MEASUREMENT REPORT

FCC PART 15.407 WLAN 802.11a/n/ac/ax

FCC ID:	TK4WPQ872
APPLICANT:	Compex Systems Pte Ltd.
Application Type:	Certification
Product:	Wireless Access Point
Model No.:	WPQ872, WPQ872-I, WPQ872HV, WPQ872LV
Brand Name:	COMPEX
FCC Classification:	Unlicensed National Information Infrastructure (UNII)
FCC Rule Part(s):	Part15 Subpart E (Section 15.407)
Test Procedure(s):	ANSI C63.10-2013, KDB 662911 D01v02r01, KDB 789033 D02v02r01
Test Date:	February 14 ~ August 06, 2020

Reviewed By: (Jame Yuan)

Approved By: (Robin Wu)

Revision History

Report No.	Version	Description	Issue Date	Note
2001RSU050-U3	Rev. 01	Initial Report	08-30-2020	Valid

CONTENTS

Description Page

General Information

Applicant:	Compex Systems Pte Ltd.
Applicant Address:	No:9 Harrison Road, Harrison Industrial Building, #05-01, Singapore 369651
Manufacturer:	Compex Systems Pte Ltd.
Manufacturer Address:	No:9 Harrison Road, Harrison Industrial Building, #05-01, Singapore 369651
Test Site:	MRT Technology (Suzhou) Co., Ltd
Test Site Address:	D8 Building, No.2 Tian'edang Rd., Wuzhong Economic Development Zone, Suzhou, China

Test Facility / Accreditations

Measurements were performed at MRT Laboratory located in Tian'edang Rd.,Suzhou, China.

- **MRT facility is a FCC registered (MRTDesignation No. CN1166) test facility with the site description report on file and has met all the requirements specified in ANSI C63.4-2014.**
- **MRT facility is an IC registered (MRT Reg. No.11384A-1) test laboratory with the site description on file at Industry Canada.**
- **MRT facility is a VCCI registered (R-20025, G-20034, C-20020, T-20020) test laboratory with the site description on file at VCCI Council.**
- **MRT Lab is accredited to ISO 17025 by the American Association for Laboratory Accreditation (A2LA) under the American Association for Laboratory Accreditation Program (A2LACert. No.3628.01) in EMC, Telecommunications, Radio and SAR testing.**

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 Innovation, Science and Economic Development Canada and Certification and Engineering Bureau.

1.2. MRT Test Location

The map below shows the location of the MRT LABORATORY, its proximity to the Taihu Lake. These measurement tests were conducted at the MRT Technology (Suzhou) Co., Ltd. Facility located at D8 Building, No.2 Tian'edang Rd., Wuzhong Economic Development Zone, Suzhou, China. The measurementfacility compliant with the test site requirements specified in ANSI C63.4-2014.

2. PRODUCT INFORMATION

2.1. Equipment Description

Product Name:	Wireless Access Point
Model No.:	WPQ872, WPQ872-I, WPQ872HV, WPQ872LV
Serial No.:	400562741600251 (Configured External Wi-Fi Antenna) 400562741600252 (Configured Internal Wi-Fi Antenna)
Wi-Fi Specification:	802.11a/b/g/n/ac/ax
Bluetooth Specification:	V5.0 (Single mode only for BLE)
Accessories	
Adapter:	MODEL: FSP040-DHMN2 INPUT: 100 - 240V ~ 50/60Hz, 1.2A. OUTPUT: DC 12.0V, 3.4A
POE	MODEL: PD-9001GR/AT/AC INPUT: 100 - 240V ~ 50/60Hz, 0.67A. OUTPUT: DC 55.0V, 0.6A

Note 1: This device has two power supply, we select DC adapter for all RF testing.

Note 2: This device has two antenna configurations, one is internal, another is external, detail see EUT photo and operation description.

Note 3: The difference of models is only for marketing different client.

Note 4: We selected WPQ872 to perform all RF testing.

2.2. Product Specification Subjective to this Report

Frequency Range:	For 802.11a/n-HT20/ac-VHT20/ax-HE20: 5180~5320MHz, 5500~5720MHz, 5745~5825MHz For 802.11n-HT40/ac-VHT40/ax-HE40: 5190~5310MHz, 5510~5710MHz, 5755~5795MHz For 802.11ac-VHT80/ax-HE80: 5210MHz, 5290MHz, 5530MHz, 5610MHz, 5690MHz, 5775MHz For 802.11ac-VHT80+80/ax-HE80+80(Contiguous): 5210MHz+5290MHz, 5530MHz+5610MHz
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 1733.2Mbps 802.11ax: up to 2402Mbps

Note: For other features of this EUT, test report will be issued separately.

2.3. Working Frequencies for this Report

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	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

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-VHT80+80/ax-HE80+80(Contiguous)

5210MHz + 5290MHz	5530MHz + 5610MHz

Note 1: For 802.11ac-VHT80+80/ax-HE80+80 mode, Ant 0 & Ant 1 ports work on one frequency of the above table, Ant 2 & Ant 3 ports work on another frequency of the above table. E.g, channel 42 + 58 group, channel 42willtransmit by Ant 0 + 1 ports and channel 58will transmit by Ant 2+3 ports.
Note 2: The limit on maximum conducted output power in each U-NII band is computed based on the portion of the emission bandwidth contained within that band.

2.4. Description of Available Antennas

Antenna Type	Frequency Band(GHz)	T_X Paths	MaxAntenna Gain(dBi)	Directional Gain (dBi)	
				ForPower	For PSD
External Antenna					
Dipole	2.4	4	2.3	2.3	8.32
	5	4	5.0	5.0	11.02
InternalAntenna					
Panel	2.4	4	6.0	6.0	12.02
	5	4	7.0	7.0	13.02
Bluetooth Antenna					
FPC	2.4	1	3		

Note:

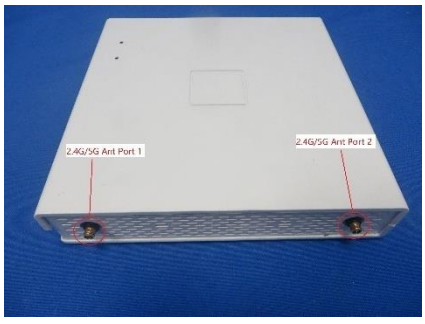
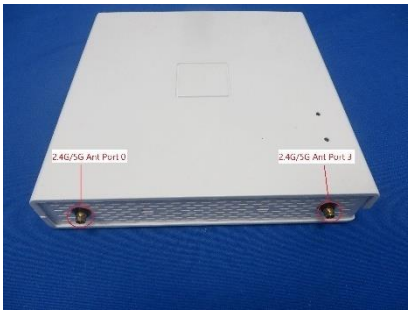
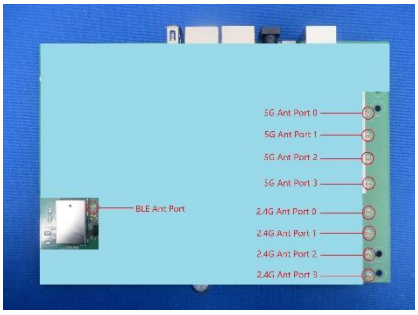
The EUT supports Cyclic Delay Diversity (CDD) mode, and CDD signals are correlated.

For CDD transmissions, directional gain is calculated as follows, N_{ANT} = 4, N_{SS} = 1.

If all antennas have the same gain, G_{ANT}, Directional gain = G_{ANT} + 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 = 6.02;
- For power measurements on IEEE 802.11 devices,
  Array Gain = 0 dB for N_{ANT} ≤ 4;

2.5. Description of Antenna RF Port

Antenna RF Port									
Software Control Port	2.4GHz RF Port				5GHz RF Port				BLE
	Ant 0	Ant 1	Ant 2	Ant 3	Ant 0	Ant 1	Ant 2	Ant 3	Ant
External Antenna									Internal Antenna
									

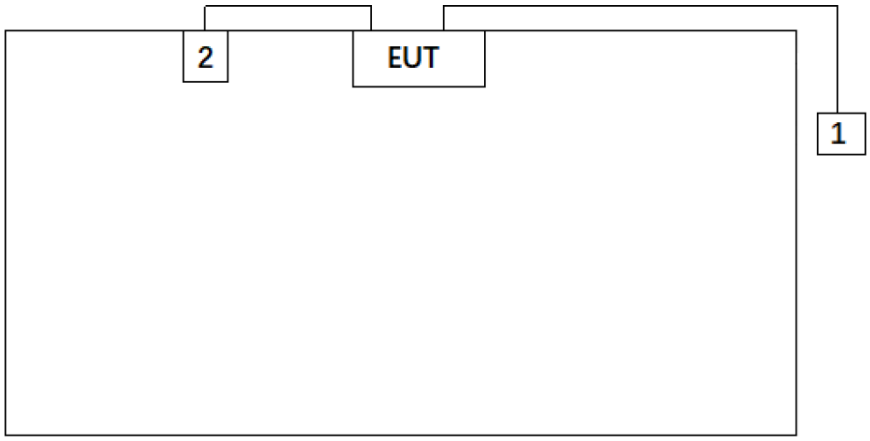
2.6. Test Mode

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 (MCS9)
	Mode 5: Transmit by 802.11ac-VHT80+80 (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-HE80+80 (MCS0)

Note: Due to 802.11n and 802.11ac have the same modulation and power setting, 802.11n-HT20 and HT40 are covered by 802.11ac-VHT20 and VHT40 in this report.

2.7. Description of Test Configuration and Software

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



Product		Manufacturer	Model No.
1	Notebook	DELL	Precision 3510
2	AC/DC Adapter	FSP GROUP INC.	FSP040-DHMN2

Note 1: The test utility software used during testing was “QRCT”, and the version was 4.0.00123.

Note 2: Detail power setting refer to operation description.

2.8. Duty Cycle

5GHz WLAN (U-NII) operation was possible in 20MHz, 40MHzand 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. 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. The duty cycles are as follows:

Test Mode	Transmission Duration (ms)	Duty Cycle (%)
802.11a	0.244	68.16
802.11ac-VHT20	5.480	91.03
802.11ac-VHT40	5.460	94.14
802.11ac-VHT80	5.480	91.03
802.11ax-HE20	5.520	97.35
802.11ax-HE40	5.500	96.83
802.11ax-HE80	5.500	96.83

2.9. EMI Suppression Device(s)/Modifications

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

2.10. Labelling 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 pamphletsupplied to the user and be readily visible to the purchaser at the time of purchase. However, when the deviceis 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 andlabel location.

3. DESCRIPTION OF TEST

3.1. Evaluation Procedure

The measurement procedures described in the American National Standard for Testing Unlicensed WirelessDevices (ANSI C63.10-2013), and the guidance provided in KDB 789033 D02v02r01 were used in themeasurement.

3.2. AC Line Conducted Emissions

The line-conducted facility is located inside an8'x4'x4' 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.

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 MF Model 210SS turntable is used for radiated measurement. It is a continuously rotatable, remotecontrolled, 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. An80cm 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 tomaximize 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 theresponsible party can be used with the device. The use of a permanently attached antenna or of an antennathat uses a unique coupling to the intentional radiator shall be considered sufficient to comply with theprovisions of this section.”

For Internal Antenna Configuration

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

For External Antenna Configuration

- The antenna of the device uses one **unique reversed** SMA connector.

Conclusion:

This unit complies with the requirement of §15.203.

5. TEST EQUIPMENT CALIBRATION DATE

Conducted Emissions - SR2

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
EMI Test Receiver	R&S	ESR3	MRTSUE06185	1 year	2021/01/18
Two-Line V-Network	R&S	ENV 216	MRTSUE06002	1 year	2021/06/11
Two-Line V-Network	R&S	ENV 216	MRTSUE06003	1 year	2021/06/11
Thermohygrometer	Testo	608-H1	MRTSUE06404	1 year	2020/08/08
Shielding Room	MIX-BEP	Chamber-SR2	MRTSUE06215	N/A	N/A

Radiated Emissions - AC1

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
EMI Test Receiver	R&S	ESR7	MRTSUE06001	1 year	2020/08/01
PXA Signal Analyzer	Keysight	9030B	MRTSUE06395	1 year	2020/09/03
Loop Antenna	Schwarzbeck	FMZB 1519	MRTSUE06025	1 year	2020/11/13
Bilog Period Antenna	Schwarzbeck	VULB 9168	MRTSUE06172	1 year	2021/04/03
BroadBand Horn Antenna	Schwarzbeck	BBHA 9120D	MRTSUE06023	1 year	2020/10/13
Broad Band Horn Antenna	Schwarzbeck	BBHA 9170	MRTSUE06024	1 year	2020/12/29
Microwave System Amplifier	Agilent	83017A	MRTSUE06076	1 year	2020/11/15
Preamplifier	Schwarzbeck	BBV 9721	MRTSUE06121	1 year	2021/06/11
Thermohygrometer	Testo	608-H1	MRTSUE06403	1 year	2020/08/08
Anechoic Chamber	TDK	Chamber-AC1	MRTSUE06212	1 year	2021/04/30

Radiated Emission - AC2

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
Spectrum Analyzer	Keysight	N9038A	MRTSUE06125	1 year	2020/08/01
Loop Antenna	Schwarzbeck	FMZB 1519	MRTSUE06025	1 year	2020/11/13
Bilog Period Antenna	Schwarzbeck	VULB 9162	MRTSUE06022	1 year	2020/10/13
Horn Antenna	Schwarzbeck	BBHA9120D	MRTSUE06171	1 year	2020/10/27
Broad Band Horn Antenna	Schwarzbeck	BBHA 9170	MRTSUE06024	1 year	2020/12/29
Broadband CoaxialPreamplifier	Schwarzbeck	BBV 9718	MRTSUE06176	1 year	2020/11/15
Preamplifier	Schwarzbeck	BBV 9721	MRTSUE06121	1 year	2021/06/11
Temperature/Humidity Meter	Minggao	ETH529	MRTSUE06170	1 year	2020/12/15
Anechoic Chamber	RIKEN	Chamber-AC2	MRTSUE06213	1 year	2021/04/30

Conducted Test Equipment - TR3

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
EXA Signal Analyzer	Agilent	N9020A	MRTSUE06106	1 year	2021/04/14
EXA Signal Analyzer	Keysight	N9010B	MRTSUE06457	1 year	2021/07/02
Signal Analyzer	R&S	FSV40	MRTSUE06218	1 year	2021/04/14
Power Meter	Agilent	U2021XA	MRTSUE06030	1 year	2020/11/17
USB wideband power sensor	Keysight	U2021XA	MRTSUE06446	1 year	2021/06/11
USB wideband power sensor	Keysight	U2021XA	MRTSUE06447	1 year	2021/06/11
Bluetooth Test Set	Anritsu	MT8852B-042	MRTSUE06389	1 year	2021/06/11
Audio Analyzer	Agilent	U8903B	MRTSUE06143	1 year	2021/06/11
Modulation Analyzer	HP	8901A	MRTSUE06098	1 year	2020/10/10
Wideband Radio Communication Tester	R&S	CMW 500	MRTSUE06243	1 year	2020/11/07
DC Power Supply	GWINSTEK	DPS-3303C	MRTSUE06064	N/A	N/A
Attenuator	MVE	6dB	MRTSUE06534	N/A	N/A
Attenuator	MVE	10dB	MRTSUE06543	N/A	N/A
Temperature & Humidity Chamber	BAOYT	BYH-150CL	MRTSUE06051	1 year	2020/11/07
Attenuator	MVE	3dB	MRTSUE06529	N/A	N/A
Attenuator	MVE	3dB	MRTSUE06532	N/A	N/A
Attenuator	MVE	10dB	MRTSUE06540	N/A	N/A
Thermohygrometer	testo	608-H1	MRTSUE06401	1 year	2020/08/08

Software	**Version**	**Function**
EMI Software	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.

AC Conducted Emission Measurement
Measurement Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): 9kHz~150kHz: 3.74dB 150kHz~30MHz: 3.44dB
Radiated Disturbance
Measurement Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): Horizontal: 30MHz~300MHz: 5.04dB 300MHz~1GHz: 4.95dB 1GHz~40GHz: 6.40dB Vertical: 30MHz~300MHz: 5.24dB 300MHz~1GHz: 6.03dB 1GHz~40GHz: 6.40dB
Spurious Emissions, Conducted
Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): 0.78dB
Output Power
Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): 1.13dB
Power Spectrum Density
Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): 1.15dB
Occupied Bandwidth
Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): 0.28%

7. TEST RESULT

7.1. Summary

FCC Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
15.407(a)	26dB Bandwidth	N/A	Conducted	Pass	Section7.2
15.407(e)	6dB Bandwidth	≥ 500kHz		Pass	Section 7.3
15.407(a)(1)(ii), (2), (3)	Maximum Conducted Output Power	Refer to Section 7.4		Pass	Section 7.4
15.407(h)(1)	Transmit Power Control	≤24 dBm		Pass	Section 7.5
15.407(a)(1)(ii), (2), (3), (5)	Peak Power Spectral Density	Refer to Section 7.6		Pass	Section 7.6
15.407(g)	Frequency Stability	N/A		Pass	Section 7.7
15.407(b)(1), (2), (3), (4)(i)	Undesirable Emissions	Refer to Section 7.8 & 7.9	Radiated	Pass	Section 7.8& 7.9
15.205, 15.209 15.407(b)(1), (2), (3), (4), (5), (6), (7)	General Field Strength Limits(Restricted Bands andRadiated Emission Limits)			Pass	
15.207	AC Conducted Emissions 150kHz - 30MHz	< FCC 15.207 limits	Line Conducted	Pass	Section 7.10

Notes:

1) 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 ofthe system to connect the EUT to the analyzer at all frequencies of interest.
2) All modes of operation and data rates were investigated. 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.

7.2. 26dB Bandwidth

7.2.1.Test Limit

N/A

7.2.2.TestProcedureUsed

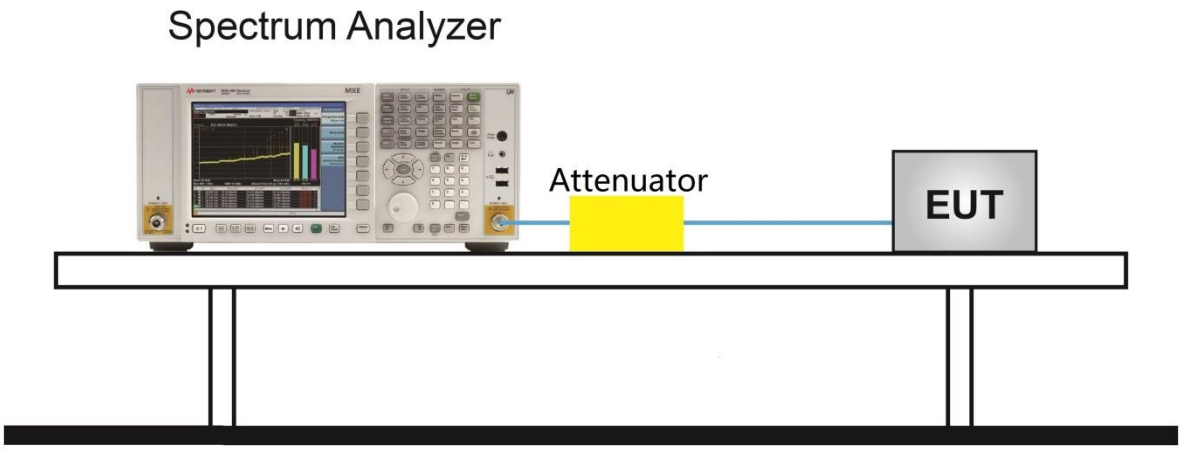
KDB 789033 D02v02r01 -Section C.1

7.2.3.TestSetting

26dB Bandwidth Measurements

1. Set RBW = approximately 1% of the emission bandwidth.
2. Set the VBW > RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. 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%.

7.2.4.Test Setup



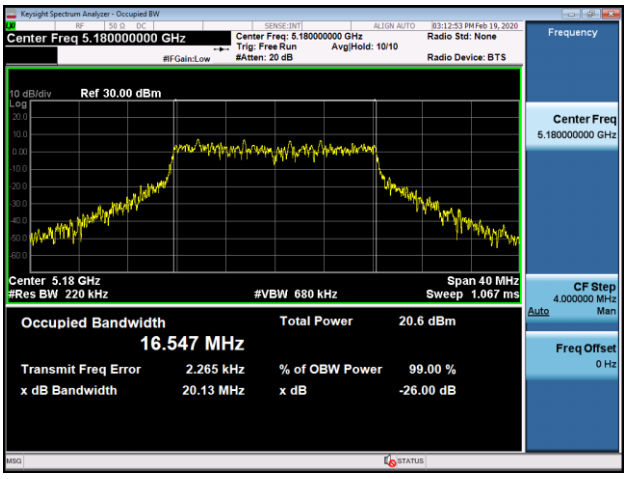
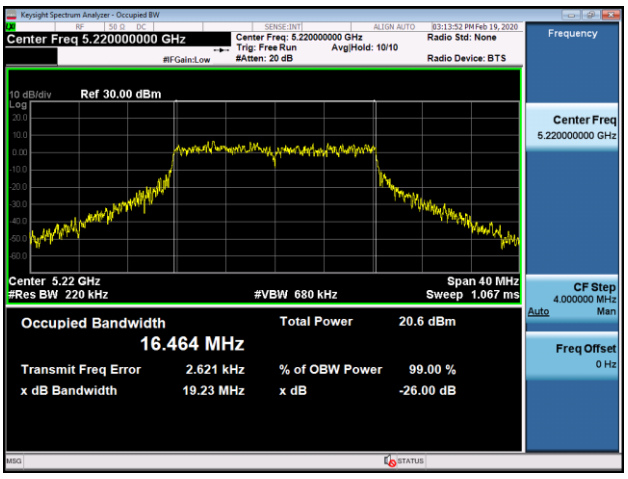
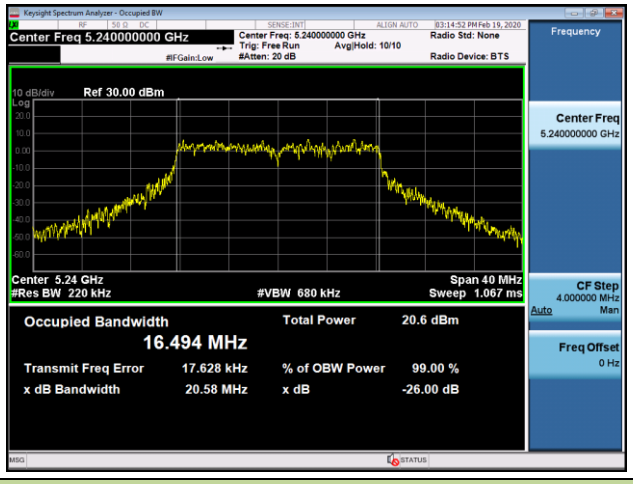
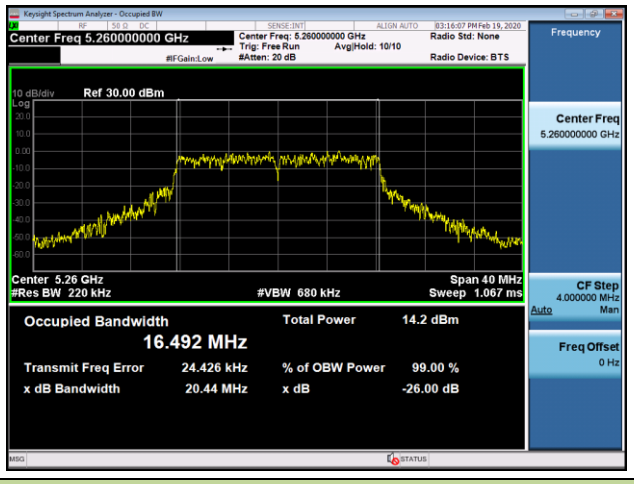
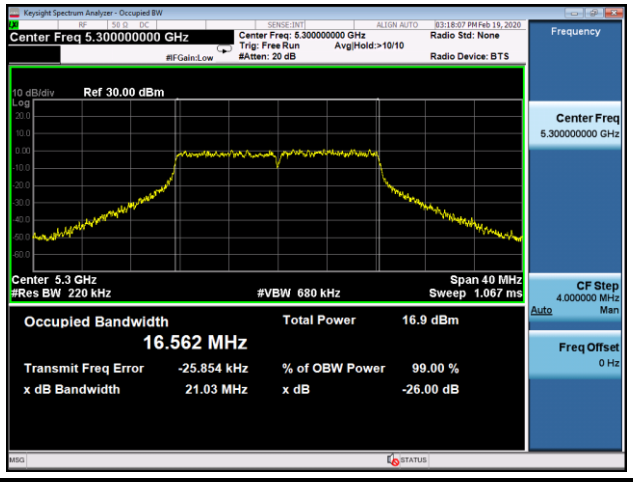
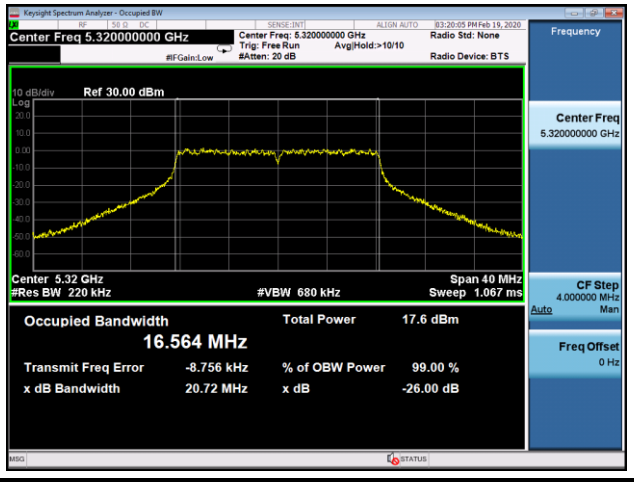
7.2.5.Test Result

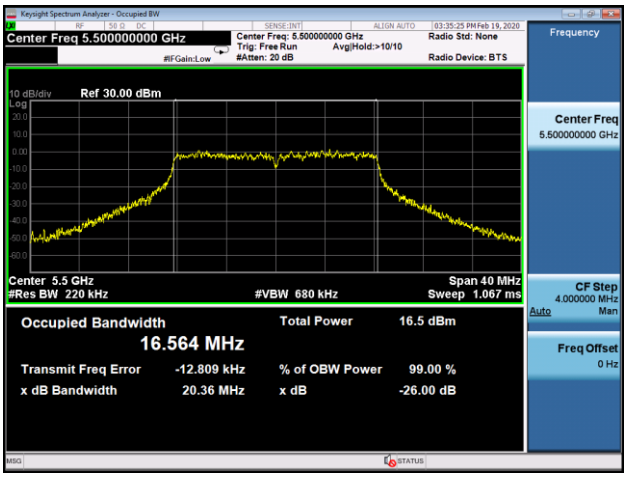
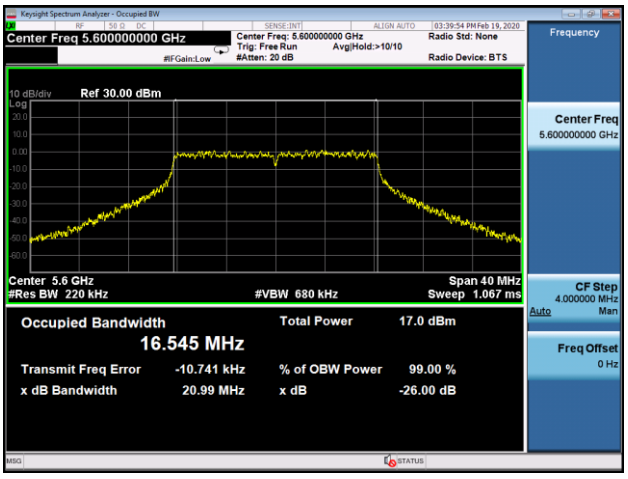
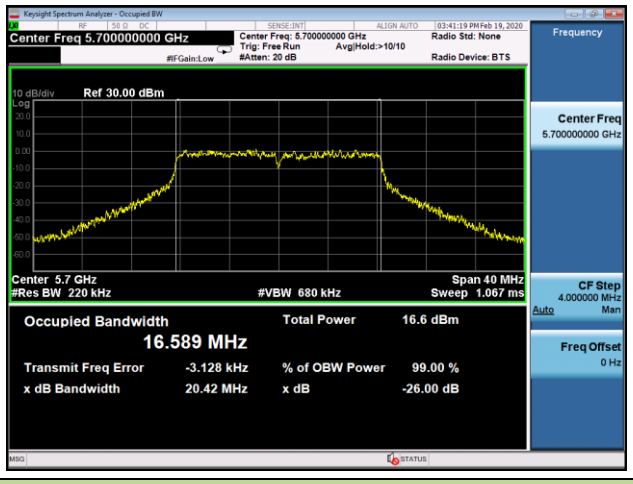
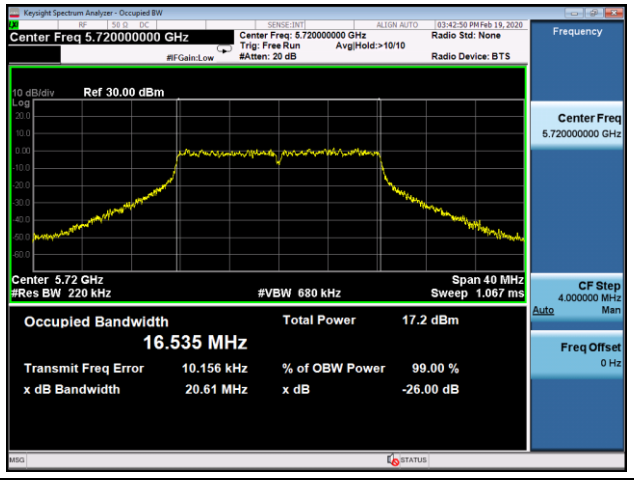
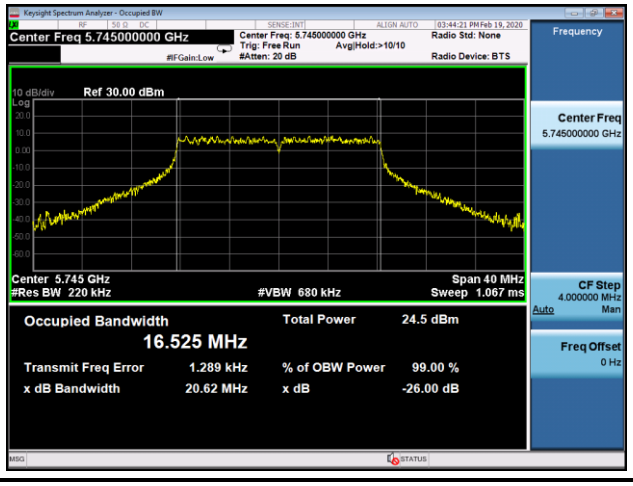
Product	Wireless Access Point	Temperature	24˚C
Test Engineer	Snake Ni	Relative Humidity	58%
Test Site	TR3	Test Date	2020/02/19

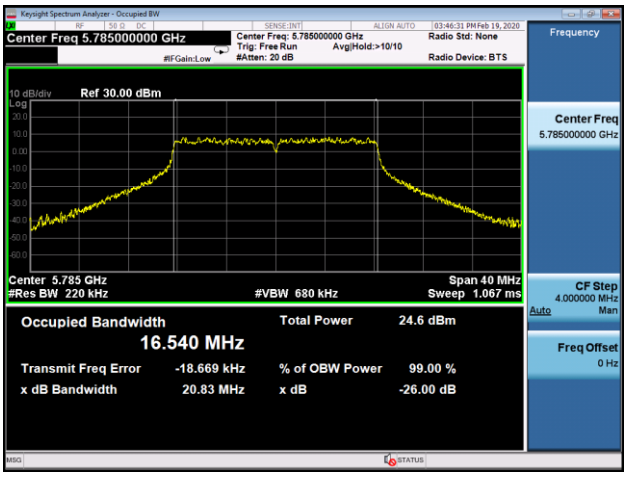
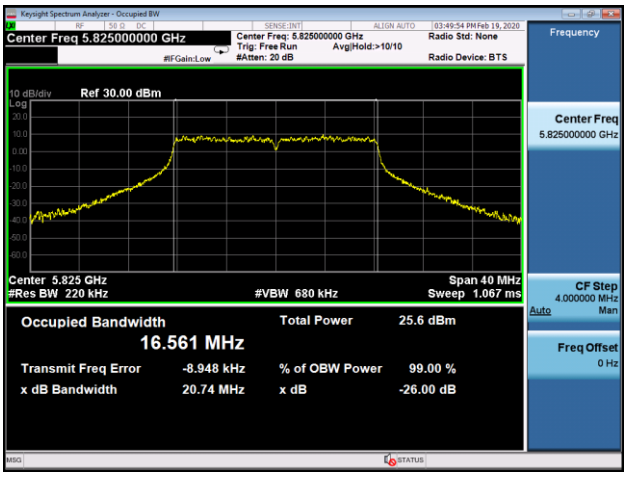
Test Mode	Data Rate/ MCS	Channel No.	Frequency (MHz)	26dB Bandwidth (MHz)
Ant 3 / Ant 0 + 1 + 2 + 3				
802.11a	6Mbps	36	5180	20.13
802.11a	6Mbps	44	5220	19.23
802.11a	6Mbps	48	5240	20.58
802.11a	6Mbps	52	5260	20.44
802.11a	6Mbps	60	5300	21.03
802.11a	6Mbps	64	5320	20.72
802.11a	6Mbps	100	5500	20.36
802.11a	6Mbps	120	5600	20.99
802.11a	6Mbps	140	5700	20.42
802.11a	6Mbps	144	5720	20.61
802.11a	6Mbps	149	5745	20.62
802.11a	6Mbps	157	5785	20.83
802.11a	6Mbps	165	5825	20.74
802.11ac-VHT20	MCS0	36	5180	22.27
802.11ac-VHT20	MCS0	44	5220	20.99
802.11ac-VHT20	MCS0	48	5240	22.22
802.11ac-VHT20	MCS0	52	5260	22.09
802.11ac-VHT20	MCS0	60	5300	22.34
802.11ac-VHT20	MCS0	64	5320	21.62
802.11ac-VHT20	MCS0	100	5500	21.28
802.11ac-VHT20	MCS0	120	5600	21.17
802.11ac-VHT20	MCS0	140	5700	22.08
802.11ac-VHT20	MCS0	144	5720	21.74
802.11ac-VHT20	MCS0	149	5745	21.46
802.11ac-VHT20	MCS0	157	5785	22.22
802.11ac-VHT20	MCS0	165	5825	22.05

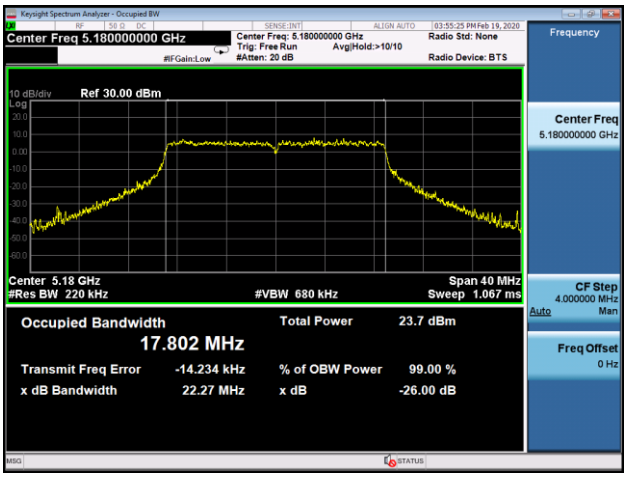
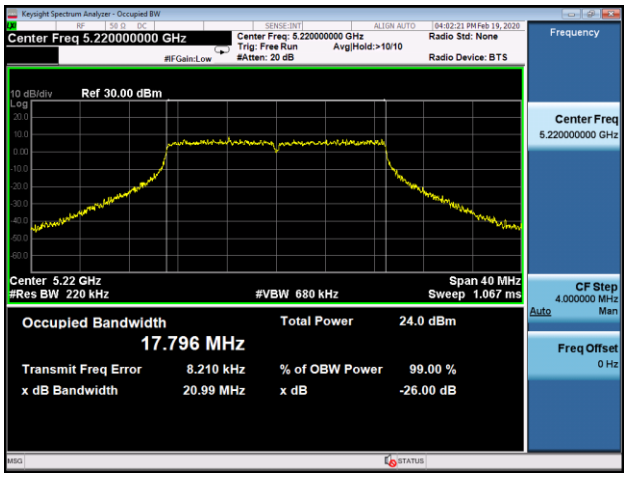
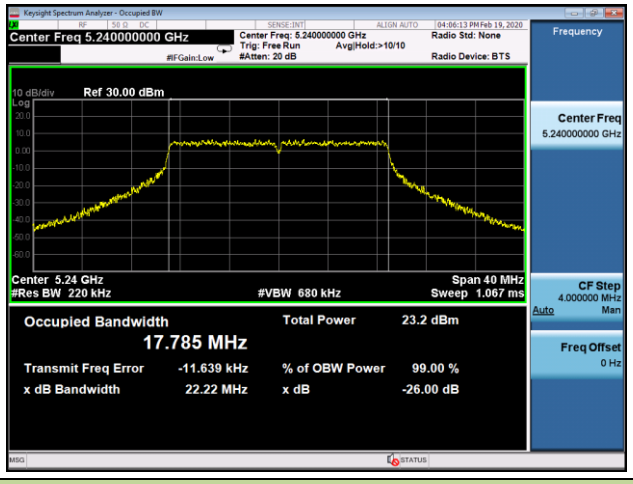
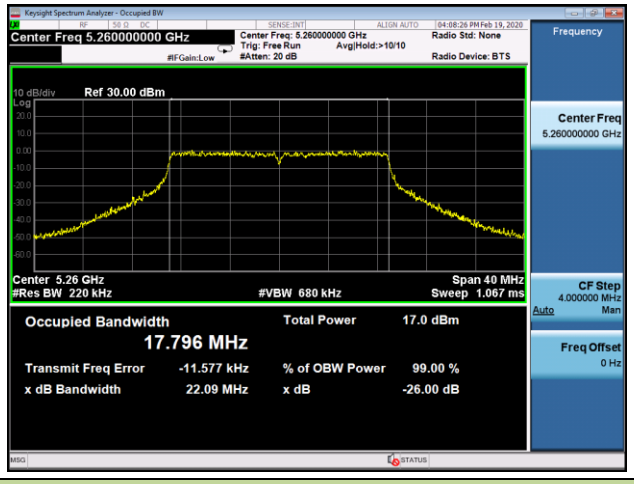
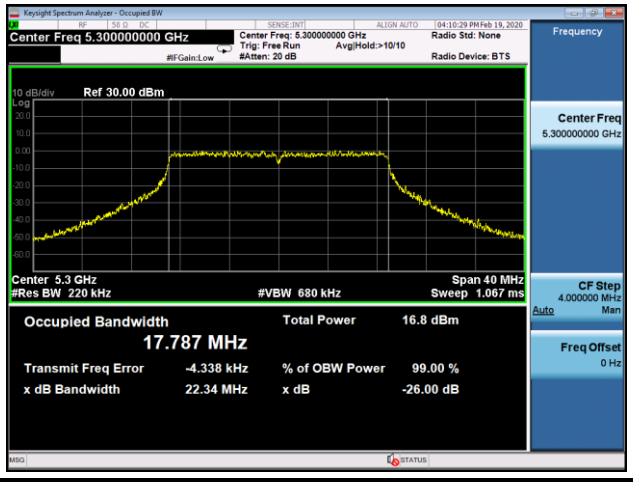
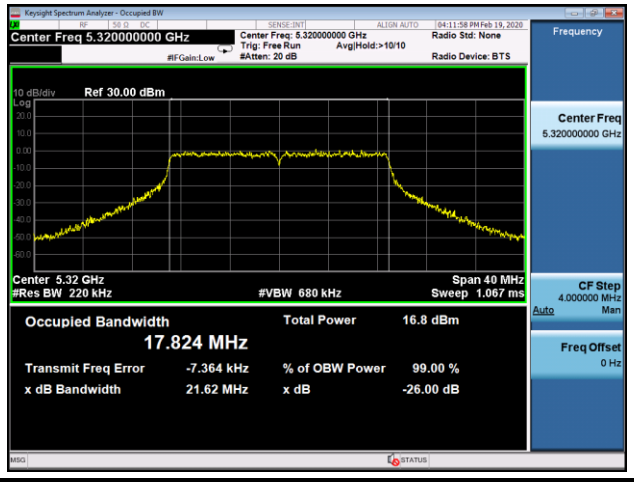
Test Mode	Data Rate/ MCS	Channel No.	Frequency (MHz)	26dB Bandwidth (MHz)
Ant 3 / Ant 0 + 1 + 2 + 3				
802.11ac-VHT40	MCS0	38	5190	43.60
802.11ac-VHT40	MCS0	46	5230	43.67
802.11ac-VHT40	MCS0	54	5270	45.22
802.11ac-VHT40	MCS0	62	5310	43.36
802.11ac-VHT40	MCS0	102	5510	43.36
802.11ac-VHT40	MCS0	118	5590	43.05
802.11ac-VHT40	MCS0	134	5670	43.14
802.11ac-VHT40	MCS0	142	5710	43.09
802.11ac-VHT40	MCS0	151	5755	42.86
802.11ac-VHT40	MCS0	159	5795	43.00
802.11ac-VHT80	MCS0	42	5210	88.24
802.11ac-VHT80	MCS0	58	5290	88.65
802.11ac-VHT80	MCS0	106	5530	88.30
802.11ac-VHT80	MCS0	122	5610	88.21
802.11ac-VHT80	MCS0	138	5690	87.97
802.11ac-VHT80	MCS0	155	5775	88.66
802.11ax-HE20	MCS0	36	5180	22.09
802.11ax-HE20	MCS0	44	5220	22.54
802.11ax-HE20	MCS0	48	5240	21.74
802.11ax-HE20	MCS0	52	5260	22.50
802.11ax-HE20	MCS0	60	5300	22.32
802.11ax-HE20	MCS0	64	5320	22.05
802.11ax-HE20	MCS0	100	5500	22.19
802.11ax-HE20	MCS0	120	5600	21.82
802.11ax-HE20	MCS0	140	5700	22.85
802.11ax-HE20	MCS0	144	5720	21.71
802.11ax-HE20	MCS0	149	5745	22.40
802.11ax-HE20	MCS0	157	5785	22.62
802.11ax-HE20	MCS0	165	5825	22.12

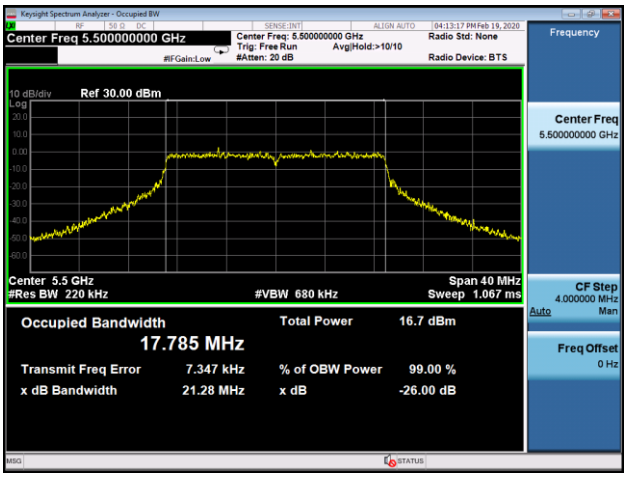
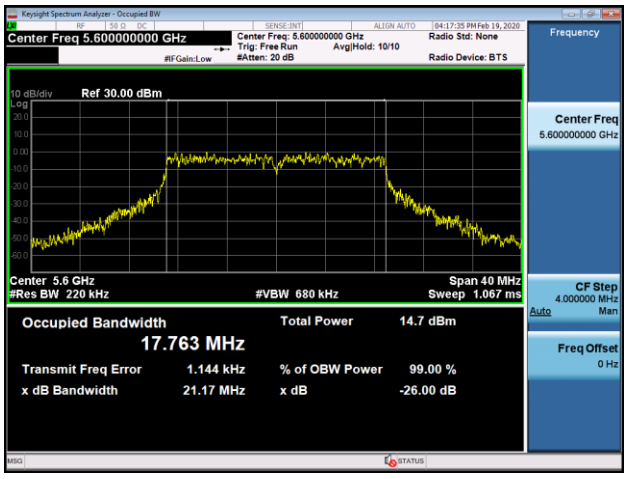
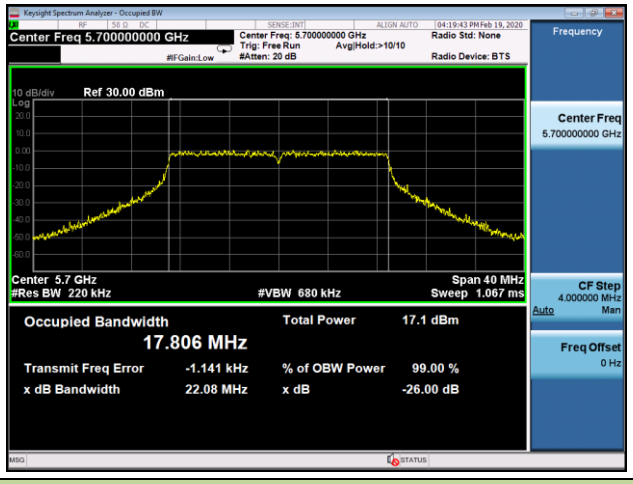
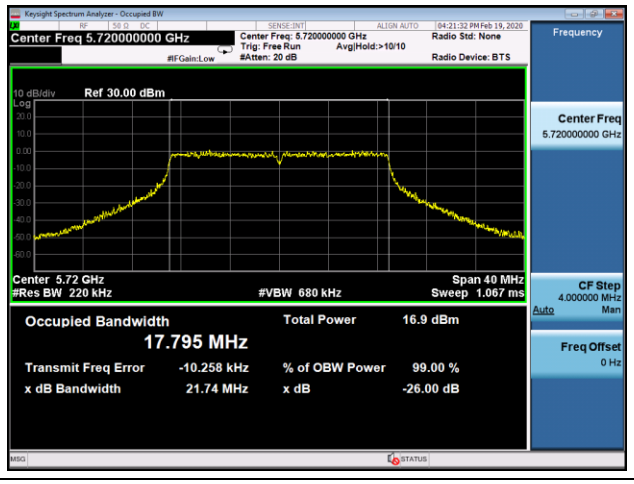
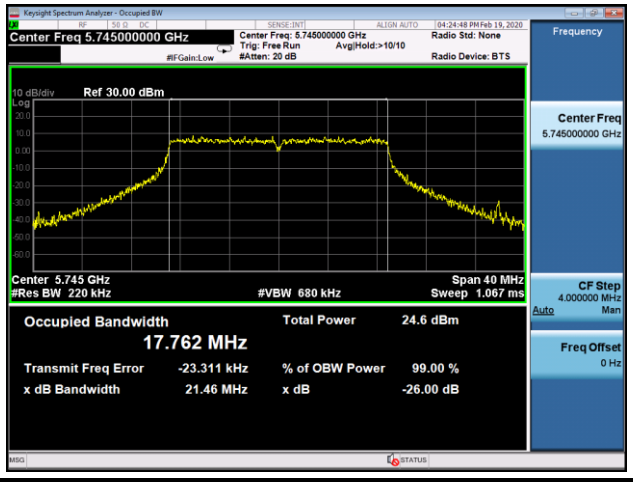
Test Mode	Data Rate/ MCS	Channel No.	Frequency (MHz)	26dB Bandwidth (MHz)
Ant 3 / Ant 0 + 1 + 2 + 3				
802.11ax-HE40	MCS0	38	5190	42.76
802.11ax-HE40	MCS0	46	5230	43.62
802.11ax-HE40	MCS0	54	5270	43.09
802.11ax-HE40	MCS0	62	5310	42.48
802.11ax-HE40	MCS0	102	5510	44.21
802.11ax-HE40	MCS0	118	5590	43.91
802.11ax-HE40	MCS0	134	5670	43.91
802.11ax-HE40	MCS0	142	5710	43.54
802.11ax-HE40	MCS0	151	5755	43.14
802.11ax-HE40	MCS0	159	5795	44.63
802.11ax-HE80	MCS0	42	5210	85.75
802.11ax-HE80	MCS0	58	5290	86.47
802.11ax-HE80	MCS0	106	5530	86.97
802.11ax-HE80	MCS0	122	5610	86.59
802.11ax-HE80	MCS0	138	5690	85.00
802.11ax-HE80	MCS0	155	5775	88.20
Ant 0 / Ant 0 + 1 & Ant 2 / Ant 2 + 3				
802.11ac-VHT80+80	MCS0	42	5210	168.93
Contiguous	MCS0	58	5290	
802.11ac-VHT80+80	MCS0	106	5530	171.24
Contiguous	MCS0	122	5610	
802.11ax-HE80+80	MCS0	42	5210	169.17
Contiguous	MCS0	58	5290	
802.11ax-HE80+80	MCS0	106	5530	167.32
Contiguous	MCS0	122	5610	

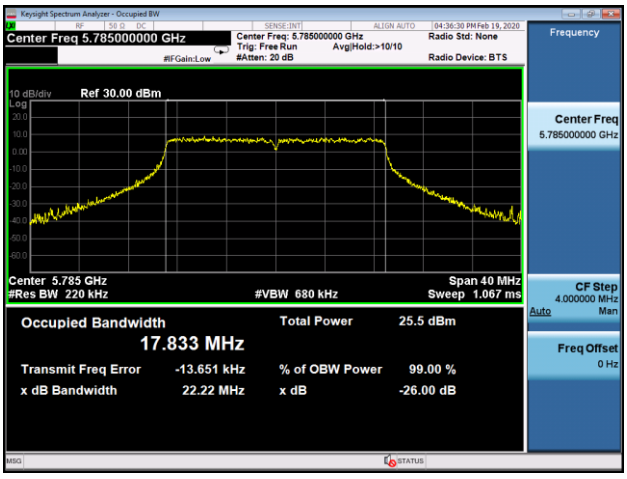
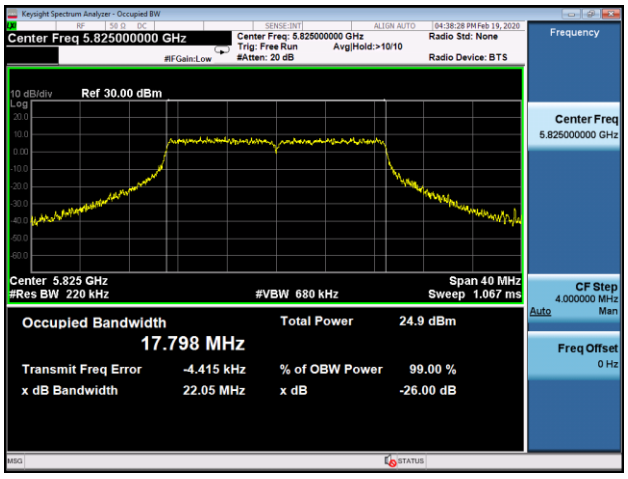
802.11a 26dB Bandwidth - Ant 3 / Ant 0 + 1 + 2 + 3	
Channel 36 (5180MHz)	Channel 44 (5220MHz)
	
Channel 48 (5240MHz)	Channel 52 (5260MHz)
	
Channel 60 (5300MHz)	Channel 64 (5320MHz)
	

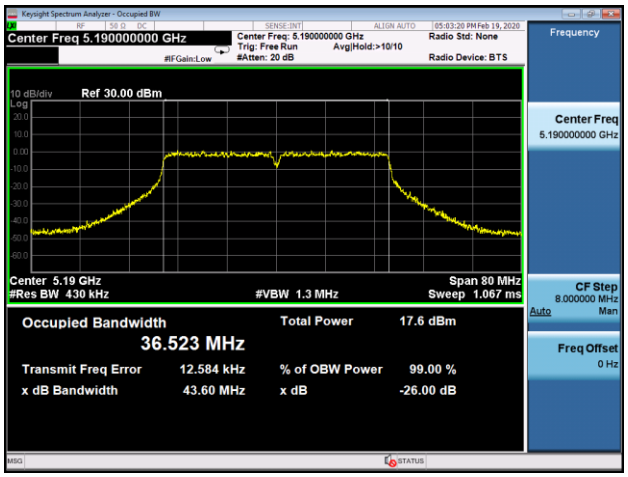
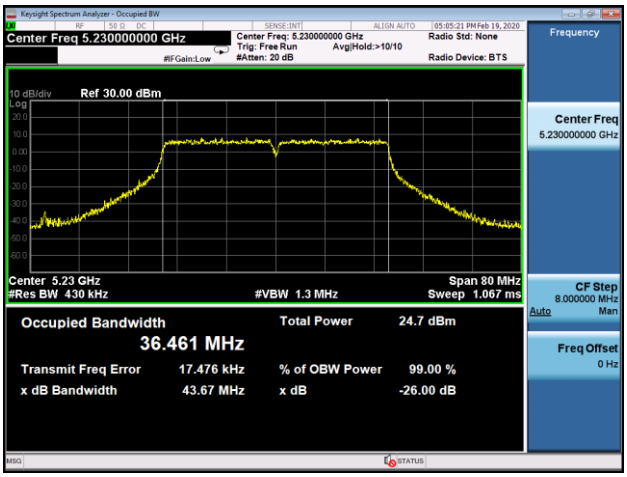
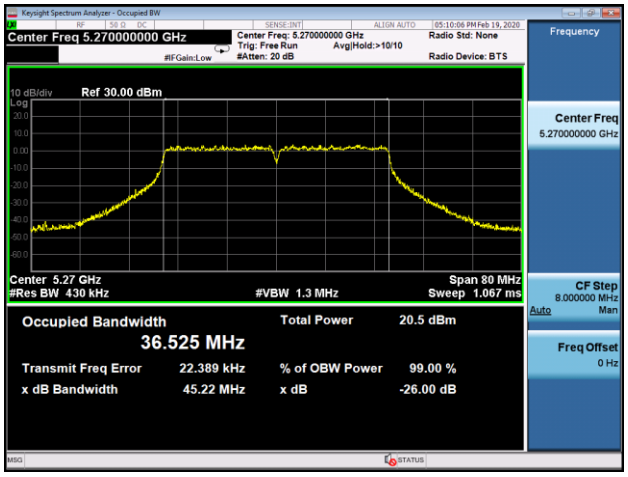
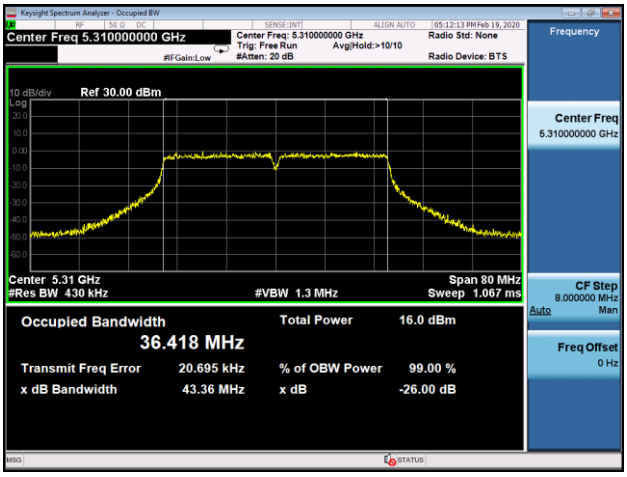
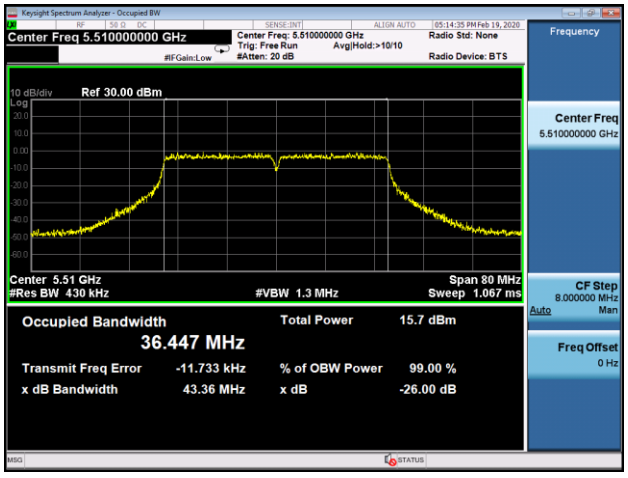
802.11a 26dB Bandwidth - Ant 3 / Ant 0 + 1 + 2 + 3	
Channel 100 (5500MHz)	Channel 100 (5600MHz)
	
Channel 140 (5700MHz)	Channel 144 (5720MHz)
	
Channel 149 (5745MHz)	
	

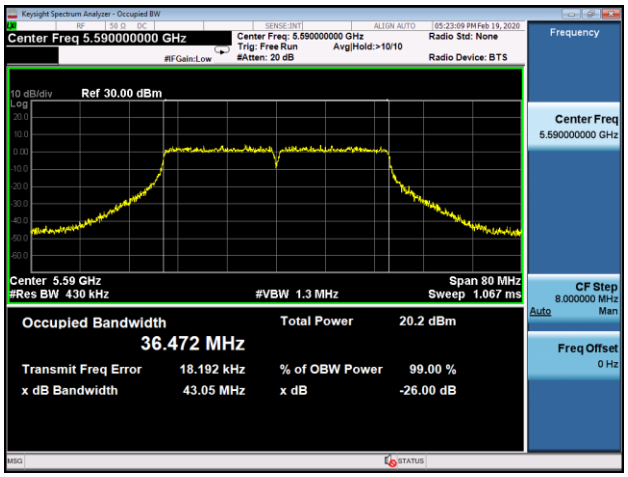
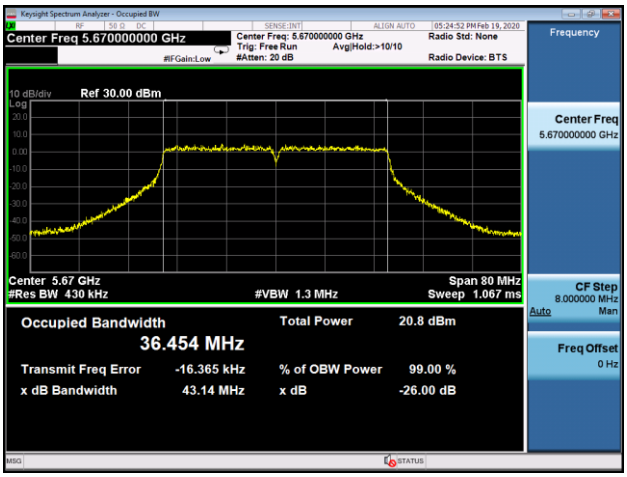
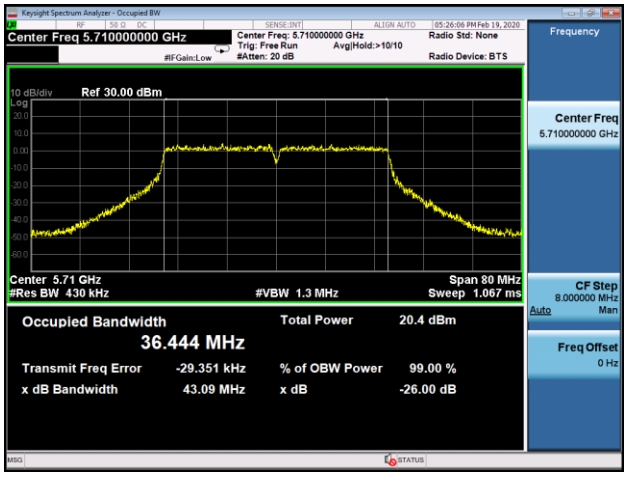
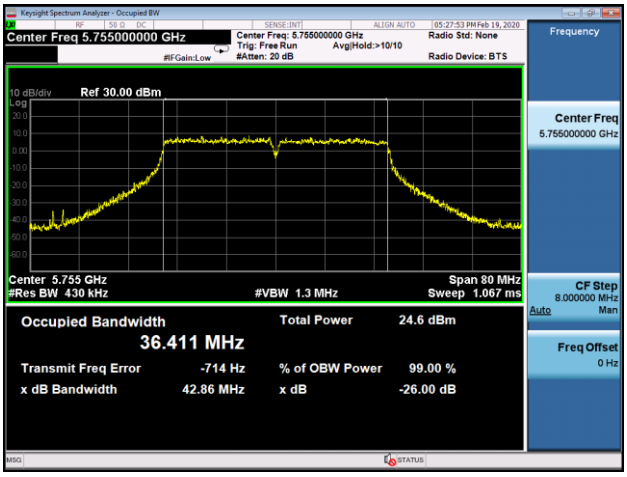
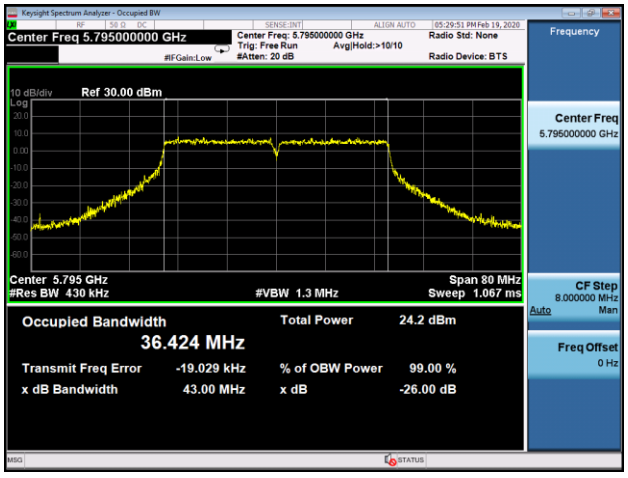
802.11a 26dB Bandwidth - Ant 3 / Ant 0 + 1 + 2 + 3	
Channel 157 (5785MHz)	Channel 165 (5825MHz)
	

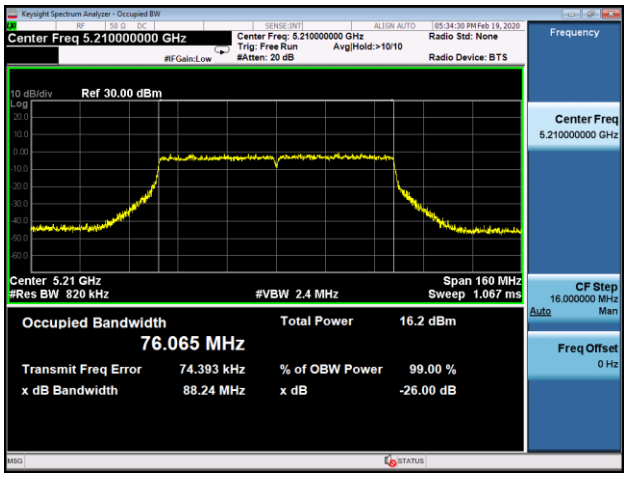
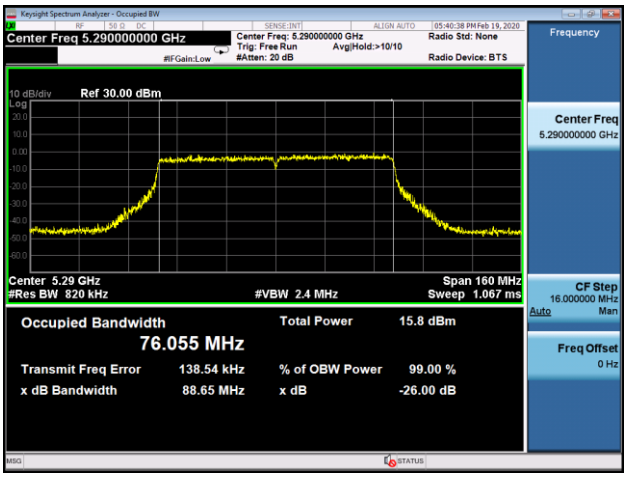
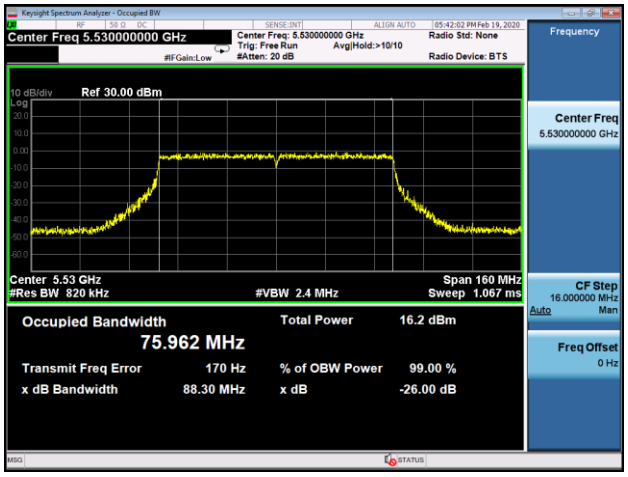
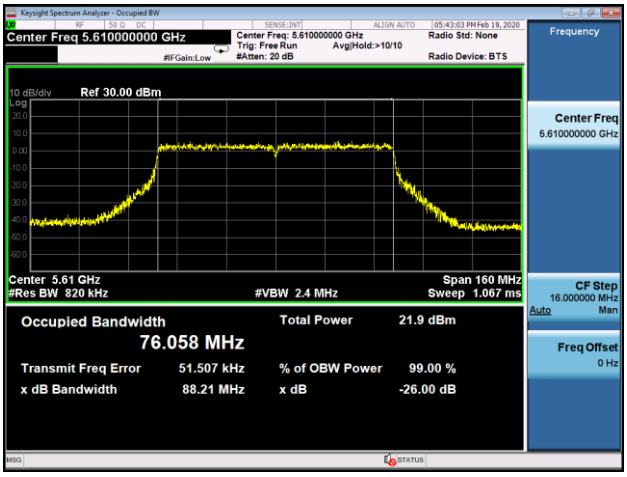
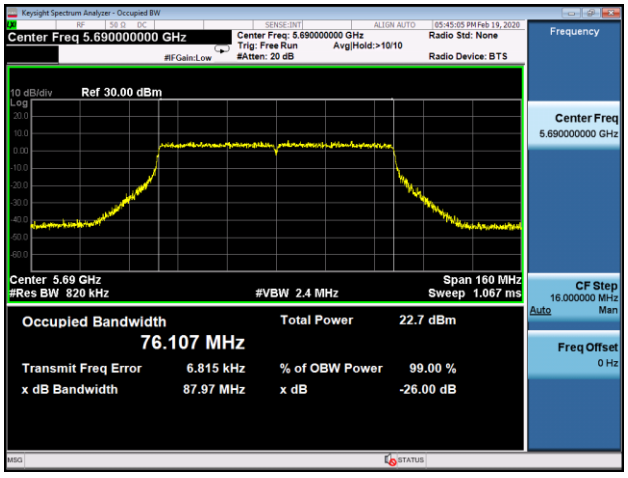
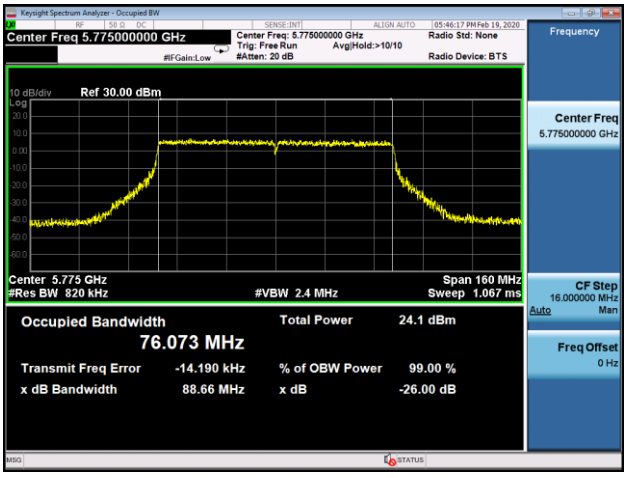
802.11ac-VHT20 26dB Bandwidth - Ant 3 / Ant 0 + 1 + 2 + 3	
Channel 36 (5180MHz)	Channel 44 (5220MHz)
	
Channel 48 (5240MHz)	Channel 52 (5260MHz)
	
Channel 60 (5300MHz)	Channel 64 (5320MHz)
	

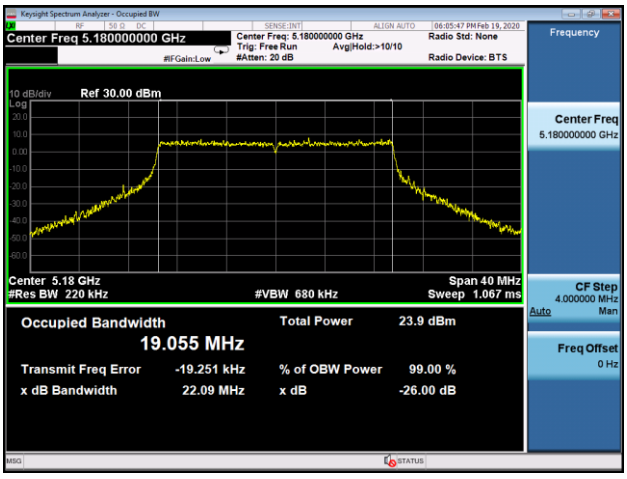
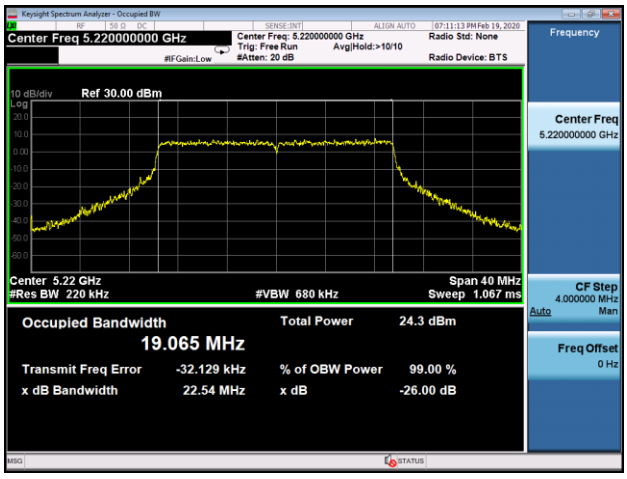
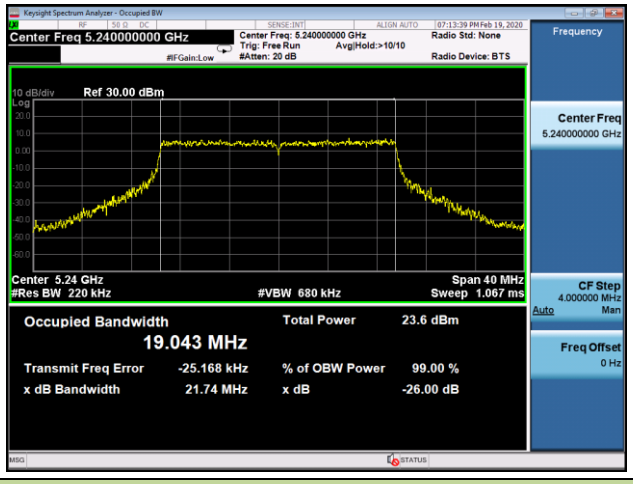
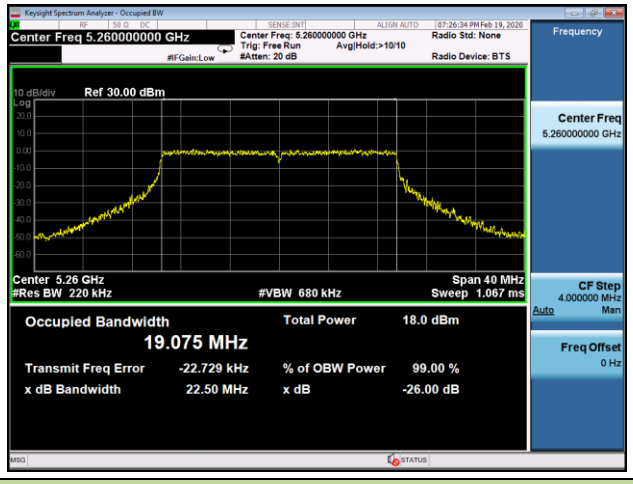
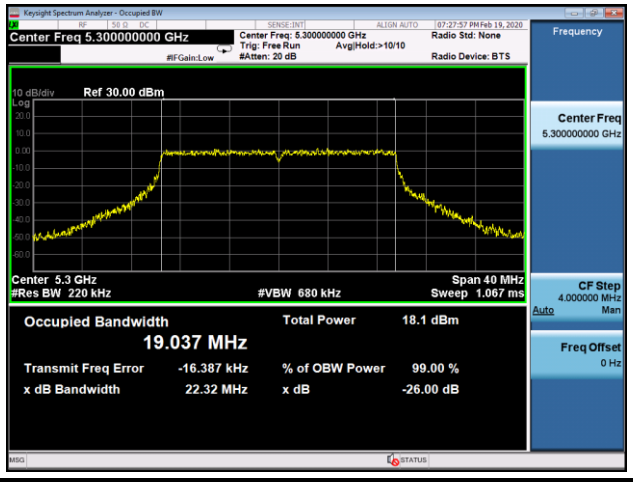
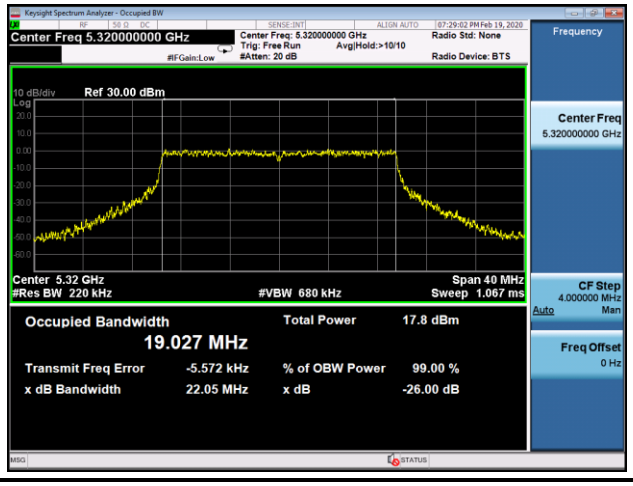
802.11ac-VHT20 26dB Bandwidth - Ant 3 / Ant 0 + 1 + 2 + 3	
Channel 100 (5500MHz)	Channel 120 (5600MHz)
	
Channel 140 (5700MHz)	Channel 144 (5720MHz)
	
Channel 149 (5745MHz)	
	

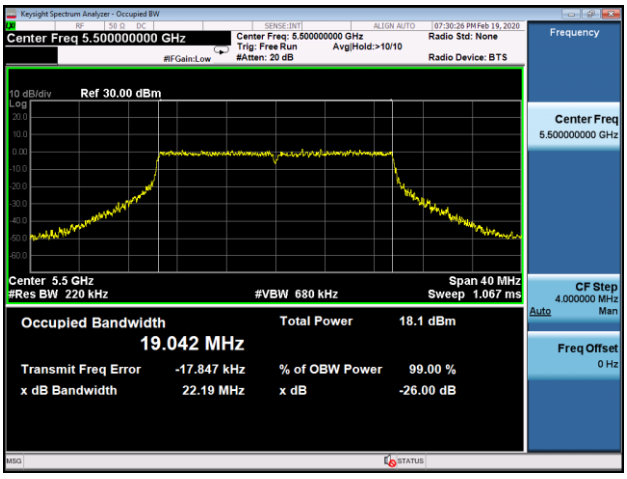
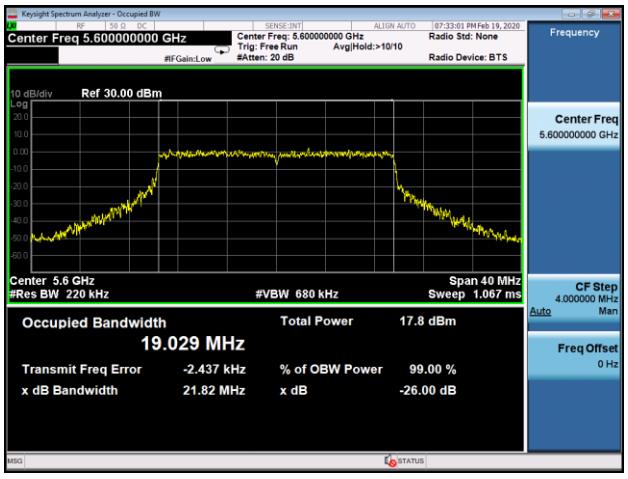
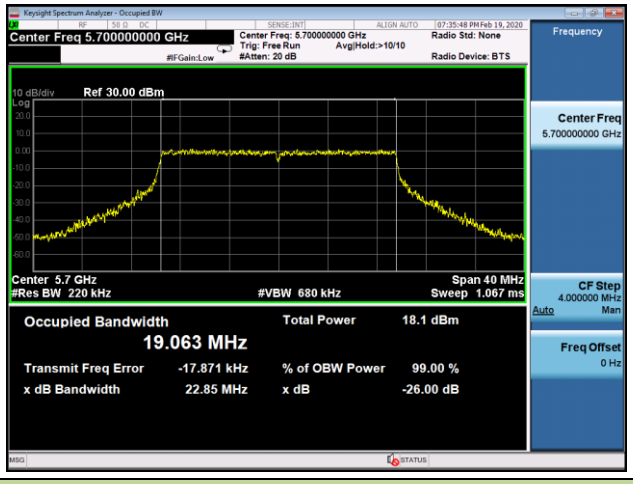
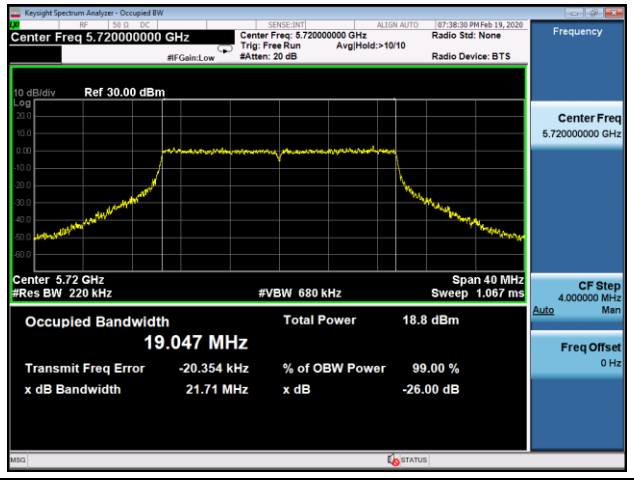
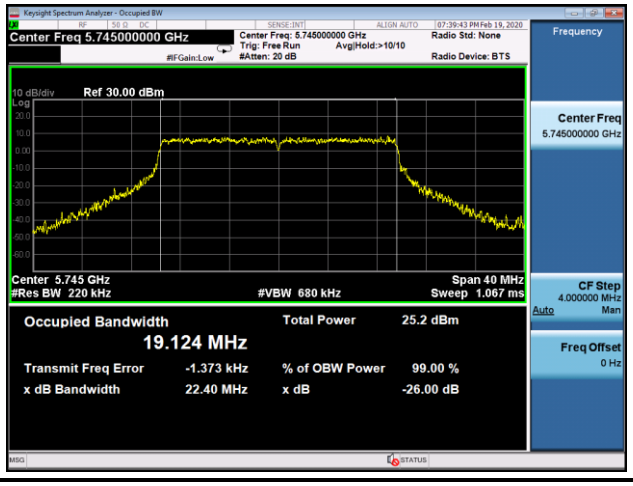
802.11ac-VHT20 26dB Bandwidth - Ant 3 / Ant 0 + 1 + 2 + 3	
Channel 157 (5785MHz)	Channel 165 (5825MHz)
	

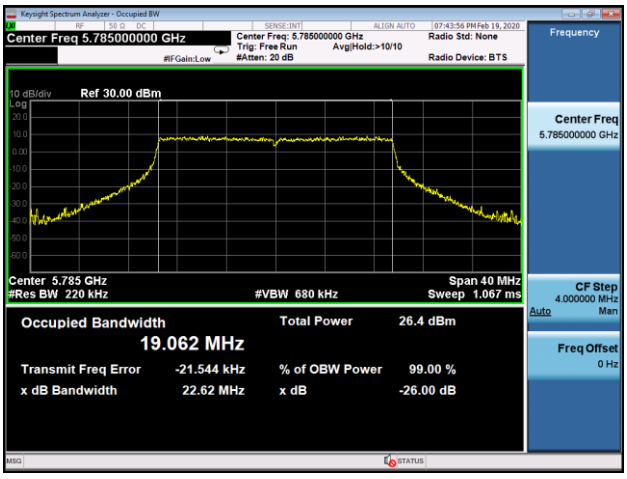
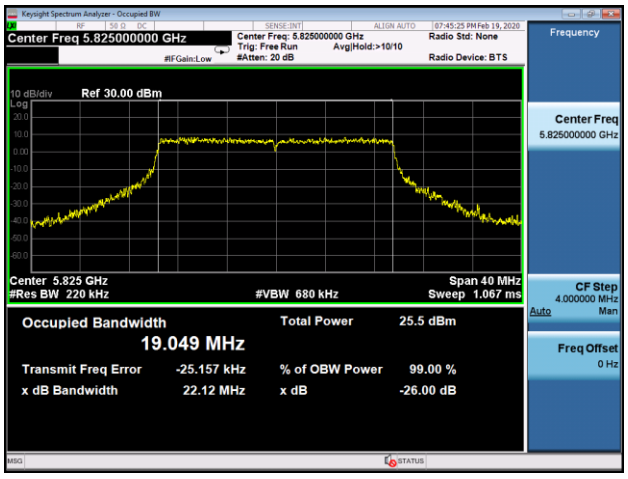
802.11ac-VHT40 26dB Bandwidth - Ant 3 / Ant 0 + 1 + 2 + 3	
Channel 38 (5190MHz)	Channel 46 (5230MHz)
	
Channel 54 (5270MHz)	Channel 62 (5310MHz)
	
Channel 102 (5510MHz)	
	

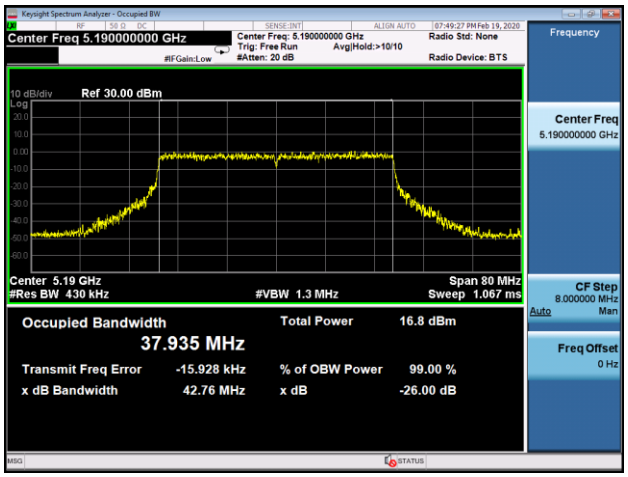
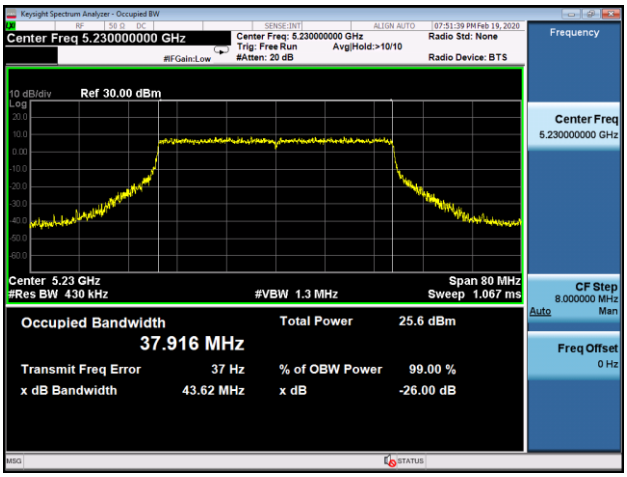
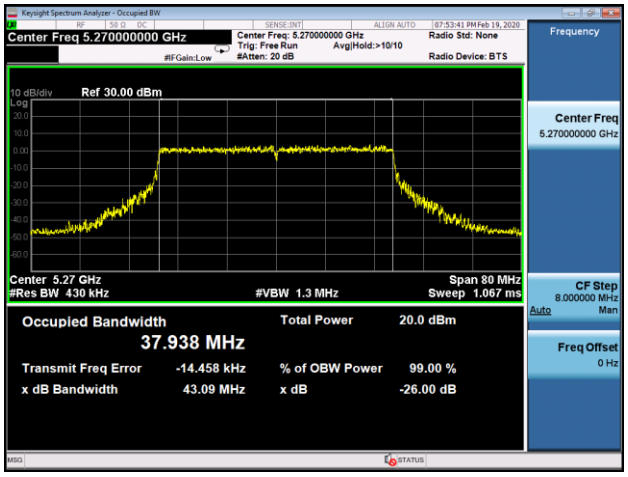
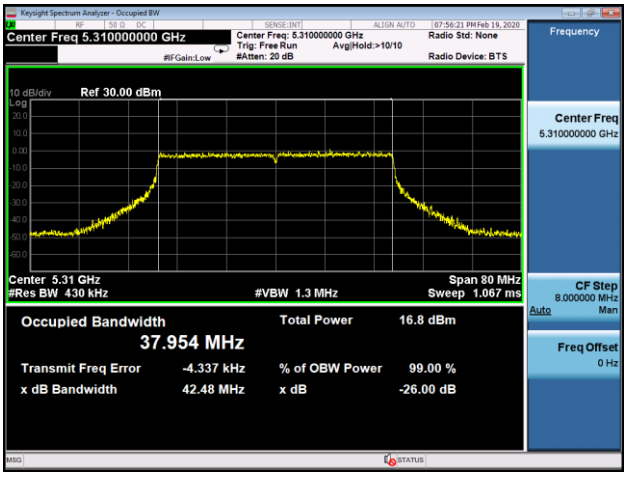
802.11ac-VHT40 26dB Bandwidth - Ant 3 / Ant 0 + 1 + 2 + 3	
Channel 118 (5590MHz)	Channel 134 (5670MHz)
	
Channel 142 (5710MHz)	Channel 151 (5755MHz)
	
Channel 159 (5795MHz)	
	

802.11ac-VHT80 26dB Bandwidth - Ant 3 / Ant 0 + 1 + 2 + 3	
Channel 42 (5210MHz)	Channel 58 (5290MHz)
	
Channel 106 (5530MHz)	Channel 122 (5610MHz)
	
Channel 138 (5690MHz)	Channel 155 (5775MHz)
	

802.11ax-HE20 26dB Bandwidth - Ant 3 / Ant 0 + 1 + 2 + 3	
Channel 36 (5180MHz)	Channel 44 (5220MHz)
	
Channel 48 (5240MHz)	Channel 52 (5260MHz)
	
Channel 60 (5300MHz)	Channel 64 (5320MHz)
	

802.11ax-HE20 26dB Bandwidth - Ant 3 / Ant 0 + 1 + 2 + 3	
Channel 100 (5500MHz)	Channel 120 (5600MHz)
	
Channel 140 (5700MHz)	Channel 144 (5720MHz)
	
Channel 149 (5745MHz)	
	

802.11ax-HE20 26dB Bandwidth - Ant 3 / Ant 0 + 1 + 2 + 3	
Channel 157 (5785MHz)	Channel 165 (5825MHz)
	

802.11ax-HE40 26dB Bandwidth - Ant 3 / Ant 0 + 1 + 2 + 3	
Channel 38 (5190MHz)	Channel 46 (5230MHz)
	
Channel 54 (5270MHz)	Channel 62 (5310MHz)
	
Channel 102 (5510MHz)