



Engineering Solutions & Electromagnetic Compatibility Services

**Certification Application Report
FCC Part 15.407 & ISED RSS-247**

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FCC ID/IC	OWDTR-0160-E/ 3636B-0160	Test Report Date	September 21, 2018
Platform	N/A	RTL Work Order #	2018025
Model / Model #/HVIN	XL-185M / XT-MPS1M	RTL Quote Number	QRTL18-025B
American National Standard Institute			
ANSI C63.10-2013 American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices			
FCC Classification			
NII-Unlicensed National Information Infrastructure TX			
FCC Rule Part(s)			
FCC Rules Part 15.407: Unlicensed National Information Infrastructure Devices - General Technical Requirements			
ISED Standards			
RSS-247 Issue 2: Digital Transmission Systems (DTSS), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices RSS-Gen Issue 5: General Requirements for Compliance of Radio Apparatus			
Digital Interface Information			
Digital Interface was found to be compliant			
Frequency Range (MHz)	Output Power (mW) Peak Conducted	Frequency Tolerance	Emission Designator
5150 – 5250	3.2	N/A	17M5G7D
5745 – 5825	2.9	N/A	17M5G7D

I, the undersigned, hereby declare that the equipment tested and referenced in this report conforms to the identified standard(s) as described in this test report. No modifications were made to the equipment during testing in order to achieve compliance with these standards. Furthermore, there was no deviation from, additions to, or exclusions from, the applicable parts of FCC Part 2, FCC Part 15, ANSI C63.10, and ISED RSS-247 and RSS-Gen.

Signature: 

Date: September 21, 2018

Typed/Printed Name: Desmond A. Fraser

Position: President

*These tests are accredited and meet the requirements of ISO/IEC 17025 as verified by ANAB.
Refer to certificate and scope of accreditation AT-1445.*

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1 General Information

1.1 Scope

Applicable Standards

- FCC Rules Part 15.407: Unlicensed National Information Infrastructure Devices - General Technical Requirements
- ISED RSS-247: Digital Transmission Systems (DTSS), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices
- ISED RSS-Gen Issue 5: General Requirements for Compliance of Radio Apparatus

1.2 Description of EUT

Equipment Under Test	Mobile Radio
Model / Model #	XL-185M / XT-MPS1M
Power Supply	13.6 VDC
Modulation Type	OFDM (802.11 a)
Frequency Range	5150 – 5250 MHz 5745 – 5825 MHz

1.3 Test Facility

The open area test site and conducted measurement facility used to collect the radiated data is located at 360 Herndon Parkway, Suite 1400, Herndon, Virginia 20170. This site has been fully described in a report and approved by the Federal Communications Commission to perform AC line conducted and radiated emissions testing (ANSI C63.10-2013).

1.4 Related Submittal(s)/Grant(s)

This is an original certification application for Harris Corporation Model XL-185M, Model #/HVIN: XT-MPS1M, FCC ID: OWDTR-0160-E, IC: 3636B-0160.

1.5 Modifications

No modifications were required for compliance.

2 Test Information

2.1 Description of Test Modes

In accordance with FCC 15.31(m), and because the EUT utilizes an operating band greater than 10 MHz, the following frequencies were tested.

Table 2-1: Channels Tested for Wi-Fi 802.11a

Channel (#)	Frequency (MHz)
34 (U-NII1)	5170
36 (U-NII1)	5180
38 (U-NII1)	5190
40 (U-NII1)	5200
42 (U-NII1)	5210
44 (U-NII1)	5220
46 (U-NII1)	5230
48 (U-NII1)	5240
149 (U-NII3)	5745
151 (U-NII3)	5755
153 (U-NII3)	5765
155 (U-NII3)	5775
157 (U-NII3)	5785
159 (U-NII3)	5795
161 (U-NII3)	5805
165 (U-NII3)	5825

2.2 Exercising the EUT

The EUT was tested in all three orthogonal planes in order to determine worst-case emissions. The EUT was provided with software to continuously transmit during testing. The carrier was also checked to verify that information was being transmitted, and all modes were investigated and the worst-case mode was used for final testing. There were no deviations from the test standard(s) and/or methods. The test results reported relate only to the item tested.

2.3 Test Result Summary

Table 2-2: Test Result Summary – FCC Part 15, Subpart C (Section 15.407); ISSED RSS-247, RSS-Gen

FCC	ISED	Test	Result
FCC 15.207	RSS-Gen 8.8	AC Conducted Emissions	N/A
FCC 15.209	RSS-247 6.2; RSS-Gen 6.13	Radiated Emissions	Pass
FCC 15.407(a/1/3)	RSS-247 6.2; RSS-Gen 6.12	Maximum Peak Power Output	Pass
FCC 15.407(a/1/3)	RSS-247 6.2	Power Spectral Density	Pass
FCC 15.407(g)	RSS-Gen 6.11	Frequency Stability	N/A
FCC 15.407(b)(7)	RSS-247 6.2	Band Edge Measurement	Pass
FCC 15.407(b)(6)	RSS-247 6.2	Antenna Conducted Spurious Emissions	Pass
FCC 15.407(a) and (e)	RSS-247 6.2	26 dB and 6dB Bandwidth	Pass
N/A	RSS-Gen 6.7/ TRC-43	99% Bandwidth	Pass

2.4 Tested System Details

The test samples were received on September 4, 2018. The FCC identifiers for all applicable equipment, plus descriptions of all cables used in the tested system, are identified in the following tables.

Table 2-3: Equipment Under Test (EUT)

Part	Manufacturer	Model/ HVIN	Serial Number	FCC ID	RTL Bar Code
Vehicular Communication Hub (VCH)	Harris Corporation	XL-185M/ XT-MPS1M	048	OWDTR-0160-E	23081
Control Head	Harris Corporation	XL-CH Mobile Control Head/ N/A	085	OWDTR-0160-E	23080

Table 2-4: Support Equipment

Part	Manufacturer	Model	PN/SN	FCC ID	RTL Bar Code
Laptop	ASUS	N550J	F2N0CY33003067G	N/A	N/A

Table 2-5: Auxiliary Equipment

Part	Manufacturer	Model	PN/SN	FCC ID	RTL Bar Code
USB Mobile Mic	N/A	USB Mobile Mic	14050-6010-01/V22e	N/A	22756
Remote Speaker	N/A	Remote Speaker	14050-6100-01	N/A	N/A
Analog Deskmic	N/A	Analog Deskmic	MC-014121-003	N/A	N/A
CH Mounting Kit	N/A	CH Mounting Kit	14050-6210-01	N/A	N/A
VCH Mounting Kit	N/A	VCH Mounting Kit	14050-6200-01	N/A	N/A
Antenna, Flex, Heavy-Duty, 136-870 MHz	N/A	XM-AN7G	12099-0300-01	N/A	N/A
Antenna, Element, Multiband, 136-870 MHz, 0 dB	N/A	XMAN6H	12099-0310-01	N/A	N/A
Antenna, Base, Standard Roof Mount Low Loss	N/A	AN-125001-002	AN-125001-002	N/A	N/A
Antenna, Base, Thick Roof Mount Low Loss	N/A	AN-125001-004	AN-125001-004	N/A	N/A

Antenna, Base, Standard Roof Mount Low Loss GPS	N/A	AN-125001-006	AN-125001-006	N/A	N/A
Antenna, Base, Magnetic Mount Low Loss	N/A	AN-125001-008	AN-125001-008	N/A	N/A
Mount, NMO Antenna, Magnetic, Heavy-Duty	N/A	XM-AN7H	12099-0370-01	N/A	N/A
Antenna, Element, 700/800 3db	N/A	AN-225001-001	AN-225001-001	N/A	N/A
Antenna, Element, 900, 3db	N/A	AN-225005-001	AN-225005-001	N/A	N/A
Antenna, GPS, Roof Mount	N/A	AN-025187-001	AN-025187-001	N/A	N/A
Antenna, GPS, Magnet Mount	N/A	AN-025187-003	AN-025187-003	N/A	N/A
Antenna Base, Std Roof Mount Low Loss GPS	N/A	AN-125001-006	AN-125001-006	N/A	N/A
Antenna 3dB 700/800/900	N/A	12099-0380-01	12099-0380-01	N/A	N/A
Squid Cable (HD44)	N/A	N/A	14002-0174-50	N/A	N/A
Ethernet Cable, overmold, 45cm	N/A	N/A	14050-6300-01	N/A	N/A
Ethernet Cable, overmold, 9m	N/A	N/A	14050-6300-02	N/A	N/A
DC power cables (CH)	N/A	N/A	CA-012616-001	N/A	N/A
DC power cables (VCH)	N/A	N/A	CA-012365-001	N/A	N/A

2.5 Configuration of Tested System

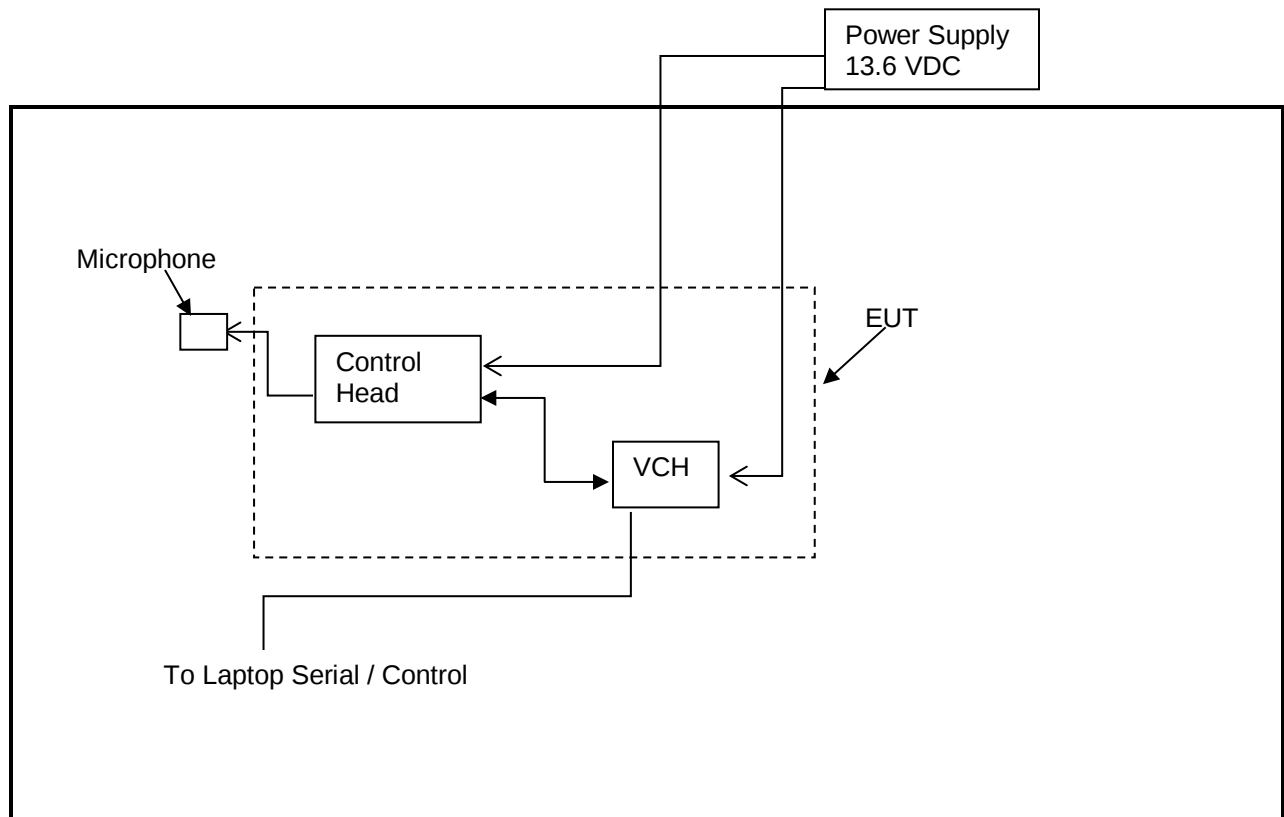


Figure 2-1: Configuration of System Under Test

3 Peak Output Power – FCC 15.407(a/1/3); RSS-247 6.2, RSS-Gen 6.12

3.1 Power Output Test Procedure

A conducted power measurement of the EUT was taken using an Agilent Analyzer with a 50 ohm attenuator.

Table 3-1: Power Output Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
901583	Agilent Technologies	N9010A	EXA Signal Analyzer (10 Hz-26.5 GHz)	MY51250846	2/6/20

3.2 Power Output Test Results

Table 3-2: Power Output Test Data – U-NII1 – 802.11a (58.5 Mbps)

Channel (#)	Frequency (MHz)	Conducted Peak Power (dBm)	Limit (dBm)	Margin (dB)
34	5170	5.0	30.0	-25.0
40	5200	4.4	30.0	-25.6
48	5240	5.1	30.0	-24.9

Table 3-3: Power Output Test Data – U-NII3 – 802.11a (58.5 Mbps)

Channel (#)	Frequency (MHz)	Conducted Peak Power (dBm)	Limit (dBm)	Margin (dB)
149	5745	4.6	30.0	-25.4
157	5785	4.4	30.0	-25.6
165	5825	3.8	30.0	-26.2

Note: EUT was programmed to TX with 58.5 Mbps rate, 20 MHz bandwidth and 10 dBm power level for all three test frequencies.

Highest conducted peak power measured: 5.1 dBm $\approx$ 3.2 mW for U-NII1
4.6 dBm $\approx$ 2.9 mW for U-NII3

$$P(\text{Watts}) = 10^{(\text{dBm} / 10)} / 1000$$

Measurement uncertainty: ± 0.5 dB. This measurement uncertainty is an expanded uncertainty for 95% confidence level received with a coverage factor $k=2$.

Results: Pass

Test Personnel:

Khue Do
Test Engineer


Signature

September 13, 2018
Date of Test

4 Compliance with the Band Edge – FCC 15.407(b)(7); RSS-247 6.2

4.1 Band Edge Test Procedure

The transmitter output was connected to its appropriate antenna. 1 MHz integrated peak (100 kHz RBW/300 kHz VBW) and 1 MHz integrated average (100 MHz RBW/300 kHz VBW) corrected measurements were taken within the restricted band to show compliance.

Table 4-1: Band Edge Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
901583	Agilent Technologies	N9010A	EXA Signal Analyzer (10 Hz-26.5 GHz)	MY51250846	2/6/20

4.2 Restricted Band Edge Test Results

Note: EUT was programmed to TX with 58.5 Mbps rate, 20 MHz bandwidth and 10 dBm power level for all three test frequencies.

Conversion of dBm to dBμV/m at 3 m.

$$\text{dB}\mu\text{V/m} = \text{dBm} + 104.7 - (20 * \text{LOG}(3\text{m})) = \text{dBm} + 95.2$$

4.1 Band Edge Plots

Plot 4-1: Lower Band Edge – Average – U-NII1 – 802.11a (58.5 Mbps)

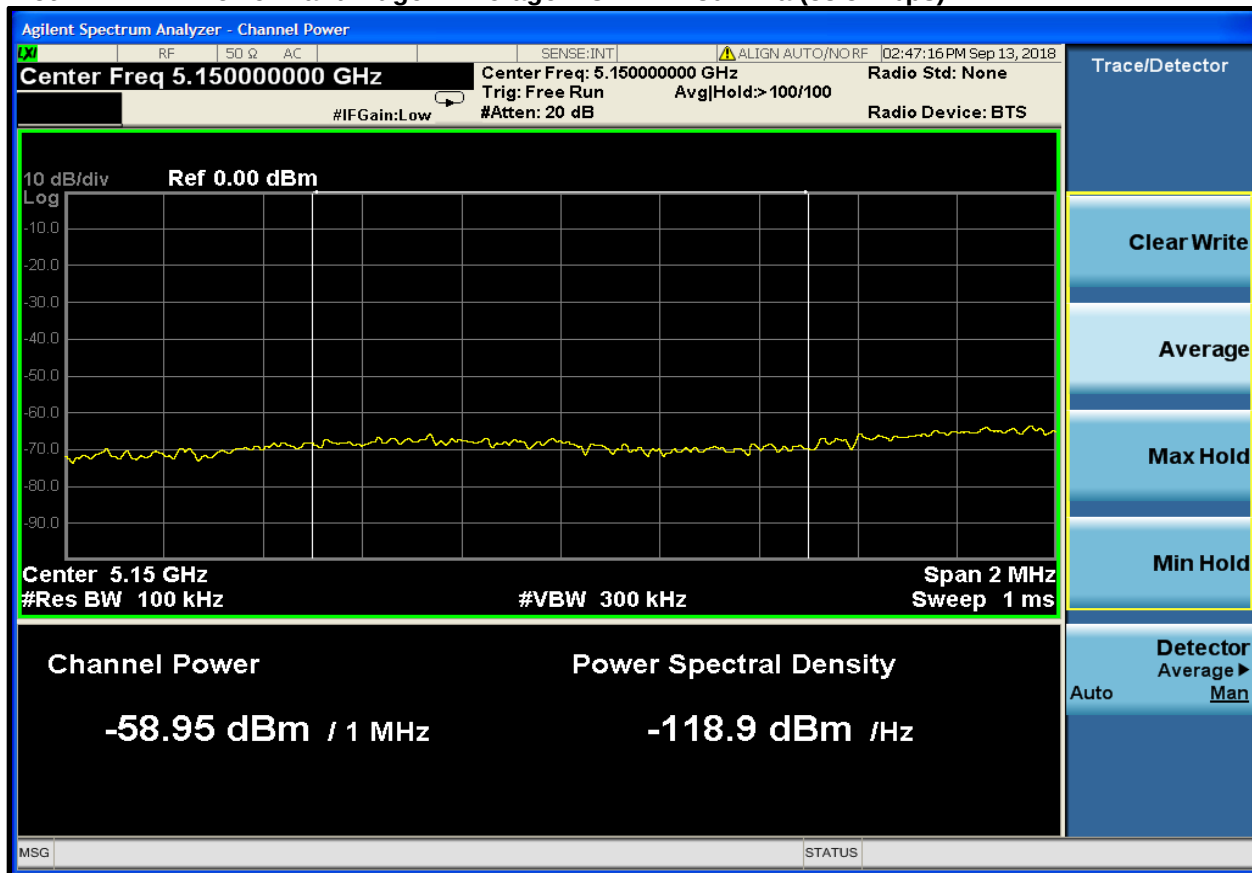


Table 4-2: Lower Band Edge Average – U-NII1 – 802.11a (58.5 Mbps)

Frequency (MHz)	Measured Average Level (dBm)	Field Strength Conversion (dBμV/m)	Average Limit (dBμV/m)	Margin (dB)
5150	-59.0	36.2	54.0	-17.8

Plot 4-2: Lower Band Edge – Peak – U-NII1 – 802.11a (58.5 Mbps)

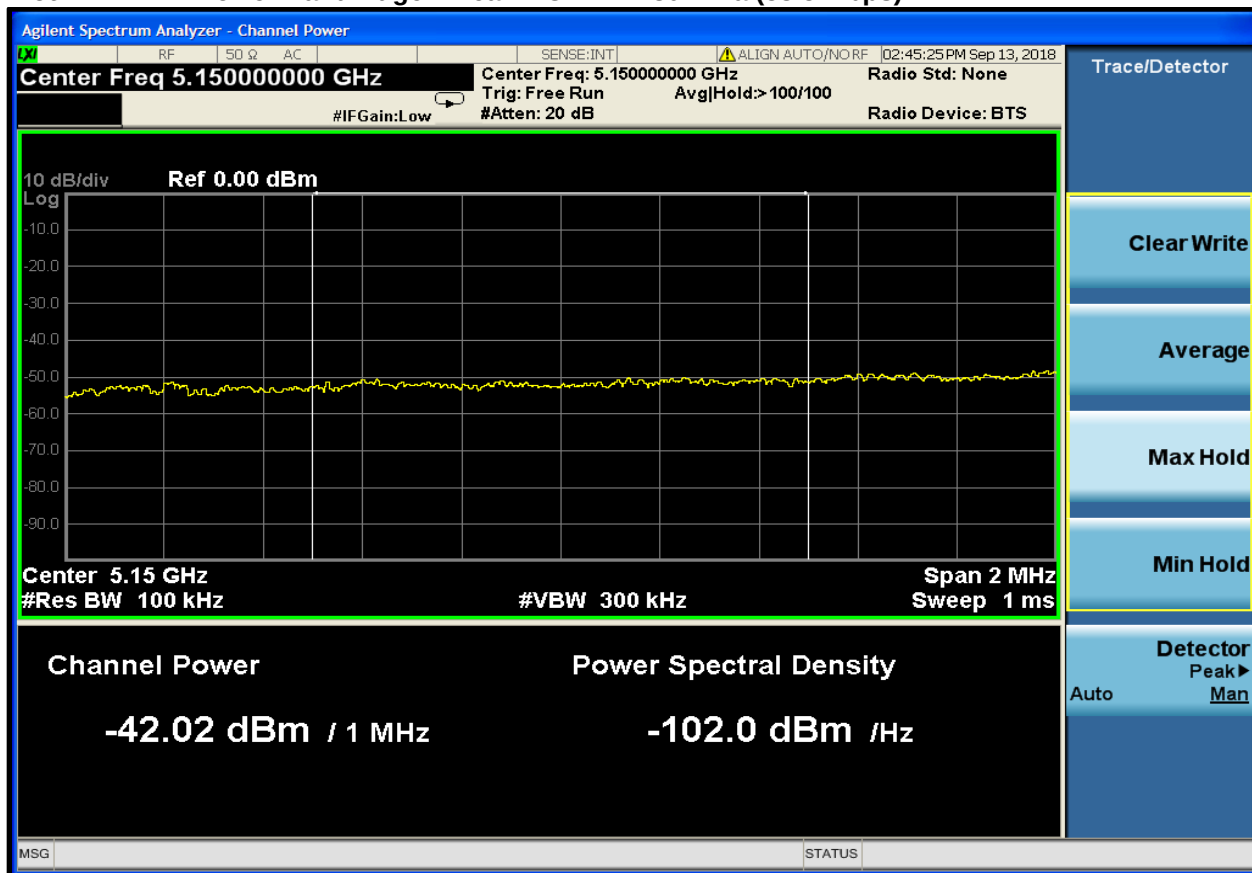


Table 4-3: Lower Band Edge Peak – U-NII1 – 802.11a (58.5 Mbps)

Frequency (MHz)	Measured Peak Level (dBm)	Field Strength Conversion (dBμV/m)	Peak Limit (dBμV/m)	Margin (dB)
5150	-42.0	53.2	74.0	-20.8

Plot 4-3: Upper Band Edge – Average – U-NII1 – 802.11a (58.5 Mbps)

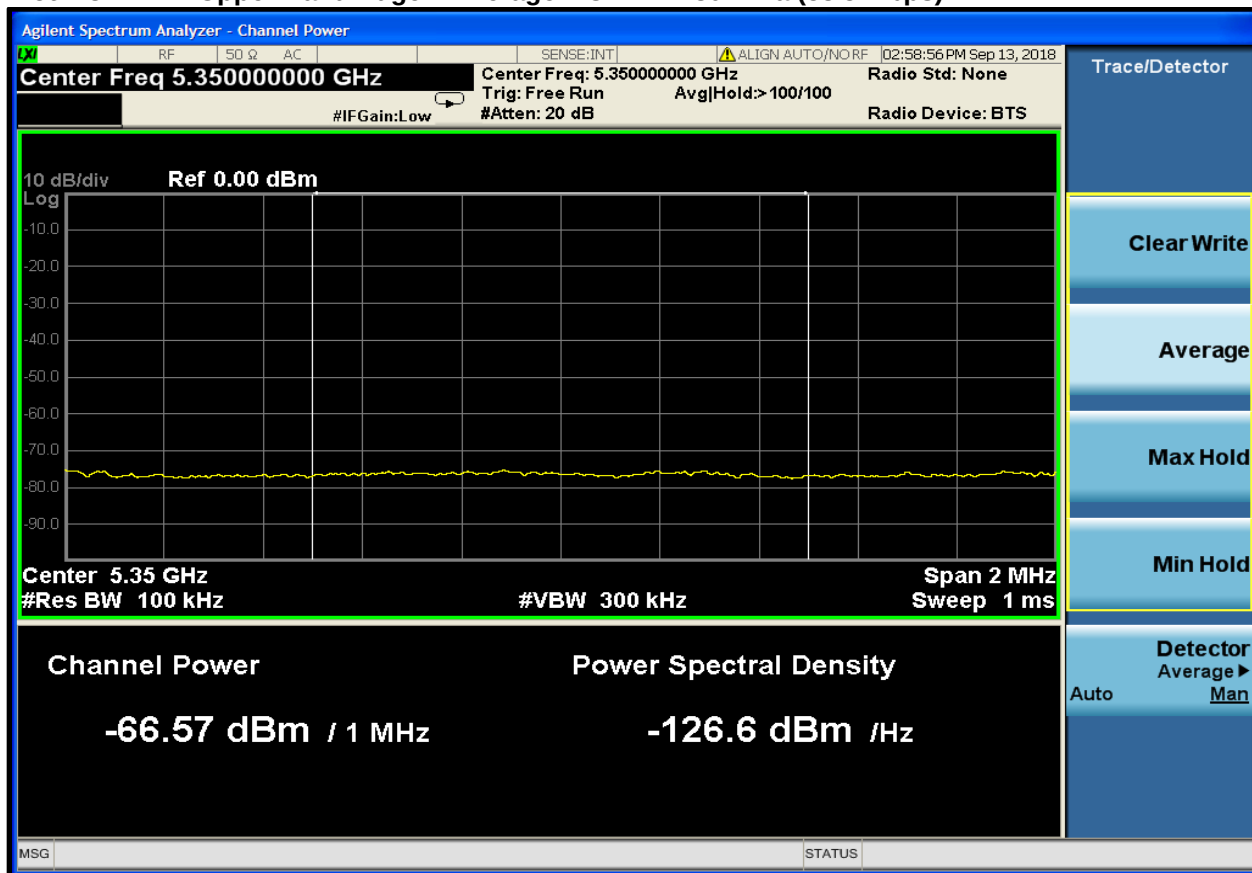


Table 4-4: Upper Band Edge Average – U-NII1 – 802.11a (58.5 Mbps)

Frequency (MHz)	Measured Average Level (dBm)	Field Strength Conversion (dBμV/m)	Average Limit (dBμV/m)	Margin (dB)
5350	-66.6	28.6	54.0	-25.4

Plot 4-4: Upper Band Edge – Peak – U-NII1 – 802.11a (58.5 Mbps)

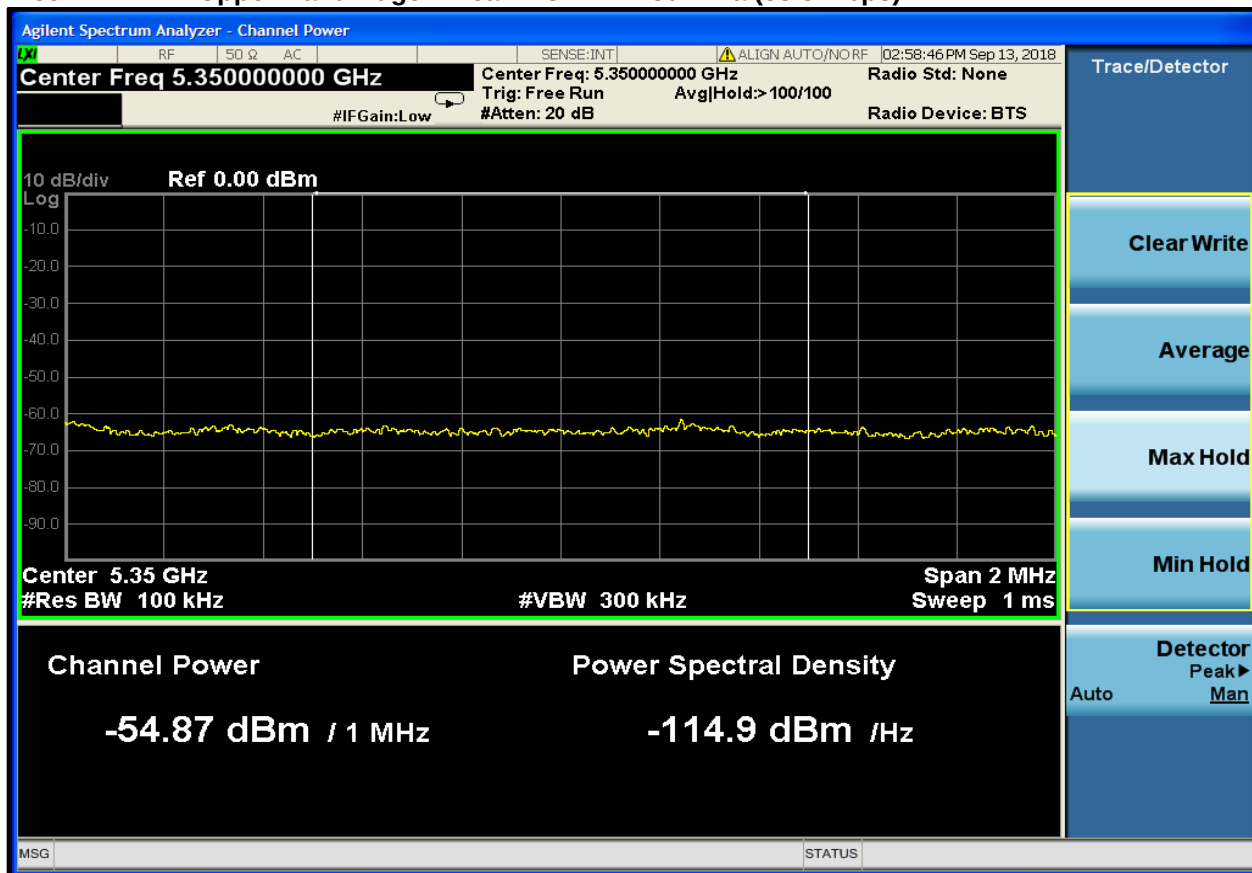
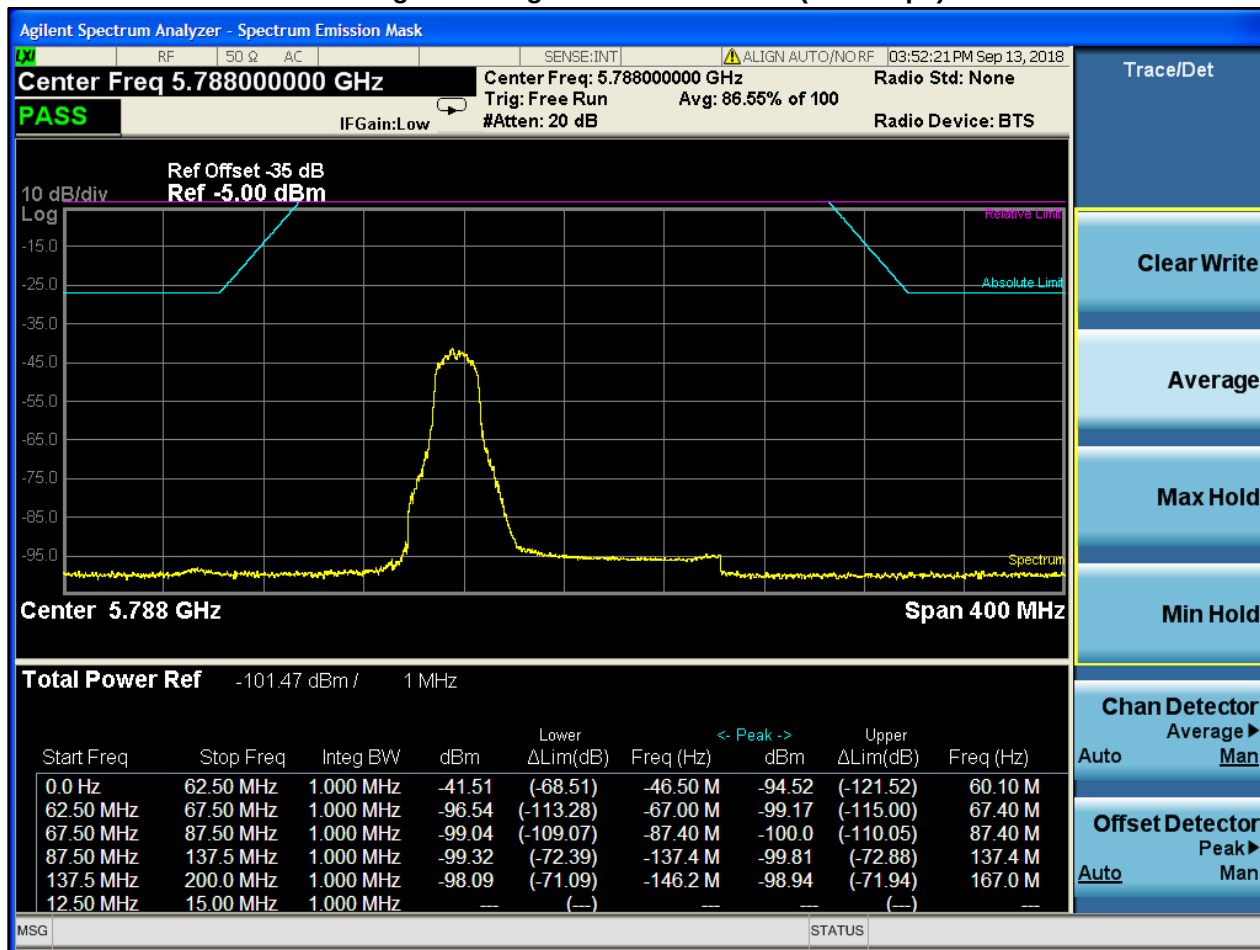


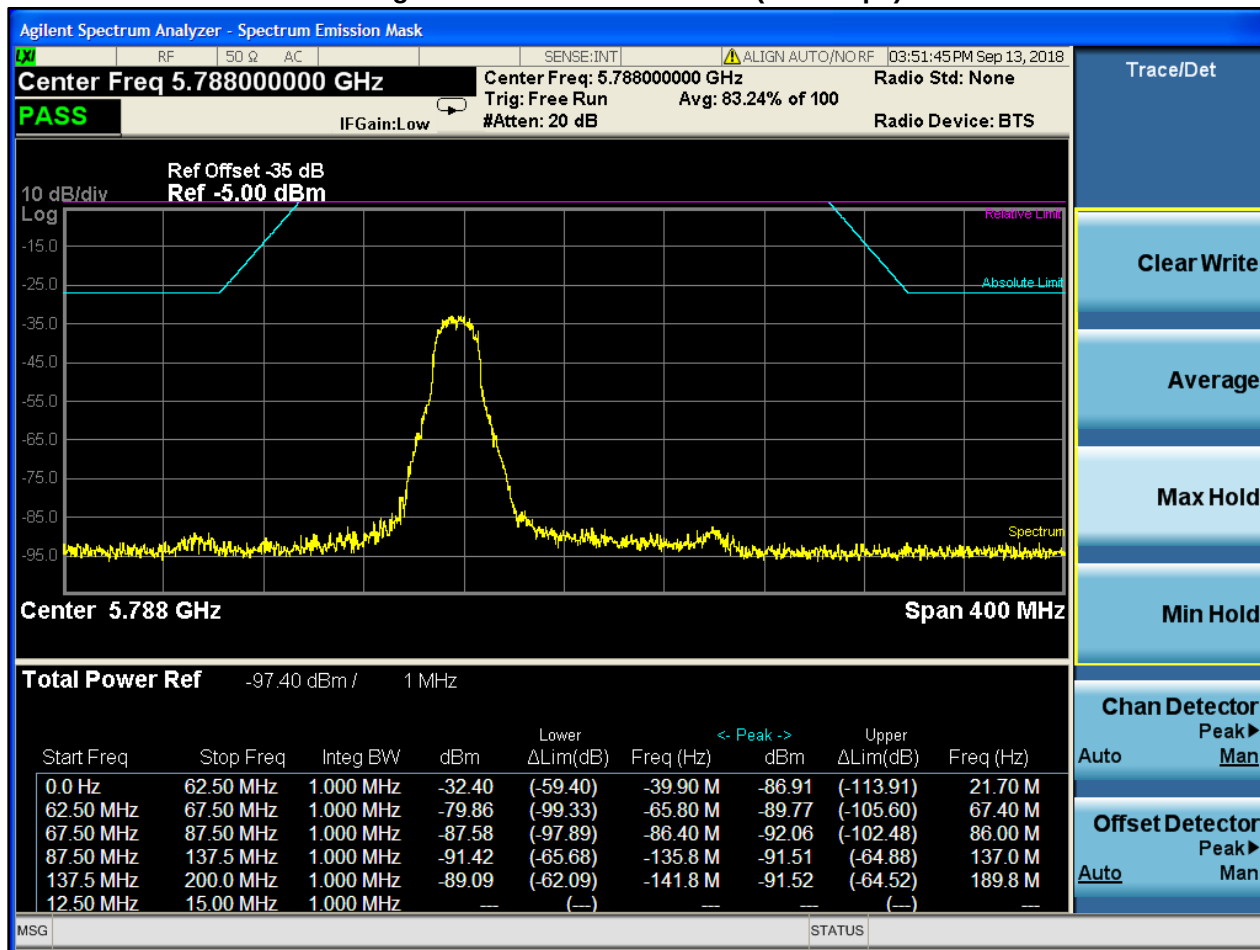
Table 4-5: Upper Band Edge Peak – U-NII1 – 802.11a (58.5 Mbps)

Frequency (MHz)	Measured Peak Level (dBm)	Field Strength Conversion (dBμV/m)	Peak Limit (dBμV/m)	Margin (dB)
5350	-54.9	40.3	74.0	-33.7

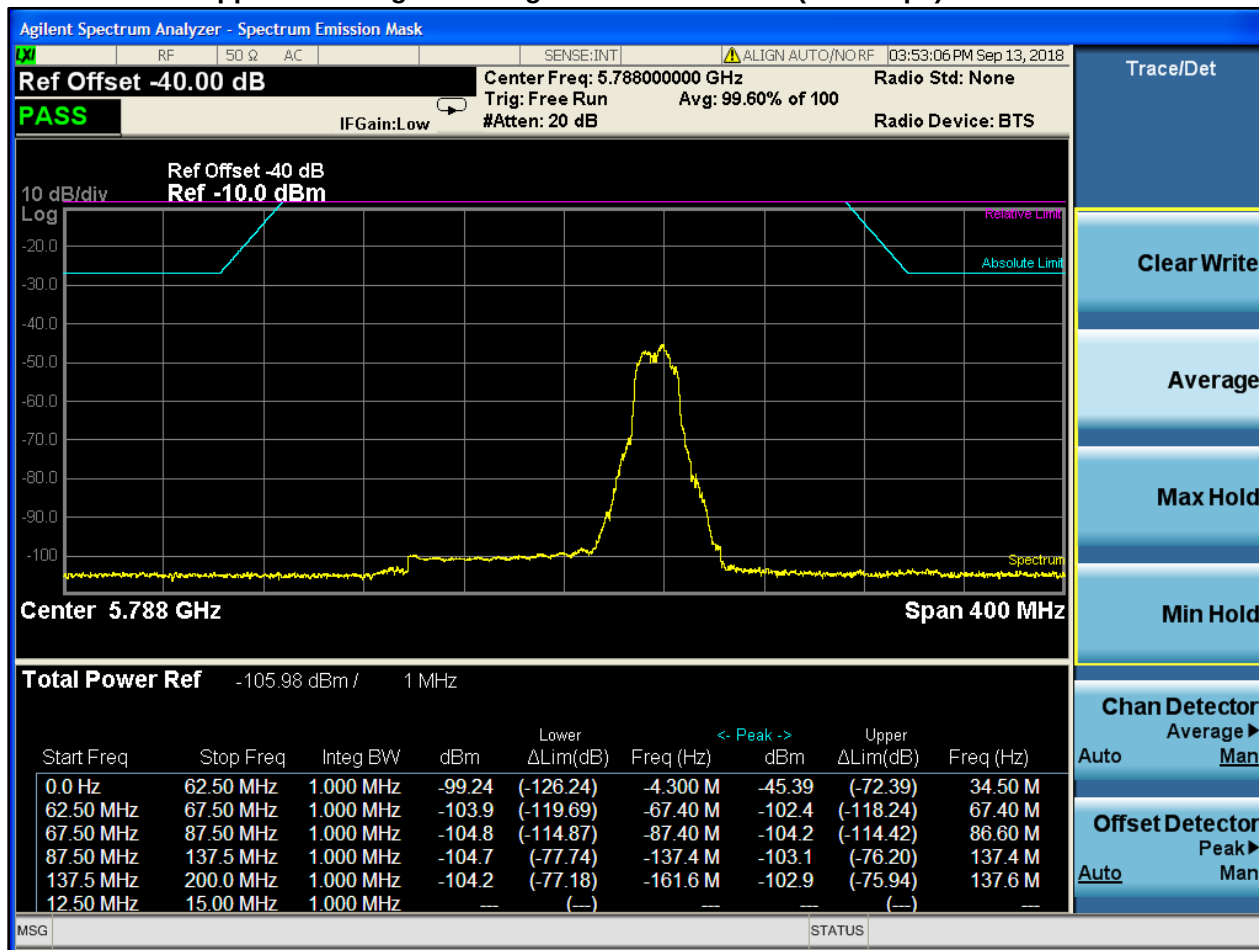
Plot 4-5: Lower Band Edge – Average – U-NII3 – 802.11a (58.5 Mbps)



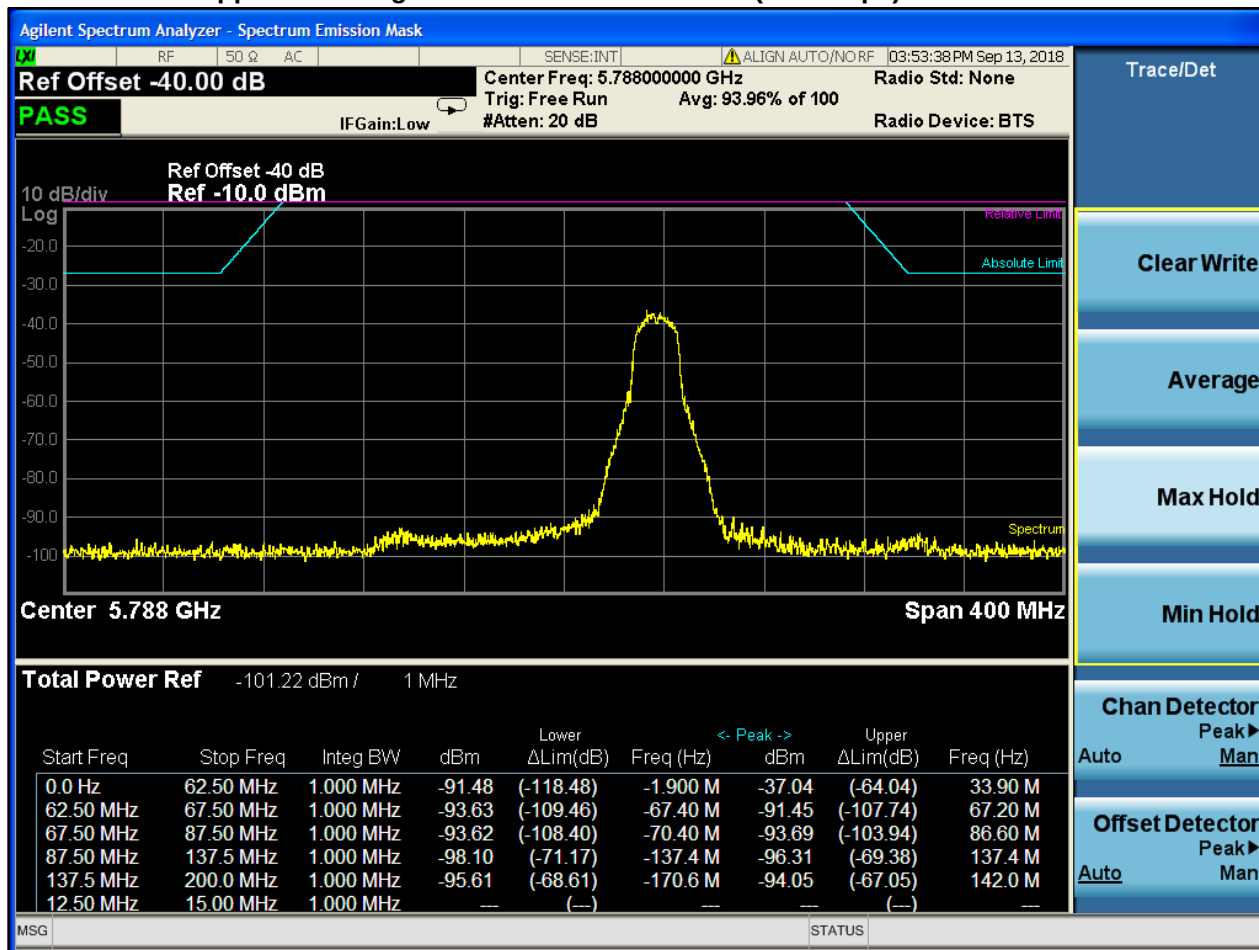
Plot 4-6: Lower Band Edge – Peak – U-NII3 – 802.11a (58.5 Mbps)



Plot 4-7: Upper Band Edge – Average – U-NII3 – 802.11a (58.5 Mbps)



Plot 4-8: Upper Band Edge – Peak – U-NII3 – 802.11a (58.5 Mbps)



Measurement uncertainty: ± 0.5 dB. This measurement uncertainty is an expanded uncertainty for 95% confidence level received with a coverage factor $k=2$.

Results: Pass

Test Personnel:

Khue Do
Test Engineer


Signature

September 13, 2018
Date of Test

5 Antenna Conducted Spurious Emissions – FCC 15.407(b)(6); RSS-247 6.2

5.1 Antenna Conducted Spurious Emissions Test Procedures

Antenna conducted spurious emissions per FCC 15.407(b)(6) were measured from the EUT antenna port using a 50-ohm spectrum analyzer with the resolution bandwidth set at 1 MHz, and the video bandwidth set at $> 3 \times \text{RBW}$.

5.2 Antenna Conducted Spurious Emissions Test Results

No harmonics or spurs were found within 20 dB (note that we are reporting power as peak) of the carrier level from the carrier to the 10th harmonic of the carrier frequency.

Table 5-1: Antenna Conducted Spurious Emissions Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
901583	Agilent Technologies	N9010A	EXA Signal Analyzer (10 Hz-26.5 GHz)	MY51250846	2/6/20

Measurement uncertainty: ± 0.5 dB. This measurement uncertainty is an expanded uncertainty for 95% confidence level received with a coverage factor $k=2$.

Results: Pass

Test Personnel:

Khue Do		September 13 – 14, 2018
Test Engineer	Signature	Dates of Test

6 Bandwidths – FCC 15.407(a) and (e); RSS-247 6.2; RSS-Gen 6.7

6.1 Bandwidth Test Procedure

The minimum 6 dB, 26 dB and 99% bandwidths per FCC 15.407(a) and (e), RSS-247 6.2 and RSS-Gen 6.7 were measured using a 50-ohm spectrum analyzer with the resolution bandwidth set at 100 kHz, and the video bandwidth set at $\geq 3 \times \text{RBW}$. The device was modulated, (VBW) shall not be smaller than three times the RBW value. Video averaging is not permitted.

Table 6-1: Bandwidth Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
901583	Agilent Technologies	N9010A	EXA Signal Analyzer (10 Hz-26.5 GHz)	MY51250846	2/6/20

6.2 Modulated Bandwidth Test Results

Note: EUT was programmed to TX with 58.5 Mbps rate for all three test frequencies.

Table 6-2: Modulated Bandwidth Test Data – U-NII1 – 802.11a (58.5 Mbps)

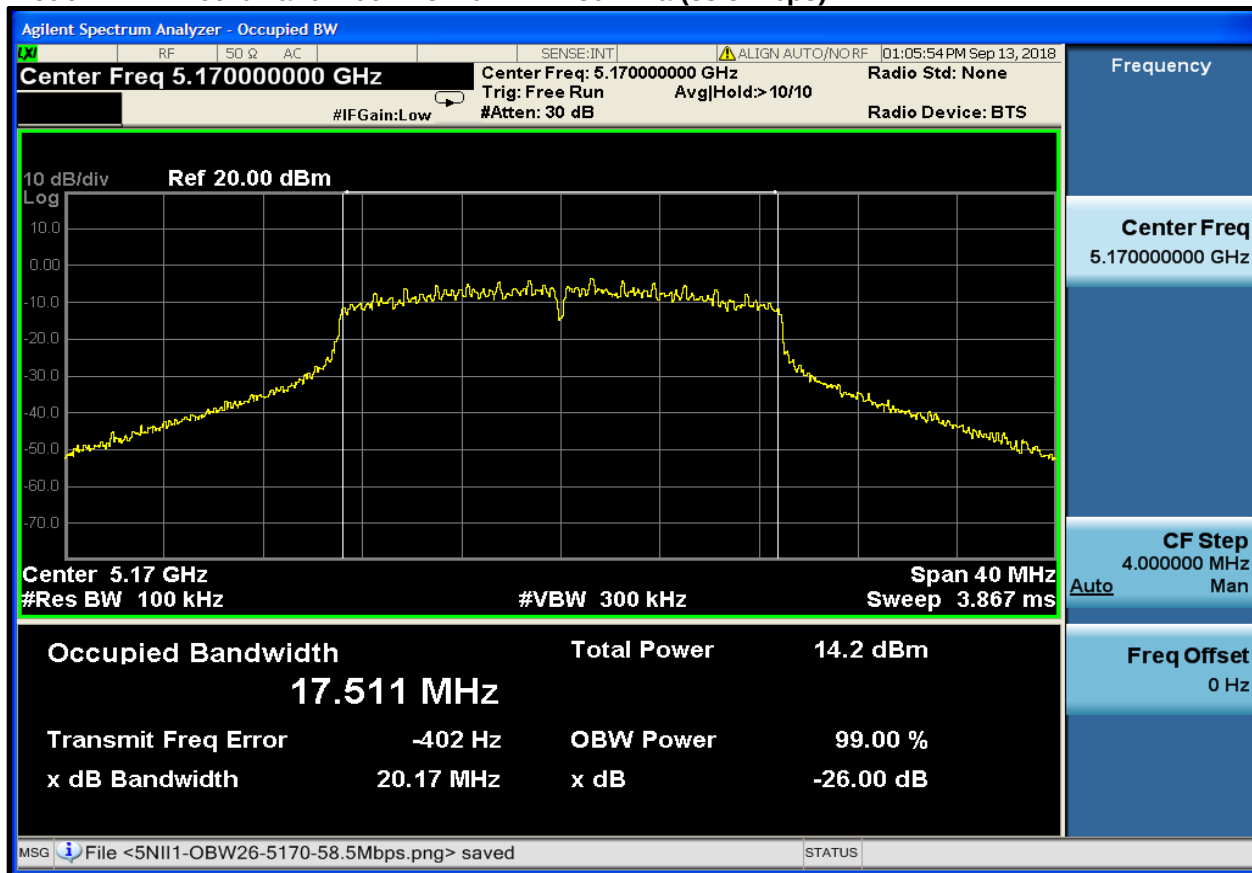
Channel (#)	Frequency (MHz)	99% Bandwidth (MHz)
34	5170	17.511
40	5200	17.479
48	5240	17.503

Table 6-3: Modulated Bandwidth Test Data – U-NII3 – 802.11a (58.5 Mbps)

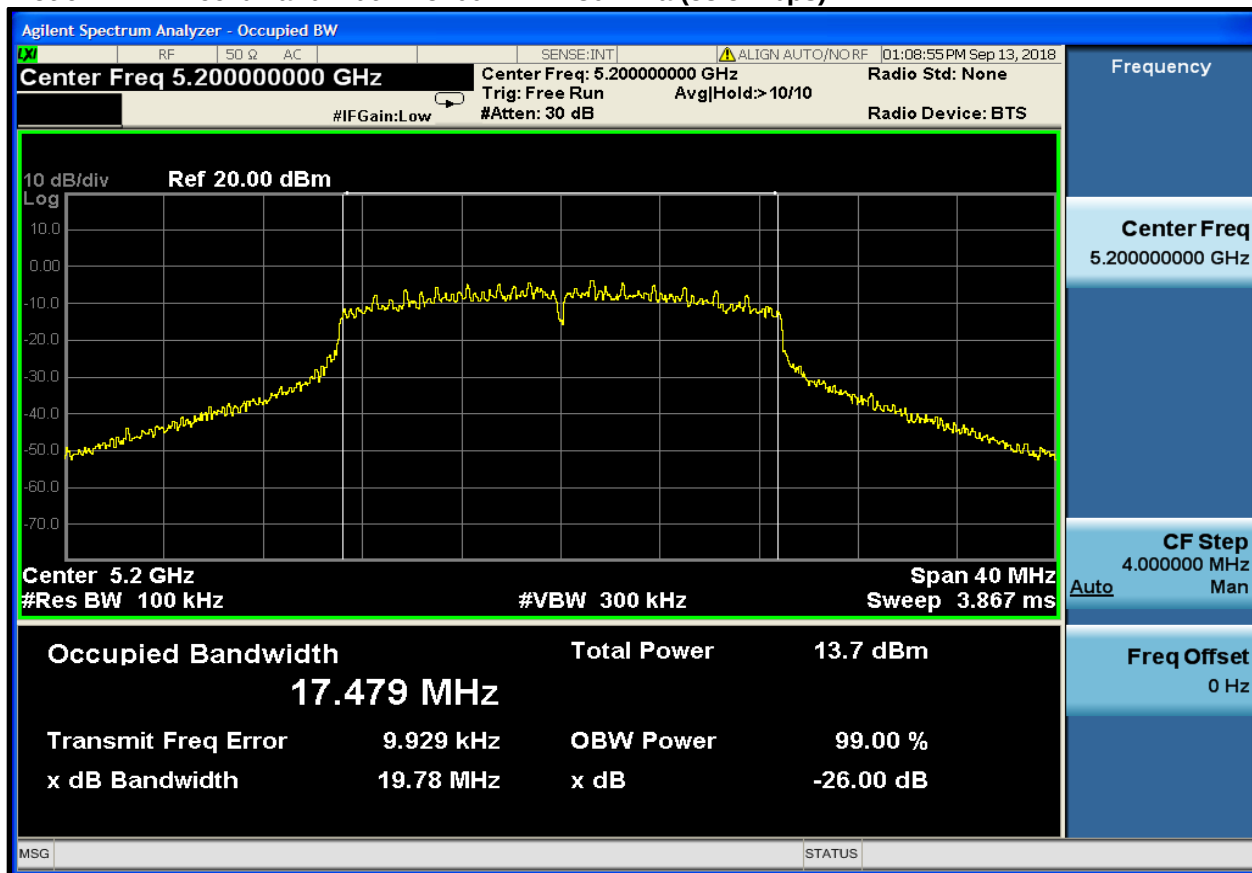
Channel (#)	Frequency (MHz)	6 dB Bandwidth (MHz)	99% Bandwidth (MHz)
149	5745	15.13	17.512
157	5785	15.15	17.505
165	5825	15.44	17.520

6.3 Bandwidth Plots – U-NII1

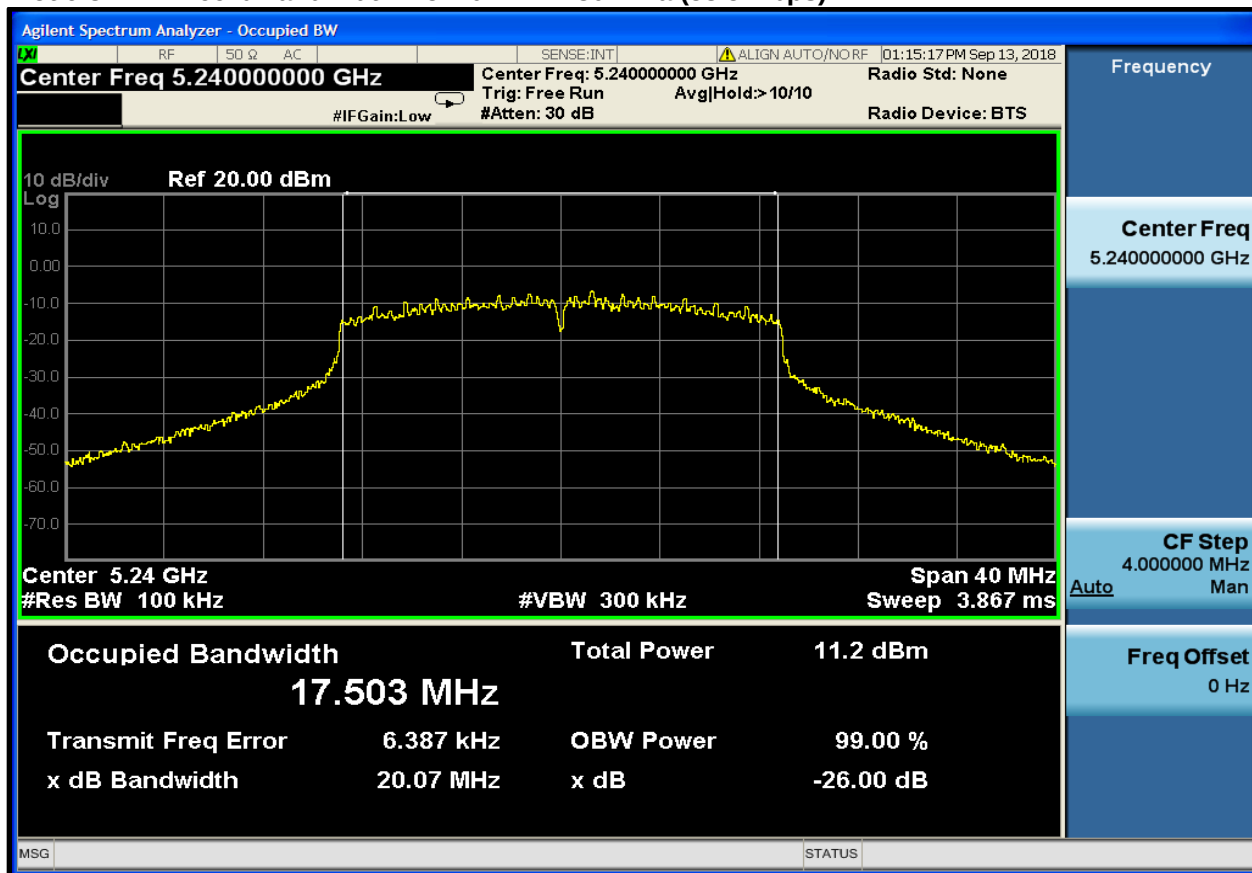
Plot 6-1: 99% Bandwidth – 5170 MHz – 802.11a (58.5 Mbps)



Plot 6-2: 99% Bandwidth – 5200 MHz – 802.11a (58.5 Mbps)

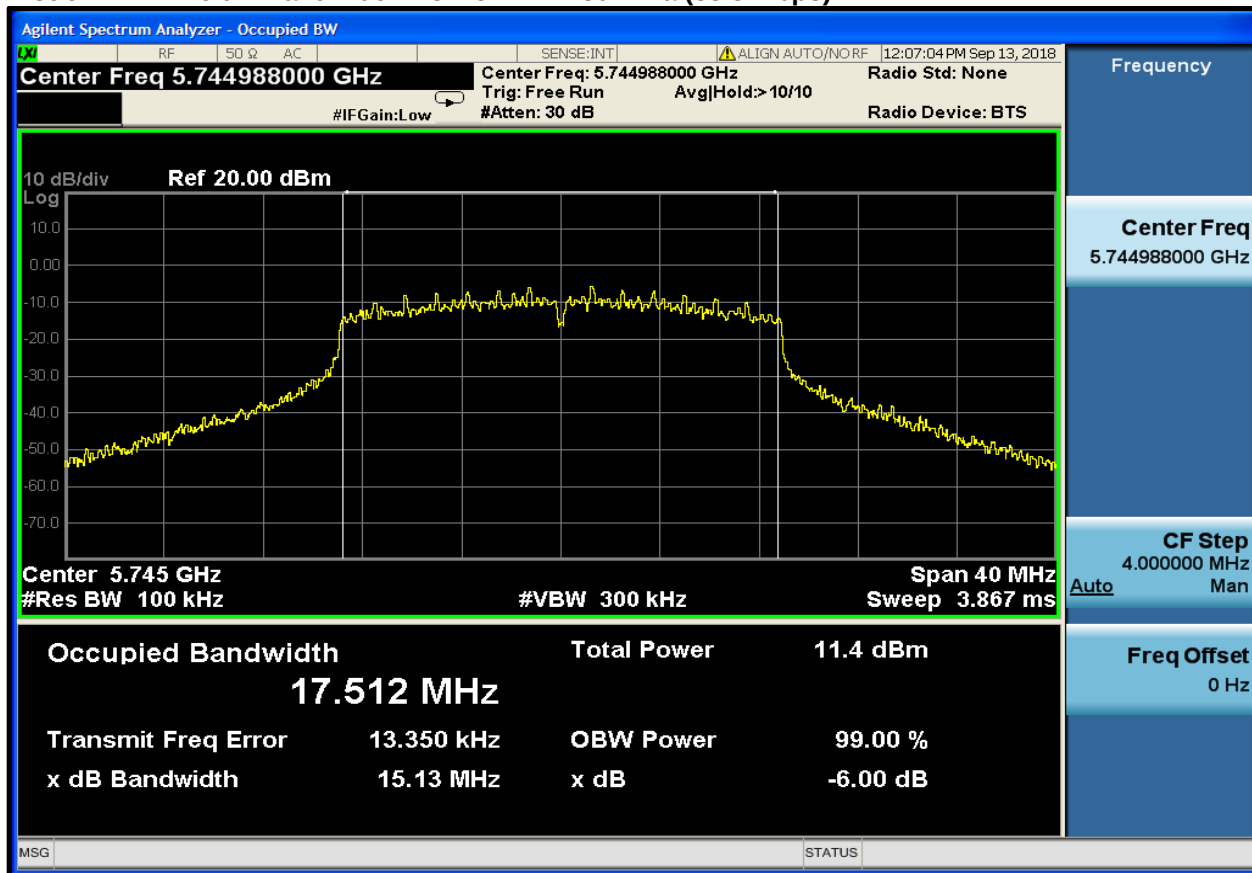


Plot 6-3: 99% Bandwidth – 5240 MHz – 802.11a (58.5 Mbps)

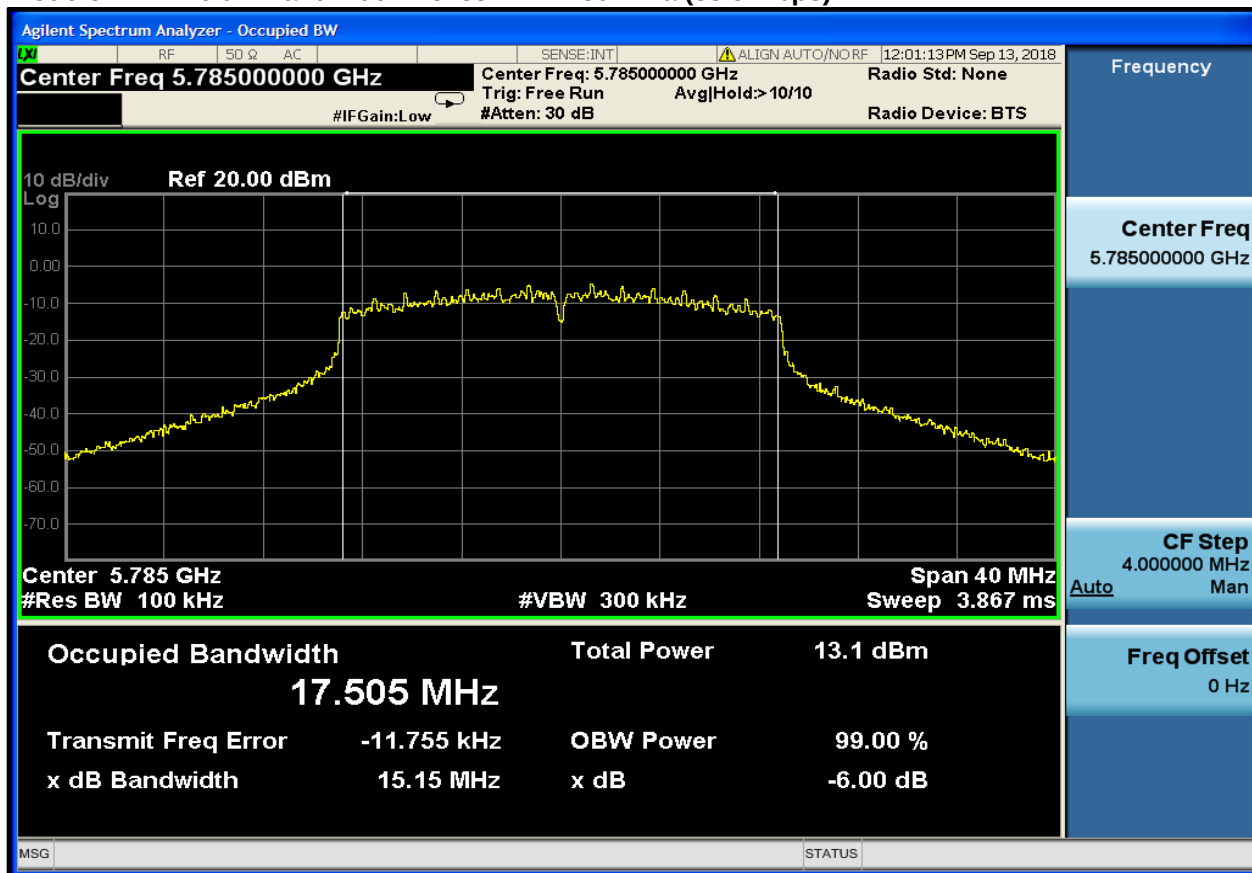


6.4 Bandwidth Plots – U-NII3

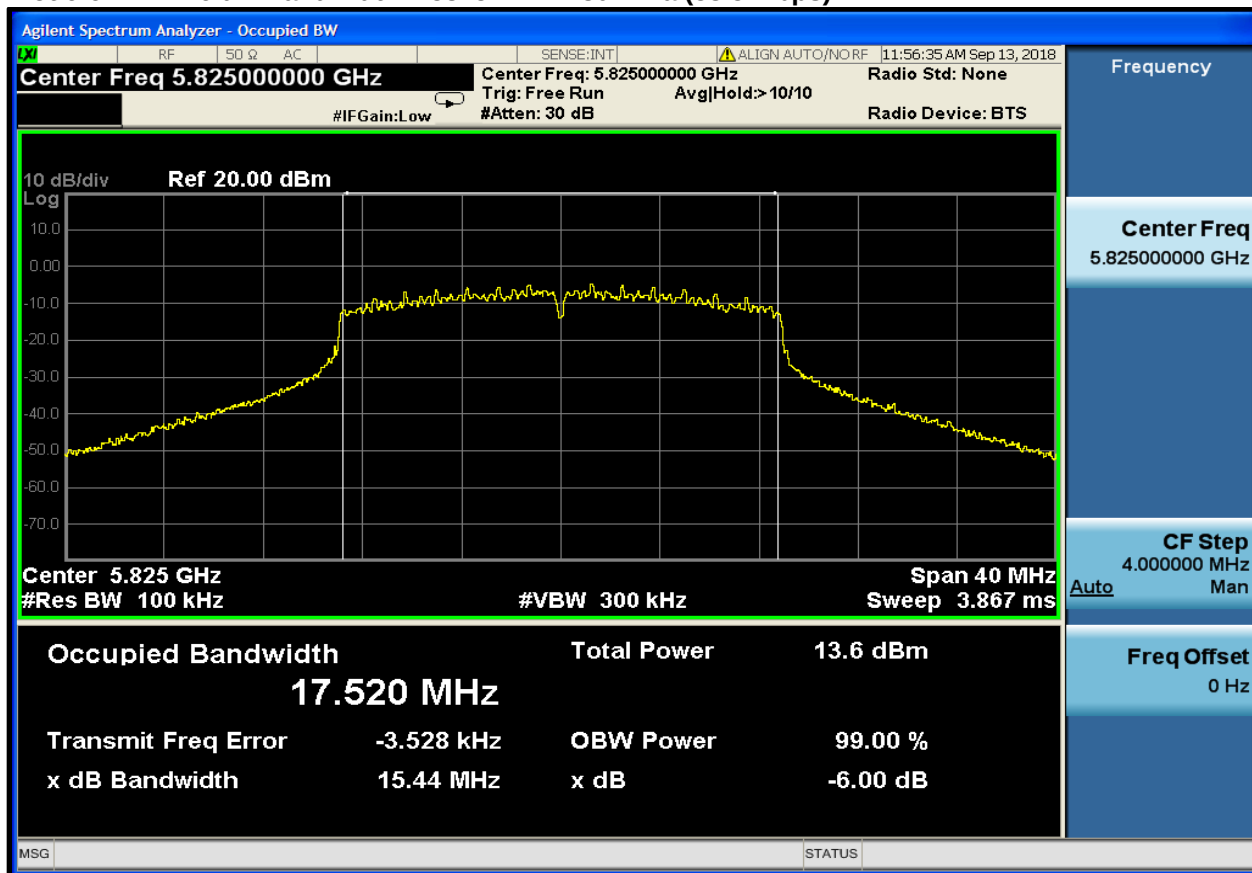
Plot 6-4: 6 dB Bandwidth – 5745 MHz – 802.11a (58.5 Mbps)



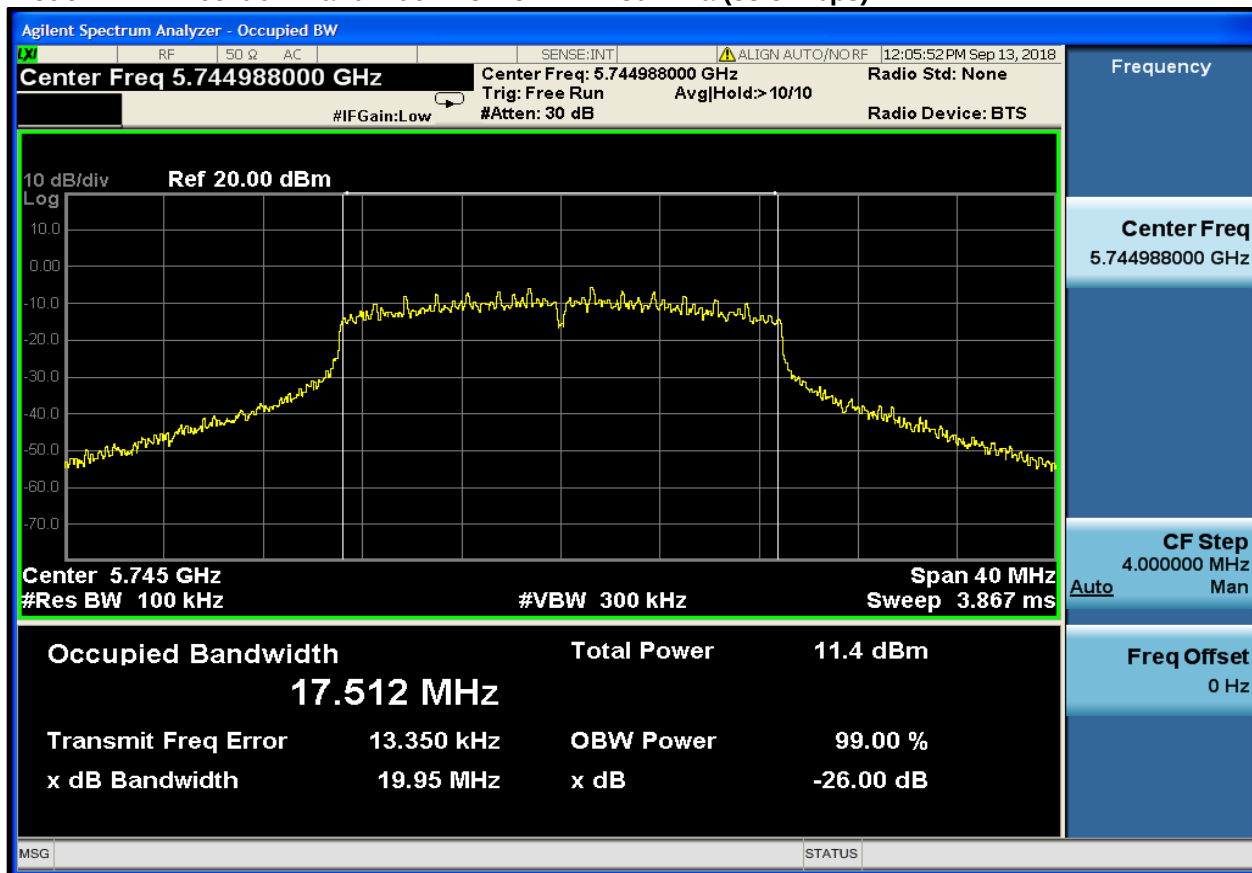
Plot 6-5: 6 dB Bandwidth – 5785 MHz – 802.11a (58.5 Mbps)



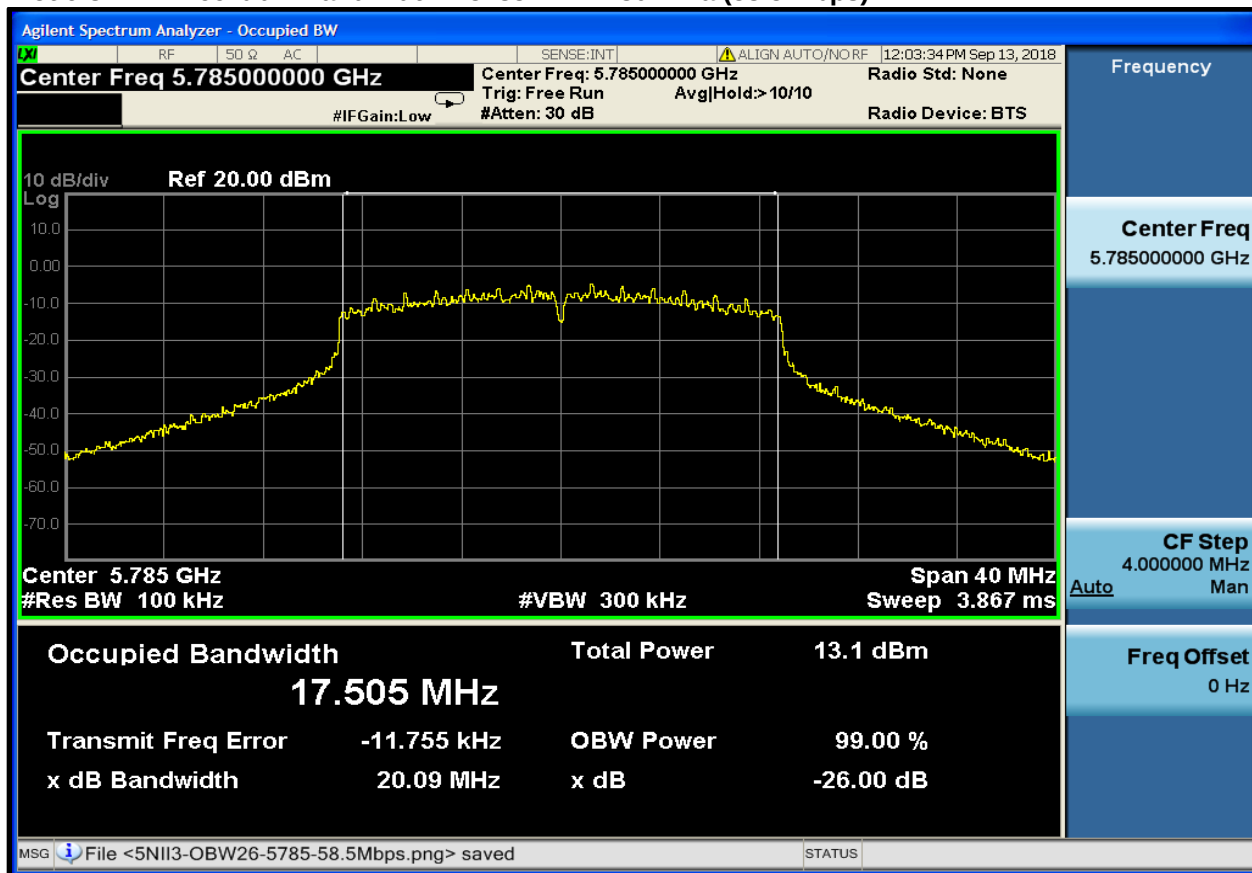
Plot 6-6: 6 dB Bandwidth – 5825 MHz – 802.11a (58.5 Mbps)



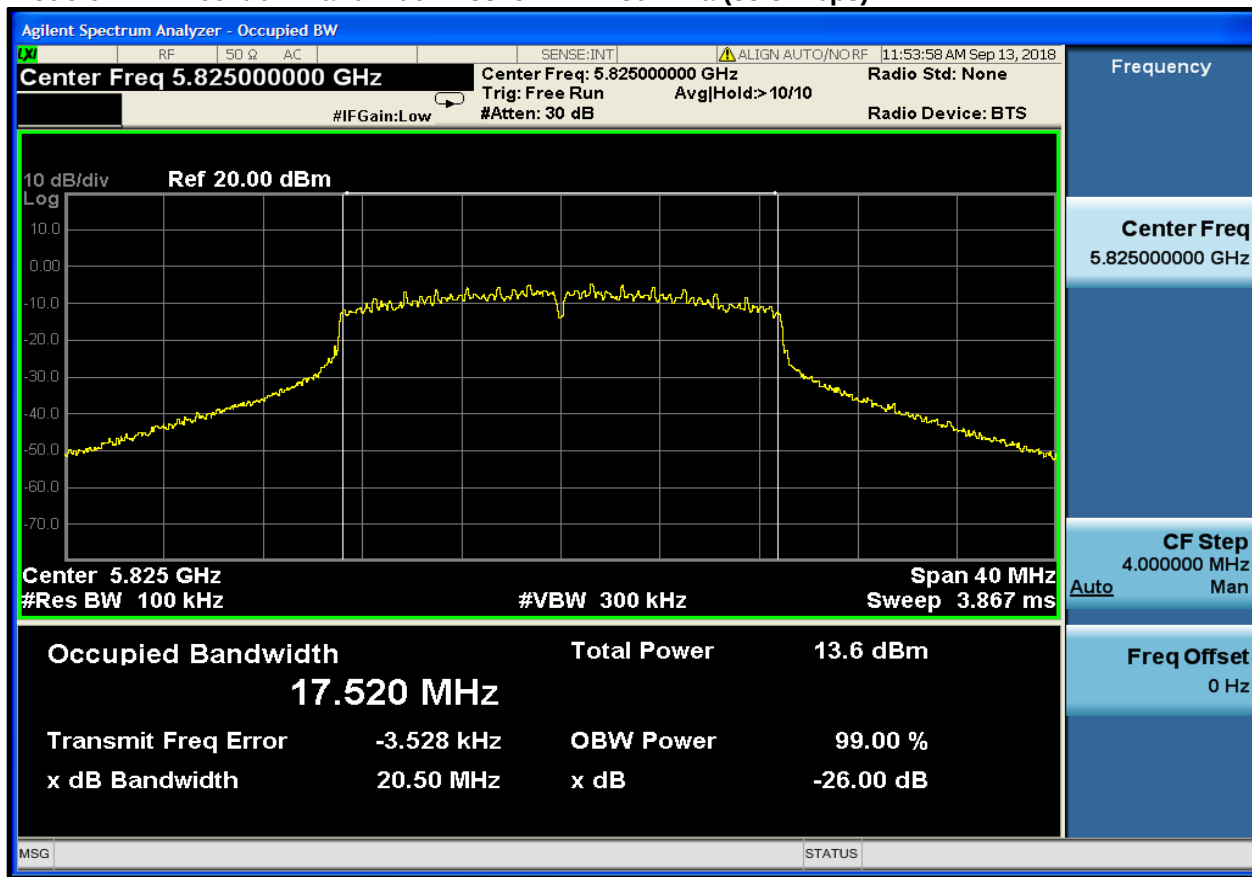
Plot 6-7: 99% dB Bandwidth – 5745 MHz – 802.11a (58.5 Mbps)



Plot 6-8: 99% dB Bandwidth – 5785 MHz – 802.11a (58.5 Mbps)

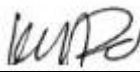


Plot 6-9: 99% dB Bandwidth – 5825 MHz – 802.11a (58.5 Mbps)



Measurement uncertainty: $\pm 1 \times 10^{-6}$ Hz. This measurement uncertainty is an expanded uncertainty for 95% confidence level received with a coverage factor $k=2$.

Test Personnel:

Khue Do		September 13, 2018
Test Engineer	Signature	Date of Test

7 Power Spectral Density – FCC 15.407(a1/3); RSS-247 6.2

7.1 Power Spectral Density Test Procedure

The power spectral density per FCC 15.407(a)(1)(3) was measured using a 50-ohm spectrum analyzer. The spectral lines were resolved for the modulated carriers. These levels are below the limits. See the power spectral density table and plots.

7.2 Power Spectral Density Test Results

Note: EUT was programmed to TX with 58.5 Mbps rate, 20 MHz bandwidth and 10 dBm power level for all three test frequencies.

Table 7-1: Power Spectral Density Test Data – U-NII1 – 802.11a (58.5 Mbps)

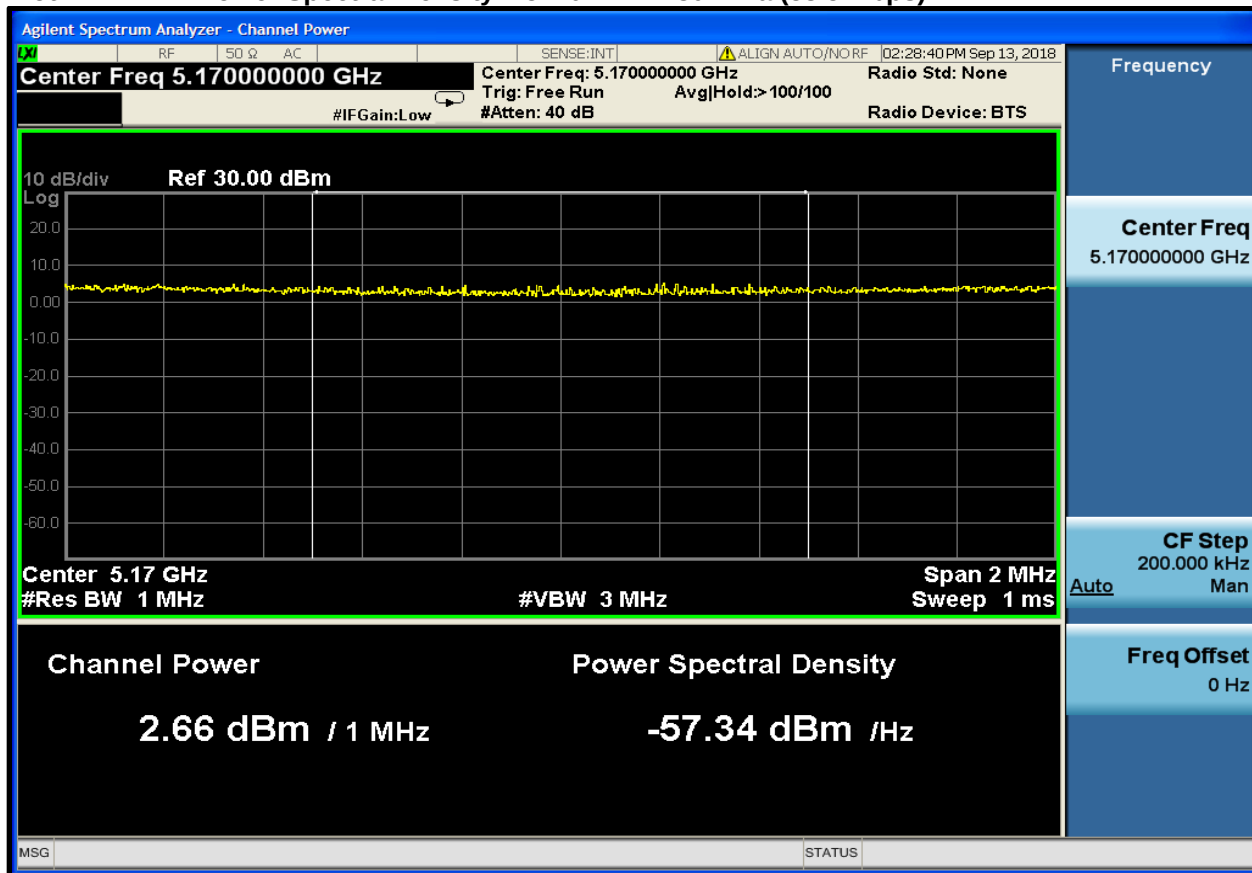
Frequency (MHz)	PSD (dBm)	Limit (dBm)	Margin (dB)	Result (Pass / Fail)
5170	2.7	17.0	-14.3	Pass
5200	2.2	17.0	-14.8	Pass
5240	3.1	17.0	-13.9	Pass

Table 7-2: Power Spectral Density Test Data – U-NII3 – 802.11a (58.5 Mbps)

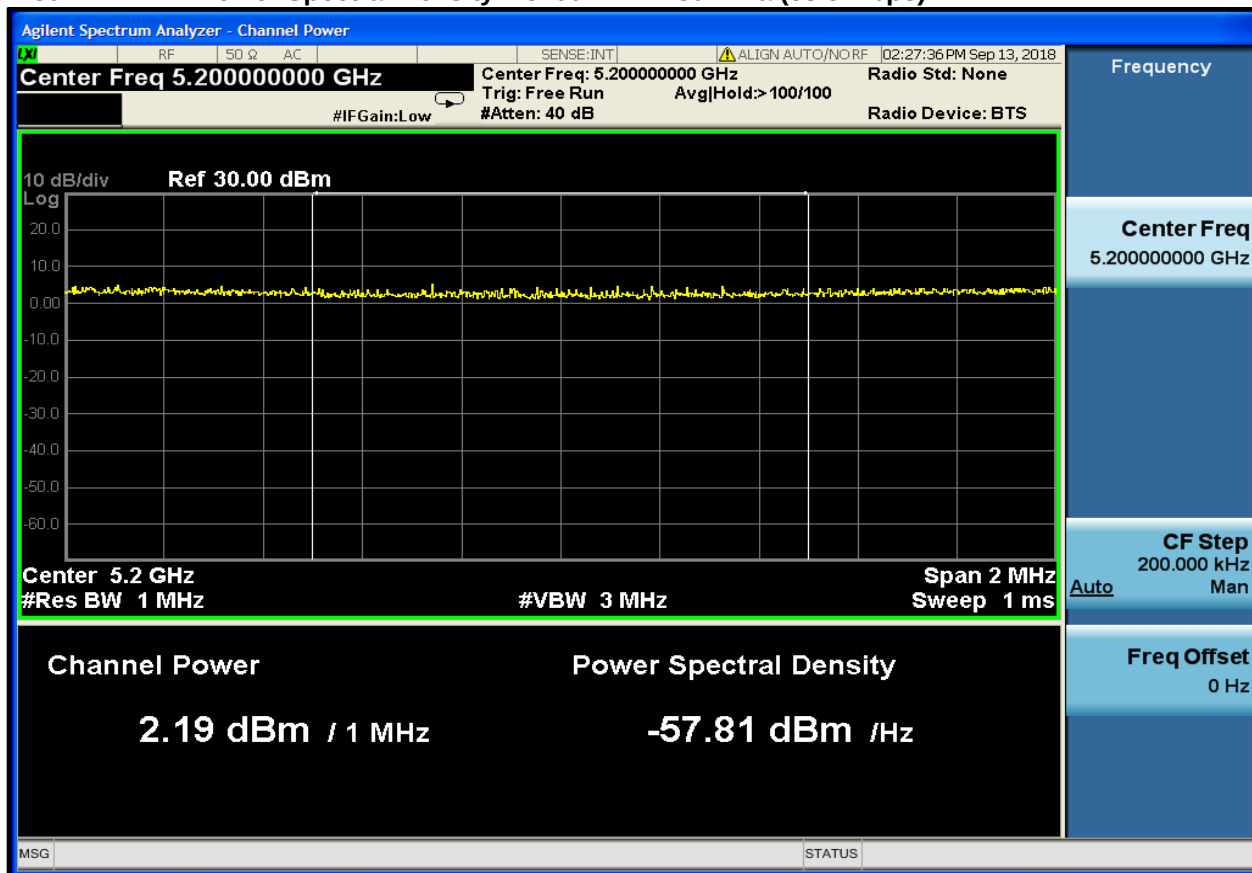
Frequency (MHz)	PSD (dBm)	Limit (dBm)	Margin (dB)	Result (Pass / Fail)
5745	-1.0	30.0	-31.0	Pass
5785	-1.3	30.0	-31.3	Pass
5825	-1.0	30.0	-31.0	Pass

7.3 Power Spectral Density Plots – U-NII1

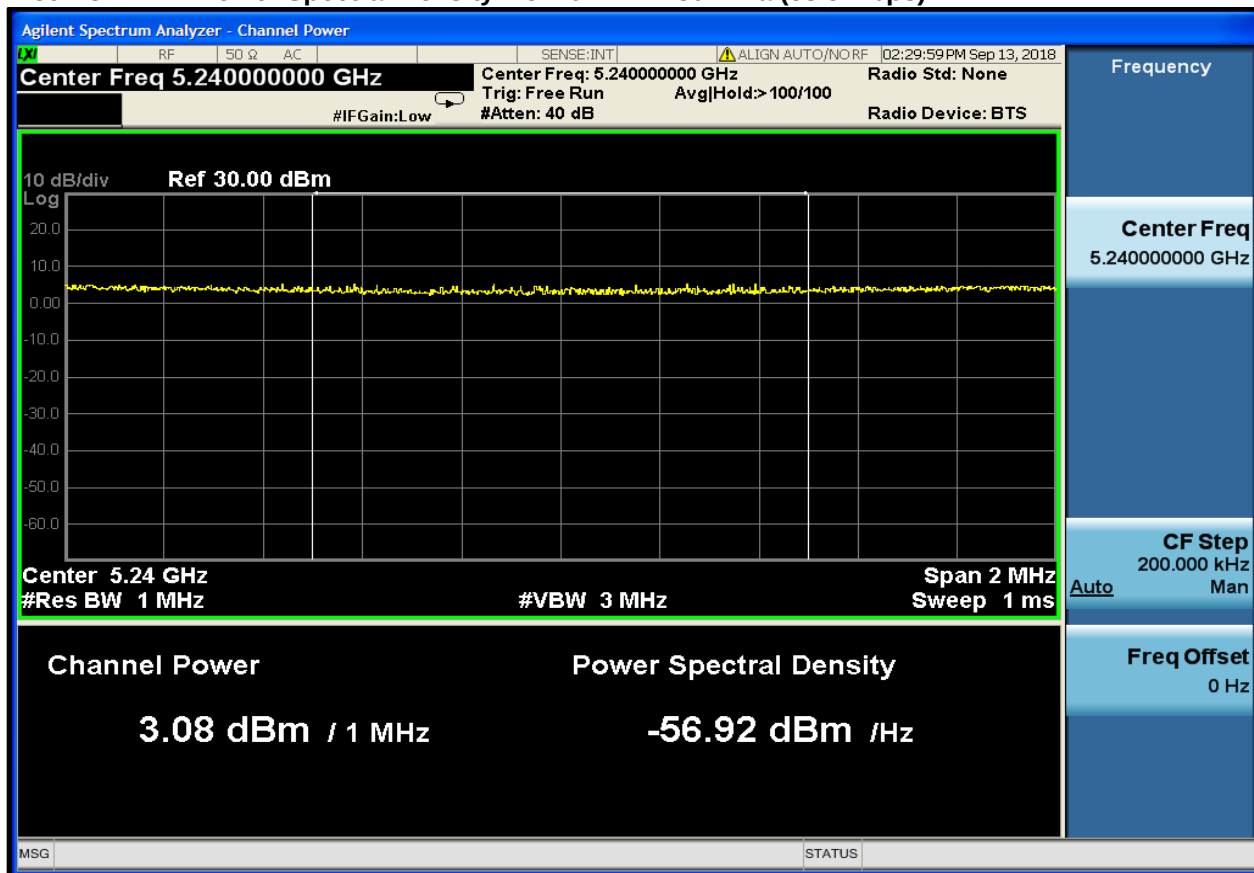
Plot 7-1: Power Spectral Density – 5170 MHz – 802.11a (58.5 Mbps)



Plot 7-2: Power Spectral Density – 5200 MHz – 802.11a (58.5 Mbps)

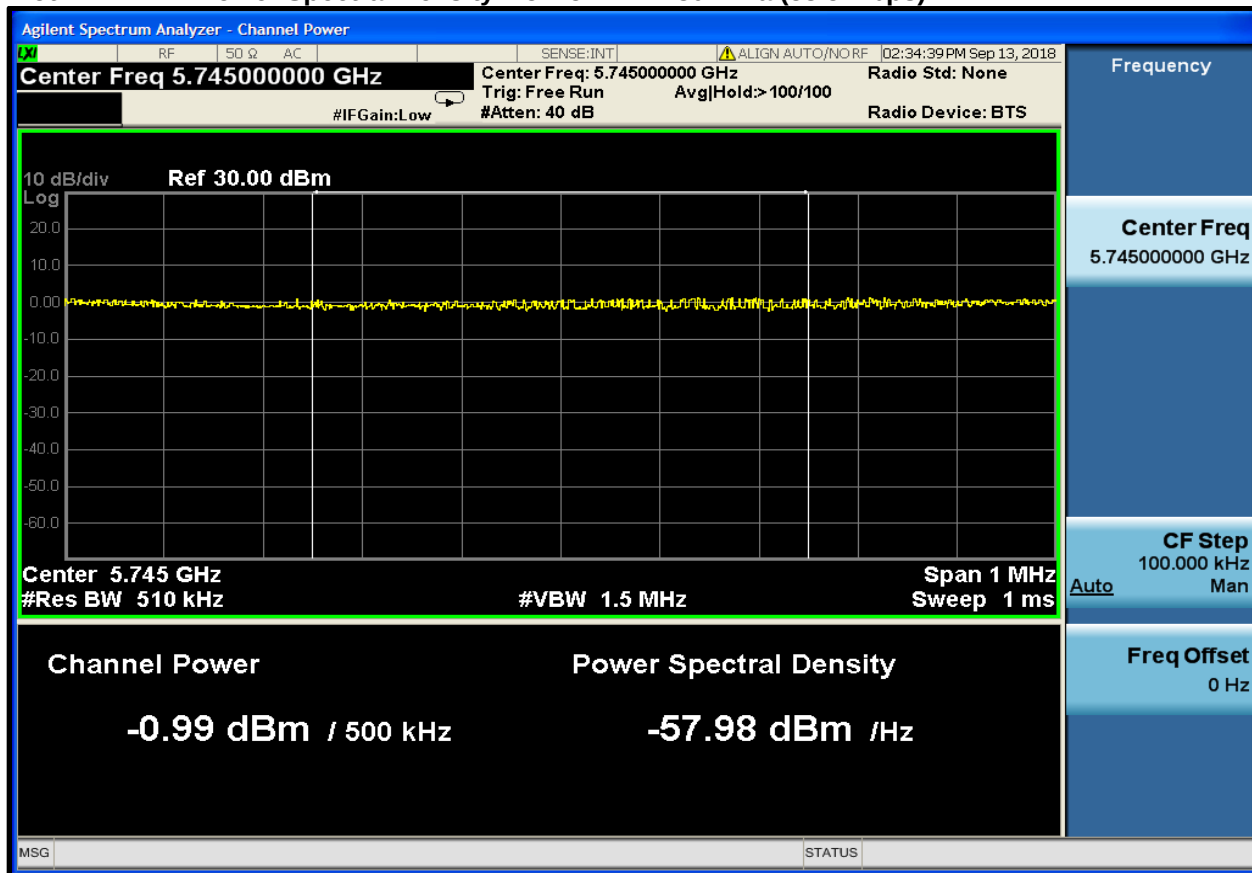


Plot 7-3: Power Spectral Density – 5240 MHz – 802.11a (58.5 Mbps)

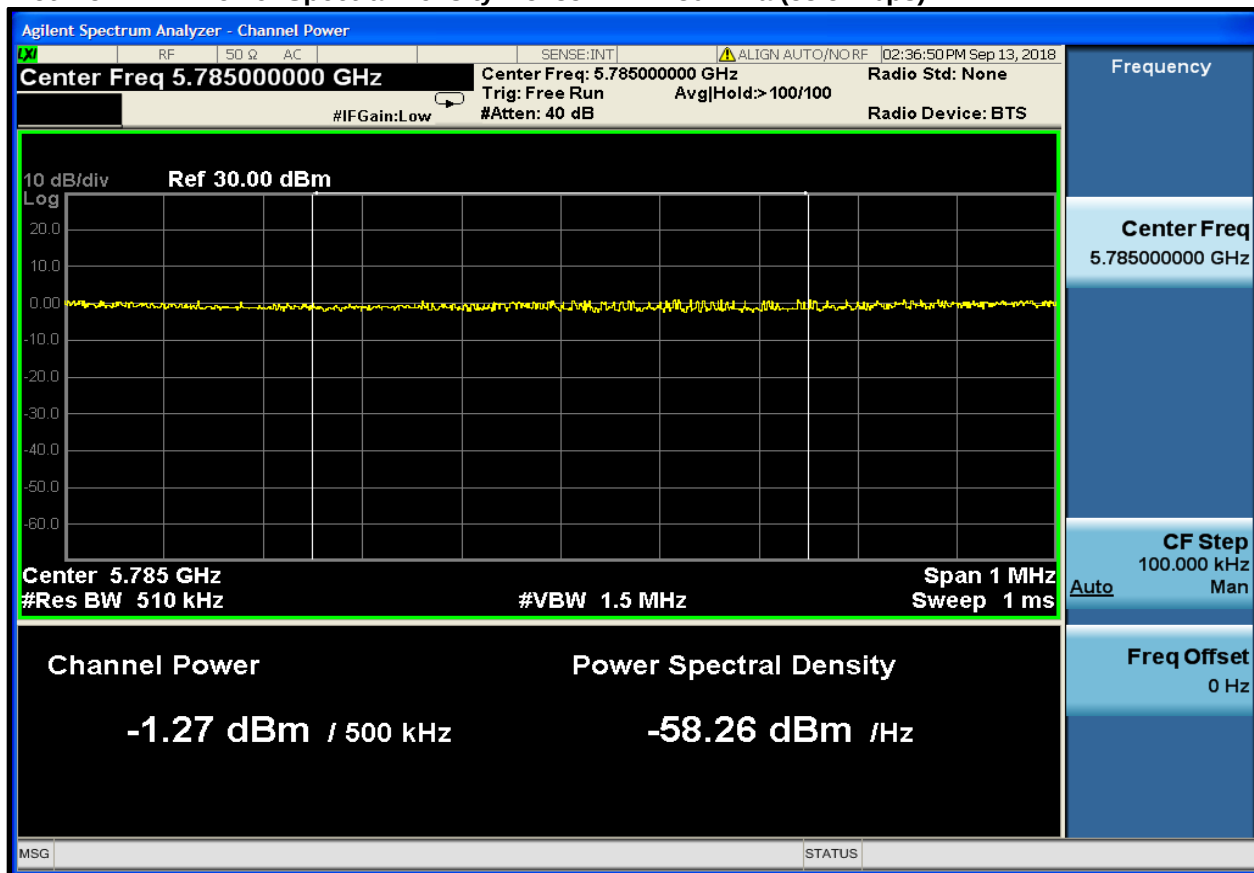


7.4 Power Spectral Density Plots – U-NII3

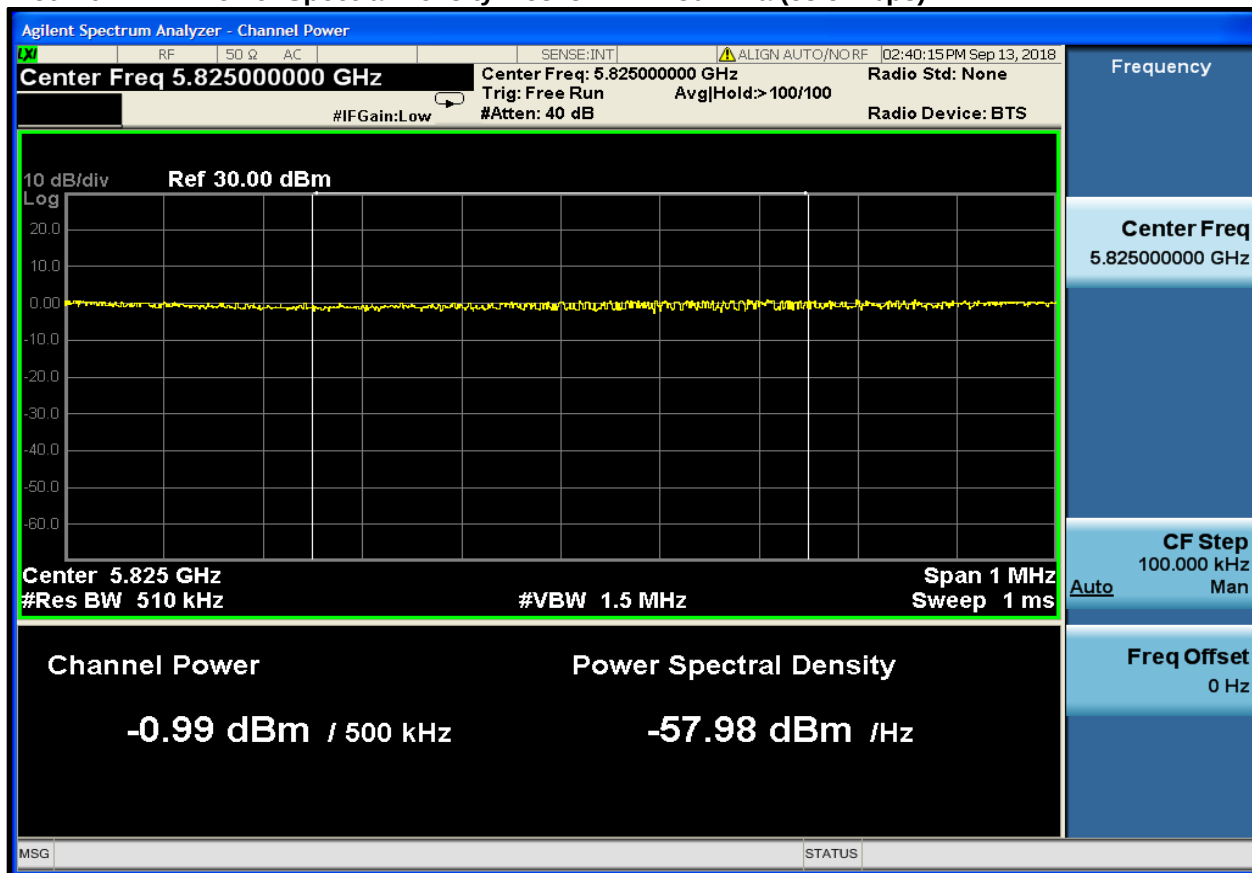
Plot 7-4: Power Spectral Density – 5745 MHz – 802.11a (58.5 Mbps)



Plot 7-5: Power Spectral Density – 5785 MHz – 802.11a (58.5 Mbps)



Plot 7-6: Power Spectral Density – 5825 MHz – 802.11a (58.5 Mbps)



Measurement uncertainty: ± 0.5 dB. This measurement uncertainty is an expanded uncertainty for 95% confidence level received with a coverage factor $k=2$.

Results: Pass

Test Personnel:

Khue Do
Test Engineer

[Signature]
Signature

September 13, 2018
Date of Test

8 Frequency Stability – FCC 15.407(g); RSS-Gen 6.11

8.1 Frequency Stability Test Procedure

The EUT was placed inside the temperature chamber and supplied by nominal 13.6 VDC. The EUT was connected to an analyzer which was located outside of the chamber. The temperature was set to the lowest level of -30.0°C and the EUT was allowed to stabilize with power off for a period of 1 hour. The EUT was then powered up and the frequency was measured. This was continued at +20.0°C and +50.0°C. The chamber was allowed to stabilize between measurements for approximately 30 minutes. At +20.0°C, the EUT supply voltage was adjusted to 85% (11.56 VDC) and 115% (15.64 VDC) of the nominal voltage, and the frequency was recorded.

8.2 Frequency Stability Test Result

Note: EUT was programmed to TX at 5200 MHz with 58.5 Mbps rate, 20 MHz bandwidth and 10 dBm power level.

Table 8-1: Frequency Stability at Extreme Temperatures

Temperature (°C)	Measured Frequency (MHz)	ppm
-30.0	5200.035	6.731
+20.0 (reference)	5200.055	10.577
+50.0	5199.995	-0.962

Table 8-2: Frequency Stability at Extreme Voltage Levels

Voltage (VDC)	Measured Frequency (MHz)	ppm
11.56	5199.995	-0.962
13.60 (reference)	5200.055	10.577
15.64	5200.005	0.962

Measurement uncertainty: ± 0.5 dB. This measurement uncertainty is an expanded uncertainty for 95% confidence level received with a coverage factor $k=2$.

Results: Pass

Test Personnel:

Khue Do		September 18, 2018
Test Engineer	Signature	Date of Test

9 AC Conducted Emissions – FCC 15.207; RSS-Gen 8.8

Device is a mobile 13.6 VDC equipment; AC line conducted emissions measurements are not required.

10 Radiated Emissions – FCC 15.209; RSS-247 6.2; RSS-Gen 6.13/7.1

10.1 Limits of Radiated Emissions Measurement

Frequency (MHz)	Field Strength ($\mu\text{V/m}$)	Measurement Distance (m)
0.009-0.490	2400/f (kHz)	300
0.490-1.705	2400/f (kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

As shown in 15.35(b), for frequencies above 1000 MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20 dB under any circumstances of modulation.

10.2 Radiated Emissions Measurement Test Procedure

Before final measurements of radiated emissions were made on the open-field three/ten meter range, the EUT was scanned indoors at one and three meter distances. This was done in order to determine its emissions spectrum signature. The physical arrangement of the test system and associated cabling was varied in order to determine the effect on the EUT's emissions in amplitude, direction and frequency. This process was repeated during final radiated emissions measurements on the open-field range, at each frequency, in order to ensure that maximum emission amplitudes were attained.

Final radiated emissions measurements were made on the three/ten-meter, open-field test site. The EUT was placed on a nonconductive turntable 0.8 meters above the ground plane. The spectrum was examined from 9 kHz to the 10th harmonic of the highest fundamental transmitter frequency (24.8 GHz).

At each frequency, the EUT was rotated 360°, and the antenna was raised and lowered from 1 to 4 meters in order to determine the emission's maximum level. Measurements were taken using both horizontal and vertical antenna polarizations. For frequencies between 30 and 1000 MHz, the spectrum analyzer's 6 dB bandwidth was set to 120 kHz, and the analyzer was operated in the CISPR quasi-peak detection mode. For emissions above 1000 MHz, emissions are measured using the average detector function with a minimum resolution bandwidth of 1 MHz. No video filter less than 10 times the resolution bandwidth was used. The highest emission amplitudes relative to the appropriate limit were measured and recorded in this report.

Table 10-1: Radiated Emissions Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
900772	EMCO	3161-02	Horn Antenna (2.0–4.0 GHz)	9804-1044	4/9/19
900321	EMCO	3161-03	Horn Antennas (4.0–8.2 GHz)	9508-1020	4/9/19
900323	EMCO	3160-7	Horn Antennas (8.2–12.4 GHz)	9605-1054	4/9/19
900356	EMCO	3160-08	Horn Antenna (12.4–18.0 GHz)	9607-1044	4/9/19
901218	EMCO	3160-09	Horn Antenna (18.0–26.5 GHz)	960281-003	4/14/19
900791	Chase	CBL6111B	Bilog Antenna (30–2000 MHz)	N/A	10/4/20
900905	Rhein Tech Laboratories, Inc.	PR-1040	Preamplifier (10–2000 MHz)	1006	8/20/19
901723	Hewlett Packard	8449B	Preamplifier (1–26.5 GHz)	3008A00762	5/22/19
901583	Agilent Technologies	N9010A	EXA Signal Analyzer (10 Hz–26.5 GHz)	MY51250846	2/6/20
900913	Hewlett Packard	85462A	EMI Receiver RF Section (9 kHz–6.5 GHz)	3325A00159	4/4/19
900914	Hewlett Packard	85460A	RF Filter Section (100 kHz-6.5 GHz)	3330A00107	4/4/19

10.3 Radiated Emissions Test Results

Note: EUT was programmed to TX with 58.5 Mbps rate, 20 MHz bandwidth and 10 dBm power level for all three test frequencies.

Frequencies above the 2nd harmonics were measured at 1 m instead of 3 m.

Correction = $20 * \text{LOG}(1 \text{ m} / 3 \text{ m}) = -9.5 \text{ dB}$

Table 10-2: Radiated Emissions Harmonics/Spurious – 5170 MHz, Peak Detector

Frequency (MHz)	Peak Analyzer (dBμV/m)	Site Correction Factor (dB/m)	Peak Corrected (dBμV/m)	Peak Limit (dBμV/m)	Peak Margin (dB)
15510	47.7	-6.7	41.0	74.0	-33.0
20680	50.7	-17.2	33.5	74.0	-40.5

Table 10-3: Radiated Emissions Harmonics/Spurious – 5170 MHz, Average Detector

Frequency (MHz)	Average Analyzer (dBµV/m)	Site Correction Factor (dB/m)	Average Corrected (dBµV/m)	Average Limit (dBµV/m)	Average Margin (dB)
15510	45.4	-6.7	38.7	54.0	-15.3
20680	47.6	-17.2	30.4	54.0	-23.6

Table 10-4: Radiated Emissions Harmonics/Spurious – 5200 MHz, Peak Detector

Frequency (MHz)	Peak Analyzer (dBµV/m)	Site Correction Factor (dB/m)	Peak Corrected (dBµV/m)	Peak Limit (dBµV/m)	Peak Margin (dB)
15600	47.7	-6.7	41.0	74.0	-33.0
20800	50.4	-17.4	33.0	74.0	-41.0

Table 10-5: Radiated Emissions Harmonics/Spurious – 5200 MHz, Average Detector

Frequency (MHz)	Average Analyzer (dBµV/m)	Site Correction Factor (dB/m)	Average Corrected (dBµV/m)	Average Limit (dBµV/m)	Average Margin (dB)
15600	46.7	-6.7	40.0	54.0	-14.0
20800	47.2	-17.4	29.8	54.0	-24.2

Table 10-6: Radiated Emissions Harmonics/Spurious – 5240 MHz, Peak Detector

Frequency (MHz)	Peak Analyzer (dBµV/m)	Site Correction Factor (dB/m)	Peak Corrected (dBµV/m)	Peak Limit (dBµV/m)	Peak Margin (dB)
15720	48.3	-6.9	41.4	74.0	-32.6
20960	50.8	-17.3	33.5	74.0	-40.5

Table 10-7: Radiated Emissions Harmonics/Spurious – 5240 MHz, Average Detector

Frequency (MHz)	Average Analyzer (dBµV/m)	Site Correction Factor (dB/m)	Average Corrected (dBµV/m)	Average Limit (dBµV/m)	Average Margin (dB)
15720	46.4	-6.9	39.5	54.0	-14.5
20960	48.3	-17.3	31.0	54.0	-23.0

Table 10-8: Radiated Emissions Harmonics/Spurious – 5745 MHz, Peak Detector

Frequency (MHz)	Peak Analyzer (dBµV/m)	Site Correction Factor (dB/m)	Peak Corrected (dBµV/m)	Peak Limit (dBµV/m)	Peak Margin (dB)
11490	43.2	-10.8	32.4	74.0	-41.6
20680	50.3	-17.0	33.3	74.0	-40.7

Table 10-9: Radiated Emissions Harmonics/Spurious – 5745 MHz, Average Detector

Frequency (MHz)	Average Analyzer (dBµV/m)	Site Correction Factor (dB/m)	Average Corrected (dBµV/m)	Average Limit (dBµV/m)	Average Margin (dB)
11490	40.6	-10.8	29.8	54.0	-24.2
20680	47.9	-17.0	30.9	54.0	-23.1

Table 10-10: Radiated Emissions Harmonics/Spurious – 5785 MHz, Peak Detector

Frequency (MHz)	Peak Analyzer (dBµV/m)	Site Correction Factor (dB/m)	Peak Corrected (dBµV/m)	Peak Limit (dBµV/m)	Peak Margin (dB)
11570	43.0	-10.7	32.3	74.0	-41.7

Table 10-11: Radiated Emissions Harmonics/Spurious – 5785 MHz, Average Detector

Frequency (MHz)	Average Analyzer (dBµV/m)	Site Correction Factor (dB/m)	Average Corrected (dBµV/m)	Average Limit (dBµV/m)	Average Margin (dB)
11570	41.4	-10.7	30.7	54.0	-23.3

Table 10-12: Radiated Emissions Harmonics/Spurious – 5825 MHz, Peak Detector

Frequency (MHz)	Peak Analyzer (dBµV/m)	Site Correction Factor (dB/m)	Peak Corrected (dBµV/m)	Peak Limit (dBµV/m)	Peak Margin (dB)
11650	44.7	-10.6	34.1	74.0	-39.9

Table 10-13: Radiated Emissions Harmonics/Spurious – 5825 MHz, Average Detector

Frequency (MHz)	Average Analyzer (dBµV/m)	Site Correction Factor (dB/m)	Average Corrected (dBµV/m)	Average Limit (dBµV/m)	Average Margin (dB)
11650	42.3	-10.6	31.7	54.0	-22.3

Table 10-14: Unintentional Emissions Test Data

Temperature: 67.0°F Humidity: 94%										
Emission Frequency (MHz)	Test Detector	Antenna Polarity (H/V)	Turntable Azimuth (°)	Antenna Height (m)	Analyzer Reading (dBμV)	Site Correction Factor (dB/m)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pass/Fail
72.145	QP	H	0.0	3.0	51.9	-22.6	29.3	40.0	-10.7	PASS
120.000	QP	V	315.0	4.0	51.8	-16.8	35.0	43.5	-8.5	PASS
150.000	QP	H	315.0	2.0	51.6	-17.7	33.9	43.5	-9.6	PASS
175.000	QP	V	350.0	3.0	49.5	-18.5	31.1	43.5	-12.4	PASS
200.000	QP	V	180.0	4.0	48.9	-18.3	30.7	43.5	-12.8	PASS
225.000	QP	V	180.0	1.0	42.5	-18.0	24.6	46.0	-21.4	PASS
233.213	QP	V	180.0	1.0	41.4	-16.9	24.5	46.0	-21.5	PASS
250.000	QP	H	270.0	1.0	49.1	-15.0	34.1	46.0	-11.9	PASS
350.000	QP	H	315.0	1.0	37.1	-11.8	25.4	46.0	-20.6	PASS
375.000	QP	H	0.0	1.0	38.5	-11.0	27.5	46.0	-18.5	PASS
400.000	QP	H	315.0	1.0	41.5	-9.9	31.7	46.0	-14.3	PASS
425.000	QP	H	315.0	1.0	37.8	-9.5	28.3	46.0	-17.7	PASS

Measurement uncertainty: ± 4.7 dB. This measurement uncertainty is an expanded uncertainty for 95% confidence level received with a coverage factor $k=2$.

Results: Pass

Test Personnel:

Khue N. Do Test Engineer	 Signature	September 11-12, 2018 Dates of Test
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11 Conclusion

The data in this NII measurement report shows that the EUT as tested, Harris Corporation XL-185M, Model #/HVIN XT-MPS1M, FCC ID: OWDTR-0160-E, IC: 3636B-0160, complies with the applicable requirements of FCC Parts 2 and 15 and ISSED RSS-247 and RSS-Gen.