TEST REPORT

Applicant:	Shenzhen suqiao computer technology co., Ltd
Address of Applicant:	503C-4, World Trade Plaza podium, No.9 Fuhong Road, Funan Community, Futian Street, Shenzhen
Manufacturer/Factory:	Shenzhen suqiao computer technology co., Ltd
Address of Manufacturer	503C-4, World Trade Plaza podium, No.9 Fuhong Road, Funan Community, Futian Street, Shenzhen
Product Name:	Mini PC
Model No.:	Ren5000,Ren2000,Ren3000,Ren4000,Ren6000,Ren7000,Ren8000, Ren9000,Ren6,Ren7,Ren8,Ren9,Ren10,Ren11,Ren12,Ren13,Ren14, Ren15
Trade Mark:	N/A
FCC ID:	2BB5T-REN5000
Applicable standards:	FCC CFR Title 47 Part 15 Subpart E Section 15.407
Date of Test:	Jul.11, 2023-Jul.19, 2023
Date of report issued:	Aug.14, 2023
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

Shenzhen ETR Standard Technology Co., Ltd.

Address: No.103, No.10, Phase I, Zone 3, Xinxing Industrial Park, Xinhe, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

Compiled by:	Reviewed by:	Approved by:
Project Engineer	Project Manager	Authorized Signature

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Report Revision History		
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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	Qiao Li
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.*

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	±4.30dB	(1)
Radiated emissions 1GHz-18GHz	±4.35dB	(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:	Mini PC
Model No.:	Ren5000,Ren2000,Ren3000,Ren4000,Ren6000,Ren7000,Ren8000,Ren9000,Ren6,Ren7,Ren8,Ren9,Ren10,Ren11,Ren12,Ren13,Ren14,Ren15
Difference of model(s)	All the model are the same circuit and RF module, except the model names and colors
Test Model:	Ren5000
Hardware Version:	N/A
Software Version:	N/A
Sample(s) Status:	Engineer sample
Operation Frequency:	☒5180-5240MHz for 802.11a/n(HT20)/ac20; 5190-5230MHz for 802.11n(HT40)/ac40; 5210MHz for 802.11 ac80; ☒5745-5825 MHz for 802.11a/n(HT20)/ac20; 5755-5795 MHz for 802.11n(HT40)/ac40; 5775MHz for 802.11 ac80;
Channel numbers:	☒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 ; ☒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:	FPCB Antenna
Antenna gain:	2.36 dBi (Note: Antenna information is provided by applicant, Testing lab is not responsible for the accuracy of the information.)
Battery	N/A
Power supply:	DC 19V

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		
Highest channel	5240	5230	

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		
Highest channel	5825	5795	

2.2 Test mode

Transmitting mode	Keep the EUT in continuously transmitting mode(or with a duty cycle ≥ 98%)

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.

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
1	LED Screen	Dell	ZQT	N/A
2	Mouse	Dell	N/A	N/A
3	keyboard	Dell	N/A	N/A

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	RTL8852B_PCIE_MP_Package_ALPHA_v1.0.54
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	ESCI3	100605	2023.3.02	2024.3.01
2	Artificial power network	schwarabeck	NSLK8127	8127483	2023.3.02	2024.3.01
3	Artificial power network	ETS	3186/2NM	1132	2023.3.02	2024.3.01
4	10dB attenuator	HUBER+SUHNER	10dB	/	2023.3.02	2024.3.01
5	Cable 4	HUBER SUNNER	3M	/	2023.3.02	2024.3.01
6	Absorbing Clamp	schwarabeck	MDS21	D69250	2023.3.06	2024.3.05

Radiated Emission &RF Conducted test:

Item	Equipment name	Manufacturer	Model	Serial No.	Calibration date	Due date
1	EMI Test Receiver	Rohde&schwarz	ESCI7	101032	2023.3.02	2024.3.01
2	Broadband antenna	schwarabeck	VULB9168	1064	2022.3.11	2024.3.10
3	Horn antenna	schwarabeck	BBHA9120D	9120D-1145	2022.3.11	2024.3.10
4	Amplifier	EMtrace	RP01A	50117	2023.3.02	2024.3.01
5	Amplifier	Space-Dtronics	EWLAN0118G-P40	19113001	2023.3.02	2024.3.01
6	Spectrum analyzer	KEYSIGHT	N9020A	MY55370280	2023.3.02	2024.3.01
7	Power detector meter	MWRFtest	MW100-PSB	MW201020JYT	2022.11.09	2023.11.08
8	Signal generator	Agilent	N5182A	MY49060455	2022.11.09	2023.11.08
9	Spectrum analyzer	Rohde&schwarz	FSV40	102137	2023.3.02	2024.3.01
10	Amplifier	SKET	LNPA_1840-50	SK2019040302	2023.3.02	2024.3.01
11	Horn antenna	schwarabeck	BBHA 9170	946	2022.3.11	2024.3.10
12	Loop antenna	schwarabeck	FMZB 1519 B	1519	2022.3.11	2024.3.10
13	Cable 6	HUBER SUNNER	0.5M	/	2023.3.02	2024.3.01
14	Cable7	HUBER SUNNER	2.0M	/	2023.3.02	2024.3.01
15	Cable8	HUBER SUNNER	6.0M	/	2023.3.02	2024.3.01
16	Filter	Xin bo	XBLBQ-GTA29	210410-3-2	2023.3.06	2024.3.05

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
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.*	
E.U.T Antenna:	
The antennas are FPCB antenna, the best case gain of the antennas are 2.36 dBi, reference to the appendix II for details	

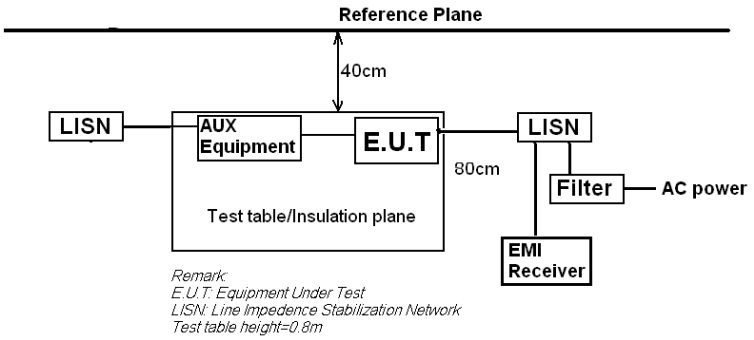
4.2 Conducted Emissions

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:



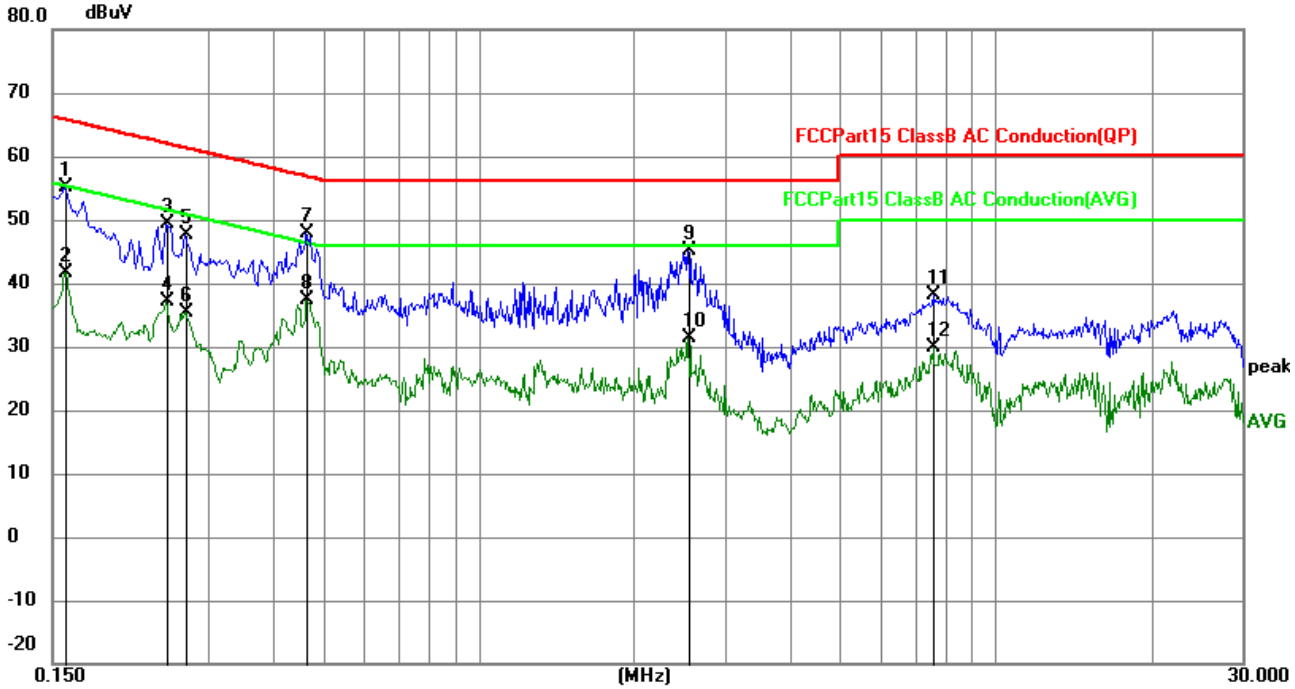
Test procedure:

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.:	25.9°C	Humid.:	50%	Press.:	1012mbar
Test voltage:	AC 120V, 60Hz					
Test results:	Pass					

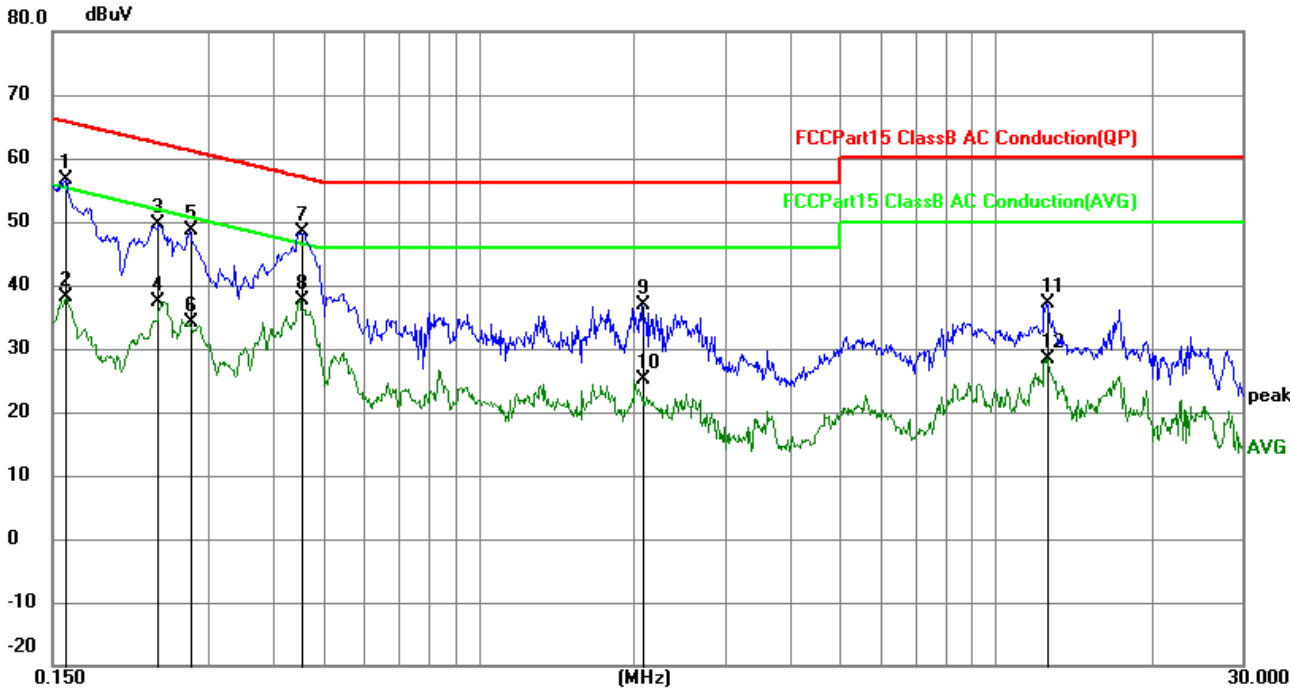
Remark:
1. Both high voltage and low voltage have been tested, and the report only shows the worst case data with AC 120V/60Hz.
2. All mode have been tested, the report only shows the worst mode (802.11 ac20 5180MHz) data.

Measurement data
Line:



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1590	45.38	9.80	55.18	65.52	-10.34	QP
2	0.1590	31.76	9.80	41.56	55.52	-13.96	AVG
3	0.2489	39.51	9.83	49.34	61.79	-12.45	QP
4	0.2489	27.18	9.83	37.01	51.79	-14.78	AVG
5	0.2714	37.84	9.83	47.67	61.07	-13.40	QP
6	0.2714	25.47	9.83	35.30	51.07	-15.77	AVG
7	0.4650	37.93	9.93	47.86	56.60	-8.74	QP
8	0.4650	27.42	9.93	37.35	46.60	-9.25	AVG
9	2.5485	35.19	9.85	45.04	56.00	-10.96	QP
10	2.5485	21.60	9.85	31.45	46.00	-14.55	AVG
11	7.5705	28.20	9.84	38.04	60.00	-21.96	QP
12	7.5705	19.95	9.84	29.79	50.00	-20.21	AVG

Neutral:

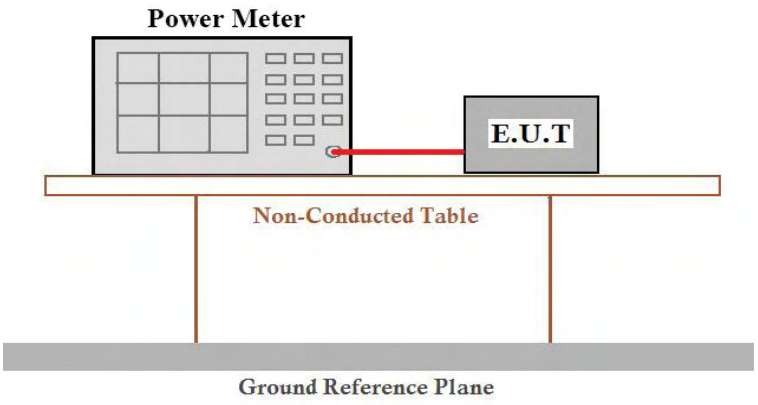


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1590	46.78	9.80	56.58	65.52	-8.94	QP
2	0.1590	28.37	9.80	38.17	55.52	-17.35	AVG
3	0.2403	39.83	9.82	49.65	62.09	-12.44	QP
4	0.2403	27.46	9.82	37.28	52.09	-14.81	AVG
5	0.2760	38.90	9.84	48.74	60.94	-12.20	QP
6	0.2760	24.38	9.84	34.22	50.94	-16.72	AVG
7	0.4560	38.44	9.93	48.37	56.77	-8.40	QP
8	0.4560	27.63	9.93	37.56	46.77	-9.21	AVG
9	2.0714	27.01	9.85	36.86	56.00	-19.14	QP
10	2.0714	15.32	9.85	25.17	46.00	-20.83	AVG
11	12.5295	27.41	9.80	37.21	60.00	-22.79	QP
12	12.5295	18.62	9.80	28.42	50.00	-21.58	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. Final Level =Receiver Read level + LISN Factor + Cable Loss
4. 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 Conducted Peak Output Power

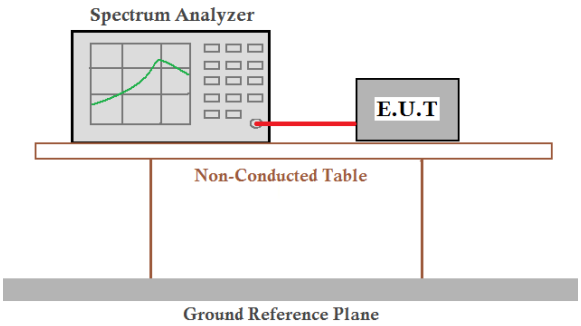
Test Requirement:	FCC Part15 E Section 15.407 (a)(1)/(a)(3)	
Test Method:	ANSI C63.10:2013 and KDB 789033 D02 General U-NII Test Procedures New Rules v02r01	
Limit:	5150-5250MHz : 250mW 5725~5850MHz : 1W	
Test setup:		
Test Instruments:	Refer to section 3.0 for details	
Test mode:	Refer to section 2.2 for details	
Test environment:	Temp.: 23.4°C	Humid.: 54%RH
Test voltage:	DC 19V	
Test results:	Pass	

Measurement Result

Test Channel	Frequency (MHz)	Maximum output power (dBm)	LIMIT dBm	Result
TX 802.11a Mode				
CH36	5180	13.34	23.98	Pass
CH40	5200	13.24	23.98	Pass
CH48	5240	12.81	23.98	Pass
TX 802.11 n20 Mode				
CH36	5180	13.46	23.98	Pass
CH40	5200	13.12	23.98	Pass
CH48	5240	12.82	23.98	Pass
TX 802.11 ac20 Mode				
CH36	5180	13.47	23.98	Pass
CH40	5200	13.19	23.98	Pass
CH48	5240	12.88	23.98	Pass
TX 802.11 n40 Mode				
CH38	5190	11.70	23.98	Pass
CH46	5230	11.28	23.98	Pass
TX 802.11 ac40 Mode				
CH38	5190	11.66	23.98	Pass
CH46	5230	11.25	23.98	Pass
TX 802.11 ac80 Mode				
CH42	5210	9.15	23.98	Pass

Test Channel	Frequency (MHz)	Maximum output power. (dBm)	LIMIT dBm	Result
TX 802.11a Mode				
CH149	5745	12.51	30	Pass
CH157	5785	12.44	30	Pass
CH165	5825	12.80	30	Pass
TX 802.11 n20 Mode				
CH149	5745	12.36	30	Pass
CH157	5785	12.49	30	Pass
CH165	5825	12.63	30	Pass
TX 802.11 ac20 Mode				
CH149	5745	12.40	30	Pass
CH157	5785	12.48	30	Pass
CH165	5825	12.58	30	Pass
TX 802.11 n40 Mode				
CH151	5755	11.35	30	Pass
CH159	5795	11.38	30	Pass
TX 802.11 ac40 Mode				
CH151	5755	11.28	30	Pass
CH159	5795	11.35	30	Pass
TX 802.11 ac80 Mode				
CH155	5775	9.71	30	Pass

4.4 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.: 23.4°C	Humid.: 54%RH
Test voltage:	DC 19V	
Test results:	Pass	

Measurement Result

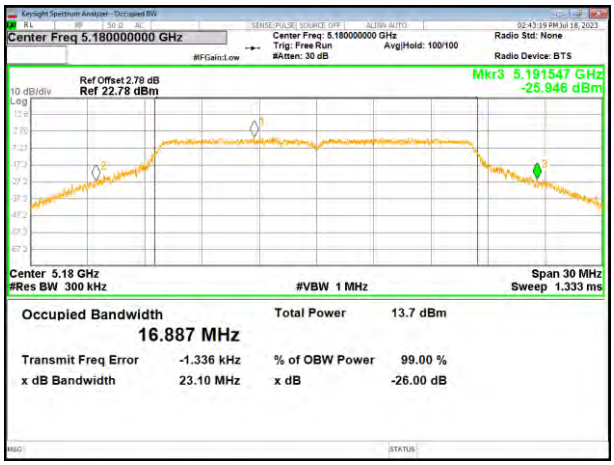
5180-5240MHz

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	23.10	23.74	23.82	43.74	44.05	--	Pass
Middle	23.68	23.16	24.45	--	--	81.61	
Highest	23.42	23.66	23.86	42.48	44.26	--	

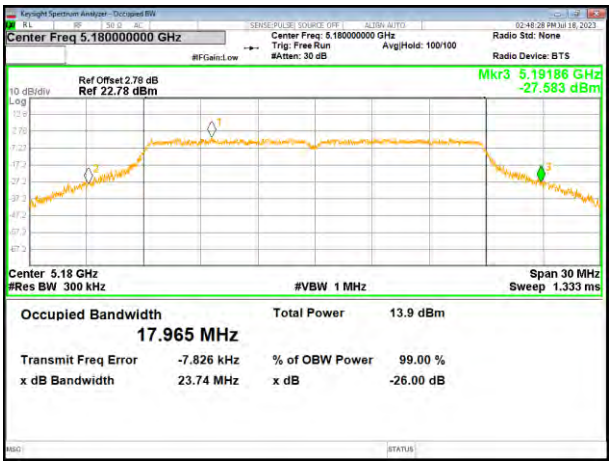
Test CH	99% Occupy Bandwidth (MHz)						Result
	802.11a	802.11n (HT20)	802.11ac (HT20)	802.11n (HT40)	802.11ac (HT40)	802.11ac (HT80)	
Lowest	16.887	17.965	18.017	36.278	36.277	--	Pass
Middle	16.887	17.939	18.002	--	--	75.017	
Highest	16.863	17.983	18.002	36.250	36.253	--	

Test plot

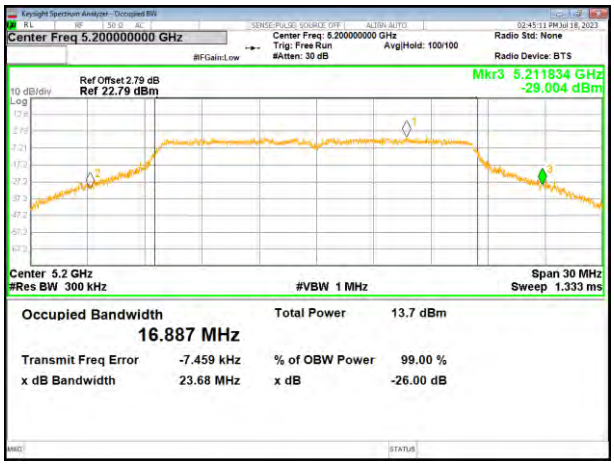
(802.11a) plot on channel 36



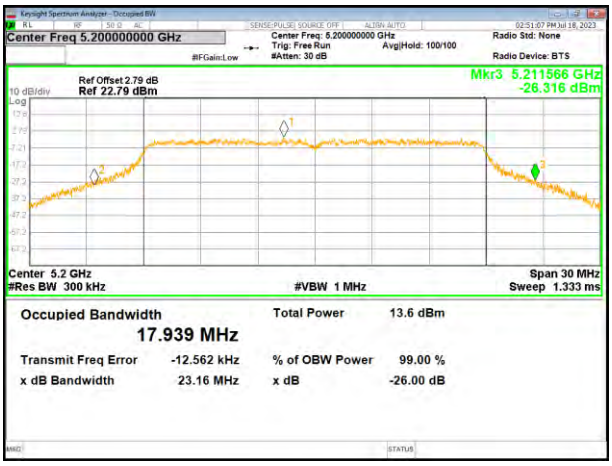
(802.11 n20) plot on channel 36



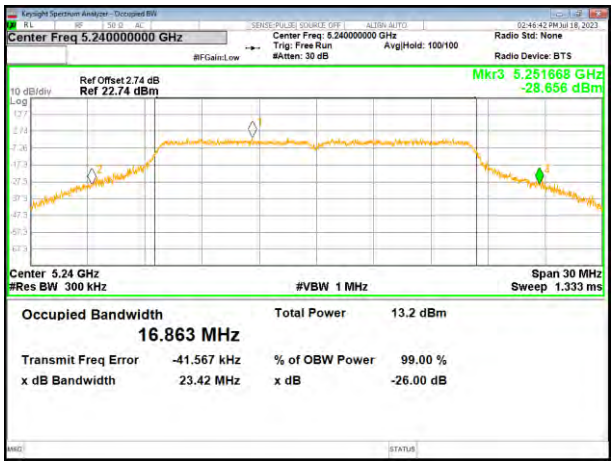
(802.11a) plot on channel 40



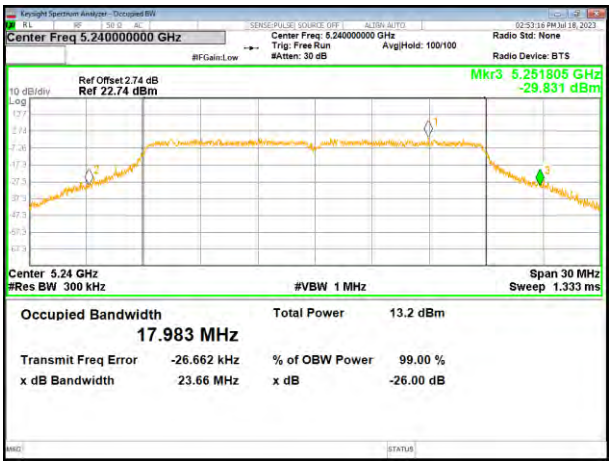
(802.11 n20) plot on channel 40



(802.11a) plot on channel 48

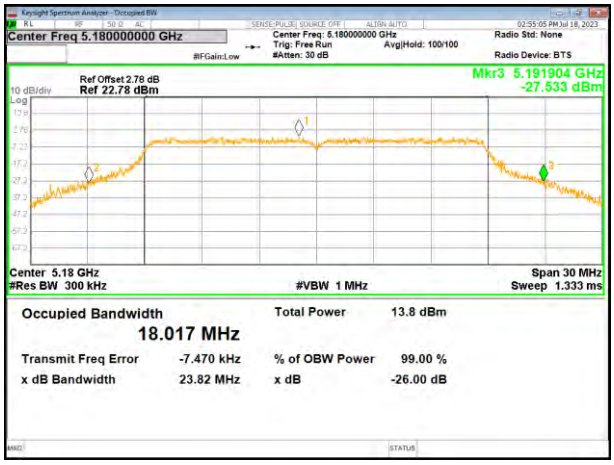


(802.11 n20) plot on channel 48

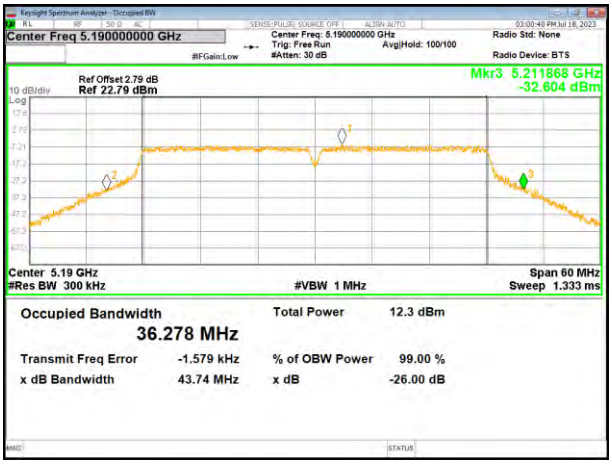


Test plot

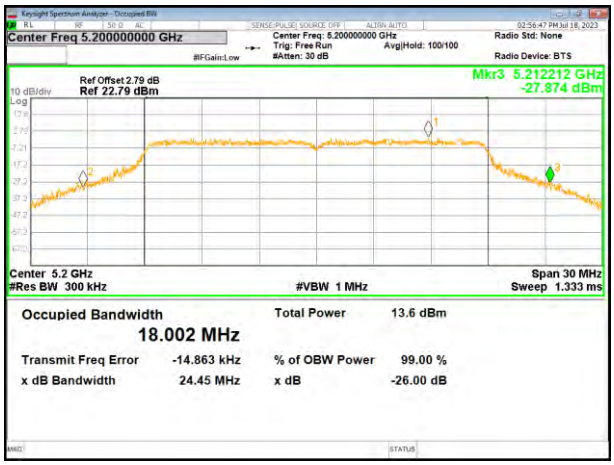
(802.11ac20) plot on channel 36



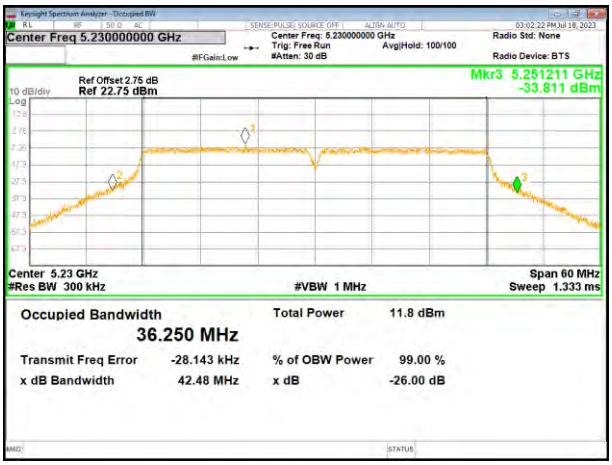
(802.11 n40) plot on channel 38



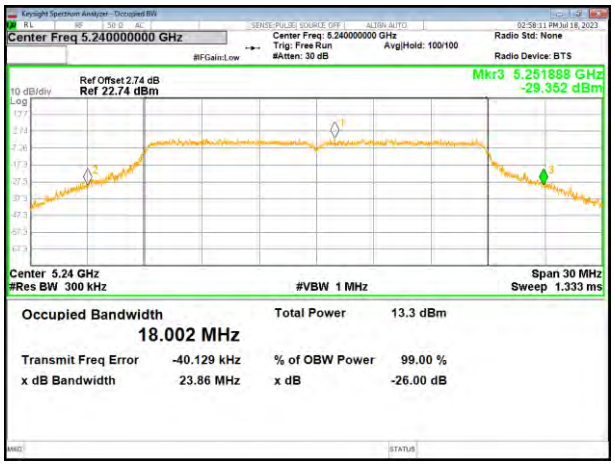
(802.11ac20) plot on channel 40



(802.11 n40) plot on channel 46

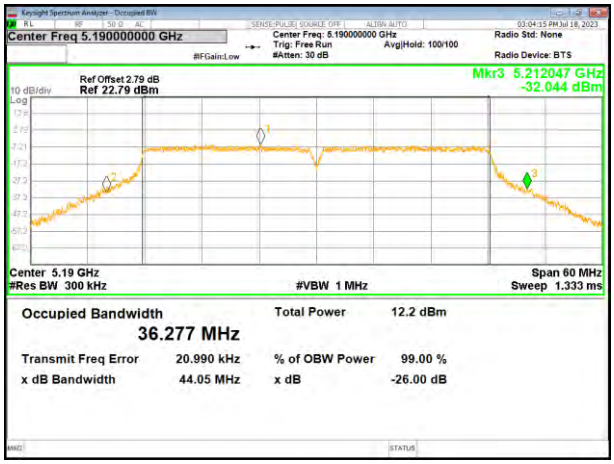


(802.11ac20) plot on channel 48

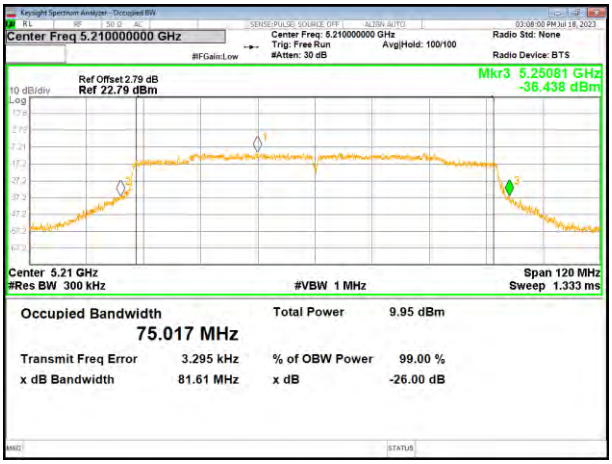


Test plot

(802.11ac40) plot on channel 38



(802.11ac80) plot on channel 42



(802.11ac40) plot on channel 46

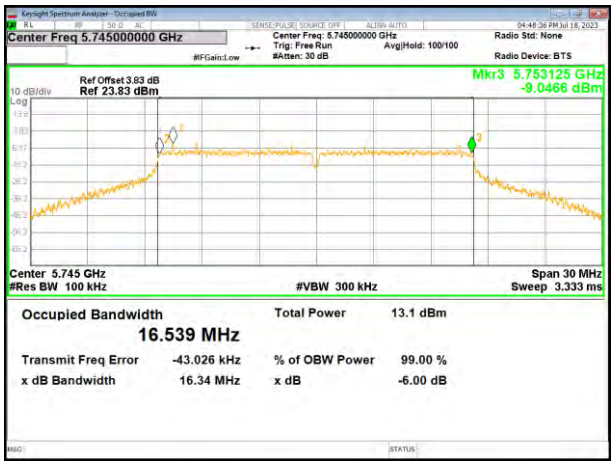
5745-5825MHz

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	16.34	17.56	17.58	36.29	36.31	--	>500	Pass
Middle	16.34	17.58	17.58	--	--	75.10		
Highest	16.33	17.56	17.52	36.31	36.29	--		

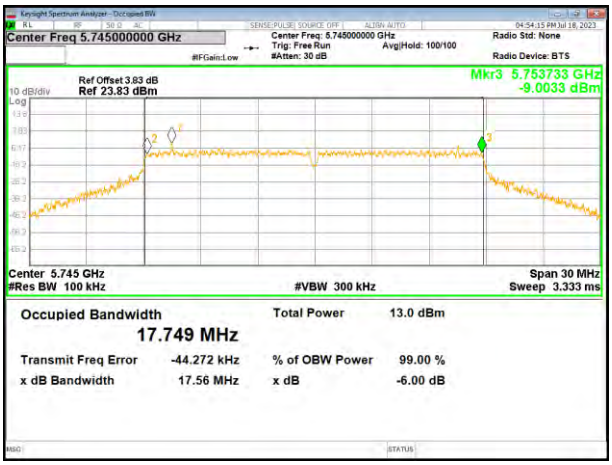
Remark: “---“is not applicable

Test plot

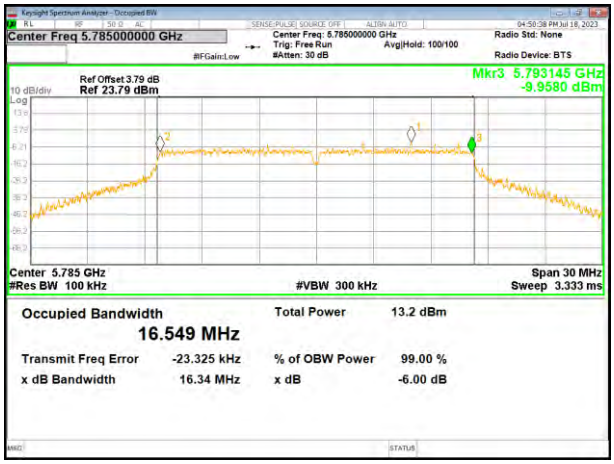
(802.11a) plot on channel 149



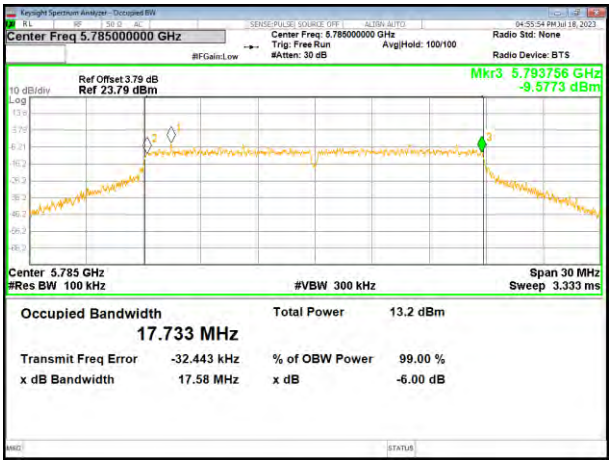
(802.11 n20) plot on channel 149



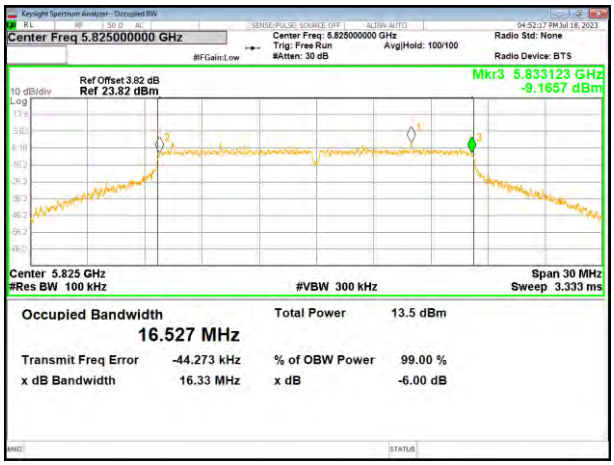
(802.11a) plot on channel 157



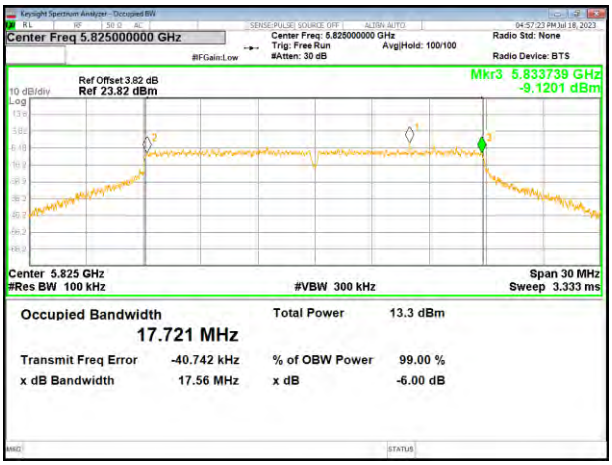
(802.11 n20) plot on channel 157



(802.11a) plot on channel 165

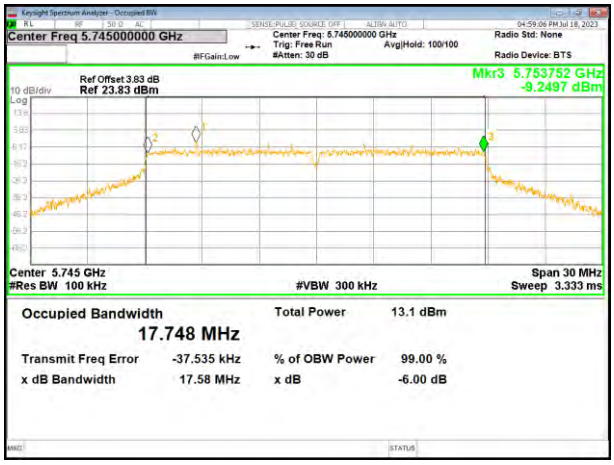


(802.11 n20) plot on channel 165

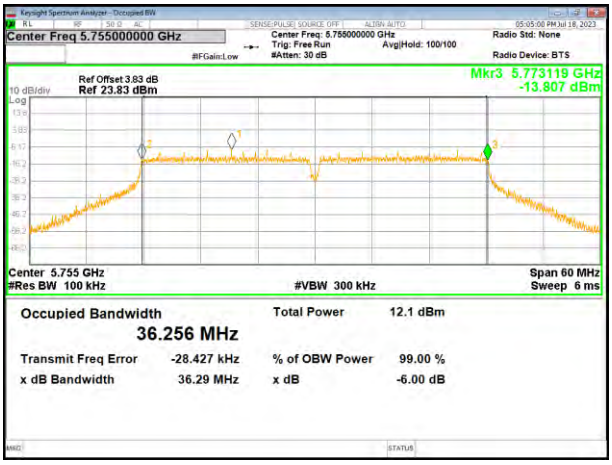


Test plot

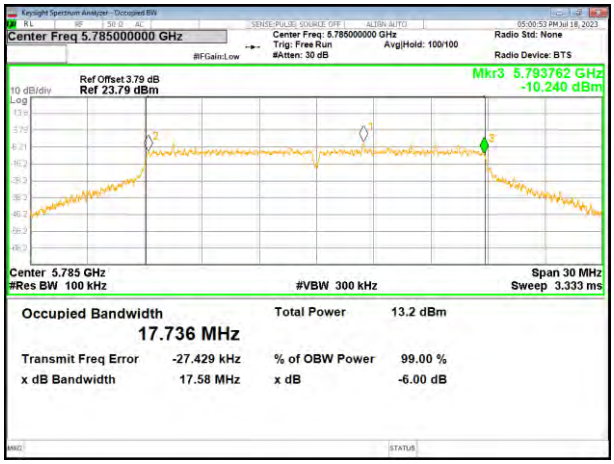
(802.11ac20) plot on channel 149



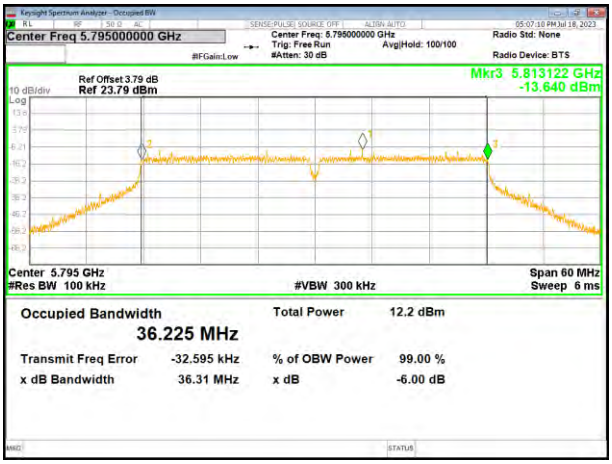
(802.11 n40) plot on channel 151



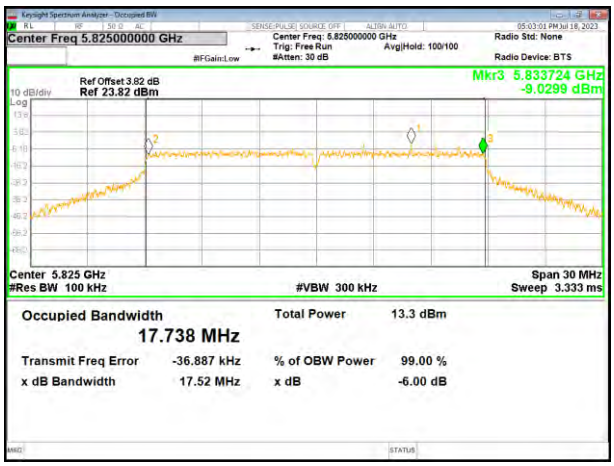
(802.11ac20) plot on channel 157



(802.11 n40) plot on channel 159

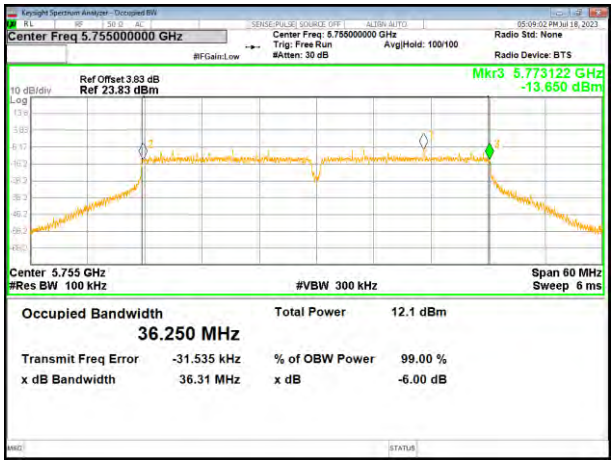


(802.11ac20) plot on channel 165

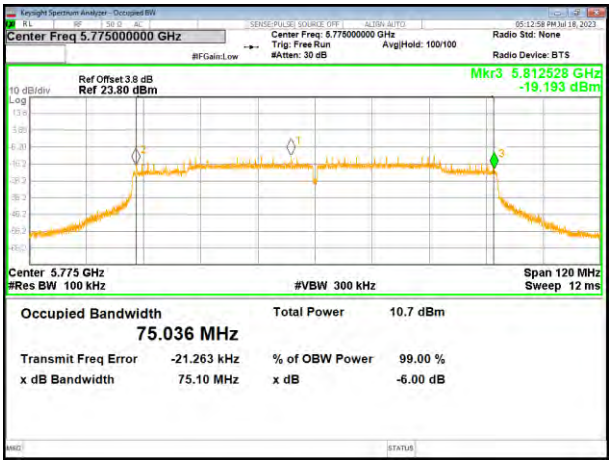


Test plot

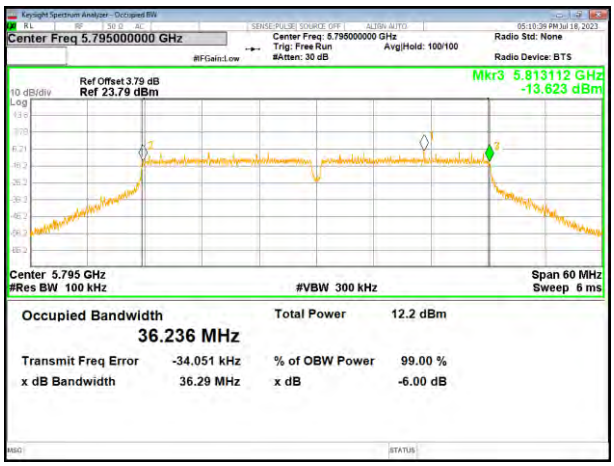
(802.11 ac40) plot on channel 151



(802.11 ac80) plot on channel 155



(802.11 ac40) plot on channel 159

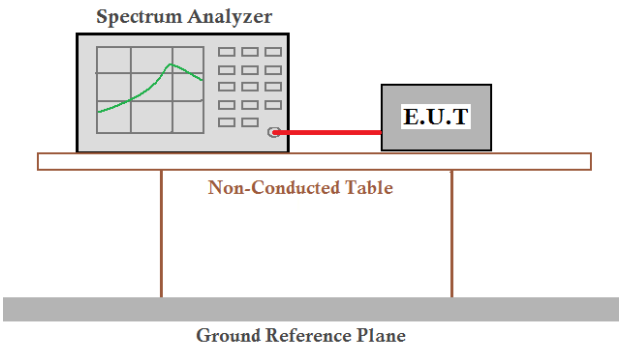


4.5 Power Spectral Density

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:



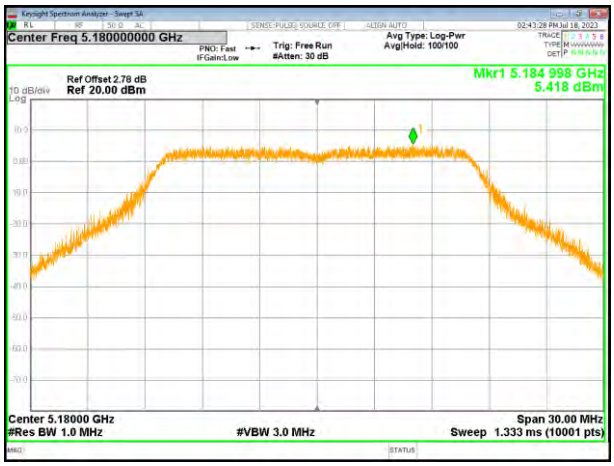
Test Instruments:	Refer to section 3.0 for details	
Test mode:	Refer to section 2.2 for details	
Test environment:	Temp.: 23.4°C	Humid.: 54%RH
Test voltage:	DC 19V	
Test results:	Pass	

Measurement Result

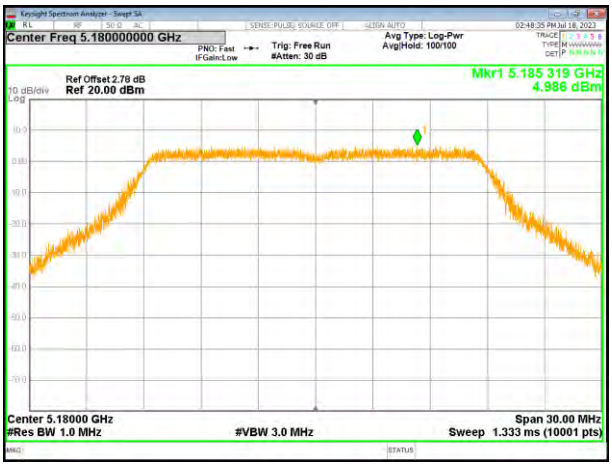
5180-5240MHz

Mode	Frequency	Measured Power Density (dBm/MHz)	Limit (dBm/MHz)
802.11 a	5180 MHz	5.418	11
	5200 MHz	4.888	11
	5240 MHz	4.677	11
802.11 n20	5180 MHz	4.986	11
	5200 MHz	4.432	11
	5240 MHz	4.179	11
802.11 ac20	5180 MHz	4.803	11
	5200 MHz	4.639	11
	5240 MHz	4.913	11
802.11 n40	5190 MHz	0.343	11
	5230 MHz	0.376	11
802.11 ac40	5190 MHz	0.286	11
	5230 MHz	-0.031	11
802.11 ac80	5210 MHz	-4.236	11

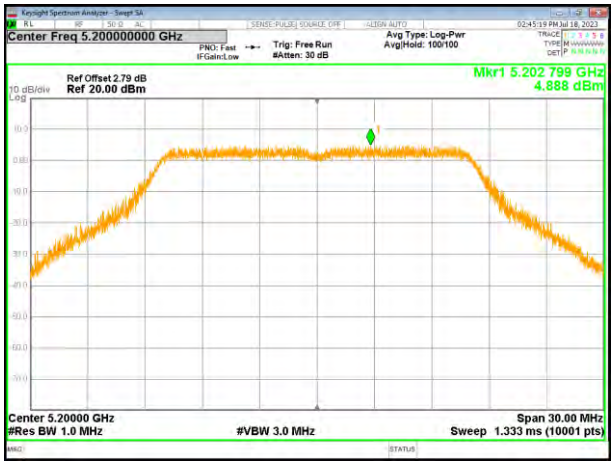
(802.11a) PSD plot on channel 36



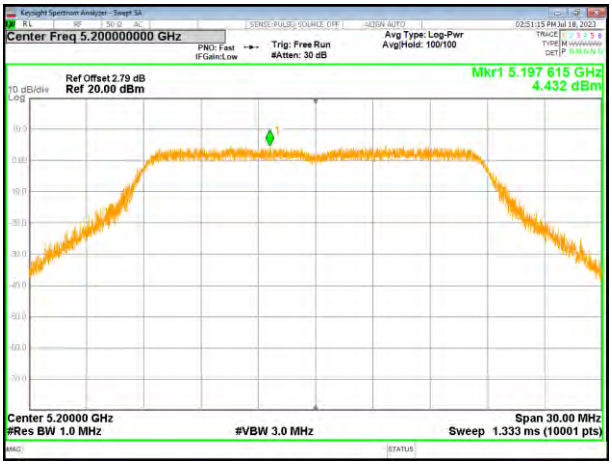
(802.11n20) PSD plot on channel 36



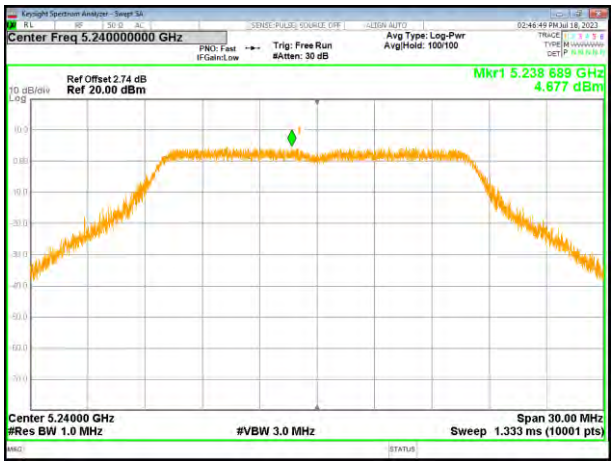
(802.11a) PSD plot on channel 40



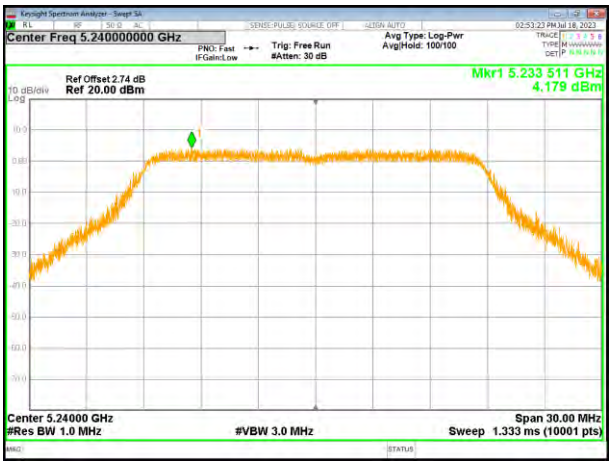
(802.11n20) PSD plot on channel 40



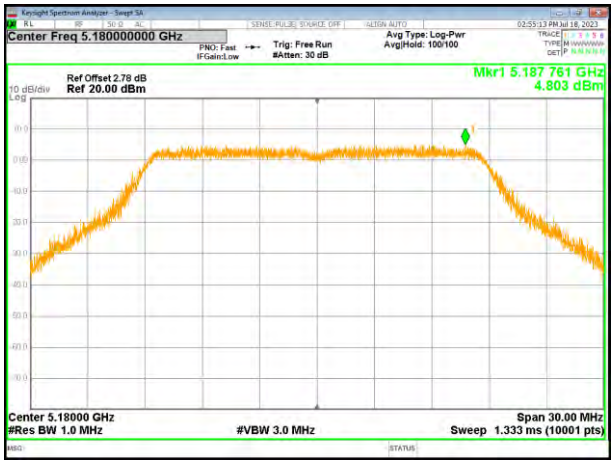
(802.11a) PSD plot on channel 48



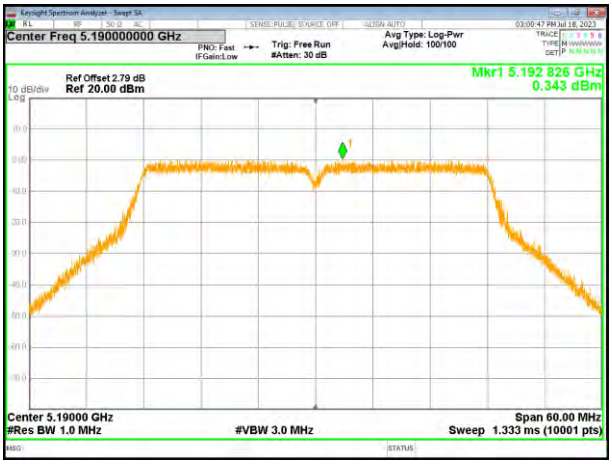
(802.11n20) PSD plot on channel 48



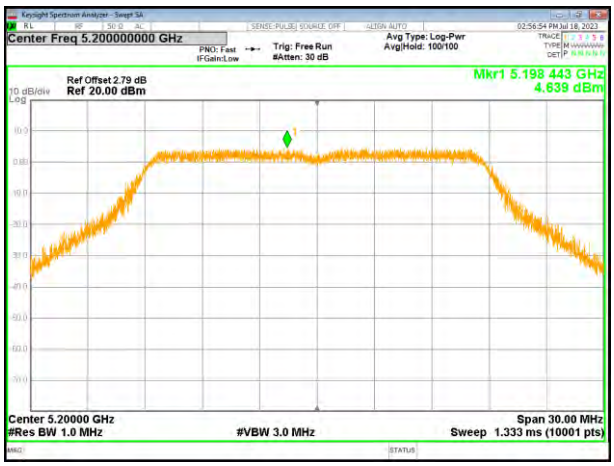
(802.11ac20) PSD plot on channel 36



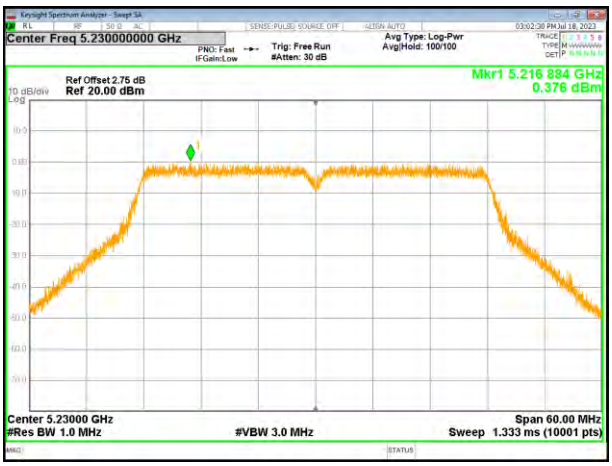
(802.11n40) PSD plot on channel 38



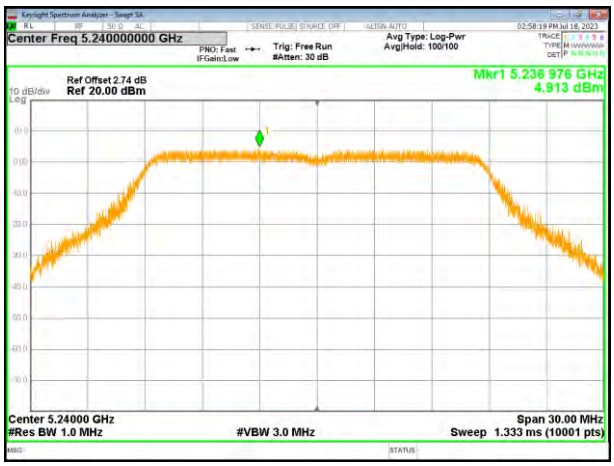
(802.11ac20) PSD plot on channel 40



(802.11n40) PSD plot on channel 46

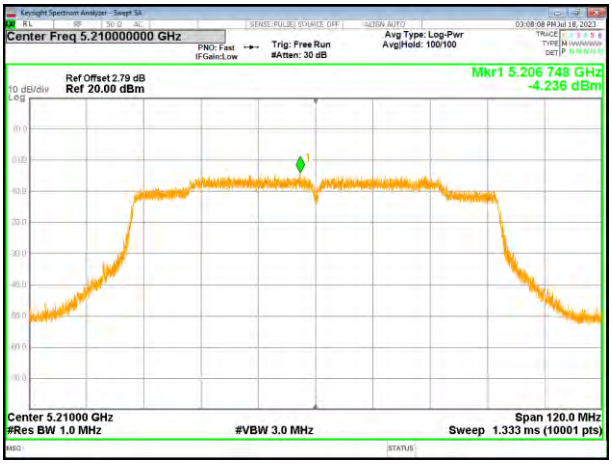


(802.11ac20) PSD plot on channel 48



(802.11ac40) PSD plot on channel 38

(802.11ac80) PSD plot on channel 42

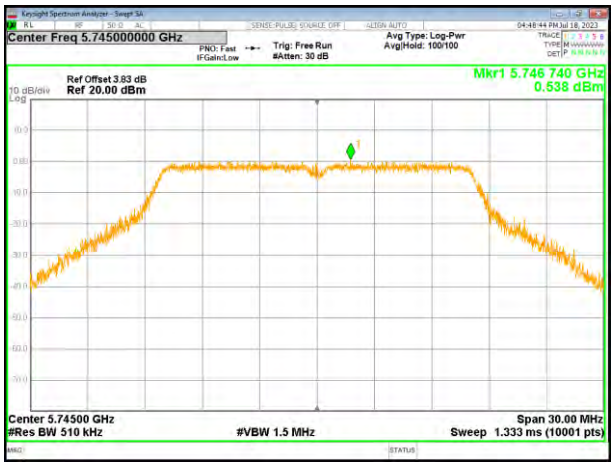


(802.11ac40) PSD plot on channel 46

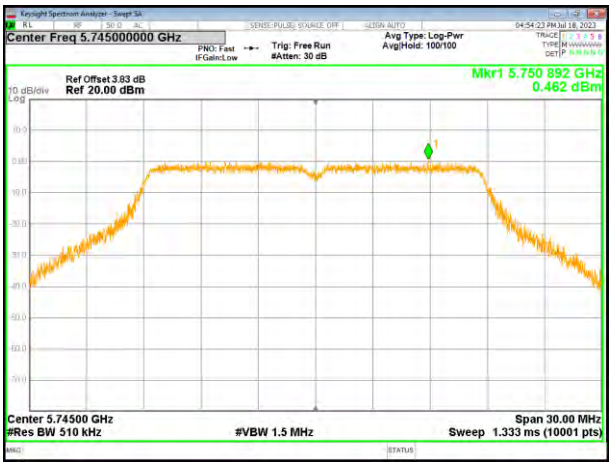
Mode	Frequency	Measured Power Density (dBm/510KHz)	Measured Power Density (dBm/500KHz)	Limit (dBm/MHz)
802.11 a	5745 MHz	0.538	0.452	30
	5785 MHz	1.065	0.979	30
	5825 MHz	1.110	1.024	30
802.11 n20	5745 MHz	0.462	0.376	30
	5785 MHz	0.477	0.391	30
	5825 MHz	1.266	1.180	30
802.11 ac20	5745 MHz	0.438	0.352	30
	5785 MHz	0.592	0.506	30
	5825 MHz	0.309	0.223	30
802.11 n40	5755 MHz	-3.573	-3.659	30
	5795 MHz	-3.301	-3.387	30
802.11 ac40	5755 MHz	-3.320	-3.406	30
	5795 MHz	-3.493	-3.579	30
802.11 AC80	5775 MHz	-8.269	-8.355	30

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

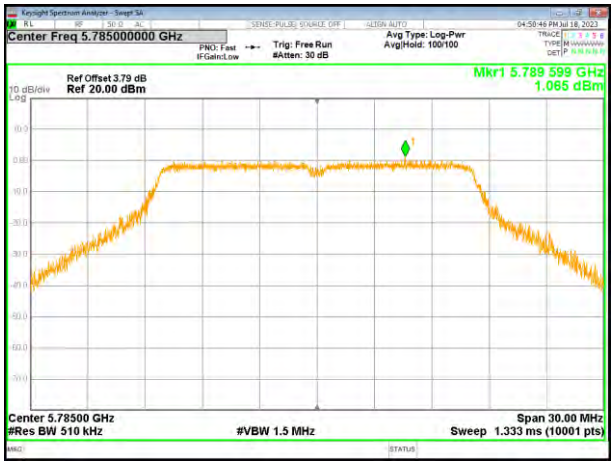
(802.11a) PSD plot on channel 149



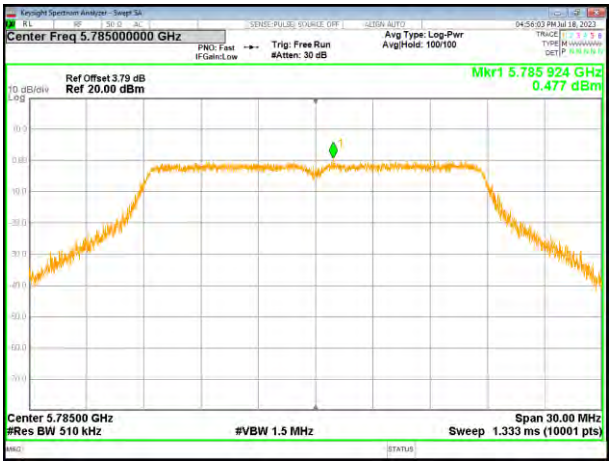
(802.11n20) PSD plot on channel 149



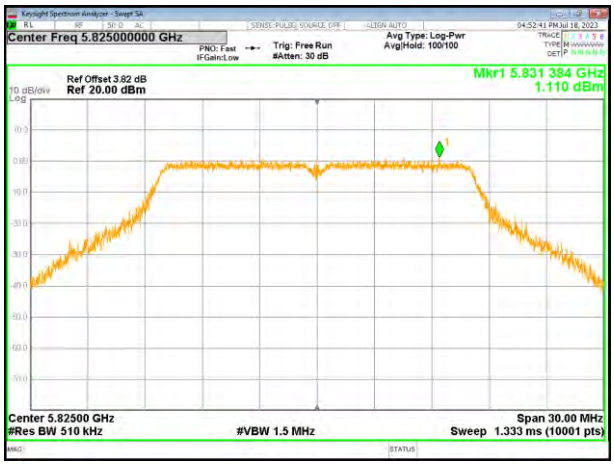
(802.11a) PSD plot on channel 157



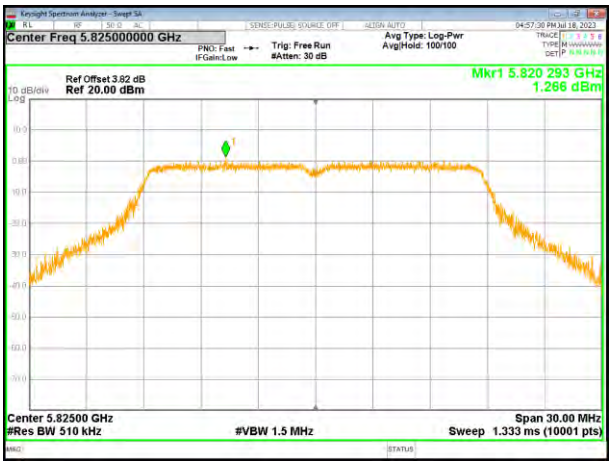
(802.11n20) PSD plot on channel 157



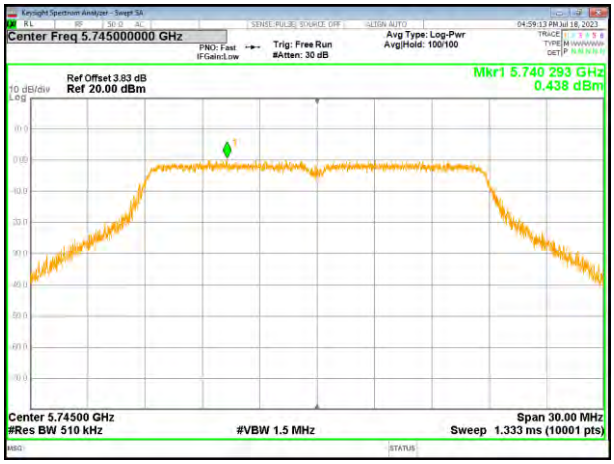
(802.11a) PSD plot on channel 165



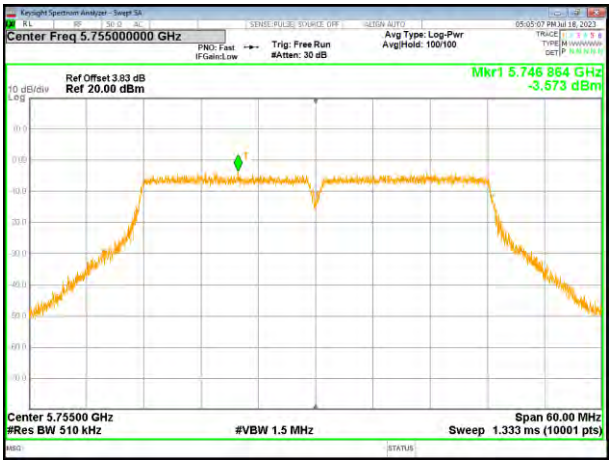
(802.11n20) PSD plot on channel 165



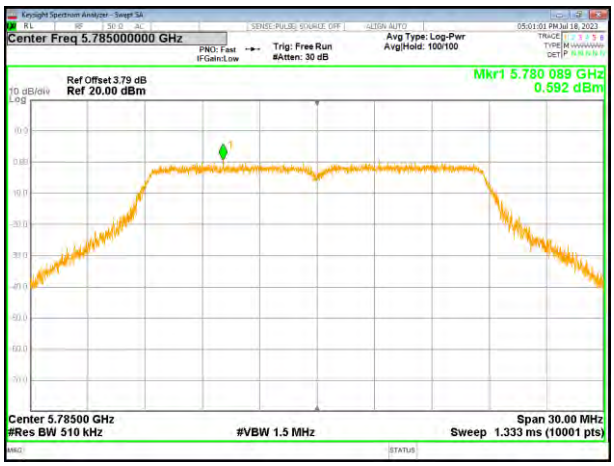
(802.11ac20) PSD plot on channel 149



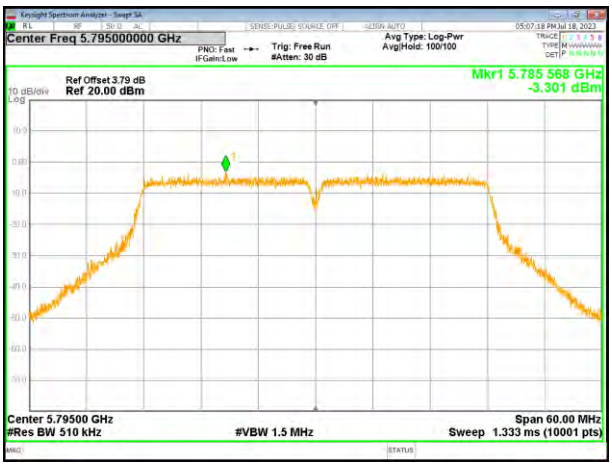
(802.11n40) PSD plot on channel 151



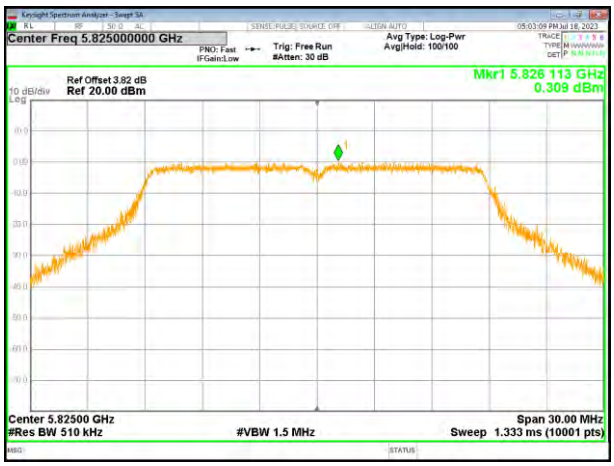
(802.11ac20) PSD plot on channel 157



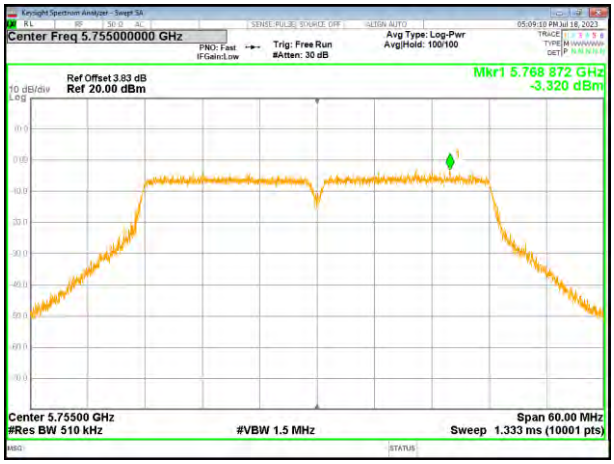
(802.11n40) PSD plot on channel 159



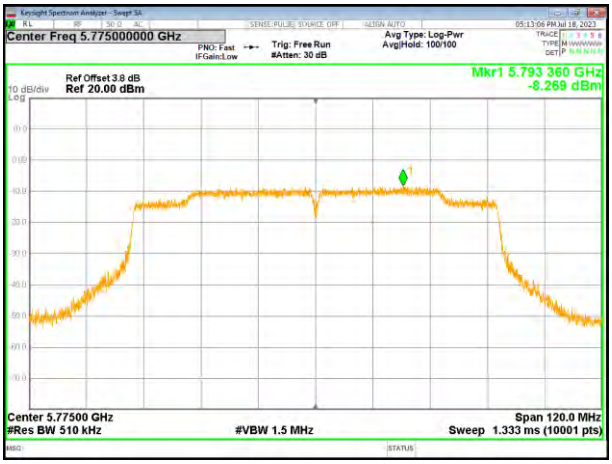
(802.11ac20) PSD plot on channel 165



(802.11ac40) PSD plot on channel 151



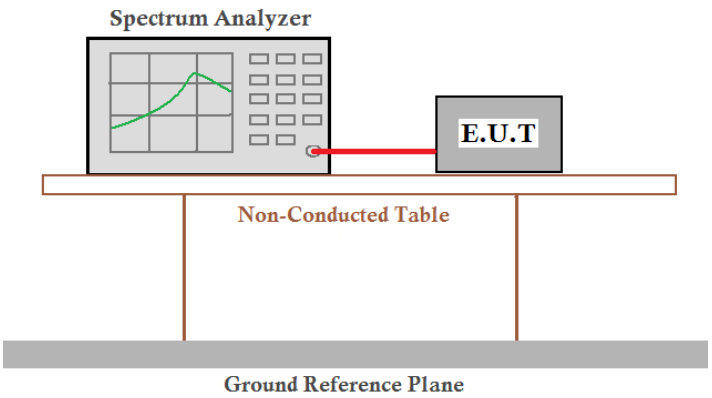
(802.11ac80) PSD plot on channel 155



(802.11ac40) PSD plot on channel 159

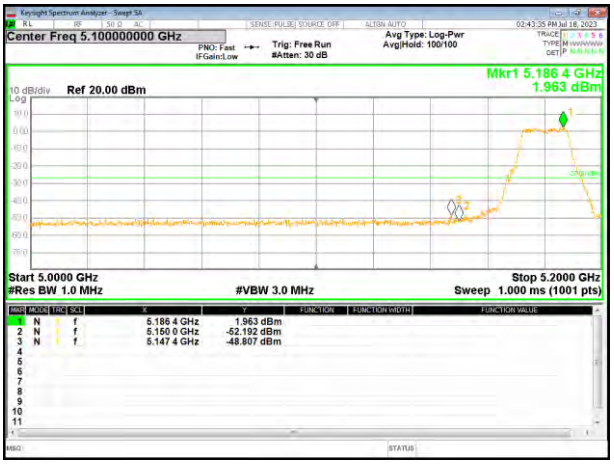
4.6 Band edge

4.6.1 Conducted test Method

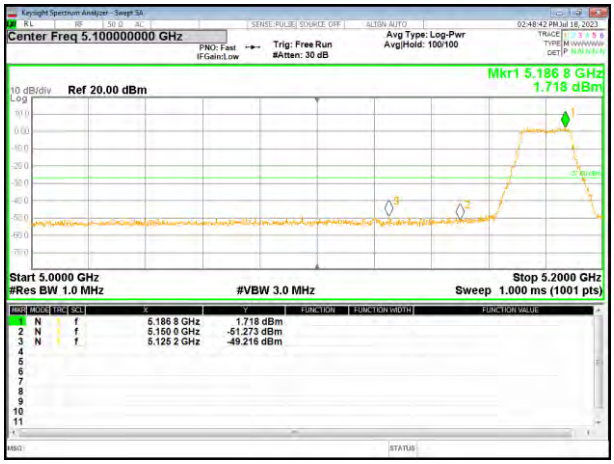
Test Requirement:	FCC Part15 C Section 15.209 and 15.205	
Test Method:	ANSI C63.10: 2013	
Limit:	All emissions shall be limited to a level of −27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below 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.: 23.4°C	Humid.: 54%RH
Test voltage:	DC 19V	
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

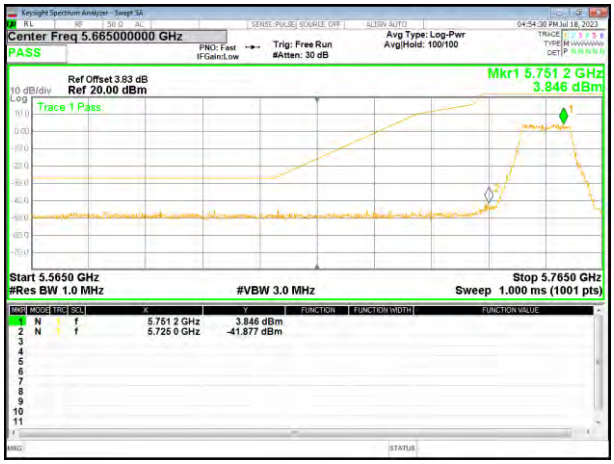
(802.11ac80) Band Edge

(802.11ac40) Band Edge, Right Side

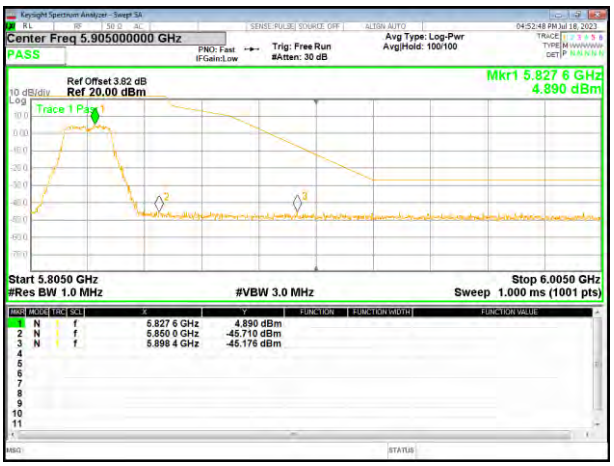
5.745~5.825 GHz

(802.11a) Band Edge, Left Side

(802.11n20) Band Edge, Left Side



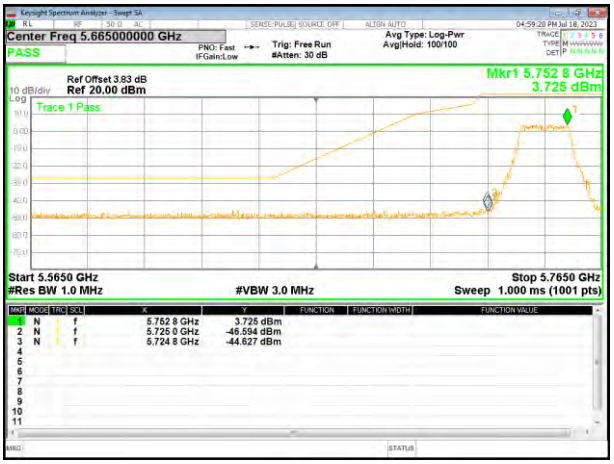
(802.11a) Band Edge, Right Side



(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

4.7 Spurious Emission

4.7.1 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

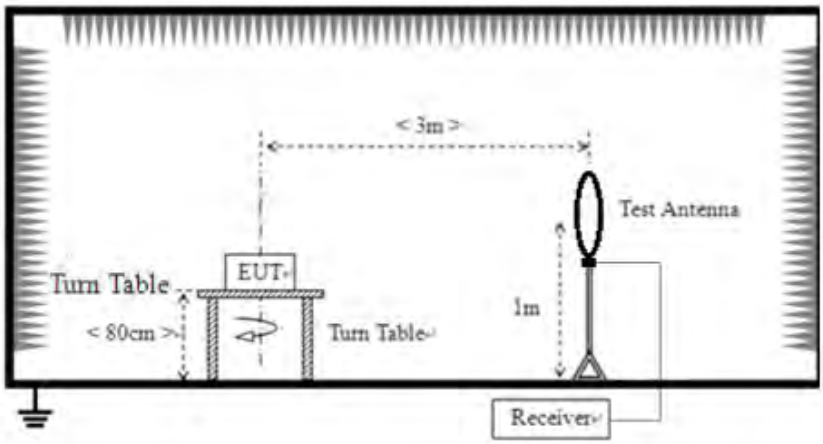
Limit:

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	

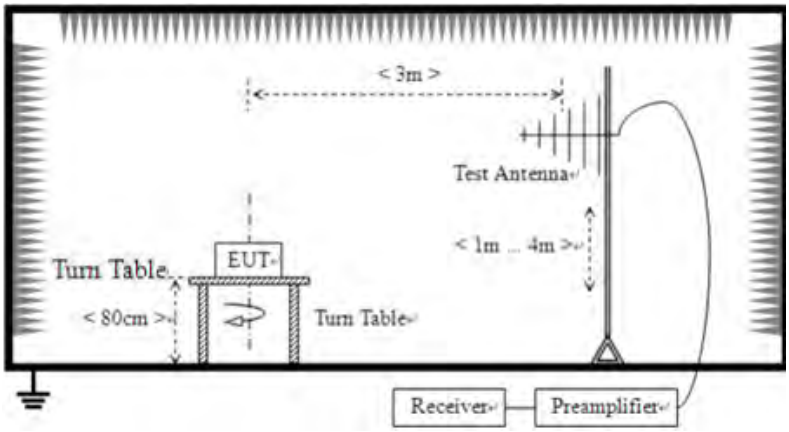
Frequency	Limit (dBm/MHz)	Remark
Above 1GHz	-27.0	Peak Value

Test setup:

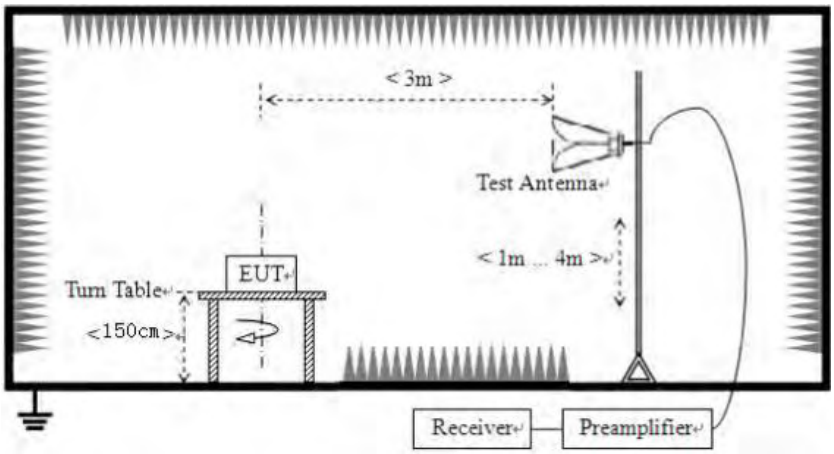
For radiated emissions from 9kHz to 30MHz



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

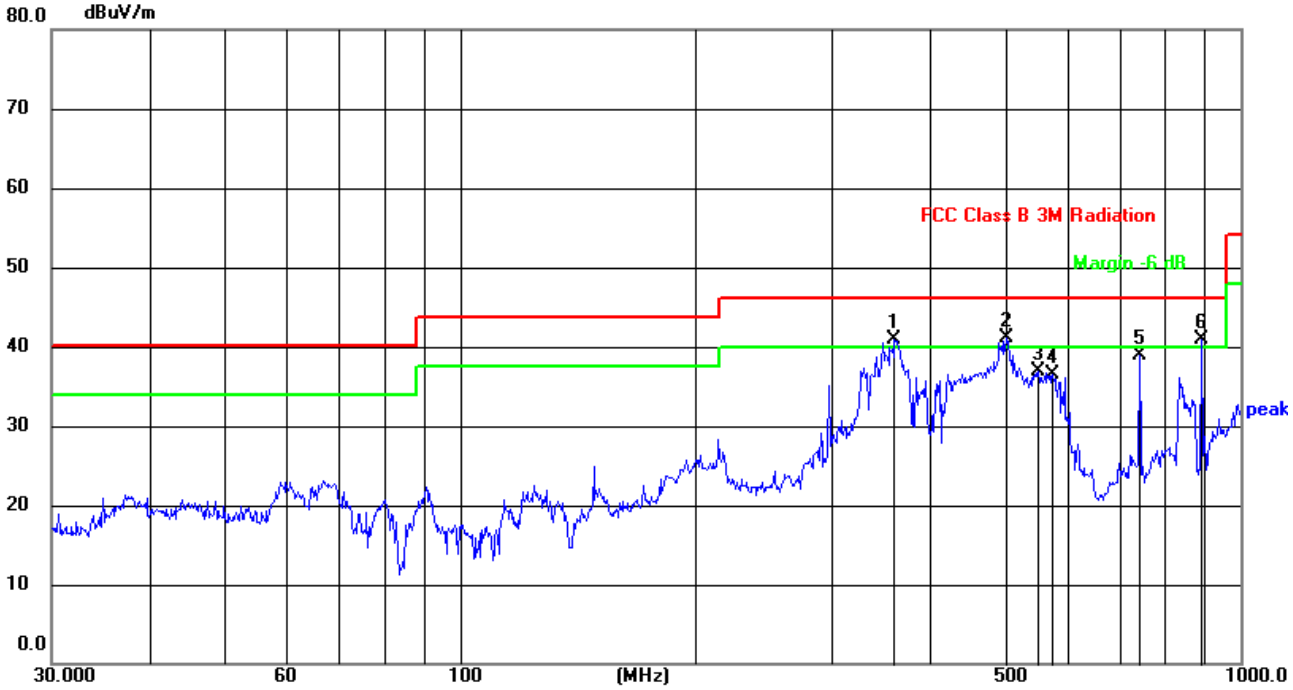
The emission from 9 kHz to 30MHz was pre-tested and found the result was 20dB lower than the limit, and according to 15.31(o) & RSS-Gen 6.13, the test result no need to reported.

Below 1GHz

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

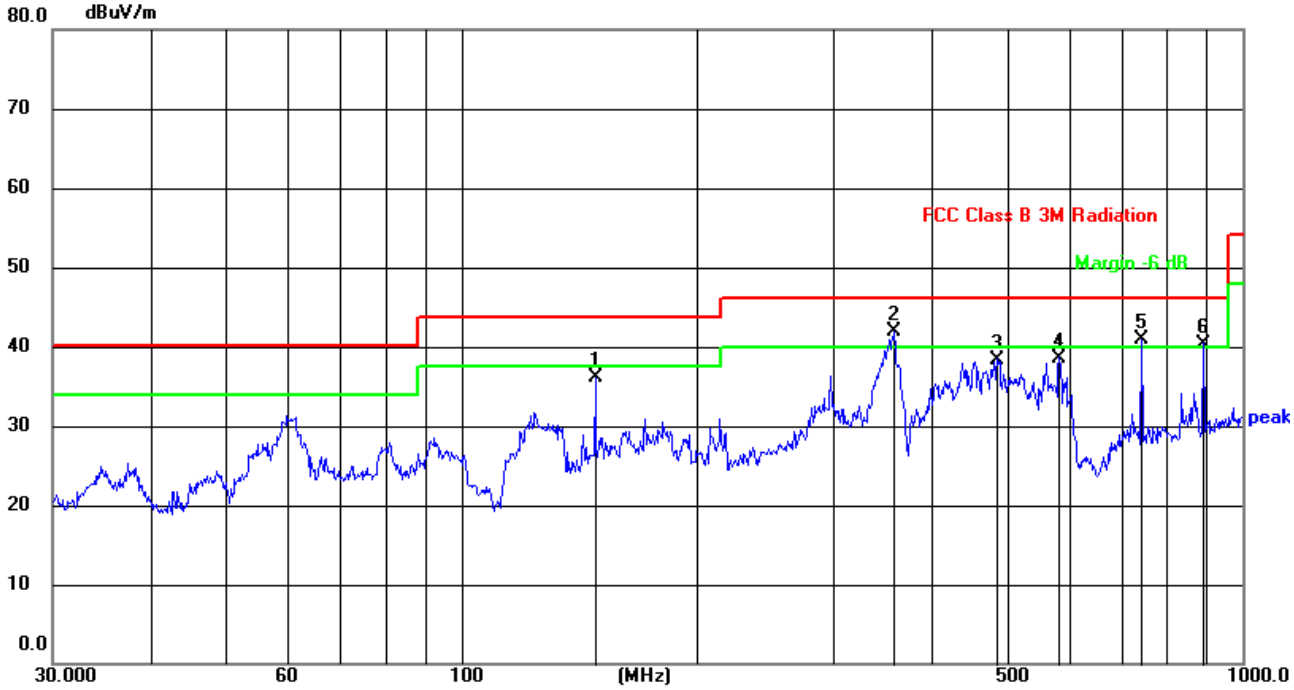
Temperature:	23.4℃	Relative Humidity:	54%
Pressure:	1010 hPa	Test Voltage :	DC 19V From adapter
Test Mode :	5.2G TX- 802.11ac20		

Horizontal:



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	360.4476	59.75	-18.89	40.86	46.00	-5.14	QP
2	501.1788	55.22	-14.17	41.05	46.00	-4.95	QP
3	550.9479	49.77	-12.82	36.95	46.00	-9.05	QP
4	574.6258	48.73	-12.31	36.42	46.00	-9.58	QP
5	742.2586	47.20	-8.27	38.93	46.00	-7.07	QP
6	890.7277	46.59	-5.60	40.99	46.00	-5.01	QP

Vertical:



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	148.4410	56.71	-20.68	36.03	43.50	-7.47	QP
2	357.9286	60.96	-19.02	41.94	46.00	-4.06	QP
3	485.6091	53.36	-14.96	38.40	46.00	-7.60	QP
4	582.7423	50.73	-12.13	38.60	46.00	-7.40	QP
5	742.2586	49.21	-8.27	40.94	46.00	-5.06	QP
6	890.7277	46.00	-5.60	40.40	46.00	-5.60	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 802.11n20 mode

Above 1GHz:

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

Temperature:	23.4℃	Relative Humidity:	54%
Pressure:	1010 hPa	Test Voltage :	DC 19V From adapter
Test Mode :	5.2G TX- 802.11ac20		

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
Low Channel:5180MHz									
V	10360.00	50.22	46.20	8.27	38.50	50.79	68.20	-17.41	PK
V	10360.00	40.33	46.20	8.27	38.50	40.90	54.00	-13.10	AV
V	15540.00	47.36	46.30	10.35	38.70	50.11	74.00	-23.89	PK
V	15540.00	37.41	46.30	10.35	38.70	40.16	54.00	-13.84	AV
V	20720.00	56.38	57.40	11.93	37.80	48.71	68.20	-19.49	PK
V	20720.00	46.43	57.40	11.93	37.80	38.76	54.00	-15.24	AV
V	25900.00	54.04	56.50	13.45	39.70	50.69	68.20	-17.51	PK
V	25900.00	43.69	56.50	13.45	39.70	40.34	54.00	-13.66	AV
H	10360.00	50.14	46.20	8.27	38.50	50.71	68.20	-17.49	PK
H	10360.00	38.97	46.20	8.27	38.50	39.54	54.00	-14.46	AV
H	15540.00	46.38	46.30	10.35	38.70	49.13	74.00	-24.87	PK
H	15540.00	34.99	46.30	10.35	38.70	37.74	54.00	-16.26	AV
H	20720.00	58.58	57.40	11.93	37.80	50.91	68.20	-17.29	PK
H	20720.00	47.33	57.40	11.93	37.80	39.66	54.00	-14.34	AV
H	25900.00	55.05	56.50	13.45	39.70	51.70	68.20	-16.50	PK
H	25900.00	43.73	56.50	13.45	39.70	40.38	54.00	-13.62	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	49.27	46.20	8.27	38.50	49.84	68.20	-18.36	PK
V	10400.00	40.09	46.20	8.27	38.50	40.66	54.00	-13.34	AV
V	15600.00	47.67	46.30	10.35	38.40	50.12	74.00	-23.88	PK
V	15600.00	38.92	46.30	10.35	38.40	41.37	54.00	-12.63	AV
V	20800.00	57.57	57.40	11.93	37.80	49.90	68.20	-18.30	PK
V	20800.00	47.95	57.40	11.93	37.80	40.28	54.00	-13.72	AV
V	26000.00	52.75	56.50	13.45	39.80	49.50	68.20	-18.70	PK
V	26000.00	44.93	56.50	13.45	39.80	41.68	54.00	-12.32	AV
H	10400.00	49.88	46.20	8.27	38.50	50.45	68.20	-17.75	PK
H	10400.00	40.35	46.20	8.27	38.50	40.92	54.00	-13.08	AV
H	15600.00	47.65	46.30	10.35	38.40	50.10	74.00	-23.90	PK
H	15600.00	38.92	46.30	10.35	38.40	41.37	54.00	-12.63	AV
H	20800.00	56.53	57.40	11.93	37.80	48.86	68.20	-19.34	PK
H	20800.00	45.86	57.40	11.93	37.80	38.19	54.00	-15.81	AV
H	26000.00	52.46	56.50	13.45	39.80	49.21	68.20	-18.99	PK
H	26000.00	44.14	56.50	13.45	39.80	40.89	54.00	-13.11	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	46.11	46.20	8.27	38.60	46.78	68.20	-21.42	PK
V	10480.00	36.19	46.20	8.27	38.60	36.86	54.00	-17.14	AV
V	15720.00	43.69	46.30	10.35	38.40	46.14	74.00	-27.86	PK
V	15720.00	33.93	46.30	10.35	38.40	36.38	54.00	-17.62	AV
V	20960.00	53.74	57.40	11.93	37.50	45.77	68.20	-22.43	PK
V	20960.00	45.22	57.40	11.93	37.50	37.25	54.00	-16.75	AV
V	26200.00	49.75	56.50	13.45	40.10	46.80	68.20	-21.40	PK
V	26200.00	40.39	56.50	13.45	40.10	37.44	54.00	-16.56	AV
H	10480.00	46.35	46.20	8.27	38.60	47.02	68.20	-21.18	PK
H	10480.00	36.19	46.20	8.27	38.60	36.86	54.00	-17.14	AV
H	15720.00	44.03	46.30	10.35	38.40	46.48	74.00	-27.52	PK
H	15720.00	34.03	46.30	10.35	38.40	36.48	54.00	-17.52	AV
H	20960.00	53.92	57.40	11.93	37.50	45.95	68.20	-22.25	PK
H	20960.00	45.12	57.40	11.93	37.50	37.15	54.00	-16.85	AV
H	26200.00	49.45	56.50	13.45	40.10	46.50	68.20	-21.70	PK
H	26200.00	39.77	56.50	13.45	40.10	36.82	54.00	-17.18	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:	23.4℃	Relative Humidity:	54%
Pressure:	1010 hPa	Test Voltage :	DC 19V From adapter
Test Mode :	5.8G TX- 802.11a		

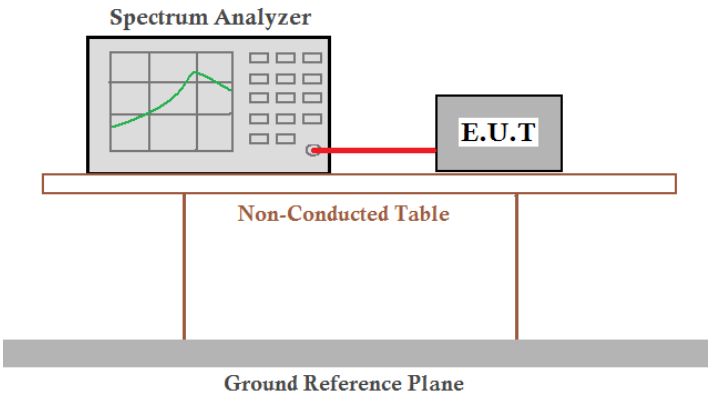
Polar (H/V)	Frequency (MHz)	Meter Readi g (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Typ
Low Channel:5745MHz									
V	11490.00	45.46	46.10	8.77	39.10	47.23	74.00	-26.77	PK
V	11490.00	37.62	46.10	8.77	39.10	39.39	54.00	-14.61	AV
V	17235.00	43.13	47.60	11.10	38.70	45.33	68.20	-22.87	PK
V	17235.00	36.12	47.60	11.10	38.70	38.32	54.00	-15.68	AV
V	22980.00	51.51	56.90	12.73	37.70	45.04	74.00	-28.96	PK
V	22980.00	43.83	56.90	12.73	37.70	37.36	54.00	-16.64	AV
V	28725.00	48.45	55.60	14.25	40.30	47.40	68.20	-20.80	PK
V	28725.00	40.28	55.60	14.25	40.30	39.23	54.00	-14.77	AV
H	11490.00	45.92	46.10	8.77	39.10	47.69	74.00	-26.31	PK
H	11490.00	37.46	46.10	8.77	39.10	39.23	54.00	-14.77	AV
H	17235.00	44.11	47.60	11.10	38.70	46.31	68.20	-21.89	PK
H	17235.00	36.52	47.60	11.10	38.70	38.72	54.00	-15.28	AV
H	22980.00	53.64	56.90	12.73	37.70	47.17	74.00	-26.83	PK
H	22980.00	43.61	56.90	12.73	37.70	37.14	54.00	-16.86	AV
H	28725.00	50.34	55.60	14.25	40.30	49.29	68.20	-18.91	PK
H	28725.00	40.88	55.60	14.25	40.30	39.83	54.00	-14.17	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	45.28	46.10	8.77	39.10	47.05	74.00	-26.95	PK
V	11570.00	37.45	46.10	8.77	39.10	39.22	54.00	-14.78	AV
V	17355.00	42.95	47.60	11.10	38.70	45.15	68.20	-23.05	PK
V	17355.00	35.93	47.60	11.10	38.70	38.13	54.00	-15.87	AV
V	23140.00	51.34	56.90	12.73	37.70	44.87	74.00	-29.13	PK
V	23140.00	43.64	56.90	12.73	37.70	37.17	54.00	-16.83	AV
V	28925.00	48.26	55.60	14.25	40.30	47.21	68.20	-20.99	PK
V	28925.00	40.10	55.60	14.25	40.30	39.05	54.00	-14.95	AV
H	11570.00	45.73	46.10	8.77	39.10	47.50	74.00	-26.50	PK
H	11570.00	37.26	46.10	8.77	39.10	39.03	54.00	-14.97	AV
H	17355.00	43.93	47.60	11.10	38.70	46.13	68.20	-22.07	PK
H	17355.00	36.33	47.60	11.10	38.70	38.53	54.00	-15.47	AV
H	23140.00	53.46	56.90	12.73	37.70	46.99	74.00	-27.01	PK
H	23140.00	43.43	56.90	12.73	37.70	36.96	54.00	-17.04	AV
H	28925.00	50.16	55.60	14.25	40.30	49.11	68.20	-19.09	PK
H	28925.00	40.70	55.60	14.25	40.30	39.65	54.00	-14.35	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	46.33	46.10	8.77	39.10	48.10	74.00	-25.90	PK
V	11650.00	37.61	46.10	8.77	39.10	39.38	54.00	-14.62	AV
V	17475.00	44.28	47.90	11.23	38.90	46.51	68.20	-21.69	PK
V	17475.00	36.91	47.90	11.23	38.90	39.14	54.00	-14.86	AV
V	23300.00	53.57	57.10	12.73	37.80	47.00	68.20	-21.20	PK
V	23300.00	44.54	57.10	12.73	37.80	37.97	54.00	-16.03	AV
V	29125.00	50.43	55.80	14.25	40.50	49.38	68.20	-18.82	PK
V	29125.00	41.90	55.80	14.25	40.50	40.85	54.00	-13.15	AV
H	11650.00	48.25	46.10	8.77	39.10	50.02	74.00	-23.98	PK
H	11650.00	39.92	46.10	8.77	39.10	41.69	54.00	-12.31	AV
H	17475.00	45.45	47.90	11.23	38.90	47.68	68.20	-20.52	PK
H	17475.00	38.14	47.90	11.23	38.90	40.37	54.00	-13.63	AV
H	23300.00	54.92	57.10	12.73	37.80	48.35	68.20	-19.85	PK
H	23300.00	45.94	57.10	12.73	37.80	39.37	54.00	-14.63	AV
H	29125.00	51.44	55.80	14.25	40.50	50.39	68.20	-17.81	PK
H	29125.00	42.61	55.80	14.25	40.50	41.56	54.00	-12.44	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.

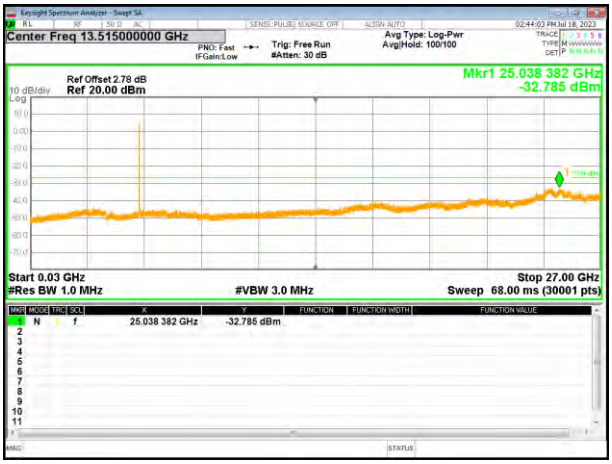
4.7.2 Conducted Emission Method

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.: 23.4°C	Humid.: 54%RH
Test voltage:	DC 19V	
Test results:	Pass	

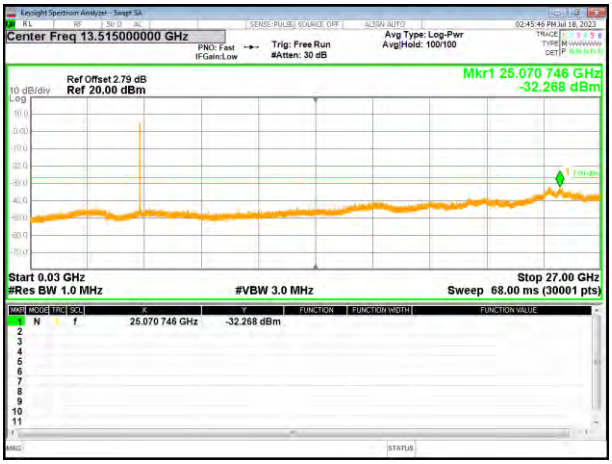
5180-5240MHz

Test Plot

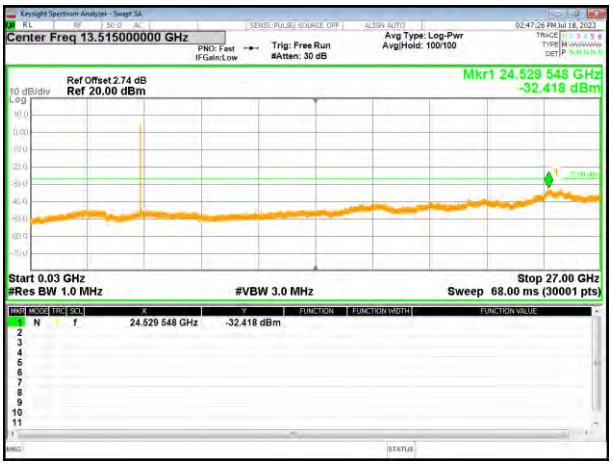
802.11a on channel 36



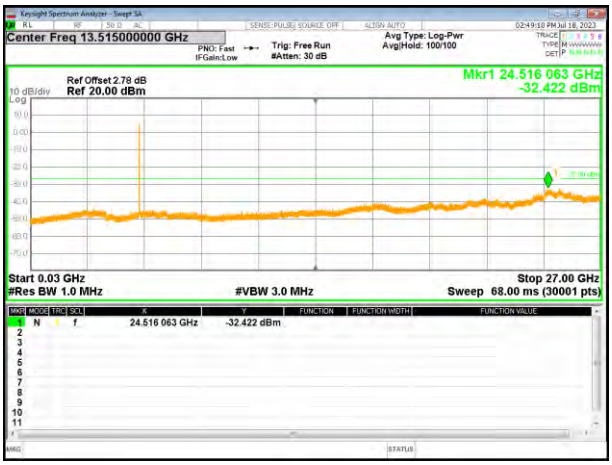
802.11a on channel 40



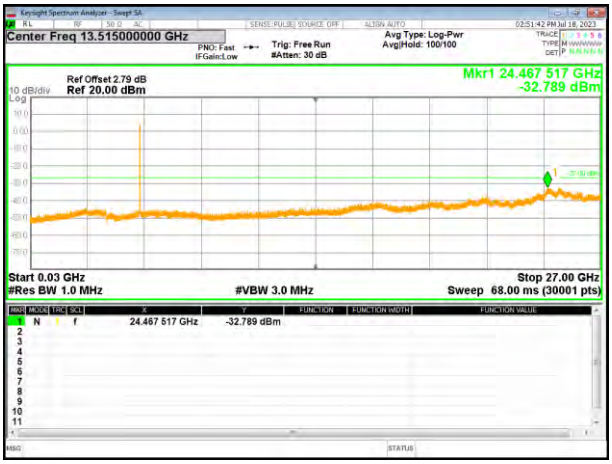
802.11a on channel 48



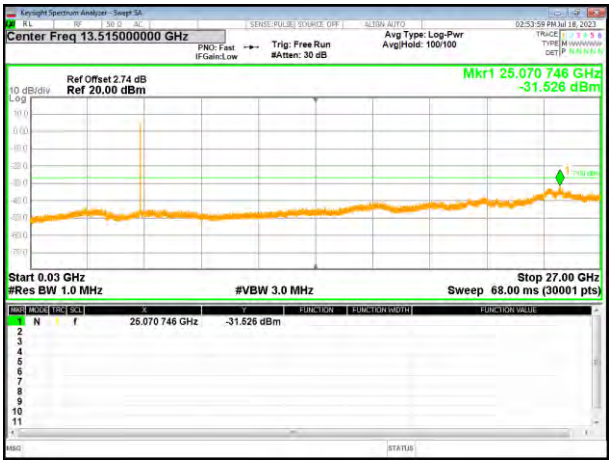
802.11n20 on channel 36



802.11n20 on channel 40

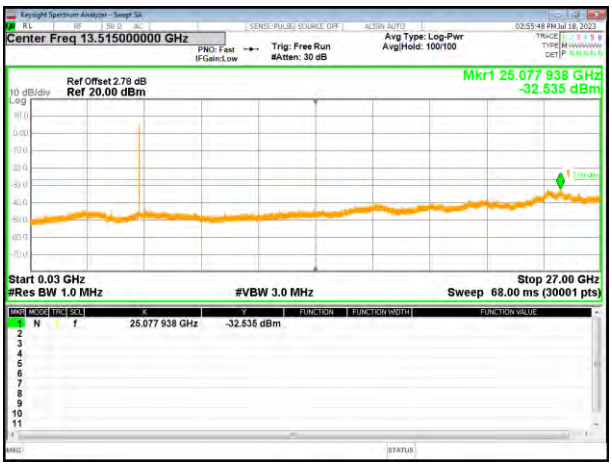


802.11n20 on channel 48



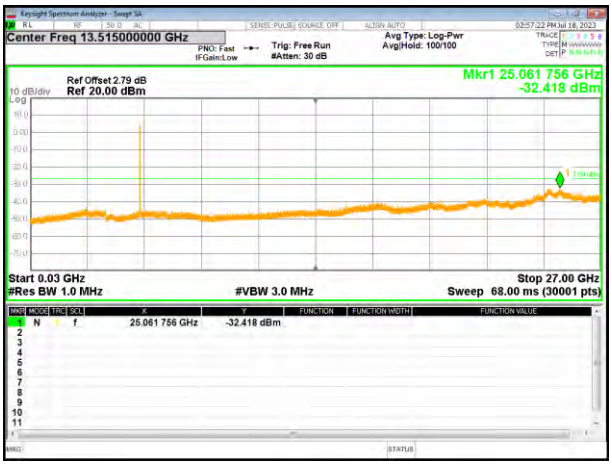
Test Plot

802.11ac20 on channel 36

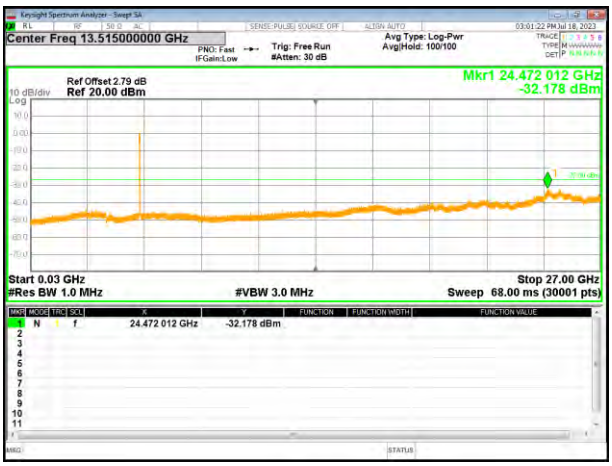


802.11ac20 on channel 40

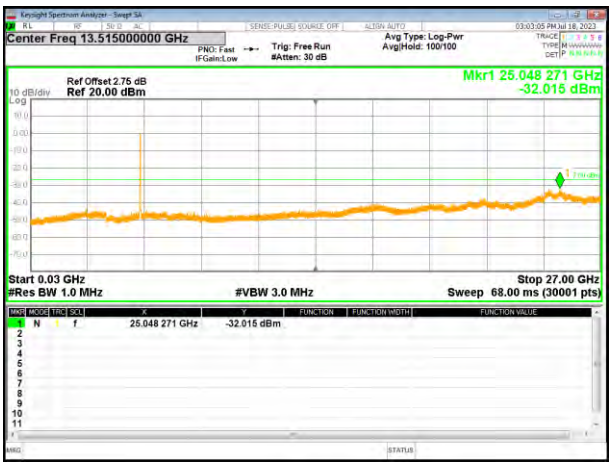
802.11ac20 on channel 48



802.11n40 on channel 38

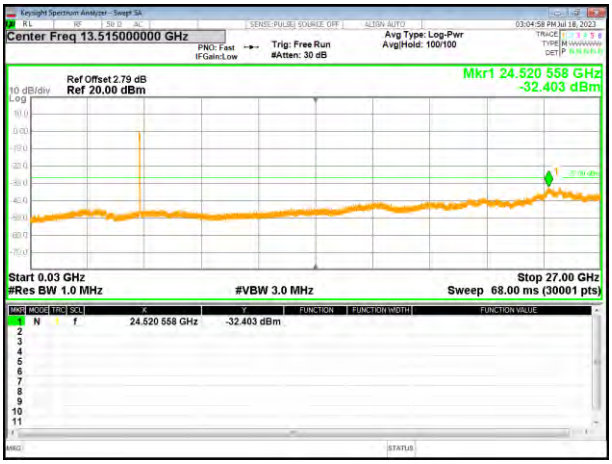


802.11n40 on channel 46

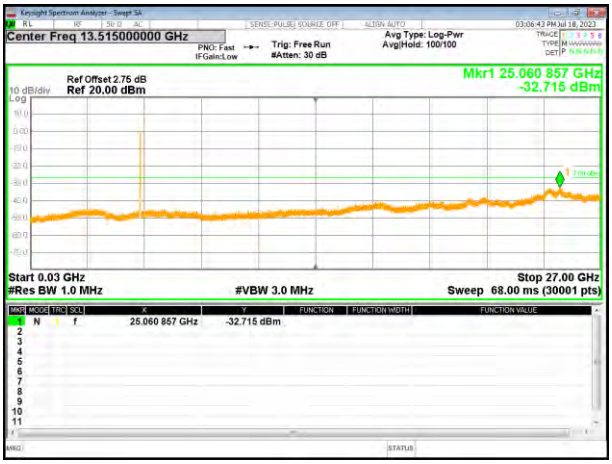


Test Plot

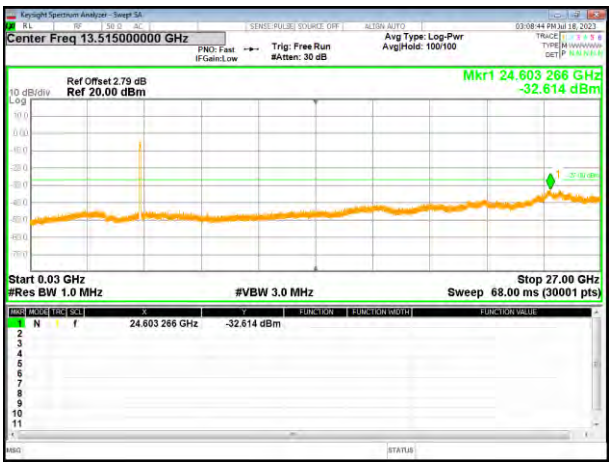
802.11ac40 on channel 38



802.11ac40 on channel 46



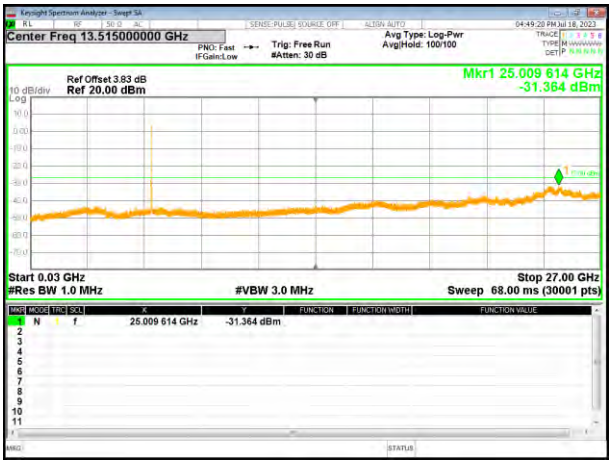
802.11ac80 on channel 42



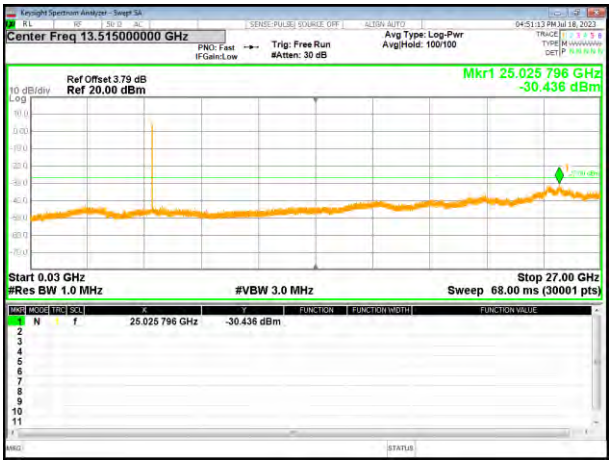
5745-5825MHz

Test Plot

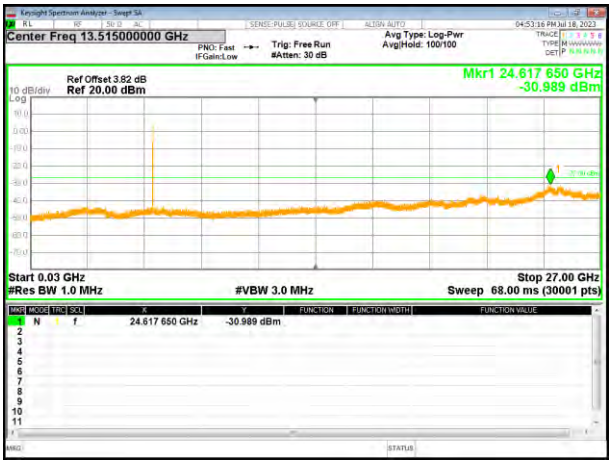
802.11a on channel 149



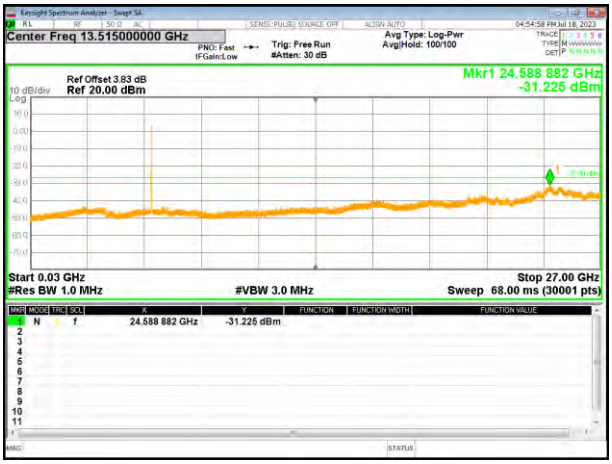
802.11a on channel 157



802.11a on channel 165

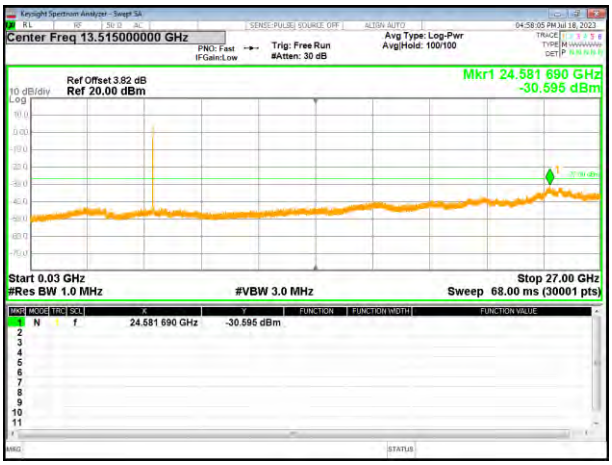


802.11n20 on channel 149



802.11n20 on channel 157

802.11n20 on channel 165

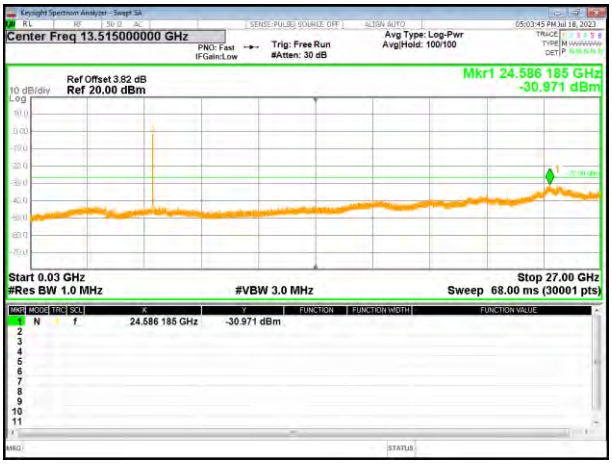


Test Plot

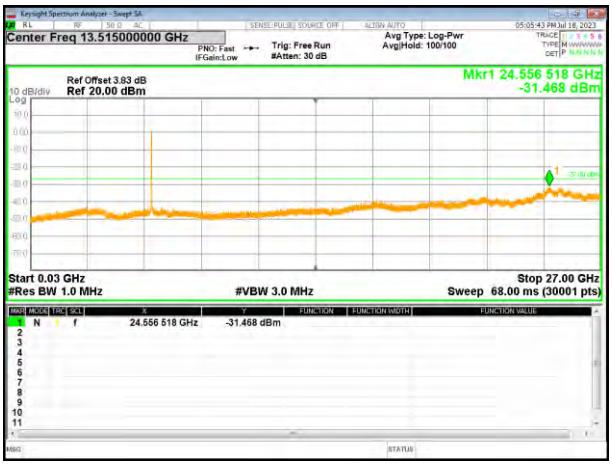
802.11ac20 on channel 149

802.11ac20 on channel 157

802.11ac20 on channel 165



802.11n40 on channel 151



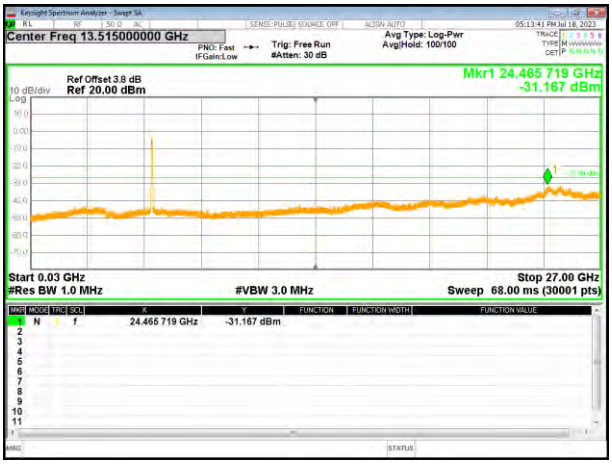
802.11n40 on channel 159

Test Plot

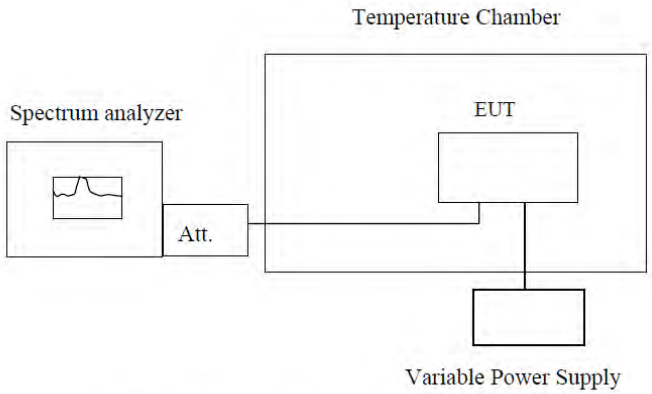
802.11ac40 on channel 151

802.11ac40 on channel 159

802.11ac80 on channel 155



4.8 Frequency stability

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

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

Measurement data:

Frequency stability versus Temp.					
Power Supply: DC 19V					
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	5180.080	5179.516	5179.944	5179.578
	5190	5190.076	5199.389	5199.819	5189.589
	5200	5200.071	5199.414	5199.844	5199.579
	5210	5210.077	5209.391	5209.822	5209.580
	5220	5220.072	5219.406	5219.837	5219.587
	5230	5230.069	5229.398	5229.829	5229.604
	5240	5240.042	5239.405	5239.837	5239.589
-20	5180	5180.071	5179.392	5179.829	5179.599
	5190	5190.062	5189.382	5189.828	5189.595
	5200	5200.070	5199.389	5199.822	5199.589
	5210	5210.062	5209.380	5209.812	5209.595
	5220	5220.083	5219.401	5219.822	5219.590
	5230	5230.060	5229.378	5299.818	5229.587
	5240	5240.078	5239.395	5239.823	5239.560
-10	5180	5180.080	5179.401	5179.808	5179.578
	5190	5190.076	5189.396	5189.819	5189.589
	5200	5200.071	5199.390	5199.810	5199.579
	5210	5210.077	5209.395	5209.811	5209.580
	5220	5220.072	5219.390	5219.818	5219.587
	5230	5230.069	5229.387	5229.835	5229.604
	5240	5240.042	5239.359	5239.807	5239.576
0	5180	5179.857	5179.380	5179.820	5179.589
	5190	5200.029	5189.390	5189.811	5189.590
	5200	5200.027	5199.380	5199.819	5199.580
	5210	5210.082	5209.380	5209.811	5299.585
	5220	5220.071	5219.387	5219.832	5219.580
	5230	5230.057	5229.404	5229.809	5229.600
	5240	5240.074	5239.375	5239.827	5239.578
10	5180	5180.059	5179.392	5179.829	5179.590
	5190	5190.070	5189.382	5189.825	5189.581
	5200	5200.061	5199.389	5199.820	5199.588

	5210	5210.062	5209.380	5209.826	5209.580
	5220	5220.069	5219.401	5219.821	5219.601
	5230	5230.086	5229.378	5229.818	5229.578
	5240	5240.071	5239.395	5239.791	5239.596
20	5180	5180.080	5179.391	5179.820	5179.551
	5190	5190.076	5189.391	5189.811	5189.581
	5200	5200.071	5199.381	5199.819	5199.605
	5210	5210.077	5299.381	5209.811	5209.589
	5220	5220.072	5219.380	5219.832	5219.580
	5230	5230.069	5229.400	5229.809	5229.607
	5240	5240.042	5239.377	5239.827	5239.595
30	5180	5180.059	5179.392	5179.820	5179.599
	5190	5190.070	5189.382	5189.811	5179.599
	5200	5200.061	5199.389	5199.819	5189.595
	5210	5210.062	5209.380	5209.811	5199.589
	5220	5220.069	5219.401	5219.832	5209.595
	5230	5230.086	5229.378	5229.809	5219.590
	5240	5240.058	5239.395	5239.827	5229.587
40	5180	5180.071	5179.391	5179.606	5179.578
	5190	5190.062	5189.391	5199.778	5189.589
	5200	5200.070	5199.381	5199.776	5199.579
	5210	5210.062	5299.381	5209.831	5209.580
	5220	5220.083	5219.380	5219.820	5219.587
	5230	5230.060	5229.400	5229.806	5229.604
	5240	5240.078	5239.377	5239.823	5239.576
50	5180	5180.071	5179.392	5179.820	5179.551
	5190	5190.062	5189.382	5189.811	5189.581
	5200	5200.070	5199.389	5199.819	5199.605
	5210	5210.062	5209.380	5209.811	5209.589
	5220	5220.083	5219.401	5219.832	5219.580
	5230	5230.060	5229.378	5229.809	5229.607
	5240	5240.078	5239.395	5239.827	5239.595

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)
16.15	5180	5180.080	5179.516	5179.820	5179.714
	5190	5190.076	5199.389	5189.811	5199.588
	5200	5200.071	5199.414	5199.819	5199.613
	5210	5210.077	5209.391	5209.811	5209.591
	5220	5220.072	5219.406	5219.832	5219.606
	5230	5230.069	5229.398	5229.809	5229.598
	5240	5240.042	5239.405	5239.827	5239.606
19.00	5180	5180.071	5179.410	5179.819	5179.599
	5190	5190.062	5179.516	5189.820	5189.598
	5200	5200.070	5199.389	5199.811	5199.591
	5210	5210.062	5209.413	5299.817	5209.581
	5220	5220.083	5219.391	5219.811	5219.591
	5230	5230.060	5229.405	5229.831	5299.586
	5240	5240.078	5239.397	5239.809	5239.592
21.85	5180	5180.080	5179.401	5179.808	5179.578
	5190	5190.076	5189.396	5189.819	5189.589
	5200	5200.071	5199.390	5199.810	5199.579
	5210	5210.077	5209.395	5209.811	5209.580
	5220	5220.072	5219.390	5219.818	5219.587
	5230	5230.069	5229.387	5229.835	5229.604
	5240	5240.042	5239.359	5239.807	5239.576

Frequency stability versus Temp.					
Power Supply: DC 19V					
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	5745.057	5744.334	5744.797	5744.560
	5755	5755.065	5754.339	5754.804	5754.548
	5775	5775.080	5774.330	5774.820	5774.559
	5785	5785.056	5784.321	5784.795	5784.565
	5795	5795.052	5794.327	5794.791	5794.583
	5825	5825.055	5824.253	5824.794	5824.574
-20	5745	5745.046	5744.345	5744.791	5744.571
	5755	5755.063	5754.345	5754.816	5754.584
	5775	5775.060	5774.347	5774.796	5774.569
	5785	5785.063	5784.338	5784.804	5784.555
	5795	5795.074	5794.328	5794.802	5794.549
	5825	5825.055	5824.334	5824.812	5824.582
-10	5745	5745.057	5744.335	5744.807	5744.191
	5755	5755.084	5754.340	5754.809	5754.573
	5775	5775.078	5774.356	5774.811	5774.574
	5785	5785.062	5784.331	5784.802	5784.576
	5795	5795.051	5794.326	5794.793	5794.559
	5825	5824.986	5824.326	5824.802	5824.554
0	5745	5745.051	5744.324	5744.807	5742.596
	5755	5755.077	5754.338	5754.809	5754.586
	5775	5775.057	5774.336	5774.811	5774.582
	5785	5785.065	5784.338	5784.802	5784.565
	5795	5795.063	5794.348	5794.793	5794.554
	5825	5825.072	5824.326	5824.802	5824.488
10	5745	5745.051	5744.334	5744.796	5744.561
	5755	5755.077	5754.349	5754.803	5754.567
	5775	5775.057	5774.349	5774.794	5774.584
	5785	5785.065	5784.330	5784.785	5784.559
	5795	5795.063	5794.346	5794.792	5794.555
	5825	5825.072	5824.341	5824.721	5824.557
20	5745	5745.067	5744.359	5744.807	5744.560
	5755	5755.082	5754.329	5754.821	5754.578
	5775	5775.065	5774.351	5774.805	5774.558
	5785	5785.052	5784.350	5784.791	5784.584
	5795	5795.046	5794.340	5794.785	5794.576
	5825	5825.079	5824.352	5824.819	5824.584
30	5745	5745.057	5744.345	5744.796	5744.585
	5755	5755.065	5754.345	5754.813	5754.556
	5775	5775.080	5774.347	5774.813	5774.579
	5785	5785.056	5784.338	5784.794	5784.578
	5795	5795.052	5794.328	5794.811	5794.569
	5825	5825.055	5824.334	5824.809	5824.583
40	5745	5745.067	5744.329	5744.807	5742.596
	5755	5755.082	5754.352	5754.809	5754.586
	5775	5775.065	5774.332	5774.811	5774.582

	5785	5785.052	5784.340	5784.802	5784.565
	5795	5795.046	5794.337	5794.793	5794.554
	5825	5825.079	5824.344	5824.802	5824.488
50	5745	5745.067	5744.359	5744.807	5744.560
	5755	5755.082	5754.329	5754.821	5754.578
	5775	5775.065	5774.351	5774.805	5774.558
	5785	5785.052	5784.350	5784.791	5784.584
	5795	5795.046	5794.340	5794.785	5794.576
	5825	5825.079	5824.352	5824.819	5824.584

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)
16.15	5745	5745.046	5744.334	5744.796	5744.555
	5755	5755.063	5754.339	5754.813	5754.579
	5775	5775.060	5774.330	5774.813	5774.560
	5785	5785.063	5784.321	5784.794	5784.568
	5795	5795.074	5794.327	5794.811	5794.566
	5825	5825.055	5824.253	5824.809	5824.575
19.00	5745	5745.046	5744.345	5744.791	5744.571
	5755	5755.063	5754.345	5754.816	5754.584
	5775	5775.060	5774.347	5774.796	5774.569
	5785	5785.063	5784.338	5784.804	5784.555
	5795	5795.074	5794.328	5794.802	5794.549
	5825	5825.055	5824.334	5824.812	5824.582
21.85	5745	5745.067	5744.359	5744.807	5744.560
	5755	5755.082	5754.329	5754.821	5754.578
	5775	5775.065	5774.351	5774.805	5774.558
	5785	5785.052	5784.350	5784.791	5784.584
	5795	5795.046	5794.340	5794.785	5794.576
	5825	5825.079	5824.352	5824.819	5824.584

5 Test Setup Photo

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

6 EUT Constructional Details

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

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