

FCC 47 CFR PART 15 SUBPART E

Applicant : Edimax Technology Co Ltd
Product Type : 3T3R 11ac Wireless Dual-band USB Adapter
Trade Name : EDIMAX
Model Number : EW-7833UAC
Test Specification : FCC 47 CFR PART 15 SUBPART E
ANSI C63.10:2013
Receive Date : Mar. 17, 2016
Test Period : May 01 ~ Jul. 07, 2016
Issue Date : Jul. 22, 2016

Issue by

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Taiwan Accreditation Foundation accreditation number: 1330

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Revision History

Rev.	Issue Date	Revisions	Revised By
00	Jul. 22, 2016	Initial Issue	Snow Wang



Verification of Compliance

Issued Date: Jul. 22, 2016

Applicant : Edimax Technology Co Ltd

Product Type : 3T3R 11ac Wireless Dual-band USB Adapter

Trade Name : EDIMAX

Model Number : EW-7833UAC

FCC ID : NDD9578331604

EUT Rated Voltage : DC 5V, 900mA

Test Voltage : 120 Vac / 60 Hz

Applicable Standard : FCC 47 CFR PART 15 SUBPART E
ANSI C63.10:2013

Test Result : Complied

Performing Lab. : A Test Lab Techno Corp.
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Taiwan Accreditation Foundation accreditation number: 1330
<http://www.atl-lab.com.tw/e-index.htm>

A Test Lab Techno Corp. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by A Test Lab Techno Corp. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Approved By : Fly Lu Reviewed By : Eric Ou Yang
(Manager) (Fly Lu) (Testing Engineer) (Eric Ou Yang)

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1 General Information

1.1. Summary of Test Result

Standard	Item	Result	Remark
FCC			
15.407(b)(6) 15.207	AC Power Conducted Emission	PASS	---
15.407(b) 15.205 / 15.209	Transmitter Radiated Emissions	PASS	---
15.407(a)	Maximum Conducted Output Power	PASS	---
15.407(a)	26dB RF Bandwidth	Reference	---
15.407(e)	6dB RF Bandwidth	PASS	----
15.407(a)	Peak Power Spectral Density	PASS	---
15.407(g)	Frequency Stability	PASS	---
15.407(a) 15.203	Antenna Requirement	PASS	---

The test results of this report relate only to the tested sample(s) identified in this report. Manufacturer or whom it may concern should recognize the pass or fail of the test result.

1.2. Measurement Uncertainty

Test Item	Frequency Range	Uncertainty
Conducted Emission	9kHz ~ 150KHz	2.7 dB
	150kHz ~ 30MHz	2.8 dB
Radiated Emission	9kHz ~ 30MHz	1.457 dB
	30MHz ~ 1000MHz	6.300 dB
	1000MHz ~ 18000MHz	5.474 dB
	18000MHz ~ 26500MHz	5.630 dB
	26500MHz ~ 40000MHz	5.054 dB
Conducted Output Power		+0.27 dB / -0.28 dB
RF Bandwidth		4.96%
Power Spectral Density		+0.71 dB / -0.77 dB
Frequency Stability		+ 2.212 x 10 ⁻⁷ % / - 2.170 x 10 ⁻⁷ %
Duty Cycle		1.06%
Time Occupancy		1.40%



2 EUT Description

Applicant	Edimax Technology Co Ltd No.3,Wu-Chuan 3rd Road,Wu-Ku Industrial Park, New Taipei City, Taiwan			
Manufacturer	Edimax Technology Co Ltd No.3,Wu-Chuan 3rd Road,Wu-Ku Industrial Park, New Taipei City, Taiwan			
Product Type	3T3R 11ac Wireless Dual-band USB Adapter			
Trade Name	EDIMAX			
Model No.	EW-7833UAC			
FCC ID	NDD9578331604			
Operate Frequency	Frequency Band		Frequency Range (MHz)	Number of Channels
	IEEE 802.11a	U-NII Band I	5180 – 5240	4
		U-NII Band III	5745 – 5825	5
	IEEE 802.11n 20 MHz / IEEE 802.11ac 20 MHz	U-NII Band I	5180 – 5240	4
		U-NII Band III	5745 – 5825	5
	IEEE 802.11n 40 MHz / IEEE 802.11ac 40 MHz	U-NII Band I	5190 – 5230	2
		U-NII Band III	5755 – 5795	2
	IEEE 802.11ac 80 MHz	U-NII Band I	5210	1
		U-NII Band III	5775	1
Modulation Type	OFDM			
Equipment Type	Client devices			
Antenna information	Antenna	Model	Type	Max. Gain (dBi)
	ANT-0	LYNwave	ALU150-222030	3.78
	ANT-1	LYNwave	ALA110-221020-056010	4.74
	ANT-2	LYNwave	ALU150-222030	3.04
Antenna Delivery	IEEE 802.11a : 1TX + 1RX IEEE 802.11ac 20 MHz / 40 MHz / 80 MHz : 3TX + 3RX			
Frequency stability specification	± 20 ppm			

Frequency Band		RF Output Power (W)
IEEE 802.11a	U-NII Band I	0.086
	U-NII Band III	0.137
IEEE 802.11ac 20 MHz	U-NII Band I	0.084
	U-NII Band III	0.073
IEEE 802.11ac 40 MHz	U-NII Band I	0.077
	U-NII Band III	0.069
IEEE 802.11ac 80 MHz	U-NII Band I	0.055
	U-NII Band III	0.069

3 Test Methodology

3.1. Mode of Operation

Decision of Test ATL has verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:

Test Mode
Mode 1: Normal Operation Mode
Mode 2: IEEE 802.11a Link Mode
Mode 3: IEEE 802.11ac 20MHz Link Mode
Mode 4: IEEE 802.11ac 40MHz Link Mode
Mode 5: IEEE 802.11ac 80MHz Link Mode

Software used to control the EUT for staying in continuous transmitting mode was programmed.

After verification, all tests were carried out with the worst case test modes as shown below except radiated spurious emission below 1GHz and power line conducted emissions below 30MHz, which worst case was in normal link mode only.

By preliminary testing and verifying three axis (X, Y and Z) position of EUT transmitted status, it was found that "X axis" position was the worst, then the final test was executed the worst condition and test data were recorded in this report.

Equipment Type	
Outdoor access point	---
Indoor access point	---
Fixed point-to-point access points	---
Client devices	V

Test Mode	ANT-0	ANT-1	ANT-2	ANT-0+1+2
Mode 2	V	---	---	---
Mode 3	V	V	V	V
Mode 4	V	V	V	V
Mode 5	V	V	V	V

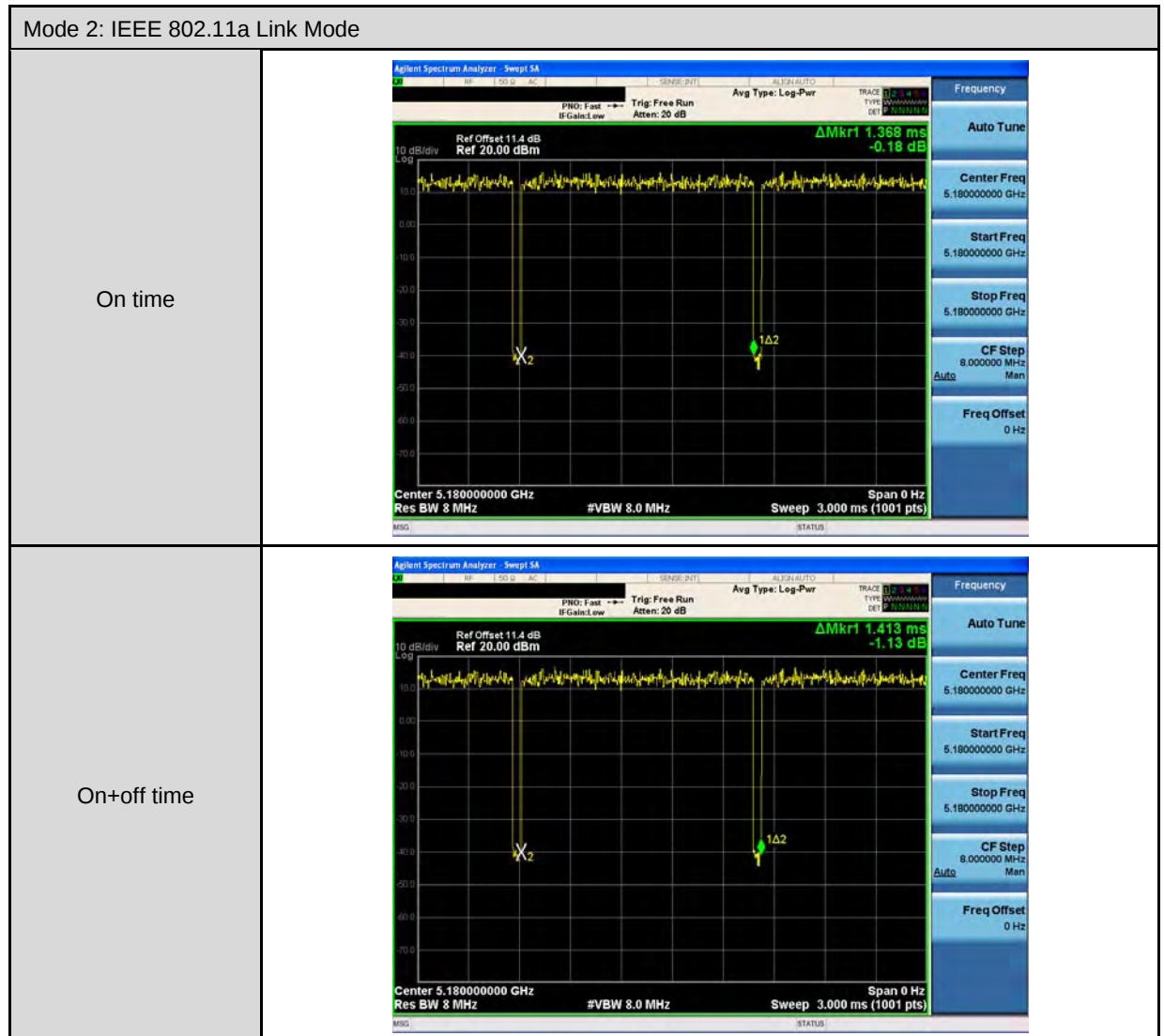
Test Mode	Band	Data Rate	Test Channel
Mode 2	U-NII Band I	6M	36, 40, 44, 48
	U-NII Band III		149,153,157,161,165
Mode 3	U-NII Band I	19.5M	36, 40, 44, 48
	U-NII Band III		149,153,157,161,165
Mode 4	U-NII Band I	40.5M	38, 46
	U-NII Band III		151,159
Mode 5	U-NII Band I	87.9M	42
	U-NII Band III		155



Duty cycle

Test Mode	Frequency (MHz)	on time (ms)	on+off time (ms)	Duty cycle	Duty Factor (dB)	1/T Minimum VBW (kHz)
Mode 2: IEEE 802.11a Link Mode	5180.0	1.368	1.413	0.968	0.141	0.731
Mode 3: IEEE 802.11ac 20MHz Link Mode	5180.0	0.472	0.518	0.911	0.404	2.119
Mode 4: IEEE 802.11ac 40MHz Link Mode	5190.0	0.256	0.304	0.842	0.746	3.906
Mode 5: IEEE 802.11ac 80MHz Link Mode	5210.0	0.149	0.199	0.749	1.257	6.711

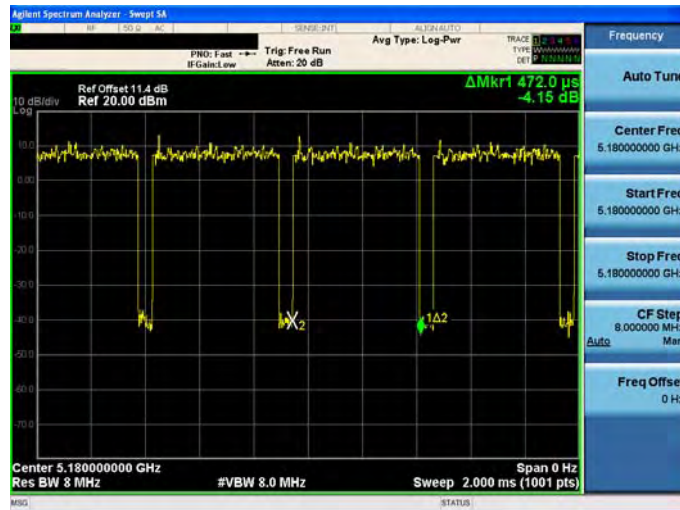
Duty Cycle Graphs





Mode 3: IEEE 802.11ac 20MHz Link Mode

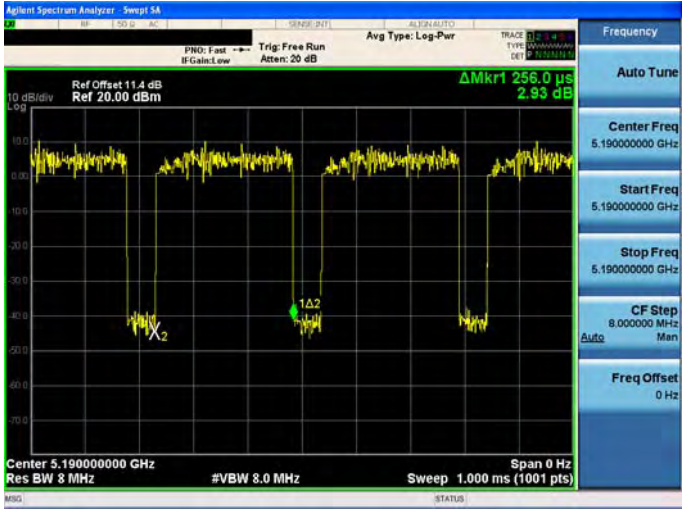
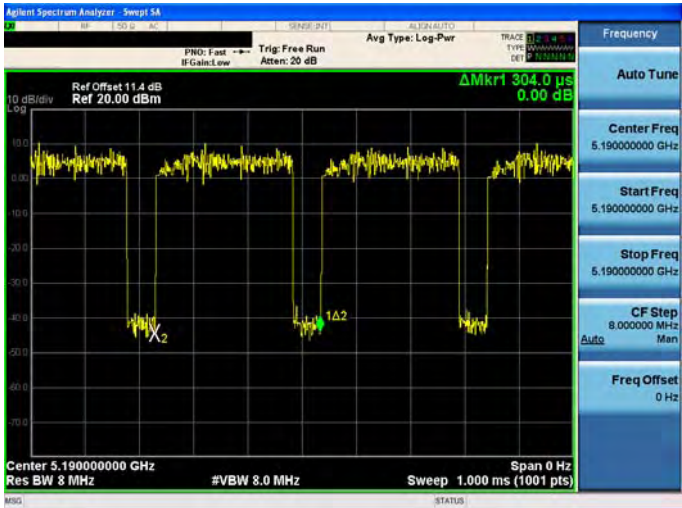
On time

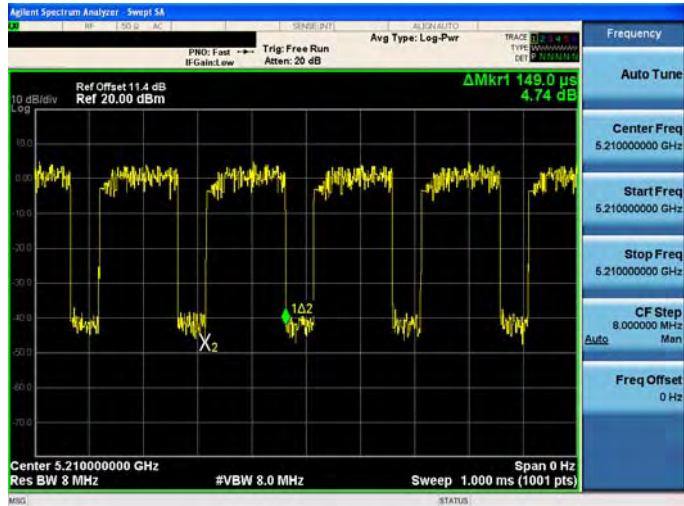
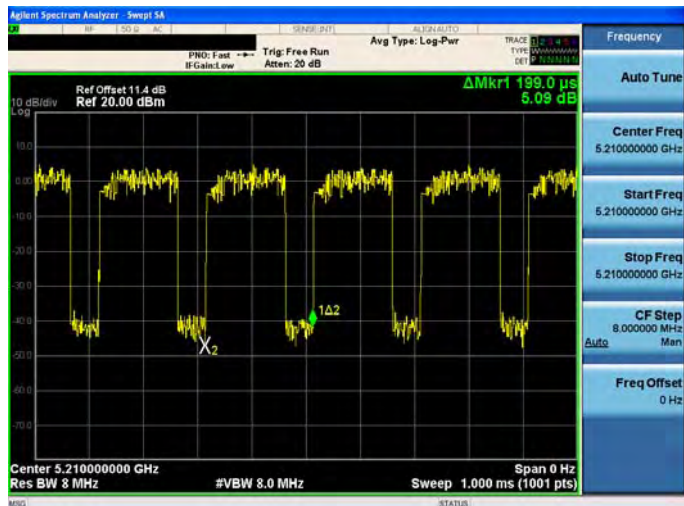


On+off time





Mode 4: IEEE 802.11ac 40MHz Link Mode	
On time	
On+off time	

Mode 5: IEEE 802.11ac 80MHz Link Mode	
On time	
On+off time	

3.2. EUT Exercise Software

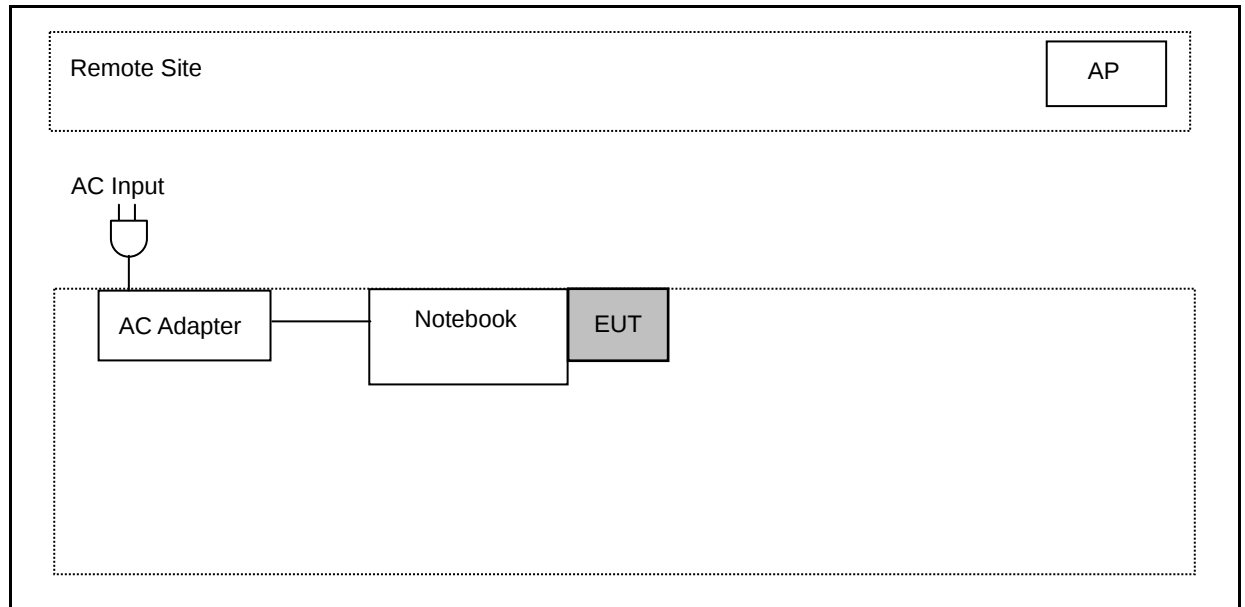
The EUT is operated in the engineering mode to fix the TX frequency for the purposes of measurement. According to its specifications, the EUT must comply with the requirements of Section 15.407 under the FCC Rules Part 15 Subpart E.

1.	Setup the EUT shown on 3.3.
2.	Turn on the power of all equipment.
3.	EUT run test program.

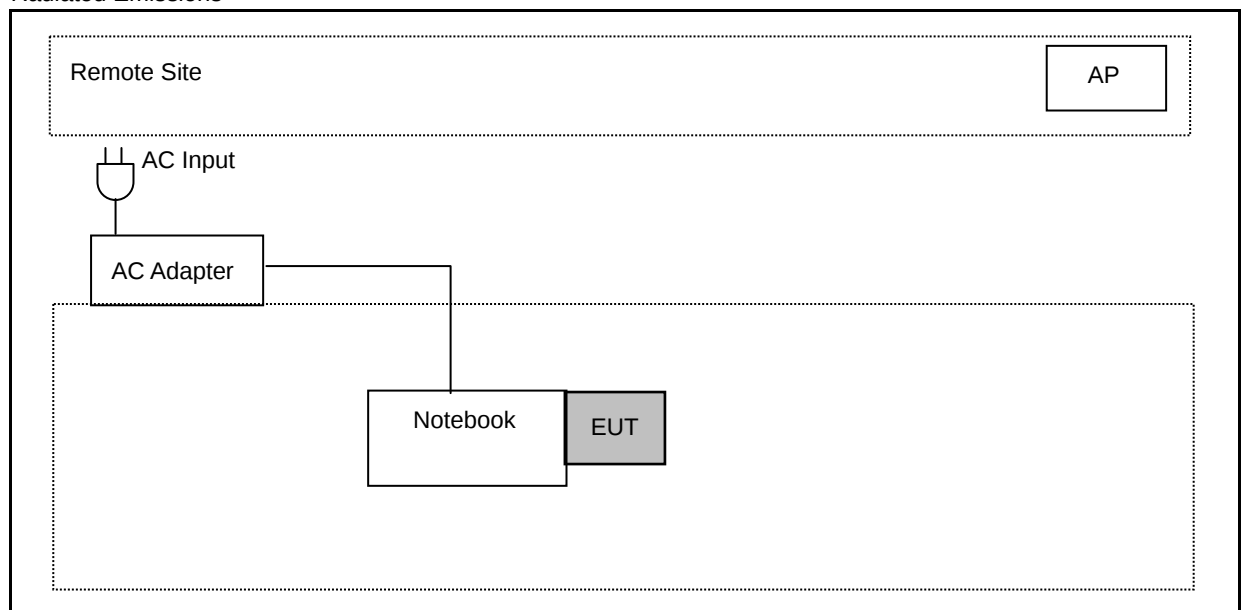
Measurement Software	
1	EZ-EMC Ver. ATL-03A1-1
2	EZ-EMC Ver ATL-ITC-3A1-1

3.3. Configuration of Test System Details

Conducted Emissions



Radiated Emissions



3.4. Test Site Environment

Items	Required (IEC 60068-1)	Actual
Temperature (°C)	15-35	26
Humidity (%RH)	25-75	60
Barometric pressure (mbar)	860-1060	950

4 Test Results

4.1. AC Power Conducted Emission Measurement

■ Limit

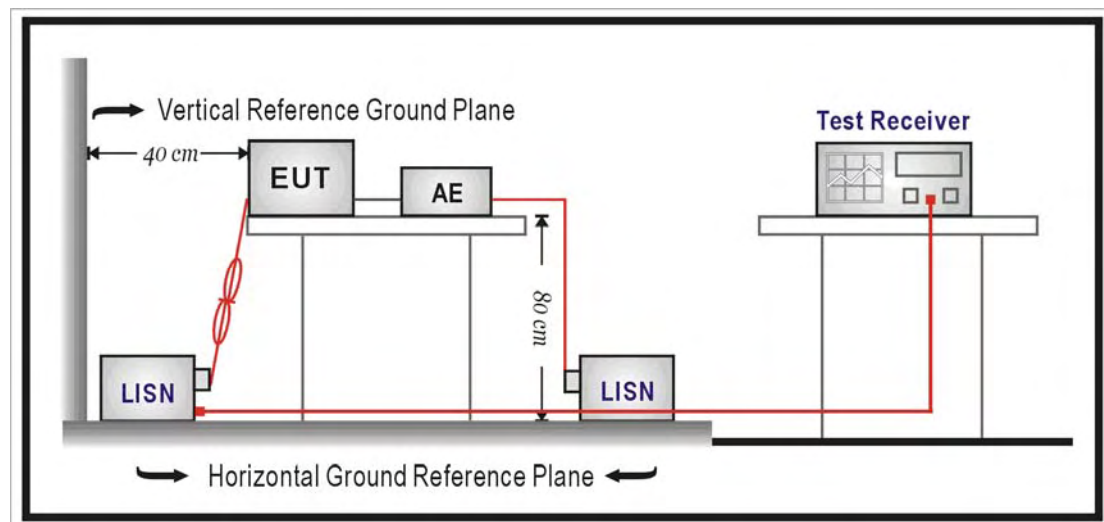
Frequency (MHz)	Quasi-peak	Average
0.15 - 0.5	66 to 56	56 to 46
0.50 - 5.0	56	46
5.0 - 30.0	60	50

■ Test Instruments

Describe	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
Test Receiver	R&S	ESCI	100367	06/25/2015	1 year
LISN	R&S	ENV216	101040	03/15/2016	1 year
LISN	R&S	ENV216	101041	03/07/2016	1 year
RF Cable	Woken	00100D1380194M	TE-02-02	06/26/2015	1 year
Test Site	ATL	TE02	TE02	N.C.R.	-----

Note: N.C.R. = No Calibration Request.

■ Test Setup



4.2. Test Procedure

The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a $50\Omega//50\mu\text{H}$ coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a $50\Omega//50\mu\text{H}$ coupling impedance with 50ohm termination.

Tabletop device shall be placed on a non-conducting platform, of nominal size 1 m by 1.5 m, raised 80 cm above the reference ground plane. The wall of screened room shall be located 40cm to the rear of the EUT. Other surfaces of tabletop or floor standing EUT shall be at least 80cm from any other ground conducting surface including one or more LISNs. For floor-standing device shall be placed under the EUT with a 12mm insulating material.

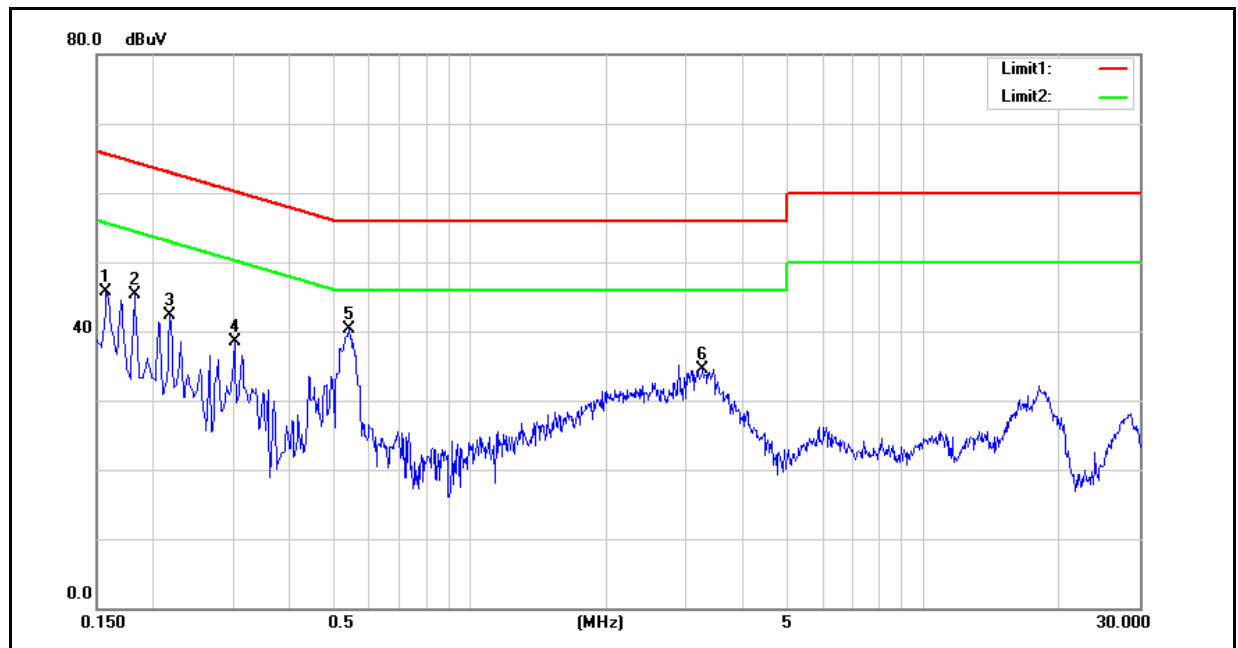
Conducted emissions were investigated over the frequency range from 0.15 MHz to 30 MHz using a resolution bandwidth of 9 kHz. The equipment under test (EUT) shall be meet the limits in section 4.1, as applicable, including the average limit and the quasi-peak limit when using respectively, an average detector and quasi-peak detector measured in accordance with the methods described of related standard. When all of peak value were complied with quasi-peak and average limit from 150kHz to 30MHz then quasi-peak and average measurement was unnecessary.

The AMN shall be placed 0,8 m from the boundary of the unit under test and bonded to a ground reference plane for AMNs mounted on top of the ground reference plane. This distance is between the closest points of the AMN and the EUT. All other units of the EUT and associated equipment shall be at least 0,8 m from the AMN. If the mains power cable is longer than 1m then the cable shall be folded back and forth at the centre of the lead to form a bundle no longer than 0.4m. All of interconnecting cables that hang closer than 40cm to the ground plane shall be folded back and forth in the center forming a bundle 30 cm to 40 cm long. All of EUT and AE shall be separate place more than 0.1m. All 50 Ω ports of the LISN shall be resistively terminated into 50 Ω loads when not connected to the measuring instrument.

If the reading of the measuring receiver shows fluctuations close to the limit, the reading shall be observed for at least 15 s at each measurement frequency; the higher reading shall be recorded with the exception of any brief isolated high reading which shall be ignored.

Test Result

Standard:	FCC Part 15E	Line:	L1
Test item:	Conducted Emission	Power:	AC 120V/60Hz
Model Number:	EW-7833UAC	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Test Mode:	Mode 1	Date:	05/04/2016
		Test By:	Eric Ou Yang
Description:			

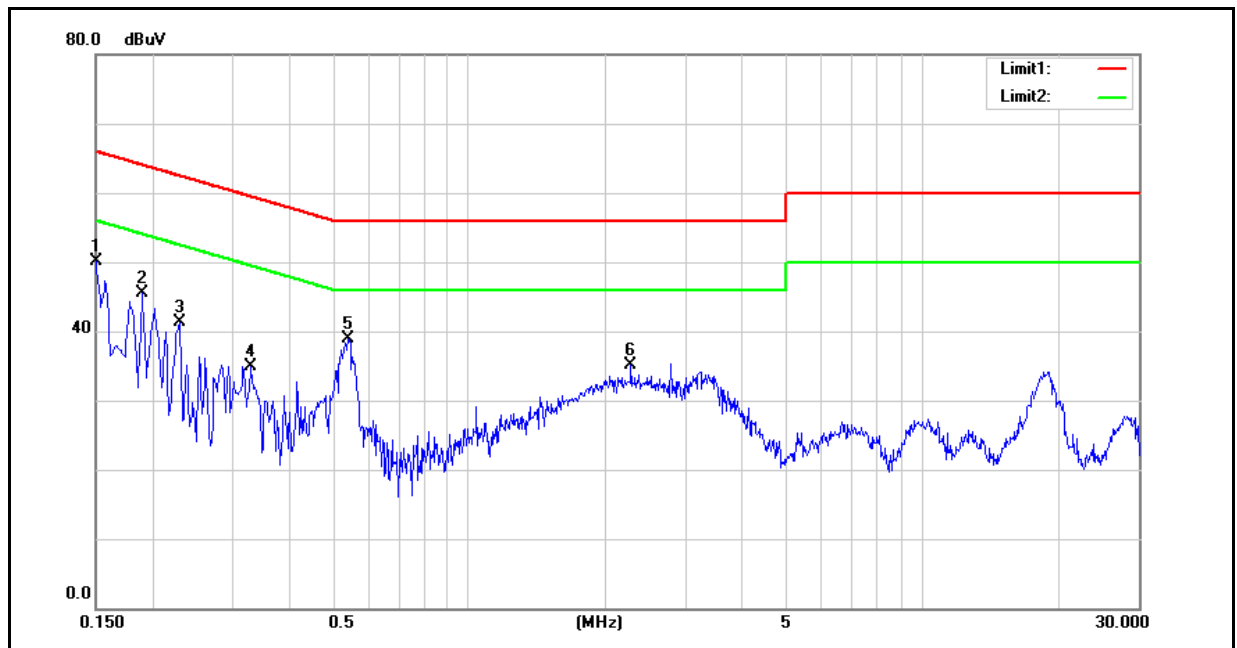


No.	Frequency (MHz)	QP reading (dBuV)	AVG reading (dBuV)	Correction factor (dB)	QP result (dBuV)	AVG result (dBuV)	QP limit (dBuV)	AVG limit (dBuV)	QP margin (dB)	AVG margin (dB)	Remark
1	0.1580	33.77	22.85	9.60	43.37	32.45	65.57	55.57	-22.20	-23.12	Pass
2	0.1820	30.18	17.87	9.59	39.77	27.46	64.39	54.39	-24.62	-26.93	Pass
3	0.2180	24.36	14.55	9.59	33.95	24.14	62.89	52.89	-28.94	-28.75	Pass
4	0.3020	21.51	12.63	9.60	31.11	22.23	60.19	50.19	-29.08	-27.96	Pass
5	0.5420	28.88	21.99	9.61	38.49	31.60	56.00	46.00	-17.51	-14.40	Pass
6	3.2700	21.48	13.33	9.74	31.22	23.07	56.00	46.00	-24.78	-22.93	Pass

Note: 1. Result = Correction factor + Reading

2. Correction factor = Antenna Factor + Cable loss – Pre-Amplifier gain.

Standard:	FCC Part 15E	Line:	N
Test item:	Conducted Emission	Power:	AC 120V/60Hz
Model Number:	EW-7833UAC	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Test Mode:	Mode 1	Date:	05/04/2016
		Test By:	Eric Ou Yang
Description:			



No.	Frequency (MHz)	QP reading (dBuV)	AVG reading (dBuV)	Correction factor (dB)	QP result (dBuV)	AVG result (dBuV)	QP limit (dBuV)	AVG limit (dBuV)	QP margin (dB)	AVG margin (dB)	Remark
1	0.1500	34.04	17.92	9.59	43.63	27.51	66.00	56.00	-22.37	-28.49	Pass
2	0.1900	30.47	17.65	9.58	40.05	27.23	64.04	54.04	-23.99	-26.81	Pass
3	0.2300	25.65	12.85	9.58	35.23	22.43	62.45	52.45	-27.22	-30.02	Pass
4	0.3321	22.32	13.30	9.59	31.91	22.89	59.40	49.40	-27.49	-26.51	Pass
5	0.5420	28.11	21.00	9.60	37.71	30.60	56.00	46.00	-18.29	-15.40	Pass
6	2.2820	21.19	16.00	9.69	30.88	25.69	56.00	46.00	-25.12	-20.31	Pass

Note: 1. Result = Correction factor + Reading

2. Correction factor = Antenna Factor + Cable loss – Pre-Amplifier gain.

4.3. Transmitter Radiated Emissions Measurement

■ Limit

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

(a)For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

(d)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.

(2)Limits of Radiated Emission Measurement

Emissions radiated outside of the specified bands, shall be according to the general radiated limits in 15.209 as following:

Frequency Range (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 ~ 0.490	2400/F(kHz)	300
0.490 ~ 1.705	24000/F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	10	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 (uV/m).
3. As shown in 15.35(b), 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.

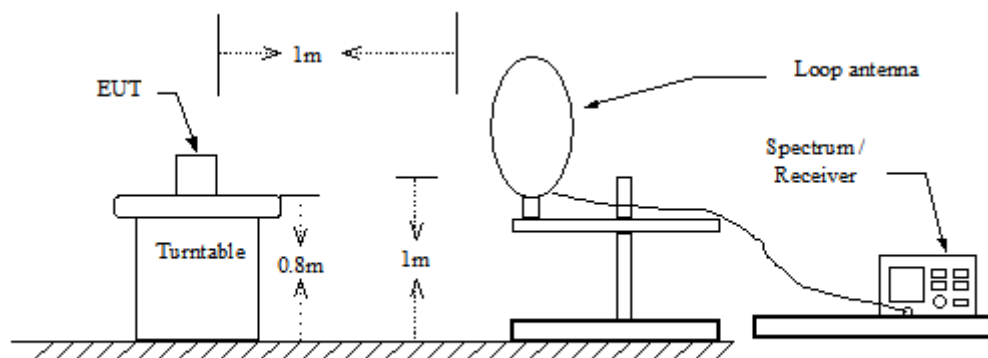
Test Instruments

3 Meter Chamber					
Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
RF Pre-selector	Agilent	N9039A	MY46520256	01/08/2016	1 year
Spectrum Analyzer	Agilent	E4446A	MY46180578	01/08/2016	1 year
Pre Amplifier	Agilent	8449B	3008A02237	10/07/2015	1 year
Pre Amplifier	Agilent	8447D	2944A11119	01/11/2016	1 year
Broadband Antenna	Schwarzbeck	VULB9168	416	09/25/2015	1 year
Horn Antenna (1~18GHz)	SCHWARZBECK MESS-ELEKTRONIK	BBHA9120D	9120D-550	06/12/2015	1 year
Horn Antenna (18~40GHz)	ETS	3116	86467	09/01/2015	1 year
Loop Antenna	COM-POWER CORPORATION	AL-130	121014	02/01/2016	1 year
Microwave Cable	EMCI	EMC102-KM-KM- 14000	151001	10/15/2015	1 year
Microwave Cable	EMCI	EMC-104-SM-SM- 14000	140202	10/15/2015	1 year
Microwave Cable	EMCI	EMC104-SM-SM- 600	140301	10/15/2015	1 year
Test Site	ATL	TE01	888001	08/27/2015	1 year

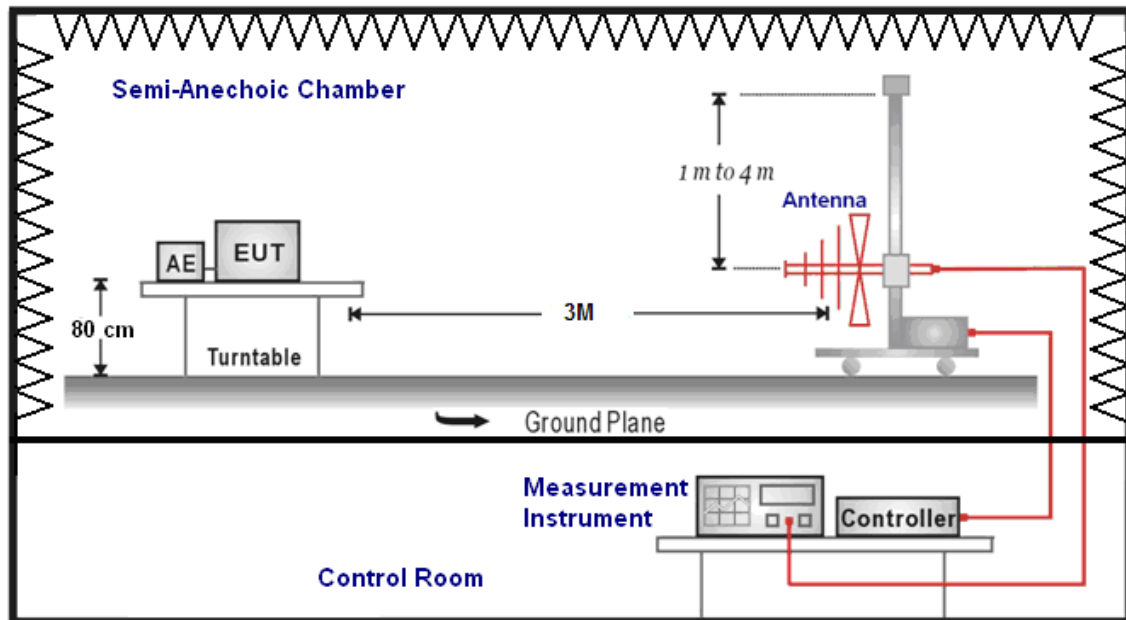
Note: N.C.R. = No Calibration Request.

Setup

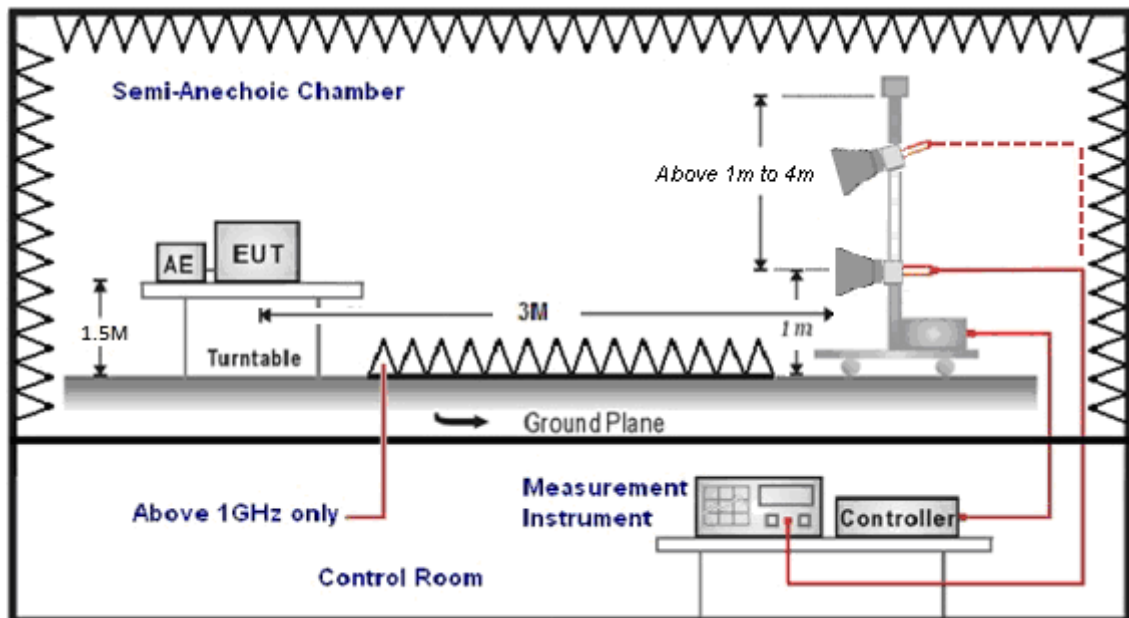
9kHz ~ 30MHz



30MHz ~ 1GHz



Above 1GHz



■ Test Procedure

Final radiation measurements were made on a three-meter, Semi Anechoic Chamber. The EUT system was placed on a nonconductive turntable which is 0.8 or 1.5 meters height (below 1GHz use 0.8m turntable / above 1GHz use 1.5m turntable), top surface 1.0 x 1.5 meter. The spectrum was examined from 250 MHz to 2.5 GHz in order to cover the whole spectrum below 10th harmonic which could generate from the EUT. During the test, EUT was set to transmit continuously & Measurements spectrum range from 9 kHz to 40 GHz is investigated.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For restricted measurements above 1 GHz the resolution bandwidth is set to 1 MHz, and then the video bandwidth is set to 3 MHz for peak measurements and 10 Hz for average measurements when Duty cycle > 0.98 / 1/T for average measurements when Duty cycle < 0.98.

For out of band measurements above 1 GHz the resolution bandwidth is set to 1 MHz, and then the video bandwidth is set to 3 MHz for peak measurements.

A nonconductive material surrounded the EUT to supporting the EUT for standing on three orthogonal planes. At each condition, the EUT was rotated 360 degrees, and the antenna was raised and lowered from one to four meters to find the maximum emission levels. Measurements were taken using both horizontal and vertical antenna polarization.

SCHWARZBECK MESS-ELEKTRONIK Trilog-Broadband Antenna at 3 Meter and the ETS-Lindgren Double-Ridged Waveguide Horn antenna Schwarzbeck Mess-Elektronik Broadband Horn Antenna was used in frequencies 1 – 40 GHz at a distance of 3 meter. The antenna at an angle toward the source of the emission. All test results were extrapolated to equivalent signal at 3 meters utilizing an inverse linear distance extrapolation Factor (20dB/decade).

For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

Appropriate preamplifiers were used for improving sensitivity and precautions were taken to avoid overloading or desensitizing the spectrum analyzer. No post – detector video filters were used in the test.

The spectrum analyzer's 6 dB bandwidth was set to 1 MHz, and the analyzer was operated in the peak detection mode, for frequencies both below and up 1 GHz. The average levels were obtained by subtracting the duty cycle correction factor from the peak readings.

The following procedures were used to convert the emission levels measured in decibels referenced to 1 microvolt (dBuV) into field intensity in micro volts per meter (uV/m).

The actual field intensity in decibels referenced to 1 microvolt in to field intensity in micro volts per meter (dBuV/m).

The actual field intensity in referenced to 1 microvolt per meter (dBuV/m) is determined by algebraically adding the measured reading in dBuV, the antenna factor (dB), and cable loss (dB) and Subtracting the gain of preamplifier (dB) is auto calculate in spectrum analyzer.

$$(1) \text{ Amplitude (dBuV/m) = FI (dBuV) + AF (dBuV) + CL (dBuV) - Gain (dB)}$$

FI= Reading of the field intensity.

AF= Antenna factor.

CL= Cable loss.

P.S Amplitude is auto calculate in spectrum analyzer.

$$(2) \text{ Actual Amplitude (dBuV/m) = Amplitude (dBuV) - Dis(dB)}$$

The FCC specified emission limits were calculated according the EUT operating frequency and by following linear interpolation equations:

(a) For fundamental frequency : Transmitter Output < +30dBm

(b) For spurious frequency : Spurious emission limits = fundamental emission limit /10

Measuring Instruments and setting

The following table is the setting of spectrum analyzer and receiver.

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000MHz
Stop Frequency	40GHz
RBW/VBW(Emission in restricted band)	1MHz / 3MHz for Peak 1MHz / (1/T) for Average
RBW/VBW(Emission in non-restricted band)	1MHz / 3MHz for Peak



■ Test Result

Below 1GHz

Standard:		FCC Part 15E		Test Distance:		3m	
Test item:		Radiated Emission		Power:		AC 120V/60Hz	
Model Number:		EW-7833UAC		Temp.(°C)/Hum.(%RH):		26(°C)/60%RH	
Test Mode:		Mode 1		Date:		05/01/2016	
Description:				Test By:		Eric Ou Yang	
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
203.5000	25.65	-7.77	17.88	43.50	-25.62	QP	H
312.0000	30.64	-3.20	27.44	46.00	-18.56	QP	H
479.0000	24.53	0.35	24.88	46.00	-21.12	QP	H
625.5000	26.66	3.43	30.09	46.00	-15.91	QP	H
750.5000	25.83	6.03	31.86	46.00	-14.14	QP	H
887.5000	24.57	8.34	32.91	46.00	-13.09	QP	H
147.5000	30.19	-5.42	24.77	43.50	-18.73	QP	V
329.5000	24.64	-2.97	21.67	46.00	-24.33	QP	V
490.5000	25.20	0.56	25.76	46.00	-20.24	QP	V
587.0000	24.17	2.53	26.70	46.00	-19.30	QP	V
760.5000	24.49	6.16	30.65	46.00	-15.35	QP	V
869.5000	24.03	7.97	32.00	46.00	-14.00	QP	V

Note: 1. No emission found between lowest internal used/generated frequency to 30MHz (9kHz~30MHz).

2. Result = Correction factor + Reading

3. Correction factor = Antenna Factor + Cable loss – Pre-Amplifier gain.



Above 1GHz

Standard:	FCC Part 15E		Test Distance:	3m			
Test item:	Radiated Emission		Power:	AC 120V/60Hz			
Model Number:	EW-7833UAC		Temp.(°C)/Hum.(%RH):	26(°C)/60%RH			
Test Mode:	Mode 2		Date:	05/01/2016			
Frequency:	5180MHz		Test By:	Eric Ou Yang			
Description:							
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
10360.000	45.64	5.21	50.85	68.20	-17.35	peak	H
10360.000	47.98	5.21	53.19	68.20	-15.01	peak	V

Standard:	FCC Part 15E	Test Distance:	3m				
Test item:	Radiated Emission	Power:	AC 120V/60Hz				
Model Number:	EW-7833UAC	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH				
Test Mode:	Mode 2	Date:	05/01/2016				
Frequency:	5200MHz	Test By:	Eric Ou Yang				
Description:							
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
10400.000	45.45	5.33	50.78	68.20	-17.42	peak	H
10400.000	46.93	5.33	52.26	68.20	-15.94	peak	V

Note: 1. Result = Correction factor + Reading

2. Correction factor = Antenna Factor + Cable loss – Pre-Amplifier gain.



Standard:	FCC Part 15E		Test Distance:	3m			
Test item:	Radiated Emission		Power:	AC 120V/60Hz			
Model Number:	EW-7833UAC		Temp.(℃)/Hum.(%RH):	26(℃)/60%RH			
Test Mode:	Mode 2		Date:	05/01/2016			
Frequency:	5240MHz		Test By:	Eric Ou Yang			
Description:							
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
10480.000	44.58	5.55	50.13	68.20	-18.07	peak	H
10480.000	46.18	5.55	51.73	68.20	-16.47	peak	V

Standard:	FCC Part 15E	Test Distance:	3m				
Test item:	Radiated Emission	Power:	AC 120V/60Hz				
Model Number:	EW-7833UAC	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH				
Test Mode:	Mode 2	Date:	05/01/2016				
Frequency:	5745MHz	Test By:	Eric Ou Yang				
Description:							
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
11490.000	44.79	6.44	51.23	74.00	-22.77	peak	H
11490.000	50.44	6.44	56.88	74.00	-17.12	peak	V
11490.000	42.20	6.44	48.64	54.00	-5.36	AVG	V

Note: 1. Result = Correction factor + Reading

2. Correction factor = Antenna Factor + Cable loss – Pre-Amplifier gain.

Standard:	FCC Part 15E	Test Distance:	3m				
Test item:	Radiated Emission	Power:	AC 120V/60Hz				
Model Number:	EW-7833UAC	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH				
Test Mode:	Mode 2	Date:	05/01/2016				
Frequency:	5785MHz	Test By:	Eric Ou Yang				
Description:							
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
11570.000	44.43	6.63	51.06	74.00	-22.94	peak	H
11570.000	46.99	6.63	53.62	74.00	-20.38	peak	V
11570.000	38.75	6.63	45.38	54.00	-8.62	AVG	V

Standard:	FCC Part 15E	Test Distance:	3m				
Test item:	Radiated Emission	Power:	AC 120V/60Hz				
Model Number:	EW-7833UAC	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH				
Test Mode:	Mode 2	Date:	05/01/2016				
Frequency:	5825MHz	Test By:	Eric Ou Yang				
Description:							
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
11650.000	44.82	6.85	51.67	74.00	-22.33	peak	H
11650.000	46.49	6.85	53.34	74.00	-20.66	peak	V
11650.000	37.92	6.85	44.77	54.00	-9.23	AVG	V

Note: 1. Result = Correction factor + Reading

2. Correction factor = Antenna Factor + Cable loss – Pre-Amplifier gain.



Standard:	FCC Part 15E		Test Distance:	3m			
Test item:	Radiated Emission		Power:	AC 120V/60Hz			
Model Number:	EW-7833UAC		Temp.(°C)/Hum.(%RH):	26(°C)/60%RH			
Test Mode:	Mode 3		Date:	05/01/2016			
Frequency:	5180MHz		Test By:	Eric Ou Yang			
Description:							
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
10360.000	46.07	5.21	51.28	68.20	-16.92	peak	H
10360.000	46.80	5.21	52.01	68.20	-16.19	peak	V

Standard:	FCC Part 15E	Test Distance:	3m				
Test item:	Radiated Emission	Power:	AC 120V/60Hz				
Model Number:	EW-7833UAC	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH				
Test Mode:	Mode 3	Date:	05/01/2016				
Frequency:	5200MHz	Test By:	Eric Ou Yang				
Description:							
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
10400.000	48.77	5.33	54.10	68.20	-14.10	peak	H
10400.000	51.75	5.33	57.08	68.20	-11.12	peak	V

Note: 1. Result = Correction factor + Reading

2. Correction factor = Antenna Factor + Cable loss – Pre-Amplifier gain.



Standard:	FCC Part 15E		Test Distance:	3m			
Test item:	Radiated Emission		Power:	AC 120V/60Hz			
Model Number:	EW-7833UAC		Temp.(°C)/Hum.(%RH):	26(°C)/60%RH			
Test Mode:	Mode 3		Date:	05/01/2016			
Frequency:	5240MHz		Test By:	Eric Ou Yang			
Description:							
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
10480.000	47.40	5.55	52.95	68.20	-15.25	peak	H
10480.000	50.02	5.55	55.57	68.20	-12.63	peak	V

Standard:	FCC Part 15E	Test Distance:	3m				
Test item:	Radiated Emission	Power:	AC 120V/60Hz				
Model Number:	EW-7833UAC	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH				
Test Mode:	Mode 3	Date:	05/01/2016				
Frequency:	5745MHz	Test By:	Eric Ou Yang				
Description:							
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
11490.000	45.45	6.44	51.89	74.00	-22.11	peak	H
11490.000	51.17	6.44	57.61	74.00	-16.39	peak	V
11490.000	43.90	6.44	50.34	54.00	-3.66	AVG	V

Note: 1. Result = Correction factor + Reading

2. Correction factor = Antenna Factor + Cable loss – Pre-Amplifier gain.



Standard:	FCC Part 15E			Test Distance:	3m		
Test item:	Radiated Emission			Power:	AC 120V/60Hz		
Model Number:	EW-7833UAC			Temp.(℃)/Hum.(%RH):	26(℃)/60%RH		
Test Mode:	Mode 3			Date:	05/01/2016		
Frequency:	5785MHz			Test By:	Eric Ou Yang		
Description:							
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
11570.000	45.14	6.63	51.77	74.00	-22.23	peak	H
11570.000	47.06	6.63	53.69	74.00	-20.31	peak	V
11570.000	38.62	6.63	45.25	54.00	-8.75	AVG	V

Standard:	FCC Part 15E	Test Distance:	3m				
Test item:	Radiated Emission	Power:	AC 120V/60Hz				
Model Number:	EW-7833UAC	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH				
Test Mode:	Mode 3	Date:	05/01/2016				
Frequency:	5825MHz	Test By:	Eric Ou Yang				
Description:							
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
11650.000	44.58	6.85	51.43	74.00	-22.57	peak	H
11650.000	46.15	6.85	53.00	74.00	-21.00	peak	V
11650.000	38.54	6.85	45.39	54.00	-8.61	AVG	V

Note: 1. Result = Correction factor + Reading

2. Correction factor = Antenna Factor + Cable loss – Pre-Amplifier gain.



Standard:	FCC Part 15E	Test Distance:	3m				
Test item:	Radiated Emission	Power:	AC 120V/60Hz				
Model Number:	EW-7833UAC	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH				
Test Mode:	Mode 4	Date:	05/01/2016				
Frequency:	5190MHz	Test By:	Eric Ou Yang				
Description:							
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
10380.000	46.42	5.27	51.69	68.20	-16.51	peak	H
10380.000	45.22	5.27	50.49	68.20	-17.71	peak	V

Standard:	FCC Part 15E		Test Distance:	3m			
Test item:	Radiated Emission		Power:	AC 120V/60Hz			
Model Number:	EW-7833UAC		Temp.(°C)/Hum.(%RH):	26(°C)/60%RH			
Test Mode:	Mode 4		Date:	05/01/2016			
Frequency:	5230MHz		Test By:	Eric Ou Yang			
Description:							
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
10460.000	45.20	5.50	50.70	68.20	-17.50	peak	H
10460.000	43.85	5.50	49.35	68.20	-18.85	peak	V

Note: 1. Result = Correction factor + Reading

2. Correction factor = Antenna Factor + Cable loss – Pre-Amplifier gain.



Standard:	FCC Part 15E	Test Distance:	3m				
Test item:	Radiated Emission	Power:	AC 120V/60Hz				
Model Number:	EW-7833UAC	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH				
Test Mode:	Mode 4	Date:	05/01/2016				
Frequency:	5755MHz	Test By:	Eric Ou Yang				
Description:							
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
11510.000	44.66	6.47	51.13	74.00	-22.87	peak	H
11510.000	47.82	6.47	54.29	74.00	-19.71	peak	V
11510.000	39.55	6.47	46.02	54.00	-7.98	AVG	V

Standard:	FCC Part 15E		Test Distance:	3m			
Test item:	Radiated Emission		Power:	AC 120V/60Hz			
Model Number:	EW-7833UAC		Temp.(°C)/Hum.(%RH):	26(°C)/60%RH			
Test Mode:	Mode 4		Date:	05/01/2016			
Frequency:	5795MHz		Test By:	Eric Ou Yang			
Description:							
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
11590.000	44.80	6.69	51.49	74.00	-22.51	peak	H
11590.000	45.24	6.69	51.93	74.00	-22.07	peak	V

Note: 1. Result = Correction factor + Reading

2. Correction factor = Antenna Factor + Cable loss – Pre-Amplifier gain.



Standard:	FCC Part 15E		Test Distance:	3m			
Test item:	Radiated Emission		Power:	AC 120V/60Hz			
Model Number:	EW-7833UAC		Temp.(°C)/Hum.(%RH):	26(°C)/60%RH			
Test Mode:	Mode 5		Date:	05/01/2016			
Frequency:	5210MHz		Test By:	Eric Ou Yang			
Description:							
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
10420.000	44.70	5.37	50.07	68.20	-18.13	peak	H
10420.000	45.05	5.37	50.42	68.20	-17.78	peak	V

Standard:	FCC Part 15E		Test Distance:	3m			
Test item:	Radiated Emission		Power:	AC 120V/60Hz			
Model Number:	EW-7833UAC		Temp.(℃)/Hum.(%RH):	26(℃)/60%RH			
Test Mode:	Mode 5		Date:	05/01/2016			
Frequency:	5775MHz		Test By:	Eric Ou Yang			
Description:							
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
11550.000	44.88	6.58	51.46	74.00	-22.54	peak	H
11550.000	44.52	6.58	51.10	74.00	-22.90	peak	V

Note: 1. Result = Correction factor + Reading

2. Correction factor = Antenna Factor + Cable loss – Pre-Amplifier gain.

**Band Edge**

Standard:		FCC Part 15E		Test Distance:		3m	
Test item:		Radiated Emission		Power:		AC 120V/60Hz	
Model Number:		EW-7833UAC		Temp.(°C)/Hum.(%RH):		26(°C)/60%RH	
Test Mode:		Mode 2		Date:		05/01/2016	
Frequency:		5180 MHz		Test By:		Eric Ou Yang	
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
4644.900	45.77	6.87	52.64	74.00	-21.36	peak	H
4644.900	37.22	6.87	44.09	54.00	-9.91	AVG	H
5150.000	43.70	8.29	51.99	74.00	-22.01	peak	H
5147.500	57.53	8.28	65.81	74.00	-8.19	peak	V
5147.500	43.43	8.28	51.71	54.00	-2.29	AVG	V
5150.000	59.20	8.29	67.49	74.00	-6.51	peak	V
5150.000	44.54	8.29	52.83	54.00	-1.17	AVG	V

Note: 1. Result = Correction factor + Reading

2. Correction factor = Antenna Factor + Cable loss – Pre-Amplifier gain.



Standard:	FCC Part 15E	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	EW-7833UAC	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Test Mode:	Mode 2	Date:	05/01/2016
Frequency:	5200 MHz	Test By:	Eric Ou Yang

Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
5086.560	43.96	8.21	52.17	74.00	-21.83	peak	H
5086.560	35.86	8.21	44.07	54.00	-9.93	AVG	H
5150.000	43.04	8.29	51.33	74.00	-22.67	peak	H
5350.000	41.82	8.50	50.32	74.00	-23.68	peak	H
5401.440	43.87	8.56	52.43	74.00	-21.57	peak	H
5401.440	35.54	8.56	44.10	54.00	-9.90	AVG	H
5147.040	49.48	8.28	57.76	74.00	-16.24	peak	V
5147.040	37.07	8.28	45.35	54.00	-8.65	AVG	V
5150.000	51.25	8.29	59.54	74.00	-14.46	peak	V
5150.000	38.64	8.29	46.93	54.00	-7.07	AVG	V
5350.000	44.67	8.50	53.17	74.00	-20.83	peak	V
5350.000	35.67	8.50	44.17	54.00	-9.83	AVG	V
5363.040	45.57	8.52	54.09	74.00	-19.91	peak	V
5363.040	35.61	8.52	44.13	54.00	-9.87	AVG	V

Note: 1. Result = Correction factor + Reading

2. Correction factor = Antenna Factor + Cable loss – Pre-Amplifier gain.



Standard:	FCC Part 15E	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	EW-7833UAC	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Test Mode:	Mode 2	Date:	05/01/2016
Frequency:	5240 MHz	Test By:	Eric Ou Yang

Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
5350.000	43.06	8.50	51.56	74.00	-22.44	peak	H
5383.000	45.42	8.54	53.96	74.00	-20.04	peak	H
5383.000	35.60	8.54	44.14	54.00	-9.86	AVG	H
5350.000	43.80	8.50	52.30	74.00	-21.70	peak	V
5350.000	35.66	8.50	44.16	54.00	-9.84	AVG	V
5351.540	47.42	8.50	55.92	74.00	-18.08	peak	V
5351.540	35.75	8.50	44.25	54.00	-9.75	AVG	V

Note: 1. Result = Correction factor + Reading

2. Correction factor = Antenna Factor + Cable loss – Pre-Amplifier gain.



Standard:	FCC Part 15E	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	EW-7833UAC	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Test Mode:	Mode 2	Date:	05/01/2016
Frequency:	5745 MHz	Test By:	Eric Ou Yang

Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
5650.000	43.50	9.01	52.51	68.20	-15.69	peak	H
5700.000	45.45	9.13	54.58	105.20	-50.62	peak	H
5720.000	56.36	9.17	65.53	110.80	-45.27	peak	H
5725.000	69.24	9.19	78.43	122.20	-43.77	peak	H
5650.000	43.44	9.01	52.45	68.20	-15.75	peak	V
5700.000	47.39	9.13	56.52	105.20	-48.68	peak	V
5720.000	57.97	9.17	67.14	110.80	-43.66	peak	V
5725.000	70.02	9.19	79.21	122.20	-42.99	peak	V

Note: 1. Result = Correction factor + Reading

2. Correction factor = Antenna Factor + Cable loss – Pre-Amplifier gain.



Standard:	FCC Part 15E	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	EW-7833UAC	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Test Mode:	Mode 2	Date:	05/01/2016
Frequency:	5785 MHz	Test By:	Eric Ou Yang

Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
5650.000	42.12	9.01	51.13	68.20	-17.07	peak	H
5700.000	42.15	9.13	51.28	105.20	-53.92	peak	H
5720.000	41.20	9.17	50.37	110.80	-60.43	peak	H
5725.000	41.39	9.19	50.58	122.20	-71.62	peak	H
5850.000	40.75	9.46	50.21	122.20	-71.99	peak	H
5855.000	41.11	9.48	50.59	110.80	-60.21	peak	H
5875.000	42.11	9.53	51.64	105.20	-53.56	peak	H
5925.000	41.09	9.65	50.74	68.20	-17.46	peak	H
5650.000	45.08	9.01	54.09	68.20	-14.11	peak	V
5700.000	44.29	9.13	53.42	105.20	-51.78	peak	V
5720.000	45.46	9.17	54.63	110.80	-56.17	peak	V
5725.000	44.88	9.19	54.07	122.20	-68.13	peak	V
5850.000	44.13	9.46	53.59	122.20	-68.61	peak	V
5855.000	44.48	9.48	53.96	110.80	-56.84	peak	V
5875.000	42.46	9.53	51.99	105.20	-53.21	peak	V
5925.000	42.78	9.65	52.43	68.20	-15.77	peak	V

Note: 1. Result = Correction factor + Reading

2. Correction factor = Antenna Factor + Cable loss – Pre-Amplifier gain.



Standard:	FCC Part 15E			Test Distance:	3m		
Test item:	Radiated Emission			Power:	AC 120V/60Hz		
Model Number:	EW-7833UAC			Temp.(°C)/Hum.(%RH):	26(°C)/60%RH		
Test Mode:	Mode 2			Date:	05/01/2016		
Frequency:	5825 MHz			Test By:	Eric Ou Yang		
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
5850.000	56.78	9.46	66.24	122.20	-55.96	peak	H
5855.000	51.88	9.48	61.36	110.80	-49.44	peak	H
5875.000	43.11	9.53	52.64	105.20	-52.56	peak	H
5925.000	42.01	9.65	51.66	68.20	-16.54	peak	H
5850.000	67.84	9.46	77.30	122.20	-44.90	peak	V
5855.000	61.44	9.48	70.92	110.80	-39.88	peak	V
5875.000	45.92	9.53	55.45	105.20	-49.75	peak	V
5925.000	43.69	9.65	53.34	68.20	-14.86	peak	V

Note: 1. Result = Correction factor + Reading

2. Correction factor = Antenna Factor + Cable loss – Pre-Amplifier gain.



Standard:	FCC Part 15E	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	EW-7833UAC	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Test Mode:	Mode 3	Date:	05/01/2016
Frequency:	5180 MHz	Test By:	Eric Ou Yang

Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
5147.500	52.82	8.28	61.10	74.00	-12.90	peak	H
5147.500	43.50	8.28	51.78	54.00	-2.22	AVG	H
5150.000	52.16	8.29	60.45	74.00	-13.55	peak	H
5150.000	44.65	8.29	52.94	54.00	-1.06	AVG	H
5145.400	62.97	8.28	71.25	74.00	-2.75	peak	V
5145.400	43.04	8.28	51.32	54.00	-2.68	AVG	V
5150.000	62.71	8.29	71.00	74.00	-3.00	peak	V
5150.000	44.52	8.29	52.81	54.00	-1.19	AVG	V

Note: 1. Result = Correction factor + Reading

2. Correction factor = Antenna Factor + Cable loss – Pre-Amplifier gain.



Standard:	FCC Part 15E	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	EW-7833UAC	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Test Mode:	Mode 3	Date:	05/01/2016
Frequency:	5200 MHz	Test By:	Eric Ou Yang

Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
5147.040	47.85	8.28	56.13	74.00	-17.87	peak	H
5147.040	35.93	8.28	44.21	54.00	-9.79	AVG	H
5150.000	45.59	8.29	53.88	74.00	-20.12	peak	H
5150.000	36.03	8.29	44.32	54.00	-9.68	AVG	H
5350.000	42.48	8.50	50.98	74.00	-23.02	peak	H
5413.920	43.38	8.57	51.95	74.00	-22.05	peak	H
5147.040	48.04	8.28	56.32	74.00	-17.68	peak	V
5147.040	35.97	8.28	44.25	54.00	-9.75	AVG	V
5150.000	48.31	8.29	56.60	74.00	-17.40	peak	V
5150.000	36.10	8.29	44.39	54.00	-9.61	AVG	V
5350.000	43.38	8.50	51.88	74.00	-22.12	peak	V
5402.400	46.17	8.56	54.73	74.00	-19.27	peak	V
5402.400	35.44	8.56	44.00	54.00	-10.00	AVG	V

Note: 1. Result = Correction factor + Reading

2. Correction factor = Antenna Factor + Cable loss – Pre-Amplifier gain.



Standard:		FCC Part 15E			Test Distance:		3m	
Test item:		Radiated Emission			Power:		AC 120V/60Hz	
Model Number:		EW-7833UAC			Temp.(°C)/Hum.(%RH):		26(°C)/60%RH	
Test Mode:		Mode 3			Date:		05/01/2016	
Frequency:		5240 MHz			Test By:		Eric Ou Yang	
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V	
5350.000	42.37	8.50	50.87	74.00	-23.13	peak	H	
5372.440	45.31	8.52	53.83	74.00	-20.17	peak	H	
5372.440	35.63	8.52	44.15	54.00	-9.85	AVG	H	
5350.000	44.08	8.50	52.58	74.00	-21.42	peak	V	
5350.000	35.74	8.50	44.24	54.00	-9.76	AVG	V	
5407.640	45.77	8.56	54.33	74.00	-19.67	peak	V	
5407.640	35.57	8.56	44.13	54.00	-9.87	AVG	V	

Note: 1. Result = Correction factor + Reading

2. Correction factor = Antenna Factor + Cable loss – Pre-Amplifier gain.



Standard:		FCC Part 15E			Test Distance:		3m	
Test item:		Radiated Emission			Power:		AC 120V/60Hz	
Model Number:		EW-7833UAC			Temp.(°C)/Hum.(%RH):		26(°C)/60%RH	
Test Mode:		Mode 3			Date:		05/01/2016	
Frequency:		5745 MHz			Test By:		Eric Ou Yang	
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V	
5650.000	44.15	9.01	53.16	68.20	-15.04	peak	H	
5700.000	48.59	9.13	57.72	105.20	-47.48	peak	H	
5720.000	65.15	9.17	74.32	110.80	-36.48	peak	H	
5725.000	76.43	9.19	85.62	122.20	-36.58	peak	H	
5650.000	45.53	9.01	54.54	68.20	-13.66	peak	V	
5700.000	49.42	9.13	58.55	105.20	-46.65	peak	V	
5720.000	67.33	9.17	76.50	110.80	-34.30	peak	V	
5725.000	79.08	9.19	88.27	122.20	-33.93	peak	V	

Note: 1. Result = Correction factor + Reading

2. Correction factor = Antenna Factor + Cable loss – Pre-Amplifier gain.



Standard:		FCC Part 15E		Test Distance:		3m	
Test item:		Radiated Emission		Power:		AC 120V/60Hz	
Model Number:		EW-7833UAC		Temp.(℃)/Hum.(%RH):		26(℃)/60%RH	
Test Mode:		Mode 3		Date:		05/01/2016	
Frequency:		5785 MHz		Test By:		Eric Ou Yang	
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
5650.000	43.20	9.01	52.21	68.20	-15.99	peak	H
5700.000	44.29	9.13	53.42	105.20	-51.78	peak	H
5720.000	43.86	9.17	53.03	110.80	-57.77	peak	H
5725.000	44.47	9.19	53.66	122.20	-68.54	peak	H
5785.000	96.68	9.32	106.00	131.20	-25.20	peak	H
5850.000	43.24	9.46	52.70	122.20	-69.50	peak	H
5855.000	42.39	9.48	51.87	110.80	-58.93	peak	H
5925.000	41.83	9.65	51.48	68.20	-16.72	peak	H
5650.000	44.08	9.01	53.09	68.20	-15.11	peak	V
5700.000	43.89	9.13	53.02	105.20	-52.18	peak	V
5720.000	43.02	9.17	52.19	110.80	-58.61	peak	V
5725.000	45.30	9.19	54.49	122.20	-67.71	peak	V
5850.000	43.63	9.46	53.09	122.20	-69.11	peak	V
5855.000	44.16	9.48	53.64	110.80	-57.16	peak	V
5875.000	42.84	9.53	52.37	105.20	-52.83	peak	V
5925.000	42.58	9.65	52.23	68.20	-15.97	peak	V

Note: 1. Result = Correction factor + Reading

2. Correction factor = Antenna Factor + Cable loss – Pre-Amplifier gain.



Standard:	FCC Part 15E			Test Distance:	3m		
Test item:	Radiated Emission			Power:	AC 120V/60Hz		
Model Number:	EW-7833UAC			Temp.(℃)/Hum.(%RH):	26(℃)/60%RH		
Test Mode:	Mode 3			Date:	05/01/2016		
Frequency:	5825 MHz			Test By:	Eric Ou Yang		
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
5850.000	63.76	9.46	73.22	122.20	-48.98	peak	H
5855.000	61.43	9.48	70.91	110.80	-39.89	peak	H
5875.000	43.13	9.53	52.66	105.20	-52.54	peak	H
5925.000	42.60	9.65	52.25	68.20	-15.95	peak	H
5850.000	64.87	9.46	74.33	122.20	-47.87	peak	V
5855.000	61.79	9.48	71.27	110.80	-39.53	peak	V
5875.000	44.11	9.53	53.64	105.20	-51.56	peak	V
5925.000	44.68	9.65	54.33	68.20	-13.87	peak	V

Note: 1. Result = Correction factor + Reading

2. Correction factor = Antenna Factor + Cable loss – Pre-Amplifier gain.



Standard:	FCC Part 15E	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	EW-7833UAC	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Test Mode:	Mode 4	Date:	05/01/2016
Frequency:	5190 MHz	Test By:	Eric Ou Yang

Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
5148.200	57.60	8.29	65.89	74.00	-8.11	peak	H
5148.200	41.85	8.29	50.14	54.00	-3.86	AVG	H
5150.000	60.11	8.29	68.40	74.00	-5.60	peak	H
5150.000	44.61	8.29	52.90	54.00	-1.10	AVG	H
5145.400	59.03	8.28	67.31	74.00	-6.69	peak	V
5145.400	43.05	8.28	51.33	54.00	-2.67	AVG	V
5150.000	61.97	8.29	70.26	74.00	-3.74	peak	V
5150.000	44.63	8.29	52.92	54.00	-1.08	AVG	V

Note: 1. Result = Correction factor + Reading

2. Correction factor = Antenna Factor + Cable loss – Pre-Amplifier gain.



Standard:		FCC Part 15E			Test Distance:		3m	
Test item:		Radiated Emission			Power:		AC 120V/60Hz	
Model Number:		EW-7833UAC			Temp.(°C)/Hum.(%RH):		26(°C)/60%RH	
Test Mode:		Mode 4			Date:		05/01/2016	
Frequency:		5230 MHz			Test By:		Eric Ou Yang	
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V	
5146.080	48.61	8.28	56.89	74.00	-17.11	peak	H	
5146.080	36.94	8.28	45.22	54.00	-8.78	AVG	H	
5150.000	48.29	8.29	56.58	74.00	-17.42	peak	H	
5150.000	38.13	8.29	46.42	54.00	-7.58	AVG	H	
5350.000	41.54	8.50	50.04	74.00	-23.96	peak	H	
5380.320	43.78	8.54	52.32	74.00	-21.68	peak	H	
5380.320	35.48	8.54	44.02	54.00	-9.98	AVG	H	
5147.040	49.12	8.28	57.40	74.00	-16.60	peak	V	
5147.040	36.86	8.28	45.14	54.00	-8.86	AVG	V	
5150.000	47.62	8.29	55.91	74.00	-18.09	peak	V	
5150.000	38.29	8.29	46.58	54.00	-7.42	AVG	V	
5350.000	44.80	8.50	53.30	74.00	-20.70	peak	V	
5350.000	35.65	8.50	44.15	54.00	-9.85	AVG	V	
5359.200	46.10	8.52	54.62	74.00	-19.38	peak	V	
5359.200	35.68	8.52	44.20	54.00	-9.80	AVG	V	

Note: 1. Result = Correction factor + Reading

2. Correction factor = Antenna Factor + Cable loss – Pre-Amplifier gain.



Standard:	FCC Part 15E			Test Distance:	3m		
Test item:	Radiated Emission			Power:	AC 120V/60Hz		
Model Number:	EW-7833UAC			Temp.(°C)/Hum.(%RH):	26(°C)/60%RH		
Test Mode:	Mode 4			Date:	05/01/2016		
Frequency:	5755 MHz			Test By:	Eric Ou Yang		
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
5650.000	44.98	9.01	53.99	68.20	-14.21	peak	H
5700.000	63.60	9.13	72.73	105.20	-32.47	peak	H
5720.000	74.30	9.17	83.47	110.80	-27.33	peak	H
5725.000	77.95	9.19	87.14	122.20	-35.06	peak	H
5650.000	44.77	9.01	53.78	68.20	-14.42	peak	V
5700.000	61.61	9.13	70.74	105.20	-34.46	peak	V
5720.000	77.03	9.17	86.20	110.80	-24.60	peak	V
5725.000	78.53	9.19	87.72	122.20	-34.48	peak	V

Note: 1. Result = Correction factor + Reading

2. Correction factor = Antenna Factor + Cable loss – Pre-Amplifier gain.



Standard:	FCC Part 15E	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	EW-7833UAC	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Test Mode:	Mode 4	Date:	05/01/2016
Frequency:	5795 MHz	Test By:	Eric Ou Yang

Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
5850.000	63.08	9.46	72.54	122.20	-49.66	peak	H
5855.000	51.71	9.48	61.19	110.80	-49.61	peak	H
5875.000	43.47	9.53	53.00	105.20	-52.20	peak	H
5925.000	42.88	9.65	52.53	68.20	-15.67	peak	H
5850.000	67.06	9.46	76.52	122.20	-45.68	peak	V
5855.000	56.33	9.48	65.81	110.80	-44.99	peak	V
5875.000	45.32	9.53	54.85	105.20	-50.35	peak	V
5925.000	43.38	9.65	53.03	68.20	-15.17	peak	V

Note: 1. Result = Correction factor + Reading

2. Correction factor = Antenna Factor + Cable loss – Pre-Amplifier gain.



Standard:		FCC Part 15E			Test Distance:		3m	
Test item:		Radiated Emission			Power:		AC 120V/60Hz	
Model Number:		EW-7833UAC			Temp.(°C)/Hum.(%RH):		26(°C)/60%RH	
Test Mode:		Mode 5			Date:		05/01/2016	
Frequency:		5210 MHz			Test By:		Eric Ou Yang	
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V	
5143.200	58.55	8.28	66.83	74.00	-7.17	peak	H	
5143.200	42.01	8.28	50.29	54.00	-3.71	AVG	H	
5150.000	55.42	8.29	63.71	74.00	-10.29	peak	H	
5150.000	44.59	8.29	52.88	54.00	-1.12	AVG	H	
5350.000	41.61	8.50	50.11	74.00	-23.89	peak	H	
5399.520	43.30	8.56	51.86	74.00	-22.14	peak	H	
5140.320	59.50	8.27	67.77	74.00	-6.23	peak	V	
5140.320	42.48	8.27	50.75	54.00	-3.25	AVG	V	
5150.000	61.88	8.29	70.17	74.00	-3.83	peak	V	
5150.000	44.60	8.29	52.89	54.00	-1.11	AVG	V	
5350.000	46.12	8.50	54.62	74.00	-19.38	peak	V	
5350.000	36.64	8.50	45.14	54.00	-8.86	AVG	V	
5355.360	46.82	8.51	55.33	74.00	-18.67	peak	V	
5355.360	36.17	8.51	44.68	54.00	-9.32	AVG	V	

Note: 1. Result = Correction factor + Reading

2. Correction factor = Antenna Factor + Cable loss – Pre-Amplifier gain.



Standard:		FCC Part 15E		Test Distance:		3m	
Test item:		Radiated Emission		Power:		AC 120V/60Hz	
Model Number:		EW-7833UAC		Temp.(°C)/Hum. (%RH):		26(°C)/60%RH	
Test Mode:		Mode 5		Date:		05/01/2016	
Frequency:		5775 MHz		Test By:		Eric Ou Yang	
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
5628.000	52.83	8.96	61.79	68.20	-6.41	peak	H
5650.000	54.81	9.01	63.82	68.20	-4.38	peak	H
5655.600	56.21	9.02	65.23	72.34	-7.11	peak	H
5700.000	68.51	9.13	77.64	105.20	-27.56	peak	H
5720.000	73.22	9.17	82.39	110.80	-28.41	peak	H
5725.000	72.90	9.19	82.09	122.20	-40.11	peak	H
5850.000	67.31	9.46	76.77	122.20	-45.43	peak	H
5855.000	64.04	9.48	73.52	110.80	-37.28	peak	H
5875.000	56.93	9.53	66.46	105.20	-38.74	peak	H
5650.000	52.48	9.01	61.49	68.20	-6.71	peak	V
5662.000	60.07	9.04	69.11	77.08	-7.97	peak	V
5700.000	69.07	9.13	78.20	105.20	-27.00	peak	V
5720.000	71.81	9.17	80.98	110.80	-29.82	peak	V
5725.000	73.60	9.19	82.79	122.20	-39.41	peak	V
5850.000	69.40	9.46	78.86	122.20	-43.34	peak	V
5855.000	68.73	9.48	78.21	110.80	-32.59	peak	V
5875.000	61.77	9.53	71.30	105.20	-33.90	peak	V
5922.000	53.20	9.63	62.83	70.42	-7.59	peak	V
5925.000	45.31	9.65	54.96	68.20	-13.24	peak	V

Note: 1. Result = Correction factor + Reading

2. Correction factor = Antenna Factor + Cable loss – Pre-Amplifier gain.

4.4. Maximum Conducted Output Power and Transmit power control Measurement

■ Limit

Frequency Range (MHz)	FCC Maximum Conducted Output Power Limit
5.150 ~ 5.250 GHz	The lesser of 250mW (24dBm)
5.725 ~ 5.850 GHz	The lesser of 1W (30dBm)

And According to 15.407 (a), if transmitting antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

According FCC KDB 662911 D01 v02r01 – for power measurements on IEEE802.11 devices,

Directional gain = $10 \cdot \log\{[10^{(G1/20)} + 10^{(G2/20)} + \dots + 10^{(Gn/20)}]^2 / NANT\}$

* SISO mode ANT-0 : Max. Gain = 3.78 dBi < 6dBi

SISO mode ANT-1 : Max. Gain = 4.74 dBi < 6dBi

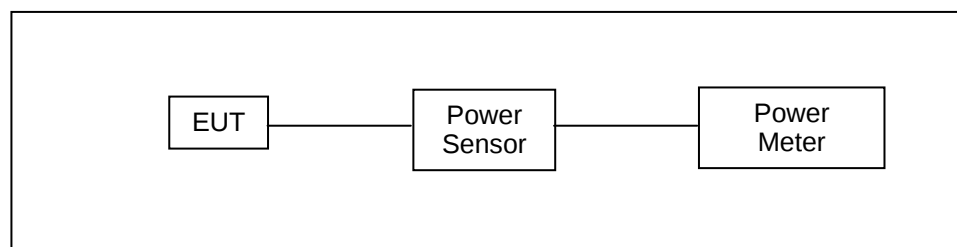
SISO mode ANT-2 : Max. Gain = 3.04 dBi < 6dBi

* MIMO mode : Directional Gain = $10 \cdot \log\{[10^{(G1/20)} + 10^{(G2/20)} + \dots + 10^{(Gn/20)}]^2 / NANT\} = 8.65 \text{ dBi} > 6\text{dBi}$

MIMO mode power limit shall be reduced = $24 - 2.65 = 21.35 \text{ dBm}$ (5.150 ~ 5.250 GHz)

MIMO mode power limit shall be reduced = $30 - 2.65 = 27.35 \text{ dBm}$ (5.725 ~ 5.850 GHz)

■ Test Setup



■ Test Instruments

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
Power Sensor	Anritsu	MA2411B	1126022	08/24/2015	1 year
Power Meter	Anritsu	ML2495A	1135009	08/24/2015	1 year
Test Site	ATL	TE05	TE05	N.C.R.	-----

Note: N.C.R. = No Calibration Request.



■ **Test Procedure**

The test is performed in accordance with KDB789033: D02 General UNII Test Procedures New Rules v01r02, Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices
Section (E) Maximum Conducted Output Power

3. Measurement using a Power Meter (PM)

b) Method PM-G (Measurement using a gated RF average power meter)



Test Result

Model Number		EW-7833UAC		
Test Item		Maximum Conducted Output Power		
Test Mode		Mode 2: IEEE 802.11a Link Mode		
Date of Test		05/01/2016		
Frequency (MHz)	Data Rate	ANT-0		FCC Limit (dBm)
		Max. Outup Power		
		(dBm)	(W)	
5180	6M	18.97	0.079	≤ 24
5200		19.28	0.085	
5220		18.67	0.074	
5240		19.34	0.086	
5745		21.38	0.137	≤ 30
5765		21.31	0.135	
5785		21.09	0.129	
5805		21.30	0.135	
5825		21.19	0.132	
5180	54M	18.86	0.077	≤ 24
5200		19.12	0.082	
5220		18.55	0.072	
5240		19.18	0.083	
5745		21.27	0.134	≤ 30
5765		21.19	0.132	
5785		20.96	0.125	
5805		21.14	0.130	
5825		21.08	0.128	



Model Number		EW-7833UAC						
Test Item		Maximum Conducted Output Power						
Test Mode		Mode 3: IEEE 802.11ac 20MHz Link Mode						
Date of Test		05/01/2016						
Frequency (MHz)	Data Rate	ANT-0		ANT-1		ANT-2		FCC Limit (dBm)
		Max. Outup Power						
		(dBm)	(W)	(dBm)	(W)	(dBm)	(W)	
5180	19.5M	12.64	0.018	15.92	0.039	14.17	0.026	≤ 24
5200		12.29	0.017	16.05	0.040	14.28	0.027	
5220		11.99	0.016	16.07	0.040	14.48	0.028	
5240		11.86	0.015	16.16	0.041	14.42	0.028	
5745		14.48	0.028	13.49	0.022	13.59	0.023	≤ 30
5765		14.39	0.027	13.38	0.022	13.41	0.022	
5785		14.31	0.027	13.28	0.021	13.54	0.023	
5805		14.21	0.026	13.02	0.020	13.45	0.022	
5825		14.16	0.026	13.54	0.023	13.47	0.022	
5180	234M	12.14	0.016	15.46	0.035	13.58	0.023	≤ 24
5200		11.71	0.015	15.59	0.036	13.61	0.023	
5220		11.48	0.014	15.54	0.036	13.88	0.024	
5240		11.39	0.014	15.71	0.037	13.75	0.024	
5745		13.92	0.025	12.96	0.020	12.88	0.019	≤ 30
5765		13.84	0.024	12.86	0.019	12.78	0.019	
5785		13.64	0.023	12.68	0.019	12.89	0.019	
5805		13.61	0.023	12.48	0.018	12.81	0.019	
5825		13.49	0.022	12.95	0.020	12.74	0.019	



Model Number		EW-7833UAC		
Test Item		Maximum Conducted Output Power		
Test Mode		Mode 3: IEEE 802.11ac 20MHz Link Mode		
Date of Test		05/01/2016		
Frequency (MHz)	Data Rate	ANT-0+1+2		FCC Limit (dBm)
		Max. Outup Power		
		(dBm)	(W)	
5180	19.5M	19.22	0.084	≤ 21.35
5200		19.24	0.084	
5220		19.26	0.084	
5240		19.26	0.084	
5745		18.65	0.073	≤ 27.35
5765		18.52	0.071	
5785		18.50	0.071	
5805		18.36	0.069	
5825		18.51	0.071	
5180	234M	18.71	0.074	≤ 21.35
5200		18.69	0.074	
5220		18.71	0.074	
5240		18.73	0.075	
5745		18.05	0.064	≤ 27.35
5765		17.96	0.062	
5785		17.86	0.061	
5805		17.76	0.060	
5825		17.84	0.061	



Model Number		EW-7833UAC						
Test Item		Maximum Conducted Output Power						
Test Mode		Mode 4: IEEE 802.11ac 40MHz Link Mode						
Date of Test		05/01/2016						
Frequency (MHz)	Data Rate	ANT-0		ANT-1		ANT-2		FCC Limit (dBm)
		Max. Outup Power						
		(dBm)	(W)	(dBm)	(W)	(dBm)	(W)	
5190	40.5M	12.22	0.017	15.53	0.036	13.89	0.024	≤ 24
5230		12.18	0.017	15.35	0.034	13.71	0.023	
5755		14.24	0.027	13.31	0.021	13.18	0.021	≤ 30
5795		14.14	0.026	12.89	0.019	13.16	0.021	
5190	540M	11.12	0.013	14.55	0.029	12.81	0.019	≤ 24
5230		10.96	0.012	14.15	0.026	12.49	0.018	
5755		13.08	0.020	12.01	0.016	12.04	0.016	≤ 30
5795		12.84	0.019	11.69	0.015	11.92	0.016	

Model Number		EW-7833UAC			
Test Item		Maximum Conducted Output Power			
Test Mode		Mode 4: IEEE 802.11ac 40MHz Link Mode			
Date of Test		05/01/2016			
Frequency (MHz)	Data Rate	ANT-0+1+2		FCC Limit (dBm)	
		Max. Outup Power			
		(dBm)	(W)		
5190	40.5M	18.86	0.077	≤ 21.35	
5230		18.71	0.074		
5755		18.37	0.069	≤ 27.35	
5795		18.20	0.066		
5190	540M	17.82	0.061	≤ 21.35	
5230		17.50	0.056		
5755		17.18	0.052	≤ 27.35	
5795		16.95	0.050		



Model Number		EW-7833UAC						
Test Item		Maximum Conducted Output Power						
Test Mode		Mode 5: IEEE 802.11ac 80MHz Link Mode						
Date of Test		05/01/2016						
Frequency (MHz)	Data Rate	ANT-0		ANT-1		ANT-2		FCC Limit (dBm)
		Max. Outup Power						
		(dBm)	(W)	(dBm)	(W)	(dBm)	(W)	
5210	87.9M	12.29	0.017	12.86	0.019	12.81	0.019	≤ 24
5775		14.14	0.026	13.21	0.021	13.37	0.022	≤ 30
5210	1170M	10.16	0.010	10.92	0.012	10.66	0.012	≤ 24
5775		12.22	0.017	10.91	0.012	11.08	0.013	≤ 30

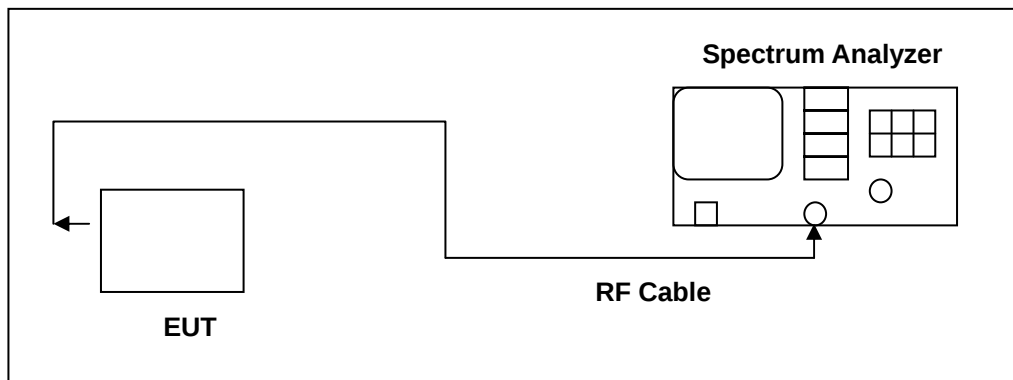
Model Number		EW-7833UAC		
Test Item		Maximum Conducted Output Power		
Test Mode		Mode 5: IEEE 802.11ac 80MHz Link Mode		
Date of Test		05/01/2016		
Frequency (MHz)	Data Rate	ANT-0+1+2		FCC Limit (dBm)
		Max. Outup Power		
		(dBm)	(W)	
5210	87.9M	17.43	0.055	≤ 21.35
5775		18.36	0.069	≤ 27.35
5210	1170M	15.36	0.034	≤ 21.35
5775		16.21	0.042	≤ 27.35

4.5. 26dB RF Bandwidth & 99 % Occupied Bandwidth Measurement

■ Limit

N/A

■ Test Setup



■ Test Instruments

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
Spectrum Analyzer	Agilent	E4445A	MY45300744	12/15/2015	1 year
Test Site	ATL	TE05	TE05	N.C.R.	-----

Note: N.C.R. = No Calibration Request.

■ Test Procedure

The test is performed in accordance with KDB789033: D02 General UNII Test Procedures New Rules v01r02, Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices - Part 15, Subpart E.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	>26dB Bandwidth
RBW	Approximately 1% of the emission bandwidth
VBW	VBW > RBW
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

Test Result

Model Number	EW-7833UAC	
Test Item	26dB RF Bandwidth & 99 % Occupied Bandwidth Measurement	
Test Mode	Mode 2: IEEE 802.11a Link Mode	
Date of Test	07/07/2016	
Frequency (MHz)	Ant-0	
	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
5180	24.790	16.536
5200	24.580	16.579
5240	24.590	16.537

Model Number	EW-7833UAC					
Test Item	26dB RF Bandwidth & 99 % Occupied Bandwidth Measurement					
Test Mode	Mode 3: IEEE 802.11ac 20MHz Link Mode					
Date of Test	07/07/2016					
Frequency (MHz)	Ant-0		Ant-1		Ant-2	
	26dB Bandwidth (MHz)	99 % Occupied Bandwidth	26dB Bandwidth (MHz)	99 % Occupied Bandwidth	26dB Bandwidth (MHz)	99 % Occupied Bandwidth
5180	20.530	17.454	20.150	17.515	20.040	17.482
5200	20.430	17.463	20.080	17.521	20.190	17.482
5240	20.450	17.435	19.970	17.495	20.020	17.487

Model Number	EW-7833UAC					
Test Item	26dB RF Bandwidth & 99 % Occupied Bandwidth Measurement					
Test Mode	Mode 4: IEEE 802.11ac 40MHz Link Mode					
Date of Test	07/07/2016					
Frequency (MHz)	Ant-0		Ant-1		Ant-2	
	26dB Bandwidth (MHz)	99 % Occupied Bandwidth	26dB Bandwidth (MHz)	99 % Occupied Bandwidth	26dB Bandwidth (MHz)	99 % Occupied Bandwidth
5190	40.350	35.657	40.770	35.946	40.430	35.771
5230	40.640	35.649	40.730	35.939	40.230	35.847

Note: The 99% occupied bandwidth not crossed 5250MHz.



Model Number	EW-7833UAC					
Test Item	26dB RF Bandwidth & 99 % Occupied Bandwidth Measurement					
Test Mode	Mode 5: IEEE 802.11ac 80MHz Link Mode					
Date of Test	07/07/2016					
Frequency (MHz)	Ant-0		Ant-1		Ant-2	
	26dB Bandwidth (MHz)	99 % Occupied Bandwidth	26dB Bandwidth (MHz)	99 % Occupied Bandwidth	26dB Bandwidth (MHz)	99 % Occupied Bandwidth
5210	81.460	75.262	81.160	75.127	81.120	75.182

Note: The 99% occupied bandwidth not crossed 5250MHz.

Test Graphs

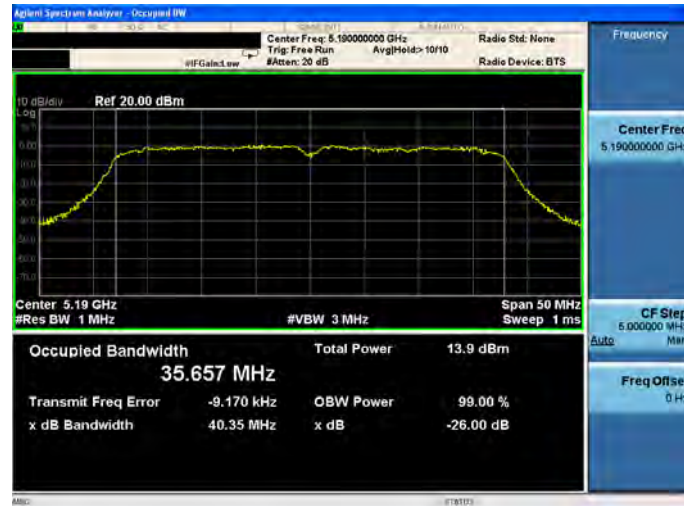
Mode 2: IEEE 802.11a Link Mode_ Ant-0	
5180 MHz	
5200 MHz	
5240 MHz	

Mode 3: IEEE 802.11ac 20MHz Link Mode_ ANT-0

5180 MHz	 Agilent Spectrum Analyzer - Occupied BW Center Freq: 5.18000000 GHz Trig: Free Run AveHld: 10/10 Radio Std: None Radio Device: BTS Ref 20.00 dBm Center 5.18 GHz #Res BW 300 kHz #VBW 1 MHz Span 25 MHz Sweep 1 ms Occupied Bandwidth 17.454 MHz Total Power 12.3 dBm Transmit Freq Error -38.112 kHz OBW Power 99.00 % x dB Bandwidth 20.53 MHz x dB -26.00 dB Frequency Center Freq 5.18000000 GHz CF Step 2.500000 MHz Auto Man Freq Offset 0 Hz
5200 MHz	 Agilent Spectrum Analyzer - Occupied BW Center Freq: 5.20000000 GHz Trig: Free Run AveHld: 10/10 Radio Std: None Radio Device: BTS Ref 20.00 dBm Center 5.2 GHz #Res BW 300 kHz #VBW 1 MHz Span 25 MHz Sweep 1 ms Occupied Bandwidth 17.463 MHz Total Power 11.5 dBm Transmit Freq Error -15.777 kHz OBW Power 99.00 % x dB Bandwidth 20.43 MHz x dB -26.00 dB Frequency Center Freq 5.20000000 GHz CF Step 2.500000 MHz Auto Man Freq Offset 0 Hz
5240 MHz	 Agilent Spectrum Analyzer - Occupied BW Center Freq: 5.24000000 GHz Trig: Free Run AveHld: 10/10 Radio Std: None Radio Device: BTS Ref 20.00 dBm Center 5.24 GHz #Res BW 300 kHz #VBW 1 MHz Span 25 MHz Sweep 1 ms Occupied Bandwidth 17.435 MHz Total Power 10.4 dBm Transmit Freq Error -5.700 kHz OBW Power 99.00 % x dB Bandwidth 20.45 MHz x dB -26.00 dB Frequency Center Freq 5.24000000 GHz CF Step 2.500000 MHz Auto Man Freq Offset 0 Hz

Mode 4: IEEE 802.11ac 40MHz Link Mode_ ANT-0

5190 MHz



5230 MHz

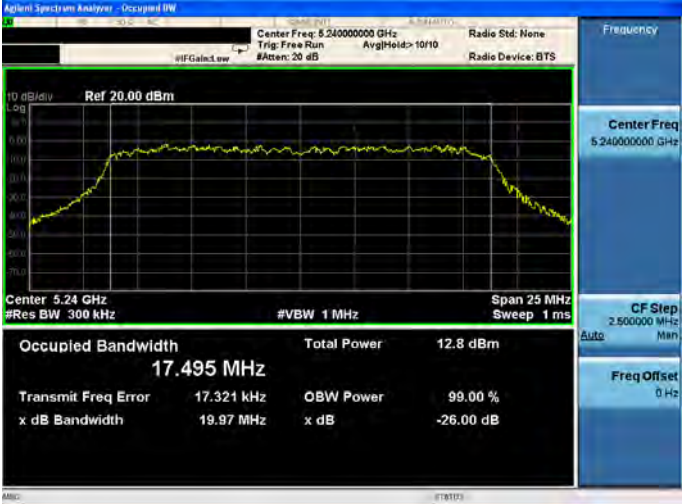


Mode 5: IEEE 802.11ac 80MHz Link Mode_ ANT-0

5210 MHz



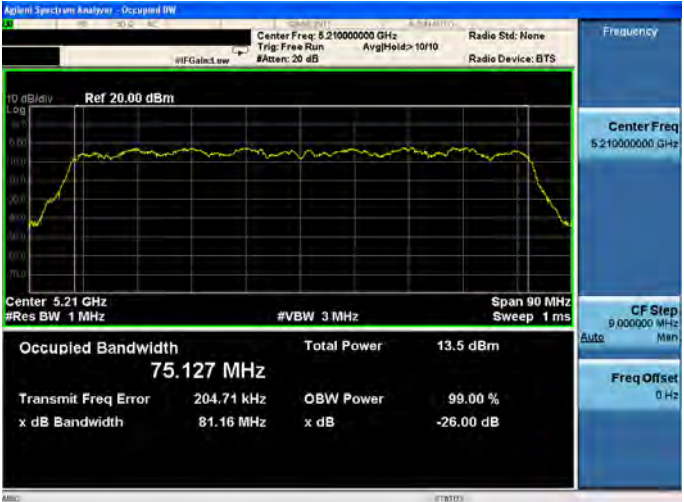
Mode 3: IEEE 802.11ac 20MHz Link Mode_ ANT-1

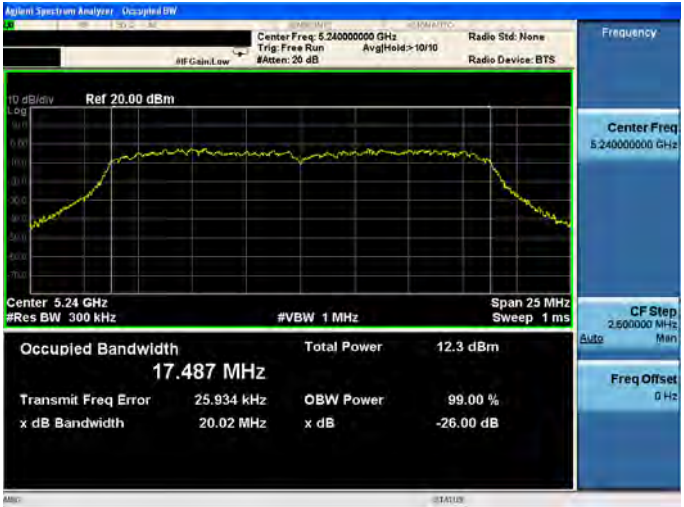
5180 MHz	 Agilent Spectrum Analyzer - Occupied BW Center Freq: 5.18000000 GHz Trig: Free Run AveHld: 10/10 Radio Std: None Radio Device: BTS Ref 20.00 dBm Center 5.18 GHz #Res BW 300 kHz #VBW 1 MHz Span 25 MHz Sweep 1 ms Occupied Bandwidth 17.515 MHz Total Power 12.5 dBm Transmit Freq Error 20.811 kHz OBW Power 99.00 % x dB Bandwidth 20.15 MHz x dB -26.00 dB Frequency Center Freq 5.18000000 GHz CF Step 2.500000 MHz Auto Man Freq Offset 0 Hz
5200 MHz	 Agilent Spectrum Analyzer - Occupied BW Center Freq: 5.20000000 GHz Trig: Free Run AveHld: 10/10 Radio Std: None Radio Device: BTS Ref 20.00 dBm Center 5.2 GHz #Res BW 300 kHz #VBW 1 MHz Span 25 MHz Sweep 1 ms Occupied Bandwidth 17.521 MHz Total Power 12.8 dBm Transmit Freq Error 15.886 kHz OBW Power 99.00 % x dB Bandwidth 20.08 MHz x dB -26.00 dB Frequency Center Freq 5.20000000 GHz CF Step 2.500000 MHz Auto Man Freq Offset 0 Hz
5240 MHz	 Agilent Spectrum Analyzer - Occupied BW Center Freq: 5.24000000 GHz Trig: Free Run AveHld: 10/10 Radio Std: None Radio Device: BTS Ref 20.00 dBm Center 5.24 GHz #Res BW 300 kHz #VBW 1 MHz Span 25 MHz Sweep 1 ms Occupied Bandwidth 17.495 MHz Total Power 12.8 dBm Transmit Freq Error 17.321 kHz OBW Power 99.00 % x dB Bandwidth 19.97 MHz x dB -26.00 dB Frequency Center Freq 5.24000000 GHz CF Step 2.500000 MHz Auto Man Freq Offset 0 Hz

Mode 4: IEEE 802.11ac 40MHz Link Mode_ ANT-1

5190 MHz	 Agilent Spectrum Analyzer - Occupied BW Center Freq: 5.19000000 GHz Trig: Free Run AveHld: 10/10 Radio Std: None Radio Device: BTS Ref 20.00 dBm Center 5.19 GHz #Res BW 1 MHz #VBW 3 MHz Span 50 MHz Sweep 1 ms Occupied Bandwidth 35.946 MHz Total Power 13.7 dBm Transmit Freq Error 134.15 kHz OBW Power 99.00 % x dB Bandwidth 40.77 MHz x dB -26.00 dB Frequency Center Freq 5.19000000 GHz CF Step 5.000000 MHz Freq Offset 0 Hz
5230 MHz	 Agilent Spectrum Analyzer - Occupied BW Center Freq: 5.23000000 GHz Trig: Free Run AveHld: 10/10 Radio Std: None Radio Device: BTS Ref 20.00 dBm Center 5.23 GHz #Res BW 1 MHz #VBW 3 MHz Span 50 MHz Sweep 1 ms Occupied Bandwidth 35.939 MHz Total Power 14.1 dBm Transmit Freq Error 122.67 kHz OBW Power 99.00 % x dB Bandwidth 40.73 MHz x dB -26.00 dB Frequency Center Freq 5.23000000 GHz CF Step 5.000000 MHz Freq Offset 0 Hz

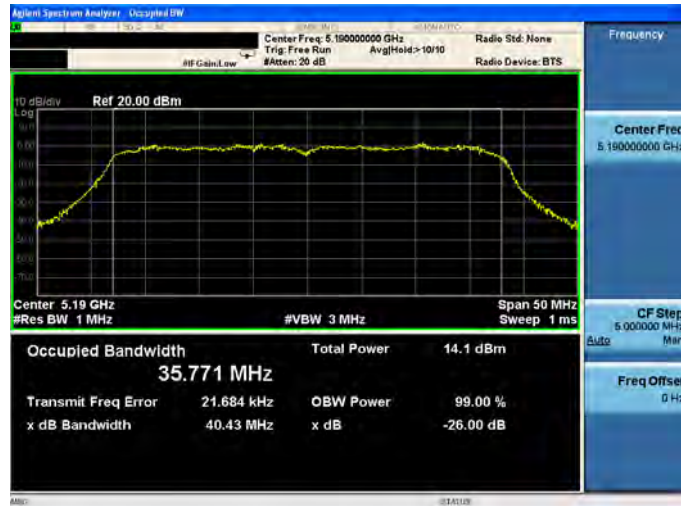
Mode 5: IEEE 802.11ac 80MHz Link Mode_ ANT-1

5210 MHz	 Agilent Spectrum Analyzer - Occupied BW Center Freq: 5.21000000 GHz Trig: Free Run AveHld: 10/10 Radio Std: None Radio Device: BTS Ref 20.00 dBm Center 5.21 GHz #Res BW 1 MHz #VBW 3 MHz Span 90 MHz Sweep 1 ms Occupied Bandwidth 75.127 MHz Total Power 13.5 dBm Transmit Freq Error 204.71 kHz OBW Power 99.00 % x dB Bandwidth 81.16 MHz x dB -26.00 dB Frequency Center Freq 5.21000000 GHz CF Step 9.000000 MHz Freq Offset 0 Hz
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Mode 3: IEEE 802.11ac 20MHz Link Mode_ ANT-2	
5180 MHz	 Agilent Spectrum Analyzer - Occupied BW Center Freq: 5.18000000 GHz Trig: Free Run AveHld: 10/10 Radio Std: None Radio Device: BTS Ref 20.00 dBm Center 5.18 GHz #Res BW 300 kHz #VBW 1 MHz Span 25 MHz Sweep 1 ms Occupied Bandwidth 17.482 MHz Total Power 12.2 dBm Transmit Freq Error 9.045 kHz OBW Power 99.00 % x dB Bandwidth 20.04 MHz x dB -26.00 dB
5200 MHz	 Agilent Spectrum Analyzer - Occupied BW Center Freq: 5.20000000 GHz Trig: Free Run AveHld: 10/10 Radio Std: None Radio Device: BTS Ref 20.00 dBm Center 5.2 GHz #Res BW 300 kHz #VBW 1 MHz Span 25 MHz Sweep 1 ms Occupied Bandwidth 17.482 MHz Total Power 12.1 dBm Transmit Freq Error 15.563 kHz OBW Power 99.00 % x dB Bandwidth 20.19 MHz x dB -26.00 dB
5240 MHz	 Agilent Spectrum Analyzer - Occupied BW Center Freq: 5.24000000 GHz Trig: Free Run AveHld: 10/10 Radio Std: None Radio Device: BTS Ref 20.00 dBm Center 5.24 GHz #Res BW 300 kHz #VBW 1 MHz Span 25 MHz Sweep 1 ms Occupied Bandwidth 17.487 MHz Total Power 12.3 dBm Transmit Freq Error 25.934 kHz OBW Power 99.00 % x dB Bandwidth 20.02 MHz x dB -26.00 dB

Mode 4: IEEE 802.11ac 40MHz Link Mode_ ANT-2

5190 MHz

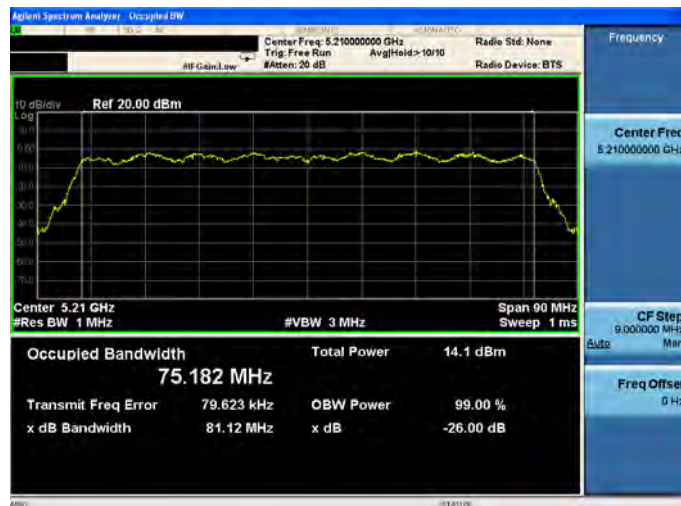


5230 MHz



Mode 5: IEEE 802.11ac 80MHz Link Mode_ ANT-2

5210 MHz



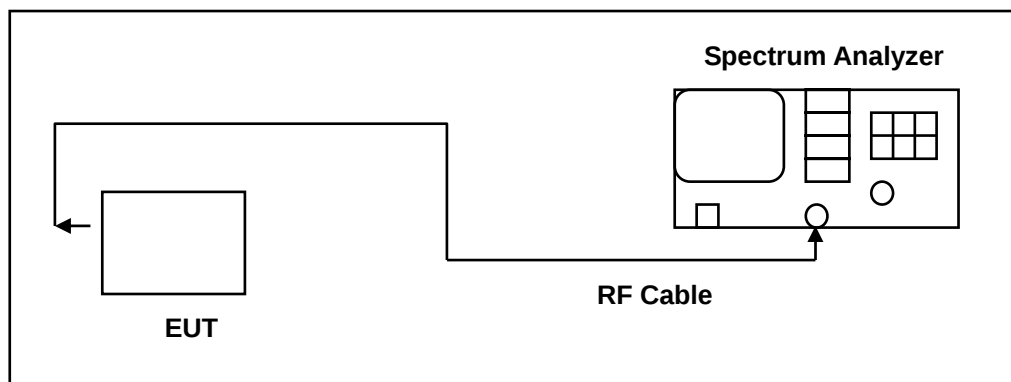
4.6. 6dB RF Bandwidth Measurement

■ Limit

6dB RF Bandwidth

Systems using digital modulation techniques may operate in the 5725~5850MHz bands. The minimum 6 dB band-width shall be at least 500 kHz.

■ Test Setup



■ Test Instruments

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Cal. Period
Spectrum Analyzer	Agilent	E4445A	MY45300744	12/15/2015	1 year
Test Site	ATL	TE05	TE05	N.C.R.	-----

Note: N.C.R. = No Calibration Request.

■ Test Procedure

6dB RF Bandwidth

The EUT tested to UNII test procedure of KDB789033 D02 for compliance to FCC 47CFR 15.407 requirements.

The antenna port of the EUT was connected to the input of a spectrum analyzer. Analyzer RES BW was set to 100 kHz. For each RF output channel investigated, the spectrum analyzer center frequency was set to the channel carrier. A peak output reading was taken, a DISPLAY line was drawn 6 dB lower than peak level. The 6 dB bandwidth was determined from where the channel output spectrum intersected the display line.

The test was performed at 3 channels.



■ Test Result

Model Number	EW-7833UAC	
Test Item	6dB RF Bandwidth	
Test Mode	Mode 2: IEEE 802.11a Link Mode	
Date of Test	07/07/2016	
Frequency (MHz)	6dB Bandwidth (kHz)	Limit (kHz)
	ANT-0	
5745	15550	> 500
5785	15360	> 500
5825	15380	> 500

Model Number	EW-7833UAC			
Test Item	6dB RF Bandwidth			
Test Mode	Mode 3: IEEE 802.11ac 20MHz Link Mode			
Date of Test	03/19/2016			
Frequency (MHz)	6dB Bandwidth (kHz)			Limit (kHz)
	ANT-0	ANT-1	ANT-2	
5745	15640	15200	16060	> 500
5785	15780	15980	16280	> 500
5825	15750	16060	16060	> 500

Model Number	EW-7833UAC			
Test Item	6dB RF Bandwidth			
Test Mode	Mode 4: IEEE 802.11ac 40MHz Link Mode			
Date of Test	03/19/2016			
Frequency (MHz)	6dB Bandwidth (kHz)			Limit (kHz)
	ANT-0	ANT-1	ANT-2	
5755	35150	35150	35150	> 500
5795	35100	35120	35160	> 500



Model Number	EW-7833UAC			
Test Item	6dB RF Bandwidth			
Test Mode	Mode 5: IEEE 802.11ac 80MHz Link Mode			
Date of Test	03/19/2016			
Frequency (MHz)	6dB Bandwidth (kHz)			Limit (kHz)
	ANT-0	ANT-1	ANT-2	
5775	75170	75150	75190	> 500



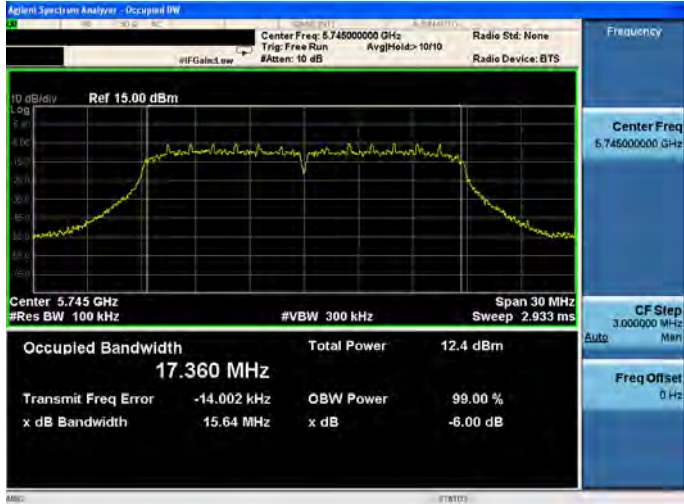
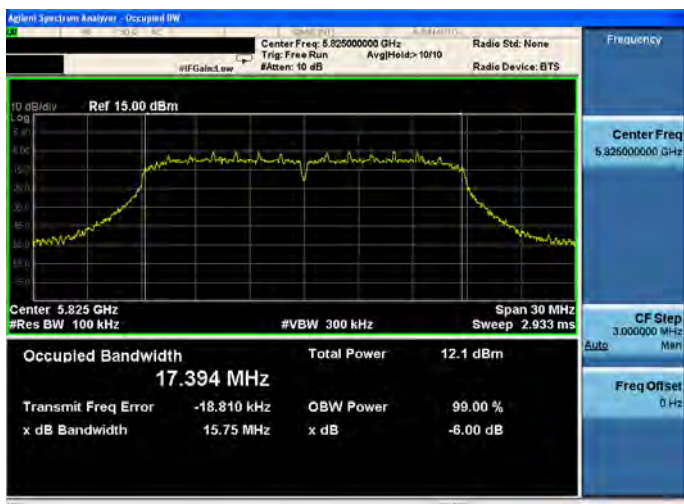
■ Test Graphs

Mode 2: IEEE 802.11a Link Mode_ ANT-0

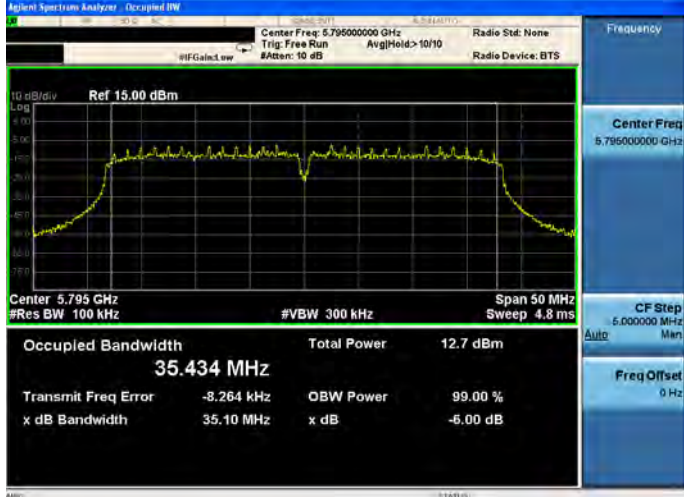
5745 MHz	
5785 MHz	
5825 MHz	



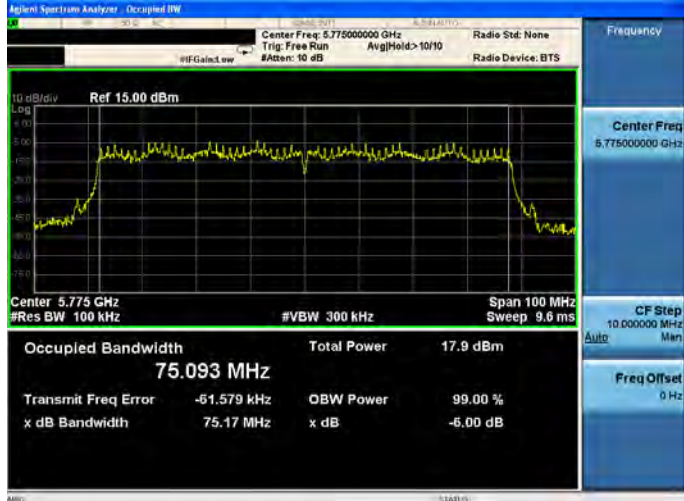
Mode 3: IEEE 802.11ac 20MHz Link Mode_ANT-0

5745 MHz	
5785 MHz	
5825 MHz	

Mode 4: IEEE 802.11ac 40MHz Link Mode_ANT-0

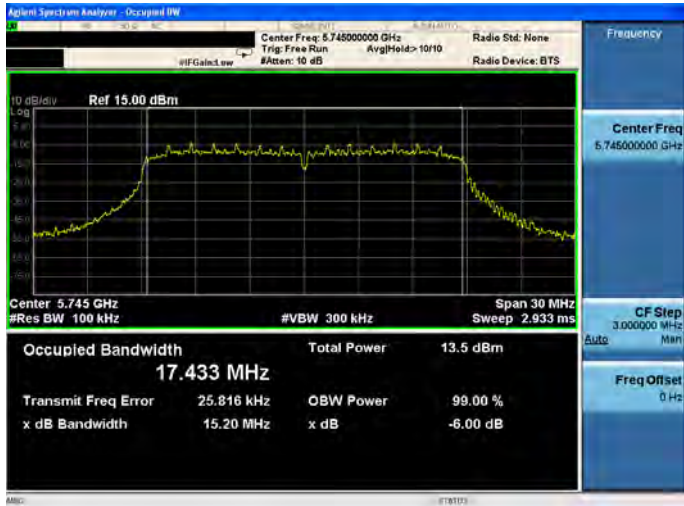
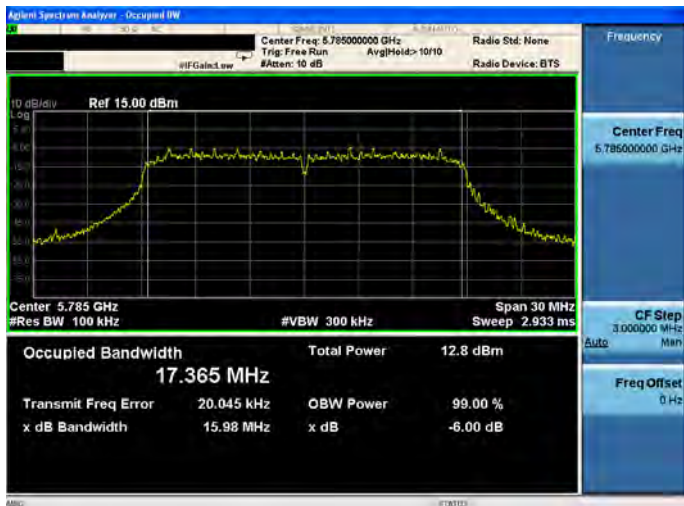
5755 MHz	 Agilent Spectrum Analyzer - Occupied BW Center Freq: 5.75500000 GHz Trig: Free Run Avg/Hold: 10/10 Radio Std: None Radio Device: BTS Ref 15.00 dBm Center 5.755 GHz #Res BW 100 kHz #VBW 300 kHz Span 50 MHz Sweep 4.8 ms Occupied Bandwidth: 35.482 MHz Total Power: 13.3 dBm Transmit Freq Error: 1.310 kHz OBW Power: 99.00 % x dB Bandwidth: 35.15 MHz x dB: -6.00 dB Frequency: 5.75500000 GHz CF Step: 5.000000 MHz FREQ Offset: 0 Hz
5795 MHz	 Agilent Spectrum Analyzer - Occupied BW Center Freq: 5.79500000 GHz Trig: Free Run Avg/Hold: 10/10 Radio Std: None Radio Device: BTS Ref 15.00 dBm Center 5.795 GHz #Res BW 100 kHz #VBW 300 kHz Span 50 MHz Sweep 4.8 ms Occupied Bandwidth: 35.434 MHz Total Power: 12.7 dBm Transmit Freq Error: -8.264 kHz OBW Power: 99.00 % x dB Bandwidth: 35.10 MHz x dB: -6.00 dB Frequency: 5.79500000 GHz CF Step: 5.000000 MHz FREQ Offset: 0 Hz

Mode 5: IEEE 802.11ac 80MHz Link Mode_ANT-0

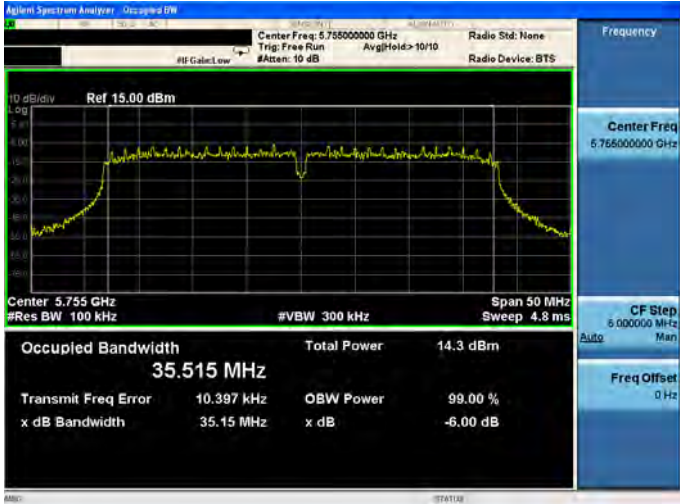
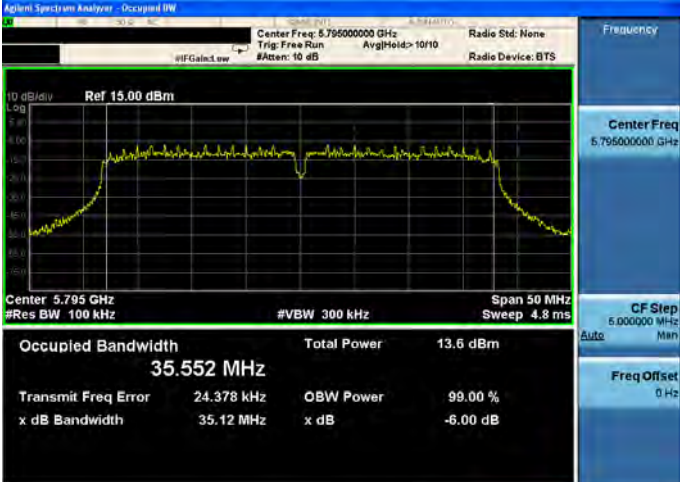
5775 MHz	 Agilent Spectrum Analyzer - Occupied BW Center Freq: 5.77500000 GHz Trig: Free Run Avg/Hold: 10/10 Radio Std: None Radio Device: BTS Ref 15.00 dBm Center 5.775 GHz #Res BW 100 kHz #VBW 300 kHz Span 100 MHz Sweep 9.0 ms Occupied Bandwidth: 75.093 MHz Total Power: 17.9 dBm Transmit Freq Error: -61.579 kHz OBW Power: 99.00 % x dB Bandwidth: 75.17 MHz x dB: -6.00 dB Frequency: 5.77500000 GHz CF Step: 10.000000 MHz FREQ Offset: 0 Hz
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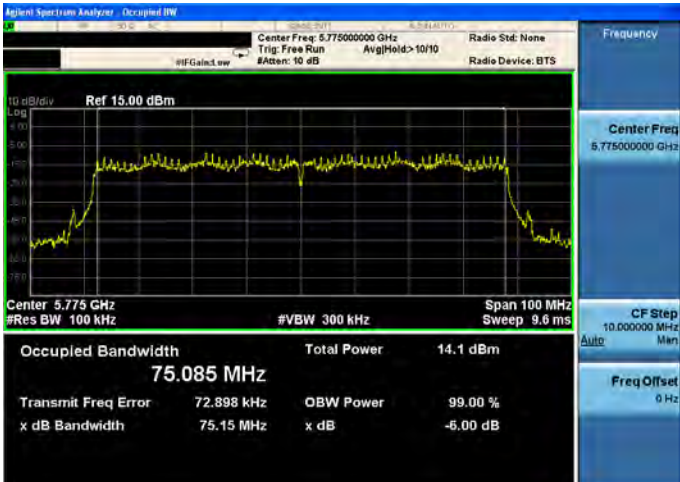
Mode 3: IEEE 802.11ac 20MHz Link Mode_ANT-1

5745 MHz	 Agilent Spectrum Analyzer - Occupied BW Center Freq: 5.745000000 GHz Trig: Free Run AvgHold: 1010 Radio Std: None Radio Device: BTS Ref 15.00 dBm Center 5.745 GHz #Res BW 100 kHz #VBW 300 kHz Span 30 MHz Sweep 2.933 ms Occupied Bandwidth 17.433 MHz Total Power 13.5 dBm Transmit Freq Error 25.816 kHz OBW Power 99.00 % x dB Bandwidth 15.20 MHz x dB -6.00 dB Frequency Center Freq 5.745000000 GHz CF Step 3.000000 MHz Auto Man Freq Offset 0 Hz
5785 MHz	 Agilent Spectrum Analyzer - Occupied BW Center Freq: 5.785000000 GHz Trig: Free Run AvgHold: 1010 Radio Std: None Radio Device: BTS Ref 15.00 dBm Center 5.785 GHz #Res BW 100 kHz #VBW 300 kHz Span 30 MHz Sweep 2.933 ms Occupied Bandwidth 17.365 MHz Total Power 12.8 dBm Transmit Freq Error 20.045 kHz OBW Power 99.00 % x dB Bandwidth 15.98 MHz x dB -6.00 dB Frequency Center Freq 5.785000000 GHz CF Step 3.000000 MHz Auto Man Freq Offset 0 Hz
5825 MHz	 Agilent Spectrum Analyzer - Occupied BW Center Freq: 5.825000000 GHz Trig: Free Run AvgHold: 1010 Radio Std: None Radio Device: BTS Ref 15.00 dBm Center 5.825 GHz #Res BW 100 kHz #VBW 300 kHz Span 30 MHz Sweep 2.933 ms Occupied Bandwidth 17.436 MHz Total Power 12.3 dBm Transmit Freq Error 65.182 kHz OBW Power 99.00 % x dB Bandwidth 16.06 MHz x dB -6.00 dB Frequency Center Freq 5.825000000 GHz CF Step 3.000000 MHz Auto Man Freq Offset 0 Hz

Mode 4: IEEE 802.11ac 40MHz Link Mode_ANT-1

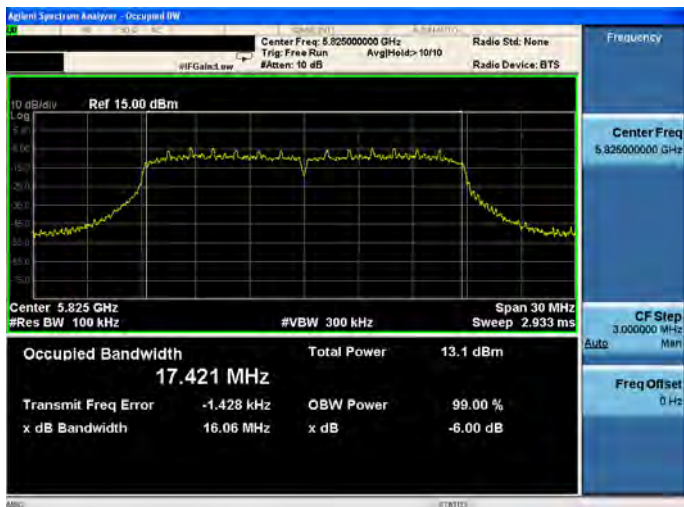
5755 MHz	 Agilent Spectrum Analyzer - Occupied BW Center Freq: 5.755000000 GHz Trig: Free Run Avg/Hold: 10/10 Radio Std: None Radio Device: BTS Ref 15.00 dBm Center 5.755 GHz #Res BW 100 kHz #VBW 300 kHz Span 50 MHz Sweep 4.8 ms Occupied Bandwidth: 35.515 MHz Total Power: 14.3 dBm Transmit Freq Error: 10.397 kHz OBW Power: 99.00 % x dB Bandwidth: 35.15 MHz x dB: -6.00 dB Frequency: 5.755000000 GHz CF Step: 5.000000 MHz Freq Offset: 0 Hz
5795 MHz	 Agilent Spectrum Analyzer - Occupied BW Center Freq: 5.795000000 GHz Trig: Free Run Avg/Hold: 10/10 Radio Std: None Radio Device: BTS Ref 15.00 dBm Center 5.795 GHz #Res BW 100 kHz #VBW 300 kHz Span 50 MHz Sweep 4.8 ms Occupied Bandwidth: 35.552 MHz Total Power: 13.6 dBm Transmit Freq Error: 24.378 kHz OBW Power: 99.00 % x dB Bandwidth: 35.12 MHz x dB: -6.00 dB Frequency: 5.795000000 GHz CF Step: 5.000000 MHz Freq Offset: 0 Hz

Mode 5: IEEE 802.11ac 80MHz Link Mode_ANT-1

5775 MHz	 Agilent Spectrum Analyzer - Occupied BW Center Freq: 5.775000000 GHz Trig: Free Run Avg/Hold: 10/10 Radio Std: None Radio Device: BTS Ref 15.00 dBm Center 5.775 GHz #Res BW 100 kHz #VBW 300 kHz Span 100 MHz Sweep 9.0 ms Occupied Bandwidth: 75.085 MHz Total Power: 14.1 dBm Transmit Freq Error: 72.898 kHz OBW Power: 99.00 % x dB Bandwidth: 75.15 MHz x dB: -6.00 dB Frequency: 5.775000000 GHz CF Step: 10.000000 MHz Freq Offset: 0 Hz
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Mode 3: IEEE 802.11ac 20MHz Link Mode_ANT-2

5745 MHz	 Agilent Spectrum Analyzer - Occupied BW Center Freq: 5.74500000 GHz Trig: Free Run Ave/Hold: 10/10 Radio Std: None Radio Device: BTS Ref 15.00 dBm Center 5.745 GHz #Res BW 100 kHz #VBW 300 kHz Span 30 MHz Sweep 2.933 ms Occupied Bandwidth 17.437 MHz Total Power 13.5 dBm Transmit Freq Error 147 Hz OBW Power 99.00 % x dB Bandwidth 16.06 MHz x dB -6.00 dB Frequency Center Freq 5.74500000 GHz CF Step 3.000000 MHz Auto Man Freq Offset 0 Hz
5785 MHz	 Agilent Spectrum Analyzer - Occupied BW Center Freq: 5.78500000 GHz Trig: Free Run Ave/Hold: 10/10 Radio Std: None Radio Device: BTS Ref 15.00 dBm Center 5.785 GHz #Res BW 100 kHz #VBW 300 kHz Span 30 MHz Sweep 2.933 ms Occupied Bandwidth 17.428 MHz Total Power 13.7 dBm Transmit Freq Error -2.360 kHz OBW Power 99.00 % x dB Bandwidth 16.28 MHz x dB -6.00 dB Frequency Center Freq 5.78500000 GHz CF Step 3.000000 MHz Auto Man Freq Offset 0 Hz
5825 MHz	 Agilent Spectrum Analyzer - Occupied BW Center Freq: 5.82500000 GHz Trig: Free Run Ave/Hold: 10/10 Radio Std: None Radio Device: BTS Ref 15.00 dBm Center 5.825 GHz #Res BW 100 kHz #VBW 300 kHz Span 30 MHz Sweep 2.933 ms Occupied Bandwidth 17.421 MHz Total Power 13.1 dBm Transmit Freq Error -1.428 kHz OBW Power 99.00 % x dB Bandwidth 16.06 MHz x dB -6.00 dB Frequency Center Freq 5.82500000 GHz CF Step 3.000000 MHz Auto Man Freq Offset 0 Hz



Mode 4: IEEE 802.11ac 40MHz Link Mode_ANT-2

5755 MHz	 Agilent Spectrum Analyzer - Occupied BW Center Freq: 5.75500000 GHz Trig: Free Run AvgHold: 1010 Radio Std: None Radio Device: BTS Ref 15.00 dBm Center 5.755 GHz #Res BW 100 kHz #VBW 300 kHz Span 50 MHz Sweep 4.8 ms Occupied Bandwidth 35.498 MHz Total Power 14.0 dBm Transmit Freq Error 28.687 kHz OBW Power 99.00 % x dB Bandwidth 35.15 MHz x dB -6.00 dB Frequency Center Freq 5.75500000 GHz CF Step 5.000000 MHz Auto Man Freq Offset 0 Hz
5795 MHz	 Agilent Spectrum Analyzer - Occupied BW Center Freq: 5.79500000 GHz Trig: Free Run AvgHold: 1010 Radio Std: None Radio Device: BTS Ref 15.00 dBm Center 5.795 GHz #Res BW 100 kHz #VBW 300 kHz Span 50 MHz Sweep 4.8 ms Occupied Bandwidth 35.495 MHz Total Power 14.3 dBm Transmit Freq Error 26.654 kHz OBW Power 99.00 % x dB Bandwidth 35.16 MHz x dB -6.00 dB Frequency Center Freq 5.79500000 GHz CF Step 5.000000 MHz Auto Man Freq Offset 0 Hz

Mode 5: IEEE 802.11ac 80MHz Link Mode_ANT-2

5775 MHz	 Agilent Spectrum Analyzer - Occupied BW Center Freq: 5.77500000 GHz Trig: Free Run AvgHold: 1010 Radio Std: None Radio Device: BTS Ref 15.00 dBm Center 5.775 GHz #Res BW 100 kHz #VBW 300 kHz Span 100 MHz Sweep 9.0 ms Occupied Bandwidth 75.071 MHz Total Power 17.0 dBm Transmit Freq Error 17.889 kHz OBW Power 99.00 % x dB Bandwidth 75.19 MHz x dB -6.00 dB Frequency Center Freq 5.77500000 GHz CF Step 10.000000 MHz Auto Man Freq Offset 0 Hz
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4.7. Peak Power Spectral Density Measurement

■ Limit

Conducted power spectral density

Frequency Range (MHz)	FCC Limit
5.150 ~ 5.250 GHz	11 dBm/MHz
5.725 ~ 5.850 GHz	30 dBm/500KHz

And According to 15.407 (a), if transmitting antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

According FCC KDB 662911 D01 v02r01 – for power measurements on IEEE802.11 devices,

Directional gain = $10 \cdot \log\{[10^{(G1/20)} + 10^{(G2/20)} + \dots + 10^{(Gn/20)}]^2 / NANT\}$

* SISO mode ANT-0 : Max. Gain = 3.78 dBi < 6dBi

SISO mode ANT-1 : Max. Gain = 4.74 dBi < 6dBi

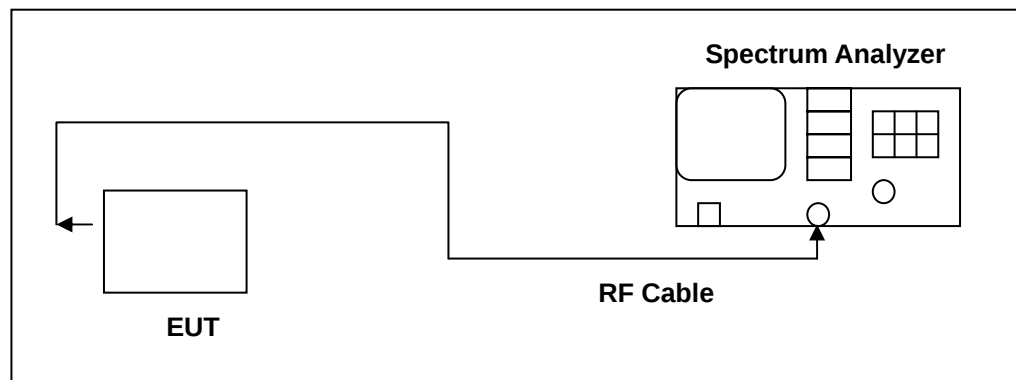
SISO mode ANT-2 : Max. Gain = 3.04 dBi < 6dBi

* MIMO mode : Directional Gain = $10 \cdot \log\{[10^{(G1/20)} + 10^{(G2/20)} + \dots + 10^{(Gn/20)}]^2 / NANT\} = 8.65 \text{ dBi} > 6\text{dBi}$

MIMO mode power limit shall be reduced = 11 - 2.65 = 8.35 dBm/MHz (5.150 ~ 5.250 GHz)

MIMO mode power limit shall be reduced = 30 - 2.65 = 27.35 dBm/ 500KHz (5.725 ~ 5.850 GHz)

■ Test Setup



■ Test Instruments

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
Spectrum Analyzer	Agilent	E4445A	MY45300744	12/15/2015	1 year
Test Site	ATL	TE05	TE05	N.C.R.	-----

Note: N.C.R. = No Calibration Request.

**■ Test Procedure**

The test is performed in accordance with KDB789033: D02 General UNII Test Procedures New Rules v01r02, Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices - Part 15, Subpart E.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	Encompass the entire emissions bandwidth (EBW) of the signal
RBW	1 MHz (5725 ~ 5850MHz use 100 kHz)
VBW	3 MHz (5725 ~ 5850MHz use 300 kHz)
Detector	RMS
Trace	AVERAGE
Sweep Time	Auto
Trace Average	100 times
Note: If measurement bandwidth of Maximum PSD is specified in 500 kHz, add $10\log(500\text{kHz}/100\text{kHz})$ to the measured result.	

Test Result

Model Number	EW-7833UAC			
Test Item	Conducted power spectral density			
Test Mode	Mode 2: IEEE 802.11a link mode			
Date of Test	07/07/2016			
Frequency (MHz)	ANT-0			
	Measurement (dBm/MHz)	Duty Factor (dB)	Calculated (dBm/MHz)	Limit (dBm/MHz)
5180	6.947	0.141	7.088	< 11
5200	7.350	0.141	7.491	
5240	6.974	0.141	7.115	

Note: Method SA-2, Power density = measured result + 10log(1/duty cycle) = measured result + duty factor.

Model Number	EW-7833UAC			
Test Item	Conducted power spectral density			
Test Mode	Mode 2: IEEE 802.11a link mode			
Date of Test	07/07/2016			
Frequency (MHz)	ANT-0			
	Measurement (dBm/100KHz)	Duty Factor (dB)	Calculated (dBm/500KHz)	Limit (dBm/500KHz)
5745	0.39	0.141	7.52	< 30
5785	-0.01	0.141	7.12	
5825	0.15	0.141	7.28	

Note: Method SA-2, Power density = measured result + 10log(1/duty cycle) + Conversion ratio = measured result + duty factor.

Conversion ratio = 10*Log(500k/100k)



Model Number	EW-7833UAC			
Test Item	Conducted power spectral density			
Test Mode	Mode 3: IEEE 802.11ac 20MHz link mode			
Date of Test	03/19/2016			
Frequency (MHz)	ANT-0			
	Measurement (dBm/MHz)	Duty Factor (dB)	Calculated (dBm/MHz)	Limit (dBm/MHz)
5180	0.047	0.404	0.451	< 11
5200	-0.167	0.404	0.237	
5240	-0.975	0.404	-0.571	
Frequency (MHz)	ANT-1			
	Measurement (dBm/MHz)	Duty Factor (dB)	Calculated (dBm/MHz)	Limit (dBm/MHz)
5180	4.382	0.404	4.786	< 11
5200	4.915	0.404	5.319	
5240	5.375	0.404	5.779	
Frequency (MHz)	ANT-2			
	Measurement (dBm/MHz)	Duty Factor (dB)	Calculated (dBm/MHz)	Limit (dBm/MHz)
5180	2.660	0.404	3.064	< 11
5200	2.814	0.404	3.218	
5240	2.836	0.404	3.240	
Frequency (MHz)	ANT-0+1+2			Limit (dBm/MHz)
	Calculated (dBm/MHz)			
5180	7.885			< 8.35
5200	8.167			
5240	8.305			

Note: Method SA-2, Power density = measured result + 10log(1/duty cycle) = measured result + duty factor.



Model Number	EW-7833UAC			
Test Item	Conducted power spectral density			
Test Mode	Mode 3: IEEE 802.11ac 20MHz link mode			
Date of Test	03/19/2016			
Frequency (MHz)	ANT-0			
	Measurement (dBm/100KHz)	Duty Factor (dB)	Calculated (dBm/500KHz)	Limit (dBm/500KHz)
5745	-5.72	0.404	1.67	< 30
5785	-6.55	0.404	0.84	
5825	-6.98	0.404	0.41	
Frequency (MHz)	ANT-1			
	Measurement (dBm/100KHz)	Duty Factor (dB)	Calculated (dBm/500KHz)	Limit (dBm/500KHz)
5745	-6.59	0.404	0.80	< 30
5785	-6.73	0.404	0.67	
5825	-8.71	0.404	-1.32	
Frequency (MHz)	ANT-2			
	Measurement (dBm/100KHz)	Duty Factor (dB)	Calculated (dBm/500KHz)	Limit (dBm/500KHz)
5745	-6.16	0.404	1.23	< 30
5785	-7.47	0.404	-0.08	
5825	-7.01	0.404	0.38	
Frequency (MHz)	ANT-0+1+2			
	Calculated (dBm/500KHz)			Limit (dBm/500KHz)
5745	6.02			< 27.35
5785	5.27			
5825	4.67			

Note: Method SA-2, Power density = measured result + 10log(1/duty cycle) + Conversion ratio = measured result + duty factor.

Conversion ratio = 10*Log(500k/100k)



Model Number	EW-7833UAC			
Test Item	Conducted power spectral density			
Test Mode	Mode 4: IEEE 802.11ac 40MHz link mode			
Date of Test	07/07/2016			
Frequency (MHz)	ANT-0			
	Measurement (dBm/MHz)	Duty Factor (dB)	Calculated (dBm/MHz)	Limit (dBm/MHz)
5190	-3.379	0.746	-2.633	< 11
5230	-3.716	0.746	-2.970	
Frequency (MHz)	ANT-1			
	Measurement (dBm/MHz)	Duty Factor (dB)	Calculated (dBm/MHz)	Limit (dBm/MHz)
5190	0.063	0.746	0.809	< 11
5230	1.917	0.746	2.663	
Frequency (MHz)	ANT-2			
	Measurement (dBm/MHz)	Duty Factor (dB)	Calculated (dBm/MHz)	Limit (dBm/MHz)
5190	-1.511	0.746	-0.765	< 11
5230	-1.416	0.746	-0.670	
Frequency (MHz)	ANT-0+1+2			
	Calculated (dBm/MHz)			Limit (dBm/MHz)
5190	4.131			< 8.35
5230	5.063			

Note: Method SA-2, Power density = measured result + 10log(1/duty cycle) = measured result + duty factor.



Model Number	EW-7833UAC			
Test Item	Conducted power spectral density			
Test Mode	Mode 4: IEEE 802.11ac 40MHz link mode			
Date of Test	03/19/2016			
Frequency (MHz)	ANT-0			
	Measurement (dBm/100KHz)	Duty Factor (dB)	Calculated (dBm/500KHz)	Limit (dBm/500KHz)
5755	-8.76	0.746	-1.03	< 30
5795	-9.50	0.746	-1.77	
Frequency (MHz)	ANT-1			
	Measurement (dBm/100KHz)	Duty Factor (dB)	Calculated (dBm/500KHz)	Limit (dBm/500KHz)
5755	-10.18	0.746	-2.44	< 30
5795	-11.80	0.746	-4.06	
Frequency (MHz)	ANT-2			
	Measurement (dBm/100KHz)	Duty Factor (dB)	Calculated (dBm/500KHz)	Limit (dBm/500KHz)
5755	-10.13	0.746	-2.39	< 30
5795	-9.63	0.746	-1.89	
Frequency (MHz)	ANT-0+1+2			
	Calculated (dBm/500KHz)			Limit (dBm/500KHz)
5755	2.87			< 27.35
5795	2.32			

Note: Method SA-2, Power density = measured result + 10log(1/duty cycle) + Conversion ratio = measured result + duty factor.

Conversion ratio = 10*Log(500k/100k)



Model Number	EW-7833UAC			
Test Item	Conducted power spectral density			
Test Mode	Mode 5: IEEE 802.11ac 80MHz link mode			
Date of Test	07/07/2016			
Frequency (MHz)	ANT-0			
	Measurement (dBm/MHz)	Duty Factor (dB)	Calculated (dBm/MHz)	Limit (dBm/MHz)
5210	-5.970	1.257	-4.713	< 11
Frequency (MHz)	ANT-1			
	Measurement (dBm/MHz)	Duty Factor (dB)	Calculated (dBm/MHz)	Limit (dBm/MHz)
5210	-5.493	1.257	-4.236	< 11
Frequency (MHz)	ANT-2			
	Measurement (dBm/MHz)	Duty Factor (dB)	Calculated (dBm/MHz)	Limit (dBm/MHz)
5210	-5.660	1.257	-4.403	< 11
Frequency (MHz)	ANT-0+1+2			
	Calculated (dBm/MHz)			Limit (dBm/MHz)
5210	0.325			< 8.35

Note: Method SA-2, Power density = measured result + 10log(1/duty cycle) = measured result + duty factor.



Model Number	EW-7833UAC			
Test Item	Conducted power spectral density			
Test Mode	Mode 5: IEEE 802.11ac 80MHz link mode			
Date of Test	03/19/2016			
Frequency (MHz)	ANT-0			
	Measurement (dBm/100KHz)	Duty Factor (dB)	Calculated (dBm/500KHz)	Limit (dBm/MHz)
5775	-11.96	1.257	-3.72	< 30
Frequency (MHz)	ANT-1			
	Measurement (dBm/100KHz)	Duty Factor (dB)	Calculated (dBm/500KHz)	Limit (dBm/MHz)
5775	-12.40	1.257	-4.15	< 30
Frequency (MHz)	ANT-2			
	Measurement (dBm/100KHz)	Duty Factor (dB)	Calculated (dBm/500KHz)	Limit (dBm/MHz)
5775	-12.57	1.257	-4.33	< 30
Frequency (MHz)	ANT-0+1+2			
	Calculated (dBm/500KHz)			Limit (dBm/MHz)
5775	0.71			< 27.35

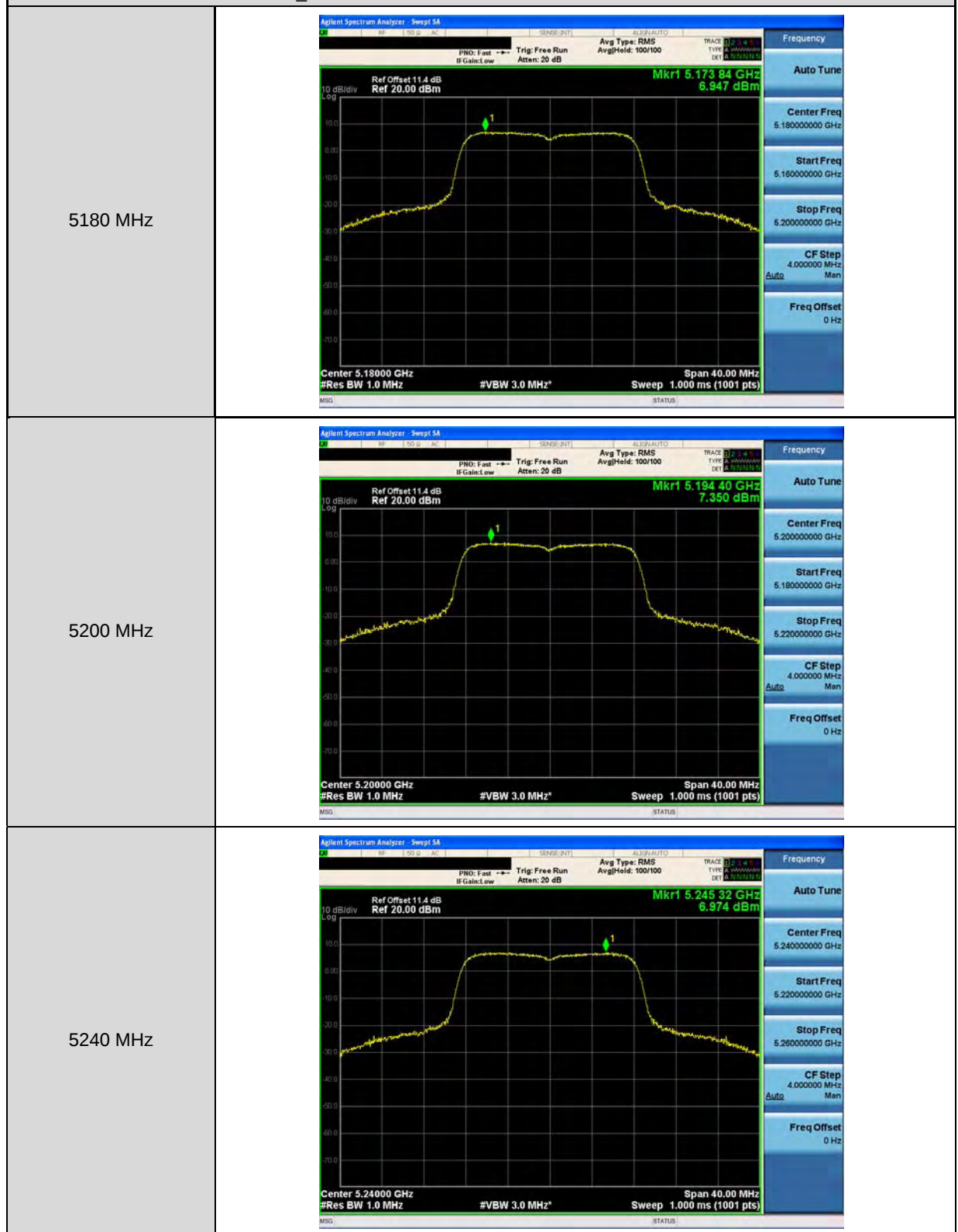
Note: Method SA-2, Power density = measured result + 10log(1/duty cycle) + Conversion ratio = measured result + duty factor.

Conversion ratio = 10*Log(500k/100k)



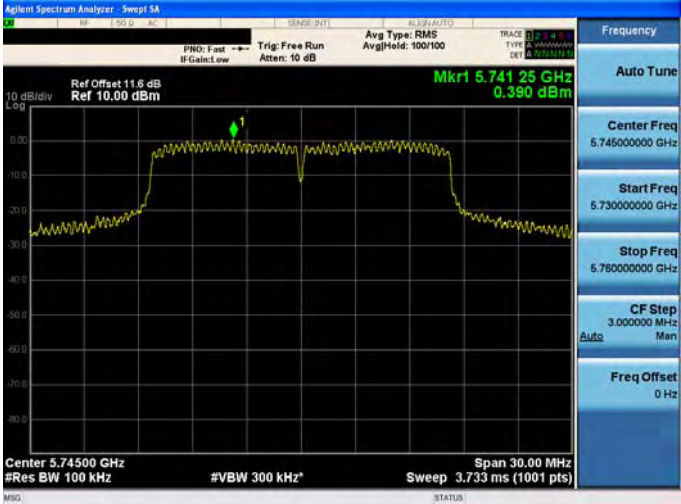
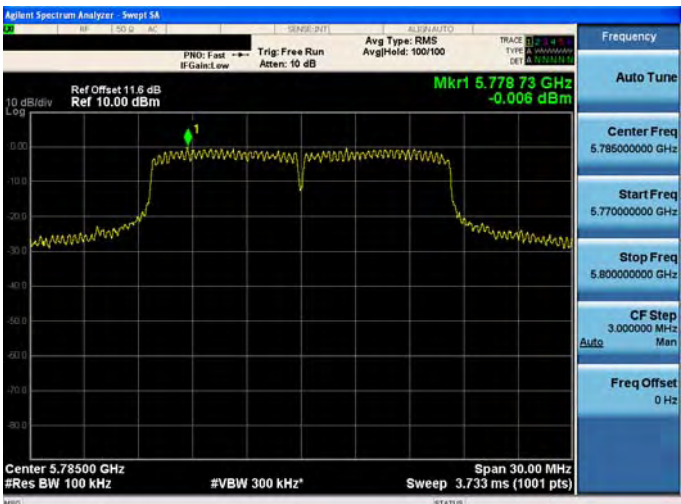
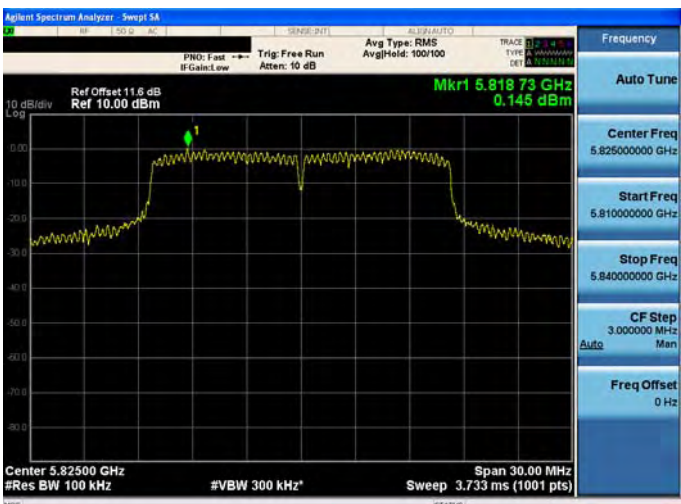
■ Test Graphs

Mode 2: IEEE 802.11a Link Mode_ ANT-0

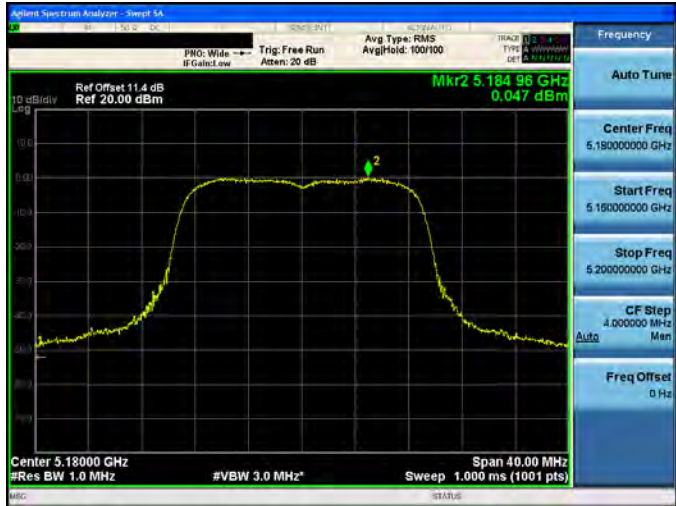
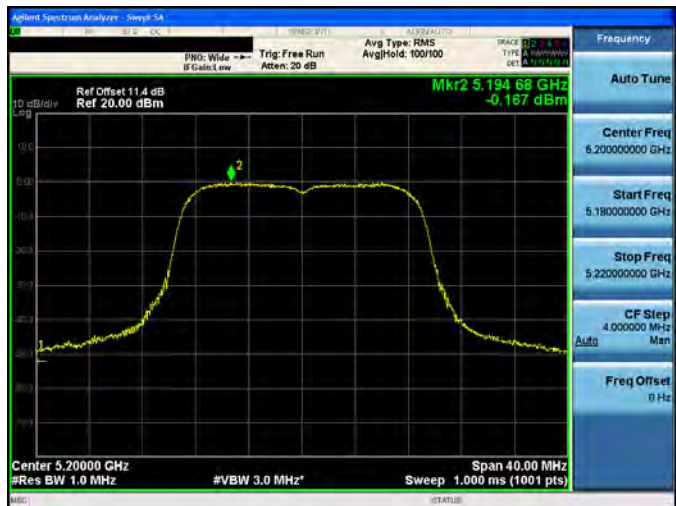
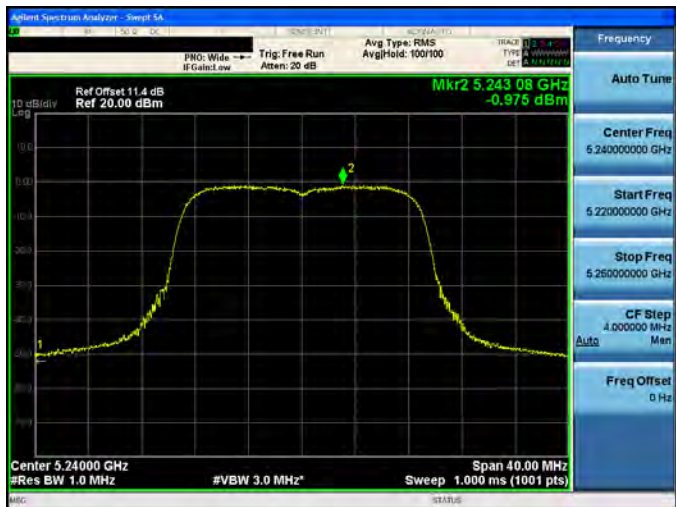




Mode 2: IEEE 802.11a Link Mode_ ANT-0

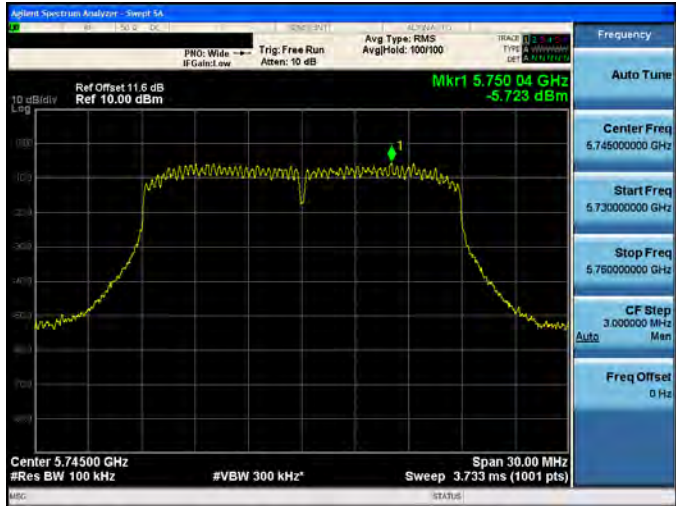
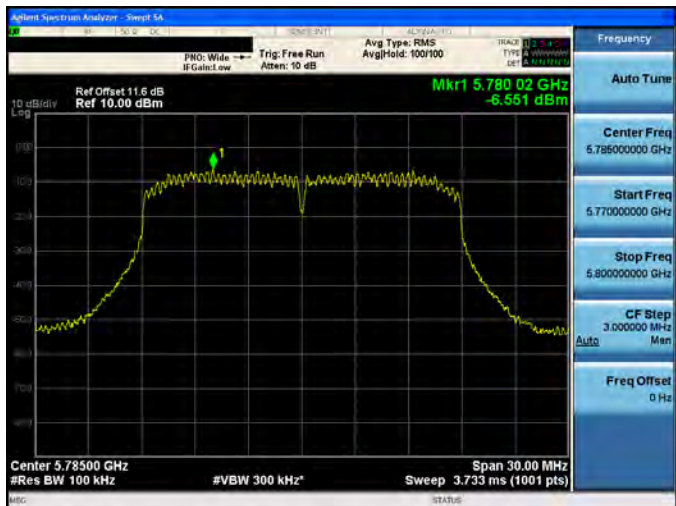
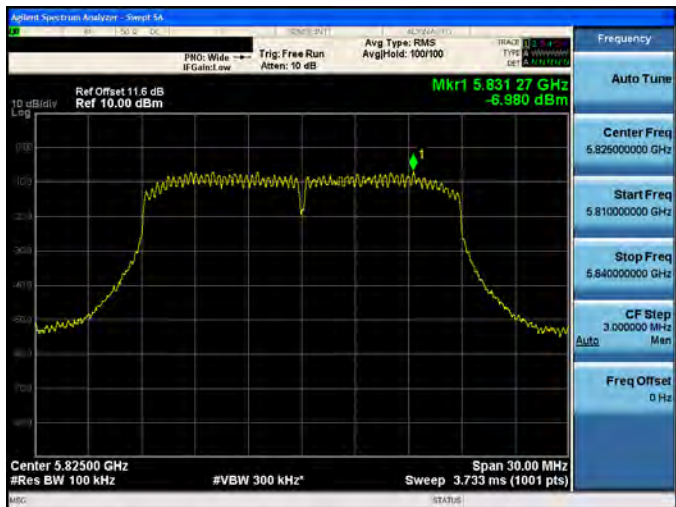
5745 MHz	
5785 MHz	
5825 MHz	



Mode 3: IEEE 802.11ac 20MHz Link Mode _ ANT-0	
5180 MHz	
5200 MHz	
5240 MHz	

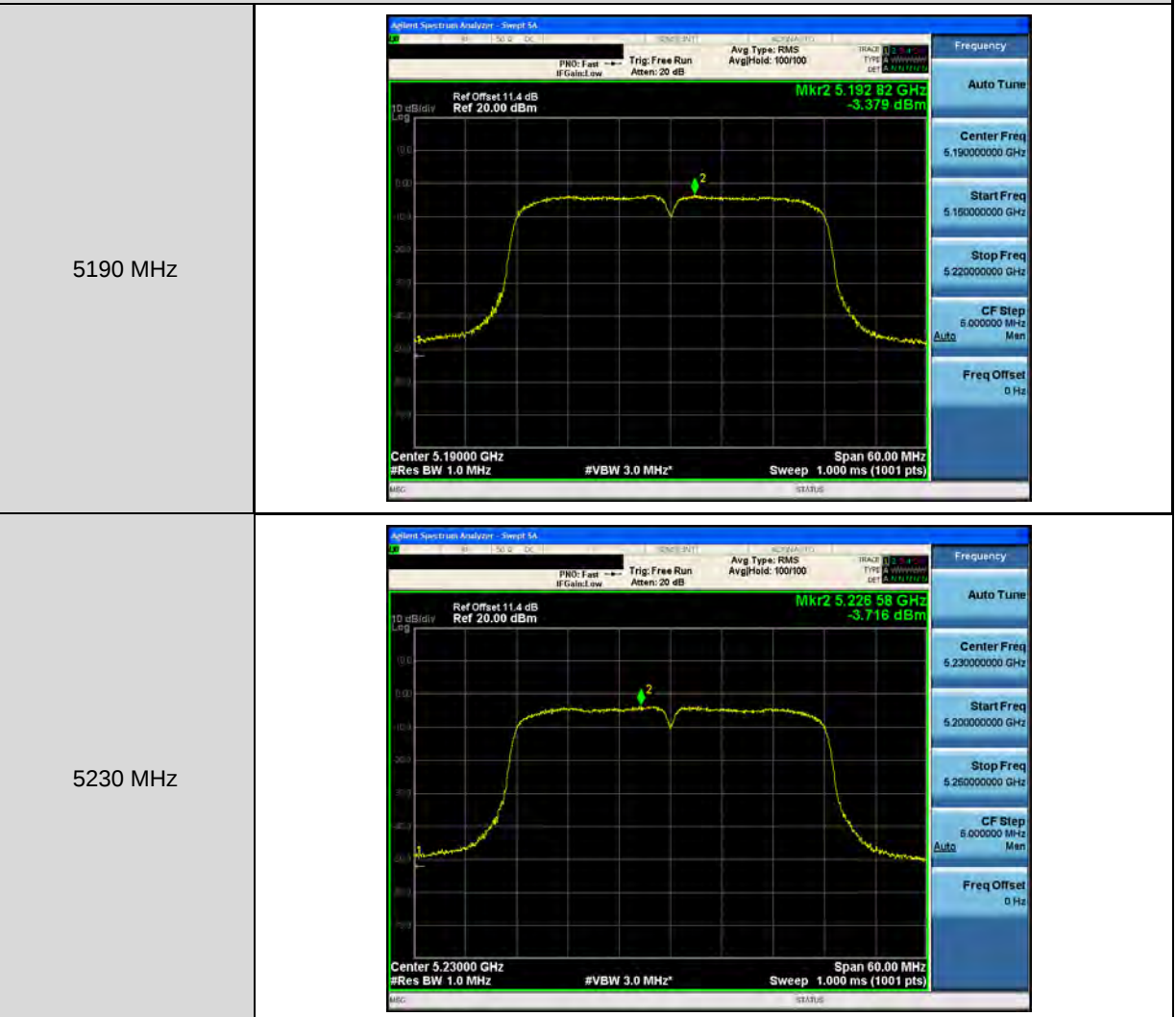


Mode 3: IEEE 802.11ac 20MHz Link Mode _ ANT-0

5745 MHz	
5785 MHz	
5825 MHz	

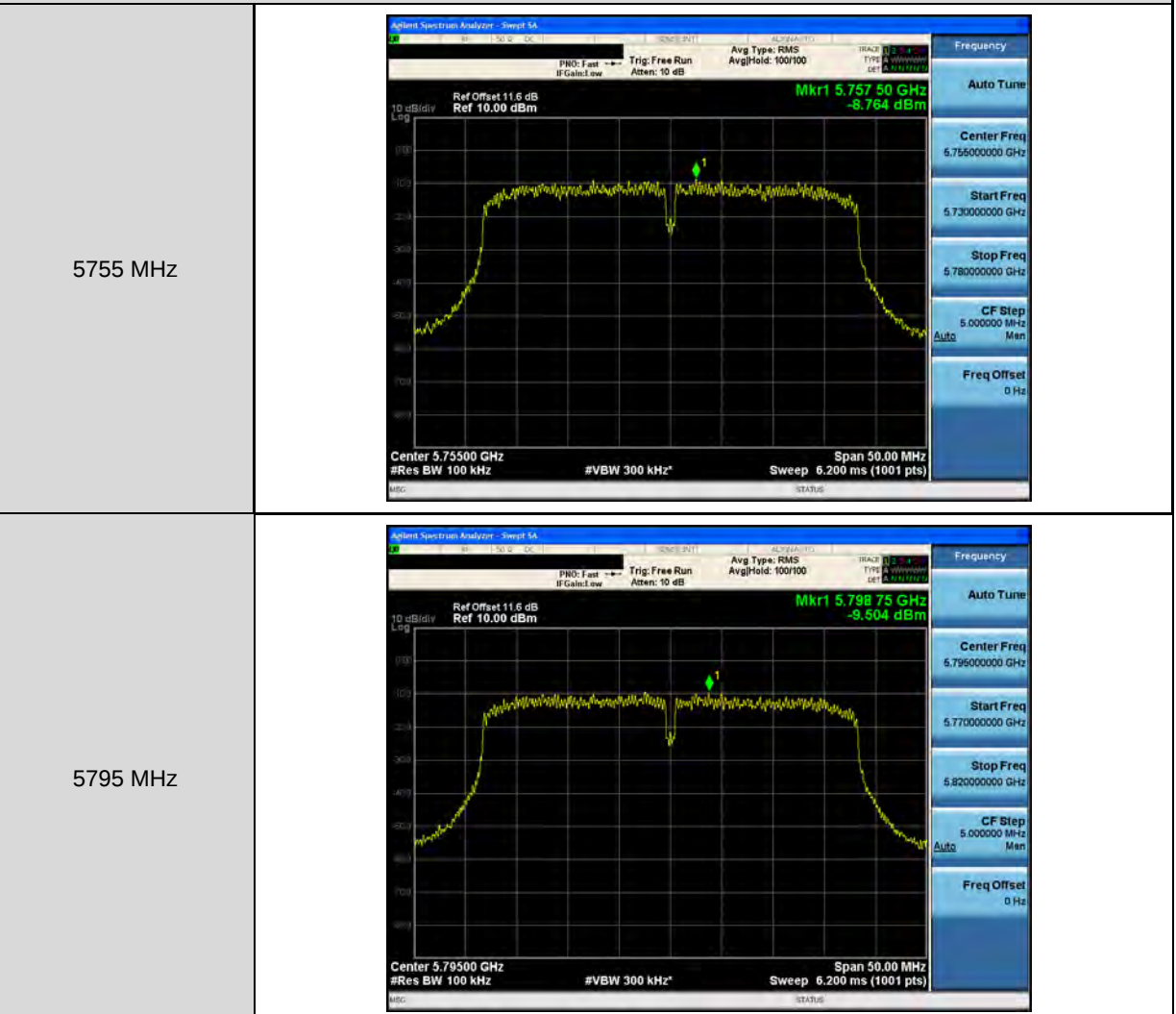


Mode 4: IEEE 802.11ac 40MHz Link Mode_ ANT-0





Mode 4: IEEE 802.11ac 40MHz Link Mode_ ANT-0





Mode 5: IEEE 802.11ac 80MHz Link Mode _ ANT-0

5210 MHz



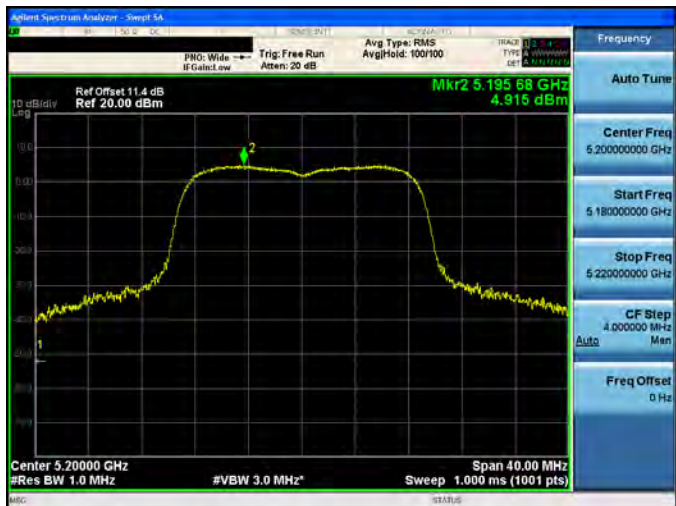
Mode 5: IEEE 802.11ac 80MHz Link Mode _ ANT-0

5775 MHz



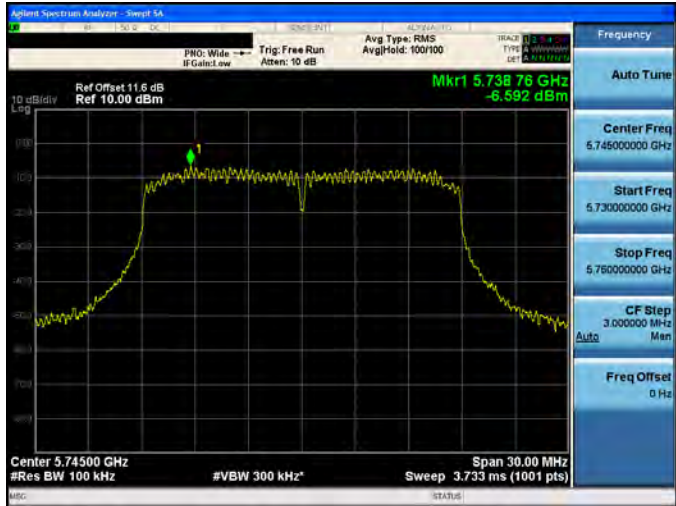
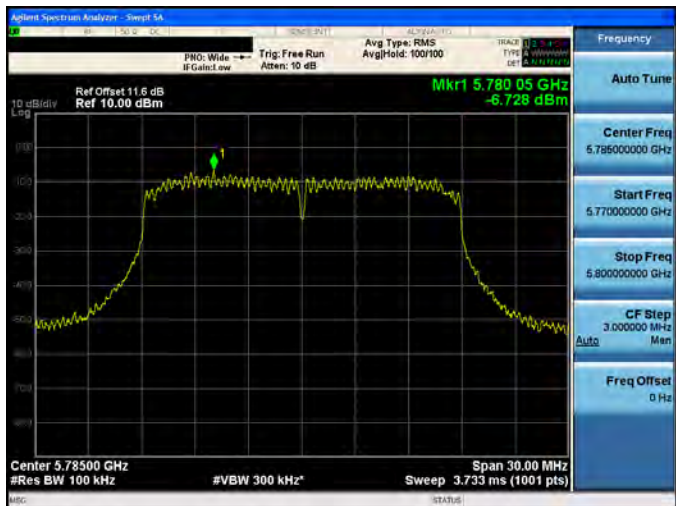
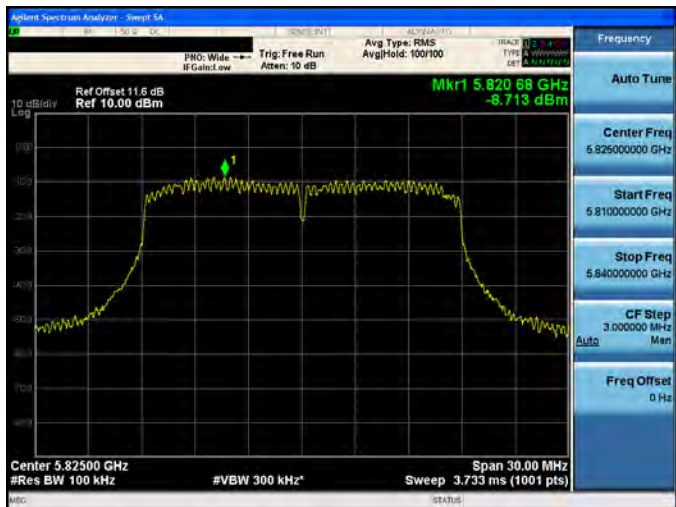


Mode 3: IEEE 802.11ac 20MHz Link Mode _ ANT-1

5180 MHz	
5200 MHz	
5240 MHz	

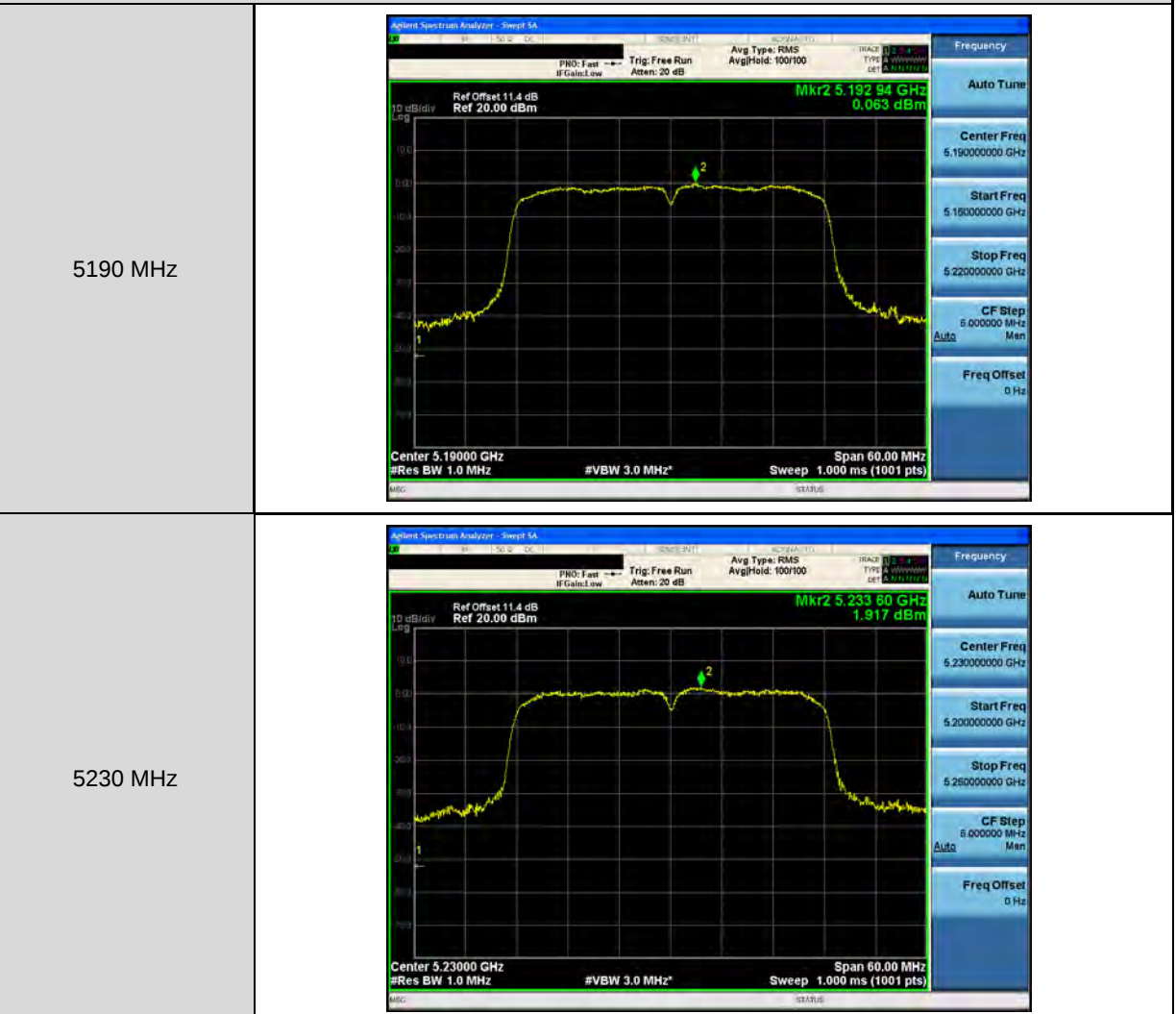


Mode 3: IEEE 802.11ac 20MHz Link Mode _ ANT-1

5745 MHz	
5785 MHz	
5825 MHz	

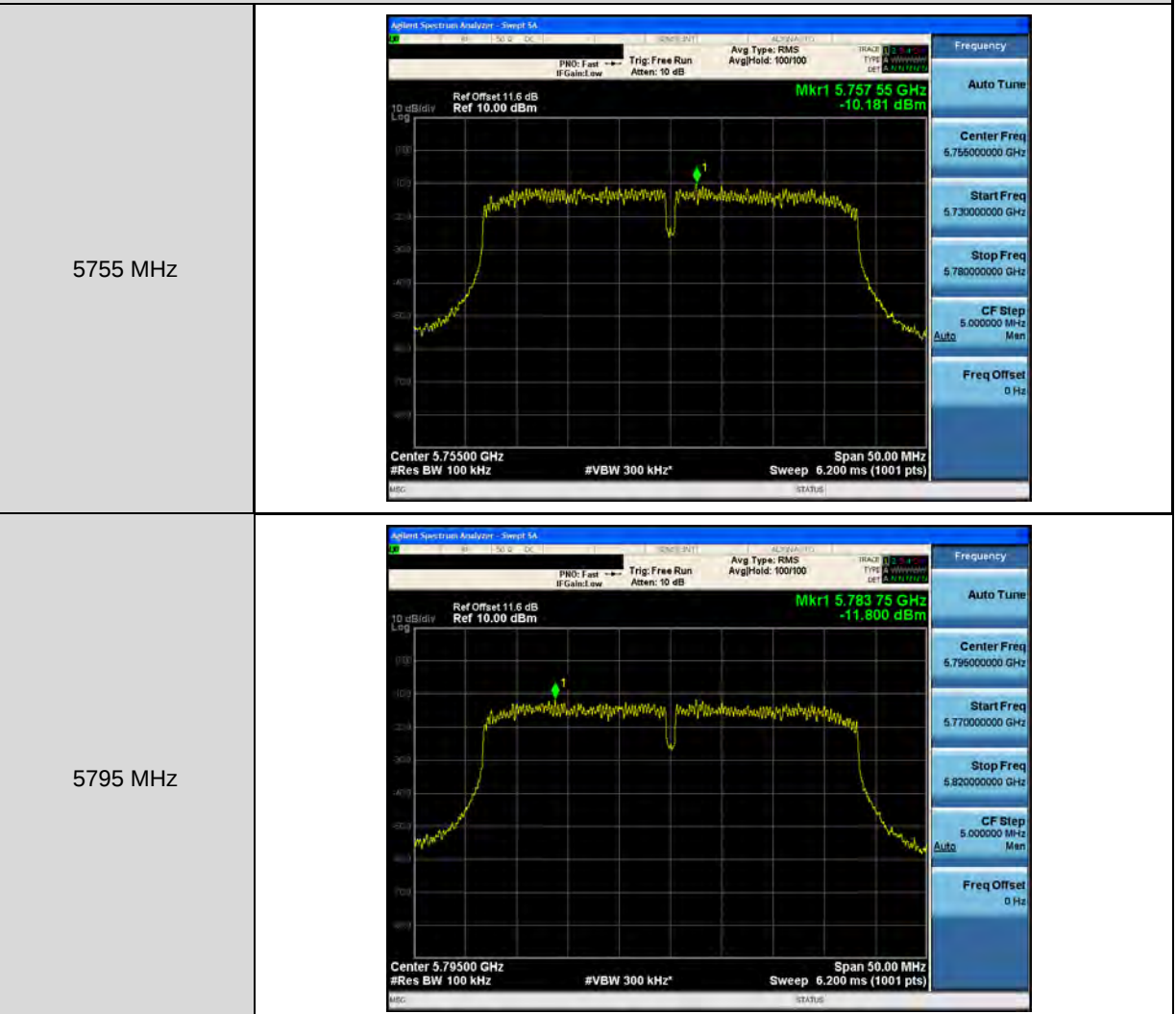


Mode 4: IEEE 802.11ac 40MHz Link Mode_ ANT-1





Mode 4: IEEE 802.11ac 40MHz Link Mode_ ANT-1





Mode 5: IEEE 802.11ac 80MHz Link Mode _ ANT-1

5210 MHz



Mode 5: IEEE 802.11ac 80MHz Link Mode _ ANT-1

5775 MHz

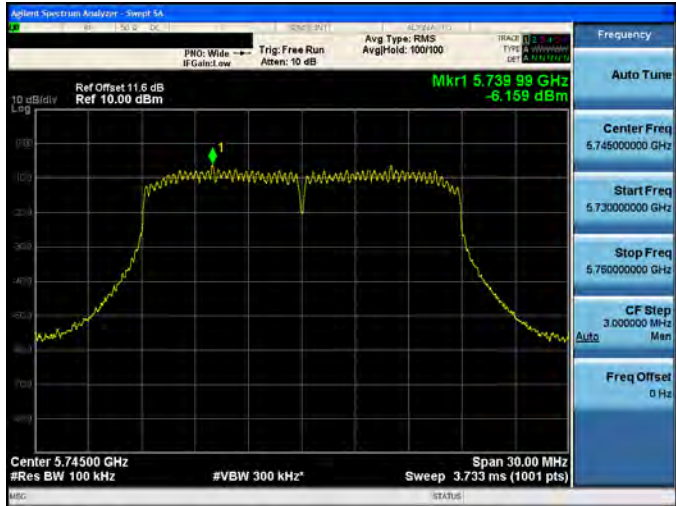
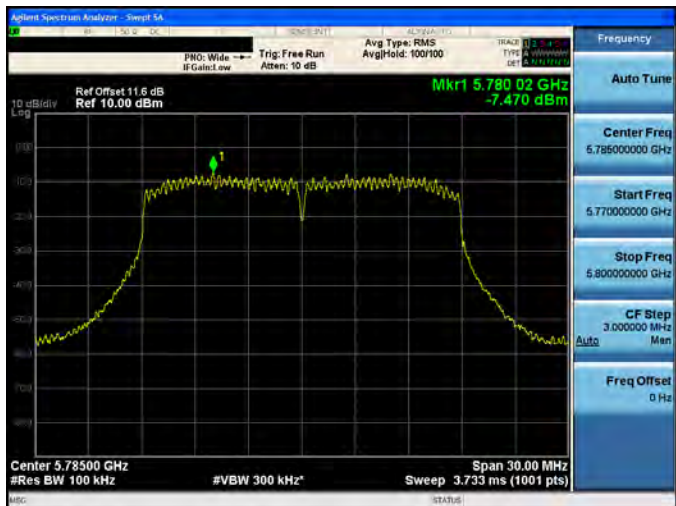
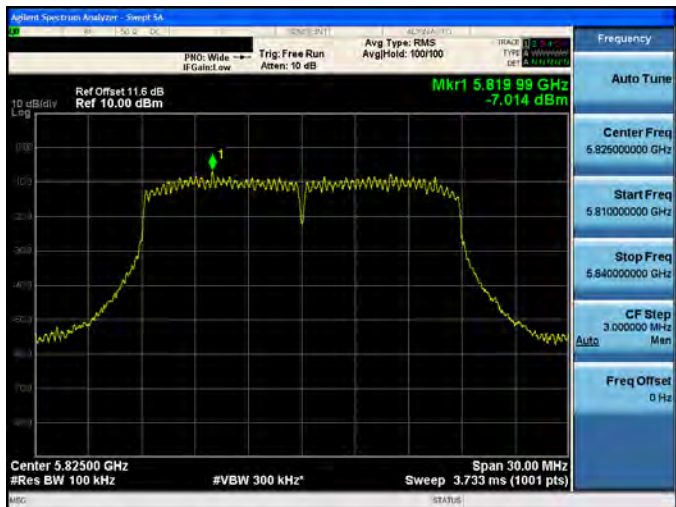


Mode 3: IEEE 802.11ac 20MHz Link Mode _ ANT-2

5180 MHz	
5200 MHz	
5240 MHz	

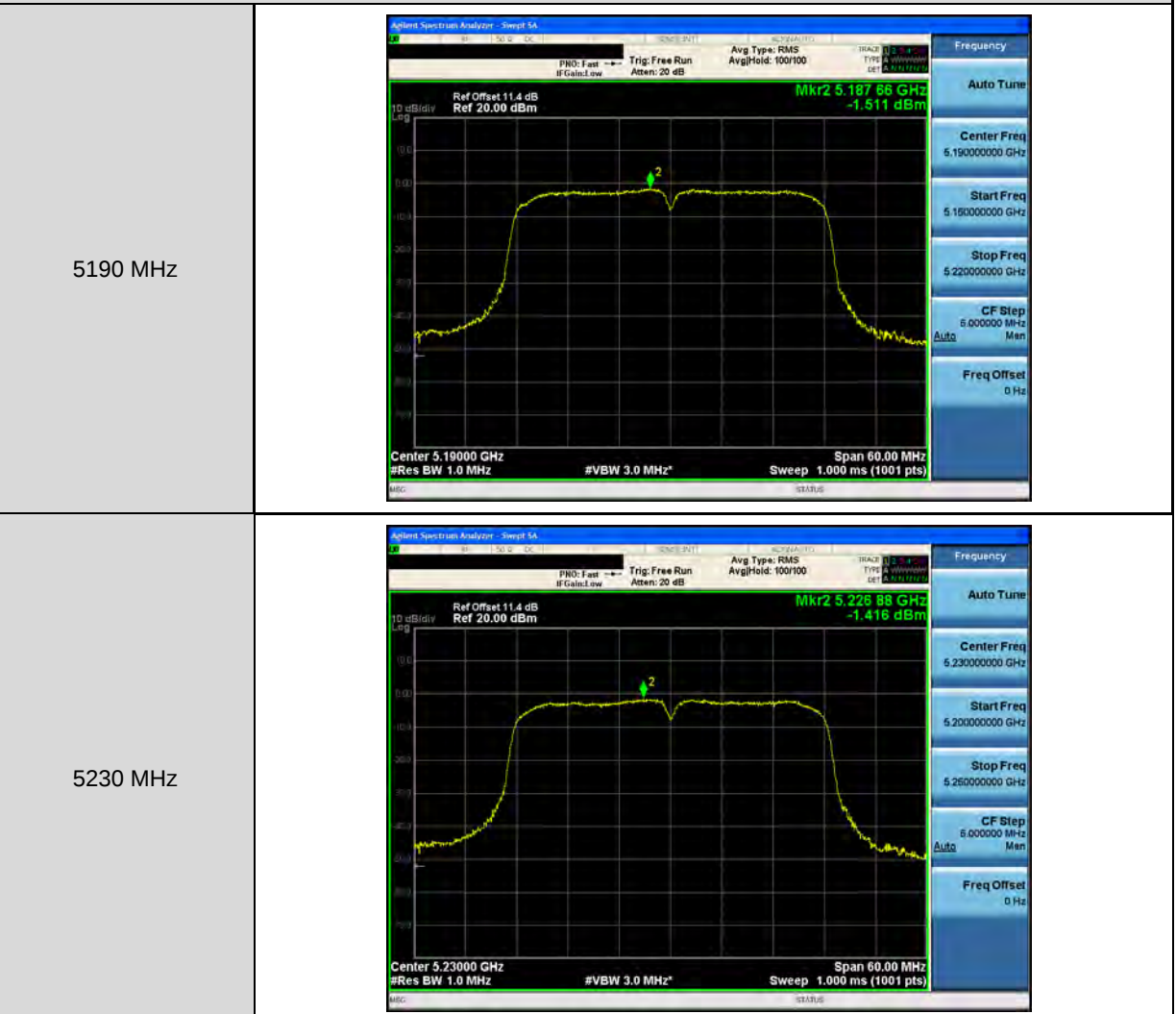


Mode 3: IEEE 802.11ac 20MHz Link Mode _ ANT-2

5745 MHz	
5785 MHz	
5825 MHz	

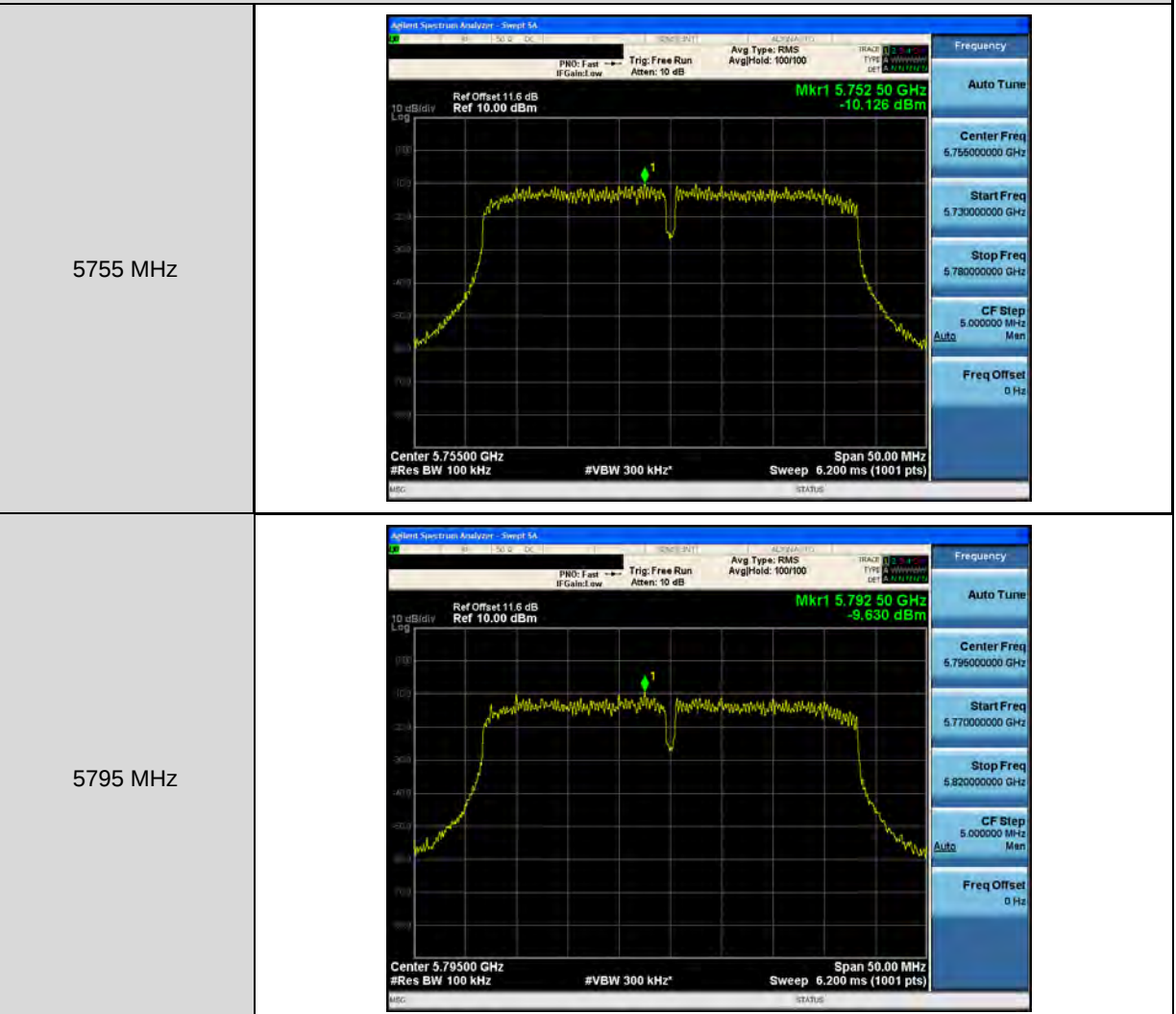


Mode 4: IEEE 802.11ac 40MHz Link Mode_ ANT-2





Mode 4: IEEE 802.11ac 40MHz Link Mode_ ANT-2





Mode 5: IEEE 802.11ac 80MHz Link Mode _ ANT-2

5210 MHz



Mode 5: IEEE 802.11ac 80MHz Link Mode _ ANT-2

5775 MHz

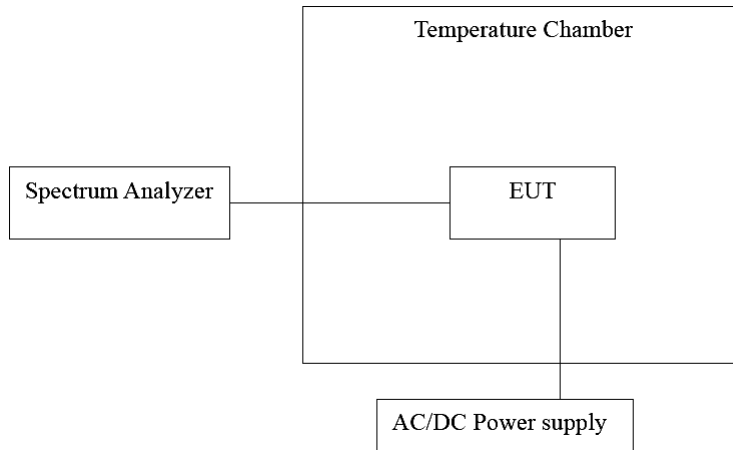


4.8. Frequency Stability Measurement

■ Limit

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the users manual.

■ Test Setup



■ Test Instruments

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
Spectrum Analyzer	Agilent	E4408B	MY45107753	07/27/2015	1 year
Temperature & Humidity Chamber	TAICHY	MHU-225LA	980729	04/18/2016	1 year
Test Site	ATL	TE05	TE05	N.C.R.	-----

Note: N.C.R. = No Calibration Request.

■ Test Procedure

1. The EUT was placed inside the environmental test chamber and powered by nominal AC/DC voltage.
2. Turn the EUT on and couple its output to a spectrum analyzer.
3. Turn the EUT off and set the chamber to the highest temperature specified.
4. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize.
5. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.
6. The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.



■ Test Result

Temperature Variations

Model Number	EW-7833UAC					
Test Item	Frequency Stability					
Date of Test	05/01/2016					
Frequency	Temp. (°C)	Voltage (Vac)	Measured Freq. (MHz)	Delta Freq. (Hz)	Tolerance (ppm)	Result (Pass/Fail)
5200 MHz	0	120	5199.9867	-13300	-2.558	Pass
	10		5200.0021	2100	0.404	Pass
	20		5200.0051	5100	0.981	Pass
	30		5200.0272	27200	5.231	Pass
	40		5200.0387	38700	7.442	Pass
5785 MHz	0	120	5784.9871	-12900	-2.230	Pass
	10		5784.9988	-1200	-0.207	Pass
	20		5785.0027	2700	0.467	Pass
	30		5785.0170	17000	2.939	Pass
	40		5785.0338	33800	5.843	Pass

Voltage Variations

Model Number	EW-7833UAC					
Test Item	Frequency Stability					
Date of Test	05/01/2016					
Frequency	Temp. (°C)	Voltage (Vac)	Measured Freq. (MHz)	Delta Freq. (Hz)	Tolerance (ppm)	Result (Pass/Fail)
5200 MHz	20	138.00	5200.0043	4300	0.827	Pass
		120.00	5200.0100	10000	1.923	Pass
		102.00	5200.0199	19900	3.827	Pass
5785 MHz	20	138.00	5784.9969	-3100	-0.536	Pass
		120.00	5785.0079	7900	1.366	Pass
		102.00	5785.0218	21800	3.768	Pass

Note: The manufacturer's frequency stability specification is better than 20ppm.



4.9. Antenna Requirement

■ Limit

For intentional device, according to 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.

And According to 15.407 (a), if transmitting antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

■ Antenna Connector Construction

See section 2 – antenna information.

■ Directional Gain Calculated

Directional Gain = $10 \cdot \log\{[10^{(G1/20)} + 10^{(G2/20)} + \dots + 10^{(Gn/20)}]^2 / NANT\}$

Operate Freq. Band	Directional Gain (dBi)
IEEE 802.11ac 20MHz	8.65
IEEE 802.11ac 40MHz	8.65
IEEE 802.11ac 80MHz	8.65