IW-6300H Series Access Point

Cisco Industrial Wireless Hazardous Location Access Point

2.4 GHz / 5 GHz 802.11 a/ac/b/g/n Wi-Fi radio

IW-6300H-AC-A-K9, IW-6300H-DC-A-K9, IW-6300H-DCW-A-K9, ESW-6300-CON-A-K9
IW-6300H-AC-B-K9, IW-6300H-DC-B-K9, IW-6300H-DCW-B-K9, ESW-6300-CON-B-K9
IW-6300H-AC-D-K9, IW-6300H-DC-D-K9, IW-6300H-DCW-D-K9, ESW-6300-CON-D-K9
IW-6300H-AC-T-K9, IW-6300H-DC-T-K9, IW-6300H-DCW-T-K9, ESW-6300-CON-T-K9
IW-6300H-AC-Z-K9, IW-6300H-DC-Z-K9, IW-6300H-DCW-Z-K9, ESW-6300-CON-Z-K9

FCC ID: LDKESW6300
IC ID: 2461D-ESW6300

5470-5725 MHz

Against the following Specifications:

47 CFR 15.407
47 CFR 15.209
47 CFR 15.205
RSS-247 issue 2
RSS-Gen issue 5
AS/NZ 4268:2017
LP0002:2018

ACCREDITED

Cisco Systems
170 West Tasman Drive
San Jose, CA 95134

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	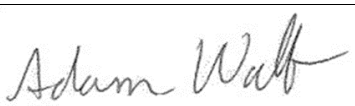
Author: Julian Land **Tested By:** Julian Land	**Approved By:** Adam Walb **Title:** MGR. IoT Compliance **Revision:** 1.0

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Section 1: Overview

The samples were assessed against the tests detailed in section 3 under the requirements of the following specifications:

Specifications:
CFR47 Part 15.407
RSS-247
LP0002:2018
AS/NZ 4268:2018

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Section2: Assessment Information

2.1 General

This report contains an assessment of an apparatus against Electromagnetic Compatibility Standards based upon tests carried out on the samples submitted. The testing was performed by and for the use of Cisco systems Inc:

With regard to this assessment, the following points should be noted:

a) The results contained in this report relate only to the items tested and were obtained in the period between the date of the initial assessment and the date of issue of the report. Manufactured products will not necessarily give identical results due to production and measurement tolerances.

b) The apparatus was set up and exercised using the configuration and modes of operation defined in this report only.

c) Where relevant, the apparatus was only assessed using the susceptibility criteria defined in this report and the Test Assessment Plan (TAP).

d) All testing was performed under the following environmental conditions:

Temperature	15℃ to 35℃ (54℉ to 95℉)
Atmospheric Pressure	860mbar to 1060mbar (25.4" to 31.3")
Humidity	10% to 75*%

e) All AC testing was performed at one or more of the following supply voltages:
110V 60 Hz (+/-20%)

Units of Measurement

The units of measurements defined in the appendices are reported in specific terms, which are test dependent. Where radiated measurements are concerned these are defined at a particular distance. Basic voltage measurements are defined in units of [dBuV] As an example, the basic calculation for all measurements is as follows:

Emission level [dBuV] = Indicated voltage level [dBuV] + Cable Loss [dB] + Other correction factors [dB]

The combinations of correction factors are dependent upon the exact test configurations [see test equipment lists for further details] and may include:-

Antenna Factors, Pre Amplifier Gain, LISN Loss, Pulse Limiter Loss and Filter Insertion Loss

Note: to convert the results from dBuV/m to uV/m use the following formula:-

Level in uV/m = Common Antilogarithm [(X dBuV/m)/20] = Y uV/m

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Measurement Uncertainty Values

voltage and power measurements	± 2 dB
conducted EIRP measurements	± 1.4 dB
radiated measurements	± 3.2 dB
frequency measurements	± 2.4 10-7
temperature measurements	± 0.54º
humidity measurements	± 2.3%
DC and low frequency measurements	± 2.5%

Where relevant measurement uncertainty levels have been estimated for tests performed on the apparatus. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Radiated emissions (expanded uncertainty, confidence interval 95%)

30 MHz - 300 MHz	+/- 3.8 dB
300 MHz - 1000 MHz	+/- 4.3 dB
1 GHz - 10 GHz	+/- 4.0 dB
10 GHz - 18GHz	+/- 8.2 dB
18GHz - 26.5GHz	+/- 4.1 dB
26.5GHz - 40GHz	+/- 3.9 dB

Conducted emissions (expanded uncertainty, confidence interval 95%)

30 MHz – 40GHz	+/- 0.38 dB

A product is considered to comply with a requirement if the nominal measured value is below the limit line. The product is considered to not be in compliance in case the nominal measured value is above the limit line.

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2.2 Date of testing

20-Nov-19 - 21-Nov-19

2.3 Report Issue Date

12/12/2019

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2.4 Testing facilities

This assessment was performed by:

Testing Laboratory

Cisco Systems, Inc.
125 West Tasman Drive (Building P)
San Jose, CA 95134
USA

Headquarters

Cisco Systems, Inc.,
170 West Tasman Drive
San Jose, CA 95134,
USA

Registration Numbers for Industry Canada

Cisco System Site	Address	Site Identifier
Building P, 10m Chamber	125 West Tasman Dr San Jose, CA 95134	Company #: 2461N-2
Building P, 5m Chamber	125 West Tasman Dr San Jose, CA 95134	Company #: 2461N-1
Building I, 5m Chamber	285 W. Tasman Drive San Jose, California 95134	Company #: 2461M-1
Building 7, 5m Chamber	425 E. Tasman Drive San Jose, California 95134	Company #: 2461N-3

Test Engineers

Julian Land

2.5 Equipment Assessed (EUT)

IW-6300H-DC-T-K9

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2.6 EUT Description

The radio supports the following modes of operation. The modes are further defined in the radio Theory of Operation. The modes included in this report represent the worst-case data for all modes.

802.11a - Non HT20, Two Antennas, 6 to 54 Mbps, 1ss

802.11a - Non HT20 Beam Forming, Two Antennas, 6 to 54 Mbps, 1ss

802.11n/ac - HT/VHT20, One Antenna, M0 to M7, 1ss
802.11n/ac - HT/VHT20, Two Antennas, M0 to M7, 1ss
802.11n/ac - HT/VHT20, Two Antennas, M8 to M15, 2ss

802.11n/ac - HT/VHT20 Beam Forming, Two Antennas, M0 to M7, 1ss
802.11n/ac - HT/VHT20 Beam Forming, Two Antennas, M8 to M15, 2ss

802.11n/ac - HT/VHT20 STBC, Two Antennas, M0 to M7, 2ss

802.11a - Non HT40, One Antenna, 6 to 54 Mbps, 1ss
802.11a - Non HT40, Two Antennas, 6 to 54 Mbps, 1ss

802.11n/ac - HT/VHT40, One Antenna, M0 to M7, 1ss
802.11n/ac - HT/VHT40, Two Antennas, M0 to M7, 1ss
802.11n/ac - HT/VHT40, Two Antennas, M8 to M15, 2ss

802.11n/ac - HT/VHT40 Beam Forming, Two Antennas, M0 to M7, 1ss
802.11n/ac - HT/VHT40 Beam Forming, Two Antennas, M8 to M15, 2ss

802.11n/ac - HT/VHT40 STBC, Two Antennas, M0 to M7, 2ss

802.11a - Non HT80, One Antenna, 6 to 54 Mbps, 1ss
802.11a - Non HT80, Two Antennas, 6 to 54 Mbps, 1ss

802.11ac - VHT80, One Antenna, M0 to M9 1ss
802.11ac - VHT80, Two Antennas, M0 to M9 1ss
802.11ac - VHT80, Two Antennas, M0 to M9 2ss

802.11ac - VHT80 Beam Forming, Two Antennas, M0 to M9 1ss
802.11ac - VHT80 Beam Forming, Two Antennas, M0 to M9 2ss

802.11ac - VHT80 STBC, Two Antennas, M0 to M9 2ss

802.11a - Non HT20, One Antenna, 6 to 54 Mbps, 1ss

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Model / PID Differences

IW-6300H-AC-x-K9, IW-6300H-DC-x-K9, IW-6300-DCW-x-K9 and ESW-6300-CON-x-K9, all have the same identical components, electronics circuitries, PCB layout and enclosure.

The only differences are listed as below:

IW-6300H-AC-x-K9
IW-6300H-DC-x-K9
IW-6300-DCW-x-K9
ESW-6300-CON-x-K9

Where “x” can be replaced with another letter to indicate country domain.
Domain letters: A, B, C, D, E, F, H, I, L, M, N, Q, R, S, T, Z

Where “AC” is Alternating Current (AC power supply)
Where “DC” is Direct Current (DC power supply), 54V native input
Where “DCW” is Direct Current; wide range 10-36VDC
Where “K9” is encryption software.

Note: Because the three models only differ in the way they are powered up, and the wireless features are exactly the same, only one set of data is collected and documented in this report. All the formal compliance testing was performed using IW-6300H-DC-T-K9

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The following antennas are tested by this product.
The data included in this report represent the worst case data for all antennas.

Frequency	Part Number	Antenna Type	Antenna Gain (dBi)	>30 degree 5 GHz Antenna Gain (dBi)
2.4/5 GHz	AIR-ANT2547V-N	Dual-band Omni	**4 / 7**	**-6**
	AIR-ANT2513P4M-N	Dual-band Polarization Diverse Patch Array	**13 / 13**	**-5**

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Section 3: Result Summary

3.1 Results Summary Table

LP0002:2018			
Standard Section	**Test Item**	**Judgment**	Remark
4.7.3.4(2)	26 dB Emissions Bandwidth	PASS	None
4.7.3.1	Peak Transmit Power	PASS	None
4.7.3.1	Peak Power Spectral Density	PASS	None
4.7.4.5/2.3	AC Power Line Emissions	PASS	None
4.7.4/2.8	Radiated Emissions	PASS	None
4.7.4/2.8	Band Edge	PASS	None

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Section 4: Sample Details

Note: Each sample was evaluated to ensure that its condition was suitable to be used as a test sample prior to the commencement of testing.

4.1 Sample Details

Sample No.	Equipment Details	Manufacturer	Hardware Rev.	Firmware Rev.	Software Rev.	Serial Number
S01	IW-6300H-DC-T-K9	Cisco Systems, Inc.	11	9.1.8.1	9.0.5.5-W8964	FOC23241G16
S02	FSP150-AWAN3	FSP Group Inc.	-	-	-	H00000063

4.2 System Details

System #	Description	Samples
1	EUT and Power Supply	S01, S02

4.3 Mode of Operation Details

Mode#	Description	Comments
1	Continuous Transmitting	Continuous Transmitting ≥98% duty cycle

All measurements were made in accordance with

- ANSI C63.10:2013
- KDB 789033 D02 General UNII Test Procedures New Rules v01r03
- KDB 662911 D01 Multiple Transmitter Output v02r01

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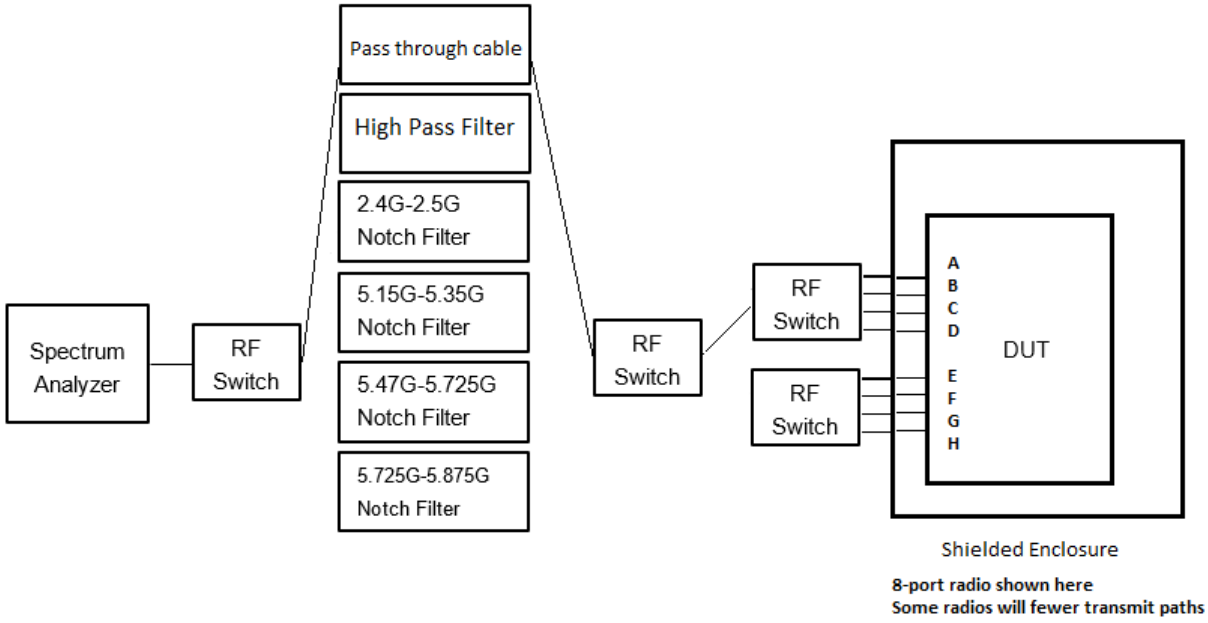
Appendix A: Emission Test Results

Conducted Test Setup Diagram



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Target Maximum Channel Power

The following table details the maximum supported Total Channel Power for all operating modes.

Antenna Gain: 7dBi	Maximum Channel Power (dBm)		
	Frequency (MHz)		
Operating Mode	5500	5560	5700
Non HT20, 6 to 54 Mbps	20	20	20
Non HT20 Beam Forming, 6 to 54 Mbps	17	17	17
HT/VHT20, M0 to M15	21	21	20
HT/VHT20 Beam Forming, M0 to M15	21	21	20
HT/VHT20 STBC, M0 to M7	21	21	20
	5510	5550	5710
Non HT40, 6 to 54 Mbps	18	20	23
HT/VHT40, M0 to M15	18	21	23
HT/VHT40 Beam Forming, M0 to M15	18	20	23
HT/VHT40 STBC, M0 to M7	18	20	23
	5530	5610	5690
Non HT80, 6 to 54 Mbps	15	19	22
VHT80, M0 to M9, M0 to M9 1-2ss	17	23	23
VHT80 Beam Forming, M0 to M9, M0 to M9 1-2ss	17	23	23
VHT80 STBC, M0 to M9 1ss	17	23	23

Antenna Gain: 13dBi Gain	Maximum Channel Power (dBm)		
	Frequency (MHz)		
Operating Mode	5500	5560	5700
Non HT20, 6 to 54 Mbps	14	14	15
Non HT20 Beam Forming, 6 to 54 Mbps	14	14	15
HT/VHT20, M0 to M15	14	14	15
HT/VHT20 Beam Forming, M0 to M15	14	14	15
HT/VHT20 STBC, M0 to M7	14	14	15
	5510	5550	5710
Non HT40, 6 to 54 Mbps	14	15	17
HT/VHT40, M0 to M15	13	15	17
HT/VHT40 Beam Forming, M0 to M15	13	14	16
HT/VHT40 STBC, M0 to M7	13	14	16
	5530	5610	5690
Non HT80, 6 to 54 Mbps	11	15	15
VHT80, M0 to M9, M0 to M9 1-2ss	13	16	17
VHT80 Beam Forming, M0 to M9, M0 to M9 1-2ss	13	16	17
VHT80 STBC, M0 to M9 1ss	13	16	17

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A.1 Duty Cycle

Duty Cycle Test Requirement
From KDB 789033 D02 General UNII Test Procedures New Rules v02r01
B. Duty Cycle (x), Transmission Duration (T), and Maximum Power Control Level

1. All measurements are to be performed with the EUT transmitting at 100 percent duty cycle at its maximum power control level; however, if 100 percent duty cycle cannot be achieved, measurements of duty cycle, x, and maximum-power transmission duration, *T*, are required for each tested mode of operation.

Duty Cycle Test Method
From KDB 789033 D02 General UNII Test Procedures New Rules v02r01:
B. Duty Cycle (x), Transmission Duration (T), and Maximum Power Control Level

The zero-span mode on a spectrum analyzer or EMI receiver, if the response time and spacing between bins on the sweep are sufficient to permit accurate measurements of the on and off times of the transmitted signal. Set the center frequency of the instrument to the center frequency of the transmission. Set RBW ≥ EBW if possible; otherwise, set RBW to the largest available value. Set VBW ≥ RBW. Set detector = peak or average. The zero-span measurement method shall not be used unless both RBW and VBW are > 50/T, where T is defined in section II.B.1.a), and the number of sweep points across duration T exceeds 100. (For example, if VBW and/or RBW are limited to 3 MHz, then the zero-span method of measuring duty cycle shall not be used if T ≤ 16.7 microseconds.)

Duty Cycle Test Information

Tested By :	**Date of testing:**
Julian Land	20-Nov-19 - 21-Nov-19
Test Result : PASS	

Test Equipment

See Appendix B for list of test equipment

Samples, Systems, and Modes

System Number	Description	Samples	System under test	Support equipment
1	EUT	S01	☑	☐
	Support	S02	☐	☑

Duty Cycle Data Table

Duty Cycle table and screen captures are shown below for power/psd modes.

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Frequency	Mode	Data Rate	Duty Cycle correction (dB)
5500	Non HT20, 6 to 54 Mbps	6	0.0
	HT/VHT20, M0 to M15	m0	0.0
5510	Non HT40, 6 to 54 Mbps	6	0.0
	HT/VHT40, M0 to M15	m0	0.1
5530	Non HT80, 6 to 54 Mbps	6	0.0
	VHT80, M0 to M9, M0 to M9 1-2ss	**m0x1**	**0.2**
5550	Non HT40, 6 to 54 Mbps	6	0.0
	HT/VHT40, M0 to M15	m0	0.1
5560	Non HT20, 6 to 54 Mbps	6	0.0
	HT/VHT20, M0 to M15	m0	0.0
5610	Non HT80, 6 to 54 Mbps	6	0.0
	VHT80, M0 to M9, M0 to M9 1-2ss	m0x1	0.2
5690	Non HT80, 6 to 54 Mbps	6	0.0
	VHT80, M0 to M9, M0 to M9 1-2ss	m0x1	0.2
5700	Non HT20, 6 to 54 Mbps	6	0.0
	HT/VHT20, M0 to M15	m0	0.0
5710	Non HT40, 6 to 54 Mbps	6	0.0
	HT/VHT40, M0 to M15	m0	0.1
5720	Non HT20, 6 to 54 Mbps	6	0.0
	HT/VHT20, M0 to M15	m0	0.0

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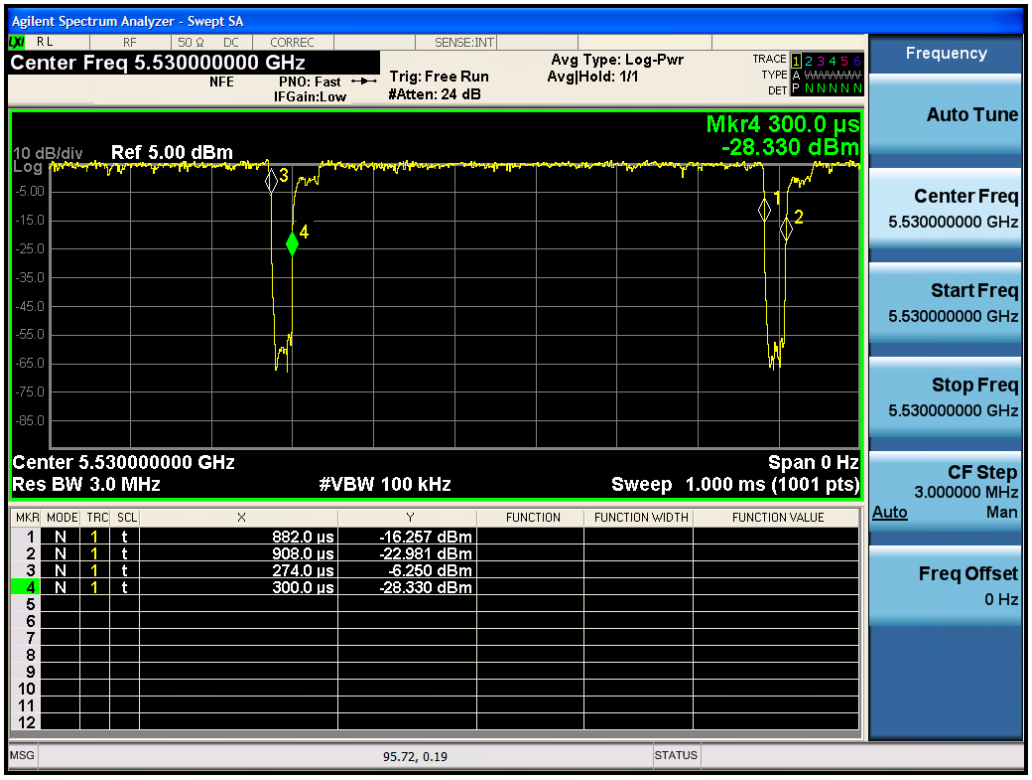
Duty Cycle, 5530 MHz, VHT80, M0 to M9, M0 to M9 1-2ss



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A.2 99% and 26dB Bandwidth

99% and 26dB Bandwidth Test Requirement

There is no requirement for the value of bandwidth. However, the 26dB BW (EBW) is used to calculate the power limits in 15.407 (a) (2), LP0002:4.7.2.3. Power measurements are made using the 99% Bandwidth as the integration bandwidth.

Band-crossing emissions: For an emission that crosses the boundary between two adjacent U-NII bands, the boundary frequency between the bands serves as one edge for defining the portion of the EBW that falls within a particular U-NII band. However, the -26 dB points are measured relative to the highest point on the contiguous segment—regardless of which band contains that highest point (Figure4).

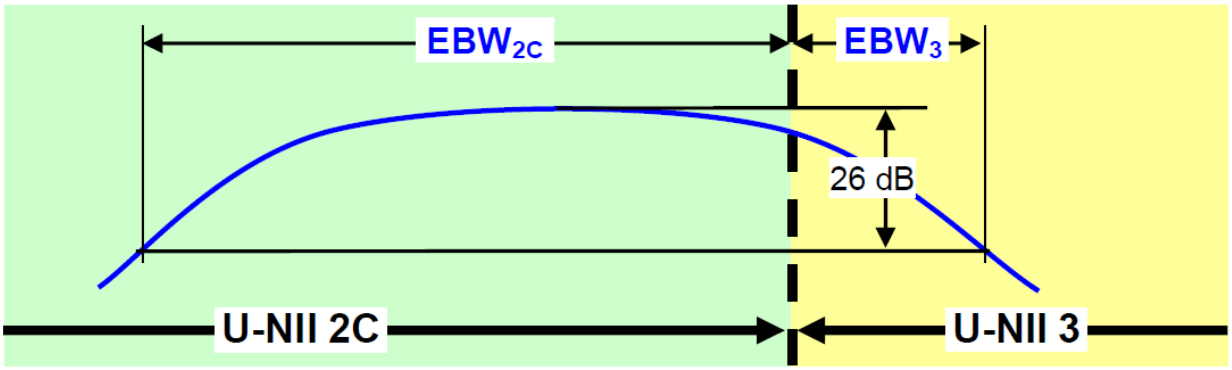

Figure 3. Emission Bandwidth (EBW) within a Band for Band-Crossing Signals

99% and 26dB Bandwidth Test Procedure

Ref. KDB 789033 Section D. 99 Percent Occupied Bandwidth
ANSI C63.10: 2013 Section 6.9.3
KDB 662911

99% BW Test Parameters
1. Set center frequency to the nominal EUT channel center frequency. 2. Set span = 1.5 times to 5.0 times the OBW. 3. Set RBW = 1 % to 5 % of the OBW 4. Set VBW ≥ 3 · RBW 5. Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used. 6. Use the 99 % power bandwidth function of the instrument (if available).

Ref KDB 789033 in Section C. Measurement Bandwidth, Section 1

26 BW Test parameters
X dB BW = -26dB (using the OBW function of the spectrum analyzer) Emission Bandwidth (EBW) a) Set RBW = approximately 1% of the emission bandwidth. b) Set the VBW > RBW. c) Detector = Peak. d) Trace mode = max hold. e) Measure the maximum width of the emission that is 26 dB down from the maximum of the emission. Compare this

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with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

Samples, Systems, and Modes

System Number	Description	Samples	System under test	Support equipment
1	EUT	S01	☑	☐
	Support	S02	☐	☑

Tested By : Test Engineer	**Date of testing:** Start Date to Finish Date here
Test Result : PASS	

Test Equipment

See Appendix B for list of test equipment

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99% and 26dB Bandwidth Table

Frequency (MHz)	Mode	Data Rate (Mbps)	26dB BW (MHz)	99% BW (MHz)
5500	Non HT20, 6 to 54 Mbps	6	19.8	16.610
	HT/VHT20, M0 to M15	m0	20.1	17.643
5510	Non HT40, 6 to 54 Mbps	6	41.8	36.387
	HT/VHT40, M0 to M15	m0	40.6	36.211
5530	Non HT80, 6 to 54 Mbps	6	83.2	76.422
	VHT80, M0 to M9, M0 to M9 1-2ss	m0x1	83.2	76.471
5550	Non HT40, 6 to 54 Mbps	6	41.4	36.477
	HT/VHT40, M0 to M15	m0	40.6	36.207
5560	Non HT20, 6 to 54 Mbps	6	19.7	16.615
	HT/VHT20, M0 to M15	m0	20.1	17.641
5610	Non HT80, 6 to 54 Mbps	6	82.0	76.356
	VHT80, M0 to M9, M0 to M9 1-2ss	m0x1	82.3	76.364
5690	Non HT80, 6 to 54 Mbps	6	82.8	76.414
	VHT80, M0 to M9, M0 to M9 1-2ss	m0x1	82.3	76.524
5700	Non HT20, 6 to 54 Mbps	6	19.7	16.612
	HT/VHT20, M0 to M15	m0	20.2	17.653
5710	Non HT40, 6 to 54 Mbps	6	41.3	36.410
	HT/VHT40, M0 to M15	m0	40.9	36.210
5720	**Non HT20, 6 to 54 Mbps**	**6**	**14.9**	**13.283**
	HT/VHT20, M0 to M15	m0	15.1	13.797

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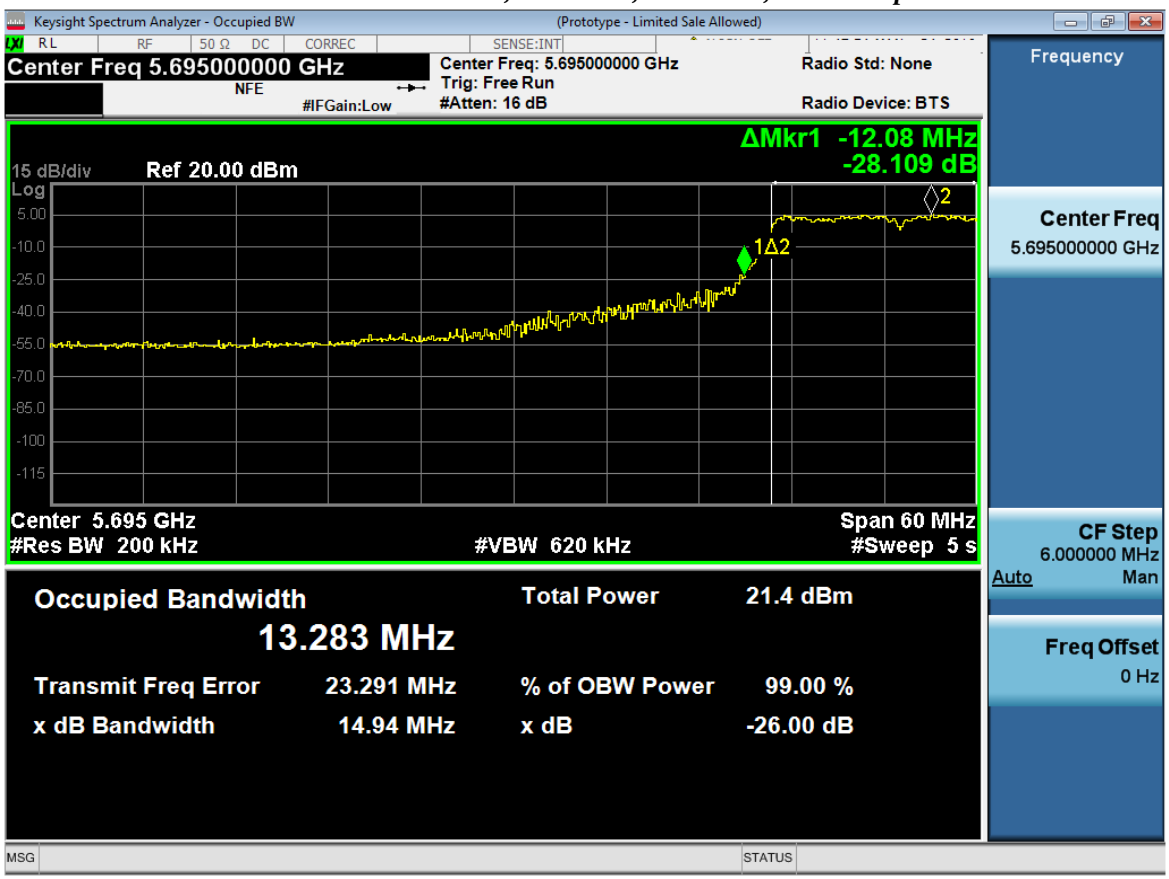
26dB / 99% Bandwidth, 5720 MHz, Non HT20, 6 to 54 Mbps



A.3Maximum Conducted Output Power

Maximum Conducted Output Power Test Requirement

15.407 (2), LP0002:4.7.3.2 (1)(3) For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26-dB emission bandwidth in megahertz. … If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted

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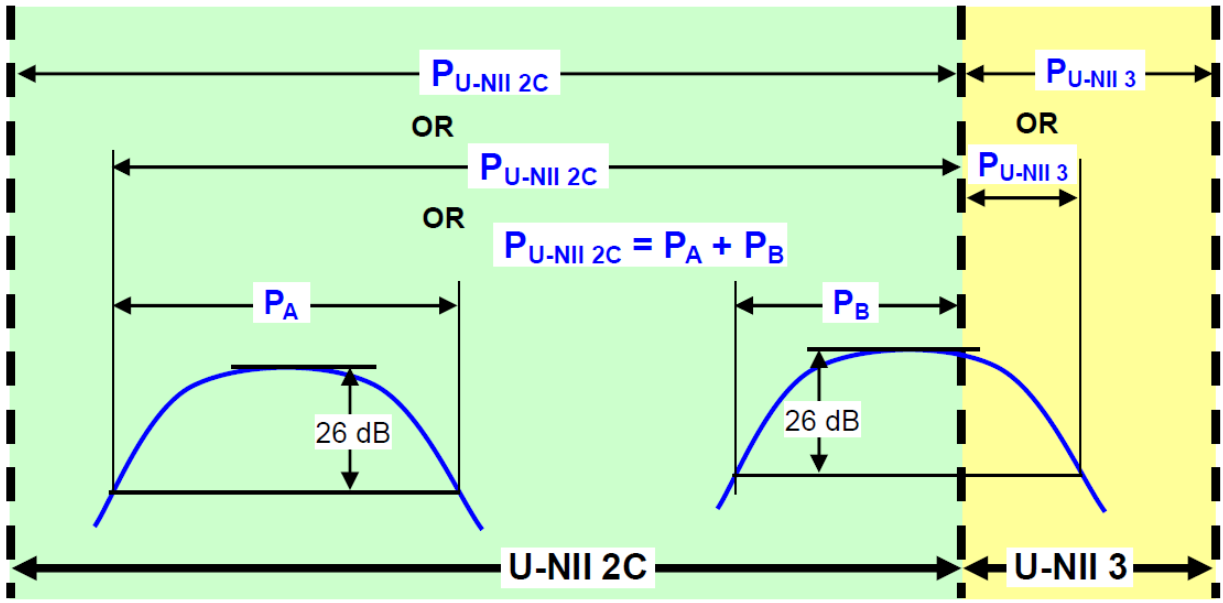
output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Band-Crossing Signals When measuring the portion of the maximum conducted output power within a single U-NII band, the power shall be integrated across only the portion of the EBW that falls within that band. That is, if an EBW extends across the boundary between two adjacent bands, the boundary frequency between the bands serves as one edge of the frequency range to be integrated. Integration across an entire U-NII band without regard to 26 dB points is also acceptable for determining conducted output power within that band.



Conducted output power within a U-NII band: Integrate over the band or integrate over a span including the 26 dB EBWs of transmission segments within the band or integrate over 26 dB EBW of each transmission segment in the band and sum.

Figure 4. Conducted Output Power Measurement Examples

Maximum Conducted Output Power Test Procedure

Ref. KDB 789033 D02 General UNII Test Procedures New Rules v02r01
ANSI C63.10: 2013

Maximum Conducted Output Power Test Procedure
1. Set the radio in the continuous transmitting mode at full power 2. Compute power by integrating the spectrum across the EBW (or alternatively entire 99% OBW) of the signal using the instrument's band power measurement function. The integration shall be performed using the spectrum analyzer band-power measurement function with band limits set equal to the EBW or the OBW band edges. 3. Capture graphs and record pertinent measurement data.

Ref. KDB 789033 D02 General UNII Test Procedures New Rules v02r01
2. Measurement using a Spectrum Analyzer or EMI Receiver (SA), (d) Method SA-2

Maximum Conducted Output Power Test parameters

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Method SA-2 (trace averaging across on and off times of the EUT transmissions, followed by duty cycle correction).
(i) Measure the duty cycle, x, of the transmitter output signal as described in section II.B.
(ii) Set span to encompass the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal.
(iii) Set RBW = 1 MHz.
(iv) Set VBW ≥ 3 MHz.
(v) Number of points in sweep ≥ 2 Span / RBW. (This ensures that bin-to-bin spacing is ≤ RBW/2, so that narrowband signals are not lost between frequency bins.)
(vi) Sweep time = auto.
(vii) Detector = RMS (i.e., power averaging), if available. Otherwise, use sample detector mode.
(viii) Do not use sweep triggering. Allow the sweep to "free run".
(ix) Trace average at least 100 traces in power averaging (i.e., RMS) mode; however, the number of traces to be averaged shall be increased above 100 as needed to ensure that the average accurately represents the true average over the on and off periods of the transmitter.
(x) Compute power by integrating the spectrum across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal using the instrument's band power measurement function with band limits set equal to the EBW (or occupied bandwidth)

The "measure-and-sum technique" is used for measuring in-band transmit power of a device. In the measure-and-sum approach, the conducted emission level is measured at each antenna port. The measured results at the various antenna ports are then summed mathematically to determine the total emission level from the device. Summing is performed in linear power units. ANSI C63.10 section 14.3.2.2

Samples, Systems, and Modes

System Number	Description	Samples	System under test	Support equipment
1	EUT	S01	☑	☐
	Support	S02	☐	☑

Tested By: Test Engineer	**Date of testing:** Start Date to Finish Date here
Test Result: PASS	

Test Equipment
See Appendix B for list of test equipment

Maximum Output Power

Antenna Gain: 7dBi

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Frequency (MHz)	Mode	Tx Paths	Correlated Antenna Gain (dBi)	Tx 1 Max Power (dBm)	Tx 2 Max Power (dBm)	Duty Cycle Correction (dB)	Total Tx Channel Power (dBm)	Limit (dBm)	Margin (dB)
5500	Non HT20, 6 to 54 Mbps	1	7	20.2		0.0	20.2	22.96	2.73
	Non HT20, 6 to 54 Mbps	2	7	14.6	14.1	0.0	17.4	22.96	5.56
	Non HT20 Beam Forming, 6 to 54 Mbps	2	10	14.6	14.1	0.0	17.4	19.96	2.56
	HT/VHT20, M0 to M7	1	7	20.2		0.0	20.2	23.0	2.76
	HT/VHT20, M0 to M7	2	7	14.7	14.3	0.0	17.6	23.0	5.44
	HT/VHT20, M8 to M15	2	7	17.2	16.7	0.0	20.0	23.0	2.99
	HT/VHT20 Beam Forming, M0 to M7	2	10	14.7	14.3	0.0	17.6	20.0	2.44
	HT/VHT20 Beam Forming, M8 to M15	2	7	17.2	16.7	0.0	20.0	23.0	2.99
	HT/VHT20 STBC, M0 to M7	2	7	17.2	16.7	0.0	20.0	23.0	2.99
5510	Non HT40, 6 to 54 Mbps	1	7	15.7		0.0	15.7	23.0	7.26
	Non HT40, 6 to 54 Mbps	2	7	15.6	15.1	0.0	18.4	23.0	4.59
	HT/VHT40, M0 to M7	1	7	15.6		0.1	15.7	23.0	7.34
	HT/VHT40, M0 to M7	2	7	15.6	15.1	0.1	18.4	23.0	4.58
	HT/VHT40, M8 to M15	2	7	15.6	15.1	0.1	18.4	23.0	4.58
	HT/VHT40 Beam Forming, M0 to M7	2	10	13.6	13.1	0.1	16.4	20.0	3.58
	HT/VHT40 Beam Forming, M8 to M15	2	7	15.6	15.1	0.1	18.4	23.0	4.58
	HT/VHT40 STBC, M0 to M7	2	7	15.6	15.1	0.1	18.4	23.0	4.58

5530	Non HT80, 6 to 54 Mbps	1	7	15.0		0.0	15.0	23.0	7.97
	Non HT80, 6 to 54 Mbps	2	7	11.6	11.0	0.0	14.4	23.0	8.65
	VHT80, M0 to M9 1ss	1	7	15.2		0.2	15.4	23.0	7.60
	VHT80, M0 to M9 1ss	2	7	14.0	13.4	0.2	16.9	23.0	6.08
	VHT80, M0 to M9 2ss	2	7	14.0	13.4	0.2	16.9	23.0	6.08
	VHT80 Beam Forming, M0 to M9 1ss	2	10	12.0	11.5	0.2	15.0	20.0	5.04
	VHT80 Beam Forming, M0 to M9 2ss	2	7	14.0	13.4	0.2	16.9	23.0	6.08
	VHT80 STBC, M0 to M9 1ss	2	7	14.0	13.4	0.2	16.9	23.0	6.08
5550	Non HT40, 6 to 54 Mbps	1	7	18.9		0.0	18.9	23.0	4.06
	Non HT40, 6 to 54 Mbps	2	7	16.9	16.5	0.0	19.8	23.0	3.24
	HT/VHT40, M0 to M7	1	7	20.0		0.1	20.1	23.0	2.94

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	HT/VHT40, M0 to M7	2	7	17.8	17.4	0.1	20.7	23.0	2.33
	HT/VHT40, M8 to M15	2	7	18.8	18.3	0.1	21.6	23.0	1.38
	HT/VHT40 Beam Forming, M0 to M7	2	10	15.6	15.0	0.1	18.4	20.0	1.62
	HT/VHT40 Beam Forming, M8 to M15	2	7	18.8	18.3	0.1	21.6	23.0	1.38
	HT/VHT40 STBC, M0 to M7	2	7	18.8	18.3	0.1	21.6	23.0	1.38
5560	Non HT20, 6 to 54 Mbps	1	7	19.4		0.0	19.4	22.94	3.51
	Non HT20, 6 to 54 Mbps	2	7	13.9	13.6	0.0	16.8	22.94	6.14
	Non HT20 Beam Forming, 6 to 54 Mbps	2	10	13.9	13.6	0.0	16.8	19.94	3.14
	HT/VHT20, M0 to M7	1	7	19.6		0.0	19.6	23.0	3.36
	HT/VHT20, M0 to M7	2	7	14.1	13.8	0.0	17.0	23.0	5.99
	HT/VHT20, M8 to M15	2	7	17.4	17.4	0.0	20.5	23.0	2.55
	HT/VHT20 Beam Forming, M0 to M7	2	10	14.1	13.8	0.0	17.0	20.0	2.99
	HT/VHT20 Beam Forming, M8 to M15	2	7	17.4	17.4	0.0	20.5	23.0	2.55
	HT/VHT20 STBC, M0 to M7	2	7	17.4	17.4	0.0	20.5	23.0	2.55
5610	Non HT80, 6 to 54 Mbps	1	7	14.4		0.0	14.4	23.0	8.57
	Non HT80, 6 to 54 Mbps	2	7	14.4	13.6	0.0	17.1	23.0	5.94
	VHT80, M0 to M9 1ss	1	7	19.6		0.2	19.8	23.0	3.20
	VHT80, M0 to M9 1ss	2	7	18.4	17.9	0.2	21.4	23.0	1.64
	VHT80, M0 to M9 2ss	2	7	18.4	17.9	0.2	21.4	23.0	1.64
	VHT80 Beam Forming, M0 to M9 1ss	**2**	**10**	**16.1**	**15.3**	**0.2**	**18.9**	**20.0**	**1.07**
	VHT80 Beam Forming, M0 to M9 2ss	2	7	18.4	17.9	0.2	21.4	23.0	1.64
	VHT80 STBC, M0 to M9 1ss	2	7	18.4	17.9	0.2	21.4	23.0	1.64
5690	Non HT80, 6 to 54 Mbps	1	7	15.5		0.0	15.5	23.0	7.47
	Non HT80, 6 to 54 Mbps	2	7	15.3	14.5	0.0	18.0	23.0	5.04
	VHT80, M0 to M9 1ss	1	7	21.7		0.2	21.9	23.0	1.10
	VHT80, M0 to M9 1ss	2	7	17.5	17.4	0.2	20.7	23.0	2.34
	VHT80, M0 to M9 2ss	2	7	17.5	17.4	0.2	20.7	23.0	2.34
	VHT80 Beam Forming, M0 to M9 1ss	2	10	15.3	15.3	0.2	18.5	20.0	1.49
	VHT80 Beam Forming, M0 to M9 2ss	2	7	17.5	17.4	0.2	20.7	23.0	2.34
	VHT80 STBC, M0 to M9 1ss	2	7	17.5	17.4	0.2	20.7	23.0	2.34

5700	Non HT20, 6 to 54 Mbps	1	7	18.0		0.0	18.0	22.94	4.91
	Non HT20, 6 to 54 Mbps	2	7	13.2	14.3	0.0	16.8	22.94	6.11
	Non HT20 Beam Forming, 6 to 54 Mbps	2	10	13.2	14.3	0.0	16.8	19.94	3.11
	HT/VHT20, M0 to M7	1	7	17.2		0.0	17.2	23.0	5.76
	HT/VHT20, M0 to M7	2	7	13.4	14.4	0.0	17.0	23.0	6.02

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	HT/VHT20, M8 to M15	2	7	16.9	18.0	0.0	20.5	23.0	2.46
	HT/VHT20 Beam Forming, M0 to M7	2	10	13.4	14.4	0.0	17.0	20.0	3.02
	HT/VHT20 Beam Forming, M8 to M15	2	7	16.9	18.0	0.0	20.5	23.0	2.46
	HT/VHT20 STBC, M0 to M7	2	7	16.9	18.0	0.0	20.5	23.0	2.46
5710	Non HT40, 6 to 54 Mbps	1	7	19.7		0.0	19.7	23.0	3.26
	Non HT40, 6 to 54 Mbps	2	7	15.6	16.1	0.0	18.9	23.0	4.09
	HT/VHT40, M0 to M7	1	7	21.5		0.1	21.6	23.0	1.44
	HT/VHT40, M0 to M7	2	7	17.3	17.9	0.1	20.7	23.0	2.32
	HT/VHT40, M8 to M15	2	7	17.7	18.2	0.1	21.0	23.0	1.98
	HT/VHT40 Beam Forming, M0 to M7	2	10	14.4	15.0	0.1	17.8	20.0	2.22
	HT/VHT40 Beam Forming, M8 to M15	2	7	17.7	18.2	0.1	21.0	23.0	1.98
	HT/VHT40 STBC, M0 to M7	2	7	17.7	18.2	0.1	21.0	23.0	1.98
5720									
	Non HT20, 6 to 54 Mbps	1	7	19.5		0.0	19.5	21.73	2.20
	Non HT20, 6 to 54 Mbps	2	7	12.7	13.7	0.0	16.3	21.73	5.46
	Non HT20 Beam Forming, 6 to 54 Mbps	2	10	12.7	13.7	0.0	16.3	18.73	2.46
	HT/VHT20, M0 to M7	1	7	18.7		0.0	18.7	21.78	3.04
	HT/VHT20, M0 to M7	2	7	12.7	13.8	0.0	16.3	21.78	5.44
	HT/VHT20, M8 to M15	2	7	16.4	16.3	0.0	19.4	21.78	2.38
	HT/VHT20 Beam Forming, M0 to M7	2	10	12.7	13.8	0.0	16.3	18.78	2.44
	HT/VHT20 Beam Forming, M8 to M15	2	7	16.4	16.3	0.0	19.4	21.73	2.33
	HT/VHT20 STBC, M0 to M7	2	7	16.4	16.3	0.0	19.4	21.73	2.33

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Antenna Gain: 13dBi									
Frequency (MHz)	Mode	Tx Paths	Correlated Antenna Gain (dBi)	Tx 1 Max Power (dBm)	Tx 2 Max Power (dBm)	Duty Cycle Correction (dB)	Total Tx Channel Power (dBm)	Limit (dBm)	Margin (dB)
5500	Non HT20, 6 to 54 Mbps	1	13	13.7		0.0	13.7	16.98	3.25
	Non HT20, 6 to 54 Mbps	2	13	11.7	10.6	0.0	14.2	16.98	2.75
	Non HT20 Beam Forming, 6 to 54 Mbps	2	13	11.7	10.6	0.0	14.2	16.98	2.75
	HT/VHT20, M0 to M7	1	13	13.8		0.0	13.8	17.0	3.16
	HT/VHT20, M0 to M7	2	13	11.8	10.8	0.0	14.4	17.0	2.62
	HT/VHT20, M8 to M15	2	13	11.8	10.8	0.0	14.4	17.0	2.62
	HT/VHT20 Beam Forming, M0 to M7	2	13	11.8	10.8	0.0	14.4	17.0	2.62
	HT/VHT20 Beam Forming, M8 to M15	2	13	11.8	10.8	0.0	14.4	17.0	2.62
	HT/VHT20 STBC, M0 to M7	2	13	11.8	10.8	0.0	14.4	17.0	2.62
5510	Non HT40, 6 to 54 Mbps	1	13	13.5		0.0	13.5	17.0	3.47
	Non HT40, 6 to 54 Mbps	2	13	9.5	8.5	0.0	12.1	17.0	4.93
	HT/VHT40, M0 to M7	1	13	12.3		0.1	12.4	17.0	4.65
	HT/VHT40, M0 to M7	2	13	10.0	9.2	0.1	12.7	17.0	4.32
	HT/VHT40, M8 to M15	2	13	10.0	9.2	0.1	12.7	17.0	4.32
	HT/VHT40 Beam Forming, M0 to M7	2	13	10.0	9.2	0.1	12.7	17.0	4.32
	HT/VHT40 Beam Forming, M8 to M15	2	13	10.0	9.2	0.1	12.7	17.0	4.32
	HT/VHT40 STBC, M0 to M7	2	13	10.0	9.2	0.1	12.7	17.0	4.32
5530	Non HT80, 6 to 54 Mbps	1	13	11.3		0.0	11.3	17.0	5.67
	Non HT80, 6 to 54 Mbps	2	13	5.5	4.7	0.0	8.2	17.0	8.84
	VHT80, M0 to M9 1ss	1	13	11.8		0.2	12.0	17.0	5.01
	VHT80, M0 to M9 1ss	2	13	9.7	9.0	0.2	12.6	17.0	4.44
	VHT80, M0 to M9 2ss	2	13	9.7	9.0	0.2	12.6	17.0	4.44
	VHT80 Beam Forming, M0 to M9 1ss	2	13	9.7	9.0	0.2	12.6	17.0	4.44
	VHT80 Beam Forming, M0 to M9 2ss	2	13	9.7	9.0	0.2	12.6	17.0	4.44
	VHT80 STBC, M0 to M9 1ss	2	13	9.7	9.0	0.2	12.6	17.0	4.44
5550	Non HT40, 6 to 54 Mbps	1	13	15.1		0.0	15.1	17.0	1.87
	Non HT40, 6 to 54 Mbps	2	13	9.2	9.0	0.0	12.1	17.0	4.86
	HT/VHT40, M0 to M7	1	13	15.2		0.1	15.3	17.0	1.75

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	HT/VHT40, M0 to M7	2	13	11.0	10.9	0.1	14.0	17.0	2.99
	HT/VHT40, M8 to M15	2	13	11.0	10.9	0.1	14.0	17.0	2.99
	HT/VHT40 Beam Forming, M0 to M7	2	13	11.0	10.9	0.1	14.0	17.0	2.99
	HT/VHT40 Beam Forming, M8 to M15	2	13	11.0	10.9	0.1	14.0	17.0	2.99
	HT/VHT40 STBC, M0 to M7	2	13	11.0	10.9	0.1	14.0	17.0	2.99
5560	Non HT20, 6 to 54 Mbps	1	13	13.6		0.0	13.6	16.94	3.31
	Non HT20, 6 to 54 Mbps	2	13	10.6	10.9	0.0	13.8	16.94	3.14
	Non HT20 Beam Forming, 6 to 54 Mbps	2	13	10.6	10.9	0.0	13.8	16.94	3.14
	HT/VHT20, M0 to M7	1	13	13.7		0.0	13.7	17.0	3.26
	HT/VHT20, M0 to M7	2	13	10.8	11.1	0.0	14.0	17.0	2.99
	HT/VHT20, M8 to M15	2	13	10.8	11.1	0.0	14.0	17.0	2.99
	HT/VHT20 Beam Forming, M0 to M7	2	13	10.8	11.1	0.0	14.0	17.0	2.99
	HT/VHT20 Beam Forming, M8 to M15	2	13	10.8	11.1	0.0	14.0	17.0	2.99
	HT/VHT20 STBC, M0 to M7	2	13	10.8	11.1	0.0	14.0	17.0	2.99
5610	Non HT80, 6 to 54 Mbps	1	13	11.6		0.0	11.6	17.0	5.37
	Non HT80, 6 to 54 Mbps	2	13	11.6	11.7	0.0	14.7	17.0	2.31
	VHT80, M0 to M9 1ss	1	13	16.3		0.2	16.5	17.0	0.51
	VHT80, M0 to M9 1ss	2	13	13.1	13.0	0.2	16.3	17.0	0.75
	VHT80, M0 to M9 2ss	2	13	13.1	13.0	0.2	16.3	17.0	0.75
	VHT80 Beam Forming, M0 to M9 1ss	2	13	13.1	13.0	0.2	16.3	17.0	0.75
	VHT80 Beam Forming, M0 to M9 2ss	2	13	13.1	13.0	0.2	16.3	17.0	0.75
	VHT80 STBC, M0 to M9 1ss	2	13	13.1	13.0	0.2	16.3	17.0	0.75
5690	Non HT80, 6 to 54 Mbps	1	13	14.1		0.0	14.1	17.0	2.87
	Non HT80, 6 to 54 Mbps	2	13	11.7	11.2	0.0	14.5	17.0	2.50
	VHT80, M0 to M9 1ss	1	13	15.9		0.2	16.1	17.0	0.91
	VHT80, M0 to M9 1ss	**2**	**13**	**13.9**	**13.6**	**0.2**	**17.0**	**17.0**	**0.05**
	VHT80, M0 to M9 2ss	2	13	13.9	13.6	0.2	17.0	17.0	0.05
	VHT80 Beam Forming, M0 to M9 1ss	2	13	13.9	13.6	0.2	17.0	17.0	0.05
	VHT80 Beam Forming, M0 to M9 2ss	2	13	13.9	13.6	0.2	17.0	17.0	0.05
	VHT80 STBC, M0 to M9 1ss	2	13	13.9	13.6	0.2	17.0	17.0	0.05

5700	Non HT20, 6 to 54 Mbps	1	13	14.1		0.0	14.1	16.94	2.81
	Non HT20, 6 to 54 Mbps	2	13	10.9	12.0	0.0	14.5	16.94	2.41
	Non HT20 Beam Forming, 6 to 54 Mbps	2	13	10.9	12.0	0.0	14.5	16.94	2.41
	HT/VHT20, M0 to M7	1	13	14.3		0.0	14.3	17.0	2.66
	HT/VHT20, M0 to M7	2	13	11.0	12.2	0.0	14.7	17.0	2.31
	HT/VHT20, M8 to M15	2	13	11.0	12.2	0.0	14.7	17.0	2.31
	HT/VHT20 Beam Forming, M0 to M7	2	13	11.0	12.2	0.0	14.7	17.0	2.31
	HT/VHT20 Beam Forming, M8 to M15	2	13	11.0	12.2	0.0	14.7	17.0	2.31
	HT/VHT20 STBC, M0 to M7	2	13	11.0	12.2	0.0	14.7	17.0	2.31

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5710	Non HT40, 6 to 54 Mbps	1	13	16.7		0.0	16.7	17.0	0.27
	Non HT40, 6 to 54 Mbps	2	13	12.8	13.2	0.0	16.0	17.0	0.96
	HT/VHT40, M0 to M7	1	13	16.6		0.1	16.7	17.0	0.35
	HT/VHT40, M0 to M7	2	13	12.8	13.1	0.1	16.0	17.0	0.99
	HT/VHT40, M8 to M15	2	13	12.8	13.1	0.1	16.0	17.0	0.99
	HT/VHT40 Beam Forming, M0 to M7	2	13	12.8	13.1	0.1	16.0	17.0	0.99
	HT/VHT40 Beam Forming, M8 to M15	2	13	12.8	13.1	0.1	16.0	17.0	0.99
	HT/VHT40 STBC, M0 to M7	2	13	12.8	13.1	0.1	16.0	17.0	0.99
5720	Non HT20, 6 to 54 Mbps	1	13	13.7		0.0	13.7	15.73	2.00
	Non HT20, 6 to 54 Mbps	2	13	9.5	10.5	0.0	13.1	15.73	2.66
	Non HT20 Beam Forming, 6 to 54 Mbps	2	13	9.5	10.5	0.0	13.1	15.73	2.66
	HT/VHT20, M0 to M7	1	13	12.9		0.0	12.9	15.78	2.84
	HT/VHT20, M0 to M7	2	13	9.5	10.6	0.0	13.1	15.78	2.64
	HT/VHT20, M8 to M15	2	13	9.5	10.6	0.0	13.1	15.78	2.64
	HT/VHT20 Beam Forming, M0 to M7	2	13	9.5	10.6	0.0	13.1	15.78	2.64
	HT/VHT20 Beam Forming, M8 to M15	2	13	9.5	10.6	0.0	13.1	15.73	2.59
	HT/VHT20 STBC, M0 to M7	2	13	9.5	10.6	0.0	13.1	15.73	2.59

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Antenna Gain: 13dBi									
Frequency (MHz)	Mode	Tx Paths	Correlated Antenna Gain (dBi)	Tx 1 Max Power (dBm)	Tx 2 Max Power (dBm)	Duty Cycle Correction (dB)	Total Tx Channel Power (dBm)	Limit (dBm)	Margin (dB)
5500	Non HT20, 6 to 54 Mbps	1	13	12.9		0.0	12.9	16.98	4.05
	Non HT20, 6 to 54 Mbps	2	13	7.7	7.3	0.0	10.5	16.98	6.43
	Non HT20 Beam Forming, 6 to 54 Mbps	2	16	7.7	7.3	0.0	10.5	13.98	3.43
	HT/VHT20, M0 to M7	1	13	12.9		0.0	12.9	17.0	4.06
	HT/VHT20, M0 to M7	2	13	8.7	8.5	0.0	11.7	17.0	5.35
	HT/VHT20, M8 to M15	2	13	11.8	11.5	0.0	14.7	17.0	2.29
	HT/VHT20 Beam Forming, M0 to M7	2	16	8.7	8.5	0.0	11.7	14.0	2.35
	HT/VHT20 Beam Forming, M8 to M15	2	13	11.8	11.5	0.0	14.7	17.0	2.29
	HT/VHT20 STBC, M0 to M7	2	13	11.8	11.5	0.0	14.7	17.0	2.29
5510	Non HT40, 6 to 54 Mbps	1	13	11.5		0.0	11.5	17.0	5.46
	Non HT40, 6 to 54 Mbps	2	13	9.6	9.1	0.0	12.4	17.0	4.59
	HT/VHT40, M0 to M7	1	13	11.4		0.1	11.5	17.0	5.54
	HT/VHT40, M0 to M7	2	13	11.4	11.0	0.1	14.3	17.0	2.73
	HT/VHT40, M8 to M15	2	13	11.4	11.0	0.1	14.3	17.0	2.73
	HT/VHT40 Beam Forming, M0 to M7	2	16	7.4	7.0	0.1	10.3	14.0	3.73
	HT/VHT40 Beam Forming, M8 to M15	2	13	11.4	11.0	0.1	14.3	17.0	2.73
	HT/VHT40 STBC, M0 to M7	2	13	11.4	11.0	0.1	14.3	17.0	2.73
5530	Non HT80, 6 to 54 Mbps	1	13	10.7		0.0	10.7	17.0	6.27
	Non HT80, 6 to 54 Mbps	2	13	5.5	5.0	0.0	8.3	17.0	8.70
	VHT80, M0 to M9 1ss	1	13	11.1		0.2	11.3	17.0	5.70
	VHT80, M0 to M9 1ss	2	13	10.0	9.3	0.2	12.9	17.0	4.13
	VHT80, M0 to M9 2ss	2	13	10.0	9.3	0.2	12.9	17.0	4.13
	VHT80 Beam Forming, M0 to M9 1ss	2	16	5.9	5.4	0.2	8.9	14.0	5.14
	VHT80 Beam Forming, M0 to M9 2ss	2	13	10.0	9.3	0.2	12.9	17.0	4.13
	VHT80 STBC, M0 to M9 1ss	2	13	10.0	9.3	0.2	12.9	17.0	4.13

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5550	Non HT40, 6 to 54 Mbps	1	13	11.5		0.0	11.5	17.0	5.46
	Non HT40, 6 to 54 Mbps	2	13	9.5	9.1	0.0	12.4	17.0	4.64
	HT/VHT40, M0 to M7	1	13	11.4		0.1	11.5	17.0	5.54
	HT/VHT40, M0 to M7	2	13	11.4	10.9	0.1	14.2	17.0	2.78
	HT/VHT40, M8 to M15	2	13	11.4	10.9	0.1	14.2	17.0	2.78
	HT/VHT40 Beam Forming, M0 to M7	2	16	9.3	8.8	0.1	12.1	14.0	1.88
	HT/VHT40 Beam Forming, M8 to M15	2	13	11.4	10.9	0.1	14.2	17.0	2.78
	HT/VHT40 STBC, M0 to M7	2	13	11.4	10.9	0.1	14.2	17.0	2.78
5560	Non HT20, 6 to 54 Mbps	1	13	12.0		0.0	12.0	16.94	4.91
	Non HT20, 6 to 54 Mbps	2	13	7.9	7.8	0.0	10.9	16.94	6.05
	Non HT20 Beam Forming, 6 to 54 Mbps	2	16	7.9	7.8	0.0	10.9	13.94	3.05
	HT/VHT20, M0 to M7	1	13	12.1		0.0	12.1	17.0	4.86
	HT/VHT20, M0 to M7	2	13	8.0	8.0	0.0	11.1	17.0	5.95
	HT/VHT20, M8 to M15	2	13	11.2	11.0	0.0	14.2	17.0	2.85
	HT/VHT20 Beam Forming, M0 to M7	2	16	8.0	8.0	0.0	11.1	14.0	2.95
	HT/VHT20 Beam Forming, M8 to M15	2	13	11.2	11.0	0.0	14.2	17.0	2.85
	HT/VHT20 STBC, M0 to M7	2	13	11.2	11.0	0.0	14.2	17.0	2.85
5610	Non HT80, 6 to 54 Mbps	1	13	11.3		0.0	11.3	17.0	5.67
	Non HT80, 6 to 54 Mbps	2	13	5.2	5.0	0.0	8.1	17.0	8.86
	VHT80, M0 to M9 1ss	**1**	**13**	**16.1**		**0.2**	**16.3**	**17.0**	**0.70**
	VHT80, M0 to M9 1ss	2	13	11.7	11.4	0.2	14.8	17.0	2.24
	VHT80, M0 to M9 2ss	2	13	11.7	11.4	0.2	14.8	17.0	2.24
	VHT80 Beam Forming, M0 to M9 1ss	2	16	9.6	9.2	0.2	12.6	14.0	1.39
	VHT80 Beam Forming, M0 to M9 2ss	2	13	11.7	11.4	0.2	14.8	17.0	2.24
	VHT80 STBC, M0 to M9 1ss	2	13	11.7	11.4	0.2	14.8	17.0	2.24
5690	Non HT80, 6 to 54 Mbps	1	13	11.1		0.0	11.1	17.0	5.87
	Non HT80, 6 to 54 Mbps	2	13	7.9	7.7	0.0	10.8	17.0	6.16
	VHT80, M0 to M9 1ss	1	13	13.4		0.2	13.6	17.0	3.40
	VHT80, M0 to M9 1ss	2	13	11.4	11.0	0.2	14.4	17.0	2.59
	VHT80, M0 to M9 2ss	2	13	11.4	11.0	0.2	14.4	17.0	2.59
	VHT80 Beam Forming, M0 to M9 1ss	2	16	9.1	9.0	0.2	12.3	14.0	1.74
	VHT80 Beam Forming, M0 to M9 2ss	2	13	11.4	11.0	0.2	14.4	17.0	2.59
	VHT80 STBC, M0 to M9 1ss	2	13	11.4	11.0	0.2	14.4	17.0	2.59

5700	Non HT20, 6 to 54 Mbps	1	13	14.0		0.0	14.0	16.94	2.91
	Non HT20, 6 to 54 Mbps	2	13	7.9	9.2	0.0	11.6	16.94	5.30

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	Non HT20 Beam Forming, 6 to 54 Mbps	2	16	7.9	9.2	0.0	11.6	13.94	2.30
	HT/VHT20, M0 to M7	1	13	13.4		0.0	13.4	17.0	3.56
	HT/VHT20, M0 to M7	2	13	7.1	8.5	0.0	10.9	17.0	6.09
	HT/VHT20, M8 to M15	2	13	10.0	11.3	0.0	13.8	17.0	3.25
	HT/VHT20 Beam Forming, M0 to M7	2	16	7.1	8.5	0.0	10.9	14.0	3.09
	HT/VHT20 Beam Forming, M8 to M15	2	13	10.0	11.3	0.0	13.8	17.0	3.25
	HT/VHT20 STBC, M0 to M7	2	13	10.0	11.3	0.0	13.8	17.0	3.25
5710	Non HT40, 6 to 54 Mbps	1	13	13.7		0.0	13.7	17.0	3.26
	Non HT40, 6 to 54 Mbps	2	13	8.8	9.3	0.0	12.1	17.0	4.89
	HT/VHT40, M0 to M7	1	13	13.5		0.1	13.6	17.0	3.44
	HT/VHT40, M0 to M7	2	13	10.2	10.9	0.1	13.6	17.0	3.37
	HT/VHT40, M8 to M15	2	13	10.2	10.9	0.1	13.6	17.0	3.37
	HT/VHT40 Beam Forming, M0 to M7	2	16	8.5	9.1	0.1	11.9	14.0	2.12
	HT/VHT40 Beam Forming, M8 to M15	2	13	10.2	10.9	0.1	13.6	17.0	3.37
	HT/VHT40 STBC, M0 to M7	2	13	10.2	10.9	0.1	13.6	17.0	3.37
5720	Non HT20, 6 to 54 Mbps	1	13	12.7		0.0	12.7	15.73	3.00
	Non HT20, 6 to 54 Mbps	2	13	6.5	7.8	0.0	10.2	15.73	5.49
	Non HT20 Beam Forming, 6 to 54 Mbps	2	16	6.5	7.8	0.0	10.2	12.73	2.49
	HT/VHT20, M0 to M7	1	13	12.7		0.0	12.7	15.78	3.04
	HT/VHT20, M0 to M7	2	13	6.6	7.9	0.0	10.4	15.78	5.43
	HT/VHT20, M8 to M15	2	13	9.4	10.7	0.0	13.2	15.78	2.63
	HT/VHT20 Beam Forming, M0 to M7	2	16	6.6	7.9	0.0	10.4	12.78	2.43
	HT/VHT20 Beam Forming, M8 to M15	2	13	9.4	10.7	0.0	13.2	15.73	2.58
	HT/VHT20 STBC, M0 to M7	2	13	9.4	10.7	0.0	13.2	15.73	2.58

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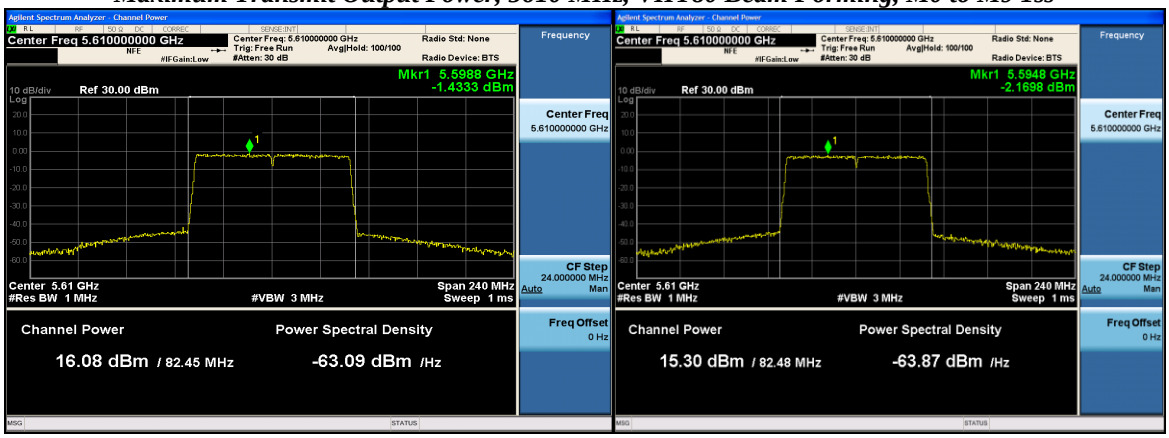
Antenna Gain: 7dBi

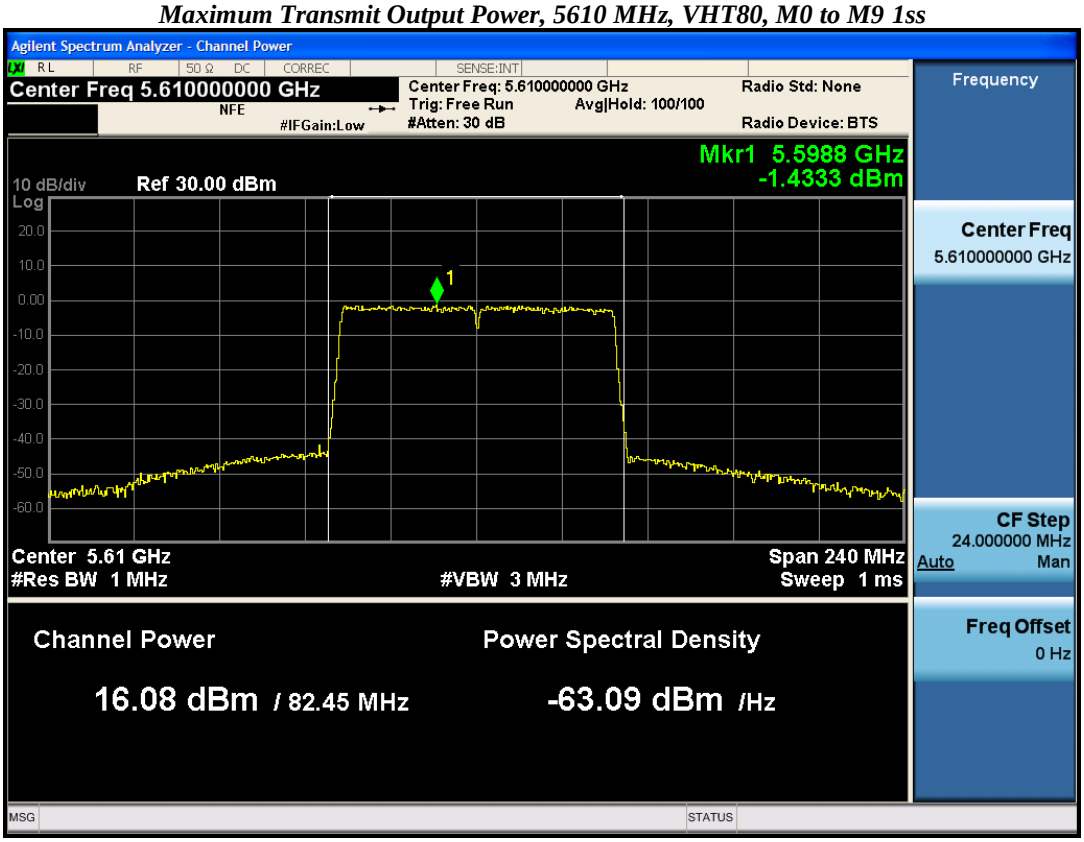
Maximum Transmit Output Power, 5610 MHz, VHT80 Beam Forming, M0 to M9 1ss



Antenna A ***Antenna B***

Antenna Gain: 13dBi

Maximum Transmit Output Power, 5610 MHz, VHT80, M0 to M9 1ss



Antenna A

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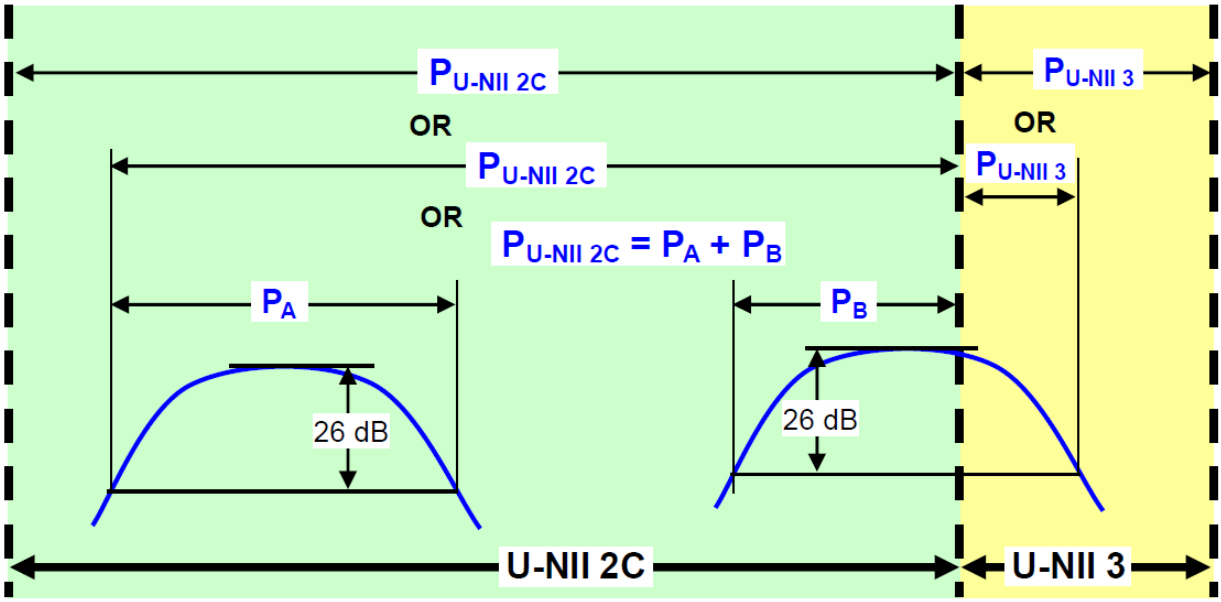
A.4 Power Spectral Density

Power Spectral Density Test Requirement

15.407 (2), **LP0002:4.7.3.2 (2)(3)** For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26-dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1-megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Band-Crossing Signals
When measuring the portion of the maximum conducted output power within a single U-NII band, the power shall be integrated across only the portion of the EBW that falls within that band. That is, if an EBW extends across the boundary between two adjacent bands, the boundary frequency between the bands serves as one edge of the frequency range to be integrated. Integration across an entire U-NII band without regard to 26 dB points is also acceptable for determining conducted output power within that band.



Conducted output power within a U-NII band: Integrate over the band or integrate over a span including the 26 dB EBWs of transmission segments within the band or integrate over 26 dB EBW of each transmission segment in the band and sum.

Figure 4. Conducted Output Power Measurement Examples

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Power Spectral Density Test Procedure

Ref. KDB 789033 D02 General UNII Test Procedures New Rules v02r01, F. Maximum Power Spectral Density
ANSI C63.10: 2013 Peak Power Spectral Density 12.5, 12.3.2.4 Method SA-2

Power Spectral Density Test Procedure
The rules requires "maximum power spectral density" measurements where the intent is to measure the maximum value of the time average of the power spectral density measured during a period of continuous transmission. 1. Create an average power spectrum for the EUT operating mode being tested by following the instructions in section II.E.2. for measuring maximum conducted output power using a spectrum analyzer or EMI receiver: select the appropriate test method (SA-1, SA-2, SA-3, or alternatives to each) and apply it up to, but not including, the step labeled, "Compute power…". (This procedure is required even if the maximum conducted output power measurement was performed using a power meter, method PM.) 2. Use the peak search function on the instrument to find the peak of the spectrum and record its value. 3. Make the following adjustments to the peak value of the spectrum, if applicable: a) If Method SA-2 or SA-2 Alternative was used, add 10 log(1/x), where x is the duty cycle, to the peak of the spectrum. b) If Method SA-3 Alternative was used and the linear mode was used in step II.E.2.g)(viii), add 1 dB to the final result to compensate for the difference between linear averaging and power averaging. 4. The result is the Maximum PSD over 1 MHz reference bandwidth.

Ref. KDB 789033 D02 General UNII Test Procedures New Rules v02r01, F. Maximum Power Spectral Density
ANSI C63.10: 2013 Peak Power Spectral Density 12.5, 12.3.2.4 Method SA-2

Power Spectral Density Test parameters
Method SA-2 (trace averaging across on and off times of the EUT transmissions, followed by duty cycle correction). (i) Measure the duty cycle, x, of the transmitter output signal as described in section II.B. (ii) Set span to encompass the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal. (iii) Set RBW = 1 MHz. (iv) Set VBW ≥ 3 MHz. (v) Number of points in sweep ≥ 2 Span / RBW. (This ensures that bin-to-bin spacing is ≤ RBW/2, so that narrowband signals are not lost between frequency bins.) (vi) Sweep time = auto. (vii) Detector = RMS (i.e., power averaging), if available. Otherwise, use sample detector mode. (viii) Do not use sweep triggering. Allow the sweep to "free run". (ix) Trace average at least 100 traces in power averaging (i.e., RMS) mode; however, the number of traces to be averaged shall be increased above 100 as needed to ensure that the average accurately represents the true average over the on and off periods of the transmitter. (x) Compute power by integrating the spectrum across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal using the instrument's band power measurement function with band limits set equal to the EBW (or occupied bandwidth) **F. Maximum Power Spectral Density (PSD)** 2. Use the peak search function on the instrument to find the peak of the spectrum and record its value. 3. Make the following adjustments to the peak value of the spectrum, if applicable: a) If Method SA-2 or SA-2 Alternative was used, add 10 log(1/x), where x is the duty cycle, to the peak of the spectrum.

The "measure-and-sum technique" is used for measuring in-band transmit power of a device. In the measure-and-sum approach, the conducted emission level is measured at each antenna port. The measured results at the various antenna ports are then summed

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mathematically to determine the total emission level from the device. Summing is performed in linear power units. ANSI C63.10 section 14.3.2.2

Samples, Systems, and Modes

System Number	Description	Samples	System under test	Support equipment
1	EUT	S01	☑	☐
	Support	S02	☐	☑

Tested By: Test Engineer	**Date of testing:** Start Date to Finish Date here
Test Result: PASS	

Test Equipment

See Appendix B for list of test equipment

Power Spectral Density

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Antenna Gain: 7dBi									
Frequency (MHz)	Mode	Tx Paths	Correlated Antenna Gain (dBi)	Tx 1 PSD (dBm/MHz)	Tx 2 PSD (dBm/MHz)	Duty Cycle Correction (dB)	Total PSD (dBm/MHz)	Limit (dBm/MHz)	Margin (dB)
5500	Non HT20, 6 to 54 Mbps	1	7	9.7		0.0	9.7	10.0	0.27
	Non HT20, 6 to 54 Mbps	2	10	4.0	3.3	0.0	6.7	7.0	0.29
	Non HT20 Beam Forming, 6 to 54 Mbps	2	10	4.0	3.3	0.0	6.7	7.0	0.29
	HT/VHT20, M0 to M7	1	7	9.2		0.0	9.2	10.0	0.76
	HT/VHT20, M0 to M7	2	10	3.8	3.2	0.0	6.6	7.0	0.44
	HT/VHT20, M8 to M15	2	7	6.6	5.7	0.0	9.2	10.0	0.77
	HT/VHT20 Beam Forming, M0 to M7	2	10	3.8	3.2	0.0	6.6	7.0	0.44
	HT/VHT20 Beam Forming, M8 to M15	2	7	6.6	5.7	0.0	9.2	10.0	0.77
	HT/VHT20 STBC, M0 to M7	2	7	6.6	5.7	0.0	9.2	10.0	0.77
5510	Non HT40, 6 to 54 Mbps	1	7	2.3		0.0	2.3	10.0	7.66
	Non HT40, 6 to 54 Mbps	2	10	2.1	1.7	0.0	5.0	7.0	2.04
	HT/VHT40, M0 to M7	1	7	1.9		0.1	2.0	10.0	8.04
	HT/VHT40, M0 to M7	2	10	1.9	1.5	0.1	4.8	7.0	2.23
	HT/VHT40, M8 to M15	2	7	1.9	1.5	0.1	4.8	10.0	5.23
	HT/VHT40 Beam Forming, M0 to M7	2	10	0.1	-0.5	0.1	2.9	7.0	4.12
	HT/VHT40 Beam Forming, M8 to M15	2	7	1.9	1.5	0.1	4.8	10.0	5.23
	HT/VHT40 STBC, M0 to M7	2	7	1.9	1.5	0.1	4.8	10.0	5.23
5530	Non HT80, 6 to 54 Mbps	1	7	-1.8		0.0	-1.8	10.0	11.77
	Non HT80, 6 to 54 Mbps	2	10	-5.4	-5.9	0.0	-2.6	7.0	9.60
	VHT80, M0 to M9 1ss	1	7	-2.2		0.2	-2.0	10.0	12.00
	VHT80, M0 to M9 1ss	2	10	-3.7	-4.3	0.2	-0.8	7.0	7.78
	VHT80, M0 to M9 2ss	2	7	-3.7	-4.3	0.2	-0.8	10.0	10.78
	VHT80 Beam Forming, M0 to M9 1ss	2	10	-5.5	-6.2	0.2	-2.6	7.0	9.63
	VHT80 Beam Forming, M0 to M9 2ss	2	7	-3.7	-4.3	0.2	-0.8	10.0	10.78
	VHT80 STBC, M0 to M9 1ss	2	7	-3.7	-4.3	0.2	-0.8	10.0	10.78

5 5	Non HT40, 6 to 54 Mbps	1	7	5.4		0.0	5.4	10.0	4.56

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	Non HT40, 6 to 54 Mbps	2	10	3.4	3.2	0.0	6.4	7.0	0.65
	HT/VHT40, M0 to M7	1	7	5.8		0.1	5.9	10.0	4.14
	HT/VHT40, M0 to M7	2	10	4.0	3.4	0.1	6.8	7.0	0.22
	HT/VHT40, M8 to M15	2	7	4.9	4.5	0.1	7.8	10.0	2.23
	HT/VHT40 Beam Forming, M0 to M7	2	10	2.0	1.3	0.1	4.7	7.0	2.27
	HT/VHT40 Beam Forming, M8 to M15	2	7	4.9	4.5	0.1	7.8	10.0	2.23
	HT/VHT40 STBC, M0 to M7	2	7	4.9	4.5	0.1	7.8	10.0	2.23
5560	Non HT20, 6 to 54 Mbps	1	7	8.7		0.0	8.7	10.0	1.27
	Non HT20, 6 to 54 Mbps	2	10	3.2	3.0	0.0	6.1	7.0	0.86
	Non HT20 Beam Forming, 6 to 54 Mbps	2	10	3.2	3.0	0.0	6.1	7.0	0.86
	HT/VHT20, M0 to M7	1	7	8.9		0.0	8.9	10.0	1.06
	HT/VHT20, M0 to M7	2	10	3.5	2.9	0.0	6.3	7.0	0.74
	HT/VHT20, M8 to M15	2	7	6.4	6.6	0.0	9.6	10.0	0.45
	HT/VHT20 Beam Forming, M0 to M7	2	10	3.5	2.9	0.0	6.3	7.0	0.74
	HT/VHT20 Beam Forming, M8 to M15	2	7	6.4	6.6	0.0	9.6	10.0	0.45
	HT/VHT20 STBC, M0 to M7	2	7	6.4	6.6	0.0	9.6	10.0	0.45
5610	Non HT80, 6 to 54 Mbps	1	7	-2.3		0.0	-2.3	10.0	12.27
	Non HT80, 6 to 54 Mbps	2	10	-2.3	-3.3	0.0	0.3	7.0	6.73
	VHT80, M0 to M9 1ss	1	7	2.3		0.2	2.5	10.0	7.50
	VHT80, M0 to M9 1ss	2	10	0.8	0.1	0.2	3.7	7.0	3.33
	VHT80, M0 to M9 2ss	2	7	0.8	0.1	0.2	3.7	10.0	6.33
	VHT80 Beam Forming, M0 to M9 1ss	2	10	-1.4	-2.2	0.2	1.4	7.0	5.57
	VHT80 Beam Forming, M0 to M9 2ss	2	7	0.8	0.1	0.2	3.7	10.0	6.33
	VHT80 STBC, M0 to M9 1ss	2	7	0.8	0.1	0.2	3.7	10.0	6.33
5690	Non HT80, 6 to 54 Mbps	1	7	-1.4		0.0	-1.4	10.0	11.37
	Non HT80, 6 to 54 Mbps	2	10	-1.1	-2.4	0.0	1.3	7.0	5.66
	VHT80, M0 to M9 1ss	1	7	4.1		0.2	4.3	10.0	5.70
	VHT80, M0 to M9 1ss	2	10	0.1	0.0	0.2	3.3	7.0	3.74
	VHT80, M0 to M9 2ss	2	7	0.1	0.0	0.2	3.3	10.0	6.74
	VHT80 Beam Forming, M0 to M9 1ss	2	10	-2.0	-2.1	0.2	1.2	7.0	5.84
	VHT80 Beam Forming, M0 to M9 2ss	2	7	0.1	0.0	0.2	3.3	10.0	6.74
	VHT80 STBC, M0 to M9 1ss	2	7	0.1	0.0	0.2	3.3	10.0	6.74
5700	Non HT20, 6 to 54 Mbps	1	7	7.7		0.0	7.7	10.0	2.27
	Non HT20, 6 to 54 Mbps	2	10	2.5	3.6	0.0	6.1	7.0	0.87
	Non HT20 Beam Forming, 6 to 54 Mbps	2	10	2.5	3.6	0.0	6.1	7.0	0.87
	HT/VHT20, M0 to M7	1	7	6.3		0.0	6.3	10.0	3.66
	HT/VHT20, M0 to M7	2	10	2.6	3.6	0.0	6.2	7.0	0.82
	HT/VHT20, M8 to M15	2	7	6.0	7.2	0.0	9.7	10.0	0.31
	HT/VHT20 Beam Forming, M0 to M7	2	10	2.6	3.6	0.0	6.2	7.0	0.82

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	HT/VHT20 Beam Forming, M8 to M15	2	7	6.0	7.2	0.0	9.7	10.0	0.31
	HT/VHT20 STBC, M0 to M7	2	7	6.0	7.2	0.0	9.7	10.0	0.31
5710	Non HT40, 6 to 54 Mbps	1	7	6.1		0.0	6.1	10.0	3.86
	Non HT40, 6 to 54 Mbps	2	10	2.2	2.5	0.0	5.4	7.0	1.60
	HT/VHT40, M0 to M7	1	7	7.7		0.1	7.8	10.0	2.24
	HT/VHT40, M0 to M7	2	10	3.5	3.9	0.1	6.8	7.0	0.23
	HT/VHT40, M8 to M15	2	7	3.7	4.4	0.1	7.1	10.0	2.87
	HT/VHT40 Beam Forming, M0 to M7	2	10	0.6	1.0	0.1	3.9	7.0	3.13
	HT/VHT40 Beam Forming, M8 to M15	2	7	3.7	4.4	0.1	7.1	10.0	2.87
	HT/VHT40 STBC, M0 to M7	2	7	3.7	4.4	0.1	7.1	10.0	2.87
5720	**Non HT20, 6 to 54 Mbps**	**1**	**7**	**9.9**		**0.0**	**9.9**	**10.0**	**0.07**
	Non HT20, 6 to 54 Mbps	2	10	3.1	4.1	0.0	6.7	7.0	0.33
	Non HT20 Beam Forming, 6 to 54 Mbps	2	10	3.1	4.1	0.0	6.7	7.0	0.33
	HT/VHT20, M0 to M7	1	7	8.7		0.0	8.7	10.0	1.26
	HT/VHT20, M0 to M7	2	10	2.9	4.1	0.0	6.6	7.0	0.41
	HT/VHT20, M8 to M15	2	7	6.7	6.5	0.0	9.7	10.0	0.35
	HT/VHT20 Beam Forming, M0 to M7	2	10	2.9	4.1	0.0	6.6	7.0	0.41
	HT/VHT20 Beam Forming, M8 to M15	2	7	6.7	6.5	0.0	9.7	10.0	0.35
	HT/VHT20 STBC, M0 to M7	2	7	6.7	6.5	0.0	9.7	10.0	0.35

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Antenna Gain: 13dBi									
Frequency (MHz)	**Mode**	**Tx Paths**	**Correlated Antenna Gain (dBi)**	**Tx 1 PSD (dBm/MHz)**	**Tx 2 PSD (dBm/MHz)**	**Duty Cycle Correction (dB)**	**Total PSD (dBm/MHz)**	**Limit (dBm/MHz)**	**Margin (dB)**
5500	Non HT20, 6 to 54 Mbps	1	13	2.3		0.0	2.3	4.0	1.67
	Non HT20, 6 to 54 Mbps	2	16	-2.8	-3.3	0.0	0.0	1.0	1.00
	Non HT20 Beam Forming, 6 to 54 Mbps	2	16	-2.8	-3.3	0.0	0.0	1.0	1.00
	HT/VHT20, M0 to M7	1	13	2.0		0.0	2.0	4.0	1.96
	HT/VHT20, M0 to M7	**2**	**16**	**-2.0**	**-2.2**	**0.0**	**1.0**	**1.0**	**0.05**
	HT/VHT20, M8 to M15	2	13	0.8	0.6	0.0	3.8	4.0	0.25
	HT/VHT20 Beam Forming, M0 to M7	2	16	-2.0	-2.2	0.0	1.0	1.0	0.05
	HT/VHT20 Beam Forming, M8 to M15	2	13	0.8	0.6	0.0	3.8	4.0	0.25
	HT/VHT20 STBC, M0 to M7	2	13	0.8	0.6	0.0	3.8	4.0	0.25
5510	Non HT40, 6 to 54 Mbps	1	13	-1.9		0.0	-1.9	4.0	5.86
	Non HT40, 6 to 54 Mbps	2	16	-4.2	-4.5	0.0	-1.3	1.0	2.30
	HT/VHT40, M0 to M7	1	13	-2.5		0.1	-2.4	4.0	6.44
	HT/VHT40, M0 to M7	2	16	-2.5	-2.8	0.1	0.4	1.0	0.58
	HT/VHT40, M8 to M15	2	13	-2.5	-2.8	0.1	0.4	4.0	3.58
	HT/VHT40 Beam Forming, M0 to M7	2	16	-6.4	-6.8	0.1	-3.5	1.0	4.53
	HT/VHT40 Beam Forming, M8 to M15	2	13	-2.5	-2.8	0.1	0.4	4.0	3.58
	HT/VHT40 STBC, M0 to M7	2	13	-2.5	-2.8	0.1	0.4	4.0	3.58
5530	Non HT80, 6 to 54 Mbps	1	13	-6.2		0.0	-6.2	4.0	10.17
	Non HT80, 6 to 54 Mbps	2	16	-11.5	-12.1	0.0	-8.7	1.0	9.75
	VHT80, M0 to M9 1ss	1	13	-6.6		0.2	-6.4	4.0	10.40
	VHT80, M0 to M9 1ss	2	16	-7.5	-8.0	0.2	-4.5	1.0	5.54
	VHT80, M0 to M9 2ss	2	13	-7.5	-8.0	0.2	-4.5	4.0	8.54
	VHT80 Beam Forming, M0 to M9 1ss	2	16	-11.7	-12.2	0.2	-8.7	1.0	9.74
	VHT80 Beam Forming, M0 to M9 2ss	2	13	-7.5	-8.0	0.2	-4.5	4.0	8.54
	VHT80 STBC, M0 to M9 1ss	2	13	-7.5	-8.0	0.2	-4.5	4.0	8.54

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5550	Non HT40, 6 to 54 Mbps	1	13	-2.2		0.0	-2.2	4.0	6.16
	Non HT40, 6 to 54 Mbps	2	16	-4.0	-4.4	0.0	-1.1	1.0	2.14
	HT/VHT40, M0 to M7	1	13	-2.6		0.1	-2.5	4.0	6.54
	HT/VHT40, M0 to M7	2	16	-2.6	-2.8	0.1	0.4	1.0	0.63
	HT/VHT40, M8 to M15	2	13	-2.6	-2.8	0.1	0.4	4.0	3.63
	HT/VHT40 Beam Forming, M0 to M7	2	16	-4.7	-5.0	0.1	-1.8	1.0	2.78
	HT/VHT40 Beam Forming, M8 to M15	2	13	-2.6	-2.8	0.1	0.4	4.0	3.63
	HT/VHT40 STBC, M0 to M7	2	13	-2.6	-2.8	0.1	0.4	4.0	3.63
5560	Non HT20, 6 to 54 Mbps	1	13	1.1		0.0	1.1	4.0	2.87
	Non HT20, 6 to 54 Mbps	2	16	-2.9	-2.8	0.0	0.2	1.0	0.81
	Non HT20 Beam Forming, 6 to 54 Mbps	2	16	-2.9	-2.8	0.0	0.2	1.0	0.81
	HT/VHT20, M0 to M7	1	13	1.5		0.0	1.5	4.0	2.46
	HT/VHT20, M0 to M7	2	16	-2.9	-2.7	0.0	0.3	1.0	0.75
	HT/VHT20, M8 to M15	2	13	0.3	0.4	0.0	3.4	4.0	0.60
	HT/VHT20 Beam Forming, M0 to M7	2	16	-2.9	-2.7	0.0	0.3	1.0	0.75
	HT/VHT20 Beam Forming, M8 to M15	2	13	0.3	0.4	0.0	3.4	4.0	0.60
	HT/VHT20 STBC, M0 to M7	2	13	0.3	0.4	0.0	3.4	4.0	0.60
5610	Non HT80, 6 to 54 Mbps	1	13	-5.6		0.0	-5.6	4.0	9.57
	Non HT80, 6 to 54 Mbps	2	16	-11.7	-12.1	0.0	-8.9	1.0	9.85
	VHT80, M0 to M9 1ss	1	13	-1.4		0.2	-1.2	4.0	5.20
	VHT80, M0 to M9 1ss	2	16	-5.9	-5.8	0.2	-2.6	1.0	3.64
	VHT80, M0 to M9 2ss	2	13	-5.9	-5.8	0.2	-2.6	4.0	6.64
	VHT80 Beam Forming, M0 to M9 1ss	2	16	-8.0	-8.2	0.2	-4.9	1.0	5.89
	VHT80 Beam Forming, M0 to M9 2ss	2	13	-5.9	-5.8	0.2	-2.6	4.0	6.64
	VHT80 STBC, M0 to M9 1ss	2	13	-5.9	-5.8	0.2	-2.6	4.0	6.64
5690	Non HT80, 6 to 54 Mbps	1	13	-5.9		0.0	-5.9	4.0	9.87
	Non HT80, 6 to 54 Mbps	2	16	-8.8	-9.1	0.0	-5.9	1.0	6.90
	VHT80, M0 to M9 1ss	1	13	-4.2		0.2	-4.0	4.0	8.00
	VHT80, M0 to M9 1ss	2	16	-5.9	-6.1	0.2	-2.8	1.0	3.79
	VHT80, M0 to M9 2ss	2	13	-5.9	-6.1	0.2	-2.8	4.0	6.79
	VHT80 Beam Forming, M0 to M9 1ss	2	16	-8.1	-8.5	0.2	-5.1	1.0	6.09
	VHT80 Beam Forming, M0 to M9 2ss	2	13	-5.9	-6.1	0.2	-2.8	4.0	6.79
	VHT80 STBC, M0 to M9 1ss	2	13	-5.9	-6.1	0.2	-2.8	4.0	6.79
5700	Non HT20, 6 to 54 Mbps	1	13	3.6		0.0	3.6	4.0	0.37
	Non HT20, 6 to 54 Mbps	2	16	-2.7	-1.6	0.0	0.9	1.0	0.07
	Non HT20 Beam Forming, 6 to 54 Mbps	2	16	-2.7	-1.6	0.0	0.9	1.0	0.07

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	HT/VHT20, M0 to M7	1	13	2.6		0.0	2.6	4.0	1.36
	HT/VHT20, M0 to M7	2	16	-3.6	-2.1	0.0	0.3	1.0	0.73
	HT/VHT20, M8 to M15	2	13	-1.0	0.4	0.0	2.8	4.0	1.19
	HT/VHT20 Beam Forming, M0 to M7	2	16	-3.6	-2.1	0.0	0.3	1.0	0.73
	HT/VHT20 Beam Forming, M8 to M15	2	13	-1.0	0.4	0.0	2.8	4.0	1.19
	HT/VHT20 STBC, M0 to M7	2	13	-1.0	0.4	0.0	2.8	4.0	1.19
5710	Non HT40, 6 to 54 Mbps	1	13	0.3		0.0	0.3	4.0	3.66
	Non HT40, 6 to 54 Mbps	2	16	-4.9	-4.4	0.0	-1.6	1.0	2.59
	HT/VHT40, M0 to M7	1	13	-0.6		0.1	-0.5	4.0	4.54
	HT/VHT40, M0 to M7	2	16	-3.5	-2.8	0.1	-0.1	1.0	1.07
	HT/VHT40, M8 to M15	2	13	-3.5	-2.8	0.1	-0.1	4.0	4.07
	HT/VHT40 Beam Forming, M0 to M7	2	16	-5.2	-4.7	0.1	-1.9	1.0	2.88
	HT/VHT40 Beam Forming, M8 to M15	2	13	-3.5	-2.8	0.1	-0.1	4.0	4.07
	HT/VHT40 STBC, M0 to M7	2	13	-3.5	-2.8	0.1	-0.1	4.0	4.07
5720	Non HT20, 6 to 54 Mbps	1	13	3.1		0.0	3.1	4.0	0.87
	Non HT20, 6 to 54 Mbps	2	16	-3.2	-1.5	0.0	0.8	1.0	0.22
	Non HT20 Beam Forming, 6 to 54 Mbps	2	16	-3.2	-1.5	0.0	0.8	1.0	0.22
	HT/VHT20, M0 to M7	1	13	2.9		0.0	2.9	4.0	1.06
	HT/VHT20, M0 to M7	2	16	-3.2	-2.0	0.0	0.5	1.0	0.51
	HT/VHT20, M8 to M15	2	13	-0.5	0.9	0.0	3.3	4.0	0.69
	HT/VHT20 Beam Forming, M0 to M7	2	16	-3.2	-2.0	0.0	0.5	1.0	0.51
	HT/VHT20 Beam Forming, M8 to M15	2	13	-0.5	0.9	0.0	3.3	4.0	0.69
	HT/VHT20 STBC, M0 to M7	2	13	-0.5	0.9	0.0	3.3	4.0	0.69

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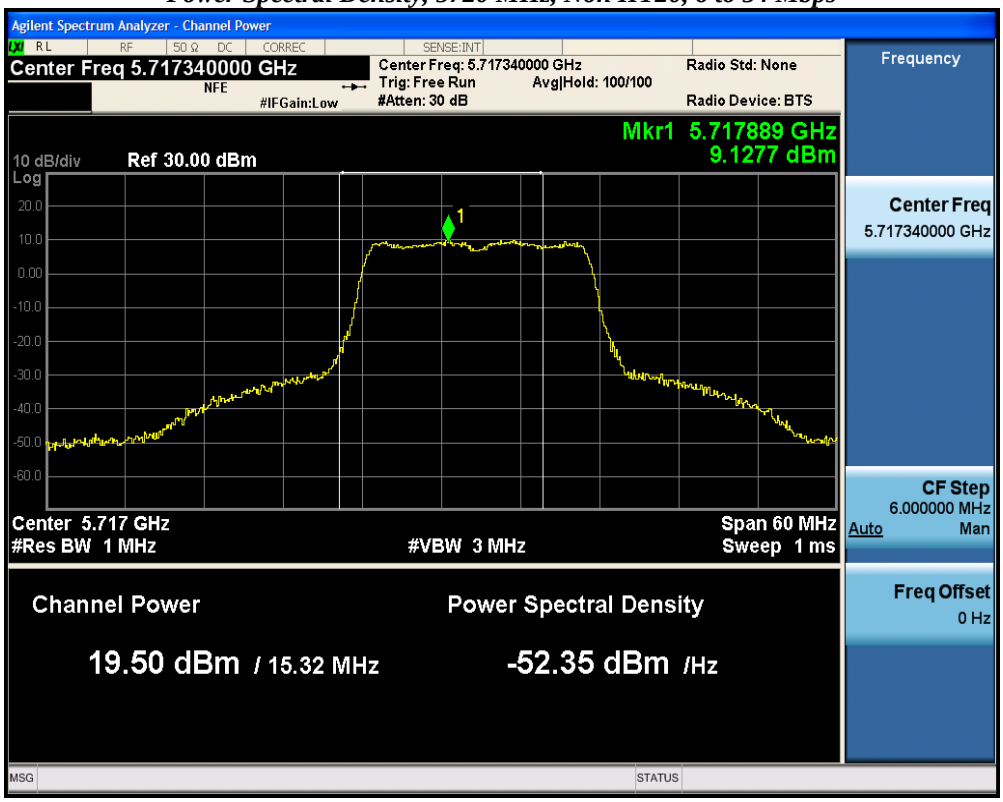
Antenna Gain: 7dBi

Power Spectral Density, 5720 MHz, Non HT20, 6 to 54 Mbps



Antenna A

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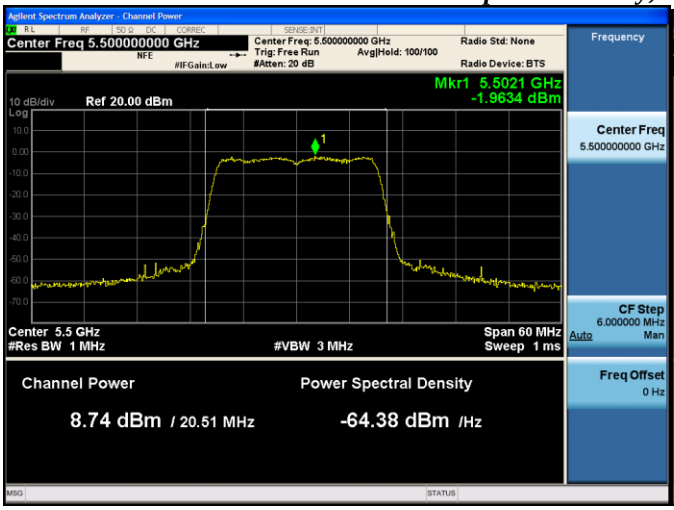
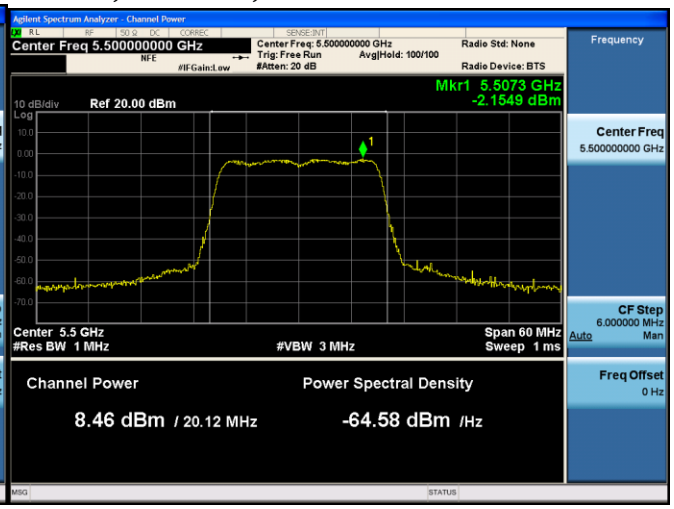
Antenna Gain: 13dBi

Power Spectral Density, 5500 MHz, HT/VHT20, M0 to M7



Antenna A



Antenna B

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A.5Conducted Spurious Emissions

Conducted Spurious Emissions Test Requirement

15.407(b), LP0002:4.7.4.1, LP0002:2.7, LP0002:2.8

Undesirable emission limits. Except as shown in paragraph (b)(7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

(3) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

(6) Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in §15.209.

(**7)** The provisions of §15.205 apply to intentional radiators operating under this section.

(8) When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the upper and lower frequency band edges as the design of the equipment permits

15.205 / 15.209 - Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

Use formula below to substitute conducted measurements in place of radiated measurements

E[dBμV/m] = EIRP [dBm] - 20 log(d[meters]) + 104.77, where E = field strength and d = 3 meter

1) Average Plot, Limit= -41.25 dBm eirp
2) Peak plot, Limit = -21.25 dBm eirp

KDB 789033 D02 General UNII Test Procedures New Rules v02r01

2. Unwanted Emissions that fall Outside of the Restricted Bands

a) For all measurements, follow the requirements in II.G.3. *"General Requirements for Unwanted Emissions Measurements."*

b) At frequencies below 1000 MHz, use the procedure described in II.G.4. *"Procedure for Unwanted Emissions Measurements Below 1000 MHz."*

c) At frequencies above 1000 MHz, use the procedure for maximum emissions described in II.G.5., *"Procedure for Unwanted Emissions Measurements Above 1000 MHz."*

(i) Sections 15.407(b)(1-3) specifies the unwanted emissions limit for the U-NII-1 and U-NII-2 bands. As specified, emissions above 1000 MHz that are outside of the restricted bands are subject to a peak emission limit of −27 dBm/MHz.[3]

Conducted Spurious Emissions Test Procedure

KDB 789033 D02 General UNII Test Procedures New Rules v02r01

Ref. ANSI C63.10: 2013

Conducted Spurious Emissions Test Procedure
1. Connect the antenna port(s) to the spectrum analyzer input. 2. Place the radio in continuous transmit mode 3. Configure Spectrum analyzer as per test parameters below (be sure to enter all losses between the transmitter output and the spectrum analyzer). 4. Use the peak marker function to determine the maximum spurs amplitude level. 5. The "measure-and-sum technique" is used for measuring in-band transmit power of a device. In the measure-and-sum approach, the conducted emission level is measured at each antenna port. The measured results at the various antenna ports are then summed mathematically to determine the total emission level from the device. Summing is performed in linear power units. The worst case output is recorded. (see ANSI C63.10:2013 section 14.3.2.2)

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6. Capture graphs and record pertinent measurement data.

Ref. ANSI C63.10: 2013 section 12.7.6 (Peak) and 12.7.7.2 (Average)
KDB 789033 D02 General UNII Test Procedures New Rules v02r01, Sec. 5 (Peak), Sec. 6 (Average Method AD)

Conducted Spurious Emissions Test parameters	
Peak RBW = 1 MHz VBW ≥ 3 MHz Sweep = Auto Detector = Peak Trace = Max Hold.	**Average** RBW = 1 MHz VBW ≥ 3 MHz Sweep = Auto Detector = RMS Power Averaging

Add the max antenna gain + ground reflection factor (4.7 dB for frequencies between 30 MHz and 1000 MHz, and 0 dB for frequencies > 1000 MHz).

Samples, Systems, and Modes

System Number	Description	Samples	System under test	Support equipment
1	EUT	S01	☑	☐
	Support	S02	☐	☑

Tested By: Julian Land	**Date of testing:** 20-Nov-19 - 21-Nov-19
Test Result: PASS	

Test Equipment
See Appendix B for list of test equipment

Note: Data with Highest and lowest Antenna gains were recorded as worst case

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Conducted Spurious Average Table

Antenna Gain: 7dBi									
Frequency (MHz)	Mode	Tx Paths	Correlated Antenna Gain (dBi)	Tx 1 Spur Power (dBm)	Tx 2 Spur Power (dBm)	Duty Cycle Correction (dB)	Total Conducted Spur (dBm)	Limit (dBm)	Margin (dB)
5500	Non HT20, 6 to 54 Mbps	1	7	-53		0	-46.0	-41.25	4.75
	Non HT20, 6 to 54 Mbps	2	7	-53.7	-55.3	0	-44.4	-41.25	3.17
	Non HT20 Beam Forming, 6 to 54 Mbps	2	10	-53.7	-55.3	0	-41.4	-41.25	0.17
	HT/VHT20, M0 to M7	1	7	-53.2		0	-46.2	-41.25	4.95
	HT/VHT20, M0 to M7	2	7	-53.8	-55.3	0	-44.5	-41.25	3.23
	HT/VHT20, M8 to M15	2	7	-53.4	-54.3	0	-43.8	-41.25	2.57
	HT/VHT20 Beam Forming, M0 to M7	2	10	-53.8	-55.3	0	-41.5	-41.25	0.23
	HT/VHT20 Beam Forming, M8 to M15	2	7	-53.4	-54.3	0	-43.8	-41.25	2.57
	HT/VHT20 STBC, M0 to M7	2	7	-53.4	-54.3	0	-43.8	-41.25	2.57
5510	Non HT40, 6 to 54 Mbps	1	7	-52.5		0	-45.5	-41.25	4.25
	Non HT40, 6 to 54 Mbps	2	7	-52	-54	0	-42.9	-41.25	1.63
	HT/VHT40, M0 to M7	1	7	-54		0.1	-46.9	-41.25	5.65
	HT/VHT40, M0 to M7	2	7	-55.3	-57.8	0.1	-46.4	-41.25	5.11
	HT/VHT40, M8 to M15	2	7	-55.3	-57.8	0.1	-46.4	-41.25	5.11
	HT/VHT40 Beam Forming, M0 to M7	2	10	-55.7	-58	0.1	-43.7	-41.25	2.44
	HT/VHT40 Beam Forming, M8 to M15	2	7	-55.3	-57.8	0.1	-46.4	-41.25	5.11
	HT/VHT40 STBC, M0 to M7	2	7	-55.3	-57.8	0.1	-46.4	-41.25	5.11
5530	Non HT80, 6 to 54 Mbps	1	7	-54.1		0	-47.1	-41.25	5.85
	Non HT80, 6 to 54 Mbps	2	7	-51.9	-54.4	0	-43.0	-41.25	1.71
	VHT80, M0 to M9 1ss	1	7	-56		0.2	-48.8	-41.25	7.55
	VHT80, M0 to M9 1ss	2	7	-56	-58.1	0.2	-46.9	-41.25	5.66
	VHT80, M0 to M9 2ss	2	7	-56	-58.1	0.2	-46.9	-41.25	5.66
	VHT80 Beam Forming, M0 to M9 1ss	2	10	-55.8	-58.6	0.2	-44.0	-41.25	2.72
	VHT80 Beam Forming, M0 to M9 2ss	2	7	-56	-58.1	0.2	-46.9	-41.25	5.66
	VHT80 STBC, M0 to M9 1ss	2	7	-56	-58.1	0.2	-46.9	-41.25	5.66

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5550	**Non HT40, 6 to 54 Mbps**	**1**	**7**	**-48.3**		**0**	**-41.3**	**-41.25**	**0.05**
	Non HT40, 6 to 54 Mbps	2	7	-52.6	-54.6	0	-43.5	-41.25	2.23
	HT/VHT40, M0 to M7	1	7	-52.8		0.1	-45.7	-41.25	4.45
	HT/VHT40, M0 to M7	2	7	-52.3	-54.2	0.1	-43.1	-41.25	1.89
	HT/VHT40, M8 to M15	2	7	-52.3	-54.2	0.1	-43.1	-41.25	1.89
	HT/VHT40 Beam Forming, M0 to M7	2	10	-54.5	-57	0.1	-42.6	-41.25	1.31
	HT/VHT40 Beam Forming, M8 to M15	2	7	-52.3	-54.2	0.1	-43.1	-41.25	1.89
	HT/VHT40 STBC, M0 to M7	2	7	-52.3	-54.2	0.1	-43.1	-41.25	1.89
5560	Non HT20, 6 to 54 Mbps	1	7	-53.2		0	-46.2	-41.25	4.95
	Non HT20, 6 to 54 Mbps	2	7	-53.4	-55.5	0	-44.3	-41.25	3.06
	Non HT20 Beam Forming, 6 to 54 Mbps	2	10	-53.4	-55.5	0	-41.3	-41.25	0.06
	HT/VHT20, M0 to M7	1	7	-53.1		0	-46.1	-41.25	4.85
	HT/VHT20, M0 to M7	2	7	-53.5	-55.6	0	-44.4	-41.25	3.16
	HT/VHT20, M8 to M15	2	7	-52.7	-54.8	0	-43.6	-41.25	2.36
	HT/VHT20 Beam Forming, M0 to M7	2	10	-53.5	-55.6	0	-41.4	-41.25	0.16
	HT/VHT20 Beam Forming, M8 to M15	2	7	-52.7	-54.8	0	-43.6	-41.25	2.36
	HT/VHT20 STBC, M0 to M7	2	7	-52.7	-54.8	0	-43.6	-41.25	2.36
5610	Non HT80, 6 to 54 Mbps	1	7	-49		0	-42.0	-41.25	0.75
	Non HT80, 6 to 54 Mbps	2	7	-53.9	-56.6	0	-45.0	-41.25	3.78
	VHT80, M0 to M9 1ss	1	7	-53		0.2	-45.8	-41.25	4.55
	VHT80, M0 to M9 1ss	2	7	-52.5	-54.6	0.2	-43.4	-41.25	2.16
	VHT80, M0 to M9 2ss	2	7	-52.5	-54.6	0.2	-43.4	-41.25	2.16
	VHT80 Beam Forming, M0 to M9 1ss	2	10	-53.5	-58.4	0.2	-42.3	-41.25	1.03
	VHT80 Beam Forming, M0 to M9 2ss	2	7	-52.5	-54.6	0.2	-43.4	-41.25	2.16
	VHT80 STBC, M0 to M9 1ss	2	7	-52.5	-54.6	0.2	-43.4	-41.25	2.16
5690	Non HT80, 6 to 54 Mbps	1	7	-50.4		0	-43.4	-41.25	2.15
	Non HT80, 6 to 54 Mbps	2	7	-50.3	-57.5	0	-42.5	-41.25	1.29
	VHT80, M0 to M9 1ss	1	7	-51		0.2	-43.8	-41.25	2.55
	VHT80, M0 to M9 1ss	2	7	-51.3	-53.1	0.2	-42.1	-41.25	0.85
	VHT80, M0 to M9 2ss	2	7	-51.3	-53.1	0.2	-42.1	-41.25	0.85
	VHT80 Beam Forming, M0 to M9 1ss	2	10	-54.8	-57.5	0.2	-42.9	-41.25	1.68
	VHT80 Beam Forming, M0 to M9 2ss	2	7	-51.3	-53.1	0.2	-42.1	-41.25	0.85
	VHT80 STBC, M0 to M9 1ss	2	7	-51.3	-53.1	0.2	-42.1	-41.25	0.85
5700	Non HT20, 6 to 54 Mbps	1	7	-52.9		0	-45.9	-41.25	4.65
	Non HT20, 6 to 54 Mbps	2	7	-55.8	-56.9	0	-46.3	-41.25	5.05
	Non HT20 Beam Forming, 6 to 54 Mbps	2	10	-55.8	-56.9	0	-43.3	-41.25	2.05
	HT/VHT20, M0 to M7	1	7	-52.2		0	-45.2	-41.25	3.95
	HT/VHT20, M0 to M7	2	7	-55.6	-56.7	0	-46.1	-41.25	4.85

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	HT/VHT20, M8 to M15	2	7	-52.9	-53.9	0	-43.4	-41.25	2.11
	HT/VHT20 Beam Forming, M0 to M7	2	10	-55.6	-56.7	0	-43.1	-41.25	1.85
	HT/VHT20 Beam Forming, M8 to M15	2	7	-52.9	-53.9	0	-43.4	-41.25	2.11
	HT/VHT20 STBC, M0 to M7	2	7	-52.9	-53.9	0	-43.4	-41.25	2.11
5710	Non HT40, 6 to 54 Mbps	1	7	-52		0	-45.0	-41.25	3.75
	Non HT40, 6 to 54 Mbps	2	7	-52.1	-53	0	-42.5	-41.25	1.27
	HT/VHT40, M0 to M7	1	7	-51.1		0.1	-44.0	-41.25	2.75
	HT/VHT40, M0 to M7	2	7	-52.1	-53.3	0.1	-42.6	-41.25	1.40
	HT/VHT40, M8 to M15	2	7	-51	-52	0.1	-41.5	-41.25	0.21
	HT/VHT40 Beam Forming, M0 to M7	2	10	-54.4	-55.6	0.1	-41.9	-41.25	0.70
	HT/VHT40 Beam Forming, M8 to M15	2	7	-51	-52	0.1	-41.5	-41.25	0.21
	HT/VHT40 STBC, M0 to M7	2	7	-51	-52	0.1	-41.5	-41.25	0.21
5720	Non HT20, 6 to 54 Mbps	1	7	-51.9		0	-44.9	-41.25	3.65
	Non HT20, 6 to 54 Mbps	2	7	-56.2	-57.2	0	-46.7	-41.25	5.41
	Non HT20 Beam Forming, 6 to 54 Mbps	2	10	-56.2	-57.2	0	-43.7	-41.25	2.41
	HT/VHT20, M0 to M7	1	7	-51		0	-44.0	-41.25	2.75
	HT/VHT20, M0 to M7	2	7	-55.4	-56.4	0	-45.9	-41.25	4.61
	HT/VHT20, M8 to M15	2	7	-52.8	-53.5	0	-43.1	-41.25	1.88
	HT/VHT20 Beam Forming, M0 to M7	2	10	-55.4	-56.4	0	-42.9	-41.25	1.61
	HT/VHT20 Beam Forming, M8 to M15	2	7	-52.8	-53.5	0	-43.1	-41.25	1.88
	HT/VHT20 STBC, M0 to M7	2	7	-52.8	-53.5	0	-43.1	-41.25	1.88

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Conducted Spurious Emissions Peak Table

Antenna Gain: 7dBi									
Frequency (MHz)	Mode	Tx Paths	Correlated Antenna Gain (dBi)	Tx 1 Spur Power (dBm)	Tx 2 Spur Power (dBm)	Tx 3 Spur Power (dBm)	Total Conducted Spur (dBm)	Limit (dBm)	Margin (dB)
5500	Non HT20, 6 to 54 Mbps	1	7	-44.4		0	-37.4	-21.25	16.15
	Non HT20, 6 to 54 Mbps	2	7	-46.1	-44.8	0	-35.4	-21.25	14.14
	Non HT20 Beam Forming, 6 to 54 Mbps	**2**	**10**	**-44.1**	**-42.8**	**0**	**-30.4**	**-21.25**	**9.14**
	HT/VHT20, M0 to M7	1	7	-43.9		0	-36.9	-21.25	15.65
	HT/VHT20, M0 to M7	2	7	-46.1	-45	0	-35.5	-21.25	14.25
	HT/VHT20, M8 to M15	2	7	-45.8	-44	0	-34.8	-21.25	13.55
	HT/VHT20 Beam Forming, M0 to M7	2	10	-46.1	-45	0	-32.5	-21.25	11.25
	HT/VHT20 Beam Forming, M8 to M15	2	7	-45.8	-44	0	-34.8	-21.25	13.55
	HT/VHT20 STBC, M0 to M7	2	7	-45.8	-44	0	-34.8	-21.25	13.55
5510	Non HT40, 6 to 54 Mbps	1	7	-47.1		0	-40.1	-21.25	18.85
	Non HT40, 6 to 54 Mbps	2	7	-46.6	-44.9	0	-35.7	-21.25	14.41
	HT/VHT40, M0 to M7	1	7	-46.5		0.1	-39.4	-21.25	18.15
	HT/VHT40, M0 to M7	2	7	-49.1	-47.9	0.1	-38.4	-21.25	17.20
	HT/VHT40, M8 to M15	2	7	-49.1	-47.9	0.1	-38.4	-21.25	17.20
	HT/VHT40 Beam Forming, M0 to M7	2	10	-49.7	-48.4	0.1	-36.0	-21.25	14.74
	HT/VHT40 Beam Forming, M8 to M15	2	7	-49.1	-47.9	0.1	-38.4	-21.25	17.20
	HT/VHT40 STBC, M0 to M7	2	7	-49.1	-47.9	0.1	-38.4	-21.25	17.20
5530	Non HT80, 6 to 54 Mbps	1	7	-48.4		0	-41.4	-21.25	20.15
	Non HT80, 6 to 54 Mbps	2	7	-46.1	-46.1	0	-36.1	-21.25	14.84
	VHT80, M0 to M9 1ss	1	7	-49.8		0.2	-42.6	-21.25	21.35
	VHT80, M0 to M9 1ss	2	7	-48.5	-48.8	0.2	-38.6	-21.25	17.39
	VHT80, M0 to M9 2ss	2	7	-48.5	-48.8	0.2	-38.6	-21.25	17.39
	VHT80 Beam Forming, M0 to M9 1ss	2	10	-50.3	-49.1	0.2	-36.6	-21.25	15.40
	VHT80 Beam Forming, M0 to M9 2ss	2	7	-48.5	-48.8	0.2	-38.6	-21.25	17.39
	VHT80 STBC, M0 to M9 1ss	2	7	-48.5	-48.8	0.2	-38.6	-21.25	17.39

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5550	Non HT40, 6 to 54 Mbps	1	7	-43.4		0	-36.4	-21.25	15.15
	Non HT40, 6 to 54 Mbps	2	7	-46.5	-44.6	0	-35.4	-21.25	14.19
	HT/VHT40, M0 to M7	1	7	-46.4		0.1	-39.3	-21.25	18.05
	HT/VHT40, M0 to M7	2	7	-45.9	-42.9	0.1	-34.1	-21.25	12.89
	HT/VHT40, M8 to M15	2	7	-45.9	-42.9	0.1	-34.1	-21.25	12.89
	HT/VHT40 Beam Forming, M0 to M7	2	10	-48.3	-46.5	0.1	-34.3	-21.25	13.05
	HT/VHT40 Beam Forming, M8 to M15	2	7	-45.9	-42.9	0.1	-34.1	-21.25	12.89
	HT/VHT40 STBC, M0 to M7	2	7	-45.9	-42.9	0.1	-34.1	-21.25	12.89
5560	Non HT20, 6 to 54 Mbps	1	7	-46.3		0	-39.3	-21.25	18.05
	Non HT20, 6 to 54 Mbps	2	7	-46.3	-46.1	0	-36.2	-21.25	14.94
	Non HT20 Beam Forming, 6 to 54 Mbps	2	10	-46.3	-46.1	0	-33.2	-21.25	11.94
	HT/VHT20, M0 to M7	1	7	-46.2		0	-39.2	-21.25	17.95
	HT/VHT20, M0 to M7	2	7	-47.6	-45.7	0	-36.5	-21.25	15.29
	HT/VHT20, M8 to M15	2	7	-46.7	-44.4	0	-35.4	-21.25	14.14
	HT/VHT20 Beam Forming, M0 to M7	2	10	-47.6	-45.7	0	-33.5	-21.25	12.29
	HT/VHT20 Beam Forming, M8 to M15	2	7	-46.7	-44.4	0	-35.4	-21.25	14.14
	HT/VHT20 STBC, M0 to M7	2	7	-46.7	-44.4	0	-35.4	-21.25	14.14
5610	Non HT80, 6 to 54 Mbps	1	7	-44.3		0	-37.3	-21.25	16.05
	Non HT80, 6 to 54 Mbps	2	7	-49	-47.4	0	-38.1	-21.25	16.87
	VHT80, M0 to M9 1ss	1	7	-47.6		0.2	-40.4	-21.25	19.15
	VHT80, M0 to M9 1ss	2	7	-47.1	-44.9	0.2	-35.9	-21.25	14.60
	VHT80, M0 to M9 2ss	2	7	-47.1	-44.9	0.2	-35.9	-21.25	14.60
	VHT80 Beam Forming, M0 to M9 1ss	2	10	-48.4	-49.1	0.2	-35.7	-21.25	14.48
	VHT80 Beam Forming, M0 to M9 2ss	2	7	-47.1	-44.9	0.2	-35.9	-21.25	14.60
	VHT80 STBC, M0 to M9 1ss	2	7	-47.1	-44.9	0.2	-35.9	-21.25	14.60
5690	Non HT80, 6 to 54 Mbps	1	7	-44.5		0	-37.5	-21.25	16.25
	Non HT80, 6 to 54 Mbps	2	7	-44	-49.4	0	-35.9	-21.25	14.65
	VHT80, M0 to M9 1ss	1	7	-46.4		0.2	-39.2	-21.25	17.95
	VHT80, M0 to M9 1ss	2	7	-46.2	-46.1	0.2	-36.1	-21.25	14.89
	VHT80, M0 to M9 2ss	2	7	-46.2	-46.1	0.2	-36.1	-21.25	14.89
	VHT80 Beam Forming, M0 to M9 1ss	2	10	-49.4	-47.8	0.2	-35.5	-21.25	14.27
	VHT80 Beam Forming, M0 to M9 2ss	2	7	-46.2	-46.1	0.2	-36.1	-21.25	14.89
	VHT80 STBC, M0 to M9 1ss	2	7	-46.2	-46.1	0.2	-36.1	-21.25	14.89
5700	Non HT20, 6 to 54 Mbps	1	7	-48		0	-41.0	-21.25	19.75
	Non HT20, 6 to 54 Mbps	2	7	-49.3	-47.7	0	-38.4	-21.25	17.17
	Non HT20 Beam Forming, 6 to 54 Mbps	2	10	-49.3	-47.7	0	-35.4	-21.25	14.17
	HT/VHT20, M0 to M7	1	7	-47.5		0	-40.5	-21.25	19.25
	HT/VHT20, M0 to M7	2	7	-49.8	-48.9	0	-39.3	-21.25	18.07
	HT/VHT20, M8 to M15	2	7	-48.1	-46	0	-36.9	-21.25	15.66

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	HT/VHT20 Beam Forming, M0 to M7	2	10	-49.8	-48.9	0	-36.3	-21.25	15.07
	HT/VHT20 Beam Forming, M8 to M15	2	7	-48.1	-46	0	-36.9	-21.25	15.66
	HT/VHT20 STBC, M0 to M7	2	7	-48.1	-46	0	-36.9	-21.25	15.66
5710	Non HT40, 6 to 54 Mbps	1	7	-47		0	-40.0	-21.25	18.75
	Non HT40, 6 to 54 Mbps	2	7	-47.2	-46.3	0	-36.7	-21.25	15.47
	HT/VHT40, M0 to M7	1	7	-46.3		0.1	-39.2	-21.25	17.95
	HT/VHT40, M0 to M7	2	7	-47.6	-46.4	0.1	-36.9	-21.25	15.70
	HT/VHT40, M8 to M15	2	7	-45.8	-44.7	0.1	-35.2	-21.25	13.95
	HT/VHT40 Beam Forming, M0 to M7	2	10	-48.4	-48.8	0.1	-35.6	-21.25	14.34
	HT/VHT40 Beam Forming, M8 to M15	2	7	-45.8	-44.7	0.1	-35.2	-21.25	13.95
	HT/VHT40 STBC, M0 to M7	2	7	-45.8	-44.7	0.1	-35.2	-21.25	13.95
5720	Non HT20, 6 to 54 Mbps	1	7	-47.3		0	-40.3	-21.25	19.05
	Non HT20, 6 to 54 Mbps	2	7	-50	-48.9	0	-39.4	-21.25	18.15
	Non HT20 Beam Forming, 6 to 54 Mbps	2	10	-50	-48.9	0	-36.4	-21.25	15.15
	HT/VHT20, M0 to M7	1	7	-46.9		0	-39.9	-21.25	18.65
	HT/VHT20, M0 to M7	2	7	-49.7	-49.3	0	-39.5	-21.25	18.24
	HT/VHT20, M8 to M15	2	7	-47.8	-47.3	0	-37.5	-21.25	16.28
	HT/VHT20 Beam Forming, M0 to M7	2	10	-49.7	-49.3	0	-36.5	-21.25	15.24
	HT/VHT20 Beam Forming, M8 to M15	2	7	-47.8	-47.3	0	-37.5	-21.25	16.28
	HT/VHT20 STBC, M0 to M7	2	7	-47.8	-47.3	0	-37.5	-21.25	16.28

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Conducted Spurious Average Table

Antenna Gain: 13dBi									
Frequency (MHz)	Mode	Tx Paths	Correlated Antenna Gain (dBi)	Tx 1 Spur Power (dBm)	Tx 2 Spur Power (dBm)	Duty Cycle Correction (dB)	Total Conducted Spur (dBm)	Limit (dBm)	Margin (dB)
5500	**Non HT20, 6 to 54 Mbps**	**1**	**13**	**-54.3**		**0.0**	**-41.3**	**-41.25**	**0.02**
	Non HT20, 6 to 54 Mbps	2	13	-60.2	-62.3	0.0	-45.1	-41.25	3.83
	Non HT20 Beam Forming, 6 to 54 Mbps	2	16	-60.2	-62.3	0.0	-42.1	-41.25	0.83
	HT/VHT20, M0 to M7	1	13	-54.5		0.0	-41.5	-41.25	0.21
	HT/VHT20, M0 to M7	2	13	-59.9	-61.8	0.0	-44.7	-41.25	3.44
	HT/VHT20, M8 to M15	2	13	-58.7	-60.3	0.0	-43.4	-41.25	2.12
	HT/VHT20 Beam Forming, M0 to M7	2	16	-59.9	-61.8	0.0	-41.7	-41.25	0.44
	HT/VHT20 Beam Forming, M8 to M15	2	13	-58.7	-60.3	0.0	-43.4	-41.25	2.12
	HT/VHT20 STBC, M0 to M7	2	13	-58.7	-60.3	0.0	-43.4	-41.25	2.12
5510	Non HT40, 6 to 54 Mbps	1	13	-54.5		0.0	-41.5	-41.25	0.21
	Non HT40, 6 to 54 Mbps	2	13	-59.3	-61.5	0.0	-44.2	-41.25	2.96
	HT/VHT40, M0 to M7	1	13	-58.7		0.1	-45.6	-41.25	4.39
	HT/VHT40, M0 to M7	2	13	-58.7	-60.6	0.1	-43.5	-41.25	2.23
	HT/VHT40, M8 to M15	2	13	-58.7	-60.6	0.1	-43.5	-41.25	2.23
	HT/VHT40 Beam Forming, M0 to M7	2	16	-60.0	-62.2	0.1	-41.9	-41.25	0.64
	HT/VHT40 Beam Forming, M8 to M15	2	13	-58.7	-60.6	0.1	-43.5	-41.25	2.23
	HT/VHT40 STBC, M0 to M7	2	13	-58.7	-60.6	0.1	-43.5	-41.25	2.23
5530	Non HT80, 6 to 54 Mbps	1	13	-54.4		0.0	-41.4	-41.25	0.12
	Non HT80, 6 to 54 Mbps	2	13	-60.4	-62.8	0.0	-45.4	-41.25	4.14
	VHT80, M0 to M9 1ss	1	13	-58.9		0.2	-45.7	-41.25	4.45
	VHT80, M0 to M9 1ss	2	13	-59.2	-61.4	0.2	-44.0	-41.25	2.70
	VHT80, M0 to M9 2ss	2	13	-59.2	-61.4	0.2	-44.0	-41.25	2.70
	VHT80 Beam Forming, M0 to M9 1ss	2	16	-64.6	-66.3	0.2	-46.2	-41.25	4.91
	VHT80 Beam Forming, M0 to M9 2ss	2	13	-59.2	-61.4	0.2	-44.0	-41.25	2.70
	VHT80 STBC, M0 to M9 1ss	2	13	-59.2	-61.4	0.2	-44.0	-41.25	2.70

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5550	Non HT40, 6 to 54 Mbps	1	13	-54.4		0.0	-41.4	-41.25	0.11
	Non HT40, 6 to 54 Mbps	2	13	-59.2	-61.5	0.0	-44.1	-41.25	2.90
	HT/VHT40, M0 to M7	1	13	-58.5		0.1	-45.4	-41.25	4.19
	HT/VHT40, M0 to M7	2	13	-58.5	-60.9	0.1	-43.5	-41.25	2.22
	HT/VHT40, M8 to M15	2	13	-58.5	-60.9	0.1	-43.5	-41.25	2.22
	HT/VHT40 Beam Forming, M0 to M7	2	16	-59.3	-61.7	0.1	-41.3	-41.25	0.02
	HT/VHT40 Beam Forming, M8 to M15	2	13	-58.5	-60.9	0.1	-43.5	-41.25	2.22
	HT/VHT40 STBC, M0 to M7	2	13	-58.5	-60.9	0.1	-43.5	-41.25	2.22
5560	Non HT20, 6 to 54 Mbps	1	13	-54.7		0.0	-41.7	-41.25	0.42
	Non HT20, 6 to 54 Mbps	2	13	-59.9	-62.1	0.0	-44.8	-41.25	3.57
	Non HT20 Beam Forming, 6 to 54 Mbps	2	16	-59.9	-62.1	0.0	-41.8	-41.25	0.57
	HT/VHT20, M0 to M7	1	13	-54.4		0.0	-41.4	-41.25	0.11
	HT/VHT20, M0 to M7	2	13	-59.9	-61.9	0.0	-44.7	-41.25	3.48
	HT/VHT20, M8 to M15	2	13	-58.6	-60.9	0.0	-43.5	-41.25	2.30
	HT/VHT20 Beam Forming, M0 to M7	2	16	-59.9	-61.9	0.0	-41.7	-41.25	0.48
	HT/VHT20 Beam Forming, M8 to M15	2	13	-58.6	-60.9	0.0	-43.5	-41.25	2.30
	HT/VHT20 STBC, M0 to M7	2	13	-58.6	-60.9	0.0	-43.5	-41.25	2.30
5610	Non HT80, 6 to 54 Mbps	1	13	-54.9		0.0	-41.9	-41.25	0.62
	Non HT80, 6 to 54 Mbps	2	13	-61.0	-63.4	0.0	-46.0	-41.25	4.74
	VHT80, M0 to M9 1ss	1	13	-54.5		0.2	-41.3	-41.25	0.05
	VHT80, M0 to M9 1ss	2	13	-58.2	-60.8	0.2	-43.1	-41.25	1.85
	VHT80, M0 to M9 2ss	2	13	-58.2	-60.8	0.2	-43.1	-41.25	1.85
	VHT80 Beam Forming, M0 to M9 1ss	2	16	-59.5	-62.0	0.2	-41.4	-41.25	0.12
	VHT80 Beam Forming, M0 to M9 2ss	2	13	-58.2	-60.8	0.2	-43.1	-41.25	1.85
	VHT80 STBC, M0 to M9 1ss	2	13	-58.2	-60.8	0.2	-43.1	-41.25	1.85
5690	Non HT80, 6 to 54 Mbps	1	13	-55.8		0.0	-42.8	-41.25	1.52
	Non HT80, 6 to 54 Mbps	2	13	-56.6	-58.2	0.0	-41.3	-41.25	0.03
	VHT80, M0 to M9 1ss	1	13	-54.7		0.2	-41.5	-41.25	0.25
	VHT80, M0 to M9 1ss	2	13	-58.4	-60.5	0.2	-43.1	-41.25	1.87
	VHT80, M0 to M9 2ss	2	13	-58.4	-60.5	0.2	-43.1	-41.25	1.87
	VHT80 Beam Forming, M0 to M9 1ss	2	16	-59.7	-61.9	0.2	-41.5	-41.25	0.20
	VHT80 Beam Forming, M0 to M9 2ss	2	13	-58.4	-60.5	0.2	-43.1	-41.25	1.87
	VHT80 STBC, M0 to M9 1ss	2	13	-58.4	-60.5	0.2	-43.1	-41.25	1.87
5700	Non HT20, 6 to 54 Mbps	1	13	-54.4		0.0	-41.4	-41.25	0.12
	Non HT20, 6 to 54 Mbps	2	13	-60.2	-61.5	0.0	-44.8	-41.25	3.51
	Non HT20 Beam Forming, 6 to 54 Mbps	2	16	-60.2	-61.5	0.0	-41.8	-41.25	0.51
	HT/VHT20, M0 to M7	1	13	-54.6		0.0	-41.6	-41.25	0.31
	HT/VHT20, M0 to M7	2	13	-60.8	-61.9	0.0	-45.3	-41.25	4.01

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	HT/VHT20, M8 to M15	2	13	-59.0	-60.0	0.0	-43.4	-41.25	2.17
	HT/VHT20 Beam Forming, M0 to M7	2	16	-60.8	-61.9	0.0	-42.3	-41.25	1.01
	HT/VHT20 Beam Forming, M8 to M15	2	13	-59.0	-60.0	0.0	-43.4	-41.25	2.17
	HT/VHT20 STBC, M0 to M7	2	13	-59.0	-60.0	0.0	-43.4	-41.25	2.17
5710	Non HT40, 6 to 54 Mbps	1	13	-54.4		0.0	-41.4	-41.25	0.11
	Non HT40, 6 to 54 Mbps	2	13	-59.8	-61.2	0.0	-44.4	-41.25	3.14
	HT/VHT40, M0 to M7	1	13	-54.5		0.1	-41.4	-41.25	0.19
	HT/VHT40, M0 to M7	2	13	-58.8	-60.0	0.1	-43.3	-41.25	2.04
	HT/VHT40, M8 to M15	2	13	-58.8	-60.0	0.1	-43.3	-41.25	2.04
	HT/VHT40 Beam Forming, M0 to M7	2	16	-59.8	-61.1	0.1	-41.3	-41.25	0.08
	HT/VHT40 Beam Forming, M8 to M15	2	13	-58.8	-60.0	0.1	-43.3	-41.25	2.04
	HT/VHT40 STBC, M0 to M7	2	13	-58.8	-60.0	0.1	-43.3	-41.25	2.04
5720	Non HT20, 6 to 54 Mbps	1	13	-54.6		0.0	-41.6	-41.25	0.32
	Non HT20, 6 to 54 Mbps	2	13	-60.6	-61.6	0.0	-45.0	-41.25	3.78
	Non HT20 Beam Forming, 6 to 54 Mbps	2	16	-60.6	-61.6	0.0	-42.0	-41.25	0.78
	HT/VHT20, M0 to M7	1	13	-54.4		0.0	-41.4	-41.25	0.11
	HT/VHT20, M0 to M7	2	13	-60.3	-61.3	0.0	-44.7	-41.25	3.47
	HT/VHT20, M8 to M15	2	13	-58.7	-59.4	0.0	-43.0	-41.25	1.73
	HT/VHT20 Beam Forming, M0 to M7	2	16	-60.3	-61.3	0.0	-41.7	-41.25	0.47
	HT/VHT20 Beam Forming, M8 to M15	2	13	-58.7	-59.4	0.0	-43.0	-41.25	1.73
	HT/VHT20 STBC, M0 to M7	2	13	-58.7	-59.4	0.0	-43.0	-41.25	1.73

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Conducted Spurious Emissions Peak Table

Antenna Gain: 13dBi									
Frequency (MHz)	Mode	Tx Paths	Correlated Antenna Gain (dBi)	Tx 1 Spur Power (dBm)	Tx 2 Spur Power (dBm)	Tx 3 Spur Power (dBm)	Total Conducted Spur (dBm)	Limit (dBm)	Margin (dB)
5500	Non HT20, 6 to 54 Mbps	1	13	-48.2		0.0	-35.2	-21.25	13.92
	Non HT20, 6 to 54 Mbps	2	13	-52.8	-51.9	0.0	-36.3	-21.25	15.03
	Non HT20 Beam Forming, 6 to 54 Mbps	2	16	-52.8	-51.9	0.0	-33.3	-21.25	12.03
	HT/VHT20, M0 to M7	1	13	-47.7		0.0	-34.7	-21.25	13.41
	HT/VHT20, M0 to M7	2	13	-51.7	-51.6	0.0	-35.6	-21.25	14.35
	HT/VHT20, M8 to M15	2	13	-50.6	-49.9	0.0	-34.2	-21.25	12.93
	HT/VHT20 Beam Forming, M0 to M7	**2**	**16**	**-51.7**	**-51.6**	**0.0**	**-32.6**	**-21.25**	**11.35**
	HT/VHT20 Beam Forming, M8 to M15	2	13	-50.6	-49.9	0.0	-34.2	-21.25	12.93
	HT/VHT20 STBC, M0 to M7	2	13	-50.6	-49.9	0.0	-34.2	-21.25	12.93
5510	Non HT40, 6 to 54 Mbps	1	13	-48.9		0.0	-35.9	-21.25	14.61
	Non HT40, 6 to 54 Mbps	2	13	-51.5	-50.8	0.0	-35.1	-21.25	13.83
	HT/VHT40, M0 to M7	1	13	-50.7		0.1	-37.6	-21.25	16.39
	HT/VHT40, M0 to M7	2	13	-50.7	-50.5	0.1	-34.5	-21.25	13.28
	HT/VHT40, M8 to M15	2	13	-50.7	-50.5	0.1	-34.5	-21.25	13.28
	HT/VHT40 Beam Forming, M0 to M7	2	16	-53.3	-52.2	0.1	-33.6	-21.25	12.40
	HT/VHT40 Beam Forming, M8 to M15	2	13	-50.7	-50.5	0.1	-34.5	-21.25	13.28
	HT/VHT40 STBC, M0 to M7	2	13	-50.7	-50.5	0.1	-34.5	-21.25	13.28
5530	Non HT80, 6 to 54 Mbps	1	13	-49.1		0.0	-36.1	-21.25	14.82
	Non HT80, 6 to 54 Mbps	2	13	-53.7	-53.0	0.0	-37.3	-21.25	16.04
	VHT80, M0 to M9 1ss	1	13	-51.4		0.2	-38.2	-21.25	16.95
	VHT80, M0 to M9 1ss	2	13	-51.9	-51.3	0.2	-35.4	-21.25	14.13
	VHT80, M0 to M9 2ss	2	13	-51.9	-51.3	0.2	-35.4	-21.25	14.13
	VHT80 Beam Forming, M0 to M9 1ss	2	16	-56.0	-54.9	0.2	-36.2	-21.25	14.96
	VHT80 Beam Forming, M0 to M9 2ss	2	13	-51.9	-51.3	0.2	-35.4	-21.25	14.13
	VHT80 STBC, M0 to M9 1ss	2	13	-51.9	-51.3	0.2	-35.4	-21.25	14.13

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5550	Non HT40, 6 to 54 Mbps	1	13	-48.8		0.0	-35.8	-21.25	14.51
	Non HT40, 6 to 54 Mbps	2	13	-51.7	-51.4	0.0	-35.5	-21.25	14.25
	HT/VHT40, M0 to M7	1	13	-51.9		0.1	-38.8	-21.25	17.59
	HT/VHT40, M0 to M7	2	13	-51.9	-50.2	0.1	-34.9	-21.25	13.65
	HT/VHT40, M8 to M15	2	13	-51.9	-50.2	0.1	-34.9	-21.25	13.65
	HT/VHT40 Beam Forming, M0 to M7	2	16	-52.9	-50.8	0.1	-32.7	-21.25	11.41
	HT/VHT40 Beam Forming, M8 to M15	2	13	-51.9	-50.2	0.1	-34.9	-21.25	13.65
	HT/VHT40 STBC, M0 to M7	2	13	-51.9	-50.2	0.1	-34.9	-21.25	13.65
5560	Non HT20, 6 to 54 Mbps	1	13	-48.0		0.0	-35.0	-21.25	13.72
	Non HT20, 6 to 54 Mbps	2	13	-53.4	-53.0	0.0	-37.2	-21.25	15.90
	Non HT20 Beam Forming, 6 to 54 Mbps	2	16	-53.4	-53.0	0.0	-34.2	-21.25	12.90
	HT/VHT20, M0 to M7	1	13	-48.7		0.0	-35.7	-21.25	14.41
	HT/VHT20, M0 to M7	2	13	-53.3	-52.5	0.0	-36.8	-21.25	15.58
	HT/VHT20, M8 to M15	2	13	-51.2	-50.9	0.0	-35.0	-21.25	13.74
	HT/VHT20 Beam Forming, M0 to M7	2	16	-53.3	-52.5	0.0	-33.8	-21.25	12.58
	HT/VHT20 Beam Forming, M8 to M15	2	13	-51.2	-50.9	0.0	-35.0	-21.25	13.74
	HT/VHT20 STBC, M0 to M7	2	13	-51.2	-50.9	0.0	-35.0	-21.25	13.74
5610	Non HT80, 6 to 54 Mbps	1	13	-49.2		0.0	-36.2	-21.25	14.92
	Non HT80, 6 to 54 Mbps	2	13	-55.2	-54.1	0.0	-38.6	-21.25	17.32
	VHT80, M0 to M9 1ss	1	13	-48.3		0.2	-35.1	-21.25	13.85
	VHT80, M0 to M9 1ss	2	13	-50.6	-51.5	0.2	-34.8	-21.25	13.57
	VHT80, M0 to M9 2ss	2	13	-50.6	-51.5	0.2	-34.8	-21.25	13.57
	VHT80 Beam Forming, M0 to M9 1ss	2	16	-52.9	-52.2	0.2	-33.3	-21.25	12.08
	VHT80 Beam Forming, M0 to M9 2ss	2	13	-50.6	-51.5	0.2	-34.8	-21.25	13.57
	VHT80 STBC, M0 to M9 1ss	2	13	-50.6	-51.5	0.2	-34.8	-21.25	13.57
5690	Non HT80, 6 to 54 Mbps	1	13	-49.1		0.0	-36.1	-21.25	14.82
	Non HT80, 6 to 54 Mbps	2	13	-49.1	-48.9	0.0	-33.0	-21.25	11.71
	VHT80, M0 to M9 1ss	1	13	-48.3		0.2	-35.1	-21.25	13.85
	VHT80, M0 to M9 1ss	2	13	-52.4	-51.7	0.2	-35.8	-21.25	14.58
	VHT80, M0 to M9 2ss	2	13	-52.4	-51.7	0.2	-35.8	-21.25	14.58
	VHT80 Beam Forming, M0 to M9 1ss	2	16	-52.7	-52.1	0.2	-33.2	-21.25	11.93
	VHT80 Beam Forming, M0 to M9 2ss	2	13	-52.4	-51.7	0.2	-35.8	-21.25	14.58
	VHT80 STBC, M0 to M9 1ss	2	13	-52.4	-51.7	0.2	-35.8	-21.25	14.58
5700	Non HT20, 6 to 54 Mbps	1	13	-48.3		0.0	-35.3	-21.25	14.02
	Non HT20, 6 to 54 Mbps	2	13	-52.6	-51.2	0.0	-35.8	-21.25	14.55
	Non HT20 Beam Forming, 6 to 54 Mbps	2	16	-52.6	-51.2	0.0	-32.8	-21.25	11.55
	HT/VHT20, M0 to M7	1	13	-48.4		0.0	-35.4	-21.25	14.11
	HT/VHT20, M0 to M7	2	13	-53.0	-53.0	0.0	-36.9	-21.25	15.70
	HT/VHT20, M8 to M15	2	13	-51.0	-50.6	0.0	-34.7	-21.25	13.49

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	HT/VHT20 Beam Forming, M0 to M7	2	16	-53.0	-53.0	0.0	-33.9	-21.25	12.70
	HT/VHT20 Beam Forming, M8 to M15	2	13	-51.0	-50.6	0.0	-34.7	-21.25	13.49
	HT/VHT20 STBC, M0 to M7	2	13	-51.0	-50.6	0.0	-34.7	-21.25	13.49
5710	Non HT40, 6 to 54 Mbps	1	13	-48.1		0.0	-35.1	-21.25	13.81
	Non HT40, 6 to 54 Mbps	2	13	-53.5	-52.4	0.0	-36.9	-21.25	15.61
	HT/VHT40, M0 to M7	1	13	-47.2		0.1	-34.1	-21.25	12.89
	HT/VHT40, M0 to M7	2	13	-52.8	-51.4	0.1	-36.0	-21.25	14.73
	HT/VHT40, M8 to M15	2	13	-52.8	-51.4	0.1	-36.0	-21.25	14.73
	HT/VHT40 Beam Forming, M0 to M7	2	16	-53.1	-52.1	0.1	-33.5	-21.25	12.25
	HT/VHT40 Beam Forming, M8 to M15	2	13	-52.8	-51.4	0.1	-36.0	-21.25	14.73
	HT/VHT40 STBC, M0 to M7	2	13	-52.8	-51.4	0.1	-36.0	-21.25	14.73
5720	Non HT20, 6 to 54 Mbps	1	13	-48.8		0.0	-35.8	-21.25	14.52
	Non HT20, 6 to 54 Mbps	2	13	-53.6	-52.2	0.0	-36.8	-21.25	15.55
	Non HT20 Beam Forming, 6 to 54 Mbps	2	16	-53.6	-52.2	0.0	-33.8	-21.25	12.55
	HT/VHT20, M0 to M7	1	13	-48.1		0.0	-35.1	-21.25	13.81
	HT/VHT20, M0 to M7	2	13	-52.0	-51.8	0.0	-35.8	-21.25	14.60
	HT/VHT20, M8 to M15	2	13	-52.2	-51.2	0.0	-35.6	-21.25	14.37
	HT/VHT20 Beam Forming, M0 to M7	2	16	-52.0	-51.8	0.0	-32.8	-21.25	11.60
	HT/VHT20 Beam Forming, M8 to M15	2	13	-52.2	-51.2	0.0	-35.6	-21.25	14.37
	HT/VHT20 STBC, M0 to M7	2	13	-52.2	-51.2	0.0	-35.6	-21.25	14.37

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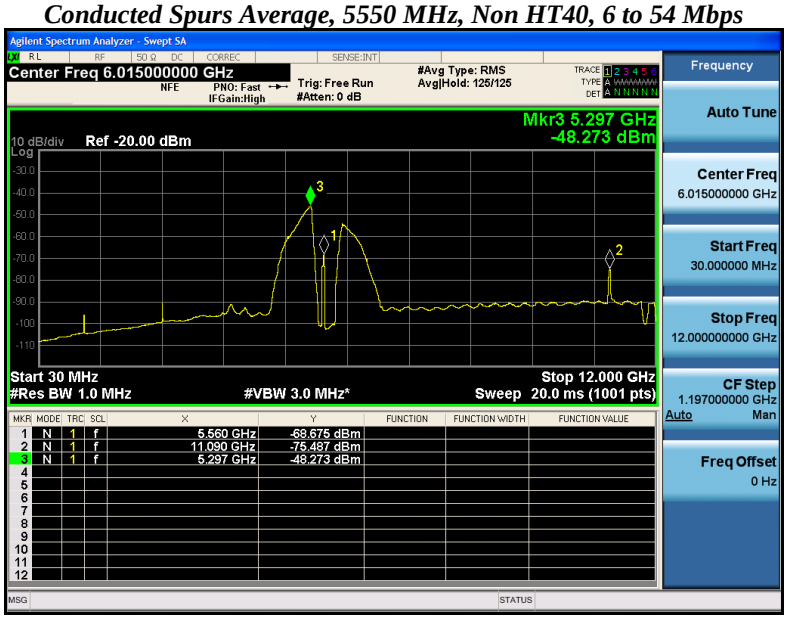
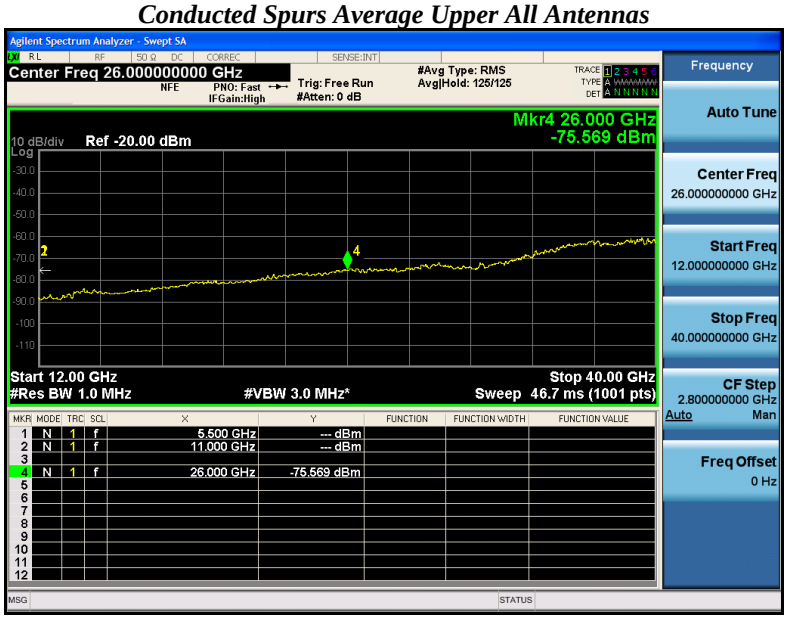
Antenna Gain 7dBi

Conducted Spurs Average, 5550 MHz, Non HT40, 6 to 54 Mbps



Antenna A

Conducted Spurs Average Upper All Antennas



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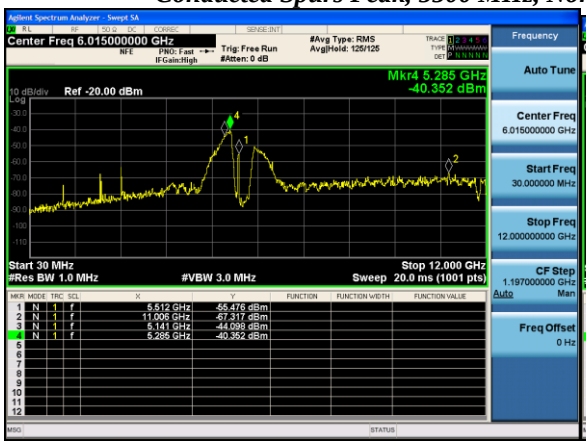
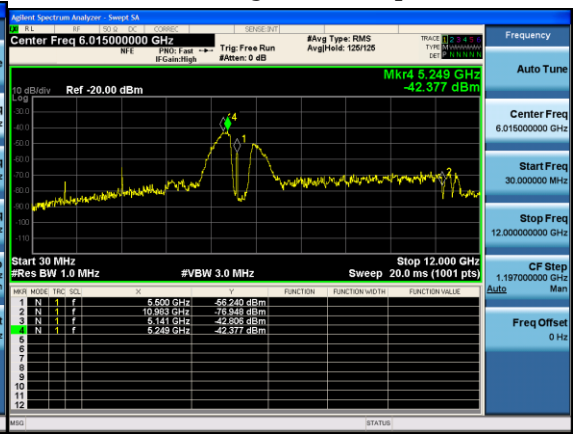
Antenna Gain 7dBi

Conducted Spurs Peak, 5500 MHz, Non HT20 Beam Forming, 6 to 54 Mbps

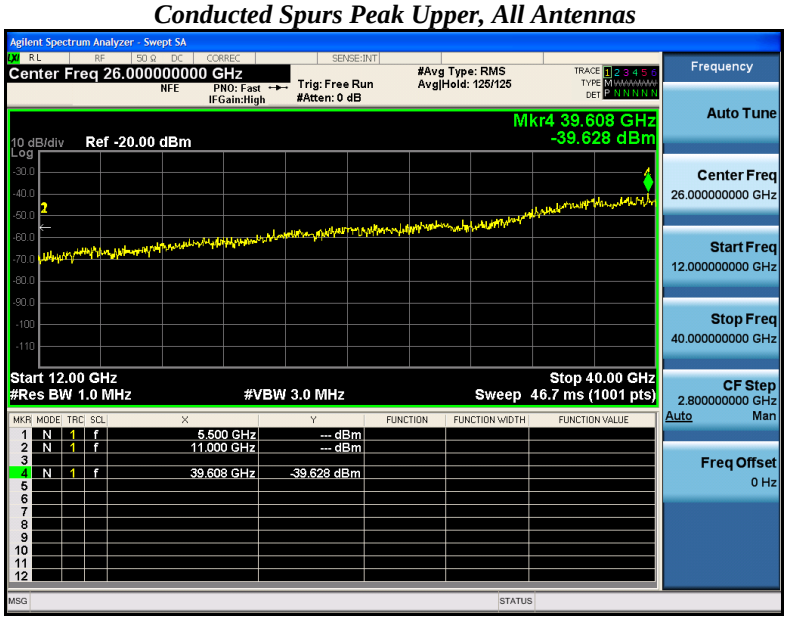


Antenna A



Antenna B

Conducted Spurs Peak Upper, All Antennas



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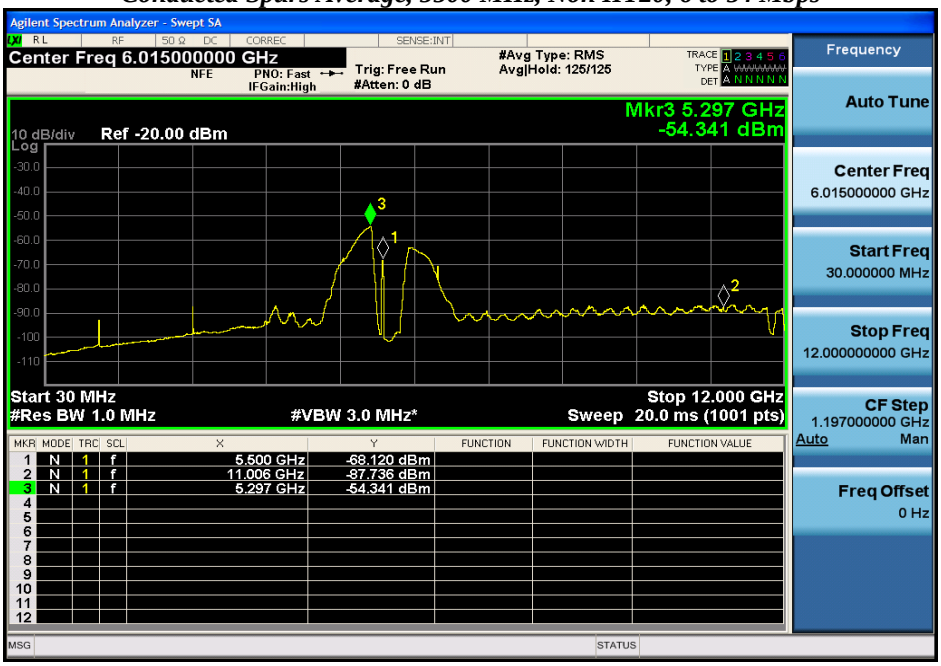
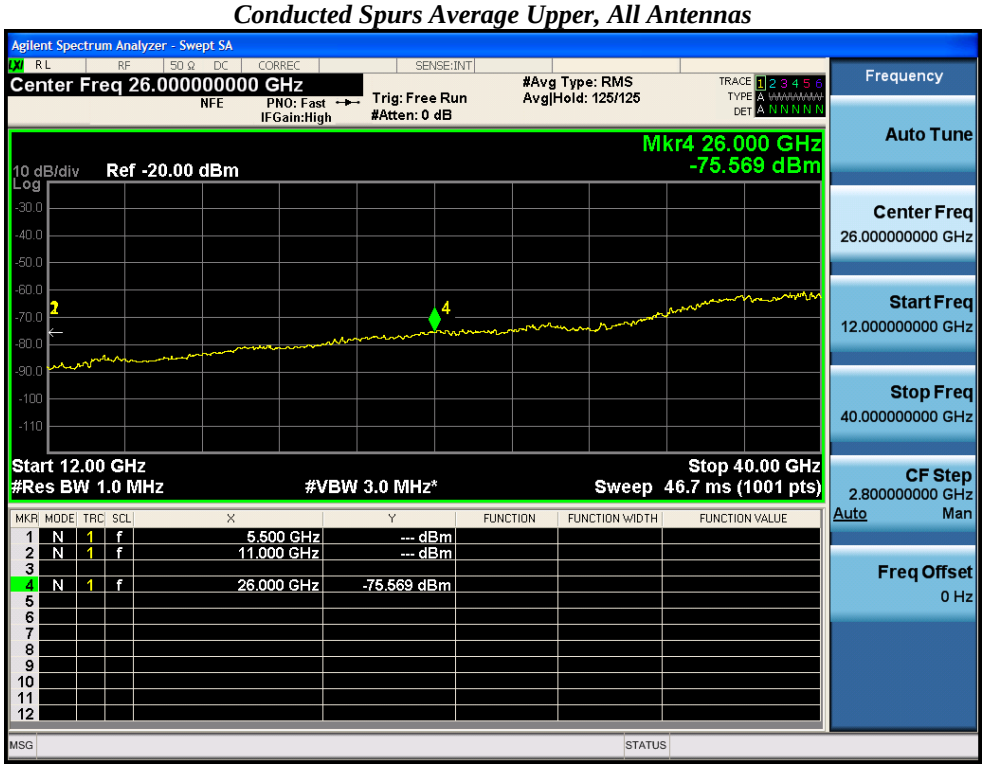
Antenna Gain 13dBi

Conducted Spurs Average, 5500 MHz, Non HT20, 6 to 54 Mbps



Antenna A

Conducted Spurs Average Upper, All Antennas



Antenna Gain : 13dBi

Conducted Spurs Peak, 5500 MHz, HT/VHT20 Beam Forming, M0 to M7

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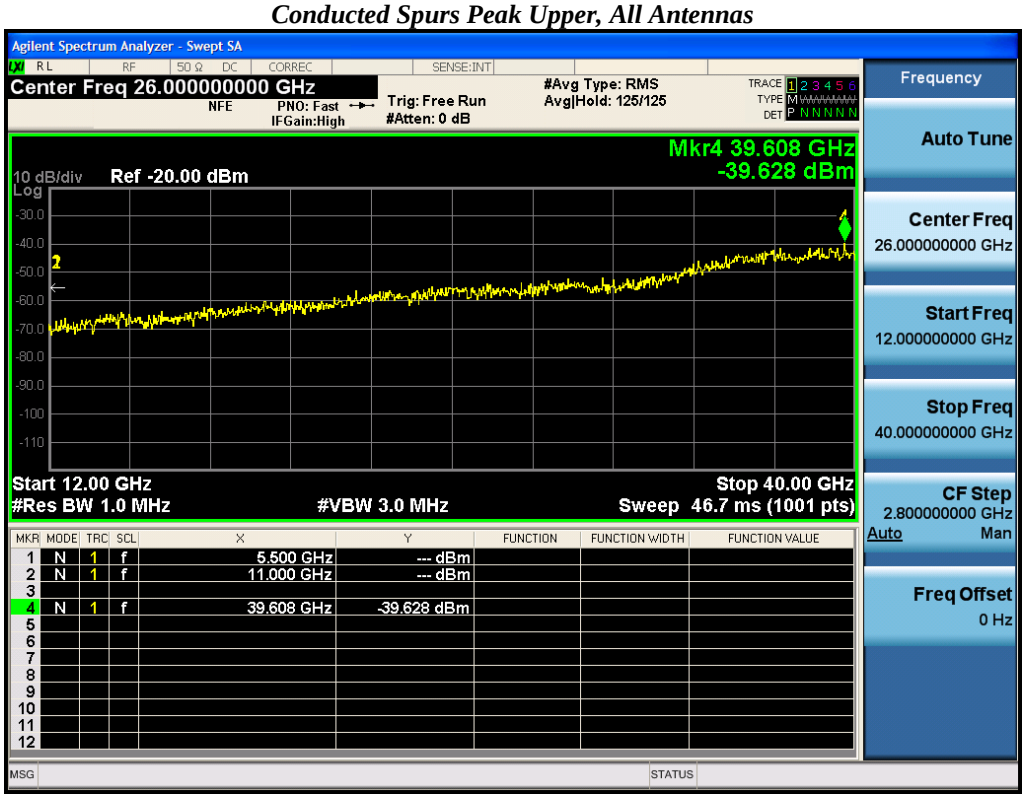
Antenna A ***Antenna B***

Antenna Gain: 13dbi

Conducted Spurs Peak Upper, All Antennas



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A.6Conducted Bandedge

15.407(b), LP0002:4.7.4.1, LP0002:2.7, LP0002:2.8

Undesirable emission limits. Except as shown in paragraph (b)(7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

(3) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

(6) Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in §15.209.

(**7)** The provisions of §15.205 apply to intentional radiators operating under this section.

(8) When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the upper and lower frequency band edges as the design of the equipment permits

15.205 / 15.209 - Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

Use formula below to substitute conducted measurements in place of radiated measurements

E[dBμV/m] = EIRP [dBm] - 20 log(d[meters]) + 104.77, where E = field strength and d = 3 meter

1) Average Plot, Limit= -41.25 dBm eirp
2) Peak plot, Limit = -21.25 dBm eirp

KDB 789033 D02 General UNII Test Procedures New Rules v02r01

2. Unwanted Emissions that fall Outside of the Restricted Bands

a) For all measurements, follow the requirements in II.G.3. *"General Requirements for Unwanted Emissions Measurements."*

b) At frequencies below 1000 MHz, use the procedure described in II.G.4. *"Procedure for Unwanted Emissions Measurements Below 1000 MHz"*

c) At frequencies above 1000 MHz, use the procedure for maximum emissions described in II.G.5., *"Procedure for Unwanted Emissions Measurements Above 1000 MHz."*

(i) Sections 15.407(b)(1-3) specifies the unwanted emissions limit for the U-NII-1 and U-NII-2 bands. As specified, emissions above 1000 MHz that are outside of the restricted bands are subject to a peak emission limit of −27 dBm/MHz.[3]

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Conducted Band Edge Test Procedure

KDB 789033 D02 General UNII Test Procedures New Rules v02r01
Ref. ANSI C63.10: 2013

Conducted Spurious Emissions Test Procedure
1. Connect the antenna port(s) to the spectrum analyzer input. 2. Place the radio in continuous transmit mode 3. Configure Spectrum analyzer as per test parameters below (be sure to enter all losses between the transmitter output and the spectrum analyzer). 4. Use the peak marker function to determine the maximum spurs amplitude level. 5. The "measure-and-sum technique" is used for measuring in-band transmit power of a device. In the measure-and-sum approach, the conducted emission level is measured at each antenna port. The measured results at the various antenna ports are then summed mathematically to determine the total emission level from the device. Summing is performed in linear power units. The worst case output is recorded. (see ANSI C63.10:2013 section 14.3.2.2) 6. Capture graphs and record pertinent measurement data.

Ref. ANSI C63.10: 2013 section 12.7.6 (Peak) and 12.7.7.2 (Average)
KDB 789033 D02 General UNII Test Procedures New Rules v02r01, Sec. 5 (Peak), Sec. 6 (Average Method AD)

Conducted Spurious Emissions Test parameters	
Peak RBW = 1 MHz VBW ≥ 3 MHz Sweep = Auto Detector = Peak Trace = Max Hold.	**Average** RBW = 1 MHz VBW ≥ 3 MHz Sweep = Auto Detector = RMS Power Averaging

Samples, Systems, and Modes

System Number	Description	Samples	System under test	Support equipment
1	EUT	S01	☑	☐
	Support	S02	☐	☑

Tested By : Julian Land	**Date of testing:** 20-Nov-19 - 21-Nov-19
Test Result : PASS	

Test Equipment
See Appendix B for list of test equipment

Note: Data with Highest and lowest Antenna gains were recorded as worst case

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Conducted Bandedge Average Table

Antenna Gain: 13dBi									
Frequency (MHz)	Mode	Tx Paths	Correlated Antenna Gain (dBi)	Tx 1 Bandedge Level (dBm)	Tx 2 Bandedge Level (dBm)	Duty Cycle Correction (dB)	Total Tx Bandedge Level (dBm)	Limit (dBm)	Margin (dB)
5500	Non HT20, 6 to 54 Mbps	1	13	-57.9		0.0	-44.9	-41.25	3.62
	Non HT20, 6 to 54 Mbps	2	13	-62.8	-63.5	0.0	-47.1	-41.25	5.84
	Non HT20 Beam Forming, 6 to 54 Mbps	2	16	-62.8	-63.5	0.0	-44.1	-41.25	2.84
	HT/VHT20, M0 to M7	1	13	-58.1		0.0	-45.1	-41.25	3.81
	HT/VHT20, M0 to M7	2	13	-62.8	-63.9	0.0	-47.3	-41.25	6.01
	HT/VHT20, M8 to M15	2	13	-61.1	-62.2	0.0	-45.6	-41.25	4.31
	HT/VHT20 Beam Forming, M0 to M7	2	16	-62.8	-63.9	0.0	-44.3	-41.25	3.01
	HT/VHT20 Beam Forming, M8 to M15	2	13	-61.1	-62.2	0.0	-45.6	-41.25	4.31
	HT/VHT20 STBC, M0 to M7	2	13	-61.1	-62.2	0.0	-45.6	-41.25	4.31
5510	Non HT40, 6 to 54 Mbps	1	13	-55.9		0.0	-42.9	-41.25	1.61
	Non HT40, 6 to 54 Mbps	2	13	-60.3	-61.4	0.0	-44.8	-41.25	3.51
	HT/VHT40, M0 to M7	1	13	-59.9		0.1	-46.8	-41.25	5.59
	HT/VHT40, M0 to M7	2	13	-59.9	-59.9	0.1	-43.8	-41.25	2.58
	HT/VHT40, M8 to M15	2	13	-59.9	-59.9	0.1	-43.8	-41.25	2.58
	HT/VHT40 Beam Forming, M0 to M7	2	16	-59.4	-63.5	0.1	-41.9	-41.25	0.67
	HT/VHT40 Beam Forming, M8 to M15	2	13	-59.9	-59.9	0.1	-43.8	-41.25	2.58
	HT/VHT40 STBC, M0 to M7	2	13	-59.9	-59.9	0.1	-43.8	-41.25	2.58
5530	Non HT80, 6 to 54 Mbps	1	13	-54.7		0.0	-41.7	-41.25	0.42
	Non HT80, 6 to 54 Mbps	2	13	-60.8	-60.8	0.0	-44.8	-41.25	3.51
	VHT80, M0 to M9 1ss	1	13	-56.0		0.2	-42.8	-41.25	1.55
	VHT80, M0 to M9 1ss	**2**	**13**	**-57.1**	**-58.2**	**0.2**	**-41.4**	**-41.25**	**0.16**
	VHT80, M0 to M9 2ss	2	13	-57.1	-58.2	0.2	-41.4	-41.25	0.16
	VHT80 Beam Forming, M0 to M9 1ss	2	16	-61.6	-63.4	0.2	-43.2	-41.25	1.95
	VHT80 Beam Forming, M0 to M9 2ss	2	13	-57.1	-58.2	0.2	-41.4	-41.25	0.16
	VHT80 STBC, M0 to M9 1ss	2	13	-57.1	-58.2	0.2	-41.4	-41.25	0.16

Conducted Band edge Peak Table

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Frequency (MHz)	Mode	Tx Paths	Correlated Antenna Gain (dBi)	Tx 1 Bandedge Level (dBm)	Tx 2 Bandedge Level (dBm)	Total Tx Bandedge Level (dBm)	Limit (dBm)	Margin (dB)
5500	Non HT20, 6 to 54 Mbps	1	13	-44.4		-31.4	-21.25	10.12
	Non HT20, 6 to 54 Mbps	2	13	-50.2	-51.6	-34.8	-21.25	13.55
	Non HT20 Beam Forming, 6 to 54 Mbps	2	16	-50.2	-51.6	-31.8	-21.25	10.55
	HT/VHT20, M0 to M7	1	13	-44.0		-31.0	-21.25	9.71
	HT/VHT20, M0 to M7	2	13	-50.2	-49.3	-33.7	-21.25	12.42
	HT/VHT20, M8 to M15	2	13	-46.7	-49.0	-31.6	-21.25	10.40
	HT/VHT20 Beam Forming, M0 to M7	2	16	-50.2	-49.3	-30.7	-21.25	9.42
	HT/VHT20 Beam Forming, M8 to M15	2	13	-46.7	-49.0	-31.6	-21.25	10.40
	HT/VHT20 STBC, M0 to M7	2	13	-46.7	-49.0	-31.6	-21.25	10.40
5510	Non HT40, 6 to 54 Mbps	1	13	-41.2		-28.2	-21.25	6.91
	Non HT40, 6 to 54 Mbps	2	13	-36.3	-46.0	-22.8	-21.25	1.57
	HT/VHT40, M0 to M7	1	13	-39.7		-26.6	-21.25	5.39
	HT/VHT40, M0 to M7	2	13	-39.7	-42.4	-24.8	-21.25	3.53
	HT/VHT40, M8 to M15	2	13	-39.7	-42.4	-24.8	-21.25	3.53
	HT/VHT40 Beam Forming, M0 to M7	**2**	**16**	**-44.4**	**-40.2**	**-22.7**	**-21.25**	**1.49**
	HT/VHT40 Beam Forming, M8 to M15	2	13	-39.7	-42.4	-24.8	-21.25	3.53
	HT/VHT40 STBC, M0 to M7	2	13	-39.7	-42.4	-24.8	-21.25	3.53
5530	Non HT80, 6 to 54 Mbps	1	13	-43.6		-30.6	-21.25	9.32
	Non HT80, 6 to 54 Mbps	2	13	-48.1	-48.4	-32.2	-21.25	10.95
	VHT80, M0 to M9 1ss	1	13	-42.6		-29.4	-21.25	8.15
	VHT80, M0 to M9 1ss	2	13	-48.5	-45.5	-30.5	-21.25	9.29
	VHT80, M0 to M9 2ss	2	13	-48.5	-45.5	-30.5	-21.25	9.29
	VHT80 Beam Forming, M0 to M9 1ss	2	16	-45.9	-47.8	-27.5	-21.25	6.29
	VHT80 Beam Forming, M0 to M9 2ss	2	13	-48.5	-45.5	-30.5	-21.25	9.29
	VHT80 STBC, M0 to M9 1ss	2	13	-48.5	-45.5	-30.5	-21.25	9.29

5700	Non HT20, 6 to 54 Mbps	1	13	-40.8		-27.8	-21.25	6.52
	Non HT20, 6 to 54 Mbps	2	13	-50.1	-43.0	-29.2	-21.25	7.94
	Non HT20 Beam Forming, 6 to 54 Mbps	2	16	-50.1	-43.0	-26.2	-21.25	4.94

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	HT/VHT20, M0 to M7	1	13	-42.3		-29.3	-21.25	8.01
	HT/VHT20, M0 to M7	2	13	-40.5	-46.9	-26.6	-21.25	5.31
	HT/VHT20, M8 to M15	2	13	-48.0	-41.7	-27.7	-21.25	6.49
	HT/VHT20 Beam Forming, M0 to M7	2	16	-40.5	-46.9	-23.6	-21.25	2.31
	HT/VHT20 Beam Forming, M8 to M15	2	13	-48.0	-41.7	-27.7	-21.25	6.49
	HT/VHT20 STBC, M0 to M7	2	13	-48.0	-41.7	-27.7	-21.25	6.49

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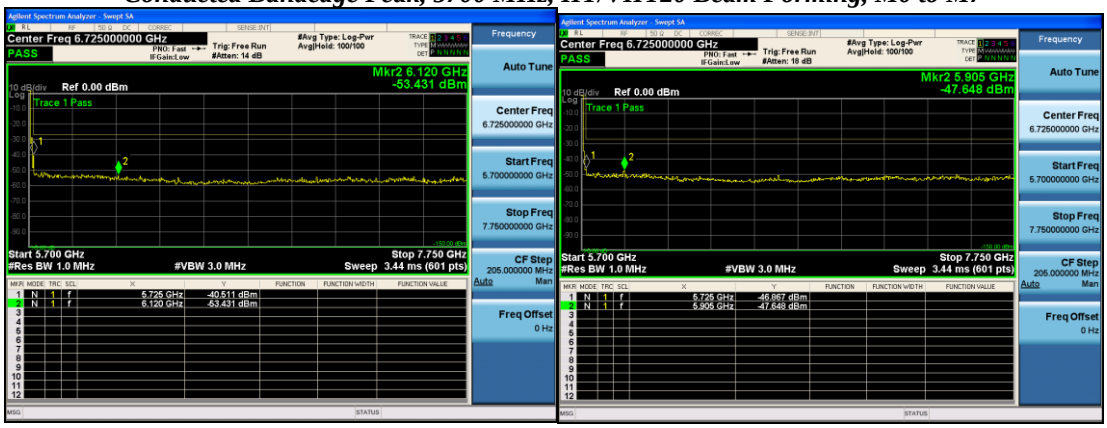
Antenna Gain: 13dBi

Conducted Bandedge Peak, 5510 MHz, HT/VHT40 Beam Forming, M0 to M7

Antenna A ***Antenna B***

Antenna Gain: 13dBi

Conducted Bandedge Peak, 5700 MHz, HT/VHT20 Beam Forming, M0 to M7



Antenna A ***Antenna B***

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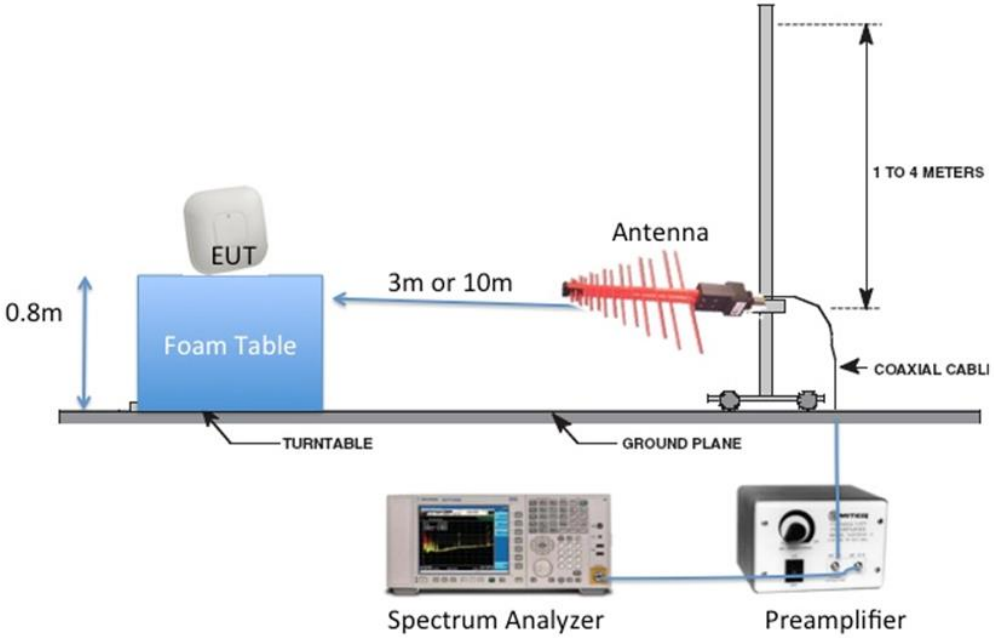
Appendix B: Radiated Spurious and AC Conducted Emissions

Testing Laboratory: Cisco Systems, Inc., 425 East Tasman Drive, San Jose, CA 95134, USA

B.1 Radiated Spurious Emissions

B1.1 Setup Diagram

Below 1G (Preamp used is optional)



Above 1G

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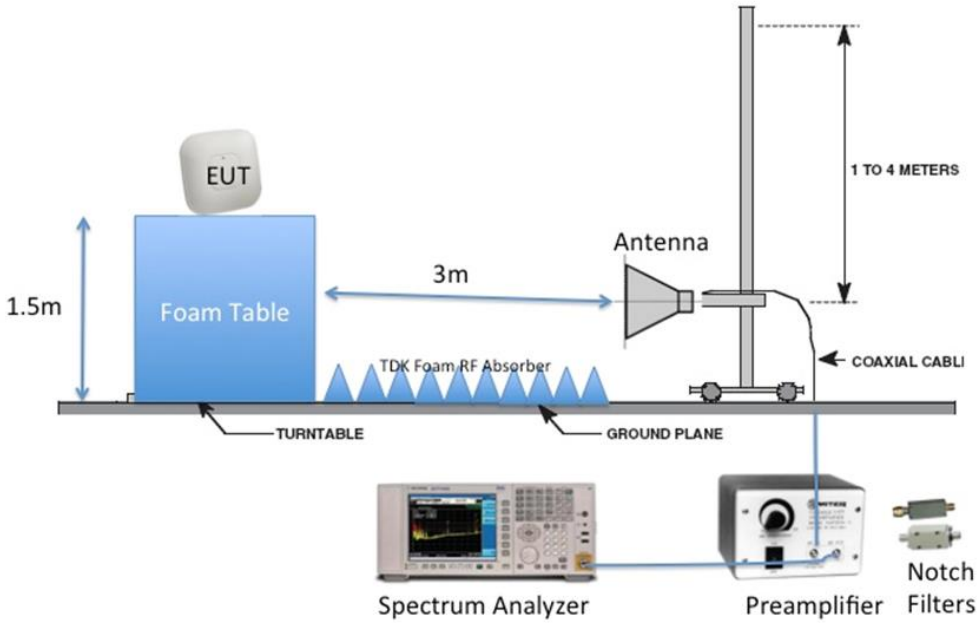

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B1.2 Restricted Bands

15.407 (b) (7),**LP0002:4.7.4.1, LP0002:2.8**

The provisions of 15.205 apply to intentional radiators operating under this section

15.205 (b) Except as provided in paragraphs (d) and (e) of this section, the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in §15.209. Refer to limit section for detailed limits.

Restricted Bands for LP0002			
MHz	**MHz**	**MHz**	**MHz**
0.090～0.110	108.00～138.00	1660.0～1785.0	8025.0～8500.0
0.490～0.510	149.90～150.05	1805.0～1880.0	9000.0～9200.0
2.172～2.198	156.70～156.90	1885.0～1900.0	9300.0～9500.0
3.013～3.033	162.01～167.17	1905.0～1985.0	10600～12700
4.115～4.198	167.72～173.20	2010.0～2025.0	13250～13400
5.670～5.690	240.00～285.00	2110.0～2170.0	14470～14500
6.200～6.300	322.00～335.40	2200.0～2300.0	15350～16200
8.230～8.400	399.90～410.00	2310.0～2390.0	17700～21400
12.265～12.600	485.00～510.00	2483.5～2900.0	22010～23120
13.340～13.430	608.00～614.00	3260.0～3267.0	23600～24000
14.965～15.020	703.00～748.00	3332.0～3339.0	31200～31800
16.700～16.755	758.00～803.00	3345.8～3358.0	36430～36500
19.965～20.020	825.00～915.00	3500.0～4400.0	Above 38600
25.500～25.700	930.00～1240.0	4500.0～5250.0	
37.475～38.275	1300.0～1427.0	5350.0～5460.0	
73.500～75.400	1435.0～1626.5	7250.0～7750.0	

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RSS-Gen 8.10

(**b**) Unwanted emissions that fall into restricted bands of Table 6 shall comply with the limits specified in RSS-Gen.

(**c**) Unwanted emissions that do not fall within the restricted frequency bands of Table 6 shall comply either with the limits specified in the applicable RSS or with those specified in this RSS-Gen.

Table 6 Restricted Bands

MHz	MHz	GHz
0.090-0.110	74.8-75.2	9.0-9.2
2.1735-2.1905	108-138	9.3-9.5
3.020-3.026	156.52475-156.52525	10.6-12.7
4.125-4.128	156.7-156.9	13.25-13.4
4.17725-4.17775	240-285	14.47-14.5
4.20725-4.20775	322-335.4	15.35-16.2
5.677-5.683	399.9-410	17.7-21.4
6.215-6.218	608-614	22.01-23.12
6.26775-6.26825	960-1427	23.6-24.0
6.31175-6.31225	1435-1626.5	31.2-31.8
8.291-8.294	1645.5-1646.5	36.43-36.5
8.362-8.366	1660-1710	Above 38.6
8.37625-8.38675	1718.8-1722.2	*
8.41425-8.41475	2200-2300	
12.29-12.293	2310-2390	
12.51975-12.52025	2655-2900	
12.57675-12.57725	3260-3267	
13.36-13.41	3332-3339	
16.42-16.423	3345.8-3358	
16.69475-16.69525	3500-4400	
16.80425-16.80475	4500-5150	
25.5-25.67	5350-5460	
37.5-38.25	7250-7750	
73-74.6	8025-8500	

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B1.3 Limits

Below 1 GHz

FCC 15.209 FCC 15.209, LP0002:2.8
The level of any unwanted emissions from an intentional radiator operating under these general provisions shall not exceed the level of the fundamental emission. Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the table specified in the table in FCC§15.209(a).

FCC15.407, LP0002:4.7.4.1

(b) (6) Unwanted emissions below 1GHz must comply with general field strength limits set forth in §15.209.

RSS-Gen 8.9: Except when the requirements applicable to a given device state otherwise, emissions from licence-exempt transmitters shall comply with the field strength limits shown in Table below. Additionally, the level of any transmitter emission shall not exceed the level of the transmitter's fundamental emission.

General Field Strength Limits Table			
Frequency (MHz)	**Field strength (uV/meter)**	**Field strength (dBuV/meter)**	**Measurement distance (meters)**
30-88	100**	40 Qp	3
88-216	150**	43.5 Qp	3
216-960	200**	46 Qp	3
Above 960	500	54 Av / 74 Pk	3

Above 1 GHz

15.407 (b) **LP0002:4.7.4.1** Undesirable *emission limits.* Except as shown in paragraph (b) (7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

(3) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz

RSS-247 6.2.3.2
Emissions outside the band 5470-5725 MHz shall not exceed -27 dBm/MHz e.i.r.p.

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Limit Conversion (power to field strength)

The field strength limit in dBµV can be converted from power (logarithmic) by using the field strength (linear) approach formula as follows:

$$\mathbf{V/m} = \frac{\sqrt{30 \times Pt \times gt}}{d}$$

where: **pt** = transmitter output power in watts,
gt = numeric gain of the transmitting antenna (unit less),
E = electric field strength in V/m,
d = measurement distance in meters (m).

From the equation above, unit conversion from log => linear with a known power limit of -27 dBm.

(1) Conversion from dBm to Watt

dBm to Watts W = 10((dBm – 30)/10)

$P(W) = 10^{(-27 -120) / 20}$
$= 10^{-5.7}$
$= 1.995 \times 10^{-6}$

(2) Convert from Watt to field strength

a. Convert from Watt to V/m @ 3m distance

$$\mathbf{V/m} = \frac{\sqrt{30 \times Pt \times gt}}{3}$$

$$= \frac{\sqrt{30 \times 0.000001995 \times 1}}{3}$$

= **0.00257**

b. Convert field strength to power density (**V/m to dBµV/m)**

dBµV/m = 20 log (V/m) + 120

= **68.2**

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B1.4 Test Procedure

Ref. ANSIC63.10-2013 section 6.5 & 6.6, Cispr16-1-1

ANSI C63.10: 2013 section 4.1.4 / section 12.7.5 (Quasi-Peak), section 12.7.6 (peak), section 12.7.7.3 (average)

Test parameters
(i) Span = Entire frequency range or segment if necessary.
(ii) Reference Level = 80 dBuV
(iii) RBW = 100 kHz (less than or equal to 1 GHz); 1 MHz (above 1 GHz)
(iv) VBW ≥ 3 x RBW
(v) Detector = Peak & Quasi-Peak (frequency range 30 MHz to 1 GHz); Peak & Average (frequency range above 1 GHz); Change VBW to 10 Hz for average measurement
(vi) Sweep Time = Couple

Using Vasona, configure the spectrum analyzer as shown below (be sure to enter all losses between the transmitter output and the spectrum analyzer). Place the radio in continuous transmit mode.

Terminate the access Point RF ports with 50-ohm loads.
Maximize Turntable (find worst case table angle), Maximize Antenna (find worst case height)

30MHz – 18GHz,
Save plots: Peak plot (Vertical and Horizontal) @3m

Above 18 GHz,
Save plots: Peak plot (Vertical and Horizontal) @1m

Place a marker at the end of the restricted band closest to the transmit frequency to show compliance.
Also measure any emissions in the restricted bands.

Note: The data displayed on the plots detailed in the graphical test results section were measured using a 'Peak Detector'. Please refer to the results table for the detectors used during formal measurements.

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This report represents the worst case data for all supported operating modes with antenna which has maximum gain.

Samples, Systems, and Modes

System Number	Description	Samples	System under test	Support equipment
1	EUT	IW-6300H with Air-ANT2513P4M-N antenna	☑	☐
	Support	IW-6300H-AC-X-K9 power supply	☐	☑

Mode Setting#	Wi-Fi Mode	Modulation	Data Rate
1 (single antenna)	802.11a*	BPSK	6 Mbps
8 (dual antenna)	802.11n (HT40)*	BPSK	27.0 Mbps (MCS0)

Tested By:	**Date of testing:**
Test Engineer(s): Farida Rahmanzai, Jose Huamani	23-Sep-2019 – 14-Oct-2019
Test Result: PASS	

Test Equipment

See Appendix C for list of test equipment

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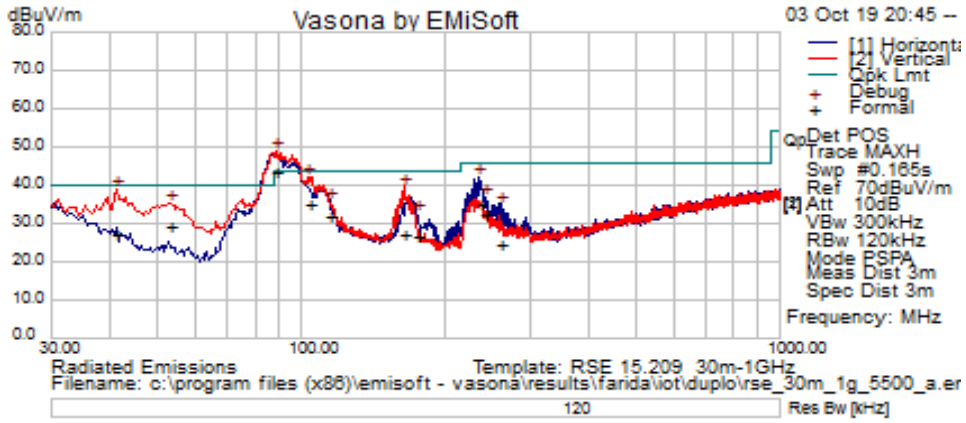
B1.5 TX Radiated Spurious Emissions Graphical Data Results

Subtest Date:	03-Oct-2019
Engineer	Farida Rahmanzai Jose Huamani
Lab Information	Building 7, 5m Anechoic
Subtest Title	Transmitter Spurious Emissions
Frequency Range	30MHz - 1GHz
Comments on the above Test Results	**802.11a**, Tx Channel 100 (5500 MHz) (worst case)



Title: **TX Spurious Emissions from 30MHz-1GHz – Ch100 (5500 MHz)**

Frequency (MHz)	Raw (dBuV)	Cab Loss (dB)	AF (dB)	Level (dBuV)	Detector	Polarity	Height (cm)	Azt (Deg)	Limit (dBuV)	Margin (dB)	Results Pass / Fail	Comments
88.5435	35.02	0.98	7.55	43.56	Quasi Max	H	391	127	53.5*	-9.94	Pass	See notes
40.982	13.33	0.66	13.21	27.21	Quasi Max	V	147	227	40	-12.79	Pass	
103.441	23.02	1.06	10.83	34.91	Quasi Max	H	398	274	43.5	-8.59	Pass	
163.2883	14.23	1.36	11.87	27.46	Quasi Max	V	159	172	43.5	-16.04	Pass	
235.1233	21.83	1.6	11.5	34.93	Quasi Max	H	107	226	46	-11.07	Pass	
53.27075	21.2	0.79	7.27	29.26	Quasi Max	V	108	258	40	-10.74	Pass	
113.961	18.11	1.12	12.99	32.23	Quasi Max	H	271	254	43.5	-11.27	Pass	
240.5625	19.1	1.62	11.7	32.42	Quasi Max	H	128	211	46	-13.58	Pass	
174.1113	14.35	1.4	11.1	26.85	Quasi Max	H	110	191	43.5	-16.65	Pass	
260.845	10.71	1.69	12.17	24.57	Quasi Max	V	101	144	46	-21.43	Pass	

Note1: 88.54MHz is detemined to be non-radio related signal. FCC part15.109 class A limit applied.
Also see FCC Part15.109 test report.

Note2: * means FCC part15.109 class A limit.

Subtest Date:	03-Oct-2019
Engineer	Farida Rahmanzai Jose Huamani

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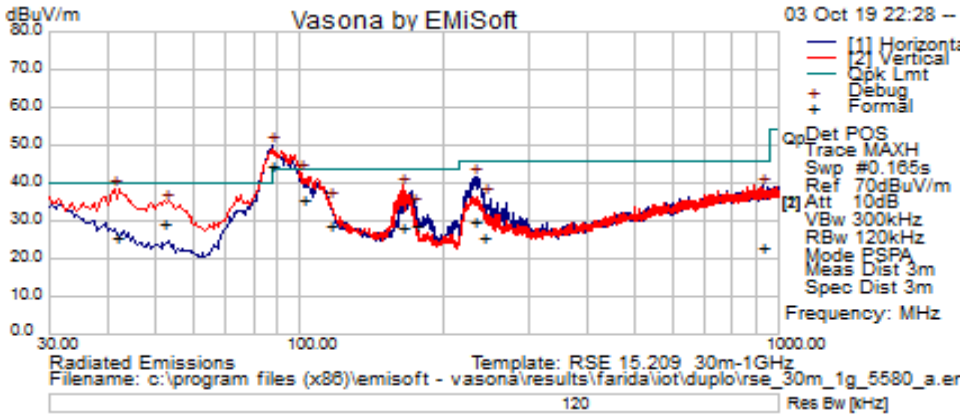
Lab Information	Building 7, 5m Anechoic
Subtest Title	Transmitter Spurious Emissions
Frequency Range	30MHz - 1GHz
Comments on the above Test Results	**802.11a**, Tx Channel 116 (5580 MHz) (worst case)



Title: **TX Spurious Emissions from 30MHz-1GHz – Ch 116 (5580 MHz)**

Frequency (MHz)	Raw (dBuV)	Cab Loss (dB)	AF (dB)	Level (dBuV)	Detector	Polarity	Height (cm)	Azt (Deg)	Limit (dBuV)	Margin (dB)	Results Pass / Fail	Comments
87.5505	35.94	0.98	7.5	44.42	Quasi Max	H	226	119	50*	-5.58	Pass	See notes
101.0905	24.66	1.04	10.23	35.94	Quasi Max	H	223	222	43.5	-7.56	Pass	
41.17	12.03	0.66	13.08	25.77	Quasi Max	V	171	83	40	-14.23	Pass	
163.4268	15.33	1.36	11.86	28.54	Quasi Max	V	126	182	43.5	-14.96	Pass	
231.795	16.91	1.59	11.28	29.78	Quasi Max	H	118	179	46	-16.22	Pass	
52.157	21.02	0.79	7.47	29.27	Quasi Max	V	104	143	40	-10.73	Pass	
927.3338	-2.66	3.17	22.37	22.88	Quasi Max	H	352	239	46	-23.12	Pass	
115.5203	14.49	1.13	13.25	28.87	Quasi Max	H	260	193	43.5	-14.63	Pass	
242.7128	12.5	1.62	11.7	25.82	Quasi Max	H	150	189	46	-20.18	Pass	
173.58	16.16	1.4	11.14	28.7	Quasi Max	H	113	207	43.5	-14.8	Pass	

Note1: 87.55MHz is detemined to be non-radio related signal. FCC part15.109 class A limit applied.
Also see FCC Part15.109 test report.
Note2: * means FCC part15.109 class A limit

Subtest Date:	04-Oct-2019
Engineer	Farida Rahmanzai Jose Huamani
Lab Information	Building 7, 5m Anechoic
Subtest Title	Transmitter Spurious Emissions
Frequency Range	30MHz - 1GHz
Comments on the above Test Results	**802.11a**, Tx Channel 140 (5700 MHz) (worst case)

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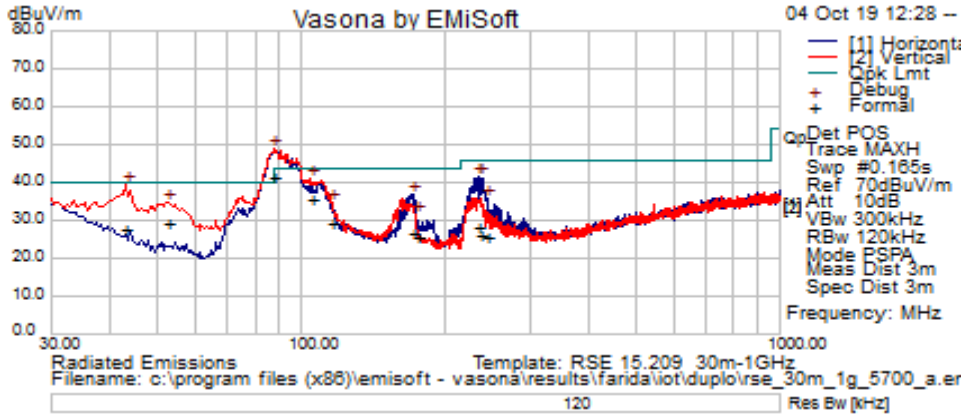
Subtest Date:	04-Oct-2019
Engineer	Farida Rahmanzai Jose Huamani
Lab Information	Building 7, 5m Anechoic
Subtest Title	Transmitter Spurious Emissions
Frequency Range	30MHz - 1GHz
Comments on the above Test Results	**802.11a**, Tx Channel 140 (5700 MHz) (worst case)



Title: **TX Spurious Emissions from 30MHz-1GHz – Ch140 (5700 MHz)**

Frequency (MHz)	Raw (dBuV)	Cab Loss (dB)	AF (dB)	Level (dBuV)	Detector	Polarity	Height (cm)	Azt (Deg)	Limit (dBuV)	Margin (dB)	Results Pass / Fail	Comments
87.5805	33.45	0.5	7.5	41.44	Quasi Max	H	171	289	50*	-8.56	Pass	See notes
42.86025	15.37	0.35	11.81	27.53	Quasi Max	V	169	128	40	-12.47	Pass	
104.7738	23.94	0.54	11.15	35.63	Quasi Max	V	128	114	43.5	-7.87	Pass	
234.1718	16.09	0.82	11.42	28.33	Quasi Max	H	155	257	46	-17.67	Pass	
235.7698	13.86	0.82	11.5	26.18	Quasi Max	V	188	28	46	-19.82	Pass	
52.651	21.56	0.4	7.37	29.33	Quasi Max	V	106	167	40	-10.67	Pass	
171.1903	14.9	0.71	11.3	26.9	Quasi Max	H	131	179	43.5	-16.6	Pass	
115.495	15.72	0.57	13.25	29.54	Quasi Max	H	278	241	43.5	-13.96	Pass	
244.3365	13.27	0.83	11.7	25.81	Quasi Max	H	106	258	46	-20.19	Pass	
174.1015	13.89	0.71	11.1	25.7	Quasi Max	H	153	191	43.5	-17.8	Pass	

Note1: 87.58MHz is detemined to be non-radio related signal. FCC part15.109 class A limit applied.
Also see FCC Part15.109 test report.
Note2: * means FCC part15.109 class A limit

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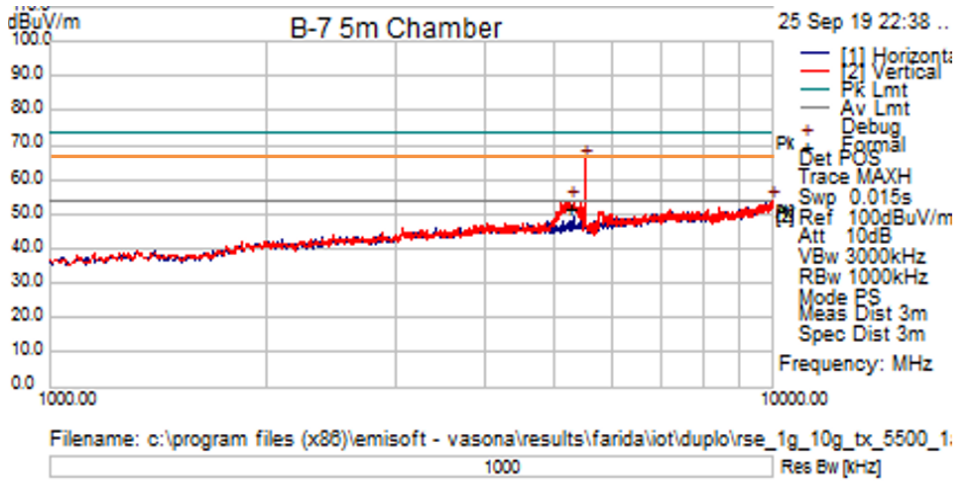
Subtest Date:	25-Sep-2019
Engineer	Farida Rahmanzai Jose Huamani
Lab Information	Building 7, 5m Anechoic
Subtest Title	Transmitter Spurious Emissions
Frequency Range	1GHz - 10GHz
Comments on the above Test Results	**802.11a**, Tx Channel 100 (5500 MHz)



Title: **TX Spurious Emissions from 1GHz-1GHz – Ch100 (5500 MHz)**

Frequency (MHz)	Raw (dBuV)	Cab Loss (dB)	AF (dB)	Level (dBuV)	Detector	Polarity	Height (cm)	Azt (Deg)	Limit (dBuV)	Margin (dB)	Results Pass / Fail	Comments
5494.375	62.29	9.31	-5.3	66.3	Peak	V	100	14	N/A	N/A	Ignored	Fundamental
5233.138	48.77	9.08	-5.79	52.05	Peak	V	99	29	68.2	-16.15	Pass	Tx/Ch100

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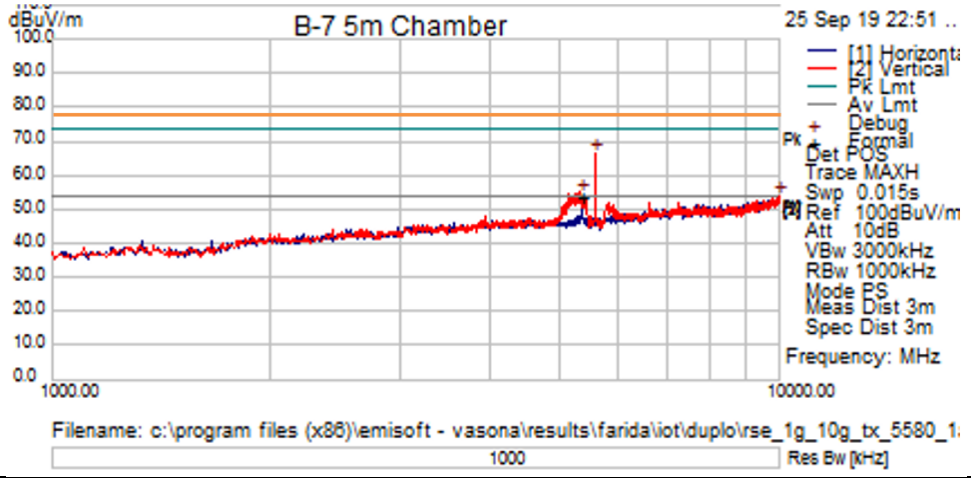
Subtest Date:	25-Sep-2019
Engineer	Farida Rahmanzai Jose Huamani
Lab Information	Building 7, 5m Anechoic
Subtest Title	Transmitter Spurious Emissions
Frequency Range	1GHz - 10GHz
Comments on the above Test Results	**802.11a**, Tx Channel 116 (5580 MHz)



Title: **TX Spurious Emissions from 1GHz-10GHz – Ch116 (5580 MHz)**

Frequency (MHz)	Raw (dBuV)	Cab Loss (dB)	AF (dB)	Level (dBuV)	Detector	Polarity	Height (cm)	Azt (Deg)	Limit (dBuV)	Margin (dB)	Results Pass / Fail	Comments
5584.375	62.54	9.36	-5.37	66.53	Peak	V	100	15	N/A	N/A	Ignored	Fundamental
5346.948	50.1	9.2	-5.54	53.76	Peak	V	100	28	68.2	-14.44	Pass	5Tx(Ch100 9.2

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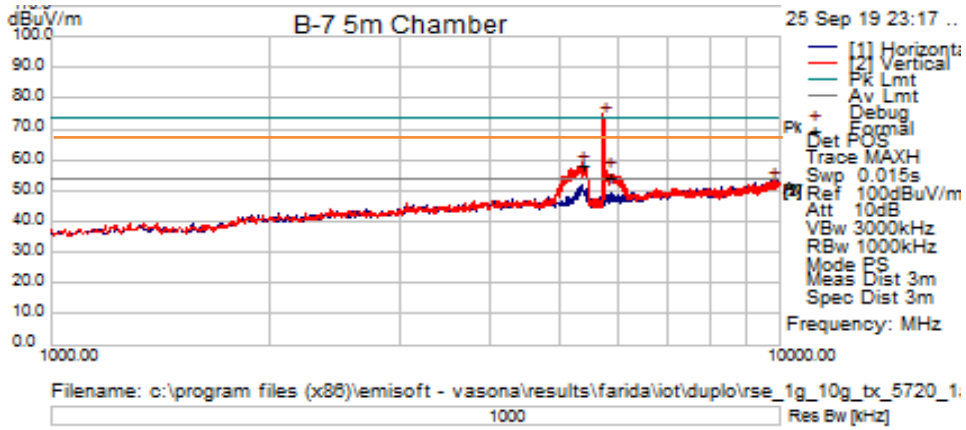
Subtest Date:	25-Sep-2019
Engineer	Farida Rahmanzai Jose Huamani
Lab Information	Building 7, 5m Anechoic
Subtest Title	Transmitter Spurious Emissions
Frequency Range	1GHz - 10GHz
Comments on the above Test Results	**802.11a**, Tx Channel 140 (5700 MHz)



Title: **TX Spurious Emissions from 1GHz-10GHz – Ch140 (5700 MHz)**

Frequency (MHz)	Raw (dBuV)	Cab Loss (dB)	AF (dB)	Level (dBuV)	Detector	Polarity	Height (cm)	Azt (Deg)	Limit (dBuV)	Margin (dB)	Results Pass / Fail	Comments
5725	70.16	9.52	-4.98	74.71	Peak	V	100	25	N/A	N/A	Ignored	Fundamental
5336.875	55.25	9.19	-5.53	58.9	Peak	V	100	22	68.2	-9.30	Pass	Tx/Ch100
5337.633	54.76	9.19	-5.53	58.42	Peak	V	100	21	68.2	-9.78	Pass	
5798.125	51.88	9.59	-4.94	56.53	Peak	V	100	8	68.2	-11.67	Pass	
5802.645	49.76	9.59	-5.01	54.34	Peak	V	100	7	68.2	-13.86	Pass	

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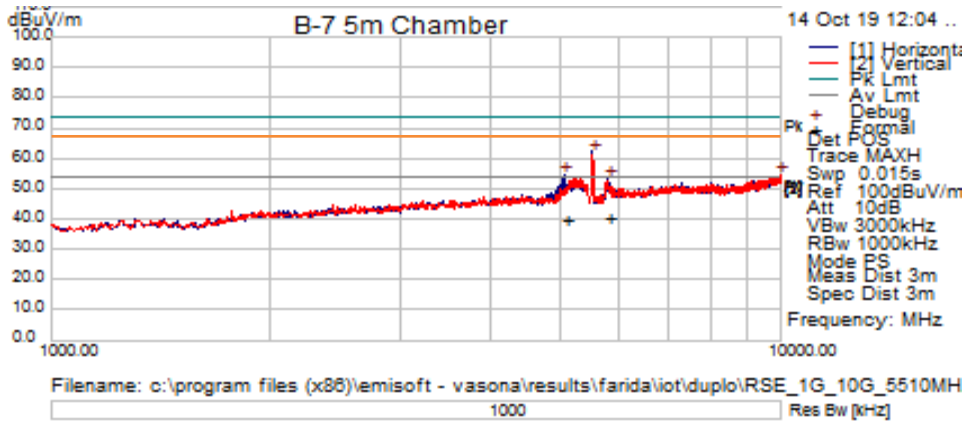
Subtest Date:	14-Oct-2019
Engineer	Farida Rahmanzai Jose Huamani
Lab Information	Building 7, 5m Anechoic
Subtest Title	Transmitter Spurious Emissions
Frequency Range	1GHz - 10GHz
Comments on the above Test Results	**802.11n40**, Tx Channel 102 (5510 MHz)



Title: **TX Spurious Emissions from 1GHz-10GHz – Ch102 (5510 MHz)**

Frequency (MHz)	Raw (dBuV)	Cab Loss (dB)	AF (dB)	Level (dBuV)	Detector	Polarity	Height (cm)	Azt (Deg)	Limit (dBuV)	Margin (dB)	Results Pass / Fail	Comments
5516.875	58.01	9.75	-5.4	62.36	Peak [Scan]	H	150	342	N/A	N/A	Ignored	Fundamental
5044.375	51.47	9.24	-5.88	54.83	Peak [Scan]	H	175	349	68.2	-13.37	Pass	RB
5090.653	36.69	9.29	-5.86	40.12	Average	H	176	349	54	-13.88	Pass	RB
5792.50	48.36	10	-4.85	53.52	Peak [Scan]	H	125	354	68.2	-14.68	Pass	
5792.72	35.49	10	-4.85	40.64	Average	H	126	355	54	-13.36	Pass	

Note: RB means restricted band

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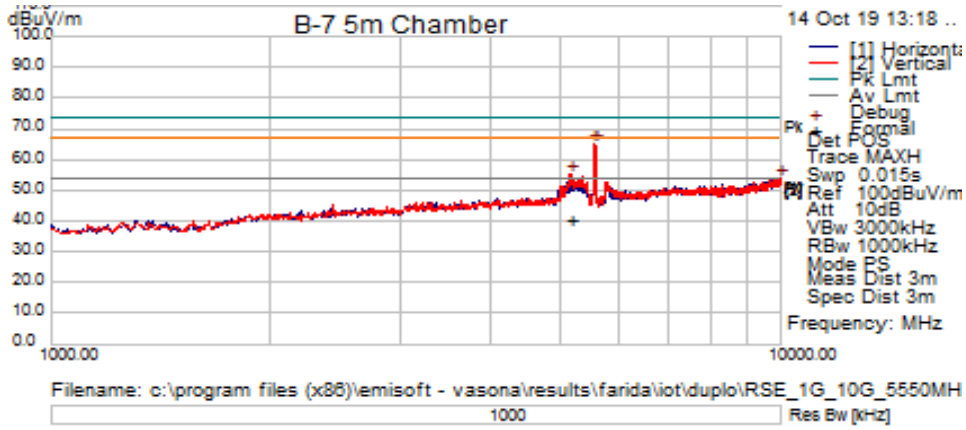
Subtest Date:	14-Oct-2019
Engineer	Farida Rahmanzai Jose Huamani
Lab Information	Building 7, 5m Anechoic
Subtest Title	Transmitter Spurious Emissions
Frequency Range	1GHz - 10GHz
Comments on the above Test Results	**802.11n40**, Tx Channel 110 (5550 MHz)



Title: **TX Spurious Emissions from 1GHz-10GHz – Ch 110 (5550 MHz)**

Frequency (MHz)	Raw (dBuV)	Cab Loss (dB)	AF (dB)	Level (dBuV)	Detector	Polarity	Height (cm)	Azt (Deg)	Limit (dBuV)	Margin (dB)	Results Pass / Fail	Comments
5533.75	60.82	9.74	-5.28	65.28	Peak [Scan]	V	100	348	N/A	N/A	Ignored	Fundamental
5145.625	51.79	9.35	-5.78	55.36	Peak [Scan]	V	125	338	68.2	-12.84	Pass	RB
5144.965	36.77	9.35	-5.78	40.34	Average	V	125	337	54	-13.66	Pass	RB

Note: RB means restricted band

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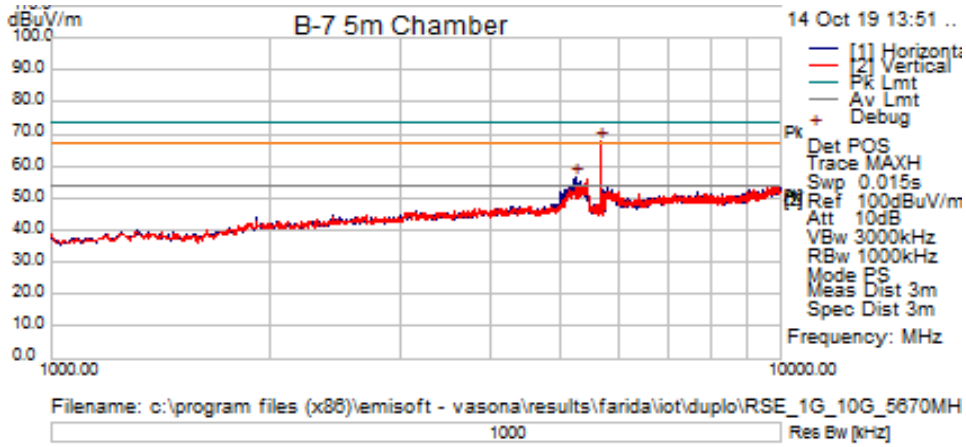
Subtest Date:	14-Oct-2019
Engineer	Farida Rahmanzai Jose Huamani
Lab Information	Building 7, 5m Anechoic
Subtest Title	Transmitter Spurious Emissions
Frequency Range	1GHz - 10GHz
Comments on the above Test Results	**802.11n40**, Tx Channel 134 (5670 MHz)



Title: **TX Spurious Emissions from 1GHz-10GHz – Ch 134 (5670 MHz)**

Frequency (MHz)	Raw (dBuV)	Cab Loss (dB)	AF (dB)	Level (dBuV)	Detector	Polarity	Height (cm)	Azt (Deg)	Limit (dBuV)	Margin (dB)	Results Pass / Fail	Comments
5668.75	59.05	12.32	-5.34	66.03	Peak	H	100	2	N/A	N/A	Ignored	Fundamental
5308.75	52.22	11.83	-5.55	58.5	Peak	V	100	360	68.2	-9.70	Pass	
5843.125	47.63	12.59	-5.06	55.17	Peak	V	100	355	68.2	-13.03	Pass	

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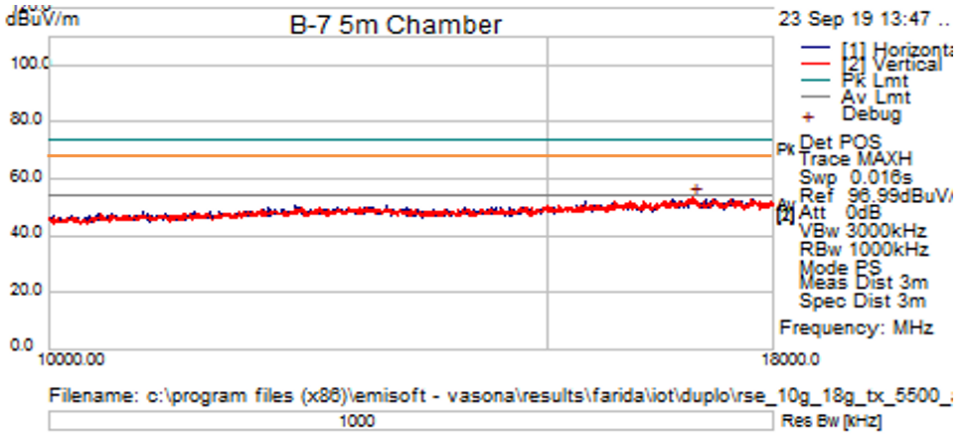
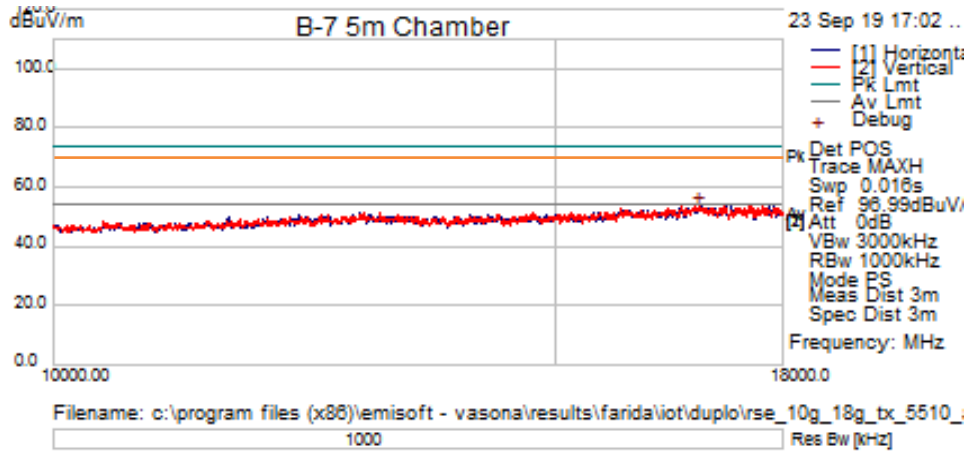
Subtest Date:	23-Sep-2019
Engineer	Farida Rahmanzai Jose Huamani
Lab Information	Building 7, 5m Anechoic
Subtest Title	Transmitter Spurious Emissions
Frequency Range	10GHz - 18GHz
Comments on the above Test Results	**802.11a,** Tx Channel 100 (5500 MHz) **802.11n40**, Tx Channel 102 (5510 MHz)



Title: **TX Spurious Emissions from 10GHz-18GHz – Ch 100 (5500 MHz)**



Title: **TX Spurious Emissions from 10GHz-18GHz – Ch 102 (5510 MHz)**

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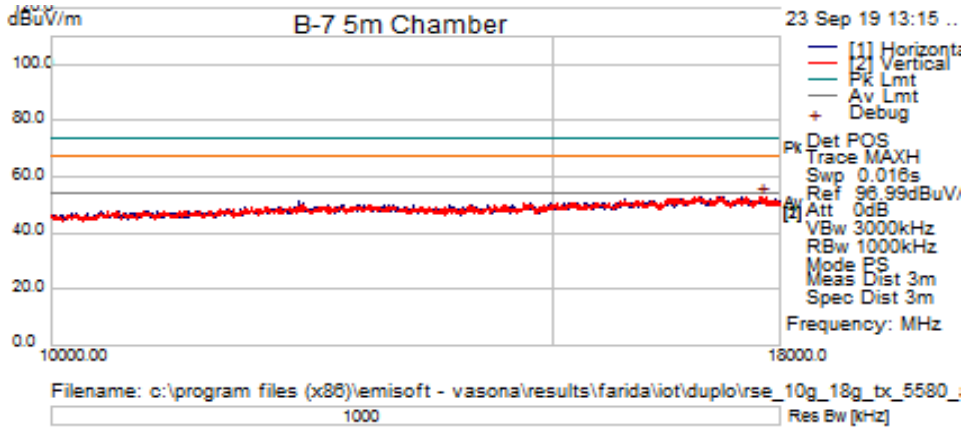
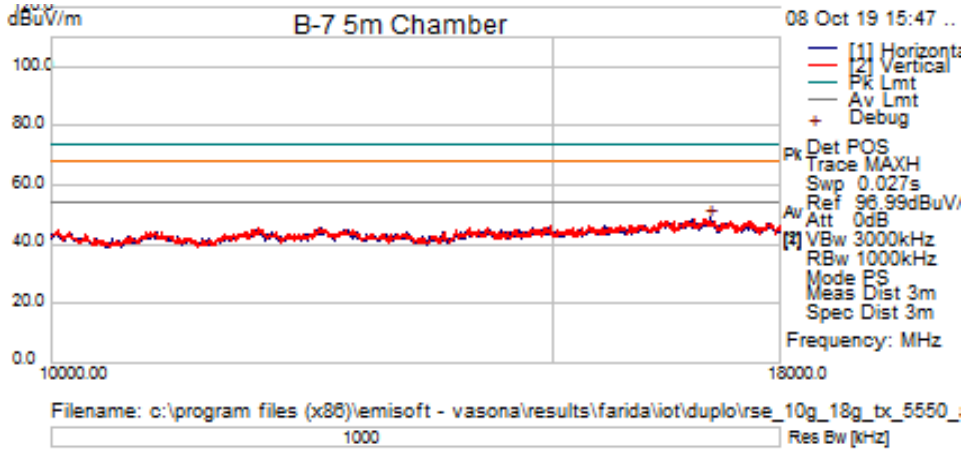
Subtest Date:	23-Sep-2019 – 08-Oct-2019
Engineer	Farida Rahmanzai Jose Huamani
Lab Information	Building 7, 5m Anechoic
Subtest Title	Transmitter Spurious Emissions
Frequency Range	10GHz - 18GHz
Comments on the above Test Results	**802.11a**, Tx Channel 116 (5580 MHz); **802.11n40**, Tx Channel 110 (5550 MHz);



Title: **TX Spurious Emissions from 10GHz-18GHz – Ch116 (5580 MHz)**



Title: **TX Spurious Emissions from 10GHz-18GHz – Ch110 (5550 MHz)**

Subtest Date:	08-Oct-2019

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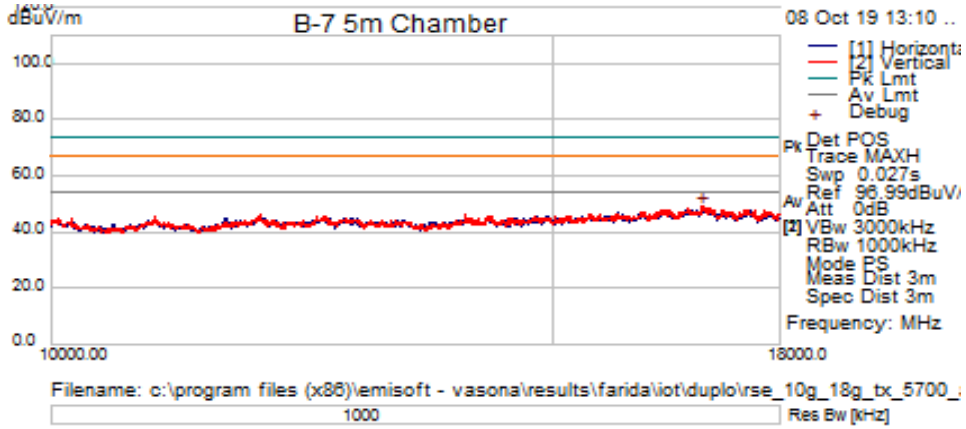
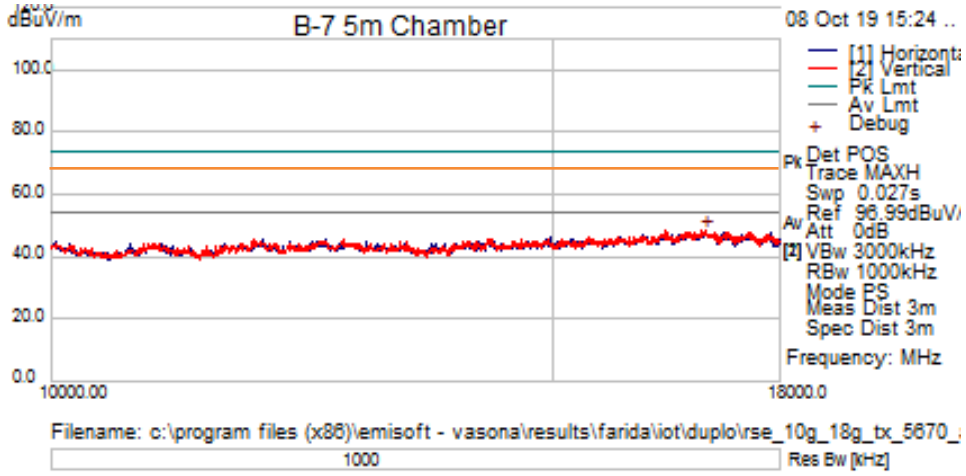
Engineer	Farida Rahmanzai Jose Huamani
Lab Information	Building 7, 5m Anechoic
Subtest Title	Transmitter Spurious Emissions
Frequency Range	10GHz - 18GHz
Comments on the above Test Results	**802.11a**, Tx Channel 140 (5700 MHz); **802.11n40**, Tx Channel 134 (5670 MHz);



Title: **TX Spurious Emissions from 10GHz-18GHz – Ch140 (5700 MHz)**



Title: **TX Spurious Emissions from 10GHz-18GHz – Ch134 (5670 MHz)**

Subtest Date:	27-Sep-2019 – 08-Oct-2019
Engineer	Farida Rahmanzai Jose Huamani
Lab Information	Building 7, 5m Anechoic
Subtest Title	Transmitter Spurious Emissions

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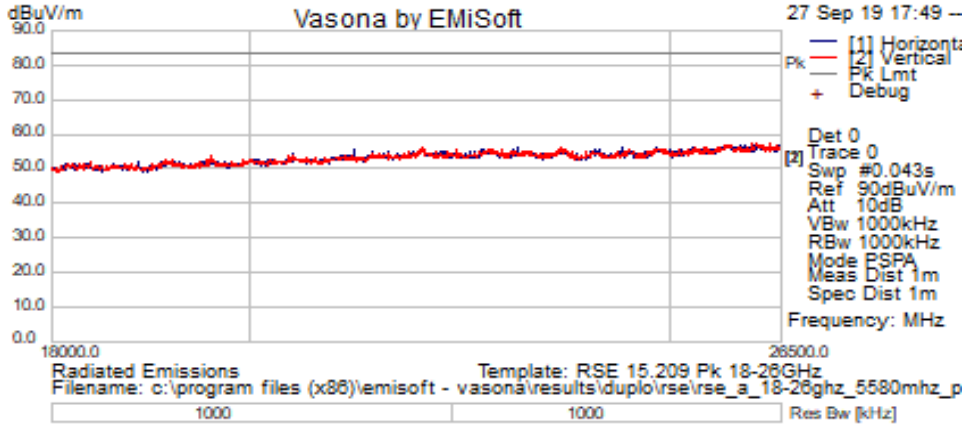
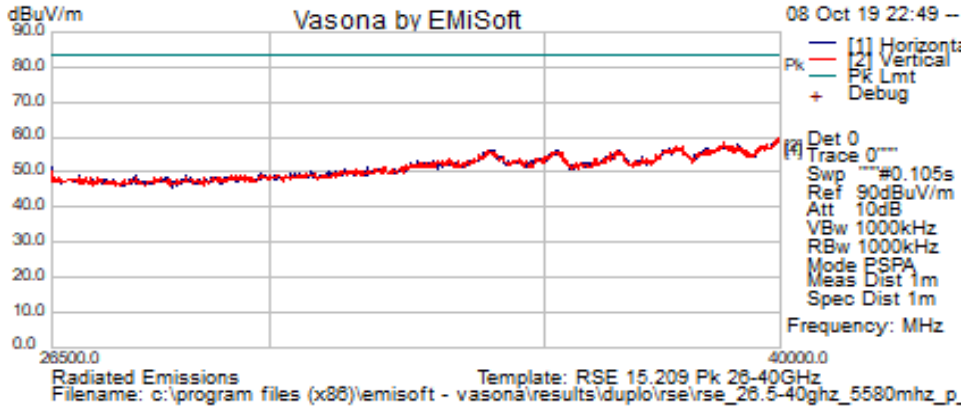
Frequency Range	18GHz - 40GHz
Comments on the above Test Results	**802.11a**, Tx Channel 116 (5580 MHz)



Title: **TX Spurious Emissions from 18GHz-26.5GHz – Ch116 (5580 MHz)**



Title: **TX Spurious Emissions from 26.5GHz-40GHz – Ch116 (5580 MHz)**

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B.2 AC Conducted Emissions

B2.1 Limits

FCC 15.207: (a), **LP0002:2.3**

Except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 μH/50 ohms line impedance stabilization network (LISN).

	Conducted Limits	
Frequency of Emission (MHz)	Quasi-Peak	Average
0.15 – 0.5	66 to 56*	56 to 46*
0.5 – 5	56	46
5 – 30	60	50

RSS-Gen 8.8: Unless stated otherwise in the applicable RSS, for radio apparatus that are designed to be connected to the public utility AC power network, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the range 150 kHz to 30 MHz shall not exceed the limits in table 4 (AC power-line conducted emissions limit), as measured using a 50 μH / 50 Ω line impedance stabilization network. This requirement applies for the radio frequency voltage measured between each power line and the ground terminal of each AC power-line mains cable of the EUT.

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B2.2 Test Procedures

Ref: C63.10:2013, section 6.2.2

Section 6.2.2 Measurement requirements

Measured levels of ac power-line conducted emission shall be the emission voltages from the voltage probe or across the 50 ΩLISN port (to which the EUT is connected), where permitted, terminated into a 50 Ω measuring instrument, or where permitted or required, the emission currents on the power line sensed by a current probe. All emission voltage and current measurements shall be made on each current-carrying conductor at the plug end of the EUT power cord by the use of mating plugs and receptacles on the LISN, if used. Equipment shall be tested with power cords that are normally supplied or recommended by the manufacturer, and that have electrical and shielding characteristics that are the same as those cords normally supplied or recommended by the manufacturer. For those measurements, using a LISN, the 50 Ω measuring port is terminated by a measuring instrument having a 50 Ω input impedance. All other ports are terminated in 50Ω loads. Figure 5, Figure 6, and Figure 7 show typical test setups for ac power-line conducted emissions testing (see 6.13). For information about the use of a RF-shielded (screen) room, vertical conducting plane and voltage probe, see ANSI C63.4.

Tabletop devices shall be placed on a platform of nominal size, 1 m by 1.5 m, raised 80 cm above the reference ground plane. The vertical conducting plane or wall of an RF-shielded (screen) room shall be located 40 cm to the rear of the EUT. Floor-standing devices shall be placed either directly on the reference ground-plane or on insulating material as described in ANSI C63.4. All other surfaces of tabletop or floor standing EUTs shall be at least 80 cm from any other grounded conducting surface, including the case or cases of one or more LISNs.

Section 6.2.5 Final ac power-line conducted emission measurements

Based on the exploratory tests of the EUT performed in 6.2.4, the one EUT cable configuration and arrangement and mode of operation that produced the emission with the highest amplitude relative to the limit is selected for the final measurement, while applying the appropriate modulating signal to the EUT. If the EUT is relocated from an exploratory test site to a final test site, the highest emissions shall be maximized at the final test location before final ac power-line conducted emission measurements are performed. The final test on all current-carrying conductors of all of the power cords to the equipment that comprises the EUT (but not the cords associated with other non-EUT equipment in the system) is then performed for the full frequency range for which the EUT is being tested for compliance without further variation of the EUT arrangement, cable positions, or EUT mode of operation. If the EUT is comprised of equipment units that have their own separate ac power connections, e.g., floor-standing equipment with independent power cords for each shelf that are able to connect directly to the ac power network, each current-carrying conductor of one unit is measured while the other units are connected to a second (or more) LISN(s). All units shall be separately measured. If a power strip is provided by the manufacturer, to supply all of the units making up the EUT, only the conductors in the power cord of the power strip shall be measured.

Record the six highest EUT emissions relative to the limit of each of the current-carrying conductors of the power cords of the equipment that comprises the EUT over the frequency range specified by the procuring or regulatory agency.

Ref. C63.10-2013 section 6.2

Test Procedure
1. Using Vasona software, configure the spectrum analyzer as shown above (be sure to enter all losses between the transmitter output and the spectrum analyzer).

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2. Set the radio in continuous transmit mode.
3. Connect cable end to LISN Hot port and other cable end to the spectrum Analyzer/EMC receiver RF input port. Terminate the LISN neutral port with a 50 Ω impedance terminator.
4. Sweep the frequency range from 150 kHz to 30 MHz (segment if necessary)
5. Use the peak marker function to determine the maximum amplitude level.
6. Center marker frequency and perform final measurement using applicable detector (Quasi-Pk/Average).
7. Record at least 6 highest reading for the worst-case operating modes in Quasi-peak/Average.
8. Repeat the test on Neutral lead.
9. Repeat step 3 – 7 with the radio sets in the Receiver mode.
10. Record at least 6 highest reading in Quasi-peak/Average

Ref. C63.10-2013 section 4 / CISPR16-1-1

Test Parameters
Span = Entire frequency range or segment if necessary.
Reference Level = 70 dBuV
RBW = 9 kHz
VBW ≥ 3 x RBW
Sweep Time = Couple
Detector = Quasi-Peak & Average

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Samples, Systems, and Modes

System Number	Description	Samples	System under test	Support equipment
2	EUT	IW-6300H with Air-ANT2513P4M-N antenna	☑	☐
	Support	IW-6300H-AC-X-K9 power supply	☐	☑

Mode Setting#	Wi-Fi Mode	Modulation	Data Rate
1 (single antenna)	802.11a*	BPSK	6 Mbps

Tested By:	**Date of testing:**
Test Engineer(s): Farida Rahmanzai, Jose Huamani	13-Nov-2019
Test Result: PASS	

Test Equipment

See Appendix C for list of test equipment

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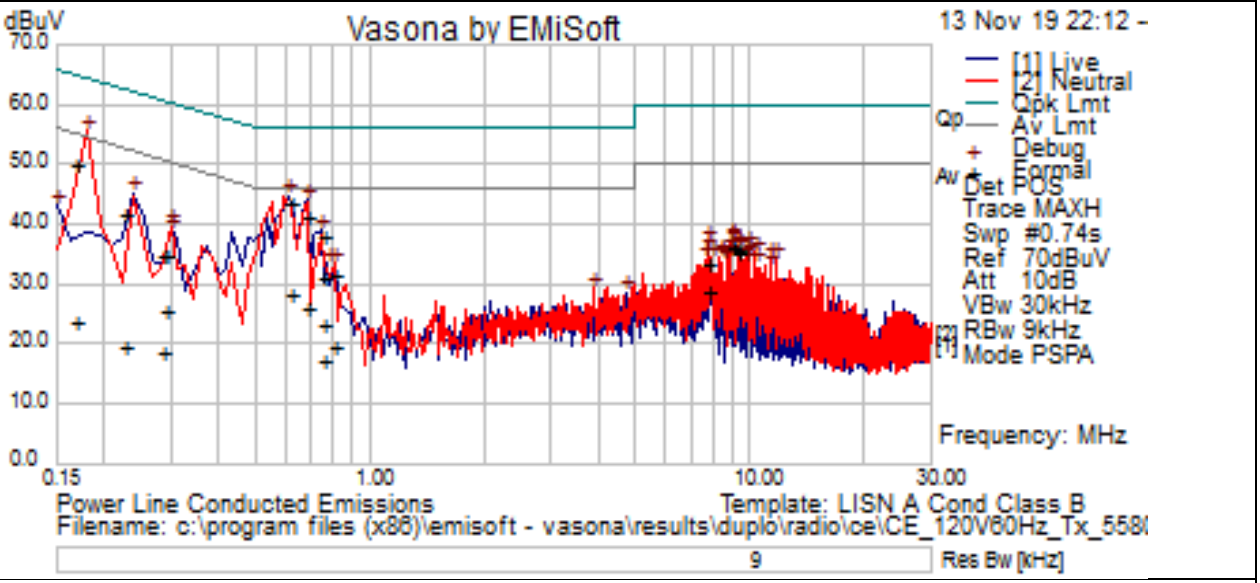
B2.3 AC Conducted Emissions Test Data and Graphical Test Results

Subtest Date:	13-Nov-2019
Engineer	Farida Rahmanzai Jose Huamani
Lab Information	Building 7, formal immunity room
Subtest Title	Conducted Emissions
Frequency Range	150 kHz - 30 MHz
Comments on the above Test Results	TX Ch116 (5580 MHz) with BPSK modulation – 6 Mbps



AC Conducted Emissions Test Result Tables for 802.11a / TX Ch116

Frequency (MHz)	Raw (dBuV)	Cab Loss (dB)	Factors (dB)	Level (dBuV)	Detector	Lines (Live/Neutral)	Limit (dBuV)	Margin (dB)	Results Pass / Fail	Comments
0.225132	21.08	20.75	0.09	41.92	Quasi Peak	Live	62.63	-20.71	Pass	TX / Ch116
0.225132	-1.17	20.75	0.09	19.68	Average	Live	52.63	-32.95	Pass	TX / Ch116
0.288234	14.38	20.48	0.08	34.93	Quasi Peak	Live	60.58	-25.64	Pass	TX / Ch116
0.288234	5.28	20.48	0.08	25.83	Average	Live	50.58	-24.74	Pass	TX / Ch116
0.623277	23.62	19.98	0.06	43.65	Quasi Peak	Live	56	-12.35	Pass	TX / Ch116
0.623277	8.34	19.98	0.06	28.37	Average	Live	46	-17.63	Pass	TX / Ch116
0.686958	21.26	19.98	0.06	41.3	Quasi Peak	Live	56	-14.7	Pass	TX / Ch116
0.686958	5.94	19.98	0.06	25.98	Average	Live	46	-20.02	Pass	TX / Ch116
0.75015	18.11	19.98	0.07	38.16	Quasi Peak	Live	56	-17.84	Pass	TX / Ch116
0.75015	3.33	19.98	0.07	23.37	Average	Live	46	-22.63	Pass	TX / Ch116
0.758904	10.97	19.98	0.07	31.02	Quasi Peak	Live	56	-24.98	Pass	TX / Ch116
0.758904	-2.78	19.98	0.07	17.27	Average	Live	46	-28.73	Pass	TX / Ch116
0.167466	29	21.09	0.1	50.19	Quasi Peak	Neutral	65.09	-14.89	Pass	TX / Ch116
0.167466	2.5	21.09	0.1	23.69	Average	Neutral	55.09	-31.4	Pass	TX / Ch116
0.28359	14.13	20.5	0.08	34.7	Quasi Peak	Neutral	60.71	-26.01	Pass	TX / Ch116
0.28359	-2.07	20.5	0.08	18.51	Average	Neutral	50.71	-32.2	Pass	TX / Ch116

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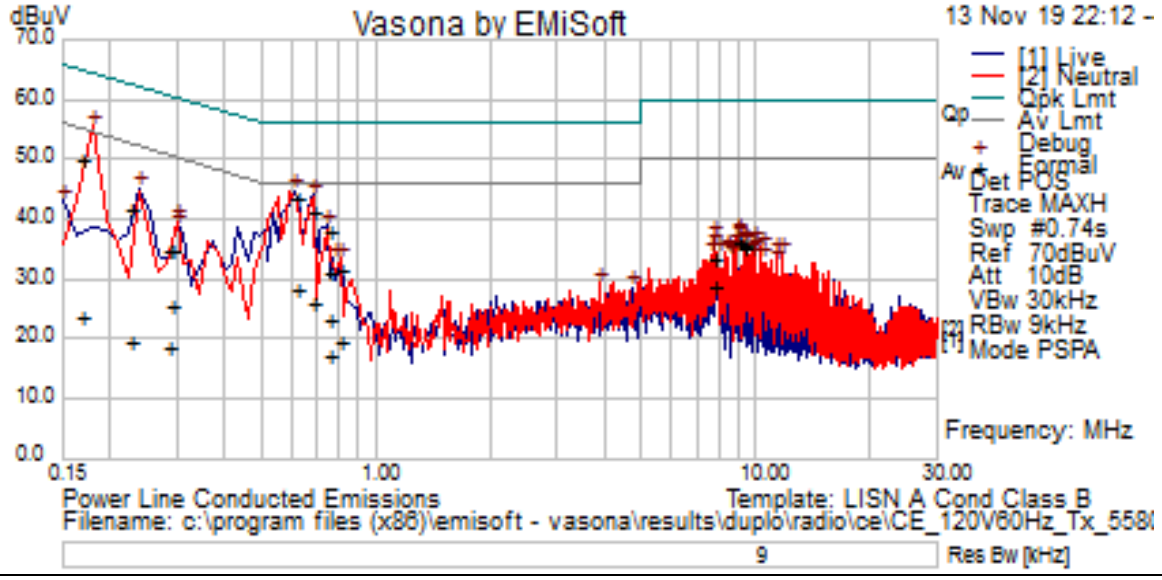
Subtest Date:	13-Nov-2019
Engineer	Farida Rahmanzai Jose Huamani
Lab Information	Building 7, formal immunity room
Subtest Title	Conducted Emissions
Frequency Range	150 kHz - 30 MHz
Comments on the above Test Results	TX Ch116 (5580 MHz) with BPSK modulation – 6 Mbps



AC Conducted Emissions Test Result Tables for 802.11a / TX Ch116

Frequency (MHz)	Raw (dBuV)	Cab Loss (dB)	Factors (dB)	Level (dBuV)	Detector	Lines (Live/Neutral)	Limit (dBuV)	Margin (dB)	Results Pass / Fail	Comments
0.811956	11.65	19.97	0.08	31.7	Quasi Peak	Neutral	56	-24.3	Pass	TX / Ch116
0.811956	-0.46	19.97	0.08	19.59	Average	Neutral	46	-26.41	Pass	TX / Ch116
7.766232	13.27	20.1	0.1	33.47	Quasi Peak	Neutral	60	-26.53	Pass	TX / Ch116
7.766232	8.72	20.1	0.1	28.92	Average	Neutral	50	-21.08	Pass	TX / Ch116
8.918445	16.28	20.14	0.1	36.52	Quasi Peak	Neutral	60	-23.48	Pass	TX / Ch116
8.918445	16.19	20.14	0.1	36.42	Average	Neutral	50	-13.58	Pass	TX / Ch116
9.349758	15.57	20.14	0.11	35.82	Quasi Peak	Neutral	60	-24.18	Pass	TX / Ch116
9.349758	15.29	20.14	0.11	35.54	Average	Neutral	50	-14.46	Pass	TX / Ch116

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Appendix B: List of Test Equipment Used to perform the test

Equip#	Manufacturer/ Model	Description	Last Cal	Next Due
RF Conducted at output antenna port				
7329	OMEGA/CT485B	Chart Recorder	18 Feb. 2019	18 Feb. 2020
49516	Keysight (Agilent/HP) / N9030A	PXA Signal Analyzer, 3Hz to 50GHz	29 Nov. 2019	29 Nov. 2019
55097	Nattional Instruments / PXI-1042	Chassis PXI	Cal Not Required	Cal Not Required
56089	National Instruments / PXI-2796	40GHz Dual 6x1 Multiplexer (SP6T)	Verify Before Use	Verify Before Use
56328	Pasternack / PE5019-1	Torque Wrench	13 Feb. 2019	13 Feb. 2020
57233	Nattional Instruments / PXI-8115	Embedded Controller	Cal Not Required	Cal Not Required
57253	National Instruments / PXI-2796	40GHz Dual 6x1 Multiplexer (SP6T)	Verify Before Use	Verify Before Use
57254	National Instruments / PXI-2799	Switch 1x1	Verify Before Use	Verify Before Use
57479	CISCO / ATIL	Automation Test Insertion Loss System	Verify Before Use	Verify Before Use

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Equip#	Manufacturer/ Model	Description	Last Cal	Next Due	Test Item
Test Equipment used for Radiated Emissions					
CIS008113	Cisco/NSA 5m Chamber	NSA 5m Chamber	01-Oct-19	01-Oct-20	B1
CIS037581	ETS Lindgren / 3117	Double Ridged Guide Horn Antenna	25-Jan-19	25-Jan-20	B1
CIS039131	Cisco / TH0118	Mast Mount Preamplifier Array, 1-18GHz	25-Feb-19	25-Feb-20	B1
CIS038404	Sunol Sciences / JB1	Combination Bi-Log Antenna, 30MHz-2GHz	31-Jan-19	31-Jan-20	B1
CIS036710	Cisco/1840	18-40GHz EMI Test Head/Verification Fixture	12-Aug-19	12-Aug-20	B1
CIS018231	Rohde & Schwarz /ESI 40(ESIB 40)	EMI RECEIVER TEST 20Hz-40GHz	07-Mar-19	07-Mar-20	B1
CIS042012	Rohde & Schwarz / ESCI	EMI Test Receiver	12-Aug-19	12-Aug-20	B1
CIS040604	Agilent / E4440A	Precision Spectrum Analyzer	19-Oct-18	19-Oct-20	B1
CIS047311	Huber+ Suhner/Sucoflex 106PA	RF Coaxial Cable, to 18GHz, 8.5 m	30-Sep-19	30-Sep-20	B1
CIS055178	Huber+ Suhner/Sucoflex 106PA	RF Coaxial Cable, to 18GHz, 8.5 m	30-Sep-19	30-Sep-20	B1
CIS025660	Micro-Coax / UFB311A-1-0840-504504	RF Coaxial Cable, to 18GHz, 8.5 m	30-Sep-19	30-Sep-20	B1
CIS025640	Micro-Coax / UFB311A-0-2720-520520	Coaxial Cable, 272.0 in. to 18GHz	30-Sep-19	30-Sep-20	B1
CIS056057	Wainwright Instruments/ WRCJV16-5440-5470-5725-5755 -40SS	SMA Band Reject Filter 5.470GHz to 5.725GHz	10-Jul-19	10-Jul-20	B1
Test Equipment used for AC Conducted Emissions					
CIS41955	Rohde & Schwarz / ESCI	EMI Test Receiver	25-Apr-19	25-Apr-20	B2
CIS08187	Fisher Custom Com / FCC-450B-2.4-N	Pulse Limiter	15-May-19	15-May-20	B2
CIS019210	TTE / H785-150K-50-21378	High Pass Filter 150KHz	25-Feb-19	25-Feb-20	B2
CIS05039	Fisher Custom Com / 50/250-50-2-02	LISN (9kHz-30MHz)	21-Feb-19	21-Feb-20	B2
CIS034158	Fisher Custom Com / 50-2-RA-NEMA-5-20R	LISN Receptacle Adaptor	21-Feb-19	21-Feb-20	B2
CIS040532	Coleman / RG-223	25 ft RG-223 Cable	04-Dec-18	04-Dec-19	B2
51663	Bird / 5-T-MB	50Ω termination	04-Dec-18	04-Dec-19	B2

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Appendix C: Abbreviation Key and Definitions

The following table defines abbreviations used within this test report.

Abbreviation	Description	Abbreviation	Description
EMC	Electro Magnetic Compatibility	°F	Degrees Fahrenheit
EMI	Electro Magnetic Interference	°C	Degrees Celsius
EUT	Equipment Under Test	Temp	Temperature
ITE	Information Technology Equipment	S/N	Serial Number
TAP	Test Assessment Schedule	Qty	Quantity
ESD	Electro Static Discharge	emf	Electromotive force
EFT	Electric Fast Transient	RMS	Root mean square
EDCS	Engineering Document Control System	Qp	Quasi Peak
Config	Configuration	Av	Average
CIS#	Cisco Number (unique identification number for Cisco test equipment)	Pk	Peak
Cal	Calibration	kHz	Kilohertz ($1x10^3$)
EN	European Norm	MHz	MegaHertz ($1x10^6$)
IEC	International Electro technical Commission	GHz	Gigahertz ($1x10^9$)
CISPR	International Special Committee on Radio Interference	H	Horizontal
CDN	Coupling/Decoupling Network	V	Vertical
LISN	Line Impedance Stabilization Network	dB	decibel
PE	Protective Earth	V	Volt
GND	Ground	kV	Kilovolt ($1x10^3$)
L1	Line 1	µV	Microvolt ($1x10^{-6}$)
L2	Line2	A	Amp
L3	Line 3	µA	Micro Amp ($1x10^{-6}$)
DC	Direct Current	mS	Milli Second ($1x10^{-3}$)
RAW	Uncorrected measurement value, as indicated by the measuring device	µS	Micro Second ($1x10^{-6}$)
RF	Radio Frequency	µS	Micro Second ($1x10^{-6}$)
SLCE	Signal Line Conducted Emissions	m	Meter
Meas dist	Measurement distance	Spec dist	Specification distance
N/A or NA	Not Applicable	SL	Signal Line (or Telecom Line)
P	Power Line	L	Live Line
N	Neutral Line	R	Return
S	Supply	AC	Alternating Current

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Appendix D: Photographs of Test Setups

Title: EUT Pictures

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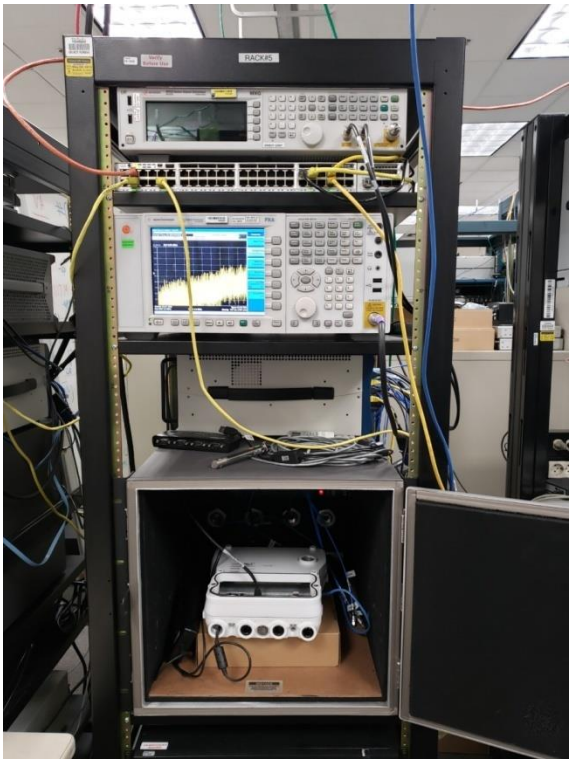
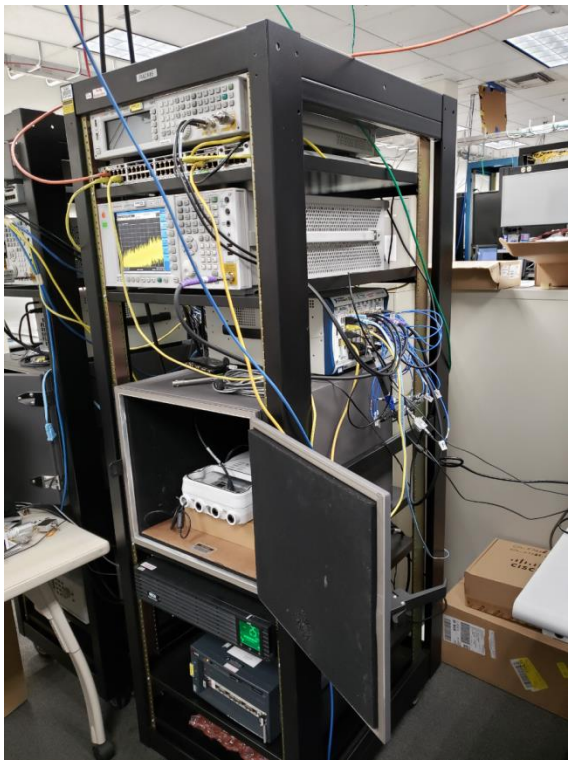
Appendix E: Photographs of Test Setups

Title: Radio Conducted Test Setup





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Title: Radiated Spurious Emissions Test Setup

Title: **Radiated Spurious Emissions 30MHz-1GHz – Test Setup**

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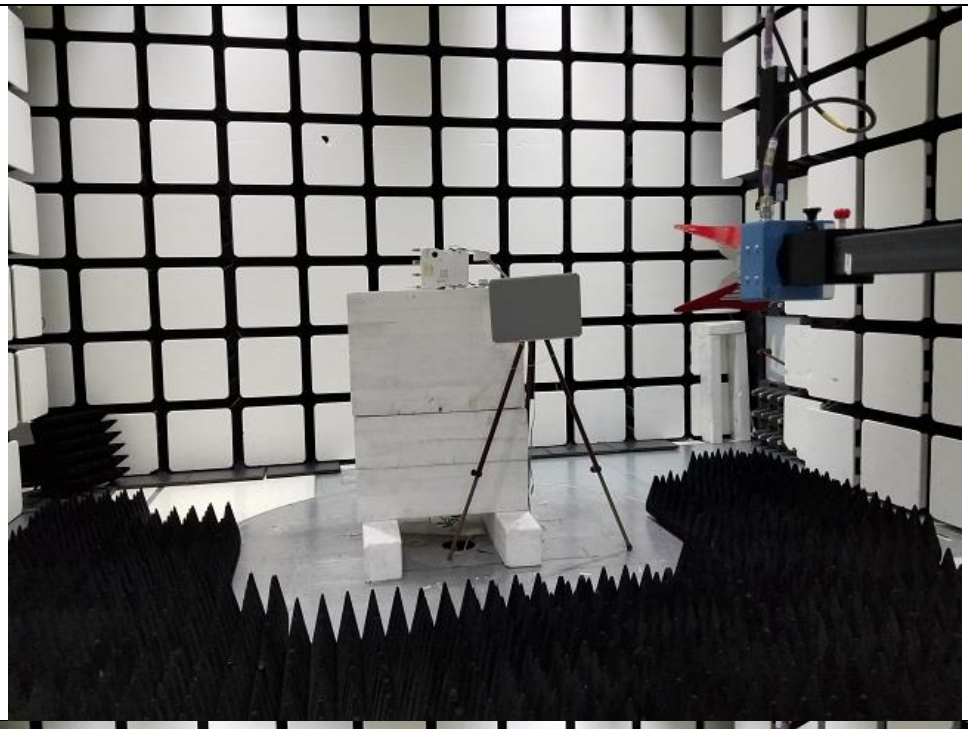

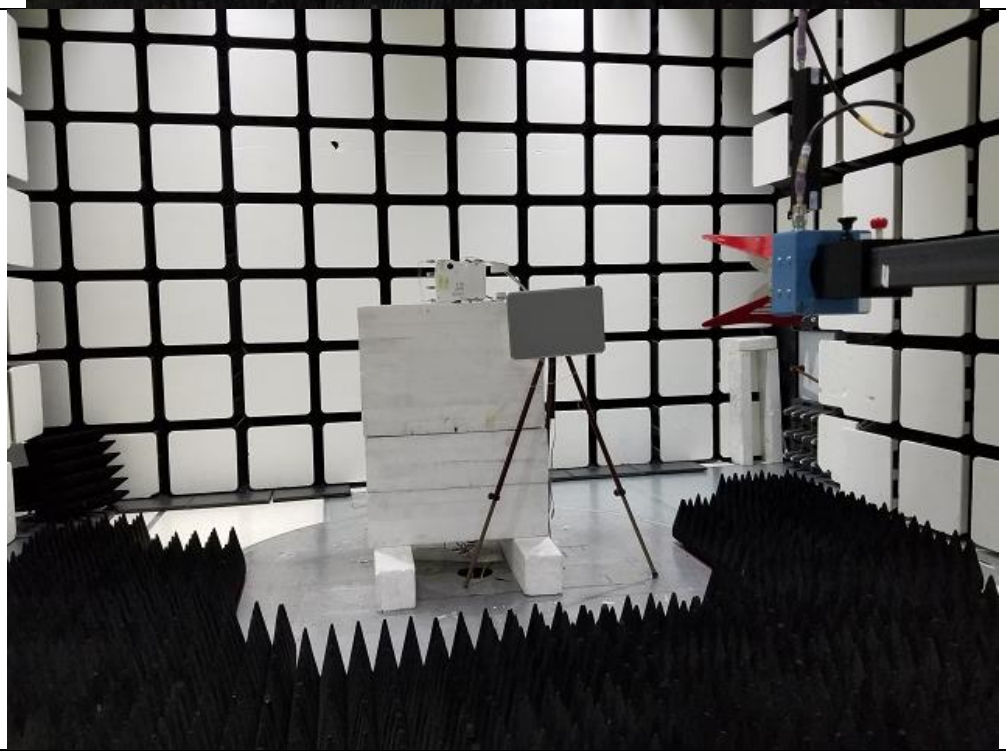

Title: **Radiated Spurious Emissions 1GHz-18GHz – Test Setup**

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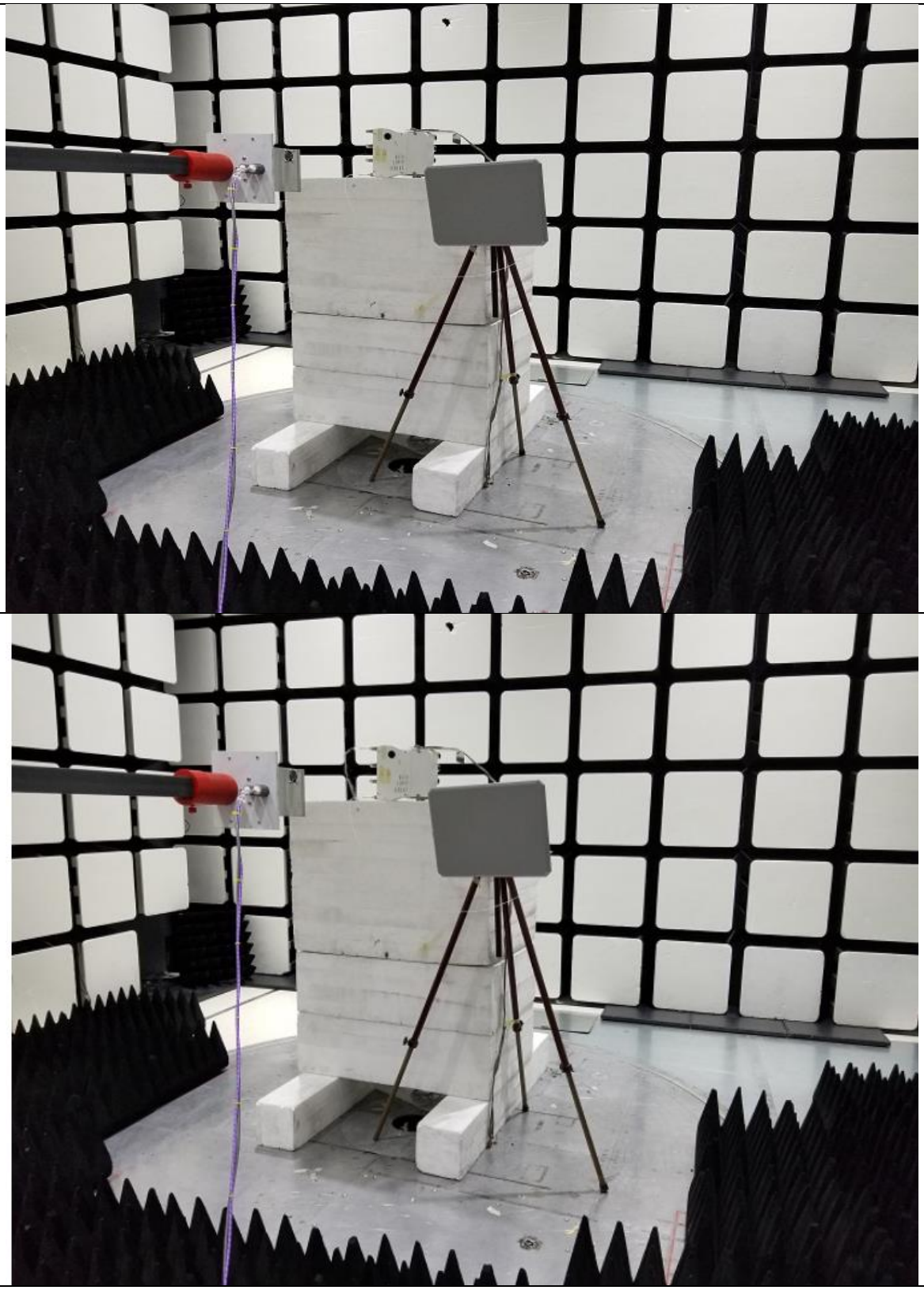

Title: **Radiated Spurious Emissions 18GHz-40GHz – Test Setup**

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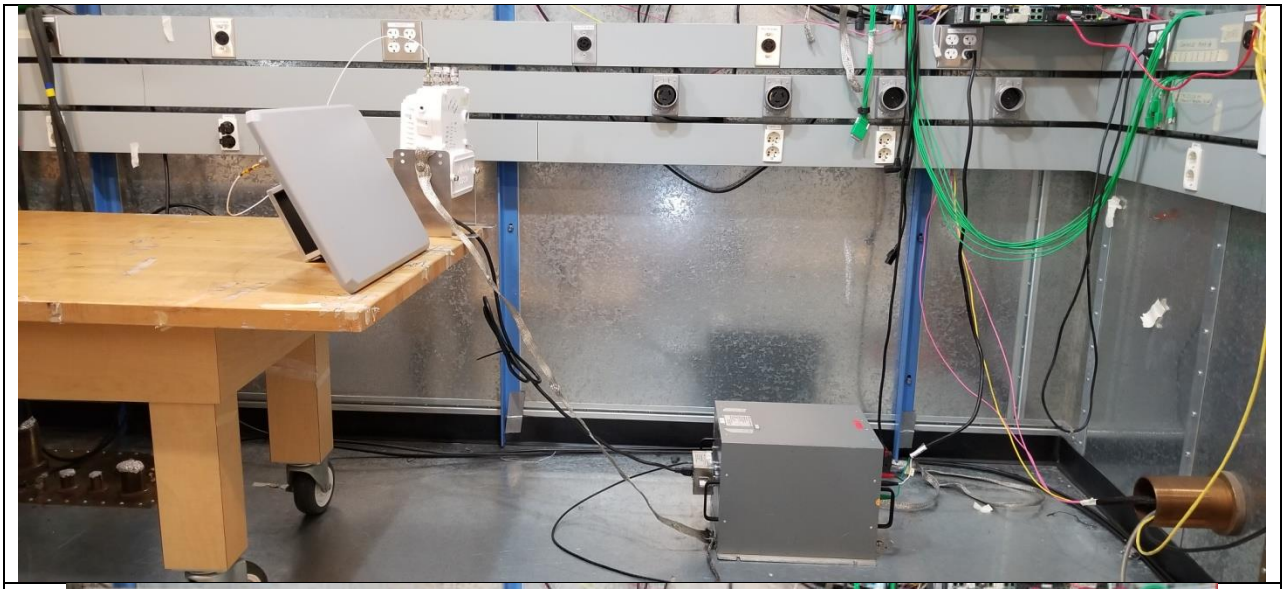

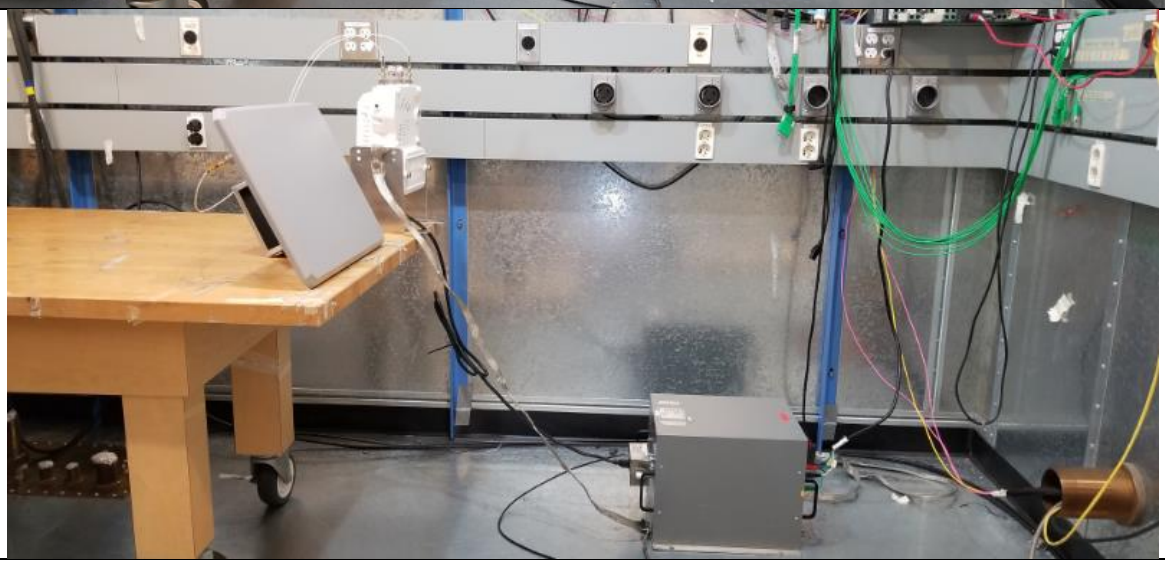

Title: **Conducted Emissions 150KHz-30MHz – Test Setup**

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Appendix F: Software Used to Perform Testing

EMIsoft Vasona, version 6.024

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Appendix G: Test Procedures

Measurements were made in accordance with

- KDB 789033 - D02 General UNII Test Procedures New Rules v02r01
- KDB 662911 - MIMO
- ANSI C63.4 2014 Unintentional Radiators
- ANSI C63.10 2013 Intentional Radiators

Test procedures are summarized below:

FCC 5GHz Test Procedures	EDCS # 1445048
FCC 5GHz RSE Test Procedures	EDCS # 1511600

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AppendixH: Scope of Accreditation (A2LA certificate number 1178-01)

The scope of accreditation of Cisco Systems, Inc. can be found on the A2LA web page at:

http://www.a2la.org/scopepdf/1178-01.pdf

Appendix I: Test Assessment Plan

Compliance Test Plan (Excel) EDCS# 18357550
Target Power Tables EDCS# 18295686

Appendix J: Worst Case Justification

All 3 orientations (Z, Y, Z) of the EUT were assessed by performing pre-scan.
The Z orientation was determined to be the worst-case orientation.

Also see Appendix A the test report.

End

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