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March 27, 2014

ARRIS Group, Inc.
3871 Lakefield Drive, Suite 300
Suwanee, GA 30024

Dear Ed Champion,

Enclosed is the EMC Wireless test report for compliance testing of the ARRIS Group, Inc., SGB6700 AC as tested to the requirements of Title 47 of the CFR, Ch. 1 (10-1-06 ed.), Title 47 of the CFR, Part 15, Subpart B and ICES-003, Issue 5 August 2012 for Unintentional Radiators, and Part 15.407 Subpart E and RSS-210, Issue 8, Dec. 2010 for Intentional Radiators.

Thank you for using the services of MET Laboratories, Inc. If you have any questions regarding these results or if MET can be of further service to you, please feel free to contact me.

Sincerely yours,
MET LABORATORIES, INC.

Jennifer Warnell
Documentation Department

Reference: (\ARRIS Group, Inc.\EMC41043A-FCC407 Rev. 5 (UNII 1))

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Electromagnetic Compatibility Criteria
Test Report

for the

ARRIS Group, Inc.
Model SGB6700 AC

Tested under
the Certification Rules
contained in
Title 47 of the CFR, Part 15, Subpart B& ICES-003
for Unintentional Radiators
and
15.407 Subpart E & & RSS-210, Issue 8, Dec. 2010
for Intentional Radiators

MET Report: EMC41043A-FCC407 Rev. 5 (UNII 1)

March 27, 2014

Prepared For:

ARRIS Group, Inc.
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Prepared By:
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914 W. Patapsco Ave
Baltimore, MD 21230

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Electromagnetic Compatibility Criteria
Test Report

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15.407 Subpart E & & RSS-210, Issue 8, Dec. 2010
for Intentional Radiators

Surinder Singh, Project Engineer
Electromagnetic Compatibility Lab

Jennifer Warnell
Documentation Department

Engineering Statement: The measurements shown in this report were made in accordance with the procedures indicated, and the emissions from this equipment were found to be within the limits applicable. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them. It is further stated that upon the basis of the measurements made, the equipment tested is capable of operation in accordance with the requirements of Parts 15B, 15.407, of the FCC Rules under normal use and maintenance.

Asad Bajwa,
Director, Electromagnetic Compatibility Lab

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Report Status Sheet

Revision	Report Date	Reason for Revision
∅	March 18, 2014	Initial Issue.
1	March 18, 2014	Editorial correction.
2	March 21, 2014	Revised to reflect engineer corrections.
3	March 25, 2014	Editorial correction.
4	March 26, 2014	Editorial correction.
5	March 27, 2014	Editorial corrections

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List of Terms and Abbreviations

AC	**A**lternating **C**urrent
ACF	**A**ntenna **C**orrection **F**actor
Cal	**Cal**ibration
d	**M**easurement **D**istance
dB	**D**eci**b**els
dBµA	**D**eci**b**els above one **micro**amp
dBµV	**D**eci**b**els above one **micro**volt
dBµA/m	**D**eci**b**els above one **micro**amp **per m**eter
dBµV/m	**D**eci**b**els above one **micro**volt **per m**eter
DC	**D**irect **C**urrent
E	**E**lectric Field
DSL	**D**igital **S**ubscriber **L**ine
ESD	**E**lectro**s**tatic **D**ischarge
EUT	**E**quipment **U**nder **T**est
f	**F**requency
FCC	**F**ederal **C**ommunications **C**ommission
GRP	**G**round **R**eference **P**lane
H	Magnetic Field
HCP	**H**orizontal **C**oupling **P**lane
Hz	**H**ert**z**
IEC	**I**nternational **E**lectrotechnical **C**ommission
kHz	**k**ilo**h**ert**z**
kPa	**k**ilo**pa**scal
kV	**k**ilo**v**olt
LISN	**L**ine **I**mpedance **S**tabilization **N**etwork
MHz	**M**ega**h**ertz
µH	**microh**enry
µ	**microf**arad
µs	**micros**econds
PRF	**P**ulse **R**epetition **F**requency
RF	**R**adio **F**requency
RMS	**R**oot-**M**ean-**S**quare
TWT	**T**raveling **W**ave **T**ube
V/m	**V**olts **per m**eter
VCP	**V**ertical **C**oupling **P**lane

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I. Executive Summary

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A. Purpose of Test

An EMC evaluation was performed to determine compliance of the ARRIS Group, Inc. SGB6700 AC, with the requirements of Part 15, §15.407. All references are to the most current version of Title 47 of the Code of Federal Regulations in effect. In accordance with §2.1033, the following data is presented in support of the Certification of the SGB6700 AC. ARRIS Group, Inc. should retain a copy of this document which should be kept on file for at least two years after the manufacturing of the SGB6700 AC, has been **permanently** discontinued.

B. Executive Summary

The following tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 15, §15.407, in accordance with ARRIS Group, Inc., purchase order number 0008075143. All tests were conducted using measurement procedure ANSI C63.4-2003.

FCC Reference	IC Reference RSS-210 Issue 8: 2010; RSS-GEN Issue 3: 2010	Description	Results
47 CFR Part 15.107 (a)	ICES-003 Issue 5 August 2012	Conducted Emission Limits for a Class B Digital Device	Compliant
47 CFR Part 15.109 (a)	ICES-003 Issue 5 August 2012	Radiated Emission Limits for a Class B Digital Device	Compliant
Title 47 of the CFR, Part 15 §15.203	N/A	Antenna Requirement	Compliant
Title 47 of the CFR, Part 15 §15.207(a)	RSS-GEN (7.2.4)	Conducted Emission Limits	Compliant
Title 47 of the CFR, Part 15 §15.403 (i)	RSS-Gen (4.6)	26dB Occupied Bandwidth	Compliant
		99% Occupied Bandwidth	Compliant
Title 47 of the CFR, Part 15 §15.407 (a)(2)	RSS-210 (A9.2)	Conducted Transmitter Output Power	Compliant
Title 47 of the CFR, Part 15 §15.407 (a)(2)	RSS-210 (A8.2)	Power Spectral Density	Compliant
Title 47 of the CFR, Part 15 §15.407 (a)(6)		Peak Excursion	Compliant
Title 47 of the CFR, Part 15 §15.407 (b)(2), (3), (5), (6)	RSS-210 (A9.2)	Undesirable Emissions (15.205/15.209 - General Field Strength Limits (Restricted Bands and Radiated Emission Limits)	Compliant
Title 47 of the CFR, Part 15 §15.407(f)	RSS-102 (4.1)	RF Exposure	Compliant

Table 1. Executive Summary of EMC Part 15.407 ComplianceTesting

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II. Equipment Configuration

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A. Overview

MET Laboratories, Inc. was contracted by ARRIS Group, Inc. to perform testing on the SGB6700 AC, under ARRIS Group, Inc.'s purchase order number 0008075143.

This document describes the test setups, test methods, required test equipment, and the test limit criteria used to perform compliance testing of the ARRIS Group, Inc. SGB6700 AC.

The results obtained relate only to the item(s) tested.

Model(s) Tested:	SGB6700 AC	
Model(s) Covered:	SGB6700 AC	
EUT Specifications:	Primary Power: 120 VAC, 60 Hz	
	FCC ID: UIDSBG6700 IC: 6670A-SbG6700	
	Type of Modulations:	CCK, OFDM, MCS
	Equipment Code:	NII
	Peak RF Output Power:	16.93 (20 MHz Legacy mode) 16.93 (40 MHz Legacy mode) 16.97 (80 MHz Legacy mode)
	EUT Frequency Ranges:	5180-5240 MHz (20 MHz channel) 5190-5230 MHz (40 MHz channel) 5210-5210 MHz (80 MHz channel)
Analysis:	The results obtained relate only to the item(s) tested.	
Environmental Test Conditions:	Temperature: 15-35º C	
	Relative Humidity: 30-60%	
	Barometric Pressure: 860-1060 mbar	
Evaluated by:	Surinder Singh	
Report Date(s):	March 27, 2014	

Table 2. EUT Summary

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B. References

CFR 47, Part 15, Subpart B	Electromagnetic Compatibility: Criteria for Radio Frequency Devices
CFR 47, Part 15, Subpart E	Unlicensed National Information Infrastructure Devices (UNII)
RSS-210, Issue 8, Dec. 2010	Low-power Licence-exempt Radiocommunications Devices (All Frequency Bands): Category I Equipment
RSS-GEN, Issue 3, Dec. 2010	General Requirements and Information for the Certification of Radio Apparatus
ICES-003, Issue 5 August 2012	Information Technology Equipment (ITE) — Limits and methods of measurement
ANSI C63.4:2003	Methods and Measurements of Radio-Noise Emissions from Low-Voltage Electrical And Electronic Equipment in the Range of 9 kHz to 40 GHz
ISO/IEC 17025:2005	General Requirements for the Competence of Testing and Calibration Laboratories
ANSI C63.10-2009	American National Standard for Testing Unlicensed Wireless Devices

Table 3. References

C. Test Site

All testing was performed at MET Laboratories, Inc., 914 W. Patapsco Ave., Baltimore, MD 21230. All equipment used in making physical determinations is accurate and bears recent traceability to the National Institute of Standards and Technology.

Radiated Emissions measurements were performed in a 3 meter semi-anechoic chamber (equivalent to an Open Area Test Site). In accordance with §2.948(a)(3), a complete site description is contained at MET Laboratories.

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D. Description of Test Sample

The ARRIS Group, Inc. SGB6700 AC, Equipment Under Test (EUT), is an indoor2.4/5GHz indoor data gateway. Device operates in a 3x3 MIMO mode.

E. Equipment Configuration

Ref. ID	Name / Description	Model Number	Part Number	Serial Number	Revision
N/A	SBG6700-ac	SBG6700-ac	N/A	N/A	N/A

Table 4. Equipment Configuration

F. Support Equipment

Ref. ID	Name / Description	Manufacturer	Model Number
N/A	Laptop	Dell	Vostro
N/A	Laptop Mouse	Logitech	N/A
N/A	RF Cable	N/A	N/A
N/A	Ethernet	N/A	N/A
N/A	12 Vdc PS	N/A	N/A

Table 5. Support Equipment

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G. Ports and Cabling Information

Ref. ID	Port Name on EUT	Cable Description	Qty.	Length (m)	Shielded (Y/N)	Termination Point
1	Data	RG6 Coax	1	8	Yes	B. TX
2	12 Vdc	DC Connector	1	2	No	(230v/50hz)
	Ethernet	Ethernet	1	2	No	N/A

Table 6. Ports and Cabling Information

H. Mode of Operation

The provided test tool will configure the SBG6700 for operation at each required test mode. Test modes have been previously supplied for quote.

I. Method of Monitoring EUT Operation

The measured emission value is over the specified FCC/IC limits.

J. Modifications

a) Modifications to EUT

No modifications were made to the EUT.

b) Modifications to Test Standard

No modifications were made to the test standard.

K. Disposition of EUT

The test sample including all support equipment submitted to the Electro-Magnetic Compatibility Lab for testing was returned to ARRIS Group, Inc. upon completion of testing.

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III. Electromagnetic Compatibility Criteria for Unintentional Radiators

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Electromagnetic Compatibility Criteria

§ 15.107 Conducted Emissions Limits

Test Requirement(s):

15.107 (a) Except for Class A digital devices, for equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in Table 7. Compliance with this provision shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminals.

15.107 (b) For a Class A digital device that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in Table 7. Compliance with this provision shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminals. The lower limit applies at the band edges.

Frequency range (MHz)	Class A Conducted Limits (dBµV)		*Class B Conducted Limits (dBµV)	
	Quasi-Peak	Average	Quasi-Peak	Average
* 0.15- 0.45	79	66	66 - 56	56 - 46
0.45 - 0.5	79	66	56	46
0.5 - 30	73	60	60	50
Note 1 — The lower limit shall apply at the transition frequencies. Note 2 — The limit decreases linearly with the logarithm if the frequency in the range 0.15 MHz to 0.5 MHz.				

Table 7. Conducted Limits for Radio Frequency Devices calculated from FCC Part 15 Subsections 15.107(a) (b)

Test Procedures:

The EUT was placed on a non-metallic table, 80 cm above the ground plane inside a semi-anechoic chamber. The method of testing, test conditions, and test procedures of ANSI C63.4 were used. The EUT was powered through a 50Ω/50µH LISN. An EMI receiver, connected to the measurement port of the LISN, scanned the frequency range from 150 kHz to 30 MHz in order to find the peak conducted emissions. All peak emissions within 6 dB of the limit were re-measured using a quasi-peak and/or average detector as appropriate.

Test Results:

The EUT was compliant with the Class B requirement(s) of this section. Measured emissions were below applicable limits.

Test Engineer(s): Djed Mouada

Test Date(s): 01/31/14

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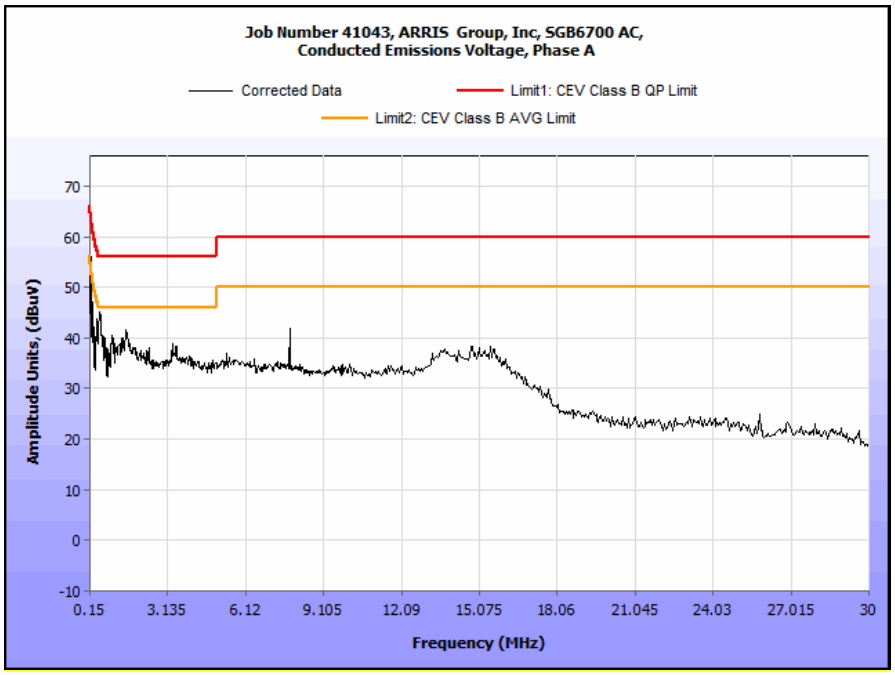
Conducted Emissions - Voltage, AC Power, Phase Line (120 VAC, 60 Hz)

Frequency (MHz)	Uncorrected Meter Reading (dBµV) QP	Cable Loss (dB)	Corrected Measurement (dBµV) QP	Limit (dBµV) QP	Margin (dB) QP	Uncorrected Meter Reading (dBµV) Avg.	Cable Loss (dB)	Corrected Measurement (dBµV) AVG	Limit (dBµV) AVG	Margin (dB) AVG
0.187	50.89	0	50.89	64.17	-13.28	35.74	0	35.74	54.17	-18.43
0.494	40.22	0	40.22	56.1	-15.88	26.89	0	26.89	46.1	-19.21
0.792	31.71	0	31.71	56	-24.29	19.35	0	19.35	46	-26.65
1.518	37.59	0	37.59	56	-18.41	24.69	0	24.69	46	-21.31
13.8	31.8	0	31.8	60	-28.2	25.79	0	25.79	50	-24.21
22.48	18.34	0	18.34	60	-41.66	12.35	0	12.35	50	-37.65

Table 8. Conducted Emissions - Voltage, AC Power, Phase Line (120 VAC, 60 Hz)



Plot 1. Conducted Emissions, Phase Line Plot

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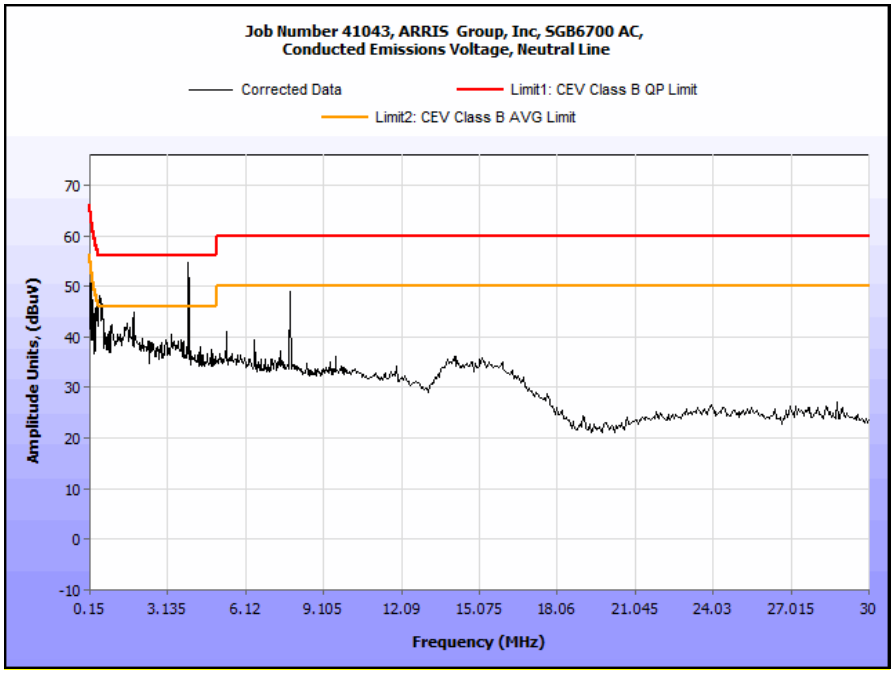
Conducted Emissions - Voltage, AC Power, Neutral Line (120 VAC, 60 Hz)

Frequency (MHz)	Uncorrected Meter Reading (dBµV) QP	Cable Loss (dB)	Corrected Measurement (dBµV) QP	Limit (dBµV) QP	Margin (dB) QP	Uncorrected Meter Reading (dBµV) Avg.	Cable Loss (dB)	Corrected Measurement (dBµV) AVG	Limit (dBµV) AVG	Margin (dB) AVG
0.151	44.1	0	44.1	65.95	-21.85	28.82	0	28.82	55.95	-27.13
0.419	46.5	0	46.5	57.47	-10.97	31.35	0	31.35	47.47	-16.12
0.545	45.82	0	45.82	56	-10.18	34.74	0	34.74	46	-11.26
1.455	35.7	0	35.7	56	-20.3	25.08	0	25.08	46	-20.92
11.3	27.84	0	27.84	60	-32.16	21.47	0	21.47	50	-28.53
29.69	1.877	0	1.877	60	-58.123	13.44	0	13.44	50	-36.56

Table 9. Conducted Emissions - Voltage, AC Power, Neutral Line (120 VAC, 60 Hz)



Plot 2. Conducted Emissions, Neutral Line Plot

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Radiated Emission Limits

§ 15.109 Radiated Emissions Limits

Test Requirement(s): **15.109 (a)** Except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the Class B limits expressed in Table 10.

15.109 (b) The field strength of radiated emissions from a Class A digital device, as determined at a distance of 10 meters, shall not exceed the Class A limits expressed in Table 10.

Frequency (MHz)	Field Strength (dBµV/m)	
	§15.109 (b), Class A Limit (dBµV) @ 10m	§15.109 (a),Class B Limit (dBµV) @ 3m
30 - 88	39.00	40.00
88 - 216	43.50	43.50
216 - 960	46.40	46.00
Above 960	49.50	54.00

Table 10. Radiated Emissions Limits calculated from FCC Part 15, §15.109 (a) (b)

Test Procedures: The EUT was placed on a non-metallic table, 80 cm above the ground plane inside a semi-anechoic chamber. The method of testing and test conditions of ANSI C63.4 were used. An antenna was located 3 m from the EUT on an adjustable mast. A pre-scan was first performed in order to find prominent radiated emissions. For final emissions measurements at each frequency of interest, the EUT was rotated and the antenna height was varied between 1 m and 4 m in order to maximize the emission. Measurements in both horizontal and vertical polarities were made and the data was recorded. Unless otherwise specified, measurements were made using a quasi-peak detector with a 120 kHz bandwidth.

Test Results: The EUT was compliant with the Class B requirement(s) of this section. Measured emissions were below applicable limits.

Test Engineer(s): Surinder Singh

Test Date(s): 02/08/14

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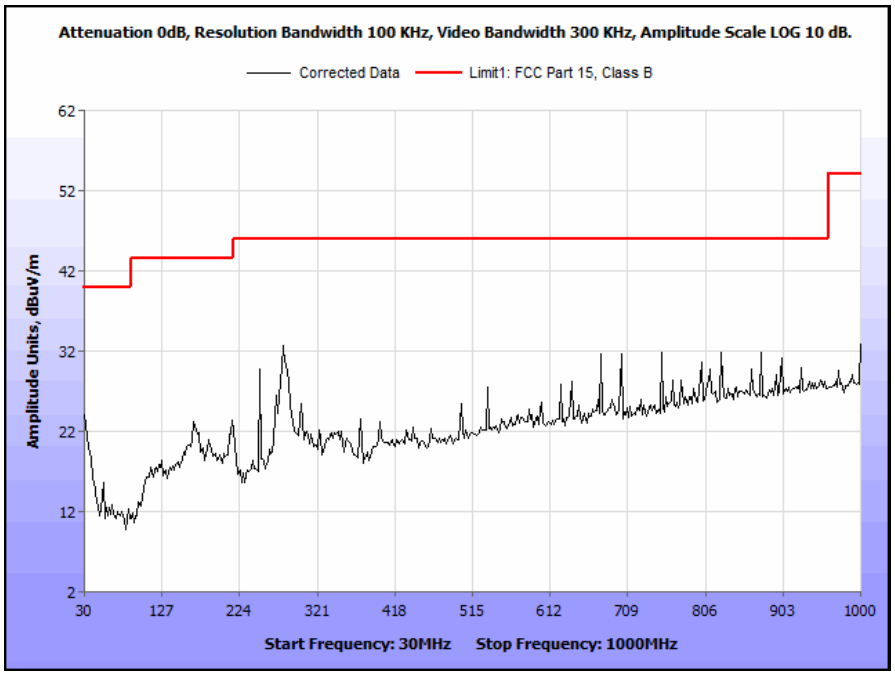
Radiated Emissions Limits Test Results, Class B

Frequency (MHz)	EUT Azimuth (Degrees)	Antenna Polarity (H/V)	Antenna HEIGHT (m)	Uncorrected Amplitude (dBµV)	Antenna Correction Factor (dB) (+)	Cable Loss (dB) (+)	Distance Correction Factor (dB) (-)	Corrected Amplitude (dBµV/m)	Limit (dBµV/m)	Margin (dB)
166.34	34	H	1.05	14.89	12.37	0.94	0.00	28.20	43.50	-15.30
166.34	83	V	1.09	16.93	12.37	0.94	0.00	30.24	43.50	-13.26
278.47	129	H	1.18	12.04	13.80	1.42	0.00	27.26	46.00	-18.74
278.47	16	V	1.12	13.25	13.80	1.42	0.00	28.47	46.00	-17.53
503.27	19	H	1.05	11.95	18.10	1.88	0.00	31.93	46.00	-14.07
503.27	289	V	1.12	11.99	18.10	1.88	0.00	31.97	46.00	-14.03
675.39	229	H	1.19	10.30	20.60	2.15	0.00	33.05	46.00	-12.95
675.39	12	V	1.09	10.40	20.60	2.15	0.00	33.15	46.00	-12.85
751.39	198	H	1.03	8.37	21.23	2.41	0.00	32.01	46.00	-13.99
751.39	210	V	1.08	8.49	21.23	2.41	0.00	32.13	46.00	-13.87
926.38	118	H	1.12	7.21	23.13	2.85	0.00	33.19	46.00	-12.81
926.38	293	V	1.11	7.22	23.13	2.85	0.00	33.20	46.00	-12.80

Table 11. Radiated Emissions Limits, Test Results, 30 MHz – 1 GHz



Plot 3. Radiated Emissions, 30 MHz - 1 GHz

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IV. Electromagnetic Compatibility Criteria for Intentional Radiators

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Electromagnetic Compatibility Criteria for Intentional Radiators

§ 15.203 Antenna Requirement

Test Requirement: **§ 15.203:** An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

The structure and application of the EUT were analyzed to determine compliance with Section 15.203 of the Rules. Section 15.203 states that the subject device must meet at least one of the following criteria:

a.) Antenna must be permanently attached to the unit.

b.) Antenna must use a unique type of connector to attach to the EUT.

c.) Unit must be professionally installed. Installer shall be responsible for verifying that the correct antenna is employed with the unit.

Results: The EUT as tested is compliant the criteria of §15.203. The EUT has an internal antenna.

Antennas	Peak Gain (over 5150-5250MHz)
Chain A0	2.968274036
Chain A1	3.828800136
Chain A2	3.507536326
3Tx Composite	8.21

The 3Tx Composite gain was calculated based upon the formula given in KDB 662911 D01 Multiple Transmitter Output v02r01 for antenna gains that are not equal and each transmit antenna is driven by only one spatial stream.

Test Engineer(s): Surinder Singh

Test Date(s): 02/22/14

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Electromagnetic Compatibility Criteria for Intentional Radiators

§ 15.207 Conducted Emissions Limits

Test Requirement(s): **§ 15.207 (a):** For an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30MHz, shall not exceed the limits in the following table, as measured using a 50 μH/50 Σ line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

Frequency range (MHz)	§ 15.207(a), Conducted Limit (dBμV)	
	Quasi-Peak	Average
* 0.15- 0.45	66 - 56	56 - 46
0.45 - 0.5	56	46
0.5 - 30	60	50

Table 12. Conducted Limits for Intentional Radiators from FCC Part 15 § 15.207(a)

Test Procedure: The EUT was placed on a 0.8 m-high wooden table inside a screen room. The EUT was situated such that the back of the EUT was 0.4 m from one wall of the vertical ground plane, and the remaining sides of the EUT were no closer than 0.8 m from any other conductive surface. The EUT was powered from a 50 Ω/50 μH Line Impedance Stabilization Network (LISN). The EMC receiver scanned the frequency range from 150 kHz to 30 MHz. Conducted Emissions measurements were made in accordance with *ANSI C63.4-2003 "Methods and Measurements of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9kHz to 40 GHz"*. The measurements were performed over the frequency range of 0.15 MHz to 30 MHz using a 50 Ω/50 μH LISN as the input transducer to an EMC/field intensity meter. For the purpose of this testing, the transmitter was turned on. Scans were performed with the transmitter on and worse case emission channel was selected to demonstrate the compliance with FCC 15.207 requirement.

Test Results: The EUT was compliant with this requirement.

Test Engineer(s): Surinder Singh

Test Date(s): 02/24/14

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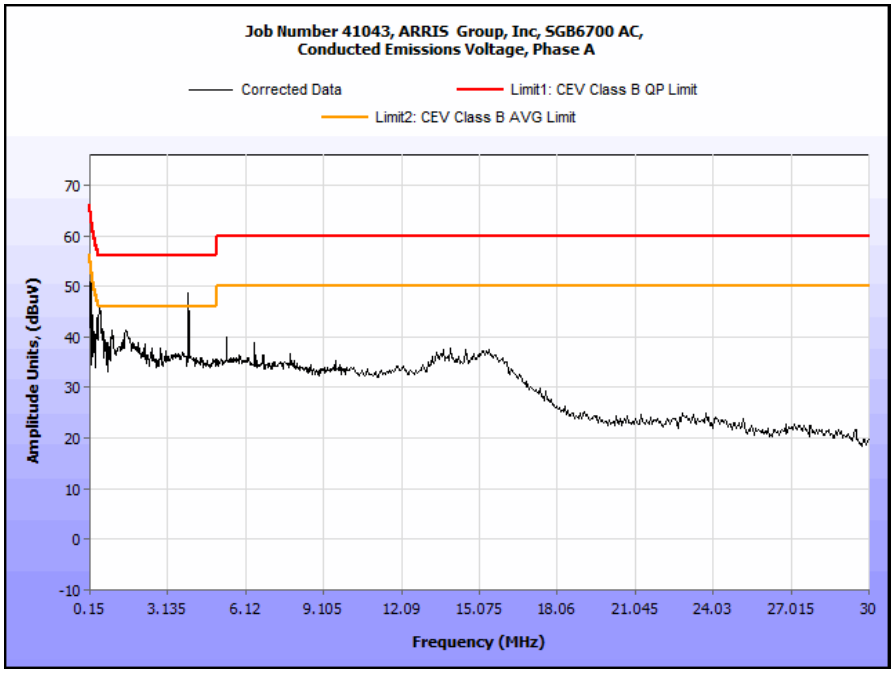
15.207(a) Conducted Emissions Test Results

Frequency (MHz)	Uncorrected Meter Reading (dBuV) QP	Cable Loss (dB)	Corrected Measurement (dBuV) QP	Limit (dBuV) QP	Margin (dB) QP	Uncorrected Meter Reading (dBuV) Avg.	Cable Loss (dB)	Corrected Measurement (dBuV) AVG	Limit (dBuV) AVG	Margin (dB) AVG
0.186	47.76	0	47.76	64.21	-16.45	34.2	0	34.2	54.21	-20.01
0.512	40.09	0	40.09	56	-15.91	29.03	0	29.03	46	-16.97
1.492	35.82	0	35.82	56	-20.18	23.46	0	23.46	46	-22.54
3.926	35.5	0.11	35.61	56	-20.39	20.27	0.11	20.38	46	-25.62
7.775	30.49	0.17	30.66	60	-29.34	22.76	0.17	22.93	50	-27.07
24.892	27.38	0.17	27.55	60	-32.45	19.03	0.17	19.2	50	-30.8

Table 13. Conducted Emissions, 15.207(a), Phase Line, Test Results



Plot 4. Conducted Emissions, 15.207(a), Phase Line, Low Channel

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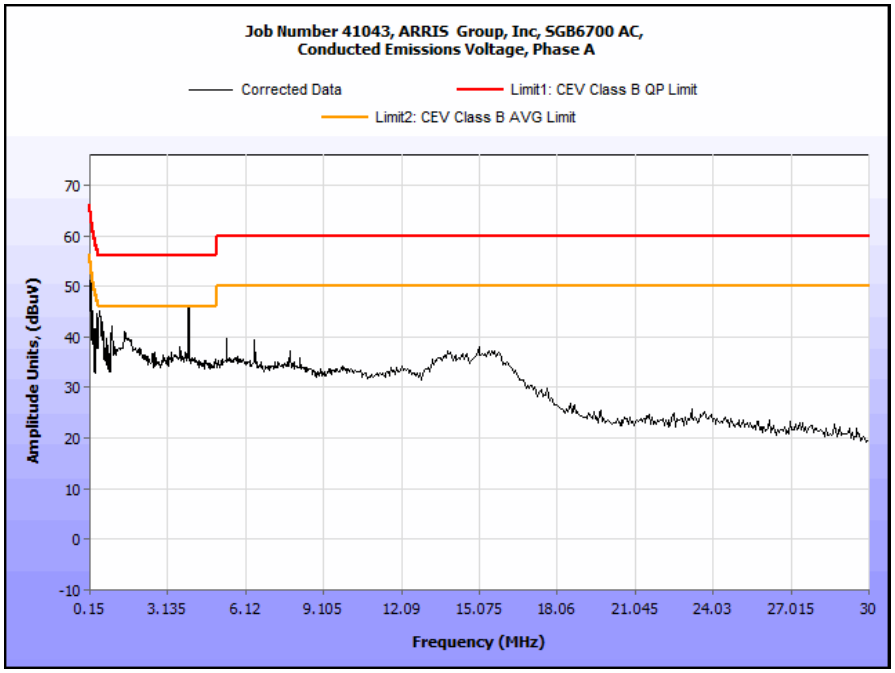
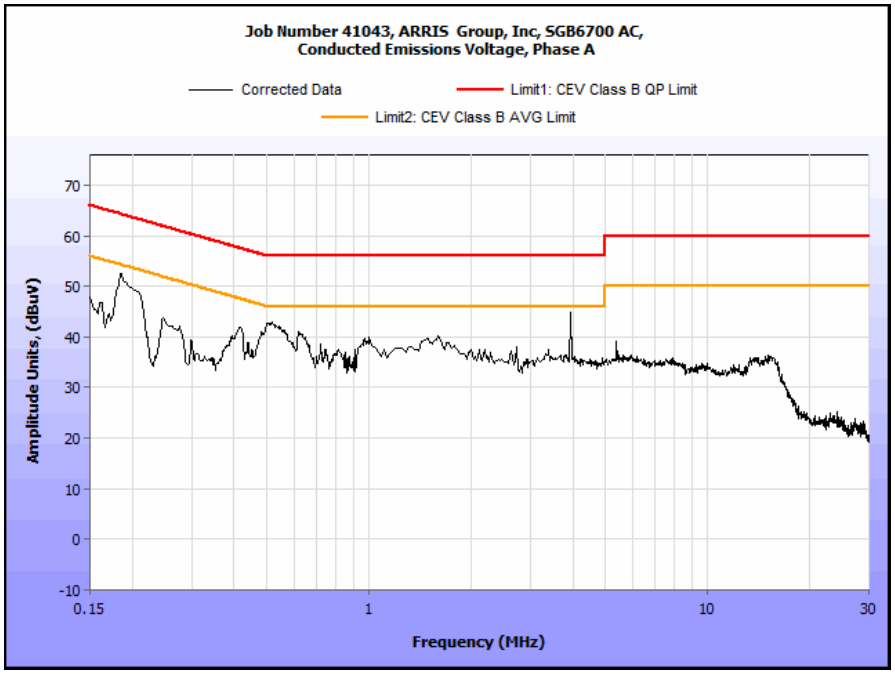


Plot 5. Conducted Emissions, 15.207(a), Phase Line, Mid Channel



Plot 6. Conducted Emissions, 15.207(a), Phase Line, High Channel

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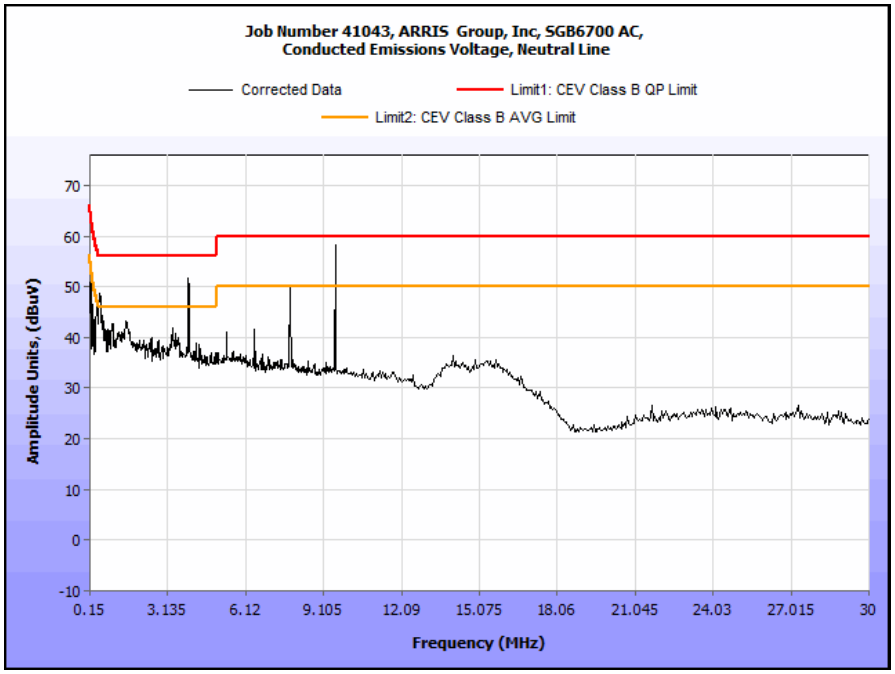
15.207(a) Conducted Emissions Test Results

Frequency (MHz)	Uncorrected Meter Reading (dBuV) QP	Cable Loss (dB)	Corrected Measurement (dBuV) QP	Limit (dBuV) QP	Margin (dB) QP	Uncorrected Meter Reading (dBuV) Avg.	Cable Loss (dB)	Corrected Measurement (dBuV) AVG	Limit (dBuV) AVG	Margin (dB) AVG
0.154	50.69	0	50.69	65.78	-15.09	41.14	0	41.14	55.78	-14.64
0.418	45.64	0	45.64	57.49	-11.85	32.65	0	32.65	47.49	-14.84
1.232	35.57	0	35.57	56	-20.43	24.42	0	24.42	46	-21.58
3.927	49.41	0.11	49.52	56	-6.48	24.9	0.11	25.01	46	-20.99
7.818	48.48	0.17	48.65	60	-11.35	26	0.17	26.17	50	-23.83
25.16	20.29	0.17	20.46	60	-39.54	15.57	0.17	15.74	50	-34.26

Table 14. Conducted Emissions, 15.207(a), Neutral Line, Test Results



Plot 7. Conducted Emissions, 15.207(a), Neutral Line, Low Channel

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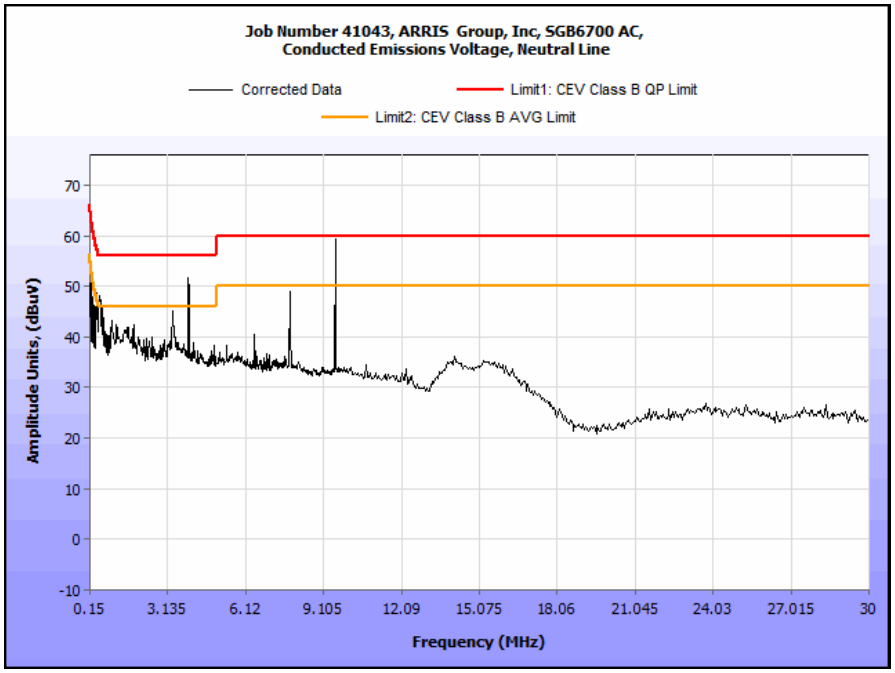
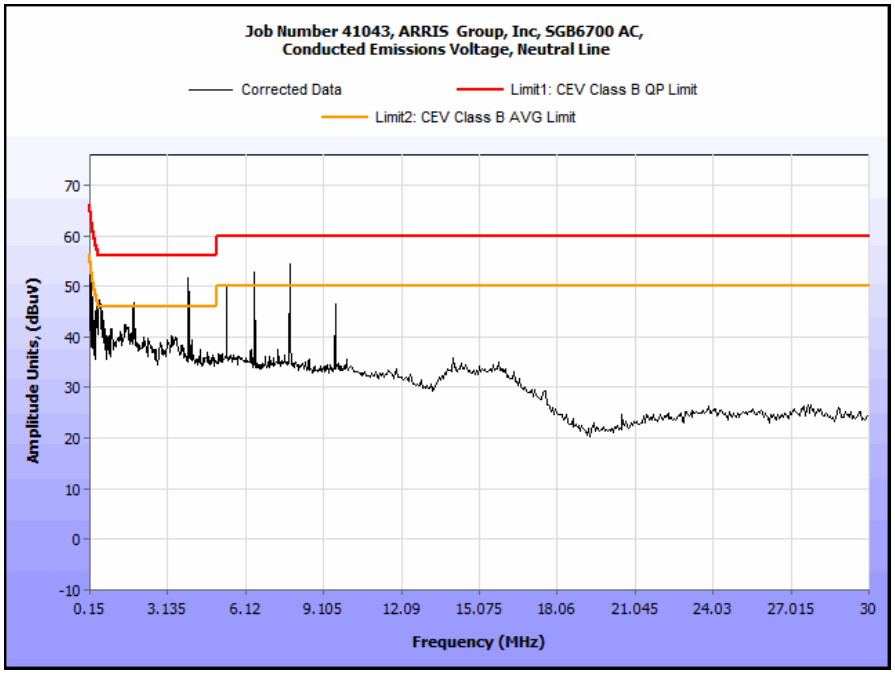


Plot 8. Conducted Emissions, 15.207(a), Neutral Line, Mid Channel



Plot 9. Conducted Emissions, 15.207(a), Neutral Line, High Channel

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Electromagnetic Compatibility Criteria for Intentional Radiators

§ 15. 407(c) 26dB Bandwidth

Test Requirements: **§ 15.407 (i):** For purposes of this subpart the emission bandwidth shall be determined by measuring the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, that are 26 dB down relative to the maximum level of the modulated carrier. Determination of the emissions bandwidth is based on the use of measurement instrumentation employing a peak detector function with an instrument resolution bandwidth approximately equal to 1.0 percent of the emission bandwidth of the device under measurement.

Test Procedure: The transmitter was set to both operating frequencies at the highest output power and connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured with the spectrum analyzer using a RBW approximately equal to 1% of the total emission bandwidth, VBW > RBW. The 26 dB Bandwidth was measured and recorded.

Test Results The 26 dB Bandwidth was compliant with the requirements of this section and was determined from the plots on the following pages.

Test Engineer(s): Surinder Singh

Test Date(s): 02/26/14

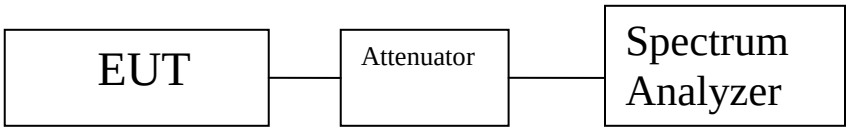

Figure 1. Occupied Bandwidth, Test Setup

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Occupied Bandwidth Test Results

Occupied Bandwidth		
Carrier Channel	**Frequency (MHz)**	**Measured 26 dB Bandwidth (MHz)**
Low	5180	20.002
Mid	5200	19.981
High	5240	20.000

Table 15. 26 dB Occupied Bandwidth, Test Results, 802.11a 20 MHz, Ant. 0

Occupied Bandwidth		
Carrier Channel	**Frequency (MHz)**	**Measured 26 dB Bandwidth (MHz)**
Low	5180	20.014
Mid	5200	19.915
High	5240	20.012

Table 16. 26 dB Occupied Bandwidth, Test Results, 802.11a 20 MHz, Ant. 1

Occupied Bandwidth		
Carrier Channel	**Frequency (MHz)**	**Measured 26 dB Bandwidth (MHz)**
Low	5180	19.971
Mid	5200	19.974
High	5240	19.992

Table 17. 26 dB Occupied Bandwidth, Test Results, 802.11a 20 MHz, Ant. 2

Occupied Bandwidth		
Carrier Channel	**Frequency (MHz)**	**Measured 26 dB Bandwidth (MHz)**
Low	5180	20.361
Mid	5200	20.201
High	5240	20.420

Table 18. 26 dB Occupied Bandwidth, Test Results, 802.11ac 20 MHz, Ant. 0

Occupied Bandwidth		
Carrier Channel	**Frequency (MHz)**	**Measured 26 dB Bandwidth (MHz)**
Low	5180	20.264
Mid	5200	20.432
High	5240	20.254

Table 19. 26 dB Occupied Bandwidth, Test Results, 802.11ac 20 MHz, Ant. 1

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Occupied Bandwidth		
Carrier Channel	**Frequency (MHz)**	**Measured 26 dB Bandwidth (MHz)**
Low	5180	20.288
Mid	5200	20.188
High	5240	20.290

Table 20. 26 dB Occupied Bandwidth, Test Results, 802.11ac 20 MHz, Ant. 2

Occupied Bandwidth		
Carrier Channel	**Frequency (MHz)**	**Measured 26 dB Bandwidth (MHz)**
Low	5180	20.231
Mid	5200	20.479
High	5240	20.191

Table 21. 26 dB Occupied Bandwidth, Test Results, 802.11ac 20 MHz, Ant. 0, MIMO

Occupied Bandwidth		
Carrier Channel	**Frequency (MHz)**	**Measured 26 dB Bandwidth (MHz)**
Low	5180	20.231
Mid	5200	20.289
High	5240	20.555

Table 22. 26 dB Occupied Bandwidth, Test Results, 802.11ac 20 MHz, Ant. 1, MIMO

Occupied Bandwidth		
Carrier Channel	**Frequency (MHz)**	**Measured 26 dB Bandwidth (MHz)**
Low	5180	20.090
Mid	5200	20.349
High	5240	20.330

Table 23. 26 dB Occupied Bandwidth, Test Results, 802.11ac 20 MHz, Ant. 2, MIMO

Occupied Bandwidth		
Carrier Channel	**Frequency (MHz)**	**Measured 26 dB Bandwidth (MHz)**
Low	5180	20.234
Mid	5200	20.246
High	5240	20.253

Table 24. 26 dB Occupied Bandwidth, Test Results, 802.11n 20 MHz, Ant. 0

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Occupied Bandwidth		
Carrier Channel	**Frequency (MHz)**	**Measured 26 dB Bandwidth (MHz)**
Low	5180	20.347
Mid	5200	20.116
High	5240	20.539

Table 25. 26 dB Occupied Bandwidth, Test Results, 802.11n 20 MHz, Ant. 1

Occupied Bandwidth		
Carrier Channel	**Frequency (MHz)**	**Measured 26 dB Bandwidth (MHz)**
Low	5180	20.563
Mid	5200	20.268
High	5240	20.283

Table 26. 26 dB Occupied Bandwidth, Test Results, 802.11n 20 MHz, Ant. 2

Occupied Bandwidth		
Carrier Channel	**Frequency (MHz)**	**Measured 26 dB Bandwidth (MHz)**
Low	5180	20.269
Mid	5200	20.097
High	5240	20.626

Table 27. 26 dB Occupied Bandwidth, Test Results, 802.11n 20 MHz, Ant. 0, MIMO

Occupied Bandwidth		
Carrier Channel	**Frequency (MHz)**	**Measured 26 dB Bandwidth (MHz)**
Low	5180	20.168
Mid	5200	20.131
High	5240	20.115

Table 28. 26 dB Occupied Bandwidth, Test Results, 802.11n 20 MHz, Ant. 1, MIMO

Occupied Bandwidth		
Carrier Channel	**Frequency (MHz)**	**Measured 26 dB Bandwidth (MHz)**
Low	5180	19.939
Mid	5200	20.234
High	5240	20.297

Table 29. 26 dB Occupied Bandwidth, Test Results, 802.11n 20 MHz, Ant. 2, MIMO

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Occupied Bandwidth		
Carrier Channel	**Frequency (MHz)**	**Measured 26 dB Bandwidth (MHz)**
Low	5190	39.996
High	5230	39.363

Table 30. 26 dB Occupied Bandwidth, Test Results, 802.11a 40 MHz, Ant. 0

Occupied Bandwidth		
Carrier Channel	**Frequency (MHz)**	**Measured 26 dB Bandwidth (MHz)**
Low	5190	39.430
High	5230	39.345

Table 31. 26 dB Occupied Bandwidth, Test Results, 802.11a 40 MHz, Ant. 1

Occupied Bandwidth		
Carrier Channel	**Frequency (MHz)**	**Measured 26 dB Bandwidth (MHz)**
Low	5190	39.341
High	5230	39.129

Table 32. 26 dB Occupied Bandwidth, Test Results, 802.11a 40 MHz, Ant. 2

Occupied Bandwidth		
Carrier Channel	**Frequency (MHz)**	**Measured 26 dB Bandwidth (MHz)**
Low	5190	39.938
High	5230	39.862

Table 33. 26 dB Occupied Bandwidth, Test Results, 802.11ac 40 MHz, Ant. 0, MIMO

Occupied Bandwidth		
Carrier Channel	**Frequency (MHz)**	**Measured 26 dB Bandwidth (MHz)**
Low	5190	39.913
High	5230	38.841

Table 34. 26 dB Occupied Bandwidth, Test Results, 802.11ac 40 MHz, Ant. 1, MIMO

Occupied Bandwidth		
Carrier Channel	**Frequency (MHz)**	**Measured 26 dB Bandwidth (MHz)**
Low	5190	39.495
High	5230	39.862

Table 35. 26 dB Occupied Bandwidth, Test Results, 802.11ac 40 MHz, Ant. 2, MIMO

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Occupied Bandwidth		
Carrier Channel	**Frequency (MHz)**	**Measured 26 dB Bandwidth (MHz)**
Low	5190	39.779
High	5230	39.657

Table 36. 26 dB Occupied Bandwidth, Test Results, 802.11n 40 MHz, Ant. 0

Occupied Bandwidth		
Carrier Channel	**Frequency (MHz)**	**Measured 26 dB Bandwidth (MHz)**
Low	5190	39.684
High	5230	39.116

Table 37. 26 dB Occupied Bandwidth, Test Results, 802.11n 40 MHz, Ant. 1

Occupied Bandwidth		
Carrier Channel	**Frequency (MHz)**	**Measured 26 dB Bandwidth (MHz)**
Low	5190	40.042
High	5230	39.364

Table 38. 26 dB Occupied Bandwidth, Test Results, 802.11n 40 MHz, Ant. 2

Occupied Bandwidth		
Carrier Channel	**Frequency (MHz)**	**Measured 26 dB Bandwidth (MHz)**
Low	5190	39.958
High	5230	39.674

Table 39. 26 dB Occupied Bandwidth, Test Results, 802.11n 40 MHz, Ant. 0, MIMO

Occupied Bandwidth		
Carrier Channel	**Frequency (MHz)**	**Measured 26 dB Bandwidth (MHz)**
Low	5190	39.285
High	5230	39.284

Table 40. 26 dB Occupied Bandwidth, Test Results, 802.11n 40 MHz, Ant. 1, MIMO

Occupied Bandwidth		
Carrier Channel	**Frequency (MHz)**	**Measured 26 dB Bandwidth (MHz)**
Low	5190	39.550
High	5230	39.128

Table 41. 26 dB Occupied Bandwidth, Test Results, 802.11n 40 MHz, Ant. 2, MIMO

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Occupied Bandwidth		
Carrier Channel	**Frequency (MHz)**	**Measured 26 dB Bandwidth (MHz)**
--	5210	81.331

Table 42. 26 dB Occupied Bandwidth, Test Results, 802.11a 80 MHz, Ant. 0

Occupied Bandwidth		
Carrier Channel	**Frequency (MHz)**	**Measured 26 dB Bandwidth (MHz)**
--	5210	82.195

Table 43. 26 dB Occupied Bandwidth, Test Results, 802.11a 80 MHz, Ant. 1

Occupied Bandwidth		
Carrier Channel	**Frequency (MHz)**	**Measured 26 dB Bandwidth (MHz)**
--	5210	82.078

Table 44. 26 dB Occupied Bandwidth, Test Results, 802.11a 80 MHz, Ant. 2

Occupied Bandwidth		
Carrier Channel	**Frequency (MHz)**	**Measured 26 dB Bandwidth (MHz)**
--	5210	82.069

Table 45. 26 dB Occupied Bandwidth, Test Results, 802.11ac 80 MHz, Ant. 0

Occupied Bandwidth		
Carrier Channel	**Frequency (MHz)**	**Measured 26 dB Bandwidth (MHz)**
--	5210	82.170

Table 46. 26 dB Occupied Bandwidth, Test Results, 802.11ac 80 MHz, Ant. 1

Occupied Bandwidth		
Carrier Channel	**Frequency (MHz)**	**Measured 26 dB Bandwidth (MHz)**
--	5210	82.207

Table 47. 26 dB Occupied Bandwidth, Test Results, 802.11ac 80 MHz, Ant. 2

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Occupied Bandwidth		
Carrier Channel	**Frequency (MHz)**	**Measured 26 dB Bandwidth (MHz)**
--	5210	81.517

Table 48. 26 dB Occupied Bandwidth, Test Results, 802.11ac 80 MHz, Ant. 0, MIMO

Occupied Bandwidth		
Carrier Channel	**Frequency (MHz)**	**Measured 26 dB Bandwidth (MHz)**
--	5210	81.480

Table 49. 26 dB Occupied Bandwidth, Test Results, 802.11ac 80 MHz, Ant. 1, MIMO

Occupied Bandwidth		
Carrier Channel	**Frequency (MHz)**	**Measured 26 dB Bandwidth (MHz)**
--	5210	813.442

Table 50. 26 dB Occupied Bandwidth, Test Results, 802.11ac 80 MHz, Ant. 2, MIMO

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Occupied Bandwidth		
Carrier Channel	**Frequency (MHz)**	**Measured 99% Bandwidth (MHz)**
Low	5180	16.5673
Mid	5200	16.4691
High	5240	16.5707

Table 51. 99% Occupied Bandwidth, Test Results, 802.11a 20 MHz, Ant. 0

Occupied Bandwidth		
Carrier Channel	**Frequency (MHz)**	**Measured 99% Bandwidth (MHz)**
Low	5180	16.5693
Mid	5200	16.5785
High	5240	16.6449

Table 52. 99% Occupied Bandwidth, Test Results, 802.11a 20 MHz, Ant. 1

Occupied Bandwidth		
Carrier Channel	**Frequency (MHz)**	**Measured 99% Bandwidth (MHz)**
Low	5180	16.6017
Mid	5200	16.4580
High	5240	16.5068

Table 53. 99% Occupied Bandwidth, Test Results, 802.11a 20 MHz, Ant. 2

Occupied Bandwidth		
Carrier Channel	**Frequency (MHz)**	**Measured 99% Bandwidth (MHz)**
Low	5180	17.7079
Mid	5200	17.7154
High	5240	17.7473

Table 54. 99% Occupied Bandwidth, Test Results, 802.11ac 20 MHz, Ant. 0

Occupied Bandwidth		
Carrier Channel	**Frequency (MHz)**	**Measured 99% Bandwidth (MHz)**
Low	5180	17.7266
Mid	5200	17.6750
High	5240	17.6165

Table 55. 99% Occupied Bandwidth, Test Results, 802.11ac 20 MHz, Ant. 1

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Occupied Bandwidth		
Carrier Channel	**Frequency (MHz)**	**Measured 99% Bandwidth (MHz)**
Low	5180	17.6921
Mid	5200	17.6619
High	5240	17.7107

Table 56. 99% Occupied Bandwidth, Test Results, 802.11ac 20 MHz, Ant. 2

Occupied Bandwidth		
Carrier Channel	**Frequency (MHz)**	**Measured 99% Bandwidth (MHz)**
Low	5180	17.6738
Mid	5200	17.6173
High	5240	17.6805

Table 57. 99% Occupied Bandwidth, Test Results, 802.11ac 20 MHz, Ant. 0, MIMO

Occupied Bandwidth		
Carrier Channel	**Frequency (MHz)**	**Measured 99% Bandwidth (MHz)**
Low	5180	17.6646
Mid	5200	17.7126
High	5240	17.6463

Table 58. 99% Occupied Bandwidth, Test Results, 802.11ac 20 MHz, Ant. 1, MIMO

Occupied Bandwidth		
Carrier Channel	**Frequency (MHz)**	**Measured 99% Bandwidth (MHz)**
Low	5180	17.6543
Mid	5200	17.6140
High	5240	17.6643

Table 59. 99% Occupied Bandwidth, Test Results, 802.11ac 20 MHz, Ant. 2, MIMO

Occupied Bandwidth		
Carrier Channel	**Frequency (MHz)**	**Measured 99% Bandwidth (MHz)**
Low	5180	17.7118
Mid	5200	17.6203
High	5240	17.6936

Table 60. 99% Occupied Bandwidth, Test Results, 802.11n 20 MHz, Ant. 0

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Occupied Bandwidth		
Carrier Channel	**Frequency (MHz)**	**Measured 99% Bandwidth (MHz)**
Low	5180	17.6828
Mid	5200	17.6653
High	5240	17.6015

Table 61. 99% Occupied Bandwidth, Test Results, 802.11n 20 MHz, Ant. 1

Occupied Bandwidth		
Carrier Channel	**Frequency (MHz)**	**Measured 99% Bandwidth (MHz)**
Low	5180	17.6280
Mid	5200	17.5913
High	5240	17.6551

Table 62. 99% Occupied Bandwidth, Test Results, 802.11n 20 MHz, Ant. 2

Occupied Bandwidth		
Carrier Channel	**Frequency (MHz)**	**Measured 99% Bandwidth (MHz)**
Low	5180	17.6872
Mid	5200	17.7734
High	5240	17.6383

Table 63. 99% Occupied Bandwidth, Test Results, 802.11n 20 MHz, Ant. 0, MIMO

Occupied Bandwidth		
Carrier Channel	**Frequency (MHz)**	**Measured 99% Bandwidth (MHz)**
Low	5180	17.5921
Mid	5200	17.7274
High	5240	17.6889

Table 64. 99% Occupied Bandwidth, Test Results, 802.11n 20 MHz, Ant. 1, MIMO

Occupied Bandwidth		
Carrier Channel	**Frequency (MHz)**	**Measured 99% Bandwidth (MHz)**
Low	5180	17.8708
Mid	5200	17.6346
High	5240	17.6565

Table 65. 99% Occupied Bandwidth, Test Results, 802.11n 20 MHz, Ant. 2, MIMO

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Occupied Bandwidth		
Carrier Channel	**Frequency (MHz)**	**Measured 99% Bandwidth (MHz)**
Low	5190	36.2048
High	5230	36.3082

Table 66. 99% Occupied Bandwidth, Test Results, 802.11a 40 MHz, Ant. 0

Occupied Bandwidth		
Carrier Channel	**Frequency (MHz)**	**Measured 99.% Bandwidth (MHz)**
Low	5190	36.2554
High	5230	36.4110

Table 67. 99% Occupied Bandwidth, Test Results, 802.11a 40 MHz, Ant. 1

Occupied Bandwidth		
Carrier Channel	**Frequency (MHz)**	**Measured 99% Bandwidth (MHz)**
Low	5190	36.2223
High	5230	36.2794

Table 68. 99% Occupied Bandwidth, Test Results, 802.11a 40 MHz, Ant. 2

Occupied Bandwidth		
Carrier Channel	**Frequency (MHz)**	**Measured 99% Bandwidth (MHz)**
Low	5190	36.3468
High	5230	36.4949

Table 69. 99% Occupied Bandwidth, Test Results, 802.11ac 40 MHz, Ant. 0, MIMO

Occupied Bandwidth		
Carrier Channel	**Frequency (MHz)**	**Measured 99% Bandwidth (MHz)**
Low	5190	36.2664
High	5230	36.3912

Table 70. 99% Occupied Bandwidth, Test Results, 802.11ac 40 MHz, Ant. 1, MIMO

Occupied Bandwidth		
Carrier Channel	**Frequency (MHz)**	**Measured 99% Bandwidth (MHz)**
Low	5190	36.2050
High	5230	36.0387

Table 71. 99% Occupied Bandwidth, Test Results, 802.11ac 40 MHz, Ant. 2, MIMO

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Occupied Bandwidth		
Carrier Channel	**Frequency (MHz)**	**Measured 99% Bandwidth (MHz)**
Low	5190	36.0327
High	5230	36.0524

Table 72. 99% Occupied Bandwidth, Test Results, 802.11n 40 MHz, Ant. 0

Occupied Bandwidth		
Carrier Channel	**Frequency (MHz)**	**Measured 99% Bandwidth (MHz)**
Low	5190	36.2236
High	5230	36.3332

Table 73. 99% Occupied Bandwidth, Test Results, 802.11n 40 MHz, Ant. 1

Occupied Bandwidth		
Carrier Channel	**Frequency (MHz)**	**Measured 99% Bandwidth (MHz)**
Low	5190	36.3960
High	5230	36.2441

Table 74. 99% Occupied Bandwidth, Test Results, 802.11n 40 MHz, Ant. 2

Occupied Bandwidth		
Carrier Channel	**Frequency (MHz)**	**Measured 99% Bandwidth (MHz)**
Low	5190	36.4440
High	5230	36.3459

Table 75. 99% Occupied Bandwidth, Test Results, 802.11n 40 MHz, Ant. 0, MIMO

Occupied Bandwidth		
Carrier Channel	**Frequency (MHz)**	**Measured 99% Bandwidth (MHz)**
Low	5190	36.2438
High	5230	36.3743

Table 76. 99% Occupied Bandwidth, Test Results, 802.11n 40 MHz, Ant. 1, MIMO

Occupied Bandwidth		
Carrier Channel	**Frequency (MHz)**	**Measured 99% Bandwidth (MHz)**
Low	5190	36.2324
High	5230	36.3122

Table 77. 99% Occupied Bandwidth, Test Results, 802.11n 40 MHz, Ant. 2, MIMO

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Occupied Bandwidth		
Carrier Channel	**Frequency (MHz)**	**Measured 99% Bandwidth (MHz)**
36	5210	75.9364

Table 78. 99% Occupied Bandwidth, Test Results, 802.11a 80 MHz, Ant. 0

Occupied Bandwidth		
Carrier Channel	**Frequency (MHz)**	**Measured 99% Bandwidth (MHz)**
36	5210	75.6042

Table 79. 99% Occupied Bandwidth, Test Results, 802.11a 80 MHz, Ant. 1

Occupied Bandwidth		
Carrier Channel	**Frequency (MHz)**	**Measured 99% Bandwidth (MHz)**
36	5210	75.9988

Table 80. 99% Occupied Bandwidth, Test Results, 802.11a 80 MHz, Ant. 2

Occupied Bandwidth		
Carrier Channel	**Frequency (MHz)**	**Measured 99% Bandwidth (MHz)**
36	5210	75.6030

Table 81. 99% Occupied Bandwidth, Test Results, 802.11ac 80 MHz, Ant. 0

Occupied Bandwidth		
Carrier Channel	**Frequency (MHz)**	**Measured 99% Bandwidth (MHz)**
36	5210	76.0270

Table 82. 99% Occupied Bandwidth, Test Results, 802.11ac 80 MHz, Ant. 1

Occupied Bandwidth		
Carrier Channel	**Frequency (MHz)**	**Measured 99% Bandwidth (MHz)**
36	5210	76.0405

Table 83. 99% Occupied Bandwidth, Test Results, 802.11ac 80 MHz, Ant. 2

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Occupied Bandwidth		
Carrier Channel	**Frequency (MHz)**	**Measured 99% Bandwidth (MHz)**
36	5210	75.7215

Table 84. 99% Occupied Bandwidth, Test Results, 802.11ac 80 MHz, Ant. 0, MIMO

Occupied Bandwidth		
Carrier Channel	**Frequency (MHz)**	**Measured 99% Bandwidth (MHz)**
36	5210	75.4809

Table 85. 99% Occupied Bandwidth, Test Results, 802.11ac 80 MHz, Ant. 1, MIMO

Occupied Bandwidth		
Carrier Channel	**Frequency (MHz)**	**Measured 99% Bandwidth (MHz)**
36	5210	75.7964

Table 86. 99% Occupied Bandwidth, Test Results, 802.11ac 80 MHz, Ant. 2, MIMO

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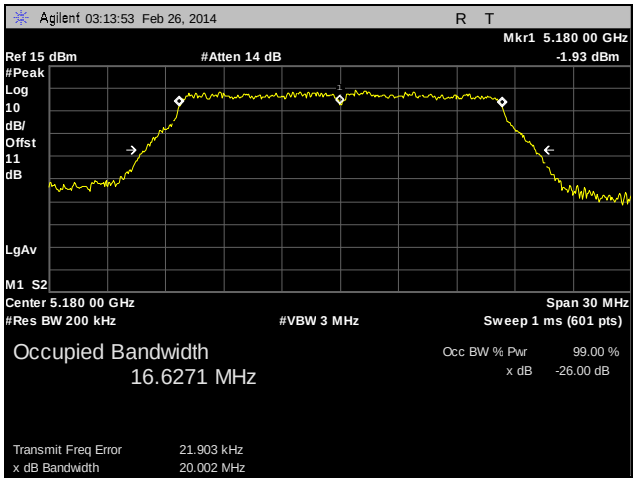
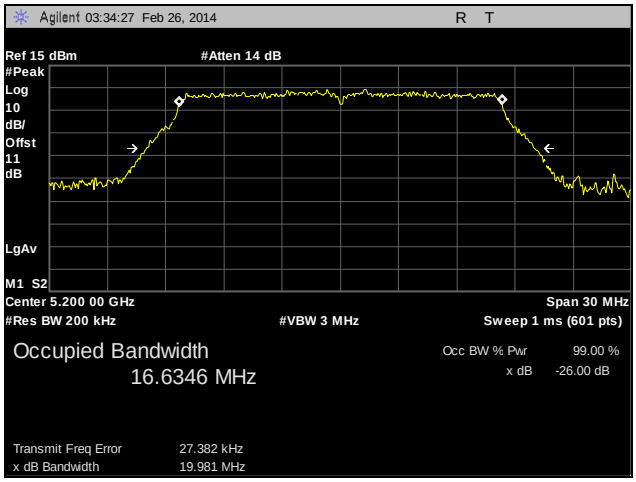
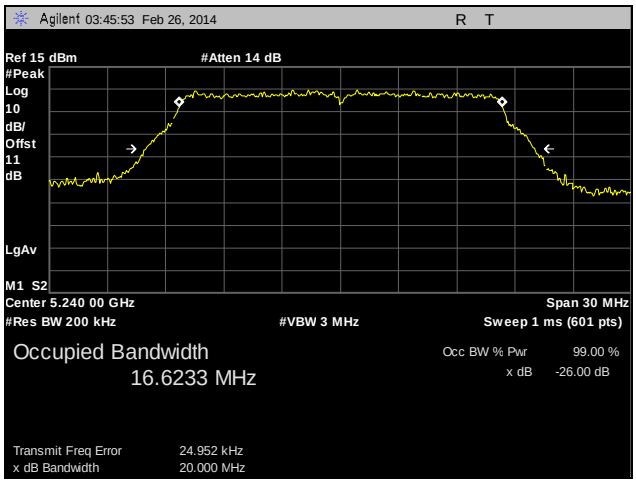
26 dB Occupied Bandwidth Test Results, 802.11a 20 MHz



Plot 10. 26 dB Occupied Bandwidth, Low Channel, 802.11a 20 MHz, Ant. 0



Plot 11. 26 dB Occupied Bandwidth, Mid Channel, 802.11a 20 MHz, Ant. 0



Plot 12. 26 dB Occupied Bandwidth, High Channel, 802.11a 20 MHz, Ant. 0

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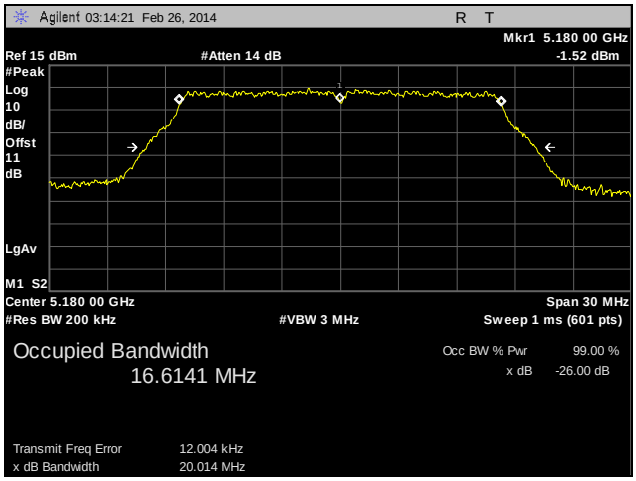
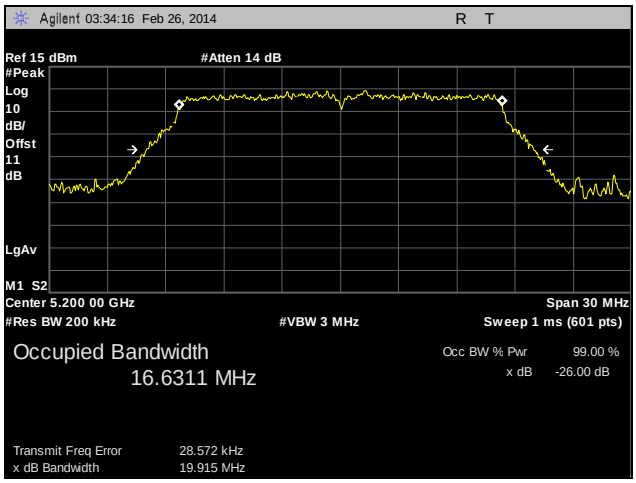
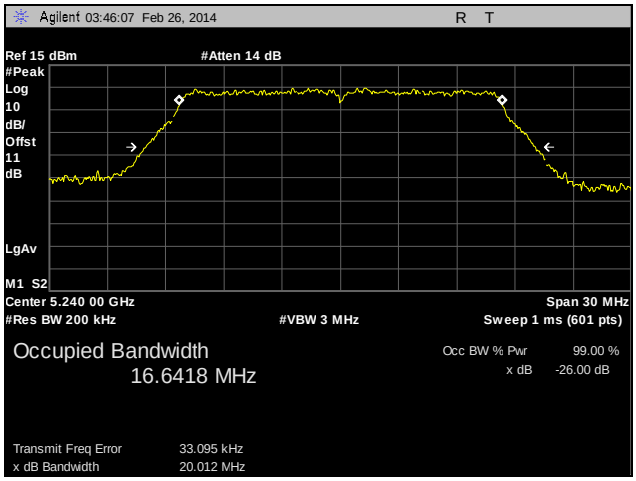


Plot 13. 26 dB Occupied Bandwidth, Low Channel, 802.11a 20 MHz, Ant. 1



Plot 14. 26 dB Occupied Bandwidth, Mid Channel, 802.11a 20 MHz, Ant. 1



Plot 15. 26 dB Occupied Bandwidth, High Channel, 802.11a 20 MHz, Ant. 1

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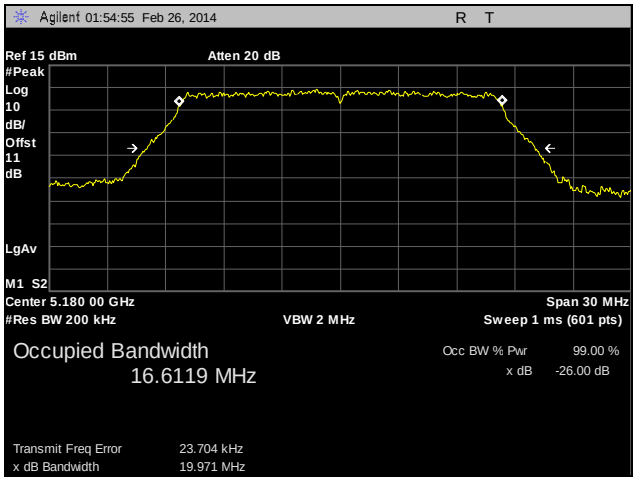
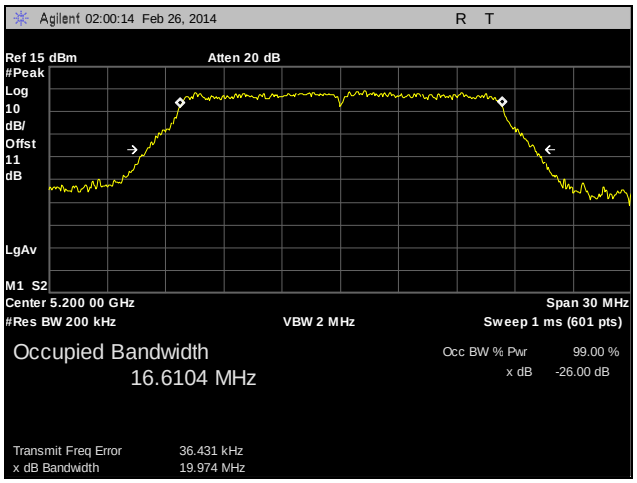
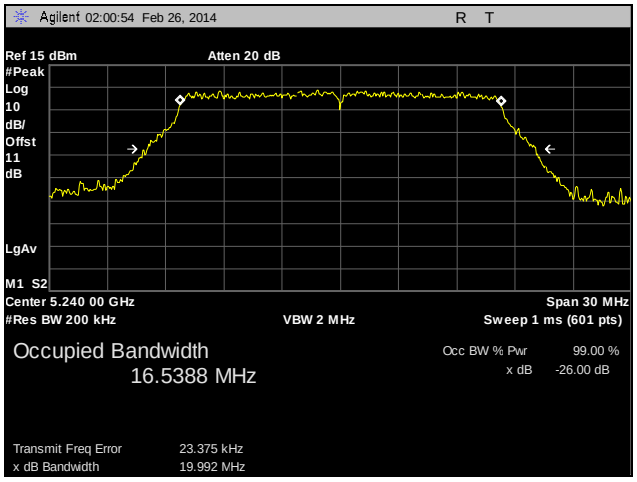


Plot 16. 26 dB Occupied Bandwidth, Low Channel, 802.11a 20 MHz, Ant. 2



Plot 17. 26 dB Occupied Bandwidth, Mid Channel, 802.11a 20 MHz, Ant. 2



Plot 18. 26 dB Occupied Bandwidth, High Channel, 802.11a 20 MHz, Ant. 2

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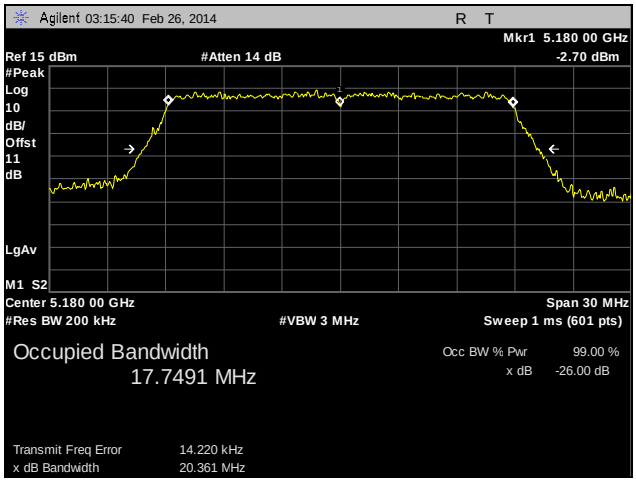
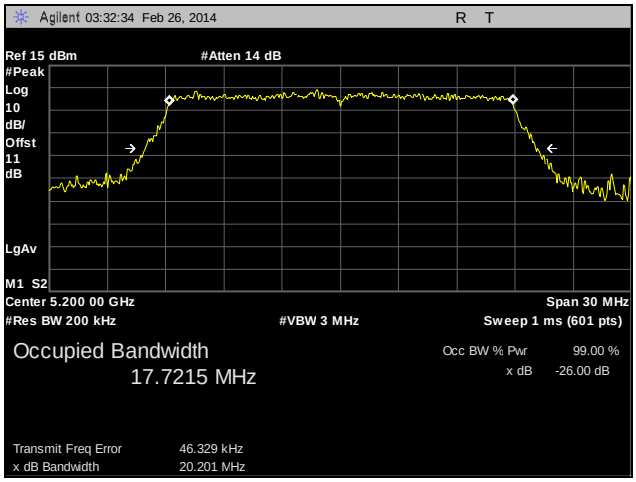
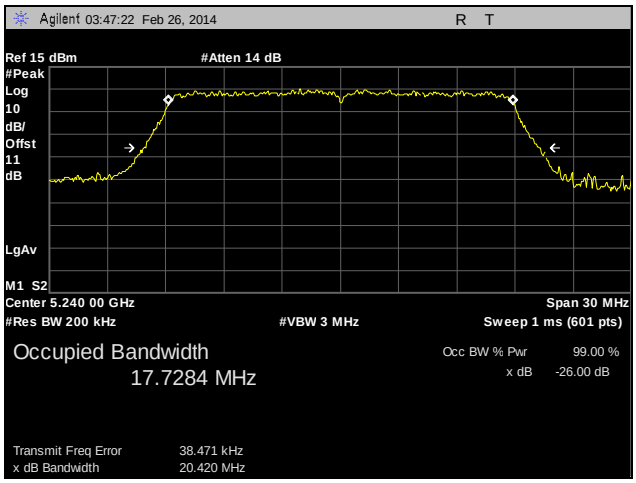
26 dB Occupied Bandwidth Test Results, 802.11ac 20 MHz



Plot 19. 26 dB Occupied Bandwidth, Low Channel, 802.11ac 20 MHz, Ant. 0



Plot 20. 26 dB Occupied Bandwidth, Mid Channel, 802.11ac 20 MHz, Ant. 0



Plot 21. 26 dB Occupied Bandwidth, High Channel, 802.11ac 20 MHz, Ant. 0

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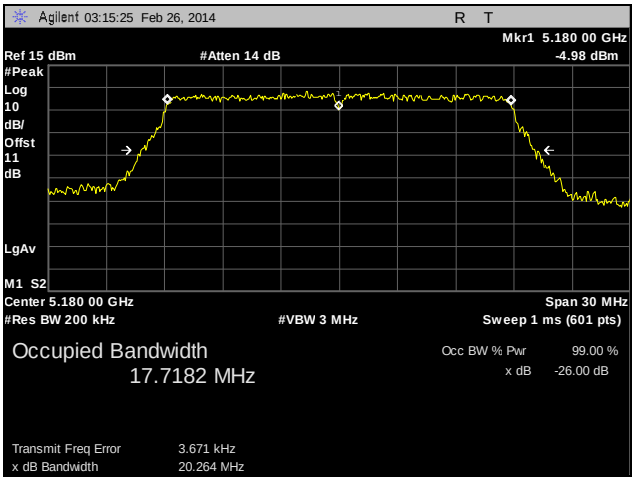
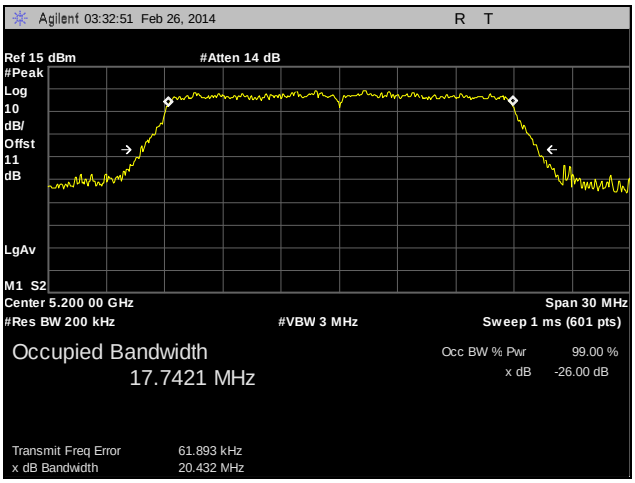
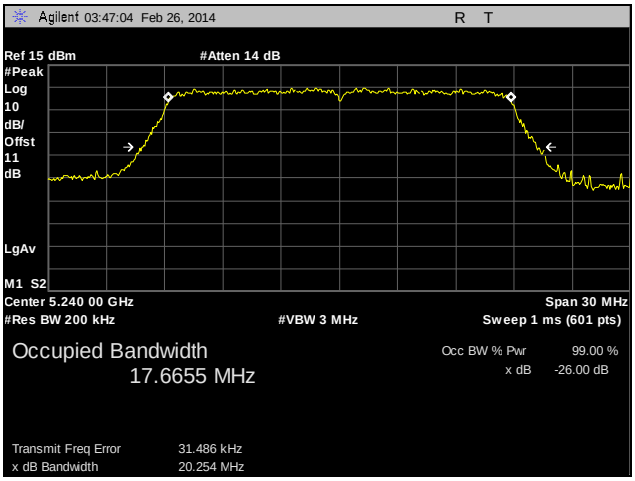


Plot 22. 26 dB Occupied Bandwidth, Low Channel, 802.11ac 20 MHz, Ant. 1



Plot 23. 26 dB Occupied Bandwidth, Mid Channel, 802.11ac 20 MHz, Ant. 1



Plot 24. 26 dB Occupied Bandwidth, High Channel, 802.11ac 20 MHz, Ant. 1

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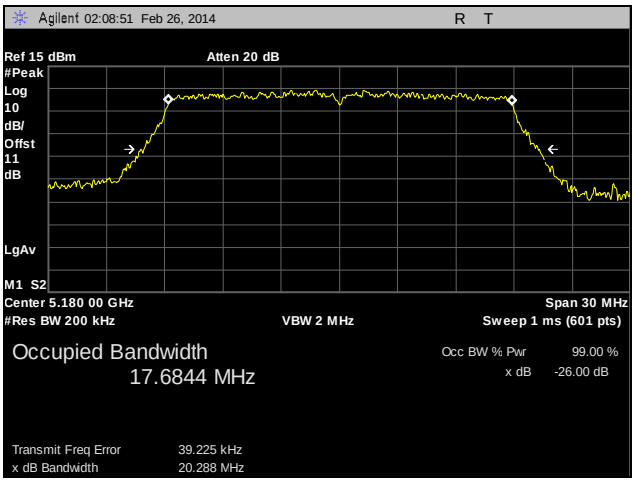
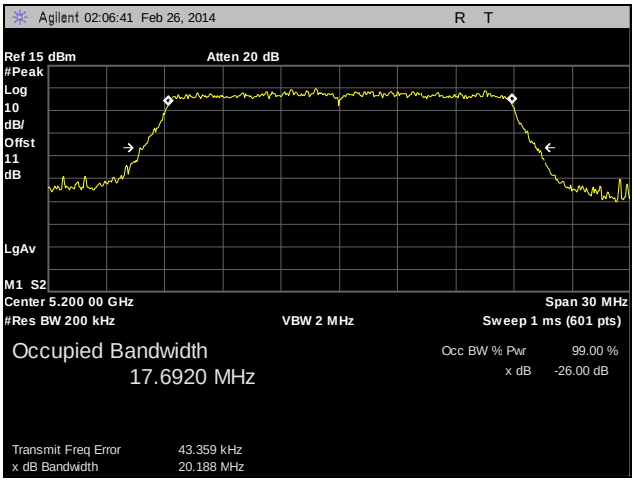
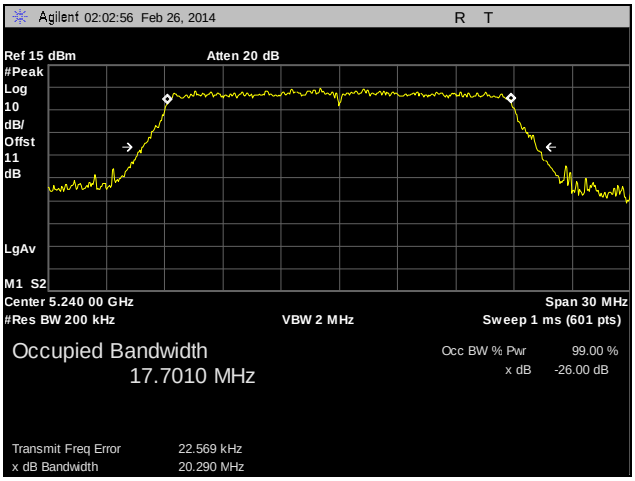


Plot 25. 26 dB Occupied Bandwidth, Low Channel, 802.11ac 20 MHz, Ant. 2



Plot 26. 26 dB Occupied Bandwidth, Mid Channel, 802.11ac 20 MHz, Ant. 2



Plot 27. 26 dB Occupied Bandwidth, High Channel, 802.11ac 20 MHz, Ant. 2

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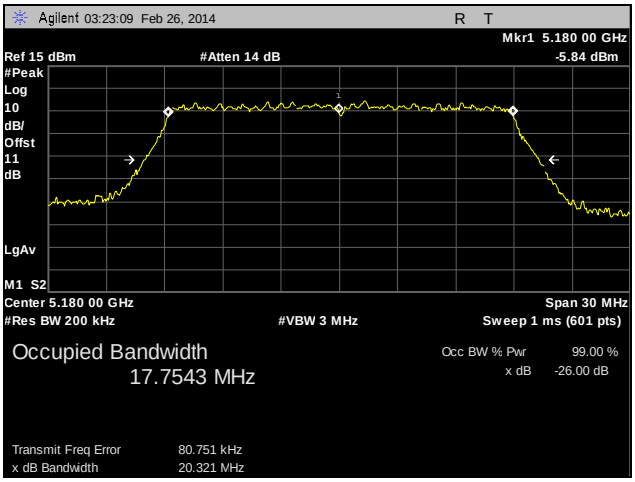
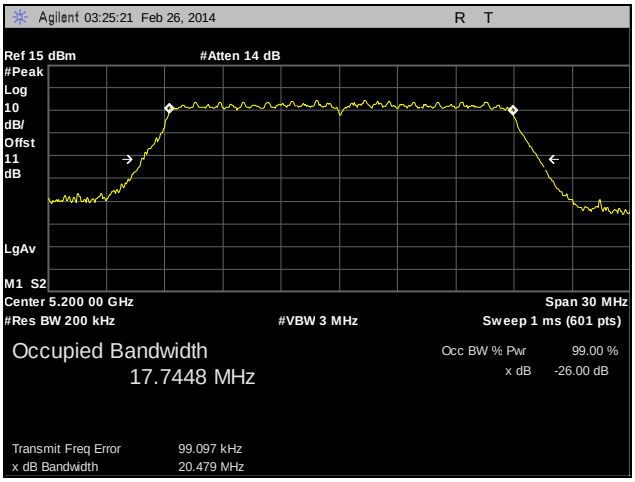
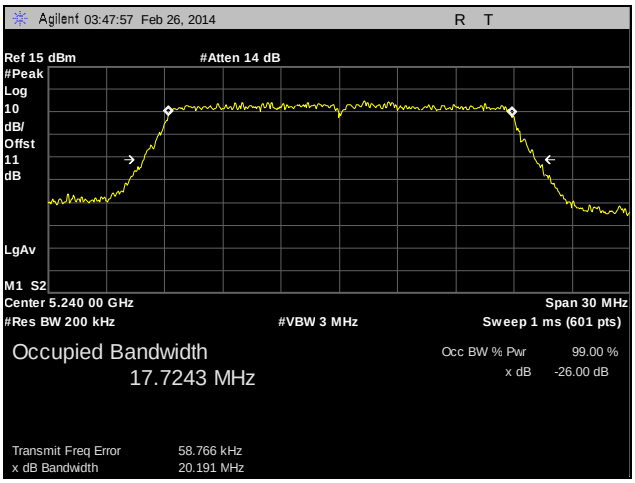
26 dB Occupied Bandwidth Test Results, 802.11ac 20 MHz, MIMO



Plot 28. 26 dB Occupied Bandwidth, Low Channel, 802.11ac 20 MHz, MIMO, Ant. 0



Plot 29. 26 dB Occupied Bandwidth, Mid Channel, 802.11ac 20 MHz, MIMO, Ant. 0



Plot 30. 26 dB Occupied Bandwidth, High Channel, 802.11ac 20 MHz, MIMO, Ant. 0

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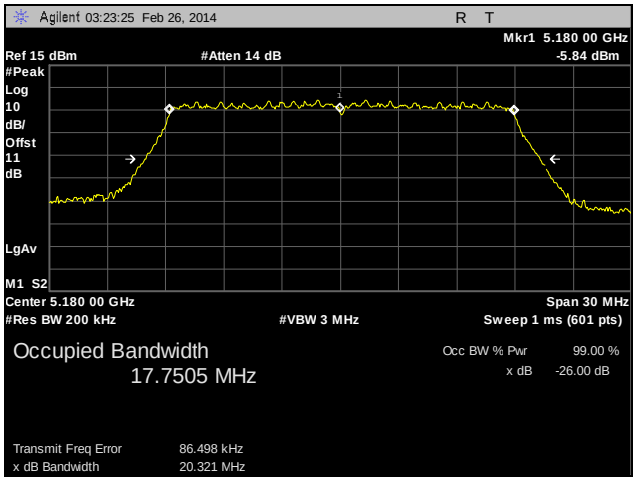
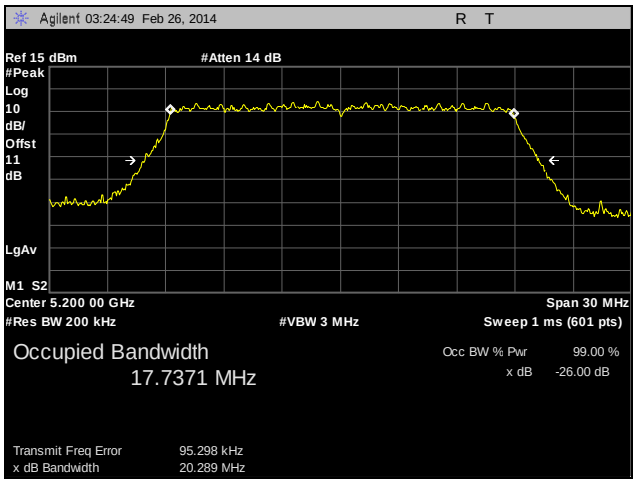
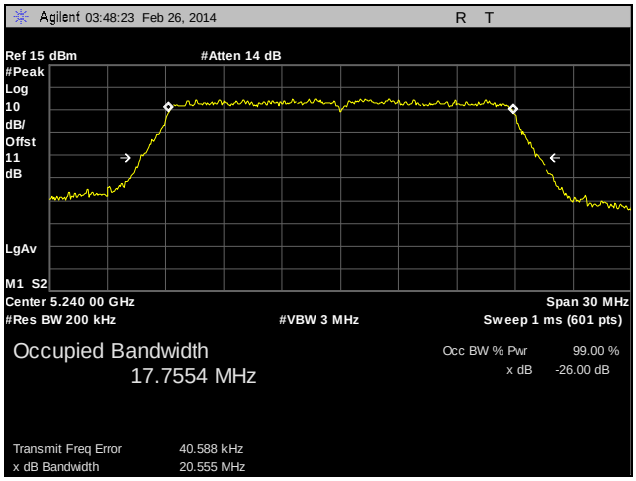


Plot 31. 26 dB Occupied Bandwidth, Low Channel, 802.11ac 20 MHz, MIMO, Ant. 1



Plot 32. 26 dB Occupied Bandwidth, Mid Channel, 802.11ac 20 MHz, MIMO, Ant. 1



Plot 33. 26 dB Occupied Bandwidth, High Channel, 802.11ac 20 MHz, MIMO, Ant. 1

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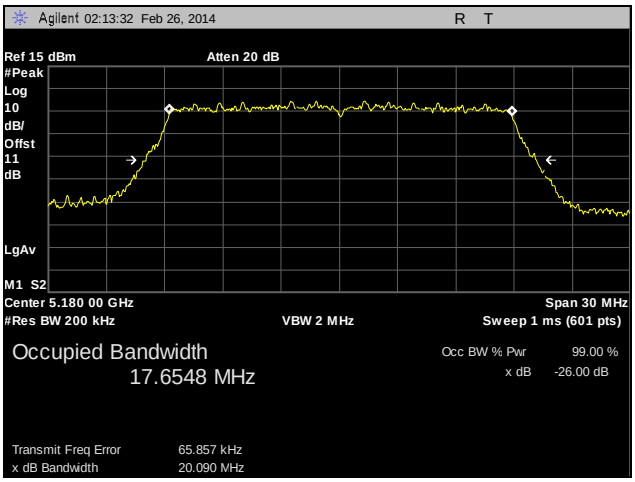
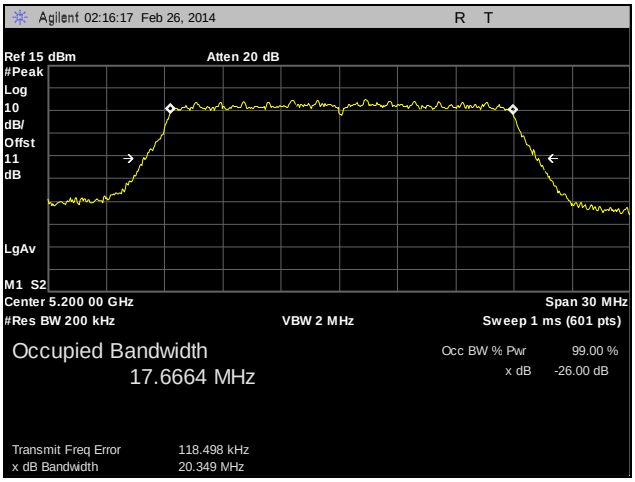
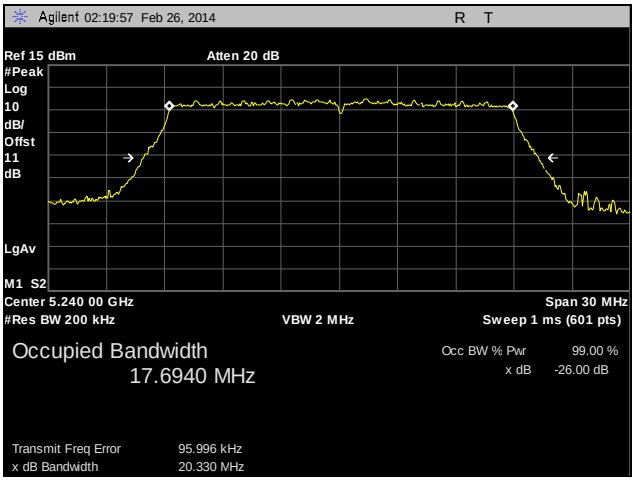


Plot 34. 26 dB Occupied Bandwidth, Low Channel, 802.11ac 20 MHz, MIMO, Ant. 2



Plot 35. 26 dB Occupied Bandwidth, Mid Channel, 802.11ac 20 MHz, MIMO, Ant. 2



Plot 36. 26 dB Occupied Bandwidth, High Channel, 802.11ac 20 MHz, MIMO, Ant. 2

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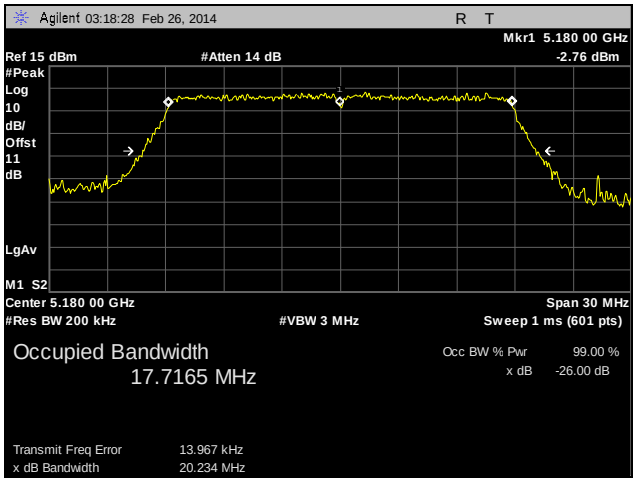
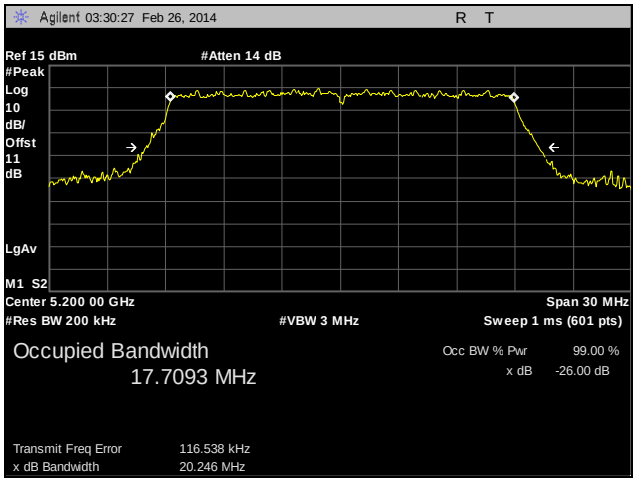
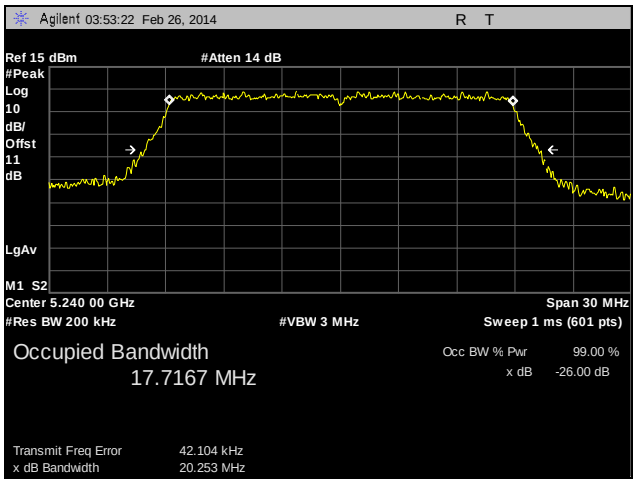
26 dB Occupied Bandwidth Test Results, 802.11n 20 MHz



Plot 37. 26 dB Occupied Bandwidth, Low Channel, 802.11n 20 MHz, Ant. 0



Plot 38. 26 dB Occupied Bandwidth, Mid Channel, 802.11n 20 MHz, Ant. 0



Plot 39. 26 dB Occupied Bandwidth, High Channel, 802.11n 20 MHz, Ant. 0

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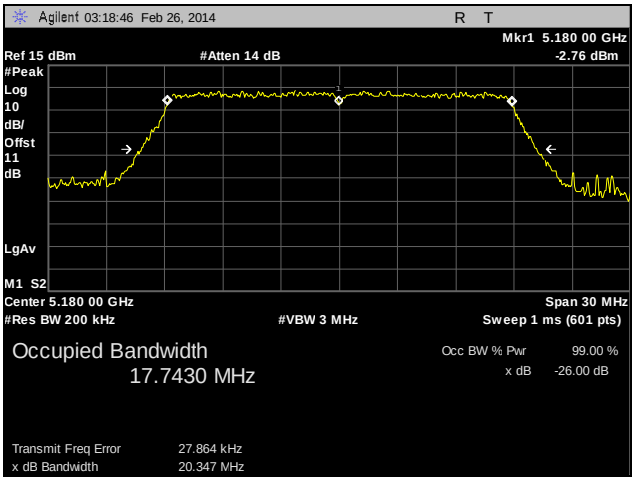
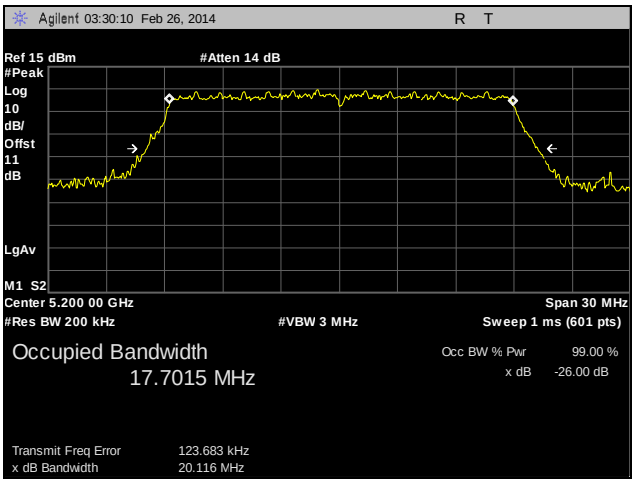
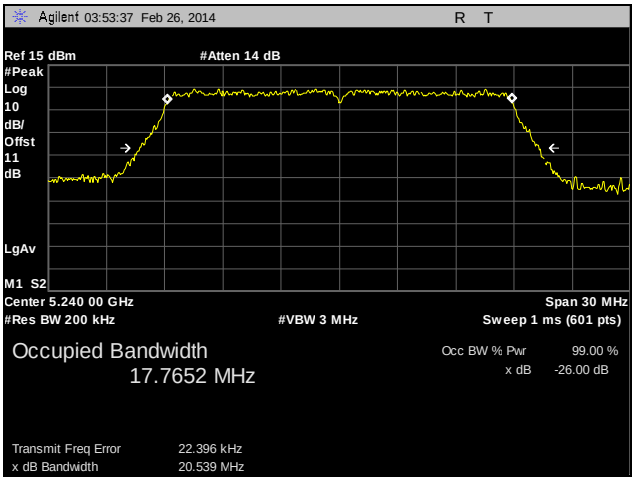


Plot 40. 26 dB Occupied Bandwidth, Low Channel, 802.11n 20 MHz, Ant. 1



Plot 41. 26 dB Occupied Bandwidth, Mid Channel, 802.11n 20 MHz, Ant. 1



Plot 42. 26 dB Occupied Bandwidth, High Channel, 802.11n 20 MHz, Ant. 1

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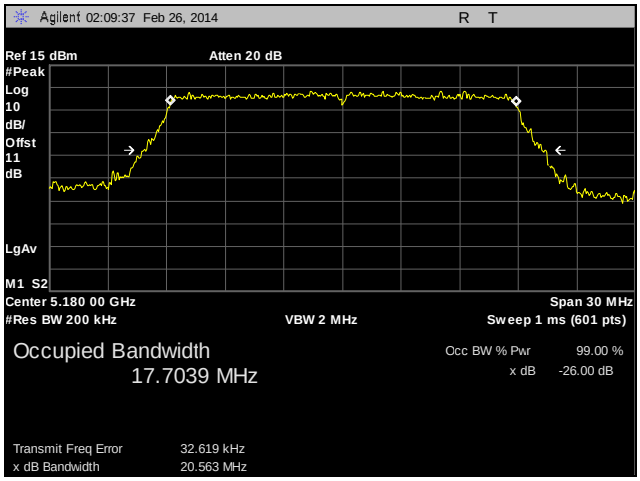
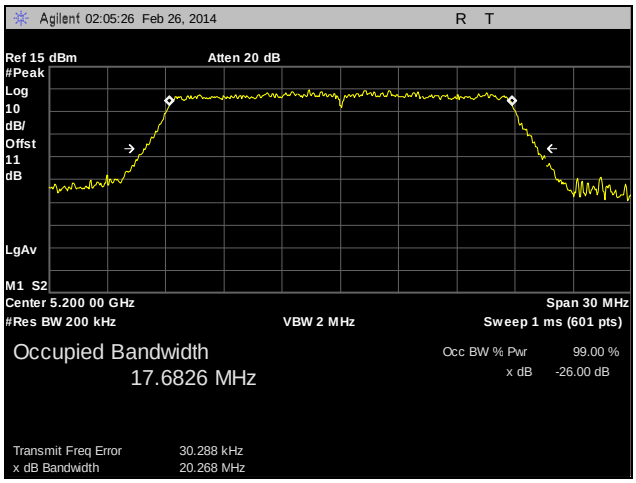
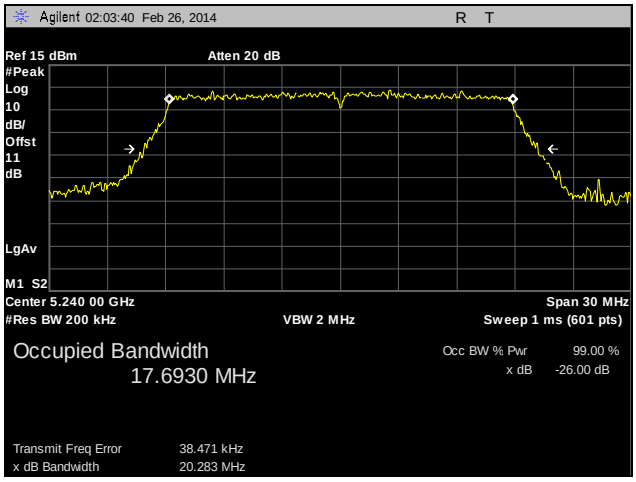


Plot 43. 26 dB Occupied Bandwidth, Low Channel, 802.11n 20 MHz, Ant. 2



Plot 44. 26 dB Occupied Bandwidth, Mid Channel, 802.11n 20 MHz, Ant. 2



Plot 45. 26 dB Occupied Bandwidth, High Channel, 802.11n 20 MHz, Ant. 2

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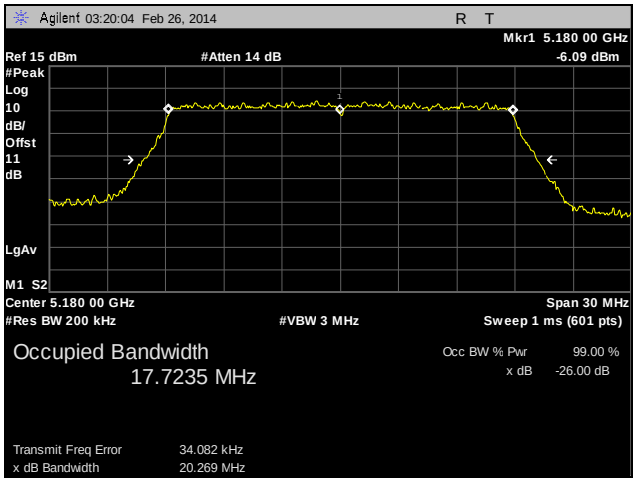
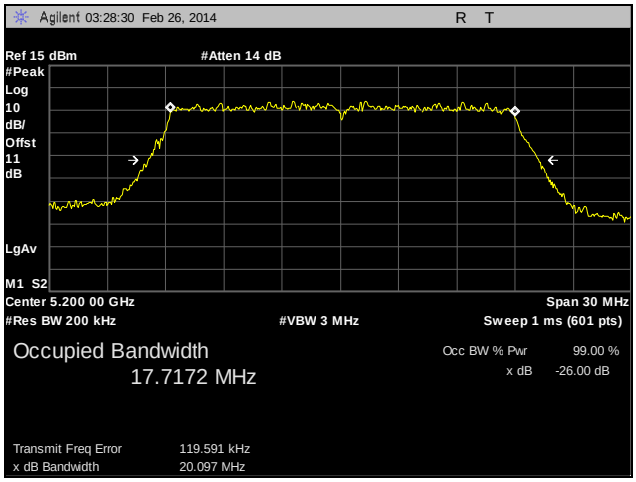
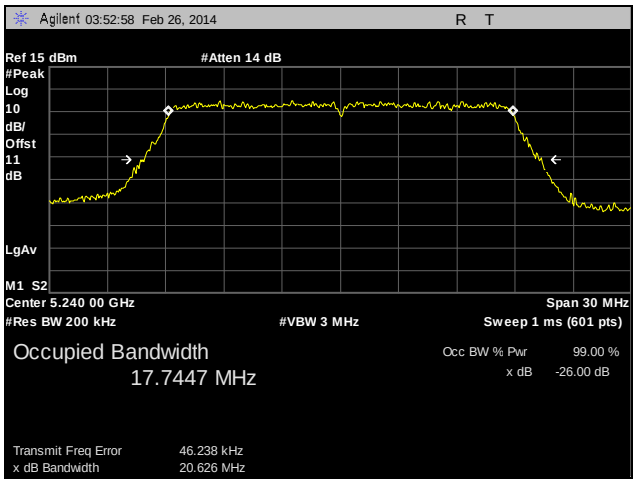
26 dB Occupied Bandwidth Test Results, 802.11n 20 MHz, MIMO



Plot 46. 26 dB Occupied Bandwidth, Low Channel, 802.11n 20 MHz, MIMO, Ant. 0



Plot 47. 26 dB Occupied Bandwidth, Mid Channel, 802.11n 20 MHz, MIMO, Ant. 0



Plot 48. 26 dB Occupied Bandwidth, High Channel, 802.11n 20 MHz, MIMO, Ant. 0

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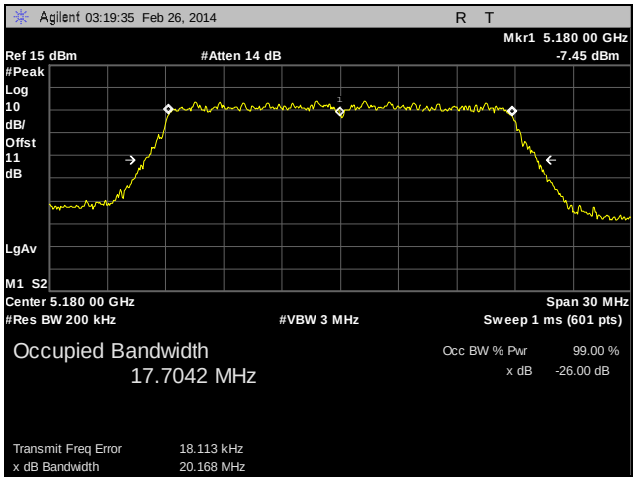
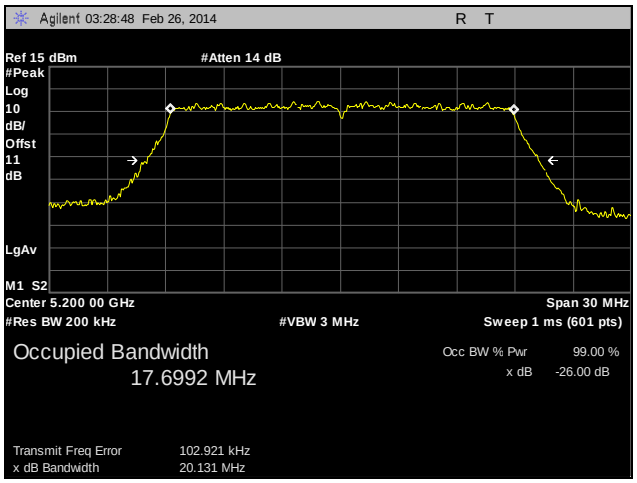
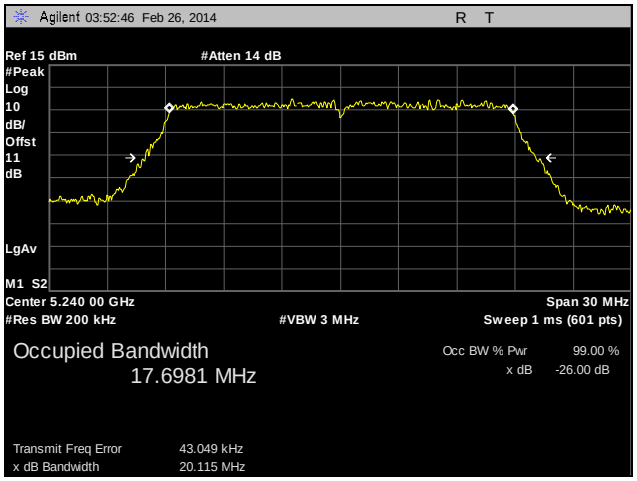


Plot 49. 26 dB Occupied Bandwidth, Low Channel, 802.11n 20 MHz, MIMO, Ant. 1



Plot 50. 26 dB Occupied Bandwidth, Mid Channel, 802.11n 20 MHz, MIMO, Ant. 1



Plot 51. 26 dB Occupied Bandwidth, High Channel, 802.11n 20 MHz, MIMO, Ant. 1

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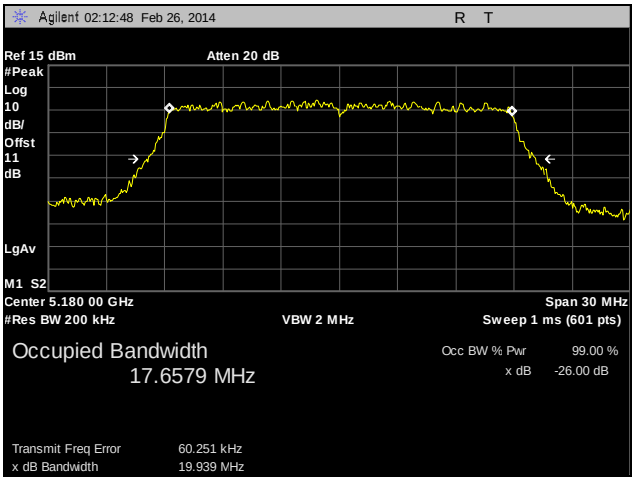
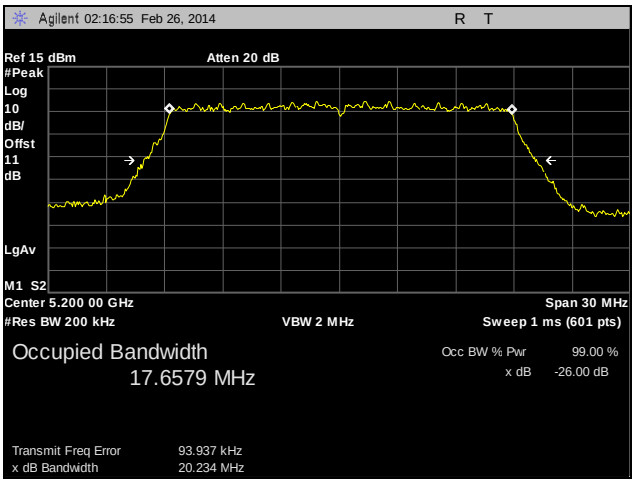
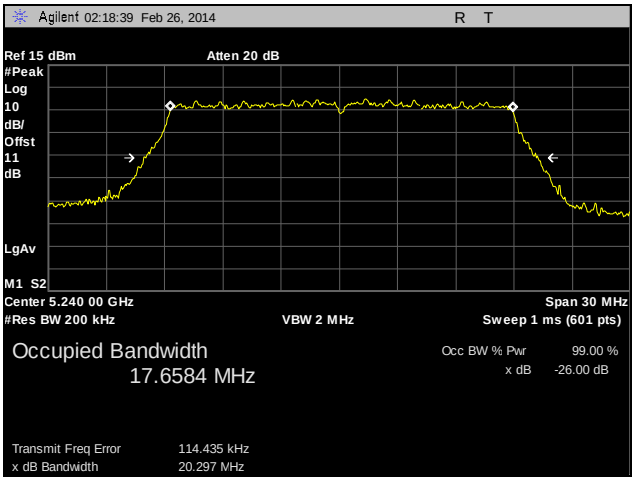


Plot 52. 26 dB Occupied Bandwidth, Low Channel, 802.11n 20 MHz, MIMO, Ant. 2



Plot 53. 26 dB Occupied Bandwidth, Mid Channel, 802.11n 20 MHz, MIMO, Ant. 2



Plot 54. 26 dB Occupied Bandwidth, High Channel, 802.11n 20 MHz, MIMO, Ant. 2

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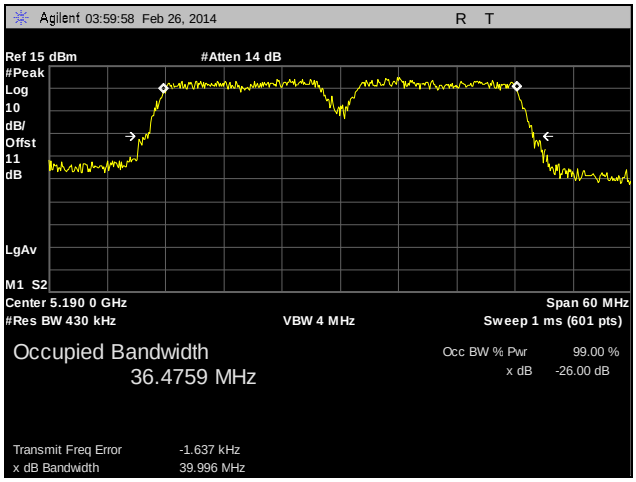
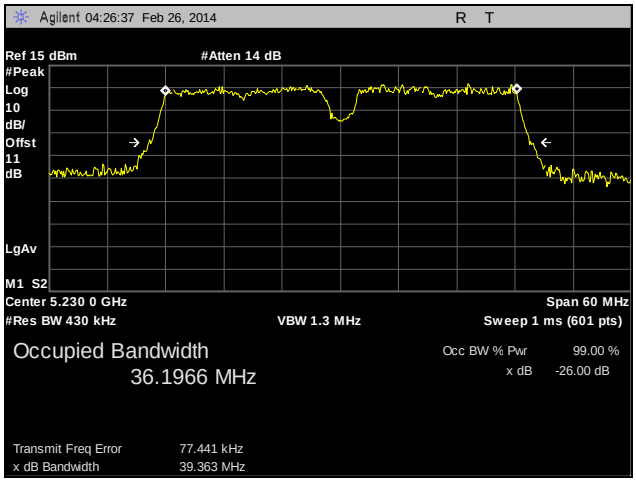
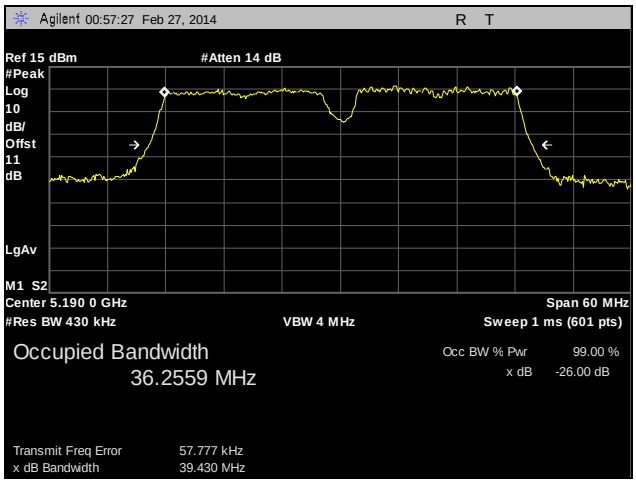
26 dB Occupied Bandwidth Test Results, 802.11a 40 MHz



Plot 55. 26 dB Occupied Bandwidth, Low Channel, 802.11a 40 MHz, Ant. 0



Plot 56. 26 dB Occupied Bandwidth, High Channel, 802.11a 40 MHz, Ant. 0



Plot 57. 26 dB Occupied Bandwidth, Low Channel, 802.11a 40 MHz, Ant. 1

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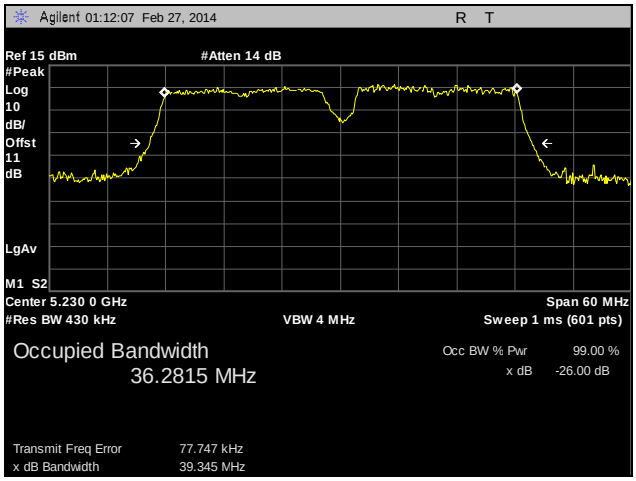
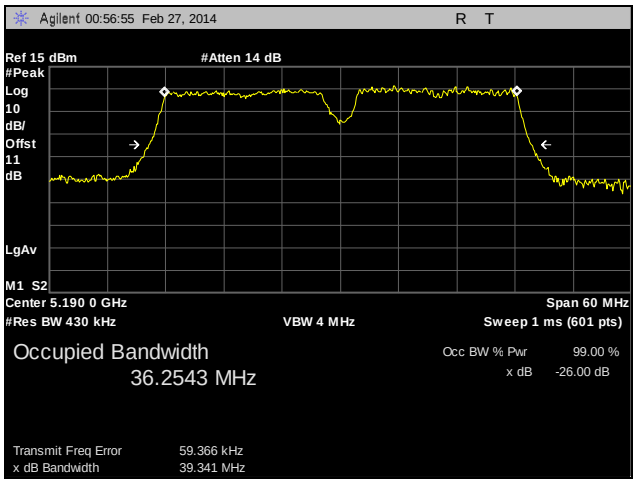
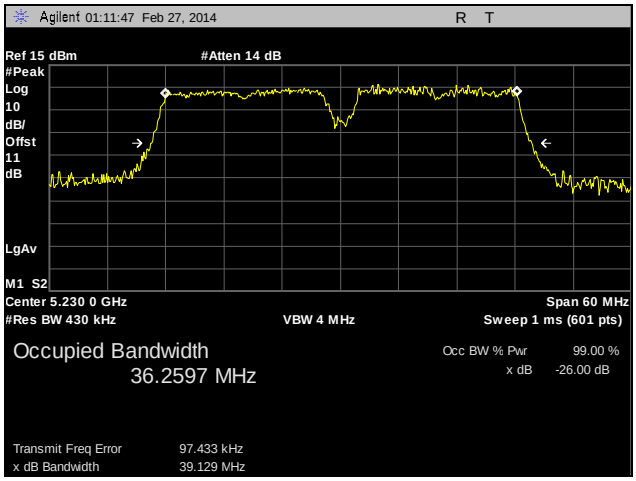


Plot 58. 26 dB Occupied Bandwidth, High Channel, 802.11a 40 MHz, Ant. 1



Plot 59. 26 dB Occupied Bandwidth, Low Channel, 802.11a 40 MHz, Ant. 2



Plot 60. 26 dB Occupied Bandwidth, High Channel, 802.11a 40 MHz, Ant. 2

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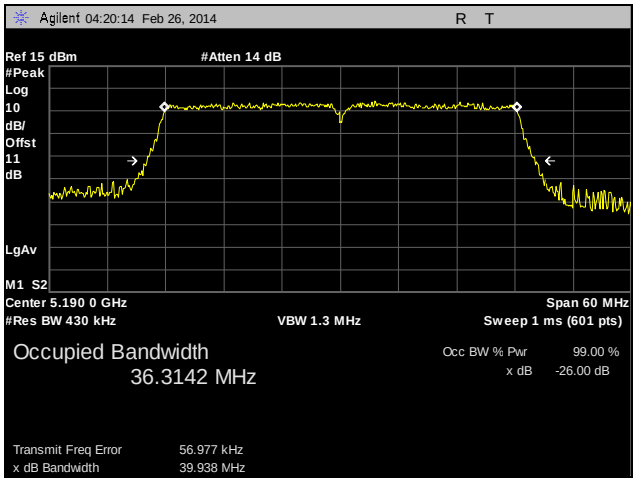
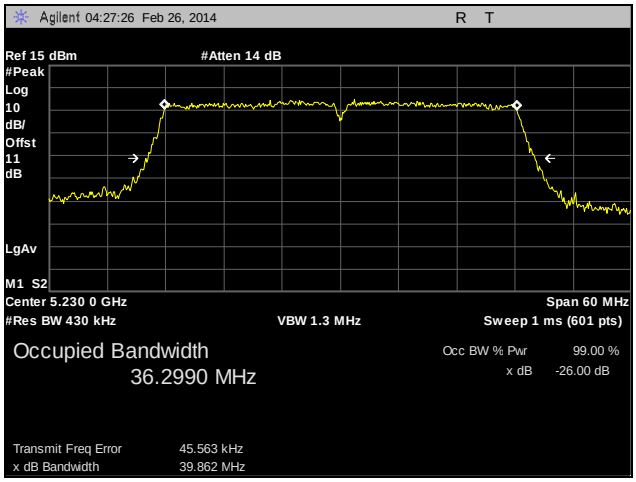
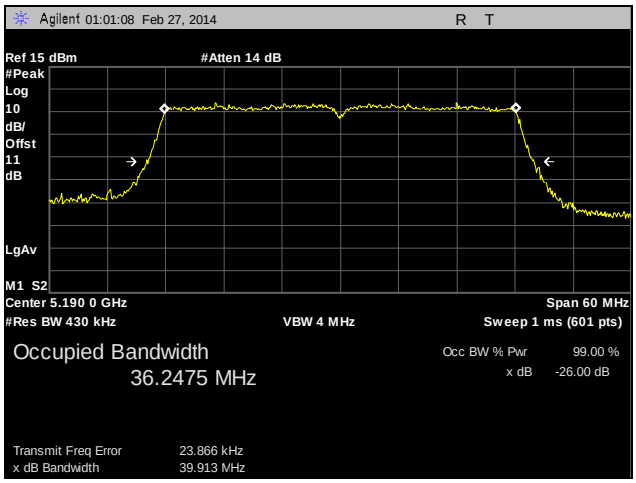
26 dB Occupied Bandwidth Test Results, 802.11ac 40 MHz, MIMO



Plot 61. 26 dB Occupied Bandwidth, Low Channel, 802.11ac 40 MHz, MIMO, Ant. 0



Plot 62. 26 dB Occupied Bandwidth, High Channel, 802.11ac 40 MHz, MIMO, Ant. 0



Plot 63. 26 dB Occupied Bandwidth, Low Channel, 802.11ac 40 MHz, MIMO, Ant. 1

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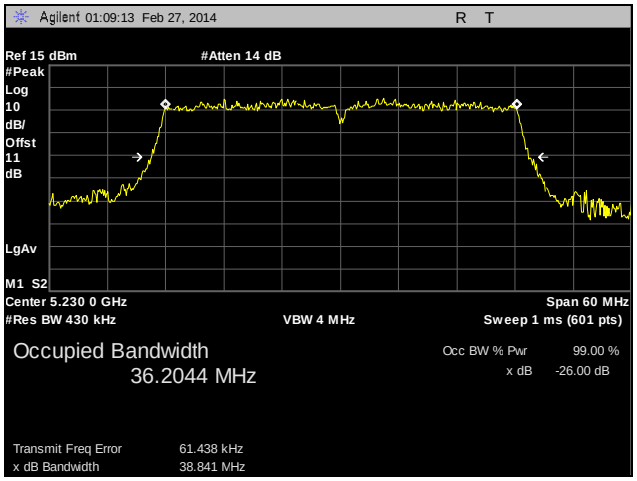
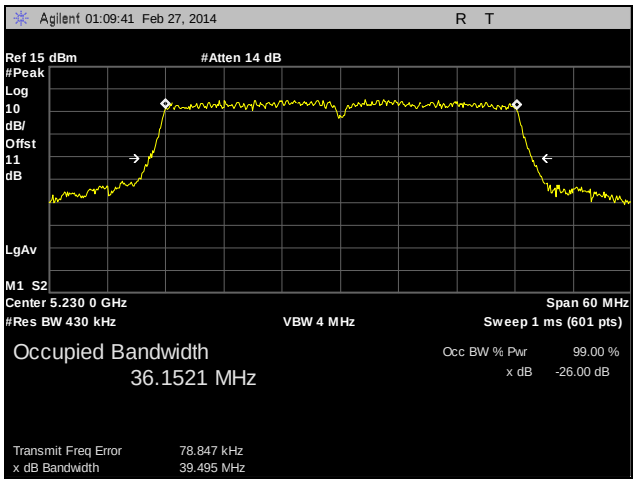
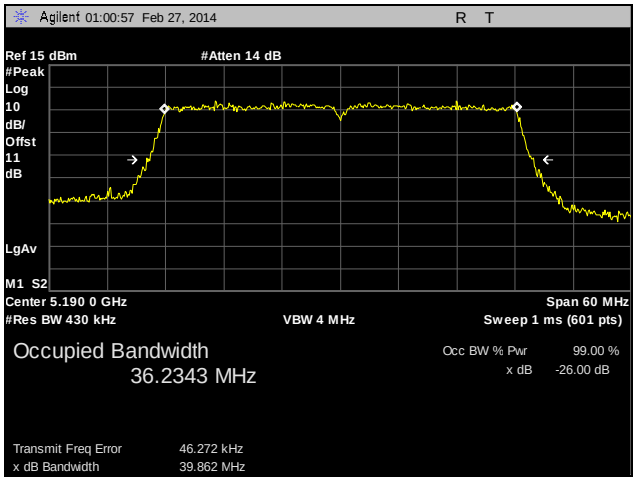


Plot 64. 26 dB Occupied Bandwidth, High Channel, 802.11ac 40 MHz, MIMO, Ant. 1



Plot 65. 26 dB Occupied Bandwidth, Low Channel, 802.11ac 40 MHz, MIMO, Ant. 2



Plot 66. 26 dB Occupied Bandwidth, High Channel, 802.11ac 40 MHz, MIMO, Ant. 2

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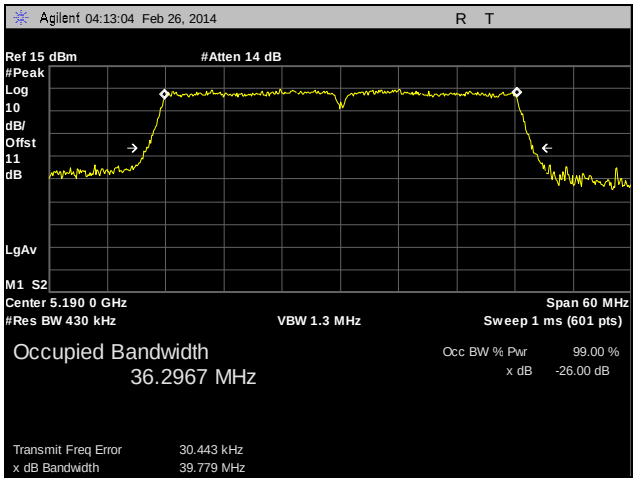
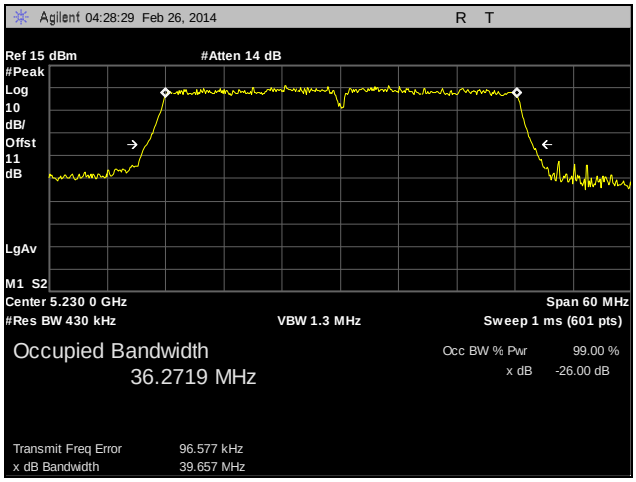
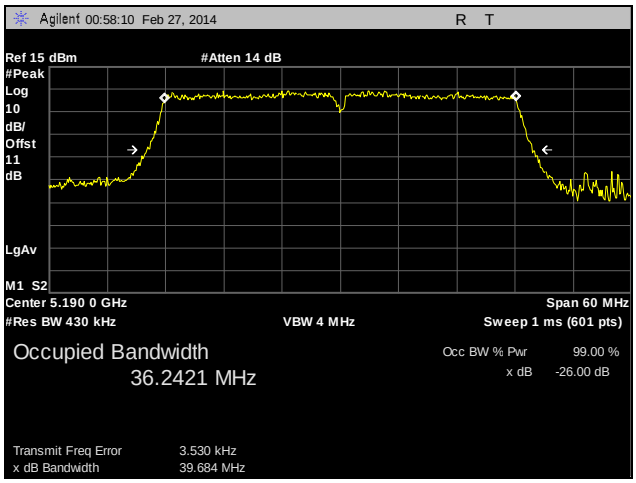
26 dB Occupied Bandwidth Test Results, 802.11n 40 MHz



Plot 67. 26 dB Occupied Bandwidth, Low Channel, 802.11n 40 MHz, Ant. 0



Plot 68. 26 dB Occupied Bandwidth, High Channel, 802.11n 40 MHz, Ant. 0



Plot 69. 26 dB Occupied Bandwidth, Low Channel, 802.11n 40 MHz, Ant. 1

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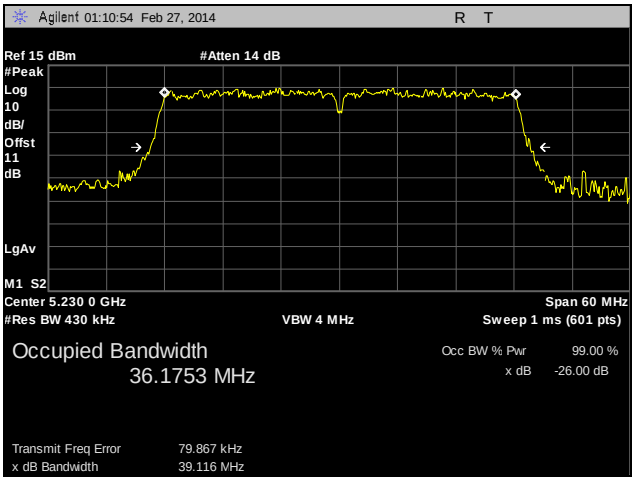
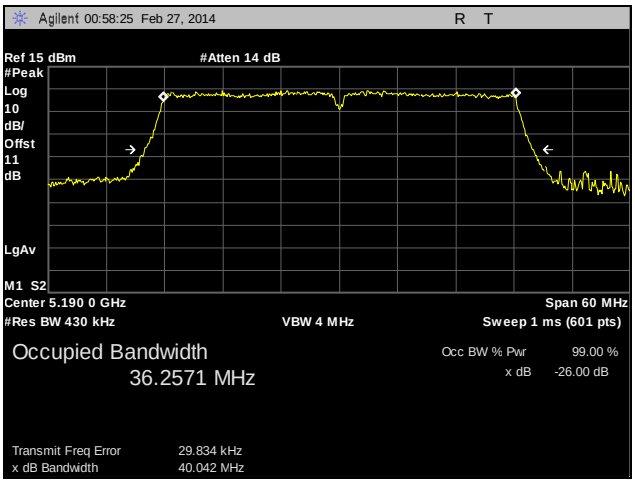
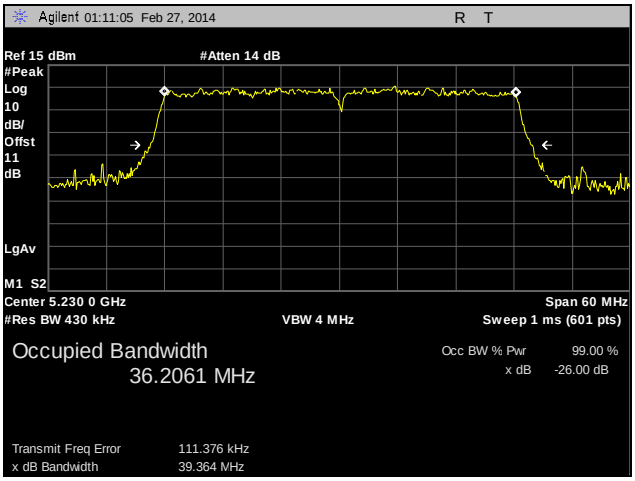


Plot 70. 26 dB Occupied Bandwidth, High Channel, 802.11n 40 MHz, Ant. 1



Plot 71. 26 dB Occupied Bandwidth, Low Channel, 802.11n 40 MHz, Ant. 2



Plot 72. 26 dB Occupied Bandwidth, High Channel, 802.11n 40 MHz, Ant. 2

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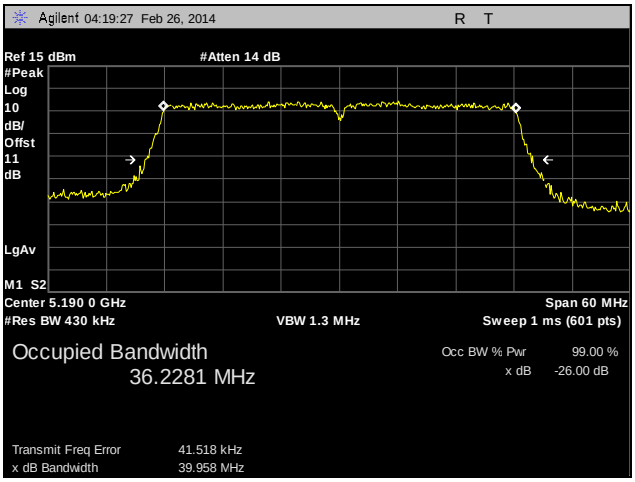
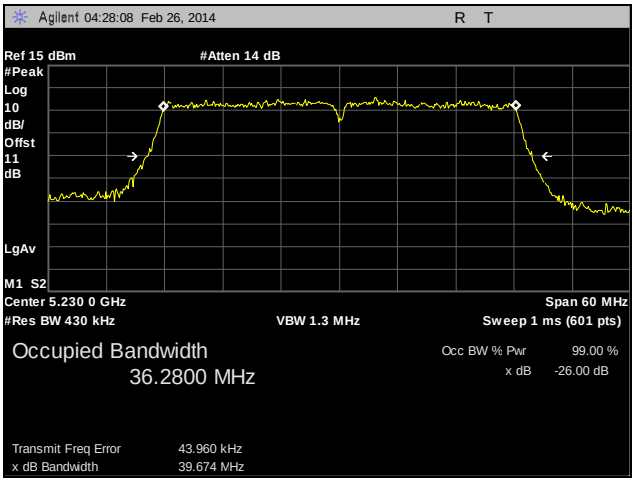
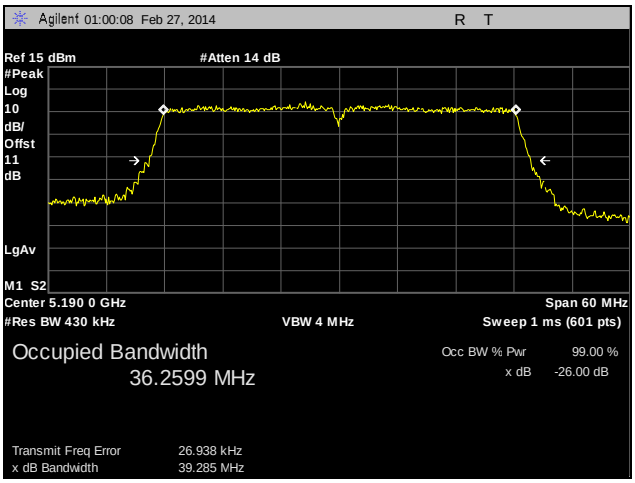
26 dB Occupied Bandwidth Test Results, 802.11n 40 MHz, MIMO



Plot 73. 26 dB Occupied Bandwidth, Low Channel, 802.11n 40 MHz, MIMO, Ant. 0



Plot 74. 26 dB Occupied Bandwidth, High Channel, 802.11n 40 MHz, MIMO, Ant. 0



Plot 75. 26 dB Occupied Bandwidth, Low Channel, 802.11n 40 MHz, MIMO, Ant. 1

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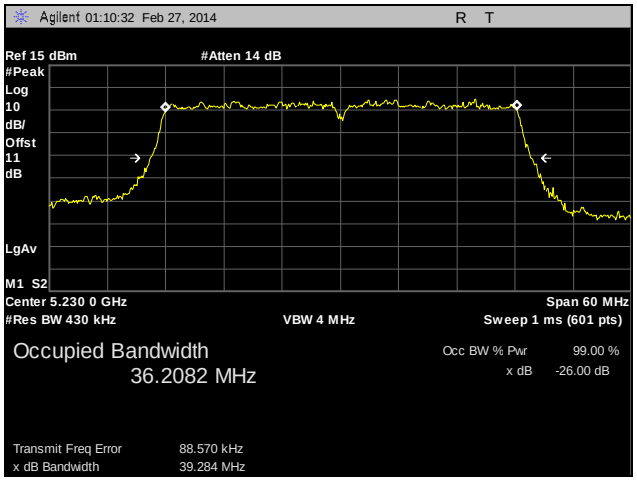
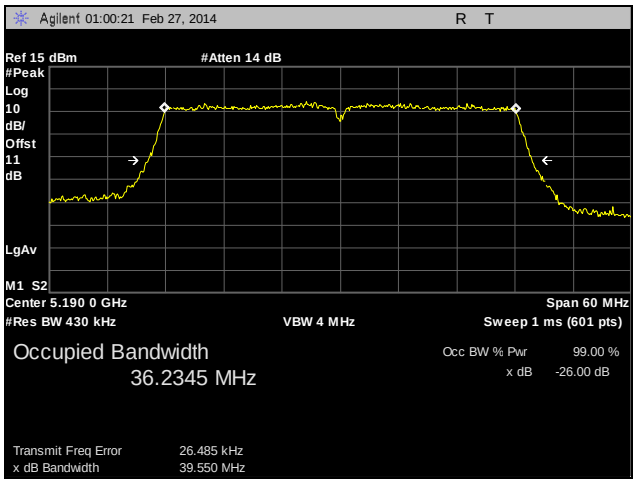
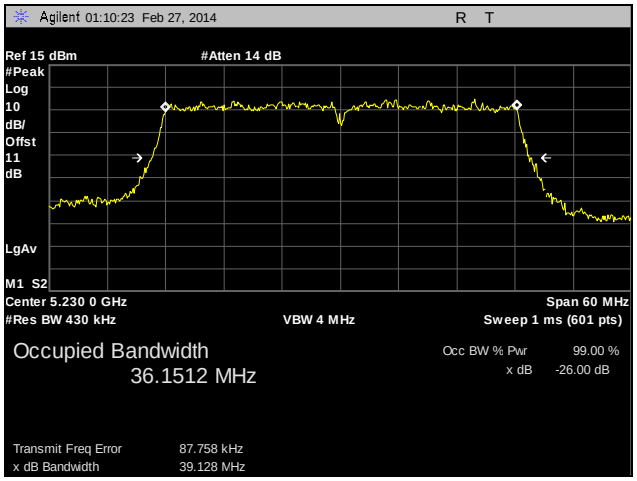


Plot 76. 26 dB Occupied Bandwidth, High Channel, 802.11n 40 MHz, MIMO, Ant. 1



Plot 77. 26 dB Occupied Bandwidth, Low Channel, 802.11n 40 MHz, MIMO, Ant. 2



Plot 78. 26 dB Occupied Bandwidth, High Channel, 802.11n 40 MHz, MIMO, Ant. 2

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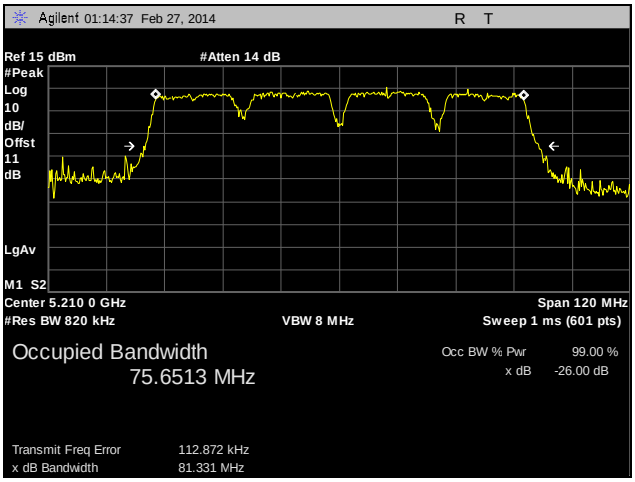
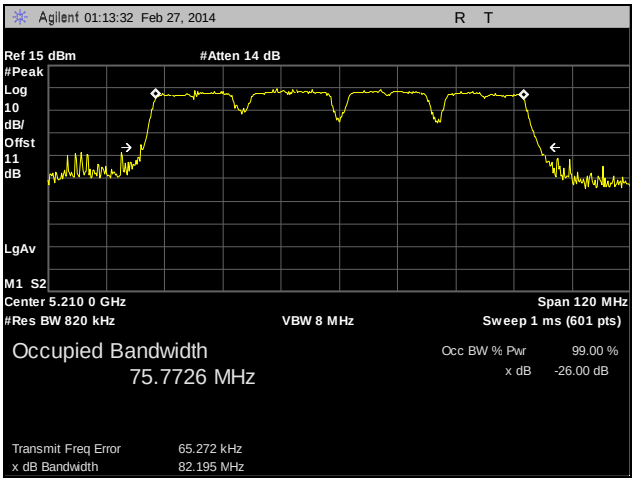
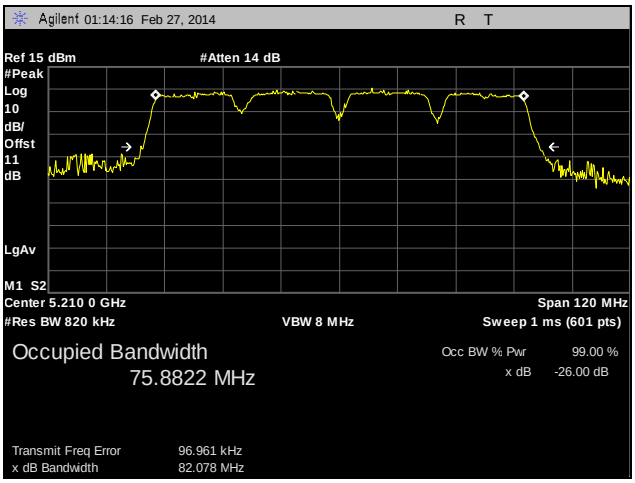
26 dB Occupied Bandwidth Test Results, 802.11a 80 MHz



Plot 79. 26 dB Occupied Bandwidth, 802.11a 80 MHz, Ant. 0



Plot 80. 26 dB Occupied Bandwidth, 802.11a 80 MHz, Ant. 1



Plot 81. 26 dB Occupied Bandwidth, 802.11a 80 MHz, Ant. 2

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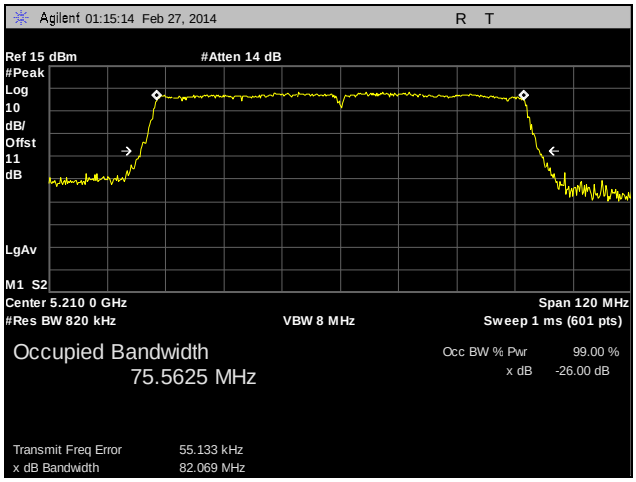
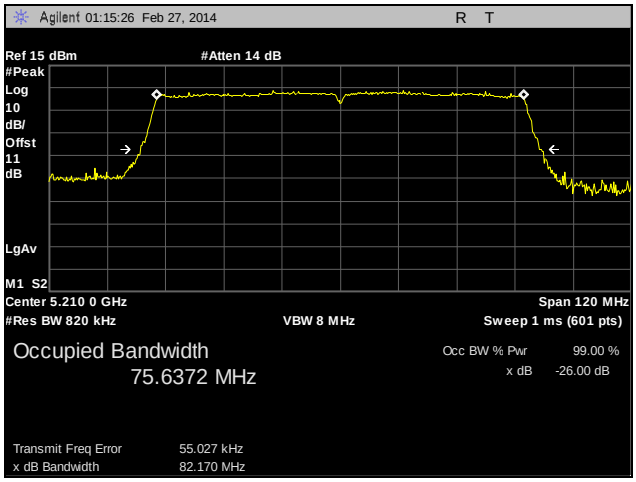
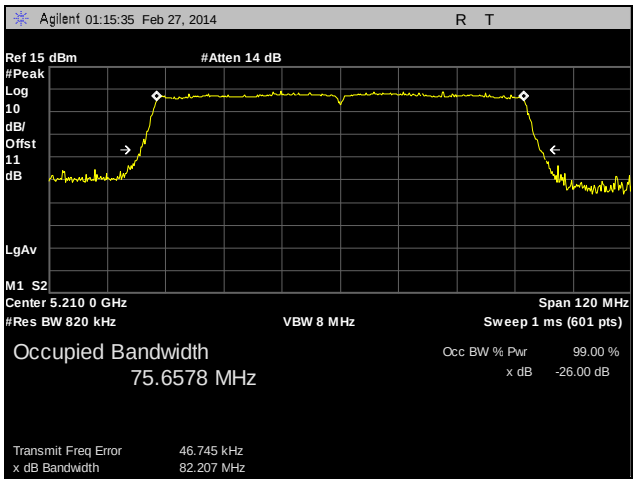
26 dB Occupied Bandwidth Test Results, 802.11ac 80 MHz



Plot 82. 26 dB Occupied Bandwidth, 802.11ac 80 MHz, Ant. 0



Plot 83. 26 dB Occupied Bandwidth, 802.11ac 80 MHz, Ant. 1



Plot 84. 26 dB Occupied Bandwidth, 802.11ac 80 MHz, Ant. 2

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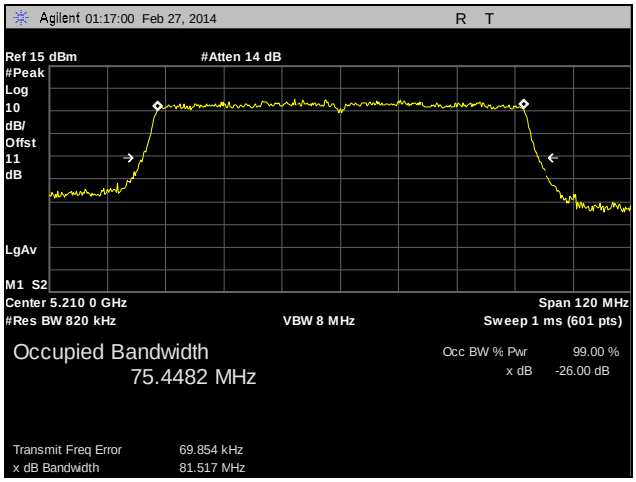
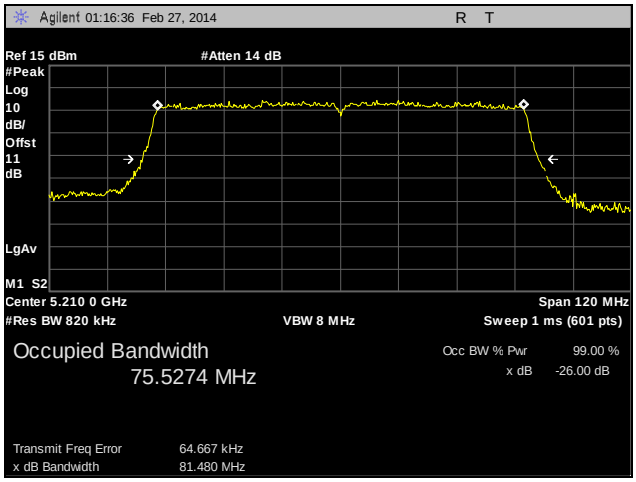
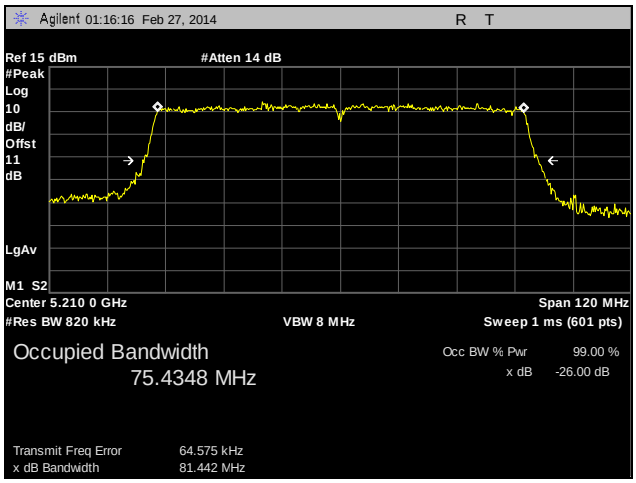
26 dB Occupied Bandwidth Test Results, 802.11ac 80 MHz, MIMO



Plot 85. 26 dB Occupied Bandwidth, 802.11ac 80 MHz, Ant. 0, MIMO



Plot 86. 26 dB Occupied Bandwidth, 802.11ac 80 MHz, Ant. 1, MIMO



Plot 87. 26 dB Occupied Bandwidth, 802.11ac 80 MHz, Ant. 2, MIMO

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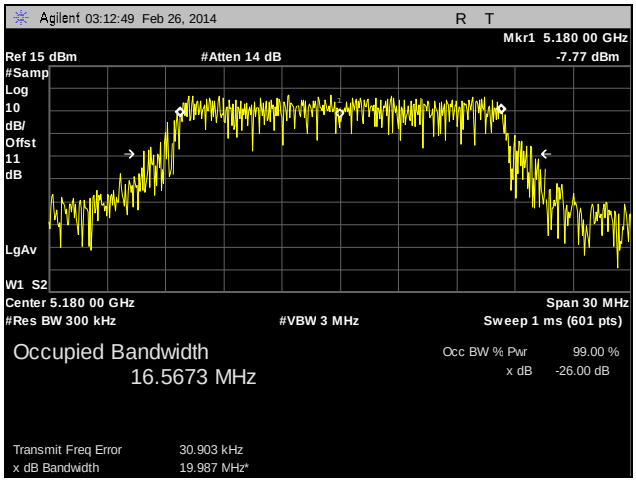
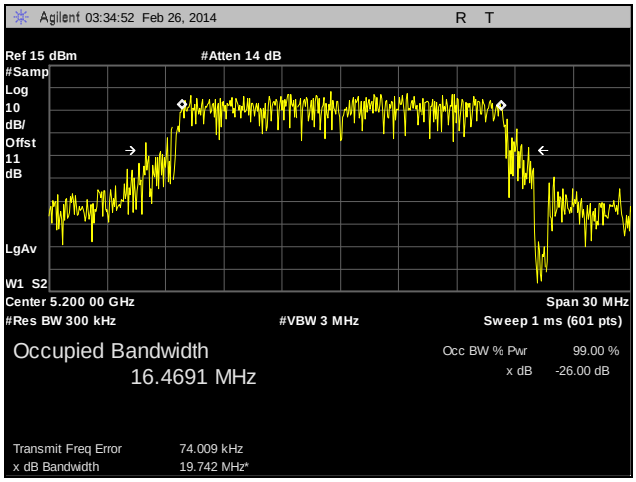
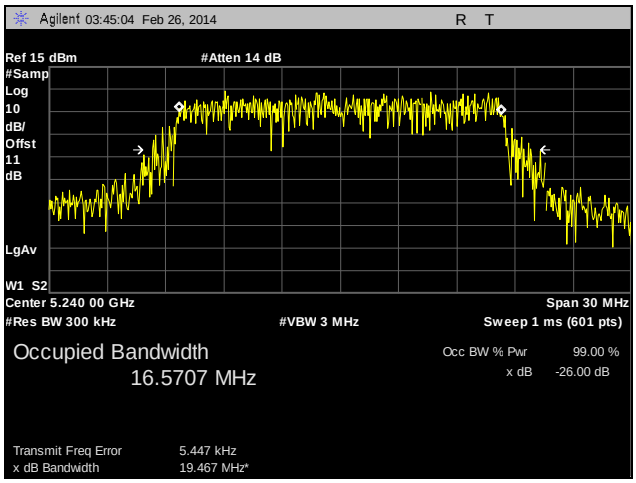
99% Occupied Bandwidth Test Results, 802.11a 20 MHz



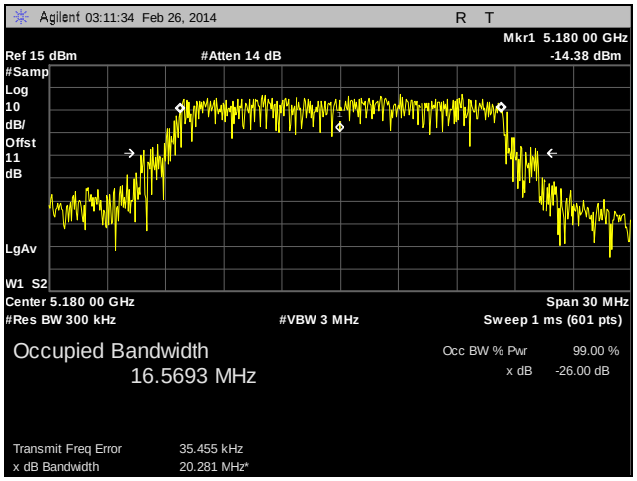
Plot 88. 99% Occupied Bandwidth, Low Channel, 802.11a 20 MHz, Ant. 0



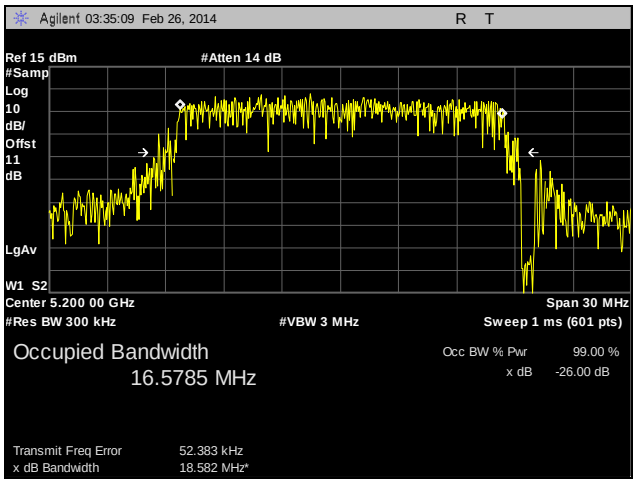
Plot 89. 99% Occupied Bandwidth, Mid Channel, 802.11a 20 MHz, Ant. 0



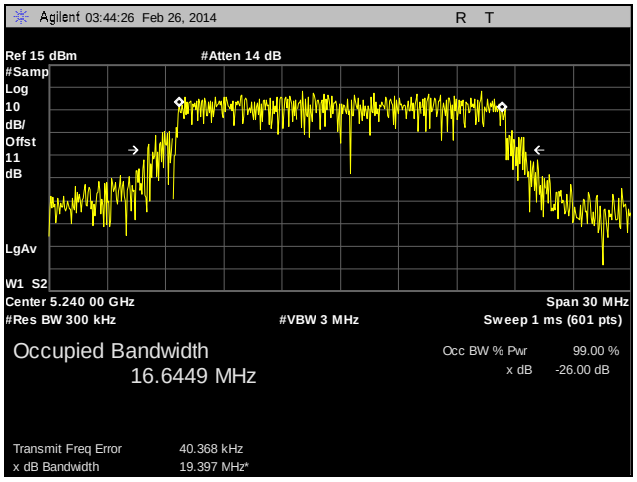
Plot 90. 99% Occupied Bandwidth, High Channel, 802.11a 20 MHz, Ant. 0



Plot 91. 99% Occupied Bandwidth, Low Channel, 802.11a 20 MHz, Ant. 1



Plot 92. 99% Occupied Bandwidth, Mid Channel, 802.11a 20 MHz, Ant. 1



Plot 93. 99% Occupied Bandwidth, High Channel, 802.11a 20 MHz, Ant. 1

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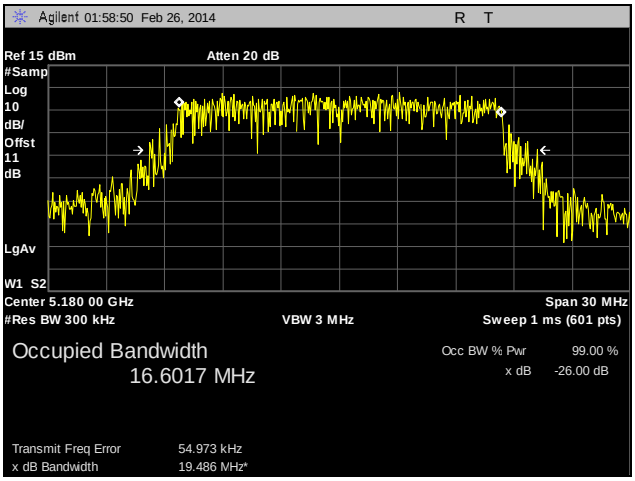
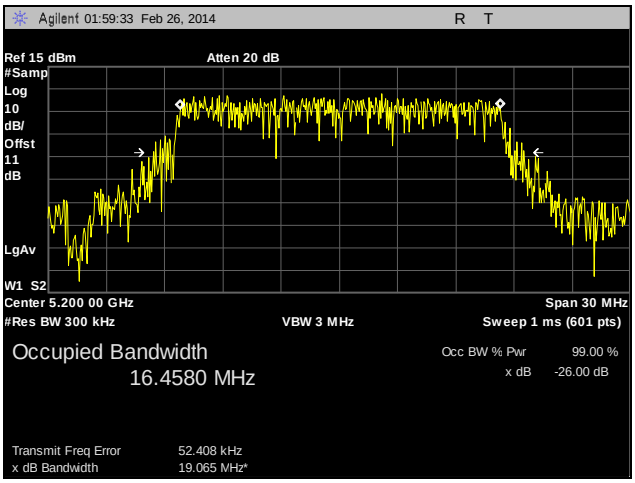
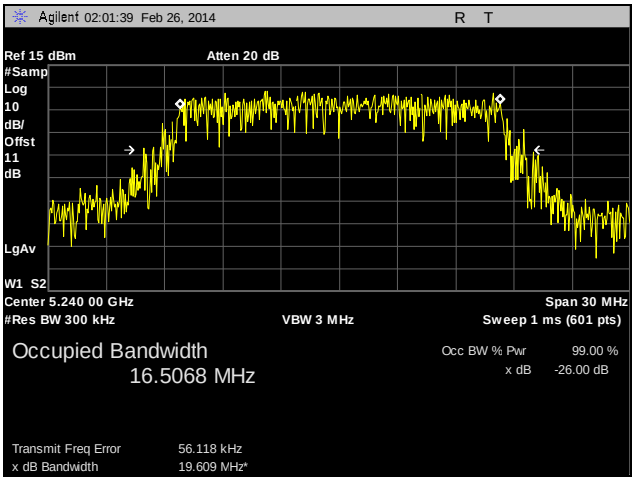


Plot 94. 99% Occupied Bandwidth, Low Channel, 802.11a 20 MHz, Ant. 2



Plot 95. 99% Occupied Bandwidth, Mid Channel, 802.11a 20 MHz, Ant. 2



Plot 96. 99% Occupied Bandwidth, High Channel, 802.11a 20 MHz, Ant. 2

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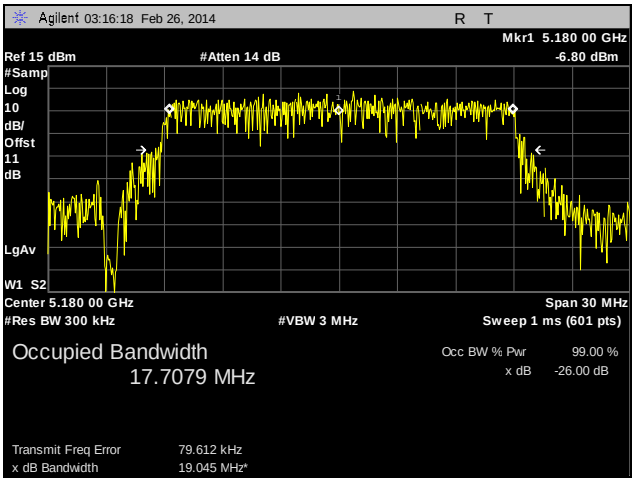
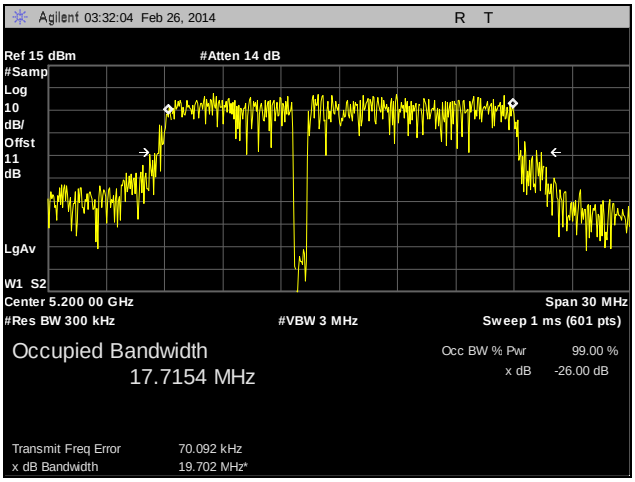
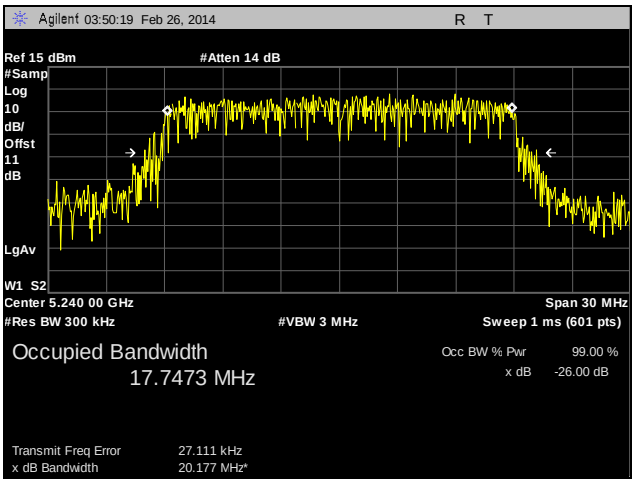
99% Occupied Bandwidth Test Results, 802.11ac 20 MHz



Plot 97. 99% Occupied Bandwidth, Low Channel, 802.11ac 20 MHz, Ant. 0



Plot 98. 99% Occupied Bandwidth, Mid Channel, 802.11ac 20 MHz, Ant. 0



Plot 99. 99% Occupied Bandwidth, High Channel, 802.11ac 20 MHz, Ant. 0

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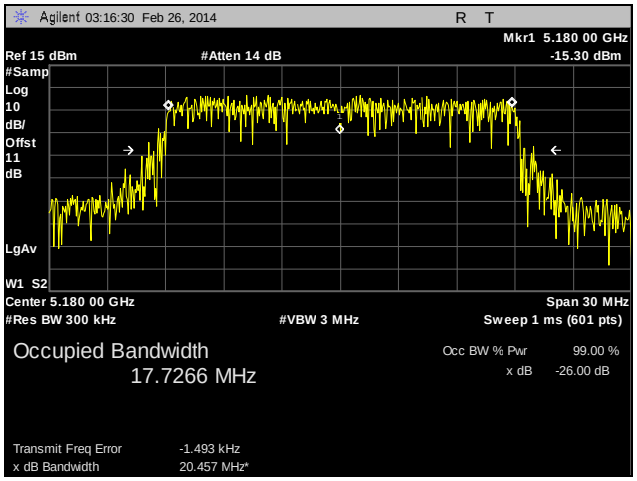
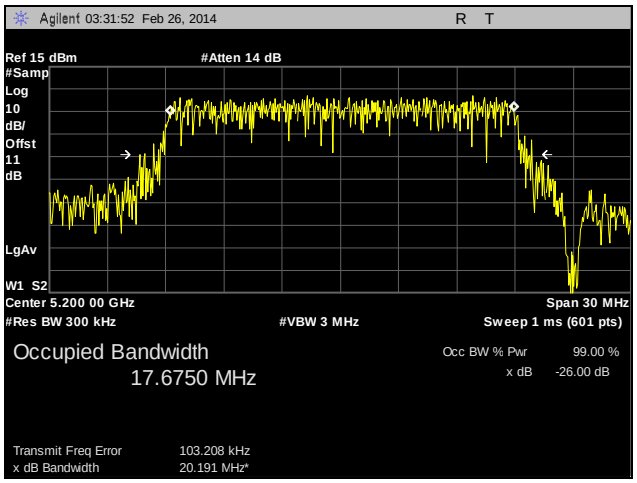
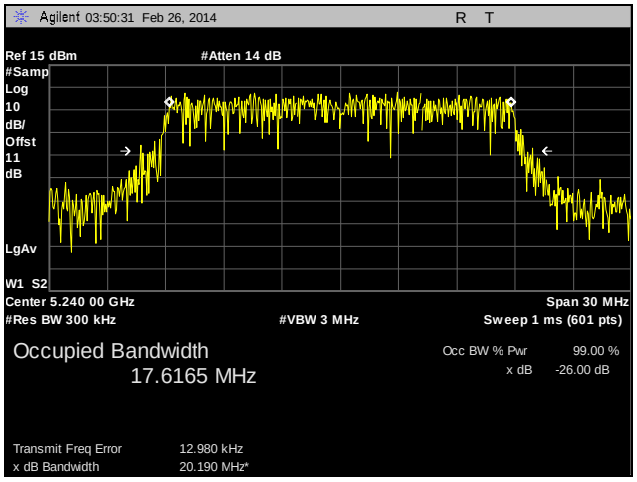


Plot 100. 99% Occupied Bandwidth, Low Channel, 802.11ac 20 MHz, Ant. 1



Plot 101. 99% Occupied Bandwidth, Mid Channel, 802.11ac 20 MHz, Ant. 1



Plot 102. 99% Occupied Bandwidth, High Channel, 802.11ac 20 MHz, Ant. 1

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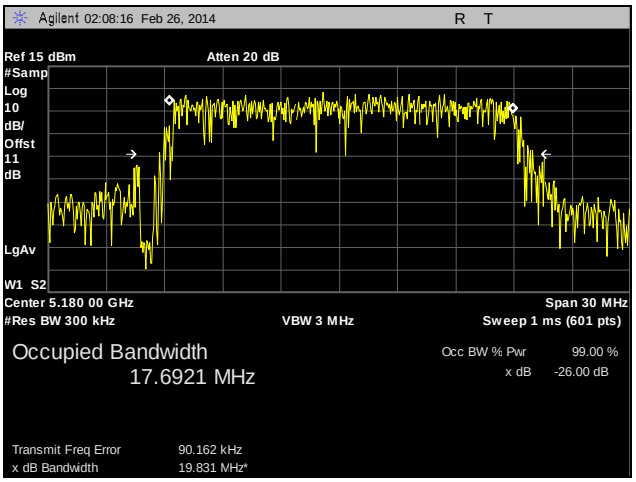
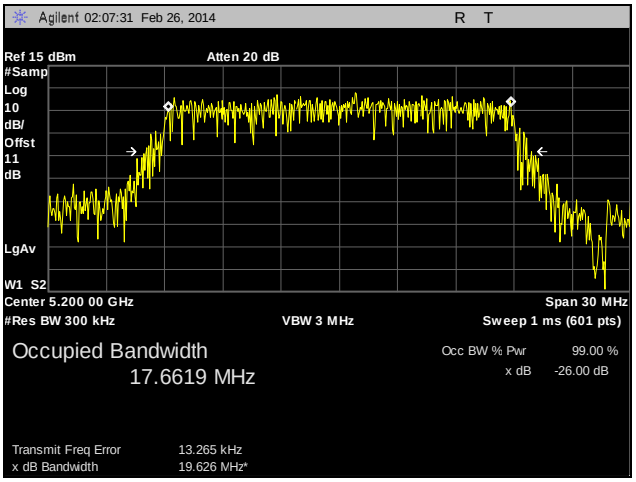
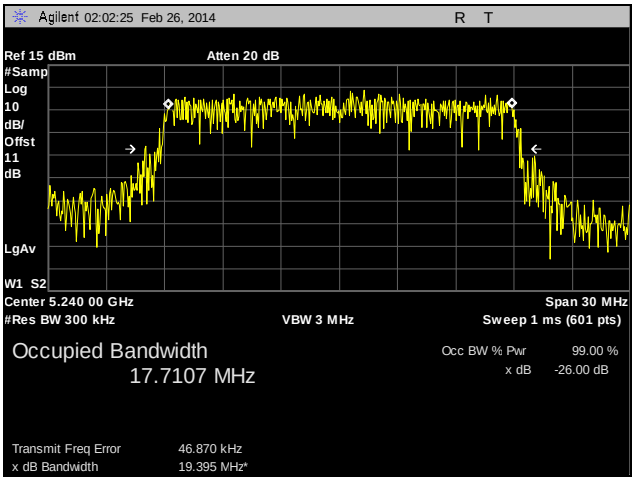


Plot 103. 99% Occupied Bandwidth, Low Channel, 802.11ac 20 MHz, Ant. 2



Plot 104. 99% Occupied Bandwidth, Mid Channel, 802.11ac 20 MHz, Ant. 2



Plot 105. 99% Occupied Bandwidth, High Channel, 802.11ac 20 MHz, Ant. 2

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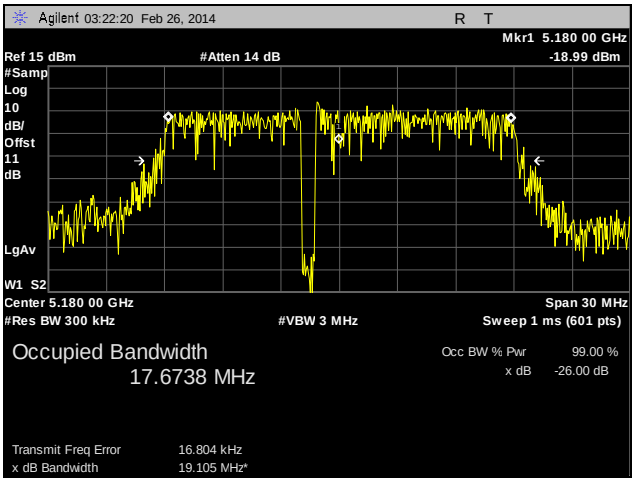
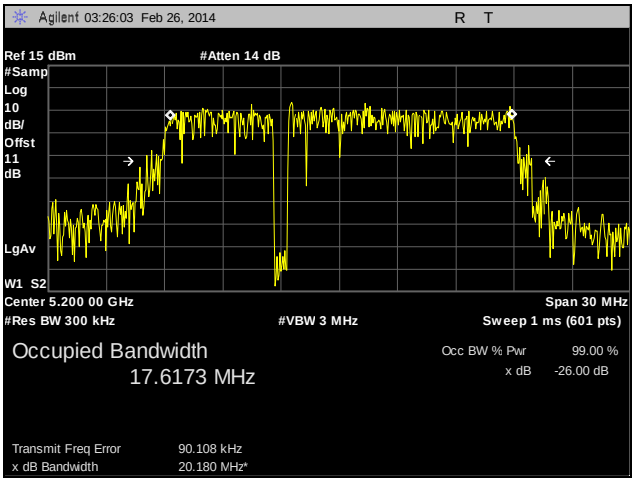
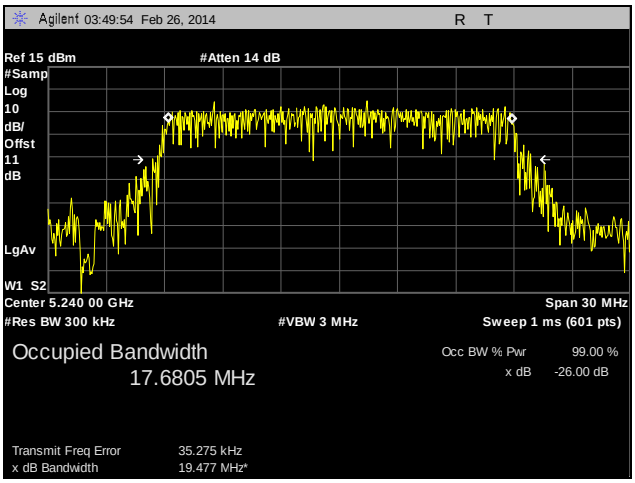
99% Occupied Bandwidth Test Results, 802.11ac 20 MHz, MIMO



Plot 106. 99% Occupied Bandwidth, Low Channel, 802.11ac 20 MHz, MIMO, Ant. 0



Plot 107. 99% Occupied Bandwidth, Mid Channel, 802.11ac 20 MHz, MIMO, Ant. 0



Plot 108. 99% Occupied Bandwidth, High Channel, 802.11ac 20 MHz, MIMO, Ant. 0

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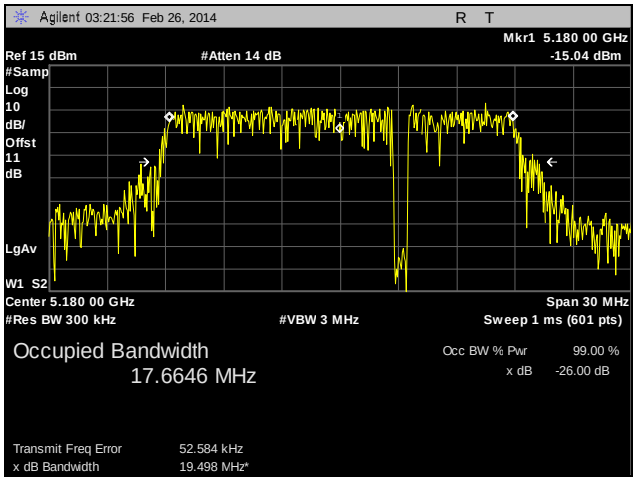
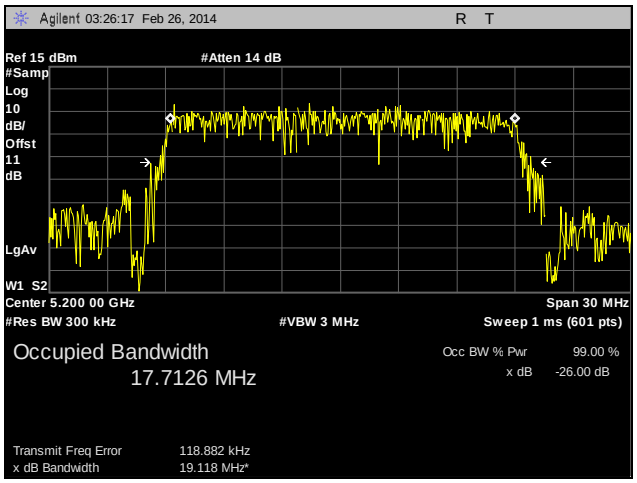
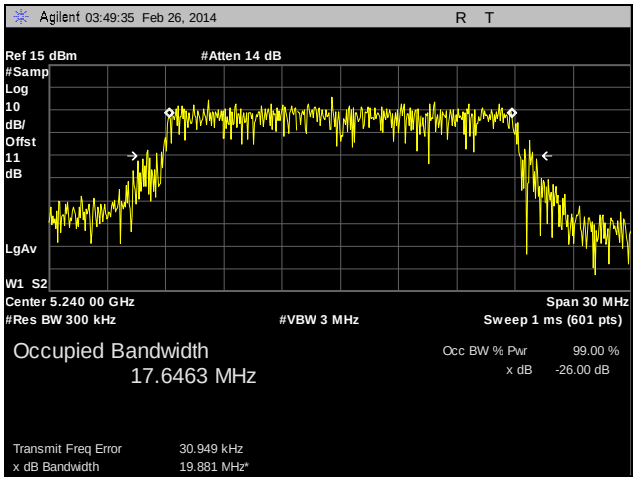


Plot 109. 99% Occupied Bandwidth, Low Channel, 802.11ac 20 MHz, MIMO, Ant. 1



Plot 110. 99% Occupied Bandwidth, Mid Channel, 802.11ac 20 MHz, MIMO, Ant. 1



Plot 111. 99% Occupied Bandwidth, High Channel, 802.11ac 20 MHz, MIMO, Ant. 1

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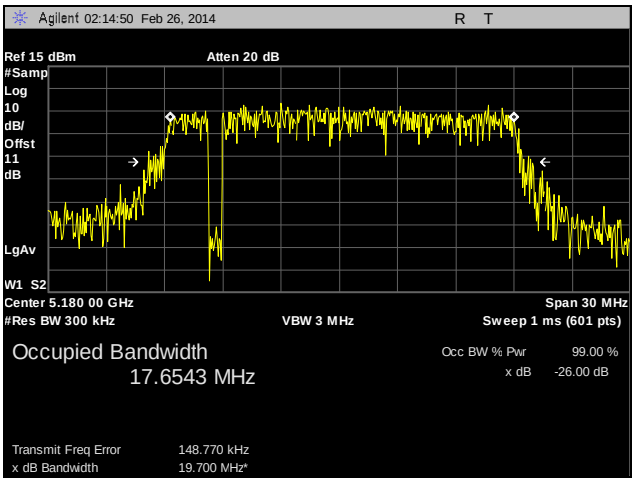
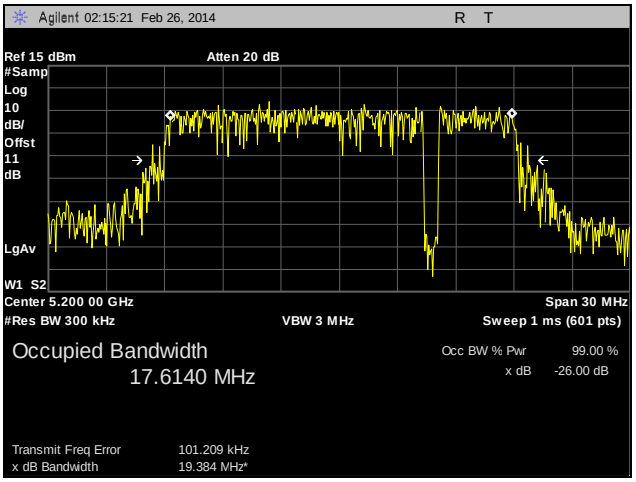
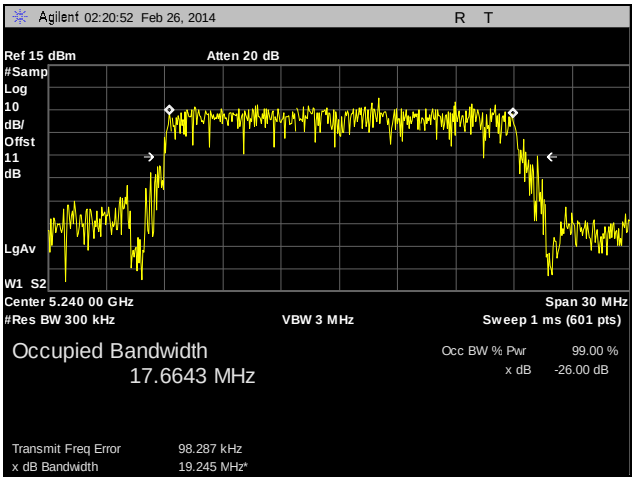


Plot 112. 99% Occupied Bandwidth, Low Channel, 802.11ac 20 MHz, MIMO, Ant. 2



Plot 113. 99% Occupied Bandwidth, Mid Channel, 802.11ac 20 MHz, MIMO, Ant. 2



Plot 114. 99% Occupied Bandwidth, High Channel, 802.11ac 20 MHz, MIMO, Ant. 2

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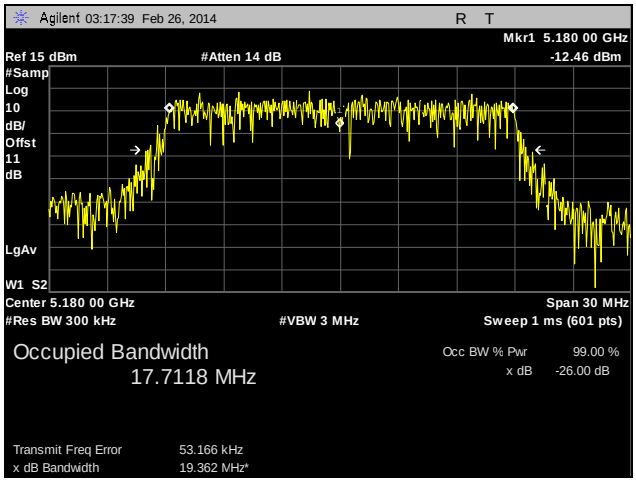
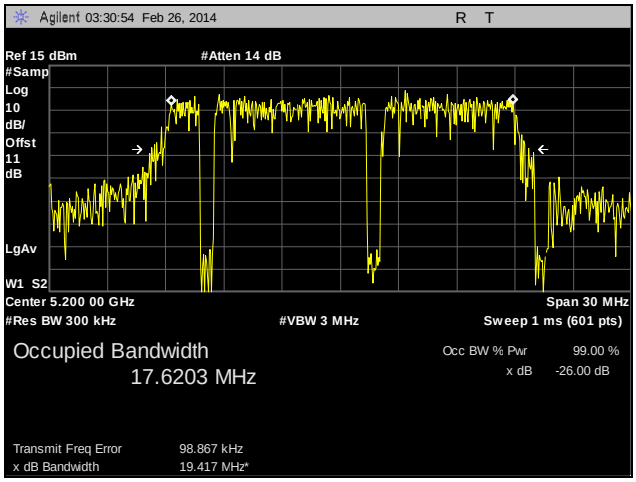
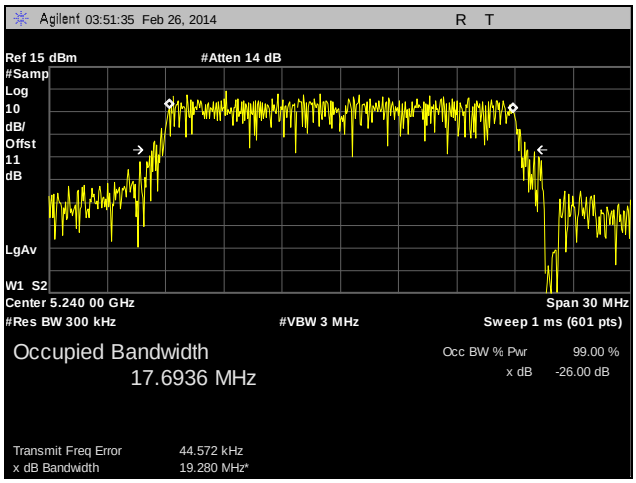
99% Occupied Bandwidth Test Results, 802.11n 20 MHz



Plot 115. 99% Occupied Bandwidth, Low Channel, 802.11n 20 MHz, Ant. 0



Plot 116. 99% Occupied Bandwidth, Mid Channel, 802.11n 20 MHz, Ant. 0



Plot 117. 99% Occupied Bandwidth, High Channel, 802.11n 20 MHz, Ant. 0

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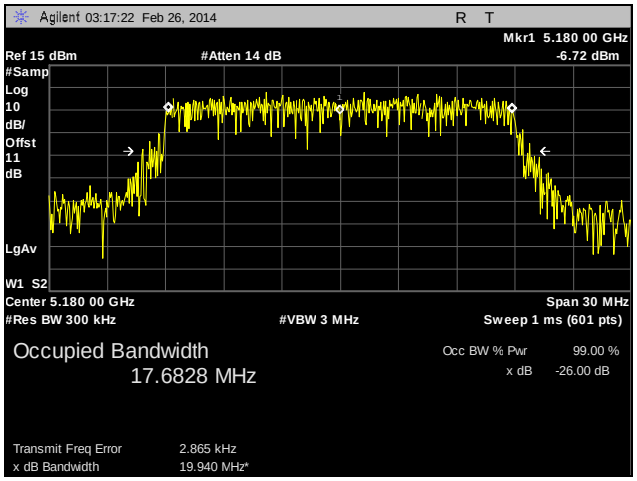
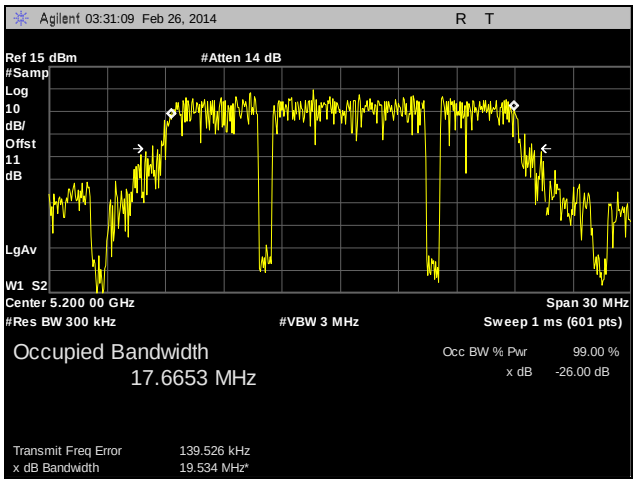
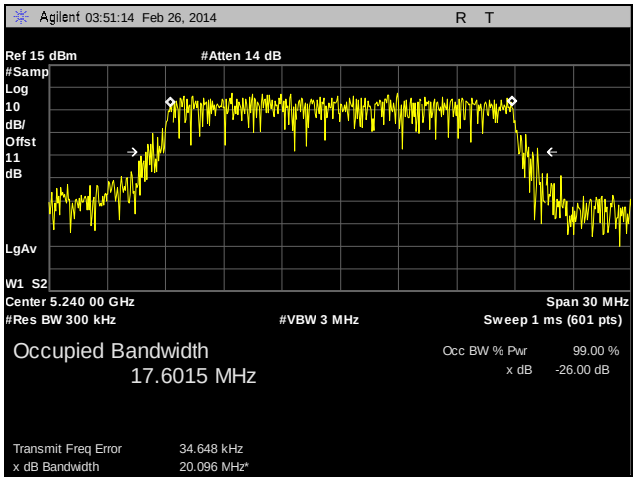


Plot 118. 99% Occupied Bandwidth, Low Channel, 802.11n 20 MHz, Ant. 1



Plot 119. 99% Occupied Bandwidth, Mid Channel, 802.11n 20 MHz, Ant. 1



Plot 120. 99% Occupied Bandwidth, High Channel, 802.11n 20 MHz, Ant. 1

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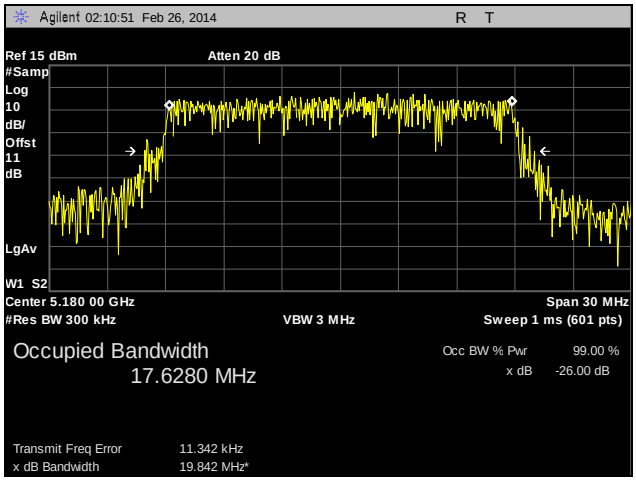
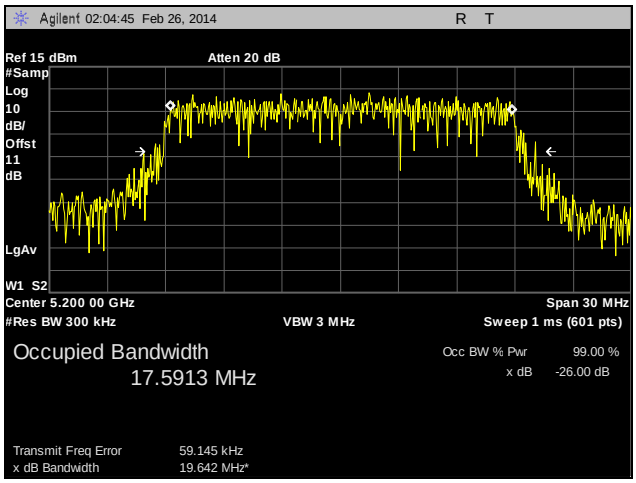
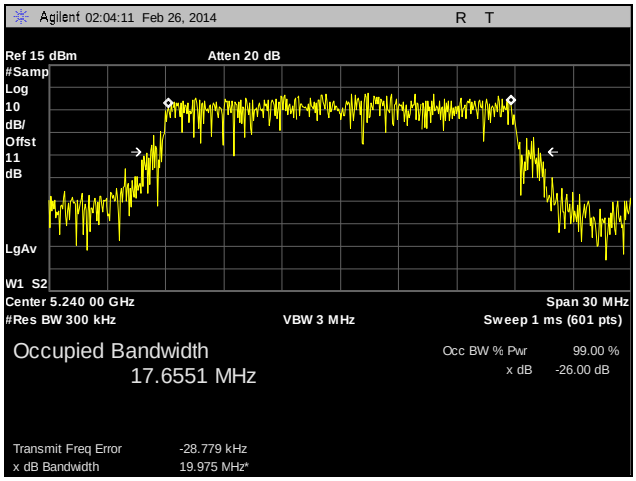


Plot 121. 99% Occupied Bandwidth, Low Channel, 802.11n 20 MHz, Ant. 2



Plot 122. 99% Occupied Bandwidth, Mid Channel, 802.11n 20 MHz, Ant. 2



Plot 123. 99% Occupied Bandwidth, High Channel, 802.11n 20 MHz, Ant. 2

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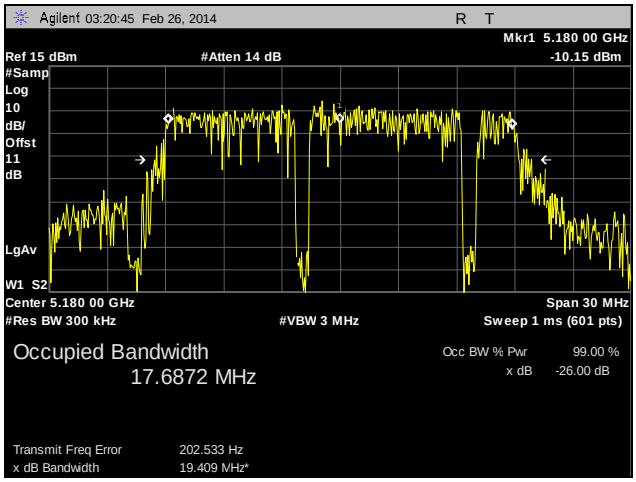
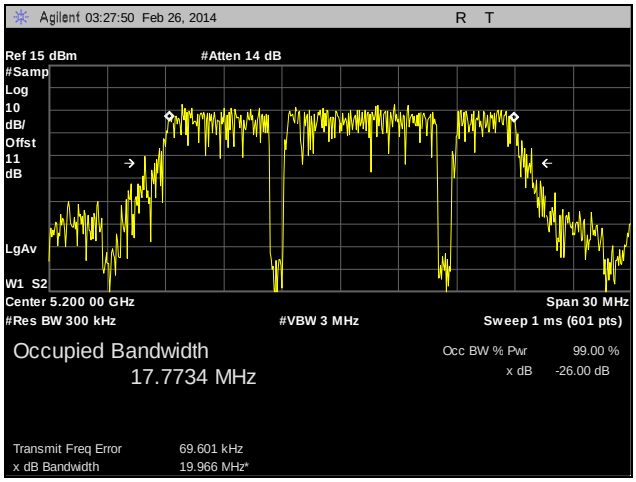
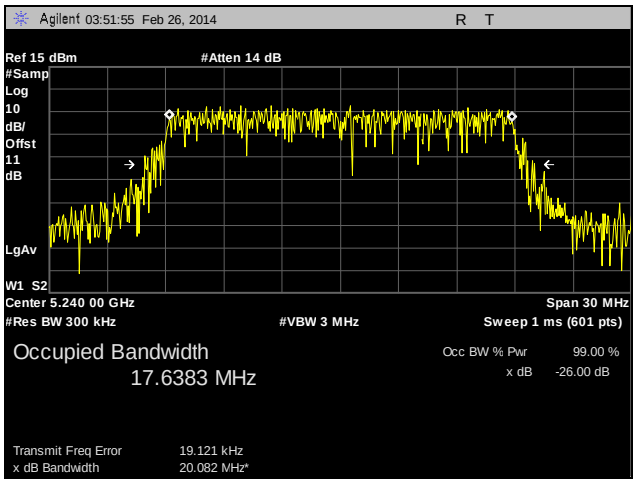
99% Occupied Bandwidth Test Results, 802.11n 20 MHz, MIMO



Plot 124. 99% Occupied Bandwidth, Low Channel, 802.11n 20 MHz, MIMO, Ant. 0



Plot 125. 99% Occupied Bandwidth, Mid Channel, 802.11n 20 MHz, MIMO, Ant. 0



Plot 126. 99% Occupied Bandwidth, High Channel, 802.11n 20 MHz, MIMO, Ant. 0

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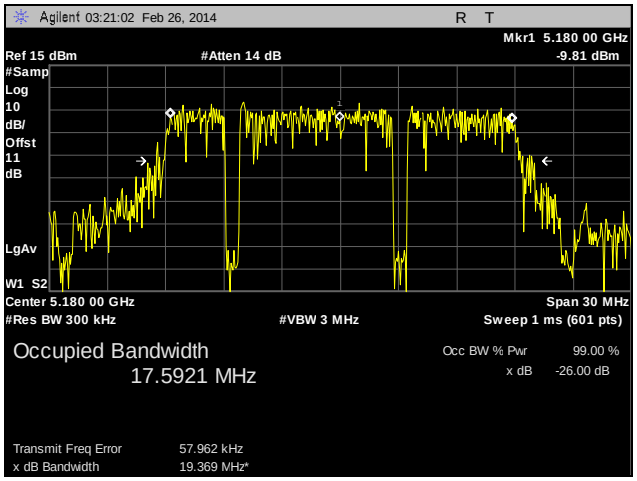
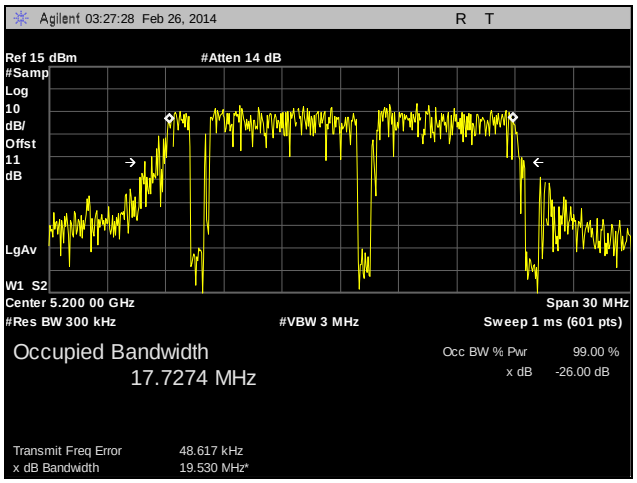
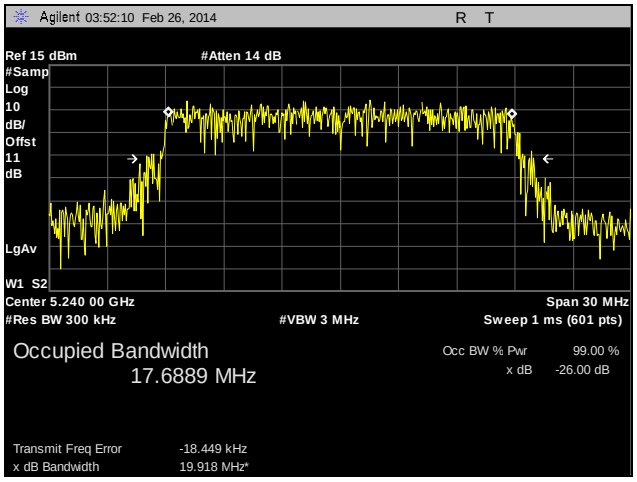


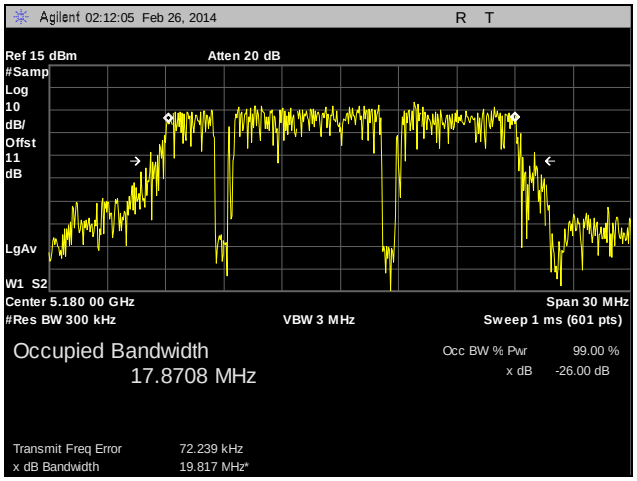
Plot 127. 99% Occupied Bandwidth, Low Channel, 802.11n 20 MHz, MIMO, Ant. 1



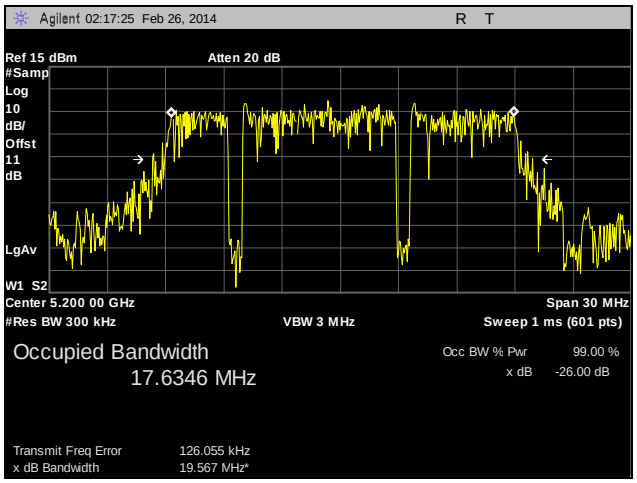
Plot 128. 99% Occupied Bandwidth, Mid Channel, 802.11n 20 MHz, MIMO, Ant. 1



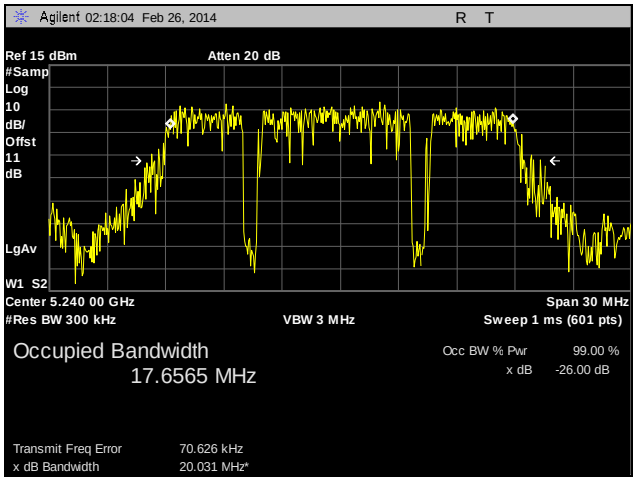
Plot 129. 99% Occupied Bandwidth, High Channel, 802.11n 20 MHz, MIMO, Ant. 1



Plot 130. 99% Occupied Bandwidth, Low Channel, 802.11n 20 MHz, MIMO, Ant. 2



Plot 131. 99% Occupied Bandwidth, Mid Channel, 802.11n 20 MHz, MIMO, Ant. 2



Plot 132. 99% Occupied Bandwidth, High Channel, 802.11n 20 MHz, MIMO, Ant. 2

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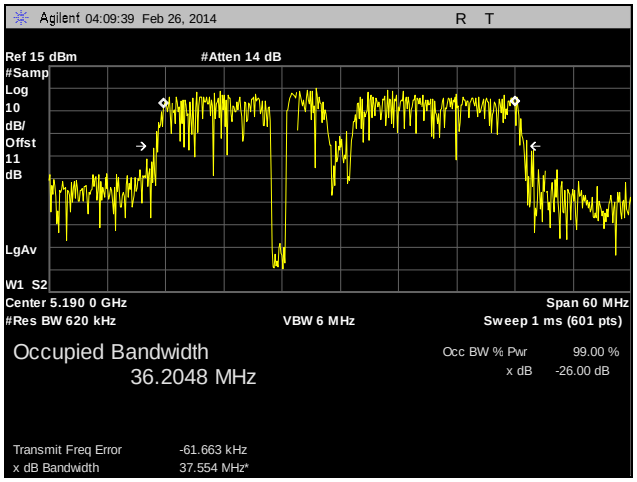
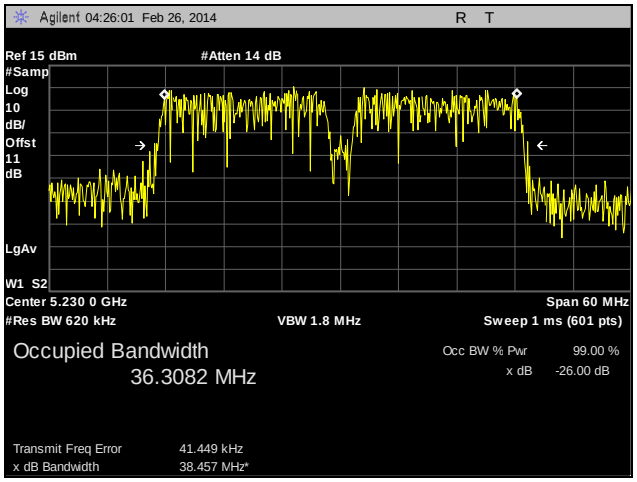
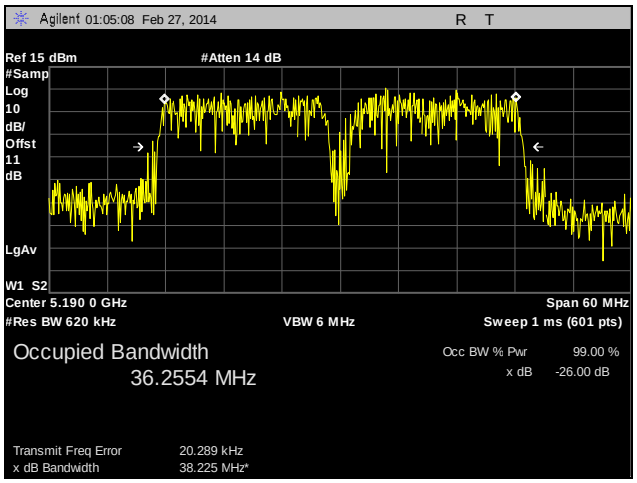
99% Occupied Bandwidth Test Results, 802.11a 40 MHz



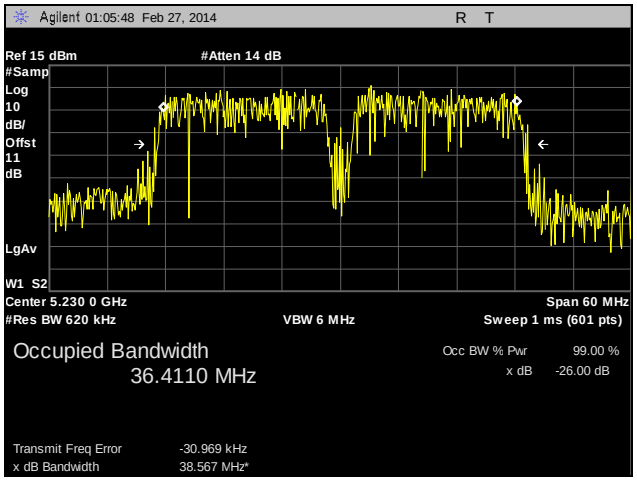
Plot 133. 99% Occupied Bandwidth, Low Channel, 802.11a 40 MHz, Ant. 0



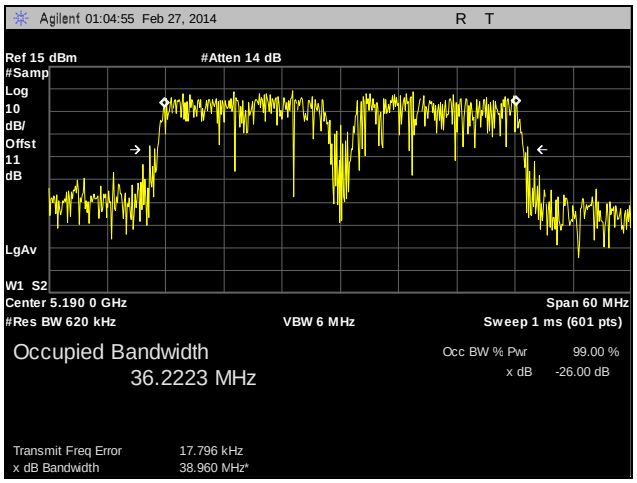
Plot 134. 99% Occupied Bandwidth, High Channel, 802.11a 40 MHz, Ant. 0



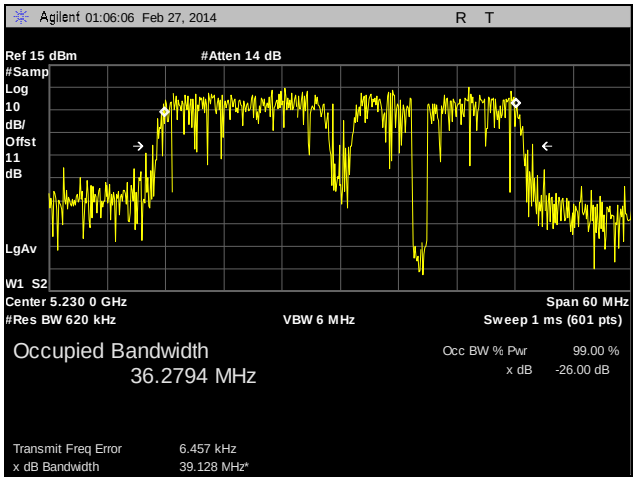
Plot 135. 99% Occupied Bandwidth, Low Channel, 802.11a 40 MHz, Ant. 1



Plot 136. 99% Occupied Bandwidth, High Channel, 802.11a 40 MHz, Ant. 1



Plot 137. 99% Occupied Bandwidth, Low Channel, 802.11a 40 MHz, Ant. 2



Plot 138. 99% Occupied Bandwidth, High Channel, 802.11a 40 MHz, Ant. 2

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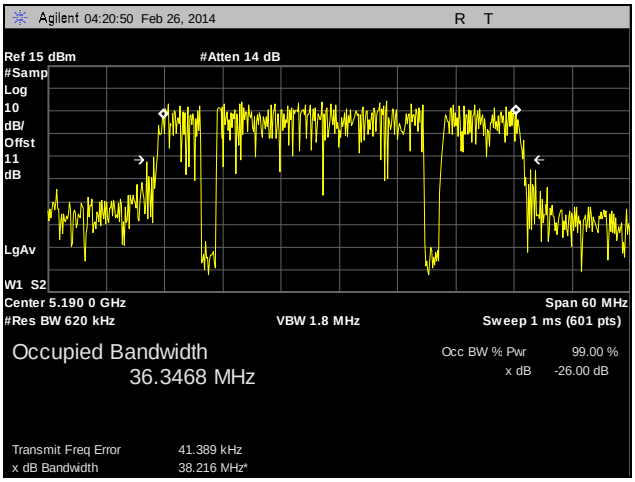
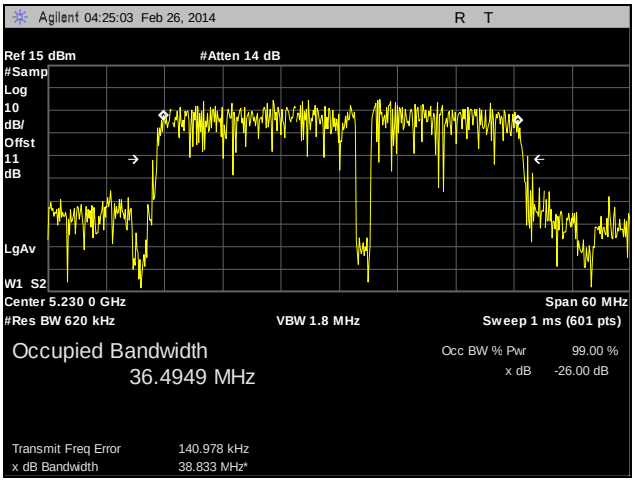
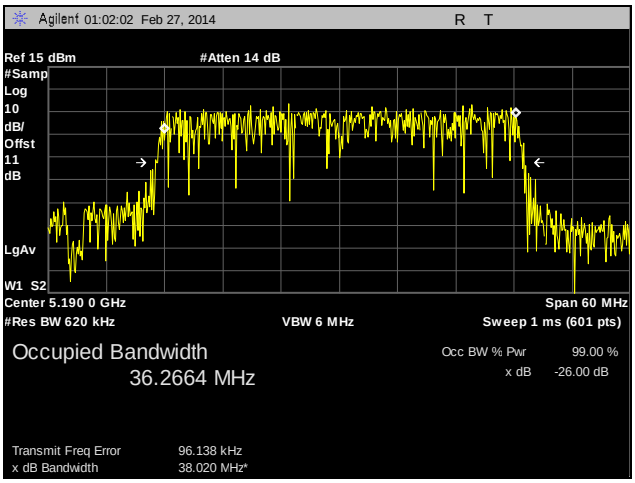
99% Occupied Bandwidth Test Results, 802.11ac 40 MHz, MIMO



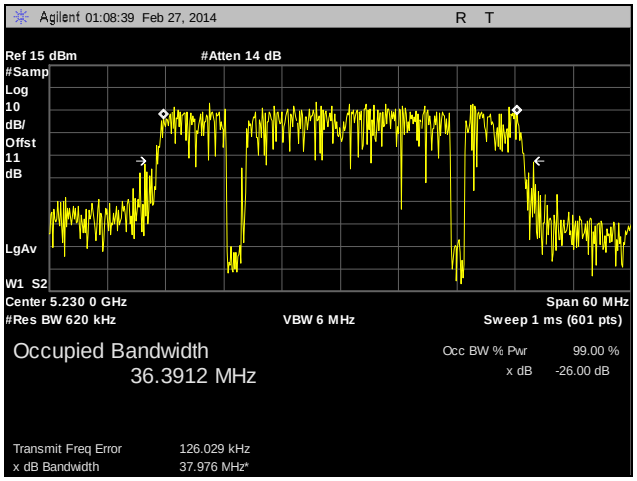
Plot 139. 99% Occupied Bandwidth, Low Channel, 802.11ac 40 MHz, MIMO, Ant. 0



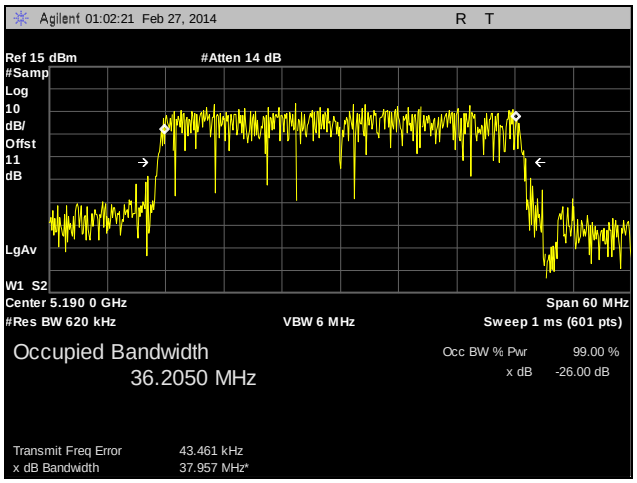
Plot 140. 99% Occupied Bandwidth, High Channel, 802.11ac 40 MHz, MIMO, Ant. 0



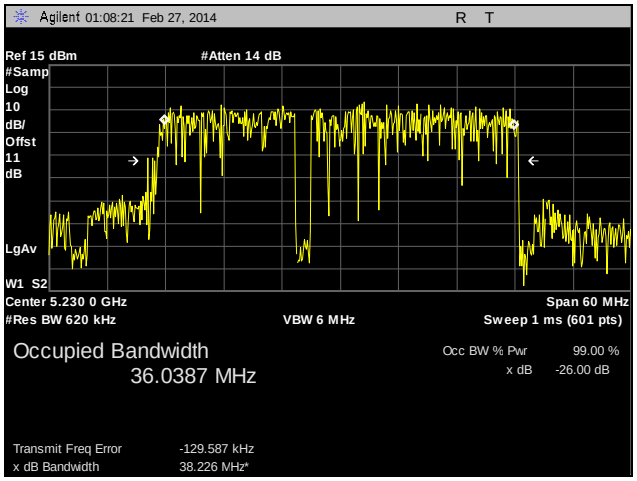
Plot 141. 99% Occupied Bandwidth, Low Channel, 802.11ac 40 MHz, MIMO, Ant. 1



Plot 142. 99% Occupied Bandwidth, High Channel, 802.11ac 40 MHz, MIMO, Ant. 1

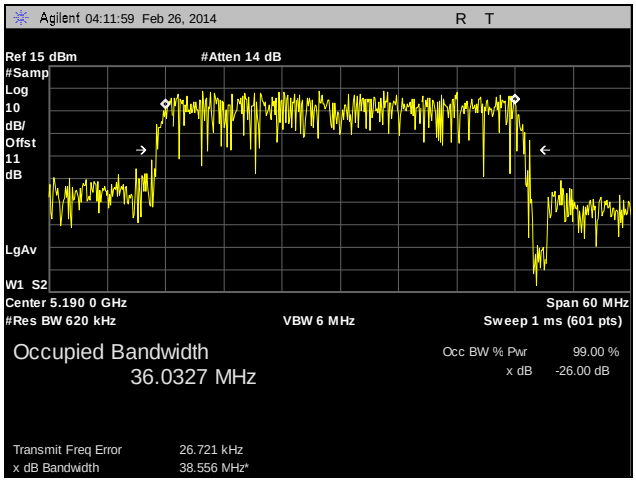


Plot 143. 99% Occupied Bandwidth, Low Channel, 802.11ac 40 MHz, MIMO, Ant. 2

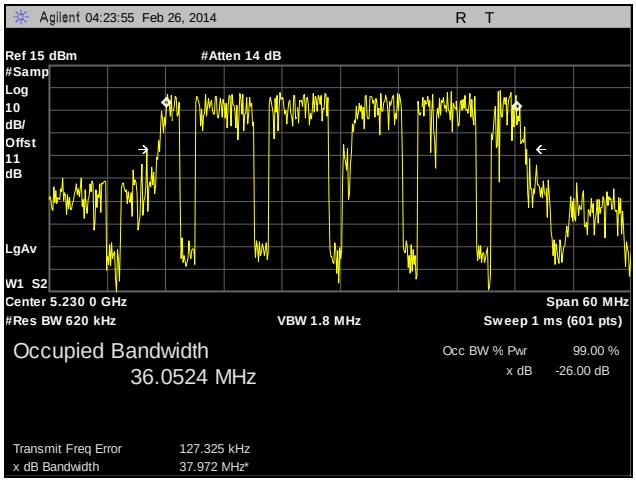


Plot 144. 99% Occupied Bandwidth, High Channel, 802.11ac 40 MHz, MIMO, Ant. 2

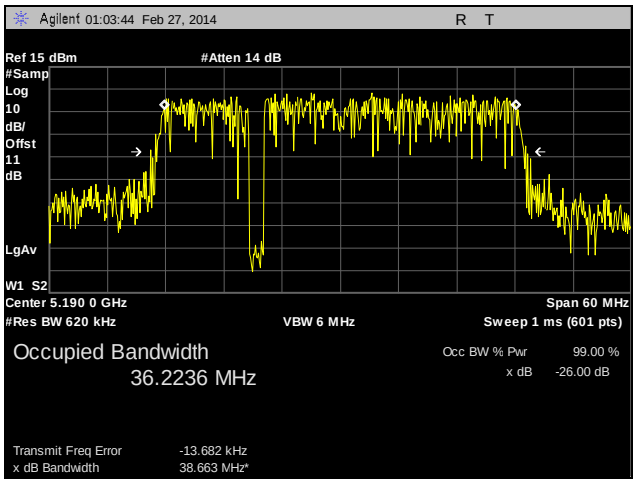
99% Occupied Bandwidth Test Results, 802.11n 40 MHz



Plot 145. 99% Occupied Bandwidth, Low Channel, 802.11n 40 MHz, Ant. 0



Plot 146. 99% Occupied Bandwidth, High Channel, 802.11n 40 MHz, Ant. 0



Plot 147. 99% Occupied Bandwidth, Low Channel, 802.11n 40 MHz, Ant. 1

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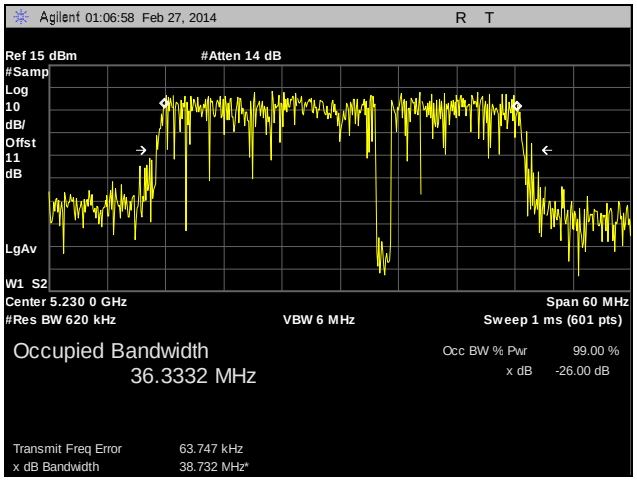
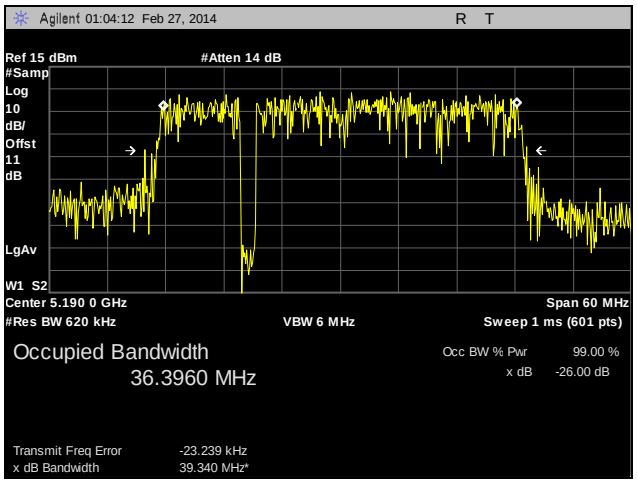
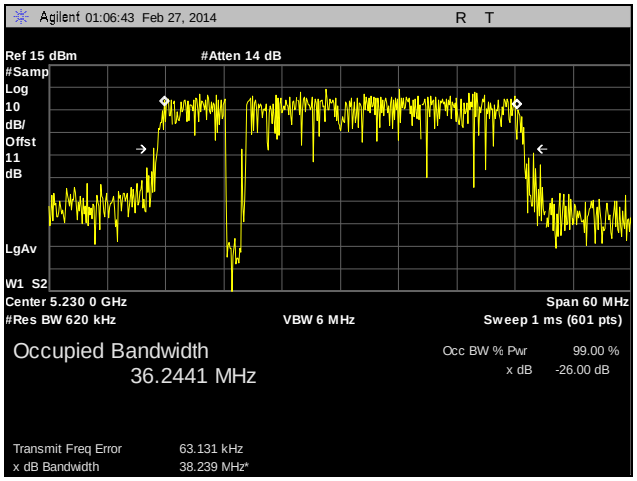


Plot 148. 99% Occupied Bandwidth, High Channel, 802.11n 40 MHz, Ant. 1



Plot 149. 99% Occupied Bandwidth, Low Channel, 802.11n 40 MHz, Ant. 2



Plot 150. 99% Occupied Bandwidth, High Channel, 802.11n 40 MHz, Ant. 2

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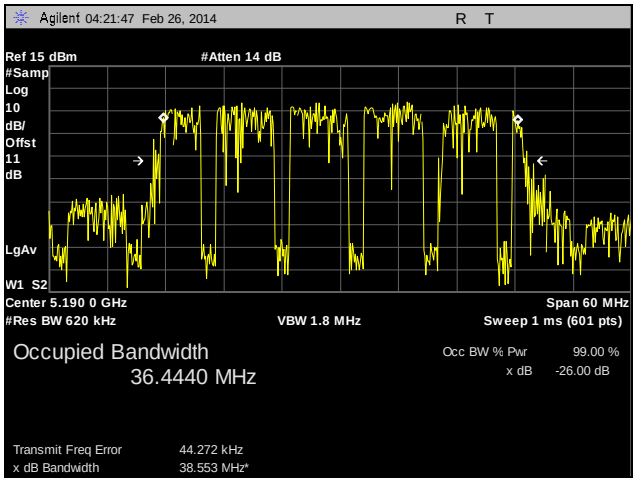
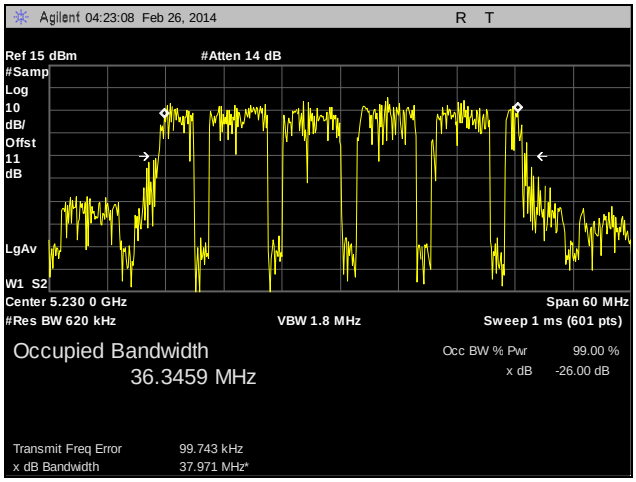
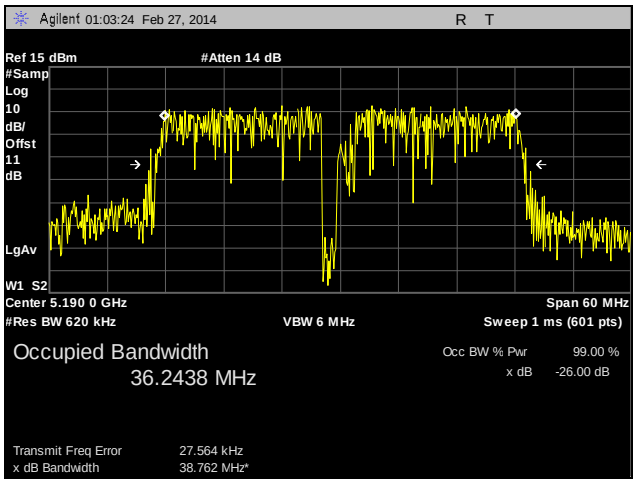
99% Occupied Bandwidth Test Results, 802.11n 40 MHz, MIMO



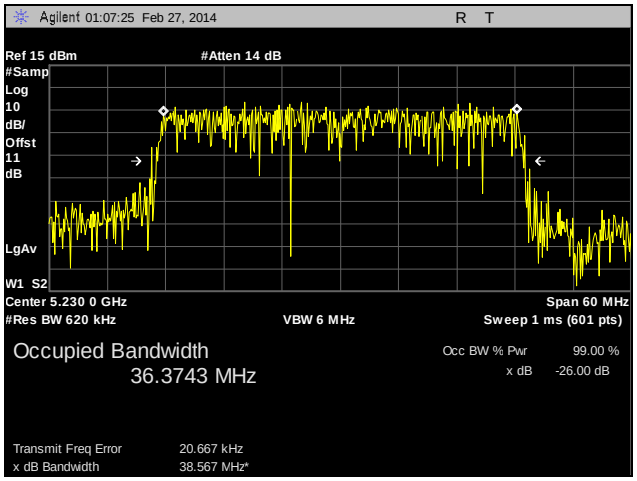
Plot 151. 99% Occupied Bandwidth, Low Channel, 802.11n 40 MHz, MIMO, Ant. 0



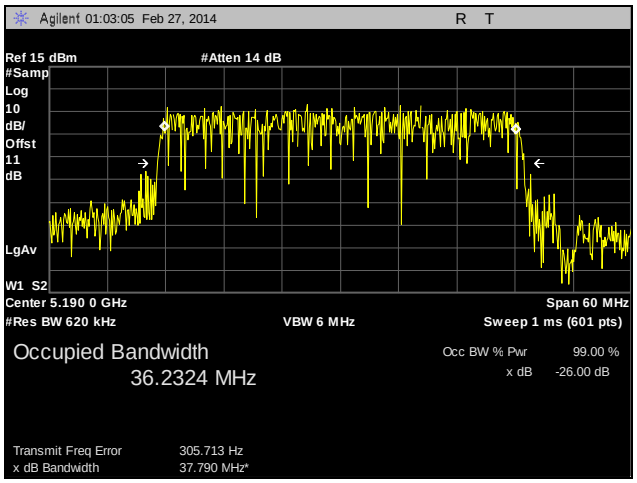
Plot 152. 99% Occupied Bandwidth, High Channel, 802.11n 40 MHz, MIMO, Ant. 0



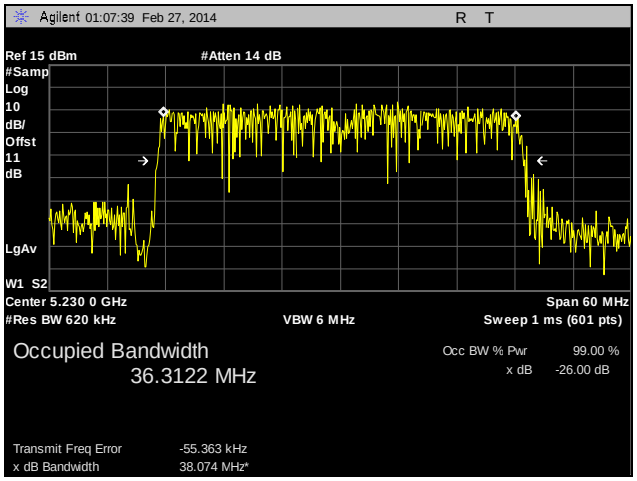
Plot 153. 99% Occupied Bandwidth, Low Channel, 802.11n 40 MHz, MIMO, Ant. 1



Plot 154. 99% Occupied Bandwidth, High Channel, 802.11n 40 MHz, MIMO, Ant. 1

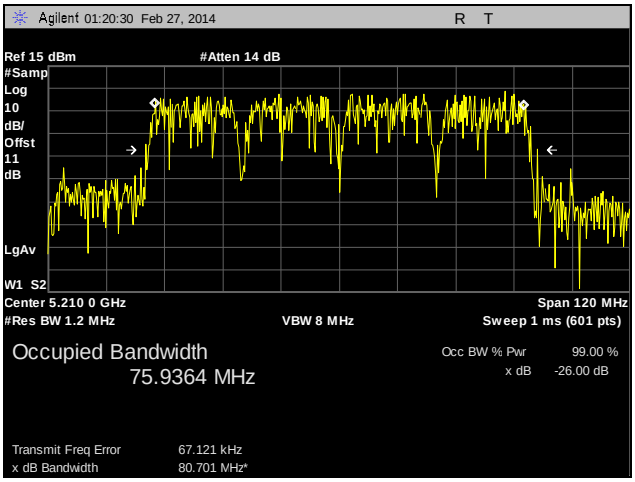


Plot 155. 99% Occupied Bandwidth, Low Channel, 802.11n 40 MHz, MIMO, Ant. 2

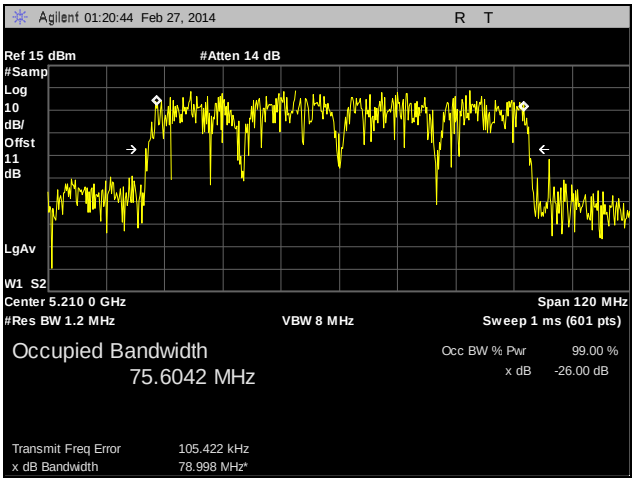


Plot 156. 99% Occupied Bandwidth, High Channel, 802.11n 40 MHz, MIMO, Ant. 2

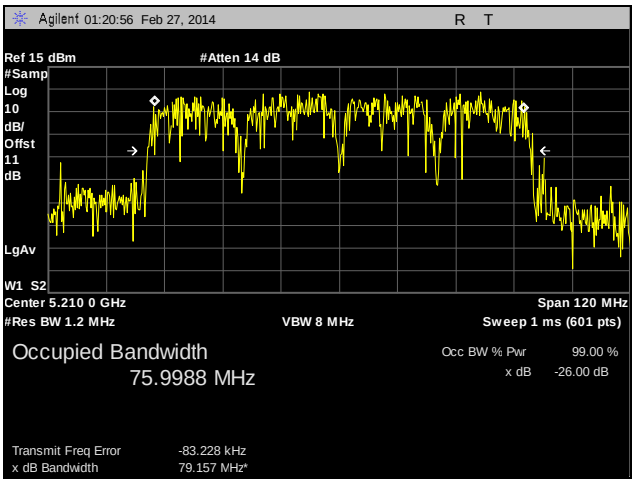
99% Occupied Bandwidth Test Results, 802.11a 80 MHz



Plot 157. 99% Occupied Bandwidth, 802.11a 80 MHz, Ant. 0

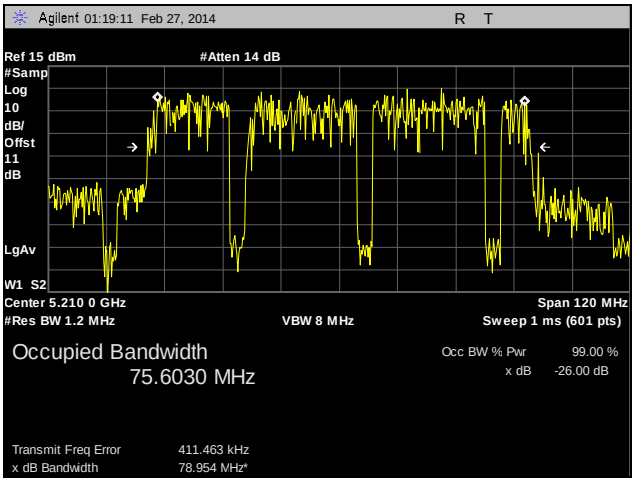


Plot 158. 99% Occupied Bandwidth, 802.11a 80 MHz, Ant. 1

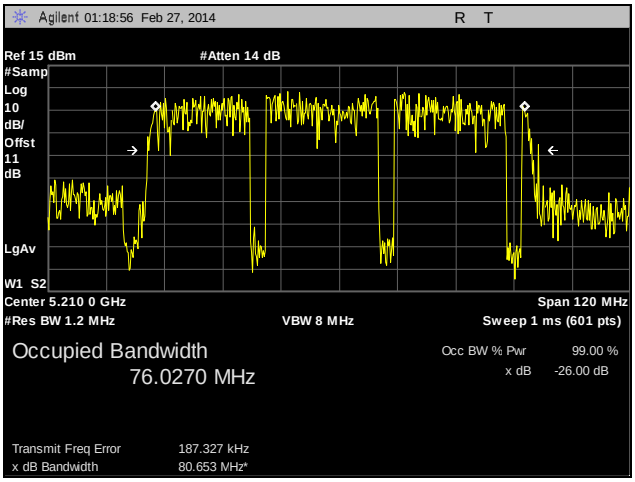


Plot 159. 99% Occupied Bandwidth, 802.11a 80 MHz, Ant. 2

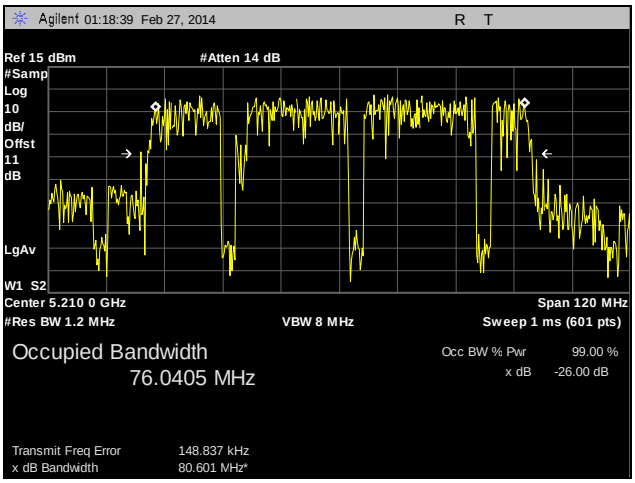
99% Occupied Bandwidth Test Results, 802.11ac 80 MHz



Plot 160. 99% Occupied Bandwidth, 802.11ac 80 MHz, Ant. 0

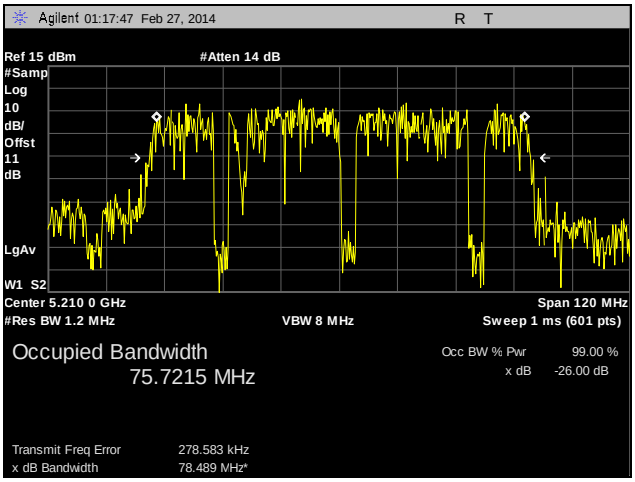


Plot 161. 99% Occupied Bandwidth, 802.11ac 80 MHz, Ant. 1

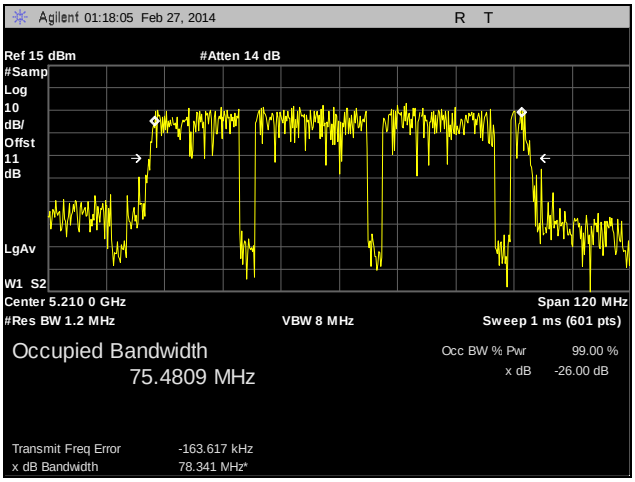


Plot 162. 99% Occupied Bandwidth, 802.11ac 80 MHz, Ant. 2

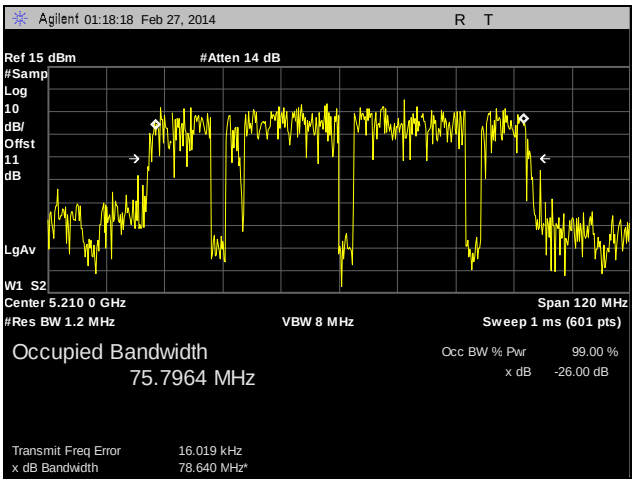
99% Occupied Bandwidth Test Results, 802.11ac 80 MHz, MIMO



Plot 163. 99% Occupied Bandwidth, 802.11ac 80 MHz, Ant. 0, MIMO



Plot 164. 99% Occupied Bandwidth, 802.11ac 80 MHz, Ant. 1, MIMO



Plot 165. 99% Occupied Bandwidth, 802.11ac 80 MHz, Ant. 2, MIMO

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Electromagnetic Compatibility Criteria for Intentional Radiators

§ 15. 407(a)(1) RF Power Output

Test Requirements: **§15.407(a)(1):** For the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 50 mW or 4 dBm + 10 log B, where B is the 26-dB emission bandwidth in MHz.

Test Procedure: The EUT was connected to a spectrum analyzer through an RF cable and an attenuator. The EUT was set to transmit on low, mid, and high channels and the power was measured according to method SA-1 from FCC Publication Number 789033. Power across the antenna ports was summed.

Test Results: Equipment was compliant with the Peak Power Output limits of **§ 15.401(a)(1)**.

Test Engineer(s): Surinder Singh

Test Date(s): 02/24/14

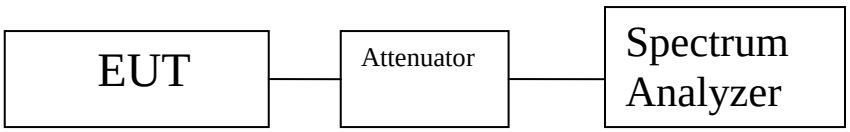

Figure 2. Power Output Test Setup

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Peak Power Output Test Results

Peak Power Output Test Result 5GHz Radio - UNII Band -1										
Peak Conducted Output Power 20MHz Band 802.11a/ac/n Mode (dBm)										
Channel	Frequency GHz	Measured Peak Output Power (dBm)/20MHz Ant 0	Measured Peak Output Power (dBm)/20MHz Ant 1	Measured Peak Output Power (dBm)/20MHz Ant 2	Mode	Power Limit (dBm)	Antenna Gain (dB)	Margin Ant0 (dB)	Margin Ant1 (dB)	Margin Ant2 (dB)
36	5180	16.93	16.61	16.61	a	17	3.8	-0.07	-0.39	-0.39
36	5180	16.89	16.46	16.71	ac	17	3.8	-0.11	-0.54	-0.29
36	5180	16.8	16.5	16.85	n	17	3.8	-0.2	-0.5	-0.15
40	5200	16.7	16.92	16.9	a	17	3.8	-0.3	-0.08	-0.1
40	5200	16.7	16.79	16.79	ac	17	3.8	-0.3	-0.21	-0.21
40	5200	16.86	16.81	16.63	n	17	3.8	-0.14	-0.19	-0.37
48	5240	16.85	16.92	16.96	a	17	3.8	-0.15	-0.08	-0.04
48	5240	16.93	16.93	16.92	ac	17	3.8	-0.07	-0.07	-0.08
48	5240	16.91	16.82	16.91	n	17	3.8	-0.09	-0.18	-0.09

Peak Conducted Output Power 20MHz Band 802.11n/ac Mode MIMO (3*3) (dBm)									
Chanel Carrier	Frequency MHz	Measured Peak Output Power (dBm)/20MHz Ant 0	Measured Peak Output Power (dBm)/20MHz Ant 1	Measured Peak Output Power (dBm)/20MHz Ant 2	Mode	Total Output Power (dBm)	Antenna Gain (dB)	Power Limit (dBm)	Margin (dB)
36	5180	9.74	9.84	9.93	ac	14.61	8.21	14.79	-0.18
40	5200	9.93	9.94	9.95	ac	14.71	8.21	14.79	-0.08
48	5240	9.99	9.99	9.99	ac	14.76	8.21	14.79	-0.03
36	5180	9.87	9.76	9.88	n	14.61	8.21	14.79	-0.18
40	5200	9.73	9.58	9.8	n	14.48	8.21	14.79	-0.31
48	5240	9.88	9.75	9.94	n	14.63	8.21	14.79	-0.16

Table 87. Peak Power Output, Test Results, 802.11 20 MHz

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Peak Power Output Test Result 5GHz Radio - UNII Band -1										
Peak Conducted Output Power 40MHz Band 802.11a/ac/n Mode (dBm)										
Channel	Frequency GHz	Measured Peak Output Power (dBm)/40MHz Ant 0	Measured Peak Output Power (dBm)/40MHz Ant 1	Measured Peak Output Power (dBm)/40MHz Ant 2	Mode	Power Limit (dBm)	Antenna Gain (dB)	Margin Ant0 (dB)	Margin Ant1 (dB)	Margin Ant2 (dB)
36	5190	16.81	16.74	16.76	a	17	3.8	-0.19	-0.26	-0.24
36	5190	16.85	16.41	16.77	n	17	3.8	-0.15	-0.59	-0.23
44	5230	16.81	16.81	16.8	a	17	3.8	-0.19	-0.19	-0.2
44	5230	16.83	16.93	16.65	n	17	3.8	-0.17	-0.07	-0.35

Peak Conducted Output Power 40MHz Band 11n mode MIMO (3*3) (dBm)									
Chanel Carrier	Frequency MHz	Measured Peak Output Power (dBm)/40MHz Ant 0	Measured Peak Output Power (dBm)/40MHz Ant 1	Measured Peak Output Power (dBm)/40MHz Ant 2	Mode	Total OutPut Power (dBm)	Antenna Gain (dB)	Power Limit (dBm)	Margin (dB)
36	5190	9.81	9.71	9.72	ac	14.52	8.21	14.79	-0.27
36	5190	9.91	9.81	9.89	n	14.64	8.21	14.79	-0.15
44	5230	9.85	9.72	9.95	ac	14.61	8.21	14.79	-0.18
44	5230	9.79	9.75	9.9	n	14.59	8.21	14.79	-0.20

Table 88. Peak Power Output, Test Results, 802.11 40 MHz

Peak Power Output Test Result 5GHz Radio - UNII Band -1										
Peak Conducted Output Power 80MHz Band 802.11a/ac Mode (dBm)										
Channel	Frequency GHz	Measured Peak Output Power (dBm)/40MHz Ant 0	Measured Peak Output Power (dBm)/40MHz Ant 1	Measured Peak Output Power (dBm)/40MHz Ant 2	Mode	Power Limit (dBm)	Antenna Gain (dB)	Margin Ant0 (dB)	Margin Ant1 (dB)	Margin Ant2 (dB)
36	5210	16.8	16.96	16.97	a	17	3.8	-0.2	-0.04	-0.03
36	5210	16.93	16.72	16.84	ac	17	3.8	-0.07	-0.28	-0.16

Peak Conducted Output Power 80MHz Band 802.11ac mode MIMO (3*3) (dBm)								
Chanel Carrier	Frequency MHz	Measured Peak Output Power (dBm)/80MHz Ant 0	Measured Peak Output Power (dBm)/80MHz Ant 1	Measured Peak Output Power (dBm)/80MHz Ant 2	Total Output Power (dBm)	Antenna Gain (dB)	Power Limit (dBm)	Margin (dB)
36	5210	9.89	9.96	9.93	14.70	8.21	14.79	-0.09

Table 89. Peak Power Output, Test Results, 802.11 80 MHz

80MHz MIMO				
Chanel Carrier	**Mode**	GUI Ant0	GUI Ant1	GUI Ant2
36	ac	38	42	41

Table 90. Peak Conducted Output Power, EUT GUI, Power Level, 80 MHz MIMO

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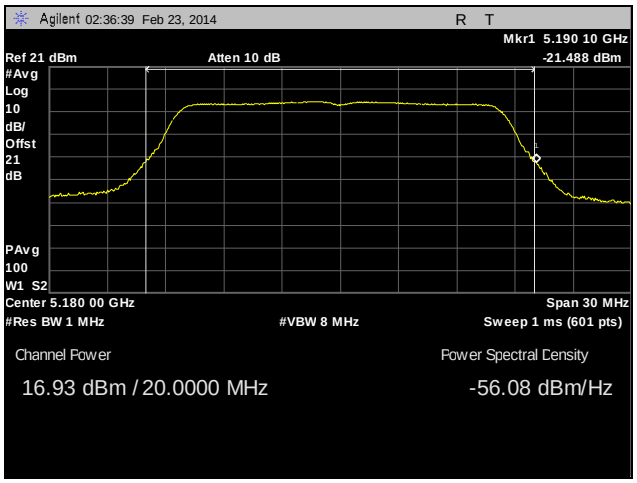
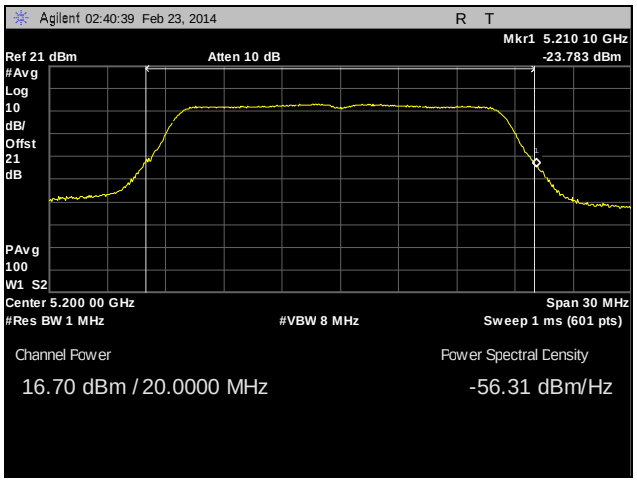
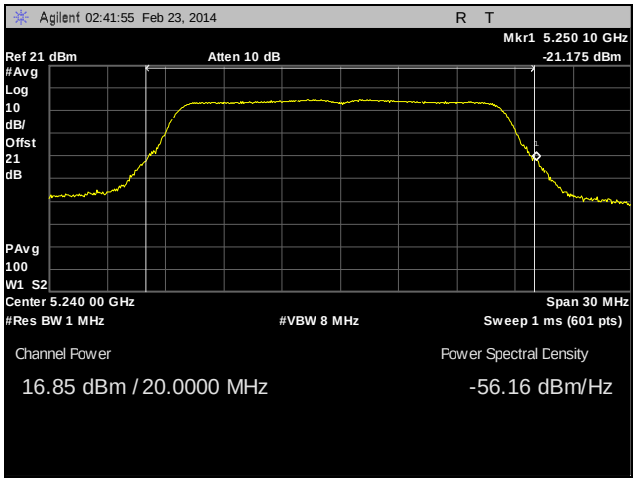
Peak Power Output Test Results, 802.11a 20 MHz



Plot 166. Peak Power Output, Low Channel, 802.11a 20 MHz, Ant. 0



Plot 167. Peak Power Output, Mid Channel, 802.11a 20 MHz, Ant. 0



Plot 168. Peak Power Output, High Channel, 802.11a 20 MHz, Ant. 0

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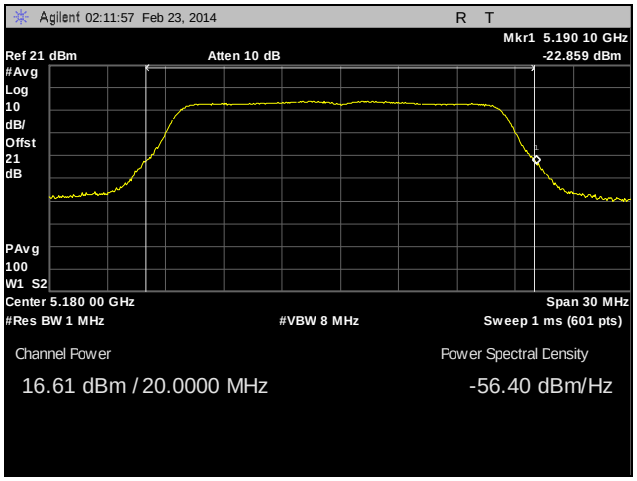
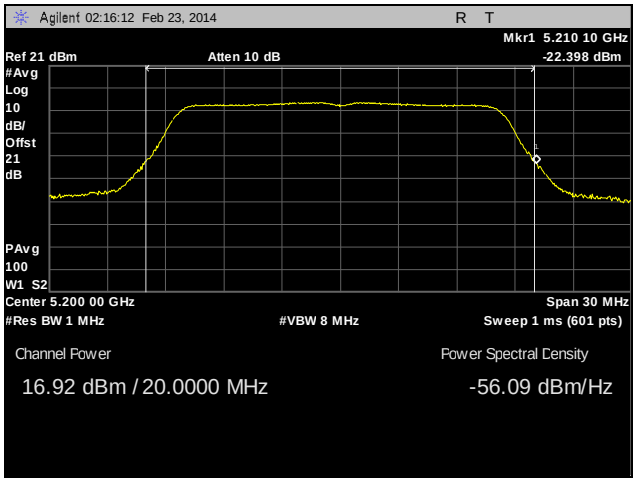
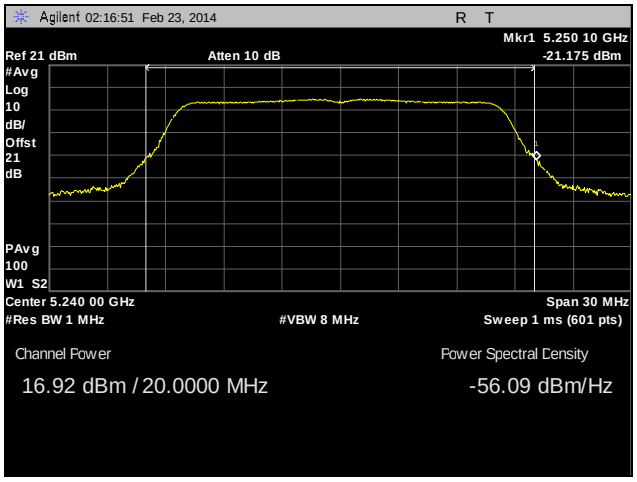


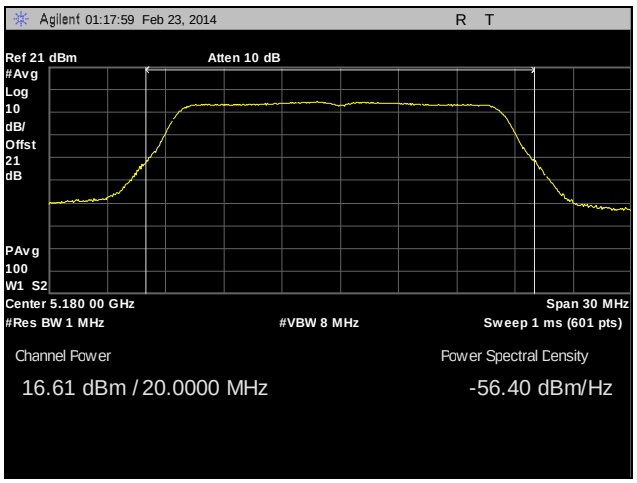
Plot 169. Peak Power Output, Low Channel, 802.11a 20 MHz, Ant. 1



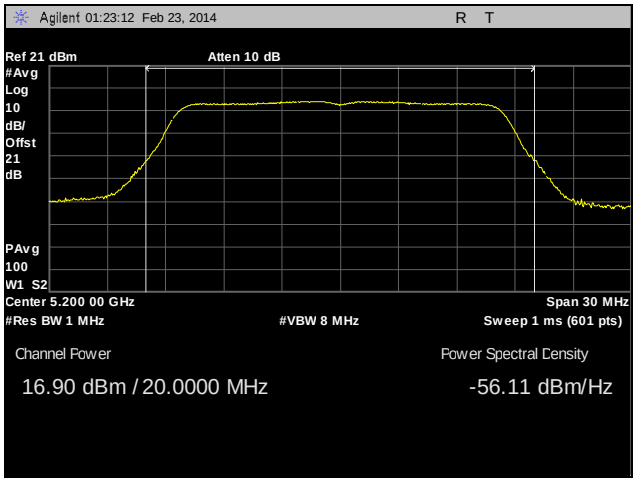
Plot 170. Peak Power Output, Mid Channel, 802.11a 20 MHz, Ant. 1



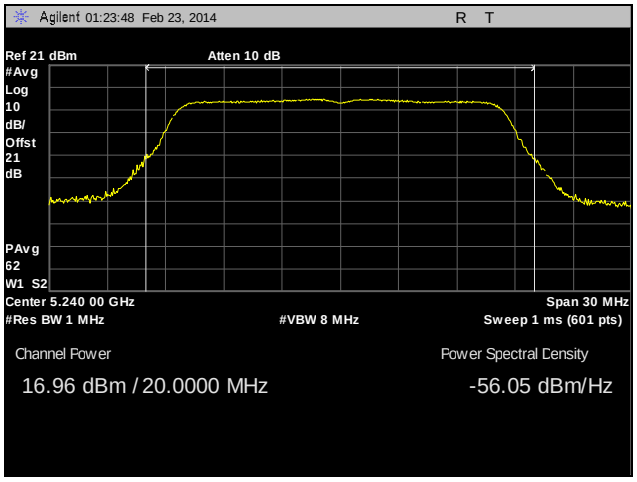
Plot 171. Peak Power Output, High Channel, 802.11a 20 MHz, Ant. 1



Plot 172. Peak Power Output, Low Channel, 802.11a 20 MHz, Ant. 2

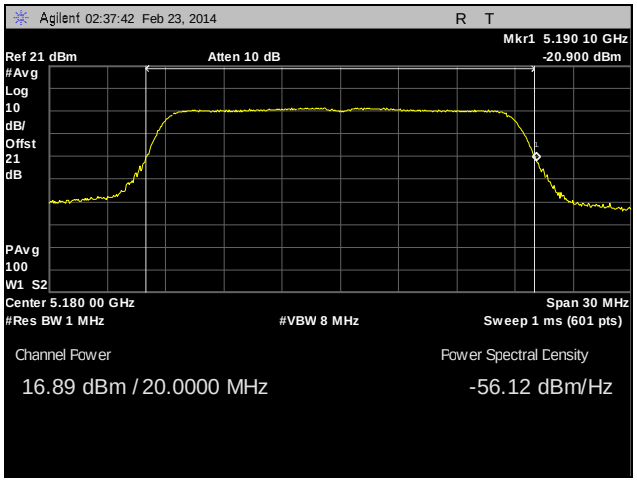


Plot 173. Peak Power Output, Mid Channel, 802.11a 20 MHz, Ant. 2

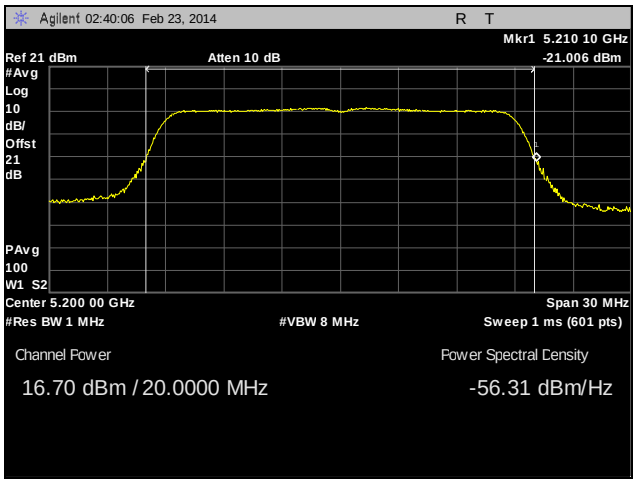


Plot 174. Peak Power Output, High Channel, 802.11a 20 MHz, Ant. 2

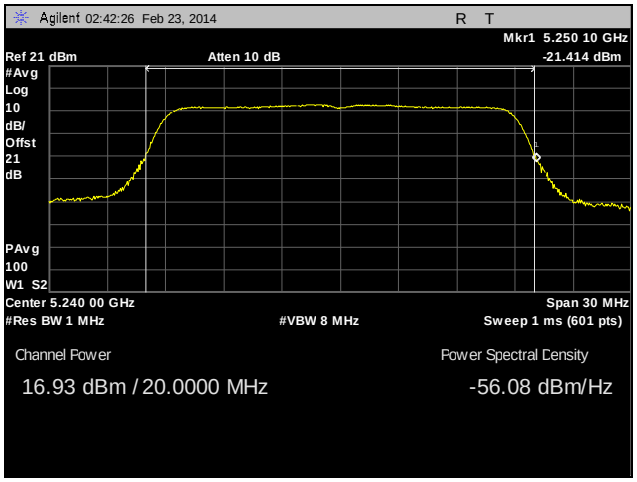
Peak Power Output Test Results, 802.11ac 20 MHz



Plot 175. Peak Power Output, Low Channel, 802.11ac 20 MHz, Ant. 0



Plot 176. Peak Power Output, Mid Channel, 802.11ac 20 MHz, Ant. 0



Plot 177. Peak Power Output, High Channel, 802.11ac 20 MHz, Ant. 0

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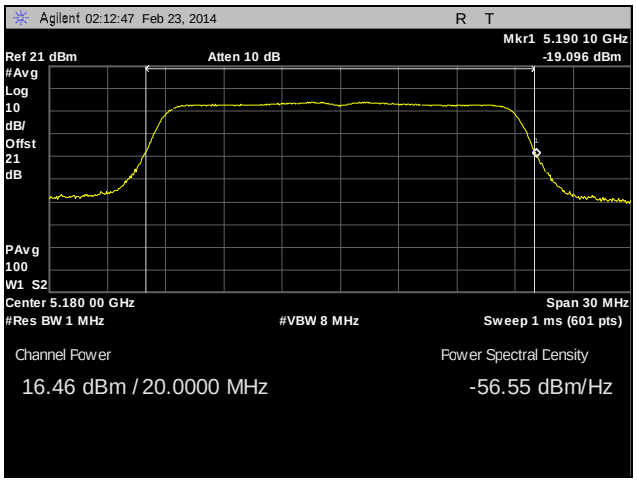
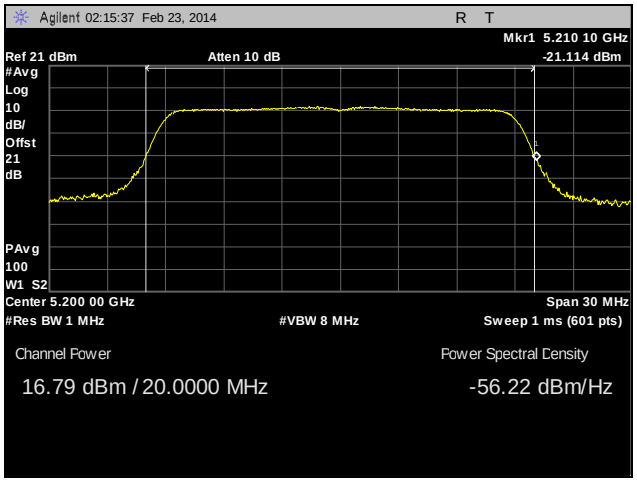
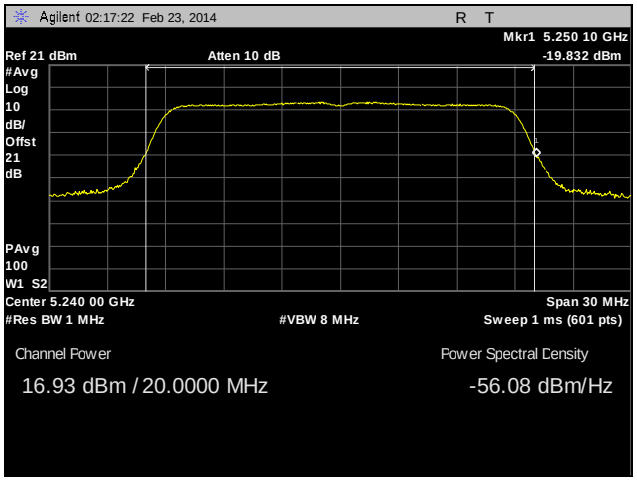


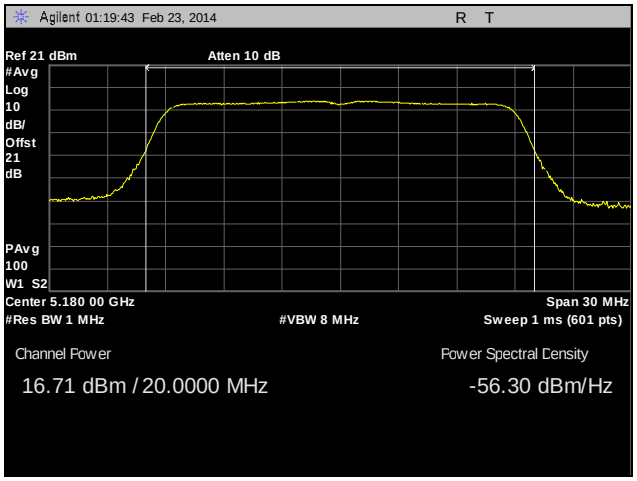
Plot 178. Peak Power Output, Low Channel, 802.11ac 20 MHz, Ant. 1



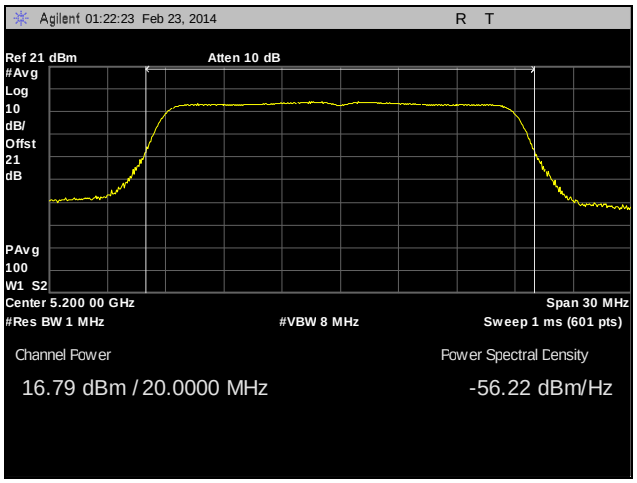
Plot 179. Peak Power Output, Mid Channel, 802.11ac 20 MHz, Ant. 1



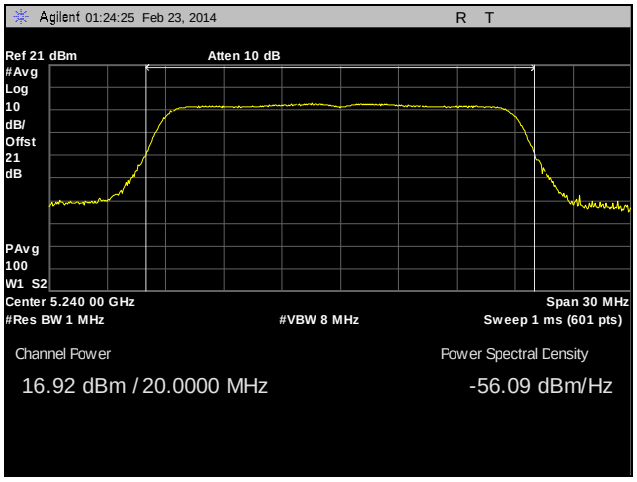
Plot 180. Peak Power Output, High Channel, 802.11ac 20 MHz, Ant. 1



Plot 181. Peak Power Output, Low Channel, 802.11ac 20 MHz, Ant. 2



Plot 182. Peak Power Output, Mid Channel, 802.11ac 20 MHz, Ant. 2



Plot 183. Peak Power Output, High Channel, 802.11ac 20 MHz, Ant. 2

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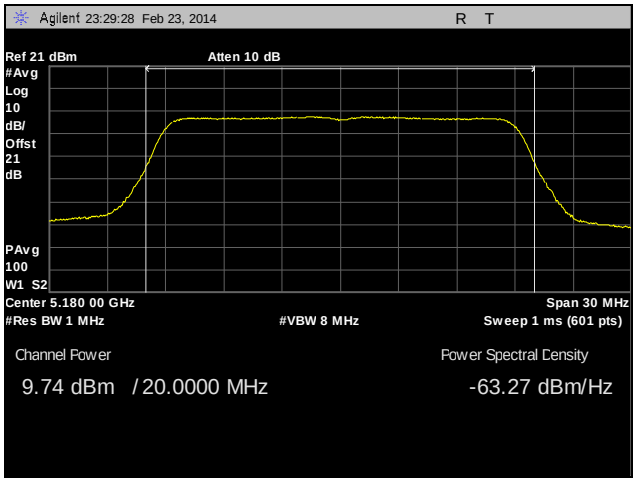
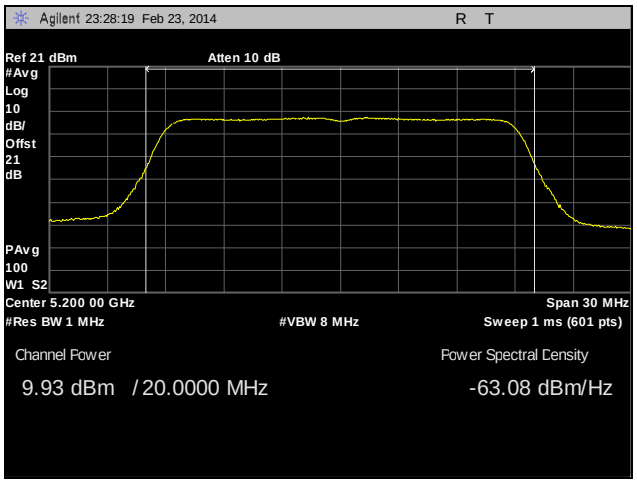
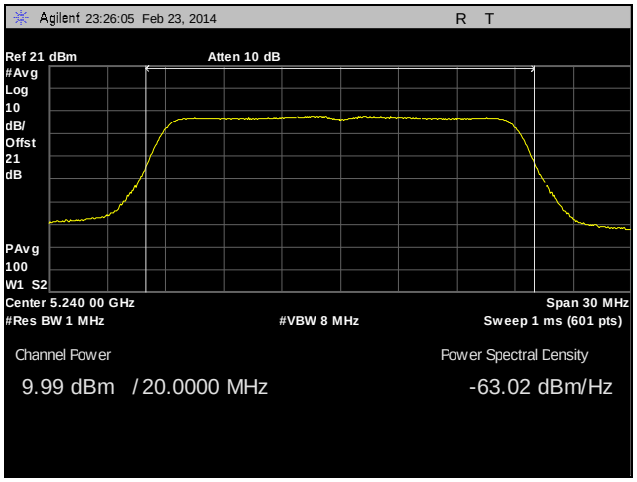
Peak Power Output Test Results, 802.11ac 20 MHz, MIMO



Plot 184. Peak Power Output, Low Channel, 802.11ac 20 MHz, Ant. 0, MIMO



Plot 185. Peak Power Output, Mid Channel, 802.11ac 20 MHz, Ant. 0, MIMO



Plot 186. Peak Power Output, High Channel, 802.11ac 20 MHz, Ant. 0, MIMO

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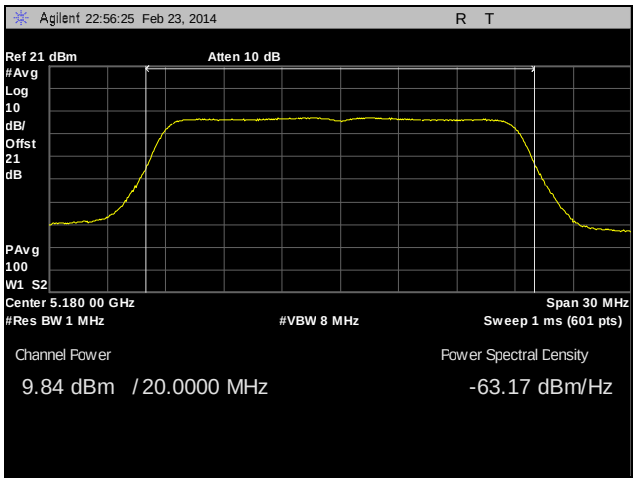
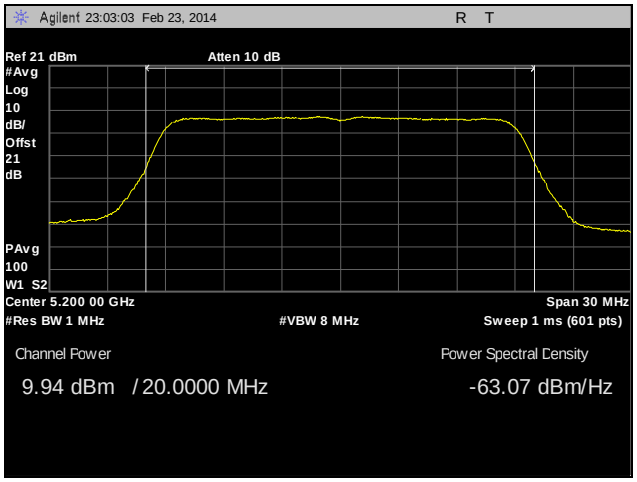
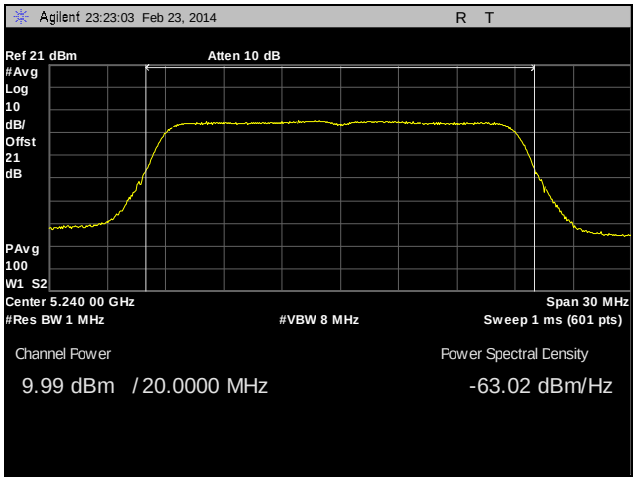


Plot 187. Peak Power Output, Low Channel, 802.11ac 20 MHz, Ant. 1, MIMO



Plot 188. Peak Power Output, Mid Channel, 802.11ac 20 MHz, Ant. 1, MIMO



Plot 189. Peak Power Output, High Channel, 802.11ac 20 MHz, Ant. 1, MIMO

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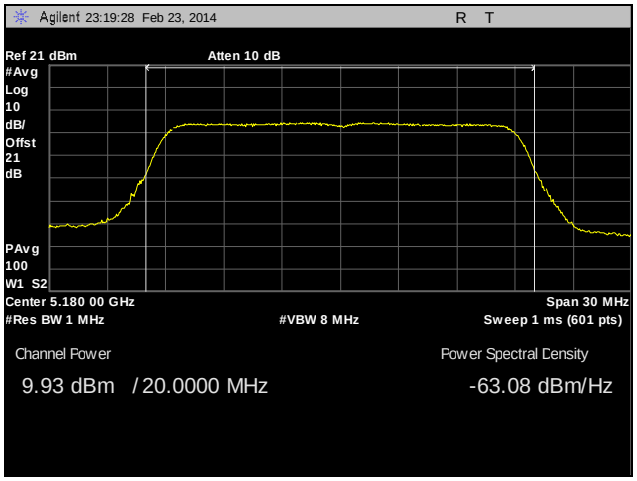
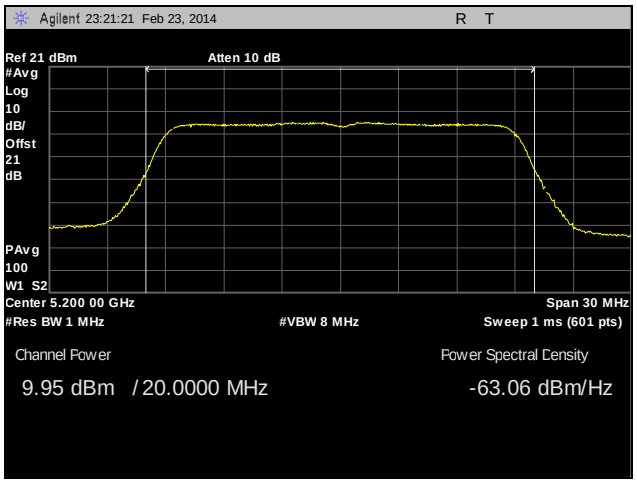
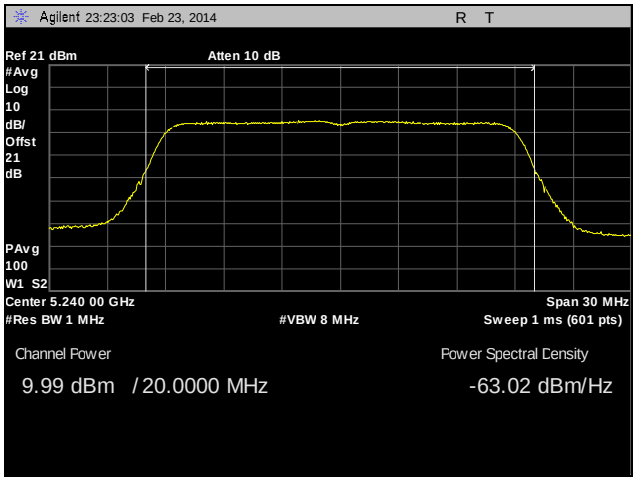


Plot 190. Peak Power Output, Low Channel, 802.11ac 20 MHz, Ant. 2, MIMO



Plot 191. Peak Power Output, Mid Channel, 802.11ac 20 MHz, Ant. 2, MIMO



Plot 192. Peak Power Output, High Channel, 802.11ac 20 MHz, Ant. 2, MIMO

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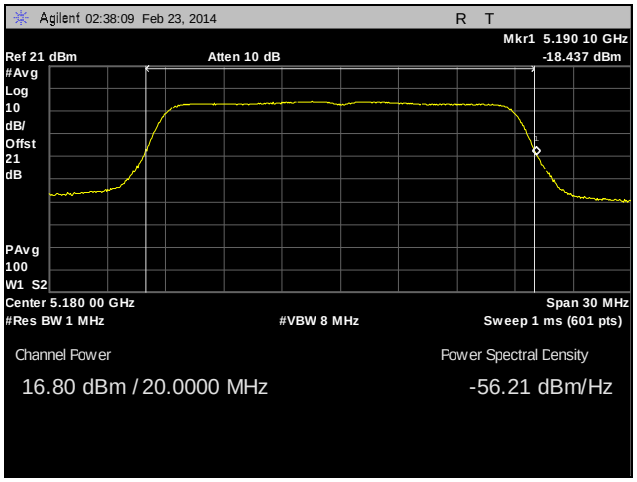
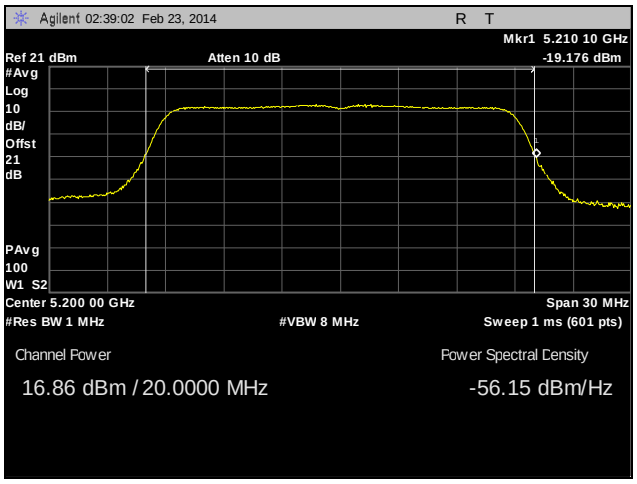
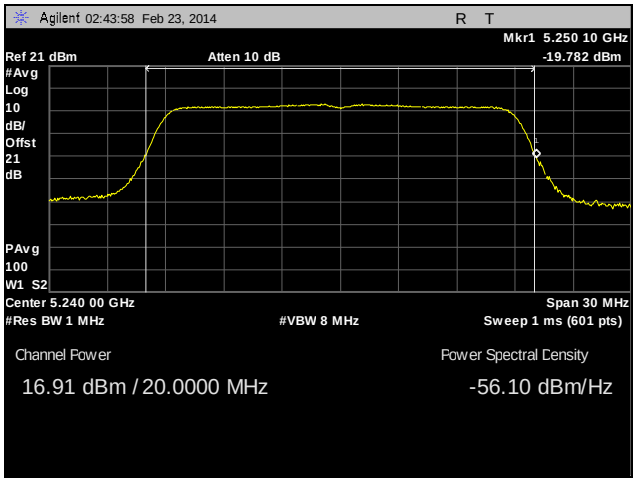
Peak Power Output Test Results, 802.11n 20 MHz



Plot 193. Peak Power Output, Low Channel, 802.11n 20 MHz, Ant. 0



Plot 194. Peak Power Output, Mid Channel, 802.11n 20 MHz, Ant. 0



Plot 195. Peak Power Output, High Channel, 802.11n 20 MHz, Ant. 0

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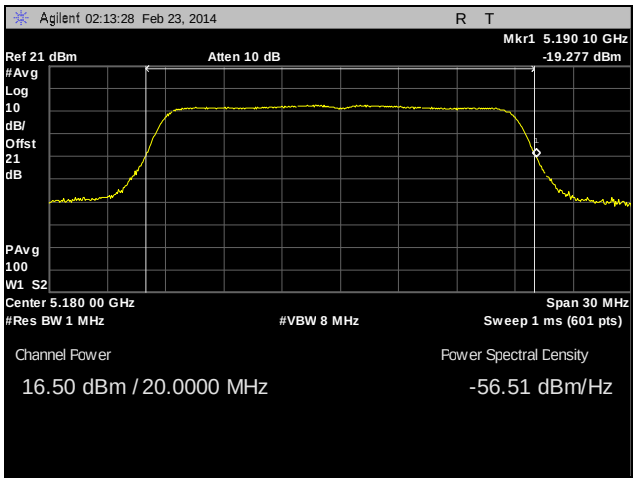
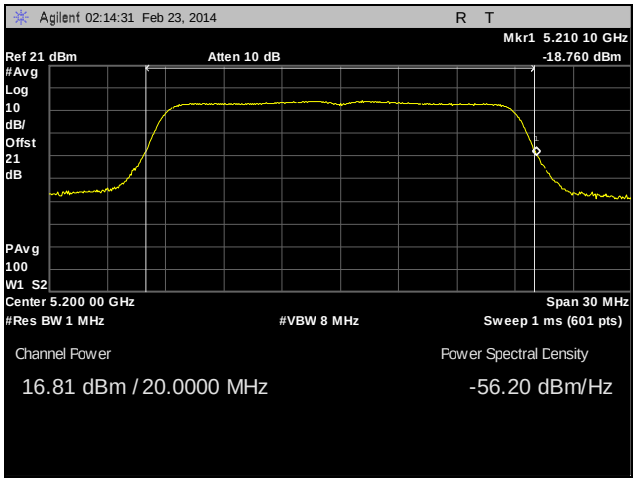
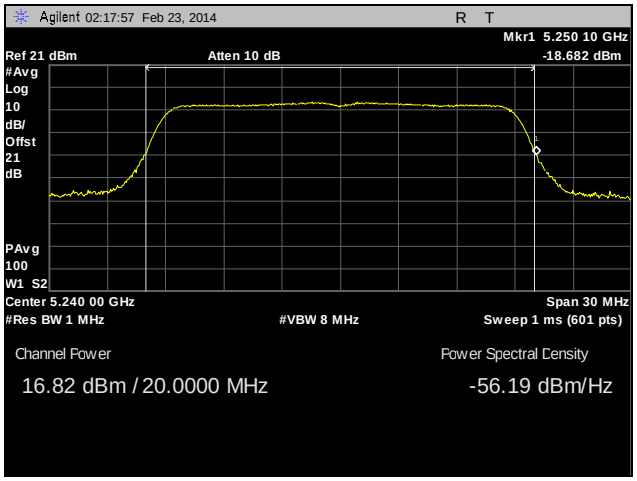


Plot 196. Peak Power Output, Low Channel, 802.11n 20 MHz, Ant. 1



Plot 197. Peak Power Output, Mid Channel, 802.11n 20 MHz, Ant. 1



Plot 198. Peak Power Output, High Channel, 802.11n 20 MHz, Ant. 1

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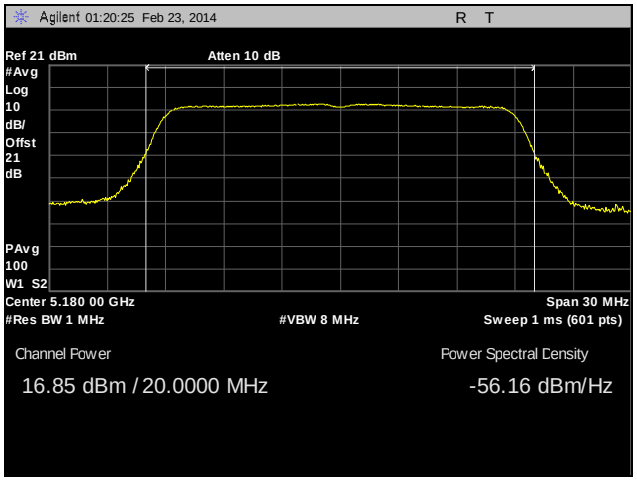
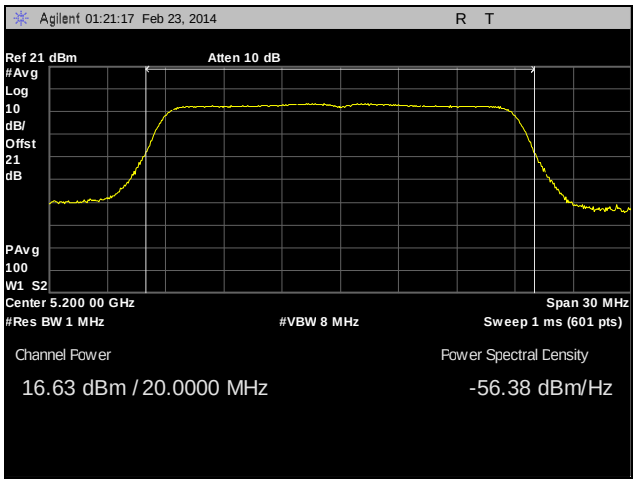
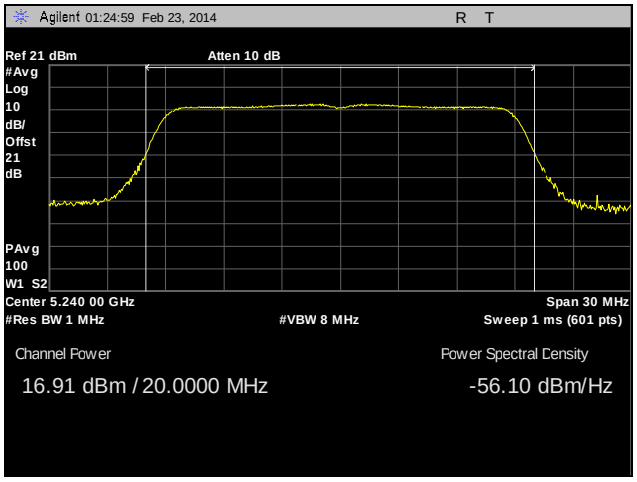


Plot 199. Peak Power Output, Low Channel, 802.11n 20 MHz, Ant. 2



Plot 200. Peak Power Output, Mid Channel, 802.11n 20 MHz, Ant. 2



Plot 201. Peak Power Output, High Channel, 802.11n 20 MHz, Ant. 2

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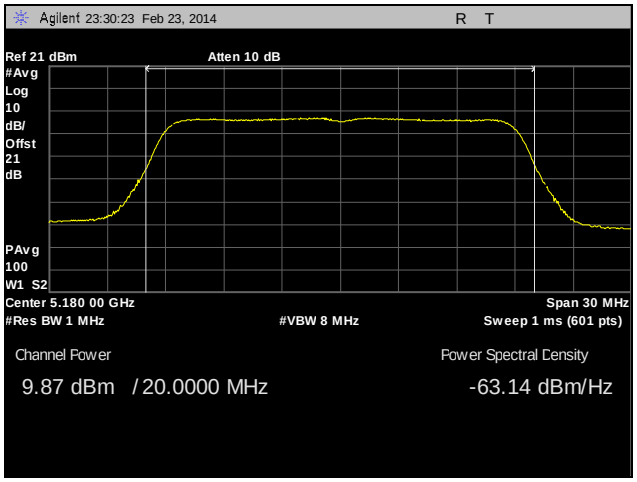
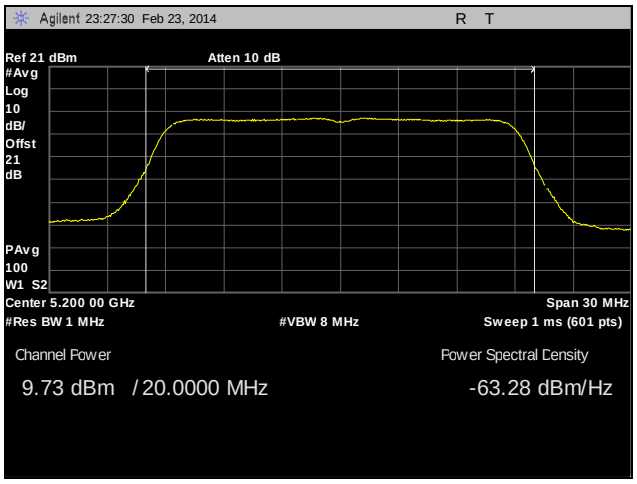
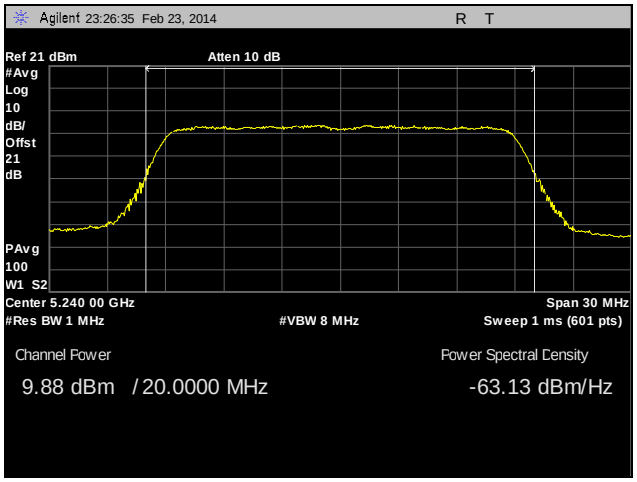
Peak Power Output Test Results, 802.11n 20 MHz, MIMO



Plot 202. Peak Power Output, Low Channel, 802.11n 20 MHz, Ant. 0, MIMO



Plot 203. Peak Power Output, Mid Channel, 802.11n 20 MHz, Ant. 0, MIMO



Plot 204. Peak Power Output, High Channel, 802.11n 20 MHz, Ant. 0, MIMO

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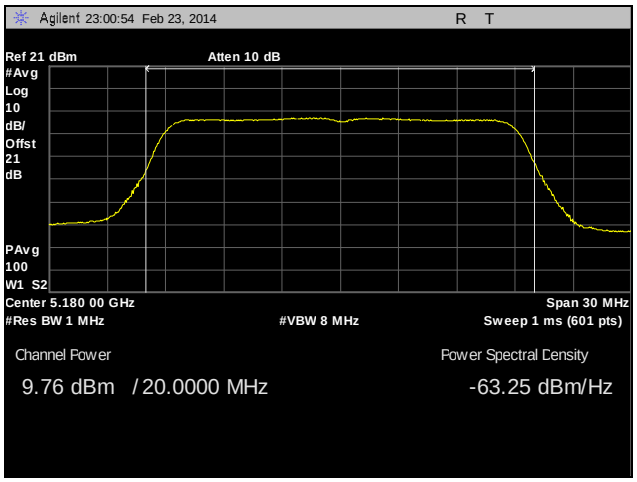
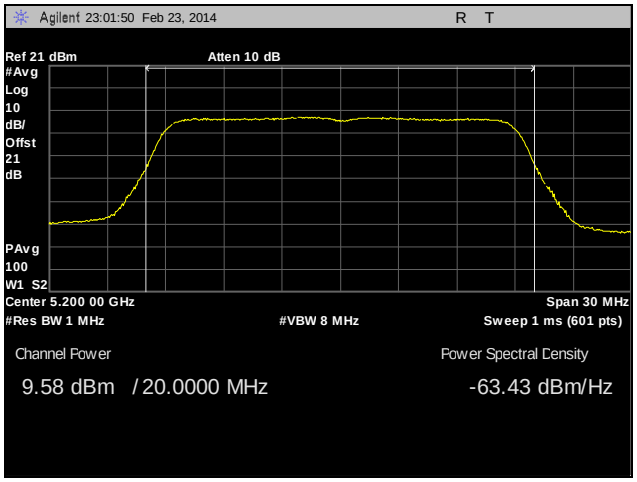
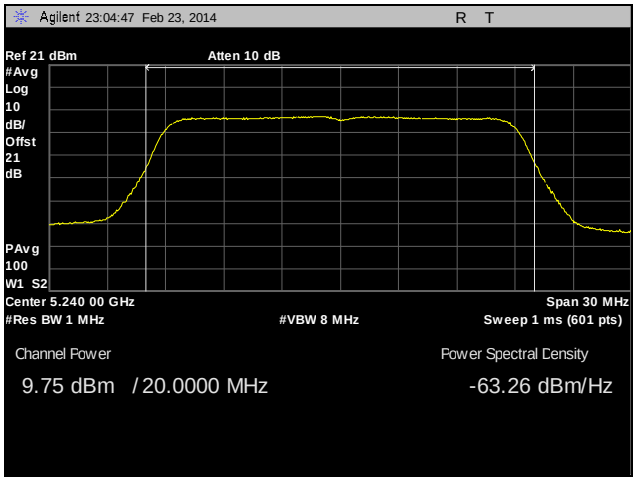


Plot 205. Peak Power Output, Low Channel, 802.11n 20 MHz, Ant. 1, MIMO



Plot 206. Peak Power Output, Mid Channel, 802.11n 20 MHz, Ant. 1, MIMO



Plot 207. Peak Power Output, High Channel, 802.11n 20 MHz, Ant. 1, MIMO

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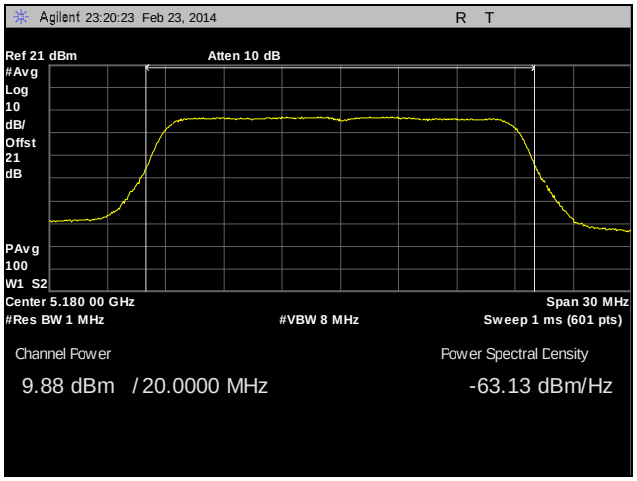
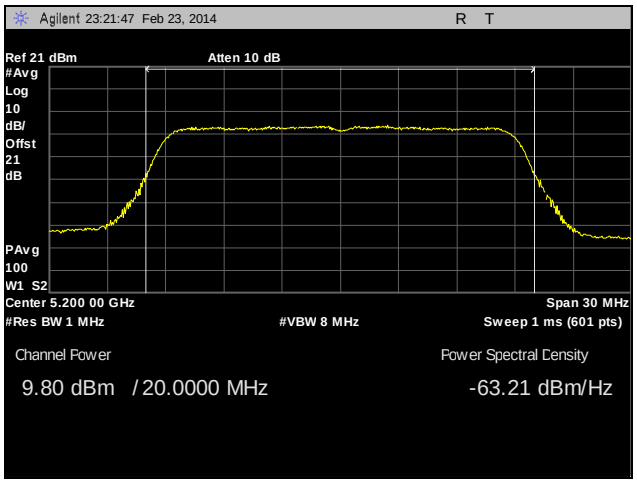
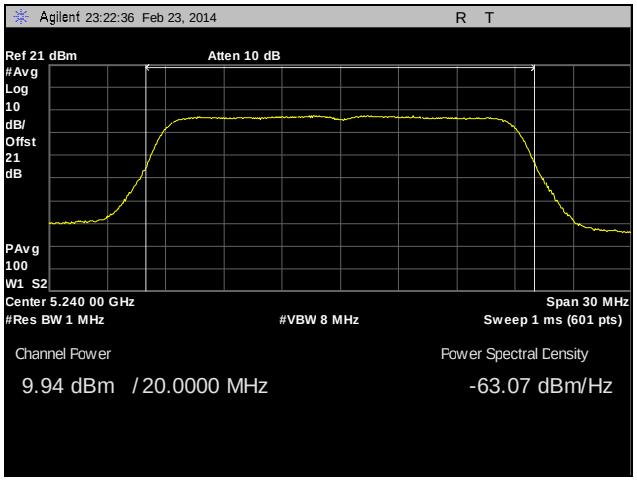


Plot 208. Peak Power Output, Low Channel, 802.11n 20 MHz, Ant. 2, MIMO



Plot 209. Peak Power Output, Mid Channel, 802.11n 20 MHz, Ant. 2, MIMO



Plot 210. Peak Power Output, High Channel, 802.11n 20 MHz, Ant. 2, MIMO

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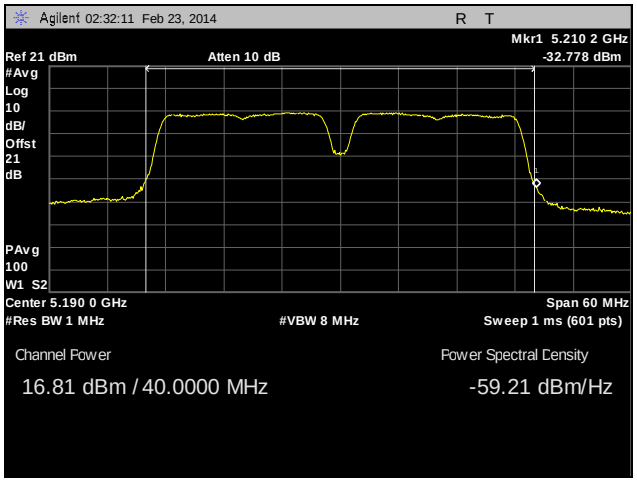
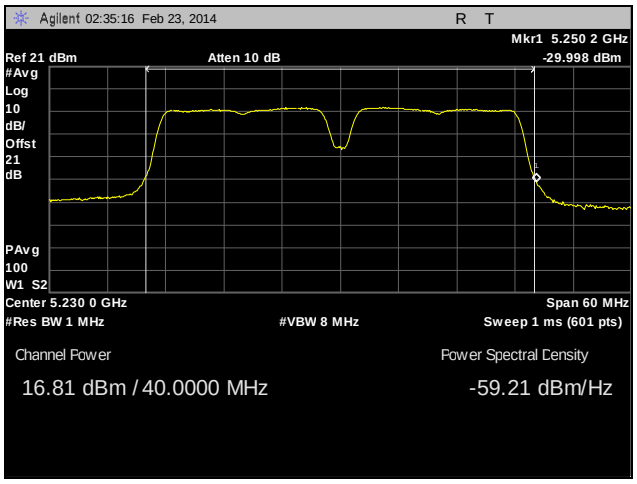
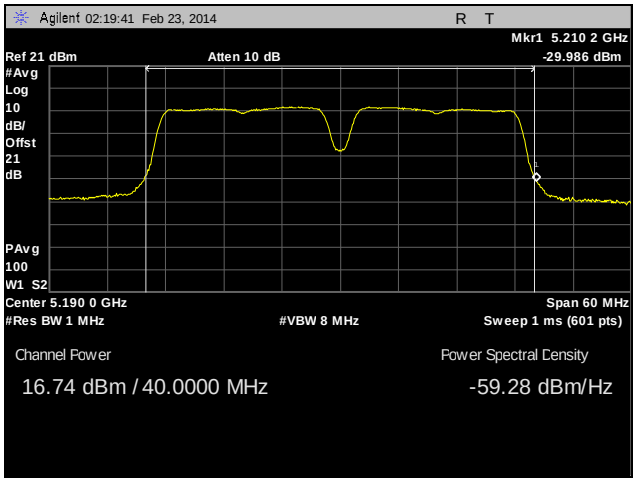
Peak Power Output Test Results, 802.11a 40 MHz



Plot 211. Peak Power Output, Low Channel, 802.11a 40 MHz, Ant. 0



Plot 212. Peak Power Output, High Channel, 802.11a 40 MHz, Ant. 0



Plot 213. Peak Power Output, Low Channel, 802.11a 40 MHz, Ant. 1

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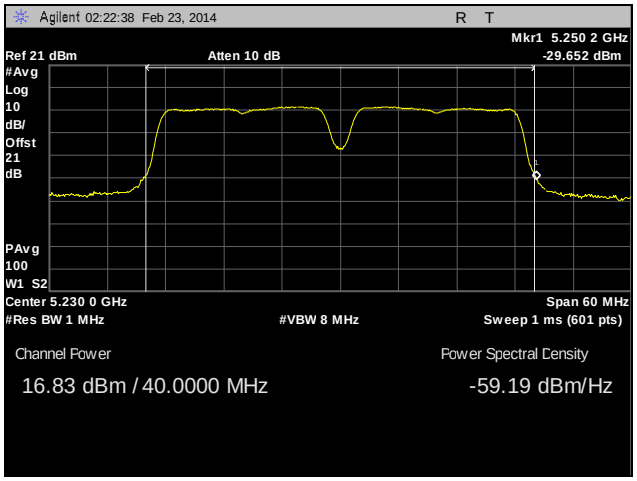
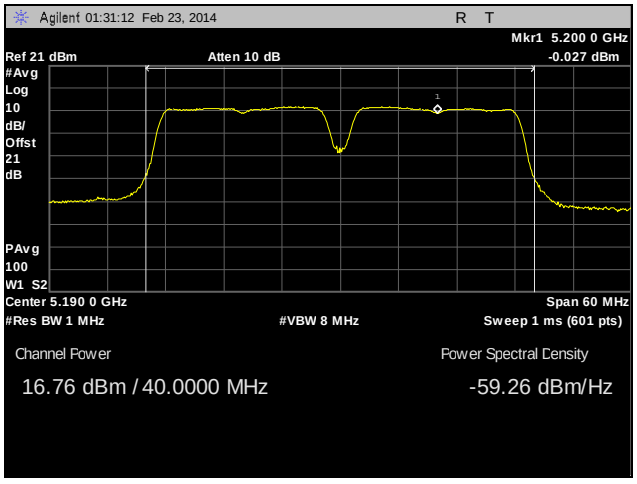
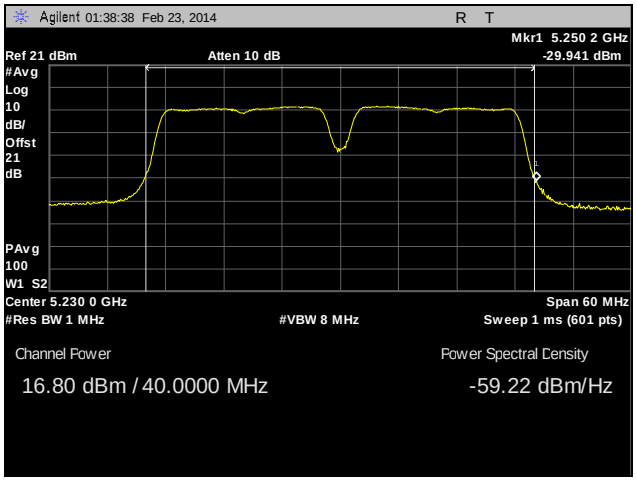


Plot 214. Peak Power Output, High Channel, 802.11a 40 MHz, Ant. 1



Plot 215. Peak Power Output, Low Channel, 802.11a 40 MHz, Ant. 2



Plot 216. Peak Power Output, High Channel, 802.11a 40 MHz, Ant. 2

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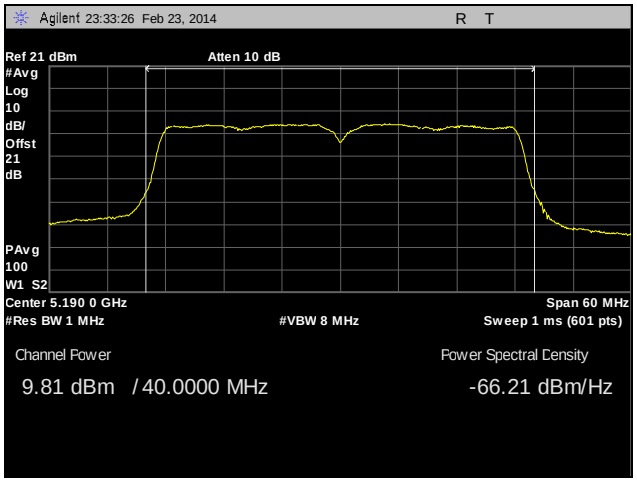
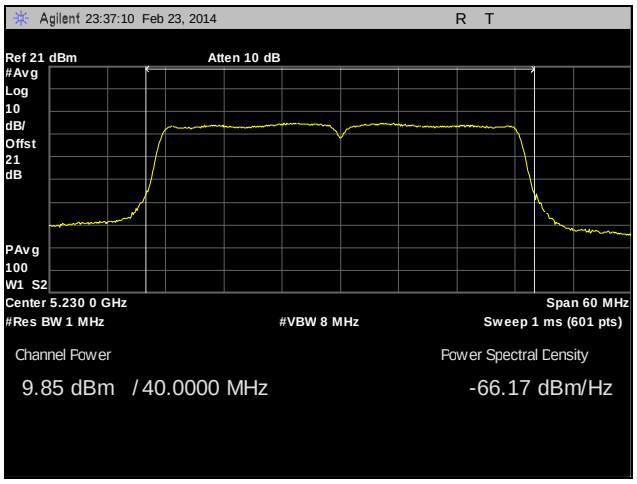
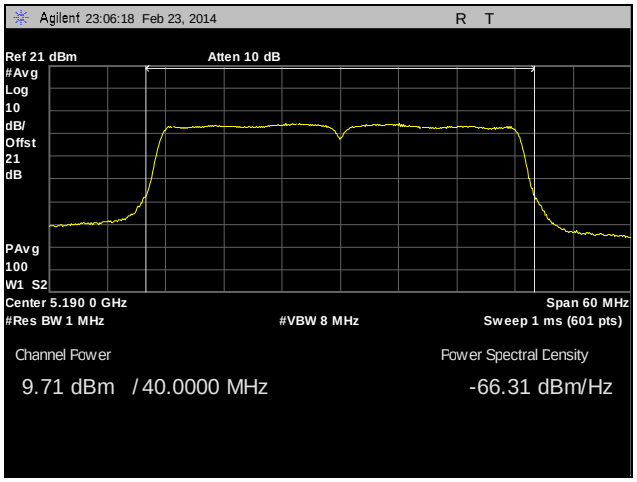
Peak Power Output Test Results, 802.11ac 40 MHz, MIMO



Plot 217. Peak Power Output, Low Channel, 802.11ac 40 MHz, Ant. 0, MIMO



Plot 218. Peak Power Output, High Channel, 802.11ac 40 MHz, Ant. 0, MIMO



Plot 219. Peak Power Output, Low Channel, 802.11ac 40 MHz, Ant. 1, MIMO

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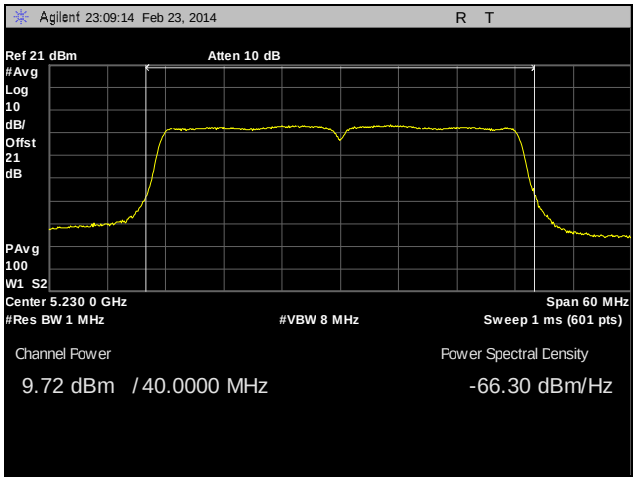
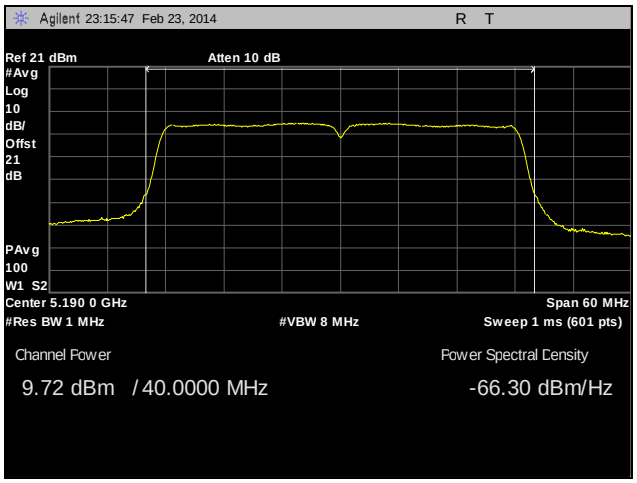
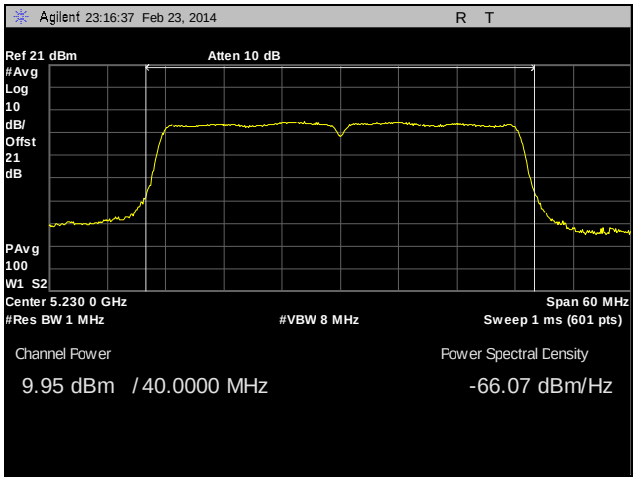


Plot 220. Peak Power Output, High Channel, 802.11ac 40 MHz, Ant. 1, MIMO

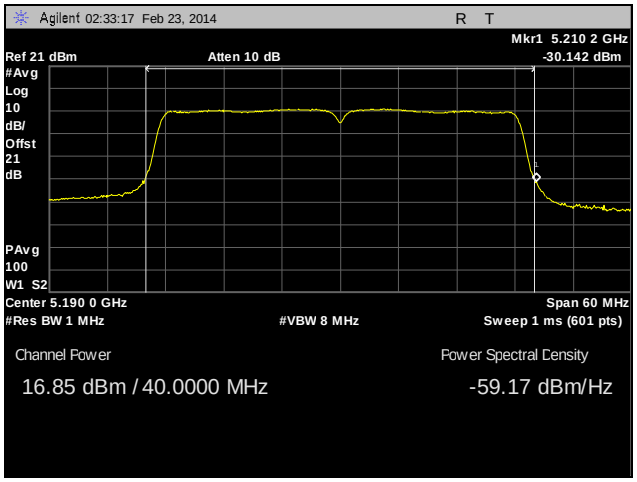


Plot 221. Peak Power Output, Low Channel, 802.11ac 40 MHz, Ant. 2, MIMO

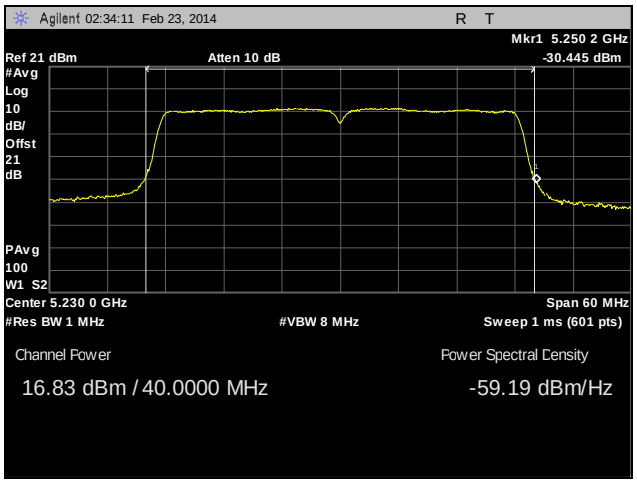


Plot 222. Peak Power Output, High Channel, 802.11ac 40 MHz, Ant. 2, MIMO

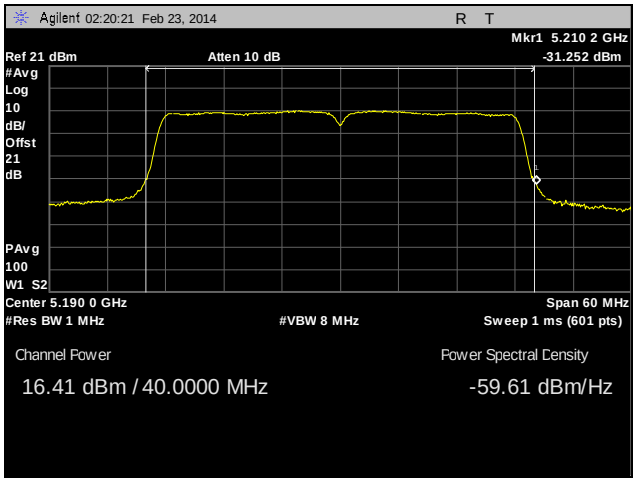
Peak Power Output Test Results, 802.11n 40 MHz



Plot 223. Peak Power Output, Low Channel, 802.11n 40 MHz, Ant. 0



Plot 224. Peak Power Output, High Channel, 802.11n 40 MHz, Ant. 0



Plot 225. Peak Power Output, Low Channel, 802.11n 40 MHz, Ant. 1

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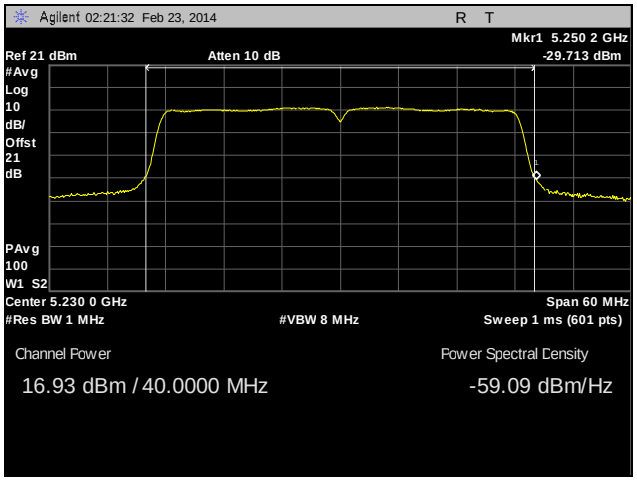
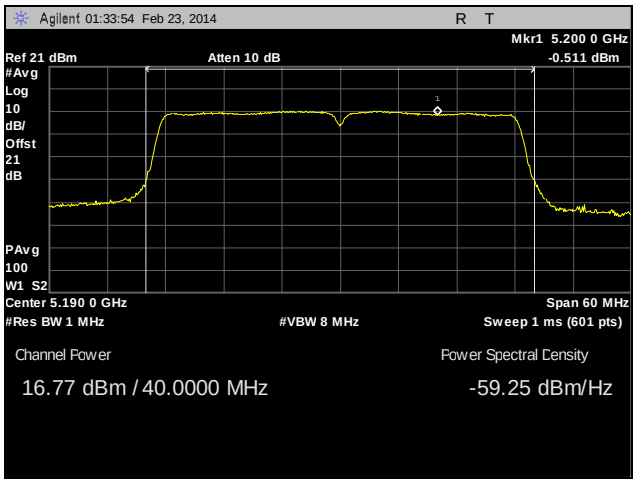
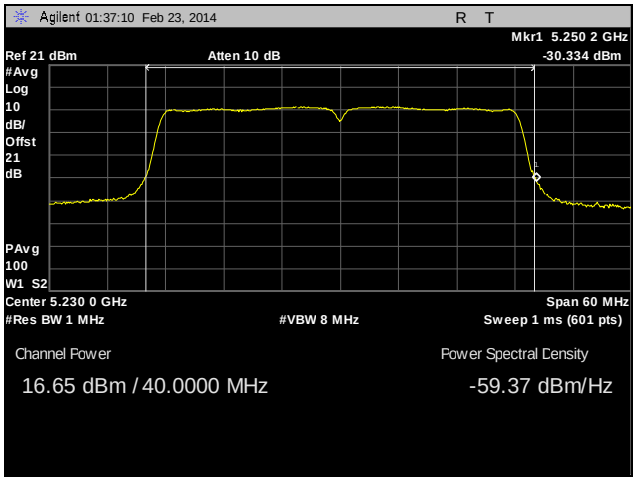


Plot 226. Peak Power Output, High Channel, 802.11n 40 MHz, Ant. 1



Plot 227. Peak Power Output, Low Channel, 802.11n 40 MHz, Ant. 2



Plot 228. Peak Power Output, High Channel, 802.11n 40 MHz, Ant. 2

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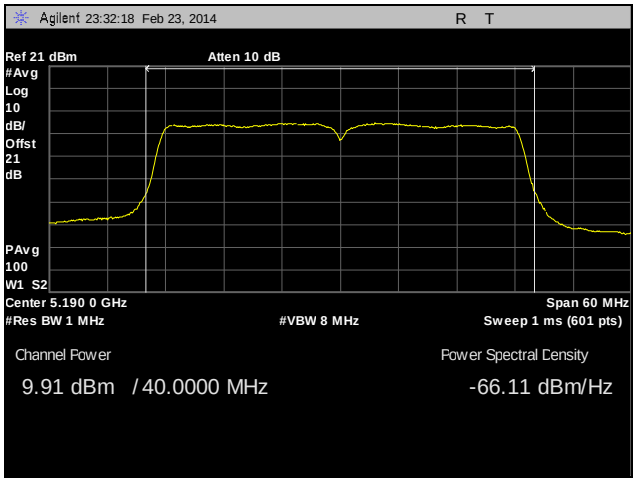
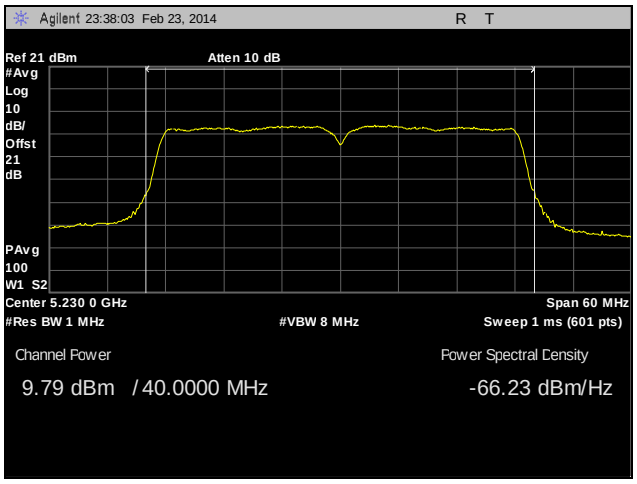
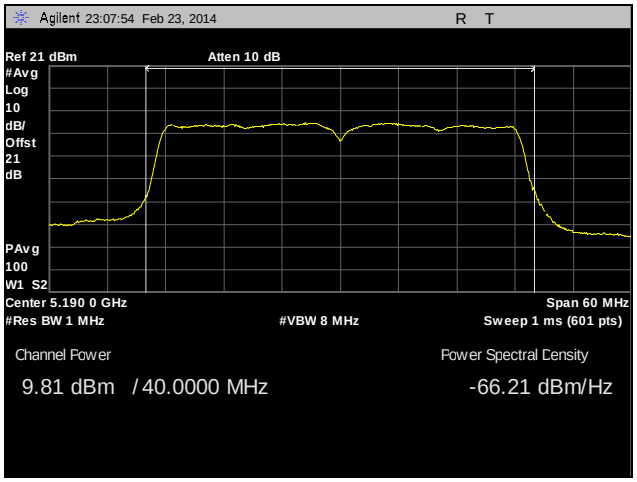
Peak Power Output Test Results, 802.11n 40 MHz, MIMO



Plot 229. Peak Power Output, Low Channel, 802.11n 40 MHz, Ant. 0, MIMO



Plot 230. Peak Power Output, High Channel, 802.11n 40 MHz, Ant. 0, MIMO



Plot 231. Peak Power Output, Low Channel, 802.11n 40 MHz, Ant. 1, MIMO

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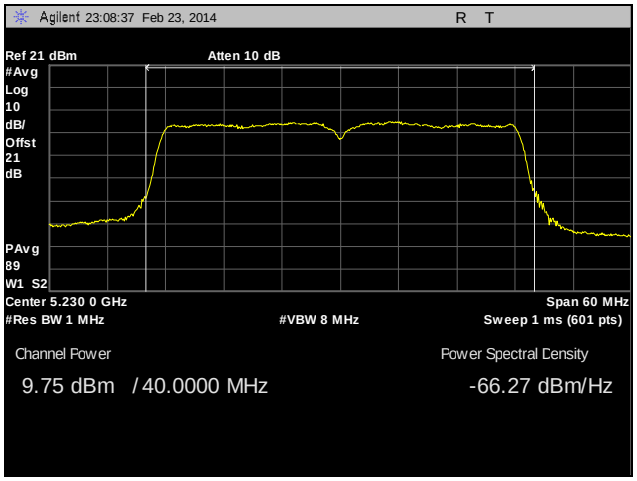
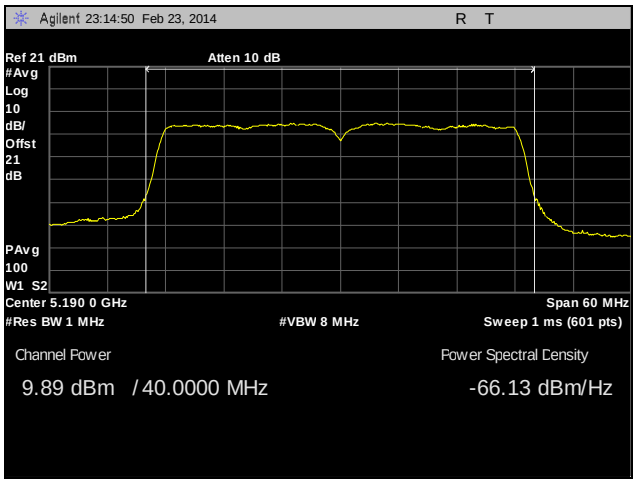
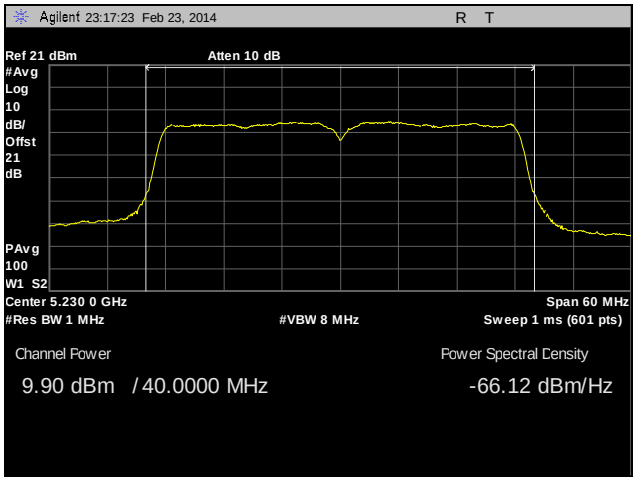


Plot 232. Peak Power Output, High Channel, 802.11n 40 MHz, Ant. 1, MIMO



Plot 233. Peak Power Output, Low Channel, 802.11n 40 MHz, Ant. 2, MIMO



Plot 234. Peak Power Output, High Channel, 802.11n 40 MHz, Ant. 2, MIMO

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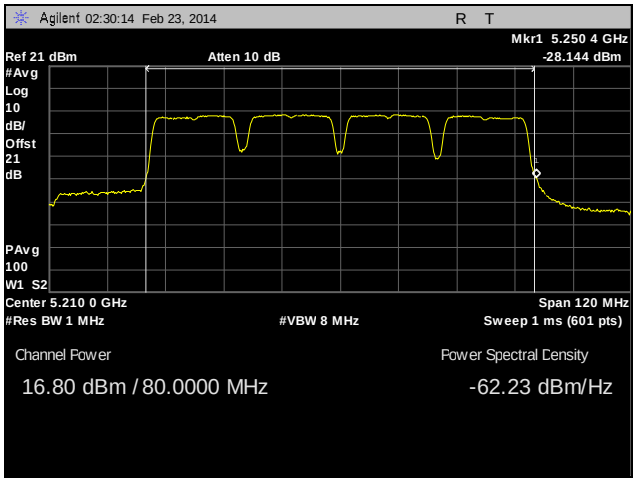
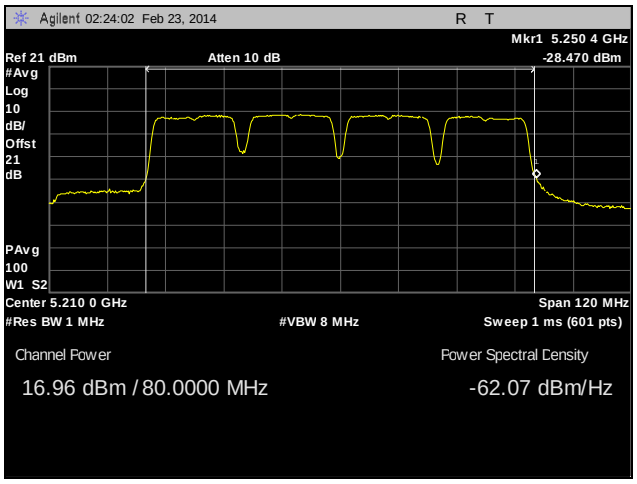
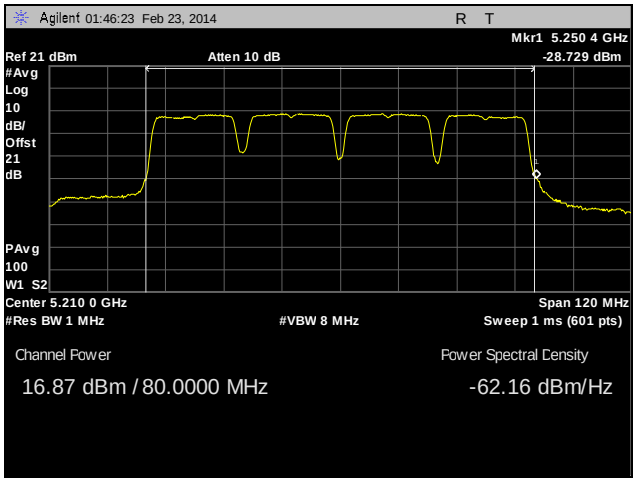
Peak Power Output Test Results, 802.11a 80 MHz



Plot 235. Peak Power Output, Low Channel, 802.11a 80 MHz, Ant. 0



Plot 236. Peak Power Output, Mid Channel, 802.11a 80 MHz, Ant. 1



Plot 237. Peak Power Output, High Channel, 802.11a 80 MHz, Ant. 2

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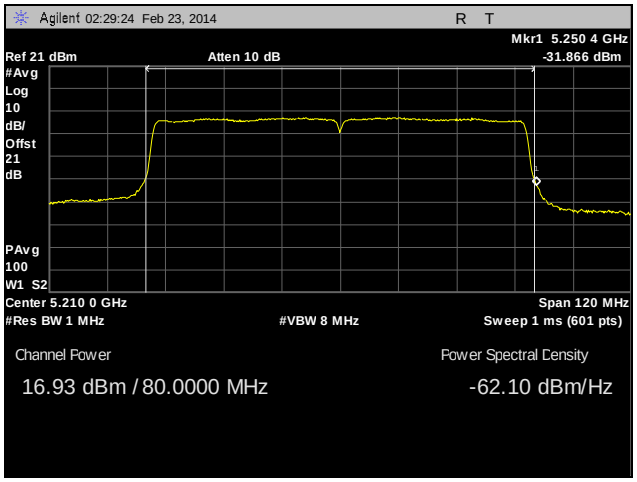
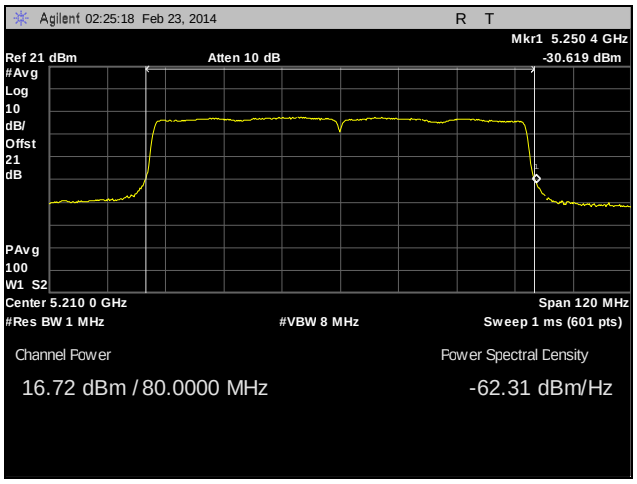
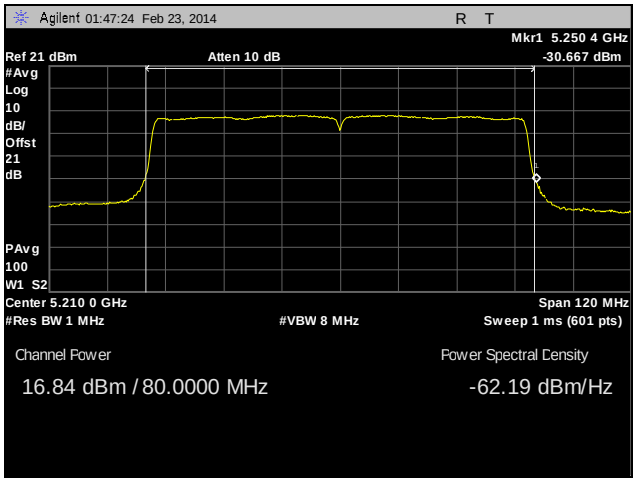
Peak Power Output Test Results, 802.11ac 80 MHz



Plot 238. Peak Power Output, Low Channel, 802.11ac 80 MHz, Ant. 0



Plot 239. Peak Power Output, Mid Channel, 802.11ac 80 MHz, Ant. 1



Plot 240. Peak Power Output, High Channel, 802.11ac 80 MHz, Ant. 2

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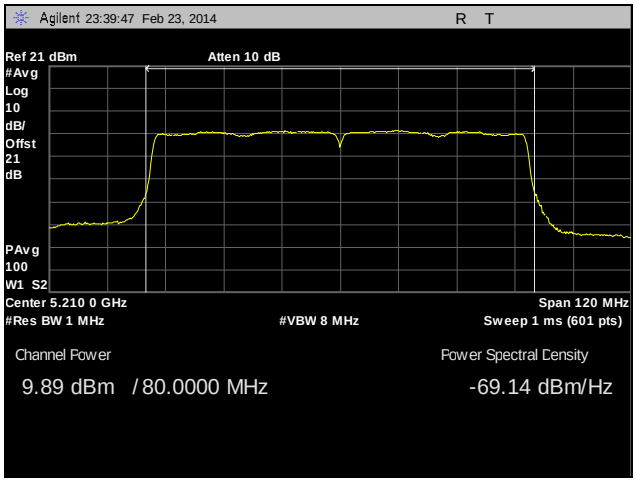
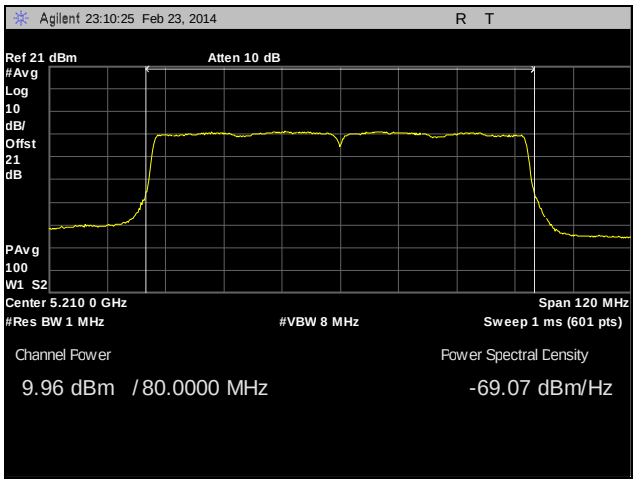
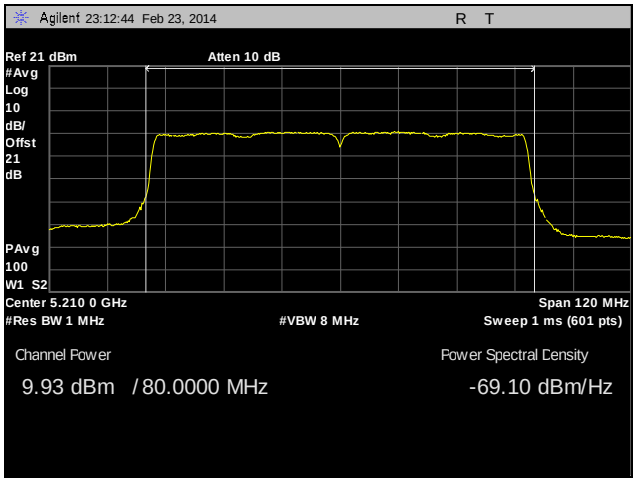
Peak Power Output Test Results, 802.11ac 80 MHz, MIMO



Plot 241. Peak Power Output, Low Channel, 802.11ac 80 MHz, Ant. 0, MIMO



Plot 242. Peak Power Output, Mid Channel, 802.11ac 80 MHz, Ant. 1, MIMO



Plot 243. Peak Power Output, High Channel, 802.11ac 80 MHz, Ant. 2, MIMO

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Electromagnetic Compatibility Criteria for Intentional Radiators

§ 15.407(a)(2) Peak Power Spectral Density

Test Requirements: **§ 15.407(a)(2):** In addition, the peak power spectral density shall not exceed 4 dBm in any 1 megahertz band.

Test Procedure: The transmitter was connected directly to a Spectrum Analyzer through an attenuator. The power level was set to the maximum level on the EUT. The RBW was set to 1MHz and the VBW was set to 3MHz. The method of measurement #1 from the FCC Public Notice DA 02-2138 was used.

Test Results: Equipment was compliant with the peak power spectral density limits of **§ 15.407 (a)(2).** The peak power spectral density was determined from plots on the following page(s).

Test Engineer(s): Surinder Singh

Test Date(s): 02/24/14

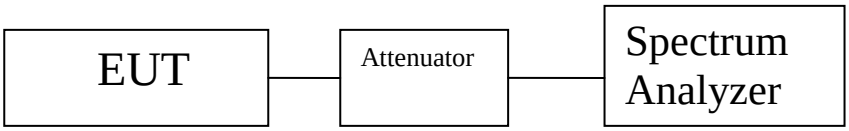

Figure 3. Power Spectral Density Test Setup

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Peak Power Spectral Density Test Results

Peak Power Spectral Density				
Carrier Channel	**Frequency (MHz)**	**Measured PPSD (dBm)**	**Limit (dBm)**	**Margin (dB)**
Low	5178	3.85	4	-0.15
Mid	5199	3.74	4	-0.26
High	5239	3.93	4	-0.07

Table 91. Peak Power Spectral Density, Test Results, 802.11a 20 MHz, Ant. 0

Peak Power Spectral Density				
Carrier Channel	**Frequency (MHz)**	**Measured PPSD (dBm)**	**Limit (dBm)**	**Margin (dB)**
Low	5181	3.85	4	-0.15
Mid	5200	3.27	4	-0.73
High	5239	3.85	4	-0.15

Table 92. Peak Power Spectral Density, Test Results, 802.11a 20 MHz, Ant. 1

Peak Power Spectral Density				
Carrier Channel	**Frequency (MHz)**	**Measured PPSD (dBm)**	**Limit (dBm)**	**Margin (dB)**
Low	5179	3.68	4	-0.32
Mid	5199	3.69	4	-0.31
High	5238	3.97	4	-0.03

Table 93. Peak Power Spectral Density, Test Results, 802.11a 20 MHz, Ant. 2

Peak Power Spectral Density				
Carrier Channel	**Frequency (MHz)**	**Measured PPSD (dBm)**	**Limit (dBm)**	**Margin (dB)**
Low	5182	3.81	4	-0.19
Mid	5201	3.84	4	-0.16
High	5239	3.82	4	-0.18

Table 94. Peak Power Spectral Density, Test Results, 802.11ac 20 MHz, Ant. 0

Peak Power Spectral Density				
Carrier Channel	**Frequency (MHz)**	**Measured PPSD (dBm)**	**Limit (dBm)**	**Margin (dB)**
Low	5181	3.93	4	-0.07
Mid	5202	3.69	4	-0.31
High	5238	3.93	4	-0.07

Table 95. Peak Power Spectral Density, Test Results, 802.11ac 20 MHz, Ant. 1

Peak Power Spectral Density				
Carrier Channel	**Frequency (MHz)**	**Measured PPSD (dBm)**	**Limit (dBm)**	**Margin (dB)**
Low	5182	3.70	4	-0.3
Mid	5201	3.52	4	-0.48
High	5242	3.86	4	-0.14

Table 96. Peak Power Spectral Density, Test Results, 802.11ac 20 MHz, Ant. 2

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Carrier Channel	Frequency (MHz)	Measured PPSD (dBm) Ant0	Measured PPSD (dBm) Ant1	Measured PPSD (dBm) Ant2	Total PPSD (dBm)	Limit (dBm)	Margin (dB)
Low	5179	-3.06	-3.35	-3.22	1.56	1.79	-0.22
Mid	5199	-3.68	-3.34	-3.50	1.26	1.79	-0.52
High	5239	-3.00	-3.59	-3.41	1.44	1.79	-0.34

Table 97. Peak Power Spectral Density, Test Results, 802.11ac 20 MHz, MIMO

Peak Power Spectral Density				
Carrier Channel	Frequency (MHz)	Measured PPSD (dBm)	Limit (dBm)	Margin (dB)
Low	5178	3.96	4	-0.04
Mid	5199	3.79	4	-0.21
High	5243	3.38	4	-0.62

Table 98. Peak Power Spectral Density, Test Results, 802.11n 20 MHz, Ant. 0

Peak Power Spectral Density				
Carrier Channel	Frequency (MHz)	Measured PPSD (dBm)	Limit (dBm)	Margin (dB)
Low	5182	3.93	4	-0.07
Mid	5202	3.97	4	-0.03
High	5237	3.96	4	-0.04

Table 99. Peak Power Spectral Density, Test Results, 802.11n 20 MHz, Ant. 1

Peak Power Spectral Density				
Carrier Channel	Frequency (MHz)	Measured PPSD (dBm)	Limit (dBm)	Margin (dB)
Low	5181	3.73	4	-0.27
Mid	5199	3.89	4	-0.11
High	5241	3.91	4	-0.09

Table 100. Peak Power Spectral Density, Test Results, 802.11n 20 MHz, Ant. 2

Carrier Channel	Frequency (MHz)	Measured PPSD (dBm) Ant0	Measured PPSD (dBm) Ant1	Measured PPSD (dBm) Ant2	Total PPSD (dBm)	Limit (dBm)	Margin (dB)
Low	5176	-3.14	-3.17	-3.05	1.65	1.79	-0.13
Mid	5198	-3.28	-3.07	-3.20	1.58	1.79	-0.20
High	5242	-3.23	-3.22	-3.52	1.45	1.79	-0.33

Table 101. Peak Power Spectral Density, Test Results, 802.11n 20 MHz, MIMO

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Peak Power Spectral Density				
Carrier Channel	**Frequency (MHz)**	**Measured PPSD (dBm)**	**Limit (dBm)**	**Margin (dB)**
Low	5184	1.64	4	-2.36
High	5224	2.70	4	-1.3

Table 102. Peak Power Spectral Density, Test Results, 802.11a 40 MHz, Ant. 0

Peak Power Spectral Density				
Carrier Channel	**Frequency (MHz)**	**Measured PPSD (dBm)**	**Limit (dBm)**	**Margin (dB)**
Low	5184	3.06	4	-0.94
High	5234	3.33	4	-0.67

Table 103. Peak Power Spectral Density, Test Results, 802.11a 40 MHz, Ant. 1

Peak Power Spectral Density				
Carrier Channel	**Frequency (MHz)**	**Measured PPSD (dBm)**	**Limit (dBm)**	**Margin (dB)**
Low	5184	3.10	4	-0.9
High	5234	3.50	4	-0.5

Table 104. Peak Power Spectral Density, Test Results, 802.11a 40 MHz, Ant. 2

Carrier Channel	Frequency (MHz)	Measured PPSD (dBm) Ant0	Measured PPSD (dBm) Ant1	Measured PPSD (dBm) Ant2	Total PPSD (dBm)	Limit (dBm)	Margin (dB)
Low	5194	-4.83	-3.98	-3.79	0.59	4	-3.4
High	5234	-4.60	-4.88	-3.23	0.59	4	-3.40

Table 105. Peak Power Spectral Density, Test Results, 802.11ac 40 MHz, MIMO

Peak Power Spectral Density				
Carrier Channel	**Frequency (MHz)**	**Measured PPSD (dBm)**	**Limit (dBm)**	**Margin (dB)**
Low	5178	0.90	4	-3.1
High	5233	2.15	4	-1.85

Table 106. Peak Power Spectral Density, Test Results, 802.11n 40 MHz, Ant. 0

Peak Power Spectral Density				
Carrier Channel	**Frequency (MHz)**	**Measured PPSD (dBm)**	**Limit (dBm)**	**Margin (dB)**
Low	5185	2.22	4	-1.78
High	5226	2.76	4	-1.24

Table 107. Peak Power Spectral Density, Test Results, 802.11n 40 MHz, Ant. 1

Peak Power Spectral Density				
Carrier Channel	**Frequency (MHz)**	**Measured PPSD (dBm)**	**Limit (dBm)**	**Margin (dB)**
Low	5195	2.14	4	-1.86
High	5225	2.02	4	-1.98

Table 108. Peak Power Spectral Density, Test Results, 802.11n 40 MHz, Ant. 2

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Carrier Channel	Frequency (MHz)	Measured PPSD (dBm) Ant0	Measured PPSD (dBm) Ant1	Measured PPSD (dBm) Ant2	Total PPSD (dBm)	Limit (dBm)	Margin (dB)
Low	5195	-4.97	-4.51	-4.35	0.16	1.79	-1.62
Mid	5224	-4.96	-4.86	-3.80	0.26	1.79	-1.52

Table 109. Peak Power Spectral Density, Test Results, 802.11n 40 MHz, Ant. 2, MIMO

Peak Power Spectral Density				
Carrier Port	Frequency (MHz)	Measured PPSD (dBm)	Limit (dBm)	Margin (dB)
Ant. 0	5197	-3.15	4	-7.15
Ant. 1	5202	-0.01	4	-4.01
Ant. 2	5219	-0.12	4	-4.12

Table 110. Peak Power Spectral Density, Test Results, 802.11a 80 MHz

Peak Power Spectral Density				
Carrier Port	Frequency (MHz)	Measured PPSD (dBm)	Limit (dBm)	Margin (dB)
Ant. 0	5202	-3.10	4	-7.1
Ant. 1	5202	-0.46	4	-4.46
Ant. 2	5219	-0.52	4	-4.52

Table 111. Peak Power Spectral Density, Test Results, 802.11ac 80 MHz

Carrier Channel	Frequency (MHz)	Measured PPSD (dBm) Ant0	Measured PPSD (dBm) Ant1	Measured PPSD (dBm) Ant2	Total PPSD (dBm)	Limit (dBm)	Margin (dB)
Low	5220	-8.37	-7.77	-7.40	-3.05	1.79	-4.84

Table 112. Peak Power Spectral Density, Test Results, 802.11ac 80 MHz, MIMO

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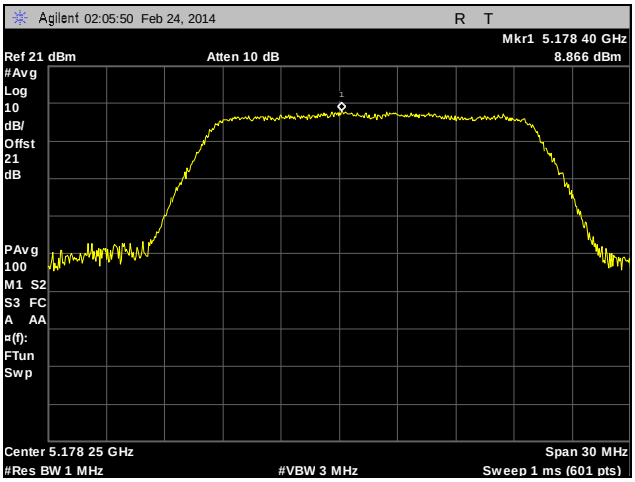
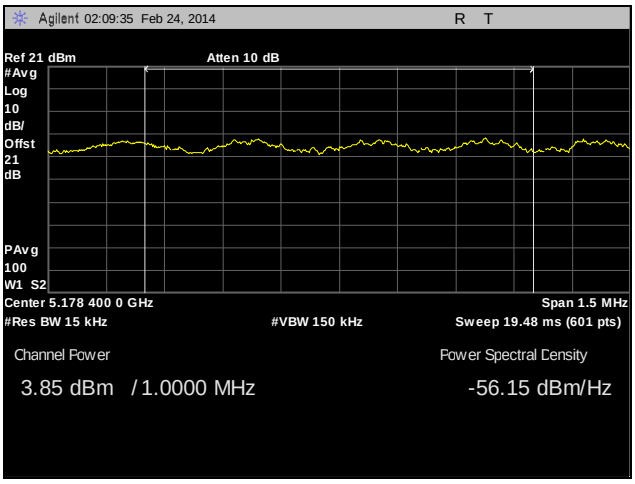
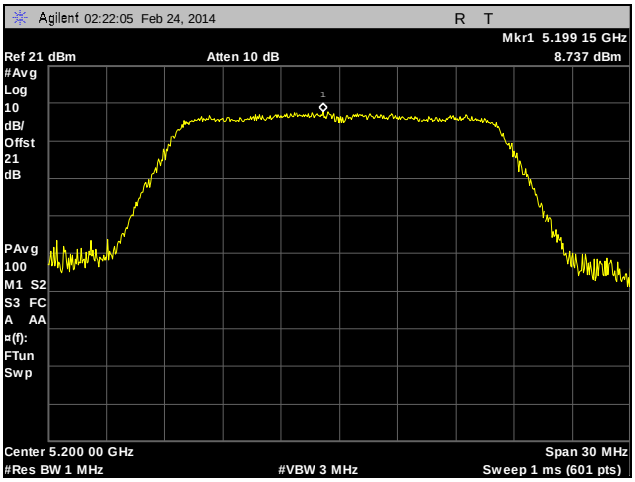
Peak Power Spectral Density, 802.11a 20 MHz



Plot 244. Peak Power Spectral Density, Determination Low Channel, 802.11a, Ant. 0



Plot 245. Peak Power Spectral Density, Low Channel, 802.11a, Ant. 0



Plot 246. Peak Power Spectral Density, Determination, Mid Channel, 802.11a, Ant. 0

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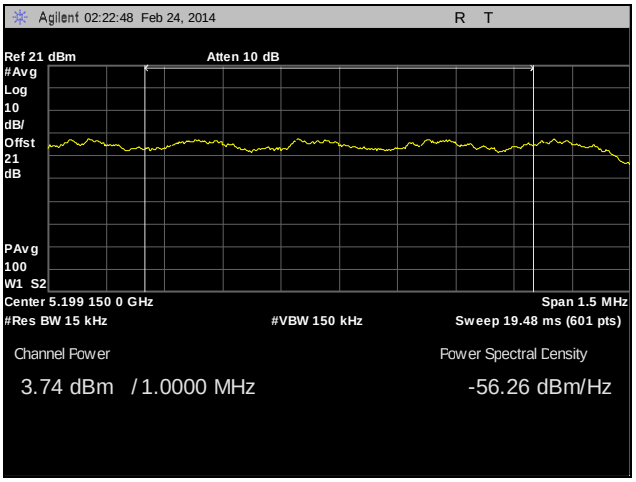
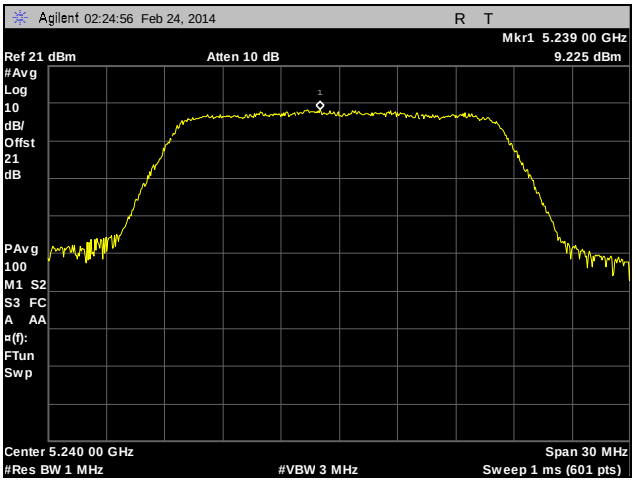
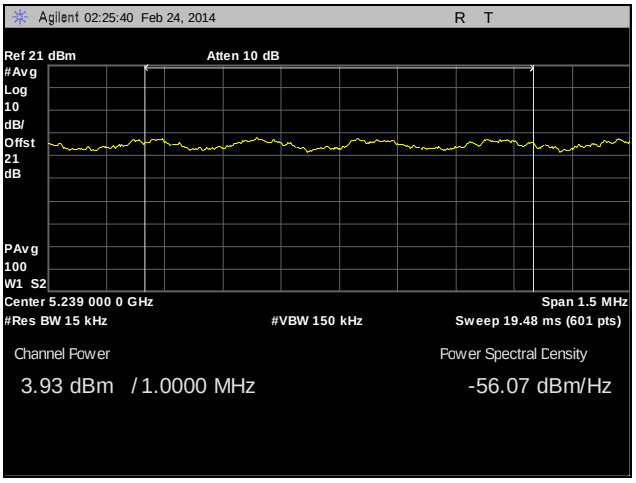


Plot 247. Peak Power Spectral Density, Mid Channel, 802.11a, Ant. 0



Plot 248. Peak Power Spectral Density, Determination, High Channel, 802.11a, Ant. 0



Plot 249. Peak Power Spectral Density, High Channel, 802.11a, Ant. 0

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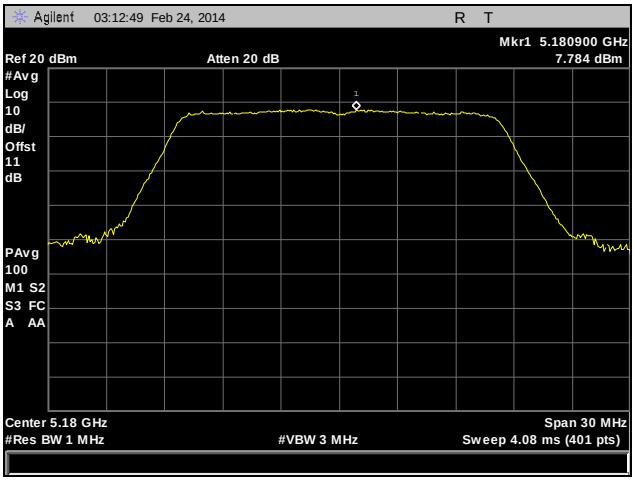
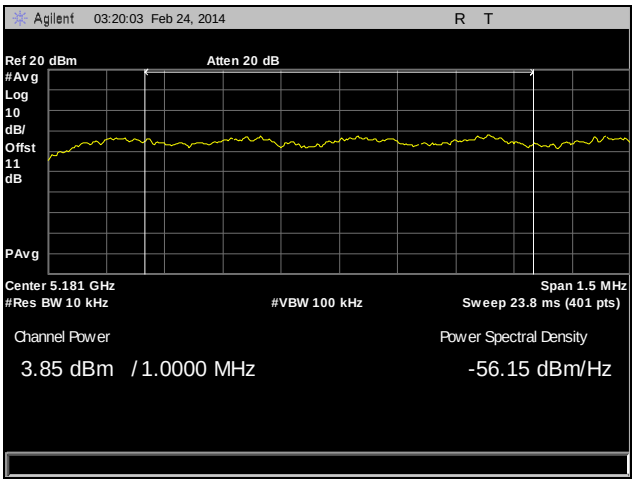
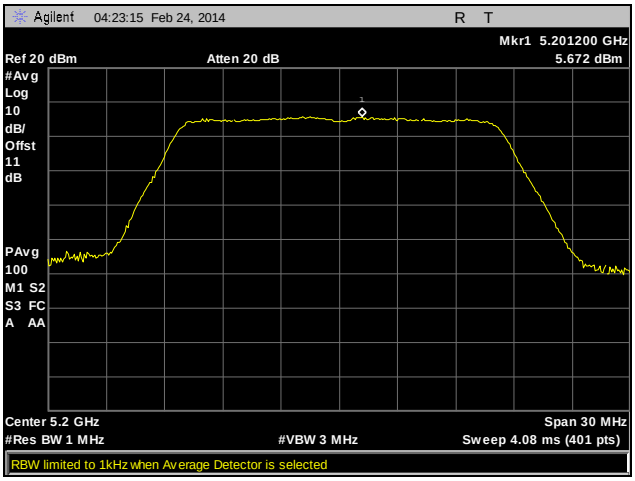


Plot 250. Peak Power Spectral Density, Determination, Low Channel, 802.11a, Ant. 1



Plot 251. Peak Power Spectral Density, Low Channel, 802.11a, Ant. 1



Plot 252. Peak Power Spectral Density, Determination, Mid Channel, 802.11a, Ant. 1

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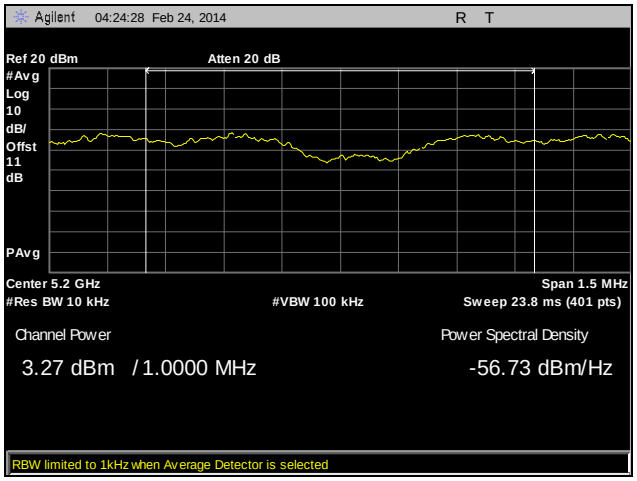
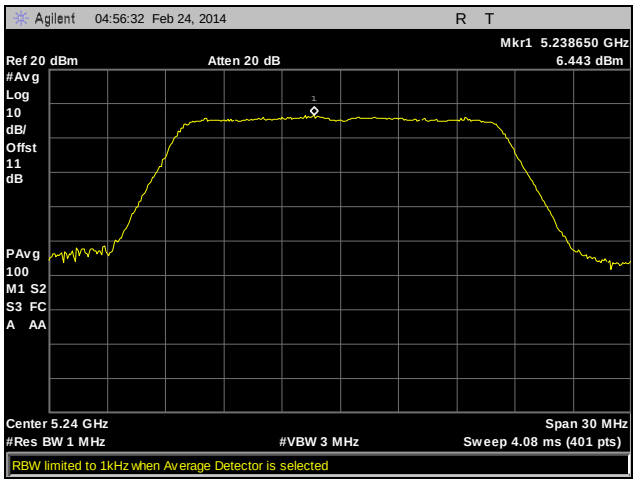
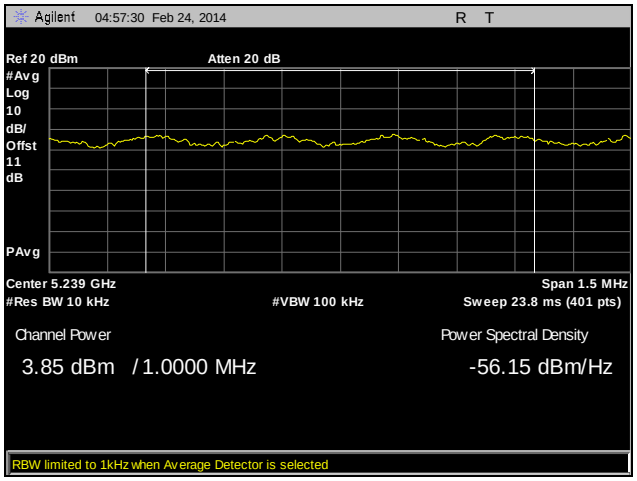


Plot 253. Peak Power Spectral Density, Mid Channel, 802.11a, Ant. 1



Plot 254. Peak Power Spectral Density, Determination, High Channel, 802.11a, Ant. 1



Plot 255. Peak Power Spectral Density, High Channel, 802.11a, Ant. 1

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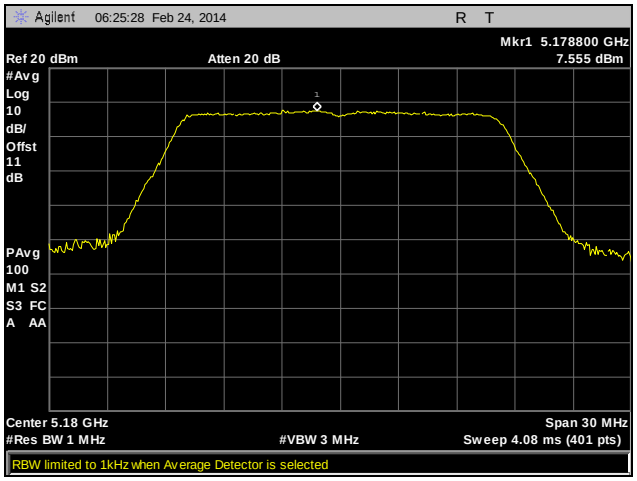
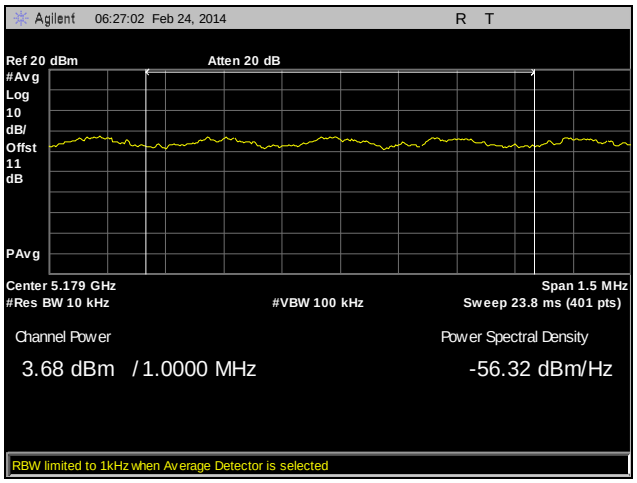
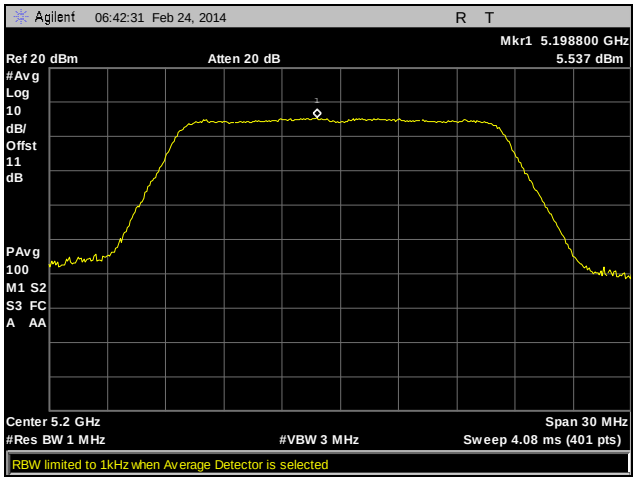


Plot 256. Peak Power Spectral Density, Determination, Low Channel, 802.11a, Ant. 2



Plot 257. Peak Power Spectral Density, Low Channel, 802.11a, Ant. 2



Plot 258. Peak Power Spectral Density, Determination, Mid Channel, 802.11a, Ant. 2

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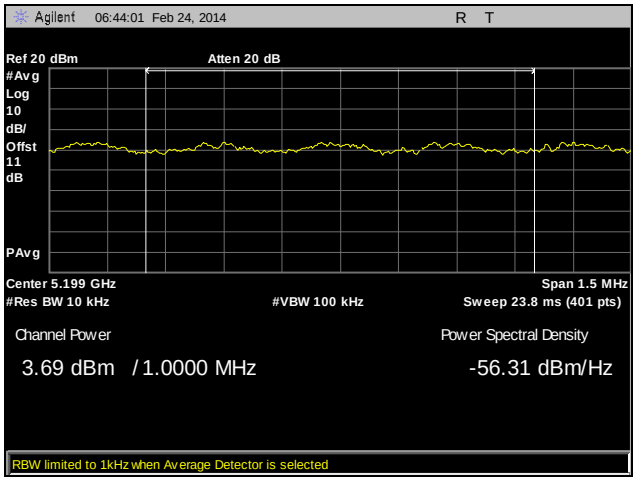
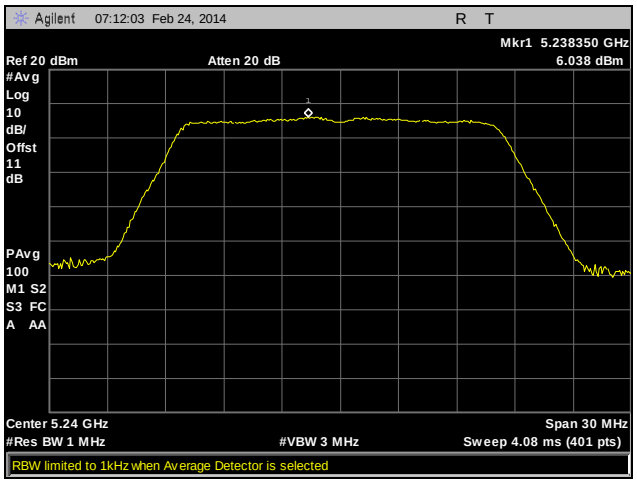
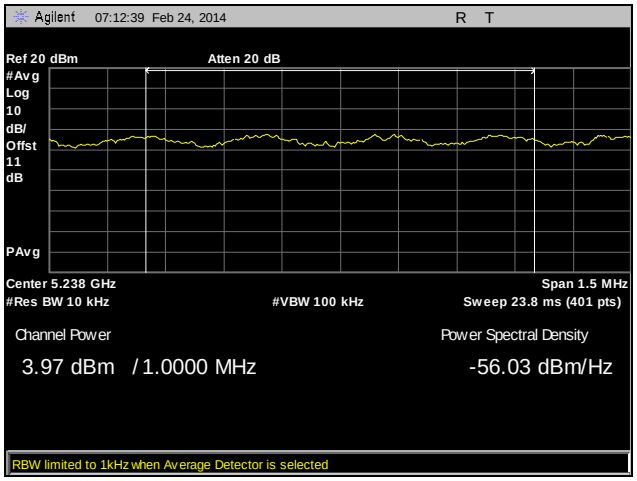


Plot 259. Peak Power Spectral Density, Mid Channel, 802.11a, Ant. 2



Plot 260. Peak Power Spectral Density, Determination, High Channel, 802.11a, Ant. 2



Plot 261. Peak Power Spectral Density, High Channel, 802.11a, Ant. 2