RF MEASUREMENT REPORT

FCC ID:	2BH7FXGB835V
Applicant:	TP-Link Systems Inc.
Product:	BE19000 Tri-Band Wi-Fi 7 XGS-PON Router
Model No.:	XGB835v
Brand Name:	tp-link
FCC Classification:	Unlicensed National Information Infrastructure (NII)
FCC Rule Part(s):	Part 15 Subpart E (Section 15.407)
Result:	Complies
Received Date:	2025-06-26
Test Date:	2025-07-04 ~ 2025-09-08

Reviewed By: Kevin Guo

Approved By: Robin Wu

Revision History

Report No.	Version	Description	Issue Date	Note
R25S1048067-U202	V01	Initial Report	2025-09-19	Valid

CONTENTS

1. General Information

1.1. Applicant

TP-Link Systems Inc.

10 Mauchly, Irvine, CA 92618

1.2. Manufacturer

TP-Link Systems Inc.

10 Mauchly, Irvine, CA 92618

1.3. Testing Facility

☒	**Test Site – MRT Suzhou Laboratory**				
	Laboratory Location (Suzhou - Wuzhong) D8 Building, No.2 Tian'edang Rd., Wuzhong Economic Development Zone, Suzhou, China **Laboratory Location (Suzhou - SIP)** 4b Building, Liando U Valley, No.200 Xingpu Rd., Shengpu Town, Suzhou Industrial Park, China **Laboratory Location (Suzhou - Wujiang)** Building 1, No.1 Xingdong Road, Wujiang, Suzhou, Jiangsu, People's Republic of China				
	Laboratory Accreditations				
	A2LA: 3628.01		CNAS: L10551		
	FCC: CN1166		ISED: CN0001		
	VCCI:	☐R-20025	☐G-20034	☐C-20020	☐T-20020
		☐R-20141	☐G-20134	☐C-20103	☐T-20104
☐	**Test Site – MRT Shenzhen Laboratory**				
	Laboratory Location (Shenzhen) 1G, Building A, Junxiangda Building, Zhongshanyuan Road West, Nanshan District, Shenzhen, China				
	Laboratory Accreditations				
	A2LA: 3628.02		CNAS: L10551		
	FCC: CN1284		ISED: CN0105		
☐	**Test Site – MRT Taiwan Laboratory**				
	Laboratory Location (Taiwan) No. 38, Fuxing 2nd Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)				
	Laboratory Accreditations				
	TAF: 3261				
	FCC: 291082, TW3261		ISED: TW3261		

1.4. Product Information

Product Name	BE19000 Tri-Band Wi-Fi 7 XGS-PON Router
Model No.	XGB835v
EUT Identification No.	20250626Sample#03 (Radiated) 20250626Sample#02 (Conducted)
Brand Name	tp-link
Wi-Fi Specification	802.11a/b/g/n/ac/ax/be
Operating Temp.	0 ~ 40 °C
Antenna Specification	Refer to clause 1.7
Power Supply	By Adapter
Accessory	
Adapter	Model No: ADS-60DG-12 12054EPCU Input: 100-240 V ~ 50/60 Hz, Max.1.5 A Output: 12.0 Vdc 4.5 A 54.0 W
Note: The information of the EUT (Equipment Under Test) was provided by the manufacturer. The accuracy, completeness, and validity of the information are solely the responsibility of the manufacturer.	

1.5. Radio Specification under Test

Frequency Range	UNII-1: 5150 ~ 5250 MHz UNII-2A: 5250 ~ 5350 MHz UNII-2C: 5470 ~ 5725 MHz UNII-3: 5725 ~ 5850 MHz	
Type of Modulation	802.11a/n/ac: OFDM 802.11ax/be: OFDMA	
Data Rate	802.11a: 6/9/12/18/24/36/48/54 Mbps 802.11n: up to 600 Mbps 802.11ac: up to 3466.7 Mbps 802.11ax: up to 4804 Mbps 802.11be: up to 5764 Mbps	
Channel Puncturing Function	☐ Supported	☒ Unsupported
Support RU	☒ Full RU	☐ Partial RU

1.6. Working Frequencies

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

Channel	Frequency	Channel	Frequency	Channel	Frequency
36	5180 MHz	40	5200 MHz	44	5220 MHz
48	5240 MHz	52	5260 MHz	56	5280 MHz
60	5300 MHz	64	5320 MHz	100	5500 MHz
104	5520 MHz	108	5540 MHz	112	5560 MHz
116	5580 MHz	120	5600 MHz	124	5620 MHz
128	5640 MHz	132	5660 MHz	136	5680 MHz
140	5700 MHz	144	5720 MHz	149	5745 MHz
153	5765 MHz	157	5785 MHz	161	5805 MHz
165	5825 MHz	--	--	--	--

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

Channel	Frequency	Channel	Frequency	Channel	Frequency
38	5190 MHz	46	5230 MHz	54	5270 MHz
62	5310 MHz	102	5510 MHz	110	5550 MHz
118	5590 MHz	126	5630 MHz	134	5670 MHz
142	5710 MHz	151	5755 MHz	159	5795 MHz

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

Channel	Frequency	Channel	Frequency	Channel	Frequency
42	5210 MHz	58	5290 MHz	106	5530 MHz
122	5610 MHz	138	5690 MHz	155	5775 MHz

802.11ac-VHT160/ax-HE160/be-EHT160

Channel	Frequency	Channel	Frequency	Channel	Frequency
50	5250 MHz	114	5570 MHz	--	--

1.7. Antenna Details

Antenna Type	Frequency Band (MHz)	T_X Paths	Number of spatial streams	Antenna Gain (dBi)				Beamforming Directional Gain (dBi)	CDD Directional Gain (dBi)	
				Ant 0	Ant 1	Ant 2	Ant 3		For Power	For PSD
Wi-Fi Antenna										
Dipole	5150 ~ 5250	4	1	2.51	5.35	2.15	4.04	7.75	2.13	7.75
	5250 ~ 5350	4	1	3.12	4.85	2.53	4.92	8.06	2.26	8.06
	5470 ~ 5725	4	1	2.66	4.36	2.43	4.65	7.36	1.43	7.36
	5725 ~ 5925	4	1	2.59	5.46	2.62	4.29	7.38	1.41	7.38

1. The device supports CDD Mode and Beamforming mode, details refer to the table as below.
2. CDD signals are correlated, the directional gain as follows,

   When N_{SS}=1, for power measurements: the max directional gain (each angle) = $10 \log[(10^{G1/10} + 10^{G2/10} + \ldots + 10^{GN/10}) / N_{ANT}]$

   For power spectral density (PSD) measurements: the max directional gain (each angle) = $10 \log[(10^{G1/20} + 10^{G2/20} + \ldots + 10^{GN/20})^2 / N_{ANT}]$

   When N_{SS}=4, the max directional gain (each angle) = $10 \log[(10^{G1/10} + 10^{G2/10} + \ldots + 10^{GN/10}) / N_{ANT}]$
3. Beamforming signals are correlated, the directional gain as follows,

   the max directional gain (each angle) = $10 \log[(10^{G1/20} + 10^{G2/20} + \ldots + 10^{GN/20})^2 / N_{ANT}]$
4. The information as above is from the antenna report.

Test Mode	T_X Paths	CDD Mode	Beamforming Mode
802.11a/n(NII)	4	√	X
802.11ac/ax/be(NII)	4	√	√

2. Test Configuration

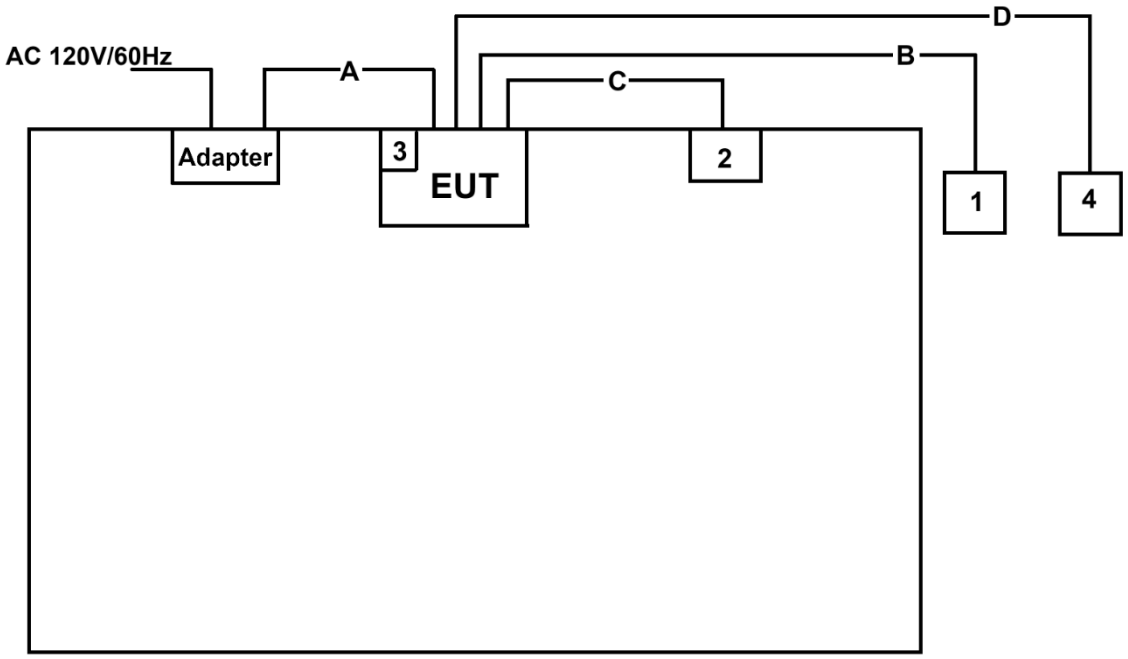
2.1. Test Mode

Mode 1: Transmit by 802.11a_N_{SS}=1 (6Mbps)
Mode 2: Transmit by 802.11ac-VHT20_N_{SS}=1 (MCS0)
Mode 3: Transmit by 802.11ac-VHT40_N_{SS}=1 (MCS0)
Mode 4: Transmit by 802.11ac-VHT80_N_{SS}=1 (MCS0)
Mode 5: Transmit by 802.11ac-VHT160_N_{SS}=1 (MCS0)
Mode 6: Transmit by 802.11ax-HE20_N_{SS}=1 (MCS0)
Mode 7: Transmit by 802.11ax-HE40_N_{SS}=1 (MCS0)
Mode 8: Transmit by 802.11ax-HE80_N_{SS}=1 (MCS0)
Mode 9: Transmit by 802.11ax-HE160_N_{SS}=1 (MCS0)
Mode 10: Transmit by 802.11be-EHT20_N_{SS}=1 (MCS0)
Mode 11: Transmit by 802.11be-EHT40_N_{SS}=1 (MCS0)
Mode 12: Transmit by 802.11be-EHT80_N_{SS}=1 (MCS0)
Mode 13: Transmit by 802.11be-EHT160_N_{SS}=1 (MCS0)
Note 1: 802.11n and 802.11ac have same modulation type and same power parameter, so we only show 802.11ac test data in report. Note 2: All modes of operation and data rates were investigated, so all RF test requirements shall be executed at the worst data rate. Note 3: For CDD mode, this device supports 4 N_{SS} and power level is the same of spatial multiplexing. The worst case is N_{SS}=1. Note 4: For Beamforming operation, the manufacturer automatically reduces power based on a factor calculated as the difference between the beamforming directional gain and the CDD directional power gain. Thus, only the CDD mode was evaluated in this report.

2.2. Test System Connection Diagram

The device was tested per the guidance ANSI C63.10: 2013 was used to reference the appropriate EUT setup for radiated emissions testing and AC line conducted testing.

Connection Diagram



Cable Type		Cable Description	Length
A	Power Cable	Non-Shielded	1.5 m
B	LAN Cable	Non-Shielded	>10.0 m
C	RJ11 Cable	Non-Shielded	1.7 m
D	LAN Cable	Non-Shielded	>10.0 m
Product		Manufacturer	Model No.
1	Notebook	Lenovo	E430C
2	Telephone	GAOKE	HCD737TSDL65
3	USB flash disk	Kingston	32GB
4	Notebook	HP	ENVY Laptop

2.3. Test Software

The test utility software used during testing was “MT7990 QA” and the version was 0.0.2.106.

Final power setting please refer to operational description.

2.4. Applied Standards

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

- FCC Part 15.407
- KDB 789033 D02v02r01
- KDB 662911 D01v02r01
- ANSI C63.10-2013

2.5. Test Environment Condition

Ambient Temperature	15 ~ 35 °C
Relative Humidity	20 ~ 75%RH

3. Antenna Requirements

Excerpt from §15.203 of the FCC Rules/Regulations:

“An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.”

- The antenna of the device is **permanently attached.**
- There are no provisions for connection to an external antenna.

Conclusion:

The unit complies with the requirement of §15.203.

4. Measuring Instrument

Instrument Name	Manufacturer	Model No.	Asset No.	Cali. Interval	Cal. Due Date	Test Site
Thermohygrometer	testo	608-H1	MRTSUE11315	1 year	2026-06-16	WJ-AC2
Anechoic Chamber	TDK	WJ-AC2	MRTSUE07117	1 year	2026-05-12	WJ-AC2
EMI Test Receiver	R&S	ESR3	MRTSUE07111	1 year	2026-03-24	WJ-AC2
Loop Antenna	Schwarzbeck	FMZB 1519 -60D	MRTSUE07076	1 year	2025-11-19	WJ-AC2
Horn Antenna	RFSPIN	DRH18-E	MRTSUE07105	1 year	2026-05-12	WJ-AC2
Pre-Amplifier	EMCI	EMC118A45SEE	MRTSUE07102	1 year	2026-04-09	WJ-AC2
Signal Analyzer	Keysight	N9010B	MRTSUE07285	1 year	2026-02-18	WJ-AC2
Broadband Horn Antenna	Schwarzbeck	BBHA 9170	MRTSUE07100	1 year	2026-04-09	WJ-AC2
Pre-Amplifier	EMCI	EMC184045SEE	MRTSUE07103	1 year	2026-04-09	WJ-AC2
EMI Test Receiver	R&S	ESR3	MRTSUE06185	1 year	2025-12-05	SIP-AC1
Anechoic Chamber	RIKEN	SIP-AC1	MRTSUE06554	1 year	2025-12-19	SIP-AC1
Thermohygrometer	testo	608-H1	MRTSUE06616	1 year	2025-10-16	SIP-AC1
TRILOG Antenna	Schwarzbeck	VULB 9168	MRTSUE06645	1 year	2026-06-26	SIP-AC1
Pre-Amplifier	EMCI	EMC184045SEE	MRTSUE07103	1 year	2026-04-09	WJ-AC2
Signal Analyzer	Keysight	N9030B	MRTSUE06395	1 year	2025-06-21 2026-06-20	SIP-TR1
USB Power Sensor	Keysight	U2021XA	MRTSUE06596	1 year	2025-07-23 2026-07-22	SIP-TR1
Signal Generator	Keysight	N5182B	MRTSUE06605	1 year	2025-09-05 2026-09-04	SIP-TR1
Thermohygrometer	testo	608-H1	MRTSUE11022	1 year	2025-10-16	SIP-TR1
Two-Line V-Network	R&S	ENV216	MRTSUE06003	1 year	2026-04-29	SIP-SR2
EMI Test Receiver	R&S	ESR3	MRTSUE06612	1 year	2026-04-29	SIP-SR2
Four-Line V-Network	R&S	ENV432	MRTSUE06614	1 year	2025-10-13	SIP-SR2
Thermohygrometer	testo	608-H1	MRTSUE06621	1 year	2025-10-29	SIP-SR2
Shielding Room	MIX-BEP	SIP-SR2	MRTSUE06949	5 years	2029-10-13	SIP-SR2

Software	Version	Function
e3	230711	RE & CE
CONTROLLER CO3000	v 1.03.02	RE Antenna & Turntable
Controller_MF 7802BS	1.02	RE Antenna & Turntable
Agilent Power Panel	V R03.09.00	Power

5. Decision Rules and Measurement Uncertainty

5.1. Decision Rules

The Decision Rule is based on Simple Acceptance in accordance with ISO Guide 98-4: 2012 Clause 8.2. (Measurement uncertainty is not taken into account when stating conformity with a specified requirement.)

5.2. Measurement Uncertainty

Where relevant, the following test uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k = 2.

AC Conducted Emission Measurement
The maximum measurement uncertainty is evaluated as: 9 kHz ~ 150 kHz: 3.58 dB 150 kHz ~ 30 MHz: 3.20 dB
Radiated Emission Measurement
The maximum measurement uncertainty is evaluated as: Coaxial: 9 kHz ~ 30 MHz: 2.35 dB Coplanar: 9 kHz ~ 30 MHz: 2.37 dB Horizontal: 30 MHz ~ 200 MHz: 3.47 dB 200 MHz ~ 1 GHz: 4.17 dB 1 GHz ~ 40 GHz: 4.97 dB Vertical: 30 MHz ~ 200 MHz: 4.07 dB 200 MHz ~ 1 GHz: 5.28 dB 1 GHz ~ 40 GHz: 4.84 dB
Spurious Emissions, Conducted
Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): 2.5 dB
Output Power
Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): 1.5 dB
Power Spectrum Density
Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): 2.5 dB
Occupied Bandwidth
Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): 3.2%

6. Test Result

6.1. Summary

FCC Section(s)	Test Description	Test Condition	Verdict
15.407(a)	26 dB Bandwidth	Conducted	Pass
15.407(e)	6 dB Bandwidth		Pass
15.407(a)(1)(ii), (2), (3)(i)	Maximum Conducted Output Power		Pass
15.407(h)(1)	Transmit Power Control		Pass
15.407(g)	Frequency Stability		N/A
15.407(a)(1)(ii), (2), (3)(i), (13)	Peak Power Spectral Density		Pass
15.407(h)(2)	Dynamic Frequency Selection (DFS)		Pass Remark 4
15.407(b)(1), (2), (3), (4)(i)	Undesirable Emissions	Radiated	Pass
15.205, 15.209 15.407(b)(8), (9), (10)	General Field Strength Limits (Restricted Bands and Radiated Emission Limits)		Pass
15.207	AC Conducted Emissions 150kHz - 30 MHz	Line Conducted	Pass

Remark:

1. The analyzer plots shown in this section were captured using a correction table to account for cable and attenuator losses in the system connecting the EUT to the analyzer across relevant frequencies.
2. For radiated emission test, every axis (X, Y, Z) was also verified. The test results shown in the following sections represent the worst-case emissions.
3. “N/A” means that this item is not applicable, and the detail information refer to relevant section.
4. DFS report refer to R25S1048067-U204.

6.2. 26 dB & 99% Bandwidth Measurement

6.2.1. Test Limit

N/A

6.2.2. Test Procedure

KDB 789033 D02v02r01- Section II)C)1) (26 dB Bandwidth)

KDB 789033 D02v02r01- Section II)D) (99% Bandwidth)

6.2.3. Test Setting

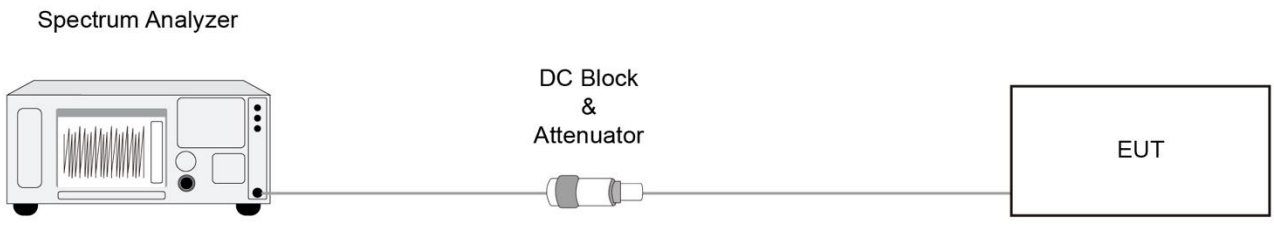
26 dB Bandwidth

1. The analyzers' automatic bandwidth measurement capability was used to perform the 26 dB bandwidth
2. RBW = approximately 1% of the emission bandwidth.
3. VBW > RBW
4. Detector = Peak.
5. Trace mode = max hold.
6. 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%.

99% Bandwidth

1. Set center frequency to the nominal EUT channel center frequency.
2. RBW = 1% to 5% of the OBW
3. VBW ≥ 3 × RBW
4. Span = 1.5 times to 5 times the OBW
5. Detector = peak
6. Trace mode = max hold
7. Allow the trace to stabilize
8. Use the 99% power bandwidth function of the instrument.

6.2.4. Test Setup



6.2.5. Test Result

Refer to Appendix A.2.

6.3. 6 dB Bandwidth Measurement

6.3.1. Test Limit

The minimum 6 dBbandwidth shall be at least 500 kHz.

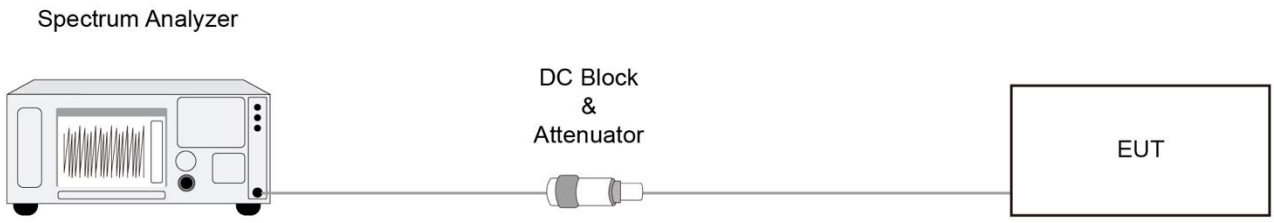
6.3.2. Test Procedure

KDB 789033 D02v02r01- Section II)C)2)

6.3.3. Test Setting

1. Set center frequency to the nominal EUT channel center frequency.
2. RBW = 100 kHz.
3. VBW ≥ 3 × RBW.
4. Detector = Peak.
5. Trace mode = max hold.
6. Sweep = auto couple.
7. Allow the trace to stabilize.
8. 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.

6.3.4. Test Setup



6.3.5. Test Result

Refer to Appendix A.3.

6.4. Output Power Measurement

6.4.1. Test Limit

For 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.

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 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz.

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W (30dBm).

If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

6.4.2. Test Procedure

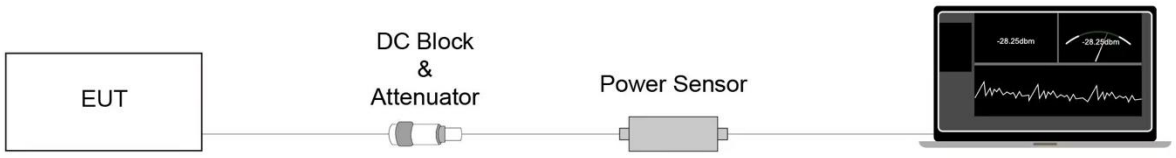
KDB 789033D02v02r01- Section II)E)3)b) Method PM-G

6.4.3. Test Setting

Average Power Measurement

Average power measurements were performed only when the EUT was transmitting at its maximum power control level using a broadband power meter with a pulse sensor. The power meter implemented triggering and gating capabilities which were set up such that power measurements were recorded only during the ON time of the transmitter.

6.4.4. Test Setup



6.4.5. Test Result

Refer to Appendix A.4.

6.5. Transmit Power Control Measurement

6.5.1. Test Limit

The U-NII device is required to have the capability to operate at least 6 dB below the mean EIRP value of 30 dBm.

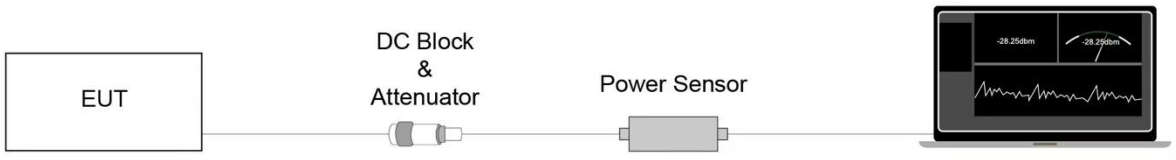
6.5.2. Test Procedure

KDB 789033 D02v02r01- Section II)E)3)b) Method PM-G

6.5.3. Test Setting

Average power measurements were performed only when the EUT was transmitting at its maximum power control level using a broadband power meter with a pulse sensor. The power meter implemented triggering and gating capabilities which were set up such that power measurements were recorded only during the ON time of the transmitter. The trace was averaged over 100 traces to obtain the final measured average power.

6.5.4. Test Setup



6.5.5. Test Result

Device supports TPC mechanism, details refer to the operational description.

6.6. Power Spectral Density Measurement

6.6.1. Test Limit

For the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band.

For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band.

For the band 5.725-5.85 GHz, 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, the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

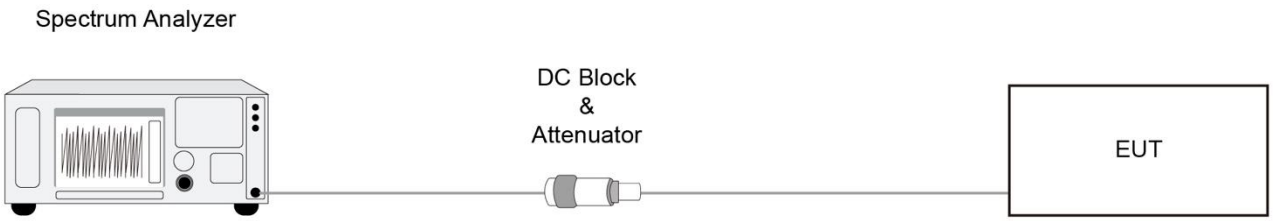
6.6.2. Test Procedure

KDB 789033 D02v02r01-Section Ⅱ)F)

6.6.3. Test Setting

1. Analyzer was set to the center frequency of the UNII channel under investigation
2. Span was set to encompass the entire 26 dB EBW of the signal.
3. RBW = 1 MHz (510 kHz, if measurement bandwidth of Maximum PSD is specified in 500 kHz)
4. VBW = 3 × RBW
5. Number of sweep points ≥ 2 × (span / RBW)
6. Detector = power averaging (Average)
7. Sweep time = auto
8. Trigger = free run
9. Trace average at least 100 traces in power averaging (rms) mode; however, the number of traces to be averaged shall be increased above 100 as needed to ensure that the average accurately represents the true average over the on and off periods of the transmitter.
10. Use the peak search function on the instrument to find the peak of the spectrum and record its value.
11. Add 10*log(1/x), where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times (because the measurement represents an average over both the on and off times of the transmission). For example, add 10*log(1/0.25) = 6 dB if the duty cycle is 25 percent.

6.6.4. Test Setup



6.6.5. Test Result

Refer to Appendix A.5.

6.7. Frequency Stability Measurement

6.7.1. Test Limit

Manufactures of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

6.7.2. Test Procedure

Frequency Stability Under Temperature Variations:

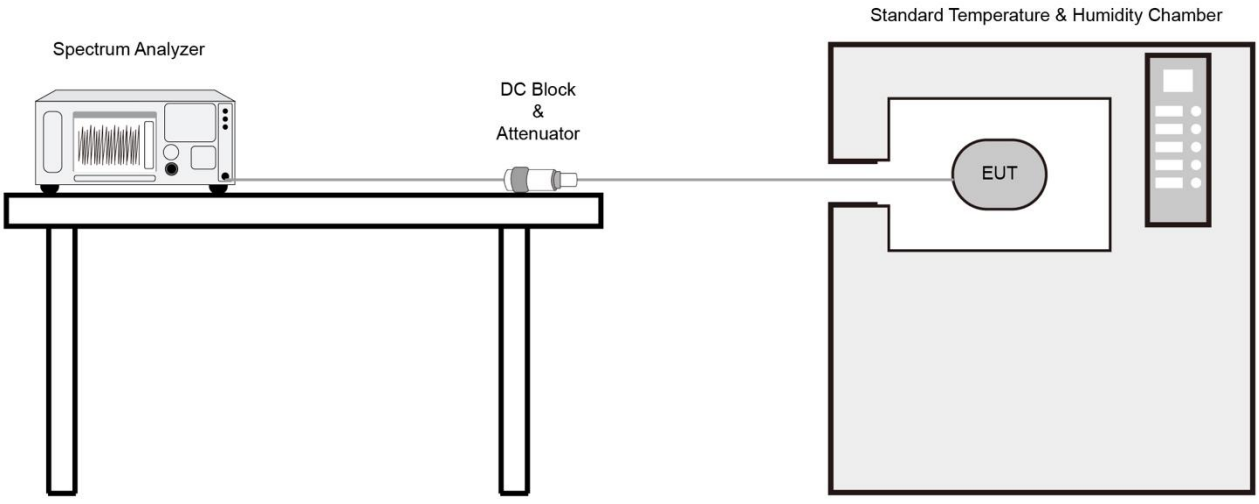
The equipment under test was connected to an external AC or DC power supply and input rated voltage. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. The EUT was placed inside the temperature chamber. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 20°C operating frequency as reference frequency. Turn EUT off and set the chamber temperature to highest. After the temperature stabilized for approximately 30 minutes recorded the frequency. Repeat step measure with 10°C decreased per stage until the lowest temperature reached.

Frequency Stability Under Voltage Variations:

Set chamber temperature to 20 °C. Use a variable AC power supply / DC power source to power the EUT and set the voltage to rated voltage. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency.

Reduce the input voltage to specify extreme voltage variation (±15%) and endpoint, record the maximum frequency change.

6.7.3. Test Setup



6.7.4. Test Result

Grantee ensure that the product meets e-CFR Title 47 section 15.407(g) and KDB 789033 D02v02r01 frequency stability such that the emissions are maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

6.8. Radiated Spurious Emission Measurement

6.8.1. Test Limit

All out of band emissions appearing in a restricted band as specified in Section 15.205 of the Title 47 CFR must not exceed the limits shown in Table per Section 15.209.

FCC Part 15 Subpart C Paragraph 15.209		
Frequency [MHz]	Field Strength [μV/m]	Measured Distance [Meters]
0.009 - 0.490	2400/F (kHz)	300
0.490 - 1.705	24000/F (kHz)	30
1.705 - 30	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

6.8.2. Test Procedure

KDB 789033 D02v02r01- Section II)G)

6.8.3. Test Setting

Table 1 - RBW as a function of frequency

Frequency	RBW
9 ~ 150 kHz	200 ~ 300 Hz
0.15 ~ 30 MHz	9 ~ 10 kHz
30 ~ 1000 MHz	100 ~ 120 kHz
> 1000 MHz	1MHz

Quasi-Peak Measurements below 1 GHz

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. Span was set greater than 1MHz
3. RBW = as specified in Table 1
4. Detector = CISPR quasi-peak
5. Sweep time = auto couple
6. Trace was allowed to stabilize

Peak Measurements above 1 GHz

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1 MHz
3. VBW = 3 MHz
4. Detector = Peak
5. Sweep time = Auto couple
6. Trace mode = Max hold
7. Trace was allowed to stabilize

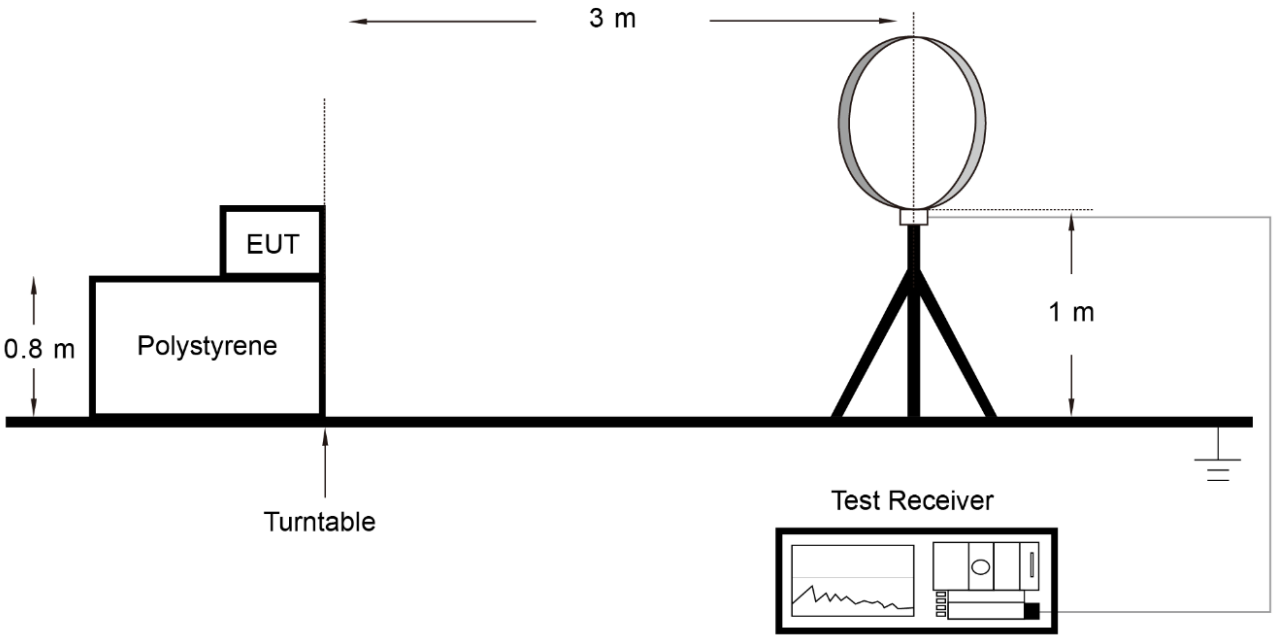
Average Measurements above 1 GHz (Method VB)

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW; if the EUT is configured to transmit with duty cycle ≥ 98%, set VBW = 10Hz

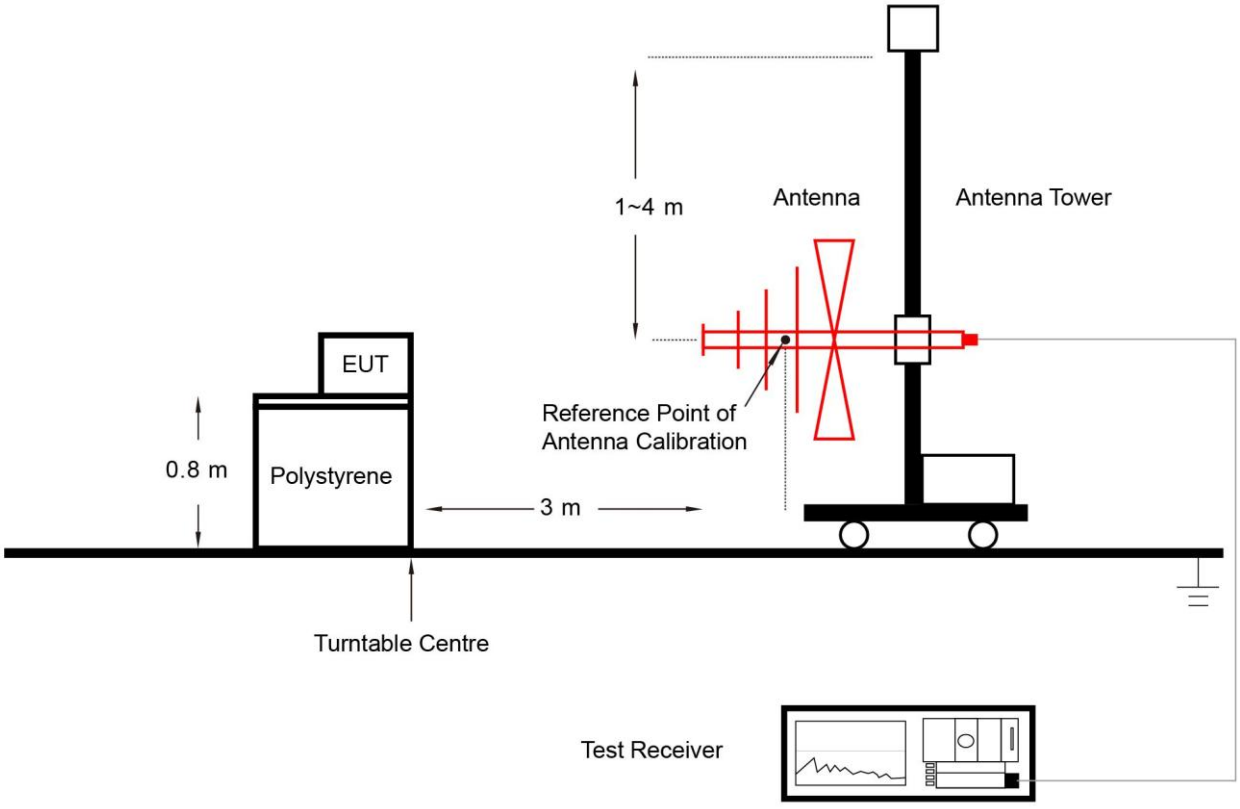
   If the EUT duty cycle is < 98%, set VBW ≥ 1/T. T is the minimum transmission duration.
4. As an alternative, the instrument may be set to linear detector mode. Ensure that video filtering is applied in linear voltage domain (rather than in a log or dB domain). Some instruments require linear display mode in order to accomplish this. Others have a setting for Average-VBW Type, which can be set to “Voltage” regardless of the display mode
5. Detector = Peak
6. Sweep time = Auto
7. Trace mode = Max hold
8. Trace was allowed to stabilize

6.8.4. Test Setup

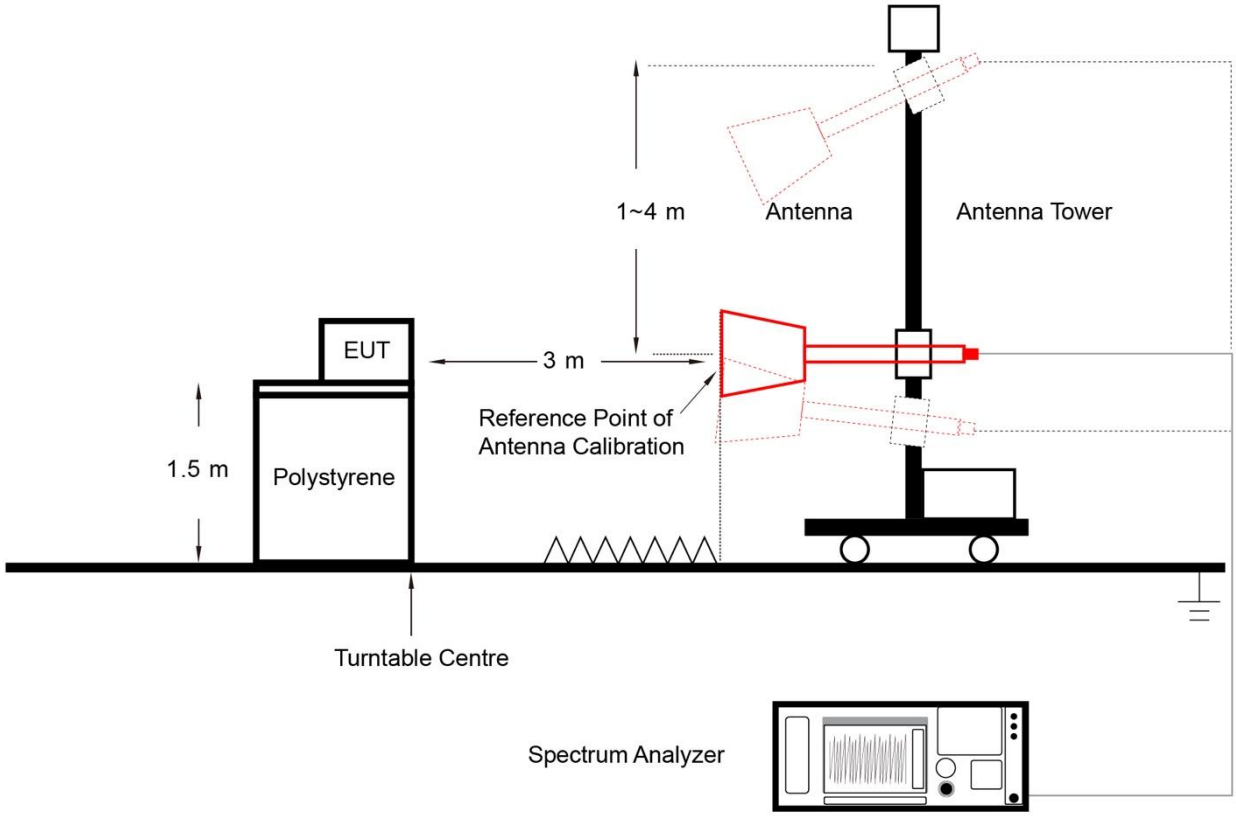
Below 30 MHz Test Setup:



Below 1 GHz Test Setup:



Above 1 GHz Test Setup:



6.8.5. Test Result

Refer to Appendix A.6.

6.9. Radiated Restricted Band Edge Measurement

6.9.1. Test Limit

For 15.205 requirement:

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a) of FCC part 15, must also comply with the radiated emission limits specified in Section 15.209(a).

Frequency (MHz)	Frequency (MHz)	Frequency (MHz)	Frequency (GHz)
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
[1] 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	([2])
13.36 - 13.41	--	--	--

For 15.407(b) requirement:

For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

For transmitters operating in the 5.725-5.85 GHz band: All emissions shall be limited to a level of −27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

Refer to KDB 789033 D02v02r01 G)2)c), as specified in § 15.407(b), emissions above 1000 MHz that are outside of the restricted bands are subject to a maximum emission limit of -27 dBm/MHz (or -17 dBm/MHz as specified in § 15.407(b)(4)). However, an out-of-band emission that complies with both the peak and average limits of § 15.209 is not required to satisfy the -27 dBm/MHz or -17 dBm/MHz maximum emission limit.

All out of band emissions appearing in a restricted band as specified in Section 15.205 of the Title 47CFR must not exceed the limits shown in Table per Section 15.209.

FCC Part 15 Subpart C Paragraph 15.209		
Frequency [MHz]	Field Strength [uV/m]	Measured Distance [Meters]
0.009 - 0.490	2400/F (kHz)	300
0.490 - 1.705	24000/F (kHz)	30
1.705 - 30	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

6.9.2. Test Procedure

KDB 789033 D02v02r01- Section II)G)

6.9.3. Test Setting

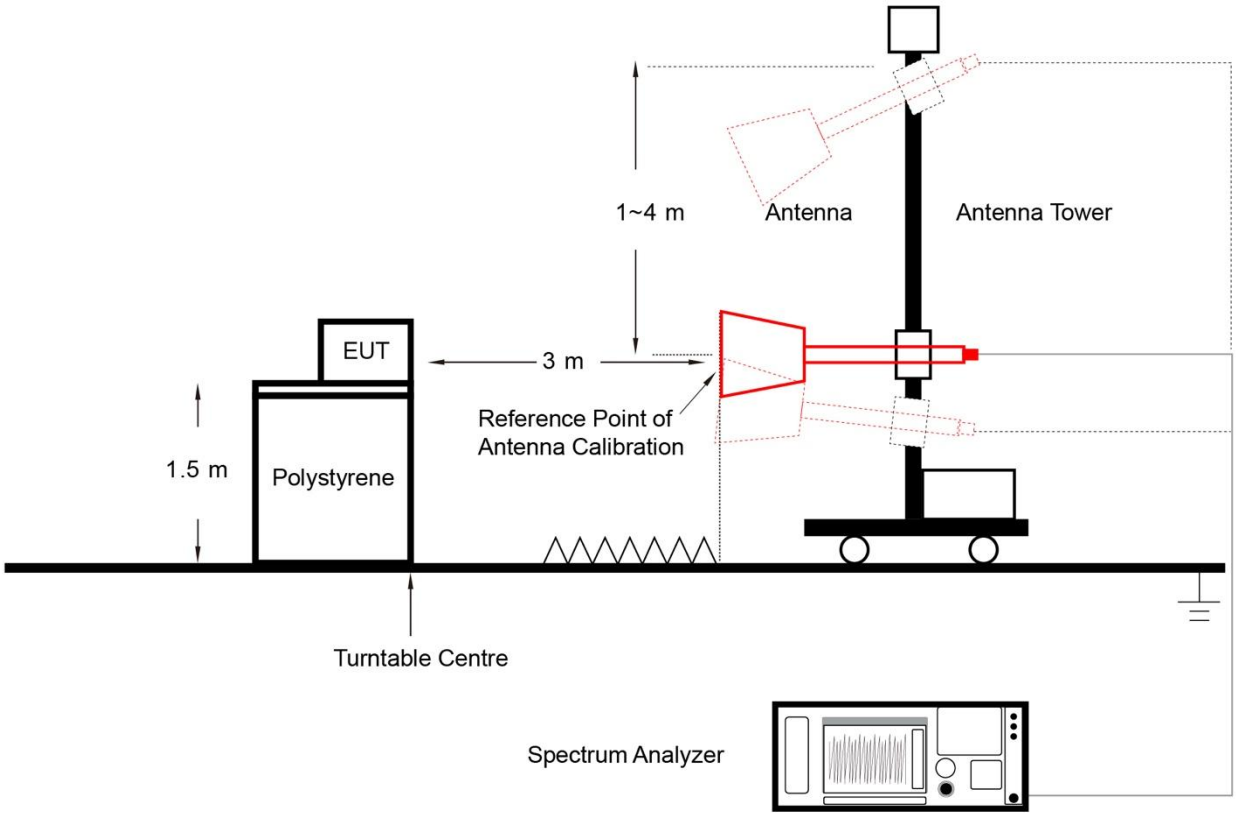
Peak Field Strength Measurements

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW = 3MHz
4. Detector = peak
5. Sweep time = auto couple
6. Trace mode = max hold
7. Trace was allowed to stabilize

Average Field Strength Measurements

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW; If the EUT is configured to transmit with duty cycle ≥ 98%, set VBW = 10 Hz.
   If the EUT duty cycle is < 98%, set VBW ≥ 1/T. T is the minimum transmission duration.
4. As an alternative, the instrument may be set to linear detector mode. Ensure that video filtering is applied in linear voltage domain (rather than in a log or dB domain). Some instruments require linear display mode in order to accomplish this. Others have a setting for Average-VBW Type, which can be set to “Voltage” regardless of the display mode
5. Detector = Peak
6. Sweep time = auto
7. Trace mode = max hold
8. Allow max hold to run for at least 50 times (1/duty cycle) traces

6.9.4. Test Setup



6.9.5. Test Result

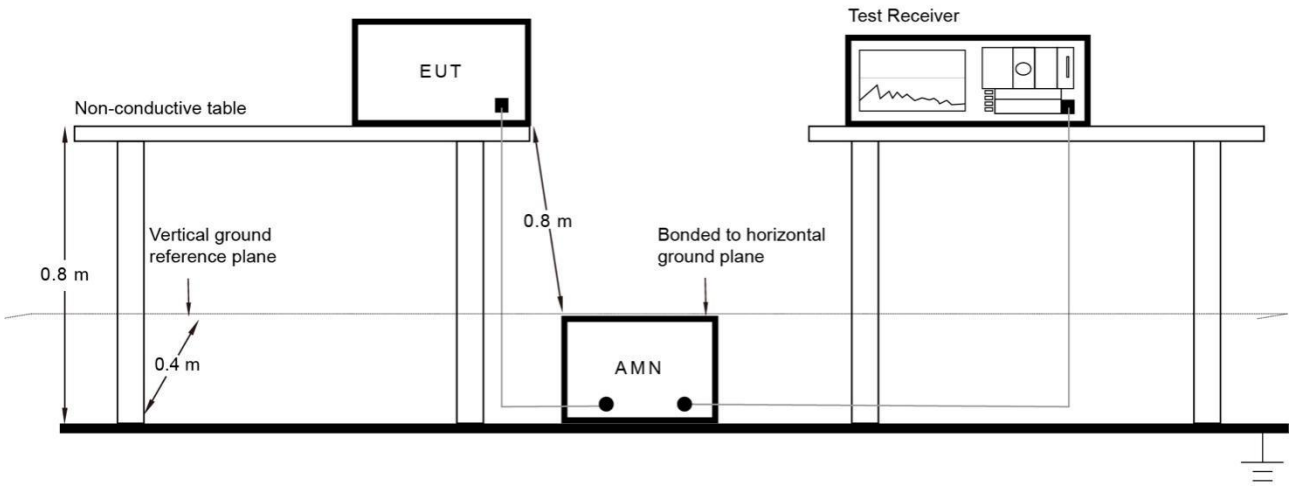
Refer to Appendix A.7.

6.10. AC Conducted Emissions Measurement

6.10.1. Test Limit

FCC Part 15.207 Limits		
Frequency (MHz)	QP (dBuV)	AV (dBuV)
0.15 - 0.50	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30	60	50
Note 1: The lower limit shall apply at the transition frequencies.		
Note 2: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.		

6.10.2. Test Setup



6.10.3. Test Result

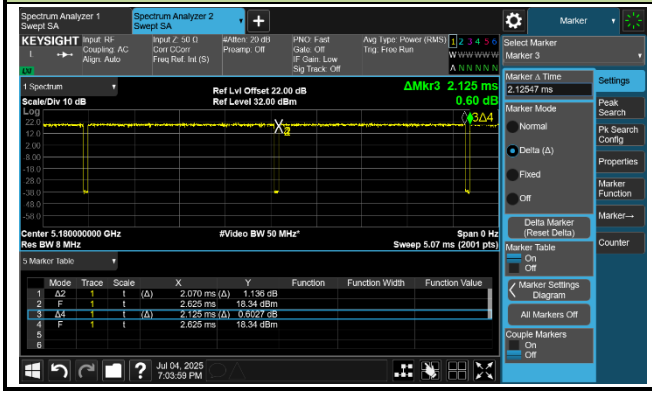
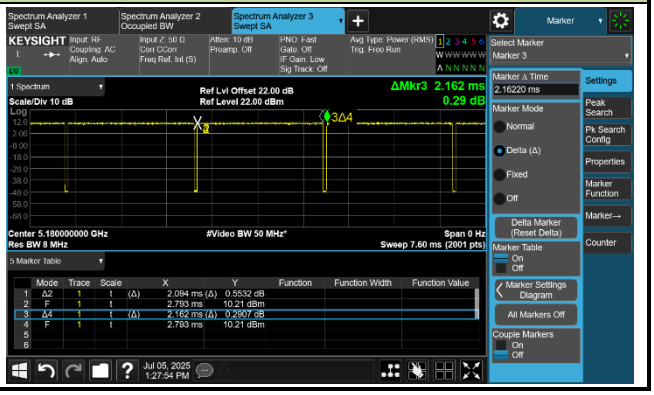
Refer to Appendix A.8.

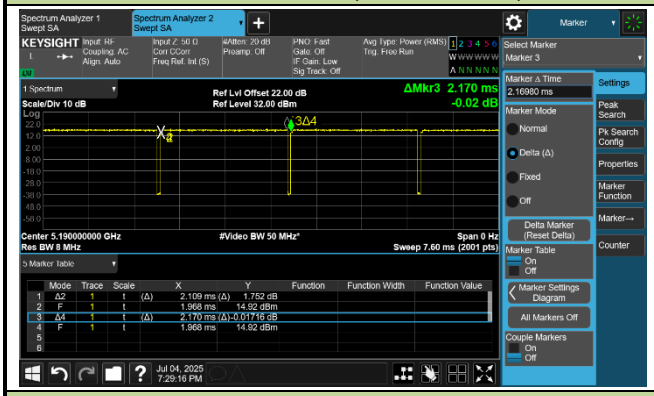
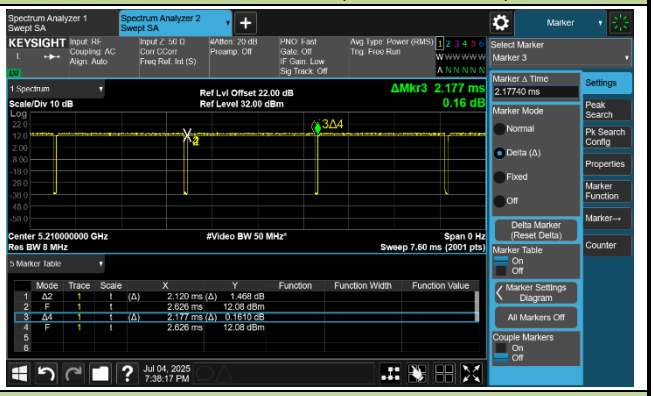
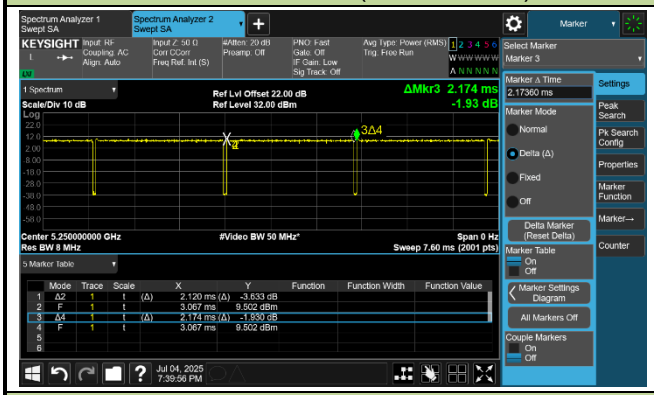
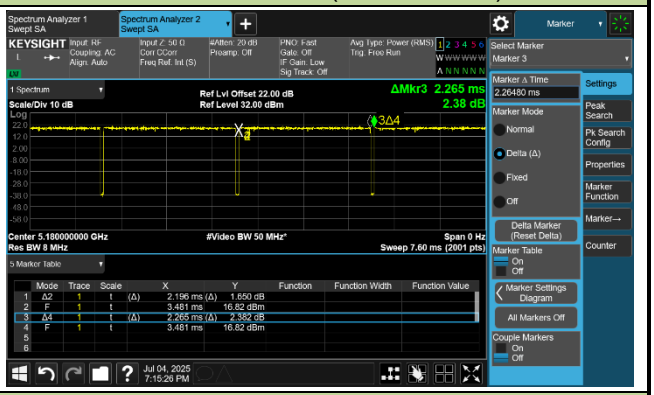
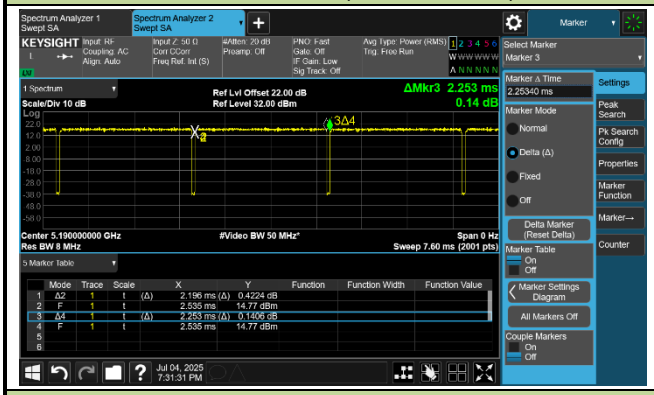
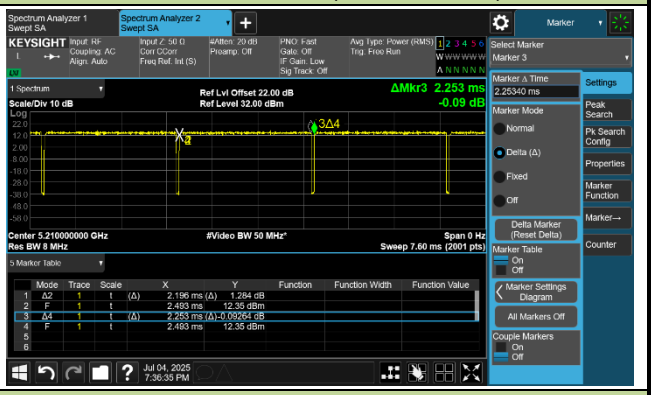
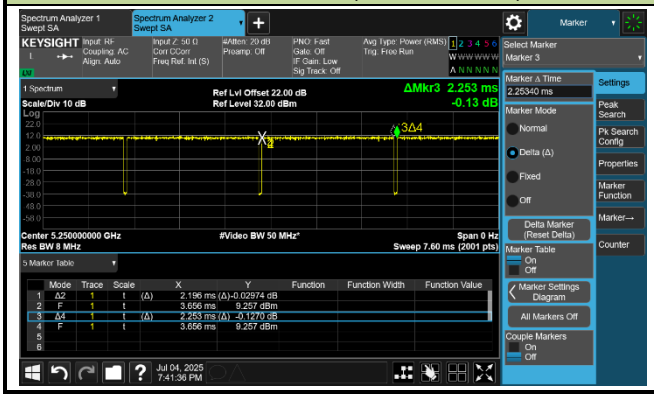
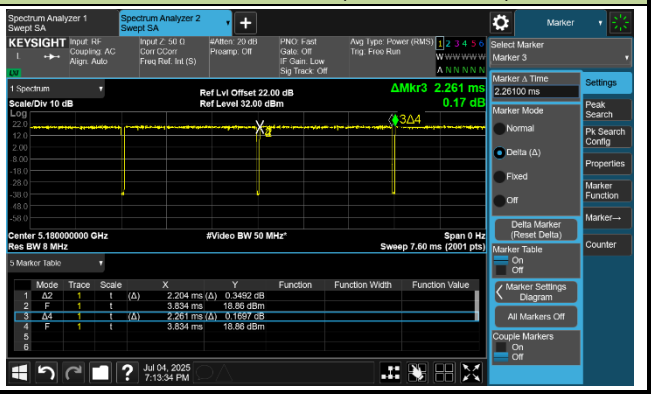
Appendix A – Test Result

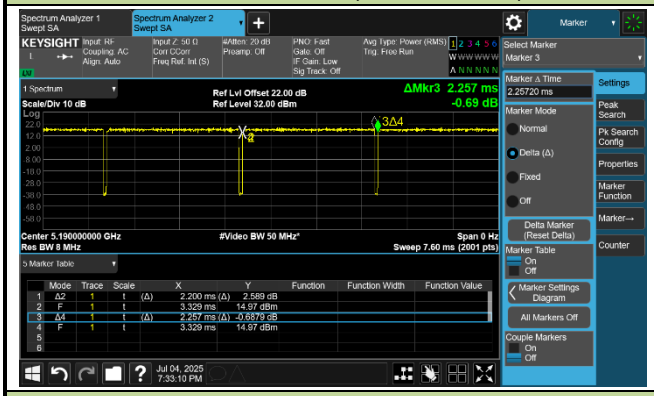
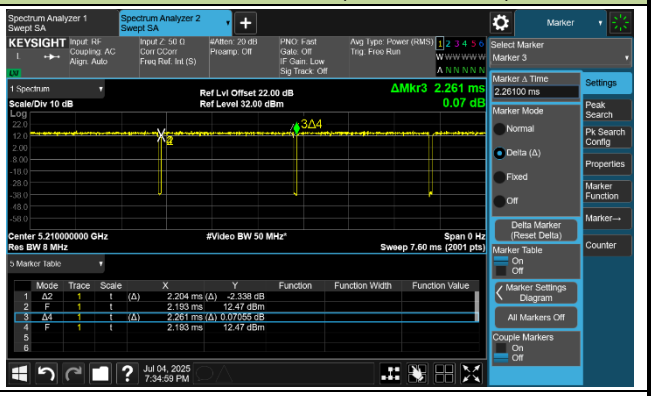
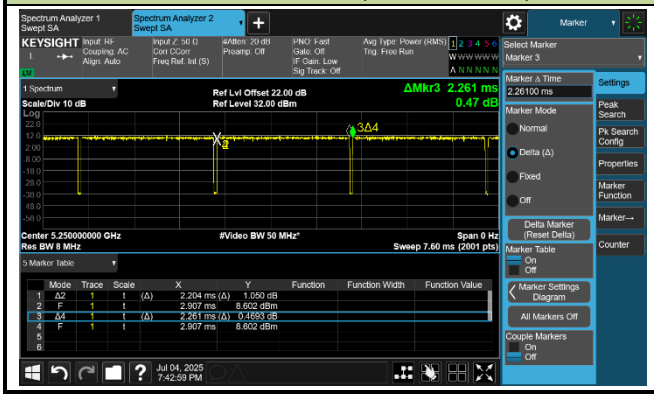
A.1 Duty Cycle Test Result

Test Site	SIP-TR1	Test Engineer	Nolan Chen
Test Date	2025-07-04		

Test Mode	Duty Cycle
802.11a	97.41%
802.11ac-VHT20	96.85%
802.11ac-VHT40	97.19%
802.11ac-VHT80	97.38%
802.11ac-VHT160	97.52%
802.11ax-HE20	96.95%
802.11ax-HE40	97.47%
802.11ax-HE80	97.47%
802.11ax-HE160	97.47%
802.11be-EHT20	97.48%
802.11be-EHT40	97.47%
802.11be-EHT80	97.48%
802.11be-EHT160	97.48%

Duty Cycle (T = Transmission Duration)	
802.11a (T = 2.070 ms)	802.11ac-VHT20 (T = 2.094 ms)
	

Duty Cycle (T = Transmission Duration)	
802.11ac-VHT40 (T = 2.109 ms)	802.11ac-VHT80 (T = 2.120 ms)
	
802.11ac-VHT160 (T = 2.120 ms)	802.11ax-HE20 (T = 2.196 ms)
	
802.11ax-HE40 (T = 2.196 ms)	802.11ax-HE80 (T = 2.196 ms)
	
802.11ax-HE160 (T = 2.196 ms)	802.11be-EHT20 (T = 2.204 ms)
	

Duty Cycle (T = Transmission Duration)	
802.11be-EHT40 (T = 2.200 ms)	802.11be-EHT80 (T = 2.204 ms)
	
802.11be-EHT160 (T = 2.204 ms)	
	

A.2 26 dB Bandwidth Test Result

Test Site	SIP-TR1	Test Engineer	Nolan Chen
Test Date	2025-07-05~2025-07-13	Test Mode	Nss = 1

Test Mode	Data Rate/ MCS	Channel No.	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
11a	6Mbps	36	5180	25.26	16.539
11a	6Mbps	44	5220	18.37	16.370
11a	6Mbps	48	5240	18.59	16.380
11a	6Mbps	52	5260	18.34	16.358
11a	6Mbps	60	5300	20.97	16.442
11a	6Mbps	64	5320	22.78	16.448
11a	6Mbps	100	5500	23.60	16.503
11a	6Mbps	116	5580	18.39	16.376
11a	6Mbps	140	5700	25.06	16.467
11a	6Mbps	144	5720	18.60	16.369
11a	6Mbps	149	5745	26.59	16.820
11a	6Mbps	157	5785	33.74	16.753
11a	6Mbps	165	5825	33.49	16.873
11ac-VHT20	MCS0	36	5180	24.97	17.578
11ac-VHT20	MCS0	44	5220	21.39	17.494
11ac-VHT20	MCS0	48	5240	20.86	17.500
11ac-VHT20	MCS0	52	5260	19.08	17.468
11ac-VHT20	MCS0	60	5300	24.66	17.552
11ac-VHT20	MCS0	64	5320	24.84	17.546
11ac-VHT20	MCS0	100	5500	24.54	17.556
11ac-VHT20	MCS0	116	5580	19.06	17.483
11ac-VHT20	MCS0	140	5700	21.05	17.539
11ac-VHT20	MCS0	144	5720	19.05	17.465
11ac-VHT20	MCS0	149	5745	29.88	17.696
11ac-VHT20	MCS0	157	5785	34.95	17.853
11ac-VHT20	MCS0	165	5825	34.98	18.218

Test Mode	Data Rate/ MCS	Channel No.	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
11ac-VHT40	MCS0	38	5190	41.57	35.922
11ac-VHT40	MCS0	46	5230	38.31	35.819
11ac-VHT40	MCS0	54	5270	38.16	35.714
11ac-VHT40	MCS0	62	5310	38.43	35.843
11ac-VHT40	MCS0	102	5510	39.12	35.869
11ac-VHT40	MCS0	110	5550	38.15	35.713
11ac-VHT40	MCS0	134	5670	39.37	35.877
11ac-VHT40	MCS0	142	5710	38.19	35.780
11ac-VHT40	MCS0	151	5755	49.96	35.998
11ac-VHT40	MCS0	159	5795	78.54	37.404
11ac-VHT80	MCS0	42	5210	78.93	75.068
11ac-VHT80	MCS0	58	5290	78.88	75.064
11ac-VHT80	MCS0	106	5530	81.61	75.164
11ac-VHT80	MCS0	122	5610	78.75	74.969
11ac-VHT80	MCS0	138	5690	78.88	75.126
11ac-VHT80	MCS0	155	5775	109.2	75.365
11ac-VHT160	MCS0	50	5250	163.1	154.25
11ac-VHT160	MCS0	114	5570	163.4	154.15
11ax-HE20	MCS0	36	5180	23.93	18.919
11ax-HE20	MCS0	44	5220	19.94	18.838
11ax-HE20	MCS0	48	5240	19.97	18.857
11ax-HE20	MCS0	52	5260	19.96	18.855
11ax-HE20	MCS0	60	5300	20.05	18.850
11ax-HE20	MCS0	64	5320	20.91	18.878
11ax-HE20	MCS0	100	5500	20.83	18.903
11ax-HE20	MCS0	116	5580	19.97	18.810
11ax-HE20	MCS0	140	5700	20.98	18.887
11ax-HE20	MCS0	144	5720	20.04	18.841
11ax-HE20	MCS0	149	5745	25.52	18.955
11ax-HE20	MCS0	157	5785	34.66	19.046
11ax-HE20	MCS0	165	5825	34.72	19.205

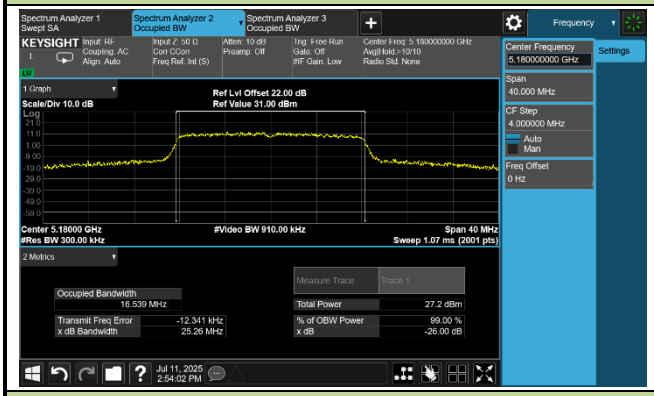
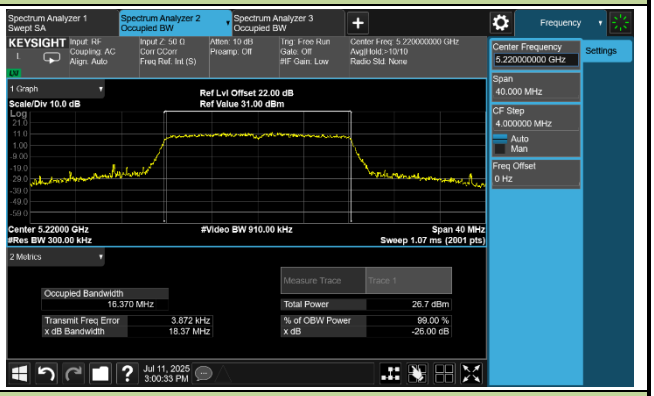
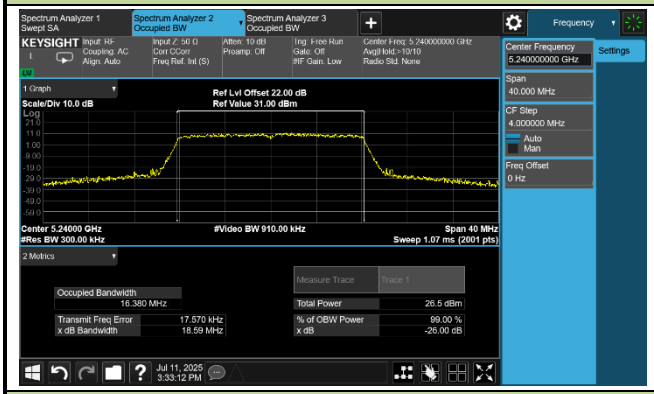
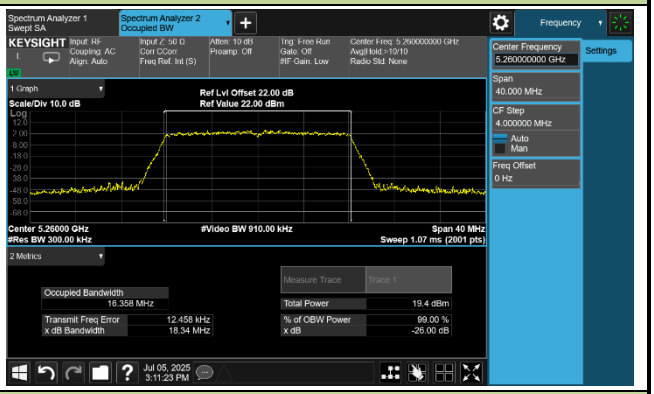
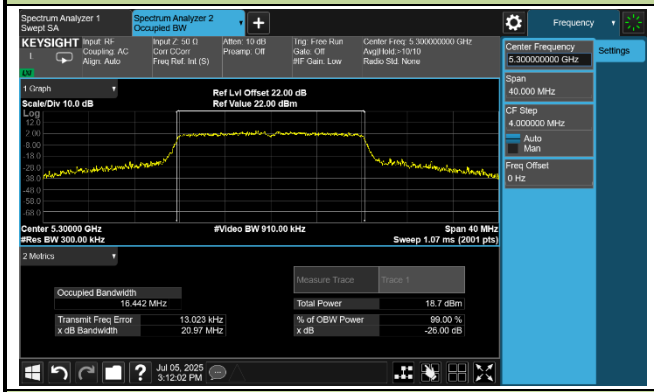
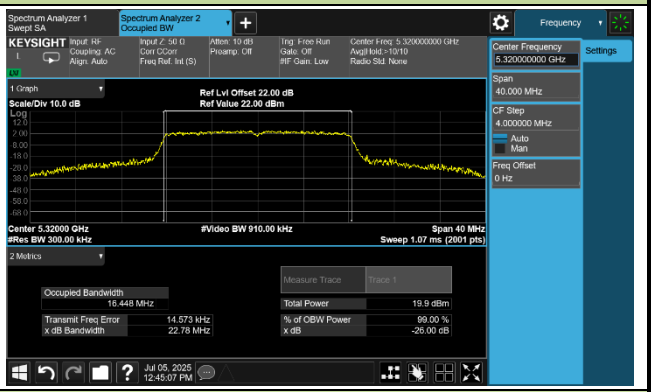
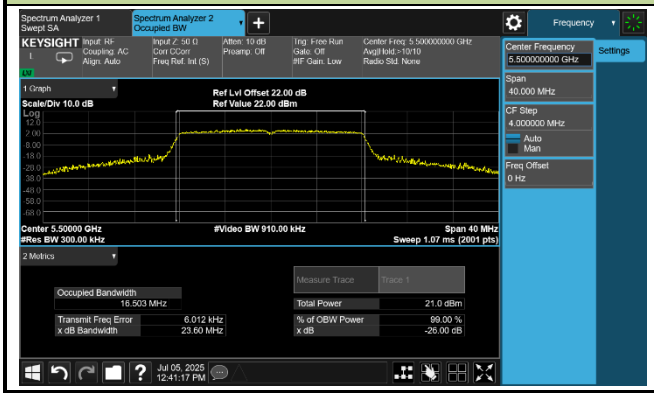
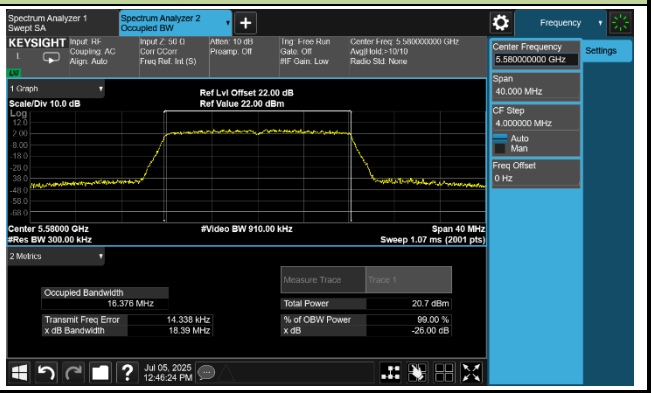
Test Mode	Data Rate/ MCS	Channel No.	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
11ax-HE40	MCS0	38	5190	39.42	37.609
11ax-HE40	MCS0	46	5230	39.43	37.588
11ax-HE40	MCS0	54	5270	39.50	37.576
11ax-HE40	MCS0	62	5310	41.08	37.499
11ax-HE40	MCS0	102	5510	44.48	37.527
11ax-HE40	MCS0	110	5550	39.34	37.393
11ax-HE40	MCS0	134	5670	39.55	37.630
11ax-HE40	MCS0	142	5710	39.45	37.481
11ax-HE40	MCS0	151	5755	44.45	37.755
11ax-HE40	MCS0	159	5795	67.80	38.003
11ax-HE80	MCS0	42	5210	79.99	76.807
11ax-HE80	MCS0	58	5290	79.98	76.820
11ax-HE80	MCS0	106	5530	79.86	76.887
11ax-HE80	MCS0	122	5610	79.84	76.707
11ax-HE80	MCS0	138	5690	79.86	76.536
11ax-HE80	MCS0	155	5775	86.83	77.166
11ax-HE160	MCS0	50	5250	161.8	155.15
11ax-HE160	MCS0	114	5570	163.4	155.82
11be-EHT20	MCS0	36	5180	23.77	18.883
11be-EHT20	MCS0	44	5220	20.82	18.873
11be-EHT20	MCS0	48	5240	21.27	18.839
11be-EHT20	MCS0	52	5260	19.96	18.838
11be-EHT20	MCS0	60	5300	20.52	18.879
11be-EHT20	MCS0	64	5320	21.76	18.872
11be-EHT20	MCS0	100	5500	23.84	18.899
11be-EHT20	MCS0	116	5580	19.94	18.844
11be-EHT20	MCS0	140	5700	21.10	18.872
11be-EHT20	MCS0	144	5720	19.95	18.807
11be-EHT20	MCS0	149	5745	29.00	18.995
11be-EHT20	MCS0	157	5785	33.84	18.992
11be-EHT20	MCS0	165	5825	32.47	19.053

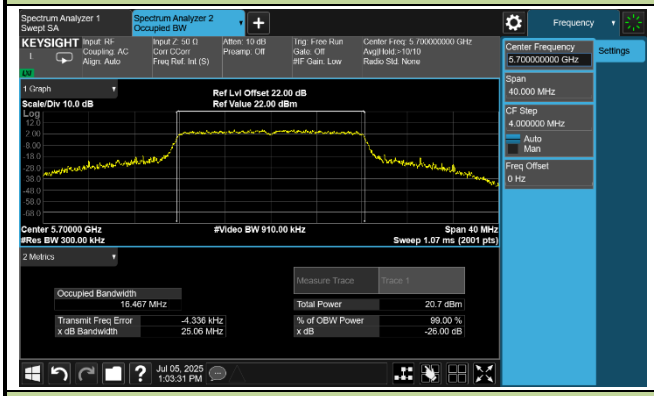
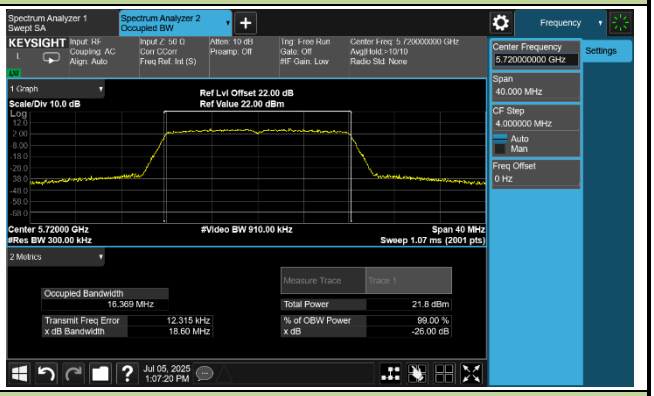
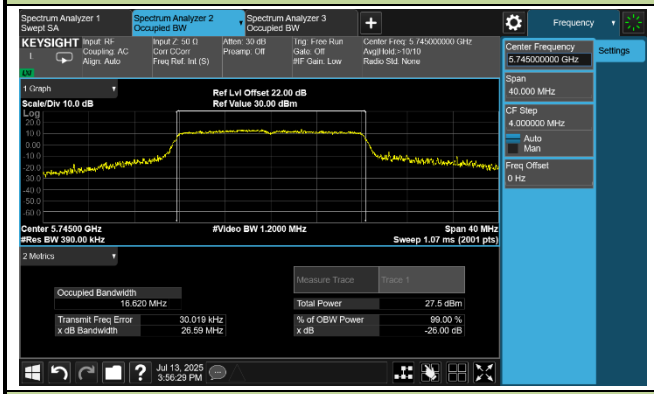
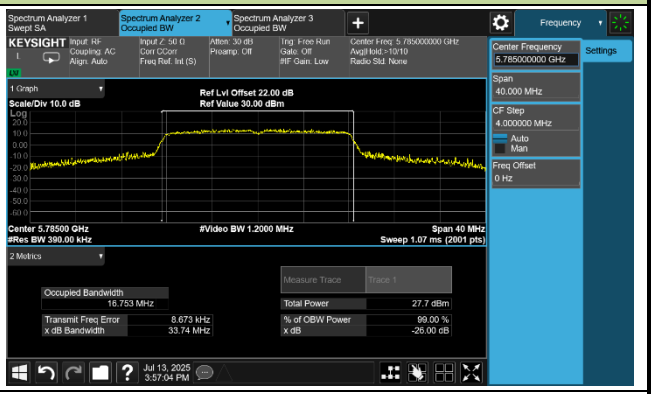
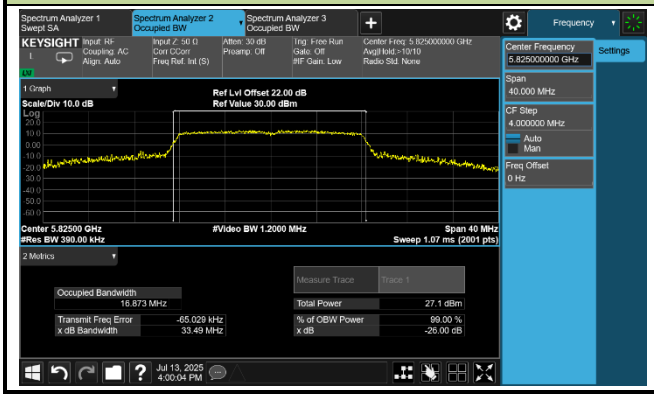
Test Mode	Data Rate/ MCS	Channel No.	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
11be-EHT40	MCS0	38	5190	42.14	37.566
11be-EHT40	MCS0	46	5230	40.48	37.575
11be-EHT40	MCS0	54	5270	39.33	37.497
11be-EHT40	MCS0	62	5310	39.53	37.471
11be-EHT40	MCS0	102	5510	39.36	37.533
11be-EHT40	MCS0	110	5550	39.38	37.464
11be-EHT40	MCS0	134	5670	39.39	37.480
11be-EHT40	MCS0	142	5710	39.41	37.451
11be-EHT40	MCS0	151	5755	41.67	37.658
11be-EHT40	MCS0	159	5795	48.98	37.740
11be-EHT80	MCS0	42	5210	80.75	76.836
11be-EHT80	MCS0	58	5290	80.03	76.890
11be-EHT80	MCS0	106	5530	80.03	76.849
11be-EHT80	MCS0	122	5610	79.90	76.648
11be-EHT80	MCS0	138	5690	79.89	76.711
11be-EHT80	MCS0	155	5775	81.93	76.999
11be-EHT160	MCS0	50	5250	161.8	155.15
11be-EHT160	MCS0	114	5570	162.1	155.80

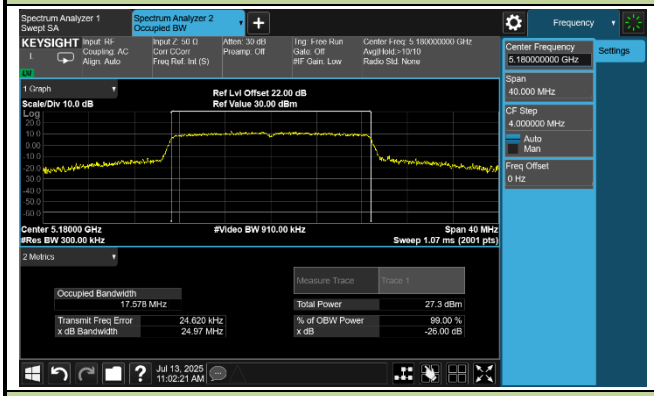
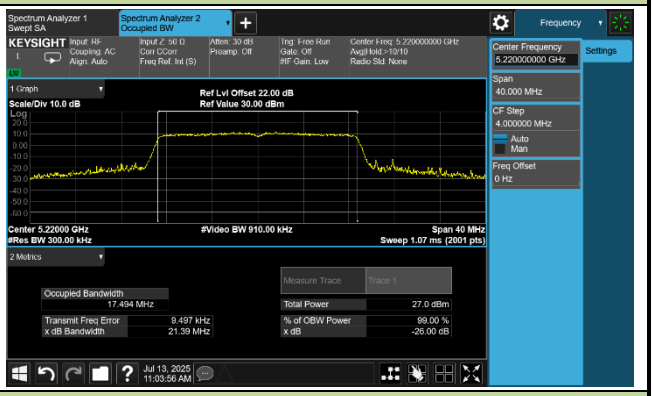
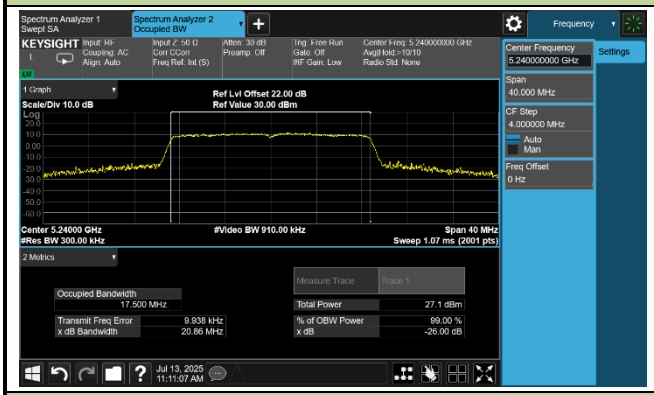
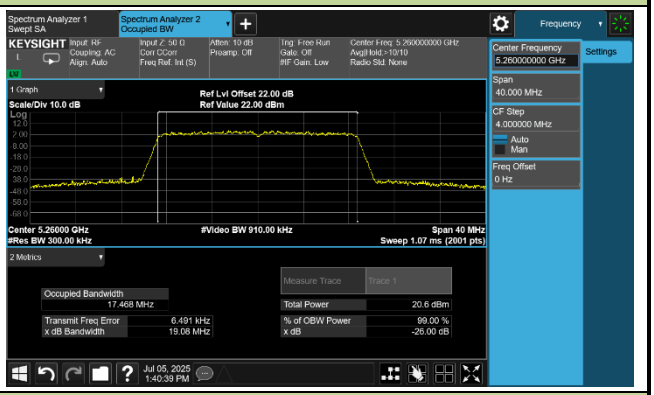
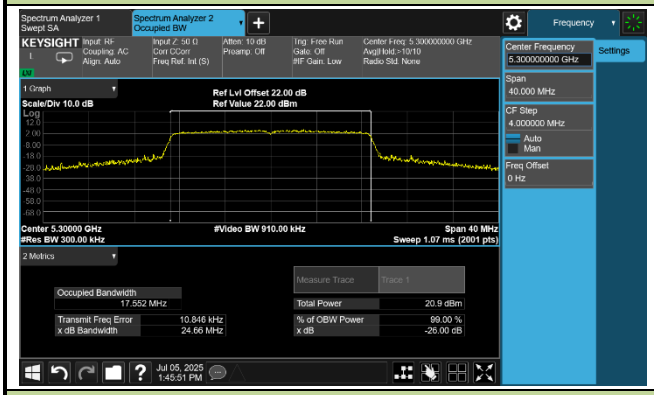
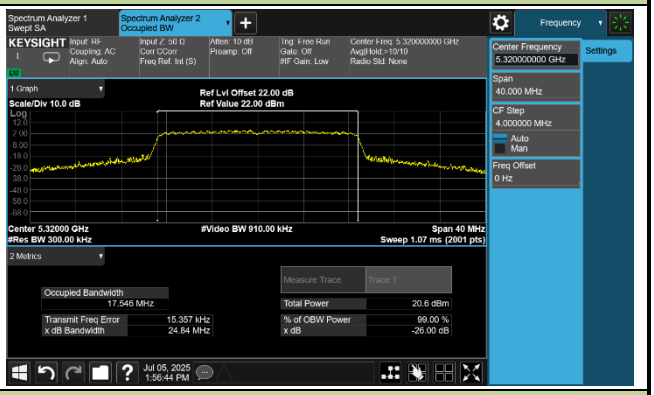
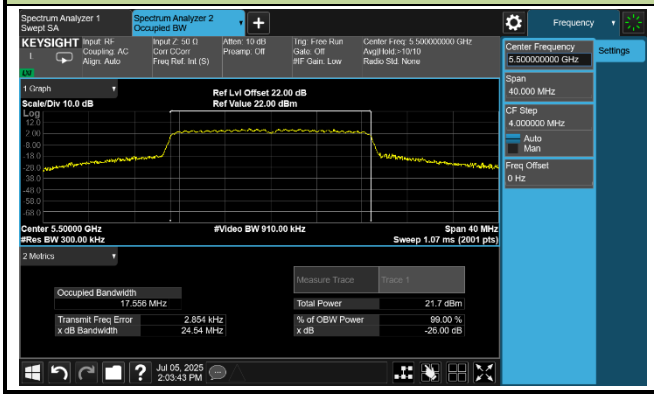
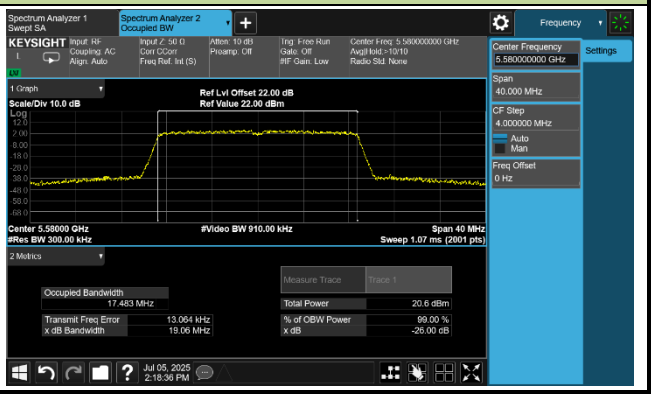
Test Mode	Data Rate/ MCS	Channel No.	Frequency (MHz)	F_H (MHz)	Limit (MHz)
802.11a	6Mbps	48	5240	5248.19	< 5250
802.11ac-VHT20	MCS0	48	5240	5248.75	< 5250
802.11ac-VHT40	MCS0	46	5230	5247.91	< 5250
802.11ac-VHT80	MCS0	42	5210	5247.53	< 5250
802.11ax-HE20	MCS0	48	5240	5249.43	< 5250
802.11ax-HE40	MCS0	46	5230	5248.79	< 5250
802.11ax-HE80	MCS0	42	5210	5248.40	< 5250
802.11be-EHT20	MCS0	48	5240	5249.42	< 5250
802.11be-EHT40	MCS0	46	5230	5248.79	< 5250
802.11be-EHT80	MCS0	42	5210	5248.42	< 5250

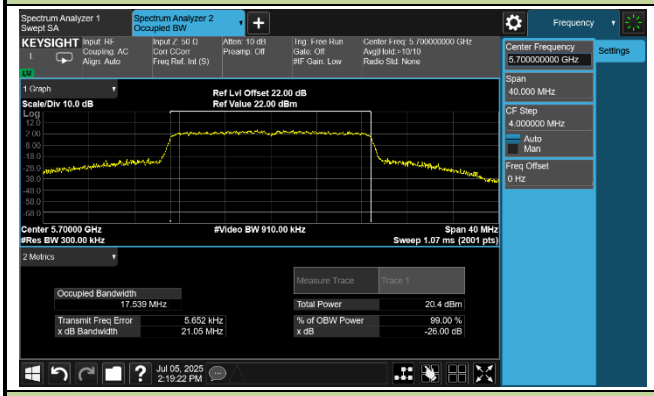
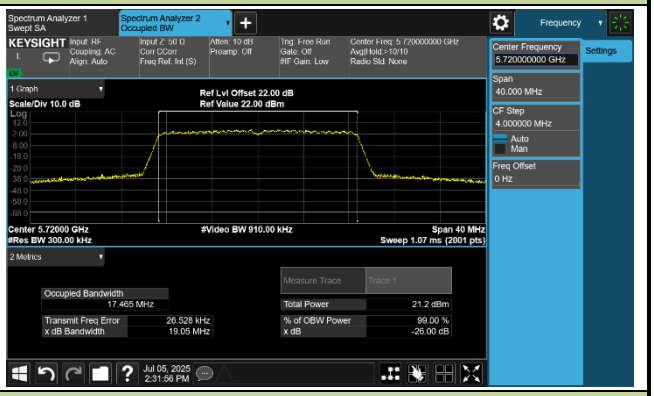
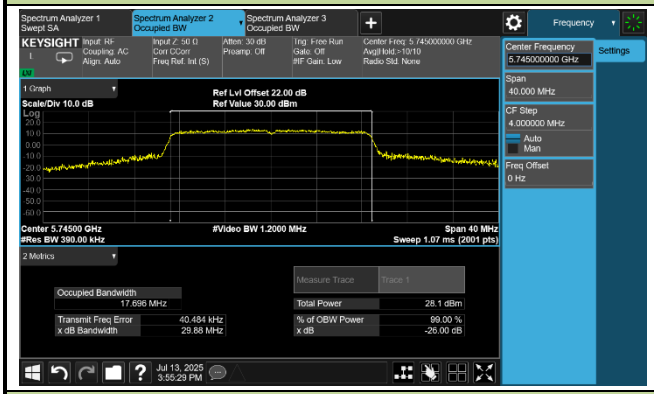
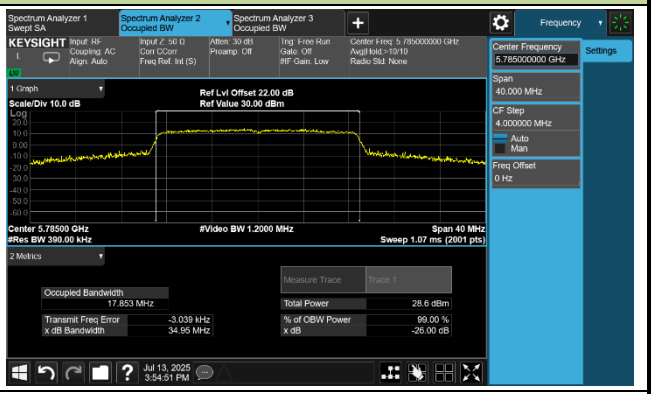
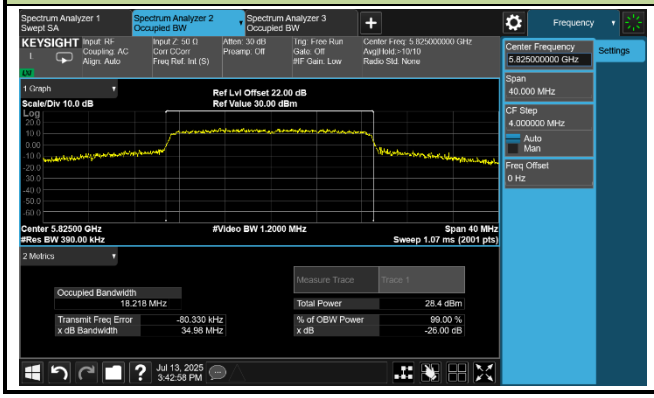
Note: F_H = Centre frequency + 99% OBW / 2.

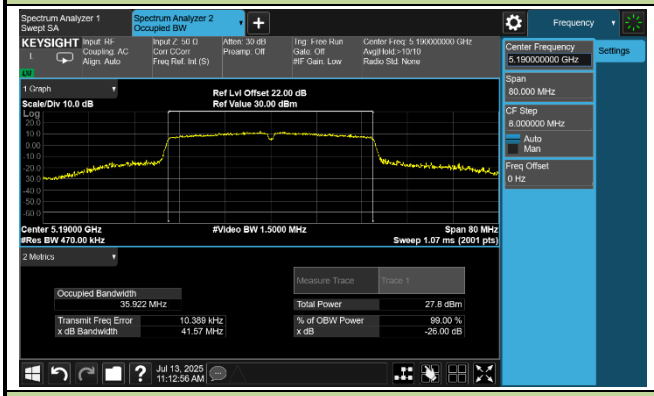
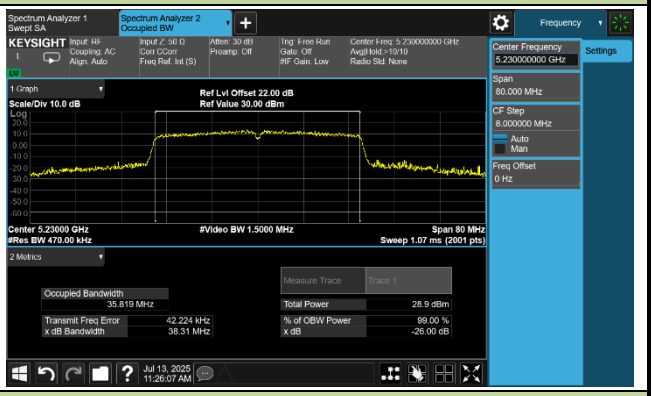
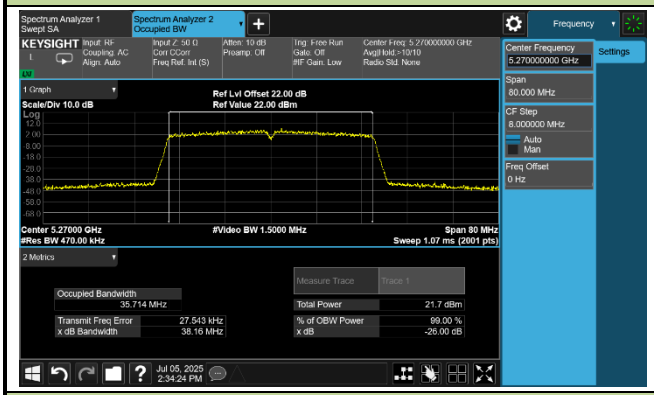
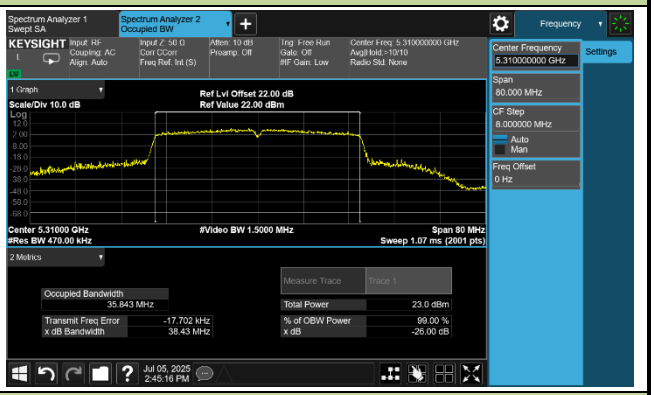
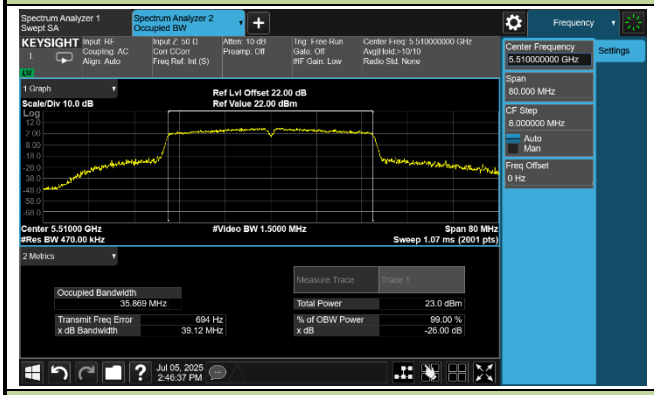
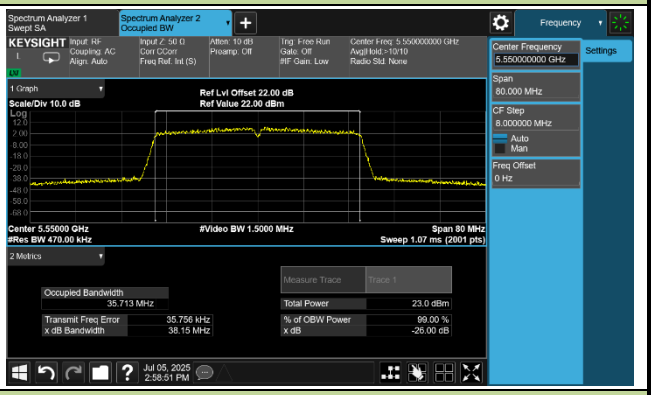
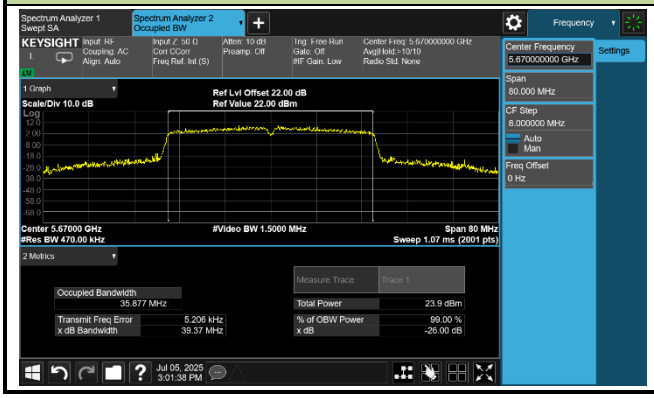
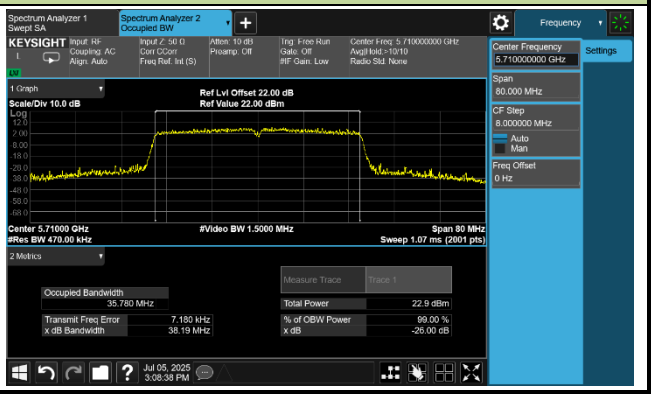
For example, 802.11a 5240 MHz, F_H = 5240 MHz + 16.380 MHz / 2 = 5248.19 MHz.

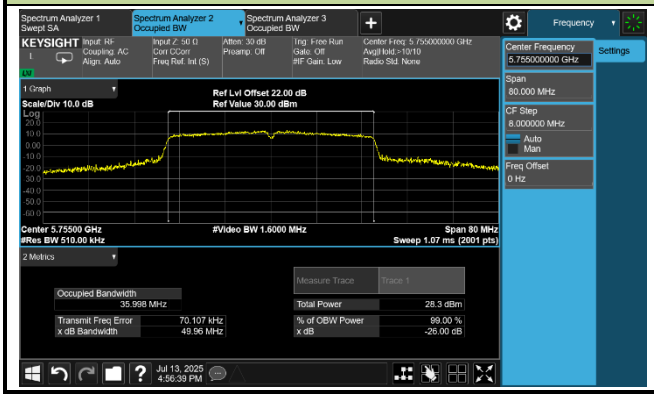
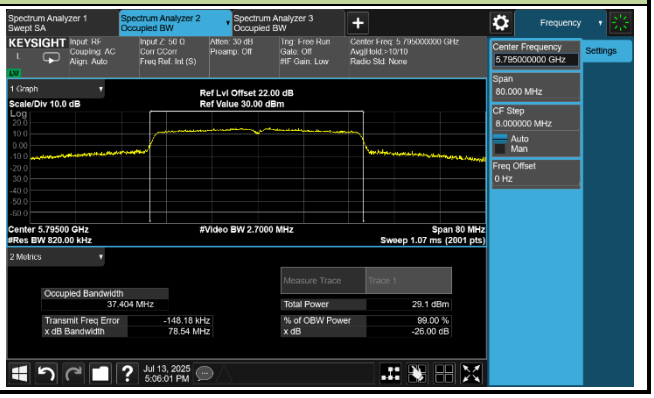
802.11a 26 dB Bandwidth & 99% Bandwidth	
Channel 36 (5180 MHz)	Channel 44 (5220 MHz)
	
Channel 48 (5240 MHz)	Channel 52 (5260 MHz)
	
Channel 60 (5300 MHz)	Channel 64 (5320 MHz)
	
Channel 100 (5500 MHz)	Channel 116 (5580 MHz)
	

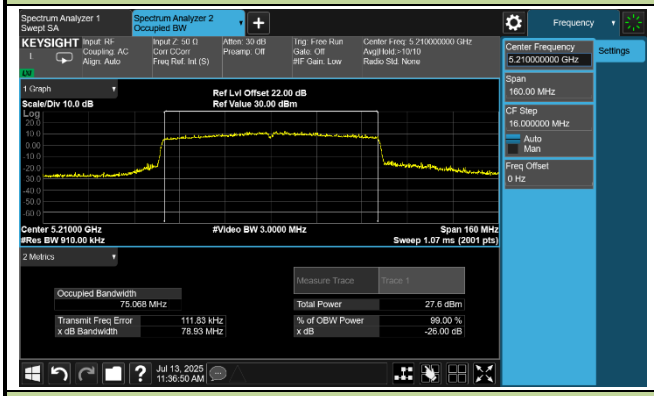
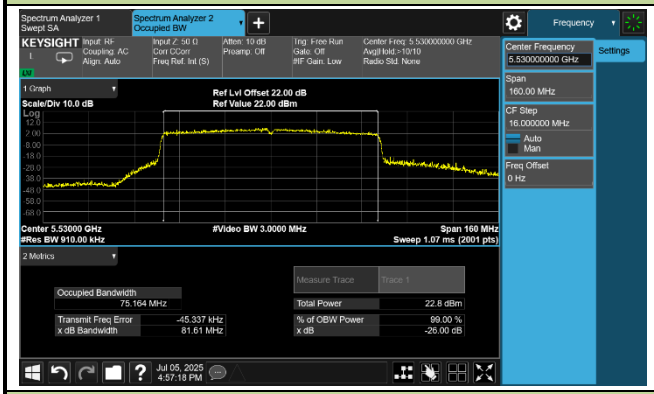
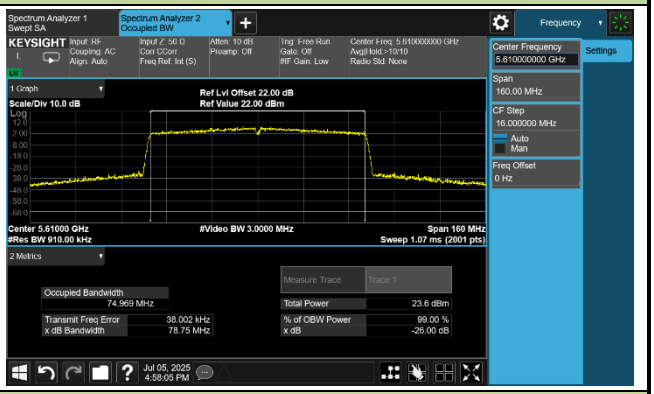
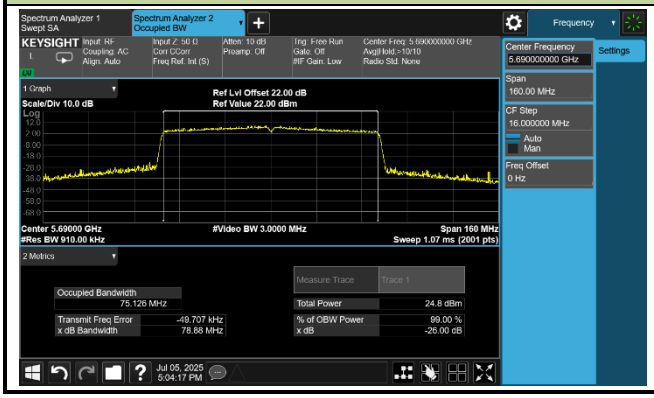
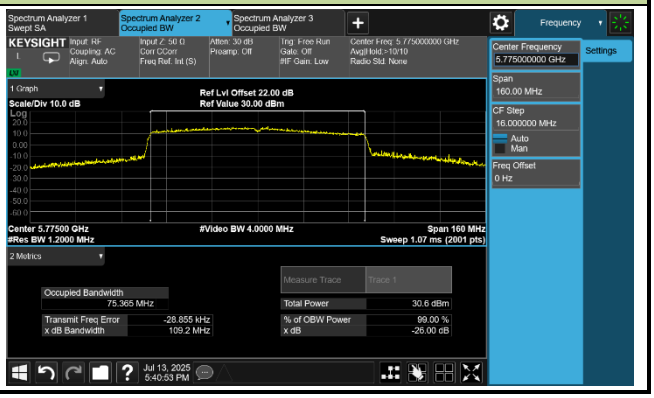
802.11a 26 dB Bandwidth & 99% Bandwidth	
Channel 140 (5700 MHz)	Channel 144(5720 MHz)
	
Channel 149 (5745 MHz)	Channel 157 (5785 MHz)
	
Channel 165 (5825 MHz)	
	

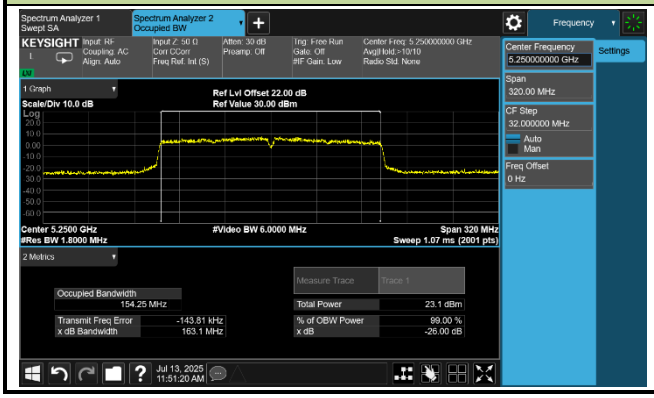
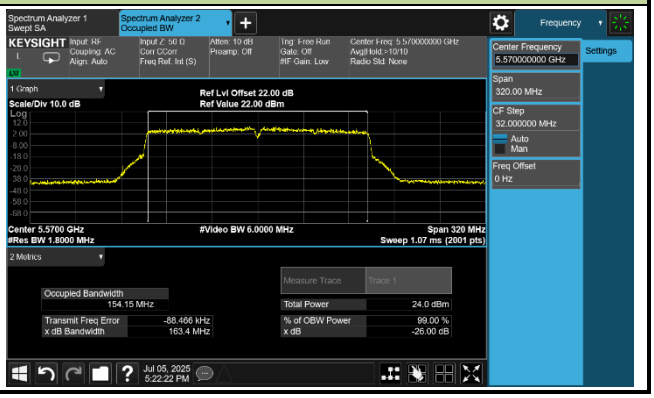
802.11ac-VHT20 26 dB Bandwidth & 99% Bandwidth	
Channel 36 (5180 MHz)	Channel 44 (5220 MHz)
	
Channel 48 (5240 MHz)	Channel 52 (5260 MHz)
	
Channel 60 (5300 MHz)	Channel 64 (5320 MHz)
	
Channel 100 (5500 MHz)	Channel 116 (5580 MHz)
	

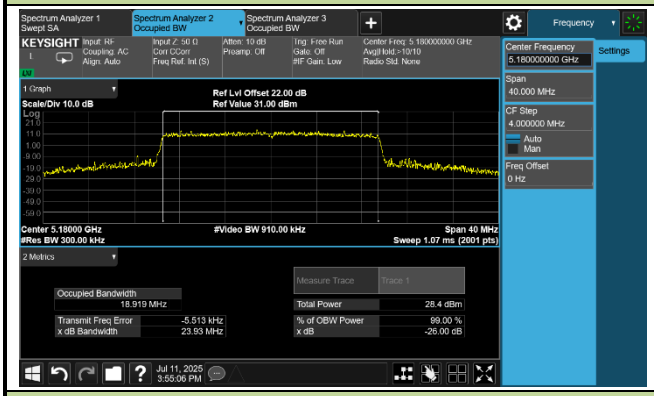
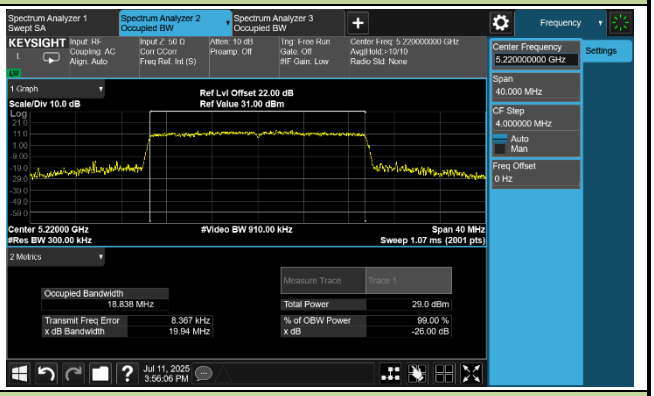
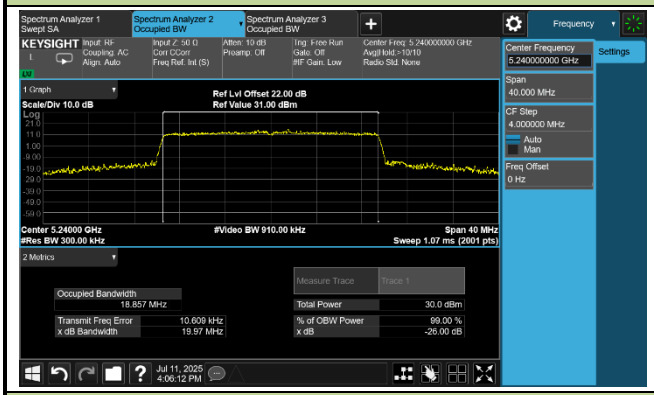
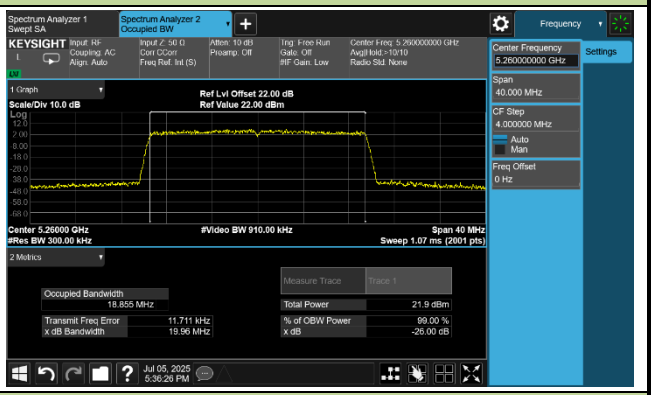
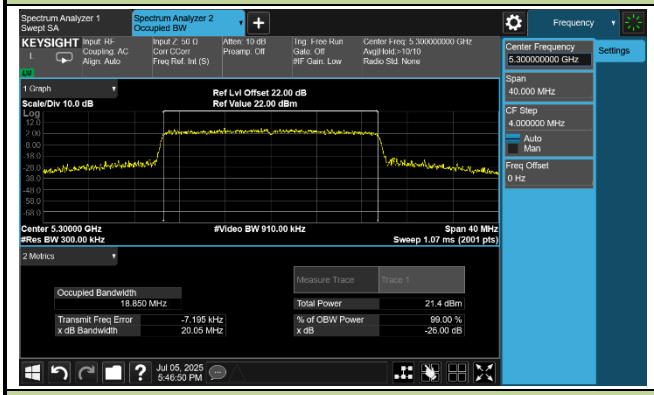
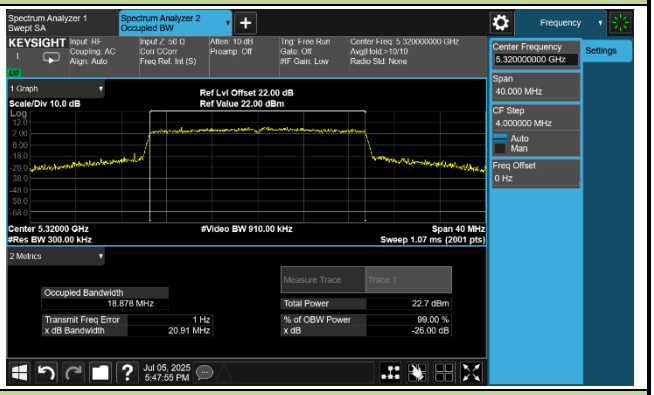
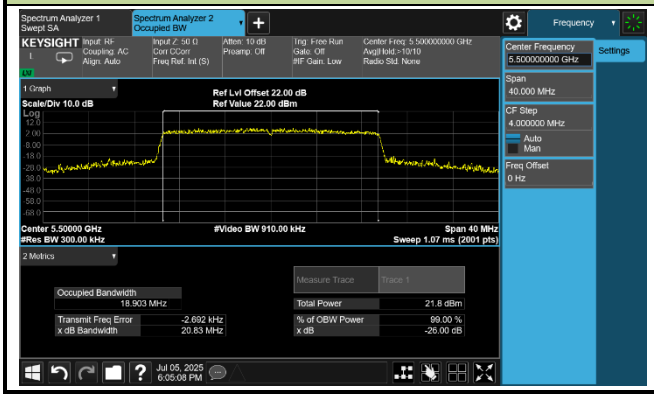
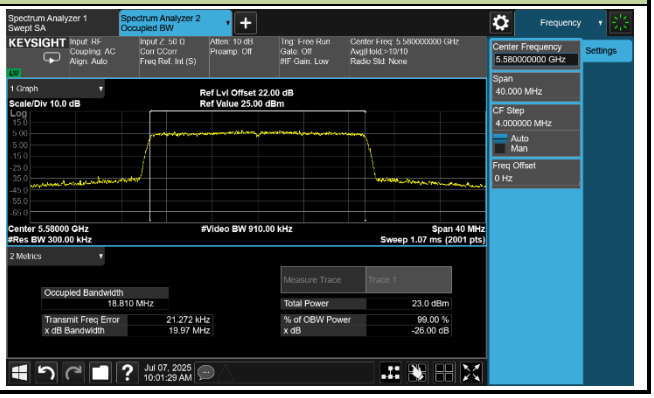
802.11ac-VHT20 26 dB Bandwidth & 99% Bandwidth	
Channel 140 (5700 MHz)	Channel 144(5720 MHz)
	
Channel 149 (5745 MHz)	Channel 157 (5785 MHz)
	
Channel 165 (5825 MHz)	
	

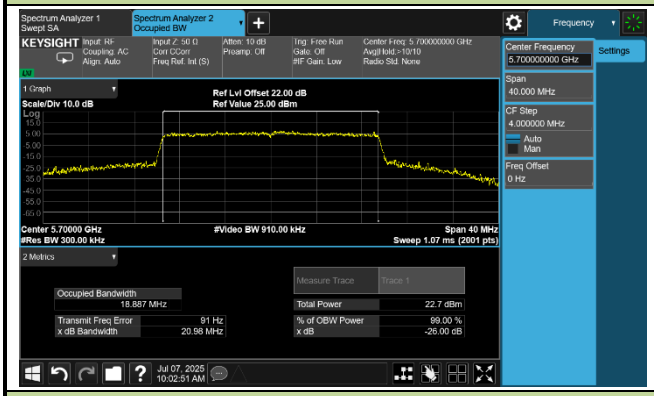
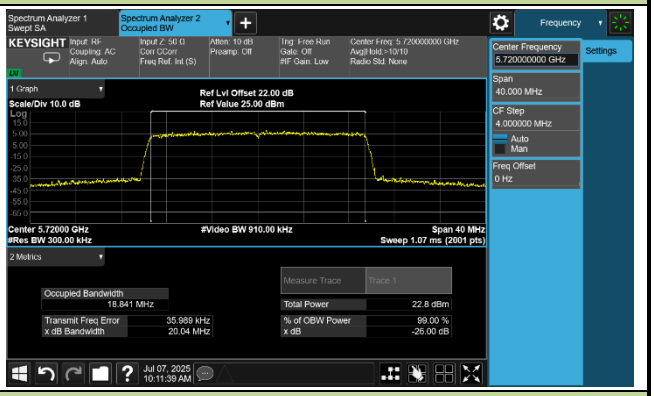
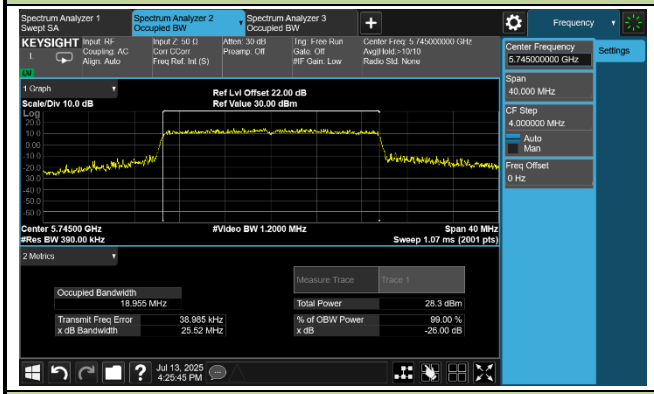
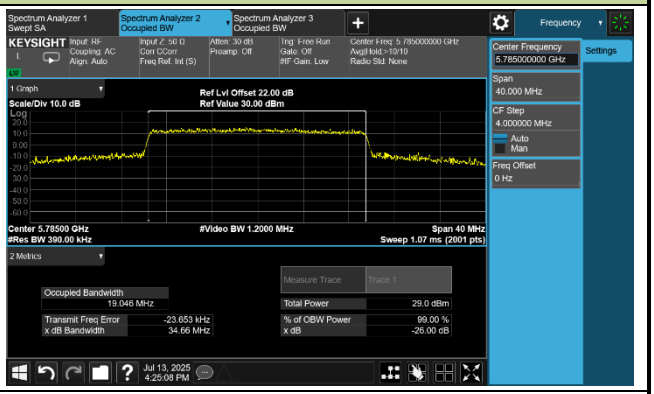
802.11ac-VHT40 26 dB Bandwidth & 99% Bandwidth	
Channel 38 (5190 MHz)	Channel 46 (5230 MHz)
	
Channel 54 (5270 MHz)	Channel 62 (5310 MHz)
	
Channel 102 (5510 MHz)	Channel 110 (5550 MHz)
	
Channel 134 (5670 MHz)	Channel 142(5710 MHz)
	

802.11ac-VHT40 26 dB Bandwidth & 99% Bandwidth	
Channel 151 (5755 MHz)	Channel 159 (5795 MHz)
	

802.11ac-VHT80 26 dB Bandwidth & 99% Bandwidth	
Channel 42 (5210 MHz)	Channel 58 (5290 MHz)
	
Channel 106 (5530 MHz)	Channel 122 (5610 MHz)
	
Channel 138 (5690 MHz)	Channel 155 (5775 MHz)
	

802.11ac-VHT160 26 dB Bandwidth & 99% Bandwidth	
Channel 50 (5250 MHz)	Channel 114 (5570 MHz)
	

802.11ax-HE20 26 dB Bandwidth & 99% Bandwidth	
Channel 36 (5180 MHz)	Channel 44 (5220 MHz)
	
Channel 48 (5240 MHz)	Channel 52 (5260 MHz)
	
Channel 60 (5300 MHz)	Channel 64 (5320 MHz)
	
Channel 100 (5500 MHz)	Channel 116 (5580 MHz)
	

802.11ax-HE20 26 dB Bandwidth & 99% Bandwidth	
Channel 140 (5700 MHz)	Channel 144(5720 MHz)
	
Channel 149 (5745 MHz)	Channel 157 (5785 MHz)
	
Channel 165 (5825 MHz)