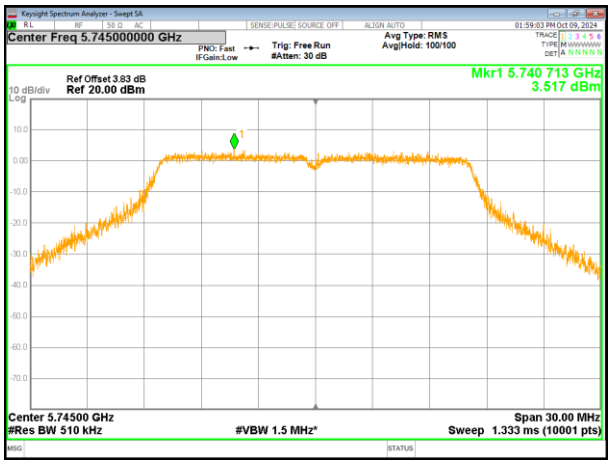
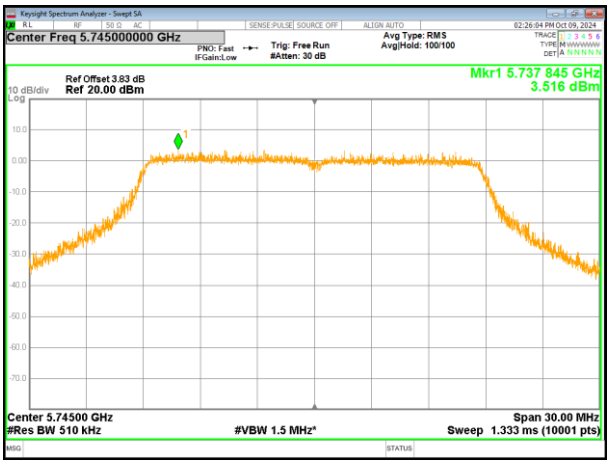
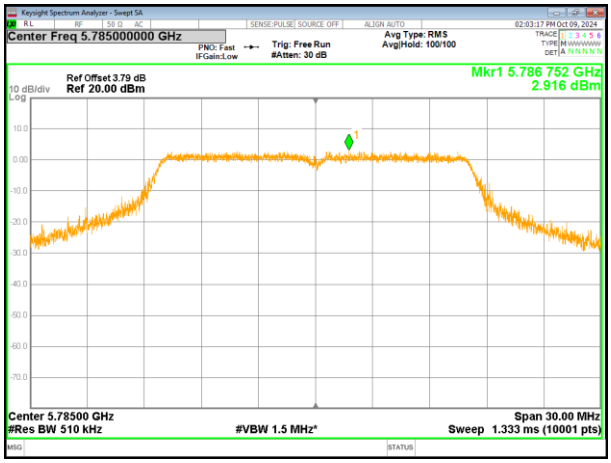
(802.11a) PSD plot on channel 149



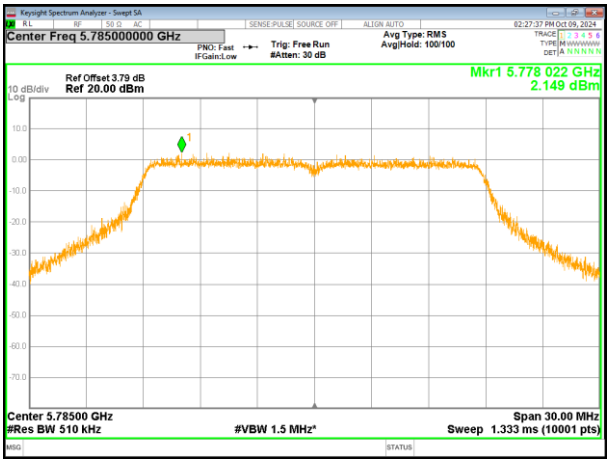
(802.11n20) PSD plot on channel 149



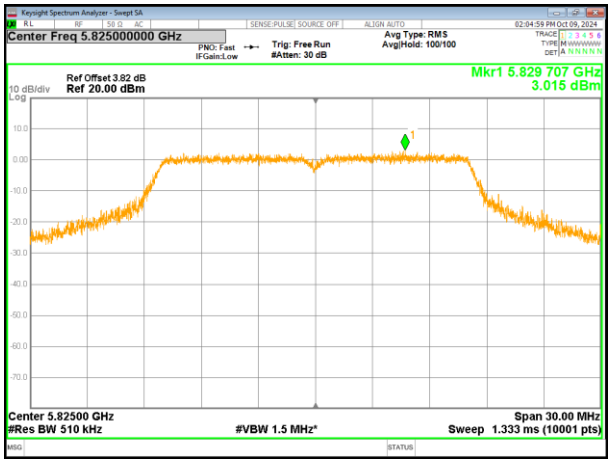
(802.11a) PSD plot on channel 157



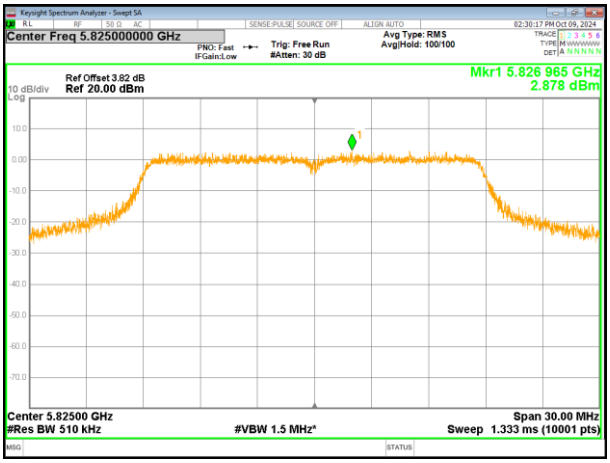
(802.11n20) PSD plot on channel 157



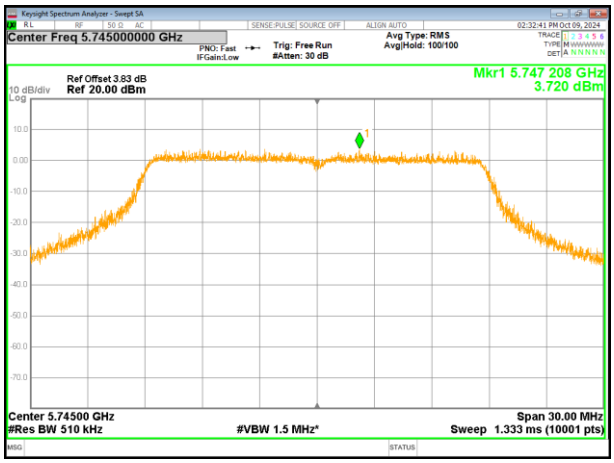
(802.11a) PSD plot on channel 165



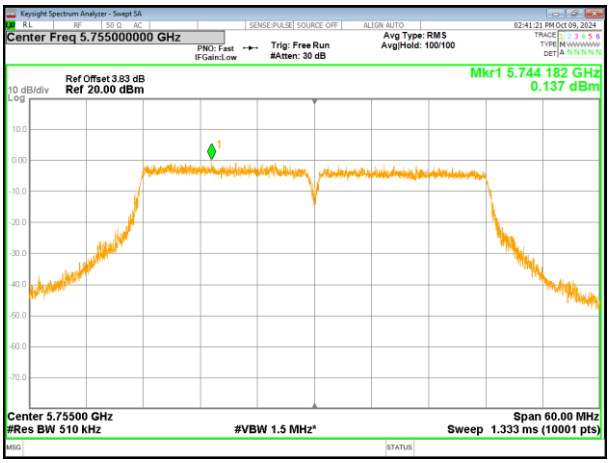
(802.11n20) PSD plot on channel 165



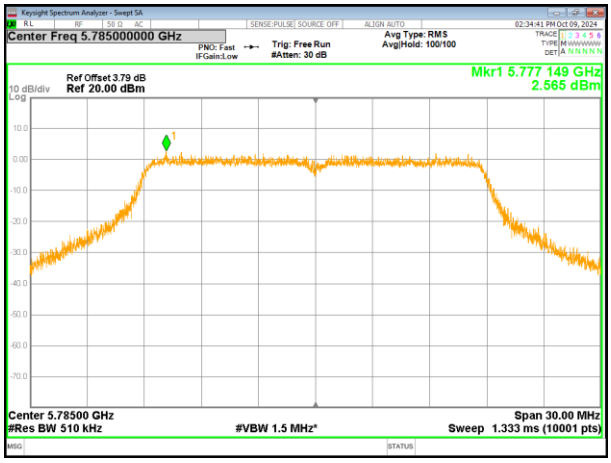
(802.11ac20) PSD plot on channel 149



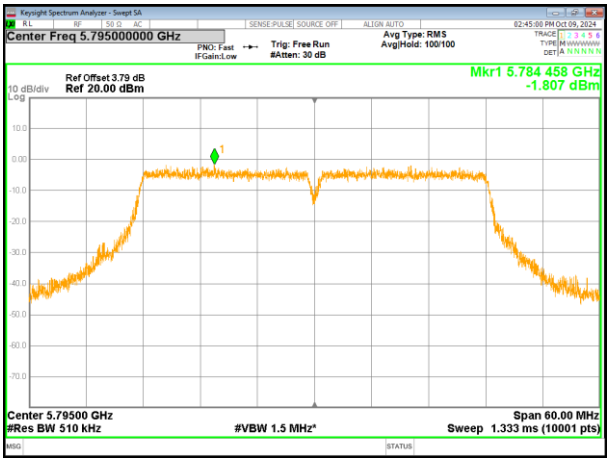
(802.11n40) PSD plot on channel 151



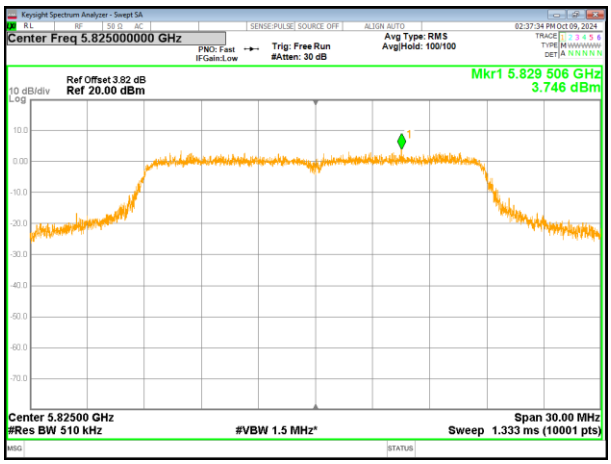
(802.11ac20) PSD plot on channel 157



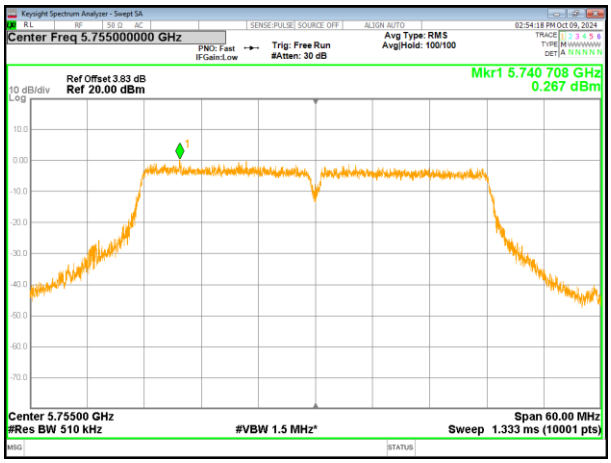
(802.11n40) PSD plot on channel 159



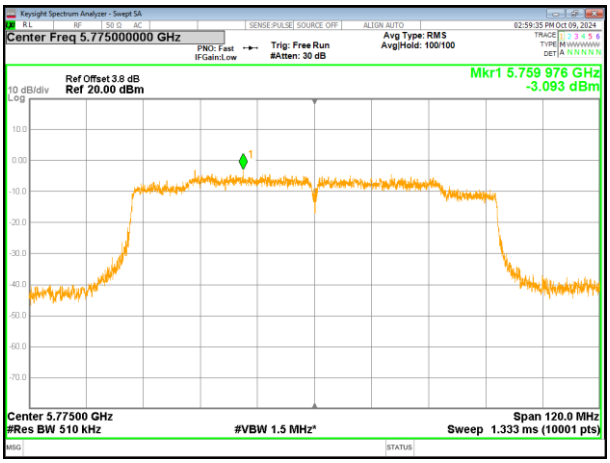
(802.11ac20) PSD plot on channel 165



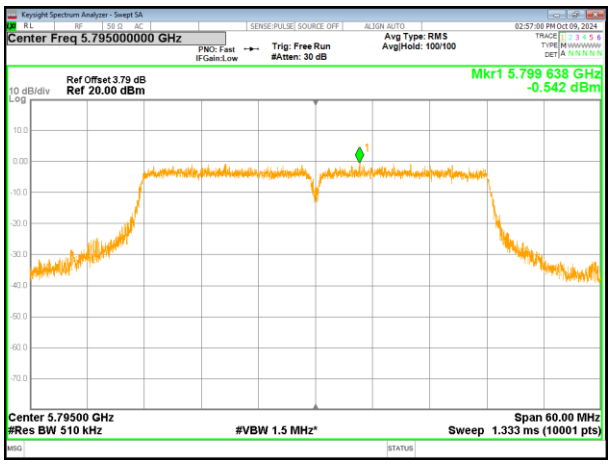
(802.11ac40) PSD plot on channel 151



(802.11ac80) PSD plot on channel 155

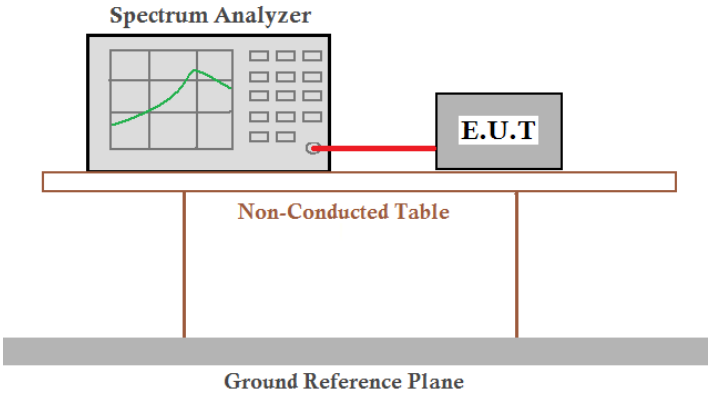


(802.11ac40) PSD plot on channel 159



4.7 Band edge

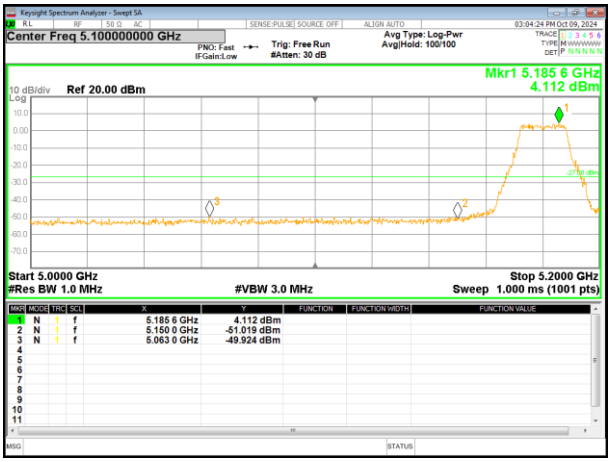
4.7.1 Conducted test Method

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:		
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.: 25.5℃	Humid.: 51%RH
Test voltage:	AC 120V	
Test results:	Pass	

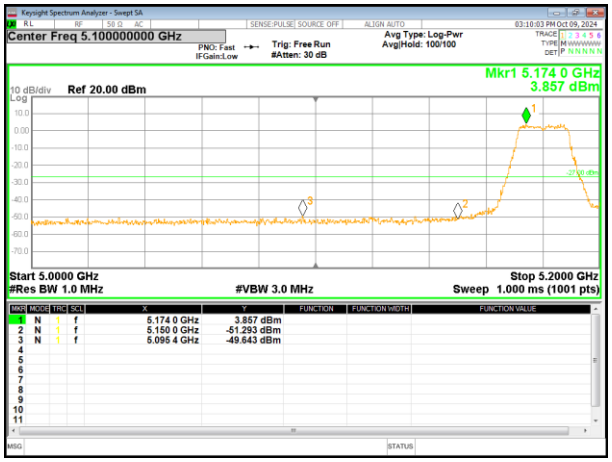
Remark: Due to the margin value of the sideband test being greater than the antenna gain value, the test meets the requirements

5.180~5.240 GHz

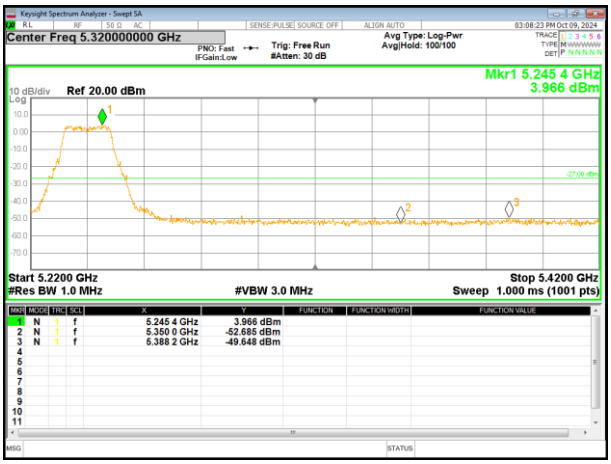
(802.11a) Band Edge, Left Side



(802.11n20) Band Edge, Left Side



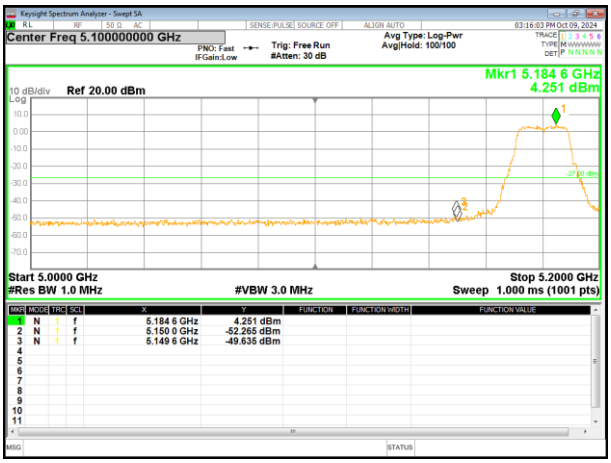
(802.11a) Band Edge, Right Side



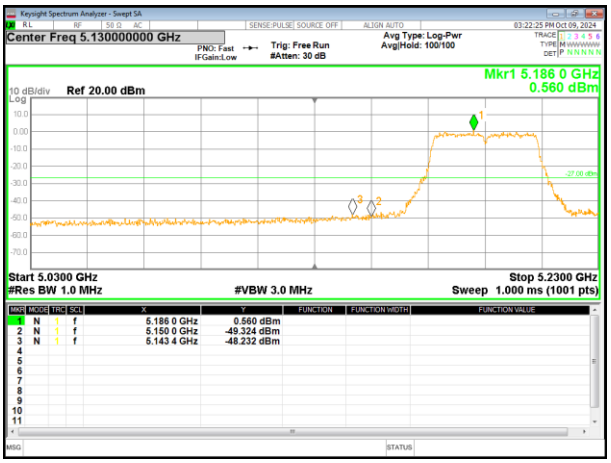
(802.11n20) Band Edge, Right Side

5.180~5.240 GHz

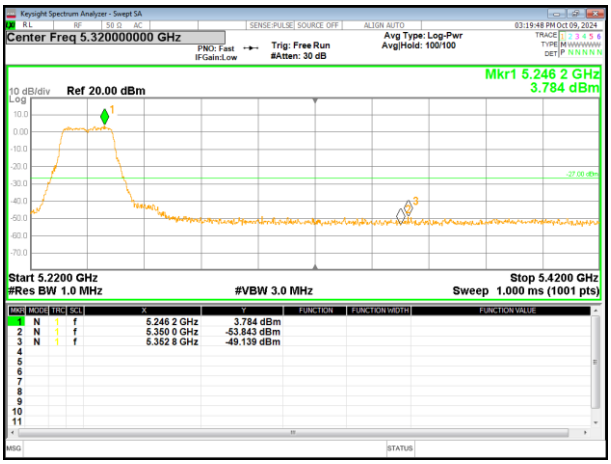
(802.11ac20) Band Edge, Left Side



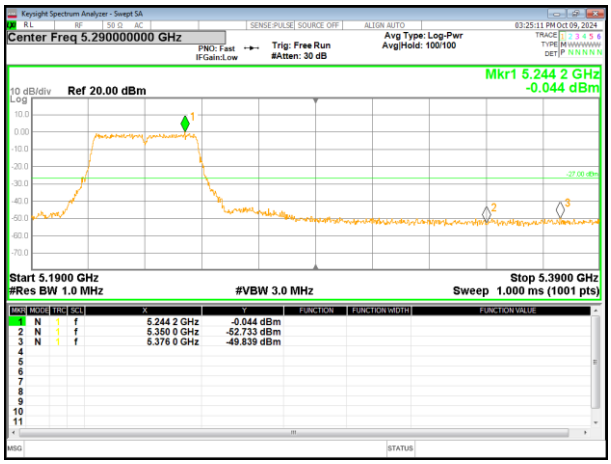
(802.11n40) Band Edge, Left Side



(802.11ac20) Band Edge, Right Side

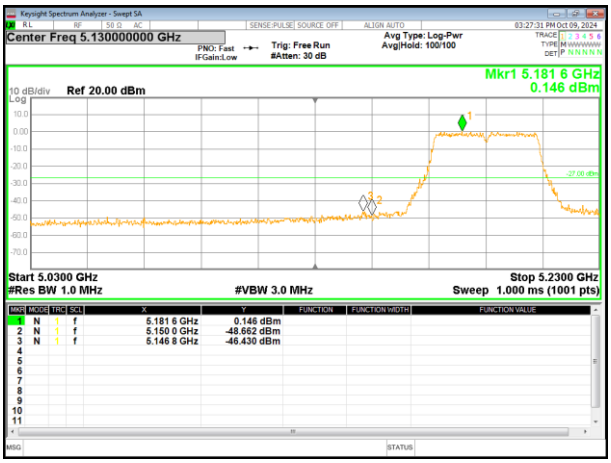


(802.11n40) Band Edge, Right Side

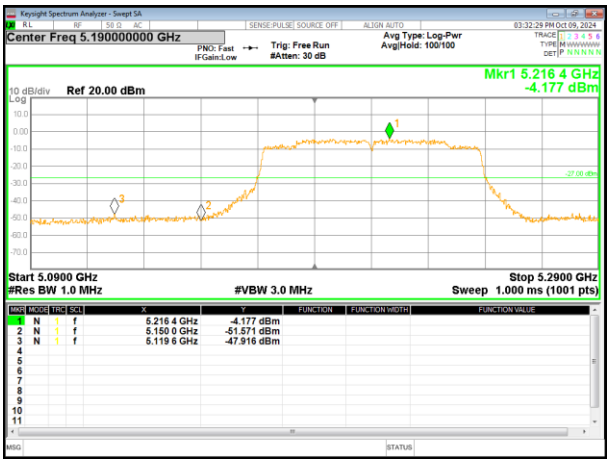


5.180~5.240 GHz

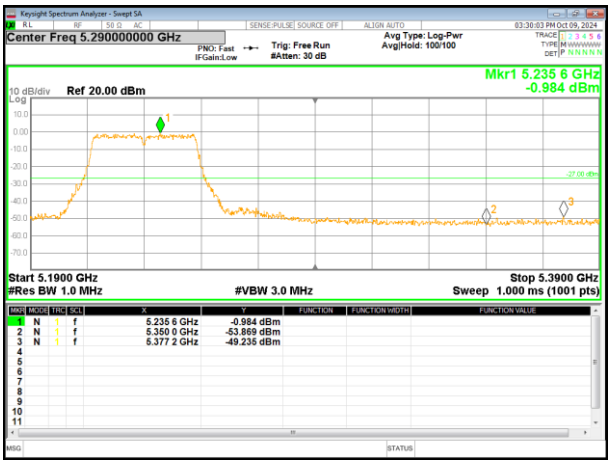
(802.11ac40) Band Edge, Left Side



(802.11ac80) Band Edge

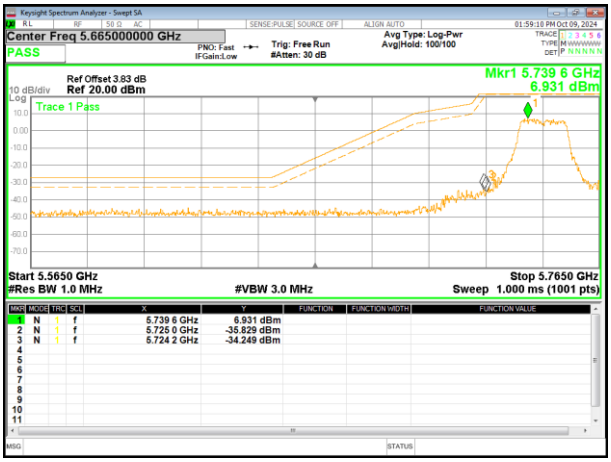


(802.11ac40) Band Edge, Right Side

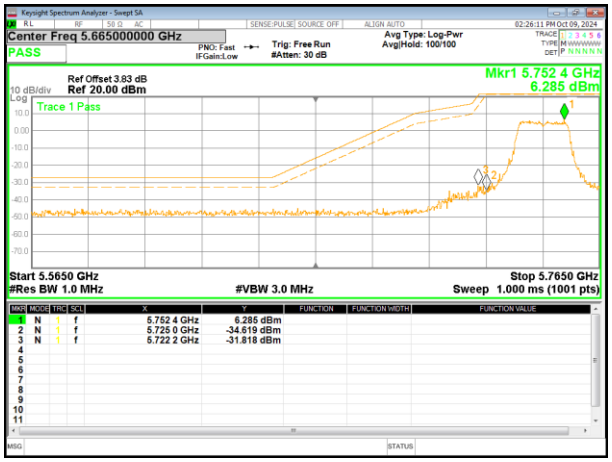


5.745~5.825 GHz

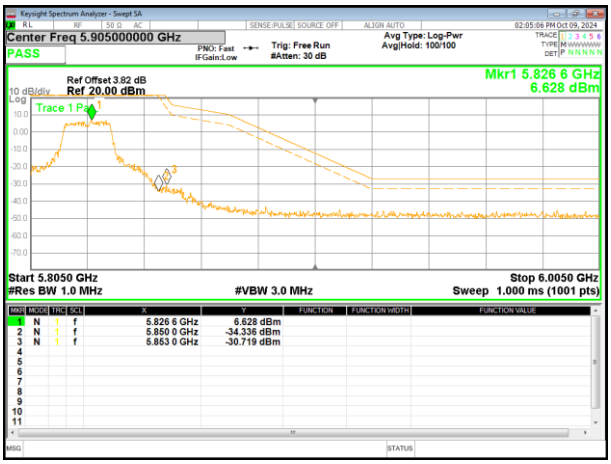
(802.11a) Band Edge, Left Side



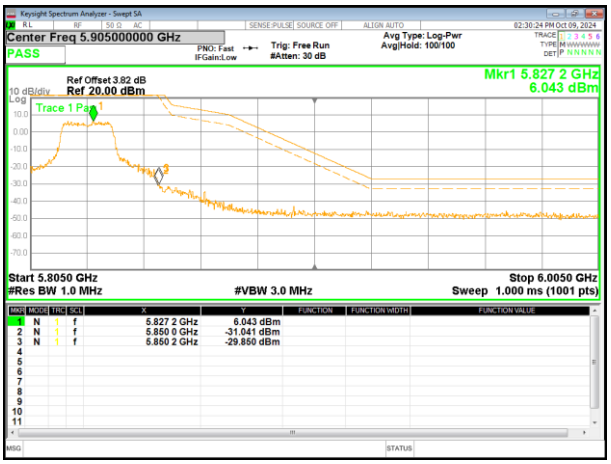
(802.11n20) Band Edge, Left Side



(802.11a) Band Edge, Right Side

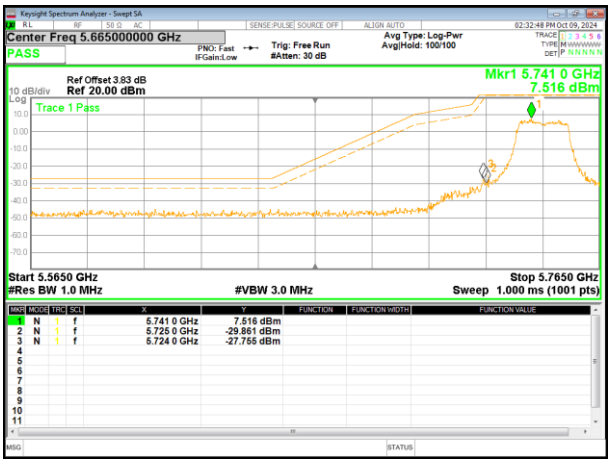


(802.11n20) Band Edge, Right Side

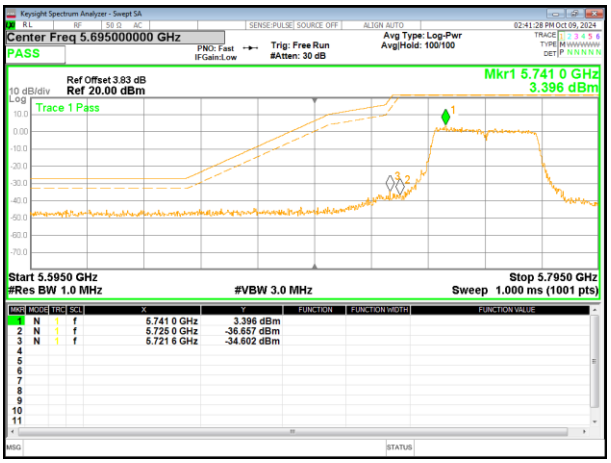


5.745~5.825 GHz

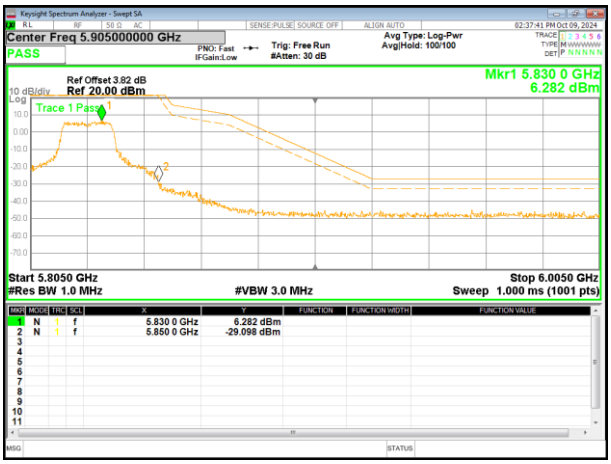
(802.11ac20) Band Edge, Left Side



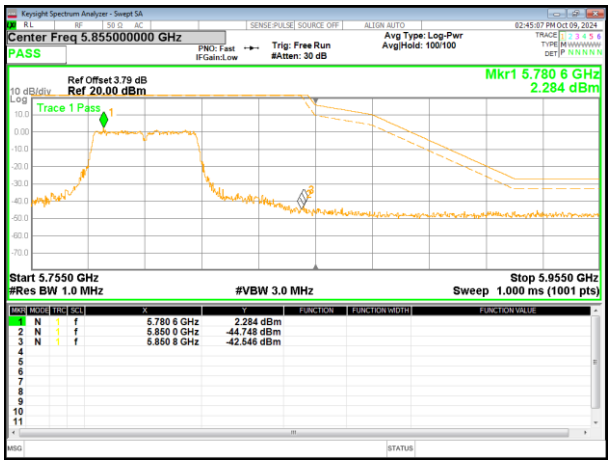
(802.11n40) Band Edge, Left Side



(802.11ac20) Band Edge, Right Side

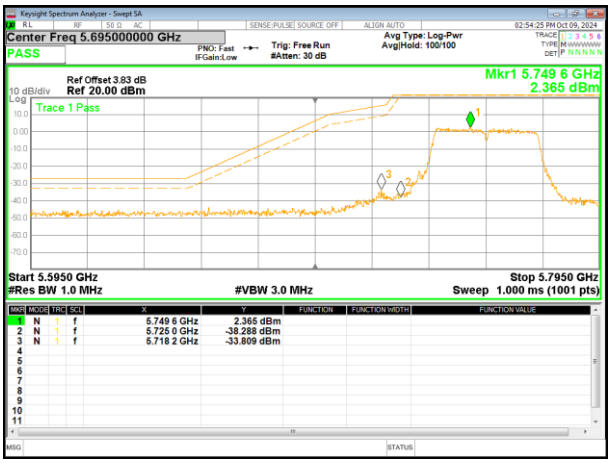


(802.11n40) Band Edge, Right Side

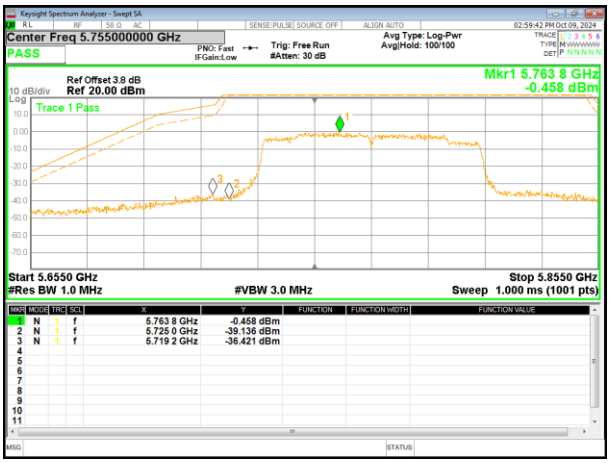


5.745~5.825 GHz

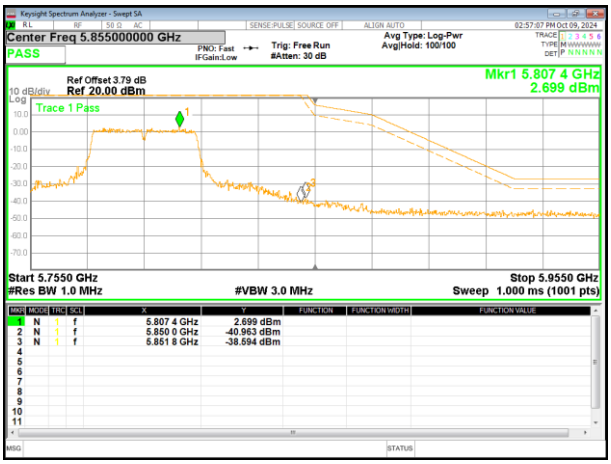
(802.11ac40) Band Edge, Left Side



(802.11ac80) Band Edge



(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

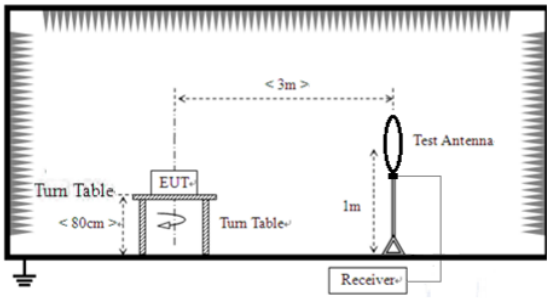
Limit:

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	

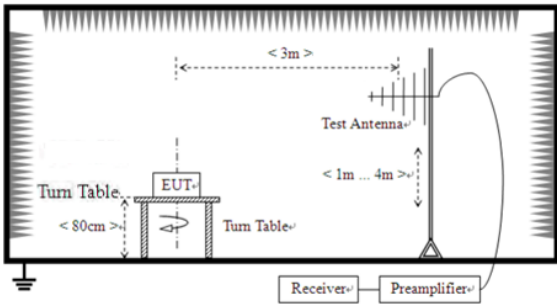
Frequency	Limit (dBm/MHz)	Remark
Above 1GHz	-27.0	Peak Value

Test setup:

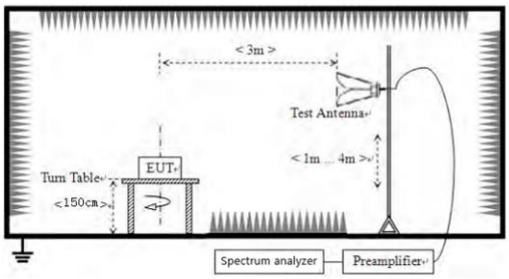
For radiated emissions from 9kHz to 30MHz



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

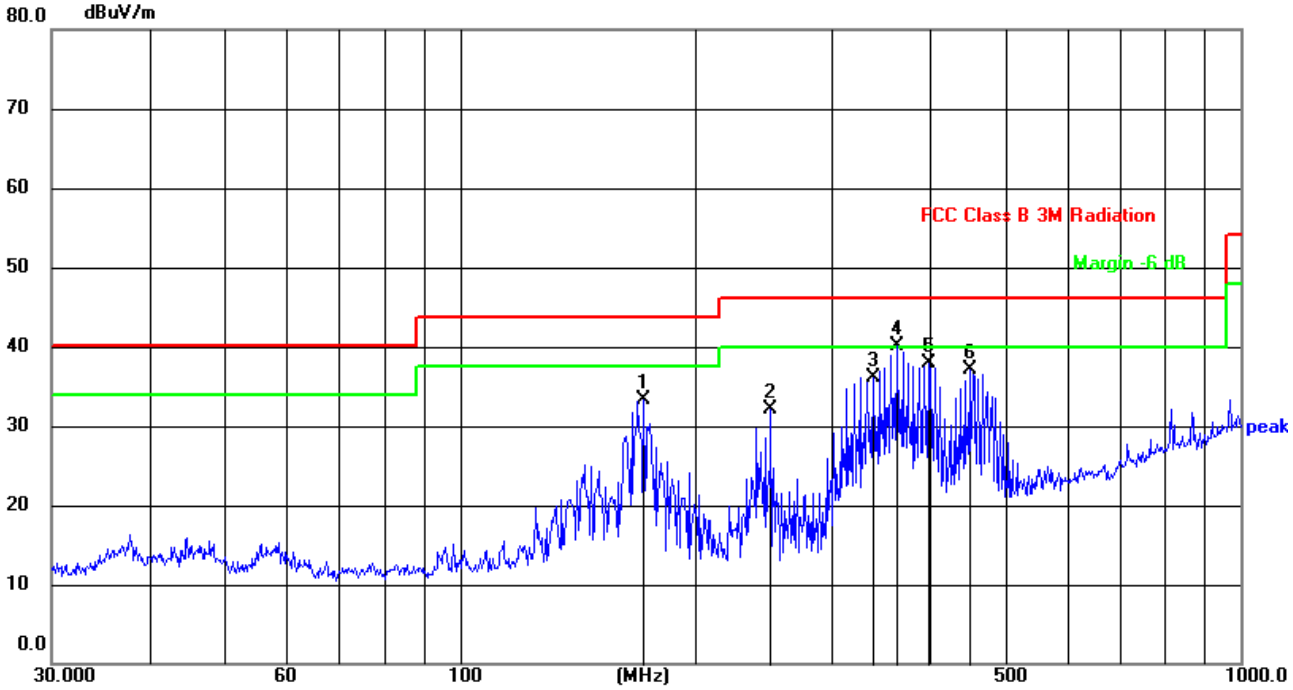
The emission from 9 kHz to 30MHz was pre-tested and found the result was 20dB lower than the limit, and according to 15.31(o) & RSS-Gen 6.13, the test result no need to reported.

Below 1GHz

Remark: The test data shows only the worst case 802.11ac20 mode.

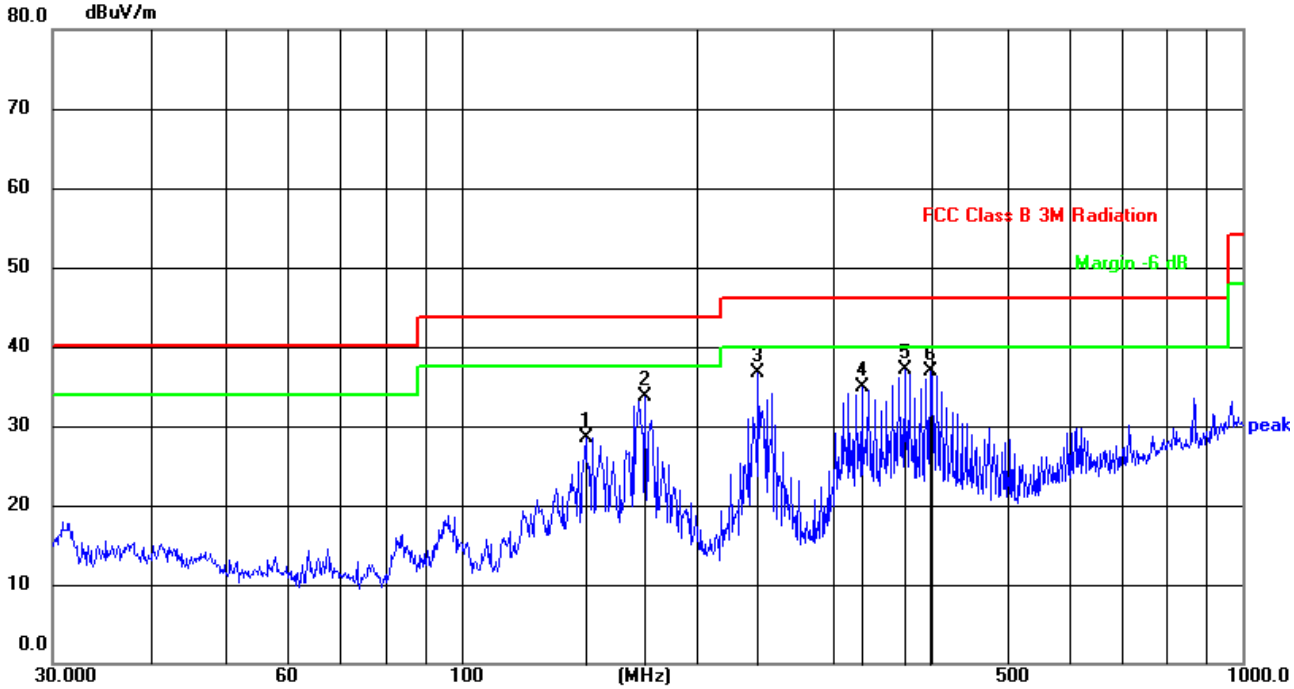
Temperature:	25.5℃	Relative Humidity:	51%
Pressure:	101.2kPar	Test Voltage :	AC 120V
Test Mode :	5.2G TX- 802.11ac20(5180MHz)		

Horizontal:



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	171.9944	54.48	-21.26	33.22	43.50	-10.28	QP
2	250.3009	54.30	-22.25	32.05	46.00	-13.95	QP
3	338.4000	55.49	-19.35	36.14	46.00	-9.86	QP
4	362.9843	58.92	-18.76	40.16	46.00	-5.84	QP
5	399.0300	55.20	-17.32	37.88	46.00	-8.12	QP
6	449.5557	52.65	-15.56	37.09	46.00	-8.91	QP

Vertical:



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	144.3343	49.64	-21.14	28.50	43.50	-15.00	QP
2	171.9944	55.06	-21.26	33.80	43.50	-9.70	QP
3	239.9873	59.23	-22.47	36.76	46.00	-9.24	QP
4	325.5957	54.10	-19.29	34.81	46.00	-11.19	QP
5	369.4045	55.54	-18.44	37.10	46.00	-8.90	QP
6	399.0300	54.17	-17.32	36.85	46.00	-9.15	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.

Above 1GHz:

Remark: The test data shows only the worst case 802.11ac20 mode.

Temperature:	25.5℃	Relative Humidity:	51%
Pressure:	101.2kPar	Test Voltage :	AC 120V
Test Mode :	5.2G TX- 802.11ac20		

Polar (H/V)	Frequency	Meter Reading	Pre-amplifier	Cable Loss	Antenna Factor	Emission Level	Limits	Margin	Detector Type
	MHz	dBuV	dB	dB	dB	dBuV/m	dBuV/m	dB	
Low Channel:5180MHz									
V	10360.00	50.72	46.20	8.27	38.50	51.29	68.20	-16.91	PK
V	10360.00	40.63	46.20	8.27	38.50	41.2	54.00	-12.8	AV
V	15540.00	47.74	46.30	10.35	38.70	50.49	74.00	-23.51	PK
V	15540.00	37.64	46.30	10.35	38.70	40.39	54.00	-13.61	AV
V	20720.00	56.94	57.40	11.93	37.80	49.27	68.20	-18.93	PK
V	20720.00	46.83	57.40	11.93	37.80	39.16	54.00	-14.84	AV
V	25900.00	54.64	56.50	13.45	39.70	51.29	68.20	-16.91	PK
V	25900.00	44.13	56.50	13.45	39.70	40.78	54.00	-13.22	AV
V	31080.00	48.57	56.10	16.12	41.60	50.19	68.20	-18.01	PK
V	31080.00	41.95	56.10	16.12	41.60	43.57	54.00	-10.43	AV
V	36260.00	45.77	56.80	18.29	42.80	50.06	68.20	-18.14	PK
V	36260.00	38.61	56.80	18.29	42.80	42.9	54.00	-11.1	AV
H	10360.00	50.73	46.20	8.27	38.50	51.3	68.20	-16.9	PK
H	10360.00	39.23	46.20	8.27	38.50	39.8	54.00	-14.2	AV
H	15540.00	46.84	46.30	10.35	38.70	49.59	74.00	-24.41	PK
H	15540.00	35.16	46.30	10.35	38.70	37.91	54.00	-16.09	AV
H	20720.00	59.23	57.40	11.93	37.80	51.56	68.20	-16.64	PK
H	20720.00	47.82	57.40	11.93	37.80	40.15	54.00	-13.85	AV
H	25900.00	55.64	56.50	13.45	39.70	52.29	68.20	-15.91	PK
H	25900.00	44.15	56.50	13.45	39.70	40.8	54.00	-13.2	AV
H	31080.00	49.15	56.10	16.12	41.60	50.77	68.20	-17.43	PK
H	31080.00	41.92	56.10	16.12	41.60	43.54	54.00	-10.46	AV
H	36260.00	44.97	56.80	18.29	42.80	49.26	68.20	-18.94	PK
H	36260.00	38.72	56.80	18.29	42.80	43.01	54.00	-10.99	AV

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
Middle Channel:5200MHz									
V	10400.00	49.72	46.20	8.27	38.50	50.29	68.20	-17.91	PK
V	10400.00	40.36	46.20	8.27	38.50	40.93	54.00	-13.07	AV
V	15600.00	48.12	46.30	10.35	38.40	50.57	74.00	-23.43	PK
V	15600.00	39.25	46.30	10.35	38.40	41.7	54.00	-12.3	AV
V	20800.00	58.18	57.40	11.93	37.80	50.51	68.20	-17.69	PK
V	20800.00	48.36	57.40	11.93	37.80	40.69	54.00	-13.31	AV
V	26000.00	53.24	56.50	13.45	39.80	49.99	68.20	-18.21	PK
V	26000.00	45.41	56.50	13.45	39.80	42.16	54.00	-11.84	AV
V	31200.00	50.73	56.10	16.12	41.60	52.35	68.20	-15.85	PK
V	31200.00	44.03	56.10	16.12	41.60	45.65	54.00	-8.35	AV
V	36400.00	47.13	56.80	18.29	42.80	51.42	68.20	-16.78	PK
V	36400.00	40.03	56.80	18.29	42.80	44.32	54.00	-9.68	AV
H	10400.00	50.34	46.20	8.27	38.50	50.91	68.20	-17.29	PK
H	10400.00	40.72	46.20	8.27	38.50	41.29	54.00	-12.71	AV
H	15600.00	48.06	46.30	10.35	38.40	50.51	74.00	-23.49	PK
H	15600.00	39.25	46.30	10.35	38.40	41.7	54.00	-12.3	AV
H	20800.00	57.13	57.40	11.93	37.80	49.46	68.20	-18.74	PK
H	20800.00	46.25	57.40	11.93	37.80	38.58	54.00	-15.42	AV
H	26000.00	53.01	56.50	13.45	39.80	49.76	68.20	-18.44	PK
H	26000.00	44.52	56.50	13.45	39.80	41.27	54.00	-12.73	AV
H	31200.00	50.93	56.10	16.12	41.60	52.55	68.20	-15.65	PK
H	31200.00	43.76	56.10	16.12	41.60	45.38	54.00	-8.62	AV
H	36400.00	47.02	56.80	18.29	42.80	51.31	68.20	-16.89	PK
H	36400.00	40.51	56.80	18.29	42.80	44.8	54.00	-9.2	AV

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
High Channel:5240MHz									
V	10480.00	46.52	46.20	8.27	38.60	47.19	68.20	-21.01	PK
V	10480.00	36.42	46.20	8.27	38.60	37.09	54.00	-16.91	AV
V	15720.00	44.13	46.30	10.35	38.40	46.58	74.00	-27.42	PK
V	15720.00	34.12	46.30	10.35	38.40	36.57	54.00	-17.43	AV
V	20960.00	54.32	57.40	11.93	37.50	46.35	68.20	-21.85	PK
V	20960.00	45.68	57.40	11.93	37.50	37.71	54.00	-16.29	AV
V	26200.00	50.26	56.50	13.45	40.10	47.31	68.20	-20.89	PK
V	26200.00	40.72	56.50	13.45	40.10	37.77	54.00	-16.23	AV
V	31440.00	51.92	56.10	16.12	41.30	53.24	68.20	-14.96	PK
V	31440.00	44.82	56.10	16.12	41.30	46.14	54.00	-7.86	AV
V	36680.00	47.63	56.80	18.29	43.10	52.22	68.20	-15.98	PK
V	36680.00	40.63	56.80	18.29	43.10	45.22	54.00	-8.78	AV
H	10480.00	46.74	46.20	8.27	38.60	47.41	68.20	-20.79	PK
H	10480.00	36.44	46.20	8.27	38.60	37.11	54.00	-16.89	AV
H	15720.00	44.43	46.30	10.35	38.40	46.88	74.00	-27.12	PK
H	15720.00	34.25	46.30	10.35	38.40	36.7	54.00	-17.3	AV
H	20960.00	54.53	57.40	11.93	37.50	46.56	68.20	-21.64	PK
H	20960.00	45.53	57.40	11.93	37.50	37.56	54.00	-16.44	AV
H	26200.00	49.97	56.50	13.45	40.10	47.02	68.20	-21.18	PK
H	26200.00	40.05	56.50	13.45	40.10	37.1	54.00	-16.9	AV
H	31440.00	51.25	56.10	16.12	41.30	52.57	68.20	-15.63	PK
H	31440.00	45.23	56.10	16.12	41.30	46.55	54.00	-7.45	AV
H	36680.00	47.83	56.80	18.29	43.10	52.42	68.20	-15.78	PK
H	36680.00	40.85	56.80	18.29	43.10	45.44	54.00	-8.56	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:	25.5℃	Relative Humidity:	51%
Pressure:	101.2kPar	Test Voltage :	AC 120V
Test Mode :	5.8G TX- 802.11ac20		

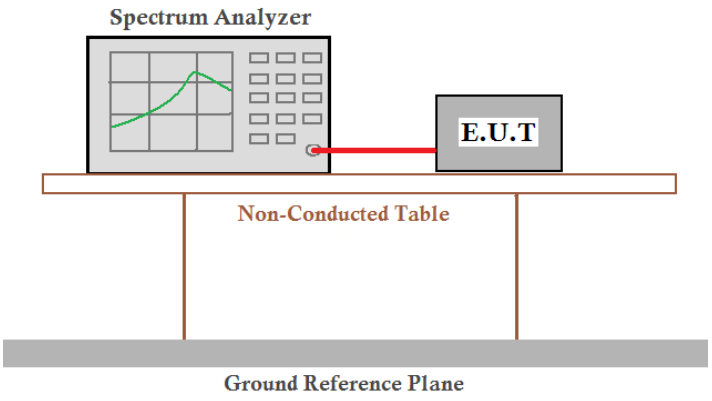
Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenn Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Typ
Low Channel:5745MHz									
V	11490.00	45.92	46.10	8.77	39.10	47.69	74.00	-26.31	PK
V	11490.00	37.87	46.10	8.77	39.10	39.64	54.00	-14.36	AV
V	17235.00	43.47	47.60	11.10	38.70	45.67	68.20	-22.53	PK
V	17235.00	36.34	47.60	11.10	38.70	38.54	54.00	-15.46	AV
V	22980.00	52.04	56.90	12.73	37.70	45.57	74.00	-28.43	PK
V	22980.00	44.23	56.90	12.73	37.70	37.76	54.00	-16.24	AV
V	28725.00	48.92	55.60	14.25	40.30	47.87	68.20	-20.33	PK
V	28725.00	40.62	55.60	14.25	40.30	39.57	54.00	-14.43	AV
V	34470.00	47.62	55.90	17.26	42.10	51.08	68.20	-17.12	PK
V	34470.00	41.44	55.90	17.26	42.10	44.9	54.00	-9.1	AV
H	11490.00	46.32	46.10	8.77	39.10	48.09	74.00	-25.91	PK
H	11490.00	37.73	46.10	8.77	39.10	39.5	54.00	-14.5	AV
H	17235.00	44.55	47.60	11.10	38.70	46.75	68.20	-21.45	PK
H	17235.00	36.73	47.60	11.10	38.70	38.93	54.00	-15.07	AV
H	22980.00	54.21	56.90	12.73	37.70	47.74	74.00	-26.26	PK
H	22980.00	44.02	56.90	12.73	37.70	37.55	54.00	-16.45	AV
H	28725.00	50.88	55.60	14.25	40.30	49.83	68.20	-18.37	PK
H	28725.00	41.21	55.60	14.25	40.30	40.16	54.00	-13.84	AV
H	34470.00	46.73	55.90	17.26	42.10	50.19	68.20	-18.01	PK
H	34470.00	40.63	55.90	17.26	42.10	44.09	54.00	-9.91	AV

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
Middle Channel:5785MHz									
V	11570.00	45.72	46.10	8.77	39.10	47.49	74.00	-26.51	PK
V	11570.00	37.71	46.10	8.77	39.10	39.48	54.00	-14.52	AV
V	17355.00	43.31	47.60	11.10	38.70	45.51	68.20	-22.69	PK
V	17355.00	36.13	47.60	11.10	38.70	38.33	54.00	-15.67	AV
V	23140.00	51.83	56.90	12.73	37.70	45.36	74.00	-28.64	PK
V	23140.00	44.02	56.90	12.73	37.70	37.55	54.00	-16.45	AV
V	28925.00	48.71	55.60	14.25	40.30	47.66	68.20	-20.54	PK
V	28925.00	40.36	55.60	14.25	40.30	39.31	54.00	-14.69	AV
V	34710.00	46.52	55.90	17.26	42.40	50.28	68.20	-17.92	PK
V	34710.00	41.01	55.90	17.26	42.40	44.77	54.00	-9.23	AV
H	11570.00	46.11	46.10	8.77	39.10	47.88	74.00	-26.12	PK
H	11570.00	37.51	46.10	8.77	39.10	39.28	54.00	-14.72	AV
H	17355.00	44.1	47.60	11.10	38.70	46.3	68.20	-21.9	PK
H	17355.00	36.55	47.60	11.10	38.70	38.75	54.00	-15.25	AV
H	23140.00	54.1	56.90	12.73	37.70	47.63	74.00	-26.37	PK
H	23140.00	43.81	56.90	12.73	37.70	37.34	54.00	-16.66	AV
H	28925.00	50.65	55.60	14.25	40.30	49.6	68.20	-18.6	PK
H	28925.00	41.01	55.60	14.25	40.30	39.96	54.00	-14.04	AV
H	34710.00	45.95	55.90	17.26	42.40	49.71	68.20	-18.49	PK
H	34710.00	40.36	55.90	17.26	42.40	44.12	54.00	-9.88	AV

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
High Channel:5825MHz									
V	11650.00	46.72	46.10	8.77	39.10	48.49	74.00	-25.51	PK
V	11650.00	37.86	46.10	8.77	39.10	39.63	54.00	-14.37	AV
V	17475.00	44.65	47.90	11.23	38.90	46.88	68.20	-21.32	PK
V	17475.00	37.16	47.90	11.23	38.90	39.39	54.00	-14.61	AV
V	23300.00	54.12	57.10	12.73	37.80	47.55	68.20	-20.65	PK
V	23300.00	44.96	57.10	12.73	37.80	38.39	54.00	-15.61	AV
V	29125.00	50.91	55.80	14.25	40.50	49.86	68.20	-18.34	PK
V	29125.00	42.25	55.80	14.25	40.50	41.2	54.00	-12.8	AV
V	34950.00	46.41	56.30	17.91	42.50	50.52	68.20	-17.68	PK
V	34950.00	40.33	56.30	17.91	42.50	44.44	54.00	-9.56	AV
H	11650.00	48.66	46.10	8.77	39.10	50.43	74.00	-23.57	PK
H	11650.00	40.22	46.10	8.77	39.10	41.99	54.00	-12.01	AV
H	17475.00	45.91	47.90	11.23	38.90	48.14	68.20	-20.06	PK
H	17475.00	38.41	47.90	11.23	38.90	40.64	54.00	-13.36	AV
H	23300.00	55.46	57.10	12.73	37.80	48.89	68.20	-19.31	PK
H	23300.00	46.32	57.10	12.73	37.80	39.75	54.00	-14.25	AV
H	29125.00	51.95	55.80	14.25	40.50	50.9	68.20	-17.3	PK
H	29125.00	46.72	55.80	14.25	40.50	45.67	54.00	-8.33	AV
H	34950.00	46.32	56.30	17.91	42.50	50.43	68.20	-17.77	PK
H	34950.00	40.31	56.30	17.91	42.50	44.42	54.00	-9.58	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:		
Test Instruments:	Refer to section 3.0 for details	
Test mode:	Refer to section 2.2 for details	
Test environment:	Temp.: 25.5℃	Humid.:51%RH
Test voltage:	AC 120V	
Test results:	Pass	

Remark:

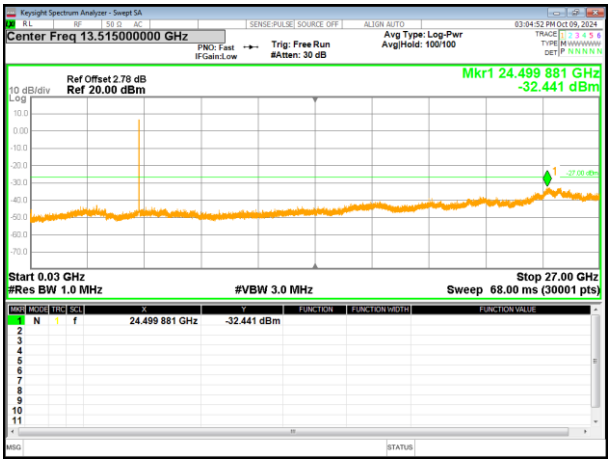
1. Antenna gain and cable loss data included in Offset.

2. We tested 30MHz-40GHz frequency and found 27GHz-40GHz test data was very lower (close to the noise of the spectrum analyzer). The test report only showed data for 30MHz-27GHz

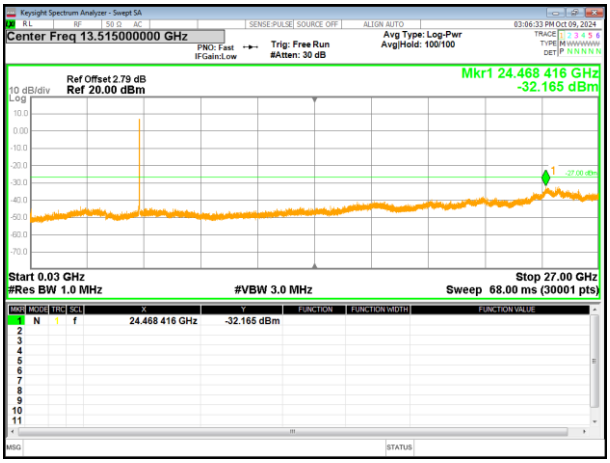
5180-5240MHz

Test Plot

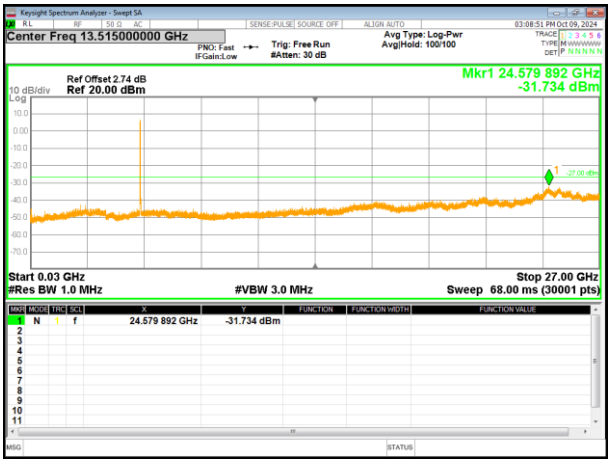
802.11a on channel 36



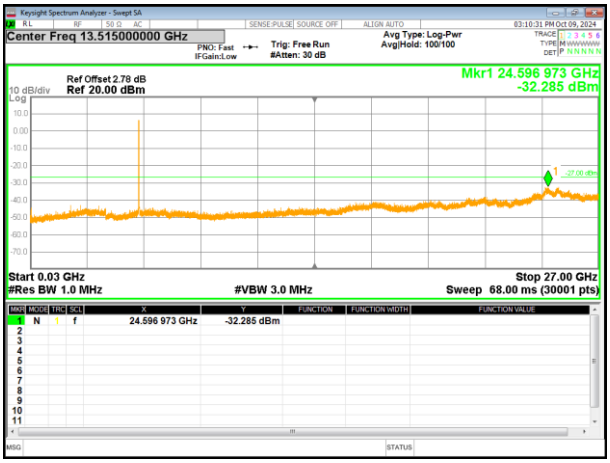
802.11a on channel 40



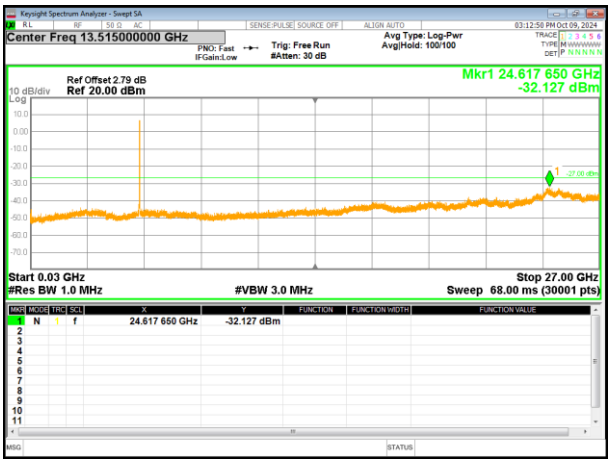
802.11a on channel 48



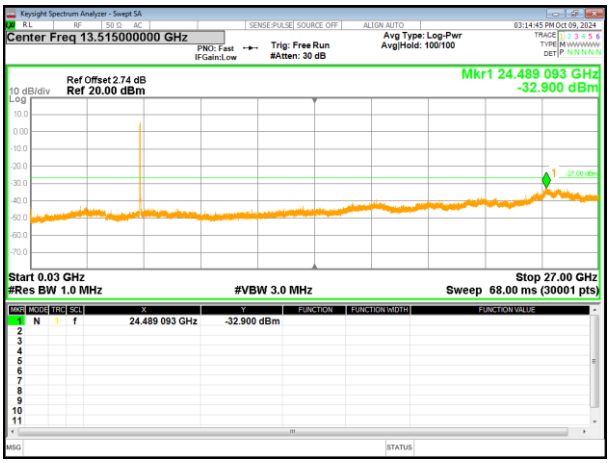
802.11n20 on channel 36



802.11n20 on channel 40

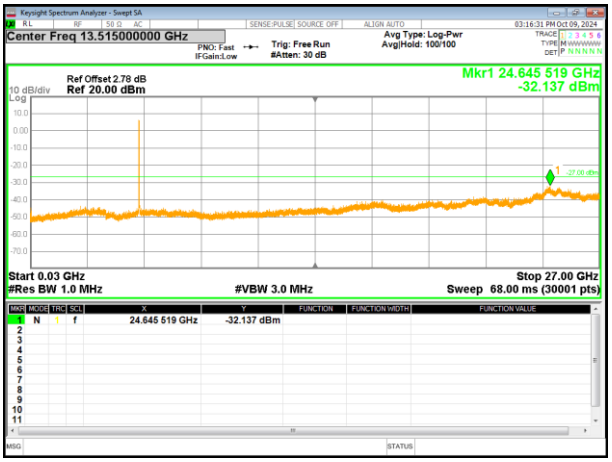


802.11n20 on channel 48

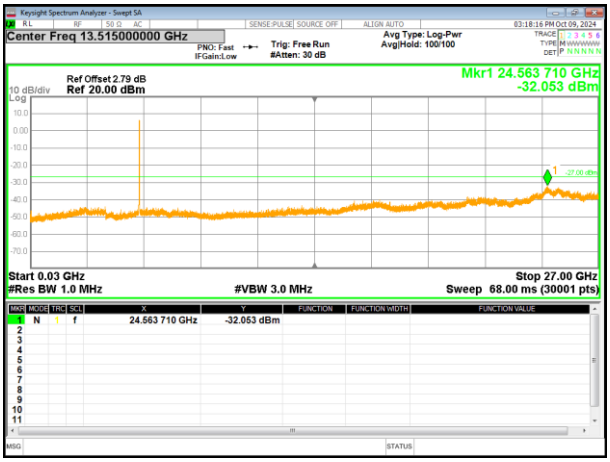


Test Plot

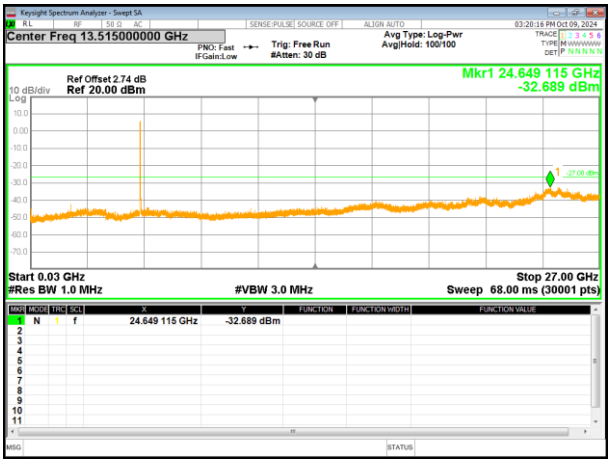
802.11ac20 on channel 36



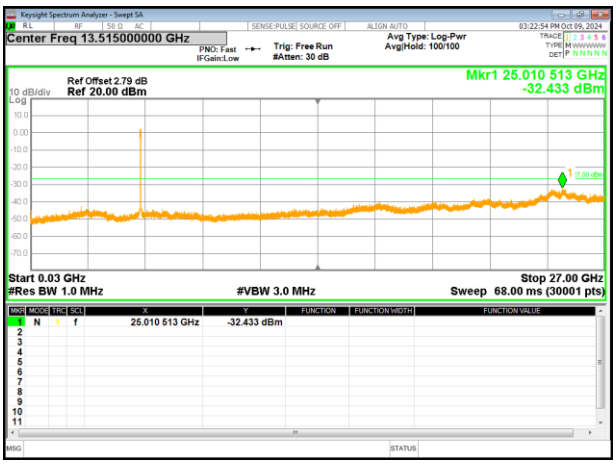
802.11ac20 on channel 40



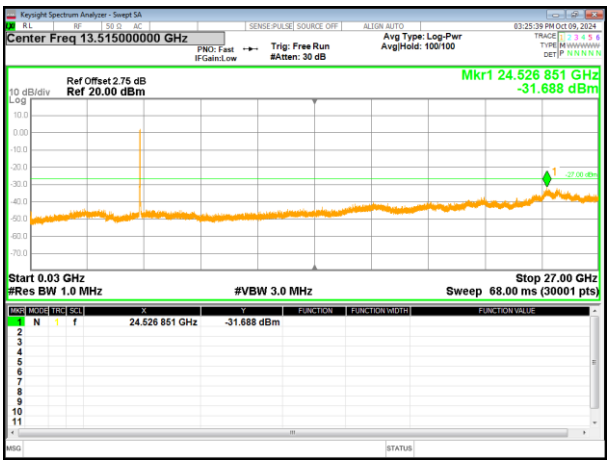
802.11ac20 on channel 48



802.11n40 on channel 38

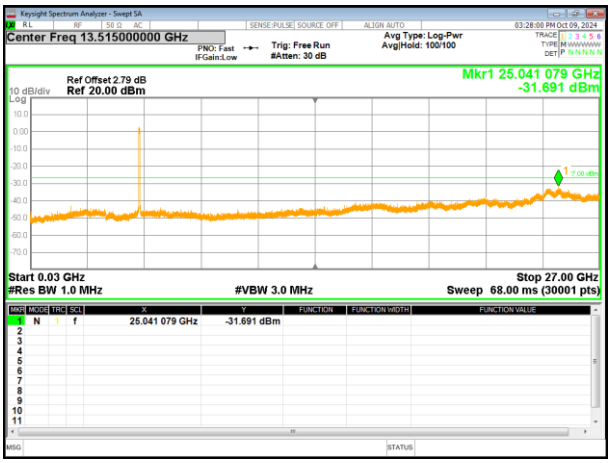


802.11n40 on channel 46

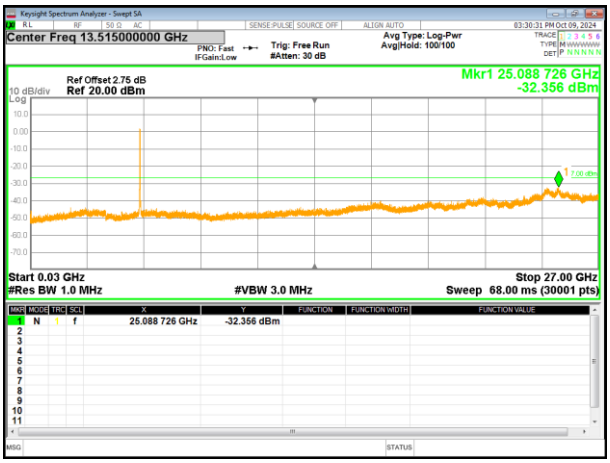


Test Plot

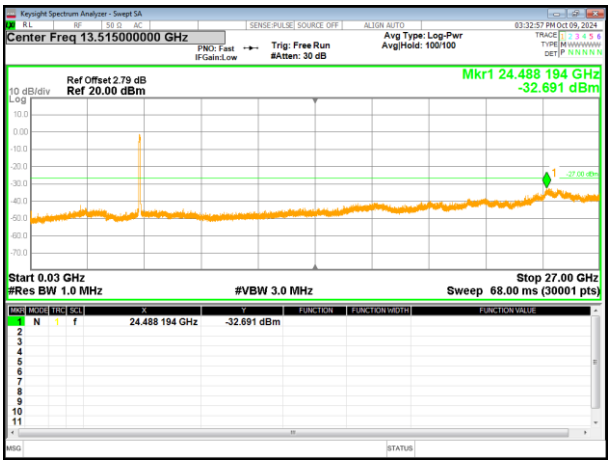
802.11ac40 on channel 38



802.11ac40 on channel 46



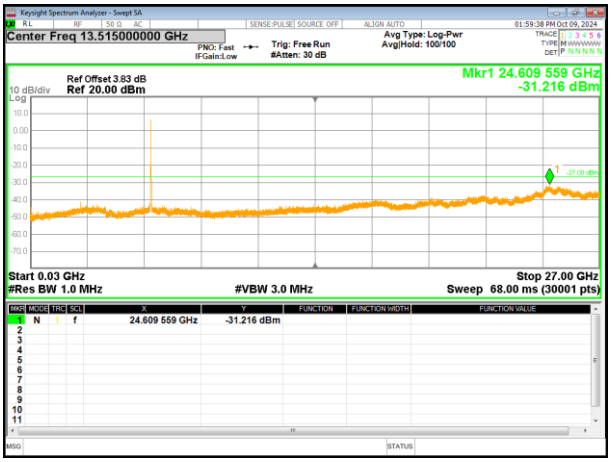
802.11ac80 on channel 42



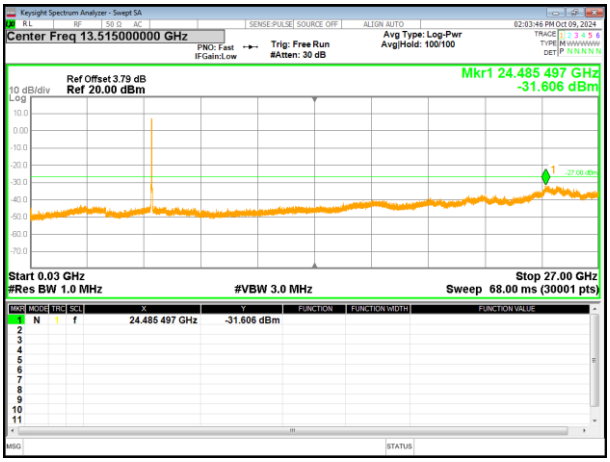
5745-5825MHz

Test Plot

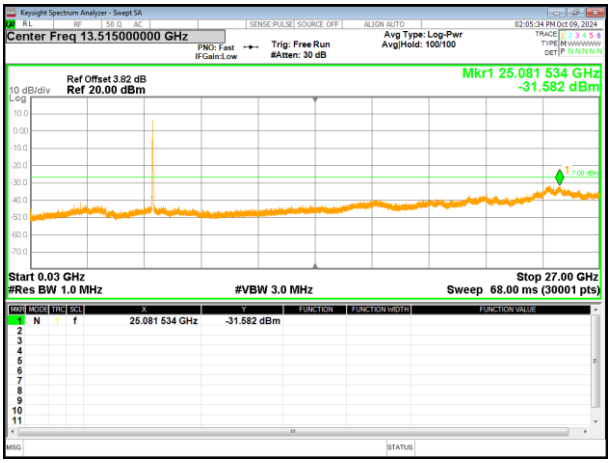
802.11a on channel 149



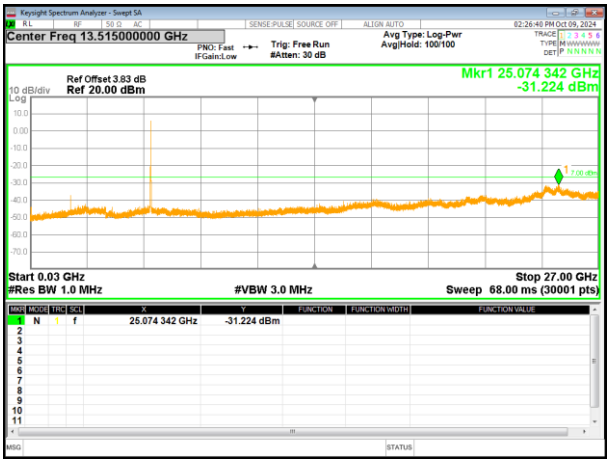
802.11a on channel 157



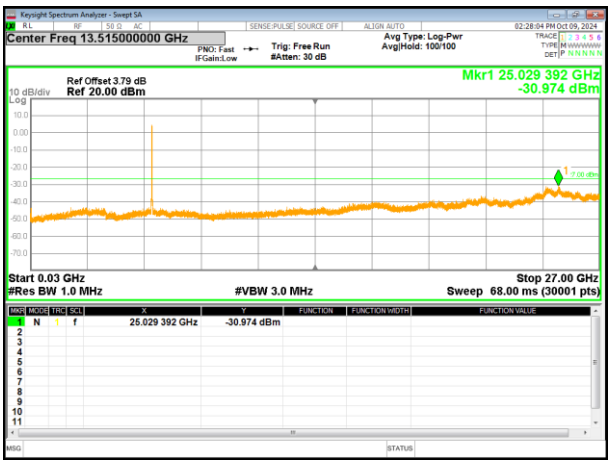
802.11a on channel 165



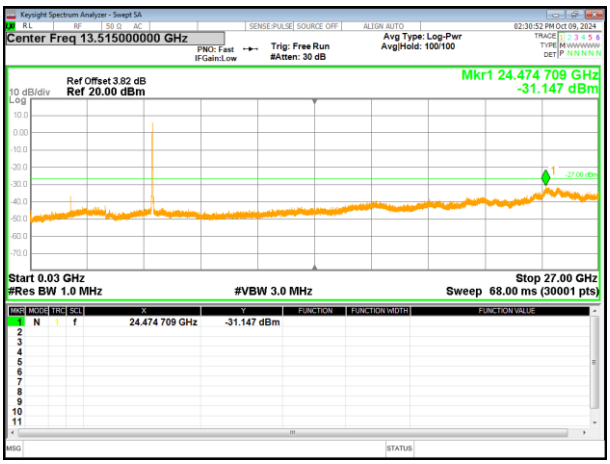
802.11n20 on channel 149



802.11n20 on channel 157

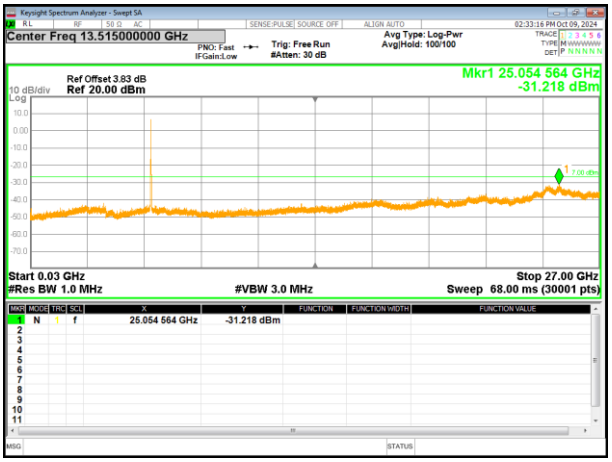


802.11n20 on channel 165

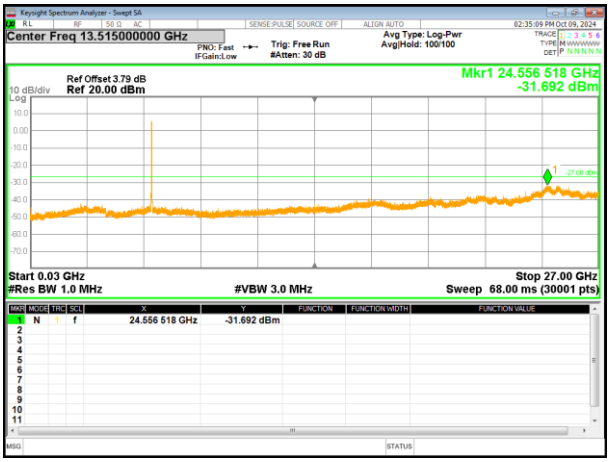


Test Plot

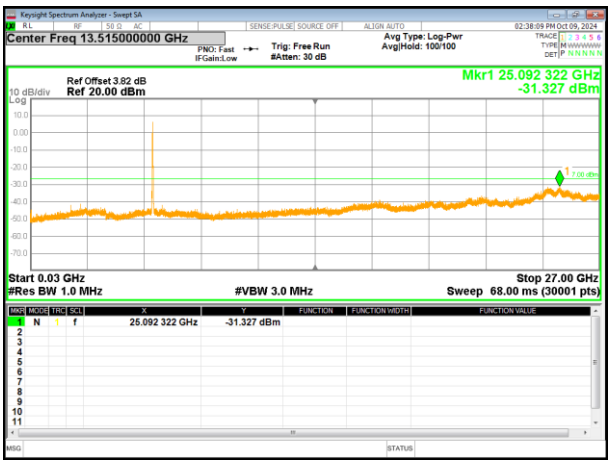
802.11ac20 on channel 149



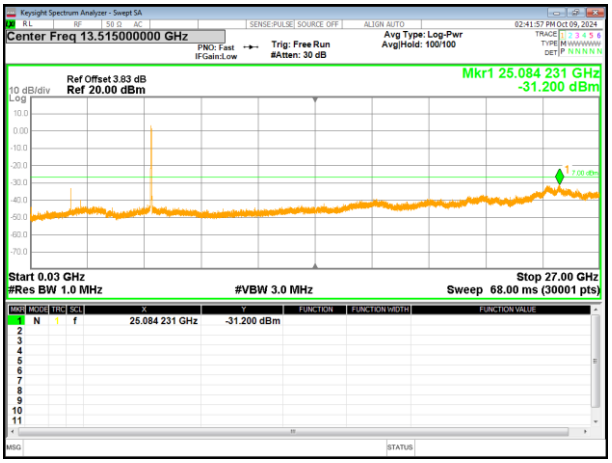
802.11ac20 on channel 157



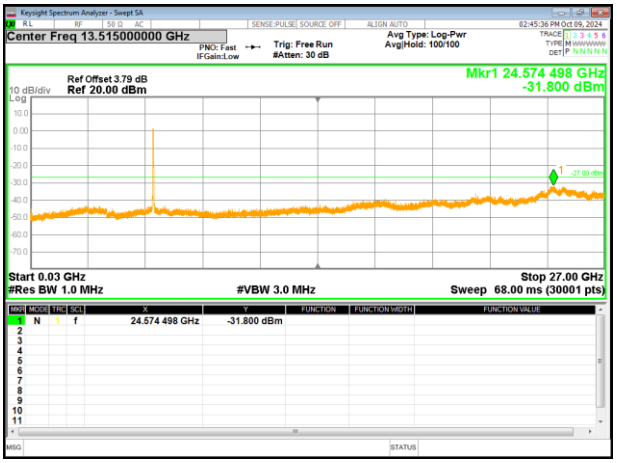
802.11ac20 on channel 165



802.11n40 on channel 151

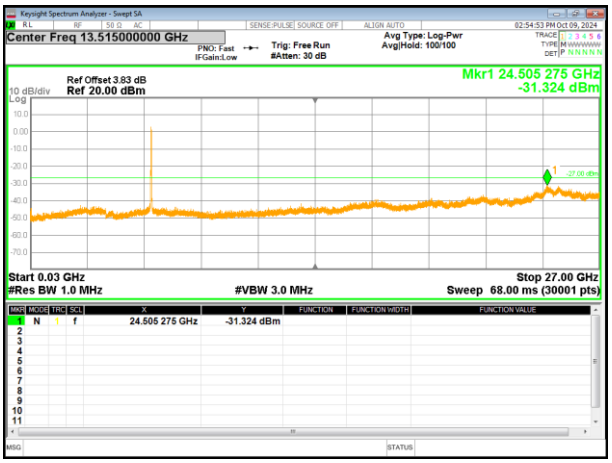


802.11n40 on channel 159

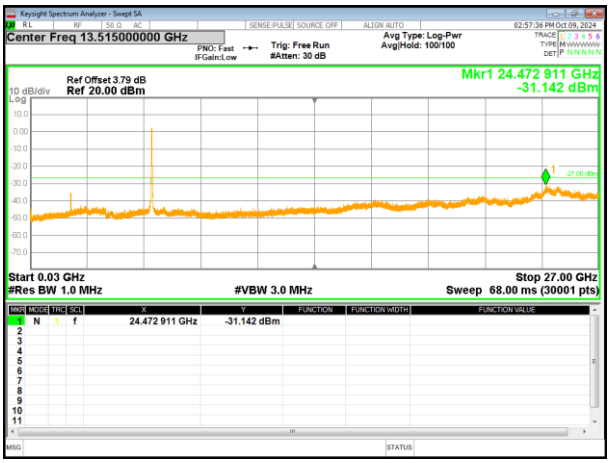


Test Plot

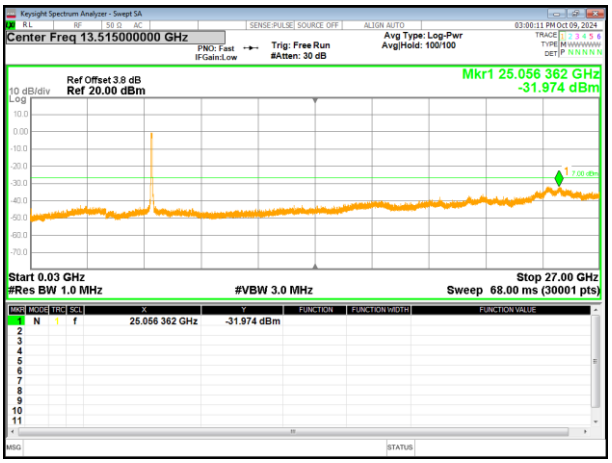
802.11ac40 on channel 151



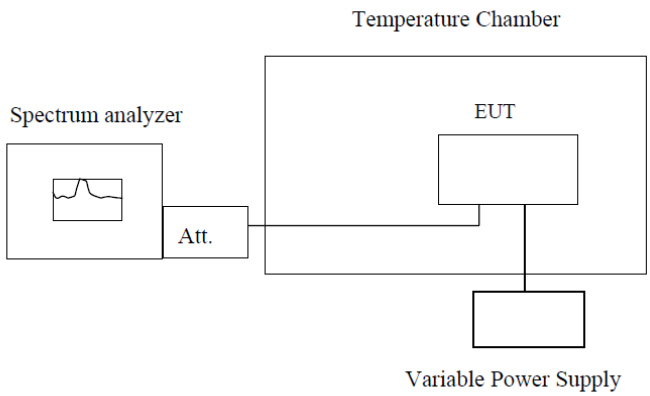
802.11ac40 on channel 159



802.11ac80 on channel 155



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: AC 120V					
Temp. (°C)	Operating Frequency (MHz)	0 minute	2 minute	5 minute	10 minute
		Measured Frequency (MHz)	Measured Frequency (MHz)	Measured Frequency (MHz)	Measured Frequency (MHz)
-30	5180	5180.040	5179.951	5180.017	5181.060
	5190	5190.030	5189.967	5190.891	5191.073
	5200	5200.032	5199.952	5199.916	5201.066
	5210	5210.037	5209.930	5209.893	5211.070
	5220	5220.032	5219.945	5219.908	5221.077
	5230	5230.030	5229.938	5229.900	5231.097
	5240	5240.002	5239.948	5239.908	5241.085
-20	5180	5180.033	5179.927	5179.902	5181.081
	5190	5190.024	5189.919	5189.901	5191.079
	5200	5200.031	5199.927	5199.894	5201.076
	5210	5210.022	5209.919	5209.883	5211.085
	5220	5220.042	5219.940	5219.893	5221.081
	5230	5230.021	5229.918	5299.886	5231.080
	5240	5240.038	5239.938	5239.894	5241.056
-10	5180	5180.042	5179.936	5179.881	5181.060
	5190	5190.038	5189.933	5189.892	5191.073
	5200	5200.032	5199.928	5199.882	5201.066
	5210	5210.037	5209.934	5209.882	5211.070
	5220	5220.032	5219.929	5219.889	5221.077
	5230	5230.030	5229.927	5229.906	5231.097
	5240	5240.002	5239.902	5239.878	5241.072
0	5180	5179.819	5179.911	5179.893	5181.071
	5190	5199.990	5189.927	5189.884	5191.074
	5200	5199.988	5199.918	5199.891	5201.067
	5210	5210.042	5209.919	5209.882	5301.095
	5220	5220.031	5219.926	5219.903	5221.070
	5230	5230.018	5229.944	5229.880	5231.093
	5240	5240.034	5239.918	5239.898	5241.074
10	5180	5180.021	5179.927	5179.902	5181.072
	5190	5190.032	5189.919	5189.898	5191.065
	5200	5200.022	5199.927	5199.892	5201.075
	5210	5210.022	5209.919	5209.897	5211.070
	5220	5220.029	5219.940	5219.892	5221.091
	5230	5230.047	5229.918	5229.889	5231.071
	5240	5240.031	5239.938	5239.862	5241.092
20	5180	5180.099	5179.180	5180.151	5180.834
	5190	5190.042	5189.970	5190.195	5191.101

	5200	5200.036	5199.961	5200.203	5201.128
	5210	5210.041	5209.975	5210.195	5211.115
	5220	5220.036	5219.961	5220.216	5221.107
	5230	5230.034	5229.982	5230.194	5231.137
	5240	5240.006	5239.962	5240.212	5241.123
30	5180	5180.025	5179.968	5180.204	5181.117
	5190	5190.036	5189.961	5190.195	5191.119
	5200	5200.026	5199.964	5200.203	5201.117
	5210	5210.026	5209.961	5210.195	5201.112
	5220	5220.033	5219.982	5220.216	5221.123
	5230	5230.051	5229.960	5230.194	5231.119
	5240	5240.022	5239.980	5240.212	5241.119
40	5180	5180.037	5179.967	5179.990	5181.096
	5190	5190.028	5189.970	5190.162	5191.109
	5200	5200.035	5199.961	5200.160	5201.102
	5210	5210.026	5209.975	5210.215	5211.106
	5220	5220.047	5219.961	5220.204	5221.114
	5230	5230.025	5229.982	5230.191	5231.134
	5240	5240.042	5239.962	5240.208	5241.109
50	5180	5180.037	5179.968	5180.204	5181.069
	5190	5190.028	5189.960	5190.195	5191.101
	5200	5200.035	5199.969	5200.203	5201.128
	5210	5210.026	5209.961	5210.195	5211.115
	5220	5220.047	5219.982	5220.216	5221.107
	5230	5230.025	5229.960	5230.194	5231.137
	5240	5240.042	5239.980	5240.212	5241.128

Frequency stability versus Voltage					
Temperature: 25°C					
Power Supply (VAC)	Operating Frequency (MHz)	0 minute	2 minute	5 minute	10 minute
		Measured Frequency (MHz)	Measured Frequency (MHz)	Measured Frequency (MHz)	Measured Frequency (MHz)
AC102V	5180	5179.942	5179.971	5180.224	5181.237
	5190	5189.938	5199.966	5190.215	5201.112
	5200	5199.932	5199.994	5200.223	5201.141
	5210	5209.937	5209.972	5210.215	5211.122
	5220	5219.931	5219.987	5220.236	5221.138
	5230	5229.929	5229.980	5230.214	5231.133
	5240	5239.900	5239.990	5240.228	5241.144
AC120V	5180	5179.928	5179.986	5180.223	5181.122
	5190	5189.924	5180.092	5190.224	5191.123
	5200	5199.931	5199.969	5200.215	5201.119
	5210	5209.923	5209.994	5210.223	5211.112
	5220	5219.943	5219.972	5220.215	5221.123
	5230	5229.920	5229.983	5230.235	5231.124
	5240	5239.937	5239.982	5240.214	5241.130
AC138V	5180	5179.942	5179.977	5180.212	5181.101
	5190	5189.938	5189.975	5190.223	5191.114
	5200	5199.932	5199.970	5200.214	5201.106
	5210	5209.937	5209.976	5210.215	5211.111
	5220	5219.932	5219.973	5220.222	5221.119
	5230	5229.929	5229.969	5230.240	5231.144
	5240	5239.901	5239.944	5240.212	5241.114

Frequency stability versus Temp.					
Power Supply: DC 120V					
Temp. (°C)	Operating Frequency (MHz)	0 minute	2 minute	5 minute	10 minute
		Measured Frequency (MHz)	Measured Frequency (MHz)	Measured Frequency (MHz)	Measured Frequency (MHz)
-30	5745	5744.879	5744.996	5745.215	5746.224
	5755	5754.888	5755.002	5755.223	5756.214
	5775	5774.908	5774.996	5775.240	5776.230
	5785	5784.883	5784.988	5785.215	5786.238
	5795	5794.878	5794.995	5795.211	5796.259
	5825	5824.874	5824.926	5825.215	5826.257
-20	5745	5744.876	5745.007	5745.209	5746.235
	5755	5754.890	5755.008	5755.235	5756.250
	5775	5774.888	5775.013	5775.216	5776.240
	5785	5784.890	5785.005	5785.224	5786.228
	5795	5794.899	5794.996	5795.222	5796.225
	5825	5824.879	5825.007	5825.233	5826.265
-10	5745	5744.886	5744.997	5745.225	5745.854
	5755	5754.911	5755.003	5755.228	5756.239
	5775	5774.906	5775.022	5775.231	5776.245
	5785	5784.889	5784.998	5785.222	5786.249
	5795	5794.877	5794.994	5795.213	5796.235
	5825	5824.810	5824.998	5825.223	5826.237
0	5745	5744.880	5744.986	5745.225	5746.225
	5755	5754.904	5755.005	5755.228	5756.252
	5775	5774.884	5775.002	5775.231	5776.253
	5785	5784.892	5785.005	5785.222	5786.238
	5795	5794.889	5795.018	5795.213	5796.230
	5825	5824.897	5824.999	5825.223	5826.171
10	5745	5744.880	5744.996	5745.214	5746.220
	5755	5754.904	5755.012	5755.222	5756.233
	5775	5774.884	5775.015	5775.214	5776.255
	5785	5784.892	5784.997	5785.205	5786.232
	5795	5794.889	5795.014	5795.212	5796.231
	5825	5824.897	5825.014	5825.142	5826.240
20	5745	5744.896	5745.021	5745.223	5746.224
	5755	5754.909	5754.992	5755.240	5756.244
	5775	5774.893	5775.017	5775.225	5776.229
	5785	5784.879	5785.017	5785.211	5786.257
	5795	5794.872	5795.008	5795.205	5796.252
	5825	5824.904	5825.025	5825.240	5826.267
30	5745	5744.886	5745.007	5745.208	5746.249
	5755	5754.892	5755.008	5755.232	5756.222
	5775	5774.908	5775.013	5775.233	5776.250
	5785	5784.882	5785.005	5785.214	5786.251
	5795	5794.878	5794.996	5795.231	5796.245
	5825	5824.879	5825.007	5825.230	5826.266
40	5745	5744.896	5744.991	5745.225	5746.218
	5755	5754.909	5755.015	5755.228	5756.252
	5775	5774.893	5774.998	5775.231	5776.253
	5785	5784.879	5785.007	5785.222	5786.238

	5795	5794.872	5795.005	5795.213	5796.230
	5825	5824.904	5825.017	5825.223	5826.171
50	5745	5744.896	5745.021	5745.225	5746.224
	5755	5754.889	5754.992	5755.239	5756.244
	5775	5774.893	5775.017	5775.225	5776.229
	5785	5784.879	5785.017	5785.211	5786.258
	5795	5794.872	5795.007	5795.205	5796.252
	5825	5824.904	5825.029	5825.240	5826.267

Frequency stability versus Voltage					
Temperature: 25°C					
Power Supply (VAC)	Operating Frequency (MHz)	0 minute	2 minute	5 minute	10 minute
		Measured Frequency (MHz)	Measured Frequency (MHz)	Measured Frequency (MHz)	Measured Frequency (MHz)
AC102V	5745	5744.990	5744.996	5745.194	5746.213
	5755	5755.005	5755.002	5755.212	5756.239
	5775	5775.004	5774.996	5775.213	5776.225
	5785	5785.007	5784.988	5785.194	5786.235
	5795	5795.016	5794.995	5795.212	5796.236
	5825	5824.996	5824.926	5825.210	5826.252
AC120V	5745	5744.990	5745.007	5745.189	5746.229
	5755	5755.005	5755.008	5755.215	5756.244
	5775	5775.004	5775.011	5775.196	5776.234
	5785	5785.006	5785.005	5785.204	5786.222
	5795	5795.012	5794.996	5795.202	5796.219
	5825	5824.996	5825.007	5825.213	5826.259
AC138V	5745	5745.011	5745.020	5745.205	5746.218
	5755	5755.024	5754.992	5755.220	5756.238
	5775	5775.009	5775.017	5775.205	5776.223
	5785	5784.995	5785.017	5785.191	5786.251
	5795	5794.988	5795.008	5795.185	5796.246
	5825	5825.021	5825.025	5825.220	5826.261

5 Test Setup Photo

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

6 EUT Constructional Details

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

------END------