



MEASUREMENT REPORT

FCC ID : 2AF82-AP6275S
IC : 23322-AP6275S
APPLICANT : Qbic Technology Co., Ltd.
Application Type : Certification
Product : Module
Model No. : AP6275S
Brand Name : Qbic
FCC Classification : Unlicensed National Information Infrastructure (UNII)
FCC Rule Part(s) : Part 15 Subpart E (Section 15.407)
ISED Standard : RSS-247 Issue 2
Test Procedure(s) : ANSI C63.10-2013
Received Date : November 28, 2022
Test Date : December 10~16, 2022
Tested By : *Fran Chen*
(Fran Chen)
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
2211TWN803-U4	1.0	Original Report	2022-12-30	

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§2.1033 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
MRT IC Registration No.	21723
FCC Rule Part(s)	Part 15 Subpart E (Section 15.407)
ISED Standard:	RSS-247 Issue 2
Test Device Serial No.	#1-1 ☐ Production ☒ Pre-Production ☐ 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 Taiwan, EU and TELEC Rules.

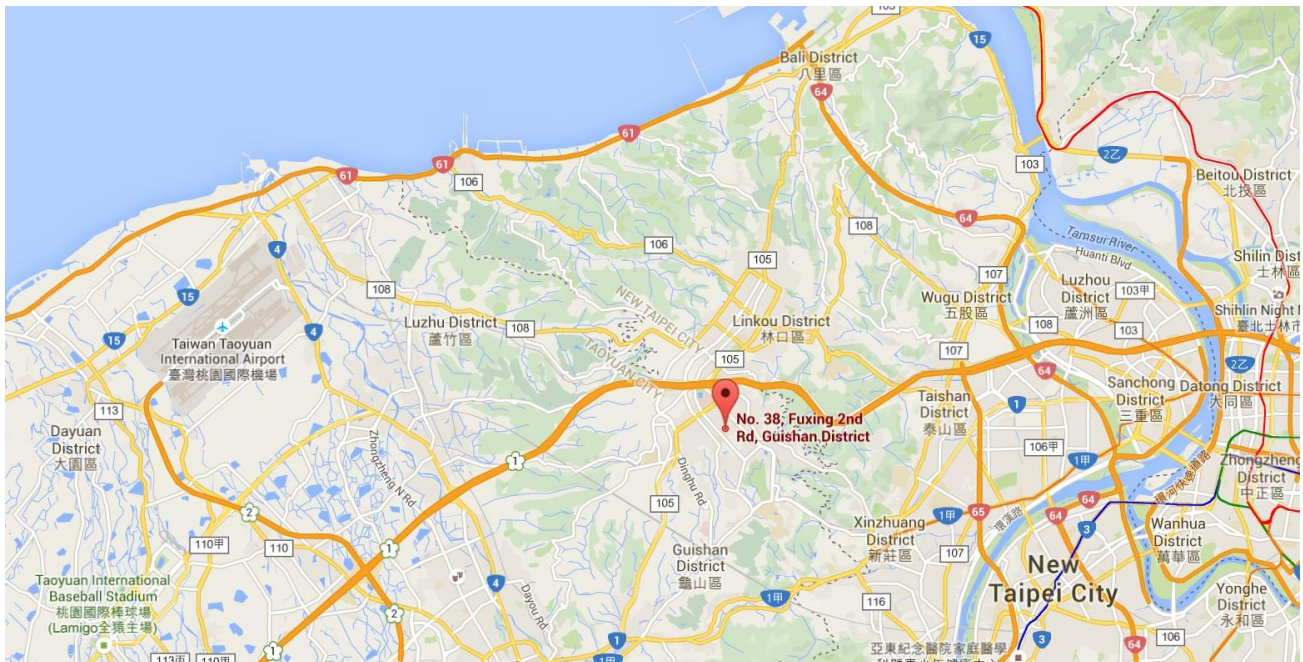
1. INTRODUCTION

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	Module
Model No.	AP6275S
Brand Name	Qbic
Supports Radios Spec.	WLAN: 2.4G: 802.11b/g/n-20/ax-20; 5G: 802.11a/n-20/ac-20/ax-20/n-40/ac-40/ax-40/ac-80/ax-80, Band 1~4 WPAN: Bluetooth Dual Mode: V5.3
Wi-Fi Specification	802.11a/n/ac/ax (2TX / 2RX)
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 600Mbps 802.11ac: up to 866.7Mbps 802.11ax: up to 1201Mbps

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

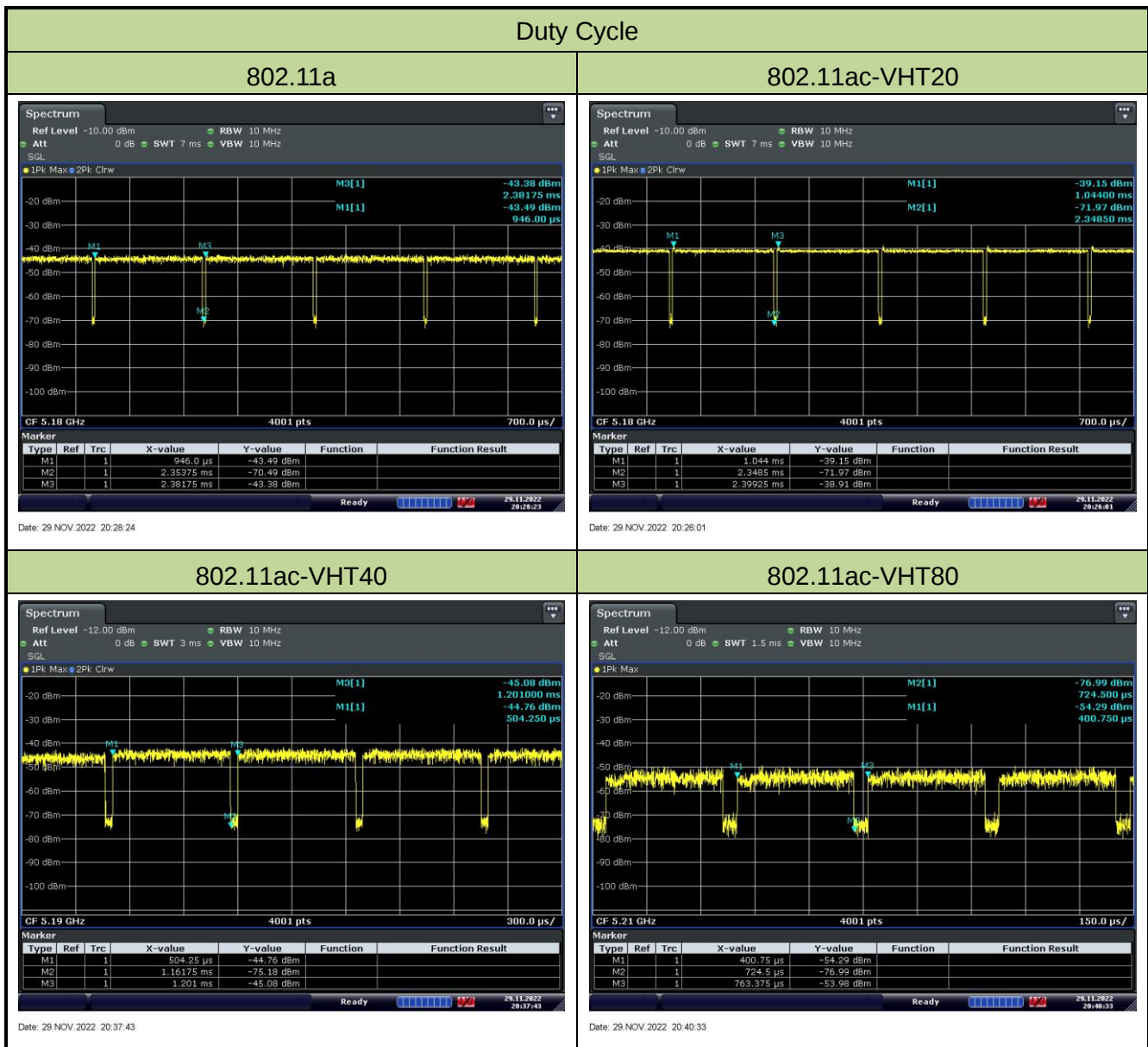
Channel	Frequency	Channel	Frequency	Channel	Frequency
38	5190 MHz	46	5230 MHz	54	5270 MHz
62	5310 MHz	102	5510 MHz	110	5550MHz
118	5590 MHz	126	5630 MHz	134	5670 MHz
142	5710 MHz	151	5755 MHz	159	5795 MHz

802.11ac-VHT80/ax-HE80

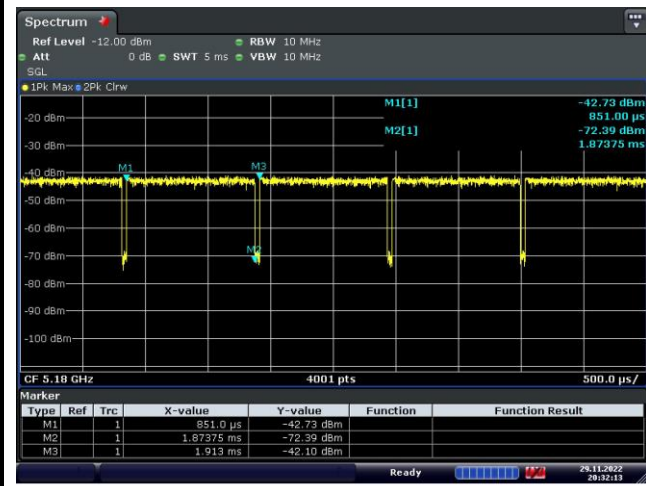
Channel	Frequency	Channel	Frequency	Channel	Frequency
42	5210 MHz	58	5290 MHz	106	5530 MHz
122	5610 MHz	138	5690 MHz	155	5775 MHz

Duty Cycle

Test Mode	Duty Cycle
802.11a	98.05%
802.11ac-VHT20	96.26%
802.11ac-VHT40	94.37%
802.11ac-VHT80	89.28%
802.11ax-HE20	96.30%
802.11ax-HE40	93.76%
802.11ax-HE80	88.05%

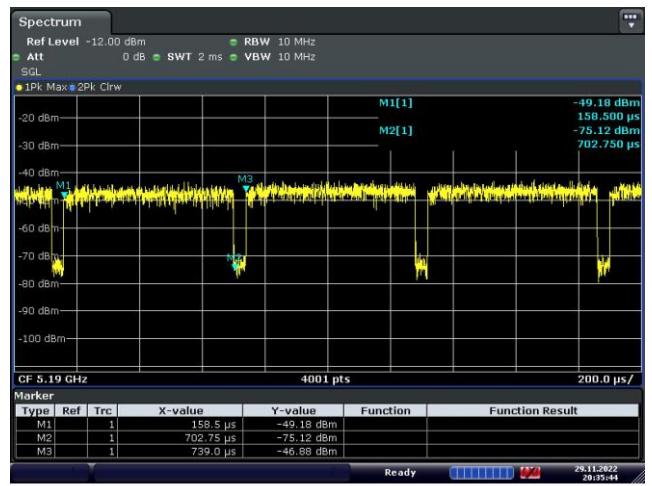


802.11ax-HE20



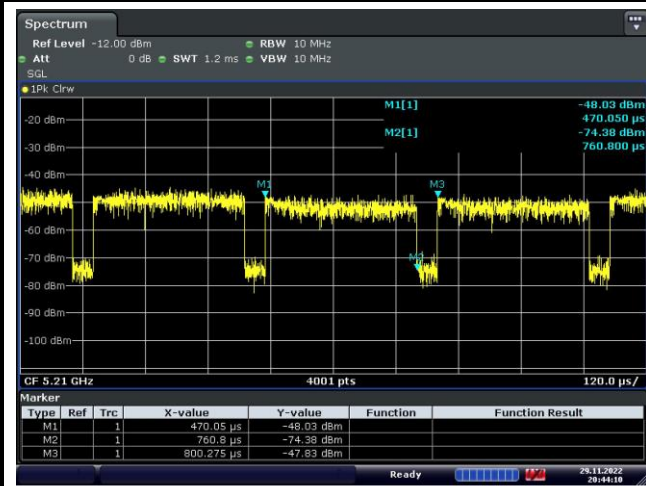
Date: 29 NOV 2022 20:32:14

802.11ax-HE40



Date: 29 NOV 2022 20:35:45

802.11ax-HE80



Date: 29 NOV 2022 20:44:11

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)
	Mode 8: Receiver by 802.11ac-VHT20 (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.

Note 2: Due to CDD mode was the worst mode, so all test items were evaluated in this report. The beamforming mode only evaluated the RF output power.

2.4. Test Software

The test utility software used during testing was “Ampak RFTestTool ver:7.3”.

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 B)2)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.

2.7. EMI Suppression Device(s)/Modifications

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

2.8. 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 **Module**, 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)	T _x Paths	Max Antenna Gain (dBi)	CDD Directional Gain (dBi)	
				For Power	For PSD
Chip Antenna	2412 ~ 2462	2	3.0	3.0	6.01
	5150 ~ 5850	2	3.3	3.3	6.31

Note:

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,

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

- For power measurements on IEEE 802.11 devices,

Array Gain = 0 dB for $N_{ANT} \leq 4$;

2. All messages of antenna were declared by manufacturer.

5. TEST EQUIPMENT CALIBRATION DATE

Conducted Emissions – SR2

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
Two-Line V-Network	R&S	ENV216	MRTTWA00019	1 year	2023/3/7
Cable	Rosnol	N1C50-RG400-B 1C50-500CM	MRTTWE00013	1 year	2023/6/19
EMI Test Receiver	R&S	ESR3	MRTTWA00009	1 year	2023/3/9

Radiated Emissions – AC2

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
Broadband TRILOG Antenna	SCHWARZBECK	VULB 9162	MRTTWA00001	1 year	2022/12/30
Active Loop Antenna	SCHWARZBECK	FMZB 1519B	MRTTWA00002	1 year	2023/5/24
Broadband Hornantenna	RFSPIN	DRH18-E	MRTTWA00087	1 year	2023/5/10
Breitband Hornantenna	SCHWARZBECK	BBHA 9170	MRTTWA00004	1 year	2023/3/29
Broadband Preamplifier	EMC Instruments corporation	EMC118A45SE	MRTTWA00088	1 year	2023/5/9
Broadband Amplifier	SCHWARZBECK	BBV 9721	MRTTWA00006	1 year	2023/3/30
Signal Analyzer	R&S	FSV40	MRTTWA00007	1 year	2023/3/16
EMI Test Receiver	R&S	ESR3	MRTTWA00009	1 year	2023/3/9
EXA Signal Analyzer	KEYSIGHT	N9010A	MRTTWA00012	1 year	2023/10/5
EXA Signal Analyzer	KEYSIGHT	N9010B	MRTTWA00074	1 year	2023/7/19
Antenna Cable	HUBERSUHNER	SF106	MRTTWE00034	1 year	2023/6/27
Cable	HUBERSUHNER	EMC105-NM-NM -3000	MRTTWE00035	1 year	2023/6/27

Conducted Test Equipment – SR5

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
EXA Signal Analyzer	KEYSIGHT	N9010A	MRTTWA00012	1 year	2023/10/5
EXA Signal Analyzer	KEYSIGHT	N9010B	MRTTWA00074	1 year	2023/7/19
USB Wideband Power Sensor	KEYSIGHT	U2021XA	MRTTWA00015	1 year	2023/3/16

Test Software

Software	Version	Function
e3	9.160520a	EMI Test Software
EMI	V3	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% ($U=2Uc(y)$): 0.15MHz~30MHz: $\pm 2.53\text{dB}$
Radiated Spurious Emission
Measuring Uncertainty for a Level of Confidence of 95% ($U=2Uc(y)$): 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% ($U=2Uc(y)$): $\pm 78.4\text{Hz}$
Conducted Power
Measuring Uncertainty for a Level of Confidence of 95% ($U=2Uc(y)$): $\pm 0.84\text{dB}$
Conducted Spurious Emission
Measuring Uncertainty for a Level of Confidence of 95% ($U=2Uc(y)$): $\pm 2.65\text{ dB}$
Occupied Bandwidth
Measuring Uncertainty for a Level of Confidence of 95% ($U=2Uc(y)$): $\pm 3.3\%$
Temp. / Humidity
Measuring Uncertainty for a Level of Confidence of 95% ($U=2Uc(y)$): $\pm 0.82^\circ\text{C} / \pm 3\%$
DC Voltage
Measuring Uncertainty for a Level of Confidence of 95% ($U=2Uc(y)$): $\pm 0.3\%$

7. TEST RESULT

7.1. Summary

Company Name: **Module**

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

FCC Section(s)	IC Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
15.407(a)	RSS-247 §6.2.1	26dB Bandwidth	N/A	Conducted	Pass	Section 7.2
15.407(e)	RSS-247 §6.2.4	6dB Bandwidth	≥ 500kHz		Pass	Section 7.3
15.407(a)(1)(i), (2), (3)	RSS-247 §6.2.1, §6.2.2, §6.2.3, §6.2.4	Maximum Conducted Output Power	Refer to Section 7.5		Pass	Section 7.4
15.407(h)(1)	RSS-247 §6.2.2, §6.2.3	Transmit Power Control	≤ 24 dBm		N/A	Section 7.5
15.407(a)(1)(i), (2), (3), (5)	RSS-247 §6.2.1, §6.2.2, §6.2.3, §6.2.4	Power Spectral Density	Refer to Section 7.7		Pass	Section 7.6
15.407(b)(1), (4)	RSS-247 §6.2.1, §6.2.2, §6.2.3, §6.2.4	Undesirable Emissions	≤ -27dBm/MHz EIRP ≤ -17dBm/MHz EIRP	Radiated	Pass	Section 7.7 & 7.8
15.205, 15.209 15.407(b)(5), (6), (7)	RSS-247 §6.2.1, §6.2.2, §6.2.3, §6.2.4	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	RSS-Gen 8.8	AC Conducted Emissions 150kHz - 30MHz	< FCC 15.207 limits	Line Conducted	Pass	Section 7.9

Notes:

- 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.
- 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

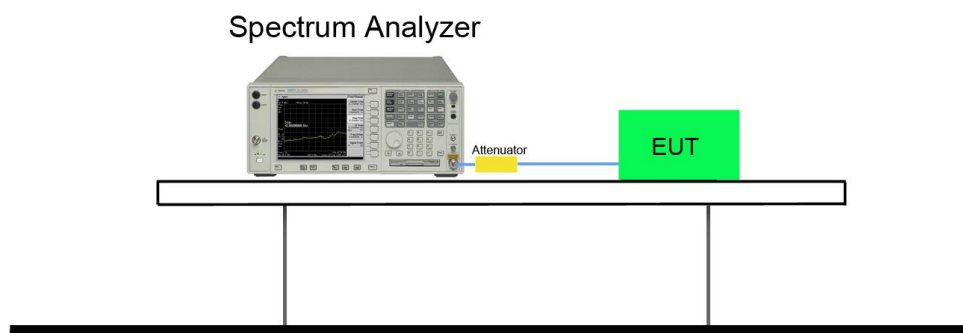
26dB Bandwidth

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	Module	Test Engineer	Peter
Test Site	SR5	Test Date	2022/12/13
Test Item	26dB Bandwidth & 99% Bandwidth		

Test Mode	Data Rate/ MCS	Channel No.	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Ant 0 / Ant 0+1					
802.11a	6Mbps	36	5180	24.550	16.615
802.11a	6Mbps	44	5220	25.020	16.656
802.11a	6Mbps	48	5240	24.750	16.684
802.11a	6Mbps	52	5260	27.880	16.670
802.11a	6Mbps	60	5300	25.390	16.821
802.11a	6Mbps	64	5320	27.820	16.873
802.11a	6Mbps	100	5500	29.540	16.769
802.11a	6Mbps	116	5580	33.810	16.914
802.11a	6Mbps	140	5700	23.840	16.663
802.11a	6Mbps	144	5720	31.330	16.843
802.11a	6Mbps	149	5745	31.000	17.072
802.11a	6Mbps	157	5785	29.350	16.813
802.11a	6Mbps	165	5825	24.450	16.818
802.11ac-VHT20	MCS0	36	5180	31.050	17.857
802.11ac-VHT20	MCS0	44	5220	23.870	17.840
802.11ac-VHT20	MCS0	48	5240	25.550	17.899
802.11ac-VHT20	MCS0	52	5260	27.440	17.855
802.11ac-VHT20	MCS0	60	5300	28.710	17.973
802.11ac-VHT20	MCS0	64	5320	26.090	17.979
802.11ac-VHT20	MCS0	100	5500	28.340	17.891
802.11ac-VHT20	MCS0	116	5580	29.230	17.993
802.11ac-VHT20	MCS0	140	5700	27.430	17.918
802.11ac-VHT20	MCS0	144	5720	34.000	18.124
802.11ac-VHT20	MCS0	149	5745	29.570	18.098
802.11ac-VHT20	MCS0	157	5785	30.320	18.039
802.11ac-VHT20	MCS0	165	5825	28.080	17.980

Test Mode	Data Rate/ MCS	Channel No.	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Ant 0 / Ant 0+1					
802.11ac-VHT40	MCS0	38	5190	44.990	36.372
802.11ac-VHT40	MCS0	46	5230	69.420	36.741
802.11ac-VHT40	MCS0	54	5270	73.910	36.896
802.11ac-VHT40	MCS0	62	5310	59.180	36.506
802.11ac-VHT40	MCS0	102	5510	40.080	36.314
802.11ac-VHT40	MCS0	110	5550	73.970	36.964
802.11ac-VHT40	MCS0	134	5670	75.690	36.672
802.11ac-VHT40	MCS0	142	5710	78.630	37.411
802.11ac-VHT40	MCS0	151	5755	79.100	37.233
802.11ac-VHT40	MCS0	159	5795	75.960	37.004
802.11ac-VHT80	MCS0	42	5210	80.490	75.872
802.11ac-VHT80	MCS0	58	5290	113.400	75.973
802.11ac-VHT80	MCS0	106	5530	81.950	75.867
802.11ac-VHT80	MCS0	122	5610	148.200	76.276
802.11ac-VHT80	MCS0	138	5690	149.400	76.411
802.11ac-VHT80	MCS0	155	5775	145.700	76.681
802.11ax-HE20	MCS0	36	5180	22.280	18.867
802.11ax-HE20	MCS0	44	5220	24.670	18.962
802.11ax-HE20	MCS0	48	5240	26.400	18.986
802.11ax-HE20	MCS0	52	5260	28.500	18.983
802.11ax-HE20	MCS0	60	5300	24.600	19.036
802.11ax-HE20	MCS0	64	5320	26.750	18.992
802.11ax-HE20	MCS0	100	5500	25.110	19.056
802.11ax-HE20	MCS0	116	5580	30.130	19.160
802.11ax-HE20	MCS0	140	5700	25.770	18.986
802.11ax-HE20	MCS0	144	5720	30.770	19.147
802.11ax-HE20	MCS0	149	5745	32.260	19.132
802.11ax-HE20	MCS0	157	5785	30.290	19.121
802.11ax-HE20	MCS0	165	5825	31.640	19.079

Test Mode	Data Rate/ MCS	Channel No.	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Ant 0 / Ant 0+1					
802.11ax-HE40	MCS0	38	5190	39.900	37.657
802.11ax-HE40	MCS0	46	5230	71.040	37.985
802.11ax-HE40	MCS0	54	5270	68.670	37.917
802.11ax-HE40	MCS0	62	5310	42.780	37.691
802.11ax-HE40	MCS0	102	5510	39.970	37.615
802.11ax-HE40	MCS0	110	5550	72.690	38.093
802.11ax-HE40	MCS0	134	5670	68.960	37.961
802.11ax-HE40	MCS0	142	5710	76.770	38.785
802.11ax-HE40	MCS0	151	5755	79.950	45.743
802.11ax-HE40	MCS0	159	5795	77.490	44.742
802.11ax-HE80	MCS0	42	5210	80.440	77.166
802.11ax-HE80	MCS0	58	5290	81.860	77.209
802.11ax-HE80	MCS0	106	5530	81.040	77.102
802.11ax-HE80	MCS0	122	5610	154.300	78.289
802.11ax-HE80	MCS0	138	5690	155.100	79.787
802.11ax-HE80	MCS0	155	5775	155.800	83.570

Test Mode	Channel No.	Frequency (MHz)	99% Bandwidth (MHz)	F _H (MHz)	Result
802.11a	48	5240	16.684	5248.342	< 5250
802.11ac-VHT20	48	5240	17.899	5248.950	< 5250
802.11ac-VHT40	46	5230	36.741	5248.371	< 5250
802.11ac-VHT80	42	5210	75.872	5247.936	< 5250
802.11ax-HE20	48	5240	18.986	5249.493	< 5250
802.11ax-HE40	46	5230	37.985	5248.993	< 5250
802.11ax-HE80	42	5210	77.166	5248.583	< 5250

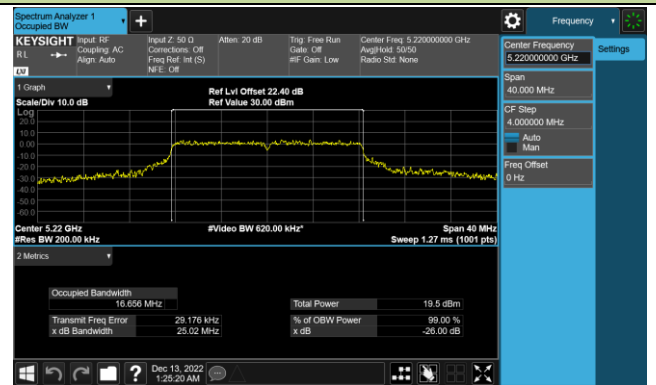
Note: F_H is the frequency of the upper marker resulting from the OBW.

802.11a 26dB Bandwidth & 99% Bandwidth

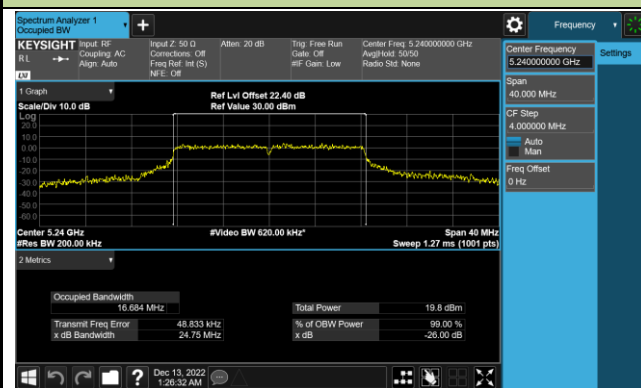
Channel 36 (5180MHz)



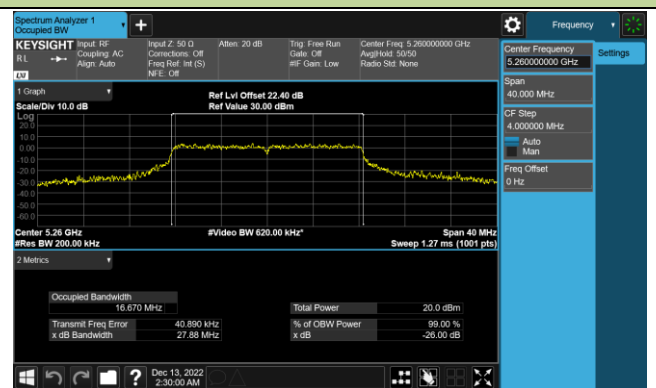
Channel 44 (5220MHz)



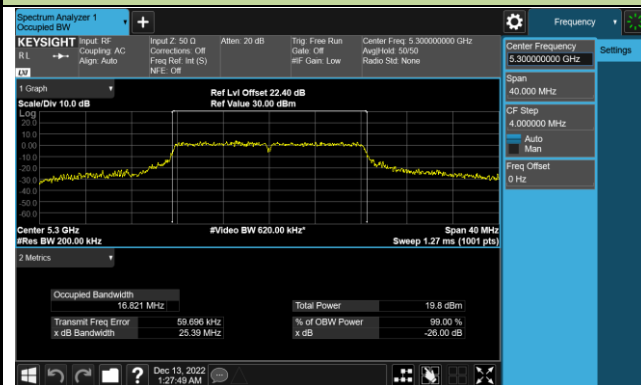
Channel 48 (5240MHz)



Channel 52 (5260MHz)



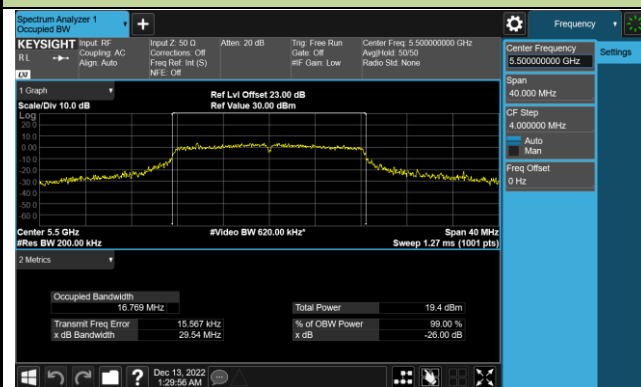
Channel 60 (5300MHz)



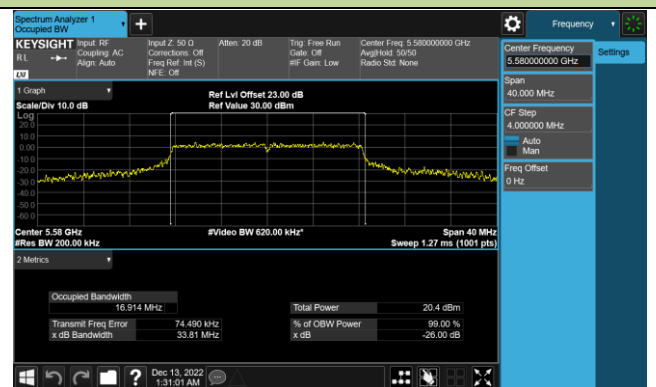
Channel 64 (5320MHz)

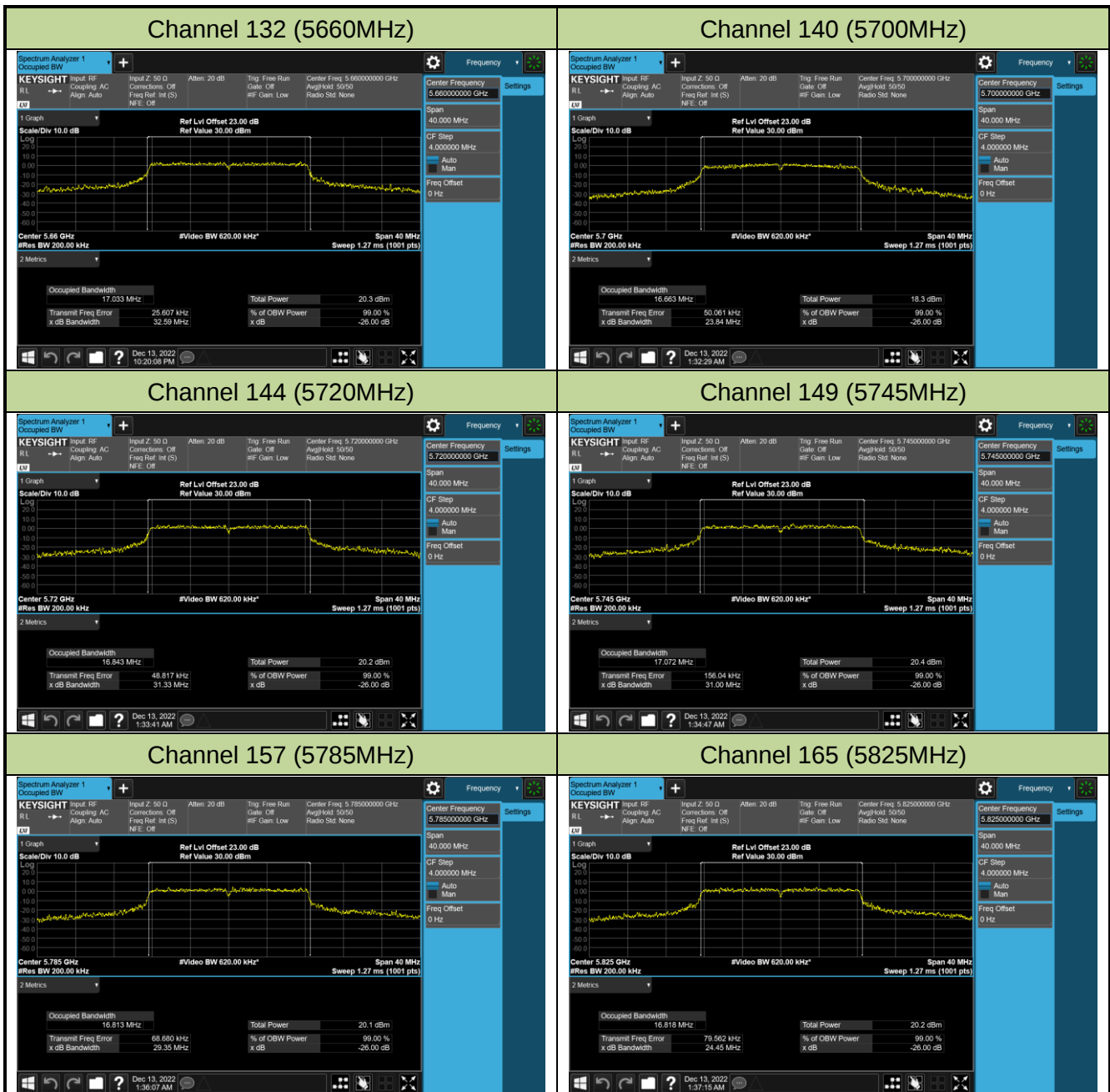


Channel 100 (5500MHz)



Channel 116 (5580MHz)



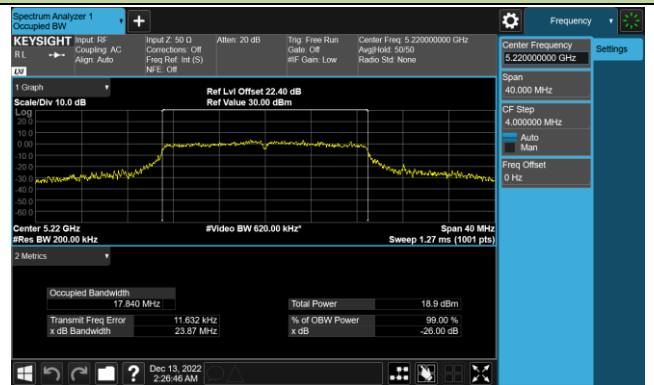


802.11ac-VHT20 26dB Bandwidth & 99% Bandwidth

Channel 36 (5180MHz)



Channel 44 (5220MHz)



Channel 48 (5240MHz)



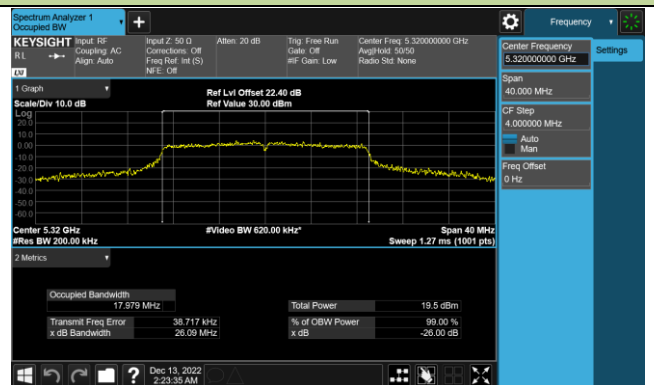
Channel 52 (5260MHz)



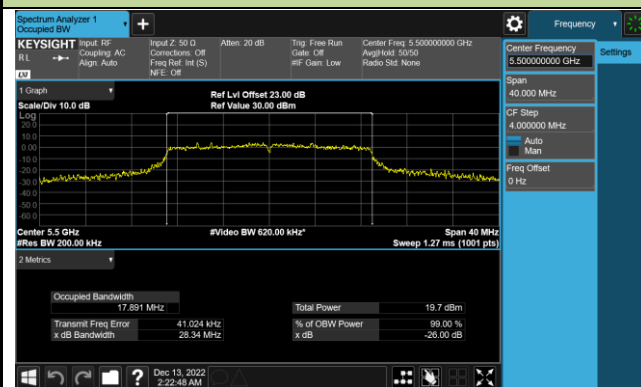
Channel 60 (5300MHz)



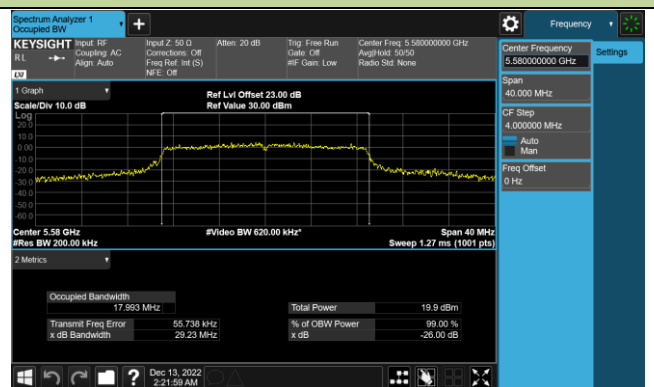
Channel 64 (5320MHz)

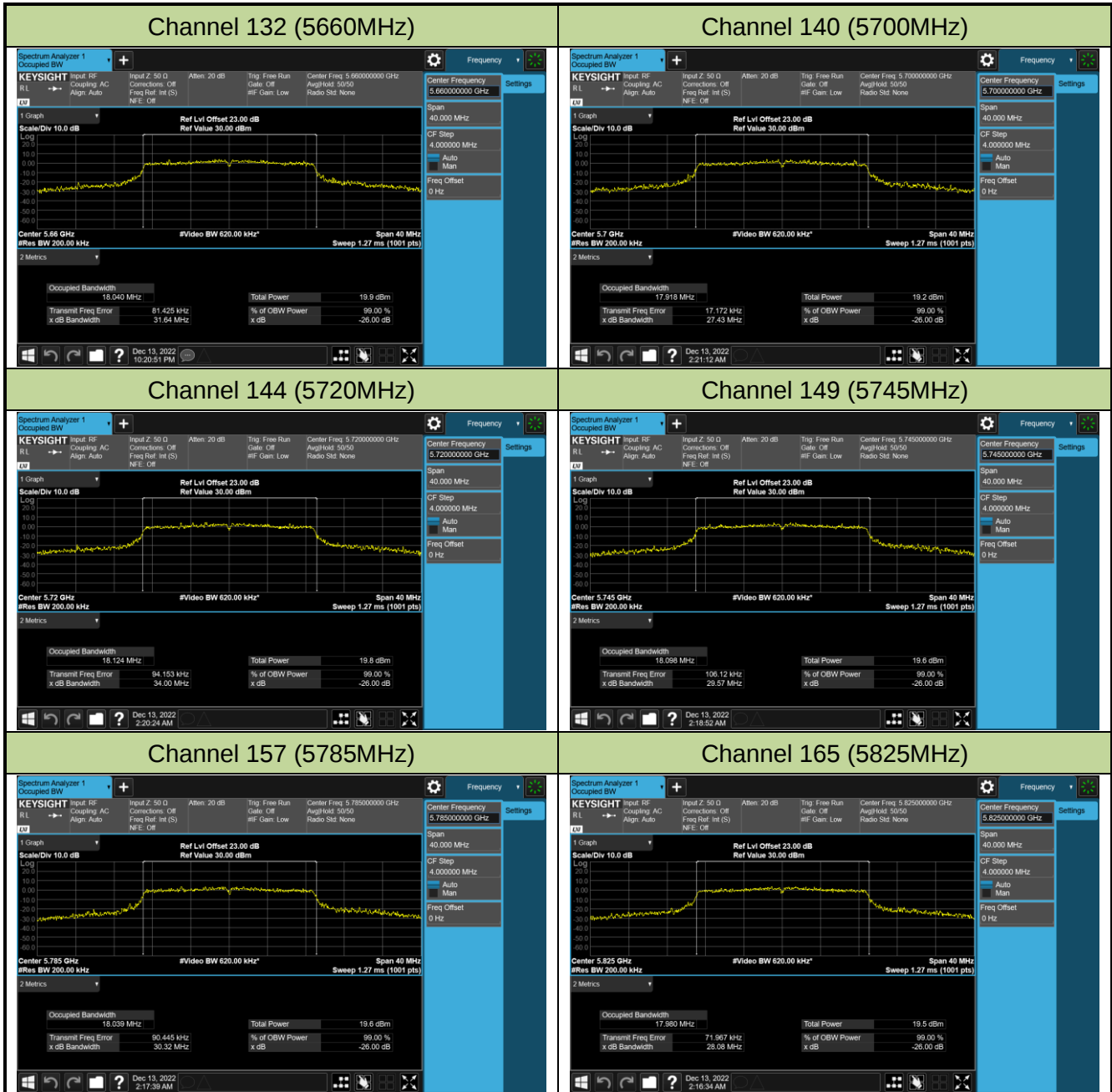


Channel 100 (5500MHz)



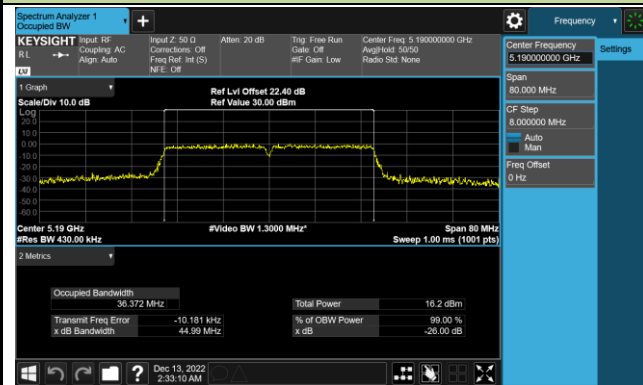
Channel 116 (5580MHz)



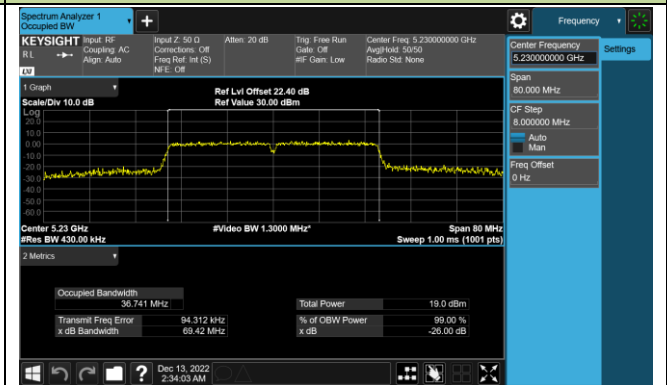


802.11ac-VHT40 26dB Bandwidth & 99% Bandwidth

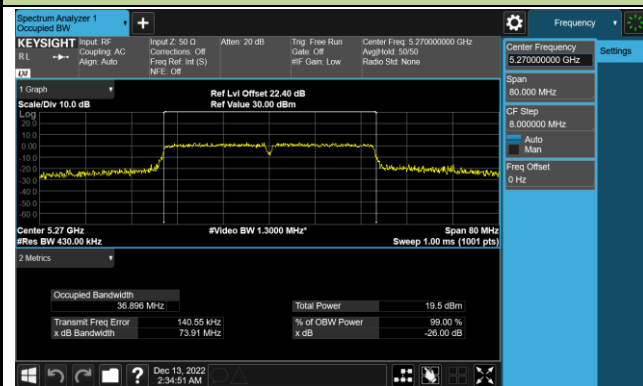
Channel 38 (5190MHz)



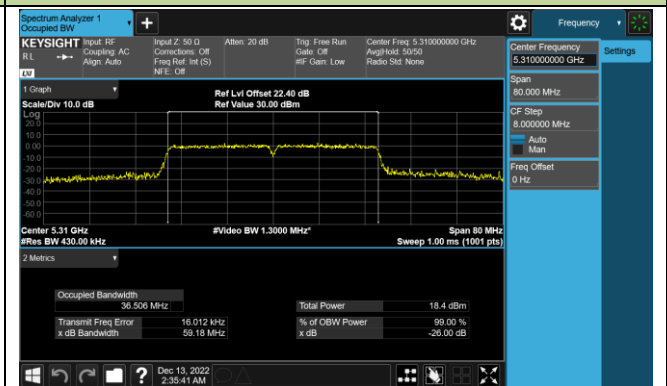
Channel 46 (5230MHz)



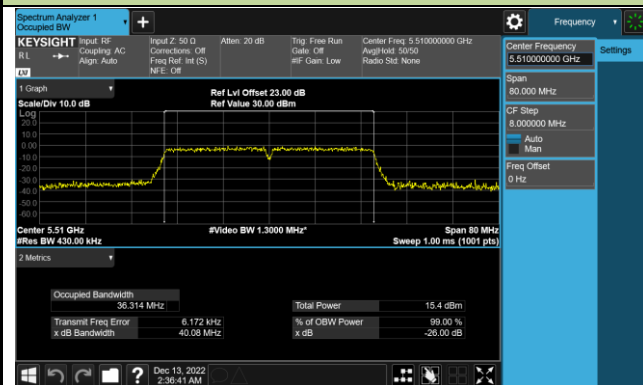
Channel 54 (5270MHz)



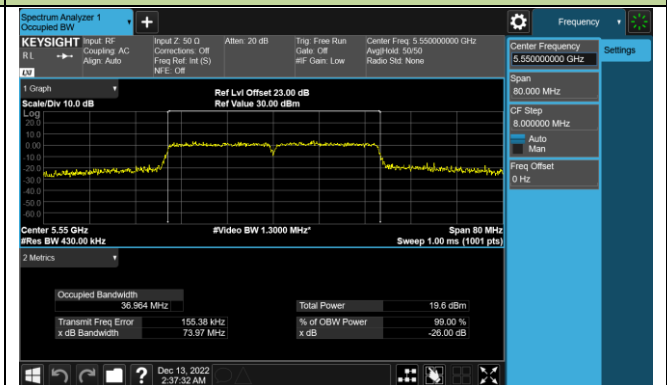
Channel 62 (5310MHz)



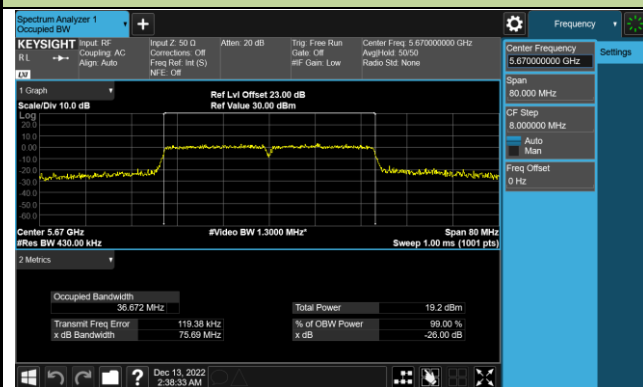
Channel 102 (5510MHz)



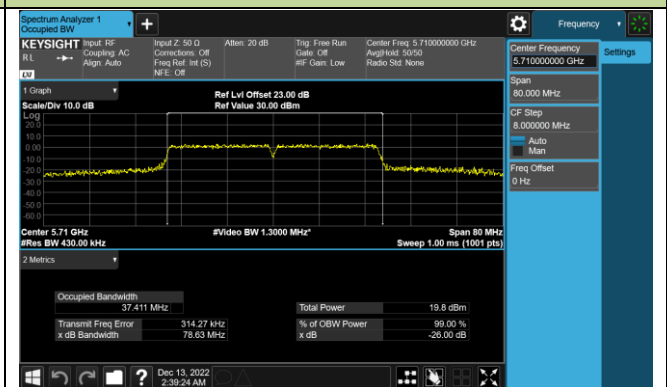
Channel 110 (5550MHz)

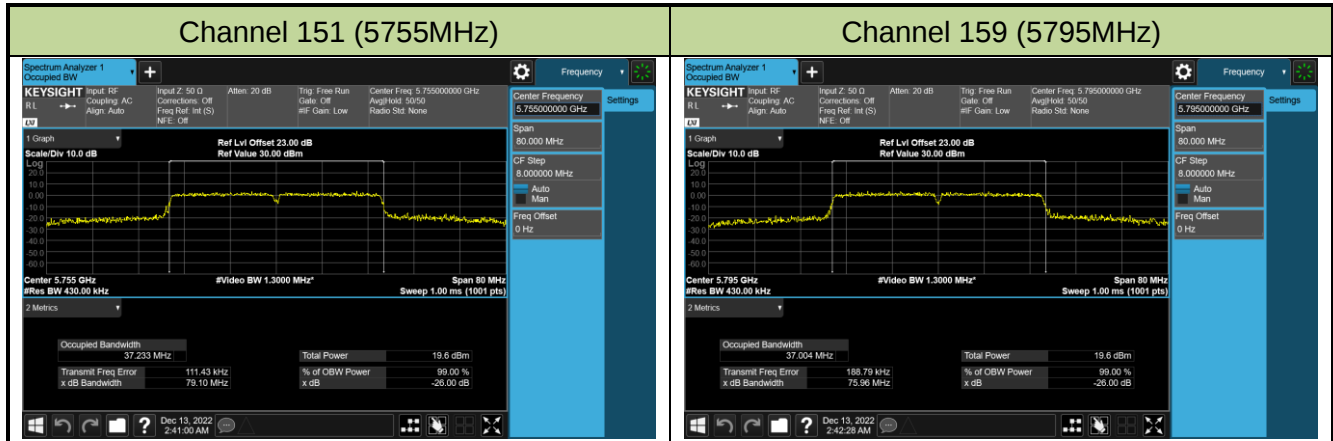


Channel 134 (5670MHz)



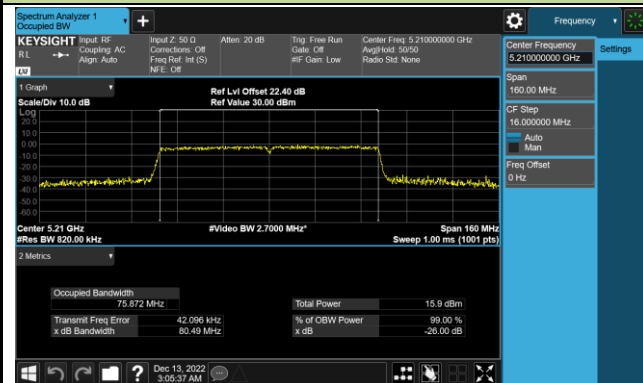
Channel 142 (5710MHz)



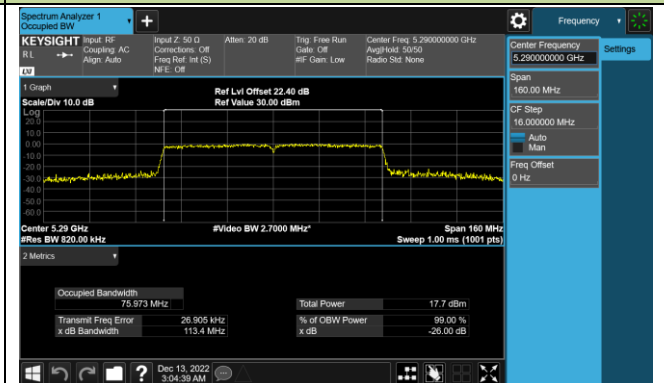


802.11ac-VHT80 26dB Bandwidth & 99% Bandwidth

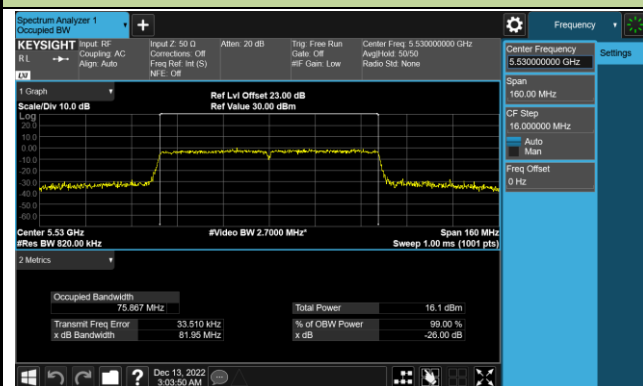
Channel 42 (5210MHz)



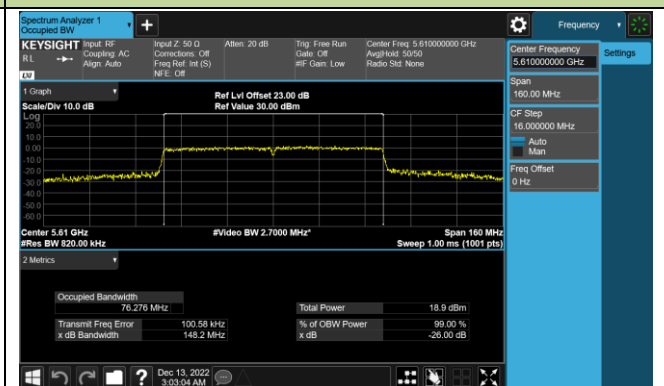
Channel 58 (5290MHz)



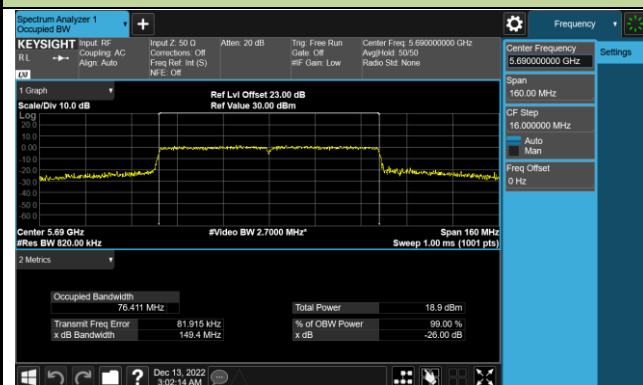
Channel 106 (5530MHz)



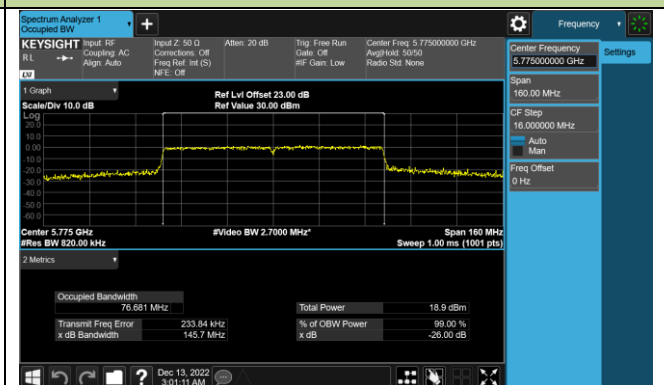
Channel 122 (5610MHz)



Channel 138 (5690MHz)

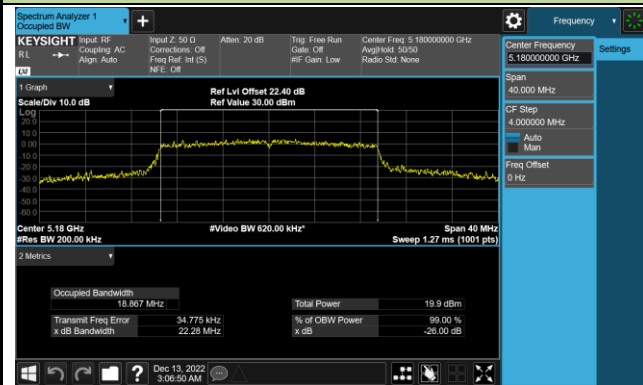


Channel 155 (5775MHz)

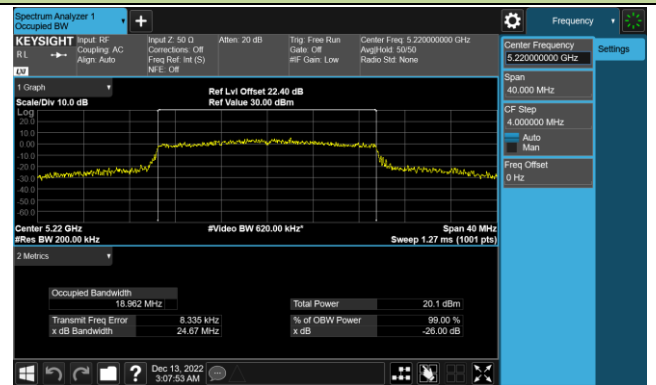


802.11ax-HE20 26dB Bandwidth & 99% Bandwidth

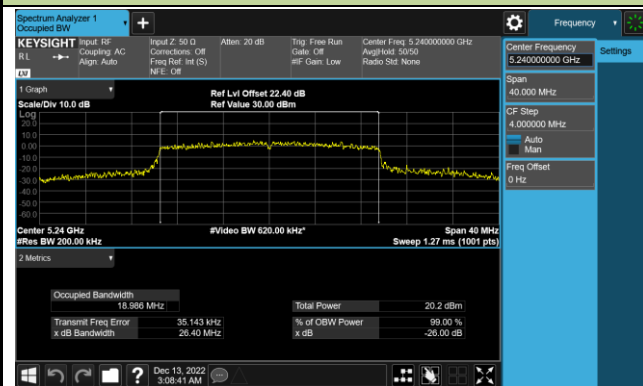
Channel 36 (5180MHz)



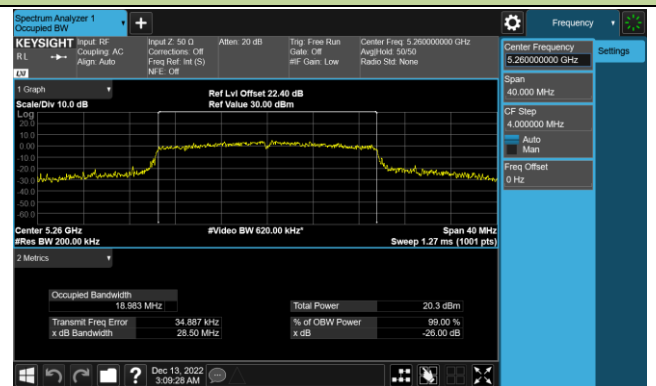
Channel 44 (5220MHz)



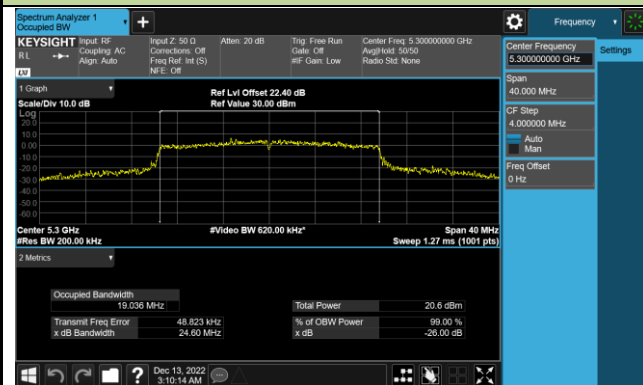
Channel 48 (5240MHz)



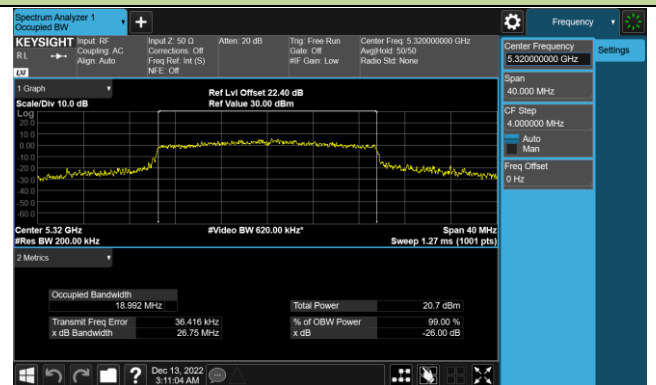
Channel 52 (5260MHz)



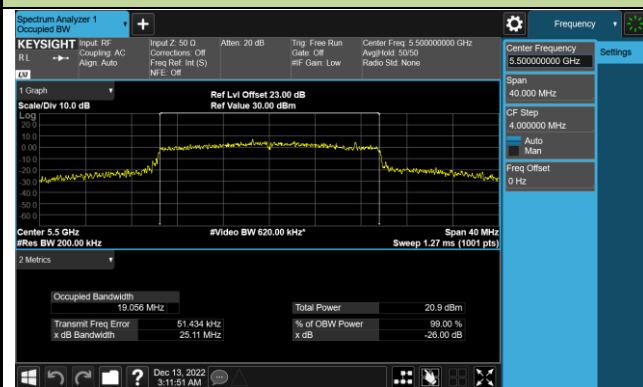
Channel 60 (5300MHz)



Channel 64 (5320MHz)



Channel 100 (5500MHz)



Channel 116 (5580MHz)

