RF MEASUREMENT REPORT

FCC ID:	2ALJ3AP57X
Applicant:	HAN Networks Co., Ltd.
Product:	HAN Access Point
Model No.:	AP571
Product Family Models:	AP571e
Brand Name:	HAN NETWORKS, HANNETWORKS
FCC Classification:	Unlicensed National Information Infrastructure (NII)
FCC Rule Part(s):	Part 15 Subpart E (Section 15.407)
Result:	Complies
Received Date:	2025-06-09
Test Date:	2025-07-05 ~ 2025-08-27

Reviewed By: Vincent Yu

Vincent Yu

Approved By: Robin Wu

Robin Wu

ACCREDITED
TESTING LABORATORY CERTIFICATE #3628.01

The test results relate only to the samples tested.
This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in KDB789033. Test results reported herein relate only to the item(s) tested.
The test report shall not be reproduced except in full without the written approval of MRT Technology (Suzhou) Co., Ltd.

Revision History

Report No.	Version	Description	Issue Date	Note
R25S1073095-U204	V01	Initial Report	2025-12-01	Valid

Note: This report is a copy report based on MRT original report (Report No.: R25S1009065-U204). Only applicant & manufacturer information and product information (name, model and brand name) has changed in this report, others are identical. The test data are all copied from the original report.

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1. General Information

1.1. Applicant

HAN Networks Co., Ltd.

101, 3rd Floor, Building 3, No.9 Compound, Yongfeng Road, Haidian District, Beijing, P.R. China

1.2. Manufacturer

HAN Networks Co., Ltd.

101, 3rd Floor, Building 3, No.9 Compound, Yongfeng Road, Haidian District, Beijing, P.R. China

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	HAN Access Point
Model No.	AP571
Product Family Models	AP571e
Brand Name	HAN NETWORKS, HANNETWORKS
Wi-Fi Specification	802.11a/b/g/n/ac/ax/be
Bluetooth Specification	Bluetooth-LE only
ZigBee Specification	802.15.4
Antenna Specification	Refer to clause 1.7
Operating Temp.	-40 ~ 70 °C
Power Supply	PoE Input
Accessories	
PoE Injector 1#	Model: POEO75U-1BT Input: 100-240 V ~ 2.0 A 50-60 Hz PoE Output 1: 56 V 0.8 A 45 W PIN3, 6+ PIN1, 2 Return PoE Output 2: 56 V 0.8 A 45 W PIN4, 5+ PIN7, 8 Return
PoE Injector 2#	Model: POE60U-1BT-X (ALE P/N: POE60U-1BT-X-R) Input: 100-240 V ~ 1.5 A, 50/60 Hz Output: 56.0 V, 0.535 A, 30 W PIN 3, 6+ PIN 1, 2 Return Output: 56.0 V, 0.535 A, 30 W PIN 4, 5+ PIN 7, 8 Return

Notes:

1. 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.
2. PoE Injectors are not marketed in conjunction with the device.
3. The two models share the same schematic diagram and PCB mainboard, with generally identical structure and enclosure. The differences are as follows:
   Wi-Fi Antenna difference: AP571 features an internal omnidirectional antenna; AP571e features an external omnidirectional antenna. The BLE/ZigBee antennas are completely identical.
   Compared to AP571, the AP571e includes external antenna connectors as part of the structural components.

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 300 Mbps 802.11ac: up to 1733.3 Mbps 802.11ax: up to 2402 Mbps 802.11be: up to 2882 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

AP571

Antenna Type	Frequency (MHz)	TX Paths	Max. Directional Gain (dBi)		Antenna Gain above 30 degrees from the horizon (dBi)
			Correlated	Uncorrelated	
Wi-Fi Antenna					
Dipole	2412 ~ 2462	2	7.69	4.68	--
Dipole & Monopole	5150 ~ 5250	2	5.61	5.61	-2.0
	5250 ~ 5350	2	5.37	5.37	--
	5470 ~ 5725	2	3.72/3.91 Note 6	3.72/3.91 Note 6	--
	5725 ~ 5850	2	3.72/3.91 Note 6	3.72/3.91 Note 6	--
Dipole & Monopole	5925 ~ 6425	2	4.13	4.13	-2.2
	6525 ~ 6875	2	4.54	4.54	0.0

Notes:

1. The EUT supports Cyclic Delay Diversity (CDD) mode, and CDD signals are correlated.
2. The EUT also supports Beam Forming mode, and the Beam Forming support 802.11n/ac/ax/be, not include 802.11a/b/g.
3. For beamforming operation, the software automatically backs power down based on CDD power.
4. The detail calculation method of directional gain refers to antenna report provided by the applicant.
5. Uncorrelated Directional Gain is for EIRP calculation, and Correlated Directional Gain is for PSD calculation.
6. For WLAN Config 2, Correlated Gain and Uncorrelated Gain of Frequency 5470 ~ 5725 MHz is 3.91 dBi, Correlated Gain and Uncorrelated Gain of Frequency 5725 ~ 5850 MHz is 3.91 dBi.

AP571e

Antenna Type	Frequency (MHz)	TX Paths	Max. Antenna Gain (dBi)	Max. Directional Gain (dBi)		Antenna Gain above 30 degrees from the horizon (dBi)
				For Power	For PSD	
Wi-Fi Antenna						
Dipole	2412 ~ 2462	2	1.00	1.00	4.01	--
	5150 ~ 5250	2	1.40/0.50 Note 5	1.40/0.50 Note 5	4.41/3.51 Note 5	1.40
	5250 ~ 5350	2	1.40/0.50 Note 5	1.40/0.50 Note 5	4.41/3.51 Note 5	--
	5470 ~ 5725	2	1.40/0.50 Note 5	1.40/0.50 Note 5	4.41/3.51 Note 5	--
	5725 ~ 5850	2	1.40/0.50 Note 5	1.40/0.50 Note 5	4.41/3.51 Note 5	--
Dipole	5925 ~ 6425	2	-0.50	-0.50	2.51	-0.50
	6525 ~ 6875	2	-0.50	-0.50	2.51	-0.50

Notes:

1. The EUT supports Cyclic Delay Diversity (CDD) mode, and CDD signals are correlated.
2. The EUT also supports Beam Forming mode, and the Beam Forming support 802.11n/ac/ax/be, not include 802.11a/b/g.
3. For beamforming operation, the software automatically backs power down based on CDD power.
4. The detail calculation method of directional gain refers to antenna report provided by the applicant.
5. For WLAN Config 2, Max. Directional Gain for Power of Frequency 5150 ~ 5850 MHz is 0.5 dBi, Max. Directional Gain for PSD of Frequency 5150 ~ 5850 MHz is 3.51 dBi.
6. Antenna Gain above 30 degrees from the horizon (dBi) uses Max. Antenna Gain (dBi).

1.8. WLAN Configuration

Model No.	WLAN Antenna Port	WLAN Config 1 - Supporting Band	WLAN Config 2 - Supporting Band
AP571/ AP571e	5GHz 2TX Port	5G Full Band: U-NII-1 (5150-5250 MHz) U-NII-2A (5250-5350 MHz) U-NII-2C (5470-5725 MHz) U-NII-3 (5725-5850 MHz)	5GL Band: U-NII-1 (5150-5250 MHz) U-NII-2A (5250-5350 MHz)
	2GHz 2TX Port	2412 to 2462 MHz	2412 to 2462 MHz
	6GHz 2TX Port	U-NII-5 (5925-6425 MHz) U-NII-7 (6525-6875 MHz)	5GH Band: U-NII-2C (5470-5725 MHz) U-NII-3 (5725-5850 MHz)
Note: WLAN Config 1 and WLAN Config 2 only differ in the software settings and there are no changes in the hardware.			

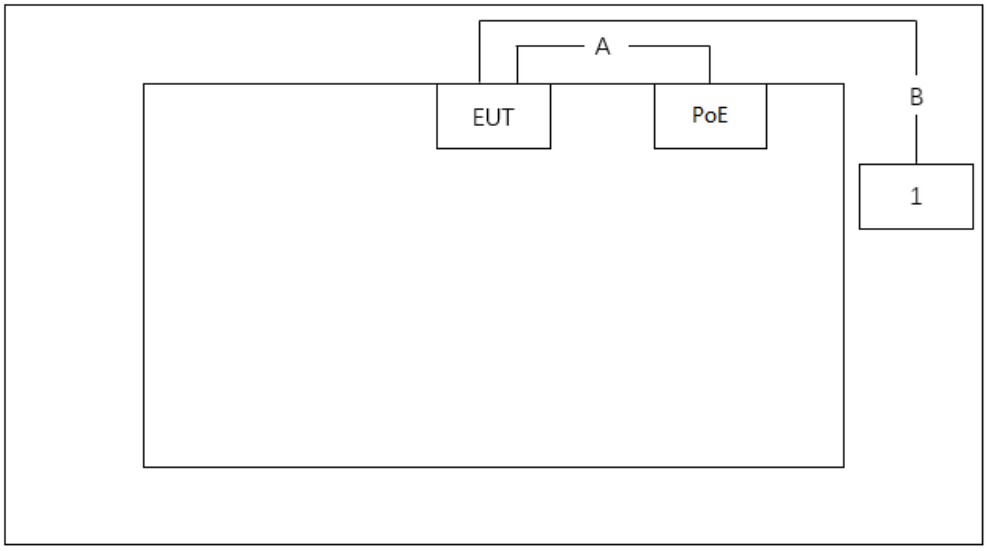
2. Test Configuration

2.1. Test Mode

Mode 1: Transmit by 802.11a (6Mbps)
Mode 2: Transmit by 802.11ac-VHT20 (MCS0)
Mode 3: Transmit by 802.11ac-VHT40 (MCS0)
Mode 4: Transmit by 802.11ac-VHT80 (MCS0)
Mode 5: Transmit by 802.11ac-VHT160 (MCS0)
Mode 6: Transmit by 802.11ax-HE20 (MCS0)
Mode 7: Transmit by 802.11ax-HE40 (MCS0)
Mode 8: Transmit by 802.11ax-HE80 (MCS0)
Mode 9: Transmit by 802.11ax-HE160 (MCS0)
Mode 10: Transmit by 802.11be-EHT20 (MCS0)
Mode 11: Transmit by 802.11be-EHT40 (MCS0)
Mode 12: Transmit by 802.11be-EHT80 (MCS0)
Mode 13: Transmit by 802.11be-EHT160 (MCS0)
Note 1: 802.11n, 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.

2.2. Test System Connection Diagram

The device was tested per the guidance ANSI C63.10: 2020 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	LAN Cable	Non-Shielded	1.5 m
B	LAN Cable	Non-Shielded	> 10 m
Product		Manufacturer	Model No.
1	Notebook	ThinkPad	E14 Gen5

2.3. Test Software

The test utility software used during testing was “QSPR” and the version was “5.0-00202”.

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 D02 v02 r01
- KDB 662911 D01 v02 r01
- ANSI C63.10-2020

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."

Conclusion:

The unit complies with the requirement of §15.203.

4. Measuring Instrument

Instrument	Manufacturer	Model No.	Asset No.	Cali. Interval	Cali. Due Date	Test Site
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
EMI Test Receiver	R&S	ESR3	MRTSUE06185	1 year	2025-12-05	SIP-AC1
Signal Analyzer	Keysight	N9010B	MRTSUE06559	1 year	2026-04-26	SIP-AC2
Horn Antenna	Schwarzbeck	BBHA 9120D	MRTSUE06648	1 year	2025-10-20	SIP-AC2
Preamplifier	EMCI	EMC051845SE	MRTSUE06601	1 year	2025-11-01	SIP-AC2
Anechoic Chamber	RIKEN	SIP-AC2	MRTSUE06781	1 year	2025-12-19	SIP-AC2
Preamplifier	EMCI	EMC184045SE	MRTSUE06602	1 year	2025-10-08	SIP-AC3
EMI Test Receiver	R&S	ESR3	MRTSUE06613	1 year	2025-10-13	SIP-AC3
Active Loop Antenna	Schwarzbeck	FMZB 1519-60 D	MRTSUE07075	1 year	2025-11-19	SIP-AC3
Signal Analyzer	Keysight	N9010B	MRTSUE07028	1 year	2025-10-13	SIP-AC3
Horn Antenna	Schwarzbeck	BBHA 9170	MRTSUE06599	1 year	2025-09-08	SIP-AC3
Preamplifier	Schwarzbeck	BBV 9721	MRTSUE06121	1 year	2026-01-21	SIP-AC3
Horn Antenna	R&S	HF907	MRTSUE06611	1 year	2026-06-20	SIP-AC3
Thermohygrometer	testo	608-H1	MRTSUE06619	1 year	2025-10-16	SIP-AC3
Preamplifier	EMCI	EMC012645SE	MRTSUE06642	1 year	2026-01-05	SIP-AC3
Anechoic Chamber	RIKEN	SIP-AC3	MRTSUE06782	1 year	2025-12-19	SIP-AC3
USB Power Sensor	Keysight	U2021XA	MRTSUE06596	1 year	2025-07-23 2026-07-14	SIP-TR1
Temperature Chamber	BAOYT	BYG-408CS	MRTSUE06847	1 year	2026-01-21	SIP-TR1
Signal Analyzer	Keysight	N9010B	MRTSUE07036	1 year	2026-01-21	SIP-TR1
Thermohygrometer	testo	608-H1	MRTSUE11022	1 year	2025-10-16	SIP-TR1
Attenuator	MVE	MVE2213	MRTSUE11103	1 year	2026-06-04	SIP-TR1
Attenuator	MVE	MVE2213	MRTSUE11111	1 year	2025-08-01	SIP-TR1
Attenuator	MVE	MVE2213	MRTSUE11111	1 year	2026-07-31	SIP-TR1
Cable	HUBER+SUHNER	RG 233/U	MRTSUE06872	1 year	2025-12-23	SIP-SR2
Cable	HUBER+SUHNER	SF106	MRTSUE06873	1 year	2025-12-19	SIP-AC3
Attenuator	MVE	MVE2213	MRTSUE11103	1 year	2026-06-04	SIP-TR1
Attenuator	MVE	MVE2213	MRTSUE11111	1 year	2025-08-01 2026-07-31	SIP-TR1

Software	Version	Function
e3	230711	RE & CE
Controller_MF 7802BS	1.02	RE Antenna & Turntable
Agilent Power Analyzer/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=2 Uc(y)): 2.5 dB
Output Power
Measuring Uncertainty for a Level of Confidence of 95% (U=2 Uc(y)): 1.5 dB
Power Spectrum Density
Measuring Uncertainty for a Level of Confidence of 95% (U=2 Uc(y)): 2.5 dB
Occupied Bandwidth
Measuring Uncertainty for a Level of Confidence of 95% (U=2 Uc(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)(i), (2), (3)(i)	Maximum Conducted Output Power		Pass
15.407(h)(1)	Transmit Power Control		Pass
15.407(g)	Frequency Stability		Pass
15.407(a)(1)(i), (2), (3)(i)	Peak Power Spectral Density		Pass
15.407(h)(2)	Dynamic Frequency Selection (DFS)		Pass Remark 3
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 150 kHz - 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. DFS report refer to R25S1073095-U205.
4. Model AP571 and AP571e have different Wi-Fi Antennas, others are identical. Therefore AP571 is selected for full test, while AP571e only undergoes testing for Output Power, Power Spectral Density, Radiated Spurious Emission and Radiated Restricted Band Edge after evaluation.
5. For WLAN Config 2, only the 5GH band was tested; the data for the 5GL band is referenced from WLAN Config 1.

6.2. 26 dB & 99% Bandwidth Measurement

6.2.1. Test Limit

N/A

6.2.2. Test Procedure

KDB 789033 D02 v02 r01- Section Ⅱ)C)1) (26 dB Bandwidth)

KDB 789033 D02 v02 r01- Section Ⅱ)D) (99% Bandwidth)

6.2.3. Test Setting

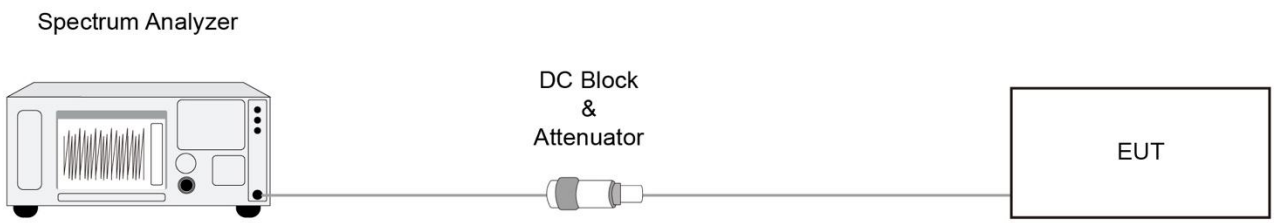
26 dB Bandwidth

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 dB bandwidth shall be at least 500 kHz.

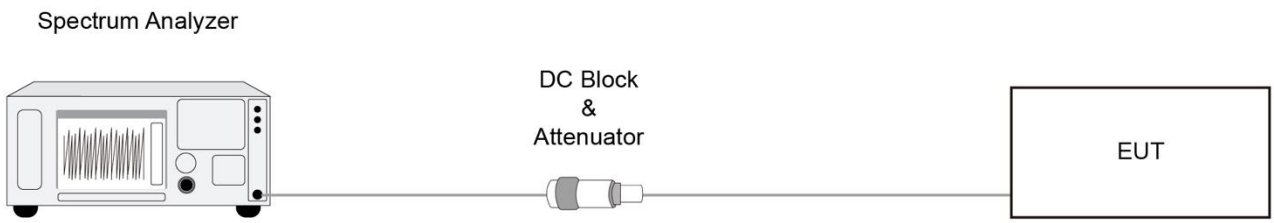
6.3.2. Test Procedure

KDB 789033 D02 v02 r01- 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.

The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exce ed 125 mW (21 dBm).

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 (30 dBm).

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

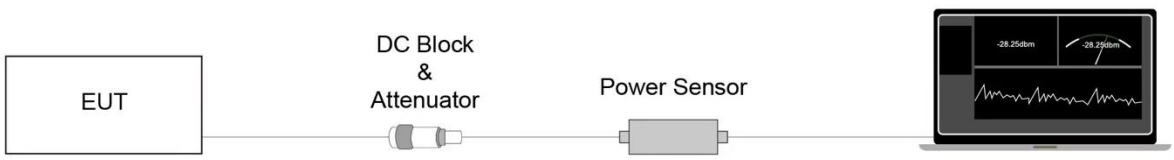
KDB 789033 D02 v02 r01- Section Ⅱ)E)3)b) Method PM-G

6.4.3. Test Setting

<u>Average Power Measurement</u>

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.

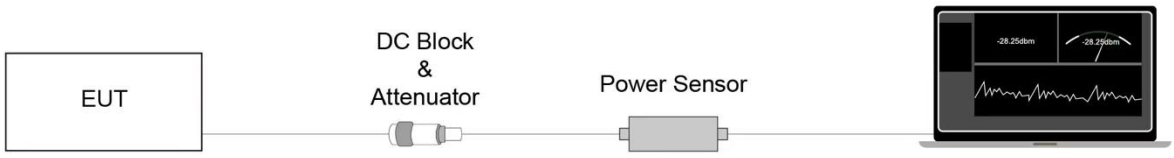
6.5.2. Test Procedure

KDB 789033 D02 v02 r01- 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.

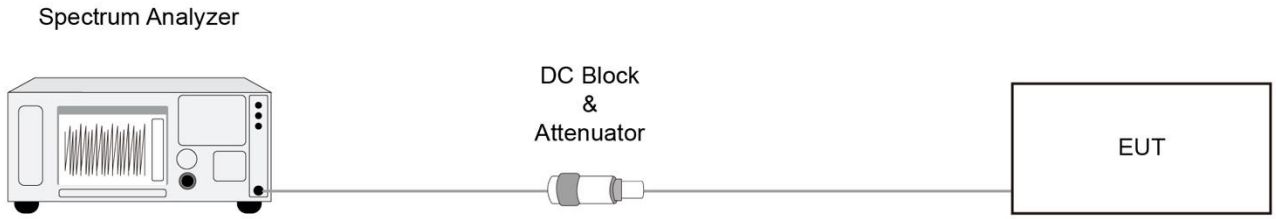
6.6.2. Test Procedure

KDB 789033 D02 v02 r01-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:

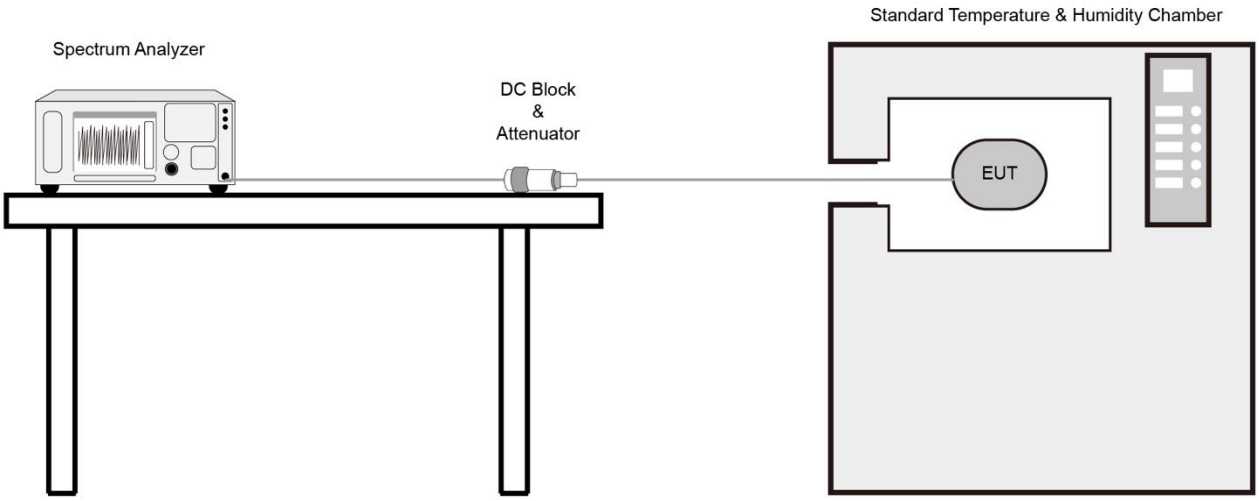
The equipment under test was connected to an external AC or DC power supply and input rated voltage. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. The EUT was placed inside the temperature chamber. Set the spectrum analyzer RBW low enough to obtain 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, recordthe maximum frequency change.

6.7.3. Test Setup



6.7.4. Test Result

Refer to Appendix A.6.

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 D02 v02 r01- 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	1 MHz

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 1 MHz
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

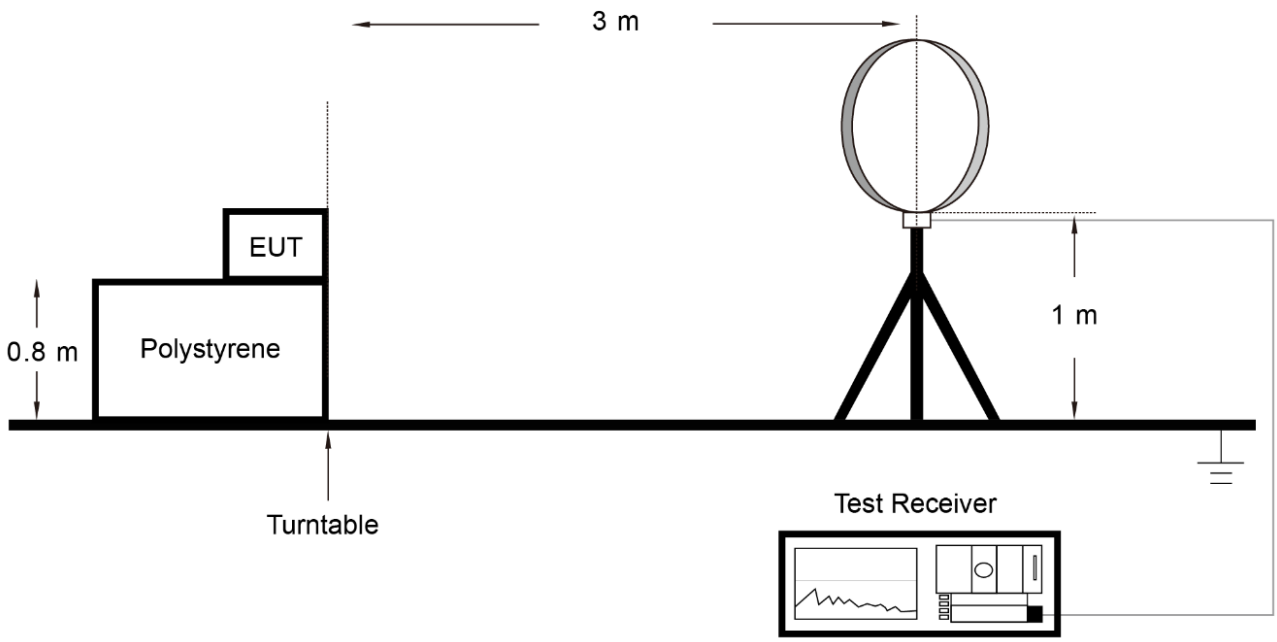
Average Measurements above 1 GHz (Method VB)

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

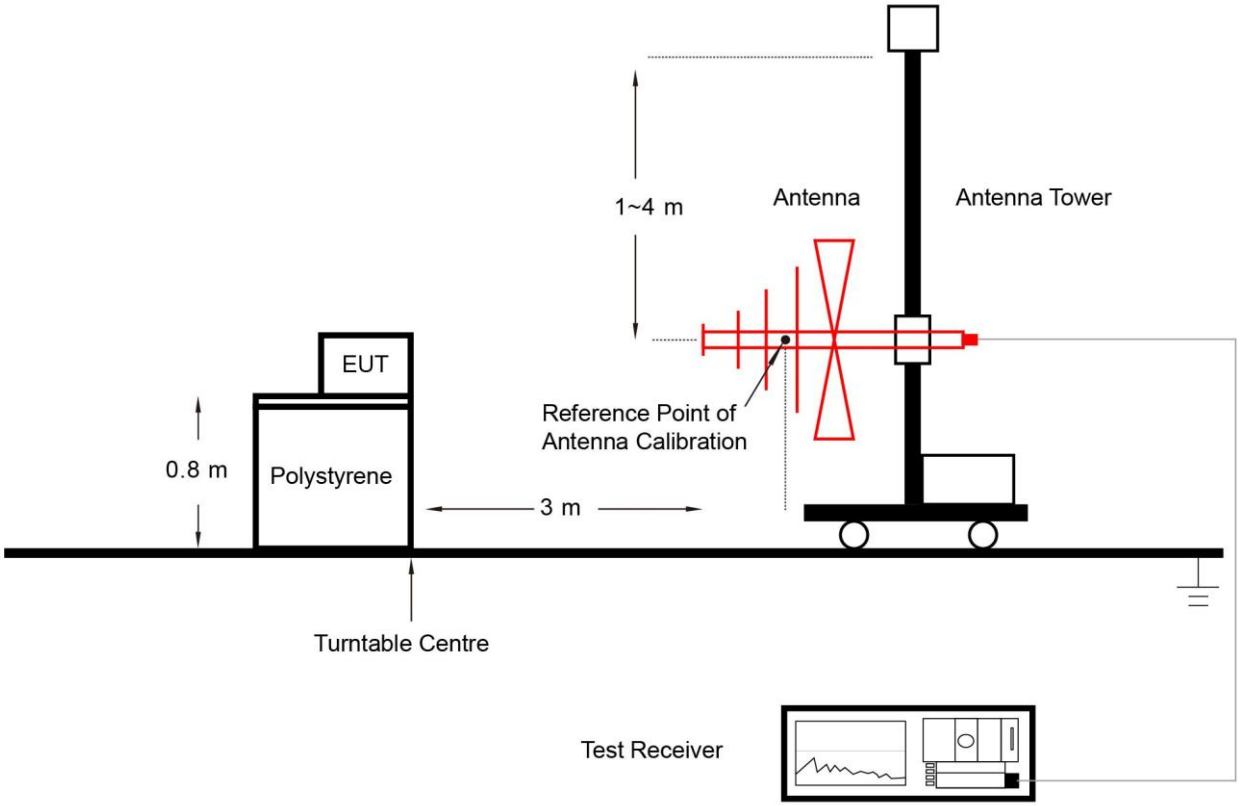
   If the EUT duty cycle is < 98%, set VBW ≥ 1/T. T is the minimum transmission duration.
4. As an alternative, the instrument may be set to linear detector mode. Ensure that video filtering is applied in linear voltage domain (rather than in a log or dB domain). Some instruments require linear display 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. Trace was allowed to stabilize

6.8.4. Test Setup

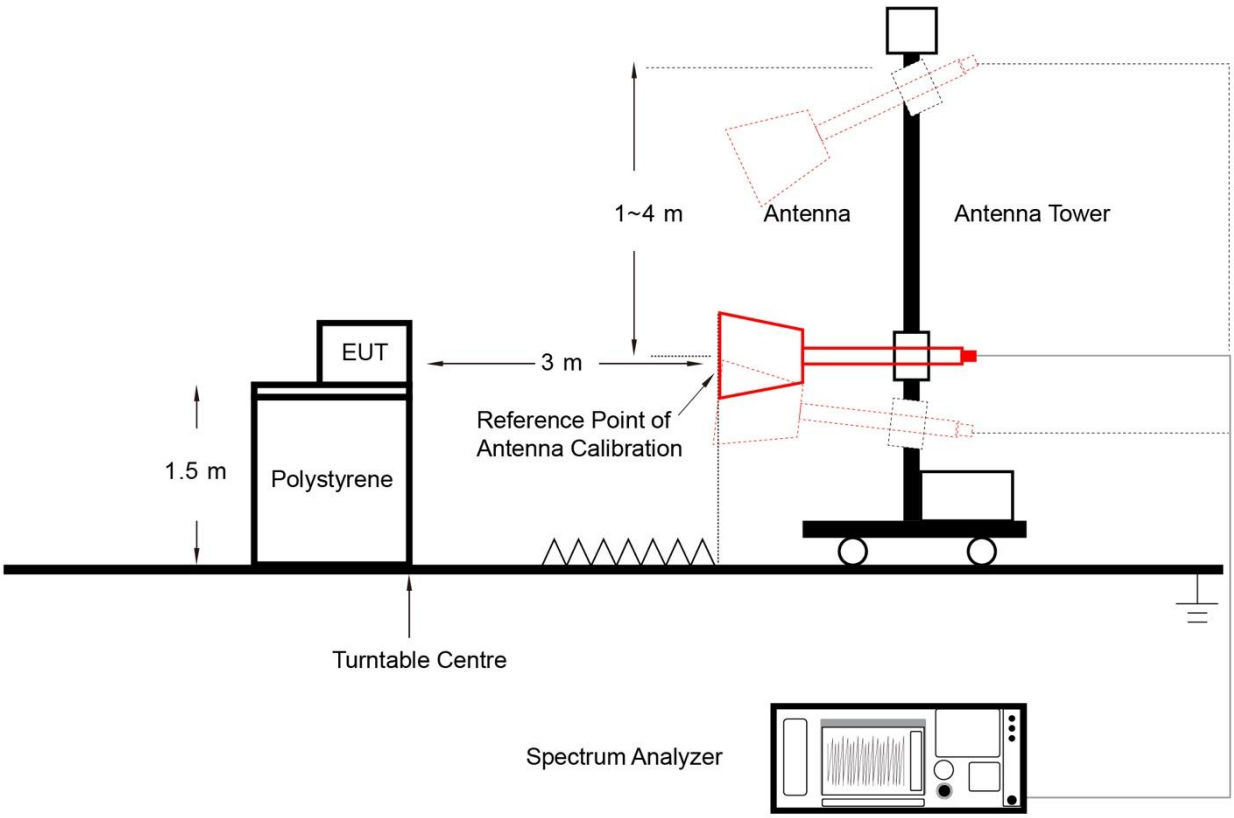
Below 30 MHz Test Setup:



Below 1 GHz Test Setup:



Above 1 GHz Test Setup:



6.8.5. Test Result

Refer to Appendix A.7.

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 D02 v02 r01 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 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

6.9.2. Test Procedure

KDB 789033 D02 v02 r01- Section II)G)

6.9.3. Test Setting

Peak Field Strength Measurements

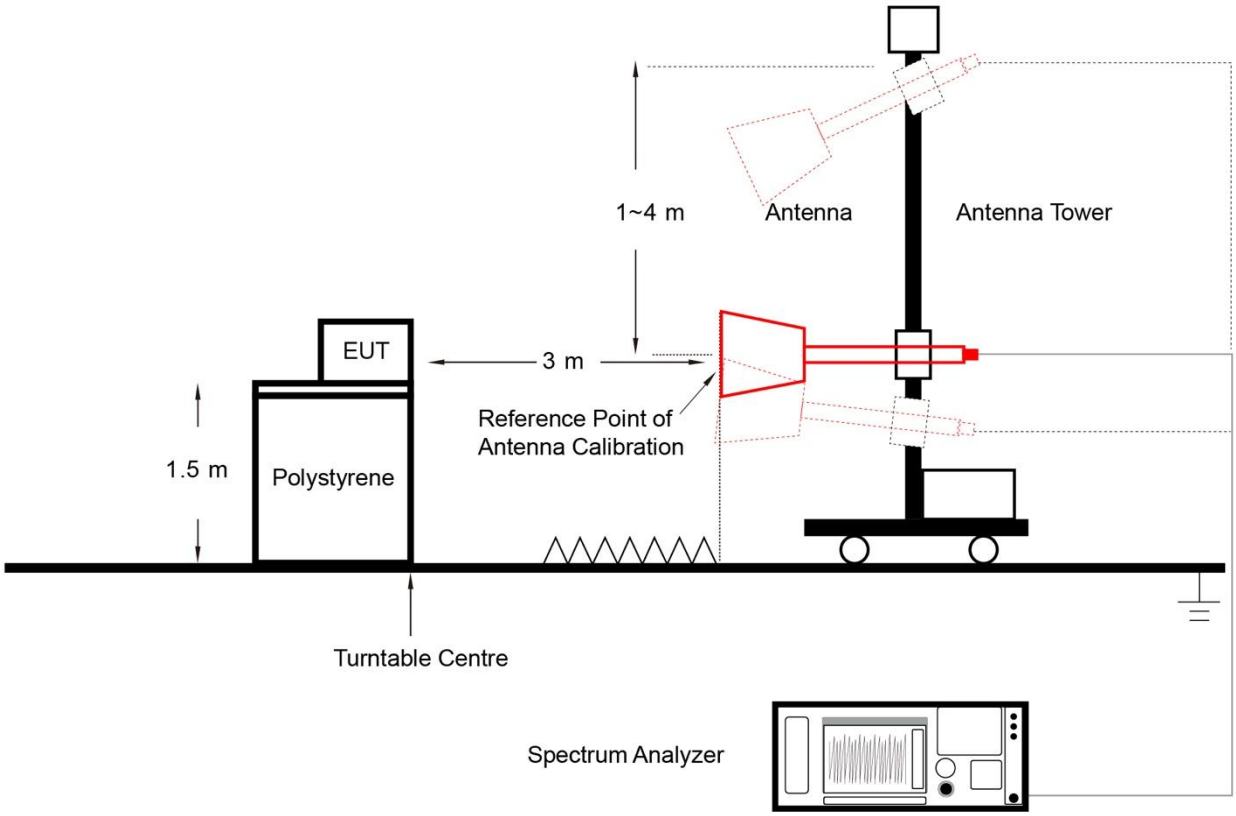
1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1 MHz
3. VBW = 3 MHz
4. Detector = peak
5. Sweep time = auto couple
6. Trace mode = max hold
7. Trace was allowed to stabilize

Average Field Strength Measurements

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1 MHz
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

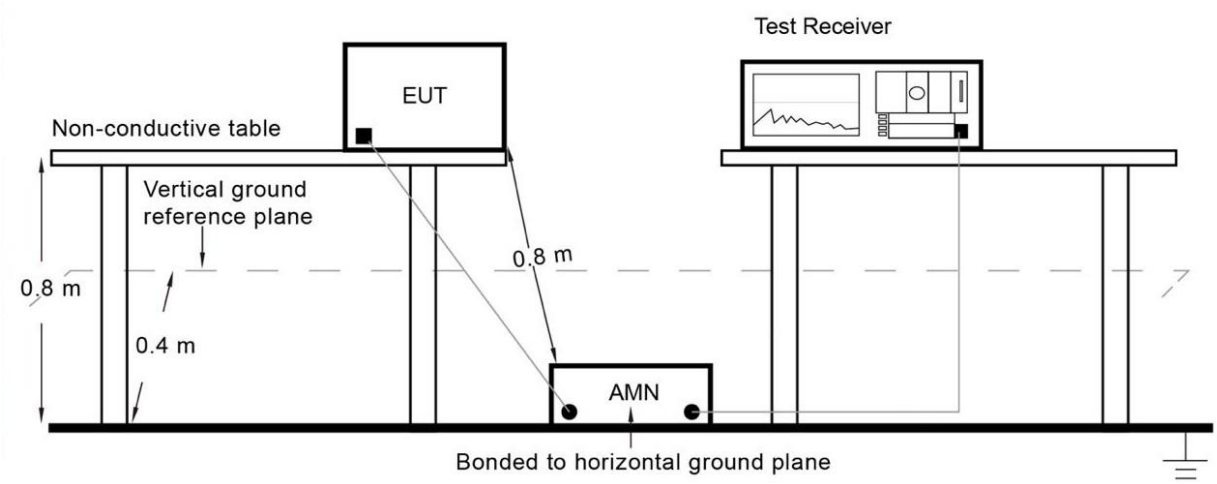
Refer to Appendix A.8.

6.10. AC Conducted Emissions Measurement

6.10.1. Test Limit

FCC Part 15.207 Limits		
Frequency (MHz)	QP (dBμV)	AV (dBμV)
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.9.

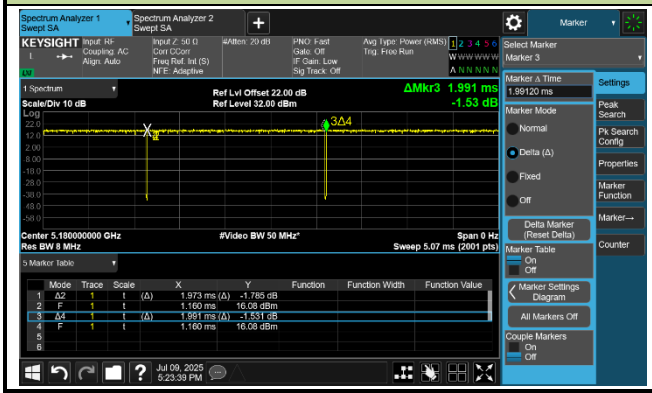
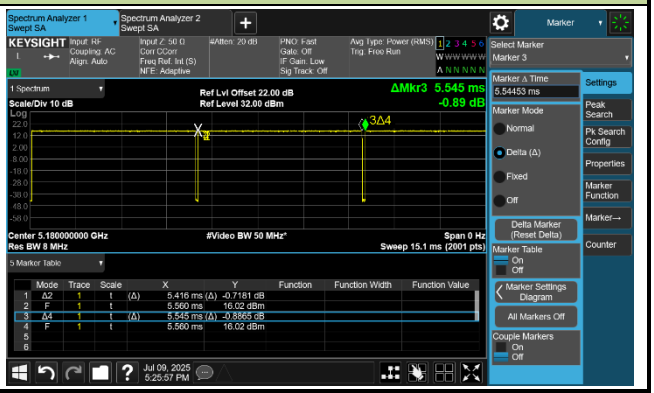
Appendix A – Test Result

A.1 Duty Cycle Test Result

AP571 - WLAN Config 1

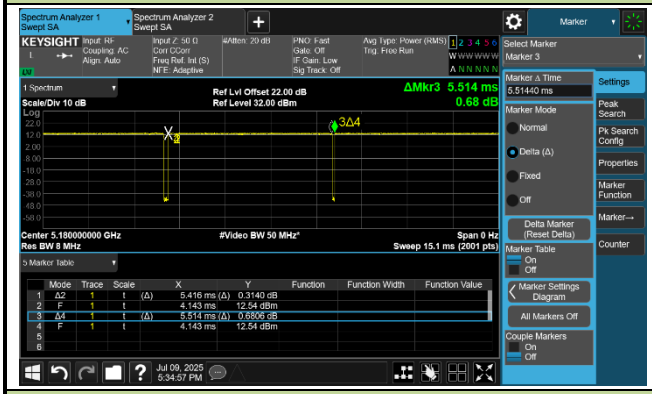
Test Site	SIP-TR1	Test Engineer	Nolan Chen
Test Date	2025-07-09 ~ 2025-07-20		

Test Mode	Duty Cycle
802.11a	99.10%
802.11ac-VHT20	97.67%
802.11ac-VHT40	98.22%
802.11ac-VHT80	97.04%
802.11ac-VHT160	98.36%
802.11ax-HE20	97.82%
802.11ax-HE40	97.14%
802.11ax-HE80	98.28%
802.11ax-HE160	97.90%
802.11be-EHT20	97.70%
802.11be-EHT40	97.32%
802.11be-EHT80	97.78%
802.11be-EHT160	97.74%

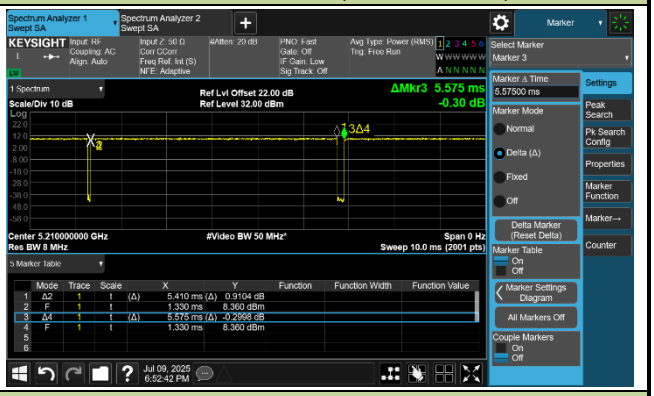
Duty Cycle (T = Transmission Duration)	
802.11a (T = 1.973 ms)	802.11ac-VHT20 (T = 5.416 ms)
	

Duty Cycle (T = Transmission Duration)

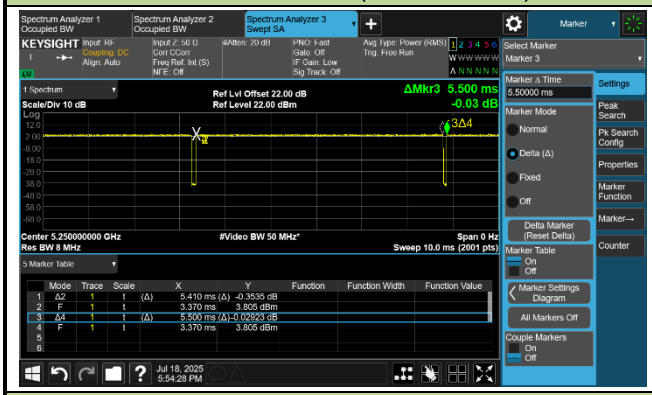
802.11ac-VHT40 (T = 5.416 ms)



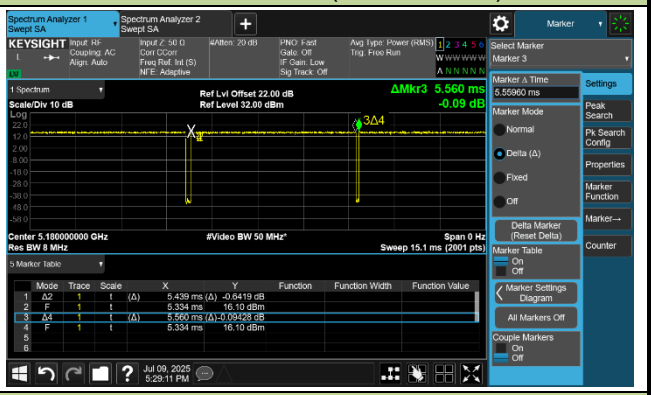
802.11ac-VHT80 (T = 5.410 ms)



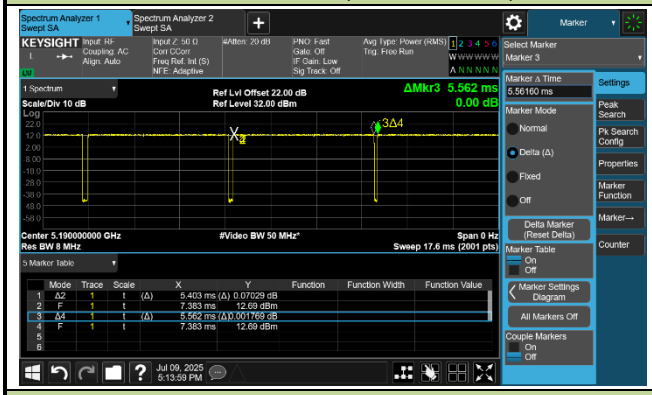
802.11ac-VHT160 (T = 5.410 ms)



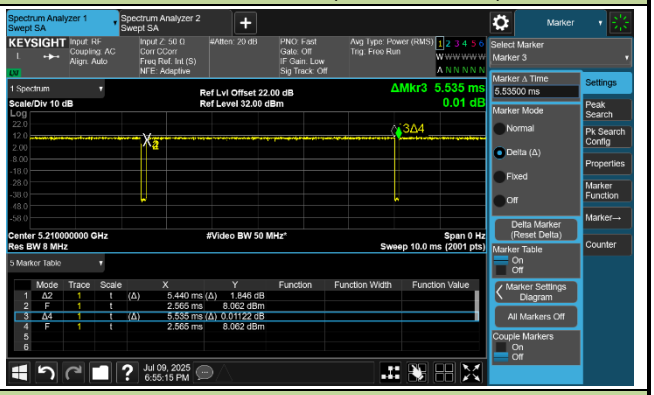
802.11ax-HE20 (T = 5.439 ms)



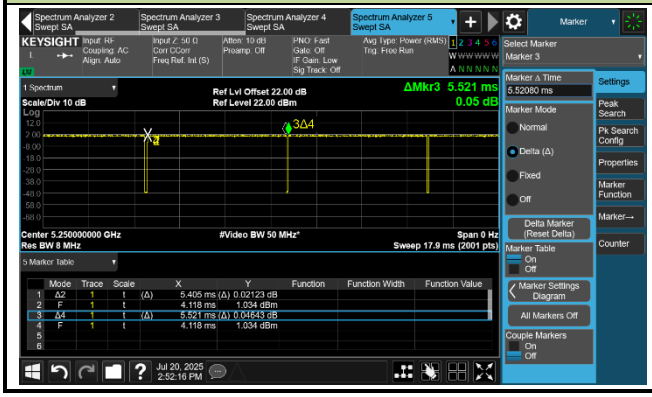
802.11ax-HE40 (T = 5.403 ms)



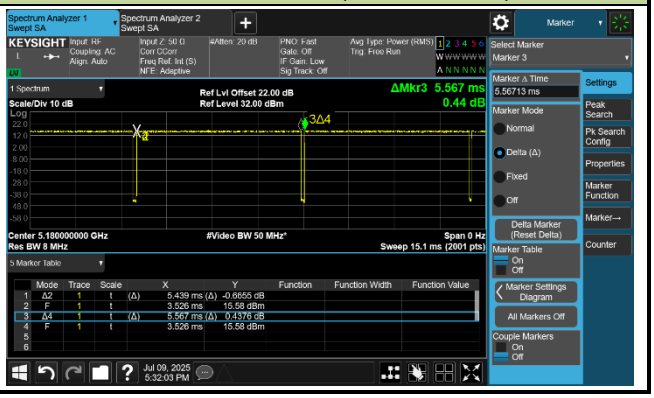
802.11ax-HE80 (T = 5.440 ms)

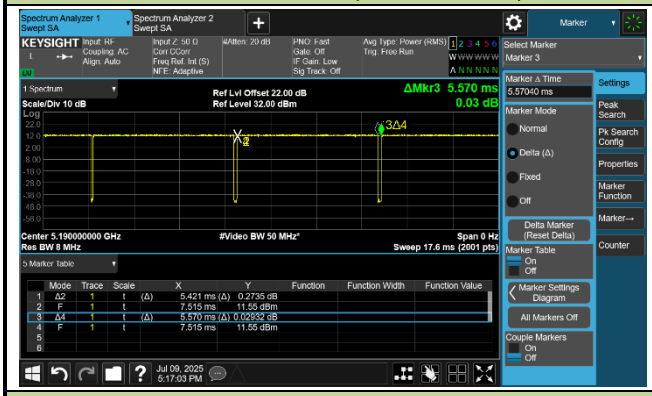
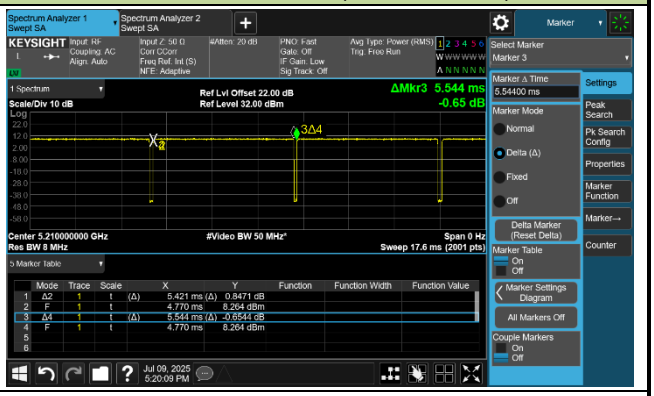
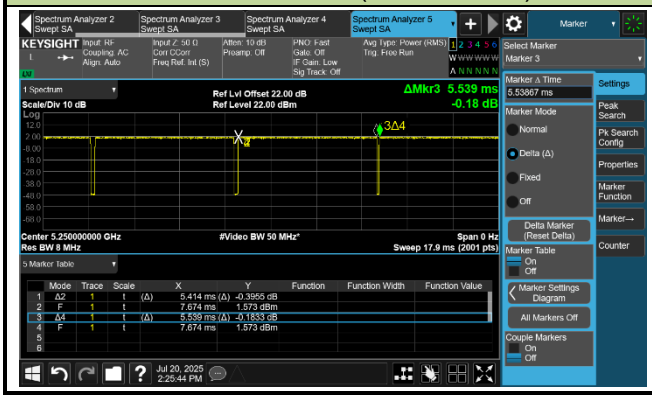


802.11ax-HE160 (T = 5.405 ms)



802.11be-EHT20 (T = 5.439 ms)

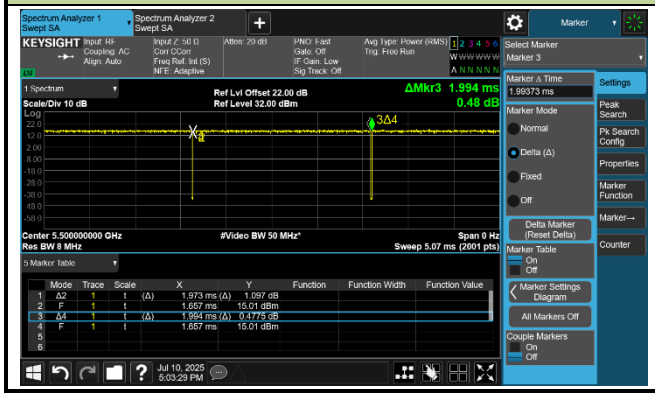
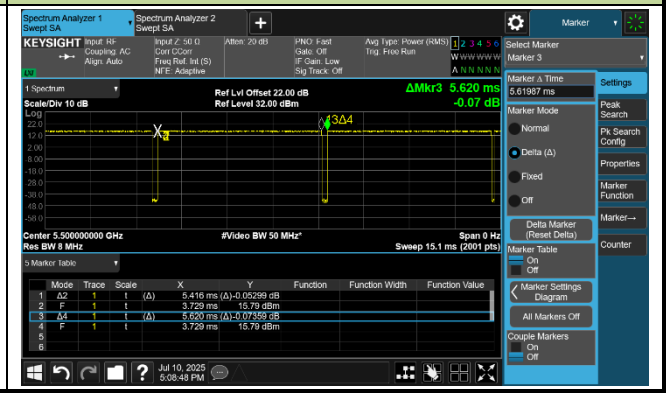


Duty Cycle (T = Transmission Duration)	
802.11be-EHT40 (T = 5.421 ms)	802.11be-EHT80 (T = 5.421 ms)
	
802.11be-EHT160 (T = 5.414 ms)	
	

AP571 - WLAN Config 2

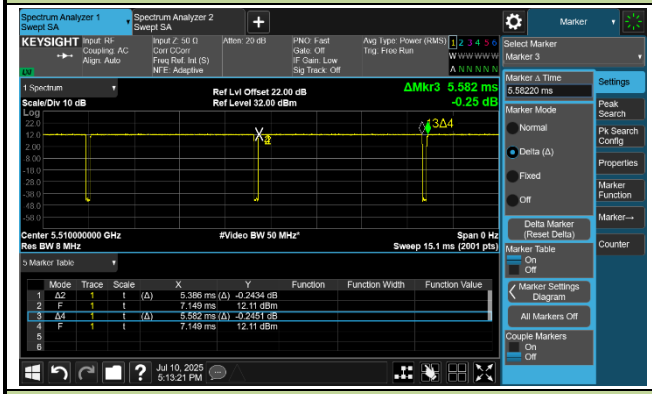
Test Site	SIP-TR1	Test Engineer	Nolan Chen
Test Date	2025-07-10 ~ 2025-07-12		

Test Mode	Duty Cycle
802.11a	98.95%
802.11ac-VHT20	96.37%
802.11ac-VHT40	96.49%
802.11ac-VHT80	96.48%
802.11ac-VHT160	98.24%
802.11ax-HE20	96.52%
802.11ax-HE40	96.65%
802.11ax-HE80	97.18%
802.11ax-HE160	97.24%
802.11be-EHT20	97.57%
802.11be-EHT40	97.31%
802.11be-EHT80	97.15%
802.11be-EHT160	96.54%

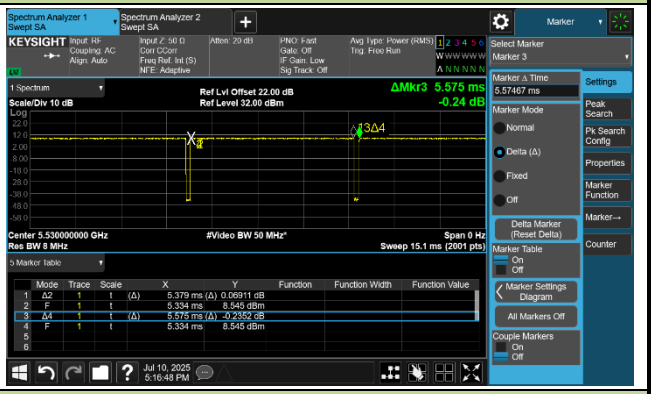
Duty Cycle (T = Transmission Duration)	
802.11a (T = 1.973 ms)	802.11ac-VHT20 (T = 5.416 ms)
	

Duty Cycle (T = Transmission Duration)

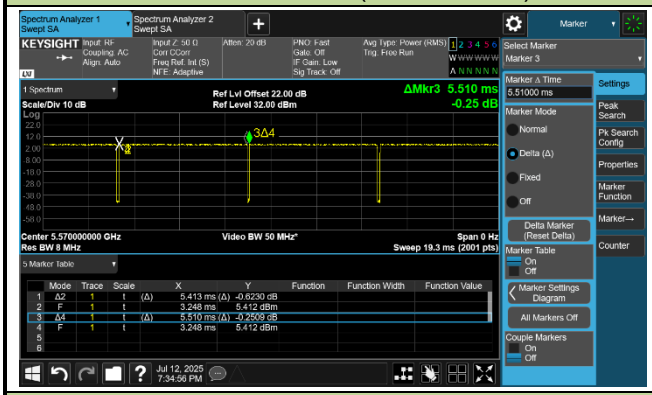
802.11ac-VHT40 (T = 5.386 ms)



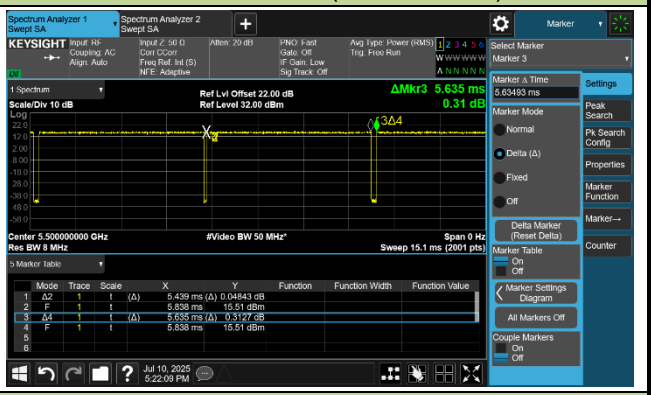
802.11ac-VHT80 (T = 5.379 ms)



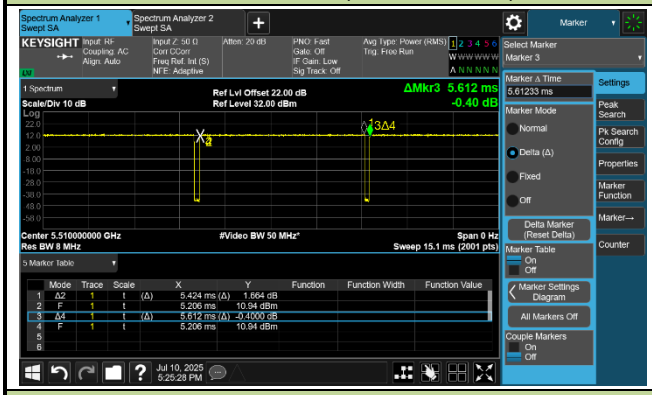
802.11ac-VHT160 (T = 5.413 ms)



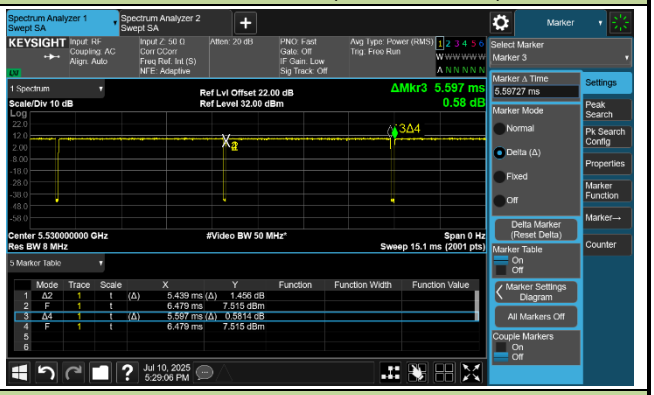
802.11ax-HE20 (T = 5.439 ms)



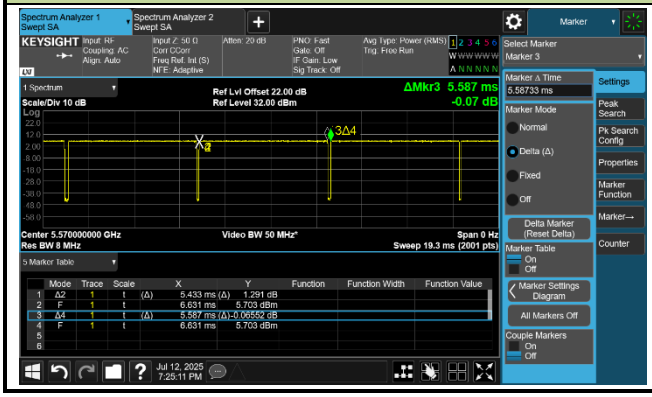
802.11ax-HE40 (T = 5.424 ms)



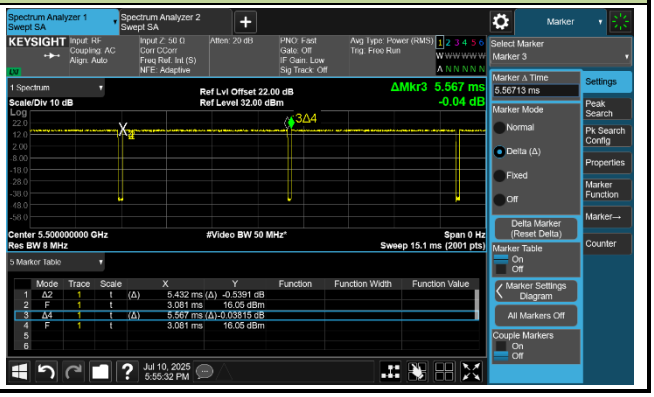
802.11ax-HE80 (T = 5.439 ms)

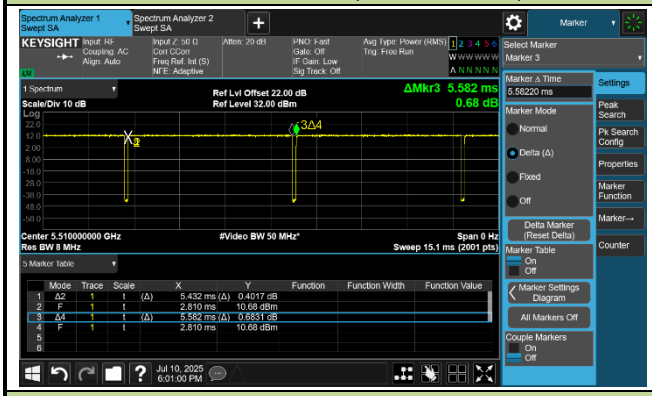
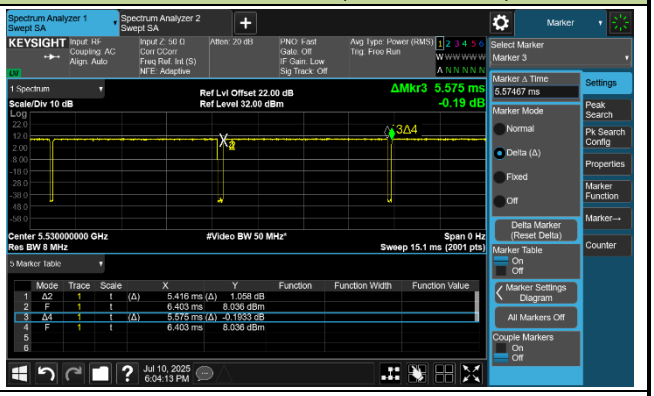
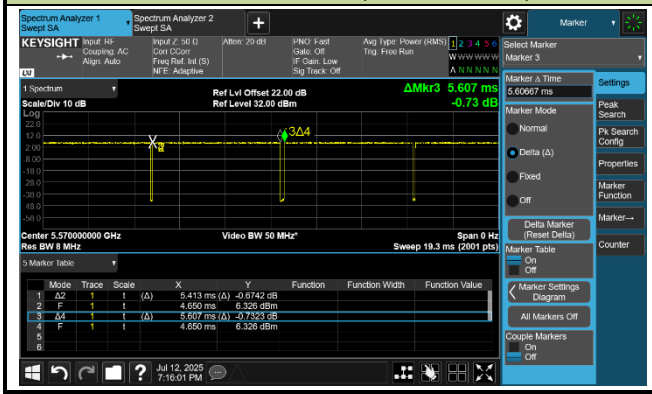


802.11ax-HE160 (T = 5.433 ms)



802.11be-EHT20 (T = 5.432 ms)



Duty Cycle (T = Transmission Duration)	
802.11be-EHT40 (T = 5.432 ms)	802.11be-EHT80 (T = 5.416 ms)
	
802.11be-EHT160 (T = 5.413 ms)	
	

A.2 26 dB Bandwidth Test Result

AP571 - WLAN Config 1

Test Site	SIP-TR1	Test Engineer	Nolan Chen
Test Date	2025-07-15 ~ 2025-07-22		

Test Mode	Data Rate/ MCS	Channel No.	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
11a	6 Mbps	36	5180	22.29	16.913
11a	6 Mbps	44	5220	22.44	16.820
11a	6 Mbps	48	5240	22.45	16.874
11a	6 Mbps	52	5260	22.37	16.826
11a	6 Mbps	60	5300	22.41	16.828
11a	6 Mbps	64	5320	22.43	16.826
11a	6 Mbps	100	5500	22.24	16.852
11a	6 Mbps	116	5580	22.14	16.856
11a	6 Mbps	140	5700	22.46	16.915
11a	6 Mbps	144	5720	22.22	16.788
11a	6 Mbps	149	5745	22.41	16.956
11a	6 Mbps	157	5785	22.34	16.902
11a	6 Mbps	165	5825	23.02	16.855
11ac-VHT20	MCS0	36	5180	23.03	18.027
11ac-VHT20	MCS0	44	5220	23.16	17.938
11ac-VHT20	MCS0	48	5240	22.92	18.012
11ac-VHT20	MCS0	52	5260	22.48	17.908
11ac-VHT20	MCS0	60	5300	23.12	17.906
11ac-VHT20	MCS0	64	5320	22.91	17.883
11ac-VHT20	MCS0	100	5500	22.58	17.883
11ac-VHT20	MCS0	116	5580	22.35	17.890
11ac-VHT20	MCS0	140	5700	23.05	17.903
11ac-VHT20	MCS0	144	5720	22.76	17.903
11ac-VHT20	MCS0	149	5745	23.64	17.938
11ac-VHT20	MCS0	157	5785	22.61	17.950
11ac-VHT20	MCS0	165	5825	23.52	17.968

Test Mode	Data Rate/ MCS	Channel No.	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
11ac-VHT40	MCS0	38	5190	44.42	36.529
11ac-VHT40	MCS0	46	5230	45.09	36.486
11ac-VHT40	MCS0	54	5270	44.23	36.586
11ac-VHT40	MCS0	62	5310	44.98	36.534
11ac-VHT40	MCS0	102	5510	43.85	36.551
11ac-VHT40	MCS0	110	5550	43.52	36.558
11ac-VHT40	MCS0	134	5670	44.85	36.588
11ac-VHT40	MCS0	142	5710	44.39	36.521
11ac-VHT40	MCS0	151	5755	44.53	36.533
11ac-VHT40	MCS0	159	5795	45.78	36.611
11ac-VHT80	MCS0	42	5210	92.12	76.080
11ac-VHT80	MCS0	58	5290	93.73	76.498
11ac-VHT80	MCS0	106	5530	91.34	76.228
11ac-VHT80	MCS0	122	5610	93.16	76.368
11ac-VHT80	MCS0	138	5690	94.31	76.153
11ac-VHT80	MCS0	155	5775	92.54	76.173
11ac-VHT160	MCS0	50	5250	173.8	155.32
11ac-VHT160	MCS0	114	5570	171.3	155.62
11ax-HE20	MCS0	36	5180	22.80	19.090
11ax-HE20	MCS0	44	5220	22.28	19.047
11ax-HE20	MCS0	48	5240	22.24	19.065
11ax-HE20	MCS0	52	5260	21.96	19.057
11ax-HE20	MCS0	60	5300	22.44	19.124
11ax-HE20	MCS0	64	5320	22.97	19.032
11ax-HE20	MCS0	100	5500	22.47	19.049
11ax-HE20	MCS0	116	5580	22.33	19.080
11ax-HE20	MCS0	140	5700	22.24	19.076
11ax-HE20	MCS0	144	5720	22.56	19.065
11ax-HE20	MCS0	149	5745	22.46	19.057
11ax-HE20	MCS0	157	5785	22.83	19.114
11ax-HE20	MCS0	165	5825	22.34	19.052

Test Mode	Data Rate/ MCS	Channel No.	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
11ax-HE40	MCS0	38	5190	43.87	38.018
11ax-HE40	MCS0	46	5230	42.83	38.033
11ax-HE40	MCS0	54	5270	43.77	38.072
11ax-HE40	MCS0	62	5310	42.92	38.020
11ax-HE40	MCS0	102	5510	43.03	38.016
11ax-HE40	MCS0	110	5550	44.39	38.026
11ax-HE40	MCS0	134	5670	42.98	37.992
11ax-HE40	MCS0	142	5710	42.23	37.991
11ax-HE40	MCS0	151	5755	42.52	38.086
11ax-HE40	MCS0	159	5795	43.28	38.101
11ax-HE80	MCS0	42	5210	88.41	77.635
11ax-HE80	MCS0	58	5290	87.44	77.808
11ax-HE80	MCS0	106	5530	89.15	77.688
11ax-HE80	MCS0	122	5610	89.29	77.758
11ax-HE80	MCS0	138	5690	87.64	77.549
11ax-HE80	MCS0	155	5775	88.00	77.721
11ax-HE160	MCS0	50	5250	171.4	156.98
11ax-HE160	MCS0	114	5570	171.8	156.91
11be-EHT20	MCS0	36	5180	21.76	19.079
11be-EHT20	MCS0	44	5220	22.47	19.054
11be-EHT20	MCS0	48	5240	22.84	19.088
11be-EHT20	MCS0	52	5260	23.54	19.069
11be-EHT20	MCS0	60	5300	23.08	19.120
11be-EHT20	MCS0	64	5320	23.20	19.078
11be-EHT20	MCS0	100	5500	23.12	19.118
11be-EHT20	MCS0	116	5580	23.17	19.096
11be-EHT20	MCS0	140	5700	22.48	19.082
11be-EHT20	MCS0	144	5720	22.41	19.080
11be-EHT20	MCS0	149	5745	23.24	19.162
11be-EHT20	MCS0	157	5785	22.77	19.142
11be-EHT20	MCS0	165	5825	22.70	19.093

Test Mode	Data Rate/ MCS	Channel No.	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
11be-EHT40	MCS0	38	5190	43.93	38.007
11be-EHT40	MCS0	46	5230	43.33	38.027
11be-EHT40	MCS0	54	5270	44.27	38.079
11be-EHT40	MCS0	62	5310	43.93	37.997
11be-EHT40	MCS0	102	5510	42.49	38.034
11be-EHT40	MCS0	110	5550	43.45	37.965
11be-EHT40	MCS0	134	5670	43.40	38.105
11be-EHT40	MCS0	142	5710	42.96	38.012
11be-EHT40	MCS0	151	5755	43.04	38.014
11be-EHT40	MCS0	159	5795	43.71	38.023
11be-EHT80	MCS0	42	5210	88.18	77.525
11be-EHT80	MCS0	58	5290	87.08	77.814
11be-EHT80	MCS0	106	5530	87.96	77.605
11be-EHT80	MCS0	122	5610	89.35	77.832
11be-EHT80	MCS0	138	5690	88.17	77.626
11be-EHT80	MCS0	155	5775	86.84	77.802
11be-EHT160	MCS0	50	5250	169.1	156.57
11be-EHT160	MCS0	114	5570	172.2	157.06

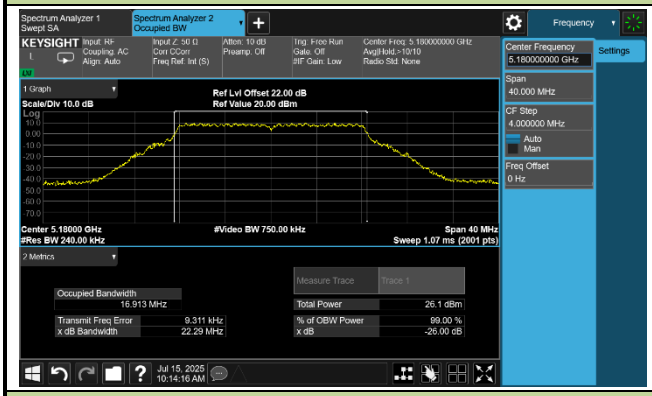
Test Mode	Data Rate/ MCS	Channel No.	Frequency (MHz)	F_H (MHz)	Limit (MHz)
802.11a	6 Mbps	48	5240	5248.44	< 5250
802.11ac-VHT20	MCS0	48	5240	5249.01	< 5250
802.11ac-VHT40	MCS0	46	5230	5248.24	< 5250
802.11ac-VHT80	MCS0	42	5210	5248.04	< 5250
802.11ax-HE20	MCS0	48	5240	5249.53	< 5250
802.11ax-HE40	MCS0	46	5230	5249.02	< 5250
802.11ax-HE80	MCS0	42	5210	5248.82	< 5250
802.11be-EHT20	MCS0	48	5240	5249.54	< 5250
802.11be-EHT40	MCS0	46	5230	5249.01	< 5250
802.11be-EHT80	MCS0	42	5210	5248.76	< 5250

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

For example, 802.11a 5240 MHz, F_H = 5240 MHz + 16.874 MHz / 2 = 5248.44 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)

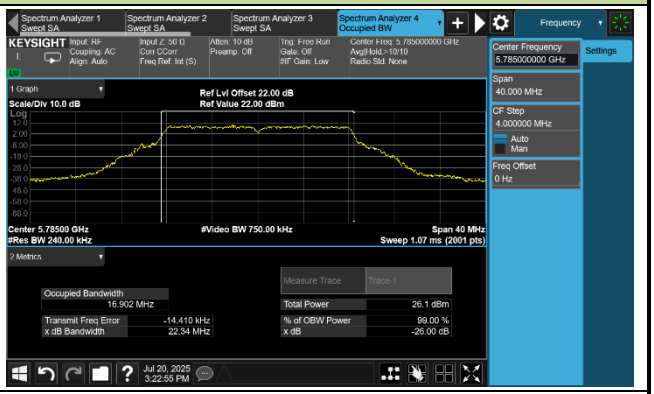
802.11a 26 dB Bandwidth & 99% Bandwidth

Channel 140 (5700 MHz)

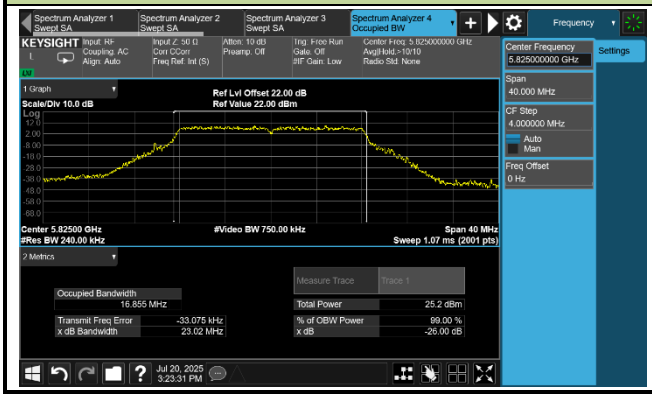
Channel 144 (5720 MHz)

Channel 149 (5745 MHz)

Channel 157 (5785 MHz)

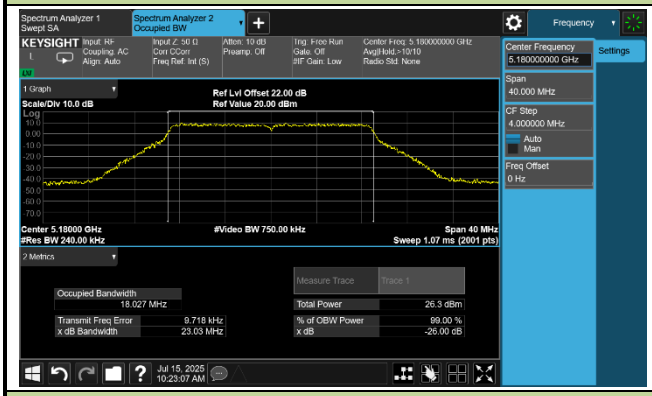


Channel 165 (5825 MHz)



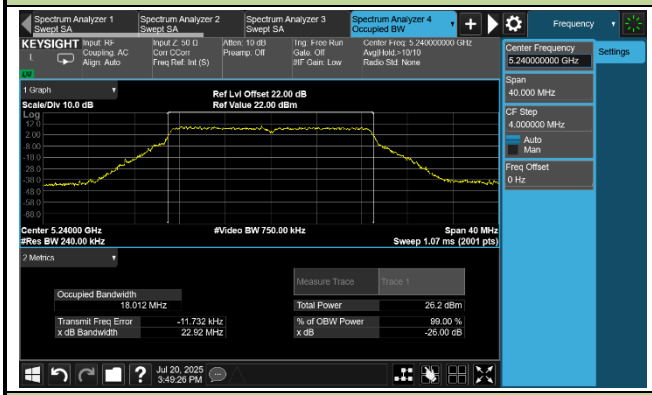
802.11ac-VHT20 26 dB Bandwidth & 99% Bandwidth

Channel 36 (5180 MHz)

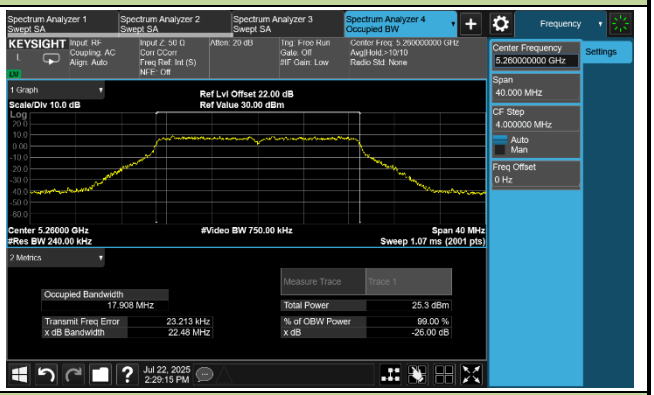


Channel 44 (5220 MHz)

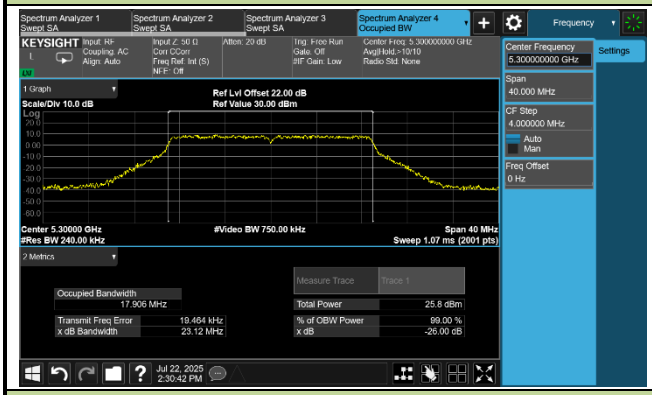
Channel 48 (5240 MHz)



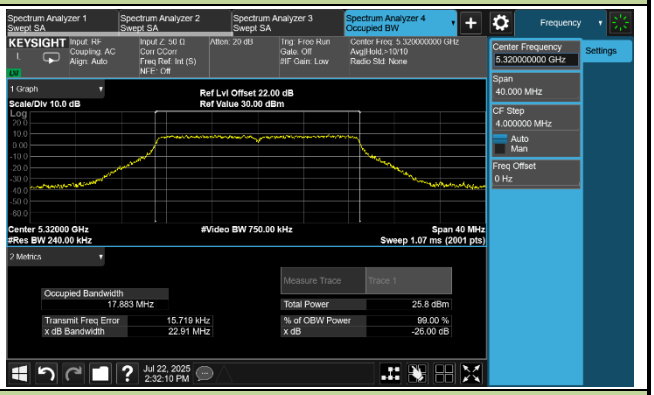
Channel 52 (5260 MHz)



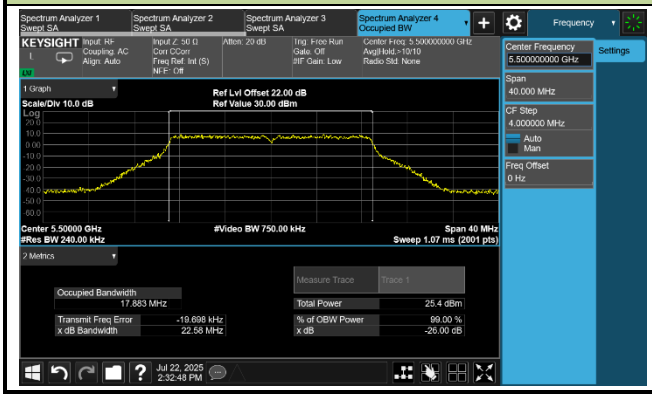
Channel 60 (5300 MHz)



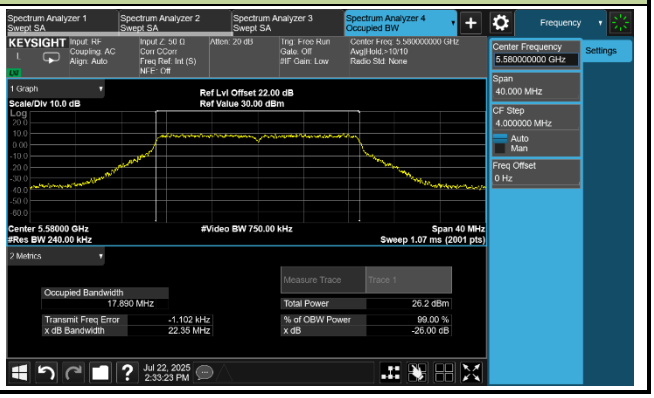
Channel 64 (5320 MHz)



Channel 100 (5500 MHz)

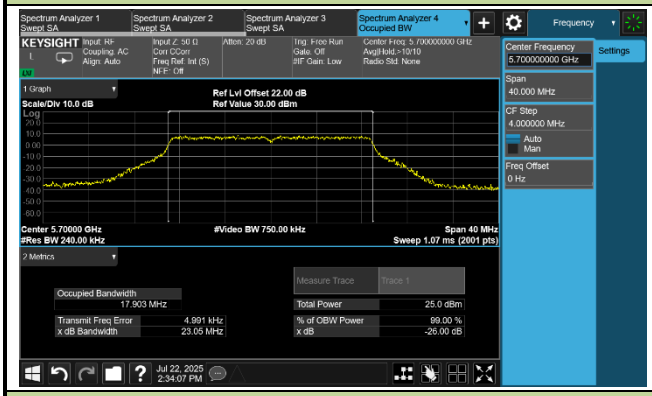


Channel 116 (5580 MHz)

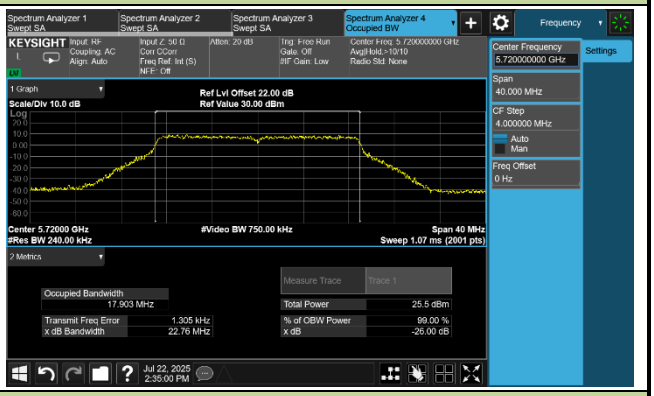


802.11ac-VHT20 26 dB Bandwidth & 99% Bandwidth

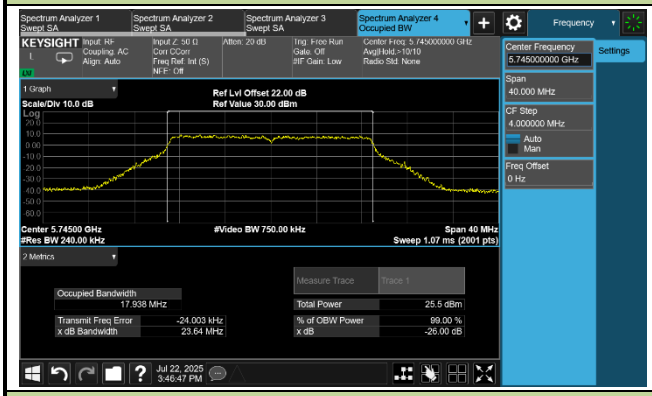
Channel 140 (5700 MHz)



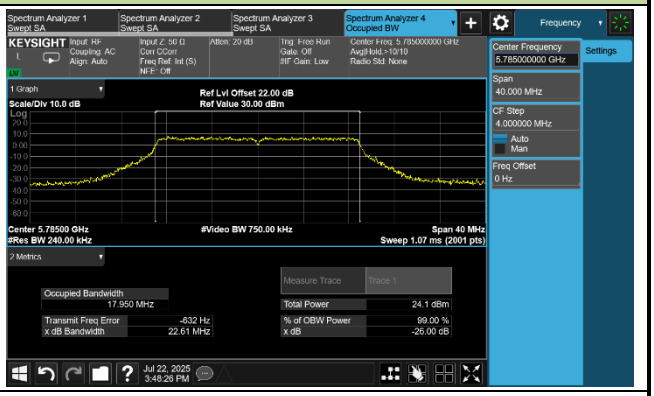
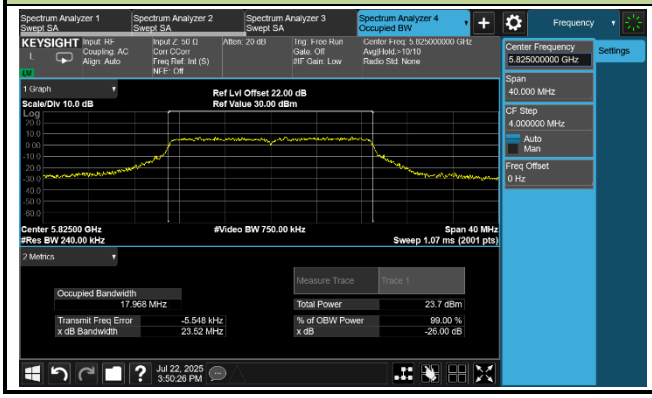
Channel 144 (5720 MHz)



Channel 149 (5745 MHz)



Channel 157 (5785 MHz)



Channel 165 (5825 MHz)