

Radio Test Report

AIR-AP1840I-B-K9

FCC ID: LDKSKMAA2017

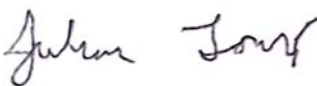
5725-5850 MHz

Against the following Specifications:

CFR47 Part 15.407



Cisco Systems
170 West Tasman Drive
San Jose, CA 95134

	
Author: Julian Land Tested By: Julian Land	Approved By: Gerard Thorpe Title: Compliance Manager Revision: 1.1

This report replaces any previously entered test report under EDCS – 17660840. This test report has been electronically authorized and archived using the CISCO Engineering Document Control system. Test Report Template EDCS# 1526152.

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Section 1: Overview

1.1 Test Summary

Radio Test Report No: **EDCS - 17660840**

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

specifications
CFR47 Part 15.407

Section 2: Assessment Information

2.1 General

This report contains an assessment of an apparatus against Radio 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°C to 35°C (54°F to 95°F)

Atmospheric Pressure 860mbar to 1060mbar (25.4" to 31.3")

Humidity 10% to 75*%

1.All AC testing was performed at one or more of the following supply voltages:

110V 60 Hz (+/-20%)

2.2 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

Measurement Uncertainty Values

voltage and power measurements	± 2 dB
conducted EIRP measurements	± 1.4 dB
radiated measurements	± 3.2 dB
frequency measurements	$\pm 2.4 \cdot 10^{-7}$
temperature measurements	$\pm 0.54^\circ$
humidity measurements	$\pm 2.3\%$
DC and low frequency measurements	$\pm 2.5\%$

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
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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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2.3 Date of testing (initial sample receipt date to last date of testing)

March 6, 2019 – May 16, 2019

2.4 Report Issue Date

Cisco uses an electronic system to issue, store and control the revision of test reports. This system is called the Engineering Document Control System (EDCS). The actual report issue date is embedded into the original file on EDCS. Any copies of this report, either electronic or paper, that are not on EDCS must be considered uncontrolled

2.5 Testing facilities

This assessment was performed by:

Headquarters

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

Testing Laboratory

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

Registration Numbers for ISED (Innovation, Science and Economic Development Canada)

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

Test Engineers

Julian Land

2.6 Equipment Assessed (EUT)

AIR-AP1840I-B-K9

2.7 EUT Description

AIR-AP1840I is a dual band wireless access point which supports 802.11 a, b, g, n, ac. It features a 2x2 2.4GHz radio, a 4x4 5GHz radio, and a BLE radio.

The following antennas are supported by this product series.

The data included in this report represent the worst-case data for all antennas.

Frequency	Port	Antenna Type	Highest Antenna Gain (dBi)
2.4GHz / 5GHz	Antenna 1	Internal dual band omni directional	4.4/5.6
2.4GHz / 5GHz	Antenna 2	Internal dual band omni directional	4/5.7
BLE / 5GHz	Antenna 3	Internal dual band omni directional	4.1/5.6
5GHz	Antenna 4	Internal single band omni directional	5.4

	Supported Channel	Bandwidth
Low	5745MHz	20MHz
Mid	5785MHz	20MHz
High	5825MHz	20MHz
Low	5755MHz	40MHz
Mid	5795MHz	40MHz
Low	5775MHz	80MHz

Section 3: Result Summary

3.1 Results Summary Table

3.1.1 Radio Port Results

Basic Standard	Technical Requirements / Details	Result
FCC 15.407	6dB Bandwidth (e) Within the 5.725-5.85 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.	Pass
FCC 15.407	99%- & 26-dB Bandwidth: The 99% occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5% of the total mean power of the given emission. There is no limit for 99% OBW. The 26dB emission is the width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 26 dB relative to the maximum level measured in the fundamental emission.	Pass
FCC 15.407	Output Power: (3) For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. ... 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. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power.	Pass
FCC 15.407	Power Spectral Density (3) For the band 5.725-5.85 GHz... the maximum power spectral density shall not exceed 30 dBm in any 500-kHz 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. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power.	Pass

FCC 15.407	Conducted Spurious Emissions / Band-Edge: (4) For transmitters operating in the 5.725-5.85 GHz band: (i) All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.	Pass
FCC 15.407 FCC 15.205 FCC 15.209	Restricted band: Unwanted emissions 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.	Pass

3.1.2 Radiated Emissions (General Requirements)

Basic Standard	Technical Requirements / Details	Result
FCC 15.407 FCC 15.205 FCC 15.209	TX Spurious Emissions: Unwanted emissions 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.	Pass
FCC 15.207	AC conducted Emissions: Except when the requirements applicable to a given device state otherwise, for any radio apparatus equipped to operate from the public utility AC power supply, either directly or indirectly (such as with a battery charger), the radio frequency voltage of emissions conducted back onto the AC power lines in the frequency range of 0.15 MHz to 30 MHz shall not exceed the limits shown in the table in these sections. The more stringent limit applies at the frequency range boundaries.	NA (Unit is only powered by DC power - POE)

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	AIR-AP1840I-B-K9	Cisco Systems, Inc.	V01	8cf8aa994fd2801c943d2471014f8c5f	8.8.1.10	PSZ22491KT9
S02	Catalyst 3850 48 PoE+	Cisco Systems, Inc.	T0	1.18	03.03.05SE	FCW1931C1U7

4.2 System Details

System #	Description	Samples
1	EUT and Power Supply (Conducted Tests)	S01 & S02

4.3 Mode of Operation Details

Mode#	Description	Comments
1	802.11a, OFDM	Receive and Transmit (1, 2, 3, or 4 chains)
2	Duplicate mode NonHT40	Receive and Transmit (1, 2, 3, or 4 chains)
3	Duplicate mode NonHT80	Receive and Transmit (1, 2, 3, or 4 chains)
5	802.11n20, OFDM	Receive and Transmit (1, 2, 3, or 4 chains)
6	802.11n40, OFDM	Receive and Transmit (1, 2, 3, or 4 chains)
9	802.11ac80, OFDM	Receive and Transmit (1, 2, 3, or 4 chains)

Section 5: Radio Port Results

5.1 Duty Cycle

5.1.1 Duty Cycle Test Requirement

From KDB 789033 D02 General UNII Test Procedures New Rules v01r02

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.

5.1.2 Duty Cycle Test Method

From KDB 789033 D02 General UNII Test Procedures New Rules v01r02:

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 $\geq$ EBW if possible; otherwise, set RBW to the largest available value. Set VBW $\geq$ 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 $T \leq 16.7$ microseconds.)

5.1.3 Duty Cycle Test Information

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: March 8, 2019 – March 25, 2019
Test Result: Pass	

Test Equipment

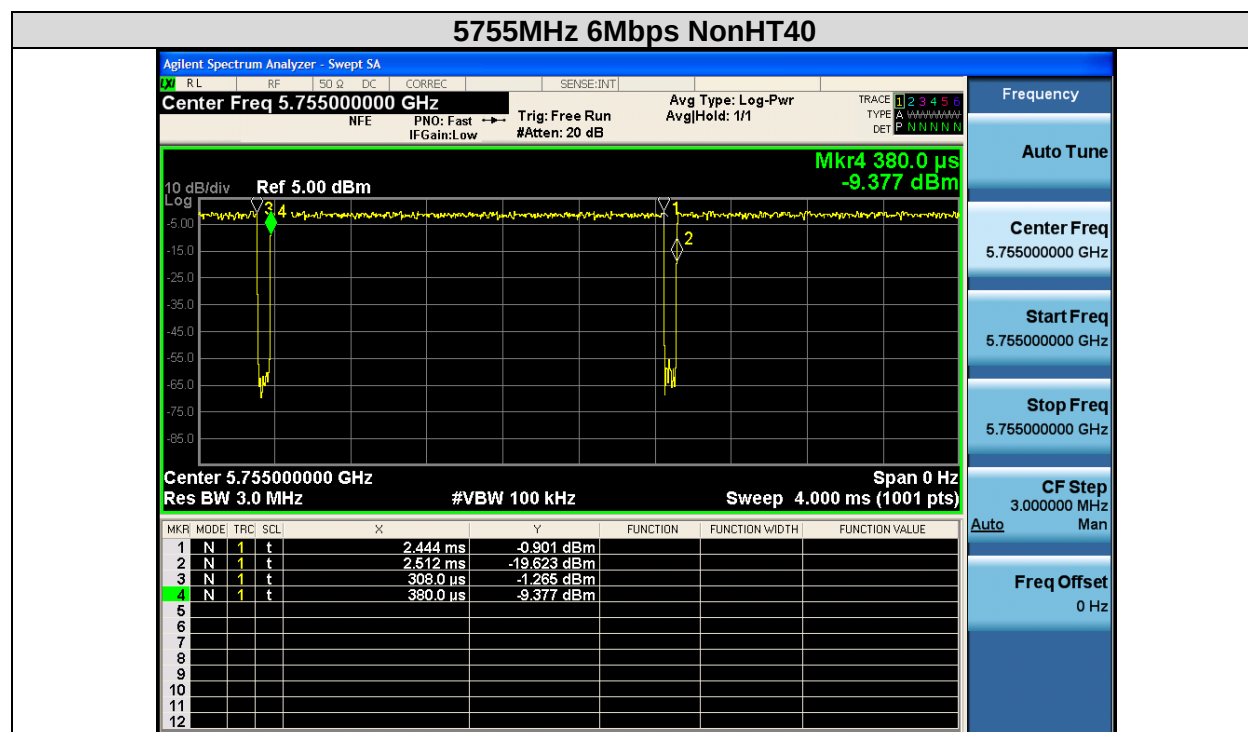
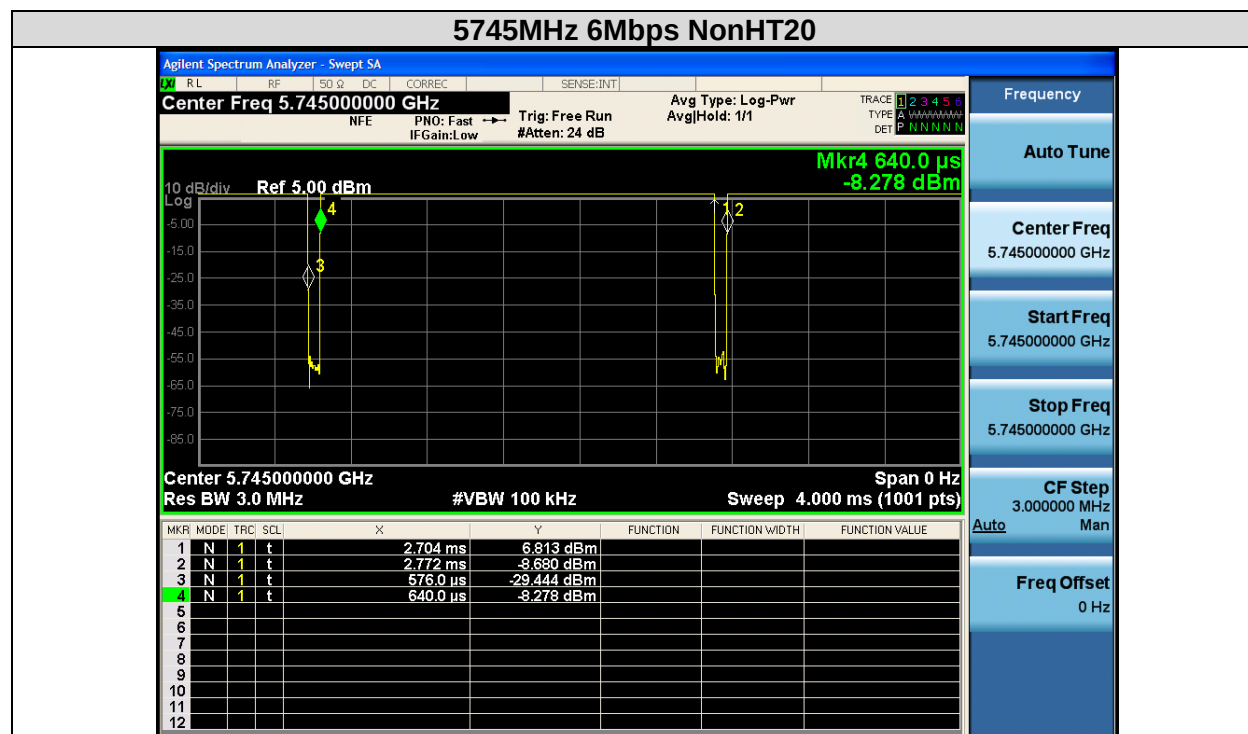
See Appendix A for list of test equipment

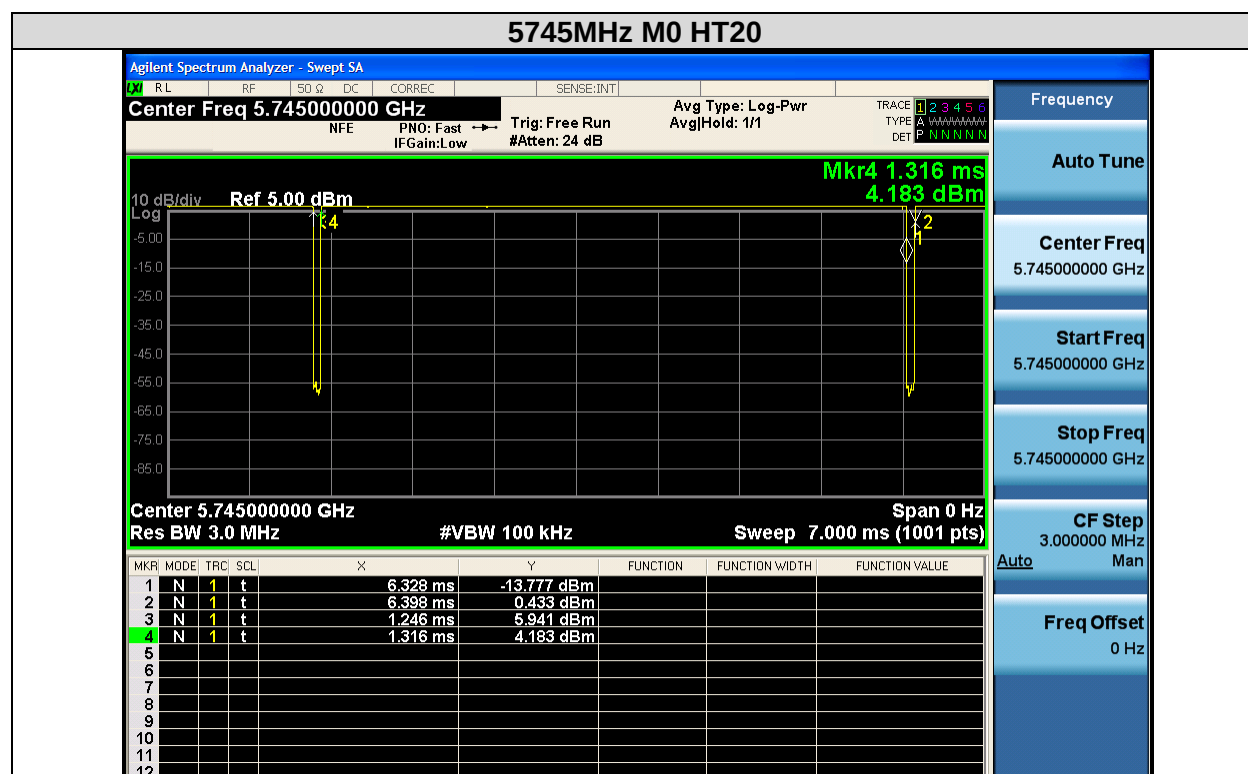
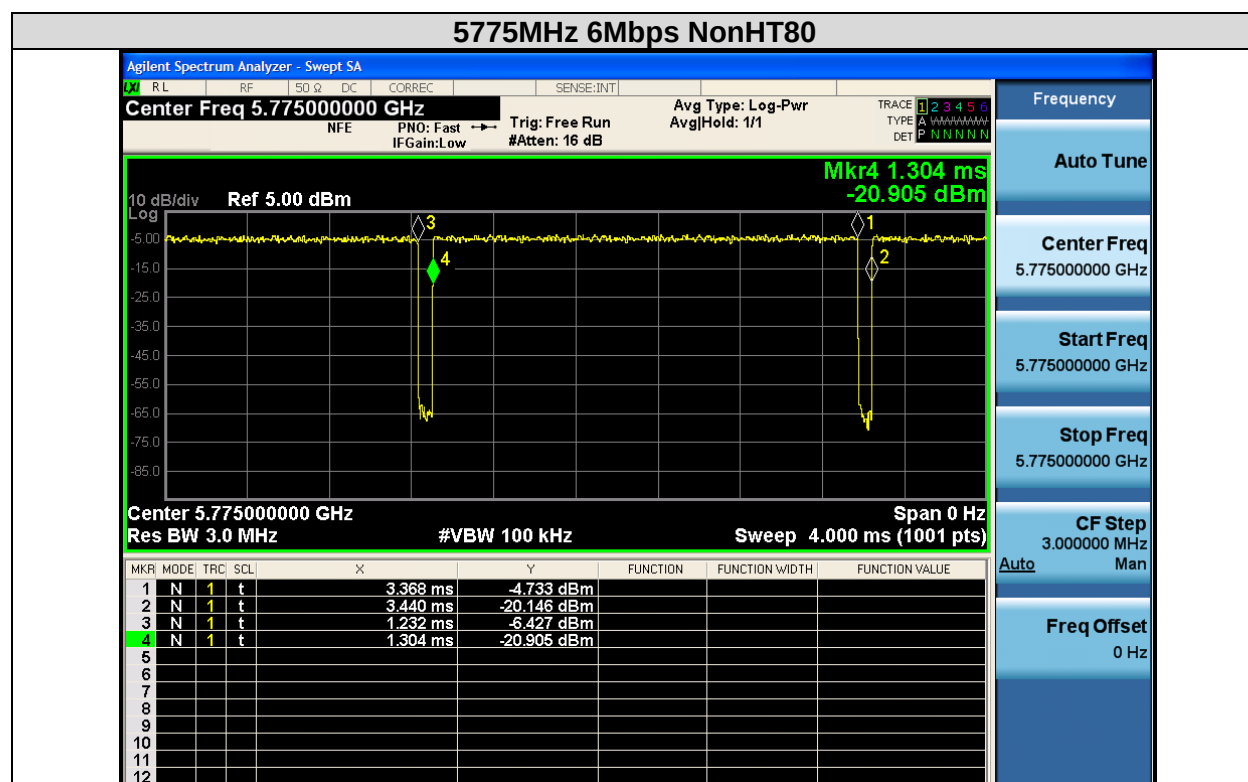
5.1.4 Duty Cycle Data Table

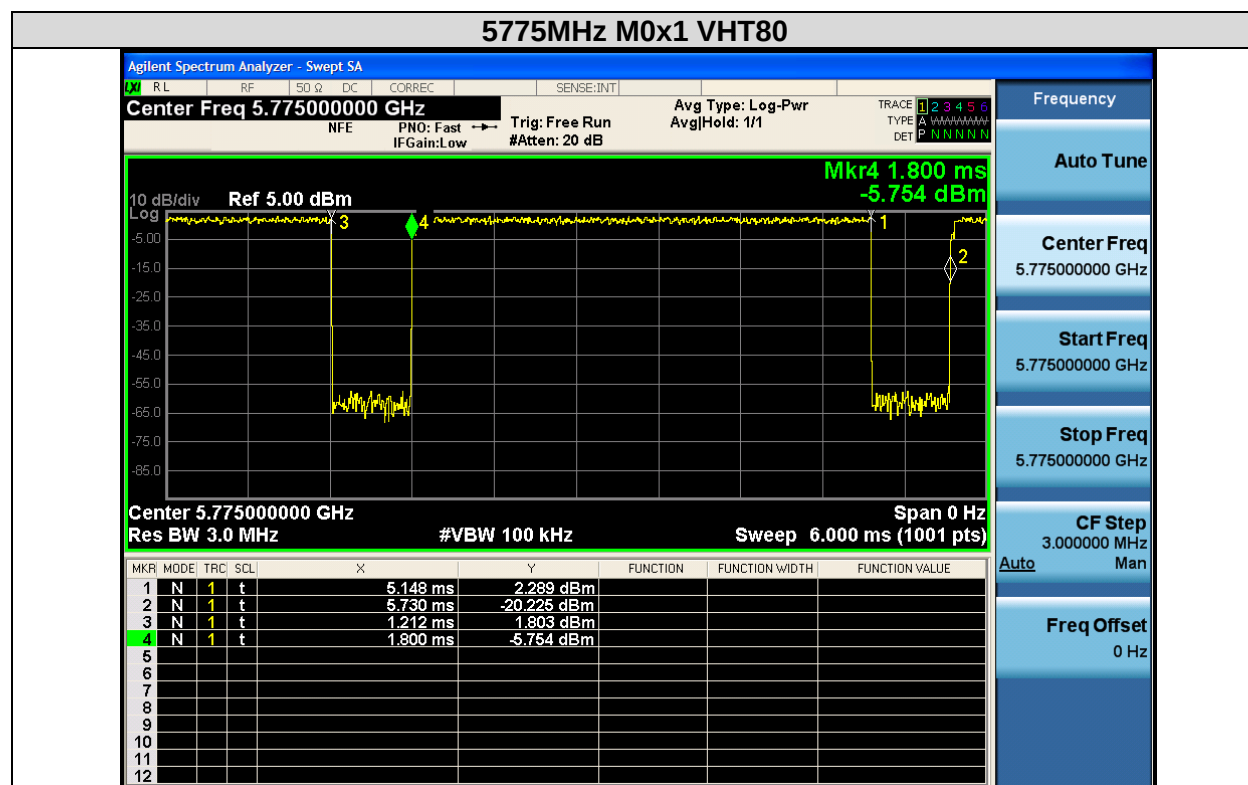
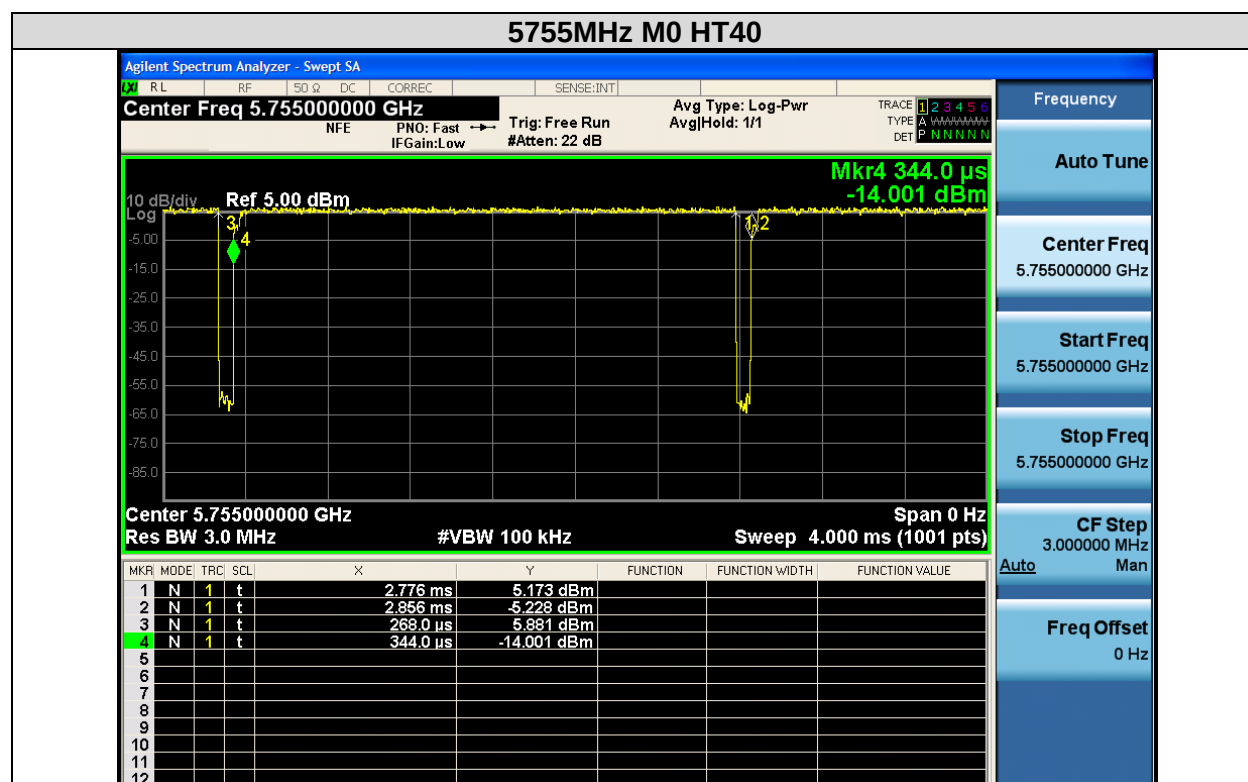
Duty Cycle table and screen captures are shown below for power/psd modes.

Mode	Data Rate	On-time (ms)	Total Time (ms)	Duty Cycle (%)	Correction Factor (dB)
NonHT20	6Mbps	2.064	2.128	96.992	0.13
NonHT40	6Mbps	2.064	2.136	96.629	0.15
NonHT80	6Mbps	2.064	2.136	96.629	0.15
HT20/VHT20	MCS0	5.012	5.082	98.623	0.06
HT40/VHT40	MCS0	2.432	2.508	96.970	0.13
VHT80	MCS0	3.348	3.936	85.061	0.70

5.1.5 Duty Cycle Data Screenshots







5.2 6dB Bandwidth

5.2.1 6dB Bandwidth Test Requirement

15.407 e

Within the 5.725-5.85 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz

5.2.2 6dB Bandwidth Test Procedure

From KDB 789033 D02 General UNII Test Procedures New Rules v01r02

Section C. Bandwidth Measurement

6 BW
Test Procedure
1. Set the radio in the continuous transmitting mode. 2. Allow the trace to stabilize. 3. Setting the x-dB bandwidth mode to -6dB within the measurement set up function. 4. Select the automatic OBW measurement function of an instrument to perform bandwidth measurement. 5. Capture graphs and record pertinent measurement data.

From KDB 789033 D02 General UNII Test Procedures New Rules v01r02

Section C. Bandwidth Measurement

6 BW
Test parameters
2. Minimum Emission Bandwidth for the band 5.725-5.85 GHz a) Set RBW = 100 kHz. b) Set the video bandwidth (VBW) $\geq 3 \times$ RBW. c) Detector = Peak. d) Trace mode = max hold. e) Sweep = auto couple. f) Allow the trace to stabilize. g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission. Note: The automatic bandwidth measurement capability of a spectrum analyzer or EMI receiver may be employed if it implements the functionality described above.

5.2.3 6dB Bandwidth Test Information

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: March 6, 2019 – March 26, 2019
Test Result: PASS	

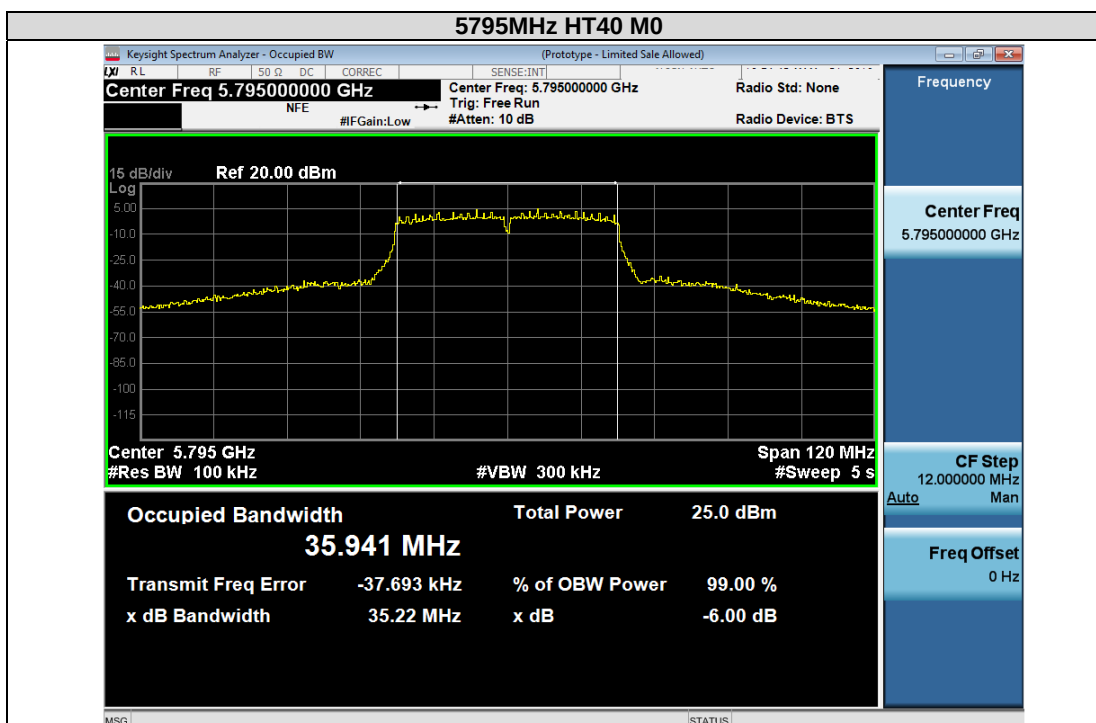
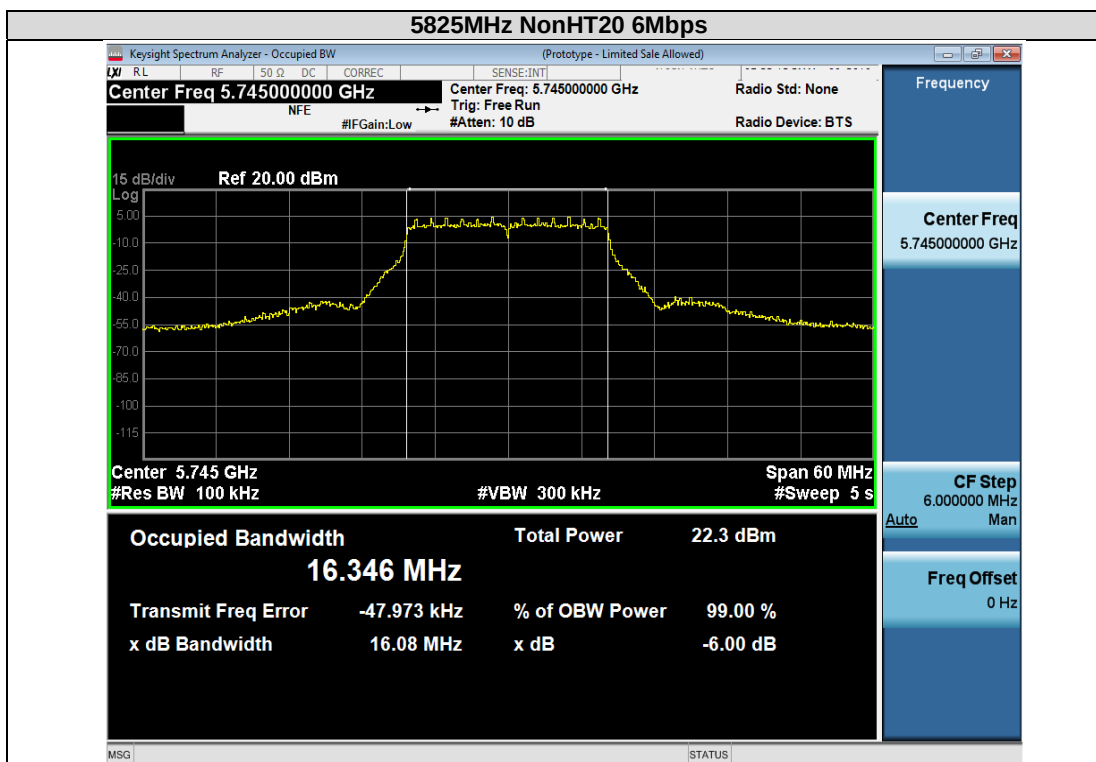
Test Equipment

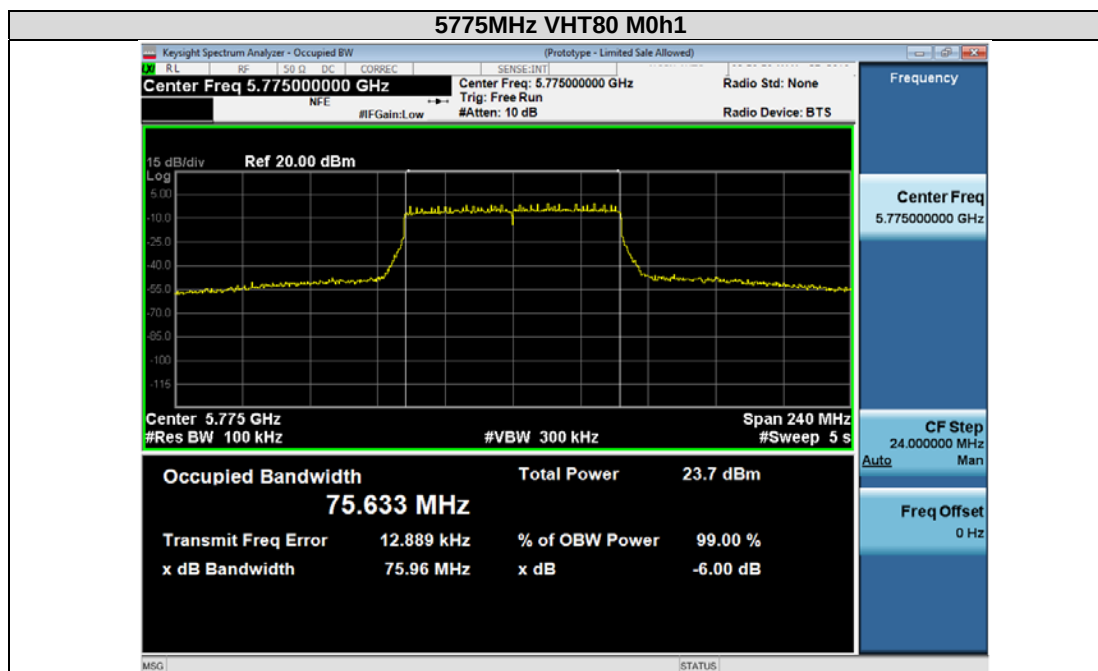
See Appendix A for list of test equipment

5.2.4 6dB Bandwidth Data Table

Frequency (MHz)	Mode	Data Rate (Mbps)	6dB BW (MHz)	Limit (kHz)	Margin (MHz)
5745	Non HT20, 6 to 54 Mbps	6	16.1	>500	15.6
	HT/VHT20, M0 to M31	m0	16.8	>500	16.3
5755	Non HT40, 6 to 54 Mbps	6	32.7	>500	32.2
	HT/VHT40, M0 to M31	m0	35.2	>500	34.7
5775	Non HT80, 6 to 54 Mbps	6	75.8	>500	75.3
	VHT80, M0 to M9, M0 to M9 1-2ss	m0x1	76	>500	75.5
5785	Non HT20, 6 to 54 Mbps	6	16	>500	15.5
	HT/VHT20, M0 to M31	m0	16.8	>500	16.3
5795	Non HT40, 6 to 54 Mbps	6	32.8	>500	32.3
	HT/VHT40, M0 to M31	m0	35.2	>500	34.7
5825	Non HT20, 6 to 54 Mbps	6	16.1	>500	15.6
	HT/VHT20, M0 to M31	m0	16.8	>500	16.3

5.2.5 6dB Bandwidth Plots





5.3 99% and 26dB Bandwidth

5.3.1 99% and 26dB Bandwidth Test Requirement

FCC:

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). Power measurements are made using the 99% Bandwidth as the integration bandwidth.

5.3.2 99% and 26dB Bandwidth Test Procedure

The 99-percent occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5 % of the total mean power of the given emission. Measurement of the 99-percent occupied bandwidth is required only as a condition for using the optional band-edge measurement techniques described in section II.G.3.d). Measurements of 99-percent occupied bandwidth may also optionally be used in lieu of the EBW to define the minimum frequency range over which the spectrum is integrated when measuring maximum conducted output power as described in section II.E. However, the EBW must be measured to determine bandwidth dependent limits on maximum conducted output power in accordance with 15.407(a).

From KDB 789033 D02 General UNII Test Procedures New Rules v01r02

Section D. 99 Percent Occupied Bandwidth

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 $\geq 3 \cdot$ 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).

From KDB 789033 D02 General UNII Test Procedures New Rules v01r02

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

5.3.3 99% Bandwidth Test Information

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: March 6, 2019 – March 26, 2019
Test Result: PASS	

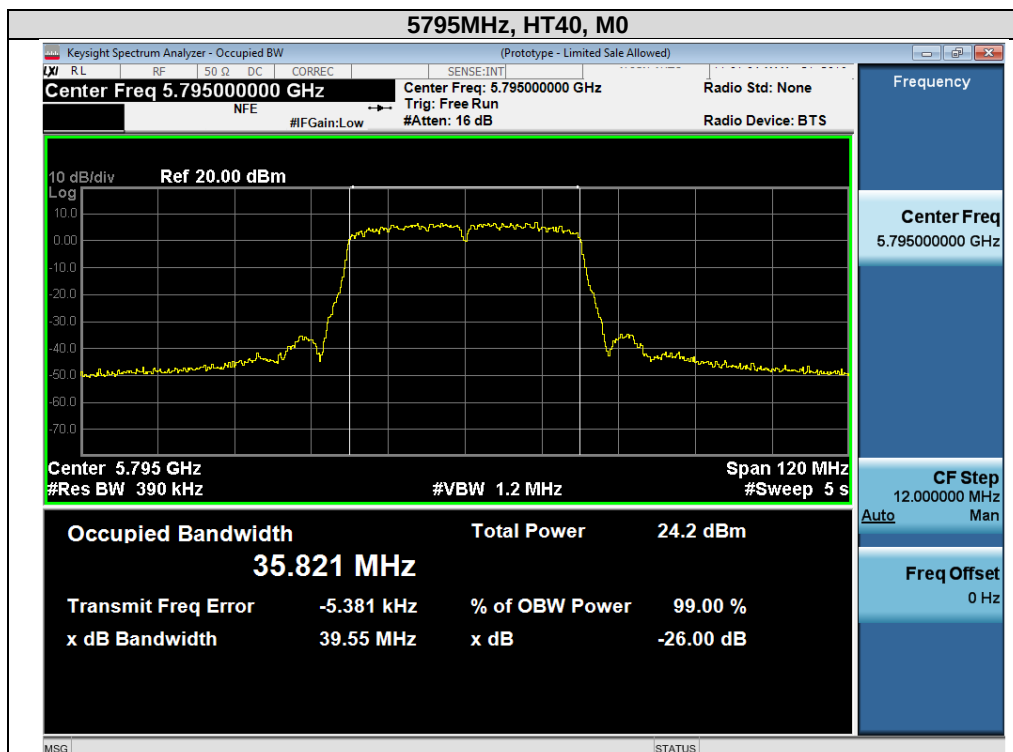
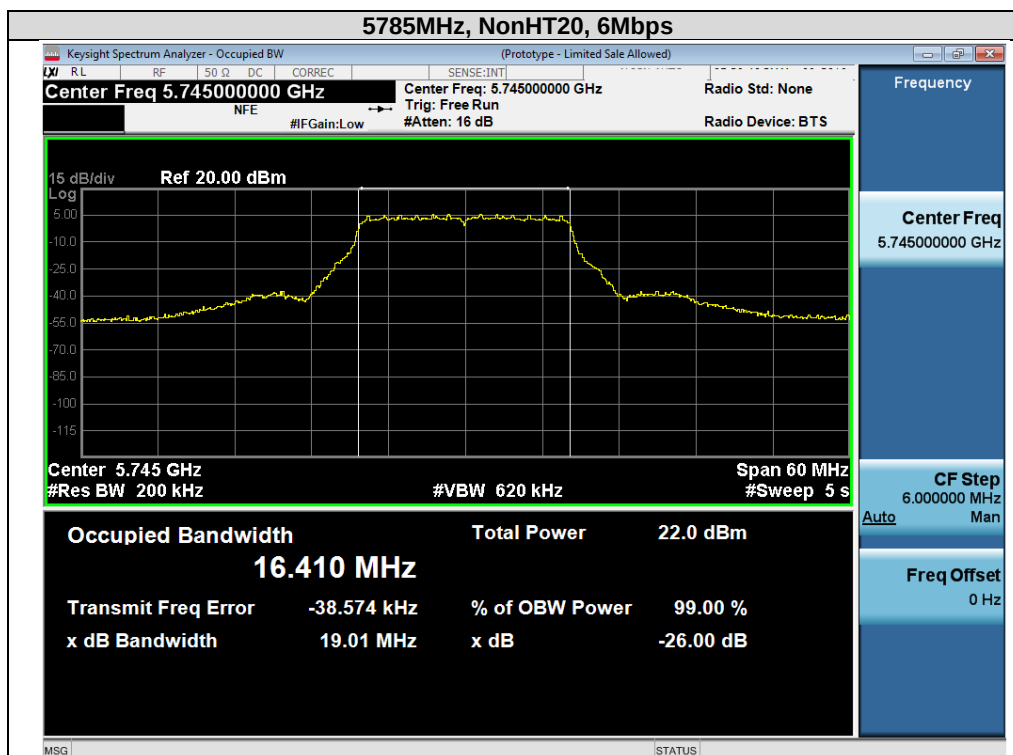
Test Equipment

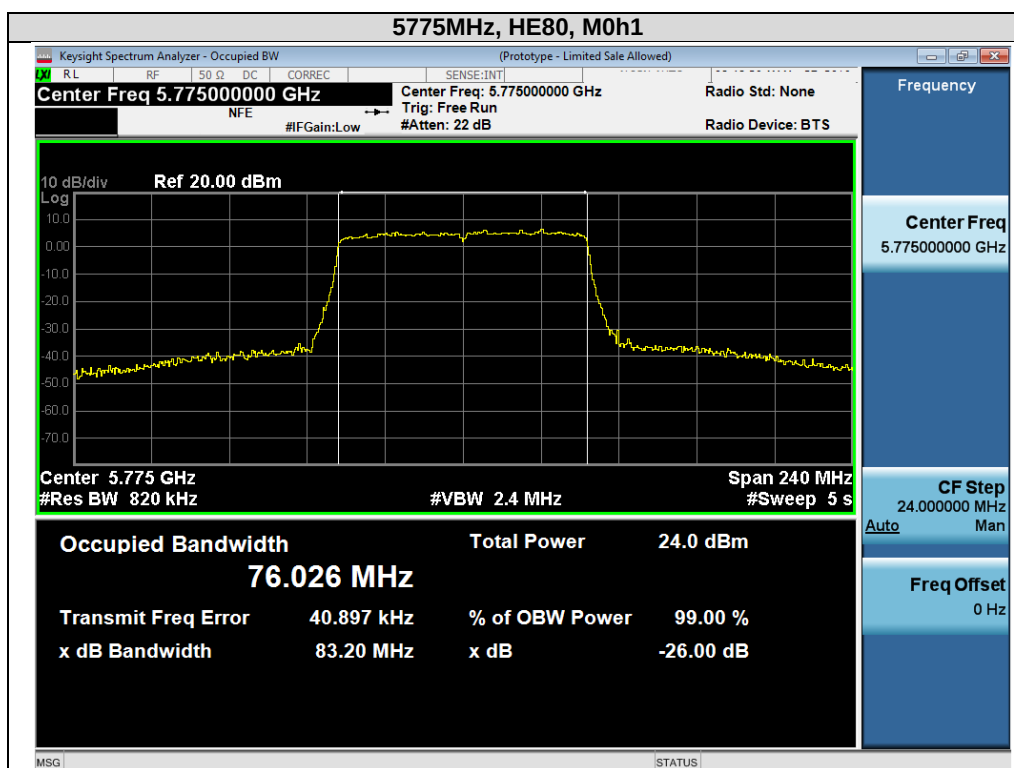
See Appendix A for list of test equipment

5.3.4 99% and 26dB Bandwidth Data Table

Frequency (MHz)	Mode	Data Rate (Mbps)	26dB BW (MHz)	99% BW (MHz)
5745	Non HT20, 6 to 54 Mbps	6	19	16.41
	HT/VHT20, M0 to M31	m0	20	17.57
5755	Non HT40, 6 to 54 Mbps	6	38.5	35.316
	HT/VHT40, M0 to M31	m0	39.6	35.878
5775	Non HT80, 6 to 54 Mbps	6	82.9	75.697
	VHT80, M0 to M9, M0 to M9 1-2ss	m0x1	83.2	76.026
5785	Non HT20, 6 to 54 Mbps	6	19.3	16.448
	HT/VHT20, M0 to M31	m0	20.1	17.604
5795	Non HT40, 6 to 54 Mbps	6	38.5	35.265
	HT/VHT40, M0 to M31	m0	39.6	35.821
5825	Non HT20, 6 to 54 Mbps	6	19.1	16.425
	HT/VHT20, M0 to M31	m0	20	17.574

5.3.4 99% and 26dB Bandwidth Data Table





5.4 Maximum Conducted Output Power

5.4.1 Maximum Conducted Output Power Test Requirement

15.407 (a) (3)

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1W. If transmitting antennas of directional gain greater than 6dBi 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 6dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

5.4.2 Maximum Conducted Output Power Test Procedure

Ref. KDB 789033 D02 General UNII Test Procedures New Rules v01r02

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 v01r02

2. Measurement using a Spectrum Analyzer or EMI Receiver (SA), (d) Method SA-2

Maximum Conducted Output Power 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 $\geq$ 3 MHz. (v) Number of points in sweep $\geq$ 2 Span / RBW. (This ensures that bin-to-bin spacing is $\leq$ 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

5.4.3 Maximum Conducted Output Power Test Information

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: March 6, 2019 - March 26, 2019
Test Result: PASS	

Test Equipment

See Appendix A for list of test equipment

5.4.4 Maximum Conducted Output Power Data Table

Frequency (MHz)	Mode	Tx Paths	Index Power (dBm)	Correlated Antenna Gain (dBi)	Duty Cycle (%)	Tx 1 Max Power (dBm)	Tx 2 Max Power (dBm)	Tx 3 Max Power (dBm)	Tx 4 Max Power (dBm)	Total Tx Channel Power (dBm)	Limit (dBm)	Margin (dB)
5720	Non HT20, 6 to 54 Mbps	1	17	6	96.99	9.9				10	30	20
	Non HT20, 6 to 54 Mbps	2	17	6	96.99	9.9	9.2			12.7	30	17.3
	Non HT20, 6 to 54 Mbps	3	13	6	96.99	6.1	5.3	4.9		10.4	30	19.6
	Non HT20, 6 to 54 Mbps	4	11	6	96.99	4.2	3.3	2.9	3.3	9.6	30	20.4
	Non HT20 Beam Forming, 6 to 54 Mbps	2	14	9	96.99	7.1	6.2			9.8	27	17.2
	Non HT20 Beam Forming, 6 to 54 Mbps	3	11	11	96.99	4.2	3.3	2.9		8.4	25	16.6
	Non HT20 Beam Forming, 6 to 54 Mbps	4	8	12	96.99	0.7	0	-0.1	0.2	6.4	24	17.6
	HT/VHT20, M0 to M7	1	17	6	98.62	10				10.1	30	19.9
	HT/VHT20, M0 to M7	2	17	6	98.62	10	8.9			12.6	30	17.4
	HT/VHT20, M8 to M15	2	17	6	98.62	10	8.9			12.6	30	17.4
	HT/VHT20, M0 to M7	3	13	6	98.62	6.2	5.1	5		10.3	30	19.7
	HT/VHT20, M8 to M15	3	16	6	98.62	8.9	8.2	7.8		13.2	30	16.8
	HT/VHT20, M16 to M23	3	16	6	98.62	8.9	8.2	7.8		13.2	30	16.8
	HT/VHT20, M0 to M7	4	9	6	98.62	1.9	1.2	1	1.4	7.5	30	22.5
	HT/VHT20, M8 to M15	4	14	6	98.62	7.3	6.2	6	6.5	12.6	30	17.4
	HT/VHT20, M16 to M23	4	15	6	98.62	8.2	7.1	6.7	7.5	13.5	30	16.5
	HT/VHT20, M24 to M31	4	15	6	98.62	8.2	7.1	6.7	7.5	13.5	30	16.5
	HT/VHT20 Beam Forming, M0 to M7	2	14	9	98.62	7.3	6.2			9.9	27	17.1
	HT/VHT20 Beam Forming, M8 to M15	2	17	6	98.62	10	8.9			12.6	30	17.4
	HT/VHT20 Beam Forming, M0 to M7	3	11	11	98.62	4.2	3.4	2.9		8.4	25	16.6
	HT/VHT20 Beam Forming, M8 to M15	3	14	8	98.62	7.3	6.2	6		11.4	28	16.6
	HT/VHT20 Beam Forming, M16 to M23	3	16	6	98.62	8.9	8.2	7.8		13.2	30	16.8
	HT/VHT20 Beam Forming, M0 to M7	4	8	12	98.62	1	0.1	-0.1	0.2	6.4	24	17.6
	HT/VHT20 Beam Forming, M8 to M15	4	11	9	98.62	4.2	3.4	2.9	3.5	9.6	27	17.4
	HT/VHT20 Beam Forming, M16 to M23	4	13	7	98.62	6.2	5.1	5	5.3	11.5	29	17.5
	HT/VHT20 Beam Forming, M24 to M31	4	15	6	98.62	8.2	7.1	6.7	7.5	13.5	30	16.5
	HT/VHT20 STBC, M0 to M7	2	17	6	98.62	10	8.9			12.6	30	17.4
	HT/VHT20 STBC, M0 to M7	3	16	6	98.62	8.9	8.2	7.8		13.2	30	16.8

	HT/VHT20 STBC, M0 to M7	4	14	6	98.62	7.3	6.2	6	6.5	12.6	30	17.4
5745	Non HT20, 6 to 54 Mbps	1	17	6	96.99	17.1				17.2	30	12.8
	Non HT20, 6 to 54 Mbps	2	17	6	96.99	17.1	16			19.7	30	10.3
	Non HT20, 6 to 54 Mbps	3	17	6	96.99	17.1	16	15.4		21.1	30	8.9
	Non HT20, 6 to 54 Mbps	4	17	6	96.99	17.1	16	15.4	16	22.3	30	7.7
	Non HT20 Beam Forming, 6 to 54 Mbps	2	17	9	96.99	17.1	16			19.7	27	7.3
	Non HT20 Beam Forming, 6 to 54 Mbps	3	17	11	96.99	17.1	16	15.4		21.1	25	3.9
	Non HT20 Beam Forming, 6 to 54 Mbps	4	17	12	96.99	17.1	16	15.4	16	22.3	24	1.7
	HT/VHT20, M0 to M7	1	17	6	98.62	16.8				16.9	30	13.1
	HT/VHT20, M0 to M7	2	17	6	98.62	16.8	15.7			19.4	30	10.6
	HT/VHT20, M8 to M15	2	17	6	98.62	16.8	15.7			19.4	30	10.6
	HT/VHT20, M0 to M7	3	17	6	98.62	16.8	15.7	15.2		20.8	30	9.2
	HT/VHT20, M8 to M15	3	17	6	98.62	16.8	15.7	15.2		20.8	30	9.2
	HT/VHT20, M16 to M23	3	17	6	98.62	16.8	15.7	15.2		20.8	30	9.2
	HT/VHT20, M0 to M7	4	17	6	98.62	16.8	15.7	15.2	15.7	22	30	8
	HT/VHT20, M8 to M15	4	17	6	98.62	16.8	15.7	15.2	15.7	22	30	8
	HT/VHT20, M16 to M23	4	17	6	98.62	16.8	15.7	15.2	15.7	22	30	8
	HT/VHT20, M24 to M31	4	17	6	98.62	16.8	15.7	15.2	15.7	22	30	8
	HT/VHT20 Beam Forming, M0 to M7	2	17	9	98.62	16.8	15.7			19.4	27	7.6
	HT/VHT20 Beam Forming, M8 to M15	2	17	6	98.62	16.8	15.7			19.4	30	10.6
	HT/VHT20 Beam Forming, M0 to M7	3	17	11	98.62	16.8	15.7	15.2		20.8	25	4.2
	HT/VHT20 Beam Forming, M8 to M15	3	17	8	98.62	16.8	15.7	15.2		20.8	28	7.2
	HT/VHT20 Beam Forming, M16 to M23	3	17	6	98.62	16.8	15.7	15.2		20.8	30	9.2
	HT/VHT20 Beam Forming, M0 to M7	4	17	12	98.62	16.8	15.7	15.2	15.7	22	24	2
	HT/VHT20 Beam Forming, M8 to M15	4	17	9	98.62	16.8	15.7	15.2	15.7	22	27	5
	HT/VHT20 Beam Forming, M16 to M23	4	17	7	98.62	16.8	15.7	15.2	15.7	22	29	7
	HT/VHT20 Beam Forming, M24 to M31	4	17	6	98.62	16.8	15.7	15.2	15.7	22	30	8
	HT/VHT20 STBC, M0 to M7	2	17	6	98.62	16.8	15.7			19.4	30	10.6
	HT/VHT20 STBC, M0 to M7	3	17	6	98.62	16.8	15.7	15.2		20.8	30	9.2
	HT/VHT20 STBC, M0 to M7	4	17	6	98.62	16.8	15.7	15.2	15.7	22	30	8
5755	Non HT40, 6 to 54 Mbps	1	17	6	96.63	17.2				17.4	30	12.7
	Non HT40, 6 to 54 Mbps	2	17	6	96.63	17.2	16.2			19.9	30	10.1
	Non HT40, 6 to 54 Mbps	3	17	6	96.63	17.2	16.2	15.8		21.4	30	8.6
	Non HT40, 6 to 54 Mbps	4	17	6	96.63	17.2	16.2	15.8	16.4	22.6	30	7.4
	HT/VHT40, M0 to M7	1	17	6	96.97	17.6				17.7	30	12.3
	HT/VHT40, M0 to M7	2	17	6	96.97	17.6	16.7			20.3	30	9.7
	HT/VHT40, M8 to M15	2	17	6	96.97	17.6	16.7			20.3	30	9.7
	HT/VHT40, M0 to M7	3	17	6	96.97	17.6	16.7	16.1		21.7	30	8.3
	HT/VHT40, M8 to M15	3	17	6	96.97	17.6	16.7	16.1		21.7	30	8.3

	HT/VHT40, M16 to M23	3	17	6	96.97	17.6	16.7	16.1		21.7	30	8.3
	HT/VHT40, M0 to M7	4	17	6	96.97	17.6	16.7	16.1	16.8	23	30	7
	HT/VHT40, M8 to M15	4	17	6	96.97	17.6	16.7	16.1	16.8	23	30	7
	HT/VHT40, M16 to M23	4	17	6	96.97	17.6	16.7	16.1	16.8	23	30	7
	HT/VHT40, M24 to M31	4	17	6	96.97	17.6	16.7	16.1	16.8	23	30	7
	HT/VHT40 Beam Forming, M0 to M7	2	17	9	96.97	17.6	16.7			20.3	27	6.7
	HT/VHT40 Beam Forming, M8 to M15	2	17	6	96.97	17.6	16.7			20.3	30	9.7
	HT/VHT40 Beam Forming, M0 to M7	3	17	11	96.97	17.6	16.7	16.1		21.7	25	3.3
	HT/VHT40 Beam Forming, M8 to M15	3	17	8	96.97	17.6	16.7	16.1		21.7	28	6.3
	HT/VHT40 Beam Forming, M16 to M23	3	17	6	96.97	17.6	16.7	16.1		21.7	30	8.3
	HT/VHT40 Beam Forming, M0 to M7	4	17	12	96.97	17.6	16.7	16.1	16.8	23	24	1
	HT/VHT40 Beam Forming, M8 to M15	4	17	9	96.97	17.6	16.7	16.1	16.8	23	27	4
	HT/VHT40 Beam Forming, M16 to M23	4	17	7	96.97	17.6	16.7	16.1	16.8	23	29	6
	HT/VHT40 Beam Forming, M24 to M31	4	17	6	96.97	17.6	16.7	16.1	16.8	23	30	7
	HT/VHT40 STBC, M0 to M7	2	17	6	96.97	17.6	16.7			20.3	30	9.7
	HT/VHT40 STBC, M0 to M7	3	17	6	96.97	17.6	16.7	16.1		21.7	30	8.3
	HT/VHT40 STBC, M0 to M7	4	17	6	96.97	17.6	16.7	16.1	16.8	23	30	7
5775	Non HT80, 6 to 54 Mbps	1	17	6	96.63	17.2				17.4	30	12.7
	Non HT80, 6 to 54 Mbps	2	17	6	96.63	17.2	16.3			19.9	30	10.1
	Non HT80, 6 to 54 Mbps	3	17	6	96.63	17.2	16.3	15.7		21.4	30	8.6
	Non HT80, 6 to 54 Mbps	4	17	6	96.63	17.2	16.3	15.7	16.3	22.6	30	7.4
	VHT80, M0 to M9 1ss	1	17	6	85.06	16.7				17.4	30	12.6
	VHT80, M0 to M9 1ss	2	17	6	85.06	16.7	16.1			20.1	30	9.9
	VHT80, M0 to M9 2ss	2	17	6	85.06	16.7	16.1			20.1	30	9.9
	VHT80, M0 to M9 1ss	3	17	6	85.06	16.7	16.1	15.6		21.6	30	8.4
	VHT80, M0 to M9 2ss	3	17	6	85.06	16.7	16.1	15.6		21.6	30	8.4
	VHT80, M0 to M9 3ss	3	17	6	85.06	16.7	16.1	15.6		21.6	30	8.4
	VHT80, M0 to M9 1ss	4	17	6	85.06	16.7	16.1	15.6	16	22.8	30	7.2
	VHT80, M0 to M9 2ss	4	17	6	85.06	16.7	16.1	15.6	16	22.8	30	7.2
	VHT80, M0 to M9 3ss	4	17	6	85.06	16.7	16.1	15.6	16	22.8	30	7.2
	VHT80, M0 to M9 4ss	4	17	6	85.06	16.7	16.1	15.6	16	22.8	30	7.2
	VHT80 Beam Forming, M0 to M9 1ss	2	17	9	85.06	16.7	16.1			20.1	27	6.9
	VHT80 Beam Forming, M0 to M9 2ss	2	17	6	85.06	16.7	16.1			20.1	30	9.9
	VHT80 Beam Forming, M0 to M9 1ss	3	17	11	85.06	16.7	16.1	15.6		21.6	25	3.4
	VHT80 Beam Forming, M0 to M9 2ss	3	17	8	85.06	16.7	16.1	15.6		21.6	28	6.4
	VHT80 Beam Forming, M0 to M9 3ss	3	17	6	85.06	16.7	16.1	15.6		21.6	30	8.4
	VHT80 Beam Forming, M0 to M9 1ss	4	17	12	85.06	16.7	16.1	15.6	16	22.8	24	1.2
	VHT80 Beam Forming, M0 to M9 2ss	4	17	9	85.06	16.7	16.1	15.6	16	22.8	27	4.2
	VHT80 Beam Forming, M0 to M9 3ss	4	17	7	85.06	16.7	16.1	15.6	16	22.8	29	6.2
	VHT80 Beam Forming, M0 to M9 4ss	4	17	6	85.06	16.7	16.1	15.6	16	22.8	30	7.2

	VHT80 STBC, M0 to M9 1ss	2	17	6	85.06	16.7	16.1			20.1	30	9.9
	VHT80 STBC, M0 to M9 1ss	3	17	6	85.06	16.7	16.1	15.6		21.6	30	8.4
	VHT80 STBC, M0 to M9 1ss	4	17	6	85.06	16.7	16.1	15.6	16	22.8	30	7.2
5785	Non HT20, 6 to 54 Mbps	1	17	6	96.99	17.3				17.4	30	12.6
	Non HT20, 6 to 54 Mbps	2	17	6	96.99	17.3	16.4			20	30	10
	Non HT20, 6 to 54 Mbps	3	17	6	96.99	17.3	16.4	15.7		21.4	30	8.6
	Non HT20, 6 to 54 Mbps	4	17	6	96.99	17.3	16.4	15.7	16.3	22.6	30	7.4
	Non HT20 Beam Forming, 6 to 54 Mbps	2	17	9	96.99	17.3	16.4			20	27	7
	Non HT20 Beam Forming, 6 to 54 Mbps	3	17	11	96.99	17.3	16.4	15.7		21.4	25	3.6
	Non HT20 Beam Forming, 6 to 54 Mbps	4	17	12	96.99	17.3	16.4	15.7	16.3	22.6	24	1.4
	HT/VHT20, M0 to M7	1	17	6	98.62	17.2				17.3	30	12.7
	HT/VHT20, M0 to M7	2	17	6	98.62	17.2	16.2			19.8	30	10.2
	HT/VHT20, M8 to M15	2	17	6	98.62	17.2	16.2			19.8	30	10.2
	HT/VHT20, M0 to M7	3	17	6	98.62	17.2	16.2	15.8		21.3	30	8.7
	HT/VHT20, M8 to M15	3	17	6	98.62	17.2	16.2	15.8		21.3	30	8.7
	HT/VHT20, M16 to M23	3	17	6	98.62	17.2	16.2	15.8		21.3	30	8.7
	HT/VHT20, M0 to M7	4	17	6	98.62	17.2	16.2	15.8	16.4	22.5	30	7.5
	HT/VHT20, M8 to M15	4	17	6	98.62	17.2	16.2	15.8	16.4	22.5	30	7.5
	HT/VHT20, M16 to M23	4	17	6	98.62	17.2	16.2	15.8	16.4	22.5	30	7.5
	HT/VHT20, M24 to M31	4	17	6	98.62	17.2	16.2	15.8	16.4	22.5	30	7.5
	HT/VHT20 Beam Forming, M0 to M7	2	17	9	98.62	17.2	16.2			19.8	27	7.2
	HT/VHT20 Beam Forming, M8 to M15	2	17	6	98.62	17.2	16.2			19.8	30	10.2
	HT/VHT20 Beam Forming, M0 to M7	3	17	11	98.62	17.2	16.2	15.8		21.3	25	3.7
	HT/VHT20 Beam Forming, M8 to M15	3	17	8	98.62	17.2	16.2	15.8		21.3	28	6.7
	HT/VHT20 Beam Forming, M16 to M23	3	17	6	98.62	17.2	16.2	15.8		21.3	30	8.7
	HT/VHT20 Beam Forming, M0 to M7	4	17	12	98.62	17.2	16.2	15.8	16.4	22.5	24	1.5
	HT/VHT20 Beam Forming, M8 to M15	4	17	9	98.62	17.2	16.2	15.8	16.4	22.5	27	4.5
	HT/VHT20 Beam Forming, M16 to M23	4	17	7	98.62	17.2	16.2	15.8	16.4	22.5	29	6.5
	HT/VHT20 Beam Forming, M24 to M31	4	17	6	98.62	17.2	16.2	15.8	16.4	22.5	30	7.5
	HT/VHT20 STBC, M0 to M7	2	17	6	98.62	17.2	16.2			19.8	30	10.2
	HT/VHT20 STBC, M0 to M7	3	17	6	98.62	17.2	16.2	15.8		21.3	30	8.7
	HT/VHT20 STBC, M0 to M7	4	17	6	98.62	17.2	16.2	15.8	16.4	22.5	30	7.5
5795	Non HT40, 6 to 54 Mbps	1	17	6	96.63	17.7				17.9	30	12.2
	Non HT40, 6 to 54 Mbps	2	17	6	96.63	17.7	17			20.5	30	9.5
	Non HT40, 6 to 54 Mbps	3	17	6	96.63	17.7	17	16.3		22	30	8
	Non HT40, 6 to 54 Mbps	4	17	6	96.63	17.7	17	16.3	16.9	23.2	30	6.8
	HT/VHT40, M0 to M7	1	17	6	96.97	18				18.1	30	11.9
	HT/VHT40, M0 to M7	2	17	6	96.97	18	17.2			20.8	30	9.2
	HT/VHT40, M8 to M15	2	17	6	96.97	18	17.2			20.8	30	9.2

	HT/VHT40, M0 to M7	3	17	6	96.97	18	17.2	16.4		22.2	30	7.8
	HT/VHT40, M8 to M15	3	17	6	96.97	18	17.2	16.4		22.2	30	7.8
	HT/VHT40, M16 to M23	3	17	6	96.97	18	17.2	16.4		22.2	30	7.8
	HT/VHT40, M0 to M7	4	17	6	96.97	18	17.2	16.4	17.1	23.4	30	6.6
	HT/VHT40, M8 to M15	4	17	6	96.97	18	17.2	16.4	17.1	23.4	30	6.6
	HT/VHT40, M16 to M23	4	17	6	96.97	18	17.2	16.4	17.1	23.4	30	6.6
	HT/VHT40, M24 to M31	4	17	6	96.97	18	17.2	16.4	17.1	23.4	30	6.6
	HT/VHT40 Beam Forming, M0 to M7	2	17	9	96.97	18	17.2			20.8	27	6.2
	HT/VHT40 Beam Forming, M8 to M15	2	17	6	96.97	18	17.2			20.8	30	9.2
	HT/VHT40 Beam Forming, M0 to M7	3	17	11	96.97	18	17.2	16.4		22.2	25	2.8
	HT/VHT40 Beam Forming, M8 to M15	3	17	8	96.97	18	17.2	16.4		22.2	28	5.8
	HT/VHT40 Beam Forming, M16 to M23	3	17	6	96.97	18	17.2	16.4		22.2	30	7.8
	HT/VHT40 Beam Forming, M0 to M7	4	17	12	96.97	18	17.2	16.4	17.1	23.4	24	0.6
	HT/VHT40 Beam Forming, M8 to M15	4	17	9	96.97	18	17.2	16.4	17.1	23.4	27	3.6
	HT/VHT40 Beam Forming, M16 to M23	4	17	7	96.97	18	17.2	16.4	17.1	23.4	29	5.6
	HT/VHT40 Beam Forming, M24 to M31	4	17	6	96.97	18	17.2	16.4	17.1	23.4	30	6.6
	HT/VHT40 STBC, M0 to M7	2	17	6	96.97	18	17.2			20.8	30	9.2
	HT/VHT40 STBC, M0 to M7	3	17	6	96.97	18	17.2	16.4		22.2	30	7.8
	HT/VHT40 STBC, M0 to M7	4	17	6	96.97	18	17.2	16.4	17.1	23.4	30	6.6
5825	Non HT20, 6 to 54 Mbps	1	17	6	96.99	17.7				17.8	30	12.2
	Non HT20, 6 to 54 Mbps	2	17	6	96.99	17.7	16.8			20.4	30	9.6
	Non HT20, 6 to 54 Mbps	3	17	6	96.99	17.7	16.8	15.9		21.8	30	8.2
	Non HT20, 6 to 54 Mbps	4	17	6	96.99	17.7	16.8	15.9	16.8	23	30	7
	Non HT20 Beam Forming, 6 to 54 Mbps	2	17	9	96.99	17.7	16.8			20.4	27	6.6
	Non HT20 Beam Forming, 6 to 54 Mbps	3	17	11	96.99	17.7	16.8	15.9		21.8	25	3.2
	Non HT20 Beam Forming, 6 to 54 Mbps	4	17	12	96.99	17.7	16.8	15.9	16.8	23	24	1
	HT/VHT20, M0 to M7	1	17	6	98.62	16.8				16.9	30	13.1
	HT/VHT20, M0 to M7	2	17	6	98.62	16.8	16.4			19.7	30	10.3
	HT/VHT20, M8 to M15	2	17	6	98.62	16.8	16.4			19.7	30	10.3
	HT/VHT20, M0 to M7	3	17	6	98.62	16.8	16.4	15		21	30	9
	HT/VHT20, M8 to M15	3	17	6	98.62	16.8	16.4	15		21	30	9
	HT/VHT20, M16 to M23	3	17	6	98.62	16.8	16.4	15		21	30	9
	HT/VHT20, M0 to M7	4	17	6	98.62	16.8	16.4	15	16	22.2	30	7.8
	HT/VHT20, M8 to M15	4	17	6	98.62	16.8	16.4	15	16	22.2	30	7.8
	HT/VHT20, M16 to M23	4	17	6	98.62	16.8	16.4	15	16	22.2	30	7.8
	HT/VHT20, M24 to M31	4	17	6	98.62	16.8	16.4	15	16	22.2	30	7.8
	HT/VHT20 Beam Forming, M0 to M7	2	17	9	98.62	16.8	16.4			19.7	27	7.3
	HT/VHT20 Beam Forming, M8 to M15	2	17	6	98.62	16.8	16.4			19.7	30	10.3
	HT/VHT20 Beam Forming, M0 to M7	3	17	11	98.62	16.8	16.4	15		21	25	4
	HT/VHT20 Beam Forming, M8 to M15	3	17	8	98.62	16.8	16.4	15		21	28	7

HT/VHT20 Beam Forming, M16 to M23	3	17	6	98.62	16.8	16.4	15		21	30	9
HT/VHT20 Beam Forming, M0 to M7	4	17	12	98.62	16.8	16.4	15	16	22.2	24	1.8
HT/VHT20 Beam Forming, M8 to M15	4	17	9	98.62	16.8	16.4	15	16	22.2	27	4.8
HT/VHT20 Beam Forming, M16 to M23	4	17	7	98.62	16.8	16.4	15	16	22.2	29	6.8
HT/VHT20 Beam Forming, M24 to M31	4	17	6	98.62	16.8	16.4	15	16	22.2	30	7.8
HT/VHT20 STBC, M0 to M7	2	17	6	98.62	16.8	16.4			19.7	30	10.3
HT/VHT20 STBC, M0 to M7	3	17	6	98.62	16.8	16.4	15		21	30	9
HT/VHT20 STBC, M0 to M7	4	17	6	98.62	16.8	16.4	15	16	22.2	30	7.8

5.4.5 Maximum Conducted Output Power Plots



5.5 Power Spectral Density

5.5.1 Power Spectral Density Test Requirement

15.407

(3) For the band 5.725-5.85 GHz the maximum power spectral density shall not exceed 30 dBm in any 500 kHz band. If transmitting antennas of directional gain greater than 6dBi 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 6dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple colocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(5) The maximum power spectral density is measured as a conducted emission by direct connection of a calibrated test instrument to the equipment under test. If the device cannot be connected directly, alternative techniques acceptable to the Commission may be used. Measurements in the 5.725-5.85 GHz band are made over a reference bandwidth of 500 kHz or the 26dB emission bandwidth of the device, whichever is less. Measurements in the 5.15-5.25 GHz, 5.25-5.35 GHz, and the 5.47-5.725 GHz bands are made over a bandwidth of 1 MHz or the 26dB emission bandwidth of the device, whichever is less. A narrower resolution bandwidth can be used, provided that the measured power is integrated over the full reference bandwidth.

5.5.2 Power Spectral Density Test Procedure

Ref. KDB 789033 D02 General UNII Test Procedures New Rules v01r02

F. Maximum Power Spectral Density (PSD)

Power Spectral Density
Test Procedure
The rules require “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. 5. For devices operating in the bands 5.15-5.25 GHz, 5.25-5.35 GHz, and 5.47-5.725 GHz, the above procedures make use of 1 MHz RBW to satisfy directly the 1 MHz reference bandwidth specified in § 15.407(a)(5). For devices operating in the band 5.725-5.85 GHz, the rules specify a measurement bandwidth of 500 kHz.

Ref. KDB 789033 D02 General UNII Test Procedures New Rules v01r02

2. Measurement using a Spectrum Analyzer or EMI Receiver (SA), (d) 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 = 1MHz. (this should be 500kHz per KDB789033, Section F, (5)) (iv) Set VBW $\geq$ 3MHz. (v) Number of points in sweep $\geq$ 2 Span / RBW. (This ensures that bin-to-bin spacing is $\leq$ 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. 5. ... For devices operating in the band 5.725-5.85 GHz, the rules specify a measurement bandwidth of 500

kHz.

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

5.5.3 Power Spectral Density Test Information

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: March 6, 2019 - March 26, 2019
Test Result: PASS	

Test Equipment

See Appendix A for list of test equipment

5.5.4 Power Spectral Density Data Table

Frequency (MHz)	Mode	Tx Paths	Index Power (dBm)	Correlated Antenna Gain (dBi)	Duty Cycle (%)	Tx 1 PSD (dBm/500kHz)	Tx 2 PSD (dBm/500kHz)	Tx 3 PSD (dBm/500kHz)	Tx 4 PSD (dBm/500kHz)	Total PSD (dBm/500kHz)	Limit (dBm/500kHz)	Margin (dB)
5720	Non HT20, 6 to 54 Mbps	1	17	6	96.99	1.7				1.8	30	28.2
	Non HT20, 6 to 54 Mbps	2	17	9	96.99	1.7	0.9			4.5	27	22.5
	Non HT20, 6 to 54 Mbps	3	13	11	96.99	-2.3	-3.4	-3.5		1.9	25	23.1
	Non HT20, 6 to 54 Mbps	4	11	12	96.99	-4.6	-4.9	-5.6	-5	1.1	24	22.9
	Non HT20 Beam Forming, 6 to 54 Mbps	2	14	9	96.99	-1	-1.9			1.7	27	25.3
	Non HT20 Beam Forming, 6 to 54 Mbps	3	11	11	96.99	-4.6	-4.9	-5.6		-0.1	25	25.1
	Non HT20 Beam Forming, 6 to 54 Mbps	4	8	12	96.99	-7.5	-8.3	-8.1	-7.9	-1.8	24	25.8
	HT/VHT20, M0 to M7	1	17	6	98.62	1.2				1.3	30	28.7
	HT/VHT20, M0 to M7	2	17	9	98.62	1.2	0.1			3.8	27	23.2
	HT/VHT20, M8 to M15	2	17	6	98.62	1.2	0.1			3.8	30	26.2
	HT/VHT20, M0 to M7	3	13	11	98.62	-2.6	-3.9	-4.1		1.4	25	23.6
	HT/VHT20, M8 to M15	3	16	8	98.62	0.5	-0.5	-1		4.5	28	23.5
	HT/VHT20, M16 to M23	3	16	6	98.62	0.5	-0.5	-1		4.5	30	25.5
	HT/VHT20, M0 to M7	4	9	12	98.62	-6.9	-7.7	-8	-7.7	-1.5	24	25.5
	HT/VHT20, M8 to M15	4	14	9	98.62	-1.9	-2.7	-3.3	-2.7	3.5	27	23.5
	HT/VHT20, M16 to M23	4	15	7	98.62	-0.8	-1.8	-2.2	-1.7	4.5	29	24.5
	HT/VHT20, M24 to M31	4	15	6	98.62	-0.8	-1.8	-2.2	-1.7	4.5	30	25.5
	HT/VHT20 Beam Forming, M0 to M7	2	14	9	98.62	-1.9	-2.7			0.8	27	26.2
	HT/VHT20 Beam Forming, M8 to M15	2	17	6	98.62	1.2	0.1			3.8	30	26.2
	HT/VHT20 Beam Forming, M0 to M7	3	11	11	98.62	-4.3	-5.7	-6		-0.4	25	25.4
	HT/VHT20 Beam Forming, M8 to M15	3	14	8	98.62	-1.9	-2.7	-3.3		2.2	28	25.8
	HT/VHT20 Beam Forming, M16 to M23	3	16	6	98.62	0.5	-0.5	-1		4.5	30	25.5
	HT/VHT20 Beam Forming, M0 to M7	4	8	12	98.62	-7.9	-8.6	-9.3	-8.8	-2.5	24	26.5
	HT/VHT20 Beam Forming, M8 to M15	4	11	9	98.62	-4.3	-5.7	-6	-5.5	0.8	27	26.2
	HT/VHT20 Beam Forming, M16 to M23	4	13	7	98.62	-2.6	-3.9	-4.1	-3.7	2.5	29	26.5
	HT/VHT20 Beam Forming, M24 to M31	4	15	6	98.62	-0.8	-1.8	-2.2	-1.7	4.5	30	25.5
	HT/VHT20 STBC, M0 to M7	2	17	6	98.62	1.2	0.1			3.8	30	26.2
	HT/VHT20 STBC, M0 to M7	3	16	8	98.62	0.5	-0.5	-1		4.5	28	23.5
	HT/VHT20 STBC, M0 to M7	4	14	9	98.62	-1.9	-2.7	-3.3	-2.7	3.5	27	23.5

5745	Non HT20, 6 to 54 Mbps	1	17	6	96.99	2.6				2.7	30	27.3
	Non HT20, 6 to 54 Mbps	2	17	9	96.99	2.6	2			5.5	27	21.5
	Non HT20, 6 to 54 Mbps	3	17	11	96.99	2.6	2	1.6		7	25	18
	Non HT20, 6 to 54 Mbps	4	17	12	96.99	2.6	2	1.6	1.9	8.2	24	15.8
	Non HT20 Beam Forming, 6 to 54 Mbps	2	17	9	96.99	2.6	2			5.5	27	21.5
	Non HT20 Beam Forming, 6 to 54 Mbps	3	17	11	96.99	2.6	2	1.6		7	25	18
	Non HT20 Beam Forming, 6 to 54 Mbps	4	17	12	96.99	2.6	2	1.6	1.9	8.2	24	15.8
	HT/VHT20, M0 to M7	1	17	6	98.62	2.5				2.6	30	27.4
	HT/VHT20, M0 to M7	2	17	9	98.62	2.5	1.5			5.1	27	21.9
	HT/VHT20, M8 to M15	2	17	6	98.62	2.5	1.5			5.1	30	24.9
	HT/VHT20, M0 to M7	3	17	11	98.62	2.5	1.5	0.7		6.5	25	18.5
	HT/VHT20, M8 to M15	3	17	8	98.62	2.5	1.5	0.7		6.5	28	21.5
	HT/VHT20, M16 to M23	3	17	6	98.62	2.5	1.5	0.7		6.5	30	23.5
	HT/VHT20, M0 to M7	4	17	12	98.62	2.5	1.5	0.7	1.3	7.6	24	16.4
	HT/VHT20, M8 to M15	4	17	9	98.62	2.5	1.5	0.7	1.3	7.6	27	19.4
	HT/VHT20, M16 to M23	4	17	7	98.62	2.5	1.5	0.7	1.3	7.6	29	21.4
	HT/VHT20, M24 to M31	4	17	6	98.62	2.5	1.5	0.7	1.3	7.6	30	22.4
	HT/VHT20 Beam Forming, M0 to M7	2	17	9	98.62	2.5	1.5			5.1	27	21.9
	HT/VHT20 Beam Forming, M8 to M15	2	17	6	98.62	2.5	1.5			5.1	30	24.9
	HT/VHT20 Beam Forming, M0 to M7	3	17	11	98.62	2.5	1.5	0.7		6.5	25	18.5
	HT/VHT20 Beam Forming, M8 to M15	3	17	8	98.62	2.5	1.5	0.7		6.5	28	21.5
	HT/VHT20 Beam Forming, M16 to M23	3	17	6	98.62	2.5	1.5	0.7		6.5	30	23.5
	HT/VHT20 Beam Forming, M0 to M7	4	17	12	98.62	2.5	1.5	0.7	1.3	7.6	24	16.4
	HT/VHT20 Beam Forming, M8 to M15	4	17	9	98.62	2.5	1.5	0.7	1.3	7.6	27	19.4
	HT/VHT20 Beam Forming, M16 to M23	4	17	7	98.62	2.5	1.5	0.7	1.3	7.6	29	21.4
	HT/VHT20 Beam Forming, M24 to M31	4	17	6	98.62	2.5	1.5	0.7	1.3	7.6	30	22.4
	HT/VHT20 STBC, M0 to M7	2	17	6	98.62	2.5	1.5			5.1	30	24.9
	HT/VHT20 STBC, M0 to M7	3	17	8	98.62	2.5	1.5	0.7		6.5	28	21.5
	HT/VHT20 STBC, M0 to M7	4	17	9	98.62	2.5	1.5	0.7	1.3	7.6	27	19.4
5755	Non HT40, 6 to 54 Mbps	1	17	6	96.63	1.1				1.3	30	28.8
	Non HT40, 6 to 54 Mbps	2	17	9	96.63	1.1	0.2			3.8	27	23.2
	Non HT40, 6 to 54 Mbps	3	17	11	96.63	1.1	0.2	0.2		5.4	25	19.6
	Non HT40, 6 to 54 Mbps	4	17	12	96.63	1.1	0.2	0.2	0.4	6.7	24	17.3
	HT/VHT40, M0 to M7	1	17	6	96.97	0.4				0.5	30	29.5
	HT/VHT40, M0 to M7	2	17	9	96.97	0.4	-0.4			3.2	27	23.8
	HT/VHT40, M8 to M15	2	17	6	96.97	0.4	-0.4			3.2	30	26.8
	HT/VHT40, M0 to M7	3	17	11	96.97	0.4	-0.4	-0.5		4.8	25	20.2
	HT/VHT40, M8 to M15	3	17	8	96.97	0.4	-0.4	-0.5		4.8	28	23.2
	HT/VHT40, M16 to M23	3	17	6	96.97	0.4	-0.4	-0.5		4.8	30	25.2
	HT/VHT40, M0 to M7	4	17	12	96.97	0.4	-0.4	-0.5	0	6	24	18

	HT/VHT40, M8 to M15	4	17	9	96.97	0.4	-0.4	-0.5	0	6	27	21
	HT/VHT40, M16 to M23	4	17	7	96.97	0.4	-0.4	-0.5	0	6	29	23
	HT/VHT40, M24 to M31	4	17	6	96.97	0.4	-0.4	-0.5	0	6	30	24
	HT/VHT40 Beam Forming, M0 to M7	2	17	9	96.97	0.4	-0.4			3.2	27	23.8
	HT/VHT40 Beam Forming, M8 to M15	2	17	6	96.97	0.4	-0.4			3.2	30	26.8
	HT/VHT40 Beam Forming, M0 to M7	3	17	11	96.97	0.4	-0.4	-0.5		4.8	25	20.2
	HT/VHT40 Beam Forming, M8 to M15	3	17	8	96.97	0.4	-0.4	-0.5		4.8	28	23.2
	HT/VHT40 Beam Forming, M16 to M23	3	17	6	96.97	0.4	-0.4	-0.5		4.8	30	25.2
	HT/VHT40 Beam Forming, M0 to M7	4	17	12	96.97	0.4	-0.4	-0.5	0	6	24	18
	HT/VHT40 Beam Forming, M8 to M15	4	17	9	96.97	0.4	-0.4	-0.5	0	6	27	21
	HT/VHT40 Beam Forming, M16 to M23	4	17	7	96.97	0.4	-0.4	-0.5	0	6	29	23
	HT/VHT40 Beam Forming, M24 to M31	4	17	6	96.97	0.4	-0.4	-0.5	0	6	30	24
	HT/VHT40 STBC, M0 to M7	2	17	6	96.97	0.4	-0.4			3.2	30	26.8
	HT/VHT40 STBC, M0 to M7	3	17	8	96.97	0.4	-0.4	-0.5		4.8	28	23.2
	HT/VHT40 STBC, M0 to M7	4	17	9	96.97	0.4	-0.4	-0.5	0	6	27	21
5775	Non HT80, 6 to 54 Mbps	1	17	6	96.63	-2.9				-2.8	30	32.8
	Non HT80, 6 to 54 Mbps	2	17	9	96.63	-2.9	-3.4			0	27	27
	Non HT80, 6 to 54 Mbps	3	17	11	96.63	-2.9	-3.4	-3.9		1.5	25	23.5
	Non HT80, 6 to 54 Mbps	4	17	12	96.63	-2.9	-3.4	-3.9	-3.4	2.8	24	21.2
	VHT80, M0 to M9 1ss	1	17	6	85.06	-3.7				-3	30	33
	VHT80, M0 to M9 1ss	2	17	9	85.06	-3.7	-4.1			-0.2	27	27.2
	VHT80, M0 to M9 2ss	2	17	6	85.06	-3.7	-4.1			-0.2	30	30.2
	VHT80, M0 to M9 1ss	3	17	11	85.06	-3.7	-4.1	-4.8		1.3	25	23.7
	VHT80, M0 to M9 2ss	3	17	8	85.06	-3.7	-4.1	-4.8		1.3	28	26.7
	VHT80, M0 to M9 3ss	3	17	6	85.06	-3.7	-4.1	-4.8		1.3	30	28.7
	VHT80, M0 to M9 1ss	4	17	12	85.06	-3.7	-4.1	-4.8	-3.8	2.6	24	21.4
	VHT80, M0 to M9 2ss	4	17	9	85.06	-3.7	-4.1	-4.8	-3.8	2.6	27	24.4
	VHT80, M0 to M9 3ss	4	17	7	85.06	-3.7	-4.1	-4.8	-3.8	2.6	29	26.4
	VHT80, M0 to M9 4ss	4	17	6	85.06	-3.7	-4.1	-4.8	-3.8	2.6	30	27.4
	VHT80 Beam Forming, M0 to M9 1ss	2	17	9	85.06	-3.7	-4.1			-0.2	27	27.2
	VHT80 Beam Forming, M0 to M9 2ss	2	17	6	85.06	-3.7	-4.1			-0.2	30	30.2
	VHT80 Beam Forming, M0 to M9 1ss	3	17	11	85.06	-3.7	-4.1	-4.8		1.3	25	23.7
	VHT80 Beam Forming, M0 to M9 2ss	3	17	8	85.06	-3.7	-4.1	-4.8		1.3	28	26.7
	VHT80 Beam Forming, M0 to M9 3ss	3	17	6	85.06	-3.7	-4.1	-4.8		1.3	30	28.7
	VHT80 Beam Forming, M0 to M9 1ss	4	17	12	85.06	-3.7	-4.1	-4.8	-3.8	2.6	24	21.4
	VHT80 Beam Forming, M0 to M9 2ss	4	17	9	85.06	-3.7	-4.1	-4.8	-3.8	2.6	27	24.4
	VHT80 Beam Forming, M0 to M9 3ss	4	17	7	85.06	-3.7	-4.1	-4.8	-3.8	2.6	29	26.4
	VHT80 Beam Forming, M0 to M9 4ss	4	17	6	85.06	-3.7	-4.1	-4.8	-3.8	2.6	30	27.4
	VHT80 STBC, M0 to M9 1ss	2	17	6	85.06	-3.7	-4.1			-0.2	30	30.2
	VHT80 STBC, M0 to M9 1ss	3	17	6	85.06	-3.7	-4.1	-4.8		1.3	30	28.7

	VHT80 STBC, M0 to M9 1ss	4	17	6	85.06	-3.7	-4.1	-4.8	-3.8	2.6	30	27.4
5785	Non HT20, 6 to 54 Mbps	1	17	6	96.99	3.3				3.4	30	26.6
	Non HT20, 6 to 54 Mbps	2	17	9	96.99	3.3	2.5			6.1	27	20.9
	Non HT20, 6 to 54 Mbps	3	17	11	96.99	3.3	2.5	1.7		7.5	25	17.5
	Non HT20, 6 to 54 Mbps	4	17	12	96.99	3.3	2.5	1.7	2.1	8.6	24	15.4
	Non HT20 Beam Forming, 6 to 54 Mbps	2	17	9	96.99	3.3	2.5			6.1	27	20.9
	Non HT20 Beam Forming, 6 to 54 Mbps	3	17	11	96.99	3.3	2.5	1.7		7.5	25	17.5
	Non HT20 Beam Forming, 6 to 54 Mbps	4	17	12	96.99	3.3	2.5	1.7	2.1	8.6	24	15.4
	HT/VHT20, M0 to M7	1	17	6	98.62	2.8				2.9	30	27.1
	HT/VHT20, M0 to M7	2	17	9	98.62	2.8	2			5.5	27	21.5
	HT/VHT20, M8 to M15	2	17	6	98.62	2.8	2			5.5	30	24.5
	HT/VHT20, M0 to M7	3	17	11	98.62	2.8	2	1.4		6.9	25	18.1
	HT/VHT20, M8 to M15	3	17	8	98.62	2.8	2	1.4		6.9	28	21.1
	HT/VHT20, M16 to M23	3	17	6	98.62	2.8	2	1.4		6.9	30	23.1
	HT/VHT20, M0 to M7	4	17	12	98.62	2.8	2	1.4	1.9	8.1	24	15.9
	HT/VHT20, M8 to M15	4	17	9	98.62	2.8	2	1.4	1.9	8.1	27	18.9
	HT/VHT20, M16 to M23	4	17	7	98.62	2.8	2	1.4	1.9	8.1	29	20.9
	HT/VHT20, M24 to M31	4	17	6	98.62	2.8	2	1.4	1.9	8.1	30	21.9
	HT/VHT20 Beam Forming, M0 to M7	2	17	9	98.62	2.8	2			5.5	27	21.5
	HT/VHT20 Beam Forming, M8 to M15	2	17	6	98.62	2.8	2			5.5	30	24.5
	HT/VHT20 Beam Forming, M0 to M7	3	17	11	98.62	2.8	2	1.4		6.9	25	18.1
	HT/VHT20 Beam Forming, M8 to M15	3	17	8	98.62	2.8	2	1.4		6.9	28	21.1
	HT/VHT20 Beam Forming, M16 to M23	3	17	6	98.62	2.8	2	1.4		6.9	30	23.1
	HT/VHT20 Beam Forming, M0 to M7	4	17	12	98.62	2.8	2	1.4	1.9	8.1	24	15.9
	HT/VHT20 Beam Forming, M8 to M15	4	17	9	98.62	2.8	2	1.4	1.9	8.1	27	18.9
	HT/VHT20 Beam Forming, M16 to M23	4	17	7	98.62	2.8	2	1.4	1.9	8.1	29	20.9
	HT/VHT20 Beam Forming, M24 to M31	4	17	6	98.62	2.8	2	1.4	1.9	8.1	30	21.9
	HT/VHT20 STBC, M0 to M7	2	17	6	98.62	2.8	2			5.5	30	24.5
	HT/VHT20 STBC, M0 to M7	3	17	8	98.62	2.8	2	1.4		6.9	28	21.1
	HT/VHT20 STBC, M0 to M7	4	17	9	98.62	2.8	2	1.4	1.9	8.1	27	18.9
5795	Non HT40, 6 to 54 Mbps	1	17	6	96.63	1.6				1.8	30	28.3
	Non HT40, 6 to 54 Mbps	2	17	9	96.63	1.6	0.9			4.4	27	22.6
	Non HT40, 6 to 54 Mbps	3	17	11	96.63	1.6	0.9	0.6		6	25	19
	Non HT40, 6 to 54 Mbps	4	17	12	96.63	1.6	0.9	0.6	1	7.2	24	16.8
	HT/VHT40, M0 to M7	1	17	6	96.97	0.8				0.9	30	29.1
	HT/VHT40, M0 to M7	2	17	9	96.97	0.8	-0.1			3.5	27	23.5
	HT/VHT40, M8 to M15	2	17	6	96.97	0.8	-0.1			3.5	30	26.5
	HT/VHT40, M0 to M7	3	17	11	96.97	0.8	-0.1	-0.6		5	25	20
	HT/VHT40, M8 to M15	3	17	8	96.97	0.8	-0.1	-0.6		5	28	23

	HT/VHT40, M16 to M23	3	17	6	96.97	0.8	-0.1	-0.6		5	30	25
	HT/VHT40, M0 to M7	4	17	12	96.97	0.8	-0.1	-0.6	-0.2	6.2	24	17.8
	HT/VHT40, M8 to M15	4	17	9	96.97	0.8	-0.1	-0.6	-0.2	6.2	27	20.8
	HT/VHT40, M16 to M23	4	17	7	96.97	0.8	-0.1	-0.6	-0.2	6.2	29	22.8
	HT/VHT40, M24 to M31	4	17	6	96.97	0.8	-0.1	-0.6	-0.2	6.2	30	23.8
	HT/VHT40 Beam Forming, M0 to M7	2	17	9	96.97	0.8	-0.1			3.5	27	23.5
	HT/VHT40 Beam Forming, M8 to M15	2	17	6	96.97	0.8	-0.1			3.5	30	26.5
	HT/VHT40 Beam Forming, M0 to M7	3	17	11	96.97	0.8	-0.1	-0.6		5	25	20
	HT/VHT40 Beam Forming, M8 to M15	3	17	8	96.97	0.8	-0.1	-0.6		5	28	23
	HT/VHT40 Beam Forming, M16 to M23	3	17	6	96.97	0.8	-0.1	-0.6		5	30	25
	HT/VHT40 Beam Forming, M0 to M7	4	17	12	96.97	0.8	-0.1	-0.6	-0.2	6.2	24	17.8
	HT/VHT40 Beam Forming, M8 to M15	4	17	9	96.97	0.8	-0.1	-0.6	-0.2	6.2	27	20.8
	HT/VHT40 Beam Forming, M16 to M23	4	17	7	96.97	0.8	-0.1	-0.6	-0.2	6.2	29	22.8
	HT/VHT40 Beam Forming, M24 to M31	4	17	6	96.97	0.8	-0.1	-0.6	-0.2	6.2	30	23.8
	HT/VHT40 STBC, M0 to M7	2	17	6	96.97	0.8	-0.1			3.5	30	26.5
	HT/VHT40 STBC, M0 to M7	3	17	8	96.97	0.8	-0.1	-0.6		5	28	23
	HT/VHT40 STBC, M0 to M7	4	17	9	96.97	0.8	-0.1	-0.6	-0.2	6.2	27	20.8
5825												
	Non HT20, 6 to 54 Mbps	1	17	6	96.99	3.5				3.6	30	26.4
	Non HT20, 6 to 54 Mbps	2	17	9	96.99	3.5	2.8			6.3	27	20.7
	Non HT20, 6 to 54 Mbps	3	17	11	96.99	3.5	2.8	1.9		7.7	25	17.3
	Non HT20, 6 to 54 Mbps	4	17	12	96.99	3.5	2.8	1.9	2.4	8.8	24	15.2
	Non HT20 Beam Forming, 6 to 54 Mbps	2	17	9	96.99	3.5	2.8			6.3	27	20.7
	Non HT20 Beam Forming, 6 to 54 Mbps	3	17	11	96.99	3.5	2.8	1.9		7.7	25	17.3
	Non HT20 Beam Forming, 6 to 54 Mbps	4	17	12	96.99	3.5	2.8	1.9	2.4	8.8	24	15.2
	HT/VHT20, M0 to M7	1	17	6	98.62	2.3				2.4	30	27.6
	HT/VHT20, M0 to M7	2	17	9	98.62	2.3	2.1			5.3	27	21.7
	HT/VHT20, M8 to M15	2	17	6	98.62	2.3	2.1			5.3	30	24.7
	HT/VHT20, M0 to M7	3	17	11	98.62	2.3	2.1	0.8		6.6	25	18.4
	HT/VHT20, M8 to M15	3	17	8	98.62	2.3	2.1	0.8		6.6	28	21.4
	HT/VHT20, M16 to M23	3	17	6	98.62	2.3	2.1	0.8		6.6	30	23.4
	HT/VHT20, M0 to M7	4	17	12	98.62	2.3	2.1	0.8	1.8	7.9	24	16.1
	HT/VHT20, M8 to M15	4	17	9	98.62	2.3	2.1	0.8	1.8	7.9	27	19.1
	HT/VHT20, M16 to M23	4	17	7	98.62	2.3	2.1	0.8	1.8	7.9	29	21.1
	HT/VHT20, M24 to M31	4	17	6	98.62	2.3	2.1	0.8	1.8	7.9	30	22.1
	HT/VHT20 Beam Forming, M0 to M7	2	17	9	98.62	2.3	2.1			5.3	27	21.7
	HT/VHT20 Beam Forming, M8 to M15	2	17	6	98.62	2.3	2.1			5.3	30	24.7
	HT/VHT20 Beam Forming, M0 to M7	3	17	11	98.62	2.3	2.1	0.8		6.6	25	18.4
	HT/VHT20 Beam Forming, M8 to M15	3	17	8	98.62	2.3	2.1	0.8		6.6	28	21.4
	HT/VHT20 Beam Forming, M16 to M23	3	17	6	98.62	2.3	2.1	0.8		6.6	30	23.4
	HT/VHT20 Beam Forming, M0 to M7	4	17	12	98.62	2.3	2.1	0.8	1.8	7.9	24	16.1

	HT/VHT20 Beam Forming, M8 to M15	4	17	9	98.62	2.3	2.1	0.8	1.8	7.9	27	19.1
	HT/VHT20 Beam Forming, M16 to M23	4	17	7	98.62	2.3	2.1	0.8	1.8	7.9	29	21.1
	HT/VHT20 Beam Forming, M24 to M31	4	17	6	98.62	2.3	2.1	0.8	1.8	7.9	30	22.1
	HT/VHT20 STBC, M0 to M7	2	17	6	98.62	2.3	2.1			5.3	30	24.7
	HT/VHT20 STBC, M0 to M7	3	17	8	98.62	2.3	2.1	0.8		6.6	28	21.4
	HT/VHT20 STBC, M0 to M7	4	17	9	98.62	2.3	2.1	0.8	1.8	7.9	27	19.1

5.5.5 Power Spectral Density Plots



5.6 Conducted Spurious Emissions

5.6.1 Conducted Spurious Emissions Test Requirement

15.407

(b) *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:

(4) For transmitters operating in the 5.725-5.85 GHz band:

(i) All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

(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.

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)).

5.6.2 Conducted Spurious Emissions Test Procedure

From KDB 789033 D02 General UNII Test Procedures New Rules v01r02

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. Out-of-band and spurious emissions tests are performed on each output individually without summing or adding 10 log(N) since the measurements are made relative to the in-band emissions on the individual outputs. The worst-case output is recorded. 6. Capture graphs and record pertinent measurement data.

Ref. ANSI C63.10: 2013 section 12.7.7.3 and 12.7.6

Conducted Spurious Emissions Test parameters
Span = 30MHz to 18GHz / 18GHz to 40GHz RBW = 1 MHz VBW ≥ 3 MHz for Peak, 1kHz for Average Sweep = Auto couple Detector = Peak Trace = Max Hold.

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).

5.6.3 Conducted Spurious Emissions Test Information

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: March 6, 2019 - March 26, 2019, May 16, 2019
Test Result: PASS	

Test Equipment

See Appendix A for list of test equipment

5.6.4 Conducted Spurious Emissions Data Tables - Peak

Frequency (MHz)	Mode	Tx Paths	Index Power (dBm)	Correlated Antenna Gain (dBi)	Tx 1 Spur Power (dBm)	Tx 2 Spur Power (dBm)	Tx 3 Spur Power (dBm)	Tx 4 Spur Power (dBm)	Total Conducted Spur (dBm)	Limit (dBm)	Margin (dB)
5720	Non HT20, 6 to 54 Mbps	1	17	6	-58.4				-52.3	-21.25	31.05
	Non HT20, 6 to 54 Mbps	2	17	6	-58.4	-59.3			-49.7	-21.25	28.45
	Non HT20, 6 to 54 Mbps	3	13	6	-60.3	-59.3	-58.4		-48.4	-21.25	27.15
	Non HT20, 6 to 54 Mbps	4	11	6	-60.7	-59.5	-59.4	-61.9	-48.1	-21.25	26.85
	Non HT20 Beam Forming, 6 to 54 Mbps	2	14	9	-60.2	-58			-46.8	-21.25	25.55
	Non HT20 Beam Forming, 6 to 54 Mbps	3	11	11	-60.7	-59.5	-59.4		-43.9	-21.25	22.65
	Non HT20 Beam Forming, 6 to 54 Mbps	4	8	12	-62.1	-60.4	-60.4	-61.8	-43	-21.25	21.75
	HT/VHT20, M0 to M7	1	17	6	-57.8				-51.7	-21.25	30.45
	HT/VHT20, M0 to M7	2	17	6	-57.8	-58.4			-49	-21.25	27.75
	HT/VHT20, M8 to M15	2	17	6	-57.8	-58.4			-49	-21.25	27.75
	HT/VHT20, M0 to M7	3	13	6	-60.4	-59.5	-57.5		-48.1	-21.25	26.85
	HT/VHT20, M8 to M15	3	16	6	-59.9	-58.9	-57.8		-48	-21.25	26.75
	HT/VHT20, M16 to M23	3	16	6	-59.9	-58.9	-57.8		-48	-21.25	26.75
	HT/VHT20, M0 to M7	4	9	6	-60.3	-59.7	-59.2	-61.2	-48	-21.25	26.75
	HT/VHT20, M8 to M15	4	14	6	-60.1	-58.6	-58.9	-60.5	-47.4	-21.25	26.15
	HT/VHT20, M16 to M23	4	15	6	-60.2	-58.7	-58.7	-59.7	-47.2	-21.25	25.95
	HT/VHT20, M24 to M31	4	15	6	-60.2	-58.7	-58.7	-59.7	-47.2	-21.25	25.95
	HT/VHT20 Beam Forming, M0 to M7	2	14	9	-60.1	-58.6			-47.2	-21.25	25.95
	HT/VHT20 Beam Forming, M8 to M15	2	17	6	-57.8	-58.4			-49	-21.25	27.75
	HT/VHT20 Beam Forming, M0 to M7	3	11	11	-61.3	-60.1	-59.7		-44.5	-21.25	23.25
	HT/VHT20 Beam Forming, M8 to M15	3	14	8	-60.1	-58.6	-58.9		-46.3	-21.25	25.05
	HT/VHT20 Beam Forming, M16 to M23	3	16	6	-59.9	-58.9	-57.8		-48	-21.25	26.75
	HT/VHT20 Beam Forming, M0 to M7	4	8	12	-60.7	-61	-59.2	-61.7	-42.5	-21.25	21.25
	HT/VHT20 Beam Forming, M8 to M15	4	11	9	-61.3	-60.1	-59.7	-61.6	-45.5	-21.25	24.25
	HT/VHT20 Beam Forming, M16 to M23	4	13	7	-60.4	-59.5	-57.5	-60.3	-46.2	-21.25	24.95
	HT/VHT20 Beam Forming, M24 to M31	4	15	6	-60.2	-58.7	-58.7	-59.7	-47.2	-21.25	25.95
	HT/VHT20 STBC, M0 to M7	2	17	6	-57.8	-58.4			-49	-21.25	27.75
	HT/VHT20 STBC, M0 to M7	3	16	6	-59.9	-58.9	-57.8		-48	-21.25	26.75
	HT/VHT20 STBC, M0 to M7	4	14	6	-60.1	-58.6	-58.9	-60.5	-47.4	-21.25	26.15

5745	Non HT20, 6 to 54 Mbps	1	17	6	-57				-50.9	-21.25	29.65
	Non HT20, 6 to 54 Mbps	2	17	6	-57	-56.6			-47.7	-21.25	26.45
	Non HT20, 6 to 54 Mbps	3	17	6	-57	-56.6	-52.9		-44.2	-21.25	22.95
	Non HT20, 6 to 54 Mbps	4	17	6	-57	-56.6	-52.9	-58.8	-43.6	-21.25	22.35
	Non HT20 Beam Forming, 6 to 54 Mbps	2	17	9	-57	-56.6			-44.7	-21.25	23.45
	Non HT20 Beam Forming, 6 to 54 Mbps	3	17	11	-57	-56.6	-52.9		-39.2	-21.25	17.95
	Non HT20 Beam Forming, 6 to 54 Mbps	4	17	12	-57	-56.6	-52.9	-58.8	-37.6	-21.25	16.35
	HT/VHT20, M0 to M7	1	17	6	-56.6				-50.5	-21.25	29.25
	HT/VHT20, M0 to M7	2	17	6	-56.6	-56.3			-47.4	-21.25	26.15
	HT/VHT20, M8 to M15	2	17	6	-56.6	-56.3			-47.4	-21.25	26.15
	HT/VHT20, M0 to M7	3	17	6	-56.6	-56.3	-52.4		-43.8	-21.25	22.55
	HT/VHT20, M8 to M15	3	17	6	-56.6	-56.3	-52.4		-43.8	-21.25	22.55
	HT/VHT20, M16 to M23	3	17	6	-56.6	-56.3	-52.4		-43.8	-21.25	22.55
	HT/VHT20, M0 to M7	4	17	6	-56.6	-56.3	-52.4	-58.3	-43.2	-21.25	21.95
	HT/VHT20, M8 to M15	4	17	6	-56.6	-56.3	-52.4	-58.3	-43.2	-21.25	21.95
	HT/VHT20, M16 to M23	4	17	6	-56.6	-56.3	-52.4	-58.3	-43.2	-21.25	21.95
	HT/VHT20, M24 to M31	4	17	6	-56.6	-56.3	-52.4	-58.3	-43.2	-21.25	21.95
	HT/VHT20 Beam Forming, M0 to M7	2	17	9	-56.6	-56.3			-44.4	-21.25	23.15
	HT/VHT20 Beam Forming, M8 to M15	2	17	6	-56.6	-56.3			-47.4	-21.25	26.15
	HT/VHT20 Beam Forming, M0 to M7	3	17	11	-56.6	-56.3	-52.4		-38.8	-21.25	17.55
	HT/VHT20 Beam Forming, M8 to M15	3	17	8	-56.6	-56.3	-52.4		-41.8	-21.25	20.55
	HT/VHT20 Beam Forming, M16 to M23	3	17	6	-56.6	-56.3	-52.4		-43.8	-21.25	22.55
	HT/VHT20 Beam Forming, M0 to M7	4	17	12	-56.6	-56.3	-52.4	-58.3	-37.2	-21.25	15.95
	HT/VHT20 Beam Forming, M8 to M15	4	17	9	-56.6	-56.3	-52.4	-58.3	-40.2	-21.25	18.95
	HT/VHT20 Beam Forming, M16 to M23	4	17	7	-56.6	-56.3	-52.4	-58.3	-42.2	-21.25	20.95
	HT/VHT20 Beam Forming, M24 to M31	4	17	6	-56.6	-56.3	-52.4	-58.3	-43.2	-21.25	21.95
	HT/VHT20 STBC, M0 to M7	2	17	6	-56.6	-56.3			-47.4	-21.25	26.15
	HT/VHT20 STBC, M0 to M7	3	17	6	-56.6	-56.3	-52.4		-43.8	-21.25	22.55
	HT/VHT20 STBC, M0 to M7	4	17	6	-56.6	-56.3	-52.4	-58.3	-43.2	-21.25	21.95
5755	Non HT40, 6 to 54 Mbps	1	17	6	-57.7				-51.6	-21.25	30.35
	Non HT40, 6 to 54 Mbps	2	17	6	-57.7	-58.2			-48.8	-21.25	27.55
	Non HT40, 6 to 54 Mbps	3	17	6	-57.7	-58.2	-54		-45.3	-21.25	24.05
	Non HT40, 6 to 54 Mbps	4	17	6	-57.7	-58.2	-54	-56.4	-44.1	-21.25	22.85
	HT/VHT40, M0 to M7	1	17	6	-57.6				-51.5	-21.25	30.25
	HT/VHT40, M0 to M7	2	17	6	-57.6	-57.5			-48.4	-21.25	27.15
	HT/VHT40, M8 to M15	2	17	6	-57.6	-57.5			-48.4	-21.25	27.15
	HT/VHT40, M0 to M7	3	17	6	-57.6	-57.5	-55		-45.6	-21.25	24.35
	HT/VHT40, M8 to M15	3	17	6	-57.6	-57.5	-55		-45.6	-21.25	24.35
	HT/VHT40, M16 to M23	3	17	6	-57.6	-57.5	-55		-45.6	-21.25	24.35

	HT/VHT40, M0 to M7	4	17	6	-57.6	-57.5	-55	-56	-44.2	-21.25	22.95
	HT/VHT40, M8 to M15	4	17	6	-57.6	-57.5	-55	-56	-44.2	-21.25	22.95
	HT/VHT40, M16 to M23	4	17	6	-57.6	-57.5	-55	-56	-44.2	-21.25	22.95
	HT/VHT40, M24 to M31	4	17	6	-57.6	-57.5	-55	-56	-44.2	-21.25	22.95
	HT/VHT40 Beam Forming, M0 to M7	2	17	9	-57.6	-57.5			-45.4	-21.25	24.15
	HT/VHT40 Beam Forming, M8 to M15	2	17	6	-57.6	-57.5			-48.4	-21.25	27.15
	HT/VHT40 Beam Forming, M0 to M7	3	17	11	-57.6	-57.5	-55		-40.6	-21.25	19.35
	HT/VHT40 Beam Forming, M8 to M15	3	17	8	-57.6	-57.5	-55		-43.6	-21.25	22.35
	HT/VHT40 Beam Forming, M16 to M23	3	17	6	-57.6	-57.5	-55		-45.6	-21.25	24.35
	HT/VHT40 Beam Forming, M0 to M7	4	17	12	-57.6	-57.5	-55	-56	-38.2	-21.25	16.95
	HT/VHT40 Beam Forming, M8 to M15	4	17	9	-57.6	-57.5	-55	-56	-41.2	-21.25	19.95
	HT/VHT40 Beam Forming, M16 to M23	4	17	7	-57.6	-57.5	-55	-56	-43.2	-21.25	21.95
	HT/VHT40 Beam Forming, M24 to M31	4	17	6	-57.6	-57.5	-55	-56	-44.2	-21.25	22.95
	HT/VHT40 STBC, M0 to M7	2	17	6	-57.6	-57.5			-48.4	-21.25	27.15
	HT/VHT40 STBC, M0 to M7	3	17	6	-57.6	-57.5	-55		-45.6	-21.25	24.35
	HT/VHT40 STBC, M0 to M7	4	17	6	-57.6	-57.5	-55	-56	-44.2	-21.25	22.95
5775											
	Non HT80, 6 to 54 Mbps	1	17	6	-58				-51.9	-21.25	30.65
	Non HT80, 6 to 54 Mbps	2	17	6	-58	-57.3			-48.5	-21.25	27.25
	Non HT80, 6 to 54 Mbps	3	17	6	-58	-57.3	-54.4		-45.4	-21.25	24.15
	Non HT80, 6 to 54 Mbps	4	17	6	-58	-57.3	-54.4	-54.7	-43.7	-21.25	22.45
	VHT80, M0 to M9 1ss	1	17	6	-58				-51.3	-21.25	30.05
	VHT80, M0 to M9 1ss	2	17	6	-58	-57.6			-48.1	-21.25	26.85
	VHT80, M0 to M9 2ss	2	17	6	-58	-57.6			-48.1	-21.25	26.85
	VHT80, M0 to M9 1ss	3	17	6	-58	-57.6	-53.2		-44.2	-21.25	22.95
	VHT80, M0 to M9 2ss	3	17	6	-58	-57.6	-53.2		-44.2	-21.25	22.95
	VHT80, M0 to M9 3ss	3	17	6	-58	-57.6	-53.2		-44.2	-21.25	22.95
	VHT80, M0 to M9 1ss	4	17	6	-58	-57.6	-53.2	-55.7	-43	-21.25	21.75
	VHT80, M0 to M9 2ss	4	17	6	-58	-57.6	-53.2	-55.7	-43	-21.25	21.75
	VHT80, M0 to M9 3ss	4	17	6	-58	-57.6	-53.2	-55.7	-43	-21.25	21.75
	VHT80, M0 to M9 4ss	4	17	6	-58	-57.6	-53.2	-55.7	-43	-21.25	21.75
	VHT80 Beam Forming, M0 to M9 1ss	2	17	9	-58	-57.6			-45.1	-21.25	23.85
	VHT80 Beam Forming, M0 to M9 2ss	2	17	6	-58	-57.6			-48.1	-21.25	26.85
	VHT80 Beam Forming, M0 to M9 1ss	3	17	11	-58	-57.6	-53.2		-39.2	-21.25	17.95
	VHT80 Beam Forming, M0 to M9 2ss	3	17	8	-58	-57.6	-53.2		-42.2	-21.25	20.95
	VHT80 Beam Forming, M0 to M9 3ss	3	17	6	-58	-57.6	-53.2		-44.2	-21.25	22.95
	VHT80 Beam Forming, M0 to M9 1ss	4	17	12	-58	-57.6	-53.2	-55.7	-37	-21.25	15.75
	VHT80 Beam Forming, M0 to M9 2ss	4	17	9	-58	-57.6	-53.2	-55.7	-40	-21.25	18.75
	VHT80 Beam Forming, M0 to M9 3ss	4	17	7	-58	-57.6	-53.2	-55.7	-42	-21.25	20.75
	VHT80 Beam Forming, M0 to M9 4ss	4	17	6	-58	-57.6	-53.2	-55.7	-43	-21.25	21.75
	VHT80 STBC, M0 to M9 1ss	2	17	6	-58	-57.6			-48.1	-21.25	26.85

	VHT80 STBC, M0 to M9 1ss	3	17	6	-58	-57.6	-53.2		-44.2	-21.25	22.95
	VHT80 STBC, M0 to M9 1ss	4	17	6	-58	-57.6	-53.2	-55.7	-43	-21.25	21.75
5785	Non HT20, 6 to 54 Mbps	1	17	6	-57				-50.9	-21.25	29.65
	Non HT20, 6 to 54 Mbps	2	17	6	-57	-56.9			-47.8	-21.25	26.55
	Non HT20, 6 to 54 Mbps	3	17	6	-57	-56.9	-54.8		-45.2	-21.25	23.95
	Non HT20, 6 to 54 Mbps	4	17	6	-57	-56.9	-54.8	-54.7	-43.6	-21.25	22.35
	Non HT20 Beam Forming, 6 to 54 Mbps	2	17	9	-57	-56.9			-44.8	-21.25	23.55
	Non HT20 Beam Forming, 6 to 54 Mbps	3	17	11	-57	-56.9	-54.8		-40.2	-21.25	18.95
	Non HT20 Beam Forming, 6 to 54 Mbps	4	17	12	-57	-56.9	-54.8	-54.7	-37.6	-21.25	16.35
	HT/VHT20, M0 to M7	1	17	6	-58				-51.9	-21.25	30.65
	HT/VHT20, M0 to M7	2	17	6	-58	-57.3			-48.6	-21.25	27.35
	HT/VHT20, M8 to M15	2	17	6	-58	-57.3			-48.6	-21.25	27.35
	HT/VHT20, M0 to M7	3	17	6	-58	-57.3	-54.3		-45.4	-21.25	24.15
	HT/VHT20, M8 to M15	3	17	6	-58	-57.3	-54.3		-45.4	-21.25	24.15
	HT/VHT20, M16 to M23	3	17	6	-58	-57.3	-54.3		-45.4	-21.25	24.15
	HT/VHT20, M0 to M7	4	17	6	-58	-57.3	-54.3	-54.1	-43.5	-21.25	22.25
	HT/VHT20, M8 to M15	4	17	6	-58	-57.3	-54.3	-54.1	-43.5	-21.25	22.25
	HT/VHT20, M16 to M23	4	17	6	-58	-57.3	-54.3	-54.1	-43.5	-21.25	22.25
	HT/VHT20, M24 to M31	4	17	6	-58	-57.3	-54.3	-54.1	-43.5	-21.25	22.25
	HT/VHT20 Beam Forming, M0 to M7	2	17	9	-58	-57.3			-45.6	-21.25	24.35
	HT/VHT20 Beam Forming, M8 to M15	2	17	6	-58	-57.3			-48.6	-21.25	27.35
	HT/VHT20 Beam Forming, M0 to M7	3	17	11	-58	-57.3	-54.3		-40.4	-21.25	19.15
	HT/VHT20 Beam Forming, M8 to M15	3	17	8	-58	-57.3	-54.3		-43.4	-21.25	22.15
	HT/VHT20 Beam Forming, M16 to M23	3	17	6	-58	-57.3	-54.3		-45.4	-21.25	24.15
	HT/VHT20 Beam Forming, M0 to M7	4	17	12	-58	-57.3	-54.3	-54.1	-37.5	-21.25	16.25
	HT/VHT20 Beam Forming, M8 to M15	4	17	9	-58	-57.3	-54.3	-54.1	-40.5	-21.25	19.25
	HT/VHT20 Beam Forming, M16 to M23	4	17	7	-58	-57.3	-54.3	-54.1	-42.5	-21.25	21.25
	HT/VHT20 Beam Forming, M24 to M31	4	17	6	-58	-57.3	-54.3	-54.1	-43.5	-21.25	22.25
	HT/VHT20 STBC, M0 to M7	2	17	6	-58	-57.3			-48.6	-21.25	27.35
	HT/VHT20 STBC, M0 to M7	3	17	6	-58	-57.3	-54.3		-45.4	-21.25	24.15
	HT/VHT20 STBC, M0 to M7	4	17	6	-58	-57.3	-54.3	-54.1	-43.5	-21.25	22.25
5795	Non HT40, 6 to 54 Mbps	1	17	6	-55				-48.9	-21.25	27.65
	Non HT40, 6 to 54 Mbps	2	17	6	-55	-57.7			-47	-21.25	25.75
	Non HT40, 6 to 54 Mbps	3	17	6	-55	-57.7	-55.7		-45.1	-21.25	23.85
	Non HT40, 6 to 54 Mbps	4	17	6	-55	-57.7	-55.7	-56	-43.8	-21.25	22.55
	HT/VHT40, M0 to M7	1	17	6	-58.7				-52.6	-21.25	31.35
	HT/VHT40, M0 to M7	2	17	6	-58.7	-58.4			-49.4	-21.25	28.15
	HT/VHT40, M8 to M15	2	17	6	-58.7	-58.4			-49.4	-21.25	28.15
	HT/VHT40, M0 to M7	3	17	6	-58.7	-58.4	-55.4		-46.3	-21.25	25.05

	HT/VHT40, M8 to M15	3	17	6	-58.7	-58.4	-55.4		-46.3	-21.25	25.05
	HT/VHT40, M16 to M23	3	17	6	-58.7	-58.4	-55.4		-46.3	-21.25	25.05
	HT/VHT40, M0 to M7	4	17	6	-58.7	-58.4	-55.4	-55.5	-44.6	-21.25	23.35
	HT/VHT40, M8 to M15	4	17	6	-58.7	-58.4	-55.4	-55.5	-44.6	-21.25	23.35
	HT/VHT40, M16 to M23	4	17	6	-58.7	-58.4	-55.4	-55.5	-44.6	-21.25	23.35
	HT/VHT40, M24 to M31	4	17	6	-58.7	-58.4	-55.4	-55.5	-44.6	-21.25	23.35
	HT/VHT40 Beam Forming, M0 to M7	2	17	9	-58.7	-58.4			-46.4	-21.25	25.15
	HT/VHT40 Beam Forming, M8 to M15	2	17	6	-58.7	-58.4			-49.4	-21.25	28.15
	HT/VHT40 Beam Forming, M0 to M7	3	17	11	-58.7	-58.4	-55.4		-41.3	-21.25	20.05
	HT/VHT40 Beam Forming, M8 to M15	3	17	8	-58.7	-58.4	-55.4		-44.3	-21.25	23.05
	HT/VHT40 Beam Forming, M16 to M23	3	17	6	-58.7	-58.4	-55.4		-46.3	-21.25	25.05
	HT/VHT40 Beam Forming, M0 to M7	4	17	12	-58.7	-58.4	-55.4	-55.5	-38.6	-21.25	17.35
	HT/VHT40 Beam Forming, M8 to M15	4	17	9	-58.7	-58.4	-55.4	-55.5	-41.6	-21.25	20.35
	HT/VHT40 Beam Forming, M16 to M23	4	17	7	-58.7	-58.4	-55.4	-55.5	-43.6	-21.25	22.35
	HT/VHT40 Beam Forming, M24 to M31	4	17	6	-58.7	-58.4	-55.4	-55.5	-44.6	-21.25	23.35
	HT/VHT40 STBC, M0 to M7	2	17	6	-58.7	-58.4			-49.4	-21.25	28.15
	HT/VHT40 STBC, M0 to M7	3	17	6	-58.7	-58.4	-55.4		-46.3	-21.25	25.05
	HT/VHT40 STBC, M0 to M7	4	17	6	-58.7	-58.4	-55.4	-55.5	-44.6	-21.25	23.35
5825	Non HT20, 6 to 54 Mbps	1	17	6	-55.4				-49.3	-21.25	28.05
	Non HT20, 6 to 54 Mbps	2	17	6	-55.4	-57.6			-47.2	-21.25	25.95
	Non HT20, 6 to 54 Mbps	3	17	6	-55.4	-57.6	-58.5		-46.1	-21.25	24.85
	Non HT20, 6 to 54 Mbps	4	17	6	-55.4	-57.6	-58.5	-55.7	-44.5	-21.25	23.25
	Non HT20 Beam Forming, 6 to 54 Mbps	2	17	9	-55.4	-57.6			-44.2	-21.25	22.95
	Non HT20 Beam Forming, 6 to 54 Mbps	3	17	11	-55.4	-57.6	-58.5		-41.1	-21.25	19.85
	Non HT20 Beam Forming, 6 to 54 Mbps	4	17	12	-55.4	-57.6	-58.5	-55.7	-38.5	-21.25	17.25
	HT/VHT20, M0 to M7	1	17	6	-56.5				-50.4	-21.25	29.15
	HT/VHT20, M0 to M7	2	17	6	-56.5	-55.2			-46.7	-21.25	25.45
	HT/VHT20, M8 to M15	2	17	6	-56.5	-55.2			-46.7	-21.25	25.45
	HT/VHT20, M0 to M7	3	17	6	-56.5	-55.2	-57.2		-45.4	-21.25	24.15
	HT/VHT20, M8 to M15	3	17	6	-56.5	-55.2	-57.2		-45.4	-21.25	24.15
	HT/VHT20, M16 to M23	3	17	6	-56.5	-55.2	-57.2		-45.4	-21.25	24.15
	HT/VHT20, M0 to M7	4	17	6	-56.5	-55.2	-57.2	-55.1	-43.8	-21.25	22.55
	HT/VHT20, M8 to M15	4	17	6	-56.5	-55.2	-57.2	-55.1	-43.8	-21.25	22.55
	HT/VHT20, M16 to M23	4	17	6	-56.5	-55.2	-57.2	-55.1	-43.8	-21.25	22.55
	HT/VHT20, M24 to M31	4	17	6	-56.5	-55.2	-57.2	-55.1	-43.8	-21.25	22.55
	HT/VHT20 Beam Forming, M0 to M7	2	17	9	-56.5	-55.2			-43.7	-21.25	22.45
	HT/VHT20 Beam Forming, M8 to M15	2	17	6	-56.5	-55.2			-46.7	-21.25	25.45
	HT/VHT20 Beam Forming, M0 to M7	3	17	11	-56.5	-55.2	-57.2		-40.4	-21.25	19.15
	HT/VHT20 Beam Forming, M8 to M15	3	17	8	-56.5	-55.2	-57.2		-43.4	-21.25	22.15
	HT/VHT20 Beam Forming, M16 to M23	3	17	6	-56.5	-55.2	-57.2		-45.4	-21.25	24.15

HT/VHT20 Beam Forming, M0 to M7	4	17	12	-56.5	-55.2	-57.2	-55.1	-37.8	-21.25	16.55
HT/VHT20 Beam Forming, M8 to M15	4	17	9	-56.5	-55.2	-57.2	-55.1	-40.8	-21.25	19.55
HT/VHT20 Beam Forming, M16 to M23	4	17	7	-56.5	-55.2	-57.2	-55.1	-42.8	-21.25	21.55
HT/VHT20 Beam Forming, M24 to M31	4	17	6	-56.5	-55.2	-57.2	-55.1	-43.8	-21.25	22.55
HT/VHT20 STBC, M0 to M7	2	17	6	-56.5	-55.2			-46.7	-21.25	25.45
HT/VHT20 STBC, M0 to M7	3	17	6	-56.5	-55.2	-57.2		-45.4	-21.25	24.15
HT/VHT20 STBC, M0 to M7	4	17	6	-56.5	-55.2	-57.2	-55.1	-43.8	-21.25	22.55

5.6.5 Conducted Spurious Emissions Plots – Peak 30MHz -12GHz

VHT80 Beam Forming, 5775MHz, M0x1

Antenna A

Antenna B

Antenna C

Antenna D


5.6.6 Conducted Spurious Emissions Data Tables - Average

Frequency (MHz)	Mode	Tx Paths	Index Power (dBm)	Correlated Antenna Gain (dBi)	Tx 1 Spur Power (dBm)	Tx 2 Spur Power (dBm)	Tx 3 Spur Power (dBm)	Tx 4 Spur Power (dBm)	Total Conducted Spur (dBm)	Limit (dBm)	Margin (dB)
5720	Non HT20, 6 to 54 Mbps	1	17	6	-61.6				-55.5	-41.25	14.2
	Non HT20, 6 to 54 Mbps	2	17	6	-61.6	-63.3			-53.2	-41.25	12
	Non HT20, 6 to 54 Mbps	3	13	6	-65	-66.8	-63.5		-54	-41.25	12.7
	Non HT20, 6 to 54 Mbps	4	11	6	-66.6	-66.7	-66.3	-68.5	-54.8	-41.25	13.5
	Non HT20 Beam Forming, 6 to 54 Mbps	2	14	9	-64.8	-63.5			-52	-41.25	10.7
	Non HT20 Beam Forming, 6 to 54 Mbps	3	11	11	-66.6	-66.7	-66.3		-50.6	-41.25	9.4
	Non HT20 Beam Forming, 6 to 54 Mbps	4	8	12	-70.4	-69.9	-66.1	-68.4	-50.2	-41.25	9
	HT/VHT20, M0 to M7	1	17	6	-61.8				-55.7	-41.25	14.5
	HT/VHT20, M0 to M7	2	17	6	-61.8	-63.4			-53.5	-41.25	12.2
	HT/VHT20, M8 to M15	2	17	6	-61.8	-63.4			-53.5	-41.25	12.2
	HT/VHT20, M0 to M7	3	13	6	-64.9	-66.8	-63.3		-53.9	-41.25	12.7
	HT/VHT20, M8 to M15	3	16	6	-64.7	-63.5	-63.2		-52.9	-41.25	11.7
	HT/VHT20, M16 to M23	3	16	6	-64.7	-63.5	-63.2		-52.9	-41.25	11.7
	HT/VHT20, M0 to M7	4	9	6	-66.5	-70.2	-66.2	-68.3	-55.4	-41.25	14.2
	HT/VHT20, M8 to M15	4	14	6	-64.7	-63.5	-63.4	-64.8	-52	-41.25	10.7
	HT/VHT20, M16 to M23	4	15	6	-64.6	-63.6	-63.4	-64.6	-51.9	-41.25	10.7
	HT/VHT20, M24 to M31	4	15	6	-64.6	-63.6	-63.4	-64.6	-51.9	-41.25	10.7
	HT/VHT20 Beam Forming, M0 to M7	2	14	9	-64.7	-63.5			-52	-41.25	10.7
	HT/VHT20 Beam Forming, M8 to M15	2	17	6	-61.8	-63.4			-53.5	-41.25	12.2
	HT/VHT20 Beam Forming, M0 to M7	3	11	11	-66.4	-66.8	-66.3		-50.7	-41.25	9.4
	HT/VHT20 Beam Forming, M8 to M15	3	14	8	-64.7	-63.5	-63.4		-51	-41.25	9.7
	HT/VHT20 Beam Forming, M16 to M23	3	16	6	-64.7	-63.5	-63.2		-52.9	-41.25	11.7
	HT/VHT20 Beam Forming, M0 to M7	4	8	12	-70.2	-70.2	-66.2	-68.4	-50.3	-41.25	9.1
	HT/VHT20 Beam Forming, M8 to M15	4	11	9	-66.4	-66.8	-66.3	-68.3	-51.8	-41.25	10.6
	HT/VHT20 Beam Forming, M16 to M23	4	13	7	-64.9	-66.8	-63.3	-64.6	-51.6	-41.25	10.4
	HT/VHT20 Beam Forming, M24 to M31	4	15	6	-64.6	-63.6	-63.4	-64.6	-51.9	-41.25	10.7
	HT/VHT20 STBC, M0 to M7	2	17	6	-61.8	-63.4			-53.5	-41.25	12.2
	HT/VHT20 STBC, M0 to M7	3	16	6	-64.7	-63.5	-63.2		-52.9	-41.25	11.7
	HT/VHT20 STBC, M0 to M7	4	14	6	-64.7	-63.5	-63.4	-64.8	-52	-41.25	10.7

5745	Non HT20, 6 to 54 Mbps	1	17	6	-65.4				-59.3	-41.25	18
	Non HT20, 6 to 54 Mbps	2	17	6	-65.4	-65.6			-56.4	-41.25	15.1
	Non HT20, 6 to 54 Mbps	3	17	6	-65.4	-65.6	-63.4		-53.8	-41.25	12.5
	Non HT20, 6 to 54 Mbps	4	17	6	-65.4	-65.6	-63.4	-67.1	-53	-41.25	11.8
	Non HT20 Beam Forming, 6 to 54 Mbps	2	17	9	-65.4	-65.6			-53.4	-41.25	12.1
	Non HT20 Beam Forming, 6 to 54 Mbps	3	17	11	-65.4	-65.6	-63.4		-48.8	-41.25	7.5
	Non HT20 Beam Forming, 6 to 54 Mbps	4	17	12	-65.4	-65.6	-63.4	-67.1	-47	-41.25	5.8
	HT/VHT20, M0 to M7	1	17	6	-65.3				-59.2	-41.25	18
	HT/VHT20, M0 to M7	2	17	6	-65.3	-65.6			-56.4	-41.25	15.1
	HT/VHT20, M8 to M15	2	17	6	-65.3	-65.6			-56.4	-41.25	15.1
	HT/VHT20, M0 to M7	3	17	6	-65.3	-65.6	-63		-53.6	-41.25	12.4
	HT/VHT20, M8 to M15	3	17	6	-65.3	-65.6	-63		-53.6	-41.25	12.4
	HT/VHT20, M16 to M23	3	17	6	-65.3	-65.6	-63		-53.6	-41.25	12.4
	HT/VHT20, M0 to M7	4	17	6	-65.3	-65.6	-63	-66.7	-52.8	-41.25	11.6
	HT/VHT20, M8 to M15	4	17	6	-65.3	-65.6	-63	-66.7	-52.8	-41.25	11.6
	HT/VHT20, M16 to M23	4	17	6	-65.3	-65.6	-63	-66.7	-52.8	-41.25	11.6
	HT/VHT20, M24 to M31	4	17	6	-65.3	-65.6	-63	-66.7	-52.8	-41.25	11.6
	HT/VHT20 Beam Forming, M0 to M7	2	17	9	-65.3	-65.6			-53.4	-41.25	12.1
	HT/VHT20 Beam Forming, M8 to M15	2	17	6	-65.3	-65.6			-56.4	-41.25	15.1
	HT/VHT20 Beam Forming, M0 to M7	3	17	11	-65.3	-65.6	-63		-48.6	-41.25	7.4
	HT/VHT20 Beam Forming, M8 to M15	3	17	8	-65.3	-65.6	-63		-51.6	-41.25	10.4
	HT/VHT20 Beam Forming, M16 to M23	3	17	6	-65.3	-65.6	-63		-53.6	-41.25	12.4
	HT/VHT20 Beam Forming, M0 to M7	4	17	12	-65.3	-65.6	-63	-66.7	-46.8	-41.25	5.6
	HT/VHT20 Beam Forming, M8 to M15	4	17	9	-65.3	-65.6	-63	-66.7	-49.8	-41.25	8.6
	HT/VHT20 Beam Forming, M16 to M23	4	17	7	-65.3	-65.6	-63	-66.7	-51.8	-41.25	10.6
	HT/VHT20 Beam Forming, M24 to M31	4	17	6	-65.3	-65.6	-63	-66.7	-52.8	-41.25	11.6
	HT/VHT20 STBC, M0 to M7	2	17	6	-65.3	-65.6			-56.4	-41.25	15.1
	HT/VHT20 STBC, M0 to M7	3	17	6	-65.3	-65.6	-63		-53.6	-41.25	12.4
	HT/VHT20 STBC, M0 to M7	4	17	6	-65.3	-65.6	-63	-66.7	-52.8	-41.25	11.6
5755	Non HT40, 6 to 54 Mbps	1	17	6	-64.2				-58.1	-41.25	16.8
	Non HT40, 6 to 54 Mbps	2	17	6	-64.2	-65.4			-55.6	-41.25	14.3
	Non HT40, 6 to 54 Mbps	3	17	6	-64.2	-65.4	-63.8		-53.5	-41.25	12.2
	Non HT40, 6 to 54 Mbps	4	17	6	-64.2	-65.4	-63.8	-64.4	-52.2	-41.25	11
	HT/VHT40, M0 to M7	1	17	6	-64.1				-58	-41.25	16.7
	HT/VHT40, M0 to M7	2	17	6	-64.1	-64.9			-55.3	-41.25	14.1
	HT/VHT40, M8 to M15	2	17	6	-64.1	-64.9			-55.3	-41.25	14.1
	HT/VHT40, M0 to M7	3	17	6	-64.1	-64.9	-63.8		-53.3	-41.25	12.1
	HT/VHT40, M8 to M15	3	17	6	-64.1	-64.9	-63.8		-53.3	-41.25	12.1
	HT/VHT40, M16 to M23	3	17	6	-64.1	-64.9	-63.8		-53.3	-41.25	12.1

	HT/VHT40, M0 to M7	4	17	6	-64.1	-64.9	-63.8	-64.3	-52.1	-41.25	10.9
	HT/VHT40, M8 to M15	4	17	6	-64.1	-64.9	-63.8	-64.3	-52.1	-41.25	10.9
	HT/VHT40, M16 to M23	4	17	6	-64.1	-64.9	-63.8	-64.3	-52.1	-41.25	10.9
	HT/VHT40, M24 to M31	4	17	6	-64.1	-64.9	-63.8	-64.3	-52.1	-41.25	10.9
	HT/VHT40 Beam Forming, M0 to M7	2	17	9	-64.1	-64.9			-52.3	-41.25	11.1
	HT/VHT40 Beam Forming, M8 to M15	2	17	6	-64.1	-64.9			-55.3	-41.25	14.1
	HT/VHT40 Beam Forming, M0 to M7	3	17	11	-64.1	-64.9	-63.8		-48.3	-41.25	7.1
	HT/VHT40 Beam Forming, M8 to M15	3	17	8	-64.1	-64.9	-63.8		-51.3	-41.25	10.1
	HT/VHT40 Beam Forming, M16 to M23	3	17	6	-64.1	-64.9	-63.8		-53.3	-41.25	12.1
	HT/VHT40 Beam Forming, M0 to M7	4	17	12	-64.1	-64.9	-63.8	-64.3	-46.1	-41.25	4.9
	HT/VHT40 Beam Forming, M8 to M15	4	17	9	-64.1	-64.9	-63.8	-64.3	-49.1	-41.25	7.9
	HT/VHT40 Beam Forming, M16 to M23	4	17	7	-64.1	-64.9	-63.8	-64.3	-51.1	-41.25	9.9
	HT/VHT40 Beam Forming, M24 to M31	4	17	6	-64.1	-64.9	-63.8	-64.3	-52.1	-41.25	10.9
	HT/VHT40 STBC, M0 to M7	2	17	6	-64.1	-64.9			-55.3	-41.25	14.1
	HT/VHT40 STBC, M0 to M7	3	17	6	-64.1	-64.9	-63.8		-53.3	-41.25	12.1
	HT/VHT40 STBC, M0 to M7	4	17	6	-64.1	-64.9	-63.8	-64.3	-52.1	-41.25	10.9
5775	Non HT80, 6 to 54 Mbps	1	17	6	-63.5				-57.4	-41.25	16.1
	Non HT80, 6 to 54 Mbps	2	17	6	-63.5	-64.5			-54.8	-41.25	13.6
	Non HT80, 6 to 54 Mbps	3	17	6	-63.5	-64.5	-63.2		-52.8	-41.25	11.5
	Non HT80, 6 to 54 Mbps	4	17	6	-63.5	-64.5	-63.2	-63.3	-51.4	-41.25	10.2
	VHT80, M0 to M9 1ss	1	17	6	-63.2				-56.5	-41.25	15.3
	VHT80, M0 to M9 1ss	2	17	6	-63.2	-64.5			-54.1	-41.25	12.8
	VHT80, M0 to M9 2ss	2	17	6	-63.2	-64.5			-54.1	-41.25	12.8
	VHT80, M0 to M9 1ss	3	17	6	-63.2	-64.5	-63.4		-52.2	-41.25	10.9
	VHT80, M0 to M9 2ss	3	17	6	-63.2	-64.5	-63.4		-52.2	-41.25	10.9
	VHT80, M0 to M9 3ss	3	17	6	-63.2	-64.5	-63.4		-52.2	-41.25	10.9
	VHT80, M0 to M9 1ss	4	17	6	-63.2	-64.5	-63.4	-63.5	-50.9	-41.25	9.7
	VHT80, M0 to M9 2ss	4	17	6	-63.2	-64.5	-63.4	-63.5	-50.9	-41.25	9.7
	VHT80, M0 to M9 3ss	4	17	6	-63.2	-64.5	-63.4	-63.5	-50.9	-41.25	9.7
	VHT80, M0 to M9 4ss	4	17	6	-63.2	-64.5	-63.4	-63.5	-50.9	-41.25	9.7
	VHT80 Beam Forming, M0 to M9 1ss	2	17	9	-63.2	-64.5			-51.1	-41.25	9.8
	VHT80 Beam Forming, M0 to M9 2ss	2	17	6	-63.2	-64.5			-54.1	-41.25	12.8
	VHT80 Beam Forming, M0 to M9 1ss	3	17	11	-63.2	-64.5	-63.4		-47.2	-41.25	5.9
	VHT80 Beam Forming, M0 to M9 2ss	3	17	8	-63.2	-64.5	-63.4		-50.2	-41.25	8.9
	VHT80 Beam Forming, M0 to M9 3ss	3	17	6	-63.2	-64.5	-63.4		-52.2	-41.25	10.9
	VHT80 Beam Forming, M0 to M9 1ss	4	17	12	-63.2	-64.5	-63.4	-63.5	-44.9	-41.25	3.7
	VHT80 Beam Forming, M0 to M9 2ss	4	17	9	-63.2	-64.5	-63.4	-63.5	-47.9	-41.25	6.7
	VHT80 Beam Forming, M0 to M9 3ss	4	17	7	-63.2	-64.5	-63.4	-63.5	-49.9	-41.25	8.7
	VHT80 Beam Forming, M0 to M9 4ss	4	17	6	-63.2	-64.5	-63.4	-63.5	-50.9	-41.25	9.7
	VHT80 STBC, M0 to M9 1ss	2	17	6	-63.2	-64.5			-54.1	-41.25	12.8

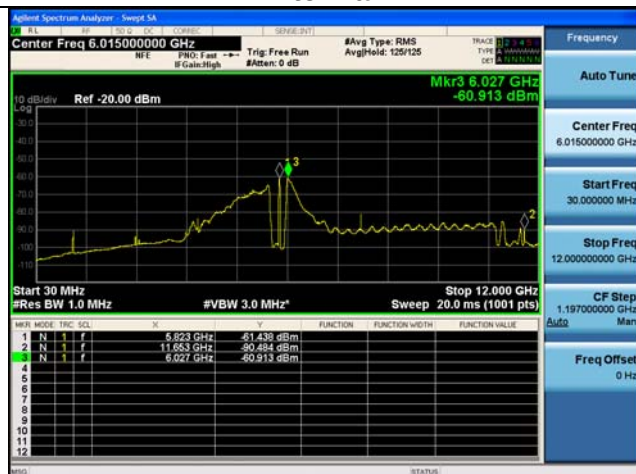
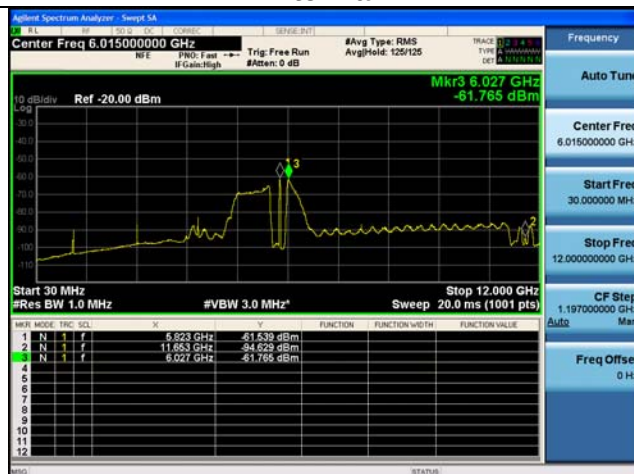
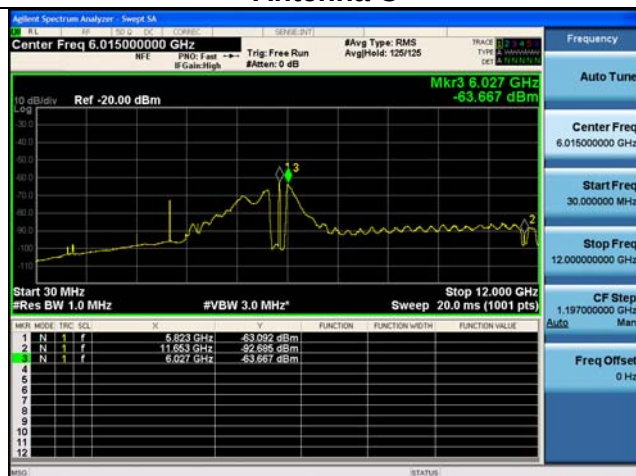
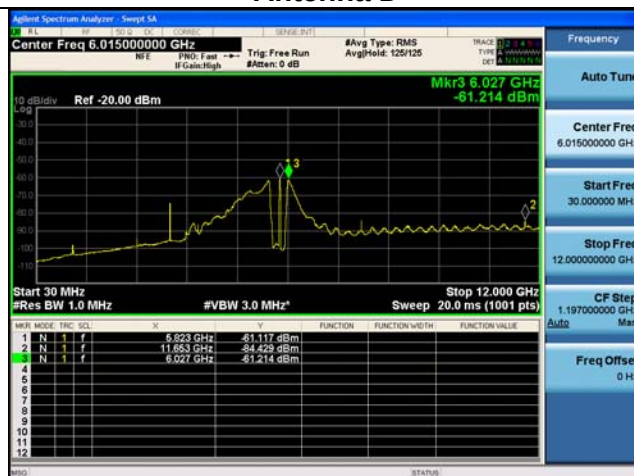
	VHT80 STBC, M0 to M9 1ss	3	17	6	-63.2	-64.5	-63.4		-52.2	-41.25	10.9
	VHT80 STBC, M0 to M9 1ss	4	17	6	-63.2	-64.5	-63.4	-63.5	-50.9	-41.25	9.7
5785	Non HT20, 6 to 54 Mbps	1	17	6	-63.7				-57.6	-41.25	16.3
	Non HT20, 6 to 54 Mbps	2	17	6	-63.7	-64.8			-55.1	-41.25	13.8
	Non HT20, 6 to 54 Mbps	3	17	6	-63.7	-64.8	-63.4		-53	-41.25	11.8
	Non HT20, 6 to 54 Mbps	4	17	6	-63.7	-64.8	-63.4	-63.9	-51.8	-41.25	10.5
	Non HT20 Beam Forming, 6 to 54 Mbps	2	17	9	-63.7	-64.8			-52.1	-41.25	10.8
	Non HT20 Beam Forming, 6 to 54 Mbps	3	17	11	-63.7	-64.8	-63.4		-48	-41.25	6.8
	Non HT20 Beam Forming, 6 to 54 Mbps	4	17	12	-63.7	-64.8	-63.4	-63.9	-45.8	-41.25	4.5
	HT/VHT20, M0 to M7	1	17	6	-63.6				-57.5	-41.25	16.3
	HT/VHT20, M0 to M7	2	17	6	-63.6	-64.5			-55	-41.25	13.7
	HT/VHT20, M8 to M15	2	17	6	-63.6	-64.5			-55	-41.25	13.7
	HT/VHT20, M0 to M7	3	17	6	-63.6	-64.5	-63.1		-52.9	-41.25	11.6
	HT/VHT20, M8 to M15	3	17	6	-63.6	-64.5	-63.1		-52.9	-41.25	11.6
	HT/VHT20, M16 to M23	3	17	6	-63.6	-64.5	-63.1		-52.9	-41.25	11.6
	HT/VHT20, M0 to M7	4	17	6	-63.6	-64.5	-63.1	-63.7	-51.6	-41.25	10.4
	HT/VHT20, M8 to M15	4	17	6	-63.6	-64.5	-63.1	-63.7	-51.6	-41.25	10.4
	HT/VHT20, M16 to M23	4	17	6	-63.6	-64.5	-63.1	-63.7	-51.6	-41.25	10.4
	HT/VHT20, M24 to M31	4	17	6	-63.6	-64.5	-63.1	-63.7	-51.6	-41.25	10.4
	HT/VHT20 Beam Forming, M0 to M7	2	17	9	-63.6	-64.5			-52	-41.25	10.7
	HT/VHT20 Beam Forming, M8 to M15	2	17	6	-63.6	-64.5			-55	-41.25	13.7
	HT/VHT20 Beam Forming, M0 to M7	3	17	11	-63.6	-64.5	-63.1		-47.9	-41.25	6.6
	HT/VHT20 Beam Forming, M8 to M15	3	17	8	-63.6	-64.5	-63.1		-50.9	-41.25	9.6
	HT/VHT20 Beam Forming, M16 to M23	3	17	6	-63.6	-64.5	-63.1		-52.9	-41.25	11.6
	HT/VHT20 Beam Forming, M0 to M7	4	17	12	-63.6	-64.5	-63.1	-63.7	-45.6	-41.25	4.4
	HT/VHT20 Beam Forming, M8 to M15	4	17	9	-63.6	-64.5	-63.1	-63.7	-48.6	-41.25	7.4
	HT/VHT20 Beam Forming, M16 to M23	4	17	7	-63.6	-64.5	-63.1	-63.7	-50.6	-41.25	9.4
	HT/VHT20 Beam Forming, M24 to M31	4	17	6	-63.6	-64.5	-63.1	-63.7	-51.6	-41.25	10.4
	HT/VHT20 STBC, M0 to M7	2	17	6	-63.6	-64.5			-55	-41.25	13.7
	HT/VHT20 STBC, M0 to M7	3	17	6	-63.6	-64.5	-63.1		-52.9	-41.25	11.6
	HT/VHT20 STBC, M0 to M7	4	17	6	-63.6	-64.5	-63.1	-63.7	-51.6	-41.25	10.4
5795	Non HT40, 6 to 54 Mbps	1	17	6	-63.7				-57.6	-41.25	16.3
	Non HT40, 6 to 54 Mbps	2	17	6	-63.7	-64.6			-55	-41.25	13.7
	Non HT40, 6 to 54 Mbps	3	17	6	-63.7	-64.6	-64.7		-53.4	-41.25	12.1
	Non HT40, 6 to 54 Mbps	4	17	6	-63.7	-64.6	-64.7	-63.8	-52	-41.25	10.8
	HT/VHT40, M0 to M7	1	17	6	-64.1				-58	-41.25	16.7
	HT/VHT40, M0 to M7	2	17	6	-64.1	-64.9			-55.3	-41.25	14.1
	HT/VHT40, M8 to M15	2	17	6	-64.1	-64.9			-55.3	-41.25	14.1
	HT/VHT40, M0 to M7	3	17	6	-64.1	-64.9	-64.8		-53.7	-41.25	12.4

	HT/VHT40, M8 to M15	3	17	6	-64.1	-64.9	-64.8		-53.7	-41.25	12.4
	HT/VHT40, M16 to M23	3	17	6	-64.1	-64.9	-64.8		-53.7	-41.25	12.4
	HT/VHT40, M0 to M7	4	17	6	-64.1	-64.9	-64.8	-64.3	-52.4	-41.25	11.1
	HT/VHT40, M8 to M15	4	17	6	-64.1	-64.9	-64.8	-64.3	-52.4	-41.25	11.1
	HT/VHT40, M16 to M23	4	17	6	-64.1	-64.9	-64.8	-64.3	-52.4	-41.25	11.1
	HT/VHT40, M24 to M31	4	17	6	-64.1	-64.9	-64.8	-64.3	-52.4	-41.25	11.1
	HT/VHT40 Beam Forming, M0 to M7	2	17	9	-64.1	-64.9			-52.3	-41.25	11.1
	HT/VHT40 Beam Forming, M8 to M15	2	17	6	-64.1	-64.9			-55.3	-41.25	14.1
	HT/VHT40 Beam Forming, M0 to M7	3	17	11	-64.1	-64.9	-64.8		-48.7	-41.25	7.4
	HT/VHT40 Beam Forming, M8 to M15	3	17	8	-64.1	-64.9	-64.8		-51.7	-41.25	10.4
	HT/VHT40 Beam Forming, M16 to M23	3	17	6	-64.1	-64.9	-64.8		-53.7	-41.25	12.4
	HT/VHT40 Beam Forming, M0 to M7	4	17	12	-64.1	-64.9	-64.8	-64.3	-46.4	-41.25	5.1
	HT/VHT40 Beam Forming, M8 to M15	4	17	9	-64.1	-64.9	-64.8	-64.3	-49.4	-41.25	8.1
	HT/VHT40 Beam Forming, M16 to M23	4	17	7	-64.1	-64.9	-64.8	-64.3	-51.4	-41.25	10.1
	HT/VHT40 Beam Forming, M24 to M31	4	17	6	-64.1	-64.9	-64.8	-64.3	-52.4	-41.25	11.1
	HT/VHT40 STBC, M0 to M7	2	17	6	-64.1	-64.9			-55.3	-41.25	14.1
	HT/VHT40 STBC, M0 to M7	3	17	6	-64.1	-64.9	-64.8		-53.7	-41.25	12.4
	HT/VHT40 STBC, M0 to M7	4	17	6	-64.1	-64.9	-64.8	-64.3	-52.4	-41.25	11.1
5825	Non HT20, 6 to 54 Mbps	1	17	6	-63.6				-57.5	-41.25	16.2
	Non HT20, 6 to 54 Mbps	2	17	6	-63.6	-64.3			-54.8	-41.25	13.5
	Non HT20, 6 to 54 Mbps	3	17	6	-63.6	-64.3	-66.1		-53.6	-41.25	12.4
	Non HT20, 6 to 54 Mbps	4	17	6	-63.6	-64.3	-66.1	-63.8	-52.2	-41.25	10.9
	Non HT20 Beam Forming, 6 to 54 Mbps	2	17	9	-63.6	-64.3			-51.8	-41.25	10.5
	Non HT20 Beam Forming, 6 to 54 Mbps	3	17	11	-63.6	-64.3	-66.1		-48.6	-41.25	7.4
	Non HT20 Beam Forming, 6 to 54 Mbps	4	17	12	-63.6	-64.3	-66.1	-63.8	-46.2	-41.25	4.9
	HT/VHT20, M0 to M7	1	17	6	-60.9				-54.8	-41.25	13.6
	HT/VHT20, M0 to M7	2	17	6	-60.9	-61.8			-52.3	-41.25	11
	HT/VHT20, M8 to M15	2	17	6	-60.9	-61.8			-52.3	-41.25	11
	HT/VHT20, M0 to M7	3	17	6	-60.9	-61.8	-63.7		-51.2	-41.25	9.9
	HT/VHT20, M8 to M15	3	17	6	-60.9	-61.8	-63.7		-51.2	-41.25	9.9
	HT/VHT20, M16 to M23	3	17	6	-60.9	-61.8	-63.7		-51.2	-41.25	9.9
	HT/VHT20, M0 to M7	4	17	6	-60.9	-61.8	-63.7	-61.2	-49.7	-41.25	8.4
	HT/VHT20, M8 to M15	4	17	6	-60.9	-61.8	-63.7	-61.2	-49.7	-41.25	8.4
	HT/VHT20, M16 to M23	4	17	6	-60.9	-61.8	-63.7	-61.2	-49.7	-41.25	8.4
	HT/VHT20, M24 to M31	4	17	6	-60.9	-61.8	-63.7	-61.2	-49.7	-41.25	8.4
	HT/VHT20 Beam Forming, M0 to M7	2	17	9	-60.9	-61.8			-49.3	-41.25	8
	HT/VHT20 Beam Forming, M8 to M15	2	17	6	-60.9	-61.8			-52.3	-41.25	11
	HT/VHT20 Beam Forming, M0 to M7	3	17	11	-60.9	-61.8	-63.7		-46.2	-41.25	4.9
	HT/VHT20 Beam Forming, M8 to M15	3	17	8	-60.9	-61.8	-63.7		-49.2	-41.25	7.9
	HT/VHT20 Beam Forming, M16 to M23	3	17	6	-60.9	-61.8	-63.7		-51.2	-41.25	9.9

HT/VHT20 Beam Forming, M0 to M7	4	17	12	-60.9	-61.8	-63.7	-61.2	-43.7	-41.25	2.4
HT/VHT20 Beam Forming, M8 to M15	4	17	9	-60.9	-61.8	-63.7	-61.2	-46.7	-41.25	5.4
HT/VHT20 Beam Forming, M16 to M23	4	17	7	-60.9	-61.8	-63.7	-61.2	-48.7	-41.25	7.4
HT/VHT20 Beam Forming, M24 to M31	4	17	6	-60.9	-61.8	-63.7	-61.2	-49.7	-41.25	8.4
HT/VHT20 STBC, M0 to M7	2	17	6	-60.9	-61.8			-52.3	-41.25	11
HT/VHT20 STBC, M0 to M7	3	17	6	-60.9	-61.8	-63.7		-51.2	-41.25	9.9
HT/VHT20 STBC, M0 to M7	4	17	6	-60.9	-61.8	-63.7	-61.2	-49.7	-41.25	8.4

5.6.7 Conducted Spurious Emissions Data Plots – Average 30MHz – 12GHz

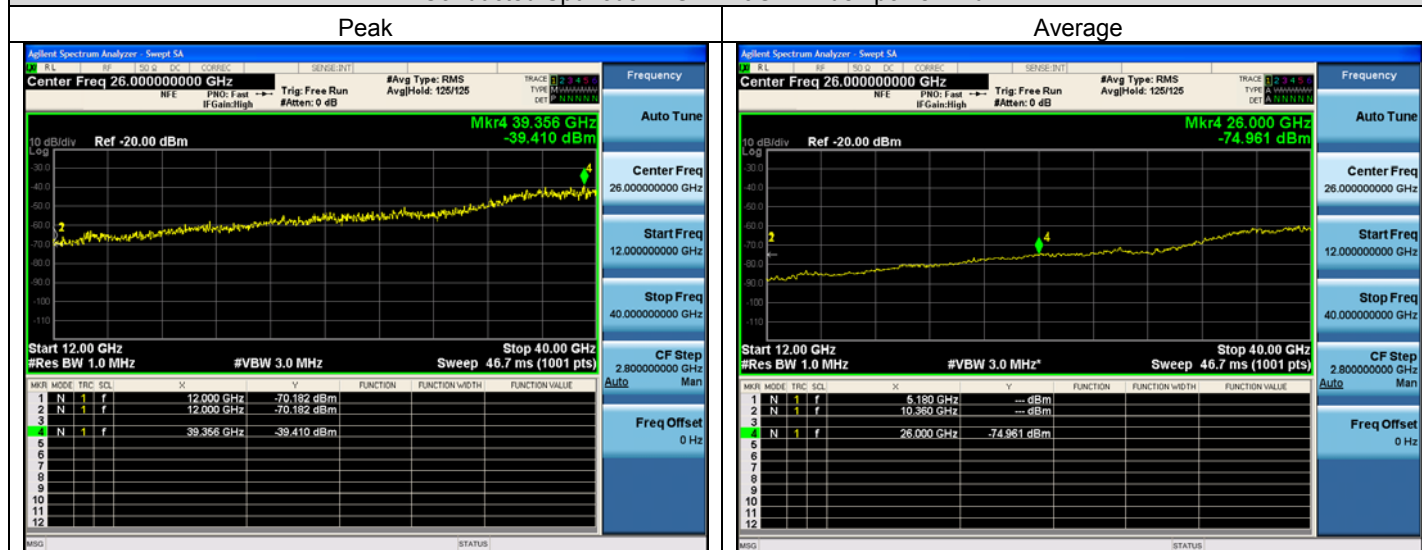
HT20 Beam Forming, 5825MHz, M0

Antenna A

Antenna B

Antenna C

Antenna D


5.6.8 Conducted Spurious Emissions Plots 12-40GHz

Plots representative of all modes

Conducted Spurious 12GHz-40GHz index power 17dBm



5.7 Conducted Band Edge

5.7.1 Conducted Band Edge Test Requirement

15.407

(b) *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:

(4) For transmitters operating in the 5.725-5.85 GHz band:

(i) All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

(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

KDB 789033 D02 General UNII Test Procedures New Rules v01r02

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.

(ii) Section 15.407(b)(4) specifies the unwanted emissions limit for the U-NII-3 band. A band emissions mask is specified in Section 15.407(b)(4)(i). The emission limits are based on the use of a peak detector.

5.7.2 Conducted Band Edge Test Procedure

Ref. 789033 D02 General UNII Test Procedures New Rules v01r02
ANSI C63.10: 2013

Conducted Band Edge

Test Procedure

1. Connect the antenna port(s) to the spectrum analyzer input.
2. Place the radio in continuous transmit mode. Use the procedures in KDB 789033 D02 General UNII Test Procedures New Rules v01r02 to substitute conducted measurements in place of radiated measurements.
3. Configure Spectrum analyzer as per test parameters below (be sure to enter all losses between the transmitter output and the spectrum analyzer).
4. Record the marker. Also measure any emissions in the restricted bands.
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.
6. 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
7. Capture graphs and record pertinent measurement data.

Ref. KDB 789033 D02 General UNII Test Procedures New Rules v01r02
Peak: KDB 789033 Section 5, Average: KDB 789033 Section 6

Conducted Band Edge

Test parameters

- 5. Procedure for Unwanted Maximum Emissions Measurements above 1000 MHz**
- a) Follow the requirements in section II.G.3., "General Requirements for Unwanted Emissions Measurements".
 - b) Maximum emission levels are measured by setting the analyzer as follows: (i) RBW = 1MHz.
 - (ii) VBW $\geq$ 3MHz.
 - (iii) Detector = Peak.
 - (iv) Sweep time = auto.
 - (v) Trace mode = max hold.
 - (vi) Allow sweeps to continue until the trace stabilizes. Note that if the transmission is not continuous, the time required for the trace to stabilize will increase by a factor of approximately 1/x, where x is the duty cycle. For example, at 50 percent duty cycle, the measurement time will increase by a factor of two relative to measurement time for continuous transmission.
- 6. Procedures for Average Unwanted Emissions Measurements above 1000 MHz**
- a) Follow the requirements in section II.G.3., "General Requirements for Unwanted Emissions Measurements".

- b) Average emission levels shall be measured using one of the following two methods.
- d) **Method VB** (Averaging using reduced video bandwidth): Alternative method. (i) RBW = 1MHz.
- (ii) Video bandwidth. • If the EUT is configured to transmit with duty cycle ≥ 98 percent, set $VBW \leq RBW/100$ (i.e., 10 kHz) but not less than 10 Hz.
- If the EUT duty cycle is < 98 percent, set $VBW \geq 1/T$, where T is defined in section II.B.1.a).
- (iii) Video bandwidth mode or display mode • The instrument shall be set to ensure that video filtering is applied in the power domain. Typically, this requires setting the detector mode to RMS and setting the Average-VBW Type to Power (RMS).
- As an alternative, the analyzer may be set to linear detector mode. Ensure that video filtering is applied in linear voltage domain (rather than in a log or dB domain). Some analyzers require linear display mode in order to accomplish this. Others have a setting for Average-VBW Type, which can be set to “Voltage” regardless of the display mode.
- (iv) Detector = Peak.
- (v) Sweep time = auto.
- (vi) Trace mode = max hold.
- (vii) Allow max hold to run for at least 50 traces if the transmitted signal is continuous or has at least 98 percent duty cycle. For lower duty cycles, increase the minimum number of traces by a factor of $1/x$, where x is the duty cycle. For example, use at least 200 traces if the duty cycle is 25 percent. (If a specific emission is demonstrated to be continuous—i.e., 100 percent duty cycle—rather than turning on and off with the transmit cycle, at least 50 traces shall be averaged.)

5.7.3 Conducted Band Edge Test Information

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: March 6, 2019 - March 26, 2019
Test Result: Pass	

Test Equipment

See Appendix A for list of test equipment

5.7.4 Conducted Band Edge Data Tables – Peak

Frequency (MHz)	Mode	Tx Paths	Index Power (dBm)	Correlated Antenna Gain (dBi)	Tx 1 Band edge Level (dBm)	Tx 2 Band edge Level (dBm)	Tx 3 Band edge Level (dBm)	Tx 4 Band edge Level (dBm)	Total Tx Band edge Level (dBm)	Limit (dBm)	Margin (dB)
5745	Non HT20, 6 to 54 Mbps	1	17	6	-53.6				-47.5	-27	20.5
	Non HT20, 6 to 54 Mbps	2	17	6	-53.6	-55.3			-45.2	-27	18.2
	Non HT20, 6 to 54 Mbps	3	17	6	-53.6	-55.3	-55.2		-43.7	-27	16.7
	Non HT20, 6 to 54 Mbps	4	17	6	-53.6	-55.3	-55.2	-56.6	-42.9	-27	15.9
	Non HT20 Beam Forming, 6 to 54 Mbps	2	17	9	-53.6	-55.3			-42.2	-27	15.2
	Non HT20 Beam Forming, 6 to 54 Mbps	3	17	11	-53.6	-55.3	-55.2		-38.7	-27	11.7
	Non HT20 Beam Forming, 6 to 54 Mbps	4	17	12	-53.6	-55.3	-55.2	-56.6	-36.9	-27	9.9
	HT/VHT20, M0 to M7	1	17	6	-54				-47.9	-27	20.9
	HT/VHT20, M0 to M7	2	17	6	-54	-55.1			-45.4	-27	18.4
	HT/VHT20, M8 to M15	2	17	6	-54	-55.1			-45.4	-27	18.4
	HT/VHT20, M0 to M7	3	17	6	-54	-55.1	-55.2		-43.9	-27	16.9
	HT/VHT20, M8 to M15	3	17	6	-54	-55.1	-55.2		-43.9	-27	16.9
	HT/VHT20, M16 to M23	3	17	6	-54	-55.1	-55.2		-43.9	-27	16.9
	HT/VHT20, M0 to M7	4	17	6	-54	-55.1	-55.2	-57.2	-43.1	-27	16.1
	HT/VHT20, M8 to M15	4	17	6	-54	-55.1	-55.2	-57.2	-43.1	-27	16.1
	HT/VHT20, M16 to M23	4	17	6	-54	-55.1	-55.2	-57.2	-43.1	-27	16.1
	HT/VHT20, M24 to M31	4	17	6	-54	-55.1	-55.2	-57.2	-43.1	-27	16.1
	HT/VHT20 Beam Forming, M0 to M7	2	17	9	-54	-55.1			-42.4	-27	15.4
	HT/VHT20 Beam Forming, M8 to M15	2	17	6	-54	-55.1			-45.4	-27	18.4
	HT/VHT20 Beam Forming, M0 to M7	3	17	11	-54	-55.1	-55.2		-38.9	-27	11.9
	HT/VHT20 Beam Forming, M8 to M15	3	17	8	-54	-55.1	-55.2		-41.9	-27	14.9
	HT/VHT20 Beam Forming, M16 to M23	3	17	6	-54	-55.1	-55.2		-43.9	-27	16.9
	HT/VHT20 Beam Forming, M0 to M7	4	17	12	-54	-55.1	-55.2	-57.2	-37.1	-27	10.1
	HT/VHT20 Beam Forming, M8 to M15	4	17	9	-54	-55.1	-55.2	-57.2	-40.1	-27	13.1
	HT/VHT20 Beam Forming, M16 to M23	4	17	7	-54	-55.1	-55.2	-57.2	-42.1	-27	15.1
	HT/VHT20 Beam Forming, M24 to M31	4	17	6	-54	-55.1	-55.2	-57.2	-43.1	-27	16.1

	HT/VHT20 STBC, M0 to M7	2	17	6	-54	-55.1			-45.4	-27	18.4
	HT/VHT20 STBC, M0 to M7	3	17	6	-54	-55.1	-55.2		-43.9	-27	16.9
	HT/VHT20 STBC, M0 to M7	4	17	6	-54	-55.1	-55.2	-57.2	-43.1	-27	16.1
5755	Non HT40, 6 to 54 Mbps	1	17	6	-55.6				-49.5	-27	22.5
	Non HT40, 6 to 54 Mbps	2	17	6	-55.6	-56.7			-47	-27	20
	Non HT40, 6 to 54 Mbps	3	17	6	-55.6	-56.7	-56.1		-45.2	-27	18.2
	Non HT40, 6 to 54 Mbps	4	17	6	-55.6	-56.7	-56.1	-54.4	-43.4	-27	16.4
	HT/VHT40, M0 to M7	1	17	6	-55.8				-49.7	-27	22.7
	HT/VHT40, M0 to M7	2	17	6	-55.8	-56.9			-47.2	-27	20.2
	HT/VHT40, M8 to M15	2	17	6	-55.8	-56.9			-47.2	-27	20.2
	HT/VHT40, M0 to M7	3	17	6	-55.8	-56.9	-56.4		-45.4	-27	18.4
	HT/VHT40, M8 to M15	3	17	6	-55.8	-56.9	-56.4		-45.4	-27	18.4
	HT/VHT40, M16 to M23	3	17	6	-55.8	-56.9	-56.4		-45.4	-27	18.4
	HT/VHT40, M0 to M7	4	17	6	-55.8	-56.9	-56.4	-54.5	-43.7	-27	16.7
	HT/VHT40, M8 to M15	4	17	6	-55.8	-56.9	-56.4	-54.5	-43.7	-27	16.7
	HT/VHT40, M16 to M23	4	17	6	-55.8	-56.9	-56.4	-54.5	-43.7	-27	16.7
	HT/VHT40, M24 to M31	4	17	6	-55.8	-56.9	-56.4	-54.5	-43.7	-27	16.7
	HT/VHT40 Beam Forming, M0 to M7	2	17	9	-55.8	-56.9			-44.2	-27	17.2
	HT/VHT40 Beam Forming, M8 to M15	2	17	6	-55.8	-56.9			-47.2	-27	20.2
	HT/VHT40 Beam Forming, M0 to M7	3	17	11	-55.8	-56.9	-56.4		-40.4	-27	13.4
	HT/VHT40 Beam Forming, M8 to M15	3	17	8	-55.8	-56.9	-56.4		-43.4	-27	16.4
	HT/VHT40 Beam Forming, M16 to M23	3	17	6	-55.8	-56.9	-56.4		-45.4	-27	18.4
	HT/VHT40 Beam Forming, M0 to M7	4	17	12	-55.8	-56.9	-56.4	-54.5	-37.7	-27	10.7
	HT/VHT40 Beam Forming, M8 to M15	4	17	9	-55.8	-56.9	-56.4	-54.5	-40.7	-27	13.7
	HT/VHT40 Beam Forming, M16 to M23	4	17	7	-55.8	-56.9	-56.4	-54.5	-42.7	-27	15.7
	HT/VHT40 Beam Forming, M24 to M31	4	17	6	-55.8	-56.9	-56.4	-54.5	-43.7	-27	16.7
	HT/VHT40 STBC, M0 to M7	2	17	6	-55.8	-56.9			-47.2	-27	20.2
	HT/VHT40 STBC, M0 to M7	3	17	6	-55.8	-56.9	-56.4		-45.4	-27	18.4
	HT/VHT40 STBC, M0 to M7	4	17	6	-55.8	-56.9	-56.4	-54.5	-43.7	-27	16.7
5775	Non HT80, 6 to 54 Mbps	1	17	6	-48.6				-42.5	-27	15.5
	Non HT80, 6 to 54 Mbps	2	17	6	-48.6	-53.3			-41.2	-27	14.2
	Non HT80, 6 to 54 Mbps	3	17	6	-48.6	-53.3	-52.8		-40.1	-27	13.1
	Non HT80, 6 to 54 Mbps	4	17	6	-48.6	-53.3	-52.8	-49.5	-38.4	-27	11.4
	VHT80, M0 to M9 1ss	1	17	6	-48.9				-42.2	-27	15.2
	VHT80, M0 to M9 1ss	2	17	6	-48.9	-54.2			-41.1	-27	14.1
	VHT80, M0 to M9 2ss	2	17	6	-48.9	-54.2			-41.1	-27	14.1
	VHT80, M0 to M9 1ss	3	17	6	-48.9	-54.2	-52.8		-39.9	-27	12.9
	VHT80, M0 to M9 2ss	3	17	6	-48.9	-54.2	-52.8		-39.9	-27	12.9
	VHT80, M0 to M9 3ss	3	17	6	-48.9	-54.2	-52.8		-39.9	-27	12.9

VHT80, M0 to M9 1ss	4	17	6	-48.9	-54.2	-52.8	-49.6	-38.1	-27	11.1
VHT80, M0 to M9 2ss	4	17	6	-48.9	-54.2	-52.8	-49.6	-38.1	-27	11.1
VHT80, M0 to M9 3ss	4	17	6	-48.9	-54.2	-52.8	-49.6	-38.1	-27	11.1
VHT80, M0 to M9 4ss	4	17	6	-48.9	-54.2	-52.8	-49.6	-38.1	-27	11.1
VHT80 Beam Forming, M0 to M9 1ss	2	17	9	-48.9	-54.2			-38.1	-27	11.1
VHT80 Beam Forming, M0 to M9 2ss	2	17	6	-48.9	-54.2			-41.1	-27	14.1
VHT80 Beam Forming, M0 to M9 1ss	3	17	11	-48.9	-54.2	-52.8		-34.9	-27	7.9
VHT80 Beam Forming, M0 to M9 2ss	3	17	8	-48.9	-54.2	-52.8		-37.9	-27	10.9
VHT80 Beam Forming, M0 to M9 3ss	3	17	6	-48.9	-54.2	-52.8		-39.9	-27	12.9
VHT80 Beam Forming, M0 to M9 1ss	4	17	12	-48.9	-54.2	-52.8	-49.6	-32.1	-27	5.1
VHT80 Beam Forming, M0 to M9 2ss	4	17	9	-48.9	-54.2	-52.8	-49.6	-35.1	-27	8.1
VHT80 Beam Forming, M0 to M9 3ss	4	17	7	-48.9	-54.2	-52.8	-49.6	-37.1	-27	10.1
VHT80 Beam Forming, M0 to M9 4ss	4	17	6	-48.9	-54.2	-52.8	-49.6	-38.1	-27	11.1
VHT80 STBC, M0 to M9 1ss	2	17	6	-48.9	-54.2			-41.1	-27	14.1
VHT80 STBC, M0 to M9 1ss	3	17	6	-48.9	-54.2	-52.8		-39.9	-27	12.9
VHT80 STBC, M0 to M9 1ss	4	17	6	-48.9	-54.2	-52.8	-49.6	-38.1	-27	11.1

Frequency (MHz)	Mode	Tx Paths	Index Power (dBm)	Correlated Antenna Gain (dBi)	Tx 1 Band edge Level (dBm)	Tx 2 Band edge Level (dBm)	Tx 3 Band edge Level (dBm)	Tx 4 Band edge Level (dBm)	Total Tx Band edge Level (dBm)	Limit (dBm)	Margin (dB)
5775	Non HT80, 6 to 54 Mbps	1	17	6	-50.4				-44.3	-27	17.3
	Non HT80, 6 to 54 Mbps	2	17	6	-50.4	-52.2			-42	-27	15
	Non HT80, 6 to 54 Mbps	3	17	6	-50.4	-52.2	-50.6		-40.1	-27	13.1
	Non HT80, 6 to 54 Mbps	4	17	6	-50.4	-52.2	-50.6	-51.1	-38.9	-27	11.9
	VHT80, M0 to M9 1ss	1	17	6	-50.5				-43.8	-27	16.8
	VHT80, M0 to M9 1ss	2	17	6	-50.5	-52.2			-41.6	-27	14.6
	VHT80, M0 to M9 2ss	2	17	6	-50.5	-52.2			-41.6	-27	14.6
	VHT80, M0 to M9 1ss	3	17	6	-50.5	-52.2	-50.3		-39.4	-27	12.4
	VHT80, M0 to M9 2ss	3	17	6	-50.5	-52.2	-50.3		-39.4	-27	12.4
	VHT80, M0 to M9 3ss	3	17	6	-50.5	-52.2	-50.3		-39.4	-27	12.4
	VHT80, M0 to M9 1ss	4	17	6	-50.5	-52.2	-50.3	-50.4	-38.1	-27	11.1
	VHT80, M0 to M9 2ss	4	17	6	-50.5	-52.2	-50.3	-50.4	-38.1	-27	11.1
	VHT80, M0 to M9 3ss	4	17	6	-50.5	-52.2	-50.3	-50.4	-38.1	-27	11.1
	VHT80, M0 to M9 4ss	4	17	6	-50.5	-52.2	-50.3	-50.4	-38.1	-27	11.1
	VHT80 Beam Forming, M0 to M9 1ss	2	17	9	-50.5	-52.2			-38.6	-27	11.6
	VHT80 Beam Forming, M0 to M9 2ss	2	17	6	-50.5	-52.2			-41.6	-27	14.6
	VHT80 Beam Forming, M0 to M9 1ss	3	17	11	-50.5	-52.2	-50.3		-34.4	-27	7.4
	VHT80 Beam Forming, M0 to M9 2ss	3	17	8	-50.5	-52.2	-50.3		-37.4	-27	10.4
	VHT80 Beam Forming, M0 to M9 3ss	3	17	6	-50.5	-52.2	-50.3		-39.4	-27	12.4
	VHT80 Beam Forming, M0 to M9 1ss	4	17	12	-50.5	-52.2	-50.3	-50.4	-32.1	-27	5.1
	VHT80 Beam Forming, M0 to M9 2ss	4	17	9	-50.5	-52.2	-50.3	-50.4	-35.1	-27	8.1
	VHT80 Beam Forming, M0 to M9 3ss	4	17	7	-50.5	-52.2	-50.3	-50.4	-37.1	-27	10.1
	VHT80 Beam Forming, M0 to M9 4ss	4	17	6	-50.5	-52.2	-50.3	-50.4	-38.1	-27	11.1
	VHT80 STBC, M0 to M9 1ss	2	17	6	-50.5	-52.2			-41.6	-27	14.6
	VHT80 STBC, M0 to M9 1ss	3	17	6	-50.5	-52.2	-50.3		-39.4	-27	12.4
	VHT80 STBC, M0 to M9 1ss	4	17	6	-50.5	-52.2	-50.3	-50.4	-38.1	-27	11.1
5785	Non HT20, 6 to 54 Mbps	1	17	6	-54.1				-48	-27	21
	Non HT20, 6 to 54 Mbps	2	17	6	-54.1	-53.9			-44.9	-27	17.9

	Non HT20, 6 to 54 Mbps	3	17	6	-54.1	-53.9	-53.1		-42.8	-27	15.8
	Non HT20, 6 to 54 Mbps	4	17	6	-54.1	-53.9	-53.1	-53.9	-41.6	-27	14.6
	Non HT20 Beam Forming, 6 to 54 Mbps	2	17	9	-54.1	-53.9			-41.9	-27	14.9
	Non HT20 Beam Forming, 6 to 54 Mbps	3	17	11	-54.1	-53.9	-53.1		-37.8	-27	10.8
	Non HT20 Beam Forming, 6 to 54 Mbps	4	17	12	-54.1	-53.9	-53.1	-53.9	-35.6	-27	8.6
	HT/VHT20, M0 to M7	1	17	6	-53.6				-47.5	-27	20.5
	HT/VHT20, M0 to M7	2	17	6	-53.6	-53.4			-44.4	-27	17.4
	HT/VHT20, M8 to M15	2	17	6	-53.6	-53.4			-44.4	-27	17.4
	HT/VHT20, M0 to M7	3	17	6	-53.6	-53.4	-53		-42.5	-27	15.5
	HT/VHT20, M8 to M15	3	17	6	-53.6	-53.4	-53		-42.5	-27	15.5
	HT/VHT20, M16 to M23	3	17	6	-53.6	-53.4	-53		-42.5	-27	15.5
	HT/VHT20, M0 to M7	4	17	6	-53.6	-53.4	-53	-53.4	-41.3	-27	14.3
	HT/VHT20, M8 to M15	4	17	6	-53.6	-53.4	-53	-53.4	-41.3	-27	14.3
	HT/VHT20, M16 to M23	4	17	6	-53.6	-53.4	-53	-53.4	-41.3	-27	14.3
	HT/VHT20, M24 to M31	4	17	6	-53.6	-53.4	-53	-53.4	-41.3	-27	14.3
	HT/VHT20 Beam Forming, M0 to M7	2	17	9	-53.6	-53.4			-41.4	-27	14.4
	HT/VHT20 Beam Forming, M8 to M15	2	17	6	-53.6	-53.4			-44.4	-27	17.4
	HT/VHT20 Beam Forming, M0 to M7	3	17	11	-53.6	-53.4	-53		-37.5	-27	10.5
	HT/VHT20 Beam Forming, M8 to M15	3	17	8	-53.6	-53.4	-53		-40.5	-27	13.5
	HT/VHT20 Beam Forming, M16 to M23	3	17	6	-53.6	-53.4	-53		-42.5	-27	15.5
	HT/VHT20 Beam Forming, M0 to M7	4	17	12	-53.6	-53.4	-53	-53.4	-35.3	-27	8.3
	HT/VHT20 Beam Forming, M8 to M15	4	17	9	-53.6	-53.4	-53	-53.4	-38.3	-27	11.3
	HT/VHT20 Beam Forming, M16 to M23	4	17	7	-53.6	-53.4	-53	-53.4	-40.3	-27	13.3
	HT/VHT20 Beam Forming, M24 to M31	4	17	6	-53.6	-53.4	-53	-53.4	-41.3	-27	14.3
	HT/VHT20 STBC, M0 to M7	2	17	6	-53.6	-53.4			-44.4	-27	17.4
	HT/VHT20 STBC, M0 to M7	3	17	6	-53.6	-53.4	-53		-42.5	-27	15.5
	HT/VHT20 STBC, M0 to M7	4	17	6	-53.6	-53.4	-53	-53.4	-41.3	-27	14.3
5795	Non HT40, 6 to 54 Mbps	1	17	6	-54.1				-48	-27	21
	Non HT40, 6 to 54 Mbps	2	17	6	-54.1	-53.8			-44.8	-27	17.8
	Non HT40, 6 to 54 Mbps	3	17	6	-54.1	-53.8	-54		-43	-27	16
	Non HT40, 6 to 54 Mbps	4	17	6	-54.1	-53.8	-54	-53.7	-41.7	-27	14.7
	HT/VHT40, M0 to M7	1	17	6	-53.4				-47.3	-27	20.3
	HT/VHT40, M0 to M7	2	17	6	-53.4	-54.1			-44.6	-27	17.6
	HT/VHT40, M8 to M15	2	17	6	-53.4	-54.1			-44.6	-27	17.6
	HT/VHT40, M0 to M7	3	17	6	-53.4	-54.1	-54.6		-43.1	-27	16.1
	HT/VHT40, M8 to M15	3	17	6	-53.4	-54.1	-54.6		-43.1	-27	16.1
	HT/VHT40, M16 to M23	3	17	6	-53.4	-54.1	-54.6		-43.1	-27	16.1
	HT/VHT40, M0 to M7	4	17	6	-53.4	-54.1	-54.6	-54.4	-42	-27	15
	HT/VHT40, M8 to M15	4	17	6	-53.4	-54.1	-54.6	-54.4	-42	-27	15

	HT/VHT40, M16 to M23	4	17	6	-53.4	-54.1	-54.6	-54.4	-42	-27	15
	HT/VHT40, M24 to M31	4	17	6	-53.4	-54.1	-54.6	-54.4	-42	-27	15
	HT/VHT40 Beam Forming, M0 to M7	2	17	9	-53.4	-54.1			-41.6	-27	14.6
	HT/VHT40 Beam Forming, M8 to M15	2	17	6	-53.4	-54.1			-44.6	-27	17.6
	HT/VHT40 Beam Forming, M0 to M7	3	17	11	-53.4	-54.1	-54.6		-38.1	-27	11.1
	HT/VHT40 Beam Forming, M8 to M15	3	17	8	-53.4	-54.1	-54.6		-41.1	-27	14.1
	HT/VHT40 Beam Forming, M16 to M23	3	17	6	-53.4	-54.1	-54.6		-43.1	-27	16.1
	HT/VHT40 Beam Forming, M0 to M7	4	17	12	-53.4	-54.1	-54.6	-54.4	-36	-27	9
	HT/VHT40 Beam Forming, M8 to M15	4	17	9	-53.4	-54.1	-54.6	-54.4	-39	-27	12
	HT/VHT40 Beam Forming, M16 to M23	4	17	7	-53.4	-54.1	-54.6	-54.4	-41	-27	14
	HT/VHT40 Beam Forming, M24 to M31	4	17	6	-53.4	-54.1	-54.6	-54.4	-42	-27	15
	HT/VHT40 STBC, M0 to M7	2	17	6	-53.4	-54.1			-44.6	-27	17.6
	HT/VHT40 STBC, M0 to M7	3	17	6	-53.4	-54.1	-54.6		-43.1	-27	16.1
	HT/VHT40 STBC, M0 to M7	4	17	6	-53.4	-54.1	-54.6	-54.4	-42	-27	15
5825	Non HT20, 6 to 54 Mbps	1	17	6	-53.7				-47.6	-27	20.6
	Non HT20, 6 to 54 Mbps	2	17	6	-53.7	-53.5			-44.5	-27	17.5
	Non HT20, 6 to 54 Mbps	3	17	6	-53.7	-53.5	-55.3		-43.2	-27	16.2
	Non HT20, 6 to 54 Mbps	4	17	6	-53.7	-53.5	-55.3	-53.4	-41.8	-27	14.8
	Non HT20 Beam Forming, 6 to 54 Mbps	2	17	9	-53.7	-53.5			-41.5	-27	14.5
	Non HT20 Beam Forming, 6 to 54 Mbps	3	17	11	-53.7	-53.5	-55.3		-38.2	-27	11.2
	Non HT20 Beam Forming, 6 to 54 Mbps	4	17	12	-53.7	-53.5	-55.3	-53.4	-35.8	-27	8.8
	HT/VHT20, M0 to M7	1	17	6	-52.4				-46.3	-27	19.3
	HT/VHT20, M0 to M7	2	17	6	-52.4	-52.4			-43.3	-27	16.3
	HT/VHT20, M8 to M15	2	17	6	-52.4	-52.4			-43.3	-27	16.3
	HT/VHT20, M0 to M7	3	17	6	-52.4	-52.4	-53.9		-42	-27	15
	HT/VHT20, M8 to M15	3	17	6	-52.4	-52.4	-53.9		-42	-27	15
	HT/VHT20, M16 to M23	3	17	6	-52.4	-52.4	-53.9		-42	-27	15
	HT/VHT20, M0 to M7	4	17	6	-52.4	-52.4	-53.9	-52.1	-40.6	-27	13.6
	HT/VHT20, M8 to M15	4	17	6	-52.4	-52.4	-53.9	-52.1	-40.6	-27	13.6
	HT/VHT20, M16 to M23	4	17	6	-52.4	-52.4	-53.9	-52.1	-40.6	-27	13.6
	HT/VHT20, M24 to M31	4	17	6	-52.4	-52.4	-53.9	-52.1	-40.6	-27	13.6
	HT/VHT20 Beam Forming, M0 to M7	2	17	9	-52.4	-52.4			-40.3	-27	13.3
	HT/VHT20 Beam Forming, M8 to M15	2	17	6	-52.4	-52.4			-43.3	-27	16.3
	HT/VHT20 Beam Forming, M0 to M7	3	17	11	-52.4	-52.4	-53.9		-37	-27	10
	HT/VHT20 Beam Forming, M8 to M15	3	17	8	-52.4	-52.4	-53.9		-40	-27	13
	HT/VHT20 Beam Forming, M16 to M23	3	17	6	-52.4	-52.4	-53.9		-42	-27	15
	HT/VHT20 Beam Forming, M0 to M7	4	17	12	-52.4	-52.4	-53.9	-52.1	-34.6	-27	7.6
	HT/VHT20 Beam Forming, M8 to M15	4	17	9	-52.4	-52.4	-53.9	-52.1	-37.6	-27	10.6
	HT/VHT20 Beam Forming, M16 to M23	4	17	7	-52.4	-52.4	-53.9	-52.1	-39.6	-27	12.6

	HT/VHT20 Beam Forming, M24 to M31	4	17	6	-52.4	-52.4	-53.9	-52.1	-40.6	-27	13.6
	HT/VHT20 STBC, M0 to M7	2	17	6	-52.4	-52.4			-43.3	-27	16.3
	HT/VHT20 STBC, M0 to M7	3	17	6	-52.4	-52.4	-53.9		-42	-27	15
	HT/VHT20 STBC, M0 to M7	4	17	6	-52.4	-52.4	-53.9	-52.1	-40.6	-27	13.6

5.7.5 Conducted Band Edge Plots

Conducted Band Edge Peak 15407L, 5775MHz, VHT80 Beam Forming, M0x1

Antenna A



Antenna B



Antenna C

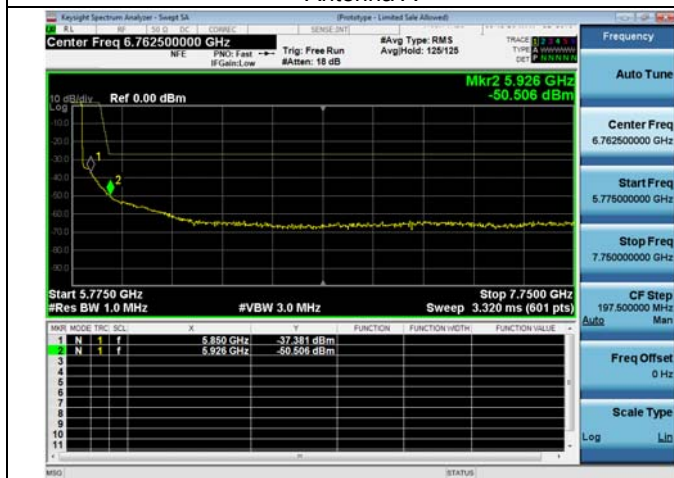


Antenna D

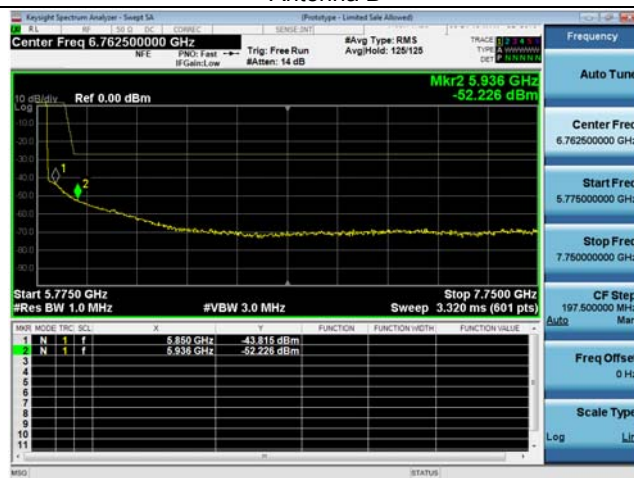


Conducted Band Edge Peak 15407R, 5775MHz, VHT80 Beam Forming, M0x1

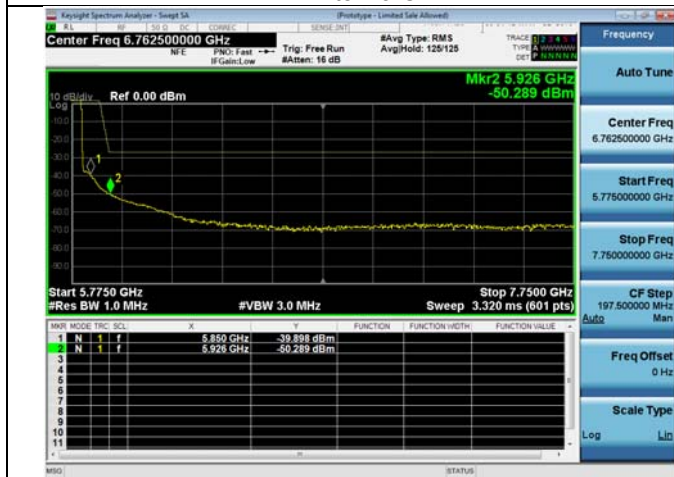
Antenna A



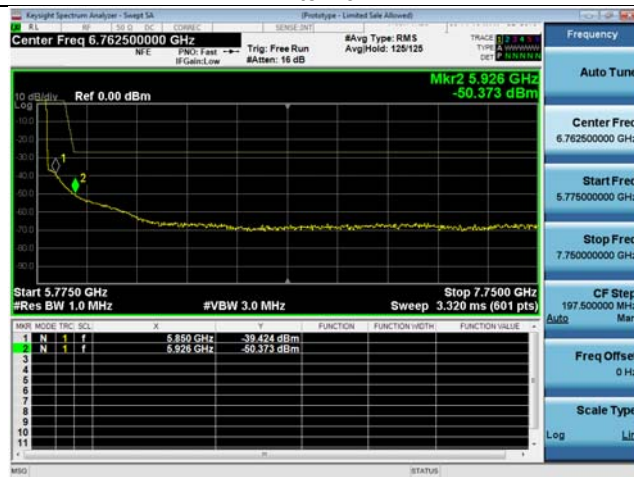
Antenna B



Antenna C



Antenna D



Section 6: Emission Test Results

6.1 Transmitter Radiated Spurious Emissions

Note: Results for Transmitter Radiated Spurious Emissions are in EDCS# 17643833.

6.2 AC Conducted Emissions

Note: Only DC power is supplied to the unit.

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

Equip#	Manufacturer/ Model	Description	Last Cal	Next Due
RF Conducted test equipment 3/12/2019 – 4/29/2019				
53614	Keysight (Agilent/HP) / N9030A-550	PXA Signal Analyzer, 3Hz to 50GHz	17 Jul. 2018	17 Jul. 2019
57475	Cisco	Automated Radio Testing Station	Verify Before Use	Verify Before Use
54237	Keysight (Agilent/HP) / 8710-1765	Preset Torque Wrench, 8in/lbs	14 Feb. 2019	14 Feb. 2020
06325	Lufft / 5063-33W	Dial Hygrometer	27 Aug. 2018	27 Aug. 2019
49516	Keysight (Agilent/HP)	PXA Signal Analyzer, 3Hz to 50GHz	29 Nov. 2018	29 Nov. 2019
57238	NATIONAL INSTRUMENTS / PXI-8115	Embedded Controller	Cal. not required	Cal. not required
57247	NATIONAL INSTRUMENTS / PXI-2796	40 GHz Dual 6x1 Multiplexer (SP6T)	Verify Before Use	Verify Before Use
57248	NATIONAL INSTRUMENTS / PXI-2799	Switch 1x1	Verify Before Use	Verify Before Use
56092	NATIONAL INSTRUMENTS / PXI-2796	40 GHz Dual 6x1 Multiplexer (SP6T)	Verify Before Use	Verify Before Use
57479	Cisco	Automated Radio Testing Station	Verify Before Use	Verify Before Use
57233	NATIONAL INSTRUMENTS / PXI-8115	Embedded Controller	Cal. not required	Cal. not required
57253	NATIONAL INSTRUMENTS / PXI-2796	40 GHz Dual 6x1 Multiplexer (SP6T)	Verify Before Use	Verify Before Use
57254	NATIONAL INSTRUMENTS / PXI-2799	Switch 1x1	Verify Before Use	Verify Before Use
56089	NATIONAL INSTRUMENTS / PXI-2796	40 GHz Dual 6x1 Multiplexer (SP6T)	Verify Before Use	Verify Before Use

Appendix B: 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 (1×10^3)
EN	European Norm	MHz	MegaHertz (1×10^6)
IEC	International Electro technical Commission	GHz	Gigahertz (1×10^9)
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 (1×10^3)
L1	Line 1	μ V	Microvolt (1×10^{-6})
L2	Line2	A	Amp
L3	Line 3	μ A	Micro Amp (1×10^{-6})
DC	Direct Current	mS	Milli Second (1×10^{-3})
RAW	Uncorrected measurement value, as indicated by the measuring device	μ S	Micro Second (1×10^{-6})
RF	Radio Frequency	μ S	Micro Second (1×10^{-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

Appendix C: Software Used to Perform Testing

Automated Testing Software: RF_Automation.vi version 46
Automated Testing Software: RF_Automation.vi version 49
Automated Testing Software: RF_Automation.vi version 51

Appendix D: Test Procedures

Measurements were made in accordance with

- KDB 789033 - D02 General UNII Test Procedures New Rules v01r02
- 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

Appendix E: 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 F: Test Assessment Plan

Test Plan EDCS# 13513665
Power Tables EDCS# 15952129