794.824	5795.625	5795.239
	5825	5825.074	5824.834	5825.638	5825.273
5.75	5745	5745.088	5744.848	5745.624	5745.248
	5755	5755.101	5754.820	5755.639	5755.266
	5775	5775.086	5774.844	5775.626	5775.247
	5785	5785.072	5784.845	5785.613	5785.273
	5795	5795.066	5794.836	5795.608	5795.266
	5825	5825.099	5824.852	5825.645	5825.275

5 Test Setup Photo

Reference to the **appendix I** for details.

6 EUT Constructional Details

Reference to the **appendix II** for details.

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