

FCC 47 CFR PART 15 SUBPART E

Product Type : Access Point
Applicant : Ubiquiti Networks, Inc.
Address : 2580 Orchard Parkway, San Jose, California, United States, 95131
Trade Name : UBIQUITI
Model Number : UAP-AC-LR
Test Specification : FCC 47 CFR PART 15 SUBPART E: Oct., 2014
ANSI C63.10-2013
Application Purpose : Original
Receive Date : Apr. 20, 2015
Test Period : Jun. 08 ~ 26, 2015
Issue Date : Aug. 04, 2015

Issue by

A Test Lab Techno Corp.
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Taiwan Accreditation Foundation accreditation number: 1330

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Revision History

Rev.	Issue Date	Revisions	Revised By
00	Aug. 04, 2015	Initial Issue	

Verification of Compliance

Issued Date: 08/04/2015

Product Type : Access Point
Applicant : Ubiquiti Networks, Inc.
Address : 2580 Orchard Parkway, San Jose, California, United States, 95131
Trade Name : UBIQUITI
Model Number : UAP-AC-LR
FCC ID : SWX-UAPACLR
EUT Rated Voltage : DC 24V, 0.5A
Test Voltage : 120 Vac / 60 Hz
Applicable Standard : FCC 47 CFR PART 15 SUBPART E: Oct., 2014
ANSI C63.10-2013

Test Result : Complied

Application Purpose : Original

Performing Lab. : A Test Lab Techno Corp.

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Taoyuan County 334, Taiwan R.O.C.

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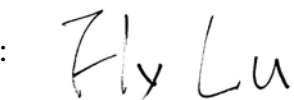
Taiwan Accreditation Foundation accreditation number: 1330

<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.

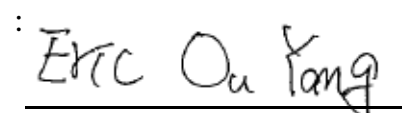
Approved By :



(Manager)

(Fly Lu)

Reviewed By :



(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(a)	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

Measurement Item	Frequency Range		Uncertainty (dB)
Conducted Emission	9kHz ~ 30MHz		± 2.020
Radiated Emission	30MHz ~ 1000MHz	Horizontal	± 3.960
		Vertical	± 3.570
	1000MHz ~ 18000MHz	Horizontal	± 3.072
		Vertical	± 3.028
	18000MHz ~ 40000MHz	Horizontal	± 3.622
		Vertical	± 3.506

2 EUT Description

Product Type	Access Point			
Trade Name	UBIQUITI			
Model No.	UAP-AC-LR			
Applicant	Ubiquiti Networks, Inc. 2580 Orchard Parkway, San Jose, California, United States, 95131			
Manufacturer	Ubiquiti Networks, Inc. 2580 Orchard Parkway, San Jose, California, United States, 95131			
FCC ID	SWX-UAPACLR			
Frequency Range	Mode	Band	Frequency Range (MHz)	Number of Channels
	IEEE 802.11a	U-NII Band I	5180 – 5240	4 Channels
		U-NII Band III	5745 – 5825	5 Channels
	IEEE 802.11n 20 MHz	U-NII Band I	5180 – 5220	4 Channels
		U-NII Band III	5745 – 5825	5 Channels
	IEEE 802.11n 40 MHz	U-NII Band I	5190 – 5230	2 Channels
		U-NII Band III	5755 – 5795	2 Channels
	IEEE 802.11ac 80 MHz	U-NII Band I	5210	1 Channel
		U-NII Band III	5775	1 Channel
Modulation Type	OFDM			
Antenna Type	Dual band tri pol antenna			
Antenna Max. Gain	3 dBi			
Antenna Delivery	2TX + 2RX			
RF Output Power	IEEE 802.11a U-NII Band I: 0.087 W / 19.41 dBm IEEE 802.11a U-NII Band III: 0.121 W / 20.83 dBm IEEE 802.11n 20 MHz U-NII Band I: 0.109 W / 20.37 dBm IEEE 802.11n 20 MHz U-NII Band III: 0.132 W / 21.22 dBm IEEE 802.11n 40 MHz U-NII Band I: 0.083 W / 19.20 dBm IEEE 802.11n 40 MHz U-NII Band III: 0.108 W / 20.34 dBm IEEE 802.11ac 80 MHz U-NII Band I: 0.074 W / 18.70 dBm IEEE 802.11ac 80 MHz U-NII Band III: 0.086 W / 19.36 dBm			
Frequency stability specification	± 30 ppm			
Temperature Range	-10 ~ 70 °C			

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 802.11n 20MHz Link Mode
Mode 4: IEEE 802.11n 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.

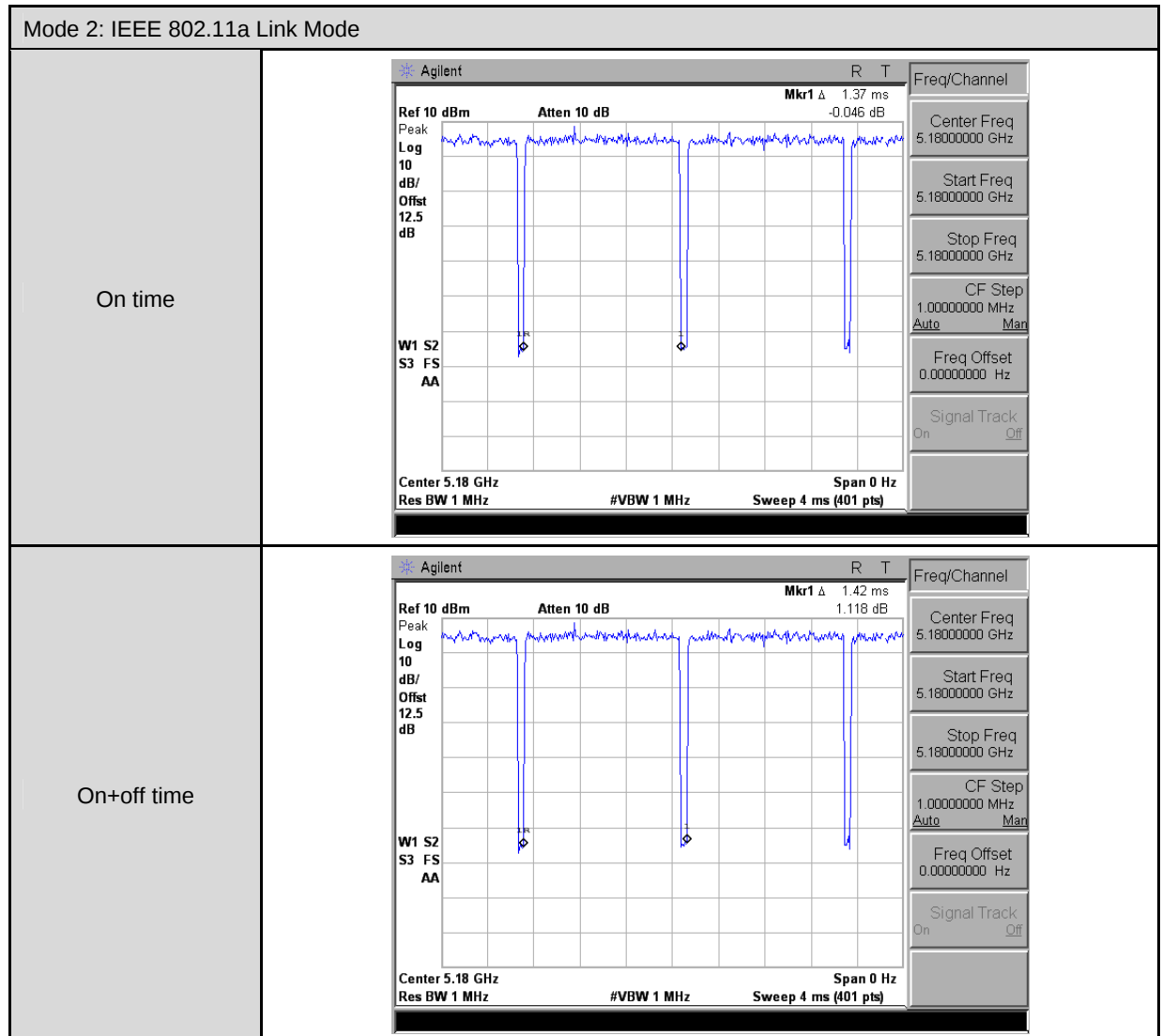
Test Mode	ANT-1	ANT-2	ANT-1+2
IEEE 802.11a Link Mode	V	V	V
IEEE 802.11n 20MHz Link Mode	V	V	V
IEEE 802.11n 40MHz Link Mode	V	V	V
IEEE 802.11ac 80MHz Link Mode	V	V	V

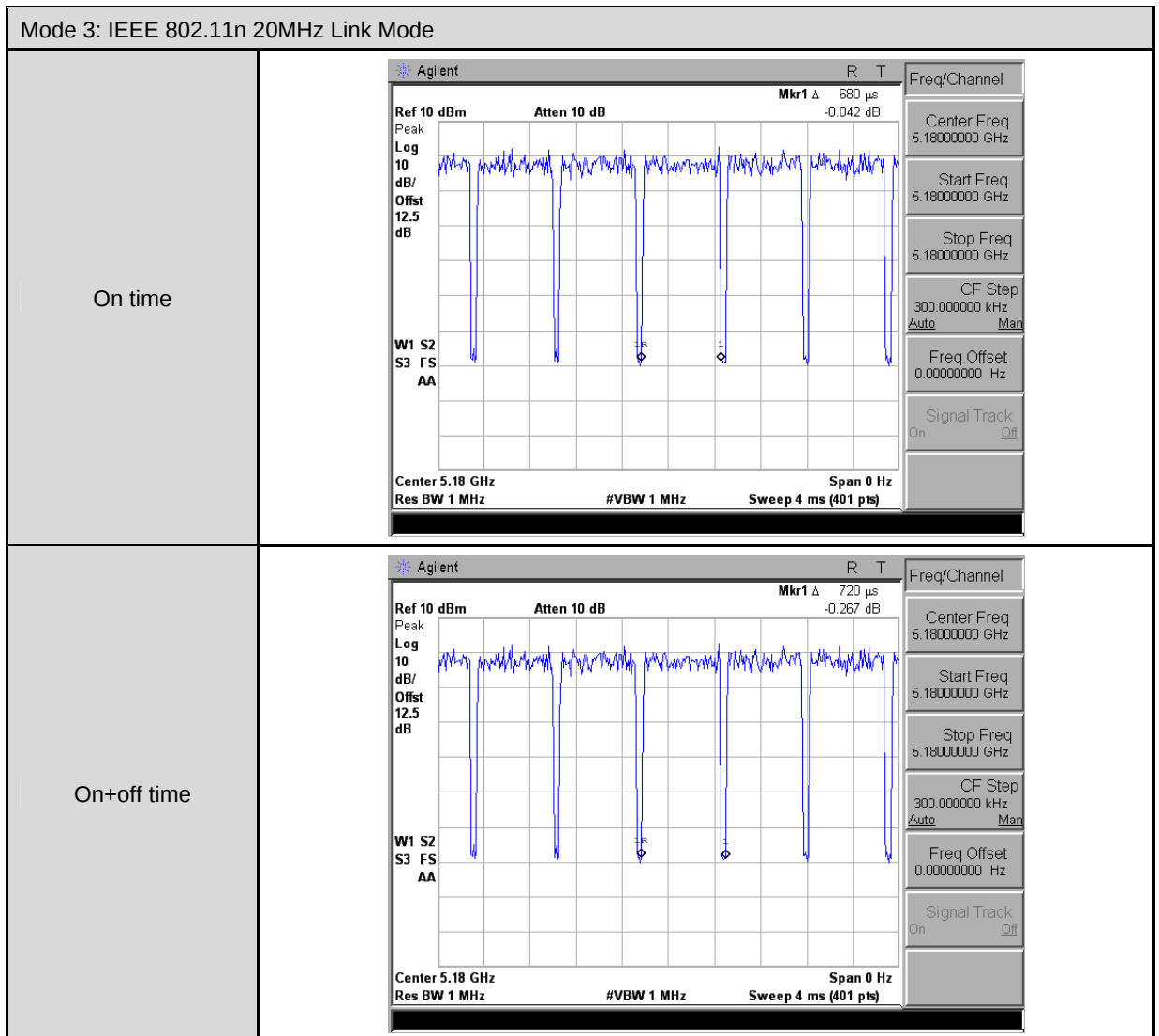
Test Mode	Band	Data Rate	Test Channel
IEEE 802.11a Link Mode	U-NII Band I	6M	36, 40, 48
	U-NII Band III		149,157,165
IEEE 802.11n 20MHz Link Mode	U-NII Band I	13M	36, 40, 48
	U-NII Band III		149,157,165
IEEE 802.11n 40MHz Link Mode	U-NII Band I	27M	38, 46
	U-NII Band III		151,159
IEEE 802.11ac 80MHz Link Mode	U-NII Band I	58.6M	42
	U-NII Band III		155

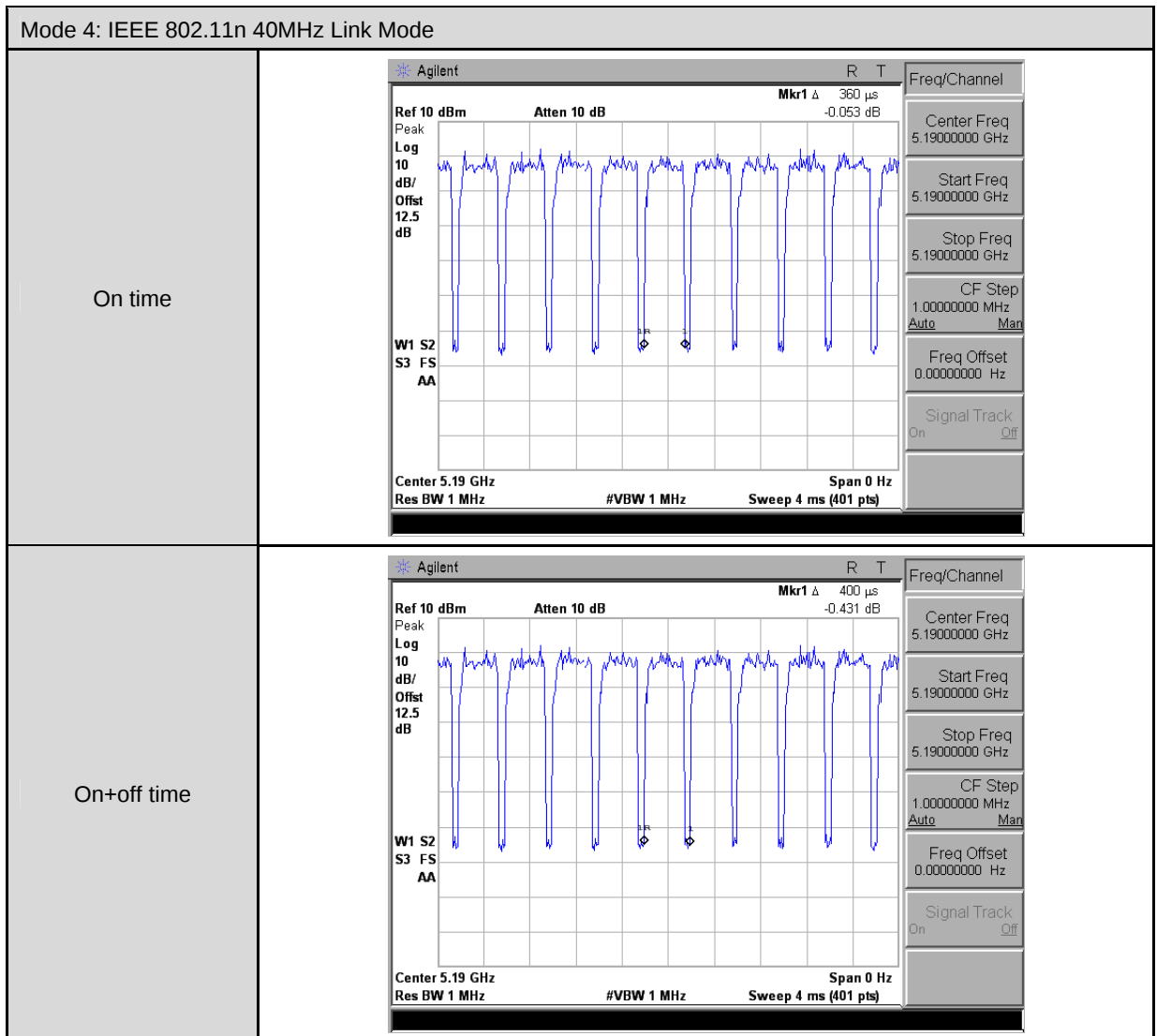
Duty cycle

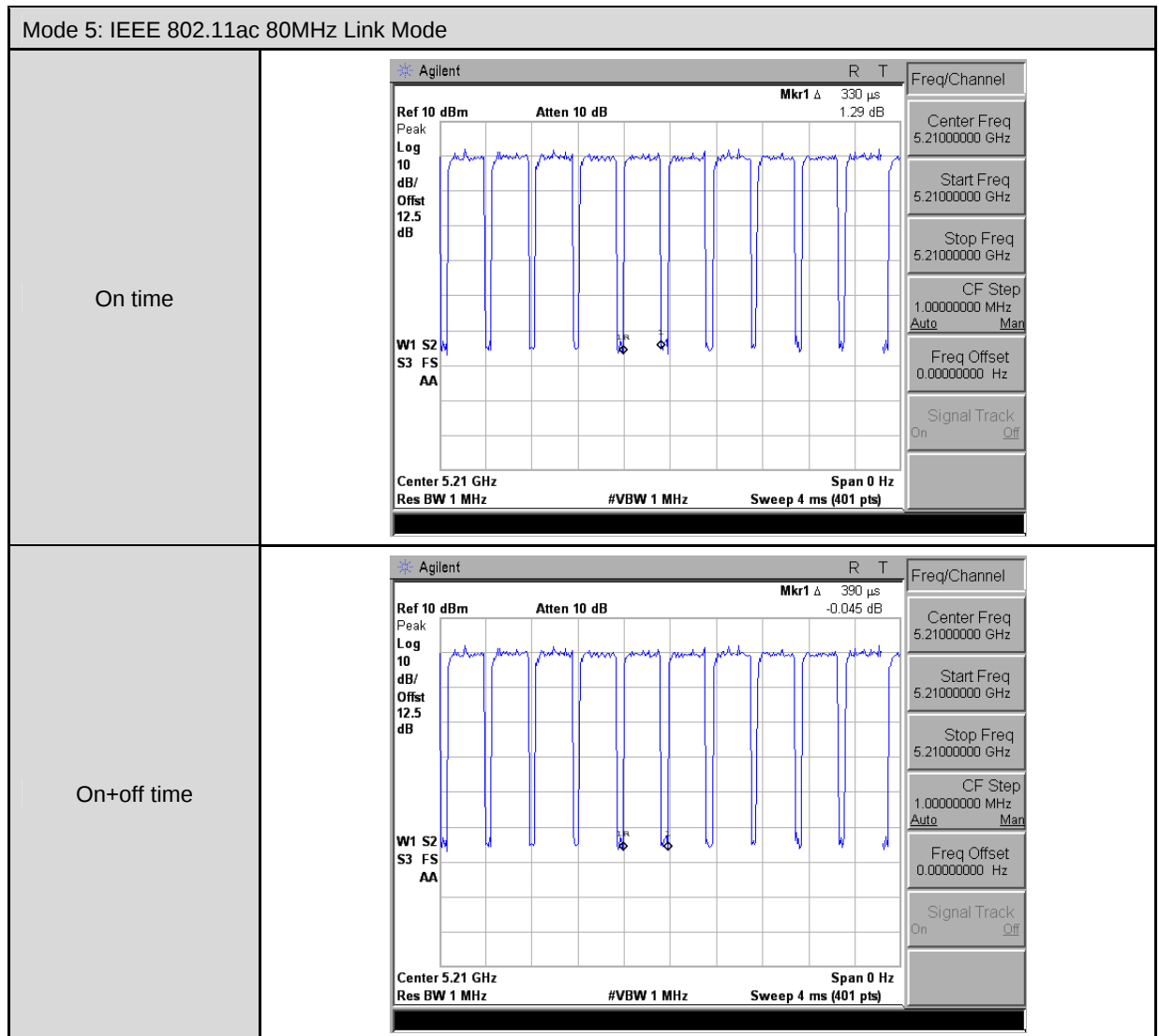
Test Mode	Frequency (MHz)	on time (ms)	on+off time (ms)	Duty cycle	Duty Factor (dB)	1/T Minimum VBW (kHz)
Mode 2: IEEE 802.11a Link Mode	5180.0	1.370	1.420	0.965	0.156	0.730
Mode 3: IEEE 802.11n 20MHz Link Mode	5180.0	0.680	0.720	0.944	0.248	1.471
Mode 4: IEEE 802.11n 40MHz Link Mode	5190.0	0.360	0.400	0.900	0.458	2.778
Mode 5: IEEE 802.11ac 80MHz Link Mode	5210.0	0.330	0.390	0.846	0.726	3.030

Duty Cycle Graphs









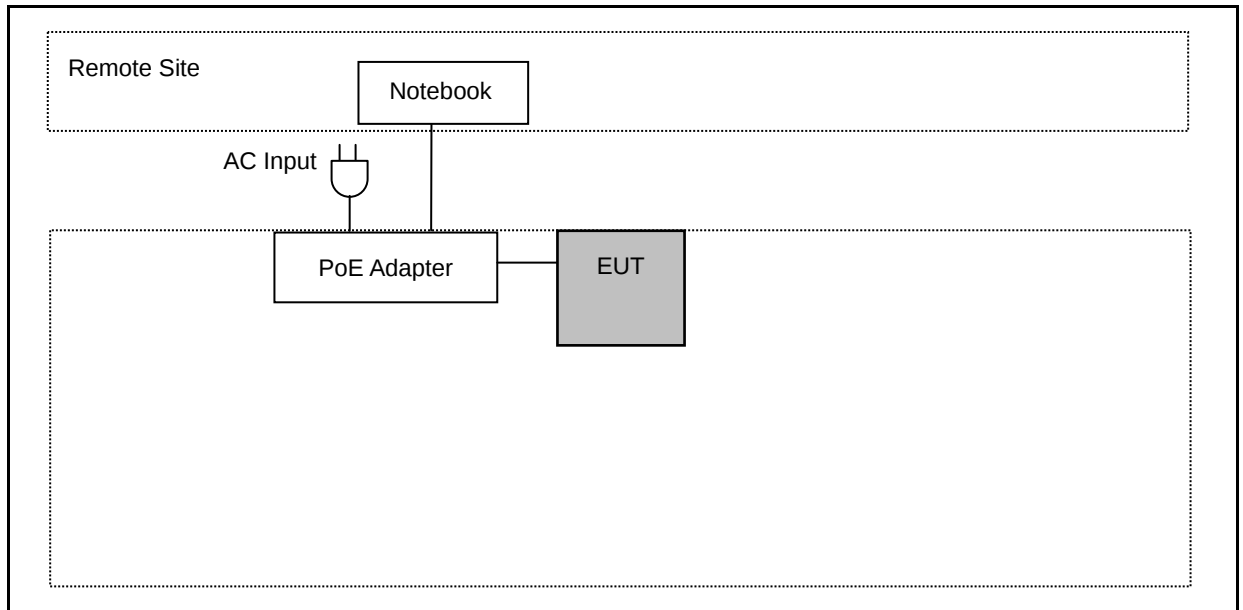
3.2. EUT Exercise Software

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.

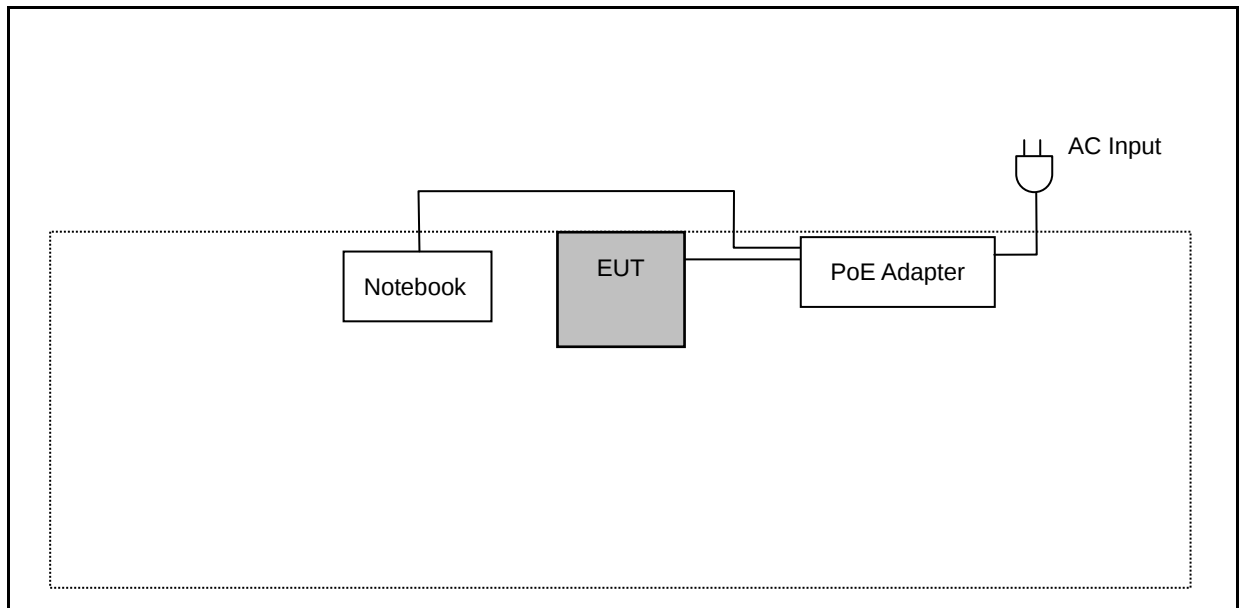
1.	Setup the EUT shown on 3.3.
2.	Turn on the power of all equipment.
3.	Turn on Wi-Fi function link to Notebook.
4.	EUT run test program.

3.3. Configuration of Test System Details

Conducted Emissions



Radiated Emissions



3.4. Test Site Environment

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	26
Humidity (%RH)	25-75	60
Barometric pressure (mbar)	860-1060	950

4 AC Power Conducted Emission Measurement

4.1. 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

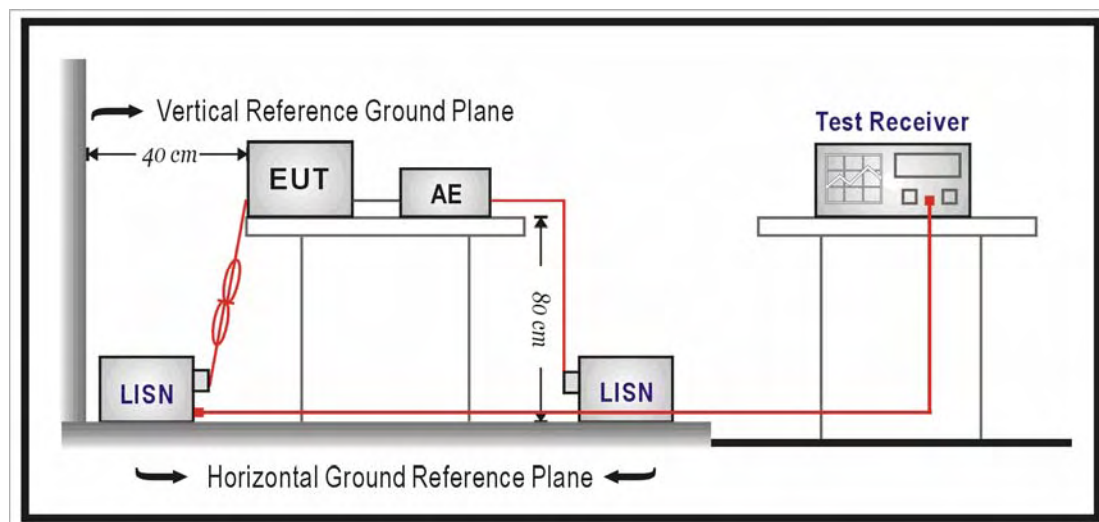
4.2. Test Instruments

Describe	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
Test Receiver	R&S	ESCI	100367	06/12/2014	(1)
LISN	R&S	ENV216	101040	03/10/2015	(1)
LISN	R&S	ENV216	101041	03/06/2015	(1)
Test Site	ATL	TE05	TE05	N.C.R.	-----

Remark: (1) Calibration period 1 year. (2) Calibration period 2 years.

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

4.3. Test Setup



4.4. Test Procedure

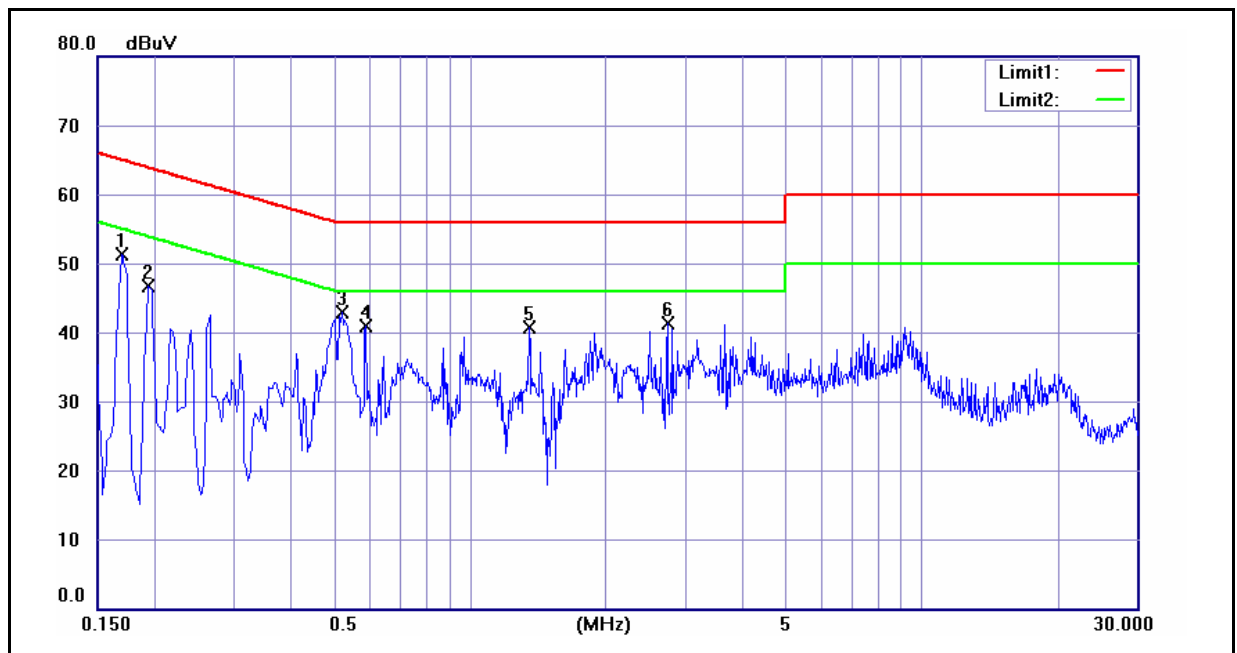
The power line conducted emission measurements were performed in a shielded enclosure. The EUT was assembled on a wooden table which is 80 centimeters high, was placed 40 centimeters from the back wall and at least 1 meter from the sidewall.

Power was fed to the EUT from the public utility power grid through a line filter and EMCO Model 3162/2 SH Line Impedance Stabilization Networks (LISN). The LISN housing, measuring instrumentation case, ground plane, etc., were electrically bonded together at the same RF potential. The Spectrum analyzer was connected to the AC line through an isolation transformer. The 50-ohm output of the LISN was connected to the spectrum analyzer directly. Conducted emission levels were in the CISPR quasi-peak detection mode. The analyzer's 6 dB bandwidth was set to 9 KHz. No post-detector video filter was used.

The spectrum was scanned from 150 KHz to 30 MHz. The physical arrangement of the test system and associated cabling was varied (within the scope of arrangements likely to be encountered in actual use) to determine the effect on the unit's emanations in amplitude and frequency. All spurious emission frequencies were observed. The highest emission amplitudes relative to the appropriate limit were measured and have been recorded in paragraph 4.1.

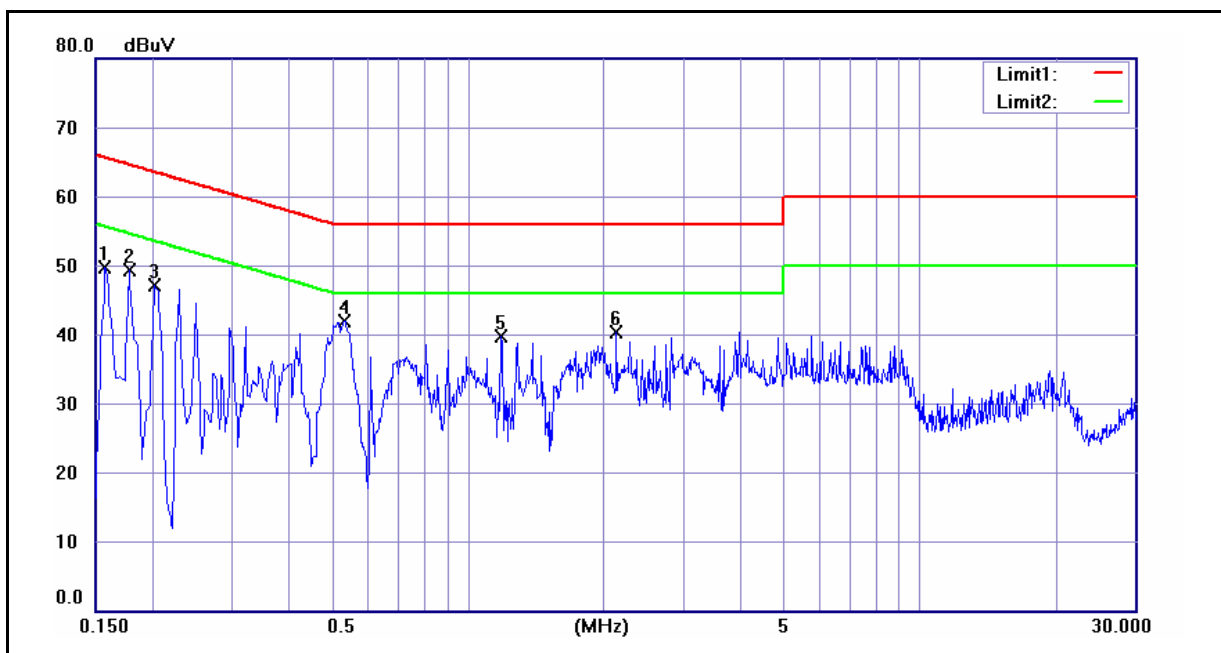
4.5. Test Result

Standard:	FCC Part 15E	Line:	L1
Test item:	Conducted Emission	Power:	AC 120V/60Hz
Model Number:	UAP-AC-LR	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Test Mode:	Mode 1	Date:	06/08/2015
		Test By:	Eric Ou Yang



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	0.1700	39.84	24.14	9.64	49.48	33.78	64.96	54.96	-15.48	-21.18	Pass
2	0.1940	35.65	16.89	9.64	45.29	26.53	63.86	53.86	-18.57	-27.33	Pass
3	0.5220	31.35	21.26	9.65	41.00	30.91	56.00	46.00	-15.00	-15.09	Pass
4	0.5900	25.16	9.63	9.65	34.81	19.28	56.00	46.00	-21.19	-26.72	Pass
5	1.3580	22.37	13.03	9.71	32.08	22.74	56.00	46.00	-23.92	-23.26	Pass
6	2.7420	19.57	7.45	9.79	29.36	17.24	56.00	46.00	-26.64	-28.76	Pass

Standard:	FCC Part 15E	Line:	N
Test item:	Conducted Emission	Power:	AC 120V/60Hz
Model Number:	UAP-AC-LR	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Test Mode:	Mode 1	Date:	06/08/2015
		Test By:	Eric Ou Yang



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	36.80	15.32	9.62	46.42	24.94	65.57	55.57	-19.15	-30.63	Pass
2	0.1780	36.41	13.11	9.62	46.03	22.73	64.58	54.58	-18.55	-31.85	Pass
3	0.2020	35.21	21.85	9.62	44.83	31.47	63.53	53.53	-18.70	-22.06	Pass
4	0.5340	31.44	22.64	9.64	41.08	32.28	56.00	46.00	-14.92	-13.72	Pass
5	1.1900	18.93	7.79	9.68	28.61	17.47	56.00	46.00	-27.39	-28.53	Pass
6	2.1340	21.68	11.96	9.72	31.40	21.68	56.00	46.00	-24.60	-24.32	Pass

5 Radiated Emission Measurement

5.1. Limit

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.

5.2. Test Instruments

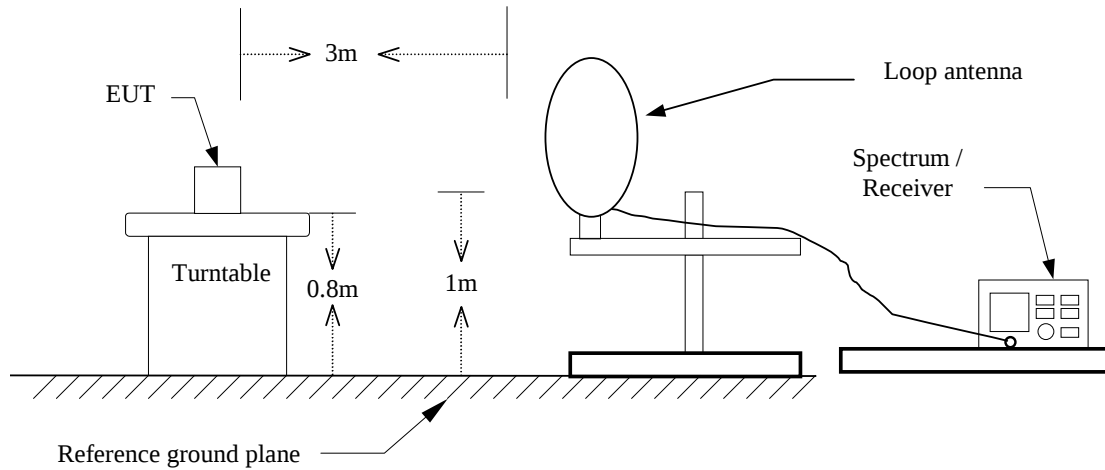
3 Meter Chamber					
Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
RF Pre-selector	Agilent	N9039A	MY46520256	01/06/2015	(1)
Spectrum Analyzer	Agilent	E4446A	MY46180578	01/06/2015	(1)
Pre Amplifier	Agilent	8449B	3008A02237	02/24/2015	(1)
Pre Amplifier	Agilent	8447D	2944A10961	02/24/2015	(1)
Broadband Antenna (30MHz~1GHz)	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	9163-270	07/18/2014	(1)
Horn Antenna (1~18GHz)	SCHWARZBECK MESS-ELEKTRONIK	BBHA9120D	9120D-550	06/10/2015	(1)
Horn Antenna (18~40GHz)	SCHWARZBECK MESS-ELEKTRONIK	BBHA9170	9170-320	07/02/2014	(1)
Test Site	ATL	TE01	888001	08/28/2014	(1)

Remark: (1) Calibration period 1 year. (2) Calibration period 2 years.

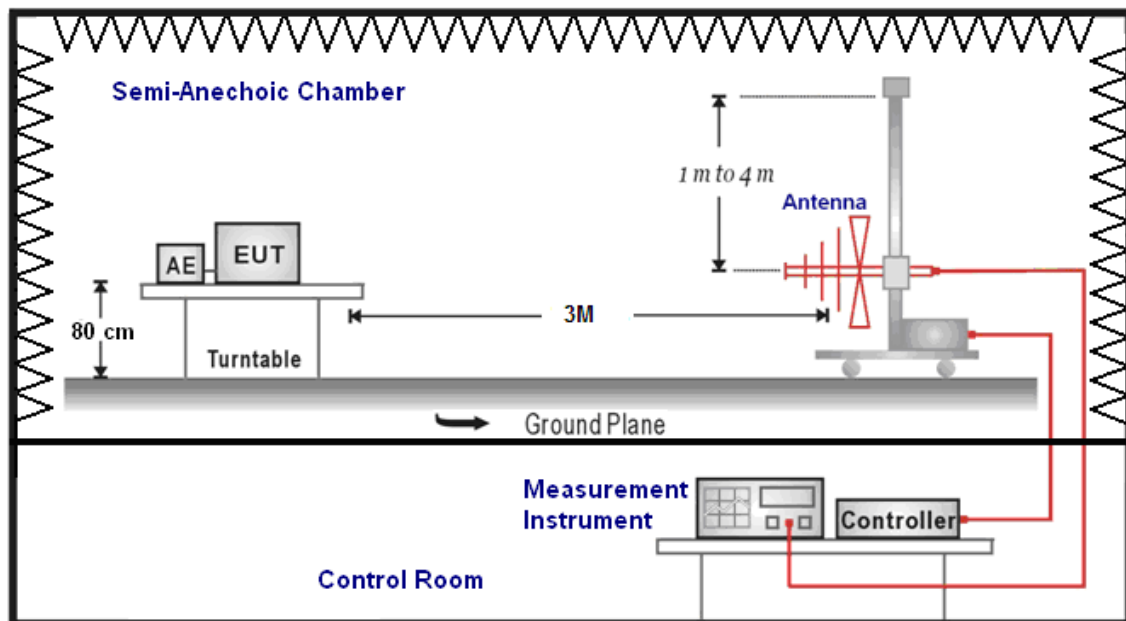
Note: N.C.R. = No Calibration Request.

5.3. Setup

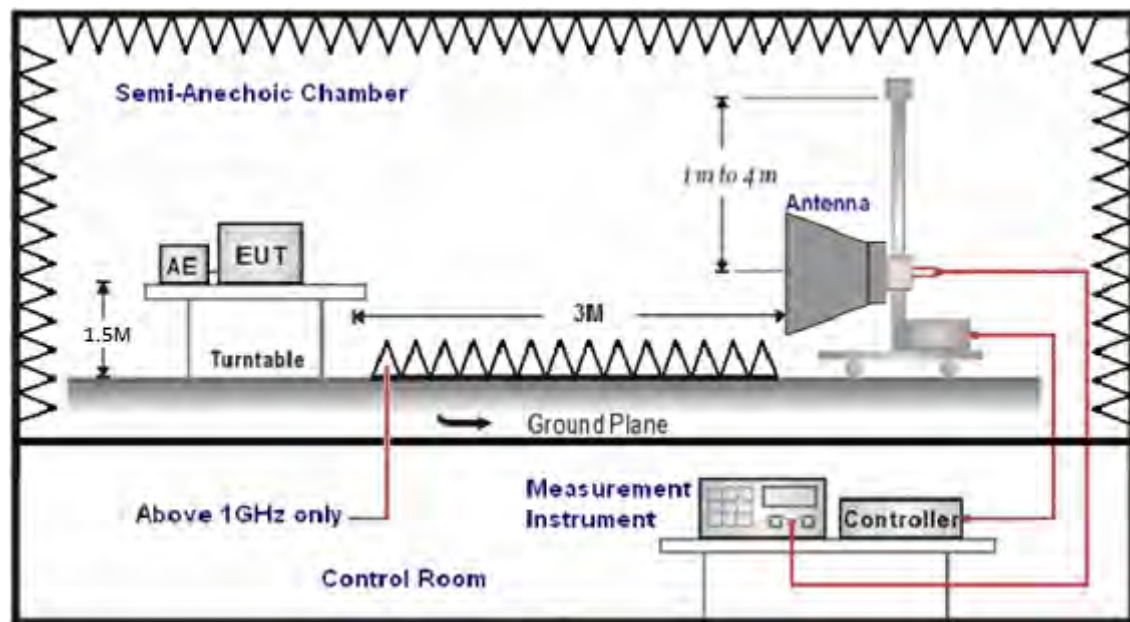
9kHz ~ 30MHz



30MHz ~ 1GHz



Above 1GHz



5.4. 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 (mode SB AC VULB) at 3 Meter and the ETS-Lindgren Double-Ridged Waveguide Horn antenna (model 3117) Schwarzbeck Mess-Elektronik Broadband Horn Antenna (BBHA 9170) was used in frequencies 1 – 40 GHz at a distance of 1 meter. 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) 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) 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

5.5. Test Result

Below 1GHz

Standard:		FCC Part 15E		Test Distance:		3m	
Test item:		Radiated Emission		Power:		AC 120V/60Hz	
Model Number:		UAP-AC-LR		Temp.(°C)/Hum.(%RH):		26(°C)/60%RH	
Test Mode:		Mode 1		Date:		06/26/2015	
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
170.5000	39.53	-11.63	27.90	43.50	-15.60	QP	H
343.5000	34.60	-8.60	26.00	46.00	-20.00	QP	H
447.5000	27.52	-6.36	21.16	46.00	-24.84	QP	H
570.0000	27.51	-3.95	23.56	46.00	-22.44	QP	H
667.0000	29.41	-2.17	27.24	46.00	-18.76	QP	H
872.0000	28.60	1.92	30.52	46.00	-15.48	QP	H
237.5000	36.61	-11.86	24.75	46.00	-21.25	QP	V
374.0000	29.21	-7.95	21.26	46.00	-24.74	QP	V
469.0000	27.67	-5.96	21.71	46.00	-24.29	QP	V
667.0000	34.64	-2.17	32.47	46.00	-13.53	QP	V
770.0000	27.22	0.02	27.24	46.00	-18.76	QP	V
872.0000	28.58	1.92	30.50	46.00	-15.50	QP	V

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

Above 1GHz

Standard:	FCC Part 15E			Test Distance:	3m		
Test item:	Radiated Emission			Power:	AC 120V/60Hz		
Model Number:	UAP-AC-LR			Temp.(°C)/Hum.(%RH):	26(°C)/60%RH		
Test Mode:	Mode 2			Date:	06/26/2015		
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
2799.000	36.84	1.03	37.87	74.00	-36.13	peak	H
4619.000	33.91	6.83	40.74	74.00	-33.26	peak	H
7671.000	33.56	14.30	47.86	74.00	-26.14	peak	H
2806.000	36.52	1.05	37.57	74.00	-36.43	peak	V
4570.000	33.27	6.68	39.95	74.00	-34.05	peak	V
7671.000	33.36	14.30	47.66	74.00	-26.34	peak	V

Standard:	FCC Part 15E		Test Distance:	3m			
Test item:	Radiated Emission		Power:	AC 120V/60Hz			
Model Number:	UAP-AC-LR		Temp.(°C)/Hum.(%RH):	26(°C)/60%RH			
Test Mode:	Mode 2		Date:	06/26/2015			
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
2799.000	37.03	1.03	38.06	74.00	-35.94	peak	H
4591.000	34.39	6.74	41.13	74.00	-32.87	peak	H
7657.000	32.78	14.28	47.06	74.00	-26.94	peak	H
2785.000	37.53	0.97	38.50	74.00	-35.50	peak	V
4577.000	33.64	6.69	40.33	74.00	-33.67	peak	V
7678.000	32.97	14.31	47.28	74.00	-26.72	peak	V

Standard:	FCC Part 15E			Test Distance:	3m		
Test item:	Radiated Emission			Power:	AC 120V/60Hz		
Model Number:	UAP-AC-LR			Temp.(℃)/Hum.(%RH):	26(℃)/60%RH		
Test Mode:	Mode 2			Date:	06/26/2015		
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
2806.000	36.32	1.05	37.37	74.00	-36.63	peak	H
4577.000	35.46	6.69	42.15	74.00	-31.85	peak	H
7678.000	32.85	14.31	47.16	74.00	-26.84	peak	H
2827.000	36.76	1.12	37.88	74.00	-36.12	peak	V
4591.000	33.52	6.74	40.26	74.00	-33.74	peak	V
7643.000	32.60	14.25	46.85	74.00	-27.15	peak	V

Standard:	FCC Part 15E			Test Distance:	3m		
Test item:	Radiated Emission			Power:	AC 120V/60Hz		
Model Number:	UAP-AC-LR			Temp.(°C)/Hum.(%RH):	26(°C)/60%RH		
Test Mode:	Mode 2			Date:	06/26/2015		
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
2806.000	37.79	1.05	38.84	74.00	-35.16	peak	H
4598.000	33.78	6.77	40.55	74.00	-33.45	peak	H
7657.000	32.32	14.28	46.60	74.00	-27.40	peak	H
2827.000	37.55	1.12	38.67	74.00	-35.33	peak	V
4598.000	34.01	6.77	40.78	74.00	-33.22	peak	V
7671.000	32.46	14.30	46.76	74.00	-27.24	peak	V

Standard:	FCC Part 15E	Test Distance:	3m				
Test item:	Radiated Emission	Power:	AC 120V/60Hz				
Model Number:	UAP-AC-LR	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH				
Test Mode:	Mode 2	Date:	06/26/2015				
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
2806.000	37.22	1.05	38.27	74.00	-35.73	peak	H
4577.000	33.31	6.69	40.00	74.00	-34.00	peak	H
7657.000	32.27	14.28	46.55	74.00	-27.45	peak	H
2813.000	38.31	1.07	39.38	74.00	-34.62	peak	V
4563.000	32.65	6.66	39.31	74.00	-34.69	peak	V
7629.000	31.40	14.23	45.63	74.00	-28.37	peak	V

Standard:	FCC Part 15E		Test Distance:	3m			
Test item:	Radiated Emission		Power:	AC 120V/60Hz			
Model Number:	UAP-AC-LR		Temp.(°C)/Hum.(%RH):	26(°C)/60%RH			
Test Mode:	Mode 2		Date:	06/26/2015			
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
2799.000	37.06	1.03	38.09	74.00	-35.91	peak	H
4570.000	33.34	6.68	40.02	74.00	-33.98	peak	H
7643.000	31.98	14.25	46.23	74.00	-27.77	peak	H
2827.000	37.42	1.12	38.54	74.00	-35.46	peak	V
4591.000	34.03	6.74	40.77	74.00	-33.23	peak	V
7671.000	33.21	14.30	47.51	74.00	-26.49	peak	V

Standard:	FCC Part 15E			Test Distance:	3m		
Test item:	Radiated Emission			Power:	AC 120V/60Hz		
Model Number:	UAP-AC-LR			Temp.(℃)/Hum.(%RH):	26(℃)/60%RH		
Test Mode:	Mode 3			Date:	06/26/2015		
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
2813.000	36.57	1.07	37.64	74.00	-36.36	peak	H
4577.000	34.07	6.69	40.76	74.00	-33.24	peak	H
7671.000	32.60	14.30	46.90	74.00	-27.10	peak	H
2834.000	36.42	1.14	37.56	74.00	-36.44	peak	V
4570.000	34.30	6.68	40.98	74.00	-33.02	peak	V
7678.000	31.95	14.31	46.26	74.00	-27.74	peak	V

Standard:	FCC Part 15E			Test Distance:	3m		
Test item:	Radiated Emission			Power:	AC 120V/60Hz		
Model Number:	UAP-AC-LR			Temp.(°C)/Hum.(%RH):	26(°C)/60%RH		
Test Mode:	Mode 3			Date:	06/26/2015		
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
2806.000	37.60	1.05	38.65	74.00	-35.35	peak	H
4570.000	33.75	6.68	40.43	74.00	-33.57	peak	H
7622.000	32.97	14.22	47.19	74.00	-26.81	peak	H
2785.000	37.58	0.97	38.55	74.00	-35.45	peak	V
4598.000	34.00	6.77	40.77	74.00	-33.23	peak	V
7657.000	31.51	14.28	45.79	74.00	-28.21	peak	V

Standard:	FCC Part 15E			Test Distance:	3m		
Test item:	Radiated Emission			Power:	AC 120V/60Hz		
Model Number:	UAP-AC-LR			Temp.(℃)/Hum.(%RH):	26(℃)/60%RH		
Test Mode:	Mode 3			Date:	06/26/2015		
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
2827.000	37.11	1.12	38.23	74.00	-35.77	peak	H
4591.000	33.61	6.74	40.35	74.00	-33.65	peak	H
7629.000	33.49	14.23	47.72	74.00	-26.28	peak	H
2806.000	37.23	1.05	38.28	74.00	-35.72	peak	V
4591.000	34.09	6.74	40.83	74.00	-33.17	peak	V
7685.000	32.29	14.32	46.61	74.00	-27.39	peak	V

Standard:	FCC Part 15E			Test Distance:	3m		
Test item:	Radiated Emission			Power:	AC 120V/60Hz		
Model Number:	UAP-AC-LR			Temp.(°C)/Hum.(%RH):	26(°C)/60%RH		
Test Mode:	Mode 3			Date:	06/26/2015		
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
2806.000	37.01	1.05	38.06	74.00	-35.94	peak	H
4563.000	32.95	6.66	39.61	74.00	-34.39	peak	H
7657.000	31.43	14.28	45.71	74.00	-28.29	peak	H
2813.000	36.69	1.07	37.76	74.00	-36.24	peak	V
4570.000	33.87	6.68	40.55	74.00	-33.45	peak	V
7650.000	31.35	14.26	45.61	74.00	-28.39	peak	V

Standard:	FCC Part 15E	Test Distance:	3m				
Test item:	Radiated Emission	Power:	AC 120V/60Hz				
Model Number:	UAP-AC-LR	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH				
Test Mode:	Mode 3	Date:	06/26/2015				
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
2813.000	37.67	1.07	38.74	74.00	-35.26	peak	H
4605.000	33.62	6.79	40.41	74.00	-33.59	peak	H
7643.000	31.91	14.25	46.16	74.00	-27.84	peak	H
2834.000	37.77	1.14	38.91	74.00	-35.09	peak	V
4570.000	33.54	6.68	40.22	74.00	-33.78	peak	V
7643.000	32.02	14.25	46.27	74.00	-27.73	peak	V

Standard:	FCC Part 15E			Test Distance:	3m		
Test item:	Radiated Emission			Power:	AC 120V/60Hz		
Model Number:	UAP-AC-LR			Temp.(°C)/Hum.(%RH):	26(°C)/60%RH		
Test Mode:	Mode 3			Date:	06/26/2015		
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
2827.000	38.91	1.12	40.03	74.00	-33.97	peak	H
4591.000	33.33	6.74	40.07	74.00	-33.93	peak	H
7650.000	31.52	14.26	45.78	74.00	-28.22	peak	H
2813.000	36.99	1.07	38.06	74.00	-35.94	peak	V
4570.000	33.58	6.68	40.26	74.00	-33.74	peak	V
7671.000	31.93	14.30	46.23	74.00	-27.77	peak	V

Standard:	FCC Part 15E			Test Distance:	3m		
Test item:	Radiated Emission			Power:	AC 120V/60Hz		
Model Number:	UAP-AC-LR			Temp.(℃)/Hum.(%RH):	26(℃)/60%RH		
Test Mode:	Mode 4			Date:	06/26/2015		
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
2806.000	36.87	1.05	37.92	74.00	-36.08	peak	H
4598.000	32.63	6.77	39.40	74.00	-34.60	peak	H
7671.000	32.45	14.30	46.75	74.00	-27.25	peak	H
2827.000	36.97	1.12	38.09	74.00	-35.91	peak	V
4577.000	34.24	6.69	40.93	74.00	-33.07	peak	V
7678.000	31.67	14.31	45.98	74.00	-28.02	peak	V

Standard:	FCC Part 15E			Test Distance:	3m		
Test item:	Radiated Emission			Power:	AC 120V/60Hz		
Model Number:	UAP-AC-LR			Temp.(°C)/Hum.(%RH):	26(°C)/60%RH		
Test Mode:	Mode 4			Date:	06/26/2015		
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
2827.000	38.08	1.12	39.20	74.00	-34.80	peak	H
4570.000	33.22	6.68	39.90	74.00	-34.10	peak	H
7629.000	31.50	14.23	45.73	74.00	-28.27	peak	H
2799.000	36.54	1.03	37.57	74.00	-36.43	peak	V
4605.000	33.76	6.79	40.55	74.00	-33.45	peak	V
7657.000	31.32	14.28	45.60	74.00	-28.40	peak	V

Standard:	FCC Part 15E			Test Distance:	3m		
Test item:	Radiated Emission			Power:	AC 120V/60Hz		
Model Number:	UAP-AC-LR			Temp.(℃)/Hum.(%RH):	26(℃)/60%RH		
Test Mode:	Mode 4			Date:	06/26/2015		
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
2813.000	37.30	1.07	38.37	74.00	-35.63	peak	H
4598.000	33.62	6.77	40.39	74.00	-33.61	peak	H
7650.000	32.98	14.26	47.24	74.00	-26.76	peak	H
2813.000	38.37	1.07	39.44	74.00	-34.56	peak	V
4577.000	33.49	6.69	40.18	74.00	-33.82	peak	V
7671.000	32.72	14.30	47.02	74.00	-26.98	peak	V

Standard:	FCC Part 15E			Test Distance:	3m		
Test item:	Radiated Emission			Power:	AC 120V/60Hz		
Model Number:	UAP-AC-LR			Temp.(°C)/Hum.(%RH):	26(°C)/60%RH		
Test Mode:	Mode 4			Date:	06/26/2015		
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
2806.000	37.01	1.05	38.06	74.00	-35.94	peak	H
4577.000	34.82	6.69	41.51	74.00	-32.49	peak	H
7622.000	32.28	14.22	46.50	74.00	-27.50	peak	H
2806.000	37.92	1.05	38.97	74.00	-35.03	peak	V
4591.000	34.00	6.74	40.74	74.00	-33.26	peak	V
7678.000	31.66	14.31	45.97	74.00	-28.03	peak	V

Standard:	FCC Part 15E			Test Distance:	3m		
Test item:	Radiated Emission			Power:	AC 120V/60Hz		
Model Number:	UAP-AC-LR			Temp.(℃)/Hum.(%RH):	26(℃)/60%RH		
Test Mode:	Mode 5			Date:	06/26/2015		
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
2799.000	37.42	1.03	38.45	74.00	-35.55	peak	H
4605.000	35.14	6.79	41.93	74.00	-32.07	peak	H
7657.000	33.15	14.28	47.43	74.00	-26.57	peak	H
2806.000	37.13	1.05	38.18	74.00	-35.82	peak	V
4591.000	33.75	6.74	40.49	74.00	-33.51	peak	V
7650.000	31.95	14.26	46.21	74.00	-27.79	peak	V

Standard:	FCC Part 15E			Test Distance:	3m		
Test item:	Radiated Emission			Power:	AC 120V/60Hz		
Model Number:	UAP-AC-LR			Temp.(°C)/Hum.(%RH):	26(°C)/60%RH		
Test Mode:	Mode 5			Date:	06/26/2015		
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
2785.000	36.98	0.97	37.95	74.00	-36.05	peak	H
4549.000	33.33	6.61	39.94	74.00	-34.06	peak	H
7657.000	31.98	14.28	46.26	74.00	-27.74	peak	H
2834.000	37.44	1.14	38.58	74.00	-35.42	peak	V
4577.000	33.21	6.69	39.90	74.00	-34.10	peak	V
7643.000	31.46	14.25	45.71	74.00	-28.29	peak	V

Standard:		FCC Part 15E		Test Distance:		3m	
Test item:		Radiated Emission		Power:		AC 120V/60Hz	
Model Number:		UAP-AC-LR		Temp.(°C)/Hum.(%RH):		26(°C)/60%RH	
Mode:		2.4GHz+5GHz		Date:		06/26/2015	
		Simultaneous Transmitting		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
2813.000	35.33	5.62	40.95	74.00	-33.05	peak	H
4570.000	32.94	9.87	42.81	74.00	-31.19	peak	H
7650.000	31.70	13.27	44.97	74.00	-29.03	peak	H
2834.000	36.18	5.67	41.85	74.00	-32.15	peak	V
4542.000	31.66	9.83	41.49	74.00	-32.51	peak	V
7685.000	32.80	13.30	46.10	74.00	-27.90	peak	V

Band Edge

Standard:		FCC Part 15E		Test Distance:		3m	
Test item:		Radiated Emission		Power:		AC 120V/60Hz	
Model Number:		UAP-AC-LR		Temp.(°C)/Hum.(%RH):		26(°C)/60%RH	
Test Mode:		Mode 2		Date:		06/25/2015	
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
4859.100	46.71	7.59	54.30	74.00	-19.70	peak	H
4859.100	37.77	7.59	45.36	54.00	-8.64	AVG	H
5150.000	43.13	8.21	51.34	74.00	-22.66	peak	H
5146.800	51.17	8.21	59.38	74.00	-14.62	peak	V
5146.800	40.55	8.21	48.76	54.00	-5.24	AVG	V
5150.000	48.08	8.21	56.29	74.00	-17.71	peak	V
5150.000	42.47	8.21	50.68	54.00	-3.32	AVG	V

Standard:	FCC Part 15E			Test Distance:	3m		
Test item:	Radiated Emission			Power:	AC 120V/60Hz		
Model Number:	UAP-AC-LR			Temp.(°C)/Hum.(%RH):	26(°C)/60%RH		
Test Mode:	Mode 3			Date:	06/25/2015		
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
4882.900	46.07	7.66	53.73	74.00	-20.27	peak	H
4882.900	38.98	7.66	46.64	54.00	-7.36	AVG	H
5150.000	42.91	8.21	51.12	74.00	-22.88	peak	H
5147.500	56.27	8.21	64.48	74.00	-9.52	peak	V
5148.900	40.93	8.21	49.14	54.00	-4.86	AVG	V
5150.000	55.77	8.21	63.98	74.00	-10.02	peak	V
5150.000	41.52	8.21	49.73	54.00	-4.27	AVG	V

Standard:		FCC Part 15E		Test Distance:		3m	
Test item:		Radiated Emission		Power:		AC 120V/60Hz	
Model Number:		UAP-AC-LR		Temp.(℃)/Hum.(%RH):		26(℃)/60%RH	
Test Mode:		Mode 4		Date:		06/25/2015	
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
5146.800	45.47	8.21	53.68	74.00	-20.32	peak	H
5146.800	37.50	8.21	45.71	54.00	-8.29	AVG	H
5150.000	45.13	8.21	53.34	74.00	-20.66	peak	H
5150.000	38.23	8.21	46.44	54.00	-7.56	AVG	H
5147.500	50.98	8.21	59.19	74.00	-14.81	peak	V
5147.500	39.85	8.21	48.06	54.00	-5.94	AVG	V
5150.000	50.49	8.21	58.70	74.00	-15.30	peak	V
5150.000	41.76	8.21	49.97	54.00	-4.03	AVG	V

Standard:		FCC Part 15E		Test Distance:		3m	
Test item:		Radiated Emission		Power:		AC 120V/60Hz	
Model Number:		UAP-AC-LR		Temp.(℃)/Hum.(%RH):		26(℃)/60%RH	
Test Mode:		Mode 5		Date:		06/25/2015	
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
5143.970	47.27	8.21	55.48	74.00	-18.52	peak	H
5143.970	37.50	8.21	45.71	54.00	-8.29	AVG	H
5150.000	46.44	8.21	54.65	74.00	-19.35	peak	H
5150.000	38.27	8.21	46.48	54.00	-7.52	AVG	H
5137.580	56.77	8.19	64.96	74.00	-9.04	peak	V
5137.580	42.60	8.19	50.79	54.00	-3.21	AVG	V
5150.000	57.97	8.21	66.18	74.00	-7.82	peak	V
5150.000	43.72	8.21	51.93	54.00	-2.07	AVG	V

6 Maximum Conducted Output Power Measurement

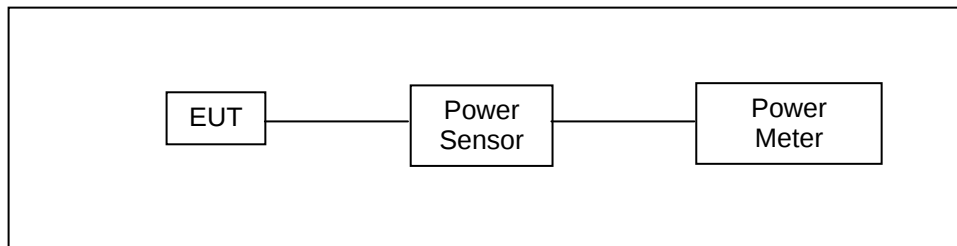
6.1. Limit

Conducted Output Power

Frequency Range (MHz)	FCC Limit
5.150 ~ 5.250 GHz	The lesser of 1000mW (30dBm)
5.250 ~ 5.350 GHz	The lesser of 250mW (24dBm) or 11dBm + 10log (B)
5.470 ~ 5.725 GHz	The lesser of 250mW (24dBm) or 11dBm + 10log (B)
5.725 ~ 5.850 GHz	The lesser of 1000mW (30dBm)

Note: Where B is the 26dB emission bandwidth in MHz.

6.2. Test Setup



6.3. Test Instruments

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
Power Sensor	Anritsu	MA2411B	1126022	08/21/2014	(1)
Power Meter	Anritsu	ML2495A	1135009	08/21/2014	(1)
Test Site	ATL	TE02	TE02	N.C.R.	-----

Remark: (1) Calibration period 1 year. (2) Calibration period 2 years.

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

6.4. Test Procedure

The test is performed in accordance with KDB789033: D02 General UNII Test Procedures New Rules v01, Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices - Part 15, Subpart E.

6.5. Test Result

Model Number		UAP-AC-LR							
Test Item		Maximum Conducted Output Power							
Test Mode		Mode 2: IEEE 802.11a Link Mode							
Date of Test		06/08/2015				Test Site		TE02	
Frequency (MHz)	Data Rate	ANT-0		ANT-1		ANT-0+1		FCC Limit (dBm)	
		Average Power		Average Power		Average Power			
		(dBm)	(W)	(dBm)	(W)	(dBm)	(W)		
5180	6M	15.83	0.038	16.66	0.046	19.28	0.085	< 30	
5200		15.88	0.039	16.87	0.049	19.41	0.087		
5220		15.81	0.038	16.77	0.048	19.33	0.086		
5240		15.72	0.037	16.84	0.048	19.33	0.086		
5745		17.19	0.052	18.37	0.069	20.83	0.121	< 30	
5765		16.86	0.049	17.76	0.060	20.34	0.108		
5785		16.64	0.046	17.48	0.056	20.09	0.102		
5805		16.48	0.044	17.74	0.059	20.17	0.104		
5825		16.37	0.043	17.32	0.054	19.88	0.097		
5180	54M	15.55	0.036	16.64	0.046	19.14	0.082	< 30	
5200		15.62	0.036	16.40	0.044	19.04	0.080		
5220		15.53	0.036	16.35	0.043	18.97	0.079		
5240		15.45	0.035	16.48	0.044	19.01	0.080		
5745		16.90	0.049	17.87	0.061	20.42	0.110	< 30	
5765		16.58	0.045	17.61	0.058	20.14	0.103		
5785		16.37	0.043	17.37	0.055	19.91	0.098		
5805		16.21	0.042	17.46	0.056	19.89	0.098		
5825		16.08	0.041	17.03	0.050	19.59	0.091		

Model Number		UAP-AC-LR							
Test Item		Maximum Conducted Output Power							
Test Mode		Mode 3: IEEE 802.11n 20MHz Link Mode							
Date of Test		06/08/2015				Test Site		TE02	
Frequency (MHz)	Data Rate	ANT-0		ANT-1		ANT-0+1		FCC Limit (dBm)	
		Average Power		Average Power		Average Power			
		(dBm)	(W)	(dBm)	(W)	(dBm)	(W)		
5180	13M	16.79	0.048	17.86	0.061	20.37	0.109	< 30	
5200		16.89	0.049	17.74	0.059	20.35	0.108		
5220		16.74	0.047	17.89	0.062	20.36	0.109		
5240		16.63	0.046	17.53	0.057	20.11	0.103		
5745		17.76	0.060	18.62	0.073	21.22	0.132	< 30	
5765		17.65	0.058	18.57	0.072	21.14	0.130		
5785		17.39	0.055	18.62	0.073	21.06	0.128		
5805		17.41	0.055	18.32	0.068	20.90	0.123		
5825		17.43	0.055	18.68	0.074	21.11	0.129		
5180	130M	16.68	0.047	17.73	0.059	20.25	0.106	< 30	
5200		16.76	0.047	17.43	0.055	20.12	0.103		
5220		16.62	0.046	17.76	0.060	20.24	0.106		
5240		16.51	0.045	17.19	0.052	19.87	0.097		
5745		17.65	0.058	18.16	0.065	20.92	0.124	< 30	
5765		17.54	0.057	18.47	0.070	21.04	0.127		
5785		17.28	0.053	18.26	0.067	20.81	0.120		
5805		17.29	0.054	18.11	0.065	20.73	0.118		
5825		17.31	0.054	18.22	0.066	20.80	0.120		

Model Number		UAP-AC-LR							
Test Item		Maximum Conducted Output Power							
Test Mode		Mode 4: IEEE 802.11n 40MHz Link Mode							
Date of Test		06/08/2015				Test Site		TE02	
Frequency (MHz)	Data Rate	ANT-0		ANT-1		ANT-0+1		FCC Limit (dBm)	
		Average Power		Average Power		Average Power			
		(dBm)	(W)	(dBm)	(W)	(dBm)	(W)		
5190	27M	15.54	0.036	16.76	0.047	19.20	0.08	< 30	
5230		15.64	0.037	16.56	0.045	19.13	0.08		
5755		16.72	0.047	17.86	0.061	20.34	0.11	< 30	
5795		16.22	0.042	17.25	0.053	19.78	0.09		
5190	270M	15.06	0.032	16.27	0.042	18.72	0.07	< 30	
5230		15.52	0.036	16.29	0.043	18.93	0.08	< 30	
5755		15.62	0.036	17.75	0.060	19.82	0.10		
5795		16.09	0.041	17.17	0.052	19.67	0.09		

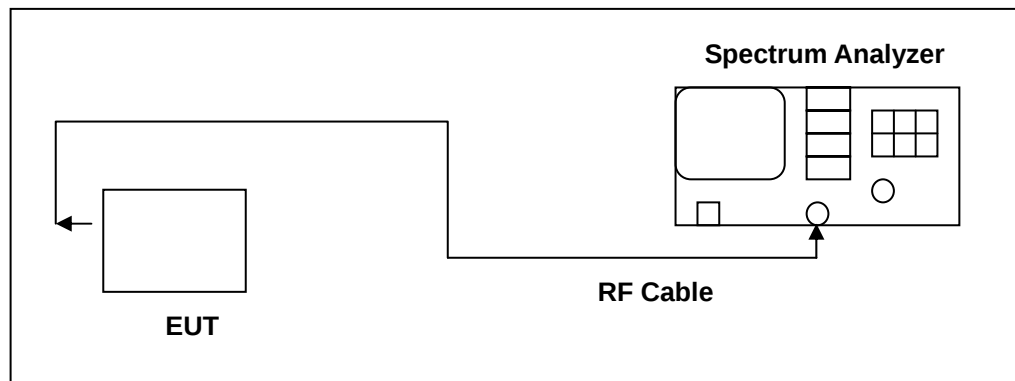
Model Number		UAP-AC-LR							
Test Item		Maximum Conducted Output Power							
Test Mode		Mode 5: IEEE 802.11ac 80MHz Link Mode							
Date of Test		06/08/2015				Test Site		TE02	
Frequency (MHz)	Data Rate	ANT-0		ANT-1		ANT-0+1		FCC Limit (dBm)	
		Average Power		Average Power		Average Power			
		(dBm)	(W)	(dBm)	(W)	(dBm)	(W)		
5210	58.6M	15.09	0.032	16.21	0.042	18.70	0.074	< 30	
5775		15.91	0.039	16.74	0.047	19.36	0.086	< 30	
5210	780M	14.75	0.030	16.05	0.040	18.46	0.070	< 30	
5775		15.61	0.036	16.33	0.043	19.00	0.079	< 30	

7 26dB RF Bandwidth & 99 % Occupied Bandwidth Measurement

7.1. Limit

N/A

7.2. Test Setup



7.3. Test Instruments

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
Spectrum Analyzer	Agilent	E4445A	MY45300744	12/16/2014	(1)
Test Site	ATL	TE02	TE02	N.C.R.	-----

Remark: (1) Calibration period 1 year. (2) Calibration period 2 years.

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

7.4. Test Procedure

The test is performed in accordance with KDB789033: D02 General UNII Test Procedures New Rules v01, Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices - Part 15, Subpart E.

7.5. Test Result

Model Number	UAP-AC-LR			
Test Item	26dB RF Bandwidth & 99 % Occupied Bandwidth Measurement			
Test Mode	Mode 2: IEEE 802.11a Link Mode			
Date of Test	06/20/2015	Test Site	TE02	
Frequency (MHz)	ANT-0		ANT-1	
	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
5180	23.759	18.0186	24.832	17.9434
5200	24.583	17.8610	23.437	17.7677
5240	24.180	17.9684	24.435	17.8360

Model Number	UAP-AC-LR			
Test Item	26dB RF Bandwidth & 99 % Occupied Bandwidth Measurement			
Test Mode	Mode 3: IEEE 802.11n 20MHz Link Mode			
Date of Test	06/09/2015	Test Site	TE02	
Frequency (MHz)	ANT-0		ANT-1	
	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
5180	25.232	18.9916	24.560	18.8509
5200	24.573	18.9085	25.557	18.8847
5240	24.749	19.0027	25.433	18.9038

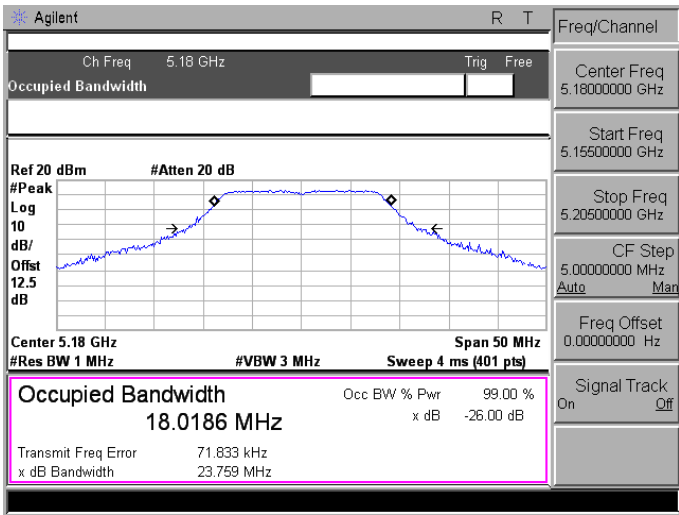
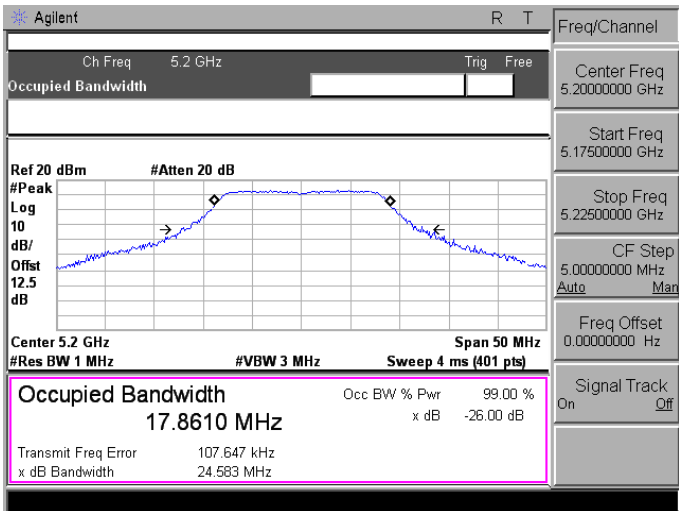
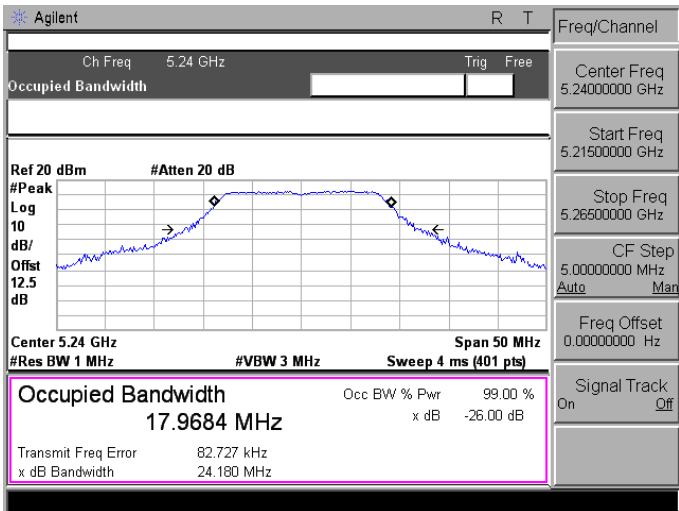
Model Number	UAP-AC-LR			
Test Item	26dB RF Bandwidth & 99 % Occupied Bandwidth Measurement			
Test Mode	Mode 4: IEEE 802.11n 40MHz Link Mode			
Date of Test	06/09/2015	Test Site	TE02	
Frequency (MHz)	ANT-0		ANT-1	
	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
5190	46.318	37.0414	44.367	36.6564
5230	46.140	36.9703	45.077	36.6362

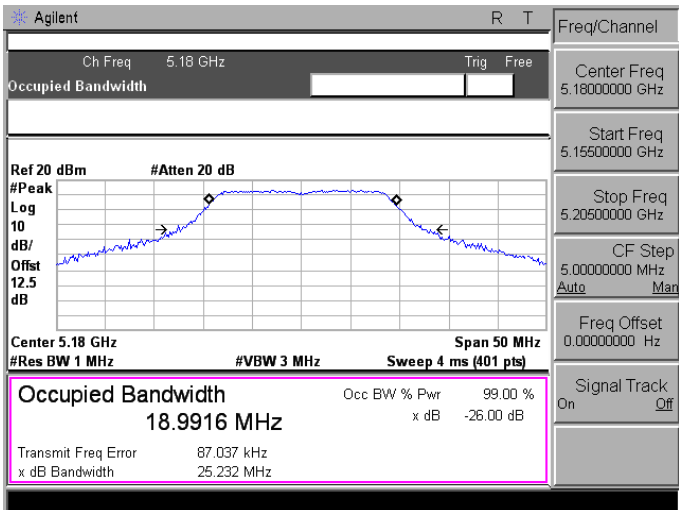
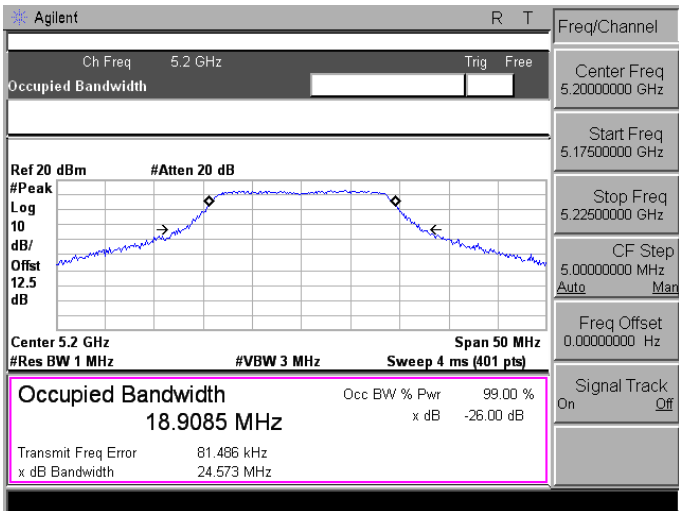
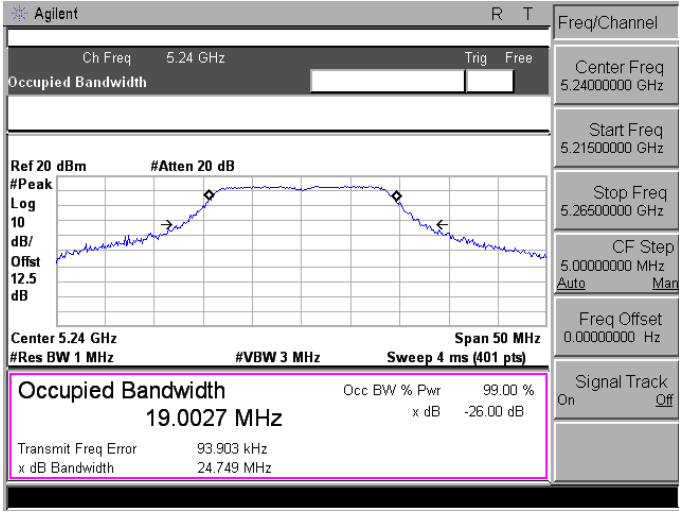
Note: The 99% occupied bandwidth not crossed 5250MHz.

Model Number	UAP-AC-LR			
Test Item	26dB RF Bandwidth & 99 % Occupied Bandwidth Measurement			
Test Mode	Mode 5: IEEE 802.11ac 80MHz Link Mode			
Date of Test	05/06/2015	Test Site	TE02	
Frequency (MHz)	ANT-0		ANT-1	
	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
5210	87.842	75.7956	88.625	75.8275

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

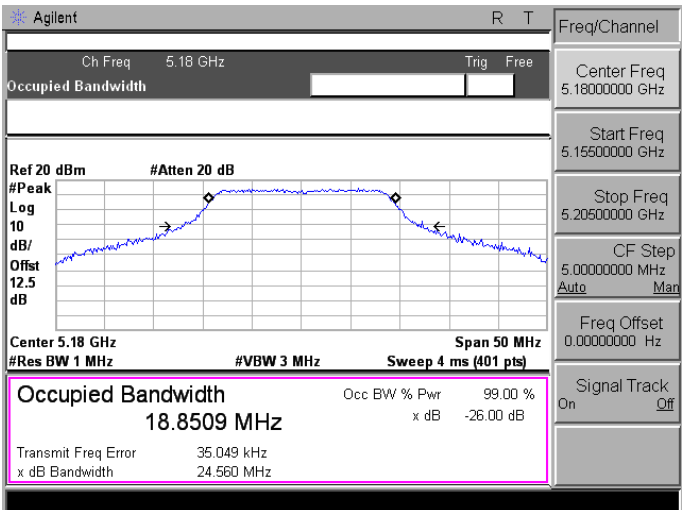
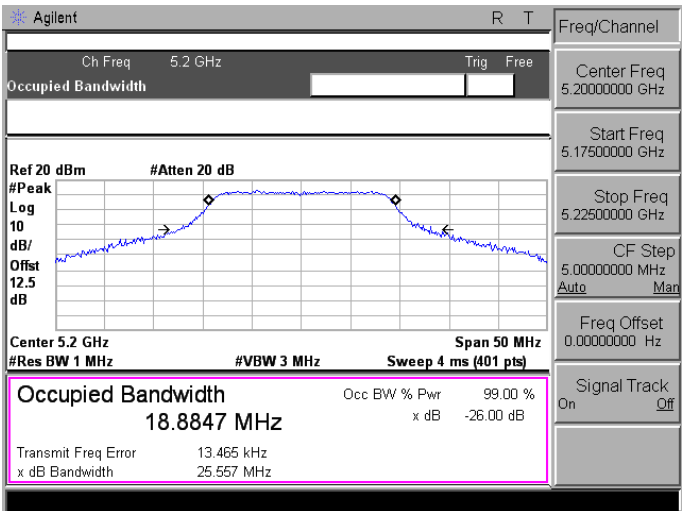
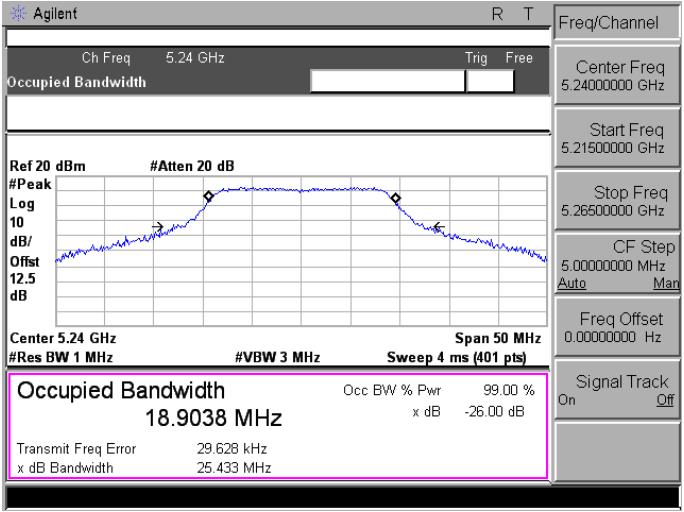
7.6. Test Graphs

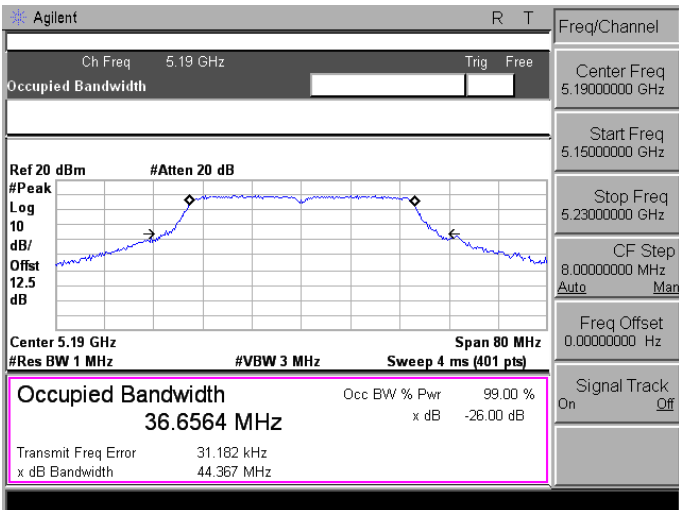
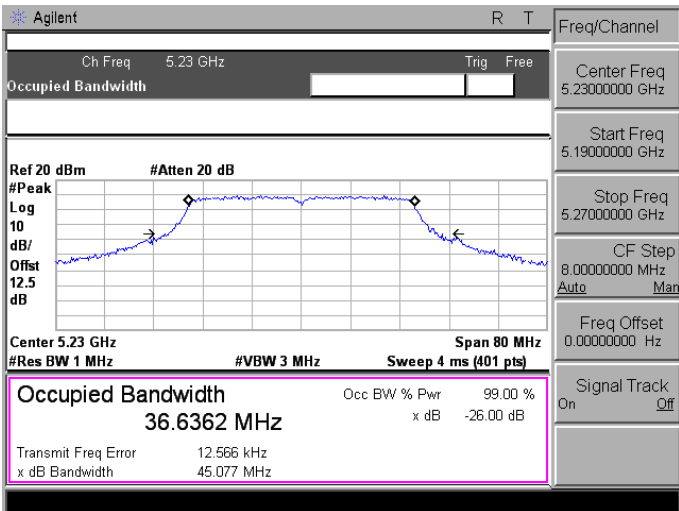
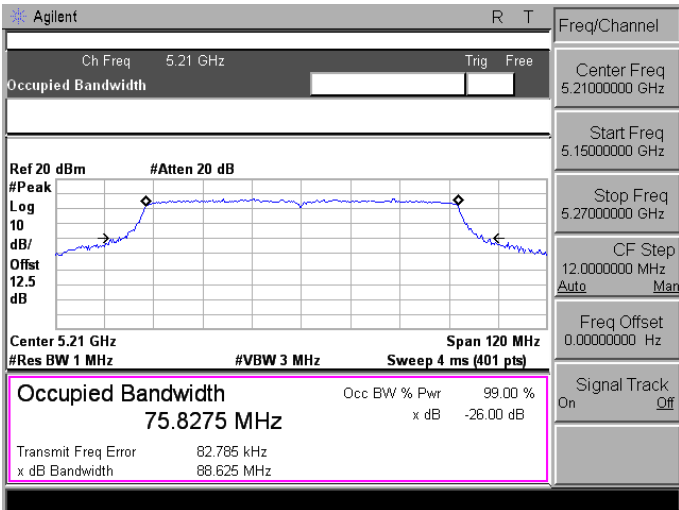
5180	Mode 2: IEEE 802.11a Link Mode_ ANT-0  Agilent R T Ch Freq 5.18 GHz Tng Free Occupied Bandwidth Ref 20 dBm #Atten 20 dB #Peak Log 10 dB/ Offset 12.5 dB Center 5.18 GHz Span 50 MHz #Res BW 1 MHz #VBW 3 MHz Sweep 4 ms (401 pts) Occupied Bandwidth 18.0186 MHz Occ BW % Pwr 99.00 % x dB -26.00 dB Transmit Freq Error 71.833 kHz x dB Bandwidth 23.759 MHz Freq/Channel Center Freq 5.18000000 GHz Start Freq 5.15500000 GHz Stop Freq 5.20500000 GHz CF Step 5.00000000 MHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off
5200	 Agilent R T Ch Freq 5.2 GHz Tng Free Occupied Bandwidth Ref 20 dBm #Atten 20 dB #Peak Log 10 dB/ Offset 12.5 dB Center 5.2 GHz Span 50 MHz #Res BW 1 MHz #VBW 3 MHz Sweep 4 ms (401 pts) Occupied Bandwidth 17.8610 MHz Occ BW % Pwr 99.00 % x dB -26.00 dB Transmit Freq Error 107.647 kHz x dB Bandwidth 24.583 MHz Freq/Channel Center Freq 5.20000000 GHz Start Freq 5.17500000 GHz Stop Freq 5.22500000 GHz CF Step 5.00000000 MHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off
5240	 Agilent R T Ch Freq 5.24 GHz Tng Free Occupied Bandwidth Ref 20 dBm #Atten 20 dB #Peak Log 10 dB/ Offset 12.5 dB Center 5.24 GHz Span 50 MHz #Res BW 1 MHz #VBW 3 MHz Sweep 4 ms (401 pts) Occupied Bandwidth 17.9684 MHz Occ BW % Pwr 99.00 % x dB -26.00 dB Transmit Freq Error 82.727 kHz x dB Bandwidth 24.180 MHz Freq/Channel Center Freq 5.24000000 GHz Start Freq 5.21500000 GHz Stop Freq 5.26500000 GHz CF Step 5.00000000 MHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off

Mode 3: IEEE 802.11n 20MHz Link Mode_ ANT-0	
5180	
5200	
5240	

Mode 4: IEEE 802.11n 40MHz Link Mode_ ANT-0	
5190	Agilent R T Ch Freq 5.19 GHz Trig Free Occupied Bandwidth Ref 20 dBm #Atten 20 dB #Peak Log 10 dB/ Offset 12.5 dB Center 5.19 GHz Span 80 MHz #Res BW 1 MHz #VBW 3 MHz Sweep 4 ms (401 pts) Occupied Bandwidth 37.0414 MHz Occ BW % Pwr 99.00 % x dB -26.00 dB Transmit Freq Error 105.698 kHz x dB Bandwidth 46.318 MHz Freq/Channel Center Freq 5.19000000 GHz Start Freq 5.15000000 GHz Stop Freq 5.23000000 GHz CF Step 8.00000000 MHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off
5230	Agilent R T Ch Freq 5.23 GHz Trig Free Occupied Bandwidth Ref 20 dBm #Atten 20 dB #Peak Log 10 dB/ Offset 12.5 dB Center 5.23 GHz Span 80 MHz #Res BW 1 MHz #VBW 3 MHz Sweep 4 ms (401 pts) Occupied Bandwidth 36.9703 MHz Occ BW % Pwr 99.00 % x dB -26.00 dB Transmit Freq Error 115.848 kHz x dB Bandwidth 46.140 MHz Freq/Channel Center Freq 5.23000000 GHz Start Freq 5.19000000 GHz Stop Freq 5.27000000 GHz CF Step 8.00000000 MHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off
Mode 5: IEEE 802.11ac 80MHz Link Mode_ ANT-0	
5210	Agilent R T Ch Freq 5.21 GHz Trig Free Occupied Bandwidth Ref 20 dBm #Atten 20 dB #Peak Log 10 dB/ Offset 12.5 dB Center 5.21 GHz Span 120 MHz #Res BW 1 MHz #VBW 3 MHz Sweep 4 ms (401 pts) Occupied Bandwidth 75.7956 MHz Occ BW % Pwr 99.00 % x dB -26.00 dB Transmit Freq Error 231.515 kHz x dB Bandwidth 87.842 MHz Freq/Channel Center Freq 5.21000000 GHz Start Freq 5.15000000 GHz Stop Freq 5.27000000 GHz CF Step 12.00000000 MHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off

Mode 2: IEEE 802.11a Link Mode_ ANT-1	
5180	Agilent R T Ch Freq 5.18 GHz Tng Free Occupied Bandwidth Ref 20 dBm #Atten 20 dB #Peak Log dB/ Offset 12.5 dB Center 5.18 GHz Span 50 MHz #Res BW 1 MHz #VBW 3 MHz Sweep 4 ms (401 pts) Occupied Bandwidth Occ BW % Pwr 99.00 % 17.9434 MHz x dB -26.00 dB Transmit Freq Error 61.088 kHz x dB Bandwidth 24.832 MHz Freq/Channel Center Freq 5.18000000 GHz Start Freq 5.15500000 GHz Stop Freq 5.20500000 GHz CF Step 5.00000000 MHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off
5200	Agilent R T Ch Freq 5.2 GHz Tng Free Occupied Bandwidth Ref 20 dBm #Atten 20 dB #Peak Log dB/ Offset 12.5 dB Center 5.2 GHz Span 50 MHz #Res BW 1 MHz #VBW 3 MHz Sweep 4 ms (401 pts) Occupied Bandwidth Occ BW % Pwr 99.00 % 17.7677 MHz x dB -26.00 dB Transmit Freq Error 19.323 kHz x dB Bandwidth 23.437 MHz Freq/Channel Center Freq 5.20000000 GHz Start Freq 5.17500000 GHz Stop Freq 5.22500000 GHz CF Step 5.00000000 MHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off
5240	Agilent R T Ch Freq 5.24 GHz Tng Free Occupied Bandwidth Ref 20 dBm #Atten 20 dB #Peak Log dB/ Offset 12.5 dB Center 5.24 GHz Span 50 MHz #Res BW 1 MHz #VBW 3 MHz Sweep 4 ms (401 pts) Occupied Bandwidth Occ BW % Pwr 99.00 % 17.8360 MHz x dB -26.00 dB Transmit Freq Error 16.558 kHz x dB Bandwidth 24.435 MHz Freq/Channel Center Freq 5.24000000 GHz Start Freq 5.21500000 GHz Stop Freq 5.26500000 GHz CF Step 5.00000000 MHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off

Mode 3: IEEE 802.11n 20MHz Link Mode_ ANT-1	
5180	 Agilent R T Ch Freq 5.18 GHz Trig Free Occupied Bandwidth Ref 20 dBm #Atten 20 dB #Peak Log 10 dB/Offset 12.5 dB Center 5.18 GHz Span 50 MHz #Res BW 1 MHz #VBW 3 MHz Sweep 4 ms (401 pts) Occupied Bandwidth 18.8509 MHz Occ BW % Pwr 99.00 % x dB -26.00 dB Transmit Freq Error 35.049 kHz x dB Bandwidth 24.560 MHz Freq/Channel Center Freq 5.18000000 GHz Start Freq 5.15500000 GHz Stop Freq 5.20500000 GHz CF Step 5.00000000 MHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off
5200	 Agilent R T Ch Freq 5.2 GHz Trig Free Occupied Bandwidth Ref 20 dBm #Atten 20 dB #Peak Log 10 dB/Offset 12.5 dB Center 5.2 GHz Span 50 MHz #Res BW 1 MHz #VBW 3 MHz Sweep 4 ms (401 pts) Occupied Bandwidth 18.8847 MHz Occ BW % Pwr 99.00 % x dB -26.00 dB Transmit Freq Error 13.465 kHz x dB Bandwidth 25.557 MHz Freq/Channel Center Freq 5.20000000 GHz Start Freq 5.17500000 GHz Stop Freq 5.22500000 GHz CF Step 5.00000000 MHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off
5240	 Agilent R T Ch Freq 5.24 GHz Trig Free Occupied Bandwidth Ref 20 dBm #Atten 20 dB #Peak Log 10 dB/Offset 12.5 dB Center 5.24 GHz Span 50 MHz #Res BW 1 MHz #VBW 3 MHz Sweep 4 ms (401 pts) Occupied Bandwidth 18.9038 MHz Occ BW % Pwr 99.00 % x dB -26.00 dB Transmit Freq Error 29.628 kHz x dB Bandwidth 25.433 MHz Freq/Channel Center Freq 5.24000000 GHz Start Freq 5.21500000 GHz Stop Freq 5.26500000 GHz CF Step 5.00000000 MHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off

Mode 4: IEEE 802.11n 40MHz Link Mode_ ANT-1	
5190	 Agilent R T Ch Freq 5.19 GHz Trig Free Occupied Bandwidth Ref 20 dBm #Atten 20 dB #Peak Log 10 dB/Offset 12.5 dB Center 5.19 GHz Span 80 MHz #Res BW 1 MHz #VBW 3 MHz Sweep 4 ms (401 pts) Occupied Bandwidth 36.6564 MHz Occ BW % Pwr 99.00 % x dB -26.00 dB Transmit Freq Error 31.182 kHz x dB Bandwidth 44.367 MHz Freq/Channel Center Freq 5.19000000 GHz Start Freq 5.15000000 GHz Stop Freq 5.23000000 GHz CF Step 8.00000000 MHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off
5230	 Agilent R T Ch Freq 5.23 GHz Trig Free Occupied Bandwidth Ref 20 dBm #Atten 20 dB #Peak Log 10 dB/Offset 12.5 dB Center 5.23 GHz Span 80 MHz #Res BW 1 MHz #VBW 3 MHz Sweep 4 ms (401 pts) Occupied Bandwidth 36.6362 MHz Occ BW % Pwr 99.00 % x dB -26.00 dB Transmit Freq Error 12.566 kHz x dB Bandwidth 45.077 MHz Freq/Channel Center Freq 5.23000000 GHz Start Freq 5.19000000 GHz Stop Freq 5.27000000 GHz CF Step 8.00000000 MHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off
Mode 5: IEEE 802.11ac 80MHz Link Mode_ ANT-1	
5210	 Agilent R T Ch Freq 5.21 GHz Trig Free Occupied Bandwidth Ref 20 dBm #Atten 20 dB #Peak Log 10 dB/Offset 12.5 dB Center 5.21 GHz Span 120 MHz #Res BW 1 MHz #VBW 3 MHz Sweep 4 ms (401 pts) Occupied Bandwidth 75.8275 MHz Occ BW % Pwr 99.00 % x dB -26.00 dB Transmit Freq Error 82.785 kHz x dB Bandwidth 88.625 MHz Freq/Channel Center Freq 5.21000000 GHz Start Freq 5.15000000 GHz Stop Freq 5.27000000 GHz CF Step 12.00000000 MHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off

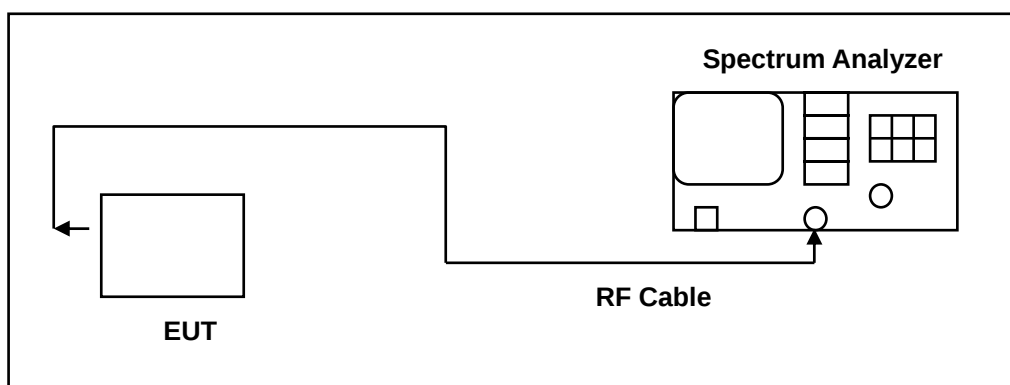
8 6dB RF Bandwidth Measurement

8.1. 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.

8.2. Test Setup



8.3. Test Instruments

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
Spectrum Analyzer	Agilent	E4445A	MY45300744	12/16/2014	(1)
Test Site	ATL	TE05	TE05	N.C.R.	-----

dRemark: (1) Calibration period 1 year. (2) Calibration period 2 years. (3) Calibration period 3 years.

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

8.4. Test Procedure

6dB RF Bandwidth

The EUT tested to UNII test procedure of KDB789033 D02 for compliance to FCC 47CFR 15.207 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.

8.5. Test Result

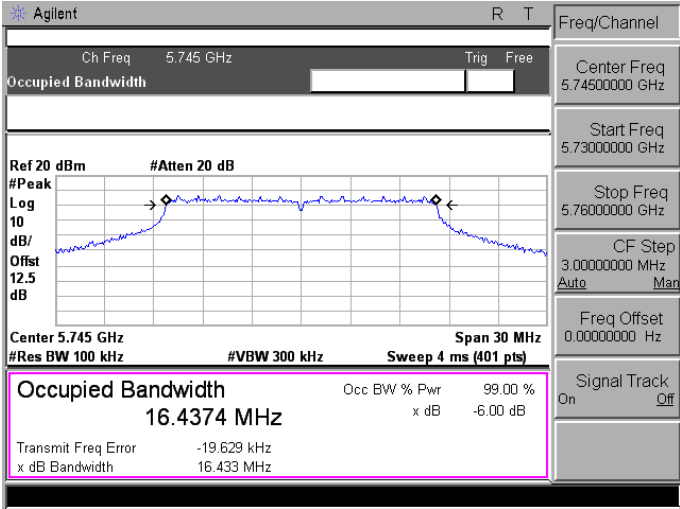
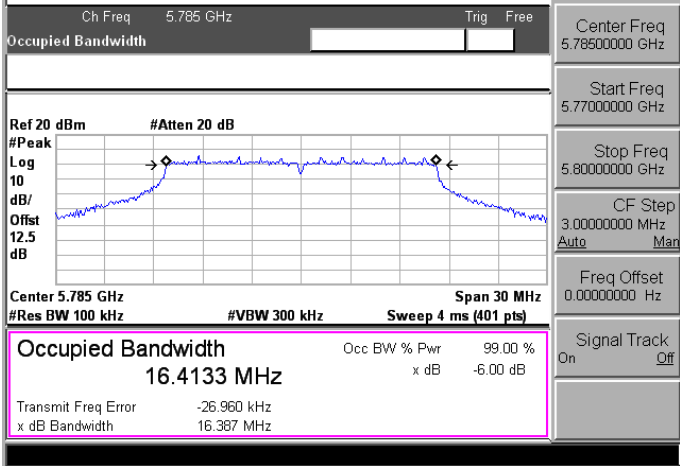
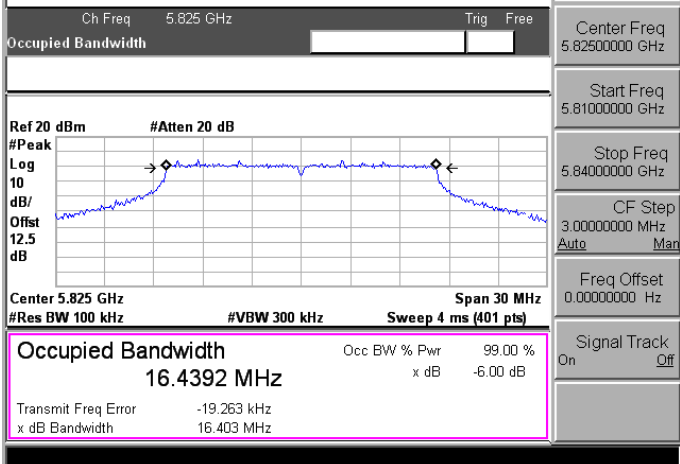
Model Number	UAP-AC-LR		
Test Item	6dB RF Bandwidth		
Test Mode	Mode 2: IEEE 802.11a Link Mode		
Date of Test	06/20/2015	Test Site	TE05
Frequency (MHz)	ANT-0	ANT-1	Limit (kHz)
5745	16.433	16.441	> 500
5785	16.387	16.408	> 500
5825	16.403	16.431	> 500

Model Number	UAP-AC-LR		
Test Item	6dB RF Bandwidth		
Test Mode	Mode 3: IEEE 802.11n 20MHz Link Mode		
Date of Test	06/17/2015	Test Site	TE05
Frequency (MHz)	ANT-0	ANT-1	Limit (kHz)
5745	17.603	17.383	> 500
5785	17.592	17.375	> 500
5825	17.582	17.538	> 500

Model Number	UAP-AC-LR		
Test Item	6dB RF Bandwidth		
Test Mode	Mode 4: IEEE 802.11n 40MHz Link Mode		
Date of Test	06/17/2015	Test Site	TE05
Frequency (MHz)	ANT-0	ANT-1	Limit (kHz)
5755	36.061	36.304	> 500
5795	35.730	35.783	> 500

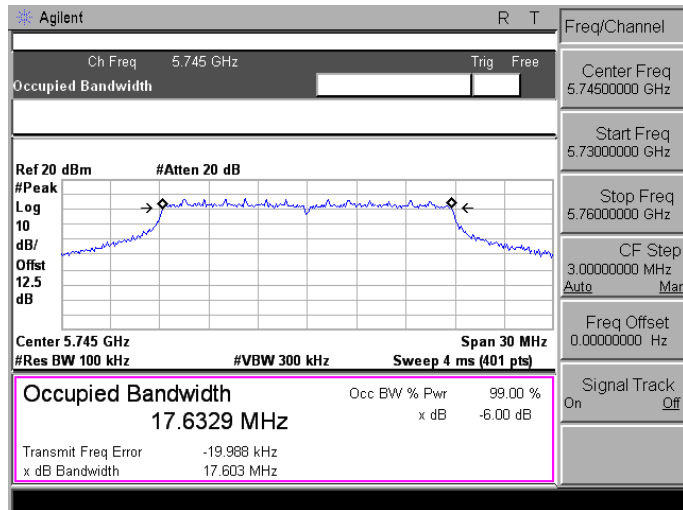
Model Number	UAP-AC-LR		
Test Item	6dB RF Bandwidth		
Test Mode	Mode 5: IEEE 802.11ac 80MHz Link Mode		
Date of Test	06/17/2015	Test Site	TE05
Frequency (MHz)	ANT-0	ANT-1	Limit (kHz)
5775	70.846	73.492	> 500

8.6. Test Graphs

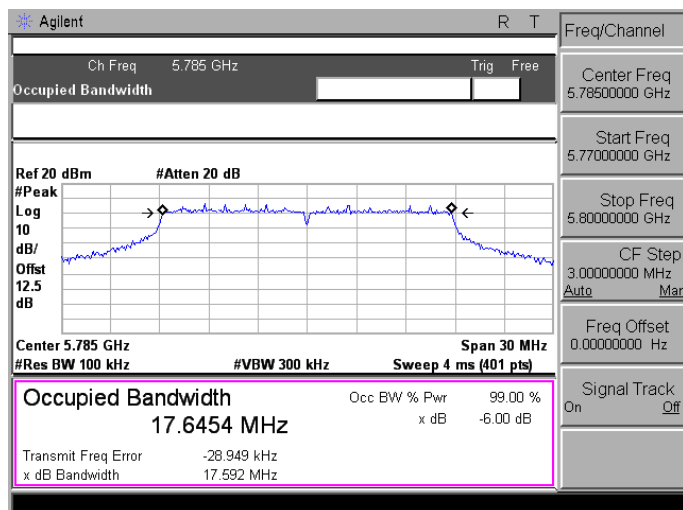
Mode 2: IEEE 802.11a Link Mode_ANT-0 5745	 Agilent R T Ch Freq 5.745 GHz Trig Free Occupied Bandwidth Ref 20 dBm #Peak Log 10 dB/Offset 12.5 dB Center 5.745 GHz Span 30 MHz #Res BW 100 kHz #VBW 300 kHz Sweep 4 ms (401 pts) Occupied Bandwidth 16.4374 MHz Occ BW % Pwr 99.00 % x dB -6.00 dB Transmit Freq Error -19.629 kHz x dB Bandwidth 16.433 MHz Freq/Channel Center Freq 5.74500000 GHz Start Freq 5.73000000 GHz Stop Freq 5.76000000 GHz CF Step 3.00000000 MHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off
5785	 Agilent R T Ch Freq 5.785 GHz Trig Free Occupied Bandwidth Ref 20 dBm #Peak Log 10 dB/Offset 12.5 dB Center 5.785 GHz Span 30 MHz #Res BW 100 kHz #VBW 300 kHz Sweep 4 ms (401 pts) Occupied Bandwidth 16.4133 MHz Occ BW % Pwr 99.00 % x dB -6.00 dB Transmit Freq Error -26.960 kHz x dB Bandwidth 16.387 MHz Freq/Channel Center Freq 5.78500000 GHz Start Freq 5.77000000 GHz Stop Freq 5.80000000 GHz CF Step 3.00000000 MHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off
5825	 Agilent R T Ch Freq 5.825 GHz Trig Free Occupied Bandwidth Ref 20 dBm #Peak Log 10 dB/Offset 12.5 dB Center 5.825 GHz Span 30 MHz #Res BW 100 kHz #VBW 300 kHz Sweep 4 ms (401 pts) Occupied Bandwidth 16.4392 MHz Occ BW % Pwr 99.00 % x dB -6.00 dB Transmit Freq Error -19.263 kHz x dB Bandwidth 16.403 MHz Freq/Channel Center Freq 5.82500000 GHz Start Freq 5.81000000 GHz Stop Freq 5.84000000 GHz CF Step 3.00000000 MHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off

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

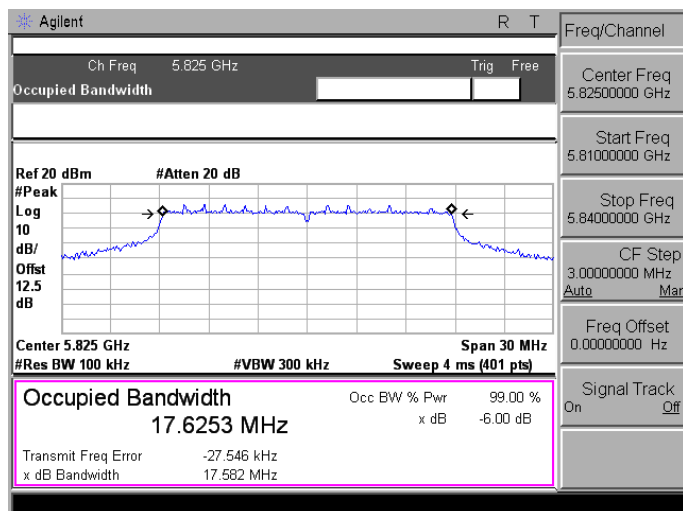
5745



5785

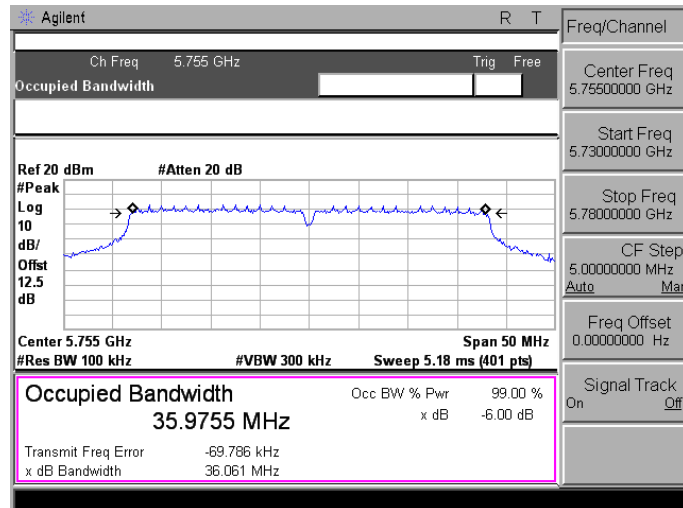


5825

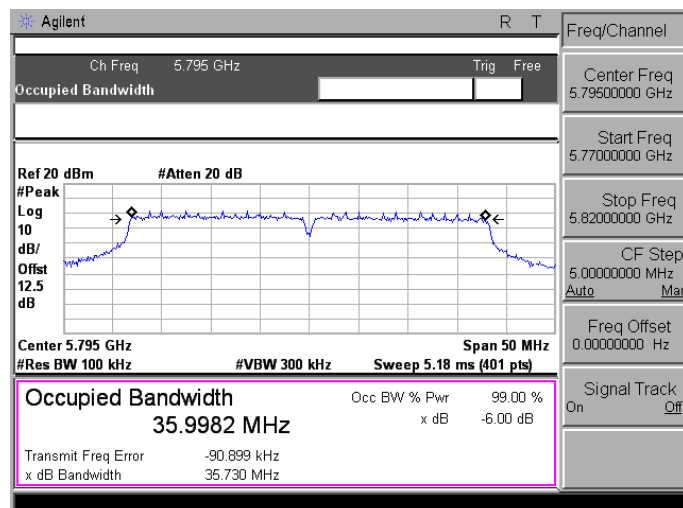


Mode 4: IEEE 802.11n 40MHz Link Mode_ANT-0

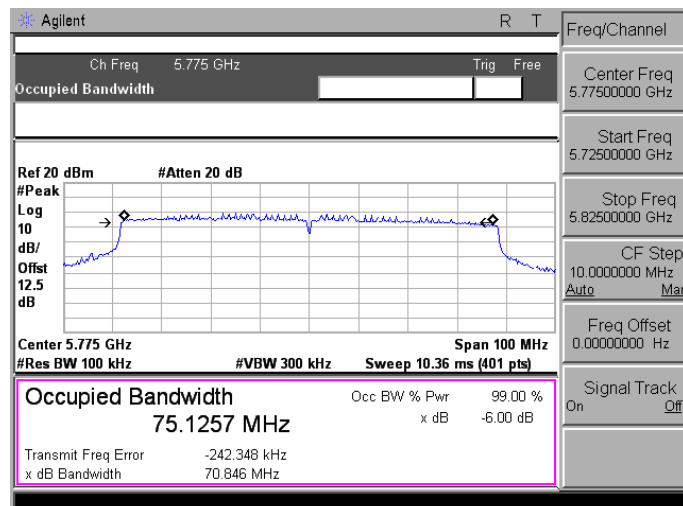
5755



5795

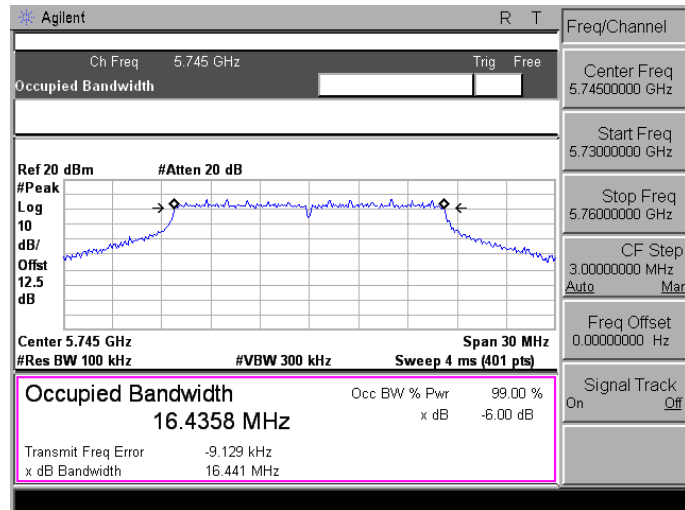

Mode 5: IEEE 802.11ac 80MHz Link Mode_ANT-0

5775

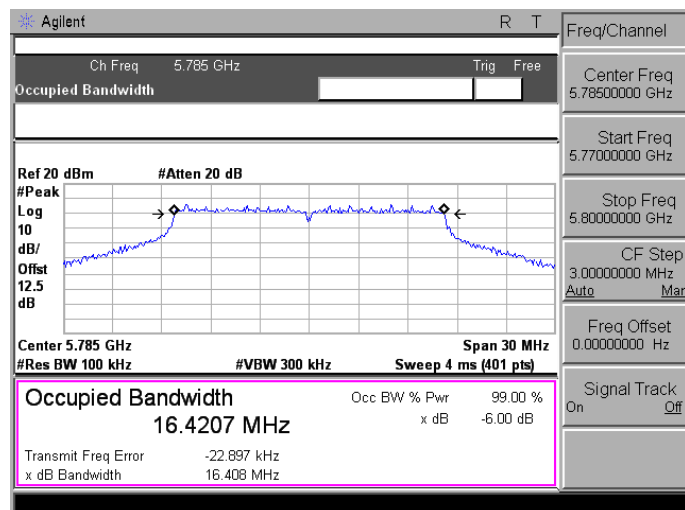


Mode 2: IEEE 802.11a Link Mode_ANT-1

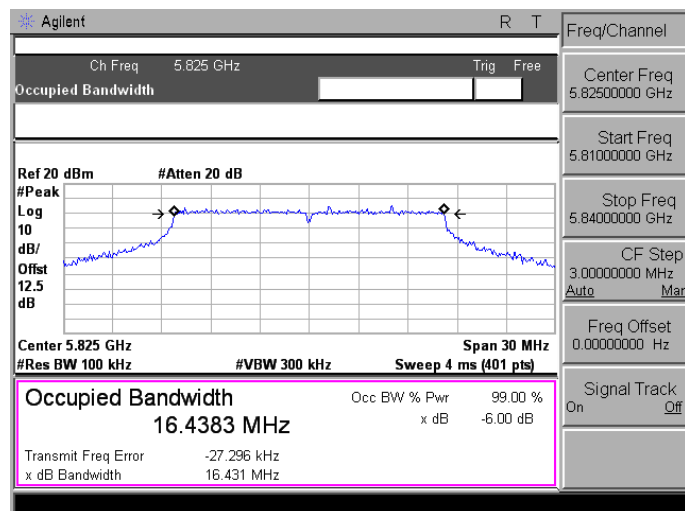
5745



5785

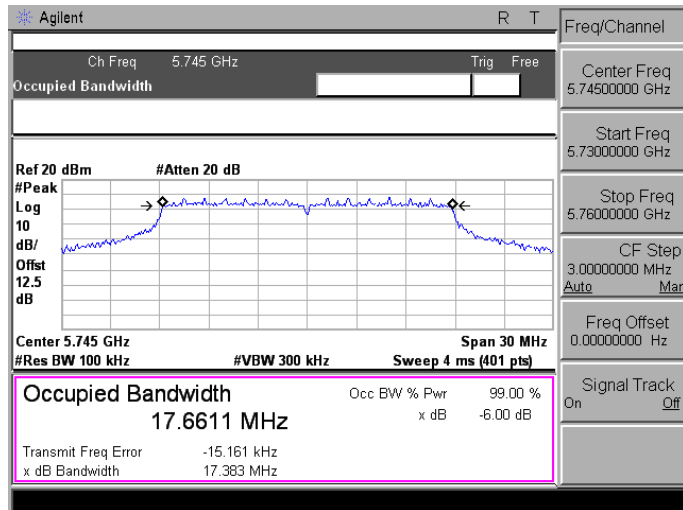


5825

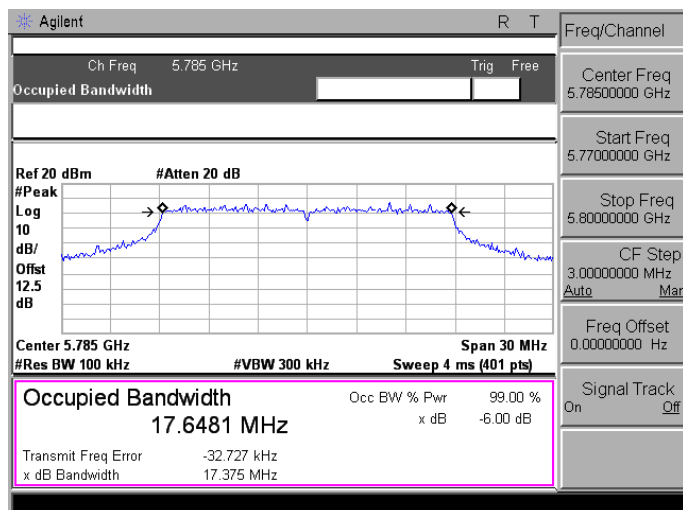


Mode 3: IEEE 802.11n 20MHz Link Mode_ANT-1

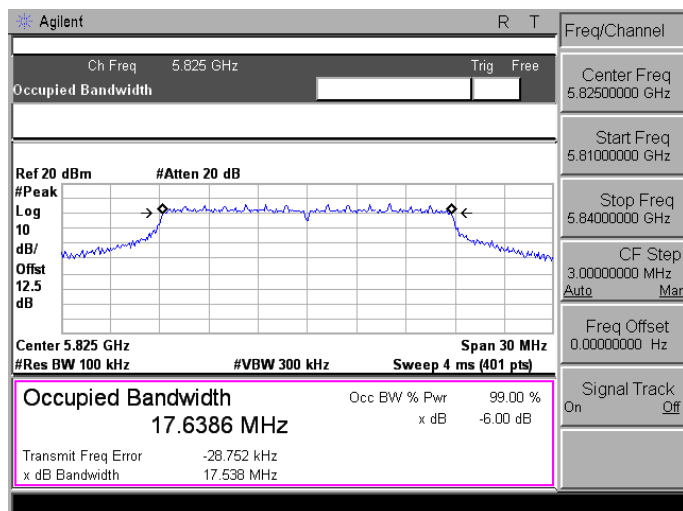
5745



5785

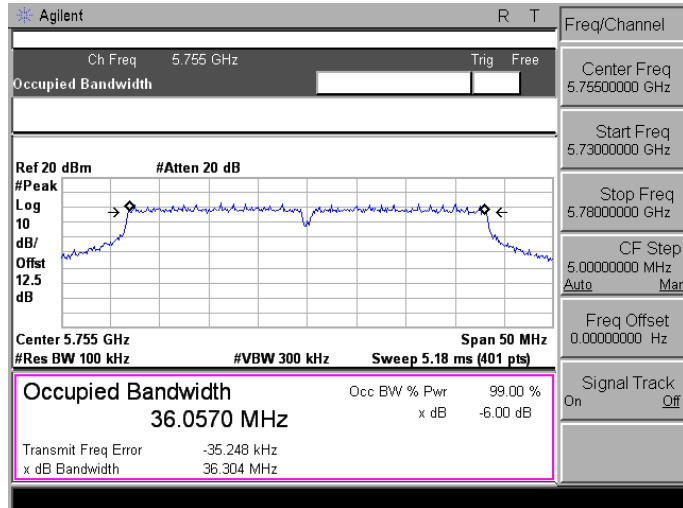


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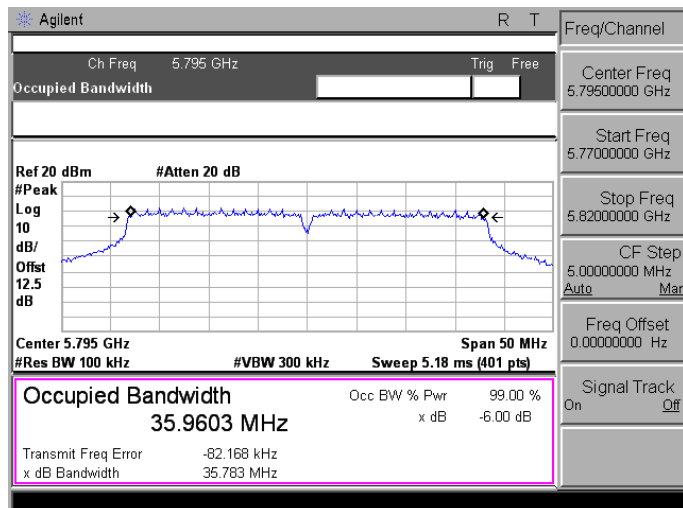


Mode 4: IEEE 802.11n 40MHz Link Mode_ANT-1

5755

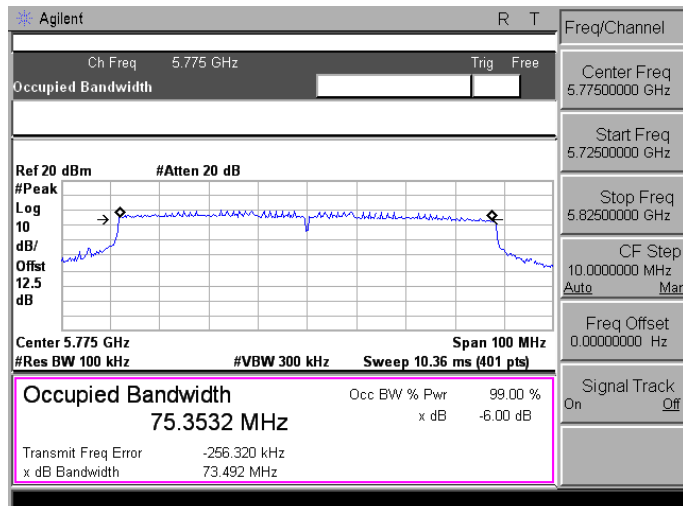


5795



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

5775



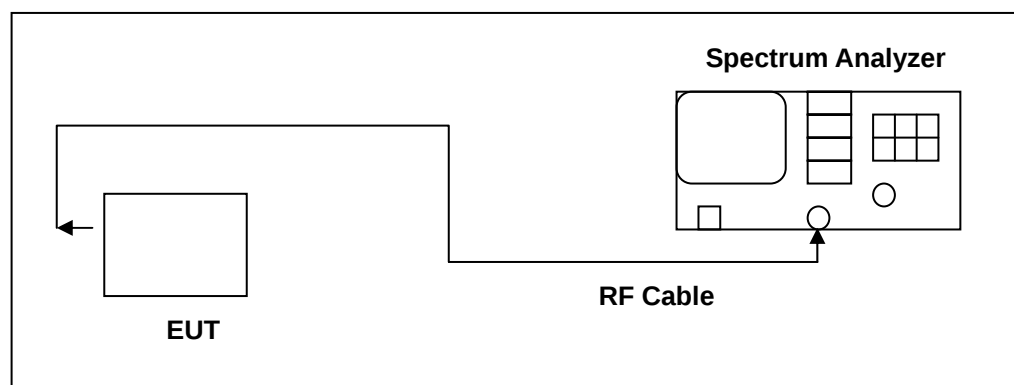
9 Peak Power Spectral Density Measurement

9.1. Limit

Conducted power spectral density

Frequency Range (MHz)	FCC Limit
5.150 ~ 5.250 GHz	17 dBm/MHz
5.250 ~ 5.350 GHz	11 dBm/MHz
5.470 ~ 5.725 GHz	11 dBm/MHz
5.725 ~ 5.850 GHz	30 dBm/500KHz

9.2. Test Setup



9.3. Test Instruments

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
Spectrum Analyzer	Agilent	E4445A	MY45300744	12/16/2014	(1)
Test Site	ATL	TE02	TE02	N.C.R.	-----

Remark: (1) Calibration period 1 year. (2) Calibration period 2 years.

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

9.4. Test Procedure

The test is performed in accordance with KDB789033: D02 General UNII Test Procedures New Rules v01, Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices - Part 15, Subpart E.

Note: Total power spectral density = conducted power density(Ant-0+Ant-1+...+Ant-n) + Duty factor.

9.5. Test Result

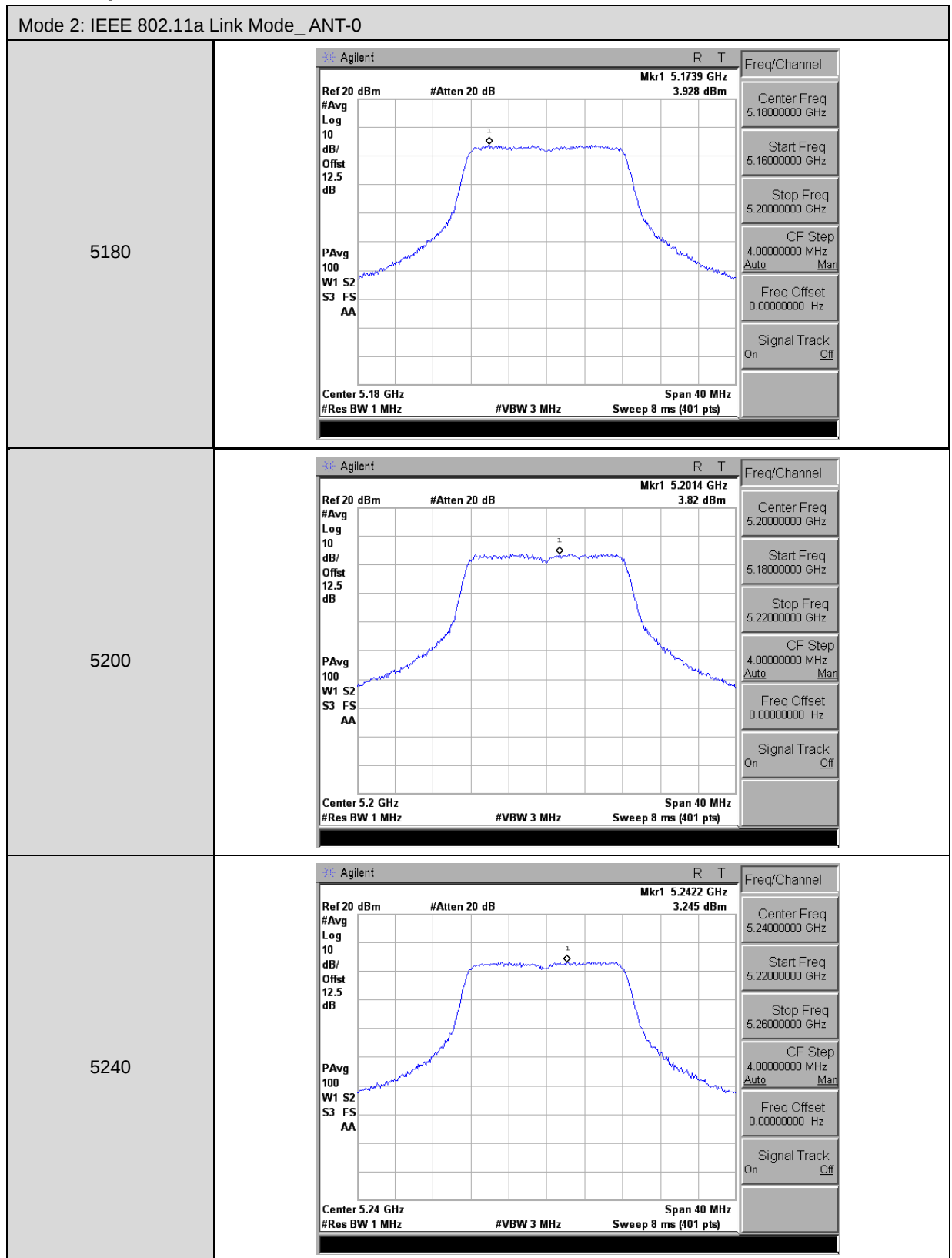
Model Number	UAP-AC-LR						
Test Item	Conducted power spectral density						
Test Mode	Mode 2: IEEE 802.11a Link Mode						
Date of Test	06/20/2015			Test Site		TE02	
Frequency (MHz)	ANT-0		ANT-1		ANT-0+1		Limit (dBm/MHz)
	(dBm/MHz)		(dBm/MHz)		(dBm/MHz)		
5180	3.928		3.261		6.773		<17
5200	3.820		3.919		7.036		
5240	3.245		3.547		6.565		
Frequency (MHz)	ANT-0		ANT-1		ANT-0+1		Limit (dBm/500KHz)
	Measurement (dBm/100KHz)	Measurement (dBm/500KHz)	Measurement (dBm/100KHz)	Measurement (dBm/500KHz)	Measurement (dBm/500KHz)		
5745	-2.86	4.13	-2.58	4.41	7.44		< 30
5785	-3.80	3.19	-3.16	3.83	6.69		
5825	-4.77	2.22	-3.72	3.27	5.94		

Model Number	UAP-AC-LR						
Test Item	Conducted power spectral density						
Test Mode	Mode 3: IEEE 802.11n 20MHz Link Mode						
Date of Test	06/20/2015			Test Site	TE02		
Frequency (MHz)	ANT-0		ANT-1		ANT-0+1		Limit (dBm/MHz)
	(dBm/MHz)		(dBm/MHz)		(dBm/MHz)		
5180	4.185		4.543		7.626		<17
5200	4.190		4.505		7.609		
5240	4.203		4.101		7.411		
Frequency (MHz)	ANT-0		ANT-1		ANT-0+1		Limit (dBm/500KHz)
	Measurement (dBm/100KHz)	Measurement (dBm/500KHz)	Measurement (dBm/100KHz)	Measurement (dBm/500KHz)	Measurement (dBm/500KHz)		
5745	-2.01	4.98	-1.71	5.28	8.39		< 30
5785	-3.50	3.49	-1.76	5.23	7.71		
5825	-4.28	2.71	-2.71	4.28	6.82		

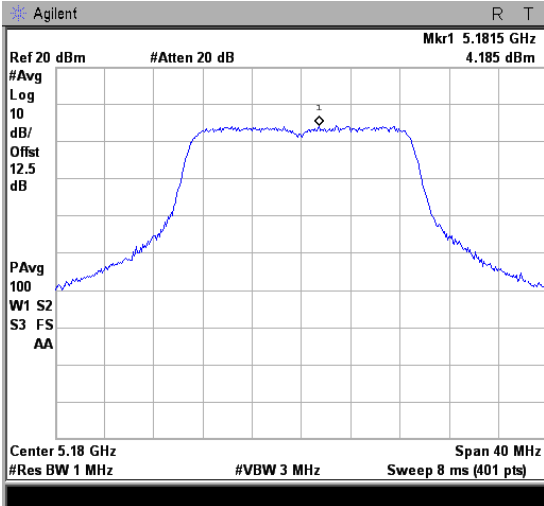
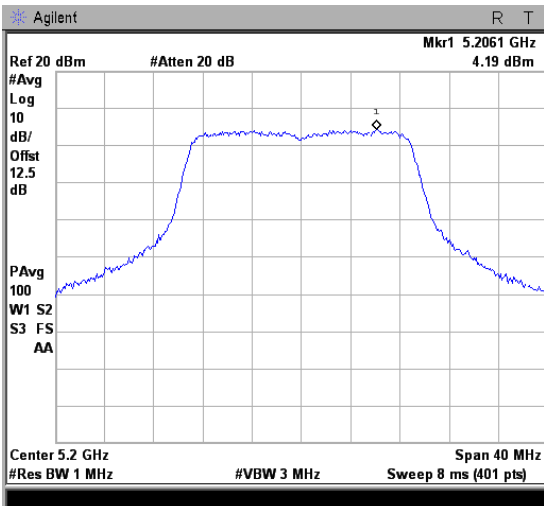
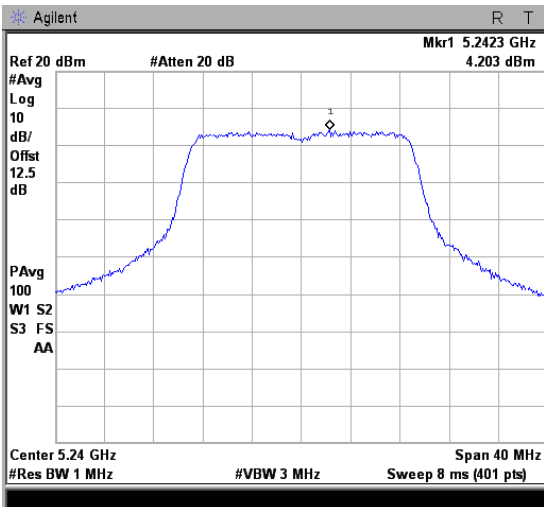
Model Number	UAP-AC-LR					
Test Item	Conducted power spectral density					
Test Mode	Mode 4: IEEE 802.11n 40MHz Link Mode					
Date of Test	06/20/2015			Test Site	TE02	
Frequency (MHz)	ANT-0		ANT-1		ANT-0+1	Limit (dBm/MHz)
	(dBm/MHz)		(dBm/MHz)		(dBm/MHz)	
5190	-0.761		-0.144		3.026	<17
5230	-0.453		-0.631		2.927	
Frequency (MHz)	ANT-0		ANT-1		ANT-0+1	Limit (dBm/500KHz)
	Measurement (dBm/100KHz)	Measurement (dBm/500KHz)	Measurement (dBm/100KHz)	Measurement (dBm/500KHz)	Measurement (dBm/500KHz)	
5755	-7.48	-0.49	-6.70	0.29	3.39	< 30
5795	-7.54	-0.55	-7.55	-0.56	2.91	

Model Number	UAP-AC-LR					
Test Item	Conducted power spectral density					
Test Mode	Mode 5: IEEE 802.11ac 80MHz Link Mode					
Date of Test	06/20/2015			Test Site	TE02	
Frequency (MHz)	ANT-0		ANT-1		ANT-0+1	Limit (dBm/MHz)
	(dBm/MHz)		(dBm/MHz)		(dBm/MHz)	
5210	-3.533		-3.627		0.156	<17
Frequency (MHz)	ANT-0		ANT-1		ANT-0+1	Limit (dBm/500KHz)
	Measurement (dBm/100KHz)	Measurement (dBm/500KHz)	Measurement (dBm/100KHz)	Measurement (dBm/500KHz)	Measurement (dBm/500KHz)	
5755	-11.73	-4.74	-11.15	-4.16	-0.70	< 30

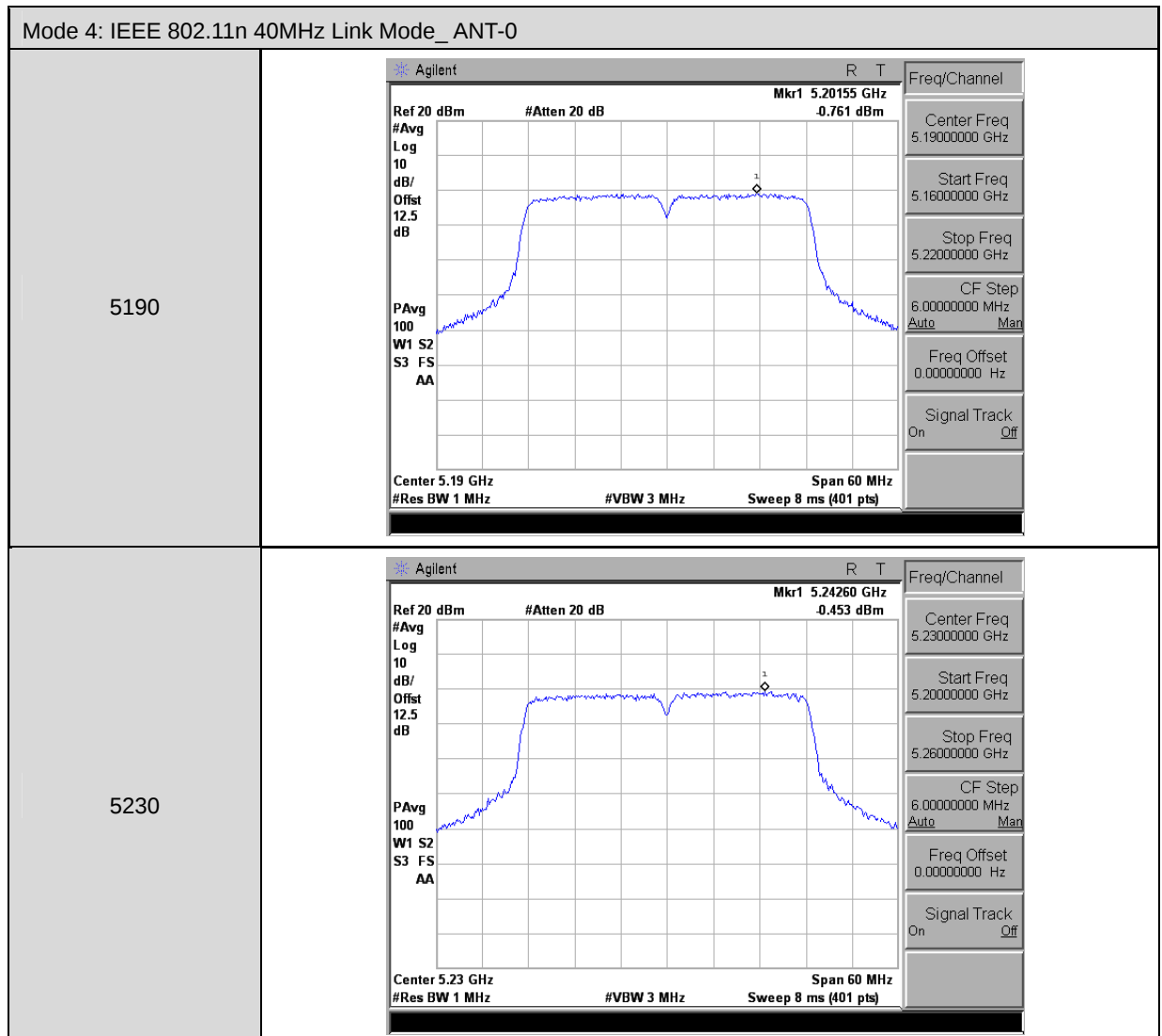
9.6. Test Graphs

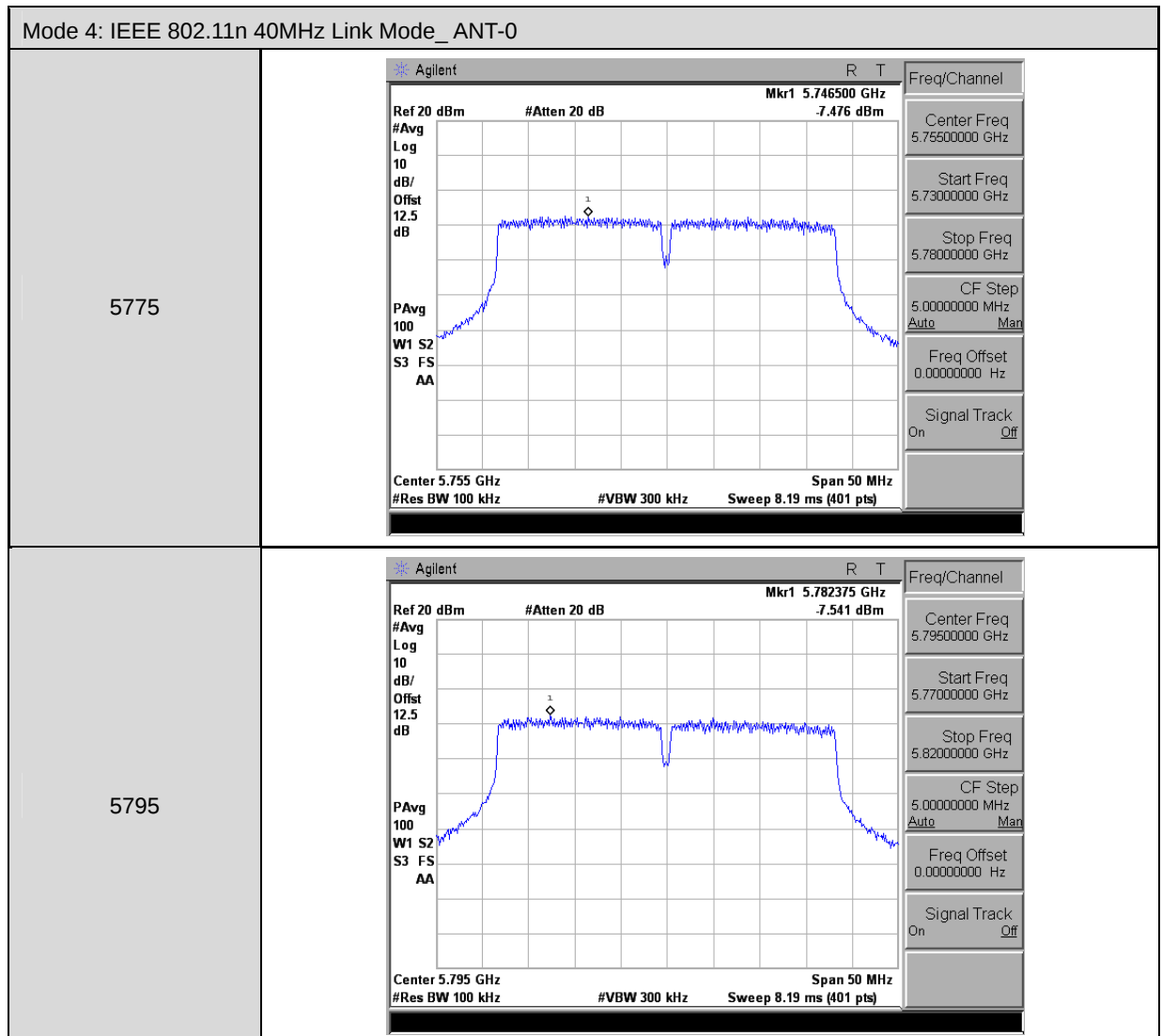


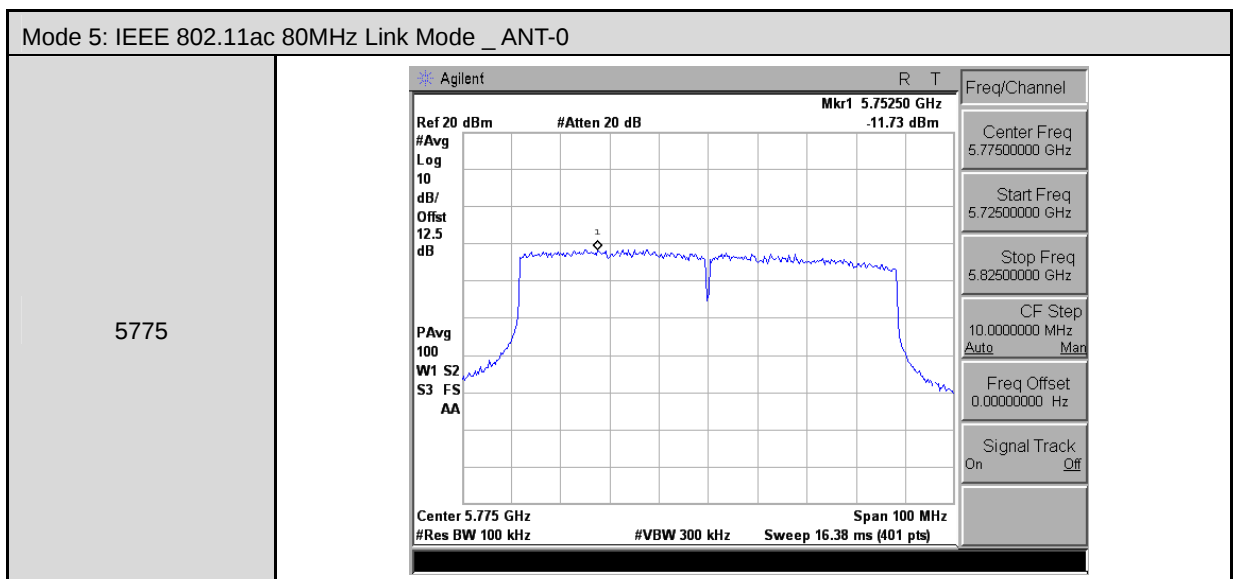
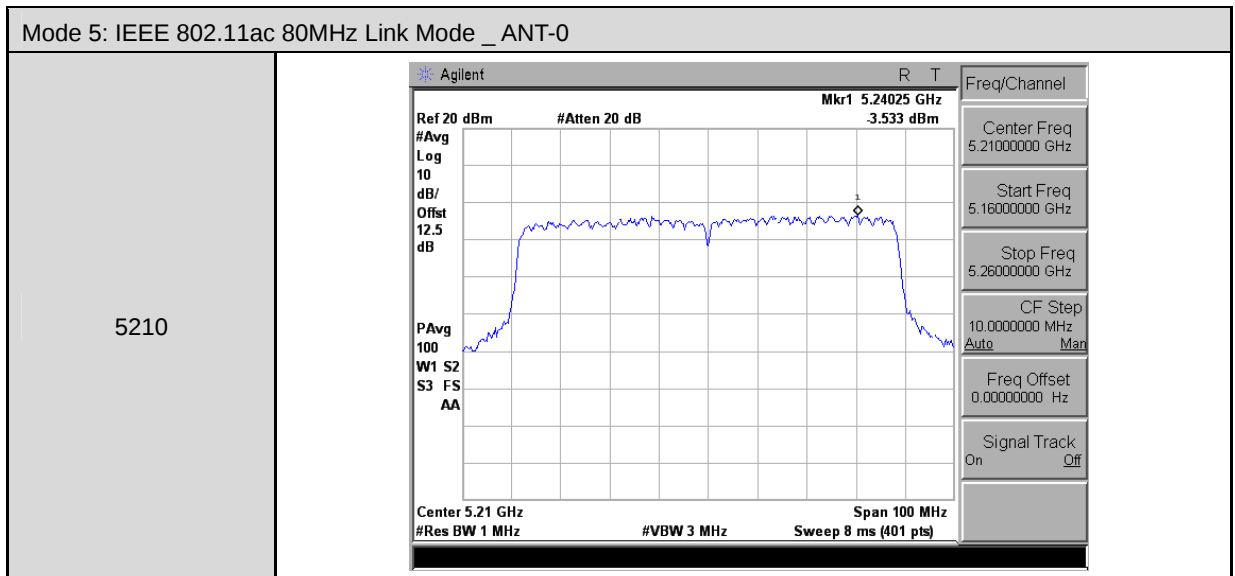
Mode 2: IEEE 802.11a Link Mode_ ANT-0	
5745	
5785	
5825	

Mode 3: IEEE 802.11n 20MHz Link Mode _ANT-0	
5180	 Agilent R T Ref 20 dBm #Atten 20 dB Mkr1 5.1815 GHz 4.185 dBm #Avg Log 10 dB/Offset 12.5 dB PAvg 100 W1 S2 S3 FS AA Center 5.18 GHz Span 40 MHz #Res BW 1 MHz #VBW 3 MHz Sweep 8 ms (401 pts) Freq/Channel Center Freq 5.18000000 GHz Start Freq 5.16000000 GHz Stop Freq 5.20000000 GHz CF Step 4.00000000 MHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off
5200	 Agilent R T Ref 20 dBm #Atten 20 dB Mkr1 5.2061 GHz 4.19 dBm #Avg Log 10 dB/Offset 12.5 dB PAvg 100 W1 S2 S3 FS AA Center 5.2 GHz Span 40 MHz #Res BW 1 MHz #VBW 3 MHz Sweep 8 ms (401 pts) Freq/Channel Center Freq 5.20000000 GHz Start Freq 5.18000000 GHz Stop Freq 5.22000000 GHz CF Step 4.00000000 MHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off
5220	 Agilent R T Ref 20 dBm #Atten 20 dB Mkr1 5.2423 GHz 4.203 dBm #Avg Log 10 dB/Offset 12.5 dB PAvg 100 W1 S2 S3 FS AA Center 5.24 GHz Span 40 MHz #Res BW 1 MHz #VBW 3 MHz Sweep 8 ms (401 pts) Freq/Channel Center Freq 5.24000000 GHz Start Freq 5.22000000 GHz Stop Freq 5.26000000 GHz CF Step 4.00000000 MHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off

Mode 3: IEEE 802.11n 20MHz Link Mode _ANT-0	
5745	
5785	
5825	





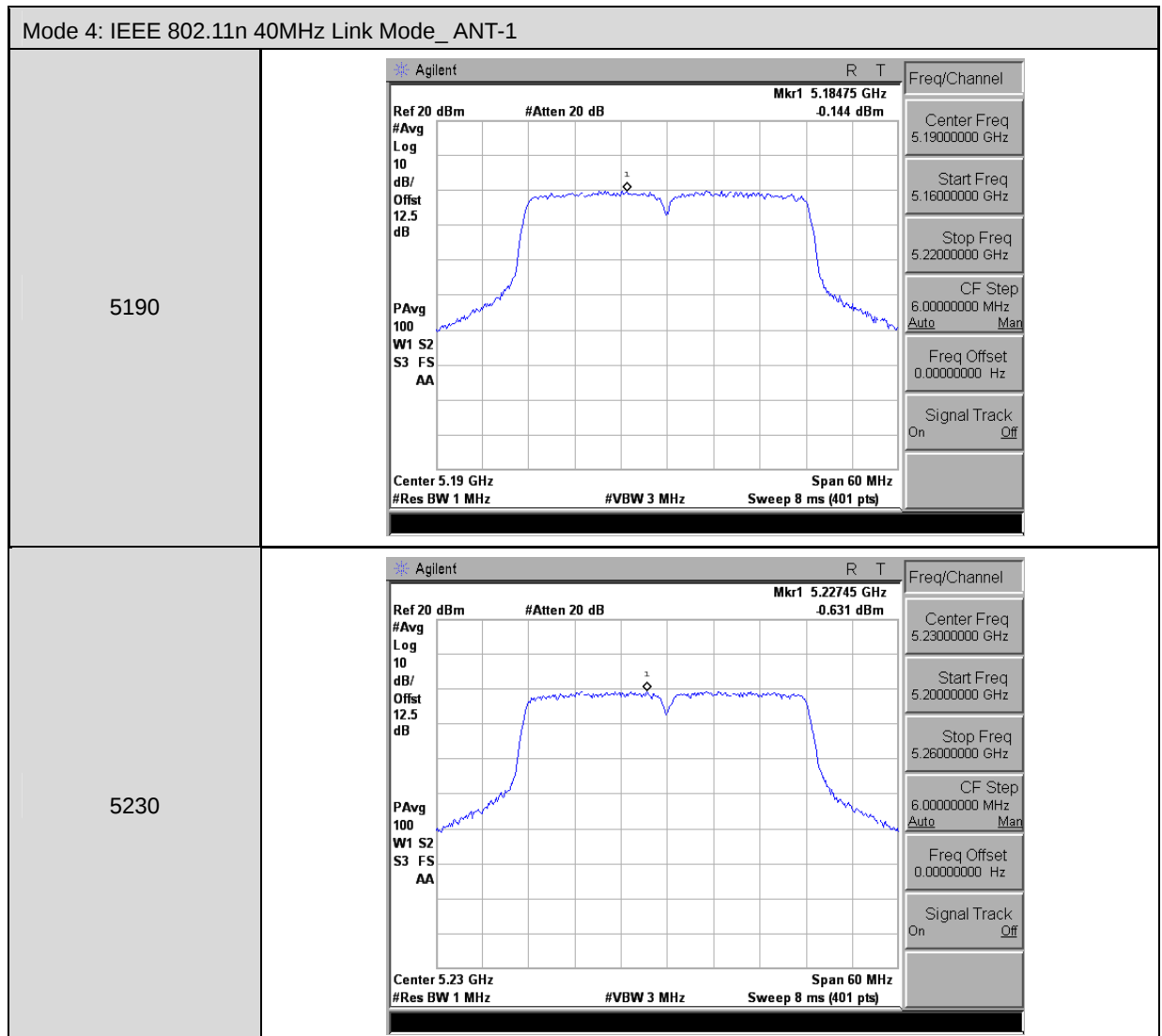


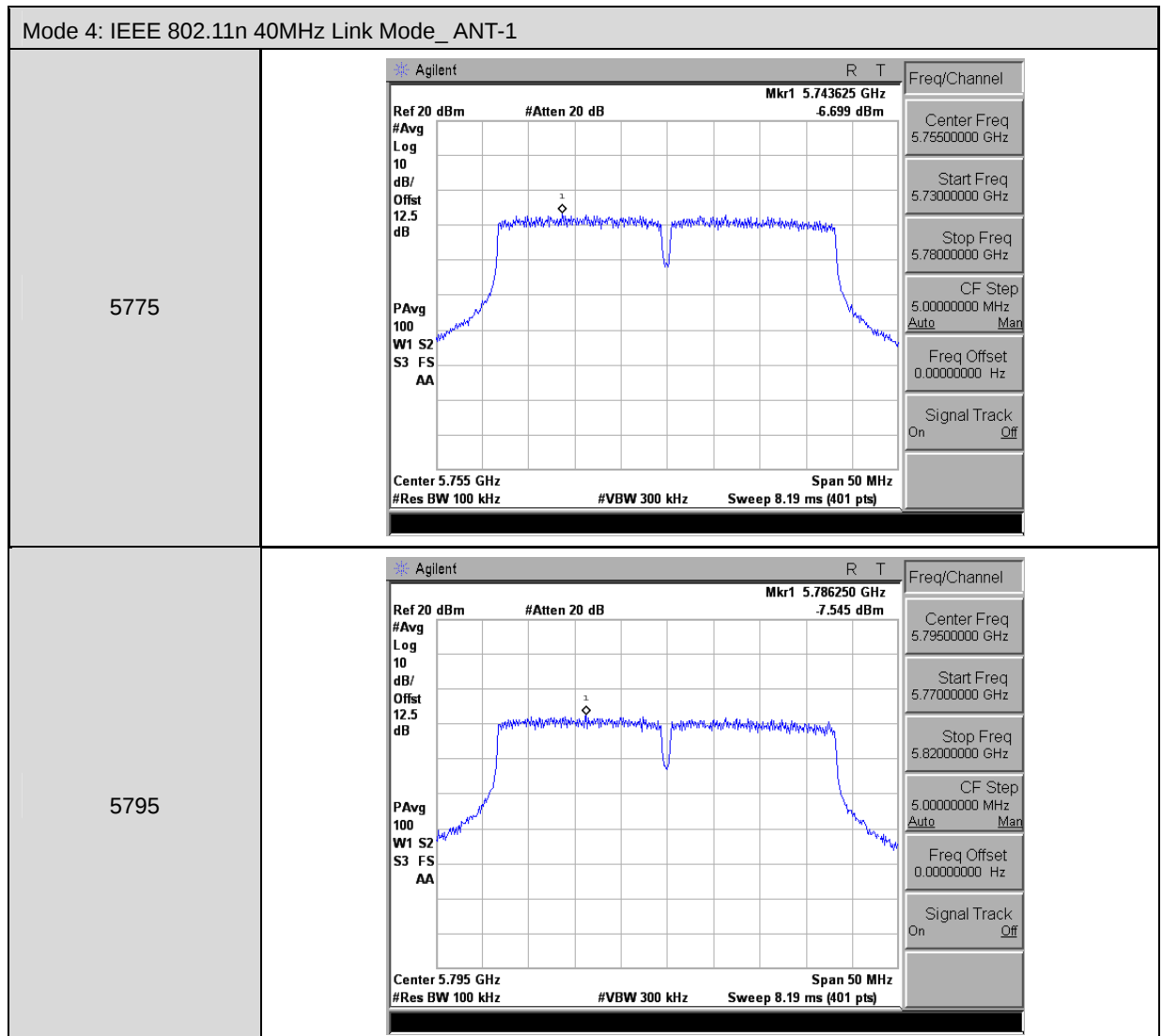
Mode 2: IEEE 802.11a Link Mode_ ANT-1	
5180	
5200	
5240	

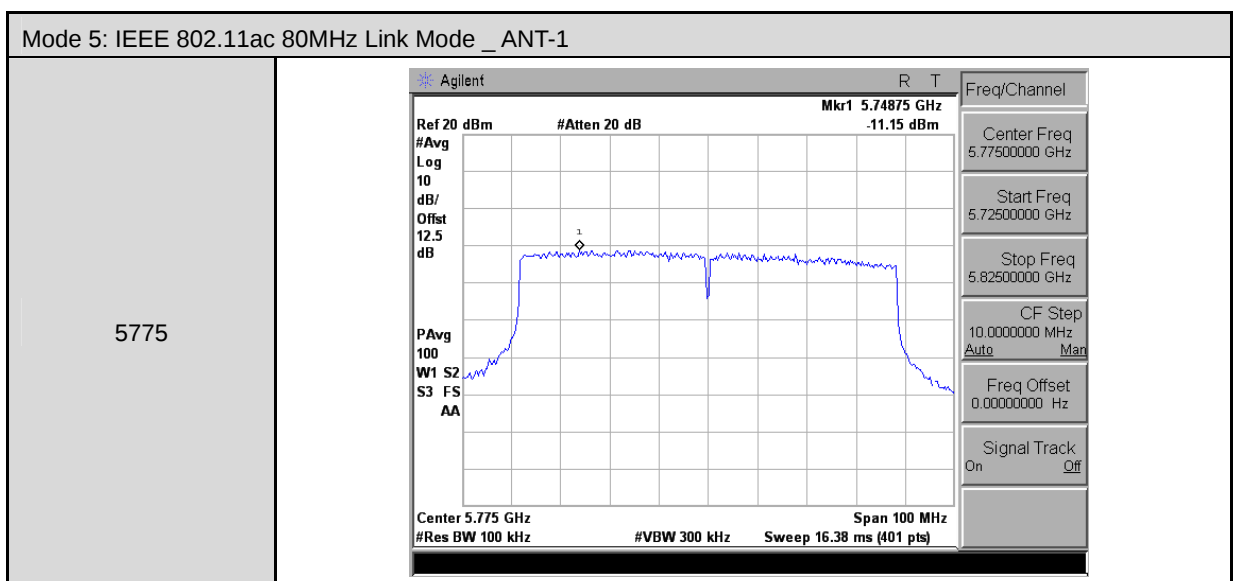
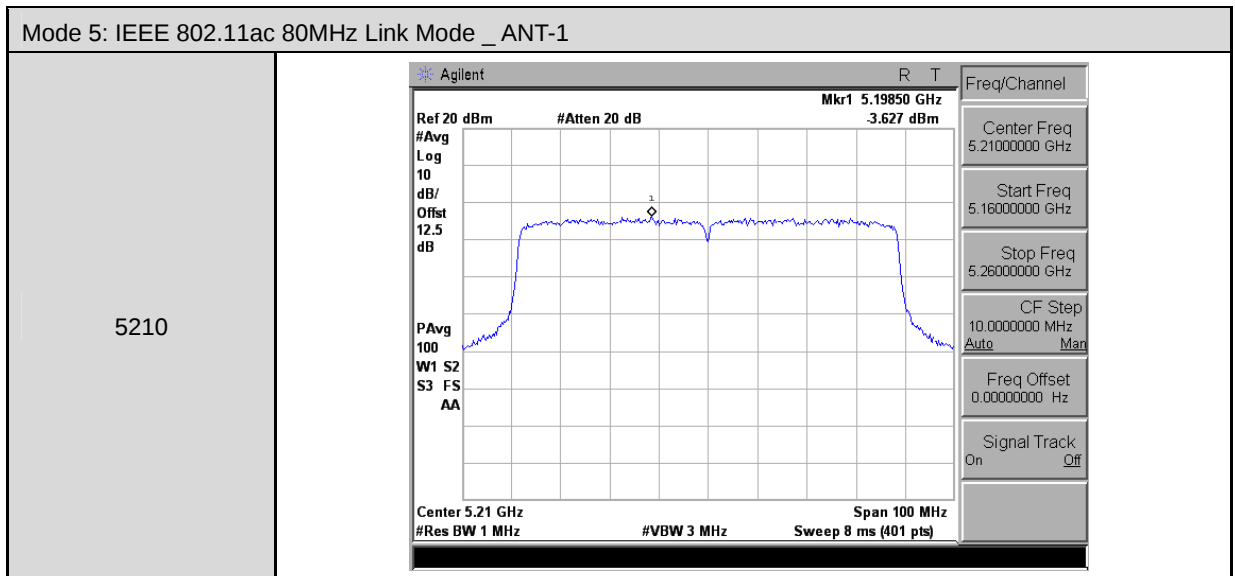
Mode 2: IEEE 802.11a Link Mode_ ANT-1	
5745	
5785	
5825	

Mode 3: IEEE 802.11n 20MHz Link Mode _ANT-1	
5180	Agilent R T Freq/Channel Ref 20 dBm #Atten 20 dB Mkr1 5.1743 GHz 4.543 dBm #Avg Log 10 dB/Offset 12.5 dB PAvg 100 W1 S2 S3 FS AA Center 5.18 GHz #Res BW 1 MHz #VBW 3 MHz Span 40 MHz Sweep 8 ms (401 pts) Freq/Channel Center Freq 5.18000000 GHz Start Freq 5.16000000 GHz Stop Freq 5.20000000 GHz CF Step 4.00000000 MHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off
5200	Agilent R T Freq/Channel Ref 20 dBm #Atten 20 dB Mkr1 5.1932 GHz 4.505 dBm #Avg Log 10 dB/Offset 12.5 dB PAvg 100 W1 S2 S3 FS AA Center 5.2 GHz #Res BW 1 MHz #VBW 3 MHz Span 40 MHz Sweep 8 ms (401 pts) Freq/Channel Center Freq 5.20000000 GHz Start Freq 5.18000000 GHz Stop Freq 5.22000000 GHz CF Step 4.00000000 MHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off
5220	Agilent R T Freq/Channel Ref 20 dBm #Atten 20 dB Mkr1 5.2434 GHz 4.101 dBm #Avg Log 10 dB/Offset 12.5 dB PAvg 100 W1 S2 S3 FS AA Center 5.24 GHz #Res BW 1 MHz #VBW 3 MHz Span 40 MHz Sweep 8 ms (401 pts) Freq/Channel Center Freq 5.24000000 GHz Start Freq 5.22000000 GHz Stop Freq 5.26000000 GHz CF Step 4.00000000 MHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off

Mode 3: IEEE 802.11n 20MHz Link Mode _ANT-1	
5745	
5785	
5825	





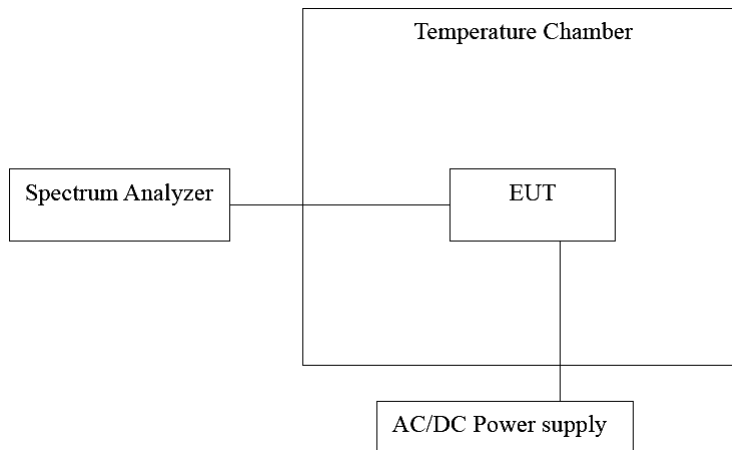


10 Frequency Stability Measurement

10.1. 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.

10.2. Test Setup



10.3. Test Instruments

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
Spectrum Analyzer	Agilent	E4408B	MY45107753	07/24/2014	(1)
Temperature & Humidity Chamber	TAICHY	MHU-225LA	980729	08/14/2014	(1)
Test Site	ATL	TE02	TE02	N.C.R.	-----

Remark: (1) Calibration period 1 year. (2) Calibration period 2 years.

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

10.4. 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.

10.5. Test Result

Model Number	UAP-AC-LR				
Test Mode	Mode 2				
Frequency	5200 MHz				
Date of Test	06/08/2015			Test Site	TE02
Temp. (°C)	Voltage (Vac)	Measured Frequency (MHz)	Delta Frequency (Hz)	Tolerance (ppm)	Result (Pass/Fail)
-10	120	5200.0841	84100	16.173	Pass
0		5200.0747	74700	14.365	Pass
10		5200.0821	82100	15.788	Pass
20		5200.0122	12200	2.346	Pass
30		5200.0370	37000	7.115	Pass
40		5200.0119	11900	2.288	Pass
50		5199.9871	-12900	-2.481	Pass
60		5199.9605	-39500	-7.596	Pass
70		5199.9779	-22100	-4.250	Pass

Model Number	UAP-AC-LR				
Test Mode	Mode 2				
Frequency	5200 MHz				
Date of Test	06/08/2015			Test Site	TE02
Temp. (°C)	Voltage (Vac)	Measured Frequency (MHz)	Delta Frequency (Hz)	Tolerance (ppm)	Result (Pass/Fail)
20	138	5200.0408	40800	7.846	Pass
	120	5200.0119	11900	2.288	Pass
	102	5199.9772	-22800	-4.385	Pass

Note: The manufacturer's frequency stability specification is better than 30ppm.

Model Number	UAP-AC-LR				
Test Mode	Mode 2				
Frequency	5785 MHz				
Date of Test	06/08/2015			Test Site	TE02
Temp. (°C)	Voltage (Vac)	Measured Frequency (MHz)	Delta Frequency (Hz)	Tolerance (ppm)	Result (Pass/Fail)
-10	120	5785.0960	96000	16.595	Pass
0		5785.0913	91300	15.782	Pass
10		5785.0339	33900	5.860	Pass
20		5785.0923	92300	15.955	Pass
30		5785.0258	25800	4.460	Pass
40		5785.0042	4200	0.726	Pass
50		5784.9951	-4900	-0.847	Pass
60		5784.9369	-63100	-10.908	Pass
70		5784.9549	-45100	-7.796	Pass

Model Number	UAP-AC-LR				
Test Mode	Mode 2				
Frequency	5785 MHz				
Date of Test	06/08/2015			Test Site	TE02
Temp. (°C)	Voltage (Vac)	Measured Frequency (MHz)	Delta Frequency (Hz)	Tolerance (ppm)	Result (Pass/Fail)
20	138	5785.0135	13500	2.334	Pass
	120	5785.0042	4200	0.726	Pass
	102	5784.9412	-58800	-10.164	Pass

Note: The manufacturer's frequency stability specification is better than 30ppm.

Model Number	UAP-AC-LR				
Test Mode	Mode 3				
Frequency	5200 MHz				
Date of Test	06/08/2015			Test Site	TE02
Temp. (°C)	Voltage (Vac)	Measured Frequency (MHz)	Delta Frequency (Hz)	Tolerance (ppm)	Result (Pass/Fail)
-10	120	5200.0525	52500	10.096	Pass
0		5200.0058	5800	1.115	Pass
10		5200.0790	79000	15.192	Pass
20		5200.0738	73800	14.192	Pass
30		5200.0477	47700	9.173	Pass
40		5200.0119	11900	2.288	Pass
50		5199.9666	-33400	-6.423	Pass
60		5199.9249	-75100	-14.442	Pass
70		5199.9679	-32100	-6.173	Pass

Model Number	UAP-AC-LR				
Test Mode	Mode 3				
Frequency	5200 MHz				
Date of Test	06/08/2015			Test Site	TE02
Temp. (°C)	Voltage (Vac)	Measured Frequency (MHz)	Delta Frequency (Hz)	Tolerance (ppm)	Result (Pass/Fail)
20	138	5200.0946	94600	18.192	Pass
	120	5200.0119	11900	2.288	Pass
	102	5199.9416	-58400	-11.231	Pass

Note: The manufacturer's frequency stability specification is better than 30ppm.

Model Number	UAP-AC-LR				
Test Mode	Mode 3				
Frequency	5785 MHz				
Date of Test	06/08/2015			Test Site	TE02
Temp. (°C)	Voltage (Vac)	Measured Frequency (MHz)	Delta Frequency (Hz)	Tolerance (ppm)	Result (Pass/Fail)
-10	120	5785.0242	24200	4.183	Pass
0		5785.0694	69400	11.997	Pass
10		5785.0171	17100	2.956	Pass
20		5785.0112	11200	1.936	Pass
30		5785.0248	24800	4.287	Pass
40		5785.0042	4200	0.726	Pass
50		5784.9628	-37200	-6.430	Pass
60		5784.9228	-77200	-13.345	Pass
70		5784.9892	-10800	-1.867	Pass

Model Number	UAP-AC-LR				
Test Mode	Mode 2				
Frequency	5785 MHz				
Date of Test	06/08/2015			Test Site	TE02
Temp. (°C)	Voltage (Vac)	Measured Frequency (MHz)	Delta Frequency (Hz)	Tolerance (ppm)	Result (Pass/Fail)
20	138	5785.0880	88000	15.212	Pass
	120	5785.0042	4200	0.726	Pass
	102	5784.9681	-31900	-5.514	Pass

Note: The manufacturer's frequency stability specification is better than 30ppm.

Model Number	UAP-AC-LR				
Test Mode	Mode 4				
Frequency	5230 MHz				
Date of Test	06/08/2015			Test Site	TE02
Temp. (°C)	Voltage (Vac)	Measured Frequency (MHz)	Delta Frequency (Hz)	Tolerance (ppm)	Result (Pass/Fail)
-10	120	5230.0507	50700	9.694	Pass
0		5230.0989	98900	18.910	Pass
10		5230.0538	53800	10.287	Pass
20		5230.0224	22400	4.283	Pass
30		5230.0202	20200	3.862	Pass
40		5230.0044	4400	0.841	Pass
50		5229.9678	-32200	-6.157	Pass
60		5229.9474	-52600	-10.057	Pass
70		5229.9531	-46900	-8.967	Pass

Model Number	UAP-AC-LR				
Test Mode	Mode 4				
Frequency	5230 MHz				
Date of Test	06/08/2015			Test Site	TE02
Temp. (°C)	Voltage (Vac)	Measured Frequency (MHz)	Delta Frequency (Hz)	Tolerance (ppm)	Result (Pass/Fail)
20	138	5230.0289	28900	5.526	Pass
	120	5230.0044	4400	0.841	Pass
	102	5229.9014	-98600	-18.853	Pass

Note: The manufacturer's frequency stability specification is better than 30ppm.

Model Number	UAP-AC-LR				
Test Mode	Mode 4				
Frequency	5795 MHz				
Date of Test	06/08/2015			Test Site	TE02
Temp. (°C)	Voltage (Vac)	Measured Frequency (MHz)	Delta Frequency (Hz)	Tolerance (ppm)	Result (Pass/Fail)
-10	120	5795.0462	46200	7.972	Pass
0		5795.0315	31500	5.436	Pass
10		5795.0836	83600	14.426	Pass
20		5795.0254	25400	4.383	Pass
30		5795.0636	63600	10.975	Pass
40		5795.0020	2000	0.345	Pass
50		5794.9152	-84800	-14.633	Pass
60		5794.9879	-12100	-2.088	Pass
70		5794.962	-38000	-6.557	Pass

Model Number	UAP-AC-LR				
Test Mode	Mode 4				
Frequency	5795 MHz				
Date of Test	06/08/2015			Test Site	TE02
Temp. (°C)	Voltage (Vac)	Measured Frequency (MHz)	Delta Frequency (Hz)	Tolerance (ppm)	Result (Pass/Fail)
20	138	5795.0294	29400	5.073	Pass
	120	5795.0020	2000	0.345	Pass
	102	5794.9484	-51600	-8.904	Pass

Note: The manufacturer's frequency stability specification is better than 30ppm.

Model Number	UAP-AC-LR				
Test Mode	Mode 5				
Frequency	5210 MHz				
Date of Test	06/08/2015			Test Site	TE02
Temp. (°C)	Voltage (Vac)	Measured Frequency (MHz)	Delta Frequency (Hz)	Tolerance (ppm)	Result (Pass/Fail)
-10	120	5210.0873	87300	16.756	Pass
0		5210.0318	31800	6.104	Pass
10		5210.0107	10700	2.054	Pass
20		5210.0682	68200	13.090	Pass
30		5210.0446	44600	8.560	Pass
40		5210.0480	48000	9.213	Pass
50		5209.9799	-20100	-3.858	Pass
60		5209.9876	-12400	-2.380	Pass
70		5209.9866	-13400	-2.572	Pass

Model Number	UAP-AC-LR				
Test Mode	Mode 5				
Frequency	5210 MHz				
Date of Test	06/08/2015			Test Site	TE02
Temp. (°C)	Voltage (Vac)	Measured Frequency (MHz)	Delta Frequency (Hz)	Tolerance (ppm)	Result (Pass/Fail)
20	138	5210.0821	82100	15.758	Pass
	120	5210.0480	48000	9.213	Pass
	102	5209.9316	-68400	-13.129	Pass

Note: The manufacturer's frequency stability specification is better than 30ppm.

Model Number	UAP-AC-LR				
Test Mode	Mode 5				
Frequency	5775 MHz				
Date of Test	06/08/2015			Test Site	TE02
Temp. (°C)	Voltage (Vac)	Measured Frequency (MHz)	Delta Frequency (Hz)	Tolerance (ppm)	Result (Pass/Fail)
-10	120	5775.0227	22700	3.931	Pass
0		5775.0819	81900	14.182	Pass
10		5775.0764	76400	13.229	Pass
20		5775.0918	91800	15.896	Pass
30		5775.0115	11500	1.991	Pass
40		5775.0110	11000	1.905	Pass
50		5774.9207	-79300	-13.732	Pass
60		5774.9767	-23300	-4.035	Pass
70		5774.935	-65000	-11.255	Pass

Model Number	UAP-AC-LR				
Test Mode	Mode 5				
Frequency	5775 MHz				
Date of Test	06/08/2015			Test Site	TE02
Temp. (°C)	Voltage (Vac)	Measured Frequency (MHz)	Delta Frequency (Hz)	Tolerance (ppm)	Result (Pass/Fail)
20	138	5775.0196	19600	3.394	Pass
	120	5775.0110	11000	1.905	Pass
	102	5774.9143	-85700	-14.840	Pass

Note: The manufacturer's frequency stability specification is better than 30ppm.

11 Antenna Requirement

11.1. 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.

11.2. Antenna Connector Construction

The antenna used in this product is Dual band tri pol antenna. And the maximum Gain of this antenna is only 3 dBi.