MEASUREMENT REPORT

FCC PART 15 Subpart E & IC RSS-247 WLAN 802.11a/n/ac

FCC ID:	2AWJG-OTPR
IC:	26228-OTPR
APPLICANT:	OhmniLabs, Inc.
Application Type:	Certification
Product:	OHMNI TELEPRESENCE ROBOTS
Model No.:	OHMNI ROBOT
FCC Classification:	Unlicensed National Information Infrastructure (UNII)
FCC Rule Part(s):	Part 15 Subpart E (Section 15.407)
IC Standard:	RSS-247 Issue 2
Test Procedure(s):	ANSI C63.10-2013, KDB 789033 D02v02r01, KDB 662911 D01v02r01
Received Date:	March 25,2020
Test Date:	April 23~June 10,2020

Tested By : Peter Syu

(Peter Syu)

Reviewed By : Paddy Chen

(Paddy Chen)

Approved By : Chenz Ker

(Chenz Ker)

Testing Laboratory
3261

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 KDB 789033 D02v02r01. Test results reported herein relate only to the item(s) tested.

Revision History

Report No.	Version	Description	Issue Date	Note
2003TW3801-U3	1.0	Original Report	2020-07-22	

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§2.1033 General Information

Applicant	OhmniLabs, Inc.
Applicant Address	2367 Bering Dr, San Jose, CA 95131, United States
Manufacturer	AAEON Technology, Inc.
Manufacturer Address	5F, No. 135, Lane 235, Pao Chiao Rd., Hsin-Tien Dist., New Taipei City, 231 Taiwan, R.O.C.
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
FCC Rule Part(s)	Part 15 Subpart E (Section 15.407)
IC Standard:	RSS-247 Issue 2
Model No.	OHMNI ROBOT
Test Device Serial No.	#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.**

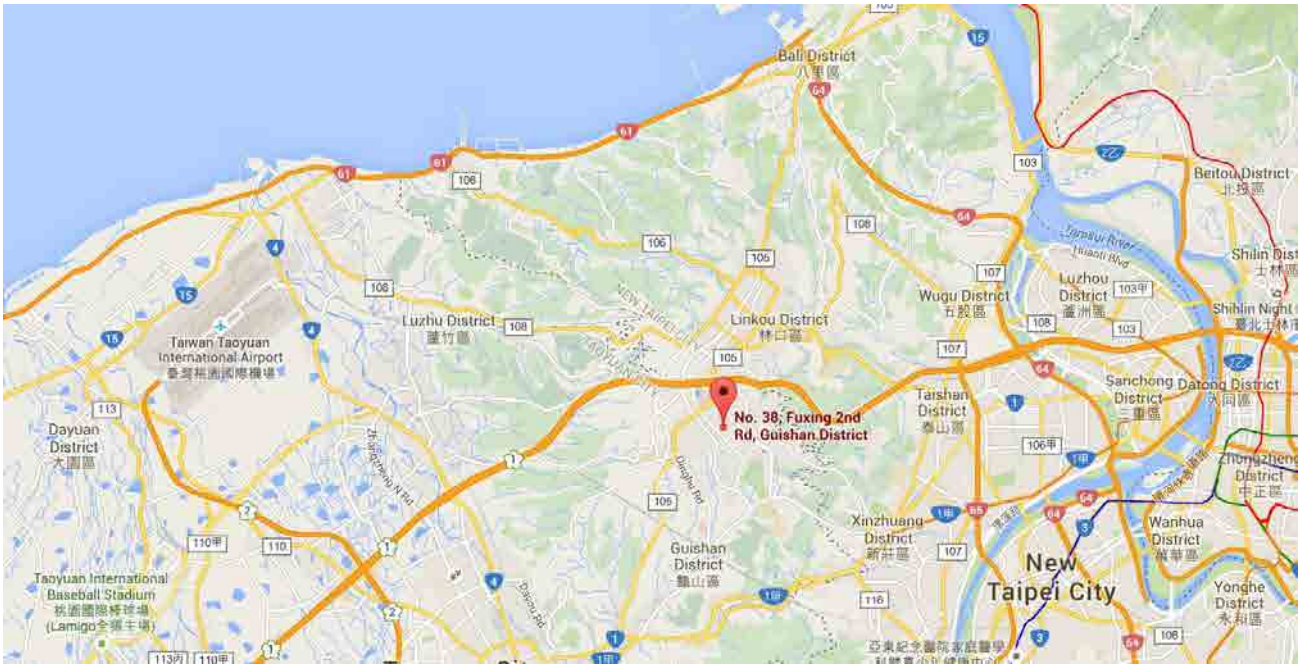
1. INTRODUCTION

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	OHMNI TELEPRESENCE ROBOTS
Model No.	OHMNI ROBOT
Supports Radios Spec.	WLAN: 2.4G: 802.11b/g/n-20/n-40 (2TX/2RX) 5G: 802.11a/n-20/ac-20/n-40/ac-40/ac-80, Band 1,2,3,4 (2TX/2RX)
Wi-Fi Specification	802.11a/n/ac
Frequency Range	**5GHz:** For 802.11a/n-HT20/ac-VHT-20: 5180~5320MHz, 5500~5700MHz, 5745~5825MHz For 802.11n-HT40/ ac-VHT40: 5190~5310MHz, 5510~5670MHz, 5755~5795MHz For 802.11ac-VHT80: 5210MHz, 5290MHz, 5530MHz, 5610MHz, 5690MHz, 5775MHz
Maximum Output Power	802.11a: 16.45dBm 802.11n-HT20: 15.46dBm, 802.11ac- VHT20: 15.49dBm 802.11n-HT40: 15.31dBm, 802.11ac- VHT40: 15.36dBm 802.11ac-VHT80: 14.29dBm
Modulation Type	802.11a/n-20/ac-20/n-40/ac-40/ac-80: OFDM (BPSK, QPSK, 16QAM, 64QAM,256QAM)
Adapter	Brand Name: Atech OEM Model No: ADS065T-W 240200 Input: AC 100-240V~ 50-60Hz 2.0A Output: DC 24V, 2.0A

2.2. Operation Frequencies and Channel List

802.11 a/n-HT20/ ac-VHT20

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
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

802.11 n-HT40/ ac-VHT40

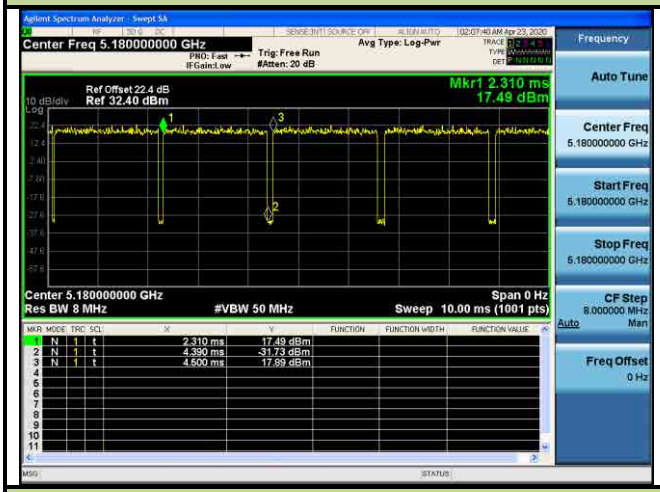
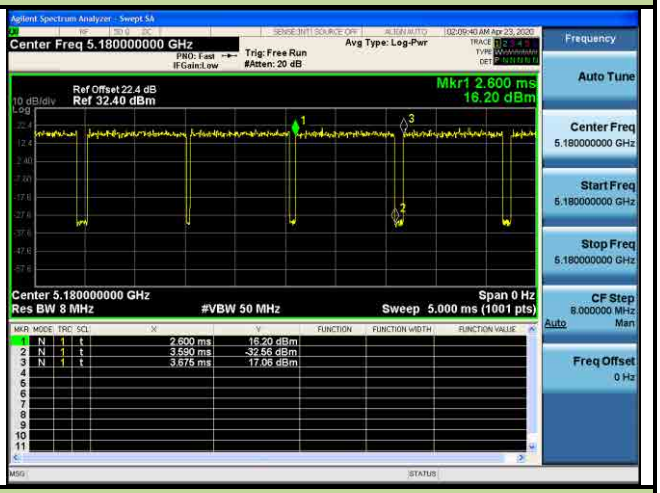
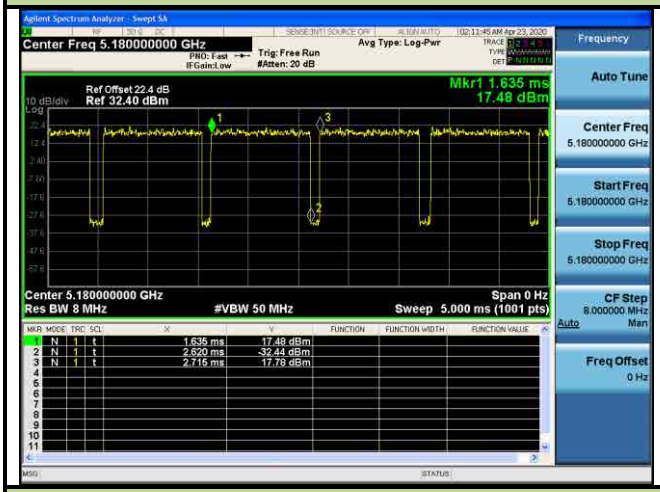
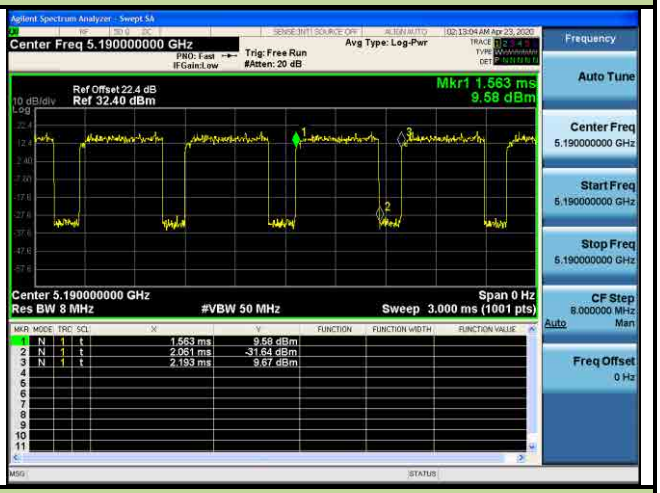
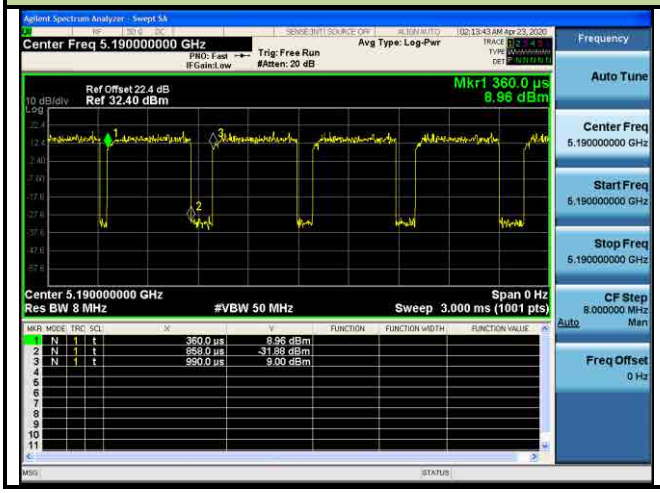
Channel	Frequency	Channel	Frequency	Channel	Frequency
38	5190 MHz	46	5230 MHz	54	5270 MHz
62	5310 MHz	102	5510 MHz	110	5550 MHz
126	5630 MHz	134	5670 MHz	151	5755 MHz
159	5795 MHz	--	--	--	--

802.11ac-VHT80

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	95%
802.11n-HT20	92%
802.11ac-VHT20	91%
802.11n-HT40	79%
802.11ac-VHT40	79%
802.11ac-VHT80	68%

802.11 a	802.11 n20
	
802.11ac-20	**802.11 n40**
	
802.11 ac40	**802.11 ac80**
	

2.3. Test Mode

Test Mode	Mode 1: Transmit by 802.11a
	Mode 2: Transmit by 802.11n-HT20
	Mode 3: Transmit by 802.11ac- VHT 20
	Mode 4: Transmit by 802.11n-HT40
	Mode 5: Transmit by 802.11ac- VHT 40
	Mode 6: Transmit by 802.11ac-VHT80
	Mode 7: Receive by 802.11n-20

2.4. Test Software

The test utility software used during testing was “WLAN Test”.

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 **OHMNI TELEPRESENCE ROBOTS,** 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 List

No.	Manufacturer	Part No.	Antenna Type	Peak Gain
1	N/A	UD812A08_1v0	PCB	6dBi*2

Note :

1. 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 = 3.01;
   - For power measurements on IEEE 802.11 devices,

   Array Gain = 0 dB for $N_{ANT} \leq 4$;
2. For PSD , Directional gain = 6+3.01= 9.01

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	2021/3/26
Cable	Rosnol	N1C50-RG400-B 1C50-500CM	MRTTWE00013	1 year	2021/6/21
EMI Test Receiver	R&S	ESR3	MRTTWA00009	1 year	2021/3/25

Radiated Emissions – AC1

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
Broadband TRILOG Antenna	SCHWARZBECK	VULB 9162	MRTTWA00001	1 year	2020/9/4
EMI Test Receiver	R&S	ESR3	MRTTWA00009	1 year	2021/3/26
Acitve Loop Antenna	Schwarzbeck	FMZB 1519B	MRTTWA00002	1 year	2021/4/27
Broadband Horn antenna	SCHWARZBECK	BBHA 9120D	MRTTWA00003	1 year	2021/4/24
Breitband Hornantenna	Schwarzbeck	BBHA 9170	MRTTWA00004	1 year	2021/4/24
Broadband Amplifier	Schwarzbeck	BBV 9721	MRTTWA00006	1 year	2021/4/24
Broadband Preamplifier	SCHWARZBECK	BBV 9718	MRTTWA00005	1 year	2021/4/24
Antenna Cable	HUBERSUHNER	SF106	MRTTWE00010	1 year	2021/6/16
Cable	Rosnol	K1K50-UP0264-K1K50-4M	MRTTWE00012	1 year	2020/6/21

Conducted Test Equipment – SR2

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
EXA Signal Analyzer	KEYSIGHT	N9010A	MRTTWA00012	1 year	2020/10/2
EXA Signal Analyzer	KEYSIGHT	N9010B	MRTTWA00074	1 year	2020/7/11
USB Wideband Power Sensor	KEYSIGHT	U2021XA	MRTTWA00015	1 year	2021/3/26

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: ± 2.53dB
Radiated Spurious Emission
Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): 9kHz~30MHz: ± 3.92dB 30MHz~1GHz: ± 4.25dB 1GHz~18GHz: ± 4.40dB 18GHz~40GHz: ± 4.45dB
Frequency Error
Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): ±78.4Hz
Conducted Power
Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): ± 0.84dB
Conducted Spurious Emission
Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)):± 2.65 dB
Occupied Bandwidth
Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): 3.3%
Temp. / Humidity
Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): ±0.82°C/ ±3%
DC Voltage
Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): ±0.3%

7. TEST RESULT

7.1. Summary

Company Name: **OHMNI TELEPRESENCE ROBOTS**

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

Data Rate(s) Tested: **6Mbps ~ 54Mbps (a);**
6.5/7.2Mbps ~ 130/144.4Mbps (n-HT20);
13.5/15.0Mbps ~ 270/300Mbps (n-HT40);
6.5/7.2Mbps ~ 156/173.4Mbps (ac-VHT20MHz);
13.5/15.0Mbps ~ 360/400Mbps (ac-VHT40MHz);
29.3/32.5Mbps ~ 780/866.7Mbps (ac-VHT80MHz)

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 7.5
15.407(h)(1)	RSS-247 §6.2.2, §6.2.3	Transmit Power Control	≤ 24 dBm		N/A	Section 7.6
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 7.7
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 7.8 & 7.9
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 7.10

Notes:

1) 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.
2) 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 Measurement

7.2.1. Test Limit

N/A

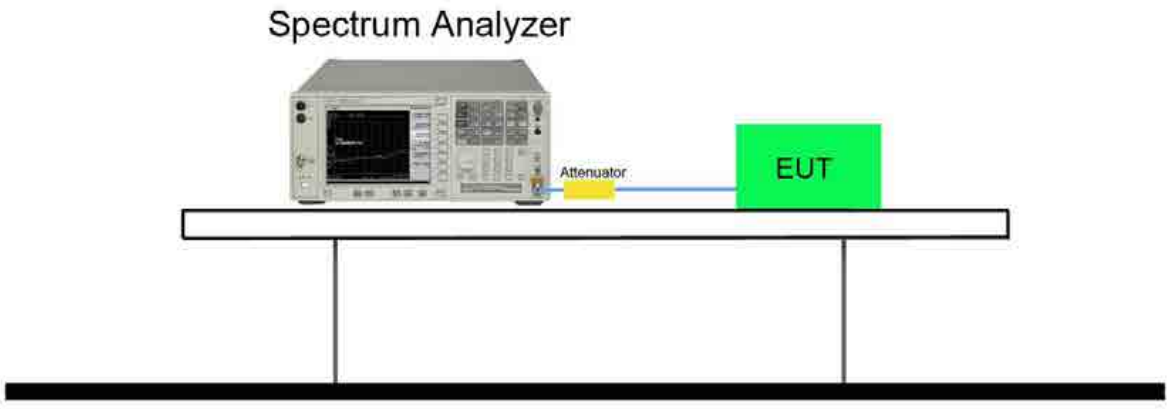
7.2.2. Test Procedure used

KDB 789033 D02v02r01 - Section C.1 / ANSI C63.10 6.9.3 / RSS-Gen 6.7

7.2.3. Test Setting

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 ≥ 3 × RBW.
4. Detector = Peak.
5. Trace mode = max hold.

7.2.4. Test Setup



7.2.5. Test Result

Product	OHMNI TELEPRESENCE ROBOTS	Test Engineer	Peter
Test Site	SR2	Test Date	2020/05/26
Test Item	26dB Bandwidth & 99% Bandwidth		

Test Mode	Channel No.	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Antenna 0				
802.11a	36	5180	20.990	16.636
802.11a	44	5220	20.360	16.567
802.11a	48	5240	20.980	16.617
802.11a	52	5260	20.200	16.623
802.11a	60	5300	20.290	16.558
802.11a	64	5320	20.990	16.618
802.11a	100	5500	19.570	16.568
802.11a	120	5600	20.870	16.635
802.11a	140	5700	20.620	16.607
802.11a	144	5720	20.610	16.609
802.11a	149	5745	20.100	16.597
802.11a	157	5785	20.390	16.615
802.11a	165	5825	20.490	16.549
802.11n-HT20	36	5180	20.860	17.717
802.11n-HT20	44	5220	20.940	17.767
802.11n-HT20	48	5240	20.340	17.661
802.11n-HT20	52	5260	20.660	17.684
802.11n-HT20	60	5300	21.200	17.672
802.11n-HT20	64	5320	20.980	17.652
802.11n-HT20	100	5500	21.130	17.729
802.11n-HT20	120	5600	21.110	17.698
802.11n-HT20	140	5700	21.100	17.604
802.11n-HT20	144	5720	21.030	17.699
802.11n-HT20	149	5745	20.680	17.677
802.11n-HT20	157	5785	20.580	17.690
802.11n-HT20	165	5825	20.470	17.717

Test Mode	Channel No.	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
802.11n-HT40	38	5190	42.690	36.275
802.11n-HT40	46	5230	41.030	36.326
802.11n-HT40	54	5270	42.900	36.262
802.11n-HT40	62	5310	41.830	36.207
802.11n-HT40	102	5510	41.560	36.207
802.11n-HT40	110	5550	41.940	36.276
802.11n-HT40	134	5670	41.530	36.312
802.11n-HT40	142	5710	42.380	36.252
802.11n-HT40	151	5755	41.890	36.203
802.11n-HT40	159	5795	41.230	36.231
802.11ac-VHT80	42	5210	80.650	75.044
802.11ac-VHT80	58	5290	80.520	75.129
802.11ac-VHT80	106	5530	79.900	75.235
802.11ac-VHT80	122	5610	80.280	75.300
802.11ac-VHT80	138	5690	80.910	75.076
802.11ac-VHT80	155	5775	81.480	75.175

Test Mode	Channel No.	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Antenna 1				
802.11a	36	5180	20.030	16.641
802.11a	44	5220	20.130	16.508
802.11a	48	5240	20.500	16.580
802.11a	52	5260	20.020	16.538
802.11a	60	5300	20.350	16.592
802.11a	64	5320	20.060	16.594
802.11a	100	5500	20.140	16.556
802.11a	120	5600	19.910	16.505
802.11a	140	5700	20.390	16.552
802.11a	144	5720	20.450	16.486
802.11a	149	5745	20.740	16.542
802.11a	157	5785	20.490	16.587
802.11a	165	5825	20.470	16.527
802.11n-HT20	36	5180	20.800	17.690
802.11n-HT20	44	5220	20.430	17.663
802.11n-HT20	48	5240	20.640	17.707
802.11n-HT20	52	5260	21.830	17.700
802.11n-HT20	60	5300	20.670	17.695
802.11n-HT20	64	5320	20.900	17.656
802.11n-HT20	100	5500	20.520	17.657
802.11n-HT20	120	5600	20.960	17.685
802.11n-HT20	140	5700	21.310	17.689
802.11n-HT20	144	5720	20.420	17.665
802.11n-HT20	149	5745	20.820	17.694
802.11n-HT20	157	5785	19.910	17.654
802.11n-HT20	165	5825	20.080	17.704

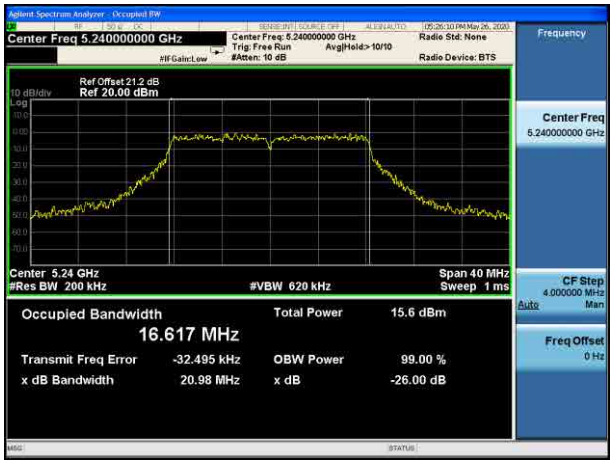
Test Mode	Channel No.	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
802.11n-HT40	38	5190	42.080	36.382
802.11n-HT40	46	5230	39.890	36.188
802.11n-HT40	54	5270	40.300	36.238
802.11n-HT40	62	5310	41.240	36.188
802.11n-HT40	102	5510	42.060	36.178
802.11n-HT40	110	5550	40.930	36.357
802.11n-HT40	134	5670	41.460	36.314
802.11n-HT40	142	5710	41.360	36.218
802.11n-HT40	151	5755	40.810	36.236
802.11n-HT40	159	5795	41.660	36.244
802.11ac-VHT80	42	5210	81.470	75.056
802.11ac-VHT80	58	5290	79.600	74.860
802.11ac-VHT80	106	5530	79.120	75.073
802.11ac-VHT80	122	5610	79.650	75.148
802.11ac-VHT80	138	5690	79.890	75.171
802.11ac-VHT80	155	5775	79.040	75.027

802.11a 26dB Bandwidth & 99% Bandwidth - Ant 0

Channel 36 (5180MHz)

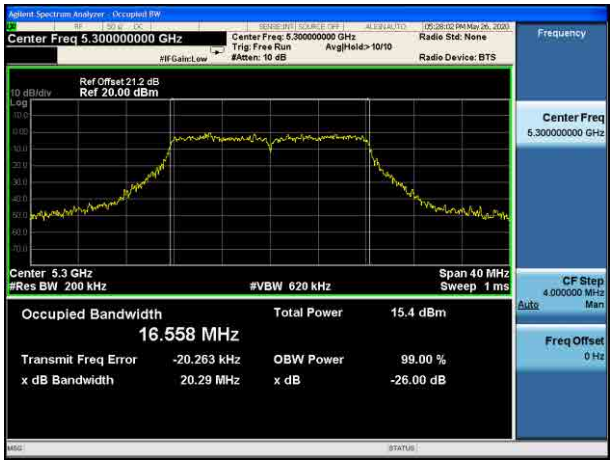
Channel 44 (5220MHz)

Channel 48 (5240MHz)

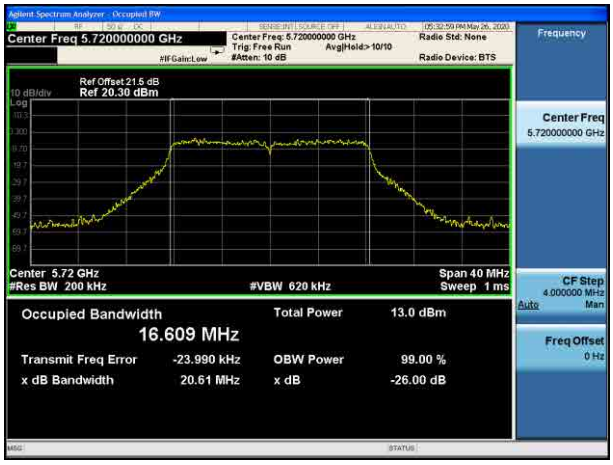


Channel 52 (5260MHz)

Channel 60 (5300MHz)



Channel 64 (5320MHz)

Channel 100 (5500MHz)	Channel 120 (5600MHz)
	
Channel 140 (5700MHz)	**Channel 144 (5720MHz)**
	
Channel 149 (5745MHz)	**Channel 157 (5785MHz)**
	

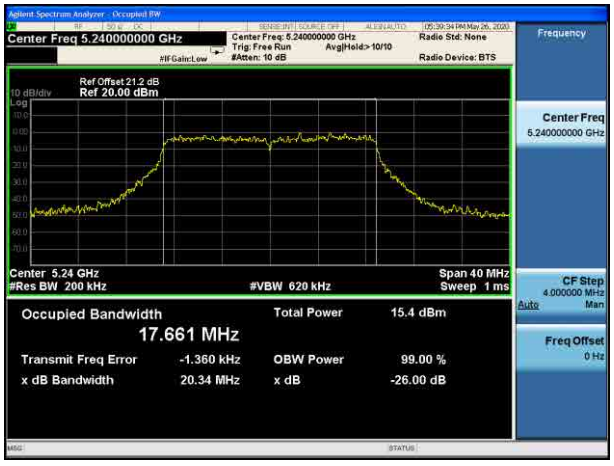
Channel 165 (5825MHz)	
	

802.11n-HT20 26dB Bandwidth & 99% Bandwidth - Ant 0

Channel 36 (5180MHz)

Channel 44 (5220MHz)

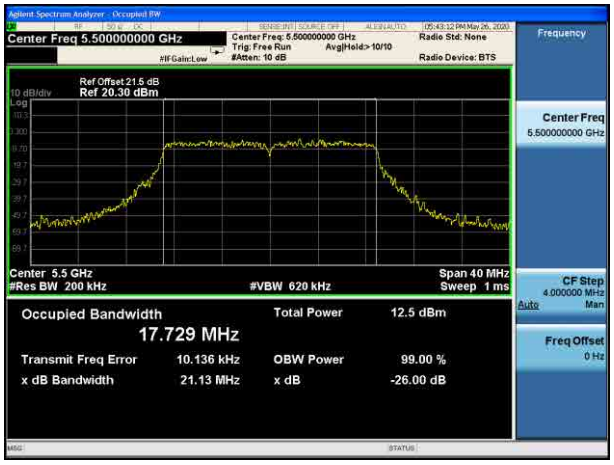
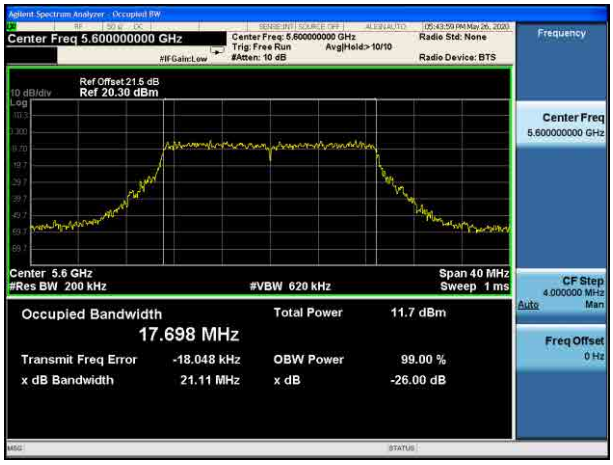
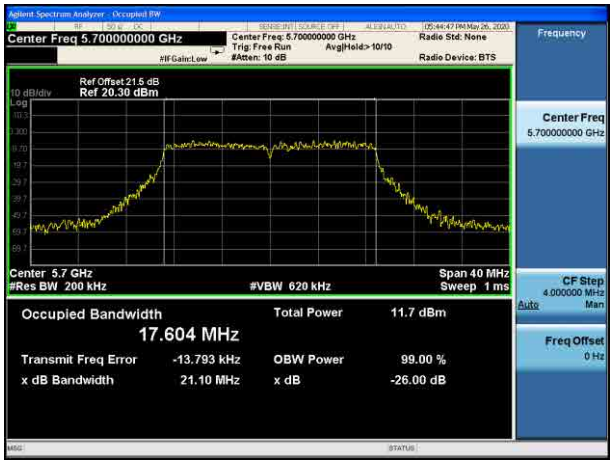
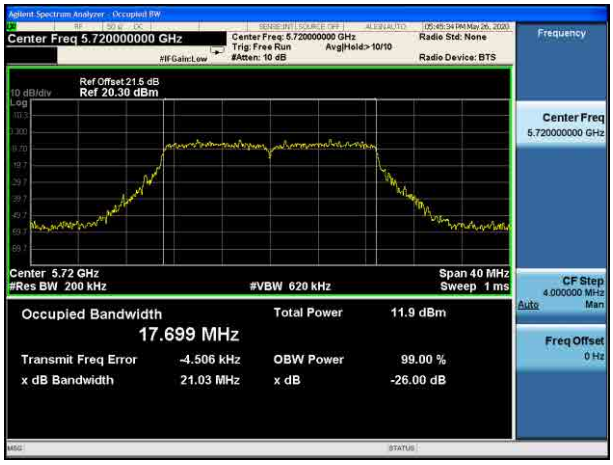
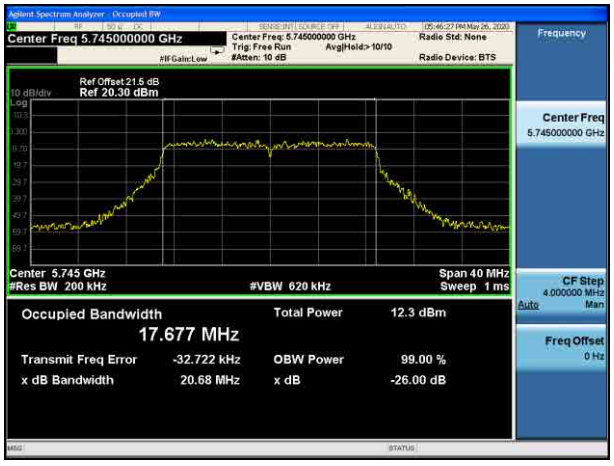
Channel 48 (5240MHz)



Channel 52 (5260MHz)

Channel 60 (5300MHz)

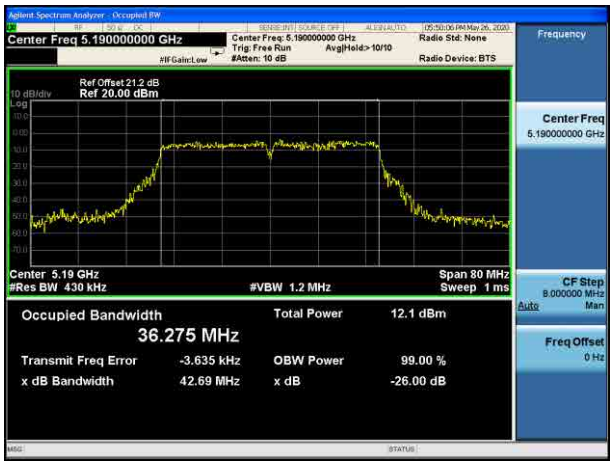
Channel 64 (5320MHz)

Channel 100 (5500MHz)	Channel 120 (5600MHz)
	
Channel 140 (5700MHz)	**Channel 144 (5720MHz)**
	
Channel 149 (5745MHz)	**Channel 157 (5785MHz)**
	

Channel 165 (5825MHz)	
	

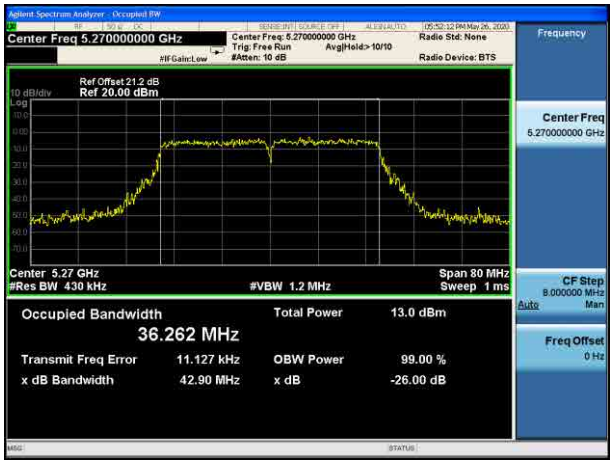
802.11n-HT40 26dB Bandwidth & 99% Bandwidth - Ant 0

Channel 38 (5190MHz)

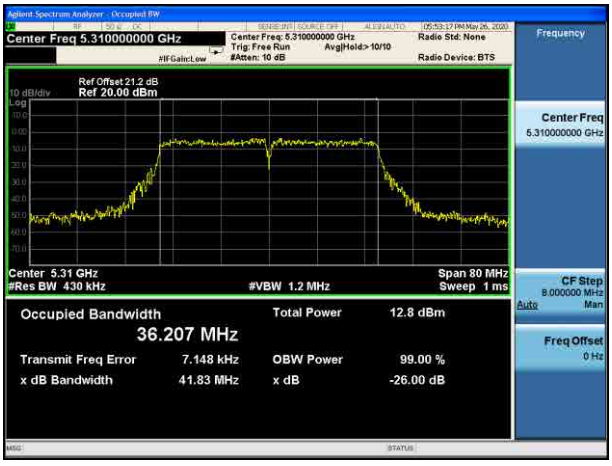


Channel 46 (5230MHz)

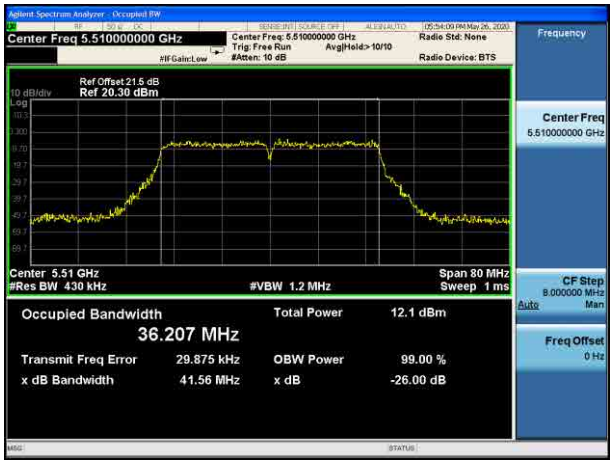
Channel 54 (5270MHz)



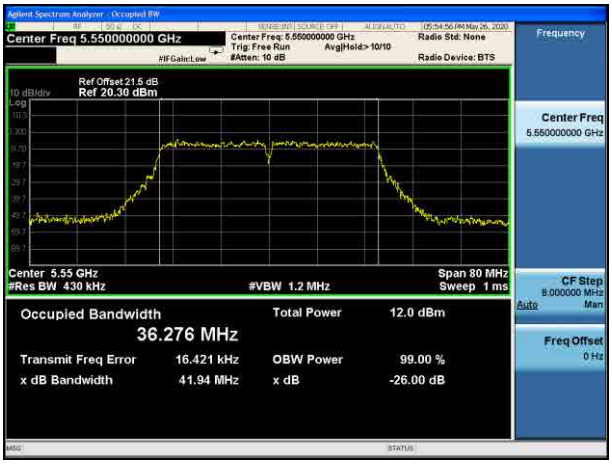
Channel 62 (5310MHz)

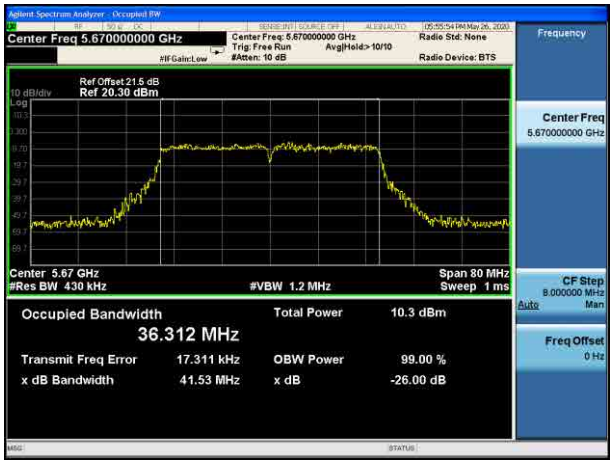
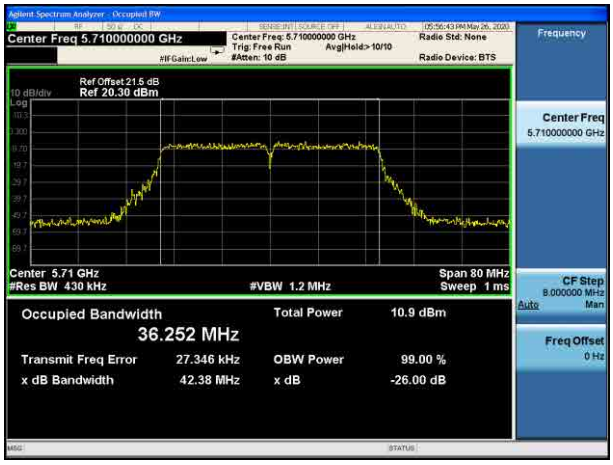
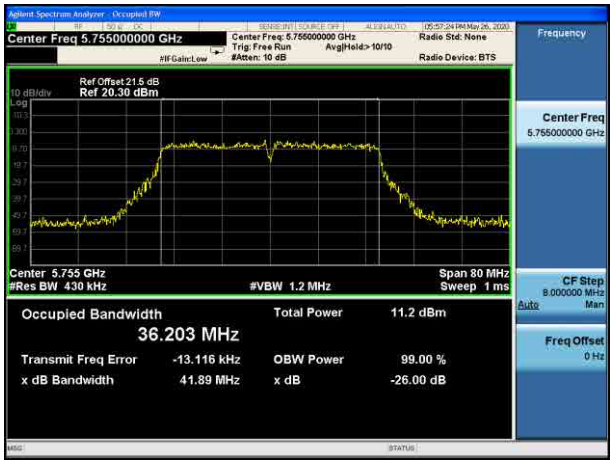
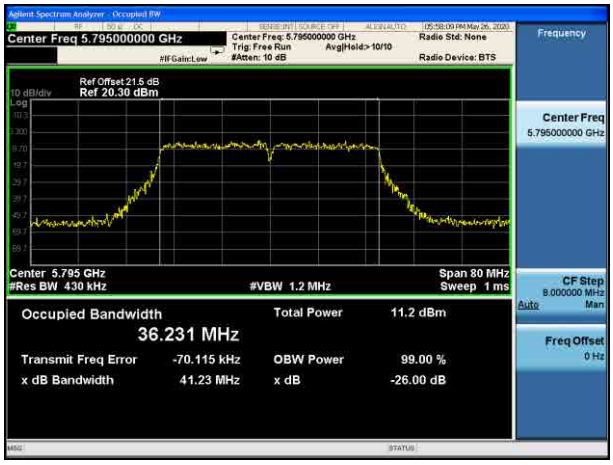


Channel 102 (5510MHz)



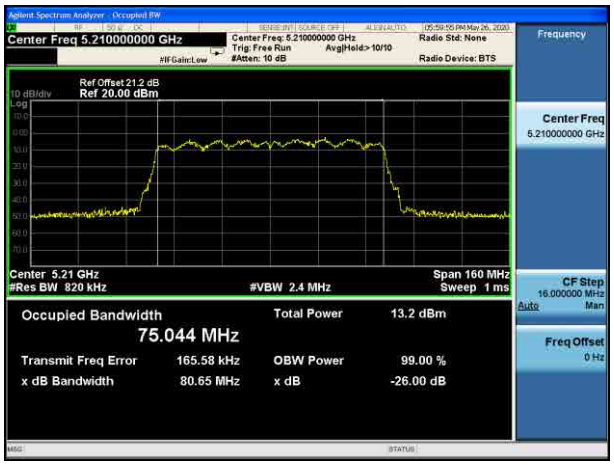
Channel 110 (5550MHz)



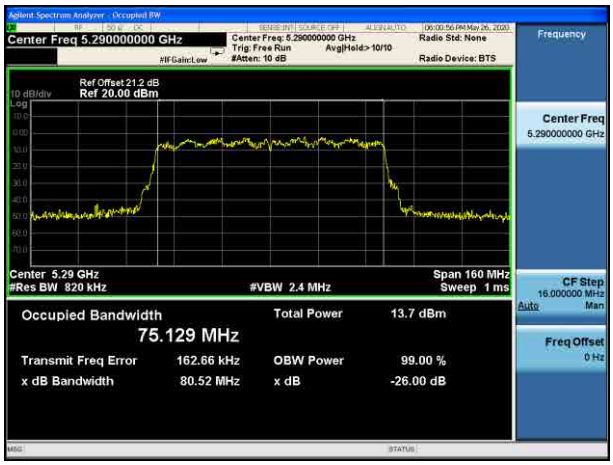
Channel 134 (5670MHz)	Channel 142 (5710MHz)
	
Channel 151 (5755MHz)	**Channel 159 (5795MHz)**
	

802.11ac-VHT80 26dB Bandwidth & 99% Bandwidth - Ant 0

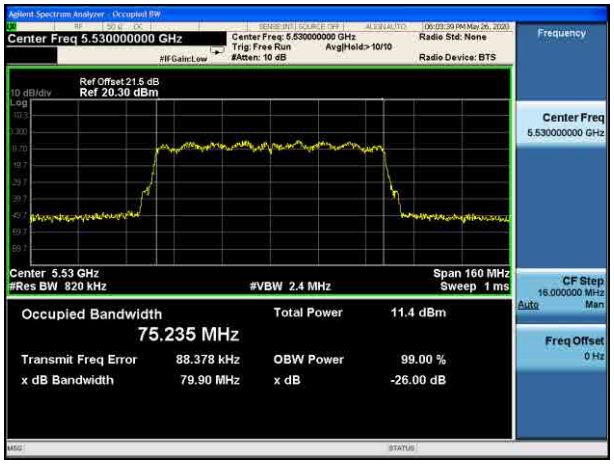
Channel 42 (5210MHz)



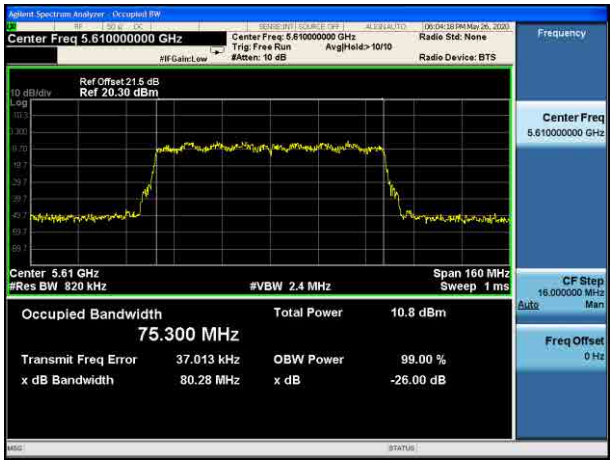
Channel 58 (5290MHz)



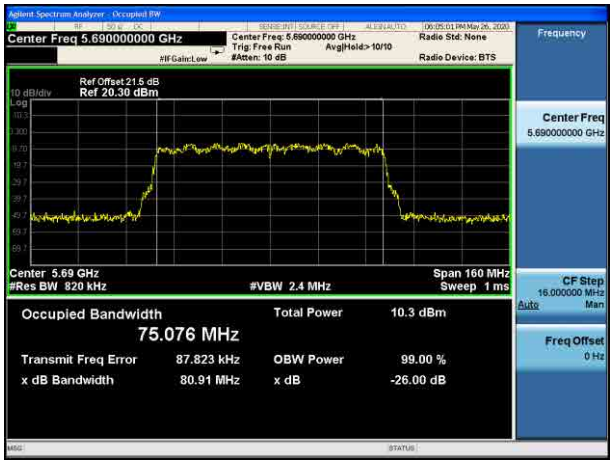
Channel 106 (5530MHz)



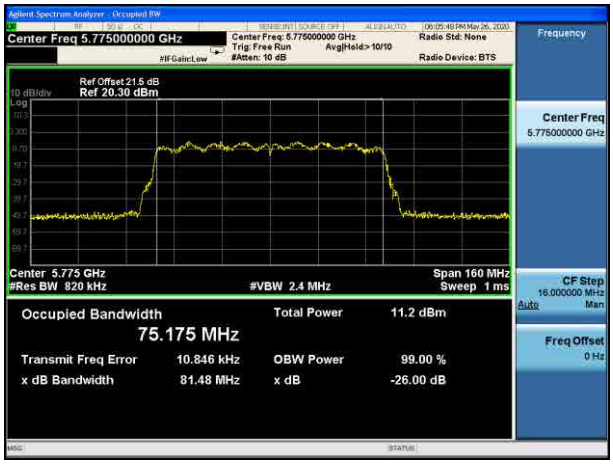
Channel 122 (5610MHz)



Channel 138 (5690MHz)



Channel 155 (5775MHz)

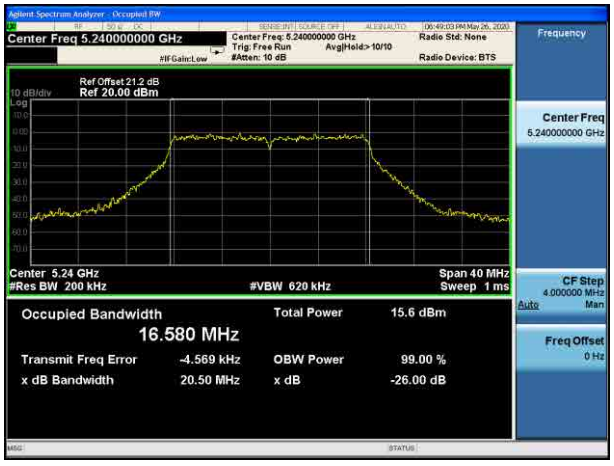


802.11a 26dB Bandwidth & 99% Bandwidth - Ant 1

Channel 36 (5180MHz)

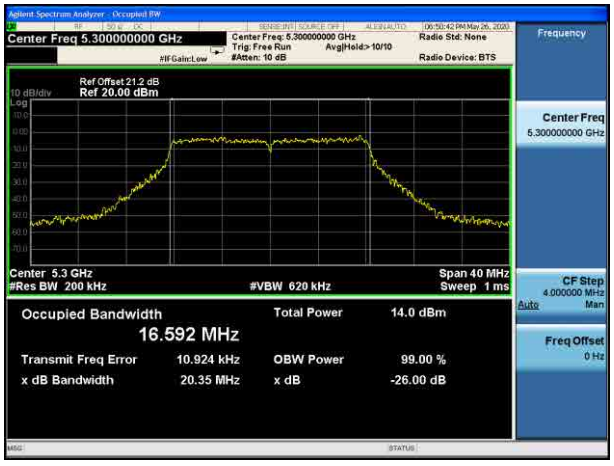
Channel 44 (5220MHz)

Channel 48 (5240MHz)

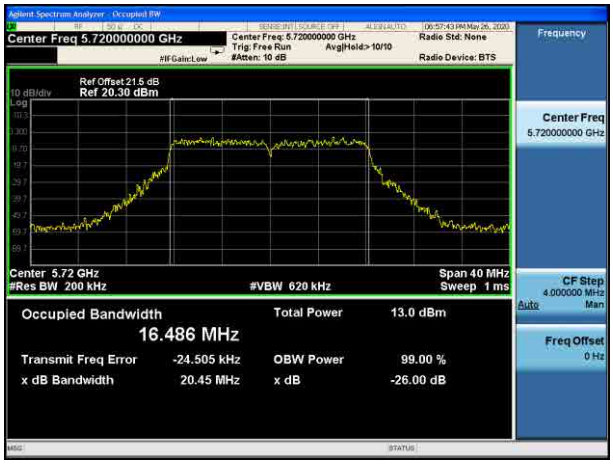
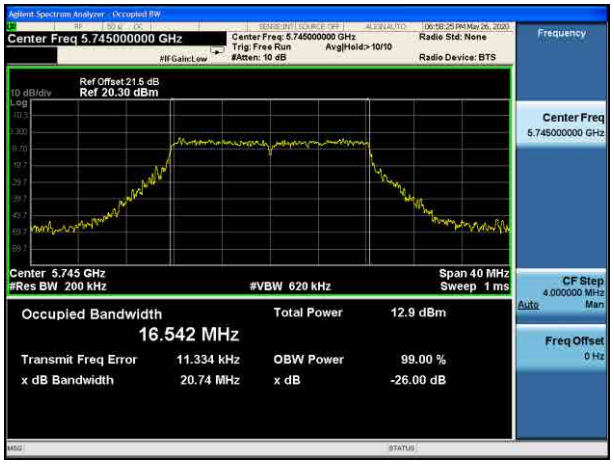


Channel 52 (5260MHz)

Channel 60 (5300MHz)



Channel 64 (5320MHz)

Channel 100 (5500MHz)	Channel 120 (5600MHz)
	
Channel 140 (5700MHz)	**Channel 144 (5720MHz)**
	
Channel 149 (5745MHz)	**Channel 157 (5785MHz)**
	

Channel 165 (5825MHz)	
	

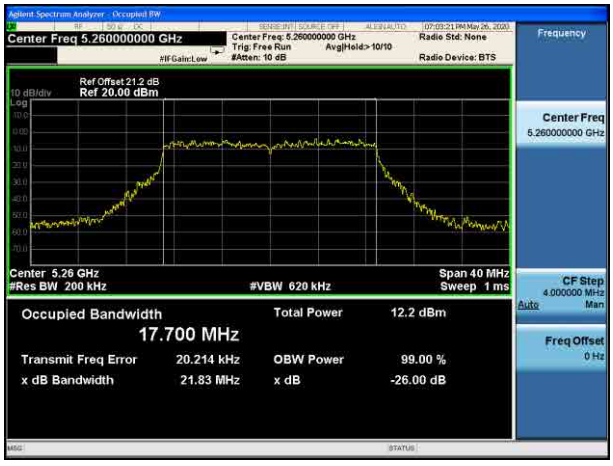
802.11n-HT20 26dB Bandwidth & 99% Bandwidth - Ant 1

Channel 36 (5180MHz)

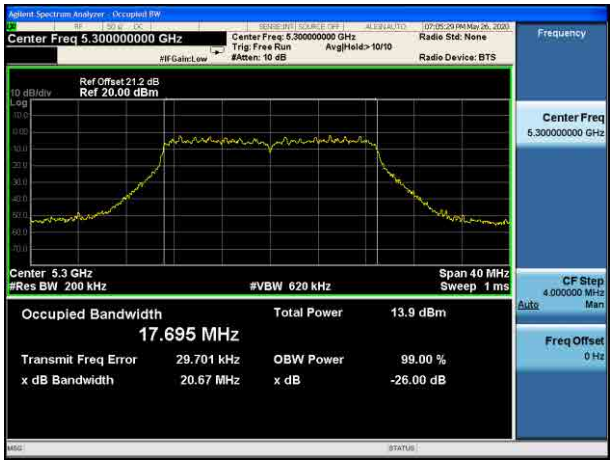
Channel 44 (5220MHz)

Channel 48 (5240MHz)

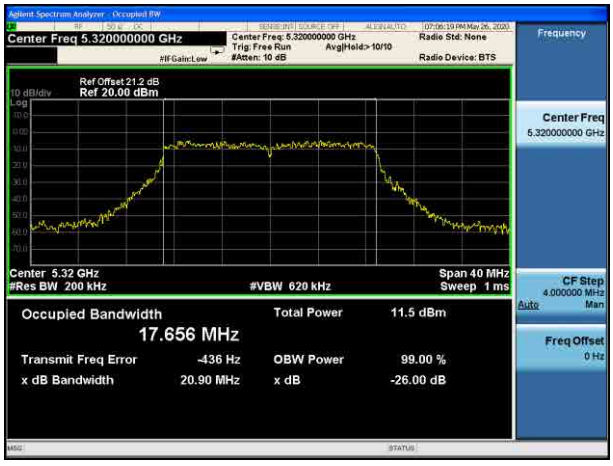
Channel 52 (5260MHz)

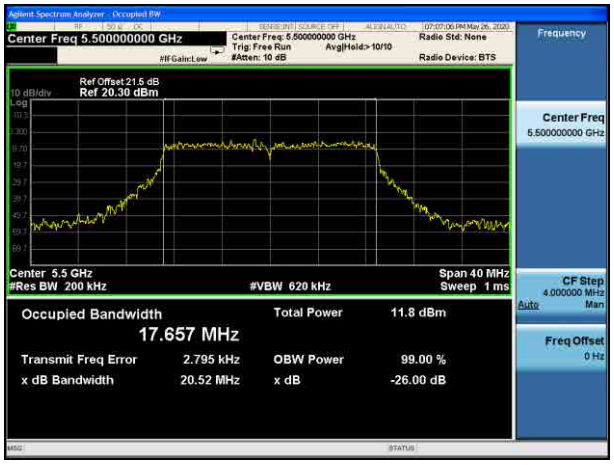
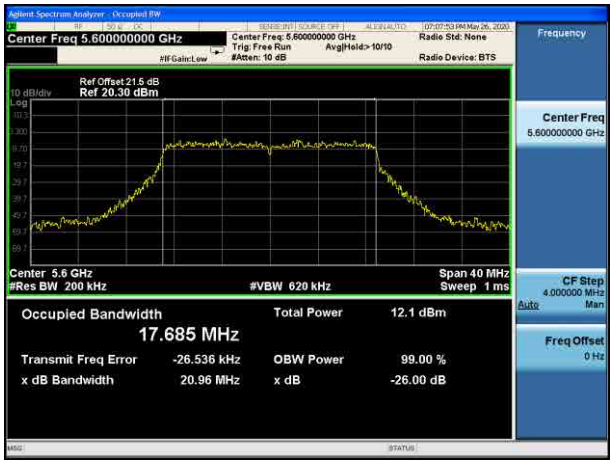
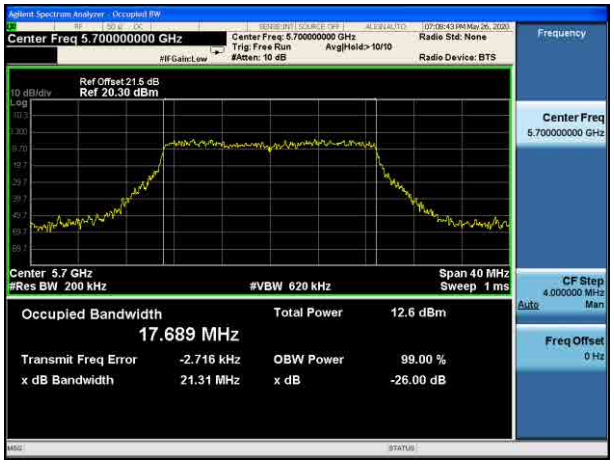
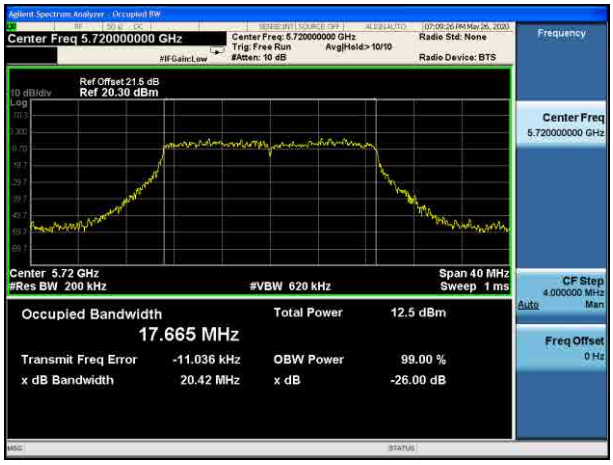
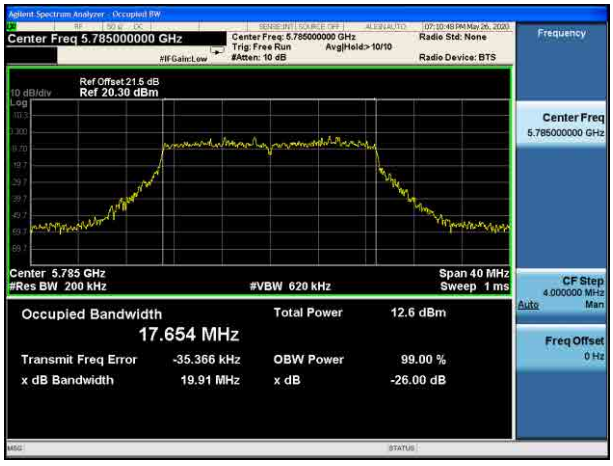


Channel 60 (5300MHz)



Channel 64 (5320MHz)



Channel 100 (5500MHz)	Channel 120 (5600MHz)
	
Channel 140 (5700MHz)	**Channel 144 (5720MHz)**
	
Channel 149 (5745MHz)	**Channel 157 (5785MHz)**
	

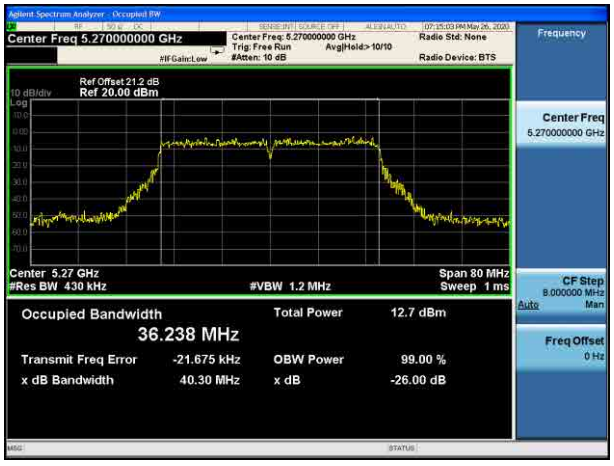
Channel 165 (5825MHz)	
	

802.11n-HT40 26dB Bandwidth & 99% Bandwidth - Ant 1

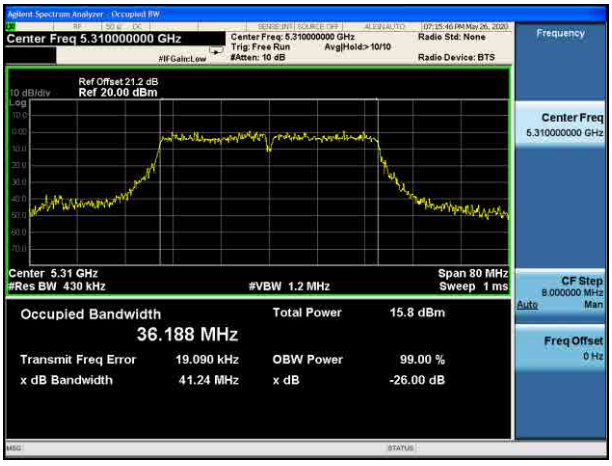
Channel 38 (5190MHz)

Channel 46 (5230MHz)

Channel 54 (5270MHz)

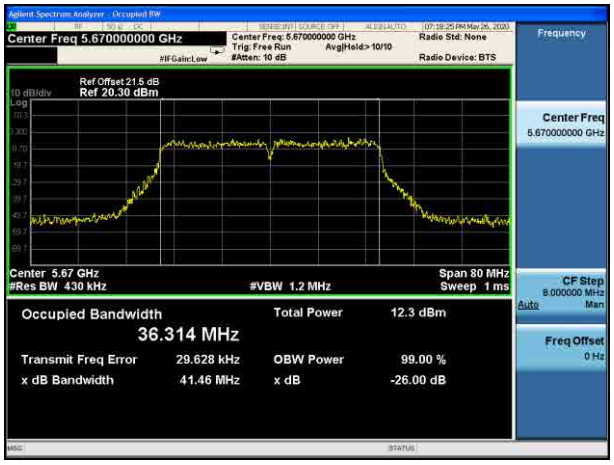
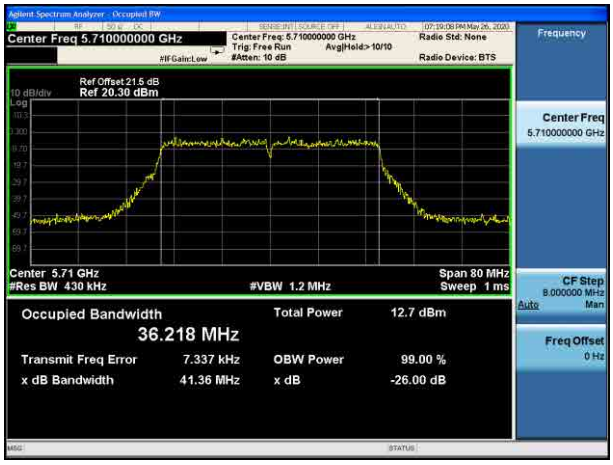
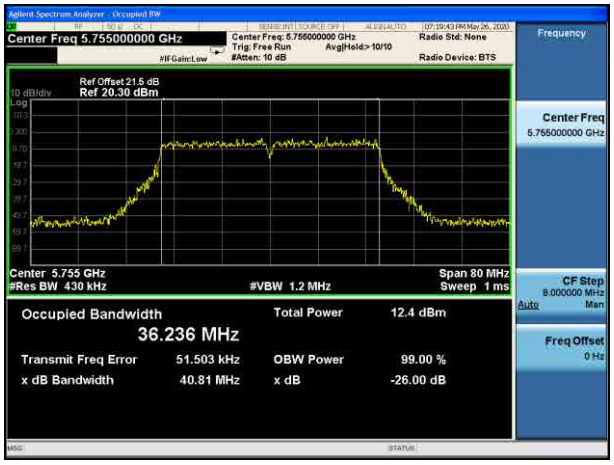
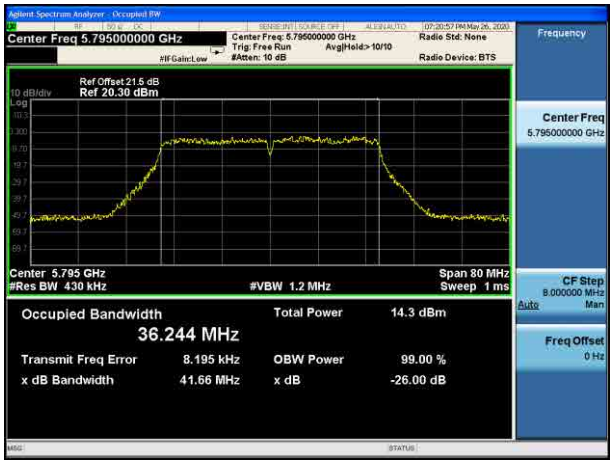


Channel 62 (5310MHz)



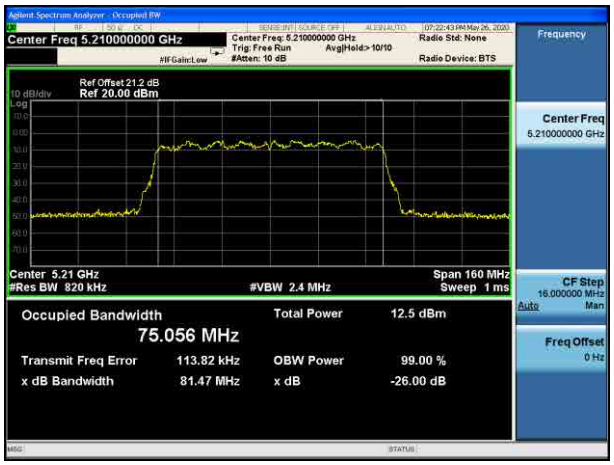
Channel 102 (5510MHz)

Channel 110 (5550MHz)

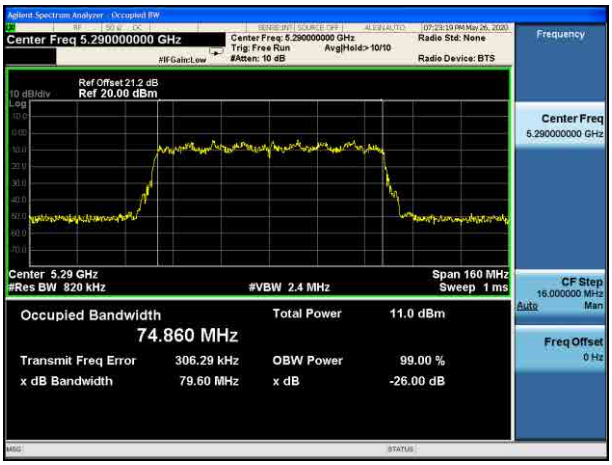
Channel 134 (5670MHz)	Channel 142 (5710MHz)
	
Channel 151 (5755MHz)	**Channel 159 (5795MHz)**
	

802.11ac-VHT80 26dB Bandwidth & 99% Bandwidth - Ant 1

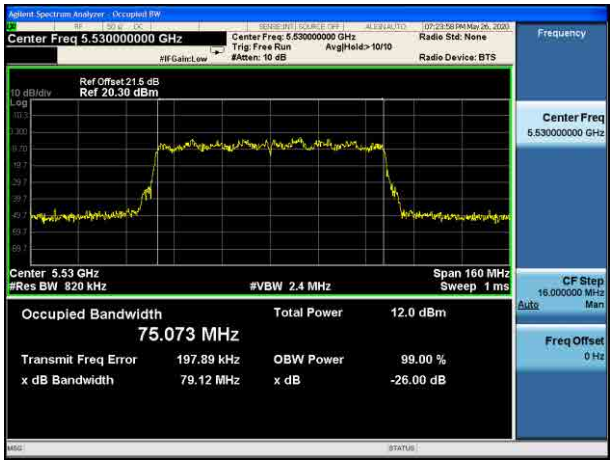
Channel 42 (5210MHz)



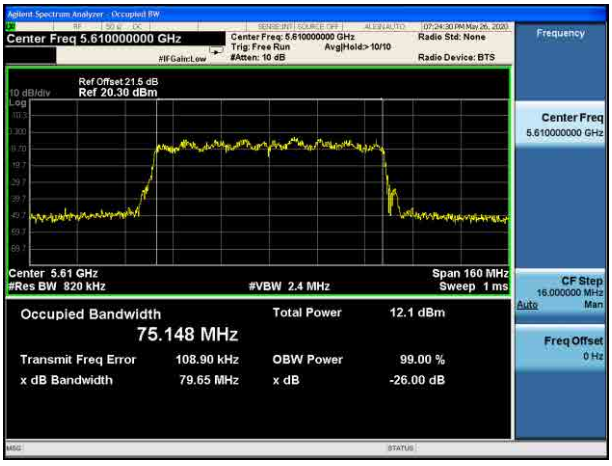
Channel 58 (5290MHz)



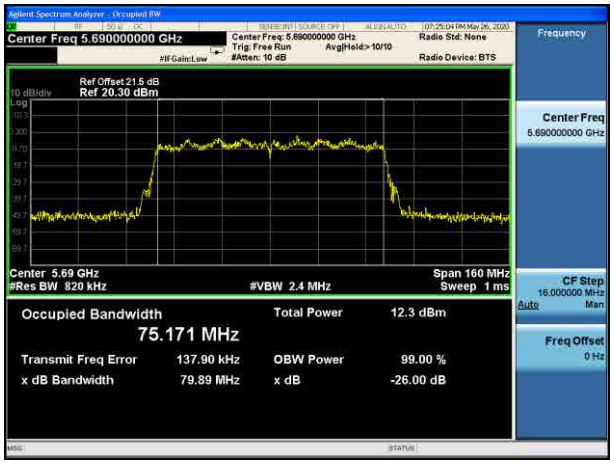
Channel 106 (5530MHz)



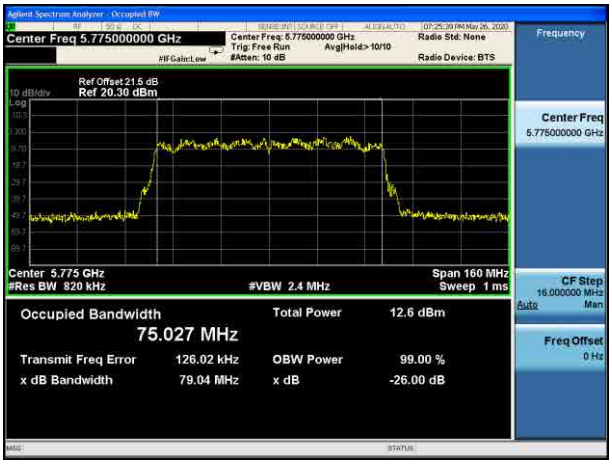
Channel 122 (5610MHz)



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.

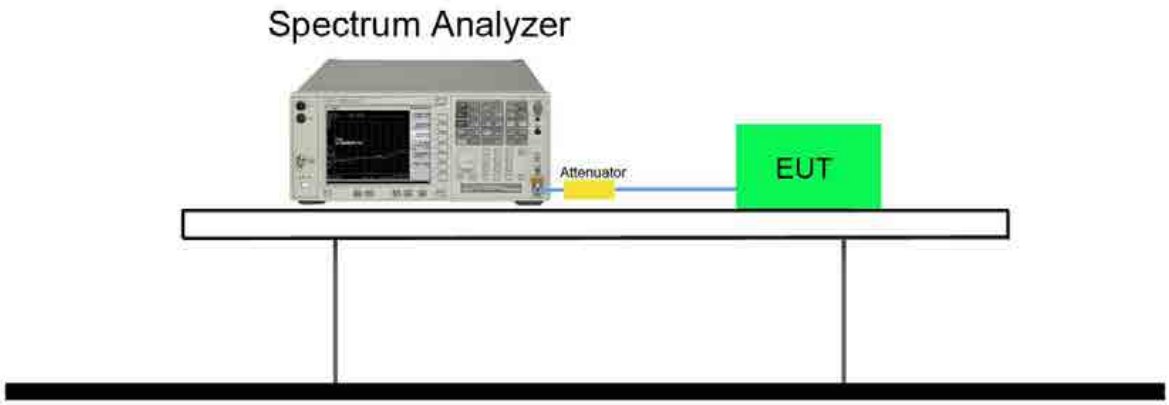
7.3.2. Test Procedure used

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 ≧ 3 × RBW.
4. Detector = Peak.
5. Trace mode = max hold.
6. Sweep = auto couple.
7. Allow the trace to stabilize.
8. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

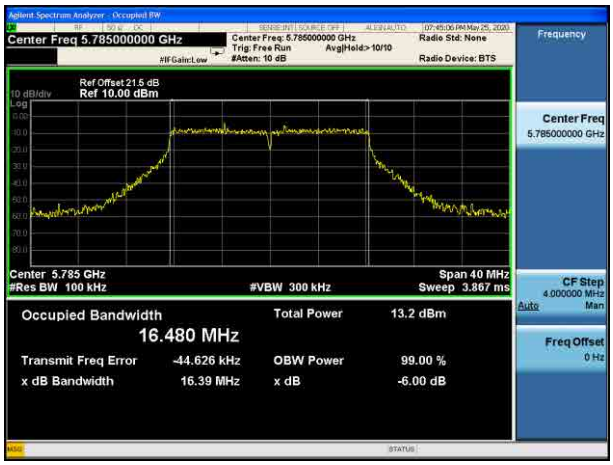
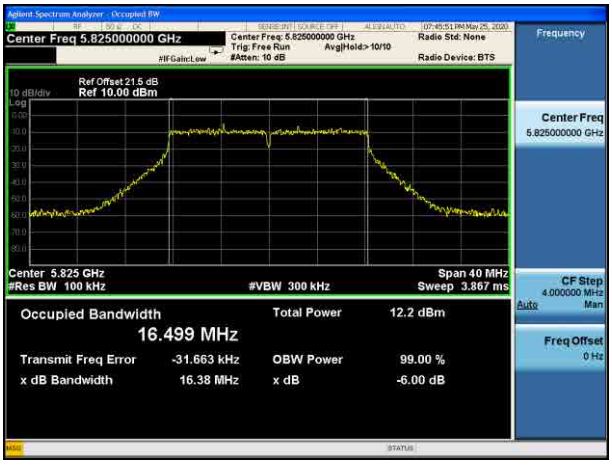
7.3.4. Test Setup

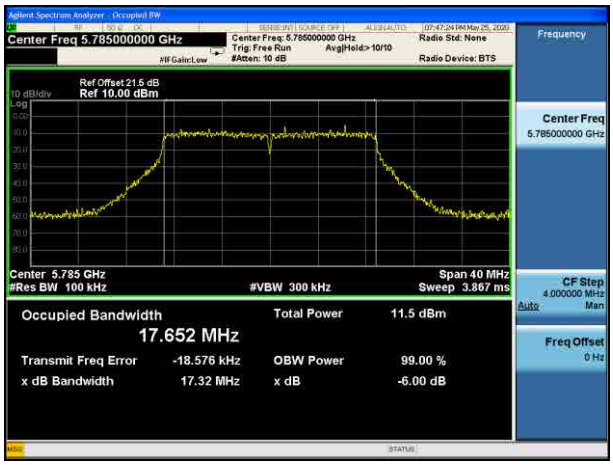
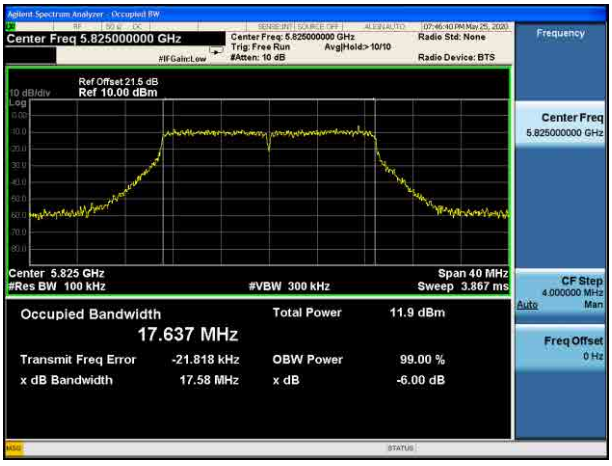


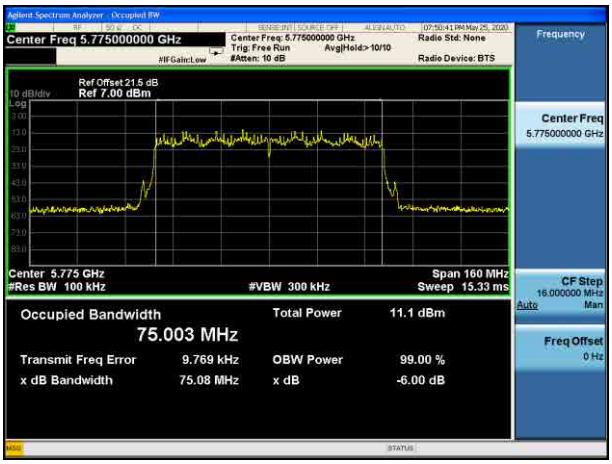
7.3.5. Test Result

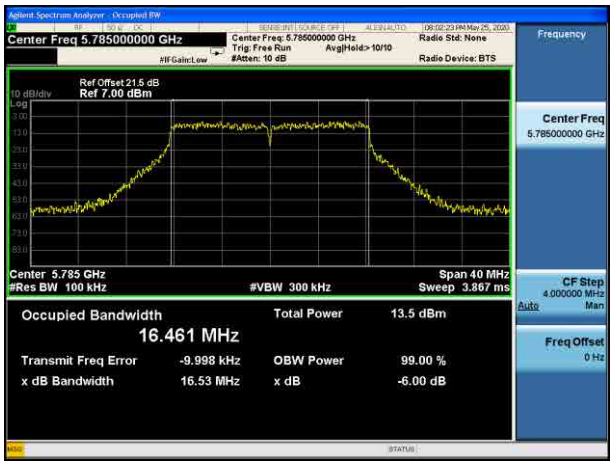
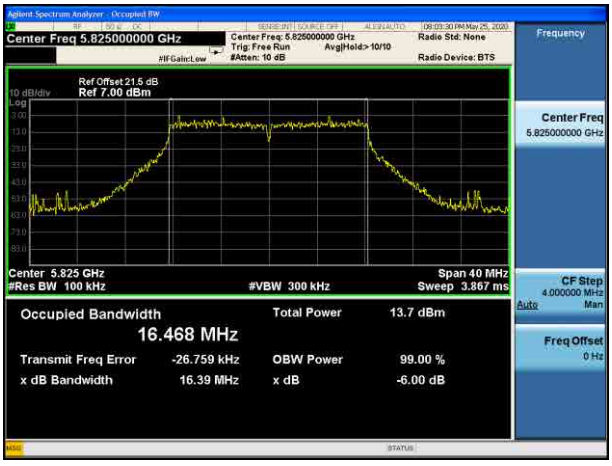
Product	OHMNI TELEPRESENCE ROBOTS	Test Engineer	Peter
Test Site	SR2	Test Date	2020/05/25
Test Item	6dB Bandwidth		

Test Mode	Channel No.	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)	Result
Antenna 0					
802.11a	149	5745	16.550	≥ 0.5	Pass
802.11a	157	5785	16.390	≥ 0.5	Pass
802.11a	165	5825	16.380	≥ 0.5	Pass
802.11n-HT20	149	5745	17.020	≥ 0.5	Pass
802.11n-HT20	157	5785	17.320	≥ 0.5	Pass
802.11n-HT20	165	5825	17.580	≥ 0.5	Pass
802.11n-HT40	151	5755	35.610	≥ 0.5	Pass
802.11n-HT40	159	5795	35.750	≥ 0.5	Pass
802.11ac-VHT80	155	5775	75.080	≥ 0.5	Pass
Antenna 1					
802.11a	149	5745	15.940	≥ 0.5	Pass
802.11a	157	5785	16.530	≥ 0.5	Pass
802.11a	165	5825	16.390	≥ 0.5	Pass
802.11n-HT20	149	5745	16.970	≥ 0.5	Pass
802.11n-HT20	157	5785	17.590	≥ 0.5	Pass
802.11n-HT20	165	5825	17.030	≥ 0.5	Pass
802.11n-HT40	151	5755	35.820	≥ 0.5	Pass
802.11n-HT40	159	5795	35.850	≥ 0.5	Pass
802.11ac-VHT80	155	5775	74.970	≥ 0.5	Pass

802.11a 6dB Bandwidth - Ant 0	
Channel 149 (5745MHz)	**Channel 157 (5785MHz)**
	
Channel 165 (5825MHz)	
	

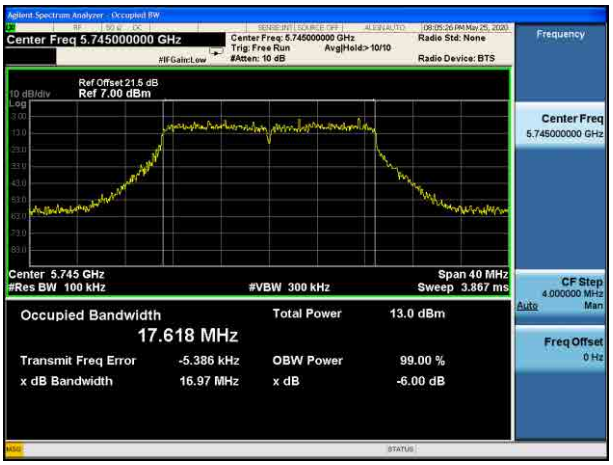
802.11n-HT20 6dB Bandwidth - Ant 0	
Channel 149 (5745MHz)	**Channel 157 (5785MHz)**
	
Channel 165 (5825MHz)	
	
802.11n-HT40 6dB Bandwidth - Ant 0	
Channel 151 (5755MHz)	**Channel 159 (5795MHz)**
	

802.11ac-VHT80 6dB Bandwidth - Ant 0	
Channel 155 (5775MHz)	
	

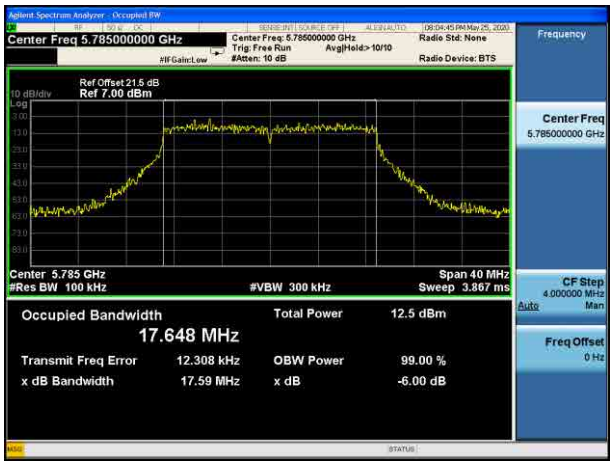
802.11a 6dB Bandwidth - Ant 1	
Channel 149 (5745MHz)	**Channel 157 (5785MHz)**
	
Channel 165 (5825MHz)	
	

802.11n-HT20 6dB Bandwidth - Ant 1

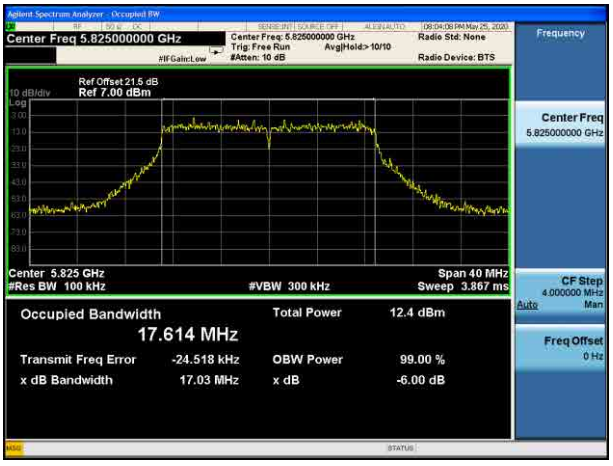
Channel 149 (5745MHz)



Channel 157 (5785MHz)

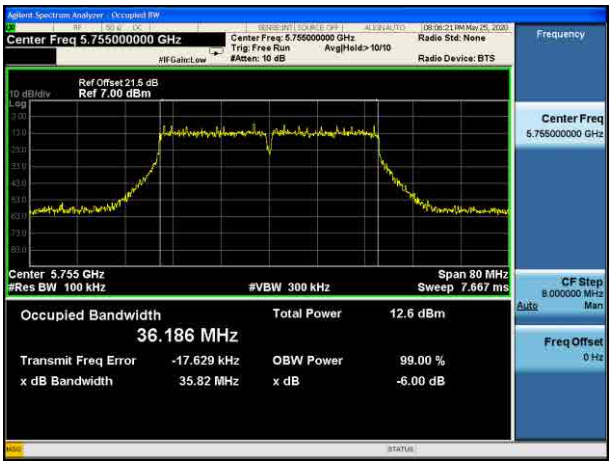


Channel 165 (5825MHz)

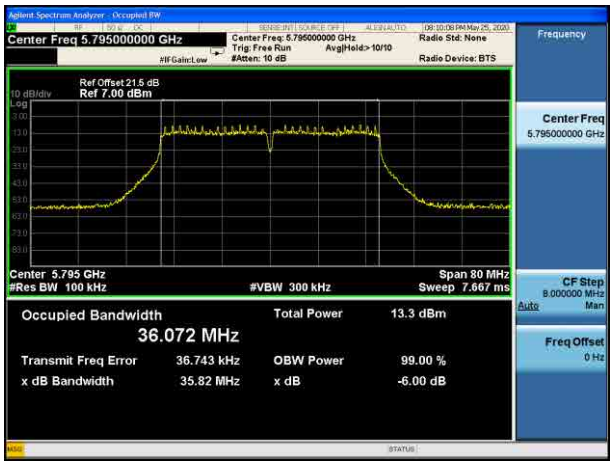


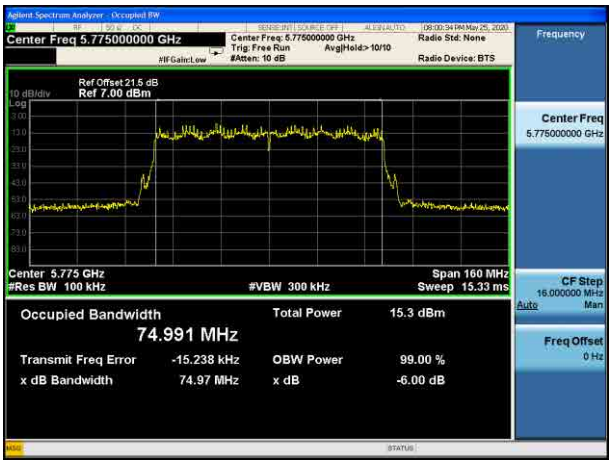
802.11n-HT40 6dB Bandwidth - Ant 1

Channel 151 (5755MHz)



Channel 159 (5795MHz)



802.11ac-VHT80 6dB Bandwidth - Ant 1	
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(23.98dBm).
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 11dBm +10 log (26dB 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*log10 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 log10 B, dBm, whichever power is less. The maximum e.i.r.p. shall not exceed 1.0 W (30dBm) or 17 + 10 log10 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.

EIRP Limit Calculation as below:

For 5150-5250MHz

802.11a: 10 + 10 $\log_{10}$ (16.64MHz) = 22.21dBm < 23.01dBm;

802.11n-HT20: 10 + 10 $\log_{10}$ (17.77MHz) = 22.55dBm < 23.01dBm;

802.11n-HT40/ ac-VHT80: 10 + 10 $\log_{10}$ B > 23.01dBm;

For 5250-5350MHz, 5470-5725MHz

802.11a: 17 + 10 $\log_{10}$ (16.64MHz) = 29.21dBm < 30dBm;

802.11n-HT20: 17 + 10 $\log_{10}$ (17.73MHz) = 29.49dBm < 30dBm;

802.11n-HT40/ac-VHT80: 10 + 10 $\log_{10}$ B > 30dBm;

Max Conducted Output Power Limit Calculation as below:

For 5250-5350MHz, 5470-5725MHz

802.11a: 11 + 10 log10 (16.64MHz) = 23.21dBm < 23.98dBm;

802.11n-HT20: 11 + 10 log10 (17.73MHz) = 23.49dBm < 23.98dBm;

802.11n-HT40/ac-VHT80: 11 + 10 log10 B > 23.98dBm;

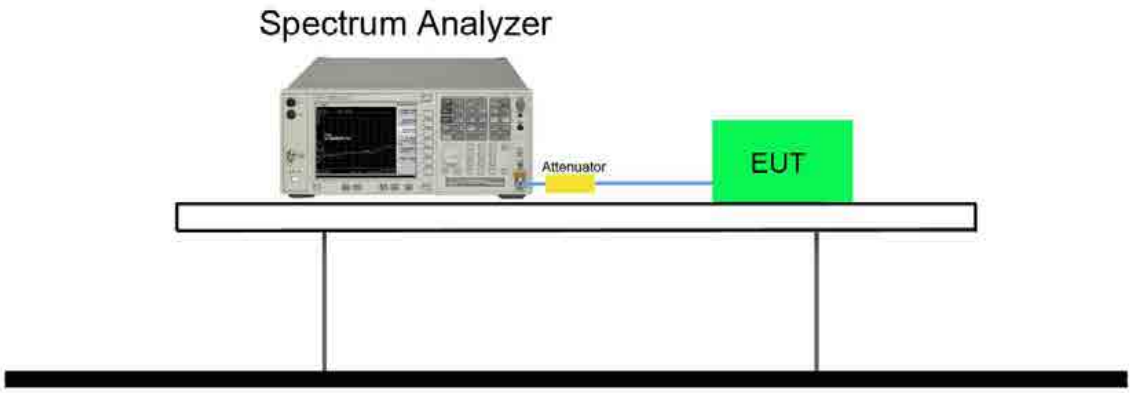
7.4.2. Test Procedure Used

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

7.4.3. Test Setting

Average power measurements were perform 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	OHMNI TELEPRESENCE ROBOTS	Test Engineer	Peter
Test Site	SR2	Test Date	2020/04/23
Test Item	Output Power		

802.11a – Antenna 0

Channel No.	Frequency (MHz)	Average Power For different Data Rate (Mbps)								Required Limit (dBm)
		6	9	12	18	24	36	48	54	
36	5180	12.85	--	--	--	--	--	--	--	≤ 23.98 / ≤ 22.21 for IC
44	5220	13.44	13.40	13.38	13.27	13.21	13.18	13.15	13.13	≤ 23.98 / ≤ 22.21 for IC
48	5240	13.28	--	--	--	--	--	--	--	≤ 23.98 / ≤ 22.21 for IC
52	5260	13.11	--	--	--	--	--	--	--	≤ 23.98 / ≤ 23.21 for IC
60	5300	13.42	13.38	13.33	13.28	13.24	13.20	13.16	13.12	≤ 23.98 / ≤ 23.21 for IC
64	5320	13.26	--	--	--	--	--	--	--	≤ 23.98 / ≤ 23.21 for IC
100	5500	13.18	--	--	--	--	--	--	--	≤ 23.98 / ≤ 23.21 for IC
120	5600	13.29	13.26	13.23	13.21	13.19	13.16	13.12	13.10	≤ 23.98 / ≤ 23.21 for IC
140	5700	13.13	--	--	--	--	--	--	--	≤ 23.98 / ≤ 23.21 for IC
144	5720	12.98	--	--	--	--	--	--	--	≤ 23.98 / ≤ 23.21 for IC
149	5745	13.10	--	--	--	--	--	--	--	≤ 30
157	5785	13.39	13.37	13.34	13.32	13.30	13.28	13.21	13.19	≤ 30
165	5825	13.41	--	--	--	--	--	--	--	≤ 30

Note: Output power =Reading value on power meter + duty cycle factor + cable loss.

802.11a – Antenna 1										
Channel No.	Frequency (MHz)	Average Power For different Data Rate (Mbps)								Required Limit (dBm)
		6	9	12	18	24	36	48	54	
36	5180	13.33	--	--	--	--	--	--	--	≤ 23.98 / ≤ 22.21 for IC
44	5220	13.33	13.30	13.28	13.20	13.19	13.18	13.13	13.10	≤ 23.98 / ≤ 22.21 for IC
48	5240	13.49	--	--	--	--	--	--	--	≤ 23.98 / ≤ 22.21 for IC
52	5260	13.49	--	--	--	--	--	--	--	≤ 23.98 / ≤ 23.21 for IC
60	5300	13.46	13.44	13.38	13.33	13.32	13.30	13.28	13.25	≤ 23.98 / ≤ 23.21 for IC
64	5320	13.38	--	--	--	--	--	--	--	≤ 23.98 / ≤ 23.21 for IC
100	5500	13.17	--	--	--	--	--	--	--	≤ 23.98 / ≤ 23.21 for IC
120	5600	13.50	13.48	13.43	13.30	13.27	13.24	13.12	13.06	≤ 23.98 / ≤ 23.21 for IC
140	5700	13.37	--	--	--	--	--	--	--	≤ 23.98 / ≤ 23.21 for IC
144	5720	13.21	--	--	--	--	--	--	--	≤ 23.98 / ≤ 23.21 for IC
149	5745	13.12	--	--	--	--	--	--	--	≤ 30
157	5785	13.21	13.20	13.19	13.18	13.17	13.16	13.14	13.13	≤ 30
165	5825	12.94	--	--	--	--	--	--	--	≤ 30

Note: Output power =Reading value on power meter + duty cycle factor + cable loss.

802.11a – Antenna 0+1										
Channel No.	**Frequency (MHz)**	**Average Power**								**Required Limit (dBm)**
		For different Data Rate (Mbps)								
		MCS8	MCS9	MCS10	MCS11	MCS12	MCS13	MCS14	MCS15	
36	5180	16.11	--	--	--	--	--	--	--	≤ 23.98 / ≤ 22.21 for IC
44	5220	16.40	16.36	16.34	16.25	16.21	16.19	16.15	16.13	≤ 23.98 / ≤ 22.21 for IC
48	5240	16.40	--	--	--	--	--	--	--	≤ 23.98 / ≤ 22.21 for IC
52	5260	16.32	--	--	--	--	--	--	--	≤ 23.98 / ≤ 23.21 for IC
60	5300	16.45	16.42	16.37	16.32	16.29	16.26	16.23	16.20	≤ 23.98 / ≤ 23.21 for IC
64	5320	16.33	--	--	--	--	--	--	--	≤ 23.98 / ≤ 23.21 for IC
100	5500	16.19	--	--	--	--	--	--	--	≤ 23.98 / ≤ 23.21 for IC
120	5600	16.41	16.39	16.35	16.27	16.24	16.21	16.13	16.09	≤ 23.98 / ≤ 23.21 for IC
140	5700	16.27	--	--	--	--	--	--	--	≤ 23.98 / ≤ 23.21 for IC
144	5720	16.11	--	--	--	--	--	--	--	≤ 23.98 / ≤ 23.21 for IC
149	5745	16.12	--	--	--	--	--	--	--	≤ 30
157	5785	16.31	16.30	16.28	16.26	16.25	16.23	16.19	16.17	≤ 30
165	5825	16.20	--	--	--	--	--	--	--	≤ 30

Note: Output power $=10*\log\{10^{\text{Ant 0 RF Output Power }/10}+10^{\text{Ant 1 RF Output Power }/10}\}$ (dBm).

802.11n-20M – Antenna 0										
Channel No.	Frequency (MHz)	Average Power For different Data Rate (Mbps)								Required Limit (dBm)
		MCS8	MCS9	MCS10	MCS11	MCS12	MCS13	MCS14	MCS15	
36	5180	12.02	--	--	--	--	--	--	--	≤ 23.98 / ≤ 22.55 for IC
44	5220	12.47	12.44	12.38	12.35	12.32	12.27	12.24	12.23	≤ 23.98 / ≤ 22.55 for IC
48	5240	12.59	--	--	--	--	--	--	--	≤ 23.98 / ≤ 22.55 for IC
52	5260	12.29	--	--	--	--	--	--	--	≤ 23.98 / ≤ 23.49 for IC
60	5300	12.09	12.07	12.06	12.05	12.04	12.03	12.01	11.99	≤ 23.98 / ≤ 23.49 for IC
64	5320	12.31	--	--	--	--	--	--	--	≤ 23.98 / ≤ 23.49 for IC
100	5500	12.29	--	--	--	--	--	--	--	≤ 23.98 / ≤ 23.49 for IC
120	5600	12.32	12.30	12.29	12.28	12.27	12.24	12.22	12.19	≤ 23.98 / ≤ 23.49 for IC
140	5700	12.36	--	--	--	--	--	--	--	≤ 23.98 / ≤ 23.49 for IC
144	5720	11.95	--	--	--	--	--	--	--	≤ 23.98 / ≤ 23.49 for IC
149	5745	12.09	--	--	--	--	--	--	--	≤ 30
157	5785	12.49	12.47	12.46	12.44	12.43	12.41	12.40	12.38	≤ 30
165	5825	12.22	--	--	--	--	--	--	--	≤ 30

Note: Output power =Reading value on power meter + duty cycle factor + cable loss.

802.11n-20M – Antenna 1										
Channel No.	Frequency (MHz)	Average Power For different Data Rate (Mbps)								Required Limit (dBm)
		MCS8	MCS9	MCS10	MCS11	MCS12	MCS13	MCS14	MCS15	
36	5180	12.38	--	--	--	--	--	--	--	≤ 23.98 / ≤ 22.55 for IC
44	5220	12.43	12.39	12.36	12.20	12.15	12.10	12.07	12.05	≤ 23.98 / ≤ 22.55 for IC
48	5240	12.23	--	--	--	--	--	--	--	≤ 23.98 / ≤ 22.55 for IC
52	5260	12.22	--	--	--	--	--	--	--	≤ 23.98 / ≤ 23.49 for IC
60	5300	12.55	12.54	12.52	12.51	12.50	12.46	12.42	12.38	≤ 23.98 / ≤ 23.49 for IC
64	5320	12.37	--	--	--	--	--	--	--	≤ 23.98 / ≤ 23.49 for IC
100	5500	12.43	--	--	--	--	--	--	--	≤ 23.98 / ≤ 23.49 for IC
120	5600	11.90	11.88	11.86	11.85	11.84	11.82	11.75	11.74	≤ 23.98 / ≤ 23.49 for IC
140	5700	12.50	--	--	--	--	--	--	--	≤ 23.98 / ≤ 23.49 for IC
144	5720	11.99	--	--	--	--	--	--	--	≤ 23.98 / ≤ 23.49 for IC
149	5745	12.07	--	--	--	--	--	--	--	≤ 30
157	5785	12.41	12.40	12.39	12.37	12.36	12.31	12.24	12.22	≤ 30
165	5825	12.10	--	--	--	--	--	--	--	≤ 30

Note: Output power =Reading value on power meter + duty cycle factor + cable loss.

802.11n-20M – Antenna 0+1										
Channel No.	Frequency (MHz)	Average Power For different Data Rate (Mbps)								Required Limit (dBm)
		MCS8	MCS9	MCS10	MCS11	MCS12	MCS13	MCS14	MCS15	
36	5180	15.21	--	--	--	--	--	--	--	≤ 23.98 / ≤ 22.55 for IC
44	5220	15.46	15.42	15.38	15.28	15.24	15.19	15.16	15.15	≤ 23.98 / ≤ 22.55 for IC
48	5240	15.42	--	--	--	--	--	--	--	≤ 23.98 / ≤ 22.55 for IC
52	5260	15.26	--	--	--	--	--	--	--	≤ 23.98 / ≤ 23.49 for IC
60	5300	15.33	15.32	15.30	15.29	15.28	15.26	15.23	15.20	≤ 23.98 / ≤ 23.49 for IC
64	5320	15.35	--	--	--	--	--	--	--	≤ 23.98 / ≤ 23.49 for IC
100	5500	15.37	--	--	--	--	--	--	--	≤ 23.98 / ≤ 23.49 for IC
120	5600	15.12	15.10	15.09	15.08	15.07	15.04	15.00	14.98	≤ 23.98 / ≤ 23.49 for IC
140	5700	15.44	--	--	--	--	--	--	--	≤ 23.98 / ≤ 23.49 for IC
144	5720	14.98	--	--	--	--	--	--	--	≤ 23.98 / ≤ 23.49 for IC
149	5745	15.09	--	--	--	--	--	--	--	≤ 30
157	5785	15.46	15.44	15.43	15.41	15.40	15.37	15.33	15.31	≤ 30
165	5825	15.17	--	--	--	--	--	--	--	≤ 30

Note: Output power =$10*\log\{10^{\text{Ant 0 RF Output Power }/10} + 10^{\text{Ant 1 RF Output Power }/10}\}$ (dBm).

802.11ac-20M – Antenna 0										
Channel No.	Frequency (MHz)	Average Power For different Data Rate (Mbps)								Required Limit (dBm)
		MCS8	MCS9	MCS10	MCS11	MCS12	MCS13	MCS14	MCS15	
36	5180	12.03	--	--	--	--	--	--	--	≤ 23.98 / ≤ 22.55 for IC
44	5220	12.65	12.61	12.58	12.50	12.44	12.43	12.40	12.39	≤ 23.98 / ≤ 22.55 for IC
48	5240	12.63	--	--	--	--	--	--	--	≤ 23.98 / ≤ 22.55 for IC
52	5260	12.28	--	--	--	--	--	--	--	≤ 23.98 / ≤ 23.49 for IC
60	5300	12.22	12.21	12.20	12.18	12.17	12.16	12.14	12.12	≤ 23.98 / ≤ 23.49 for IC
64	5320	12.23	--	--	--	--	--	--	--	≤ 23.98 / ≤ 23.49 for IC
100	5500	11.92	--	--	--	--	--	--	--	≤ 23.98 / ≤ 23.49 for IC
120	5600	12.18	12.11	12.05	11.90	11.80	11.76	11.66	11.63	≤ 23.98 / ≤ 23.49 for IC
140	5700	11.90	--	--	--	--	--	--	--	≤ 23.98 / ≤ 23.49 for IC
144	5720	11.88	--	--	--	--	--	--	--	≤ 23.98 / ≤ 23.49 for IC
149	5745	12.11	--	--	--	--	--	--	--	≤ 30
157	5785	12.60	12.52	12.42	12.36	12.33	12.31	12.28	12.27	≤ 30
165	5825	12.23	--	--	--	--	--	--	--	≤ 30

Note: Output power =Reading value on power meter + duty cycle factor + cable loss.

802.11ac-20M – Antenna 1										
Channel No.	Frequency (MHz)	Average Power For different Data Rate (Mbps)								Required Limit (dBm)
		MCS8	MCS9	MCS10	MCS11	MCS12	MCS13	MCS14	MCS15	
36	5180	12.32	--	--	--	--	--	--	--	≤ 23.98 / ≤ 22.55 for IC
44	5220	12.26	12.20	12.15	12.09	12.07	12.06	12.02	12.00	≤ 23.98 / ≤ 22.55 for IC
48	5240	12.22	--	--	--	--	--	--	--	≤ 23.98 / ≤ 22.55 for IC
52	5260	12.12	--	--	--	--	--	--	--	≤ 23.98 / ≤ 23.49 for IC
60	5300	12.73	12.71	12.68	12.66	12.63	12.61	12.60	12.57	≤ 23.98 / ≤ 23.49 for IC
64	5320	12.34	--	--	--	--	--	--	--	≤ 23.98 / ≤ 23.49 for IC
100	5500	12.04	--	--	--	--	--	--	--	≤ 23.98 / ≤ 23.49 for IC
120	5600	11.84	11.80	11.76	11.72	11.71	11.68	11.66	11.65	≤ 23.98 / ≤ 23.49 for IC
140	5700	11.87	--	--	--	--	--	--	--	≤ 23.98 / ≤ 23.49 for IC
144	5720	11.91	--	--	--	--	--	--	--	≤ 23.98 / ≤ 23.49 for IC
149	5745	11.94	--	--	--	--	--	--	--	≤ 30
157	5785	12.16	12.11	12.08	12.02	11.99	11.96	11.94	11.92	≤ 30
165	5825	12.09	--	--	--	--	--	--	--	≤ 30

Note: Output power =Reading value on power meter + duty cycle factor + cable loss.