



TEST REPORT

Applicant: Shenzhen Hongshengda Optoelectronic Technology Co. , Ltd
Address of Applicant: 3rd Floor, Building 4, No. 161 Xingye Road Fenghuang Community, Fuyong Street, Bao'an District, Shenzhen
Manufacturer: Shenzhen Hongshengda Optoelectronic Technology Co. , Ltd
Address of Manufacturer: 3rd Floor, Building 4, No. 161 Xingye Road Fenghuang Community, Fuyong Street, Bao'an District, Shenzhen
Product Name: Smart Mobile Display
Model No.: HSD-215,D01,D01T,D01A,D01AI,D02,D02T,D02A,D02AI,P01, P01A,P01AI,D01-T,D02-T,HSD-215ZJ,HSD-215ZJD01,HSD-215ZJD02
Trade Mark: N/A
FCC ID: 2BDTM-HSD215
Applicable standards: CFR Title 47 Part 15.407
Date of Test: Jul.04, 2025-Jul.24, 2025
Date of report issued: Jul.25, 2025

Remark:

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	Result	Test by
Antenna requirement	47CRF part 15.203	Pass	/
AC Power Line Conducted Emission	47CRF part 15.207	Pass	Jason Huang
Conducted Output Power	47CRF part 15.407 (a)(1)/(a)(3)	Pass	Kara Wu
26dB Bandwidth and 99% Occupied Bandwidth	47CRF part 15.407 (a)(12)	Pass	Kara Wu
6dB Bandwidth	47CRF part 15.407 (e)	Pass	Kara Wu
Power Spectral Density	47CRF part 15.407(a)(1)/(a)(3)	Pass	Kara Wu
Band Edge	47CRF part 15.407(b)(1)/(b)(4)	Pass	Kara Wu
Spurious Emission	47CRF part 15.205/15.209 47CRF part 15.407(b)(1)/(b)(4)/(b)(8)	Pass	Jason Huang
Frequency Stability	47CRF part 15.407(g)	Pass	Kara Wu

Remarks:

1. Pass: The EUT complies with the essential requirements in the standard.
2. Test according to ANSI C63.10:2013 and KDB 789033 D02 General U-NII Test Procedures New Rules v02r01.
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"

Measurement Uncertainty

Test Item	Measurement Uncertainty	Notes
Occupied Channel Bandwidth	0.55%	(1)
RF output power, conducted	±0.57 dB	(1)
Power Spectral Density, conducted	±0.61 dB	(1)
Unwanted Emissions, conducted	±0.64 dB	(1)
AC Power Line Conducted Emission	± 2.55 dB	(1)
Radiated emissions 9K-30MHz	±3.79 dB	(1)
Radiated emissions 30M- 1GHz	± 4.24 dB	(1)
Radiated emissions 1GHz-18GHz	± 4.26 dB	(1)
Radiated emissions 18GHz-40GHz	±4.17 dB	(1)
Frequency error	Uc=1X10-7	(1)
Duty Cycle	0.03%	(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 Mobile Display
Model No.:	HSD-215,D01,D01T,D01A,D01AI,D02,D02T,D02A,D02AI,P01,P01A,P01AI,D01-T,D02-T,HSD-215ZJ,HSD-215ZJD01,HSD-215ZJD02
Difference of model(s)	All models have the same circuit and RF module, except for the model name and color
Test Model:	HSD-215
Hardware Version:	V1.0
Software Version:	1.0
Sample(s) Status:	Engineer sample
Operation Frequency:	☒ 5180-5240MHz for 802.11a/n20/ac20; 5190-5230MHz for 802.11n40/ac40; 5210MHz for 802.11ac80 ☒ 5745-5825 MHz for 802.11a/n20/ac20; 5755-5795 MHz for 802.11n40/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/802.11n20/ 802.11ac20/ : 20MHz 802.11n(HT40)/ 802.11ac40 : 40MHz 802.11ac(VHT80) : 80MHz
Data Rate	802.11a: 6,9,12,18,24,36,48,54Mbps; 802.11n(20/40):MCS0-MCS15; 802.11ac(20/40/80):NSS1, MCS0-MCS9
Modulation technology:	Orthogonal Frequency Division Multiplexing (OFDM) with BPSK/QPSK/16QAM/64QAM/256QAM/1024QAM
Antenna Type:	FPCB antenna
Antenna gain:	2.94dBi (Note: Antenna information is provided by applicant, Testing lab is not responsible for the accuracy of the information.)
Power supply:	15VDC from adapter with 100-240Vac
Battery	DC 11.1V 6000mAh
Adapter Model:	Model: LC36C-150240Z Input:100-240Vac 0.8A Output: 15V/2.4A

For more details, refer to the user's manual of the EUT.

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 /n20/ac20/	802.11 n40/ac40/	802.11ac80
Lowest channel	5180	5190	5210
Middle channel	5200	X	
Highest channel	5240		

Test channel	Frequency (MHz)		
	802.11 a /n20/ac20	802.11 n40/ac40	802.11ac80
Lowest channel	5745	5755	5775
Middle channel	5785	X	
Highest channel	5825		

2.2 Test mode

Transmitting mode	Keep the EUT in continuously transmitting mode(or with max duty cycle.)
<i>Remark: For battery operated equipment, the EUT was performed using a new DC 11.1V battery.</i>	

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/ac 20CH36/CH40/CH48 802.11a / n 20/ac 20CH149/CH157/CH165
Mode 2	802.11n40/CH38/CH46 802.11n 40CH 151/CH159
Mode 3	802.11 ac80 CH 42/CH155
Mode 4	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/ac20CH36/ CH40/ CH 48 802.11a/n 20/ac 20CH149/ CH157/ CH165
Mode 2	802.11n40CH38/ CH46 802.11n40CH 151/CH159
Mode 3	802.11 ac80 CH 42/CH155

Note: 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
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2.4 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
IC Company Number:	28440
IC CAB identifier:	CN0132
Laboratory location:	No.103, No.10, Phase I, Zone 3, Xinxing Industrial Park, Xinhe, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

2.5 Additional Instructions

Test Software	Engineering mode
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	2025.3.06	2026.3.05
2	Artificial power network	schwarabeck	NSLK8127	8127483	2025.3.06	2026.3.05
3	Artificial power network	ETS	3186/2NM	1132	2025.3.06	2026.3.05
4	10dB attenuator	HUBER+SUHNER	10dB	/	2025.3.06	2026.3.05
5	Cable 4	HUBER SUNNER	3M	/	2025.3.06	2026.3.05
6	Absorbing Clamp	schwarabeck	MDS21	D69250	2025.3.06	2026.3.05

Radiated Emission &RF Conducted test:

Item	Equipment name	Manufacturer	Model	Serial No.	Calibration date	Due date
1	EMI Test Receiver	Rohde&schwarz	ESCI7	101032	2025.3.06	2026.3.05
2	Broadband antenna	schwarabeck	VULB9168	1064	2024.3.26	2026.3.25
3	Horn antenna	schwarabeck	BBHA9120D	9120D-1145	2024.3.22	2026.3.21
4	Amplifier	EMtrace	RP01A	50117	2025.3.06	2026.3.05
5	Amplifier	Space-Dtronic	EWLAN0118G-P40	19113001	2025.3.06	2026.3.05
6	Spectrum analyzer	KEYSIGHT	N9020A	MY55370280	2025.3.06	2026.3.05
7	Power detector meter	MWRFTest	MW100-PSB	MW201020JYT	2025.3.06	2026.3.05
8	Signal generator	Agilent	N5182A	MY49060455	2025.3.06	2026.3.05
9	Spectrum analyzer	Rohde&schwarz	FSV-40N	101321	2025.3.06	2026.3.05
10	Amplifier	SKET	LNPA_1840-50	SK2019040302	2025.3.06	2026.3.05
11	Horn antenna	schwarabeck	BBHA 9170	946	2024.3.22	2026.3.21
12	Loop antenna	schwarabeck	FMZB 1519 B	1519	2024.3.22	2026.3.21
13	Cable 6	HUBER SUNNER	0.5M	/	2025.3.06	2026.3.05
14	Cable7	HUBER SUNNER	2.0M	/	2025.3.06	2026.3.05
15	Cable8	HUBER SUNNER	6.0M	/	2025.3.06	2026.3.05
16	Filter	Xin bo	XBLBQ-GTA29	210410-3-2	2025.3.06	2026.3.05
17	Power Sensor	Keysight	U2021XA	MY54111006	2025.3.06	2026.3.05
18	Temp. & Humidity Chamber	Jiecheng Instrument	QA-LP-80	20160705001	2025/3/07	2026/3/06

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

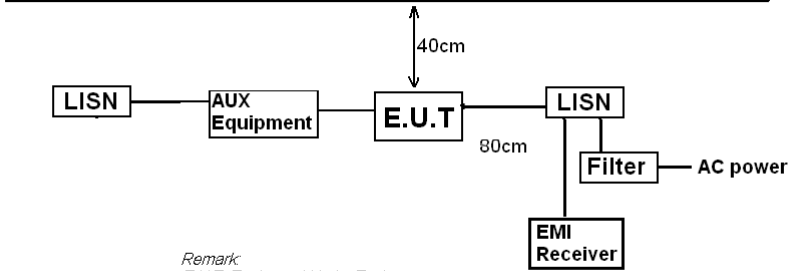
Software Name	Manufacturer	Model	Version
RF test software	MWRFTest	MTS 8310	V2.0.0.0
Conducted test software	EZ-EMC	Farad	Ver.EMC-CON 3A1.1
Radiated test software	EZ-EMC	Farad	Ver.FA-03A2 RE

4 Test results and Measurement Data

4.1 Antenna requirement

Standard requirement:	47CRF Part 15.203
15.203 requirement: <i>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>	
EUT Antenna:	
The antenna is FPCB antenna, the best case gain of the is 2.94dBi, reference to the Internal photos for details.	

4.2 Conducted Emissions

Test Requirement:	47CRF Part 15.207						
Test Method:	ANSI C63.10:2013						
Test Frequency Range:	150KHz to 30MHz						
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:	Reference Plane  <i>Remark: E.U.T: Equipment Under Test LISN: Line Impedance Stabilization Network</i>						
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.:	22.9°C	Humid.:	57%	Press.:	1012mbar	
Test voltage:	AC 120V 60Hz						
Test results:	Pass						

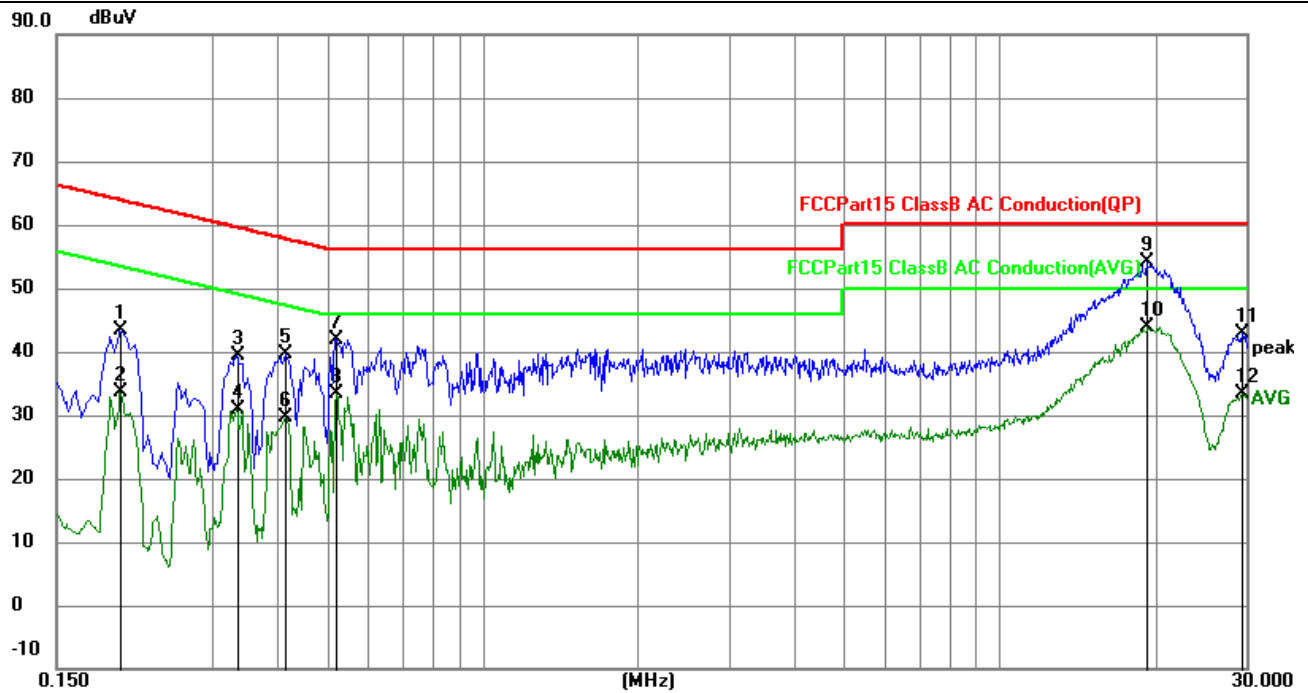
Remark:

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 (802.11a 5825MHz)

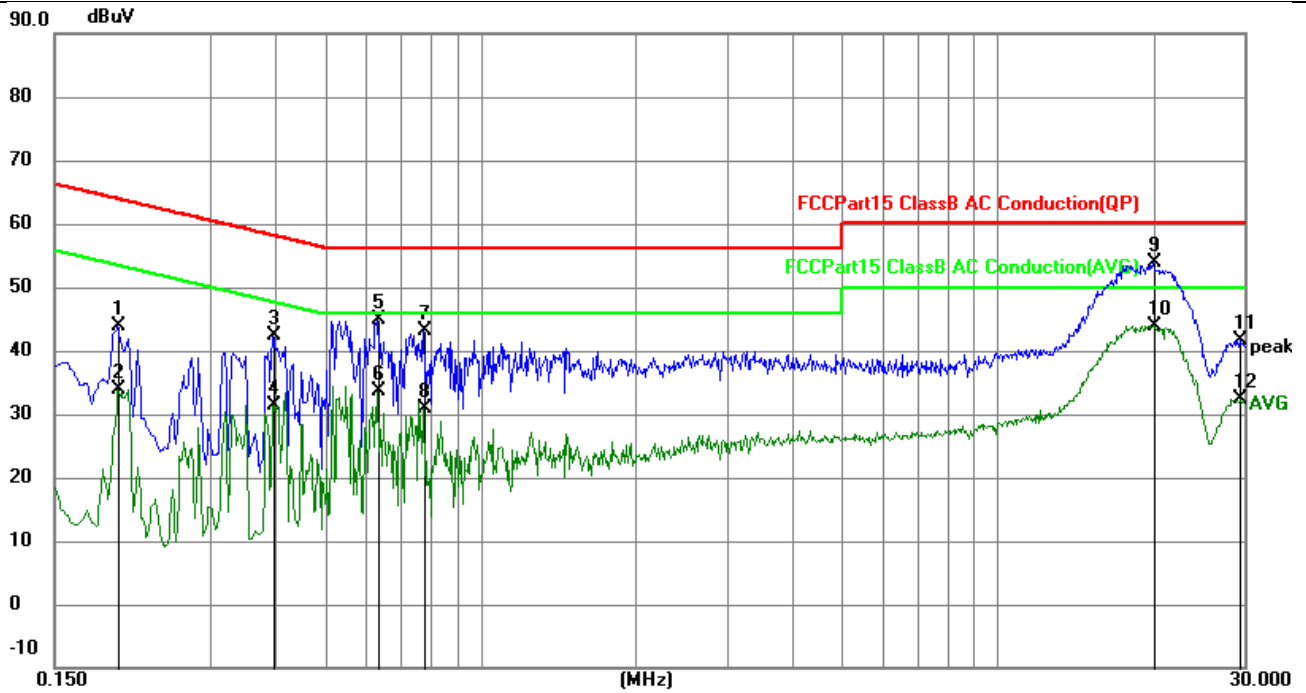
Measurement Result

Line:



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1995	33.67	9.71	43.38	63.63	-20.25	QP
2	0.1995	23.93	9.71	33.64	53.63	-19.99	AVG
3	0.3345	29.69	9.73	39.42	59.34	-19.92	QP
4	0.3345	21.14	9.73	30.87	49.34	-18.47	AVG
5	0.4153	29.87	9.73	39.60	57.54	-17.94	QP
6	0.4153	19.84	9.73	29.57	47.54	-17.97	AVG
7	0.5190	32.15	9.74	41.89	56.00	-14.11	QP
8	0.5190	23.64	9.74	33.38	46.00	-12.62	AVG
9	19.2973	44.75	9.37	54.12	60.00	-5.88	QP
10	19.2973	34.62	9.37	43.99	50.00	-6.01	AVG
11	29.4675	33.56	9.30	42.86	60.00	-17.14	QP
12	29.4675	24.06	9.30	33.36	50.00	-16.64	AVG

Neutral:

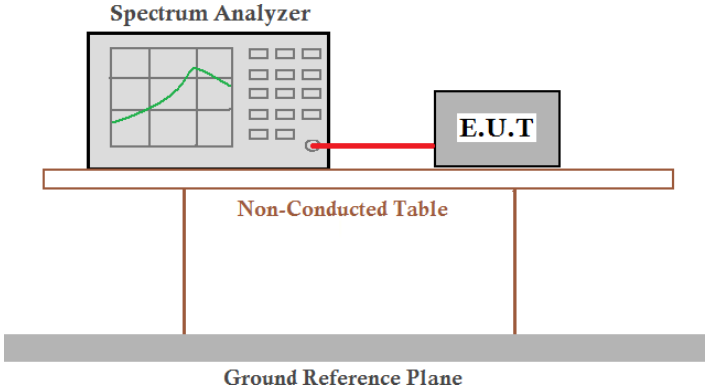


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1995	34.07	9.71	43.78	63.63	-19.85	QP
2	0.1995	24.09	9.71	33.80	53.63	-19.83	AVG
3	0.3975	32.74	9.73	42.47	57.91	-15.44	QP
4	0.3975	21.67	9.73	31.40	47.91	-16.51	AVG
5	0.6312	35.03	9.74	44.77	56.00	-11.23	QP
6	0.6312	24.00	9.74	33.74	46.00	-12.26	AVG
7	0.7752	33.32	9.76	43.08	56.00	-12.92	QP
8	0.7752	21.14	9.76	30.90	46.00	-15.10	AVG
9	19.9905	44.71	9.16	53.87	60.00	-6.13	QP
10	19.9905	34.77	9.16	43.93	50.00	-6.07	AVG
11	29.5213	32.28	9.38	41.66	60.00	-18.34	QP
12	29.5213	22.97	9.38	32.35	50.00	-17.65	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 Duty cycle

Test Method :	ANSI C63.10:2013	
Limit:	/	
Test setup:	 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. The table is supported by two vertical legs and sits on a Ground Reference Plane.	
Test Instruments:	Refer to section 3.0 for details	
Test mode:	Refer to section 2.2 for details	
Test environment:	Temp.: 24.1°C	Humid.: 63%RH
Test voltage:	11.1V DC	
Test results:	Pass	

Measurement Result

5180-5240MHz

Mode	Duty cycle (%)	Correction Factor (dB)
TX 802.11a Mode	93.88	0.27
TX 802.11n20 Mode	93.88	0.27
TX 802.11ac20 Mode	93.88	0.27
TX 802.11n40 Mode	92.83	0.32
TX 802.11a40 Mode	92.83	0.32
TX 802.11ac80 Mode	90.84	0.42

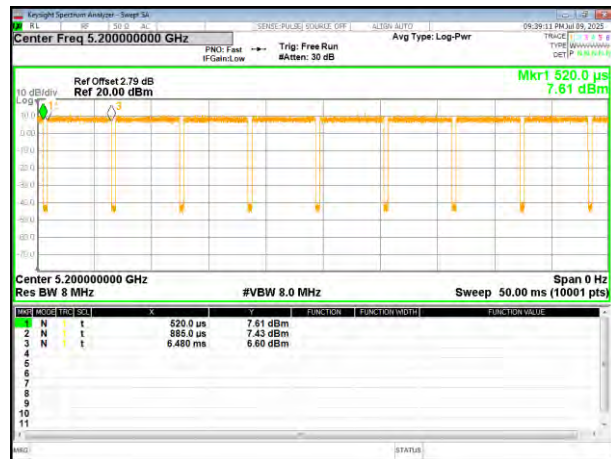
5745-5825 MHz

Mode	Duty cycle (%)	Correction Factor (dB)
TX 802.11a Mode	96.99	0.13
TX 802.11n20 Mode	97.01	0.13
TX 802.11ac20 Mode	96.99	0.13
TX 802.11n40 Mode	92.00	0.36
TX 802.11ac40 Mode	92.00	0.36
TX 802.11ac80 Mode	93.44	0.29

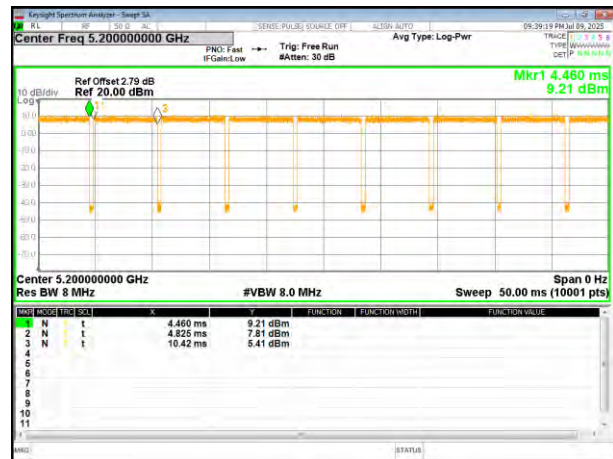
Test plot

5180-5240MHz

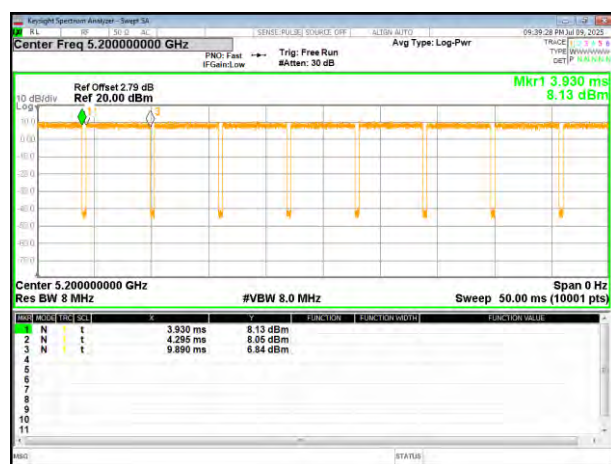
(802.11a) plot



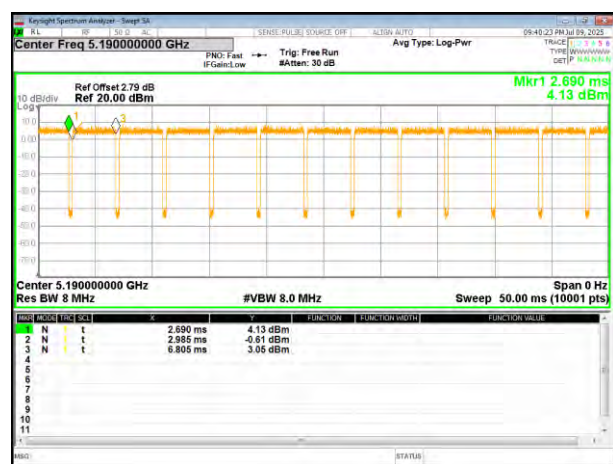
(802.11 n20) plot



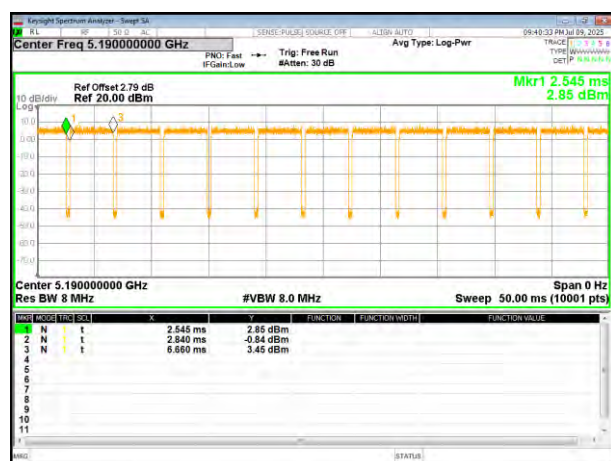
(802.11 ac20) plot



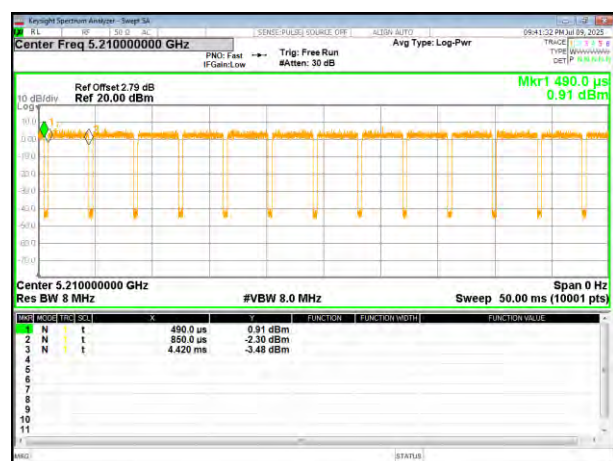
(802.11 n40) plot



(802.11 ac40) plot



(802.11 ac80) plot

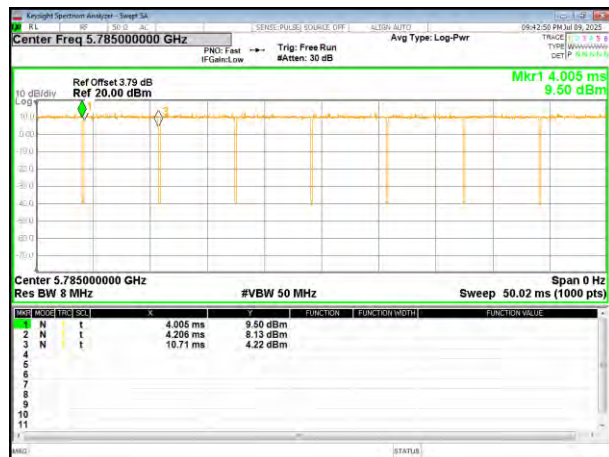


5745-5825 MHz

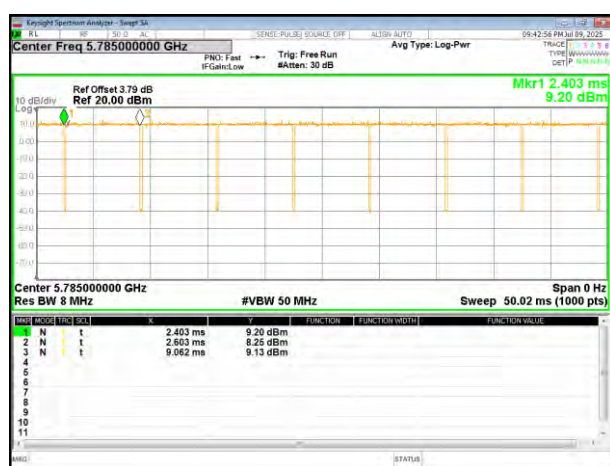
(802.11a) plot



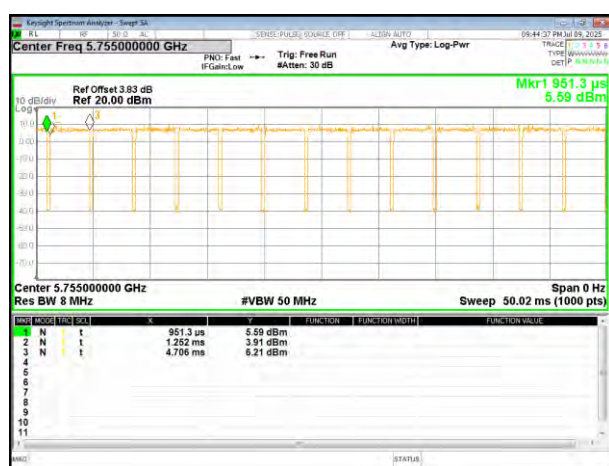
(802.11 n20) plot



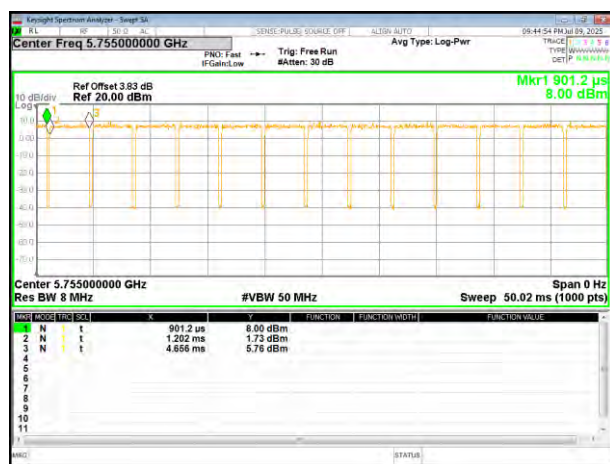
(802.11ac20) plot



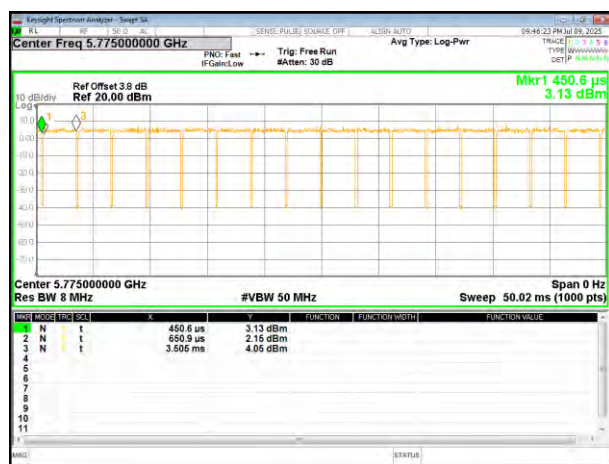
(802.11 n40) plot



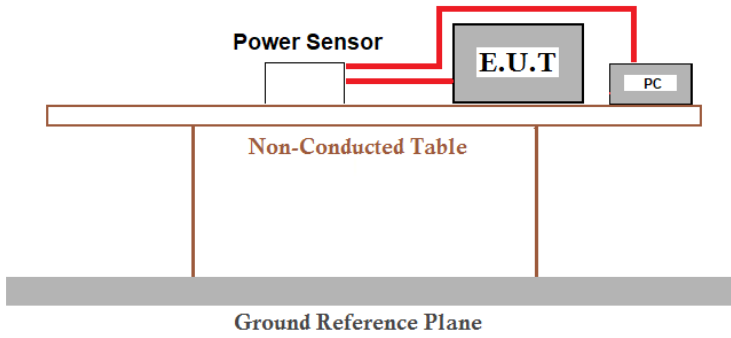
(802.11 ac40) plot



(802.11 ac80) plot



4.4 Conducted Output Power

Test Requirement:	47CRF Part 15.407 (a)(1)/(a)(3)	
Test Method:	KDB 789033 D02 General U-NII Test Procedures New Rules v02r01 ANSI C63.10-2013	
Limit:	5150-5250MHz : 250mW 5725~5850MHz : 1W	
Test setup:	 The diagram illustrates the test setup. A Power Sensor is connected via red lines to an E.U.T. (Equipment Under Test) and a PC. The E.U.T. is placed on a Non-Conducted Table, which is supported by a Ground Reference Plane.	
Test Instruments:	Refer to section 3.0 for details	
Test mode:	Refer to section 2.2 for details	
Test environment:	Temp.: 24.1°C	Humid.: 63%RH
Test voltage:	11.1V DC	
Test results:	Pass	



Measurement Result

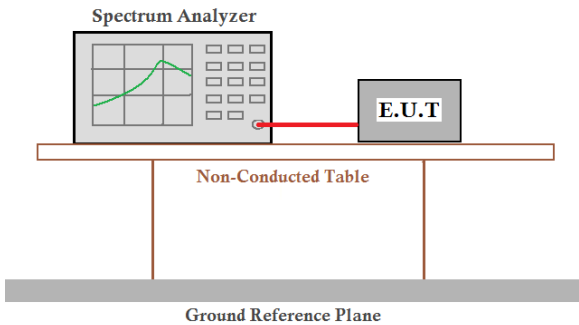
5180-5240MHz

Test Channel	Frequency	Correction Factor	Maximum output power	Total Power	LIMIT	Result
	(MHz)	(dB)	(dBm)	(dBm)	dBm	
TX 802.11a Mode						
CH36	5180	0.27	14.43	14.70	23.98	Pass
CH40	5200	0.27	14.09	14.36	23.98	Pass
CH48	5240	0.27	14.28	14.55	23.98	Pass
TX 802.11 n20 Mode						
CH36	5180	0.27	14.11	14.38	23.98	Pass
CH40	5200	0.27	13.83	14.10	23.98	Pass
CH48	5240	0.27	13.99	14.26	23.98	Pass
TX 802.11 ac20 Mode						
CH36	5180	0.27	14.29	14.56	23.98	Pass
CH40	5200	0.27	14.07	14.34	23.98	Pass
CH48	5240	0.27	14.13	14.40	23.98	Pass
TX 802.11 n40 Mode						
CH38	5190	0.32	13.17	13.49	23.98	Pass
CH46	5230	0.32	13.00	13.32	23.98	Pass
TX 802.11 ac40 Mode						
CH38	5190	0.32	13.63	13.95	23.98	Pass
CH46	5230	0.32	13.86	14.18	23.98	Pass
TX 802.11 ac80 Mode						
CH42	5210	0.42	12.40	12.82	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	0.13	14.70	14.83	30	Pass
CH157	5785	0.13	14.70	14.83	30	Pass
CH165	5825	0.13	15.09	15.22	30	Pass
TX 802.11 n20 Mode						
CH149	5745	0.13	14.42	14.55	30	Pass
CH157	5785	0.13	14.86	14.99	30	Pass
CH165	5825	0.13	14.67	14.80	30	Pass
TX 802.11 ac20 Mode						
CH149	5745	0.13	14.39	14.52	30	Pass
CH157	5785	0.13	14.35	14.48	30	Pass
CH165	5825	0.13	14.19	14.32	30	Pass
TX 802.11 n40 Mode						
CH151	5755	0.36	13.73	14.09	30	Pass
CH159	5795	0.36	14.29	14.65	30	Pass
TX 802.11 ac40 Mode						
CH151	5755	0.36	13.75	14.11	30	Pass
CH159	5795	0.36	13.72	14.08	30	Pass
TX 802.11 ac80 Mode						
CH155	5775	0.29	12.65	12.94	30	Pass

4.5 Bandwidth

Test Requirement:	47CRF Part 15.407(a)(12)&15.407(e),	
Test Method:	KDB 789033 D02 General U-NII Test Procedures New Rules v02r01, ANSI C63.10:2013	
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.: 24.1°C	Humid.: 63%RH
Test voltage:	11.1V DC	
Test results:	Pass	

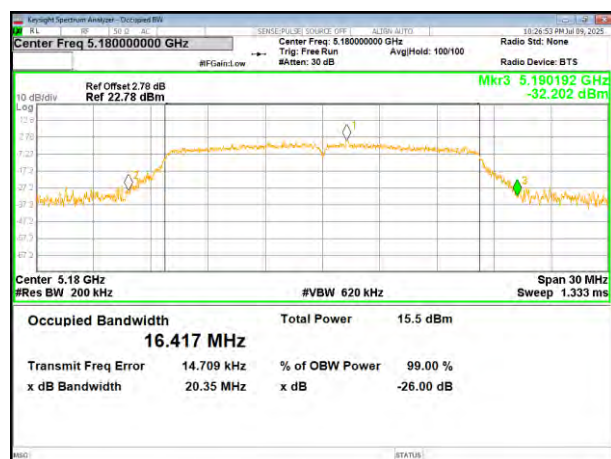
Measurement Result

5180-5240MHz

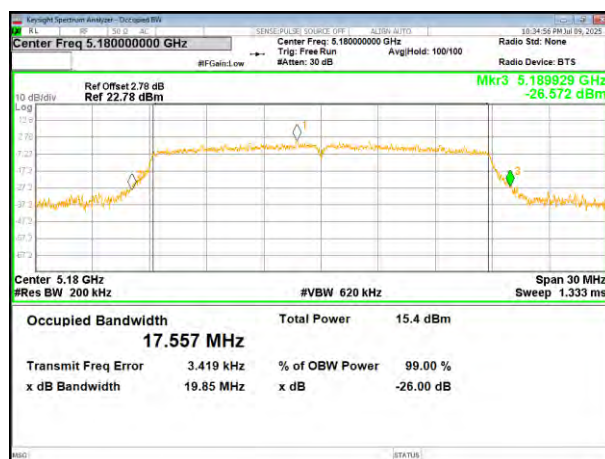
Test CH	-26dB Channel Bandwidth (MHz)						Result
	802.11a	802.11n20	802.11ac20	802.11n40	802.11ac40	802.11ac80	
Lowest	20.35	19.85	19.71	39.61	39.99	--	Pass
Middle	21.28	19.72	19.77	--	--	79.50	
Highest	19.95	19.98	19.84	39.48	39.52	--	

Remark: "---"is not applicable

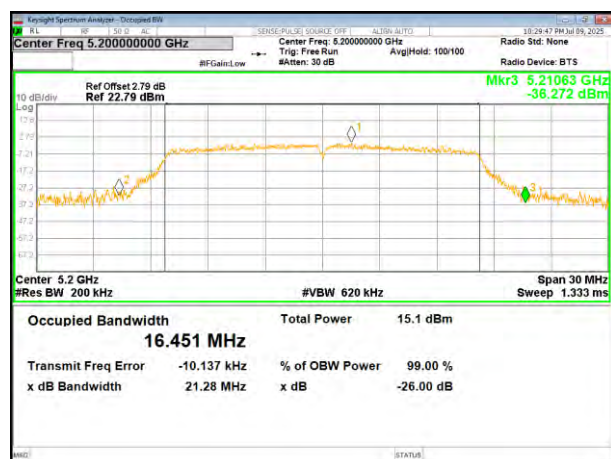
(802.11a) plot on channel 36



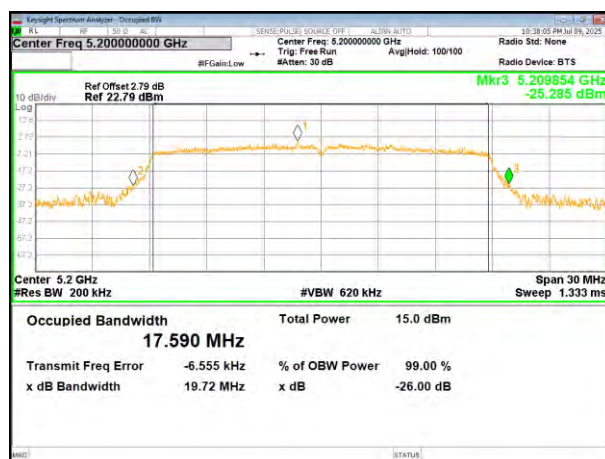
(802.11 n20) plot on channel 36



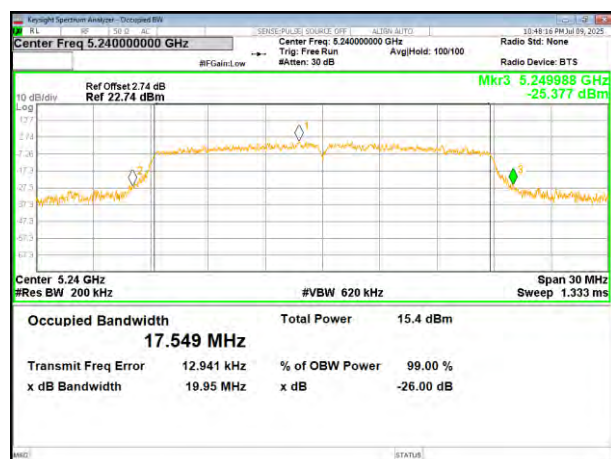
(802.11a) plot on channel 40



(802.11 n20) plot on channel 40



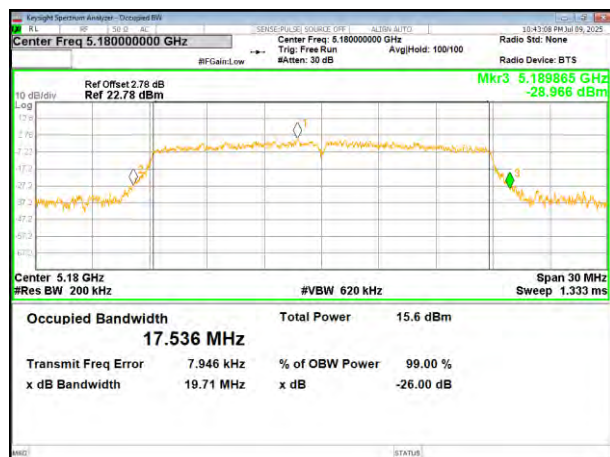
(802.11a) plot on channel 48



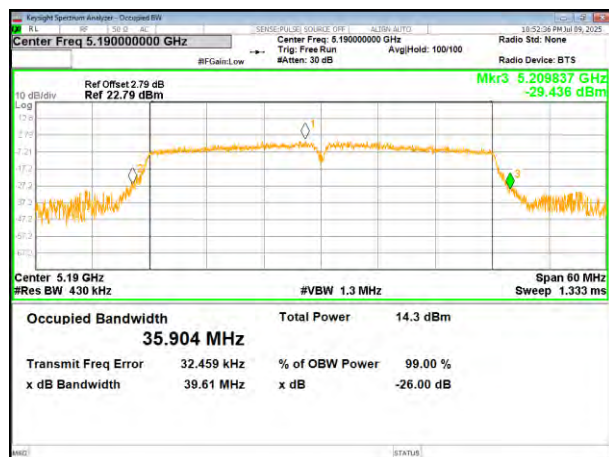
(802.11 n20) plot on channel 48



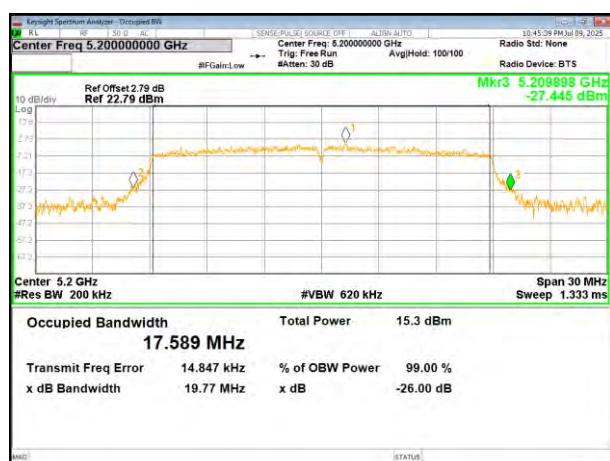
(802.11ac20) plot on channel 36



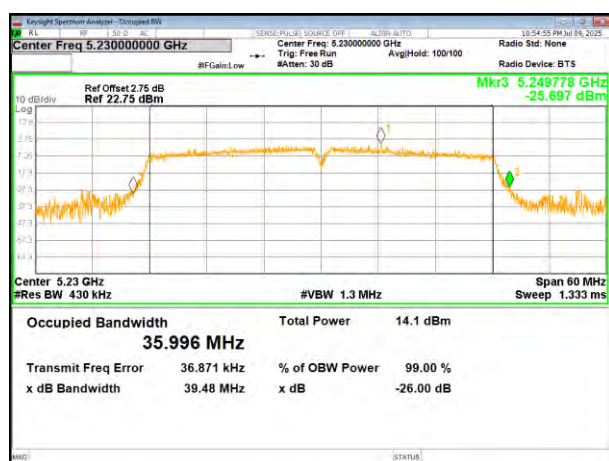
(802.11n40) plot on channel 38



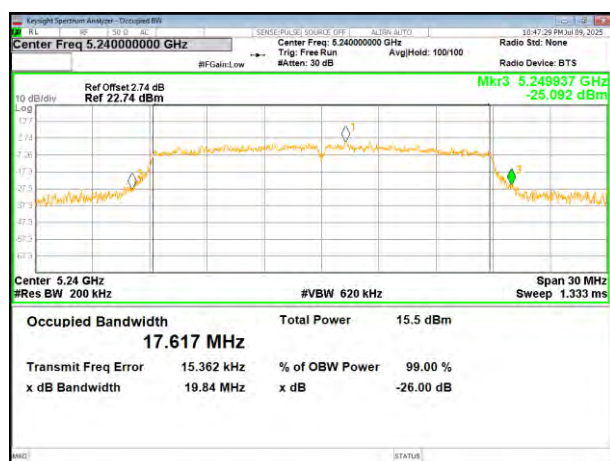
(802.11ac20) plot on channel 40



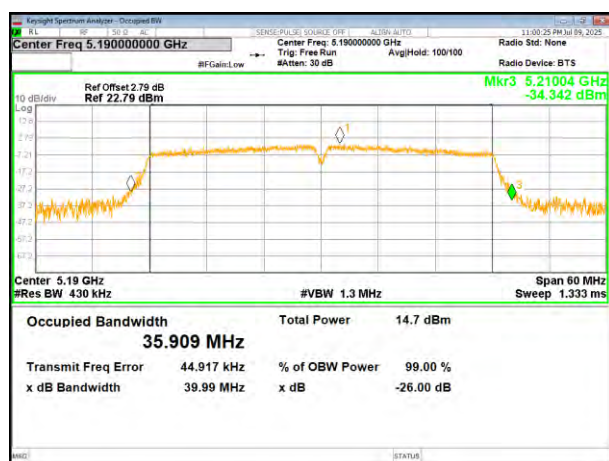
(802.11n40) plot on channel 46

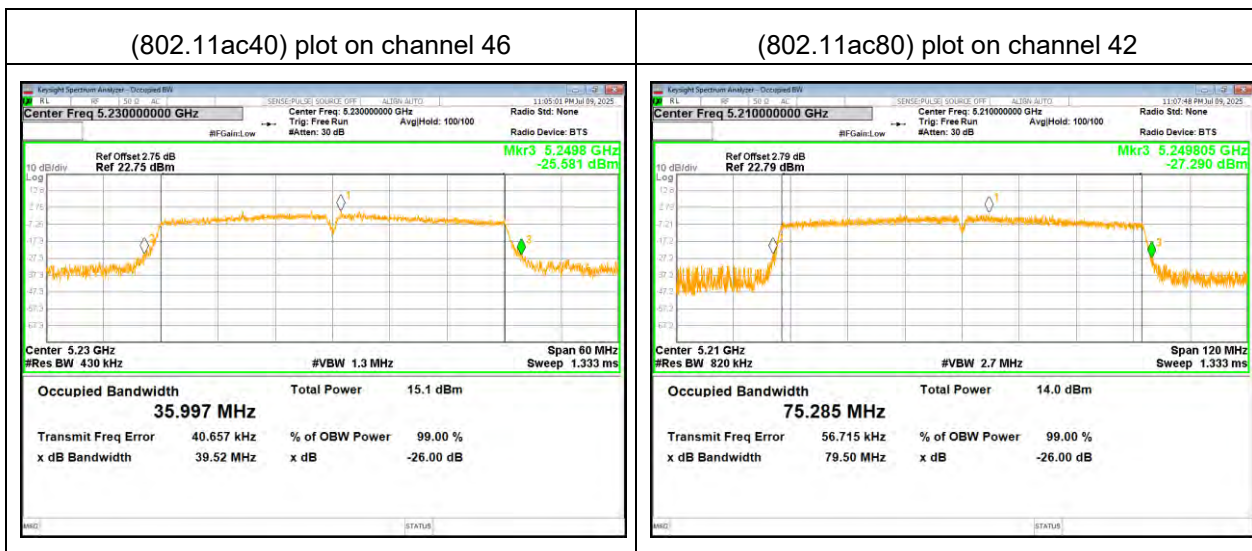


(802.11ac20) plot on channel 48



(802.11ac40) plot on channel 38







5745-5825MHz

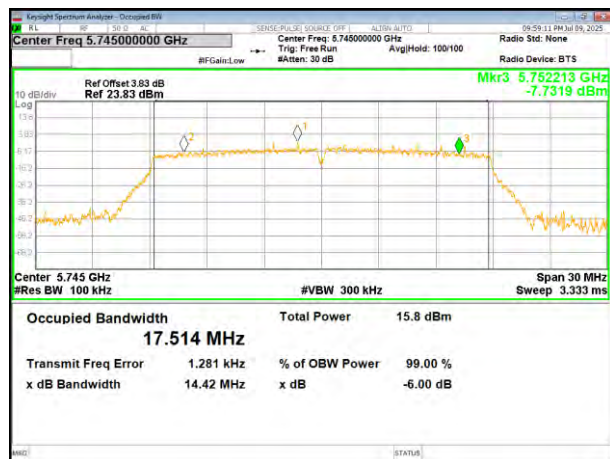
Test CH	-6dB Channel Bandwidth (MHz)						Limit (KHz)	Result
	802.11a	802.11n 20	802.11ac 20	802.11n 40	802.11ac 40	802.11ac 80		
Lowest	14.41	15.06	14.42	35.11	33.76	--	>500	Pass
Middle	13.17	15.05	15.03	--	--	75.12		
Highest	15.63	15.11	14.41	35.02	35.04	--		

Remark: “---”is not applicable

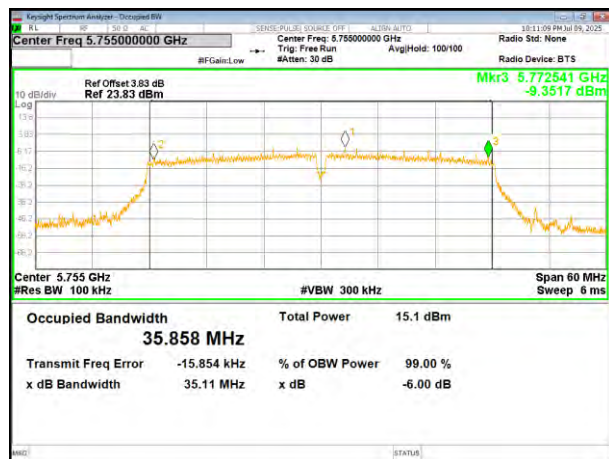
Test plot -6dB Channel Bandwidth



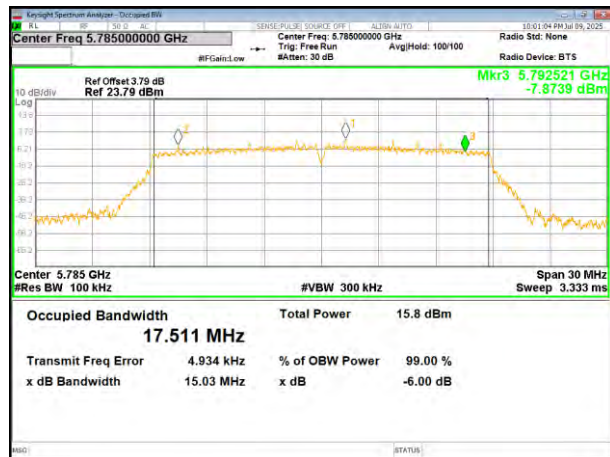
(802.11ac20) plot on channel 149



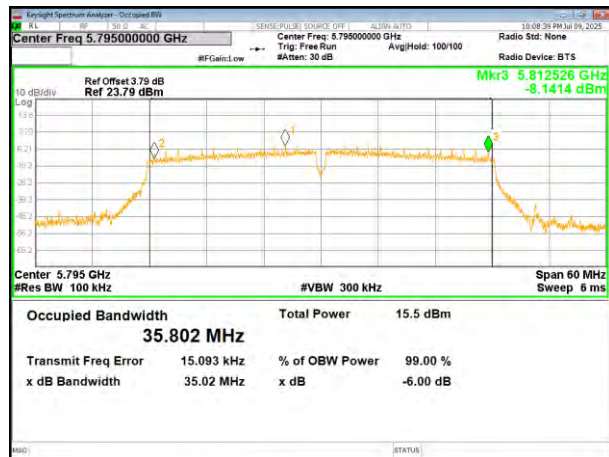
(802.11 n40) plot on channel 151



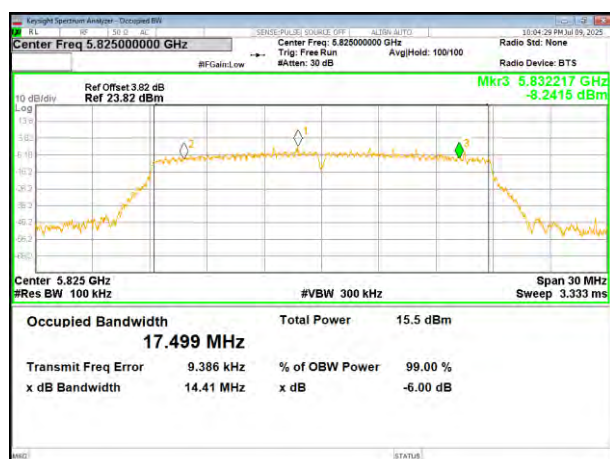
(802.11ac20) plot on channel 157



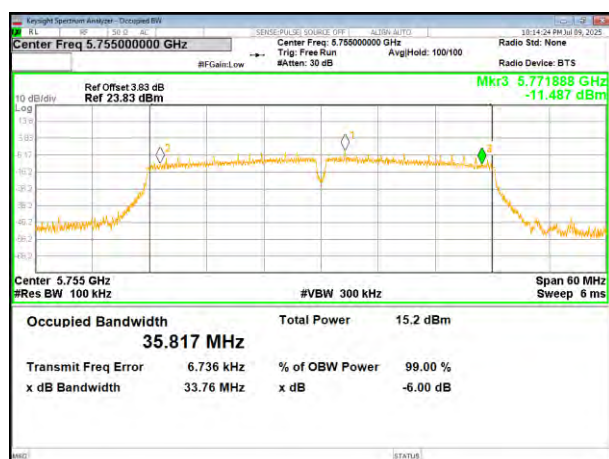
(802.11 n40) plot on channel 159

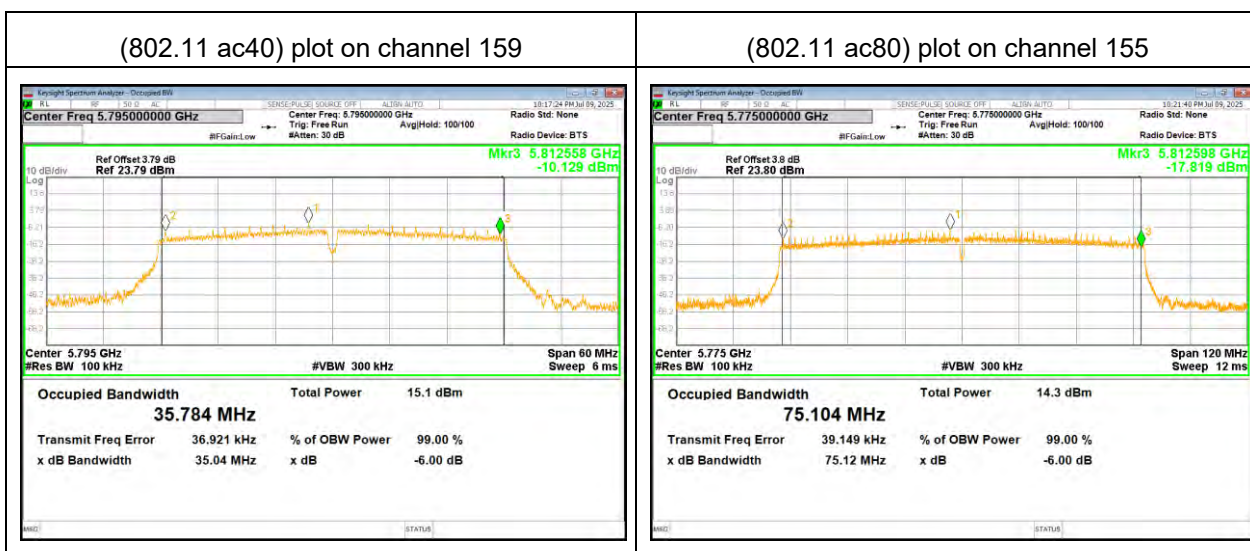


(802.11ac20) plot on channel 165

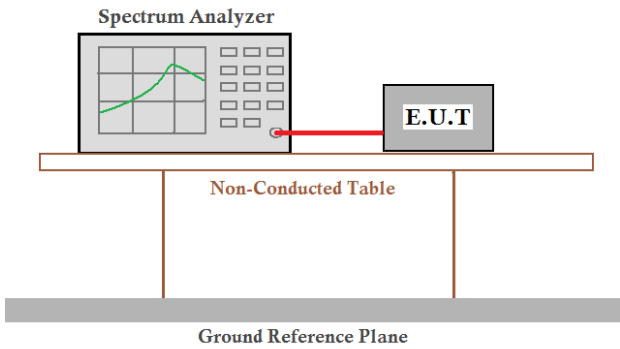


(802.11 ac40) plot on channel 151





4.6 Power Spectral Density

Test Requirement:	47CRF Part 15.407(a)(1)/ (a)(3)	
Test Method:	KDB 789033 D02 General U-NII Test Procedures New Rules v02r01, ANSI C63.10:2013	
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:	 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.	
Test Instruments:	Refer to section 3.0 for details	
Test mode:	Refer to section 2.2 for details	
Test environment:	Temp.: 24.1°C	Humid.: 63%RH
Test voltage:	11.1V DC	
Test results:	Pass	

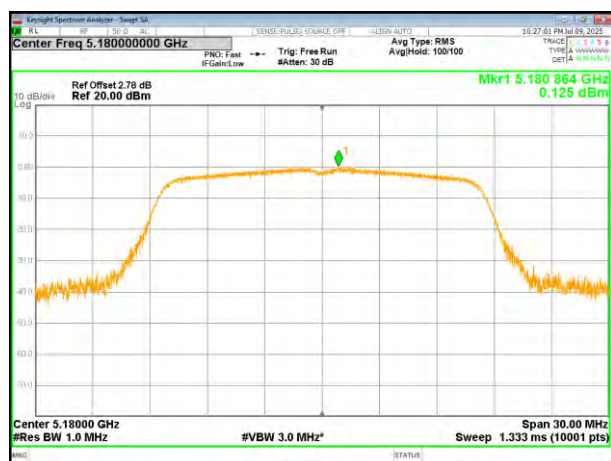
Measurement Result See next page



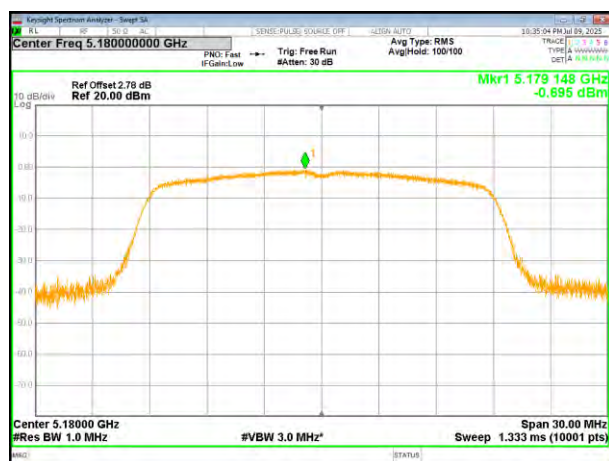
5180-5240MHz

Mode	Frequency	Measured Power Density (dBm/MHz)	Correction Factor (dB)	Total Measured Power Density (dBm/MHz)	Limit (dBm/MHz)
802.11 a	5180 MHz	0.125	0.270	0.395	11
	5200 MHz	-0.071	0.270	0.199	11
	5240 MHz	0.003	0.270	0.273	11
802.11 n20	5180 MHz	-0.695	0.270	-0.425	11
	5200 MHz	-0.944	0.270	-0.674	11
	5240 MHz	-1.143	0.270	-0.873	11
802.11 ac20	5180 MHz	-2.165	0.270	-1.895	11
	5200 MHz	-2.475	0.270	-2.205	11
	5240 MHz	-2.64	0.270	-2.370	11
802.11 n40	5190 MHz	-6.777	0.320	-6.457	11
	5230 MHz	-6.797	0.320	-6.477	11
802.11 ac40	5190 MHz	-6.113	0.320	-5.793	11
	5230 MHz	-5.758	0.320	-5.438	11
802.11 ac80	5210 MHz	-11.893	0.420	-11.473	11

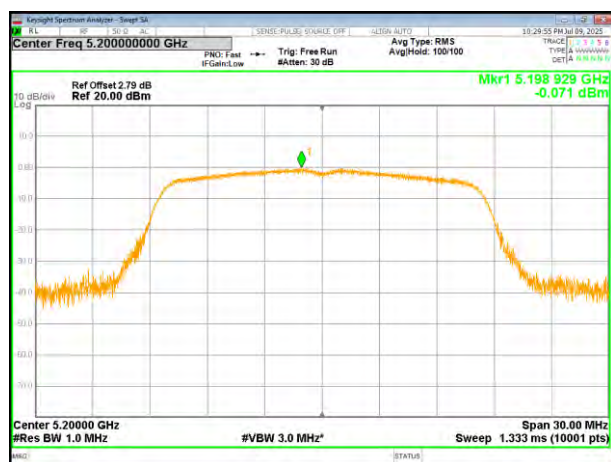
(802.11a) PSD plot on channel 36



(802.11n20) PSD plot on channel 36



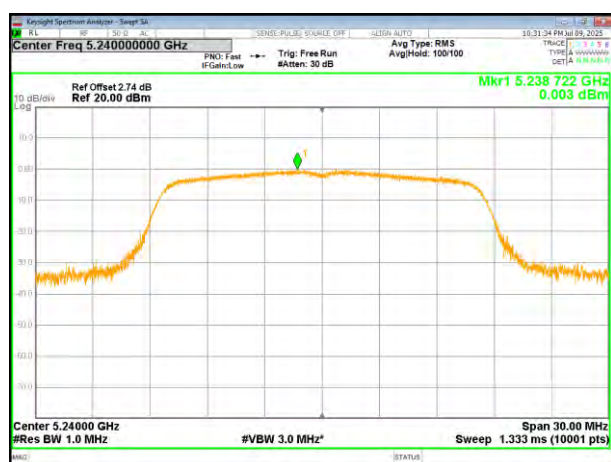
(802.11a) PSD plot on channel 40



(802.11n20) PSD plot on channel 40



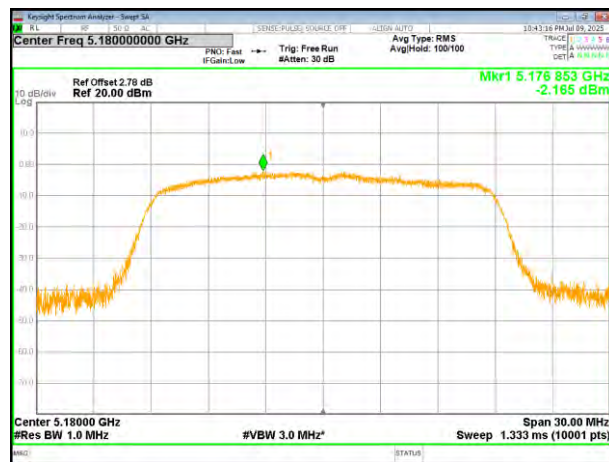
(802.11a) PSD plot on channel 48



(802.11n20) PSD plot on channel 48



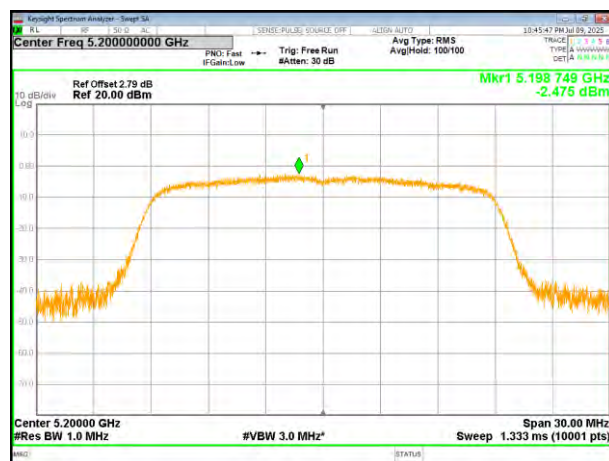
(802.11ac20) PSD plot on channel 36



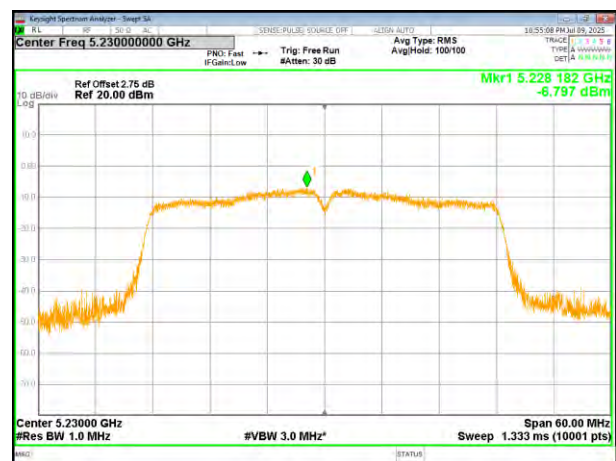
(802.11n40) PSD plot on channel 38



(802.11ac20) PSD plot on channel 40



(802.11n40) PSD plot on channel 46

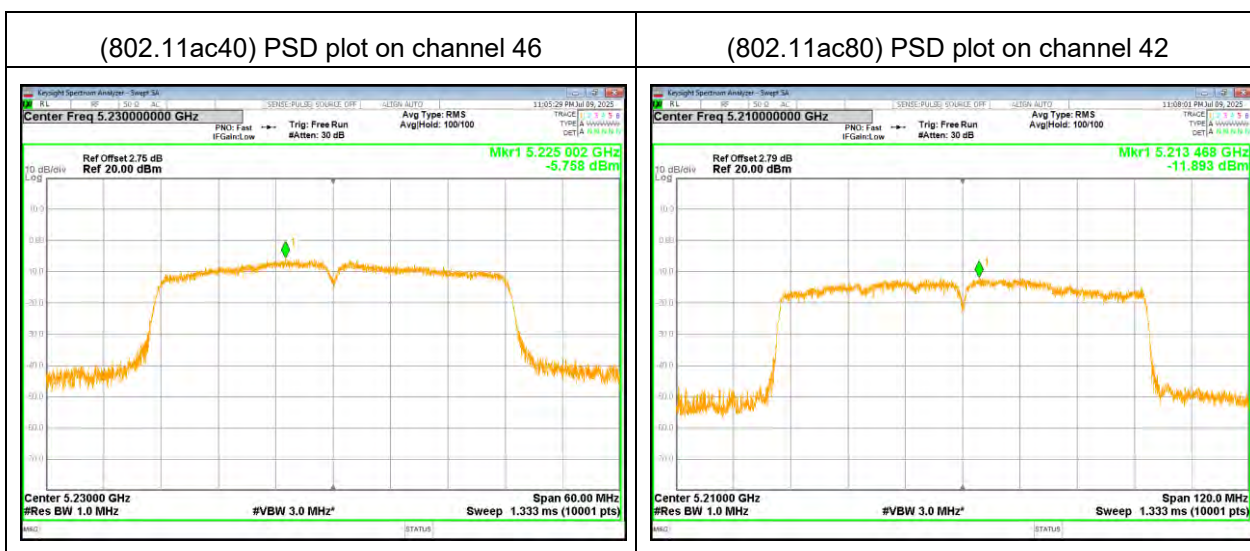


(802.11ac20) PSD plot on channel 48



(802.11ac40) PSD plot on channel 38





5745-5825MHz

Mode	Frequency	Measured Power Density (dBm/510KHz)	Measured Power Density (dBm/500KHz)	Correction Factor (dB)	Total Measured Power Density (dBm/500KHz)	Limit (dBm/MHz)
802.11 a	5745 MHz	-2.601	-2.687	0.130	-2.557	30
	5785 MHz	-2.684	-2.770	0.130	-2.640	30
	5825 MHz	-2.208	-2.294	0.130	-2.164	30
802.11 n20	5745 MHz	-3.602	-3.688	0.130	-3.558	30
	5785 MHz	-2.989	-3.075	0.130	-2.945	30
	5825 MHz	-3.415	-3.501	0.130	-3.371	30
802.11ac20	5745 MHz	-3.776	-3.862	0.130	-3.732	30
	5785 MHz	-3.496	-3.582	0.130	-3.452	30
	5825 MHz	-4.021	-4.107	0.130	-3.977	30
802.11 n40	5755 MHz	-7.300	-7.386	0.360	-7.026	30
	5795 MHz	-7.511	-7.597	0.360	-7.237	30
802.11ac40	5755 MHz	-8.180	-8.266	0.360	-7.906	30
	5795 MHz	-7.757	-7.843	0.360	-7.483	30
802.11ac80	5775 MHz	-13.425	-13.511	0.290	-13.221	30

Note: 1. Total Measured Power Density (dBm/500KHz)=dbm/510KHz-(10*log(510/500))+Duty cycle factor.

2. Correction Factor (dB)= duty cycle factor, RB Factor=10*log(510KHz/500KHz).

3. Offset= cable loss

(802.11a) PSD plot on channel 149



(802.11n20) PSD plot on channel 149



(802.11a) PSD plot on channel 157



(802.11n20) PSD plot on channel 157



(802.11a) PSD plot on channel 165



(802.11n20) PSD plot on channel 165



(802.11ac20) PSD plot on channel 149



(802.11n40) PSD plot on channel 151



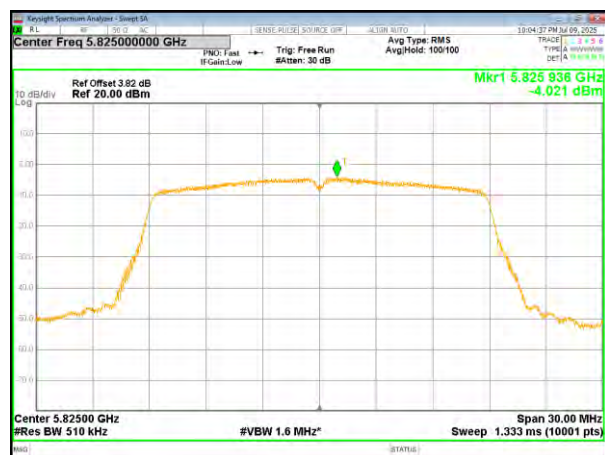
(802.11ac20) PSD plot on channel 157



(802.11n40) PSD plot on channel 159



(802.11ac20) PSD plot on channel 165



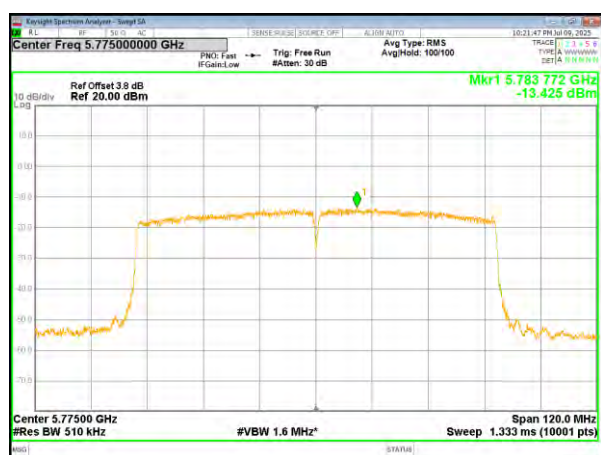
(802.11ac40) PSD plot on channel 151



(802.11ac40) PSD plot on channel 159

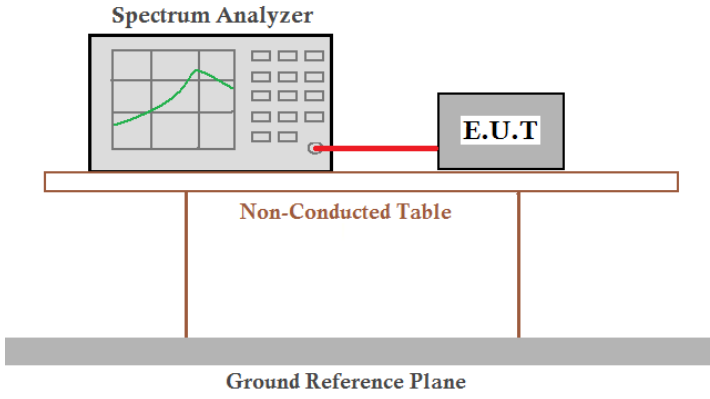


(802.11ac80) PSD plot on channel 155



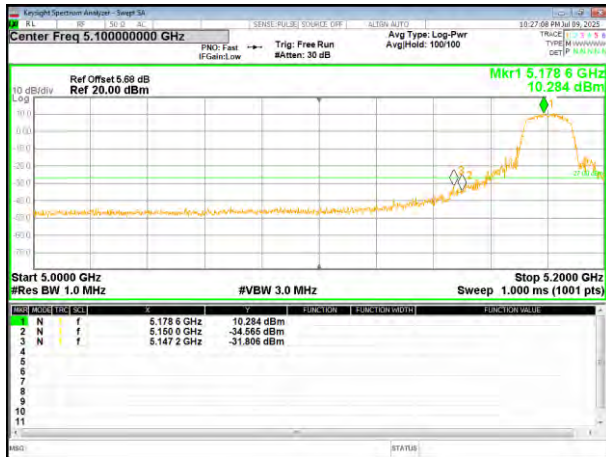
4.7 Band edge

4.7.1 Conducted test Method

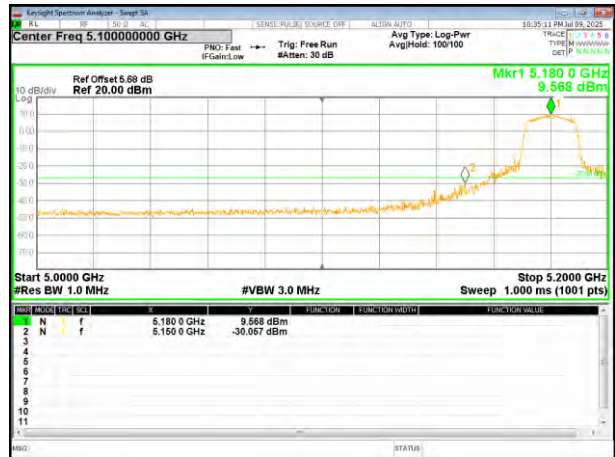
Test Requirement:	47CRF Part 15.209 and 15.205	
Test Method:	ANSI C63.10: 2013	
Limit:	All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.	
Test setup:	 The diagram illustrates the test setup. A Spectrum Analyzer is connected to an E.U.T. (Equipment Under Test) via a red cable. Both are placed on a Non-Conducted Table, which is supported by a Ground Reference Plane.	
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.: 24.1°C	Humid.: 63%RH
Test voltage:	11.1V DC	
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

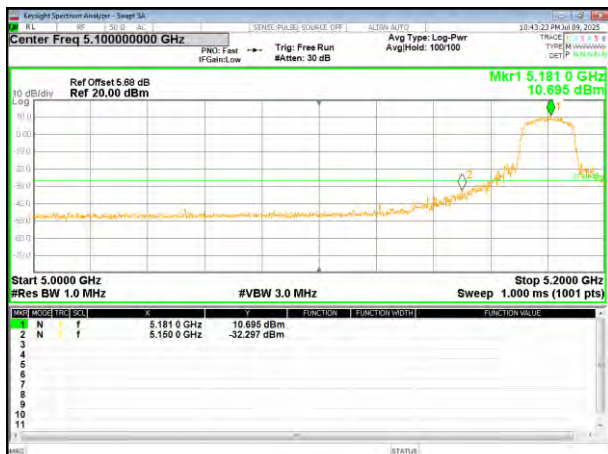


(802.11n20) Band Edge, Right Side

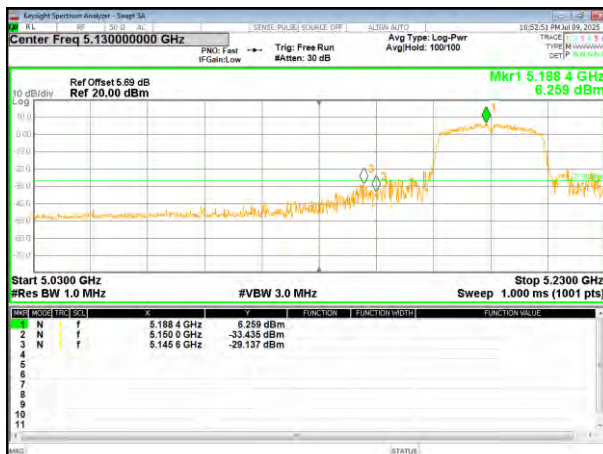


Remark: The antenna gain and cable loss were not compensated in the test data, and the margin value of the Band Edge test was greater than the sum of the antenna gain and cable loss, so the test met the requirements

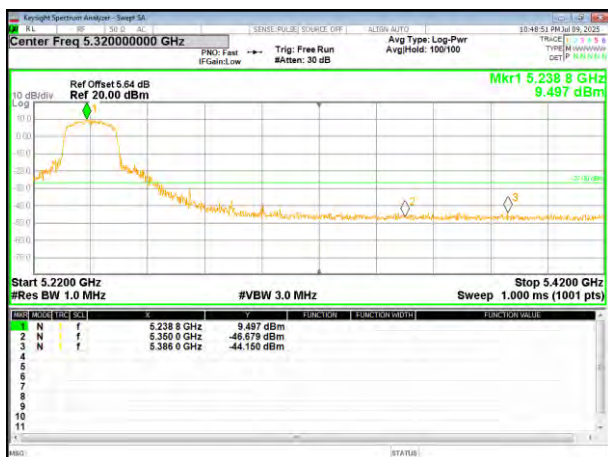
(802.11ac20) Band Edge, Left Side



(802.11n40) Band Edge, Left Side



(802.11ac20) Band Edge, Right Side

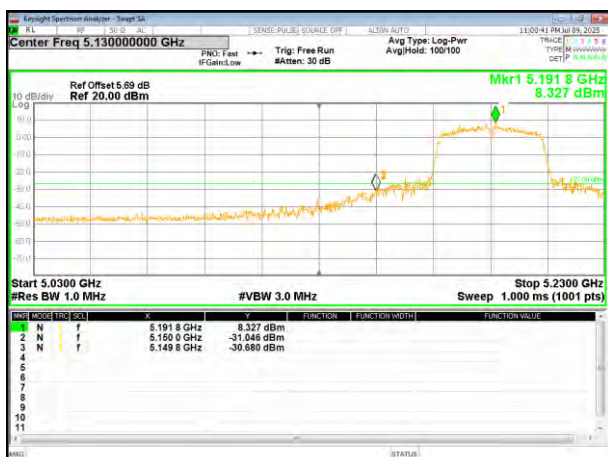


(802.11n40) Band Edge, Right Side

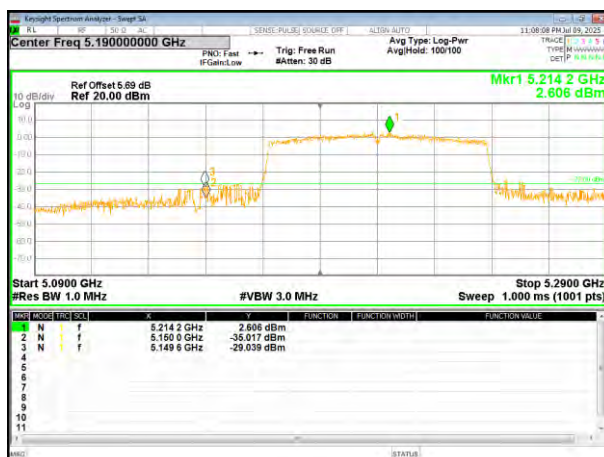


Remark: The antenna gain and cable loss were not compensated in the test data, and the margin value of the Band Edge test was greater than the sum of the antenna gain and cable loss, so the test met the requirements

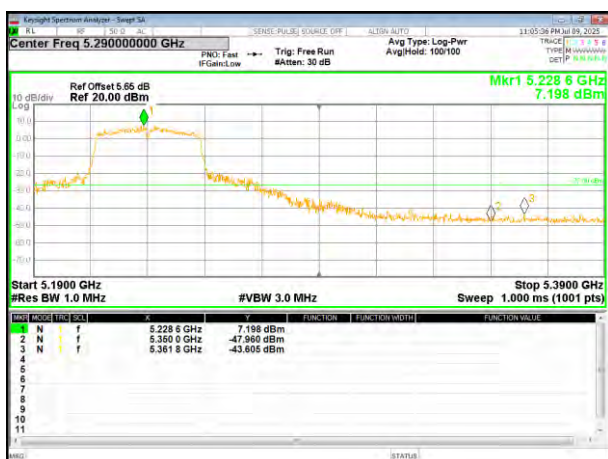
(802.11ac40) Band Edge, Left Side



(802.11ac80) Band Edge



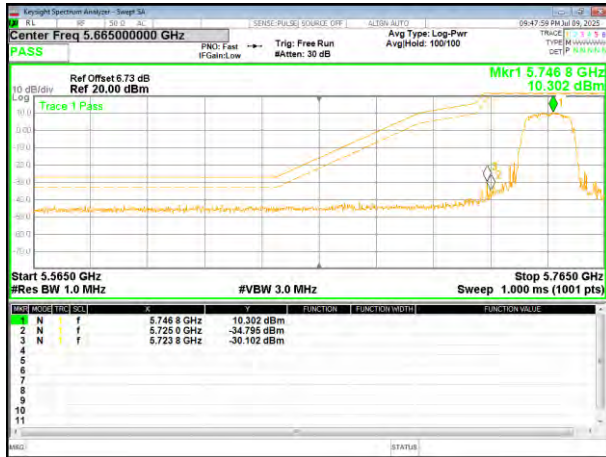
(802.11ac40) Band Edge, Right Side



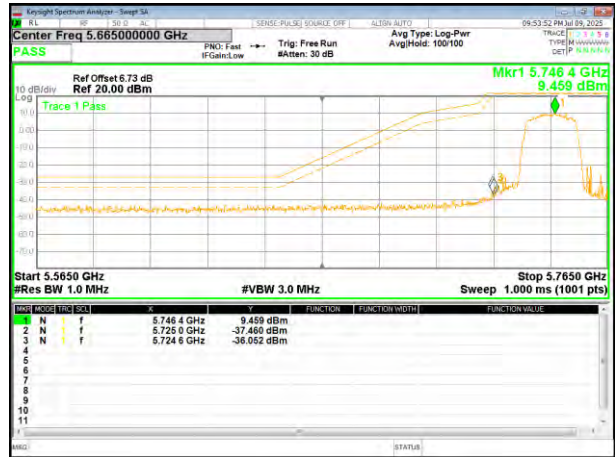
Remark: The antenna gain and cable loss were not compensated in the test data, and the margin value of the Band Edge test was greater than the sum of the antenna gain and cable loss, so the test met the requirements

5.745~5.825 GHz

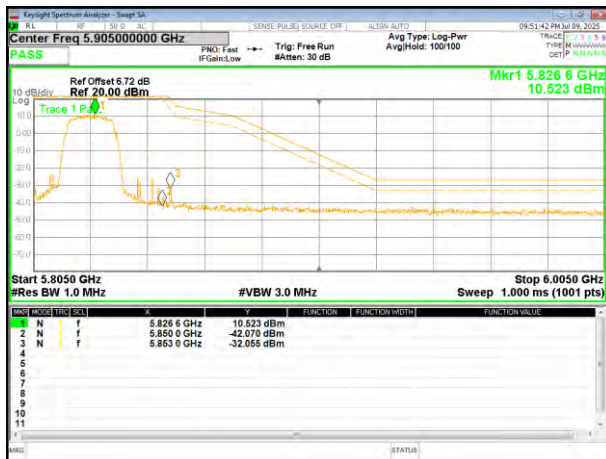
(802.11a) Band Edge, Left Side



(802.11n20) Band Edge, Left Side



(802.11a) Band Edge, Right Side

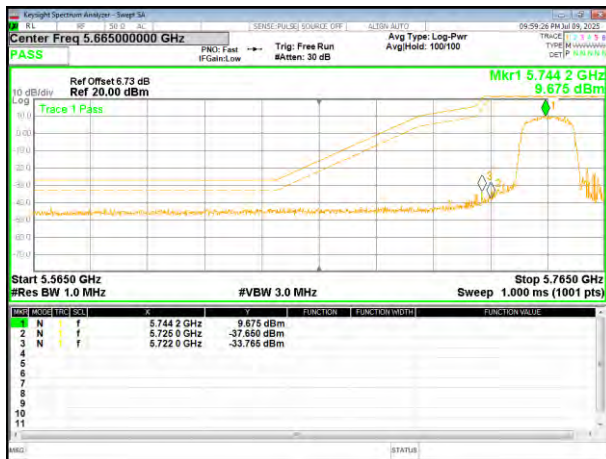


(802.11n20) Band Edge, Right Side

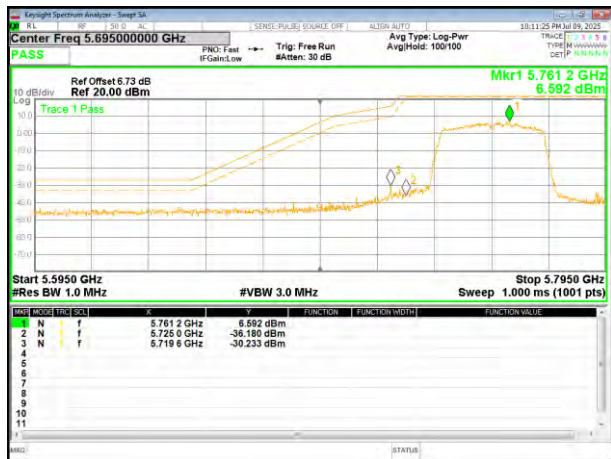


Remark: Antenna gain and cable loss data included in Offset.

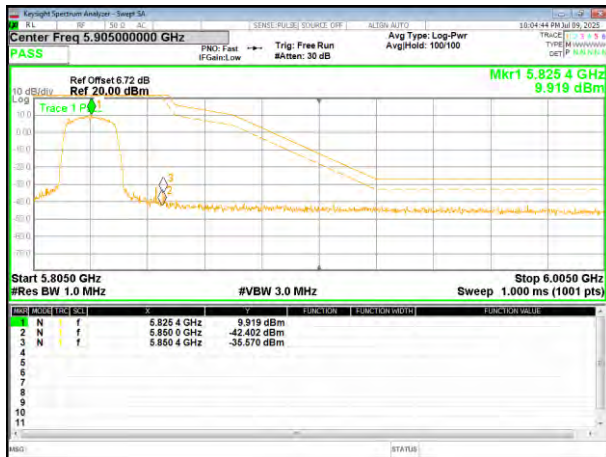
(802.11ac20) Band Edge, Left Side



(802.11n40) Band Edge, Left Side



(802.11ac20) Band Edge, Right Side



(802.11n40) Band Edge, Right Side



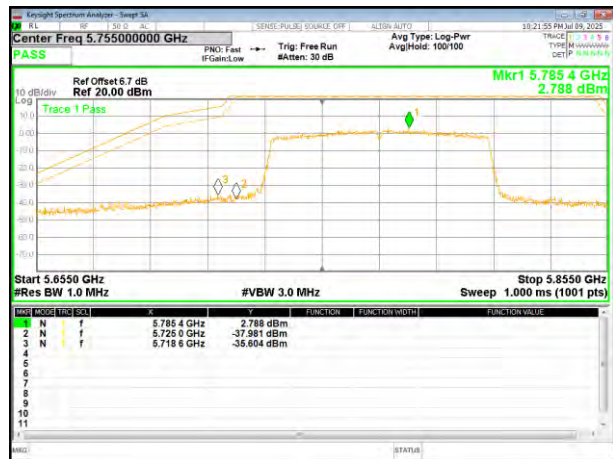
Remark: Antenna gain and cable loss data included in Offset.



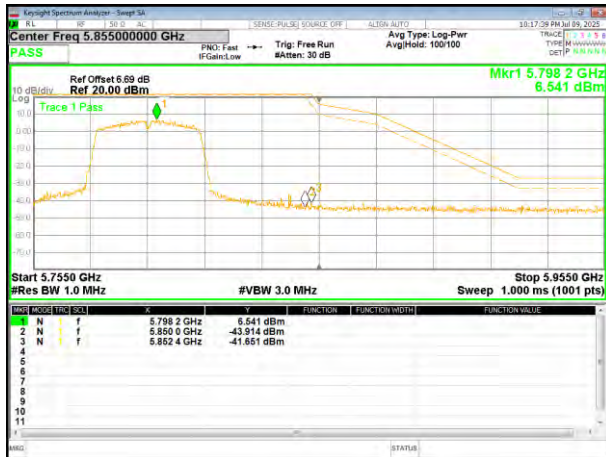
(802.11ac40) Band Edge, Left Side



(802.11ac80) Band Edge



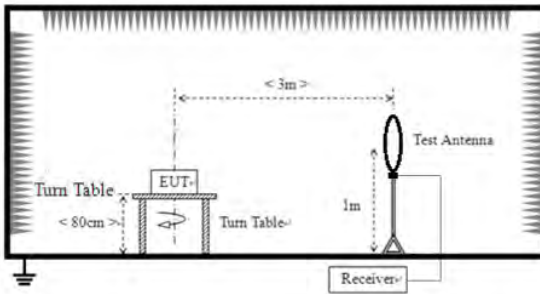
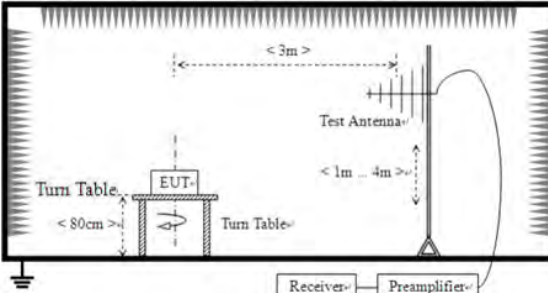
(802.11ac40) Band Edge, Right Side

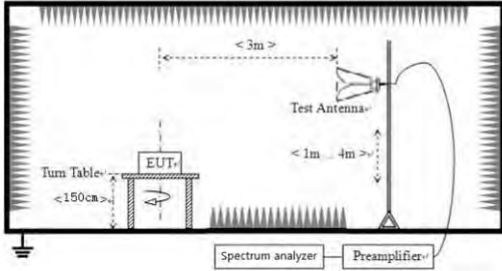


Remark: Antenna gain and cable loss data included in Offset.

4.8 Spurious Emission

4.8.1 Radiated Emission Method

Test Requirement:	47CRF Part 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:

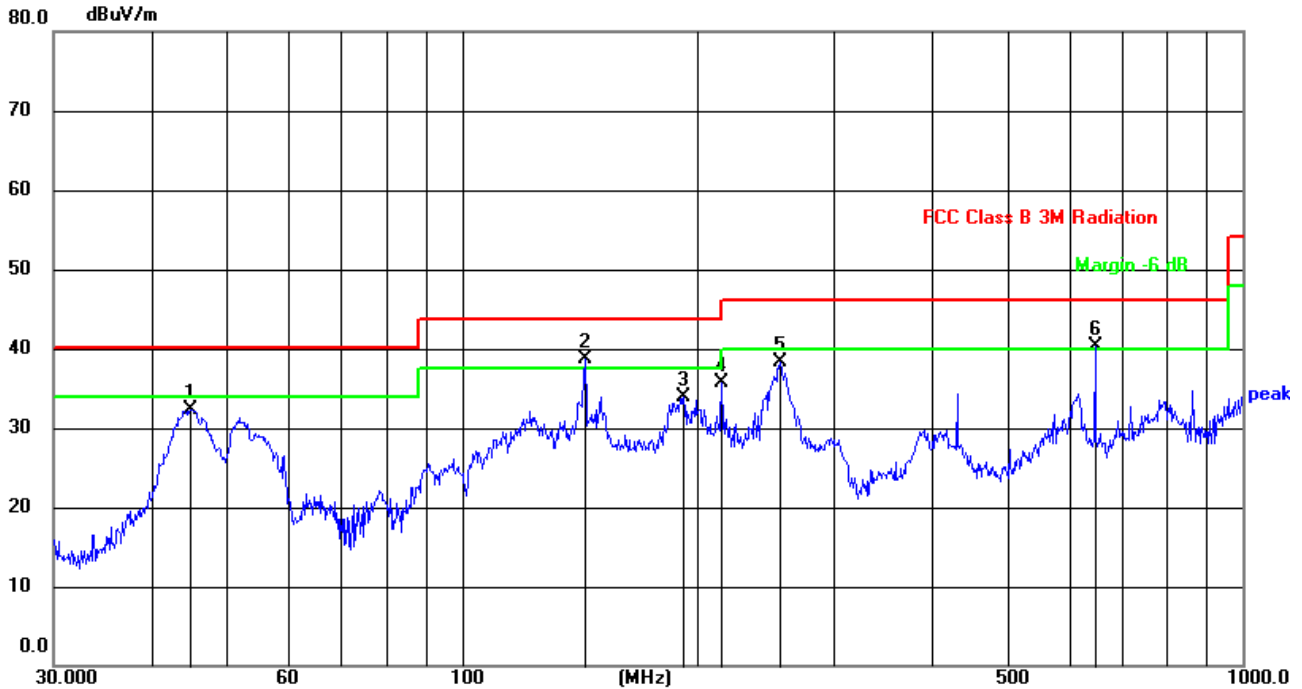
9 kHz ~ 30 MHz

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

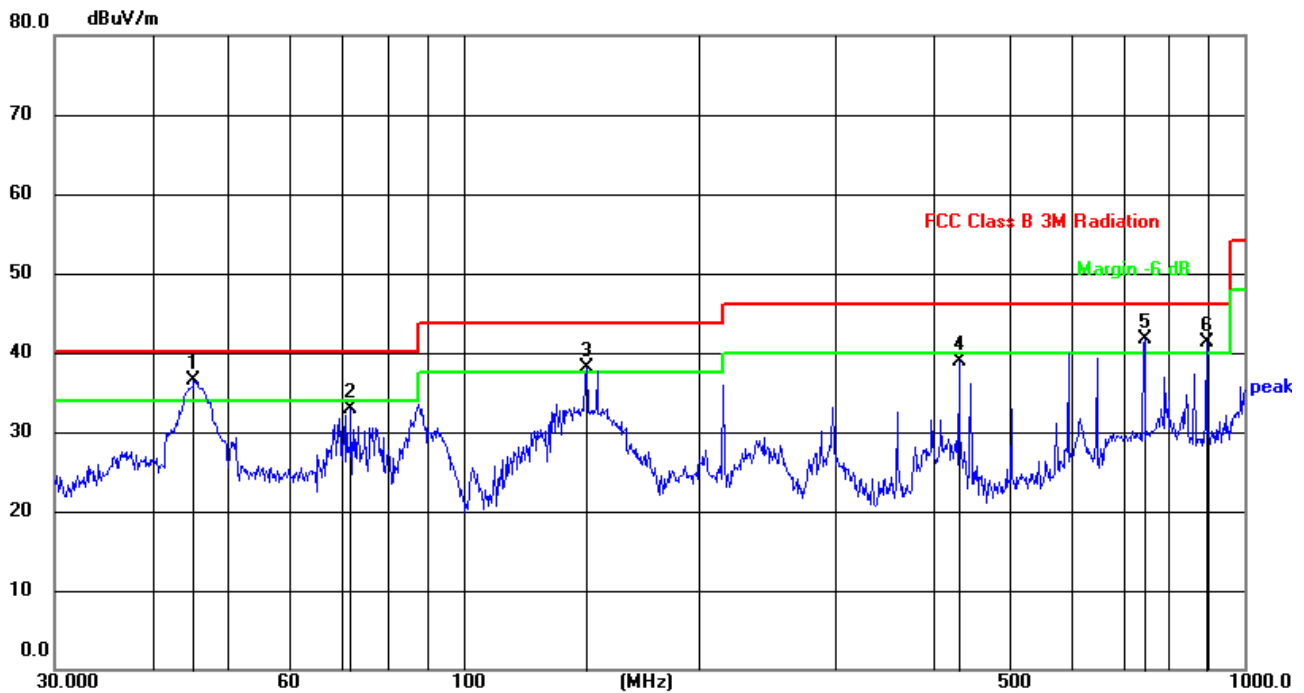
Temperature:	21.4℃	Relative Humidity:	63%RH
Pressure:	101.2kPa	Test Voltage :	15VDC from adapter with 120Vac
Test Mode :	TX- 802.11a (5825MHz)		

Horizontal:



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	44.9004	53.58	-21.18	32.40	40.00	-7.60	QP
2	143.8292	59.85	-21.20	38.65	43.50	-4.85	QP
3	192.4182	57.06	-23.17	33.89	43.50	-9.61	QP
4	215.2675	59.23	-23.52	35.71	43.50	-7.79	QP
5	255.6228	60.43	-22.15	38.28	46.00	-7.72	QP
6	647.3854	50.63	-10.38	40.25	46.00	-5.75	QP

Vertical:



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	45.2165	57.76	-21.21	36.55	40.00	-3.45	QP
2	71.8319	57.37	-24.52	32.85	40.00	-7.15	QP
3	143.8291	59.24	-21.20	38.04	43.50	-5.46	QP
4	431.0314	55.02	-16.09	38.93	46.00	-7.07	QP
5	744.8659	49.85	-8.21	41.64	46.00	-4.36	QP
6	893.8564	46.85	-5.54	41.31	46.00	-4.69	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 802.11a mode.**

Temperature:	21.4℃	Relative Humidity:	63%RH
Pressure:	101.2kPa	Test Voltage :	11.1V DC
Test Mode :	5.2G TX- 802.11a		

Polar (H/V)	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detect or Type
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
Low Channel:5180MHz							
V	10360.00	41.79	1.77	43.56	68.20	-24.64	PK
V	10360.00	37.03	1.77	38.80	54.00	-15.20	AV
V	15540.00	44.19	7.72	51.91	74.00	-22.09	PK
V	15540.00	33.20	7.72	40.92	54.00	-13.08	AV
V	20720.00	48.66	-5.73	42.93	68.20	-25.27	PK
V	20720.00	43.18	-5.73	37.45	54.00	-16.55	AV
V	25900.00	45.81	-2.89	42.92	68.20	-25.28	PK
V	25900.00	41.04	-2.89	38.15	54.00	-15.85	AV
V	31080.00	47.40	1.66	49.06	68.20	-19.14	PK
V	31080.00	41.47	1.66	43.13	54.00	-10.87	AV
V	36260.00	44.42	4.63	49.05	68.20	-19.15	PK
V	36260.00	38.41	4.63	43.04	54.00	-10.96	AV
H	10360.00	42.11	1.77	43.88	68.20	-24.32	PK
H	10360.00	37.19	1.77	38.96	54.00	-15.04	AV
H	15540.00	43.59	7.72	51.31	74.00	-22.69	PK
H	15540.00	33.30	7.72	41.02	54.00	-12.98	AV
H	20720.00	47.78	-5.73	42.05	68.20	-26.15	PK
H	20720.00	41.95	-5.73	36.22	54.00	-17.78	AV
H	25900.00	45.78	-2.89	42.89	68.20	-25.31	PK
H	25900.00	40.27	-2.89	37.38	54.00	-16.62	AV
H	31080.00	46.44	1.66	48.10	68.20	-20.10	PK
H	31080.00	41.09	1.66	42.75	54.00	-11.25	AV
H	36260.00	43.96	4.63	48.59	68.20	-19.61	PK
H	36260.00	38.80	4.63	43.43	54.00	-10.57	AV

Remark:

1. Emission Level = Meter Reading + Factor,
Factor=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.



Polar (H/V)	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detect or Type
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
Middle Channel:5200Hz							
V	10400.00	41.75	1.85	43.60	68.20	-24.60	PK
V	10400.00	37.02	1.85	38.87	54.00	-15.13	AV
V	15600.00	43.57	7.64	51.21	74.00	-22.79	PK
V	15600.00	32.57	7.64	40.21	54.00	-13.79	AV
V	20800.00	51.92	-5.67	46.25	68.20	-21.95	PK
V	20800.00	47.37	-5.67	41.70	54.00	-12.30	AV
V	26000.00	46.27	-2.85	43.42	68.20	-24.78	PK
V	26000.00	41.11	-2.85	38.26	54.00	-15.74	AV
V	31200.00	44.97	1.57	46.54	68.20	-21.66	PK
V	31200.00	41.13	1.57	42.70	54.00	-11.30	AV
V	36400.00	44.60	4.93	49.53	68.20	-18.67	PK
V	36400.00	39.66	4.93	44.59	54.00	-9.41	AV
H	10400.00	41.93	1.85	43.78	68.20	-24.42	PK
H	10400.00	37.42	1.85	39.27	54.00	-14.73	AV
H	15600.00	43.37	7.64	51.01	74.00	-22.99	PK
H	15600.00	32.79	7.64	40.43	54.00	-13.57	AV
H	20800.00	48.69	-5.67	43.02	68.20	-25.18	PK
H	20800.00	43.93	-5.67	38.26	54.00	-15.74	AV
H	26000.00	47.88	-2.85	45.03	68.20	-23.17	PK
H	26000.00	42.95	-2.85	40.10	54.00	-13.90	AV
H	31200.00	46.73	1.57	48.30	68.20	-19.90	PK
H	31200.00	41.29	1.57	42.86	54.00	-11.14	AV
H	36400.00	44.06	4.93	48.99	68.20	-19.21	PK
H	36400.00	39.50	4.93	44.43	54.00	-9.57	AV

Remark:

1. Emission Level = Meter Reading + Factor,
Factor=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.



Polar (H/V)	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detect or Type
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
High Channel:5240MHz							
V	10480.00	39.69	2.02	41.71	68.20	-26.49	PK
V	10480.00	34.69	2.02	36.71	54.00	-17.29	AV
V	15720.00	40.09	7.46	47.55	74.00	-26.45	PK
V	15720.00	30.39	7.46	37.85	54.00	-16.15	AV
V	20960.00	45.62	-5.56	40.06	68.20	-28.14	PK
V	20960.00	40.96	-5.56	35.40	54.00	-18.60	AV
V	26200.00	43.39	-2.50	40.89	68.20	-27.31	PK
V	26200.00	39.32	-2.50	36.82	54.00	-17.18	AV
V	31440.00	44.60	1.39	45.99	68.20	-22.21	PK
V	31440.00	40.11	1.39	41.50	54.00	-12.50	AV
V	36680.00	40.91	5.25	46.16	68.20	-22.04	PK
V	36680.00	36.74	5.25	41.99	54.00	-12.01	AV
H	10480.00	40.08	2.02	42.10	68.20	-26.10	PK
H	10480.00	35.53	2.02	37.55	54.00	-16.45	AV
H	15720.00	40.35	7.46	47.81	74.00	-26.19	PK
H	15720.00	30.44	7.46	37.90	54.00	-16.10	AV
H	20960.00	45.43	-5.56	39.87	68.20	-28.33	PK
H	20960.00	41.06	-5.56	35.50	54.00	-18.50	AV
H	26200.00	45.30	-2.50	42.80	68.20	-25.40	PK
H	26200.00	42.13	-2.50	39.63	54.00	-14.37	AV
H	31440.00	43.98	1.39	45.37	68.20	-22.83	PK
H	31440.00	39.42	1.39	40.81	54.00	-13.19	AV
H	36680.00	41.17	5.15	46.32	68.20	-21.88	PK
H	36680.00	36.44	5.15	41.59	54.00	-12.41	AV

Remark:

1. Emission Level = Meter Reading + Factor,
Factor=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:	24.7°C	Relative Humidity:	63%RH
Pressure:	101.2kPa	Test Voltage :	11.1V DC
Test Mode :	5.8G TX- 802.11a		

Polar (H/V)	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detect or Type
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
Low Channel:5745MHz							
V	11490.00	47.16	3.31	50.47	74.00	-23.53	PK
V	11490.00	37.10	3.31	40.41	54.00	-13.59	AV
V	17235.00	36.40	10.10	46.50	68.20	-21.70	PK
V	17235.00	31.38	10.10	41.48	54.00	-12.52	AV
V	22980.00	53.83	-4.61	49.22	74.00	-24.78	PK
V	22980.00	42.92	-4.61	38.31	54.00	-15.69	AV
V	28725.00	44.50	0.87	45.37	68.20	-22.83	PK
V	28725.00	40.12	0.87	40.99	54.00	-13.01	AV
V	34470.00	45.05	3.82	48.87	68.20	-19.33	PK
V	34470.00	39.68	3.82	43.50	54.00	-10.50	AV
H	11490.00	47.82	3.31	51.13	74.00	-22.87	PK
H	11490.00	37.27	3.31	40.58	54.00	-13.42	AV
H	17235.00	35.51	10.10	45.61	68.20	-22.59	PK
H	17235.00	30.64	10.10	40.74	54.00	-13.26	AV
H	22980.00	53.41	-4.61	48.80	74.00	-25.20	PK
H	22980.00	42.69	-4.61	38.08	54.00	-15.92	AV
H	28725.00	46.80	0.87	47.67	68.20	-20.53	PK
H	28725.00	42.56	0.87	43.43	54.00	-10.57	AV
H	34470.00	45.55	3.82	49.37	68.20	-18.83	PK
H	34470.00	40.99	3.82	44.81	54.00	-9.19	AV

Remark:

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



Polar (H/V)	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detect or Type
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
Low Channel:5785MHz							
V	11570.00	46.48	3.34	49.82	74.00	-24.18	PK
V	11570.00	36.36	3.34	39.70	54.00	-14.30	AV
V	17355.00	34.64	10.52	45.16	68.20	-23.04	PK
V	17355.00	29.99	10.52	40.51	54.00	-13.49	AV
V	23140.00	52.97	-4.66	48.31	74.00	-25.69	PK
V	23140.00	42.82	-4.66	38.16	54.00	-15.84	AV
V	28925.00	45.88	1.36	47.24	68.20	-20.96	PK
V	28925.00	41.01	1.36	42.37	54.00	-11.63	AV
V	34710.00	45.45	3.95	49.40	68.20	-18.80	PK
V	34710.00	40.23	3.95	44.18	54.00	-9.82	AV
H	11570.00	47.53	3.34	50.87	74.00	-23.13	PK
H	11570.00	37.41	3.34	40.75	54.00	-13.25	AV
H	17355.00	33.78	10.52	44.30	68.20	-23.90	PK
H	17355.00	30.34	10.52	40.86	54.00	-13.14	AV
H	23140.00	53.52	-4.66	48.86	74.00	-25.14	PK
H	23140.00	42.68	-4.66	38.02	54.00	-15.98	AV
H	28925.00	46.65	1.36	48.01	68.20	-20.19	PK
H	28925.00	42.28	1.36	43.64	54.00	-10.36	AV
H	34710.00	46.04	3.95	49.99	68.20	-18.21	PK
H	34710.00	40.58	3.95	44.53	54.00	-9.47	AV

Remark:

1. Emission Level = Meter Reading + Factor,
Factor=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.

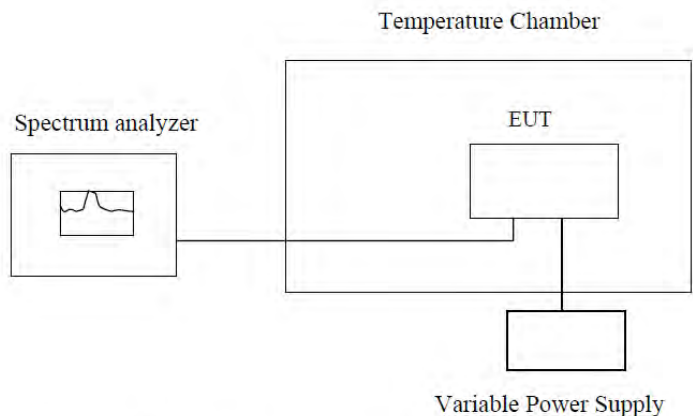


Polar (H/V)	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detect or Type
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
Low Channel:5825MHz							
V	11650.00	44.54	3.36	47.90	74.00	-26.10	PK
V	11650.00	34.50	3.36	37.86	54.00	-16.14	AV
V	17475.00	32.60	10.93	43.53	68.20	-24.67	PK
V	17475.00	28.96	10.93	39.89	54.00	-14.11	AV
V	23300.00	46.04	-4.77	41.27	68.20	-26.93	PK
V	23300.00	41.66	-4.77	36.89	54.00	-17.11	AV
V	29125.00	43.71	1.65	45.36	68.20	-22.84	PK
V	29125.00	38.51	1.65	40.16	54.00	-13.84	AV
V	34950.00	42.02	4.09	46.11	68.20	-22.09	PK
V	34950.00	37.87	4.09	41.96	54.00	-12.04	AV
H	11650.00	44.93	3.36	48.29	74.00	-25.71	PK
H	11650.00	35.01	3.36	38.37	54.00	-15.63	AV
H	17475.00	32.01	10.93	42.94	68.20	-25.26	PK
H	17475.00	27.23	10.93	38.16	54.00	-15.84	AV
H	23300.00	45.62	-4.77	40.85	68.20	-27.35	PK
H	23300.00	41.11	-4.77	36.34	54.00	-17.66	AV
H	29125.00	42.61	1.65	44.26	68.20	-23.94	PK
H	29125.00	39.47	1.65	41.12	54.00	-12.88	AV
H	34950.00	42.95	4.09	47.04	68.20	-21.16	PK
H	34950.00	38.06	4.09	42.15	54.00	-11.85	AV

Remark:

1. Emission Level = Meter Reading + Factor,
Factor=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.

4.9 Frequency stability

Test Requirement:	47CRF Part 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: 11.1VDC					
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	5179.994	5179.997	5179.994	5179.943
	5190	5189.990	5189.998	5189.985	5189.973
	5200	5199.985	5199.989	5199.993	5199.998
	5210	5209.991	5209.997	5209.985	5209.982
	5220	5219.986	5219.989	5220.006	5219.973
	5230	5229.984	5230.010	5229.984	5230.001
	5240	5239.997	5239.988	5240.002	5239.989
-20	5180	5179.946	5179.997	5179.982	5179.986
	5190	5189.976	5189.998	5189.993	5189.981
	5200	5199.971	5199.989	5199.984	5199.983
	5210	5209.985	5209.997	5209.985	5209.984
	5220	5219.976	5219.989	5219.992	5219.999
	5230	5229.984	5230.010	5230.000	5229.992
	5240	5239.992	5239.988	5239.982	5240.000
-10	5180	5179.984	5179.997	5179.994	5179.950
	5190	5189.985	5189.998	5189.985	5189.980
	5200	5199.976	5199.989	5199.993	5199.985
	5210	5209.984	5209.997	5209.985	5209.989
	5220	5219.976	5219.989	5220.006	5219.980
	5230	5229.997	5230.010	5229.984	5229.988
	5240	5239.975	5239.988	5240.002	5239.996
0	5180	5179.936	5180.000	5180.000	5179.988
	5190	5189.932	5189.996	5189.990	5189.988
	5200	5199.927	5199.991	5200.000	5199.999
	5210	5209.933	5209.997	5209.950	5210.000
	5220	5219.928	5220.002	5219.996	5219.985
	5230	5229.926	5230.006	5230.002	5230.002
	5240	5239.989	5240.006	5240.003	5239.987
10	5180	5179.973	5179.998	5179.994	5179.991
	5190	5189.984	5189.989	5189.985	5189.991
	5200	5199.975	5199.997	5199.993	5199.987
	5210	5209.976	5209.989	5209.985	5209.982
	5220	5219.983	5220.010	5220.006	5219.998
	5230	5229.991	5229.988	5229.984	5229.983
	5240	5239.973	5240.006	5240.002	5239.981
20	5180	5179.994	5179.997	5179.994	5179.943
	5190	5189.990	5189.998	5189.985	5189.973



	5200	5199.985	5199.989	5199.993	5199.998
	5210	5209.991	5299.997	5209.985	5209.982
	5220	5219.986	5219.989	5220.006	5219.973
	5230	5229.984	5230.010	5229.984	5230.001
	5240	5239.957	5239.988	5240.002	5239.989
30	5180	5179.924	5179.995	5179.993	5179.992
	5190	5189.920	5190.009	5189.824	5189.996
	5200	5199.915	5199.992	5199.992	5199.981
	5210	5209.921	5209.995	5209.994	5210.002
	5220	5219.916	5220.010	5219.995	5219.993
	5230	5229.913	5230.003	5229.992	5229.988
	5240	5239.886	5240.011	5239.996	5239.993
40	5180	5179.984	5179.986	5179.994	5179.981
	5190	5189.985	5189.997	5189.985	5189.982
	5200	5199.915	5199.997	5200.002	5199.981
	5210	5209.921	5209.995	5209.994	5209.989
	5220	5219.916	5220.002	5219.995	5219.993
	5230	5229.997	5230.004	5229.984	5229.994
	5240	5239.975	5239.986	5240.002	5239.972
50	5180	5179.946	5179.997	5179.982	5179.996
	5190	5189.976	5189.998	5189.993	5189.981
	5200	5199.991	5199.989	5199.984	5199.993
	5210	5209.921	5210.009	5209.994	5209.993
	5220	5219.916	5220.004	5220.001	5219.994
	5230	5229.913	5230.011	5229.996	5229.992
	5240	5239.986	5240.009	5239.990	5239.993



Frequency stability versus Voltage					
Temperature: 25°C					
Power Supply (VDC)	Operating Frequency (MHz)	0 minute Measured Frequency (MHz)	2 minute Measured Frequency (MHz)	5 minute Measured Frequency (MHz)	10 minute Measured Frequency (MHz)
9.435VDC	5180	5179.910	5180.010	5179.992	5179.987
	5190	5189.986	5190.000	5189.993	5189.985
	5200	5199.984	5200.002	5199.994	5199.989
	5210	5209.987	5209.987	5209.990	5209.999
	5220	5219.997	5219.995	5219.994	5219.988
	5230	5229.974	5230.000	5229.993	5229.992
	5240	5239.982	5240.009	5240.002	5239.989
11.1VDC	5180	5179.924	5180.005	5179.993	5179.992
	5190	5189.980	5189.999	5189.994	5189.976
	5200	5199.985	5199.987	5199.992	5199.981
	5210	5209.921	5209.995	5209.968	5209.999
	5220	5219.916	5220.010	5219.995	5219.993
	5230	5229.913	5230.002	5229.992	5229.985
	5240	5239.986	5240.009	5239.996	5239.993
12.765VDC	5180	5179.994	5180.007	5179.982	5179.970
	5190	5189.990	5190.003	5189.993	5189.981
	5200	5199.985	5199.998	5199.984	5199.971
	5210	5209.991	5210.004	5209.985	5209.973
	5220	5219.986	5219.999	5219.992	5219.980
	5230	5229.984	5229.997	5229.997	5230.003
	5240	5239.987	5240.000	5239.982	5239.970



Frequency stability versus Temp.					
Power Supply: 11.1VDC					
Temp. (°C)	Operating Frequency (MHz)	0 minute Measured Frequency (MHz)	2 minute Measured Frequency (MHz)	5 minute Measured Frequency (MHz)	10 minute Measured Frequency (MHz)
-30	5745	5744.996	5745.000	5744.995	5744.991
	5755	5754.984	5754.996	5754.999	5754.973
	5775	5774.976	5774.995	5775.000	5774.982
	5785	5784.985	5784.998	5785.003	5784.973
	5795	5794.976	5795.009	5794.986	5794.984
	5825	5824.987	5824.990	5824.982	5824.987
-20	5745	5744.890	5744.980	5744.996	5744.974
	5755	5754.915	5754.996	5754.998	5755.000
	5775	5774.895	5774.995	5775.001	5774.996
	5785	5784.904	5784.998	5784.993	5784.980
	5795	5794.982	5795.009	5794.984	5794.969
	5825	5824.987	5824.990	5824.993	5824.983
-10	5745	5744.976	5744.991	5744.980	5744.988
	5755	5754.983	5754.998	5755.005	5754.983
	5775	5774.975	5774.995	5774.986	5774.987
	5785	5784.967	5784.991	5784.995	5784.988
	5795	5794.974	5794.987	5794.993	5794.991
	5825	5824.983	5824.990	5825.003	5824.992
0	5745	5744.970	5744.990	5744.986	5744.993
	5755	5754.980	5754.997	5754.993	5754.992
	5775	5774.991	5774.989	5774.997	5774.983
	5785	5784.977	5784.981	5784.986	5784.980
	5795	5794.973	5794.988	5794.982	5794.998
	5825	5824.971	5824.997	5824.985	5824.990
10	5745	5744.967	5745.001	5744.980	5744.984
	5755	5754.982	5755.003	5755.005	5754.998
	5775	5774.981	5775.006	5774.986	5774.983
	5785	5784.984	5784.998	5784.995	5784.970
	5795	5794.994	5794.989	5794.993	5794.964
	5825	5824.976	5824.998	5825.003	5824.998
20	5745	5744.987	5744.990	5744.996	5744.973
	5755	5754.989	5755.007	5755.000	5754.992
	5775	5774.986	5775.008	5774.995	5774.972
	5785	5784.973	5784.990	5784.982	5784.999
	5795	5794.967	5795.007	5794.976	5794.991
	5825	5824.993	5825.005	5824.946	5825.000
30	5745	5744.966	5745.001	5744.980	5744.992
	5755	5754.982	5755.003	5755.005	5754.998
	5775	5774.981	5775.006	5774.986	5774.983
	5785	5784.984	5784.998	5784.995	5784.970
	5795	5794.995	5794.989	5794.993	5794.964
	5825	5824.976	5824.998	5825.003	5824.998
40	5745	5744.977	5744.990	5744.980	5744.968
	5755	5754.984	5755.007	5755.005	5754.993
	5775	5774.976	5775.008	5774.986	5774.974
	5785	5784.968	5784.990	5784.995	5784.983
	5795	5794.975	5795.007	5794.993	5794.981
	5825	5824.994	5825.005	5825.003	5824.991



50	5745	5744.971	5744.990	5744.985	5744.974
	5755	5754.996	5755.007	5754.992	5754.981
	5775	5774.977	5775.008	5774.984	5774.998
	5785	5784.986	5784.990	5784.976	5784.974
	5795	5794.984	5795.007	5794.983	5794.970
	5825	5824.994	5825.005	5824.912	5824.973

Frequency stability versus Voltage					
Temperature: 25°C					
Power Supply (VDC)	Operating Frequency (MHz)	0 minute Measured Frequency (MHz)	2 minute Measured Frequency (MHz)	5 minute Measured Frequency (MHz)	10 minute Measured Frequency (MHz)
9.435VDC	5745	5744.986	5745.000	5744.996	5744.988
	5755	5754.982	5754.997	5755.002	5754.993
	5775	5774.981	5774.989	5775.003	5774.974
	5785	5784.984	5784.981	5784.985	5784.983
	5795	5794.995	5794.988	5795.003	5794.981
	5825	5824.976	5825.007	5825.000	5824.991
11.1VDC	5745	5744.966	5745.001	5744.980	5744.984
	5755	5754.982	5755.003	5755.005	5754.998
	5775	5774.981	5775.006	5774.986	5774.983
	5785	5784.984	5784.998	5784.995	5784.970
	5795	5794.991	5794.989	5794.993	5794.964
	5825	5824.976	5824.998	5825.003	5824.998
16.765VDC	5745	5744.896	5744.998	5744.996	5745.001
	5755	5754.983	5755.010	5755.000	5754.989
	5775	5774.989	5774.994	5774.995	5774.999
	5785	5784.995	5785.994	5784.982	5784.995
	5795	5794.994	5794.989	5794.993	5794.964
	5825	5824.976	5824.998	5825.003	5824.998



5 Test Setup Photo

Reference to the file No.: ET-25072212SP for details.

6 EUT Constructional Details

Reference to the file No.: ET-25072212EP and ET-25072212IP for details.

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