



RF TEST REPORT

Applicant	ZTE Corporation
FCC ID	SRQ-MU5001
Product	UFI
Model	MU5001
Marketing	Vodafone Giga To Go
Report No.	R2106A0528-R3V1
Issue Date	July 19, 2021

TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in **FCC CFR47 Part 15E (2020)**. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

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TABLE OF CONTENT

1. Test Laboratory	5
1.1. Notes of the test report.....	5
1.2. Test facility	5
1.3. Testing Location.....	5
2. General Description of Equipment under Test.....	6
2.1. Applicant and Manufacturer Information.....	6
2.2. General information.....	6
3. Applied Standards	8
4. Test Configuration	9
5. Test Case Results	13
5.1. Occupied Bandwidth	13
5.2. Average Power Output.....	39
5.3. Frequency Stability.....	54
5.4. Power Spectral Density	57
5.5. Unwanted Emission	126
5.6. Conducted Emission	199
6. Main Test Instruments.....	202
ANNEX A: The EUT Appearance	203
ANNEX B: Test Setup Photos	204



Version	Revision description	Issue Date
Rev.0	Initial issue of report.	July 16, 2021
Rev.1	Add description Page 7.	July 19, 2021
Note: This revised report (Report No. R2106A0528-R3V1) supersedes and replaces the previously issued report (Report No. R2106A0528-R3). Please discard or destroy the previously issued report and dispose of it accordingly.		

Summary of measurement results

Number	Test Case	Clause in FCC rules	Verdict
1	Average output power	15.407(a)	PASS
2	Occupied bandwidth	15.407(e)	PASS
3	Frequency stability	15.407(g)	PASS
4	Power spectral density	15.407(a)	PASS
5	Unwanted Emissions	15.407(b)	PASS
6	Conducted Emissions	15.207	PASS
Date of Testing: June 22, 2021~July 15, 2021			
Date of Sample Received: June 22, 2021			
Note: PASS: The EUT complies with the essential requirements in the standard. FAIL: The EUT does not comply with the essential requirements in the standard. All indications of Pass/Fail in this report are opinions expressed by TA Technology (Shanghai) Co., Ltd. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only.			



1. Test Laboratory

1.1. Notes of the test report

This report shall not be reproduced in full or partial, without the written approval of **TA technology (shanghai) co., Ltd.** The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. Measurement Uncertainties were not taken into account and are published for informational purposes only. This report is written to support regulatory compliance of the applicable standards stated above.

1.2. Test facility

FCC (Designation number: CN1179, Test Firm Registration Number: 446626)

TA Technology (Shanghai) Co., Ltd. has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements.

A2LA (Certificate Number: 3857.01)

TA Technology (Shanghai) Co., Ltd. has been listed by American Association for Laboratory Accreditation to perform electromagnetic emission measurement.

1.3. Testing Location

Company: TA Technology (Shanghai) Co., Ltd.
Address: No.145, Jintang Rd, Tangzhen Industry Park, Pudong
City: Shanghai
Post code: 201201
Country: P. R. China
Contact: Xu Kai
Telephone: +86-021-50791141/2/3
Fax: +86-021-50791141/2/3-8000
Website: <http://www.ta-shanghai.com>
E-mail: xukai@ta-shanghai.com

2. General Description of Equipment under Test

2.1. Applicant and Manufacturer Information

Applicant	ZTE Corporation
Applicant address	ZTE Plaza, Keji Road South, Hi-Tech, Industrial Park, Nanshan District, Shenzhen, Guangdong, 518057, P.R.China
Manufacturer	Vodafone S.à r.l.
Manufacturer address	15 rue Edward Steichen, L-2540, Luxembourg, Grand-Duché de Luxembourg

2.2. General information

EUT Description	
Model	MU5001
IMEI	869926050009519
Hardware Version	MU5001V1.0.0
Software Version	BD_ASEUMU5001V1.0.0B03
Power Supply	Battery / AC adapter
Antenna Type	Internal Antenna
Antenna Gain	Antenna 1: 2.5dBi Antenna 2: 2.6dBi
Directional Gain	Beamforming Mode for Power: 2.60dBi Beamforming Mode for PSD: 5.61dBi
Test Band	U-NII-1(5150MHz-5250MHz) U-NII-3(5725MHz-5850MHz)
Modulation Type	802.11a/n (HT20/HT40) : OFDM 802.11ac (VHT20/VHT40/VHT80): OFDM 802.11ax(HE20/HE40/ HE80): OFDMA
Max. Conducted Power	16.91dBm
Operating Frequency Range(s)	U-NII-1: 5150MHz-5250MHz U-NII-3: 5725MHz-5850MHz
Extreme temperature range:	-30 ° C to 50° C
Operating temperature range:	-10 ° C to 55° C
Operating voltage range:	3.3 V to 4.4 V
State DC voltage:	3.8V
EUT Accessory	
Adapter 1	Manufacturer: SHENZHEN RUIJING INDUSTRIAL CO LTD Model: STC-A5930A1-A



Adapter 2	Manufacturer: Jiangsu Chenyang Electron Co., Ltd. Model: STC-A5930A1-A
Adapter 3	Manufacturer: SHENZHEN RUIJING INDUSTRIAL CO LTD Model: STC-A5930A1-B
Adapter 4	Manufacturer: Jiangsu Chenyang Electron Co., Ltd. Model: STC-A5930A1-B
Battery	Manufacturer: ZHUHAI COSMX BATTERY CO., LTD. Model:Li3945T44P4h815174
USB Cable 1	Manufacturer: Luxshare-ICT Co., Ltd Model:USB-TC30-W-100-M 100cm Cable, Shielded
USB Cable 2	Manufacturer: King Power Electronics Co.,Ltd Model:USB-TC30-W-100-M 100cm Cable, Shielded
Note:1. The EUT is sent from the applicant to TA and the information of the EUT is declared by the applicant. 2. There are more than one Adapter, and USB Cable, each one should be applied throughout the compliance test respectively, however, only the worst case (Adapter 1/ USB Cable 1) will be recorded in this report. 3. This device support automatically discontinue transmission, while the device is not transmitting any information, the device can automatically discontinue transmission and become standby mode for power saving. The device can detect the controlling signal of ACK message transmitting from remote device and verify whether it shall resend or discontinue transmission.	



3. Applied Standards

According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

Test standards:

FCC CFR47 Part 15E (2020)

ANSI C63.10 (2013)

Reference standard:

KDB 789033 D02 General UNII Test Procedures New Rules v02r01

KDB 662911 D01 Multiple Transmitter Output v02r01

4. Test Configuration

Test Mode

The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application.

The radiated emission was measured in the following position: EUT stand-up position (Z axis), lie-down position (X, Y axis). The worst emission was found in stand-up position (Z axis) and the worst case was recorded.

In order to find the worst case condition, Pre-tests are needed at the presence of different data rate. Preliminary tests have been done on all the configuration for confirming worst case. Data rate below means worst-case rate of each test item.

Worst-case data rates are shown as following table.

Mode	Data Rate		
	Antenna 1	Antenna 2	MIMO
802.11a	6 Mbps	6 Mbps	/
802.11n HT20	MCS0	MCS0	MCS8
802.11n HT40	MCS0	MCS0	MCS8
802.11ac VHT20	MCS0	MCS0	MCS0
802.11ac VHT40	MCS0	MCS0	MCS0
802.11ac VHT80	MCS0	MCS0	MCS0
802.11ax HE20	MCS0	MCS0	MCS0
802.11ax HE40	MCS0	MCS0	MCS0
802.11ax HE80	MCS0	MCS0	MCS0



The worst case Antenna mode for each of the following tests for Wi-Fi:

TB Mode

Test Cases	SISO Antenna 1	SISO Antenna 2	MIMO
Average conducted output power	RU Mode 802.11a 802.11n HT20 802.11n HT40 802.11ac VHT20 802.11ac VHT40 802.11ac VHT80 TB Mode MU 802.11ax HE20 (26-Tones:RU Index 0/4/8, 52-Tones:RU Index 37/38/40, 106-Tones:RU Index 53/54) TB Mode SU 802.11ax HE20 (242-Tones:RU Index 61) TB Mode SU 802.11ax HE40 (484-Tones:RU Index 65) TB Mode SU 802.11ax HE80 (996-Tones:RU Index 67)	RU Mode 802.11a 802.11n HT20 802.11n HT40 802.11ac VHT20 802.11ac VHT40 802.11ac VHT80 TB Mode MU 802.11ax HE20 (26-Tones:RU Index 0/4/8, 52-Tones:RU Index 37/38/40, 106-Tones:RU Index 53/54) TB Mode SU 802.11ax HE20 (242-Tones:RU Index 61) TB Mode SU 802.11ax HE40 (484-Tones:RU Index 65) TB Mode SU 802.11ax HE80 (996-Tones:RU Index 67)	RU Mode 802.11a 802.11n HT20 802.11n HT40 802.11ac VHT20 802.11ac VHT40 802.11ac VHT80 TB Mode MU 802.11ax HE20 (26-Tones:RU Index 0/4/8, 52-Tones:RU Index 37/38/40, 106-Tones:RU Index 53/54) TB Mode SU 802.11ax HE20 (242-Tones:RU Index 61) TB Mode SU 802.11ax HE40 (484-Tones:RU Index 65) TB Mode SU 802.11ax HE80 (996-Tones:RU Index 67)
Occupied bandwidth	RU Mode 802.11a 802.11n HT20 802.11n HT40 802.11ac VHT20 802.11ac VHT40 802.11ac VHT80 TB Mode MU 802.11ax HE20 (26-Tones:RU Index 0/4/8, 52-Tones:RU Index 37/38/40, 106-Tones:RU Index 53/54) TB Mode SU 802.11ax HE20 (242-Tones:RU Index 61) TB Mode SU 802.11ax HE40 (484-Tones:RU Index 65) TB Mode SU 802.11ax HE80 (996-Tones:RU Index 67)	--	--
Frequency stability	802.11a	--	--
Power Spectral Density	RU Mode 802.11a 802.11n HT20 802.11n HT40 802.11ac VHT20	RU Mode 802.11a 802.11n HT20 802.11n HT40 802.11ac VHT20	RU Mode 802.11a 802.11n HT20 802.11n HT40 802.11ac VHT20



	802.11ac VHT40 802.11ac VHT80 TB Mode MU 802.11ax HE20 (26-Tones:RU Index 0/4/8, 52-Tones:RU Index 37/38/40, 106-Tones:RU Index 53/54) TB Mode SU 802.11ax HE20 (242-Tones:RU Index 61) TB Mode SU 802.11ax HE40 (484-Tones:RU Index 65) TB Mode SU 802.11ax HE80 (996-Tones:RU Index 67)	802.11ac VHT40 802.11ac VHT80 TB Mode MU 802.11ax HE20 (26-Tones:RU Index 0/4/8, 52-Tones:RU Index 37/38/40, 106-Tones:RU Index 53/54) TB Mode SU 802.11ax HE20 (242-Tones:RU Index 61) TB Mode SU 802.11ax HE40 (484-Tones:RU Index 65) TB Mode SU 802.11ax HE80 (996-Tones:RU Index 67)	802.11ac VHT40 802.11ac VHT80 TB Mode MU 802.11ax HE20 (26-Tones:RU Index 0/4/8, 52-Tones:RU Index 37/38/40, 106-Tones:RU Index 53/54) TB Mode SU 802.11ax HE20 (242-Tones:RU Index 61) TB Mode SU 802.11ax HE40 (484-Tones:RU Index 65) TB Mode SU 802.11ax HE80 (996-Tones:RU Index 67)
Unwanted Emissions	802.11a	-	802.11n HT20 802.11n HT40 802.11ac VHT20 802.11ac VHT40 802.11ac VHT80 802.11ax HE20 802.11ax HE40 802.11ax HE80
Conducted Emissions	-	-	802.11ax HE40
Note: "O": test all bands			

According to RF Output power results in chapter 5.1, MIMO was selected as the worst antenna for 802.11n HT20/40, 802.11ac VHT20/40/80, 802.11ax HE20/40/80. SISO Antenna 1 was selected as the worst SISO antenna.

**Wireless Technology and Frequency Range**

Wireless Technology		Bandwidth	Channel	Frequency
Wi-Fi	U-NII-1	20 MHz	36	5180MHz
			40	5200MHz
			44	5220MHz
			48	5240MHz
		40 MHz	38	5190MHz
			46	5230MHz
		80 MHz	42	5210MHz
	U-NII-3	20 MHz	149	5745MHz
			153	5765MHz
			157	5785MHz
			161	5805MHz
			165	5825MHz
		40 MHz	151	5755MHz
			159	5795MHz
		80 MHz	155	5775MHz

5. Test Case Results

5.1. Occupied Bandwidth

Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

The EUT was connected to the spectrum analyzer through an external attenuator (20dB) and a known loss cable.

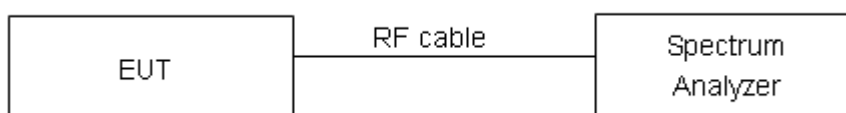
For U-NII-1/U-NII-2A/U-NII-2C, set RBW $\approx$ 1% OCB kHz, VBW $\geq 3 \times$ RBW, measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 26 dB relative to the maximum level measured in the fundamental emission.

For U-NII-3, Set RBW = 100 kHz, VBW $\geq 3 \times$ RBW, measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

Note: The automatic bandwidth measurement capability of a spectrum analyzer or EMI receiver may be employed if it implements the functionality described above.

Use the 99 % power bandwidth function of the instrument

Test Setup



Limits

Rule FCC Part §15.407(e)

Within the 5.725-5.85 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 2$, $U = 936$ Hz.

**Test Results:****RU Mode****U-NII-1**

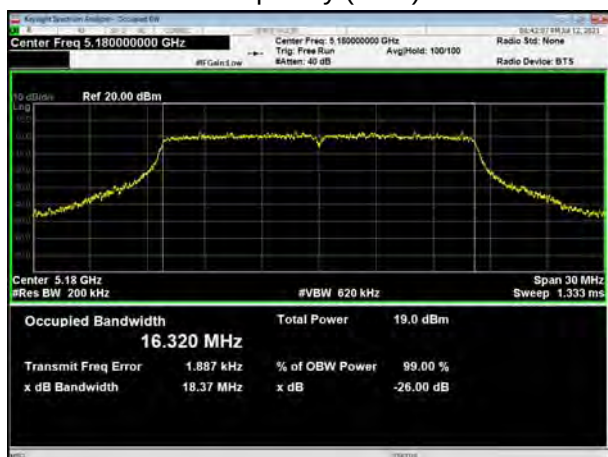
Mode	Carrier frequency (MHz)	99% bandwidth (MHz)	Minimum 26 dB bandwidth (MHz)	Conclusion
802.11a	5180	16.320	18.37	PASS
	5200	16.326	18.41	PASS
	5240	16.336	18.35	PASS
802.11n HT20	5180	17.507	19.49	PASS
	5200	17.516	19.55	PASS
	5240	17.511	19.37	PASS
802.11n HT40	5190	35.962	38.94	PASS
	5230	35.993	38.84	PASS
802.11ac VHT20	5180	17.518	19.55	PASS
	5200	17.514	19.41	PASS
	5240	17.515	19.45	PASS
802.11ac VHT40	5190	35.991	39.17	PASS
	5230	35.994	39.24	PASS
802.11ac VHT80	5210	75.329	80.92	PASS
802.11ax HE20	5180	18.874	20.49	PASS
	5200	18.875	20.25	PASS
	5240	18.898	20.49	PASS
802.11ax HE40	5190	37.661	40.25	PASS
	5230	37.675	40.10	PASS
802.11ax HE80	5210	77.004	80.82	PASS



U-NII-3

Mode	Carrier frequency (MHz)	99% bandwidth (MHz)	Minimum 6 dB bandwidth (MHz)	Limit (kHz)	Conclusion
802.11a	5745	16.335	16.040	500	PASS
	5785	16.330	16.272	500	PASS
	5825	16.333	16.293	500	PASS
802.11n HT20	5745	17.531	17.548	500	PASS
	5785	17.508	16.909	500	PASS
	5825	17.534	17.579	500	PASS
802.11n HT40	5755	36.011	36.284	500	PASS
	5795	35.911	34.158	500	PASS
802.11ac VHT20	5745	17.523	16.887	500	PASS
	5785	17.506	17.037	500	PASS
	5825	17.522	17.239	500	PASS
802.11ac VHT40	5755	36.029	36.285	500	PASS
	5795	35.914	33.733	500	PASS
802.11ac VHT80	5775	75.371	74.456	500	PASS
802.11ax HE20	5745	18.854	18.550	500	PASS
	5785	18.866	18.846	500	PASS
	5825	18.885	17.685	500	PASS
802.11ax HE40	5755	37.647	37.851	500	PASS
	5795	37.551	37.473	500	PASS
802.11ax HE80	5775	77.135	74.634	500	PASS

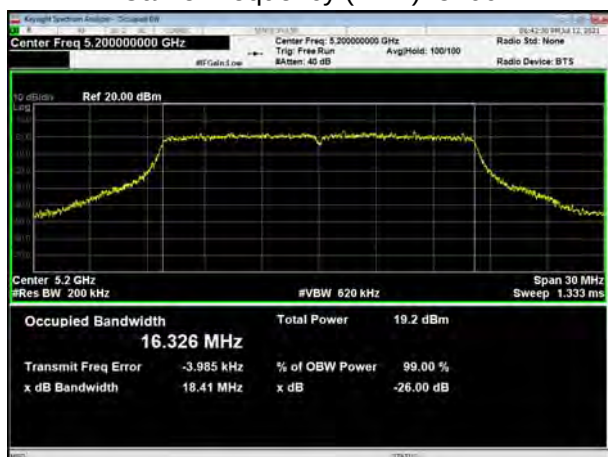
U-NII-1, 802.11a
Carrier frequency (MHz): 5180



U-NII-1, 802.11n HT20
Carrier frequency (MHz): 5180



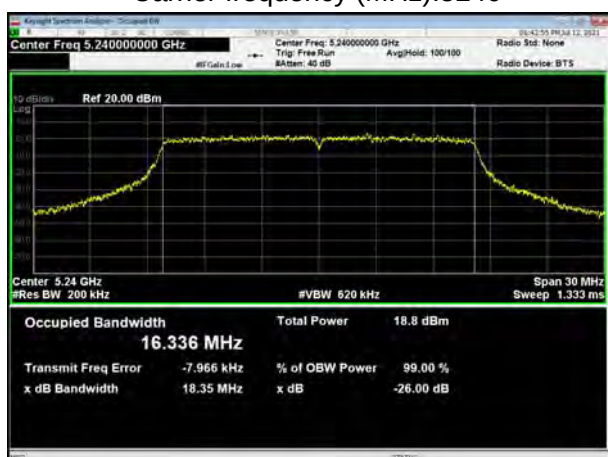
U-NII-1, 802.11a
Carrier frequency (MHz): 5200



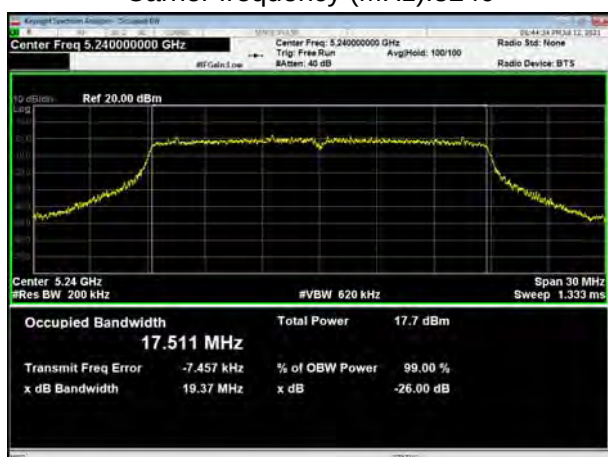
U-NII-1, 802.11n HT20
Carrier frequency (MHz): 5200



U-NII-1, 802.11a
Carrier frequency (MHz): 5240



U-NII-1, 802.11n HT20
Carrier frequency (MHz): 5240



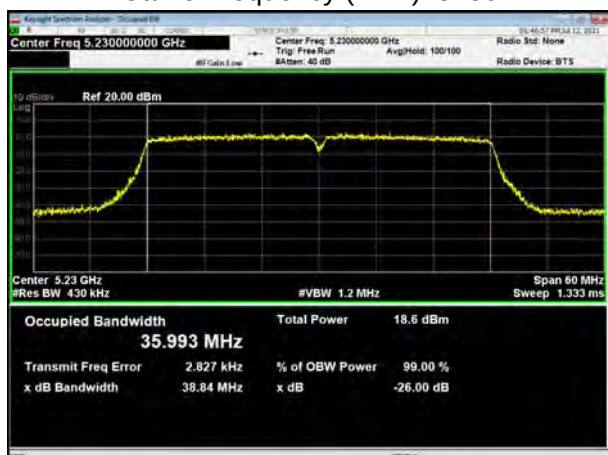
U-NII-1, 802.11n HT40 Carrier frequency (MHz): 5190



U-NII-1, 802.11ac VHT20 Carrier frequency (MHz): 5180



U-NII-1, 802.11n HT40 Carrier frequency (MHz): 5230



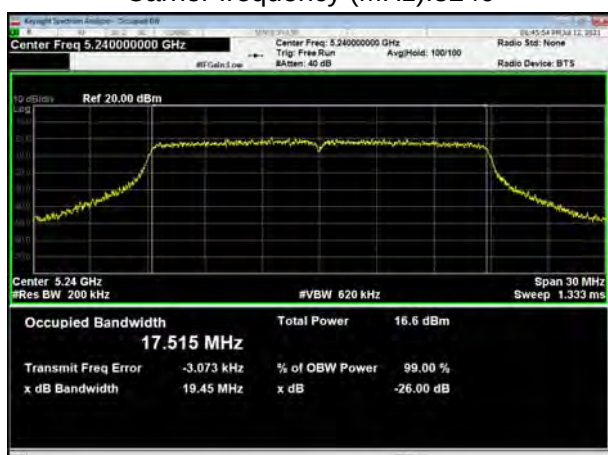
U-NII-1, 802.11ac VHT20 Carrier frequency (MHz): 5200



U-NII-1, 802.11ac VHT40 Carrier frequency (MHz): 5190



U-NII-1, 802.11ac VHT20 Carrier frequency (MHz): 5240



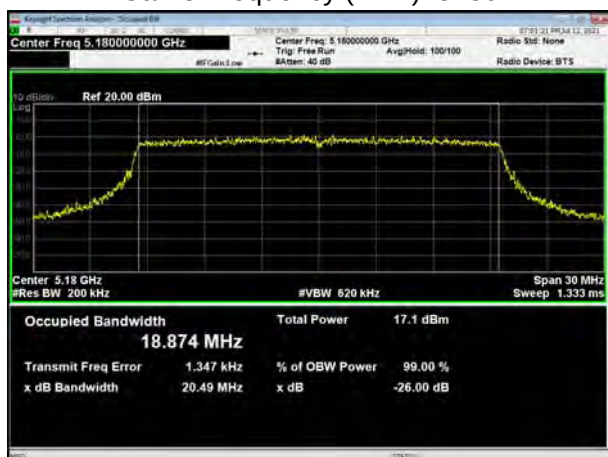
U-NII-1, 802.11ac VHT40 Carrier frequency (MHz): 5230



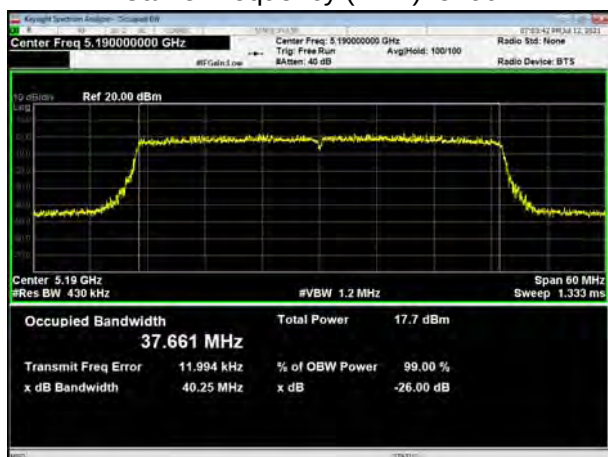
U-NII-1, 802.11ac VHT80 Carrier frequency (MHz): 5210



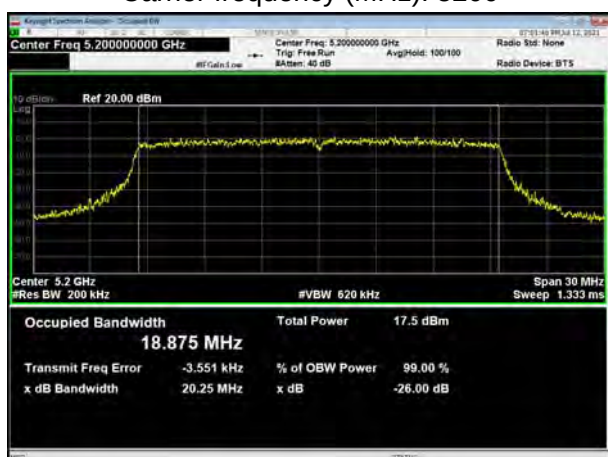
U-NII-1,802.11ax HE20 Carrier frequency (MHz): 5180



U-NII-1,802.11ax HE40 Carrier frequency (MHz): 5190



U-NII-1,802.11ax HE20 Carrier frequency (MHz): 5200



U-NII-1,802.11ax HE40 Carrier frequency (MHz): 5230



U-NII-1,802.11ax HE20 Carrier frequency (MHz): 5240

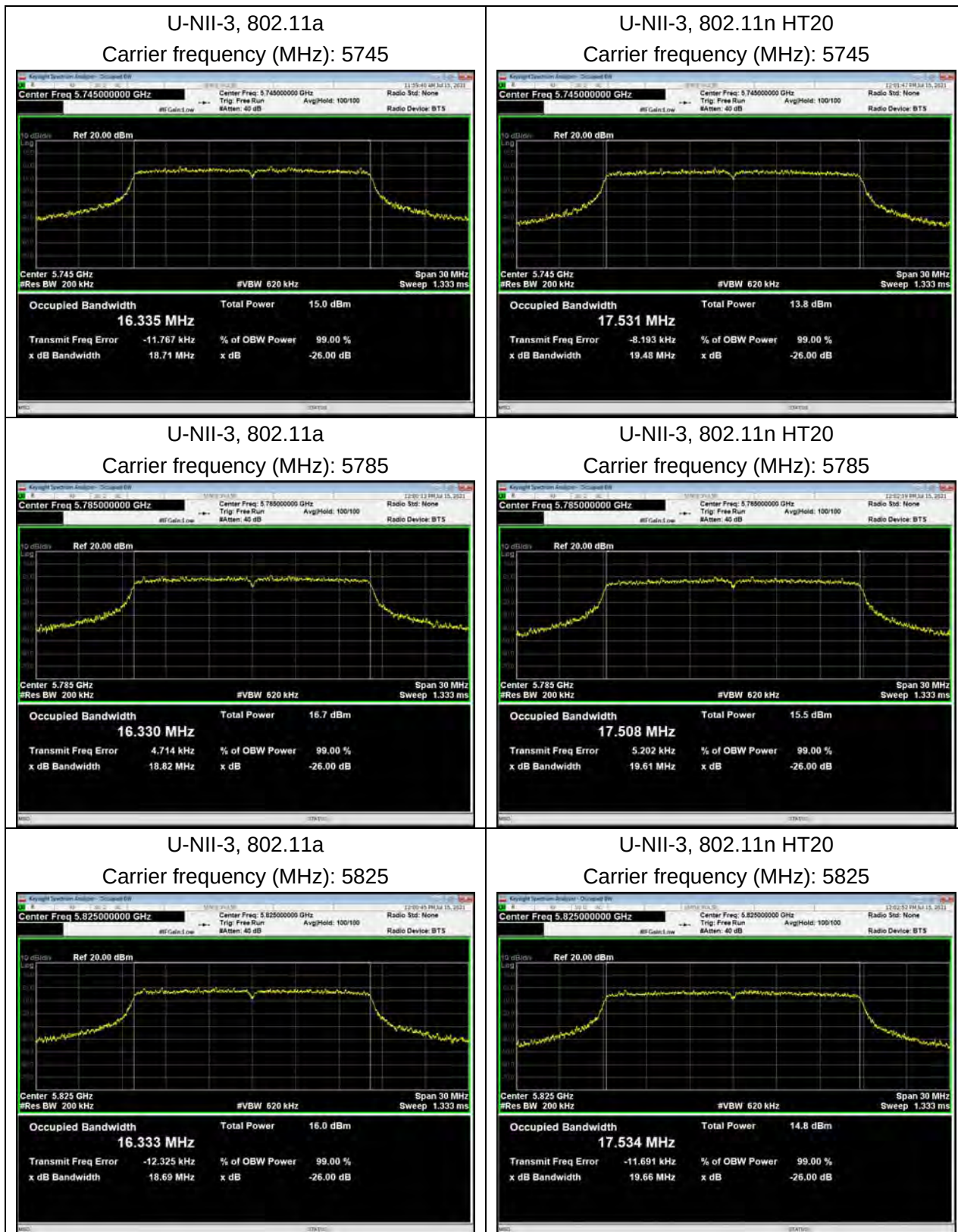


U-NII-1,802.11ax HE80 Carrier frequency (MHz): 5210





99% bandwidth



U-NII-3, 802.11n HT40 Carrier frequency (MHz): 5755



U-NII-3, 802.11ac VHT20 Carrier frequency (MHz): 5745



U-NII-3, 802.11n HT40 Carrier frequency (MHz): 5795



U-NII-3, 802.11ac VHT20 Carrier frequency (MHz): 5785



U-NII-3, 802.11ac VHT40 Carrier frequency (MHz): 5755



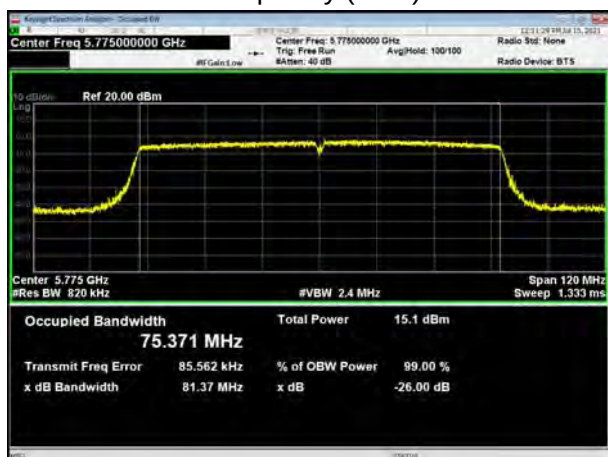
U-NII-3, 802.11ac VHT20 Carrier frequency (MHz): 5825



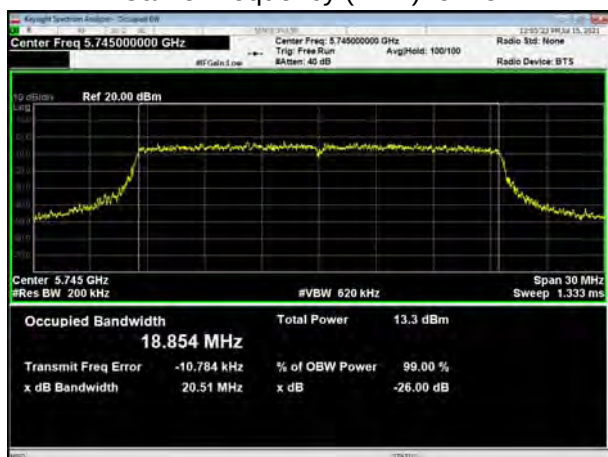
U-NII-3, 802.11ac VHT40 Carrier frequency (MHz): 5795



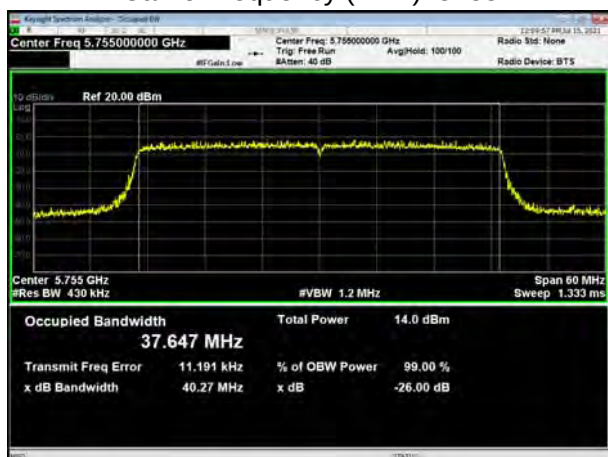
U-NII-3, 802.11ac VHT80 Carrier frequency (MHz): 5775



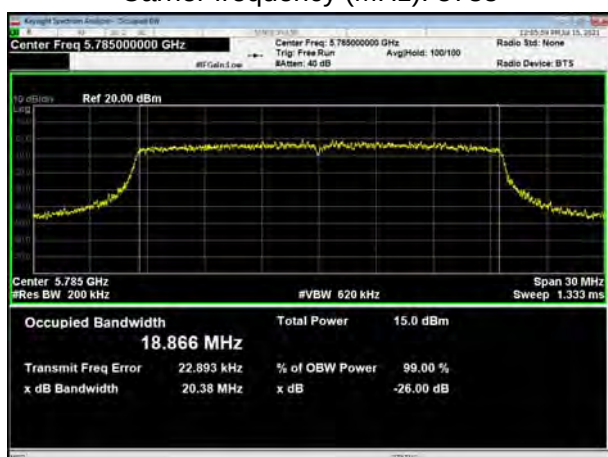
U-NII-3,802.11ax HE20 Carrier frequency (MHz): 5745



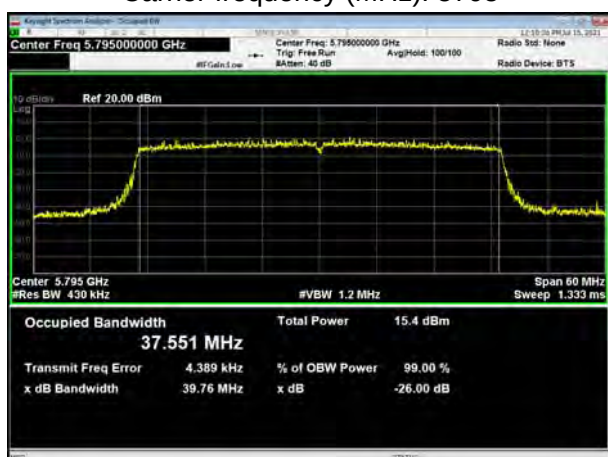
U-NII-3,802.11ax HE40 Carrier frequency (MHz): 5755



U-NII-3,802.11ax HE20 Carrier frequency (MHz): 5785



U-NII-3,802.11ax HE40 Carrier frequency (MHz): 5795



U-NII-3,802.11ax HE20 Carrier frequency (MHz): 5825



U-NII-3,802.11ax HE80 Carrier frequency (MHz): 5775





Minimum -6 dB bandwidth

U-NII-3, 802.11a

Carrier frequency (MHz): 5745



U-NII-3, 802.11n HT20

Carrier frequency (MHz): 5745



U-NII-3, 802.11a

Carrier frequency (MHz): 5785



U-NII-3, 802.11n HT20

Carrier frequency (MHz): 5785



U-NII-3, 802.11a

Carrier frequency (MHz): 5825



U-NII-3, 802.11n HT20

Carrier frequency (MHz): 5825



U-NII-3, 802.11n HT40
Carrier frequency (MHz): 5755



U-NII-3, 802.11ac VHT20
Carrier frequency (MHz): 5745



U-NII-3, 802.11n HT40
Carrier frequency (MHz): 5795



U-NII-3, 802.11ac VHT20
Carrier frequency (MHz): 5785



U-NII-3, 802.11ac VHT40
Carrier frequency (MHz): 5755



U-NII-3, 802.11ac VHT20
Carrier frequency (MHz): 5825



U-NII-3, 802.11ac VHT40
Carrier frequency (MHz): 5795



U-NII-3, 802.11ac VHT80
Carrier frequency (MHz): 5775



U-NII-3,802.11ax HE20
Carrier frequency (MHz): 5745



U-NII-3,802.11ax HE40
Carrier frequency (MHz): 5755



U-NII-3,802.11ax HE20
Carrier frequency (MHz): 5785



U-NII-3,802.11ax HE40
Carrier frequency (MHz): 5795





U-NII-3,802.11ax HE20
Carrier frequency (MHz): 5825



U-NII-3,802.11ax HE80
Carrier frequency (MHz): 5775



**TB Mode****U-NII-1**

Mode	Carrier frequency (MHz)	99% bandwidth (MHz)	Minimum 26 dB bandwidth (MHz)	Conclusion
802.11ax HE20 106Tone	5180	17.629	19.72	PASS
	5200	17.813	22.88	PASS
	5240	17.799	20.49	PASS
802.11ax HE20 242Tone	5180	18.964	24.44	PASS
	5200	18.976	25.30	PASS
	5240	18.981	24.78	PASS
802.11ax HE20 26Tone	5180	17.895	18.84	PASS
	5200	15.247	16.70	PASS
	5240	17.189	18.19	PASS
802.11ax HE20 52Tone	5180	17.545	18.82	PASS
	5200	14.243	17.36	PASS
	5240	15.814	20.03	PASS
802.11ax HE40 484Tone	5190	37.934	45.26	PASS
	5230	37.851	50.35	PASS
802.11ax HE80 996 Tone	5210	77.462	101.70	PASS



U-NII-3

Mode	Carrier frequency (MHz)	99% bandwidth (MHz)	-6 dB Bandwidth (MHz)	Conclusion
802.11ax HE20 106Tone	5745	17.108	8.209	PASS
	5785	15.823	17.02	PASS
	5825	15.840	13.37	PASS
802.11ax HE20 242Tone	5745	18.966	18.97	PASS
	5785	18.991	18.86	PASS
	5825	18.964	18.96	PASS
802.11ax HE20 26Tone	5745	17.031	2.00	PASS
	5785	16.069	2.62	PASS
	5825	17.923	2.03	PASS
802.11ax HE20 52Tone	5745	15.782	17.03	PASS
	5785	14.129	13.74	PASS
	5825	14.958	15.76	PASS
802.11ax HE40 484Tone	5755	37.949	37.99	PASS
	5795	37.856	38.00	PASS
802.11ax HE80 996 Tone	5775	77.454	77.99	PASS



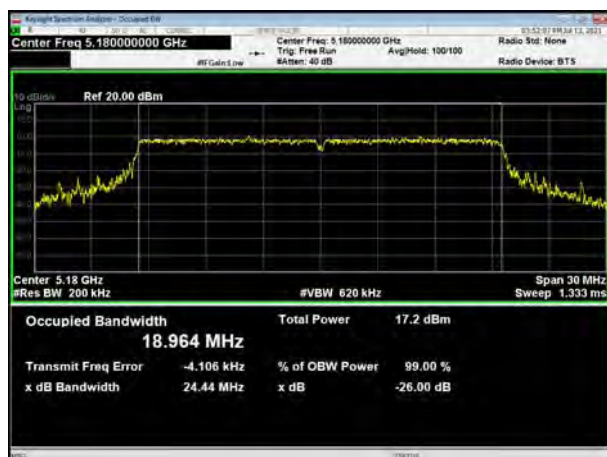
TB Mode

UNII-1

802.11ax HE20 106Tone:5180



802.11ax HE20 242Tone: 5180



802.11ax HE20 106Tone:5200



802.11ax HE20 242Tone: 5200



802.11ax HE20 106Tone: 5240



802.11ax HE20 242Tone: 5240



802.11ax HE20 26Tone:5180



802.11ax HE20 52Tone: 5180



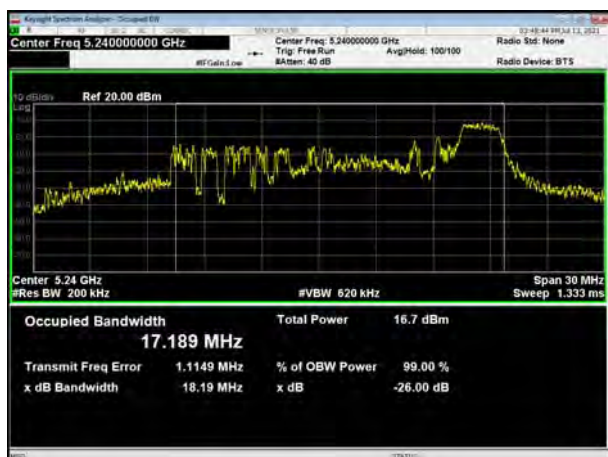
802.11ax HE20 26Tone:5200



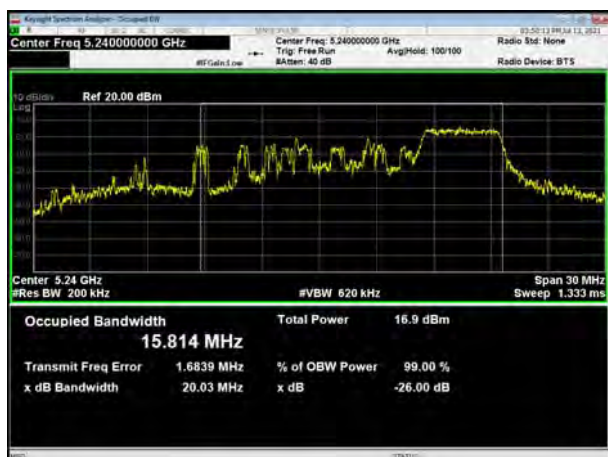
802.11ax HE20 52Tone: 5200



802.11ax HE20 26Tone: 5240



802.11ax HE20 52Tone: 5240



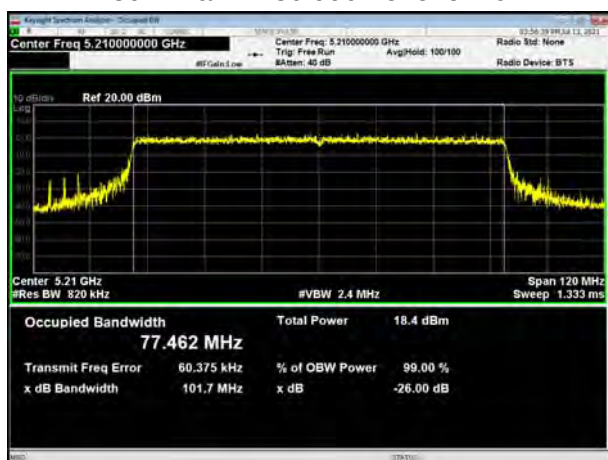
802.11ax HE40 484Tone: 5190



802.11ax HE40 484Tone: 5230



802.11ax HE80 996 Tone: 5210





UNII-3

Minimum 6 dB bandwidth

802.11ax HE20 106Tone:5745



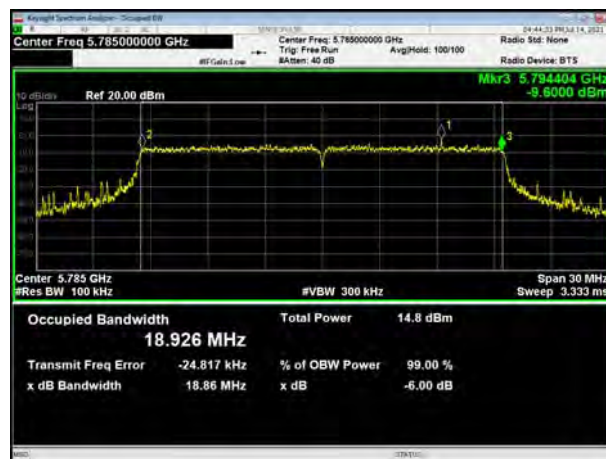
802.11ax HE20 242Tone: 5745



802.11ax HE20 106Tone:5785



802.11ax HE20 242Tone: 5785



802.11ax HE20 106Tone: 5825



802.11ax HE20 242Tone: 5825





802.11ax HE20 26Tone:5745



802.11ax HE20 52Tone: 5745



802.11ax HE20 26Tone:5785



802.11ax HE20 52Tone: 5785



802.11ax HE20 26Tone: 5825



802.11ax HE20 52Tone: 5825





802.11ax HE40 484Tone: 5755



802.11ax HE40 484Tone: 5795



802.11ax HE80 996 Tone: 5775



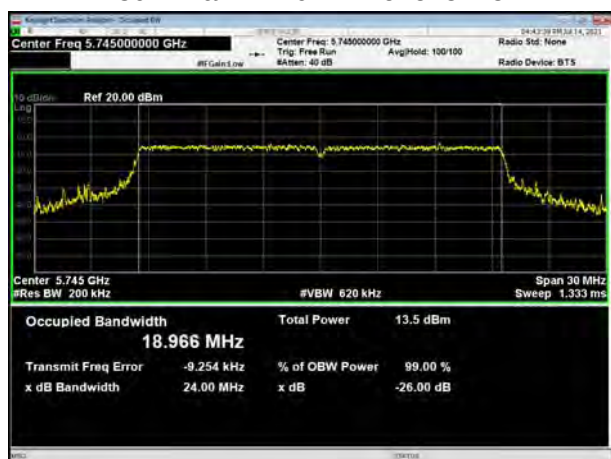


99% bandwidth

802.11ax HE20 106Tone:5745



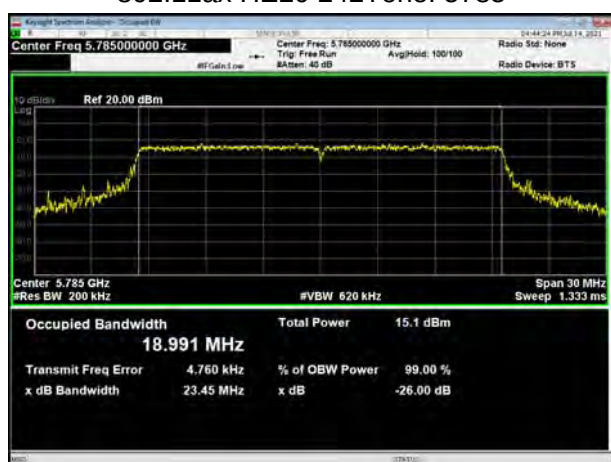
802.11ax HE20 242Tone: 5745



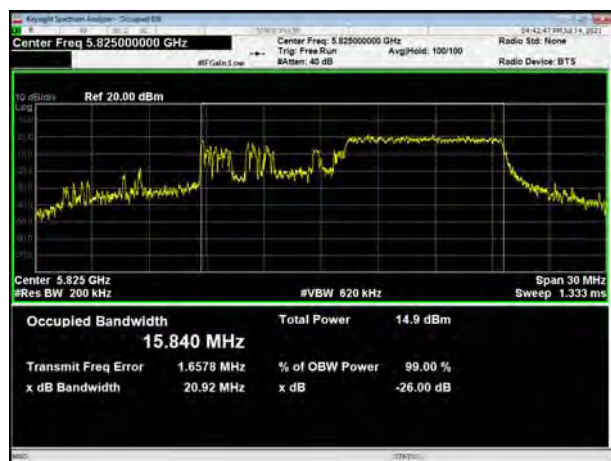
802.11ax HE20 106Tone:5785



802.11ax HE20 242Tone: 5785



802.11ax HE20 106Tone: 5825



802.11ax HE20 242Tone: 5825





802.11ax HE20 26Tone:5745



802.11ax HE20 52Tone: 5745



802.11ax HE20 26Tone:5785



802.11ax HE20 52Tone: 5785



802.11ax HE20 26Tone: 5825

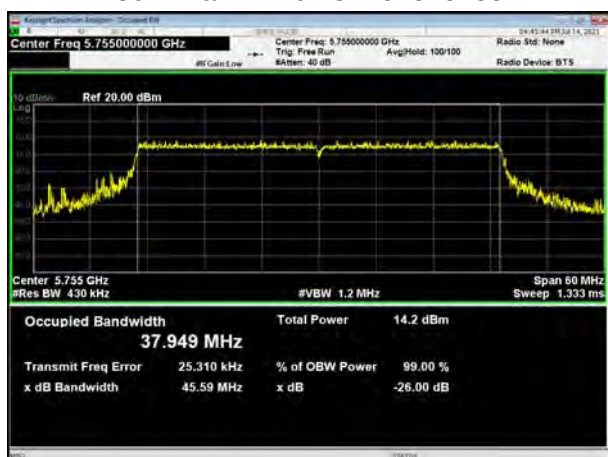


802.11ax HE20 52Tone: 5825

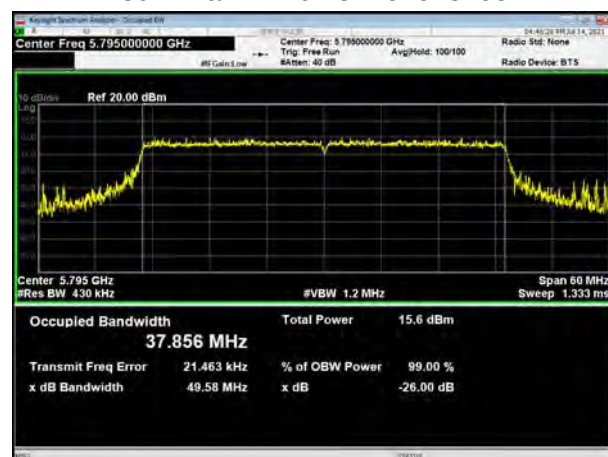




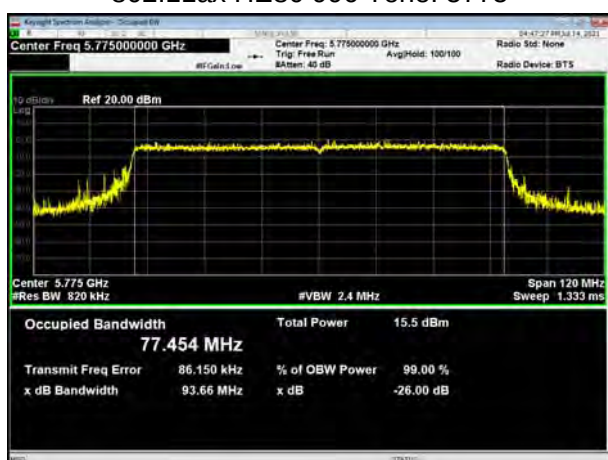
802.11ax HE40 484Tone: 5755



802.11ax HE40 484Tone: 5795



802.11ax HE80 996 Tone: 5775



5.2. Average Power Output Ambient condition

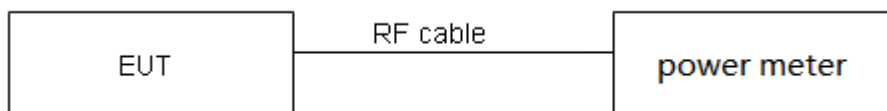
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Methods of Measurement

During the process of the testing, The EUT was connected to the average power meter through an external attenuator and a known loss cable. The EUT is max power transmission with proper modulation. We use Maximum average Conducted Output Power Level Method in KDB789033 for this test

The conducted Power is measured at each antenna port. The measured results at the various antenna ports are then summed mathematically.

Test Setup



Limits

Rule FCC Part 15.407(a)(1)(2)(3)

(1) For the band 5.15-5.25 GHz.

(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is



required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) For client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(2) For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or $11 \text{ dBm} + 10 \log B$, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(3) For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 2$, $U = 0.44 \text{ dB}$.



Test Results

Mode	T _{on} (ms)	T _(on+off) (ms)	Duty cycle	Duty cycle correction Factor(dB)
802.11a	1.00	1.00	1.00	NA
802.11n HT20	1.00	1.00	1.00	NA
802.11n HT40	1.00	1.00	1.00	NA
802.11ac VHT20	1.00	1.00	1.00	NA
802.11ac VHT40	1.00	1.00	1.00	NA
802.11ac VHT80	1.00	1.00	1.00	NA
802.11ax HE20	1.00	1.00	1.00	NA
802.11ax HE40	1.00	1.00	1.00	NA
802.11ax HE80	1.00	1.00	1.00	NA
Note: when Duty cycle ≥ 0.98 , Duty cycle correction Factor not required.				

Power Index											
Channel	802.11a	802.11n HT20	802.11ac VHT20	802.11ax HE20	Channel	802.11n HT40	802.11ac VHT40	802.11ax HE40	Channel	802.11ac VHT80	802.11ax HE80
CH36	15	14	13	12	CH38	14	13	12	CH42	13	12
CH40	15	14	13	12	CH46	14	13	12	/	/	
CH48	15	14	13	12	/	/	/		/	/	
CH149	15	14	13	12	CH151	14	13	12	CH155	13	12
CH157	15	14	13	12	CH159	14	13	12	/	/	
CH165	15	14	13	12	/	/	/		/	/	

**SU mode****SISO Antenna 1****U-NII-1**

Mode	Channel/ Frequency (MHz)	Average Power Measured (dBm)	Average Power with duty factor (dBm)	Limit (dBm)	Conclusion
802.11a	36/5180	14.76	14.76	24	PASS
	40/5200	14.82	14.82	24	PASS
	48/5240	14.43	14.43	24	PASS
802.11n HT20	36/5180	13.38	13.38	24	PASS
	40/5200	13.54	13.54	24	PASS
	48/5240	13.21	13.21	24	PASS
802.11n HT40	38/5190	13.87	13.87	24	PASS
	46/5230	14.07	14.07	24	PASS
802.11ac VHT20	36/5180	12.35	12.35	24	PASS
	40/5200	12.52	12.52	24	PASS
	48/5240	12.18	12.18	24	PASS
802.11ac VHT40	38/5190	12.80	12.80	24	PASS
	46/5230	12.96	12.96	24	PASS
802.11ac VHT80	42/5210	13.21	13.21	24	PASS
802.11ax HE20	36/5180	12.07	12.07	24	PASS
	40/5200	12.23	12.23	24	PASS
	48/5240	11.91	11.91	24	PASS
802.11ax HE40	38/5190	12.27	12.27	24	PASS
	46/5230	12.64	12.64	24	PASS
802.11ax HE80	42/5210	12.89	12.89	24	PASS
Note: Average Power with duty factor = Average Power Measured +Duty cycle correction factor					



U-NII-3

Mode	Channel/ Frequency (MHz)	Average Power Measured (dBm/ 470kHz)	Average Power with duty factor (dBm/ 500kHz)	Limit (dBm/ 500kHz)	Conclusion
802.11a	149/5745	14.51	14.51	30	PASS
	157/5785	14.18	14.18	30	PASS
	165/5825	14.18	14.18	30	PASS
802.11n HT20	149/5745	13.02	13.02	30	PASS
	157/5785	13.16	13.16	30	PASS
	165/5825	13.06	13.06	30	PASS
802.11n HT40	151/5755	13.14	13.14	30	PASS
	159/5795	13.22	13.22	30	PASS
802.11ac VHT20	149/5745	12.03	12.03	30	PASS
	157/5785	12.22	12.22	30	PASS
	165/5825	12.08	12.08	30	PASS
802.11ac VHT40	151/5755	12.09	12.09	30	PASS
	159/5795	12.48	12.48	30	PASS
802.11ac VHT80	155/5775	12.15	12.15	30	PASS
802.11ax HE20	149/5745	11.29	11.29	30	PASS
	157/5785	11.86	11.86	30	PASS
	165/5825	11.35	11.35	30	PASS
802.11ax HE40	151/5755	11.14	11.14	30	PASS
	159/5795	11.87	11.87	30	PASS
802.11ax HE80	155/5775	11.76	11.76	30	PASS
Note: Average Power with duty factor = Average Power Measured +Duty cycle correction factor					

**SISO Antenna 2****U-NII-1**

Mode	Channel/ Frequency (MHz)	Average Power Measured (dBm)	Average Power with duty factor (dBm)	Limit (dBm)	Conclusion
802.11a	36/5180	15.92	15.92	24	PASS
	40/5200	14.65	14.65	24	PASS
	48/5240	14.61	14.61	24	PASS
802.11n HT20	36/5180	14.83	14.83	24	PASS
	40/5200	13.76	13.76	24	PASS
	48/5240	13.46	13.46	24	PASS
802.11n HT40	38/5190	14.53	14.53	24	PASS
	46/5230	14.08	14.08	24	PASS
802.11ac VHT20	36/5180	13.79	13.79	24	PASS
	40/5200	12.73	12.73	24	PASS
	48/5240	12.39	12.39	24	PASS
802.11ac VHT40	38/5190	13.46	13.46	24	PASS
	46/5230	13.02	13.02	24	PASS
802.11ac VHT80	42/5210	13.53	13.53	24	PASS
802.11ax HE20	36/5180	13.19	13.19	24	PASS
	40/5200	12.38	12.38	24	PASS
	48/5240	11.94	11.94	24	PASS
802.11ax HE40	38/5190	12.74	12.74	24	PASS
	46/5230	12.20	12.20	24	PASS
802.11ax HE80	42/5210	12.83	12.83	24	PASS
Note: Average Power with duty factor = Average Power Measured +Duty cycle correction factor					



U-NII-3

Mode	Channel/ Frequency (MHz)	Average Power Measured (dBm/ 470kHz)	Average Power with duty factor (dBm/ 500kHz)	Limit (dBm/ 500kHz)	Conclusion
802.11a	149/5745	14.07	14.07	30	PASS
	157/5785	14.63	14.63	30	PASS
	165/5825	14.33	14.33	30	PASS
802.11n HT20	149/5745	13.09	13.09	30	PASS
	157/5785	13.41	13.41	30	PASS
	165/5825	13.17	13.17	30	PASS
802.11n HT40	151/5755	13.41	13.41	30	PASS
	159/5795	14.04	14.04	30	PASS
802.11ac VHT20	149/5745	12.08	12.08	30	PASS
	157/5785	12.37	12.37	30	PASS
	165/5825	12.22	12.22	30	PASS
802.11ac VHT40	151/5755	12.38	12.38	30	PASS
	159/5795	12.92	12.92	30	PASS
802.11ac VHT80	155/5775	12.43	12.43	30	PASS
802.11ax HE20	149/5745	11.47	11.47	30	PASS
	157/5785	12.16	12.16	30	PASS
	165/5825	11.93	11.93	30	PASS
802.11ax HE40	151/5755	11.97	11.97	30	PASS
	159/5795	12.48	12.48	30	PASS
802.11ax HE80	155/5775	12.08	12.08	30	PASS
Note: Average Power with duty factor = Average Power Measured +Duty cycle correction factor					



MIMO

U-NII-1

Mode	Channel/ Frequency (MHz)	Antenna 1		Antenna 2		Total Power (dBm)	Limit (dBm)	Conclusion
		Average Power Measured (dBm)	Average Power with duty factor (dBm)	Average Power Measured (dBm)	Average Power with duty factor (dBm)			
802.11n HT20	36/5180	12.58	12.58	14.53	14.53	16.67	24.00	PASS
	40/5200	12.95	12.95	13.42	13.42	16.20	24.00	PASS
	48/5240	12.77	12.77	13.22	13.22	16.01	24.00	PASS
802.11n HT40	36/5180	13.46	13.46	14.29	14.29	16.91	24.00	PASS
	40/5200	13.66	13.66	13.84	13.84	16.76	24.00	PASS
802.11ac VHT20	48/5240	12.04	12.04	13.55	13.55	15.87	24.00	PASS
	38/5190	12.11	12.11	12.58	12.58	15.36	24.00	PASS
	46/5230	11.87	11.87	12.25	12.25	15.07	24.00	PASS
802.11ac VHT40	36/5180	12.41	12.41	13.22	13.22	15.84	24.00	PASS
	40/5200	12.55	12.55	12.78	12.78	15.68	24.00	PASS
802.11ac VHT80	48/5240	12.76	12.76	13.12	13.12	15.95	24.00	PASS
802.11ax HE20	38/5190	11.67	11.67	12.98	12.98	15.38	24.00	PASS
	46/5230	11.85	11.85	11.86	11.86	14.87	24.00	PASS
	42/5210	11.46	11.46	11.35	11.35	14.42	24.00	PASS
802.11ax HE40	36/5180	11.77	11.77	12.43	12.43	15.12	24.00	PASS
	40/5200	12.16	12.16	12.04	12.04	15.11	24.00	PASS
802.11ax HE80	48/5240	12.43	12.43	12.42	12.42	15.44	24.00	PASS

Note: 1. For Total Power, according to KDB 662911 D01 Multiple Transmitter Output v02r01 1),

The Total Power = $10\log(10^{(\text{Power antenna1 in dBm}/10)} + 10^{(\text{Power antenna2 in dBm}/10)})$

2. The manufacturer declared the transmitter output signals is CDD mode And $N_{SS}=1$. According to KDB 662911 D01 Multiple Transmitter Output v02r01 2)f)(i): If all antennas have the same gain, Directional gain = $G_{ANT} + \text{Array Gain}$,

For power measurements on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;

Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT} ;

Array Gain = $5\log(N_{ANT}/N_{SS})$ dB or 3 dB, whichever is less, for 20-MHz channel widths with $N_{ANT} \geq 5$.

So directional gain = $G_{ANT} + \text{Array Gain} = 2.6 + 0 = 2.6$ dBi < 6dBi. So the power limit is 24dBm.



U-NII-3

Mode	Channel/ Frequency (MHz)	Antenna 1		Antenna 2		Total Power (dBm/ 500kHz)	Limit (dBm/ 500kHz)	Conclusion
		Average Power Measured (dBm/ 470kHz)	Average Power with duty factor (dBm/ 500kHz)	Average Power Measured (dBm/ 470kHz)	Average Power with duty factor (dBm/ 500kHz)			
802.11n HT20	149/5745	12.83	12.83	12.66	12.66	15.76	30.00	PASS
	157/5785	12.97	12.97	13.08	13.08	16.04	30.00	PASS
	165/5825	12.87	12.87	12.94	12.94	15.92	30.00	PASS
802.11n HT40	149/5745	12.95	12.95	13.08	13.08	16.03	30.00	PASS
	157/5785	13.03	13.03	13.71	13.71	16.39	30.00	PASS
802.11ac VHT20	165/5825	11.84	11.84	12.05	12.05	14.96	30.00	PASS
	151/5755	12.03	12.03	12.04	12.04	15.05	30.00	PASS
	159/5795	11.89	11.89	12.09	12.09	15.00	30.00	PASS
802.11ac VHT40	149/5745	12.02	12.02	12.15	12.15	15.10	30.00	PASS
	157/5785	12.29	12.29	12.59	12.59	15.45	30.00	PASS
802.11ac VHT80	165/5825	12.06	12.06	12.18	12.18	15.13	30.00	PASS
802.11ax HE20	151/5755	11.13	11.13	11.25	11.25	14.20	30.00	PASS
	159/5795	11.48	11.48	11.84	11.84	14.67	30.00	PASS
	155/5775	11.17	11.17	11.63	11.63	14.42	30.00	PASS
802.11ax HE40	149/5745	11.66	11.66	11.69	11.69	14.69	30.00	PASS
	157/5785	11.33	11.33	12.27	12.27	14.84	30.00	PASS
802.11ax HE80	165/5825	11.38	11.38	11.82	11.82	14.62	30.00	PASS

Note: 1. For Total Power, according to KDB 662911 D01 Multiple Transmitter Output v02r01 1),

The Total Power = $10\log(10^{(\text{Power antenna1 in dBm}/10)} + 10^{(\text{Power antenna2 in dBm}/10)})$

2. The manufacturer declared the transmitter output signals is CDD mode And $N_{ss}=1$. According to KDB 662911 D01 Multiple Transmitter Output v02r01 2)f(i): If all antennas have the same gain, Directional gain = $G_{ANT} + \text{Array Gain}$, For power measurements on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;

Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT} ;

Array Gain = $5 \log(N_{ANT}/N_{ss})$ dB or 3 dB, whichever is less, for 20-MHz channel widths with $N_{ANT} \geq 5$.

So directional gain = $G_{ANT} + \text{Array Gain} = 2.6 + 0 = 2.6 \text{ dBi} < 6 \text{ dBi}$. So the power limit is 30dBm.



TB mode

SISO Antenna 1

U-NII-1

Mode	RU Size	Index	Channel/ Frequency (MHz)	Average Power Measured (dBm)	Average Power with duty factor (dBm)	Limit (dBm)	Conclusion
MU 802.11ax HE20	26Tone	0	36/5180	11.34	11.34	24	PASS
		4	40/5200	11.38	11.38	24	PASS
		8	48/5240	11.27	11.27	24	PASS
	52Tone	37	36/5180	11.25	11.25	24	PASS
		38	40/5200	11.37	11.37	24	PASS
		40	48/5240	11.19	11.19	24	PASS
	106 Tone	53	36/5180	11.75	11.75	24	PASS
		53	40/5200	12.08	12.08	24	PASS
		54	48/5240	11.64	11.64	24	PASS
SU 802.11ax HE20	242 Tone	61	36/5180	12.21	12.21	24	PASS
		61	40/5200	12.41	12.41	24	PASS
		61	48/5240	12.29	12.29	24	PASS
SU 802.11ax HE40	484 Tone	65	38/5190	12.74	12.74	24	PASS
		65	46/5230	12.91	12.91	24	PASS
SU 802.11ax HE80	996 Tone	67	42/5210	12.95	12.95	24	PASS
Note: Average Power with duty factor = Average Power Measured +Duty cycle correction factor							



U-NII-3

Mode	RU Size	Index	Channel/ Frequency (MHz)	Average Power Measured (dBm/ 470kHz)	Average Power with duty factor (dBm/ 500kHz)	Limit (dBm/ 500kHz)	Conclusion
MU 802.11ax HE20	26Tone	0	149/5745	10.84	10.84	30	PASS
		4	157/5785	11.08	11.08	30	PASS
		8	165/5825	10.69	10.69	30	PASS
	52Tone	37	149/5745	10.57	10.57	30	PASS
		38	157/5785	11.32	11.32	30	PASS
		40	165/5825	10.46	10.46	30	PASS
	106 Tone	53	149/5745	10.74	10.74	30	PASS
		53	157/5785	11.42	11.42	30	PASS
		54	165/5825	11.14	11.14	30	PASS
SU 802.11ax HE20	242 Tone	61	149/5745	10.79	10.79	30	PASS
		61	157/5785	11.57	11.57	30	PASS
		61	165/5825	11.15	11.15	30	PASS
SU 802.11ax HE40	484 Tone	65	151/5755	11.09	11.09	30	PASS
		65	159/5795	12.13	12.13	30	PASS
SU 802.11ax HE80	996 Tone	67	155/5775	12.07	12.07	30	PASS
Note: Average Power with duty factor = Average Power Measured +Duty cycle correction factor							

**SISO Antenna 2****U-NII-1**

Mode	RU Size	Index	Channel/ Frequency (MHz)	Average Power Measured (dBm)	Average Power with duty factor (dBm)	Limit (dBm)	Conclusion
MU 802.11ax HE20	26Tone	0	36/5180	12.15	12.15	24	PASS
		4	40/5200	11.39	11.39	24	PASS
		8	48/5240	11.21	11.21	24	PASS
	52Tone	37	36/5180	12.22	12.22	24	PASS
		38	40/5200	11.84	11.84	24	PASS
		40	48/5240	11.18	11.18	24	PASS
	106 Tone	53	36/5180	12.84	12.84	24	PASS
		53	40/5200	12.23	12.23	24	PASS
		54	48/5240	11.87	11.87	24	PASS
SU 802.11ax HE20	242 Tone	61	36/5180	12.68	12.68	24	PASS
		61	40/5200	12.07	12.07	24	PASS
		61	48/5240	11.63	11.63	24	PASS
SU 802.11ax HE40	484 Tone	65	38/5190	12.98	12.98	24	PASS
		65	46/5230	12.41	12.41	24	PASS
SU 802.11ax HE80	996 Tone	67	42/5210	12.88	12.88	24	PASS
Note: Average Power with duty factor = Average Power Measured +Duty cycle correction factor							



U-NII-3

Mode	RU Size	Index	Channel/ Frequency (MHz)	Average Power Measured (dBm/ 470kHz)	Average Power with duty factor (dBm/ 500kHz)	Limit (dBm/ 500kHz)	Conclusion
MU 802.11ax HE20	26Tone	0	149/5745	10.91	10.91	30	PASS
		4	157/5785	11.15	11.15	30	PASS
		8	165/5825	10.76	10.76	30	PASS
	52Tone	37	149/5745	10.74	10.74	30	PASS
		38	157/5785	11.39	11.39	30	PASS
		40	165/5825	10.63	10.63	30	PASS
	106 Tone	53	149/5745	10.81	10.81	30	PASS
		53	157/5785	11.59	11.59	30	PASS
		54	165/5825	11.21	11.21	30	PASS
SU 802.11ax HE20	242 Tone	61	149/5745	10.88	10.88	30	PASS
		61	157/5785	11.63	11.63	30	PASS
		61	165/5825	11.22	11.22	30	PASS
SU 802.11ax HE40	484 Tone	65	151/5755	11.16	11.16	30	PASS
		65	159/5795	12.18	12.18	30	PASS
SU 802.11ax HE80	996 Tone	67	155/5775	12.23	12.23	30	PASS
Note: Average Power with duty factor = Average Power Measured +Duty cycle correction factor							



MIMO

U-NII-1

Mode	RU Size	Index	Channel/ Frequency (MHz)	Antenna 1		Antenna 2		Total Power (dBm)	Limit (dBm)	Conclusion
				Average Power Measured (dBm)	Average Power with duty factor (dBm)	Average Power Measured (dBm)	Average Power with duty factor (dBm)			
MU 802.11ax HE20	26Tone	0	36/5180	11.21	11.21	11.84	11.84	14.55	24.00	PASS
		4	40/5200	11.25	11.25	11.08	11.08	14.18	24.00	PASS
		8	48/5240	11.14	11.14	11.24	11.24	14.20	24.00	PASS
	52Tone	37	36/5180	11.12	11.12	12.05	12.05	14.62	24.00	PASS
		38	40/5200	11.24	11.24	11.67	11.67	14.47	24.00	PASS
		40	48/5240	11.06	11.06	10.97	10.97	14.03	24.00	PASS
	106 Tone	53	36/5180	11.62	11.62	12.43	12.43	15.05	24.00	PASS
		53	40/5200	11.95	11.95	12.05	12.05	15.01	24.00	PASS
		54	48/5240	11.51	11.51	11.66	11.66	14.60	24.00	PASS
SU 802.11ax HE20	242 Tone	61	36/5180	12.08	12.08	12.37	12.37	15.24	24.00	PASS
		61	40/5200	12.28	12.28	11.96	11.96	15.13	24.00	PASS
		61	48/5240	12.16	12.16	11.41	11.41	14.81	24.00	PASS
SU 802.11ax HE40	484 Tone	65	38/5190	12.61	12.61	12.73	12.73	15.68	24.00	PASS
		65	46/5230	12.78	12.78	12.21	12.21	15.51	24.00	PASS
SU 802.11ax HE80	996 Tone	67	42/5210	12.82	12.82	12.67	12.67	15.76	24.00	PASS

Note: 1. For Total Power, according to KDB 662911 D01 Multiple Transmitter Output v02r01 1),

The Total Power = $10\log(10^{(\text{Power antenna1 in dBm}/10)} + 10^{(\text{Power antenna2 in dBm}/10)})$

2. The manufacturer declared the transmitter output signals is CDD mode And $N_{ss}=1$. According to KDB 662911 D01

Multiple Transmitter Output v02r01 2)f)(i): If all antennas have the same gain, Directional gain = $G_{ANT} + \text{Array Gain}$,

For power measurements on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;

Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT} ;

Array Gain = $5 \log(N_{ANT}/N_{SS})$ dB or 3 dB, whichever is less, for 20-MHz channel widths with $N_{ANT} \geq 5$.

So directional gain = $G_{ANT} + \text{Array Gain} = 2.6 + 0 = 2.6 \text{ dBi} < 6 \text{ dBi}$. So the power limit is 30dBm.



U-NII-3

Mode	RU Size	Index	Carrier frequency (MHz)	Antenna 1		Antenna 2		Total Power (dBm/500kHz)	Limit (dBm/500kHz)	Conclusion
				Average Power Measured (dBm/470kHz)	Average Power with duty factor (dBm/500kHz)	Average Power Measured (dBm/470kHz)	Average Power with duty factor (dBm/500kHz)			
MU 802.11ax HE20	26Tone	0	149/5745	10.71	10.71	10.70	10.70	13.72	30.00	PASS
		4	157/5785	10.93	10.93	10.94	10.94	13.95	30.00	PASS
		8	165/5825	10.54	10.54	10.55	10.55	13.56	30.00	PASS
	52Tone	37	149/5745	10.44	10.44	10.53	10.53	13.50	30.00	PASS
		38	157/5785	11.19	11.19	11.18	11.18	14.20	30.00	PASS
		40	165/5825	10.33	10.33	10.43	10.43	13.39	30.00	PASS
	106 Tone	53	149/5745	10.61	10.61	10.64	10.64	13.64	30.00	PASS
		53	157/5785	11.29	11.29	11.39	11.39	14.35	30.00	PASS
		54	165/5825	11.01	11.01	11.10	11.10	14.07	30.00	PASS
SU 802.11ax HE20	242 Tone	61	149/5745	10.66	10.66	10.60	10.60	13.64	30.00	PASS
		61	157/5785	11.44	11.44	11.45	11.45	14.46	30.00	PASS
		61	165/5825	11.10	11.10	11.01	11.01	14.07	30.00	PASS
SU 802.11ax HE40	484 Tone	65	151/5755	11.05	11.05	11.96	11.96	14.54	30.00	PASS
		65	159/5795	12.13	12.13	12.56	12.56	15.36	30.00	PASS
SU 802.11ax HE80	996 Tone	67	155/5775	12.18	12.18	11.96	11.96	15.08	30.00	PASS

Note: 1. For Total Power, according to KDB 662911 D01 Multiple Transmitter Output v02r01 1),

The Total Power = $10\log(10^{(\text{Power antenna1 in dBm}/10)} + 10^{(\text{Power antenna2 in dBm}/10)})$

2. The manufacturer declared the transmitter output signals is CDD mode And $N_{ss}=1$. According to KDB 662911 D01

Multiple Transmitter Output v02r01 2)f(i): If all antennas have the same gain, Directional gain = $G_{ANT} + \text{Array Gain}$,

For power measurements on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;

Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT} ;

Array Gain = $5 \log(N_{ANT}/N_{ss})$ dB or 3 dB, whichever is less, for 20-MHz channel widths with $N_{ANT} \geq 5$.

So directional gain = $G_{ANT} + \text{Array Gain} = 2.6 + 0 = 2.6 \text{ dBi} < 6 \text{ dBi}$. So the power limit is 30dBm.

5.3. Frequency Stability

Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

1. Frequency stability with respect to ambient temperature

- a) Supply the EUT with a nominal ac voltage or install a new or fully charged battery in the EUT. If possible, a dummy load shall be connected to the EUT because an antenna near the metallic walls of an environmental test chamber could affect the output frequency of the EUT. If the EUT is equipped with a permanently attached, adjustable-length antenna, then the EUT shall be placed in the center of the chamber with the antenna adjusted to the shortest length possible. Turn ON the EUT and tune it to one of the number of frequencies shown in 5.6.
- b) Couple the unlicensed wireless device output to the measuring instrument by connecting an antenna to the measuring instrument with a suitable length of coaxial cable and placing the measuring antenna near the EUT (e.g., 15 cm away), or by connecting a dummy load to the measuring instrument, through an attenuator if necessary.
- c) Adjust the location of the measurement antenna and the controls on the measurement instrument to obtain a suitable signal level (i.e., a level that will not overload the measurement instrument but is strong enough to allow measurement of the operating or fundamental frequency of the EUT).
- d) Turn the EUT OFF and place it inside the environmental temperature chamber. For devices that have oscillator heaters, energize only the heater circuit.
- e) Set the temperature control on the chamber to the highest specified in the regulatory requirements for the type of device and allow the oscillator heater and the chamber temperature to stabilize.
- f) While maintaining a constant temperature inside the environmental chamber, turn the EUT ON and record the operating frequency at startup, and at 2 minutes, 5 minutes, and 10 minutes after the EUT is energized. Four measurements in total are made.
- g) Measure the frequency at each of frequencies specified in 5.6.
- h) Switch OFF the EUT but do not switch OFF the oscillator heater.
- i) Lower the chamber temperature by not more than 10°C, and allow the temperature inside the chamber to stabilize.
- j) Repeat step f) through step i) down to the lowest specified temperature.

2. Frequency stability when varying supply voltage

Unless otherwise specified, these tests shall be made at ambient room temperature (+15°C to +25 °C). An antenna shall be connected to the antenna output terminals of the EUT if possible. If the EUT is equipped with or uses an adjustable-length antenna, then it shall be fully extended.

- a) Supply the EUT with nominal voltage or install a new or fully charged battery in the EUT. Turn ON the EUT and couple its output to a frequency counter or other frequency-measuring instrument.



- b) Tune the EUT to one of the number of frequencies required in 5.6. Adjust the location of the measurement antenna and the controls on the measurement instrument to obtain a suitable signal level (i.e., a level that will not overload the measurement instrument but is strong enough to allow measurement of the operating or fundamental frequency of the EUT).
- c) Measure the frequency at each of the frequencies specified in 5.6.
- d) Repeat the above procedure at 85% and 115% of the nominal supply voltage.

Limit

Manufacturers 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 in the users manual.

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 2$, $U = 936\text{Hz}$

**Test Results**

Voltage (V)	Temperature (°C)	U-NII-1 Test Results			
		5200MHz			
		1min	2min	5min	10min
3.8	-20	5199.998058	5199.995327	5199.986828	5199.978724
3.8	-10	5200.002968	5199.992564	5199.983111	5199.974308
3.8	0	5199.998126	5199.991976	5199.977403	5199.968904
3.8	10	5199.990876	5199.983917	5199.974683	5199.960349
3.8	20	5199.987486	5199.980357	5199.966634	5199.952368
3.8	30	5199.983786	5199.978142	5199.956962	5199.946018
3.8	40	5199.978887	5199.977942	5199.954612	5199.942165
3.8	50	5199.972065	5199.971647	5199.954282	5199.936400
3.3	20	5199.967067	5199.962219	5199.952271	5199.931000
4.4	20	5199.959752	5199.957315	5199.948696	5199.930989
MHz		-0.040248	-0.042685	-0.051304	-0.069011
PPM		-7.740058	-8.208727	-9.866141	-13.271289

Voltage (V)	Temperature (°C)	U-NII-3 Test Results			
		5785MHz			
		1min	2min	5min	10min
3.8	-20	5785.007596	5784.999598	5784.996174	5784.988981
3.8	-10	5785.004823	5784.991508	5784.987146	5784.987703
3.8	0	5784.996791	5784.987583	5784.979766	5784.980269
3.8	10	5784.994202	5784.987153	5784.973314	5784.977950
3.8	20	5784.993700	5784.981711	5784.967898	5784.973121
3.8	30	5784.987850	5784.973940	5784.966854	5784.969353
3.8	40	5784.981650	5784.968312	5784.965331	5784.965098
3.8	50	5784.975748	5784.968138	5784.956645	5784.963410
3.3	20	5784.966857	5784.966024	5784.951653	5784.955991
4.4	20	5784.958229	5784.957257	5784.951618	5784.954833
MHz		-0.041771	-0.042743	-0.048382	-0.045167
PPM		-7.220627	-7.388589	-8.363420	-7.807681

5.4. Power Spectral Density

Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

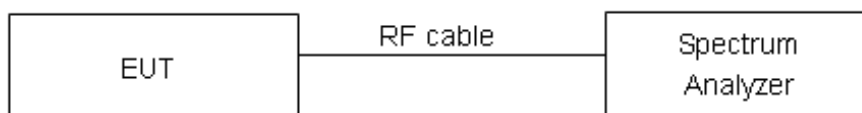
Method of Measurement

The EUT was connected to the spectrum analyzer through an external attenuator (20dB) and a known loss cable.

Set RBW = 1MHz, VBW =3MHz for the band 5.150-5.250GHz,

The conducted PSD is measured at each antenna port. The measured results at the various antenna ports are then summed mathematically.

Test setup



Limits

Rule FCC Part 15.407(a)(1)/ Part 15.407(a)(2) / Part 15.407(a)(3)

For an indoor access point operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Frequency Bands/MHz	Limits
5150-5250	17/11dBm/MHz

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 2$, $U = 0.75\text{dB}$.

**Test Results:**

Note: Power Spectral Density =Read Value+Duty cycle correction factor

SU mode**SISO Antenna 1****U-NII-1**

Mode	Channel Number	Read Value (dBm /MHz)	Power Spectral Density (dBm /MHz)	Limit (dBm /MHz)	Conclusion
802.11a	36/5180	2.98	2.98	11	PASS
	40/5200	3.29	3.29	11	PASS
	48/5240	2.81	2.81	11	PASS
802.11n HT20	36/5180	1.72	1.72	11	PASS
	40/5200	1.77	1.77	11	PASS
	48/5240	1.50	1.50	11	PASS
802.11n HT40	38/5190	-1.02	-1.02	11	PASS
	46/5230	-0.83	-0.83	11	PASS
802.11ac VHT20	36/5180	0.54	0.54	11	PASS
	40/5200	0.62	0.62	11	PASS
	48/5240	0.48	0.48	11	PASS
802.11ac VHT40	38/5190	-2.09	-2.09	11	PASS
	46/5230	-1.82	-1.82	11	PASS
802.11ac VHT80	42/5210	-4.60	-4.60	11	PASS
802.11ax HE20	36/5180	-0.014	-0.01	11	PASS
	40/5200	0.411	0.41	11	PASS
	48/5240	-0.024	-0.02	11	PASS
802.11ax HE40	38/5190	-2.555	-2.56	11	PASS
	46/5230	-2.308	-2.31	11	PASS
802.11ax HE80	42/5210	-4.828	-4.83	11	PASS



U-NII-3

Mode	Channel Number	Read Value (dBm/470kHz)	Power Spectral Density (dBm/500kHz)	Limit (dBm/500kHz)	Conclusion
802.11a	149/5745	-4.241	-3.97	30	PASS
	157/5785	-2.474	-2.20	30	PASS
	165/5825	-3.138	-2.87	30	PASS
802.11n HT20	149/5745	-5.768	-5.50	30	PASS
	157/5785	-3.796	-3.53	30	PASS
	165/5825	-4.730	-4.46	30	PASS
802.11n HT40	151/5755	-8.299	-8.03	30	PASS
	159/5795	-6.682	-6.41	30	PASS
802.11ac VHT20	149/5745	-6.771	-6.50	30	PASS
	157/5785	-5.177	-4.91	30	PASS
	165/5825	-5.823	-5.55	30	PASS
802.11ac VHT40	151/5755	-9.292	-9.02	30	PASS
	159/5795	-7.742	-7.47	30	PASS
802.11ac VHT80	155/5775	-11.235	-10.97	30	PASS
802.11ax HE20	149/5745	-7.276	-7.01	30	PASS
	157/5785	-5.399	-5.13	30	PASS
	165/5825	-6.073	-5.80	30	PASS
802.11ax HE40	151/5755	-9.604	-9.33	30	PASS
	159/5795	-8.077	-7.81	30	PASS
802.11ax HE80	155/5775	-11.446	-11.18	30	PASS
Note: PSD=Read Value+Duty cycle+10*LOG(500/470) correction factor					



SISO Antenna 2

U-NII-1

Mode	Channel Number	Read Value (dBm /MHz)	Power Spectral Density (dBm /MHz)	Limit (dBm /MHz)	Conclusion
802.11a	36/5180	4.273	4.27	11	PASS
	40/5200	3.006	3.01	11	PASS
	48/5240	3.228	3.23	11	PASS
802.11n HT20	36/5180	3.125	3.13	11	PASS
	40/5200	1.546	1.55	11	PASS
	48/5240	1.915	1.92	11	PASS
802.11n HT40	38/5190	-0.657	-0.66	11	PASS
	46/5230	-0.933	-0.93	11	PASS
802.11ac VHT20	36/5180	1.957	1.96	11	PASS
	40/5200	0.642	0.64	11	PASS
	48/5240	0.559	0.56	11	PASS
802.11ac VHT40	38/5190	-1.366	-1.37	11	PASS
	46/5230	-1.742	-1.74	11	PASS
802.11ac VHT80	42/5210	-4.976	-4.98	11	PASS
802.11ax HE20	36/5180	1.221	1.22	11	PASS
	40/5200	-0.058	-0.06	11	PASS
	48/5240	-0.201	-0.20	11	PASS
802.11ax HE40	38/5190	-2.372	-2.37	11	PASS
	46/5230	-2.903	-2.90	11	PASS
802.11ax HE80	42/5210	-5.654	-5.65	11	PASS



U-NII-3

Mode	Channel Number	Read Value (dBm/470kHz)	Power Spectral Density (dBm/500kHz)	Limit (dBm/500kHz)	Conclusion
802.11a	149/5745	-2.753	-2.48	30	PASS
	157/5785	-2.292	-2.02	30	PASS
	165/5825	-2.449	-2.18	30	PASS
802.11n HT20	149/5745	-4.428	-4.16	30	PASS
	157/5785	-3.696	-3.43	30	PASS
	165/5825	-3.767	-3.50	30	PASS
802.11n HT40	151/5755	-6.663	-6.39	30	PASS
	159/5795	-6.264	-5.99	30	PASS
802.11ac VHT20	149/5745	-5.305	-5.04	30	PASS
	157/5785	-4.793	-4.52	30	PASS
	165/5825	-5.009	-4.74	30	PASS
802.11ac VHT40	151/5755	-7.892	-7.62	30	PASS
	159/5795	-7.130	-6.86	30	PASS
802.11ac VHT80	155/5775	-10.604	-10.33	30	PASS
802.11ax HE20	149/5745	-5.845	-5.58	30	PASS
	157/5785	-5.203	-4.93	30	PASS
	165/5825	-5.258	-4.99	30	PASS
802.11ax HE40	151/5755	-8.443	-8.17	30	PASS
	159/5795	-7.515	-7.25	30	PASS
802.11ax HE80	155/5775	-11.140	-10.87	30	PASS
Note: PSD=Read Value+Duty cycle+10*LOG(500/470) correction factor					



MIMO

U-NII-1

Mode	Channel/ Frequency (MHz)	Power Spectral Density					Limit (dBm)	Conclusion
		Antenna 1		Antenna 2		Total Power (dBm /MHz)		
		Read Value (dBm)	Power Spectral Density (dBm)	Read Value (dBm)	Power Spectral Density (dBm)			
802.11n HT20	36/5180	0.43	0.43	2.68	2.68	4.71	11.00	PASS
	40/5200	1.12	1.12	1.35	1.35	4.25	11.00	PASS
	48/5240	0.81	0.81	1.03	1.03	3.93	11.00	PASS
802.11n HT40	38/5190	-1.87	-1.87	-0.89	-0.89	1.66	11.00	PASS
	46/5230	-1.23	-1.23	-1.47	-1.47	1.66	11.00	PASS
802.11ac VHT20	36/5180	-0.52	-0.52	1.51	1.51	3.62	11.00	PASS
	40/5200	-0.01	-0.01	0.34	0.34	3.18	11.00	PASS
	48/5240	-0.02	-0.02	-0.17	-0.17	2.92	11.00	PASS
802.11ac VHT40	38/5190	-2.92	-2.92	-2.00	-2.00	0.57	11.00	PASS
	46/5230	-2.57	-2.57	-2.49	-2.49	0.48	11.00	PASS
802.11ac VHT80	42/5210	-5.50	-5.50	-5.40	-5.40	-2.44	11.00	PASS
802.11ax HE20	36/5180	-1.27	-1.27	0.64	0.64	2.80	11.00	PASS
	40/5200	-0.86	-0.86	-0.34	-0.34	2.42	11.00	PASS
	48/5240	-0.75	-0.75	-0.74	-0.74	2.27	11.00	PASS
802.11ax HE40	38/5190	-4.17	-4.17	-2.53	-2.53	-0.27	11.00	PASS
	46/5230	-3.08	-3.08	-3.50	-3.50	-0.27	11.00	PASS
802.11ax HE80	42/5210	-6.07	-6.07	-5.48	-5.48	-2.75	11.00	PASS

Note: 1. Power Spectral Density = Read Value + Duty cycle correction factor

2. For Total PSD, according to KDB 662911 D01 Multiple Transmitter Output v02r01 2)a), the power spectral density = $10\log(10^{(\text{PSD antenna1 in dBm}/10)} + 10^{(\text{PSD antenna2 in dBm}/10)})$

3. The manufacturer declared the transmitter output signals is CDD mode And Nss=1. According to KDB 662911 D01 Multiple Transmitter Output v02r01 2)f)(i): If all antennas have the same gain, Directional gain = GANT + Array Gain, For PSD measurements on all devices, Array Gain = $10\log(\text{Nant}/\text{Nss})\text{dB}$, so directional gain = GANT + Array Gain = $2.6 + 10\log(2/1) = 5.61 < 6\text{dBi}$. So the PSD limit is $11 + 6 - \text{MAX}(\text{directional gain}, 6) = 11.00\text{dBm}$.



U-NII-3

Mode	Channel/ Frequency (MHz)	Power Spectral Density					Limit (dBm/ 500kHz)	Conclusion
		Antenna 1		Antenna 2		Total Power (dBm /MHz)		
		Read Value (dBm/ 470kHz)	Power Spectral Density (dBm/ 500kHz)	Read Value (dBm/ 470kHz)	Power Spectral Density (dBm/ 500kHz)			
802.11n HT20	149/5745	-3.58	-3.31	-4.42	-4.15	-0.70	30.00	PASS
	157/5785	-1.88	-1.61	-3.81	-3.54	0.55	30.00	PASS
	165/5825	-2.88	-2.61	-4.12	-3.85	-0.17	30.00	PASS
802.11n HT40	151/5755	-6.14	-5.87	-7.30	-7.03	-3.40	30.00	PASS
	159/5795	-4.61	-4.34	-6.61	-6.34	-2.22	30.00	PASS
802.11ac VHT20	149/5745	-4.61	-4.34	-5.73	-5.46	-1.85	30.00	PASS
	157/5785	-3.15	-2.88	-5.06	-4.79	-0.72	30.00	PASS
	165/5825	-3.78	-3.51	-4.85	-4.58	-1.00	30.00	PASS
802.11ac VHT40	151/5755	-6.91	-6.64	-8.05	-7.78	-4.16	30.00	PASS
	159/5795	-5.84	-5.57	-7.70	-7.43	-3.39	30.00	PASS
802.11ac VHT80	155/5775	-9.11	-8.84	-11.22	-10.95	-6.75	30.00	PASS
802.11ax HE20	149/5745	-5.11	-4.84	-5.94	-5.67	-2.22	30.00	PASS
	157/5785	-3.24	-2.97	-5.60	-5.33	-0.98	30.00	PASS
	165/5825	-3.93	-3.66	-5.75	-5.48	-1.47	30.00	PASS
802.11ax HE40	151/5755	-7.71	-7.44	-8.89	-8.62	-4.98	30.00	PASS
	159/5795	-5.98	-5.71	-7.77	-7.50	-3.51	30.00	PASS
802.11ax HE80	155/5775	-9.52	-9.25	-11.20	-10.93	-7.00	30.00	PASS

Note: 1. Power Spectral Density =Read Value+Duty cycle correction factor

2. For Total PSD, according to KDB 662911 D01 Multiple Transmitter Output v02r01 2)a),the power spectral density= $10\log(10(\text{PSD antenna1 in dBm}/10)+10(\text{PSD antenna2 in dBm}/10))$

3. The manufacturer declared the transmitter output signals is CDD mode And Nss=1. According to KDB 662911 D01 Multiple Transmitter Output v02r01 2)f)(i): If all antennas have the same gain, Directional gain = GANT + Array Gain, For PSD measurements on all devices,Array Gain= $10\log(\text{Nant}/\text{Nss})\text{dB}$,so directional gain=GANT+Array Gain= $2.6+10\log(2/1)=5.61<6\text{dBi}$. So the PSD limit is $30+6-\text{MAX}(\text{directional gain}, 6) = 30.00\text{dBm}$.



TB mode

SISO Antenna 1

U-NII-1

Mode	RU Size	Index	Channel/ Frequency (MHz)	Read Value (dBm /MHz)	Power Spectral Density (dBm /MHz)	Limit (dBm)	Conclusion
MU 802.11ax HE20	26Tone	0	36/5180	7.340	7.34	11	PASS
		4	40/5200	6.780	6.78	11	PASS
		8	48/5240	7.400	7.40	11	PASS
	52Tone	37	36/5180	4.960	4.96	11	PASS
		38	40/5200	5.007	5.01	11	PASS
		40	48/5240	4.634	4.63	11	PASS
	106 Tone	53	36/5180	2.359	2.36	11	PASS
		53	40/5200	2.310	2.31	11	PASS
		54	48/5240	2.004	2.00	11	PASS
SU 802.11ax HE20	242 Tone	61	36/5180	-0.633	-0.63	11	PASS
		61	40/5200	-0.730	-0.73	11	PASS
		61	48/5240	-0.811	-0.81	11	PASS
SU 802.11ax HE40	484 Tone	65	38/5190	-2.748	-2.75	11	PASS
		65	46/5230	-2.572	-2.57	11	PASS
SU 802.11ax HE80	996 Tone	67	42/5210	-5.951	-5.95	11	PASS
Note: Average Power with duty factor = Average Power Measured +Duty cycle correction factor							



U-NII-3

Mode	RU Size	Index	Channel/ Frequency (MHz)	Read Value (dBm/470kHz)	Power Spectral Density (dBm/500kHz)	Limit (dBm/500kHz)	Conclusion
MU 802.11ax HE20	26Tone	0	149/5745	0.649	0.92	30	PASS
		4	157/5785	1.913	2.18	30	PASS
		8	165/5825	0.938	1.21	30	PASS
	52Tone	37	149/5745	-2.397	-2.13	30	PASS
		38	157/5785	-0.791	-0.52	30	PASS
		40	165/5825	-1.196	-0.93	30	PASS
	106 Tone	53	149/5745	-4.363	-4.09	30	PASS
		53	157/5785	-2.879	-2.61	30	PASS
		54	165/5825	-3.636	-3.37	30	PASS
SU 802.11ax HE20	242 Tone	61	149/5745	-8.104	-7.83	30	PASS
		61	157/5785	-6.103	-5.83	30	PASS
		61	165/5825	-7.259	-6.99	30	PASS
SU 802.11ax HE40	484 Tone	65	151/5755	-9.851	-9.58	30	PASS
		65	159/5795	-8.395	-8.13	30	PASS
SU 802.11ax HE80	996 Tone	67	155/5775	-11.652	-11.38	30	PASS
Note: Average Power with duty factor = Average Power Measured +Duty cycle correction factor							



SISO Antenna 2

U-NII-1

Mode	RU Size	Index	Channel/ Frequency (MHz)	Read Value (dBm /MHz)	Power Spectral Density (dBm /MHz)	Limit (dBm)	Conclusion
MU 802.11ax HE20	26Tone	0	36/5180	8.552	8.55	11	PASS
		4	40/5200	6.446	6.45	11	PASS
		8	48/5240	6.928	6.93	11	PASS
	52Tone	37	36/5180	5.542	5.54	11	PASS
		38	40/5200	5.205	5.21	11	PASS
		40	48/5240	4.508	4.51	11	PASS
	106 Tone	53	36/5180	3.885	3.89	11	PASS
		53	40/5200	2.875	2.88	11	PASS
		54	48/5240	2.139	2.14	11	PASS
SU 802.11ax HE20	242 Tone	61	36/5180	-0.102	-0.10	11	PASS
		61	40/5200	-0.681	-0.68	11	PASS
		61	48/5240	-1.093	-1.09	11	PASS
SU 802.11ax HE40	484 Tone	65	38/5190	-2.662	-2.66	11	PASS
		65	46/5230	-3.276	-3.28	11	PASS
SU 802.11ax HE80	996 Tone	67	42/5210	-5.940	-5.94	11	PASS
Note: Average Power with duty factor = Average Power Measured +Duty cycle correction factor							



U-NII-3

Mode	RU Size	Index	Channel/ Frequency (MHz)	Read Value (dBm/470kHz)	Power Spectral Density (dBm/500kHz)	Limit (dBm/ 500kHz)	Conclusion
MU 802.11ax HE20	26Tone	0	149/5745	1.242	1.51	30	PASS
		4	157/5785	2.503	2.77	30	PASS
		8	165/5825	1.925	2.20	30	PASS
	52Tone	37	149/5745	-1.144	-0.87	30	PASS
		38	157/5785	-0.191	0.08	30	PASS
		40	165/5825	-0.523	-0.25	30	PASS
	106 Tone	53	149/5745	-3.212	-2.94	30	PASS
		53	157/5785	-2.201	-1.93	30	PASS
		54	165/5825	-2.991	-2.72	30	PASS
SU 802.11ax HE20	242 Tone	61	149/5745	-6.669	-6.40	30	PASS
		61	157/5785	-6.111	-5.84	30	PASS
		61	165/5825	-6.036	-5.77	30	PASS
SU 802.11ax HE40	484 Tone	65	151/5755	-8.454	-8.18	30	PASS
		65	159/5795	-7.787	-7.52	30	PASS
SU 802.11ax HE80	996 Tone	67	155/5775	-11.552	-11.28	30	PASS
Note: Average Power with duty factor = Average Power Measured +Duty cycle correction factor							



MIMO

U-NII-1

Mode	RU Size	Index	Channel/ Frequency (MHz)	Antenna 1		Antenna 2		Total Power (dBm)	Limit (dBm)	Conclusion
				Read Value (dBm/MHz)	PSD (dBm /MHz)	Read Value (dBm/MHz)	PSD (dBm /MHz)			
MU 802.11ax HE20	26Tone	0	36/5180	6.30	6.30	8.09	8.09	10.30	11.00	PASS
		4	40/5200	5.83	5.83	6.21	6.21	9.04	11.00	PASS
		8	48/5240	6.85	6.85	6.49	6.49	9.69	11.00	PASS
	52Tone	37	36/5180	3.74	3.74	6.00	6.00	8.03	11.00	PASS
		38	40/5200	4.03	4.03	4.12	4.12	7.08	11.00	PASS
		40	48/5240	4.23	4.23	4.36	4.36	7.30	11.00	PASS
	106 Tone	53	36/5180	1.22	1.22	3.51	3.51	5.53	11.00	PASS
		53	40/5200	1.59	1.59	2.57	2.57	5.12	11.00	PASS
		54	48/5240	1.96	1.96	1.85	1.85	4.92	11.00	PASS
SU 802.11ax HE20	242 Tone	61	36/5180	-1.87	-1.87	0.26	0.26	2.33	11.00	PASS
		61	40/5200	-1.65	-1.65	-0.80	-0.80	1.81	11.00	PASS
		61	48/5240	-1.44	-1.44	-1.71	-1.71	1.44	11.00	PASS
SU 802.11ax HE40	484 Tone	65	38/5190	-3.95	-3.95	-3.04	-3.04	-0.46	11.00	PASS
		65	46/5230	-3.02	-3.02	-3.70	-3.70	-0.34	11.00	PASS
SU 802.11ax HE80	996 Tone	67	42/5210	-6.51	-6.51	-5.99	-5.99	-3.23	11.00	PASS

Note: 1. For Total Power, according to KDB 662911 D01 Multiple Transmitter Output v02r01 1),

The Total Power = $10\log(10^{(\text{Power antenna1 in dBm}/10)} + 10^{(\text{Power antenna2 in dBm}/10)})$

2. The manufacturer declared the transmitter output signals is CDD mode And $N_{ss}=1$. According to KDB 662911 D01

Multiple Transmitter Output v02r01 2)f(i): If all antennas have the same gain, Directional gain = $G_{ANT} + \text{Array Gain}$,

For power measurements on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;

Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT} ;

Array Gain = $5 \log(N_{ANT}/N_{ss})$ dB or 3 dB, whichever is less, for 20-MHz channel widths with $N_{ANT} \geq 5$.

So directional gain = $G_{ANT} + \text{Array Gain} = 2.6 + 0 = 2.6 \text{ dBi} < 6 \text{ dBi}$. So the power limit is 11dBm.



U-NII-3

Mode	RU Size	Index	Carrier frequency (MHz)	Antenna 1		Antenna 2		Total Power (dBm/500kHz)	Limit (dBm/500kHz)	Conclusion
				Read Value (dBm/500kHz)	PSD (dBm/500kHz)	Read Value (dBm/500kHz)	PSD (dBm/500kHz)			
MU 802.11ax HE20	26Tone	0	149/5745	0.89	1.16	1.62	1.89	4.55	30.00	PASS
		4	157/5785	1.65	1.92	2.28	2.55	5.25	30.00	PASS
		8	165/5825	1.16	1.43	1.68	1.95	4.71	30.00	PASS
	52Tone	37	149/5745	-2.52	-2.25	-1.60	-1.33	1.25	30.00	PASS
		38	157/5785	-0.60	-0.33	-0.57	-0.30	2.70	30.00	PASS
		40	165/5825	-1.04	-0.77	-0.79	-0.52	2.37	30.00	PASS
	106 Tone	53	149/5745	-4.31	-4.04	-3.59	-3.32	-0.65	30.00	PASS
		53	157/5785	-3.13	-2.86	-2.73	-2.46	0.36	30.00	PASS
		54	165/5825	-4.09	-3.82	-2.98	-2.71	-0.22	30.00	PASS
SU 802.11ax HE20	242 Tone	61	149/5745	-7.74	-7.47	-6.55	-6.28	-3.82	30.00	PASS
		61	157/5785	-6.24	-5.97	-5.82	-5.55	-2.74	30.00	PASS
		61	165/5825	-6.82	-6.55	-6.00	-5.73	-3.11	30.00	PASS
SU 802.11ax HE40	484 Tone	65	151/5755	-9.93	-9.66	-8.84	-8.57	-6.07	30.00	PASS
		65	159/5795	-8.45	-8.18	-8.21	-7.94	-5.05	30.00	PASS
SU 802.11ax HE80	996 Tone	67	155/5775	-11.85	-11.58	-11.78	-11.51	0.00	30.00	PASS

Note: 1. For Total Power, according to KDB 662911 D01 Multiple Transmitter Output v02r01 1),

The Total Power = $10\log(10^{(\text{Power antenna1 in dBm}/10)} + 10^{(\text{Power antenna2 in dBm}/10)})$

2. The manufacturer declared the transmitter output signals is CDD mode And $N_{ss}=1$. According to KDB 662911 D01

Multiple Transmitter Output v02r01 2)f(i): If all antennas have the same gain, Directional gain = $G_{ANT} + \text{Array Gain}$,

For power measurements on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;

Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT} ;

Array Gain = $5 \log(N_{ANT}/N_{SS})$ dB or 3 dB, whichever is less, for 20-MHz channel widths with $N_{ANT} \geq 5$.

So directional gain = $G_{ANT} + \text{Array Gain} = 2.6 + 0 = 2.6$ dBi < 6 dBi. So the power limit is 30dBm.

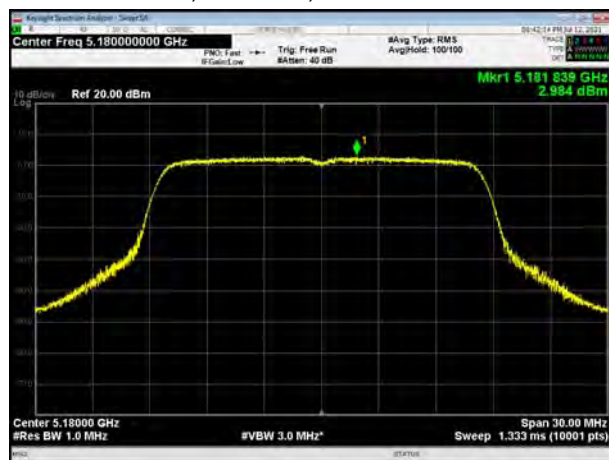


SU mode

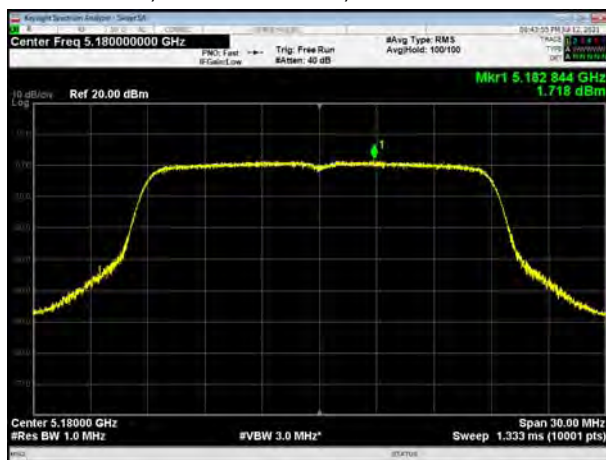
SISO Antenna 1

U-NII-1

U-NII-1, 802.11a, Channel No.: 36



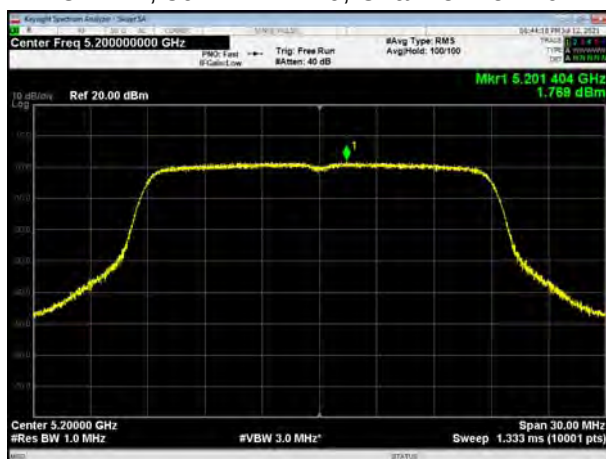
U-NII-1, 802.11n HT20, Channel No.: 36



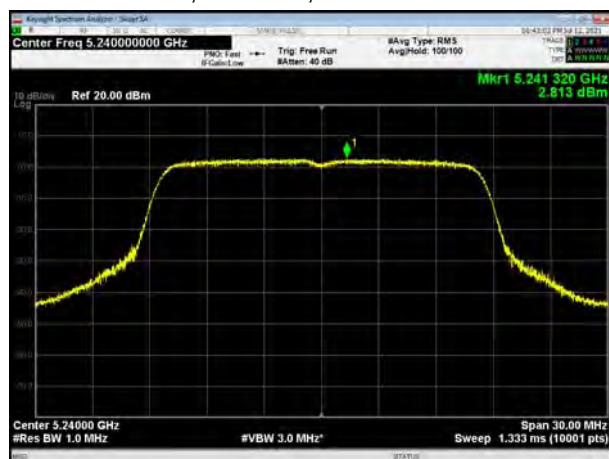
U-NII-1, 802.11a, Channel No.: 40



U-NII-1, 802.11n HT20, Channel No.: 40



U-NII-1, 802.11a, Channel No.: 48



U-NII-1, 802.11n HT20, Channel No.: 48



U-NII-1, 802.11n HT40, Channel No.: 38



U-NII-1, 802.11ac VHT20, Channel No.: 36



U-NII-1, 802.11n HT40, Channel No.: 46



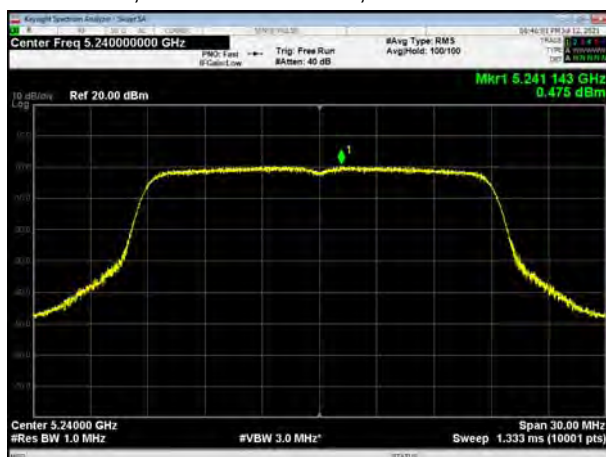
U-NII-1, 802.11ac VHT20, Channel No.: 40



U-NII-1, 802.11ac VHT40, Channel No.: 38



U-NII-1, 802.11ac VHT20, Channel No.: 48



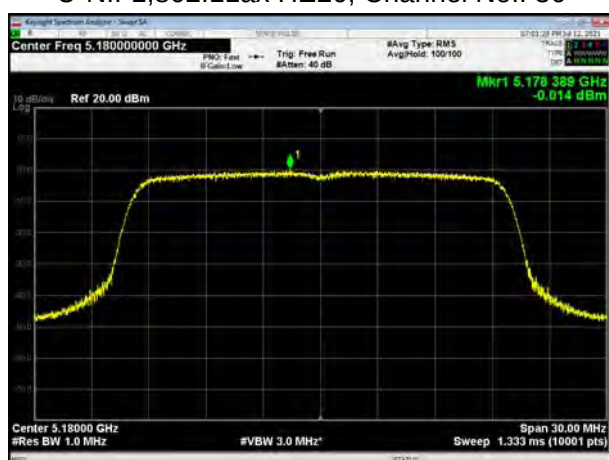
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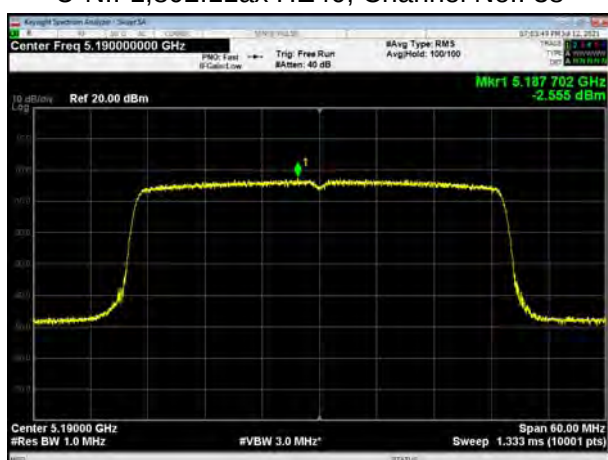
U-NII-1, 802.11ac VHT80, Channel No.: 42



U-NII-1,802.11ax HE20, Channel No.: 36



U-NII-1,802.11ax HE40, Channel No.: 38



U-NII-1,802.11ax HE20, Channel No.: 40



U-NII-1,802.11ax HE40, Channel No.: 46





U-NII-1,802.11ax HE20, Channel No.: 48



U-NII-1,802.11ax HE80, Channel No.: 42





UNII-3

U-NII-3, 802.11a, Channel No.: 149



U-NII-3, 802.11n HT20, Channel No.: 149



U-NII-3, 802.11a, Channel No.: 157



U-NII-3, 802.11n HT20, Channel No.: 157



U-NII-3, 802.11a, Channel No.: 165



U-NII-3, 802.11n HT20, Channel No.: 165



U-NII-3, 802.11n HT40, Channel No.: 151



U-NII-3, 802.11ac VHT20, Channel No.: 149



U-NII-3, 802.11n HT40, Channel No.: 159



U-NII-3, 802.11ac VHT20, Channel No.: 157



U-NII-3, 802.11ac VHT40, Channel No.: 151



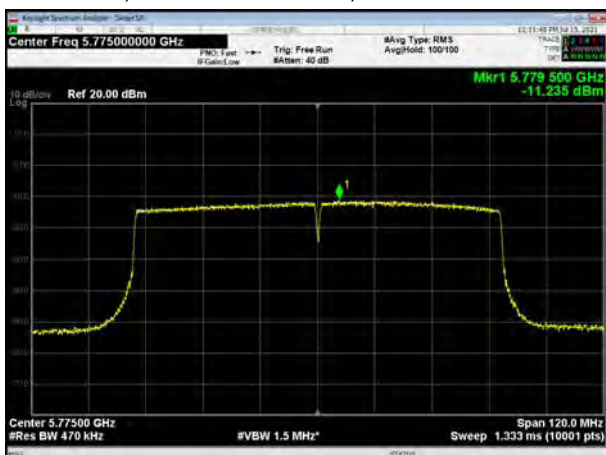
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U-NII-3, 802.11ac VHT40, Channel No.: 159



U-NII-3, 802.11ac VHT80, Channel No.: 155



U-NII-3,802.11ax HE20, Channel No.: 149



U-NII-3,802.11ax HE40, Channel No.: 151



U-NII-3,802.11ax HE20, Channel No.: 157

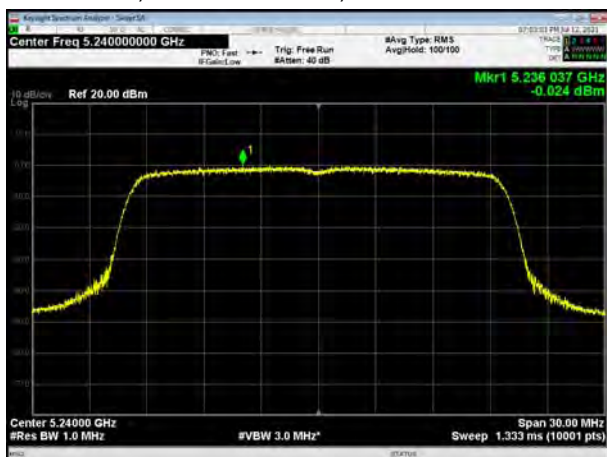


U-NII-3,802.11ax HE40, Channel No.: 159

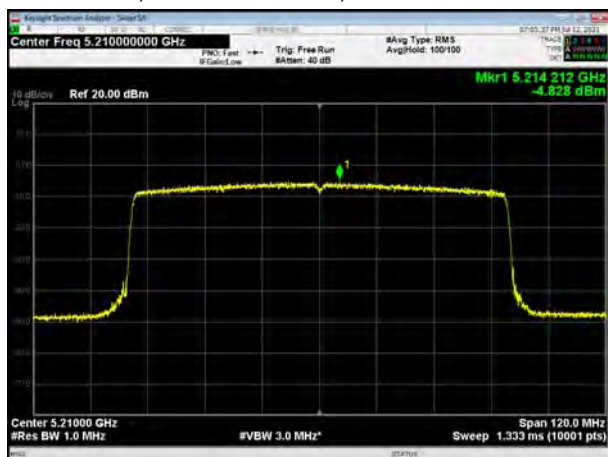




U-NII-3,802.11ax HE20, Channel No.: 165



U-NII-3,802.11ax HE80, Channel No.: 155



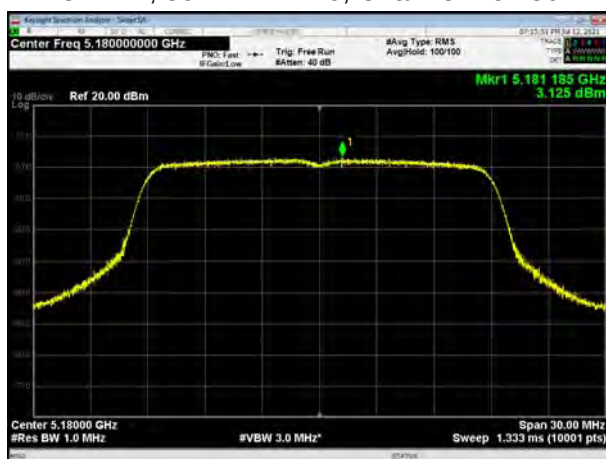


SISO Antenna 2

U-NII-1, 802.11a, Channel No.: 36



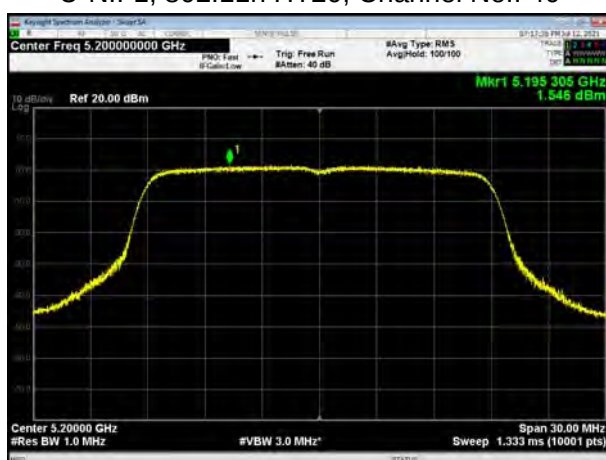
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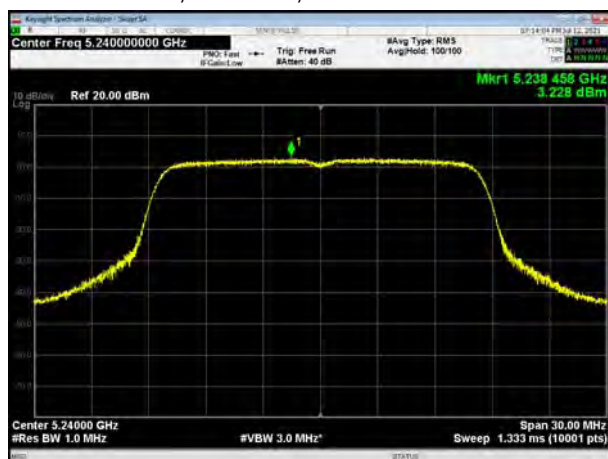
U-NII-1, 802.11a, Channel No.: 40



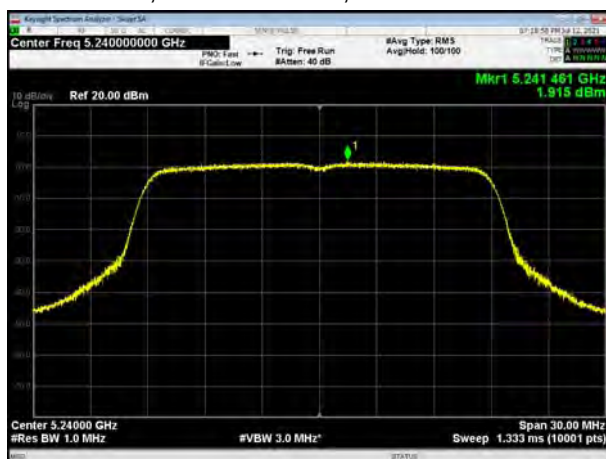
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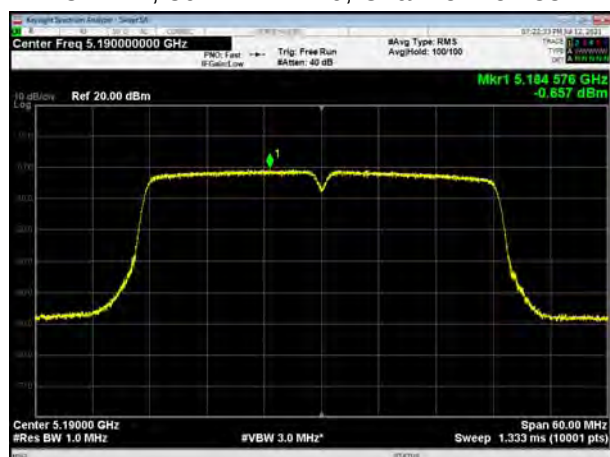
-NII-1, 802.11a, Channel No.: 48



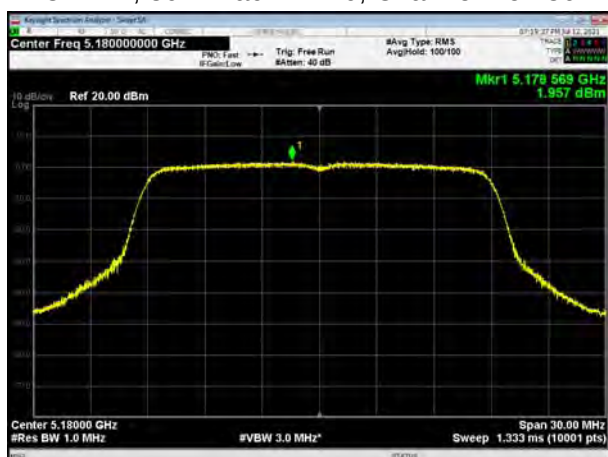
U-NII-1, 802.11n HT20, Channel No.: 48



U-NII-1, 802.11n HT40, Channel No.: 38



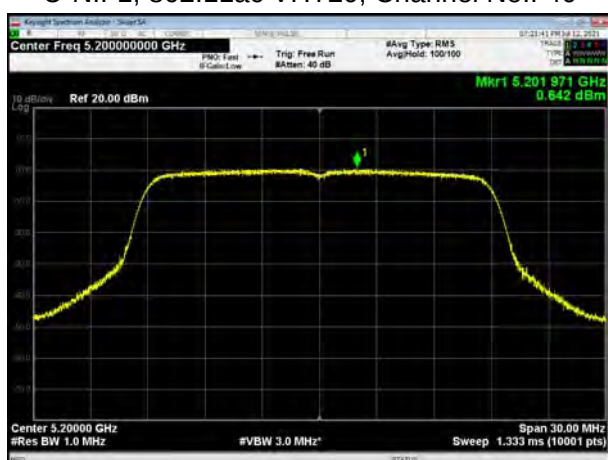
U-NII-1, 802.11ac VHT20, Channel No.: 36



U-NII-1, 802.11n HT40, Channel No.: 46



U-NII-1, 802.11ac VHT20, Channel No.: 40



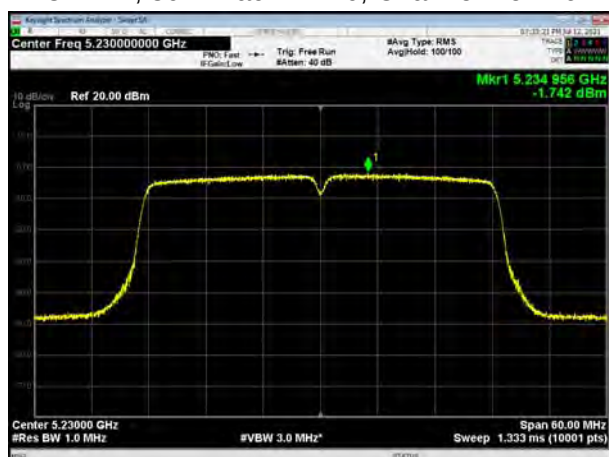
U-NII-1, 802.11ac VHT40, Channel No.: 38



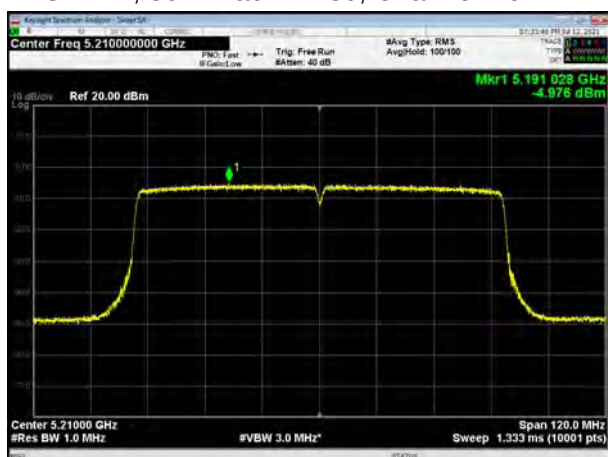
U-NII-1, 802.11ac VHT20, Channel No.: 48



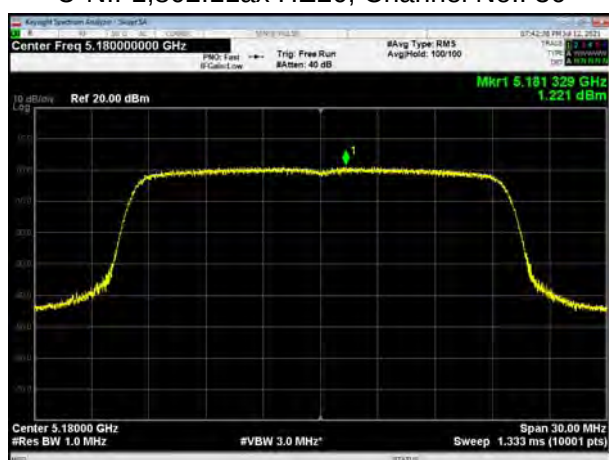
U-NII-1, 802.11ac VHT40, Channel No.: 46



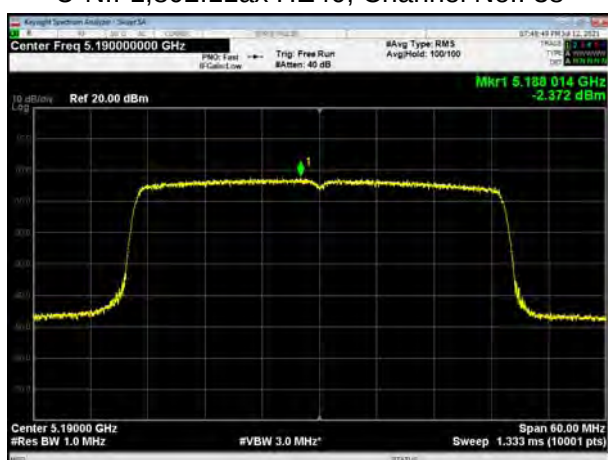
U-NII-1, 802.11ac VHT80, Channel No.: 42



U-NII-1,802.11ax HE20, Channel No.: 36



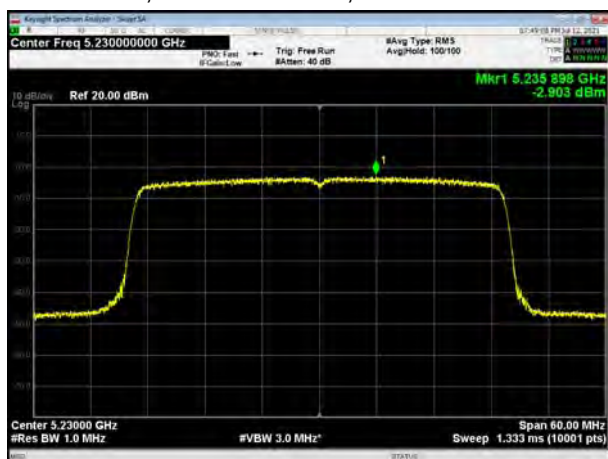
U-NII-1,802.11ax HE40, Channel No.: 38



U-NII-1,802.11ax HE20, Channel No.: 40

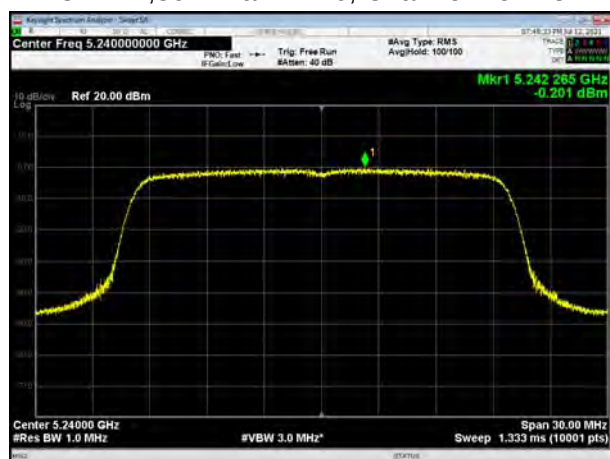


U-NII-1,802.11ax HE40, Channel No.: 46

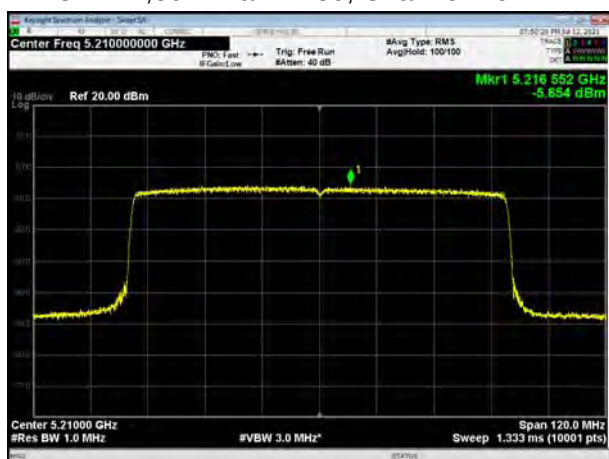




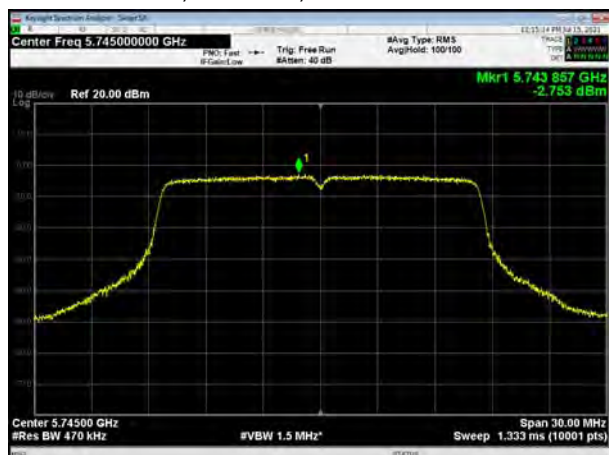
U-NII-1,802.11ax HE20, Channel No.: 48



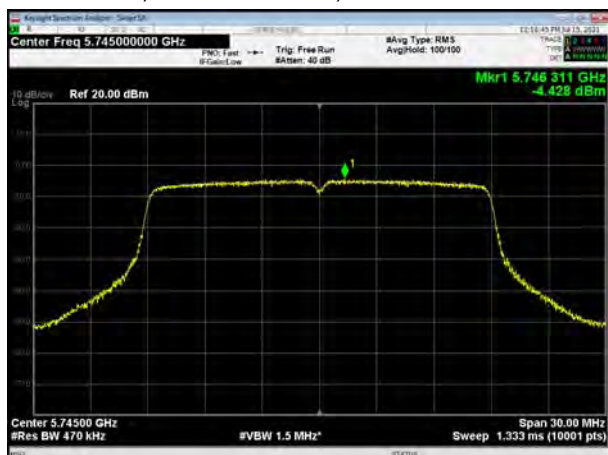
U-NII-1,802.11ax HE80, Channel No.: 42



U-NII-3, 802.11a, Channel No.: 149



U-NII-3, 802.11n HT20, Channel No.: 149



U-NII-3, 802.11a, Channel No.: 157



U-NII-3, 802.11n HT20, Channel No.: 157



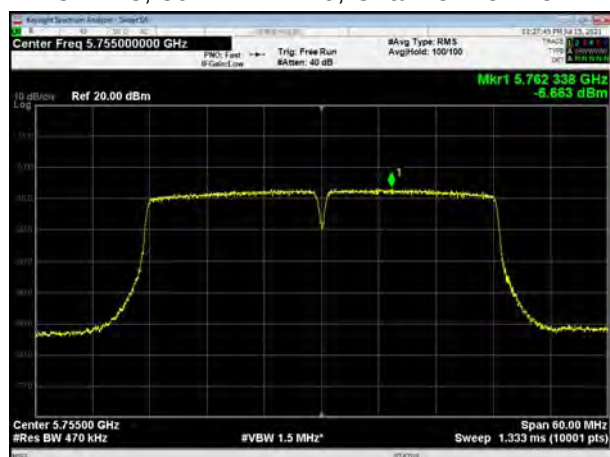
U-NII-3, 802.11a, Channel No.: 165



U-NII-3, 802.11n HT20, Channel No.: 165



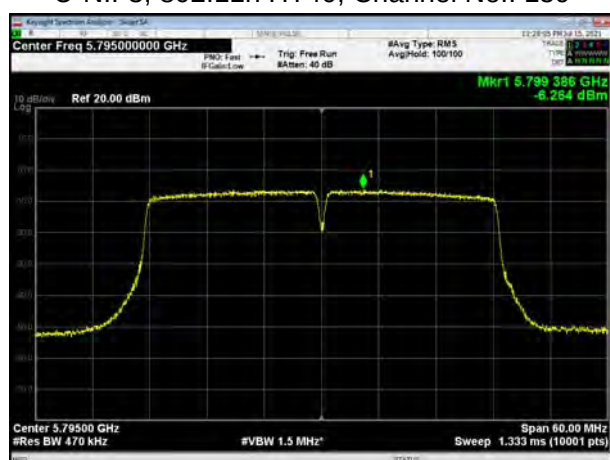
U-NII-3, 802.11n HT40, Channel No.: 151



U-NII-3, 802.11ac VHT20, Channel No.: 149



U-NII-3, 802.11n HT40, Channel No.: 159



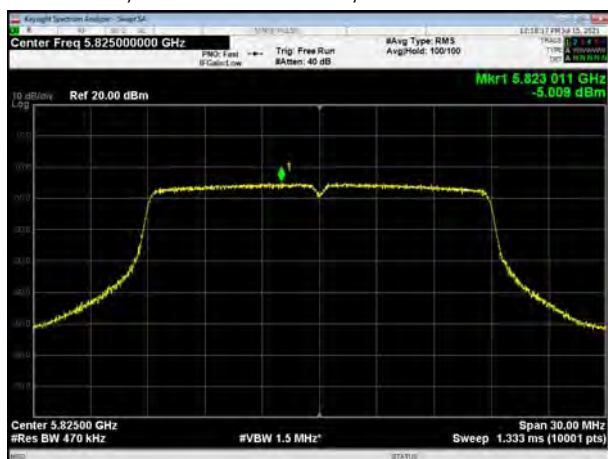
U-NII-3, 802.11ac VHT20, Channel No.: 157



U-NII-3, 802.11ac VHT40, Channel No.: 151



U-NII-3, 802.11ac VHT20, Channel No.: 165





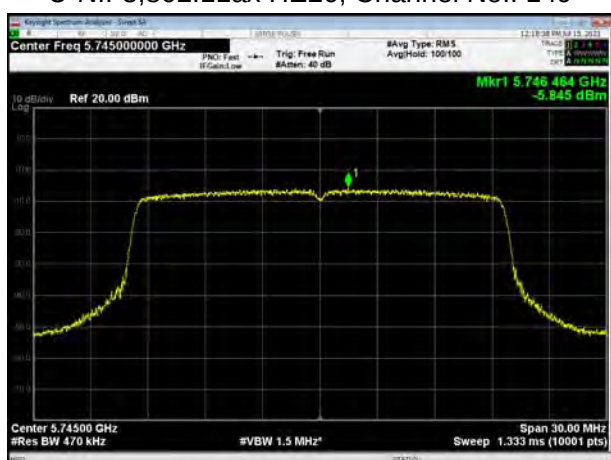
U-NII-3, 802.11ac VHT40, Channel No.: 159



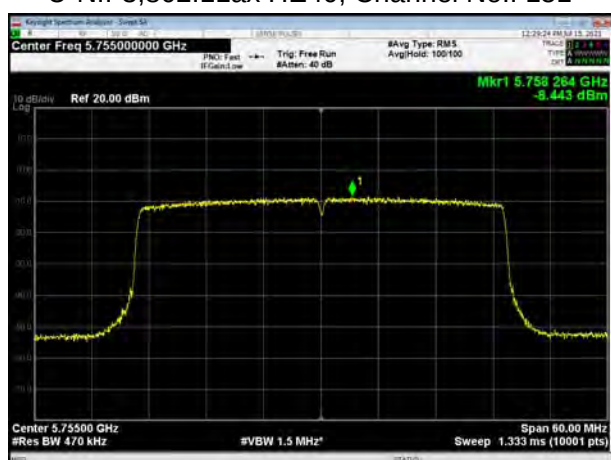
U-NII-3, 802.11ac VHT80, Channel No.: 155



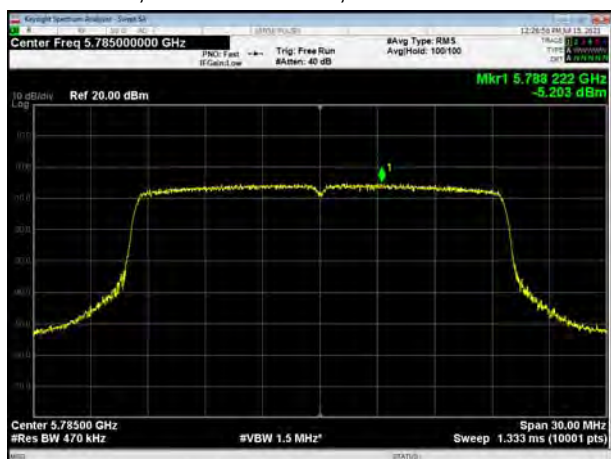
U-NII-3, 802.11ax HE20, Channel No.: 149



U-NII-3, 802.11ax HE40, Channel No.: 151



U-NII-3, 802.11ax HE20, Channel No.: 157



U-NII-3, 802.11ax HE40, Channel No.: 159

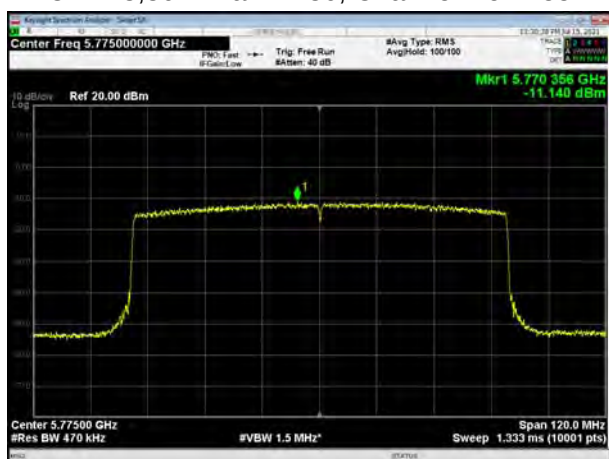




U-NII-3,802.11ax HE20, Channel No.: 165



U-NII-3,802.11ax HE80, Channel No.: 155

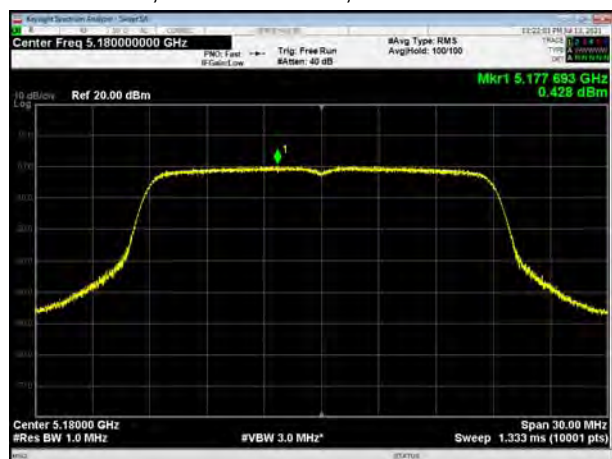




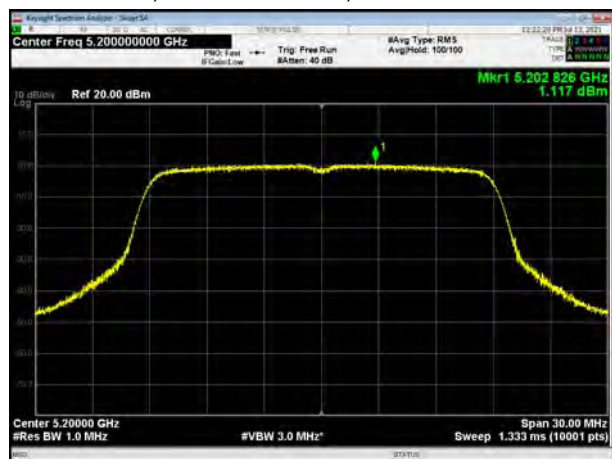
MIMO Antenna 1

UNII-1

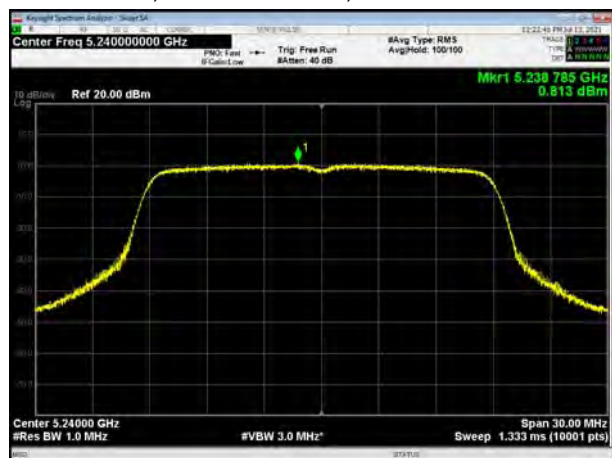
U-NII-1, 802.11n HT20, Channel No.: 36



U-NII-1, 802.11n HT20, Channel No.: 40



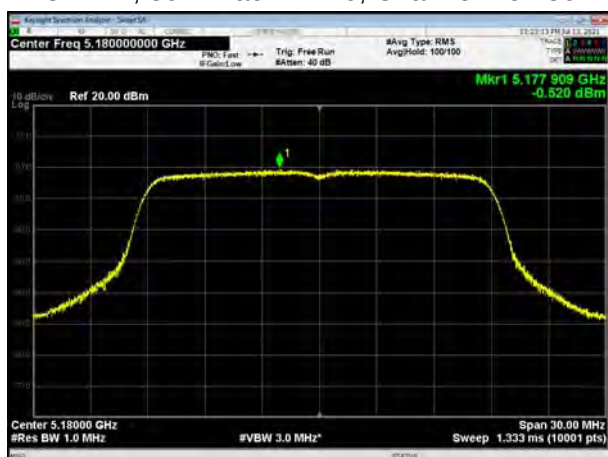
U-NII-1, 802.11n HT20, Channel No.: 48



U-NII-1, 802.11n HT40, Channel No.: 38



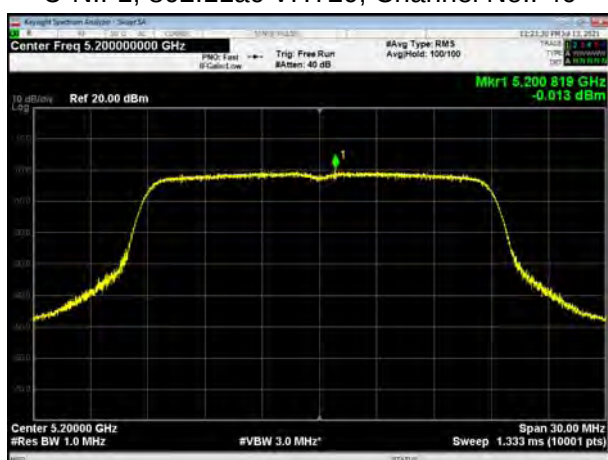
U-NII-1, 802.11ac VHT20, Channel No.: 36



U-NII-1, 802.11n HT40, Channel No.: 46



U-NII-1, 802.11ac VHT20, Channel No.: 40



U-NII-1, 802.11ac VHT40, Channel No.: 38



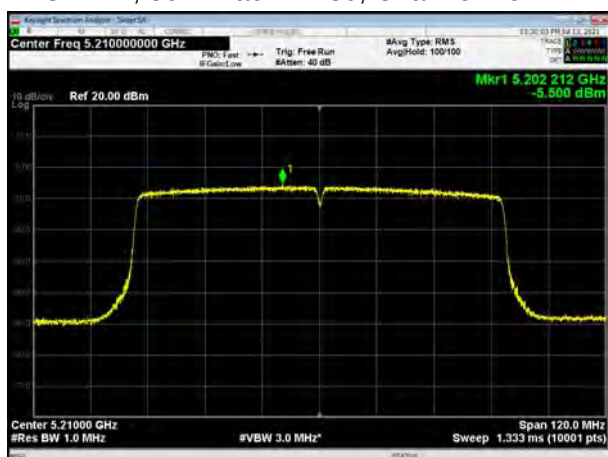
U-NII-1, 802.11ac VHT20, Channel No.: 48



U-NII-1, 802.11ac VHT40, Channel No.: 46



U-NII-1, 802.11ac VHT80, Channel No.: 42



U-NII-1,802.11ax HE20, Channel No.: 36



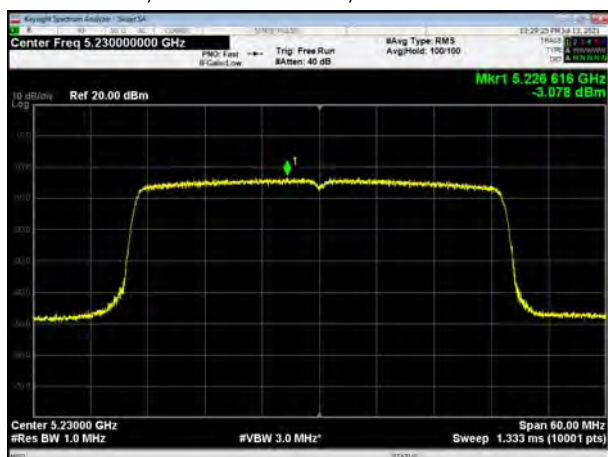
U-NII-1,802.11ax HE40, Channel No.: 38



U-NII-1,802.11ax HE20, Channel No.: 40



U-NII-1,802.11ax HE40, Channel No.: 46





U-NII-1,802.11ax HE20, Channel No.: 48

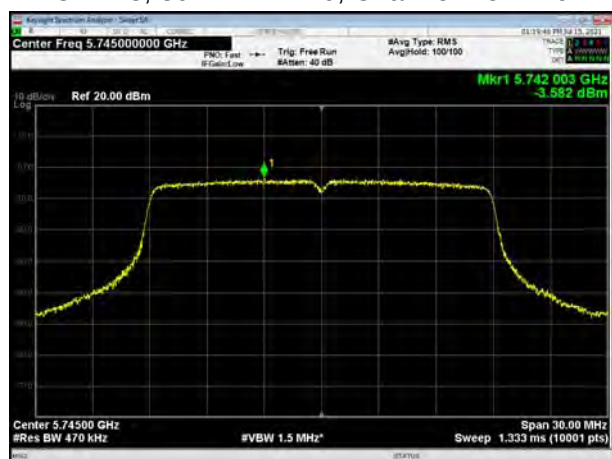


U-NII-1,802.11ax HE80, Channel No.: 42



UNII-3

U-NII-3, 802.11n HT20, Channel No.: 149



U-NII-3, 802.11n HT20, Channel No.: 157



U-NII-3, 802.11n HT20, Channel No.: 165



U-NII-3, 802.11n HT40, Channel No.: 151



U-NII-3, 802.11ac VHT20, Channel No.: 149



U-NII-3, 802.11n HT40, Channel No.: 159



U-NII-3, 802.11ac VHT20, Channel No.: 157



U-NII-3, 802.11ac VHT40, Channel No.: 151



U-NII-3, 802.11ac VHT20, Channel No.: 165



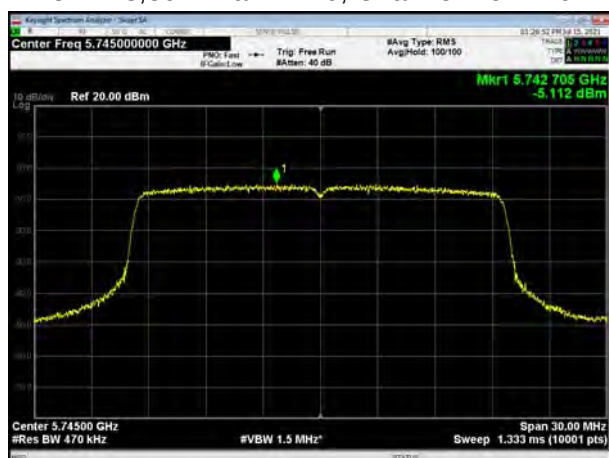
U-NII-3, 802.11ac VHT40, Channel No.: 159



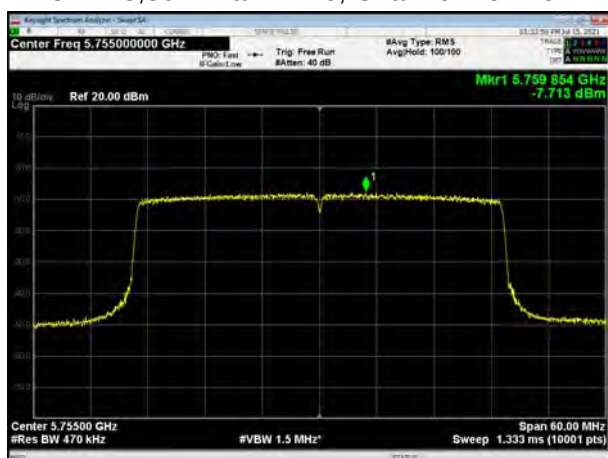
U-NII-3, 802.11ac VHT80, Channel No.: 155



U-NII-3,802.11ax HE20, Channel No.: 149



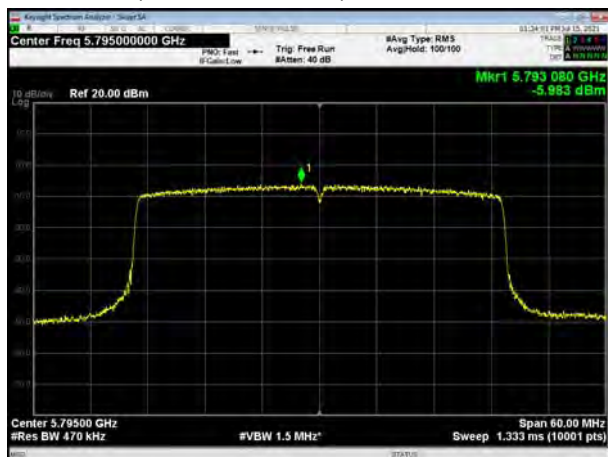
U-NII-3,802.11ax HE40, Channel No.: 151



U-NII-3,802.11ax HE20, Channel No.: 157

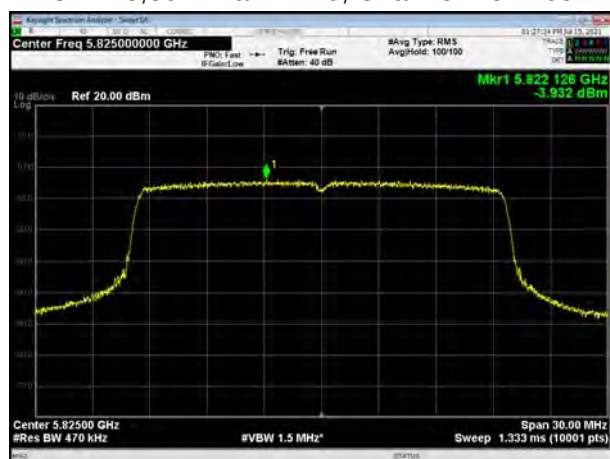


U-NII-3,802.11ax HE40, Channel No.: 159

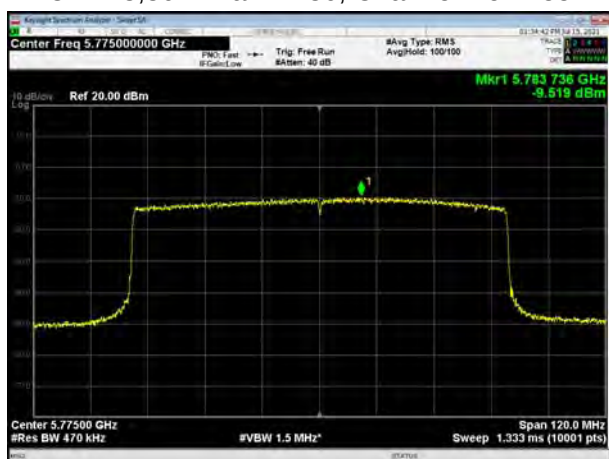




U-NII-3,802.11ax HE20, Channel No.: 165

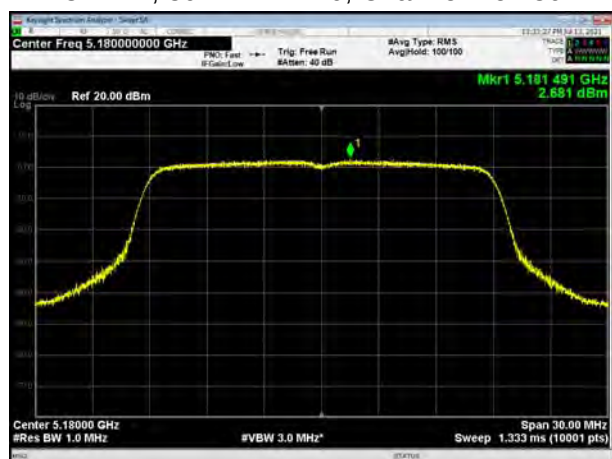


U-NII-3,802.11ax HE80, Channel No.: 155

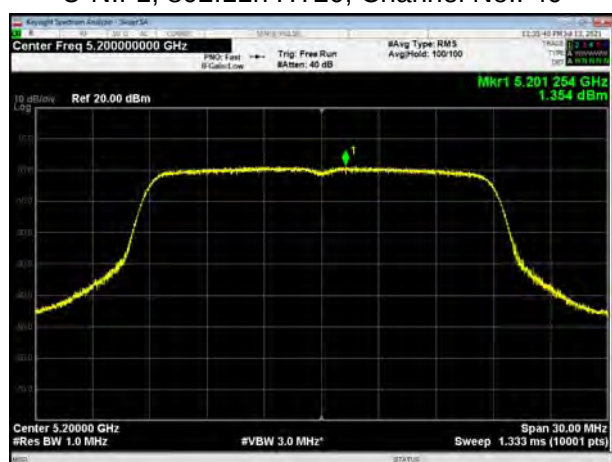


MIMO Antenna 2

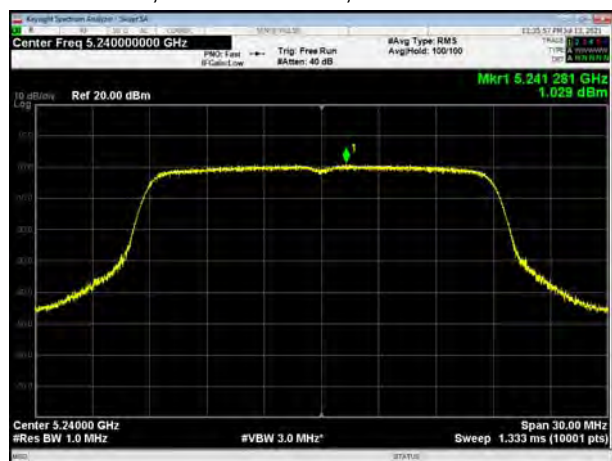
U-NII-1, 802.11n HT20, Channel No.: 36



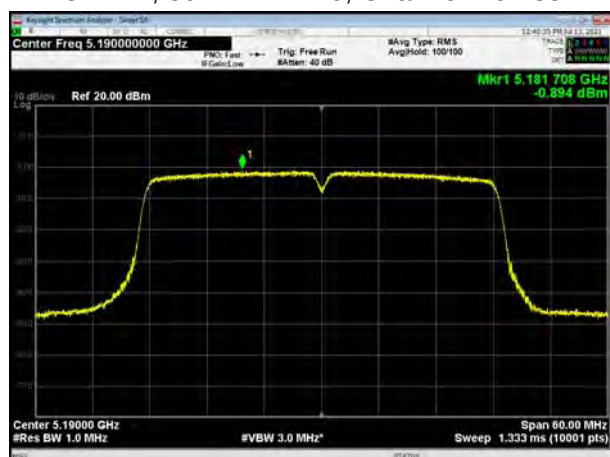
U-NII-1, 802.11n HT20, Channel No.: 40



U-NII-1, 802.11n HT20, Channel No.: 48



U-NII-1, 802.11n HT40, Channel No.: 38



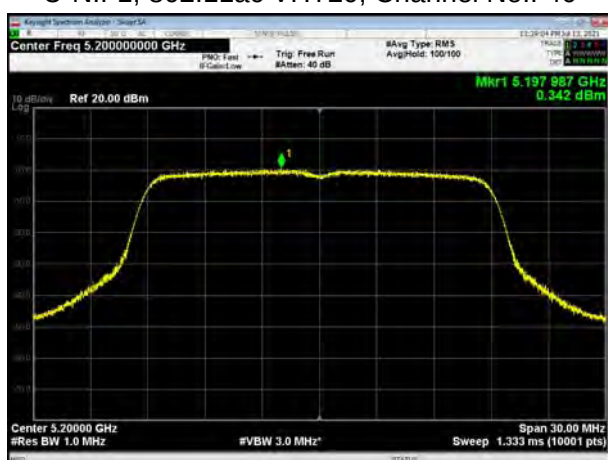
U-NII-1, 802.11ac VHT20, Channel No.: 36



U-NII-1, 802.11n HT40, Channel No.: 46



U-NII-1, 802.11ac VHT20, Channel No.: 40



U-NII-1, 802.11ac VHT40, Channel No.: 38



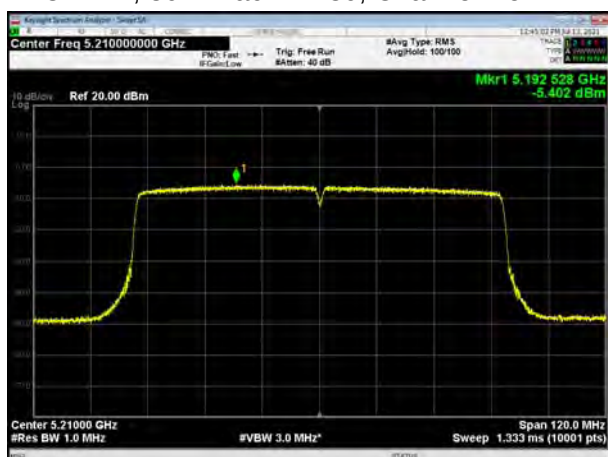
U-NII-1, 802.11ac VHT20, Channel No.: 48



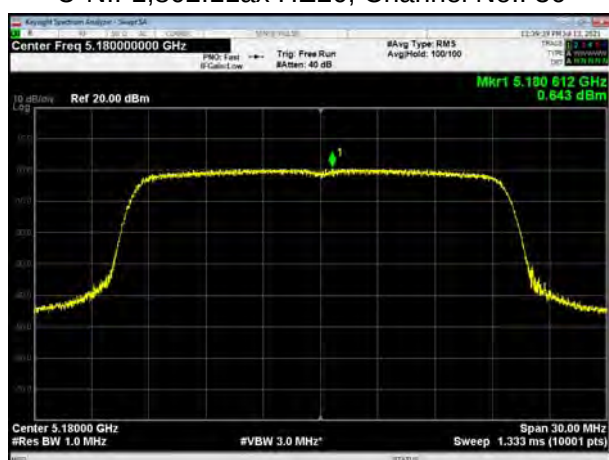
U-NII-1, 802.11ac VHT40, Channel No.: 46



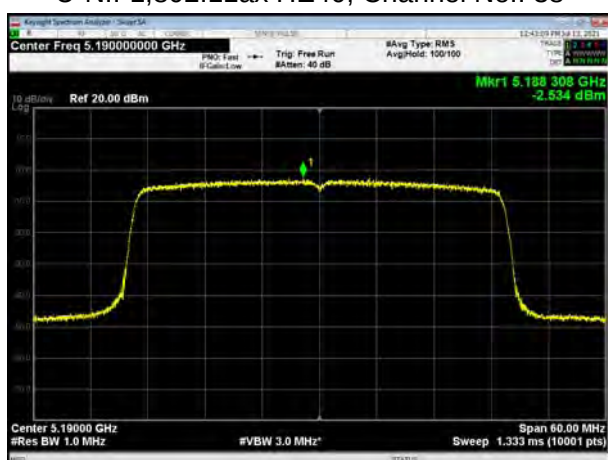
U-NII-1, 802.11ac VHT80, Channel No.: 42



U-NII-1,802.11ax HE20, Channel No.: 36



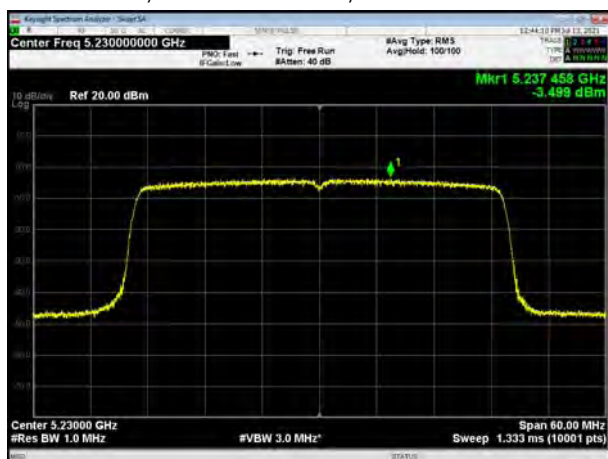
U-NII-1,802.11ax HE40, Channel No.: 38



U-NII-1,802.11ax HE20, Channel No.: 40



U-NII-1,802.11ax HE40, Channel No.: 46

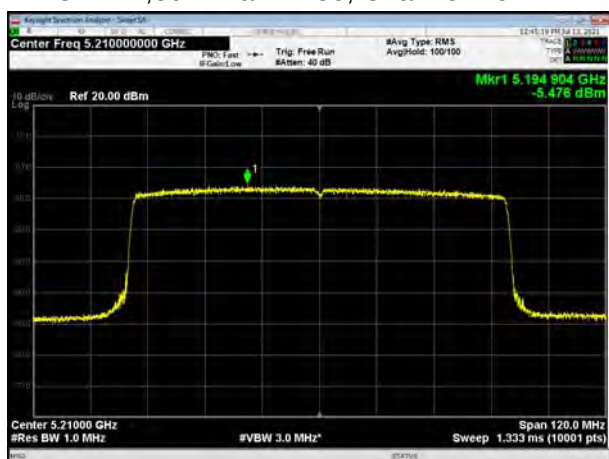




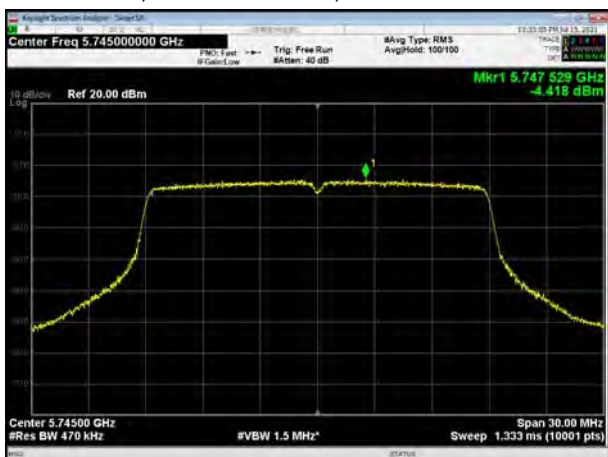
U-NII-1,802.11ax HE20, Channel No.: 48



U-NII-1,802.11ax HE80, Channel No.: 42



U-NII-3, 802.11n HT20, Channel No.: 149



U-NII-3, 802.11n HT20, Channel No.: 157



U-NII-3, 802.11n HT20, Channel No.: 165



U-NII-3, 802.11n HT40, Channel No.: 151



U-NII-3, 802.11ac VHT20, Channel No.: 149



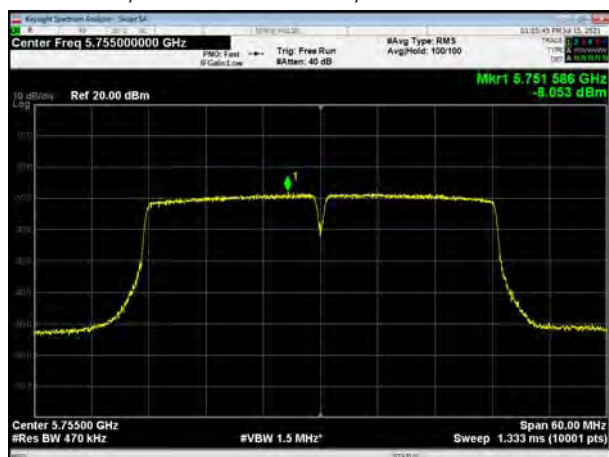
U-NII-3, 802.11n HT40, Channel No.: 159



U-NII-3, 802.11ac VHT20, Channel No.: 157



U-NII-3, 802.11ac VHT40, Channel No.: 151



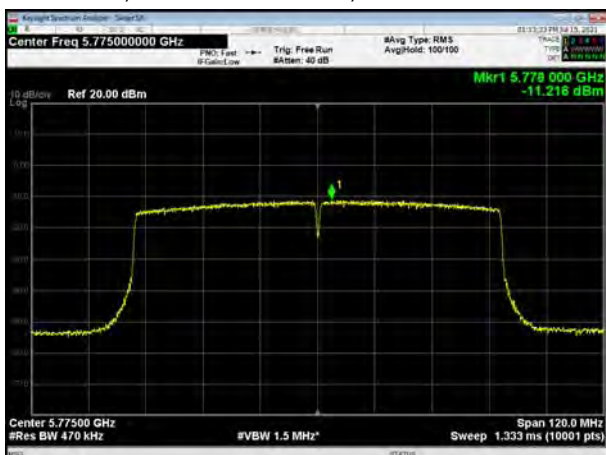
U-NII-3, 802.11ac VHT20, Channel No.: 165



U-NII-3, 802.11ac VHT40, Channel No.: 159



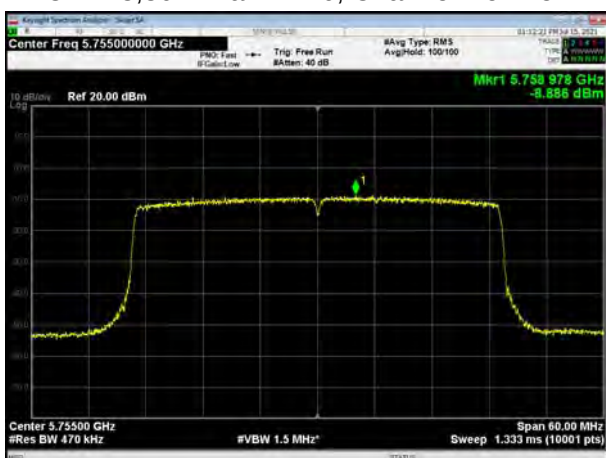
U-NII-3, 802.11ac VHT80, Channel No.: 155



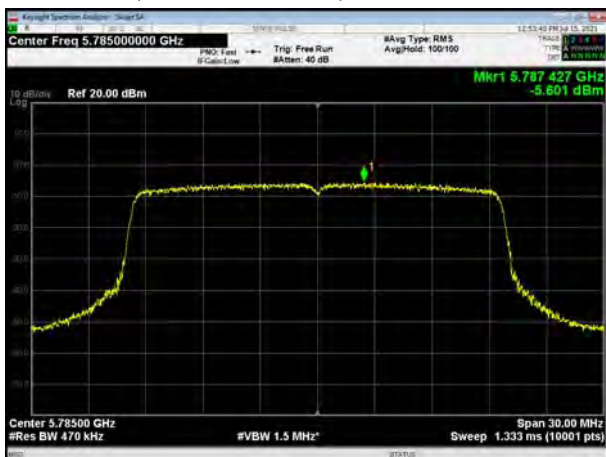
U-NII-3,802.11ax HE20, Channel No.: 149



U-NII-3,802.11ax HE40, Channel No.: 151



U-NII-3,802.11ax HE20, Channel No.: 157

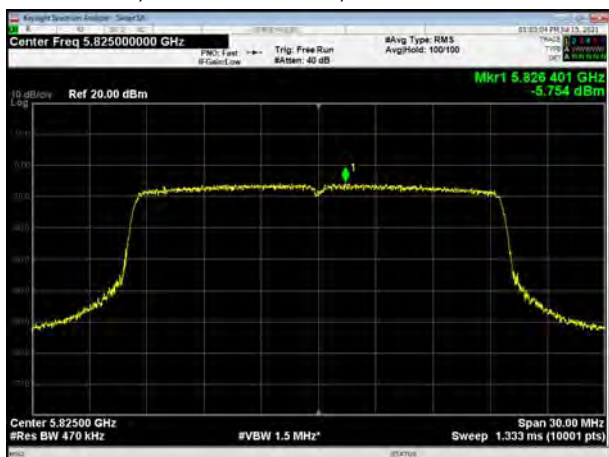


U-NII-3,802.11ax HE40, Channel No.: 159

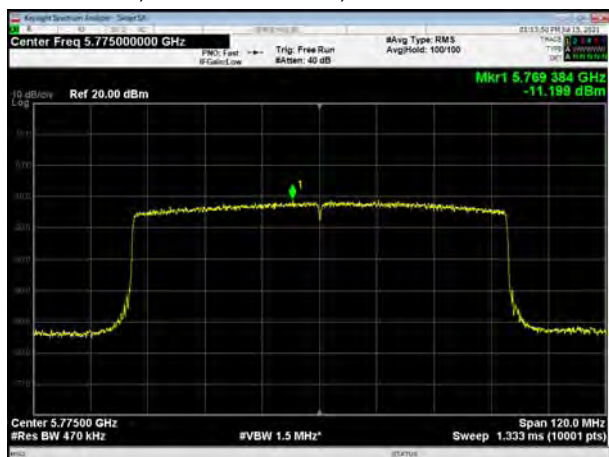




U-NII-3,802.11ax HE20, Channel No.: 165



U-NII-3,802.11ax HE80, Channel No.: 155



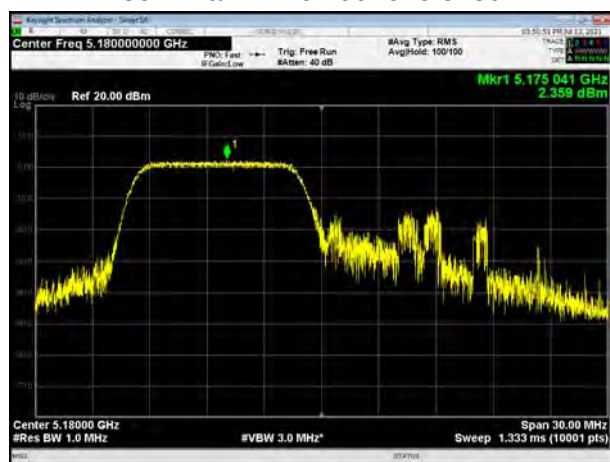


TB mode

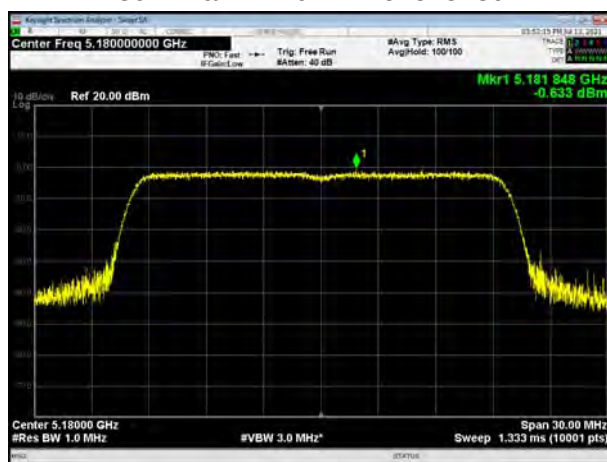
SISO Antenna 1

UNII-1

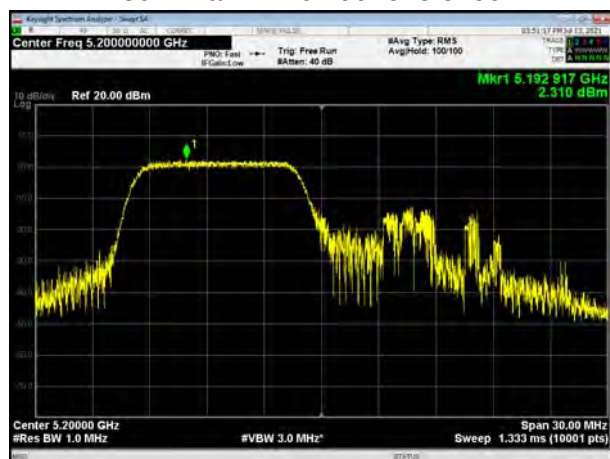
802.11ax HE20 106Tone:5180



802.11ax HE20 242Tone: 5180



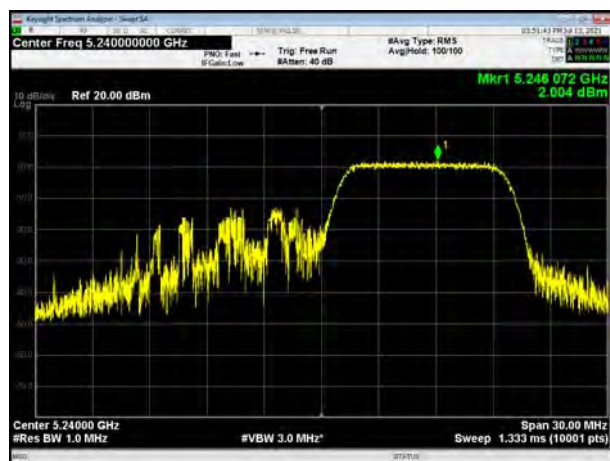
802.11ax HE20 106Tone:5200



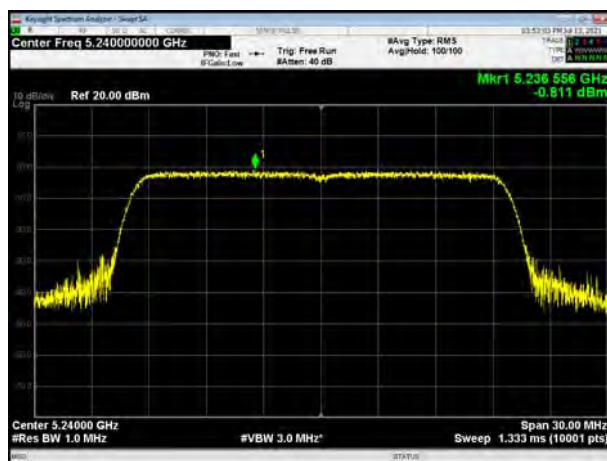
802.11ax HE20 242Tone: 5200



802.11ax HE20 106Tone: 5240

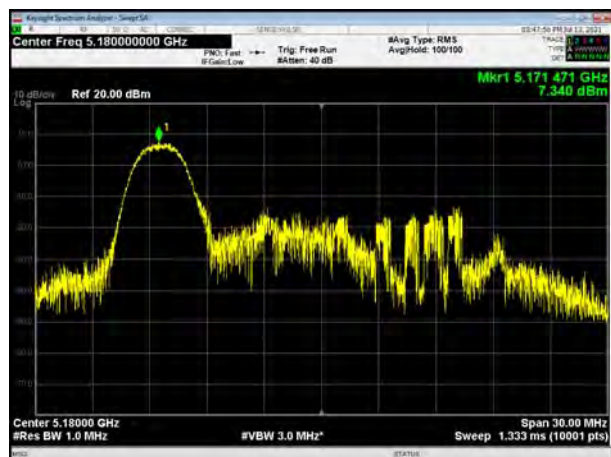


802.11ax HE20 242Tone: 5240

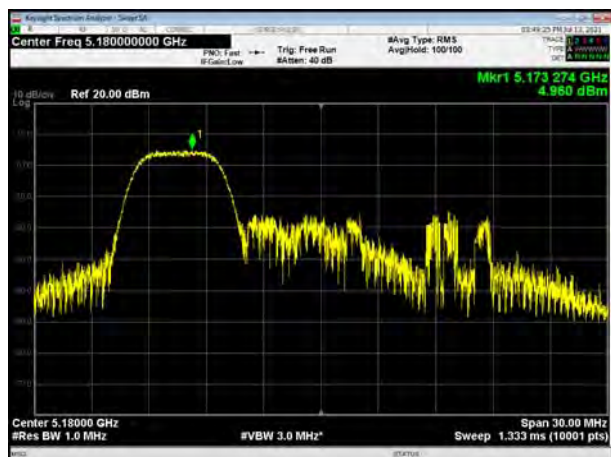




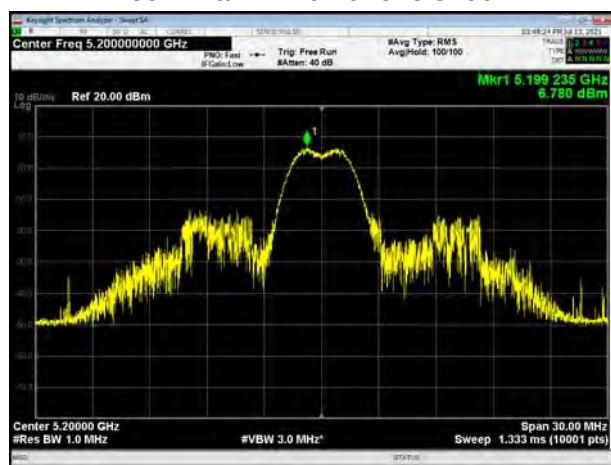
802.11ax HE20 26Tone:5180



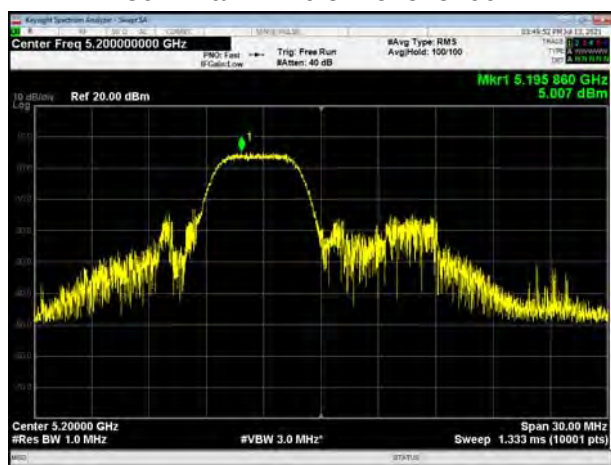
802.11ax HE20 52Tone: 5180



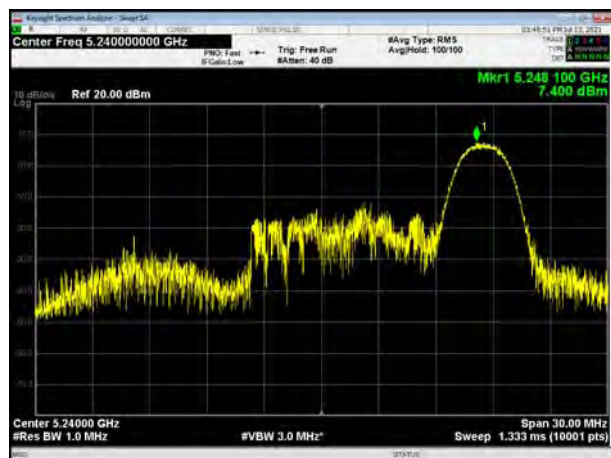
802.11ax HE20 26Tone:5200



802.11ax HE20 52Tone: 5200



802.11ax HE20 26Tone: 5240



802.11ax HE20 52Tone: 5240

