



RF TEST REPORT

Report No.: SET2019-07181

Product Name: VBox Android TV Gateway Terrestrial Quad Tuner

FCC ID: 2ASUW4144-4174

Model No. : 4144, 4174

Applicant: VBox Communications LTD

Address: 5 Shenkar St., Herzliya 4672505, Israel

Dates of Testing: 06/01/2019 —06/19/2019

Issued by: CCIC Southern Electronic Product Testing (Shenzhen) Co.,
Ltd.

Lab Location: Building 28/29, East of Shigu, Xili Industrial Zone, Xili Road,
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Test Report

Product Name : VBox Android TV Gateway Terrestrial Quad Tuner

Brand Name : 

Trade Name : VBox

Applicant : VBox Communications LTD

Applicant Address : 5 Shenkar St., Herzliya 4672505, Israel

Manufacturer : VBox Communications LTD

Manufacturer Address : 5 Shenkar St., Herzliya 4672505, Israel

Test Standards : 47 CFR Part 15 Subpart E 15.407

Test Result : PASS

Tested by :  2019.06.20
Robin Luo, Test Engineer

Reviewed by :  2019.06.20
Chris You, Senior Engineer

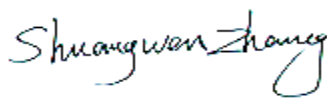
Approved by :  2019.06.20
Shuangwen Zhang, Manager

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Change History		
Issue	Date	Reason for change
1.0	2019.06.20	First edition

1. General Information

1.1. EUT Description

EUT Type	VBox Android TV Gateway Terrestrial Quad Tuner
EUT supports Radios application	WLAN5.0GHz 802.11a/n (HT20/40)/ac(VHT20/40/80)
Product Type	Indoor
Modulation Type	CCK, DQPSK, DBPSK for DSSS 256QAM, 64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode only
Transfer Rate	802.11a: 54/48/36/24/18/12/9/6 Mbps 802.11n : up to 300 Mbps(MIMO) 802.11ac: up to 866 Mbps(MIMO)
Frequency Range	Band UNII-1: 5150 ~ 5250MHz Band UNII-3: 5725 ~ 5850MHz
Channel Bandwidth	802.11a: 20MHz, 802.11n: 20MHz/40MHz 802.11ac: 20MHz/40MHz/80MHz
Channel Number	5150 MHz ~ 5250MHz/5725 MHz ~ 5850MHz:4/5 for 802.11a, 802.11n (HT20), 802.11ac (VHT20), 2 for 802.11n (HT40), 802.11ac(VHT40), 1 for 802.11ac (VHT80)
Antenna Type	Internal
Antenna Gain	Antenna 1/2: 2dBi
Output Power (Max.)	Band UNII-1: 17.31dBm Band UNII-3: 16.86dBm



Frequency	Modulation Mode	TX / RX Function
5.0GHz	802.11a	1TX / 1RX
	802.11n (HT20)	1TX / 1RX or 2TX / 2RX
	802.11n (HT40)	1TX / 1RX or 2TX / 2RX
	802.11ac (VHT20)	1TX / 1RX or 2TX / 2RX
	802.11ac (VHT40)	1TX / 1RX or 2TX / 2RX
	802.11ac (VHT80)	1TX / 1RX or 2TX / 2RX

1.2. Test Standards and Results

The objective of the report is to perform testing according to 47 CFR Part 15 Subpart E for the EUT FCC Certification:

No.	Identity	Document Title
1	47 CFR Part 15 Subpart E § 15.407	Radio Frequency Devices
2	KDB Publication 789033D02v01	Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices Part 15, Subpart E
6	ANSI C63.10-2013	American National Standard for Testing Unlicensed Wireless Devices

Test detailed items/section required by FCC rules, and results are as below:

No.	FCC Rule	Description	Result
1	15.203	Antenna Requirement	PASS
2	15.407(a)	Maximum Conducted Output Power	PASS
3	15.407(a)	Emission Bandwidth (26 dB Bandwidth)	PASS
	15.407(e)	Emission Bandwidth (6 dB Bandwidth)	PASS
4	15.407(a)	Power spectral density (PSD)	PASS
5	15.207	AC Power Line Conducted Emission	PASS
6	15.209 15.407(b)	Radiated Band Edges and Spurious Emission	PASS
7	15.407(g)	Frequency Stability	PASS

1.3. Table for Supporting Units

No.	Equipment	Brand Name	Model Name	Manufacturer	Serial No.	Note
1	Notebook	DELL	PP11L	DELL	H5914A03	FCC DOC

1.4. Channel List

Operated band in 5150 MHz ~ 5250MHz

4 channels are provided for 802.11a, 802.11n-HT20, and 802.11ac-VHT20

Channel	Frequency	Channel	Frequency
36	5180 MHz	44	5220 MHz
40	5200 MHz	48	5240 MHz

2 channels are provided for 802.11n-HT40 and 802.11ac-VHT40

Channel	Frequency	Channel	Frequency
38	5190 MHz	46	5230 MHz

1 channel are provided for 802.11ac-VHT80

Channel	Frequency	Channel	Frequency
42	5210 MHz	/	/

Operated band in 5725 MHz ~ 5850MHz

5 channels are provided for 802.11a, 802.11n-HT20 and 802.11ac-VHT20

Channel	Frequency	Channel	Frequency
149	5745 MHz	161	5805 MHz
153	5765 MHz	165	5825 MHz
157	5785 MHz	/	/

2 channels are provided for 802.11n-HT40 and 802.11ac-VHT40

Channel	Frequency	Channel	Frequency
151	5755 MHz	159	5795 MHz

1 channel are provided for 802.11ac-VHT80

Channel	Frequency	Channel	Frequency
155	5775 MHz	/	/

1.5. Test environment and mode

Operating Environment	
Temperature	24 °C
Humidity	57 % RH
Atmospheric Pressure	1010 mbar
Test mode:	
Continuously transmitting mode	Keeps the EUT in 100% duty cycle transmitting with modulation in SISO and MIMO, duty cycle factor is not required.

We have verified the construction and function in typical operation. All the test modes were carried out with the EUT in transmitting operation, which was shown in this test report and defined as follows:

We have verified the construction and function in typical operation. All the test modes were carried out with the EUT in transmitting operation, which was shown in this test report and defined as follows:

For Frequency band 5150 ~ 5250 MHz			
Mode	Modulation scheme / bandwidth		
	5180 MHz	5220 MHz	5240 MHz
802.11a	6 Mbps	6 Mbps	6 Mbps
802.11n/ac – HT20	MCS 0	MCS 0	MCS 0
Frequency	5190 MHz		5230 MHz
802.11n/ac – HT40	MCS 0		MCS 0
Frequency	5210 MHz		
802.11ac – VHT80	MCS 0		
For Frequency band 5725 ~ 5850 MHz			
Mode	Modulation scheme / bandwidth		
	5745 MHz	5785 MHz	5825 MHz
802.11a	6 Mbps	6 Mbps	6 Mbps
802.11n/ac – HT20	MCS 0	MCS 0	MCS 0
Frequency	5755 MHz		5795 MHz
802.11n/ac – HT40	MCS 0		MCS 0
Frequency	5775 MHz		
802.11ac – VHT80	MCS 0		

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation modes or test configuration modes mentioned above was evaluated respectively.

Pretest Test Mode	Description
Mode 1	TX A Mode / CH36, CH44, CH48 (UNII-1)
Mode 2	TX N20 Mode / CH36, CH44, CH48 (UNII-1)
Mode 3	TX N40 Mode / CH38, CH46 (UNII-1)
Mode 4	TX AC20 Mode / CH36, CH44, CH48 (UNII-1)
Mode 5	TX AC40 Mode / CH38, CH46 (UNII-1)
Mode 6	TX AC80 Mode / CH42 (UNII-1)
Mode 7	TX A Mode / CH149, CH157, CH165 (UNII-3)
Mode 8	TX N20 Mode / CH149, CH157, CH165 (UNII-3)
Mode 9	TX N40 Mode / CH151, CH159 (UNII-3)
Mode 10	TX AC20 Mode / CH149, CH157, CH165 (UNII-3)
Mode 11	TX AC40 Mode / CH151, CH159 (UNII-3)
Mode 12	TX AC80 Mode / CH155 (UNII-3)
Mode 13	TX Mode

The EUT system operated these modes were found to be the worst case during the pre-scanning test as following:

For Conducted Test	
Final Test Mode	Description
Mode 13	TX Mode

For Radiated Test	
Final Test Mode	Description
Mode 1	TX A Mode / CH36, CH44, CH48 (UNII-1)
Mode 2	TX N20 Mode / CH36, CH44, CH48 (UNII-1)
Mode 3	TX N40 Mode / CH38, CH46 (UNII-1)
Mode 4	TX AC20 Mode / CH36, CH44, CH48 (UNII-1)
Mode 5	TX AC40 Mode / CH38, CH46 (UNII-1)
Mode 6	TX AC80 Mode / CH42 (UNII-1)
Mode 7	TX A Mode / CH149, CH157, CH165 (UNII-3)
Mode 8	TX N20 Mode / CH149, CH157, CH165 (UNII-3)
Mode 9	TX N40 Mode / CH151, CH159 (UNII-3)
Mode 10	TX AC20 Mode / CH149, CH157, CH165 (UNII-3)
Mode 11	TX AC40 Mode / CH151, CH159 (UNII-3)
Mode 12	TX AC80 Mode / CH155 (UNII-3)

1.6. Power level setup in software

Power level setup in software for 5G wifi			
UNII-1 (Antenna 0)			
Frequency (MHz)	5180	5220	5240
A mode	50	50	50
Frequency (MHz)	5180	5220	5240
N20 mode	50	50	50
Frequency (MHz)	5190	5230	\
N40 mode	46	46	\
Frequency (MHz)	5180	5220	5240
AC20 mode	50	50	50
Frequency (MHz)	5190	5230	\
AC40 mode	46	46	\
Frequency (MHz)	5210	\	\
AC80 mode	46	\	\

Power level setup in software for 5G wifi			
UNII-1 (Antenna 1)			
Frequency (MHz)	5180	5220	5240
A mode	50	50	50
Frequency (MHz)	5180	5220	5240
N20 mode	50	50	50
Frequency (MHz)	5190	5230	\
N40 mode	46	46	\
Frequency (MHz)	5180	5220	5240
AC20 mode	50	50	50
Frequency (MHz)	5190	5230	\
AC40 mode	46	46	\
Frequency (MHz)	5210	\	\
AC80 mode	46	\	\

Power level setup in software for 5G wifi			
UNII-3 (Antenna 0)			
Frequency (MHz)	5745	5785	5825
A mode	50	50	50
Frequency (MHz)	5745	5785	5825
N20 mode	50	50	50
Frequency (MHz)	5755	5795	\
N40 mode	46	46	\
Frequency (MHz)	5745	5785	5825
AC20 mode	50	50	50
Frequency (MHz)	5755	5795	\
AC40 mode	46	46	\
Frequency (MHz)	5775	\	\
AC80 mode	46	\	\

Power level setup in software for 5G wifi			
UNII-3 (Antenna 1)			
Frequency (MHz)	5745	5785	5825
A mode	50	50	50
Frequency (MHz)	5745	5785	5825
N20 mode	50	50	50
Frequency (MHz)	5755	5795	\
N40 mode	46	46	\
Frequency (MHz)	5745	5785	5825
AC20 mode	50	50	50
Frequency (MHz)	5755	5795	\
AC40 mode	46	46	\
Frequency (MHz)	5775	\	\
AC80 mode	46	\	\

1.7. Laboratory Facilities

FCC-Registration No.: CN5031

CCIC Southern Electronic Product Testing (Shenzhen) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. Designation Number: CN5031, valid time is until December 31, 2019.

ISED Registration: 11185A-1

CAB identifier:CN0064

CCIC Southern Electronic Product Testing (Shenzhen) Co., Ltd. EMC Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 11185A-1 on Aug. 04, 2016, valid time is until Dec. 31, 2019.

NVLAP Lab Code: 201008-0

CCIC-SET is a third party testing organization accredited by NVLAP according to ISO/IEC 17025. The accreditation certificate number is 201008-0.

2. 47 CFR Part 15E Requirements

2.1. Antenna requirement

2.1.1. Applicable Standard

According to FCC 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.

And according to FCC 47 CFR Section 15.407(E), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

2.1.2. Antenna Information

Antenna System	Cyclic Delay Diversity(CDD)
	2 antennas are correlated with each other
Antenna Type	PCB

2.1.3. Antenna Gain

Antenna	Gain(dBi)
0	2
1	2
0+1	5.01

Note: 1. for 802.11n/ac mode, antenna 0, 1 can transmit/receive simultaneously (MIMO mode), for 802.11a, both antennas 0, 1 can transmit/receive at single mode (SISO mode)

2. Directional gain = $G_{ANT} + 10\log(N_{ANT})$ dBi

2.1.4. Result: comply

The EUT has a permanently and irreplaceable attached antenna. Please refer to the EUT internal photos.

2.2. Output Power

2.2.1. Limit of Output Power

FCC 15.407(a)

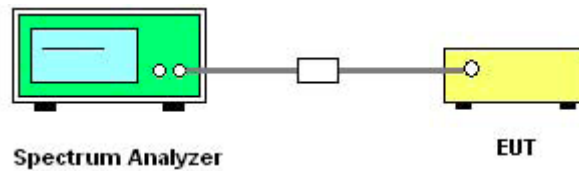
The maximum conducted output power should not exceed:

Band	EUT Category	Limit
U-NII-1	☐ Outdoor Access Point	1 Watt (30 dBm) (Max. e.i.r.p $\leq$ 125mW(21dBm) at any elevation angle above 30 degrees as measured from the horizon)
	☐ Fixed point-to-point Access device	1 Watt (30 dBm)
	☐ Indoor Access Point	1 Watt (30 dBm)
	☒ Mobile and portable client device	250mW (24 dBm)
U-NII-2A	☐	250mW (24 dBm) or 11dBm+10logB* Whichever is less.
U-NII-2C	☐	250mW (24 dBm) or 11dBm+10logB* Whichever is less.
U-NII-3	☒	1 Watt (30 dBm)
Note: B* is the 26 dB emission bandwidth in MHz.		

2.2.2. Measuring Instruments

The measuring equipment is listed in the section 3 of this test report.

2.2.3. Test Setup



2.2.4. Test Procedures

1. The testing follows the Measurement Procedure of FCC KDB 789033 D02 General UNII Test Procedures New Rules v02 Method SA-1
2. The RF output of EUT was connected to spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Set RBW=1MHz, VBW=3MHz, Sweep time=Auto, Detector=average (RMS), Compute power by integrating the spectrum across the 99%OBW.
5. Measure the conducted output power and record the results in the test report.



2.2.5. Test Result

Please refer to APPENDIX A for detail

2.3. Emission Bandwidth

2.3.1. Limit of Bandwidth

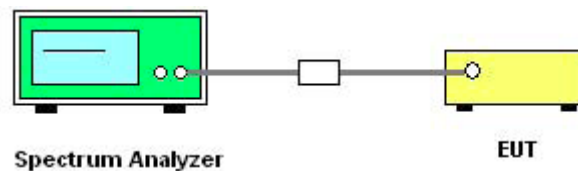
There is no limit bandwidth for bandU-NII-1, U-NII-2A and U-NII-2C.

The minimum of 6dB bandwidth measurement is 0.5 MHz for U-NII-3.

2.3.2. Measuring Instruments

The measuring equipment is listed in the section 3 of this test report.

2.3.3. Test Setup



2.3.4. Test Procedures

1. The testing follows the Measurement Procedure of FCC KDB 789033 D02 General UNII Test Procedures New Rules v02.

2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.

3. Set to the maximum power setting and enable the EUT transmit continuously.

4. For 26dB bandwidth Measurement, the spectrum analyzer's resolution bandwidth (RBW) = approximately 1%EBW, VBW $\geq$ 3RBW , Detector = Peak, Trace mode = max hold

Span > 26 dB bandwidth and Sweep time = auto

5. Use the spectrum analyzer N dB down function to find the 26dB bandwidth.

6. For 6 Bandwidth Measurement, the spectrum analyzer's resolution bandwidth (RBW) = 100kHz
VBW = 300 kHz, Detector = Peak, Trace mode = max hold

7. Use the spectrum analyzer N dB down function to find the 6dB bandwidth

8. Measure and record the worst results in the test report.



2.3.5. Test Results Bandwidth

Please refer to APPENDIX A for detail

2.4. Power spectral density (PSD)

2.4.1. Limit of Power Spectral Density

FCC 15.407(a)

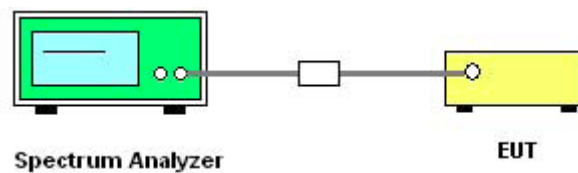
The maximum power spectral density should not exceed:

Band	EUT Category	Limit
U-NII-1	☐ Access Point (Master device)	17 dBm/MHz
	☐ Fixed point-to-point Access device	
	☒ Mobile and portable client device	11 dBm/MHz
U-NII-2A	☐	11 dBm/MHz
U-NII-2C	☐	11 dBm/MHz
U-NII-3	☒	30dBm/500kHz

2.4.2. Measuring Instruments

The measuring equipment is listed in the section 3 of this test report.

2.4.3. Test Setup



2.4.4. Test Procedures

1. Place the EUT on the table and set it in transmitting mode.
2. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02.
3. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to Spectrum.

4. For U-NII-1, U-NII-2A, U-NII-2C Band:

Using method SA-1

Set RBW=1MHz, VBW=3MHz, where span is enough to capture the entire bandwidth, Sweep time = Auto, detector = sample, traces 100 sweeps of averaging mode.

For U-NII-3 Band:

Set RBW=500 kHz, $VBW \geq 3RBW$, where span is enough to capture the entire bandwidth, Sweep time = Auto, detector = sample, traces 100 sweeps of averaging mode.

5. Use peak search function on the instrument to find the peak of the spectrum and record its value
6. Repeat above procedures until all default test channel (low, middle, and high) was complete.

2.4.5. Test Results of Power spectral density

Please refer to APPENDIX A for detail

2.5. Frequency Stability

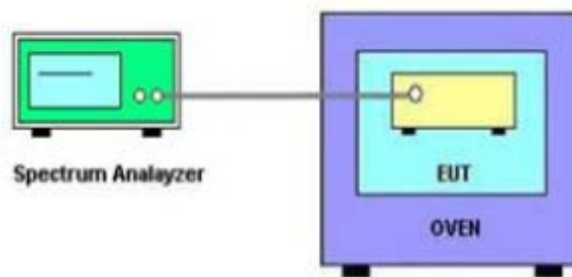
2.5.1. Limit

FCC 15.407(b) Frequency Stability	
Frequency Band(MHz)	Limit
5150~5250	Specified in the user's manual
5250~5350	
5470~5725	
5725~5850	

2.5.2. Measuring Instruments

The measuring equipment is listed in the section 3 of this test report.

2.5.3. Test Setup



2.5.4. Test Procedures

1. The EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
2. Set to the maximum power setting and enable the EUT transmit continuously.
3. The EUT is installed in an environment test chamber with external power source.
4. Set the chamber to operate at 50 centigrade and external power source to output at nominal voltage of EUT.
5. A sufficient stabilization period at each temperatures in used prior to each frequency measurement.
6. The test shall be performed under -10 to 55 centigrade and 85 to 115 percent of the nominal voltage. Change setting of chamber and external power source to complete all conditions.
7. Measure and record the worst results in the test report.



2.5.5. Test Results of Frequency Stability

Please refer to APPENDIX A for detail

2.6. Radiated Band Edge and Spurious Emission

2.6.1. Limit of Radiated Band Edges and Spurious Emission

Radiated emission which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 20dB below the highest level of the desired power:

Frequency (MHz)	Field Strength ($\mu\text{V/m}$)	Measurement Distance (m)
0.009 - 0.490	2400/F(kHz)	300
0.490 - 1.705	24000/F(kHz)	30
1.705 - 30.0	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level ($\mu\text{V/m}$).
3. For frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

Limits of unwanted emission out of the restricted bands

Applicable To	Limit	
789033 D02 General UNII Test Procedures New Rules v01	Field Strength at 3m	
	PK:74(dB $\mu\text{V/m}$)	AV:54 (dB $\mu\text{V/m}$)

Frequency Band (MHz)	Frequency (MHz)	EIRP Limit (dBm)	Equivalent Field Strength (3m) (dB $\mu\text{V/m}$)
5150 - 5250	Outside of the 5.15~5.35 GHz	-27	68.2
5250 - 5350	Outside of the 5.15~5.35 GHz		
5470 -5725	Outside of the 5.47~5.725 GHz		

FCC 15.407			
Frequency Band (MHz)	Frequency (MHz)	EIRP Limit (dBm)	Equivalent Field Strength (3m) (dBμV/m)
5725 - 5850	<5650	-27	68.2
	5650~5700	-27~10	68.2~105.2
	5700~5720	10~15.6	105.2~110.8
	5720~5725	15.6~27	110.8~122.2
	5850~5855	27~15.6	122.2~110.8
	5855~5875	15.6~10	110.8~105.2
	5875~5925	10~-27	105.2~68.2
	>5925	-27	68.2

Note: 1. The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength:

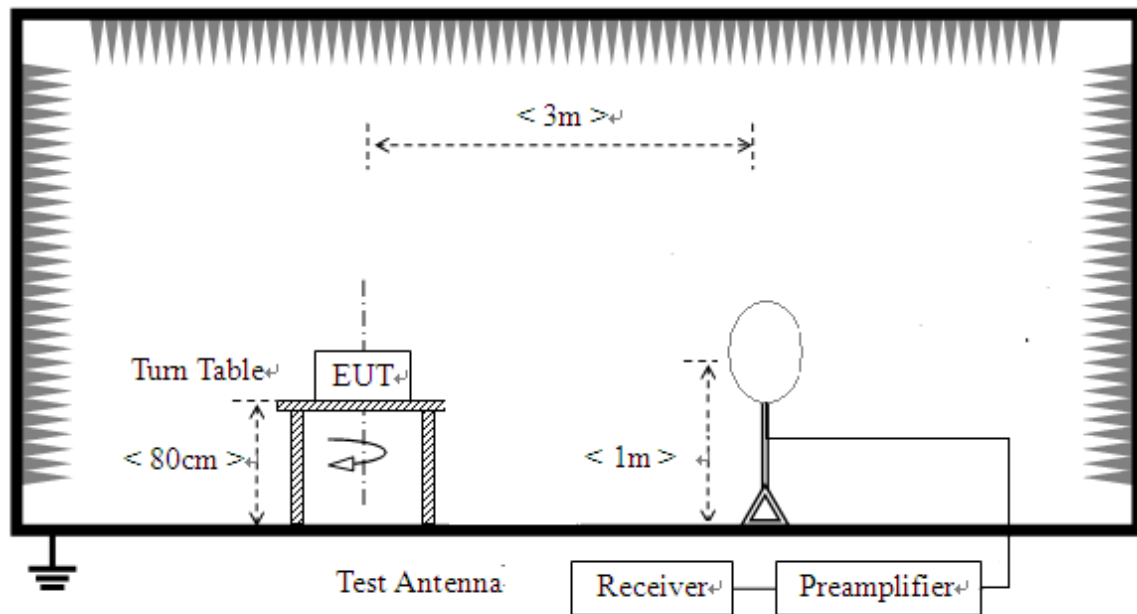
$$E = \frac{1000000 \sqrt{30P}}{3} \text{ } \mu\text{V/m, where P is the eirp (Watts).}$$

2.6.2. Measuring Instruments

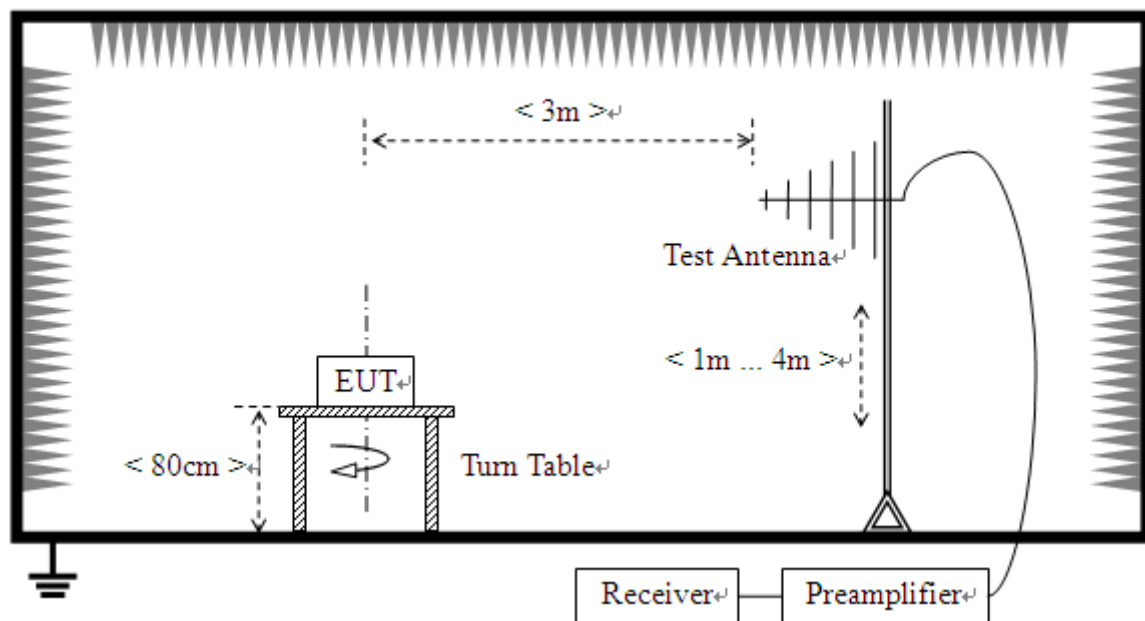
The measuring equipment is listed in the section 3 of this test report.

2.6.3. Test Setup

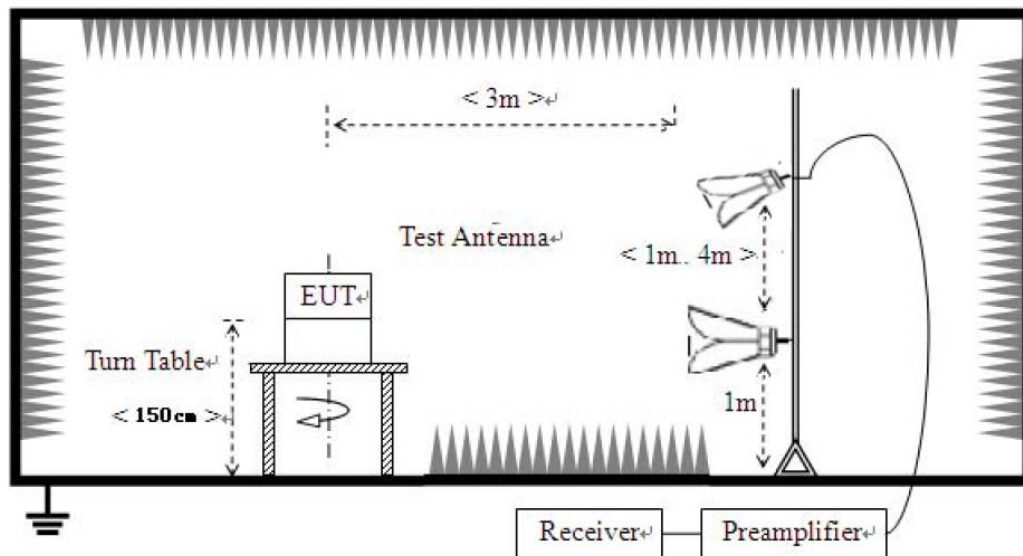
For radiated emissions from 9 KHz to 30 MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



2.6.4. Test Procedures

1. The EUT was placed on the top of a rotating table 0.8 meters (for below 1GHz) / 1.5 meters (for above 1GHz) above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
3. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
5. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
6. The test-receiver system was set to peak and average detects function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Note:

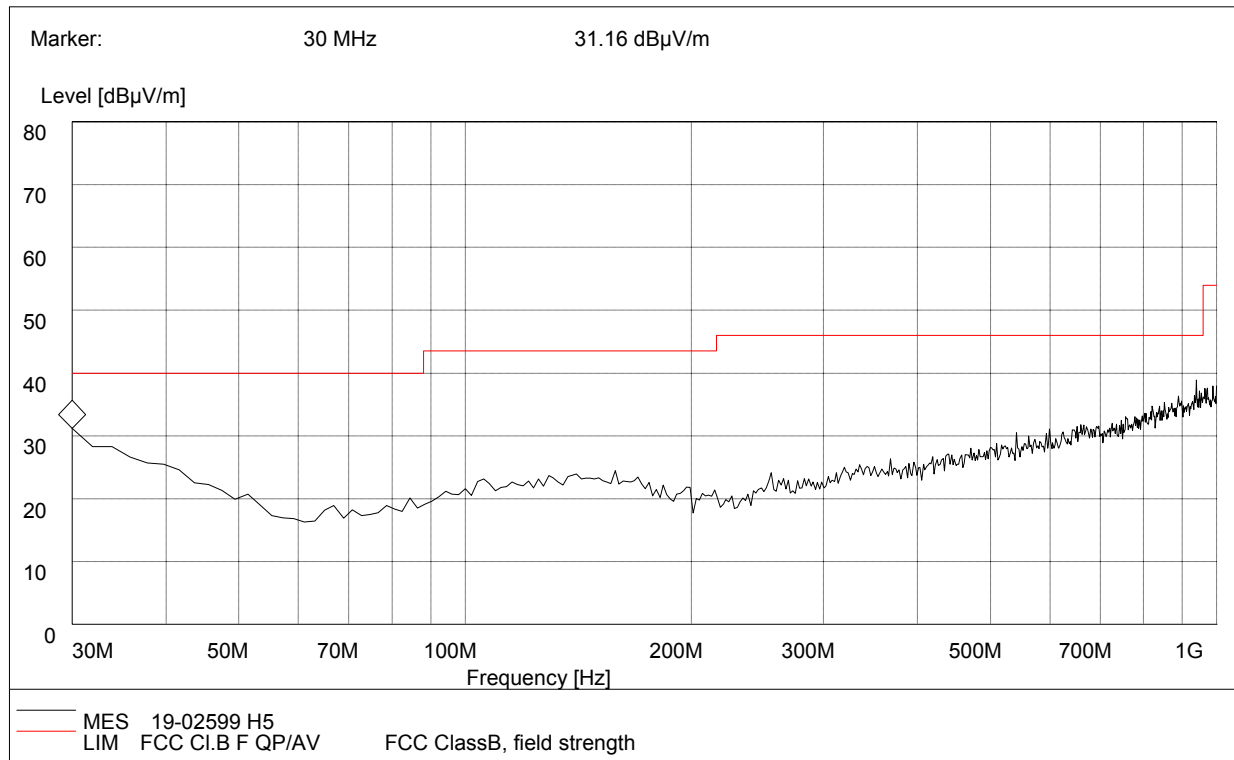
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection (QP) at frequency below 1 GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 3MHz for RMS Average (Duty cycle < 98%) for Average detection (AV) at frequency above 1GHz, then the measurement results was added to a correction factor ($10 \log(1/\text{duty cycle})$).
4. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz (Duty cycle $\geq 98\%$) for Average detection (AV) at frequency above 1GHz.
5. Only provide worst-Case mode data provide here, ANT0 for 11a and MIMO mode for 11n/11n(40M)/11ac/11ac(40M)/11ac(80M) for above 1GHz, 11n(40M) MIMO mode for Below 1GHz .

2.6.5. Test Results of Radiated Band Edge and Spurious Emission

For 9 KHz to 30MHz

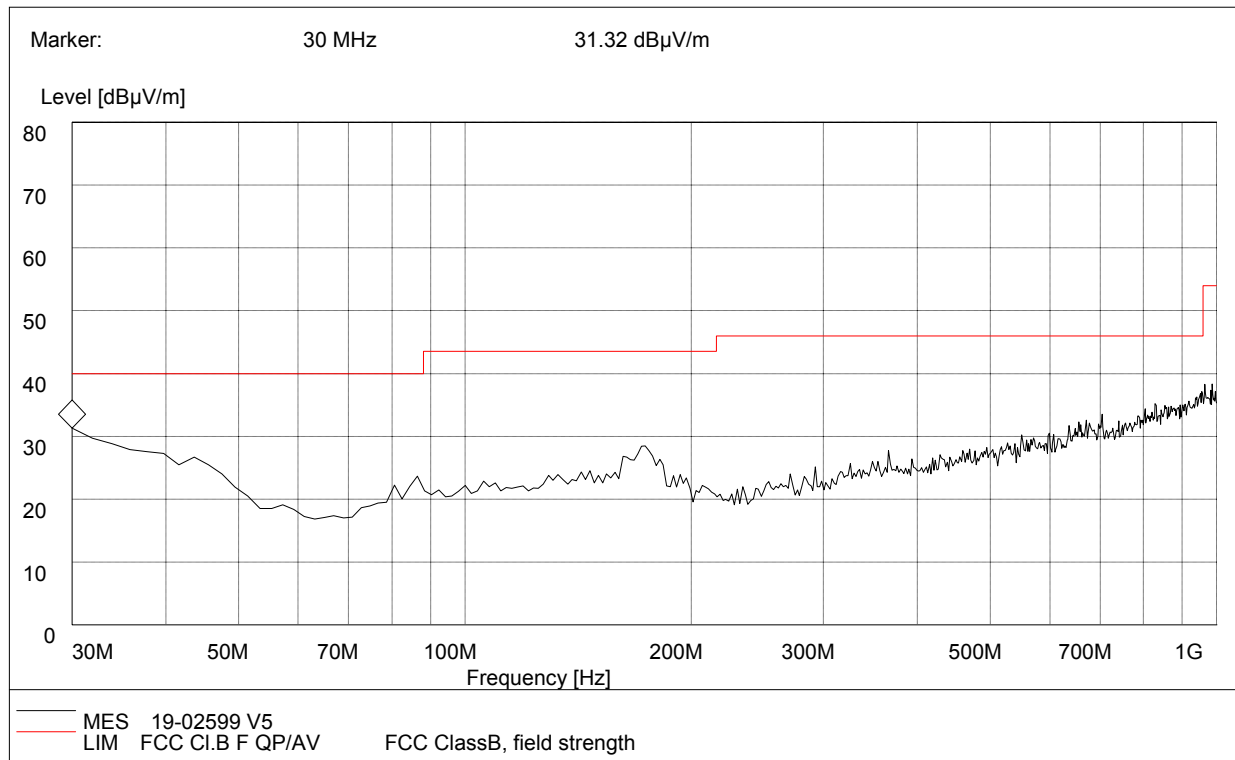
The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

For 30MHz to 1000 MHz



30MHz to 1GHz, Antenna Horizontal

Frequency (MHz)	QuasiPeak (dB μ V/m)	Bandwidth (kHz)	Antenna height (cm)	Limit (dB μ V/m)	Antenna	Verdict
30.00	31.16	120.000	200.0	40.00	Horizontal	Pass



30MHz to 1GHz, Antenna Vertical

Frequency (MHz)	QuasiPeak (dB μ V/m)	Bandwidth (kHz)	Antenna height (cm)	Limit (dB μ V/m)	Antenna	Verdict
30	31.32	120.000	200.0	40.0	Vertical	Pass

For 1GHz to 40 GHz

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11a_5180MHz) ANT0									
No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1.	5150.00	58.69	PK	68.20	-9.51	2.00	260	51.19	7.50
2	5150.00	48.39	AV	54.00	-5.61	2.00	260	40.89	7.50
3	10360.00	51.23	PK	68.20	-16.97	1.50	180	31.43	19.80
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11a_5180MHz) ANT0									
No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	5150.00	60.35	PK	68.20	-7.85	1.00	180	52.85	7.50
2	5150.00	50.37	AV	54.00	-3.63	1.00	180	42.87	7.50
3	10360.00	53.24	PK	68.20	-14.96	1.00	360	33.44	19.80



ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11a_5220MHz)									
No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	10400.00	49.65	PK	68.20	-18.55	1.50	360	29.75	19.90
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11a_5220MHz)									
No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	10400.00	52.47	PK	68.20	-15.73	1.50	250	32.57	19.90

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11a_5240MHz)

No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	5350.00	59.87	PK	68.20	-8.33	2.00	120	51.87	8.00
2	5350.00	49.52	AV	54.00	-4.48	2.00	120	41.52	8.00
3	10480.00	48.69	PK	68.20	-19.51	1.80	90	28.79	19.90

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11a_5240MHz)

No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	5350.00	58.24	PK	68.20	-9.96	1.50	260	50.24	8.00
2	5350.00	48.10	AV	54.00	-5.9	1.50	260	40.10	8.00
3	10480.00	50.69	PK	68.20	-17.51	2.00	0	30.79	19.90

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11a_5745MHz)

No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	5700.00	42.59	PK	68.2	-25.61	1.48	170	32.94	9.65
2	11490.00	52.18	PK	68.20	-16.02	1.29	340	30.48	21.70
3	11490.00	45.66	AV	54.00	-8.34	1.50	340	23.96	21.70

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11a_5745MHz)

No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	5700.00	44.39	PK	68.2	-23.81	1.50	170	34.74	9.65
2	11490.00	52.08	PK	68.20	-16.12	1.50	350	30.38	21.70
3	11490.00	45.54	AV	54.00	-8.46	1.45	350	23.84	21.70

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11a_5785MHz)

No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	11570.00	51.29	PK	68.20	-16.91	1.00	120	29.59	21.70
2	11570.00	44.61	AV	54.00	-9.39	1.00	120	22.91	21.70

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11a_5785MHz)

No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	11570.00	52.36	PK	68.20	-15.84	1.00	200	30.66	21.70
2	11570.00	45.78	AV	54.00	-8.22	1.00	200	24.08	21.70

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11a_5825MHz)

No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	5850.00	38.65	PK	68.20	-29.55	2.00	0	28.87	9.78
2	11650.00	51.74	PK	68.20	-16.46	1.00	250	29.84	21.90
3	11650.00	45.39	AV	54.00	-8.61	1.00	250	23.49	21.90

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11a_5825MHz)

No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	5850.00	40.15	PK	68.20	-28.05	1.00	180	30.37	9.78
2	11650.00	52.36	PK	68.20	-15.84	2.00	120	30.46	21.90
3	11650.00	45.82	AV	54.00	-8.18	2.00	120	23.92	21.90

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11n20_5180MHz)

No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	5150.00	46.26	PK	68.20	-21.94	1.00	120	38.76	7.50
2	5150.00	35.96	AV	54.00	-18.04	1.00	120	28.46	7.50
3	10360.00	51.24	PK	68.20	-16.96	1.50	120	31.44	19.80

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11n20_5180MHz)

No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	5150.00	44.25	PK	68.20	-23.95	1.50	260	36.75	7.50
2	5150.00	34.27	AV	54.00	-19.73	1.50	260	26.77	7.50
3	10360.00	50.09	PK	68.20	-18.11	1.50	270	30.29	19.80

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11n20_5220MHz)

No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	10400.00	51.19	PK	68.2	-17.01	1.50	250	31.29	19.90

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11n20_5220MHz)

No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	10400.00	51.84	PK	68.2	-16.36	1.00	360	31.94	19.90

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11n20_5240MHz)

No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	5350.00	46.25	PK	68.20	-21.95	1.00	120	38.25	8.00
2	5350.00	35.90	AV	54.00	-18.1	1.00	120	27.90	8.00
3	10480.00	48.95	PK	68.2	-19.25	2.00	120	29.05	19.90

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11n20_5240MHz)

No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	5350.00	43.52	PK	68.20	-24.95	1.00	230	35.52	8.00
2	5350.00	33.38	AV	54.00	-20.62	1.00	230	25.38	8.00
3	10480.00	51.19	PK	68.2	-17.01	2.00	360	31.29	19.90

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11n20_5745MHz)

No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	5700.00	40.18	PK	68.2	-28.02	1.00	120	30.53	9.65
2	11490.00	51.18	PK	68.20	-17.02	1.20	320	29.48	21.70
3	11490.00	44.66	AV	54.00	-9.34	1.20	320	22.96	21.70

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11n20_5745MHz)

No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	5700.00	45.35	PK	68.2	-22.85	2.00	220	35.70	9.65
2	11490.00	50.06	PK	68.20	-18.14	1.00	100	28.36	21.70
3	11490.00	43.52	AV	54.00	-10.48	1.00	100	21.82	21.70

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11n20_5785MHz)

No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	11570.00	52.25	PK	68.20	-15.95	2.00	223	30.55	21.70
2	11570.00	45.57	AV	54.00	-8.43	2.00	223	23.87	21.70

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11n20_5785MHz)

No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	11570.00	51.19	PK	68.20	-17.01	2.00	120	29.49	21.70
2	11570.00	44.61	AV	54.00	-9.39	2.00	120	22.91	21.70

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11n20_5825MHz)

No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	5150.00	44.26	PK	68.20	-23.94	1.20	210.00	36.76	7.50
2	5150.00	33.48	AV	54.00	-28.13	1.20	210.00	25.98	7.50
3	10380.00	50.36	PK	68.2	-23.64	1.50	100.00	30.56	19.80

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11n20_5825MHz)

No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	5150.00	42.65	PK	68.20	-25.55	1.20	250.00	35.15	7.50
2	5150.00	32.67	AV	54.00	-21.33	1.20	250.00	25.17	7.50
3	10380.00	53.36	PK	68.2	-14.84	1.00	270.00	33.56	19.80

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11n40_5190MHz)

No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	5150.00	44.26	PK	68.20	-23.94	1.2	210.00	36.76	7.50
2	5150.00	33.48	AV	54.00	-20.52	1.2	210.00	25.98	7.50
3	10380.00	50.36	PK	68.2	-17.84	1.5	100.00	30.56	19.80

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11n40_5190MHz)

No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	5150.00	42.65	PK	68.20	-25.55	1.20	250.00	35.15	7.50
2	5150.00	32.67	AV	54.00	-21.33	1.20	250.00	25.17	7.50
3	10380.00	53.36	PK	68.2	-14.84	1.00	270.00	33.56	19.80

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11n40_5230MHz)

No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	5350.00	44.16	PK	68.20	-24.04	2.00	100.00	36.16	8.00
2	5350.00	33.81	AV	54.00	-20.19	2.00	100.00	25.81	8.00
3	10460.00	52.36	PK	68.2	-15.84	1.00	200.00	32.46	19.90

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11n40_5230MHz)

No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	5350.00	45.35	PK	68.20	-22.85	1.80	100.00	37.35	8.00
2	5350.00	35.21	AV	54.00	-18.79	1.80	100.00	27.21	8.00
3	10460.00	53.02	PK	68.2	-15.18	2.00	360.00	33.12	19.90

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11n40_5755MHz)

No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	5725.00	44.26	PK	68.20	-23.94	1.80	180.00	34.61	9.65
2	11510.00	51.36	PK	68.20	-16.84	2.00	120.00	29.66	21.70
3	11510.00	40.84	AV	54.00	-13.16	2.00	120.00	19.14	21.70

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11n40_5755MHz)

No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	5725.00	43.62	PK	68.20	-24.58	1.20	200.00	33.97	9.65
2	11510.00	52.29	PK	68.20	-15.91	2.00	180.00	30.59	21.70
3	11510.00	41.75	AV	54.00	-12.25	2.00	180.00	20.05	21.70

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11n40_5795MHz)

No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	5850.00	42.21	PK	68.20	-25.99	1.50	200.00	32.43	9.78
2	11590.00	53.32	PK	68.20	-14.88	1.80	360.00	31.52	21.80
3	11590.00	42.64	AV	54.00	-11.36	1.80	360.00	20.84	21.80

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11n40_5795MHz)

No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	5850.00	42.56	PK	68.20	-25.64	1.50	120.00	32.78	9.78
2	11590.00	53.36	PK	68.20	-14.84	1.80	360.00	31.56	21.80
3	11590.00	42.78	AV	54.00	-11.22	1.80	360.00	20.98	21.80

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11ac20_5180MHz)

No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	5150.00	42.65	PK	68.20	-25.55	1.00	120	35.15	7.50
2	5150.00	32.35	AV	54.00	-21.65	1.00	120	24.85	7.50
3	10360.00	50.32	PK	68.2	-17.88	1.50	140	30.52	19.80

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11ac20_5180MHz)

No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	5150.00	44.05	PK	68.20	-24.15	1.50	240	36.55	7.50
2	5150.00	34.07	AV	54.00	-19.93	1.50	240	26.57	7.50
3	10360.00	51.36	PK	68.2	-16.84	1.50	250	31.56	19.80

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11ac20_5220MHz)

No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	10400.00	52.05	PK	68.2	-16.15	1.50	200	32.15	19.90

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11ac20_5220MHz)

No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	10400.00	53.21	PK	68.2	-14.99	1.00	120	33.31	19.90

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11ac20_5240MHz)

No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	5350.00	45.52	PK	68.20	-22.68	1.00	240	37.52	8.00
2	5350.00	35.17	AV	54.00	-18.83	1.00	240	27.17	8.00
3	10480.00	47.00	PK	68.20	-21.20	2.00	160	27.10	19.90

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11ac20_5240MHz)

No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	5350.00	45.00	PK	68.20	-23.20	1.00	120	37.00	8.00
2	5350.00	34.86	AV	54.00	-19.14	1.00	120	26.86	8.00
3	10480.00	50.25	PK	68.20	-17.95	2.00	180	30.35	19.90

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11ac20_5745MHz)

No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	5700.00	41.25	PK	68.20	-26.95	1.00	100	31.60	9.65
2	11490.00	52.36	PK	68.20	-15.84	2.00	320	30.66	21.70
3	11490.00	45.84	AV	54.00	-8.16	2.00	320	24.14	21.70

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11ac20_5745MHz)

No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	5700.00	42.36	PK	68.20	-25.84	1.00	120	32.71	9.65
2	11490.00	51.25	PK	68.20	-16.95	2.00	250	29.55	21.70
3	11490.00	44.71	AV	54.00	-9.29	2.00	250	23.01	21.70

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11ac20_5785MHz)

No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	11570.00	53.36	PK	68.20	-14.84	1.00	250	31.66	21.70
2	11570.00	46.68	AV	54.00	-7.32	1.00	250	24.98	21.70

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11ac20_5785MHz)

No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	11570.00	50.26	PK	68.20	-17.94	1.00	260	28.56	21.70
2	11570.00	43.68	AV	54.00	-10.32	1.00	260	21.98	21.70

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11ac20_5825MHz)

No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	5850.00	38.65	PK	68.2	-29.55	1.50	200	28.87	9.78
2	11650.00	51.26	PK	68.20	-16.94	1.50	260	29.36	21.90
3	11650.00	44.91	AV	54.00	-9.09	1.50	260	23.01	21.90

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11ac20_5825MHz)

No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	5850.00	39.54	PK	68.2	-28.66	2.00	100	29.76	9.78
2	11650.00	52.00	PK	68.20	-16.20	1.80	270	30.10	21.90
3	11650.00	45.46	AV	54.00	-8.54	1.80	270	23.56	21.90

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11ac40_5190MHz)

No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	5150.00	43.25	PK	68.20	-24.95	1.00	100.00	35.75	7.50
2	5150.00	32.47	AV	54.00	-21.53	1.00	100.00	24.97	7.50
3	10380.00	52.14	PK	68.20	-16.06	1.60	120.00	32.34	19.80

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11ac40_5190MHz)

No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	5150.00	41.36	PK	68.20	-26.84	2.00	360.00	33.86	7.50
2	5150.00	31.38	AV	54.00	-22.62	2.00	360.00	23.88	7.50
3	10380.00	53.65	PK	68.20	-14.55	1.80	250.00	33.85	19.80

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11ac40_5230MHz)

No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	5350.00	43.36	PK	68.20	-24.84	1.00	200.00	35.36	8.00
2	5350.00	33.01	AV	54.00	-20.99	1.00	200.00	25.01	8.00
3	10460.00	52.36	PK	68.2	-15.84	2.00	180.00	32.46	19.90

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11ac40_5230MHz)

No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	5350.00	44.15	PK	68.20	-24.05	2.00	100.00	36.15	8.00
2	5350.00	34.01	AV	54.00	-19.99	2.00	100.00	26.01	8.00
3	10460.00	51.06	PK	68.2	-17.14	1.50	360.00	31.16	19.90

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11ac40_5755MHz)

No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	5725.00	43.36	PK	68.2	-24.84	1.80	180.00	33.71	9.65
2	11510.00	50.15	PK	68.20	-18.05	2.00	120.00	28.45	21.70
3	11510.00	39.63	AV	54.00	-14.37	2.00	120.00	17.93	21.70

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11ac40_5755MHz)

No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	5725.00	43.62	PK	68.2	-24.58	1.20	200.00	33.97	9.65
2	11510.00	52.29	PK	68.20	-15.91	2.00	180.00	30.59	21.70
3	11510.00	41.75	AV	54.00	-12.25	2.00	180.00	20.05	21.70

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11ac40_5795MHz)

No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	5850.00	42.25	PK	68.20	-25.95	1.40	100.00	32.47	9.78
2	11590.00	52.36	PK	68.20	-15.84	1.60	0.00	30.56	21.80
3	11590.00	41.68	AV	54.00	-12.32	1.60	0.00	19.88	21.80

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11ac40_5795MHz)

No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	5850.00	44.15	PK	68.20	-24.05	1.20	360.00	34.37	9.78
2	11590.00	56.25	PK	68.20	-11.95	2.00	120.00	34.45	21.80
3	11590.00	45.67	AV	54.00	-8.33	2.00	120.00	23.87	21.80

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11ac-VHT80_5210MHz)									
No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	5150.00	43.58	PK	68.20	-24.62	1.00	150.00	36.08	7.50
2	5150.00	32.92	AV	54.00	-21.08	1.00	150.00	25.42	7.50
3	10420.00	51.36	PK	68.20	-16.84	1.60	330.00	31.46	19.90
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11ac-VHT80_5210MHz)									
No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	5150.00	43.15	PK	68.20	-25.05	2.00	0.00	35.65	7.50
2	5150.00	33.17	AV	54.00	-20.83	2.00	0.00	25.67	7.50
3	10420.00	50.36	PK	68.20	-17.84	1.60	180.00	30.46	19.90

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11ac-VHT80_5775MHz)									
No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	5460.00	42.36	PK	68.20	-25.84	1.50	100.00	32.58	9.78
2	5460.00	34.62	AV	54.00	-19.38	1.50	100.00	24.84	9.78
3	11550.00	48.25	PK	68.20	-19.95	1.50	180.00	26.45	21.80
4	11550.00	40.51	AV	54.00	-13.49	1.50	180.00	18.71	21.80
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11ac-VHT80_5775MHz)									
No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	5460.00	41.36	PK	68.20	-26.84	1.50	100.00	31.58	9.78
2	5460.00	32.71	AV	54.00	-21.29	1.50	100.00	22.93	9.78
3	11550.00	50.26	PK	68.20	-17.94	2.00	180.00	28.46	21.80
4	11550.00	42.68	AV	54.00	-11.32	2.00	180.00	20.88	21.80

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

2.7. Conducted Emission

2.7.1. Limit of Conducted Emission

FCC 15.207,

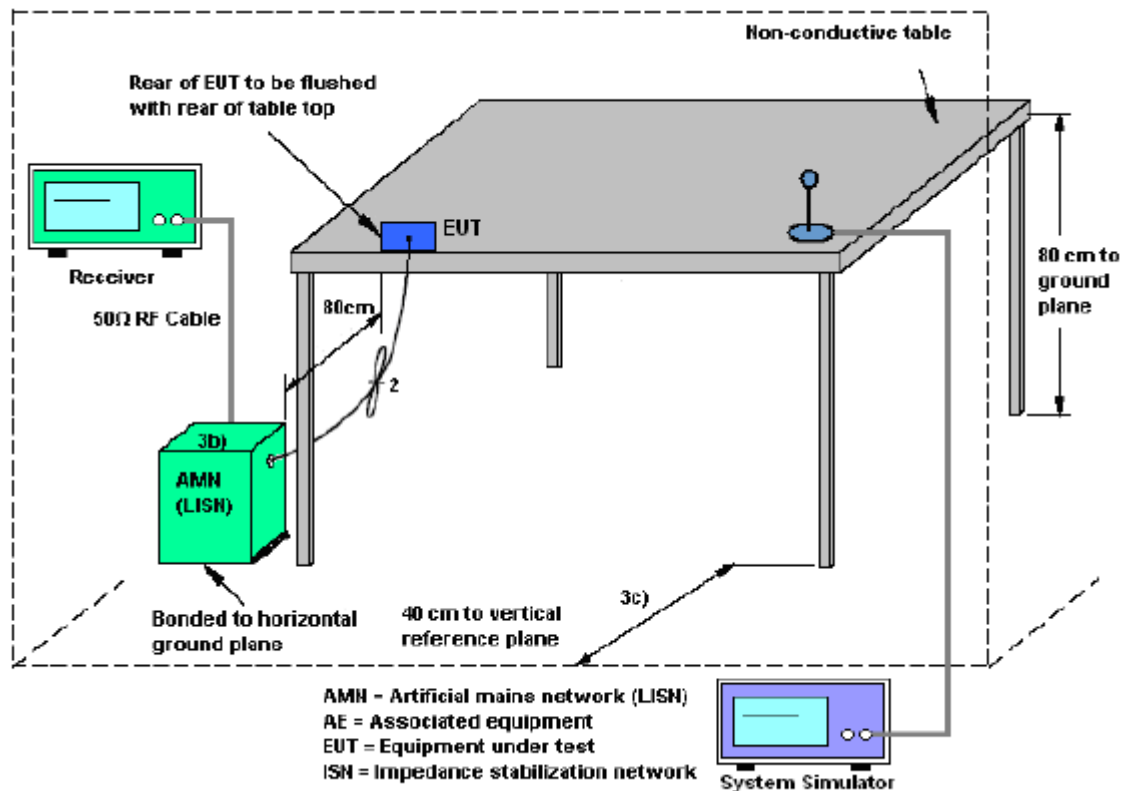
For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

Frequency range (MHz)	Conducted Limit (dB μ V)	
	Quai-peak	Average
0.15 - 0.50	66 to 56	56 to 46
0.50 - 5	56	46
5 - 30	60	50

2.7.2. Measuring Instruments

The measuring equipment is listed in the section 3 of this test report.

2.7.3. Test Setup

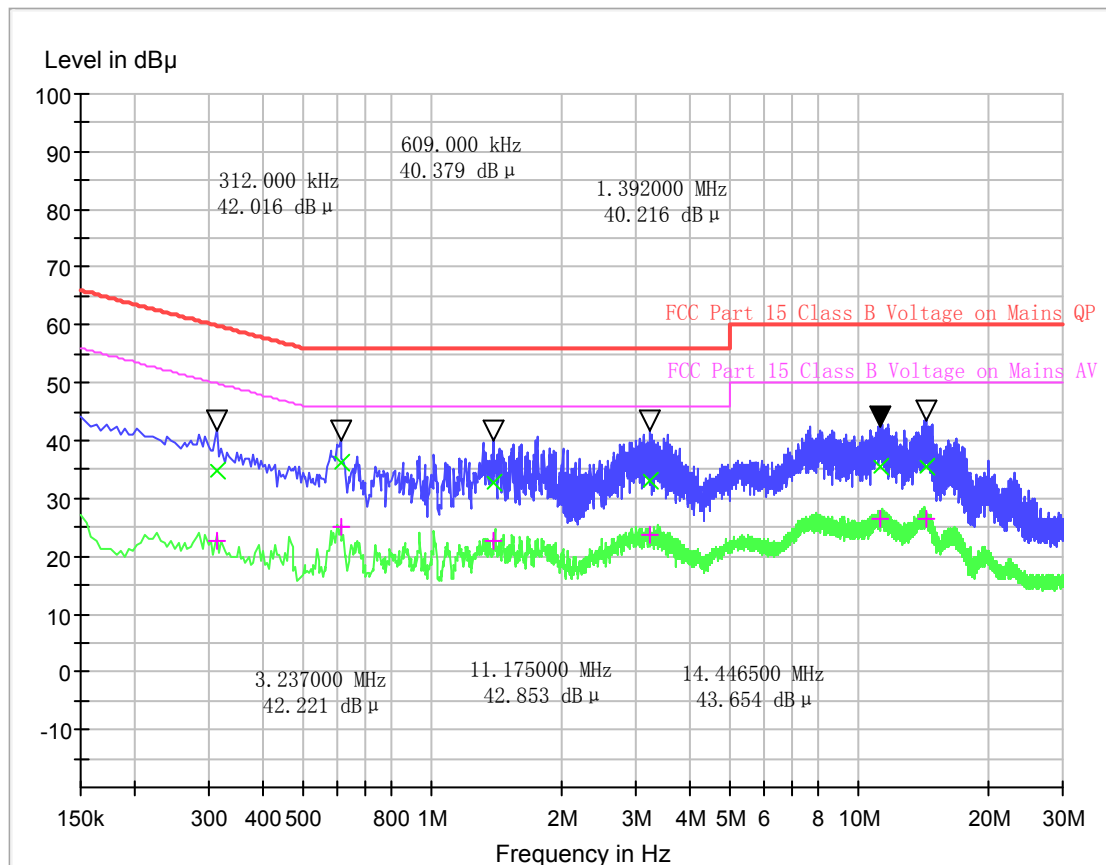


2.7.4. Test Procedures

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
6. Both sides of AC line were checked for maximum conducted interference.
7. The frequency range from 150 kHz to 30 MHz was searched.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth (IF Bandwidth = 9kHz) with Maximum Hold Mode. Then measurement is also conducted by Average Detector and Quasi-Peak Detector Function respectively.

2.7.5. Test Results of Conducted Emission

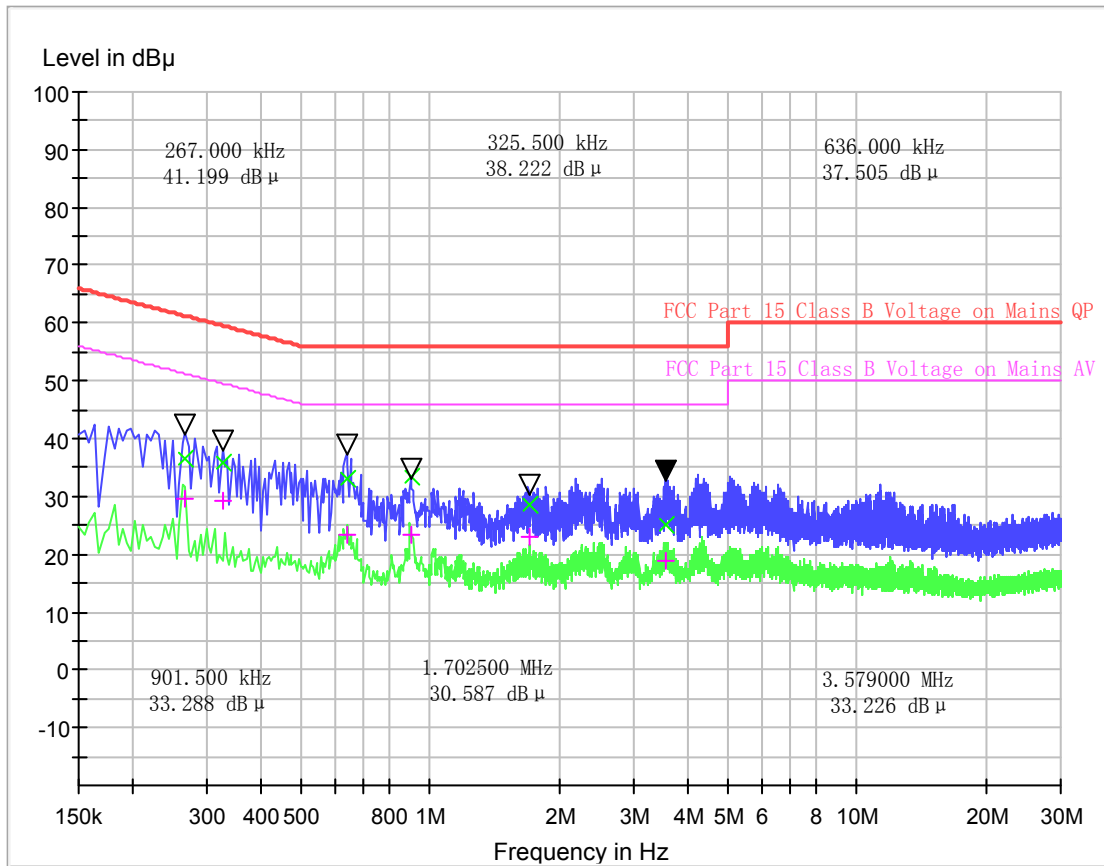
The EUT configuration of the emission tests is 5G WLAN Link + USB Cable (Charging from Adapter)



Conducted Disturbance at Mains Terminals

L Test Data

QP			AV		
Frequency (MHz)	Limits (dB μ V)	Measurement Value (dB μ V)	Frequency (MHz)	Limits (dB μ V)	Measurement Value (dB μ V)
0.312000	59.9	34.97	0.312000	49.9	22.77
0.609000	56.0	36.03	0.609000	46.0	25.22
1.392000	56.0	32.74	1.392000	46.0	22.76
3.237000	56.0	33.23	3.237000	46.0	23.78
11.175000	60.0	35.44	11.175000	50.0	26.62
14.446500	60.0	35.46	14.446500	50.0	26.44



Conducted Disturbance at Mains Terminals					
N Test Data					
QP			AV		
Frequency (MHz)	Limits (dBμV)	Measurement Value (dBμV)	Frequency (MHz)	Limits (dBμV)	Measurement Value (dBμV)
0.667500	56.0	29.80	0.667500	46.0	18.84
1.338000	56.0	29.45	1.338000	46.0	19.79
3.300000	56.0	30.89	3.300000	46.0	22.08
8.079000	60.0	32.38	8.079000	50.0	25.18
11.197500	60.0	33.63	11.197500	50.0	25.78
14.451000	60.0	33.93	14.451000	50.0	26.16

Test result: PASS

3. List of measuring equipment

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal
1	Ultra-Broadband Antenna	ShwarzBeck	VULB9163	538	2018/11/11
2	EMI TEST RECEIVER	Rohde&Schwarz	ESI 26	100009	2018/11/11
3	EMI TEST Software	Audix	E3	N/A	N/A
4	TURNTABLE	ETS	2088	2149	N/A
5	ANTENNA MAST	ETS	2075	2346	N/A
6	EMI TEST Software	Rohde&Schwarz	ESK1	N/A	N/A
7	HORNANTENNA	ShwarzBeck	9120D	1011	2018/11/11
8	Amplifer	Sonoma	310N	E009-13	2018/11/11
9	JS amplifer	Rohde&Schwarz	JS4-00101800-28-5A	F201504	2018/11/11
10	High pass filter	Compliance Direction systems	BSU-6	34202	2018/11/11
11	HORNANTENNA	ShwarzBeck	9120D	1012	2018/11/11
12	Amplifer	Compliance Direction systems	PAP1-4060	120	2018/11/11
13	Loop Antenna	Rohde&Schwarz	HFH2-Z2	100020	2018/11/11
14	TURNTABLE	MATURO	TT2.0	----	N/A
15	ANTENNA MAST	MATURO	TAM-4.0-P	----	N/A
16	Horn Antenna	SCHWARZBECK	BBHA9170	25841	2018/11/11
17	ULTRA-BROADBAND ANTENNA	Rohde&Schwarz	HL562	100015	2018/07/12
18	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal
20	Spectrum Analyzer	Keysight	N9030A	A160702554	2018/10/15

Note: the calibration interval of test equipment is one year.

Appendix A

Conducted output power

Test results

Conducted Power Test results of band U-NII-1 (5150 ~ 5250 MHz)

802.11a mode					
Frequency (MHz)	Conducted Output Power (dBm)		FCC Limit (dBm)	Result	
	Antenna 0	Antenna 1			
5180	14.20	14.36	24	PASS	
5220	14.24	14.08	24	PASS	
5240	14.19	14.17	24	PASS	
802.11n-HT20 mode					
Test Frequency (MHz)	Conducted Output Power (dBm)			FCC Limit (dBm)	Result
	Antenna 0	Antenna 1	Total		
5180	14.14	14.45	17.31	24	PASS
5220	14.11	14.07	17.10	24	PASS
5240	14.12	13.83	16.99	24	PASS
802.11n-HT40 mode					
Test Frequency (MHz)	Conducted Output Power (dBm)			FCC Limit (dBm)	Result
	Antenna 0	Antenna 1	Total		
5190	14.00	13.32	16.68	24	PASS
5230	13.67	12.92	16.32	24	PASS
802.11ac-VHT20 mode					
Test Frequency (MHz)	Conducted Output Power (dBm)			FCC Limit (dBm)	Result
	Antenna 0	Antenna 1	Total		
5180	14.45	14.09	17.28	24	PASS
5220	14.32	13.83	17.09	24	PASS
5240	14.34	13.73	17.06	24	PASS



802.11ac-VHT40 mode					
Test Frequency (MHz)	Conducted Output Power (dBm)			FCC Limit (dBm)	Result
	Antenna 0	Antenna 1	Total		
5190	13.85	13.32	16.60	24	PASS
5230	13.50	12.95	16.24	24	PASS

802.11ac-VHT80 mode					
Test Frequency (MHz)	Conducted Output Power (dBm)			FCC Limit (dBm)	Result
	Antenna 0	Antenna 1	Total		
5210	13.14	11.91	15.58	24	PASS

Conducted Power Test results of band U-NII-3 (5725 ~ 5850 MHz)

802.11a mode					
Frequency (MHz)	Conducted Output Power (dBm)		FCC Limit (dBm)	Result	
	Antenna 0	Antenna 1			
5745	13.94	14.63	30	PASS	
5785	13.94	13.22	30	PASS	
5825	14.23	13.36	30	PASS	
802.11n-HT20 mode					
Test Frequency (MHz)	Conducted Output Power (dBm)			FCC Limit (dBm)	Result
	Antenna 0	Antenna 1	Total		
5745	13.91	13.25	16.60	30	PASS
5785	13.89	13.15	16.55	30	PASS
5825	14.22	13.26	16.78	30	PASS
802.11n-HT40 mode					
Test Frequency (MHz)	Conducted Output Power (dBm)			FCC Limit (dBm)	Result
	Antenna 0	Antenna 1	Total		
5755	13.60	12.71	16.19	30	PASS
5795	13.73	12.85	16.32	30	PASS
802.11ac-VHT20 mode					
Test Frequency (MHz)	Conducted Output Power (dBm)			FCC Limit (dBm)	Result
	Antenna 0	Antenna 1	Total		
5745	13.92	13.26	16.61	30	PASS
5785	13.92	13.19	16.58	30	PASS
5825	14.32	13.33	16.86	30	PASS



802.11ac-VHT40 mode					
Test Frequency (MHz)	Conducted Output Power (dBm)			FCC Limit (dBm)	Result
	Antenna 0	Antenna 1	Total		
5755	13.61	12.90	16.28	30	PASS
5795	13.72	12.90	16.34	30	PASS

802.11ac-VHT80 mode					
Test Frequency (MHz)	Conducted Output Power (dBm)			FCC Limit (dBm)	Result
	Antenna 0	Antenna 1	Total		
5775	13.29	12.40	15.88	30	PASS

AVGSA Power Spectral Density

Conducted PSD Test results of band U-NII-1 (5150~5250MHz)

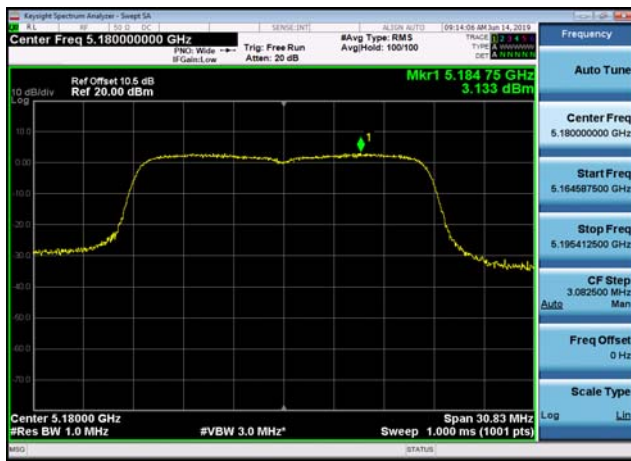
802.11a mode					
Test Frequency (MHz)	Power Spectral Density (dBm/MHz)		Limit (dBm/MHz)	Result	
	Antenna 0	Antenna 1			
5180	3.261	3.269	11	PASS	
5220	3.124	2.984	11	PASS	
5240	3.232	3.200	11	PASS	
802.11n-HT20 mode					
Test Frequency (MHz)	Power Spectral Density (dBm/MHz)			Limit (dBm/MHz)	Result
	Antenna 0	Antenna 1	Total		
5180	3.133	3.325	6.24	11	PASS
5220	2.890	2.830	5.87	11	PASS
5240	3.026	2.557	5.81	11	PASS
802.11n-HT40 mode					
Test Frequency (MHz)	Power Spectral Density (dBm/MHz)			Limit (dBm/MHz)	Result
	Antenna 0	Antenna 1	Total		
5190	-0.457	-1.263	2.17	11	PASS
5230	-0.844	-1.430	1.88	11	PASS
802.11ac-VHT20 mode					
Test Frequency (MHz)	Power Spectral Density (dBm/MHz)			Limit (dBm/MHz)	Result
	Antenna 0	Antenna 1	Total		
5180	3.189	2.844	6.03	11	PASS
5220	3.182	2.604	5.91	11	PASS
5240	3.146	2.562	5.87	11	PASS
802.11ac-VHT40 mode					
Test Frequency (MHz)	Power Spectral Density (dBm/MHz)			Limit (dBm/MHz)	Result
	Antenna 0	Antenna 1	Total		
5190	-0.843	-1.235	1.98	11	PASS
5230	-0.983	-1.614	1.72	11	PASS
802.11n-VHT80 mode					
Test Frequency (MHz)	Power Spectral Density (dBm/MHz)			Limit (dBm/MHz)	Result
	Antenna 0	Antenna 1	Total		
5210	-3.285	-4.713	-0.93	11	PASS

Conducted PSD Test results of band U-NII-3 (5725 ~ 5850 MHz)

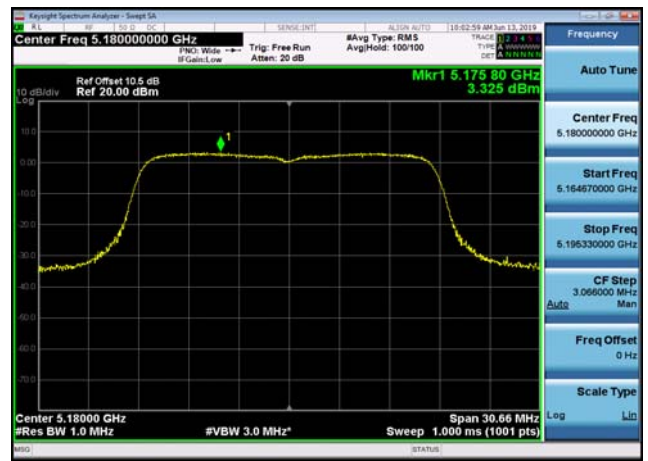
802.11a mode					
Test Frequency (MHz)	Power Spectral Density (dBm/500kHz)		Limit (dBm/MHz)	Result	
	Antenna 0	Antenna 1			
5745	0.078	0.940	30	PASS	
5785	0.198	-0.462	30	PASS	
5825	0.574	-0.257	30	PASS	
802.11n-HT20 mode					
Test Frequency (MHz)	Power Spectral Density (dBm/500kHz)			Limit (dBm/MHz)	Result
	Antenna 0	Antenna 1	Total		
5745	0.244	-0.536	2.88	30	PASS
5785	0.198	-0.865	2.71	30	PASS
5825	0.469	-0.359	3.09	30	PASS
802.11n-HT40 mode					
Test Frequency (MHz)	Power Spectral Density (dBm/500kHz)			Limit (dBm/MHz)	Result
	Antenna 0	Antenna 1	Total		
5755	-3.394	-4.280	-0.80	30	PASS
5795	-3.494	-4.242	-0.84	30	PASS
802.11ac-VHT20 mode					
Test Frequency (MHz)	Power Spectral Density (dBm/500kHz)			Limit (dBm/MHz)	Result
	Antenna 0	Antenna 1	Total		
5745	-0.086	-0.717	2.62	30	PASS
5785	0.171	-0.608	2.81	30	PASS
5825	0.742	-0.387	3.22	30	PASS
802.11ac-VHT40 mode					
Test Frequency (MHz)	Power Spectral Density (dBm/500kHz)			Limit (dBm/MHz)	Result
	Antenna 0	Antenna 1	Total		
5755	-3.389	-4.139	-0.74	30	PASS
5795	-3.622	-4.127	-0.86	30	PASS
802.11n-VHT80 mode					
Test Frequency (MHz)	Power Spectral Density (dBm/500kHz)			Limit (dBm/MHz)	Result
	Antenna 0	Antenna 1	Total		
5775	-5.763	-6.571	-3.14	30	PASS

Test Plots

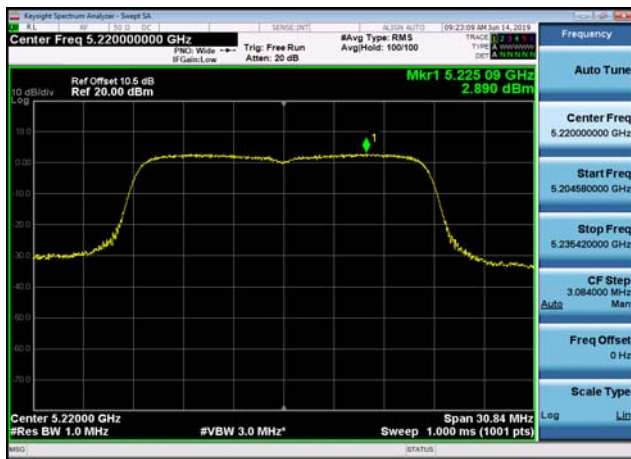
U-NII-1 Power spectral density-802.11
n(20MHz),5180MHz,Ant0



U-NII-1 Power spectral density-802.11
n(20MHz),5180MHz,Ant1



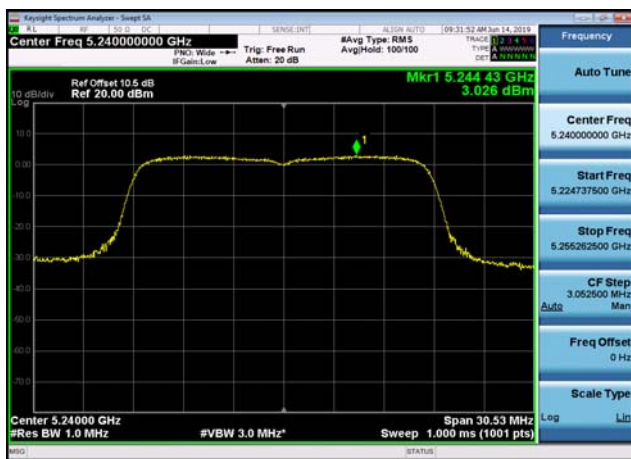
U-NII-1 Power spectral density-802.11
n(20MHz),5220MHz,Ant0



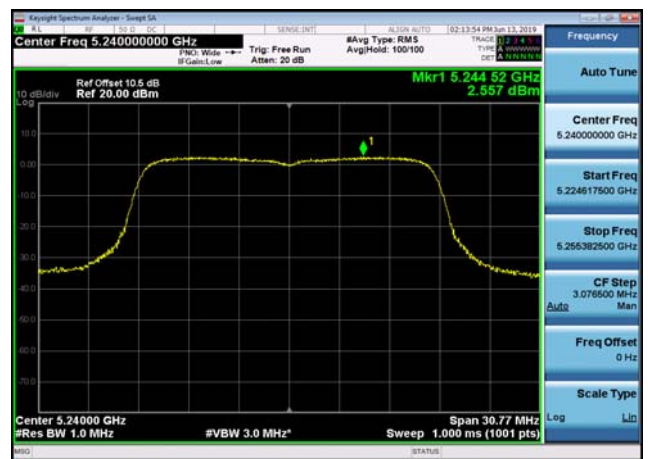
U-NII-1 Power spectral density-802.11
n(20MHz),5220MHz,Ant1



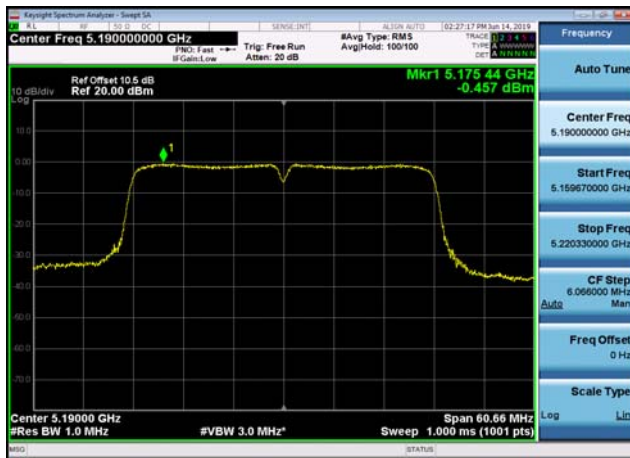
U-NII-1 Power spectral density-802.11
n(20MHz),5240MHz,Ant0



U-NII-1 Power spectral density-802.11
n(20MHz),5240MHz,Ant1



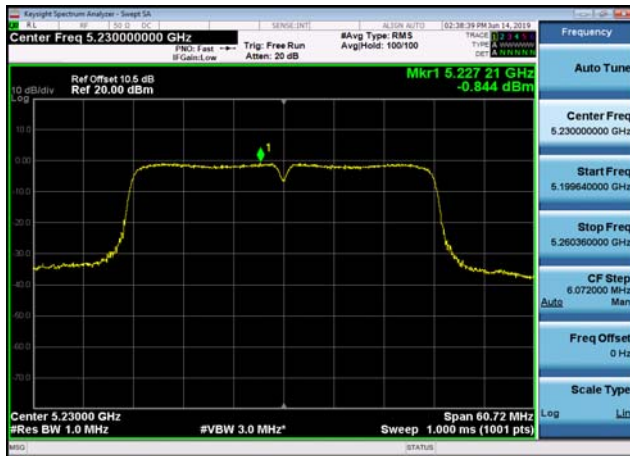
U-NII-1 Power spectral density-802.11
n(40MHz),5190MHz,Ant0



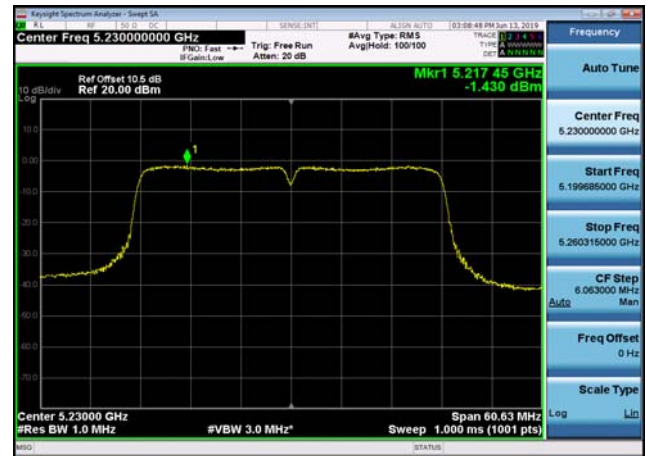
U-NII-1 Power spectral density-802.11
n(40MHz),5190MHz,Ant1



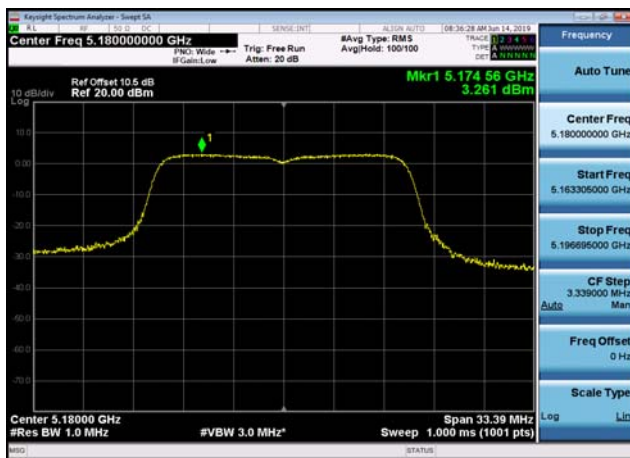
U-NII-1 Power spectral density-802.11
n(40MHz),5230MHz,Ant0



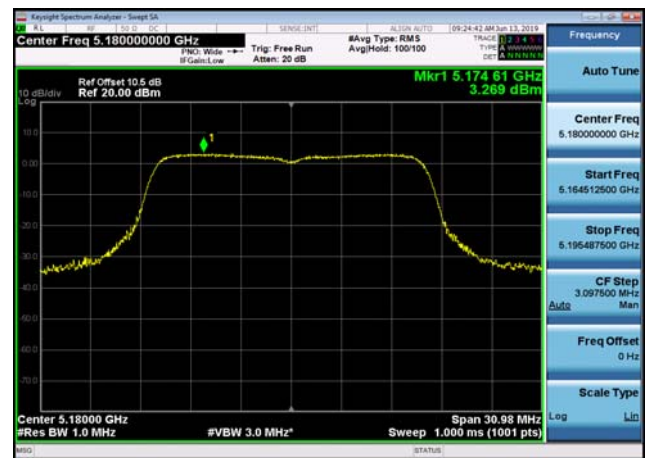
U-NII-1 Power spectral density-802.11
n(40MHz),5230MHz,Ant1



U-NII-1 Power spectral density-802.11
a(20MHz),5180MHz,Ant0



U-NII-1 Power spectral density-802.11
a(20MHz),5180MHz,Ant1



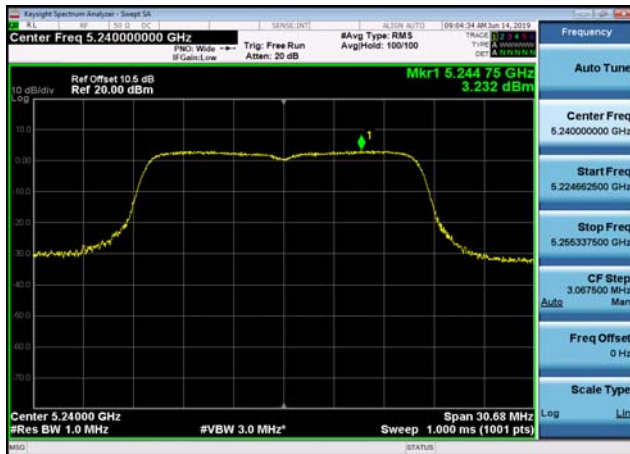
U-NII-1 Power spectral density-802.11
a(20MHz),5220MHz,Ant0



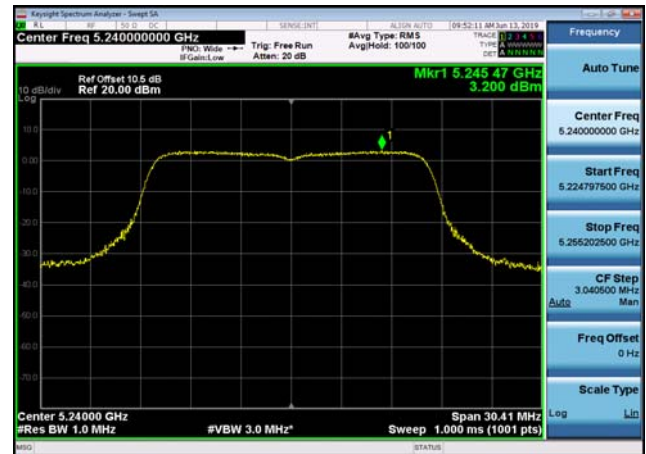
U-NII-1 Power spectral density-802.11
a(20MHz),5220MHz,Ant1



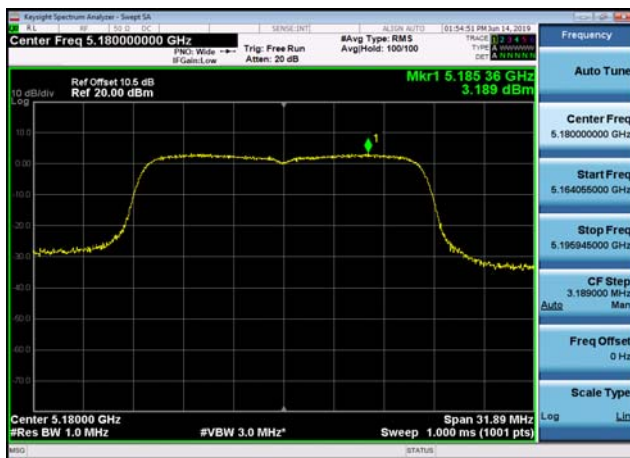
U-NII-1 Power spectral density-802.11
a(20MHz),5240MHz,Ant0



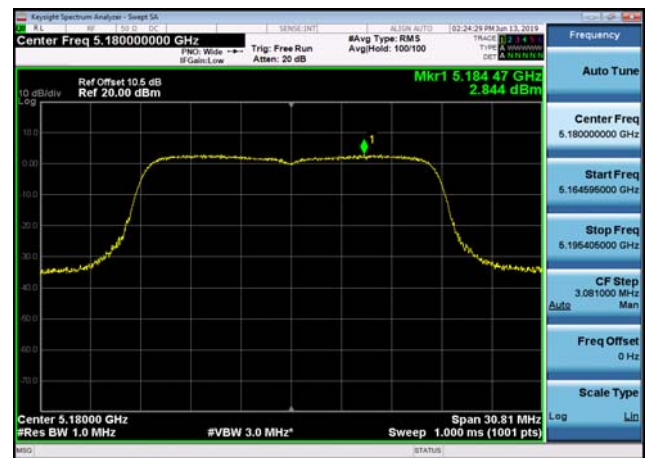
U-NII-1 Power spectral density-802.11
a(20MHz),5240MHz,Ant1



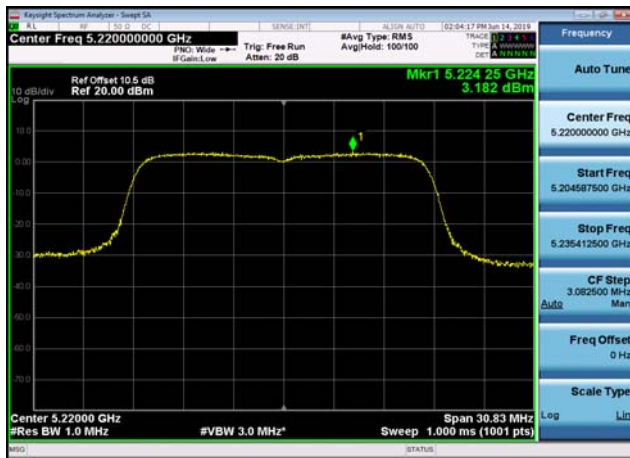
U-NII-1 Power spectral density-802.11
ac(20MHz),5180MHz,Ant0



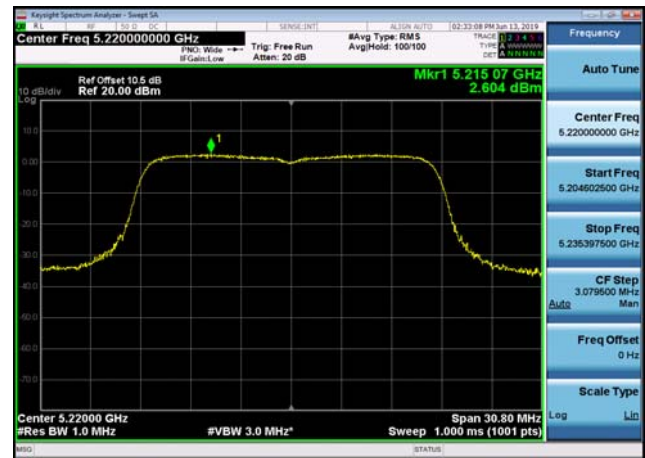
U-NII-1 Power spectral density-802.11
ac(20MHz),5180MHz,Ant1



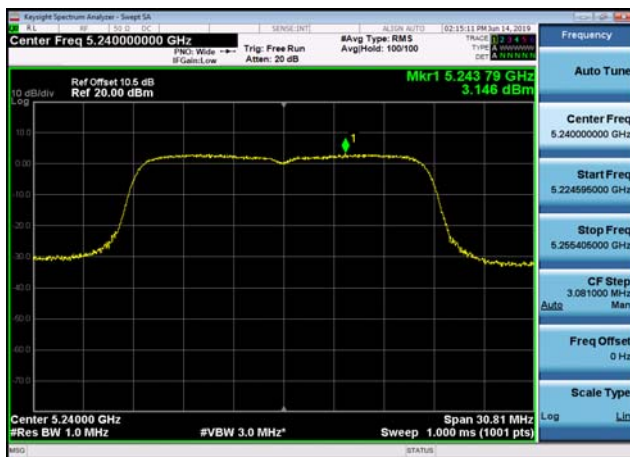
U-NII-1 Power spectral density-802.11
ac(20MHz),5220MHz,Ant0



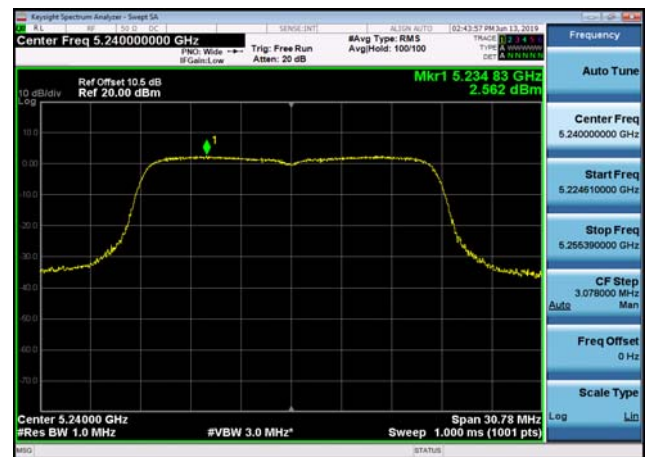
U-NII-1 Power spectral density-802.11
ac(20MHz),5220MHz,Ant1



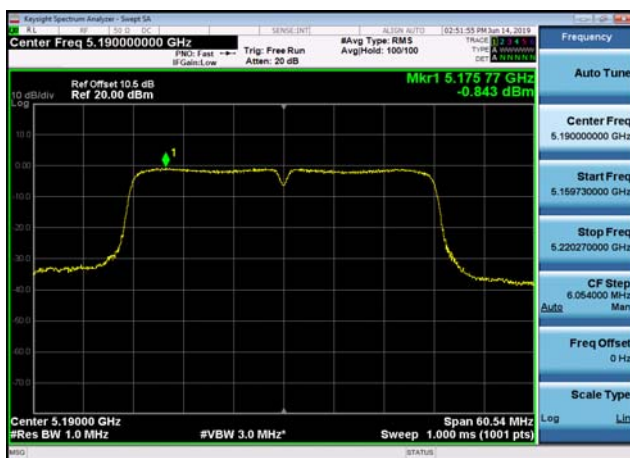
U-NII-1 Power spectral density-802.11
ac(20MHz),5240MHz,Ant0



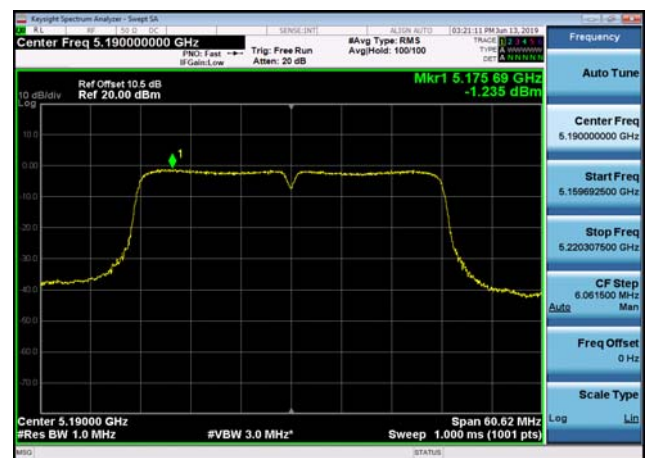
U-NII-1 Power spectral density-802.11
ac(20MHz),5240MHz,Ant1



U-NII-1 Power spectral density-802.11
ac(40MHz),5190MHz,Ant0



U-NII-1 Power spectral density-802.11
ac(40MHz),5190MHz,Ant1



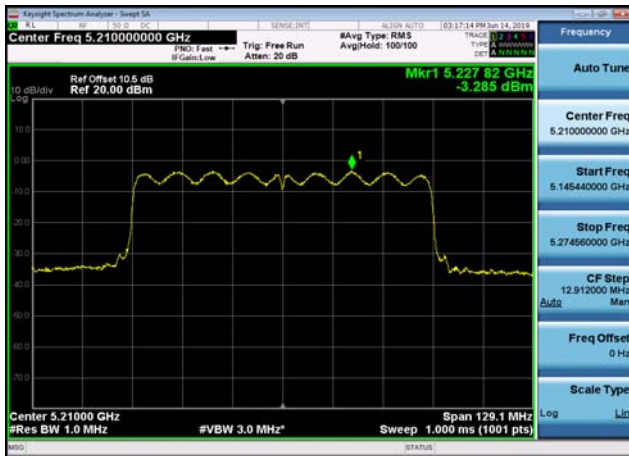
U-NII-1 Power spectral density-802.11
ac(40MHz),5230MHz,Ant0



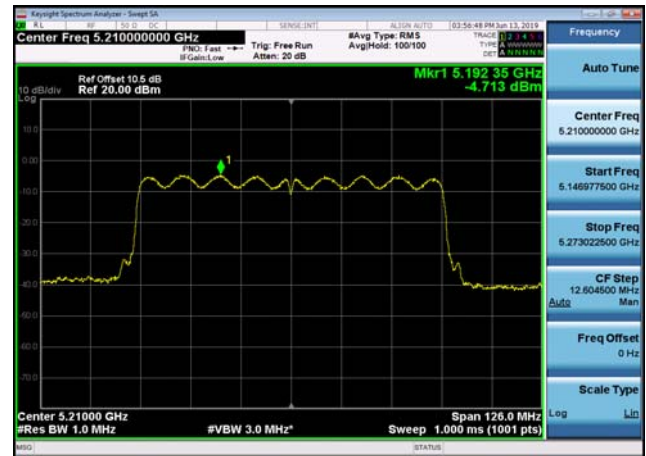
U-NII-1 Power spectral density-802.11
ac(40MHz),5230MHz,Ant1



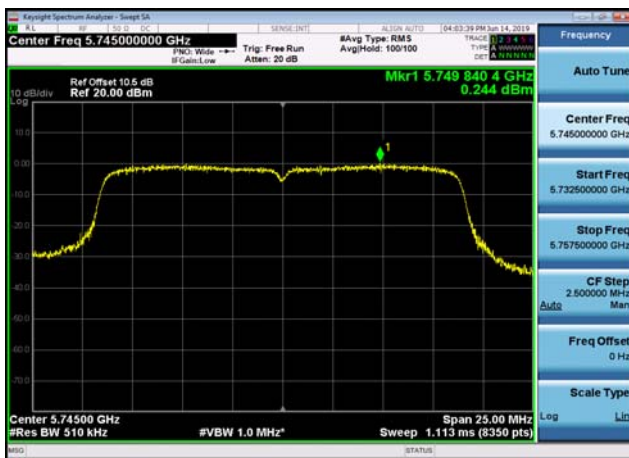
U-NII-1 Power spectral density-802.11
ac(80MHz),5210MHz,Ant0



U-NII-1 Power spectral density-802.11
ac(80MHz),5210MHz,Ant1



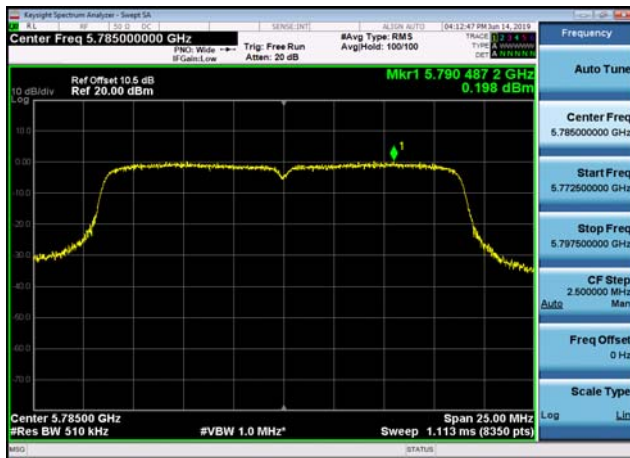
U-NII-3 Power spectral density-802.11
n(20MHz),5745MHz,Ant0



U-NII-3 Power spectral density-802.11
n(20MHz),5745MHz,Ant1



U-NII-3 Power spectral density-802.11
n(20MHz),5785MHz,Ant0



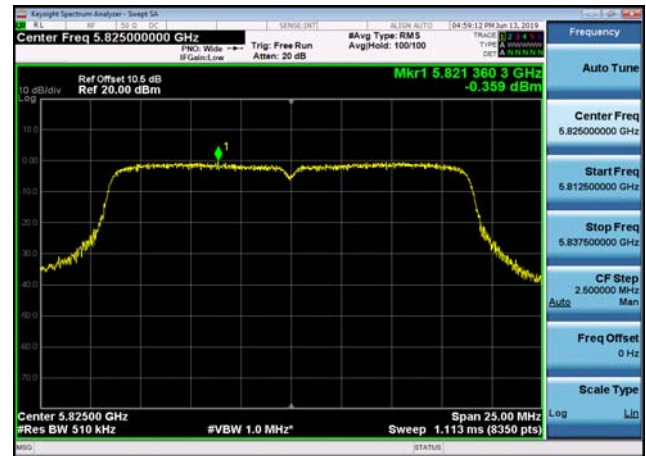
U-NII-3 Power spectral density-802.11
n(20MHz),5785MHz,Ant1



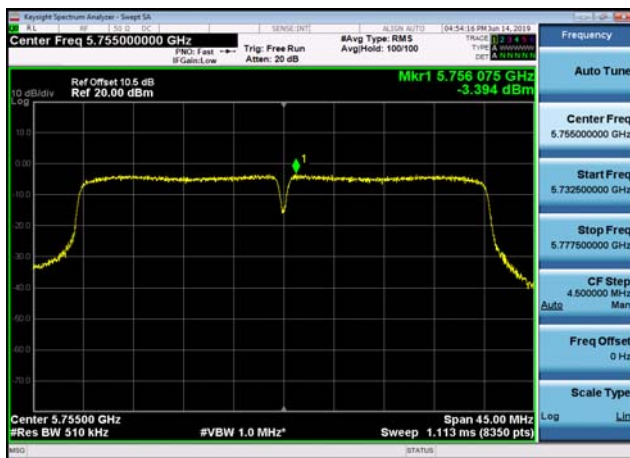
U-NII-3 Power spectral density-802.11
n(20MHz),5825MHz,Ant0



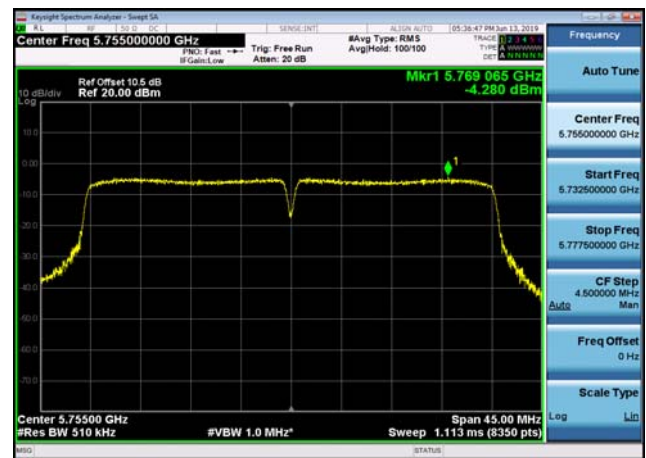
U-NII-3 Power spectral density-802.11
n(20MHz),5825MHz,Ant1



U-NII-3 Power spectral density-802.11
n(40MHz),5755MHz,Ant0



U-NII-3 Power spectral density-802.11
n(40MHz),5755MHz,Ant1



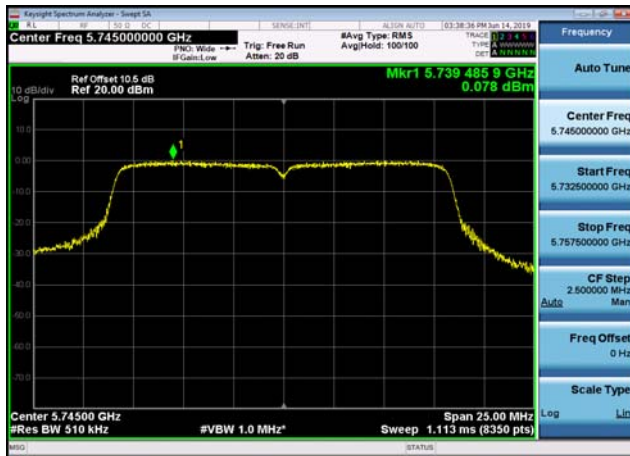
U-NII-3 Power spectral density-802.11
n(40MHz),5795MHz,Ant0



U-NII-3 Power spectral density-802.11
n(40MHz),5795MHz,Ant1



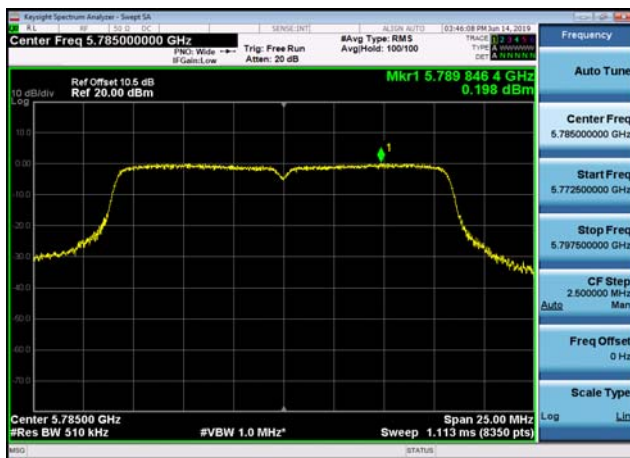
U-NII-3 Power spectral density-802.11
a(20MHz),5745MHz,Ant0



U-NII-3 Power spectral density-802.11
a(20MHz),5745MHz,Ant1



U-NII-3 Power spectral density-802.11
a(20MHz),5785MHz,Ant0



U-NII-3 Power spectral density-802.11
a(20MHz),5785MHz,Ant1



U-NII-3 Power spectral density-802.11
a(20MHz),5825MHz,Ant0



U-NII-3 Power spectral density-802.11
a(20MHz),5825MHz,Ant1



U-NII-3 Power spectral density-802.11
ac(20MHz),5745MHz,Ant0



U-NII-3 Power spectral density-802.11
ac(20MHz),5745MHz,Ant1



U-NII-3 Power spectral density-802.11
ac(20MHz),5785MHz,Ant0



U-NII-3 Power spectral density-802.11
ac(20MHz),5785MHz,Ant1



U-NII-3 Power spectral density-802.11
ac(20MHz),5825MHz,Ant0



U-NII-3 Power spectral density-802.11
ac(20MHz),5825MHz,Ant1



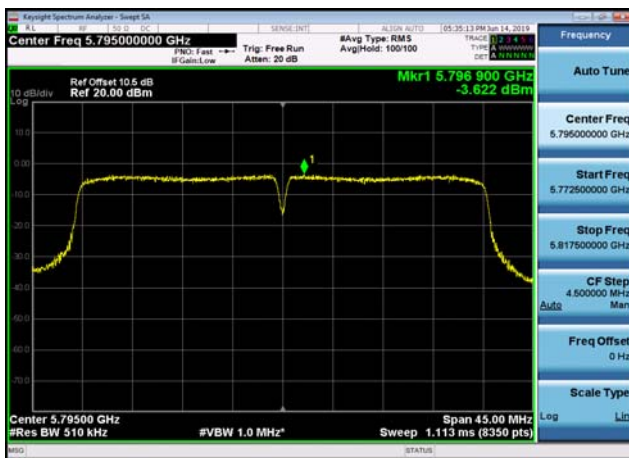
U-NII-3 Power spectral density-802.11
ac(40MHz),5755MHz,Ant0



U-NII-3 Power spectral density-802.11
ac(40MHz),5755MHz,Ant1



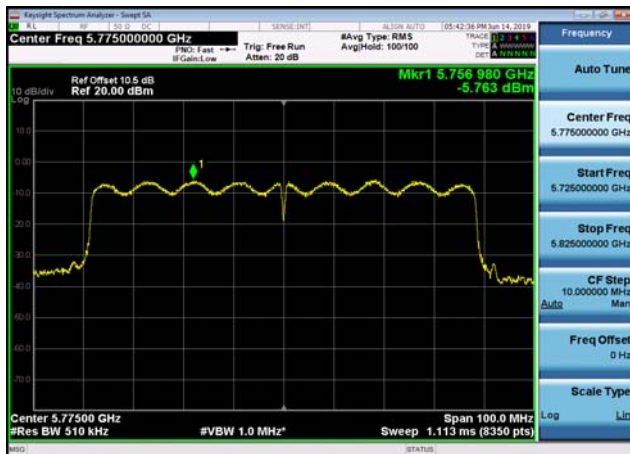
U-NII-3 Power spectral density-802.11
ac(40MHz),5795MHz,Ant0



U-NII-3 Power spectral density-802.11
ac(40MHz),5795MHz,Ant1



U-NII-3 Power spectral density-802.11
ac(80MHz),5775MHz,Ant0



U-NII-3 Power spectral density-802.11
ac(80MHz),5775MHz,Ant1



26dB and 6dB Down Bandwidth

Test Result and Data

U-NII-1 Occupied 26 dB Bandwidth				
Mode	Test Frequency (MHz)	Ant	Occupied Bandwidth (MHz)	Result
802.11n (20MHz)	5180	Ant0	20.55	Pass
802.11n (20MHz)	5180	Ant1	20.44	Pass
802.11n (20MHz)	5220	Ant0	20.56	Pass
802.11n (20MHz)	5220	Ant1	20.53	Pass
802.11n (20MHz)	5240	Ant0	20.35	Pass
802.11n (20MHz)	5240	Ant1	20.51	Pass
802.11n (40MHz)	5190	Ant0	40.44	Pass
802.11n (40MHz)	5190	Ant1	40.56	Pass
802.11n (40MHz)	5230	Ant0	40.48	Pass
802.11n (40MHz)	5230	Ant1	40.42	Pass
802.11ac (20MHz)	5180	Ant0	21.26	Pass
802.11ac (20MHz)	5180	Ant1	20.54	Pass
802.11ac (20MHz)	5220	Ant0	20.55	Pass
802.11ac (20MHz)	5220	Ant1	20.53	Pass
802.11ac (20MHz)	5240	Ant0	20.54	Pass
802.11ac (20MHz)	5240	Ant1	20.52	Pass
802.11ac (40MHz)	5190	Ant0	40.36	Pass
802.11ac (40MHz)	5190	Ant1	40.41	Pass
802.11ac (40MHz)	5230	Ant0	40.23	Pass
802.11ac (40MHz)	5230	Ant1	40.28	Pass
802.11ac (80MHz)	5210	Ant0	86.08	Pass
802.11ac (80MHz)	5210	Ant1	84.03	Pass
802.11a (20MHz)	5180	Ant0	22.26	Pass
802.11a (20MHz)	5180	Ant1	20.14	Pass
802.11a (20MHz)	5220	Ant0	21.07	Pass
802.11a (20MHz)	5220	Ant1	20.22	Pass
802.11a (20MHz)	5240	Ant0	20.45	Pass
802.11a (20MHz)	5240	Ant1	20.27	Pass

U-NII-3 Occupied 6 dB Bandwidth				
Mode	Test Frequency (MHz)	Ant	Occupied Bandwidth (MHz)	Result
802.11n (20MHz)	5745	Ant0	17.61	Pass
802.11n (20MHz)	5745	Ant1	17.63	Pass
802.11n (20MHz)	5785	Ant0	17.61	Pass
802.11n (20MHz)	5785	Ant1	17.63	Pass
802.11n (20MHz)	5825	Ant0	17.61	Pass
802.11n (20MHz)	5825	Ant1	17.63	Pass
802.11n (40MHz)	5755	Ant0	36.43	Pass
802.11n (40MHz)	5755	Ant1	36.48	Pass
802.11n (40MHz)	5795	Ant0	36.43	Pass
802.11n (40MHz)	5795	Ant1	36.44	Pass
802.11ac (20MHz)	5745	Ant0	17.62	Pass
802.11ac (20MHz)	5745	Ant1	17.63	Pass
802.11ac (20MHz)	5785	Ant0	17.62	Pass
802.11ac (20MHz)	5785	Ant1	17.63	Pass
802.11ac (20MHz)	5825	Ant0	17.61	Pass
802.11ac (20MHz)	5825	Ant1	17.64	Pass
802.11ac (40MHz)	5755	Ant0	36.42	Pass
802.11ac (40MHz)	5755	Ant1	36.46	Pass
802.11ac (40MHz)	5795	Ant0	36.42	Pass
802.11ac (40MHz)	5795	Ant1	36.47	Pass
802.11ac (80MHz)	5775	Ant0	76.38	Pass
802.11ac (80MHz)	5775	Ant1	76.43	Pass
802.11a (20MHz)	5745	Ant0	16.47	Pass
802.11a (20MHz)	5745	Ant1	16.46	Pass
802.11a (20MHz)	5785	Ant0	16.48	Pass
802.11a (20MHz)	5785	Ant1	16.55	Pass
802.11a (20MHz)	5825	Ant0	16.48	Pass
802.11a (20MHz)	5825	Ant1	16.55	Pass

Test Plots

U-NII-1 26dB Bandwidth-802.11n(20MHz)
,5180MHz,Ant0



U-NII-1 26dB Bandwidth-802.11n(20MHz)
,5180MHz,Ant1



U-NII-1 26dB Bandwidth-802.11n(20MHz)
,5220MHz,Ant0



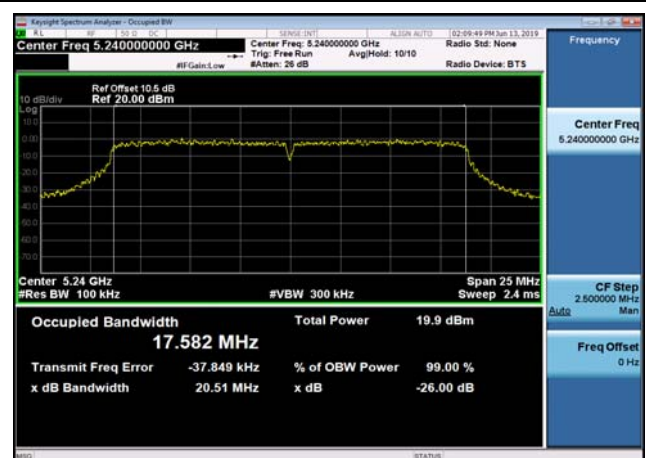
U-NII-1 26dB Bandwidth-802.11n(20MHz)
,5220MHz,Ant1



U-NII-1 26dB Bandwidth-802.11n(20MHz)
,5240MHz,Ant0



U-NII-1 26dB Bandwidth-802.11n(20MHz)
,5240MHz,Ant1



U-NII-1 26dB Bandwidth-802.11n(40MHz)
,5190MHz,Ant0



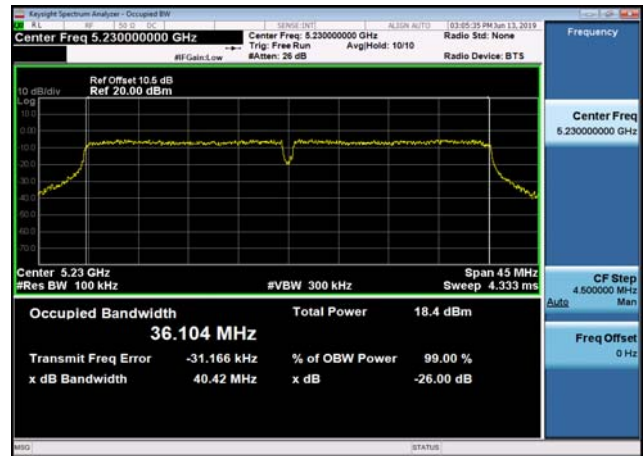
U-NII-1 26dB Bandwidth-802.11n(40MHz)
,5190MHz,Ant1



U-NII-1 26dB Bandwidth-802.11n(40MHz)
,5230MHz,Ant0



U-NII-1 26dB Bandwidth-802.11n(40MHz)
,5230MHz,Ant1



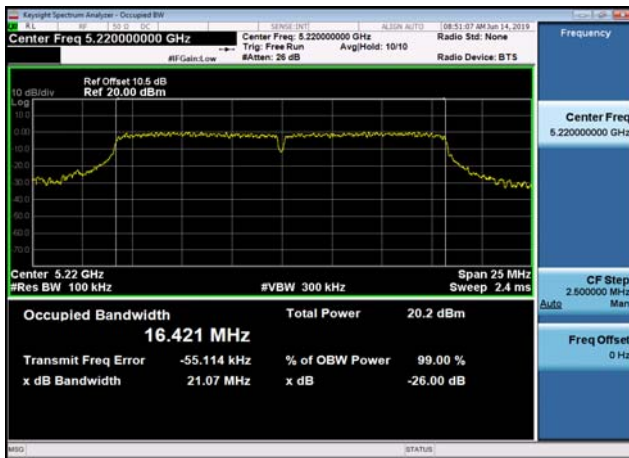
U-NII-1 26dB Bandwidth-802.11a(20MHz)
,5180MHz,Ant0



U-NII-1 26dB Bandwidth-802.11a(20MHz)
,5180MHz,Ant1



U-NII-1 26dB Bandwidth-802.11a(20MHz)
,5220MHz,Ant0



U-NII-1 26dB Bandwidth-802.11a(20MHz)
,5220MHz,Ant1



U-NII-1 26dB Bandwidth-802.11a(20MHz)
,5240MHz,Ant0



U-NII-1 26dB Bandwidth-802.11a(20MHz)
,5240MHz,Ant1



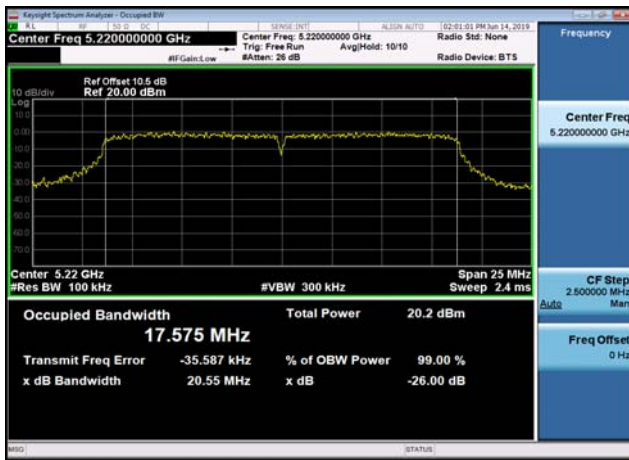
U-NII-1 26dB Bandwidth-802.11ac(20MHz)
,5180MHz,Ant0



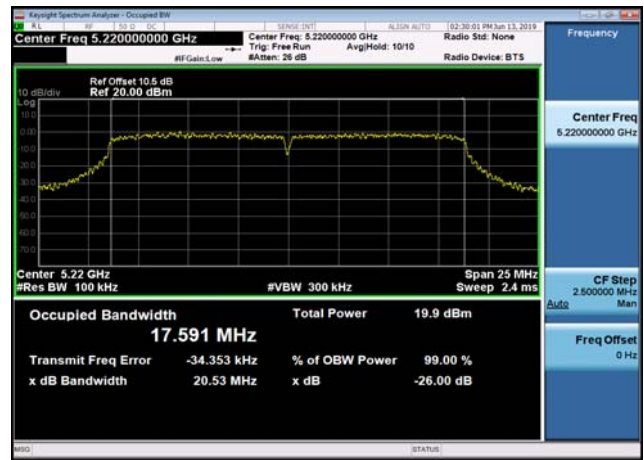
U-NII-1 26dB Bandwidth-802.11ac(20MHz)
,5180MHz,Ant1



U-NII-1 26dB Bandwidth-802.11ac(20MHz
,5220MHz,Ant0



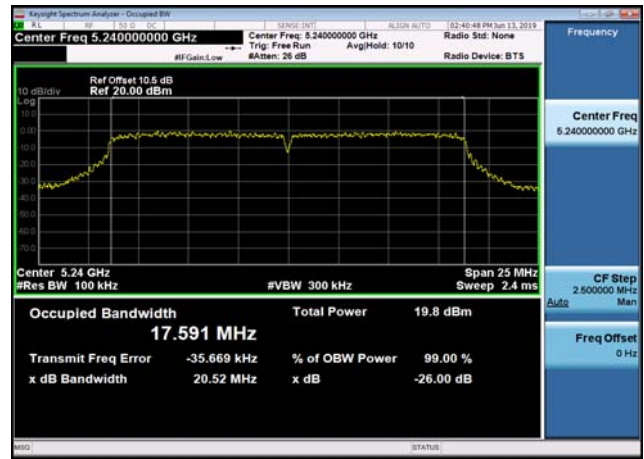
U-NII-1 26dB Bandwidth-802.11ac(20MHz
,5220MHz,Ant1



U-NII-1 26dB Bandwidth-802.11ac(20MHz
,5240MHz,Ant0



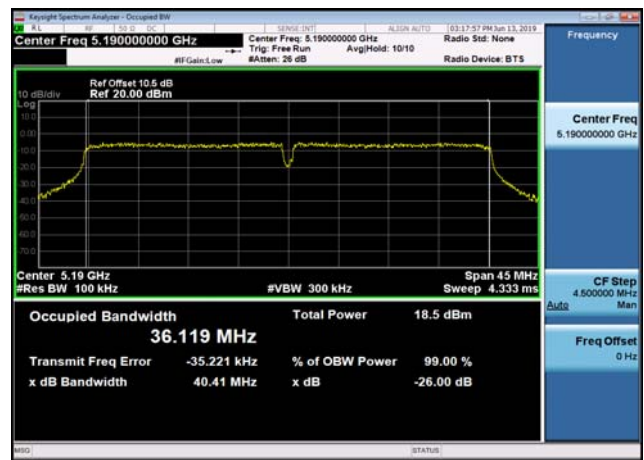
U-NII-1 26dB Bandwidth-802.11ac(20MHz
,5240MHz,Ant1



U-NII-1 26dB Bandwidth-802.11ac(40MHz
,5190MHz,Ant0



U-NII-1 26dB Bandwidth-802.11ac(40MHz
,5190MHz,Ant1



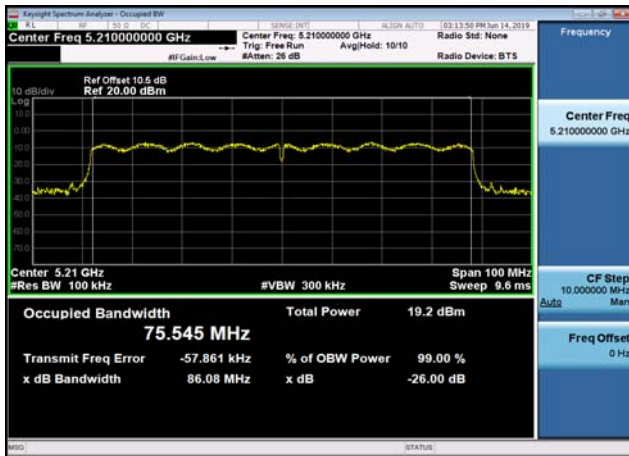
U-NII-1 26dB Bandwidth-802.11ac(40MHz)
,5230MHz,Ant0



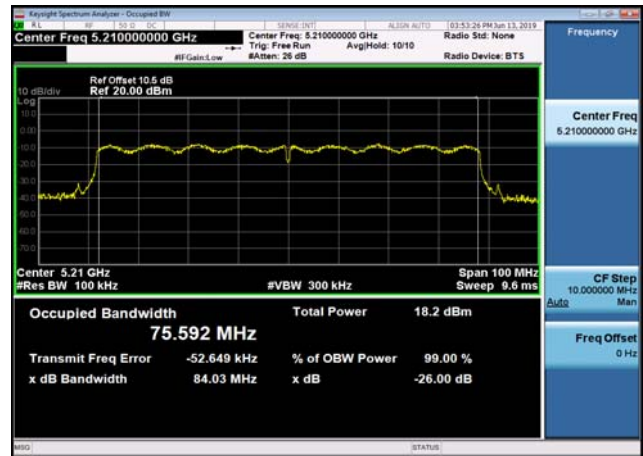
U-NII-1 26dB Bandwidth-802.11ac(40MHz)
,5230MHz,Ant1



U-NII-1 26dB Bandwidth-802.11ac(80MHz)
,5210MHz,Ant0



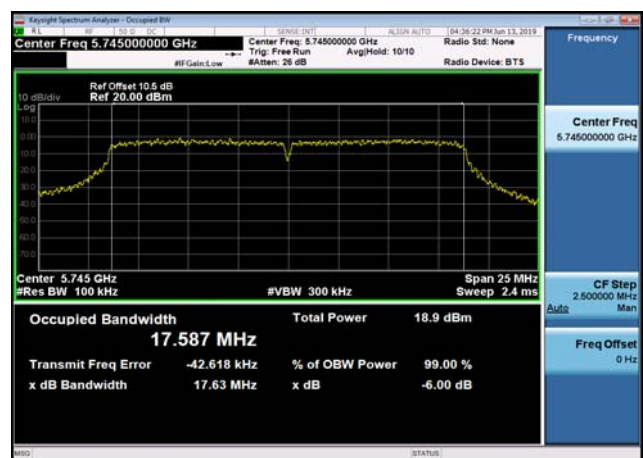
U-NII-1 26dB Bandwidth-802.11ac(80MHz)
,5210MHz,Ant1



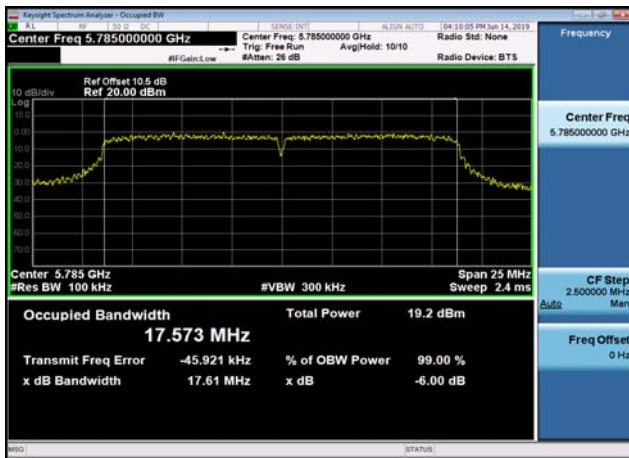
U-NII-3 6dB Bandwidth-802.11n(20MHz)
,5745MHz,Ant0



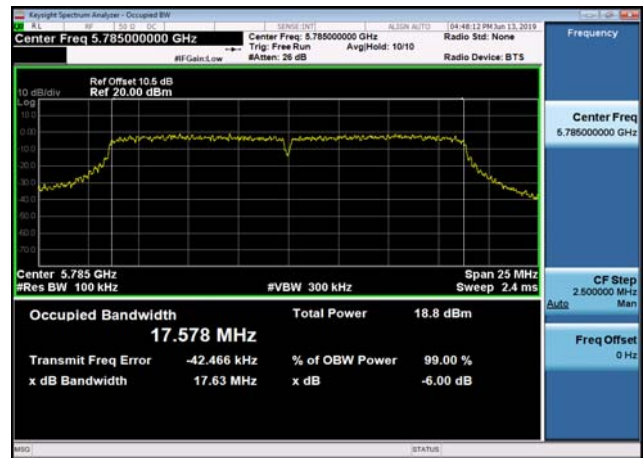
U-NII-3 6dB Bandwidth-802.11n(20MHz)
,5745MHz,Ant1



U-NII-3 6dB Bandwidth-802.11n(20MHz)
,5785MHz,Ant0



U-NII-3 6dB Bandwidth-802.11n(20MHz)
,5785MHz,Ant1



U-NII-3 6dB Bandwidth-802.11n(20MHz)
,5825MHz,Ant0



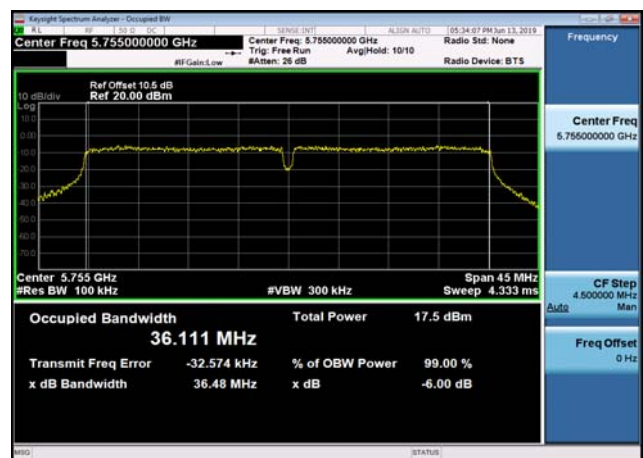
U-NII-3 6dB Bandwidth-802.11n(20MHz)
,5825MHz,Ant1



U-NII-3 6dB Bandwidth-802.11n(40MHz)
,5755MHz,Ant0



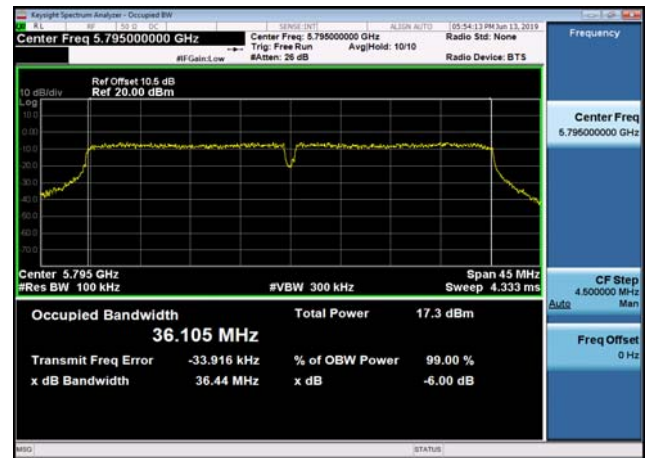
U-NII-3 6dB Bandwidth-802.11n(40MHz)
,5755MHz,Ant1



U-NII-3 6dB Bandwidth-802.11n(40MHz)
,5795MHz,Ant0



U-NII-3 6dB Bandwidth-802.11n(40MHz)
,5795MHz,Ant1



U-NII-3 6dB Bandwidth-802.11a(20MHz)
,5745MHz,Ant0



U-NII-3 6dB Bandwidth-802.11a(20MHz)
,5745MHz,Ant1



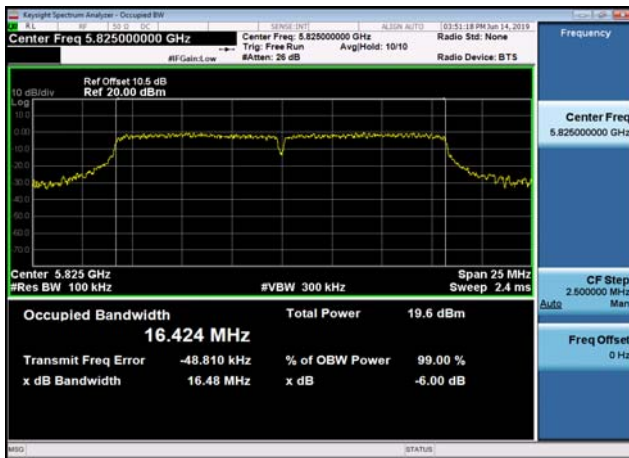
U-NII-3 6dB Bandwidth-802.11a(20MHz)
,5785MHz,Ant0



U-NII-3 6dB Bandwidth-802.11a(20MHz)
,5785MHz,Ant1



U-NII-3 6dB Bandwidth-802.11a(20MHz)
,5825MHz,Ant0



U-NII-3 6dB Bandwidth-802.11a(20MHz)
,5825MHz,Ant1



U-NII-3 6dB Bandwidth-802.11ac(20MHz)
,5745MHz,Ant0



U-NII-3 6dB Bandwidth-802.11ac(20MHz)
,5745MHz,Ant1



U-NII-3 6dB Bandwidth-802.11ac(20MHz)
,5785MHz,Ant0



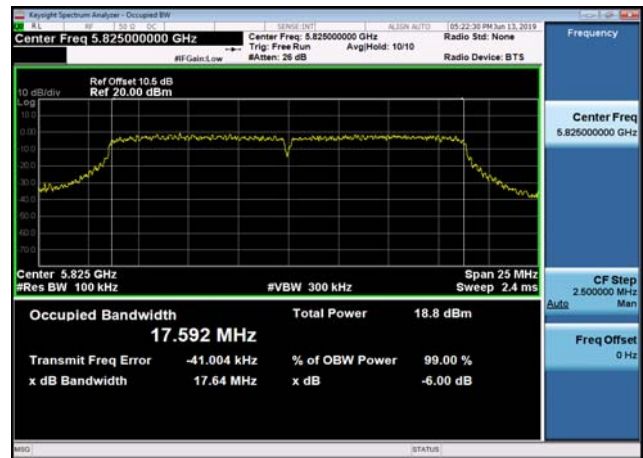
U-NII-3 6dB Bandwidth-802.11ac(20MHz)
,5785MHz,Ant1



U-NII-3 6dB Bandwidth-802.11ac(20MHz)
,5825MHz,Ant0



U-NII-3 6dB Bandwidth-802.11ac(20MHz)
,5825MHz,Ant1



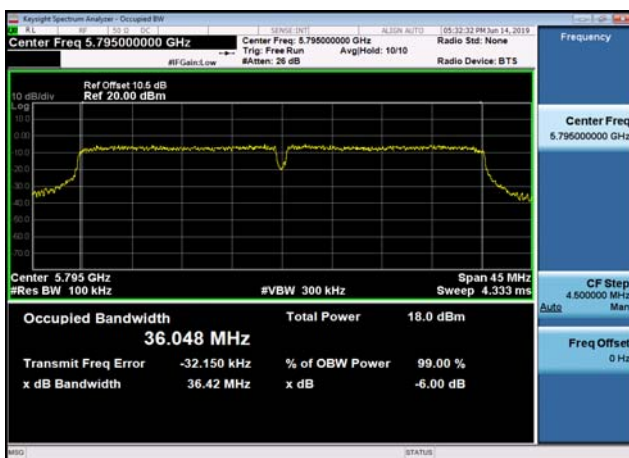
U-NII-3 6dB Bandwidth-802.11ac(40MHz)
,5755MHz,Ant0



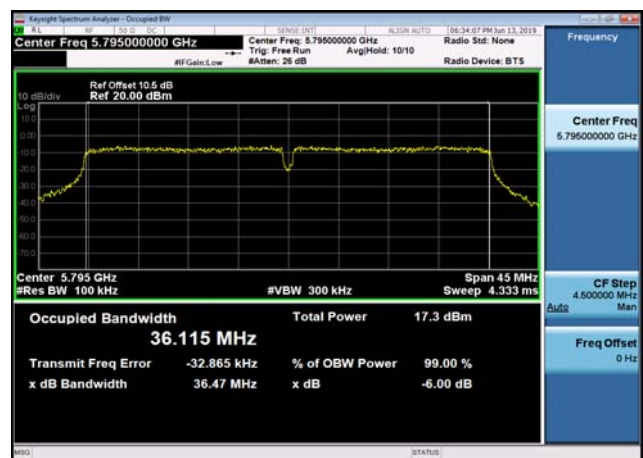
U-NII-3 6dB Bandwidth-802.11ac(40MHz)
,5755MHz,Ant1



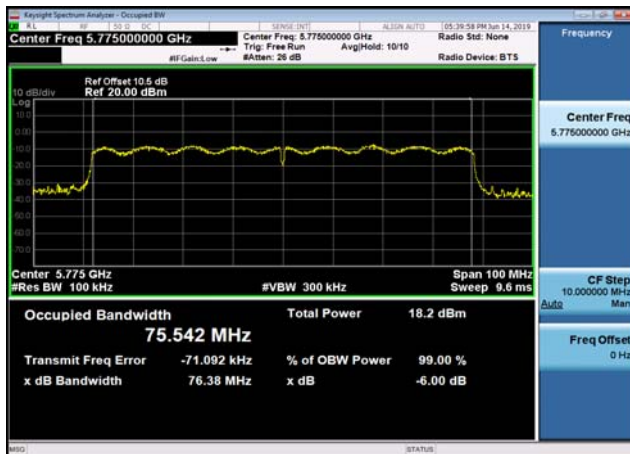
U-NII-3 6dB Bandwidth-802.11ac(40MHz)
,5795MHz,Ant0



U-NII-3 6dB Bandwidth-802.11ac(40MHz)
,5795MHz,Ant1



U-NII-3 6dB Bandwidth-802.11ac(80MHz)
,5775MHz,Ant0



U-NII-3 6dB Bandwidth-802.11ac(80MHz)
,5775MHz,Ant1



Frequency Stability

U-NII-1 Centre Frequency							
Mode	Test Frequency (MHz)	Ant	LF (MHz)	HF (MHz)	CF (MHz)	Freq Stability (ppm)	Test Result
802.11n (20MHz)	5180	Ant1	5171.040	5188.881	5179.960	-7.640	Pass
802.11n (20MHz)	5180	Ant2	5171.039	5188.895	5179.967	-6.350	Pass
802.11n (20MHz)	5220	Ant1	5211.039	5228.875	5219.957	-8.220	Pass
802.11n (20MHz)	5220	Ant2	5211.033	5228.893	5219.963	-7.100	Pass
802.11n (20MHz)	5240	Ant1	5231.043	5248.869	5239.956	-8.430	Pass
802.11n (20MHz)	5240	Ant2	5231.033	5248.896	5239.965	-6.760	Pass
802.11n (40MHz)	5190	Ant1	5171.652	5208.255	5189.954	-8.960	Pass
802.11n (40MHz)	5190	Ant2	5171.643	5208.282	5189.963	-7.230	Pass
802.11n (40MHz)	5230	Ant1	5211.657	5248.258	5229.957	-8.170	Pass
802.11n (40MHz)	5230	Ant2	5211.652	5248.278	5229.965	-6.740	Pass
802.11ac (20MHz)	5180	Ant1	5171.037	5188.893	5179.965	-6.760	Pass
802.11ac (20MHz)	5180	Ant2	5171.051	5188.883	5179.967	-6.350	Pass
802.11ac (20MHz)	5220	Ant1	5211.042	5228.888	5219.965	-6.780	Pass
802.11ac (20MHz)	5220	Ant2	5211.038	5228.893	5219.966	-6.550	Pass
802.11ac (20MHz)	5240	Ant1	5231.031	5248.891	5239.961	-7.470	Pass
802.11ac (20MHz)	5240	Ant2	5231.033	5248.898	5239.966	-6.520	Pass
802.11ac (40MHz)	5190	Ant1	5171.664	5208.266	5189.965	-6.790	Pass
802.11ac (40MHz)	5190	Ant2	5171.648	5208.260	5189.954	-8.960	Pass
802.11ac	5230	Ant1	5211.649	5248.260	5229.954	-8.750	Pass



(40MHz)							
802.11ac (40MHz)	5230	Ant2	5211.657	5248.267	5229.962	-7.310	Pass
802.11ac (80MHz)	5210	Ant1	5171.680	5248.250	5209.965	-6.720	Pass
802.11ac (80MHz)	5210	Ant2	5171.667	5248.240	5209.953	-8.960	Pass
802.11a (20MHz)	5180	Ant1	5171.646	5188.273	5179.960	-7.800	Pass
802.11a (20MHz)	5180	Ant2	5171.621	5188.273	5179.947	-10.220	Pass
802.11a (20MHz)	5220	Ant1	5211.647	5228.263	5219.955	-8.700	Pass
802.11a (20MHz)	5220	Ant2	5211.658	5228.278	5219.968	-6.070	Pass
802.11a (20MHz)	5240	Ant1	5231.656	5248.268	5239.962	-7.320	Pass
802.11a (20MHz)	5240	Ant2	5231.621	5248.279	5239.950	-9.540	Pass



U-NII-3 Centre Frequency							
Mode	Test Frequency (MHz)	Ant	LF (MHz)	HF (MHz)	CF (MHz)	Freq Stability (ppm)	Test Result
802.11n (20MHz)	5745	Ant1	5736.033	5753.892	5744.963	-6.530	Pass
802.11n (20MHz)	5745	Ant2	5736.033	5753.875	5744.954	-7.980	Pass
802.11n (20MHz)	5785	Ant1	5776.033	5793.883	5784.958	-7.200	Pass
802.11n (20MHz)	5785	Ant2	5776.025	5793.883	5784.954	-7.920	Pass
802.11n (20MHz)	5825	Ant1	5816.025	5833.875	5824.950	-8.580	Pass
802.11n (20MHz)	5825	Ant2	5816.025	5833.900	5824.963	-6.440	Pass
802.11n (40MHz)	5755	Ant1	5736.640	5773.270	5754.955	-7.820	Pass
802.11n (40MHz)	5755	Ant2	5736.655	5773.270	5754.963	-6.520	Pass
802.11n (40MHz)	5795	Ant1	5776.640	5813.270	5794.955	-7.770	Pass
802.11n (40MHz)	5795	Ant2	5776.640	5813.270	5794.955	-7.770	Pass
802.11ac (20MHz)	5745	Ant1	5736.025	5753.900	5744.963	-6.530	Pass
802.11ac (20MHz)	5745	Ant2	5736.025	5753.900	5744.963	-6.530	Pass
802.11ac (20MHz)	5785	Ant1	5776.033	5793.892	5784.963	-6.480	Pass
802.11ac (20MHz)	5785	Ant2	5776.033	5793.900	5784.967	-5.760	Pass
802.11ac (20MHz)	5825	Ant1	5816.042	5833.883	5824.963	-6.440	Pass
802.11ac (20MHz)	5825	Ant2	5816.025	5833.892	5824.958	-7.150	Pass
802.11ac (40MHz)	5755	Ant1	5736.655	5773.270	5754.963	-6.520	Pass
802.11ac (40MHz)	5755	Ant2	5736.640	5773.270	5754.955	-7.820	Pass
802.11ac (40MHz)	5795	Ant1	5776.640	5813.270	5794.955	-7.770	Pass
802.11ac	5795	Ant2	5776.655	5813.285	5794.970	-5.180	Pass



(40MHz)							
802.11ac (80MHz)	5775	Ant1	5736.667	5813.267	5774.967	-5.770	Pass
802.11ac (80MHz)	5775	Ant2	5736.633	5813.267	5774.950	-8.660	Pass
802.11a (20MHz)	5745	Ant1	5736.642	5753.267	5744.954	-7.980	Pass
802.11a (20MHz)	5745	Ant2	5736.625	5753.267	5744.946	-9.430	Pass
802.11a (20MHz)	5785	Ant1	5776.633	5793.275	5784.954	-7.920	Pass
802.11a (20MHz)	5785	Ant2	5776.625	5793.275	5784.950	-8.640	Pass
802.11a (20MHz)	5825	Ant1	5816.650	5833.267	5824.958	-7.150	Pass
802.11a (20MHz)	5825	Ant2	5816.617	5833.275	5824.946	-9.300	Pass

Note: The worst data reported only.

**** END OF REPORT ****