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914 WEST PATAPSCO AVENUE • BALTIMORE, MARYLAND 21230-3432 • PHONE (410) 354-3300 • FAX (410) 354-3313

33439 WESTERN AVENUE • UNION CITY, CALIFORNIA 94587 • PHONE (510) 489-6300 • FAX (510) 489-6372

3162 BELICK STREET • SANTA CLARA, CALIFORNIA 95054 • PHONE (408) 748-3585 • FAX (510) 489-6372

March 2, 2012

Fortress Technologies
2 Technology Park Drive
Westford, MA 01886

Dear John Pacheco,

Enclosed is the EMC Wireless test report for compliance testing of the Fortress Technologies, ES2440 (Radio M25) as tested to the requirements of Title 47 of the CFR, Ch. 1 (10-1-06 ed.), Part 15, Subpart B, ICES-003, Issue 4 February 2004 for a Class A Digital Device and FCC Part 15 Subpart C, 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: (\Fortress Technologies\EMC32466A-FCC247 Rev. 1)

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Electromagnetic Compatibility Criteria Test Report

for the

**Fortress Technologies
ES2440 (Radio M25)**

Tested under
the FCC Certification Rules
contained in
Title 47 of the CFR, Parts 15 Subpart B & ICES-003
for Class A Digital Devices
&
15.247 Subpart C & RSS-210, Issue 8, Dec. 2010
for Intentional Radiators

MET Report: EMC32466A-FCC247 Rev. 1

March 2, 2012

Prepared For:

**Fortress Technologies
2 Technology Park Drive
Westford, MA 01886**

Prepared By:
MET Laboratories, Inc.
914 W. Patapsco Ave.
Baltimore, MD 21230

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for Class A Digital Devices
&
15.247 Subpart C & RSS-210, Issue 8, Dec. 2010
for Intentional Radiators



Jeffrey Pratt, 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 the FCC Rules Parts 15B, 15.247 and Industry Canada standards ICES-003, Issue 4 February 2004, RSS-210, Issue 8, Dec. 2010 under normal use and maintenance.



Shawn McMillen,
Wireless Manager, Electromagnetic Compatibility Lab

Report Status Sheet

Revision	Report Date	Reason for Revision
∅	January 5, 2012	Initial Issue.
1	March 2, 2012	Revised to reflect engineer corrections.

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List of Terms and Abbreviations

AC	Alternating Current
ACF	Antenna Correction Factor
Cal	Calibration
<i>d</i>	Measurement Distance
dB	Decibels
dBμA	Decibels above one microamp
dBμV	Decibels above one microvolt
dBμA/m	Decibels above one microamp per meter
dBμV/m	Decibels above one microvolt per meter
DC	Direct Current
E	Electric Field
DSL	Digital Subscriber Line
ESD	Electrostatic Discharge
EUT	Equipment Under Test
<i>f</i>	Frequency
FCC	Federal Communications Commission
GRP	Ground Reference Plane
H	Magnetic Field
HCP	Horizontal Coupling Plane
Hz	Hertz
IEC	International Electrotechnical Commission
kHz	kilohertz
kPa	kilopascal
kV	kilovolt
LISN	Line Impedance Stabilization Network
MHz	Megahertz
μH	microhenry
μ	microfarad
μs	microseconds
NEBS	Network Equipment-Building System
PRF	Pulse Repetition Frequency
RF	Radio Frequency
RMS	Root-Mean-Square
TWT	Traveling Wave Tube
V/m	Volts per meter
VCP	Vertical Coupling Plane

I. Executive Summary

A. Purpose of Test

An EMC evaluation was performed to determine compliance of the Fortress Technologies ES2440 (Radio M25), with the requirements of Part 15, §15.247. 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 ES2440 (Radio M25). Fortress Technologies should retain a copy of this document which should be kept on file for at least two years after the manufacturing of the ES2440 (Radio M25), 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, §15.247, in accordance with Fortress Technologies, purchase order number 0003235. All tests were conducted using measurement procedure ANSI C63.4-2003.

FCC Reference 47 CFR Part 15.247:2005	IC Reference RSS-210 Issue 8: 2010; RSS-GEN Issue 3: 2010	Description	Compliance
47 CFR Part 15.107 (a)	ICES-003 Issue 4 February 2004	Conducted Emission Limits for a Class A Digital Device	Compliant
47 CFR Part 15.109 (a)	ICES-003 Issue 4 February 2004	Radiated Emission Limits for a Class A 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 §15.247(a)(2)	RSS-Gen(4.6)	6dB Occupied Bandwidth	Compliant
		99% Occupied Bandwidth	Compliant
Title 47 of the CFR, Part 15 §15.247(b)	RSS-210(A8.4)	Peak Power Output	Compliant
Title 47 of the CFR, Part 15 §15.247(d); §15.209; §15.205	RSS-210(A8.5)	Radiated Spurious Emissions Requirements	Compliant
Title 47 of the CFR, Part 15 §15.247(d)	RSS-210(A8.5)	RF Conducted Spurious Emissions Requirements	Compliant
Title 47 of the CFR, Part 15 §15.247(d)	RSS-210(A8.5)	RF Conducted Band Edge	Compliant
Title 47 of the CFR, Part 15; §15.247(e)	RSS-210(A8.2)	Peak Power Spectral Density	Compliant
Title 47 of the CFR, Part 15 §15.247(i)	RSS-Gen(5.6)	Maximum Permissible Exposure (MPE)	Compliant
N/A	RSS-Gen(4.10)	Receiver Spurious Emissions	Compliant

Table 1. Executive Summary of EMC Part 15.247 Compliance Testing

II. Equipment Configuration

A. Overview

MET Laboratories, Inc. was contracted by Fortress Technologies to perform testing on the ES2440 (Radio M25), under Fortress Technologies's purchase order number 0003235.

This document describes the test setups, test methods, required test equipment, and the test limit criteria used to perform compliance testing of the Fortress Technologies, ES2440 (Radio M25).

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

Model(s) Tested:	ES2440 (Radio M25)	
Model(s) Covered:	ES2440 (Radio M25)	
EUT Specifications:	Primary Power: 120 VAC, 60 Hz	
	FCC ID: WYK-ES2440 IC: 8190A-ES2440	
	Type of Modulations:	OFDM
	Equipment Code:	DTS
Analysis:	The results obtained relate only to the item(s) tested.	
Environmental Test Conditions:	Temperature: 15-35° C	
	Relative Humidity: 30-60%	
	Barometric Pressure: 860-1060 mbar	
Evaluated by:	Jeffrey Pratt	
Report Date(s):	March 2, 2012	

Table 2. EUT Summary Table

B. References

CFR 47, Part 15, Subpart C	Federal Communication Commission, Code of Federal Regulations, Title 47, Part 15: General Rules and Regulations, Allocation, Assignment, and Use of Radio Frequencies
CFR 47, Part 15, Subpart B	Electromagnetic Compatibility: Criteria for Radio Frequency Devices
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 4 February 2004	Electromagnetic Compatibility: Criteria for Radio Frequency Devices
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
ANSI/NCSL Z540-1-1994	Calibration Laboratories and Measuring and Test Equipment - General Requirements
ANSI/ISO/IEC 17025:2000	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.

D. Description of Test Sample

The Fortress Technologies ES2440, Equipment Under Test (EUT), is a quad radio access point/bridge. It embeds four COTS high power radios and three Ethernet ports in a ruggedized enclosure. The radios operate in accordance to the 802.11a, 802.11b, 802.11g, and 802.11n standards.

The ES2440 is intended to provide outdoor mobile connectivity in a secure manner both wired and wirelessly.



Photograph 1. Fortress Technologies ES2440

E. Equipment Configuration

Ref. ID	Name / Description	Model Number	Serial Number
1	Fortress High Capacity Infrastructure Mesh Point	ES2440	11022261

Table 4. Equipment Configuration

F. Support Equipment

Support equipment necessary for the operation and testing of the EUT is included in the following list.

Ref. ID	Name / Description	Manufacturer	Model Number
1	PoE Adapter	Phihong	POE61U-560DG
2	2.4GHz Omni Antenna	Ubiquiti	AMO-2G10
3	2.4GHz Sector Antenna	PCTel	SP2327 15XP90
5	5.8GHz Omni Antenna	Ubiquiti	AMO-5G10
6	5.8GHz Sector Antenna	PCTel	SP4959 16XP90

Table 5. Support Equipment

G. Ports and Cabling Information

Ref. ID	Port Name on EUT	Cable Description	Qty.	Length (m)	Shielded (Y/N)	Termination Point
1	ANT1A, ANT1B, ANT2A, ANT2B, ANT3A, ANT3B, ANT4A, ANT4B	Antenna	8	-	Y	-
2	DC Power	Provides power	1	-	N	-
3	Ethernet1/WAN/POE Ethernet 2 Ethernet 3	Standard RJ45 CAT5 Ethernet Cable	3	-	N	-
4	Serial	Standard RJ45 serial cable	1	-	N	-
	GPS	GPS antenna	1	-	N	-

Table 6. Ports and Cabling Information

H. Mode of Operation

The ES2440 can operate in 802.11a, 802.11b, 802.11g, and 802.11n modes. These modes may be configured using the UI of the product. Additionally, these modes may be entered by using ART, the Atheros Radio Test tool. This is a standard tool provide by Atheros for directly manipulating and configuring their chips during testing and manufacturing.

I. 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.

J. Disposition of EUT

The test sample including all support equipment submitted to the Electro-Magnetic Compatibility Lab for testing was returned to Fortress Technologies upon completion of testing.

III. Electromagnetic Compatibility Criteria for Unintentional Radiators

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.

15.207(a), Except as shown in paragraphs (b) and (c) of this section*, charging, AC adapters or battery eliminators the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the Table 7, as measured using a 50 μ H/50 ohms 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 frequencies ranges.

Frequency range (MHz)	Class A Conducted Limits (dB μ V)		*Class B Conducted Limits (dB μ V)	
	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.
 * -- Limits per Subsection 15.207(a).

Table 7. Conducted Limits for Radio Frequency Devices calculated from FCC Part 15 Subsections 15.107(a) (b) and 15.207(a)

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

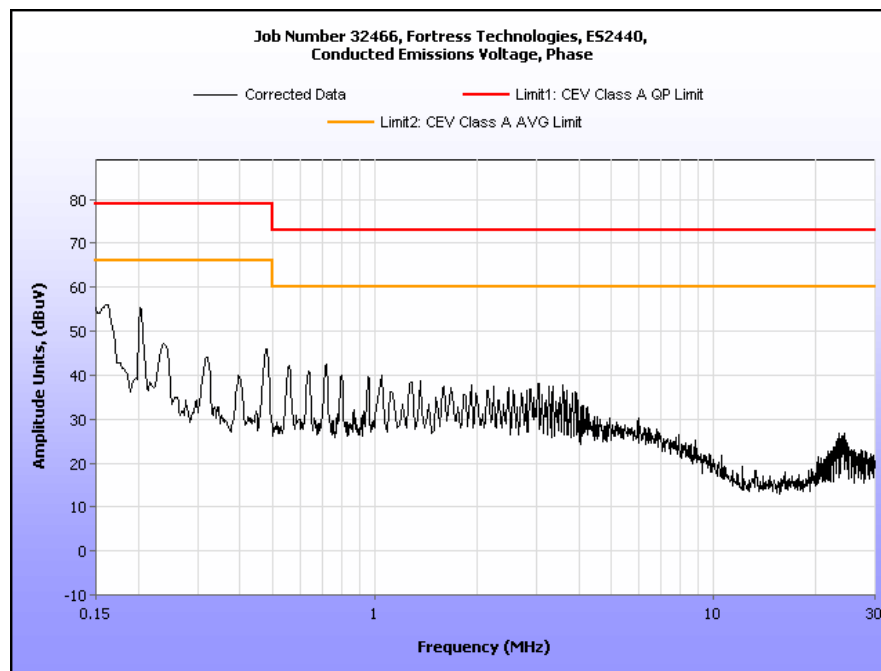
Test Engineer(s): Jeff Pratt

Test Date(s): 10/26/11

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

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
0.158	50.21	0	50.21	79	-28.79	42.13	0	42.13	66	-23.87
0.238	43.17	0.01	43.18	79	-35.82	37.86	0.01	37.87	66	-28.13
0.476	42.62	0	42.62	79	-36.38	37.98	0	37.98	66	-28.02
0.715	38.38	0	38.38	73	-34.62	33.1	0	33.1	60	-26.9
0.318	39.87	0	39.87	79	-39.13	34.91	0	34.91	66	-31.09
0.635	37.81	0	37.81	73	-35.19	33.36	0	33.36	60	-26.64

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

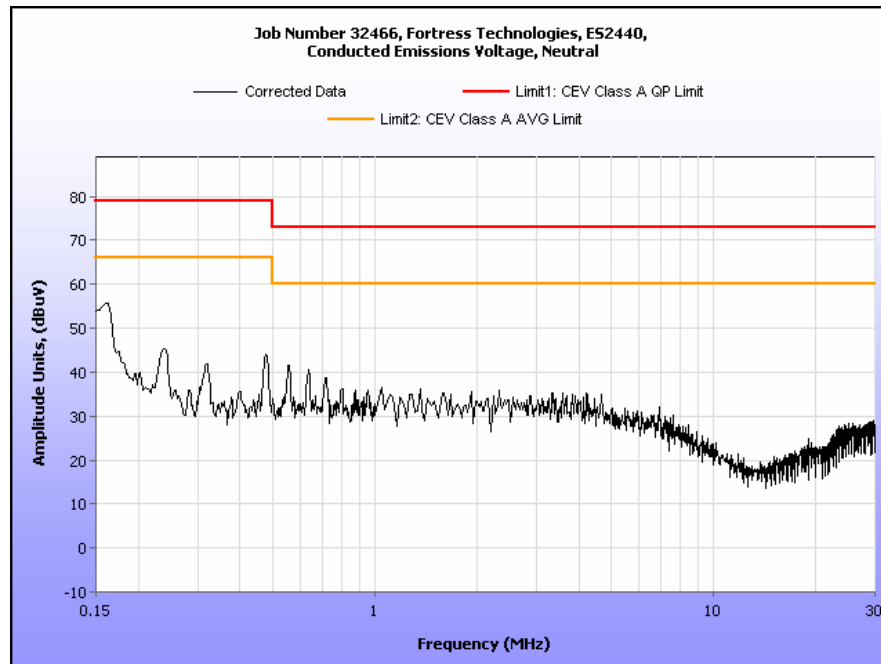


Plot 1. Conducted Emission, Phase Line Plot

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

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
0.238	41.73	0.01	41.74	79	-37.26	38.52	0.01	38.53	66	-27.47
0.477	42.14	0	42.14	79	-36.86	41.22	0	41.22	66	-24.78
0.158	50.36	0	50.36	79	-28.64	43.74	0	43.74	66	-22.26
0.557	38.85	0	38.85	73	-34.15	37.66	0	37.66	60	-22.34
0.634	38.48	0	38.48	73	-34.52	37.08	0	37.08	60	-22.92
0.318	39.36	0	39.36	79	-39.64	37.3	0	37.3	66	-28.7

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



Plot 2. Conducted Emission, Neutral Line Plot

Conducted Emission Limits Test Setup



Photograph 2. Conducted Emissions, Test Setup

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 (dB μ V/m)	
	§15.109 (b), Class A Limit (dB μ V) @ 10m	§15.109 (a), Class B Limit (dB μ V) @ 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 A requirement(s) of this section. Measured emissions were below applicable limits.

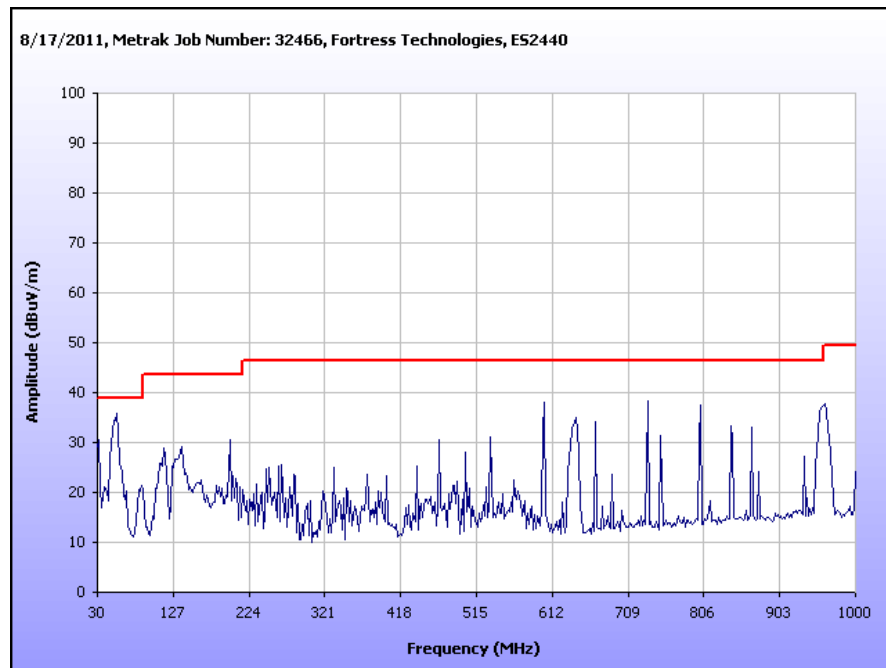
Test Engineer(s): Ben Taylor

Test Date(s): 08/17/11

Radiated Emissions Limits Test Results, Class A

Frequency (MHz)	EUT Azimuth (Degrees)	Antenna Polarity (H/V)	Antenna HEIGHT (m)	Uncorrected Amplitude (dBUV)	Antenna Correction Factor (dB) (+)	Cable Loss (dB) (+)	Distance Correction Factor (dB) (-)	Corrected Amplitude (dBUV/m)	Limit (dBUV/m)	Margin (dB)
55.791583	109	H	3.17	18.18	7.44	0.23	10.46	15.39	39.00	-23.61
55.791583	11	V	1.02	36.23	7.44	0.23	10.46	33.44	39.00	-5.56
200.04008	158	H	1.39	14.54	12.99	0.23	10.46	17.30	43.50	-26.20
200.04008	207	V	1.06	25.18	12.99	0.23	10.46	27.94	43.50	-15.56
600.05078	81	H	1.17	26.84	19.50	1.17	10.46	37.05	46.40	-9.35
600.05078	89	V	1.05	26.07	19.50	1.17	10.46	36.28	46.40	-10.12
639.40882	349	H	1.45	17.26	19.99	1.17	10.46	27.96	46.40	-18.44
639.40882	253	V	1.05	18.79	19.99	1.17	10.46	29.49	46.40	-16.91
733.38482	59	H	1.34	27.58	20.90	1.50	10.46	39.52	46.40	-6.88
733.38482	89	V	1.02	24.75	20.90	1.50	10.46	36.69	46.40	-9.71
957.56513	202	H	1.01	17.42	23.10	1.72	10.46	31.78	46.40	-14.62
957.56513	350	V	1.05	13.38	23.10	1.72	10.46	27.74	46.40	-18.66

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

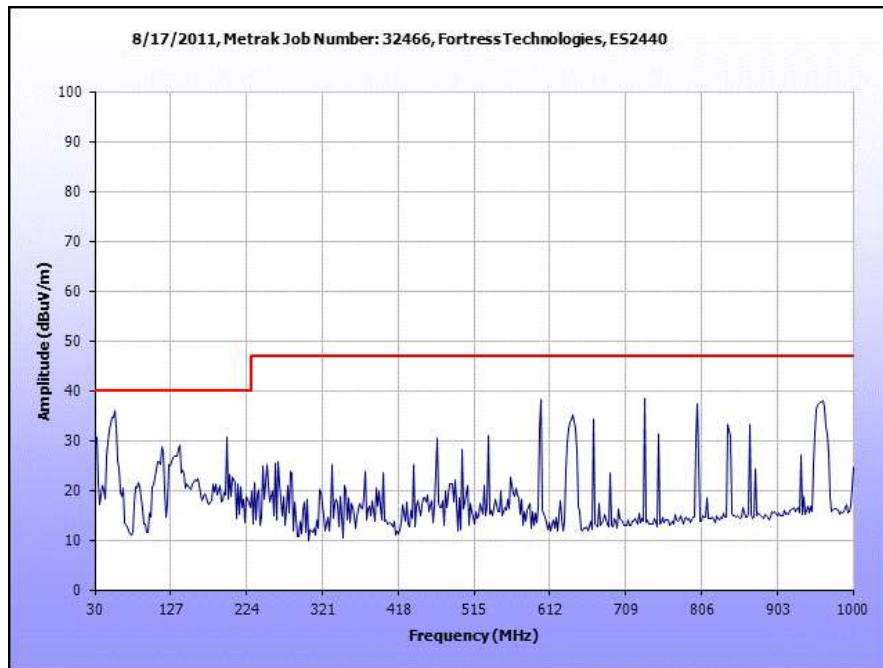


Plot 3. Radiated Emissions, 30 MHz - 1 GHz, FCC Limits

Radiated Emissions Limits Test Results, Class A

Frequency (MHz)	EUT Azimuth (Degrees)	Antenna Polarity (H/V)	Antenna HEIGHT (m)	Uncorrected Amplitude (dBuV)	Antenna Correction Factor (dB) (+)	Cable Loss (dB) (+)	Distance Correction Factor (dB) (-)	Corrected Amplitude (dBuV/m)	Limit (dBuV/m)	Margin (dB)
55.791583	109	H	3.17	18.18	7.44	0.23	10.46	15.39	40.00	-24.61
55.791583	11	V	1.02	36.23	7.44	0.23	10.46	33.44	40.00	-6.56
200.04008	158	H	1.39	14.54	12.99	0.23	10.46	17.30	40.00	-22.70
200.04008	207	V	1.06	25.18	12.99	0.23	10.46	27.94	40.00	-12.06
600.05078	81	H	1.17	26.84	19.50	1.17	10.46	37.05	47.00	-9.95
600.05078	89	V	1.05	26.07	19.50	1.17	10.46	36.28	47.00	-10.72
639.40882	349	H	1.45	17.26	19.99	1.17	10.46	27.96	47.00	-19.04
639.40882	253	V	1.05	18.79	19.99	1.17	10.46	29.49	47.00	-17.51
733.38482	59	H	1.34	27.58	20.90	1.50	10.46	39.52	47.00	-7.48
733.38482	89	V	1.02	24.75	20.90	1.50	10.46	36.69	47.00	-10.31
957.56513	202	H	1.01	17.42	23.10	1.72	10.46	31.78	47.00	-15.22
957.56513	350	V	1.05	13.38	23.10	1.72	10.46	27.74	47.00	-19.26

Table 12. Radiated Emissions Limits, Test Results, ICES-003 Limits



Plot 4. Radiated Emissions, 30 MHz - 1 GHz, IC Limits

Radiated Emission Limits Test Setup



Photograph 3. Radiated Emission, Test Setup

IV. Electromagnetic Compatibility Criteria for Intentional Radiators

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 antenna is professionally installed.

Test Engineer(s): Jeff Pratt

Test Date(s): 10/17/11

Antenna	Gain
2.4 GHz Omni	10 dBi
2.4 GHz Sector	15 dBi
5.8 GHz Omni	10 dBi
5.8 GHz Sector	25.5 dBi

Electromagnetic Compatibility Criteria for Intentional Radiators

§ 15.207(a) 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 μ H/50 Ω 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 (dB μ V)	
	Quasi-Peak	Average
* 0.15- 0.45	66 - 56	56 - 46
0.45 - 0.5	56	46
0.5 - 30	60	50

Table 13. 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 μ H 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 μ H 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.

Test Results: The EUT was compliant with this requirement.

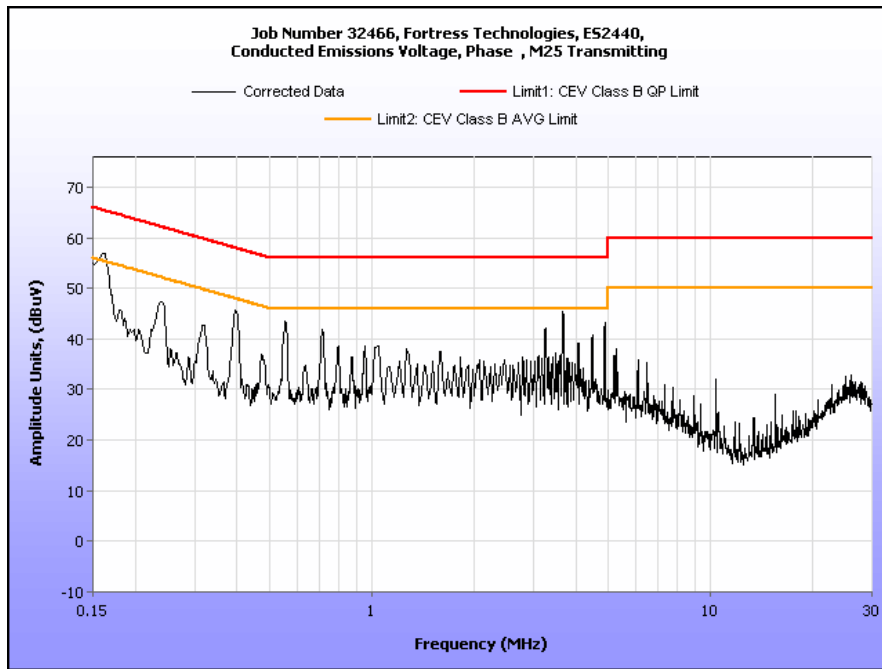
Test Engineer(s): Ben Taylor

Test Date(s): 10/26/11

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
0.1569	53.36	0	53.36	65.63	-12.27	43.66	0	43.66	55.63	-11.97
0.3995	43.6	0	43.6	57.86	-14.26	38.08	0	38.08	47.86	-9.78
0.5584	41	0	41	56	-15	35.6	0	35.6	46	-10.4
0.7148	39.1	0	39.1	56	-16.9	33.57	0	33.57	46	-12.43
3.66	42.31	0.03	42.34	56	-13.66	37.52	0.03	37.55	46	-8.45
4.475	42.82	0.08	42.9	56	-13.1	39.42	0.08	39.5	46	-6.5

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

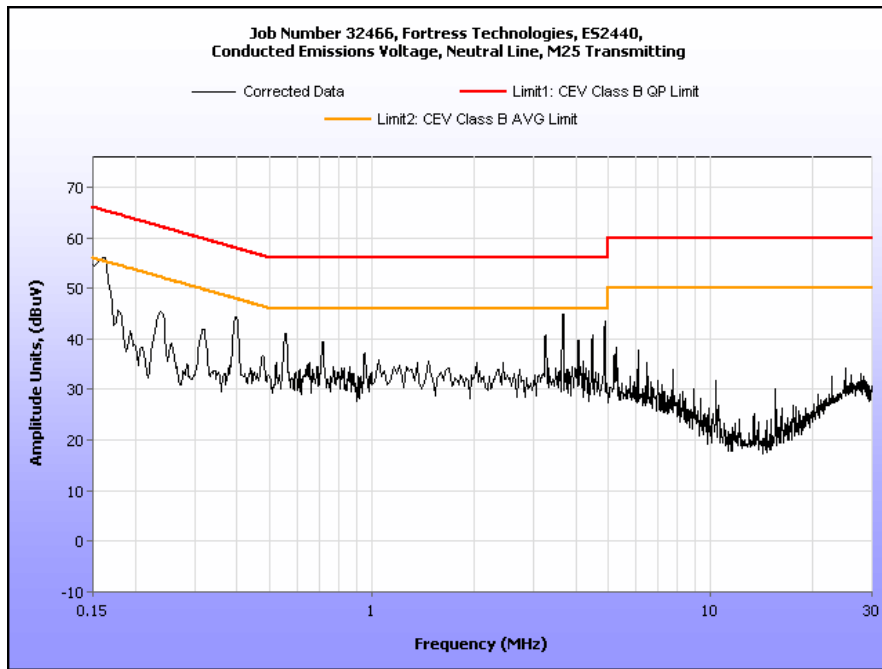


Plot 5. Conducted Emissions, 15.207(a), Phase Line

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
0.1584	53.42	0	53.42	65.55	-12.13	44.62	0	44.62	55.55	-10.93
0.2385	44.18	0.01	44.19	62.15	-17.96	38.39	0.01	38.4	52.15	-13.75
0.398	42.8	0	42.8	57.9	-15.1	41	0	41	47.9	-6.9
0.5568	39.35	0	39.35	56	-16.65	39.44	0	39.44	46	-6.56
3.66	43.13	0.03	43.16	56	-12.84	42.03	0.03	42.06	46	-3.94
4.881	42.25	0.1	42.35	56	-13.65	41.96	0.1	42.06	46	-3.94

Table 15. Conducted Emissions, 15.207(a), Neutral Line, Test Results



Plot 6. Conducted Emissions, 15.207(a), Neutral Line

15.207(a) Conducted Emissions Test Setup Photo



Photograph 4. Conducted Emissions, 15.207(a), Test Setup

Electromagnetic Compatibility Criteria for Intentional Radiators

§ 15.247(a)(2) 6 dB and 99% Bandwidth

Test Requirements: § 15.247(a)(2): Operation under the provisions of this section is limited to frequency hopping and digitally modulated intentional radiators that comply with the following provisions:

For systems using digital modulation techniques, the EUT may operate in the 902-928 MHz, 2400-2483.5 MHz and 5725-5850 MHz bands. The minimum 6dB bandwidth shall be at least 500 kHz.

Test Procedure: The transmitter was on and transmitting at the highest output power. The bandwidth of the fundamental frequency was measured with the spectrum analyzer using a RBW approximately 1% of the total emission bandwidth, VBW > RBW. The 6 dB Bandwidth was measured and recorded. The measurements were performed on the low, mid and high channels.

Test Results The EUT was compliant with § 15.247 (a)(2).

The 6 dB and 99% Bandwidth was determined from the plots on the following pages.

Test Engineer(s): Jeff Pratt

Test Date(s): 08/15/11

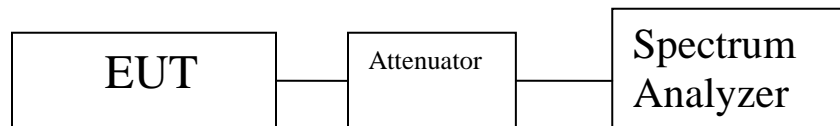


Figure 1. Block Diagram, Occupied Bandwidth Test Setup

Occupied Bandwidth Test Results

Occupied Bandwidth			
Mode	Carrier Channel	Frequency (MHz)	Measured 6 dB Bandwidth (MHz)
802.11b Port A	Low	2412	11.562
	Mid	2437	11.562
	High	2462	9.133
802.11g Port A	Low	2412	16.538
	Mid	2437	16.282
	High	2462	16.431
802.11g HT20 Port A	Low	2412	17.354
	Mid	2437	17.619
	High	2462	17.443
802.11g HT20 Port B	Low	2412	17.743
	Mid	2437	17.804
	High	2462	17.589
802.11g HT40 Port A	Low	2422	35.277
	Mid	2437	36.035
	High	2452	35.340
802.11g HT40 Port B	Low	2422	36.419
	Mid	2437	36.070
	High	2452	36.168

Table 16. 6 dB Occupied Bandwidth, Test Results, 2.4 GHz

Occupied Bandwidth			
Mode	Carrier Channel	Frequency (MHz)	Measured 6 dB Bandwidth (MHz)
802.11a Port A	Low	5745	16.297
	Mid	5785	16.295
	High	5825	16.428
802.11n 20 MHz Port A	Low	5745	17.772
	Mid	5785	17.608
	High	5825	17.720
802.11n 20 MHz Port B	Low	5745	17.468
	Mid	5785	17.668
	High	5825	17.741
802.11n 40 MHz Port A	Low	5755	36.185
	Mid	5785	31.683
	High	5815	36.348
802.11n 40 MHz Port B	Low	5755	33.288
	Mid	5785	35.640
	High	5815	35.589

Table 17. 6 dB Occupied Bandwidth, Test Results, 5.8 GHz

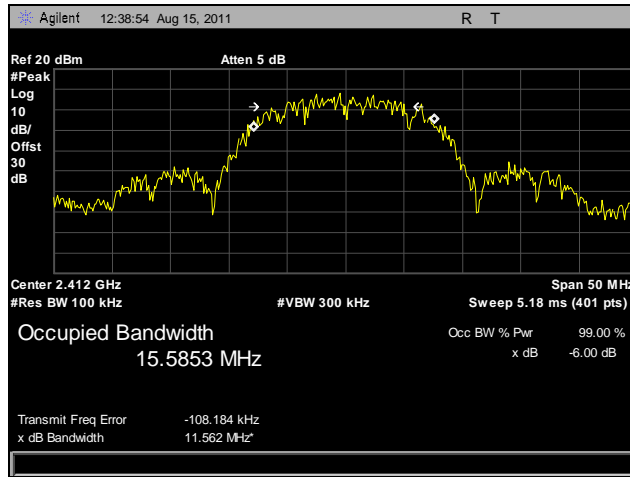
Occupied Bandwidth			
Mode	Carrier Channel	Frequency (MHz)	Measured 99% Bandwidth (MHz)
802.11b Port A	Low	2412	15.7141
	Mid	2437	15.8202
	High	2462	15.7144
802.11g Port A	Low	2412	16.6169
	Mid	2437	16.8090
	High	2462	16.8024
802.11g HT20 Port A	Low	2412	17.9866
	Mid	2437	17.8876
	High	2462	17.9036
802.11g HT20 Port B	Low	2412	17.6869
	Mid	2437	18.0137
	High	2462	17.8676
802.11g HT40 Port A	Low	2422	36.8308
	Mid	2437	36.8494
	High	2452	37.1857
802.11g HT40 Port B	Low	2422	37.3166
	Mid	2437	37.4569
	High	2452	36.9956

Table 18. 99% Occupied Bandwidth, Test Results, 2.4 GHz

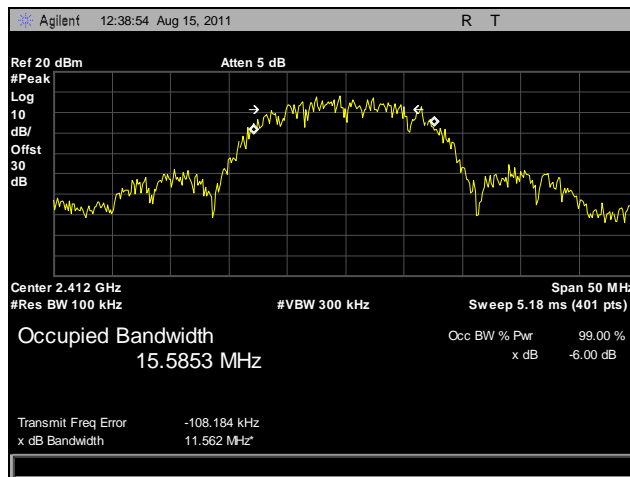
Occupied Bandwidth			
Mode	Carrier Channel	Frequency (MHz)	Measured 99% Bandwidth (MHz)
802.11a Port A	Low	5745	16.6346
	Mid	5785	16.4243
	High	5825	16.5691
802.11n 20 MHz Port A	Low	5745	17.8153
	Mid	5785	17.7484
	High	5825	17.8203
802.11n 20 MHz Port B	Low	5745	17.9257
	Mid	5785	17.7466
	High	5825	17.6178
802.11n 40 MHz Port A	Low	5755	36.0997
	Mid	5785	36.3655
	High	5815	36.1489
802.11n 40 MHz Port B	Low	5755	36.4066
	Mid	5785	36.7726
	High	5815	36.2552

Table 19. 99% Occupied Bandwidth, Test Results, 5.8 GHz

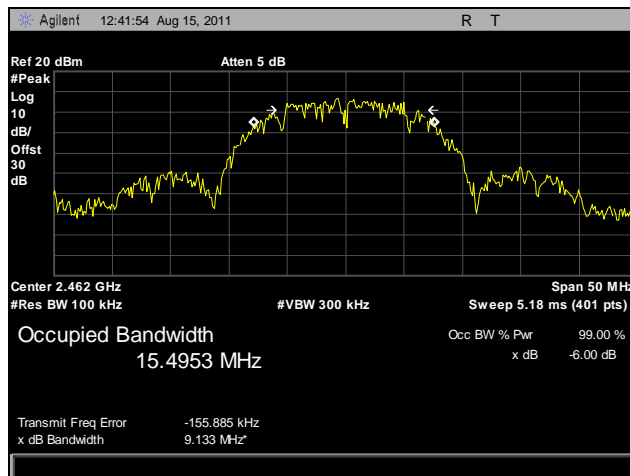
6 dB Occupied Bandwidth Test Results, 2.4 GHz, 802.11b, Port A



Plot 7. 6 dB Occupied Bandwidth, Low Channel, 2.4 GHz, 802.11b, Port A

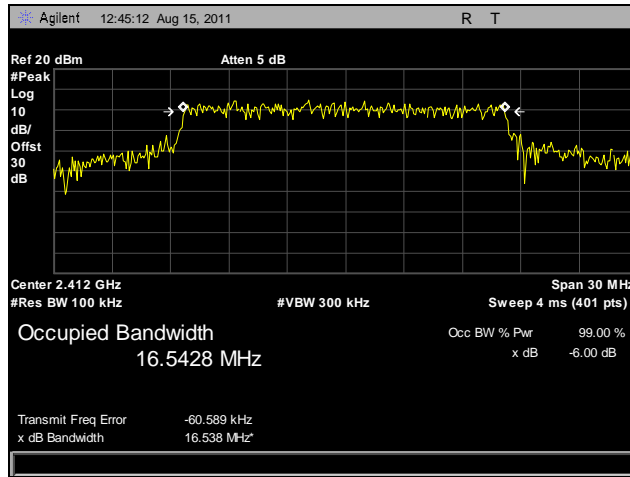


Plot 8. 6 dB Occupied Bandwidth, Mid Channel, 2.4 GHz, 802.11b, Port A

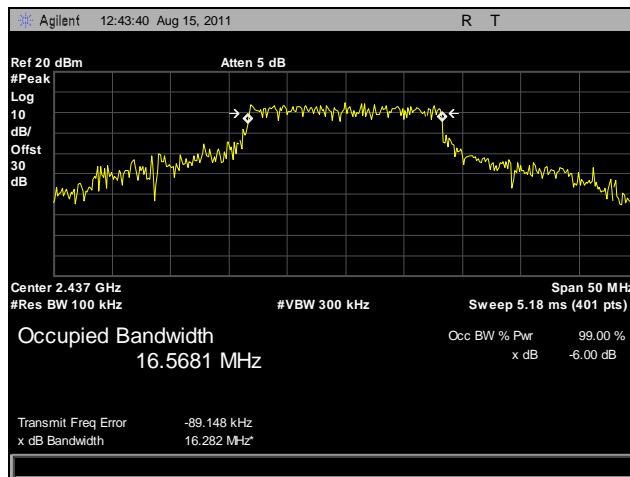


Plot 9. 6 dB Occupied Bandwidth, High Channel, 2.4 GHz, 802.11b, Port A

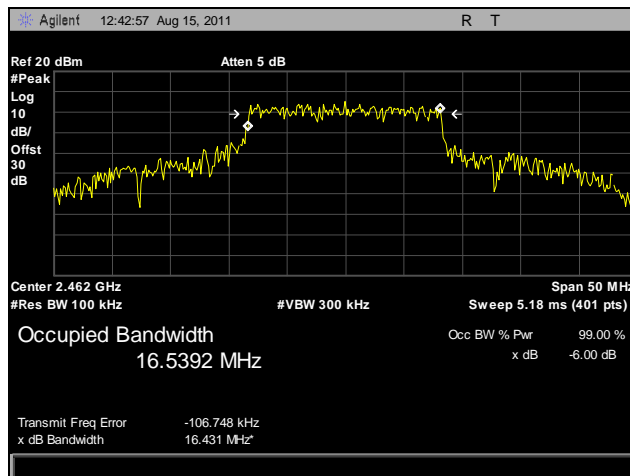
6 dB Occupied Bandwidth Test Results, 2.4 GHz, 802.11g, Port A



Plot 10. 6 dB Occupied Bandwidth, Low Channel, 2.4 GHz, 802.11g, Port A

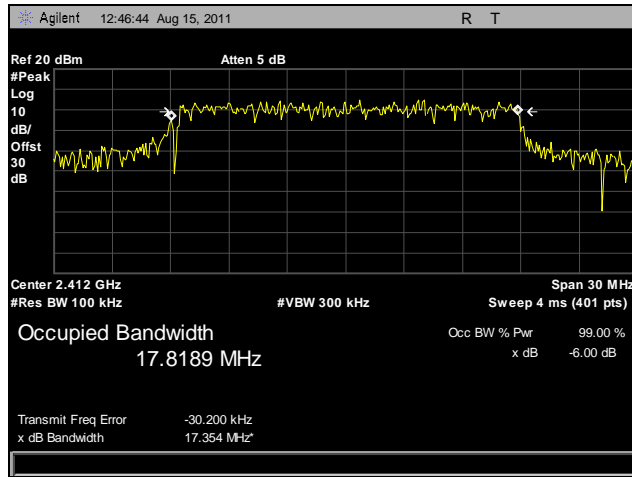


Plot 11. 6 dB Occupied Bandwidth, Mid Channel, 2.4 GHz, 802.11g, Port A

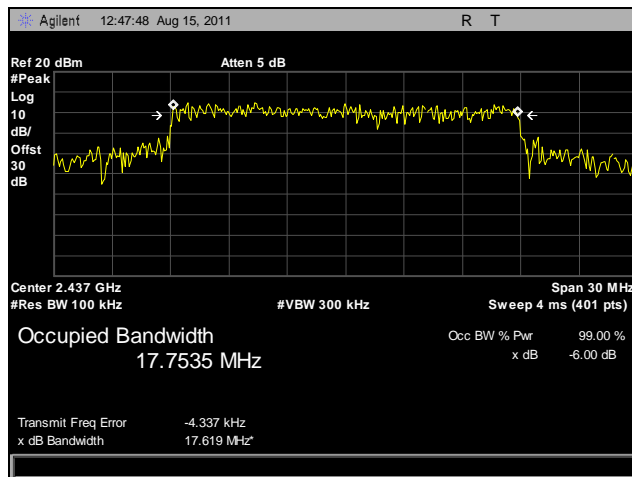


Plot 12. 6 dB Occupied Bandwidth, High Channel, 2.4 GHz, 802.11g, Port A

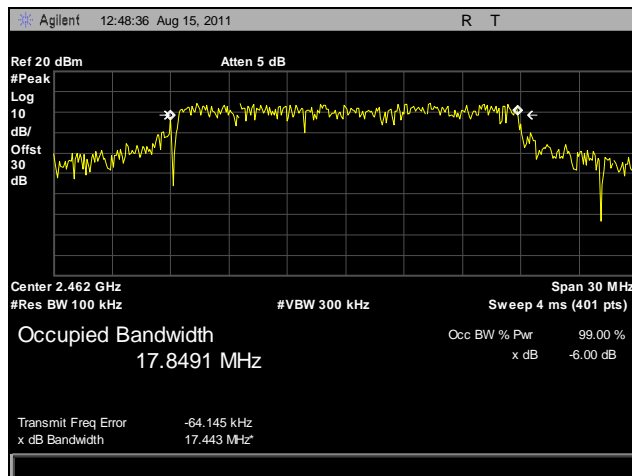
6 dB Occupied Bandwidth Test Results, 2.4 GHz, 802.11g HT20, Port A



Plot 13. 6 dB Occupied Bandwidth, Low Channel, 2.4 GHz, 802.11g HT20, Port A

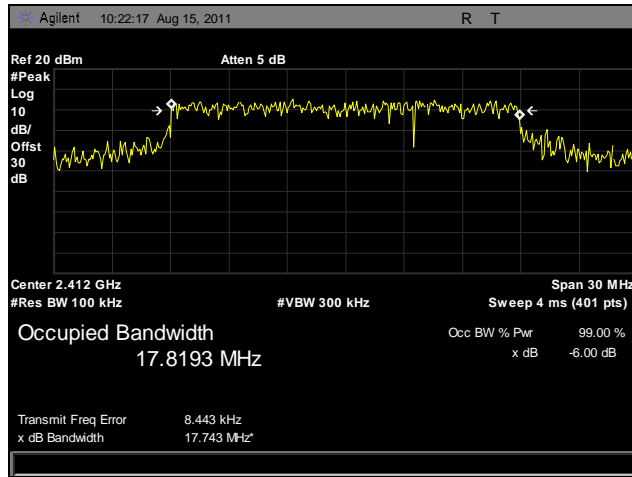


Plot 14. 6 dB Occupied Bandwidth, Mid Channel, 2.4 GHz, 802.11g HT20, Port A

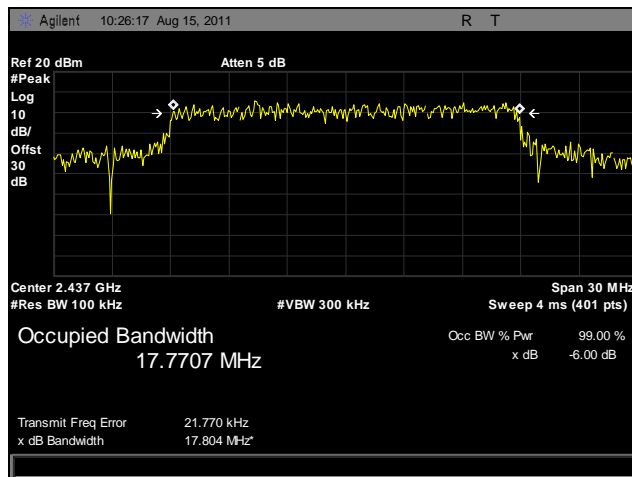


Plot 15. 6 dB Occupied Bandwidth, High Channel, 2.4 GHz, 802.11g HT20, Port A

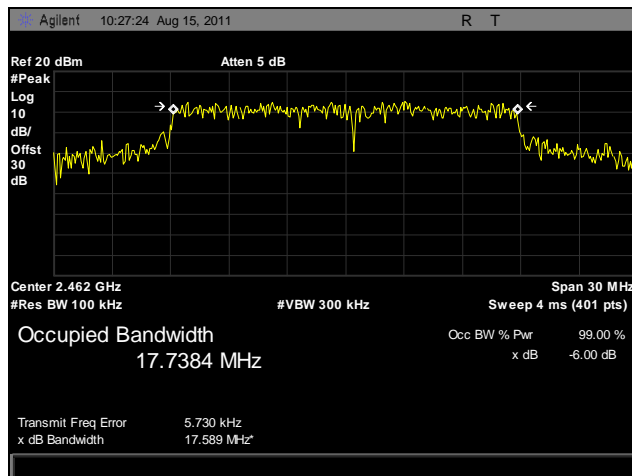
6 dB Occupied Bandwidth Test Results, 2.4 GHz, 802.11g HT20, Port B



Plot 16. 6 dB Occupied Bandwidth, Low Channel, 2.4 GHz, 802.11g HT20, Port B

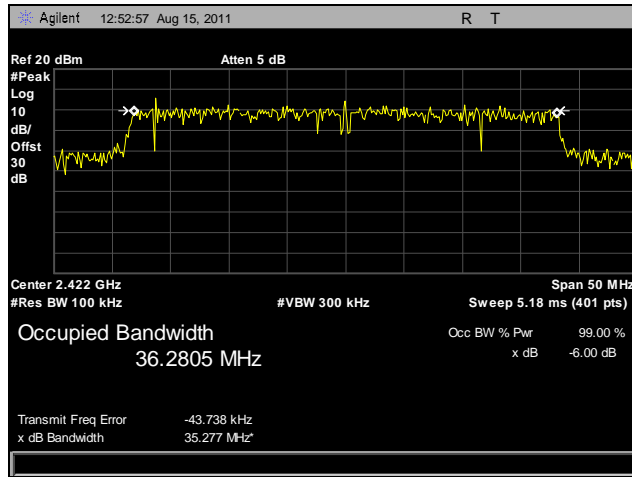


Plot 17. 6 dB Occupied Bandwidth, Mid Channel, 2.4 GHz, 802.11g HT20, Port B

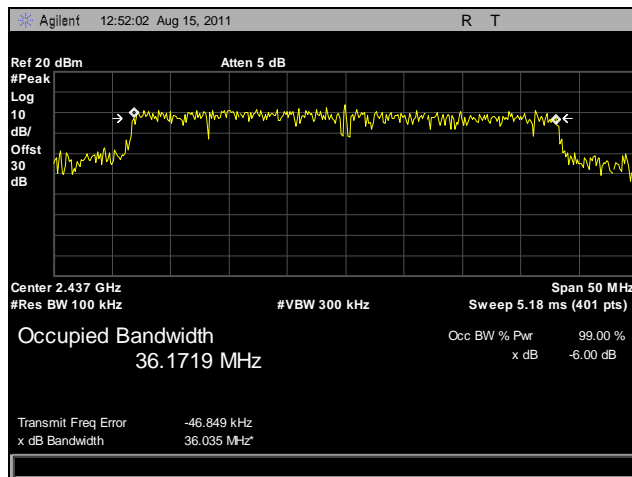


Plot 18. 6 dB Occupied Bandwidth, High Channel, 2.4 GHz, 802.11g HT20, Port B

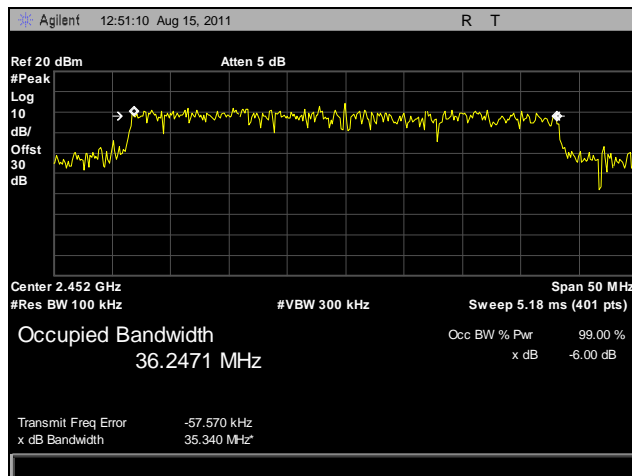
6 dB Occupied Bandwidth Test Results, 2.4 GHz, 802.11g HT40, Port A



Plot 19. 6 dB Occupied Bandwidth, Low Channel, 2.4 GHz, 802.11g HT40, Port A

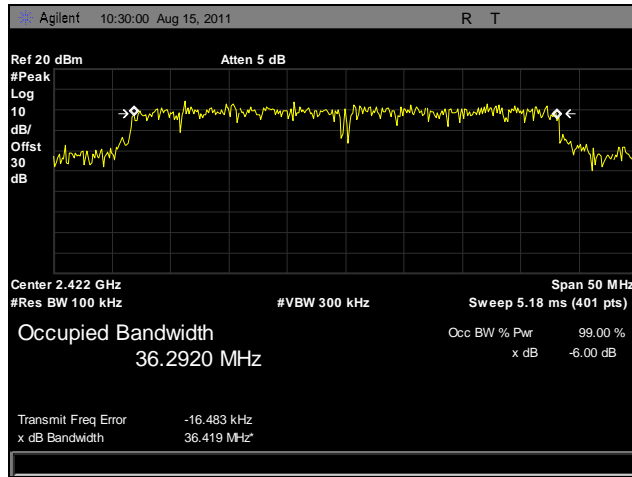


Plot 20. 6 dB Occupied Bandwidth, Mid Channel, 2.4 GHz, 802.11g HT40, Port A

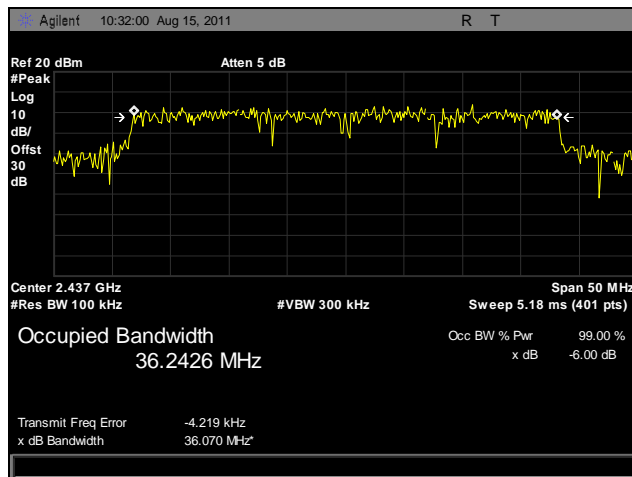


Plot 21. 6 dB Occupied Bandwidth, High Channel, 2.4 GHz, 802.11g HT40, Port A

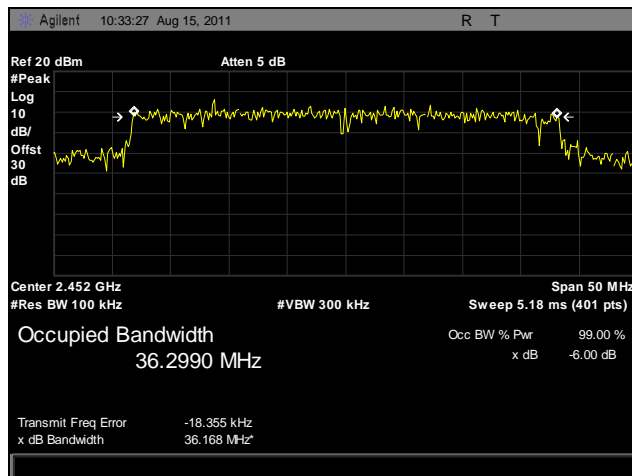
6 dB Occupied Bandwidth Test Results, 2.4 GHz, 802.11g HT40, Port B



Plot 22. 6 dB Occupied Bandwidth, Low Channel, 2.4 GHz, 802.11g HT40, Port B

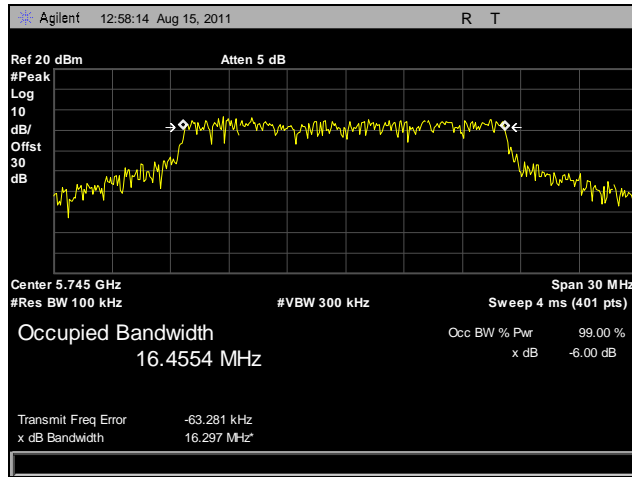


Plot 23. 6 dB Occupied Bandwidth, Mid Channel, 2.4 GHz, 802.11g HT40, Port B

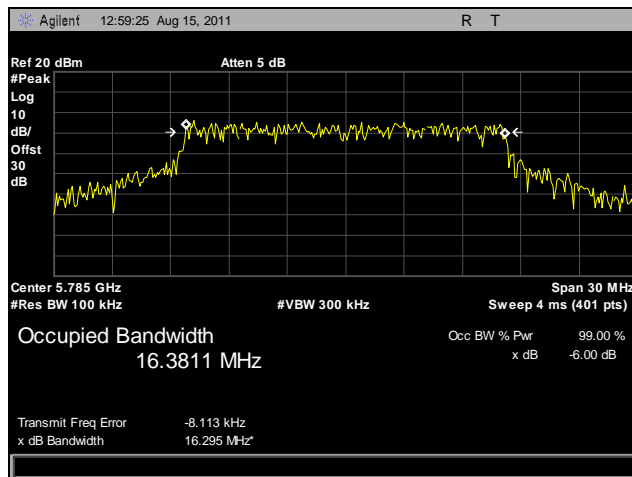


Plot 24. 6 dB Occupied Bandwidth, High Channel, 2.4 GHz, 802.11g HT40, Port B

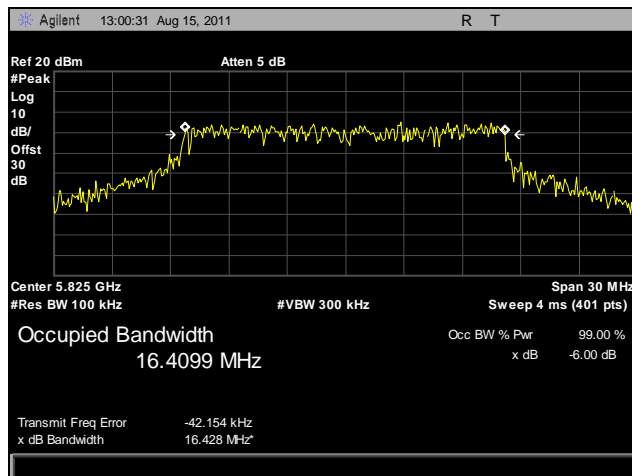
6 dB Occupied Bandwidth Test Results, 5.8 GHz, 802.11a, Port A



Plot 25. 6 dB Occupied Bandwidth, Low Channel, 5.8 GHz, 802.11a, Port A

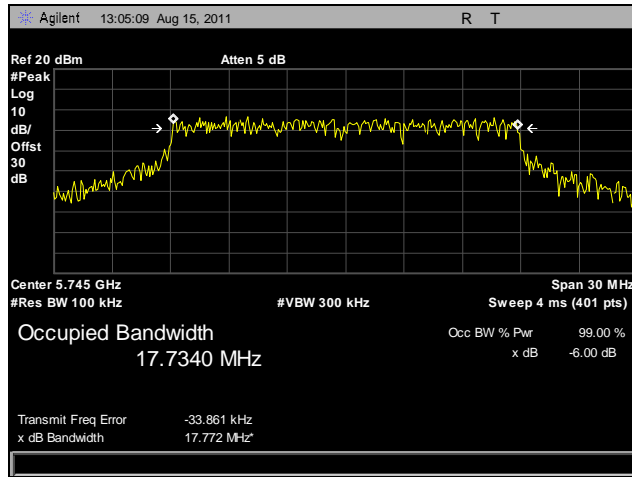


Plot 26. 6 dB Occupied Bandwidth, Mid Channel, 5.8 GHz, 802.11a, Port A

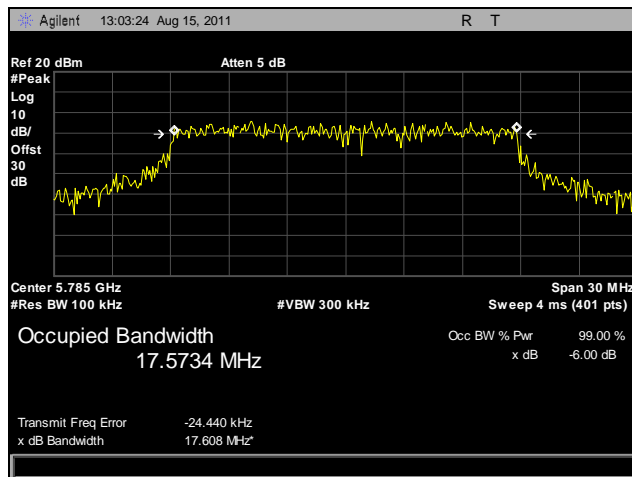


Plot 27. 6 dB Occupied Bandwidth, High Channel, 5.8 GHz, 802.11a, Port A

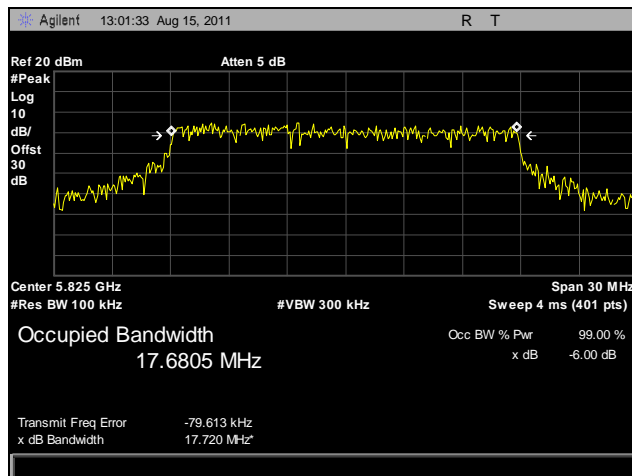
6 dB Occupied Bandwidth Test Results, 5.8 GHz, 802.11n 20 MHz, Port A



Plot 28. 6 dB Occupied Bandwidth, Low Channel, 5.8 GHz, 802.11n 20 MHz, Port A

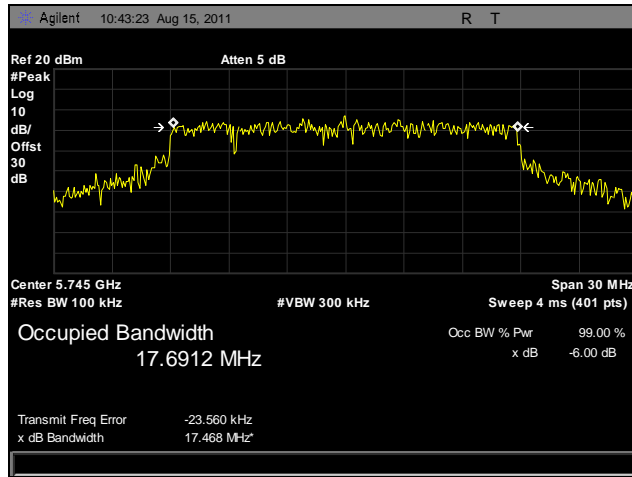


Plot 29. 6 dB Occupied Bandwidth, Mid Channel, 5.8 GHz, 802.11n 20 MHz, Port A

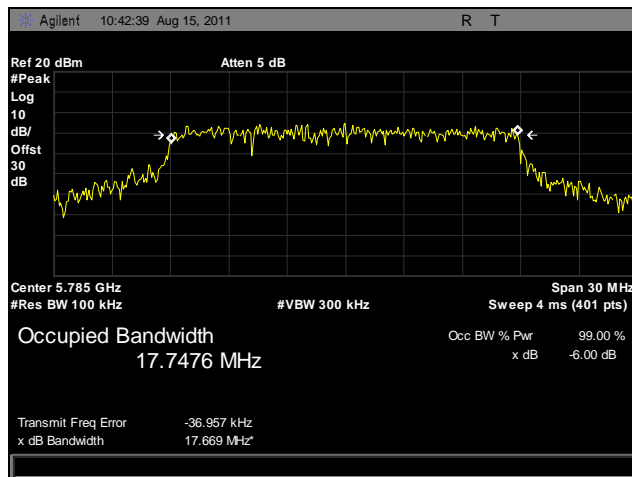


Plot 30. 6 dB Occupied Bandwidth, High Channel, 5.8 GHz, 802.11n 20 MHz, Port A

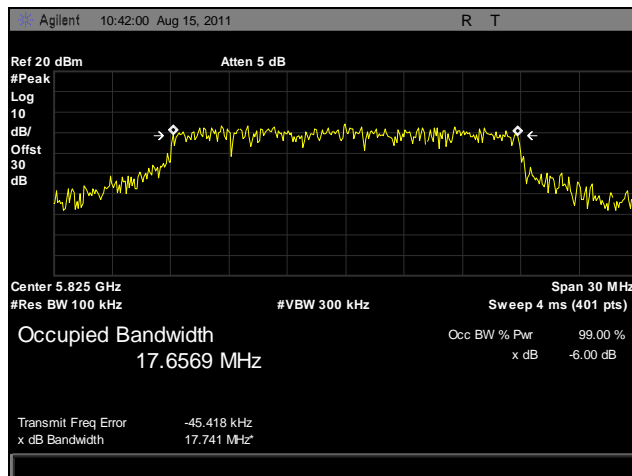
6 dB Occupied Bandwidth Test Results, 5.8 GHz, 802.11n 20 MHz, Port B



Plot 31. 6 dB Occupied Bandwidth, Low Channel, 5.8 GHz, 802.11n 20 MHz, Port B

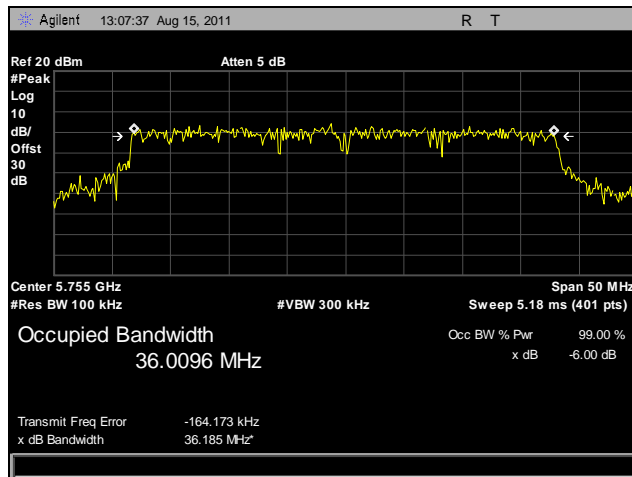


Plot 32. 6 dB Occupied Bandwidth, Mid Channel, 5.8 GHz, 802.11n 20 MHz, Port B

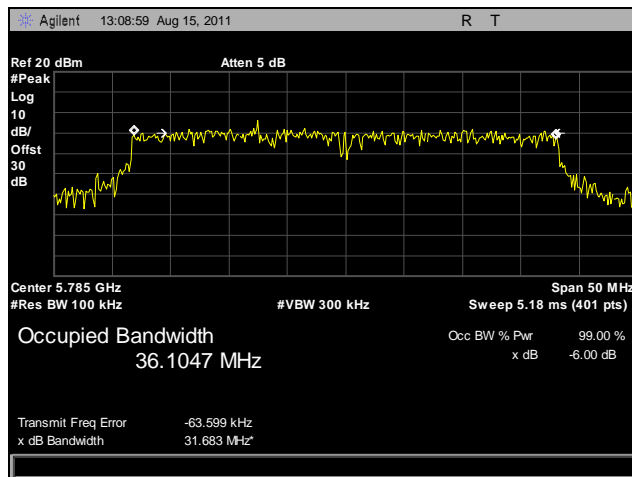


Plot 33. 6 dB Occupied Bandwidth, High Channel, 5.8 GHz, 802.11n 20 MHz, Port B

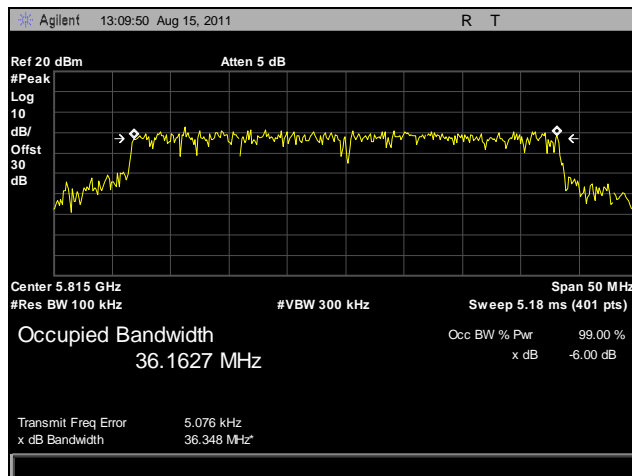
6 dB Occupied Bandwidth Test Results, 5.8 GHz, 802.11n 40 MHz, Port A



Plot 34. 6 dB Occupied Bandwidth, Low Channel, 5.8 GHz, 802.11n 40 MHz, Port A

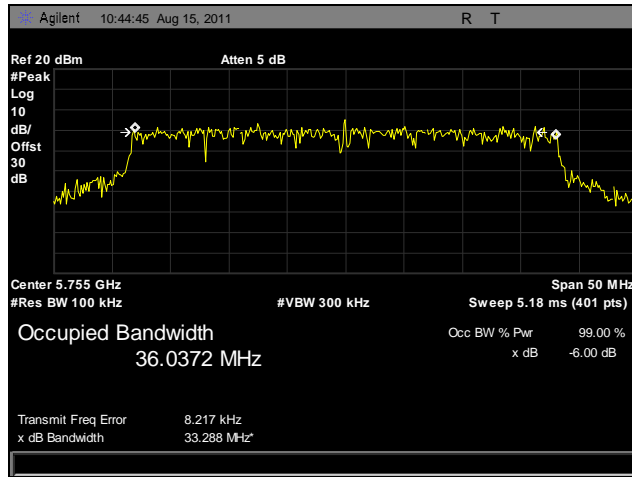


Plot 35. 6 dB Occupied Bandwidth, Mid Channel, 5.8 GHz, 802.11n 40 MHz, Port A

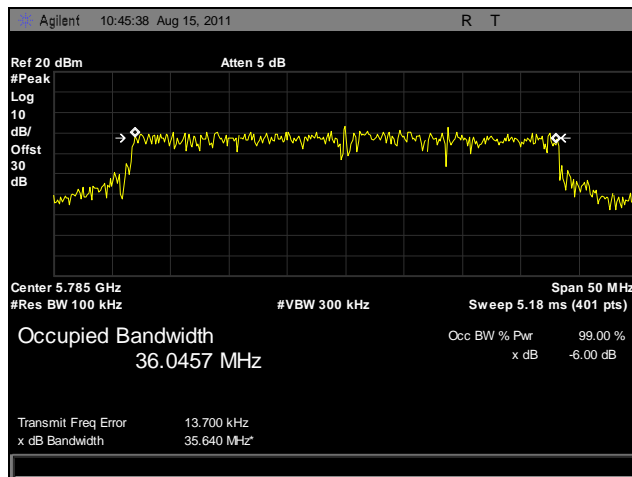


Plot 36. 6 dB Occupied Bandwidth, High Channel, 5.8 GHz, 802.11n 40 MHz, Port A

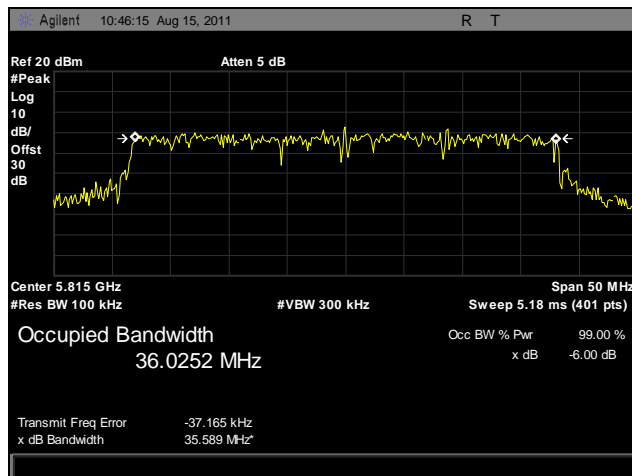
6 dB Occupied Bandwidth Test Results, 5.8 GHz, 802.11n 40 MHz, Port B



Plot 37. 6 dB Occupied Bandwidth, Low Channel, 5.8 GHz, 802.11n 40 MHz, Port B

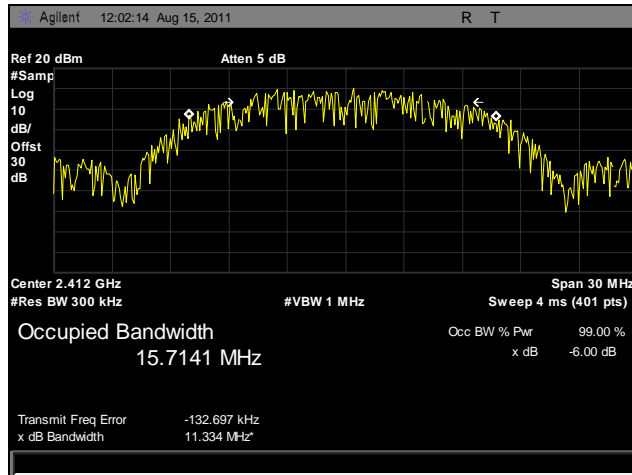


Plot 38. 6 dB Occupied Bandwidth, Mid Channel, 5.8 GHz, 802.11n 40 MHz, Port B

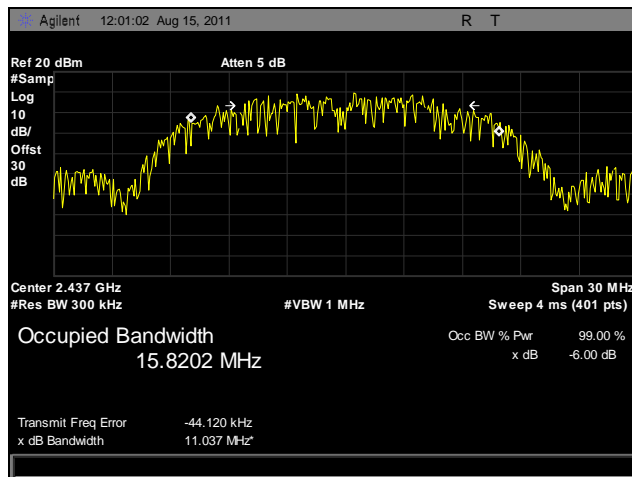


Plot 39. 6 dB Occupied Bandwidth, High Channel, 5.8 GHz, 802.11n 40 MHz, Port B

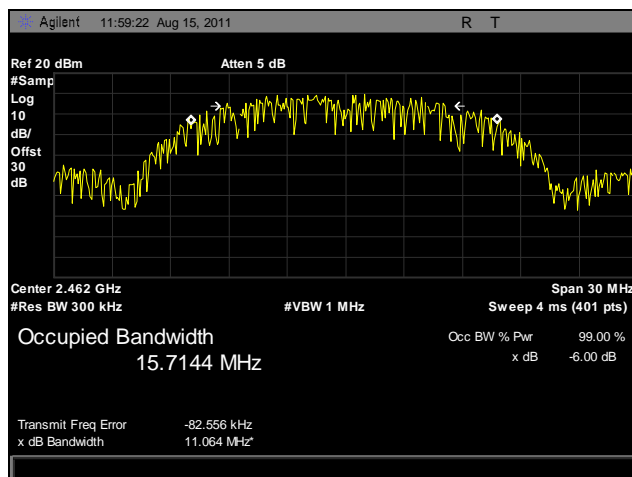
99% Occupied Bandwidth Test Results, 2.4 GHz, 802.11b, Port A



Plot 40. 99% Occupied Bandwidth, Low Channel, 2.4 GHz, 802.11b, Port A

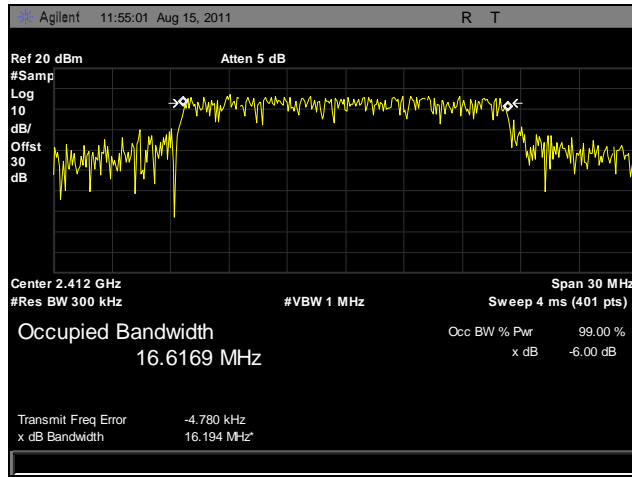


Plot 41. 99% Occupied Bandwidth, Mid Channel, 2.4 GHz, 802.11b, Port A

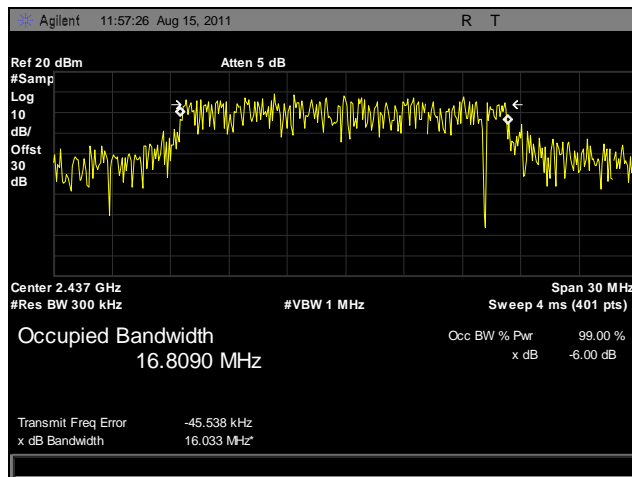


Plot 42. 99% Occupied Bandwidth, High Channel, 2.4 GHz, 802.11b, Port A

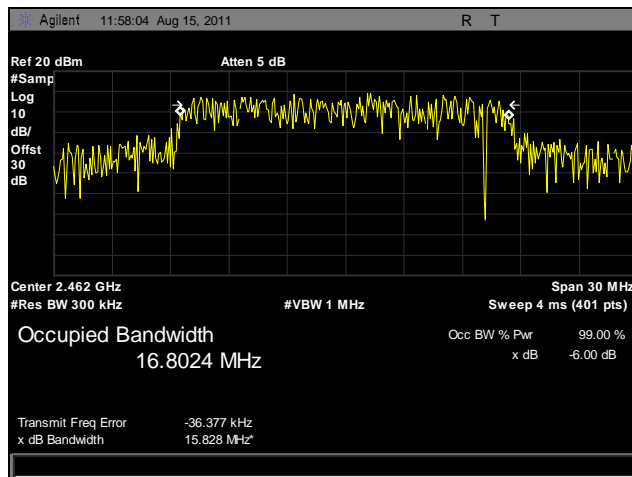
99% Occupied Bandwidth Test Results, 2.4 GHz, 802.11g, Port A



Plot 43. 99% Occupied Bandwidth, Low Channel, 2.4 GHz, 802.11g, Port A

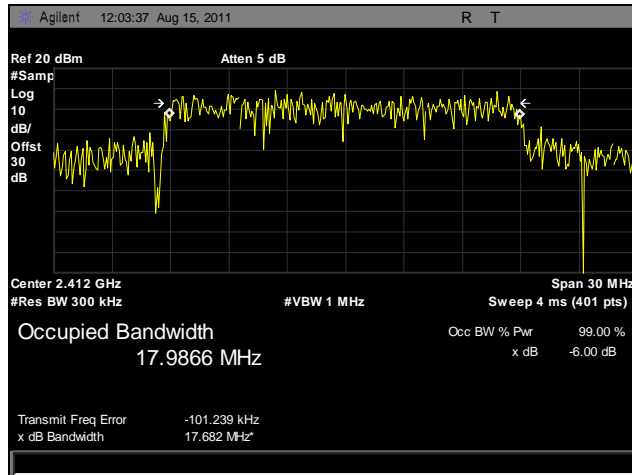


Plot 44. 99% Occupied Bandwidth, Mid Channel, 2.4 GHz, 802.11g, Port A

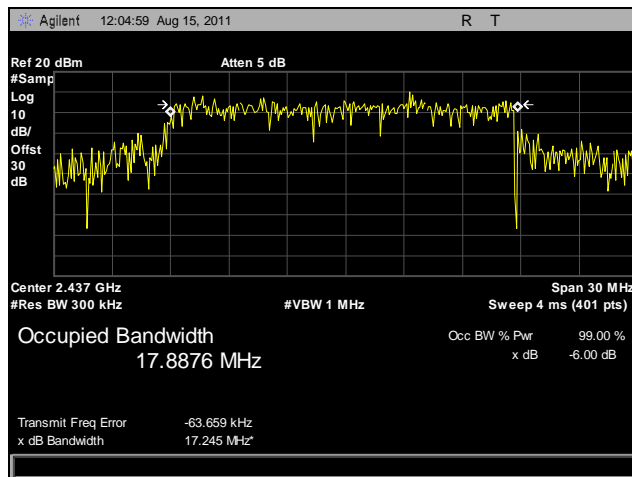


Plot 45. 99% Occupied Bandwidth, High Channel, 2.4 GHz, 802.11g, Port A

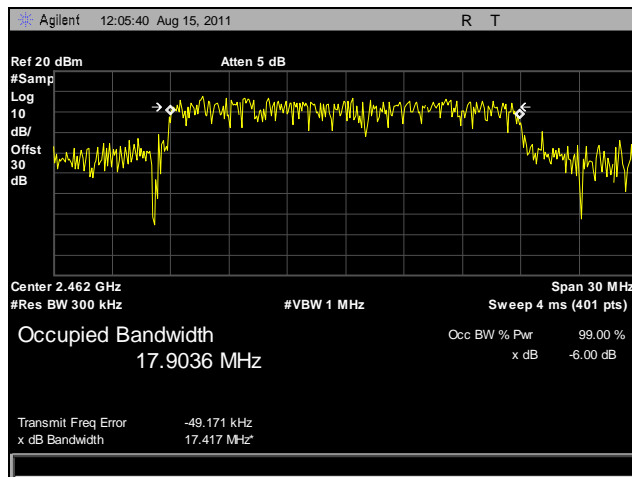
99% Occupied Bandwidth Test Results, 2.4 GHz, 802.11g HT20, Port A



Plot 46. 99% Occupied Bandwidth, Low Channel, 2.4 GHz, 802.11g HT20, Port A

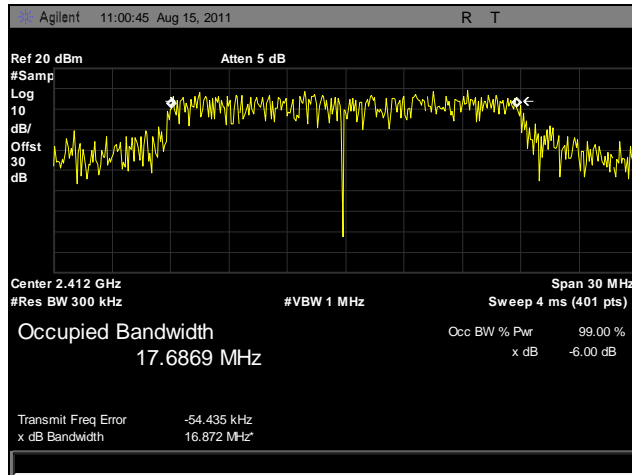


Plot 47. 99% Occupied Bandwidth, Mid Channel, 2.4 GHz, 802.11g HT20, Port A

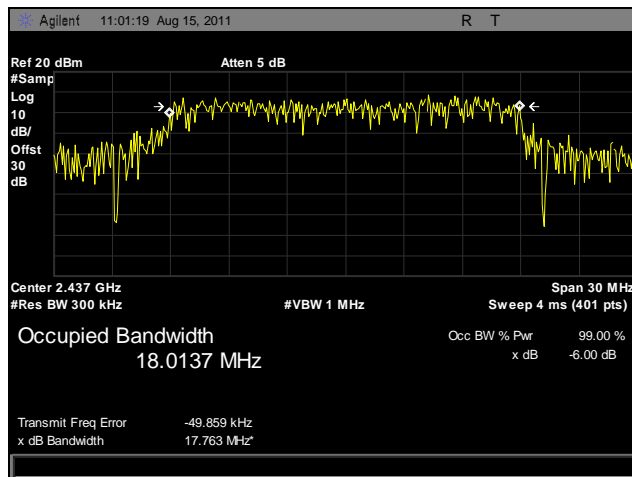


Plot 48. 99% Occupied Bandwidth, High Channel, 2.4 GHz, 802.11g HT20, Port A

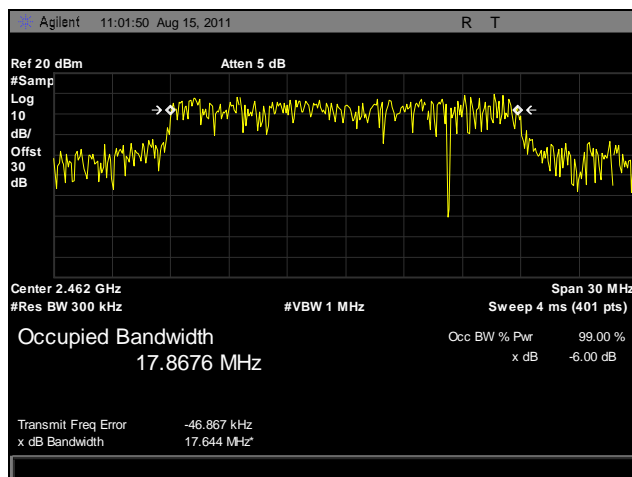
99% Occupied Bandwidth Test Results, 2.4 GHz, 802.11g HT20, Port B



Plot 49. 99% Occupied Bandwidth, Low Channel, 2.4 GHz, 802.11g HT20, Port B

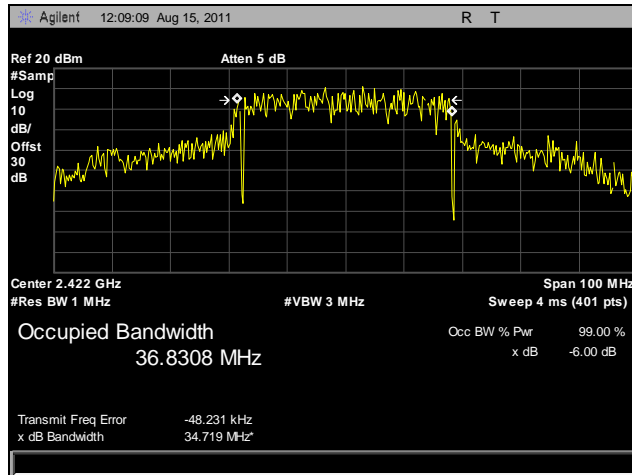


Plot 50. 99% Occupied Bandwidth, Mid Channel, 2.4 GHz, 802.11g HT20, Port B

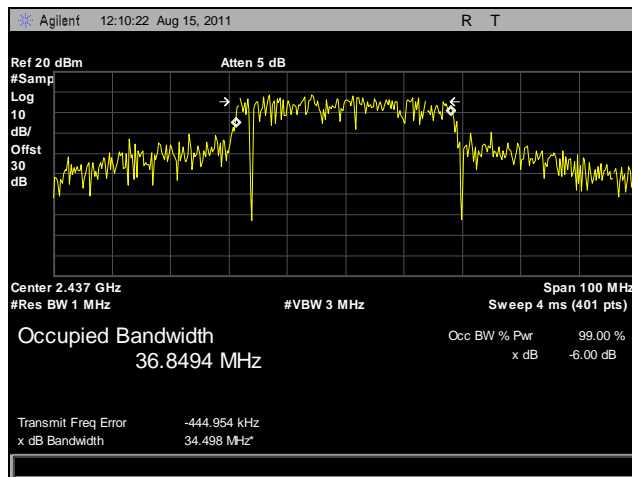


Plot 51. 99% Occupied Bandwidth, High Channel, 2.4 GHz, 802.11g HT20, Port B

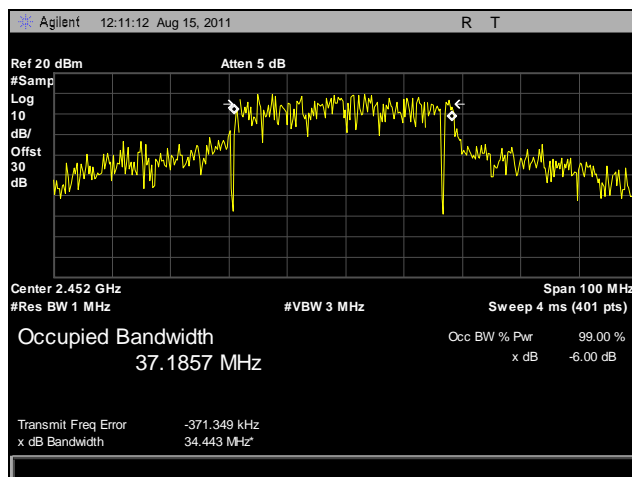
99% Occupied Bandwidth Test Results, 2.4 GHz, 802.11g HT40, Port A



Plot 52. 99% Occupied Bandwidth, Low Channel, 2.4 GHz, 802.11g HT40, Port A

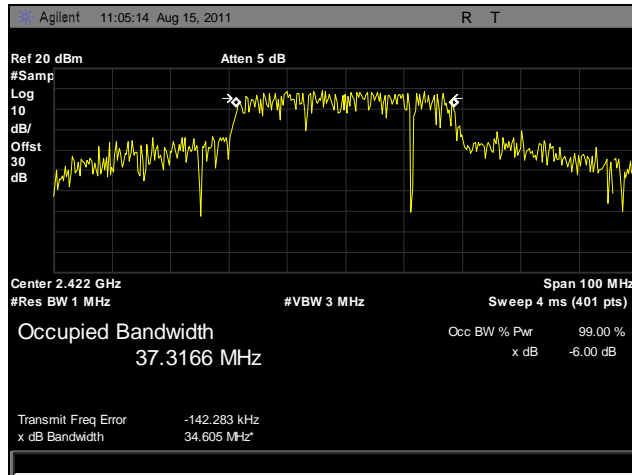


Plot 53. 99% Occupied Bandwidth, Mid Channel, 2.4 GHz, 802.11g HT40, Port A

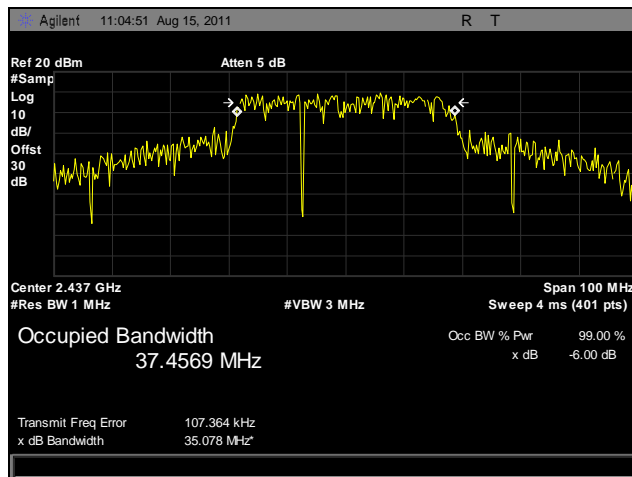


Plot 54. 99% Occupied Bandwidth, High Channel, 2.4 GHz, 802.11g HT40, Port A

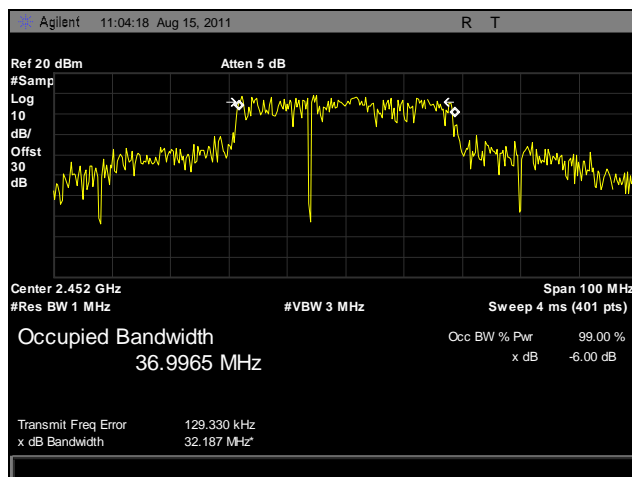
99% Occupied Bandwidth Test Results, 2.4 GHz, 802.11g HT40, Port B



Plot 55. 99% Occupied Bandwidth, Low Channel, 2.4 GHz, 802.11g HT40, Port B

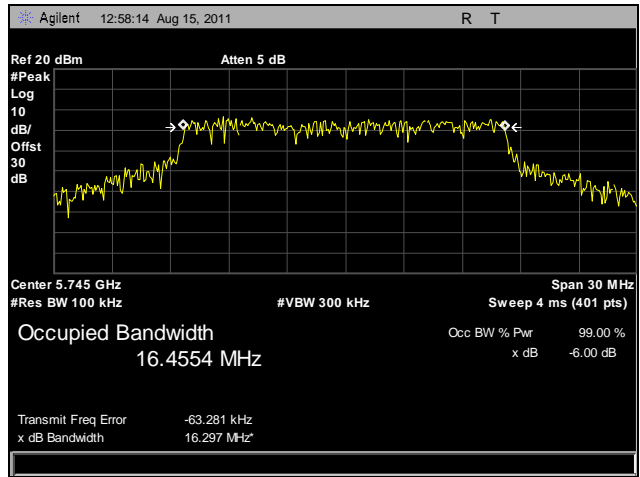


Plot 56. 99% Occupied Bandwidth, Mid Channel, 2.4 GHz, 802.11g HT40, Port B

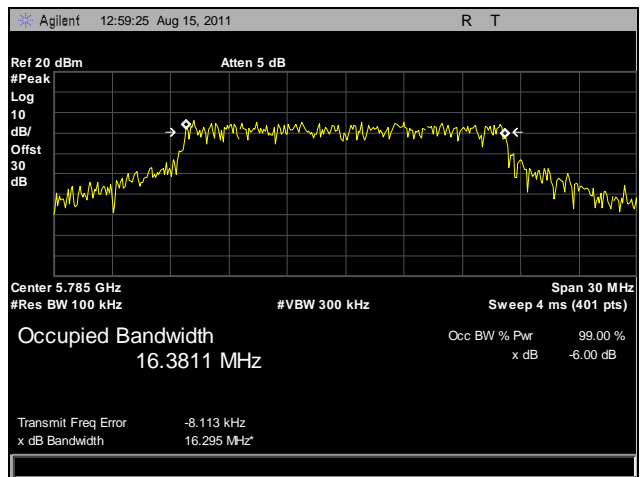


Plot 57. 99% Occupied Bandwidth, High Channel, 2.4 GHz, 802.11g HT40, Port B

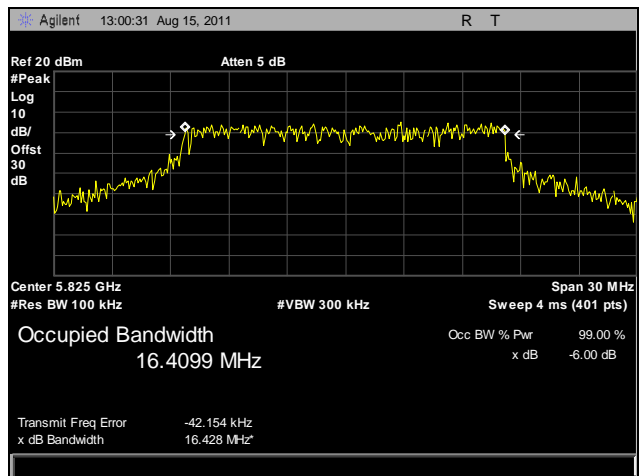
99% Occupied Bandwidth Test Results, 5.8 GHz, 802.11a, Port A



Plot 58. 99% Occupied Bandwidth, Low Channel, 5.8 GHz, 802.11a, Port A

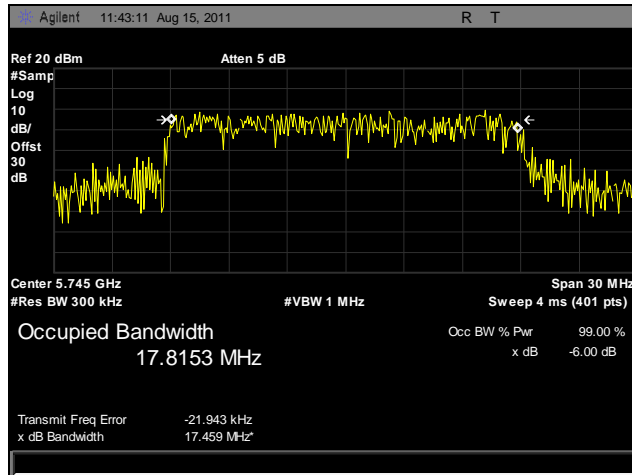


Plot 59. 99% Occupied Bandwidth, Mid Channel, 5.8 GHz, 802.11a, Port A

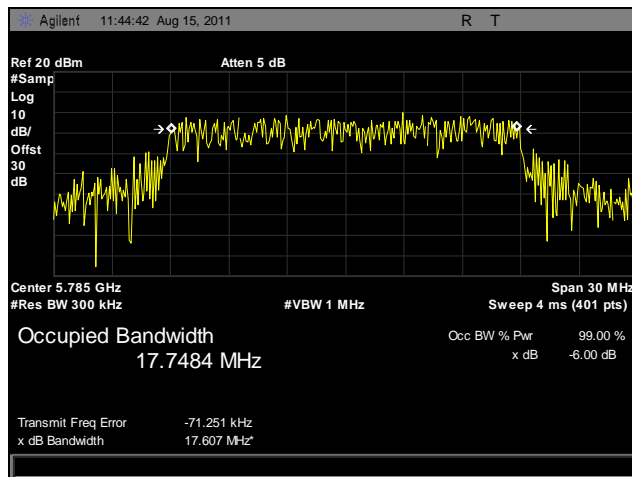


Plot 60. 99% Occupied Bandwidth, High Channel, 5.8 GHz, 802.11a, Port A

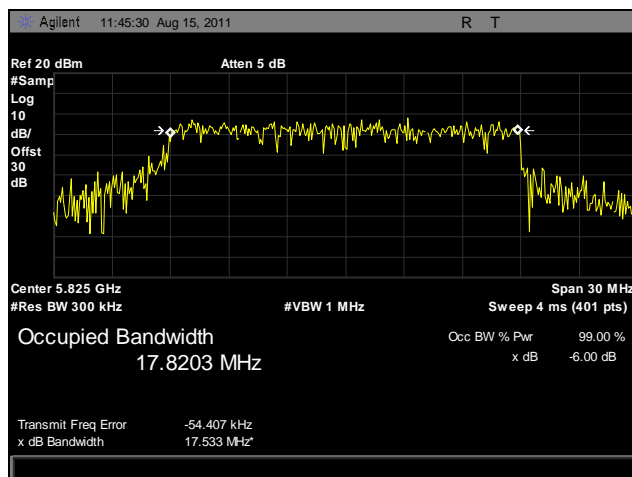
99% Occupied Bandwidth Test Results, 5.8 GHz, 802.11n 20 MHz, Port A



Plot 61. 99% Occupied Bandwidth, Low Channel, 5.8 GHz, 802.11n 20 MHz, Port A

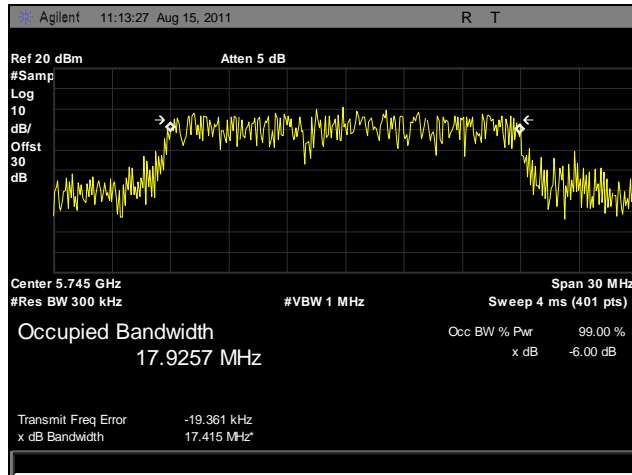


Plot 62. 99% Occupied Bandwidth, Mid Channel, 5.8 GHz, 802.11n 20 MHz, Port A

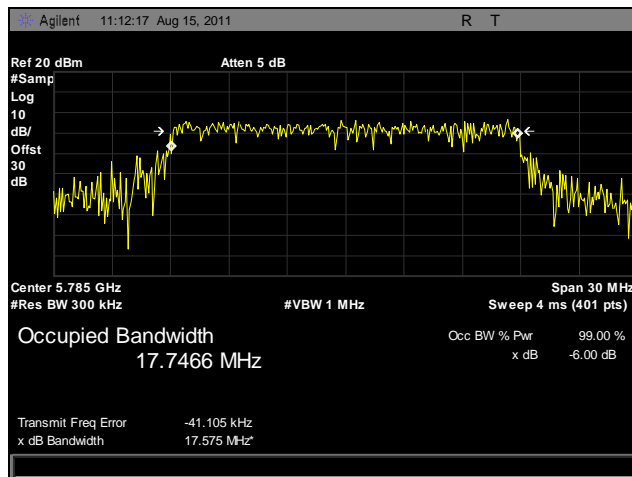


Plot 63. 99% Occupied Bandwidth, High Channel, 5.8 GHz, 802.11n 20 MHz, Port A

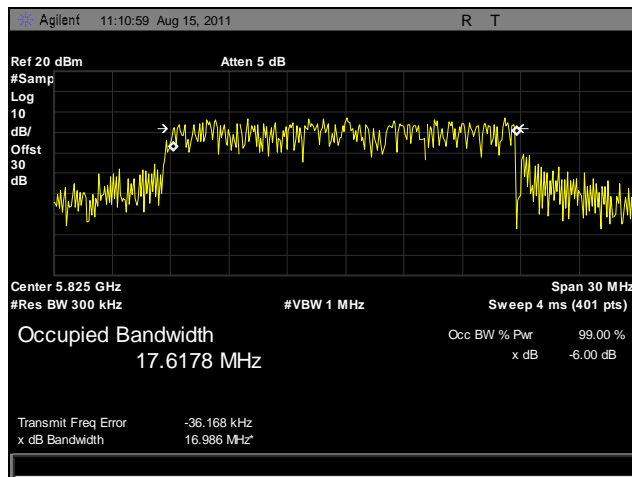
99% Occupied Bandwidth Test Results, 5.8 GHz, 802.11n 20 MHz, Port B



Plot 64. 99% Occupied Bandwidth, Low Channel, 5.8 GHz, 802.11n 20 MHz, Port B

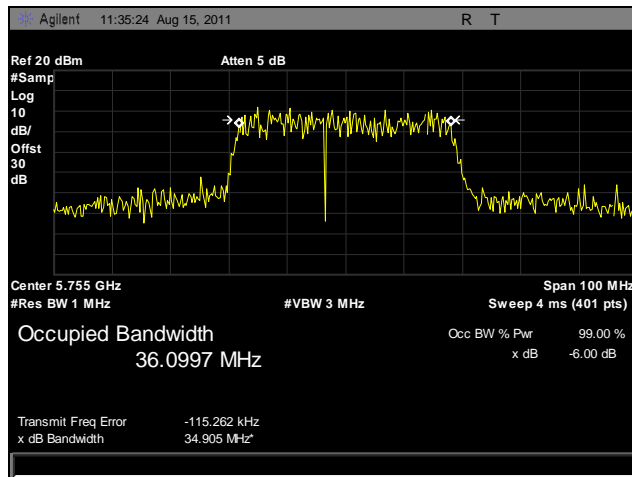


Plot 65. 99% Occupied Bandwidth, Mid Channel, 5.8 GHz, 802.11n 20 MHz, Port B

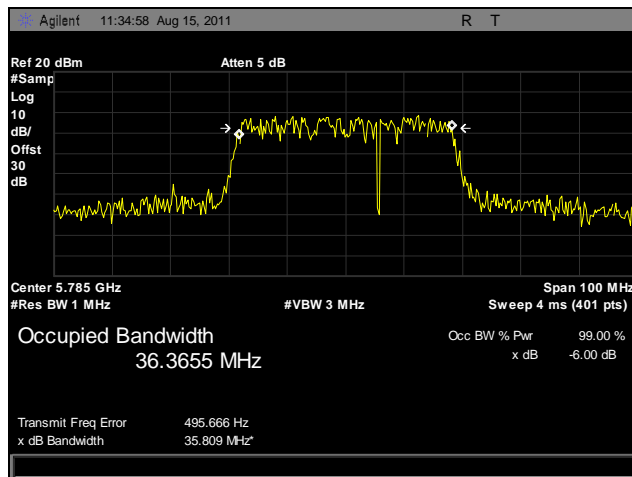


Plot 66. 99% Occupied Bandwidth, High Channel, 5.8 GHz, 802.11n 20 MHz, Port B

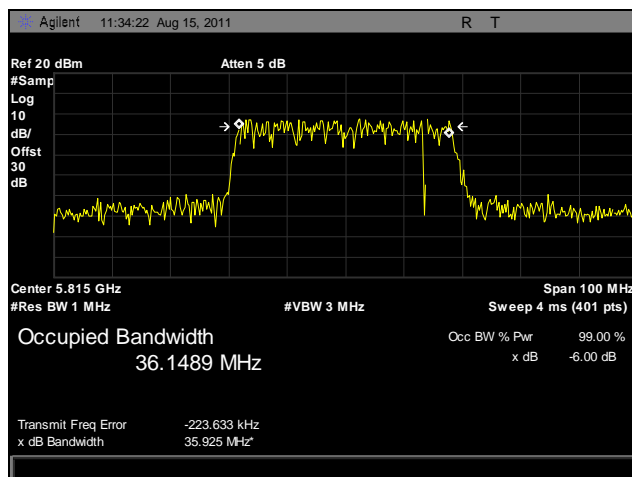
Occupied Bandwidth Test Results, 5.8 GHz, 802.11n 40 MHz, Port A



Plot 67. 99% Occupied Bandwidth, Low Channel, 5.8 GHz, 802.11n 40 MHz, Port A

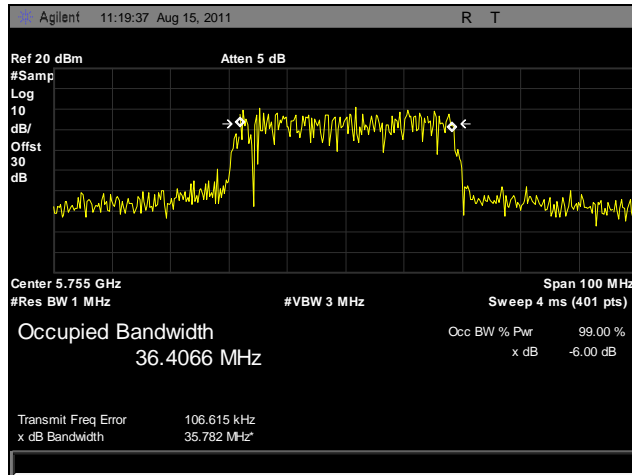


Plot 68. 99% Occupied Bandwidth, Mid Channel, 5.8 GHz, 802.11n 40 MHz, Port A

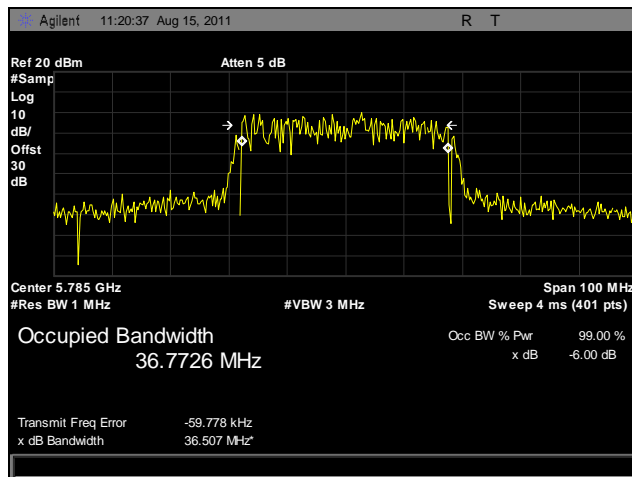


Plot 69. 99% Occupied Bandwidth, High Channel, 5.8 GHz, 802.11n 40 MHz, Port A

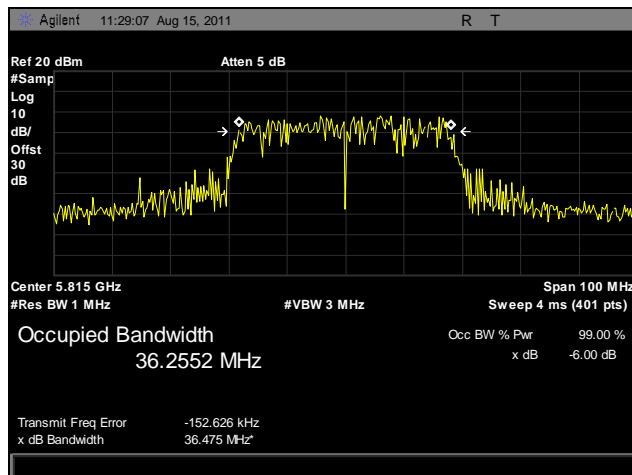
Occupied Bandwidth Test Results, 5.8 GHz, 802.11n 40 MHz, Port B



Plot 70. 99% Occupied Bandwidth, Low Channel, 5.8 GHz, 802.11n 40 MHz, Port B



Plot 71. 99% Occupied Bandwidth, Mid Channel, 5.8 GHz, 802.11n 40 MHz, Port B



Plot 72. 99% Occupied Bandwidth, High Channel, 5.8 GHz, 802.11n 40 MHz, Port B

Electromagnetic Compatibility Criteria for Intentional Radiators

§ 15.247(b) Peak Power Output

Test Requirements: §15.247(b): The maximum peak output power of the intentional radiator shall not exceed the following:

Digital Transmission Systems (MHz)	Output Limit (Watts)
902-928	1.000
2400-2483.5	1.000
5725- 5850	1.000

Table 20. Output Power Requirements from §15.247(b)

§15.247(c): if transmitting antennas of directional gain greater than 6 dBi are used the peak output power from the intentional radiator shall be reduced below the stated values in the Table 20, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Systems operating in the 2400 – 2483.5 MHz band and using a point to point application may employ transmitting antennas with directional gain greater than 6 dBi provided the maximum peak output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

Systems operating in the 5725 – 5850 MHz band that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter peak output power.

Fixed, point-to-point operation excludes the use of point-to-multipoint systems, Omni-directional applications, and multiple co-located intentional radiators transmitting the same information. The operator of the spread spectrum intentional radiator or, if the equipment is professionally installed, the installer is responsible for ensuring that the system is used exclusively for fixed, point-to-point operations. The instruction manual furnished with the intentional radiator shall contain language in the installation instructions informing the operator and the installer of this responsibility.

Test Procedure: The transmitter was connected to a calibrated spectrum analyzer. The EUT was measured at the low, mid and high channels of each band at the maximum power level.

Test Results: The EUT was compliant with the Peak Power Output limits of §15.247(b).

Test Engineer(s): Jeff Pratt

Test Date(s): 09/27/11

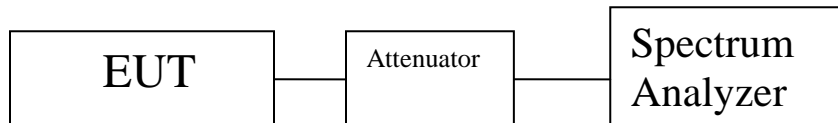


Figure 2. Peak Power Output Test Setup

Peak Power Output Test Results

Channel (MHz)	Mode/Modulation Type	Port 1A Conducted Power (dBm)	Port 1A Conducted Power (mW)	Port 1B Conducted Power (dBm)	Port 1B Conducted Power (mW)	Summed Conducted Power (mW)	Summed Conducted Power (dBm)	Antenna Gain (dBi)	Limit (dBm)	Margin (dB)
2412	802.11b	14.57	28.64178	-	-	28.64178	14.57	10	26	-11.43
2437	802.11b	14.35	27.227013	-	-	27.227013	14.35	10	26	-11.65
2462	802.11b	14.42	27.669416	-	-	27.669416	14.42	10	26	-11.58
2412	802.11g	22.84	192.30917	-	-	192.30917	22.84	10	26	-3.16
2437	802.11g	24.3	269.15348	-	-	269.15348	24.3	10	26	-1.7
2462	802.11g	23.05	201.83664	-	-	201.83664	23.05	10	26	-2.95
2412	802.11g HT20	17.79	60.117374	20.04	100.92529	161.04266	22.0694094	10	26	-3.93059
2437	802.11g HT20	19.86	96.827786	21.26	133.65955	230.48734	23.6264707	10	26	-2.37353
2462	802.11g HT20	18.63	72.945751	19.38	86.696188	159.64194	22.0314699	10	26	-3.96853
2422	802.11g HT40	14.61	28.906799	17.35	54.325033	83.231832	19.2028945	10	26	-6.79711
2437	802.11g HT40	20.26	106.16956	21.18	131.21999	237.38955	23.7546159	10	26	-2.24538
2452	802.11g HT40	15.33	34.119291	17.44	55.462571	89.581862	19.5222009	10	26	-6.4778

Table 21. Peak Power Output, Test Results, 2.4 GHz

Channel (MHz)	Mode/Modulation Type	Port 1A Conducted Power (dBm)	Port 1A Conducted Power (mW)	Port 1B Conducted Power (dBm)	Port 1B Conducted Power (mW)	Summed Conducted Power (mW)	Summed Conducted Power (dBm)	Antenna Assembly Gain (dBi)	Limit (dBm)	Margin (dB)
5745	802.11a	23.41	219.28	-	1.00	220.28	23.43	10	26	-2.57
5785	802.11a	22.53	179.06	-	1.00	180.06	22.55	10	26	-3.45
5825	802.11a	21.15	130.32	-	1.00	131.32	21.18	10	26	-4.82
5745	802.11n 20 MHz	22.17	164.82	21.84	152.76	317.57	25.02	10	26	-0.98
5785	802.11n 20 MHz	21.8	151.36	20.88	122.46	273.82	24.37	10	26	-1.63
5825	802.11n 20 MHz	20.64	115.88	18.72	74.47	190.35	22.80	10	26	-3.20
5755	802.11n 40 MHz	21.59	144.21	20.28	106.66	250.87	23.99	10	26	-2.01
5785	802.11n 40 MHz	20.87	122.18	19.99	99.77	221.95	23.46	10	26	-2.54
5815	802.11n 40 MHz	19.52	89.54	18.94	78.34	167.88	22.25	10	26	-3.75

Table 22. Peak Power Output, Test Results, 5.8 GHz

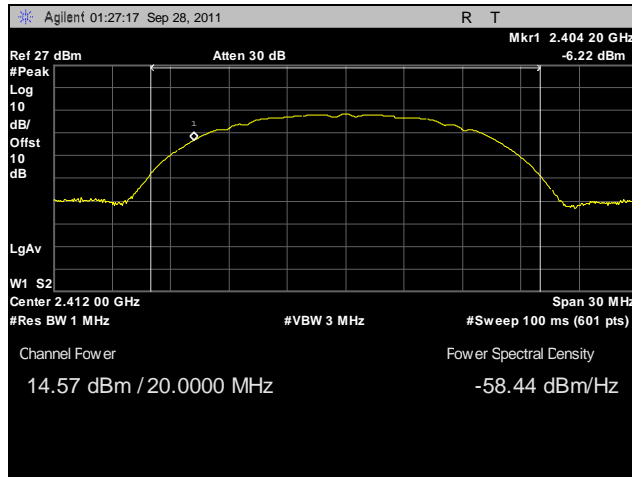
Channel (MHz)	Mode/Modulation Type	Port 1A Conducted Power (dBm)	Port 1A Conducted Power (mW)	Port 1B Conducted Power (dBm)	Port 1B Conducted Power (mW)	Summed Conducted Power (mW)	Summed Conducted Power (dBm)	Antenna Gain (dBi)	Limit (dBm)	Margin (dB)
2412	802.11b	13.75	23.713737			23.713737	13.75	15.5	20.5	-6.75
2437	802.11b	13.8	23.988329			23.988329	13.8	15.5	20.5	-6.7
2462	802.11b	13.33	21.527817			21.527817	13.33	15.5	20.5	-7.17
2412	802.11g	20.27	106.4143			106.4143	20.27	15.5	20.5	-0.23
2437	802.11g	20.3	107.15193			107.15193	20.3	15.5	20.5	-0.2
2462	802.11g	20.16	103.75284			103.75284	20.16	15.5	20.5	-0.34
2412	802.11g HT20	16.31	42.756289	18.1	64.565423	107.32171	20.3068759	15.5	20.5	-0.19312
2437	802.11g HT20	15.89	38.815037	18.36	68.548823	107.36386	20.3085811	15.5	20.5	-0.19142
2462	802.11g HT20	16.75	47.315126	17.96	62.517269	109.8324	20.4073045	15.5	20.5	-0.0927
2422	802.11g HT40	13.98	25.003454	16.76	47.424199	72.427652	18.5990441	15.5	20.5	-1.90096
2437	802.11g HT40	16.24	42.072663	18.23	66.527316	108.59998	20.3582974	15.5	20.5	-0.1417
2452	802.11g HT40	16.98	49.888449	15.21	33.189446	83.077895	19.1948548	15.5	20.5	-1.30515

Table 23. Peak Power Output, Test Results, 2.4 GHz, Sector Antenna

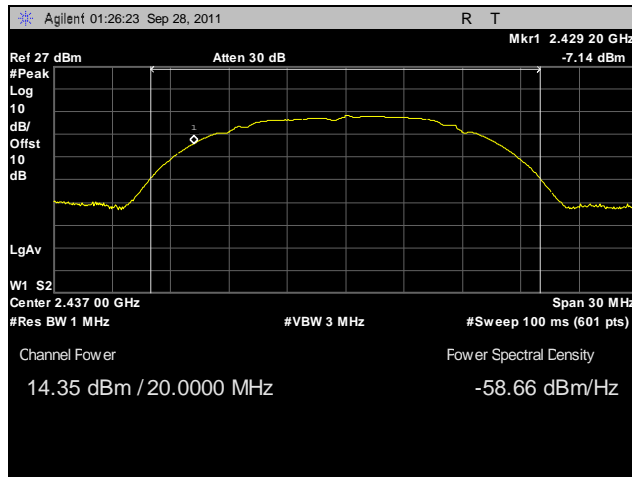
Channel (MHz)	Mode/Modulation Type	Port 1A Conducted Power (dBm)	Port 1A Conducted Power (mW)	Port 1B Conducted Power (dBm)	Port 1B Conducted Power (mW)	Summed Conducted Power (mW)	Summed Conducted Power (dBm)	Antenna Assembly Gain (dBi)	Limit (dBm)	Margin (dB)
5745	802.11a	20.14	103.28			103.28	20.14	15.5	20.5	-0.36
5785	802.11a	19.98	99.54			99.54	19.98	15.5	20.5	-0.52
5825	802.11a	19.95	98.86			98.86	19.95	15.5	20.5	-0.55
5745	802.11n HT20	17.29	53.58	16.15	41.21	94.79	19.77	15.5	20.5	-0.73
5785	802.11n HT20	17.36	54.45	17.24	52.97	107.42	20.31	15.5	20.5	-0.19
5825	802.11n HT20	17.18	52.24	17.02	50.35	102.59	20.11	15.5	20.5	-0.39
5755	802.11n HT40	18.02	63.39	16.65	46.24	109.63	20.40	15.5	20.5	-0.10
5785	802.11n HT40	17.7	58.88	17.12	51.52	110.41	20.43	15.5	20.5	-0.07
5815	802.11n HT40	17.11	51.40	17.29	53.58	104.98	20.21	15.5	20.5	-0.29

Table 24. Peak Power Output, Test Results, 5.8 GHz, Sector Antenna

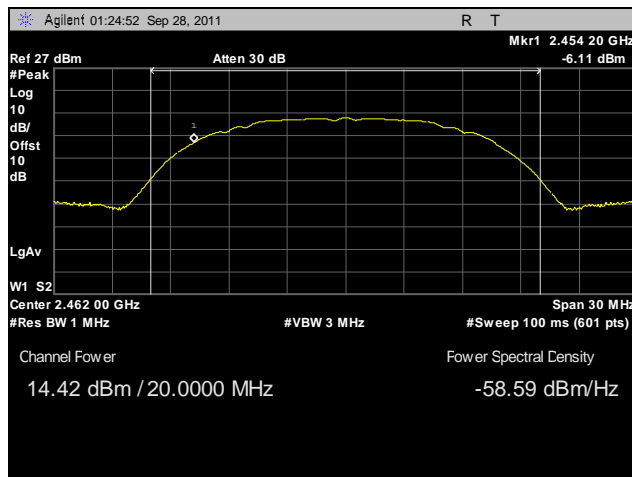
Peak Power Output Test Results, 2.4 GHz, 802.11b, Port A



Plot 73. Peak Power Output, Low Channel, 2.4 GHz, 802.11b, Port A

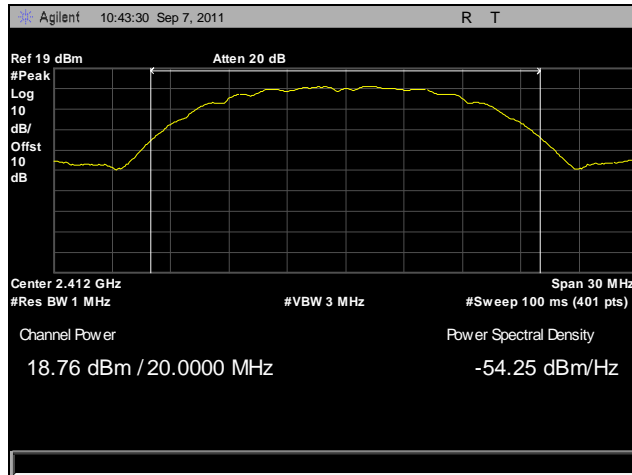


Plot 74. Peak Power Output, Mid Channel, 2.4 GHz, 802.11b, Port A

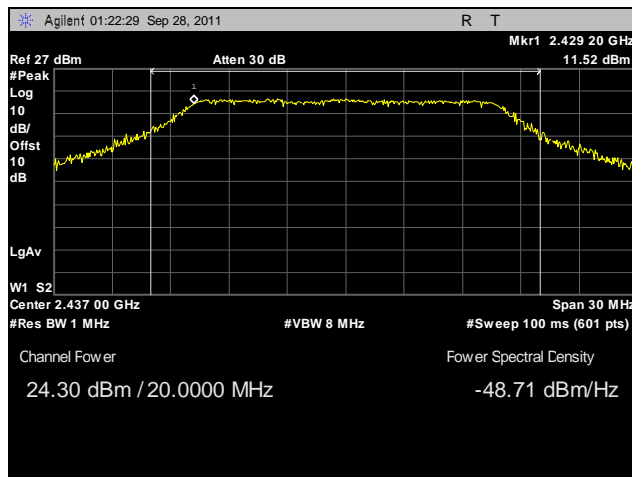


Plot 75. Peak Power Output, High Channel, 2.4 GHz, 802.11b, Port A

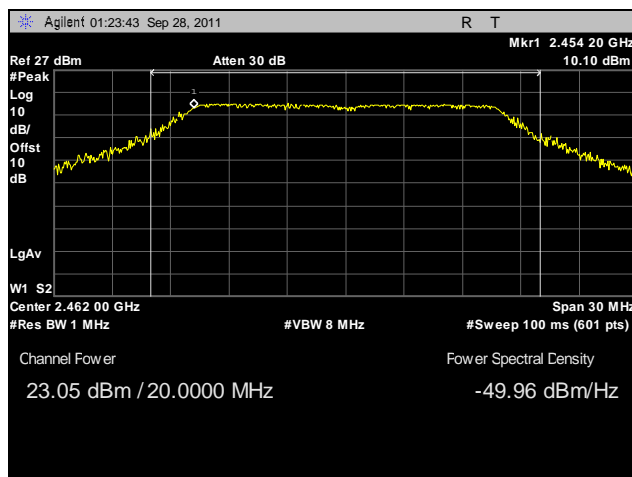
Peak Power Output Test Results, 2.4 GHz, 802.11g, Port A



Plot 76. Peak Power Output, Low Channel, 2.4 GHz, 802.11g, Port A

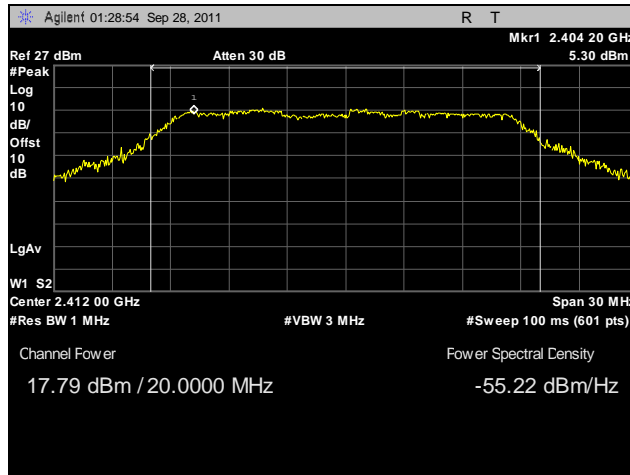


Plot 77. Peak Power Output, Mid Channel, 2.4 GHz, 802.11g, Port A

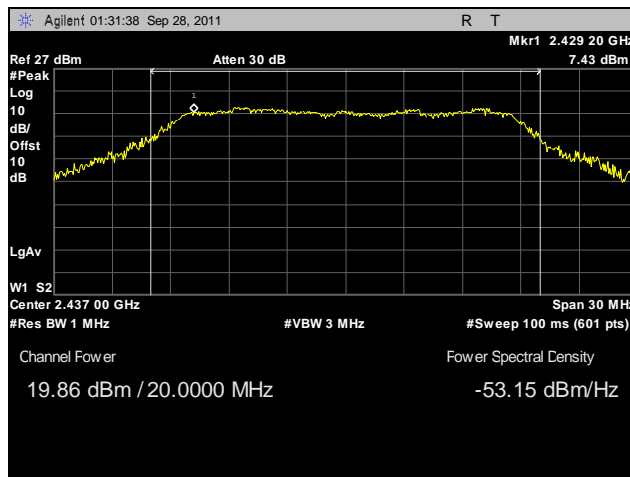


Plot 78. Peak Power Output, High Channel, 2.4 GHz, 802.11g, Port A

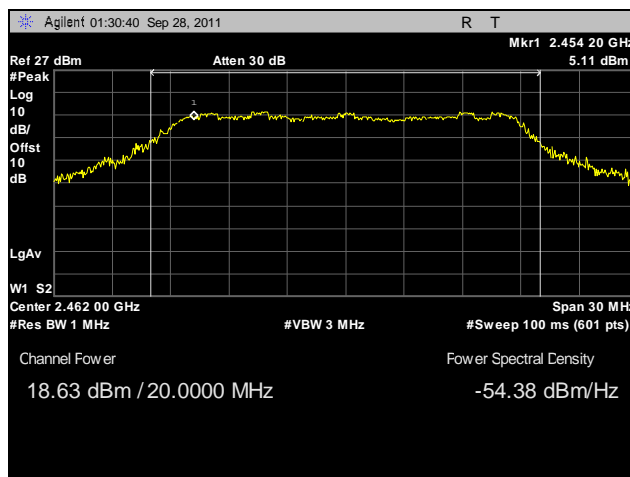
Peak Power Output Test Results, 2.4 GHz, 802.11g HT20, Port A



Plot 79. Peak Power Output, Low Channel, 2.4 GHz, 802.11g HT20, Port A

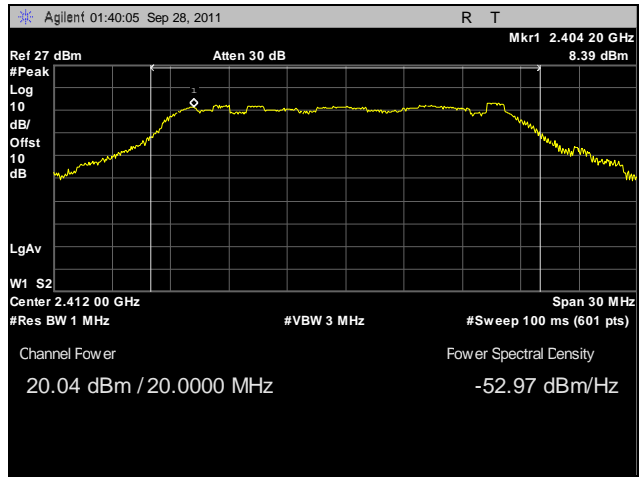


Plot 80. Peak Power Output, Mid Channel, 2.4 GHz, 802.11g HT20, Port A

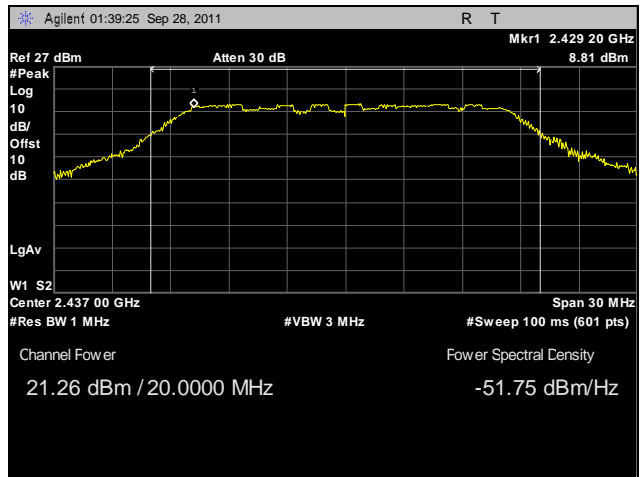


Plot 81. Peak Power Output, High Channel, 2.4 GHz, 802.11g HT20, Port A

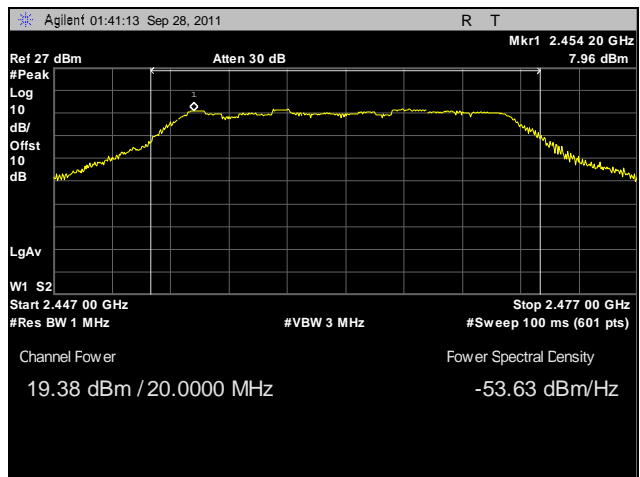
Peak Power Output Test Results, 2.4 GHz, 802.11g HT20, Port B



Plot 82. Peak Power Output, Low Channel, 2.4 GHz, 802.11g HT20, Port B

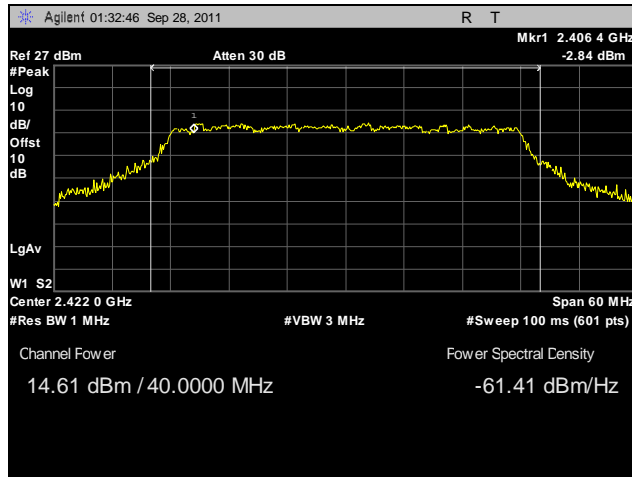


Plot 83. Peak Power Output, Mid Channel, 2.4 GHz, 802.11g HT20, Port B

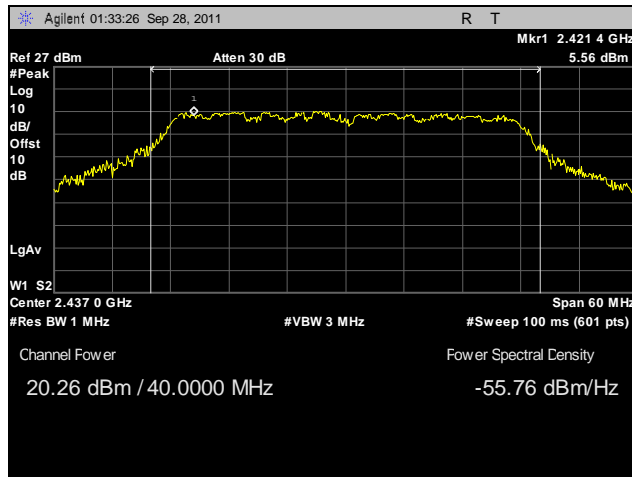


Plot 84. Peak Power Output, High Channel, 2.4 GHz, 802.11g HT20, Port B

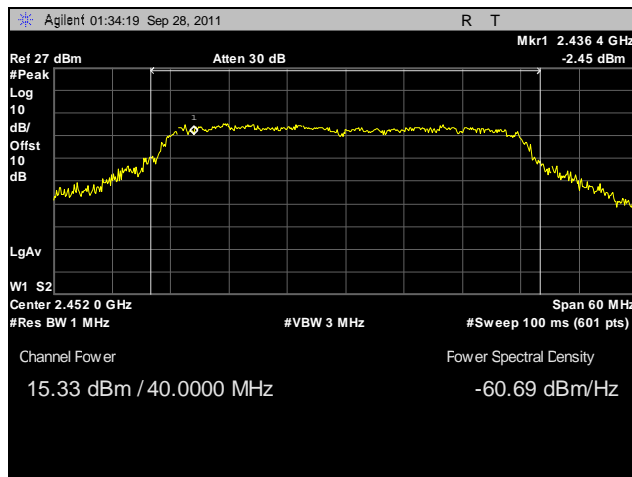
Peak Power Output Test Results, 2.4 GHz, 802.11g HT40, Port A



Plot 85. Peak Power Output, Low Channel, 2.4 GHz, 802.11g HT40, Port A

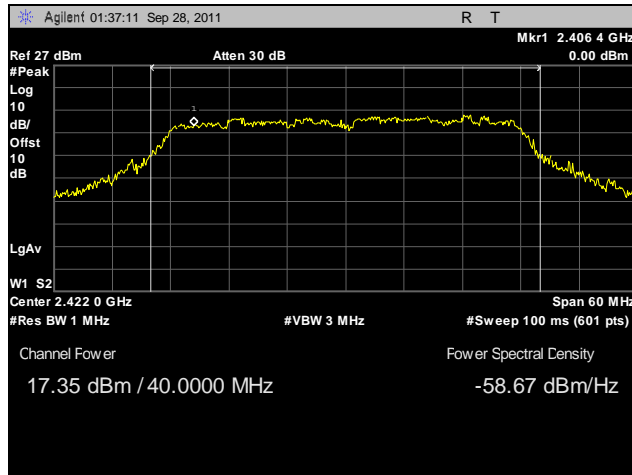


Plot 86. Peak Power Output, Mid Channel, 2.4 GHz, 802.11g HT40, Port A

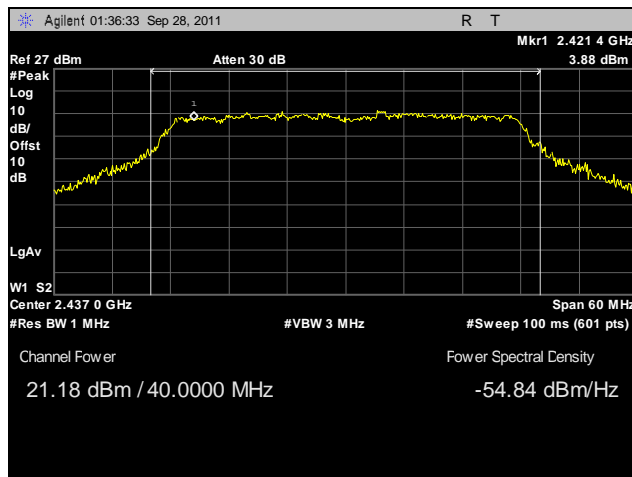


Plot 87. Peak Power Output, High Channel, 2.4 GHz, 802.11g HT40, Port A

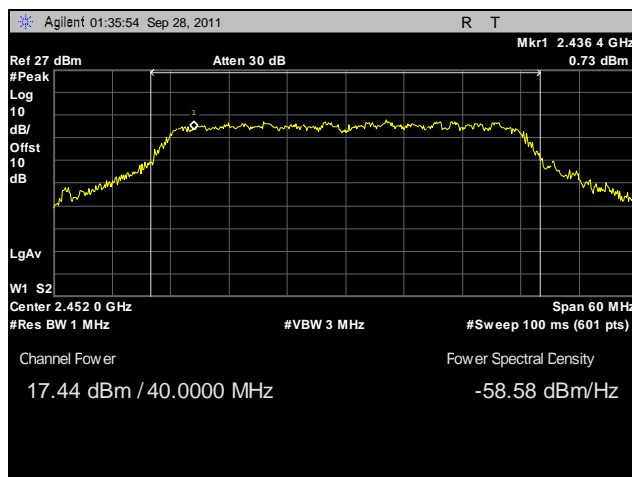
Peak Power Output Test Results, 2.4 GHz, 802.11g HT40, Port B



Plot 88. Peak Power Output, Low Channel, 2.4 GHz, 802.11g HT40, Port B

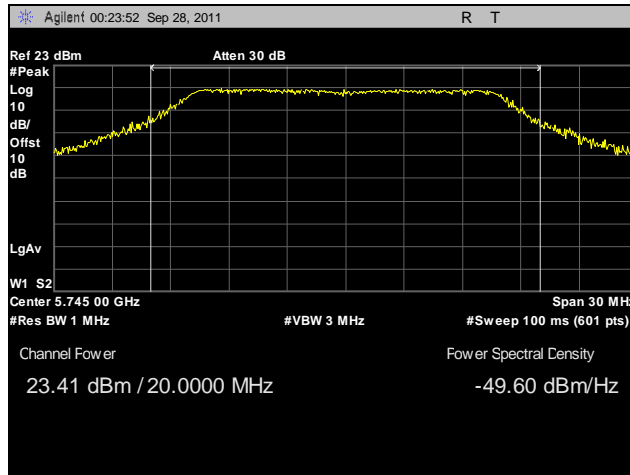


Plot 89. Peak Power Output, Mid Channel, 2.4 GHz, 802.11g HT40, Port B

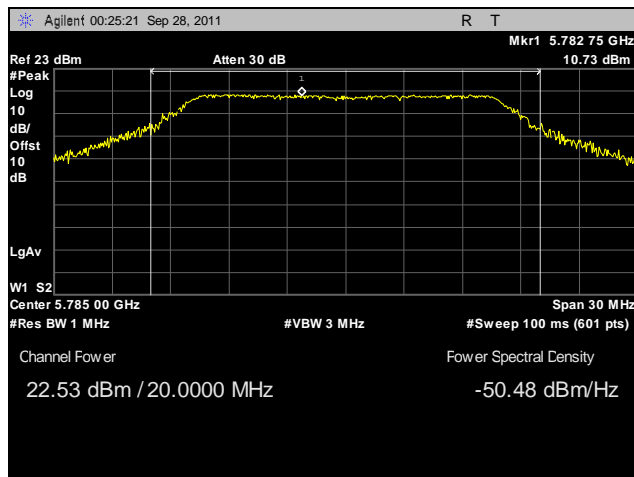


Plot 90. Peak Power Output, High Channel, 2.4 GHz, 802.11g HT40, Port B

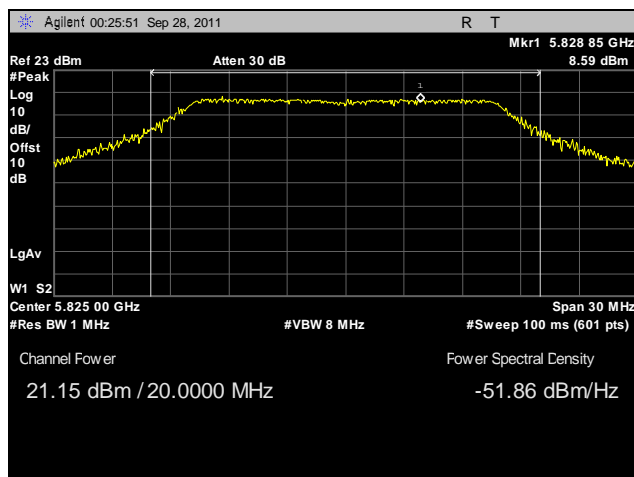
Peak Power Output Test Results, 5.8 GHz, 802.11a, Port A



Plot 91. Peak Power Output, Low Channel, 5.8 GHz, 802.11a, Port A

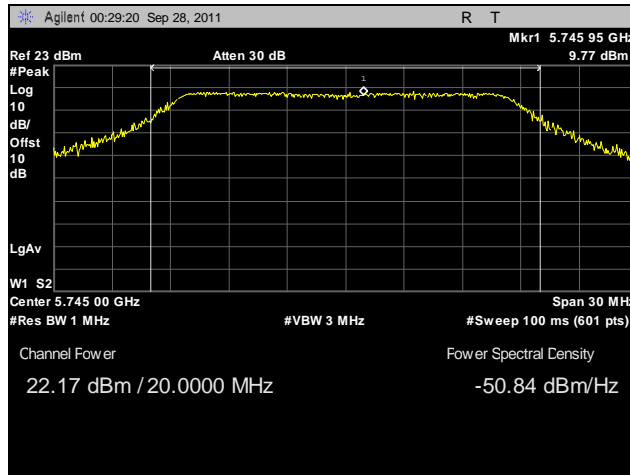


Plot 92. Peak Power Output, Mid Channel, 5.8 GHz, 802.11a, Port A

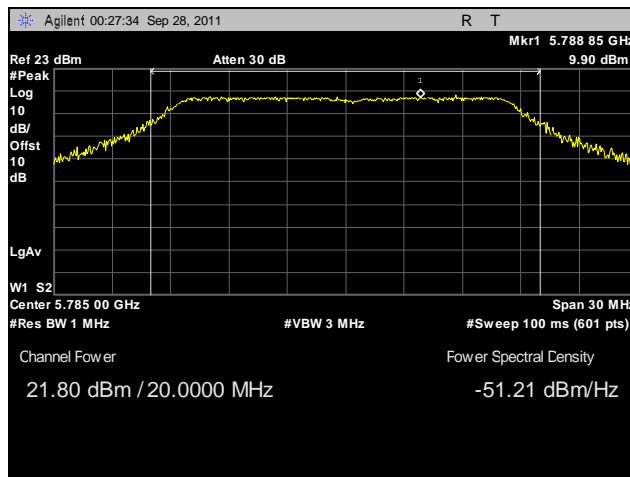


Plot 93. Peak Power Output, High Channel, 5.8 GHz, 802.11a, Port A

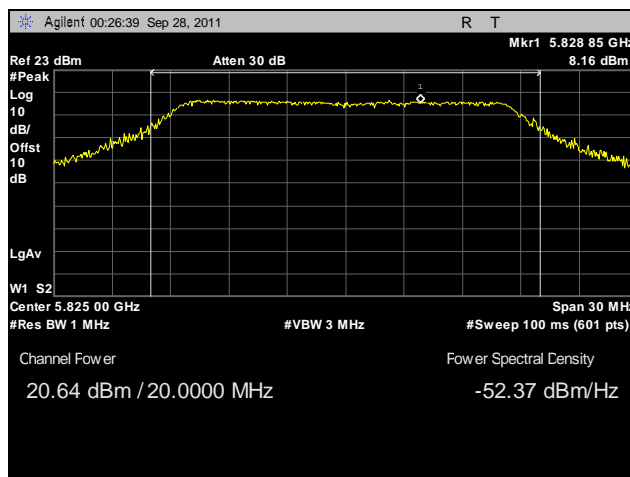
Peak Power Output Test Results, 5.8 GHz, 802.11n 20 MHz, Port A



Plot 94. Peak Power Output, Low Channel, 5.8 GHz, 802.11n 20 MHz, Port A

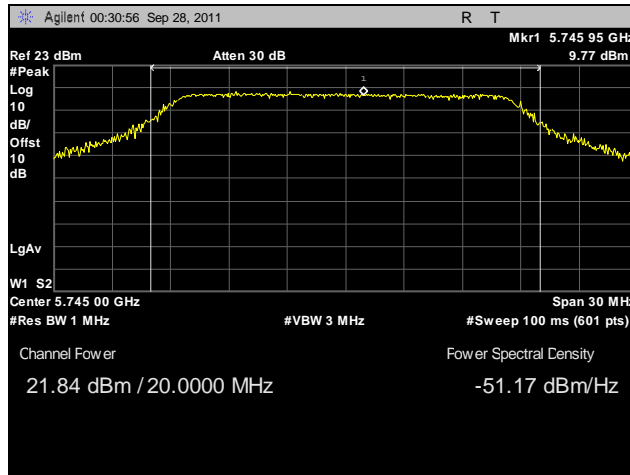


Plot 95. Peak Power Output, Mid Channel, 5.8 GHz, 802.11n 20 MHz, Port A

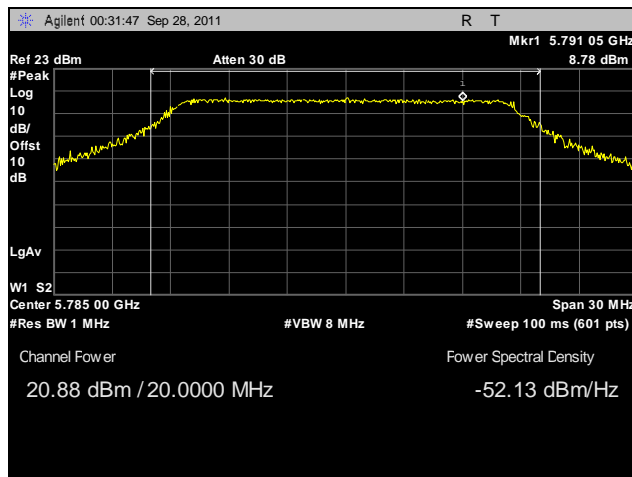


Plot 96. Peak Power Output, High Channel, 5.8 GHz, 802.11n 20 MHz, Port A

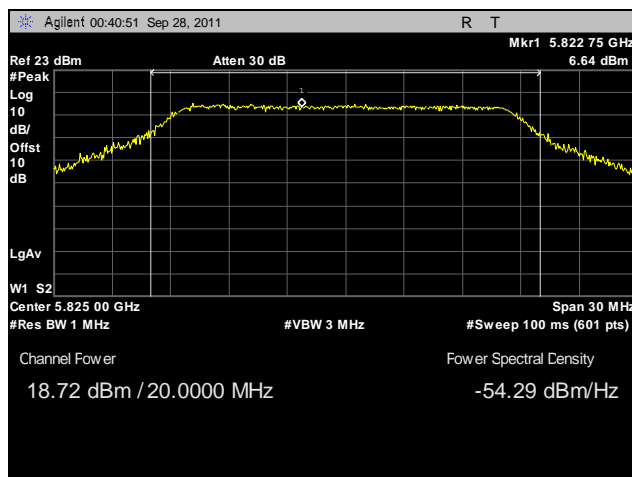
Peak Power Output Test Results, 5.8 GHz, 802.11n 20 MHz, Port B



Plot 97. Peak Power Output, Low Channel, 5.8 GHz, 802.11n 20 MHz, Port B

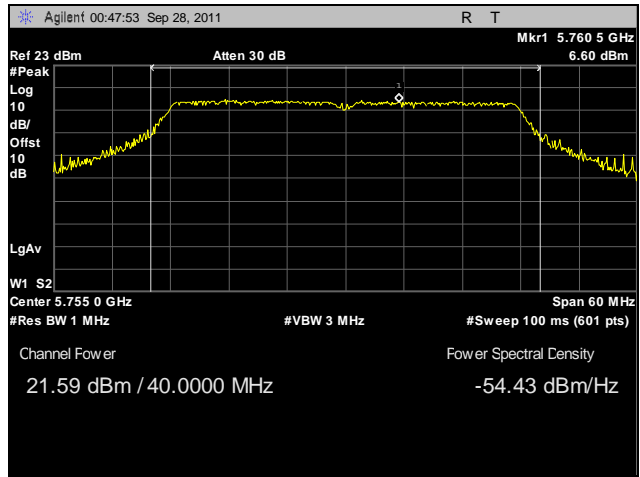


Plot 98. Peak Power Output, Mid Channel, 5.8 GHz, 802.11n 20 MHz, Port B

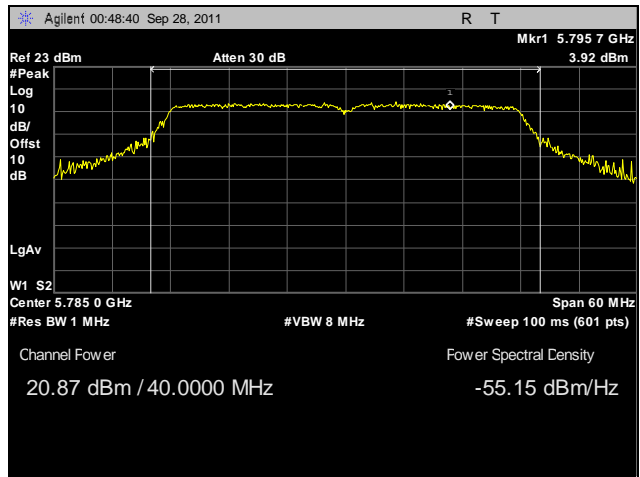


Plot 99. Peak Power Output, High Channel, 5.8 GHz, 802.11n 20 MHz, Port B

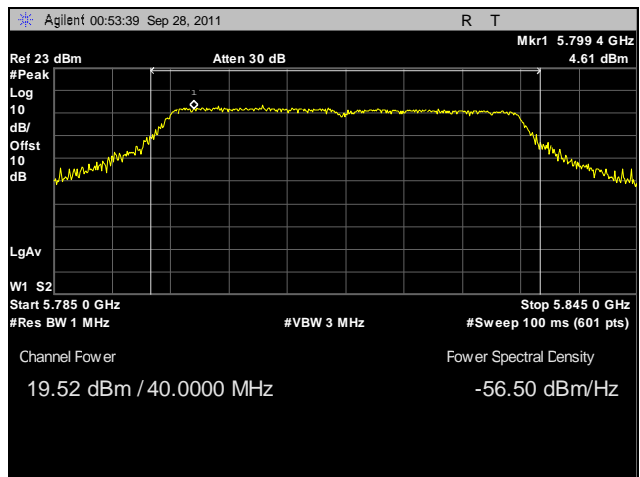
Peak Power Output Test Results, 5.8 GHz, 802.11n 40 MHz, Port A



Plot 100. Peak Power Output, Low Channel, 5.8 GHz, 802.11n 40 MHz, Port A

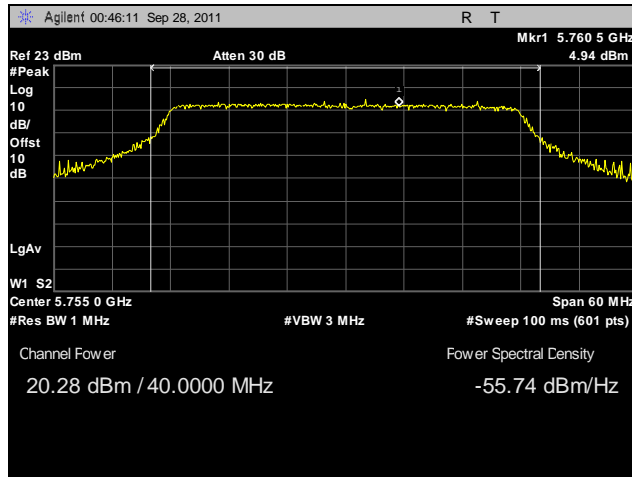


Plot 101. Peak Power Output, Mid Channel, 5.8 GHz, 802.11n 40 MHz, Port A

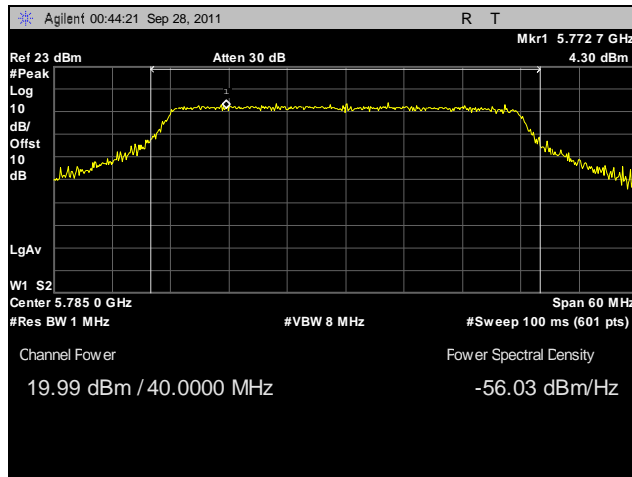


Plot 102. Peak Power Output, High Channel, 5.8 GHz, 802.11n 40 MHz, Port A

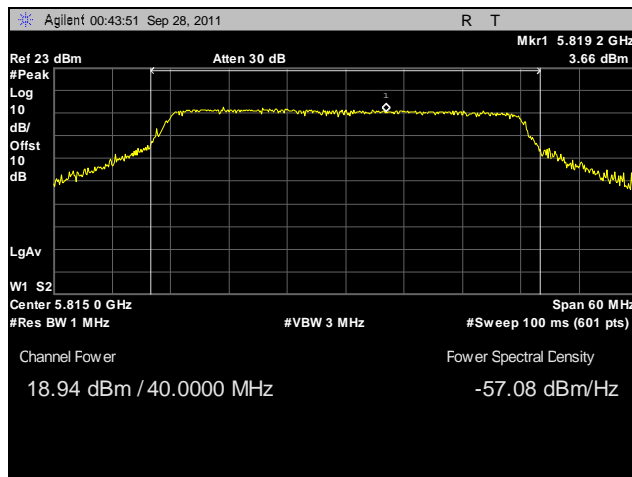
Peak Power Output Test Results, 5.8 GHz, 802.11n 40 MHz, Port B



Plot 103. Peak Power Output, Low Channel, 5.8 GHz, 802.11n 40 MHz, Port B

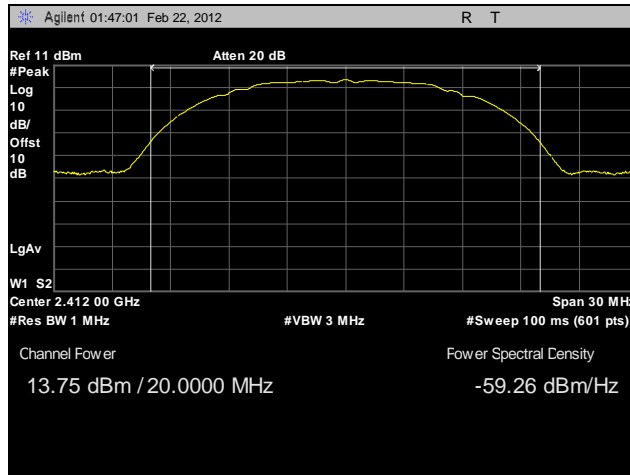


Plot 104. Peak Power Output, Mid Channel, 5.8 GHz, 802.11n 40 MHz, Port B

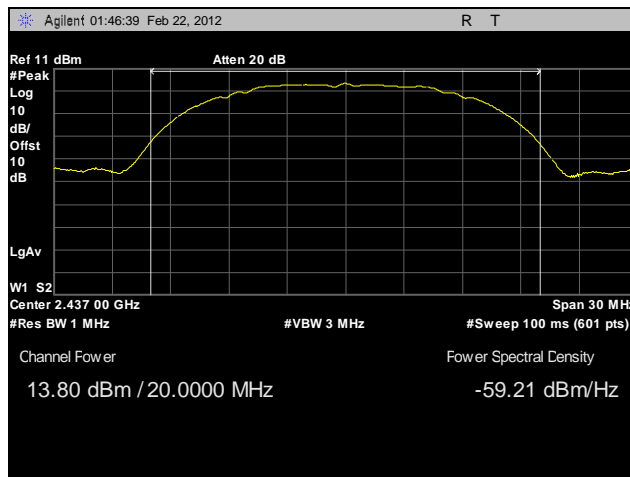


Plot 105. Peak Power Output, High Channel, 5.8 GHz, 802.11n 40 MHz, Port B

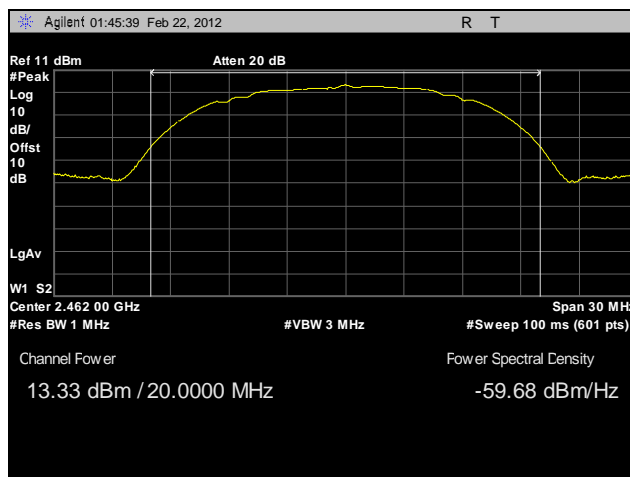
Peak Power Output Test Results, 2.4 GHz, 802.11b, Port A, Sector Antenna



Plot 106. Peak Power Output, Low Channel, 2.4 GHz, 802.11b, Port A, Sector Antenna

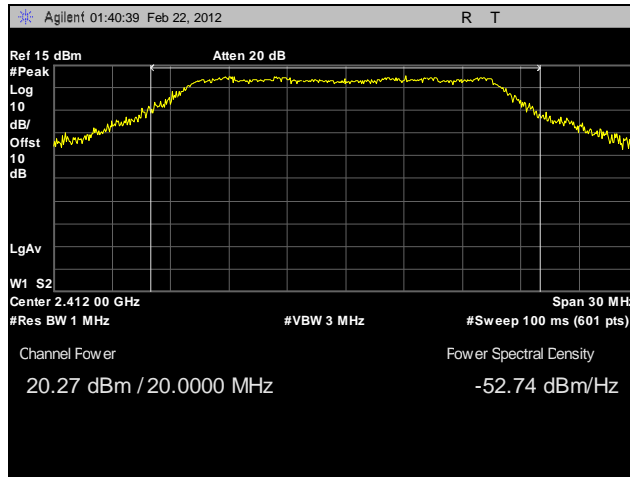


Plot 107. Peak Power Output, Mid Channel, 2.4 GHz, 802.11b, Port A, Sector Antenna

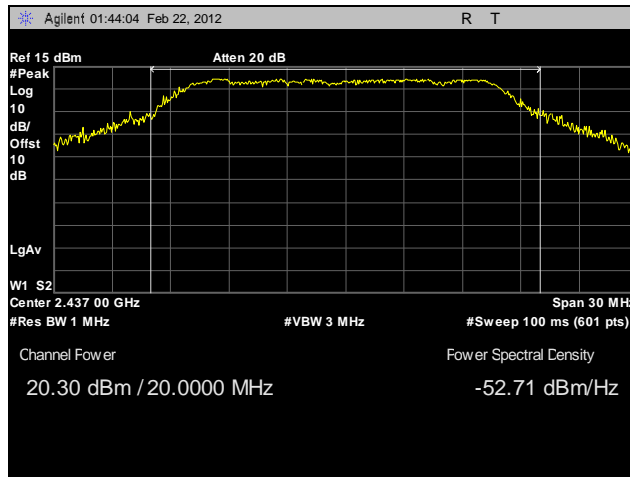


Plot 108. Peak Power Output, High Channel, 2.4 GHz, 802.11b, Port A, Sector Antenna

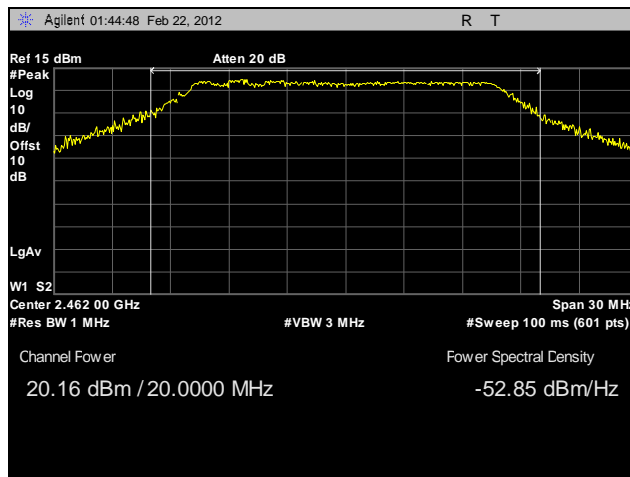
Peak Power Output Test Results, 2.4 GHz, 802.11g, Port A, Sector Antenna



Plot 109. Peak Power Output, Low Channel, 2.4 GHz, 802.11g, Port A, Sector Antenna

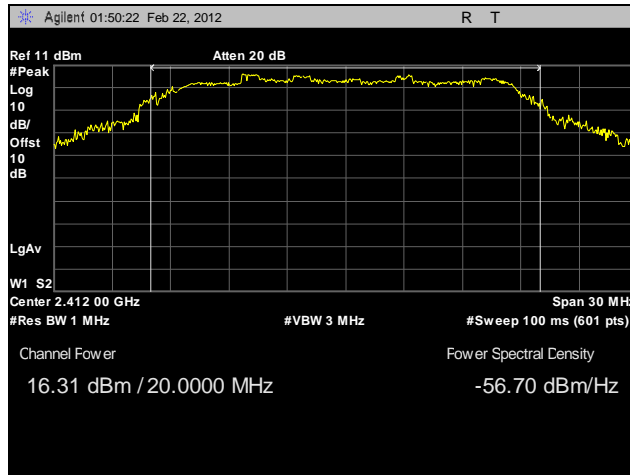


Plot 110. Peak Power Output, Mid Channel, 2.4 GHz, 802.11g, Port A, Sector Antenna

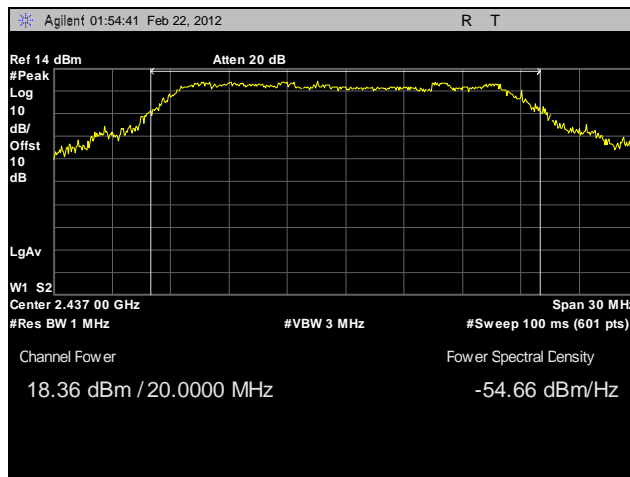


Plot 111. Peak Power Output, High Channel, 2.4 GHz, 802.11g, Port A, Sector Antenna

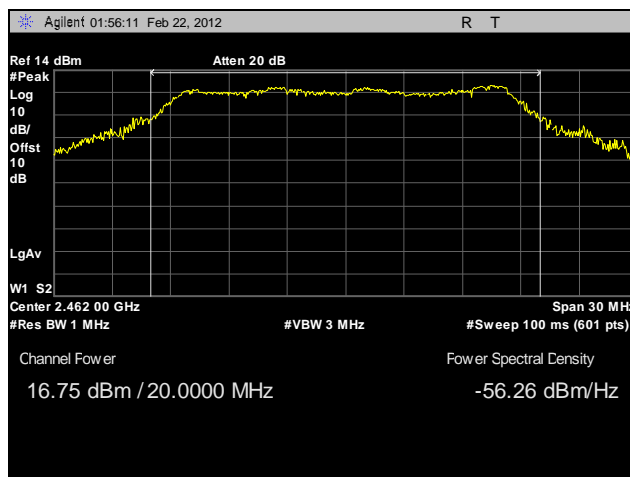
Peak Power Output Test Results, 2.4 GHz, 802.11g HT20, Port A, Sector Antenna



Plot 112. Peak Power Output, Low Channel, 2.4 GHz, 802.11g HT20, Port A, Sector Antenna

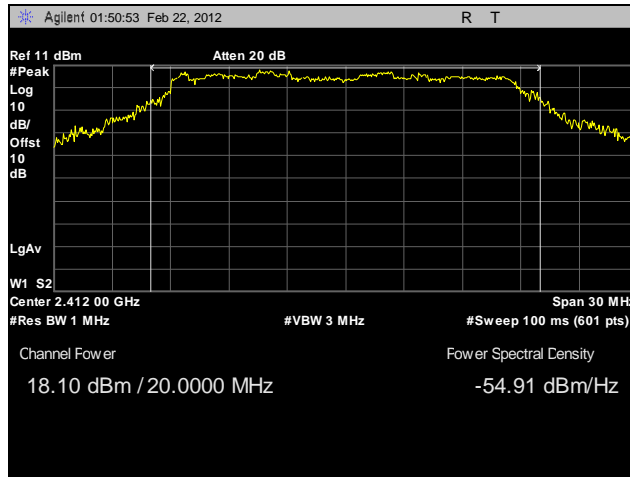


Plot 113. Peak Power Output, Mid Channel, 2.4 GHz, 802.11g HT20, Port A, Sector Antenna

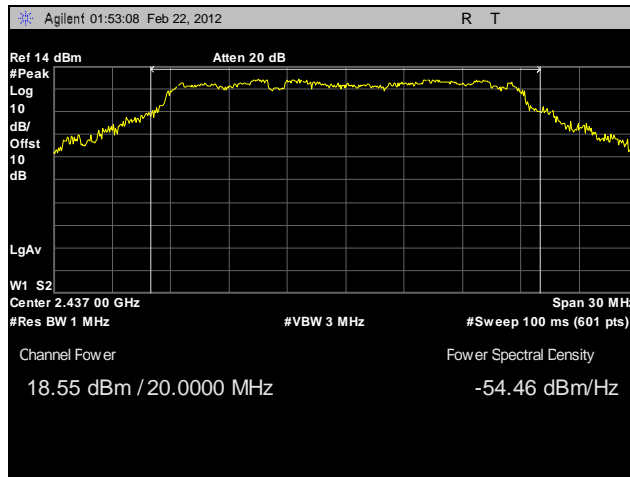


Plot 114. Peak Power Output, High Channel, 2.4 GHz, 802.11g HT20, Port A, Sector Antenna

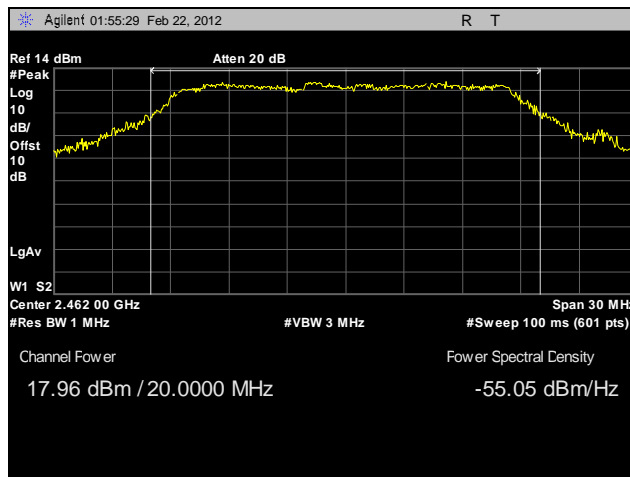
Peak Power Output Test Results, 2.4 GHz, 802.11g HT20, Port B, Sector Antenna



Plot 115. Peak Power Output, Low Channel, 2.4 GHz, 802.11g HT20, Port B, Sector Antenna

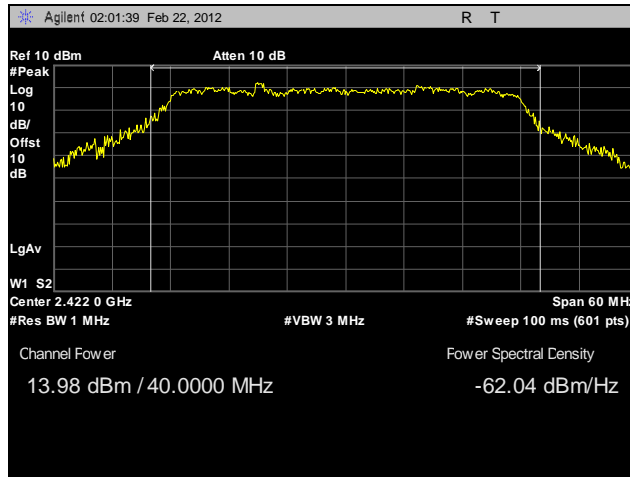


Plot 116. Peak Power Output, Mid Channel, 2.4 GHz, 802.11g HT20, Port B, Sector Antenna

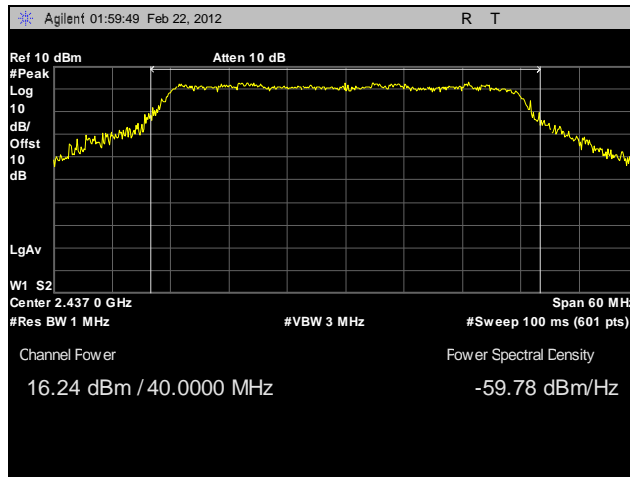


Plot 117. Peak Power Output, High Channel, 2.4 GHz, 802.11g HT20, Port B, Sector Antenna

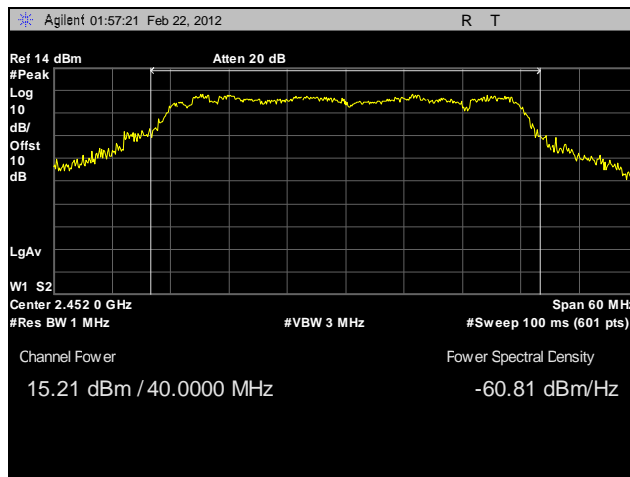
Peak Power Output Test Results, 2.4 GHz, 802.11g HT40, Port A, Sector Antenna



Plot 118. Peak Power Output, Low Channel, 2.4 GHz, 802.11g HT40, Port A, Sector Antenna

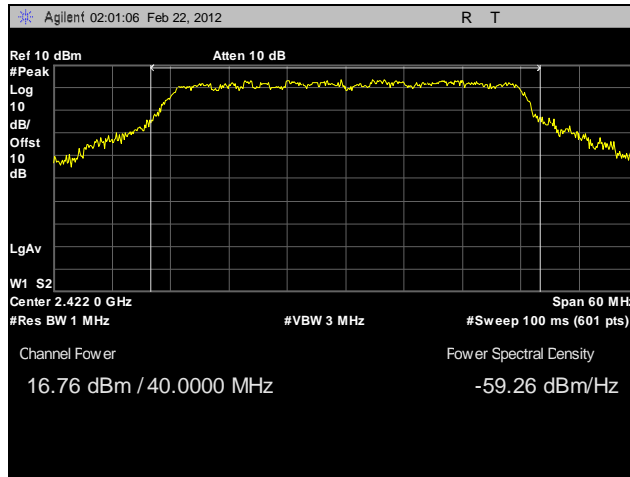


Plot 119. Peak Power Output, Mid Channel, 2.4 GHz, 802.11g HT40, Port A, Sector Antenna

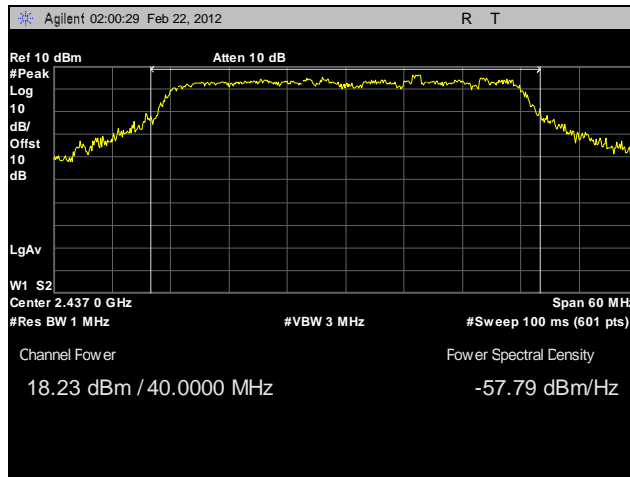


Plot 120. Peak Power Output, High Channel, 2.4 GHz, 802.11g HT40, Port A, Sector Antenna

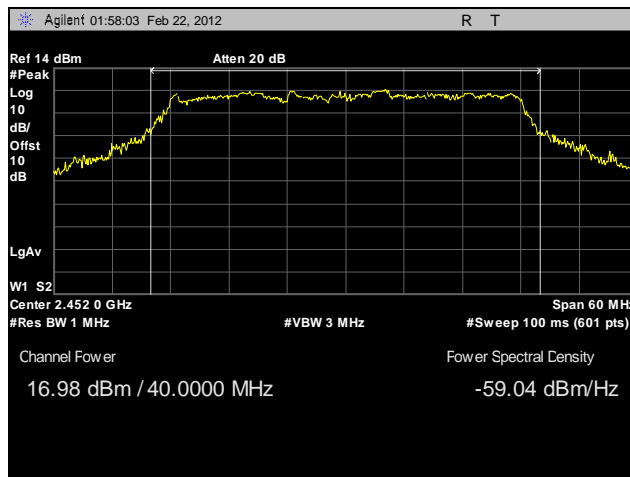
Peak Power Output Test Results, 2.4 GHz, 802.11g HT40, Port B, Sector Antenna



Plot 121. Peak Power Output, Low Channel, 2.4 GHz, 802.11g HT40, Port B, Sector Antenna

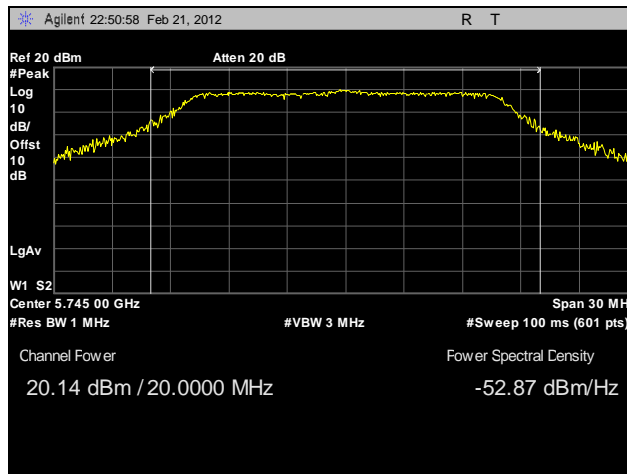


Plot 122. Peak Power Output, Mid Channel, 2.4 GHz, 802.11g HT40, Port B, Sector Antenna

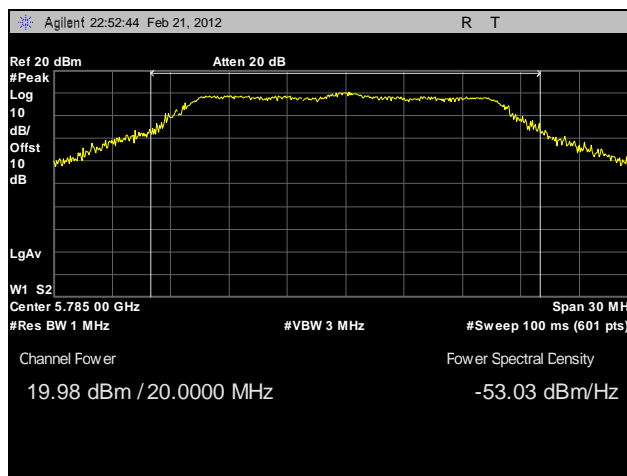


Plot 123. Peak Power Output, High Channel, 2.4 GHz, 802.11g HT40, Port B, Sector Antenna

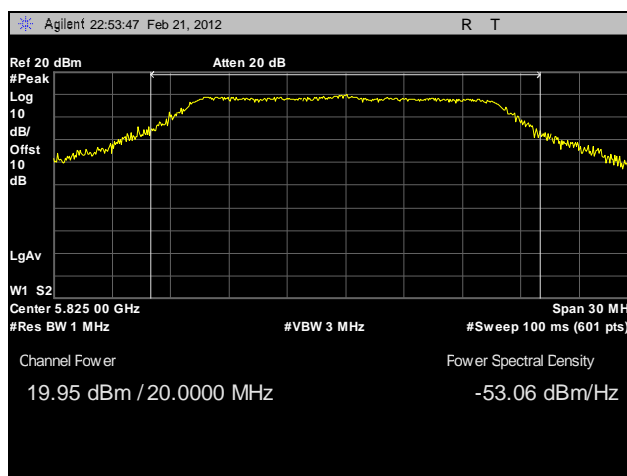
Peak Power Output Test Results, 5.8 GHz, 802.11a, Port A, Sector Antenna



Plot 124. Peak Power Output, Low Channel, 5.8 GHz, 802.11a, Port A, Sector Antenna

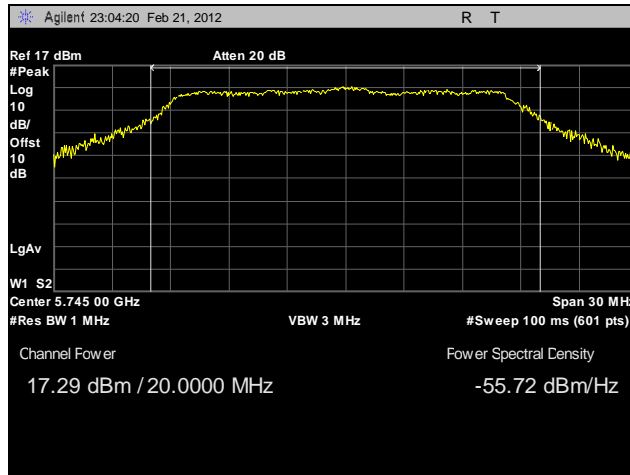


Plot 125. Peak Power Output, Mid Channel, 5.8 GHz, 802.11a, Port A, Sector Antenna

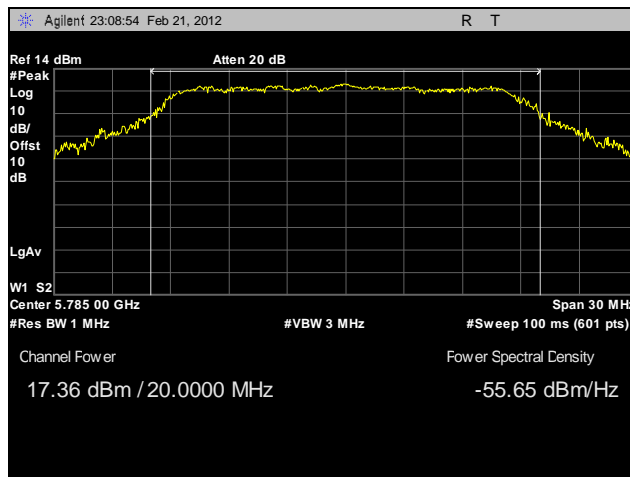


Plot 126. Peak Power Output, High Channel, 5.8 GHz, 802.11a, Port A, Sector Antenna

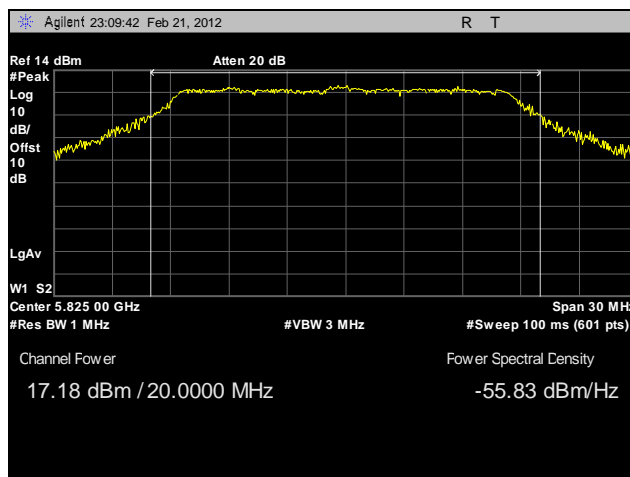
Peak Power Output Test Results, 5.8 GHz, 802.11n 20 MHz, Port A, Sector Antenna



Plot 127. Peak Power Output, Low Channel, 5.8 GHz, 802.11n 20 MHz, Port A, Sector Antenna

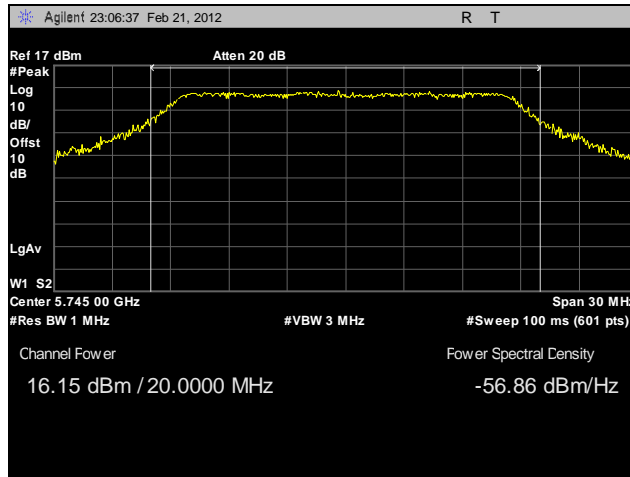


Plot 128. Peak Power Output, Mid Channel, 5.8 GHz, 802.11n 20 MHz, Port A, Sector Antenna

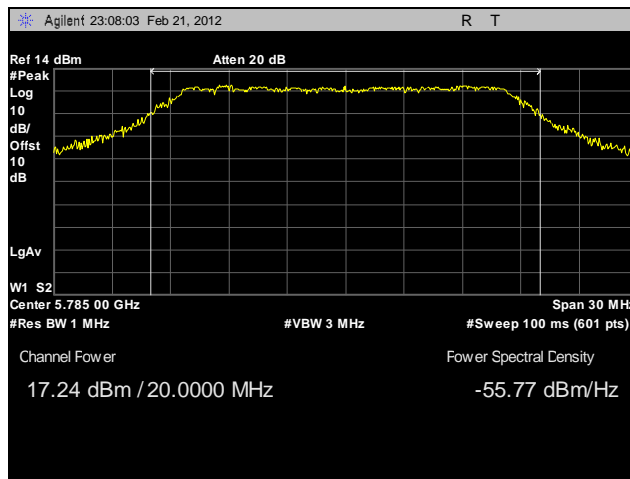


Plot 129. Peak Power Output, High Channel, 5.8 GHz, 802.11n 20 MHz, Port A, Sector Antenna

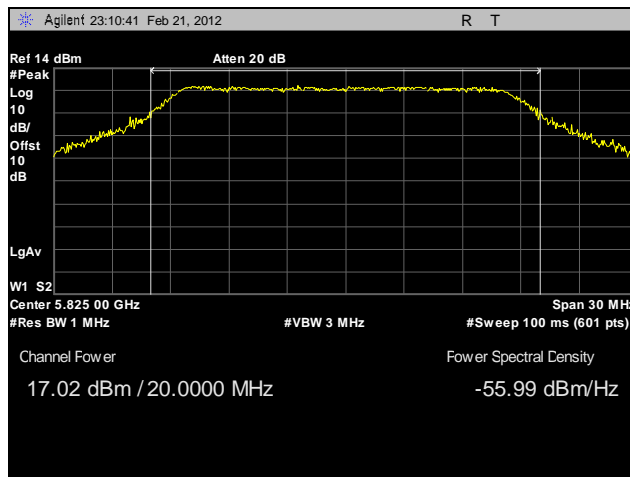
Peak Power Output Test Results, 5.8 GHz, 802.11n 20 MHz, Port B, Sector Antenna



Plot 130. Peak Power Output, Low Channel, 5.8 GHz, 802.11n 20 MHz, Port B, Sector Antenna

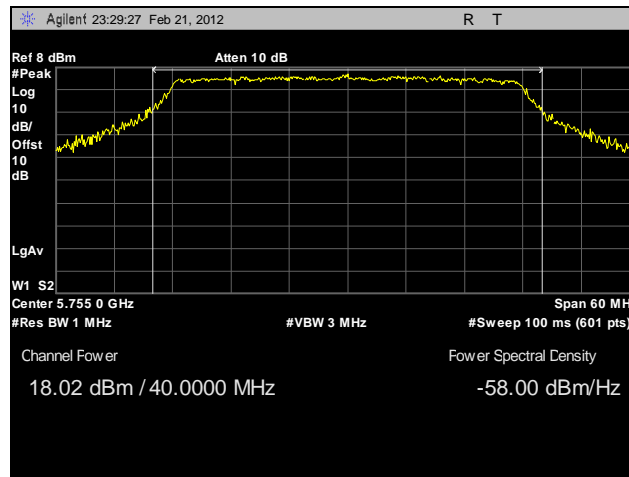


Plot 131. Peak Power Output, Mid Channel, 5.8 GHz, 802.11n 20 MHz, Port B, Sector Antenna

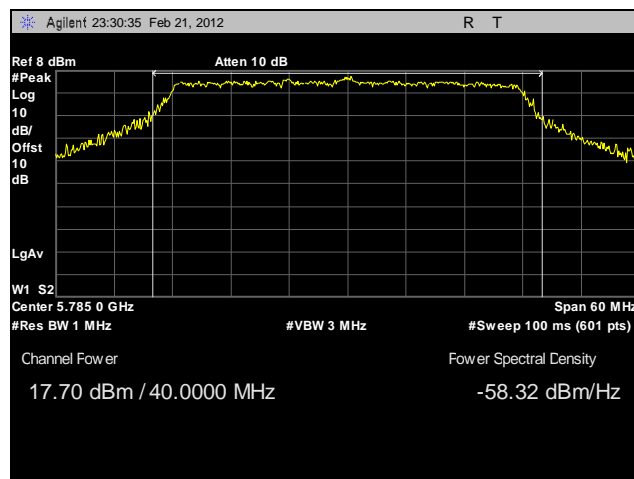


Plot 132. Peak Power Output, High Channel, 5.8 GHz, 802.11n 20 MHz, Port B, Sector Antenna

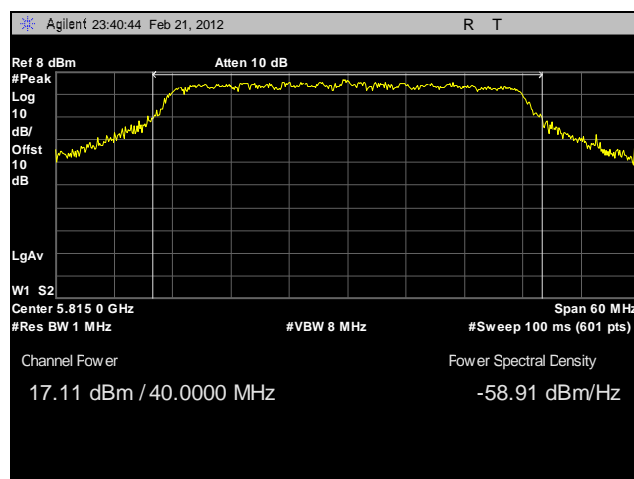
Peak Power Output Test Results, 5.8 GHz, 802.11n 40 MHz, Port A, Sector Antenna



Plot 133. Peak Power Output, Low Channel, 5.8 GHz, 802.11n 40 MHz, Port A, Sector Antenna

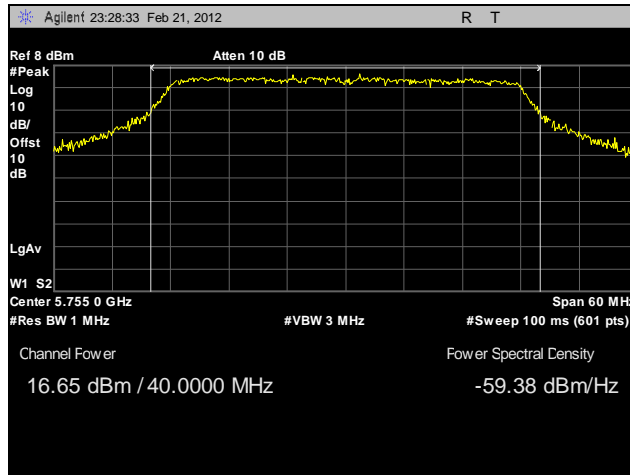


Plot 134. Peak Power Output, Mid Channel, 5.8 GHz, 802.11n 40 MHz, Port A, Sector Antenna

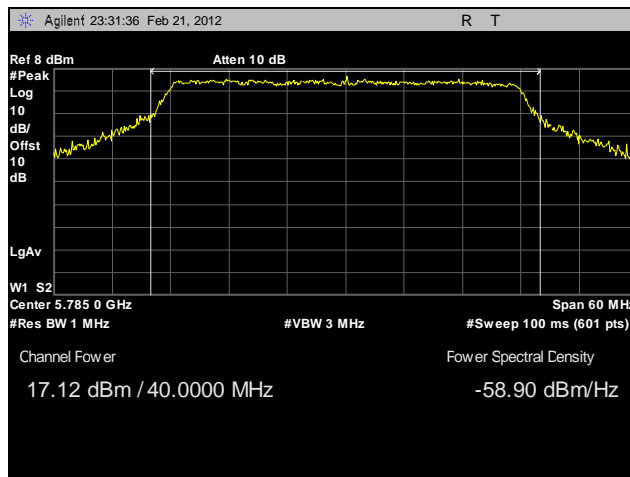


Plot 135. Peak Power Output, High Channel, 5.8 GHz, 802.11n 40 MHz, Port A, Sector Antenna

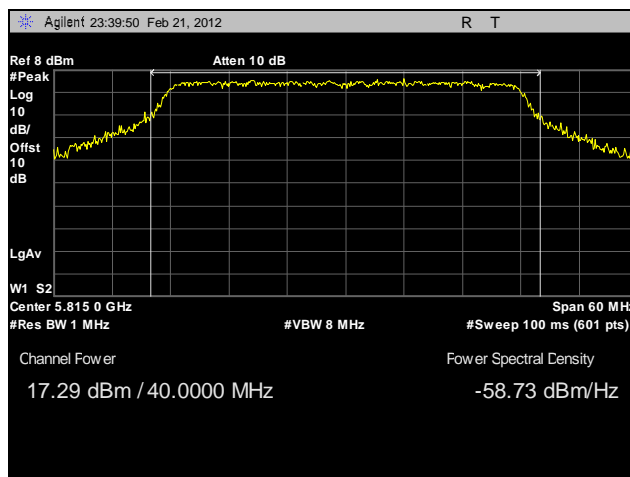
Peak Power Output Test Results, 5.8 GHz, 802.11n 40 MHz, Port B, Sector Antenna



Plot 136. Peak Power Output, Low Channel, 5.8 GHz, 802.11n 40 MHz, Port B, Sector Antenna



Plot 137. Peak Power Output, Mid Channel, 5.8 GHz, 802.11n 40 MHz, Port B, Sector Antenna



Plot 138. Peak Power Output, High Channel, 5.8 GHz, 802.11n 40 MHz, Port B, Sector Antenna

Electromagnetic Compatibility Criteria for Intentional Radiators

§ 15.247(d) Radiated Spurious Emissions Requirements and Band Edge

Test Requirements: §15.247(d); §15.205: Emissions outside the frequency band.

§15.247(d): In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in § 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a).

§15.205(a): Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090–0.110-----	16.42–16.423	399.9–410	4.5–5.15
¹ 0.495–0.505-----	16.69475–16.69525	608–614	5.35–5.46
2.1735–2.1905-----	16.80425–16.80475	960–1240	7.25–7.75
4.125–4.128-----	25.5–25.67	1300–1427	8.025–8.5
4.17725–4.17775-----	37.5–38.25	1435–1626.5	9.0–9.2
4.20725–4.20775-----	73–74.6	1645.5–1646.5	9.3–9.5
6.215–6.218-----	74.8–75.2	1660–1710	10.6–12.7
6.26775–6.26825-----	108–121.94	1718.8–1722.2	13.25–13.4
6.31175–6.31225-----	123–138	2200–2300	14.47–14.5
8.291–8.294-----	149.9–150.05	2310–2390	15.35–16.2
8.362–8.366-----	156.52475–156.52525	2483.5–2500	17.7–21.4
8.37625–8.38675-----	156.7–156.9	2655–2900	22.01–23.12
8.41425–8.41475-----	162.0125–167.17	3260–3267	23.6–24.0
12.29–12.293-----	167.72–173.2	3332–3339	31.2–31.8
12.51975–12.52025-----	240–285	3345.8–3358 36.	43–36.5
12.57675–12.57725-----	322–335.4	3600–4400	(²)

Table 25. Restricted Bands of Operation

¹ Until February 1, 1999, this restricted band shall be 0.490 – 0.510 MHz.

² Above 38.6

Test Requirement(s): § 15.209 (a): Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in Table 26.

Frequency (MHz)	§ 15.209(a), Radiated Emission Limits (dB μ V) @ 3m
30 - 88	40.00
88 - 216	43.50
216 - 960	46.00
Above 960	54.00

Table 26. Radiated Emissions Limits Calculated from FCC Part 15, § 15.209 (a)

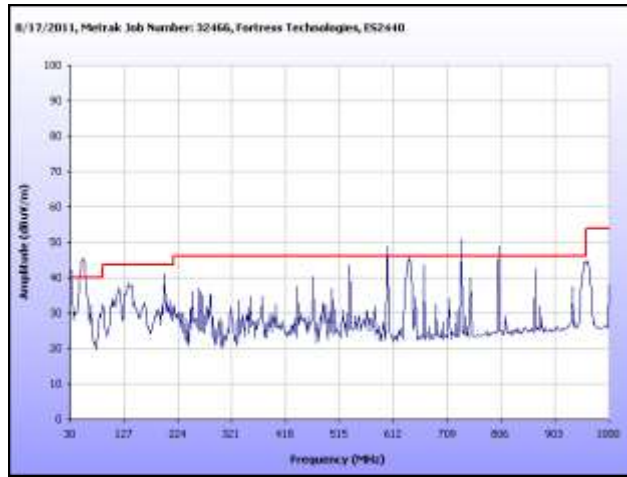
Test Procedures: The transmitter was turned on. Measurements were performed of the low, mid and high Channels. The EUT was rotated orthogonally through all three axes. Plots shown are corrected for both antenna correction factor and distance and compared to a 3 m limit line.

Test Results: The EUT was compliant with the Radiated Spurious Emission limits of § 15.247(d).

Test Engineer(s): Jeff Pratt

Test Date(s): 10/04/11

Radiated Spurious Emissions Test Results, 2.4 GHz, 802.11b, Omni Antenna



Plot 139. Radiated Spurs, Low Channel, 2.4 GHz, 802.11b, 30 MHz – 1 GHz, Omni

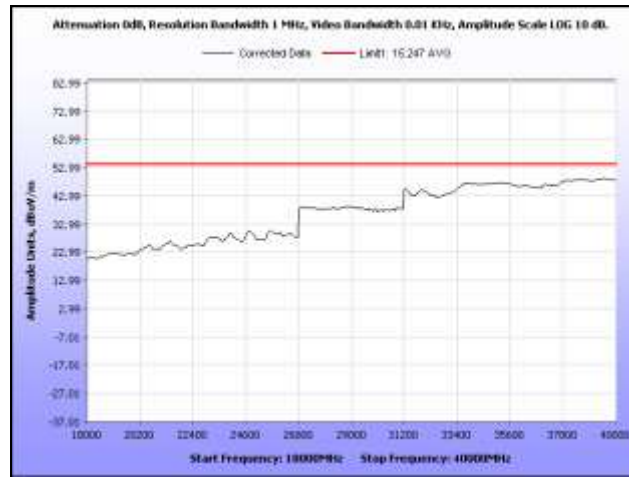
Note: Emissions which exceed the limit are digital emissions.



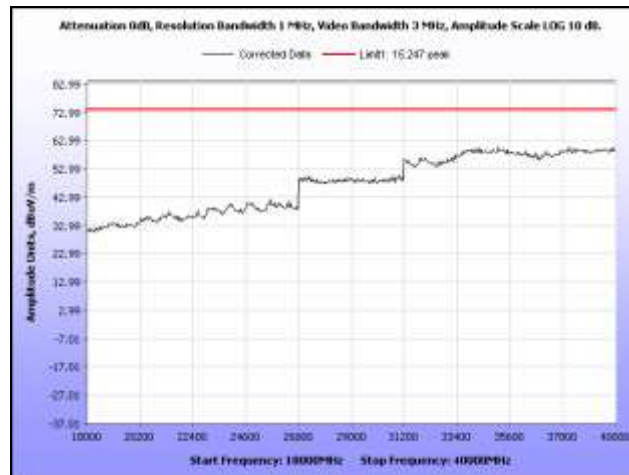
Plot 140. Radiated Spurs, Low Channel, 2.4 GHz, 802.11b, 1 GHz – 18 GHz, Average, Omni



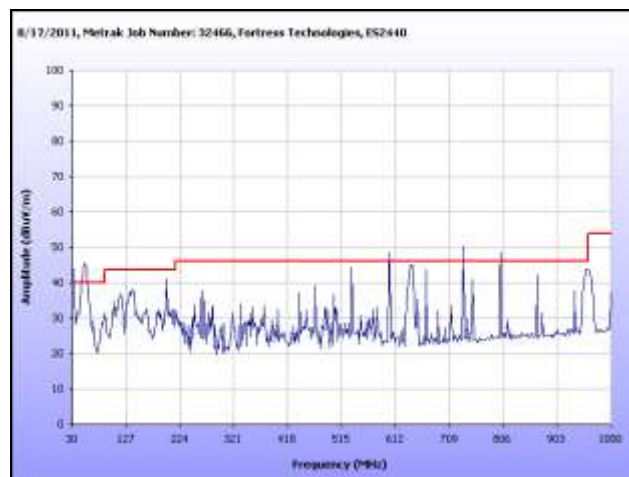
Plot 141. Radiated Spurs, Low Channel, 2.4 GHz, 802.11b, 1 GHz – 18 GHz, Peak, Omni



Plot 142. Radiated Spurs, Low Channel, 2.4 GHz, 802.11b, 18 GHz – 40 GHz, Average, Omni

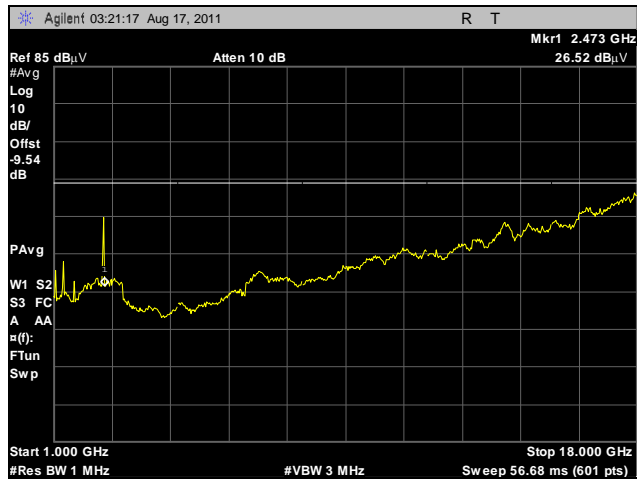


Plot 143. Radiated Spurs, Low Channel, 2.4 GHz, 802.11b, 18 GHz – 40 GHz, Peak, Omni

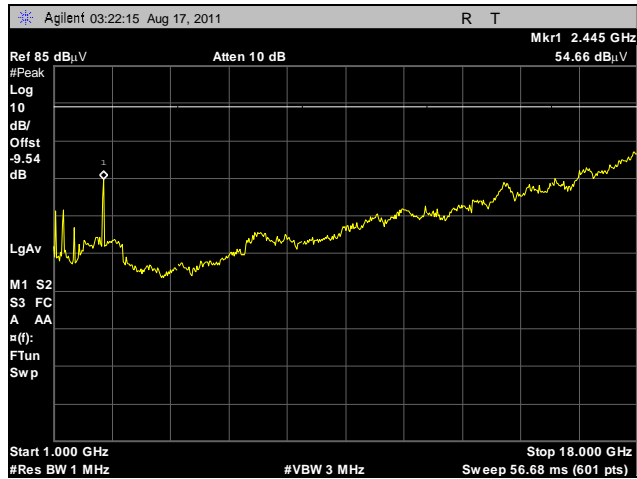


Plot 144. Radiated Spurs, Mid Channel, 2.4 GHz, 802.11b, 30 MHz – 1 GHz, Omni

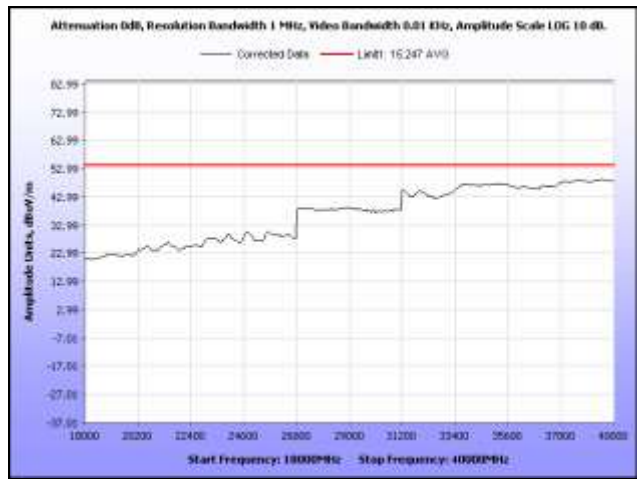
Note: Emissions which exceed the limit are digital emissions.



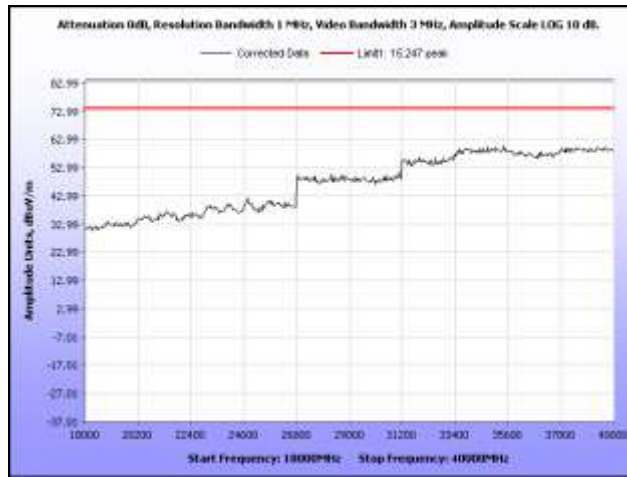
Plot 145. Radiated Spurs, Mid Channel, 2.4 GHz, 802.11b, 1 GHz – 18 GHz, Average, Omni



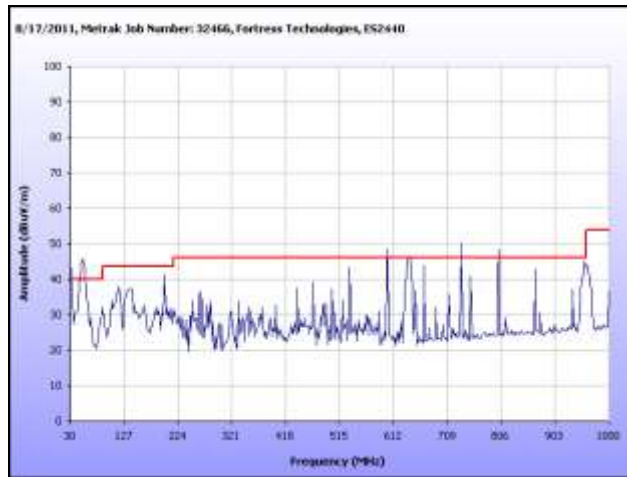
Plot 146. Radiated Spurs, Mid Channel, 2.4 GHz, 802.11b, 1 GHz – 18 GHz, Peak, Omni



Plot 147. Radiated Spurs, Mid Channel, 2.4 GHz, 802.11b, 18 GHz – 40 GHz, Average, Omni



Plot 148. Radiated Spurs, Mid Channel, 2.4 GHz, 802.11b, 18 GHz – 40 GHz, Peak, Omni

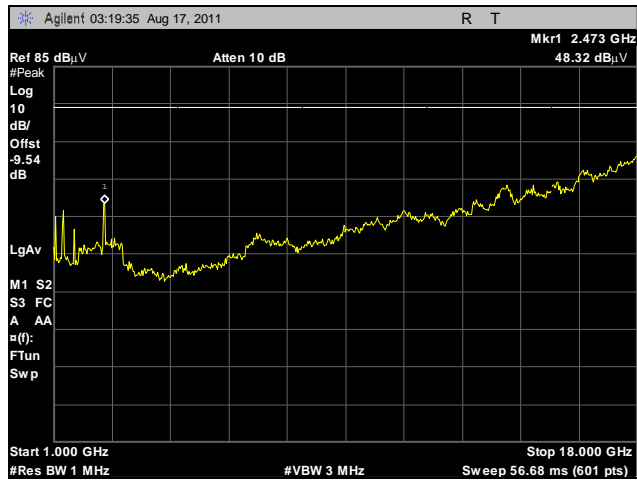


Plot 149. Radiated Spurs, High Channel, 2.4 GHz, 802.11b, 30 MHz – 1 GHz, Omni

Note: Emissions which exceed the limit are digital emissions.



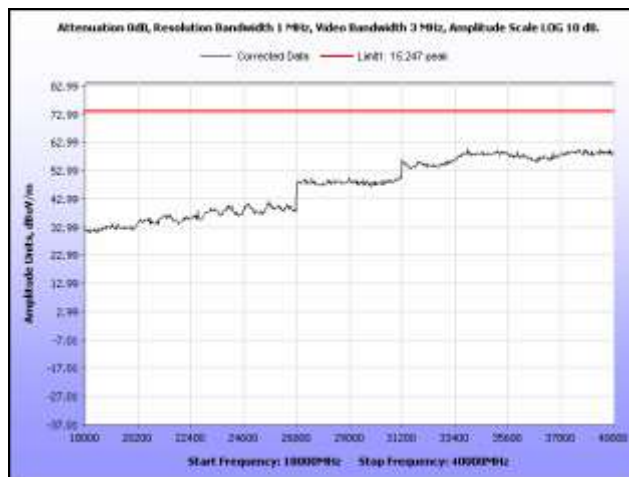
Plot 150. Radiated Spurs, High Channel, 2.4 GHz, 802.11b, 1 GHz – 18 GHz, Average, Omni



Plot 151. Radiated Spurs, High Channel, 2.4 GHz, 802.11b, 1 GHz – 18 GHz, Peak, Omni

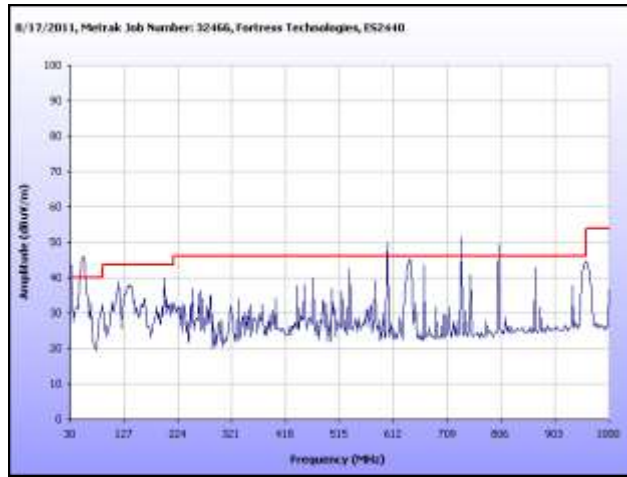


Plot 152. Radiated Spurs, High Channel, 2.4 GHz, 802.11b, 18 GHz – 40 GHz, Average, Omni



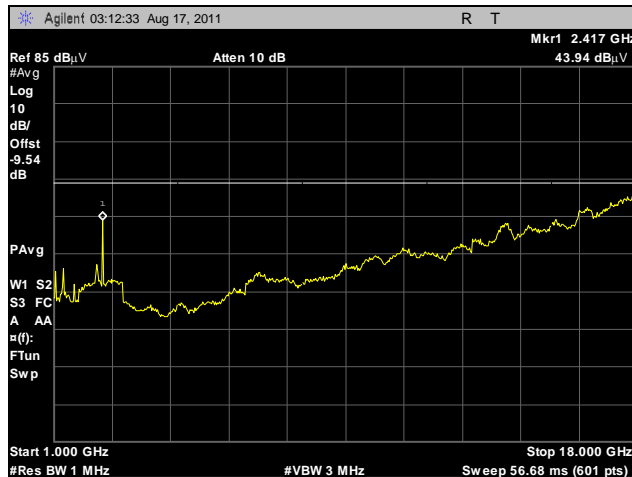
Plot 153. Radiated Spurs, High Channel, 2.4 GHz, 802.11b, 18 GHz – 40 GHz, Peak, Omni

Radiated Spurious Emissions Test Results, 2.4 GHz, 802.11g, Omni Antenna

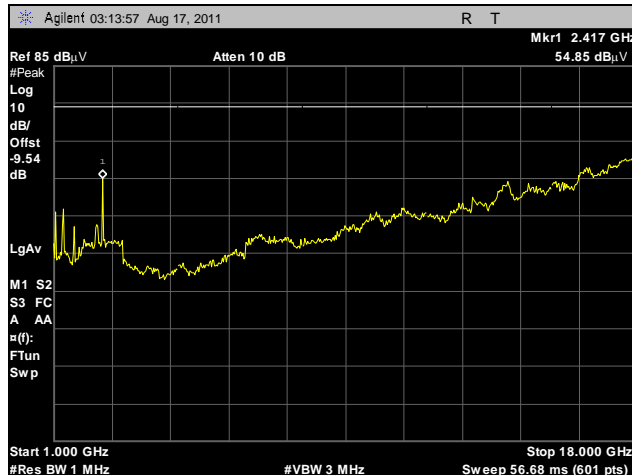


Plot 154. Radiated Spurs, Low Channel, 2.4 GHz, 802.11g, 30 MHz – 1 GHz, Omni

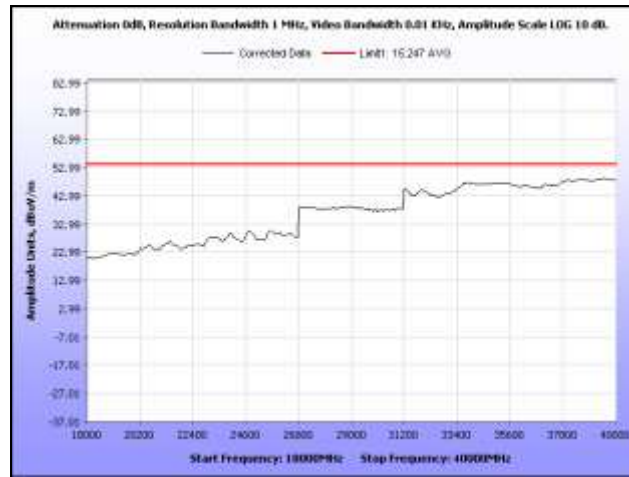
Note: Emissions which exceed the limit are digital emissions.



Plot 155. Radiated Spurs, Low Channel, 2.4 GHz, 802.11g, 1 GHz – 18 GHz, Average, Omni



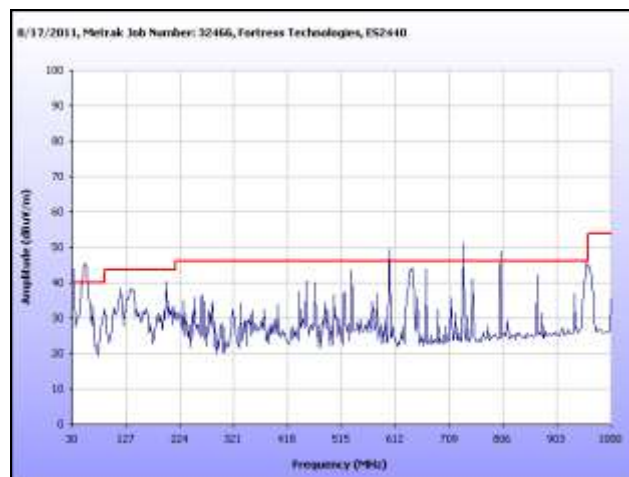
Plot 156. Radiated Spurs, Low Channel, 2.4 GHz, 802.11g, 1 GHz – 18 GHz, Peak, Omni



Plot 157. Radiated Spurs, Low Channel, 2.4 GHz, 802.11g, 18 GHz – 40 GHz, Average, Omni

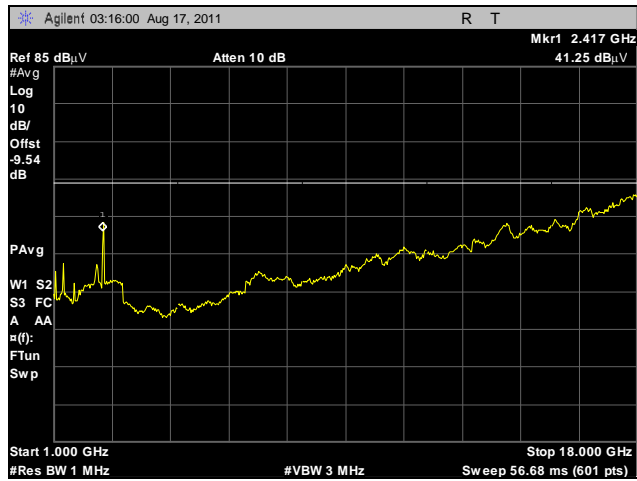


Plot 158. Radiated Spurs, Low Channel, 2.4 GHz, 802.11g, 18 GHz – 40 GHz, Peak, Omni

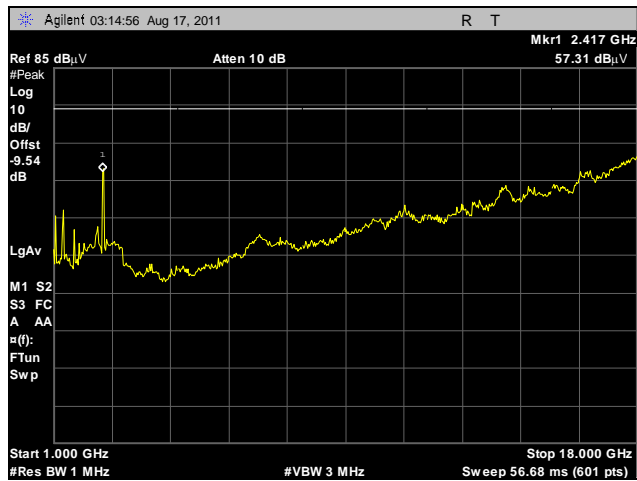


Plot 159. Radiated Spurs, Mid Channel, 2.4 GHz, 802.11g, 30 MHz – 1 GHz, Omni

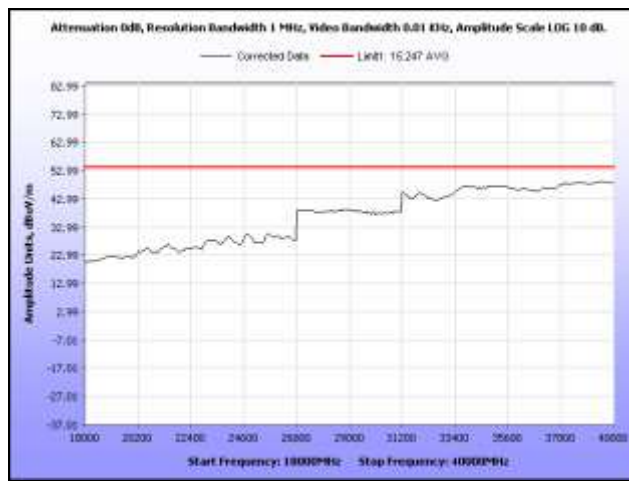
Note: Emissions which exceed the limit are digital emissions.



Plot 160. Radiated Spurs, Mid Channel, 2.4 GHz, 802.11g, 1 GHz – 18 GHz, Average, Omni



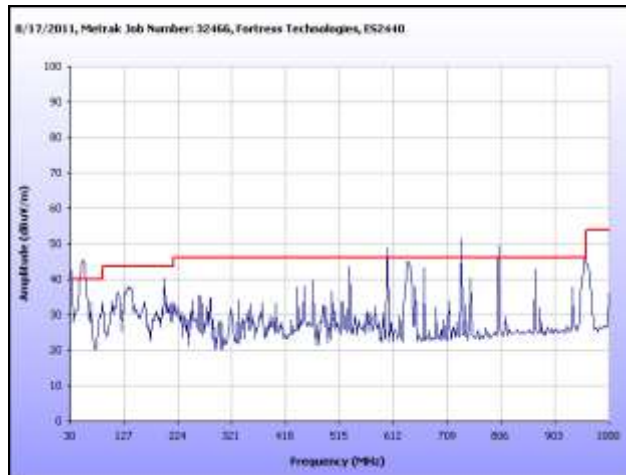
Plot 161. Radiated Spurs, Mid Channel, 2.4 GHz, 802.11g, 1 GHz – 18 GHz, Peak, Omni



Plot 162. Radiated Spurs, Mid Channel, 2.4 GHz, 802.11g, 18 GHz – 40 GHz, Average, Omni

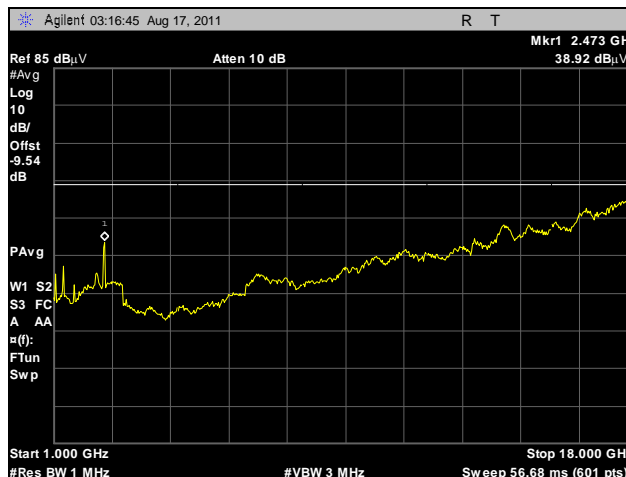


Plot 163. Radiated Spurs, Mid Channel, 2.4 GHz, 802.11g, 18 GHz – 40 GHz, Peak, Omni

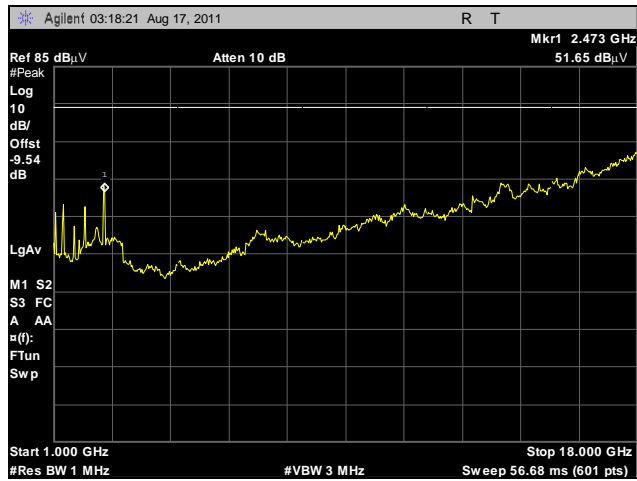


Plot 164. Radiated Spurs, High Channel, 2.4 GHz, 802.11g, 30 MHz – 1 GHz, Omni

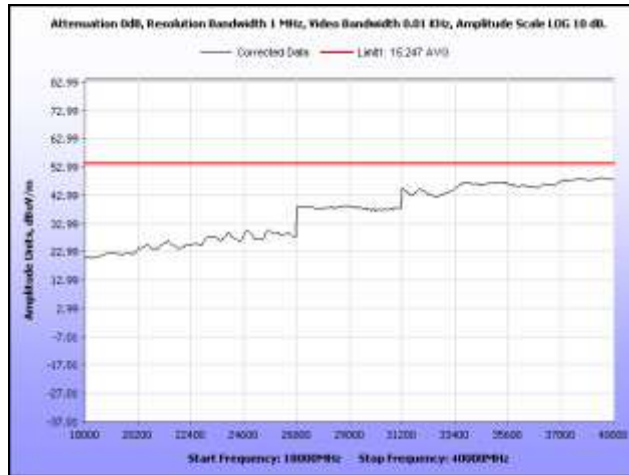
Note: Emissions which exceed the limit are digital emissions.



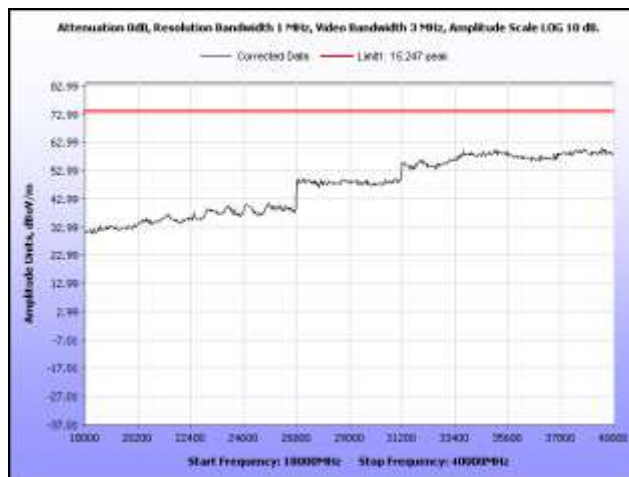
Plot 165. Radiated Spurs, High Channel, 2.4 GHz, 802.11g, 1 GHz – 18 GHz, Average, Omni



Plot 166. Radiated Spurs, High Channel, 2.4 GHz, 802.11g, 1 GHz – 18 GHz, Peak, Omni

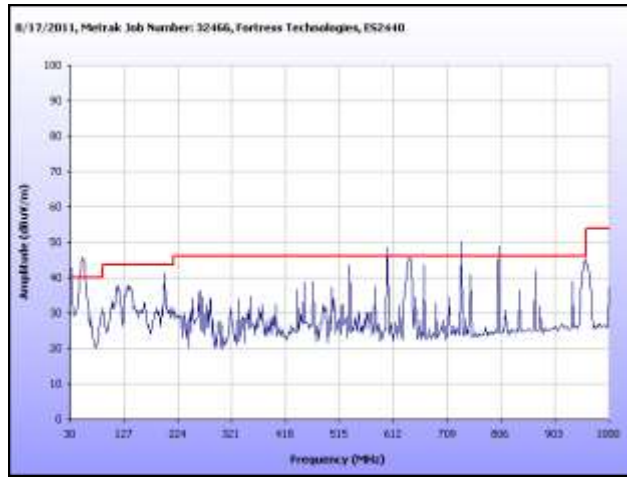


Plot 167. Radiated Spurs, High Channel, 2.4 GHz, 802.11g, 18 GHz – 40 GHz, Average, Omni



Plot 168. Radiated Spurs, High Channel, 2.4 GHz, 802.11g, 18 GHz – 40 GHz, Peak, Omni

Radiated Spurious Emissions Test Results, 2.4 GHz, 802.11g HT20, Omni Antenna



Plot 169. Radiated Spurs, Low Channel, 2.4 GHz, 802.11g HT20, 30 MHz – 1 GHz, Omni

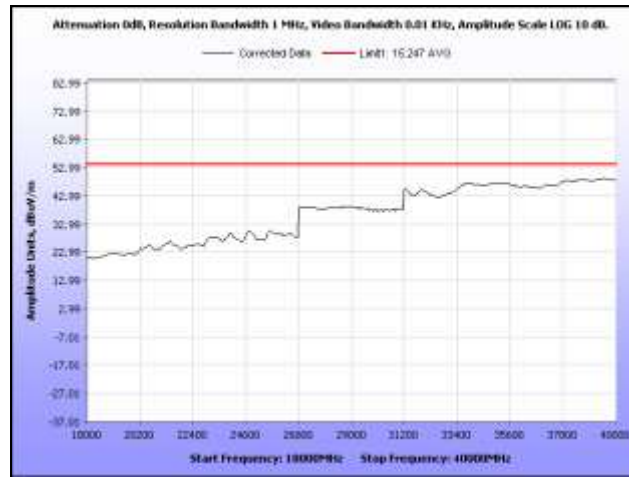
Note: Emissions which exceed the limit are digital emissions.



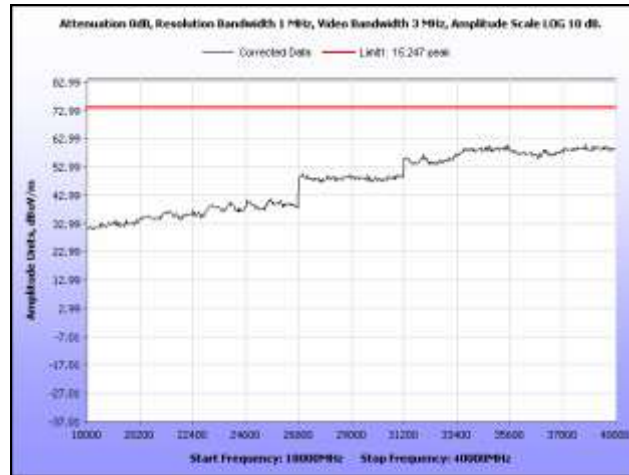
Plot 170. Radiated Spurs, Low Channel, 2.4 GHz, 802.11g HT20, 1 GHz – 18 GHz, Average, Omni



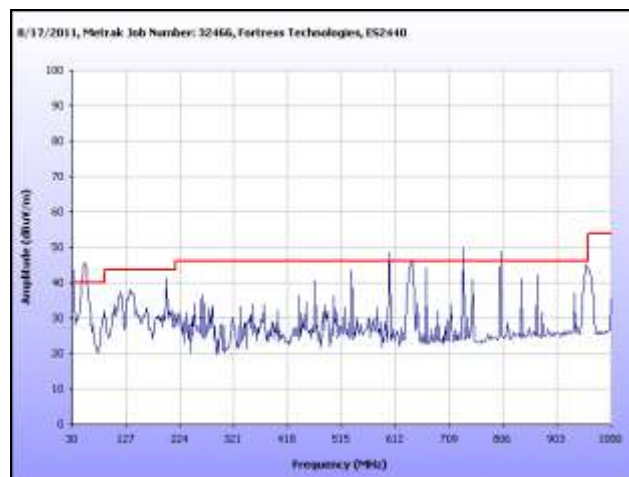
Plot 171. Radiated Spurs, Low Channel, 2.4 GHz, 802.11g HT20, 1 GHz – 18 GHz, Peak, Omni



Plot 172. Radiated Spurs, Low Channel, 2.4 GHz, 802.11g HT20, 18 GHz – 40 GHz, Average, Omni

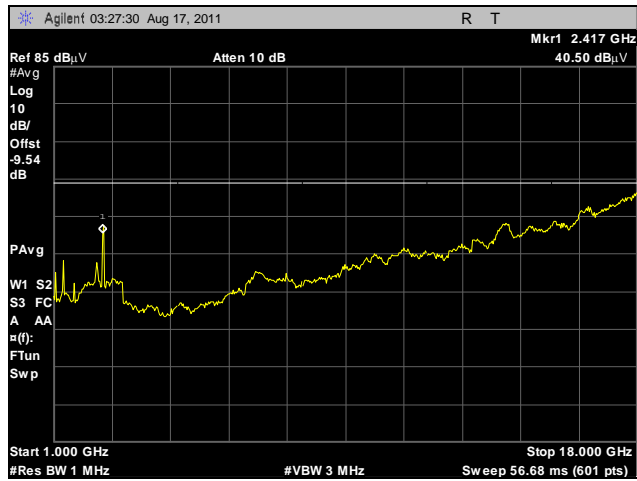


Plot 173. Radiated Spurs, Low Channel, 2.4 GHz, 802.11g HT20, 18 GHz – 40 GHz, Peak, Omni

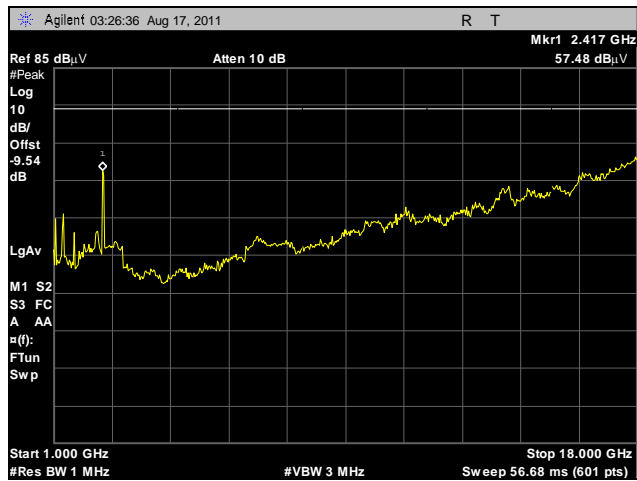


Plot 174. Radiated Spurs, Mid Channel, 2.4 GHz, 802.11g HT20, 30 MHz – 1 GHz, Omni

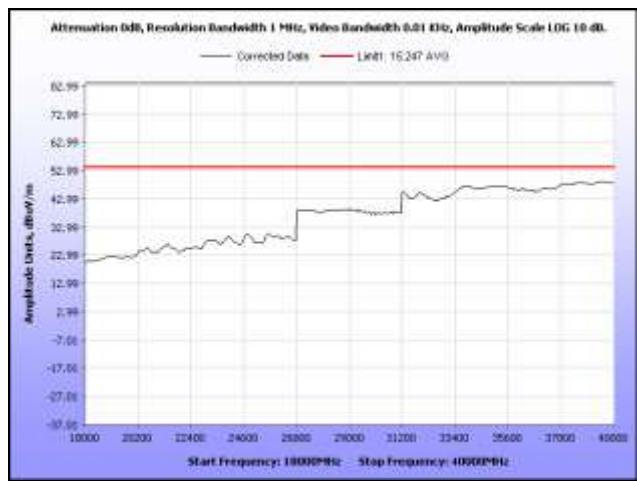
Note: Emissions which exceed the limit are digital emissions.



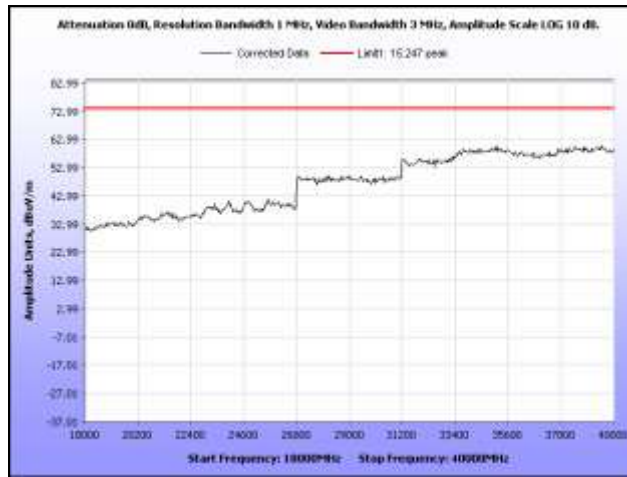
Plot 175. Radiated Spurs, Mid Channel, 2.4 GHz, 802.11g HT20, 1 GHz – 18 GHz, Average, Omni



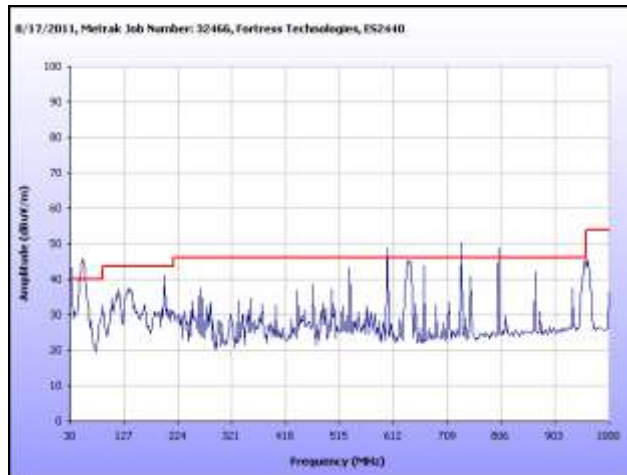
Plot 176. Radiated Spurs, Mid Channel, 2.4 GHz, 802.11g HT20, 1 GHz – 18 GHz, Peak, Omni



Plot 177. Radiated Spurs, Mid Channel, 2.4 GHz, 802.11g HT20, 18 GHz – 40 GHz, Average, Omni



Plot 178. Radiated Spurs, Mid Channel, 2.4 GHz, 802.11g HT20, 18 GHz – 40 GHz, Peak, Omni

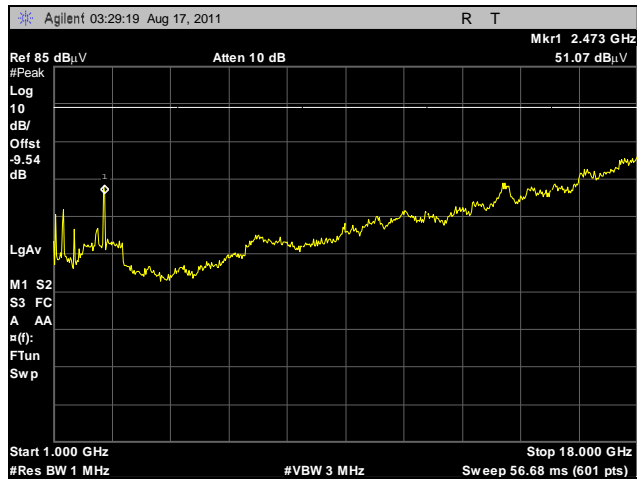


Plot 179. Radiated Spurs, High Channel, 2.4 GHz, 802.11g HT20, 30 MHz – 1 GHz, Omni

Note: Emissions which exceed the limit are digital emissions.



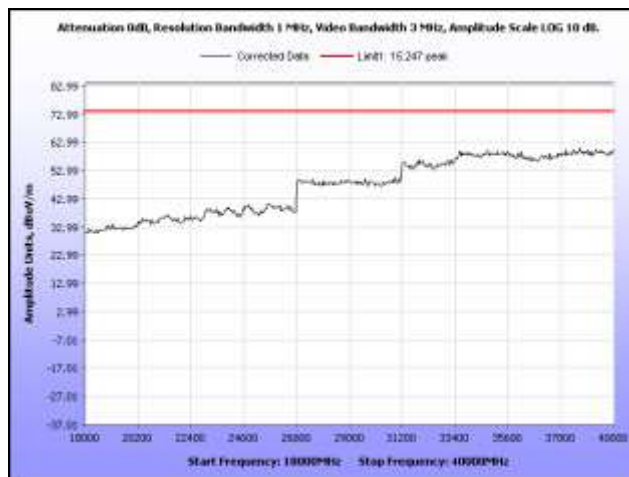
Plot 180. Radiated Spurs, High Channel, 2.4 GHz, 802.11g HT20, 1 GHz – 18 GHz, Average, Omni



Plot 181. Radiated Spurs, High Channel, 2.4 GHz, 802.11g HT20, 1 GHz – 18 GHz, Peak, Omni

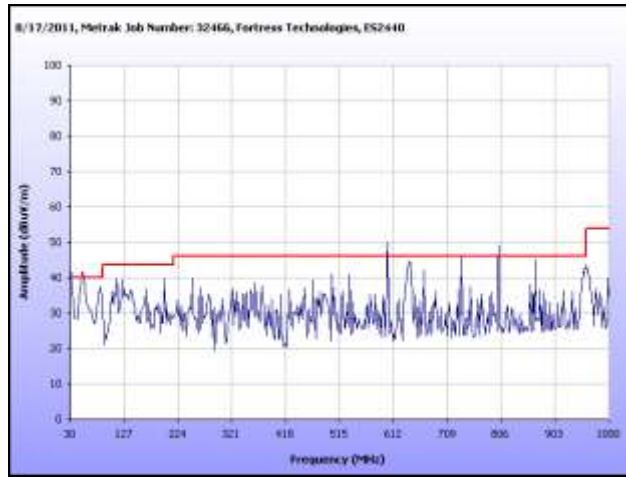


Plot 182. Radiated Spurs, High Channel, 2.4 GHz, 802.11g HT20, 18 GHz – 40 GHz, Average, Omni



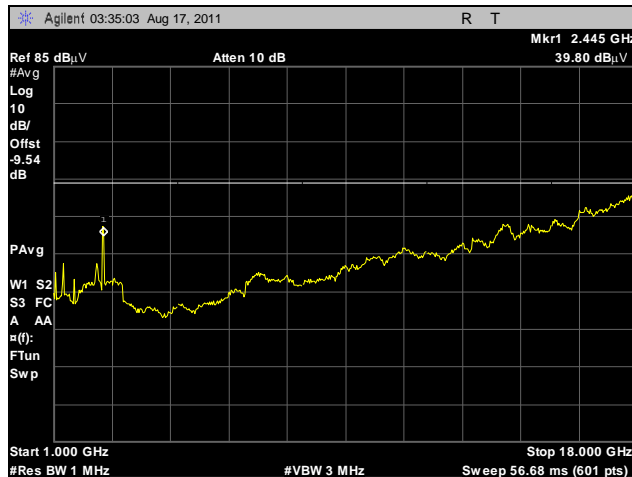
Plot 183. Radiated Spurs, High Channel, 2.4 GHz, 802.11g HT20, 18 GHz – 40 GHz, Peak, Omni

Radiated Spurious Emissions Test Results, 2.4 GHz, 802.11g HT40, Omni Antenna

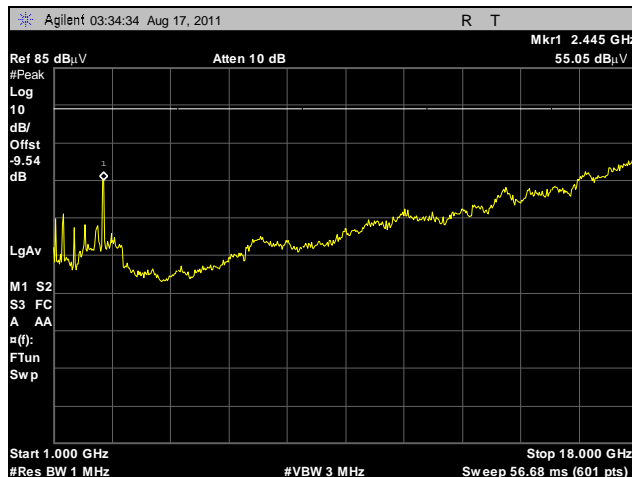


Plot 184. Radiated Spurs, Low Channel, 2.4 GHz, 802.11g HT40, 30 MHz – 1 GHz, Omni

Note: Emissions which exceed the limit are digital emissions.



Plot 185. Radiated Spurs, Low Channel, 2.4 GHz, 802.11g HT40, 1 GHz – 18 GHz, Average, Omni



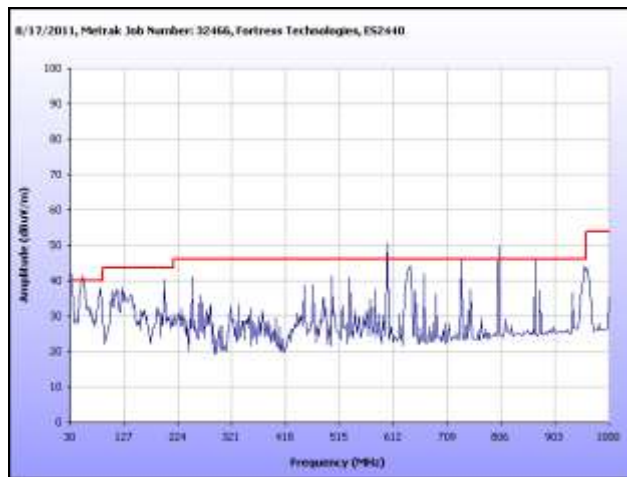
Plot 186. Radiated Spurs, Low Channel, 2.4 GHz, 802.11g HT40, 1 GHz – 18 GHz, Peak, Omni



Plot 187. Radiated Spurs, Low Channel, 2.4 GHz, 802.11g HT40, 18 GHz – 40 GHz, Average, Omni

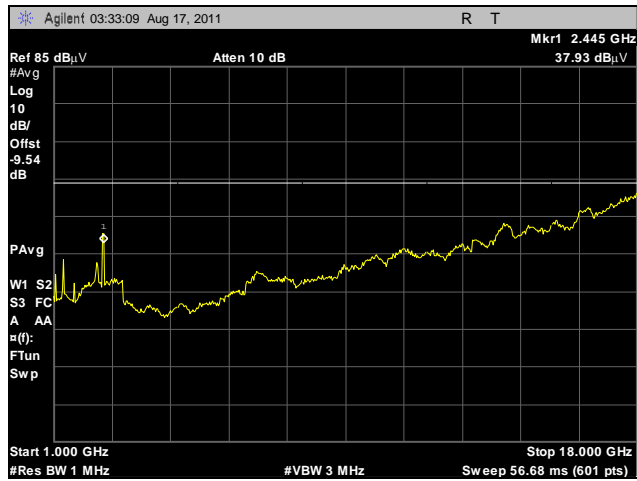


Plot 188. Radiated Spurs, Low Channel, 2.4 GHz, 802.11g HT40, 18 GHz – 40 GHz, Peak, Omni

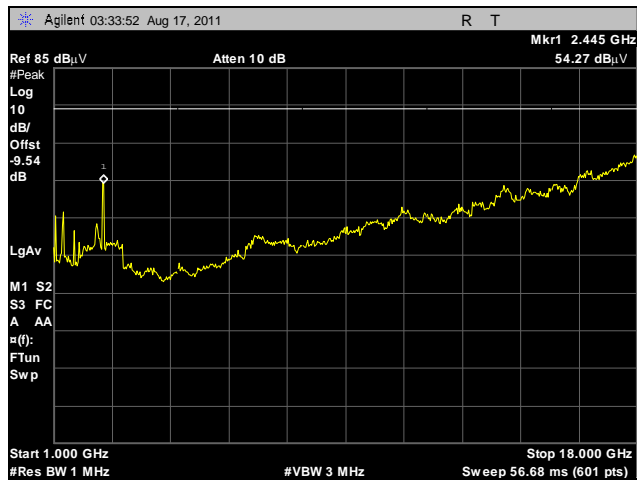


Plot 189. Radiated Spurs, Mid Channel, 2.4 GHz, 802.11g HT40, 30 MHz – 1 GHz, Omni

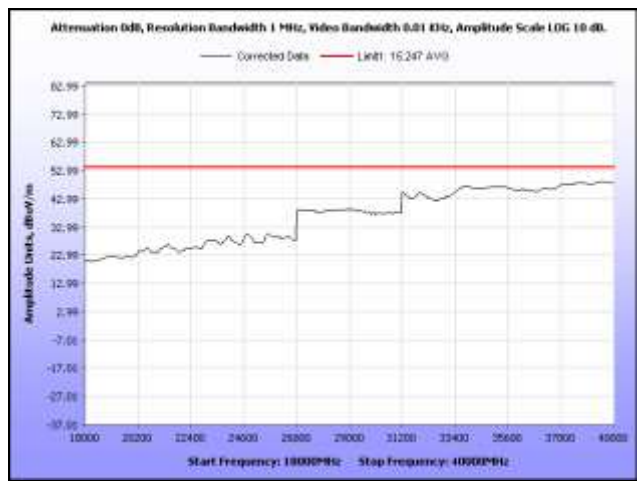
Note: Emissions which exceed the limit are digital emissions.



Plot 190. Radiated Spurs, Mid Channel, 2.4 GHz, 802.11g HT40, 1 GHz – 18 GHz, Average, Omni



Plot 191. Radiated Spurs, Mid Channel, 2.4 GHz, 802.11g HT40, 1 GHz – 18 GHz, Peak, Omni



Plot 192. Radiated Spurs, Mid Channel, 2.4 GHz, 802.11g HT40, 18 GHz – 40 GHz, Average, Omni



Plot 193. Radiated Spurs, Mid Channel, 2.4 GHz, 802.11g HT40, 18 GHz – 40 GHz, Peak, Omni

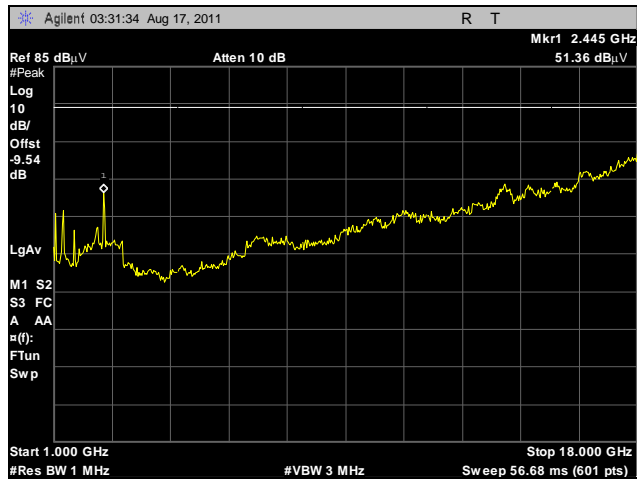


Plot 194. Radiated Spurs, High Channel, 2.4 GHz, 802.11g HT40, 30 MHz – 1 GHz, Omni

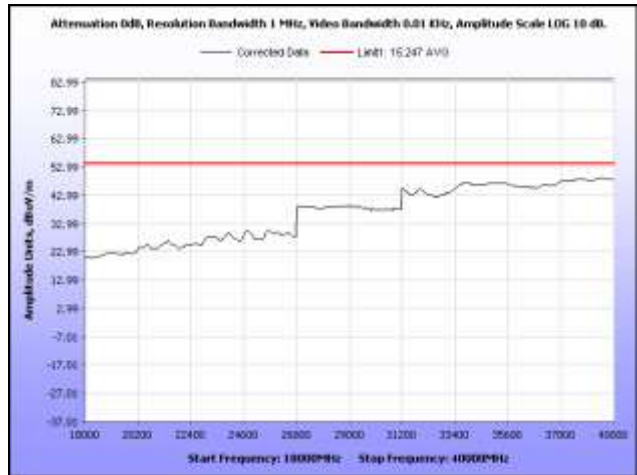
Note: Emissions which exceed the limit are digital emissions.



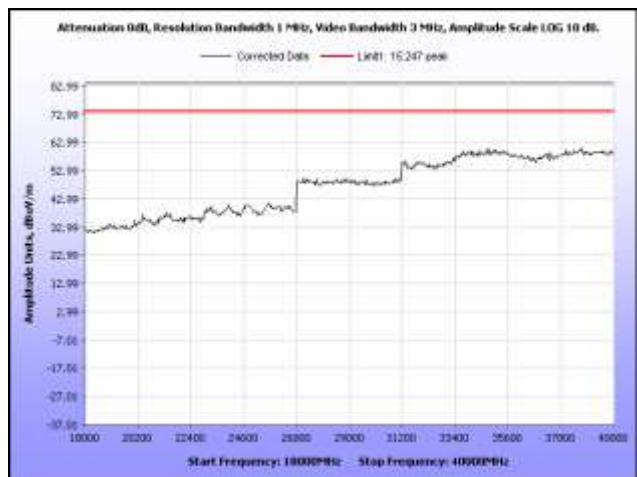
Plot 195. Radiated Spurs, High Channel, 2.4 GHz, 802.11g HT40, 1 GHz – 18 GHz, Average, Omni



Plot 196. Radiated Spurs, High Channel, 2.4 GHz, 802.11g HT40, 1 GHz – 18 GHz, Peak, Omni

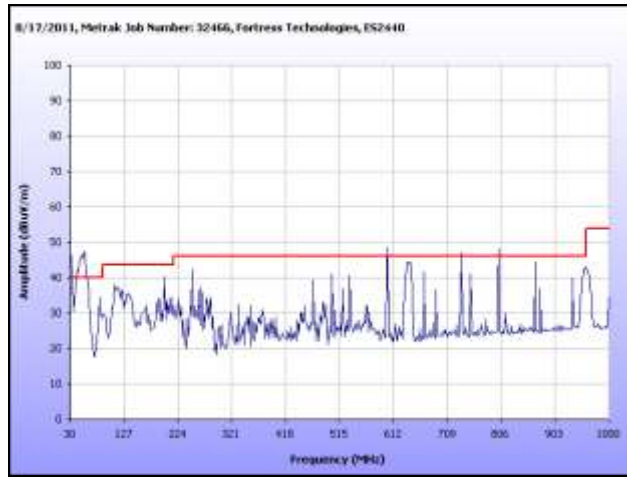


Plot 197. Radiated Spurs, High Channel, 2.4 GHz, 802.11g HT40, 18 GHz – 40 GHz, Average, Omni



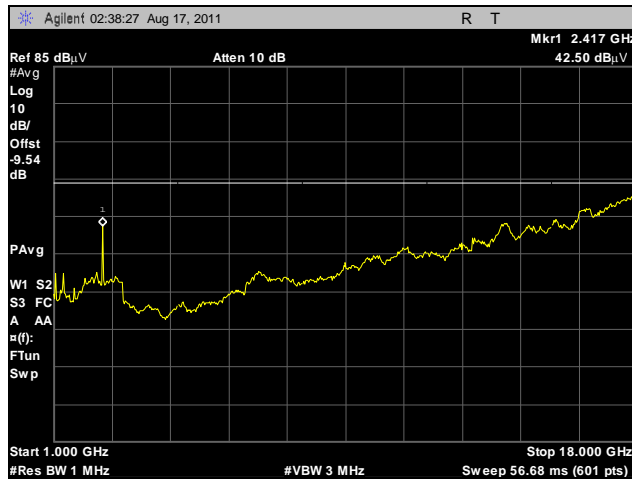
Plot 198. Radiated Spurs, High Channel, 2.4 GHz, 802.11g HT40, 18 GHz – 40 GHz, Peak, Omni

Radiated Spurious Emissions Test Results, 2.4 GHz, 802.11b, Sector Antenna

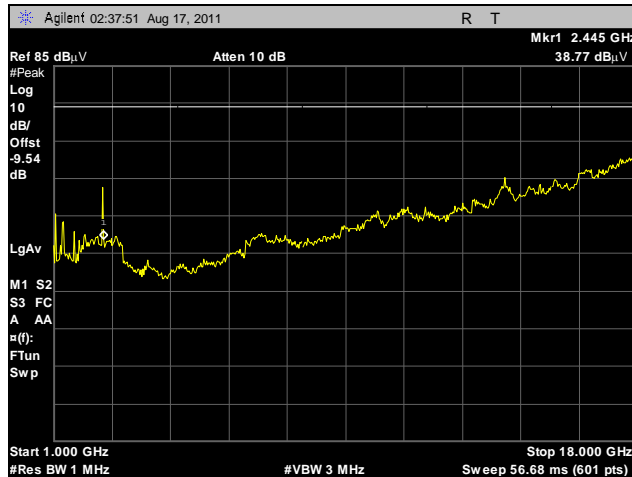


Plot 199. Radiated Spurs, Low Channel, 2.4 GHz, 802.11b, 30 MHz – 1 GHz, Sector

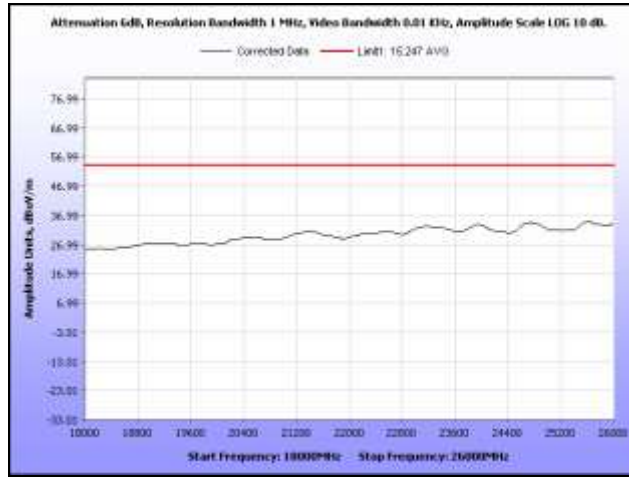
Note: Emissions which exceed the limit are digital emissions.



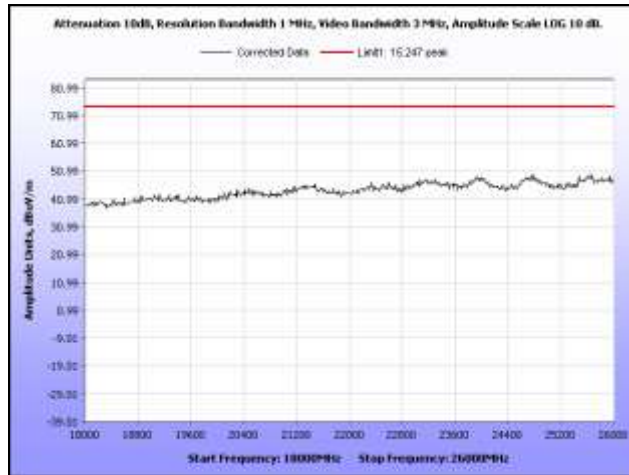
Plot 200. Radiated Spurs, Low Channel, 2.4 GHz, 802.11b, 1 GHz – 18 GHz, Average, Sector



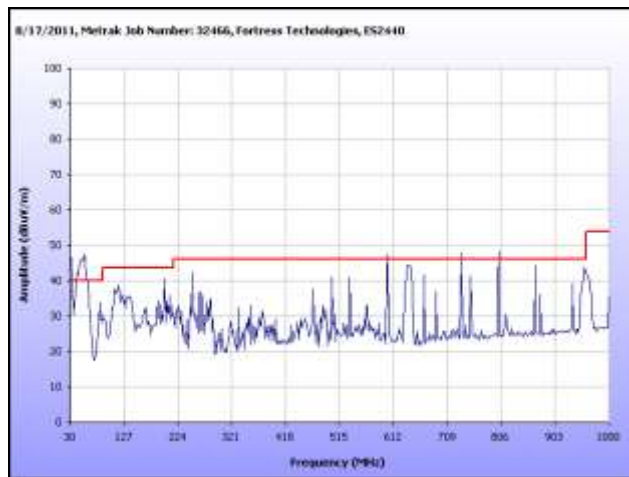
Plot 201. Radiated Spurs, Low Channel, 2.4 GHz, 802.11b, 1 GHz – 18 GHz, Peak, Sector



Plot 202. Radiated Spurs, Low Channel, 2.4 GHz, 802.11b, 18 GHz – 26 GHz, Average, Sector

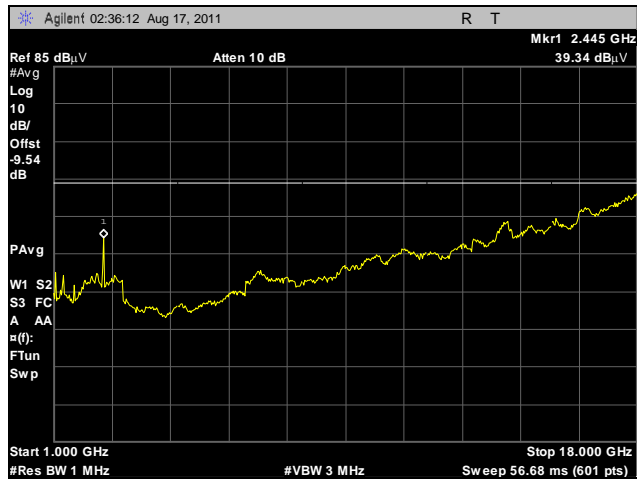


Plot 203. Radiated Spurs, Low Channel, 2.4 GHz, 802.11b, 18 GHz – 26 GHz, Peak, Sector



Plot 204. Radiated Spurs, Mid Channel, 2.4 GHz, 802.11b, 30 MHz – 1 GHz, Sector

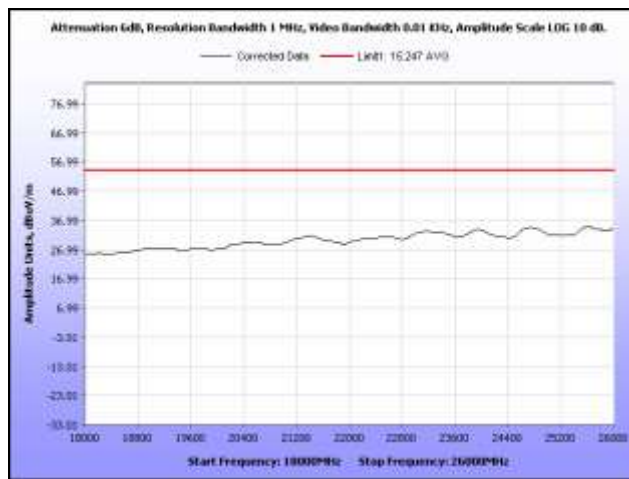
Note: Emissions which exceed the limit are digital emissions.



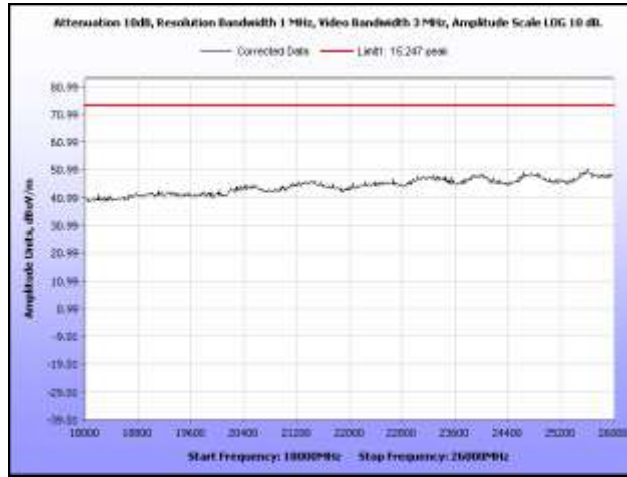
Plot 205. Radiated Spurs, Mid Channel, 2.4 GHz, 802.11b, 1 GHz – 18 GHz, Average, Sector



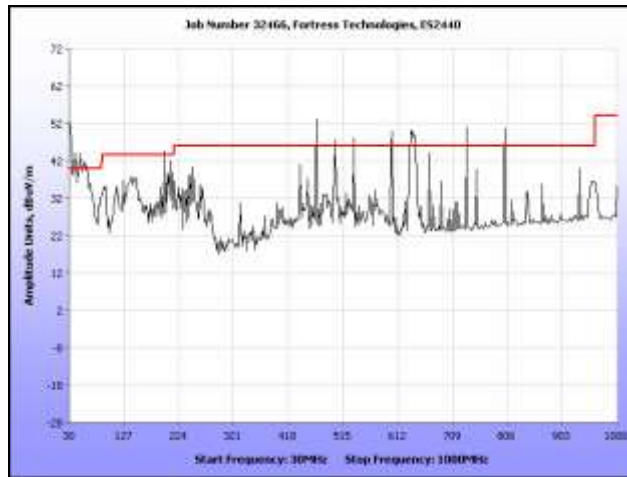
Plot 206. Radiated Spurs, Mid Channel, 2.4 GHz, 802.11b, 1 GHz – 18 GHz, Peak, Sector



Plot 207. Radiated Spurs, Mid Channel, 2.4 GHz, 802.11b, 18 GHz – 26 GHz, Average, Sector



Plot 208. Radiated Spurs, Mid Channel, 2.4 GHz, 802.11b, 18 GHz – 26 GHz, Peak, Sector

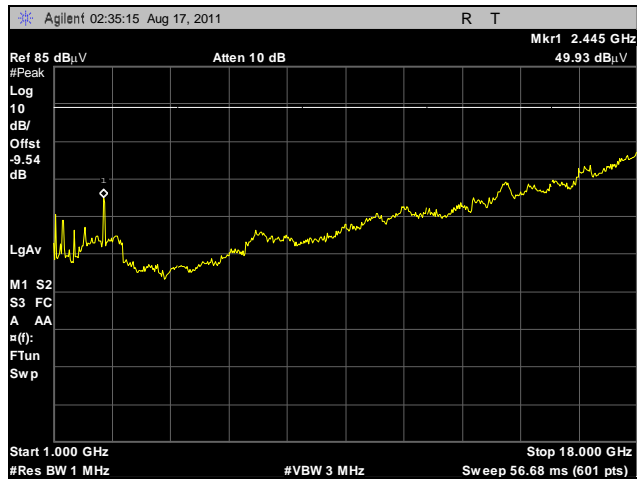


Plot 209. Radiated Spurs, High Channel, 2.4 GHz, 802.11b, 30 MHz – 1 GHz, Sector

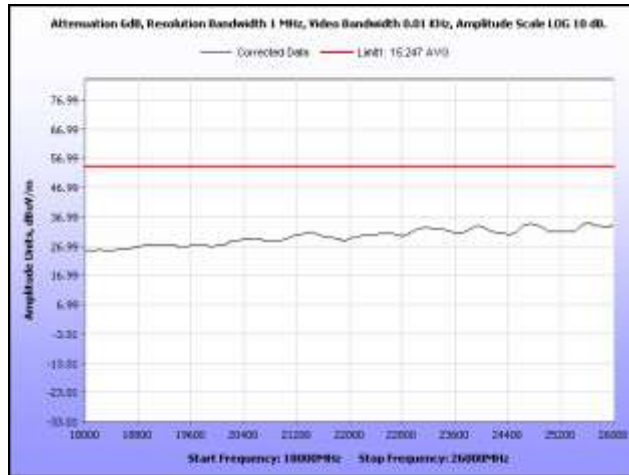
Note: Emissions which exceed the limit are digital emissions.



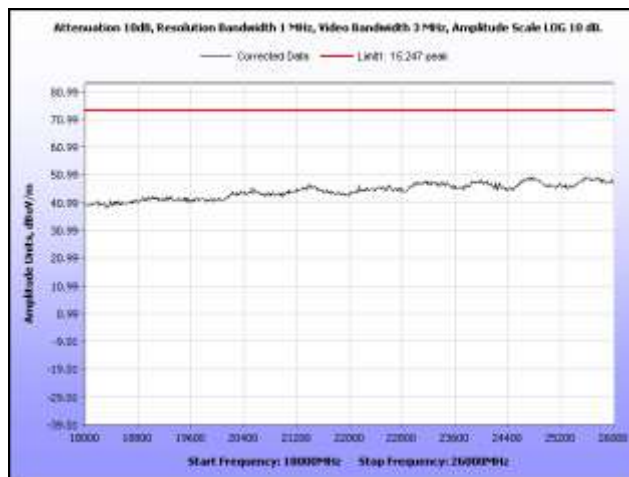
Plot 210. Radiated Spurs, High Channel, 2.4 GHz, 802.11b, 1 GHz – 18 GHz, Average, Sector



Plot 211. Radiated Spurs, High Channel, 2.4 GHz, 802.11b, 1 GHz – 18 GHz, Peak, Sector

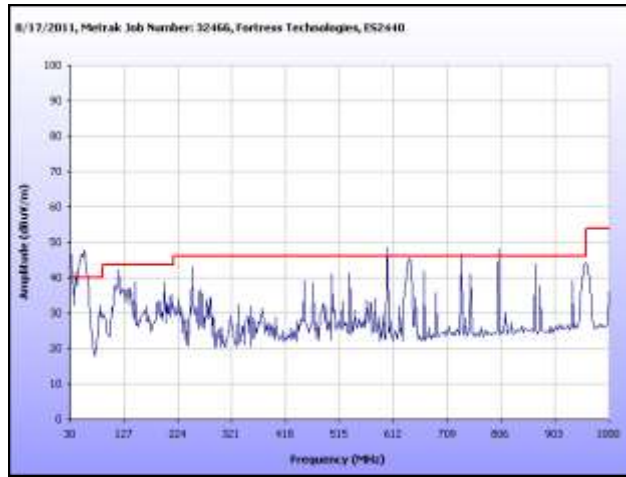


Plot 212. Radiated Spurs, High Channel, 2.4 GHz, 802.11b, 18 GHz – 26 GHz, Average, Sector



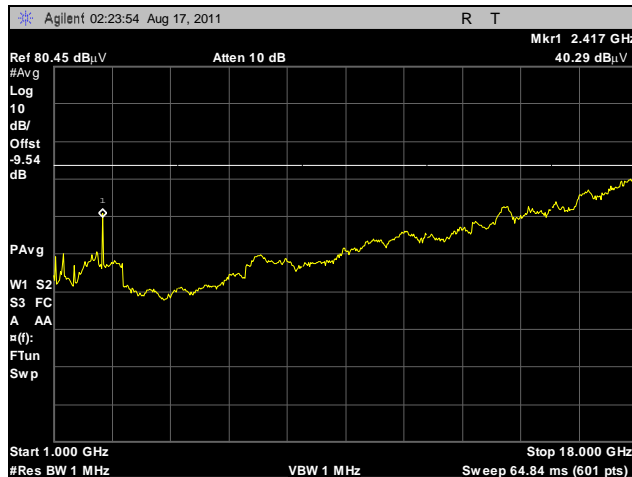
Plot 213. Radiated Spurs, High Channel, 2.4 GHz, 802.11b, 18 GHz – 26 GHz, Peak, Sector

Radiated Spurious Emissions Test Results, 2.4 GHz, 802.11g, Sector



Plot 214. Radiated Spurs, Low Channel, 2.4 GHz, 802.11g, 30 MHz – 1 GHz, Sector

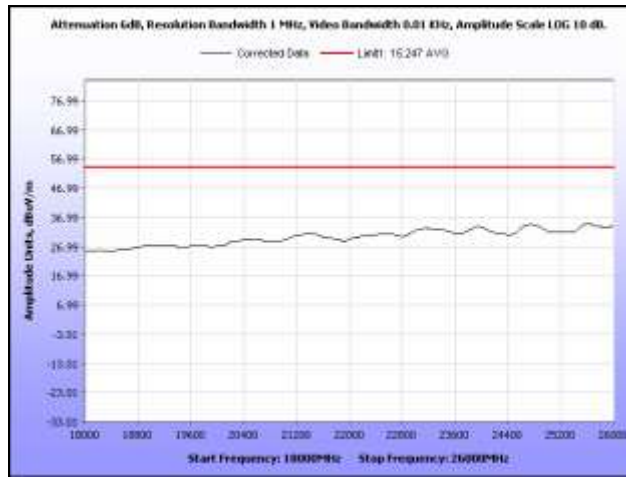
Note: Emissions which exceed the limit are digital emissions.



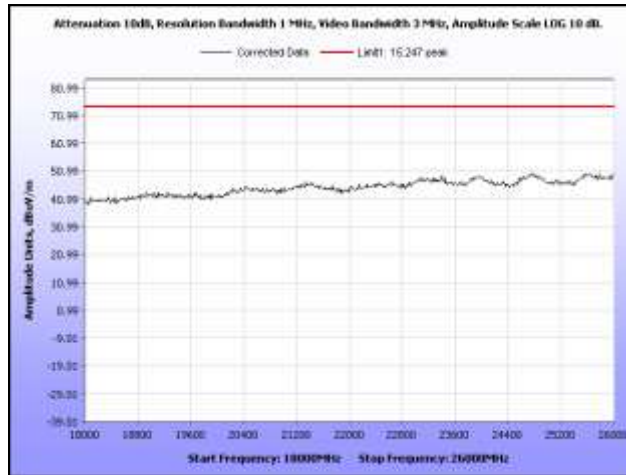
Plot 215. Radiated Spurs, Low Channel, 2.4 GHz, 802.11g, 1 GHz – 18 GHz, Average, Sector



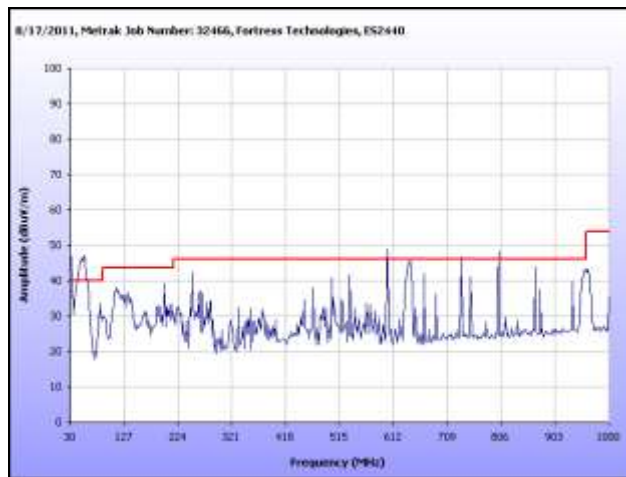
Plot 216. Radiated Spurs, Low Channel, 2.4 GHz, 802.11g, 1 GHz – 18 GHz, Peak, Sector



Plot 217. Radiated Spurs, Low Channel, 2.4 GHz, 802.11g, 18 GHz – 26 GHz, Average, Sector

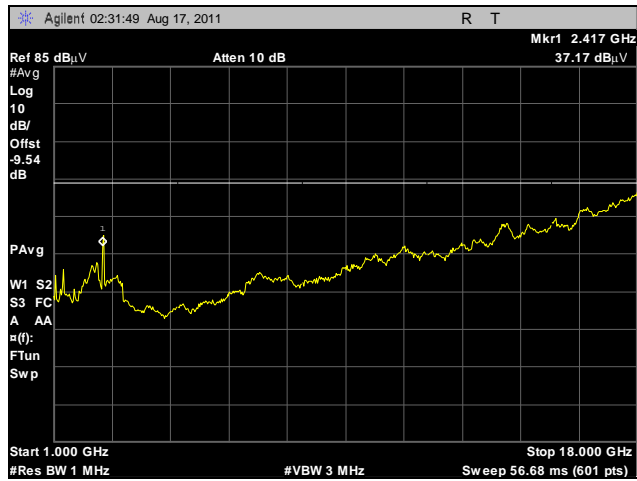


Plot 218. Radiated Spurs, Low Channel, 2.4 GHz, 802.11g, 18 GHz – 26 GHz, Peak, Sector

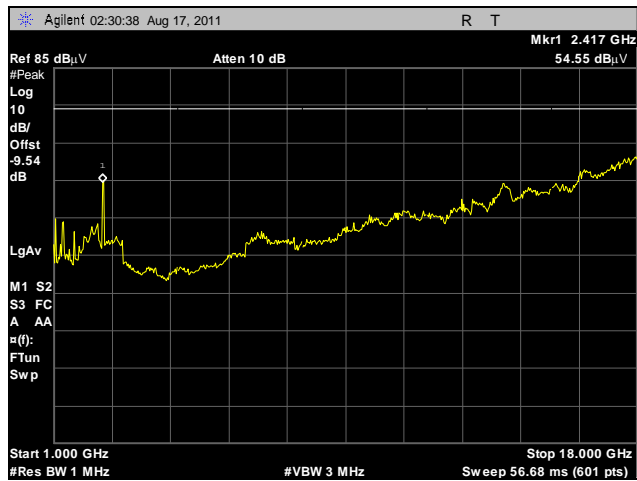


Plot 219. Radiated Spurs, Mid Channel, 2.4 GHz, 802.11g, 30 MHz – 1 GHz, Sector

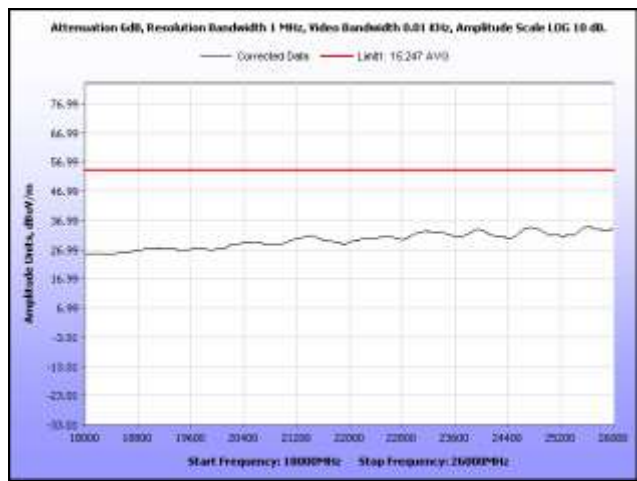
Note: Emissions which exceed the limit are digital emissions.



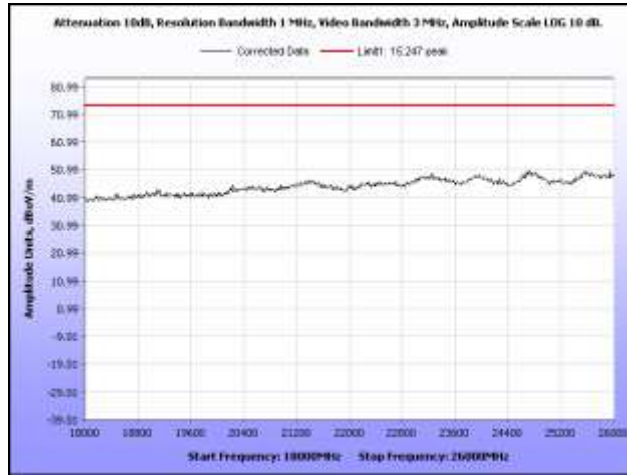
Plot 220. Radiated Spurs, Mid Channel, 2.4 GHz, 802.11g, 1 GHz – 18 GHz, Average, Sector



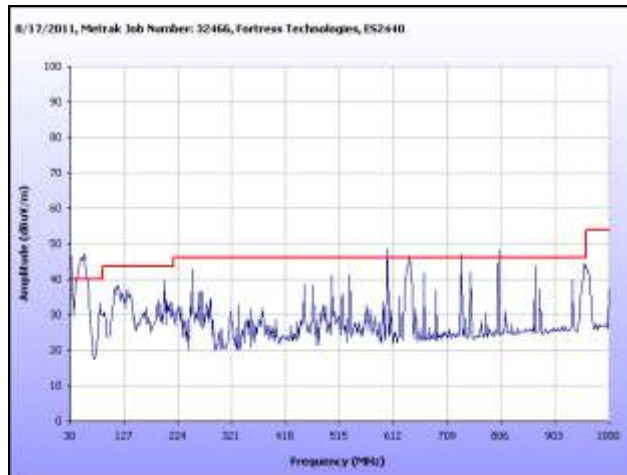
Plot 221. Radiated Spurs, Mid Channel, 2.4 GHz, 802.11g, 1 GHz – 18 GHz, Peak, Sector



Plot 222. Radiated Spurs, Mid Channel, 2.4 GHz, 802.11g, 18 GHz – 26 GHz, Average, Sector



Plot 223. Radiated Spurs, Mid Channel, 2.4 GHz, 802.11g, 18 GHz – 26 GHz, Peak, Sector

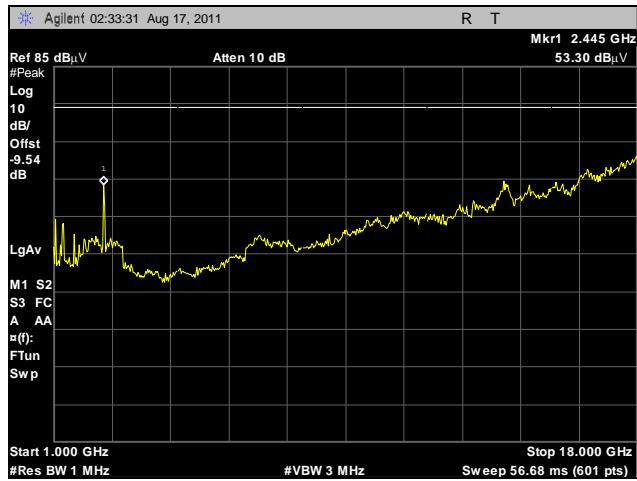


Plot 224. Radiated Spurs, High Channel, 2.4 GHz, 802.11g, 30 MHz – 1 GHz, Sector

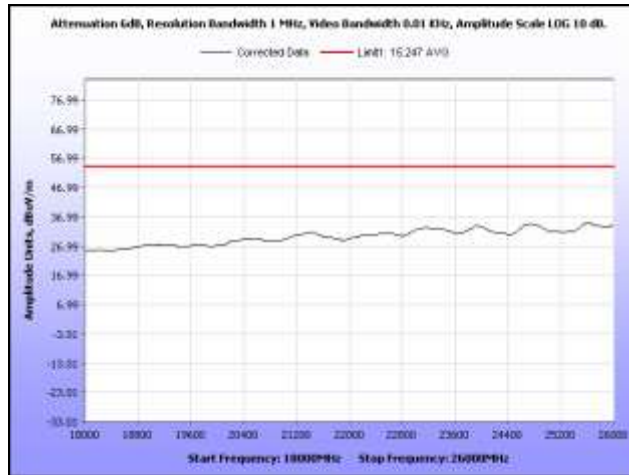
Note: Emissions which exceed the limit are digital emissions.



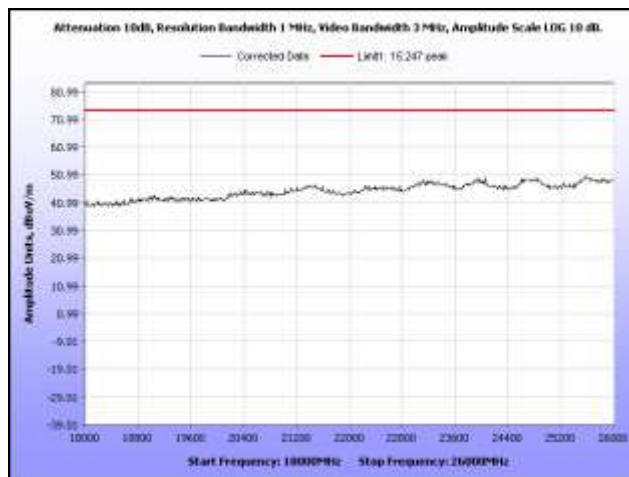
Plot 225. Radiated Spurs, High Channel, 2.4 GHz, 802.11g, 1 GHz – 18 GHz, Average, Sector



Plot 226. Radiated Spurs, High Channel, 2.4 GHz, 802.11g, 1 GHz – 18 GHz, Peak, Sector

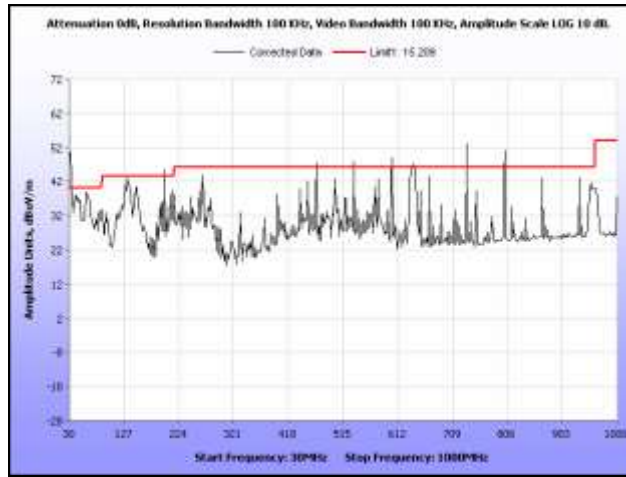


Plot 227. Radiated Spurs, High Channel, 2.4 GHz, 802.11g, 18 GHz – 26 GHz, Average, Sector



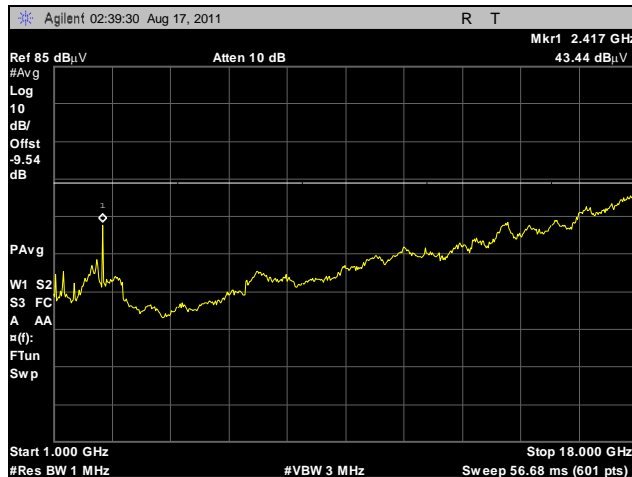
Plot 228. Radiated Spurs, High Channel, 2.4 GHz, 802.11g, 18 GHz – 26 GHz, Peak, Sector

Radiated Spurious Emissions Test Results, 2.4 GHz, 802.11g HT20, Sector Antenna

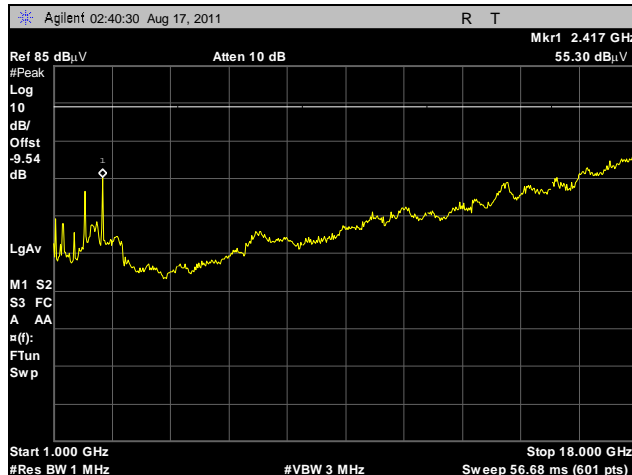


Plot 229. Radiated Spurs, Low Channel, 2.4 GHz, 802.11g HT20, 30 MHz – 1 GHz, Sector

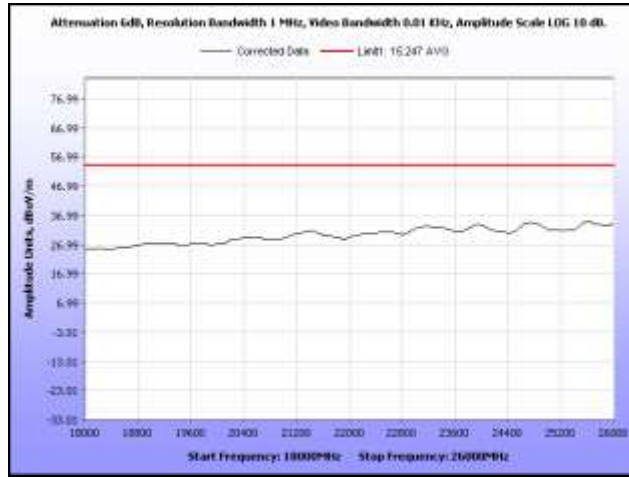
Note: Emissions which exceed the limit are digital emissions.



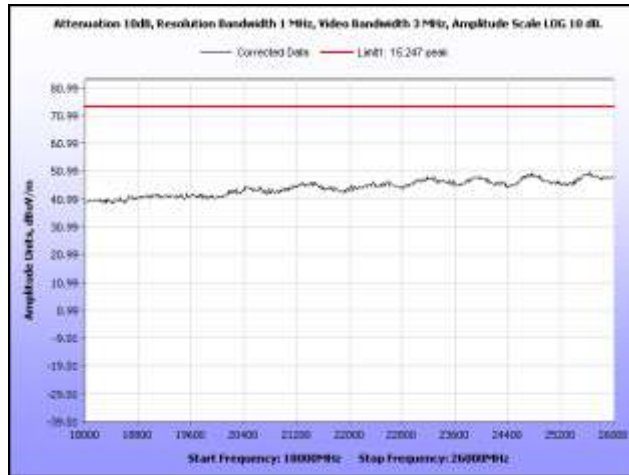
Plot 230. Radiated Spurs, Low Channel, 2.4 GHz, 802.11g HT20, 1 GHz – 18 GHz, Average, Sector



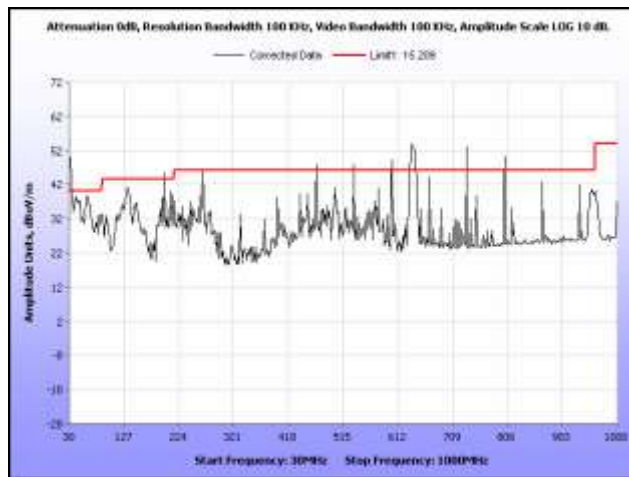
Plot 231. Radiated Spurs, Low Channel, 2.4 GHz, 802.11g HT20, 1 GHz – 18 GHz, Peak, Sector



Plot 232. Radiated Spurs, Low Channel, 2.4 GHz, 802.11g HT20, 18 GHz – 26 GHz, Average, Sector

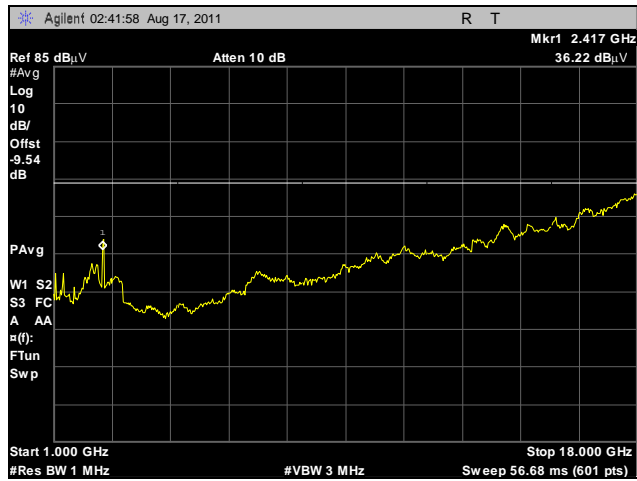


Plot 233. Radiated Spurs, Low Channel, 2.4 GHz, 802.11g HT20, 18 GHz – 26 GHz, Peak, Sector

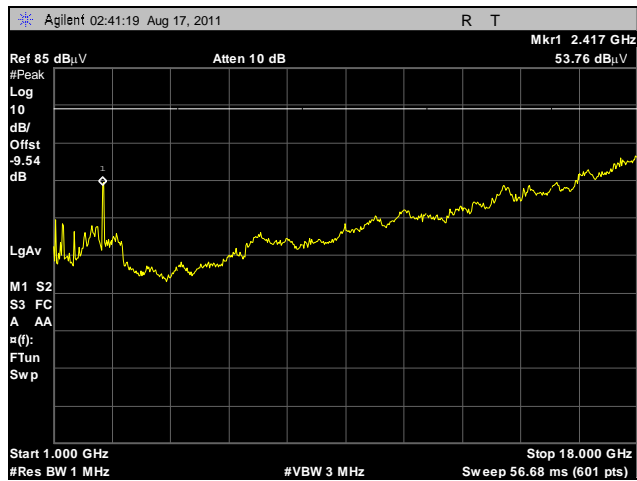


Plot 234. Radiated Spurs, Mid Channel, 2.4 GHz, 802.11g HT20, 30 MHz – 1 GHz, Sector

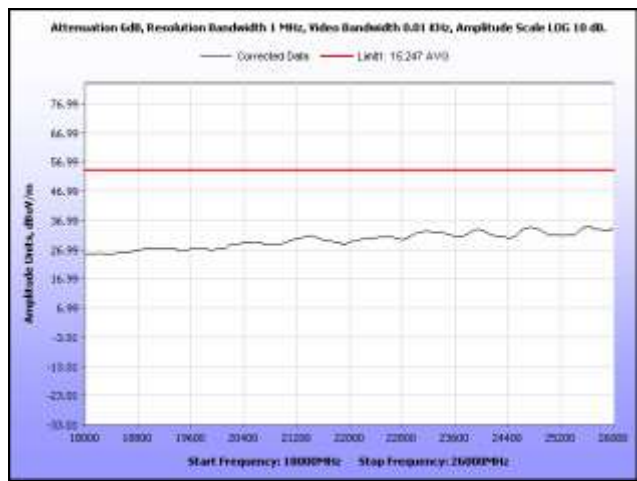
Note: Emissions which exceed the limit are digital emissions.



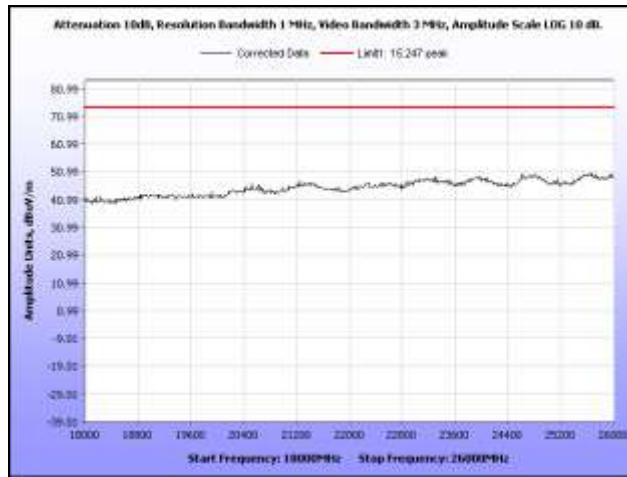
Plot 235. Radiated Spurs, Mid Channel, 2.4 GHz, 802.11g HT20, 1 GHz – 18 GHz, Average, Sector



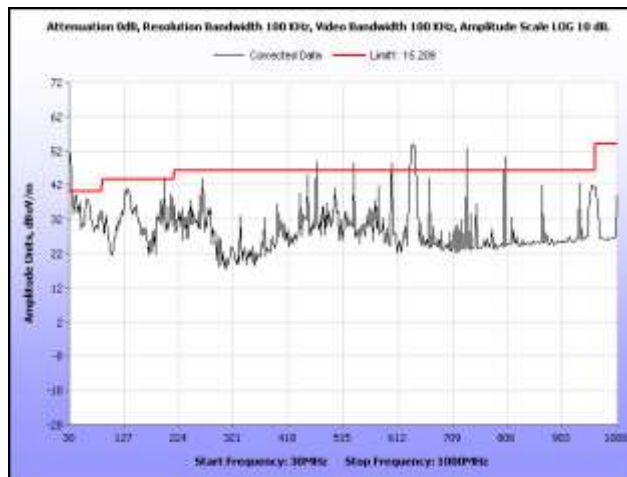
Plot 236. Radiated Spurs, Mid Channel, 2.4 GHz, 802.11g HT20, 1 GHz – 18 GHz, Peak, Sector



Plot 237. Radiated Spurs, Mid Channel, 2.4 GHz, 802.11g HT20, 18 GHz – 26 GHz, Average, Sector



Plot 238. Radiated Spurs, Mid Channel, 2.4 GHz, 802.11g HT20, 18 GHz – 26 GHz, Peak, Sector

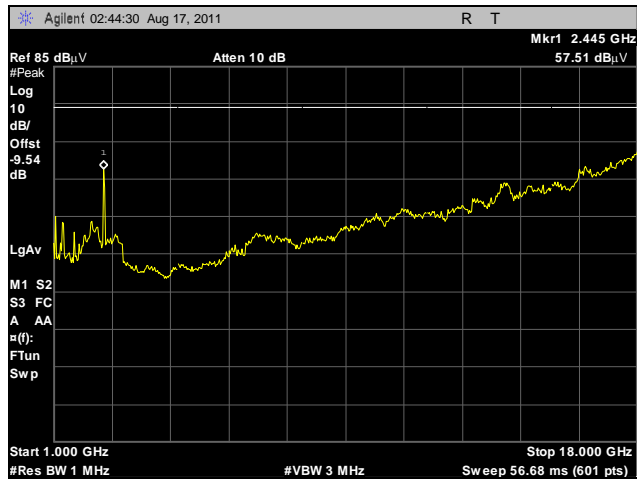


Plot 239. Radiated Spurs, High Channel, 2.4 GHz, 802.11g HT20, 30 MHz – 1 GHz, Sector

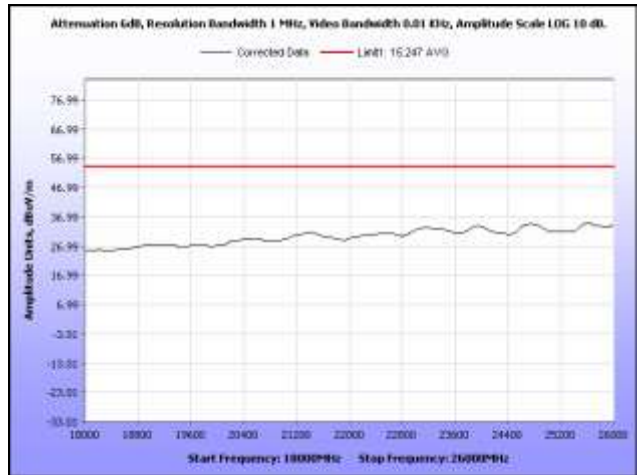
Note: Emissions which exceed the limit are digital emissions.



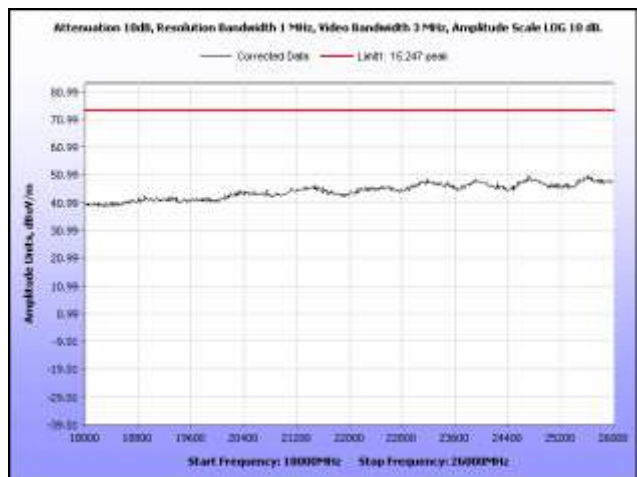
Plot 240. Radiated Spurs, High Channel, 2.4 GHz, 802.11g HT20, 1 GHz – 18 GHz, Average, Sector



Plot 241. Radiated Spurs, High Channel, 2.4 GHz, 802.11g HT20, 1 GHz – 18 GHz, Peak, Sector

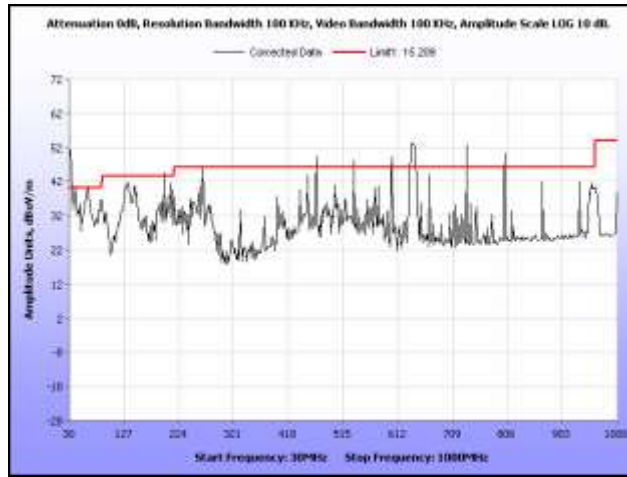


Plot 242. Radiated Spurs, High Channel, 2.4 GHz, 802.11g HT20, 18 GHz – 26 GHz, Average, Sector



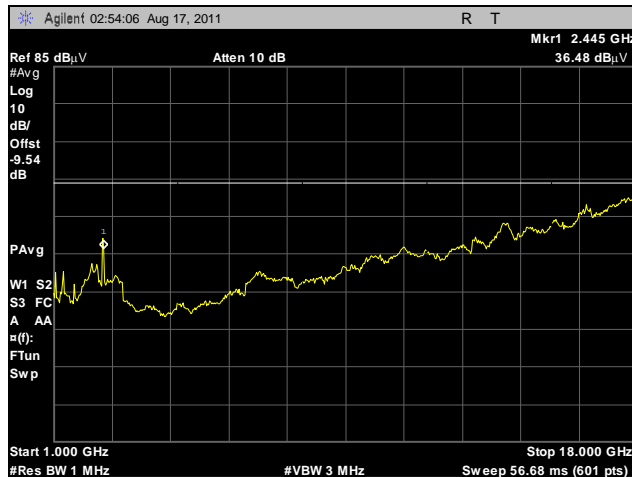
Plot 243. Radiated Spurs, High Channel, 2.4 GHz, 802.11g HT20, 18 GHz – 26 GHz, Peak, Sector

Radiated Spurious Emissions Test Results, 2.4 GHz, 802.11g HT40, Sector Antenna

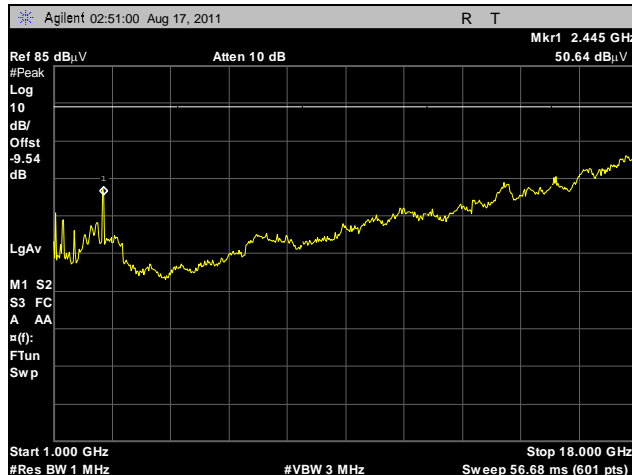


Plot 244. Radiated Spurs, Low Channel, 2.4 GHz, 802.11g HT40, 30 MHz – 1 GHz, Sector

Note: Emissions which exceed the limit are digital emissions.



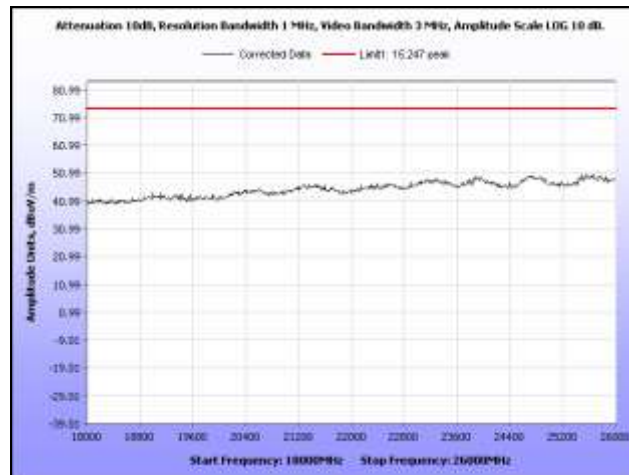
Plot 245. Radiated Spurs, Low Channel, 2.4 GHz, 802.11g HT40, 1 GHz – 18 GHz, Average, Sector



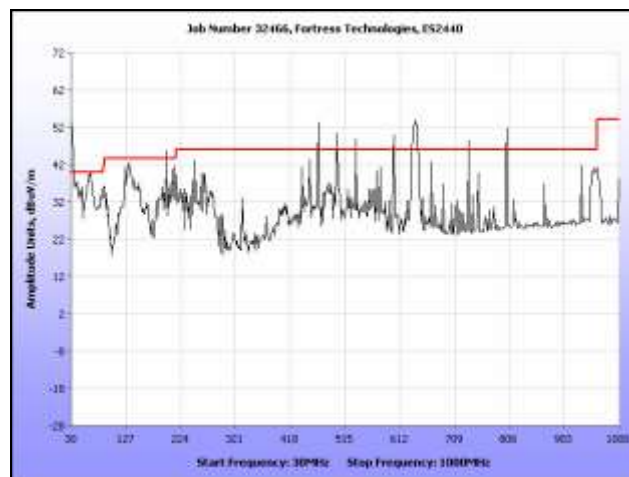
Plot 246. Radiated Spurs, Low Channel, 2.4 GHz, 802.11g HT40, 1 GHz – 18 GHz, Peak, Sector



Plot 247. Radiated Spurs, Low Channel, 2.4 GHz, 802.11g HT40, 18 GHz – 26 GHz, Average, Sector

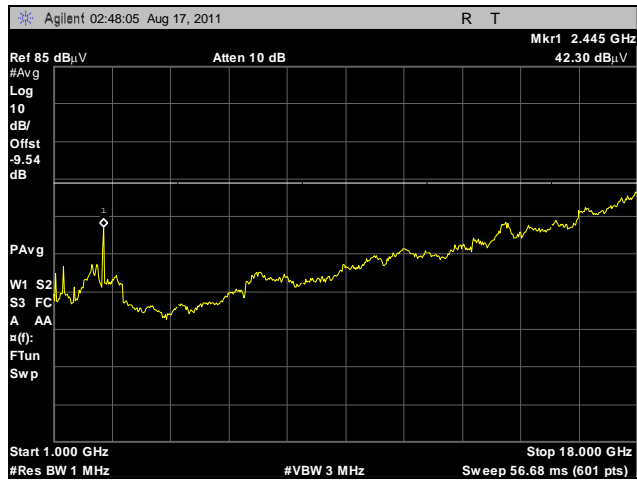


Plot 248. Radiated Spurs, Low Channel, 2.4 GHz, 802.11g HT40, 18 GHz – 26 GHz, Peak, Sector

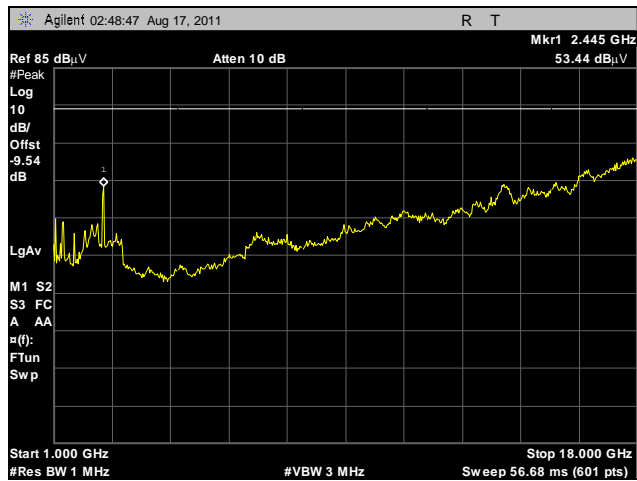


Plot 249. Radiated Spurs, Mid Channel, 2.4 GHz, 802.11g HT40, 30 MHz – 1 GHz, Sector

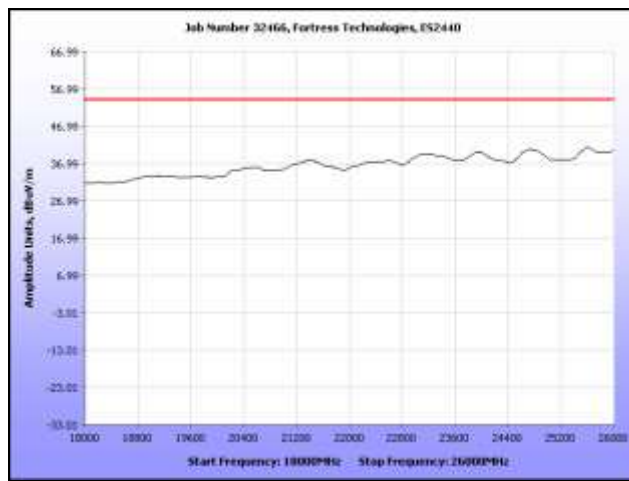
Note: Emissions which exceed the limit are digital emissions.



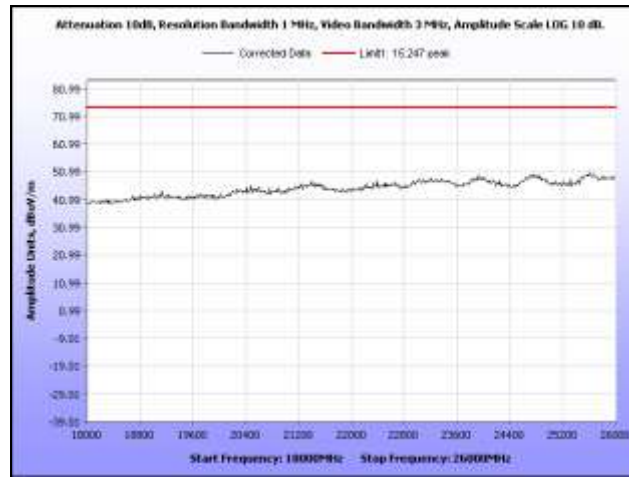
Plot 250. Radiated Spurs, Mid Channel, 2.4 GHz, 802.11g HT40, 1 GHz – 18 GHz, Average, Sector



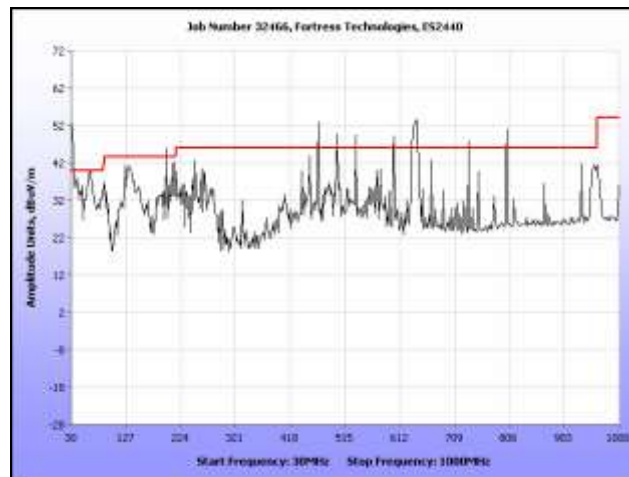
Plot 251. Radiated Spurs, Mid Channel, 2.4 GHz, 802.11g HT40, 1 GHz – 18 GHz, Peak, Sector



Plot 252. Radiated Spurs, Mid Channel, 2.4 GHz, 802.11g HT40, 18 GHz – 26 GHz, Average, Sector



Plot 253. Radiated Spurs, Mid Channel, 2.4 GHz, 802.11g HT40, 18 GHz – 26 GHz, Peak, Sector

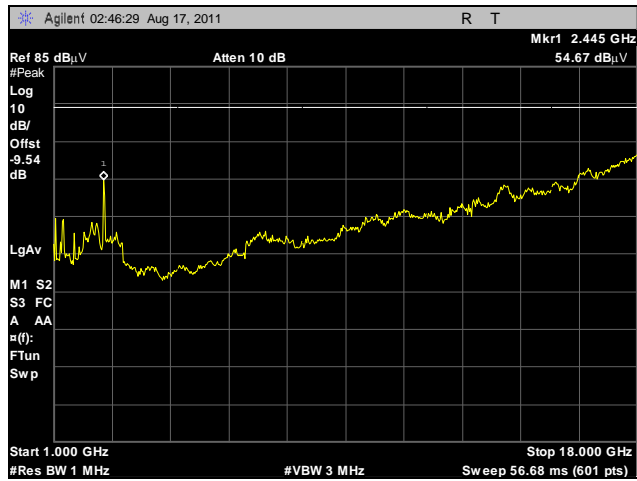


Plot 254. Radiated Spurs, High Channel, 2.4 GHz, 802.11g HT40, 30 MHz – 1 GHz, Sector

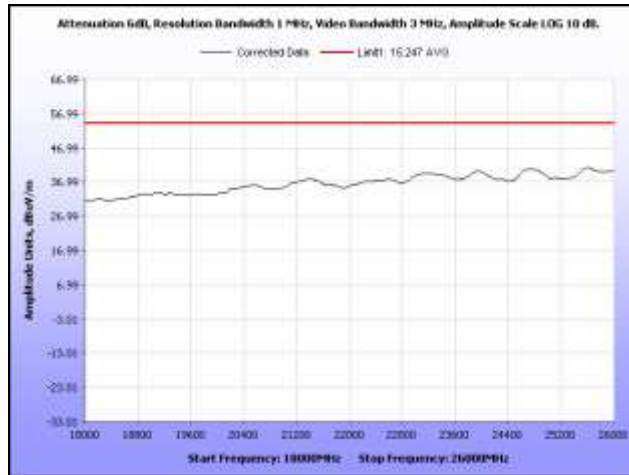
Note: Emissions which exceed the limit are digital emissions.



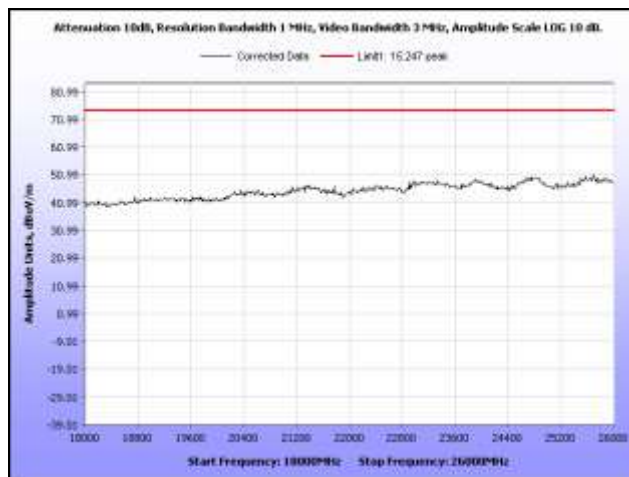
Plot 255. Radiated Spurs, High Channel, 2.4 GHz, 802.11g HT40, 1 GHz – 18 GHz, Average, Sector



Plot 256. Radiated Spurs, High Channel, 2.4 GHz, 802.11g HT40, 1 GHz – 18 GHz, Peak, Sector

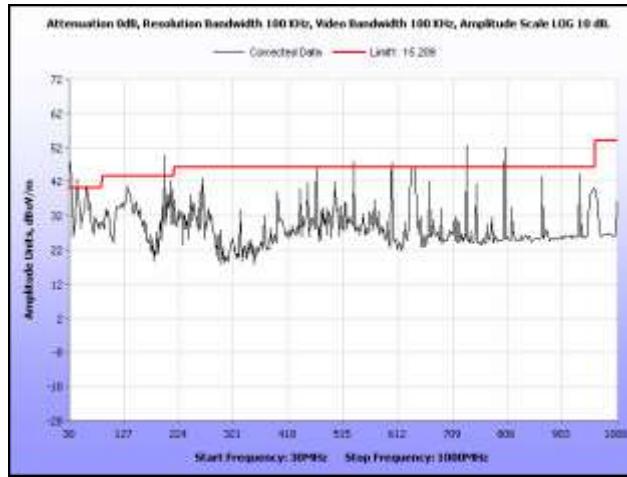


Plot 257. Radiated Spurs, High Channel, 2.4 GHz, 802.11g HT40, 18 GHz – 26 GHz, Average, Sector



Plot 258. Radiated Spurs, High Channel, 2.4 GHz, 802.11g HT40, 18 GHz – 26 GHz, Peak, Sector

Radiated Spurious Emissions Test Results, 5.8 GHz, 802.11a, Omni Antenna



Plot 259. Radiated Spurs, Low Channel, 5.8 GHz, 802.11a, 30 MHz – 1 GHz, Omni

Note: Emissions which exceed the limit are digital emissions.



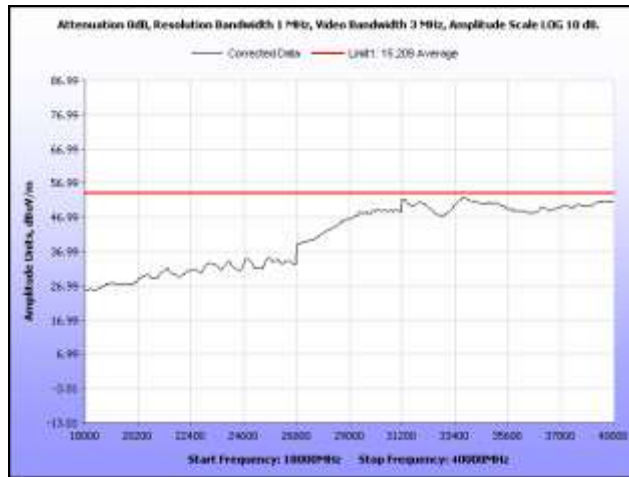
Plot 260. Radiated Spurs, Low Channel, 5.8 GHz, 802.11a, 1 GHz – 6 GHz, Average, Omni



Plot 261. Radiated Spurs, Low Channel, 5.8 GHz, 802.11a, 1 GHz – 6 GHz, Peak, Omni



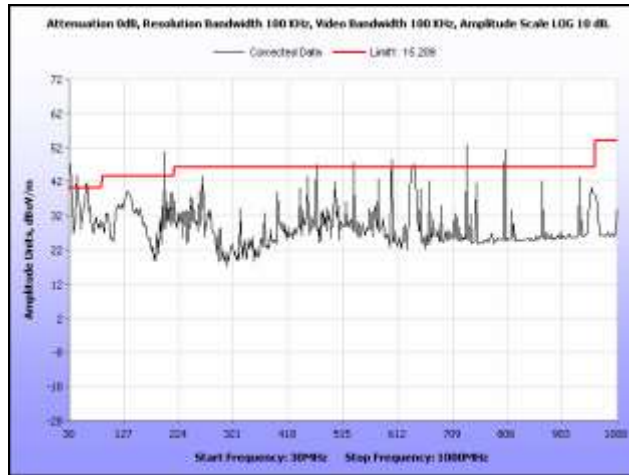
Plot 262. Radiated Spurs, Low Channel, 5.8 GHz, 802.11a, 6 GHz – 18 GHz, Peak under Avg., Omni



Plot 263. Radiated Spurs, Low Channel, 5.8 GHz, 802.11a, 18 GHz – 40 GHz, Average, Omni



Plot 264. Radiated Spurs, Low Channel, 5.8 GHz, 802.11a, 18 GHz – 40 GHz, Peak, Omni



Plot 265. Radiated Spurs, Mid Channel, 5.8 GHz, 802.11a, 30 MHz – 1 GHz, Omni

Note: Emissions which exceed the limit are digital emissions.



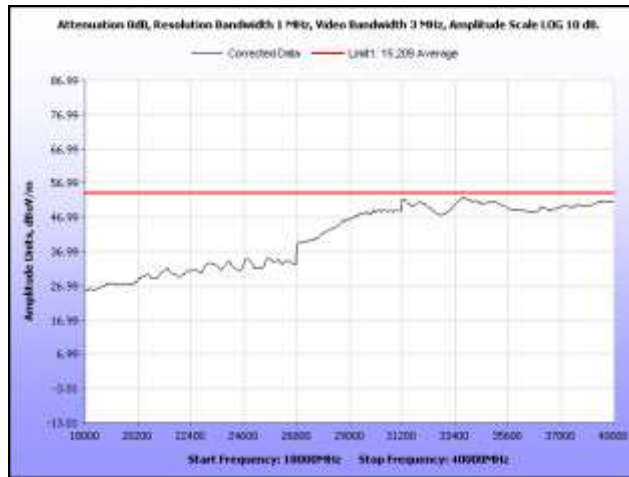
Plot 266. Radiated Spurs, Mid Channel, 5.8 GHz, 802.11a, 1 GHz – 6 GHz, Average, Omni



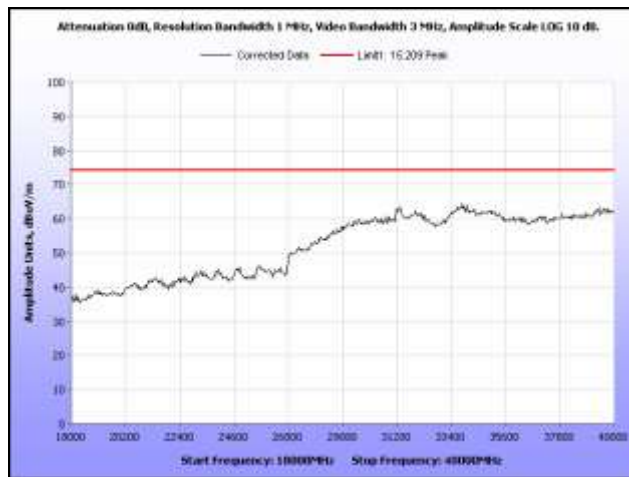
Plot 267. Radiated Spurs, Mid Channel, 5.8 GHz, 802.11a, 1 GHz – 6 GHz, Peak, Omni



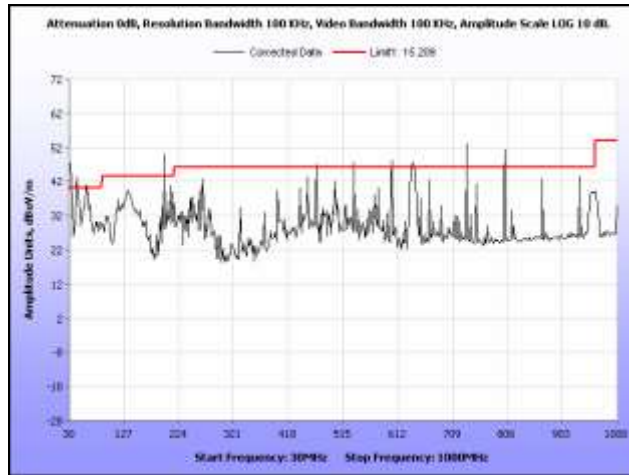
Plot 268. Radiated Spurs, Mid Channel, 5.8 GHz, 802.11a, 6 GHz – 18 GHz, Peak under Avg., Omni



Plot 269. Radiated Spurs, Mid Channel, 5.8 GHz, 802.11a, 18 GHz – 40 GHz, Average, Omni



Plot 270. Radiated Spurs, Mid Channel, 5.8 GHz, 802.11a, 18 GHz – 40 GHz, Peak, Omni



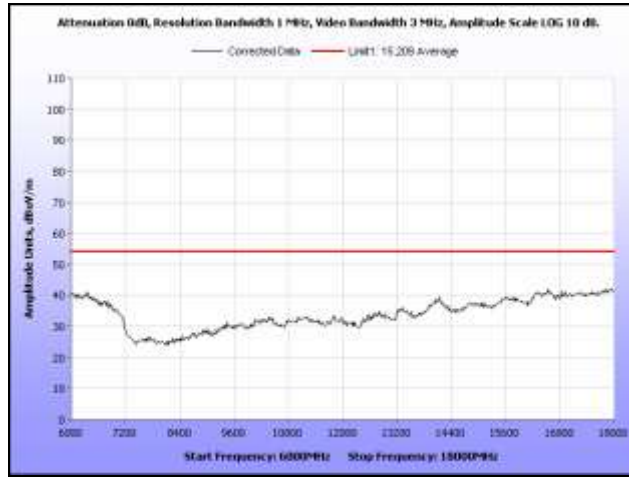
Plot 271. Radiated Spurs, High Channel, 5.8 GHz, 802.11a, 30 MHz – 1 GHz, Omni
Note: Emissions which exceed the limit are digital emissions.



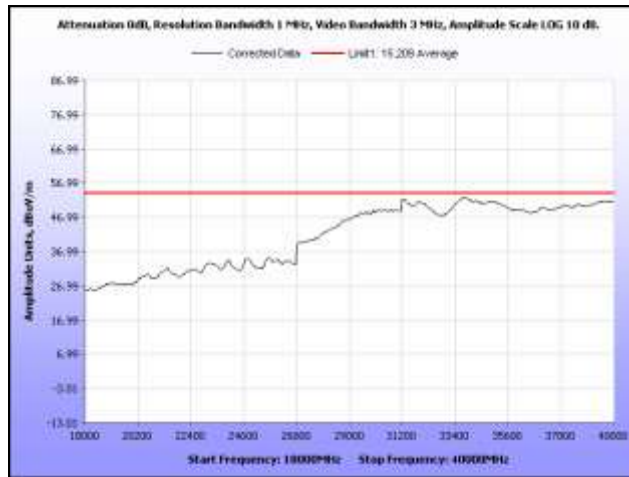
Plot 272. Radiated Spurs, High Channel, 5.8 GHz, 802.11a, 1 GHz – 6 GHz, Average, Omni



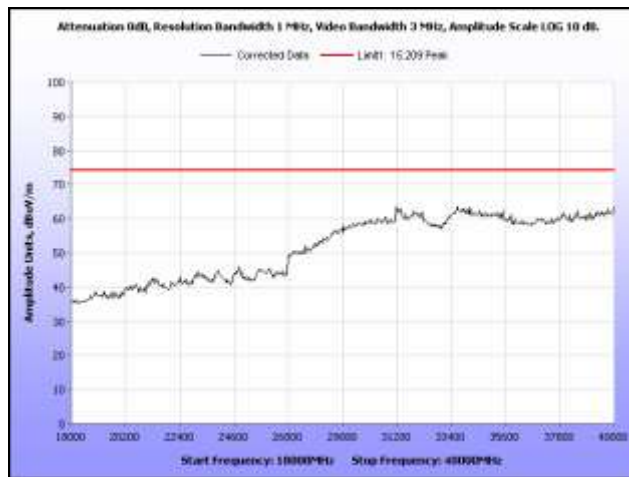
Plot 273. Radiated Spurs, High Channel, 5.8 GHz, 802.11a, 1 GHz – 6 GHz, Peak, Omni



Plot 274. Radiated Spurs, High Channel, 5.8 GHz, 802.11a, 6 GHz – 18 GHz, Peak under Avg., Omni

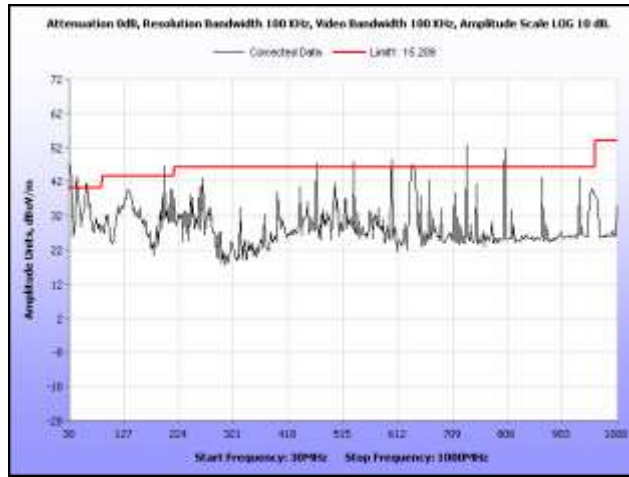


Plot 275. Radiated Spurs, High Channel, 5.8 GHz, 802.11a, 18 GHz – 40 GHz, Average, Omni



Plot 276. Radiated Spurs, High Channel, 5.8 GHz, 802.11a, 18 GHz – 40 GHz, Peak, Omni

Radiated Spurious Emissions Test Results, 5.8 GHz, 802.11n 20 MHz, Omni Antenna



Plot 277. Radiated Spurs, Low Channel, 5.8 GHz, 802.11n 20 MHz, 30 MHz – 1 GHz, Omni

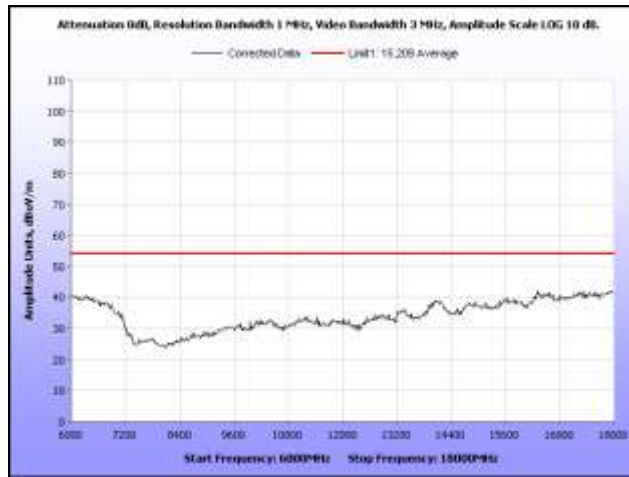
Note: Emissions which exceed the limit are digital emissions.



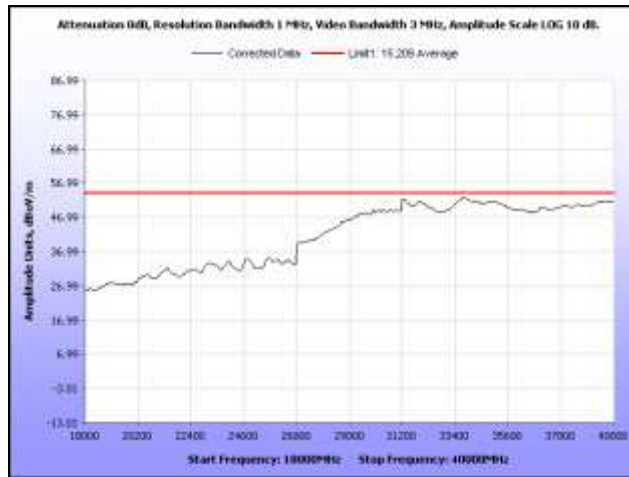
Plot 278. Radiated Spurs, Low Channel, 5.8 GHz, 802.11n 20 MHz, 1 GHz – 6 GHz, Average, Omni



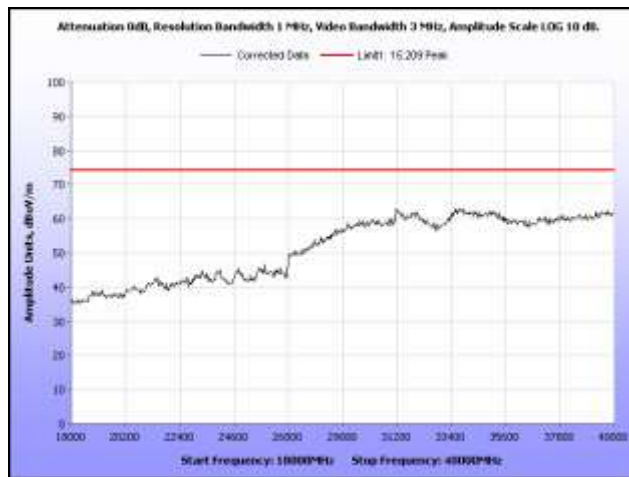
Plot 279. Radiated Spurs, Low Channel, 5.8 GHz, 802.11n 20 MHz, 1 GHz – 6 GHz, Peak, Omni



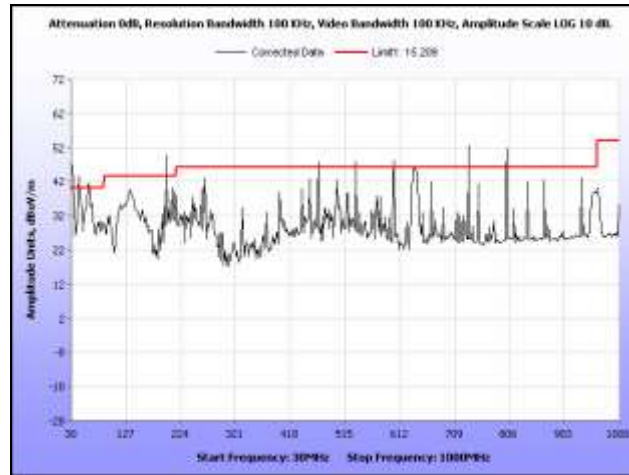
Plot 280. Radiated Spurs, Low Channel, 5.8 GHz, 802.11n 20 MHz, 6 GHz – 18 GHz, Peak under Avg., Omni



Plot 281. Radiated Spurs, Low Channel, 5.8 GHz, 802.11n 20 MHz, 18 GHz – 40 GHz, Average, Omni



Plot 282. Radiated Spurs, Low Channel, 5.8 GHz, 802.11n 20 MHz, 18 GHz – 40 GHz, Peak, Omni



Plot 283. Radiated Spurs, Mid Channel, 5.8 GHz, 802.11n 20 MHz, 30 MHz – 1 GHz, Omni

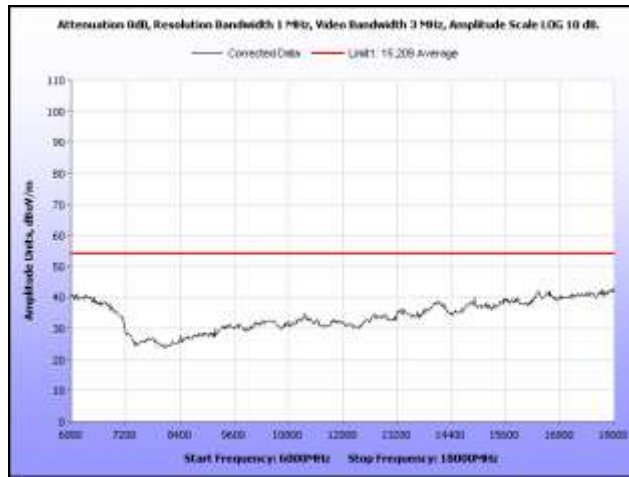
Note: Emissions which exceed the limit are digital emissions.



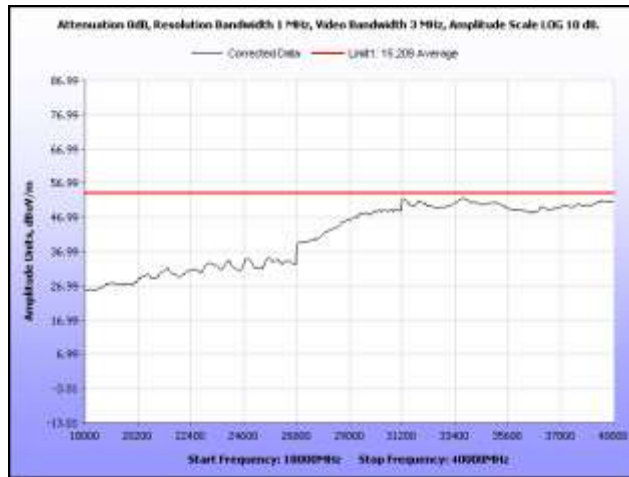
Plot 284. Radiated Spurs, Mid Channel, 5.8 GHz, 802.11n 20 MHz, 1 GHz – 6 GHz, Average, Omni



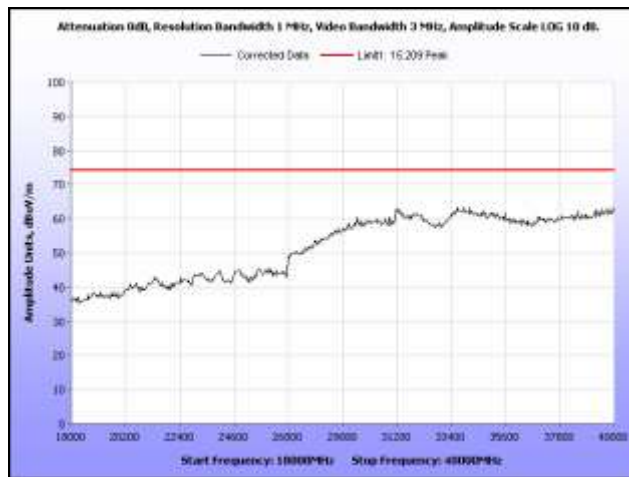
Plot 285. Radiated Spurs, Mid Channel, 5.8 GHz, 802.11n 20 MHz, 1 GHz – 6 GHz, Peak, Omni



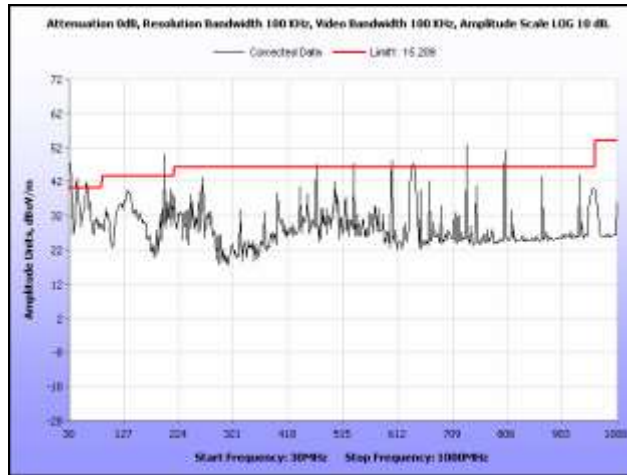
Plot 286. Radiated Spurs, Mid Channel, 5.8 GHz, 802.11n 20 MHz, 6 GHz – 18 GHz, Peak under Avg., Omni



Plot 287. Radiated Spurs, Mid Channel, 5.8 GHz, 802.11n 20 MHz, 18 GHz – 40 GHz, Average, Omni



Plot 288. Radiated Spurs, Mid Channel, 5.8 GHz, 802.11n 20 MHz, 18 GHz – 40 GHz, Peak, Omni



Plot 289. Radiated Spurs, High Channel, 5.8 GHz, 802.11n 20 MHz, 30 MHz – 1 GHz, Omni
Note: Emissions which exceed the limit are digital emissions.



Plot 290. Radiated Spurs, High Channel, 5.8 GHz, 802.11n 20 MHz, 1 GHz – 6 GHz, Average, Omni



Plot 291. Radiated Spurs, High Channel, 5.8 GHz, 802.11n 20 MHz, 1 GHz – 6 GHz, Peak, Omni