

## MEASUREMENT REPORT

**FCC ID** : 2AF82-HC1570M

**APPLICANT** : Qbic Technology Co., Ltd.

**Application Type** : Certification

**Product** : Smart touch panel tablet

**Model No.** : Lumenen 15 Pro

**Brand Name** : Qbic

**FCC Classification** : Unlicensed National Information Infrastructure (UNII)

**FCC Rule Part(s)** : Part 15 Subpart E (Section 15.407)

**Test Procedure(s)** : ANSI C63.10-2013

**Received Date** : February 4, 2025

**Test Date** : February 25, 2025~April 10, 2025

**Tested By** : Peter Syu

( Peter Syu )



**Reviewed By** : Paddy Chen

( Paddy Chen )



**Approved By** : Chenz Ker

( Chenz Ker )

The test results only relate to the tested samples.

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 ANSI C63.10. 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 (Taiwan) Co., Ltd.

## Revision History

Report No.	Version	Description	Issue Date	Note
2502TWN801-U5	1.0	Original Report	2025-05-06	

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## General Information

Applicant	Qbic Technology Co., Ltd.			
Applicant Address	26F-12, No. 99, Sec. 1, Xintai 5th Rd, Xizhi Dist, New Taipei City, 22175 Taiwan			
Manufacturer	Qbic Technology Co., Ltd.			
Manufacturer Address	26F-12, No. 99, Sec. 1, Xintai 5th Rd, Xizhi Dist, New Taipei City, 22175 Taiwan			
Test Site	MRT Technology (Taiwan) Co., Ltd			
Test Site Address	No. 38, Fuxing Second Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C)			
MRT FCC Registration No.	291082			
Test Device Serial No.	#1-1	<input type="checkbox"/> Production	<input checked="" type="checkbox"/> Pre-Production	<input type="checkbox"/> Engineering

### Test Facility / Accreditations

Measurements were performed at MRT Laboratory located in Fuxing Rd., Taoyuan, Taiwan (R.O.C)

- MRT facility is a FCC registered (Reg. No. 291082) test facility with the site description report on file and is designated by the FCC as an Accredited Test Firm.
- MRT facility is an IC registered (MRT Reg. No. 21723) test laboratory with the site description on file at Industry Canada.
- MRT Lab is accredited to ISO 17025 by the Taiwan Accreditation Foundation (TAF Cert. No. 3261) in EMC, Telecommunications and Radio testing for FCC (Designation Number: TW3261), Industry Canada, EU and TELEC Rules.

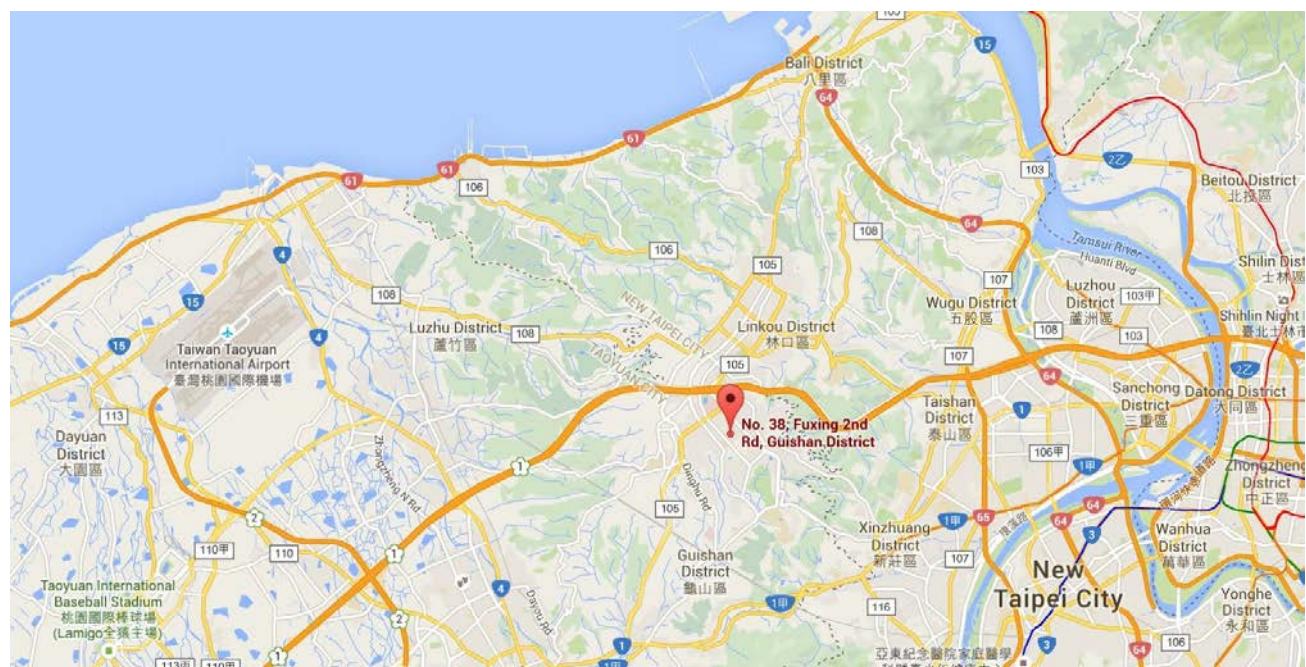
## 1. INTRODUCTION

### 1.1. Scope

Measurement and determination of electromagnetic emissions (EMC) of radio frequency devices including intentional and/or unintentional radiators for compliance with the technical rules and regulations of the Federal Communications Commission and the Industry Canada Certification and Engineering Bureau.

### 1.2. MRT Test Location

The map below shows the location of the MRT LABORATORY, its proximity to the Taoyuan City. These measurement tests were conducted at the MRT Technology (Taiwan) Co., Ltd. Facility located at No.38, Fuxing 2nd Rd., Guishan Dist., Taoyuan City 33377, Taiwan (R.O.C).



## 2. PRODUCT INFORMATION

### 2.1. Equipment Description

Product Name	Smart touch panel tablet
Model No.	Luminen 15 Pro
Brand Name	Qbic
Supports Radios Spec.	<b>WLAN:</b> 2.4G: 802.11b/g/n-20/ax-20/ax-40; 5G: 802.11a/n-20/ac-20/ax-20/n-40/ac-40/ax-40/ac-80/ax-80, Band 1~4 <b>WPAN:</b> Bluetooth Dual Mode: V5.4 NFC 13.56MHz
Frequency Range	For 802.11a/n-HT20/ac-VHT20/ax-HE20: 5180~5240MHz, 5260~5320MHz, 5500~5720MHz, 5745~5825MHz For 802.11n-HT40/ac-VHT40/ax-HE40: 5190~5230MHz, 5270~5310MHz, 5510~5710MHz, 5755~5795MHz For 802.11ac-VHT80/ax-HE80: 5210MHz, 5290MHz, 5530MHz, 5610 MHz, 5690MHz, 5775MHz
Type of Modulation:	802.11a/n/ac: OFDM 802.11ax: OFDMA
Data Rate:	802.11a: 6/9/12/18/24/36/48/54Mbps 802.11n: up to 300Mbps 802.11ac: up to 866.7Mbps 802.11ax: up to 1201Mbps
Accessory	
Adapter	Brand Name: HOIOTO Model: ADS-40RJ-12 12036E Input: AC 100-240V~ 50-60Hz Output: DC 12.0V-3.0A 36.0W DC Cable Out Non-Shielding, 1.7m

## 2.2. Operation Frequencies and Channel List

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

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

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

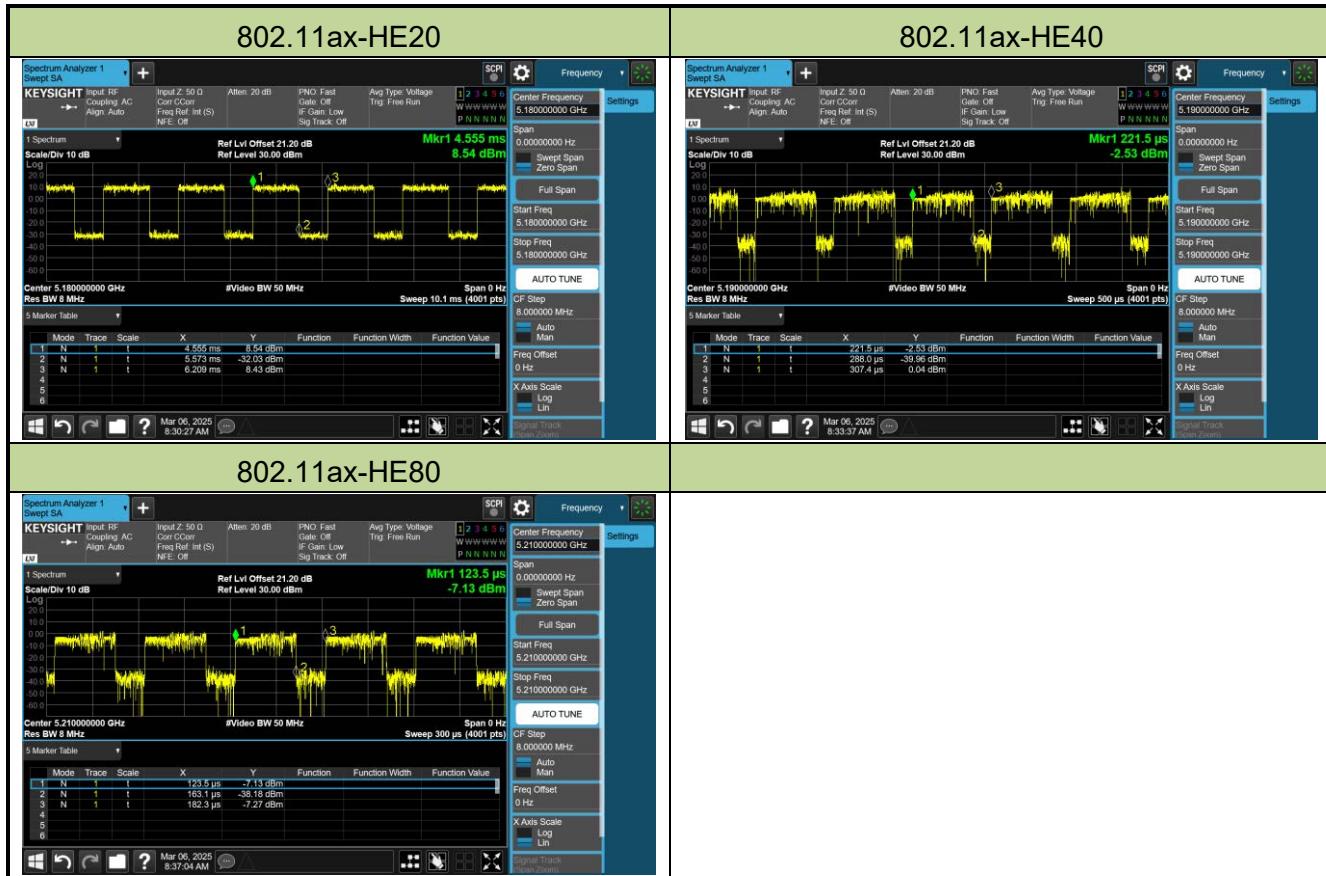
802.11ac-VHT80/ax-HE80

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

## Duty Cycle

Test Mode	Duty Cycle
802.11a	69.04%
802.11ac-VHT20	67.83%
802.11ac-VHT40	51.09%
802.11ac-VHT80	34.64%
802.11ax-HE20	61.55%
802.11ax-HE40	77.42%
802.11ax-HE80	67.35%





## 2.3. Test Mode

Test Mode	Mode 1: Transmit by 802.11a (6Mbps) (CDD mode)
	Mode 2: Transmit by 802.11ac-VHT20 (MCS0) (CDD mode)
	Mode 3: Transmit by 802.11ac-VHT40 (MCS0) (CDD mode)
	Mode 4: Transmit by 802.11ac-VHT80 (MCS0) (CDD mode)
	Mode 5: Transmit by 802.11ax-HE20 (MCS0) (CDD mode)
	Mode 6: Transmit by 802.11ax-HE40 (MCS0) (CDD mode)
	Mode 7: Transmit by 802.11ax-HE80 (MCS0) (CDD mode)

Note 1: Due to the same modulation between 802.11n and 802.11ac, so 802.11n-HT20 and HT40 are covered by 802.11ac-VHT20 and VHT40 in this report, meanwhile, power setting for 802.11n-HT20 and HT40 will not be greater than 802.11ac-VHT20 and VHT40.

## 2.4. Test Software

The test utility software used during testing was “adb.exe”.

## 2.5. Device Capabilities

This device contains the following capabilities:

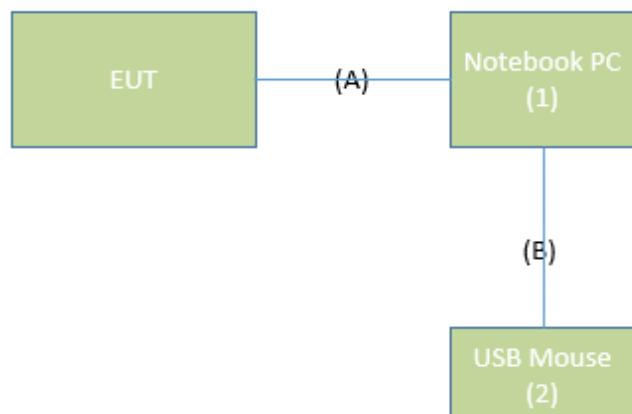
2.4GHz WLAN (DTS) and 5GHz WLAN (NII).

**Note:** 5GHz (NII) operation is possible in 20MHz, 40MHz and 80MHz channel bandwidths. The maximum achievable duty cycles for all modes were determined based on measurements performed on a spectrum analyzer in zero-span mode with RBW = 8MHz, VBW = 50MHz, and detector = average per the guidance of Section B2)b) of KDB 789033 D02v02r01. The RBW and VBW were both greater than 50/T, where T is the minimum transmission duration, and the number of sweep points across T was greater than 100.

## 2.6. Test Configuration

This device was tested per the guidance of KDB 789033 D02v02r01. ANSI C63.10-2013 was used to reference the appropriate EUT setup for radiated spurious emissions testing and AC line conducted testing.

Connection Diagram



Signal Cable Type		Signal Cable Description
A	USB Cable	Shielded, 1.0m
B	USB Mouse Cable	Shielded, 1.8m

## 2.7. Test System Details

Product	Manufacturer	Model No.	Serial No.	Power Cord
1	Notebook PC	Lenovo	20SL	N/A
2	USB Mouse	Logitech	M90	N/A

## 2.8. EMI Suppression Device(s)/Modifications

No EMI suppression device(s) were added and/or no modifications were made during testing.

## 2.9. Labeling Requirements

Per 2.1074 & 15.19; Docket 95-19

The label shall be permanently affixed at a conspicuous location on the device; instruction manual or pamphlet supplied to the user and be readily visible to the purchaser at the time of purchase.

However, when the device is so small wherein placement of the label with specified statement is not practical, only the FCC ID must be displayed on the device per Section 15.19(a)(5). Please see attachment for FCC ID label and label location.

### 3. DESCRIPTION OF TEST

#### 3.1. Evaluation Procedure

The measurement procedures described in the American National Standard for Testing Unlicensed Wireless Devices (ANSI C63.10-2013), and the guidance provided in KDB 789033 were used in the measurement of the device.

**Deviation from measurement procedure.....**.....**None**

#### 3.2. AC Line Conducted Emissions

The line-conducted facility is located inside an 9'x4'x3' shielded enclosure. A 1m x 2m wooden table 80cm high is placed 40cm away from the vertical wall and 80cm away from the sidewall of the shielded room. Two 10kHz-30MHz, 50Ω/50uH Line-Impedance Stabilization Networks (LISNs) are bonded to the shielded room floor. Power to the LISNs is filtered by external high-current high-insertion loss power line filters. These filters attenuate ambient signal noise from entering the measurement lines. These filters are also bonded to the shielded enclosure.

The EUT is powered from one LISN and the support equipment is powered from the second LISN. All interconnecting cables more than 1 meter were shortened to a 1 meter length by non-inductive bundling (serpentine fashion) and draped over the back edge of the test table. All cables were at least 40cm above the horizontal reference ground-plane. Power cables for support equipment were routed down to the second LISN while ensuring that that cables were not draped over the second LISN.

Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. The RF output of the LISN was connected to the receiver and exploratory measurements were made to determine the frequencies producing the maximum emission from the EUT. The receiver was scanned from 150kHz to 30MHz. The detector function was set to peak mode for exploratory measurements while the bandwidth of the analyzer was set to 9kHz. The EUT, support equipment, and interconnecting cables were arranged and manipulated to maximize each emission. Each emission was also maximized by varying: power lines, the mode of operation or data exchange speed, or support equipment whichever determined the worst-case emission. Once the worst case emissions have been identified, the one EUT cable configuration/arrangement and mode of operation that produced these emissions are used for final measurements on the same test site. The analyzer is set to CISPR quasi-peak and average detectors with a 9kHz resolution bandwidth for final measurements.

An extension cord was used to connect to a single LISN which powered by EUT. The extension cord was calibrated with LISN, the impedance and insertion loss are compliance with the requirements as stated in ANSI C63.10-2013.

Line conducted emissions test results are shown in Section 7.10.

### 3.3. Radiated Emissions

The radiated test facilities consisted of an indoor 3 meter semi-anechoic chamber used for final measurements and exploratory measurements, when necessary. The measurement area is contained within the semi-anechoic chamber which is shielded from any ambient interference. For measurements above 1GHz absorbers are arranged on the floor between the turn table and the antenna mast in such a way so as to maximize the reduction of reflections. For measurements below 1GHz, the absorbers are removed. A turntable is used for radiated measurement. It is a continuously rotatable, remote controlled, metallic turntable and 2 meters (6.56 ft.) in diameter. The turn table is flush with the raised floor of the chamber in order to maintain its function as a ground plane. An 80cm high PVC support structure is placed on top of the turntable.

For all measurements, the spectrum was scanned through all EUT azimuths and from 1 to 4 meter receive antenna height using a broadband antenna from 30MHz up to the upper frequency shown in 15.33(b)(1) depending on the highest frequency generated or used in the device or on which the device operates or tunes. For frequencies above 1GHz, linearly polarized double ridge horn antennas were used. For frequencies below 30MHz, a calibrated loop antenna was used. When exploratory measurements were necessary, they were performed at 1 meter test distance inside the semi-anechoic chamber using broadband antennas, broadband amplifiers, and spectrum analyzers to determine the frequencies and modes producing the maximum emissions. Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. The test set-up for frequencies below 1GHz was placed on top of the 0.8 meter high, 1 x 1.5 meter table; and test set-up for frequencies 1-40GHz was placed on top of the 1.5 meter high, 1 x 1.5 meter table. The EUT, support equipment, and interconnecting cables were arranged and manipulated to maximize each emission. Appropriate precaution was taken to ensure that all emissions from the EUT were maximized and investigated. The system configuration, clock speed, mode of operation or video resolution, if applicable, turntable azimuth, and receive antenna height was noted for each frequency found.

Final measurements were made in the semi-anechoic chamber using calibrated, linearly polarized broadband and horn antennas. The test setup was configured to the setup that produced the worst case emissions. The spectrum analyzer was set to investigate all frequencies required for testing to compare the highest radiated disturbances with respect to the specified limits. The turntable containing the EUT was rotated through 360 degrees and the height of the receive antenna was varied 1 to 4 meters and stopped at the azimuth and height producing the maximum emission. Each emission was maximized by changing the orientation of the EUT through three orthogonal planes and changing the polarity of the receive antenna, whichever produced the worst-case emissions. According to 3dB Beam-Width of horn antenna, the horn antenna should be always directed to the EUT when rising height.

## 4. 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 **Smart touch panel tablet**, is permanently attached.
- There are no provisions for connection to an external antenna.

### Conclusion:

The EUT unit complies with the requirement of §15.203.

Antenna Type	Frequency Band (MHz)	Tx Paths	Number of spatial streams	Max Antenna Gain (dBi)	Directional Gain (dBi)	CDD Directional Gain (dBi)	
						For Power	For PSD
BT/BLE Antenna							
PCB	2402 ~ 2480	1	--	1.42	--	1.42	--
Wi-Fi Antenna							
Dipole	2412 ~ 2462	2	1	4.56	7.57	4.56	7.57
	5150 ~ 5250	2	1	4.96	7.97	4.96	7.97
	5250 ~ 5350	2	1	4.96	7.97	4.96	7.97
	5470 ~ 5725	2	1	5.92	8.93	5.92	8.93
	5725 ~ 5850	2	1	5.71	8.72	5.71	8.72

### Remark:

1. The EUT supports Cyclic Delay Diversity (CDD) mode, and CDD signals are correlated.

If all antennas have the same gain,  $G_{ANT}$ , Directional gain =  $G_{ANT} + \text{Array Gain}$ , where Array Gain is as follows.

- For power spectral density (PSD) measurements on all devices,

$$\text{Array Gain} = 10 \log (N_{ANT}/ N_{SS}) \text{ dB};$$

- For power measurements on IEEE 802.11 devices,

$$\text{Array Gain} = 0 \text{ dB for } N_{ANT} \leq 2;$$

2. All messages of antenna were declared by manufacturer.

## 5. TEST EQUIPMENT CALIBRATION DATE

### Conducted Emissions

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
Two-Line V-Network	R&S	ENV216	MRTTWA00020	1 year	2025/4/21
EMI Test Receiver	R&S	ESR3	MRTTWA00009	1 year	2026/3/4
Cable	Rosnol	N1C50-RG400-B 1C50-500CM	MRTTWE00013	1 year	2025/6/14

### Radiated Emissions

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
Active Loop Antenna	SCHWARZBECK	FMZB 1519B	MRTTWA00002	1 year	2025/5/7
Broadband TRILOG Antenna	SCHWARZBECK	VULB 9162	MRTTWA00086	1 year	2025/11/5
Broadband Hornantenna	SCHWARZBECK	BBHA 9120D	MRTTWA00003	1 year	2026/2/11
Broadband Preamplifier	SCHWARZBECK	BBV 9718	MRTTWA00005	1 year	2026/2/11
Breitband Hornantenna	SCHWARZBECK	BBHA 9170	MRTTWA00004	1 year	2026/3/27
Broadband Amplifier	SCHWARZBECK	BBV 9721	MRTTWA00006	1 year	2026/3/21
EMI Test Receiver	R&S	ESR3	MRTTWA00009	1 year	2026/3/4
Signal Analyzer	R&S	FSV40	MRTTWA00007	1 year	2025/4/14
Antenna Cable	HUBERSUHNER	SF106	MRTTWE00010	1 year	2025/6/14
Cable	Rosnol	K1K50-UP0264- K1K50-4M	MRTTWE00012	1 year	2025/6/14
Temperature/Humidity Meter	TFA	35.1083	MRTTWA00050	1 year	2025/6/2

### Conducted Test Equipment

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
EXA Signal Analyzer	KEYSIGHT	N9010A	MRTTWA00012	1 year	2025/9/24
EXA Signal Analyzer	KEYSIGHT	N9010B	MRTTWA00074	1 year	2025/8/12
USB Wideband Power Sensor	KEYSIGHT	U2021XA	MRTTWA00015	1 year	2026/3/12

### Test Software

Software	Version	Function
e3	9.160520a	EMI Test Software

## 6. 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  $k = 2$ .

Conducted Emission- Power Line
Measuring Uncertainty for a Level of Confidence of 95% ( $U=2U_{c(y)}$ ): 0.15MHz~30MHz: $\pm 2.53\text{dB}$
Radiated Spurious Emission
Measuring Uncertainty for a Level of Confidence of 95% ( $U=2U_{c(y)}$ ): 9kHz~30MHz: $\pm 3.92\text{dB}$ 30MHz~1GHz: $\pm 4.25\text{dB}$ 1GHz~18GHz: $\pm 4.40\text{dB}$ 18GHz~40GHz: $\pm 4.45\text{dB}$
Frequency Error
Measuring Uncertainty for a Level of Confidence of 95% ( $U=2U_{c(y)}$ ): $\pm 78.4\text{Hz}$
Conducted Power
Measuring Uncertainty for a Level of Confidence of 95% ( $U=2U_{c(y)}$ ): $\pm 0.84\text{dB}$
Conducted Spurious Emission
Measuring Uncertainty for a Level of Confidence of 95% ( $U=2U_{c(y)}$ ): $\pm 2.65\text{ dB}$
Occupied Bandwidth
Measuring Uncertainty for a Level of Confidence of 95% ( $U=2U_{c(y)}$ ): $\pm 3.3\%$
Temp. / Humidity
Measuring Uncertainty for a Level of Confidence of 95% ( $U=2U_{c(y)}$ ): $\pm 0.82^\circ\text{C}$ / $\pm 3\%$
DC Voltage
Measuring Uncertainty for a Level of Confidence of 95% ( $U=2U_{c(y)}$ ): $\pm 0.3\%$

## 7. TEST RESULT

### 7.1. Summary

**Company Name:** Smart touch panel tablet

**FCC Classification:** Unlicensed National Information Infrastructure (UNII)

FCC Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
15.407(a)	26dB Bandwidth	N/A	Conducted	Pass	Section 7.2
15.407(e)	6dB Bandwidth	$\geq 500\text{kHz}$		Pass	Section 7.3
15.407(a)(1)(i), (2), (3)	Maximum Conducted Output Power	Refer to Section 7.5		Pass	Section 7.4
15.407(h)(1)	Transmit Power Control	$\leq 24\text{ dBm}$		N/A	Section 7.5
15.407(a)(1)(i), (2), (3), (5)	Power Spectral Density	Refer to Section 7.7		Pass	Section 7.6
15.407(b)(1), (4)	Undesirable Emissions	$\leq -27\text{dBm}/\text{MHz EIRP}$ $\leq -17\text{dBm}/\text{MHz EIRP}$	Radiated	Pass	Section 7.7 & 7.8
15.205, 15.209 15.407(b)(5), (6), (7)	General Field Strength Limits (Restricted Bands and Radiated Emission Limits)	Emissions in restricted bands must meet the radiated limits detailed in 15.209		Pass	
15.207	AC Conducted Emissions 150kHz - 30MHz	$< \text{FCC 15.207 limits}$	Line Conducted	Pass	Section 7.9

#### Notes:

- 1) Determining compliance is based on the test results met the regulation limits or requirements declared by clients, and the test results don't take into account the value of measurement uncertainty.
- 2) All channels, modes, and modulations/data rates were investigated among all UNII bands. The test results shown in the following sections represent the worst case emissions.
- 3) The analyzer plots shown in this section were all taken with a correction table loaded into the analyzer. The correction table was used to account for the losses of the cables and attenuators used as part of the system to connect the EUT to the analyzer at all frequencies of interest.

## 7.2. 26dB Bandwidth & 99% Bandwidth Measurement

### 7.2.1. Test Limit

N/A

### 7.2.2. Test Procedure used

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

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

### 7.2.3. Test Setting

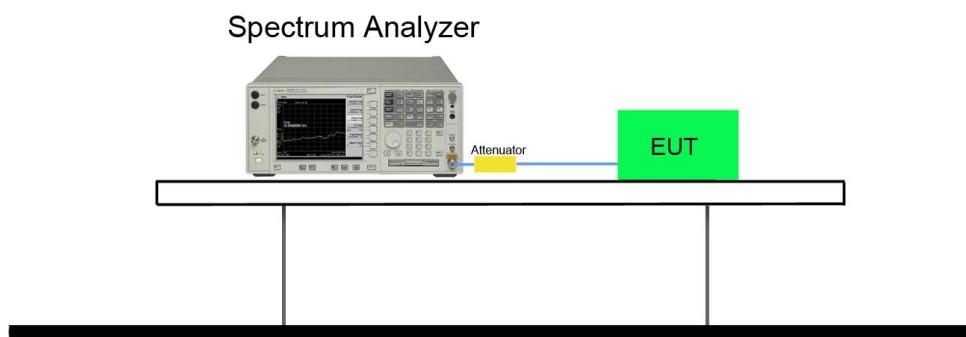
#### 26dB Bandwidth

1. The analyzers' automatic bandwidth measurement capability was used to perform the 26dB bandwidth measurement. The "X" dB bandwidth parameter was set to  $X = 26$ . The automatic bandwidth measurement function also has the capability of simultaneously measuring the 99% occupied bandwidth. The bandwidth measurement was not influenced by any intermediated power nulls in the fundamental emission.
2. RBW = approximately 1% of the emission bandwidth.
3. VBW  $\geq 3 \times$  RBW.
4. Detector = Peak.
5. Trace mode = max hold.

#### 99% Bandwidth

1. Set center frequency to the nominal EUT channel center frequency.
2. Set span = 1.5 times to 5.0 times the OBW.
3. Set RBW = 1% to 5% of the OBW
4. Set VBW  $\geq 3 \times$  RBW
5. Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.

### 7.2.4. Test Setup



### 7.2.5. Test Result

Product	Smart touch panel tablet	Temperature	21°C
Test Engineer	Peter	Relative Humidity	56%
Test Site	SR7	Test Date	2025/4/9~2025/4/10

Test Mode	Data Rate/ MCS	Channel No.	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
<b>Ant 1</b>					
802.11a	6Mbps	36	5180	21.230	16.467
802.11a	6Mbps	44	5220	22.540	16.494
802.11a	6Mbps	48	5240	18.480	16.306
802.11a	6Mbps	52	5260	20.390	16.385
802.11a	6Mbps	60	5300	22.020	16.528
802.11a	6Mbps	64	5320	21.390	16.471
802.11a	6Mbps	100	5500	20.900	16.459
802.11a	6Mbps	116	5580	20.570	16.448
802.11a	6Mbps	140	5700	21.710	16.514
802.11a	6Mbps	144	5720	22.190	16.520
802.11a	6Mbps	149	5745	20.780	16.447
802.11a	6Mbps	157	5785	21.200	16.505
802.11a	6Mbps	165	5825	21.080	16.396
802.11ac-VHT20	MCS0	36	5180	21.620	17.666
802.11ac-VHT20	MCS0	44	5220	21.660	17.655
802.11ac-VHT20	MCS0	48	5240	19.380	17.546
802.11ac-VHT20	MCS0	52	5260	20.840	17.668
802.11ac-VHT20	MCS0	60	5300	21.120	17.671
802.11ac-VHT20	MCS0	64	5320	21.350	17.676
802.11ac-VHT20	MCS0	100	5500	21.890	17.685
802.11ac-VHT20	MCS0	116	5580	21.270	17.683
802.11ac-VHT20	MCS0	140	5700	20.740	17.642
802.11ac-VHT20	MCS0	144	5720	22.080	17.678
802.11ac-VHT20	MCS0	149	5745	21.560	17.689
802.11ac-VHT20	MCS0	157	5785	21.880	17.686
802.11ac-VHT20	MCS0	165	5825	21.240	17.654

Test Mode	Data Rate/ MCS	Channel No.	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Ant 1					
802.11ac-VHT40	MCS0	38	5190	38.390	35.692
802.11ac-VHT40	MCS0	46	5230	38.200	35.756
802.11ac-VHT40	MCS0	54	5270	38.210	35.718
802.11ac-VHT40	MCS0	62	5310	38.190	35.722
802.11ac-VHT40	MCS0	102	5510	38.400	35.867
802.11ac-VHT40	MCS0	110	5550	38.380	35.771
802.11ac-VHT40	MCS0	134	5670	38.470	35.813
802.11ac-VHT40	MCS0	142	5710	38.900	35.832
802.11ac-VHT40	MCS0	151	5755	38.420	35.791
802.11ac-VHT40	MCS0	159	5795	38.550	35.836
802.11ac-VHT80	MCS0	42	5210	78.320	75.023
802.11ac-VHT80	MCS0	58	5290	78.260	74.763
802.11ac-VHT80	MCS0	106	5530	78.350	74.949
802.11ac-VHT80	MCS0	122	5610	78.280	75.198
802.11ac-VHT80	MCS0	138	5690	78.240	74.880
802.11ac-VHT80	MCS0	155	5775	78.310	75.238
802.11ax-HE20	MCS0	36	5180	20.630	18.948
802.11ax-HE20	MCS0	44	5220	20.090	18.867
802.11ax-HE20	MCS0	48	5240	19.680	18.820
802.11ax-HE20	MCS0	52	5260	20.280	18.900
802.11ax-HE20	MCS0	60	5300	20.690	18.898
802.11ax-HE20	MCS0	64	5320	20.190	18.924
802.11ax-HE20	MCS0	100	5500	20.430	18.938
802.11ax-HE20	MCS0	116	5580	20.460	18.895
802.11ax-HE20	MCS0	140	5700	20.160	18.896
802.11ax-HE20	MCS0	144	5720	20.550	18.876
802.11ax-HE20	MCS0	149	5745	20.480	18.910
802.11ax-HE20	MCS0	157	5785	20.580	18.875
802.11ax-HE20	MCS0	165	5825	20.410	18.915

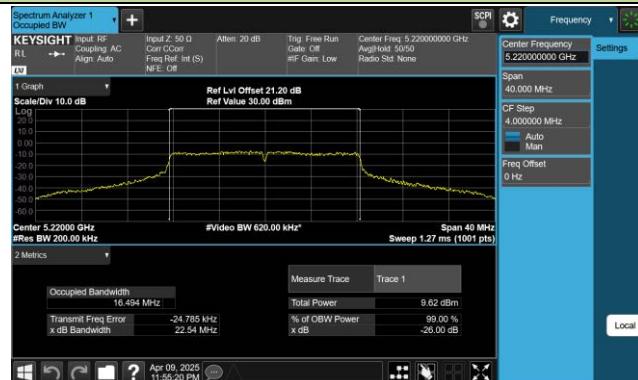
Test Mode	Data Rate/ MCS	Channel No.	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Ant 1					
802.11ax-HE40	MCS0	38	5190	39.080	37.199
802.11ax-HE40	MCS0	46	5230	39.080	37.246
802.11ax-HE40	MCS0	54	5270	39.060	37.199
802.11ax-HE40	MCS0	62	5310	39.070	37.256
802.11ax-HE40	MCS0	102	5510	39.100	37.204
802.11ax-HE40	MCS0	110	5550	39.080	37.295
802.11ax-HE40	MCS0	134	5670	39.090	37.340
802.11ax-HE40	MCS0	142	5710	39.070	37.270
802.11ax-HE40	MCS0	151	5755	39.050	37.228
802.11ax-HE40	MCS0	159	5795	39.070	37.267
802.11ax-HE80	MCS0	42	5210	79.770	76.152
802.11ax-HE80	MCS0	58	5290	79.630	76.057
802.11ax-HE80	MCS0	106	5530	79.590	76.239
802.11ax-HE80	MCS0	122	5610	79.720	76.442
802.11ax-HE80	MCS0	138	5690	79.790	76.032
802.11ax-HE80	MCS0	155	5775	79.540	76.123

## 802.11a 26dB Bandwidth & 99% Bandwidth

## Channel 36 (5180MHz)



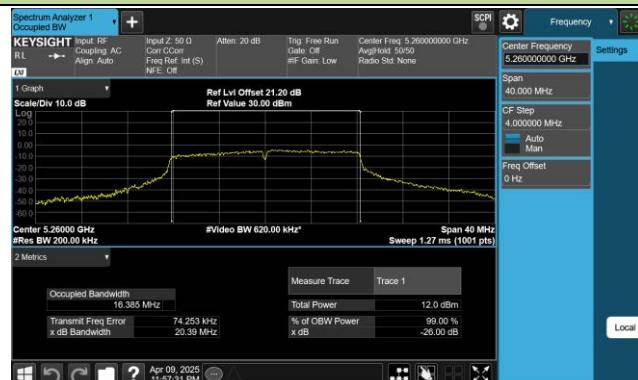
## Channel 44 (5220MHz)



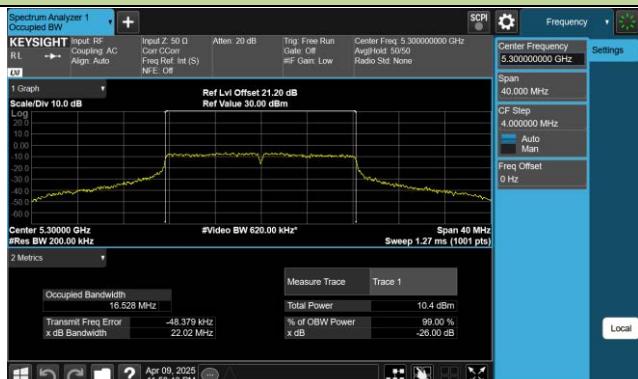
## Channel 48 (5240MHz)



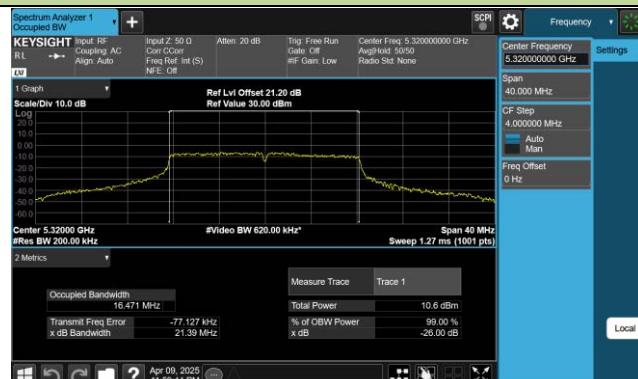
Channel 52 (5260MHz)



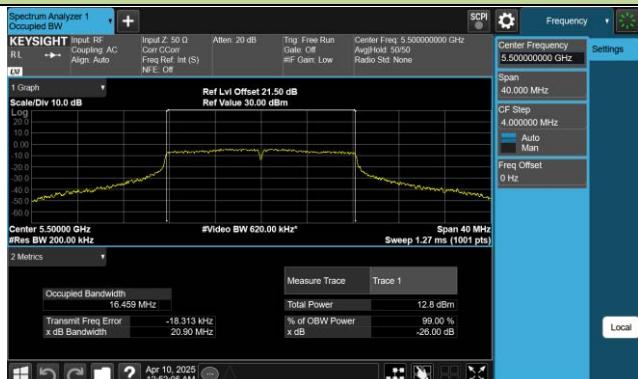
## Channel 60 (5300MHz)



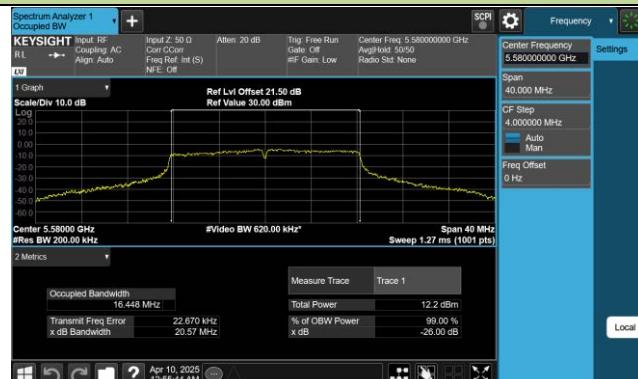
## Channel 64 (5320MHz)

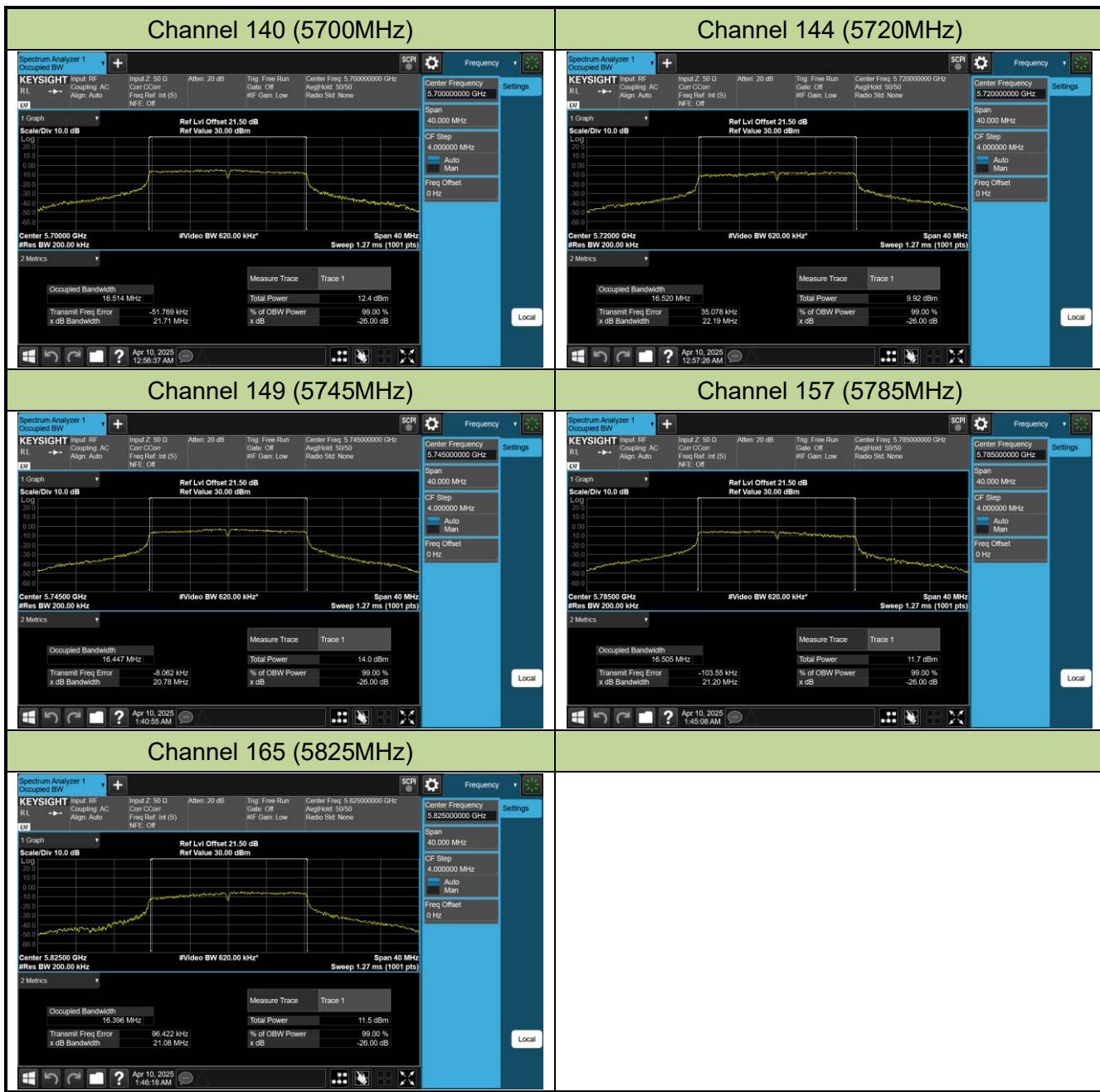


## Channel 100 (5500MHz)



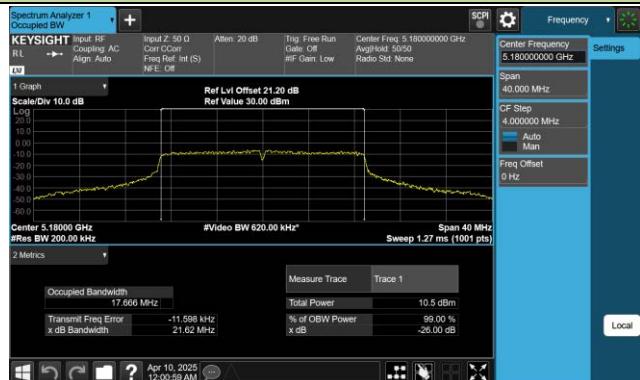
## Channel 116 (5580MHz)



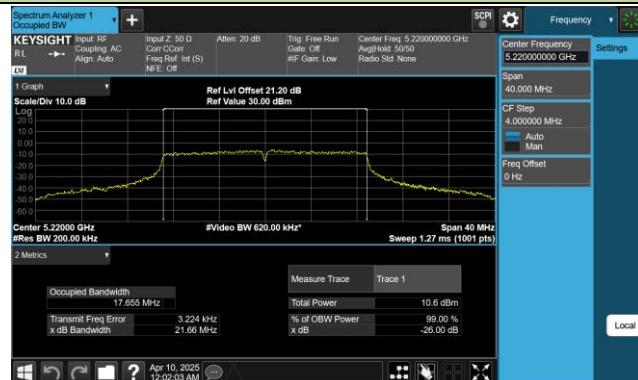


## 802.11ac-VHT20 26dB Bandwidth & 99% Bandwidth

### Channel 36 (5180MHz)



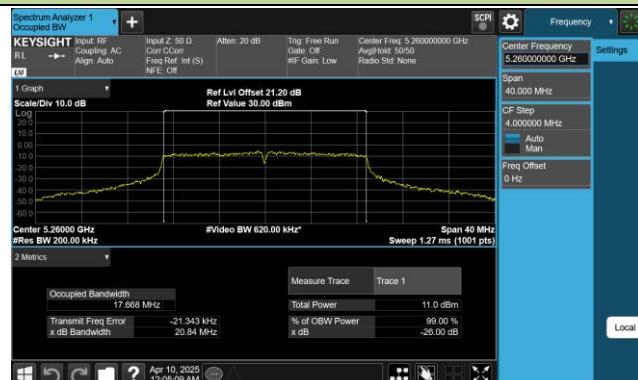
### Channel 44 (5220MHz)



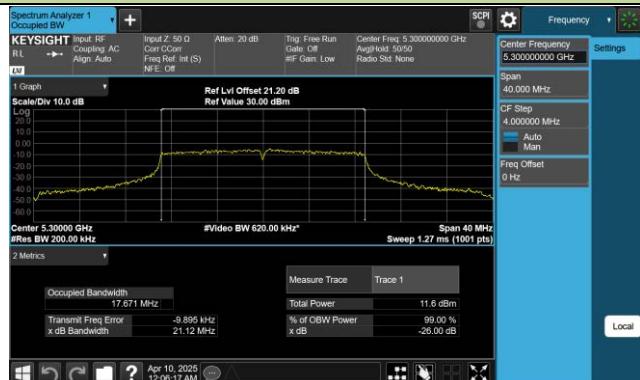
### Channel 48 (5240MHz)



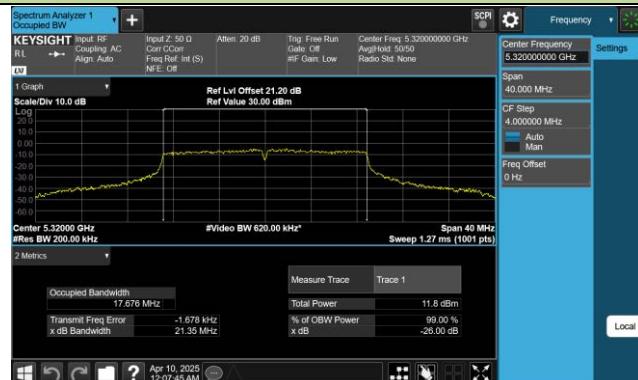
### Channel 52 (5260MHz)



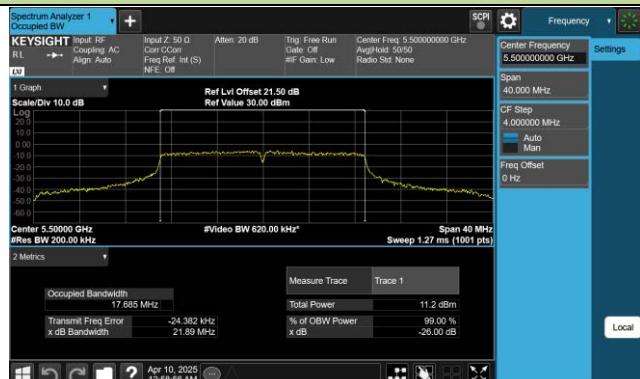
### Channel 60 (5300MHz)



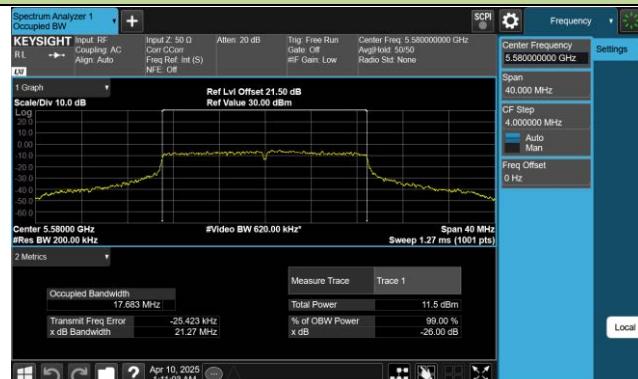
### Channel 64 (5320MHz)

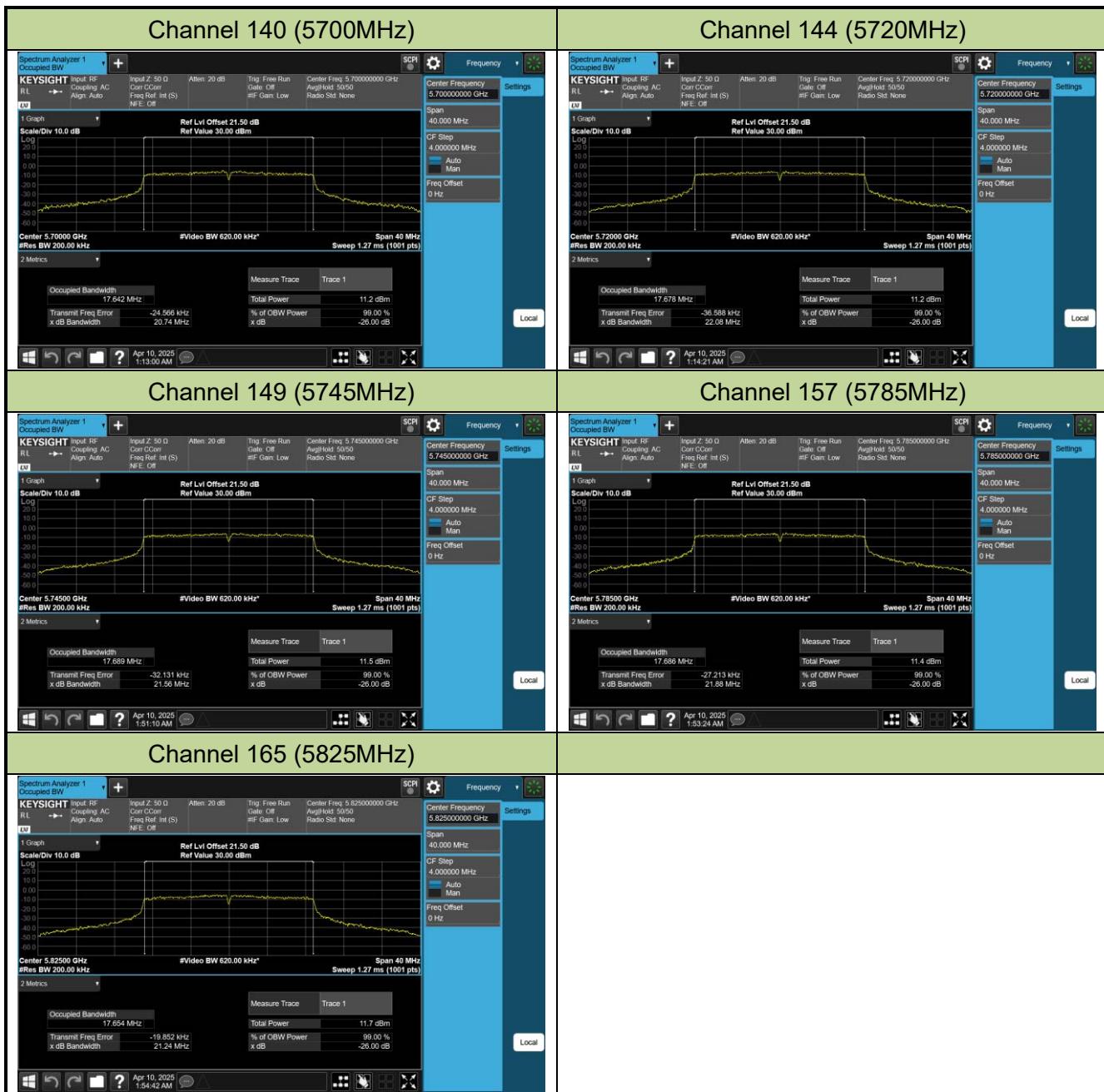


### Channel 100 (5500MHz)



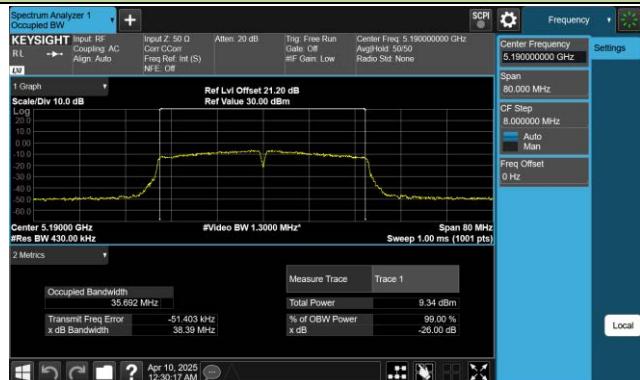
### Channel 116 (5580MHz)





### 802.11ac-VHT40 26dB Bandwidth & 99% Bandwidth

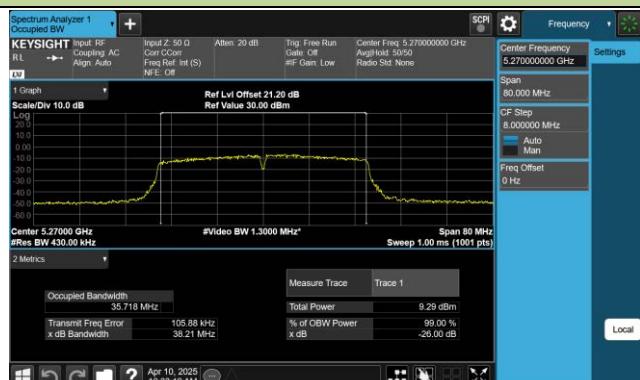
#### Channel 38 (5190MHz)



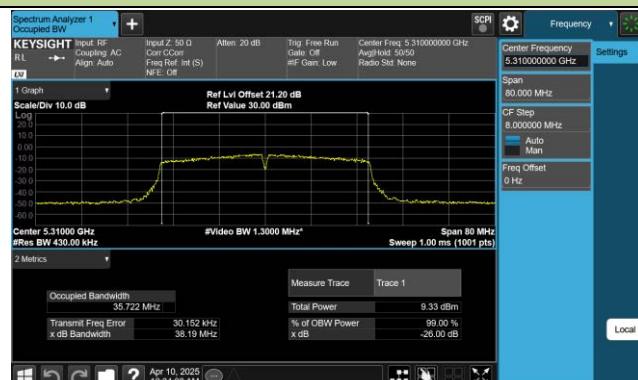
#### Channel 46 (5230MHz)



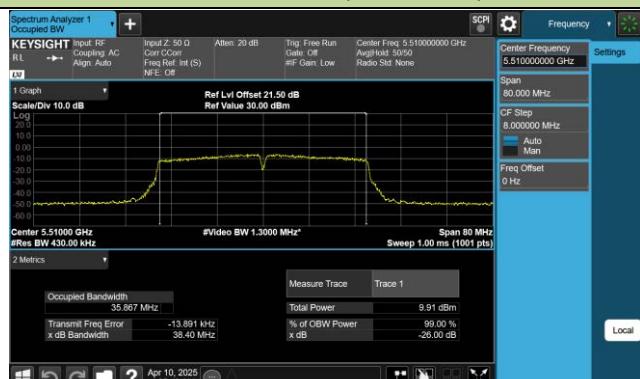
#### Channel 54 (5270MHz)



#### Channel 62 (5310MHz)



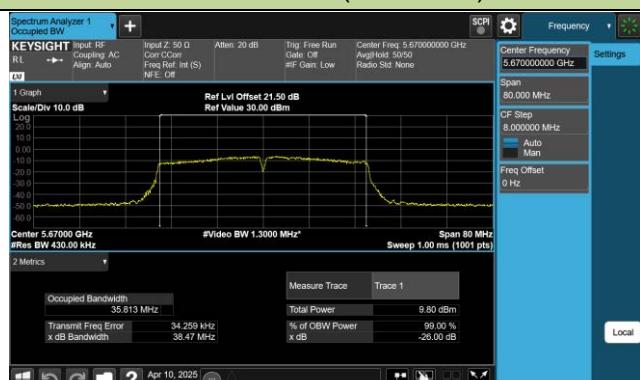
#### Channel 102 (5510MHz)



#### Channel 110 (5550MHz)



#### Channel 134 (5670MHz)



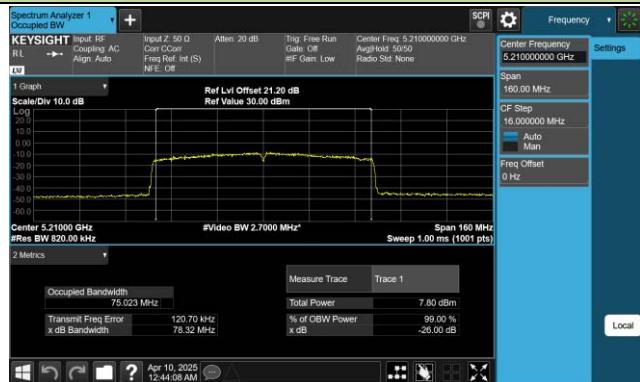
#### Channel 142 (5710MHz)





### 802.11ac-VHT80 26dB Bandwidth & 99% Bandwidth

#### Channel 42 (5210MHz)



#### Channel 58 (5290MHz)



#### Channel 106 (5530MHz)



#### Channel 122 (5610MHz)



#### Channel 138 (5690MHz)

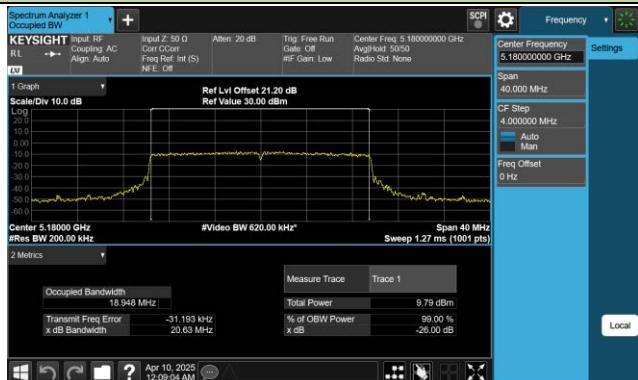


#### Channel 155 (5775MHz)

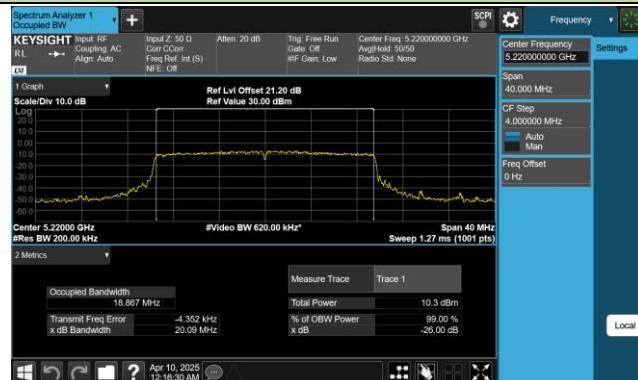


## 802.11ax-HE20 26dB Bandwidth & 99% Bandwidth

Channel 36 (5180MHz)



## Channel 44 (5220MHz)



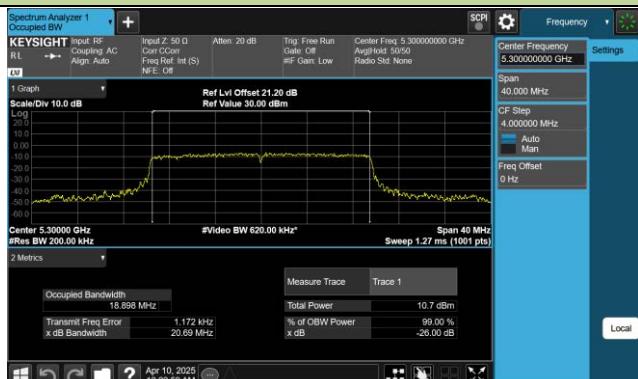
## Channel 48 (5240MHz)



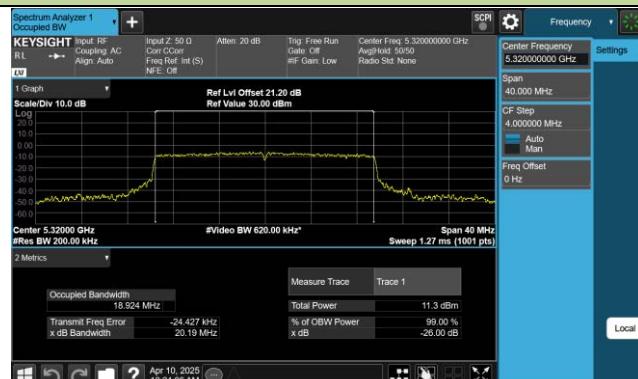
## Channel 52 (5260MHz)



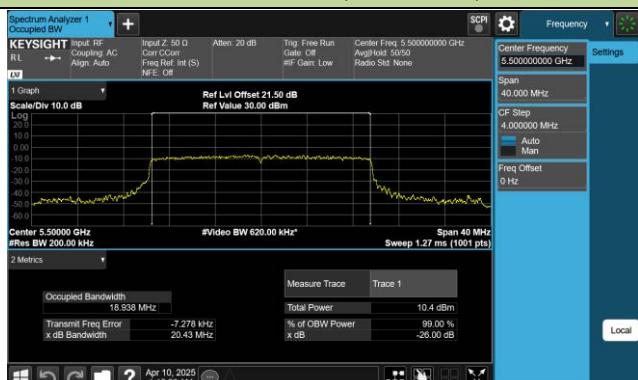
## Channel 60 (5300MHz)



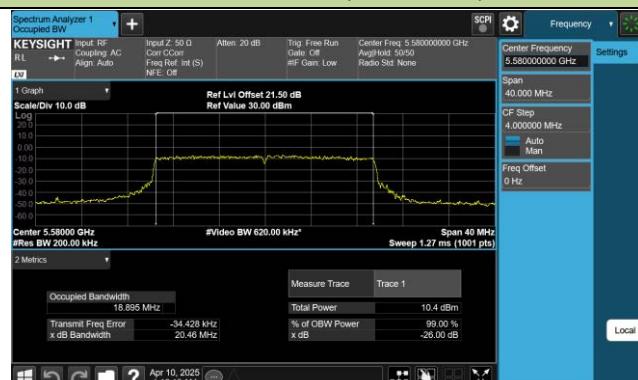
## Channel 64 (5320MHz)

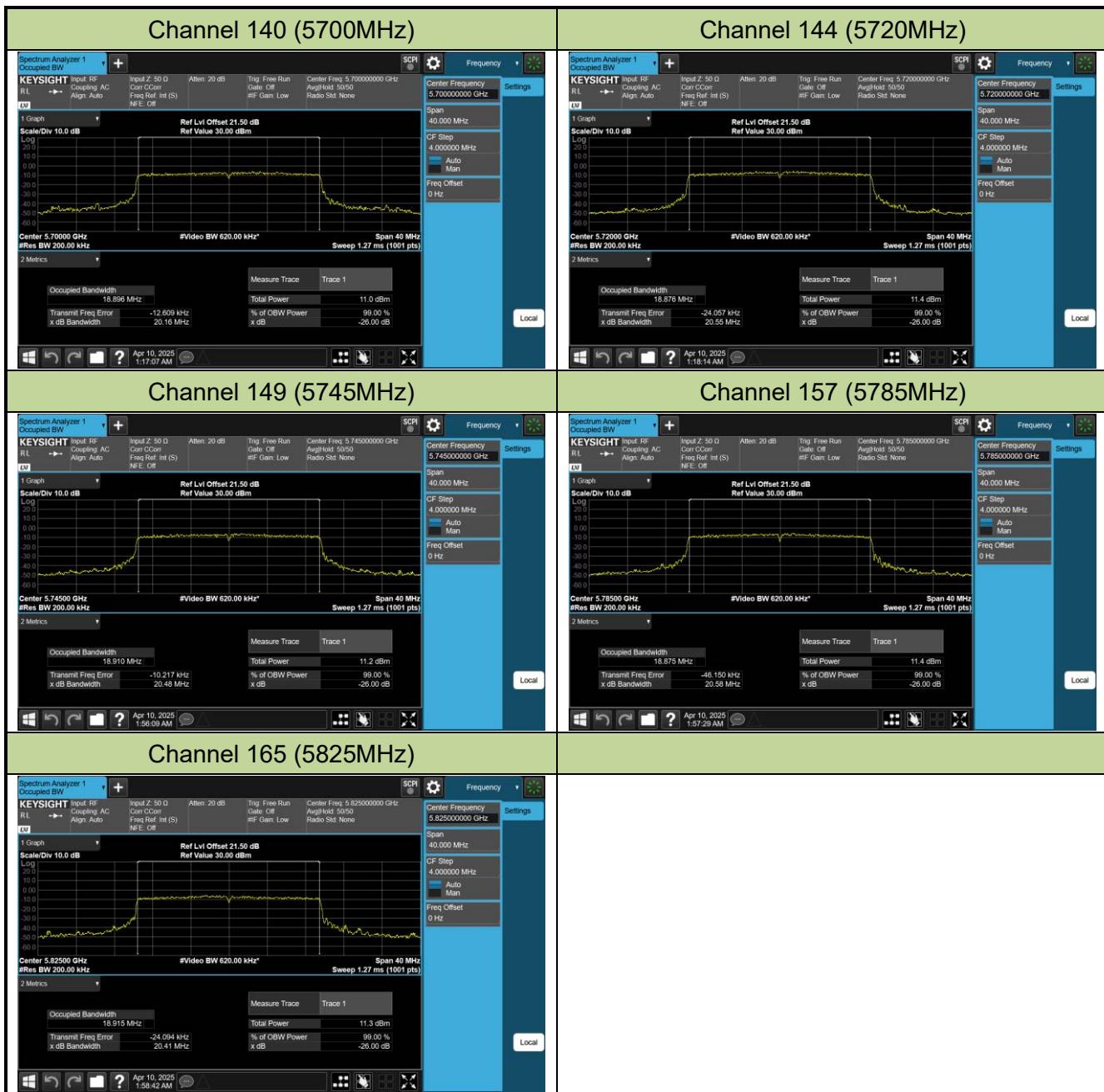


## Channel 100 (5500MHz)



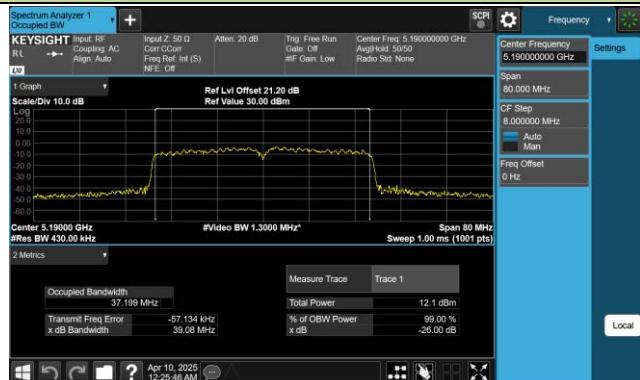
Channel 116 (5580MHz)



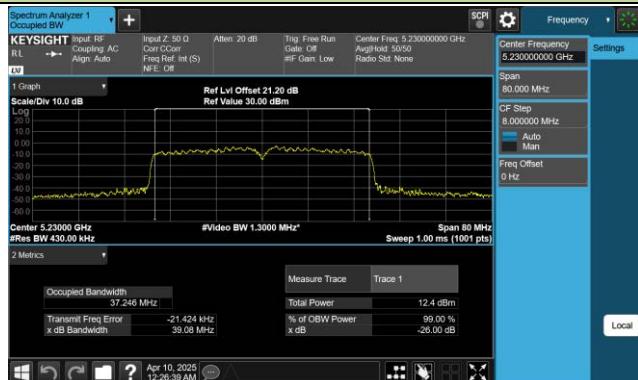


## 802.11ax-HE40 26dB Bandwidth & 99% Bandwidth

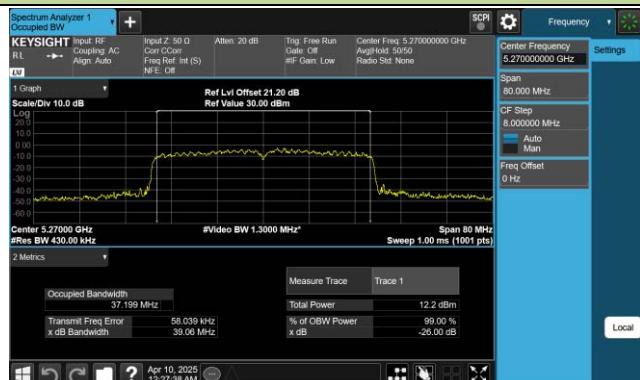
### Channel 38 (5190MHz)



### Channel 46 (5230MHz)



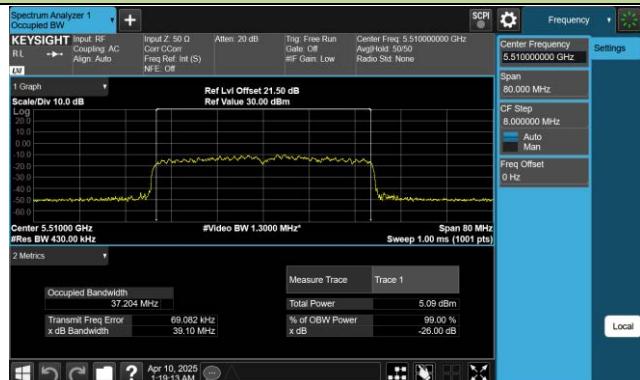
### Channel 54 (5270MHz)



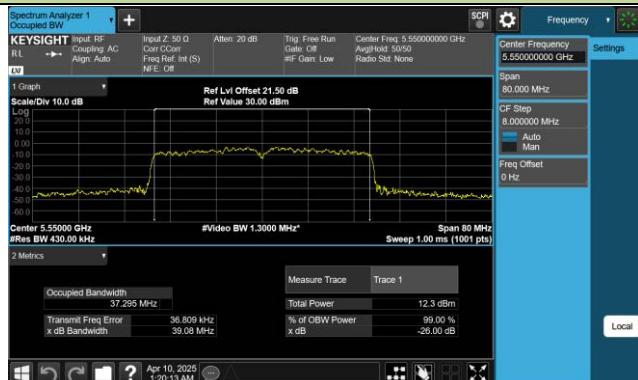
### Channel 62 (5310MHz)



### Channel 102 (5510MHz)



### Channel 110 (5550MHz)

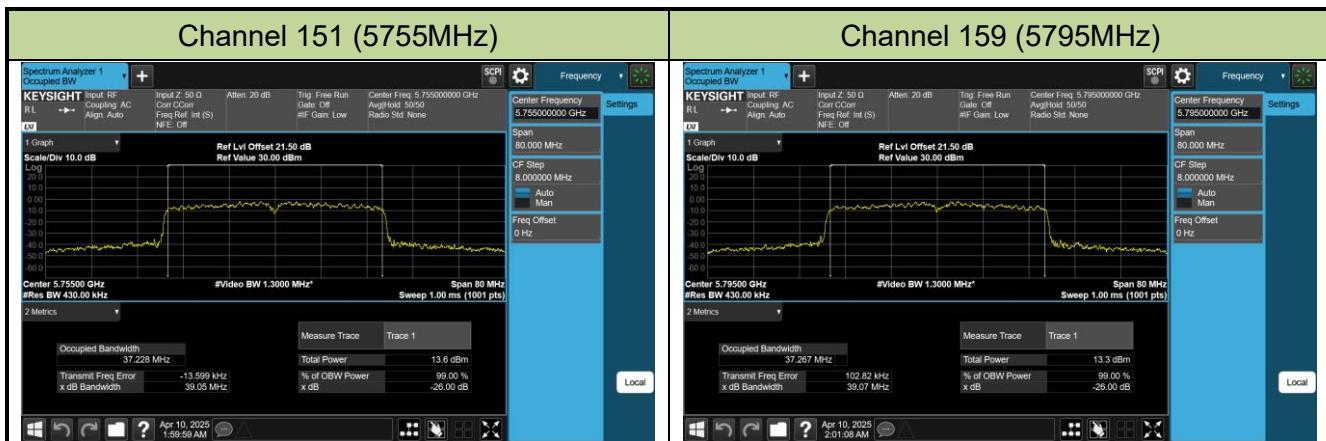


### Channel 134 (5670MHz)



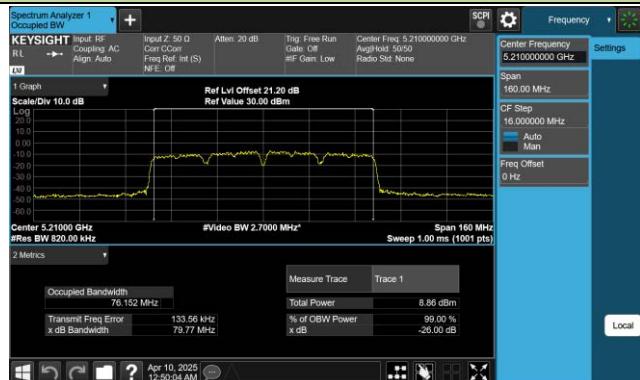
### Channel 142 (5710MHz)





## 8802.11ax-HE80 26dB Bandwidth & 99% Bandwidth

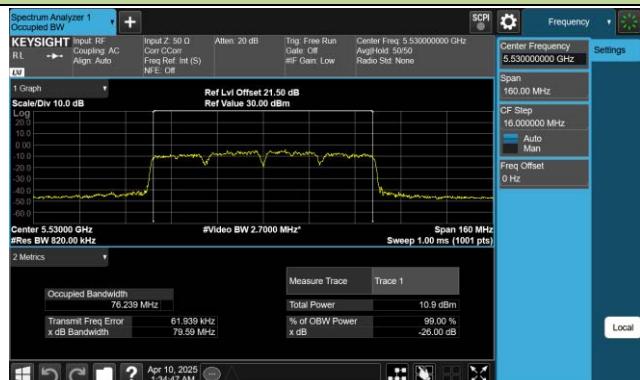
## Channel 42 (5210MHz)



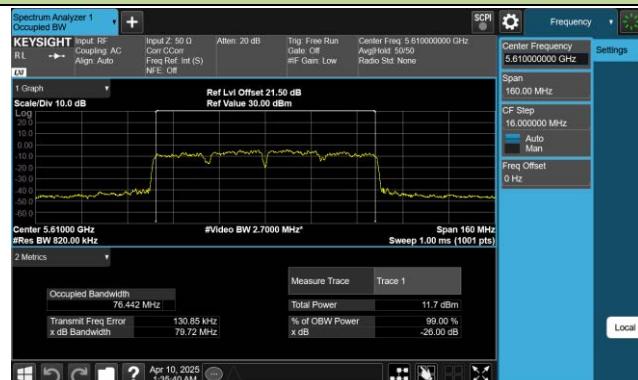
## Channel 58 (5290MHz)



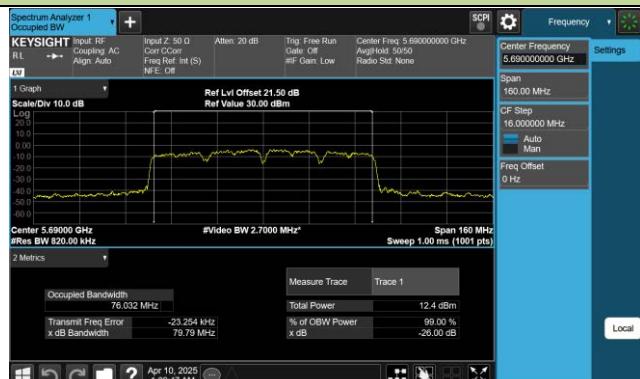
Channel 106 (5530MHz)



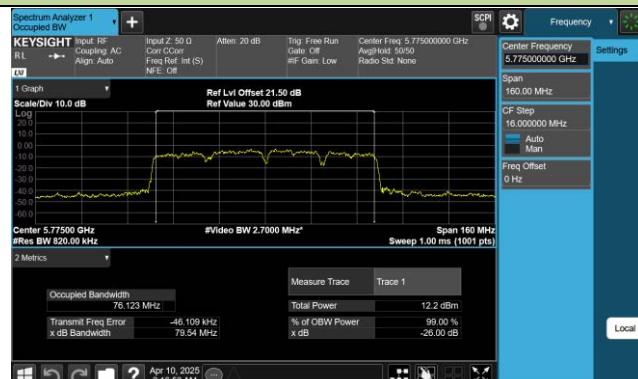
Channel 122 (5610MHz)



## Channel 138 (5690MHz)



## Channel 155 (5775MHz)



## 7.3. 6dB Bandwidth Measurement

### 7.3.1. Test Limit

The minimum 6dB bandwidth shall be at least 500 kHz.

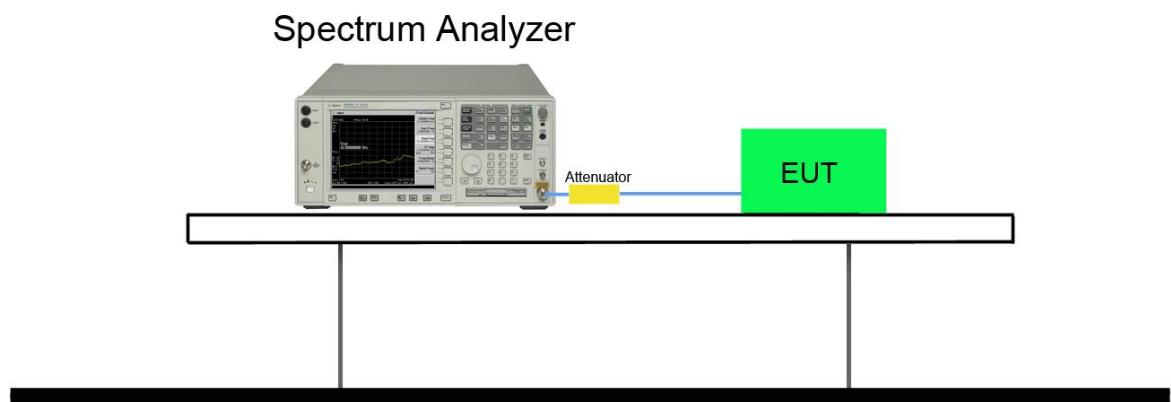
### 7.3.2. Test Procedure used

KDB 789033 D02v02r01 - Section C.2

### 7.3.3. Test Setting

1. Set center frequency to the nominal EUT channel center frequency.
2. RBW = 100 kHz.
3. VBW  $\geq 3 \times$  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.

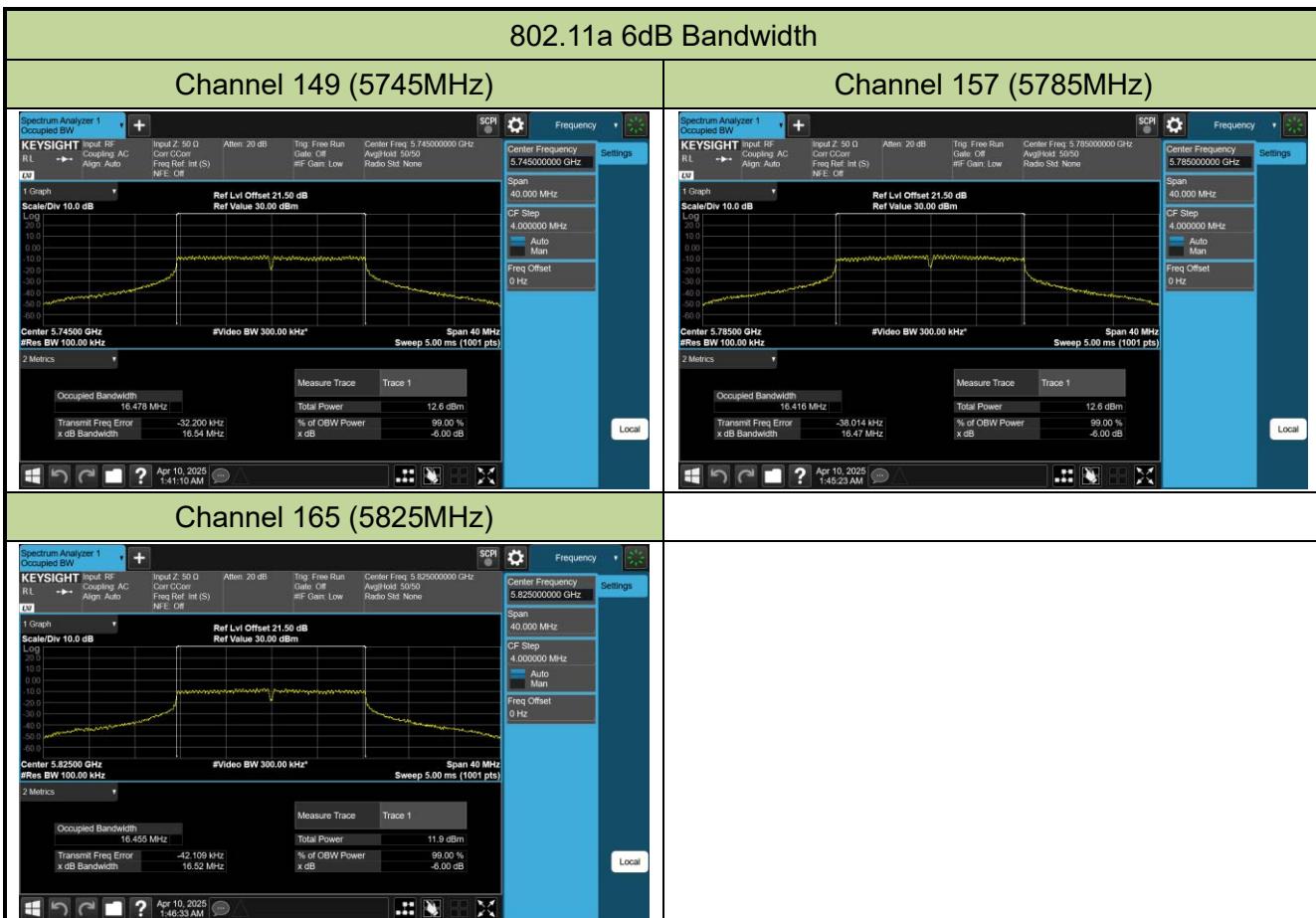
### 7.3.4. Test Setup



### 7.3.5. Test Result

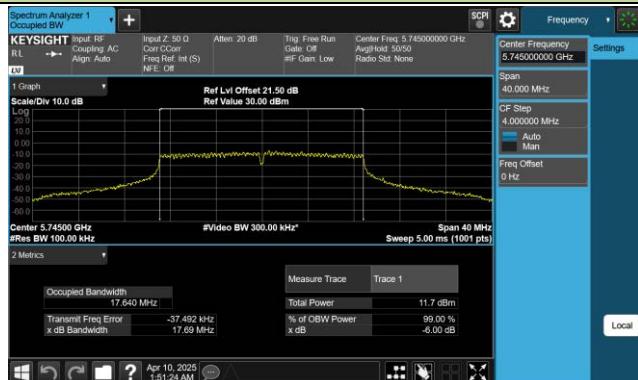
Product	Smart touch panel tablet	Temperature	21°C
Test Engineer	Peter	Relative Humidity	56%
Test Site	SR7	Test Date	2025/4/10

Test Mode	Data Rate/ MCS	Channel No.	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)	Result
Ant 1						
802.11a	6Mbps	149	5745	16.540	≥ 0.5	Pass
802.11a	6Mbps	157	5785	16.470	≥ 0.5	Pass
802.11a	6Mbps	165	5825	16.520	≥ 0.5	Pass
802.11ac-VHT20	MCS0	149	5745	17.690	≥ 0.5	Pass
802.11ac-VHT20	MCS0	157	5785	17.680	≥ 0.5	Pass
802.11ac-VHT20	MCS0	165	5825	17.700	≥ 0.5	Pass
802.11ac-VHT40	MCS0	151	5755	34.740	≥ 0.5	Pass
802.11ac-VHT40	MCS0	159	5795	32.410	≥ 0.5	Pass
802.11ac-VHT80	MCS0	155	5775	76.400	≥ 0.5	Pass
802.11ax-HE20	MCS0	149	5745	19.100	≥ 0.5	Pass
802.11ax-HE20	MCS0	157	5785	19.110	≥ 0.5	Pass
802.11ax-HE20	MCS0	165	5825	19.110	≥ 0.5	Pass
802.11ax-HE40	MCS0	151	5755	35.120	≥ 0.5	Pass
802.11ax-HE40	MCS0	159	5795	35.110	≥ 0.5	Pass
802.11ax-HE80	MCS0	155	5775	75.180	≥ 0.5	Pass

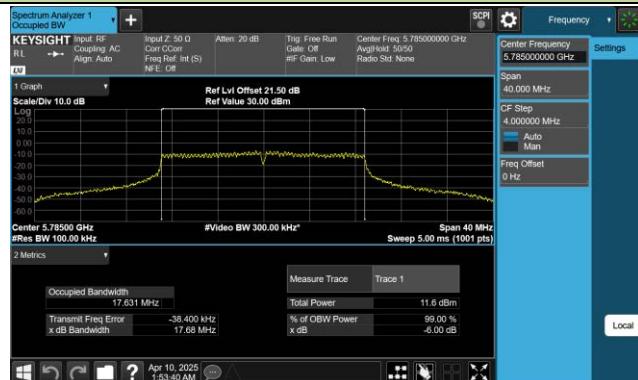


### 802.11ac-VHT20 6dB Bandwidth

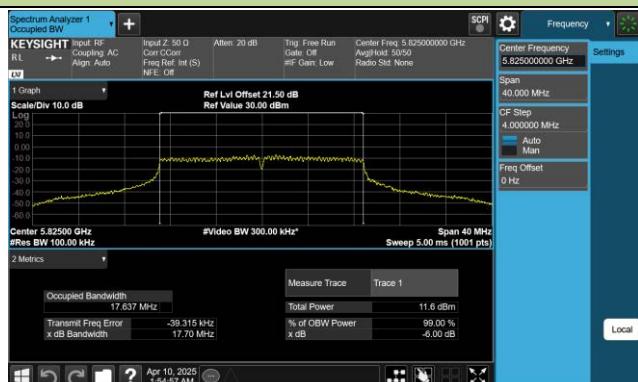
#### Channel 149 (5745MHz)



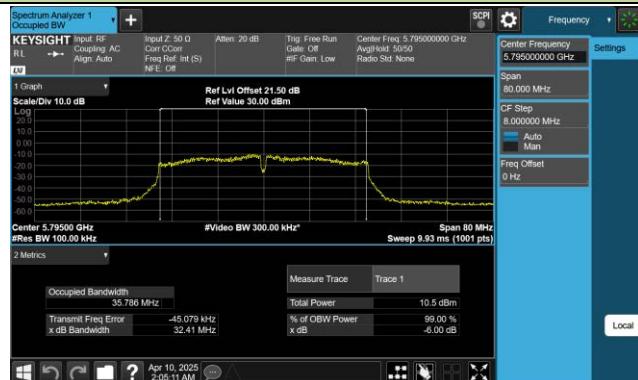
#### Channel 157 (5785MHz)



#### Channel 165 (5825MHz)



### 802.11ac-VHT40 6dB Bandwidth



### 802.11ac-VHT80 6dB Bandwidth

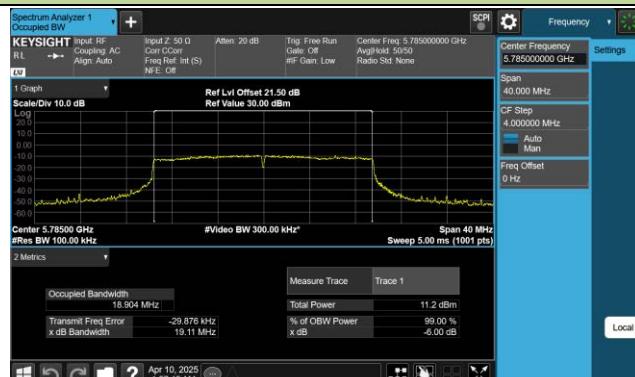


### 802.11ax-HE20 6dB Bandwidth

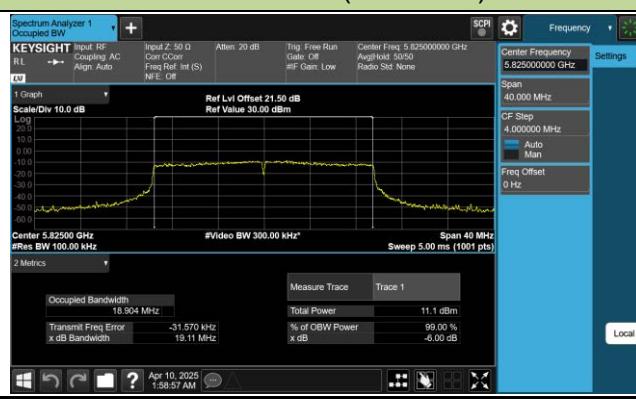
#### Channel 149 (5745MHz)



#### Channel 157 (5785MHz)

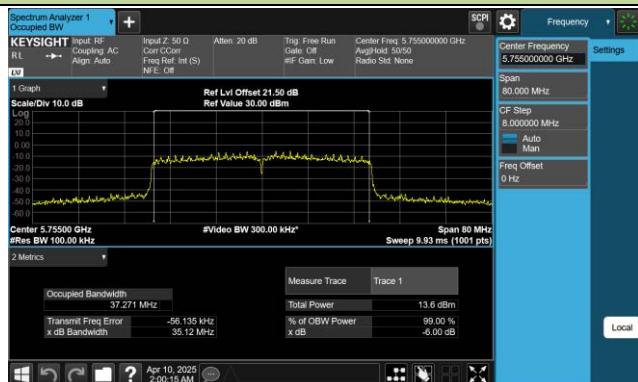


#### Channel 165 (5825MHz)

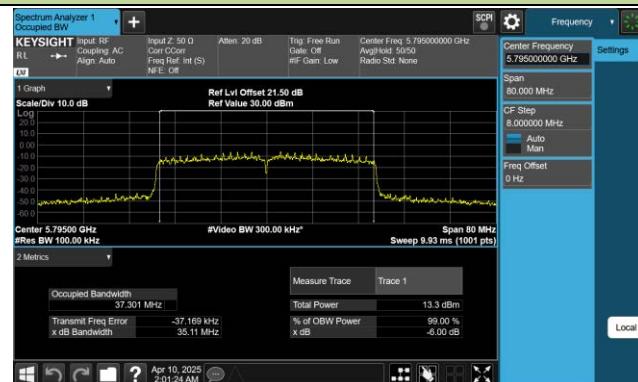


## 802.11ax-HE40 6dB Bandwidth

## Channel 151 (5755MHz)

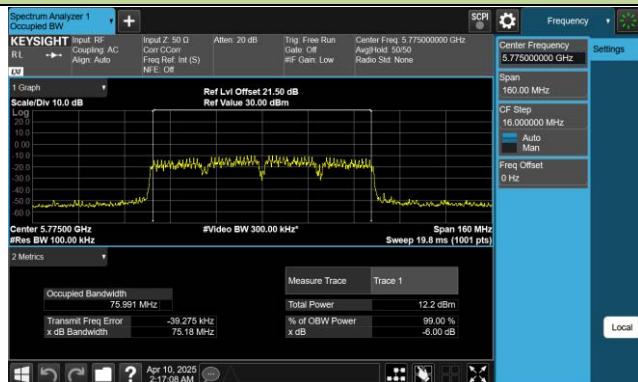


## Channel 159 (5795MHz)



## 802.11ax-HE80 6dB Bandwidth

## Channel 155 (5775MHz)



## 7.4. Output Power Measurement

### 7.4.1. Test Limit

#### For FCC Power Measurement Limit

For client operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 250mW.

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 (23.98dBm) or  $11\text{dBm} + 10 \log(26\text{dB BW})$ .

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

#### For IC Power Measurement Limit

For the band 5.15-5.25 GHz, the maximum e.i.r.p. shall not exceed 200 mW (23.01dBm) or  $10 + 10 \log_{10} B$ , dBm, whichever power is less. B is the 99% emission bandwidth in MHz.

For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power shall not exceed 250 mW (23.98dBm) or  $11 + 10 \log_{10} B$ , dBm, whichever power is less. The maximum e.i.r.p. shall not exceed 1.0 W (30dBm) or  $17 + 10 \log_{10} B$ , dBm, whichever power is less. B is the 99% emission bandwidth in MHz.

For the 5.725-5.85 GHz band, the maximum conducted output power shall not exceed 1 W.

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

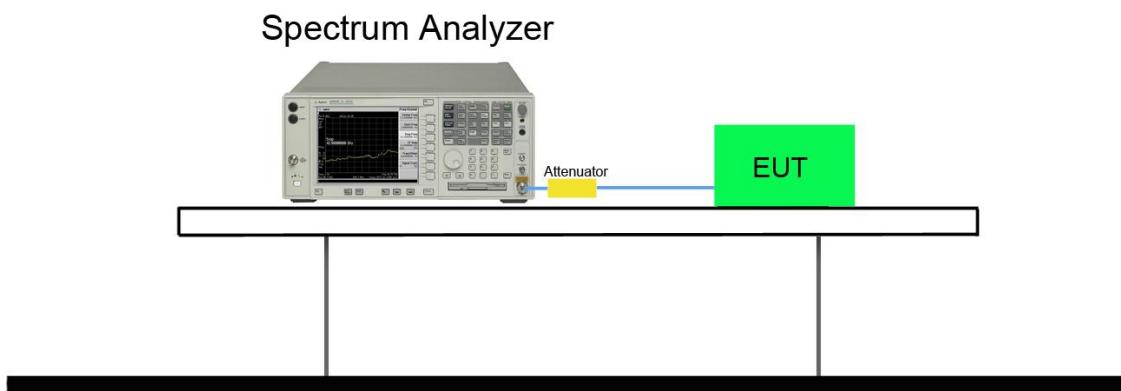
### 7.4.2. Test Procedure Used

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

#### 7.4.3. 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.

#### 7.4.4. Test Setup



### 7.4.5. Test Result

Product	Smart touch panel tablet	Temperature	21°C
Test Engineer	Peter	Relative Humidity	56%
Test Site	SR7	Test Date	2025/3/18

Test Mode	Data Rate/ MCS	Channel No.	Freq. (MHz)	Ant 0 Average Power (dBm)	Ant 1 Average Power (dBm)	Total Average Power (dBm)	Average Power Limit (dBm)	Result
11a	6Mbps	36	5180	14.25	13.47	16.89	≤ 23.98	Pass
11a	6Mbps	44	5220	14.10	13.49	16.82	≤ 23.98	Pass
11a	6Mbps	48	5240	14.05	13.62	16.85	≤ 23.98	Pass
11a	6Mbps	52	5260	14.09	13.83	16.97	≤ 23.98	Pass
11a	6Mbps	60	5300	14.27	13.63	16.97	≤ 23.98	Pass
11a	6Mbps	64	5320	14.15	13.81	16.99	≤ 23.98	Pass
11a	6Mbps	100	5500	14.55	13.23	16.95	≤ 23.98	Pass
11a	6Mbps	116	5580	13.62	14.01	16.83	≤ 23.98	Pass
11a	6Mbps	140	5700	13.52	13.83	16.69	≤ 23.98	Pass
11a	6Mbps	144	5720	13.37	13.87	16.64	≤ 23.07	Pass
11a	6Mbps	149	5745	14.23	13.99	17.12	≤ 30.00	Pass
11a	6Mbps	157	5785	13.97	14.27	17.13	≤ 30.00	Pass
11a	6Mbps	165	5825	13.74	13.77	16.77	≤ 30.00	Pass
11ac-VHT20	MCS0	36	5180	13.63	12.85	16.27	≤ 23.98	Pass
11ac-VHT20	MCS0	44	5220	13.51	13.00	16.27	≤ 23.98	Pass
11ac-VHT20	MCS0	48	5240	13.23	12.75	16.01	≤ 23.98	Pass
11ac-VHT20	MCS0	52	5260	13.21	13.24	16.24	≤ 23.98	Pass
11ac-VHT20	MCS0	60	5300	13.60	12.98	16.31	≤ 23.98	Pass
11ac-VHT20	MCS0	64	5320	13.67	13.15	16.43	≤ 23.98	Pass
11ac-VHT20	MCS0	100	5500	13.72	13.12	16.44	≤ 23.98	Pass
11ac-VHT20	MCS0	116	5600	13.19	13.67	16.45	≤ 23.98	Pass
11ac-VHT20	MCS0	140	5700	13.05	13.20	16.14	≤ 23.98	Pass
11ac-VHT20	MCS0	144	5720	12.82	13.47	16.17	≤ 23.05	Pass
11ac-VHT20	MCS0	149	5745	13.00	13.18	16.10	≤ 30.00	Pass
11ac-VHT20	MCS0	157	5785	13.17	13.15	16.17	≤ 30.00	Pass
11ac-VHT20	MCS0	165	5825	12.99	13.34	16.18	≤ 30.00	Pass