Nalloy, LLC

TEST REPORT FOR

A2D0US

Tested to The Following Standards:

FCC Part 15 Subpart E Section(s)

15.207 & 15.407
(NII 5.470 – 5.725GHz)

Report No.: 106407-36

Date of issue: February 8, 2022

This test report bears the accreditation symbol indicating that the testing performed herein meets the test and reporting requirements of ISO/IEC 17025 under the applicable scope of testing for CKC Laboratories, Inc.

We strive to create long-term, trust based relationships by providing sound, adaptive, customer first testing services. We embrace each of our customers' unique EMC challenges, not as an interruption to set processes, but rather as the reason we are in business.

Test Certificate # 803.01

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ADMINISTRATIVE INFORMATION

Test Report Information

REPORT PREPARED FOR:

Nalloy, LLC
2301 5th Avenue
Seattle, WA 98108

Representative: Naga Suryadevara
Customer Reference Number: 2D-07350222

REPORT PREPARED BY:

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CKC Laboratories, Inc.
5046 Sierra Pines Drive
Mariposa, CA 95338

Project Number: 106407

DATE OF EQUIPMENT RECEIPT: December 6, 2021
DATE(S) OF TESTING: December 6, 2021
December 6-10, 16, 21,& 23, 2021
January 5-7, 10-13, 17-21 & 24-28, 2022
Feburary 2, 2022

Report Authorization

The test data contained in this report documents the observed testing parameters pertaining to and are relevant for only the equipment provided by the client, tested in the agreed upon operational mode(s) and configuration(s) as identified herein. Compliance assessment remains the client's responsibility. This report may not be used to claim product endorsement by A2LA or any government agencies. This test report has been authorized for release under quality control from CKC Laboratories, Inc.

Steve Behm
Director of Quality Assurance & Engineering Services
CKC Laboratories, Inc.

Test Facility Information

Our laboratories are configured to effectively test a wide variety of product types. CKC utilizes first class test equipment, anechoic chambers, data acquisition and information services to create accurate, repeatable and affordable test results.

TEST LOCATION(S):
CKC Laboratories, Inc.
Canyon Park
22116 23rd Drive S.E., Suite A
Bothell, WA 98021

Software Versions

CKC Laboratories Proprietary Software	Version
EMITest Emissions	5.03.20

Site Registration & Accreditation Information

Location	*NIST CB #	FCC	Canada	Japan
Canyon Park, Bothell, WA	US0103	US1024	3082C	A-0136
Brea, CA	US0103	US1024	3082D	A-0136
Fremont, CA	US0103	US1024	3082B	A-0136
Mariposa, CA	US0103	US1024	3082A	A-0136

*CKC's list of NIST designated countries can be found at: https://standards.gov/cabs/designations.html

SUMMARY OF RESULTS

Standard / Specification: FCC Part 15 Subpart E - 15.407 (NII)

Test Procedure	Description	Modifications	Results
15.215	Occupied Bandwidth	NA	PASS
15.407(a)	Output Power	NA	PASS
15.407(a)	Power Spectral Density	NA	PASS
15.407(b)	Radiated Emissions & Band Edge	NA	PASS
15.407(g)	Frequency Stability	NA	NP1
15.207	AC Conducted Emissions	NA	PASS

NA = Not Applicable
NP1 = CKC was not contracted to perform the required testing.

ISO/IEC 17025 Decision Rule
The declaration of pass or fail herein is based upon assessment to the specification(s) listed above, including where applicable, assessment of measurement uncertainties. For performance related tests, equipment was monitored for specified criteria identified in that section of testing.

Modifications During Testing

This list is a summary of the modifications made to the equipment during testing.

Summary of Conditions
No modifications were made during testing.

Modifications listed above must be incorporated into all production units.

Conditions During Testing

This list is a summary of the conditions noted to the equipment during testing.

Summary of Conditions
The Test Setup Photos are incorporated by reference 106407-36_Test Setup_Photos.

EQUIPMENT UNDER TEST (EUT)

During testing, numerous configurations may have been utilized. The configurations listed below support compliance to the standard(s) listed in the Summary of Results section.

Configuration 1

Equipment Tested:

Device	Manufacturer	Model #	S/N
None	Nalloy, LLC	A2D0US	G3A1VF021386000B

Support Equipment:

Device	Manufacturer	Model #	S/N
Headphones	Poly	C5220T	NA
Laptop	HP	14-fq0032od	5CD12654D3
None	Nalloy, LLC	Gala	XXX
None	Nalloy, LLC	Gala	XXX
USB to Ethernet Adapter	Amazon	Gigabit Ethernet Adapter	0050B6E212BA
AC Adapter	Delta Electronics, Inc.	MDS-030AAC15	NA

Configuration 2

Equipment Tested:

Device	Manufacturer	Model #	S/N
None	Nalloy, LLC	A2D0US	G3A1VF021386000G

Support Equipment:

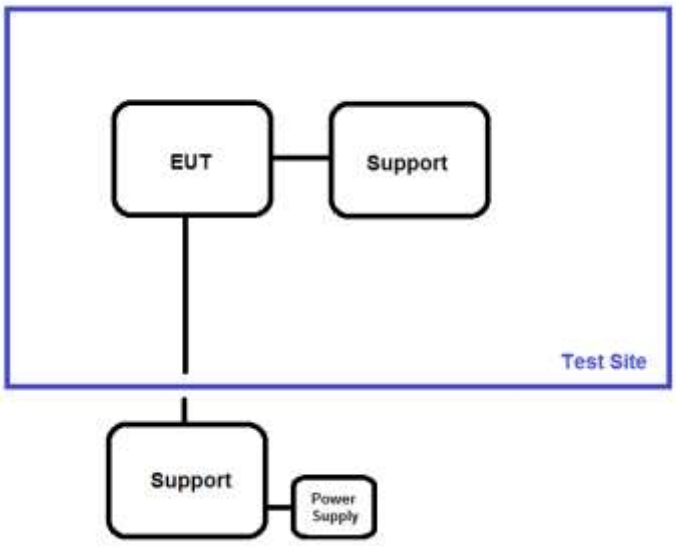
Device	Manufacturer	Model #	S/N
Headphones	Sony	WH-1000X M3	NA
Laptop	ASUS	E210M	M9N0CX21R750387
None	Nalloy, LLC	Gala	XXX
None	Nalloy, LLC	Gala	XXX
USB to Ethernet Adapter	Amazon	Gigabit Ethernet Adapter	0050B6E212BA
AC Adapter	Delta Electronics, Inc.	MDS-030AAC15	NA

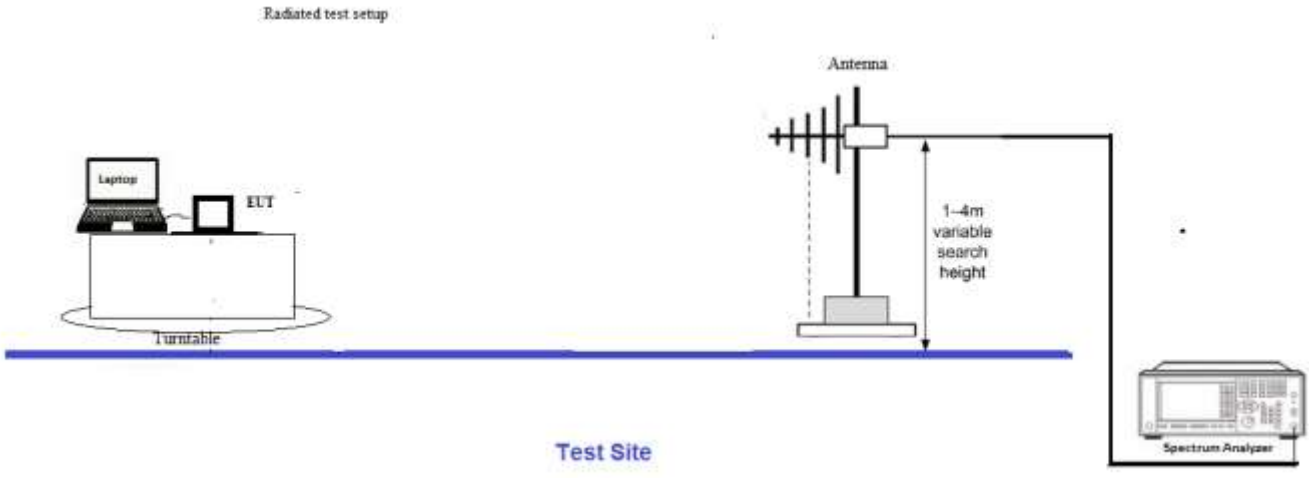
General Product Information:

Product Information	Manufacturer-Provided Details
Equipment Type:	Stand-Alone Equipment
Type of Wideband System:	802.11a, 802.11ac (20, 40 and 80 MHz), 802.11n (20 and 40MHz BW)
Operating Frequency Range:	5500-5700 MHz
Modulation Type(s):	BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM
Maximum Duty Cycle:	100% Modulated (tested worst-case)
Number of TX Chains:	1
Antenna Type(s) and Gain:	Omnidirectional / 3.8dBi
Beamforming Type:	N/A
Antenna Connection Type:	Integral (External connector provided to facilitate testing)
Nominal Input Voltage:	120VAC
Firmware / Software used for Test:	mainline-1.0.2137.0 Bin file- Golden 082621 Qualcomm radio control toolkit v4.0
The validity of results is dependent on the stated product details, the accuracy of which the manufacturer assumes full responsibility.	

Block Diagram of Test Setup(s)

Test Setup Block Diagram





Rev C

FCC Part 15 Subpart E

15.215 Occupied Bandwidth

Test Setup/Conditions			
Test Location:	Bothell Lab C3	Test Engineer:	S. Pittsford
Test Method:	ANSI C63.10 (2013), KDB 789033	Test Date(s):	1/18/2022
Configuration:	1		
Test Setup:	Duty Cycle: 100% (Test Mode) Test Mode: Continuously transmitting Test Setup: EUT is transmitting through the antenna port connector and is attached to the spectrum analyzer.		

Environmental Conditions			
Temperature (ºC)	21	Relative Humidity (%):	45

Test Equipment					
Asset#	**Description**	**Manufacturer**	**Model**	**Cal Date**	**Cal Due**
02872	Spectrum Analyzer	Agilent	E4440A	11/29/2021	11/29/2023
P07229	Attenuator	Pasternack	PE7004-20	8/9/2021	8/9/2023
P07796	Cable	Andrews	Heliax	7/7/2021	7/7/2023

26dB Occupied Bandwidth

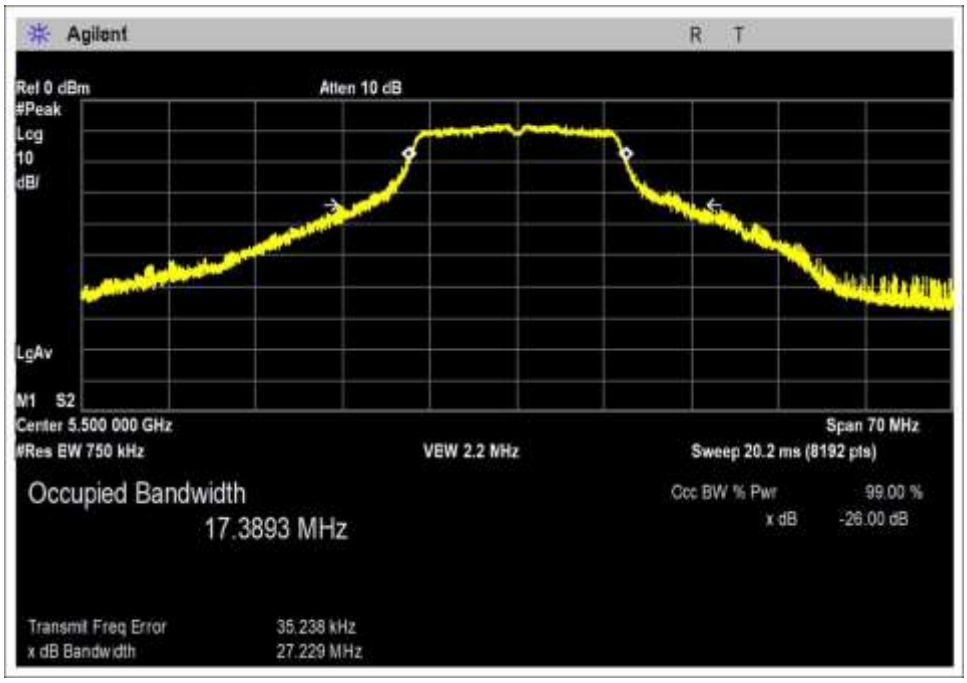
Test Data Summary					
Frequency (MHz)	**Antenna Port**	**Modulation**	**Measured (kHz)**	**Limit (kHz)**	**Results**
5500	0	802.11a	27229	None	N/A
5580	0	802.11a	30983		
5700	0	802.11a	30922		
5500	0	802.11n20	28785	None	N/A
5580	0	802.11n20	30144		
5700	0	802.11n20	33064		
5510	0	802.11n40	47602	None	N/A
5590	0	802.11n40	61712		
5670	0	802.11n40	64859		
5500	0	802.11ac20	28675	None	N/A
5580	0	802.11ac20	31148		
5700	0	802.11ac20	33804		
5510	0	802.11ac40	49121	None	N/A
5590	0	802.11ac40	62775		
5670	0	802.11ac40	68499		
5530	0	802.11ac80	90979	None	N/A
5610	0	802.11ac80	146938		

99% Occupied Bandwidth

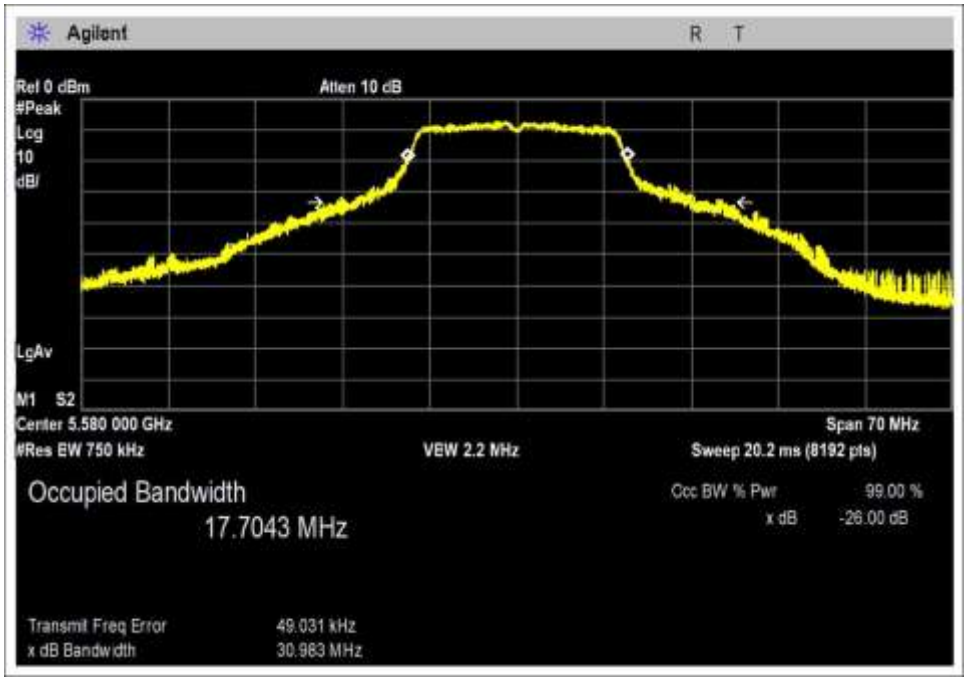
Test Data Summary					
Frequency (MHz)	**Antenna Port**	**Modulation**	**Measured (kHz)**	**Limit (kHz)**	**Results**
5500	0	802.11a	17389.3	None	N/A
5580	0	802.11a	17704.3		
5700	0	802.11a	17759.2		
5500	0	802.11n20	18546.7	None	N/A
5580	0	802.11n20	18795.1		
5700	0	802.11n20	19030.7		
5510	0	802.11n40	37380.4	None	N/A
5590	0	802.11n40	37906.3		
5670	0	802.11n40	38061.1		
5500	0	802.11ac20	18594.2	None	N/A
5580	0	802.11ac20	18749.0		
5700	0	802.11ac20	19302.1		
5510	0	802.11ac40	37341.7	None	N/A
5590	0	802.11ac40	37906.8		
5670	0	802.11ac40	38064.3		
5530	0	802.11ac80	76339.1	None	N/A
5610	0	802.11ac80	77165.7		

Plot(s)

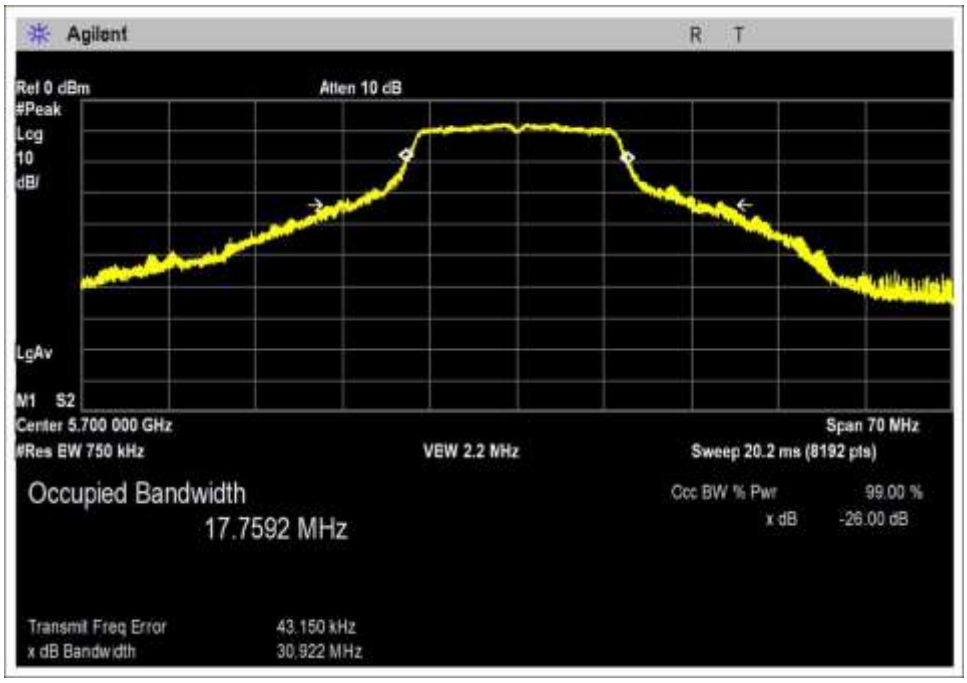
99% & 26dB Occupied Bandwidth 802.11a



Low Channel

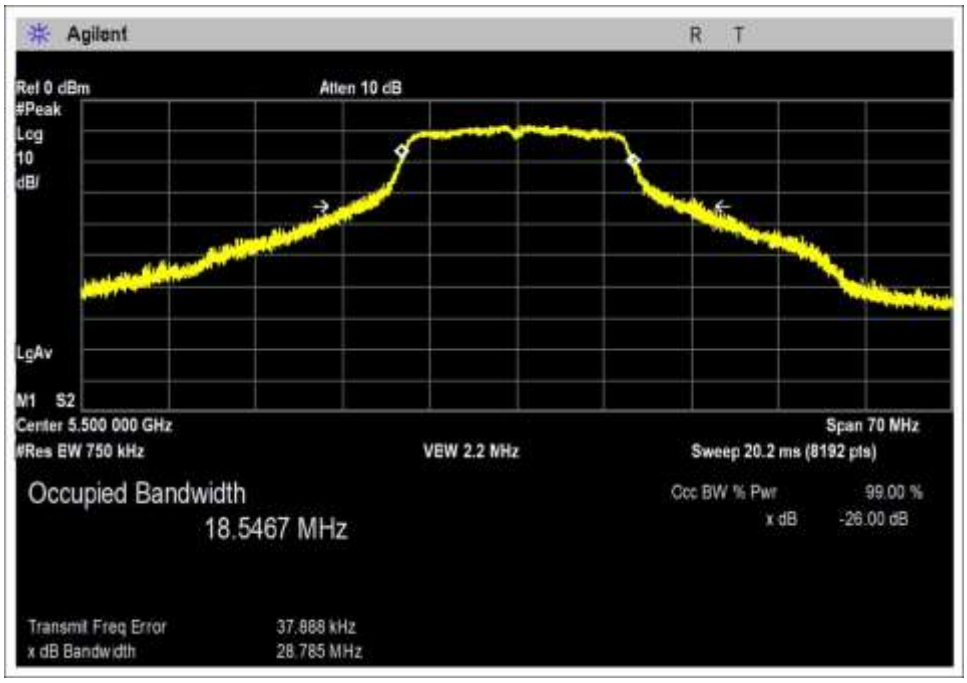


Middle Channel



High Channel

99% & 26dB Occupied Bandwidth 802.11n20



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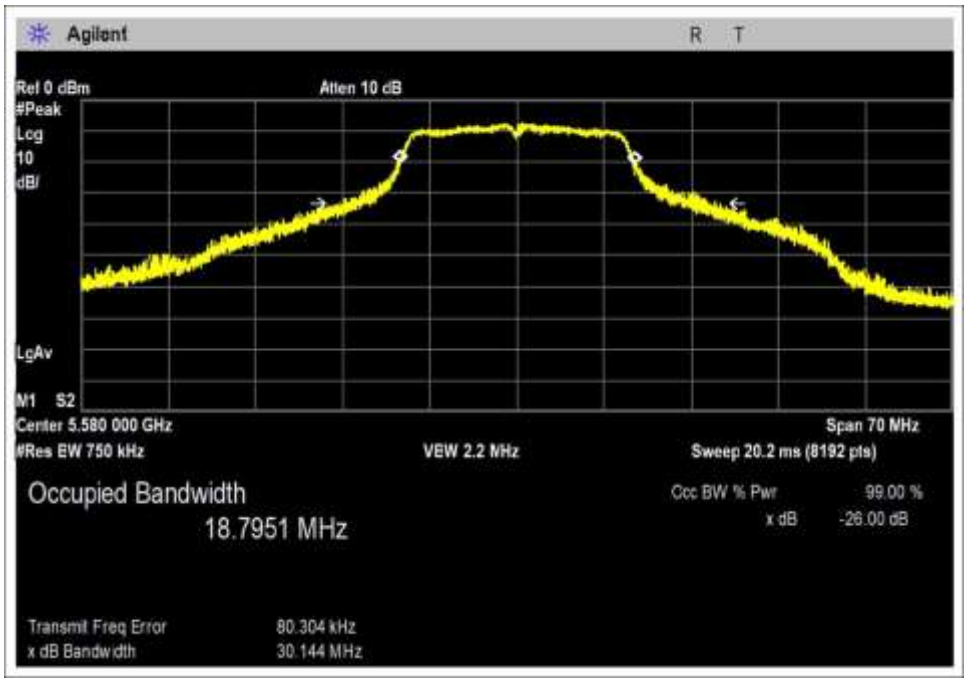

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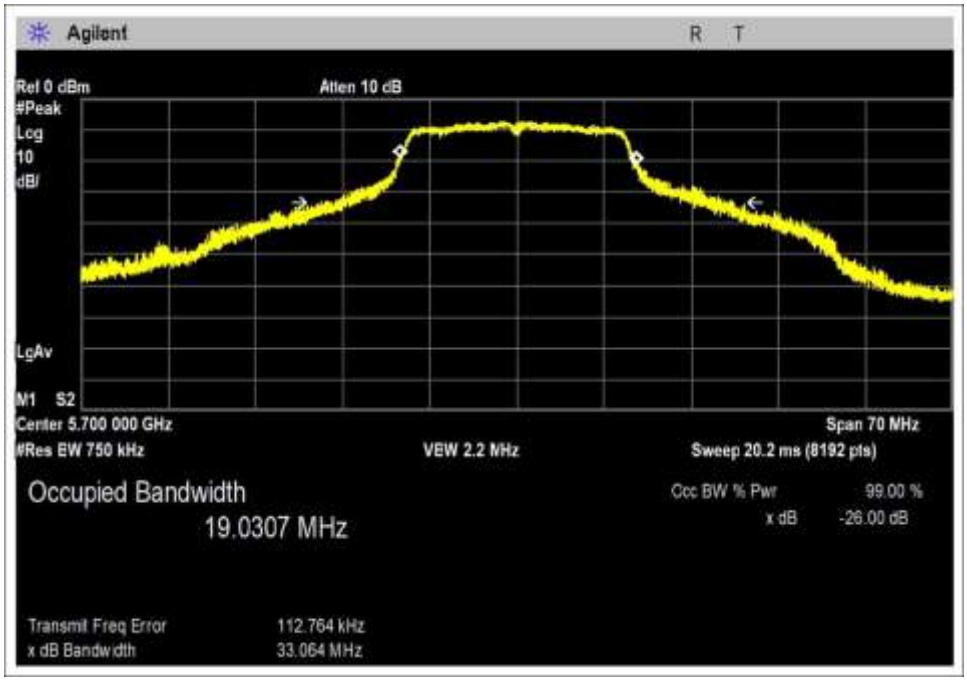
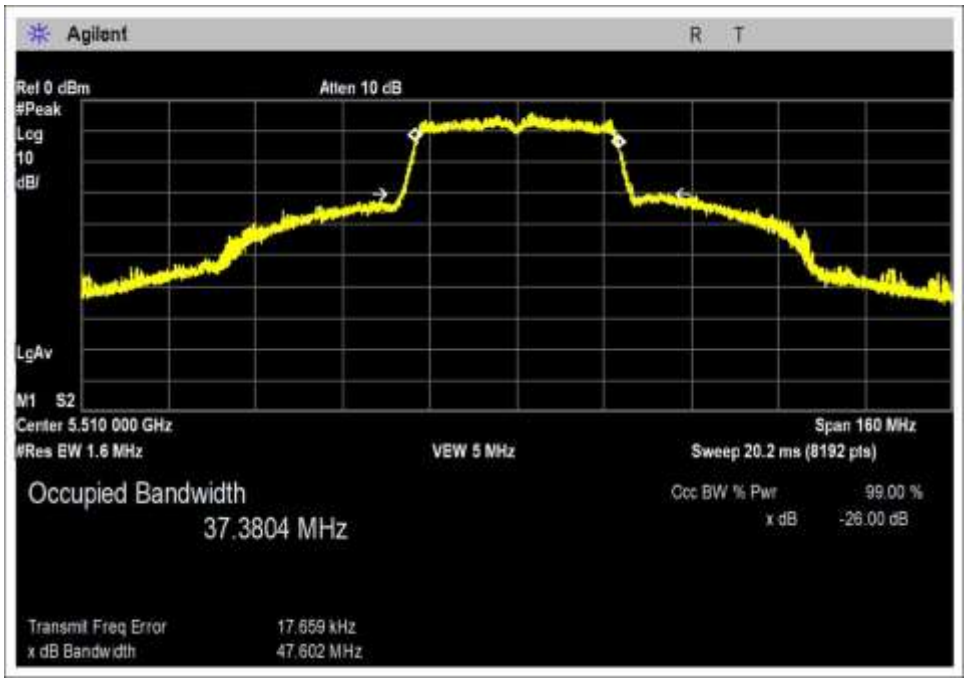


High Channel

99% & 26dB Occupied Bandwidth 802.11n40



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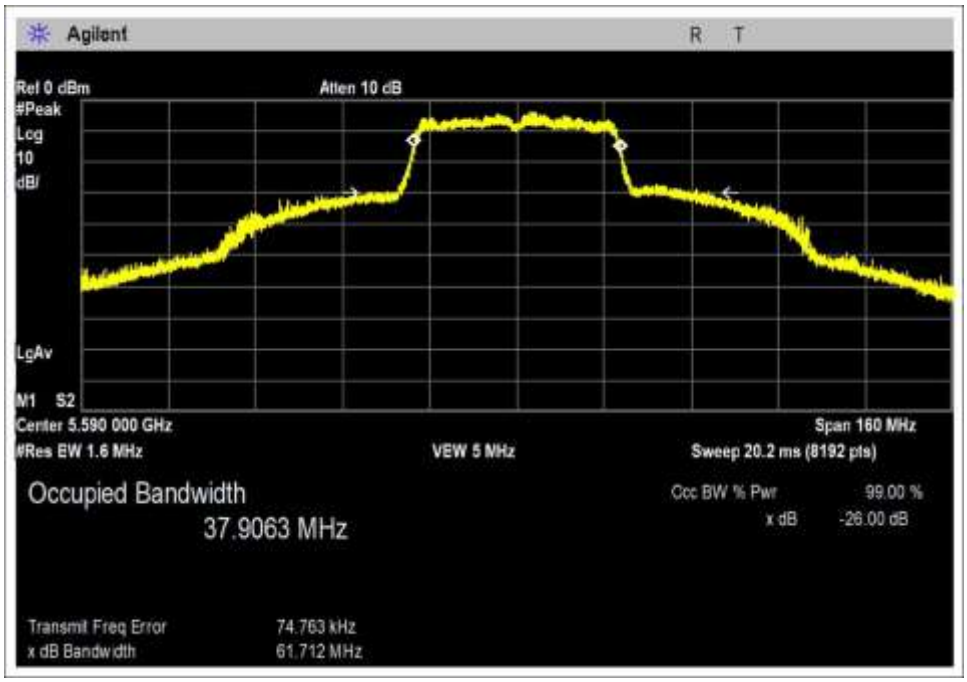
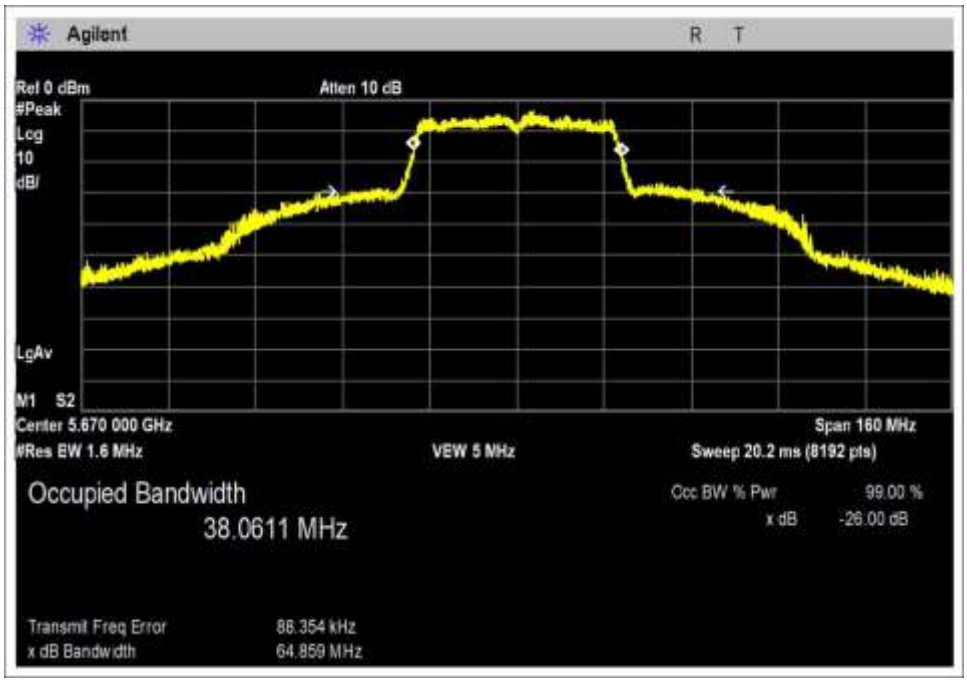
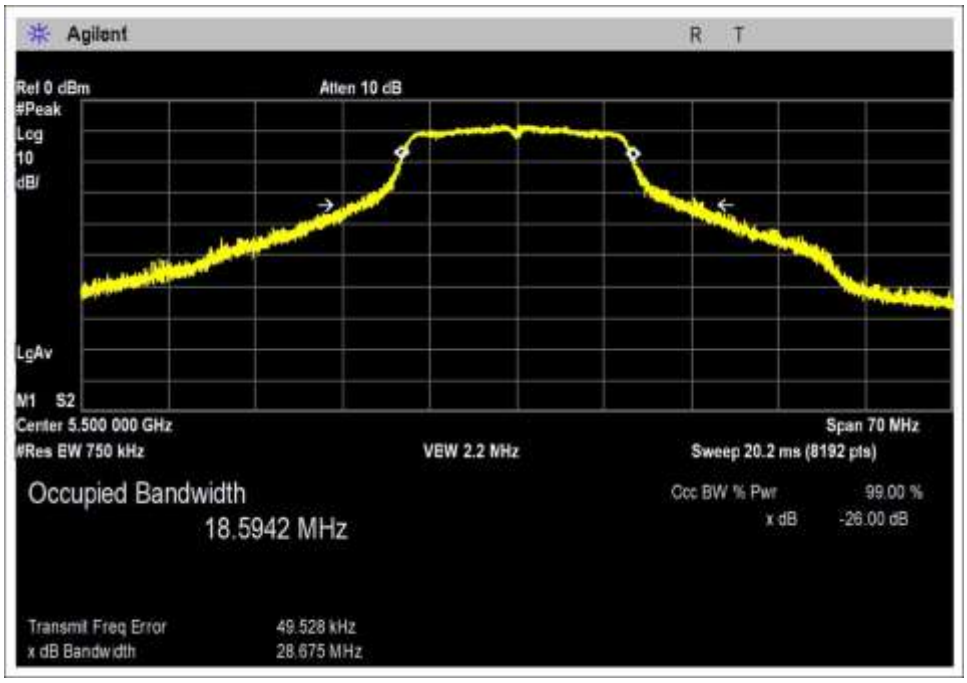


Middle Channel

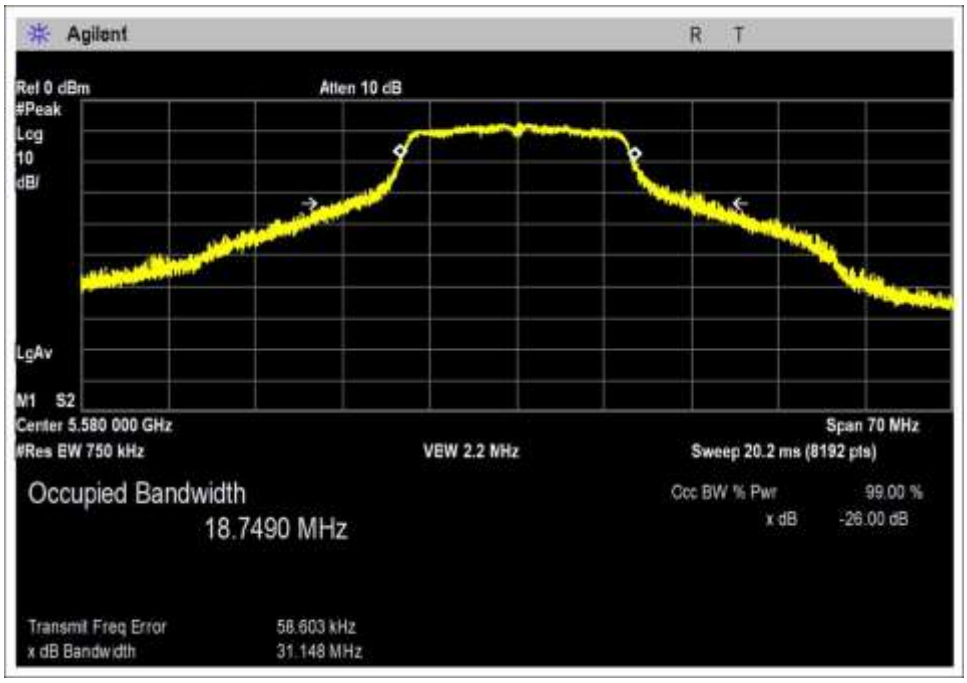


High Channel

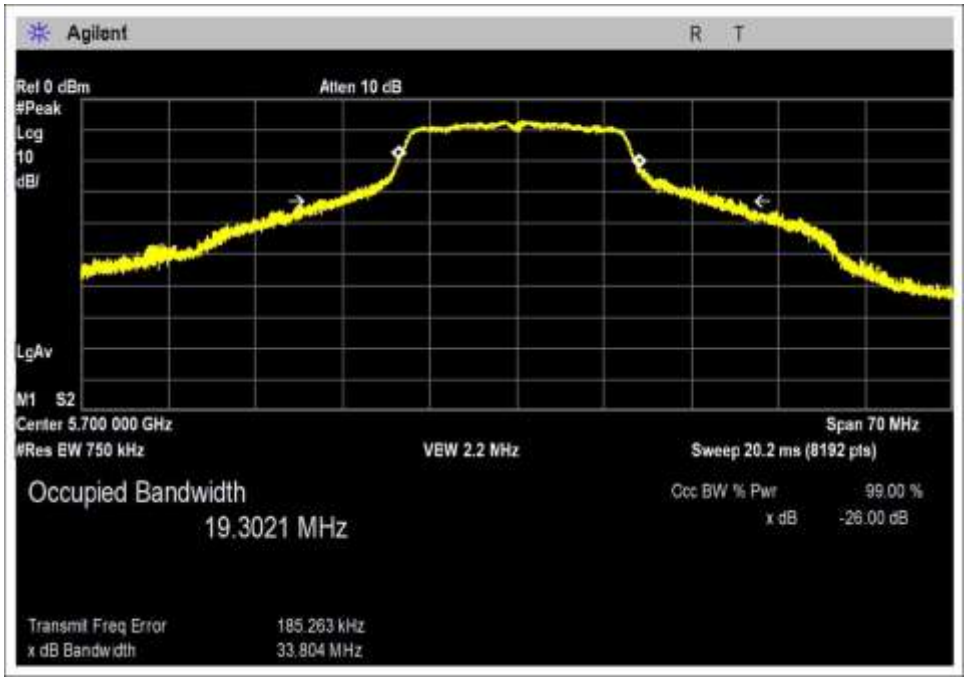
99% & 26dB Occupied Bandwidth 802.11ac20



Low Channel

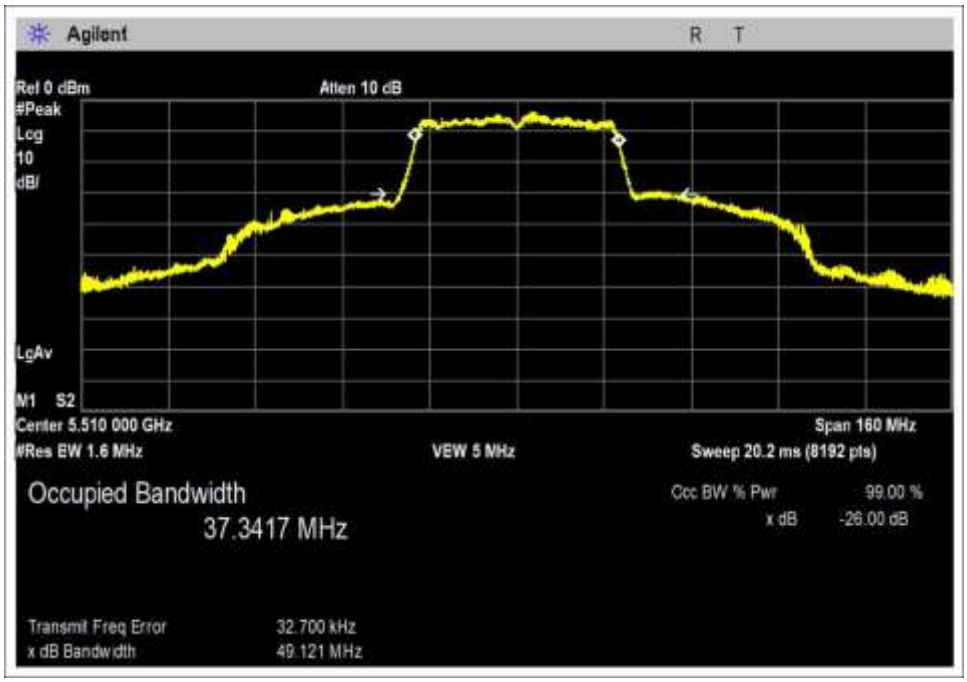


Middle Channel

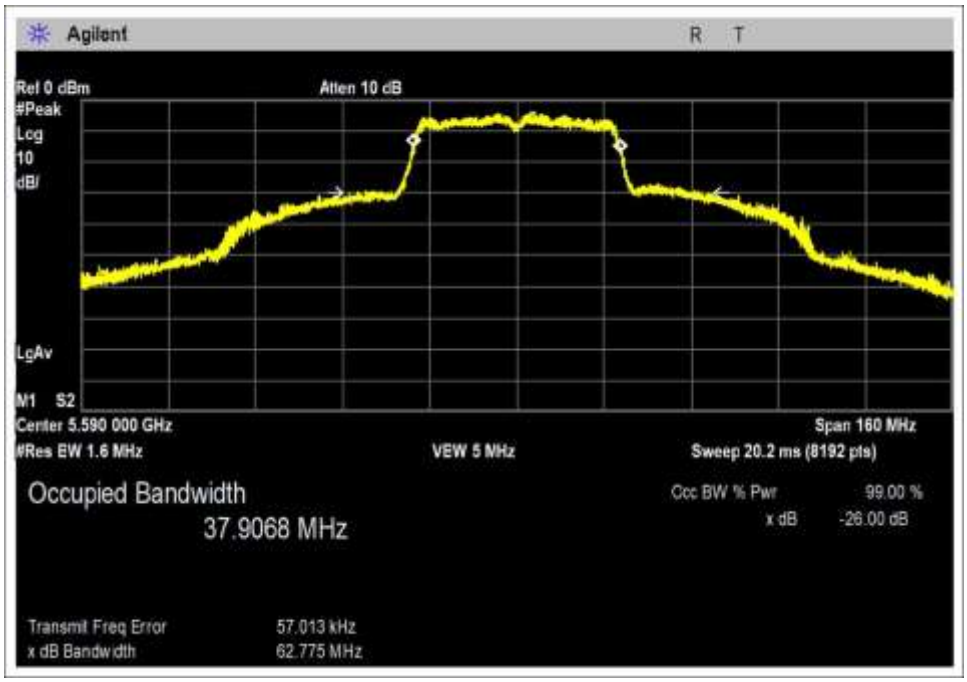


High Channel

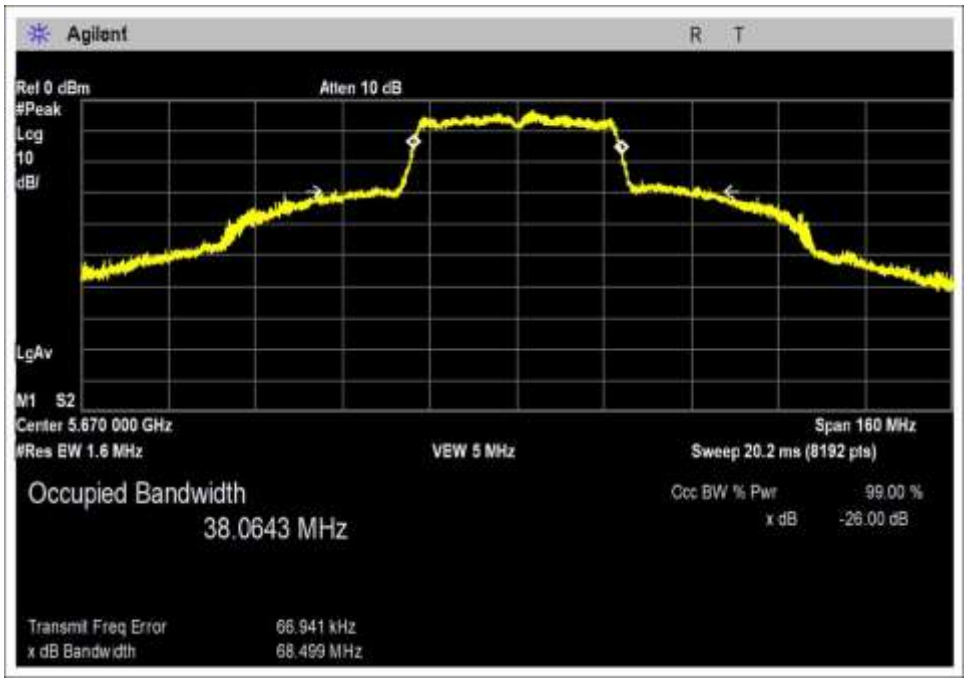
99% & 26dB Occupied Bandwidth 802.11ac40



Low Channel

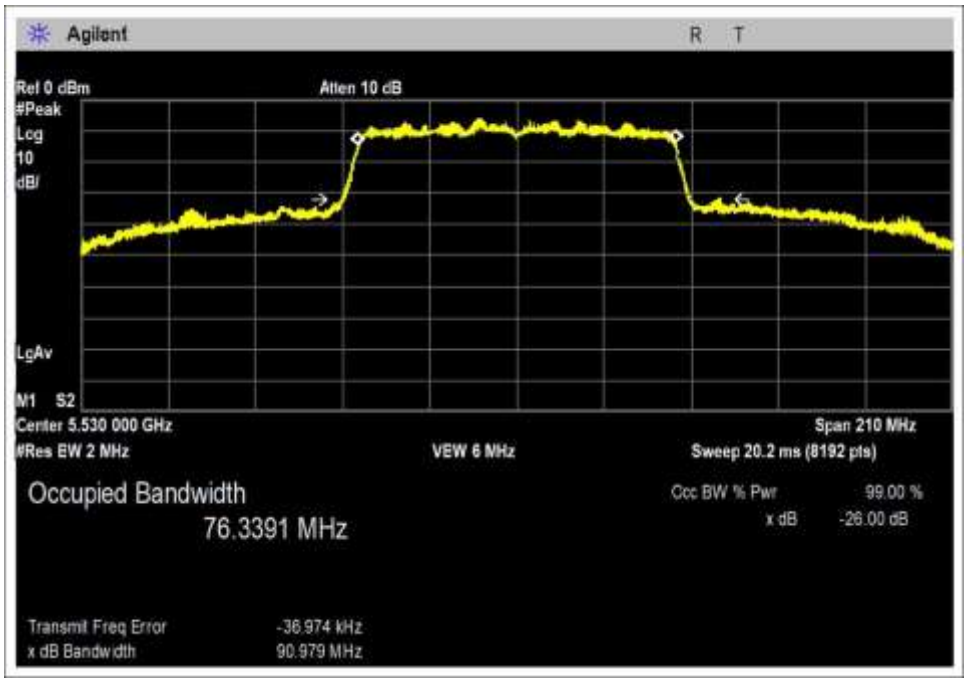


Middle Channel

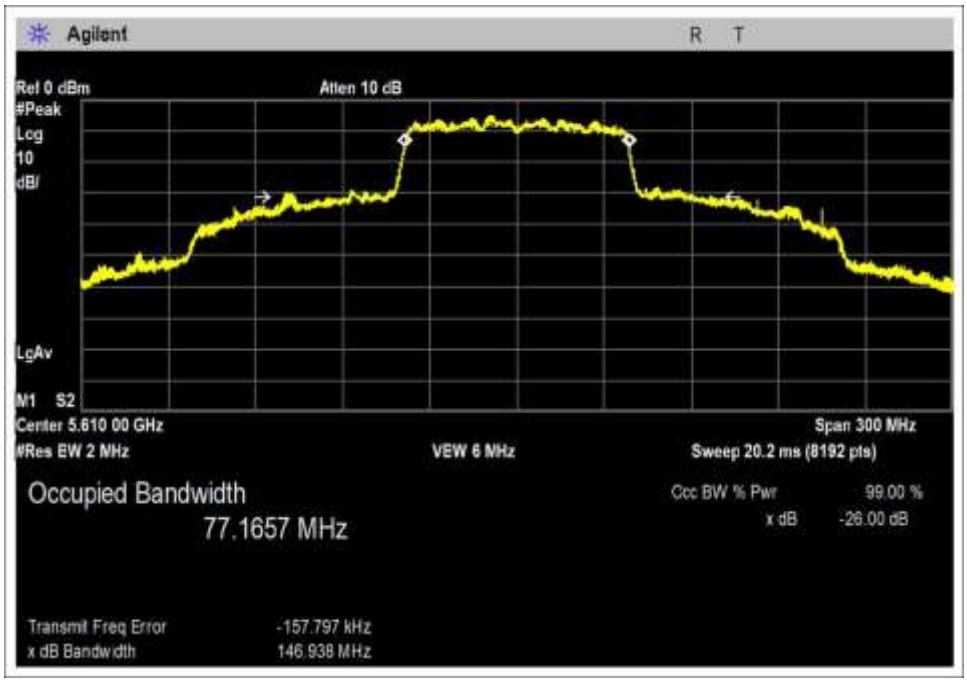


High Channel

99% & 26dB Occupied Bandwidth 802.11ac80



Low Channel



High Channel

15.407(a) Output Power

Test Setup/Conditions			
Test Location:	Bothell Lab C3	Test Engineer:	M. Harrison
Test Method:	ANSI C63.10 (2013), KDB 789033	Test Date(s):	1/26/2022
Configuration:	1		
Test Setup:	Duty Cycle: 100% (Test Mode) Test Mode: Continuously transmitting Test Setup: EUT is transmitting through a temporary connection to antenna port connector via UFL adapter and is attached to the spectrum analyzer. The UFL adapter has a declared manufacturer loss of 1.0 dB and will be accounted for in the measurement.		

Environmental Conditions			
Temperature (ºC)	21	Relative Humidity (%):	45

Test Equipment					
Asset#	**Description**	**Manufacturer**	**Model**	**Cal Date**	**Cal Due**
02872	Spectrum Analyzer	Agilent	E4440A	11/29/2021	11/29/2023
P06011	Cable	Andrew	Heliax	8/7/2020	8/7/2022
03514	Multimeter	Fluke	87	12/3/2020	12/3/2022
01505B	AC Power Supply	PPS	345AMXT-UPC32	6/15/2021	6/15/2023

Test Data Summary - Voltage Variations					
Frequency (MHz)	**Modulation / Ant Port**	**$V_{Minimum}$ (dBm)**	**$V_{Nominal}$ (dBm)**	**$V_{Maximum}$ (dBm)**	**Max Deviation from $V_{Nominal}$ (dB)**
5500	802.11a	18.0	18.0	18.0	0.0
5580	802.11n20	18.5	18.6	18.6	0.1
5590	802.11n40	19.5	19.5	19.5	0.0
5580	802.11ac20	17.8	17.9	17.9	0.1
5590	802.11ac40	19.0	19.0	19.0	0.0
5610	802.11ac80	18.9	18.9	18.9	0.0

Test performed using operational mode with the highest output power, representing worst case.

Parameter Definitions:

Measurements performed at input voltage Vnominal ± 15%.

Parameter	Value
$V_{Nominal}$:	120
$V_{Minimum}$:	102
$V_{Maximum}$:	138

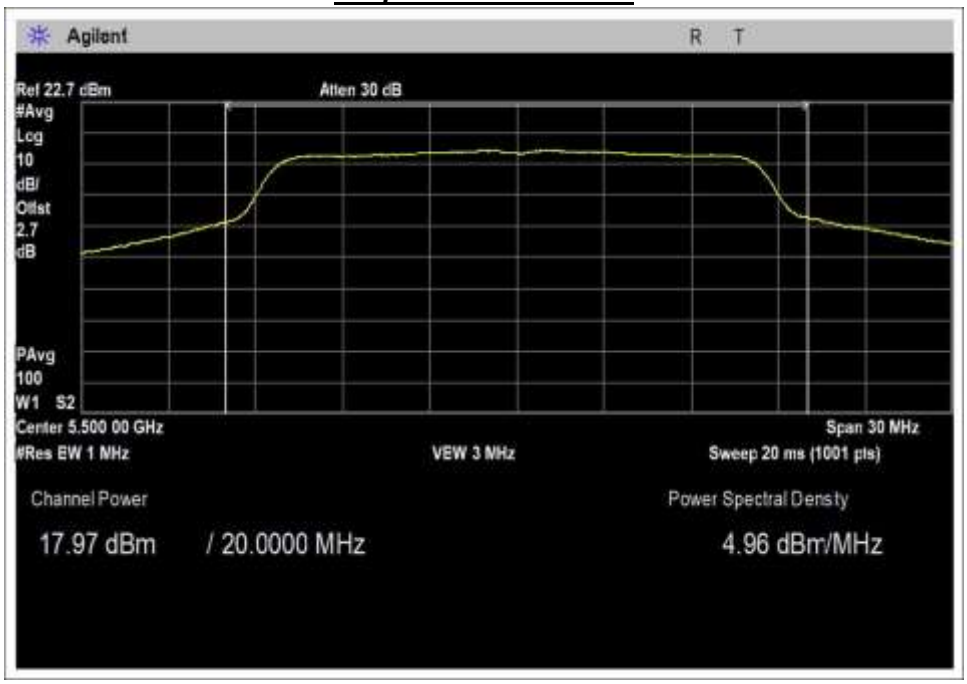
Test Data Summary - RF Conducted Measurement					
Measurement Option: AVGSA-1					
Frequency (MHz)	**Modulation**	**Ant. Type / Gain (dBi)**	**Measured (dBm)**	**Limit (dBm)**	**Results**
5500	802.11a	Omnidirectional / 3.8dBi	18.0	≤24	Pass
5580	802.11a	Omnidirectional / 3.8dBi	18.0	≤24	Pass
5700	802.11a	Omnidirectional / 3.8dBi	11.8	≤24	Pass
5500	802.11n20	Omnidirectional / 3.8dBi	17.9	≤24	Pass
5580	802.11n20	Omnidirectional / 3.8dBi	18.6	≤24	Pass
5700	802.11n20	Omnidirectional / 3.8dBi	13.2	≤24	Pass
5510	802.11n40	Omnidirectional / 3.8dBi	15.4	≤24	Pass
5590	802.11n40	Omnidirectional / 3.8dBi	19.5	≤24	Pass
5670	802.11n40	Omnidirectional / 3.8dBi	15.5	≤24	Pass
5500	802.11ac20	Omnidirectional / 3.8dBi	17.8	≤24	Pass
5580	802.11ac20	Omnidirectional / 3.8dBi	17.9	≤24	Pass
5700	802.11ac20	Omnidirectional / 3.8dBi	13.3	≤24	Pass
5510	802.11ac40	Omnidirectional / 3.8dBi	14.5	≤24	Pass
5590	802.11ac40	Omnidirectional / 3.8dBi	19.0	≤24	Pass
5670	802.11ac40	Omnidirectional / 3.8dBi	17.1	≤24	Pass
5530	802.11ac80	Omnidirectional / 3.8dBi	16.4	≤24	Pass
5610	802.11ac80	Omnidirectional / 3.8dBi	18.9	≤24	Pass

The limit is calculated in accordance with 15.407(a)(2):

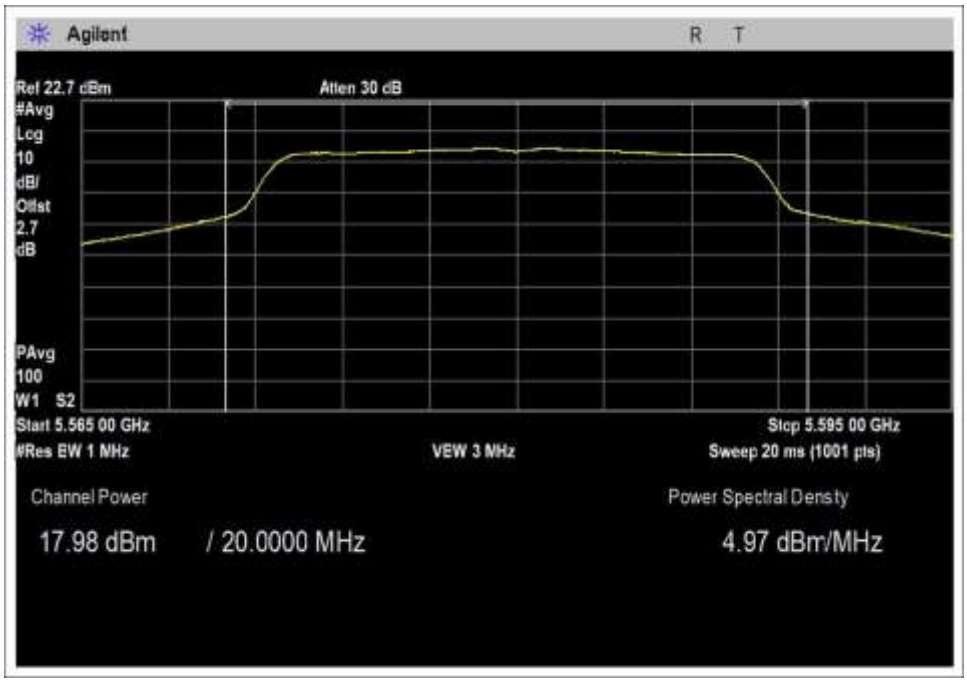
$$Limit = The\ lesser\ of \begin{cases} 24\ dBm - (G-6) \\ 11dBm + 10LOG(B) - (G-6) \end{cases}$$

Plot Data – Radiated Measurement

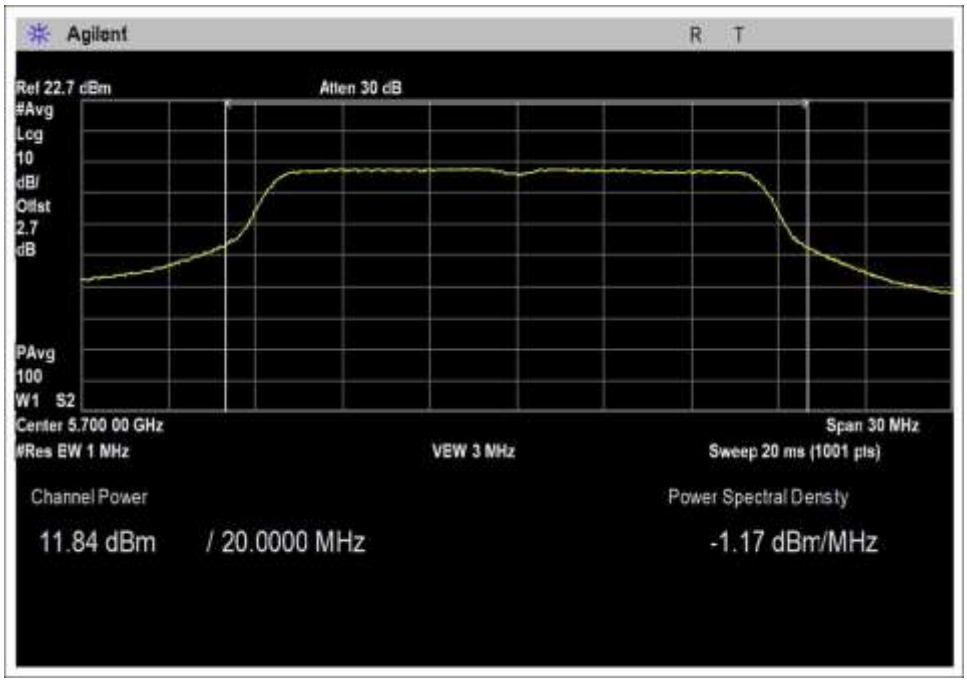
Output Power 802.11a



Low Channel

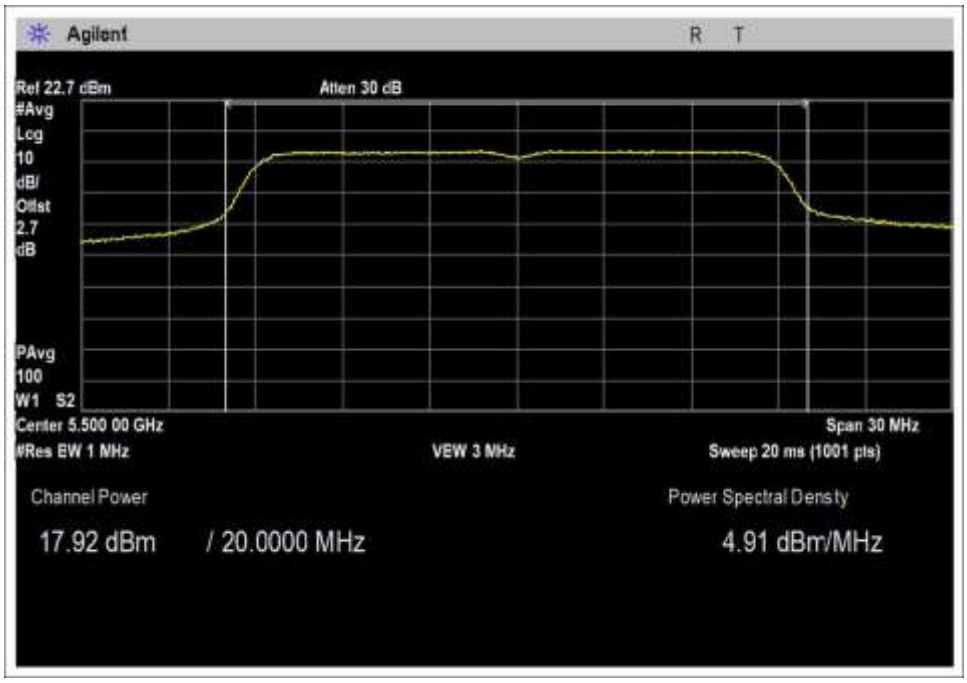


Middle Channel

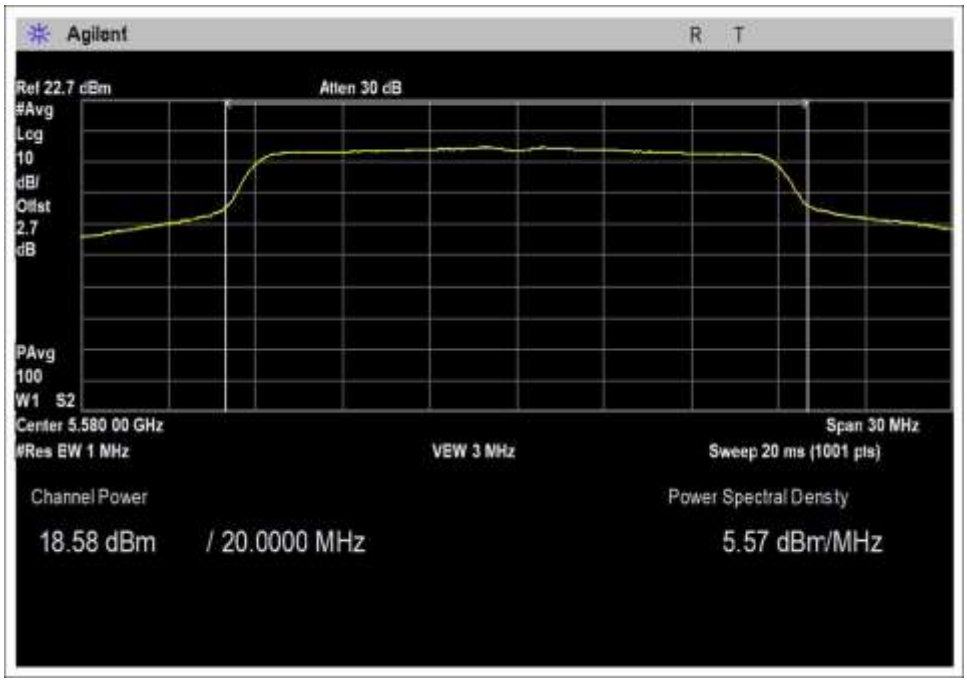


High Channel

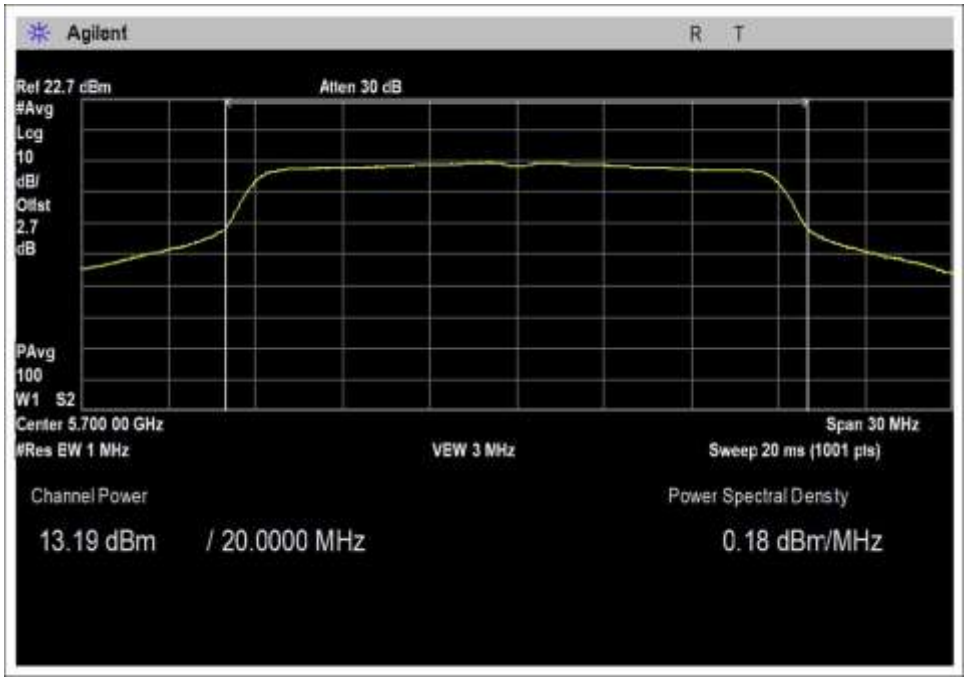
Output Power 802.11n20



Low Channel

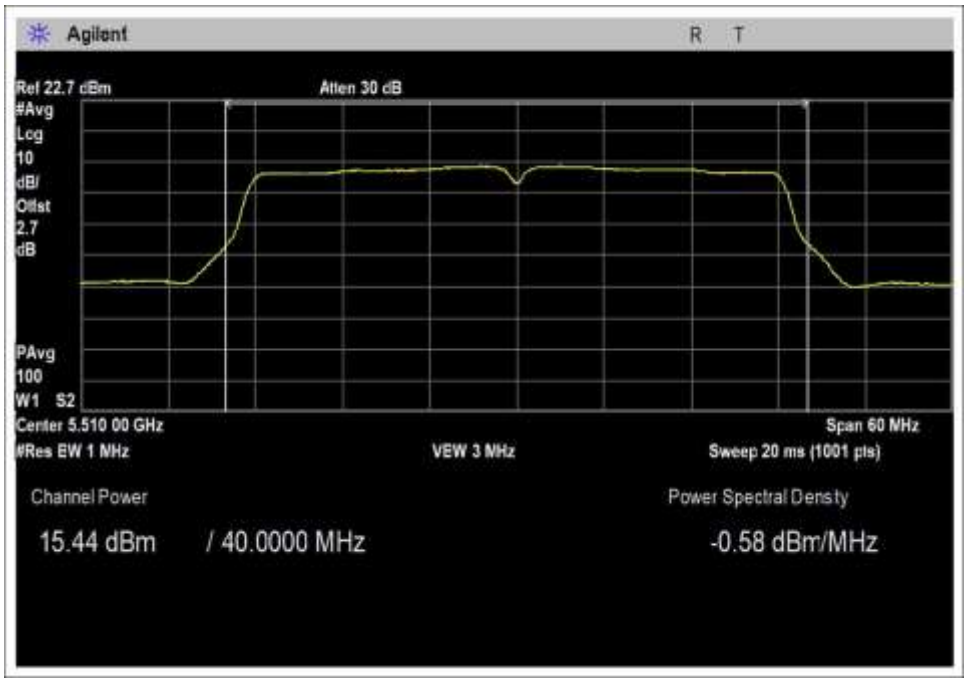


Middle Channel

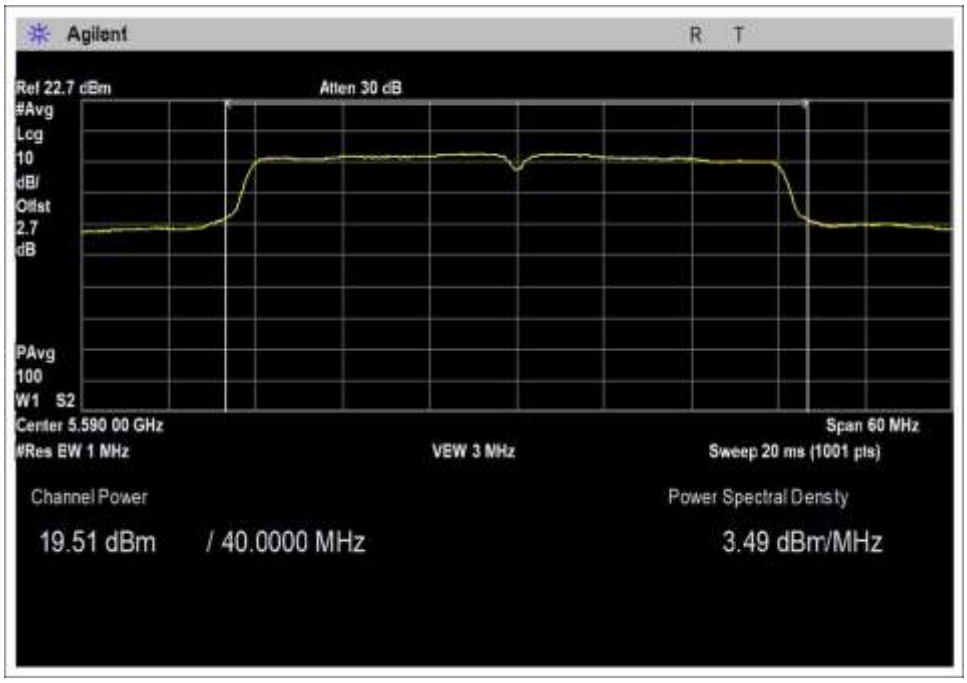


High Channel

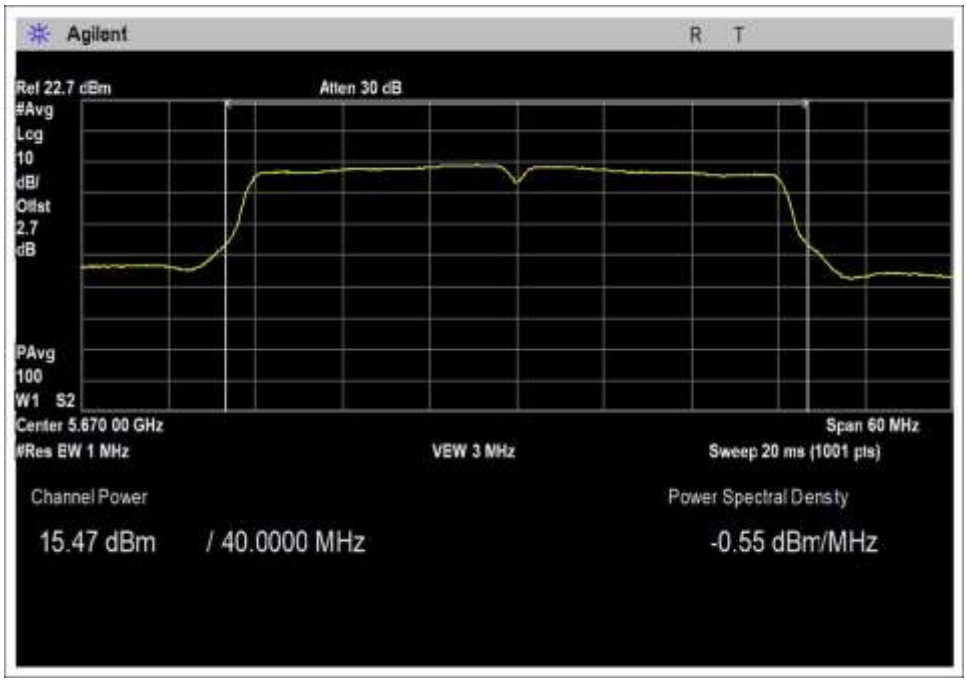
Output Power 802.11n40



Low Channel

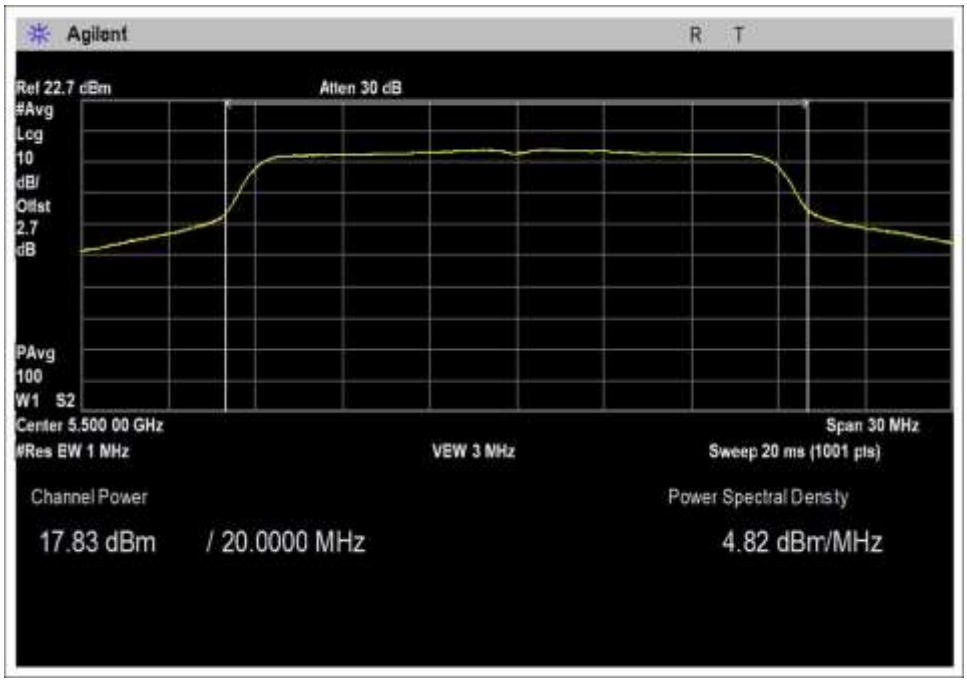


Middle Channel



High Channel

Output Power 802.11ac20



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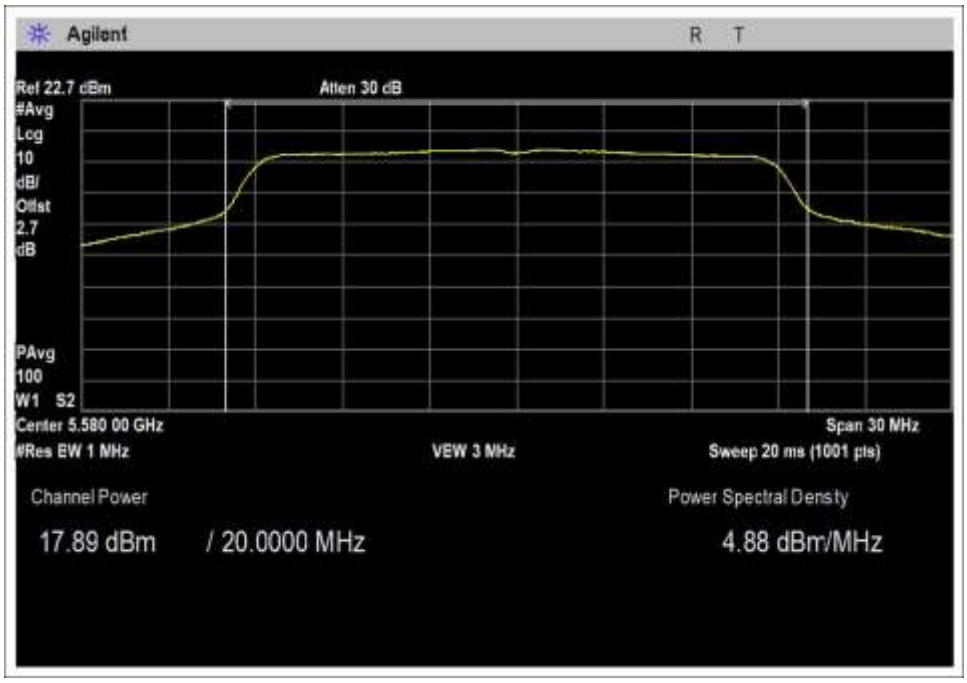
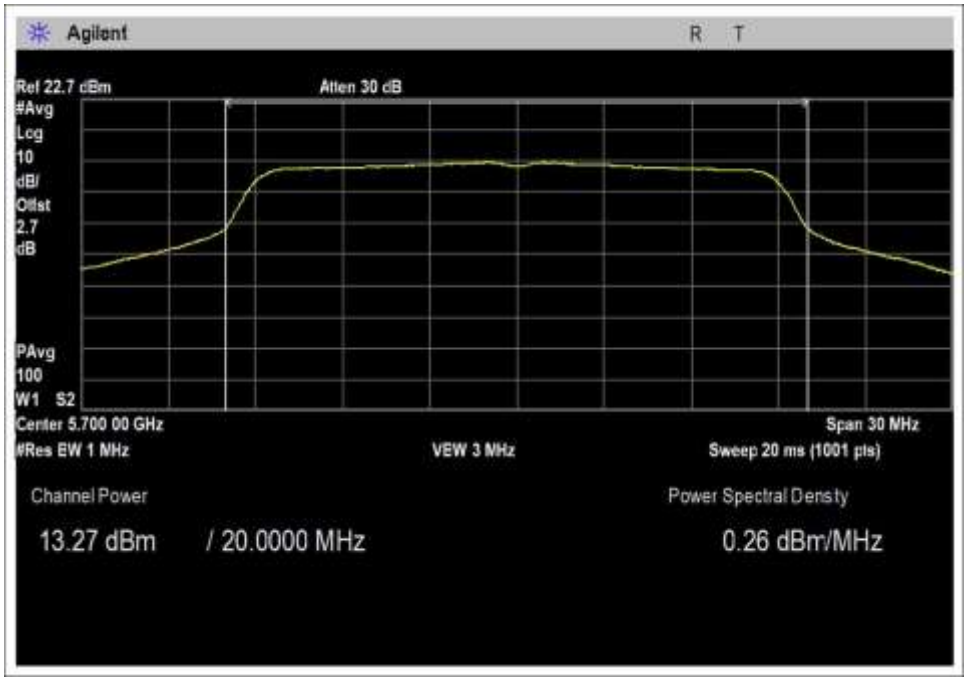
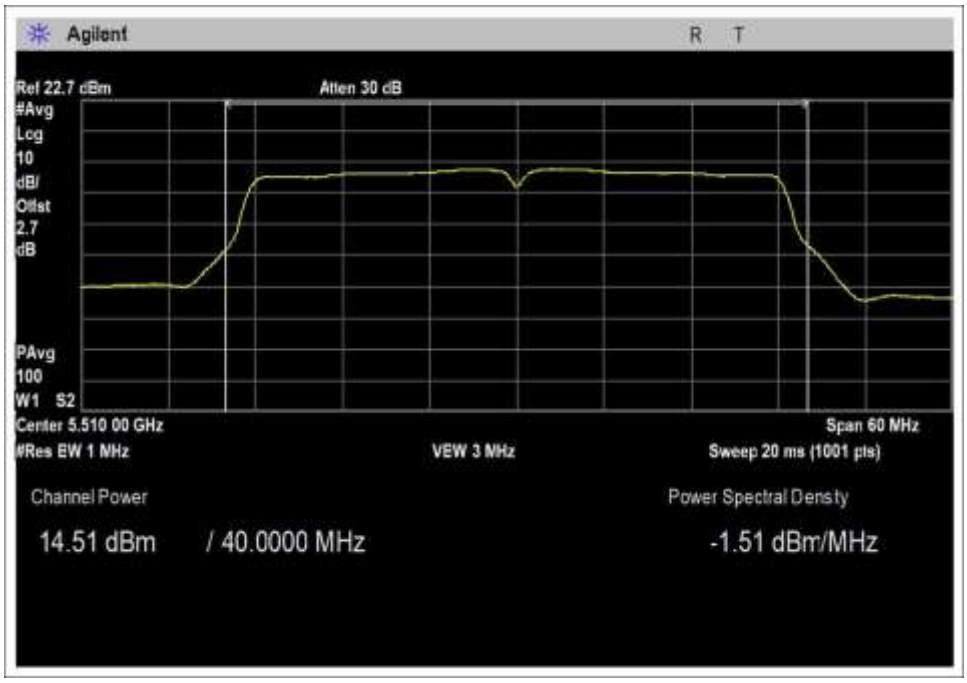


Middle Channel

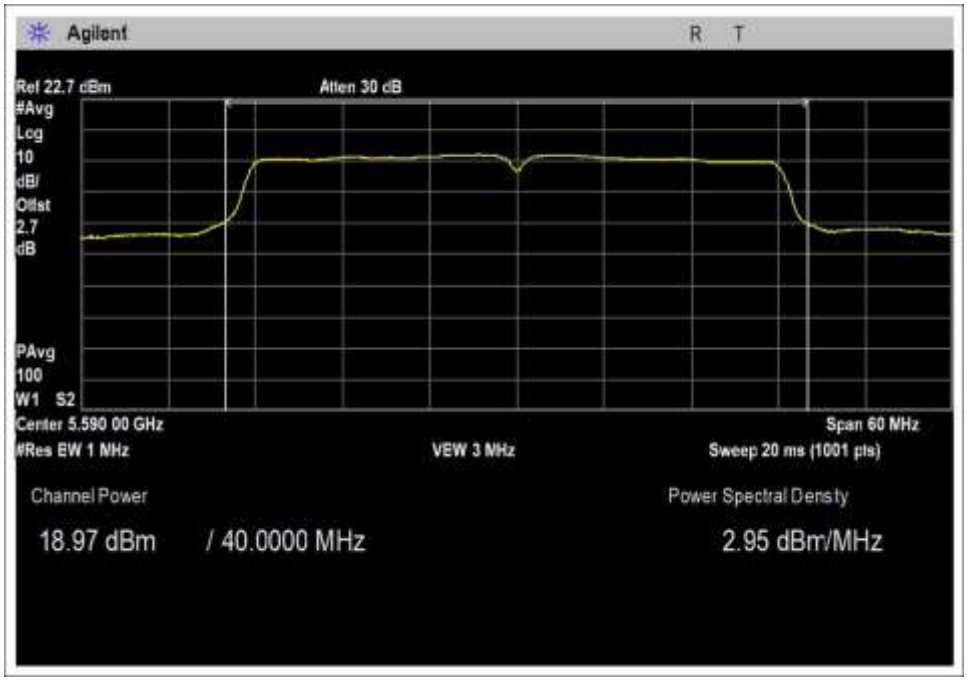


High Channel

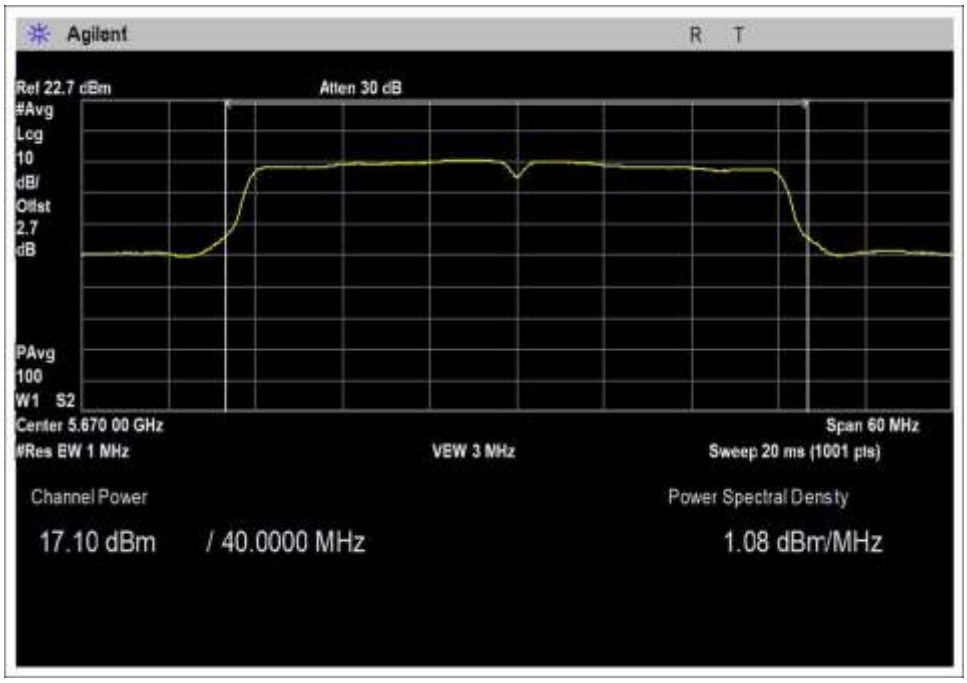
Output Power 802.11ac40



Low Channel

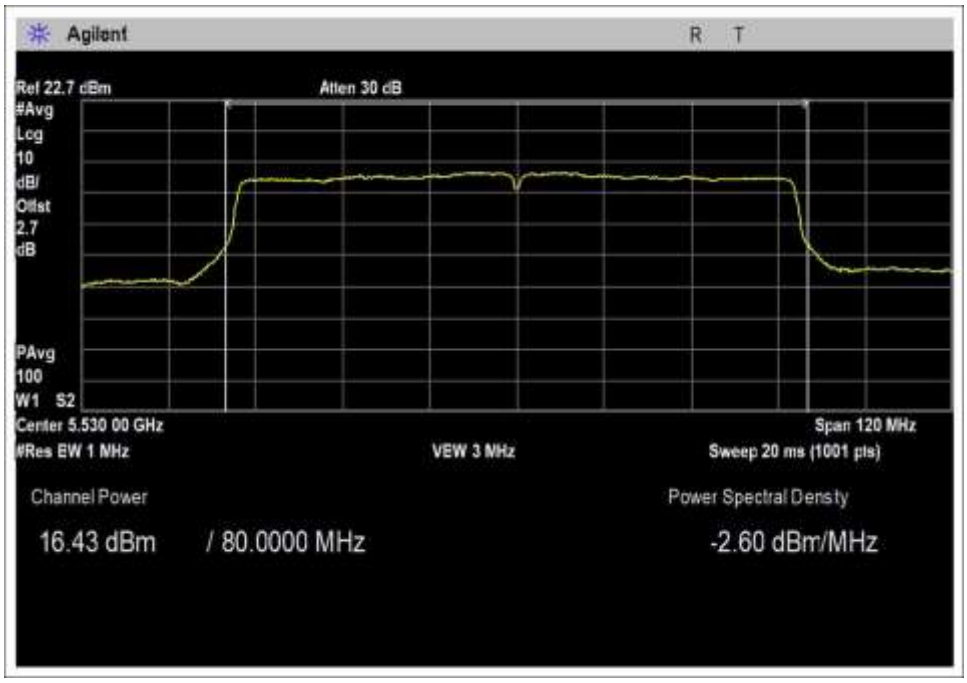


Middle Channel

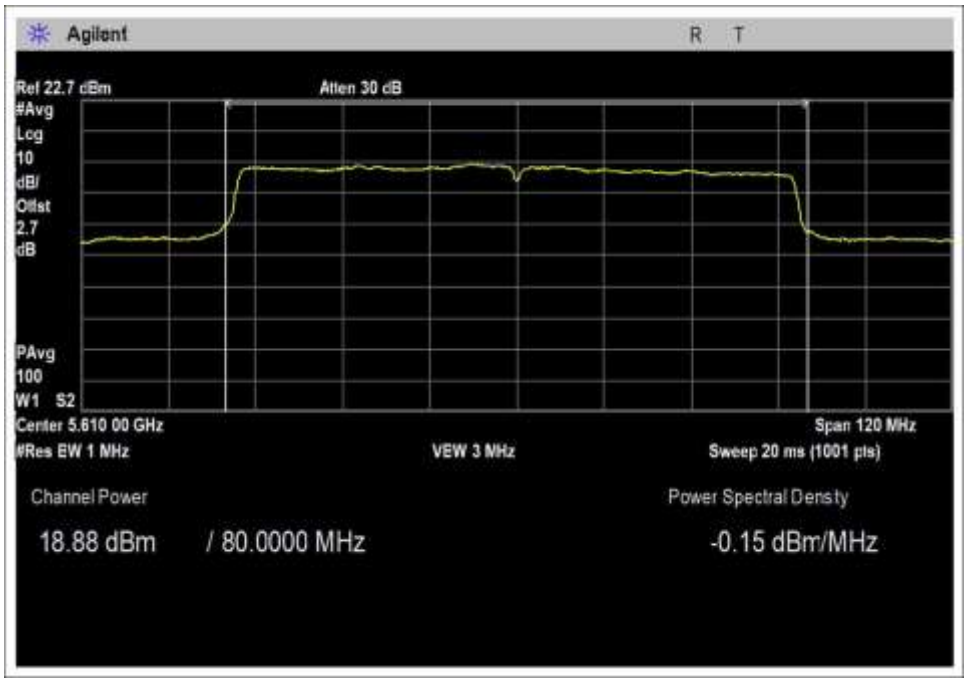


High Channel

<u>Output Power 802.11ac80</u>



Low Channel



High Channel

15.407(a) Power Spectral Density

Test Setup/Conditions			
Test Location:	Bothell Lab C3	Test Engineer:	M. Harrison
Test Method:	ANSI C63.10 (2013), KDB 789033	Test Date(s):	1/27/2022
Configuration:	1		
Test Setup:	Duty Cycle: 100% (Test Mode) Test Mode: Continuously transmitting Test Setup: EUT is transmitting through a temporary connection to antenna port connector via UFL adapter and is attached to the spectrum analyzer. The UFL adapter has a declared manufacturer loss of 1.0 dB and will be accounted for in the measurement.		

Environmental Conditions			
Temperature (ºC)	21	Relative Humidity (%):	45

Test Data Summary - RF Conducted Measurement

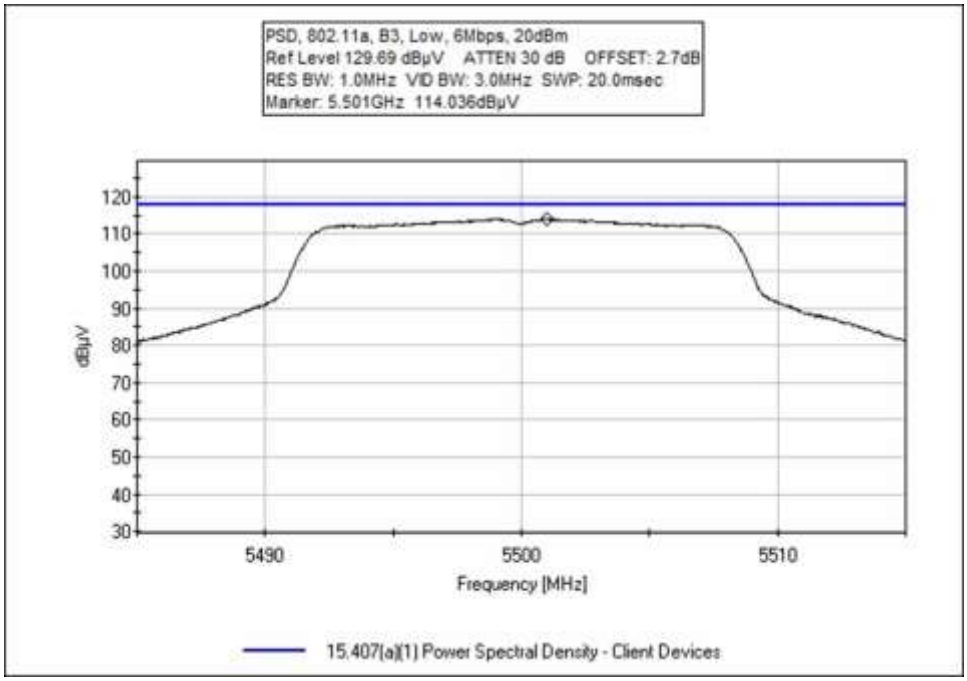
Measurement Option: AVGSA-1

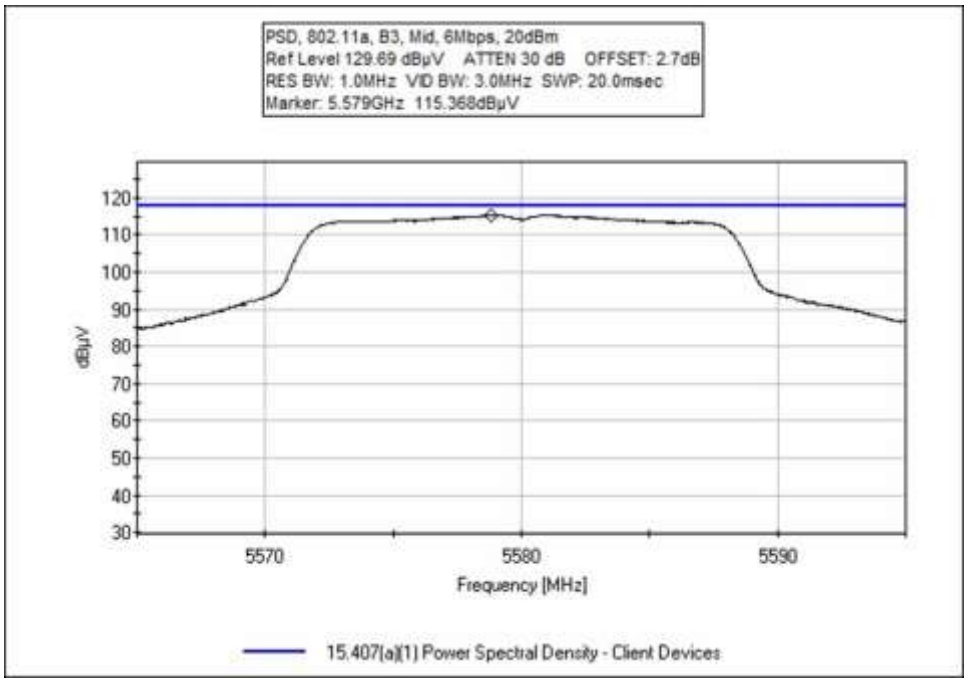
Frequency (MHz)	Modulation	Ant. Type / Gain (dBi)	Measured (dBm/MHz)	Limit (dBm/MHz)	Results
5500	802.11a	Omnidirectional / 3.8dBi	7.0	≤ 11	Pass
5580	802.11a	Omnidirectional / 3.8dBi	8.4	≤ 11	Pass
5700	802.11a	Omnidirectional / 3.8dBi	2.6	≤ 11	Pass
5500	802.11n20	Omnidirectional / 3.8dBi	7.4	≤ 11	Pass
5580	802.11n20	Omnidirectional / 3.8dBi	7.2	≤ 11	Pass
5700	802.11n20	Omnidirectional / 3.8dBi	4.0	≤ 11	Pass
5510	802.11n40	Omnidirectional / 3.8dBi	1.9	≤ 11	Pass
5590	802.11n40	Omnidirectional / 3.8dBi	5.4	≤ 11	Pass
5670	802.11n40	Omnidirectional / 3.8dBi	2.9	≤ 11	Pass
5500	802.11ac20	Omnidirectional / 3.8dBi	6.7	≤ 11	Pass
5580	802.11ac20	Omnidirectional / 3.8dBi	7.3	≤ 11	Pass
5700	802.11ac20	Omnidirectional / 3.8dBi	3.3	≤ 11	Pass
5510	802.11ac40	Omnidirectional / 3.8dBi	1.0	≤ 11	Pass
5590	802.11ac40	Omnidirectional / 3.8dBi	5.4	≤ 11	Pass
5670	802.11ac40	Omnidirectional / 3.8dBi	4.5	≤ 11	Pass
5530	802.11ac80	Omnidirectional / 3.8dBi	-0.2	≤ 11	Pass
5610	802.11ac80	Omnidirectional / 3.8dBi	2.4	≤ 11	Pass

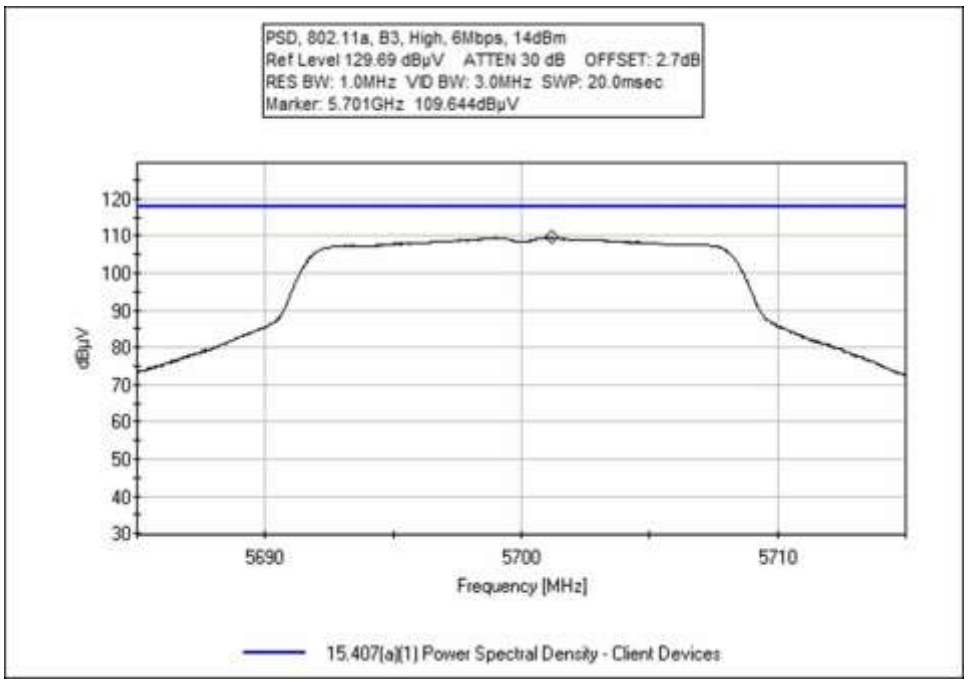
The limit is calculated in accordance with 15.407(a)(2):

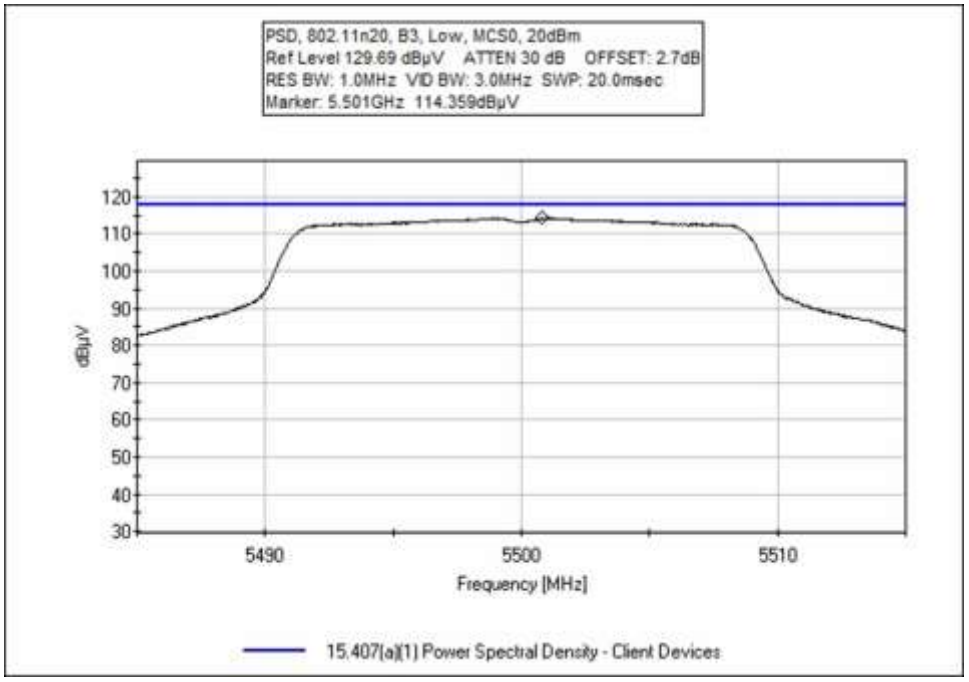
$Limit = 11 - Roundup(G - 6)$

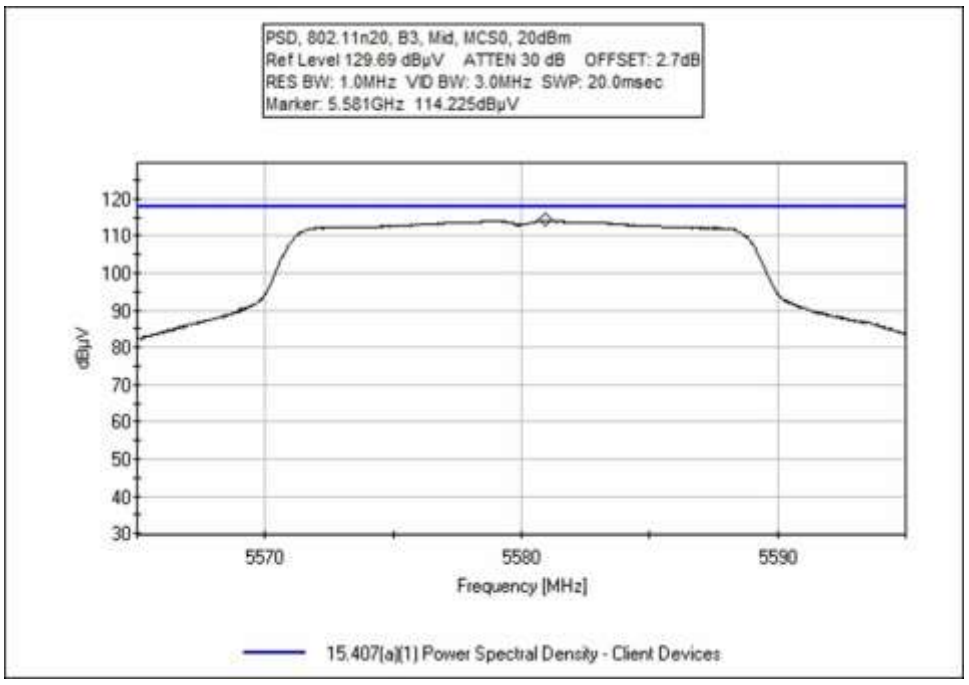
Plots

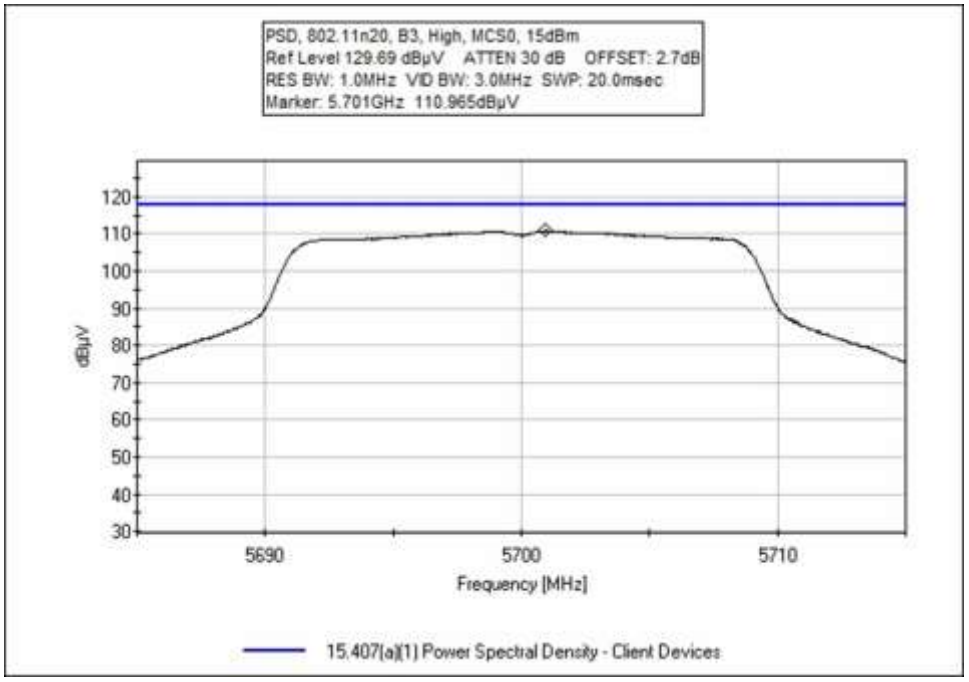

PSD, 802.11a, B3, Low, 6Mbps, 20dBm
Ref Level 129.69 dBµV ATTEN 30 dB OFFSET: 2.7dB
RES BW: 1.0MHz VID BW: 3.0MHz SWP: 20.0msec
Marker: 5.501GHz 114.036dBµV
120
110
100
90
80
70
60
50
40
30
dBµV
5490
5500
5510
Frequency [MHz]
15.407(a)(1) Power Spectral Density - Client Devices

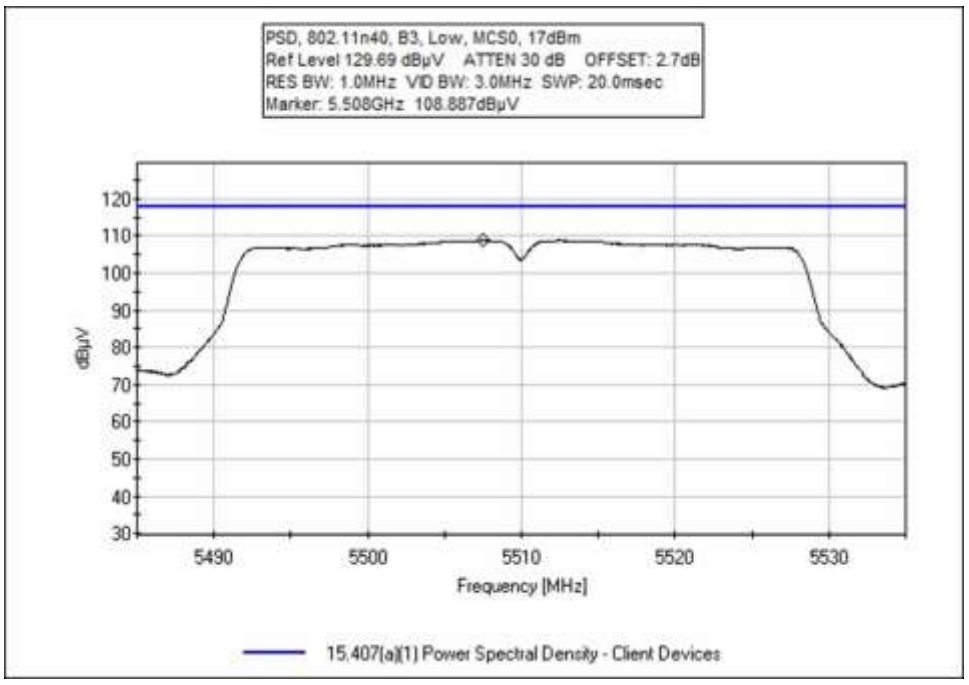

PSD, 802.11a, B3, Mid, 6Mbps, 20dBm
Ref Level 129.69 dBµV ATTEN 30 dB OFFSET: 2.7dB
RES BW: 1.0MHz VID BW: 3.0MHz SWP: 20.0msec
Marker: 5.579GHz 115.368dBµV
120
110
100
90
80
70
60
50
40
30
dBµV
5570
5580
5590
Frequency [MHz]
15.407(a)(1) Power Spectral Density - Client Devices

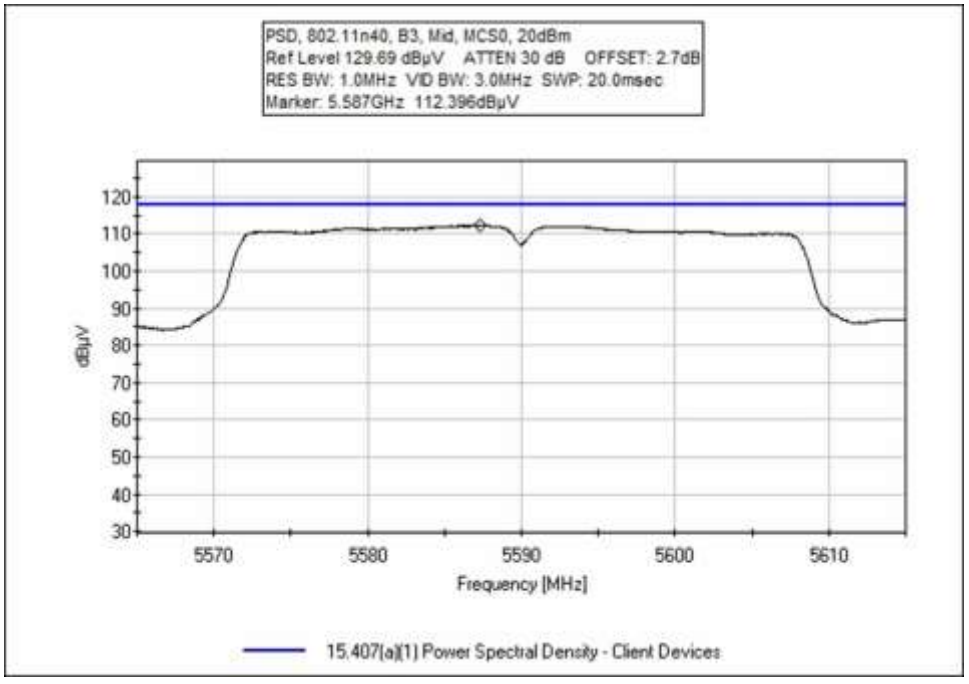

PSD, 802.11a, B3, High, 6Mbps, 14dBm
Ref Level 129.69 dBµV ATTEN 30 dB OFFSET: 2.7dB
RES BW: 1.0MHz VID BW: 3.0MHz SWP: 20.0msec
Marker: 5.701GHz 109.644dBµV
120
110
100
90
80
70
60
50
40
30
dBµV
5690
5700
5710
Frequency [MHz]
15.407(a)(1) Power Spectral Density - Client Devices

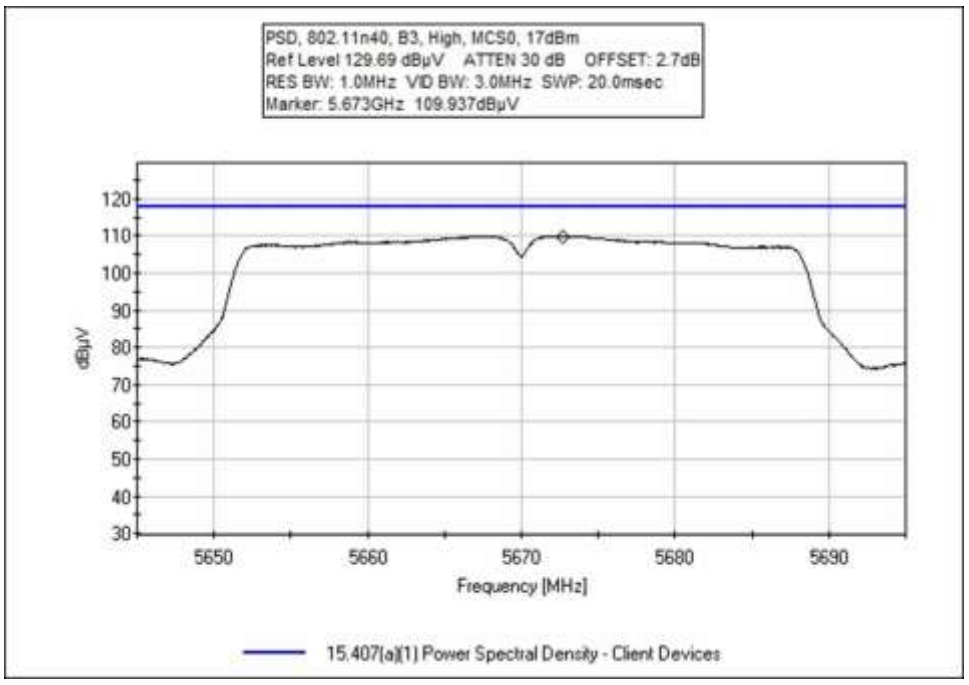

PSD, 802.11n20, B3, Low, MCS0, 20dBm
Ref Level 129.69 dBµV ATTEN 30 dB OFFSET: 2.7dB
RES BW: 1.0MHz VID BW: 3.0MHz SWP: 20.0msec
Marker: 5.501GHz 114.359dBµV
120
110
100
90
80
70
60
50
40
30
dBµV
5490
5500
5510
Frequency [MHz]
15.407(a)(1) Power Spectral Density - Client Devices

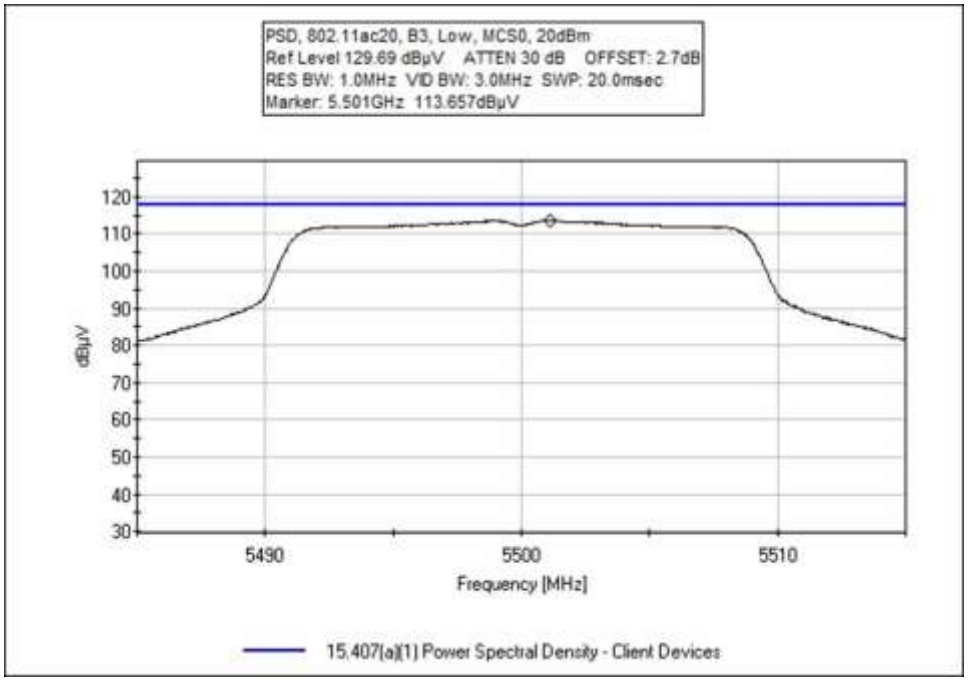

PSD, 802.11n20, B3, Mid, MCS0, 20dBm
Ref Level 129.69 dBµV ATTEN 30 dB OFFSET: 2.7dB
RES BW: 1.0MHz VID BW: 3.0MHz SWP: 20.0msec
Marker: 5.581GHz 114.225dBµV
dBµV
120
110
100
90
80
70
60
50
40
30
5570
5580
5590
Frequency [MHz]
15.407(a)(1) Power Spectral Density - Client Devices

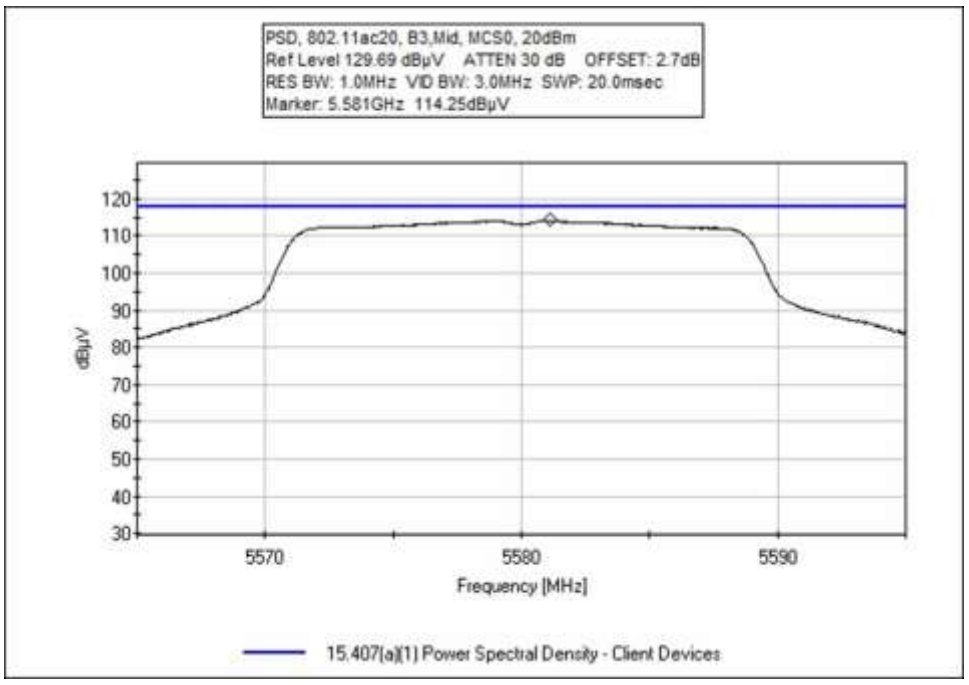

PSD, 802.11n20, B3, High, MCS0, 15dBm
Ref Level 129.69 dBµV ATTEN 30 dB OFFSET: 2.7dB
RES BW: 1.0MHz VID BW: 3.0MHz SWP: 20.0msec
Marker: 5.701GHz 110.965dBµV
dBµV
120
110
100
90
80
70
60
50
40
30
5690
5700
5710
Frequency [MHz]
15.407(a)(1) Power Spectral Density - Client Devices

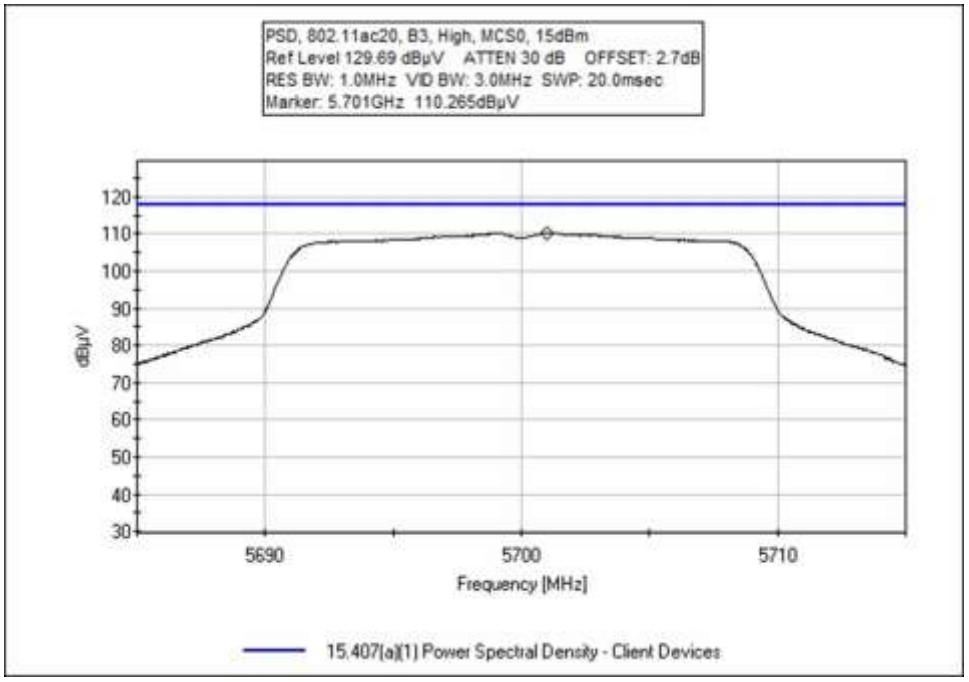

PSD, 802.11n40, B3, Low, MCS0, 17dBm
Ref Level 129.69 dBµV ATTEN 30 dB OFFSET: 2.7dB
RES BW: 1.0MHz VID BW: 3.0MHz SWP: 20.0msec
Marker: 5.508GHz 108.887dBµV
dBµV
120
110
100
90
80
70
60
50
40
30
5490
5500
5510
5520
5530
Frequency [MHz]
15.407(a)(1) Power Spectral Density - Client Devices

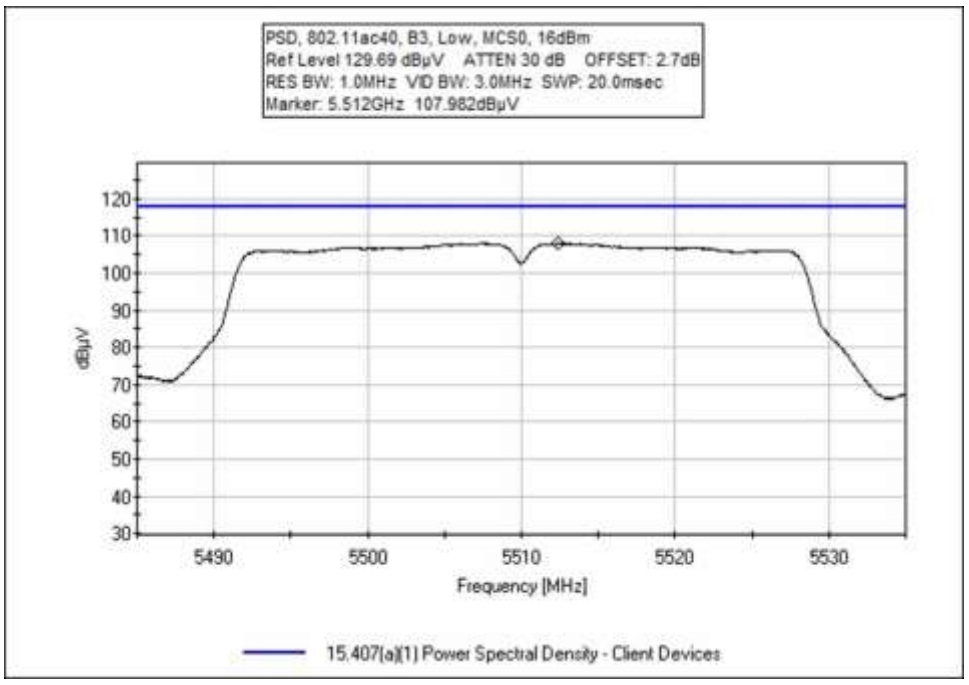

PSD, 802.11n40, B3, Mid, MCS0, 20dBm
Ref Level 129.69 dBµV ATTEN 30 dB OFFSET: 2.7dB
RES BW: 1.0MHz VID BW: 3.0MHz SWP: 20.0msec
Marker: 5.587GHz 112.396dBµV
dBµV
120
110
100
90
80
70
60
50
40
30
5570
5580
5590
5600
5610
Frequency [MHz]
15.407(a)(1) Power Spectral Density - Client Devices

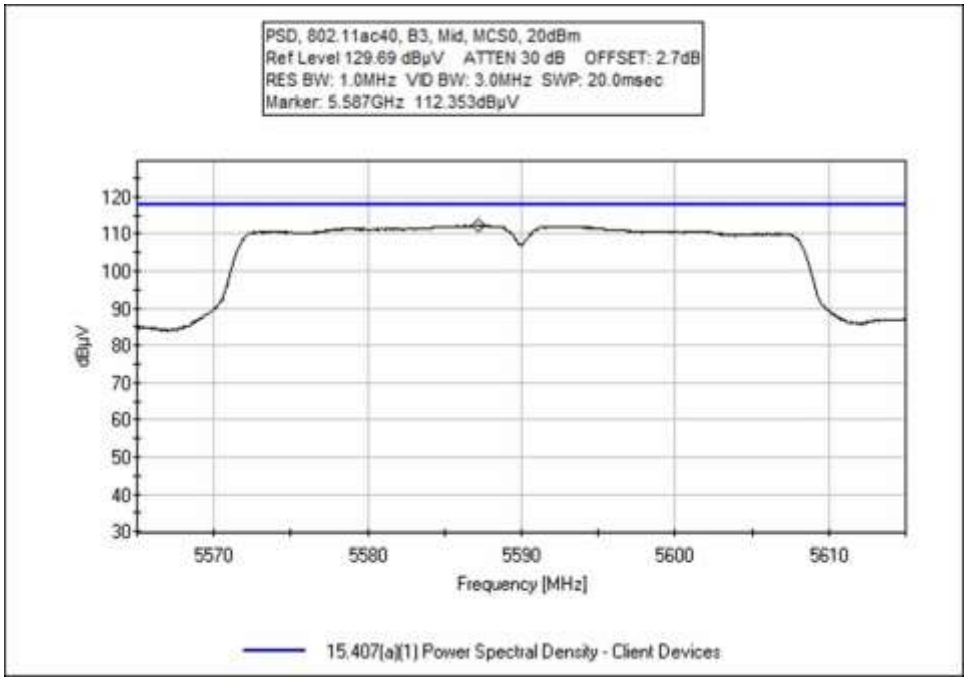

PSD, 802.11n40, B3, High, MCS0, 17dBm
Ref Level 129.69 dBµV ATTEN 30 dB OFFSET: 2.7dB
RES BW: 1.0MHz VID BW: 3.0MHz SWP: 20.0msec
Marker: 5.673GHz 109.937dBµV
120
110
100
90
80
70
60
50
40
30
dBµV
5650
5660
5670
5680
5690
Frequency [MHz]
15.407(a)(1) Power Spectral Density - Client Devices

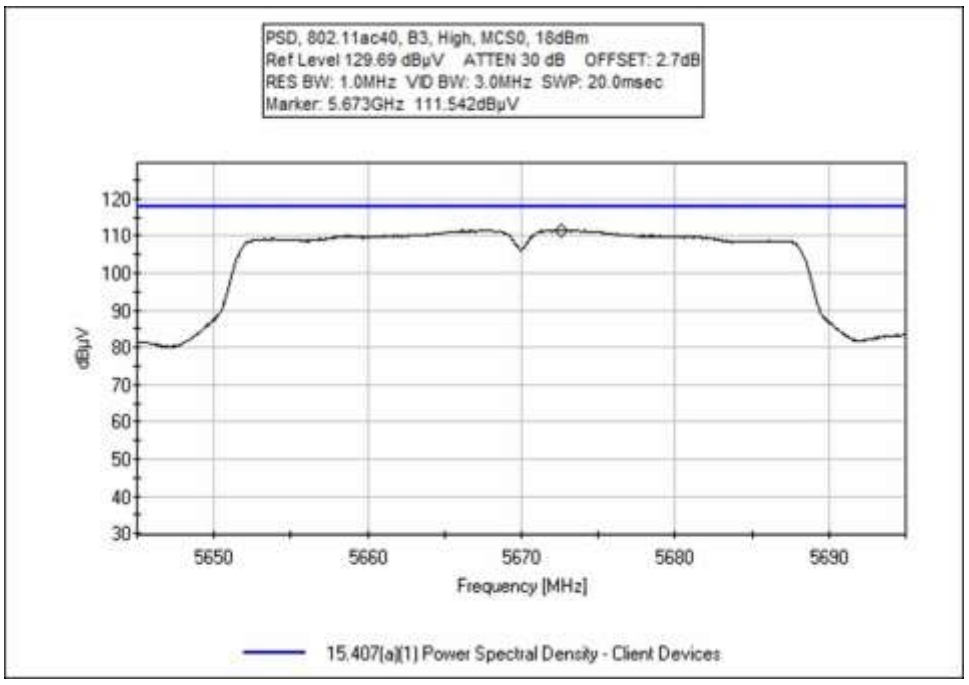

PSD, 802.11ac20, B3, Low, MCS0, 20dBm
Ref Level 129.69 dBµV ATTEN 30 dB OFFSET: 2.7dB
RES BW: 1.0MHz VID BW: 3.0MHz SWP: 20.0msec
Marker: 5.501GHz 113.657dBµV
120
110
100
90
80
70
60
50
40
30
dBµV
5490
5500
5510
Frequency [MHz]
15.407(a)(1) Power Spectral Density - Client Devices

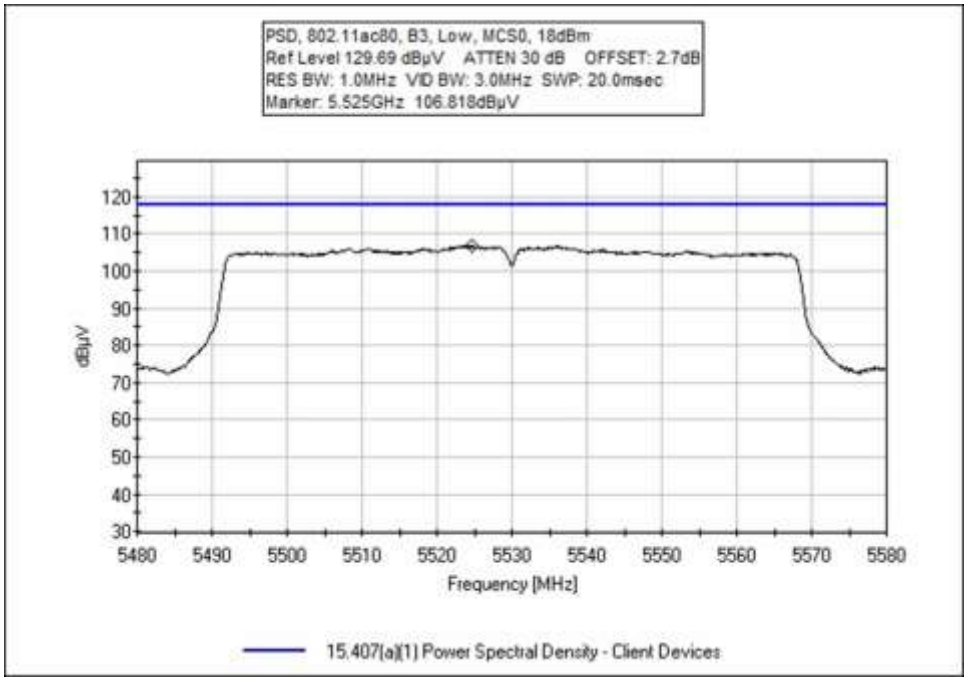

PSD, 802.11ac20, B3,Mid, MCS0, 20dBm
Ref Level 129.69 dBµV ATTEN 30 dB OFFSET: 2.7dB
RES BW: 1.0MHz VID BW: 3.0MHz SWP: 20.0msec
Marker: 5.581GHz 114.25dBµV
dBµV
120
110
100
90
80
70
60
50
40
30
5570
5580
5590
Frequency [MHz]
15.407(a)(1) Power Spectral Density - Client Devices

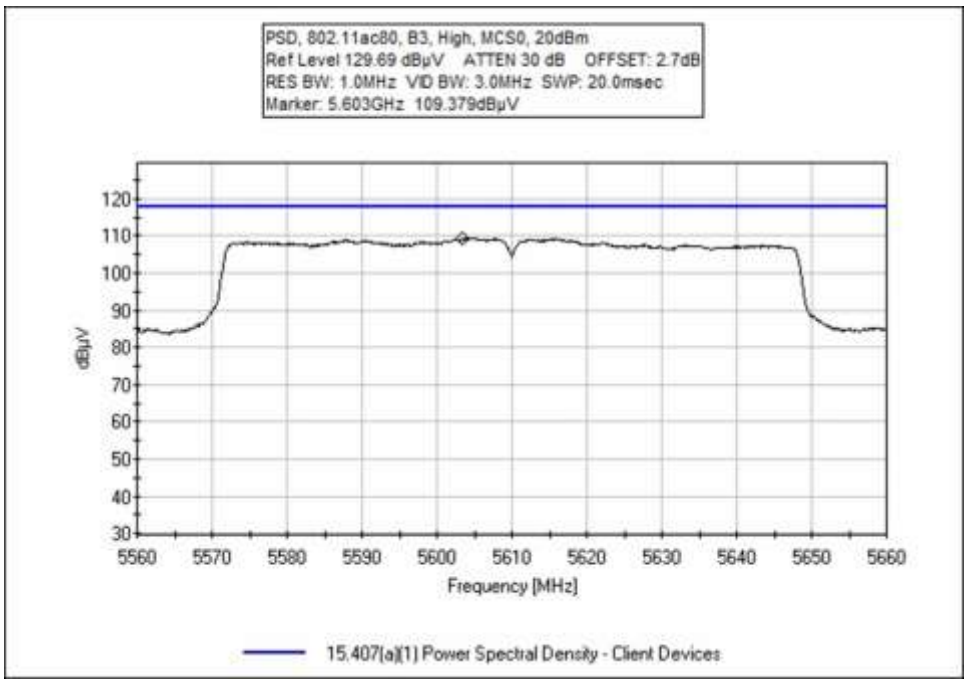

PSD, 802.11ac20, B3, High, MCS0, 15dBm
Ref Level 129.69 dBµV ATTEN 30 dB OFFSET: 2.7dB
RES BW: 1.0MHz VID BW: 3.0MHz SWP: 20.0msec
Marker: 5.701GHz 110.265dBµV
dBµV
120
110
100
90
80
70
60
50
40
30
5690
5700
5710
Frequency [MHz]
15.407(a)(1) Power Spectral Density - Client Devices


PSD, 802.11ac40, B3, Low, MCS0, 16dBm
Ref Level 129.69 dBµV ATTEN 30 dB OFFSET: 2.7dB
RES BW: 1.0MHz VID BW: 3.0MHz SWP: 20.0msec
Marker: 5.512GHz 107.982dBµV
120
110
100
90
80
70
60
50
40
30
dBµV
5490
5500
5510
5520
5530
Frequency [MHz]
15.407(a)(1) Power Spectral Density - Client Devices


PSD, 802.11ac40, B3, Mid, MCS0, 20dBm
Ref Level 129.69 dBµV ATTEN 30 dB OFFSET: 2.7dB
RES BW: 1.0MHz VID BW: 3.0MHz SWP: 20.0msec
Marker: 5.587GHz 112.353dBµV
120
110
100
90
80
70
60
50
40
30
dBµV
5570
5580
5590
5600
5610
Frequency [MHz]
15.407(a)(1) Power Spectral Density - Client Devices


PSD, 802.11ac40, B3, High, MCS0, 18dBm
Ref Level 129.69 dBµV ATTEN 30 dB OFFSET: 2.7dB
RES BW: 1.0MHz VID BW: 3.0MHz SWP: 20.0msec
Marker: 5.673GHz 111.542dBµV
dBµV
120
110
100
90
80
70
60
50
40
30
5650
5660
5670
5680
5690
Frequency [MHz]
15.407(a)(1) Power Spectral Density - Client Devices


PSD, 802.11ac80, B3, Low, MCS0, 18dBm
Ref Level 129.69 dBµV ATTEN 30 dB OFFSET: 2.7dB
RES BW: 1.0MHz VID BW: 3.0MHz SWP: 20.0msec
Marker: 5.525GHz 106.818dBµV
dBµV
120
110
100
90
80
70
60
50
40
30
5480
5490
5500
5510
5520
5530
5540
5550
5560
5570
5580
Frequency [MHz]
15.407(a)(1) Power Spectral Density - Client Devices


PSD, 802.11ac80, B3, High, MCS0, 20dBm
Ref Level 129.69 dBµV ATTEN 30 dB OFFSET: 2.7dB
RES BW: 1.0MHz VID BW: 3.0MHz SWP: 20.0msec
Marker: 5.603GHz 109.379dBµV
120
110
100
90
80
70
60
50
40
30
dBµV
5560
5570
5580
5590
5600
5610
5620
5630
5640
5650
5660
Frequency [MHz]
15.407(a)(1) Power Spectral Density - Client Devices

Test Data – RF Conducted Measurement

Test Location:	CKC Laboratories, Inc. • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)		
Customer:	**Nalloy, LLC**		
Specification:	**15.407(a)(1) Power Spectral Density - Client Devices**		
Work Order #:	**106407**	Date:	1/27/2022
Test Type:	**Conducted Emissions**	Time:	12:22:58
Tested By:	M. Harrison	Sequence#:	55
Software:	EMITest 5.03.20		120V 60Hz

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

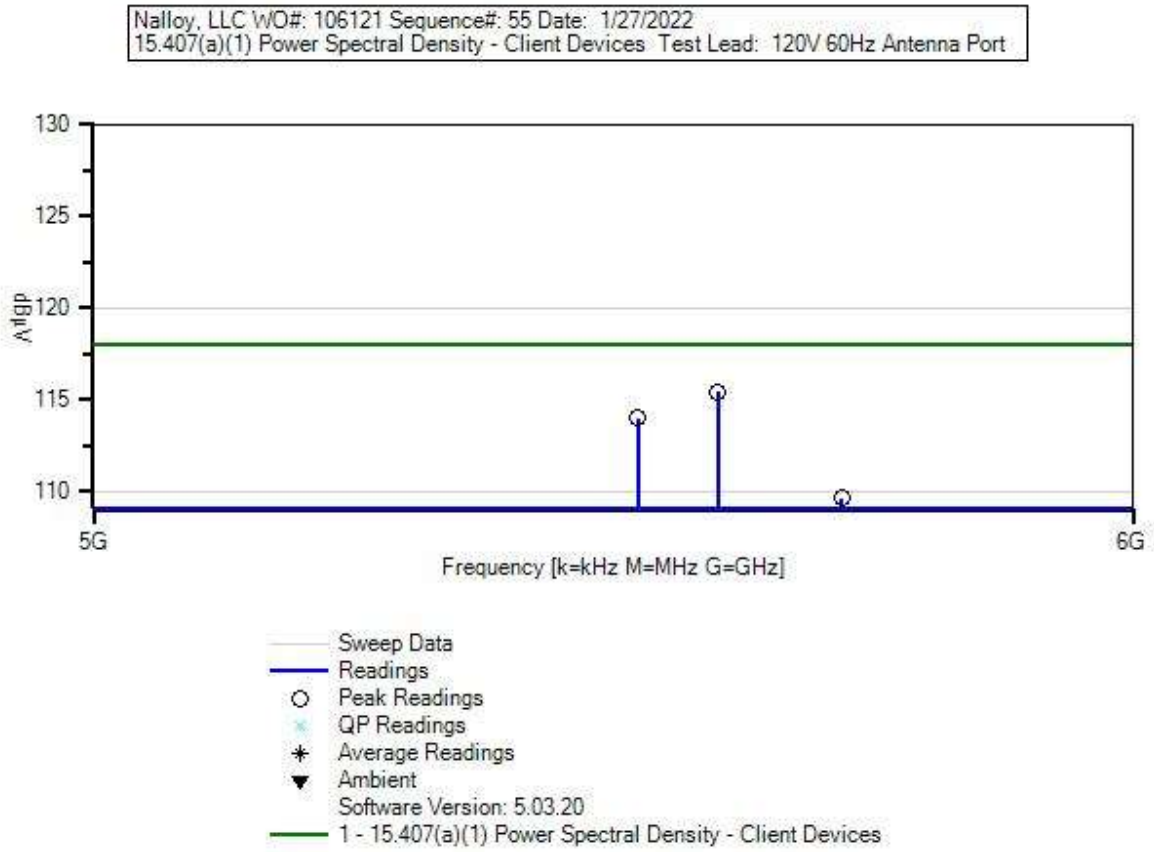
Environmental Conditions:
Temperature: 21°C
Humidity: 45%
Pressure: 101.2kPa

Method: ANSI C63.10: 2013

Frequency range: 5500-5700 MHz

Setup:
Antenna 0
Channels: 5500, 5580, 5700 MHz
802.11a Band 3
Rate: 6-54Mbps
PWR Output: Low/Mid: 20 dBm, High: 14 dBm
100% Duty Cycle

Notes:
PSD Measurements were performed with corresponding correction factors applied as an offset in the Spectrum Analyzer



Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	ANUFL Adapter	Test Data Adjustment		1/14/2022	1/14/2024
	ANP05961	Cable	Heliax	6/9/2021	6/9/2023
T1	AN02872	Spectrum Analyzer	E4440A	11/29/2021	11/29/2023

Measurement Data: Reading listed by margin. Test Lead: Antenna Port

#	Freq MHz	Rdng dBµV	T1 dB	dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	5578.830M	115.4	+0.0				+0.0	115.4	118.0	-2.6	Anten
									6Mbps, 20dBm		
2	5501.020M	114.0	+0.0				+0.0	114.0	118.0	-4.0	Anten
									6Mbps, 20dBm		
3	5701.200M	109.6	+0.0				+0.0	109.6	118.0	-8.4	Anten
									6Mbps, 14dBm		

Test Location:	CKC Laboratories, Inc. • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)		
Customer:	**Nalloy, LLC**		
Specification:	**15.407(a)(1) Power Spectral Density - Client Devices**		
Work Order #:	**106407**	Date:	1/27/2022
Test Type:	**Conducted Emissions**	Time:	12:40:39
Tested By:	M. Harrison	Sequence#:	56
Software:	EMITest 5.03.20		120V 60Hz

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

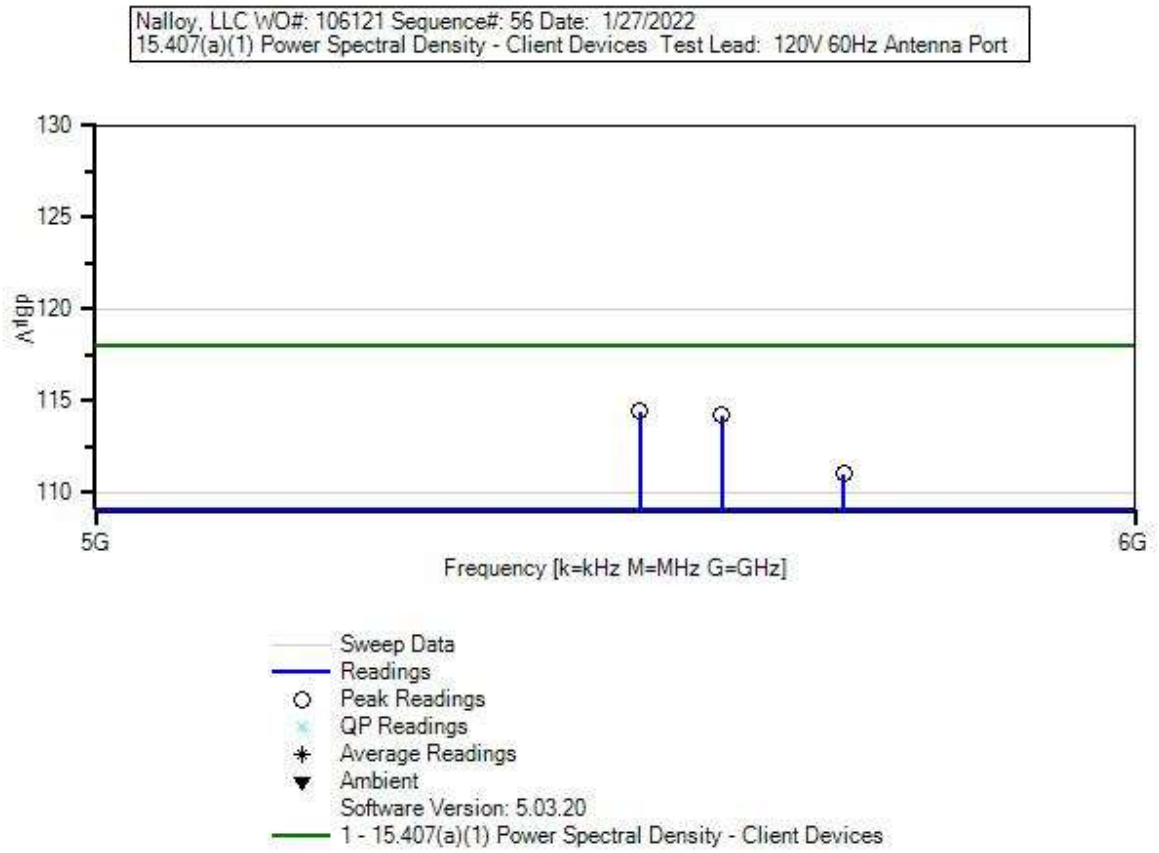
Environmental Conditions:
Temperature 21°C
Humidity: 45%
Pressure: 101.2kPa

Method: ANSI C63.10: 2013

Frequency range: 5500-5700 MHz

Setup:
Antenna 0
Channels: 5500, 5580, 5700 MHz
802.11n20 Band 3
Rate: MCS0-7
PWR Output: Low/Mid: 20 dBm, High: 15 dBm
100% Duty Cycle

Notes:
PSD Measurements were performed with corresponding correction factors applied as an offset in the Spectrum Analyzer



Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	ANUFL Adapter	Test Data Adjustment		1/14/2022	1/14/2024
	ANP05961	Cable	Heliax	6/9/2021	6/9/2023
T1	AN02872	Spectrum Analyzer	E4440A	11/29/2021	11/29/2023

Measurement Data: Reading listed by margin. Test Lead: Antenna Port

#	Freq MHz	Rdng dBµV	T1 dB	dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	5500.840M	114.4	+0.0				+0.0	114.4	118.0 MCS0, 20dBm	-3.6	Anten
2	5580.960M	114.2	+0.0				+0.0	114.2	118.0 MCS0, 20dBm	-3.8	Anten
3	5700.960M	111.0	+0.0				+0.0	111.0	118.0 MCS0, 14dBm	-7.0	Anten

Test Location:	CKC Laboratories, Inc. • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)		
Customer:	**Nalloy, LLC**		
Specification:	**15.407(a)(1) Power Spectral Density - Client Devices**		
Work Order #:	**106407**	Date:	1/27/2022
Test Type:	**Conducted Emissions**	Time:	12:55:17
Tested By:	M. Harrison	Sequence#:	58
Software:	EMITest 5.03.20		120V 60Hz

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

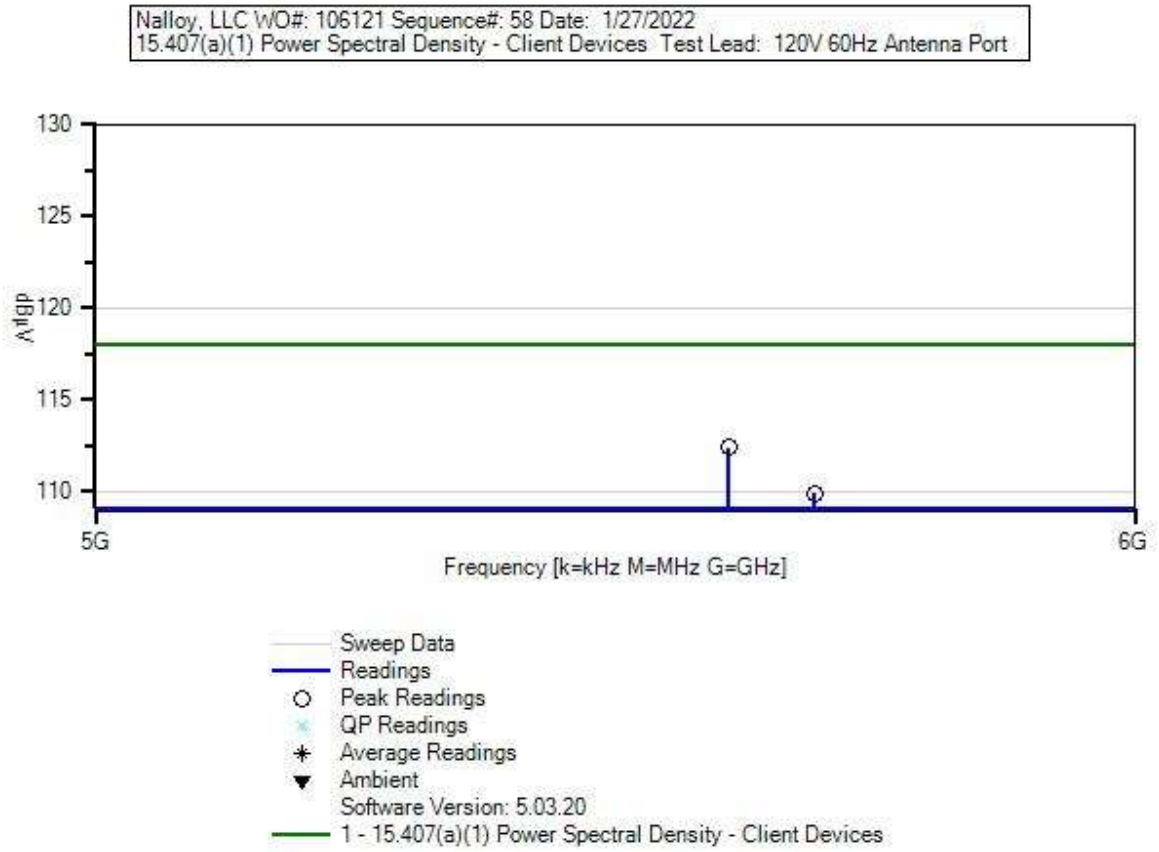
Environmental Conditions:
Temperature: 21°C
Humidity: 45%
Pressure: 101.2kPa

Method: ANSI C63.10: 2013

Frequency range: 5510-5670 MHz

Setup:
Antenna 0
Channels: 5510, 5590, 5670 MHz
802.11n40 Band 3
Rate: MCS0-7
PWR Output: Low: 17dBm, Mid: 20 dBm, High: 17 dBm
100% Duty Cycle

Notes:
PSD Measurements were performed with corresponding correction factors applied as an offset in the Spectrum Analyzer



Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	ANUFL Adapter	Test Data Adjustment		1/14/2022	1/14/2024
	ANP05961	Cable	Heliax	6/9/2021	6/9/2023
T1	AN02872	Spectrum Analyzer	E4440A	11/29/2021	11/29/2023

Measurement Data: Reading listed by margin. Test Lead: Antenna Port

#	Freq MHz	Rdng dBµV	T1 dB	dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	5587.350M	112.4	+0.0				+0.0	112.4	118.0 MCS0, 20dBm	-5.6	Anten
2	5672.650M	109.9	+0.0				+0.0	109.9	118.0 MCS0, 17dBm	-8.1	Anten
3	5507.550M	108.9	+0.0				+0.0	108.9	118.0 MCS0, 17dBm	-9.1	Anten

Test Location:	CKC Laboratories, Inc. • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)		
Customer:	**Nalloy, LLC**		
Specification:	**15.407(a)(1) Power Spectral Density - Client Devices**		
Work Order #:	**106407**	Date:	1/27/2022
Test Type:	**Conducted Emissions**	Time:	12:47:23
Tested By:	M. Harrison	Sequence#:	57
Software:	EMITest 5.03.20		120V 60Hz

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

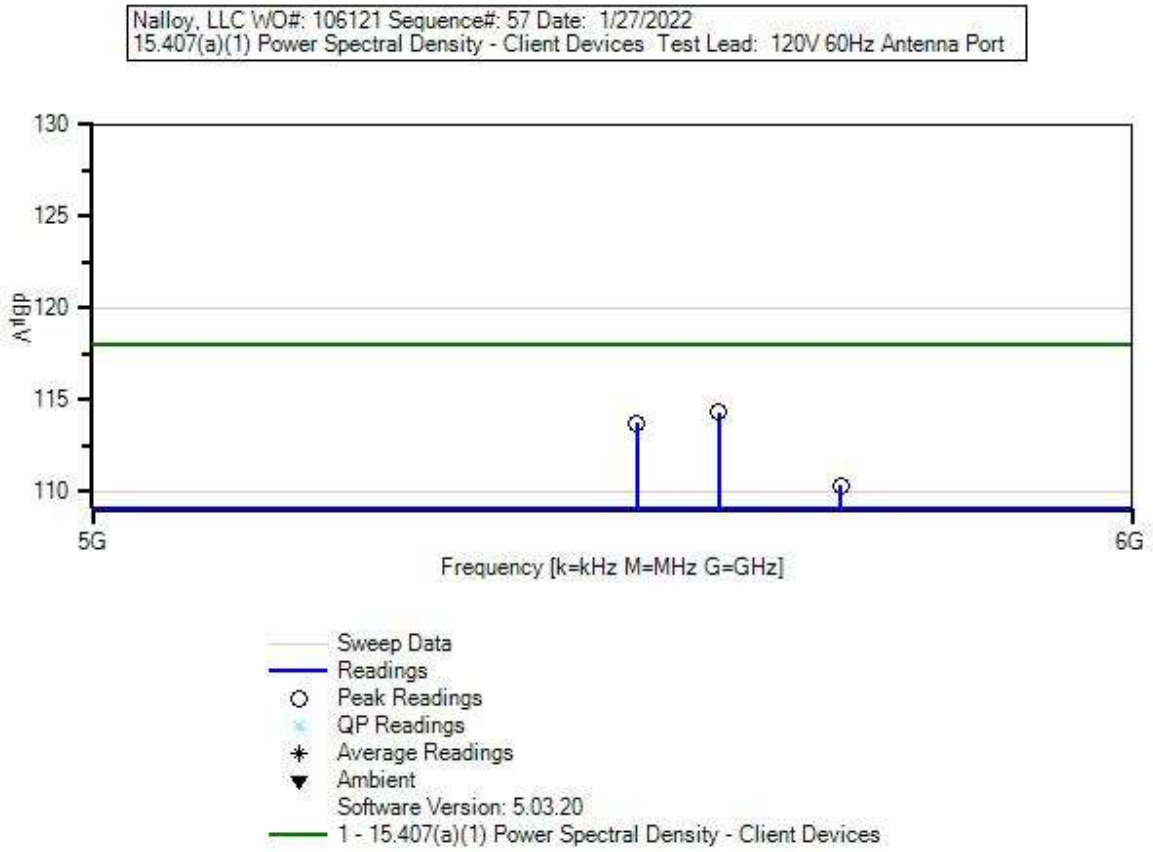
Environmental Conditions:
Temperature: 21°C
Humidity: 45%
Pressure: 101.2kPa

Method: ANSI C63.10: 2013

Frequency range: 5500-5700 MHz

Setup:
Antenna 0
Channels: 5500, 5580, 5700 MHz
802.11ac20 Band 3
Rate: MCS0-8
PWR Output: Low/Mid: 20 dBm, High: 15 dBm
100% Duty Cycle

Notes:
PSD Measurements were performed with corresponding correction factors applied as an offset in the Spectrum Analyzer



Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	ANUFL Adapter	Test Data Adjustment		1/14/2022	1/14/2024
	ANP05961	Cable	Heliax	6/9/2021	6/9/2023
T1	AN02872	Spectrum Analyzer	E4440A	11/29/2021	11/29/2023

Measurement Data: Reading listed by margin. Test Lead: Antenna Port

#	Freq MHz	Rdng dBµV	T1 dB	dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	5581.110M	114.3	+0.0				+0.0	114.3	118.0 MCS0, 20dBm	-3.7	Anten
2	5501.110M	113.7	+0.0				+0.0	113.7	118.0 MCS0, 20dBm	-4.3	Anten
3	5701.020M	110.3	+0.0				+0.0	110.3	118.0 MCS0, 15dBm	-7.7	Anten

Test Location:	CKC Laboratories, Inc. • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)		
Customer:	**Nalloy, LLC**		
Specification:	**15.407(a)(1) Power Spectral Density - Client Devices**		
Work Order #:	**106407**	Date:	1/27/2022
Test Type:	**Conducted Emissions**	Time:	13:25:02
Tested By:	M. Harrison	Sequence#:	59
Software:	EMITest 5.03.20		120V 60Hz

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

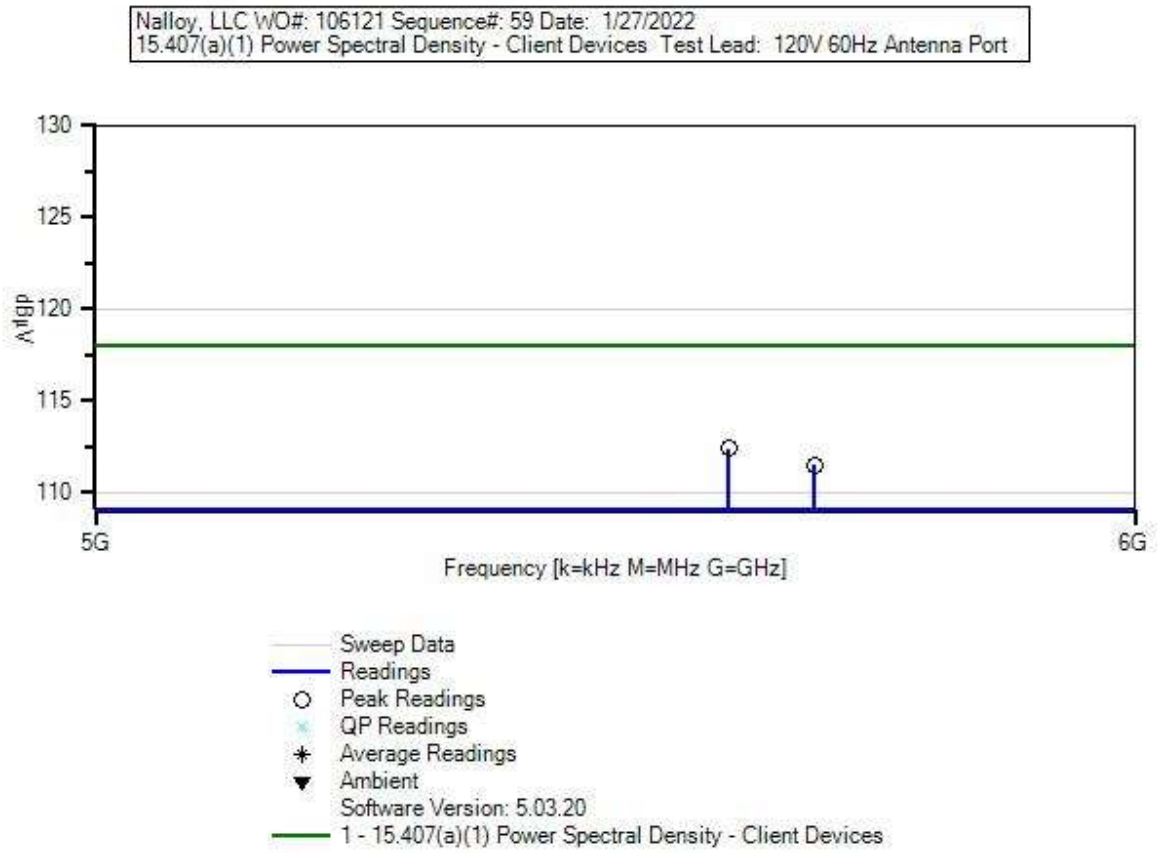
Environmental Conditions:
Temperature: 21°C
Humidity: 45%
Pressure: 101.2kPa

Method: ANSI C63.10: 2013

Frequency range: 5510-5670 MHz

Setup:
Antenna 0
Channels: 5510, 5590, 5670 MHz
802.11ac40 Band 3
Rate: MCS0-9
PWR Output: Low: 16dBm, Mid: 20 dBm, High: 18 dBm
100% Duty Cycle

Notes:
PSD Measurements were performed with corresponding correction factors applied as an offset in the Spectrum Analyzer



Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	ANUFL Adapter	Test Data Adjustment		1/14/2022	1/14/2024
	ANP05961	Cable	Heliax	6/9/2021	6/9/2023
T1	AN02872	Spectrum Analyzer	E4440A	11/29/2021	11/29/2023

Measurement Data: Reading listed by margin. Test Lead: Antenna Port

#	Freq MHz	Rdng dBµV	T1 dB	dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	5587.250M	112.4	+0.0				+0.0	112.4	118.0 MCS0, 20dBm	-5.6	Anten
2	5672.550M	111.5	+0.0				+0.0	111.5	118.0 MCS0, 18dBm	-6.5	Anten
3	5512.350M	108.0	+0.0				+0.0	108.0	118.0 MCS0, 16dBm	-10.0	Anten

Test Location:	CKC Laboratories, Inc. • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)		
Customer:	**Nalloy, LLC**		
Specification:	**15.407(a)(1) Power Spectral Density - Client Devices**		
Work Order #:	**106407**	Date:	1/27/2022
Test Type:	**Conducted Emissions**	Time:	13:32:06
Tested By:	M. Harrison	Sequence#:	60
Software:	EMITest 5.03.20		120V 60Hz

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

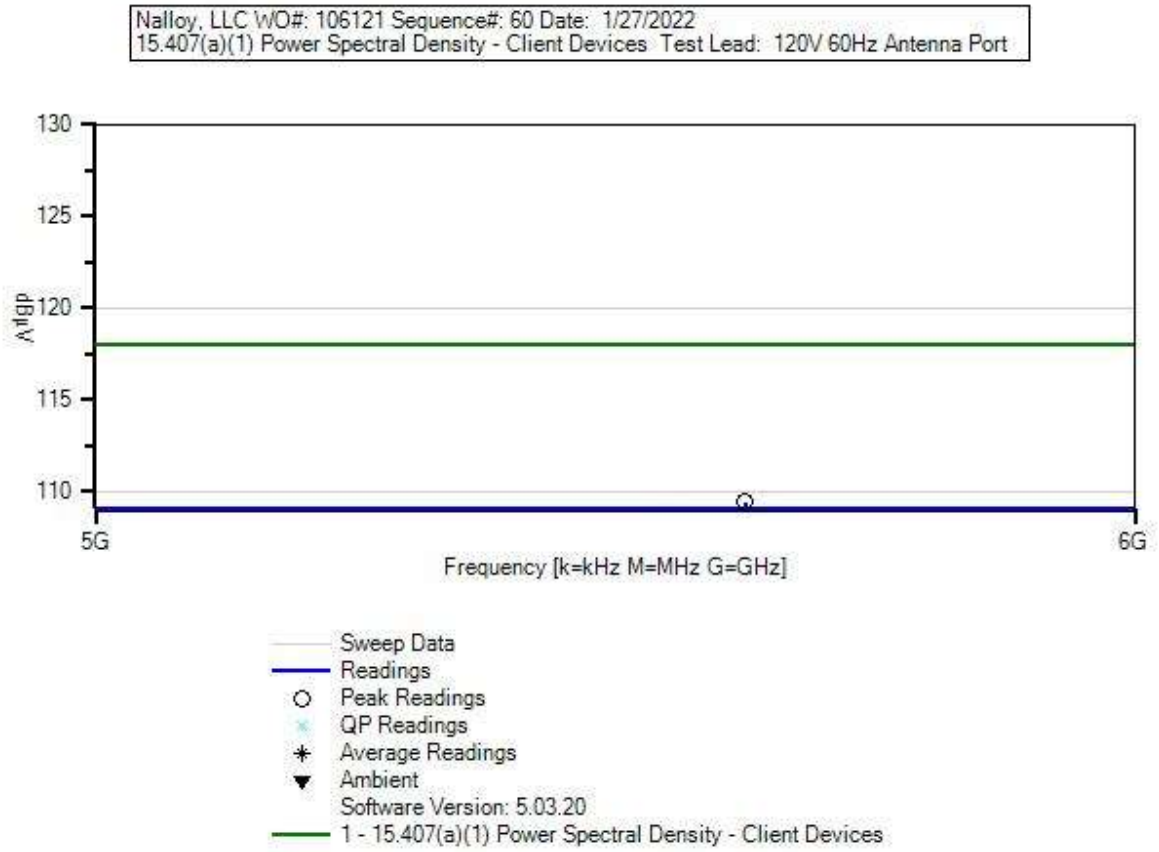
Environmental Conditions:
Temperature: 21°C
Humidity: 45%
Pressure: 101.2kPa

Method: ANSI C63.10: 2013

Frequency range: 5530-5610 MHz

Setup:
Antenna 0
Channels: 5530, 5610 MHz
802.11ac80 Band 3
Rate: MCS7
PWR Output: Low: 18 dBm, High: 20 dBm
100% Duty Cycle

Notes:
PSD Measurements were performed with corresponding correction factors applied as an offset in the Spectrum Analyzer



Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	ANUFL Adapter	Test Data Adjustment		1/14/2022	1/14/2024
	ANP05961	Cable	Heliax	6/9/2021	6/9/2023
T1	AN02872	Spectrum Analyzer	E4440A	11/29/2021	11/29/2023

Measurement Data: Reading listed by margin. Test Lead: Antenna Port

#	Freq MHz	Rdng dBµV	T1 dB	dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	5603.400M	109.4	+0.0				+0.0	109.4	118.0	-8.6	Anten
									MCS0, 20dBm		
2	5524.700M	106.8	+0.0				+0.0	106.8	118.0	-11.2	Anten
									MCS0, 18dBm		

15.407(b) Radiated Emissions & Band Edge

Test Setup / Conditions / Data

Test Location:	CKC Laboratories, Inc. • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)		
Customer:	**Nalloy, LLC**		
Specification:	**15.407(b) / 15.209 Radiated Spurious Emissions**		
Work Order #:	**106407**	Date:	1/18/2022
Test Type:	**Maximized Emissions**	Time:	10:33:51
Tested By:	M. Harrison	Sequence#:	35
Software:	EMITest 5.03.20		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

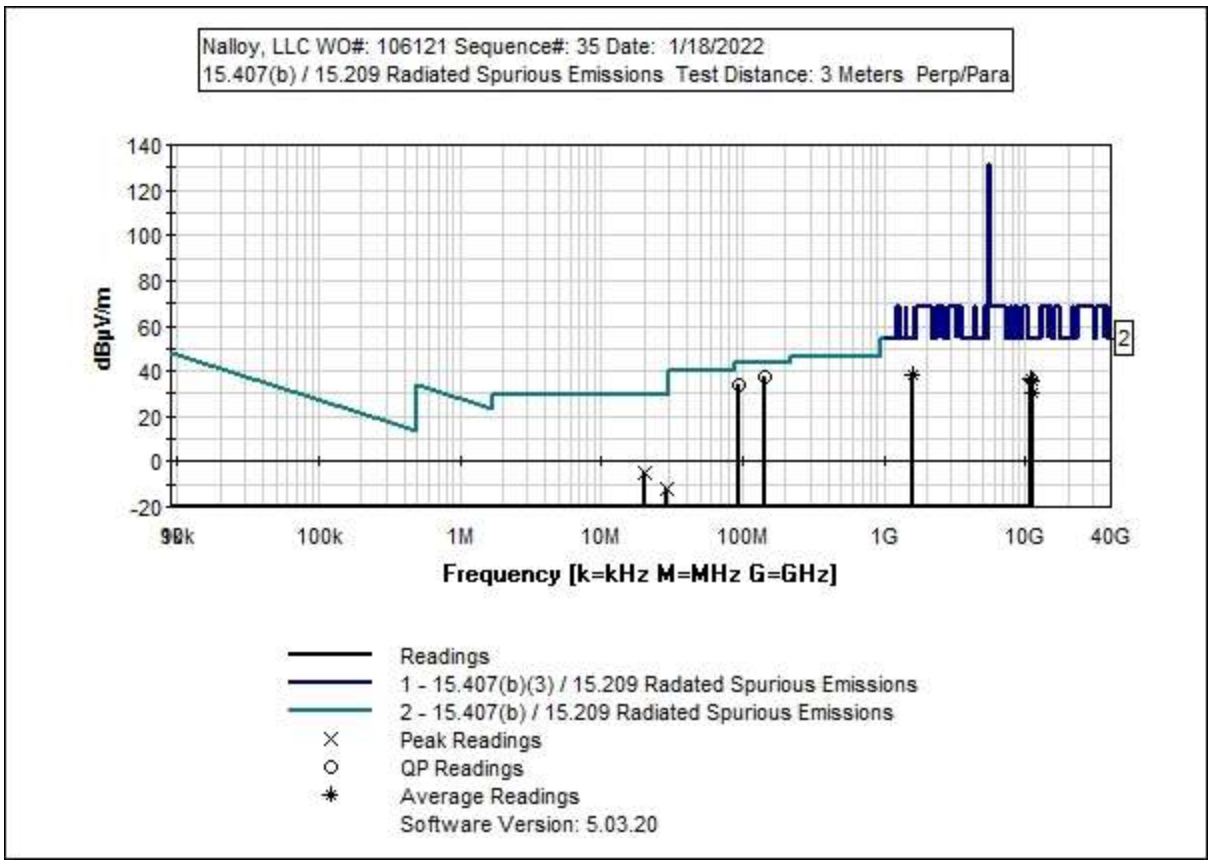
Environmental Conditions:
Temperature: 21°C
Humidity: 45%
Pressure: 101.2kPa

Method: ANSI C63.10: 2013

Frequency range: 9k-40 GHz

Setup:
Antenna 0
Channels: 5500, 5580, 5700 MHz
802.11a Band 3
Rate: 54Mbps
PWR Output: Low/Mid: 20 dBm, High: 20 dBm
100% Duty Cycle

Notes:
No EUT Emissions found within 20 dB of the limit above 18GHz


Nalloy, LLC WO#: 106121 Sequence#: 35 Date: 1/18/2022
15.407(b) / 15.209 Radiated Spurious Emissions Test Distance: 3 Meters Perp/Para
140
120
100
80
60
40
20
0
-20
dBµV/m
100k
1M
10M
100M
1G
10G
40G
Frequency [k=kHz M=MHz G=GHz]
2
Readings
1 - 15.407(b)(3) / 15.209 Radated Spurious Emissions
2 - 15.407(b) / 15.209 Radiated Spurious Emissions
Peak Readings
QP Readings
Average Readings
Software Version: 5.03.20

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN02673	Spectrum Analyzer	E4446A	2/3/2021	2/3/2023
T1	ANP05961	Cable	Heliax	6/9/2021	6/9/2023
T2	ANP06515	Cable	Heliax	7/1/2020	7/1/2022
T3	AN02374ANSI	Horn Antenna	RGA-60	5/25/2021	5/25/2023
T4	AN03540	Preamp	83017A	5/14/2021	5/14/2023
T5	ANP06242	Attenuator	54A-10	1/27/2020	1/27/2022
T6	ANP07505	Cable	CLU40-KMKM-02.00F	1/26/2021	1/26/2023
T7	AN02741	Active Horn Antenna	AMFW-5F-12001800-20-10P	5/13/2021	5/13/2023
T8	AN02742	Active Horn Antenna	AMFW-5F-18002650-20-10P	11/11/2020	11/11/2022
T9	AN02743	Active Horn Antenna	AMFW-5F-260400-33-8P	5/11/2021	5/11/2023
T10	AN02763-69	Waveguide	Multiple	4/28/2020	4/28/2022
T11	AN02764-70	Waveguide	Multiple	4/28/2020	4/28/2022
T12	ANP06678	Cable	32026-29801-29801-144	2/20/2020	2/20/2022
T13	ANP07211	Cable	32026-29801-29801-18	6/16/2021	6/16/2023
T14	ANP07504	Cable	CLU40-KMKM-02.00F	1/26/2021	1/26/2023
T15	AN02307	Preamp	8447D	1/6/2022	1/6/2024
T16	AN03628	Biconilog Antenna	3142E	6/3/2021	6/3/2023
T17	ANP05360	Cable	RG214	2/3/2020	2/3/2022
T18	ANP06011	Cable	Heliax	8/7/2020	8/7/2022
T19	AN00052	Loop Antenna	6502	5/4/2020	5/4/2022

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq	Rdng	T1 T5 T9 T13 T17	T2 T6 T10 T14 T18	T3 T7 T11 T15 T19	T4 T8 T12 T16	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	143.304M	49.8	+0.0	+0.6	+0.0	+0.0	+0.0	37.6	43.5	-5.9	Vert
	QP		+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	-27.6	+13.9					
			+0.7	+0.2	+0.0						
^	143.304M	54.0	+0.0	+0.6	+0.0	+0.0	+0.0	41.8	43.5	-1.7	Vert
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	-27.6	+13.9					
			+0.7	+0.2	+0.0						
3	94.395M	47.1	+0.0	+0.5	+0.0	+0.0	+0.0	33.7	43.5	-9.8	Vert
	QP		+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	-27.7	+13.1					
			+0.6	+0.1	+0.0						
^	94.395M	50.4	+0.0	+0.5	+0.0	+0.0	+0.0	37.0	43.5	-6.5	Vert
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	-27.7	+13.1					
			+0.6	+0.1	+0.0						
5	1576.000M	35.0	+0.8	+2.2	+25.6	-35.1	+0.0	38.4	54.0	-15.6	Vert
	Ave		+9.7	+0.2	+0.2	+0.2					
			+0.2	+0.2	+0.2	+0.2					
			+0.2	+0.2	+0.0	+0.0					
			+0.0	+0.0	+0.0						
^	1576.000M	47.0	+0.8	+2.2	+25.6	-35.1	+0.0	50.4	54.0	-3.6	Vert
			+9.7	+0.2	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0						
7	11001.800	40.7	+2.0	+6.6	+0.0	+0.0	+0.0	36.7	54.0	-17.3	Vert
	M		+0.0	+0.0	-12.6	+0.0					
	Ave		+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0						
^	11001.800	56.2	+2.0	+6.6	+0.0	+0.0	+0.0	52.2	54.0	-1.8	Vert
	M		+0.0	+0.0	-12.6	+0.0					
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0						

9	11161.640	39.4	+2.1	+6.7	+0.0	+0.0	+0.0	35.7	54.0	-18.3	Vert
	M		+0.0	+0.0	-12.5	+0.0					
	Ave		+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0						
^	11161.640	54.7	+2.1	+6.7	+0.0	+0.0	+0.0	51.0	54.0	-3.0	Vert
	M		+0.0	+0.0	-12.5	+0.0					
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0						
11	11395.040	34.3	+2.3	+6.9	+0.0	+0.0	+0.0	30.6	54.0	-23.4	Vert
	M		+0.0	+0.0	-12.9	+0.0					
	Ave		+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0						
^	11395.040	48.7	+2.3	+6.9	+0.0	+0.0	+0.0	45.0	54.0	-9.0	Vert
	M		+0.0	+0.0	-12.9	+0.0					
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0						
13	20.269M	27.1	+0.0	+0.2	+0.0	+0.0	-40.0	-5.4	29.5	-34.9	Perp/
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+7.3						
14	28.687M	23.1	+0.0	+0.3	+0.0	+0.0	-40.0	-11.7	29.5	-41.2	Perp/
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.1	+4.8						

Test Location:	CKC Laboratories, Inc. • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)		
Customer:	**Nalloy, LLC**		
Specification:	**15.407(b) / 15.209 Radiated Spurious Emissions**		
Work Order #:	**106407**	Date:	1/18/2022
Test Type:	**Maximized Emissions**	Time:	10:53:56
Tested By:	M. Harrison	Sequence#:	36
Software:	EMITest 5.03.20		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

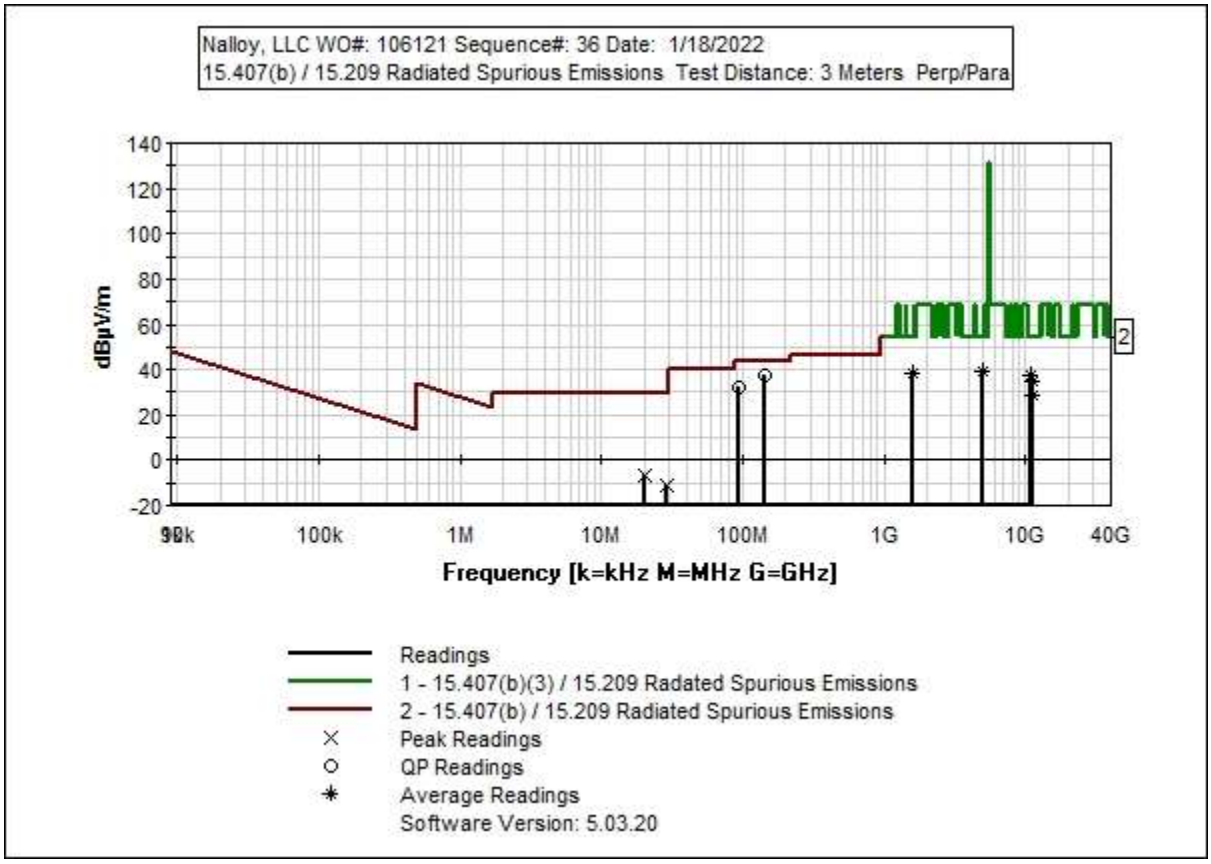
Environmental Conditions:
Temperature: 21°C
Humidity: 45%
Pressure: 101.2kPa

Method: ANSI C63.10: 2013

Frequency range: 9k-40 GHz

Setup:
Antenna 0
Channels: 5500, 5580, 5700 MHz
802.11n20 Band 3
Rate: MCS0
PWR Output: Low/Mid: 20 dBm, High: 20 dBm
100% Duty Cycle

Notes:
No EUT Emissions found within 20 dB of the limit above 18GHz


Nalloy, LLC WO#: 106121 Sequence#: 36 Date: 1/18/2022
15.407(b) / 15.209 Radiated Spurious Emissions Test Distance: 3 Meters Perp/Para
140
120
100
80
60
40
20
0
-20
dBµV/m
100k
1M
10M
100M
1G
10G
40G
Frequency [k=kHz M=MHz G=GHz]
2
Readings
1 - 15.407(b)(3) / 15.209 Radated Spurious Emissions
2 - 15.407(b) / 15.209 Radiated Spurious Emissions
Peak Readings
QP Readings
Average Readings
Software Version: 5.03.20

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN02673	Spectrum Analyzer	E4446A	2/3/2021	2/3/2023
T1	ANP05961	Cable	Heliax	6/9/2021	6/9/2023
T2	ANP06515	Cable	Heliax	7/1/2020	7/1/2022
T3	AN02374ANSI	Horn Antenna	RGA-60	5/25/2021	5/25/2023
T4	AN03540	Preamp	83017A	5/14/2021	5/14/2023
T5	ANP06242	Attenuator	54A-10	1/27/2020	1/27/2022
T6	ANP07505	Cable	CLU40-KMKM-02.00F	1/26/2021	1/26/2023
T7	AN02741	Active Horn Antenna	AMFW-5F-12001800-20-10P	5/13/2021	5/13/2023
	AN02742	Active Horn Antenna	AMFW-5F-18002650-20-10P	11/11/2020	11/11/2022
	AN02743	Active Horn Antenna	AMFW-5F-260400-33-8P	5/11/2021	5/11/2023
	AN02763-69	Waveguide	Multiple	4/28/2020	4/28/2022
	AN02764-70	Waveguide	Multiple	4/28/2020	4/28/2022
	ANP06678	Cable	32026-29801-29801-144	2/20/2020	2/20/2022
	ANP07211	Cable	32026-29801-29801-18	6/16/2021	6/16/2023
	ANP07504	Cable	CLU40-KMKM-02.00F	1/26/2021	1/26/2023
T8	AN02307	Preamp	8447D	1/6/2022	1/6/2024
T9	AN03628	Biconilog Antenna	3142E	6/3/2021	6/3/2023
T10	ANP05360	Cable	RG214	2/3/2020	2/3/2022
T11	ANP06011	Cable	Heliax	8/7/2020	8/7/2022
T12	AN00052	Loop Antenna	6502	5/4/2020	5/4/2022

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq	Rdng	T1 T5 T9	T2 T6 T10	T3 T7 T11	T4 T8 T12	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	143.290M	50.0	+0.0	+0.6	+0.0	+0.0	+0.0	37.8	43.5	-5.7	Vert
	QP		+0.0	+0.0	+0.0	-27.6					
			+13.9	+0.7	+0.2	+0.0					
^	143.290M	53.9	+0.0	+0.6	+0.0	+0.0	+0.0	41.7	43.5	-1.8	Vert
			+0.0	+0.0	+0.0	-27.6					
			+13.9	+0.7	+0.2	+0.0					
3	94.430M	45.7	+0.0	+0.5	+0.0	+0.0	+0.0	32.3	43.5	-11.2	Vert
	QP		+0.0	+0.0	+0.0	-27.7					
			+13.1	+0.6	+0.1	+0.0					
^	94.430M	50.0	+0.0	+0.5	+0.0	+0.0	+0.0	36.6	43.5	-6.9	Vert
			+0.0	+0.0	+0.0	-27.7					
			+13.1	+0.6	+0.1	+0.0					
5	4987.000M	22.7	+1.7	+3.8	+33.8	-33.4	+0.0	38.8	54.0	-15.2	Vert
	Ave		+9.7	+0.5	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
^	4987.000M	39.9	+1.7	+3.8	+33.8	-33.4	+0.0	56.0	54.0	+2.0	Vert
			+9.7	+0.5	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
7	1576.000M	35.0	+0.8	+2.2	+25.6	-35.1	+0.0	38.4	54.0	-15.6	Vert
	Ave		+9.7	+0.2	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
^	1576.000M	47.2	+0.8	+2.2	+25.6	-35.1	+0.0	50.6	54.0	-3.4	Vert
			+9.7	+0.2	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
9	10997.760	41.1	+2.0	+6.6	+0.0	+0.0	+0.0	37.2	54.0	-16.8	Vert
	M		+0.0	+0.0	-12.5	+0.0					
	Ave		+0.0	+0.0	+0.0	+0.0					
^	10997.760	58.9	+2.0	+6.6	+0.0	+0.0	+0.0	55.0	54.0	+1.0	Vert
	M		+0.0	+0.0	-12.5	+0.0					
			+0.0	+0.0	+0.0	+0.0					
11	11157.840	38.7	+2.1	+6.7	+0.0	+0.0	+0.0	35.0	54.0	-19.0	Vert
	M		+0.0	+0.0	-12.5	+0.0					
	Ave		+0.0	+0.0	+0.0	+0.0					
^	11157.840	56.0	+2.1	+6.7	+0.0	+0.0	+0.0	52.3	54.0	-1.7	Vert
	M		+0.0	+0.0	-12.5	+0.0					
			+0.0	+0.0	+0.0	+0.0					

13	11397.960	32.5	+2.3	+6.9	+0.0	+0.0	+0.0	28.8	54.0	-25.2	Vert
	M		+0.0	+0.0	-12.9	+0.0					
	Ave		+0.0	+0.0	+0.0	+0.0					
^	11397.960	48.7	+2.3	+6.9	+0.0	+0.0	+0.0	45.0	54.0	-9.0	Vert
	M		+0.0	+0.0	-12.9	+0.0					
			+0.0	+0.0	+0.0	+0.0					
15	20.329M	26.2	+0.0	+0.2	+0.0	+0.0	-40.0	-6.4	29.5	-35.9	Perp/
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0	+7.2					
16	28.687M	23.7	+0.0	+0.3	+0.0	+0.0	-40.0	-11.1	29.5	-40.6	Perp/
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.1	+4.8					

Test Location:	CKC Laboratories, Inc. • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)		
Customer:	**Nalloy, LLC**		
Specification:	**15.407(b) / 15.209 Radiated Spurious Emissions**		
Work Order #:	**106407**	Date:	1/18/2022
Test Type:	**Maximized Emissions**	Time:	11:13:56
Tested By:	M. Harrison	Sequence#:	37
Software:	EMITest 5.03.20		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

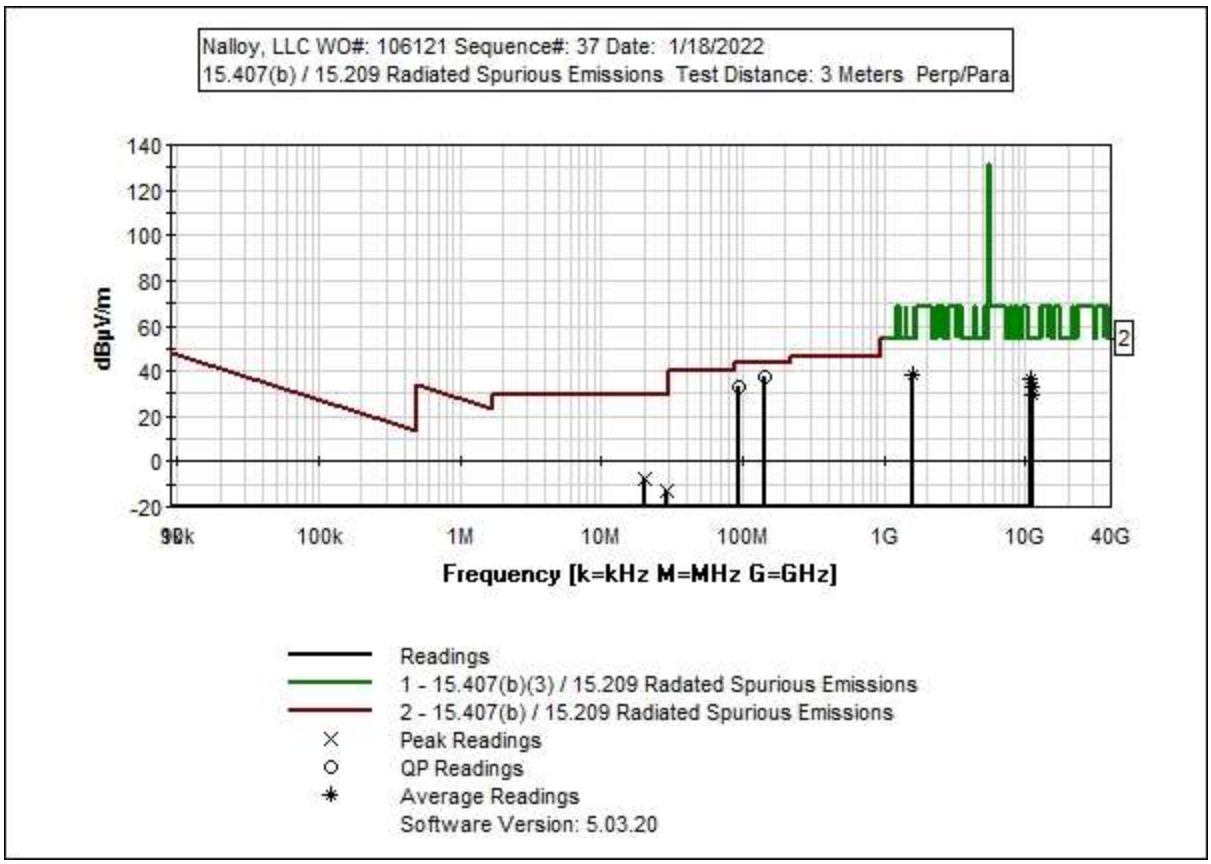
Environmental Conditions:
Temperature: 21°C
Humidity: 45%
Pressure: 101.2kPa

Method: ANSI C63.10: 2013

Frequency range: 9k-40 GHz

Setup:
Antenna 0
Channels: 5510, 5590, 5670 MHz
802.11n40 Band 3
Rate: MCS0
PWR Output: Low/Mid: 20 dBm, High: 20 dBm
100% Duty Cycle

Notes:
No EUT Emissions found within 20 dB of the limit above 18GHz


Nalloy, LLC WO#: 106121 Sequence#: 37 Date: 1/18/2022
15.407(b) / 15.209 Radiated Spurious Emissions Test Distance: 3 Meters Perp/Para
dBµV/m
140
120
100
80
60
40
20
0
-20
100k
1M
10M
100M
1G
10G
40G
Frequency [k=kHz M=MHz G=GHz]
2
Readings
1 - 15.407(b)(3) / 15.209 Radated Spurious Emissions
2 - 15.407(b) / 15.209 Radiated Spurious Emissions
Peak Readings
QP Readings
Average Readings
Software Version: 5.03.20

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN02673	Spectrum Analyzer	E4446A	2/3/2021	2/3/2023
T1	ANP05961	Cable	Heliax	6/9/2021	6/9/2023
T2	ANP06515	Cable	Heliax	7/1/2020	7/1/2022
T3	AN02374ANSI	Horn Antenna	RGA-60	5/25/2021	5/25/2023
T4	AN03540	Preamp	83017A	5/14/2021	5/14/2023
T5	ANP06242	Attenuator	54A-10	1/27/2020	1/27/2022
T6	ANP07505	Cable	CLU40-KMKM-02.00F	1/26/2021	1/26/2023
T7	AN02741	Active Horn Antenna	AMFW-5F-12001800-20-10P	5/13/2021	5/13/2023
	AN02742	Active Horn Antenna	AMFW-5F-18002650-20-10P	11/11/2020	11/11/2022
	AN02743	Active Horn Antenna	AMFW-5F-260400-33-8P	5/11/2021	5/11/2023
	AN02763-69	Waveguide	Multiple	4/28/2020	4/28/2022
	AN02764-70	Waveguide	Multiple	4/28/2020	4/28/2022
	ANP06678	Cable	32026-29801-29801-144	2/20/2020	2/20/2022
	ANP07211	Cable	32026-29801-29801-18	6/16/2021	6/16/2023
	ANP07504	Cable	CLU40-KMKM-02.00F	1/26/2021	1/26/2023
T8	AN02307	Preamp	8447D	1/6/2022	1/6/2024
T9	AN03628	Biconilog Antenna	3142E	6/3/2021	6/3/2023
T10	ANP05360	Cable	RG214	2/3/2020	2/3/2022
T11	ANP06011	Cable	Heliax	8/7/2020	8/7/2022
T12	AN00052	Loop Antenna	6502	5/4/2020	5/4/2022

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq	Rdng	T1 T5 T9	T2 T6 T10	T3 T7 T11	T4 T8 T12	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	143.315M	49.8	+0.0	+0.6	+0.0	+0.0	+0.0	37.6	43.5	-5.9	Vert
	QP		+0.0	+0.0	+0.0	-27.6					
			+13.9	+0.7	+0.2	+0.0					
^	143.315M	52.8	+0.0	+0.6	+0.0	+0.0	+0.0	40.6	43.5	-2.9	Vert
			+0.0	+0.0	+0.0	-27.6					
			+13.9	+0.7	+0.2	+0.0					
3	94.365M	46.6	+0.0	+0.5	+0.0	+0.0	+0.0	33.2	43.5	-10.3	Vert
	QP		+0.0	+0.0	+0.0	-27.7					
			+13.1	+0.6	+0.1	+0.0					
^	94.365M	51.0	+0.0	+0.5	+0.0	+0.0	+0.0	37.6	43.5	-5.9	Vert
			+0.0	+0.0	+0.0	-27.7					
			+13.1	+0.6	+0.1	+0.0					
5	1567.000M	34.6	+0.8	+2.2	+25.6	-35.1	+0.0	38.0	54.0	-16.0	Vert
	Ave		+9.7	+0.2	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
^	1567.000M	49.4	+0.8	+2.2	+25.6	-35.1	+0.0	52.8	54.0	-1.2	Vert
			+9.7	+0.2	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
7	11020.240	41.0	+2.0	+6.6	+0.0	+0.0	+0.0	37.0	54.0	-17.0	Vert
	M		+0.0	+0.0	-12.6	+0.0					
	Ave		+0.0	+0.0	+0.0	+0.0					
^	11020.240	56.3	+2.0	+6.6	+0.0	+0.0	+0.0	52.3	54.0	-1.7	Vert
	M		+0.0	+0.0	-12.6	+0.0					
			+0.0	+0.0	+0.0	+0.0					
9	11169.200	36.5	+2.1	+6.7	+0.0	+0.0	+0.0	32.8	54.0	-21.2	Vert
	M		+0.0	+0.0	-12.5	+0.0					
	Ave		+0.0	+0.0	+0.0	+0.0					
^	11169.200	51.7	+2.1	+6.7	+0.0	+0.0	+0.0	48.0	54.0	-6.0	Vert
	M		+0.0	+0.0	-12.5	+0.0					
			+0.0	+0.0	+0.0	+0.0					
11	11336.300	33.2	+2.3	+6.9	+0.0	+0.0	+0.0	29.6	54.0	-24.4	Vert
	M		+0.0	+0.0	-12.8	+0.0					
	Ave		+0.0	+0.0	+0.0	+0.0					
^	11336.300	47.7	+2.3	+6.9	+0.0	+0.0	+0.0	44.1	54.0	-9.9	Vert
	M		+0.0	+0.0	-12.8	+0.0					
			+0.0	+0.0	+0.0	+0.0					
13	20.239M	24.5	+0.0	+0.2	+0.0	+0.0	-40.0	-8.0	29.5	-37.5	Perp/
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0	+7.3					
14	28.687M	22.3	+0.0	+0.3	+0.0	+0.0	-40.0	-12.5	29.5	-42.0	Perp/
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.1	+4.8					

Test Location:	CKC Laboratories, Inc. • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)		
Customer:	**Nalloy, LLC**		
Specification:	**15.407(b) / 15.209 Radiated Spurious Emissions**		
Work Order #:	**106407**	Date:	1/18/2022
Test Type:	**Maximized Emissions**	Time:	11:26:26
Tested By:	M. Harrison	Sequence#:	38
Software:	EMITest 5.03.20		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

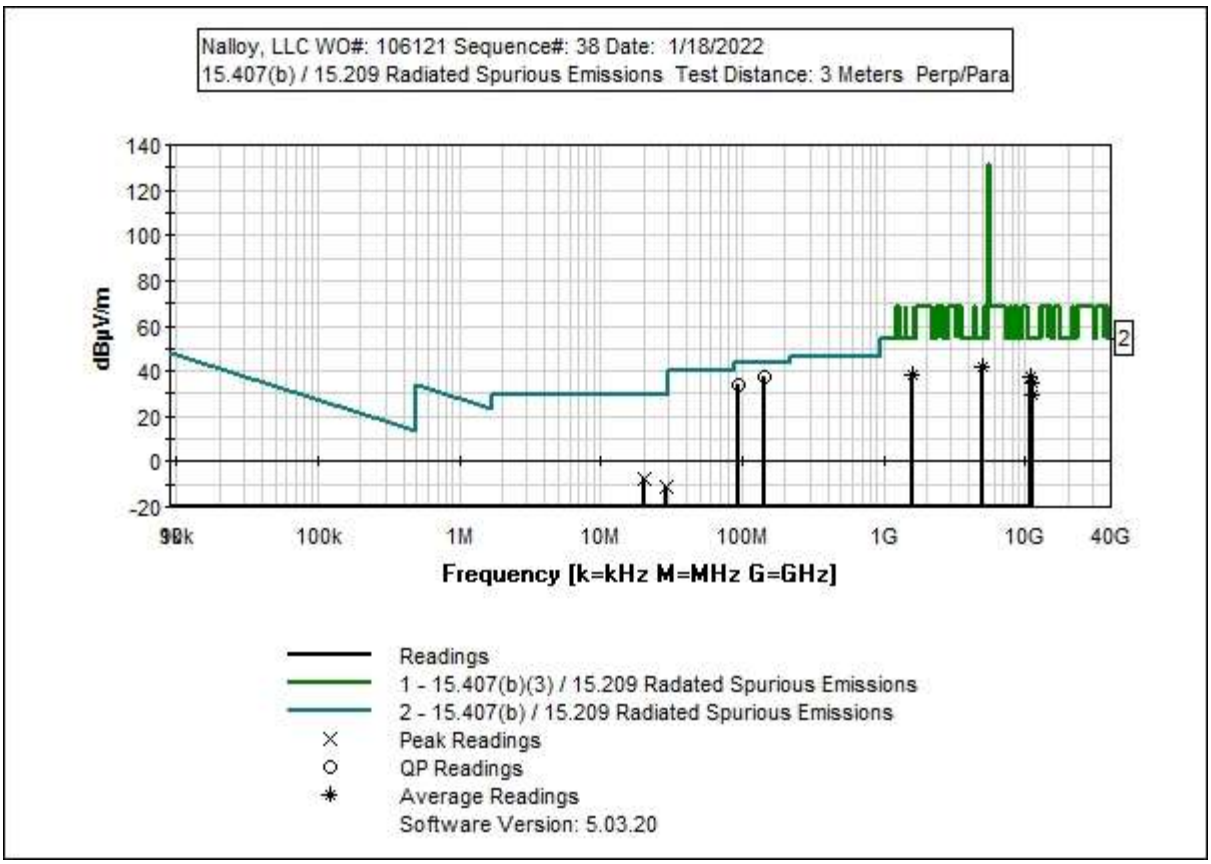
Environmental Conditions:
Temperature: 21°C
Humidity: 45%
Pressure: 101.2kPa

Method: ANSI C63.10: 2013

Frequency range: 9k-40 GHz

Setup:
Antenna 0
Channels: 5500, 5580, 5700 MHz
802.11ac20 Band 3
Rate: MCS0
PWR Output: Low/Mid: 20 dBm, High: 20 dBm
100% Duty Cycle

Notes:
No EUT Emissions found within 20 dB of the limit above 18GHz


Nalloy, LLC WO#: 106121 Sequence#: 38 Date: 1/18/2022
15.407(b) / 15.209 Radiated Spurious Emissions Test Distance: 3 Meters Perp/Para
dBµV/m
140
120
100
80
60
40
20
0
-20
90k
100k
1M
10M
100M
1G
10G
40G
2
Frequency [k=kHz M=MHz G=GHz]
Readings
1 - 15.407(b)(3) / 15.209 Radated Spurious Emissions
2 - 15.407(b) / 15.209 Radiated Spurious Emissions
Peak Readings
QP Readings
Average Readings
Software Version: 5.03.20

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN02673	Spectrum Analyzer	E4446A	2/3/2021	2/3/2023
T1	ANP05961	Cable	Heliax	6/9/2021	6/9/2023
T2	ANP06515	Cable	Heliax	7/1/2020	7/1/2022
T3	AN02374ANSI	Horn Antenna	RGA-60	5/25/2021	5/25/2023
T4	AN03540	Preamp	83017A	5/14/2021	5/14/2023
T5	ANP06242	Attenuator	54A-10	1/27/2020	1/27/2022
T6	ANP07505	Cable	CLU40-KMKM-02.00F	1/26/2021	1/26/2023
T7	AN02741	Active Horn Antenna	AMFW-5F-12001800-20-10P	5/13/2021	5/13/2023
	AN02742	Active Horn Antenna	AMFW-5F-18002650-20-10P	11/11/2020	11/11/2022
	AN02743	Active Horn Antenna	AMFW-5F-260400-33-8P	5/11/2021	5/11/2023
	AN02763-69	Waveguide	Multiple	4/28/2020	4/28/2022
	AN02764-70	Waveguide	Multiple	4/28/2020	4/28/2022
	ANP06678	Cable	32026-29801-29801-144	2/20/2020	2/20/2022
	ANP07211	Cable	32026-29801-29801-18	6/16/2021	6/16/2023
	ANP07504	Cable	CLU40-KMKM-02.00F	1/26/2021	1/26/2023
T8	AN02307	Preamp	8447D	1/6/2022	1/6/2024
T9	AN03628	Biconilog Antenna	3142E	6/3/2021	6/3/2023
T10	ANP05360	Cable	RG214	2/3/2020	2/3/2022
T11	ANP06011	Cable	Heliax	8/7/2020	8/7/2022
T12	AN00052	Loop Antenna	6502	5/4/2020	5/4/2022

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq	Rdng	T1 T5 T9	T2 T6 T10	T3 T7 T11	T4 T8 T12	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	143.300M	50.1	+0.0	+0.6	+0.0	+0.0	+0.0	37.9	43.5	-5.6	Vert
	QP		+0.0	+0.0	+0.0	-27.6					
			+13.9	+0.7	+0.2	+0.0					
^	143.300M	53.3	+0.0	+0.6	+0.0	+0.0	+0.0	41.1	43.5	-2.4	Vert
			+0.0	+0.0	+0.0	-27.6					
			+13.9	+0.7	+0.2	+0.0					
3	94.370M	46.9	+0.0	+0.5	+0.0	+0.0	+0.0	33.5	43.5	-10.0	Vert
	QP		+0.0	+0.0	+0.0	-27.7					
			+13.1	+0.6	+0.1	+0.0					
^	94.370M	50.7	+0.0	+0.5	+0.0	+0.0	+0.0	37.3	43.5	-6.2	Vert
			+0.0	+0.0	+0.0	-27.7					
			+13.1	+0.6	+0.1	+0.0					
5	4978.000M	26.0	+1.7	+3.8	+33.8	-33.4	+0.0	42.1	54.0	-11.9	Vert
	Ave		+9.7	+0.5	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
^	4978.000M	39.4	+1.7	+3.8	+33.8	-33.4	+0.0	55.5	54.0	+1.5	Vert
			+9.7	+0.5	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
7	1576.000M	35.3	+0.8	+2.2	+25.6	-35.1	+0.0	38.7	54.0	-15.3	Vert
	Ave		+9.7	+0.2	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
^	1576.000M	50.6	+0.8	+2.2	+25.6	-35.1	+0.0	54.0	54.0	+0.0	Vert
			+9.7	+0.2	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
9	11001.400	41.4	+2.0	+6.6	+0.0	+0.0	+0.0	37.4	54.0	-16.6	Vert
	M		+0.0	+0.0	-12.6	+0.0					
	Ave		+0.0	+0.0	+0.0	+0.0					
^	11001.400	57.5	+2.0	+6.6	+0.0	+0.0	+0.0	53.5	54.0	-0.5	Vert
	M		+0.0	+0.0	-12.6	+0.0					
			+0.0	+0.0	+0.0	+0.0					
11	11158.050	38.3	+2.1	+6.7	+0.0	+0.0	+0.0	34.6	54.0	-19.4	Vert
	M		+0.0	+0.0	-12.5	+0.0					
	Ave		+0.0	+0.0	+0.0	+0.0					
^	11158.050	56.2	+2.1	+6.7	+0.0	+0.0	+0.0	52.5	54.0	-1.5	Vert
	M		+0.0	+0.0	-12.5	+0.0					
			+0.0	+0.0	+0.0	+0.0					

13	11395.850 M	32.8	+2.3 +0.0	+6.9 +0.0	+0.0 -12.9	+0.0 +0.0	+0.0	29.1	54.0	-24.9	Vert
	Ave		+0.0	+0.0	+0.0	+0.0					
^	11395.850 M	49.1	+2.3 +0.0	+6.9 +0.0	+0.0 -12.9	+0.0 +0.0	+0.0	45.4	54.0	-8.6	Vert
			+0.0	+0.0	+0.0	+0.0					
15	20.329M	25.0	+0.0 +0.0	+0.2 +0.0	+0.0 +0.0	+0.0 +0.0	-40.0	-7.6	29.5	-37.1	Perp/
			+0.0	+0.0	+0.0	+7.2					
16	28.687M	23.5	+0.0 +0.0	+0.3 +0.0	+0.0 +0.0	+0.0 +0.0	-40.0	-11.3	29.5	-40.8	Perp/
			+0.0	+0.0	+0.1	+4.8					

Test Location:	CKC Laboratories, Inc. • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)		
Customer:	**Nalloy, LLC**		
Specification:	**15.407(b) / 15.209 Radiated Spurious Emissions**		
Work Order #:	**106407**	Date:	1/18/2022
Test Type:	**Maximized Emissions**	Time:	12:22:39
Tested By:	M. Harrison	Sequence#:	39
Software:	EMITest 5.03.20		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

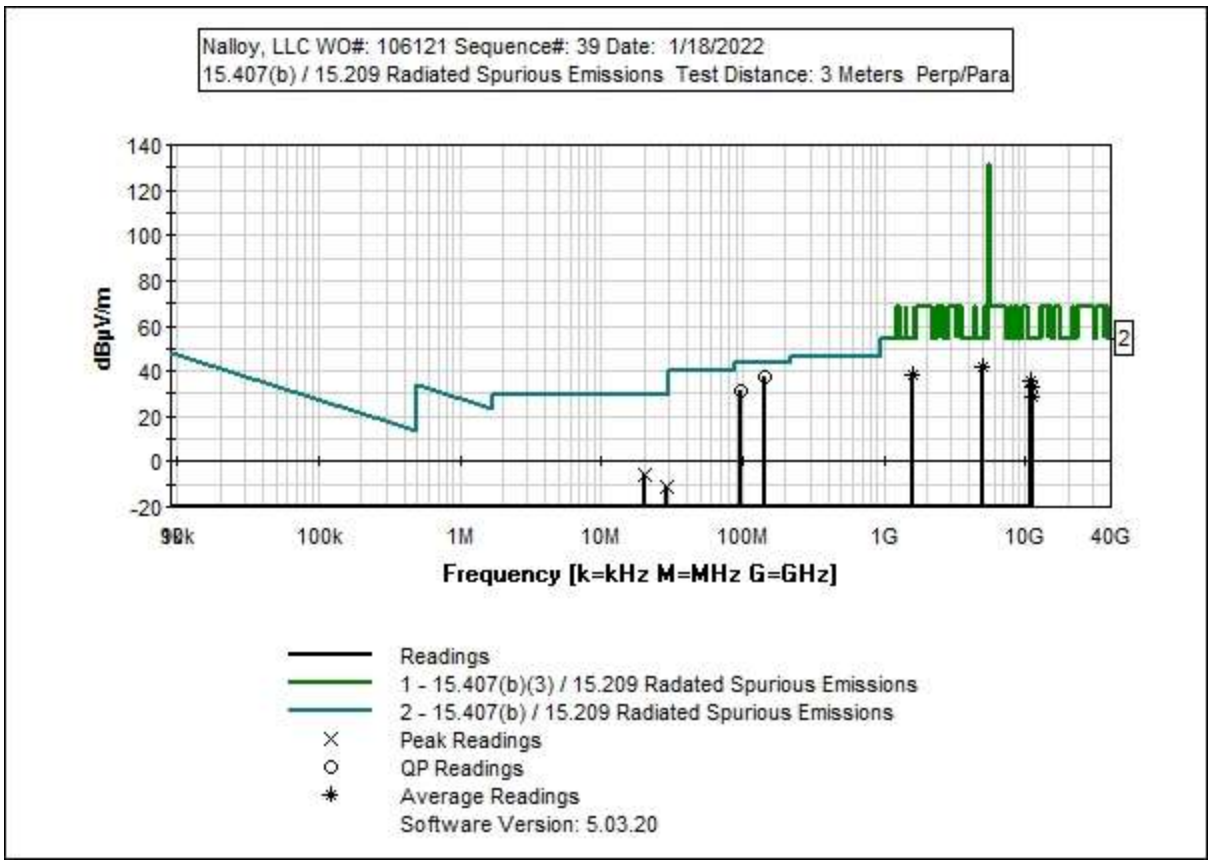
Environmental Conditions:
Temperature: 21°C
Humidity: 45%
Pressure: 101.2kPa

Method: ANSI C63.10: 2013

Frequency range: 9k-40 GHz

Setup:
Antenna 0
Channels: 5510, 5590, 5670 MHz
802.11ac40 Band 3
Rate: MCS0
PWR Output: Low/Mid: 20 dBm, High: 20 dBm
100% Duty Cycle

Notes:
No EUT Emissions found within 20 dB of the limit above 18GHz


Nalloy, LLC WO#: 106121 Sequence#: 39 Date: 1/18/2022
15.407(b) / 15.209 Radiated Spurious Emissions Test Distance: 3 Meters Perp/Para
dBµV/m
140
120
100
80
60
40
20
0
-20
90k
100k
1M
10M
100M
1G
10G
40G
Frequency [k=kHz M=MHz G=GHz]
2
Readings
1 - 15.407(b)(3) / 15.209 Radated Spurious Emissions
2 - 15.407(b) / 15.209 Radiated Spurious Emissions
Peak Readings
QP Readings
Average Readings
Software Version: 5.03.20

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02673	Spectrum Analyzer	E4446A	2/3/2021	2/3/2023
T2	ANP05961	Cable	Heliax	6/9/2021	6/9/2023
T3	ANP06515	Cable	Heliax	7/1/2020	7/1/2022
T4	AN02374ANSI	Horn Antenna	RGA-60	5/25/2021	5/25/2023
T5	AN03540	Preamp	83017A	5/14/2021	5/14/2023
T6	ANP06242	Attenuator	54A-10	1/27/2020	1/27/2022
T7	ANP07505	Cable	CLU40-KMKM-02.00F	1/26/2021	1/26/2023
T8	AN02741	Active Horn Antenna	AMFW-5F-12001800-20-10P	5/13/2021	5/13/2023
	AN02742	Active Horn Antenna	AMFW-5F-18002650-20-10P	11/11/2020	11/11/2022
	AN02743	Active Horn Antenna	AMFW-5F-260400-33-8P	5/11/2021	5/11/2023
	AN02763-69	Waveguide	Multiple	4/28/2020	4/28/2022
	AN02764-70	Waveguide	Multiple	4/28/2020	4/28/2022
	ANP06678	Cable	32026-29801-29801-144	2/20/2020	2/20/2022
	ANP07211	Cable	32026-29801-29801-18	6/16/2021	6/16/2023
	ANP07504	Cable	CLU40-KMKM-02.00F	1/26/2021	1/26/2023
T9	AN02307	Preamp	8447D	1/6/2022	1/6/2024
T10	AN03628	Biconilog Antenna	3142E	6/3/2021	6/3/2023
T11	ANP05360	Cable	RG214	2/3/2020	2/3/2022
T12	ANP06011	Cable	Heliax	8/7/2020	8/7/2022
T13	AN00052	Loop Antenna	6502	5/4/2020	5/4/2022

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq	Rdng	T1 T5 T9 T13	T2 T6 T10	T3 T7 T11	T4 T8 T12	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	143.320M QP	49.8	+0.0 +0.0 -27.6 +0.0	+0.0 +0.0 +13.9	+0.6 +0.0 +0.7	+0.0 +0.0 +0.2	+0.0	37.6	43.5	-5.9	Vert
^	143.320M	53.4	+0.0 +0.0 -27.6 +0.0	+0.0 +0.0 +13.9	+0.6 +0.0 +0.7	+0.0 +0.0 +0.2	+0.0	41.2	43.5	-2.3	Vert
3	4978.000M Ave	25.9	+0.0 -33.4 +0.0 +0.0	+1.7 +9.7 +0.0	+3.8 +0.5 +0.0	+33.8 +0.0 +0.0	+0.0	42.0	54.0	-12.0	Vert
^	4978.000M	40.9	+0.0 -33.4 +0.0 +0.0	+1.7 +9.7 +0.0	+3.8 +0.5 +0.0	+33.8 +0.0 +0.0	+0.0	57.0	54.0	+3.0	Vert
5	95.180M QP	44.6	+0.0 +0.0 -27.7 +0.0	+0.0 +0.0 +13.2	+0.5 +0.0 +0.6	+0.0 +0.0 +0.1	+0.0	31.3	43.5	-12.2	Vert
^	95.180M	49.8	+0.0 +0.0 -27.7 +0.0	+0.0 +0.0 +13.2	+0.5 +0.0 +0.6	+0.0 +0.0 +0.1	+0.0	36.5	43.5	-7.0	Vert
7	1572.650M Ave	34.9	+0.0 -35.1 +0.0 +0.0	+0.8 +9.7 +0.0	+2.2 +0.2 +0.0	+25.6 +0.0 +0.0	+0.0	38.3	54.0	-15.7	Vert
^	1572.650M	50.0	+0.0 +0.0 +0.0 +0.0	+0.8 +0.0 +0.0	+2.2 +0.0 +0.0	+0.0 +0.0 +0.0	+0.0	53.4	54.0	-0.6	Vert
9	11007.250 M Ave	39.6	+0.0 +0.0 +0.0 +0.0	+2.0 +0.0 +0.0	+6.6 +0.0 +0.0	+0.0 -12.6 +0.0	+0.0	35.6	54.0	-18.4	Vert
^	11007.250 M	54.2	+0.0 +0.0 +0.0 +0.0	+2.0 +0.0 +0.0	+6.6 +0.0 +0.0	+0.0 -12.6 +0.0	+0.0	50.2	54.0	-3.8	Vert
11	11169.400 M Ave	37.1	+0.0 +0.0 +0.0 +0.0	+2.1 +0.0 +0.0	+6.7 +0.0 +0.0	+0.0 -12.5 +0.0	+0.0	33.4	54.0	-20.6	Vert

^	11169.400 M	52.0	+0.0 +0.0 +0.0 +0.0	+2.1 +0.0 +0.0	+6.7 +0.0 +0.0	+0.0 -12.5 +0.0	+0.0	48.3	54.0	-5.7	Vert
13	11337.700 M Ave	32.6	+0.0 +0.0 +0.0 +0.0	+2.3 +0.0 +0.0	+6.9 +0.0 +0.0	+0.0 -12.8 +0.0	+0.0	29.0	54.0	-25.0	Vert
^	11337.700 M	48.2	+0.0 +0.0 +0.0 +0.0	+2.3 +0.0 +0.0	+6.9 +0.0 +0.0	+0.0 -12.8 +0.0	+0.0	44.6	54.0	-9.4	Vert
15	20.329M	26.5	+0.0 +0.0 +0.0 +7.2	+0.0 +0.0 +0.0	+0.2 +0.0 +0.0	+0.0 +0.0 +0.0	-40.0	-6.1	29.5	-35.6	Perp/
16	28.687M	23.8	+0.0 +0.0 +0.0 +4.8	+0.0 +0.0 +0.0	+0.3 +0.0 +0.0	+0.0 +0.0 +0.1	-40.0	-11.0	29.5	-40.5	Perp/

Test Location:	CKC Laboratories, Inc. • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)		
Customer:	**Nalloy, LLC**		
Specification:	**15.407(b) / 15.209 Radiated Spurious Emissions**		
Work Order #:	**106407**	Date:	1/18/2022
Test Type:	**Maximized Emissions**	Time:	12:43:44
Tested By:	M. Harrison	Sequence#:	40
Software:	EMITest 5.03.20		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

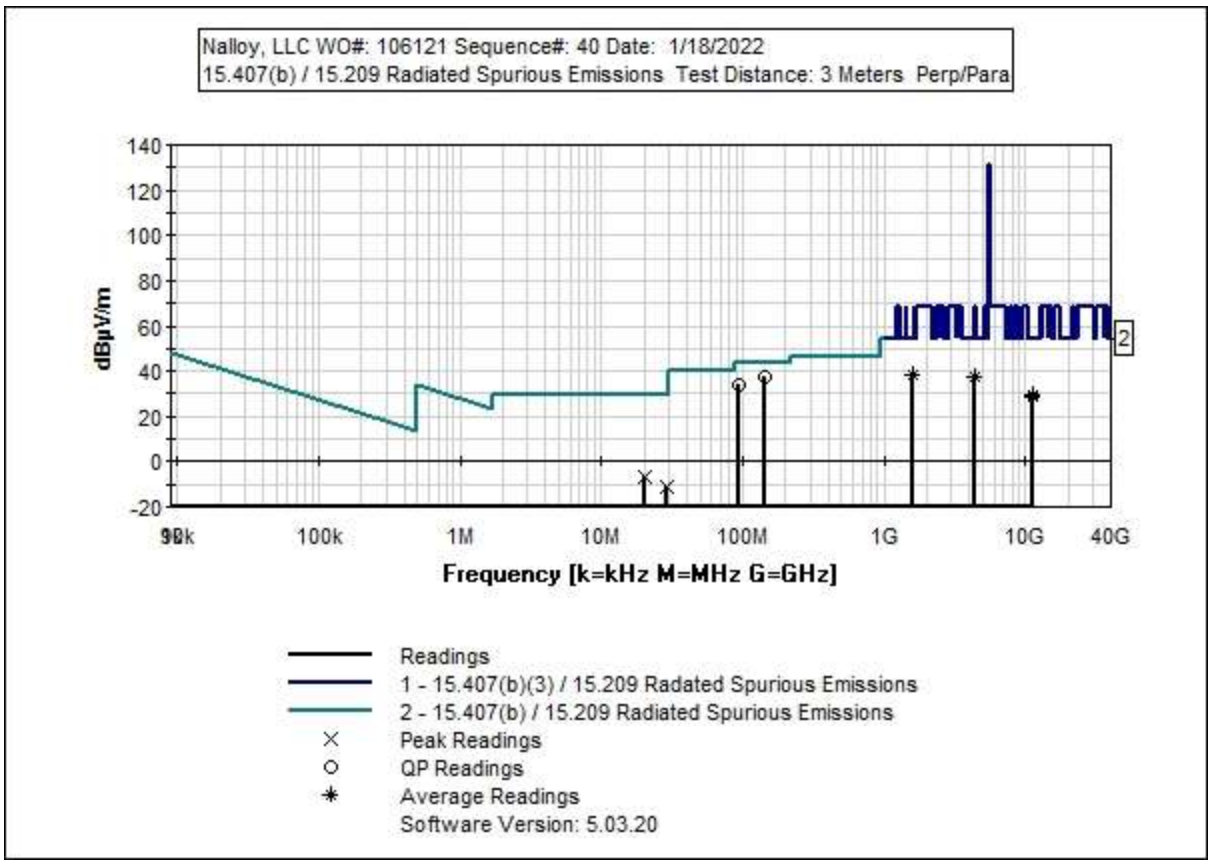
Environmental Conditions:
Temperature: 21°C
Humidity: 45%
Pressure: 101.2kPa

Method: ANSI C63.10: 2013

Frequency range: 9k-40 GHz

Setup:
Antenna 0
Channels: 5530, 5610 MHz
802.11ac80 Band 3
Rate: MCS7
PWR Output: Low: 18 dBm, High: 20 dBm
100% Duty Cycle

Notes:
No EUT Emissions found within 20 dB of the limit above 18GHz


Nalloy, LLC WO#: 106121 Sequence#: 40 Date: 1/18/2022
15.407(b) / 15.209 Radiated Spurious Emissions Test Distance: 3 Meters Perp/Para
dBµV/m
140
120
100
80
60
40
20
0
-20
100k
1M
10M
100M
1G
10G
40G
Frequency [k=kHz M=MHz G=GHz]
2
Readings
1 - 15.407(b)(3) / 15.209 Radated Spurious Emissions
2 - 15.407(b) / 15.209 Radiated Spurious Emissions
Peak Readings
QP Readings
Average Readings
Software Version: 5.03.20

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
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T1	ANP05961	Cable	Heliax	6/9/2021	6/9/2023
T2	ANP06515	Cable	Heliax	7/1/2020	7/1/2022
T3	AN02374ANSI	Horn Antenna	RGA-60	5/25/2021	5/25/2023
T4	AN03540	Preamp	83017A	5/14/2021	5/14/2023
T5	ANP06242	Attenuator	54A-10	1/27/2020	1/27/2022
T6	ANP07505	Cable	CLU40-KMKM-02.00F	1/26/2021	1/26/2023
T7	AN02741	Active Horn Antenna	AMFW-5F-12001800-20-10P	5/13/2021	5/13/2023
	AN02742	Active Horn Antenna	AMFW-5F-18002650-20-10P	11/11/2020	11/11/2022
	AN02743	Active Horn Antenna	AMFW-5F-260400-33-8P	5/11/2021	5/11/2023
	AN02763-69	Waveguide	Multiple	4/28/2020	4/28/2022
	AN02764-70	Waveguide	Multiple	4/28/2020	4/28/2022
	ANP06678	Cable	32026-29801-29801-144	2/20/2020	2/20/2022
	ANP07211	Cable	32026-29801-29801-18	6/16/2021	6/16/2023
	ANP07504	Cable	CLU40-KMKM-02.00F	1/26/2021	1/26/2023
T8	AN02307	Preamp	8447D	1/6/2022	1/6/2024
T9	AN03628	Biconilog Antenna	3142E	6/3/2021	6/3/2023
T10	ANP05360	Cable	RG214	2/3/2020	2/3/2022
T11	ANP06011	Cable	Heliax	8/7/2020	8/7/2022
T12	AN00052	Loop Antenna	6502	5/4/2020	5/4/2022

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

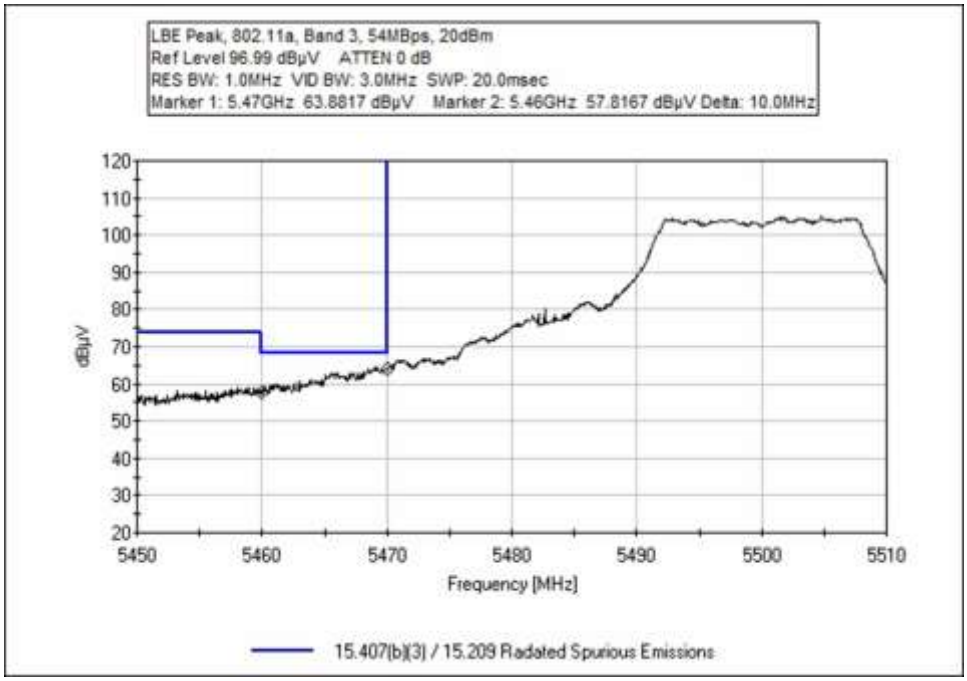
#	Freq	Rdng	T1 T5 T9	T2 T6 T10	T3 T7 T11	T4 T8 T12	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	143.310M	50.0	+0.0	+0.6	+0.0	+0.0	+0.0	37.8	43.5	-5.7	Vert
	QP		+0.0	+0.0	+0.0	-27.6					
			+13.9	+0.7	+0.2	+0.0					
^	143.310M	53.8	+0.0	+0.6	+0.0	+0.0	+0.0	41.6	43.5	-1.9	Vert
			+0.0	+0.0	+0.0	-27.6					
			+13.9	+0.7	+0.2	+0.0					
3	94.390M	47.0	+0.0	+0.5	+0.0	+0.0	+0.0	33.6	43.5	-9.9	Vert
	QP		+0.0	+0.0	+0.0	-27.7					
			+13.1	+0.6	+0.1	+0.0					
^	94.390M	50.8	+0.0	+0.5	+0.0	+0.0	+0.0	37.4	43.5	-6.1	Vert
			+0.0	+0.0	+0.0	-27.7					
			+13.1	+0.6	+0.1	+0.0					
5	1574.850M	34.8	+0.8	+2.2	+25.6	-35.1	+0.0	38.2	54.0	-15.8	Vert
	Ave		+9.7	+0.2	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
^	1574.850M	49.9	+0.8	+2.2	+25.6	-35.1	+0.0	53.3	54.0	-0.7	Vert
			+9.7	+0.2	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
7	4348.000M	23.6	+1.5	+3.6	+32.2	-33.4	+0.0	37.1	54.0	-16.9	Vert
	Ave		+9.3	+0.3	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
^	4348.000M	39.6	+1.5	+3.6	+32.2	-33.4	+0.0	53.1	54.0	-0.9	Vert
			+9.3	+0.3	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
9	11201.100 M	33.5	+2.2	+6.8	+0.0	+0.0	+0.0	29.9	54.0	-24.1	Vert
			+0.0	+0.0	-12.6	+0.0					
	Ave		+0.0	+0.0	+0.0	+0.0					
^	11201.100 M	50.5	+2.2	+6.8	+0.0	+0.0	+0.0	46.9	54.0	-7.1	Vert
			+0.0	+0.0	-12.6	+0.0					
			+0.0	+0.0	+0.0	+0.0					
11	11058.900 M	32.6	+2.0	+6.6	+0.0	+0.0	+0.0	28.5	54.0	-25.5	Vert
			+0.0	+0.0	-12.7	+0.0					
	Ave		+0.0	+0.0	+0.0	+0.0					
^	11058.900 M	49.5	+2.0	+6.6	+0.0	+0.0	+0.0	45.4	54.0	-8.6	Vert
			+0.0	+0.0	-12.7	+0.0					
			+0.0	+0.0	+0.0	+0.0					
13	20.329M	26.3	+0.0	+0.2	+0.0	+0.0	-40.0	-6.3	29.5	-35.8	Perp/
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0	+7.2					
14	28.687M	23.4	+0.0	+0.3	+0.0	+0.0	-40.0	-11.4	29.5	-40.9	Perp/
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.1	+4.8					

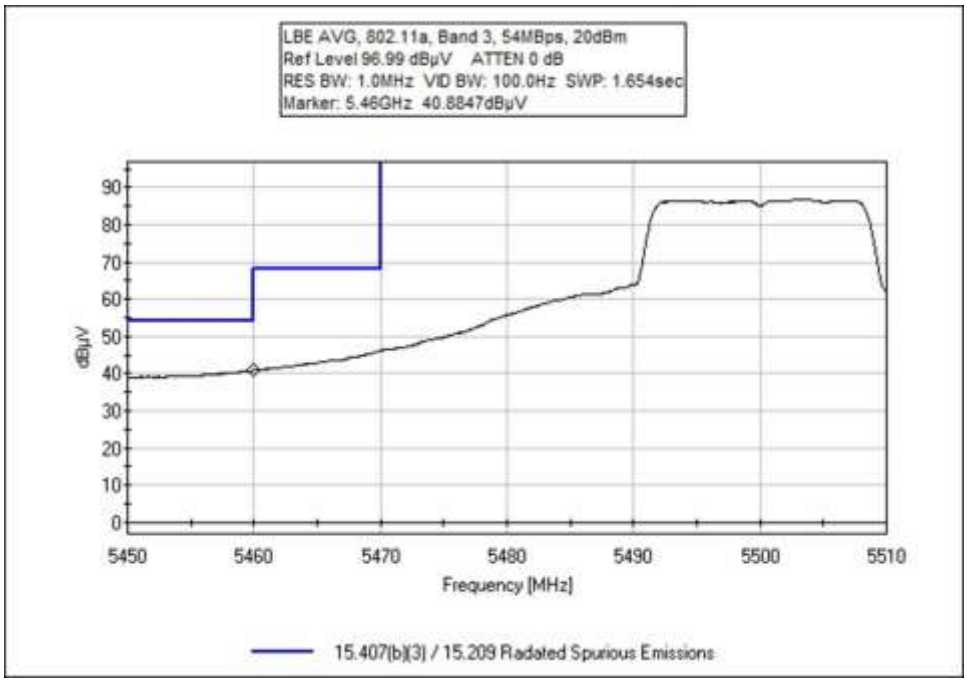
Band Edge

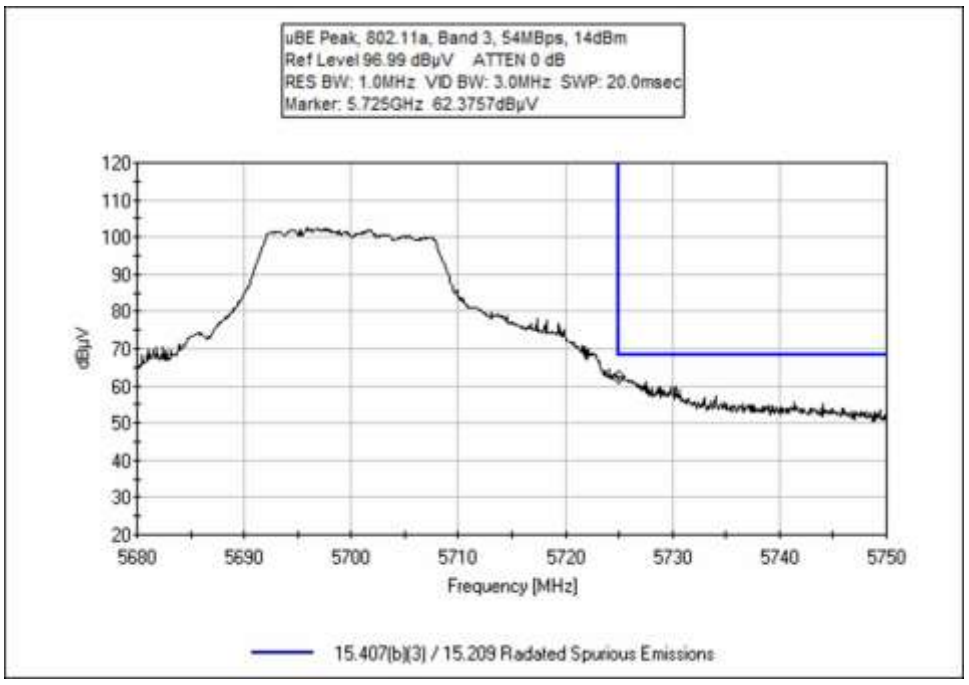
Band Edge Summary					
Frequency (MHz)	**Modulation**	**Ant. Type**	**Field Strength (dBuV/m @3m)**	**Limit (dBuV/m @3m)**	**Results**
5460*	802.11a	Omnidirectional / 3.8dBi	40.9	< 54.0 Av	Pass
5470	802.11a	Omnidirectional / 3.8dBi	63.9	< 68.2 PK	Pass
5725	802.11a	Omnidirectional / 3.8dBi	62.4	< 68.2 PK	Pass
5460*	802.11n20	Omnidirectional / 3.8dBi	40.5	< 54.0 Av	Pass
5470	802.11n20	Omnidirectional / 3.8dBi	64.0	< 68.2 PK	Pass
5725	802.11n20	Omnidirectional / 3.8dBi	65.2	< 68.2 PK	Pass
5460*	802.11n40	Omnidirectional / 3.8dBi	43.0	< 54.0 Av	Pass
5470	802.11n40	Omnidirectional / 3.8dBi	65.2	< 68.2 PK	Pass
5725	802.11n40	Omnidirectional / 3.8dBi	61.9	< 68.2 PK	Pass
5460*	802.11ac20	Omnidirectional / 3.8dBi	39.0	< 54.0 Av	Pass
5470	802.11ac20	Omnidirectional / 3.8dBi	62.7	< 68.2 PK	Pass
5725	802.11ac20	Omnidirectional / 3.8dBi	61.4	< 68.2 PK	Pass
5460*	802.11ac40	Omnidirectional / 3.8dBi	40.8	< 54.0 Av	Pass
5470	802.11ac40	Omnidirectional / 3.8dBi	62.7	< 68.2 PK	Pass
5725	802.11ac40	Omnidirectional / 3.8dBi	64.6	< 68.2 PK	Pass
5460*	802.11ac80	Omnidirectional / 3.8dBi	43.8	< 54.0 Av	Pass
5470	802.11ac80	Omnidirectional / 3.8dBi	63.7	< 68.2 PK	Pass
5725	802.11ac80	Omnidirectional / 3.8dBi	58.0	< 68.2 PK	Pass

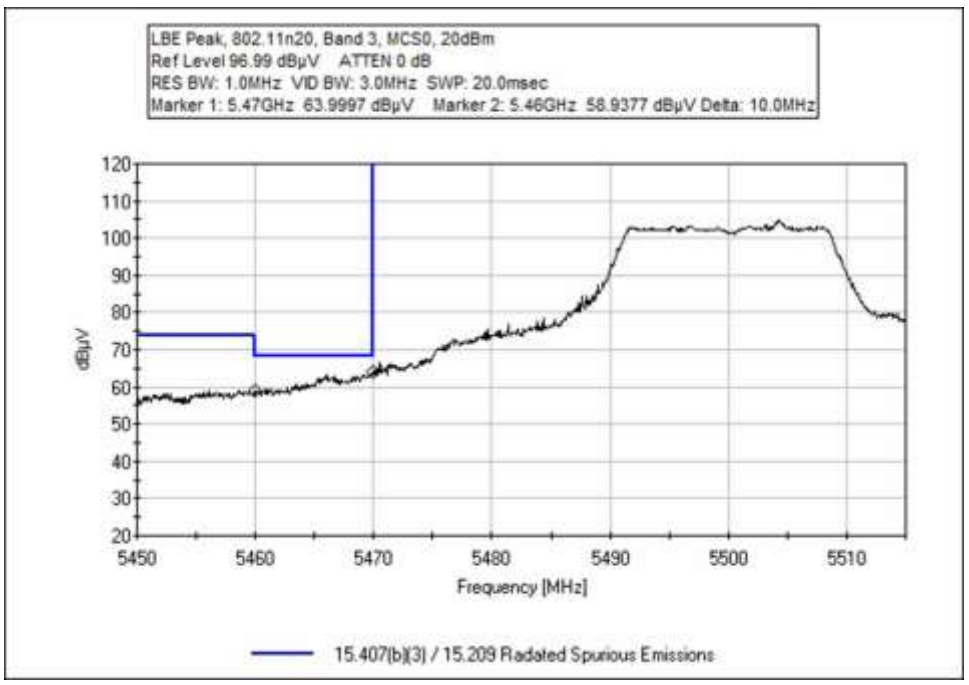
* restricted band

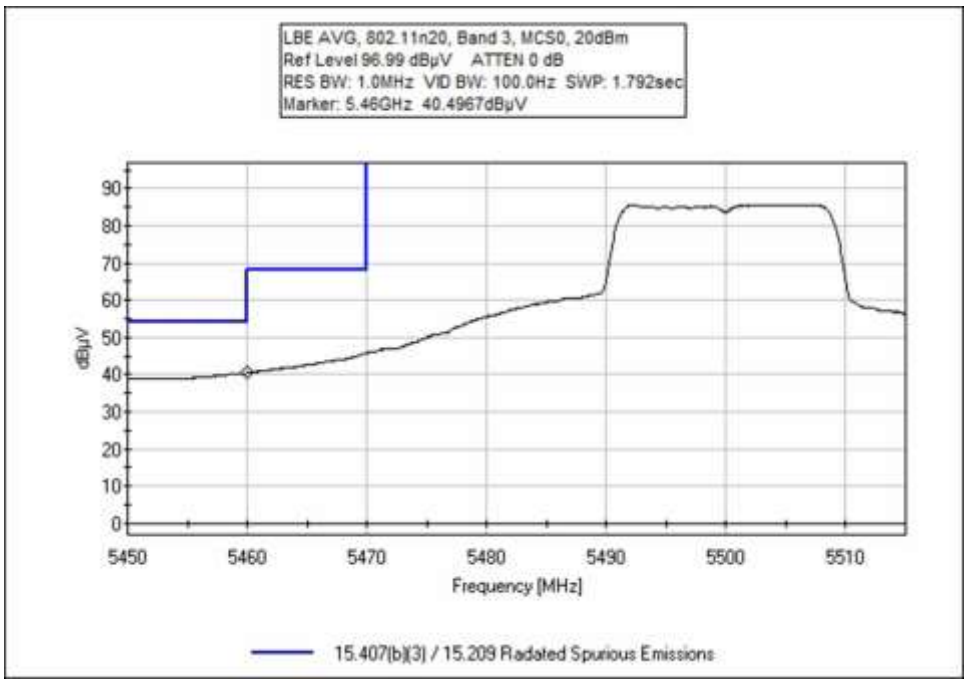
Band Edge Plots

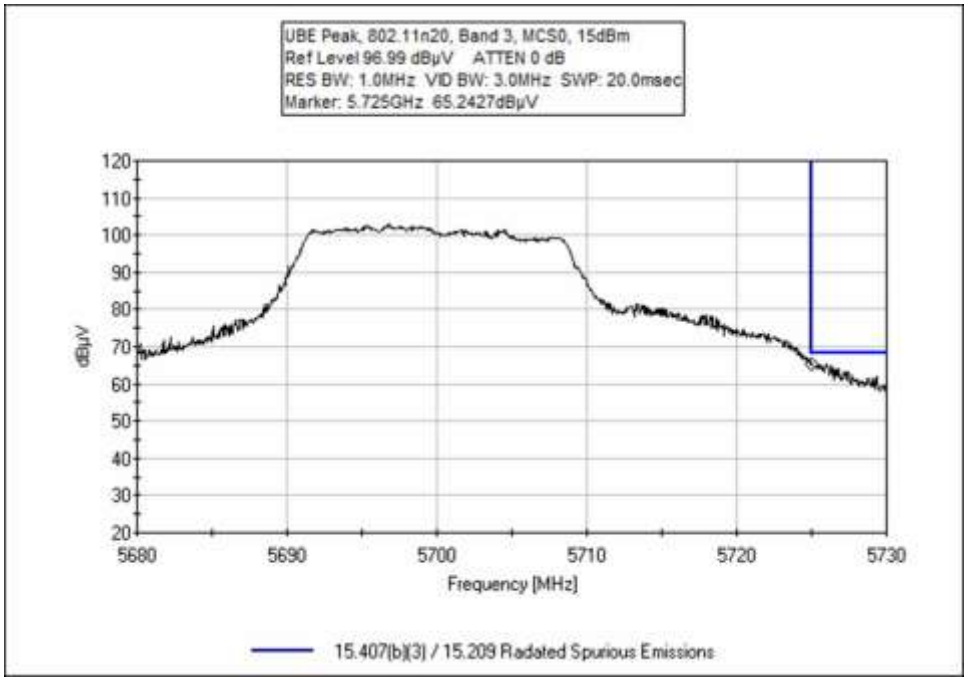


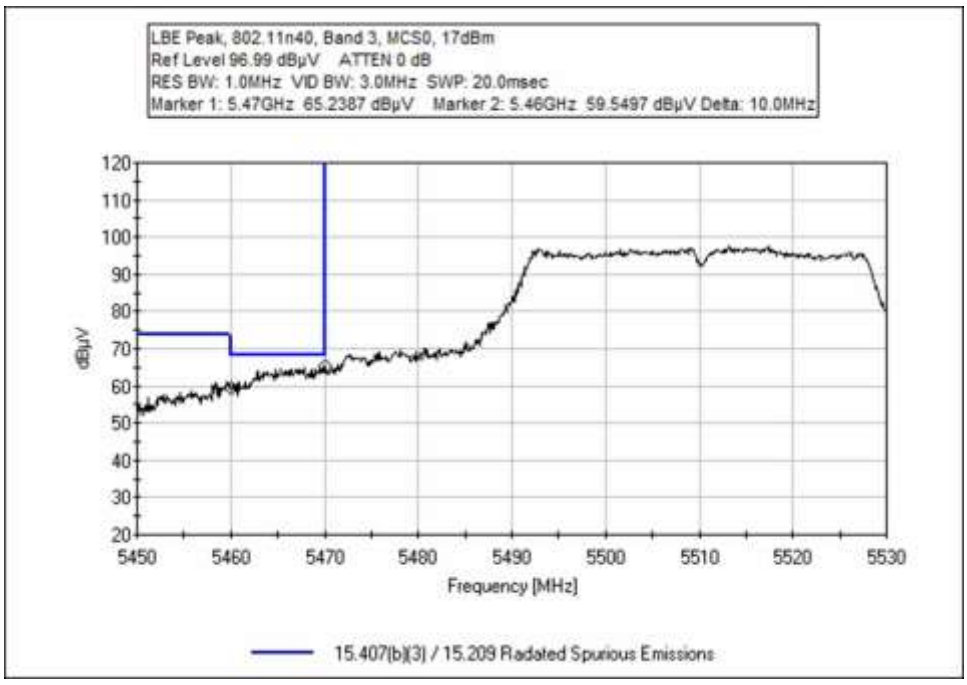


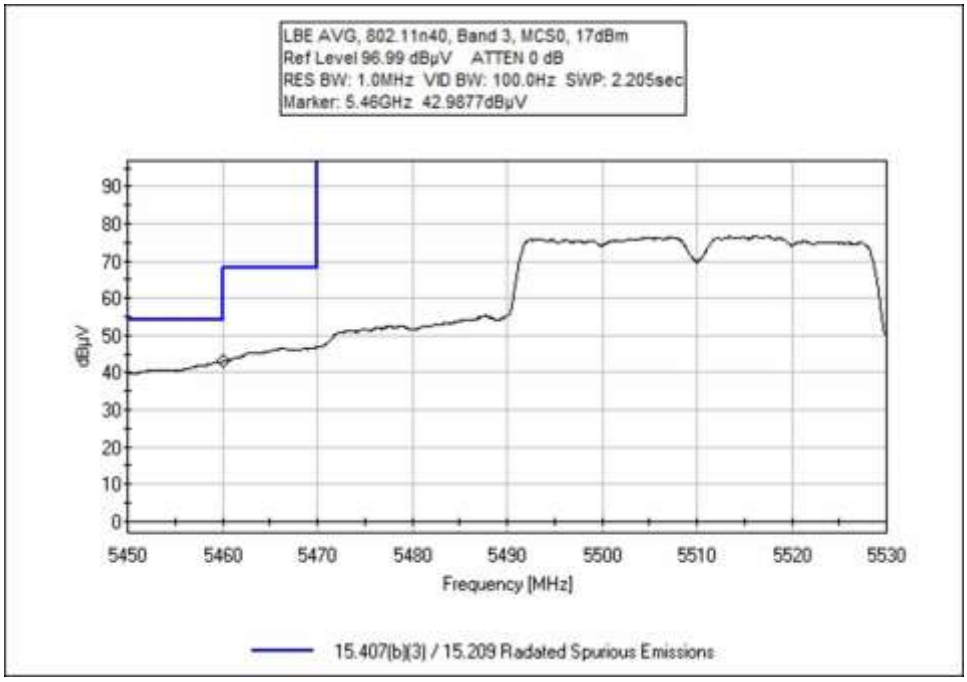

uBE Peak, 802.11a, Band 3, 54MBps, 14dBm
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 1.0MHz VID BW: 3.0MHz SWP: 20.0msec
Marker: 5.725GHz 62.3757dBµV
dBµV
Frequency [MHz]
15.407(b)(3) / 15.209 Radated Spurious Emissions

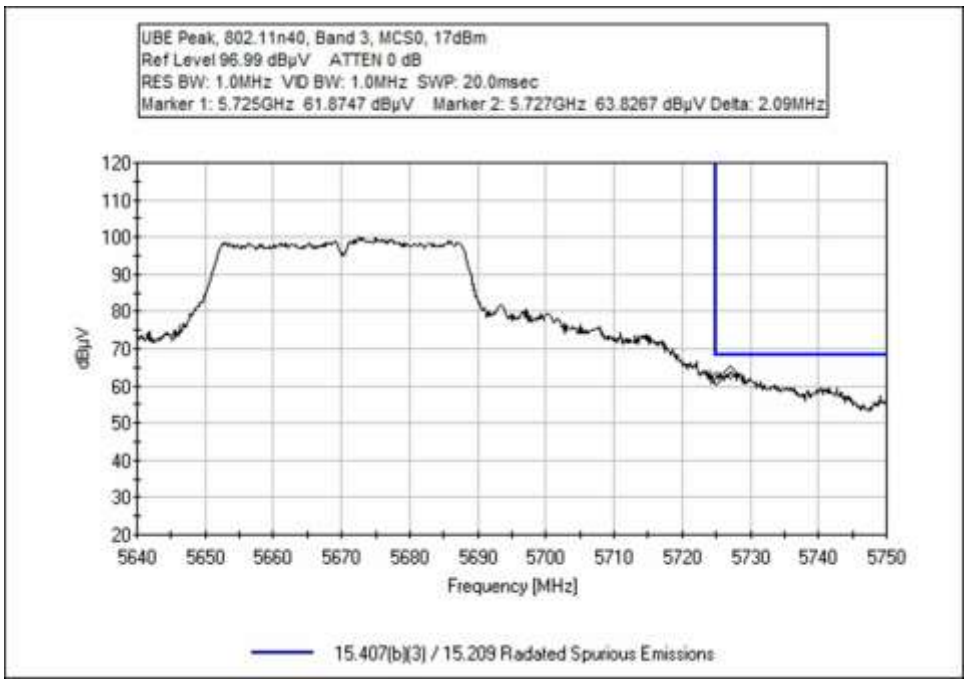

LBE Peak, 802.11n20, Band 3, MCS0, 20dBm
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 1.0MHz VID BW: 3.0MHz SWP: 20.0msec
Marker 1: 5.47GHz 63.9997 dBµV Marker 2: 5.46GHz 58.9377 dBµV Delta: 10.0MHz
dBµV
Frequency [MHz]
15.407(b)(3) / 15.209 Radated Spurious Emissions

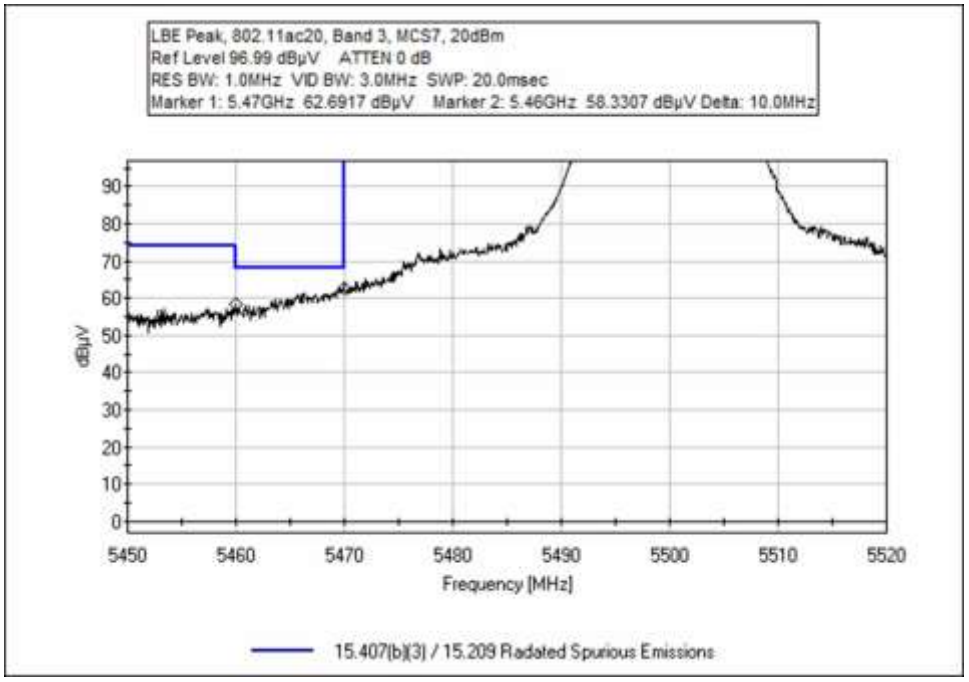

LBE AVG, 802.11n20, Band 3, MCS0, 20dBm
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 1.0MHz VID BW: 100.0Hz SWP: 1.792sec
Marker: 5.46GHz 40.4967dBµV
dBµV
Frequency [MHz]
15.407(b)(3) / 15.209 Radated Spurious Emissions

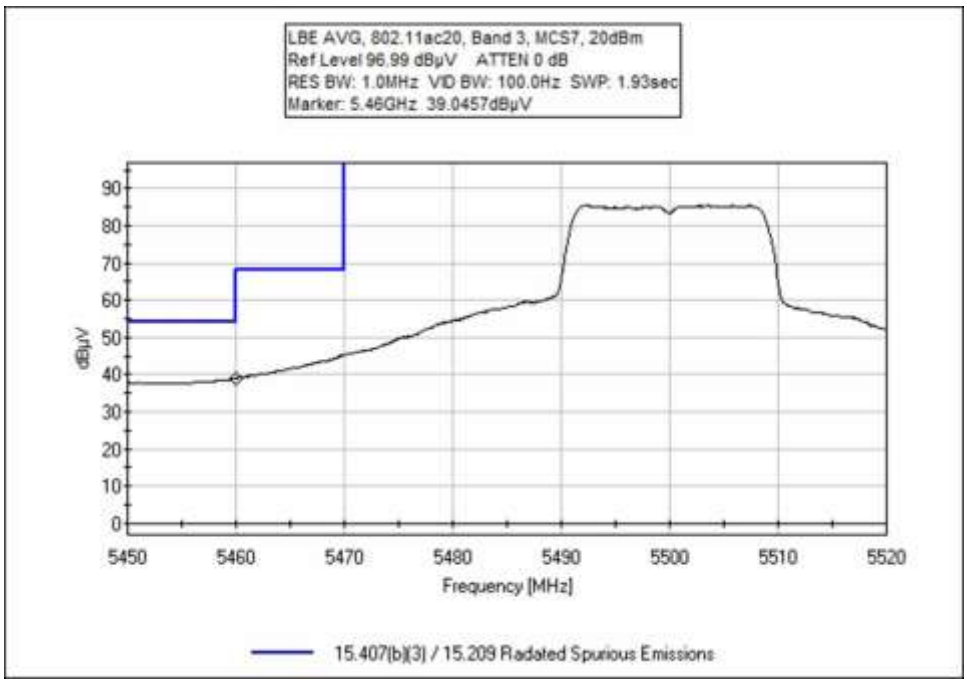

UBE Peak, 802.11n20, Band 3, MCS0, 15dBm
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 1.0MHz VID BW: 3.0MHz SWP: 20.0msec
Marker: 5.725GHz 65.2427dBµV
dBµV
Frequency [MHz]
15.407(b)(3) / 15.209 Radated Spurious Emissions

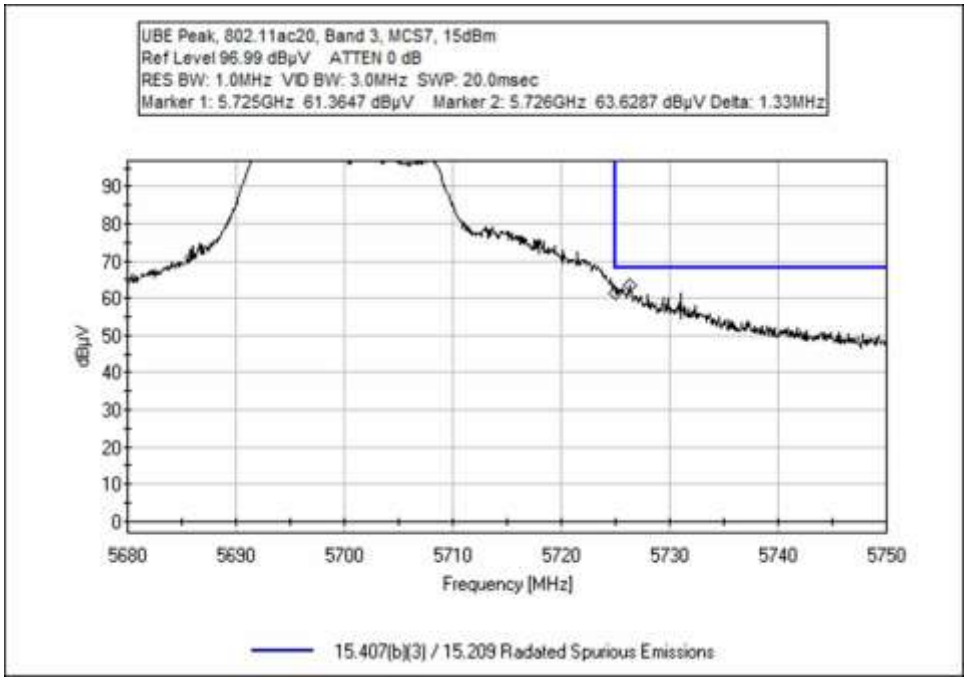

LBE Peak, 802.11n40, Band 3, MCS0, 17dBm
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 1.0MHz VID BW: 3.0MHz SWP: 20.0msec
Marker 1: 5.47GHz 65.2387 dBµV Marker 2: 5.46GHz 59.5497 dBµV Delta: 10.0MHz
dBµV
Frequency [MHz]
15.407(b)(3) / 15.209 Radated Spurious Emissions

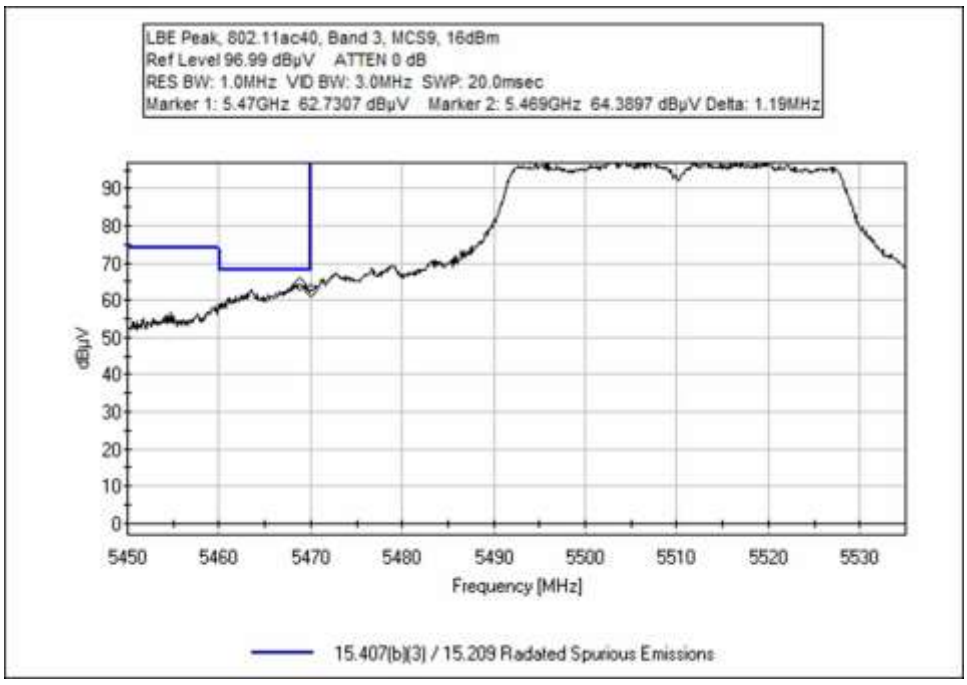

LBE AVG, 802.11n40, Band 3, MCS0, 17dBm
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 1.0MHz VID BW: 100.0Hz SWP: 2.205sec
Marker: 5.46GHz 42.9877dBµV
dBµV
Frequency [MHz]
15.407(b)(3) / 15.209 Radated Spurious Emissions

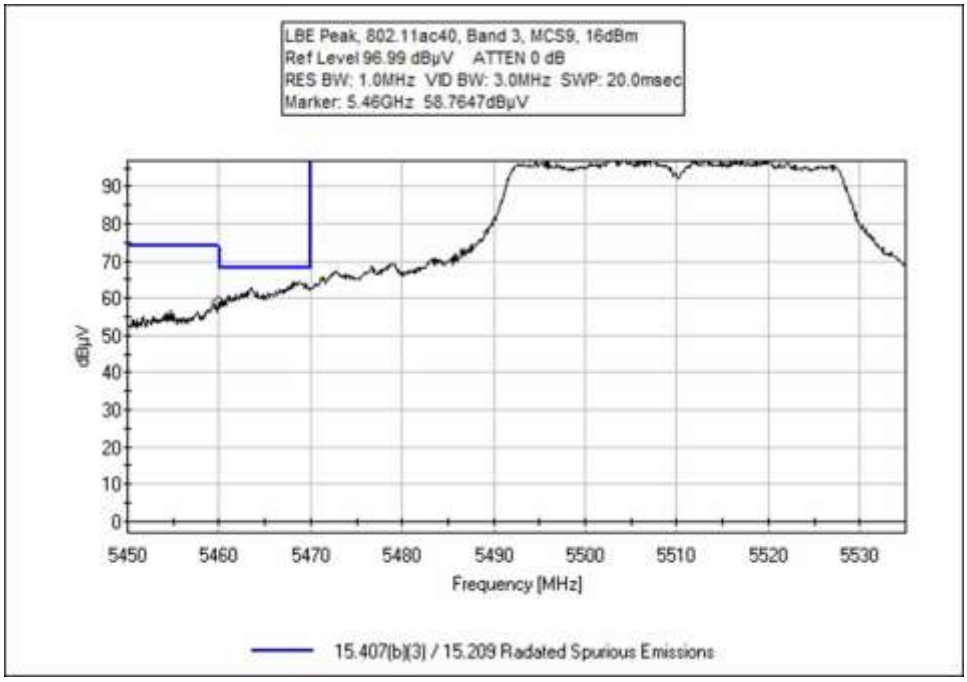

UBE Peak, 802.11n40, Band 3, MCS0, 17dBm
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 1.0MHz VID BW: 1.0MHz SWP: 20.0msec
Marker 1: 5.725GHz 61.8747 dBµV Marker 2: 5.727GHz 63.8267 dBµV Delta: 2.09MHz
dBµV
Frequency [MHz]
15.407(b)(3) / 15.209 Radated Spurious Emissions

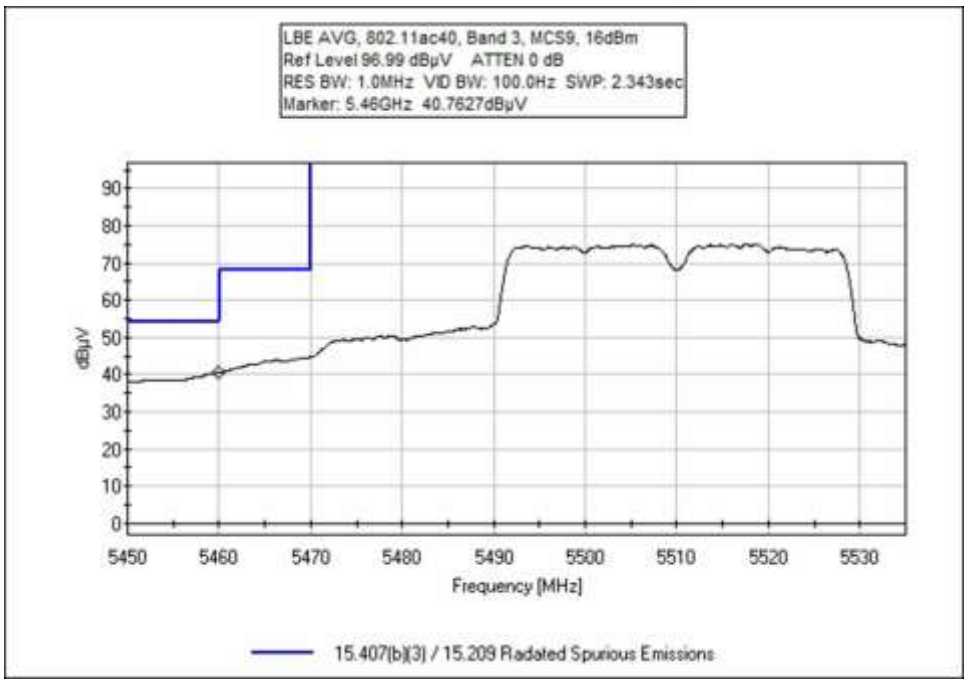

LBE Peak, 802.11ac20, Band 3, MCS7, 20dBm
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 1.0MHz VID BW: 3.0MHz SWP: 20.0msec
Marker 1: 5.47GHz 62.6917 dBµV Marker 2: 5.46GHz 58.3307 dBµV Delta: 10.0MHz
dBµV
Frequency [MHz]
15.407(b)(3) / 15.209 Radated Spurious Emissions

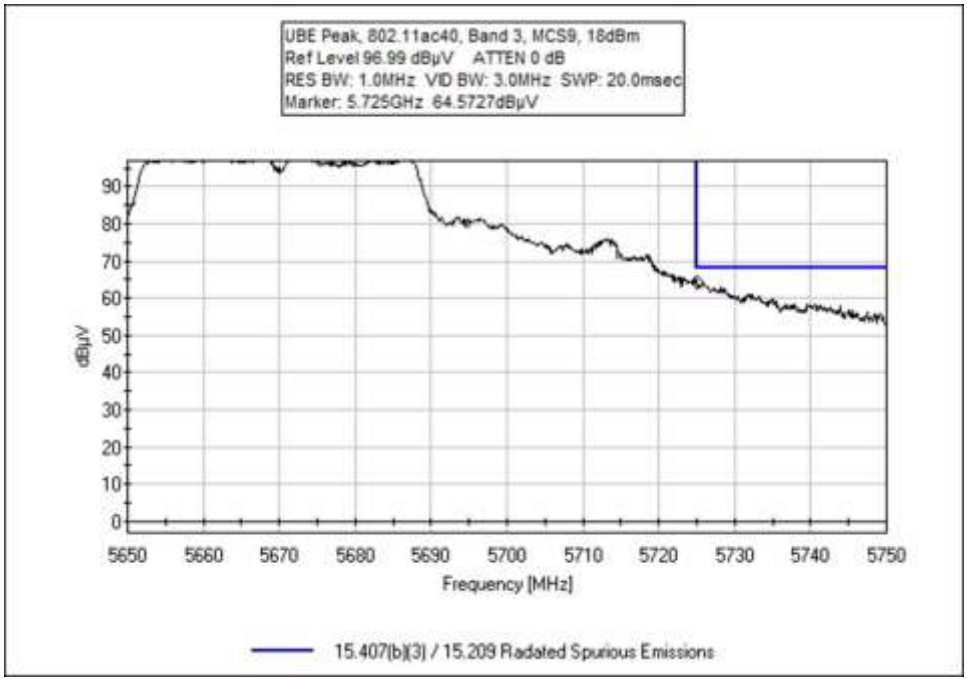

LBE AVG, 802.11ac20, Band 3, MCS7, 20dBm
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 1.0MHz VID BW: 100.0Hz SWP: 1.93sec
Marker: 5.46GHz 39.0457dBµV
dBµV
Frequency [MHz]
15.407(b)(3) / 15.209 Radated Spurious Emissions

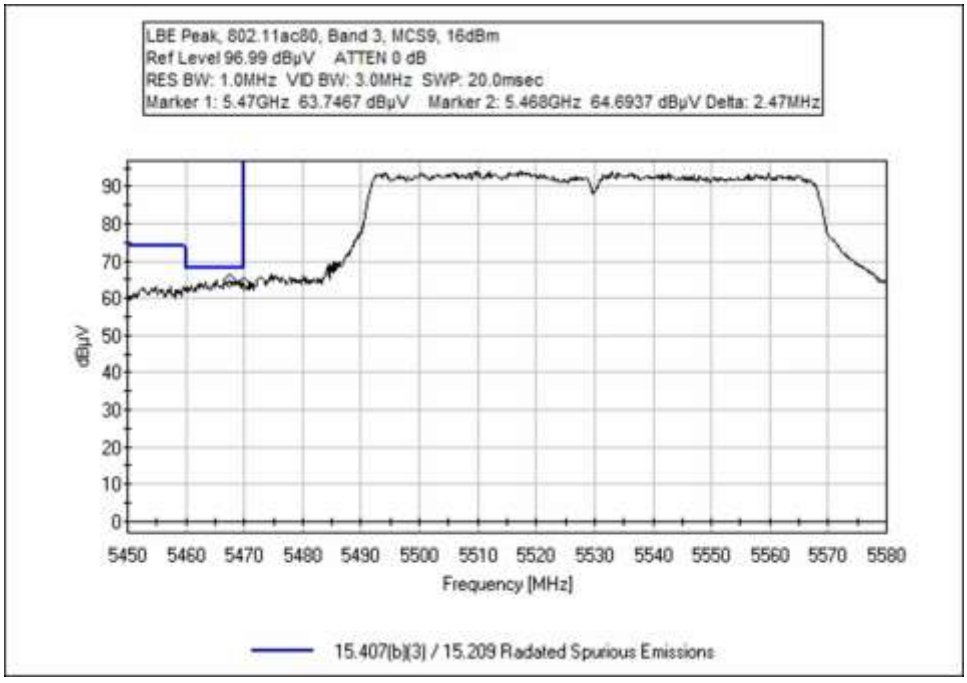

UBE Peak, 802.11ac20, Band 3, MCS7, 15dBm
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 1.0MHz VID BW: 3.0MHz SWP: 20.0msec
Marker 1: 5.725GHz 61.3647 dBµV Marker 2: 5.726GHz 63.6287 dBµV Delta: 1.33MHz
dBµV
Frequency [MHz]
15.407(b)(3) / 15.209 Radated Spurious Emissions

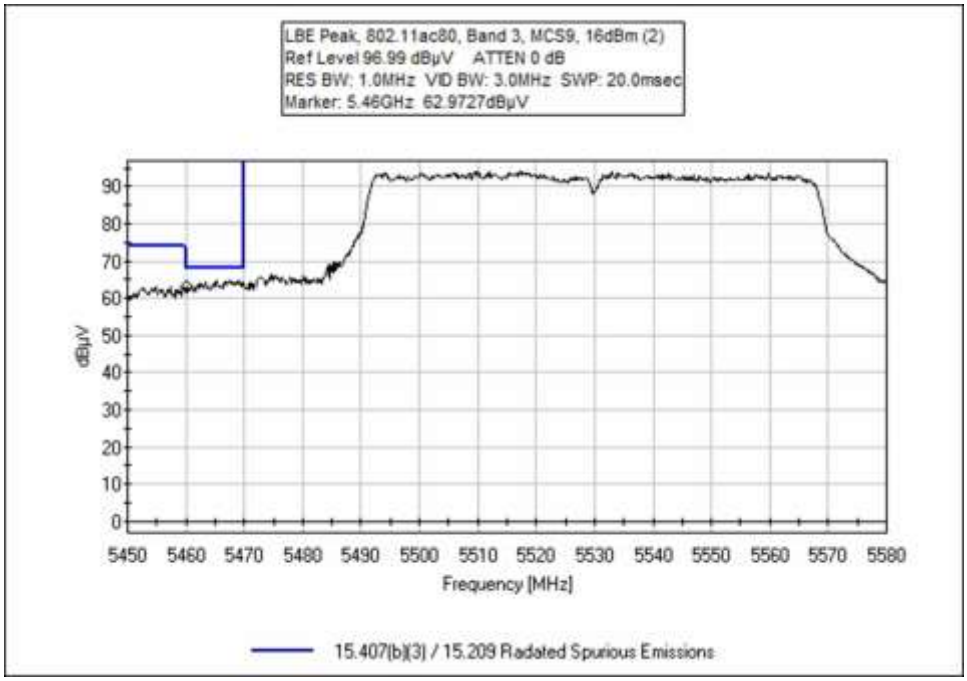

LBE Peak, 802.11ac40, Band 3, MCS9, 16dBm
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 1.0MHz VID BW: 3.0MHz SWP: 20.0msec
Marker 1: 5.47GHz 62.7307 dBµV Marker 2: 5.469GHz 64.3897 dBµV Delta: 1.19MHz
dBµV
90
80
70
60
50
40
30
20
10
0
5450
5460
5470
5480
5490
5500
5510
5520
5530
Frequency [MHz]
15.407(b)(3) / 15.209 Radated Spurious Emissions

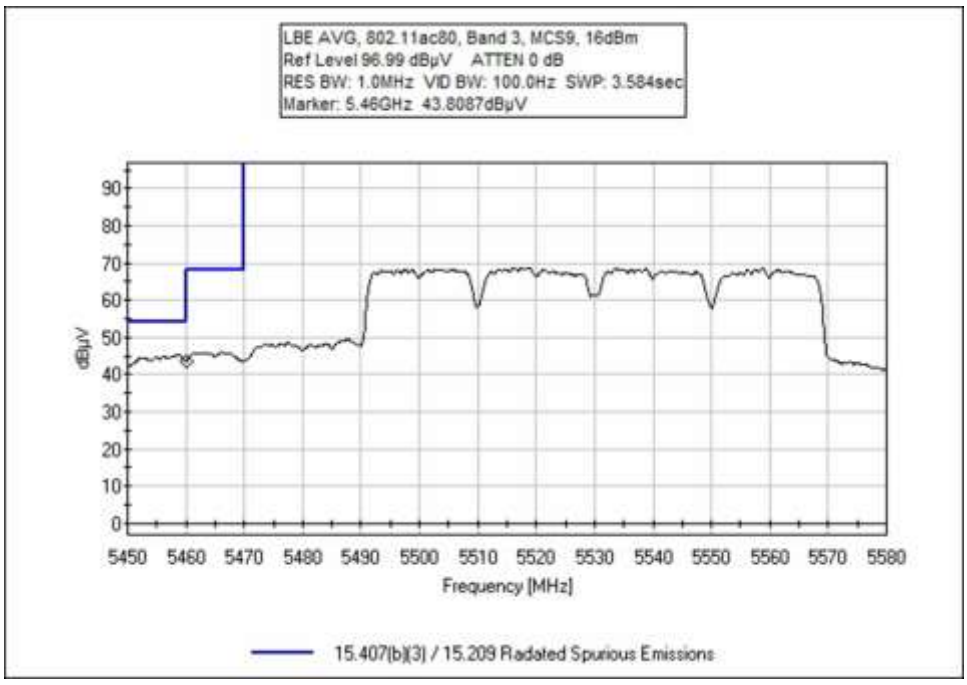

LBE Peak, 802.11ac40, Band 3, MCS9, 16dBm
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 1.0MHz VID BW: 3.0MHz SWP: 20.0msec
Marker: 5.46GHz 58.7647dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
5450
5460
5470
5480
5490
5500
5510
5520
5530
Frequency [MHz]
15.407(b)(3) / 15.209 Radated Spurious Emissions

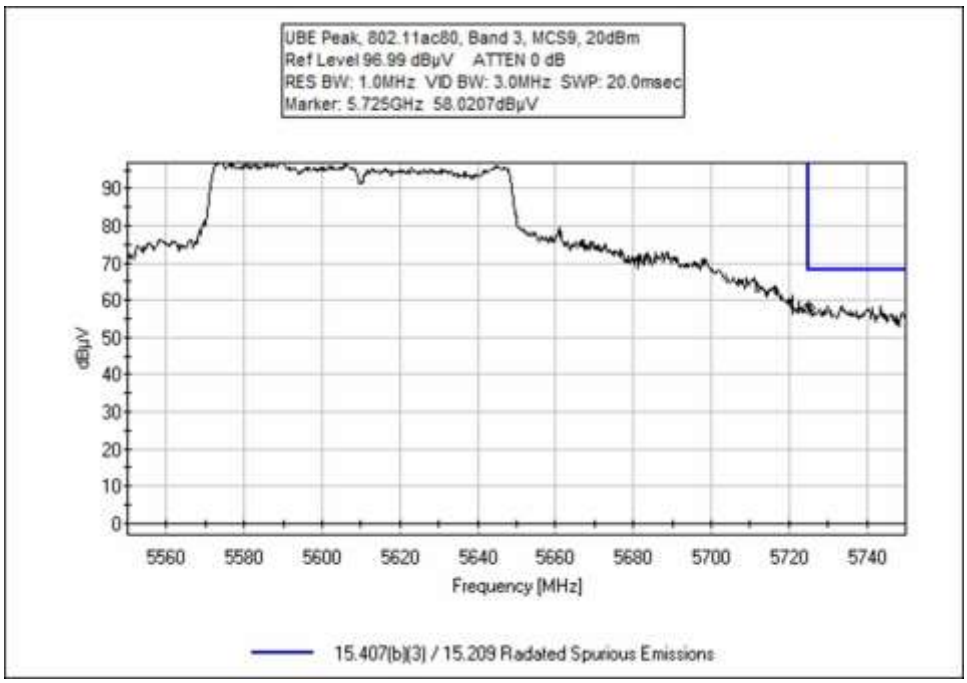

LBE AVG, 802.11ac40, Band 3, MCS9, 16dBm
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 1.0MHz VID BW: 100.0Hz SWP: 2.343sec
Marker: 5.46GHz 40.7627dBµV
dBµV
Frequency [MHz]
15.407(b)(3) / 15.209 Radated Spurious Emissions


UBE Peak, 802.11ac40, Band 3, MCS9, 18dBm
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 1.0MHz VID BW: 3.0MHz SWP: 20.0msec
Marker: 5.725GHz 64.5727dBµV
dBµV
Frequency [MHz]
15.407(b)(3) / 15.209 Radated Spurious Emissions


LBE Peak, 802.11ac80, Band 3, MCS9, 16dBm
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 1.0MHz VID BW: 3.0MHz SWP: 20.0msec
Marker 1: 5.47GHz 63.7467 dBµV Marker 2: 5.468GHz 64.6937 dBµV Delta: 2.47MHz
dBµV
Frequency [MHz]
15.407(b)(3) / 15.209 Radated Spurious Emissions


LBE Peak, 802.11ac80, Band 3, MCS9, 16dBm (2)
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 1.0MHz VID BW: 3.0MHz SWP: 20.0msec
Marker: 5.46GHz 62.9727dBµV
dBµV
Frequency [MHz]
15.407(b)(3) / 15.209 Radated Spurious Emissions


LBE AVG, 802.11ac80, Band 3, MCS9, 16dBm
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 1.0MHz VID BW: 100.0Hz SWP: 3.584sec
Marker: 5.46GHz 43.8087dBµV
dBµV
Frequency [MHz]
15.407(b)(3) / 15.209 Radated Spurious Emissions


UBE Peak, 802.11ac80, Band 3, MCS9, 20dBm
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 1.0MHz VID BW: 3.0MHz SWP: 20.0msec
Marker: 5.725GHz 58.0207dBµV
dBµV
Frequency [MHz]
15.407(b)(3) / 15.209 Radated Spurious Emissions

Test Setup / Conditions / Data

Test Location:	CKC Laboratories, Inc. • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)		
Customer:	**Nalloy, LLC**		
Specification:	**15.407(b)(3) / 15.209 Radiated Spurious Emissions**		
Work Order #:	**106407**	Date:	1/19/2022
Test Type:	**Maximized Emissions**	Time:	13:21:25
Tested By:	M. Harrison	Sequence#:	17
Software:	EMITest 5.03.20		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

Environmental Conditions:
Temperature: 21°C
Humidity: 45%
Pressure: 101.2kPa

Method: ANSI C63.10: 2013

Frequency range: 5.47-5.725 GHz

Setup:
Antenna 0
Channels: 5500, 5700 MHz
802.11a Band 3
Rate: 54 Mbps
PWR Output: Low/Mid: 20 dBm, High: 14 dBm
100% Duty Cycle

Notes:
All data rates explored, worst case provided.
Band Edge Measurements were performed with correct factors loaded into Spectrum Analyzer.

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02673	Spectrum Analyzer	E4446A	2/3/2021	2/3/2023
	ANP06515	Cable	Heliax	7/1/2020	7/1/2022
	AN02374ANSI	Horn Antenna	RGA-60	5/25/2021	5/25/2023
	AN03540	Preamp	83017A	5/14/2021	5/14/2023
	ANP06242	Attenuator	54A-10	1/27/2020	1/27/2022
	ANP07505	Cable	CLU40-KMKM-02.00F	1/26/2021	1/26/2023
	ANP05961	Cable	Heliax	6/9/2021	6/9/2023

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq MHz	Rdng dBµV	T1 dB	dB	dB	dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	5470.000M	63.9	+0.0				+0.0	63.9	68.2 5500, 54Mbps, 20dBm	-4.3	Horiz
2	5725.000M	62.4	+0.0				+0.0	62.4	68.2 5700, 54Mbps, 14dBm	-5.8	Horiz
3	5460.000M Ave	40.9	+0.0				+0.0	40.9	54.0 5500, 54Mbps, 20dBm	-13.1	Horiz
^	5460.000M	57.8	+0.0				+0.0	57.8	68.2 5500, 54Mbps, 20dBm	-10.4	Horiz

Test Location:	CKC Laboratories, Inc. • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)		
Customer:	**Nalloy, LLC**		
Specification:	**15.407(b)(3) / 15.209 Radiated Spurious Emissions**		
Work Order #:	**106407**	Date:	1/19/2022
Test Type:	**Maximized Emissions**	Time:	13:58:06
Tested By:	M. Harrison	Sequence#:	18
Software:	EMITest 5.03.20		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

Environmental Conditions:
Temperature: 21°C
Humidity: 45%
Pressure: 101.2kPa

Method: ANSI C63.10: 2013

Frequency range: 5.47-5.725 GHz

Setup:
Antenna 0
Channels: 5500, 5700 MHz
802.11n20 Band 3
Rate: MCS0-7
PWR Output: Low/Mid: 20 dBm, High: 15 dBm
100% Duty Cycle

Notes:
All data rates explored, worst case provided.
Band Edge Measurements were performed with correct factors loaded into Spectrum Analyzer.

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02673	Spectrum Analyzer	E4446A	2/3/2021	2/3/2023
	ANP05961	Cable	Heliax	6/9/2021	6/9/2023
	ANP06515	Cable	Heliax	7/1/2020	7/1/2022
	AN02374ANSI	Horn Antenna	RGA-60	5/25/2021	5/25/2023
	AN03540	Preamp	83017A	5/14/2021	5/14/2023
	ANP06242	Attenuator	54A-10	1/27/2020	1/27/2022
	ANP07505	Cable	CLU40-KMKM-02.00F	1/26/2021	1/26/2023

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq MHz	Rdng dBµV	T1 dB	dB	dB	dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	5725.000M	65.2	+0.0				+0.0	65.2	68.2 5700, MCS7, 15dBm	-3.0	Horiz
2	5470.000M	64.0	+0.0				+0.0	64.0	68.2 5500, MCS7, 20dBm	-4.2	Horiz
3	5460.000M Ave	40.5	+0.0				+0.0	40.5	54.0 5500, MCS7, 20dBm	-13.5	Horiz
^	5460.000M	58.9	+0.0				+0.0	58.9	68.2 5500, MCS7, 20dBm	-9.3	Horiz

Test Location:	CKC Laboratories, Inc. • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)		
Customer:	**Nalloy, LLC**		
Specification:	**15.407(b)(3) / 15.209 Radiated Spurious Emissions**		
Work Order #:	**106407**	Date:	1/20/2022
Test Type:	**Maximized Emissions**	Time:	09:38:43
Tested By:	M. Harrison	Sequence#:	19
Software:	EMITest 5.03.20		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

Environmental Conditions:
Temperature: 21°C
Humidity: 45%
Pressure: 101.2kPa

Method: ANSI C63.10: 2013

Frequency range: 5.47-5.725 GHz

Setup:
Antenna 0
Channels: 5510, 5670 MHz
802.11n40 Band 3
Rate: MCS0-7
PWR Output: 17 dBm
100% Duty Cycle

Notes:
All data rates explored, worst case provided.
Band Edge Measurements were performed with correct factors loaded into Spectrum Analyzer.

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02673	Spectrum Analyzer	E4446A	2/3/2021	2/3/2023
	ANP05961	Cable	Heliax	6/9/2021	6/9/2023
	ANP06515	Cable	Heliax	7/1/2020	7/1/2022
	AN02374ANSI	Horn Antenna	RGA-60	5/25/2021	5/25/2023
	AN03540	Preamp	83017A	5/14/2021	5/14/2023
	ANP06242	Attenuator	54A-10	1/27/2020	1/27/2022
	ANP07505	Cable	CLU40-KMKM-02.00F	1/26/2021	1/26/2023

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq MHz	Rdng dBµV	T1 dB	dB	dB	dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	5470.000M	65.2	+0.0				+0.0	65.2	68.2 5510, MCS7, 17dBm	-3.0	Horiz
2	5727.090M	63.8	+0.0				+0.0	63.8	68.2 5670, MCS7, 17dBm	-4.4	Horiz
3	5725.000M	61.9	+0.0				+0.0	61.9	68.2 5670, MCS7, 17dBm	-6.3	Horiz
4	5460.000M Ave	43.0	+0.0				+0.0	43.0	54.0 5510, MCS7, 17dBm	-11.0	Horiz
^	5460.000M	59.5	+0.0				+0.0	59.5	68.2 5510, MCS7, 17dBm	-8.7	Horiz

Test Location:	CKC Laboratories, Inc. • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)		
Customer:	**Nalloy, LLC**		
Specification:	**15.407(b)(3) / 15.209 Radiated Spurious Emissions**		
Work Order #:	**106407**	Date:	1/20/2022
Test Type:	**Maximized Emissions**	Time:	10:39:04
Tested By:	M. Harrison	Sequence#:	20
Software:	EMITest 5.03.20		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

Environmental Conditions:
Temperature: 21°C
Humidity: 45%
Pressure: 101.2kPa

Method: ANSI C63.10: 2013

Frequency range: 5.47-5.725 GHz

Setup:
Antenna 0
Channels: 5500, 5700 MHz
802.11ac20 Band 3
Rate: MCS0-8
PWR Output: Low/Mid: 20 dBm, High: 15 dBm
100% Duty Cycle

Notes:
All data rates explored, worst case provided.
Band Edge Measurements were performed with correct factors loaded into Spectrum Analyzer.

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02673	Spectrum Analyzer	E4446A	2/3/2021	2/3/2023
	ANP05961	Cable	Heliax	6/9/2021	6/9/2023
	ANP06515	Cable	Heliax	7/1/2020	7/1/2022
	AN02374ANSI	Horn Antenna	RGA-60	5/25/2021	5/25/2023
	AN03540	Preamp	83017A	5/14/2021	5/14/2023
	ANP06242	Attenuator	54A-10	1/27/2020	1/27/2022
	ANP07505	Cable	CLU40-KMKM-02.00F	1/26/2021	1/26/2023

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq MHz	Rdng dBµV	T1 dB	dB	dB	dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	5726.330M	63.6	+0.0				+0.0	63.6	68.2 5700, MCS7, 15dBm	-4.6	Horiz
2	5470.000M	62.7	+0.0				+0.0	62.7	68.2 5500, MCS7, 20dBm	-5.5	Horiz
3	5725.000M	61.4	+0.0				+0.0	61.4	68.2 5700, MCS7, 15dBm	-6.8	Horiz
4	5460.000M Ave	39.0	+0.0				+0.0	39.0	54.0 5500, MCS7, 20dBm	-15.0	Horiz
^	5460.000M	58.3	+0.0				+0.0	58.3	68.2 5500, MCS7, 20dBm	-9.9	Horiz

Test Location:	CKC Laboratories, Inc. • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)		
Customer:	**Nalloy, LLC**		
Specification:	**15.407(b)(3) / 15.209 Radiated Spurious Emissions**		
Work Order #:	**106407**	Date:	1/20/2022
Test Type:	**Maximized Emissions**	Time:	11:13:39
Tested By:	M. Harrison	Sequence#:	21
Software:	EMITest 5.03.20		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

Environmental Conditions:
Temperature: 21°C
Humidity: 45%
Pressure: 101.2kPa

Method: ANSI C63.10: 2013

Frequency range: 5.47-5.725 GHz

Setup:
Antenna 0
Channels: 5510, 5670 MHz
802.11ac40 Band 3
Rate: MCS0-9
PWR Output: Low: 16 dBm, High: 18 dBm
100% Duty Cycle

Notes:
All data rates explored, worst case provided.
Band Edge Measurements were performed with correct factors loaded into Spectrum Analyzer.

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02673	Spectrum Analyzer	E4446A	2/3/2021	2/3/2023
	ANP05961	Cable	Heliax	6/9/2021	6/9/2023
	ANP06515	Cable	Heliax	7/1/2020	7/1/2022
	AN02374ANSI	Horn Antenna	RGA-60	5/25/2021	5/25/2023
	AN03540	Preamp	83017A	5/14/2021	5/14/2023
	ANP06242	Attenuator	54A-10	1/27/2020	1/27/2022
	ANP07505	Cable	CLU40-KMKM-02.00F	1/26/2021	1/26/2023

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq MHz	Rdng dBµV	T1 dB	dB	dB	dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	5725.000M	64.6	+0.0				+0.0	64.6	68.2 5670, MCS9, 18dBm	-3.6	Horiz
2	5468.810M	64.4	+0.0				+0.0	64.4	68.2 5510, MCS9, 16dBm	-3.8	Horiz
3	5470.000M	62.7	+0.0				+0.0	62.7	68.2 5510, MCS9, 16dBm	-5.5	Horiz
4	5460.000M Ave	40.8	+0.0				+0.0	40.8	54.0 5510, MCS9, 16dBm	-13.2	Horiz
^	5460.000M	58.8	+0.0				+0.0	58.8	68.2 5510, MCS9, 16dBm	-9.4	Horiz

Test Location:	CKC Laboratories, Inc. • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)		
Customer:	**Nalloy, LLC**		
Specification:	**15.407(b)(3) / 15.209 Radiated Spurious Emissions**		
Work Order #:	**106407**	Date:	1/20/2022
Test Type:	**Maximized Emissions**	Time:	11:56:20
Tested By:	M. Harrison	Sequence#:	22
Software:	EMITest 5.03.20		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

Environmental Conditions:
Temperature: 21°C
Humidity: 45%
Pressure: 101.2kPa

Method: ANSI C63.10: 2013

Frequency range: 5.47-5.725 GHz

Setup:
Antenna 0
Channels: 5530, 5610 MHz
802.11ac80 Band 3
Rate: MCS0-9
PWR Output: Low: 16 dBm, High: 20 dBm
100% Duty Cycle

Notes:
All data rates explored, worst case provided.
Band Edge Measurements were performed with correct factors loaded into Spectrum Analyzer.

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02673	Spectrum Analyzer	E4446A	2/3/2021	2/3/2023
	ANP05961	Cable	Heliax	6/9/2021	6/9/2023
	ANP06515	Cable	Heliax	7/1/2020	7/1/2022
	AN02374ANSI	Horn Antenna	RGA-60	5/25/2021	5/25/2023
	AN03540	Preamp	83017A	5/14/2021	5/14/2023
	ANP06242	Attenuator	54A-10	1/27/2020	1/27/2022
	ANP07505	Cable	CLU40-KMKM-02.00F	1/26/2021	1/26/2023

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq MHz	Rdng dBµV	T1 dB	dB	dB	dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	5467.530M	64.7	+0.0				+0.0	64.7	68.2 5530, MCS9, 16dBm	-3.5	Horiz
2	5470.000M	63.7	+0.0				+0.0	63.7	68.2 5530, MCS9, 16dBm	-4.5	Horiz
3	5725.000M	58.0	+0.0				+0.0	58.0	68.2 5610, MCS9, 20dBm	-10.2	Horiz
4	5460.000M Ave	43.8	+0.0				+0.0	43.8	54.0 5530, MCS9, 16dBm	-10.2	Horiz
^	5460.000M	63.0	+0.0				+0.0	63.0	68.2 5530, MCS9, 16dBm	-5.2	Horiz

15.207 AC Conducted Emissions

Test Setup / Conditions / Data

Test Location:	CKC Laboratories, Inc. • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)		
Customer:	**Nalloy, LLC**		
Specification:	**15.207 AC Mains - Average**		
Work Order #:	**106407**	Date:	1/19/2022
Test Type:	**Conducted Emissions**	Time:	09:15:02
Tested By:	M. Harrison	Sequence#:	60
Software:	EMITest 5.03.20		120V 60Hz

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

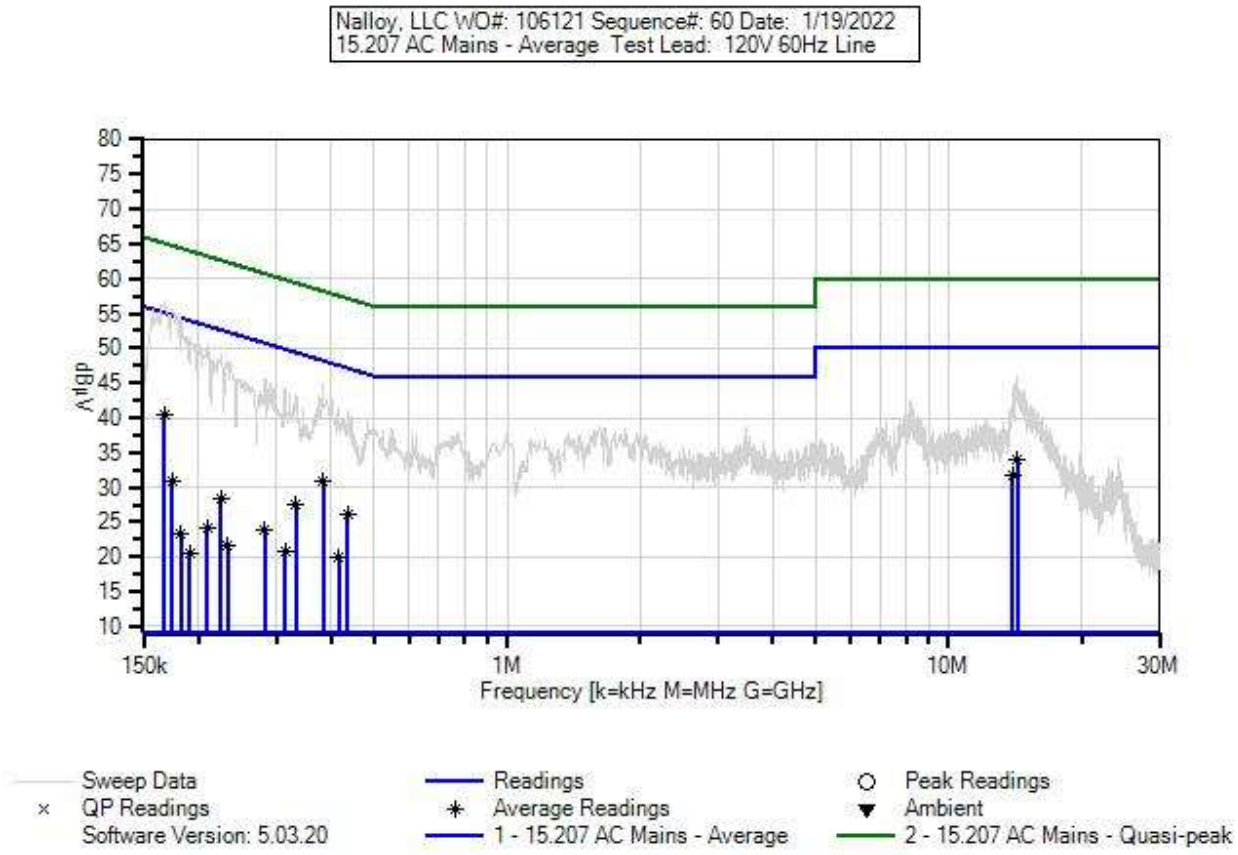
Environmental Conditions:
Temperature: 21°C
Humidity: 45%
Pressure: 101.2kPa

Method: ANSI C63.10: 2013

Frequency range: 150k-30 MHz

Setup:
Antenna 0
Channels: 5500, 5580, 5700 MHz
802.11a Band 3
Rate: 54Mbps
PWR Output: Low/Mid: 20 dBm, High: 14 dBm
100% Duty Cycle

Notes:



Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP06219	Attenuator	768-10	4/7/2020	4/7/2022
T2	ANP06011	Cable	Heliax	8/7/2020	8/7/2022
T3	ANP06515	Cable	Heliax	7/1/2020	7/1/2022
T4	AN01311	50uH LISN-Line1 (L)	3816/2	2/24/2020	2/24/2022
	AN01311	50uH LISN-Line2 (N)	3816/2	2/24/2020	2/24/2022
T5	AN02611	High Pass Filter	HE9615-150K-50-720B	1/5/2022	1/5/2024
	AN02673	Spectrum Analyzer	E4446A	2/3/2021	2/3/2023

Measurement Data: Reading listed by margin. Test Lead: Line

#	Freq	Rdng	T1 T5	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV	dBµV	dB	Ant
1	167.452k	29.3	+9.1	+0.0	+0.0	+1.6	+0.0	40.3	55.1	-14.8	Line
	Ave		+0.3								
^	167.451k	45.7	+9.1	+0.0	+0.0	+1.6	+0.0	56.7	55.1	+1.6	Line
			+0.3								
3	14.337M	24.0	+9.1	+0.0	+0.2	+0.6	+0.0	33.9	50.0	-16.1	Line
	Ave		+0.0								
^	14.337M	36.2	+9.1	+0.0	+0.2	+0.6	+0.0	46.1	50.0	-3.9	Line
			+0.0								
5	382.705k	21.1	+9.1	+0.0	+0.0	+0.5	+0.0	30.8	48.2	-17.4	Line
	Ave		+0.1								
^	382.704k	35.3	+9.1	+0.0	+0.0	+0.5	+0.0	45.0	48.2	-3.2	Line
			+0.1								
7	13.968M	21.9	+9.1	+0.0	+0.2	+0.6	+0.0	31.8	50.0	-18.2	Line
	Ave		+0.0								
^	13.968M	34.6	+9.1	+0.0	+0.2	+0.6	+0.0	44.5	50.0	-5.5	Line
			+0.0								
9	435.791k	16.3	+9.1	+0.0	+0.0	+0.5	+0.0	26.0	47.1	-21.1	Line
	Ave		+0.1								
^	435.790k	31.3	+9.1	+0.0	+0.0	+0.5	+0.0	41.0	47.1	-6.1	Line
			+0.1								
11	333.255k	17.9	+9.1	+0.0	+0.0	+0.6	+0.0	27.6	49.4	-21.8	Line
	Ave		+0.0								
^	333.254k	33.7	+9.1	+0.0	+0.0	+0.6	+0.0	43.4	49.4	-6.0	Line
			+0.0								
13	173.997k	20.0	+9.1	+0.0	+0.0	+1.5	+0.0	30.9	54.8	-23.9	Line
	Ave		+0.3								
^	173.996k	44.7	+9.1	+0.0	+0.0	+1.5	+0.0	55.6	54.8	+0.8	Line
			+0.3								
15	224.901k	18.1	+9.1	+0.0	+0.0	+1.0	+0.0	28.3	52.6	-24.3	Line
	Ave		+0.1								
^	224.901k	38.9	+9.1	+0.0	+0.0	+1.0	+0.0	49.1	52.6	-3.5	Line
			+0.1								
17	283.078k	14.1	+9.1	+0.0	+0.0	+0.8	+0.0	24.0	50.7	-26.7	Line
	Ave		+0.0								
^	283.077k	36.0	+9.1	+0.0	+0.0	+0.8	+0.0	45.9	50.7	-4.8	Line
			+0.0								
19	415.429k	10.2	+9.1	+0.0	+0.0	+0.5	+0.0	19.9	47.5	-27.6	Line
	Ave		+0.1								
^	415.429k	31.9	+9.1	+0.0	+0.0	+0.5	+0.0	41.6	47.5	-5.9	Line
			+0.1								
21	313.620k	11.1	+9.1	+0.0	+0.0	+0.7	+0.0	20.9	49.9	-29.0	Line
	Ave		+0.0								
^	313.620k	34.4	+9.1	+0.0	+0.0	+0.7	+0.0	44.2	49.9	-5.7	Line
			+0.0								
23	209.630k	13.8	+9.1	+0.0	+0.0	+1.1	+0.0	24.1	53.2	-29.1	Line
	Ave		+0.1								

^	209.629k	40.2	+9.1 +0.1	+0.0	+0.0	+1.1	+0.0	50.5	53.2	-2.7	Line
25	232.900k Ave	11.5	+9.1 +0.1	+0.0	+0.0	+1.0	+0.0	21.7	52.3	-30.6	Line
^	232.900k	37.9	+9.1 +0.1	+0.0	+0.0	+1.0	+0.0	48.1	52.3	-4.2	Line
27	181.996k Ave	12.4	+9.1 +0.3	+0.0	+0.0	+1.4	+0.0	23.2	54.4	-31.2	Line
^	181.996k	43.8	+9.1 +0.3	+0.0	+0.0	+1.4	+0.0	54.6	54.4	+0.2	Line
29	191.450k Ave	10.1	+9.1 +0.1	+0.0	+0.0	+1.3	+0.0	20.6	54.0	-33.4	Line
^	191.449k	40.8	+9.1 +0.1	+0.0	+0.0	+1.3	+0.0	51.3	54.0	-2.7	Line

Test Location:	CKC Laboratories, Inc. • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)		
Customer:	**Nalloy, LLC**		
Specification:	**15.207 AC Mains - Average**		
Work Order #:	**106407**	Date:	1/19/2022
Test Type:	**Conducted Emissions**	Time:	09:03:25
Tested By:	M. Harrison	Sequence#:	59
Software:	EMITest 5.03.20		120V 60Hz

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

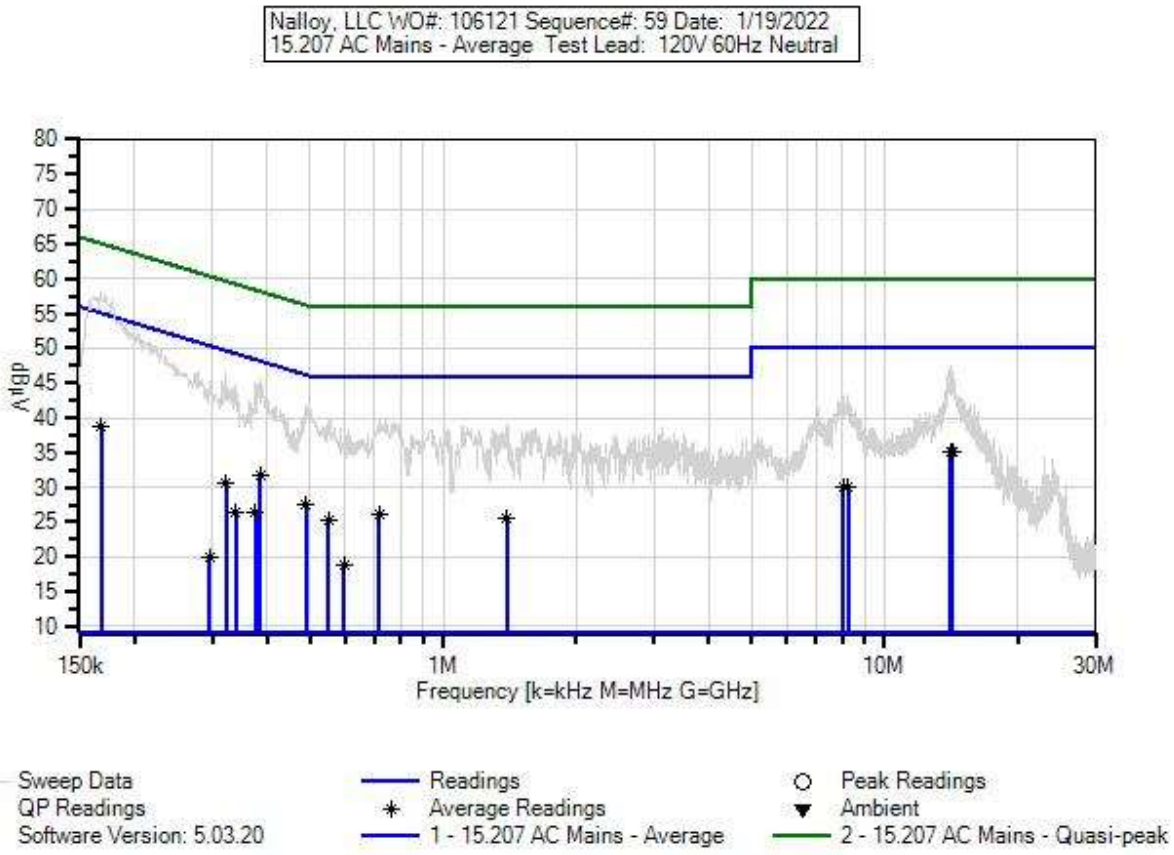
Environmental Conditions:
Temperature: 21°C
Humidity: 45%
Pressure: 101.2kPa

Method: ANSI C63.10: 2013

Frequency range: 150k-30 MHz

Setup:
Antenna 0
Channels: 5500, 5580, 5700 MHz
802.11a Band 3
Rate: 54Mbps
PWR Output: Low/Mid: 20 dBm, High: 14 dBm
100% Duty Cycle

Notes:



Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP06219	Attenuator	768-10	4/7/2020	4/7/2022
T2	ANP06011	Cable	Heliax	8/7/2020	8/7/2022
T3	ANP06515	Cable	Heliax	7/1/2020	7/1/2022
	AN01311	50uH LISN-Line1 (L)	3816/2	2/24/2020	2/24/2022
T4	AN01311	50uH LISN-Line2 (N)	3816/2	2/24/2020	2/24/2022
T5	AN02611	High Pass Filter	HE9615-150K-50-720B	1/5/2022	1/5/2024
	AN02673	Spectrum Analyzer	E4446A	2/3/2021	2/3/2023

Measurement Data: Reading listed by margin. Test Lead: Neutral

#	Freq	Rdng	T1 T5	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV	dBµV	dB	Ant
1	14.130M	25.3	+9.1	+0.0	+0.2	+0.6	+0.0	35.2	50.0	-14.8	Neutr
	Ave		+0.0								
^	14.130M	37.5	+9.1	+0.0	+0.2	+0.6	+0.0	47.4	50.0	-2.6	Neutr
			+0.0								
3	14.256M	25.3	+9.1	+0.0	+0.2	+0.6	+0.0	35.2	50.0	-14.8	Neutr
	Ave		+0.0								
^	14.256M	36.7	+9.1	+0.0	+0.2	+0.6	+0.0	46.6	50.0	-3.4	Neutr
			+0.0								
5	168.180k	27.8	+9.1	+0.0	+0.0	+1.5	+0.0	38.7	55.0	-16.3	Neutr
	Ave		+0.3								
^	168.180k	47.3	+9.1	+0.0	+0.0	+1.5	+0.0	58.2	55.0	+3.2	Neutr
			+0.3								
7	384.888k	21.9	+9.1	+0.0	+0.0	+0.5	+0.0	31.6	48.2	-16.6	Neutr
	Ave		+0.1								
^	384.887k	35.9	+9.1	+0.0	+0.0	+0.5	+0.0	45.6	48.2	-2.6	Neutr
			+0.1								
9	490.332k	18.0	+9.1	+0.0	+0.0	+0.4	+0.0	27.6	46.2	-18.6	Neutr
	Ave		+0.1								
^	490.332k	32.2	+9.1	+0.0	+0.0	+0.4	+0.0	41.8	46.2	-4.4	Neutr
			+0.1								
11	321.621k	21.0	+9.1	+0.0	+0.0	+0.6	+0.0	30.7	49.7	-19.0	Neutr
	Ave		+0.0								
^	321.620k	37.0	+9.1	+0.0	+0.0	+0.6	+0.0	46.7	49.7	-3.0	Neutr
			+0.0								
13	8.058M	20.5	+9.1	+0.0	+0.1	+0.4	+0.0	30.1	50.0	-19.9	Neutr
	Ave		+0.0								
^	8.058M	33.5	+9.1	+0.0	+0.1	+0.4	+0.0	43.1	50.0	-6.9	Neutr
			+0.0								
15	8.265M	20.3	+9.1	+0.0	+0.1	+0.5	+0.0	30.0	50.0	-20.0	Neutr
	Ave		+0.0								
^	8.265M	33.6	+9.1	+0.0	+0.1	+0.5	+0.0	43.3	50.0	-6.7	Neutr
			+0.0								
17	716.493k	16.4	+9.1	+0.0	+0.0	+0.3	+0.0	26.0	46.0	-20.0	Neutr
	Ave		+0.2								
^	716.493k	30.4	+9.1	+0.0	+0.0	+0.3	+0.0	40.0	46.0	-6.0	Neutr
			+0.2								
19	1.396M	15.9	+9.1	+0.0	+0.0	+0.3	+0.0	25.4	46.0	-20.6	Neutr
	Ave		+0.1								
^	1.396M	29.6	+9.1	+0.0	+0.0	+0.3	+0.0	39.1	46.0	-6.9	Neutr
			+0.1								
21	549.963k	15.6	+9.1	+0.0	+0.0	+0.4	+0.0	25.2	46.0	-20.8	Neutr
	Ave		+0.1								
^	549.963k	30.0	+9.1	+0.0	+0.0	+0.4	+0.0	39.6	46.0	-6.4	Neutr
			+0.1								
23	375.434k	16.6	+9.1	+0.0	+0.0	+0.6	+0.0	26.4	48.4	-22.0	Neutr
	Ave		+0.1								

^	375.433k	35.1	+9.1 +0.1	+0.0	+0.0	+0.6	+0.0	44.9	48.4	-3.5	Neutr
25 Ave	339.074k	16.6	+9.1 +0.0	+0.0	+0.0	+0.6	+0.0	26.3	49.2	-22.9	Neutr
^	339.073k	34.9	+9.1 +0.0	+0.0	+0.0	+0.6	+0.0	44.6	49.2	-4.6	Neutr
27 Ave	595.777k	9.4	+9.1 +0.1	+0.0	+0.0	+0.4	+0.0	19.0	46.0	-27.0	Neutr
^	595.777k	29.9	+9.1 +0.1	+0.0	+0.0	+0.4	+0.0	39.5	46.0	-6.5	Neutr
29 Ave	296.168k	10.2	+9.1 +0.0	+0.0	+0.0	+0.7	+0.0	20.0	50.3	-30.3	Neutr
^	296.168k	35.4	+9.1 +0.0	+0.0	+0.0	+0.7	+0.0	45.2	50.3	-5.1	Neutr

SUPPLEMENTAL INFORMATION

Measurement Uncertainty

Uncertainty Value	Parameter
4.73 dB	Radiated Emissions
3.34 dB	Mains Conducted Emissions
3.30 dB	Disturbance Power

Uncertainties reported are worst case for all CKC Laboratories' sites and represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k=2. Compliance is deemed to occur provided measurements are below the specified limits.

Emissions Test Details

TESTING PARAMETERS

Unless otherwise indicated, the following configuration parameters are used for equipment setup: The cables were routed consistent with the typical application by varying the configuration of the test sample. Interface cables were connected to the available ports of the test unit. The effect of varying the position of the cables was investigated to find the configuration that produced maximum emissions. Cables were of the type and length specified in the individual requirements. The length of cable that produced maximum emissions was selected.

The equipment under test (EUT) was set up in a manner that represented its normal use, as shown in the setup photographs. Any special conditions required for the EUT to operate normally are identified in the comments that accompany the emissions tables.

The emissions data was taken with a spectrum analyzer or receiver. Incorporating the applicable correction factors for distance, antenna, cable loss and amplifier gain, the data was reduced as shown in the table below. The corrected data was then compared to the applicable emission limits. Preliminary and final measurements were taken in order to ensure that all emissions from the EUT were found and maximized.

CORRECTION FACTORS

The basic spectrum analyzer reading was converted using correction factors as shown in the highest emissions readings in the tables. For radiated emissions in dBµV/m, the spectrum analyzer reading in dBµV was corrected by using the following formula. This reading was then compared to the applicable specification limit. Individual measurements were compared with the displayed limit value in the margin column. The margin was calculated based on subtracting the limit value from the corrected measurement value; a positive margin represents a measurement exceeding the limit, while a negative margin represents a measurement less than the limit.

SAMPLE CALCULATIONS		
	Meter reading	(dBµV)
+	Antenna Factor	(dB/m)
+	Cable Loss	(dB)
-	Distance Correction	(dB)
-	Preamplifier Gain	(dB)
=	Corrected Reading	(dBµV/m)

TEST INSTRUMENTATION AND ANALYZER SETTINGS

The test instrumentation and equipment listed were used to collect the emissions data. A spectrum analyzer or receiver was used for all measurements. Unless otherwise specified, the following table shows the measuring equipment bandwidth settings that were used in designated frequency bands. For testing emissions, an appropriate reference level and a vertical scale size of 10 dB per division were used.

MEASURING EQUIPMENT BANDWIDTH SETTINGS PER FREQUENCY RANGE			
TEST	BEGINNING FREQUENCY	ENDING FREQUENCY	BANDWIDTH SETTING
CONDUCTED EMISSIONS	150 kHz	30 MHz	9 kHz
RADIATED EMISSIONS	9 kHz	150 kHz	200 Hz
RADIATED EMISSIONS	150 kHz	30 MHz	9 kHz
RADIATED EMISSIONS	30 MHz	1000 MHz	120 kHz
RADIATED EMISSIONS	1000 MHz	>1 GHz	1 MHz

SPECTRUM ANALYZER/RECEIVER DETECTOR FUNCTIONS

The notes that accompany the measurements contained in the emissions tables indicate the type of detector function used to obtain the given readings. Unless otherwise noted, all readings were made in the "positive peak" detector mode. Whenever a "quasi-peak" or "average" reading was recorded, the measurement was annotated with a "QP" or an "Ave" on the appropriate rows of the data sheets. In cases where quasi-peak or average limits were employed and data exists for multiple measurement types for the same frequency then the peak measurement was retained in the report for reference, however the numbering for the affected row was removed and an arrow or caret ("^") was placed in the far left-hand column indicating that the row above takes precedence for comparison to the limit. The following paragraphs describe in more detail the detector functions and when they were used to obtain the emissions data.

Peak

In this mode, the spectrum analyzer or receiver recorded all emissions at their peak value as the frequency band selected was scanned. By combining this function with another feature called "peak hold," the measurement device had the ability to measure intermittent or low duty cycle transient emission peak levels. In this mode the measuring device made a slow scan across the frequency band selected and measured the peak emission value found at each frequency across the band.

Quasi-Peak

Quasi-peak measurements were taken using the quasi-peak detector when the true peak values exceeded or were within 2 dB of a quasi-peak specification limit. Additional QP measurements may have been taken at the discretion of the operator.

Average

Average measurements were taken using the average detector when the true peak values exceeded or were within 2 dB of an average specification limit. Additional average measurements may have been taken at the discretion of the operator. If the specification or test procedure requires trace averaging, then the averaging was performed using 100 samples or as required by the specification. All other average measurements are performed using video bandwidth averaging. To make these measurements, the test engineer reduces the video bandwidth on the measuring device until the modulation of the signal is filtered out. At this point, the measuring device is set into the linear mode and the scan time is reduced.