

TEST REPORT

**CTK Co., Ltd.**

(Ho-dong), 113, Yejik-ro, Cheoin-gu, Yongin-si,
Gyeonggi-do, 17142, Korea
Tel: +82-31-339-9970
Fax: +82-31-624-9501

REPORT No.:
CTK-2025-03706
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1. Applicant

- Name : Samsung Electronics Co Ltd
- Address : 19 Chapin Rd, Building D. Pine Brook, New Jersey, United States
- Date of Receipt : 2025-09-12

2. Manufacturer

- Name : Samsung Electronics Co Ltd

3. Use of Report : For FCC Conformance**4. Test sample / Model** : Wireless One Connect Receiver / WCHA31M**5. Date(s) of test** : 2025-10-21 to 2025-12-18**6. Test Standard (Method) used** : FCC 47 CFR part 15 subpart E 15.407**7. Testing Environment** : Refer to 10 pages**8. Test Results** : Compliance**9. Location of Test** : ☒ Permanent Testing Lab ☐ On Site Testing

(Address : (Unhak-Dong) 5, 221 beon-gil, Dongbu-ro, Cheoin-gu, Yongin-si, Gyeonggi-do, Republic of Korea)

The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
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Approval	Tested by:	Technical Manager:
	 Seong-uk Park (Signature)	 Bong-seok Kim (Signature)

Remark. This report is not related to KOLAS accreditation and relevant regulation.

2025-12-23

CTK Co., Ltd.

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REPORT REVISION HISTORY

Date	Revision	Page No
2025-12-23	Issued (CTK-2025-03706)	all

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1. General Product Description

1.1 Applicant Information

Company	Samsung Electronics Co Ltd
Contact Point	19 Chapin Rd, Building D. Pine Brook, New Jersey, United States
Contact Person	Name : Minhyung Cho E-mail : mh719.cho@samsung.com Tel : +82-31-277-2688 Fax : -

1.2 Manufacturer Information

Manufacturer	Samsung Electronics Co., Ltd.
Address	129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Republic of Korea
Factory #1	Chengdu Xuguang Technology Co., Ltd.
Factory #1 Address	Building 1, Floors 1-2 and Building 2, Wenbai Avenue No.998, Baihe Street, Economic and Technological Development Zone (Longquanyi District), Chengdu City, Sichuan Province, P.R.China
Factory #2	XUGUANG TECHNOLOGY (VIETNAM) COMPANY LIMITED
Factory #2 Address	Factory No.4, Lot CN1, An Duong Industrial Park, Hong Phong Commune, An Duong District, Hai Phong City, Vietnam
Factory #3	CHEMTRONICS Co., Ltd
Factory #3 Address	35, Hyeongjero, Namsa-myeon, Cheoin-gu, Yongin-si, Gyeonggi-do, Republic of Korea
Factory #4	CHEMTROVINA COMPANY LIMITED
Factory #4 Address	Nhon Trach 2 - Loc Khang IZ, Hiep Phuoc Town, Nhon Trach District, Dong Nai Province, Vietnam
Factory #5	SJIT CO., LTD.
Factory #5 Address	#54-11, Dongtanhana 1gil, Hwaseong-si, Gyeonggi-Do, Korea
Factory #6	SJIT VINA Co., Ltd
Factory #6 Address	Lot X2, Ho Nai Industrial Zone, Ho Nai 3 Commune, Trang Bom District, Dong Nai Province, Vietnam

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1.3 Product Information

FCC ID	A3LWCHA31M	
Product Description	Wireless One Connect Receiver	
Model name	WCHA31M	
Variant Model name	-	
Operating Frequency	UNII 1: 20 MHz_BW : 5 180 MHz – 5 240 MHz 40 MHz_BW : 5 190 MHz – 5 230 MHz 80 MHz_BW : 5 210 MHz UNII 3: 20 MHz_BW : 5 745 MHz – 5 825 MHz 40 MHz_BW : 5 755 MHz – 5 795 MHz 80 MHz_BW : 5 775 MHz	
RF Output Power	802.11a : 19.49 dBm (88.92 mW) 802.11n_HT20 : 19.37 dBm (86.50 mW) 802.11n_HT40 : 18.51 dBm (70.96 mW) 802.11ac_VHT20 : 19.53 dBm (89.74 mW) 802.11ac_VHT40 : 18.37 dBm (68.71 mW) 802.11ac_VHT80 : 18.19 dBm (65.92 mW) 802.11ax_HE20 : 19.77 dBm (94.84 mW) 802.11ax_HE40 : 19.54 dBm (89.95 mW) 802.11ax_HE80 : 18.86 dBm (76.91 mW) 802.11be_EHT20 : 19.49 dBm (88.92 mW) 802.11be_EHT40 : 18.86 dBm (76.91 mW) 802.11be_EHT80 : 18.86 dBm (76.91 mW)	
Antenna Specification	Antenna type : Metal Antenna	
	UNII 1	Peak Gain : 0.19 dBi
	UNII 3	Peak Gain : 0.73 dBi
Antenna Configurations	802.11a : SISO 802.11n : SISO 802.11ac : SISO 802.11ax : SISO 802.11be : SISO	
Number of channels	802.11a/n/ac/ax/be(BW20) : 9 802.11n/ac/ax/be(BW40): 4 802.11ac/ax/be(BW80): 2	
Type of Modulation	802.11a/n/ac : OFDM 802.11ax/be: OFDM	
Data Rate	802.11a : 54 / 48 / 36 / 24 / 18 / 12 / 9 / 6 Mbps 802.11n : up to 300 Mbps 802.11ac : up to 867 Mbps 802.11ax : up to 1 201 Mbps 802.11be : up to 1 441 Mbps	
Power Source	DC 5 V	
Hardware Rev	V1.0	
Software Rev	2, FC 1	
RF Power setting in Test SW	WIFI_RAM_CODE_MT7925	

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RF Power setting in Test SW

Mode		Frequency Band	Power Setting Value
802.11a		UNII 1	16
		UNII 3	17
802.11n_HT20		UNII 1	16
		UNII 3	17
802.11n_HT40		UNII 1	17
		UNII 3	17
802.11ac_VHT20		UNII 1	16
		UNII 3	17
802.11ac_VHT40		UNII 1	17
		UNII 3	17
802.11ac_VHT80		UNII 1	17
		UNII 3	17
802.11ax_HE20	SU	UNII 1	17
		UNII 3	17
802.11ax_HE40	SU	UNII 1	17
		UNII 3	17
802.11ax_HE80	SU	UNII 1	17
		UNII 3	16
802.11ax_HE20	SU	UNII 1	16
		UNII 3	17
802.11ax_HE40	SU	UNII 1	17
		UNII 3	17
802.11ax_HE80	SU	UNII 1	17
		UNII 3	17

1.4 Peripheral Devices

Device	Manufacturer	Model No.	Serial No.
Note Computer	HP	15-bs563TU	CND7253R6N
AC/DC Adapter	HP	HSTNN-LA40	-
Note Computer	Samsung Electronics Co., Ltd.	NT-RC530-WS55	HPFG91EC300116B
AC/DC Adapter	Samsung Electronics Co., Ltd.	PA-1600-66	-

1.5 Model Differences

Not applicable

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2. Accreditations

2.1 Laboratory Accreditations and Listings

Country	Agency	Registration Number
USA	FCC	805871
CANADA	ISED	CN : 8737A CAB ID : KR0025
KOREA	NRRA	KR0025

2.2 Calibration Details of Equipment Used for Measurement

Test equipment and test accessories are calibrated on regular basis. The maximum time between calibrations is one year or what is recommended by the manufacturer, whichever is less. All test equipment calibrations are traceable to the Korea Research Institute of Standards and Science (KRISS), therefore, all test data recorded in this report is traceable to KRISS.

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3. Test Specifications

3.1 Standards

FCC Part Section(s)	Requirement(s)	Limit	Status (Note 1)	Test Condition
15.407 (e)	6 dB Bandwidth	> 500 kHz (5 725 – 5 850 MHz)	C	Conducted
15.407 (a)	26 dB Bandwidth and 99% Bandwidth	NA	C	
15.407 (a)(1),(2),(3)	Conducted Output Power	< 250 mW (5 150 – 5 250 MHz) < 1 W (5 725 – 5 850 MHz)	C	
15.407 (a)(1),(2),(3)	Power Spectral Density	< 11 dBm/MHz (5 150 – 5 250 MHz) < 30 dBm/500 KHz (5 725 – 5 850 MHz)	C	
15.407 (g)	Frequency Stability	NA	C	
15.407 (b)	Undesirable emission	< -27 dBm/MHz EIRP (5 150 – 5 250 MHz) < -27 dBm/MHz EIRP < 10 dBm/MHz EIRP < 15.6 dBm/MHz EIRP < 27 dBm/MHz EIRP (5 725 – 5 850 MHz)	C	Radiated
15.205, 15.407 (b)(9),(10)	Radiated Spurious Emission	15.209(a)	C	
15.407 (b)(9)	AC Conducted Emissions	15.207(a)	C	Line Conducted

Note 1: C=Complies NC=Not Complies NT=Not Tested NA=Not Applicable

Note 2: The data in this test report are traceable to the national or international standards.

Note 3: The sample was tested according to the following specification: FCC Part 15.407, ANSI C63.10-2020

Note 4: The tests were performed according to the method of measurements prescribed in KDB No.789033, KDB No.987594

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3.2 Mode of operation during the test

The EUT is operated in a manner representative of the typical of the equipments.

During at testing, system components were manipulated within the confines of typical usage to maximize each emission.

For WLAN function, the engineering test program was provided and enabled to make EUT continuous transmit.

All modulation modes were tests. The results are only attached worst cases.

Test Frequency & Bandwidth

- 802.11a, 802.11n HT20, 802.11ac VHT20, 802.11ax HE20, 802.11be EHT20

	Lowest channel	Middle channel	Highest channel
UNII 1	5 180 MHz	5 200 MHz	5 240 MHz
UNII 3	5 745 MHz	5 785 MHz	5 825 MHz

- 802.11n HT40, 802.11ac VHT40, 802.11ax HE40, 802.11be EHT40

	Lowest channel	Middle channel	Highest channel
UNII 1	5 190 MHz	-	5 230 MHz
UNII 3	5 755 MHz	-	5 795 MHz

- 802.11ac VHT80, 802.11ax HE80, 802.11be EHT80

	Lowest channel	Middle channel	Highest channel
UNII 1	5 210 MHz	-	-
UNII 3	5 775 MHz	-	-

Test mode & Worst case

Test mode	Modulation	Data rate	Duty Cycle	Duty Cycle Factor
802.11a	OFDM	6 Mbps	76.40 %	1.17 dB
802.11n_HT20	OFDM	MCS 0	75.26 %	1.23 dB
802.11n_HT40		MCS 0	60.11 %	2.21 dB
802.11ac_VHT20		MNSS 0	75.32 %	1.23 dB
802.11ac_VHT40		MNSS 0	60.32 %	2.20 dB
802.11ac_VHT80		MNSS 0	42.97 %	3.67 dB
802.11ax_HE20_SU	OFDM	MCS 0	41.89 %	3.78 dB
802.11ax_HE40_SU			41.89 %	3.78 dB
802.11ax_HE80_SU			40.85 %	3.89 dB
802.11be_EHT20_SU			45.84 %	3.39 dB
802.11be_EHT40_SU			45.84 %	3.39 dB
802.11be_EHT80_SU			44.73 %	3.49 dB

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3.3 Device Modifications

The following modifications were necessary for compliance:

Not applicable

3.4 Maximum Measurement Uncertainty

The value of the measurement uncertainty for the measurement of each parameter.
Coverage factor $k = 2$, Confidence levels of 95 %

Description	Uncertainty
Conducted RF Output Power	1.50 dB (C.L.: Approx. 95 %, $k = 2$)
Power Spectral Density	1.50 dB (C.L.: Approx. 95 %, $k = 2$)
Occupied Bandwidth	0.10 MHz (C.L.: Approx. 95 %, $k = 2$)
Unwanted Emission(conducted)	3.00 dB (C.L.: Approx. 95 %, $k = 2$)
Radiated Emissions ($f \leq 1$ GHz)	4.11 dB (C.L.: Approx. 95 %, $k = 2$)
Radiated Emissions ($f > 1$ GHz)	4.43 dB (C.L.: Approx. 95 %, $k = 2$)
Line Conducted Emission	2.06 dB (C.L.: Approx. 95 %, $k = 2$)

3.5 Test Software

Conducted Test	Ics Pro Ver. 6.0.3
Radiated Test	EP5RE Ver. 6.0.1.0, ES10 Ver. 10.001
Line Conducted Test	EMC32 Ver. 10.50.00

3.6 Testing Environment

Test Item	Test Date	Temperature (°C)	Relative Humidity (%)
6 dB Bandwidth	2025-10-23 ~ 2025-11-05	(22~25) $\pm$ 1	(36~37) $\pm$ 3
26 dB Bandwidth and 99% Bandwidth			
Conducted Output Power			
Power Spectral Density			
Frequency Stability	2025-11-04 ~ 2025-11-05	(24~25) $\pm$ 1	(36~37) $\pm$ 3
Radiated Emissions (1GHz Adobe)	2025-10-21 ~ 2025-11-04	(23~25) $\pm$ 1	(33~35) $\pm$ 3
Radiated Emissions (1GHz Below)	2025-12-02 ~ 2025-12-03	21 $\pm$ 1	(26~27) $\pm$ 3
AC Conducted Emissions	2025-12-18	22 $\pm$ 1	25 $\pm$ 3

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4. Technical Characteristic Test

4.1 6dB Bandwidth

Test Procedures

KDB 789033 – Section C.2
ANSI C63.10-2020 - Section 6.9.3

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.

Test Settings :

Center frequency = the highest, middle and the lowest channels

- a) RBW = 100 kHz
- b) VBW $\geq 3 \times$ RBW
- c) Detector = peak
- d) Trace mode = Max hold
- e) Sweep = auto couple
- f) Allow trace to fully stabilize
- g) 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.

Minimum Standard:

6 dB Bandwidth > 500 kHz

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Test Data:

	6 dB Bandwidth (MHz)				
Mode	802.11a	802.11n_ HT20	802.11ac_ VHT20	802.11ax_ HE20_SU	802.11be_ EHT20_SU
Frequency					
5 745 MHz	14.98	15.05	16.52	15.10	16.44
5 785 MHz	15.52	15.11	15.05	17.34	15.17
5 825 MHz	15.34	16.51	15.08	17.58	15.14

	6 dB Bandwidth (MHz)			
Mode	802.11n_HT40	802.11ac_VHT40	802.11ax_ HE40_SU	802.11be_ EHT40_SU
Frequency				
5 755 MHz	35.33	34.02	34.02	35.31
5 795 MHz	35.03	35.11	35.11	36.07

	6 dB Bandwidth (MHz)		
Mode	802.11ac_VHT80	802.11ax_HE80_SU	802.11be_ EHT80_SU
Frequency			
5 775 MHz	75.12	73.15	75.31

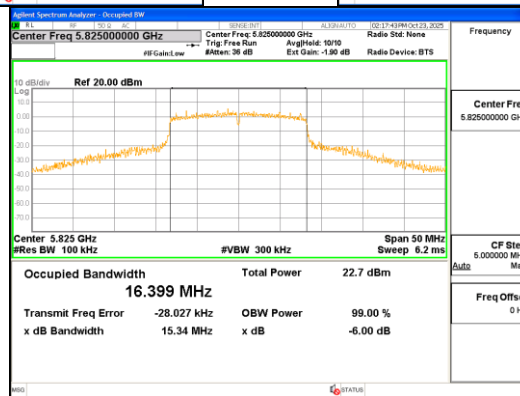
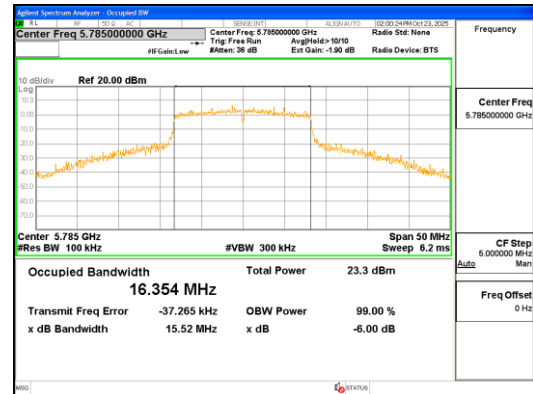
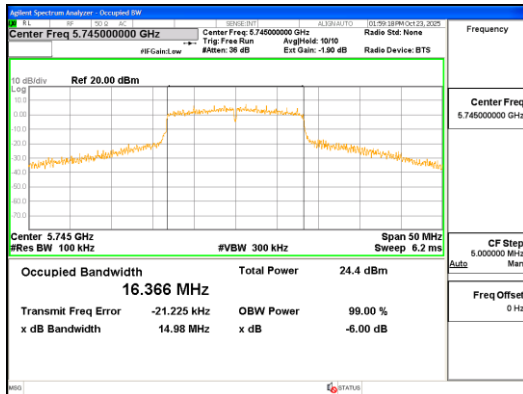
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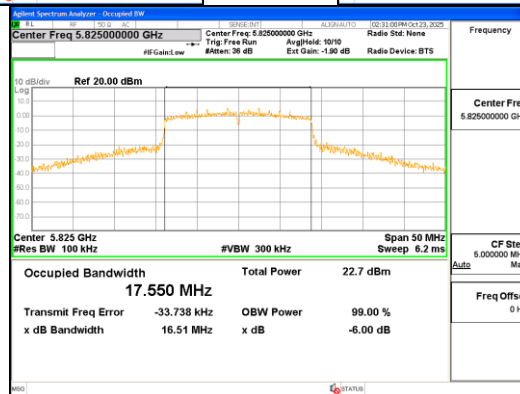
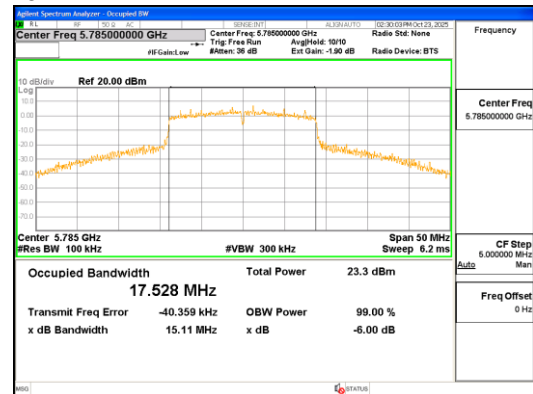
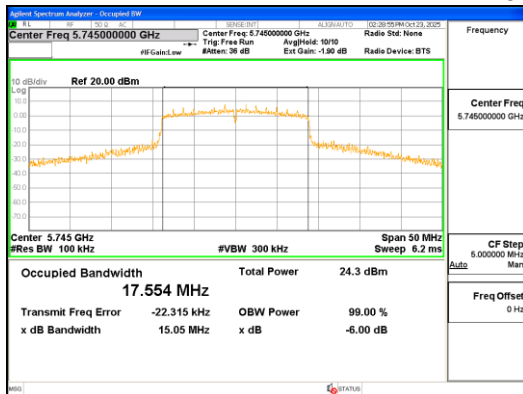
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802.11a_UNII 3



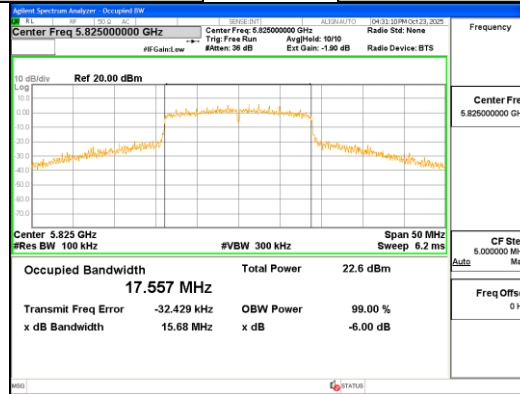
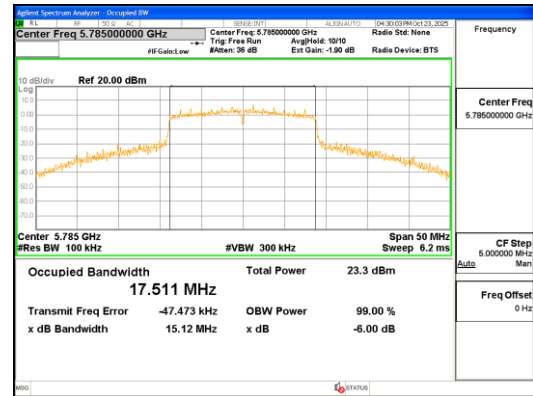
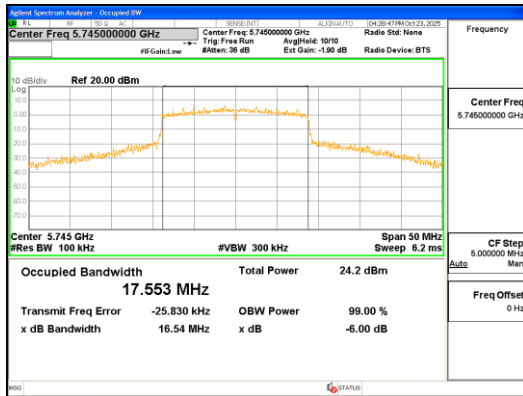
802.11n_HT20_UNII 3



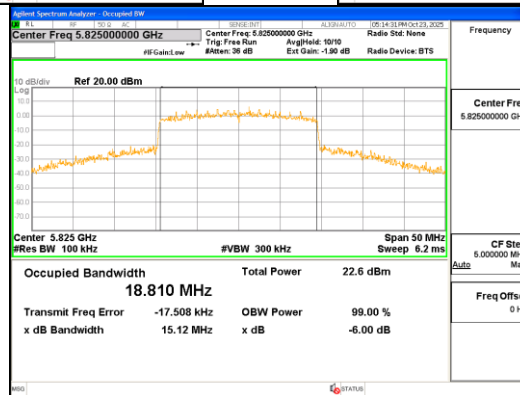
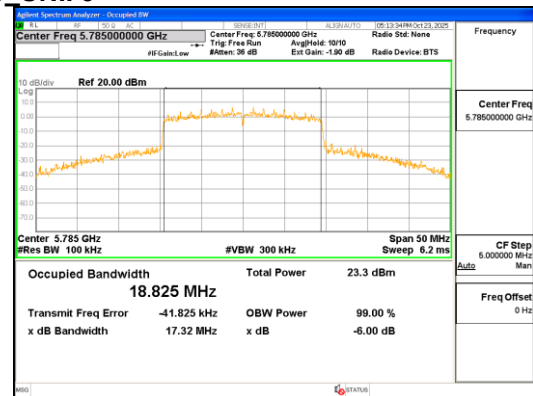
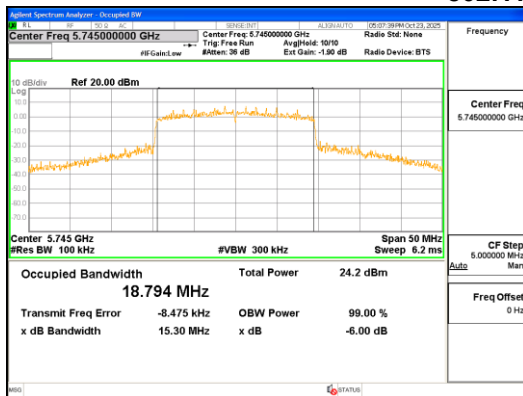
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802.11ac_VHT20_UNII 3



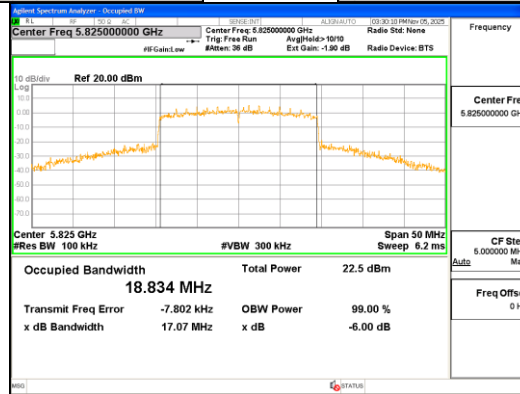
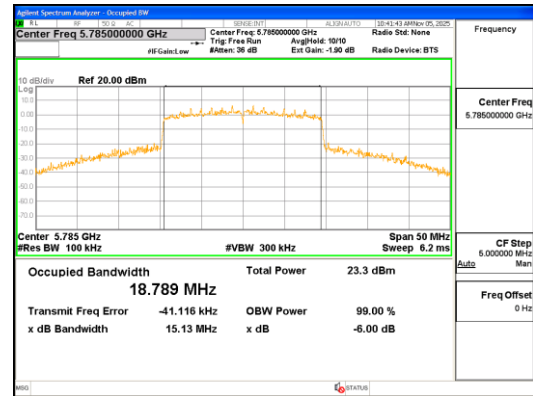
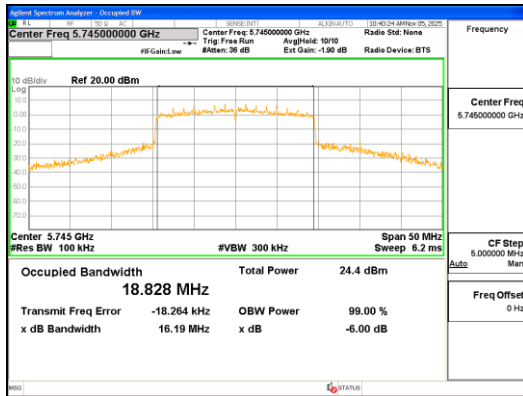
802.11ax_HE20_SU_UNII 3



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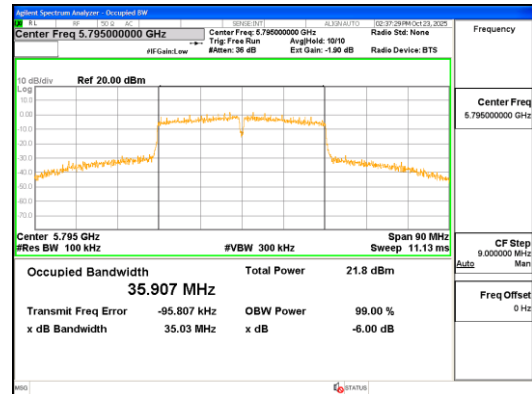
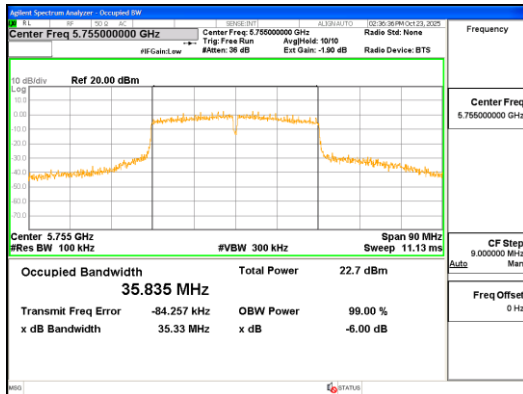
802.11be_EHT20_SU_UNII 3



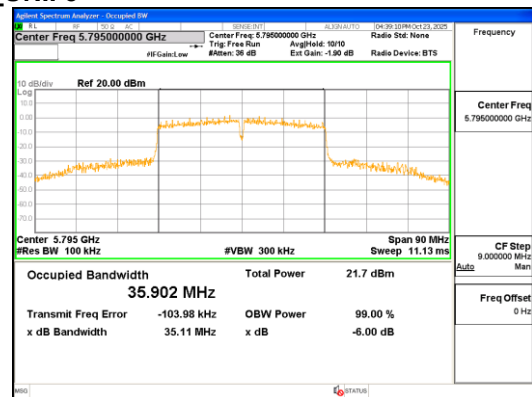
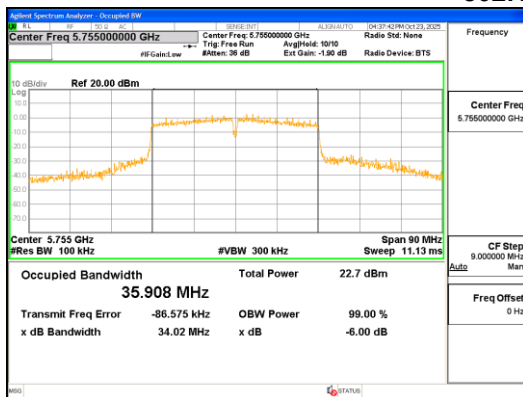
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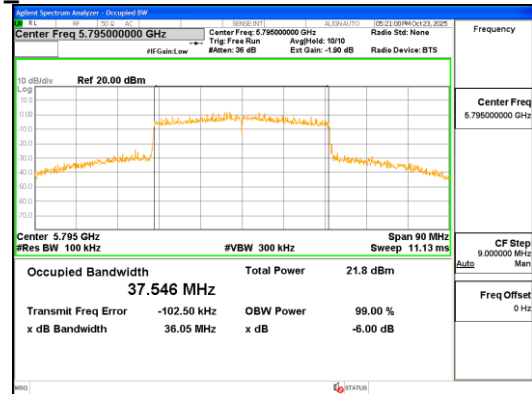
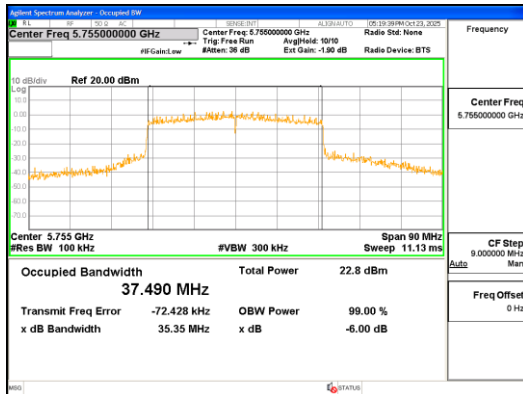
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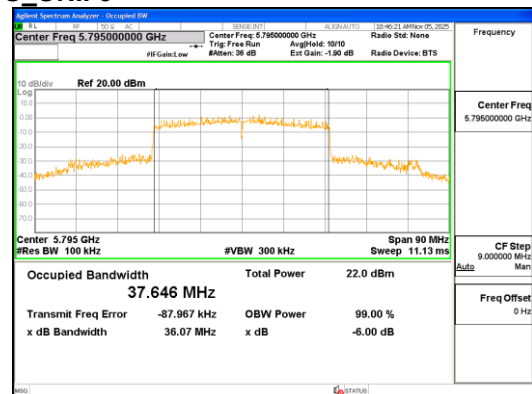
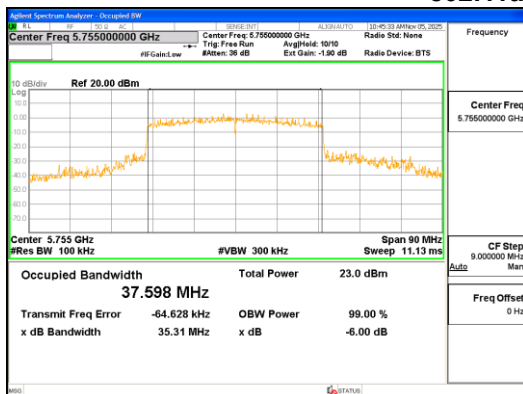
802.11n_HT40_UNII 3



802.11ac_VHT40_UNII 3



802.11ac_HE40_SU_UNII 3



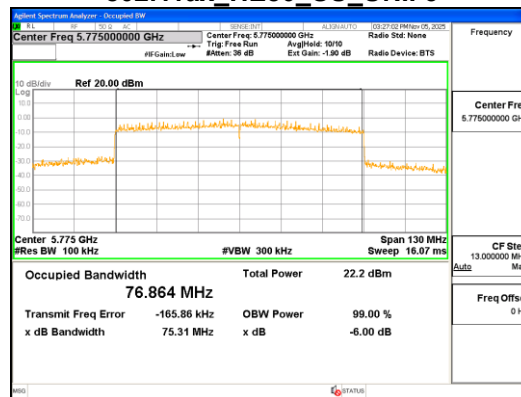
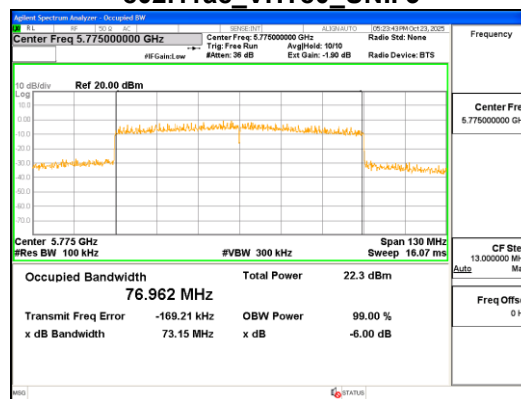
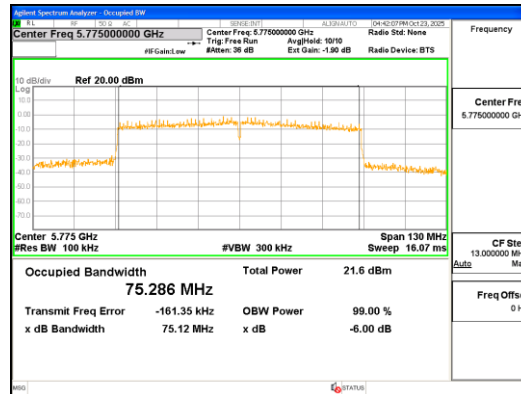
802.11be_EHT40_SU_UNII 3



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4.2 26 dB Bandwidth and 99% Bandwidth

Test Procedures

KDB 789033 – Section C.1
ANSI C63.10-2020 - Section 6.9.3

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.

Test Procedures

KDB 789033 – Section C.1
ANSI C63.10-2020 - Section 6.9.3

The occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5% of the total mean power of the given emission. Use the 99% power bandwidth function of the instrument and report the measured bandwidth.

Test Settings :

Center frequency = the highest, middle and the lowest channels

- a) RBW = approximately 1 % of the emission bandwidth
- b) VBW $\geq$ RBW
- c) Detector = peak
- d) Trace mode = Max hold
- e) Measure the maximum width of the emission that is 26 dB down from the maximum of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

Minimum Standard:

NA

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Test Data:

	26 dB Bandwidth and 99 % Bandwidth (MHz)					
Mode	802.11a		802.11n_HT20		802.11ac_VHT20	
Frequency	26 dB	99 %	26 dB	99 %	26 dB	99 %
5 180 MHz	23.47	16.40	27.06	17.53	22.04	17.48
5 200 MHz	24.41	16.38	23.08	17.51	24.67	17.49
5 240 MHz	21.15	16.35	21.26	17.47	21.65	17.47
5 745 MHz	25.05	16.47	24.93	17.59	25.38	17.57
5 785 MHz	25.63	16.42	26.02	17.57	26.07	17.55
5 825 MHz	28.62	16.49	24.69	17.57	29.72	17.61

	26 dB Bandwidth and 99 % Bandwidth (MHz)			
Mode	802.11ax_HE20		802.11be_EHT20	
Frequency	26 dB	99 %	26 dB	99 %
5 180 MHz	20.73	18.79	24.46	18.8
5 200 MHz	21.67	18.79	21.04	18.78
5 240 MHz	20.06	18.77	20.93	18.79
5 745 MHz	26.18	18.84	26.40	18.86
5 785 MHz	26.18	18.84	26.77	18.83
5 825 MHz	26.72	18.84	30.02	18.86

	26 dB Bandwidth and 99% Bandwidth (MHz)							
Mode	802.11n_HT40		802.11ac_VHT40		802.11ax_HE40_SU		802.11be_EHT40_SU	
Frequency	26 dB	99 %	26 dB	99 %	26 dB	99 %	26 dB	99 %
5 190 MHz	44.57	35.96	54.06	36.01	45.31	37.65	64.76	37.74
5 230 MHz	46.96	35.94	50.36	35.98	44.55	37.57	50.36	37.76
5 755 MHz	47.21	35.90	44.97	35.91	41.71	37.59	60.08	37.68
5 795 MHz	42.86	35.94	45.66	35.93	49.46	37.64	49.11	37.76

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	26 dB Bandwidth and 99% Bandwidth (MHz)					
Mode	802.11ac_VHT80		802.11ax_HE80_SU		802.11be_EHT80_SU	
Frequency	26 dB	99 %	26 dB	99 %	26 dB	99 %
5 210 MHz	102.24	75.58	101.09	77.17	89.62	77.21
5 775 MHz	88.49	75.46	100.25	77.20	97.90	77.21

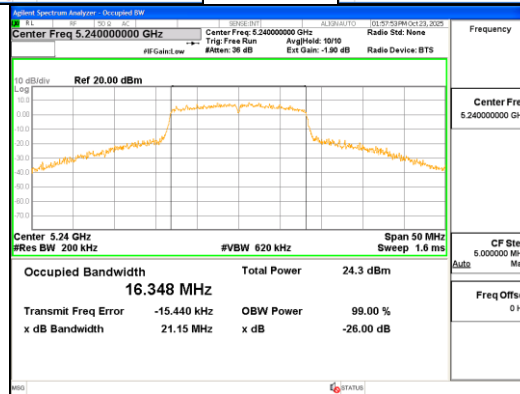
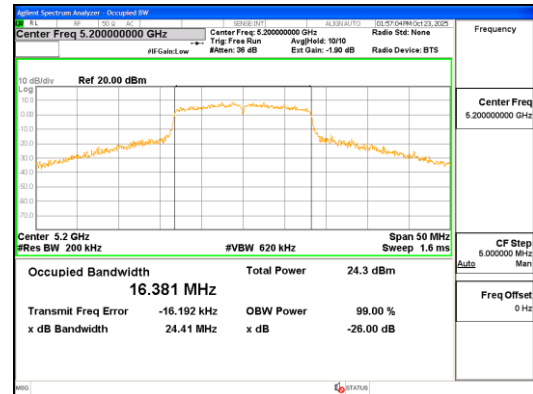
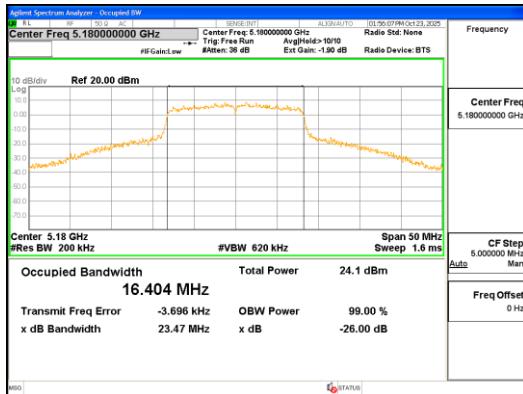
See next pages for actual measured spectrum plots.



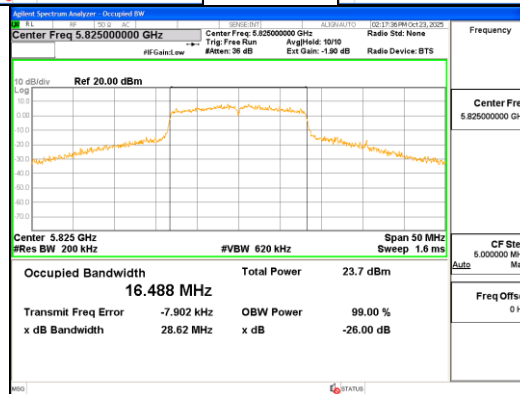
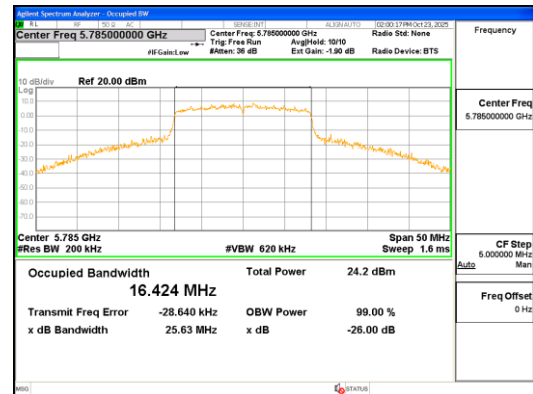
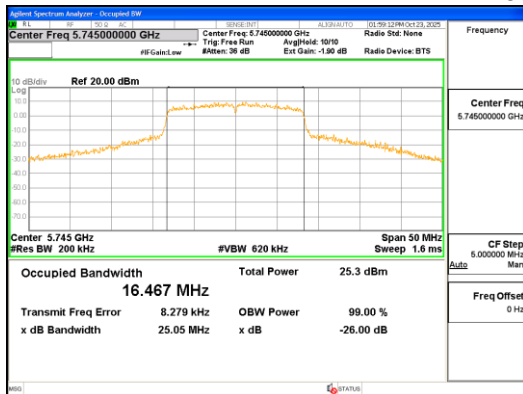
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802.11a_UNII 1



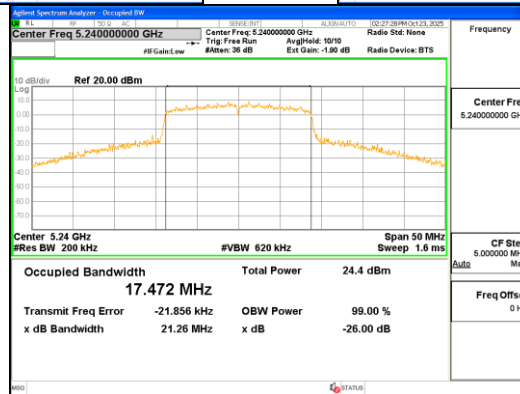
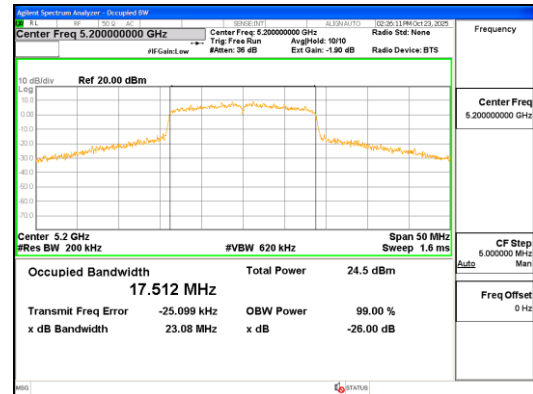
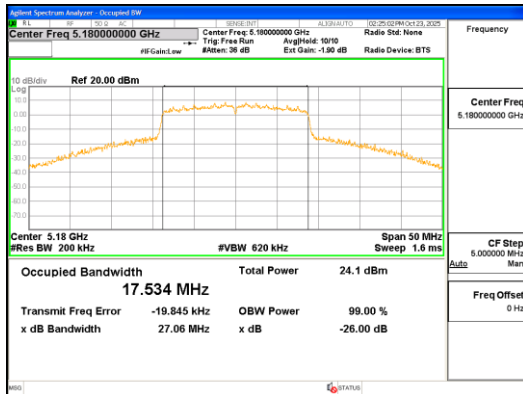
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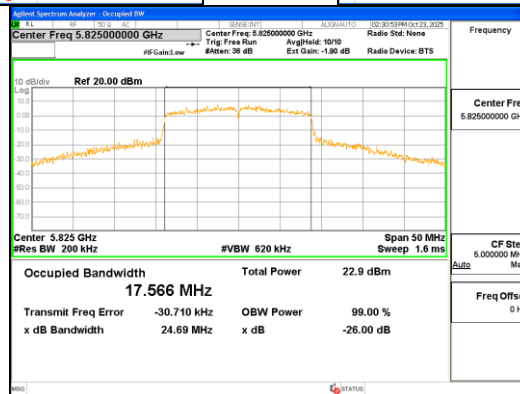
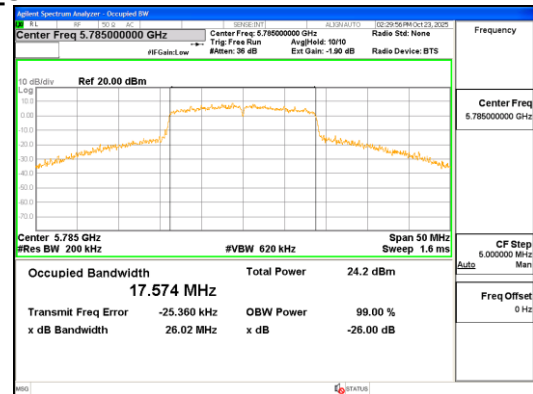
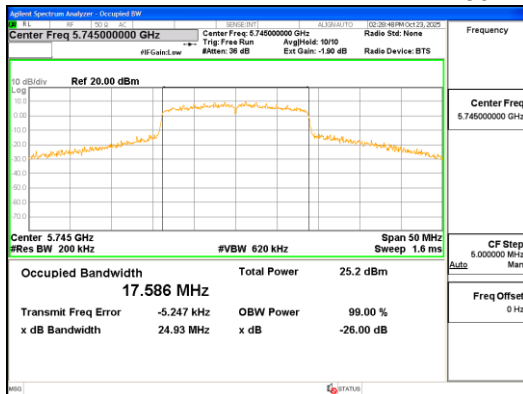
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802.11n_HT20_UNII 1



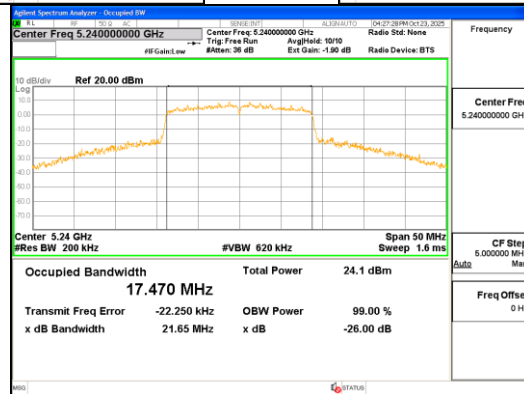
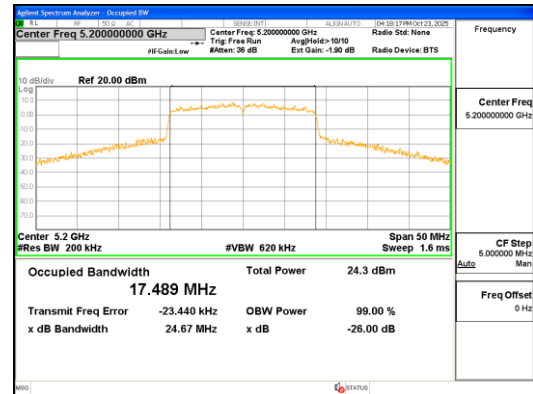
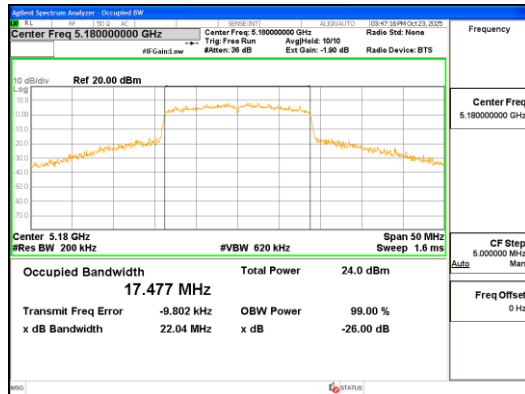
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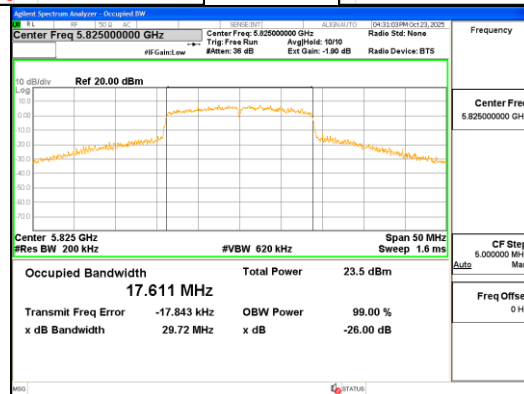
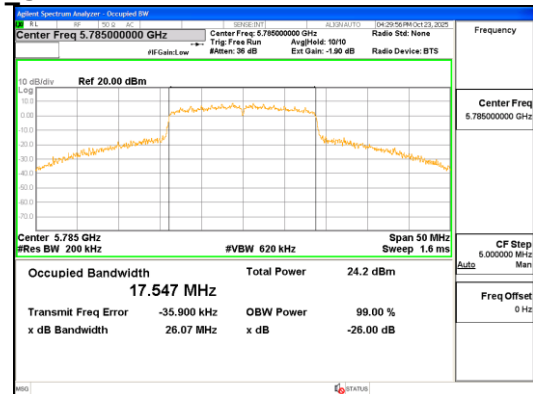
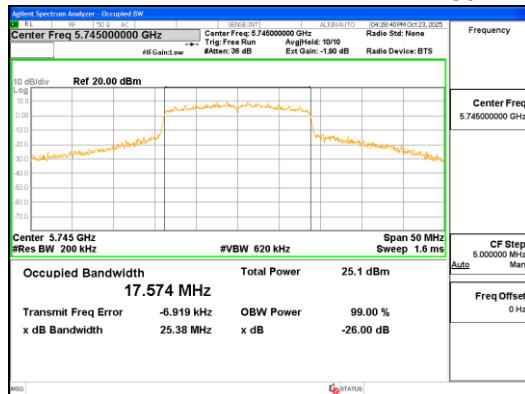
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802.11ac_VHT20_UNII 1



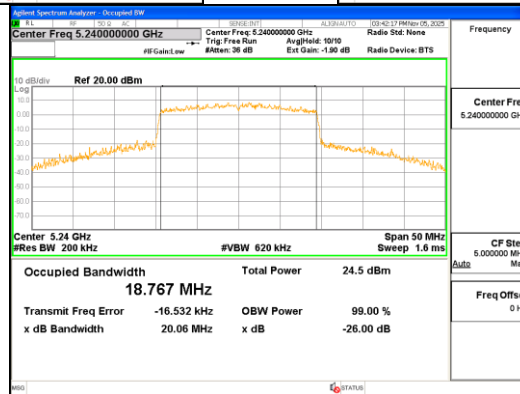
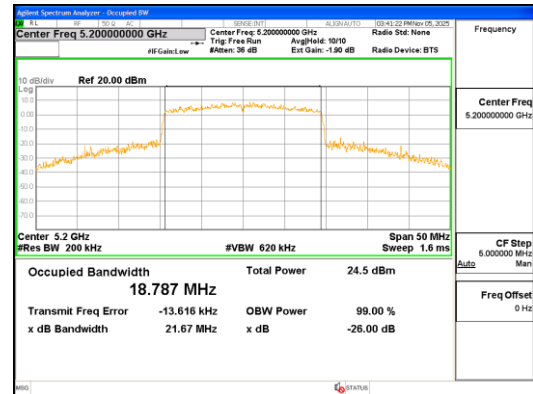
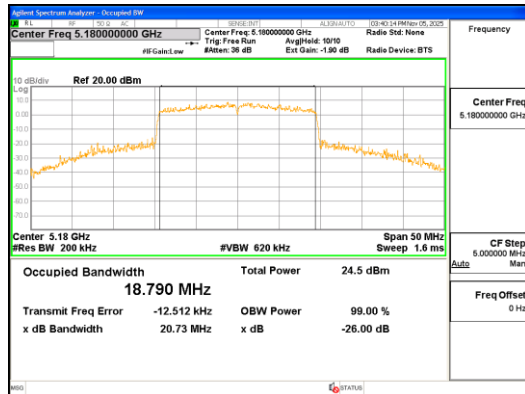
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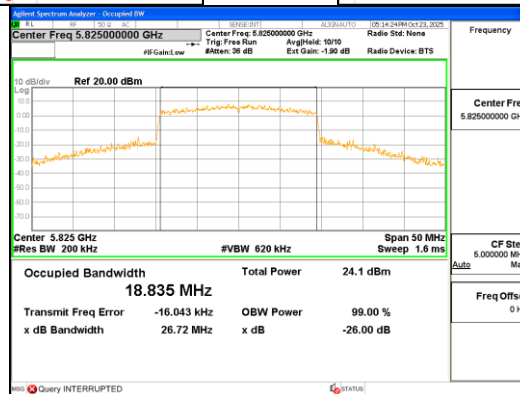
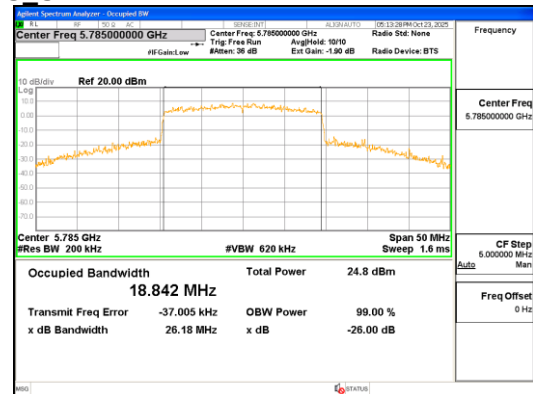
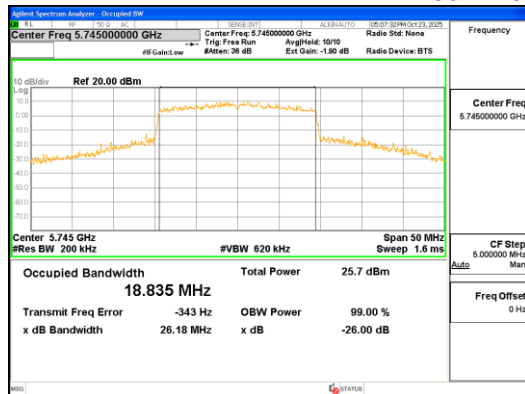
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802.11ax_HE20_SU_UNI1 1



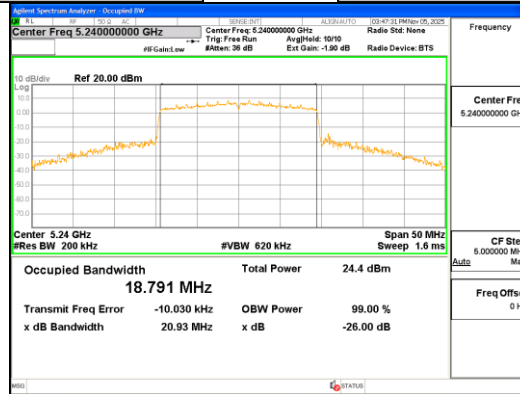
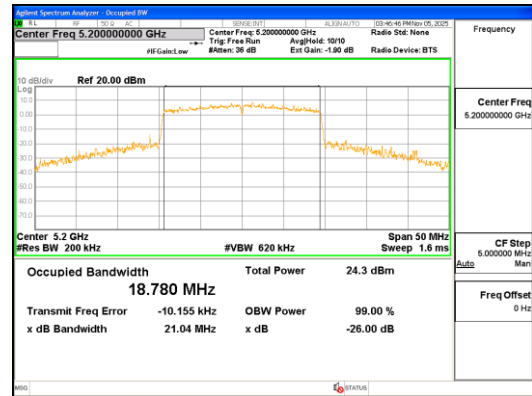
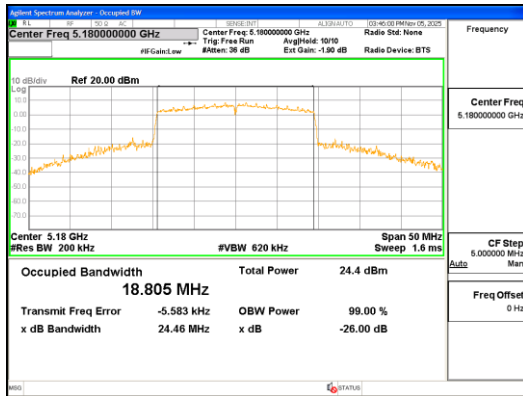
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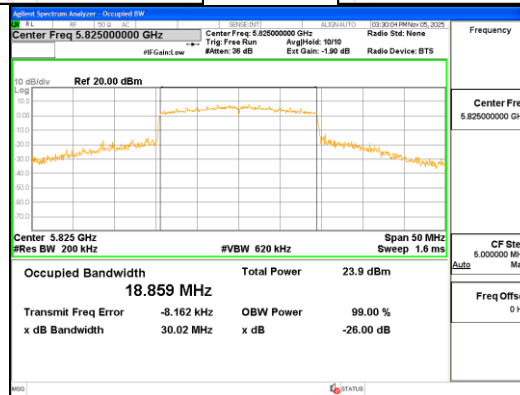
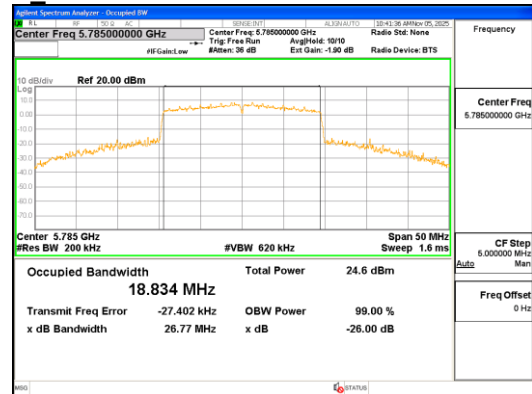
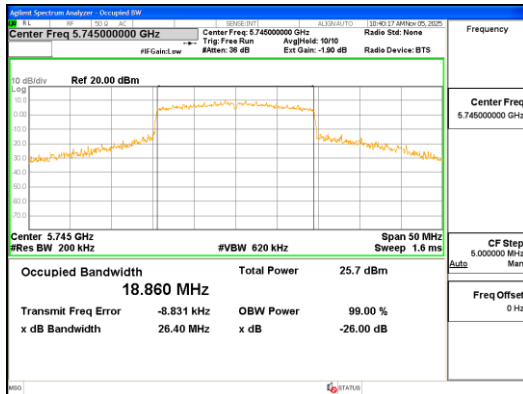
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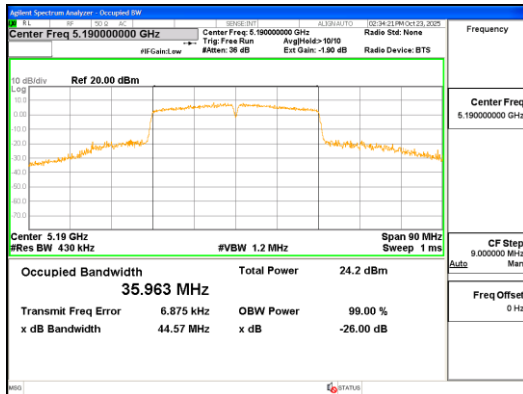
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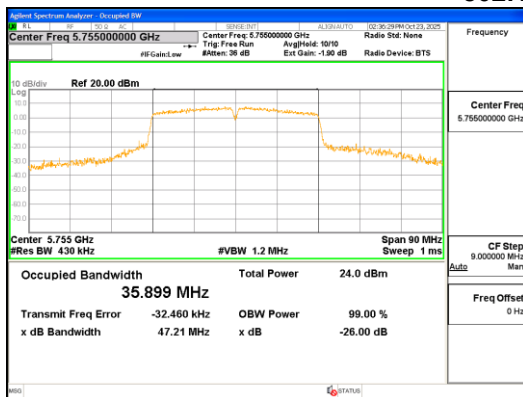
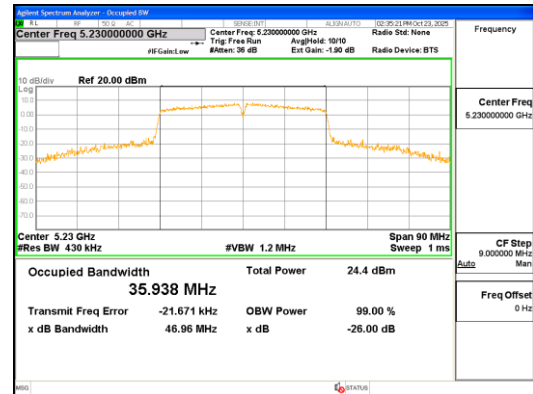
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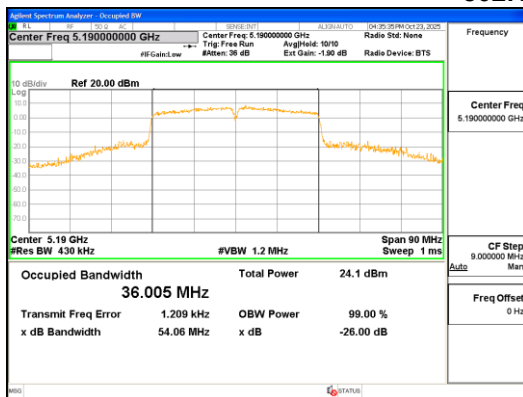
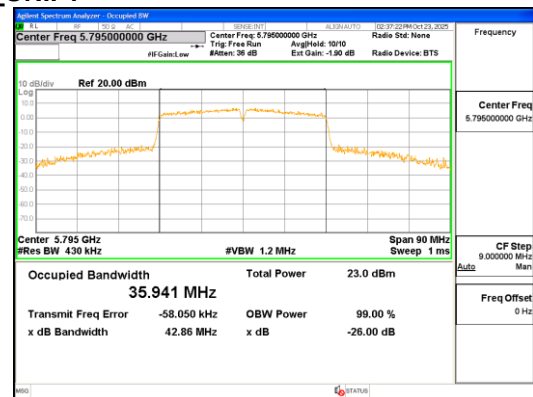
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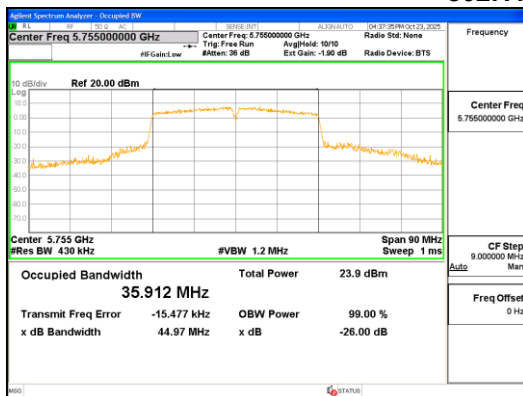
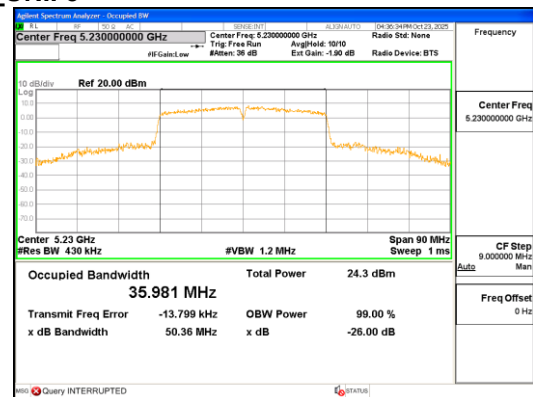
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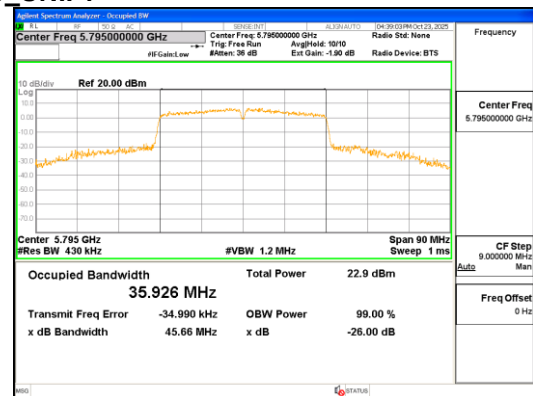
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802.11ac_VHT40_UNII 1



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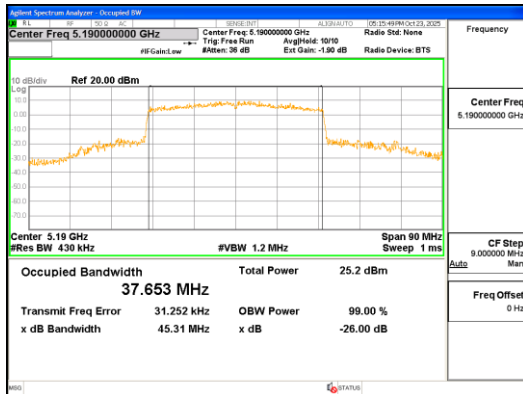




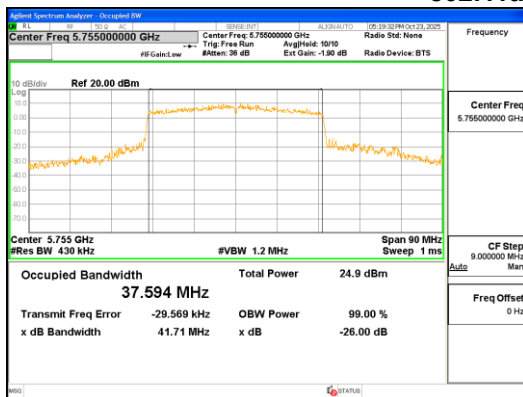
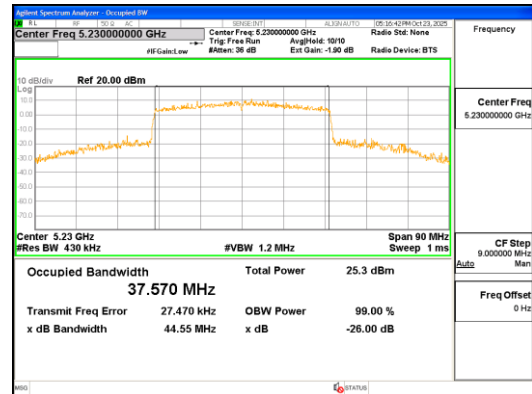
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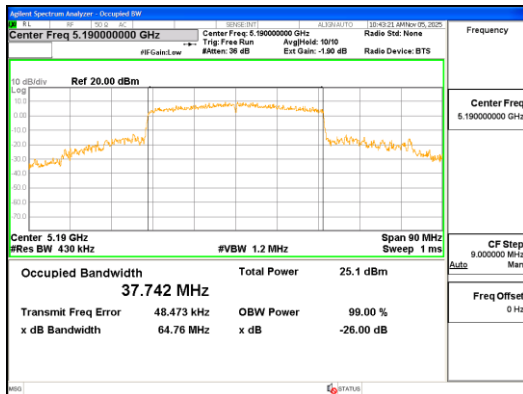
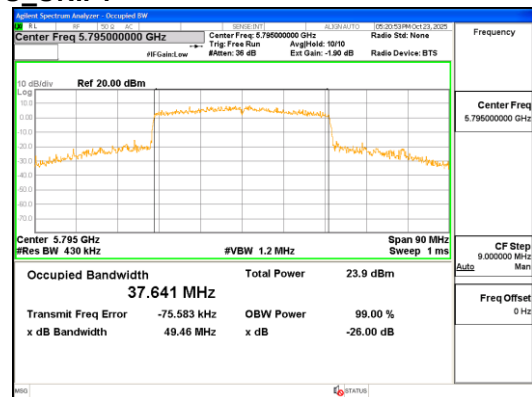
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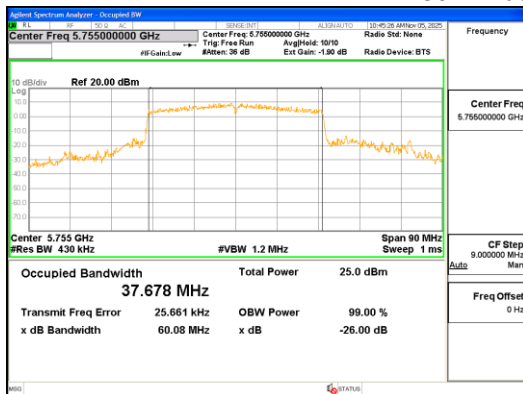
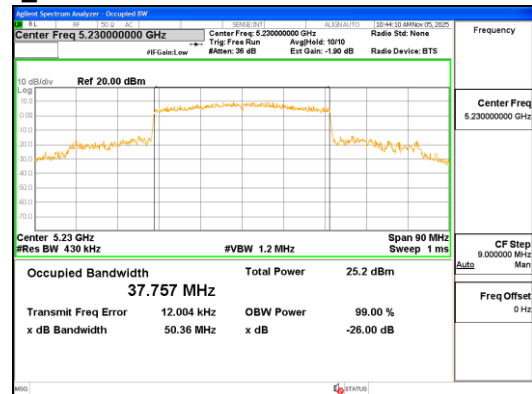
802.11ax_HE40_SU_UNII 1



802.11ax_HE40_SU_UNII 3



802.11be_EHT40_SU_UNII 1



802.11be_EHT40_SU_UNII 3

