



TEST REPORT

Applicant: Jiangxi Giwei technology Co.,limited
Address of Applicant: No.7, Liuxing industrial park, Jinggangshan economical and technological development zone, Ji'an, Jiangxi province, china
Manufacturer/Factory: Jiangxi Giwei technology Co.,limited
Address of Manufacturer: No.7, Liuxing industrial park, Jinggangshan economical and technological development zone, Ji'an, Jiangxi province, china
Product Name: Smart Meeting Tablet
Model No.: GW-HY75K110, GW-HY
Trade Mark: GIWEI
FCC ID: 2BFIF-HY75K110
Applicable standards: FCC CFR Title 47 Part 15 Subpart E Section 15.407
Date of Test: Mar.08, 2024-Mar.28, 2024
Date of report issued: Apr.10,2024
Test Result : PASS *

Remark:

* In the configuration tested, the EUT complied with the standards specified above.

The results shown in this test report refer only to the sample(s) tested , this test report cannot be reproduced, except in full without prior written permission of the company.

The report would be invalid without specific stamp of test institute and the signatures of compiler and approver

Prepared By

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1 Test Summary

Test Item	Section in CFR 47	Result	Test by
Antenna requirement	15.203	Pass	/
AC Power Line Conducted Emission	15.207	Pass	Carr Kang
Conducted Output Power	15.407 (a)(1)/(a)(3)	Pass	Yvan Fan
26dB Bandwidth and 99% Occupied Bandwidth	15.407 (a)(12)	Pass	Yvan Fan
6dB Bandwidth	15.407 (e)	Pass	Yvan Fan
Power Spectral Density	15.407(a)(1)/(a)(3)	Pass	Yvan Fan
Band Edge	15.407(b)(1)/(b)(4)	Pass	Yvan Fan
Spurious Emission	15.205/15.209 15.407(b)(1)/(b)(4)/(b)(8)	Pass	Carr Kang
Frequency Stability	15.407(g)	Pass	Yvan Fan

Remarks:

1. *Pass: The EUT complies with the essential requirements in the standard.*
2. *Test according to ANSI C63.10:2013*
3. *Note: Compliance determination rules*
 - 1). *The Compliance determination of test results does not take into account measurement uncertainty. Measurement results are determined based on regulatory limitations or requirements specified by the applicant/manufacturer. If measurement uncertainty is taken into account, the applicant/manufacturer will bear all possible risks of non-compliance.*
 - 2). *The measurement uncertainty please refer to each test result in the "Measurement Uncertainty"*

1.1 Measurement Uncertainty

Test Item	Measurement Uncertainty	Notes
Occupied Channel Bandwidth	±0.55%	(1)
RF output power, conducted	±0.99dB	(1)
Power Spectral Density, conducted	±0.61dB	(1)
Unwanted Emissions, conducted	±0.64dB	(1)
AC Power Line Conducted Emission	± 3.02dB	(1)
Radiated emissions 9K-30MHz	±3.98dB	(1)
Radiated emissions 30M- 1GHz	±4.32dB	(1)
Radiated emissions 1GHz-18GHz	±4.56dB	(1)
Radiated emissions 18GHz-40GHz	±4.59 dB	(1)

Note (1): The measurement uncertainty is for coverage factor of k=2 and a level of confidence of 95%.

2 General Information

2.1 General Description of EUT

Product Name:	Smart Meeting Tablet
Model No.:	GW-HY75K110, GW-HY
Difference of model(s)	All the model are the same circuit and RF module, except the model names and colors
Test Model:	GW-HY75K110
Hardware Version:	N/A
Software Version:	N/A
Sample(s) Status:	Engineer sample
Operation Frequency:	<input checked="" type="checkbox"/> 5180-5240MHz for 802.11a/n(HT20)/ac20; 5190-5230MHz for 802.11n(HT40)/ac40; 5210MHz for 802.11 ac80; <input checked="" type="checkbox"/> 5745-5825 MHz for 802.11a/n(HT20)/ac20; 5755-5795 MHz for 802.11n(HT40)/ac40; 5775MHz for 802.11 ac80;
Channel numbers:	<input checked="" type="checkbox"/> 4 channels for 802.11a/n20/ac20 in the 5180-5240MHz band; 2 channels for 802.11 n40/ac40 in the 5190-5230MHz band ; 1 channels for 802.11 ac80 in the 5210MHz band ; <input checked="" type="checkbox"/> 5 channels for 802.11a/n20/ac20 in the 5745-5825MHz band ; 2 channels for 802.11 n40/ac40 in the 5755-5795MHz band ; 1 channels for 802.11 ac80 in the 5775MHz band
Channel bandwidth:	802.11a/802.11n(HT20)/ 802.11ac(HT20): 20MHz 802.11n(HT40)/ 802.11ac(HT40) : 40MHz 802.11ac(HT80) : 80MHz
Data Rate	802.11a: 6,9,12,18,24,36,48,54Mbps; 802.11n(HT20/HT40):MCS0-MCS15; 802.11ac(VHT/20/40/80):NSS1, MCS0-MCS9
Modulation technology:	Orthogonal Frequency Division Multiplexing (OFDM) with BPSK/QPSK/16QAM/64QAM/256QAM
Antenna Type:	External Antenna
Antenna gain:	3.58 dBi (Note: Antenna information is provided by applicant, Testing lab is not responsible for the accuracy of the information.)
Battery	N/A
Adapter Model:	N/A
Power supply:	AC 120V 60Hz

Operation Frequency each of channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
36	5180MHz	38	5190MHz	40	5200MHz	42	5210MHz
44	5220MHz	46	5230MHz	48	5240MHz	/	/
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
149	5745MHz	151	5755MHz	153	5765MHz	155	5775MHz
157	5785MHz	159	5795MHz	161	5805MHz	/	/
165	5825MHz	/					

Note:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

Test channel	Frequency (MHz)		
	802.11 a /n(HT20)/ac(HT20)	802.11 n(HT40)/ac(HT40)	802.11ac(HT80)
Lowest channel	5180	5190	5210
Middle channel	5200	5230	5240
Highest channel	5240	5230	5210

Test channel	Frequency (MHz)		
	802.11 a /n(HT20)/ac(HT20)	802.11 n(HT40)/ac(HT40)	802.11ac(HT80)
Lowest channel	5745	5755	5775
Middle channel	5785	5795	5805
Highest channel	5825	5795	5775

2.2 Test mode

Transmitting mode	Keep the EUT in continuously transmitting mode(or with a duty cycle \geq 98%)
<p><i>Remark: During the test, the test voltage was tuned from 85% to 115% of the nominal rated supply voltage, and found that the worst case was under the nominal rated supply condition. So the report just shows that condition's data.</i></p>	

We have verified the construction and function in typical operation. All the test modes were carried out with the EUT in transmitting operation, which was shown in this test report and defined as follows:

Pretest Mode	Description
Mode 1	802.11a / n 20 CH36/ CH40/ CH 48 802.11a /n 20 CH149/ CH157/ CH 165
Mode 2	802.11n 40 CH38/ CH 46 802.11n 40 CH 151 / CH 159
Mode 3	802.11 ac80 CH 42/CH 155
Mode 4	802.11a / n 20 CH36/ CH40/ CH 48 802.11a /n 20 CH149/ CH157/ CH 165
Mode 5	Link Mode

Conducted Emission	
Final Test Mode	Description
Mode 5	Link Mode

For Radiated Emission	
Final Test Mode	Description
Mode 1	802.11a / n 20 CH36/ CH40/ CH 48 802.11a /n 20 CH149/ CH157/ CH 165
Mode 2	802.11n 40 CH38/ CH 46 802.11n 40 CH 151 / CH 159
Mode 3	802.11 ac80 CH 42/CH 155
Mode 4	802.11a / n 20 CH36/ CH40/ CH 48 802.11a /n 20 CH149/ CH157/ CH 165

Note:

(1) The measurements are performed at all Bit Rate of Transmitter, the worst data was reported.

2.3 Description of Support Units

No.	Description	Manufacturer	Model	Serial Number
/	/	/	/	/

2.4 Deviation from Standards

None.

2.5 Abnormalities from Standard Conditions

None.

2.6 Test Facility

Test laboratory:	Shenzhen ETR Standard Technology Co., Ltd.
CNAS Registration Number:	L11864
A2LA Certificate Number:	6640.01
FCC Designation Number:	CN1326
FCC Test Firm Registration:	183064

2.7 Test Location

All tests were performed at:	
Laboratory location:	No.103, No.10, Phase I, Zone 3, Xinxing Industrial Park, Xinhe, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China
Telephone:	+86 755 85259392

2.8 Additional Instructions

Test Software	Manufacturer's special ADB serial port command
Power level setup	Default

3 Test Instruments list

Conducted Emission

Item	Equipment name	Manufacturer	Model	Serial No.	Calibration date	Due date
1	EMI Test Receiver	Rohde&schwarz	ESC13	100605	2024.3.12	2025.3.11
2	Artificial power network	schwarabeck	NSLK8127	8127483	2024.3.12	2025.3.11
3	Artificial power network	ETS	3186/2NM	1132	2024.3.12	2025.3.11
4	10dB attenuator	HUBER+SUHNER	10dB	/	2024.3.12	2025.3.11
5	Cable 4	HUBER SUNNER	3M	/	2024.3.12	2025.3.11
6	Absorbing Clamp	schwarabeck	MDS21	D69250	2024.3.12	2025.3.11

Radiated Emission &RF Conducted test:

Item	Equipment name	Manufacturer	Model	Serial No.	Calibration date	Due date
1	EMI Test Receiver	Rohde&schwarz	ESC17	101032	2024.3.12	2025.3.11
2	Broadband antenna	schwarabeck	VULB9168	1064	2024.3.19	2026.3.18
3	Horn antenna	schwarabeck	BBHA9120D	9120D-1145	2024.3.19	2026.3.18
4	Amplifier	EMtrace	RP01A	50117	2024.3.12	2025.3.11
5	Amplifier	Space-Dtronic	EWLAN0118G-P40	19113001	2024.3.12	2025.3.11
6	Spectrum analyzer	KEYSIGHT	N9020A	MY55370280	2024.3.12	2025.3.11
7	Power detector meter	MWRftest	MW100-PSB	MW201020JYT	2024.3.12	2025.3.11
8	Signal generator	Agilent	N5182A	MY49060455	2024.3.12	2025.3.11
9	Spectrum analyzer	Rohde&schwarz	FSU40	1166.1660K43	2024.3.12	2025.3.11
10	Amplifier	SKET	LNPA_1840-50	SK2019040302	2024.3.12	2025.3.11
11	Horn antenna	schwarabeck	BBHA 9170	946	2024.3.19	2026.3.18
12	Loop antenna	schwarabeck	FMZB 1519 B	1519	2024.3.19	2026.3.18
13	Cable 6	HUBER SUNNER	0.5M	/	2024.3.12	2025.3.11
14	Cable7	HUBER SUNNER	2.0M	/	2024.3.12	2025.3.11
15	Cable8	HUBER SUNNER	6.0M	/	2024.3.12	2025.3.11
16	Filter	Xin bo	XBLBQ-GTA29	210410-3-2	2024.3.12	2025.3.11
17	Power meter	Rohde&Schwarz	NRP-Z11	1138.3004.02-117725-vh	2024.3.12	2025.3.11

Note: the calibration interval of the above test instruments is 12 or 24 months and the calibrations are traceable to international system unit (SI).

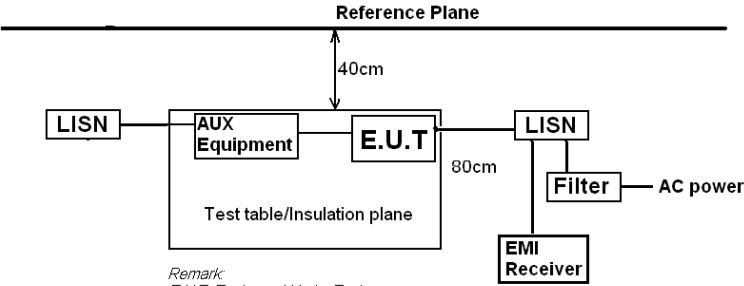
Software Name	Manufacturer	Model	Version
RF test software	MWRftest	MTS 8310	V2.0.0.0
Conducted test software	EZ-EMC	Farad	Ver.EMC-CON 3A1.1
Radiated test software	EZ-EMC	Farad	Ver.FA-03A2 RE

4 Test results and Measurement Data

4.1 Antenna requirement

Standard requirement:	FCC Part15 C Section 15.203
<i>15.203 requirement: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.</i>	
E.U.T Antenna:	
<i>The antennas are External Antenna, the best case gain of the antennas are 3.58 dBi, reference to the appendix II for details</i>	

4.2 Conducted Emissions

Test Requirement:	FCC Part15 C Section 15.207					
Test Method:	ANSI C63.10:2013					
Test Frequency Range:	150KHz to 30MHz					
Class / Severity:	Class B					
Receiver setup:	RBW=9KHz, VBW=30KHz, Sweep time=auto					
Limit:	Frequency range (MHz)		Limit (dBuV)			
			Quasi-peak		Average	
	0.15-0.5		66 to 56*		56 to 46*	
	0.5-5		56		46	
5-30		60		50		
* Decreases with the logarithm of the frequency.						
Test setup:	 <p><i>Remark:</i> E.U.T: Equipment Under Test LISN: Line Impedance Stabilization Network Test table height=0.8m</p>					
Test procedure:	<ol style="list-style-type: none"> 1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment. 2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs). 3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10:2013 on conducted measurement. 					
Test Instruments:	Refer to section 3.0 for details					
Test mode:	Refer to section 2.2 for details					
Test environment:	Temp.:	21.0°C	Humid.:	34%	Press.:	1012mbar
Test voltage:	AC 120V, 60Hz					
Test results:	Pass					

Remark:

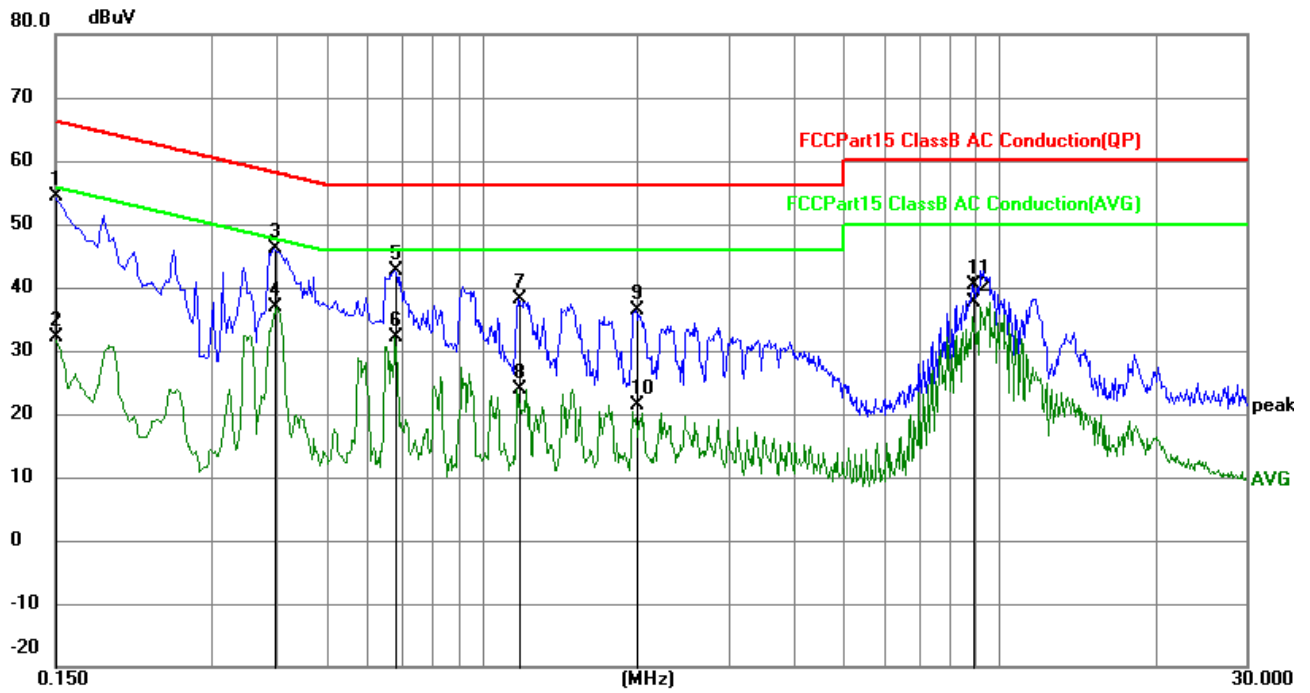
EUT is directly powered by DC, this project is not applicable

Remark:

1. Both high voltage and low voltage have been tested, and the report only shows the worst case data with AC 120V/60Hz.
2. All mode have been tested, the report only shows the worst 802.11a(5200MHz) mode data.

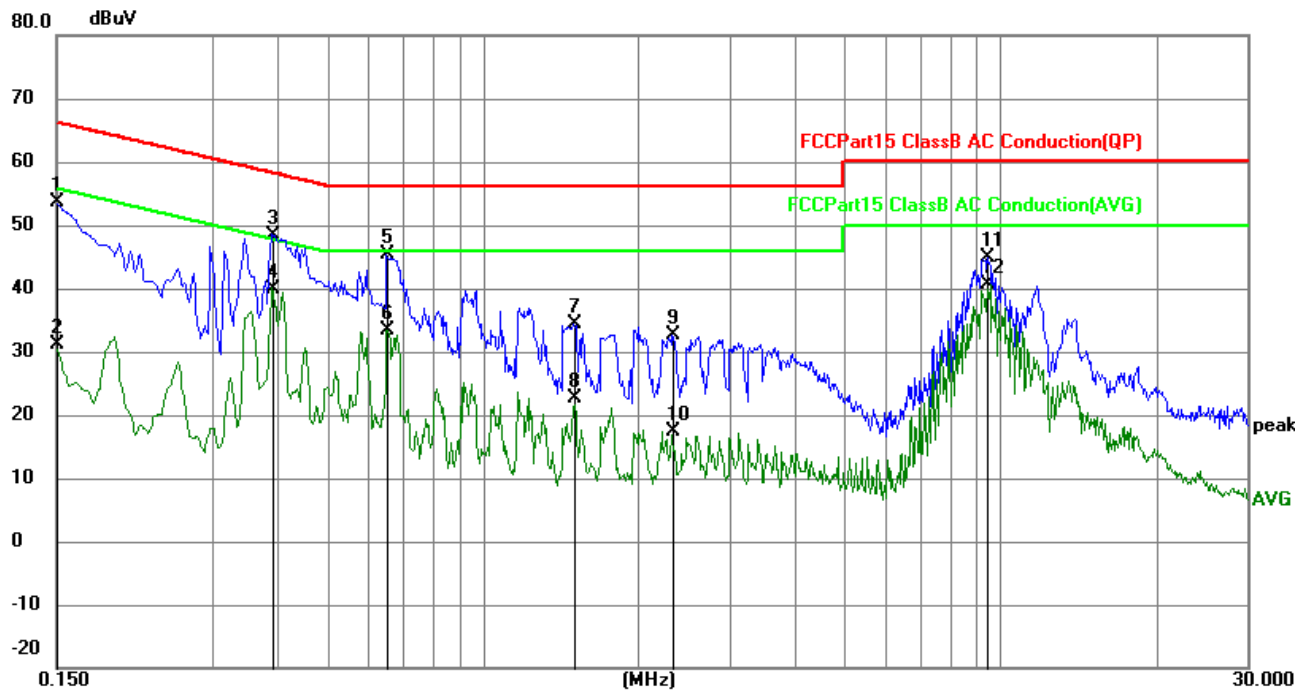
Measurement data

Line:



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1500	44.49	9.80	54.29	66.00	-11.71	QP
2	0.1500	22.42	9.80	32.22	56.00	-23.78	AVG
3	0.3975	36.20	9.90	46.10	57.91	-11.81	QP
4	0.3975	27.02	9.90	36.92	47.91	-10.99	AVG
5	0.6804	32.81	9.94	42.75	56.00	-13.25	QP
6	0.6804	22.12	9.94	32.06	46.00	-13.94	AVG
7	1.1799	28.21	9.94	38.15	56.00	-17.85	QP
8	1.1799	14.00	9.94	23.94	46.00	-22.06	AVG
9	1.9858	26.41	9.85	36.26	56.00	-19.74	QP
10	1.9858	11.52	9.85	21.37	46.00	-24.63	AVG
11	8.9115	30.52	9.84	40.36	60.00	-19.64	QP
12	8.9115	27.72	9.84	37.56	50.00	-12.44	AVG

Neutral:

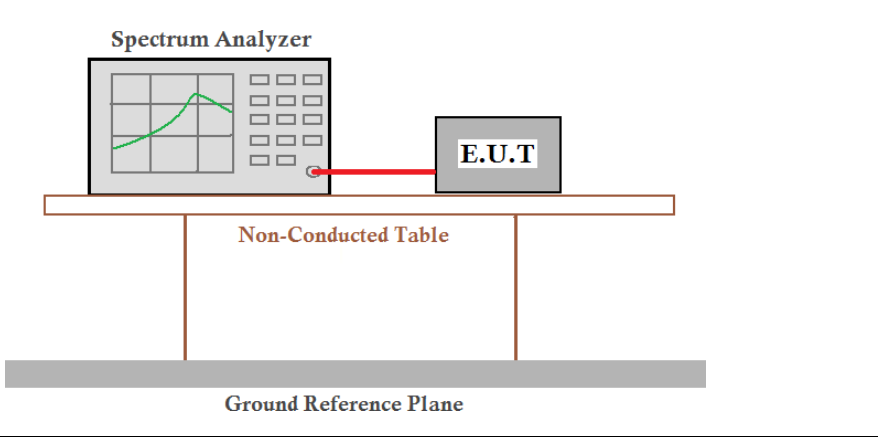


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1500	43.75	9.80	53.55	66.00	-12.45	QP
2	0.1500	21.39	9.80	31.19	56.00	-24.81	AVG
3	0.3930	38.61	9.89	48.50	58.00	-9.50	QP
4	0.3930	30.11	9.89	40.00	48.00	-8.00	AVG
5	0.6539	35.32	9.94	45.26	56.00	-10.74	QP
6	0.6539	23.51	9.94	33.45	46.00	-12.55	AVG
7	1.4954	24.37	9.90	34.27	56.00	-21.73	QP
8	1.4954	12.69	9.90	22.59	46.00	-23.41	AVG
9	2.3233	22.71	9.85	32.56	56.00	-23.44	QP
10	2.3233	7.55	9.85	17.40	46.00	-28.60	AVG
11	9.4512	35.00	9.83	44.83	60.00	-15.17	QP
12	9.4512	30.90	9.83	40.73	50.00	-9.27	AVG

Notes:

1. An initial pre-scan was performed on the line and neutral lines with peak detector.
 2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
 3. Level = Receiver Read level + Factor (Factor = LISN Factor + Cable Loss + Attenuator Factor)
- If the average limit is met when using a quasi-peak detector receiver, the EUT shall be deemed to meet both limits and measurement with the average detector receiver is unnecessary

4.3 Duty cycle

Test Method :	ANSI C63.10:2013	
Limit:	/	
Test setup:	 <p>The diagram illustrates the test setup. A Spectrum Analyzer is connected via a red cable to an E.U.T. (Equipment Under Test). Both are placed on a Non-Conducted Table. Below the table is a Ground Reference Plane.</p>	
Test Instruments:	Refer to section 3.0 for details	
Test mode:	Refer to section 2.2 for details	
Test environment:	Temp.: 21.4°C	Humid.: 40%RH
Test voltage:	AC 120V	
Test results:	Pass	

Measurement Result

5180-5240MHz

Mode	Duty cycle (%)	Correction Factor (dB)
TX 802.11a Mode	73.15	1.36
TX 802.11n20 Mode	71.82	1.44
TX 802.11ac20 Mode	71.88	1.43
TX 802.11n40 Mode	55.91	2.53
TX 802.11a40 Mode	56.06	2.51
TX 802.11ac80 Mode	38.78	4.11

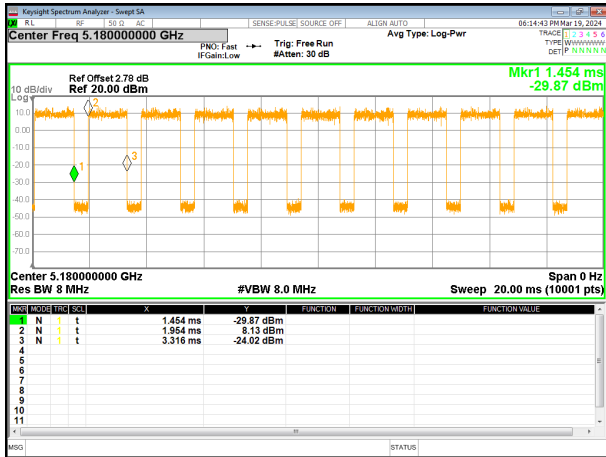
5745-5825 MHz

Mode	Duty cycle (%)	Correction Factor (dB)
TX 802.11a Mode	73.04	1.36
TX 802.11n20 Mode	71.82	1.44
TX 802.11ac20 Mode	71.77	1.44
TX 802.11n40 Mode	55.81	2.53
TX 802.11a40 Mode	55.99	2.52
TX 802.11ac80 Mode	38.63	4.13

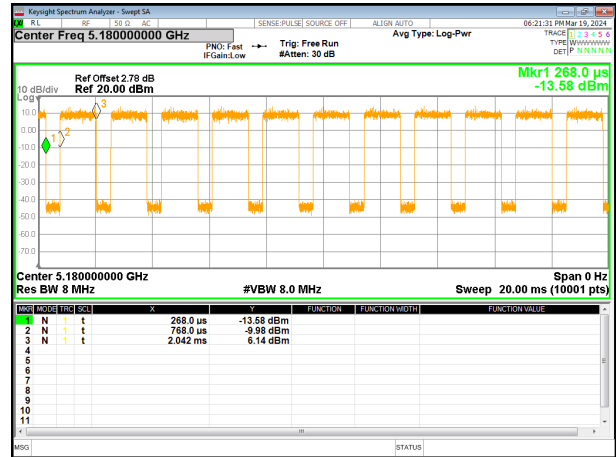
Test plot

5180-5240MHz

(802.11a) plot on channel 40

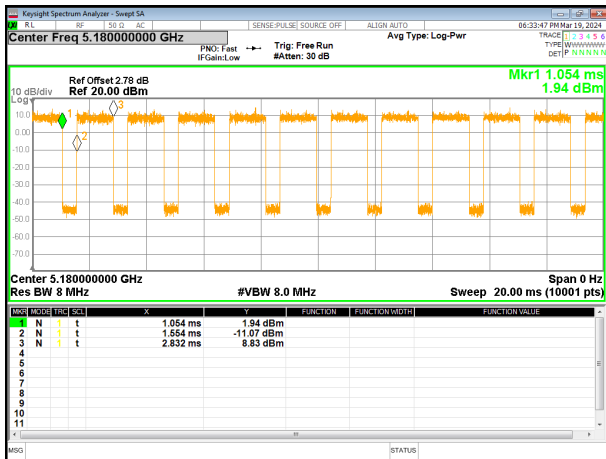


(802.11 n20) plot on channel 40

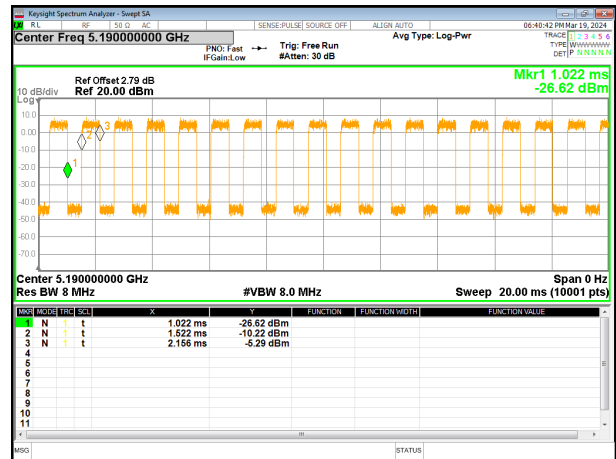


Test plot

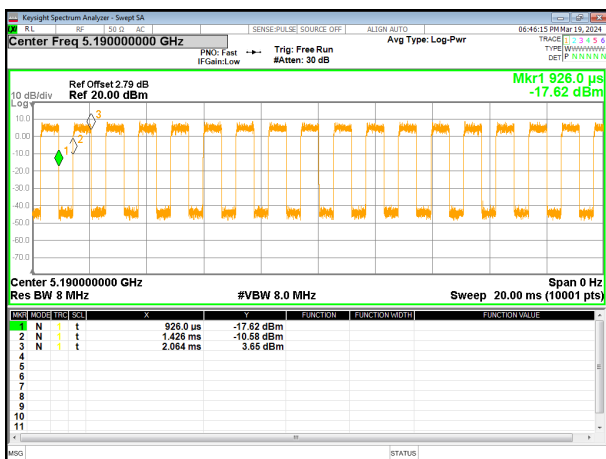
(802.11ac20) plot on channel 40



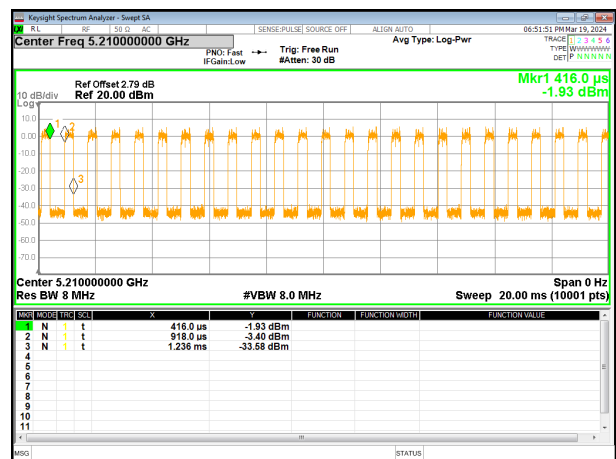
(802.11 n40) plot on channel 38



(802.11ac40) plot on channel 38

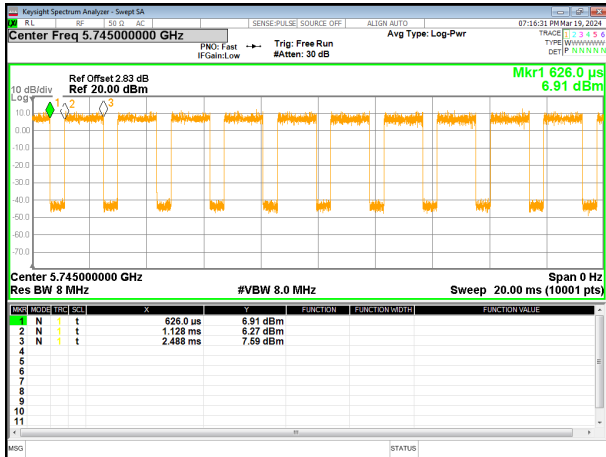


(802.11ac80) plot on channel 42

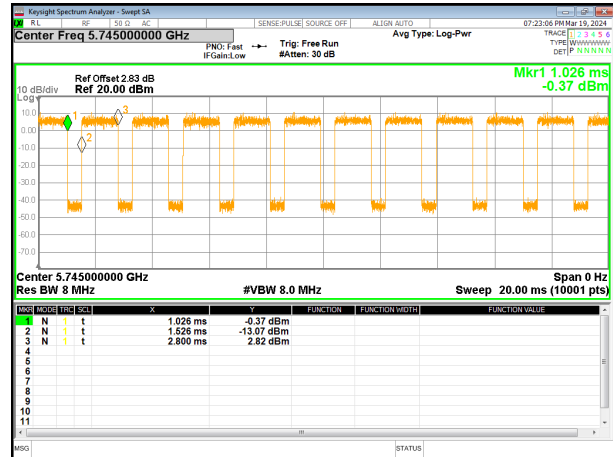


5745-5825 MHz

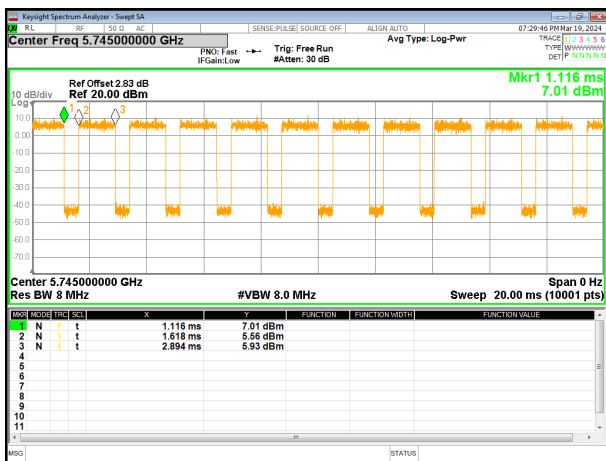
(802.11a) plot on channel 40



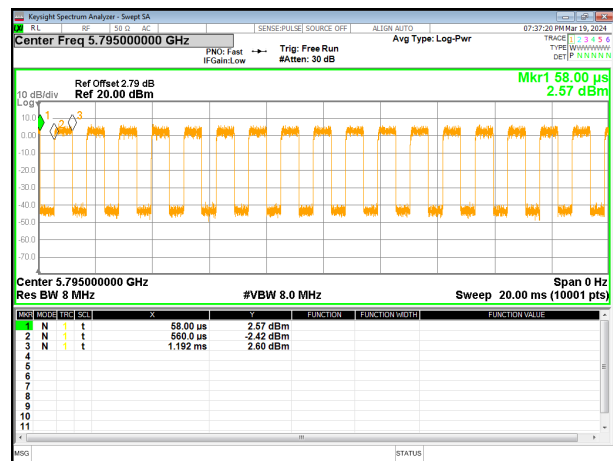
(802.11 n20) plot on channel 40



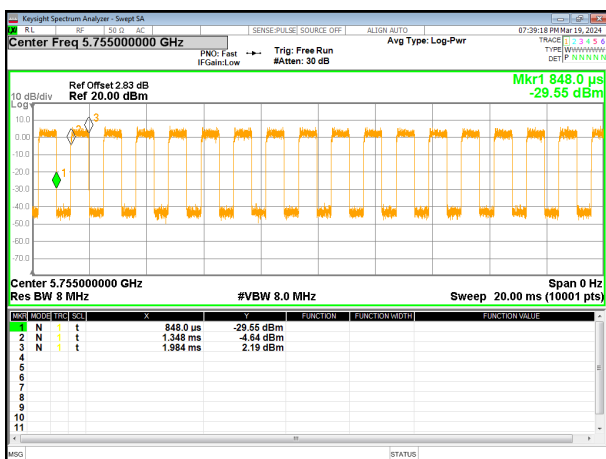
(802.11ac20) plot on channel 40



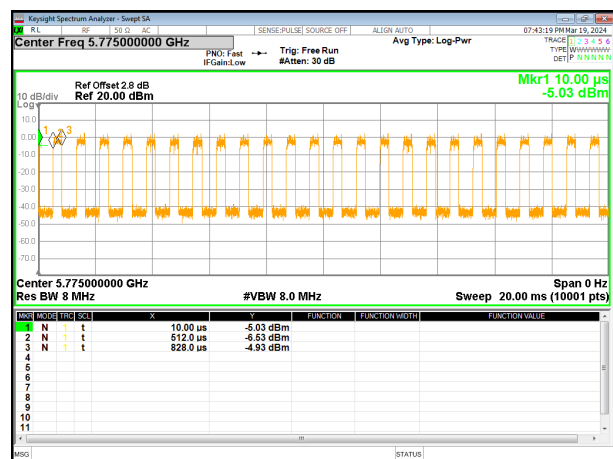
(802.11 n40) plot on channel 38



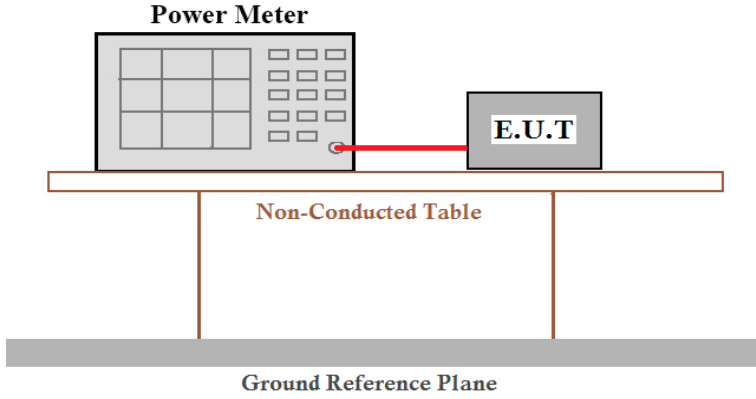
(802.11ac40) plot on channel 38



(802.11ac80) plot on channel 42



4.4 Conducted Output Power

Test Requirement:	FCC Part15 E Section 15.407 (a)(1)/(a)(3)	
Test Method:	ANSI C63.10:2013 and KDB 789033 D02 General U-NII Test Procedures New Rules v02r01	
Limit:	5150-5250MHz : 250mW 5725~5850MHz : 1W	
Test setup:	 <p>The diagram shows a Power Meter connected to an E.U.T. (Equipment Under Test) via a red cable. Both are placed on a Non-Conducted Table, which is supported by two legs. Below the table is a Ground Reference Plane.</p>	
Test Instruments:	Refer to section 3.0 for details	
Test mode:	Refer to section 2.2 for details	
Test environment:	Temp.: 21.4°C	Humid.: 40%RH
Test voltage:	AC 120V	
Test results:	Pass	

Measurement Result

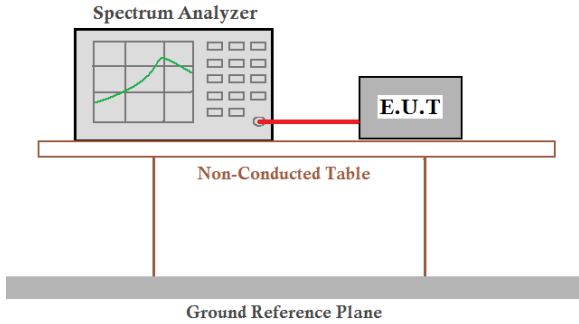
5180-5240MHz

Test Channel	Frequency	Correction Factor	Maximum output power	Total Power	LIMIT	Result
	(MHz)	(dB)	(dBm)	(dBm)	dBm	
TX 802.11a Mode						
CH36	5180	1.36	10.97	12.33	23.98	Pass
CH40	5200	1.36	11.11	12.47	23.98	Pass
CH48	5240	1.36	10.86	12.22	23.98	Pass
TX 802.11 n20 Mode						
CH36	5180	1.44	11.10	12.54	23.98	Pass
CH40	5200	1.44	10.98	12.42	23.98	Pass
CH48	5240	1.44	10.63	12.07	23.98	Pass
TX 802.11 ac20 Mode						
CH36	5180	1.43	10.74	12.17	23.98	Pass
CH40	5200	1.43	10.92	12.35	23.98	Pass
CH48	5240	1.43	10.63	12.06	23.98	Pass
TX 802.11 n40 Mode						
CH38	5190	2.53	9.53	12.06	23.98	Pass
CH46	5230	2.53	9.48	12.01	23.98	Pass
TX 802.11 ac40 Mode						
CH38	5190	2.51	9.68	12.19	23.98	Pass
CH46	5230	2.51	9.71	12.22	23.98	Pass
TX 802.11 ac80 Mode						
CH42	5210	4.11	8.60	12.71	23.98	Pass

5745-5825 MHz

Test Channel	Frequency	Correction Factor	Maximum output power	Total Power	LIMIT	Result
	(MHz)	(dB)	(dBm)	(dBm)	dBm	
TX 802.11a Mode						
CH149	5745	1.36	9.48	10.84	30	Pass
CH157	5785	1.36	9.02	10.38	30	Pass
CH165	5825	1.36	9.41	10.77	30	Pass
TX 802.11 n20 Mode						
CH149	5745	1.44	7.96	9.40	30	Pass
CH157	5785	1.44	8.06	9.50	30	Pass
CH165	5825	1.44	8.51	9.95	30	Pass
TX 802.11 ac20 Mode						
CH149	5745	1.44	7.94	9.38	30	Pass
CH157	5785	1.44	8.05	9.49	30	Pass
CH165	5825	1.44	8.40	9.84	30	Pass
TX 802.11 n40 Mode						
CH151	5755	2.53	6.68	9.21	30	Pass
CH159	5795	2.53	7.10	9.63	30	Pass
TX 802.11 ac40 Mode						
CH151	5755	2.52	7.08	9.60	30	Pass
CH159	5795	2.52	7.38	9.90	30	Pass
TX 802.11 ac80 Mode						
CH155	5775	4.13	5.70	9.83	30	Pass

4.5 Bandwidth 99% Occupy Bandwidth

Test Requirement:	FCC Part15 E Section 15.407(a)(12)&15.407(e)	
Test Method:	ANSI C63.10:2013 and KDB 789033 D02 General U-NII Test Procedures New Rules v02r01	
Limit:	Measurements in the 5.725-5.85 GHz band, the minimum bandwidth 6 dB bandwidth of U-NII devices shall be at least 500KHz. Measurements in the 5.15-5.25 GHz, 5.25-5.35 GHz, and the 5.47-5.725 GHz bands are made over a bandwidth of 1 MHz or the 26 dB emission bandwidth of the device, whichever is less. A narrower resolution bandwidth can be used, provided that the measured power is integrated over the full reference bandwidth.	
Test setup:		
Test Instruments:	Refer to section 3.0 for details	
Test mode:	Refer to section 2.2 for details	
Test environment:	Temp.: 21.4°C	Humid.: 40%RH
Test voltage:	AC 120V	
Test results:	Pass	

Measurement Result

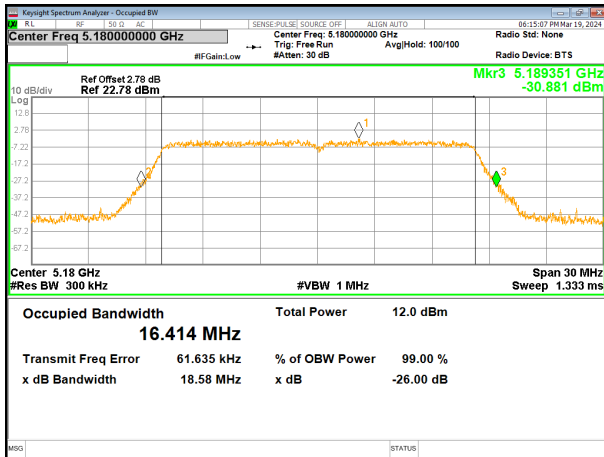
5180-5240MHz

Test CH	-26dB Channel Bandwidth (MHz)						Result
	802.11a	802.11n (HT20)	802.11ac (HT20)	802.11n (HT40)	802.11ac (HT40)	802.11ac (HT80)	
Lowest	18.58	19.46	19.61	40.06	40.03	--	Pass
Middle	18.60	19.52	19.59	--	--	79.96	
Highest	18.61	19.52	19.51	39.82	39.76	--	

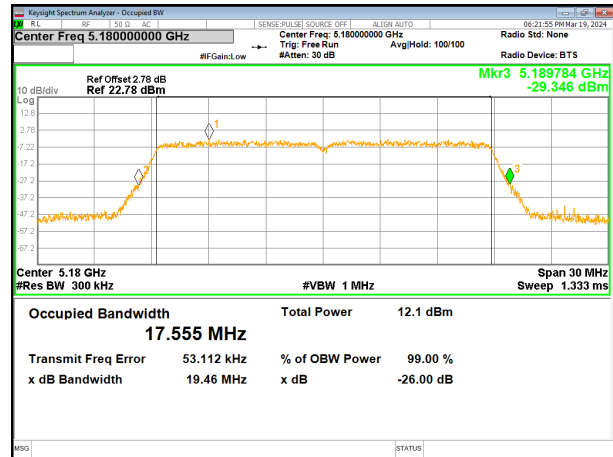
Test CH	99% Occupy Bandwidth (MHz)						Result
	802.11a	802.11n (HT20)	802.11ac (HT20)	802.11n (HT40)	802.11ac (HT40)	802.11ac (HT80)	
Lowest	16.348	17.529	17.530	36.016	36.009	--	Pass
Middle	16.339	17.534	17.540	--	--	74.680	
Highest	16.341	17.537	17.551	35.972	36.075	--	

Test plot -26dB Channel Bandwidth

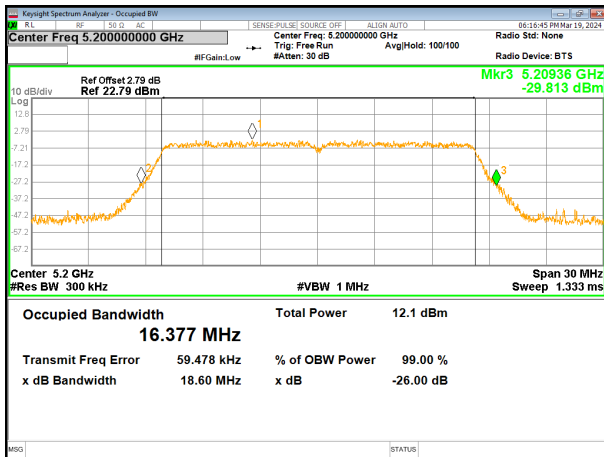
(802.11a) plot on channel 36



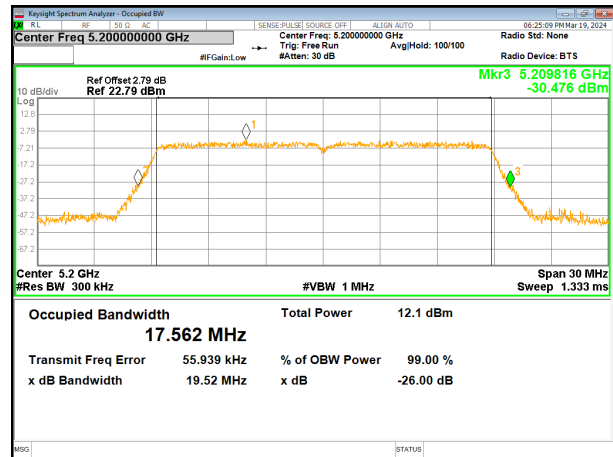
(802.11 n20) plot on channel 36



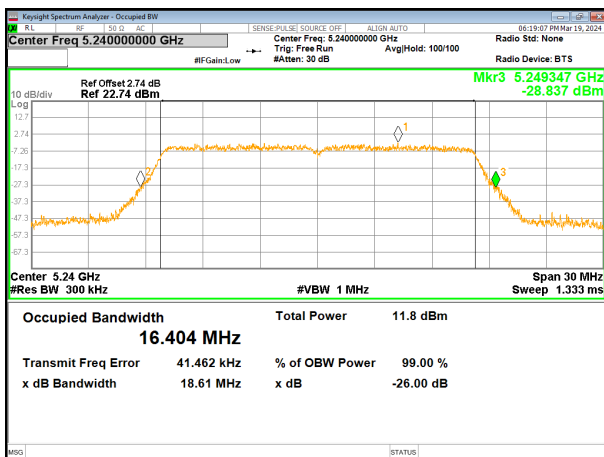
(802.11a) plot on channel 40



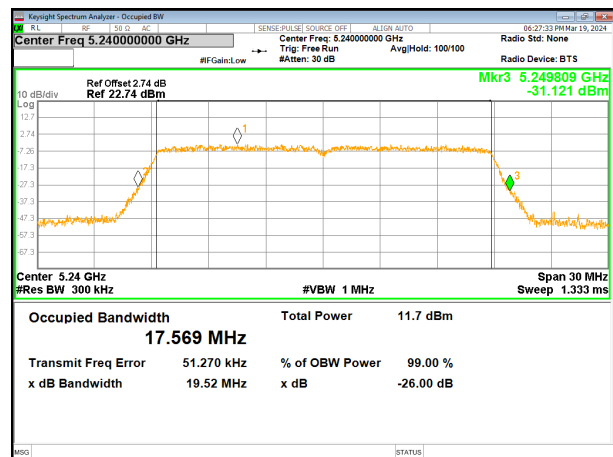
(802.11 n20) plot on channel 40



(802.11a) plot on channel 48

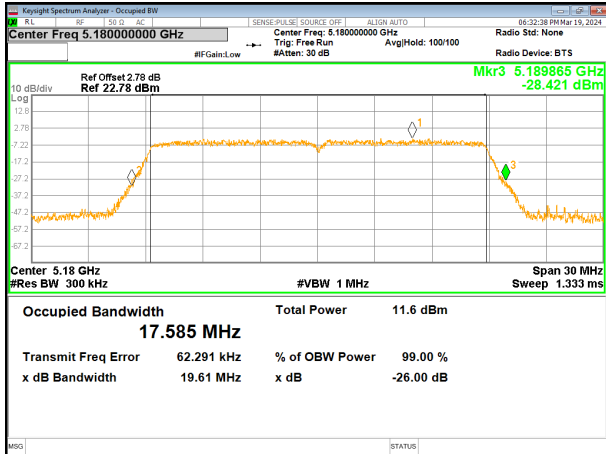


(802.11 n20) plot on channel 48

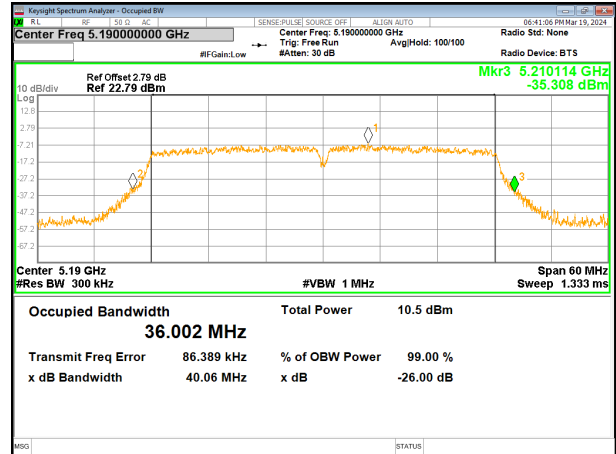


Test plot

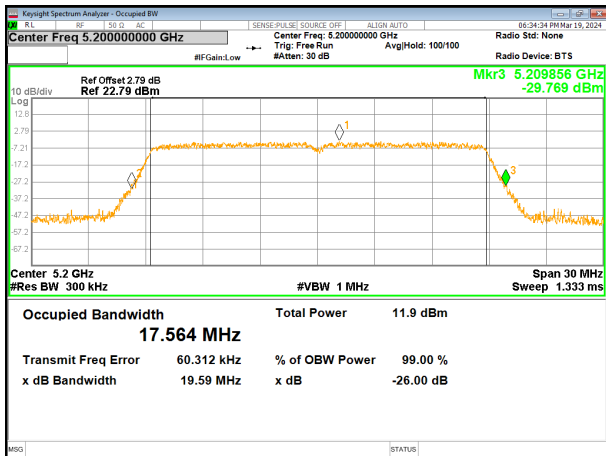
(802.11ac20) plot on channel 36



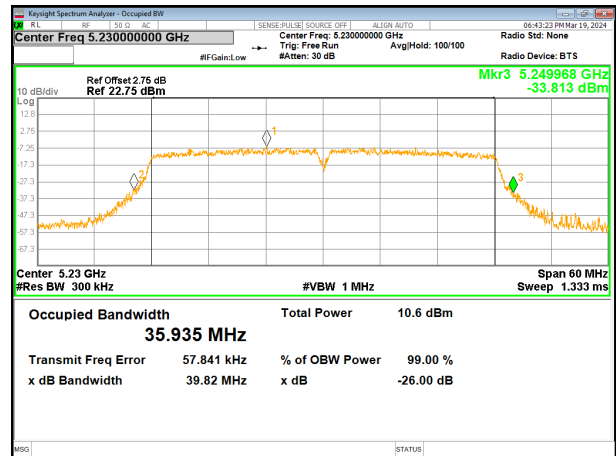
(802.11 n40) plot on channel 38



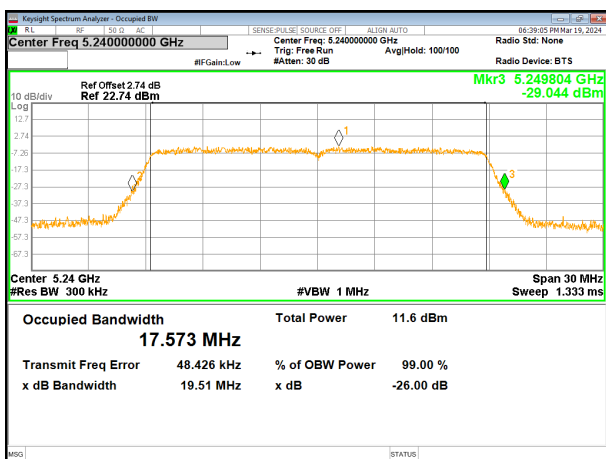
(802.11ac20) plot on channel 40



(802.11 n40) plot on channel 46

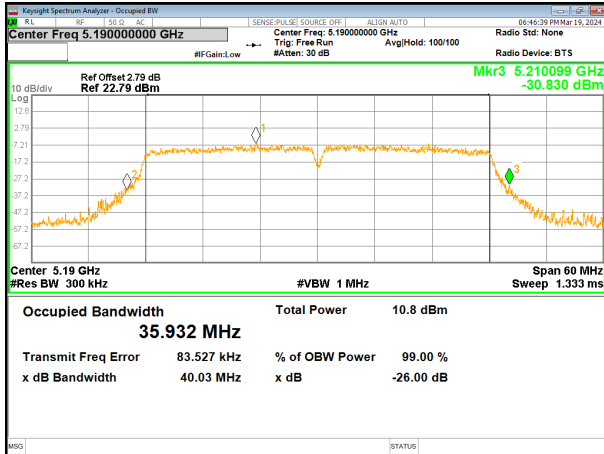


(802.11ac20) plot on channel 48

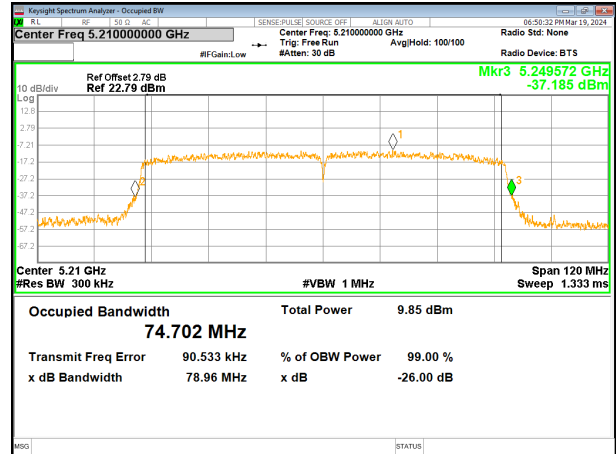


Test plot

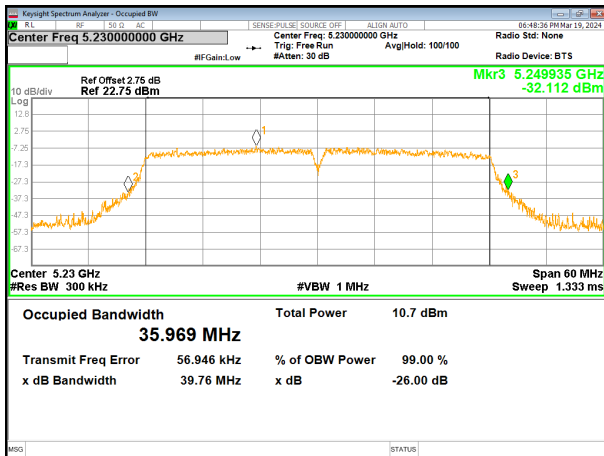
(802.11ac40) plot on channel 38



(802.11ac80) plot on channel 42

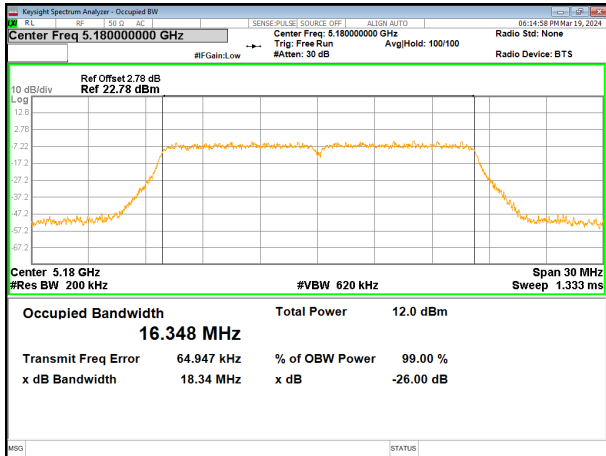


(802.11ac40) plot on channel 46

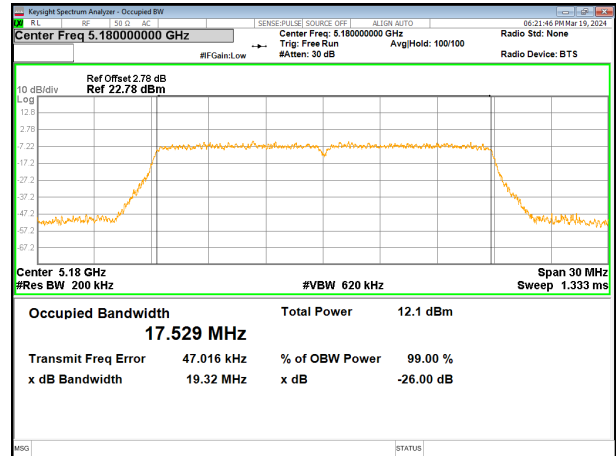


Test plot 99% Occupy Bandwidth

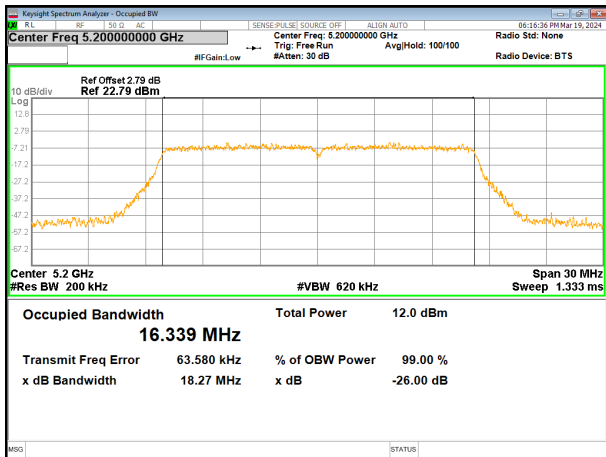
(802.11a) plot on channel 36



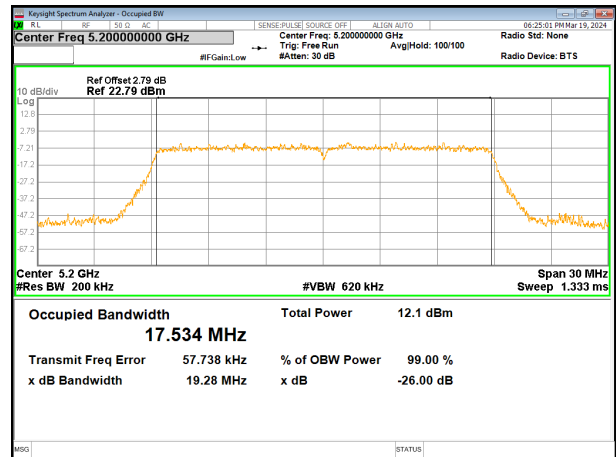
(802.11 n20) plot on channel 36



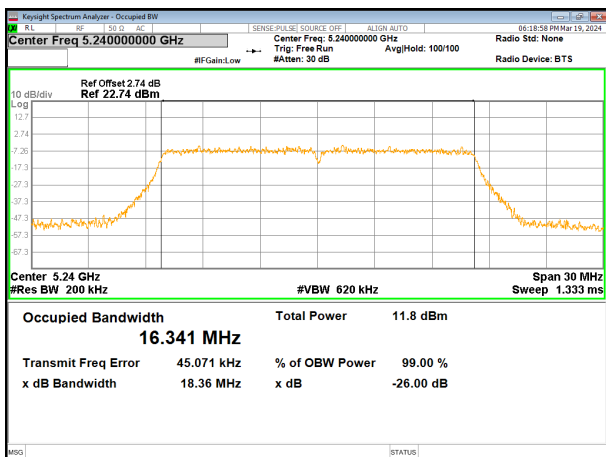
(802.11a) plot on channel 40



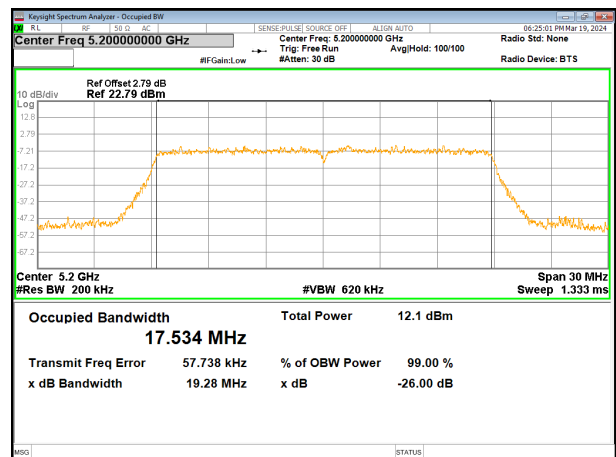
(802.11 n20) plot on channel 40



(802.11a) plot on channel 48

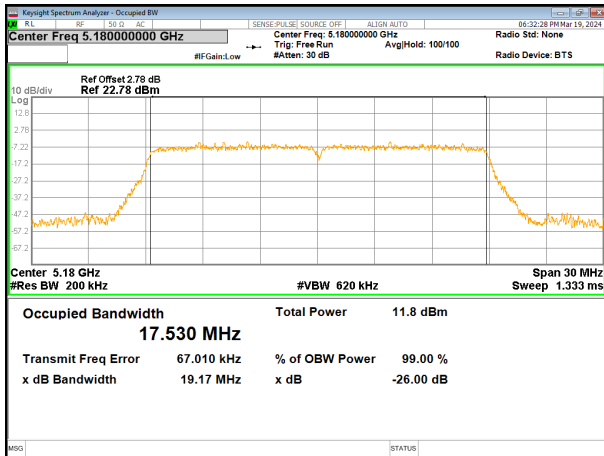


(802.11 n20) plot on channel 48

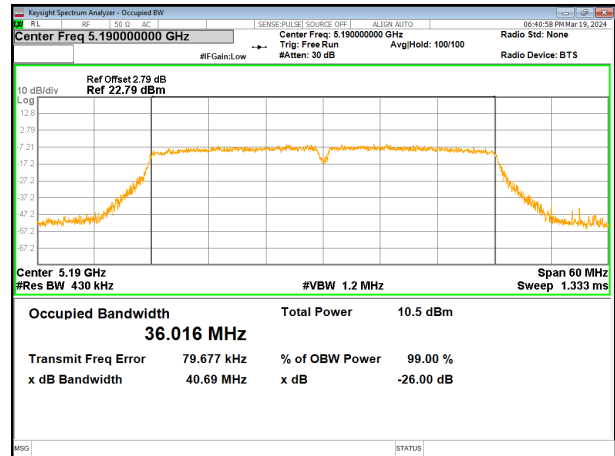


Test plot

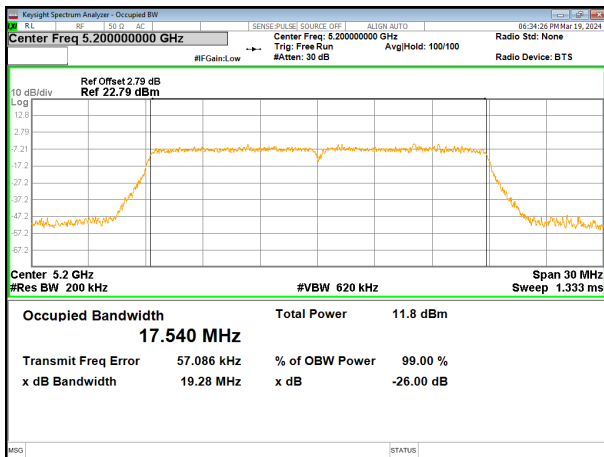
(802.11ac20) plot on channel 36



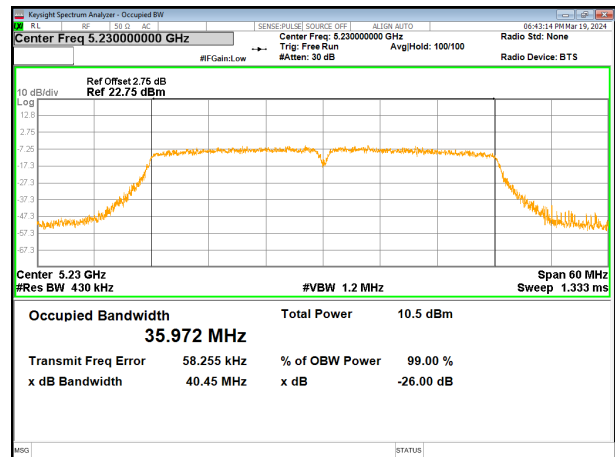
(802.11 n40) plot on channel 38



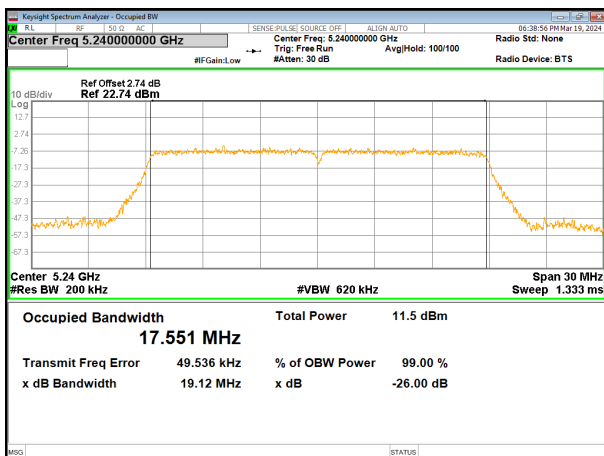
(802.11ac20) plot on channel 40



(802.11 n40) plot on channel 46

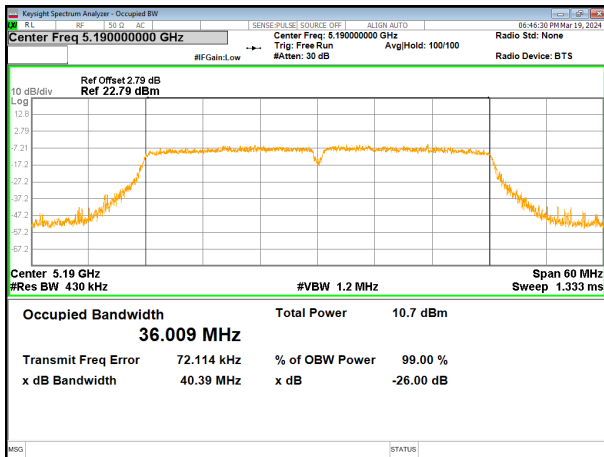


(802.11ac20) plot on channel 48

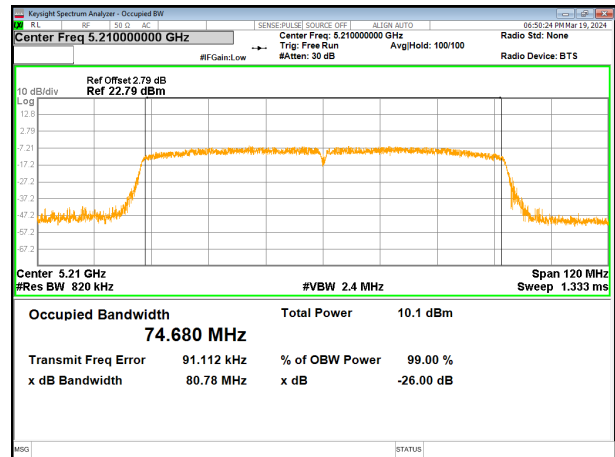


Test plot

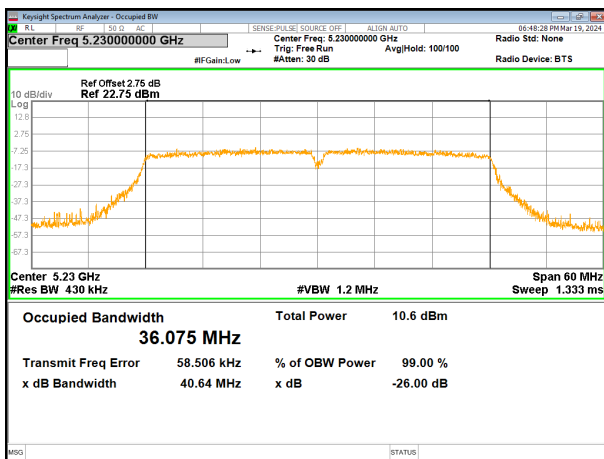
(802.11ac40) plot on channel 38



(802.11ac80) plot on channel 42



(802.11ac40) plot on channel 46



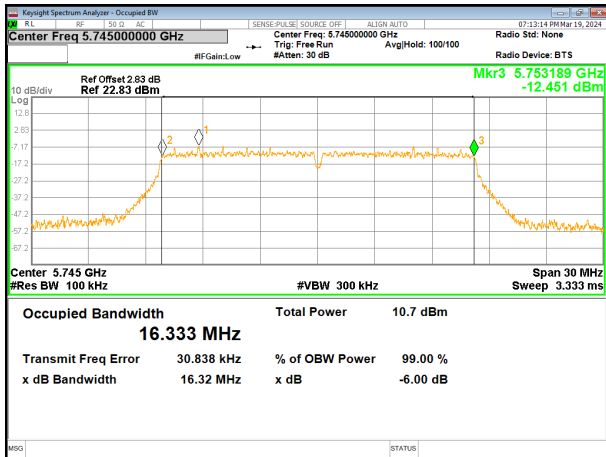
5745-5825MHz

Test CH	-6dB Channel Bandwidth (MHz)						Limit (KHz)	Result
	802.11a	802.11n (HT20)	802.11ac (HT20)	802.11n (HT40)	802.11ac (HT40)	802.11ac (HT80)		
Lowest	16.32	17.59	17.59	35.45	35.08	--	>500	Pass
Middle	16.30	17.57	17.24	--	--	73.86		
Highest	16.31	17.55	17.53	32.59	35.08	--		

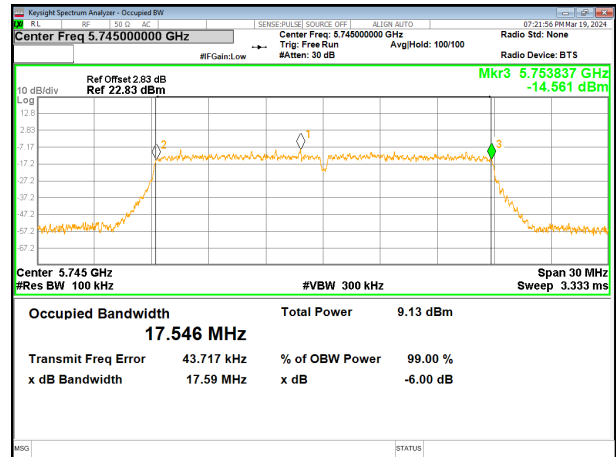
Remark: "--" is not applicable

Test plot

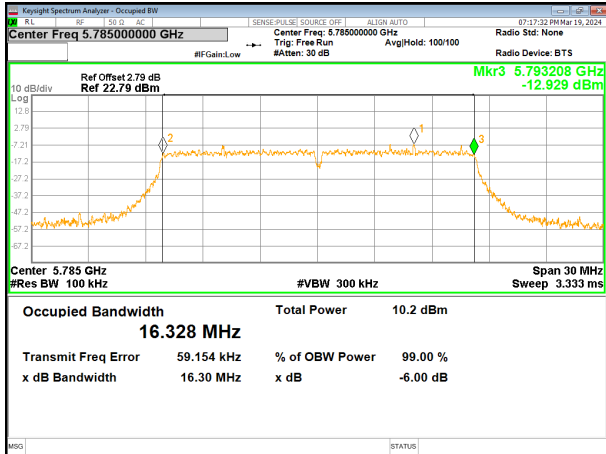
(802.11a) plot on channel 149



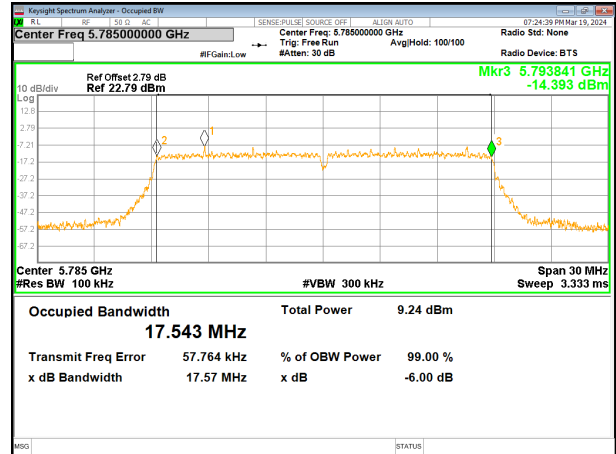
(802.11 n20) plot on channel 149



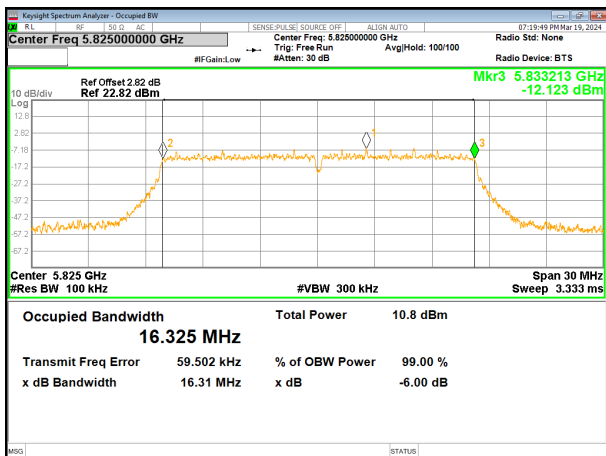
(802.11a) plot on channel 157



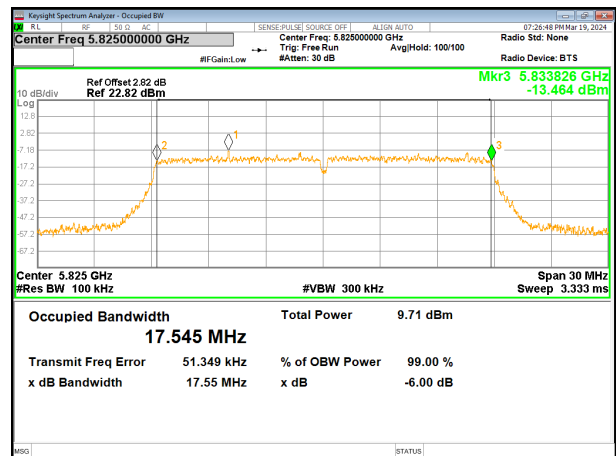
(802.11 n20) plot on channel 157



(802.11a) plot on channel 165

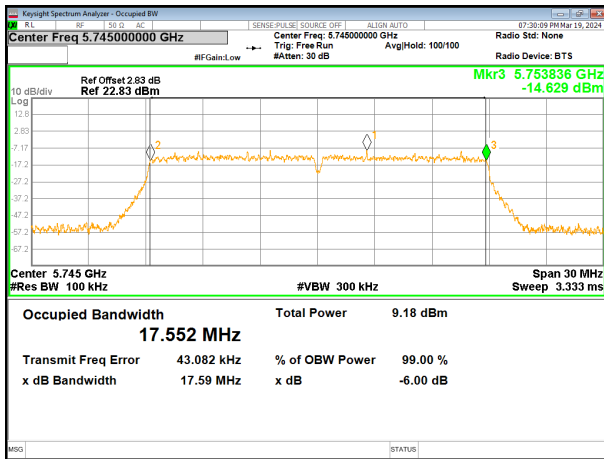


(802.11 n20) plot on channel 165

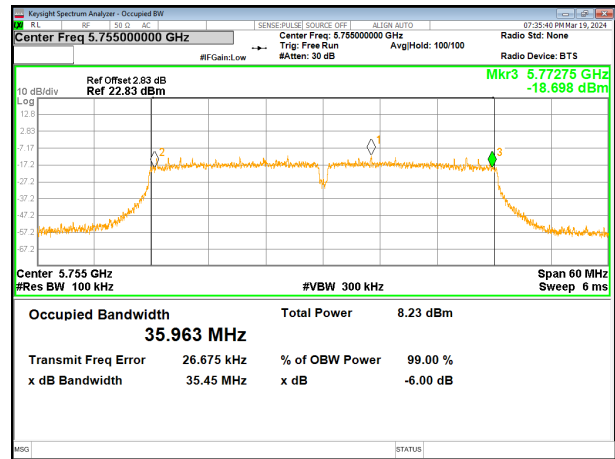


Test plot

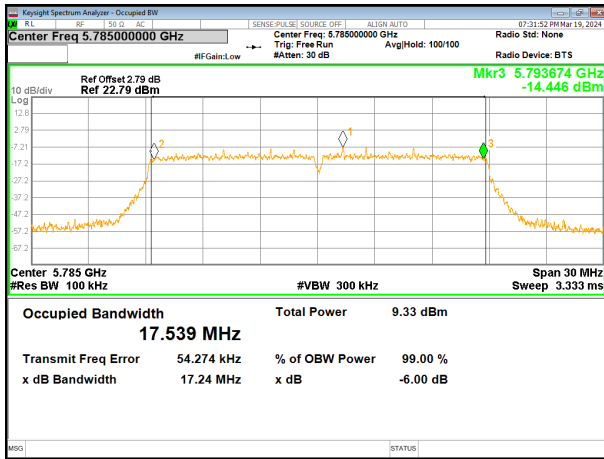
(802.11ac20) plot on channel 149



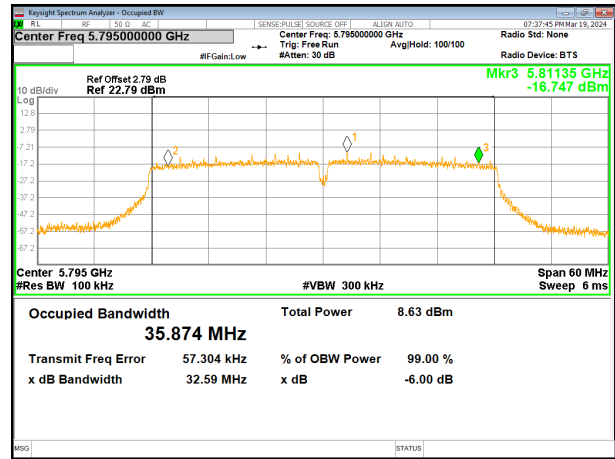
(802.11 n40) plot on channel 151



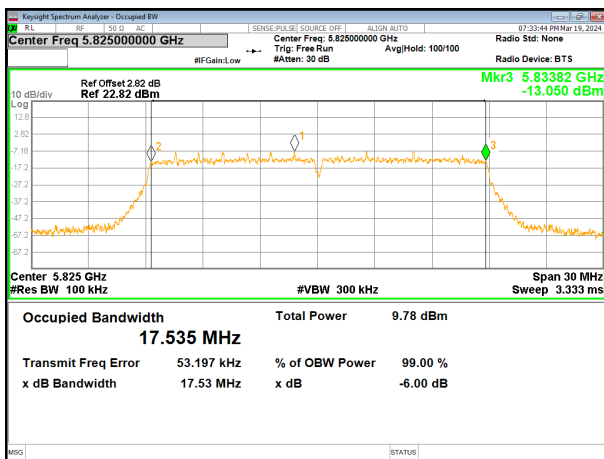
(802.11ac20) plot on channel 157



(802.11 n40) plot on channel 159

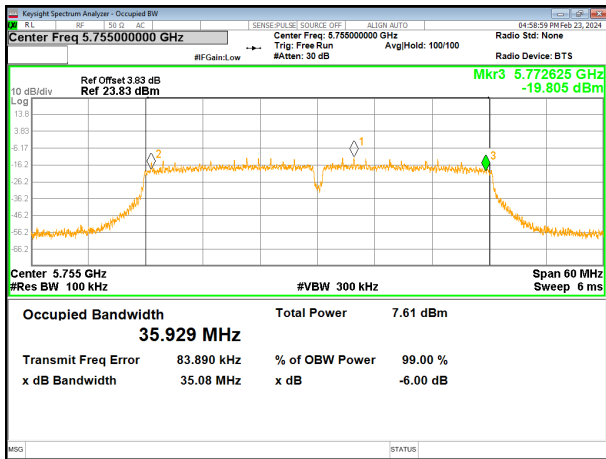


(802.11ac20) plot on channel 165

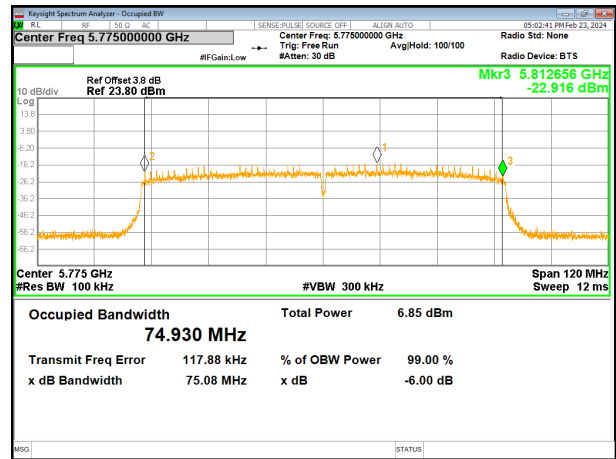


Test plot

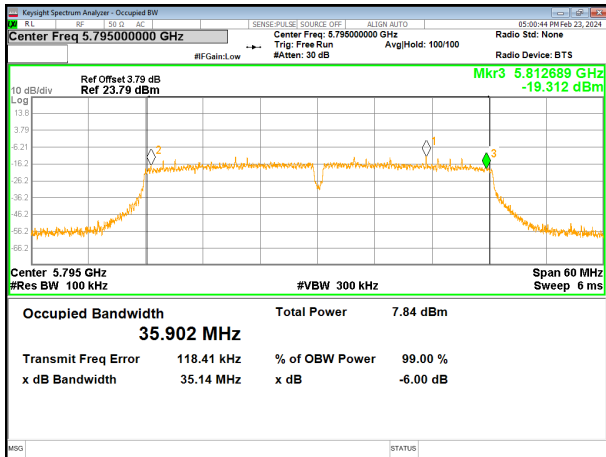
(802.11 ac40) plot on channel 151



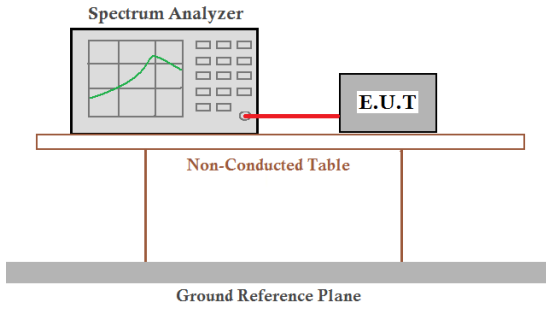
(802.11 ac80) plot on channel 155



(802.11 ac40) plot on channel 159



4.6 Power Spectral Density

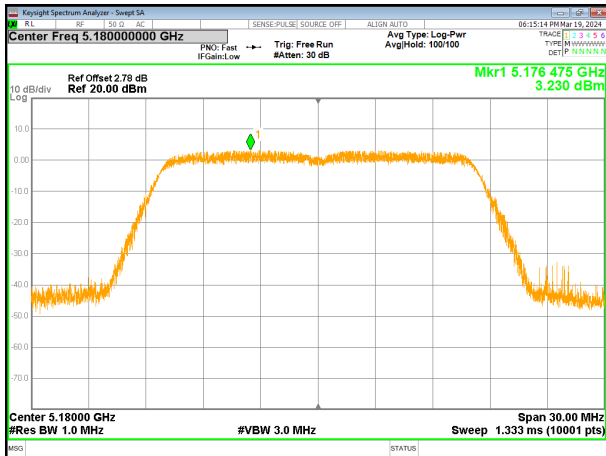
Test Requirement:	FCC Part15 E Section 15.407(a)(1)/ (a)(3)	
Test Method:	ANSI C63.10:2013 and KDB 789033 D02 General U-NII Test Procedures New Rules v02r01	
Limit:	Frequency band (MHz)	Limit
	5150-5250	≤17dBm/1MHz for master device
		≤11dBm/1MHz for client device
	5250-5350	≤11dBm/1MHz for client device
	5470-5725	≤11dBm/1MHz for client device
5725-5850	≤30dBm/500kHz	
Test setup:		
Test Instruments:	Refer to section 3.0 for details	
Test mode:	Refer to section 2.2 for details	
Test environment:	Temp.: 21.4°C	Humid.: 40%RH
Test voltage:	AC 120V	
Test results:	Pass	

Measurement Result

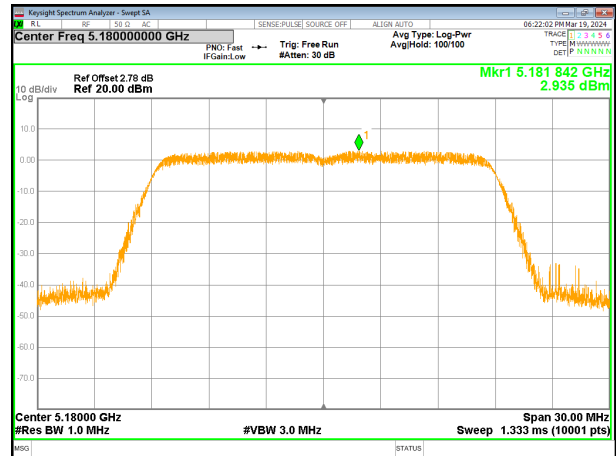
5180-5240MHz

Mode	Frequency	Measured Power Density (dBm/MHz)	Correction Factor (dB)	Total Measured Power Density (dBm/MHz)	Limit (dBm/MHz)
802.11 a	5180 MHz	3.230	1.36	4.590	11
	5200 MHz	3.756	1.36	5.116	11
	5240 MHz	3.648	1.36	5.008	11
802.11 n20	5180 MHz	2.935	1.44	4.375	11
	5200 MHz	2.847	1.44	4.287	11
	5240 MHz	2.463	1.44	3.903	11
802.11 ac20	5180 MHz	2.913	1.43	4.343	11
	5200 MHz	2.961	1.43	4.391	11
	5240 MHz	2.913	1.43	4.343	11
802.11 n40	5190 MHz	-1.142	2.53	1.388	11
	5230 MHz	-1.083	2.53	1.447	11
802.11 ac40	5190 MHz	-1.018	2.51	1.492	11
	5230 MHz	-1.051	2.51	1.459	11
802.11 ac80	5210 MHz	-4.409	4.11	-0.299	11

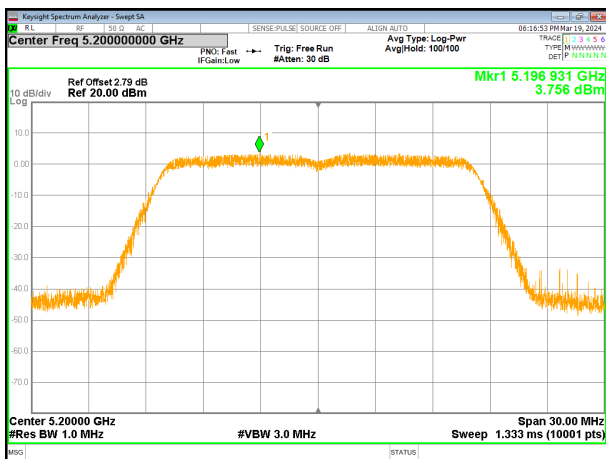
(802.11a) PSD plot on channel 36



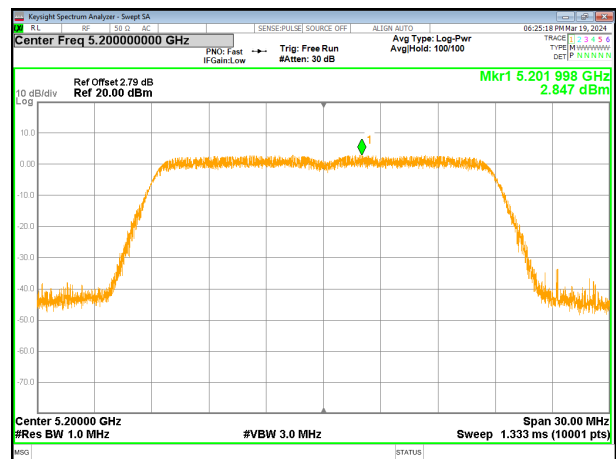
(802.11n20) PSD plot on channel 36



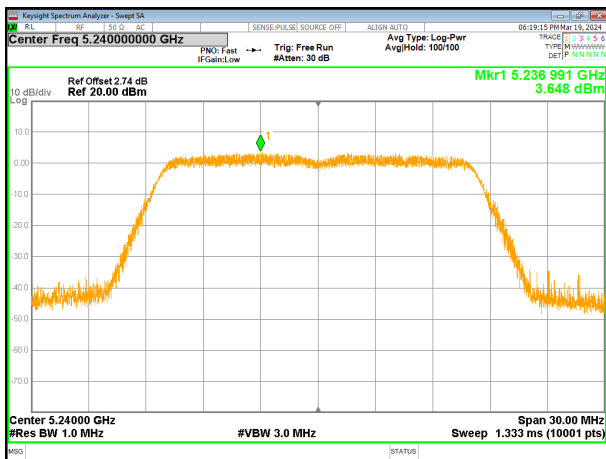
(802.11a) PSD plot on channel 40



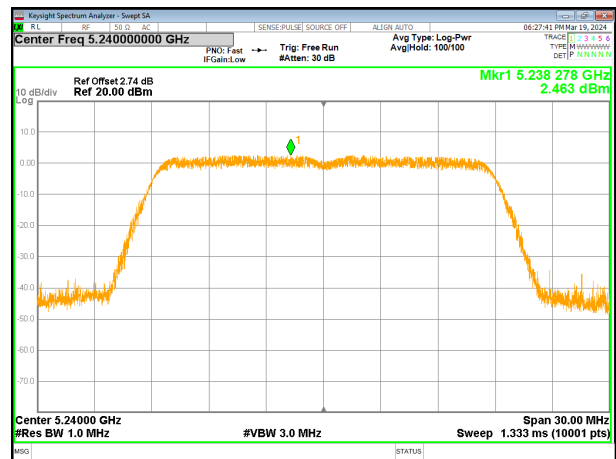
(802.11n20) PSD plot on channel 40



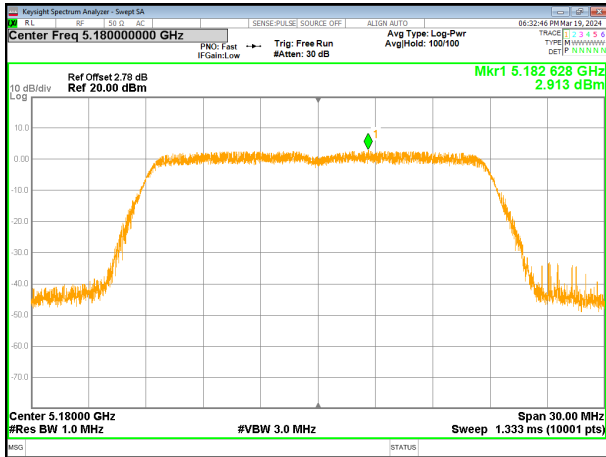
(802.11a) PSD plot on channel 48



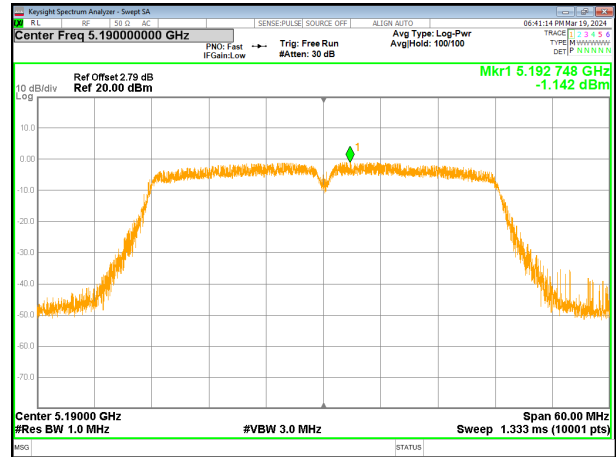
(802.11n20) PSD plot on channel 48



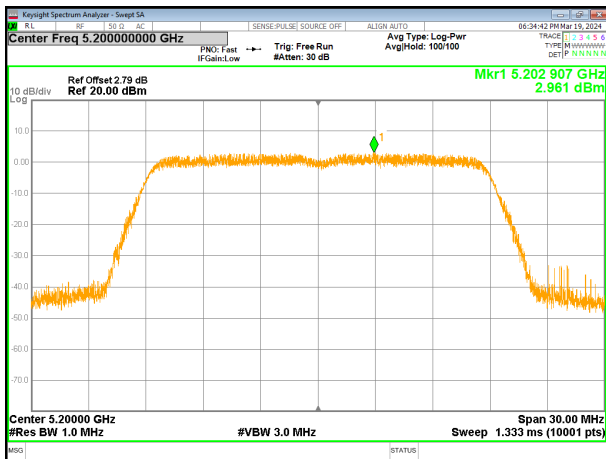
(802.11ac20) PSD plot on channel 36



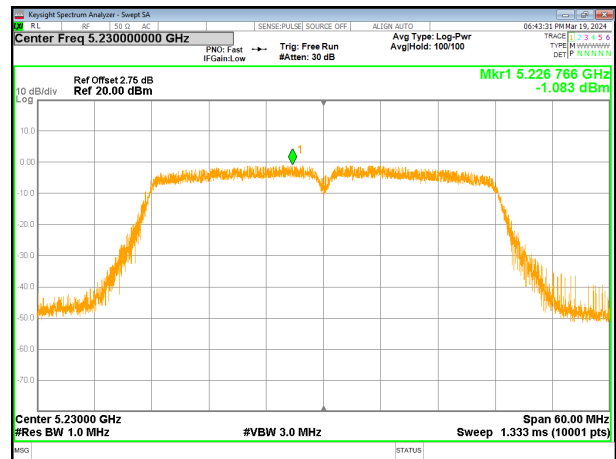
(802.11n40) PSD plot on channel 38



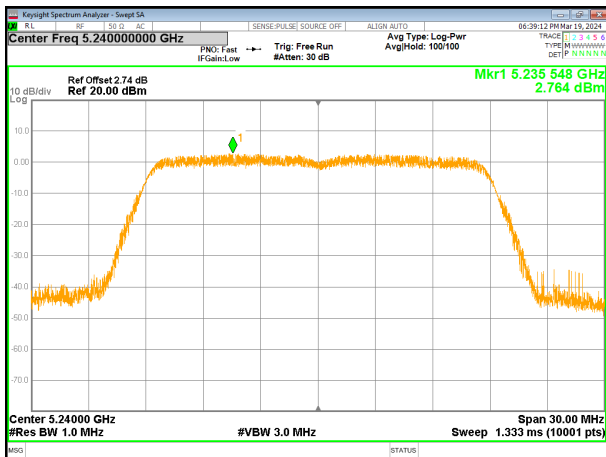
(802.11ac20) PSD plot on channel 40



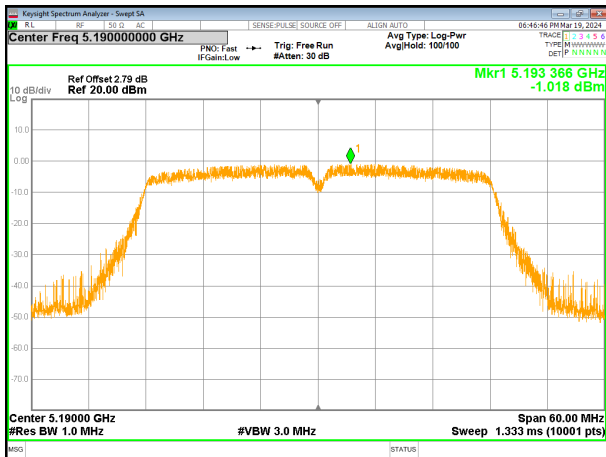
(802.11n40) PSD plot on channel 46



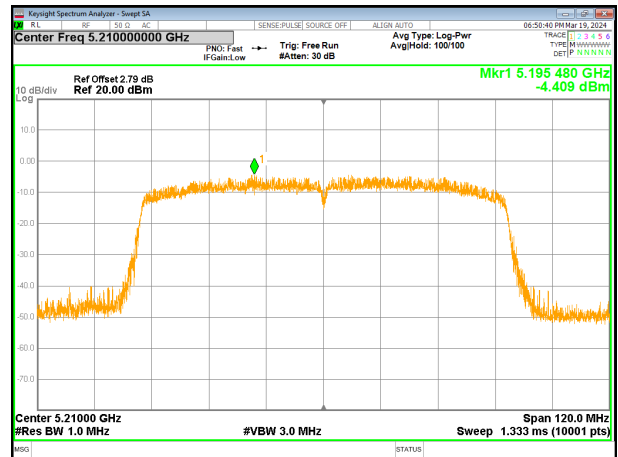
(802.11ac20) PSD plot on channel 48



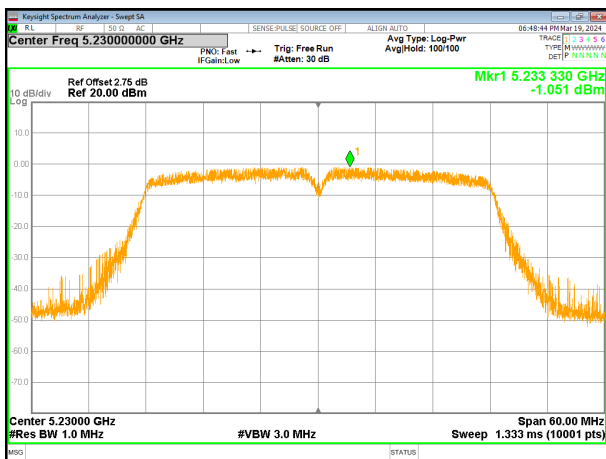
(802.11ac40) PSD plot on channel 38



(802.11ac80) PSD plot on channel 42



(802.11ac40) PSD plot on channel 46

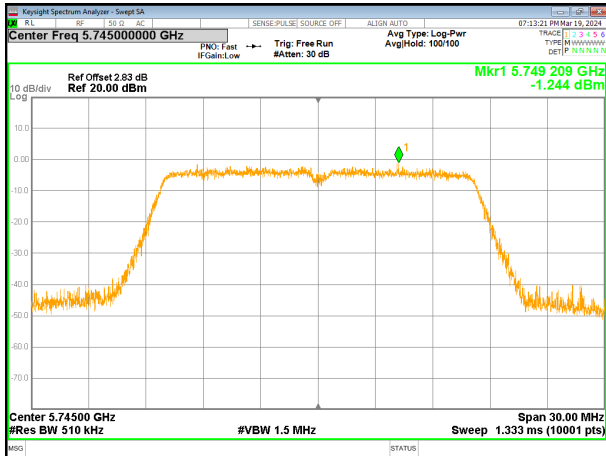


Mode	Frequency	Measured Power Density (dBm/510KHz)	Measured Power Density(dBm/500K Hz)	Correction Factor (dB)	Total Measured Power Density (dBm/500KHz)	Limit (dBm/MHz)
802.11 a	5745 MHz	-1.244	-1.330	1.36	0.030	30
	5785 MHz	-1.380	-1.466	1.36	-0.106	30
	5825 MHz	-1.817	-1.903	1.36	-0.543	30
802.11 n20	5745 MHz	-3.574	-3.660	1.44	-2.220	30
	5785 MHz	-3.227	-3.313	1.44	-1.873	30
	5825 MHz	-2.798	-2.884	1.44	-1.444	30
802.11ac20	5745 MHz	-7.557	-7.643	1.44	-6.203	30
	5785 MHz	-6.716	-6.802	1.44	-5.362	30
	5825 MHz	-3.361	-3.447	1.44	-2.007	30
802.11 n40	5755 MHz	-3.343	-3.429	2.53	-0.899	30
	5795 MHz	-2.884	-2.970	2.53	-0.440	30
802.11ac40	5755 MHz	-7.107	-7.193	2.52	-4.673	30
	5795 MHz	-6.801	-6.887	2.52	-4.367	30
802.11ac80	5775 MHz	-11.077	-11.163	4.13	-7.033	30

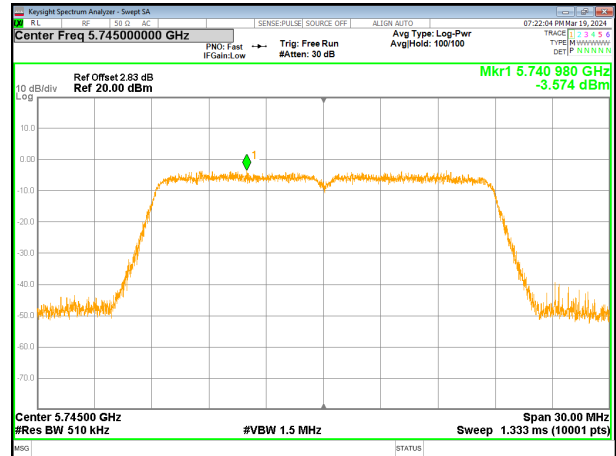
Note: 1. If the measurement is X dBm/510kHz, thus $X \text{ dBm/510kHz} = (10^{X/10}) * (500 / 510) \text{ dBm/500kHz}$

2. Correction Factor (dB)= duty cycle factor+RBW factor

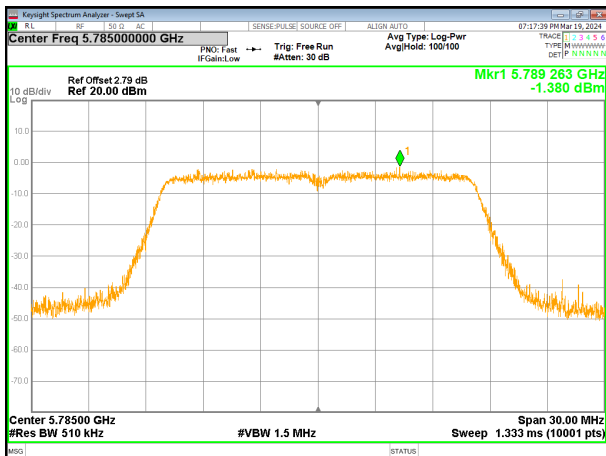
(802.11a) PSD plot on channel 149



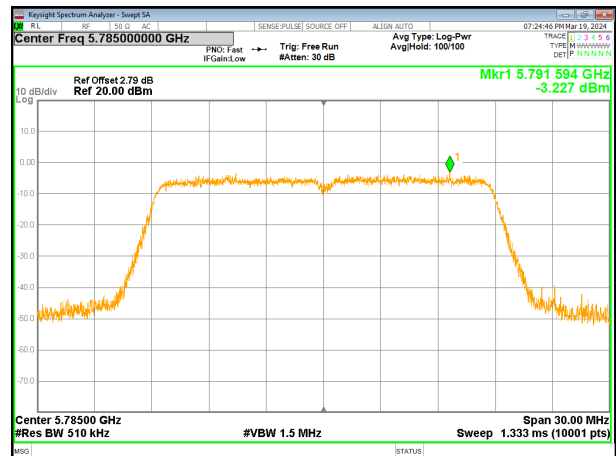
(802.11n20) PSD plot on channel 149



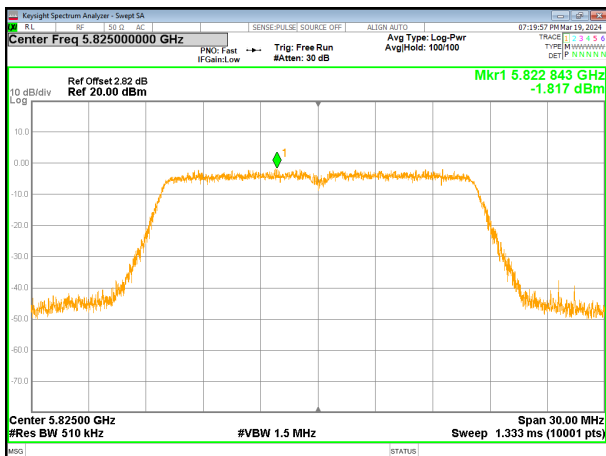
(802.11a) PSD plot on channel 157



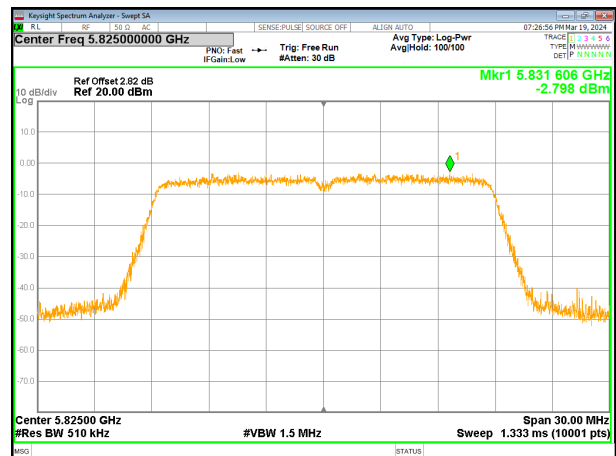
(802.11n20) PSD plot on channel 157



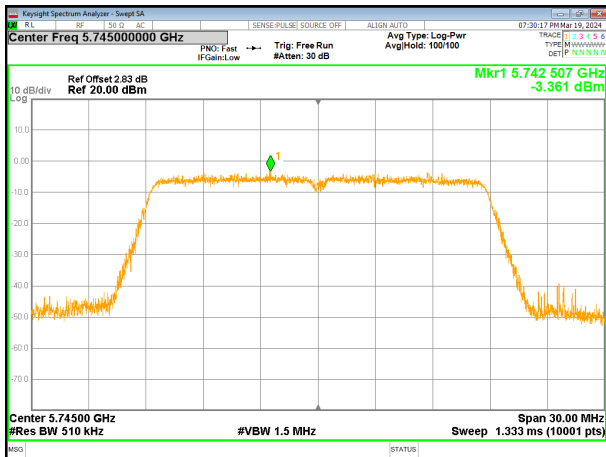
(802.11a) PSD plot on channel 165



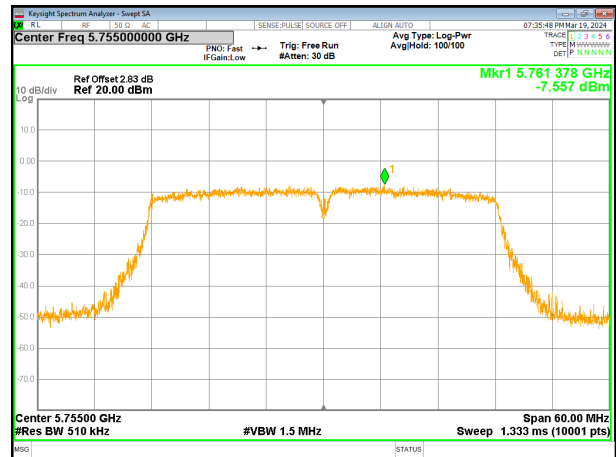
(802.11n20) PSD plot on channel 165



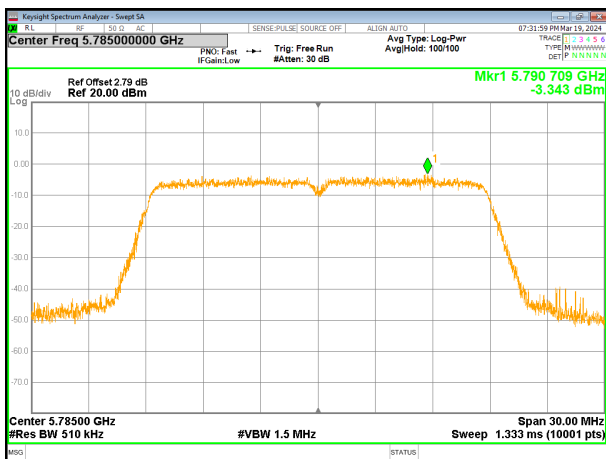
(802.11ac20) PSD plot on channel 149



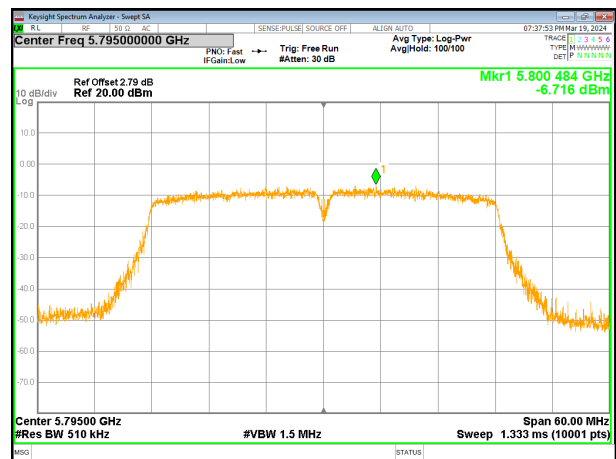
(802.11n40) PSD plot on channel 151



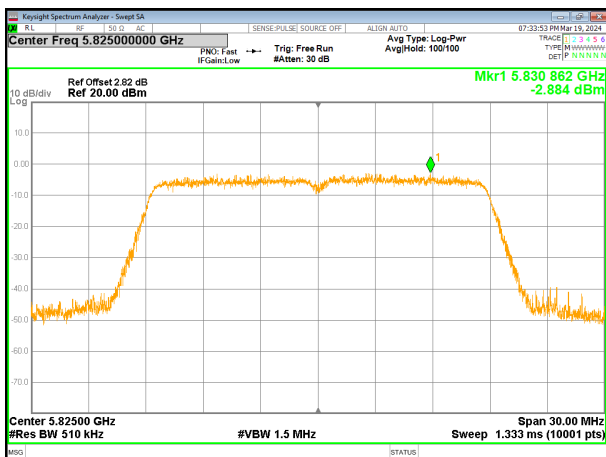
(802.11ac20) PSD plot on channel 157



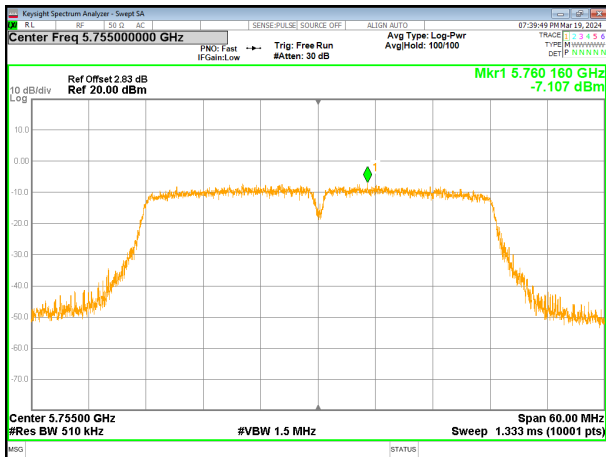
(802.11n40) PSD plot on channel 159



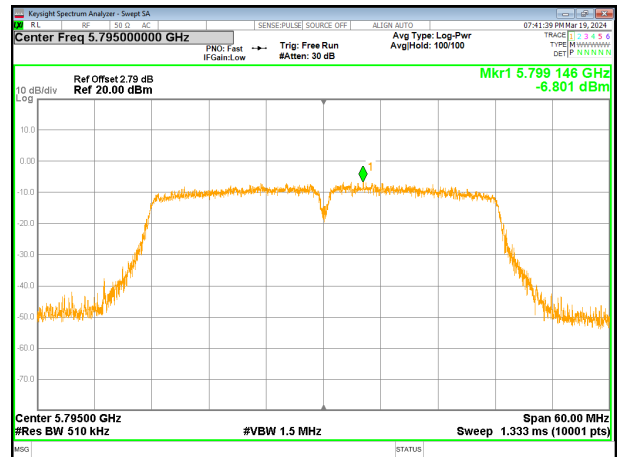
(802.11ac20) PSD plot on channel 165



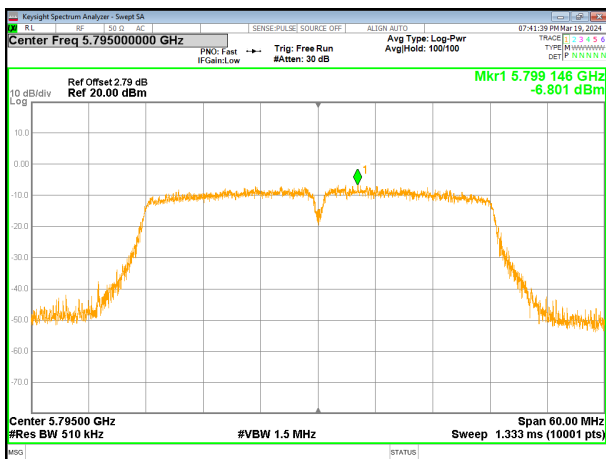
(802.11ac40) PSD plot on channel 151



(802.11ac80) PSD plot on channel 155

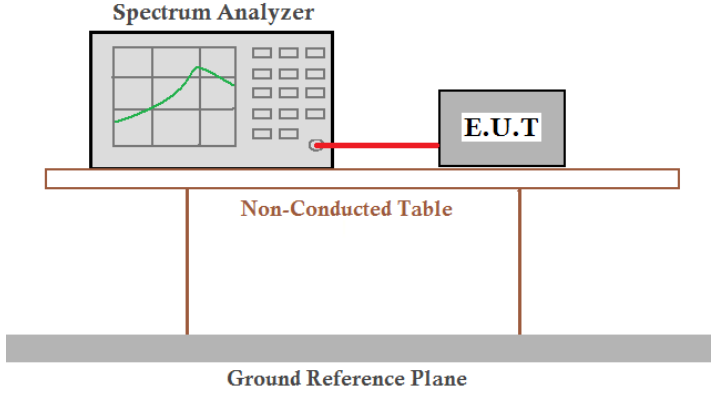


(802.11ac40) PSD plot on channel 159



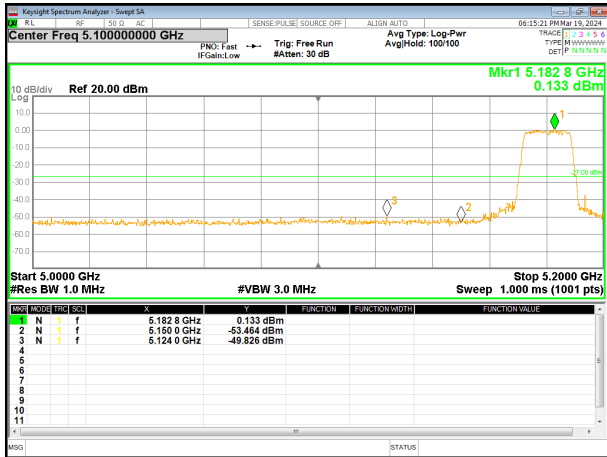
4.7 Band edge

4.7.1 Conducted test Method

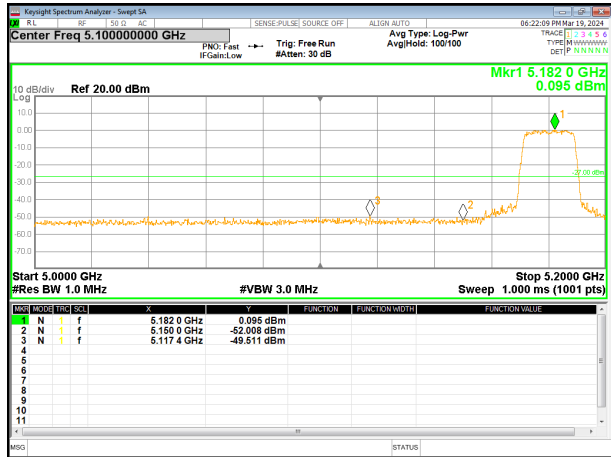
Test Requirement:	FCC Part15 C Section 15.209 and 15.205	
Test Method:	ANSI C63.10: 2013	
Limit:	All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below 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:	 <p>The diagram illustrates the test setup. A Spectrum Analyzer is connected via a red cable to the E.U.T. (Equipment Under Test). Both are placed on a Non-Conducted Table. The table is supported by two vertical legs and sits on a Ground Reference Plane.</p>	
Test Procedure:	<ol style="list-style-type: none"> 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.: 21.4°C	Humid.: 40%RH
Test voltage:	AC 120V	
Test results:	Pass	

5.180~5.240 GHz

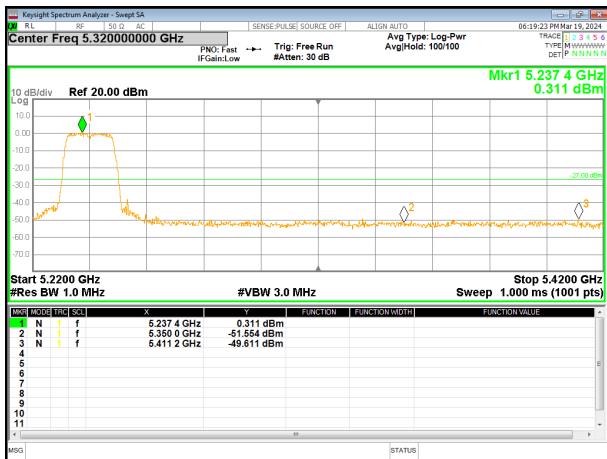
(802.11a) Band Edge, Left Side



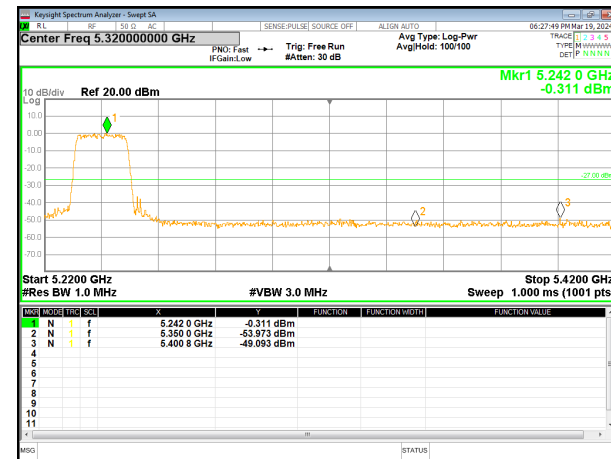
(802.11n20) Band Edge, Left Side



(802.11a) Band Edge, Right Side

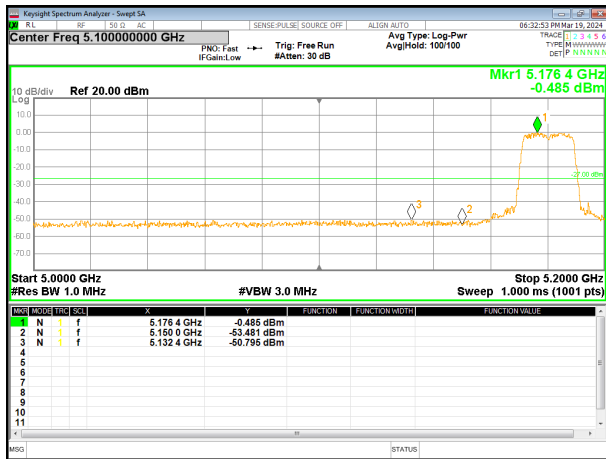


(802.11n20) Band Edge, Right Side

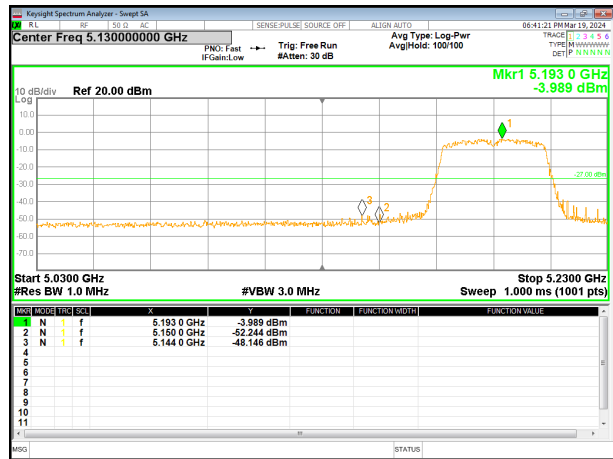


5.180~5.240 GHz

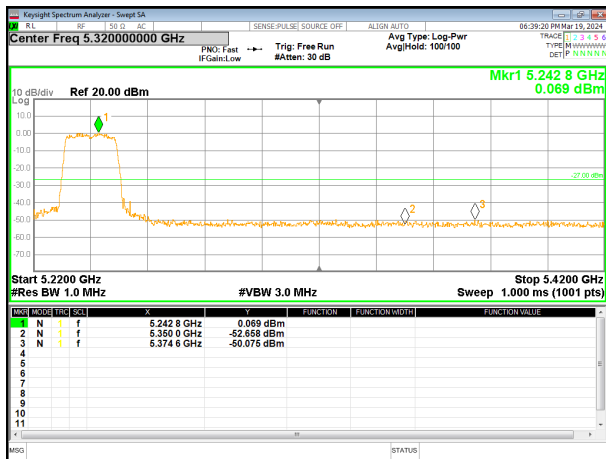
(802.11ac20) Band Edge, Left Side



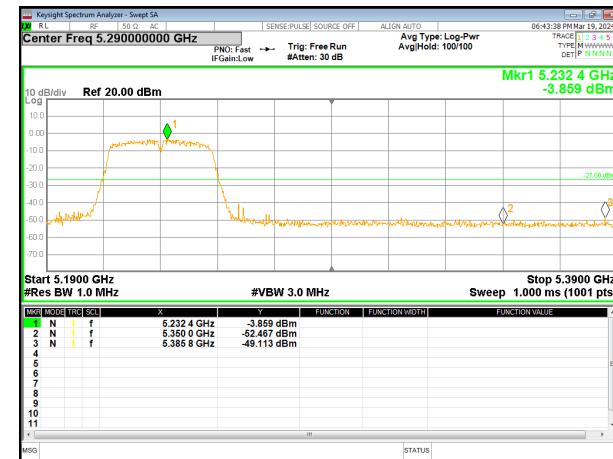
(802.11n40) Band Edge, Left Side



(802.11ac20) Band Edge, Right Side

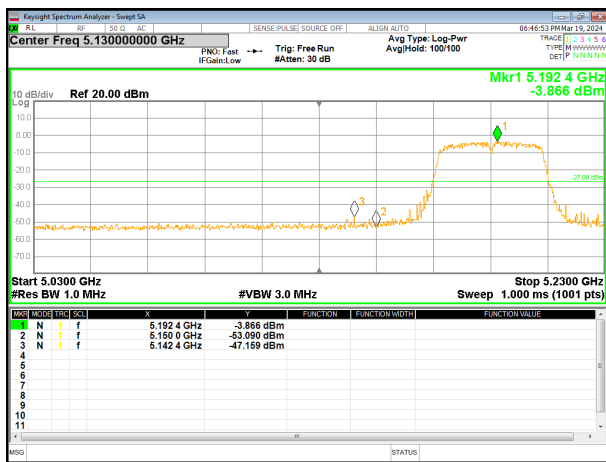


(802.11n40) Band Edge, Right Side

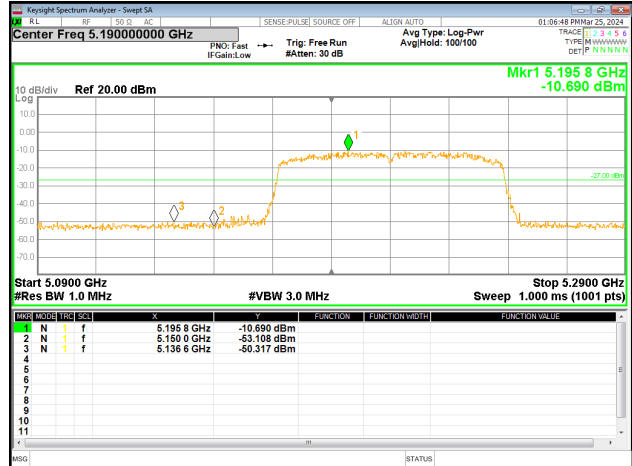


5.180~5.240 GHz

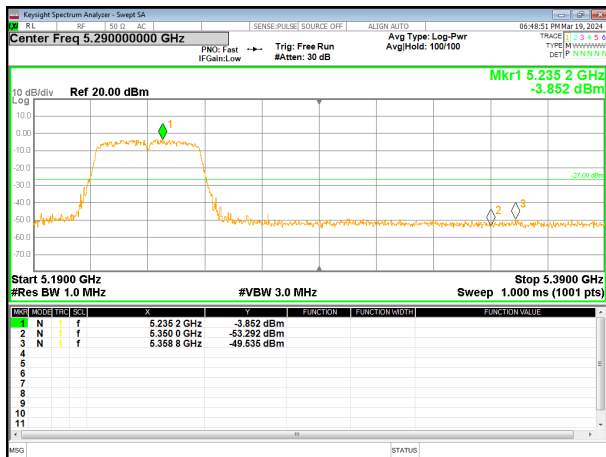
(802.11ac40) Band Edge, Left Side



(802.11ac80) Band Edge

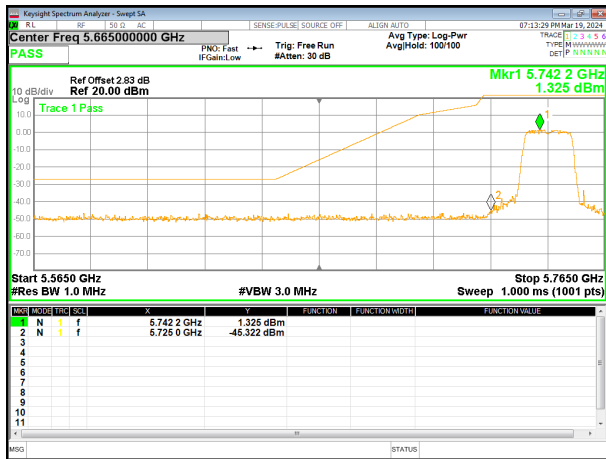


(802.11ac40) Band Edge, Right Side

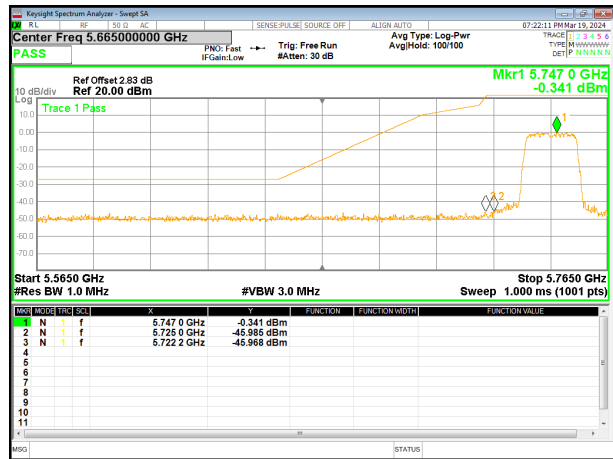


5.745~5.825 GHz

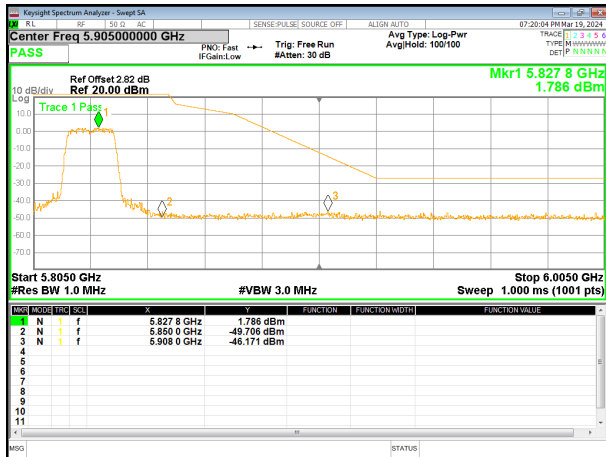
(802.11a) Band Edge, Left Side



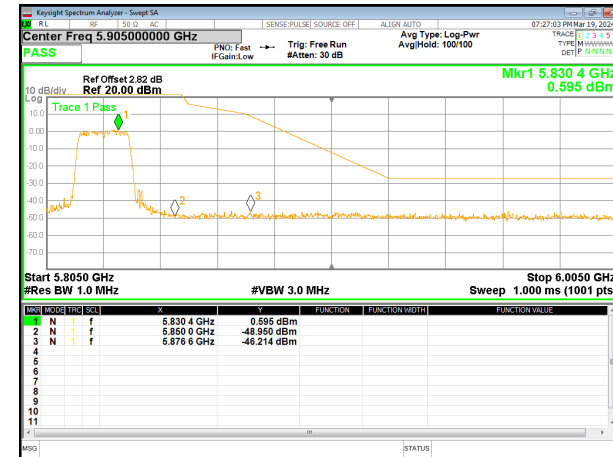
(802.11n20) Band Edge, Left Side



(802.11a) Band Edge, Right Side

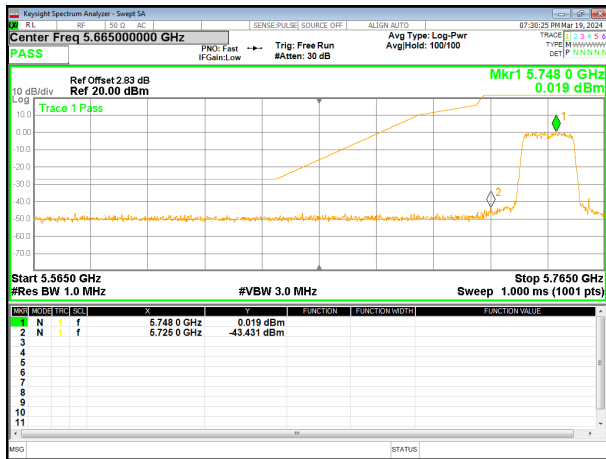


(802.11n20) Band Edge, Right Side

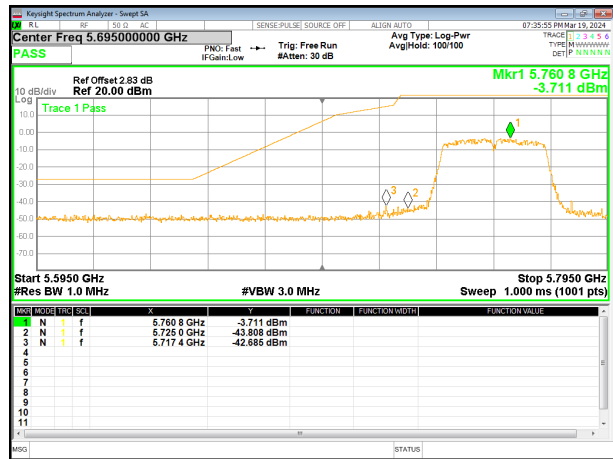


5.745~5.825 GHz

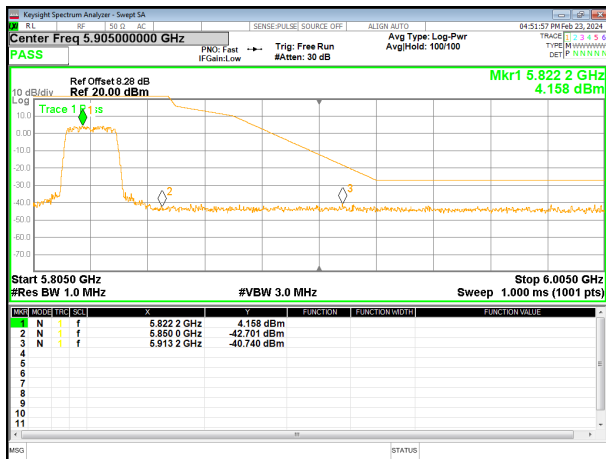
(802.11ac20) Band Edge, Left Side



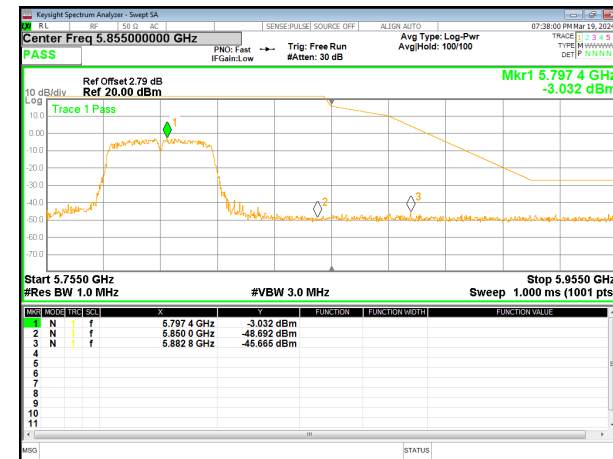
(802.11n40) Band Edge, Left Side



(802.11ac20) Band Edge, Right Side

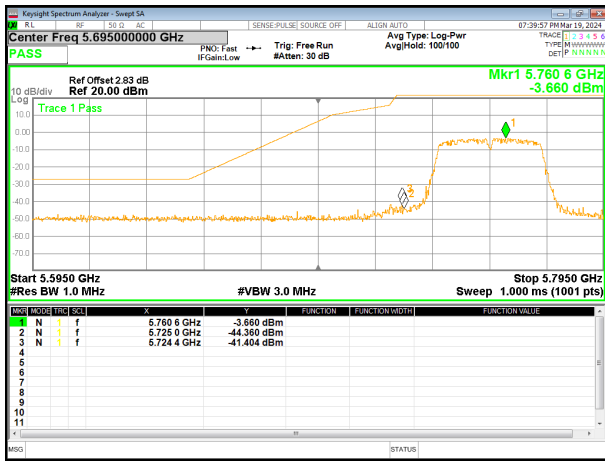


(802.11n40) Band Edge, Right Side

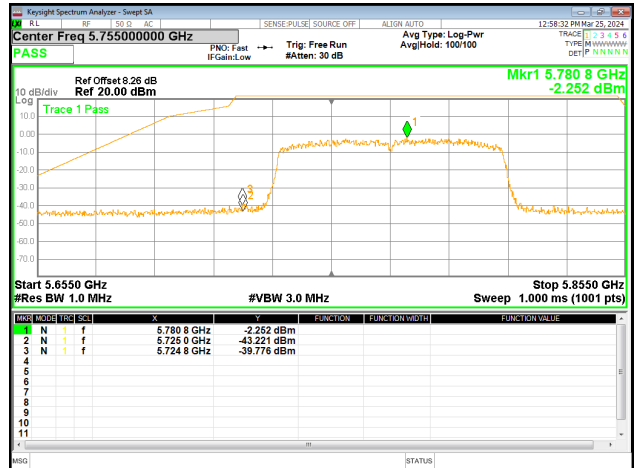


5.745~5.825 GHz

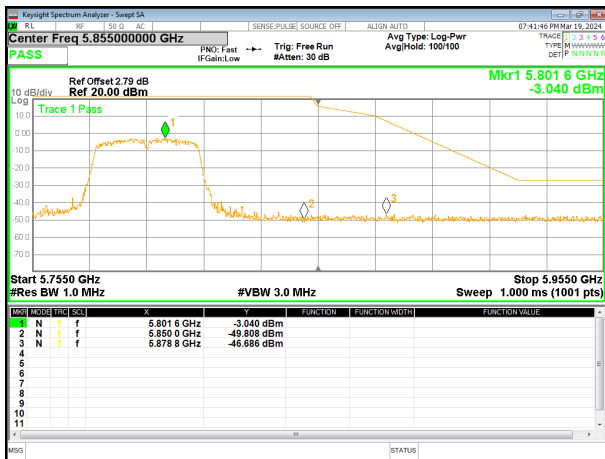
(802.11ac40) Band Edge, Left Side



(802.11ac80) Band Edge

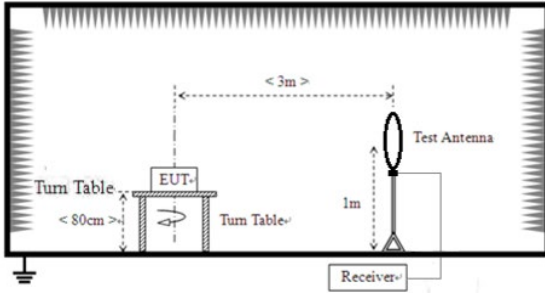
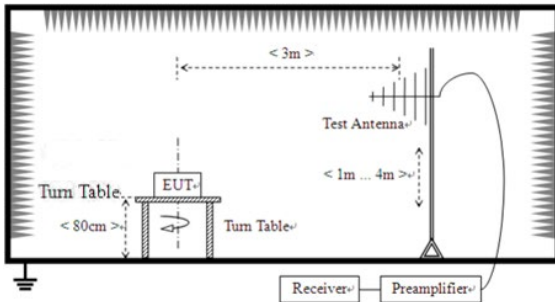


(802.11ac40) Band Edge, Right Side

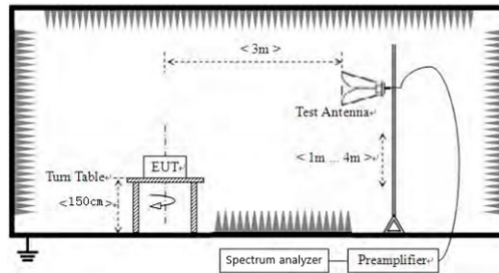


4.8 Spurious Emission

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				
					
Test setup:	For radiated emissions from 30MHz to 1GHz				
					

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

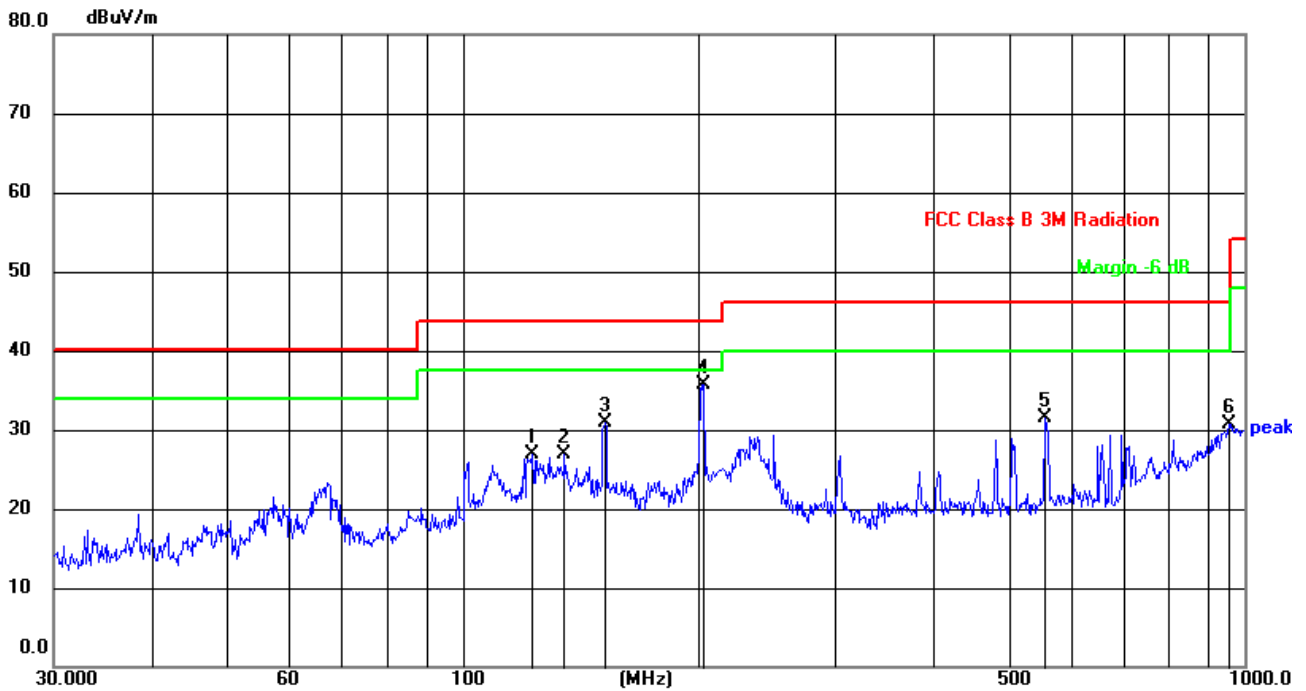
The emission from 9 kHz to 30MHz was pre-tested and found the result was 20dB lower than the limit, and according to 15.31(o) & RSS-Gen 6.13, the test result no need to reported.

Below 1GHz

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

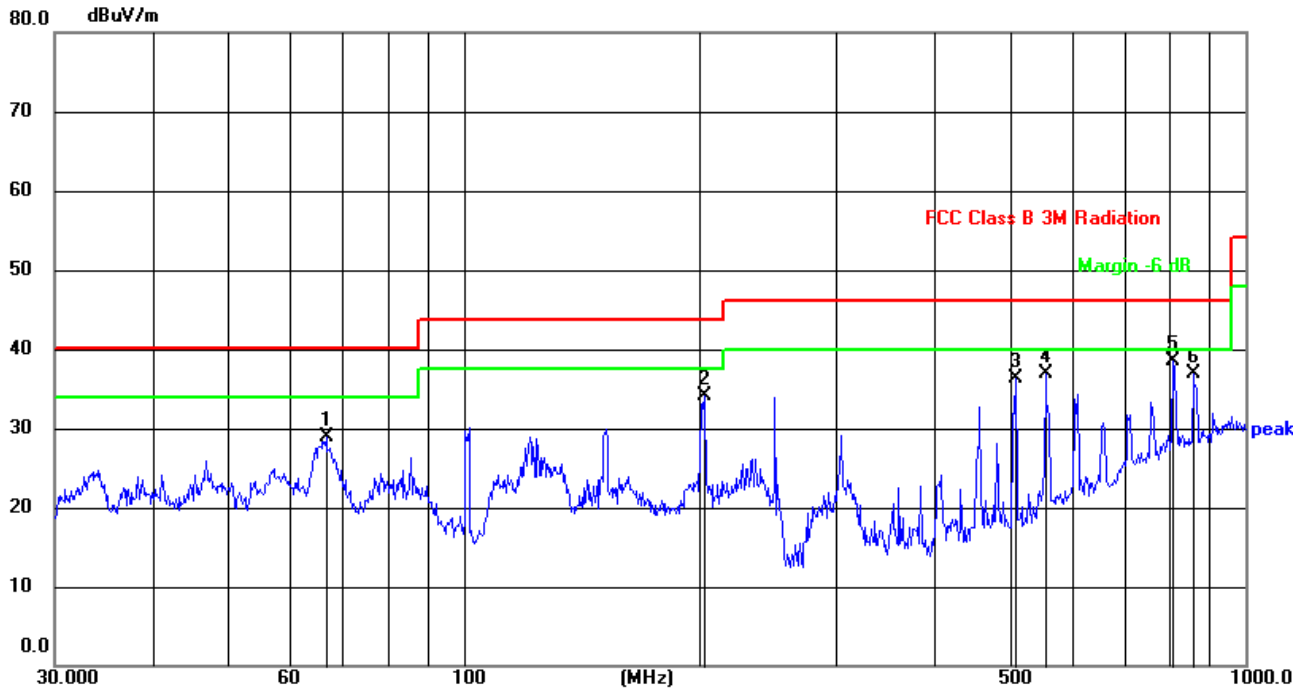
Temperature:	21.4°C	Relative Humidity:	40%
Pressure:	101.2kPar	Test Voltage :	AC 120V
Test Mode :	5.2G TX- 802.11a (5200MHz)		

Horizontal:



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	122.8336	49.95	-23.00	26.95	43.50	-16.55	QP
2	135.0318	48.95	-22.09	26.86	43.50	-16.64	QP
3	152.1297	51.47	-20.51	30.96	43.50	-12.54	QP
4	203.5226	59.16	-23.41	35.75	43.50	-7.75	QP
5	554.8251	44.28	-12.73	31.55	46.00	-14.45	QP
6	955.4379	34.45	-3.76	30.69	46.00	-15.31	QP

Vertical:



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	66.7325	52.63	-23.63	29.00	40.00	-11.00	QP
2	203.5226	57.43	-23.41	34.02	43.50	-9.48	QP
3	508.2581	50.36	-13.97	36.39	46.00	-9.61	QP
4	554.8252	49.69	-12.73	36.96	46.00	-9.04	QP
5	807.4288	45.05	-6.47	38.58	46.00	-7.42	QP
6	857.0244	43.07	-6.15	36.92	46.00	-9.08	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 802.11a mode

Above 1GHz:

Temperature:	21.4°C	Relative Humidity:	40%
Pressure:	101.2kPar	Test Voltage :	AC 120V
Test Mode :	5.2G TX- 802.11a		

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	
<i>Low Channel:5180MHz</i>									
V	10360.00	51.23	46.20	8.27	38.50	51.80	68.20	-16.40	PK
V	10360.00	41.03	46.20	8.27	38.50	41.60	54.00	-12.40	AV
V	15540.00	48.27	46.30	10.35	38.70	51.02	74.00	-22.98	PK
V	15540.00	38.02	46.30	10.35	38.70	40.77	54.00	-13.23	AV
V	20720.00	57.57	57.40	11.93	37.80	49.90	68.20	-18.30	PK
V	20720.00	47.33	57.40	11.93	37.80	39.66	54.00	-14.34	AV
V	25900.00	55.16	56.50	13.45	39.70	51.81	68.20	-16.39	PK
V	25900.00	44.52	56.50	13.45	39.70	41.17	54.00	-12.83	AV
H	10360.00	51.15	46.20	8.27	38.50	51.72	68.20	-16.48	PK
H	10360.00	39.63	46.20	8.27	38.50	40.20	54.00	-13.80	AV
H	15540.00	47.27	46.30	10.35	38.70	50.02	74.00	-23.98	PK
H	15540.00	35.54	46.30	10.35	38.70	38.29	54.00	-15.71	AV
H	20720.00	59.84	57.40	11.93	37.80	52.17	68.20	-16.03	PK
H	20720.00	48.24	57.40	11.93	37.80	40.57	54.00	-13.43	AV
H	25900.00	56.21	56.50	13.45	39.70	52.86	68.20	-15.34	PK
H	25900.00	44.55	56.50	13.45	39.70	41.20	54.00	-12.80	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)	
<i>Middle Channel:5200MHz</i>									
V	10400.00	50.26	46.20	8.27	38.50	50.83	68.20	-17.37	PK
V	10400.00	40.78	46.20	8.27	38.50	41.35	54.00	-12.65	AV
V	15600.00	48.60	46.30	10.35	38.40	51.05	74.00	-22.95	PK
V	15600.00	39.58	46.30	10.35	38.40	42.03	54.00	-11.97	AV
V	20800.00	58.81	57.40	11.93	37.80	51.14	68.20	-17.06	PK
V	20800.00	48.88	57.40	11.93	37.80	41.21	54.00	-12.79	AV
V	26000.00	53.81	56.50	13.45	39.80	50.56	68.20	-17.64	PK
V	26000.00	45.78	56.50	13.45	39.80	42.53	54.00	-11.47	AV
H	10400.00	50.87	46.20	8.27	38.50	51.44	68.20	-16.76	PK
H	10400.00	41.05	46.20	8.27	38.50	41.62	54.00	-12.38	AV
H	15600.00	48.58	46.30	10.35	38.40	51.03	74.00	-22.97	PK
H	15600.00	39.58	46.30	10.35	38.40	42.03	54.00	-11.97	AV
H	20800.00	57.73	57.40	11.93	37.80	50.06	68.20	-18.14	PK
H	20800.00	46.73	57.40	11.93	37.80	39.06	54.00	-14.94	AV
H	26000.00	53.54	56.50	13.45	39.80	50.29	68.20	-17.91	PK
H	26000.00	44.97	56.50	13.45	39.80	41.72	54.00	-12.28	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)	
High Channel:5240MHz									
V	10480.00	50.26	46.20	8.27	38.50	50.83	68.20	-17.37	PK
V	10480.00	40.78	46.20	8.27	38.50	41.35	54.00	-12.65	AV
V	15720.00	48.60	46.30	10.35	38.40	51.05	74.00	-22.95	PK
V	15720.00	39.58	46.30	10.35	38.40	42.03	54.00	-11.97	AV
V	20960.00	58.81	57.40	11.93	37.80	51.14	68.20	-17.06	PK
V	20960.00	48.88	57.40	11.93	37.80	41.21	54.00	-12.79	AV
V	26200.00	53.81	56.50	13.45	39.80	50.56	68.20	-17.64	PK
V	26200.00	45.78	56.50	13.45	39.80	42.53	54.00	-11.47	AV
H	10480.00	50.87	46.20	8.27	38.50	51.44	68.20	-16.76	PK
H	10480.00	41.05	46.20	8.27	38.50	41.62	54.00	-12.38	AV
H	15720.00	48.58	46.30	10.35	38.40	51.03	74.00	-22.97	PK
H	15720.00	39.58	46.30	10.35	38.40	42.03	54.00	-11.97	AV
H	20960.00	57.73	57.40	11.93	37.80	50.06	68.20	-18.14	PK
H	20960.00	46.73	57.40	11.93	37.80	39.06	54.00	-14.94	AV
H	26200.00	53.54	56.50	13.45	39.80	50.29	68.20	-17.91	PK
H	26200.00	44.97	56.50	13.45	39.80	41.72	54.00	-12.28	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:	21.4°C	Relative Humidity:	40%
Pressure:	101.2kPar	Test Voltage :	AC 120V
Test Mode :	5.8G TX- 802.11a		

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	46.31	46.10	8.77	39.10	48.08	74.00	-25.92	PK
V	11490.00	38.25	46.10	8.77	39.10	40.02	54.00	-13.98	AV
V	17235.00	43.93	47.60	11.10	38.70	46.13	68.20	-22.07	PK
V	17235.00	36.71	47.60	11.10	38.70	38.91	54.00	-15.09	AV
V	22980.00	52.56	56.90	12.73	37.70	46.09	74.00	-27.91	PK
V	22980.00	44.63	56.90	12.73	37.70	38.16	54.00	-15.84	AV
V	28725.00	49.41	55.60	14.25	40.30	48.36	68.20	-19.84	PK
V	28725.00	40.99	55.60	14.25	40.30	39.94	54.00	-14.06	AV
H	11490.00	46.80	46.10	8.77	39.10	48.57	74.00	-25.43	PK
H	11490.00	38.07	46.10	8.77	39.10	39.84	54.00	-14.16	AV
H	17235.00	44.94	47.60	11.10	38.70	47.14	68.20	-21.06	PK
H	17235.00	37.10	47.60	11.10	38.70	39.30	54.00	-14.70	AV
H	22980.00	54.76	56.90	12.73	37.70	48.29	74.00	-25.71	PK
H	22980.00	44.41	56.90	12.73	37.70	37.94	54.00	-16.06	AV
H	28725.00	51.35	55.60	14.25	40.30	50.30	68.20	-17.90	PK
H	28725.00	41.61	55.60	14.25	40.30	40.56	54.00	-13.44	AV

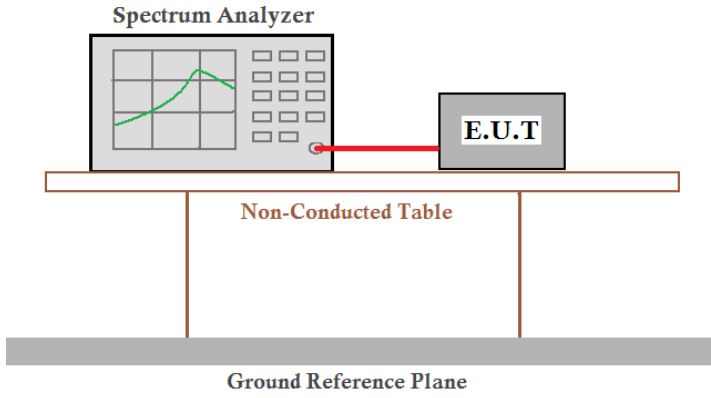
Polar (H/V)	Frequency	Meter Reading	Pre-amplifier	Cable Loss	Antenna Factor	Emission Level	Limits	Margin	Detect or Type
	(MHz)	(dBuV)	(dB)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Middle Channel:5785MHz									
V	11570.00	46.12	46.10	8.77	39.10	47.89	74.00	-26.11	PK
V	11570.00	38.06	46.10	8.77	39.10	39.83	54.00	-14.17	AV
V	17355.00	43.75	47.60	11.10	38.70	45.95	68.20	-22.25	PK
V	17355.00	36.49	47.60	11.10	38.70	38.69	54.00	-15.31	AV
V	23140.00	52.39	56.90	12.73	37.70	45.92	74.00	-28.08	PK
V	23140.00	44.45	56.90	12.73	37.70	37.98	54.00	-16.02	AV
V	28925.00	49.21	55.60	14.25	40.30	48.16	68.20	-20.04	PK
V	28925.00	40.79	55.60	14.25	40.30	39.74	54.00	-14.26	AV
H	11570.00	46.60	46.10	8.77	39.10	48.37	74.00	-25.63	PK
H	11570.00	37.87	46.10	8.77	39.10	39.64	54.00	-14.36	AV
H	17355.00	44.75	47.60	11.10	38.70	46.95	68.20	-21.25	PK
H	17355.00	36.92	47.60	11.10	38.70	39.12	54.00	-14.88	AV
H	23140.00	54.55	56.90	12.73	37.70	48.08	74.00	-25.92	PK
H	23140.00	44.24	56.90	12.73	37.70	37.77	54.00	-16.23	AV
H	28925.00	51.17	55.60	14.25	40.30	50.12	68.20	-18.08	PK
H	28925.00	41.42	55.60	14.25	40.30	40.37	54.00	-13.63	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)	
High Channel:5825MHz									
V	11650.00	47.21	46.10	8.77	39.10	48.98	74.00	-25.02	PK
V	11650.00	38.25	46.10	8.77	39.10	40.02	54.00	-13.98	AV
V	17475.00	45.09	47.90	11.23	38.90	47.32	68.20	-20.88	PK
V	17475.00	37.52	47.90	11.23	38.90	39.75	54.00	-14.25	AV
V	23300.00	54.68	57.10	12.73	37.80	48.11	68.20	-20.09	PK
V	23300.00	45.36	57.10	12.73	37.80	38.79	54.00	-15.21	AV
V	29125.00	51.44	55.80	14.25	40.50	50.39	68.20	-17.81	PK
V	29125.00	42.67	55.80	14.25	40.50	41.62	54.00	-12.38	AV
H	11650.00	49.19	46.10	8.77	39.10	50.96	74.00	-23.04	PK
H	11650.00	40.61	46.10	8.77	39.10	42.38	54.00	-11.62	AV
H	17475.00	46.30	47.90	11.23	38.90	48.53	68.20	-19.67	PK
H	17475.00	38.79	47.90	11.23	38.90	41.02	54.00	-12.98	AV
H	23300.00	56.06	57.10	12.73	37.80	49.49	68.20	-18.71	PK
H	23300.00	46.82	57.10	12.73	37.80	40.25	54.00	-13.75	AV
H	29125.00	52.49	55.80	14.25	40.50	51.44	68.20	-16.76	PK
H	29125.00	43.38	55.80	14.25	40.50	42.33	54.00	-11.67	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

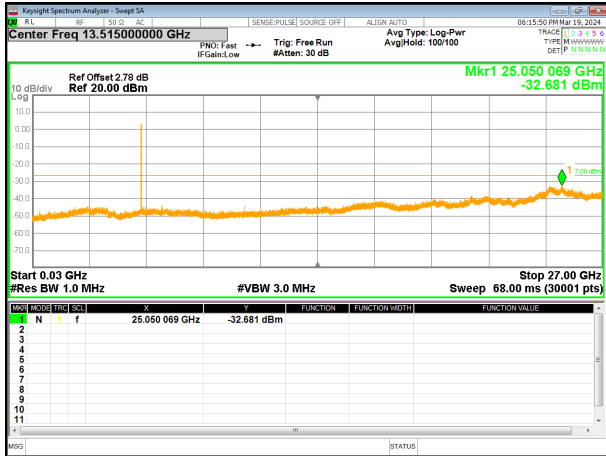
Test Requirement:	FCC Part15 C Section 15.209, Part 15E Section 15.407(b)(4)	
Test Method:	ANSI C63.10:2013	
Limit:	-27dBm/MHz	
Test setup:	 <p>The diagram illustrates the test setup. A Spectrum Analyzer is connected to an E.U.T. (Equipment Under Test) via a red cable. Both the Spectrum Analyzer and the E.U.T. are placed on a Non-Conducted Table. The table is supported by two legs and sits on a Ground Reference Plane.</p>	
Test Instruments:	Refer to section 3.0 for details	
Test mode:	Refer to section 2.2 for details	
Test environment:	Temp.: 21.4°C	Humid.:40%RH
Test voltage:	AC 120V	
Test results:	Pass	



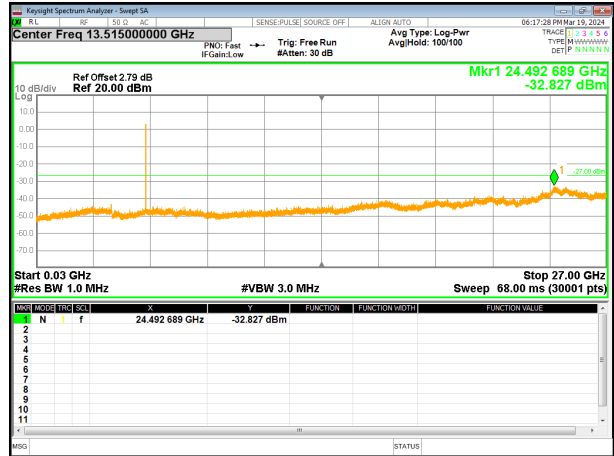
5180-5240MHz

Test Plot

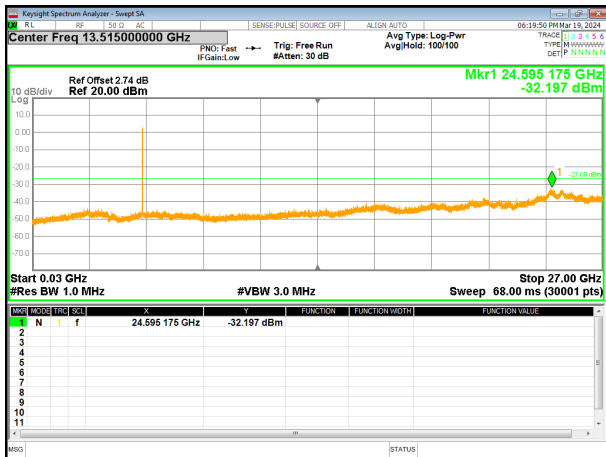
802.11a on channel 36



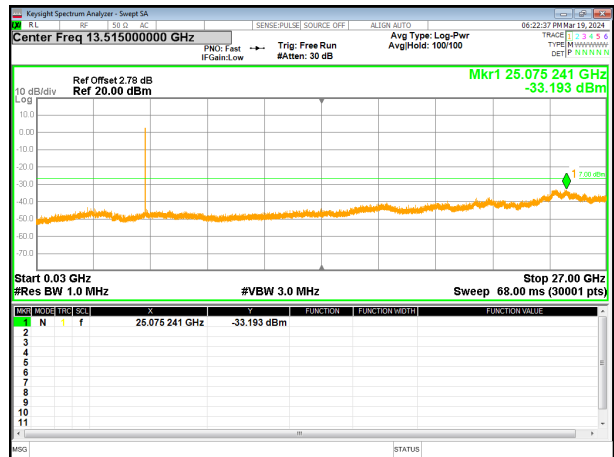
802.11a on channel 40



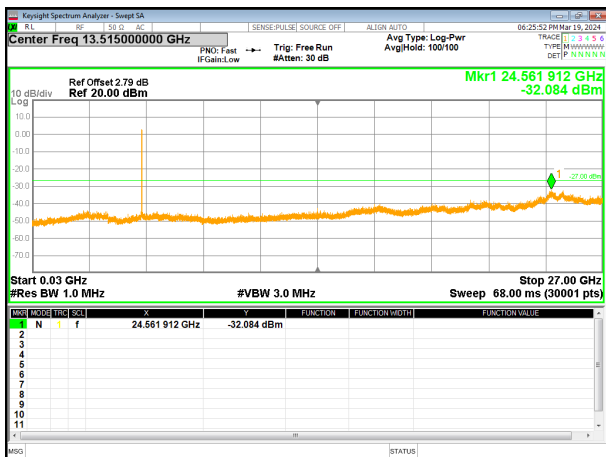
802.11a on channel 48



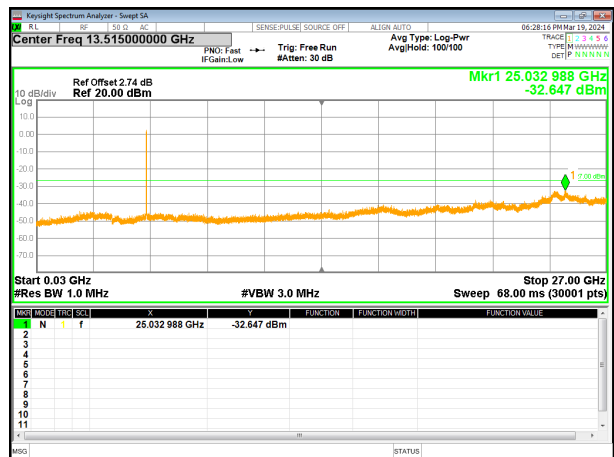
802.11n20 on channel 36



802.11n20 on channel 40

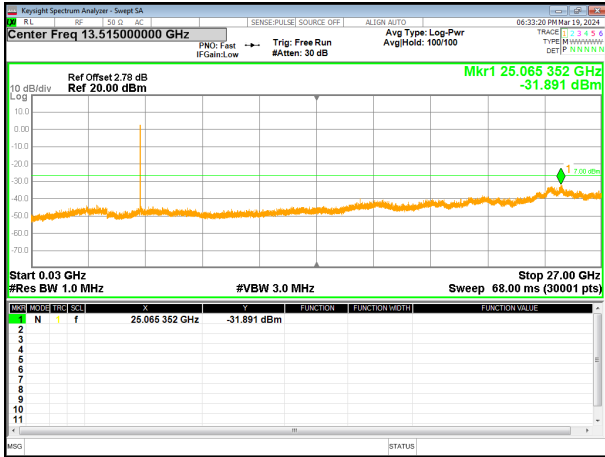


802.11n20 on channel 48

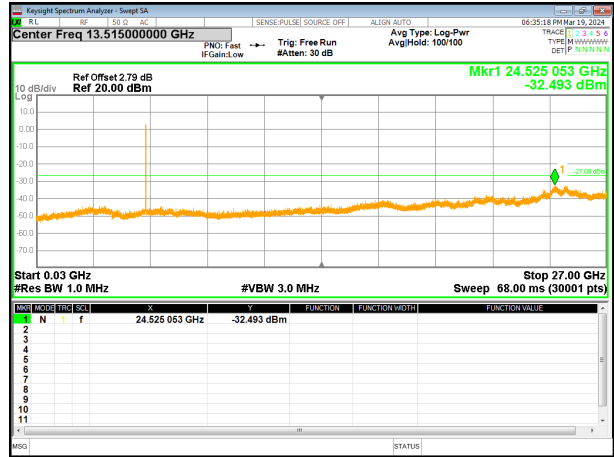


Test Plot

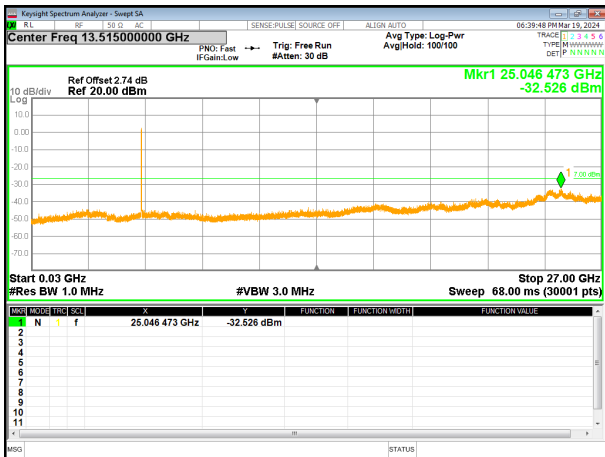
802.11ac20 on channel 36



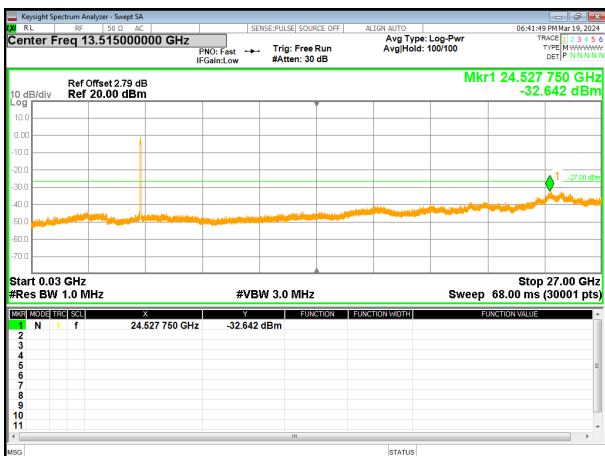
802.11ac20 on channel 40



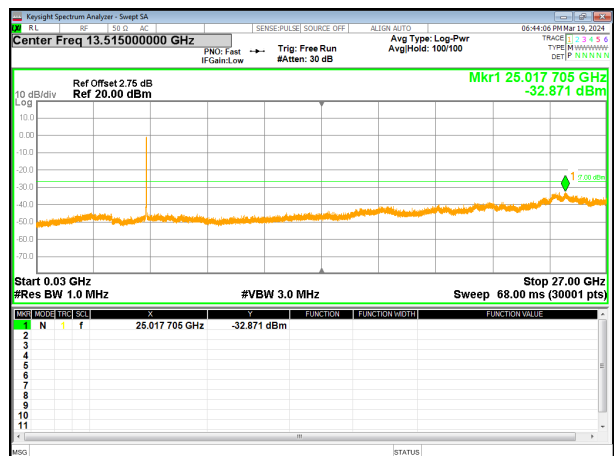
802.11ac20 on channel 48



802.11n40 on channel 38

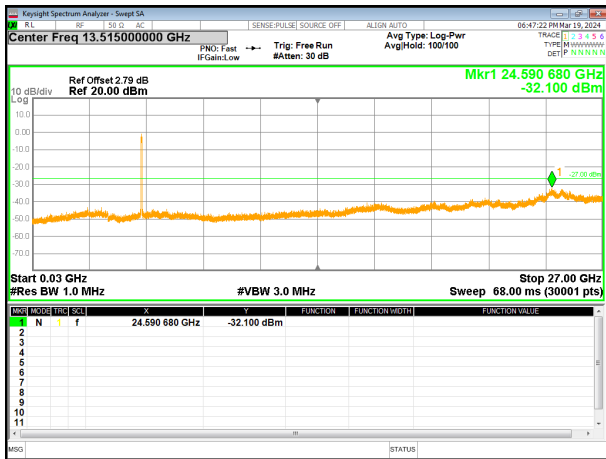


802.11n40 on channel 46

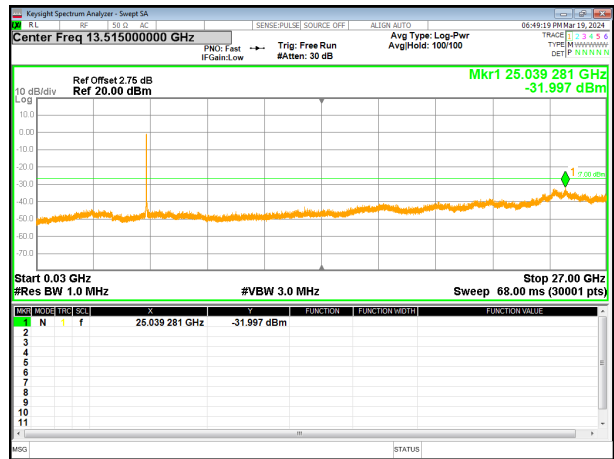


Test Plot

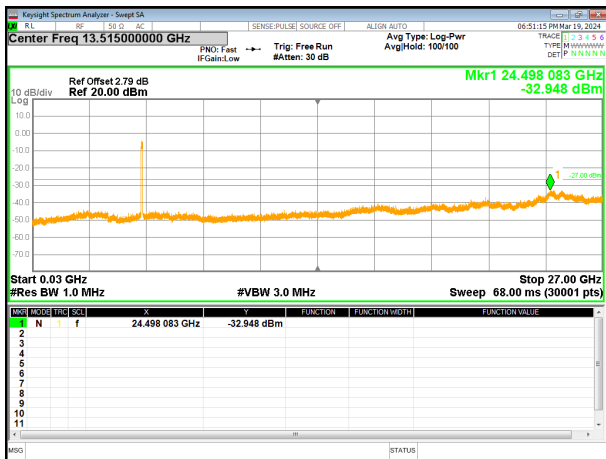
802.11ac40 on channel 38



802.11ac40 on channel 46



802.11ac80 on channel 42

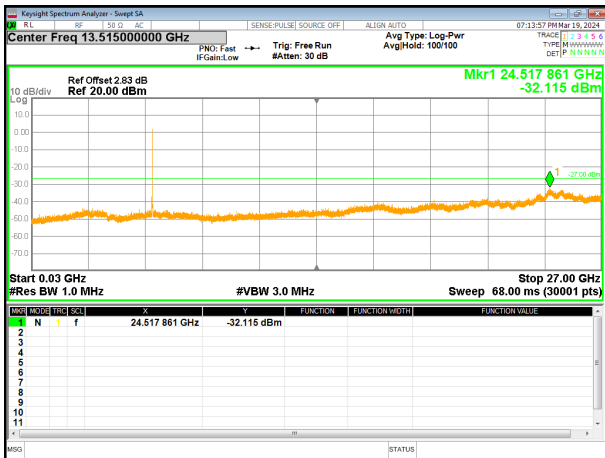




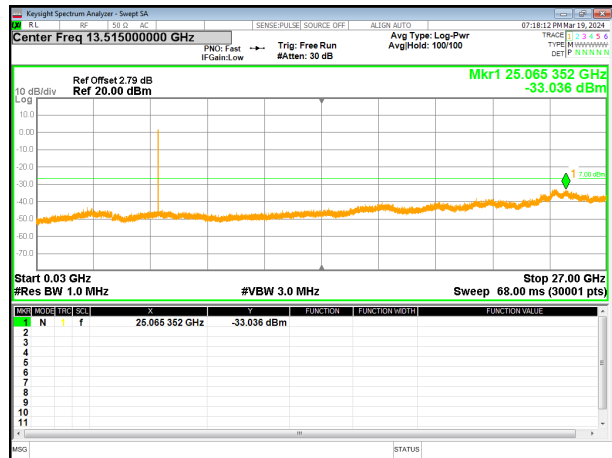
5745-5825MHz

Test Plot

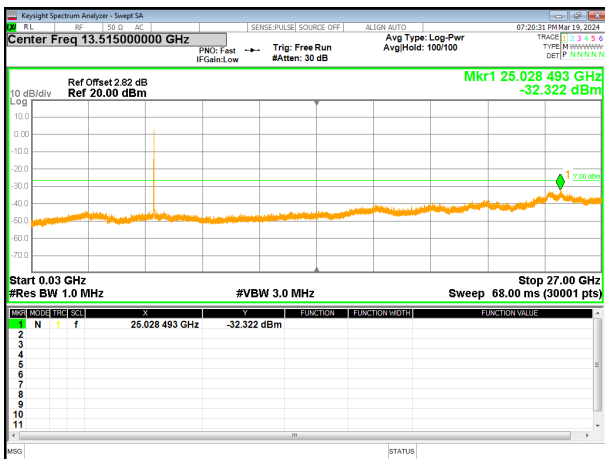
802.11a on channel 149



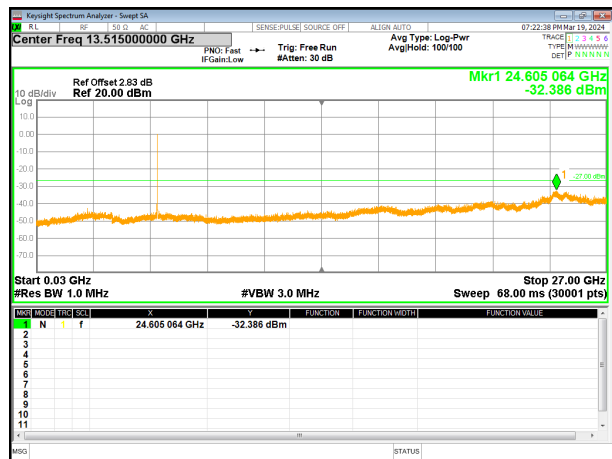
802.11a on channel 157



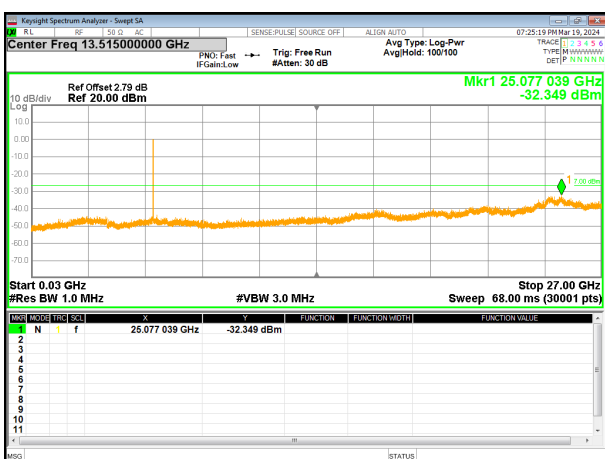
802.11a on channel 165



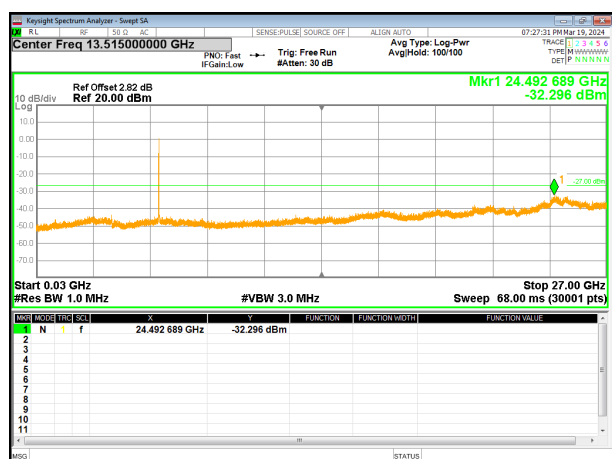
802.11n20 on channel 149



802.11n20 on channel 157

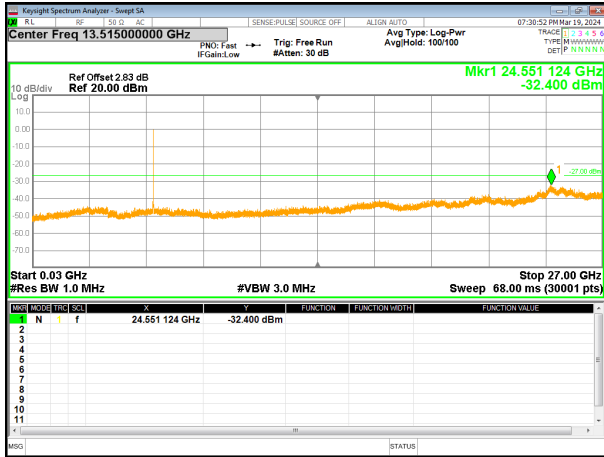


802.11n20 on channel 165

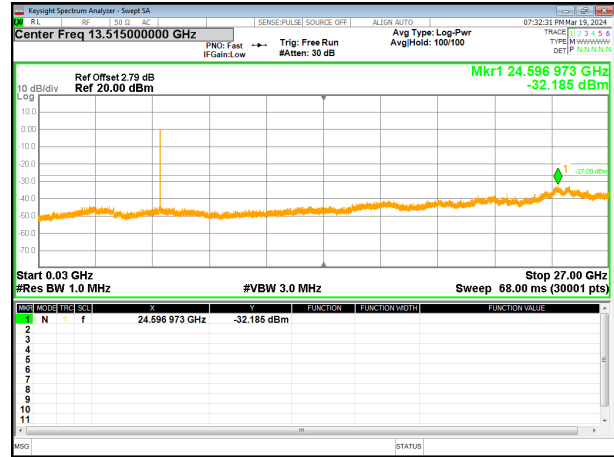


Test Plot

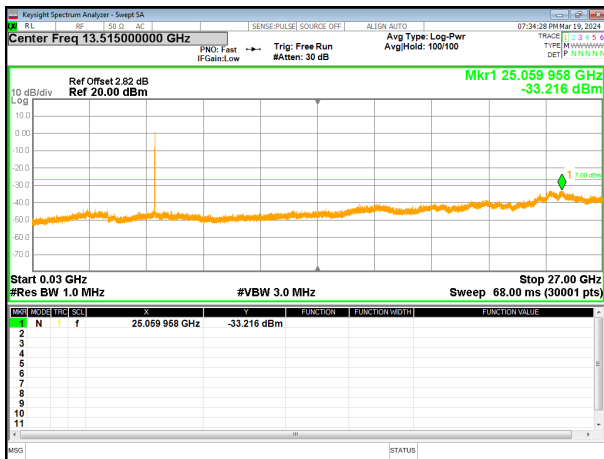
802.11ac20 on channel 149



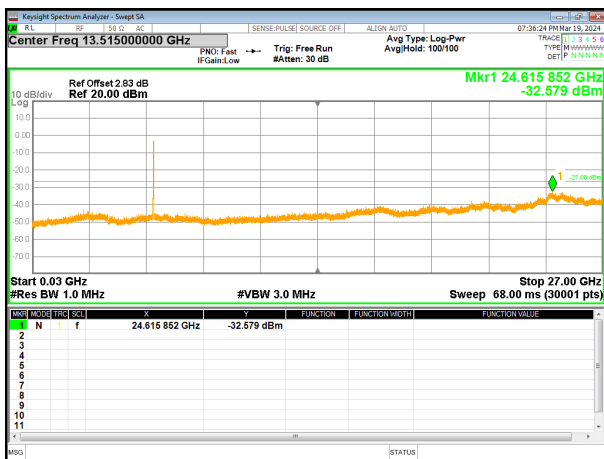
802.11ac20 on channel 157



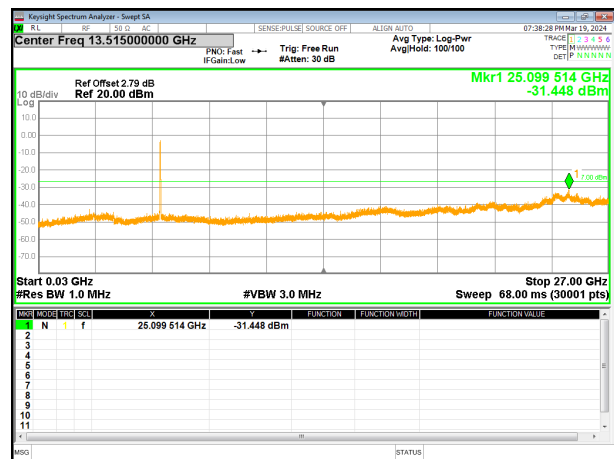
802.11ac20 on channel 165



802.11n40 on channel 151

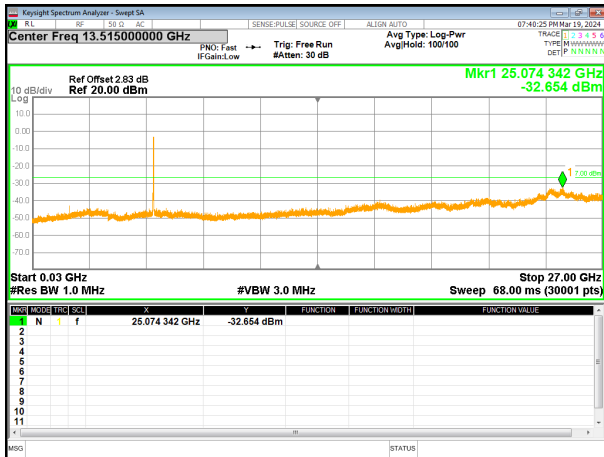


802.11n40 on channel 159

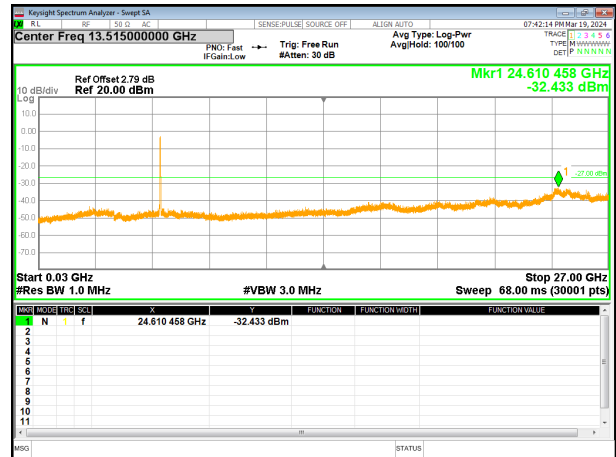


Test Plot

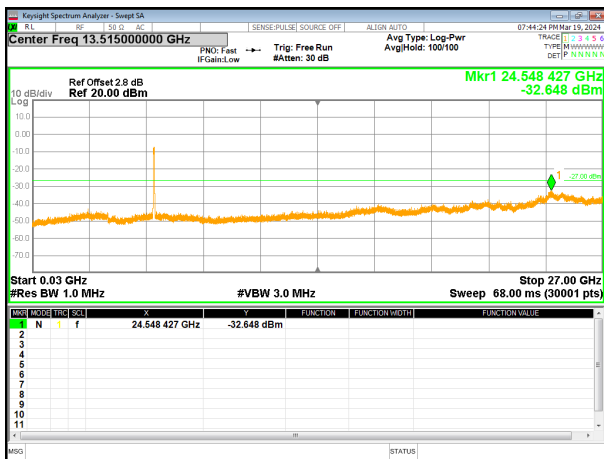
802.11ac40 on channel 151



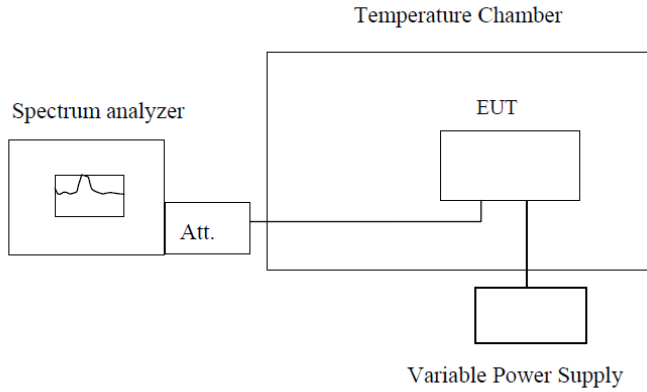
802.11ac40 on channel 159



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:	<p>a. The EUT was placed inside the environmental test chamber and powered by nominal DC voltage.</p> <p>b. Turn the EUT on and couple its output to a spectrum analyzer.</p> <p>c. Turn the EUT off and set the chamber to the highest temperature specified.</p> <p>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.</p> <p>e. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.</p> <p>f. The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 Minute</p> <p>s. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.</p>
Test setup:	 <p style="text-align: center;">Note : Measurement setup for testing on Antenna connector</p>
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	5180.368	5179.776	5180.142	5180.383
	5190	5190.358	5199.791	5200.018	5190.393
	5200	5200.361	5199.776	5200.043	5200.384
	5210	5210.367	5209.754	5210.021	5210.385
	5220	5220.362	5219.769	5220.037	5220.390
	5230	5230.360	5229.762	5230.029	5230.408
	5240	5240.333	5239.771	5240.038	5240.393
-20	5180	5180.361	5179.752	5180.027	5180.404
	5190	5190.352	5189.743	5190.027	5190.399
	5200	5200.360	5199.751	5200.021	5200.394
	5210	5210.352	5209.743	5210.011	5210.400
	5220	5220.373	5219.764	5220.022	5220.393
	5230	5230.351	5229.742	5300.020	5230.391
	5240	5240.369	5239.761	5240.024	5240.364
-10	5180	5180.370	5179.761	5180.006	5180.383
	5190	5190.366	5189.757	5190.018	5190.393
	5200	5200.361	5199.752	5200.009	5200.384
	5210	5210.367	5209.758	5210.010	5210.385
	5220	5220.362	5219.753	5220.018	5220.390
	5230	5230.360	5229.751	5230.035	5230.408
	5240	5240.333	5239.725	5240.008	5240.380
0	5180	5180.147	5179.740	5180.018	5180.394
	5190	5200.319	5189.751	5190.010	5190.394
	5200	5200.317	5199.742	5200.018	5200.385
	5210	5210.372	5209.743	5210.010	5300.389
	5220	5220.361	5219.750	5220.032	5220.383
	5230	5230.348	5229.768	5230.009	5230.404
	5240	5240.365	5239.741	5240.028	5240.382
10	5180	5180.349	5179.752	5180.027	5180.395
	5190	5190.360	5189.743	5190.024	5190.385
	5200	5200.351	5199.751	5200.019	5200.393
	5210	5210.352	5209.743	5210.025	5210.385
	5220	5220.359	5219.764	5220.021	5220.404
	5230	5230.377	5229.742	5230.018	5230.382
	5240	5240.362	5239.761	5239.992	5240.400
20	5180	5180.427	5179.005	5180.276	5180.157



	5190	5190.370	5189.794	5190.321	5190.421
	5200	5200.365	5199.785	5200.330	5200.446
	5210	5210.371	5299.796	5210.323	5210.430
	5220	5220.366	5219.785	5220.345	5220.420
	5230	5230.364	5229.806	5230.323	5230.448
	5240	5240.337	5239.785	5240.342	5240.436
30	5180	5180.353	5179.793	5180.329	5180.440
	5190	5190.364	5189.785	5190.321	5180.440
	5200	5200.355	5199.793	5200.330	5190.435
	5210	5210.356	5209.785	5210.323	5200.430
	5220	5220.363	5219.806	5220.345	5210.436
	5230	5230.381	5229.784	5230.323	5220.430
5240	5240.353	5239.803	5240.342	5230.428	
40	5180	5180.365	5179.792	5180.115	5180.419
	5190	5190.356	5189.794	5200.289	5190.429
	5200	5200.364	5199.785	5200.287	5200.420
	5210	5210.356	5299.796	5210.343	5210.421
	5220	5220.377	5219.785	5220.333	5220.427
	5230	5230.355	5229.806	5230.320	5230.445
5240	5240.373	5239.785	5240.338	5240.417	
50	5180	5180.365	5179.793	5180.329	5180.392
	5190	5190.356	5189.785	5190.321	5190.421
	5200	5200.364	5199.793	5200.330	5200.446
	5210	5210.356	5209.785	5210.323	5210.430
	5220	5220.377	5219.806	5220.345	5220.420
	5230	5230.355	5229.784	5230.323	5230.448
5240	5240.373	5239.803	5240.342	5240.436	

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)
10.20	5180	5180.374	5179.796	5180.329	5180.555
	5190	5190.370	5199.790	5190.321	5200.429
	5200	5200.365	5199.818	5200.330	5200.454
	5210	5210.371	5209.796	5210.323	5210.432
	5220	5220.366	5219.811	5220.345	5220.446
	5230	5230.364	5229.804	5230.323	5230.439
	5240	5240.337	5239.813	5240.338	5240.447
12.00	5180	5180.360	5179.811	5180.328	5180.440
	5190	5190.356	5179.917	5190.330	5190.438
	5200	5200.364	5199.793	5200.322	5200.432
	5210	5210.357	5209.818	5300.337	5210.422
	5220	5220.377	5219.796	5220.324	5220.431
	5230	5230.355	5229.811	5230.344	5300.427
	5240	5240.373	5239.805	5240.324	5240.433
13.80	5180	5180.374	5179.802	5180.317	5180.419
	5190	5190.370	5189.799	5190.329	5190.429
	5200	5200.365	5199.794	5200.321	5200.419
	5210	5210.371	5209.800	5210.323	5210.421
	5220	5220.366	5219.795	5220.331	5220.427
	5230	5230.364	5229.793	5230.349	5230.450
	5240	5240.337	5239.767	5240.322	5240.417

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	5745	5745.350	5744.803	5745.363	5745.405
	5755	5755.360	5754.810	5755.370	5755.393
	5775	5775.381	5774.803	5775.389	5775.404
	5785	5785.357	5784.795	5785.365	5785.410
	5795	5795.353	5794.802	5795.362	5795.428
	5825	5825.351	5824.732	5825.368	5825.419
-20	5745	5745.347	5744.814	5745.357	5745.416
	5755	5755.362	5754.816	5755.382	5755.429
	5775	5775.361	5774.820	5775.365	5775.414
	5785	5785.364	5784.812	5785.374	5785.400
	5795	5795.374	5794.803	5795.373	5795.394
	5825	5825.356	5824.813	5825.386	5825.427
-10	5745	5745.357	5744.804	5745.373	5745.035
	5755	5755.383	5754.811	5755.375	5755.418
	5775	5775.379	5774.829	5775.380	5775.419
	5785	5785.363	5784.805	5785.372	5785.421
	5795	5795.352	5794.801	5795.364	5795.404
	5825	5825.287	5824.804	5825.376	5825.399
0	5745	5745.351	5744.793	5745.373	5745.406
	5755	5755.376	5754.809	5755.375	5755.431
	5775	5775.357	5774.809	5775.380	5775.427
	5785	5785.366	5784.812	5785.372	5785.410
	5795	5795.364	5794.825	5795.364	5795.399
	5825	5825.374	5824.805	5825.376	5825.333
10	5745	5745.351	5744.803	5745.362	5745.401
	5755	5755.376	5754.820	5755.369	5755.412
	5775	5775.357	5774.822	5775.363	5775.429
	5785	5785.366	5784.804	5785.355	5785.404
	5795	5795.364	5794.821	5795.363	5795.400
	5825	5825.374	5824.820	5825.295	5825.402
20	5745	5745.367	5744.828	5745.371	5745.405
	5755	5755.381	5754.800	5755.387	5755.423
	5775	5775.366	5774.824	5775.374	5775.403
	5785	5785.353	5784.824	5785.361	5785.429
	5795	5795.347	5794.815	5795.356	5795.421
	5825	5825.381	5824.831	5825.393	5825.429
30	5745	5745.357	5744.814	5745.356	5745.430
	5755	5755.364	5754.816	5755.379	5755.401
	5775	5775.381	5774.820	5775.382	5775.424
	5785	5785.357	5784.812	5785.364	5785.423
	5795	5795.353	5794.803	5795.382	5795.414
	5825	5825.356	5824.813	5825.383	5825.428
40	5745	5745.367	5744.798	5745.373	5745.399
	5755	5755.381	5754.823	5755.375	5755.431



	5775	5775.366	5774.805	5775.380	5775.427
	5785	5785.353	5784.814	5785.372	5785.410
	5795	5795.347	5794.812	5795.364	5795.399
	5825	5825.381	5824.823	5825.376	5825.333
50	5745	5745.367	5744.828	5745.373	5745.405
	5755	5755.361	5754.800	5755.386	5755.423
	5775	5775.366	5774.824	5775.374	5775.403
	5785	5785.353	5784.824	5785.361	5785.430
	5795	5795.347	5794.814	5795.356	5795.421
	5825	5825.381	5824.835	5825.393	5825.429

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)
10.20	5745	5745.346	5744.803	5745.362	5745.400
	5755	5755.362	5754.810	5755.379	5755.424
	5775	5775.361	5774.803	5775.382	5775.405
	5785	5785.364	5784.795	5785.364	5785.413
	5795	5795.375	5794.802	5795.383	5795.411
	5825	5825.356	5824.732	5825.383	5825.420
12.00	5745	5745.346	5744.814	5745.357	5745.416
	5755	5755.362	5754.816	5755.382	5755.429
	5775	5775.361	5774.820	5775.365	5775.414
	5785	5785.364	5784.812	5785.374	5785.400
	5795	5795.371	5794.803	5795.373	5795.394
	5825	5825.356	5824.813	5825.386	5825.427
13.80	5745	5745.367	5744.827	5745.373	5745.405
	5755	5755.381	5754.800	5755.387	5755.423
	5775	5775.366	5774.824	5775.374	5775.403
	5785	5785.353	5784.824	5785.361	5785.429
	5795	5795.347	5794.815	5795.356	5795.421
	5825	5825.381	5824.831	5825.393	5825.429

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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